



Total Recovery and Control for the AS/400

Version 3.3

User and Administration Guide

We pride ourselves in producing good stuff. If you have any questions, problems, or suggestions regarding this product, please contact us at:

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Chapter 1: TRAC/400 Overview and Installation	7
Security.....	7
TRAC/400 Services	7
System Policy	8
Backup sets	8
Scheduling Operations.....	9
Reporting	9
Techniques to Consider.....	9
Frequency of Saves	9
Designing for Recovery.....	10
Sample Save and Restore Strategies	10
Media Strategy	11
Managing Your Media	11
Storage Locations.....	13
Tape Drives and Media Types.....	13
More Complex Strategies	14
Save - Further Considerations.....	14
Restore - Further Considerations	14
Media - Further Considerations	14
User-controlled operations	14
Chapter 2: Installation.....	16
Installing TRAC/400.....	16
Installation - CD-ROM.....	17
Installation - Tape	17
Installation – Internet Download	17
Removing TRAC/400.....	17
Chapter 3: Media Devices.....	18
Tape Devices.....	18
Adding Tape Devices.....	18
Changing Tape Devices.....	18
Media Libraries	19
Changing IBM Media Libraries	20
StorageTek Media Libraries	22
Third Party Media Libraries	23
Chapter 4: Media Management	26
Storage Locations.....	26
Work with Media	27
Adding Media to the Media Inventory	29
Initializing a Volume using ADDMEDTRK command	31
Initializing a Volume using the INZMEDTRK Command	32
Enrolling Existing Volumes	33
Reviewing the Media Inventory	34
Media Handling Techniques.....	36
Migrating from Media Set Rotation to Media Scratch Pool.....	37
Working with Media Information	38
Media Protection	39
Chapter 5: Backup.....	40

<i>Backup Sets</i>	40
<i>Working with Backup Sets</i>	41
<i>Example of a User-defined Backup Set</i>	42
<i>Backup Items in a Backup Set</i>	44
<i>Weekly Activity in a Backup Set</i>	46
<i>Creating Backup Lists for a Backup Set</i>	46
<i>Save While Active</i>	50
<i>Using Function Keys in a Backup Set</i>	50
<i>Backup procedures</i>	53
<i>Work with Backup Procedures</i>	54
<i>Add Multiple Devices for Concurrent Saves</i>	58
<i>Automatically Backup Media Information</i>	59
<i>Planning for Media Information</i>	60
<i>Running a Backup Using the STRBKUTRK Command</i>	60
<i>Running a SAVSYS Backup</i>	62
<i>Special Considerations for Using *SAVSYS in a Backup Set</i>	63
<i>Structuring a Complete System Save</i>	63
<i>Using Console Monitor to Schedule a *SAVSYS</i>	64
<i>Working with Save History</i>	65
<i>Using the Work with Media Information (WRKMEDITRK) Command</i>	66
<i>Using the Work with Saved Objects (WRKOBJTRK) Command</i>	68
<i>Using the Work with Saved Folders (WRKFLRTRK) Command</i>	69
<i>Using the Work with Saved Spooled Files (WRKSPLFTRK) Command</i>	70
<i>Using the Work with Link Information (WRKLNKTRK) Command</i>	71
<i>Selecting Items to Omit from Backup Processing</i>	73
Chapter 6: Recovery	75
<i>Setting up a Recovery Contact</i>	75
<i>Setting Up a Recovery Activity</i>	76
<i>Performing Recovery using the STRRCYTRK</i>	78
<i>Recovering the Full System</i>	80
<i>Recovering IBM Libraries</i>	80
<i>Recovering All User Libraries</i>	81
<i>Recovering a Specific Library</i>	81
<i>Recovering a Specific Auxiliary Storage Pool (ASP)</i>	82
<i>Recovery Based on Backup Sets</i>	82
<i>Recovering all Document Library Objects (DLO)</i>	83
<i>Resuming a Recovery</i>	83
<i>Using the WRKMEDITRK Command</i>	84
<i>Using the WRKOBJTRK command</i>	85
<i>Using the WRKFLRTRK Command</i>	88
<i>Using the WRKSPLFTRK Command</i>	89
<i>Using the WRKLNKTRK Command</i>	90
<i>Displaying the Recovery Process</i>	92
<i>Displaying the TRAC/400 Log for Recovery</i>	92
Chapter 7: Scheduling Operations and Policy Administration	94
<i>Automatic Job Scheduling</i>	94
<i>Scheduling Commands</i>	94
<i>Adding a Job to the Job Scheduler</i>	94
<i>Keeping Job Log Information</i>	96
<i>Scheduling Recovery</i>	96
<i>Working with Scheduled TRAC/400 Jobs</i>	97
<i>Selecting IBM Job Scheduler for AS/400</i>	99
<i>Substitution Variables</i>	100

<i>System Policy</i>	101
<i>A policy is another name for a set of defaults that are used throughout TRAC/400. Normally, the default values for the policy are used, but there can be situations when you need to modify these values.</i>	
<i>System Policy Defaults</i>	101
<i>Working with Sign-Off Exceptions</i>	103
<i>Checking Subsystems Before an IPL</i>	104
Network Groups	104
<i>Network Communication for TRAC/400</i>	105
<i>Adding Systems to Network Group</i>	105
<i>Removing a System from the Network</i>	106
<i>Changing the System Name</i>	106
<i>Joining Two TRAC/400 Networks</i>	107
<i>Verifying the TRAC/400 Network</i>	107
<i>Working with network group</i>	107
<i>Displaying the TRAC/400 Log</i>	109
Chapter 8: Daily Maintenance Procedures	111
<i>Maintenance Functions</i>	111
<i>STRMNTTRK Command</i>	111
<i>Scheduling STRMNTTRK Maintenance Processing</i>	111
<i>STRMNTTRK in a Backup Set</i>	113
<i>Notification of Failure to Process STRMNTTRK</i>	113
Chapter 9: Save Files	114
<i>Libraries Containing TRAC/400 Save Files</i>	114
<i>Specifying use of Save Files in Backup Procedures</i>	114
<i>Using the Save Save Files using TRAC/400 (SAVSAVFTRK) Command</i>	115
<i>Saving non-TRAC/400 Save Files</i>	116
Appendix A: Command Reference	117
<i>Add Media (ADDMEDTRK)</i>	117
Appendix B: Report Examples	184
<i>TRAC/400 Log</i>	184
<i>Media Report</i>	184
<i>Media Expiration</i>	185
<i>Media Information</i>	186
<i>Media Movement</i>	187
<i>Recovery Activities</i>	187
<i>Recovery Analysis</i>	188
<i>Recovery Volume Summary</i>	191
<i>Save Strategy Exceptions Report</i>	191
Appendix C:	192
A Day in the Life of A TRAC/400 Operator	192
<i>Assumptions</i>	192
<i>Operators' Tasks</i>	192

Chapter 1: TRAC/400 Overview and Installation	7
Security.....	7
TRAC/400 Services.....	7
Sample Save and Restore Strategies	10
Media Strategy	11
Managing Your Media	11
More Complex Strategies.....	14
User-controlled operations	14
Chapter 2: Installation.....	16
Installing TRAC/400.....	16
Removing TRAC/400.....	17
Chapter 3: Media Devices.....	18
Tape Devices.....	18
Media Libraries.....	19
StorageTek Media Libraries	22
Third Party Media Libraries	23
Chapter 4: Media Management	26
Storage Locations.....	26
Work with Media.....	27
Reviewing the Media Inventory	34
Media Handling Techniques.....	36
Chapter 5: Backup.....	40
Backup Sets	40
Backup procedures.....	53
Running a Backup Using the STRBKUTRK Command.....	60
Working with Save History.....	65
Chapter 6: Recovery	75
Setting up a Recovery Contact.....	75
Setting Up a Recovery Activity	76
Performing Recovery using the STRRCYTRK	78
Recovering the Full System.....	80
Resuming a Recovery	83
Using the WRKMEDITRK Command	84
Using the WRKFLRTRK Command	88
Using the WRKSPLFTRK Command	89
Using the WRKLNKTRK Command	90
Displaying the Recovery Process.....	92
Displaying the TRAC/400 Log for Recovery.....	92
Chapter 7: Scheduling Operations and Policy Administration	94
Automatic Job Scheduling	94
Scheduling Recovery.....	96
System Policy.....	101
Network Groups.....	104
Displaying the TRAC/400 Log	109
Chapter 8: Daily Maintenance Procedures.....	111

<i>Maintenance Functions</i>	111
Chapter 9: Save Files	114
<i>Libraries Containing TRAC/400 Save Files</i>	114
<i>Specifying use of Save Files in Backup Procedures</i>	114
<i>Saving non-TRAC/400 Save Files</i>	116
Appendix A: Command Reference	117
Appendix B: Report Examples	184
<i>TRAC/400 Log</i>	184
<i>Media Report</i>	184
<i>Media Expiration</i>	185
<i>Media Information</i>	186
<i>Media Movement</i>	187
<i>Recovery Activities</i>	187
<i>Recovery Analysis</i>	188
Appendix C:	192
A Day in the Life of A TRAC/400 Operator	192

Chapter 1: TRAC/400 Overview and Installation

Total Recovery and Control for the AS/400 (TRAC/400) provides AS/400 system users with support for the controlled running of backup, recovery, and media management operations. The objective of the product is to provide a simple, yet powerful operations tool that automates your backup and recovery processes.

TRAC/400 allows you to define how these operations are to occur, and with the use of a job scheduler can be set up to run automatically. Media, whether used for backup or other AS/400 activities, can be managed and tracked by volume or location. All media devices are supported, including media libraries. Disaster planning services allow you to identify and document critical resources, contact information, and special instructions.

Logging validates that operations are completed successfully and as planned. TRAC/400 provides cost savings, reduces complexity, improves operational productivity, and aids in disaster recovery.

With the provided interfaces, you can use TRAC/400 with other system management products that provide scheduling, distribution, and notification functions. With extensibility features such as command-driven interfaces and modifiable default values, you can tailor the use of services to the unique requirements of your environment

Security

TRAC/400 uses the security and auditing features of OS/400. Use of these facilities is optional. The security measures supplied by OS/400 are designed to reduce the risk of users changing or destroying resources, but do not prevent the risk. OS/400 security features include the use of passwords, and a security option to limit read/write access for files, libraries, and folders during normal operations. To achieve increased security, OS/400 controls should be combined with physical security and a division of duties.

User management is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities. TRAC/400 provides logging facilities to track system usage.

TRAC/400 Services

TRAC/400 is comprised of three major functions:

Backup

A service for defining, processing, monitoring, and reporting backup operations for libraries, objects, members, folders, stream files and spooled files, with provisions for dynamic online location and recovery of required data. You can define the order of backups, level of detail, subsystems to process, and control IPLs.

Recovery

A service for the orderly implementation of your disaster/recovery plan through single or phased recovery operations. You can restore individual or sets of saved items by date, an entire backup set, an entire ASP, or your entire system.

Media management

A service for controlling and monitoring media usage, including volume number, media status, location, and scratch availability for all media created on your AS/400 system that has been enrolled in TRAC/400.

System Policy

The system policy establishes default values used in various aspects of backup, recovery and media management processing. TRAC/400 is delivered with predefined defaults for the system policy that you can use as delivered or change to suit your operating requirements. In the system policy you can specify such things as:

- Default output queue
- Message severity notification limits
- Earliest and latest IPL times
- Auto-enroll media
- Presentation controls
- You should review the system policy periodically and change as necessary to meet your system processing requirements.

Backup sets

Backup sets define those logical sets of libraries and objects that possess similar backup, retention and recovery requirements and therefore should be grouped together for common processing.

One default backup set is the USER backup set. This backup set is established for you when you install TRAC/400 and with its defaults, backs up all "user" type libraries. The following list contains the default entries for the USER backup set:

- *SAVSECDTA - saves security data
- *SAVCFG - saves configuration information
- *ALLUSR - saves all user libraries
- *ALLDLO - saves the document library and all auxiliary storage pools (ASPs)
- *LINK - saves all objects not in /QSYS.LIB and /QDLS directories
- *EXIT - special operation that allows user exit processing

The other backup set is the SYSTEM backup set. This backup set is established for you when you install TRAC/400 and with its defaults, backs up all system type libraries. The following list contains the default entries for the SYSTEM backup set:

- *SAVSYS - saves the operating system
- *IBM - saves all IBM libraries

Using the installation defaults for the two default backup sets, you can backup up your entire system. After you have a better understanding of how you want to tailor these two sets in your environment, you can change any or all values in either backup set. You should be aware that the backup sets can be used identically. The designation of a backup set and a system set gives the user a convenient way of separating logically the backup of these two system components, but in no way should imply that the sets perform different functions. The special values, libraries, lists and special operations values determine how each backup set processes, not the set itself.

You may also add your own backup sets to the list.

Scheduling Operations

TRAC/400 provides a direct interface to the OS/400 job scheduler, IBM Advanced Job Scheduler for AS/400 or other job schedulers that permit you to schedule backup, recovery and media management operations for automatic processing. You can schedule a backup set, report processing or other TRAC/400 functions using a job scheduler.

Reporting

The reports available to you are some of the most useful features of TRAC/400. Reports can be processed using the reports menu (TRKRPT). Other reports can be processed using the TRAC/400 commands. Sample reports are displayed in Appendix B, "Report Examples" and command details are shown in Appendix A, "User Commands" of this book.

In general, the strategy which you develop and use for your saves will also dictate the way in which your strategy must be designed for your recovery. You should expect to perform save functions on a regular basis, but only under exceptional circumstances would you expect to perform a system restore.

At a minimum, you should ensure you have an offline copy of all critical objects such that, in the event of a failure, you are able to recover lost objects in a time scale that is acceptable to your organization. You must understand what the affect of a failure on your business will be, and try to assign the cost of failure to it. Only then can you really begin to justify additional functions to minimize the affect.

Techniques to Consider

There are many facilities that should be used, depending on your requirements, as part of your save and restore strategy. These include:

- Save and restore commands
- Saving access paths
- Journaling
- Using save files
- Using save-while-active
- User auxiliary storage pools
- Saving output queue contents

Frequency of Saves

Not all libraries and objects on your system need to be saved offline with the same frequency. Generally, IBM-supplied libraries do not change very frequently. You should always back up the IBM libraries after you have applied any significant maintenance, such as installing a new release or applying PTFs. You

may choose to back up IBM libraries on a regular three or six-month basis. The same may apply to your application program libraries, although these may change more frequently due to new functions being added. The libraries that change most frequently are those containing user data. You should include the IBM-supplied libraries QUSRSYS, QGPL and QGPL38 with your user data libraries in the backup set. These libraries are included in the procedures for the backup set.

In earlier releases of OS/400, you could only save security data and configuration details as part of a full operating system save (SAVSYS). More recently, you have been able to save these with separate commands (SAVSECDTA and SAVCFG). You can accomplish the same thing by using the *SAVSECDTA and *SAVCFG special values in a backup set. When the security data and configuration details change frequently, you should save these objects weekly.

Designing for Recovery

When designing your save strategy, you should consider how you will restore, and under what circumstances. When you determine your critical applications and how quickly will they be needed, you should structure your backups and your hardware configuration (for example, user auxiliary storage pools - ASPs) to allow you to recover as little as possible to get your critical applications running again.

You should also ensure that your library structure is designed for recovery:

- **Restoring saved access paths**
When restoring saved access paths, you should ensure that the based-on physical file has first been restored. A logical file which is in a different library to the based-on physical file will not have its access paths restored if the logical file is restored first. This could be the case if, for example, you have to restore the entire system.
- **Recovery with journaling**
Also, you need to be aware of the sequence for restoring objects if you are using journaling. In order to preserve the journaling environment, you should ensure your journals are restored before the files being journaled. Once the files have been restored, you should restore the journal receivers. If all your objects are in the same library, OS/400 will handle the restore of the different object types in the correct sequence.
- **Library naming convention**
If you save all user libraries with the SAVLIB *NONSYS or SAVLIB *ALLUSR commands, those libraries will be saved in **alphabetical sequence**. When using RSTLIB *NONSYS or RSTLIB *ALLUSR to restore, this could cause problems, since the libraries will be restored in the same alphabetical sequence. It may be possible that the logical files and journals are in different libraries than the physical files; therefore the correct restore sequence is not used. (OS/400 will manage the restore sequence if the objects are in the same library). To avoid this situation, you should consider the order in which your libraries are saved. Do this by either:
 - Naming your libraries containing your physical files so that they are alphabetically earlier than those containing the logicals, and those with your journals earlier than the physical file libraries; or
 - Specifically naming your libraries on the SAVLIB and RSTLIB commands.

Sample Save and Restore Strategies

There are various Save and Restore Strategies that may be accomplished on your AS/400. The following chapters in this document will give you sufficient information to allow you to accomplish these strategies using TRAC/400. These can be summarized as:

Complete system save

- Basic
 - Save storage
 - Regular save of system, user libraries and documents, and daily save of specific objects
- Complex
 - Multiple save types at varying frequencies

Incomplete save

- Save only security data, configuration objects, user libraries, user objects and documents.

When the system size and availability requirements dictate that a sophisticated save strategy be used, the more intricate (and consequently complex) you make your save strategy, the more complex your recovery will be. This will lead to a greater system management overhead. It is exactly this environment that a tool such as TRAC/400 is designed, helping to eliminate the complexity of recovery, especially when operations staff is under significant pressure to recover the system as soon as possible.

TRAC/400 could be considered an enabler for more complex save strategies, and it allows easy recovery from multiple piecemeal saves. In developing your save and restore strategy, you must consider how long it will take to do a regular save, and how much time in which you have to do it. What is most important to your business?

- Minimizing the time to do your backups?
- Recovering the entire system as quickly as possible after failure?
- Making critical applications available as quickly as possible before the entire system is recovered?

When putting in a tool such as TRAC/400, it is assumed that you will want recovery to be as automatic as possible.

Media Strategy

In addition to strategies for save and restore, you should have a strategy for the media you will use for your save and restore. This should include the number of copies of your saved objects that you will keep, where you keep these copies, and which media to use.

Managing Your Media

A simple approach to media handling is to use sets of media and to rotate them on a regular basis. This approach is easy to understand, and each set can have a specific identifier, either in the volume id, or by color-coding the labels.

Table 1-2 shows a typical strategy for managing multiple copies of your backups. This strategy is illustrated using native OS/400 save commands and terminology. This strategy, or a more complex one, can be implemented using TRAC/400.

This strategy uses three sets of tapes that are rotated on a weekly basis. A Save Security Data (SAVSECDDTA), Save Configuration (SAVCFG), and Save Library (SAVLIB LIB(*NONSYS)) is done every Sunday. Save Changed Objects (SAVCHGOBJ) is done all other days of the week. A Save System (SAVSYS) is done on a less frequent basis (shown as **1** in the table). A copy is made of the original SAVSYS tapes so that one can be kept onsite in the safe, and the second copy sent offsite to the vault.

At the end of the week, after Saturday's saves are complete, the tapes that comprise the SAVSECDTA, SAVCFG, and SAVLIB LIB(*NONSYS), from the previous Sunday, as well as Saturday's SAVCHGOBJ tapes are moved to the safe. Monday to Friday's SAVCHGOBJ save tapes are reused.

When reading the following table, assume that we are currently in the week that is using the Green Set.

Table 1-2. Sample Media Strategy. Shows the Copies to be Held at Each Location

Green Set			Yellow Set			Blue Set		
Library	Day of save	Max days old	Safe	Day of save	Max days old	Vault	Day of save	Max days old
			SAVSYS 1			SAVSYS 1		
SAVECDTA	Sun	6	SAVSECDTA	Sun-1	13	SAVSECDTA	Sun-2	20
SAVCFG	Sun	6	SAVCFG	Sun-1	13	SAVCFG	Sun-2	20
*NONSYS	Sun	6	*NONSYS	Sun-1	13	*NONSYS	Sun-2	20 3
SAVCHGOBJ	Mon	6	SAVCHGOBJ	Sat-1	8	SAVCHGOBJ	Sat-2	15
SAVCHGOBJ	Tue	5						
SAVCHGOBJ	Wed	4 2						
SAVCHGOBJ	Thu	3						
SAVCHGOBJ	Fri	2						
SAVCHGOBJ	Sat	1						

Each rotation set in the table is represented by a broad column showing the save type used, the day of the week when the save was taken, and the maximum age of the save tapes. For example, the *Max days old* column indicates that for a save taken on Wednesday, using SAVCHGOBJ (see 2 in Table 1-2), the saved copy would normally only be required for restore until the following Saturday, since on Sunday a SAVLIB LIB(*NONSYS) will occur.

The Sunday SAVLIB *NONSYS will be done using the Blue set of tapes, marked 3, which will be brought back onsite from the vault to become the current set of tapes in the library. Hence, Wednesday's save data (Green) will be only four days old when the new Blue SAVLIB *NONSYS is taken.

At this time, a new rotation set will begin, using the tapes originally designated as the Green set. The Yellow set of tapes in the safe would be moved offsite to the vault and those in the library would be moved to the safe.

Those sets, which are kept in the safe and in the vault do not need to have all the changed object tapes stored at those locations. Keeping each day's changed objects for the current week and the most recent SAVLIB *NONSYS (Green set in the example in Table 1-2) will allow a restore to any particular day of that week.

Similarly, keeping only the previous SAVLIB *NONSYS and the last changed objects of the previous week in the safe, allows recovery from tapes that were stored onsite for a maximum of only one week. Keeping the SAVLIB *NONSYS prior to that, and the last changed objects of the week prior to that, will allow recovery from offsite tapes that were stored offsite for a maximum of two weeks.

You could, if you want, keep all of the changed objects' tapes together as a set when they move locations. This would allow you further granularity in your recovery, but this is not necessary, if you want to keep media storage or transportation costs to a minimum.

Storage Locations

The purpose of taking an offline copy of your system and applications is to protect against a major failure. Save files in a user ASP will not protect you from a fire, flood, etc., if the whole AS/400 configuration is affected. Keeping your offline tapes in a rack next to the AS/400 may be fine for retrieving them quickly, but a fire or flood in the computer room could affect both your online and offline data. Even a fireproof safe or vault close to the computer room would not provide a fully protected environment in the event of an explosion or major fire. Therefore, you should plan to have **at least one copy of your backups stored offsite**. You should consider two offsite copies (in different locations) for your most critical objects. This will protect you in the event that one is unusable and you have lost the main site.

The example shown in Table 1-2 has three storage locations:

Library - close to computer room
Safe - fireproof safe in the same building, away from the computer room
Vault - offsite

You should keep to a regular schedule for moving your tapes between locations. If you use a specialist service to move them, you will benefit from the discipline this brings. If the tapes are to be collected at specific times, your staff must have them prepared and ready for collection. **Do not forget to include a copy of your updated recovery procedures with the tapes.** Recovery procedures will change as each new set of tapes is written. This will ensure you have procedures to follow even if your main site has been destroyed.

Tapes should be moved between the storage locations, with the most recent/current week's saves being kept close to the computer room for quick retrieval.

Tape Drives and Media Types

There are many different media types and associated devices on the AS/400 that can be used for storing offline copies. The most common are:

- 1/4-inch cartridge
- 1/2-inch cartridge
- 1/2-inch reel
- 8mm cartridge
- 3570 cartridge

You should consider both the device and media type that you require for your backups. Each has its own characteristics, and you should decide which to use for different types of saves. Your SAVSYS activity will be restricted by your alternate-IPL device.

Generally, for backup purposes, you would use the fastest and most dense media according to your cost justification. However, for systems with a large amount of DASD, you would benefit from a media library device. Other devices do not have the capacity or automation facilities required for saving and restoring large amounts of data.

Also, you must consider whether you need to be able to read your offline backups on another system and what limitations that might impose.

See Chapter 3, "Media Devices" for more information about tape drives and media types.

More Complex Strategies

The strategies discussed previously may be sufficient for many sites. However, many may need greater flexibility than these strategies can provide. This section describes approaches that should be considered.

Save - Further Considerations

If you have applications with different critical days (for example, payroll that runs on Tuesday), you may want to change the strategy shown in Table 1-2 to save those libraries at a different time than the other applications. In this case, you would replace the `SAVLIB *NONSYS` saves with saves of specific libraries on their critical dates, and have a set of `SAVCHGOBJ` saves for each set of libraries.

In addition to this, you may have critical objects that you need to save with a different frequency than their libraries. In this case, you would include the appropriate `SAVOBJ` commands in your save processes.

Restore - Further Considerations

Increasing the number of save cycles will increase the recovery and media management requirements. With multiple sets of tapes to manage, and more complex recovery procedures, the chances of an error occurring during the recovery will increase, unless you have a well-documented set of instructions. TRAC/400 will help you manage these complex strategies, and will more easily accommodate changes than a manual system.

Media - Further Considerations

Another way of managing your media is to use a scratch pool concept. With a scratch pool, tapes are not allocated to specific sets. When a tape is required for output, any available scratch tape can be used. This requires that an inventory be kept of all tapes so that available tapes can be identified but has the advantage that tapes do not need to be allocated in advance. If the inventory is well managed, tape usage can be balanced rather than some tapes being used more than others can.

To gain maximum control of your media volumes, you may want to regard your stock of tapes just like any other stock of items. You can then:

- Control the usage of the tapes
- Know where they have been moved
- Replace them when their "shelf life" has expired
- Hold supplier re-order details
- Inquire on your inventory

In fact, TRAC/400 operates just like any other inventory control application!

User-controlled operations

TRAC/400 operates in conjunction with AS/400 system commands, tasks, and direct interfaces to AS/400 media handling processes to give you the tools to control and define backup, recovery, and media management strategies described earlier in this chapter.

Some of the special user functions available for processing and tailoring your operations are:

User Commands: Numerous user commands are available. You can use these commands from any OS/400 or TRAC/400 command line. See Appendix A, "User Commands" for more details on user commands. You can press F10 from any menu and you are taken to the TRAC/400 commands menu

where you can select any of the TRAC/400 commands. The online help information carries a complete description of each command and its associated parameters.

User Exits: User exits can be specified at any point in a backup set by specifying an *EXIT keyword within a backup set.

Example: You can use exits to perform any task such as notifying the system operator that backups are complete, or doing a file reorganization prior to beginning backups.

During backup set processing, control is automatically transferred to any user-specified *EXIT routines. After processing the user exit, control is returned and processing resumes. *EXIT item processing can occur before backup set pre-processing, in sequential item number order or after backup set post-processing. There is no limit on the number of *EXIT keywords that can be used within a backup set.

Operational Menu (TRKOPR): All menus contain the F13 key that provides access to the TRAC/400 Operational menu. You can also select Option 12 from the main menu to go to the Operational menu.

Functions provided include:

- Displaying the TRAC/400 log
- Processing TRAC/400 maintenance
- Scheduling TRAC/400 jobs

Special Values: Special values can be used in backup sets to use certain types of save operations. These specialized saves include items such as configurations (*SAVCFG), security data (*SAVSECDTA), and IBM libraries (*IBM).

A complete list of special values and their meanings can be accessed in the online help information from the either backup set display by positioning the cursor to the **Backup Items** field and pressing the Help key.

Security: You can apply security to media and media content information removal by securing the Remove Media Volumes from TRK (RMVMEDTRK) command. All commands that use the 4=Remove option for media check authorization for the RMVMEDTRK command.

AS/400 Job Scheduling Interface: TRAC/400 interfaces directly with OS/400 job scheduling through easy access from the TRAC/400 main menu option 10 (Policy Administration), and from other key points within each of the services. Operations can also be initiated through other commercially available job scheduling systems or can be manually initiated through online TRAC/400 commands. You can tailor scheduling functions such as add, list and select to the requirements of your operations using the Change Job Scheduler (CHGSCDTRK) command.

Chapter 2: Installation

Installation of TRAC/400 creates one library on your system, TRAC400. The TRAC400 library contains all the program objects, subsystem descriptions, job queues and is used to store TRAC/400 database objects and logs, including a history of media information. Installation will also duplicate TRAC/400 commands into the QGPL library.

TRAC/400 is delivered with standard default values and assumptions. You can use these defaults as defined, or change the defaults to provide backup, recovery, and media management functions that are specific to your operation. During installation, other required defaults are automatically retrieved from your AS/400 system internal configuration tables (such as your standard tape device name) and are used to configure TRAC/400 to your environment.

Media and Storage Extensions: Media and Storage Extensions (MSE) is a pre-requisite required to use many important features of TRAC/400. To determine if you have MSE installed on your AS/400 system, enter the following on a command line:

```
GO LICPGM
```

Select option 10 – Display installed licensed programs

If MSE is installed on your system, you will see the following entry among the operating system licensed products (SS1):

```
57xxSS1 *COMPATIBLE OS/400 - Media and Storage Extensions,
```

where xx will be 63 for V3R2, 16 for V3R7 and 69 for V4R1 and above.

If you do not have MSE installed on your system, you will need to contact your TRAC/400 sales representative, your IBM Business Partner or call 1(800) IBM-CALL.

MSE is necessary for recording all save information to tape and preventing active tapes from being overwritten. Without it, you will be able to enroll media, setup and maintain backup sets, lists, and procedures, and save to save file. However, any saves to tape will not be correctly recorded by TRAC/400.

Once TRAC/400 has been installed, it registers one exit program in the registration information for Exit Point QIBM_QTA_TAPE_TMS. If you install MSE after installing TRAC/400, it is necessary to issue the following command:

```
INZTRK OPTION(*DATA)
```

Note: If you have another tape management solution installed on your system when TRAC/400 is installed, the existing tape management solution may no longer work. This is due to the low level tape routines that many tape management solutions share to access information about tape operations.

Installing TRAC/400

Note: After you install TRAC/400 you should check the QALWUSRDMN system value. You can do this by entering the following command on any command line:

```
WRKSYSVAL QALWUSRDMN
```

You can then display the current values for the QALWUSRDMN system value. If this value is not set to *ALL, you must add TRAC400 to the list of libraries specified for the

QALWUSRDMN parameter.

Installation - CD-ROM

Installation of TRAC/400 from CD-ROM is accomplished by performing the following steps:

1. Be sure that you have library QTEMP in your library list; if not, please add it to your library list.
2. Load CD into the CD-ROM drive
3. Enter the following command: `LODRUN DEV(*OPT)`
4. The CD-ROM product installation menu is displayed. To install TRAC/400, enter a 1 beside TRAC/400.
5. You are now ready to use TRAC/400 go, to Chapter 3: Setup.

Installation - Tape

Installation of TRAC/400 from tape is accomplished by performing the following steps:

1. Be sure that you have library QTEMP in your library list; if not, please add it to your library list.
2. Load tape in the appropriate drive
3. At the command line type: `RSTLIB SAVLIB(MBAINST) DEV(device name)`
4. Execute the install command: `MBAINST/MBAINST PRODUCT(TRK) ACTION(*INSTALL) DEV(device name)`
5. You are now ready to use TRAC/400, go to Chapter 3: Setup.

Installation – Internet Download

Using any browser, go to our web page at <http://www.trac400.com>. Scroll to the site on the page identified to download free trial product and follow the directions.

Removing TRAC/400

Use of this command will delete the TRAC400 library. Deletion of TRAC/400 is accomplished by performing the following steps:

1. To be able to delete the associated objects, sign on the system with a user profile having QSECOFR authority.
2. Ensure that TRAC/400 is not being used, and that TRAC400 library is not in your library list. To do this, enter the command: `WRKOBJLCK OBJ(QSYS/TRAC400) OBJTYPE(*LIB)`
Confirm that there are no locks on this library.
3. Note the severity code filter and delivery settings of the system operator message queue. To do this, enter the following command and note the values associated with "Severity . . .:" and "Delivery . . .:" as seen on the top of the "Display Messages" display: `DSPMSG MSGQ(QSYSOPR)`
4. Ensure that the system operator message queue is in *BREAK mode and has a severity code filter set to 95. To do this, enter the following command: `CHGMSGQ MSGQ(QSYSOPR) DLVRY(*BREAK) SEV(95)`
5. Enter the following command to remove TRAC/400 from your system: `MBAINST/MBAINST PRODUCT(TRK) ACTION(*REMOVE) RMVINST(*YES)`
6. Reset the severity code filter and delivery of the system operator message queue. To do this, enter the following command using the values as noted in step 3: `CHGMSGQ MSGQ(QSYSOPR) DLVRY(dd) SEV(ss)`

where **dd** = delivery value as previously noted

ss = severity code filter value as previously noted

Chapter 3: Media Devices

Tape Devices

TRAC/400 supports any tape device that is attached to your AS/400. You should consider both the device and density that you require for your backups. Each has its own characteristics, and you should decide which to use for different types of saves. For instance, your alternate-IPL device will restrict your system save activity. For backup purposes, generally you would use the fastest and most dense media according to your cost justification. You must also consider whether you need to be able to read your offline backups on another system and what limitations that might impose.

Adding Tape Devices

Devices can be added to the TRAC/400 device table in three ways. The first is during installation of the TRAC/400 product. Devices are automatically added to the TRAC/400 device table during installation. After installation you can add devices to TRAC/400 in two ways. You can use the Work with Devices display, Option 1 (Add device) or you can use the Initialize TRAC/400 (INZTRK) command to add new devices. You reach the Work with Devices display by selecting Media management (Option 1) from the TRAC/400 Main Menu and Work with device information (Option 3) from the Media Management menu (TRKMED). If you choose to add the device using the Work with Devices display, you must manually add the device and its characteristics. If you choose to use the Initialize TRAC/400 (INZTRK) command, you can use the *DATA or *DEVICE value for the **Type of initialize** prompt. Refer to Appendix A, "User Commands" for more information about the INZTRK command.

Changing Tape Devices

From the Media Management menu, select option 3 (Work with device information) to enter and update tape device entries. From the resulting Work with Devices display, type a 2 by a tape device entry to go to the Change Tape Device display.

```
TRKMED                               Media Management

Select one of the following:

    1. Work with media
    2. Work with storage locations
--> 3. Work with device information
    4. Work with media library media
```

```
                               Work with Devices

Position to . . . . .           Starting characters

Type options, press Enter.
 1=Add   2=Change   4=Remove   5=Display
 8=Work with status

Opt   Device      Category  Type/Model  Text
--
 2    TABMLB01    *TAPMLB  3570/C12   *NONE
     TAP01       *TAP     63A0/001   *NONE
     USRMLB      *USRMLB  *USRDFN    *NONE
```

```

Change Tape Device
Tape device . . . . . : TAP01
Device type/model . . . . . : 63A0/001

Type changes, press Enter.

Text . . . . . Entry created by TRAC/400 configuration

Location . . . . . *HOME Name, F4 for list

Next volume message . . . . . *YES *YES, *NO
Tape mount delay . . . . . *IMMED *IMMED, 1-999
Auto enroll media . . . . . *SYSPCY *SYSPCY, *NO, *YES

```

Change Tape Device Display for a Device Configured by TRAC/400 at Installation

The Change Tape Device display illustrates the information that you enter, or is configured for you using the INZTRK command. The following is a description of key fields in the Change Tape Device display:

- **Tape device:** The tape device is the name of a device that has been identified to your system as an attached AS/400 device. The tape device name is either entered by you, or automatically configured using the INZTRK command. You cannot add a device name that does not exist on the AS/400 except for a category of *STK or *USRMLB.
- **Device type/model:** This field is the IBM designated type and model number of the device. For instance, for the IBM 63A0-001, 63A0 is the type and 001 is the model number.
- **Location:** A device must be in a specified location. You can have multiple devices assigned to a location. In the case of a V3R2 operating system and an IBM media library or a StorageTek library (*STK) or a third party library (*USRMLB), all devices in the MLB unit must have the same location as the MLB unit.
- **Tape mount delay:** Specifies how long you want the device to delay before it begins processing the next tape on a device. This is helpful when you have to restore an object that exists on multiple tapes.
- **Next volume message:** Specifies whether you want TRAC/400 to notify you through a message to mount another tape. This is useful when a backup of a backup set requires more than one tape. For media library devices and auto-cartridge loaders it should be set to *NO.
- **Auto enroll media:** Can be specified for non-MLB devices and controls whether TRAC/400 should automatically add media used in output operations to the media inventory, if the request has been done using TRAC/400 media and is on this device.

Media Libraries

TRAC/400 supports IBM media libraries (MLB), third party media libraries that emulate IBM media libraries, StorageTek media libraries and third party media libraries that do not emulate IBM media libraries (*USRMLB). A MLB is an automated tape library that allows you to store a large number of tapes in the MLB unit and access a specified tape or tapes for read and write operations. TRAC/400 determines which volumes are resident in the MLB, and when needed by an application, issues the proper command to mount the volume. OS/400 determines how to best utilize the devices within the MLB for IBM libraries. When finished with the volume, TRAC/400 issues the corresponding command to remove the volume. For instance, when an output operation calls for a scratch volume mount, TRAC/400 will determine an eligible scratch volume and mount the volume. After the operation is complete, the MLB will unload the volume (if specified in the command), and return the volume to its correct media inventory location.

Media libraries are added to TRAC/400 in the same way as other tape devices: During installation, using Option 1 (Add) on the Work with Devices display, and processing the INZTRK command.

When configuring OS/400 V3R2 or third party libraries which do not emulate IBM libraries, neither the installation or INZTRK method will work unless the MLB unit software and associated commands are already installed on the system. TRAC/400 will attempt to build the information needed for the MLB entry. The information that must be generated is the relationship between TRAC/400 device (*TAP) information, location and the TRAC/400 MLB (*USRMLB) entry. The location ties the device and MLB information together, since an MLB and its associated devices must have a unique location. With this information, TRAC/400 will update the device entries in the TRAC/400 configuration. It will create a location in the Location table with the same name as the MLB name.

Note: To physically add media to an IBM MLB, the media is inserted into the MLB in an "unusable" category (*INSERT). You must run the Add Media Library Media to TRAC/400 (ADDMLMTRK) command to change the category from an unusable category to a usable category or use option 1=Add in the WRKMLMTRK display.

Changing IBM Media Libraries

From the Media Management menu, select option 3 (Work with device information). From the resulting Work with Devices display, type a 2 by a device entry with a category of *TAPMLB to go to the Change Tape Media Library Device display.

```

                                Work with Devices

Position to . . . . .           Starting characters

Type options, press Enter.
  1=Add   2=Change   4=Remove   5=Display
  8=Work with status

Opt   Device      Category  Type/Model  Text
  2   TAPMLB01    *TAPMLB   3570/C12   Entry created by TRAC/400
  _   TAP01       *TAP      63A0/001   Entry created by TRAC/400
  _   USRMLB      *USRMLB   *USRDFN    *NONE
  
```

```

                                Change Tape Media Library Device

Media library . . . . . : TAPMLB01
Device type/model . . . . . : 3570/C12

Type changes, press Enter.

Text . . . . . *NONE

Location . . . . . TAPMLB01      Name, F4 for list

Next volume message . . . . . *NO          *YES, *NO
Tape mount delay . . . . . *IMMED       *IMMED, 1-999
  
```

Media Library Entry

The Change Tape Media Library Device display shows you an IBM media library that has been added as a MLB in TRAC/400 during configuration. The following is a description of key fields in the Change Tape Media Library Device display.

- **Media Library:** The media library (MLB) name that you have set up is displayed. The media library name will be the same name as the device description, unless it is a *STK or *USRMLB.
- **Location:** The location for this MLB is displayed and can be changed if necessary. There is a one-to-one correspondence between a MLB and its location. Only one MLB can reside at a location. The location must have been set up during the installation process or added by using the Work with Storage Locations display. Normally the location is the same name as the MLB name. Press F4 for a list of storage locations.
- **Tape mount delay:** Specifies how long you want the device to delay before it begins processing the next tape on a device. This should be *IMMED for IBM MLBs and 30 for *STK or *USRMLB.
- **Next volume message:** Specifies whether you want TRAC/400 to notify you through a message to place another tape on a device. The default is *NO for MLBs.

To review media library media, select 4 from the Media Management menu, or enter the WRKMLMTRK (Work with Media Library Media) command on a command line.

```

Work with Media Library Media (WRKMLMTRK)

Type choices, press Enter.

Media library . . . . . TAPMLB01      Name
Volume . . . . . *ALL                *ALL, generic*
TRAC/400 volume . . . . . *ANY        *ANY, *YES, *NO
Output . . . . . *                    *, *PRINT

```

Enter a media library and press Enter to go to the Work with Media Library Media display.

```

Work with Media Library Media
System: XXXXXXXX

Library device . . . . . : TABMLB01
Position to volume . . . . . Starting characters

Type options, press Enter.
 1=Add  2=Change  4=Remove  5=Display  6=Work with media set  7=Expire
13=Display contents  15=Mount  16=Dismount  20=Eject

Opt  Volume      Status      Expiration      Date      Location      Density      Cartridge
     Volume      Status      Date      Location      Density      Status
000030 *ACT      05/04/00      TAPMLB01      *FMT3590
000031 *ACT      04/24/00      TABMLB01      *FMT3590
000036 *ACT      05/04/00      TABMLB01      *FMT3590
000037 *ACT      05/05/00      TABMLB01      *FMT3590
000039 *ACT      05/06/00      TABMLB01      *FMT3590
901876 NONE

Bottom

Type command, press Enter.
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel

```

Media Library Media Information

The Work with Media Library Media is a useful display for MLB users. By using this display, you do not have to use or remember various OS/400 commands to perform basic MLB functions, such as volume eject, volume mount and demount. With this display you can add MLB volumes to TRAC/400, initialize volumes, change volume categories and perform other routine TRAC/400 and MLB functions. A value of NONE in the **Status** field indicates the volume is not enrolled into TRAC/400.

StorageTek Media Libraries

TRAC/400 provides built in support for StorageTek (STK) media libraries. STK media libraries are added to TRAC/400 by specifying *STK in the **Category** field in the Work with Devices display.

```

                                Add StorageTek Library Device

Media library . . . . . :   STKLIB

Type choices, press Enter.

Library server type . . . . . :   _____   *ALS, *SRL
Text . . . . . :   *NONE

Location . . . . . :   STKLIB   Name, F4 for list

Next volume message . . . . . :   *NO   *YES, *NO
Tape mount delay . . . . . :   30   *IMMED, 1-999

F3=Exit   F4=Prompt   F12=Cancel
```

Add StorageTek Library Media Information

In the Library server type, you must specify the STK server *ALS for ACSLS attached or *SRL for direct attached. Currently Library station should be configured using the *USRMLB interface. TRAC/400 is continuing to add support for STK, so if your library is not currently supported, contact technical support to see if it has been added. When adding a new STK library device to TRAC/400, if the location specified does not already exist, TRAC/400 will automatically create the location and change the location of any TRAC/400 devices found in the RMLS/PFTAP file and with a location of *HOME to the new library location.

TRAC/400 does not support restricted state concurrent saves for the *SRL server type. We recommend that you perform restricted state saves to one device and add the save of the RMLS library to the set that performs the restricted state save. By adding the RMLS library to the restricted state save, file lock contention is eliminated and the RMLS library and the library can then be omitted from all other saves. For example, you could change your SYSTEM set to include *SAVSYS, *IBM and a list containing the QUSRSYS and RMLS libraries. For *SRL server type and sets which contains a *SAVSYS save, TRAC/400 will perform the following steps:

Issue the ENDSBS *ALL command to bring the system into a restricted state.

Note: The message CPF1240 Job "nnnnnnn/xxxxxxx/RMLSDA ended abnormally" should be ignored.

Issue the STRSEQMOD command with the device specified in the procedure with a list of up to ten volumes contained in the media inventory.

Issue the *SAVSYS command.

Process remaining steps contained within the set.

Issue the ENDSBS *ALL command, in case any subsystems had been restarted.

Issue the ENDSEQMOD command.

Issue the STRSBS xxxxx command, where xxxxx is the controlling subsystem

Issue the INITRMLDA command, to start the RMLS subsystem.

If you ever wish to use a tape drive contained within a STK library in stand-alone mode, select option 3=Work with device information on the TRKMED menu, option 2=Change change the location of the device to a location other than the location of the library. The default device for stand alone tape drives is *HOME.

Third Party Media Libraries

TRAC/400 provides support for third party (non-IBM) media libraries. Third party media libraries are added to TRAC/400 by specifying *USRMLB in the **Category** field in the Work with Devices display when adding a device. When you specify *USRMLB, TRAC/400 provides fields where you can specify the third party command that is to be issued for various MLB functions such as mounting media, ejecting media and so on. The customer or media library manufacturer is responsible for the programming to interface the commands with the MLB unit and TRAC/400. For assistance on configuring third party libraries, go to the TRAC/400 web page at www.trac400.com.

```
Work with Devices

Position to . . . . . Starting characters

Type options, press Enter.
 1=Add  2=Change  4=Remove  5=Display
 8=Work with status

Opt  Device      Category  Type/Model  Text
 1   USRMLB     *USRMLB
-   TAPMLB01     *TAPMLB   3570/C12    Entry created by TRAC/400
-   TAP01        *TAP      63A0/001    Entry created by TRAC/400
```

There are three variables that a customer/manufacturer can use with each of the MLB commands. Values for the variables are supplied through the tape exit.

1. &DEVICE - the tape device name.
2. &VOLUME - the volume identifier.
3. &MLBNAME - the TRAC/400 name of the third party MLB

There are two messages supplied with TRAC/400 for users of third party media libraries. They are located in message file TRKMSGF in library TRAC400. They are:

1. TRK1990 - User exit retry operation message.
2. TRK1991 - User exit failure operation message.

If these messages are issued as escape messages to TRAC/400, then the operation will be retried (TRK1990) or failed (TRK1991), as appropriate.

An example of adding a third party media library is shown below:

Note: The commands shown below are totally fictitious and are used only for illustration purposes.

```
Add User Media Library Device

Media library . . . . . : USRMLB
Device type/model . . . . . : *USRMLB

Type choices, press Enter.
```

Text	*NONE	
Location	USERMLB	Name, F4 for list
Mount media command	*NONE	
Eject media command	*NONE	


```

                                Add User Media Library Device

Type choices, press Enter.

Insert media command . . . . . *NONE

Add media command . . . . .  ADDMEDCMD VOL (&VOLUME)
                                MLBNAME (&MLBNAME)

Work with media command . . . . .  WRKMEDCMD VOL (&VOLUME)

Display media command . . . . .  DSPMEDCMD VOL (&VOLUME) MLBNAME (&MLBNAME)

```

```

                                Add User Media Library Device

Type choices, press Enter.

Work with status command . . . . . *NONE

Display status command . . . . .  DSPSTSCMD MLBNAME (&MLBNAME)

Allocate device command . . . . .  ALCTAPDEV TAPDEV (&DEVICE)

Deallocate device command . . . . .  DLCTAPDEV TAPDEV (&DEVICE)

```

Adding a third party media library to TRAC/400.

Chapter 4: Media Management

Storage Locations

A first step in beginning media management procedures is to identify and set up your media storage locations. Default storage locations have been supplied by the TRAC/400 configuration for *HOME (local media inventory) and VAULT (offsite storage) and TRAC/400 will add configure a location for any attached IBM media libraries. The location name will be the same as the media library name. You can reach this display by selecting option 2 (Work with storage locations) from the Media Management menu (TRKMED).

```
TRKMED                               Media Management

Select one of the following:

    1. Work with media
-->  2. Work with storage locations
    3. Work with device information
    4. Work with media library media
```

You can have an unlimited number of storage locations. To add a storage location called MYLOC, select option 1 (Add) by typing a 1 in the option column of the Work with Storage Locations display, and the name of the new location, MYLOC in the Location column and press the Enter key. You are then transferred to the Add Storage Location display where you can enter information about your storage location.

```
                               Work with Storage Locations

Position to . . . . .           Starting characters

Type options, press Enter.
  1=Add   2=Change   3=Copy   4=Remove   5=Display   6=Work with media

Opt  Location      Volumes  Text
1   MYLOC
-    *HOME          2      Entry created by TRAC/400 configuration
-    VAULT          1      Entry created by TRAC/400 configuration
```

```

                                Add Storage Location

Type choices, press Enter.

Storage location . . . . . : MYLOC Name
Address line 1 . . . . . : MYLOC Building
Address line 2 . . . . . : 5555 MYLOC Boulevard
Address line 3 . . . . . : MYLOC, OK 74444
Address line 4 . . . . . : _____
Address line 5 . . . . . : _____
Contact name . . . . . : Joe Smith
Contact telephone number . . . . . : 555-555-5555
Retrieval time . . . . . : 1.0 Hours
Allow volumes to expire . . . . . : *NO *YES, *NO
Volume threshold . . . . . : *NOMAX *NOMAX, Number
Volume maximum . . . . . : *NOMAX *NOMAX, Number
Text . . . . . : Information for user location

```

User Created Storage Location

When you are adding a storage location, there are no required fields except the location name. However, you should be familiar with several available choices and additional parameters:

- **Retrieval time:** This is the estimated time in hours that it takes to return the media from this location to the location where it is required for use. In the case of location MYLOC, the retrieval time is 1 hour.
- **Allow volumes to expire:** Indicates if volumes are permitted to expire while in this location.

Work with Media

Volumes are managed and tracked using an online media inventory. The Work with Media display is the primary display for viewing up-to-date information on media status, location, and contents. It is from this display that media can be moved, updated, reinitialized, or expired. You reach this display by selecting option 1 (Work with media) from the Media Management menu or processing the WRKMEDTRK command.

```

TRKMED                                Media Management

Select one of the following:

--> 1. Work with media
    2. Work with storage locations
    3. Work with device information
    4. Work with media library media

```

Work with Media							
Position to volume				Starting characters			
Type options, press Enter.							
1=Add 2=Change 4=Remove 5=Display 6=Work with media set 7=Expire							
13=Display contents							
Opt	Volume	Status	Creation Date	Expiration Date	Location	Move Date	Density
	052B2B	*ACT	03/25/99	04/29/99	TAPMLB01	03/15/99	*FMT3570E
	052644	*ACT	03/26/99	04/30/99	TAPMLB01	03/15/99	*FMT3570E
	052783	*ACT	03/24/99	04/28/99	TAPMLB01	03/15/99	*FMT3570E
	052997	*EXP	03/25/99	03/25/99	TAPMLB01	03/25/99	*FMT3570E

Work with Media Display

All operations to tape, except Save Storage (SAVSTG), are tracked by TRAC/400 media management facilities. A record is kept in the TRAC/400 media inventory about the volumes used in operations, and whether the volumes are active or expired. If a media volume that is not in the TRAC/400 media inventory is used, the event is logged, and the tape operation is allowed to continue.

For those tapes that are in the TRAC/400 media inventory, volume content is also tracked at library, object or member level if this information was saved by the user. No volume content information is recorded for those volumes not in the media inventory.

The following is a description of options in the Work with Media display:

- **Status.** Media is available for reuse (scratch volume) because the retention period specified in the associated media policy has passed, or the volume is new. Media that has expired while in storage cannot be reused until it has been moved to the home location. A move from storage to the home location can be processed using the Work with Media display, or by processing the CHGMEDTRK (Change Media using TRAC/400) command. Expired media are designated on the Work with Media display by a *EXP in the **Status** field. *ACT indicates that the volume is active, and *ERR indicates that an unknown error occurred.
- **Creation Date.** The date the volume was last written on. An internal birth date for volume statistical evaluation is also kept.
- **Expiration Date.** The date the volume expires as determined by the length of time specified in the procedure for a backup set. Note that if you perform a Display Tape (DSPTAP) all tapes will show an expiration date of *PERM. TRAC/400 does this so that it can manage the protection of tapes that have not yet expired, instead of using OS/400 to check tape expiration.
- **Location.** The current physical location of the volume. If the volume has not been assigned, a location the volume is assigned a location of *NONE.
- **Move Date.** The date the volume moved to its current storage location.
- **Density.** The density of the volume.
- **Work with Media Set.** Option 6 allows you to work with media with information grouped into multiple volumes.
- **Expire.** Option 7 changes the volume expiration date to the current date and changes the status to *EXP.
- **Display contents.** Option 13 allows you to work with media information.

Adding Media to the Media Inventory

Media can be enrolled to the TRAC/400 media inventory at any time. The only requirement is that the media must be enrolled in the media inventory prior to any save or restore operations. This requirement is valid unless **Auto enroll** on the System Policy is set to *YES and not using media library devices.

There are a number of methods that can be used to enroll media into TRAC/400. The commands ADDMEDTRK (Add Media to TRAC/400), WRKMEDTRK (Work with Media) Option 1 (Add), and ADDMLMTRK (Add Media Library Media to TRAC/400) can be used for this purpose. The ADDMLMTRK command should be used in the case where the tapes being added are located in a media library device. For TRAC/400 to track your media, you need a unique volume ID for every tape in your inventory. For media libraries with barcode readers the volume ID must match the barcode label. You should make certain that the volume ID contains sufficient right-most numeric positions to handle future inventory growth. It is recommended that you allow at least four suffix positions of the six-character volume ID.

The prefix of the volume ID can be used to identify the physical media type, although it is not required. The volume ID should not be directly tied to the density because the density of the media can be changed at any time. The volume ID should not be tied to any variable, such as the system name, which may change at any time.

Some examples of valid volume IDs would be:

- Q00001 for a 120MB 1/4-inch cartridge tape
- Q10001 for a 525MB 1/4-inch cartridge tape
- C00001 for a 1/2-inch cartridge tape
- H00001 for a 8mm helical scan tape

OS/400 uses certain volume identifiers for special purposes. You should avoid using these volume identifiers in your volume labeling. Volume identifiers that you should avoid are:

- TAPxxx
- NLTxxx
- BLKxxx
- CLNxxx
- ERRxxx
- SLTxxx
- IMPxxx

Option 1 (Add) of the Work with Media display allows you to add a new tape volume to the media inventory and if required, initialize the volume. To do this, type a "1" in the option column, enter the desired volume id, and press the Enter key. You are transferred to the Add Media to TRAC/400 command for enrollment of this volume into TRAC/400.

```

Work with Media

Position to . . . . .

Type options, press Enter.
 1=Add  2=Change  4=Remove  5=Display  6=Work with media set
 13=Display contents

Opt  Volume  Status  Creation  Expiration  Move  Density
   1  NEWVOL
     ICC001  *ACT   11/10/99  12/15/99  *HOME *NONE  *QIC2GB
     ICC002  *EXP   11/10/99  *NONE     *HOME *NONE  *QIC2GB

```

```

Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

Volume identifier . . . . . > NEWVOL      Character value
Density . . . . .          *FMT3570E  *FMT2GB, *FMT5GB, *FMT3490E..
Number to add . . . . .          1        1-999
Initialize tape . . . . .          *NO     *NO, *YES
Text . . . . .          *NONE

```

```

Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

Volume identifier . . . . . > NEWVOL      Character value
Density . . . . .          *FMT3570E  *FMT2GB, *FMT3480, *FMT3490E..
Number to add . . . . .          1        1-999
Initialize tape . . . . .          *NO     *NO, *YES
Text . . . . .          *NONE

Expiration date . . . . .          *NONE   Date, *PERM, *NONE
System . . . . .          *LCL
Creation date . . . . .          *CURRENT Date, *CURRENT

```

Adding a Volume to the Media Inventory

On the Add Media to TRAC/400 command display, position the cursor in the **Density** prompt and press F4 to review and select from a list of densities pre-configured at installation. Note that the **Initialize tape** prompt defaults to *NO (do not initialize this volume). If this field is *NO, when you press the Enter key an **Expiration date** prompt will appear along with the **Creation date** prompts as the last lines of the command. You can specify the expiration date to be assigned this volume. This means you are enrolling a volume that already has active data and want TRAC/400 to manage its expiration. You can also enter the creation date for the volume that you are adding to the media inventory.

You can use the ADDMEDTRK command to enroll existing media in the media inventory by entering the volume id (or beginning volume id) of the tapes to be added in the **Volume identifier** field. Enter the count of volumes to be added in the **Number to add** prompt. This identifies a volume to be tracked and managed in media inventory. You should make certain that the **Volume identifier** prompt contains sufficient right-most numeric positions to handle the total number of volumes to be added that is specified in the **Number to add** prompt. It is recommended that you allow at least 4 suffix positions to allow for

volume inventory growth. Following are examples of incorrect and correct starting volume identifier to use when mass enrolling 999 tapes in the media inventory:

Will not work

- T01 or T1
- TAPE01

Acceptable

- T00001
- R00500

Initializing a Volume using ADDMEDTRK command

You can use the ADDMEDTRK command not only to add volumes to the TRAC/400 media inventory that you want to manage, but also to initialize volumes and add the initialized volumes to the TRAC/400 media inventory for use as scratch media. You could use the Initialize Media using TRK (INZMEDTRK) command to initialize a volume, but the ADDMEDTRK command allows you to specify additional TRAC/400 media management information, such as location, statistical information and so on.

To initialize a volume use Option 1 (Add) on the Work with media display to go to the ADDMEDTRK command. After selecting the correct density from the list of densities types, change the **Initialize tape** field value to *YES and press the Enter key. Tape initialization fields are presented to you as defaults for tape initialization. If you want to initialize the tape, enter a valid tape device and press Enter.

```

                                Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

Volume identifier . . . . . > NEWVOL           Character value
Density . . . . .          *FMT3570E         *FMT2GB, *FMT3480, *FMT3490E..
Number to add . . . . .          1           1-999
Initialize tape . . . . .          *YES       *NO, *YES
Text . . . . .                *NONE
  
```

```

                                Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

Volume identifier . . . . . > NEWVOL           Character value
Density . . . . .          *FMT3570E         *FMT2GB, *FMT3480, *FMT3490E..
Number to add . . . . .          1           1-999
Initialize tape . . . . .          > *YES       *NO, *YES
Text . . . . .                *NONE

System . . . . .                *LCL
Creation date . . . . .          *CURRENT     Date, *CURRENT
Tape unit . . . . .              TAPMLB01     Name
New owner identifier . . . . .          *BLANK
Check for active files . . . . .          *YES   *YES, *NO, *FIRST
Code . . . . .                  *EBCDIC       *EBCDIC, *ASCII
End of tape option . . . . .          *REWIND  *REWIND, *UNLOAD
Clear . . . . .                  *NO          *NO, *YES
  
```

```

                                Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

                                Additional Parameters

Location . . . . . *HOME          *HOME, USRLIB, VAULT
Last moved date . . . . . *NONE      Date, *NONE
Media uses . . . . . 0              Number
Read errors . . . . . 0             Number
Write errors . . . . . 0            Number
Bytes read . . . . . 0
Bytes written . . . . . 0
Current bytes written . . . . . 0
Maximum bytes written . . . . . 0

```

Initializing Media that you are Adding to TRAC/400

If you want to review additional ADDMEDTRK parameters, press F10 (Additional parameters). You can then use the roll key to review these additional parameters. If at this point you want to initialize the volume, enter a valid tape device name and press Enter. If you do not want to initialize the tape press F3 or F12 to return to the Work with Media display.

Note: Volumes cannot be initialized unless the required tape device has already been varied on.

Initializing a Volume using the INZMEDTRK Command

It is recommended that you use the TRAC/400 Initialize Media (INZMEDTRK) command in place of the OS/400 INZTAP command.

Note: The INZMEDTRK command will not automatically add a volume to the media inventory. See "Initializing a Volume" for an example of how to initialize a volume and add it to the media inventory using the ADDMEDTRK command.

To assure the protection of media on an AS/400 utilizing TRAC/400 media, the **Check for active files** prompt, CHECK(*NO), has been disabled on the INZTAP command for users without *SAVSYS, *SERVICE or *ALLOBJ special authority. Users do not need any specific authority to utilize this prompt on the TRAC/400 INZMEDTRK command.

Initialize Once

TRAC/400 is designed such that you will only need to initialize a volume once in its life. TRAC/400 keeps track of whether the volume has active data on it, and will prevent you from overwriting the active data. In addition, it will allow you to overwrite expired data. The single initialize concept means less wear on your tape and that volume error statistics can be kept for the life of the tape. These statistics are associated with the volume identifier that you assign. If you were to reinitialize a volume and give it a different volume identifier, the statistics would be lost. Keeping lifetime statistics for volumes is important for good media management. When the error rate for a particular volume is too high, the volume should be removed from service.

Initializing Multiple Volumes

Multiple volumes can be initialized on an automatic cartridge loader tape device without operator intervention. You can do this by specifying a **Tape mount delay time** on the Add Media to TRAC/400

(ADDMEDTRK) command. You must specify sufficient time for the automatic cartridge loader to eject the first volume, load and ready the second. This should be used with the **Next volume message** keyword set at *NO. This same support can be used to initialize a large number of volumes on a single volume media device. You will need to change volumes manually, but so long as you specify a longer **Tape mount delay time** sufficient to load the tape by hand, no message will be issued on the QSYSOPR message queue. This will enable you to more quickly initialize many volumes.

Determining the Number of Initialized Volumes

It is important that you have sufficient initialized volumes before performing a save operation. If, during a save operation, you require more volumes than you have available, a potential exposure will occur. To identify which volumes are available to use for backup, run the Work with Media (WRKMEDTRK) command. Press F4 to prompt the command. In the **Status** field, specify *EXP to find expired volumes. In the **Location** field, specify the location for tape selection. When the command is run, TRAC/400 will list all expired media from that location.

Enrolling Existing Volumes

If you want to add active volumes to the TRAC/400 media inventory, use the default value of *NO in the **Initialize tape** field on the ADDMEDTRK display. This allows you to add volume id information and a future expiration date without initializing the volume. If you change the value to *YES, you risk deleting existing data.

Adding Media Contents to the History File from an Enrolled Volume:

TRAC/400 uses the volume information it saves in its media history files to recover data lost due to accident or disaster. You can review or change media history information from the Work with Media Information (WRKMEDITRK) display. TRAC/400 records content information only for media that is already part of the TRAC/400 media inventory. To add additional information to the TRAC/400 media inventory, use the Add Media Information (**ADDMEDITRK**) command. Use the ADDMEDITRK command to specify media content information in a way that does not require mounted media. For more information about the **ADDMEDITRK** command, see the online help, or refer to Appendix A.

You can also use the Load Media Information (**LODMEDITRK**) command to add media information to the media inventory. In this case, however, you are adding media information from an existing volume by extracting it from the actual tape content. This method limits the media information for this volume to what TRAC/400 can extract from the tape. Because this method is more time-consuming, you should limit its use only to those backup volumes that were created prior to the installation of TRAC/400.

To use the Extract Media Information display, take the following steps:

1. Type `LODMEDITRK` at a command line and press Enter.

```

Load Media Information (LODMEDITRK)

Type choices, press Enter.

Device . . . . . Name
Volume . . . . . *MOUNTED Character value, *MOUNTED
File origin . . . . . *FILE *FILE, *SAVLIB, *SAVOBJ...
End of tape option . . . . . *UNLOAD *LEAVE, *REWIND, *UNLOAD

```

2. The key parameters on this command are:
 - In the **Device** field, specify the name of the device on which the tape is mounted.
 - In the **Volume ID** field, you can enter a specific volume name, or you can use the default value of *MOUNTED. If you use *MOUNTED, TRAC/400 attempts to add content information for the

volume that is currently in the tape device. When a volume is part of a multi-volume set, TRAC/400 adds content information for each of the volumes in the set. You must mount the media set in the same order in which the save was performed. That is, the first volume of the set must be the volume that you initially mount on the specified tape device.

- You must use the default value of *UNLOAD in the **End of tape option** field. TRAC/400 prompts you to mount the subsequent volumes when needed and in set order.

Note: You cannot use the *MOUNTED value for a tape existing in a tape library device. Instead you need to enter the specific volume name.

3. Review and change the remaining parameter as needed.
4. Press Enter to issue the command.

Reviewing the Media Inventory

From the Media Management menu (TRKMED), select option 1 (Work with media) to access the Work with Media (WRKMEDTRK) command. The WRKMEDTRK command is fully described in Appendix A, "User Commands", but will be described in general here.

The Work with Media using TRK (WRKMEDTRK) command allows you to produce a display or report of the media that is in your media inventory. Using the various parameters in the command you can:

- Select active, expired or both types of volumes
- Select volumes created during a specified date range
- Select volumes with expiration dates within a specified date range
- Select all volumes or a generic set of volumes
- Select volumes from all locations or a specific location
- Select volumes that have a specific density or all volumes regardless of density
- Select the sort sequence for the resulting display or report
- Select whether you want a display or report

The WRKMEDTRK command with its default values is displayed following:

```
TRKMED                               Media Management

Select one of the following:

--> 1. Work with media
    2. Work with storage locations
    3. Work with device information
    4. Work with media libraries
```

```

Work with Media using TRAC/400 (WRKMEDTRK)

Type choices, press Enter.

Volume identifier . . . . . *ALL      *ALL, generic*
      + for more values
Select volumes . . . . . *ALL      *ALL, *ACT, *EXP. *ERR
Select creation dates:
  Beginning creation date . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  Ending creation date . . . . *END     Date, *CURRENT, *END, nnnnn
Select expiration dates:
  Beginning expiration date . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  Ending expiration date . . . *END     Date, *CURRENT, *END, nnnnn
From location . . . . . *ALL      *ALL, *HOME, TAPMLB01...
Density . . . . . *ALL      *ALL, *QIC120, *QIC525...
System name . . . . . *ALL
Set . . . . . *ALL      *ALL, *NONE, USER, SYSTEM
Sequence option . . . . . *VOL     *VOL, *CRT, *EXP, *LOC
Output . . . . . *          *, *PRINT

```

Work with Media (WRKMEDTRK) command

When you have selected the parameters in the WRKMEDTRK that you want to use, press Enter to go to the resulting Work with Media display.

```

Work with Media

Position to . . . . .

Type options, press Enter.
  1=Add  2=Change  4=Remove  5=Display  6=Work with media set  7=Expire
  13=Display contents

Opt  Volume  Status  Creation  Expiration  Location  Move  Density
     Date    Date    Date      Date        Date      Date
-----
-    ICC001  *EXP   11/12/99  *NONE      *HOME     *NONE *QIC2GB
-    ICC002  *ACT   11/12/99  12/20/99  *HOME     *NONE *QIC2GB

```

Working with the Media Inventory

All operations to tape, except Save Storage (SAVSTG), are tracked by TRAC/400 media management facilities. A record is kept in the TRAC/400 media inventory about the volumes used in operations, and whether the volumes are active or expired. If a media volume that is not in the TRAC/400 media inventory is used, the event is logged, and the tape operation is allowed to continue.

For those tapes that *are* in the TRAC/400 media inventory, volume content is also tracked at library, object, or member level, if selected by the user. No volume content information is recorded for those volumes not in the media inventory.

The following is a description of concepts used in the Work with Media display:

- **Status.** Expired media is designated on the Work with Media display by a *EXP in the **Status** field. *ACT indicates that the volume is active, *ERR indicates that an error has occurred with this volume and action should be taken.
- **Creation Date.** The date the volume was last written on. An internal birth date for the volume and statistical evaluation is also kept.

- **Expiration Date.** The date the volume expires as determined by the length of time specified in the backup set. Note that if you perform a Display Tape (DSPTAP) command, all tapes will show an expiration date of *PERM. TRAC/400 does this so that it can manage the protection of tapes that have not yet expired, instead of using OS/400 to check tape expiration.
- **Location.** The current physical location of the volume. If the volume has not been assigned a location, the volume is assigned a location of *NONE.
- **Move Date.** The date the volume moved to its current storage location.
- **Density.** The density of the media (ex: *FMT3570E).

Media Handling Techniques

There are two common methods for defining media that are used for performing save operations. They are:

- Media Set Rotation
- Media Scratch Pool

In the past, Media Set Rotation has been a commonly used method for media handling. However, TRAC/400 implements the more flexible Media Scratch Pool concept.

Media Set Rotation: Works by first identifying a set of volumes that are to be used to back up a group of objects for a particular period. Often, all volumes in this set will be color-coded, blue for example. A second set may exist, but coded with another color, for example green. The green set is used to perform a backup of the same data during the time period following the blue set, for instance the next week. A third set could be introduced with, again, a different color code, red for example, which is used to back up the data for the period following the green set. After this, the tape sets are rotated, and the blue set is initialized and used once again. At any one time, three versions of the data will exist on removable media.

This is simple in concept but has a number of limitations:

- It limits the ability to easily specify differing media retention for objects that are saved
- Operators need to carefully select the correct volumes depending on the period in which the backup is being performed within the backup cycle
- It requires more operator intervention
- More volumes are used, since each set will be defined with a fixed number of volumes, not all of which will be used
- Unused volumes cannot be moved from location to location, wasting time, space, and money

Media Scratch Pool: Works by enrolling all media into a media inventory. All media that currently has no active data on it, as defined by the media inventory, is available for use and logically belongs to a scratch pool. A request for a media load will allow use of any available volume, regardless of the volume id. The media inventory tracks the volume id of the media currently in use (protected from rewrite), or available for scratch.

Scratch Mount Prompting: When performing a backup with TRAC/400, the operator is prompted to insert a volume from the scratch pool into the tape device, when the tape device is not ready, except in the case of media libraries TRAC/400 will mount a volume automatically. This prompting is called scratch mount prompting. TRAC/400 assists the operator by providing a list of candidate scratch volumes. This list can be obtained by pressing F1 or the Help key.

Scratch mount prompting is enabled for all media devices on a system when TRAC/400 is installed. After the installation, all volumes used for save operations will be checked by TRAC/400 during the volume load to see if they are enrolled in the media inventory. If the volume id is not enrolled, TRAC/400 issues a message which informs the operator and waits for a continue (G) or cancel (C) reply. The operator can

respond to the message with the continue option, and the operation will proceed as normal. However, the TRAC/400 media inventory is not updated with the information about the save operation, and, consequently, the data on the volume is not protected from being overwritten by another save operation. TRAC/400 will not automatically add the volume to the media inventory. Good media management relies on specific enrollment of media volumes to the media inventory.

Migrating from Media Set Rotation to Media Scratch Pool

Users of the Media Set Rotation method for defining media will see many advantages for moving to the Media Scratch Pool method. The migration from Media Set Rotation is quite simple. The following example can be used to illustrate the steps involved.

Current Environment: This example assumes backups are performed every weeknight, taking a full save of production libraries. Five volumes are reserved for each of the color codes, for each weeknight. For instance, in week one (blue), the Monday backup is allocated five media volumes, the Tuesday backup is allocated five volumes, and so on to Friday. There are 25 volumes in the blue set, which will serve for one week. The green set and red set are the same, each with five volumes in total for each weeknight. The total number of volumes in the media inventory therefore is 75. The morning after each backup, the volumes are moved offsite and are returned during the day of their next use, three weeks later.

Analysis: Having volumes to perform backups over a three week period means that the first Monday blue tape will not be used again until 21 days has elapsed. If the data on this tape is ever needed within the 21 day period, it can be recalled from this tape.

In a Media Scratch Pool environment, this is equivalent to having a retention period for data of 21 days. This would be specified in the media policy for the USER backup set. Volumes could be enrolled in the TRAC/400 media inventory using varying expiration dates depending on which day the data on that volume was saved, and when it would expire. The Add Media to TRAC/400 (ADDMEDTRK) command is used to specify INZ(*NO), (do not reinitialize), with the actual expiration date of the data on each tape. This would ensure that current data would not be overwritten.

As such, the facilities of the Media Set Rotation method can be accommodated by the Scratch Media Pool environment, and you can enjoy the benefits of this more flexible approach.

Media sets are multiple related volumes that are created during TRAC/400 back up processing. They are implicitly defined when data is saved to them during the processing of a single backup set. For example, a backup set may save seven libraries and 23 folders using four volumes. These four volumes are related by the fact that they were written to during the backup set process, and, as such, TRAC/400 identifies these as a media set.

A backup set may create two or more media sets by the inclusion of the *LOAD special operation. *LOAD will identify the end of the prior media set and define the start of a new media set. A media set is active in the media inventory until all the volumes in the set have expired, and have been reused.

Media sets allow the volume sequence, expiration dates, and current storage location.

All volumes belonging to media sets are identified on the Work with Media display with a "+" following the volume id. Typing a "6" (Work with media set) in the Option column on the Work with Media display next to a volume belonging to a media set and pressing Enter transfers you to the Work with Media Set display. From the Work with Media Set display, media management functions that relate to media sets can be accessed and performed.

```

Work with Media

Position to . . . . .

Type options, press Enter.
 1=Add  2=Change  4=Remove  5=Display  6=Work with media set
 13=Display contents

Opt  Volume  Status      Creation  Expiration  Location  Move      Density
    Date      Date
---  ---
 6  ICC001  + *ACT      11/10/99  12/15/99   *HOME     *NONE     *QIC2GB
    ICC002  + *ACT      11/10/99  12/15/99   *HOME     *NONE     *QIC2GB
    SYS001  *ACT      10/29/99  12/01/99   VAULT     10/29/99  *QIC2GB

```

```

Work with Media Set

Type options, press Enter.
 2=Change  5=Display  7=Expire  8=Move  10=Reinitialize
 12=Mark as cleaned...

Opt  Volume      Volume  Creation  Move      Density
    Date      Seq      Date      Date      Density
---  ---
    ICC001      1      *ACT      11/10/99  8/25/99  *QIC2GB
    ICC002      2      *ACT      11/10/99  8/25/99  *QIC2GB

```

Volumes that are Contained in a Media Set

Working with Media Information

If you need to know the contents of a tape or save file that you have created using TRAC/400, you can use Option 13 (Display contents) from the Work with Media display, or the Work with Media Information (WRKMEDITRK) command. The resulting display is the Work with Media Information display which shows each saved item on the selected media, the date and time saved, the type of save that was used, the file sequence on the media and the expiration date.

In the following example, volume ICC001 is selected using Option 13 from the Work with Media display.

```

Work with Media

Position to . . . . .

Type options, press Enter.
 1=Add  2=Change  4=Remove  5=Display  6=Work with media set
 13=Display contents

Opt  Volume  Status      Creation  Expiration  Location  Move      Density
    Date      Date
13  ICC001+  *ACT      11/10/99  12/15/99   *HOME     08/25/99  *QIC2GB
    ICC002+  *ACT      11/10/99  12/15/99   *HOME     08/25/99  *QIC2GB
    SYS001  *ACT      10/29/99  12/01/99   VAULT     10/29/99  *QIC2GB

```

The resulting Work with Media Information display shows the contents of the two selected volumes.

Work with Media Information							
Position to Date							
Type options, press Enter.							
2=Change		4=Remove		5=Display		6=Work with media	
9=Work with saved objects						7=Restore	
Opt	Saved Item	Date	Time	Save Type	Volume Serial	File Sequence	Expiration Date
-	BYLIB	11/15/99	15:39:26	*FULL	ICC001	1	12/15/99
-	SGLIB	11/15/99	15:39:42	*FULL	ICC001	2	12/15/99
-	ASMSRC	11/15/99	15:39:48	*FULL	ICC001	3	12/15/99
-	TRAC400	11/15/99	15:39:55	*TRAC	ICC001	4	12/15/99
-	ASMSRC	11/15/99	15:51:45	*FULL	ICC001	5	12/15/99
-	LBS	11/15/99	15:51:55	*FULL	ICC001	6	12/15/99
-	SGLIB	11/15/99	15:51:55	*FULL	ICC001	7	12/15/99
-	BYLIB	11/15/99	15:51:56	*FULL	ICC001	8	12/15/99
-	TRAC400	11/15/99	15:52:05	*TRAC	ICC001	9	12/15/99

Notes:

1. By default, the WRKMEDITRK command displays the most recent entries by save date and time on the display. You will have to page backward to see earlier media information. This command also has the option of specifying *OUTPUT(*PRINT)*, so that a report can be produced from this information.
2. There are a variety of valid values for the **Save type** column. For instance, *FILE indicates that the media information was created as a result of using a native OS/400 command or a save did not complete. Use the online help information to review all of the possible entries in this column.

Media Protection

TRAC/400 provides tracking and protection of all enrolled media. Also, all media used that is not enrolled is logged in the TRAC/400 log when the media is used in a backup operation. Volumes not managed by TRAC/400 are not automatically added (enrolled) to the media inventory, unless you specify *YES in the *Auto enroll media* in the system policy. You can further specify automatic media enrollment for each device identified to TRAC/400 in the device table.

Media operations are monitored and protected in various ways:

- Before using any output tape, the media inventory is checked to insure that the volume is in scratch status. If it is not in scratch status, it is rejected, and a message will be issued to mount a scratch volume. A valid scratch volume suggestion is included in the message. This provides media protection against volume over-writes.
- Output to media during a backup process requires that the media be of the correct density. If not, it is rejected and logged. If rejected, a correct candidate volume will be suggested to the operator.

Note: If using the Save Storage (SAVSTG) command to backup your system, be aware that no media inventory checking is performed by TRAC/400. It is your responsibility to ensure that you select media from the scratch media pool for this operation. In addition, the usage of this media will not be logged by TRAC/400. As such, if you use volumes from the scratch pool, TRAC/400 will not record that these volumes are active. You should use volumes that are not under control of TRAC/400 media management for Save Storage operations.

Chapter 5: Backup

Your ability to ultimately recover any part of your system relies on a solid backup strategy, and this strategy should be implemented in a structured way to minimize exposures. The TRAC/400 backup service offers this structured methodology for implementing your strategy, and highlights exposures and omissions. It is important that you plan and develop your backup/recovery strategy based on the needs of your organization, and then use TRAC/400 to implement your plan.

To reach the Backup menu (TRKBKU), select Option 2 (Backup) from the TRAC/400 main menu.

```
TRK                                TRAC/400 Main Menu

Select one of the following:

    1. Media management
-->  2. Backup
    3. Recovery

    10. Policy administration
    11. Operational menu
    12. Reports
```

```
TRKBKU                              Backup

Select one of the following:

    1. Work with backup sets
    2. Work with backup lists
    3. Work with backup procedures
    4. Perform backup
    5. Display backup history
    6. Work with items to omit from backups
    7. Start console monitor
```

Backup menu

From the Backup menu you can:

- Work with backup sets
- Work with backup procedures
- Work with lists of items including library, object, folder, spooled file and IFS lists
- Perform backups with the STRBKUTRK command
- Display and work with media information from previous backups
- Specify items to omit when backing up backup sets
- Start the console monitor function, if at the system console

Backup Sets

A *backup set* can be considered to be an interpretive CL program for performing backup. The advantage over a CL program is that it is easy to create, easy to change, easy to process, provides full error checking, while maintaining the flexibility and function that a CL program offers, all without requiring CL programming skills.

TRAC/400, when installed, provides two default backup sets which can be used to backup up your system USER and SYSTEM. As the names imply, each is delivered with a set of defaults designed to perform a specified backup task. In the case of the USER, the target backup is the user libraries, document library objects, and the integrated file system. In the case of SYSTEM, the target backup is the operating system and related system libraries. With no modification, these two backup sets can back up your entire system.

Although the defaults delivered with TRAC/400 can back up your system, you can add additional backup sets to fit your individual company's needs. You can add product libraries or objects that are important to your system processing, as well as subsystems and job queues to process. How you use your backup sets is totally controlled by you.

A backup set can be used to back up a single library, a set of related libraries, a set of objects or folders defined by a backup list, and certain pre-defined components of the system such as configuration or security data. It can also include special operations to tell the operator to load a new tape, or process an exit program. This program could send a message to operations or users, start or end a subsystem, or anything you choose.

As part of a backup set, you also must define a *backup activity* for each item in the backup set. The backup activity identifies which days of the week a backup item is backed up, and, also whether the backup is a full (save entire object) or incremental (save changed object) save.

Backup Set functions include:

- Full save (SAVLIB, SAVOBJ or SAVDLO, SAV)
- Incremental save (SAVCHGOBJ, SAVDLO, or SAV)
 - Cumulative incremental
 - Non-cumulative incremental
 - Backup to perform on each day of the week
 - Interface that supports save-while-active
 - Keep object level detail
 - Specify save defaults

Working with Backup Sets

You can work with the backup sets by selecting Option 1 from the Backup menu.

```
TRKBKU                                Backup

Select one of the following:

--> 1. Work with backup sets
    2. Work with backup lists
    3. Work with backup procedures
    4. Perform backup
    5. Display backup history
    6. Work with items to omit from backups
```

The following display is the backup sets created by TRAC/400 at installation.

```

                                Work with Backup Sets

Position to set . . . . . _____ Starting characters

Type options, press Enter.
  1=Add   2=Change   3=Copy   4=Remove   5=Display

Opt   Set name      Text
  _   _____
  _   System        Entry created by TRAC/400 configuration
  _   User          Entry created by TRAC/400 configuration

```

Backup Sets

The USER backup set contains those backup items that will likely be changed more frequently and thus need to be backed up more often. On the other hand, the SYSTEM backup set includes those OS/400 and other IBM components, which are relatively infrequently updated. As these form a large group of libraries that would take considerable time and media to save, they are not included in the USER backup set. There is a measure of overlap between these sets, as the configuration and security data, for example, are also saved in the SYSTEM backup set.

Example of a User-defined Backup Set

A backup set is designed to be a facility that allows you to set up all the parameters required to process your specific backup requirements. The following example will show how a backup set can be designed to fit your requirements.

To add a backup set:

- Enter GO TRKBKU on a command line, which takes you to the Backup menu
- Select Option 1, Work with backup set entries, which takes you to the Work with Backup Sets display

The backup sets are displayed. To add a new set, simply type the name of the new set on the **Set name** field. Specify a sequence number for your backup item in the sequence column. In the set, four example entries have been added to the default entries. The added entries are MYLIST, which is a list of objects, two libraries lists, MYLIB1 and MYLIB2, and a special operation *LOAD, which indicates that a new tape is to be mounted. The *Weekly activity* field has been modified for the default entries and specific backup patterns have been entered for the example entries.

Work with Backup Set

Set name . . . : MYSET (1)
 Text : Myset backup

Type information, press Enter.

Set Seq (2)	Backup Items (3)	List Type (4)	Weekly Activity SMTWTFS (5)	Retain Object Detail (6)	Save While Active (7)	SWA Message Queue (8)	Omit List (8)
10	MYLIB	*LIB	F	*NO	*NO		*NONE
20	MYLIB2	*LIB	F F F	*NO	*NO		*NONE
30	MYLIST	*OBJ	F I I	*NO	*LIB	*LIB	*NONE
40	*LOAD		F F F				

(9)

F3=Exit F5=Refresh F10=Change item F11=Display exits
 F13=Change defaults F19=Select libraries F24=More keys

Example Backup Set

The following is an explanation of the example backup set.

- (1) The *Backup Set name* contains the name of the set that you will use to backup your system. You also may add sets of your own (here, MYSET) to include items that are important to the functioning of your system. You may add as many backup sets as necessary.
- (2) The *Seq* column indicates the sequence number of backup items. To add a sequence number and associated data, go to the blank line below the **Seq** heading and type the sequence number, along with the entry information. To process your entry, press Enter. Your entry as well as the defaults is added to the entry list in the sequence position you specified. To change the sequence number of the selected entries, change the current sequence number to the desired sequence number and press Enter. For instance, if you want to move sequence number 10 to appear between sequence numbers 30 and 40, change sequence number 10 to 35 and press Enter. The system sequences them for you. To delete an entry, position the cursor on the sequence number of the line and clear the sequence number, then press Enter. In each case TRAC/400 will sequence the numbers within the set starting with 10 and in increments of 10.
- (3) The *Backup items* column contains the items that you want to back up within each set. Each item can be a list name, a special value (such as *SAVSYS) or special operation (such as *EXIT). MYLIST is an object list which has a full backup (F) scheduled on Monday and incremental backups on Wednesday and Friday. Object detail is kept for objects saved in the list, which means that information about each object in the backup list is logged to refer to later, for instance in case of recovery, or for reporting purposes. The objects in this list have not been selected for a save-while-active. You can not see what has been defined in the object list on this display. It could be one object or it could be 300. You can use the F7 key to display the Work with Lists screen or place the cursor on the line and press F10 to change the list. This could be your accounting files, payroll files and so on. The other items in the backup set indicate other activities to be performed when the backup set is selected for backup. Each item is backed up in the order of the sequence number in the backup item column, except the *LOAD and *EXIT instructions which loads a tape (*LOAD) and perform some user exit (*EXIT) procedure respectively. MYLIB1 is set up in the weekly activity to be backed up on Friday and MYLIB2 on Monday, Wednesday and Friday. MYLIB2 is saved using the save-while-active function, *LIB, which provides locking at the library level. The message queue for the library MYLIB2 is used to receive save-while-active messages.
- (4) The *List type* column applies to library, object, spooled file, IFS, or folder lists. Library lists are specified as *LIB, Object lists are specified as *OBJ, spooled file lists are specified as *SPL,

- integrated file system (stream files) lists are specified as *LNK and folder lists are specified as *FLR.
- (5) The *Weekly activity* column has one character for each day of the week, Sunday through Saturday. An "F" represents a full (or normal) save of the objects in a list (SAVOBJ) or the library (SAVLIB). An "I" represents an incremental save (or save changed object) for the items specified. The backup procedures (which can be reviewed by returning to the Backup menu and select Option 3, Change backup procedures) determine whether the "I" refers to a cumulative (changes since last full save), or non-cumulative (changes since last save) incremental save.
- (6) The *Retain object detail* column records object and member names and details about the objects/members being saved. This provides some important advantages:
1. Individual object restore can be done from a TRAC/400 work-with display. You can look up each time that an object has been saved, and select the appropriate object to be restored. If you specify *NO here, you can still restore the object, but you need to provide the object name. TRAC/400 can only tell you when the library was saved.
 2. For objects saved with an object list, this is the only detailed record of these objects. It is recommended that *YES is always used with object and folder lists.
 3. For an entire library restore, the object level detail is not required.
- When object detail is selected, this information is recorded in the object detail file in the TRAC400 library. If object detail is selected on every library on every save (such as in a *ALLUSR save), you will find that the object detail file will become extremely large. It is important that you have a good balance between the need for individual object information and recovery, and the size of the file. Keeping object detail will cause the save to take slightly longer than if object detail is not kept. This is due to the processing of this data. In addition, if recovery data at the object level is saved to tape after user objects, then this will take more time and more space on tape.
- (7) The *Save while active* column gives you the opportunity to specify a save-while-active parameter for the save. The parameter you specify would be exactly the same as you would specify on an OS/400 save command, such as *LIB, *NO, *SYSDFN, *SYNCLIB, and *YES (for DLOs). In our example, we have specified that MYLIB2 can be saved while active using the library (*LIB) special value for the *Save while active* and the *Save while active message queue*. *LIB indicates that objects in a library can be saved while they are in use by another job. All of the objects in a library reach a checkpoint together and are saved in a consistent state in relationship to each other. You should note that libraries with thousands of objects may be too large for this option.
- (8) The *Omit list* column allows you to specify an omit list when processing the entry. This gives you the flexibility to specify a special value such as *ALLUSR or a *LIB list with a generic value or and object list and omit libraries or objects from the save.
- (9) The *Functions keys* are very important for usability. For example:

F7 will take you to the Work with Backup lists.

F10 will allow you to change the contents of *EXIT entry.

F11 will scroll the display horizontally, removing the List type, Weekly activity, Retain object detail, and save-while-active columns, and replacing them with the first 50 characters of the command that is specified for the *EXIT.

F13 allows you to change the defaults defined for the backup set, such as Weekly activity, Save while Active, Object detail, and SWA message queue.

F17 allows you to work with the TRAC/400 job schedule entries for a particular item.

Backup Items in a Backup Set

Named lists, special values and special operations can be used as backup items to invoke system functions. They direct TRAC/400 to perform pre-defined actions or assume pre-defined values in a field. The online help information includes additional information about each of these items.

Named Items

- **List name**
The name of an object list, spooled file list, integrated file system list or a folder list. Objects specified in a list are saved with the OS/400 commands, SAVOBJ, SAV or SAVDLO, depending on the type of list.

Special Values

- ***ALLUSR**
All user libraries are backed up. Library TRAC400 is classified as a user library. This is equivalent to the native OS/400 command SAVLIB LIB(*ALLUSR) option.
- ***ALLDLO**
Specifies that you want to save a copy of all documents, folders, and distribution objects (mail). This keyword causes TRAC/400 to issue SAVDLO DLO(*ALL) FLR(*ANY).
- ***ASPnn**
Saves the auxiliary storage pool number (01 - 16) that you specify. The ASP number must include the leading "0". This option is only for library ASPs. TRAC/400 determines which libraries are in the nominated ASP, then saves them with SAVLIB commands.
- ***IBM**
Saves all system (IBM) libraries except for certain user libraries that are created on system installation. This is equivalent to SAVLIB LIB(*IBM).
- ***QHST**
The special value *QHST causes TRAC/400 to back up history files. This is equivalent to SAVOBJ OBJ(QHST*) LIB(QSYS).
- ***SAVCAL**
Specifies that you want to save calendars and calendar items. You can save only local calendars. *SAVCAL causes TRAC/400 to issue SAVCAL CAL(*ALL).
- ***SAVCFG**
Specifies the Save Configuration (*SAVCFG) special value that saves all configurations and system resource management (SRM) objects without requiring a system in a restricted state. The information saved includes: Line descriptions, Controller descriptions, Device descriptions, Mode descriptions, Class-of-service descriptions, Network interface descriptions, Connection lists, Configuration lists, Hardware resource data, Token-ring adaptor data.

The *SAVCFG special value causes TRAC/400 to issue the SAVCFG command.
Information that is saved using the *SAVCFG special value can be restored using TRAC/400 recovery procedures or the RSTCFG command
- ***SAVSECDTA**
Specifies that all security information is saved without requiring a system in a restricted state. The *SAVSECDTA special value saves: User profiles, Authorization lists, Authority holders.
The *SAVSECDTA special value causes TRAC/400 to issue the SAVSECDTA command.
- ***SAVSYS**
Specifies that *SAVSYS is included in the backup items list in a backup set. When *SAVSYS is included in the list, the backup operation must be started from the console, the user sign on being used must be excluded from sign off in the system policy and the backup system must be in an interactive method of operation.

The *SAVSYS special value causes TRAC/400 to issue the SAVSYS command.

The Save System (*SAVSYS) special value saves a copy of the QSYS library in a format compatible with the installation process. It does not save objects from any other library. In addition, it saves security and configuration objects.

- ***DLOnn**
Saves document library in a selected ASP (nn=01-16).
- ***ALLPROD**
Save all library types of *PROD
- ***ALLTEST**
Save all library types of *TEST
- ***LINK**
Save all integrated file system (IFS) stream files

Special Operations

- ***EXIT**
This special operation allows you to perform user command processing.
- ***LOAD**
Specifies to the backup system to begin a new tape. For instance, if you wanted only one library on a tape or set of tapes, you would enter *LOAD ahead and following the library name in the backup items list.

Weekly Activity in a Backup Set

The *Weekly activity* column is actually 7 fields that represent each day of the week (for example, Sunday through Saturday). Each entry in the backup item field has a corresponding entry in the Weekly activity field. You can specify for each day of the week, and for each backup item, what type of backup (full or incremental) that you want to process.

The indicators shown in this field are positioned under each day of the week (SMTWTFS) and tell TRAC/400 whether a full or incremental backup is to be performed on that day. If no entry is shown in a **Weekly Activity** field, (each day is considered its own field), then no backup is performed. If you want to change the schedule, type the incremental or full backup indicators under the chosen days. In the following example, Backup Set 1 uses the default weekly schedule, which is a full backup every day of the week. Backup Set 2 processes incremental backups Monday through Thursday and a full backup every Friday. There are no backups performed on Sunday and Saturday.

	S	M	T	W	T	F	S
Backup Set 1	F	F	F	F	F	F	F
Backup Set 2	I	I	I	I	F		

Specifying Different Weekly Activities on the Same Day TRAC/400 will perform an implicit *LOAD (changing tapes) between two adjacent items in a backup set if the weekly activity for these items on the day of the save is different (for instance one is F - full, and the other is I - incremental). This is because the backup procedures may specify two different retention periods for full and incremental saves.

Creating Backup Lists for a Backup Set

To create backup lists for use in backup set processing, you can press F7 (Work with lists) on the Work with Backup Set Entries display. Using the menu system, you can type GO TRKBKU to go to the Backup menu and select Option 2 (Work with backup lists).

Backup lists are made up of libraries (*LIB), objects (*OBJ), folders (*FLR), spooled files (*SPL), and stream file information (*LNK) that are grouped together for processing in a backup set. The named list of items can be added as a backup item entry in a backup set for processing. In the example below, five backup lists are currently defined for use by backup sets. The backup list BKULISTA is made up of libraries, BKULISTB is made up of objects (which can specify a list of members), list BKULISTC is made up of folders, BKULISTD is made up of spooled files, BKULISTE is made up of integrated file system information.

```

                                Work with Lists

Position to . . . . . _____ Starting characters

Type options, press Enter.
  1=Add   2=Change  3=Copy   4=Remove   5=Display   6=Print

Opt  List Name   Type  Text
---  -
  2  BKULISTA    *LIB  Backup list of libraries
    BKULISTB    *OBJ  Backup list of objects
    BKULISTC    *FLR  Backup list of folders
    BKULISTD    *SPL  Backup list of spooled files
    BKULISTE    *LNK  Backup list of integrated file system information

```

Lists of Objects/Members, Folders, Spooled Files and Integrated File System Information

Typing a "2" in the option column next to the list names and pressing the Enter key allows you to change the backup lists. In the example below, BKULISTA is a *LIB list type and contains two libraries that will be backed up when the list is processed. Backup lists that contain libraries should not be confused with your default library list. This list is only used for backup processing. This list contains two library names GL and PAYROLL which will be included when processing this list.

```

Change Library List

List name . . . . . : BKULISTA
Text . . . . . Backup list of libraries

Type choices, press Enter.

Seq   Library
---   -
10    GL
20    PAYROLL

```

Changing libraries in a backup library list

BKULISTB is a *OBJ list type is made up of three entries. The first line (sequence 10) instructs TRAC/400 to include all objects, all types of objects and all members of included objects (*FILE type objects) in library PRDLIB when processing backups using this list. The second line (sequence 20) instructs the backup service to include program CRTALL in library TSTLIB when processing backups using this list. The third (sequence 30) instructs the backup service to include all file members in object GLCLOSE when processing backups using this list.

```

Change Object List

List name . . . . . : BKULISTB
Text . . . . . Backup list of objects

Type choices, press Enter.

Seq   Library      Object      Type      Member
---   -
10    PRDLIB        *ALL       *ALL      *ALL
20    TSTLIB        CRTALL     *PGM
30    GL            GLCLOSE    *FILE     *ALL

```

Changing objects in a backup object list

In the following example, backup list BKULISTC is a *FLR list type and is made up of two folder entries. The first line (sequence 10) instructs TRAC/400 to include folder GNTST when processing this list. The second line (sequence 20) instructs TRAC/400 to include subfolder PNTST/PNSUB1/PNSUB2/PNSUB3 when processing backups using this list.

```

Change Folder List

List name . . . . . : BKULISTC
Text . . . . . Backup list of folders
Type choices, press Enter.
Seq   Folder
---   -
10    GNTST
20    PNTST/PNSUB1/PNSUB2/PNSUB3

```

Changing objects in a folder list

In the following example, backup list BKULISTD is a *SPL list type and is made up of three entries. The first line (sequence 10) instructs TRAC/400 to include (*INC) all spooled files in the out queue QGPL/QPRINT when processing this list. The second and third line (sequence 20 and 30) instructs

TRAC/400 to include all spool files in GLLIB library with the exception of spool files contained in out queue GLLIB/TEMP when processing backups using this list.

Note: Incremental saves of spooled files is not supported. If you specify an incremental save for a list type *SPL, all spooled files in the list will be saved.

```

Change Spooled File List

List name . . . . . : BKULISTD
Text . . . . . Backup list of spooled files

Type choices, press Enter.

Seq  Library   Outq      File      Job      User      User data  *INC/
-----
10   QGPL        QPRINT   *ALL      *ALL     *ALL     *ALL      *INC
20   GLLIB      *ALL     *ALL      *ALL     *ALL     *ALL      *INC
20   GLLIB      TEMP     *ALL      *ALL     *ALL     *ALL      *EXC

```

Including and excluding spooled file entries in a backup list

In the next example, a backup list called BKULISTE is a *LNK list type and is added using Option 1 (Add) from Work with Lists function of TRAC/400. *LNK list types are different in that it is a two step process, first you must create the list name and then you can add/change entries.

```

Add Link List

Type choices, press Enter.

List name . . . . . BKULISTE
Text . . . . . Object link backup list

```

List entries are added/changed to the list using Option 2 (Change) from the Work with Lists display. In this case the Change Link List (CHGLNKLTRK) command is displayed for backup list BKULISTE, which contains integrated file system objects that you want to save. Like the other lists, you can include items in the list or exclude items from the list.

The first item in the list indicates that you want to backup all directories that begin with the letters www. The second item in the list excludes *old* from the directories that would be backed up.

```

Change Link List

Type choices, press Enter.

List . . . . . > BKULISTD      Character value
Objects:
  Name . . . . . > '/www*'
  Include or omit . . . . . > *INCLUDE      *INCLUDE, *OMIT
  Name . . . . . > '/www/old'
  Include or omit . . . . . > *OMIT        *INCLUDE, *OMIT
      + for more values _
Directory subtree . . . . . *ALL          *ALL, *DIR, *OBJ
Text . . . . . > 'Object link list for file system
QLANSrv'

```

Including and excluding entries in an integrated file system list

Save While Active

You can specify in the backup set entry that an object can be changed while it is being saved. If save while active is not specified, the existing save request method of locking objects is used. Note that use of this option implies locking and saving all of the objects at once. You can run into limits on the size of a library that can be saved while active. For restrictions on use of save while active options, refer to online help information for this column on the Edit Backup Set Entries display.

Using Function Keys in a Backup Set

At the bottom of each backup set there are function keys that allow you to perform additional useful functions and further tailor the backup set. Other function keys, such as F3 (Exit) and F5 (Refresh), are not discussed here, since these are standard OS/400 keys available on many OS/400 displays. You can read the online help information for these or any of the keys, if you need further information. The F24 (More keys) function key allows you to scroll through the various function keys.

F7=Work with Lists

To work with lists associated with a backup set, press F7 (Work with lists). See "Work with items to omit from backups" for more information on using lists in a backup set.

F8=Work with Omit Lists

To work with omit lists associated with a backup set, press F8 (Work with omit lists). See "Creating Backup Lists for a Backup Set" for more information on using omit lists in a backup set.

F10-Change Item

The F10 (Change item) function key is used to examine in more detail the contents of certain items in the backup item list. The only items in the list that use the F10 key are:

- *EXIT
- Lists

For instance, if you wanted to examine a user exit in the backup set, position the cursor on the *EXIT item and press F10 (Change item). You are transferred to the User Exit Maintenance display to review or change the user exit procedure. To add an *EXIT, enter the desired sequencing and the *EXIT keyword and press the Enter key. After doing this, position the cursor on *EXIT and press F10 to type your user exit procedure. In the case of a backup list, position the cursor on the list name and press F10. You will be taken to the appropriate (for example, *OBJ, *FLR and so on) list display.

For instance if you positioned the cursor on an object list called BKULISTB in a backup set and pressed F10, you would be taken to the following display:

```

List name . . . . . : OBJLIST
Text . . . . . List of items to back up

Type choices, press Enter.

  Seq   Library      Object      Type      Member
  ----  -
  10    PRDLIB          *ALL       *ALL      *ALL
  20    TSTLIB          CRTALL     *PGM
  30    GL              GLCLOSE   *FILE     *ALL
  
```

Using the Change Item (F10) Key

F11=Display Exits

F11 will scroll the display horizontally, removing the List type, Weekly activity, Retain Object Detail, and Save-While-Active columns, and replacing them with the first 50 characters of the command that is specified for the *EXIT. To display the content of any user exits, select F11 from a backup set display. The following display is the resulting display for the backup set. What is shown are the first 50 characters of the *EXIT command. If you position the cursor on the *EXIT and press F10 from this display, you are taken to the User Exit Maintenance display where you can review or change the full *EXIT item.

```

                                Work with Backup Sets
Type information, press Enter.

  Seq   Backup      Exit command
  ----  -
  10    *SAVSYS
  20    *IBM
  10    *SAVSECDTA
  20    *SAVCFG
  30    *ALLUSR
  40    *ALLDLO
  50    *LINK
  60    *EXIT          SNDMSG MSG('Backups are complete.') TOUSR(*SYSOPR)
  
```

Displaying the exit command (F11) for the backup sets.

To change an exit, position the cursor and press F10.

```

                                User Exit Maintenance

Type command, press Enter.

Sequence number . . . . . :    60
Where used . . . . . :    *EXIT
Weekly activity . . . . . :    ..... SMTWTFS
Command . . . . . :    SNDMSG MSG('Backups are complete') TOUSR(*S
YSOPR)

_____
_____ F4
_____

```

Changing a user exit.

Special Considerations for Using *EXIT as a Backup Item: The *EXIT special operation allows you to perform user command processing. You can control when the user command processing occurs in backup set processing by the placement of the *EXIT in the backup set. An *EXIT can be processed prior to backup set pre-processing (starting and ending subsystems, holding and releasing job queues and so on), during sequential backup set processing, based on the sequence numbers you assign; or after backup set post-processing (processing subsystems job queues and so on), but before IPL. The example below illustrates how the placement of the *EXITs in a backup set determines whether the user command processing occurs before backup set pre-processing, during backup set processing or after backup set post-processing.

Set Name	Seq	Backup Item	Weekly Activity							
			S	M	T	W	T	F	S	
MYSET	10	*EXIT	F							
MYSET	20	LIB1	F	F						
MYSET	30	*EXIT		F			F			
MYSET	40	LIB2	F					F		
MYSET	50	*EXIT			F			F		
MYSET	60	LIB3			F					
MYSET	70	*EXIT	F							

In the example, backup items are processed on Sunday (S), Tuesday (T) and Friday (F). In the Sunday processing two exits are processed, sequence numbers 10 and 70. Because sequence number 10 is the first sequence number in the list that is processed on Sunday, the *EXIT special operation is processed before the backup set pre-processing. Because sequence number 70 is the last sequence number that is processed on Sunday, the *EXIT special operation is processed after the backup set post-processing, but before an IPL.

In the Tuesday processing two exits are also processed, sequence numbers 30 and 50. Because neither *EXIT special operation is the first or last sequence number processed on Tuesday, the *EXIT operation is processed in the order specified. In other words, sequence number 20, which is a full save of LIB1, is processed first; then the *EXIT at sequence number 30 is processed; then the *EXIT at sequence number 50 is processed and then the library (LIB3) at sequence number 60 is saved.

In the Friday processing, because the *EXIT at sequence number 30 is the first backup item processed, it is processed before the backup set pre-processing; because the *EXIT at sequence number 50 is the last backup item processed, it is processed after the backup set post-processing.

F13=Change Defaults

The Change defaults (F13) function key is used to assist you in entering items into a backup set. When you press F13, you are taken to the Change Defaults for Items Added display. You can specify the default values for several backup set fields. These values will be filled in automatically for you, thus eliminating the need to type in the entries. The Change defaults function only changes new entries, not existing entries. The following display illustrates the Change Defaults for Items Added display.

```

                                Work with Backup Set Entries

Type information, press Enter.

Seq      Backup      : ..... :
      Items      :      Change Defaults for Items Added      :
      :      :
10      *SAVSEC   : Type information, press Enter.      :
20      *SAVCFG   : Weekly activity . . . . . FFFFFFFF SMTWTFS (F/I)      :
30      *ALLUSR   : Save while active . . . . . *NO *NO, *LIB, *SYSDFN      :
40      *ALLDLO   : Object detail . . . . . *NO      *OBJ, *MBR, *NO...      :
50      *EXIT     : SWA message queue . . . . . *LIB Name, *LIB      :
      :      :
      :      F12=Cancel      :
      :      :
      : ..... :
F3=Exit   F5=Refresh   F10=Change item      F11=Display exits
F13=Change defaults   F19=Select libraries   F24=More keys

```

Change defaults for items added (F13).

F17=Work with Schedules

While in a backup set, you can press F17 (Work with schedules) to go to the Work with TRAC/400 Job Schedule Entries display. This display allows you to add, change, display and so on, TRAC/400 entries in the OS/400 job scheduler.

Backup procedures

Backup procedure values allow you to specify overall characteristics for a backup set that you are processing. For instance, you can specify the default backup device to use for backups, the density of the media to be used in backups, and how long media created during backup is to be kept as active media, etc. Each field in the backup procedures should be reviewed and understood, although in many cases the default values will suffice.

When TRAC/400 is initialized, it automatically sets up procedures for every backup device listed in your device file, as well as one procedure for save files. You may add as many procedures as necessary.

You can go to the backup procedures display by using the menu system, type GO TRKBKU to go to the Backup menu and select Option 3 (Work with backup procedures)

```

TRKBKU                               Backup

Select one of the following:

    1. Work with backup sets
    2. Work with backup lists
--> 3. Work with backup procedures
    4. Perform backup
    5. Display backup history
    6. Work with items to omit from backups

```

Backup menu.

The Work with backup procedures display shows all backup procedures that have been defined for TRAC/400. You can add new procedures as necessary. Backup procedures will be associated with a backup set when backup processing (STRBKUTRK) takes place.

Work with Backup Procedures

```

                                Work with Backup Procedures

Position to . . . . .           Starting characters

Type options, press Enter
  1=Create   2=Change   3=Copy   4=Delete   5=Display
  9=Subsystems to process   10=Job queues to process

  Procedure      Backup
  Opt Name       Device      Text
  ---
  DAILY          TAP01       Daily Backup
  MONTHLY        TAP01       Monthly Backup
  PAYROLL        TAP01       Payroll Backups
  SAVF           *SAVF      Entry created by TRAC/400 configuration
  TAPMLB01       TAPMLB01    Entry created by TRAC/400 configuration
  TAP01          TAP01       Entry created by TRAC/400 configuration
  TAP02          TAP02       Entry created by TRAC/400 configuration

```

Work with Backup Procedures display.

The Work with Backup Procedures display allows you to add, change, copy, display or remove backup procedures, as well as select subsystems and job queues to process. The procedure properties will be used to define the parameters for backup set processing. For example, you set up a backup procedure called **WEEKLY**. Once you have defined the properties that you want the procedure to have, you will use this procedure to process a backup set with the STRBKUTRK command. You will specify the procedure name on this command display. When the backup set processes, it will use the parameters as defined by the **WEEKLY** procedure.

The following illustrates the Change Backup Procedure display. This display is made up of three panels. The first panel contains the properties, such as retention values for full and incremental backups.

```

Change Backup Procedure

Procedure name . . . . . WEEKLY

Type information, press Enter.
Backup device . . . . . TAP01      Name, *SAVF, F4 for list
Retention for full:
  Retention type . . . . . 2        1=Date, 2=Days, 3=Perm
  Retain media . . . . . 14        Date, Number
Retention for incremental:
  Retention type . . . . . 2        1=Date, 2=Days, 3=Perm
  Retain media . . . . . 12        Date, Number
Sign off interactive users . . . . *NO      *YES, *NO
Sign off limit . . . . . 30        0-999 minutes
Incremental type . . . . . *CUML     *CUML, *INCR
Automatically backup
  media information . . . . . *LIB     *LIB, *OBJ, *NONE
Text . . . . .

```

The second panel of the Change Backup Procedure display contains items that are more concerned more on how to save items such as data compression and compaction.

```

Change Backup Procedure

Procedure name . . . . . WEEKLY

Type information, press Enter.

Density . . . . . *QIC2GB      Name, F4 for list
Append to media . . . . . *NO      *YES, *NO
End of tape option . . . . . *UNLOAD  *UNLOAD, *REWIND, *LEAVE
Use optimum block size . . . . . *NO      *NO, *YES
Save access paths . . . . . *YES      *YES, *NO
Save contents of save files . . . . . *YES      *YES, *NO
Data compression . . . . . *DEV      *DEV, *YES, *NO
Data compaction . . . . . *DEV      *DEV, *NO
Target release . . . . . *CURRENT  *CURRENT, *PRV
Clear . . . . . *NONE      *NONE, *ALL, *AFTER
Object pre-check . . . . . *NO      *YES, *NO
Journaled objects . . . . . *NO      *YES, *NO
Concurrent Saves . . . . . *NO      *YES, *NO

```

More

The third display deals with IPL information

Change Backup Procedure		
Procedure name	WEEKLY	
Type information, press Enter.		
IPL after backup	*NO	*YES, *NO
How to end	*CNTRLD	*CNTRLD, *IMMED
Delay time, if *CNTRLD	1200	Seconds, *NOLIMIT
Restart after power down	*YES	*YES, *NO
IPL source	*PANEL	*PANEL, A, B

Change backup procedures panels

The following key fields on the first panel of the backup procedures require further definition:

- **Backup device** - The device name that you specify here is the default device that you want to use for backups. If you want to select a different device from a list of devices, you can position the cursor in the Backup device field and press F4. From the Select Device list, you can select a different device from the list or press F9 (Work with devices) to go to the Work with Devices display to set up a new device.
- **Retention (full/incremental)** - The retention period is specified here. Full media retention is specified separately from incremental media retention, although the parameters to specify the retention are the same. The retention period is the length of time that media used in backups are to be kept active (protected from rewrite). An active volume can only be appended to, never overwritten. The media (an individual volume or group of volumes) will be protected from rewrite by the system until the end of the specified retention period has passed and the volume has been expired. You must run STRMNTTRK EXPMED(*YES) command to actually expire media or use the CHGMEDTRK command to change the expiration date.

Note: The retention information for saved data is kept in the TRAC/400 media inventory. If you take a tape with data saved through TRAC/400 to a system that does not have TRAC/400 installed, then the system reading the tape will not have the retention details. Because of this, the tape will appear to have expiration set as *PERM no matter what expiration was set during the save. This will protect the tape from accidental erasure.

You have three choices for the retain media parameter:

1. **Date** - Specify the date through which you want the media to be active. Media is active until midnight of the date. After that date, the media is expired. If you decide to use file expiration date, you should be careful because the date that you set up in the backup procedures today may not be relevant in six months time. You could find that your media has expired as soon as you have completed the save. You can of course regularly update the backup procedure with a new date, but you will normally find that days retention offers more function and flexibility.
Things to remember about date retention are:
 - Date retention is the date that data expires
 - Media is eligible for re-use at midnight of the expiration date (assuming that maintenance has been run)
 - Requires regular changes to the backup procedures
 - Included primarily for OS/400 save compatibility
2. **Days** - Specify the number of days that you want the media to be active. This value is the default and is the "safest" retention parameter to use. In days retention, you specify a number of days after a save operation processes that you want the media to expire. TRAC/400 calculates the date that the media expires for you. You can specify up to 9999

days, which is more than 27 years, although for periods this long, you can choose to use the *PERM retention type.

Things to remember about days retention are:

- Days retention is the number of days since data was written on the media
- Days retention is the default for TRAC/400 created backup sets
- Media is eligible for re-use at midnight of expiration date (assuming that maintenance has been run)

3. **Permanent** - Specify that the media is permanently active and does not expire. Media saved with this choice will never expire. Permanent retention (*PERM) can be used if you want to keep the data on tape indefinitely, such as keeping a copy of month-end data. You can use this for your normal rotational backup, but this is not advised since you would have to manually expire the tapes, which goes against the automated nature of TRAC/400.
- **Sign off interactive users** - Specifies whether TRAC/400 should automatically notify active users that a backup is about to occur and then sign them off.
 - **Sign-off limit** - Specifies the maximum time limit in minutes that TRAC/400 automatically notifies users prior to automatically signing off active users. The number of minutes can range from 0 to 999 minutes.
 - Messages are sent using the following schedule:
 - Zero - send the message one time and then the user is signed off.
 - 1-10 - send the message every minute and then the user is signed off.
 - 11-60 - send the message every 2 minutes and then the user is signed off.
 - 61+ - send the message every 10 minutes and then the user is signed off.
 - **Incremental type** – Specifies the incremental type to use when incremental processing is being preformed. You can use a cumulative (*CUMUL) type of incremental backup, which specifies that incremental backups include all changed objects and new objects since the last full backup. Alternately you can use an incremental (*INCR) backup type, which specifies that incremental backups include all changed objects and new objects since the last incremental backup.
 - **Automatically backup media information** - Specifies whether you want to automatically save the media information needed for recovery each time you perform a backup. Additionally, you can specify whether this information is to be saved at the library or object level. See "Automatically Backup Media Information" for more information on automatically backing up media information.
 - **Text** - Specifies text that describes the backup set that you are changing. Text that you enter here is assigned to volumes created as a result of saving the backup set.
Note: If you want to preserve the text for the volume that you are writing save information to, and not use the text from the backup set that you are saving, blank out the text for the backup set. This will preserve the text currently associated with the volume in the media inventory and not use the backup set text.

The important fields for the second panel includes the following:

- **Density** - Specifies the density that you want to use when processing this backup set. If you want to select a density from a list of densities, place the cursor within the Density prompt and press F4.
- **Select volume from location** – You can specify that the media that is used in save processing can come from any location for from a specific location. ***ANY** indicates any media from any location capable of being used by the specified device can be utilized for the save operation.
Note: If you are using a media library it is important to specify the location assigned to the library so that TRAC/400 will select volumes within the media library.
- **Append to media** - Specifies whether to add data files on existing media with active files or to begin a new volume. If *YES is specified, files are written to the volume immediately following the last active file. This value can be overridden on the start backup command (STRBKUTRK).
- **End of tape option** - Specifies, when a tape is used, what positioning operation is automatically done on the volume after the save operation ends. If more than one volume is included, this

parameter applies only to the last volume used; all other volumes are rewound and unloaded when the end of the volume is reached.

- **Concurrent saves** – Specifies if you want to save the items in your backup set concurrently to more than one device. If you choose this option, you may specify multiple devices by pressing F7=Additional Devices on the first panel of the Change Backup Procedure display.

The third panel deals with IPL information. For more information on those fields, please refer to the online help.

If you specify *SAVF as the backup device, the following second panel will be displayed:

```

Change Backup Procedure

Procedure . . . . . : SAVF

Type information, press Enter.

ASP for save files . . . . . 1          1-16
ASP storage limit. . . . . 90          1-99
Save access paths . . . . . *YES       *YES, *NO
Save contents of save files . . . . . *YES       *YES, *NO
Data compression . . . . . *DEV        *DEV, *YES, *NO
Data compaction . . . . . *DEV        *DEV, *NO
Target release . . . . . *CURRENT     *CURRENT, *PRV
Clear . . . . . *NONE                *NONE, *ALL, *AFTER
Object pre-check . . . . . *NO         *YES, *NO
Journalled objects . . . . . *NO         *YES, *NO

```

Procedure values for save files.

The important fields are listed below:

- **ASP for save files:** Specifies the Auxiliary Storage Pool (ASP) number that you want to store save files created as a result of TRAC/400 processing. Permitted values are 1 - 16. When spooled files are being saved, this ASP number will also be used for temporary storage prior to the spooled files being moved to removable media.
- **ASP storage limit:** Specifies the maximum percentage auxiliary storage pool (ASP) utilization that is acceptable during a save operation. For example, an entry of 90 would mean that a save process would continue until the ASP utilization exceeded 90%. If the upper limit is reached, the save process is stopped and a message sent to the TRAC/400 log.
- **Save access paths:** Specifies whether the logical file access paths that are dependent on the physical files being saved are also saved. The access paths are saved only if all members on which the access paths are built are included in this save operation. Informational messages are sent indicating the number of logical file access paths saved with each physical file. All physical files on which an access path is built must be in the same library. This parameter does not save logical objects; it only controls the saving of the access paths. Information on the restoring of saved access paths is in the Backup and Recovery book.
- **Save contents of save files:** Specifies whether the description of a save file, or both the description and the contents of a save file, are saved on the tape or in another save file.

Add Multiple Devices for Concurrent Saves

Pressing F7 on the Add or Change Backup Procedure display will take you to the Add Multiple Devices display.

```

                                Add Multiple Devices

Type information, press Enter.

Device 1      Name      Density
Device 2      TAP05     *FMT5GB
Device 3      TAP07     *FMT7GB
Device 4      TAP09     *FMT7GB
Device 5
Device 6
Device 7
Device 8
Device 9
Device 10

```

The Add Multiple Devices display allows you to specify up to ten devices along with densities that will be used when making concurrent saves. Concurrent saves allows you to back up the items in a backup set to more than one tape or device at a time, depending on the size of your objects. This decreases your backup time because you are backing up your items concurrently, rather than sequentially.

If you do not know the name of your device, you may prompt the name by placing your cursor on a device line and pressing F4. The Select Device display will appear. Place a 1 beside the device that you want to use and press Enter. The device you selected will appear on the Device line. You can also prompt for the density by pressing F4 in the density field.

Automatically Backup Media Information

TRAC/400 records media information when objects are saved to volumes or save files. This media information is also saved by default when processing a backup set. You are able to control how much media information TRAC/400 records when objects are saved, and also how much media information is saved with every backup operation. Your decisions here will have an impact on the performance of your save operation and the amount of volumes used to process the backup. Additionally, the amount of recovery data recorded during backup affects what level of detail (library or object) you can recover.

The backup procedures can be changed to specify whether you want to automatically save the data needed for recovery each time you perform a backup. If you do, this data is added to the end of your volume, or saved to a save file associated with the save files created to store your data. Additionally, you can specify how much media information is to be saved with your data. You can save only the information about the libraries that have been saved, or about both libraries and objects (as long as object-level detail has been recorded). If no object-level detail has been recorded, then no media information will be saved for those objects.

The media information saved with your backup set is recovery data needed for TRAC/400. This includes all currently available TRAC/400 save histories and media information for use in disaster recovery situations. Note that this includes more data than is associated with the backup items of the current backup set.

If you have instructed TRAC/400 to record object-level detail for every save operation, and depending on the amount of media information and the number volumes in your inventory, you may be saving some sizable files in addition to your backup items. Consequently, a backup set with a very small object that specifies Automatically backup media information (*OBJ) could spend more time backing up the media information than it will in actually backing up your small object.

Planning for Media Information

TRAC/400 media information consists of six files needed to recover library information. Additional files contain object and IFS information respectively. The files that contains object information and IFS information can be very large files. All files are required for object level detail.

The files required for library level information are:

- TRKAHS
- TRKAMM
- TRKADV
- TRKASP
- TRKALR
- TRKAOQ

The additional files required for object level and IFS information are:

- TRKAOD
- TRKADI
- TRKALI

You should consider the following points to minimize the impact of the size of your media information:

- **Process the Start Maintenance for TRAC/400 (STRMNTTRK) command on a regular basis.**
In an environment with many volumes, there are likely to be many volumes expiring every day. As such, information about the data on these volumes can be removed from the system, thus reducing the size of the recovery files. When you process the STRMNTTRK command, you can specify when the object-level detail can be removed.

As an example, you may choose to keep library level detail for saved objects for a period of three months but decide to remove object level detail after two months. This will mean that individual object restore is not possible for the oldest month, however the library information is still available for recovery. This would reduce the size of older, and less likely to be used, object-level data on the system; hence, when future saves are done, less redundant media information is saved.

- **Structure saving of media information when processing multiple sets.**
If you are processing more than one backup set, you may want to consider creating two procedures to optimize performance. One procedure that has **Automatically backup media information** set to *NONE or *LIB, rather than *OBJ. The second procedure should specify *OBJ for the **Automatically backup media information**. As such, when the last backup set is processed, the full system recovery data will have been saved. Specifying *NONE for the first backup set could create an exposure such that if a disaster occurs prior to the planned later save of the media information, TRAC/400 will be unable to recover from that save. Consequently, a better option for recoverability is to specify *LIB on the first backup set. This offers a good balance between performance and recoverability and will save the files required for library level recovery.

Running a Backup Using the STRBKUTRK Command

To run a backup you can use Option 4 (Perform backup) from the TRKBKU menu or type the STRBKUTRK command on a command line. Using the TRKBKU menu Option 4, you are taken to the STRBKUTRK command.

```

TRKBKU                               Backup

Select one of the following:

    1. Work with backup sets
    2. Work with backup lists
    3. Work with backup procedures
==> 4. Perform backup
    5. Display backup history
    6. Work with items to omit from backups

```

Backup menu.

```

                                Start Backup using TRAC/400 (STRBKUTRK)

Type choices, press Enter.

Set . . . . . USER           Name, SYSTEM, USER, PAYROLL
Procedure . . . . . TAP01     SAVF, TAPMLB01, TAP01...
Retrieve Size . . . . . *NO    *YES, *NO
Schedule time . . . . . *IMMED hhmm, *IMMED
Submit to batch . . . . . *YES  *CONSOLE, *YES, *NO
Append to media . . . . . *PROCEDURE *PROCEDURE, *YES, *NO

```

STRBKUTRK Prompt Screen

You can do the following using the Start Backup using TRAC/400 (STRBKUTRK) command:

- Enter backup set name
- Enter the backup procedure name
- Specify if you want to retrieve the size of the objects for concurrent saves
 - NOTE:** If you do not want to retrieve the size of the objects at the time of the backup, you may run the command Retrieve Size using TRAC/400 (RTVSIZTRK) to retrieve the size of items in the backup set at any time. See Appendix A for more details on this command.
- Enter scheduled processing time
- Select *YES or *NO for Submit to batch
- Select *YES or *NO to override the procedure append value

Further options for this command include:

```

                                Start Backup using TRAC/400 (STRBKUTRK)

Type choices, press Enter.

Set . . . . . USER           Name, SYSTEM, USER, SET1
Procedure . . . . . TAP01     SAVF, TAPMLB01, TAP01...
Retrieve Size . . . . . *NO    *YES, *NO
Schedule time . . . . . *IMMED hhmm, *IMMED
Submit to batch . . . . . *YES  *CONSOLE, *YES, *NO
Append to media . . . . . *PROCEDURE *PROCEDURE, *YES, *NO
Job description . . . . . *USRPRF Name, *USRPRF
  Library . . . . .           Name, *LIBL, *CURLIB
Job queue . . . . . *JOBBD   Name, *JOBBD
  Library . . . . .           Name, *LIBL, *CURLIB

```

STRBKUTRK further options

Running a SAVSYS Backup

You should be aware when performing a system backup it must be done interactively from the system console or you may choose to use option 7 = Start Console monitor on the TRKBKU menu along with the use the Start Backup using TRAC/400 (STRBKUTRK) command and specify *CONSOLE on the SBMJOB parameter. See **Using Console Monitor to Schedule a *SAVSYS** for more information.

```
Start Backup using TRAC/400 (STRBKUTRK)

Type choices, press Enter.

Set. . . . . SYSTEM      Name, USER, SYSTEM, PAYROLL
Procedure. . . . . > WEEKLY  Name, SYSTEM, USER, MONTHLY
Retrieve Size . . . . . *NO   *YES, *NO
Schedule time . . . . . > 2300  hhmm, *IMMED
Submit to batch . . . . . > *NO  *CONSOLE, *YES, *NO
```

SYSTEM backup set processing.

Sufficient expired tapes must be available before starting a save operation, as tapes cannot be initialized during the save. It is important that you monitor the number of available tapes regularly, and acquire additional tapes to ensure you have enough on hand.

The following items need further description.

- **Schedule time**

To schedule a backup set that uses the special value *SAVSYS, use the Start Backup using TRAC/400 (STRBKUTRK) command and specify a schedule time you want the backup to begin on the SCDTIME parameter and specify *NO on the SBMJOB parameter. You should be aware that after submitting the STRBKUTRK from the console, the console is unavailable until the backup has completed. It is also very important to ensure messages being sent to the console do not interrupt the STRBKUTRK command that has been submitted. To prevent the interruption by messages to the console, specify the following Change Message Queue (CHGMSGQ) command either from a command line prior to submitting the STRBKUTRK command or in the backup set you are using:

```
CHGMSGQ MSGQ(QSYSOPR) DLVRY(*NOTIFY) SEV(99)
```

Note: Leaving the console signed on and unattended as described above could expose your system to a security violation. If it is essential that you follow this procedure, other security measures should be put in place to protect the console from unauthorized access during this process.

- **Submit to Batch**

In most cases it is best to leave the *YES default and submit to batch. For a *SAVSYS backup you must change the Submit to batch field to *NO. *If you want to schedule a *SAVSYS, you may choose to Start Console Monitor function, and specify *CONSOLE.*

It is usually best to submit TRAC/400 jobs to a separate job queue from the rest of your system jobs so that a backup is not held up because of other batch jobs running on the system.

This should not be confused with the job scheduler. When you submit to batch, the submit happens immediately, but you can delay the processing to a set time. If you use the job scheduler, the job would not be submitted to batch until the scheduled time. Also, because the scheduler does the submitting, you would actually say *NO to the **Submit to batch** prompt of the STRBKUTRK command.

Special Considerations for Using *SAVSYS in a Backup Set

When the *SAVSYS (Save System) special value is included in the backup items list of either backup set, a copy of the QSYS library is saved in a format compatible with the installation process. It does not save objects from any other library. The *SAVSYS special value saves all object types shown on the **Object types** field (OBJTYPE parameter) in the Save Object (SAVOBJ) command. In addition, it saves security and configuration objects.

Restrictions

- You must perform a *SAVSYS backup interactively from the system console or with the TRAC/400 console monitor and the user profile must be excluded from signoff using the Work with Sign off Exceptions display (Option 2 in the System Policy). TRAC/400 will end all active subsystems before performing the system save function.
- You must have *SAVSYS special authority to perform a backup with *SAVSYS special value.
- Tapes created using this command that are used for installation should be initialized with a density that is supported by the current alternate IPL device. If this is not done, the current alternate IPL device has to be changed to a media device that supports the density of the created *SAVSYS tapes before installation begins during a recovery.
- Tapes created using the *SAVSYS special value cannot be used for automatic installation.

Structuring a Complete System Save

Typically, OS/400 and IBM Licensed Programs will not require to be saved as frequently as user data, since changes to these IBM objects will only occur with updates when PTFs are applied, or on a release upgrade. As such, the retention period for the data saved with *SAVSYS and *IBM would be longer than the retention period for data saved with *ALLUSR and *ALLDLO special values. Generally, user objects and document library objects are changed more frequently than IBM objects.

However, the data retention period applies to all items in a backup set. This limits the re-use of tapes used to save the *ALLUSR and *ALLDLO portion of the total system save if using just one backup set. Therefore, a complete system save is best done with the two backup sets, as follows:

```
SYSTEM:  *SAVSYS
          *IBM

USER:    *SAVSECDTA
          *SAVCFG
          *ALLUSR
          *ALLDLO
          *LINK
```

It should be noted that security and configuration data are saved with the *SAVSYS special value in SYSTEM. However, security and configuration data is likely to change more frequently than the base operating system and IBM Licensed Programs. As such, *SAVSECDTA and *SAVCFG should appear in USER backup set to be saved on a more regular basis. It is up to you to decide on the number of days to keep your saved data based on your backup strategy.

Ending and Starting Subsystems with *SAVSYS

Note: If you need to reply to messages, on a non-programmable workstation you press Shift, System Attention and Enter to take you to the System Request display where you can select Option 6 (Display system operator messages).

If a backup set contains a *SAVSYS special value, all subsystems are ended before the save commences. This ensures that no other activity can occur on the system during the save. The controlling

subsystem is started after processing the last backup item in the backup set. If you specify in your backup procedures that an IPL is to occur after the backup set has finished processing, the controlling subsystem is not started, since this is done as part of the IPL process.

Using Console Monitor to Schedule a *SAVSYS

Use the console monitoring function in TRAC/400 to enhance your ability to schedule a system save. Console monitoring allows you to put the console in a monitored state. In addition, you can suspend the monitored state, enter OS/400 commands as required, and then return the console to a monitored state. When console monitoring is started, you can schedule a system save to process at a later time using the STRBKUTRK command. You can use the console for other system functions until the save starts. When a system save begins, the console goes to a restricted state.

The special value *CONSOLE on the SBMJOB parameter of the STRBKUTRK command provides for use of the monitored console. This parameter indicates to TRAC/400 to submit the STRBKUTRK command to the console for processing.

You must start the console monitoring from the system console. If you attempt to start console monitoring from any other workstation, you will get the message, "Not in the correct environment to start console monitor".

To start the console monitor from the console, go to the Backup menu or type GO TRKBKU. Select Option 7 (Start console monitor) and press Enter. You have put the console into a monitored state, awaiting the arrival of a system save operation from a job scheduler or from entry by a TRAC/400 user.

```
TRKBKU                               Backup

Select one of the following:

    1. Work with backup sets
    2. Work with backup lists
    3. Work with backup procedures
    4. Perform backup
    5. Display backup history
    6. Work with items to omit from backups
--> 7. Start console monitor
```

```
Console Monitor

Press F12 to cancel the monitor operation.
Press F9 to access command line. Control must return to this display
for TRAC activity to be monitored.
```

Console monitor display

If you want to interrupt the console monitor process and take the console out of monitored state, press F9. You see the Console Monitor Security display where you are asked to enter your password. If you are successful in entering your password, you are provided with a popup window where you can enter system commands.


```

                                Console Monitor Security

Press F12 to cancel access command line function.

Type choice, press Enter.

Current user IDp . . . . . QSYSOPR
Enter password to verify . . . . . Current password

```

```

                                Console Monitor Security

Press F12 to cancel access command line function.

Type choice, press Enter.

Current user IDp . . . . . QSYSOPR
Enter password to verify . . . . . Current password
:
: Command
:  ===>
:  F4=Prompt  F9=Retrieve  F12=Cancel
:
:.....

```

Console Monitor Security display

It is important that after completing your use of the command line that you return the console to a restricted state. You do this by pressing F12 (Cancel). When you press F12, you are taken to the Console Monitor Exit display. This display, like the Console Monitor Security display requires you to enter the correct password for the displayed user identification. If you are unsuccessful in entering the password, the current job is signed off.

Working with Save History

Once you have processed one or many save operations, you will need to work with information stored on the media used in save operations. Information stored on the media is referred to as media information, which can include saves of libraries, objects, folders, members, etc. To work with save history, which can include displaying, restoring, removing, etc., you can use the menu system or one of several TRAC/400 commands.

If you use the menu system, you can go to the TRKBKUHST menu or Option 5 from the TRKBKU menu to work with media information. The TRKBKUHST menu gives you the following selections:

```

TRKBKUHST                                Display Backup History

Select one of the following:
  1. Work with media information
  2. Work with saved objects
  3. Work with saved folders
  4. Work with saved documents
  5. Work with saved spooled files
  6. Work with saved link information

```

Working with Save History

Each of the menu selections takes you to one of the following commands:

- WRKMEDITRK - Library level, drill down to objects
- WRKOBJTRK - Object level (requires retain object detail *YES), drill down to member level
- WRKFLRTRK - Folder level, drill down to documents
- WRKSPLFTRK - Spooled files
- WRKLNKTRK - IFS information, drill down to stream files

Using the Work with Media Information (WRKMEDITRK) Command

When you select Option 1 (Work with media information), you are taken to the Work with Media Information (WRKMEDITRK) command display. Optionally, you can type this command on any command line. The command has several parameters that allow you to tailor the resulting display. For instance you can specify:

- All, generic or a single library
- All or a single volume
- Type of save, incremental or full
- Set name or all sets
- Date ranges
- Report or online display

```

Work with Media Information (WRKMEDITRK)
Type choices, press Enter.

Saved item . . . . . *ALL      Name, generic*, *ALL...
Volume . . . . . *ALL      Character value, *ALL
Auxiliary storage pool ID . . . *ALL      1-16, *ALL
Set . . . . . *ALL      *ALL, USER, SYSTEM, *NONE
...
Save type . . . . . *ALL      *ALL, *FULL, *CUML, *INCR...
      + for more values

Select dates:
  From date . . . . . *BEGIN    Date, *CURRENT, *BEGIN,nnnnn
  To date . . . . . *END      Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL      *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE    *DATE, *LIB, *VOL
Entries to be displayed first . *LAST    *LAST, *FIRST
From system . . . . . *LCL
Output . . . . . *          *, *PRINT

```

Work with Media Information (WRKMEDITRK) command display.

The resulting Work with Media Information display provides a listing of saved libraries and special values based on the values you specified on the WRKMEDITRK command display. You use the Work with Media Information display to remove library information from the media content information, display save information, or restore libraries. Additionally, you can select object detail to review or restore objects, spooled files and members from selected library saves.

Note: Objects can only be restored from libraries that were saved with the **Retain object detail** prompt *YES, *OBJ or *MBR in a backup set.

You can transfer to the Work with Saved Objects display by selecting option 9 (Work with Saved Objects) for any library name listed on the Work with Media Information display. If object level detail does not exist for the library, you get the message "Object level detail does not exist for the selected entry".

You can recover a library using the WRKMEDITRK display. When you select option 7 (Restore) for a library entry and press Enter, you are taken to the Select Recovery Items display.

Work with Media Information							
Position to Date _____							
Type options, press Enter.							
2=Change 4=Remove 5=Display 6=Work with media 7=Restore							
9=Work with saved objects							
Saved							
Opt	Item	Date	Time	Save Type	Volume Serial	File Seq	Expiration Date
-	TOMLIB	9/17/99	13:08:46	*BKU	T00011	1	*PERM
-	XXTSTLIB	9/17/99	13:09:21	*BKU	T00011	1	*PERM
-	QSYS38	9/17/99	13:13:32	*FULL	T00010	2	10/17/99
-	Q1ATRKSFO1	9/17/99	13:13:54	*FULL	T00010	2	10/17/99
-	Q1ATRKSFO2	9/17/99	13:14:16	*FULL	T00010 +	1	10/17/99
-	Q1ASRC	9/17/99	13:34:39	*FULL	T00012	1	10/17/99
-	Q1ASRC02	9/17/99	13:42:35	*FULL	T00012	2	10/17/99
-	TRAC400	9/17/99	13:45:11	*RCY	T00012	1	10/17/99
7	BRTSTLIB	9/18/99	11:24:08	*FULL	*SAVF		11/07/99

WRKMEDITRK display

Save Strategy Exceptions

The Work with Media Information (WRKMEDITRK) command can be used to produce a display or a report of libraries that are not part of the save strategy and are not being backed up. Information about libraries that are not being backed up is added to the media information when the STRMNTTRK command is processed.

To determine the libraries that are not being saved, use the WRKMEDITRK command to create a display or report. When processing the WRKMEDITRK command to identify libraries that have not been saved, the choice for the **Save type** field should be *NONE. An example of the resulting display follows:

Work with Media Information (WRKMEDITRK)		
Type choices, press Enter.		
Saved item	*ALL	Name, generic*, *ALL...
Volume	*ALL	Character value, *ALL
Auxiliary storage pool ID . . .	*ALL	1-16, *ALL
Set	*ALL	*ALL, USER, SYSTEM
Save type	*NONE	*ALL, *FULL, *CUML, *INCR...
	+ for more values	_____
Select dates:		
From date	*BEGIN	Date, *CURRENT, *BEGIN, nnnnn
To date	*END	Date, *CURRENT, *END, nnnnn
Save status	*ALL	*ALL, *NOERROR, *ERROR
Sequence option	*DATE	*DATE, *LIB, *VOL
Entries to be displayed first .	*LAST	*LAST, *FIRST
From system	*LCL	
Output	*	*, *PRINT

The resulting display contains all the libraries that are not included in the TRAC/400 save strategy.

```

                                Work with Media Information

Position to Date . . . . .

Type options, press Enter.
  2=Change   4=Remove   5=Display   6=Work with media   7=Restore
  9=Work with saved objects

   Saved
Opt  Item          Date      Time      Save   Volume   File   Expiration
      Type          Serial    Seq      Date

_   XIF0A1         00/00/00  0:00:00  *NONE
_   BQOX          00/00/00  0:00:00  *NONE
_   CANAFM        00/00/00  0:00:00  *NONE
_   IMPLIB        00/00/00  0:00:00  *NONE
_   CMN38         00/00/00  0:00:00  *NONE
_   QGPL          00/00/00  0:00:00  *NONE
_   TRAC400       00/00/00  0:00:00  *NONE
_   JENNIFER      00/00/00  0:00:00  *NONE

```

Save Strategy Exceptions

If you wanted a report of this information, you would specify *PRINT in the **Output** field, which prints the Media Information report. Refer to Appendix B, "Report Examples" for an example of the Media Information report.

Using the Work with Saved Objects (WRKOBJTRK) Command

When you select Option 2 (Work with saved objects), you are taken to the Work with Saved Objects (WRKOBJTRK) command. Optionally, you can type the command on any command line. The command has several parameters that allow you to tailor the resulting display. For instance, you can specify:

- All or a specific object
- All or a specific library
- Date ranges
- Report or online display

```

                                Work with Saved Objects (WRKOBJTRK)

Type choices, press Enter.

Object . . . . . *ALL      Name, *ALL
Library . . . . . *ALL      Name, *ALL
Type . . . . . *ALL      Character value, *ALL
Select dates:
  From date . . . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END     Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL     *ALL, *NOERROR, *ERROR
Object information . . . . . *ALL   *ALL, *OBJ, *DLO, *MBR
Sequence option . . . . . *SAVDAT *SAVDAT, *OBJ, *LIB
From system . . . . . *LCL
Output . . . . . *          *, *PRINT

```

The resulting Work with Saved Objects display provides a listing of saved objects based on the values you specified on the WRKOBJTRK command display. You use the Work with Saved Objects display to remove object information from the media content information, change an entry, display save information, work with saved members or restore objects.

```

Work with Saved Objects

Position to Date . . . .

Type options, press Enter.
  4=Remove   5=Display   6=Work with media   7=Restore object
  9=Work with saved members

Opt Object      Library      Type      Save      Save      Volume      Message
  _ MYFILE1      MYLIB       *FILE     11/10/99  10:35:36  ICC001
  _ MYFILE2      MYLIB       *FILE     11/10/99  10:35:36  ICC001
  7 MYFILE3      MYLIB       *FILE     11/10/99  10:35:36  ICC001
  7 MYFILE4      MYLIB       *FILE     11/10/99  10:35:36  ICC001
  7 MYFILE5      MYLIB       *FILE     11/10/99  10:35:36  ICC001
  _ MYFILE6      MYLIB       *FILE     11/10/99  10:35:36  ICC001

```

Work with Saved Objects display

Using the Work with Saved Folders (WRKFLRTRK) Command

When you select Option 3 (Work with saved folders), you are taken to the Work with Saved Folders (WRKFLRTRK) command. Optionally, you can type the command on any command line. The command has several parameters that allow you to tailor the resulting display. For instance, you can specify:

- All or a specific folder
- Sequence options
- Date ranges
- Report or online display

```

Work with Saved Folders (WRKFLRTRK)

Type choices, press Enter.

Folder name . . . . . *ALL_____

Select dates:
  From date . . . . . *BEGIN Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE *DATE, *FLR
Output . . . . . * *, *PRINT

```

Work with Saved Folders display

The Work with Saved Folders display provides a listing of saved folders based on the values you specified on the WRKFLRTRK command display. You use the Work with Saved Folders display to remove folder information from the media content information, display media information, or restore folders. Additionally, you can select folder detail to review or restore documents from selected folder saves.

Note: Documents can only be restored from folders that were saved with the **Retain object detail** *YES

in a backup set.

```

                                Work with Saved Folders
Position to save date . .

Type options, press Enter.
  4=Remove   5=Display   6=Work with media   7=Restore folder
  9=Work with saved objects

Opt  Folder                                Save      Save      DLO      Not      Volume
     Folder                                Date      Time      Saved    Saved
  9  QADTSCS                                11/02/99  0:25:00   4        0      ICC001
   _  QADTSCS/MRI2924                       11/02/99  0:25:00  53        0      ICC001
   _  QADTSCS/MRI2924/BIN                   11/02/99  0:25:00   0        0      ICC001
   _  QADTSCS/MRI2924/DLL                   11/02/99  0:25:00  16        0      ICC001
   _  QADTSCS/MRI2924/HLP                   11/02/99  0:25:00  27        0      ICC001
   _  QADTSCS/MRM                           11/02/99  0:25:00 112        0      ICC001
   _  QADTSCS/MRM/BIN                       11/02/99  0:25:00  33        0      ICC001
   _  QADTSCS/MRM/DLL                       11/02/99  0:25:00 118        0      ICC001

```

Work with saved folders display.

When you select Option 4 (Work with saved documents), you are taken to the Work with Saved Objects (WRKOBJTRK) command. You should note that the OBJ parameter is defaulted to *ALL with a library of QDOC, and the OBJINF parameter is defaulted to *DLO. This tailors the selections to select saved documents.

```

                                Work with Saved Objects (WRKOBJTRK)

Type choices, press Enter.

Object . . . . . > *ALL Name, *ALL
Library . . . . . > QDOC Name, *ALL
Type . . . . . *ALL Character value, *ALL
Select dates:
  From date . . . . . *BEGIN Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL *ALL, *NOERROR, *ERROR
Object information . . . . . > *DLO *ALL, *OBJ, *DLO, *MBR
Sequence option . . . . . *SAVDAT *SAVDAT, *OBJ, *LIB
Output . . . . . * *, *PRINT

```

Work with Saved Objects (WRKOBJTRK) command display.

Using the Work with Saved Spooled Files (WRKSPLFTRK) Command

When you select Option 5 (Work with saved spooled files), you are taken to the Work with Saved Spooled Files (WRKSPLFTRK) command display. Optionally you can type the command on any command line. The command has several parameters that allow you to tailor the resulting display. For instance, you can specify:

- Specify output queues and libraries
- File and job name
- Date ranges
- Report or online display

```

Work with Saved Spooled Files (WRKSPLFTRK)

Type choices, press Enter.

Output queue . . . . . *ALL      Name, *ALL
  Library . . . . . *ALL      Name, *ALL
File . . . . . *ALL      Name, *ALL
Job name . . . . . *ALL      Name, *ALL
User . . . . . *ALL      Name, *ALL
User data. . . . . *ALL      Name, *ALL
Select dates:
  From date . . . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END      Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL      *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE   *DATE, *JOB, *FILE
From system . . . . . *LCL
Output . . . . . *          *, *PRINT

```

Work with Saved Spooled Files command

The Work with Saved Spooled Files display provides a listing of saved spooled files based on the values you specified on the WRKSPLFTRK command display. You use the Work with Saved Spooled Files display to remove folder information from the media content information, display save information, or restore saved spooled files. Additionally, you can work with media (Option 6) that contains the selected saved spooled files.

```

Work with Saved Spooled Files

Position to date . . _____

Type Options, press Enter.
  4=Remove   5=Display   6=Work with media   7=Restore spooled file

Opt  Library   Outq      File      Job      User      Date      Time
  6  QUSRSYS    QPRINT    Q1AASP    Q1ARMM    USER1     2/28/99   9:43:32
  _  QUSRSYS    QPRINT    Q1ARMM    Q1ARMM    USER1     2/28/99   9:48:44
  _  QUSRSYS    QPRINT    Q1A2ASP    Q1A2ASP    USER2     2/28/99   9:49:16
  _  QUSRSYS    QEZJOBLOG QPJOBLOG    DSP07     USER2     2/28/99  20:43:17
  _  QUSRSYS    QEZJOBLOG QPJOBLOG    WRKCNRTRK PSFB       3/01/99   7:01:47

```

Work with Saved Spooled Files display

Using the Work with Link Information (WRKLNKTRK) Command

When you select Option 6 (Work with saved link information), you are taken to the Work with Link Information (WRKLNKTRK) command display. Optionally you can type the command on any command line. The command has several parameters that allow you to tailor the resulting display. For instance, you can specify:

- All or selected file system object link information
- Date ranges
- Report or online display

```

                                Work with Link Information (WRKLNKTRK)

Type choices, press Enter.

Directory . . . . . '*'

Select dates:
  From date . . . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  To date   . . . . . *END     Date, *CURRENT, *END, nnnnn
Output . . . . . *           *, *PRINT

```

The Work with Link Information display provides a listing of saved link information based on the values you specified on the WRKLNKTRK command display. You use the Work with Link Information display to remove directory information or work with directory information.

```

                                Work with Link Information
                                                                04/19/99

16:00:53
Type options, press Enter.
  4=Remove   9=Work with directory information

Opt   Directory
  -    /
  -    /home
  -    /home/RESTDIR
  -    /home/RESTDIR
  -    /home/RESTDIR/level1
  -    /home/RESTDIR/level1/level2
  -    /home/RESTDIR/level1/level2/level3
  -    /home/RESTDIR/level1/level2/level3/level4
  -    /home/RESTDIR/level1/level2/level3/level4/level5
  -    /home/RESTDIR/level1/level2/level3/level4/level5/level6
  -    /home/RESTDIR/level1/level2/level3/level4/level5/level6 >
  -    /home/RESTDIR/level1/level2/level3/level4/level5/level6 >

More...

```

Work with link information display.

As is shown in the previous display, the absolute path name of the directory is shown, beginning with the "root" directory. If the path name of the directory is too long to be displayed, the symbol ">" is shown which indicates that the name is truncated from the right. If you want to display the entire absolute path name, place the cursor on the name you want to display and press F22. A popup window containing the entire absolute path name is displayed as follows:

To create a new list type a "1" in the option column, type the name for the new list. Typing a "2" in the option column next to the list names and pressing the Enter key allows you to change the omit lists. Omit items are made up of three entries. If only the library column contains a value then it is a library omit. If the object or type column contains a value than the library, object and type must be specified and this is an object omit. In the example below, sequence 10 will omit any library starting with an "A," Sequence 20 will omit any program starting with "P" in the PAYROLL library. You can use any combination of library and object omissions. Library omissions are normally processed when the backup list is processed and object omissions are processed during the save.

Note: You can specify a maximum of 300 items to omit.

Add Omit List			
List name	OMITLIST		
Text	_____		
Type options, press Enter.			
Seq	Library	Object	Type
10	A*_____	_____	_____
20	PAYROLL_____	P*_____	*PGM_____

Lists of Omit items

Chapter 6: Recovery

The most important function of TRAC/400 is its ability to guide you through the recovery of all or part of your system. TRAC/400 provides instructions on how to restore the latest saved copy of any object up to the restore point time that you specify. In an environment where a complex save strategy is implemented, this facility is even more important, since not all objects will have been saved to the same media set, in the same backup set, or even on the same day. You can restore by auxiliary storage pool (ASP), backup set, library, object, member, spooled file, folder, stream file, or the entire system.

Additionally, TRAC/400 has facilities to document procedures and contact names associated with your recovery plan. This can be used to produce reports that can be kept offsite in case of a disaster.

Setting up a Recovery Contact

To set up a recovery contact, you should select option 3 (Recovery) from the main menu. From the Recovery display, select option 1 (Recovery planning).

```
TRKRCY                                Recovery

Select one of the following:

--> 1. Recovery planning
    2. Perform recovery
    3. Display log
```

From the Recovery Planning menu, select Option 1 (Work with recovery contacts)

```
TRKRCYPLN                            Recovery Planning

Select one of the following:

--> 1. Work with recovery contacts
    2. Work with recovery activities
    3. Print recovery activities
    4. Print recovery analysis
```

Recovery planning menu.

The Work with Recovery Contacts display lists all contacts that have been defined for your enterprise. You use this display to define the names and telephone numbers of all responsible personnel and vendors that are to be contacted during various recovery processes.

If you want to add a recovery contact, go to the **Option** field, type a 1 (Add) followed by a name in the **Recovery contact** field. Press the Enter key and you are transferred to the Add Recovery Contact display for input of telephone number and Contact information for this Recovery contact.

```

                                Work with Recovery Contacts

Position to . . . . . _____ Starting characters

Type options, press Enter.
  1=Add  2=Change  4=Remove  5=Display

Opt  Recovery contact          Telephone number
  1   John Hernandez           909-555-3215
  -   Elizabeth Payton        800-555-SERV
  -   IBM Service              909-555-7999
  -   Janice Kay                909-555-3786
  -   Kristen Taylor           909-555-8113
  -   Lawrence Whitefeather    909-555-8085
  -   Michelle Syska           909-555-5762
  -   Print-Rite Business Forms

```

```

                                Add Recovery Contact

Type information, press Enter.

Recovery contact. . . . . John Hernandez
Telephone number . . . . . 909-555-8781
Contact information . . . . .
  ___ Office: 3rd Floor/Room 21/Extension 5526
  ___ Payroll and General Ledger support programming
  ___ Manager: Kristen Taylor
  ___ Vacation : June 6-12, November 14-21. Contact Michelle Syska
  ___
  ___
  ___
  ___

```

Adding recovery contacts

Setting Up a Recovery Activity

From the Recovery Planning display, select option 2 (Work with recovery activities). On the Work with Recovery Activities display you see a listing of all recovery activities that have been defined for your enterprise. Recovery activities are steps, functions and tasks that you assign to plan recovery activities.

In the **Option** field, type a 1 (Add) followed by a name in the **Activity** field. Press the Enter key, and you are transferred to the Add Recovery Activity display for input of one to five recovery contacts that are associated with this recovery activity. By placing the cursor on any **Recovery contact** field on the Add Recovery Activity display you can key the name of a recovery contact, or by pressing F4 you can select a name from the recovery contact list. After you type or select the recovery contacts for the recovery activity, press the Enter key to return to the Work with Recovery Activities display.

```

                                Work with Recovery Activities

Position to . . . . . _____ Starting characters

Type options, press Enter.
  1=Add 2=Change 3=Copy 4=Remove 5=Display
  9=Change recovery information

Opt  Activity      Seq  Text
_1   P/R
___  A/P           3  Accounts Payable related recovery instructions
___  A/R           2  Accounts Receivable related recovery instructions
___  G/L           3  General Ledger related recovery instructions
___  H/R           7  Human Resources related recovery instructions
___  Hardware Fail 1  Hardware Failure related recovery instructions
___  O/E          15  Order Entry related recovery instructions
___  Power Fail    1  Power failure related recovery instructions

```

```

                                Add Recovery Activity

Type information, press Enter.

Activity . . . . . P/R
Recovery contact one . . . . . John Hernandez F4
Recovery contact two . . . . . Michelle Syska F4
Recovery contact three . . . . . Kristen Taylor F4
Recovery contact four. . . . . Print-Rite Business Forms F4
Recovery contact five. . . . . _____ F4
Activity sequence . . . . . 1 1-999
Text . . . . . Payroll related recovery instructions

```

Adding Recovery Activity Display

In the **Option** field next to a recovery activity, type a "9" (Change recovery information). Press the Enter key, and you are transferred to the Change Recovery Information display to input a detailed, freeform description of the recovery activity. After you type the recovery information associated with this recovery activity, press the Enter key twice to return to the Work with Recovery Activities display. Then press the Enter key to return to the Recovery Planning display.

```

                                Work with Recovery Activities

Position to . . . . . _____ Starting characters

Type options, press Enter.
  1=Add 2=Change 3=Copy 4=Remove 5=Display
  9=Change recovery information

Opt   Activity                Seq  Text
--   -
_     A/P                      3  Accounts Payable related recovery instructions
_     A/R                      2  Accounts Receivable related recovery instructio
_     Hardware Fail            1  Hardware Failure related recovery instructions
_     O/E                      15 Order Entry related recovery instructions
_     P/R                      1  Payroll related recovery instructions
_     Power Fail               1  Power failure related recovery instructions

```

```

                                Change Recovery Information

Activity . . . . . : P/R

Type information, press Enter.

  1) Paychecks printed using incorrect alignment:
    a) Call contact #1 and #3
    b) Call contact #4 if there are not enough checks to reprint the run
    c) When authorized by contact #3, restore PRLIB02 from backup
       version created at beginning of payroll processing job that created
       checks.
    d) When authorized by contact #3, resubmit payroll processing job.

  2) Payroll libraries PRLIB01 and PRLIB02 out of synchronization
     resulting in conflicting overall totals on reports PR21TX4 and PR25WH4:
    a) Call contact #2.
    b) When authorized by contact #2, submit job PRJ46.
    c) When authorized by contact #2, restore PRLIB01 from most recent
       FULL save backup.
    d) Submit supplemental payroll job PRJ22 using current date as BEGIN,

```

Example of recovery activity information entered by a user

Performing Recovery using the STRRCYTRK

The Start Recovery using TRAC/400 (STRRCYTRK) command determines the most appropriate times and dates of entries in the TRAC/400 media content information to use for recovery to a user-specified end date and time. This reflects the order in which libraries and objects were saved. For instance, a recovery request for a library will restore the most recent full backup of a library preceding the user-specified end date and time. After this, the objects from the latest incremental backup of that library and all object level saves since the last full save are restored in date and time sequence. This means that some single objects in a library may be restored multiple times to obtain the most current version of all objects. They would be restored the first time from the full library save, and, perhaps, later from the incremental saves and individual object saves.

Prior to processing a restore, you should use the report option (*REPORT) in the STRRCYTRK command to produce the Recovery Analysis Report listing the steps required to restore the portion of the system or the entire system.

Refer to Appendix B, "Report Examples" for an example of the Recovery Analysis Report.

```
TRKRKY                                Recovery

Select one of the following:

    1. Recovery planning
-->  2. Perform recovery
    3. Display log
```

```
TRKRCYOPT                              Perform Recovery

Select one of the following:

-->  1. Recover system
    2. Recover auxiliary storage pool (ASP)
    3. Recover backup set
    4. Recover library
    5. Work with media information
    6. Work with saved objects
    7. Work with saved folders
    8. Work with saved spooled files
    9. Work with saved link information
```

The menu selections titled Recover system, Recover auxiliary storage pool (ASP), Recover backup set, and Recover library run the Start Recovery using TRAC/400 (STRRCYTRK) command. The other menu selections run the Work with Media Information (WRKMEDITRK), Work with Saved Objects using (WRKOBJTRK), Work with Saved Folders using TRAC/400 (WRKFLRTRK), Work with Saved Spooled Files using TRAC/400 (WRKSPLFTRK), and Work with Link Information (WRKLNKTRK) commands, respectively.

You use the Start Recovery using TRAC/400 (STRRCYTRK) command to recover items ranging from a single library to the entire system. Any library or group of libraries that was saved by a TRAC/400 save operation can be restored using this command. Recovery is based on entries in the media content information.

Recovery using STRRCYTRK uses the most recent times and dates of entries in the media content information based on the backup time and date range you specify. This reflects the order in which libraries and objects were saved. For instance, a recovery request for a library will select the most recent full backup of a library, the latest incremental backup of that library (assuming that you are using the *CUMUL method for incremental backups), and all object level saves that occurred since the last full save.

```

                                Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . *SYSTEM   *SYSTEM, *SAVSYS, *IBM...
Action . . . . . *REPORT   *REPORT, *RESTORE

Time period for recovery:
  Start time and date:
  Beginning time . . . . . *AVAIL   Time, *AVAIL
  Beginning date . . . . . *BEGIN   Date, *CURRENT, *BEGIN
  End time and date:
  Ending time . . . . . *AVAIL   Time, *AVAIL
  Ending date . . . . . *END     Date, *CURRENT, *END
Use save files . . . . . *NO     *NO, *YES
Volume location . . . . . *ALL    *ALL, *HOME, MLD01...
                                + for more values
Library to omit. . . . . *NONE    *DELETE, *NONE

```

Start Recovery using TRAC/400 command for *SYSTEM

The display shown above is the recovery display when you specify *SYSTEM in the OPTION parameter. If you would specify *SAVSYS or any of the other choices, the display will be changed to reflect the information required for each of the choices.

You can use the STRRCYTRK command and specify a specific date on which the required object was saved. The WRKMEDITRK command will allow a similar restore using an interactive interface.

Note: Before running a restore, you should use the ACTION parameter value *REPORT to produce the Recovery Analysis Report outlining the steps required to run the restore, based on the recovery option value you select.

Recovering the Full System

Full system recovery is required if a disk unit in the system ASP is damaged and needs to be replaced and no method of disk protection is in place, such as mirroring or RAID-5 protection. Full system recovery can be done based on the media content information using the STRRCYTRK command with the *SAVSYS option.

The Recovery Analysis report contains a complete step by step procedure for recovering your system, including the media required and its current location. A complete example of the "Recovery Analysis" is found in Appendix B, "Report Examples".

Recovering IBM Libraries

You use the *IBM option to restore the IBM libraries. This option restores all IBM libraries with names that begin with the letter Q, except the following:

- | | | | |
|----------|-----------|------------|------------|
| QDOC | QRCL | QS36F | QUSRRDARS |
| QDOCXXX | QRECOVERY | QTEMP | QUSRSYS |
| QDSNX | QRPLOBJ | QUSER38 | QUSRVxRxMx |
| QGPL | QSPL | QUSRADSM | |
| QGPL38 | QSRV | QUSRIJS | |
| QPFRDATA | QSYS | QUSRINFSKR | |

Note: The user can create a different library name, in the format QUSRVxRxMx, for each previous

release supported by IBM to contain any user commands to be compiled in a CL program for the previous release. For the QUSRVxRxMx user library, VxRxMx is the version, release, and modification level of a previous release that IBM continues to support.

The *IBM option also restores the following libraries with names that do not begin with the letter Q:

```
#CGULIB    #DFULIB    #RPGLIB    #SEULIB
#COBLIB    #DSULIB    #SDALIB
```

Recovering All User Libraries

You use the *ALLUSR option to restore user libraries, including the document library. This option restores all libraries with names that do not begin with the letter Q, except the following:

```
#CGULIB    #DFULIB    #RPGLIB    #SEULIB
#COBLIB    #DSULIB    #SDALIB
```

Although provided by IBM, some libraries with names that begin with the letter Q typically contain user data that change frequently. Therefore, the following libraries are considered user libraries, and are also restored with the *ALLUSR option:

```
QDSNX      QRCL       QUSRSYS    QUSRVxRxMx
QGPL       QS36F     QUSRIJS
QGPL38     QUSER38   QUSRINFSKR
QPFRDATA   QUSRADSM  QUSRRDARS
```

Note: The user may create a different library name, in the format QUSRVxRxMx, for each previous release supported by IBM to contain any user commands to be compiled in a CL program for the previous release. For the QUSRVxRxMx user library, VxRxMx is the version, release, and modification level of a previous release that IBM continues to support.

Recovering a Specific Library

You use the *LIB option to restore a specific library based on the media content information. You specify the library name and restore the latest version of the library by using the latest full save, the latest incremental save, and any object saves that occurred since the latest full save.

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . > *LIB      *SYSTEM, *SAVSYS, *IBM...
Action . . . . .      *REPORT  *REPORT, *RESTORE
Time period for recovery:
  Start time and date:
    Beginning time . . . . . *AVAIL   Time, *AVAIL
    Beginning date . . . . . *BEGIN   Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL   Time, *AVAIL
    Ending date . . . . . *END       Date, *CURRENT, *END
Use save files . . . . . *NO        *NO, *YES
Library . . . . . *LIBNAME  Name, generic*
Volume location . . . . . *ALL      *ALL, *HOME, *NONE...
                                + for more values
From system . . . . . *LCL

```

Using STRRCYTRK command to restore a library

Recovering a Specific Auxiliary Storage Pool (ASP)

You use the *ASP option to restore a specific auxiliary storage pool (ASP) based on the media content information. You must specify the ASP number.

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . > *ASP      *SYSTEM, *SAVSYS, *IBM...
Action . . . . .      *REPORT  *REPORT, *RESTORE
Time period for recovery:
  Start time and date:
    Beginning time . . . . . *AVAIL   Time, *AVAIL
    Beginning date . . . . . *BEGIN   Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL   Time, *AVAIL
    Ending date . . . . . *END       Date, *CURRENT, *END
Use save files . . . . . *NO        *NO, *YES
Auxiliary storage pool ID . . . . . > 1          1-16
Volume location . . . . . *ALL      *ALL, *HOME, MLD01...
                                + for more values
Library to omit . . . . . *NONE      *DELETE, *NONE
From system . . . . . *LCL

```

Using STRRCYTRK command to restore an ASP

Recovery Based on Backup Sets

You use the *SET option to restore backup items included in a specific backup set, based on the media content information. Only named items can be recovered with this option. Objects saved with special values, such as *SAVSECDTA and *SAVCFG, are not restored. These can only be restored with the *SYSTEM option. You need to specify the name of the backup set.

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . > *SET      *SYSTEM, *SAVSYS, *IBM...
Action . . . . . *REPORT  *REPORT, *RESTORE
Time period for recovery:
  Start time and date:
    Beginning time . . . . . *AVAIL  Time, *AVAIL
    Beginning date . . . . . *BEGIN  Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL  Time, *AVAIL
    Ending date . . . . . *END     Date, *CURRENT, *END
  Use save files . . . . . *NO     *NO, *YES
  Set . . . . . *ALL      *ALL, Name
  Volume location . . . . . *ALL    *ALL, *HOME, *NONE...
      + for more values
  Library to omit . . . . . *NONE   *DELETE, *NONE
  From system . . . . . *LCL

```

Using STRRCYTRK command to restore backup sets

Recovering all Document Library Objects (DLO)

You use the *ALLDLO option to restore all documents, folders and distribution objects (mail) from the media content information that meet the specified starting and ending dates and times.

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . > *ALLDLO  *SYSTEM, *SAVSYS, *IBM...
Action . . . . . *REPORT  *REPORT, *RESTORE
Time period for recovery:
  Start time and date:
    Beginning time . . . . . *AVAIL  Time, *AVAIL
    Beginning date . . . . . *BEGIN  Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL  Time, *AVAIL
    Ending date . . . . . *END     Date, *CURRENT, *END
  Use save files . . . . . *NO     *NO, *YES
  Volume location . . . . . *ALL    *ALL, *HOME, MLD01...
      + for more values

```

Using STRRCYTRK command to restore all documents

Resuming a Recovery

The STRRCYTRK command can be used to resume a recovery that was stopped. To do so specify the *RESUME choice in the Option parameter and press Enter. When you press Enter you are taken to the Select Recovery display where you can review the items that will be included when you resume the recovery process.

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . > *RESUME *SYSTEM, *SAVSYS, *IBM...

```

Using STRRCYTRK command to resume a recovery

Using the WRKMEDITRK Command

You use the Work with Media Information (WRKMEDITRK) command to create a report or display of media information, based on libraries, date ranges, and sequences that you specify. You can specify the command on a command line or select Option 5 (Work with media information) from the Perform Recovery (TRKRCYOPT) menu.

```

Work with Media Information (WRKMEDITRK)

Type choices, press Enter.

Library . . . . . *ALL Name, generic*, *ALL...
Volume . . . . . *ALL Character value, *ALL
Auxiliary storage pool ID . . . *ALL 1-16, *ALL
Set . . . . . *ALL *ALL, USER, SYSTEM, PAYROLL...
Save type . . . . . *ALL *ALL, *FULL, *CUML, *INCR...
      + for more values
Select dates:
  From date . . . . . *BEGIN Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE *DATE, *LIB, *VOL
Entries to be displayed first . *LAST *LAST, *FIRST
Output . . . . . * *, *PRINT

```

The Work with Media Information display provides a listing of saved libraries and special values based on the values you specified on the WRKMEDITRK command display. You use the Work with Media Information display to remove save information from the media content information, display save information, or restore. Additionally, you can select object detail to review or restore objects, spooled files and members from selected saves.

Note: Objects can only be restored from libraries that were saved with the **Retain object detail** prompt *YES, *OBJ or *MBR in a backup set.

You can transfer to the Work with Saved Objects display by selecting option 9 (Work with saved objects) for any library name listed on the Work with Media Information display. If object level detail does not exist for the library, you get the message "Object level detail does not exist for the selected entry".

You can recover a library using the WRKMEDITRK display. When you select option 7 (Restore) for a library entry and press Enter, you are taken to the Select Recovery Items display.

Work with Media Information							
Position to Date _____							
Type options, press Enter.							
2=Change 4=Remove 5=Display 6=Work with media 7=Restore							
9=Work with saved objects							
Opt	Saved Item	Date	Time	Save Type	Volume Serial	File Seq	Expiration Date
-	TOMLIB	9/17/99	13:08:46	*BKU	T00011	1	*PERM
-	XXTSTLIB	9/17/99	13:09:21	*BKU	T00011	1	*PERM
-	QSYS2	9/17/99	13:12:54	*FULL	T00010	2	10/17/99
-	QSYS38	9/17/99	13:13:32	*FULL	T00010	2	10/17/99
-	TRACSF01	9/17/99	13:13:54	*FULL	T00010	2	10/17/99
-	TRACSF02	9/17/99	13:14:16	*FULL	T00010 +	1	10/17/99
-	TRACSF03	9/17/99	13:34:39	*FULL	T00012	1	10/17/99
-	TRACSF04	9/17/99	13:42:35	*FULL	T00012	2	10/17/99
-	TRAC400	9/17/99	13:45:11	*RCY	T00012	1	10/17/99
7	BRTSTLIB	9/18/99	11:24:08	*FULL	*SAVF		11/07/99

Select Recovery Items								
Type options, press Enter. Press F16 to select all.								
1=Select 4=Remove 5=Display 7=Specify object								
Opt	Saved Item	Date	Time	Save Type	Volume Serial	File Seq	Expiration Date	Objects Saved
1	TSTLIB	9/21/99	11:24:08	*FULL	T00016	1	9/23/99	

Select recovery items.

The Select Recovery Items display provides a listing of all libraries that you specified for recovery on the Work with Media Information display. On this display, you can remove an item from the list of selected recovery items, display more details about a selected item, or continue with the recovery of the selected items.

Using the WRKOBJTRK command

You use the Work with Saved Objects using TRAC/400 (WRKOBJTRK) command to create a report or display of saved objects, based on object names, date ranges, and sequences that you specify. You can specify the command on a command line or select Option 6 (Work with saved objects) from the Perform Recovery (TRKRCHOPT) menu.

```

                                Work with Saved Objects (WRKOBJTRK)

Type choices, press Enter.

Object . . . . . *ALL      Name, *ALL
Library . . . . . *ALL      Name, *ALL
Type . . . . . *ALL      Character value, *ALL
Select dates:
  From date . . . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END      Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL      *ALL, *NOERROR, *ERROR
Object information . . . . . *ALL      *ALL, *OBJ, *DLO, *MBR
Sequence option . . . . . *SAVDAT *SAVDAT, *OBJ, *LIB
Output . . . . . *          *, *PRINT

```

The Work with Saved Objects display provides a listing of saved objects based on the values you specified on the WRKOBJTRK command display. You use the Work with Saved Objects display to remove object information from the media content information, change an entry, display save information, work with saved members or restore objects.

```

                                Work with Saved Objects

Position to Date . . . .

Type Options, press Enter.
  4=Remove   5=Display   6=Work with media   7=Restore object
  9=Work with saved members

Opt Object      Library      Type      Save      Save      Volume      Message
   Date      Time
--  -
 7  QPRINT      HMTSTLIB    *OUTQ     9/16/99   11:08:52   *SAVF
 7  QSTRUP      HMTSTLIB    *PGM      9/16/99   11:08:52   *SAVF
 7  STARTPSF    HMTSTLIB    *PGM      9/16/99   11:08:52   *SAVF
 7  WRTRPGLVL  HMTSTLIB    *CMD      9/16/99   11:08:52   *SAVF
 7  TRKADV      TRAC400     *FILE     9/16/99   11:09:06   *SAVF
 7  TRKAHS      TRAC400     *FILE     9/16/99   11:09:09   *SAVF

```

Work with Saved Objects display

You transfer to the Select Recovery Items display when you select option 7 (Restore object) on the Work with Saved Objects display. The Select Recovery Items display provides a listing of all objects that you specified for recovery on the Work with Saved Objects display. On this display, you can remove an item from the list of selected recovery items, display more details about a selected item, or continue with the recovery of the selected items.

Select Recovery Items							
Type options, press Enter. Press F16 to select all.							
1=Select 4=Remove 5=Display							
Opt	Object	Library	Type	Save Date	Expiration Date	Volume	Message ID
1	QSTRUP	HMTSTLIB	*PGM	9/16/99	9/17/99	*SAVF	
1	STARTPSF	HMTSTLIB	*PGM	9/16/99	9/17/99	*SAVF	
1	WRTRPGLVL	HMTSTLIB	*CMD	9/16/99	9/17/99	*SAVF	

You can also work with saved members from the Work with Saved Objects display. You do this by choosing Option 9 (Work with saved members) for an object for which members were saved (*FILE type object). From the Work with Saved Members display you can remove, display, work with media or restore members.

Work with Saved Objects							
Position to Date							
Type Options, press Enter.							
4=Remove 5=Display 6=Work with media 7=Restore object							
9=Work with saved members							
Opt	Object	Library	Type	Save Date	Save Time	Volume	Message ID
_	QPRINT	HMTSTLIB	*OUTQ	9/16/99	11:08:52	*SAVF	
9	SAVE01	SAVELIB	*FILE	9/16/99	11:08:52	T00005	
_	TRKADV	TRAC400	*FILE	9/16/99	11:09:06	*SAVF	
_	TRKAHS	TRAC400	*FILE	9/16/99	11:09:09	*SAVF	

Work with Saved Members							
File: SAVE01							
Library : SAVELIB				Position to _____			
Type options, press Enter.							
4=Remove 5=Display 6=Work with media 7=Restore member							
Opt	Member	Save Date	Save Time	Volume			
_	MEMBER1	2/23/99	12:12:04	T00005			
_	MEMBER2	2/23/99	12:12:06	T00005			
_	MEMBER3	2/23/99	12:12:08	T00005			
_	MEMBER4	2/23/99	12:12:54	T00005			

Work with Saved Members display

Using the WRKFLRTRK Command

You use the Work with Saved Folders (WRKFLRTRK) command to create a report or display of saved folders, based on folder names, date ranges, and sequences that you specify. You can specify the command on a command line or select Option 7 (Work with saved folders) from the Perform Recovery (TRKRCYOPT) menu.

```

Work with Saved Folders (WRKFLRTRK)

Type choices, press Enter.

Folder name . . . . . *ALL _____

Select dates:
  From date . . . . . *BEGIN   Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END     Date, *CURRENT, *END, nnnnn
  Save status . . . . . *ALL   *ALL, *NOERROR, *ERROR
  Sequence option . . . . . *DATE *DATE, *FLR
  Output . . . . . *        *, *PRINT
  
```

Work with Saved Folders display

The Work with Saved Folders display provides a listing of saved folders based on the values you specified on the WRKFLRTRK command display. You use the Work with Saved Folders display to remove folder information from the media content information, display media information, or restore folders. Additionally, you can select folder detail to review or restore documents from selected folder saves.

Note: Documents can only be restored from folders that were saved with the **Retain object detail** prompt *YES in a backup set.

```

Work with Saved Folders

Position to save date . .

Type options, press Enter.
  4=Remove   5=Display   6=Work with media   7=Restore folder
  9=Work with saved objects

Opt  Folder                Save      Save      DLO      Not      Volume
     Folder                Date      Time      Saved    Saved
-----
_   QADTSCS                11/02/99  0:25:00   4        0    ICC001
_   QADTSCS/MRI2924        11/02/99  0:25:00  53        0    ICC001
_   QADTSCS/MRI2924/BIN    11/02/99  0:25:00   0        0    ICC001
_   QADTSCS/MRI2924/DLL    11/02/99  0:25:00  16        0    ICC001
_   QADTSCS/MRI2924/HLP    11/02/99  0:25:00  27        0    ICC001
_   QADTSCS/MRM            11/02/99  0:25:00 112        0    ICC001
_   QADTSCS/MRM/BIN        11/02/99  0:25:00  33        0    ICC001
_   QADTSCS/MRM/DLL        11/02/99  0:25:00 118        0    ICC001
  
```

You can transfer to the Work with Saved Objects display by selecting option 9 (Work with Saved Objects) for any folder name listed on the Work with Saved Folders display.

Work with Saved Objects							
Position to object . . . _____							
Type Options, press Enter.							
4=Remove 5=Display 6=Work with media 7=Restore object							
9=Work with saved members							
Opt	Object	Library	Type	Save Date	Save Time	Volume	Message ID
-	QHSTPRT	QDOC	*DOC	9/28/99	21:15:02	*SAVF	
-	QINDUSR	QDOC	*DOC	9/28/99	21:15:09	*SAVF	
-	QPROFDOC	QDOC	*DOC	9/28/99	21:16:14	*SAVF	
-	QPROFNOT	QDOC	*DOC	9/28/99	21:16:45	*SAVF	

Using the WRKSPLFTRK Command

You use the Work with Saved Spooled Files using TRAC/400 (WRKSPLFTRK) command to create a report or display of saved spooled files, based on spooled file names, output queue, library, date ranges, and sequences that you specify. You can specify the command on a command line or select Option 8 (Work with saved spooled files) from the Perform Recovery (TRKRCYOPT) menu.

Work with Saved Spooled Files (WRKSPLFTRK)			
Type choices, press Enter.			
Output queue	*ALL	Name,	*ALL
Library	*ALL	Name,	*ALL
File	*ALL	Name,	*ALL
Job name	*ALL	Name,	*ALL
User	*ALL	Name,	*ALL
User data.	*ALL	Name,	*ALL
Select dates:			
From date	*BEGIN	Date,	*CURRENT, *BEGIN, nnnnn
To date	*END	Date,	*CURRENT, *END, nnnnn
Save status	*ALL	*ALL,	*NOERROR, *ERROR
Sequence option	*DATE	*DATE,	*JOB, *FILE
From system	*LCL		
Output	*	*,	*PRINT

Work with Saved Spooled Files command

The Work with Saved Spooled Files display provides a listing of saved spooled files based on the values you specified on the WRKSPLFTRK command display. You use the Work with Saved Spooled Files display to remove folder information from the media content information, display save information, or restore saved spooled files. Additionally, you can work with media (Option 6) that contains the selected saved spooled files.

Work with Saved Spooled Files							
Position to date . . . _____							
Type Options, press Enter.							
4=Remove 5=Display 6=Work with media 7=Restore spooled file							
Opt	Library	Outq	File	Job	User	Date	Time
6	QUSRSYS	QPRINT	QSYSPRT	PAY	USER1	2/28/99	9:43:32
-	QUSRSYS	QPRINT	QSYSPRT	AR	USER1	2/28/99	9:48:44
-	QUSRSYS	QPRINT	QSYSPRT	AP	USER2	2/28/99	9:49:16
-	QUSRSYS	QEZJOBLOG	QPJOBLOG	DSP07	USER2	2/28/99	20:43:17
-	QUSRSYS	QEZJOBLOG	QPJOBLOG	WRKCNTRK	PSFB	3/01/99	7:01:47

Using the WRKLNKTRK Command

You use the Work with Link Information (WRKLNKTRK) command to work with all, or selected integrated file system object link information. You are taken to the Work with Link Information display where you can work with detailed integrated file system object link information, or remove integrated file system object link information. You can specify the command on a command line or select Option 9 (Work with saved link information) from the Perform Recovery (TRKRCHOPT) menu.

Work with Link Information (WRKLNKTRK)			
Type choices, press Enter.			
Directory	'*'		
Select dates:			
From date	*BEGIN	Date, *CURRENT, *BEGIN, nnnnn	
To date	*END	Date, *CURRENT, *END, nnnnn	
From system	*LCL		
Output	*	*, *PRINT	

Work with Link Information Command

From the Work with Link Information display you can select Option 9 (Work with directory information) to go to the Work with Directory Information display. From this display you can restore directory information by using Option 7 (Restore).

```

Work with Link Information
04/19/99 16:00:53
Type options, press Enter.
4=Remove 9=Work with directory information

Opt  Directory
-    /
-    /home
-    /home/RESTDIR
-    /home/RESTDIR
9    /home/RESTDIR/level1
-    /home/RESTDIR/level1/level2
-    /home/RESTDIR/level1/level2/level3
-    /home/RESTDIR/level1/level2/level3/level4
-    /home/RESTDIR/level1/level2/level3/level4/level5
-    /home/RESTDIR/level1/level2/level3/level4/level5/level6
-    /home/RESTDIR/level1/level2/level3/level4/level5/level6 >
-    /home/RESTDIR/level1/level2/level3/level4/level5/level6 >

More...

```

Work with Link Information Display

```

Work with Directory Information
04/19/99 16:08:00
Directory . . . . : /home/RESTDIR/level1
Type options, press Enter.
4=Remove 5=Display 7=Restore 9=Work with objects

Opt  Date      Time      Save      Volume      Expiration  Objects      Not
     Saved     Saved     Type      Serial      Date        Saved        Saved
7    03/14/99  12:59:54 *FULL    ICC001      12/20/99    1            0

```

Restoring integrated file system directory information

If you want to restore object information, you can select Option 9 (Work with objects) from the Work with Directory Information display. From this display you can restore a selected integrated file system object by using Option 7 (Restore) and pressing Enter. You are taken to the Restore Object (RST) command where you can further change your restore request prior to processing the RST command.

```

Work with Directory Information
04/19/99 16:08:00
Directory . . . . : /home/RESTDIR/level1
Type options, press Enter.
4=Remove 5=Display 7=Restore 9=Work with objects

Opt  Date      Time      Save      Volume      Expiration  Objects      Not
     Saved     Saved     Type      Serial      Date        Saved        Saved
9    03/14/99  12:59:54 *FULL    ICC001      12/20/99    1            0

```

```

Work with Objects
04/19/99 16:54:17
Directory . . . . : /home/RESTDIR/level1
Saved date/time . : 03/14/99 12:59:54

Type options, press Enter.
4=Remove 5=Display 7=Restore

Opt      Object      Volume      Size
7        level2      SMC998     28672

```

Restoring integrated file system object information

Displaying the Recovery Process

When you submit the Start Recovery using TRAC/400 (STRRCYTRK) command for any of the specified recoveries such as backup sets, library, ASP, etc., the Display Recovery Items display is shown so you can observe the progress of the recovery. This display is a dynamic display that changes as items are recovered, as well as calculating statistical information, such as remaining items, remaining objects and remaining size. The following display illustrates the Display Recovery Items display.

```

Display Recovery Items
14:43:58
Remaining items . . . . . :          4
Remaining objects . . . . . :          6
Remaining size . . . . . :    798.72 M    43.2 %

Library      Date      Time      Backup  Volume  Expiration  Objects  Not
              Date      Time      Type    Serial   Date        Saved    Saved
BYTEST1      8/19/99 14:31:34 *FULL  *SAVF   9/23/99     2        0
BYTEST2      8/19/99 14:32:07 *FULL  *SAVF   9/23/99     2        0
BYTEST1      8/19/99 14:36:56 *CUML  *SAVF   9/23/99     1        0
BYTEST2      8/19/99 14:37:18 *CUML  *SAVF   9/23/99     1        0

```

Display Recovery Items display monitoring the recovery process

Displaying the TRAC/400 Log for Recovery

The TRAC/400 log captures detail information about transactions that occur during TRAC/400 processing. Information is kept in the log by transaction type such as recovery (*RCY), backup (*BKU) and so on. When you select Option 3 (Display log) from the Recovery menu, you are taken to the Display Log for TRAC/400 (DSPLOGTRK) command. The TYPE parameter defaults to *RCY, so that only recovery transactions are displayed. If you want to select other types of transactions, you can enter the DSPLOGTRK command on a command line and specify the type of transaction that you want to review in the TYPE parameter.

TRKRKY

Recovery

Select one of the following:

1. Recovery planning
2. Perform recovery
- > 3. Display log

Display Log for TRAC/400 (DSPLOGTRK)

Type choices, press Enter.

```
Type . . . . . > *RCY          *ALL, *BKU, *MED, *MAINT...
Time period for log output:
  Start time and date:
  Beginning time . . . . . *AVAIL      Time, *AVAIL
  Beginning date . . . . . *CURRENT    Date, *CURRENT, *BEGIN
  End time and date:
  Ending time . . . . . *AVAIL        Time, *AVAIL
  Ending date . . . . . *CURRENT      Date, *CURRENT, *BEGIN
Severity . . . . . 00              00-99
Output . . . . . *                  *, *PRINT
```

*Display Log for TRAC/400with *RCY option*

Chapter 7: Scheduling Operations and Policy Administration

TRAC/400 has provisions for automatic scheduling of operations using the AS/400 job scheduler, IBM Advanced Job Scheduler for AS/400 (JS for AS/400), or other scheduling products. Special values allow an easy interface for insertion of backup, recovery, and media activities directly into the AS/400 job scheduler or JS for AS/400. Other parameters allow you to enter command information from other schedulers to facilitate the use of these products.

Automatic Job Scheduling

TRAC/400 is designed with an interface to the AS/400 job scheduler that permits you to easily set up TRAC/400 jobs for automatic processing. If you have purchased and installed IBM Advanced Job Scheduler for AS/400, a similar interface is available.

For more information about how to use the JS for AS/400 job scheduler, refer to the IBM Advanced Job Scheduler for AS/400 book.

Other job schedulers can be used by entering the appropriate TRAC/400 commands in the job scheduler to initiate operations. See Appendix A for information on available TRAC/400 commands and their text descriptions.

Scheduling Commands

If you do not want to use the menu interface (TRKPCY menu) to add, change or work with scheduled TRAC/400 jobs in a job scheduler, there are commands available to allow you to perform these functions. There is a command set for the AS/400, job scheduler, IBM Advanced Job Scheduler for AS/400 or another scheduler that you may select to use.

The commands for add, change and work with jobs for each of the IBM schedulers are:

AS/400 Job Scheduler

- ADDJOBSCDE - Add Job Schedule Entry
- CHGJOBSCDE - Change Job Schedule Entry
- WRKJOBSCDE - Work with Job Schedule Entry

IBM Advanced Job Scheduler for AS/400

- ADDJOBJS - Add Job using Advanced Job Scheduler
- CHGJOBJS - Change Job using Advanced Job Scheduler
- WRKJOBJS - Work with Jobs using JS

This is not meant to be a complete command set. Refer to the respective product command reference guide for a full set of commands.

Adding a Job to the Job Scheduler

Add Job Schedule Entry (ADDJOBSCDE) command. The ADDJOBSCDE command can be reached by typing the command on command line, or from the TRAC/400 main menu option 10 (Policy administration). Assuming that you are using the AS/400 job scheduler, you would add a scheduled job as follows:

```

TRAC/400                                TRAC/400 Main Menu

Select one of the following:

    1. Media management
    2. Backup
    3. Recovery

-->10. Policy administration
    11. Operational menu
    12. Reports

```

```

TRKPCY                                    Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log

Scheduling
-->10. Add TRAC/400 job to scheduler
    11. Work with TRAC/400 scheduled jobs
    12. Work with all scheduled jobs
    13. Change job scheduler

```

```

                                Start Backup using TRAC/400 (STRBKUTRK)

Type choices, press Enter.

Set . . . . . SYSTEM, TEST1, USER...
Procedure . . . . . *NONE, SAVF, TAPMLB01...
Retrieve Size . . . . . *NO *YES, *NO
Schedule time . . . . . *IMMED hhmm, *IMMED
Submit to batch . . . . . > *NO *CONSOLE, *YES, *NO

```

Adding Scheduled Jobs

When adding jobs to the IBM scheduler you are first prompted with the STRBKUTRK command to select the set and procedure to run. Pressing enter will cause the ADDJOBSCDE command to be displayed with the TRAC400/command-string in the Command to run field. When typing the command-string, you can press F4 (Prompt) to display a prompt display for the command. You can type the respective job name of the task in the Job name field and other information.

```

                                Add Job Schedule Entry (ADDJOBSCDE)

Type choices, press Enter.

Job name . . . . . > TRACBKUP          Name, *JOBID
Command to run . . . . . > STRBKUTRK SET (USER) PROCEDURE (TAPMLB01)
SBMJOB (*NO) _____

Frequency . . . . . > *WEEKLY          *ONCE, *WEEKLY, *MONTHLY
Schedule date, or . . . . . > *NONE      Date, *CURRENT,
*MONTHSTR...
Schedule day . . . . . > *ALL           *NONE, *ALL, *MON, *TUE...
      + for more values
Schedule time . . . . . > '00:01'      Time, *CURRENT

                                Additional Parameters

Text 'description' . . . . . > 'Entry created for TRAC/400 job.' _____

```

Adding the Backup set to the AS/400 Job Scheduler

Keeping Job Log Information

The AS/400 job scheduler has a facility with which you can work with the last submission details of scheduled jobs. This will allow you to display the job log. The job log may contain useful information regarding TRAC/400 jobs that you have scheduled.

When submitting jobs using the job scheduler, the default job description for the user profile (*USRPRF) is used. In most cases, the interactive job description is set such that the job log is not kept after the job has ended. This prevents you from viewing the job log for scheduled jobs using the work with last submission option.

If you require the job log information for scheduled jobs, you need to specify a different job description that contains LOG(4 00 *SECLVL). To specify this new job description, press F10 (Additional parameters) on the Add Job Schedule Entry (ADDJOBSCDE) command display and type the job description at the JOBID parameter.

For scheduled jobs that will only be submitted once, you should also use the SAVE(*YES) keyword. This will ensure that submission details are available if you need to check at a later stage.

If you are using JS for AS/400, change the job description to LOG(4 00 *SECLVL).

Scheduling Recovery

The Start Recovery using TRAC/400 (STRRCYTRK) command can not be run from the job scheduler with the *RESTORE keyword, since this generates an interactive display for the user to select items to recover. STRRCYTRK with the *REPORT keyword *can* be submitted to the scheduler as it requires no further user input.

Working with Scheduled TRAC/400 Jobs

Scheduled backup, media management, and maintenance jobs are quickly accessed from the TRAC/400 main menu option 10 (Policy administration). Assuming that you are using the AS/400 job scheduler, you would work with scheduled jobs as follows:

```

TRAC/400                                TRAC/400 Main Menu

Select one of the following:

    1. Media management
    2. Backup
    3. Recovery

-->10. Policy administration
    11. Operational menu
    12. Reports
    
```

```

TRKPCY                                    Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log

Scheduling
  10. Add TRAC/400 job to scheduler
-->11. Work with TRAC/400 scheduled jobs
  12. Work with all scheduled jobs
  13. Change job scheduler
    
```

```

                                Work with TRAC/400 Job Schedule Entries

Type options, press Enter.
  2=Change  3=Hold  4=Remove  5=Work with  6=Release

Opt  Job          Status  Date      Time      Frequency  Recovery  Submit
-----Schedule-----
_    TRACBKU      SCD    *ALL     0:01:00  *WEEKLY   *SBMRLS   2/06/99
_    TRACBKU      SCD    *NONE    0:01:00  *MONTHLY  *SBMRLS   3/31/99
    
```

Working with Scheduled Jobs

The Change Job Scheduler (CHGSCDTRK) command is used to change the job scheduler that TRAC/400 uses to schedule backup set and command processing. Assuming that you are using the default (*SYSTEM) job scheduler, which is the AS/400 job scheduler, you can use the defaults provided by TRAC/400, as shown below. You can specify whether to prompt the add, change or select command. To get to the CHGSCDTRK command, you can use the menu interface or type the command on any command line.

```

TRKPCY                                Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log

Scheduling
    10. Add TRAC/400 job to scheduler
    11. Work with TRAC/400 scheduled jobs
    12. Work with all scheduled jobs
-->13. Change job scheduler

```

```

                                Change Job Scheduler (CHGSCDTRK)

Type choices, press Enter.

Scheduler type . . . . . *USRDFN    *SYSTEM, *IJS, *USRDFN
Add a job command . . . . . *SYSTEM

-----

Command prompt for add . . . . . *NO          *NO, *YES
List jobs command . . . . . *SYSTEM

-----

Command prompt for list. . . . . *NO          *NO, *YES
Select jobs command . . . . . *SYSTEM

-----

Command prompt for select . . . *NO          *NO, *YES

```

Change Job Scheduler Command

Several of the prompts require further definition:

- **Scheduler type:** The default value for scheduler type is *SYSTEM, which is the standard AS/400 job scheduler. For any other scheduler, or if you want to change any of the commands, you should specify *USRDFN.
- **Add job command:** You can change the command used to add a scheduled item to the job scheduler. The add command that you have changed is used when TRAC/400 interfaces with the add function of the scheduler.
- **List jobs command:** You can change the command used to list jobs that are scheduled in the job scheduler. The list command that you have changed is used when TRAC/400 interfaces with the list function of the scheduler. For instance, if you are in the Policy Administration menu and you want to list all jobs in the job scheduler, you type menu Option 10 (Work with all TRAC/400 scheduled jobs) and press Enter. If you are using the default values supplied with TRAC/400, you are taken to the WRKJOBSCDE command used by the AS/400 scheduler. If you are using JS for AS/400, you are taken to the WRKJOBJS command, and if you have changed the list function using the **List jobs command** parameter, you are taken to the list command that you specified.

- Select jobs command:** You can change the command used to select jobs from the job scheduler. The select command that you have changed is used when TRAC/400 interfaces with the select function of the scheduler. For instance, if you are in the Policy Administration menu and you want to select all TRAC/400 jobs in the job scheduler, you type menu Option 10 (Work with all TRAC/400 scheduled jobs) and press Enter. If you are using the default values supplied with TRAC/400, you are taken to the Work with TRAC/400 Job Schedule Entries display. If you have changed the select function using the **Select jobs command** parameter, you are taken to the select display that you specified.

Selecting IBM Job Scheduler for AS/400

The Change Job Scheduler (CHGSCDTRK) command can be used to change the job scheduler that TRAC/400 uses. If you have JS for AS/400 installed on your system, you can select JS for AS/400 by using the *IJS special value in the TYPE parameter. If you do not want to change any of the commands or command prompting, TRAC/400 will use the JS for AS/400 commands. For instance, if you want to review scheduled TRAC/400 jobs and you are using JS for AS/400 you would get the following display:

```

TRKPCY                               Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log

Scheduling
  10. Add TRAC/400 job to scheduler
-->11. Work with TRAC/400 scheduled jobs
  12. Work with all scheduled jobs
  13. Change job scheduler
  
```

```

                               Work with Jobs
                                                    2/05/99 1:06:03
Position to . . . . . _____ Starting characters

Type options, press Enter.
  1=Add    2=Change    3=Hold    4=Remove    5=Display    6=Release/Reset
  7=Submit immediately 8=Change command list 9=Change job LDA ...

   Job          Group      Grp
Opt Name        Name       Seq   Status   Application Text
_  DAILYBKUP    *NONE      0    *READY   TRAC400      Daily backup
  
```

Working with Jobs using JS for AS/400

Substitution Variables

There are four substitution variables that can be specified in any of the command strings used on the parameters to the CHGSCDTRK command as described above. TRAC/400 passes information to these four substitution variables depending on what TRAC/400 function is being used. The four variables are:

- **&JOBNAME** - A TRAC/400 identifier assigned to every job: TRACBKUP.
- **&REQUEST** - The full TRAC/400 command to be submitted to the scheduler; STRBKUTRK with parameters (if applicable).
- **&APPL** - Always contains "TRAC/400". This can be used to assist a non-IBM scheduler locate jobs by an application code if they support this function.
- **&GROUP** - Backup set name (if applicable).

Not all variables are applicable in each case. If the variable name is not relevant, an asterisk (*) is placed in the variable.

The following figures show the prompts for the Change Job Scheduler command for a user-defined job scheduler.

Change Job Scheduler (CHGSCDTRK)	
Type choices, press Enter.	
Scheduler type	*USRDFN *SYSTEM, *IJS, *USRDFN
Add a job command	'ADDJOB JOB(&JOBNAME) APP(&APPL)
SCDCDE(*DAILY) TIME(2300) CMD(&REQUEST) '	_____
Command prompt for add	*YES *NO, *YES
List jobs command	'WRKJOB'
Command prompt for list.	*NO *NO, *YES
Select jobs command	'WRKJOB APP(&APPL)'
Command prompt for select	*NO *NO, *YES

Change Job Scheduler Command with Control Language Prompts

Note: You should not mix the use of both the AS/400 job scheduler and a vendor scheduler for TRAC/400. Although there is no technical reason not to do so, you will have better control if all scheduling is using one interface.

System Policy

A policy is another name for a set of defaults that are used throughout TRAC/400. Normally, the default values for the policy are used, but there can be situations when you need to modify these values.

System Policy Defaults

To display or change the system policy defaults, select Option 1 (Change system policy) from the Policy Administration menu. You will be taken to the Change System Policy display.

```

TRKPCY                               Policy Administration

Select one of the following:

-->1. Change system policy
   2. Work with sign off exceptions
   3. Work with subsystems to check before IPL
   4. Work with network group
   5. Display log

Scheduling
10. Add TRAC/400 job to scheduler
11. Work with TRAC/400 scheduled jobs
12. Work with all scheduled jobs
13. Change job scheduler
    
```

```

                                Change System Policy

Type choices, press Enter.

Output queue . . . . . *PRTF           Name, *PRTF
  Library . . . . .                               Name, *LIBL
Day start time . . . . . 0:00:00         Time
Media monitor . . . . . *YES            *YES, *NO
Auto enroll media . . . . . *NO         *NO, *YES
Message queue for notification . . . . . QSYSOPR      Name
  Library . . . . .                               Name, *LIBL
Message severity for notification . . . . . 40        00-99
Inquiry message reply . . . . . *DFT     *RQD, *DFT, *SYSRPYL
Earliest time to allow an IPL . . . . . 0:01        HHMM
Latest time to allow an IPL . . . . . 7:00        HHMM
Trace . . . . . *YES                    *NO, *YES
Character for full backup . . . . . F         Character
Character for incremental backup . . . . . I     Character
Character for general activity . . . . . *      Character
First day of the week . . . . . SUN         SUN, MON, TUE...
    
```

Change System Policy display

A description of the various parameters follows:

- **Output queue and library**
You can specify the default output queue and its associated library that you want to use for printed information generated as a result of TRAC/400 processing.
- **Day start time**

The day start time parameter allows you to set the time of day that TRAC/400 will use as the start of a new day. The default is 0:00:00, which is midnight. If the recording time is equal to or less than the day start time (in this case 0:00:00), 1 will be subtracted from the current date.

Day start time is used to determine the creation date assigned to media. The time that media is recorded is compared to the day start time. If the recording time is less than the day start time, 1 is subtracted from the current date and the resulting date is assigned to the media as the creation date. If the recording time is greater than creation date, the current date is assigned to the media as the creation date. For example, if the day start time is 8:00:00 and the media is recorded at 6:39:00, the creation date assigned to the media is calculated as the current date minus 1.

- **Media Monitor**

The TRAC/400 media monitor notifies TRAC/400 of any media activity on the system and will prevent actions such as writing over a volume that is an active TRAC/400 volume. There can be instances where you want to stop the monitor from performing this function. If this is the case, specify *NO. The default value is *YES.

- **Auto Enroll Media**

Specifies whether TRAC/400 should automatically add media used in output operations to the media inventory if the request has been done using media with a density defined to TRAC/400 but not previously added to the TRAC/400 media inventory. The default value is *NO, which indicates that you do not want to automatically add media to the media inventory.

- **Message Queue for Notification**

Specifies the name of the message queue on which you want to receive TRAC/400 messages. The message queue receives messages that equal or exceed a user-defined severity level. All other messages go to the TRAC/400 log.

- **Message Severity for Notification**

Specifies the message severity number that indicates which TRAC/400 messages should go to the TRAC/400 message queue. For instance, if the message severity for notification level is 40, all messages that equal or exceed severity level 40 go to the TRAC/400 message queue. All messages that have a severity level less than 40 go to the TRAC/400 log.

- **Inquiry Message Reply**

Specifies the way that predefined messages that are sent as a result of running TRAC/400 jobs are answered. You can specify that no change is made in the way that predefined messages are answered, or that all inquiry messages require a reply or that a default reply is issued, or that the system reply list is checked for a matching reply as each predefined inquiry message is sent.

- **Earliest Time to Allow an IPL**

Specifies the earliest time that an IPL may be started by TRAC/400. The earliest time to allow an IPL is the starting time in a range of times that are permitted for IPL. If a time is not in the time range defined by the earliest and latest time to allow an IPL, TRAC/400 does not perform an IPL. The earliest time to allow an IPL is expressed in 24-hour clock format, hour, minute (HHMM).

- **Latest Time to Allow an IPL**

Specifies the latest time that an IPL may be started by TRAC/400. The latest time to allow an IPL is the ending time in a range of times that are permitted for IPL. If a time is not in the time range defined by the earliest and latest time to allow an IPL, TRAC/400 does not perform an IPL. The latest time to allow an IPL is expressed in 24-hour clock format, hour, minute (HHMM).

- **Trace**

Specifies whether TRAC/400 should record information that will help your technical support representative diagnose problems.

Note: Because this function can create a large file of TRAC/400 information, you should use the default value of *NO unless instructed otherwise by your technical support representative.

- **Character for full backup**

Specifies the single character that is to be used to represent full backups. The character is used in the weekly activity field to show which days of the week you want to process a full backup. For instance, a weekly activity pattern of F__F_ would show that (assuming Sunday is the first day of the week) full backups occur on Sunday and Friday. This value cannot be changed anywhere else in TRAC/400.

- **Character for incremental backup**

Specifies the single character that is to be used to represent incremental backups. The character is used in the weekly activity field to show which days of the week you want to process an incremental back up. For instance, a weekly pattern of `_IIIF_` would show that (assuming Sunday is the first day of the week) incremental backups occur on Monday through Thursday and a full backup occurs on Friday. This value cannot be changed anywhere else in TRAC/400.

- **Character for general activity**

Specifies the single character that is to be used to represent general activities. General activities include `*EXIT` and `*LOAD` special operations. The character is used in the weekly activity field to show which days of the week you want to perform a general activity. For instance, a weekly pattern of `_*****_` shows that (assuming Sunday is the first day of the week) a `*LOAD` is processed for backups that occur Monday through Friday. This value can not be changed anywhere else in TRAC/400.

- **First day of week**

Specifies the first day of the week to be used with the weekly activity field in either backup set. Any day from Sunday to Saturday can be the first day of the week. The default is Sunday.

Working with Sign-Off Exceptions

In the backup procedures, you can specify whether to sign off interactive users when processing a backup set. There can be users or devices that you do not want to sign off during backups.

The Work with Sign Off Exceptions display is used to add or remove users or devices from a list of display stations or users that are excluded from being automatically signed off during TRAC/400 processing, such as the console or security officer.

To go to the Work with Sign off Exceptions display, select Option 2 (Work with sign off exceptions) from the Policy Administration (TRKPCY) menu.

```
TRKPCY                               Policy Administration

Select one of the following:

    1. Change system policy
-->2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log
Scheduling
    10. Add TRAC/400 job to scheduler
    11. Work with TRAC/400 scheduled jobs
    12. Work with all scheduled jobs
    13. Change job scheduler
```

```
                               Work with Sign off Exceptions

Type options, press Enter.
    1=Add    4=Remove

Opt  User ID or Device
--  _____
--  DSP01
--  QSECOFR
--  QSYSOPR
```

Work with Sign Off Exceptions Display

Checking Subsystems Before an IPL

There are situations where you want to be sure that a specific subsystem or subsystems are not active when you begin an IPL. You can specify these subsystems in the system policy.

The Work with Subsystems to Check display is used to add or remove subsystems from a list of subsystems to check before starting the system through an IPL. If any of the subsystems in the list are active when an IPL is scheduled to begin, the IPL is omitted for that process.

To go to the Work with Subsystems to Check Before IPL display, select Option 3 (Work with subsystems to check before IPL) from the Policy Administration (TRKPCY) menu.

```
TRKPCY                                Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
-->3. Work with subsystems to check before IPL
    4. Work with network group
    5. Display log

Scheduling
    10. Add TRAC/400 job to scheduler
    11. Work with TRAC/400 scheduled jobs
    12. Work with all scheduled jobs
    13. Change job scheduler
```

```
                                Work with Subsystems to Check before IPL

Type options, press Enter.
    1=Add    4=Remove

Opt  Subsystem      Library
  _  _____    _____
  _  QBATCH        *LIBL
```

Work with Subsystems to Check Before IPL

Network Groups

By grouping multiple AS/400 systems in a TRAC/400 network group, you are able to share TRAC/400 media and storage location information across the network group. This allows you to manage the backup of all your AS/400 systems in a consistent manner, as well as optimizing the use of your media and preventing other systems from overwriting media used by other systems.

Each AS/400 system that is a member of a network group receives updates to the media inventory, regardless of which network member makes the change. So if you have a network of four AS/400 systems (SYSTEM01, SYSTEM02, SYSTEM03, SYSTEM04), and you add a media volume (A001) on SYSTEM01, the information about this new volume is propagated on all other systems. Information shared between systems in the shared media inventory environment includes:

- Media inventory

- Network group
- Storage location

NOTE: You are allowed a maximum of 6 AS/400s in your network group.

Network Communication for TRAC/400

TRAC/400 uses Distributed Data Management (DDM) for its networking support. Your system configuration must allow DDM to support TRAC/400. As of release V4R4M0 of the operating system, DDM supports address types of Systems Network Architecture (SNA) and Internet Protocol (IP). TRAC/400 supports both connection types. To verify DDM, run the CRTDDMF command:

```
CRTDDMF FILE(QTEMP/DDMTEST) RMTFILE(TRAC400/TRKAHS) RMTLOCNAME(TARGETSYS)
```

where *TARGETSYS* is the remote location name of your remote system or CRTDDMF

```
FILE(QTEMP/DDMTEST) RMTFILE(TRAC400/TRKAHS) RMTLOCNAME(target.system.address
```

*IP) where *target.system.address* is the IP address of the remote system. Use the DSPPFM command DSPPFM FILE(QTEMP/DDMTEST) to test if the connection has been made.

For additional information about DDM, refer to the IBM manuals.

As with many communication products, TRAC/400 also uses the default local location name LCLLOCNAME and not the system name SYSNAME. In most cases, the AS/400 systems have the same value specified in the LCLLOCNAME as in the SYSNAME. TRAC/400 also uses the local network identifier LCLNETID. Other network attributes have no effect on TRAC/400. These network values are defined in the network attributes and can be changed using the Change Network Attribute (CHGNETA) command. You can display the values using the Display Network Attribute (DSPNETA) command.

NOTE: All references to system name assume that the system name and local location name are the same and are used interchangeably in the help information. If they are not the same, use the local location name instead of the system name. You can review the setting for the system name and default location name by using the DSPNETA command from any command.

Adding Systems to Network Group

Setting up the TRAC/400 network group is simple as long as you **follow the steps listed below**. Although the steps are fairly easy, you should take every precaution to ensure that proper planning has taken place and that you fully understand the implications of adding and removing systems from the TRAC/400 network.

Some of the planning considerations that you should be aware of are:

- We recommend that you have a **full backup of the TRAC400 library** on all of your AS/400 systems that you plan to put in the network group. The TRAC/400 network setup modifies some critical files in library TRAC400. You may have to restore TRAC400 libraries to their original state if errors occur.
- We recommend that there is no TRAC/400 activity on the systems that you are planning to network within the network group. To verify there is no activity, select Work with network group from the Policy Administration menu and press **F8 = Display Status** on the Change Network Group display. Journal and synchronization entries pending should ***NO** prior to starting the network connection.
- If you already have TRAC/400 operational on individual systems, ensure that the operation is error free and that there are no outstanding issues with the normal operations.
- If you have a 3494 media library device attached to multiple AS/400 systems in a TRAC/400 network, we recommend that you have the library names the same across all of the AS/400 systems.
- The system being added cannot already be a member of the network group.
- Duplicate volume Ids must be resolved before adding a new system to the network group. Duplicate volume names are **not** allowed with a shared media inventory.

The following is an example of adding a system, SYSTEMB, to TRAC/400. In this example, SYSTEMA is the master system.

1. Save library TRAC400 on SYSTEMA.

2. Save library TRAC400 on SYSTEMB.
3. Ensure that the communications link on SYSTEMA for SYSTEMB is active. Use WRKCFGSTS command to determine status for line, controller, and device description.
4. Ensure that the communications link on SYSTEMB for SYSTEMA is active. Use WRKCFGSTS command to determine status for line, controller, and device description.
5. Ensure that there is no TRAC/400 activity on SYSTEMA. Press **F8=Display Status** on the Change Network Group display.
6. Ensure that there is no TRAC/400 activity on SYSTEMB. Press **F8=Display Status** on the Change Network Group display.
7. To add the new system to the network group, on SYSTEMB enter the following on a command line:
 For a SNA connection:
INZTRK OPTION(*NETSYS) FROMSYS (SYSTEMA)
 For an IP connection:
INZTRK OPTION(*NETSYS) FROMSYS (SYSTEMA) TYPE (*IP)
IP ('target.system.address')

The INZTRK command merges network files from the FROMSYS system in the network with the system that you are adding. The INZTRK command also:

- Validates FROMSYS name
- Makes sure the current system is not in a network
- Verifies that the maximum number of 6 systems in the network is not exceeded
- Checks for duplicate volume lds
- Merges files
- Starts the TRACNET subsystem
- Updates records so synchronization will pass to other systems

Removing a System from the Network

Use the following steps to remove the systems from the network:

1. On the system being removed from the network group, select option 4 (Remove) for all network entries on the Change Network Group display. This removes all entries from the network group table on the system that you are removing from the network group. When selecting option 4 (Remove), you are transferred to the Confirm Remove of Network Systems display. On this display you can remove media entries from this system's media inventory for media belonging to the other systems in the network group. By selecting the value ***YES** for the Remove media information field, you will remove all media entries from this system's media inventory belonging to all systems being removed. If you select ***NO**, you do not remove any media entries from the systems that you are removing. If you select ***RENAME**, you will rename the system name for the media owned by the system to the system name of the system you are on.
2. On any system that remains in the network group, select option 4 (Remove) to remove the system name from the network group on the Change Network Group display. This removes the system name from all systems that remain in the network group. When selecting option 4 (Remove), you are transferred to the Confirm Remove of Network Systems display where you can remove the system.

Changing the System Name

Renaming a system is not a task that is undertaken lightly. Many definitions may depend on the system name, not the least of which are PC networking definitions and the system directory. You must consult your network support personnel to resolve issues related to configuration objects. Implied in a system name change is a default local location, LCLLOCNAME, name change and, hence, a change for TRAC/400. When this happens, TRAC/400 needs to do the following:

- Update the network to remove the old system name and add the new system name.

The Network Group display shows the remote systems that are contained in your network group, as well as information about each system. A network group is a group of networked systems that share a centralized media inventory with each other. Each system that is a member of a network group receives additions, changes and removals from the media inventory, regardless of which network member makes the change. From this display, you can also remove a remote location from your network group.

To add a system to the network group, you must issue the INZTRK command on the AS/400 you are adding. Please refer to the section regarding **Adding Systems to a Network Group**.

Some important fields on the Network Group display include the following:

- **Receive media information:** Every AS/400 system in a TRAC/400 network group receives media inventory updates. In addition, you can specify whether media content information will be received by the current system from other systems in the network group. Media content is the information that can be viewed with the Work with Media Information (WRKMEDITRK) command. You can specify whether media content information is shared with the current system or you can specify that the current system is not to receive any media content information from other systems in the network group. ***NO** indicates that media content information will not be sent to the current system. ***YES** indicates that media content information will be sent to the current system. You can change the Receive media information field at any time, and depending on the number of media information records you have, the synchronization process may take a long time.
Note: We recommend that you do not change the Receive media information field frequently. A change to the Receive Media Information does not take effect until you exit the Change Network Group display.
- **Preferred connection type:** *SNA specifies that this system will only communicate using Systems Network Architecture (SNA). *IP specifies that this system would prefer to use Internet Protocol (IP) for communications, but if the remote systems preferred method is *SNA then SNA will be used to create the DDM connection.
- **IP Address:** This field is only viewable if the preferred connection type is *IP. This field should contain the address of the current system. The address can be specified using the internet address or the host and domain name with a maximum of 254 characters.
- **Remote local location name:** The system location name of the system in the network group is displayed. All references to system name assume that the system name and the location name are the same. If they are not the same, use the location name instead of the system name.
- **Remote network ID:** Specifies the identifier (ID) of the remote network in which the remote location resides. That ID is used to communicate with the remote (target) system.
- **Receive media info:** Specifies whether the system is to receive media information from other systems in the network group. To change this value, you must go to that system name and change the value on that system. ***NO** indicates that media information will not be sent to this system, while ***YES** indicates that it will.
- **Connect type:** Specifies the communication method that will be used.

Press **F8** to display the status of the various network functions. These functions include:

- **TRACNET subsystem status:** The status of the network subsystem is displayed. A network subsystem is the subsystem that coordinates processing and resources for the network.
- **Journal receiver program status:** The status of the network job is displayed. A network job is a batch input stream sent by one user to one or more users in the network.
- **TRACNET job queue status:** The status of the network job queue is displayed. The network job queue is an object that contains a list of batch jobs waiting to be processed by a system on the network. **Held** specifies that the job queue is held, while **Released** specifies that the job queue is released.
- **Journal entries pending:** Specifies whether all of the journal entries have been processed and added to the synchronization file.
- **Synchronization entries pending:** Specifies if records are waiting for synchronization to other systems in the network.

Displaying the TRAC/400 Log

TRAC/400 keeps a detailed log of all activity that occurs during TRAC/400 processing. The TRAC/400 log is a display by date and time of messages that TRAC/400 has created as a result of processing. The DSPLOGTRK command allows you to display or print all or part of the log.

The 99DSPLOGTRK command can be used to display TRAC/400 specific history information. There is an option of specifying *OUTPUT(*PRINT)* to produce a report.

You can type the DSPLOGTRK command on any command line or you can go to the Change Presentation Controls display by selecting Option 5 (Display log) from the Policy Administration (TRKPCY) menu.

```
TRKPCY                                Policy Administration

Select one of the following:

    1. Change system policy
    2. Work with sign off exceptions
    3. Work with subsystems to check before IPL
    4. Work with network group
-->5. Display log

Scheduling
    10. Add TRAC/400 job to scheduler
    11. Work with TRAC/400 scheduled jobs
    12. Work with all scheduled jobs
    13. Change job scheduler
```

From the DSPLOGTRK command, you can select the type of TRAC/400 transactions that you want to display, the time period for log output, severity levels and whether the output is a display or a report.

```
                                Display Log for TRAC/400 (DSPLOGTRK)

Type choices, press Enter.

Type . . . . . *ALL      *ALL, *BKU, *MED, *MAINT...
Time period for log output:
  Start time and date:
  Beginning time . . . . . *AVAIL      Time, *AVAIL
  Beginning date . . . . . *CURRENT    Date, *CURRENT, *BEGIN
  End time and date:
  Ending time . . . . . *AVAIL      Time, *AVAIL
  Ending date . . . . . *CURRENT    Date, *CURRENT, *END
Severity . . . . . 00              00-99
Output . . . . . *                *, *PRINT
```

Once the command has been tailored to your requirements, press enter and you get the following log information.

```
6/10/99          Display TRAC/400 Log Information
8:51:26          Position to . . . . 6/10/99
```

```
Volume R00039 expired.
Begin processing for backup set USER
Interactive users are allowed to stay active.
Starting save of library BARRY to save file.
2 objects saved from library BARRY.
Starting save of TRAC/400 recovery data at level *LIB to device TAP01.
7 objects saved from library TRAC400.
Save of TRAC/400 recovery data at level *LIB complete.
Backup set USER is complete.
Starting transfer of save files to tape.
Devices TAP01 are used for save file processing.
Transfer of save files is complete.
TRAC/400 maintenance procedure started.
Volume expiration procedure expired 0 volumes to give 4 total expired volumes
Starting history record maintenance.
History record maintenance removed 35 records.
Volume error statistics collected from error log.
Library BARRYST is not included in save strategy.
Library COOK is not included in save strategy.
Save analysis indicated 2 libraries not being saved.
TRAC/400 maintenance procedure completed.
```

The Type of Information Available using DSPLOGTRK

Chapter 8: Daily Maintenance Procedures

It is important to perform maintenance and cleanup functions each day after backups are completed to remove expired records from media and media content information files. This will help control the resources (time and media) used by future saves of media information. The Start Maintenance for TRAC/400 (STRMNTTRK) command can be processed by manual job submission or set up in an automatic job scheduler.

Maintenance Functions

A variety of functions are performed during maintenance. These include:

- Remove outdated save history records - library/object level
- Expire media
- Clean up old TRAC/400 log entries
- Produce the Media Expiration report (newly expired)
- Produce the Backup Activity report
- Produce the Recovery Analysis report
- Collect and apply media usage and error statistics
- Change journal receiver (and delete old receiver)

The Start Maintenance using TRAC/400 (STRMNTTRK) command should be run every day after processing the last backup set to assure that these important maintenance functions are processed.

STRMNTTRK Command

The STRMNTTRK command processes several commands that can also be run separately. These commands and their maintenance functions include:

WRKMEDTRK	Expired media report
WRKMEDITRK	Display media information
STRRCYTRK	Recovery analysis

We recommend that you use the STRMNTTRK command with all the options in your operating environment, rather than running the individual commands. This is much easier to control than a more fragmented approach. In general, you should use the individual commands only on an ad hoc basis.

Scheduling STRMNTTRK Maintenance Processing

TRAC/400 maintenance processing can be performed using the AS/400 job scheduler, JS for AS/400, or any user selected scheduler to set up the STRMNTTRK command to run automatically at scheduled times and dates that you select. For instance, if you are using the AS/400 scheduler, you should enter the command **ADDJOBSCDE** from a command line. This will retrieve the Add Job Schedule Entry (ADDJOBSCDE) display. The **STRMNTTRK** command can be set up by typing `STRMNTTRK` on the "Command to run line" of the ADDJOBSCDE display and then prompting the command by pressing F4 to transfer to the STRMNTTRK display for parameter selection.

```

Add Job Schedule Entry (ADDJOBSCDE)

Type choices, press Enter.

Job name . . . . . _____ Name, *JOBQ
Command to run . . . . . > STRMNTTRK

```

```

Start Maintenance for TRAC/400 (STRMNTTRK)

Type choices, press Enter.

Expire media . . . . . *YES *YES, *NO
Remove media information:
  Media contents . . . . . *EXP *EXP, *REUSE, *NONE
  Object level detail . . . . *MEDCON 1-9999, *MEDCON
Remove log entries:
  Type . . . . . *ALL *ALL, *NONE, *BKU, *MED...
  From date . . . . . *BEGIN Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . 90 Date, *CURRENT, *END, nnnnn
Run cleanup operations . . . . *YES *YES, *NO
Retrieve volume statistics . . *YES *YES, *NO
Audit system media . . . . . *NETGRP
      + for more values
Change journal receivers . . . *YES *YES, *NO
Print expired media report . . *YES *YES, *NO
Print backup activity report . *YES *YES, *NO

```

```

Start Maintenance for TRAC/400 (STRMNTTRK)

Type choices, press Enter.

Print recovery reports . . . . *ALL *ALL, *NONE, *RCYANL...

```

Start Maintenance for TRAC/400command (displays 1 and 2)

- **Expire media.** This parameter specifies to expire media that is in the media content information file. When the media is expired, it can be reused in save processing. Volumes are expired when the expiration date or number of versions is exceeded.
- **Remove media information.** The values under this parameter specify what records to remove from the media content information file and how long to keep object detail.
- The **Media contents** parameter indicates when objects and their contents are to be removed from the media inventory content information file. You can remove media content information entries when they have expired (*EXP), wait to remove expired media content information entries until the associated media volumes have been reused (*REUSE), or choose to not remove expired media content information records at all (*NONE).
- The **Object level detail** parameter indicates when the object level detail is to be removed. You can remove object level detail at the same time that you remove the corresponding expired media content information records from the media content information (*MEDCON), or you can choose to remove the object level detail after it has been kept a specific number of days (fewer than the media content information will be kept). If not removed sooner, the object level detail is always removed when the associated expired media content information entries are removed.

The following is an example of how these fields work together. Media content information expires and is removed 90 days after it is created, but object level detail is to be removed 45 days after media

content information is created. On the 46th day, the contents of a library are still available for recovery, but individual object recovery is no longer available.

- **Remove Log Entries.** This parameter allows you to clear the log based on the type of entry and a date range that you specify.
- **Change TRAC/400 journal receivers.** This parameter specifies whether to change the receivers for the TRAC/400 journals. When the TRAC/400 journal receivers are changed, the old TRAC/400 journal receiver is deleted.
- **Print media expiration report.** Specifies whether to print a listing of media that was expired during this maintenance process.
- **Print backup activity report.** Specifies whether to print a listing of what was backed up. The report includes backups done on the day of the report, as well as the previous day.
- **Print recovery reports.** Specifies whether to print various reports for recovery. The reports that you can print include:
 - **Recovery Analysis.** This report outlines the steps required to restore your system and lists any backup deficiencies that you should resolve.
 - **Save Strategy Exceptions.** This report lists libraries that are not currently being backed up in any Backup Set.
 - **Recovery Activities.** This report lists all recovery activities that you have entered for your system through the TRAC/400 Recovery Planning input displays.
- **Run cleanup operations.** Specifies if TRAC/400 is to run clean-up procedures.
- **Retrieve volume statistics.** Specifies if TRAC/400 is to retrieve volume statistics.
- **Audit system media.** Specifies whether media information as contained by one or more systems in the network group should be audited and differences in media information resolved. You can enter one or more system/network identifiers, or you can select the special value *NETGRP for all systems in the network group or *NONE for none of the systems in the network group.

Note: It is advisable to send a hard copy print of these reports to an offsite storage location on a daily basis to aid in disaster recovery situations or use ICOM/400 to email a copy to your email address.

STRMNTTRK in a Backup Set

TRAC/400 maintenance can be activated as the last step of the last backup set each day. The best approach is to submit a batch job using an *EXIT in the backup set. The backup set completes and updates the media content information file and then allows the independent job to start.

This batch job should be the STRMNTTRK command. To ensure that the STRMNTTRK does not process until the backup set has completed, the batch job queue should be held for the duration of the backup set processing. This can be done through the Work with Backup Procedures display by selecting Option 10 (Job queues to process).

Notification of Failure to Process STRMNTTRK

It is important that STRMNTTRK is run regularly to assure that media is expired on time, recovery reports are printed and so on. TRAC/400 monitors the STRMNTTRK process and notifies you if you have failed to process the STRMNTTRK command in two days. This notification occurs in two ways:

1. A message is sent to the TRAC/400 log.
2. A message is sent to the message queue specified in the TRAC/400 system policy.

Chapter 9: Save Files

Save files can be used for unattended save operations (such as backups scheduled for times when an operator will not be present to mount media volumes to receive save output). These can be created in the system ASP, or in the user ASP that you specify.

Two types of save files are supported by TRAC/400. There are those created by TRAC/400 itself when backing up to a save file. There are also those that are created by users, operators or user applications in the process of saving user data. In either case, saving to save files can be faster than saving to tape and can enable you to frequently save critical data. Save files also make it possible to do unattended saves in cases where a single tape volume cannot contain the whole save and no automated tape drive is available or installed.

Libraries Containing TRAC/400 Save Files

The **ASP for save files** field in the backup procedures specifies the Auxiliary Storage Pool (ASP) number in which you want to store save files created as a result of TRAC/400 processing. Any valid ASP number is permitted for specifying the ASP used to store save files. When TRAC/400 saves to save files, libraries are created on each ASP to contain the save files to be stored there. The names for these libraries are TRACSF01 for ASP 01, TRACSF02 for ASP 02, and so on. Consequently, if saving to a user ASP it must be a library ASP rather than an independent object ASP.

You can also specify an ASP storage limit in the backup set attributes as a percent of total available ASP space. For instance, ninety percent in the **ASP storage limit** field indicates that save files can be written to the ASP until it reaches ninety percent utilization. When the limit is reached, the message queue designated in the system policy is sent a message indicating that the ASP storage limit has been exceeded and gives you the opportunity to ignore, cancel or retry. You can remedy the situation by starting the SAVSAVFTRK command which moves files from save files to tape or you can increase the ASP storage limit percent in the backup set attributes and then retry the save to save files.

Individual save file names are generated automatically by TRAC/400 based on a date/time stamp. TRAC/400 manages its own save file environment. It is not important to know the save file names or the names of the libraries in which they reside.

When a backup set containing the *IBM special value is backed up, the save file library will be included in the save. Typically, you would save these files using the SAVSAVFTRK command on the morning following an unattended save, either through manual submission or a job scheduler. They can also be quite large and, consequently, could take considerable time and media to backup. You may want to omit this library from the *IBM group using the *Work with items to Omit from Backup* display, which is Option 8 on the TRKBKU menu.

Specifying use of Save Files in Backup Procedures

Whether you want to use save files for backups is specified in the backup procedures. In the following example, the *Save to save file* field contains the special value *YES, indicating that the save is to go to save files. The save files are to be stored in ASP 01, and if the storage limit of ASP 01 exceeds 90%, a message is sent to the message queue specified in the system policy. The save files created as a result of processing this backup set will remain on the system until the SAVSAVFTRK command is processed, at which time the save files are copied to tape and subsequently removed from the disk unit.

```

Change Backup Procedure

Procedure . . . . . : SYSTEM

Type information, press Enter.

ASP for save files . . . . . 1          1-16
ASP storage limit. . . . . 90          1-99
Save access paths . . . . . *YES       *YES, *NO
Save contents of save files . . . . . *YES       *YES, *NO
Data compression . . . . . *DEV        *DEV, *YES, *NO
Data compaction . . . . . *DEV        *DEV, *NO
Target release . . . . . *CURRENT     *CURRENT, *PRV
Clear . . . . . *NONE                *NONE, *ALL, *AFTER
Object pre-check . . . . . *NO        *YES, *NO
Journaled objects . . . . . *NO        *YES, *NO
More...

```

Change Backup Procedure Display

Using the Save Save Files using TRAC/400 (SAVSAVFTRK) Command

The Save Save Files using TRAC/400 (SAVSAVFTRK) command allows you to copy save files to tape and then deletes the save files from the disk unit. The SAVSAVFTRK command is shown with its default information.

```

Save Save Files using TRAC/400 (SAVSAVFTRK)

Type choices, press Enter.

Device . . . . . _____ Name
Density . . . . . _____ *QIC120, *QIC525, *QIC1000..
Backup Set . . . . . *ALL      *ALL, USER, SYSTEM
Library . . . . . *ALL      Name, generic*, *ALL, *MEDINF
      + for more values
Density . . . . . *ALL      *ALL, *QIC1000, *QIC120...
Time period for save files:
  Start time and date:
  Beginning time . . . . . *AVAIL   Time, *AVAIL
  Beginning date . . . . . *BEGIN   Date, *CURRENT, *BEGIN
  End time and date:
  Ending time . . . . . *AVAIL     Time, *AVAIL
  Ending date . . . . . *END       Date, *CURRENT, *END
Device . . . . . *SAVF          Name, *SAVF
Sequence number . . . . . 1      1-9999, *END
End of tape option . . . . . *UNLOAD *UNLOAD, *REWIND, *LEAVE
Clear . . . . . *SAVF          *SAVF, *NONE, *ALL, *AFTER
Data compaction . . . . . *SAVF   *SAVF, *DEV, *NO
Add subsequent saves . . . . . *NO   *NO, *YES
Save file retention . . . . . *MEDINF *MEDINF, Date, *REMOVE

```

Figure 9-1. Save Save Files using TRAC/400 (SAVSAVFTRK) Display

Several fields are discussed further here:

- **Backup Set:** You can specify that save files created as a result of a backup set or all backup sets are to be copied from the disk unit to removable media.
- **Time period for save files:** You can specify a starting and ending range of dates and times for the save files that you are copying to removable media.
- **Device:** You can either specify a device to which you want to copy save files or you can specify the special value *SAVF, which implies that you are going to save the save files to the device specified in the backup procedures at the time the save file was created.

The SAVSAVFTRK command should not be confused with the *Save contents of save files* field, which is on the second screen of the Add or Change Backup Procedure display. This option refers to the ability to save data in user save files to the media defined in your backup set. The SAVSAVFTRK is a command to save TRAC/400 save files to media under TRAC/400 control.

Saving non-TRAC/400 Save Files

If your application saves data to a save file, such data will, by default, be included when the library containing the save file (or just the save file itself is specified in a backup list) is backed up as part of a TRAC/400 backup set. The default value of the **Save contents of save files** field in the backup procedure is *YES. If this value is *YES, the contents and the description of the save file is saved to tape. If the value is *NO, only the description of the save file is saved, but not the data.

Appendix A: Command Reference

The following is a list of all commands that are available in TRAC/400. Each command is listed with its title. Following each summary, the command is fully described with an accompanying command syntax diagram.

Add Media (ADDMEDTRK)

```
                                Add Media to TRAC/400 (ADDMEDTRK)

Type choices, press Enter.

Volume . . . . .                               Character value
Density . . . . .                               *QIC120, *QIC525, *QIC1000...
Number to add . . . . . 1                       1-999
Initialize tape . . . . . *NO                    *NO, *YES
Text . . . . . *NONE

Expiration date . . . . . *NONE                 Date, *PERM, *NONE
System . . . . . *LCL
Creation date . . . . . *CURRENT                Date, *CURRENT
```

The Add Media to TRAC/400 (ADDMEDTRK) command adds a media volume to the TRAC/400 media inventory. The volume can be a volume from another media inventory that contains active data, a volume from some other outside source, or a new volume that you want to initialize. Once added, TRAC/400 tracks the volume's characteristics, location, use and content.

When you add the volume, you must specify the media class of the volume. You can also specify where the volume is located and other miscellaneous attributes.

If the numbering scheme of the volumes that you are adding is consecutive, the ADDMEDTRK command will automatically add the volumes without having to add the volumes one at a time.

Required Parameters

VOL - Volume Identifier

Specifies the identifier of the volume being added to the TRAC/400 media inventory. This is a required parameter.

volume-identifier: Specify the identifier of the volume being added to the media inventory. The volume identifier is a maximum of six characters in length. A volume cannot be added if its volume identifier already exists in the TRAC/400 media inventory.

Note: Valid characters for the volume identifier are 0 - 9 and A - Z.

DENSITY - Density

Specifies the density of the volume that you are adding to the TRAC/400 inventory. This is a required parameter.

***SAVSYS:** The value specified for density in the TRAC/400 system policy is used for this value.

density: Specify the density for the media volume that you are adding.

Optional Parameters

VOLCNT - Number to add

Specifies the number of volumes to add during this session. The value specified in the Volume identifier prompt (VOL parameter) is increased by 1 for each volume added until the end of the count is reached. If the new volume identifier cannot be increased because of the way a volume is named, such as TAPEB9, an error message is sent.

Note: You can add a maximum of 999 volumes at a time, even though the field can hold up to 5 digits.

1: Adds a single volume.

number-of-volumes: Specify the number of volumes to add. For instance, specifying a "5" would add 5 volumes, each volume being increased by 1, such as T00001, T00002, T00003 and so on. The first volume (T00001 in the above example) is the volume specified in the Volume identifier prompt (VOL parameter). The maximum number of volumes that you can add at a time is 999.

INZ - Initialize tape

Specifies whether the volumes that you are adding are to be initialized.

***NO:** The volume that you are adding is not to be initialized. This is used if the volume has been initialized outside of TRAC/400 and contains active data. You can specify the expiration date for this volume in the Expiration date prompt (EXPDATE parameter).

***YES:** The volume is to be initialized with the ADDMEDTRK command and is to be added to the TRAC/400 media inventory. The date in the Expiration date prompt (EXPDATE parameter) is set to *NONE (all zeros).

TEXT - Text

Specifies text to describe the media that you are adding.

***NONE:** There is no text associated with the volume that you are adding.

text: Specify the text for the volume that you are adding.

EXPDATE - Expiration date

Specifies the expiration date of the media volume that is added to the media inventory. If a date is specified, the file is protected and cannot be overwritten until the expiration date.

***NONE:** The media is expired media and can be used in backup processing. A value of *NONE means that the volume is a new volume that has been added to the media inventory or that the volume has been reinitialized.

***PERM:** The media has a permanent retention and cannot be used in backup processing.

expiration-date: Specify the date when protection for the media ends.

CRTDATE - Creation date

Specifies the date that the first file on this volume was written.

***CURRENT**: You are assigning the current date as the creation date for this volume.

creation-date: Specify the date that this volume had data written on it. The date must be specified in job date format.

DEV - Tape unit

Specifies the name of the tape unit which is used to initialize the volume. The tape unit must be one that has TRAC/400 information specified.

Note: When *YES is specified in the Initialize tape prompt (INZ parameter), tape unit is a required field.

NEWOWNID - New owner identifier

Specifies the volume owner's identifier to write in the volume label of the volume being written.

***BLANK**: The owner identification field is set to blanks.

new-owner-identifier: Specify no more than 14 characters to identify the owner of the volume. If fewer than 14 characters are specified, the field is left-justified and is filled with blanks on the right.

CHECK - Check for active files

Specifies whether a labeled volume should be checked for active data files before it is initialized for use. If an unlabeled volume is placed in the specified device, this parameter is ignored.

***YES**: All data file labels on the volume are checked. If any active files are found, the operation is ended and an error message is sent.

***NO**: Volume initialization continues with no checking for active files. To initialize a new or empty volume, *NO must be specified and *MOUNTED must be specified on the Volume identifier prompt (VOL parameter).

***FIRST**: Only the first data file label on the volume is checked. If there are no data files on the volume or if the first data file has expired, the volume is initialized for use without checking for any other files on the volume. If the first data file has not expired, the operation is ended and an error message is sent.

CODE - Code

Specifies the character code in which the volume label is written. All data that is not save/restore data written after the label must be in the same code; codes cannot be intermixed on a volume that is not a save/restore volume.

***EBCDIC**: The volume label is written in EBCDIC and is an IBM standard label; all additional data must also be written in EBCDIC.

***ASCII**: The volume label is written in ASCII and is an American National Standard Institute standard label; all additional data must also be written in ASCII.

ENDOPT - End of tape option

Specifies whether the volume is only rewound, or rewound and unloaded after it has been initialized for use.

***REWIND:** The volume is rewound after it has been initialized for use.

***UNLOAD:** The volume is rewound and unloaded.

CLEAR - Clear

Specifies whether all labels and data are to be deleted from the volume when it is initialized for use. If the volume must be cleared of all data, it is deleted from the location of the volume label or volume marks to the end of the volume marker.

***NO:** Existing data is not deleted. Even though the existing data is not deleted, the data on the volume is not usable after the volume has been initialized for use.

***YES:** After the beginning of the volume has been initialized for use, the remaining data on the volume is deleted.

NEXTVOLMSG - Next volume message

Specifies whether you want TRAC/400 to notify you through messages to place another volume on a device.

***YES:** TRAC/400 will send you messages when the device is ready to accept another volume.

***NO:** You do not want TRAC/400 to send you messages as soon as the device is ready to accept another volume.

DLY - Tape mount delay

Specifies how long you want the device to delay before it begins processing the next volume on a device.

***DEV:** The device should begin processing the next volume based on the device default.

***IMMED:** The device should begin processing the next volume as soon as it finishes the previous volume.

number-of-seconds: Specify the number of seconds that the device should wait before it begins processing the next volume. The number of seconds can range from 1 to 900.

LOC - Storage location

Specifies the name of the storage location for the volume you are adding. Storage locations are used to hold media. For example storage locations can be a local storage area such as your computer room, or a remote location such as a vault or vaulting service. Storage location names are user-defined. Storage locations are set up in the Work with Storage Locations display. The choices on the command reflect the locations that you have set up.

***HOME:** The volume is assigned to a location called *HOME.

location-name: Specify the name of the storage location for this volume.

MOVDATE - Last moved date

Specifies the last date this volume was moved prior to being added to the media inventory.

***NONE:** You are not assigning a last moved date for this volume.

move-date: Specify the date that this volume was last moved.

USECNT - Media uses

Specifies the number of times that a media volume has been read from or written to. Media uses is expressed in number of uses.

0: Initializes the media uses as zero.

media-uses: Specify a number of media uses.

READERR - Read errors

Specifies the number of read errors that have been recorded for each media volume in the media inventory. Read errors are expressed in kilobytes per read error.

0: Initializes the read errors as zero.

read-errors: Specify a number of read errors.

WRTErr - Write errors

Specifies the number of write errors that have been recorded for each media volume in the media inventory. Write errors are expressed in kilobytes per write error.

0: Initializes the write errors as zero.

write-errors: Specify a number of write errors.

BYTereAD - Bytes read

Specifies the number of bytes read from the volume since its creation date.

0: Initializes the bytes read as zero.

bytes-read: Specify a number of bytes read.

BYTEWRT - Bytes written

Specifies the number of bytes written to the volume since its creation date.

0: Initializes the bytes written as zero.

bytes-written: Specify a number of bytes written.

CURBYTES - Current bytes written

Specifies the number of bytes currently written on the media volume.

0: Initializes the current bytes written as zero.

current-bytes-written: Specify a number of current bytes written.

MAXBYTES - Maximum bytes written

Specifies the maximum number of bytes that can be written to this volume.

0: Initializes the maximum bytes written as zero.

maximum-bytes-written: Specify a maximum number of bytes written.

Add Media Information (ADDMEDITRK)

Add Media Information to TRAC/400 (ADDMEDITRK)		
Type choices, press Enter.		
Volume		Character value
	+ for more values	
Volume sequence		1-9999
Sequence number		1-16777215
File label	*TYPE	
Type	*LIB	*LIB, *ALLDLO, *SAVCAL...
Saved item		Name
File origin	*FILE	*FILE, *SAVLIB, *SAVOBJ...
Entry date	*CURRENT	Date, *CURRENT
Entry time	*CURRENT	Time, *CURRENT
Expiration date	*PERM	Date, *PERM, *VERnnn
Device	*NONE	Name, *NONE
	+ for more values	
Beginning volume	*VOL	Character value, *VOL

The Add Media Information to TRK (**ADDMEDITRK**) command adds file level detail to TRAC/400 media inventory volume content information. The files, and the volumes that contain them, can be from another tape inventory or from some other outside source. The purpose of the command is to allow user applications or another tape management system to insert data (tape file descriptions) into the TRK media volume content information so that the volumes and their contents can be managed.

The volume for which you are adding content information must exist in the media inventory and the volume, file sequence and volume sequence must be unique in the media inventory content information. Multiple volumes will write a media information record for each volume with the volume sequence being incremented as the records are added.

Required Parameters:

VOL - Volume

Specifies the volume identifier or identifiers of the volume or volumes that contain the file that is being added to the TRAC/400 media inventory contents information. Volumes must be enrolled in the TRAC/400 media inventory. A maximum of 300 volumes can be specified here.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

volume-identifier: Specify the identifier of the volume that contains the file being added to the TRAC/400 media inventory contents information. The volume identifier is a maximum of six characters in length. The volume must already exist in the TRAC/400 media inventory.

VOLSEQ – Volume Sequence

Specifies the sequence number of the volume that contains the file that you are adding to the TRAC/400 media inventory contents information. The volume sequence number is the sequence number of the volume that contains the beginning of the file that you are adding. If you specify a volume sequence other than 1 in the Volume sequence prompt (VOLSEQ parameter), you must specify the beginning volume of the media set in the Beginning volume prompt (STRVOL parameter). If you specify a 1 in the Volume sequence prompt (VOLSEQ parameter), the volume specified in the Volume prompt (VOL parameter) must match the volume specified in the Beginning volume prompt (STRVOL parameter) or be *VOL.

SEQNBR - Sequence number

Specifies the sequence number of the file that you are adding to the media inventory. The sequence number is the file sequence of the file on the volume that you are adding.

Optional Parameters:

LABEL - File label

Specifies the label for the file that you are adding to the media content information.

***TYPE:** The label of the file is used.

label-identifier: Specify the label identifier for the file.

TYPE - Type

Specifies the special value associated with the file that you are adding to the TRAC/400 media content information.

***LIB:** The type of information that you are adding is library information. If you specify *LIB for the Type prompt (TYPE parameter), you must specify a library name in the Library prompt (LIB parameter).

***ALLDLO:** The type of information that you are adding is document library information.

***SAVCAL:** The type of information that you are adding is calendar information.

***SAVSYS:** The type of information that you are adding is system save information.

***SAVCFG:** The type of information that you are adding is configuration information.

***SAVSECDTA:** The type of information that you are adding is security information.

***QHST:** The type of information that you are adding is history information.

LIB - Saved Item

Specifies the name of the library whose content information you are adding to the TRAC/400 media content information. This parameter is required when *LIB is specified in the Type prompt (TYPE parameter).

FILE - File origin

Specifies the operation that was used to create the file that you are adding to the media information file.

***FILE:** The file that you are adding was not created using a save operation.

***SAVLIB:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVLIB command.

***SAVOBJ:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVOBJ command.

***SAVCHGOBJ:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVCHGOBJ command.

***SAVSYS:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVSYS command.

***SAVCAL:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVCAL command.

***SAVCHGCAL:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVCAL command with a selected reference date and time.

***SAVCFG:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVCFG command.

***SAVSECDTA:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVSECDTA command.

***SAVDLO:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVDLO command.

***SAVCHGDLO:** The file that you are adding to the TRAC/400 media inventory contents information was created using a SAVDLO command with a selected reference date and time.

CRTDATE - Entry date

Specifies the date the file was created. Dates are entered in job date format with or without date separators.

***CURRENT:** The date the file was saved is the current date of the system.

entry-date: Specify the date that the file was saved.

CRTTIM - Entry time

Specifies the time that each file was created. Time is expressed in the hhmmss format where hh = hours, mm = minutes, and ss = seconds.

***CURRENT:** The time the file was saved is the current time of the system.

entry-time: Specify the time the file was saved.

EXPDATE - Expiration date

Specifies the expiration date of the file that is added to the media content information. If a date is specified, the file is protected and cannot be overwritten until the expiration date has passed. Dates are entered in job date format with or without date separators.

***PERM:** The file has a permanent retention and cannot be used.

***VER nnn:** Specify the number of versions that are kept in the TRAC/400 media inventory contents information. For instance, *VER 003 indicates that three versions of the save item are kept. When the fourth version of the save item is created, the earliest version is removed and replaced by the fourth version of the save.

Note: *VER 003 is not the version number. It is the number of versions as specified in the media policy.

expiration-date: Specify the date when protection for the file ends.

DEV - Device

Specifies the name of the device or devices which were used to create the file. A maximum of four devices can be specified.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***NONE:** No devices are to be associated with the file that you are adding to the TRAC/400 media inventory contents information.

device-name: Specify the name of the device that you want to associate with the file that you are adding to the TRAC/400 media inventory contents information.

STRVOL - Beginning volume

Specifies the beginning volume of the media set that contains the file that you are adding to the media information. For instance if you had a 3 volume media set, T00001, T00002 and T00003 and you were adding the fourth file in the media set (which is on T00002), the value in the Volume prompt (VOL parameter) would be T00002, the value in the Sequence number prompt (SEQNBR parameter) would be 4, the Volume sequence prompt (VOLSEQ parameter) would be 2 and the Beginning volume prompt (STRVOL parameter) would be T00001.

***VOL:** The first volume specified in the Volume list is the beginning volume. This can only be true when the Volume sequence is equal to 1.

volume-identifier: Specify the volume identifier that is the beginning volume for the media set that contains the file that you are adding to the TRAC/400 media inventory contents information.

OBJSAV - Objects saved

Specifies the number of objects saved for the file that you are adding to the media content information.

1: The number of saved objects is one.

number-of-objects-saved: Specify the number of objects saved.

OBJNOTSAV - Objects not saved

Specifies the number of objects that were not saved for the file that you are adding to the media content information.

0: The number of objects not saved is zero.

number-of-objects-not-saved: Specify the number of objects that were not saved.

ASP - Auxiliary storage pool ID

Specifies the auxiliary storage pool ID for the file that you are adding to the media content information.

1: The number of the ASP is 1.

auxiliary-storage-pool-ID: Specify the number of auxiliary storage pool. Storage pool ID's can range from 1 to 16.

SET - Set

Specifies the backup set with which you want to associate the file that you are adding to the media content information.

***NONE:** You do not want to associate the file with a backup set.

set-name: Specify a backup set name that you have defined to associate with the file that you are adding.

RCDFMT - Record format

Specifies the record format for the file that you are adding to the media content information.

U: The record format is undefined for the file that you are adding to the media content information.

***NONE:** There is no record format associated with the file that you are adding to the media content information.

F: The record format is fixed length records for the file that you are adding to the media content information.

V: The record format is variable length records for the file that you are adding to the media content information.

RCDLEN - Record length

Specifies the record length of the file.

- Fixed length records = Number of bytes in each record
- Variable length records = Maximum number of bytes in each record
- Undefined format = Zero

0: The record length is zero.

record-length: Specify the record length of the record in the file.

BLKLEN - Block length

Specifies the number of bytes in each block.

32760: The block length is 32760 bytes.

block-length: Specify the block length for this file.

BLKCNT - Block count

Specifies the number of blocks.

1: The block count is one.

block-count: Specify the block count for this file.

TEXT - Text

Specifies text information about the file that you are adding to the media content information.

***NONE:** No text is specified for the media content.

text: Specify the text that describes the media content.

Add Media Library Media (ADDMLMTRK)

```

                                Add Media Library Media (ADDMLMTRK)

Type choices, press Enter.

Library device . . . . . Name
Volume . . . . . *INSERT Character value, *INSERT
      + for more values
Add volume to TRAC/400 . . . . . *NO *NO, *YES
Initialize tape . . . . . *NO *NO, *YES
```

The Add Media Library Media to TRAC/400 (ADDMLMTRK) command adds volumes to a media library (MLB). The command adds the specified media volumes to a usable category and optionally enrolls them to TRAC/400. If the Add volume to TRAC/400 prompt (ADDVOL parameter) is *YES, you can specify a density for the volume or volumes that you are adding. If the Add volume to TRAC/400 prompt (ADDVOL parameter) and the Initialize tape prompt (INZ parameter) are both *YES, you are supplied with additional parameters for the volumes that you are initializing.

Required Parameters

MLB - Library device

Specifies the name of the media library to which you are adding media. The library device must be one that TRAC/400 lists on its Work with Devices display.

VOL - Volume

Specifies the volume identifier of the media being added to the TRAC/400 media inventory.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***INSERT:** Volume identifiers that are in the insert category in the MLB are to be changed to a usable category within the MLB based on the value specified in the Add volume to TRAC/400 prompt (ADDVOL parameter). If the value specified in the Add volume to TRAC/400 prompt (ADDVOL parameter) is *NO, only volumes already enrolled in TRAC/400 will be changed from the insert category to a usable category. If the value specified in the Add volume to TRAC/400 prompt (ADDVOL parameter) is *YES, volumes that are currently enrolled in TRAC/400 as well as those that are not currently enrolled in TRAC/400 and are in the insert category, will be added to TRAC/400 and changed from the insert category to a usable category.

volume-identifier: Specify the identifier of the volume or volumes that you want to change from the insert category to a usable category within the MLB.

Optional Parameters

ADDVOL - Add volume to TRAC/400

Specifies whether you want to add the volumes specified in the Volume identifier prompt (VOL parameter) to the TRAC/400 media inventory.

***NO:** You do not want to add the volumes specified to the TRAC/400 media inventory.

***YES:** You want to add the volumes specified to the TRAC/400 media inventory. When you specify *YES, you are asked to supply a density in the Density prompt (DENSITY parameter).

INZ - Initialize tape

Specifies whether you want to initialize the volumes specified in the Volume identifier prompt (VOL parameter). This parameter is ignored if ADDVOL=*NO.

***NO:** You do not want to format the specified volumes.

***YES:** You want to format the specified volumes. When you specify *YES, you are asked to supply a device and initialization information.

DENSITY - Density

Specifies the density of the volume you are adding.

This is a required parameter if ADDVOL=*YES. This parameter is ignored if ADDVOL=*NO.

MOVDAT - Last moved date

Specifies the date of the last time this media volume was moved prior to being added to the media inventory.

This parameter is ignored if ADDVOL=*NO.

***NONE:** You are not assigning a last moved date for this media volume.

move-date: Specify the date that this volume was last moved in job date format.

DEV - Device

Specifies the name of the tape unit that you want to use to initialize the specified volumes. The location of the tape unit and the location of the MLB specified in the MLB parameter must be the same.

This parameter is ignored if ADDVOL=*NO.

***MLB:** Any tape unit associated with the specified MLB can be used to initialize the specified volumes.

tape-unit-name: Specify the user-defined name of the tape unit that you want to use to initialize the specified volumes.

NEWOWNID - New owner identifier

Specifies the volume owner's identifier to write in the volume label of the volume being written.

Note: This parameter is ignored if ADDVOL=*NO.

***BLANK:** The owner identification field is set to blanks.

new-owner-identifier: Specify no more than 14 characters to identify the owner of the volume. If fewer than 14 characters are specified, the field is left-justified and is filled with blanks on the right.

CHECK - Check for active files

Specifies whether a labeled volume should be checked for active data files before it is initialized for use. If an unlabeled volume is placed in the specified device, this parameter is ignored.

This parameter is ignored if ADDVOL=*NO.

***YES:** All data file labels on the volume are checked. If any active files are found, the operation is ended and an error message is sent.

***NO:** Volume initialization continues with no checking for active files. To initialize a new or empty volume *NO must be specified here and *MOUNTED must be specified on the Volume identifier prompt (VOL parameter).

***FIRST:** Only the first data file label on the volume is checked. If there are no data files on the volume or if the first data file has expired, the volume is initialized for use without checking for any other files on the volume. If the first data file has not expired, the operation is ended and an error message is sent.

CODE - Code

Specifies the character code in which the volume label is written. All data that is not save/restore data written after the label must be in the same code; codes cannot be intermixed on a volume that is not a save/restore volume.

This parameter is ignored if ADDVOL=*NO.

***EBCDIC:** The volume label is written in EBCDIC and is an IBM standard label; all additional data must also be written in EBCDIC.

***ASCII:** The volume label is written in ASCII and is an American National Standard Institute standard label; all additional data must also be written in ASCII.

CLEAR - Clear

Specifies whether all labels and data are to be deleted from the volume when it is initialized for use. If the volume must be cleared of all data, it is deleted from the location of the volume label or tape marks to the end of the tape marker.

This parameter is ignored if ADDVOL=*NO.

***NO:** Existing data is not deleted. Even though the existing data is not deleted, the data on the volume is not usable after the volume has been initialized for use.

***YES:** After the beginning of the volume has been initialized for use, the remaining data on the volume is deleted.

Change Media (CHGMEDTRK)

```
Change Media using TRAC/400 (CHGMEDTRK)

Type choices, press Enter.

Volume . . . . .
Density . . . . . *SAME
Expiration date . . . . . *SAME
Location . . . . . *SAME
Creation date . . . . . *SAME
System . . . . . *SAME
Text . . . . . *SAME

Character value
*SAME, *QIC120, *QIC525...
Date, *SAME, *PERM, *NONE
*HOME, TAPMLB01, VAULT
Date, *SAME
```

The Change Media using TRAC/400 (CHGMEDTRK) command changes an attribute or several attributes of a media volume in the TRAC/400 media inventory.

Required Parameters

VOL - Volume

Specifies the volume identifier of the volume being changed in the TRAC/400 media inventory.

This is a required parameter.

volume-identifier: Specify the identifier of the volume being changed in the media inventory. The volume identifier is a maximum of six characters in length. **Note**: Valid characters for the volume identifier are 0 - 9 and A - Z.

Optional Parameters

DENSITY - Density

Specifies the density for the volume you are changing.

***SAME**: Use the same value as is currently assigned to the parameter.

density: Specify the density to which you want to change.

EXPDATE - Expiration date

Specifies the expiration date of the media volume that is changed in the media inventory. If a date is specified, the file is protected and cannot be overwritten until the expiration date.

Changing the expiration date of a volume will change the expiration date for all entries that contain data on that volume. If the data for an entry spans multiple volumes, the expiration date for those volumes may also change. The other volumes expiration dates will change only if the changed date is further in the future or the changed entry is the only entry having data on that volume.

***SAME**: The expiration date currently assigned to the media is not changed.

***PERM**: The media has a permanent retention and cannot be used in backup processing.

***NONE:** The media is expired media and can be used in backup processing.

expiration-date: Specify the date when protection for the media ends. The date must be specified in job date format.

LOC - Location

Specifies the name of current storage location of the media volume.

***HOME:** The home location is assigned to the media volume.

location-name: Specify the name of the location that you want to assign to this volume.

SYSNAME - System name

Specifies the system identifier for the volume that you are changing.

***LCL:** The system is the local system. TRAC/400 uses the default local location name, LCLLOCNAME and not the system name SYSNAME. In most cases, the AS/400 systems have the same value specified in the LCLLOCNAME and in the SYSNAME. You can use the DSPNETA command to view the system network attributes.

location-name: Specify the name of the remote location associated with the system. The local system's network identifier, as seen by using the DSPNETA command, is used as the system's network identifier.

network-id.location-name: Specify the name of the network identifier and the name of the remote location associated with the system. Specify these values using the format nnnnnnnn.cccccc, where nnnnnnnn is the network identifier and cccccc is the remote location name.

TEXT - Text

Specifies text to describe the media that you are changing.

***SAME:** You are not going to change the text that describes the volume.

***NONE:** No text is specified to describe this volume.

text: Specify text that describes the volume.

Change Job Scheduler (CHGSCDTRK)

```
Change Job Scheduler (CHGSCDTRK)

Type choices, press Enter.

Scheduler type . . . . . > *USRDFN          *SYSTEM, *USRDFN
Add a job command . . . . .
*SYSTEM_____

_____

_____

_____

_____

_____

Command prompt for add . . . . . *NO          *NO, *YES
List jobs command . . . . .
*SYSTEM_____

_____

_____

_____

_____

_____

More...
```

TRAC/400 is delivered with an OS/400 job scheduler. The Change Job Scheduler for TRAC/400 (CHGSCDTRK) command changes the job scheduler interface used by TRAC/400. You can change the commands that TRAC/400 uses to add, list and select job schedule entries. You can also specify whether you want to be prompted when TRAC/400 uses these commands.

The following substitution variables can be used in these commands to pass values from TRAC/400 to the scheduler:

- &JOBNAME - QTRK BKUP
- &REQUEST - will be STRBKUTRK
- &APPL - TRKS
- &SET - backup set name

You can change these to your operating requirements or choose to use the defaults.

Optional Parameters

TYPE - Scheduler type

Specifies which type of scheduler that you want to use for scheduling TRAC/400 backup sets and commands. Any commercial or user developed scheduler can be used with TRAC/400.

* Specifies that TRAC/400 is to use the OS/400 job scheduler and its associated command set.

Note: When you specify *SYSTEM for the Scheduler type prompt (TYPE parameter), the ADDCMD, ADDPMT, LISTCMD, LISTPMT, SLTCMD and SLTPMT parameters are ignored.

***USRDFN:** Specifies that you want to use another scheduling package command set or change the way in which TRAC/400 starts the OS/400 job scheduler.

Note: When you specify *USRDFN in the Scheduler type prompt (TYPE parameter), all of the job scheduler commands are displayed and can be changed.

ADDCMD - Add job command

Specifies an alternative command to be used by TRAC/400 to add a job schedule entry. When you are in a TRAC/400 function that allows you to add a job to the job scheduler, the command that you specify here is started in lieu of the TRAC/400 default command.

***SAME:** The command used does not change.

* The OS/400 command to add a job to the job schedule is used.

user-command: Specify the command that you want TRAC/400 to use when adding a job schedule entry.

ADDPMT - Command prompt for add

Specifies whether TRAC/400 should prompt the command specified in the Add a job command prompt (ADDCMD parameter).

***NO:** The command is not prompted when started by TRAC/400.

***YES:** The command is prompted when started by TRAC/400.

LISTCMD - List job commands

Specifies an alternative command to be used by TRAC/400 to list all jobs in the job schedule. When you are in a TRAC/400 function that allows you to list all jobs in the job schedule, the command that you specify here is started.

***SAME:** The command used does not change.

* The OS/400 command to list all jobs in the job schedule is used.

user-command: Specify the command that you want to use when listing all jobs in the job schedule.

LISTPMT - Command prompt for list

Specifies whether TRAC/400 should prompt the command specified in the List jobs command prompt (LISTCMD parameter).

***NO:** The command is not prompted when started by TRAC/400.

***YES:** The command is prompted when started by TRAC/400.

SLTCMD - Select jobs command

Specifies an alternative command to be used by TRAC/400 to list selected jobs in the job schedule. When you are in a TRAC/400 function that allows you to select a list of TRAC/400 jobs in the job schedule, the command that you specify here is started.

***SAME:** The command used does not change.

* The OS/400 command to select jobs in the job schedule is used.

user-command: Specify the command that you want TRAC/400 to use when listing TRAC/400 jobs in the job schedule.

SLTPMT - Command prompt for select

Specifies whether TRAC/400 should prompt the command specified in the Select jobs command prompt (SLTCMD parameter).

***NO:** The command is not prompted when started by TRAC/400.

***YES:** The command is prompted when started by TRAC/400.

Display Log (DSPLOGTRK)

```
Display Log for TRAC/400 (DSPLOGTRK)

Type choices, press Enter.

Type . . . . . *ALL          *ALL, *BKU, *MED, *MAINT...
Time period for log output:
  Start time and date:
  Beginning time . . . . . *AVAIL      Time, *AVAIL
  Beginning date . . . . . *CURRENT    Date, *CURRENT, *BEGIN
  End time and date:
  Ending time . . . . . *AVAIL        Time, *AVAIL
  Ending date . . . . . *CURRENT      Date, *CURRENT, *END
Severity . . . . . 00              00-99
Output . . . . . *                  *, *PRINT
```

The Display Log for TRAC/400 (DSPLOGTRK) command displays the TRAC/400 log. The TRAC/400 log is a display by date and time of messages that TRAC/400 has created as a result of processing. The DSPLOGTRK command allows you to display or print all or part of the log.

Optional Parameters

TYPE - Type

Specifies the type of entry for which you want to review log entries.

Note: The default parameter for Type depends on the area that you use to access this command. For instance, if you access this command from a backup menu, the default Type is *BKU.

***ALL:** Selects all log entries for display or print.

***BKU:** Selects only back up log entries for display or print.

***MED:** Selects only media management log entries for display or print.

***MAINT:** Selects only maintenance log entries for display or print.

***RCY:** Selects only recovery log entries for display or print.

PERIOD - Time period for log output

Specifies the period of time for which the log entries are selected for the display or report. This parameter contains two lists of two elements each.

Element 1: Beginning Time

One of the following is used to specify the beginning creation time at which or after log entries are included. Any log entries created before the specified time and date are not included in the display or report.

***AVAIL:** Any time that is available for the beginning date is included.

begin-time: Specify the beginning time for the specified beginning date that indicates which log entries are to be included.

The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh=hours, mm=minutes and ss=seconds. Hours, minutes, and seconds must each be exactly 2 digits (using leading zeros if necessary).
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Beginning Date

One of the following is used to specify the beginning date on or after which the log entries were made. Any entries prior to the specified date are not included in the display or report.

***CURRENT:** Log entries with a current date creation date and between the specified beginning and ending times (if specified) are included.

***BEGIN:** Log entries from the beginning of the log entries are included.

begin-date: Specify the beginning date. The date must be specified in the job date format.

Element 3: Ending Time

One of the following is used to specify the ending time before which log entries are included. Any items created after the specified time and date are not included in the log entries for the display or report.

***AVAIL:** Any time that is available for the ending date is included.

end-time: Specify the ending time for the specified ending date that indicates which log entries are to be included.

Element 4: Ending Date

One of the following is used to specify the ending date on which or before which the log entries must have been made. Any log entries made after the specified date are included in the display but not in the report.

***CURRENT**: Log entries whose date is on or before the current date are included in the display or report.

***END**: The log entries to the end of the log information are included in the display or report.

end-date: Specify the ending date. The date must be specified in the job date format.

SEV - Severity

Specifies the message severity level that you want to include in the display or print. For example, a severity level of 30 would include all messages that are severity level 30 and above. The severity level can be specified from 0 to 99.

00: The default severity level is zero.

severity-level: Specify the message severity level that you want to display.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

*****: The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT**: The output is printed with the job's spooled output.

The report that is produced is the TRAC/400 Log report. The report, if printed, is written to the printer file TRKPLG.

DETAIL - Detail

Specifies the format used for the printed output.

***BASIC**: The entries are printed in abbreviated list format.

***FULL**: The detail of each entry is printed in an expanded format.

USER - User

Specifies the name of the user profile for the log entries that you want to display or print.

***ALL**: Include all user profiles in the display or report.

user-name: Specify the user profile whose log entries you want to include in the display or report.

MSGID - Message identifier

Specifies the message identifier for the log entries that you want to display or print.

***ALL:** Include all message identifiers in the display or report.

message-identifier: Specify the message identifier whose log entries you want to include in the display or report.

Initialize Media (INZMEDTRK)

```
Initialize Media (INZMEDTRK)

Type choices, press Enter.

Device . . . . . Name
New volume identifier . . . . . Character value
Density . . . . . *QIC120, *QIC525,
*QIC1000...
New owner identifier . . . . . *BLANK
Volume . . . . . *MOUNTED Character value, *MOUNTED
Check for active files . . . . . *YES *YES, *NO, *FIRST
Code . . . . . *EBCDIC *EBCDIC, *ASCII
End of tape option . . . . . *REWIND *REWIND, *UNLOAD
Clear . . . . . *NO *NO, *YES
```

The Initialize Media using TRAC/400 (INZMEDTRK) command prepares media for use in the TRAC/400 system. This command is used to initialize a volume with a standard volume label for standard label magnetic volume processing.

Note: It is recommended that you use the INZMEDTRK command in place of the OS/400 INZTAP command. To assure the protection of media, TRAC/400 disables INZTAP CHECK(*NO) for users who do not have *SECADM, *SECOFR, *SERVICE or *SAVSYS authority. Unlike users of INZTAP, users of INZMEDTRK do not need these levels of authority in order to use the CHECK(*NO) option.

Note: Do not precede an entry with an asterisk unless that entry is a "special value" that is shown (on the display itself or in the help information) with an asterisk.

Required Parameters

DEV - Device

Specifies the name of the tape unit which is used to initialize the volume. The tape unit name must be defined in the TRAC/400 device table.

NEWVOL - New volume identifier

Specifies the volume identifier for a volume being initialized for use as a TRAC/400 volume.

new-volume-identifier: Specify the 6 character identifier of the new volume. The identifier must contain only alphanumeric characters (A through Z and 0 through 9), and cannot have a prefix or be filled with blanks.

DENSITY - Density

Specifies the density of the media that you are initializing.

Optional Parameters

NEWOWNID - New owner identifier

Specifies the volume owner's identifier to write in the volume label of the volume being written.

***BLANK**: The owner identification field is set to blanks.

new-owner-identifier: Specify no more than 14 characters to identify the owner of the volume. If fewer than 14 characters are specified, the field is left-justified and is filled with blanks on the right.

VOL - Volume

Specifies the existing volume identifier of the volume being initialized for use or indicates that the volume currently on the magnetic device should be initialized for use.

***MOUNTED**: Any labeled or unlabeled volume that is placed in the specified volume device is initialized for use. To initialize a new or empty volume for use, *MOUNTED must be specified, and *NO must be specified on the Check for active files prompt (CHECK parameter).

volume-identifier: Specify the identifier of the labeled volume being initialized for use. This parameter value can be used only to initialize a volume for use that is already a labeled volume. If the volume on the specified device has a different volume identifier than the one specified or if it is an unlabeled volume, an error message is sent.

CHECK - Check for active files

Specifies whether a labeled volume should be checked for active data files before it is initialized for use. If an unlabeled volume is placed in the specified device, this parameter is ignored.

***YES**: All data file labels on the volume are checked. If any active files are found, the operation is ended and an error message is sent.

***NO**: Volume initialization continues with no checking for active files. To initialize a new or empty volume for use, *NO must be specified here and *MOUNTED must be specified on the Volume identifier parameter (VOL parameter).

***FIRST**: Only the first data file label on the volume is checked. If there are no data files on the volume or if the first data file has expired, the volume is initialized for use without checking for any other files on the volume. If the first data file has not expired, the operation is ended and an error message is sent.

CODE - Code

Specifies the character code in which the volume label is written. All data that is not save/restore data written after the label must be in the same code; codes cannot be intermixed on a volume that is not a save/restore volume.

***EBCDIC**: The volume label is written in EBCDIC and is an IBM standard label; all additional data must also be written in EBCDIC.

***ASCII**: The volume label is written in ASCII and is an American National Standard Institute standard label; all additional data must also be written in ASCII.

ENDOPT - End of tape option

Specifies whether the volume is only rewind, or rewind and unloaded after it has been initialized for use.

***REWIND:** The volume is rewind after it has been initialized for use.

***UNLOAD:** The volume is rewind and unloaded.

CLEAR - Clear

Specifies whether all labels and data are to be deleted from the volume when it is initialized for use. If the volume must be cleared of all data, it is deleted from the location of the volume label or tape marks to the end of the tape marker.

***NO:** The existing data is not deleted. Even though the existing data is not deleted, the data on the volume is not usable after the volume has been initialized for use.

***YES:** After the beginning of the volume has been initialized for use, the remaining data on the volume is deleted.

Initialize TRAC/400 (INZTRK)

```
                Initialize TRAC/400 (INZTRK)
Type choices, press Enter.
Type of initialize . . . . . *DATA          *DATA, *DEVICE, *NETSYS...
```

The Initialize TRAC/400 (INZTRK) command performs several types of initialization. These are:

- Initializes all major files as well as establishing default policies and sets
- Allows you to reset TRAC/400 and re-initialize all major files as well as establishing default policies and sets
- Clears and re-initializes the device file.

Optional Parameters

OPTION - Type of initialize

Specifies which of the types of initialization you want to perform.

***DATA:** You are initializing TRAC/400. Default sets, policies and tables are built based on the characteristics of the system that is being initialized.

***DEVICE:** You are clearing device and media library information and re-initializing the files with the tape units currently described on the system. In addition to clearing and re-initializing the device file, *DEVICE also performs the same functions as *DATA.

***RESET:** You are resetting TRAC/400. When you use this option TRAC/400 information is removed from your system and all major files are re-initialized. Using OPTION(*RESET) clears all major TRAC/400 files and processes the INZTRK command OPTION(*DATA).

***NETSYS:** You are adding a system location name to a network group and are initializing the network files required for shared media.

FROMSYS - From system

Specifies the name of any system which is already in the network set that you want the new system to join. The network media inventory files on the system that you specify here is copied to your system.

For example, if system A is a system that you want to add to the network and system B is an active member of a network set, you would specify system B in the FROMSYS parameter. The network media inventory from system B replaces the media inventory on system A and system A has now become an active member of the network set.

***LCL:** The from-system is the local system.

location-name: Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc, where nnnnnnnn is the network identifier, and cccccc is the remote location name.

Load Media Information (LODMEDITRK)

```
Load Media Information (LODMEDITRK)

Type choices, press Enter.

Device . . . . . Name
Volume . . . . . *MOUNTED Character value, *MOUNTED
File origin . . . . . *FILE *FILE, *SAVLIB, *SAVOBJ...
End of tape option . . . . . *UNLOAD *LEAVE, *REWIND, *UNLOAD
```

The Load Media Information (LODMEDITRK) command adds information about a volume in the TRAC/400 media file. You specify the identifier of the volume and what is contained on the volume.

TRAC/400 records content information only for media already added to the TRAC/400 media inventory, and then only for media whose contents are currently shown as expired. If active content information for the media already exists, or if the media has not been added to the media inventory, no content information is added.

Required Parameters:

DEV – Device:

Specifies the name of the device on which you are loading the volume. The device name must be defined in the TRAC/400 device table.

Optional Parameters:

VOL - Volume identifier

Specifies the volume identifier of the volume on the device whose information is being added to TRAC/400.

***MOUNTED:** The information on the volume identifier that is loaded on the device is added to TRAC/400.

volume-identifier: Specify the volume identifier of the volumes from which data is being added to the TRAC/400 media content information.

FILE - File origin

Specifies the type of information that is stored on the volume.

***FILE:** The information on the volume is a file.

***SAVLIB:** The information on the volume is a saved library.

***SAVOBJ:** The information on the volume is a full object save.

***SAVCHGOBJ:** The information on the volume is an incremental object save.

***SAVSYS:** The information on the volume is system save information.

***SAVCAL:** The information on the volume is a full save of calendar information.

***SAVCHGCAL:** The information on the volume is an incremental calendar save.

***SAVCFG:** The information on the volume is a save of configuration information.

***SAVSECDTA:** The information on the volume is a save of security information.

***SAVDLO:** The information on the volume is a full save of document information.

***SAVCHGDLO:** The information on the volume is an incremental save of document information.

***SAV:** The information on the volume is IFS information.

***SAVCHG:** The information on the volume is an incremental save of IFS information.

ENDOPT - End of tape option

Specifies, when tape is used, what positioning operation is automatically done on the tape volume after the save operation ends.

If more than one volume is included, this parameter applies only to the last volume used; all other volumes are rewound and unloaded when the end of the tape is reached.

Note: If no objects are saved the volume is not opened and the ENDOPT parameter is ignored.

Note: If you specify *LEAVE and the device is a shared device, the device will not be varied off after the save operation. If you specify *LEAVE and the device is not a shared device, the device will be varied off after the save operation.

***UNLOAD:** The volume is automatically rewound and unloaded after the operation ends.

***REWIND:** The volume is rewound, but not unloaded.

***LEAVE:** The volume does not rewind or unload after the operation ends. It remains at the current position on the device.

Monitor Save while Active (MONSWATRK)

```
Monitor Save While Active (MONSWATRK)

Type choices, press Enter.

Saved library . . . . . Name, *MSGQ
Command to run . . . . . _____

_____

Job description . . . . . *USRPRF      Name, *USRPRF
  Library . . . . .                Name, *LIBL, *CURLIB
Job queue . . . . . *JOBID          Name, *JOBID
  Library . . . . .                Name, *LIBL, *CURLIB
Time limit in seconds . . . . . 3600   1-999999, *NOMAX
```

The Monitor Save While Active (MONSWATRK) command reviews the save while active message queue and looks for the message indicating the end of library synchronization. When synchronization is detected, you can issue a command to the system. The MONSWATRK command can be used as an exit (*EXIT) special value in a set during backup processing.

Required Parameters

LIB - Saved library

Specifies the name of the library or message queue that you want to review for synchronization during a save while active operation.

This is a required parameter.

***MSGQ:** When you specify *MSGQ, you must specify a message queue name in the Message queue prompt (MSGQ parameter). The message queue name that you specify is reviewed for synchronization.

library-name: Specify the name of the library that you want to review for synchronization.

CMD - Command to run

Specifies the command that you want to process when library synchronization is achieved during a save while active operation.

For instance, you may want to restart a subsystem once synchronization has occurred for the library you are saving.

Note: Effective use of MONSWATRK in a backup set requires that you specify *YES for "Save while active" in the backup set entry for the monitored library, and that the *EXIT entry precedes the backup set entry for the monitored library.

This is a required parameter.

Optional Parameters

JOB - Job description

Specifies the name of the job description used with this job.

***USRPRF:** The job description in the user profile under which the submitted job runs is used as the job description of the submitted job.

job-description-name: Specify the name of the job description used for the job.

***LIBL:** The library list is used to locate the job description name.

***CURLIB:** The current library for the job is used to locate the job description name. If no library is specified as the current library for the job, QGPL is used.

library-name: Specify the name of the library where the job description name is located.

JOBQ - Job queue

Specifies the name of the job queue in which this job is placed. This job queue must be different from the job queue in which the backup set will run, so that the MONSWATRK command will run at the same time with the backup set.

***JOBQ:** The submitted job is placed on the job queue named in the specified job description.

job-queue-name: Specify the name (library-name/ job-queue-name) of the job queue on which the submitted job is placed.

***LIBL:** The library list is used to locate the job queue name.

***CURLIB:** The current library for the job is used to locate the job queue name. If no library is specified as the current library for the job, QGPL is used.

library-name: Specify the name of the library where the job queue name is located.

WAITMSG - Time limit in seconds

Specifies the time in seconds that the MONSWATRK command should wait for the library synchronization message in the job queue. If the specified time is exceeded, the MONSWATRK command will stop monitoring the message queue. The time can be specified from 1 to 999999 seconds, with a default time of 3600 seconds (1 hour).

3600: The default time limit is one hour.

***NOMAX:** The program waits indefinitely for the arrival of the library synchronization message.

time-limit-in-seconds: Specify the time limit in seconds. The time can range from 1 to 999999 seconds.

MSGQ - Message queue

Specifies the name of the message queue that you want to review for synchronization. This parameter is required when *MSGQ is specified in the Saved library prompt, (LIB parameter).

Print Media Movement (PRTMOVTRK)

```
Print Media Movement (PRTMOVTRK)

Type choices, press Enter.

Select dates:
  From date . . . . . *BEGIN      Date, *CURRENT, *BEGIN,
nnnnn
  To date . . . . . *CURRENT      Date, *CURRENT, *END, nnnnn
From location . . . . . *ALL       Name, *ALL, *HOME
```

The Print Media Movement (PRTMOVTRK) command prints the Media Movement report based on a specified date range and location. The report shows all the volumes that have moved, the from and to locations, and the move date. The report, if printed, is written to printer file TRKPPVMS.

Optional Parameters

SLTDATE - Select dates

Specifies a range of dates that you want to use when printing the Media Movement report. The From date is the beginning of a date range of media movement and the To date is the end of the date range.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN:** Uses the earliest activity date for the beginning date of the date range.

***CURRENT:** Use the current date for the beginning date of the date range.

from-date: Specify the date entered in job date format with or without date separators for the beginning date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: To date

***CURRENT:** Uses the current date for the ending date of the date range.

***END:** The last date that a media moves is the ending date of the date range that you want to use for the search.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

LOC - From location

Specifies whether you want the Media Movement report to include a single location or all locations.

***ALL**: Includes all locations in the Media Movement report. Each from and to location movement that is reported will cause a page break, such as From Vault to *HOME would be one part of the report and *HOME to vault would page break and begin a new part of the report.

***HOME**: You want to include the home location (*HOME) in the Media Movement report.

from-location-name: Specify the name of the location that you want to include in the Media Movement report.

Remove Media Volumes (RMVMEDTRK)

```
Remove Media Volumes from TRAC (RMVMEDTRK)

Type choices, press Enter.

Volume . . . . . Character value
```

The Remove Media Volumes from TRAC/400 (RMVMEDTRK) command removes a media volume from the TRAC/400 media inventory. A volume is removed because of age, error rate, shipment to another location, and so on.

Note: Media can only be removed if it was previously added using the ADDMEDTRK or ADDMLMTRK commands. All information about the volume including content and statistics, is deleted when the volume is removed. Also the total number of volumes in TRAC/400 is decremented.

Required Parameters

VOL - Volume

Specifies the volume identifier of the volume being removed from the TRAC/400 media inventory.

This is a required parameter.

volume-identifier: Specify the identifier of the volume being removed from the media inventory. The volume identifier is a maximum of six characters in length.

Retrieve Size (RTVSIZTRK)

```

Retrieve Size using TRAC/400 (RTVSIZTRK)

Type choices, press Enter.

Set . . . . . ABC, SYSTEM, USER...

```

The Retrieve Size using TRAC/400 (RTVSIZTRK) command allows you to retrieve the size of objects within a backup set. This is necessary when you wish to backup your system using simultaneous saves. Using the RTVSIZTRK command allows you to retrieve the sizes of your objects before you do a STRBKUTRK, saving you time during your backup.

Save save file (SAVSAVFTRK)

```

Save Save Files using TRAC/400 (SAVSAVFTRK)

Type choices, press Enter.

Device . . . . . _____ Name
Density . . . . . _____ *QIC120, *QIC525, *QIC1000..
Backup Set . . . . . *ALL *ALL, USER, SYSTEM
Library . . . . . *ALL Name, generic*, *ALL, *MEDINF
      + for more values
Density . . . . . *ALL *ALL, *QIC1000, *QIC120...
Time period for save files:
  Start time and date:
    Beginning time . . . . . *AVAIL Time, *AVAIL
    Beginning date . . . . . *BEGIN Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL Time, *AVAIL
    Ending date . . . . . *END Date, *CURRENT, *END
Device . . . . . *SAVF Name, *SAVF
Sequence number . . . . . 1 1-9999, *END
End of tape option . . . . . *UNLOAD *UNLOAD, *REWIND, *LEAVE
Clear . . . . . *SAVF *SAVF, *NONE, *ALL, *AFTER
Data compaction . . . . . *SAVF *SAVF, *DEV, *NO
Add subsequent saves . . . . . *NO *NO, *YES
Save file retention . . . . . *MEDINF *MEDINF, Date, *REMOVE

```

The Save Save file using TRAC/400 (SAVSAVFTRK) command allows you to copy save files to tape. You can start the process immediately or you can schedule it using the system job scheduler. Processing can be batch or interactive.

Required Parameters

DEV – Device name

Specify the name of the device to which you want to copy selected save files.

DENSITY - Density

Specify the procedure to be used for backup processing. To display a list of procedures, place your cursor on this parameter and press F4 to bring up a list of existing procedures.

procedure-name: Specify the procedure that you want to use for backup processing. This is a required field.

Optional Parameters

SET – Set name

Specifies the name of the set that was processed to create the save files that you want to copy to removable media.

***ALL** Save files created by any set that meet the other parameters are copied to removable media.

LIB – Library name

Specifies the name of the library that is saved in save files that you want to copy to removable media. You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter multiple values, type a plus sign (+) in the entry field opposite the phrase “+ for more”, and press the Enter key.

PERIOD - Time period for recovery

Specifies the period of time for which save files are selected to save to removable media. This parameter contains two lists of two elements each.

Element 1: Beginning Time

One of the following is used to specify the beginning creation time at which or after save files are included. Any save files created before the specified time and date are not included in the selected save files for copy to removable media.

***AVAIL**: Any time that is available for the beginning date is included.

begin-time: Specify the beginning time for the specified beginning date that indicates which save files are to be included.

The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh=hours, mm=minutes and ss=seconds. Hours, minutes, and seconds must each be exactly 2 digits (using leading zeros if necessary).
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Beginning Date

One of the following is used to specify the beginning date on or after which the save files were created. Any entries saved prior to the specified date are not included in the copy to removable media.

***BEGIN:** Save files from the beginning of the media content information are copied to removable media.

***CURRENT:** The save files with a current date creation date and between the specified beginning and ending times (if specified) are copied to removable media.

begin-date: Specify the beginning date. The date must be specified in the job date format.

Element 3: Ending Time

One of the following is used to specify the ending time before which save files are included. Any save files created after the specified time and date are not included in the items selected for copy to removable media.

***AVAIL:** Any time that is available for the ending date is included.

end-time: Specify the ending time for the specified ending date that indicates which save files are included.

Element 4: Ending Date

One of the following is used to specify the ending date on which or before which the save files must have been created. Any save files created after the specified date are not included in the copy to removable media.

***END:** The save files to the end of the save file media content information are copied to removable media.

***CURRENT:** Save files whose save date is on or before the current date are included in the copy to removable media.

end-date: Specify the ending date. The date must be specified in the job date fo

SEQNBR – Sequence number

Specify the name of the device to which you want to copy selected save files.

ENDOPT - End of tape option

Specifies, when a tape is used, what positioning operation is automatically done on the volume after the save operation ends. If more than one volume is included, this parameter is applies only to the last volume used: all other volumes are rewound and unloaded when the end of the volume is reached.

***UNLOAD:** The volume is rewound and unloaded after the save operation ends.

***REWIND:** The volume is rewound, but not unloaded.

***LEAVE:** The volume does not rewind or unloaded after the operation ends. It remains at the current position on the device.

OPTBLK – Optimum block

Specifies whether to use optimum block size when using

***YES:** Use optimum block size.

***NO:** Do not use optimum block size.

CLEAR - Clear

Specifies whether uncleared tapes or diskettes encountered during the save operation are automatically cleared.

***SAVE:** Use the value specified when the save file was created.

***NONE:** None of the uncleared tapes or diskettes encountered during the save operation are automatically cleared. If the save operation cannot proceed because an uncleared tape or diskette is encountered, an inquiry message is sent to the operator, allowing the operator to end the save operation, or to specify that the currently selected tape or diskette be cleared so the operation can continue.

***ALL:** All the uncleared tapes or diskettes encountered during the save operation are automatically cleared. If tapes are used and a sequence number is specified on the SEQNBR parameter, the first tape cleared beginning at that sequence number. All tapes following that first tape are completely cleared. To clear the entire first tape, SEQNBR(1) must be specified.

***AFTER:** All the uncleared tapes or diskettes that follow the initial diskette or tape are automatically cleared. If the operation cannot proceed because the first tape or diskette is uncleared, an inquiry message is sent to the system operator, allowing the operator to end the operation or to specify that the currently selected diskette or tape be cleared so the operation can continue.

COMPACT – Data compaction

Specifies whether data compaction is performed.

***SAVE:** Use the data compaction value specified when the save was performed.

***DEV:** Device data compaction is performed if the data is the device specified on the Device prompt (DEV parameter) support the compaction feature.

***NO:** No data compaction is performed

ALWADLSAVE – Allow additional save

Specifies whether you can save save files to removable media in subsequent save file operations.

***NO:** You cannot save save files on subsequent save operations.

***YES:** You can save save files on subsequent save operations.

SAVFRET – Save file retention

Allows you to change the expiration date on the media information record for the save file. To view the current expiration date, use the Work with Media Information (WRKMEDITRK) command.

***MEDINF:** Use the expiration date contained in the media information file is used.

DATE: Specify expiration date in the system job date format. The media information content will be updated.

***REMOVE:** Remove the save file from the system after successfully saving it to tape.

Start Backup (STRBKUTRK)

```
Start Backup using TRAC/400 (STRBKUTRK)

Type choices, press Enter.

Set . . . . . SYSTEM, USER
Procedure . . . . . SAVF, SYSTEM, TAPMLB01...
Schedule time . . . . . *IMMED hhmm, *IMMED
Submit to batch . . . . . *YES *YES, *NO
Job description . . . . . *USRPRF Name, *USRPRF
  Library . . . . . Name, *LIBL, *CURLIB
Job queue . . . . . *JOBID Name, *JOBID
  Library . . . . . Name, *LIBL, *CURLIB
```

The Start Backup using TRAC/400 (STRBKUTRK) command selects a backup set to back up. You can start the backup immediately or you can schedule it using the system job scheduler. Processing can be batch or interactive.

Required Parameters

SET - Backup set

Specify the name of the backup set that you want to schedule for backup.

This is a required field.

USER: The USER backup set is processed.

The SYSTEM backup set is processed.

set-name: Specify the set name to use for backup processing.

PROCEDURE - Procedure

Specify the procedure to be used for backup processing. To display a list of procedures, place your cursor on this parameter and press F4 to bring up a list of existing procedures.

procedure-name: Specify the procedure that you want to use for backup processing.
This is a required field.

Optional Parameters

SCDTIME - Schedule time

Specifies the time that you want TRAC/400 to begin processing the backup.

***IMMED:** The backups are to begin immediately.

start-time: Specify the time in hour and minutes that you want the backup to begin. The time is expressed in 24 hour clock format 'hhmm'.

SBMJOB - Submit to batch

Specifies how you want to process the selected backup set.

***YES:** Submits the processing of the backup set to batch. The job is dependent on the job queue and job description specified as subsequent parameters.

***NO:** Performs the processing of the backup set within the current job.

STRSEQ - Starting sequence

Specifies the sequence number and library from which you want to restart backup processing.

Note: If you are not restarting a backup set, then you will always start at the first sequence number in the backup set, regardless of the values specified in the STRSEQ parameter.

Note: You can use this parameter when *IBM, *ALLUSER, *ALLPROD, *ALLTEST, *ASPnn or generic*-library is specified as the Backup item in the specified sequence number in the backup set.

Element 1: Starting sequence

***FIRST:** Backup processing starts with the first item in the backup set.

sequence-number: Specify the sequence number within the backup set from which you want to restart backup processing.

Element 2: Starting library

***FIRST:** Backup processing starts with the first library in the specified sequence number.

library-name: Specify the name of the library within the sequence number from which you want to restart backup processing.

APPEND - Append to media

Specifies whether you want to append the backup data for the backup processing you are restarting to an active volume.

***SETATR:** Use the value from the backup set attributes for Append to media.

***YES:** Append the backup data for the backup you are restarting to an active volume. Backup data is written to the volume immediately following the last active file on the volume.

***NO:** Do not append backup data for the backup you are restarting to an active volume.

JOBID - Job description

Specifies the name of the job description used with this job

***USRPRF:** The job description in the user profile under which the submitted job runs is used as the job description of the submitted job.

job-description-name: Specify the name of the job description used for the job.

***LIBL:** The library list is used to locate the job description name.

***CURLIB:** The current library for the job is used to locate the job description name. If no library is specified as the current library for the job, QGPL is used.

library-name: Specify the name of the library where the job description name is located.

JOBQ - Job queue

Specifies the name of the job queue in which this job is placed.

***JOBQ:** The submitted job is placed on the job queue named in the specified job description.

job-queue-name: Specify the name (library-name/ job-queue-name) of the job queue on which the submitted job is placed.

***LIBL:** The library list is used to locate the job queue name.

***CURLIB:** The current library for the job is used to locate the job queue name. If no library is specified as the current library for the job, QGPL is used.

library-name: Specify the name of the library where the job queue name is located.

SCDDATE - Schedule date

Specifies the date on which the job is submitted to run.

If your system or your job is configured to use the Julian date format, *MONTHSTR and *MONTHEND are calculated as if the system or job did not use the Julian date format.

***CURRENT:** The backup is submitted on the current date.

***MONTHEND:** The job is submitted on the last day of the month. If you specify *MONTHEND, and today is the last day of the month and the time you specify on the SCDTIME has not passed, the job is submitted today. Otherwise it is submitted on the last day of the next month.

***MONTHSTR:** The job is submitted on the first day of the month. If you specify *MONTHSTR, and if today is the first day of the month and the time you specify on the SCDTIME parameter has not passed, the job is submitted today. Otherwise, the job is submitted on the first day of the next month.

***MON:** The job is scheduled to run on Monday.

***TUE:** The job is scheduled to run on Tuesday.

***WED:** The job is scheduled to run on Wednesday.

***THU:** The job is scheduled to run on Thursday.

***FRI:** The job is scheduled to run on Friday.

***SAT:** The job is scheduled to run on Saturday.

***SUN:** The job is scheduled to run on Sunday.

start-date: Specify the date in job date format that you want the back up to process.

Start Maintenance (STRMNTTRK)

```

Start Maintenance for TRAC/400 (STRMNTTRK)

Type choices, press Enter.

Expire media . . . . . *YES          *YES, *NO
Remove media information:
  Media contents . . . . . *EXP          *EXP, *REUSE, *NONE
  Object level detail . . . . . *MEDCON      1-9999, *MEDCON
Remove log entries:
  Type . . . . . *ALL          *ALL, *NONE, *BKU, *MED...
  From date . . . . . *BEGIN      Date, *CURRENT, *BEGIN,
nnnnn
  To date . . . . . 90          Date, *CURRENT, *END, nnnnn
Run cleanup operations . . . . . *YES          *YES, *NO
Retrieve volume statistics . . . . . *YES          *YES, *NO
Audit system media . . . . . *NETGRP
      + for more values
Change journal receivers . . . . . *YES          *YES, *NO
Print expired media report . . . . . *YES          *YES, *NO
Print backup activity report . . . . . *YES          *YES, *NO

```

The Start Maintenance for TRAC/400 (STRMNTTRK) command performs various TRAC/400 maintenance and clean-up functions. The STRMNTTRK command can be scheduled to process periodically either by manual submission or inclusion in an automatic job scheduler.

The STRMNTTRK command processes several other commands that can be run separately. These include:

- WRKMEDITRK - Display backup activity
- STRRCYTRK - Recovery analysis

Note: Depending on the size of your media inventory, this command can take a long time to process.

Note: The STRMNTTRK command should be run as an independent job. No other TRAC/400 functions should be active when the STRMNTTRK command is processing.

The STRMNTTRK produces multiple reports depending on the print options you select as well as the current conditions that it detects. Listed below are the printer files and associated reports that can be produced when the STRMNTTRK command processes:

- TRKPEP - Media Expiration
- TRKPMM - Media Report by Expiration Date
- TRKPHS - Media Information
- TRKPLE - Save Strategy Exceptions
- TRKPRCY - Recovering Your Entire System

- TRKPRW - Recovery Activities
- TRKP2RCY - Recovery Volume Summary

Note: This command should not be used by backup set *EXIT item processing as results will be unpredictable.

Optional Parameters

EXPMED - Expire media

Specifies whether to expire media when the STRMNTTRK command processes. Expired save files that have been copied to tape are deleted when this command is run.

***YES:** Media is expired when the STRMNTTRK command is processed.

***NO:** Media is not expired when the STRMNTTRK command is processed.

RMVMEDI - Remove media information

Specifies what information to remove from the TRAC/400 media content inventory and how long to keep object detail. The Media contents prompt indicates when media content information is removed from the media content information and the Object level detail prompt indicates when the object level detail is to be removed.

Element 1: Media contents removal

***EXP:** All TRAC/400 media content information entries that have an expiration date that is equal to or less than the current date are removed from the media content inventory.

***REUSE:** Media content information associated with a volume is not removed from the media content inventory file until the volume is re-used, even though the volume has already expired.

***NONE:** No media content information is to be removed from the media content information inventory when the STRMNTTRK command is run.

Element 2: Object detail removal

***MEDCON:** Object detail is removed when media content information is removed.

number-of-days: Specify the number of days that object detail is kept in the media content inventory. If this number of days is greater than the number of days implied in the Media contents field, such as the volume expires in 60 days and you specify 90 days for the Object level detail, the value has no effect since object detail is always removed when media content information is removed. However, if you specify 45 days and the object expires in 60 days, the object level detail is removed 15 days before other media content information is removed.

RMVLOGE - Remove log entries

Specifies whether to remove log entries when the STRMNTTRK command is run. You can specify the type of log entries that you want to remove and a date range of log entries. The RMVLOGETRK command is processed by the STRMNTTRK command to remove log entries.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on

the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: Type

***ALL**: Selects all log entries to remove within the specified date range.

***NONE**: No log entries are removed when the STRMNTTRK command processes.

***BKU**: Selects only back up log entries to remove within the specified date range.

***MED**: Selects only media management log entries to remove within the specified date range.

***MAINT**: Selects only maintenance log entries to remove within the specified date range.

***RCY**: Selects only recovery log entries to remove within the specified date range.

Element 2: From date

***BEGIN**: The earliest log entry date in the TRAC/400 log is the beginning date of the date range.

***CURRENT**: The current date is the starting point of the range of dates used to remove entries from the TRAC/400 log.

from-date: Specify the date entered in job date format with or without date separators that you want to be the beginning date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the beginning date of the date range.

Element 3: To date

90: 90 days before the current day is the ending date of the date range.

***CURRENT**: The current date is the ending date of the date range.

***END**: The last date in the log is the ending date of the date range.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

RUNCLNUP - Run cleanup operations

Specifies whether TRAC/400 is to run clean up operations when the STRMNTTRK command processes.

***YES**: Clean up operations are performed when the STRMNTTRK command is processed.

***NO:** Clean up operations are not performed when the STRMNTTRK command is processed.

RTVVOLSTAT - Retrieve volume statistics

Specifies whether TRAC/400 is to retrieve volume statistics when the STRMNTTRK command processes.

***YES:** Volume statistics are retrieved when the STRMNTTRK command is processed.

***NO:** Volume statistics are not retrieved when the STRMNTTRK command is processed.

AUDSYSMED - Audit system media

Specifies whether media information as contained by one or more systems in the network set should be audited and differences in media information resolved. You can enter one or more system/network identifiers or you can select the special value *NETGRP for all systems in the network set or *NONE for none of the systems in the network set.

Note: Running shared inventory audit processing on each and every system using STRMNTTRK results in undue system and communications work. This auditing could be performed on just one system, in order to accomplish the same result.

Note: Shared inventory audit processing is not generally required (except when users are restoring a back level TRAC400 database) and need a way to resynchronize this local back level copy, or correct for problems due to loss of TRKANET records.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***NETGRP:** Media information for all systems in the network set is to be audited and differences resolved.

***NONE:** No media information for any system in the network set is to be audited and differences resolved.

location-name: Specify the name of the remote location associated with the system. The local system's network identifier, as seen by using the DSPNETA command, is used as the system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the system. Specify these values using the format nnnnnnnn.cccccc where nnnnnnnn is the network identifier and cccccc is the remote location name.

CHGJRN - Change TRAC/400 journals

Specifies whether to change the receivers for the TRAC/400 journals when the STRMNTTRK command processes. When the TRAC/400 journal receivers are changed, the old TRAC/400 journal receiver is deleted.

***YES:** The journal receivers are changed when the STRMNTTRK command is processed.

***NO:** The journal receivers are not changed when the STRMNTTRK command is processed.

PRTEXPMED - Print expired media report

Specifies whether to print a report of media that was expired when the STRMNTTRK command processes.

***YES:** A report of media that was expired prints when the STRMNTTRK command is processed.

***NO:** No report is created of the media that was expired when the STRMNTTRK command is processed.

PRTBKUACT - Print backup activity report

Specifies whether to print a report of what was backed up. The report will include backups done the day of the report and the previous day. The WRKMEDITRK command (OUTPUT parameter=*PRINT) is run by the STRMNTTRK command to produce the report.

***YES:** A report is printed of what was backed up today and yesterday when the STRMNTTRK command is run.

***NO:** No report is created of what was backed up.

PRTRCYRPT - Print recovery reports

Specifies which recovery reports to print for recovery when the STRMNTTRK command runs. If you want to print two of the three reports, specify the special values for the reports. If you want to print all three of the reports, specify *ALL.

***ALL:** Print all reports for recovery when the STRMNTTRK command is processed.

***NONE:** You do not want to print any of the reports when the STRMNTTRK command is processed.

***RCYANL:** Print the Recovery Analysis report when the STRMNTTRK command is processed.

***SAVEXCP:** Print the Save Strategy Exceptions report when the STRMNTTRK command is processed.

***RCYACT:** Print the Recovery Activities report when the STRMNTTRK command is processed.

Start Recovery (STRRCYTRK)

```

Start Recovery using TRAC/400 (STRRCYTRK)

Type choices, press Enter.

Option . . . . . *SYSTEM          *SYSTEM, *SAVSYS, *IBM...
Action . . . . . *REPORT          *REPORT, *RESTORE
Time period for recovery:
  Start time and date:
    Beginning time . . . . . *AVAIL      Time, *AVAIL
    Beginning date . . . . . *BEGIN      Date, *CURRENT, *BEGIN
  End time and date:
    Ending time . . . . . *AVAIL      Time, *AVAIL
    Ending date . . . . . *END          Date, *CURRENT, *END
Use save files . . . . . *NO           *NO, *YES
Volume location . . . . . *ALL         *ALL, *HOME, TAPMLB01...
      + for more values
Library to omit . . . . . *NONE        *DELETE, *NONE
From system . . . . . *LCL

```

The Start Recovery using TRAC/400 (STRRCYTRK) command recovers items ranging from a single library to the entire system. Any library or set of libraries that were saved by TRAC/400 can be restored by this command. Recovery is based on entries in the TRAC/400 media inventory contents information.

Recovery using the STRRCYTRK uses the most recent times and dates of entries in the TRAC/400 media content information. This reflects the order in which libraries and objects were saved. For instance, a recovery request for a library will restore the most recent full backup of a library, the latest incremental backup of that library, and all object level saves that have dates after the last full save.

Note: Prior to processing a restore, you should use the report option (*REPORT) to produce a report of the steps required to restore a portion of the system or the entire system. The report that is produced is the Recovery Analysis report. The report, if printed, is written to printer file TRKPRCY.

Note: Do not precede an entry with an asterisk unless that entry is a "special value" that is shown (on the display itself or in the help information) with an asterisk.

Note: This command should not be used by backup set *EXIT item processing as results will be unpredictable.

Optional Parameters

OPTION - Option

Specifies what you want to restore entries from the TRAC/400 media content inventory. When you are restoring multiple items, such as a *SYSTEM, it is advisable to first run a Recovery Analysis Report to assist you in evaluating the steps required to restore the requested items.

* You want to restore the entire system based on the TRAC/400 media content information. Because TRAC/400 cannot automatically restore the entire system without some assistance, you can use the *REPORT value for the Option prompt (OPTION parameter), but not the *RESTORE value. For instance, TRAC/400 cannot install the

Licensed Internal Code and restore the operating system for you automatically. The report assists you in locating the required volumes and identifies the manual steps needed to install the Licensed Internal Code. Perform a restore of the operating system and the TRAC/400 product. After you have performed the manual steps, TRAC/400 is able to provide automated assistance in restoring the remainder of the system. The steps required to restore the system are based on the Recovery Analysis report.

***SAVSYS:** You want to restore the operating system based on the TRAC/400 media content information. Because TRAC/400 cannot automatically restore the entire system without some assistance, you can use the *REPORT value for the Option prompt (OPTION parameter), but not the *RESTORE value. For instance, TRAC/400 cannot install the Licensed Internal Code and restore the operating system for you automatically. The report assists you in locating the required volumes and identifies the manual steps needed to install the Licensed Internal Code and a restore of the operating system.

***IBM:** Restores all system (IBM) libraries except for the following:

QDOC	QPFRDATA	QSPL	QTEMP
QDSNX	QRCL	QSRV	QUSER38
QGPL	QRECOVERY	QSYS	QUSRSYS
QGPL38	QRPLOBJ	QS36F	QUSRVxRxMx

Note: A different library name, in the format QUSRVxRxMx may be created by the user for each previous release supported by IBM to contain any user commands to be compiled in a CL program for the previous release. For the QUSRVxRxMx user library, VxRxMx is the version, release, and modification level of a previous release that IBM continues to support.

The following libraries with names that do not begin with the letter Q are also restored:

#CGULIB	#DSULIB	#SEULIB
#COBLIB	#RPGLIB	
#DFULIB	#SDALIB	

***ALLUSR:** All libraries with names that do not begin with Q are restored except for the following:

#CGULIB	#DSULIB	#SEULIB
#COBLIB	#RPGLIB	
#DFULIB	#SDALIB	

Although the following Qxxx libraries are provided by IBM, they typically contain user data that changes frequently. Therefore, these libraries are considered "user libraries", and are also restored:

QDSNX	QPFRDATA	QUSER38
QGPL	QRCL	QUSRSYS
QGPL38	QS36F	QUSRVxRxMx

Note: A different library name, in the format QUSRVxRxMx, may be created by the user for each previous release supported by IBM to contain any user commands to be compile in a CL program for the previous release. For the QUSRVxRxMx user library, VxRxMx is the version, release, an modification level of a previous release that IBM continues to support.

***LIB:** You want to restore a library from the media content information. You must specify the library name in the Library prompt (LIB parameter). The latest version of the library is restored from the TRAC/400 media content information by using the latest full save plus any incremental and object saves subsequent to the latest full save.

***ASP:** You want to restore an ASP (Auxiliary Storage Pool). You must specify the ASP number (1-16) in the Auxiliary storage pool ID prompt (ASP parameter). If you are restoring ASP01, only user data is restored, not the operating system.

***SET:** You want to restore a backup set and its associated save items from the media content information. You must specify the backup set name in the Backup set prompt (SET parameter).

***ALLDLO:** You want to restore all documents, folders, and distribution objects (mail) from the media content information that meet the specified starting and ending date.

***RESUME:** You want to start the recovery from the point where the recovery stopped.

ACTION - Action

You can specify whether you want to create a Recovery Analysis Report or perform an actual recovery.

***REPORT:** You want to create the Recovery Analysis Report. This is recommended prior to restoring the system or *IBM to assure that the required media is available and that all necessary saves have been performed.

***RESTORE:** You want to restore the requested items from the TRAC/400 media content information.

Note: If you specify *RESTORE and have specified *SYSTEM for the Option prompt (OPTION parameter), you will be returned to the Perform Recovery display.

PERIOD - Time period for recovery

Specifies the period of time for which the recovery items are selected for recovery. Selected items are either included in the recovery report or recovered. This is dependent on the value specified in the Action prompt (ACTION parameter). This parameter contains two lists of two elements each.

Element 1: Beginning Time

One of the following is used to specify the beginning creation time at which or after recovery items are included. Any items created before the specified time and date are not included in the selected recovery items.

***AVAIL:** Any time that is available for the beginning date is included.

begin-time: Specify the beginning time for the specified beginning date that indicates which recovery items are to be included.

The time is specified in 24-hour format and can be specified with or without a time separator:

- Without a time separator, specify a string of 4 or 6 digits (hhmm or hhmmss) where hh=hours, mm=minutes and ss=seconds. Hours, minutes, and seconds must each be exactly 2 digits (using leading zeros if necessary).
- With a time separator, specify a string of 5 or 8 digits where the time separator specified for your job is used to separate the hours, minutes, and seconds. If you enter this command from the command line, the string must be enclosed in apostrophes. If a time separator other than the separator specified for your job is used, this command will fail.

Element 2: Beginning Date

One of the following is used to specify the beginning date on or after which the recovery items must have been saved. Any entries saved prior to the specified date are not included in the recovery.

***BEGIN:** Recovery items from the beginning of the media content information are recovered.

***CURRENT:** Recovery items with a current date creation date and between the specified beginning and ending times (if specified) are recovered.

begin-date: Specify the beginning date. The date must be specified in the job date format.

Element 3: Ending Time

One of the following is used to specify the ending time before which recovery items are included. Any items created after the specified time and date are not included in the recovery items selected for recovery.

***AVAIL:** Any time that is available for the ending date is included.

end-time: Specify the ending time for the specified ending date that indicates which recovery items are to be included.

Element 4: Ending Date

One of the following is used to specify the ending date on which or before which the recovery items must have been saved. Any recovery items created after the specified date are not included in the recovery operation.

***END:** The recovery items to the end of the recovery information are recovered.

***CURRENT:** Recovery items whose save date is on or before the current date are included in the recovery.

end-date: Specify the ending date. The date must be specified in the job date format.

USESAVF - Use save files

Specifies whether you want to use save files for recovery.

***NO:** You do not want to use save files for recovery.

***YES:** You do want to use save files for recovery. If the library that you want to recover is saved both on tape and a save file, and the save time and dates are the same, then TRAC/400 will use the save file for recovery.

ASP - Auxiliary storage pool ID

Specifies the auxiliary storage pool number (1 - 16) that you want to restore. The Auxiliary storage pool ID field is a required field when the Option field contains *ASP. If you are restoring ASP01, only user data, not the operating system is restored.

1: Auxiliary storage pool number 1 is restored.

auxiliary-storage-pool-number: Specify the auxiliary storage pool number that you want to restore.

LIB - Library

Specifies the name of the library that you want to restore. Library is a required field when the Option field contains *LIB.

library-name: Specify the name of the library that you want to restore.

generic-library-name*: Specify the generic name for libraries that you want to restore. A generic name is a character string that contains one or more characters followed by an asterisk (*). If an * is not specified with the name, the system assumes that the name is a complete library name.

SET - Backup set

Specifies the name of the backup sets that you want to restore. The Backup set prompt (SET parameter) is a required field when the Option prompt (OPTION parameter) contains *SET. You can specify either backup set or you can specify both backup sets and sequence the order in which they are restored. You can also specify both backup sets with the special value *ALL which will restore media information from either backup set in the order in which it was saved.

***ALL**: You want to restore all backup sets from the media content information. This parameter can not be used in batch operations.

USER: You want to restore information saved using the USER backup set.

You want to restore information saved using the SYSTEM backup set.

set-name: Specify the backup set you want to restore.

LOC - Volume location

Specifies the locations that you want to include in the recovery.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***ALL**: Include all locations that have been set up in TRAC/400.

***HOME**: Include only the home location.

location-name: Specify the name of the location that you want to include in the recovery. You can specify up to 10 locations.

OMITLIB - Library to omit

Specifies whether you want to omit media information in the recover for libraries that have been deleted.

***NONE**: Include media information for deleted libraries.

***DELETE**: Do not include media information for deleted libraries.

FROMSYS - From system

The location and network identification of the system from which you want to restore media information to the local system.

***LCL:** The from-system is the local system. TRAC/400 uses the default local location name, LCLLOCNAME and not the system name SYSNAME. In most cases, the the AS/400 systems have the same value specified in the LCLLOCNAME and in the SYSNAME. You can use the DSPNETA command to view the system network attributes.

location-name: Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc where nnnnnnnn is the network identifier and cccccc is the remote location name.

Work with Saved Folders (WRKFLRTRK)

```
Work with Saved Folders (WRKFLRTRK)

Type choices, press Enter.

Folder . . . . . *ALL

Select dates:
  From date . . . . . *BEGIN      Date, *CURRENT, *BEGIN, nnnn
  To date . . . . . *END          Date, *CURRENT, *END, nnnn
Save status . . . . . *ALL        *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE    *DATE, *FLR
From system . . . . . *LCL
Output . . . . . *                *, *PRINT
```

The Work with Saved Folders using TRAC/400 (WRKFLRTRK) command displays or prints a report of saved folders, including all subfolders. Folders are selected by date ranges and the resulting display/print can be sequenced in several ways.

If the display option is selected, you can display the documents in each folder and restore them from the media inventory. The report that is produced is the Saved Folders report. The report, if printed, is written to printer file TRKPFDD.

Optional Parameters

FLR - Folder

Specifies the name of the folder or set of folders that you want to display or print.

***ALL:** Include all folders in the display or print.

folder-name: Specify the name of the folder that you want to display or print.

generic-folder-name:* Specify the generic folder name. For example, specifying

ACCFLR* would cause all folder whose names that begin with ACCFLR to be included in the display or print.

SLTDATE - Select dates

Specifies a range of dates that you want to use when displaying or printing saved folders. The From date is the beginning of a date range of saved folders and the To date is the end of the date range.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using onth/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number.

TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN:** Uses the earliest activity date for the beginning date of the date range.

***CURRENT:** Use the current date for the beginning date of the date range.

from-date: Specify the date entered in job date format with or without date separators for the beginning date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: To date

***END:** The last date that a folder was saved is the ending date of the date range that you want to use for the search.

***CURRENT:** Uses the current date for the ending date of the date range.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

SAVSTS - Save status

Specifies whether you want to display or report all successful saves, unsuccessful saves or both.

***ALL:** Include both successful and unsuccessful saves in the display or report.

***NOERROR:** Include only successful saves in the display or report.

***ERROR:** Include only unsuccessful saves in the display or report.

SORT - Sequence option

The Work with Saved Folders display or report can be sequenced several ways.

***DATE:** Orders the display or report in date sequence.

***FLR:** Orders the display or report in folder sequence.

FROMSYS - From system

Specifies the location and network identification of the system whose folder information that you want to work with.

***LCL:** The from-system is the local system. TRAC/400 uses the default local location name, LCLLOCNAME and not the system name SYSNAME. In most cases, the AS/400 systems have the same value specified in the LCLLOCNAME and in the SYSNAME. You can use the DSPNETA command to view the system network attributes.

location-name:

Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc where nnnnnnnn is the network identifier and cccccc is the remote location name.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

*****: The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT:** The output is printed with the job's spooled output.

Work with Link Information (WRKLNKTRK)

```
Work with Link Information (WRKLNKTRK)

Type choices, press Enter.

Directory . . . . . ' * '

Select dates:
  From date . . . . . *BEGIN      Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END        Date, *CURRENT, *END, nnnnn
  From system . . . . . *LCL
  Output . . . . . *           *, *PRINT
```

The Work with Link Information (WRKLNKTRK) command allows you to work with all or selected directories that contain integrated file systems object link information. You are taken to the Work with Link Information display where you can work with integrated file system object link information or remove integrated file system object link information. Output can be a display or printed report.

Optional Parameters

DIR - Directory

Specifies the path for the directories that you want to work with in a display or report.

*****: Include all directories in the display or report.

object-name-pattern: Specify the name of the object or a pattern to match the name(s) of the object(s) to be shown. The object path name can be either a simple name or a name that is qualified with the name of the directory in which the object is located. A pattern can be specified in the last part of the path name. An asterisk (*) matches any number of characters and a question mark (?) matches a single character. If the path name is qualified or contains a pattern, it must be enclosed in apostrophes.

SLTDATE - Select date

Specifies a range of dates that you want to use when selecting entries to include in the display or report. The From date is the beginning point in the date range and the To date is the end of the date range.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN**: The date of the earliest entry is the beginning date of the date range.

***CURRENT**: The current date is the starting point of the range of dates to select for the display or report.

from-date: Specify the date entered in job date format with or without date separators that you want to be the beginning date of the date range.

number-of-days: Specify the number of days before the current day that is the beginning date of the date range.

Element 2: To date

***END**: The last date is the ending date of the date range.

***CURRENT**: The current date is the ending date of the date range.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of the date range.

number-of-days: Specify the number of days before the current day that is the ending date of the date range.

FROMSYS - From system

Specifies the location and network identification of the system whose integrated file system information that you want to display or print.

***LCL:** The from-system is the local system. TRAC/400 uses the default local location name, LCLLOCNAME and not the system name SYSNAME. In most cases, the AS/400 systems have the same value specified in the LCLLOCNAME and in the SYSNAME. You can use the DSPNETA command to view the system network attributes.

location-name:

Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc where nnnnnnnn is the network identifier and cccccc is the remote location name.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

***:** The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT:**

The output is printed with the job's spooled output.

Work with Media (WRKMEDTRK)

```

Work with Media using TRAC/400 (WRKMEDTRK)

Type choices, press Enter.

Volume . . . . . *ALL          *ALL, generic*
      + for more values
Status . . . . . *ALL          *ALL, *ACT, *EXP, *ERR
Creation dates:
  Beginning creation date . . . *BEGIN      Date, *CURRENT, *BEGIN, nnnnn
  Ending creation date . . . . *END        Date, *CURRENT, *END, nnnnn
Expiration dates:
  Beginning expiration date . . *BEGIN      Date, *CURRENT, *BEGIN, nnnnn
  Ending expiration date . . . *END        Date, *CURRENT, *END, nnnnn
Location . . . . . *ALL          *ALL, *HOME, TAPMLB01...
Density . . . . . *ALL          *ALL, *QIC120, *QIC525...
System name . . . . . *ALL
Set . . . . . *ALL          Name, *ALL, *NONE
Sequence option . . . . . *VOL      *VOL, *CRT, *EXP, *LOC
Output . . . . . *              *, *PRINT

```

The Work with Media using TRAC/400 (WRKMEDTRK) command works with active, expired or all media volumes in the media inventory by creation and expiration date for any or all locations. The following parameters can be used to tailor this display or printed report. The report that is produced is the Media report. The report, if printed, is written to printer file TRKPMM.

Optional Parameters

VOL - Volume

Specifies the volume or volumes that you want to display in the Work with Media display or print.

You can type multiple values for this parameter. If you are on an entry display and you need additional entry fields to type these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***ALL:** You want to display or print all volumes in the media inventory that meet all specified parameters.

generic-volume-name:* Specify the generic volume name. For example, specifying VOL* would cause all volumes whose names that begin with VOL to be included in the display or print.

volume-name: Specify that you want to display or print the volume or volumes that meet all specified parameters.

STATUS - Status

Specifies the status of the media with which you want to work.

The possible values are:

***ALL:** You want to work with all media, regardless of status.

***ACT:** You want to work with active media.

***EXP:** You want to work with expired media.

***ERR:** You want to work with error media.

SLTCRTDATE - Select creation date

Specifies a range of creation dates that you want to use when working with media. The Beginning creation date is the beginning of a date range of media selected and the Ending creation date is the end of the date range of creation dates.

Element 1: Beginning creation date

***BEGIN:** Uses the earliest media volume creation date that is on the file for the beginning of the creation date range.

***CURRENT:** Uses the current date as the beginning of the creation date range.

beginning-creation-date: Specify a date that is the beginning of the creation date range. The date must be less than or equal to the current date.

number-of-days: Specify the number of days before the current day that is used to determine the beginning date of the date range.

Element 2: Ending creation date

***END:** The last creation date in the media inventory is used as the end of the creation date range.

***CURRENT:** Uses the current date as the ending of the creation date range.

ending-creation-date: Specify a date that is the ending of the creation date range. The date must be equal to or greater than the beginning creation date and less than or equal to the current date.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

SLTEXPDATE - Select expiration date

Specifies a range of expiration dates that you want to use when working with media. The Beginning expiration date is the beginning of a date range of media selected and the Ending expiration date is the end of the date range of expiration dates.

Element 1: Beginning expiration date

***BEGIN**: Uses the earliest media volume expiration date that is on the file for the beginning of the expiration date range.

***CURRENT**: Uses the current date as the beginning of the expiration date range.

beginning-expiration-date: Specify a date that is the beginning of the expiration date range. The date must be less than or equal to the current date.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: Ending expiration date

***END**: The last expiration date in the media inventory is used as the end of the expiration date range.

***CURRENT**: Uses the current date as the ending of the expiration date range.

ending-expiration-date: Specify a date that is greater than or equal to the beginning expiration date.

number-of-days: Specify the number of days after the current day that is used to determine the ending date of the date range.

LOC - Location

Specifies the location of the media that you want to display or print.

***ALL**: Use the media volumes that reside in any storage location.

***HOME**: Use the media volumes that reside in the local storage location, *HOME.

from-location-name: Specify the name of the media storage location.

DENSITY - Density

Specifies the density of the media that you want to display or print. You can select a specific density or all densities.

***ALL**: Work with all densities.

density: Specify the name of the density that you want to display or print.

SYSNAME - System name

Specifies the system name whose media inventory you want to print or display.

***ALL**: You want to print or display the media inventory for all system names.

***LCL**: You want to print or display the media inventory for the local system.

system-name: Specify the name of the remote location associated with the system.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the system. Specify these values using the format nnnnnnnn.cccccc where nnnnnnnn is the network identifier and cccccc is the remote location name.

SET - Backup set

Specifies the backup set that you want to include in the volumes that you want to display or print.

***ALL**: Include the backup sets that meet the other specifications for the media that you want to display or print.

***NONE**: Do not include either backup sets.

USER: Include volumes that contain the USER backup set.

Include volumes that contain the SYSTEM backup set.

set-name: Specify the set that you want to include in the volumes.

SORT - Sequence

Specifies the sort sequence that you want to use for this display or report.

***VOL**: Sorts the display or report in volume sequence.

***CRT**: Sorts the display or report in creation date sequence.

***EXP**: Sorts the display or report in expiration date sequence.

***LOC**: Sorts the display or report in location sequence.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

*****: The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT**: The output is printed with the job's spooled output.

Work with Media Information (WRKMEDITRK)

```

Work with Media Information (WRKMEDITRK)

Type choices, press Enter.

Library . . . . . *ALL          Name, generic*, *ALL...
Volume . . . . . *ALL          Character value, *ALL
Auxiliary storage pool ID . . . *ALL          1-16, *ALL
Set . . . . . *ALL           Name, *ALL, *NONE
Save type . . . . . *ALL       *ALL, *FULL, *CUML, *INCR...
      + for more values

Select dates:
  From date . . . . . *BEGIN     Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END        Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL       *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE   *DATE, *LIB, *VOL
Entries to be displayed first . *LAST   *LAST, *FIRST
From system . . . . . *LCL
Output . . . . . *              *, *PRINT

```

The Work with Media Information using TRAC/400 (WRKMEDITRK) command displays or reports media information based on specified libraries, date ranges and sequences. The Work with Media Information command shows the date and time each library was saved, the type of save, the volume serial and its associated expiration date and the number of objects that were saved and the number that were not saved. The command gives you the option to display or print the report. The report that is produced is the Backup Activity report. The report, if printed, is written to printer file TRKPHS.

Optional Parameters

LIB - Library

Specifies the name of the library or special value that you want to display or report.

***ALL:** All libraries are to be included in the media information report.

***ALLDLO:** You want to display or print media information for all folders that you have saved using the *ALLDLO special value.

***SAVCAL:** You want to display or print media information for all calendars that you have saved using the *SAVCAL special value.

***SAVSYS:** You want to display or print media information that was the result of using the *SAVSYS special value.

***SAVCFG:** You want to display or print media information for all configurations that you have saved using the *SAVCFG special value.

***SAVSECDTA:** You want to display or print media information for all security data that you have saved using the *SAVSECDTA special value.

***SAVSPLF:** You want to display or print media information for all spooled files that you have saved in a list.

***QHST:** You want to display or print media information for all entries you have saved using the *QHST special value.

generic-library-name*: Specify that the library name is generic. For example, specifying ACCTP* would cause all libraries whose names begin with ACCTP to be included in the report or on the display.

library-name: Specify the name of a specific library on which you want to report media information.

VOL - Volume

Specifies the name of the media volume which you want to include in the Work with Media Information display or *ALL if you want to include all volumes.

***ALL**: You want to include all volumes in the media information display or report.

volume-identifier: Specify the name of a media volume on which you want to display or report media information.

ASP - Auxiliary storage pool ID

Specifies the Auxiliary Storage Pool (ASP) number that you want to review as part of the Work with Media Information display/report. The ASP number is the number of the ASP where the libraries or objects resided when the save operation occurred.

***ALL**: You want to work with all ASPs that have entries in the save history.

ASP-number: Specify the ASP number (1-16) that you want to display/report.

SET - Backup set

Specifies the name of the backup set that you want to work with when displaying saved items.

***ALL**: Work with both backup sets.

USER: You want to work with items saved using the USER backup set.

You want to work with items saved using the system USER backup set.

***NONE**: Work with items that were not saved using a backup set.

set-name: Specify the name of the backup set whose items you want to work with.

SAVTYPE - Save type

Specifies the type of save items that you want to work with. You can specify all types of items, a specific type or a mix of types.

You can enter multiple values for this parameter. If you are on an entry display and you need additional entry fields to enter these multiple values, type a plus sign (+) in the entry field opposite the phrase "+ for more", and press the Enter key.

***ALL**: Work with all types of save items.

***FULL**: Only work with save items that were a result of a full save.

***CUML**: Only work with save items that were a result of an incremental (save changed objects) save. *CUML indicates that the incremental save includes all objects that have been changed since the last full save.

***INCR:** Only work with save items that were a result of an incremental (save changed objects) save. *INCR indicates that the incremental save includes all objects that have been changed since the last incremental save.

***QTRK:** Work with TRAC/400 media information items that have been saved.

***FILE:** Only work with save items that were a result of native OS/400 save commands.

***NONE:** Only work with save items that have never been saved.

SLTDATE - Select dates

Specifies a range of dates that you want to use when reporting on media information. The From date is the beginning of a date range of media information and the To date is the end of the date range.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN:** The earliest media information date on the file is the beginning date of a date range.

***CURRENT:** The current date is the beginning date of a date range.

from-date: Specify the date in job date format with or without date separators that you want to be the beginning date of a date range.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: To date

***END:** The last date found in the file is the end of the date range for the search.

***CURRENT:** The current date is the ending date of the date range.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of a date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

SAVSTS - Save status

Specifies whether you want to display or report all successful saves, unsuccessful saves or both.

***ALL:** You want to include both successful and unsuccessful saves in the display or report.

***NOERROR:** You want to include only successful saves in the display or report.

Note: Objects that are not saved are not necessarily considered an error condition. For instance, if one object within a library is in a locked condition during a save operation, and the remainder of the objects in the library are not, a save operation of the library can complete successfully, even though the locked object will be omitted. The omitted object will be indicated in the Not saved column of the resulting Work with Media Information display or report.

***ERROR:** You want to include only unsuccessful saves in the display or report.

Note: Errors that are included are those that would have resulted in an abnormal completion condition if you had used a native OS/400 save command for the save operation.

SORT - Sequence

Specifies that the media information report is to be sequenced in several ways.

***DATE:** Sequences the media information report by date.

***LIB:** Sequences the media information report by library.

***VOL:** Sequences the media information report by volume.

START - Entries to be displayed first

Specifies the starting position of the media information entries. The display station user can roll the display up or down to see other media information entries if the media information entry is on another display screen.

***LAST:** Media information is shown starting with the last entry at the bottom of the display.

***FIRST:** Media information is shown starting with the first entry at the top of the display.

FROMSYS - From system

Specifies the remote system from which the media information originated.

***LCL:** The from-system is the local system.

location-name: Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc, where nnnnnnnn is the network identifier, and cccccc is the remote location name.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

***:** The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT:** The output is printed with the job's spooled output.

Work with Media Library Media (WRKMLMTRK)

```
Work with Media Library Media (WRKMLMTRK)

Type choices, press Enter.

Library device . . . . . Name
Volume . . . . . *ALL *ALL, generic*
Category . . . . . *ALL Name, *ALL, *SHARE400...
TRAC/400 volume . . . . . *ANY *ANY, *YES, *NO
Output . . . . . * *, *PRINT
```

The Work with Media Library Media using TRAC/400 (WRKMLMTRK) command works with all media or specific media in an IBM media library device that you specify. Various parameters can be used to tailor this display or report. The report that is produced is the Media Library Media report. The report, if printed, is written to the printer file QP1A1MD.

Required Parameters

MLB - Media library

Use this parameter to specify the media library (MLB) that you want to display or print.

Optional Parameters

VOL - Volume

Specifies all media, a generic media volume or the specific media volume that you want to display or print.

***ALL:** Include all media for the selected media library in the display or report.

generic-media-volume:* Specify the generic name of a volume. A generic name is a character string of one or more characters followed by an asterisk (*); for example ABC*. The asterisk (*) substitutes for any valid characters. A generic name specifies all volumes with names that begin with the generic prefix, for which the user has authority. If an asterisk is not included with the generic (prefix) name, the system assumes it to be the complete volume name.

media-volume: Specify the media volume for the selected media library device that you want to include in the display or report.

CGY - Category

Specifies which media by category from the selected IBM media library (MLB) to include in the display or print.

***ALL:** All media in the MLB is to be included in the display or report.

Note: If you have defined your own media categories, they will not be included when you specify CGY(*ALL).

***SHARE400:** Only share media already added to the MLB are to be included in the display or report.

***NOSHARE:** Only private media already added to the MLB are to be included in the display or report. Private media are those which are only able to be used by this system.

***INSERT:** Only media already in the MLB which does not have a category such as *SHARE400 or *NOSHARE and which are otherwise not assigned to a system is to be included in the display or report.

***EJECT:** Only media in the eject mode in the selected MLB is included in the display or report.

***IPL:** Only alternate IPL media in the selected MLB is included in the display or report.

***NL:** Only non-labeled media in the selected MLB is included in the display or report.

***CNV:** Only convenience station media in the selected MLB is included in the display or report.

***SYSGEN:** Only *SYSGEN mode media in the selected MLB is included in the display or report.

category-name: Specify the user defined media category name.

TRKVOL - TRAC/400 volume

Specifies whether you want to include only TRAC/400 media, non-TRAC/400 media or any media in the display or report.

***ANY:** Any media, whether registered in TRAC/400 or not, is included in the display or report.

***YES:** Only media registered in TRAC/400 is included in the display or report.

***NO:** Only non-TRAC/400 media is included in the display or report.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

***:** The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT:** The output is printed with the job's spooled output.

Work with Saved Objects (WRKOBJTRK)

```

Work with Saved Objects (WRKOBJTRK)

Type choices, press Enter.

Object . . . . . *ALL          Name, *ALL
Library . . . . . *ALL          Name, *ALL
Type . . . . . *ALL            Character value, *ALL
Select dates:
  From date . . . . . *BEGIN      Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END          Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL        *ALL, *NOERROR, *ERROR
Object information . . . . . *ALL  *ALL, *OBJ, *DLO, *MBR
Sequence option . . . . . *SAVDAT *SAVDAT, *OBJ, *LIB
From system . . . . . *LCL
Output . . . . . *              *, *PRINT

```

The Work with Saved Objects using TRAC/400 (WRKOBJTRK) command prints/displays a report of saved objects. Sets of objects are selected by date ranges and the resulting display or report can be sequenced in several ways. If the display option is selected, you can restore objects from the media inventory. The report that is produced is the Saved Objects report. The report, if printed, is written to printer file TRKPOD.

Optional Parameters

OBJ - Object

Specifies the name and library of the object or set of objects that you want to display or print.

***ALL:** Include all objects that are the object types specified in the Type prompt (TYPE parameter) in the Work with Saved Objects display or report.

object-name: Specify the name of a specific object for which you want to produce the Work with Saved Objects display or print.

***ALL:** Search all libraries for objects to include in the Work with Saved Objects display or report.

library-name: Specify the name of a specific library to search for objects to included in the display or print.

OBJTYPE - Type

Specifies the type of object that you want to display or print.

***ALL:** Include all object types in the display or print.

object-name: Specify the name of a specific object type about which you want to display or print.

SLTDATE - Select dates

Specifies a range of dates that you want to use when reporting on saved objects. The From date is the beginning of a date range and the To date is the end of a date range of

saved objects.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN:** Uses the earliest date in the file for the beginning date of the date range.

***CURRENT:** Uses the current date for the beginning date of the date range.

from-date: Specify the date in job date format with or without date separators that you want to use as the beginning date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: To date

***END:** Use the last date that an object was saved as the ending date in the date range that you want to use for the search.

***CURRENT:** Uses the current date as the ending date of the date range.

to-date: Specify the date in job date format with or without date separators to use as the ending date of the date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

SAVSTS - Save status

Specifies whether you want to display or report all successful saves, unsuccessful saves or both.

***ALL:** Include both successful and unsuccessful saves in the display or report.

***NOERROR:** Include only successful saves in the display or report.

***ERROR:** Include only unsuccessful saves in the display or report.

INFTYPE - Object information

Specifies whether you want to display or report all objects or selected objects.

***ALL:** Include all objects in the display or report.

***OBJ:** Include only non-DLO objects in the display or report.

***DLO:** Include only DLO objects in the display or report.

***MBR:** Include only members in the display or report.

SORT - Sequence option

The saved object display or report can be sequenced several ways.

***SAVDAT**: Orders the list in save date sequence.

***OBJ**: Orders the list in object sequence.

***LIB**: Orders the list in library sequence.

FROMSYS - From system

Specifies the location and network identification of the system whose object information that you want to work with.

***LCL**: The from-system is the local system.

location-name: Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc, where nnnnnnnn is the network identifier, and cccccc is the remote location name.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

*****: The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT**: The output is printed with the job's spooled output.

Work with Saved Spooled Files (WRKSPLFTRK)

```
Work with Saved Spooled Files (WRKSPLFTRK)

Type choices, press Enter.

Output queue . . . . . *ALL      Name, *ALL
  Library . . . . . *ALL      Name, *ALL
File . . . . . *ALL      Name, *ALL
Job name . . . . . *ALL      Name, *ALL
User . . . . . *ALL      Name, *ALL
User data . . . . . *ALL      Name, *ALL
Select dates:
  From date . . . . . *BEGIN    Date, *CURRENT, *BEGIN, nnnnn
  To date . . . . . *END      Date, *CURRENT, *END, nnnnn
Save status . . . . . *ALL      *ALL, *NOERROR, *ERROR
Sequence option . . . . . *DATE    *DATE, *JOB, *FILE
From system . . . . . *LCL
Output . . . . . *          *, *PRINT
```

The Work with Saved Spooled Files using TRAC/400 (WRKSPLFTRK) command creates a display or report of saved spooled files based on specified libraries, output queues, files, job names, users, date ranges and sequences. Processing the Work with Saved Spooled Files command takes you to the Work with Saved Spooled Files display where you can remove, display or retrieve selected spooled file entries as well as work with media that contains saved spooled files. The report that is produced is the Saved Spooled File report. The report, if printed, is written to printer file QP1AOQ.

Optional Parameters

OUTQ - Output queue

Specifies the name of the library and output queue that you want to include in the display or report.

***ALL:** Include all output queues in the display or report.

output-queue-name: Specify the name of an output queue that you want to include in the display or report.

***ALL:** All libraries or special values containing the spooled files are to be included in the list of spooled files.

library-name: Specify the name of a library that contained the spooled file.

FILE - File

Specifies the name of the printer file that contained the spooled file when it was saved that you want to include in the display or report.

***ALL:** Include all files in the display or report.

file-name: Specify the name of a file that you want to include in the display or report.

JOB - Job name

Specifies the name of the job that which created the spooled file that you want to include in the display or report.

***ALL:** Include all spooled files for jobs in the display or report.

job-name: Specify the name of a job whose files are to be included in the display or report.

USER - User

Specifies the name of the user that created the spooled file that you want to include in the display or report.

***ALL:** Include files for all users in the display or report.

user-name: Specify the name of a user whose files are to be included in the display or report.

SLTDATE - Select dates

Specifies a range of dates that you want to use when reporting on saved spooled files. The From date is the beginning of a date range and the To date is the end of the date range.

Note: The From date is based on the date the spooled file was created.

Note: Using this parameter, it is possible to enter a date with no separator, or a number of days which can be up to 5 digits in length. For instance, if you are using month/day/year format, the number 12994 would be formatted as January 29, 1994. If on the other hand, you entered a number 13994, TRAC/400 would assume that this is not a date, but rather is a number. TRAC/400 always tries to calculate a calendar date first when a number is entered and then if the date it calculates is not valid, assumes that it is a number of days. If the number that is entered is over 5 digits and the date that it calculates is not valid, you receive an error message.

Element 1: From date

***BEGIN:** The earliest save date on the file is the beginning date of a date range.

***CURRENT:** The current date is the beginning date of a date range.

from-date: Specify the date in job date format with or without date separators that you want to be the beginning date of a date range.

number-of-days: Specify the number of days before the current day that is used to determine the starting date of the date range.

Element 2: To date

***END:** The last date found in the file is the end of the date range for the search.

***CURRENT:** The current date is the ending date of the date range.

to-date: Specify the date in job date format with or without date separators that you want to be the ending date of a date range.

number-of-days: Specify the number of days before the current day that is used to determine the ending date of the date range.

SAVSTS - Save status

Specifies whether you want to display or report all successful saves, unsuccessful saves or both.

***ALL:** You want to include media information that was saved successfully and unsuccessfully in the display or report.

***NOERROR:** You want to include only successful saves in the display or report.

***ERROR:** You want to include only unsuccessful saves in the display or report.

SORT - Sequence option

The saved spooled file report can be sequenced several ways.

***DATE:** Sequences the saved spooled file report by date.

***JOB:** Sequences the saved spooled file report by job.

***FILE:** Sequences the saved spooled file report by file.

FROMSYS - From system

Specifies the location and network identification of the system whose spooled file information that you want to work with.

***LCL**: The from-system is the local system.

location-name: Specify the name of the remote location associated with the from-system. The local system's network identifier, as seen by using the DSPNETA command, is used as the from-system's network identifier.

network-id.location-name: Specify the network identifier and the name of the remote location associated with the from-system. Specify these values using the format nnnnnnnn.cccccc, where nnnnnnnn is the network identifier, and cccccc is the remote location name.

OUTPUT - Output

Specifies whether the output from the command is displayed at the requesting work station or printed with the job's spooled output.

***.**

The output is displayed (if requested by an interactive job) or printed (if requested by a batch job).

***PRINT**: The output is printed with the job's spooled output.

Appendix B: Report Examples

The following pages show examples of TRAC/400 reports.

The reports shown are examples of what you may see on your system. They were produced from test data and there may be no correlation between data on one report and that on another. Although many of the reports can be selected and sequenced in a variety of ways, only one sequence of each report is displayed. Not all reports listed in the preceding list are illustrated here.

TRAC/400 Log

The TRAC/400 Log shows activities processed through TRAC/400 commands. You can restrict the type of entries shown by selection criteria on the DSPLOGTRK command.

Selections can be made on:

- **Date.** Select to and from dates
- **Severity.** Select lowest severity code for messages to be printed
- **Type.** *ALL selects all activities. *BKU selects only backup activities. *MED selects only media activities. *RCY selects only recovery activities. *MAINT selects only maintenance activities.

```
TRAC400 V3R1M0 990315          TRAC/400          Log          7/08/99 11:28:20 Page          1
Date      Time      Message Sev Text                                     Program  User      Type
7/08/99  10:17:42 CPC9063 40 2 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:17:44 TRK1476 10 Starting SAVDLO of folder CRAIGT to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:18:05 TRK1474 10 *FULL save of folder CRAIGT complete.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:06 CPC9063 40 153 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:08 TRK1476 10 Starting SAVDLO of folder CRAIGT/PRIVATE to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:18:22 TRK1474 10 *FULL save of folder CRAIGT/PRIVATE complete. TRKACSD  CRAIG    *BKU
7/08/99  10:18:23 CPC9063 40 91 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:25 TRK1476 10 Starting SAVDLO of folder CRAIGT/IBMCT to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:18:36 TRK1474 10 *FULL save of folder CRAIGT/IBMCT complete. TRKACSD  CRAIG    *BKU
7/08/99  10:18:37 CPC9063 40 30 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:39 TRK1476 10 Starting SAVDLO of folder HIRO2 to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:18:46 TRK1474 10 *FULL save of folder HIRO2 complete.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:47 CPC9063 40 5 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:49 TRK1476 10 Starting SAVDLO of folder JENS to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:18:54 CPC9063 40 2 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:54 TRK1474 10 *FULL save of folder JENS complete.          TRKACSD  CRAIG    *BKU
7/08/99  10:18:57 TRK1476 10 Starting SAVDLO of folder JORGELIN to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:19:02 TRK1474 10 *FULL save of folder JORGELIN complete. TRKACSD  CRAIG    *BKU
7/08/99  10:19:03 CPC9063 40 10 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:19:05 TRK1476 10 Starting SAVDLO of folder KRIS to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:19:10 TRK1474 10 *FULL save of folder KRIS complete.          TRKACSD  CRAIG    *BKU
7/08/99  10:19:10 CPC9063 40 1 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:19:13 TRK1476 10 Starting SAVDLO of folder YESSONG to save file. TRKACSD  CRAIG    *BKU
7/08/99  10:19:17 TRK1474 10 *FULL save of folder YESSONG complete. TRKACSD  CRAIG    *BKU
7/08/99  10:19:18 CPC9063 40 1 document library objects saved.          TRKACSD  CRAIG    *BKU
7/08/99  10:19:34 TRK1414 00 Save of list WEEKDLO complete.          TRKACAF  CRAIG    *BKU
7/08/99  10:19:34 TRK1647 10 Starting save of TRAC/400 media info at level *OBJ to device TAP01. TRKACRD  CRAIG    *BKU
7/08/99  10:21:19 CPC3722 40 8 objects saved from library TRAC400.          TRKACSO  CRAIG    *BKU
7/08/99  10:21:20 TRK1587 10 Save of TRAC/400 media information at level *OBJ complete. TRKACRD  CRAIG    *BKU
7/08/99  11:25:02 TRK1380 10 Begin processing for backup set USER type *BKU. TRKAC0ARC ITSCID09 *ARC
7/08/99  11:25:04 TRK1118 10 No active entries found in backup set SYSTEM. TRKAC0ARC ITSCID09 *ARC
7/08/99  11:27:16 TRK1123 00 Backup activity report is created.          TRKACHS  ITSCID09 *BKU
7/08/99  11:28:04 TRK1625 10 TRAC/400 Save file report was processed. TRKACSF  ITSCID09 *BKU
```

Media Report

The Media report by Volume Serial is the result of processing the WRKMEDTRK command using the *Sequence option* *VOL. It can also be produced by choosing options 1,2,3 or 4 from the TRKPRTINV menu, depending on selection criteria or sequence required.

The purpose of the report is to summarize status and location information for selected or all volumes in the media library.

The following should be noted about this report:

1. This report can be created in volume (as shown below), creation or expiration date sequence using the WRKMEDTRK command.
2. The WRKMEDTRK command provides multiple parameters to select volumes to include in the report. The selection criteria for the report are listed first, including the creation and expiration date ranges, whether or not to include active, expired or both types of volumes, what locations to include and so on.
3. The *Volume list* field indicates whether all volumes in the inventory are included (*NO) or whether specific volumes requested in a list (*YES) are printed.
4. Note that volumes TRD001 through TRD003 have dates earlier than the current date but have not expired. This could be because the STRMNTTRK command has not been run recently or that these volumes cannot expire in a remote location.
5. A summary shows the number of active, expired and the total number of volumes in the inventory.

TRAC400 V3R1M0 000315 Media Report by Volume Serial
(1)

Selection Criteria (2)

```
Active or expired . . . . . : *BOTH
Creation date range . . . . . : *BEGIN ..to.. 1/01/00
Expiration date range . . . . . : *BEGIN ..to.. *END
Volume list . . . . . : *NO (3)
Location . . . . . : *ALL
Density . . . . . : *ALL
Backup set . . . . . : *ALL
Text . . . . . : *ALL
```

Volume Serial	Expired	Density	Creation Date	Expiration Date	Location Date	Storage Location
BKUP01	Yes	QIC525	1/01/99	6/06/99	*NONE	*HOME
BKUP02	Yes	QIC525	1/09/99	*NONE	*NONE	*HOME
BKUP03	Yes	QIC525	1/09/99	*NONE	*NONE	*HOME
T00019		HALFINCH	1/02/99	6/24/99	11223/99	VAULT
T00141	Yes	HALFINCH	1/01/99	6/05/99	*NONE	*HOME
(4) TRD001		HALFINCH	1/02/99	6/24/99	1/23/99	VAULT
(4) TRD002		HALFINCH	1/02/99	6/24/99	12/23/99	VAULT
(4) TRD003		HALFINCH	1/02/99	6/24/99	12/23/99	VAULT
ZRD003		HALFINCH	1/08/99	*NONE	*NONE	*HOME

```
Total active . . . . . : 5 (5)
Total expired . . . . . : 4 (5)
Total volumes . . . . . : 9 (5)
```

Media Expiration

The Media Expiration report is produced as a result of running maintenance (STRMNTTRK). It shows the media that has expired as a result of that particular run. It also indicates the total number of volumes in the inventory which are expired.

TRAC400 V3R1M0 990315 Media Expiration Report
Volume Creation

```

Serial  System  Date      Location  User      Use Count
ICC001  XXXXXXXX  1/01/00  *HOME    BRUCE     0
ICC002  XXXXXXXX  1/01/00  *HOME    BRUCE     0
    Volumes expired . . . . . :           2
    Previously expired . . . . . :           2
    Total expired count . . . . . :           4
                                     * * * *  E N D  O F  L I S T I N G  * * * *

```

Media Information

The Media Information report shows a history of what has been backed up by TRAC/400. It is printed as a result of processing the WRKMEDITRK command, or as part of the STRMNTTRK maintenance job.

The following should be noted about this report:

1. The *Expiration date* field indicates when the item will expire. For instance, an expiration date of 5/15/99 indicates that the save item will expire no sooner than 12:01 A.M. on 5/16/99.
2. The *Objects saved* field indicates the total number of objects saved as a result of this save operation.
3. The *Not saved* field indicates the number of objects that were not able to be saved. Objects may not be saved due to being locked at the time the save operation took place.
4. The *Type save* field indicates the type of save that was specified for this save item. For instance:
 - *INCR indicates that the save was an incremental save (changed objects)
 - *CUML indicates that the save was an incremental save (cumulative save changed objects)
 - *FULL indicates that the save was of the entire library
 - *RCY indicates that TRAC/400 was saved when processing a backup set

Media Information Report										
TRAC400	V3R1M0	000315	(1)	(2)	(3)	(4)	File	Volume	Backup	Item
Saved Item/ File Label	Save Date	Save Time	Expiration Date	Objects Saved	Not Saved	Type Save	Seq	Serial	Set	Type
BRSLIB	1/01/00	10:12:22	7/15/99	122	0	*FULL	0	*SAVF	USER	*LIB
CRAIG	1/01/00	10:13:37	7/15/99	318	0	*FULL	0	*SAVF	USER	*LIB
HIRO2	1/01/00	10:15:39	7/15/99	64	0	*FULL	0	*SAVF	USER	*LIB
JORGELIN	1/01/00	10:17:19	7/15/99	3	0	*FULL	0	*SAVF	USER	*LIB
MAGGIE	1/01/00	10:17:31	7/15/99	6	0	*FULL	0	*SAVF	USER	*LIB
ROB	1/01/00	10:17:42	7/15/99	12	0	*FULL	0	*SAVF	USER	*LIB
SUBTIL	1/01/00	10:18:01	7/15/99	2	0	*FULL	0	*SAVF	USER	*LIB
QDOC	1/01/00	10:18:27	7/15/99	153	0	*FULL	0	*SAVF	USER	*LIB
QDOC	1/01/00	10:18:48	7/15/99	91	0	*FULL	0	*SAVF	USER	*LIB
QDOC	1/01/00	10:19:02	7/15/99	30	0	*FULL	0	*SAVF	USER	*LIB
NORM	1/01/00	10:19:30	7/15/99	10	0	*FULL	0	*SAVF	USER	*LIB
BSTUART	1/01/00	10:19:38	7/15/99	7	0	*FULL	0	*SAVF	USER	*LIB
TRAC400	1/01/00	10:20:11	7/15/99	8	0	*RCY	0	*SAVF	USER	*LIB
BEST1LAB	1/01/00	10:20:43	6/30/99	6	0	*FULL	1	149V13	USER	*LIB
CRAIG	1/01/00	10:21:15	6/30/99	318	0	*FULL	2	149V13	USER	*LIB
CTLIB	1/01/00	10:22:03	6/30/99	4	0	*FULL	3	149V13	USER	*LIB
STULIB	1/01/00	10:22:42	6/30/99	21	0	*FULL	4	149V13	USER	*LIB
SECURITY	1/01/00	10:23:51	6/30/99	20	0	*FULL	5	149V13	USER	*LIB
TRAC400	1/01/00	10:25:03	6/30/99	7	0	*RCY	6	149V13	USER	*LIB
#CGULIB	1/01/00	10:49:43	*PERM	5	0	*FULL	2	149V14	USER	*LIB
#COBLIB	1/01/00	10:49:43	*PERM	85	0	*FULL	3	149V14	USER	*LIB
#DFULIB	1/01/00	10:49:43	*PERM	7	0	*FULL	4	149V14	USER	*LIB
#RPGLIB	1/01/00	10:49:43	*PERM	59	0	*FULL	6	149V14	USER	*LIB
#SDALIB	1/01/00	10:49:43	*PERM	5	0	*FULL	7	149V14	USER	*LIB

The report can be sequenced by:

- Save Date,
- Library Name,
- Volume Serial Number.

Various selection criteria can be specified on the WRKMEDITRK command.

Media Movement

The Media Movement report is generated when the PRTMOVTRK command is processed. The Media Movement report shows all volumes that have been moved from one location to another location. The report page breaks for each from/to combination.

In the example shown below 5 volumes were manually moved from location *HOME to location VAULT, and the next week 4 of the volumes were moved from the VAULT location back to *HOME.

```
TRAC400 V3R1M0 000315 Media Movement Report 03/15/00
8:14:13 Page 1
```

All Volumes

```
From location . . . : *HOME To location . . . : VAULT
```

Volume	Serial	Expired	Density	Creation Date	Expiration Date	Location Date	Backup Set
	AO8505	*YES	*QIC120	3/22/99	3/24/99	3/23/99	USER
	AO8510	*YES	*QIC120	3/22/99	3/24/99	3/23/99	USER
	AO8556	*YES	*QIC120	3/22/99	3/24/99	3/23/99	USER
	AO8571	*YES	*QIC120	3/22/99	3/24/99	3/23/99	USER
	AO8586	*YES	*QIC120	3/22/99	3/24/99	3/23/99	USER

```
Total volumes . . . . : 5
```

```
TRAC400 V3R1M0 000315 Media Movement Report
All Volumes
```

```
From location . . . : *VAULT To location . . . : *HOME
```

Volume	Serial	Expired	Density	Creation Date	Expiration Date	Location Date	Backup Set
	AO8505	*YES	*QIC120	3/22/99	3/24/99	3/31/99	USER
	AO8510	*YES	*QIC120	3/22/99	3/24/99	3/31/99	USER
	AO8556	*YES	*QIC120	3/22/99	3/24/99	3/31/99	USER
	AO8571	*YES	*QIC120	3/22/99	3/24/99	3/31/99	USER

```
Total volumes . . . . : 4
```

Recovery Activities

The Recovery Activities report is printed as part of the maintenance run (STRMNTTRK) if you select *YES and the *RCYANL choice for the PRTRCYRPT parameter. It is also printed if you select option 4 from the *Recovery Planning* menu. One page is printed for each activity that you have set up. Activities may range from a full system recovery, including actions to take for implementing a full mobile recovery service to those activities necessary to recover a failed application as in the example below.

The following should be noted about this report:

1. *Sequence* is a number between 1 and 999. It is used to sequence the activities on the report, but need not be a unique number.
2. *Activity* is a brief description of the recovery activity to perform.
3. *Text* describes the activity. You should make this as meaningful as possible.
4. These fields describe the people who may need to be contacted in order to perform the activity. Up to five contacts can be shown.
5. *Recovery information* is a free format area of text to describe in detail the activity to be performed.

```

Sequence . . . . . : (1) 1
Activity . . . . . : (2) P/R
Text . . . . . : (3) Payroll related recovery instructions
  Recovery contact one . . . . . : (4) John Hernandez
  Telephone number . . . . . : 909-253-8781
  Contact information . . . . . : Office: 3rd Floor/Room 21/Ext 234
                                Payroll and General Ledger
                                support programming
                                Manager: Kristen Taylor
                                Vacation: June 6-12, November
                                14-21. Contact Michelle Syska

  Recovery contact two . . . . . : Michelle Syska
  Telephone number . . . . . : 909-253-8085
  Recovery contact three . . . . . : Kristen Taylor
  Telephone number . . . . . : 909-243-3786
  Recovery contact four . . . . . : Print-Rite Business Forms
  Telephone number . . . . . : 909-333-5762
  Recovery information . . . . . : (7)

```

- 1) Paychecks printed using incorrect alignment:
 - a) Call contact #1 and #3
 - b) Call contact #4 if there are not enough checks to reprint the run
 - c) When authorized by contact #3, restore PRLIB02 from backup version created at beginning of payroll processing job that created checks.
 - d) When authorized by contact #3, resubmit payroll processing job.
- 2) Payroll libraries PRLIB01 and PRLIB02 out of synchronization resulting in conflicting overall totals on reports PR21TX4 and PR25WH4:
 - a) Call contact #2.
 - b) When authorized by contact #2, submit job PRJ46.
 - c) When authorized by contact #2, restore PRLIB01 from most recent FULL save backup.
 - d) Submit supplemental payroll job PRJ22 using current date as BEGIN date.

Recovery Analysis

The Recovery Analysis report is used to restore all or parts of the software on your system. The report is generated as a result of processing the STRRCYTRK or STRMNTTRK commands. The report is broken into 13 steps, with instructions and associated media volumes where applicable for each step. Chapter 6 of this manual covers each of the areas in more detail. When doing an *SAVSYS, the number of objects will show as 0 since the licensed internal code is not comprised of OS/400 objects. If recovering to a different system you should specify *ALL in the *Allow object differences* field and *NONE in the *System resource management* field.

The example shown below illustrates typical information contained in the Recovery Analysis report for a total system recovery.

Step 1 - Recover Licensed Internal Code. Use media as shown below and the procedure for "Recovering the Licensed Internal code" using Option 2 if you are recovering to a different system, or using Option 3 if you are recovering to the same system.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
*SAVSYS	*FULL	01	1/07/00	18:26:13	0		1	SYSTEM	ICC003

Step 2 - Recover operating system. Use the media shown below and the procedure for "Restoring the Operating System using the Complete Restore Method", as detailed in the Backup and Recovery book.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
*SAVSYS	*FULL	01	1/07/00	18:26:13	0		1	SYSTEM	ICC003

Step 3 - Recover the TRAC/400 product and associated libraries. The TRAC/400 product and associated libraries must be recovered before you can use the product to perform other recovery operations. Use WRKCFGSTS *DEV *TAP to see which tape devices are configured. Then run RSTLIB for each of the following libraries specifying SEQNBR and using media as shown below.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
QMSE	*FULL	01	1/07/00	19:50:58	7		63	SYSTEM	ICC003
TRAC400	*FULL	01	1/30/00	5:46:05	480		138	USER	052C22

Step 4 - Recover TRAC/400 related media information. You must recover this data for the TRAC/400 product to accurately guide you through remaining recovery operations. To do so, run RSTOBJ OBJ(*ALL) SAVLIB(library-name) MBROPT(*ALL) specifying library name, SEQNBR and using media as shown below.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
TRAC400	*TRAC	01	1/31/00	2:26:10	6		335	USER	052BAC

Step 5 - Recover user profiles. You should restore a current version of your system's user profiles. To do so, run STRRCYTRK OPTION(*SYSTEM) ACTION(*RESTORE) using media shown below.

If you are recovering to a different system, press F9 (Recovery defaults) on the Select Recovery Items display. When recovering to a different system you must specify *ALL on the Allow object differences (ALWOBJDIF) parameter and *NONE on the System resource management (SRM) parameter.

Use WRKDEVD *TAP and WRKDEVTRK commands to review device information for the tape device you will be using during this recovery step. Ensure device name, type and model are consistent as shown on each of these displays.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
*SAVSECDTA	*FULL	01	1/31/00	1:01:48	300		280	USER	052BAC

Step 6 - Recover TRAC/400 required system libraries. You must restore specific system libraries before you can use TRAC/400 to perform other recovery operations. To do so, run STRRCYTRK OPTION(*SYSTEM) ACTION(*RESTORE) using media shown below.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
QGPL	*FULL	01	1/30/00	1:42:15	289		124	USER	052C22
QGPL	*INCR	01	1/31/00	2:10:30	38		331	USER	052BAC
QUSRSYS	*FULL	01	1/07/00	19:43:46	1,342		16	SYSTEM	ICC003
QSYS2	*FULL	01	1/07/00	19:50:58	108		88	SYSTEM	ICC003

Step 7 - Recover configuration data. You should restore a current version of your system configuration. To do so, run STRRCYTRK OPTION(*SYSTEM) ACTION(*RESTORE) using media shown below. Use WRKDEVD *TAP and WRKDEVTRK commands to review device information for the tape device on your system. Ensure that device names, types and models are consistent as shown on each of these displays. Where appropriate, use change and rename options to make them consistent.

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
*SAVCFG	*FULL	01	1/31/00	1:23:15	274		281	USER	052BAC

Step 8 - Recover IBM product libraries. You should restore the current version of IBM product libraries on your system. To do so, run STRRCYTRK OPTION(*IBM) ACTION(*RESTORE) using media shown below.

Some of the IBM libraries are listed below:

Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
------	------	-----	-----------	-----------	---------	------	---------------	-----	------------

#CGULIB	*FULL	01	1/07/00	19:50:58	4		19	SYSTEM	ICC003
#RPGLIB	*FULL	01	1/07/00	19:50:58	58		23	SYSTEM	ICC003
#SDALIB	*FULL	01	1/07/00	19:50:58	4		24	SYSTEM	ICC003
#SEULIB	*FULL	01	1/07/00	19:50:58	6		25	SYSTEM	ICC003
QADM	*FULL	01	1/07/00	19:50:58	174		26	SYSTEM	ICC003
QDCT	*FULL	01	1/07/00	19:50:58	28		41	SYSTEM	ICC003

Step 9 - Recover user libraries. You should restore the current version of your libraries. If you ran STRRCYTRK OPTION(*RESUME) for a complete system restore, select the libraries to recover.

Otherwise, run STRRCYTRK OPTION(*ALLUSR) ACTION(*RESTORE) OMITLIB(*DELETE) using media shown below.

Depending on your recovery strategy, you may choose to use the STRRCYTRK OPTION(*SET) ACTION(*RESTORE) OMITLIB(*DELETE) command to restore individual backup sets.

ATTENTION – If you have logical files whose based-on file is in a different library, you must restore all based-on files before you can restore the logical file. If you use journaling, the libraries containing the journals must be restored before restoring the journaled files.

Some examples of the user libraries are listed below:

Saved Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
PAYROLL	*FULL	01	1/07/00	1:55:43	505		50	SYSTEM	052972
PAYROLL	*INCR	01	1/31/00	1:55:43	3,248		51	USER	052C22
ALLTAXS	*FULL	01	1/31/00	1:42:15	23		16	USER	052C22

Step 10 - Recover document library. You should restore the current version of your documents, folders and mail. To do so, run STRRCYTRK OPTION(*ALLDLO) ACTION(*RESTORE) using the media shown below. To do so, run RCLDLO DLO(*ALL).

Saved Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
*ALLDLO	*FULL	01	1/30/00	5:47:30	4,771		139	USER	052C22
*ALLDLO	*INCR	01	1/31/00	2:10:59	200		309	USER	052972

Step 11 - Recover objects in directories. You should restore the current version of your objects in directories. If you ran STRRCYTRK OPTION(*RESUME) for a complete system restore, select objects in directories to recover.

Otherwise, run STRRCYTRK OPTION(*LNKLIST) ACTION(*RESTORE) using media shown below

Saved Item	Type	ASP	Save Date	Save Time	Objects	Omit	File Sequence	Set	Volume (s)
USERLNK	*FULL	01	1/30/00	6:04:20	1,556		333	USER	052C22
USERLNK	*INCR	01	2/01/00	2:29:24	34		333	USER	052C22

Step 12 - Recover Spooled files. If spooled files were saved, restore your spooled files using the WRKSPLFTRK command.

Step 13 - Apply journal changes. To determine if you need to apply journal changes, refer to the section "Determining Whether You Need to Apply Journaled Changes" under the chapter "Restoring Changed Objects and Applying Journaled Changes" as detailed in the Backup and Recovery book.

Step 14 - Recover authorizations. You should recover private authorizations if user profiles were recovered in an earlier step. This operation requires a dedicated system and can be long running.

Step 15 - Print joblog. You should print the joblog. To do so, run DSPJOBLOG **PRINT.

Step 16: Perform IPL. Return system to normal mode and IPL using PWRDWNYSYS OPTION(*IMMED) RESTART(*YES)

Recovery Volume Summary

The Recovery Volume Summary report is produced as part of the maintenance (STRMNTTRK) activity. It provides a list of all tape volumes required to complete a full system recovery to the latest backup point. Use this report in conjunction with the Recovery Analysis report to locate all tapes required for recovery.

The following should be noted about this report:

1. The total number of volumes required for a complete system recovery is shown as a final summary.
2. Volumes that are not members of the TRAC/400 media inventory are noted in the report.

Save Strategy Exceptions Report

The Save Strategy Exceptions report is produced when the STRMNTTRK command is processed using the PRTRCYRPT parameter with special values *ALL or *SAVEXCP.

```
TRAC400 V3R1M0    000315                Save Strategy Exceptions

Library      Text                               Backup
#RPGLIB                                     Set
#SDALIB                                     USER
#SEULIB                                     USER
AUTOPRINT    Print library                   USER
CHKLIB       DATA CHECKER Library           USER
Total libraries . . . . . :                    5
```

Appendix C:

A Day in the Life of A TRAC/400 Operator

This appendix describes a typical day in the life of an operator responsible for backup, recovery, and media management in an environment where TRAC/400 is being utilized. It covers most of the activities that an operator would carry out in a more formal environment. While not intended to be an exhaustive list of such activities, you may find it useful in better understanding the ways in which TRAC/400 can assist your operators and ensure the security of your data.

Assumptions

In the environment to be described it is assumed that the following TRAC/400 facilities are being used:

- Multiple locations.
- Media movement.
- Send hardcopy of Recovery Analysis report and Recovery Volume Summary report offsite with tapes.
- Daily backups overnight, unattended.
- Some saves are performed to save files, others are saved directly to tape.
- Locations of RETIRED and DISPOSED are for old volumes that have either exceeded tape life or have accumulated too many tape errors.
- STRMNTTRK is scheduled to run after backups with all options set.
- Batch job to print the reports after backups

Operators' Tasks

These are the typical tasks an operator could perform to ensure the smooth operation of the described environment.

In the Morning

- Check TRAC/400 Log report, created with the DSPLOGTRK command, to ensure previous night's saves ran without errors. Investigate if any errors occurred.
- Review Media Movement report (created by STRMNTTRK) and perform moves accordingly. Contact the vaulting service for collection and movement of tapes.
- Send a hardcopy of the Recovery Analysis report offsite with tapes.
- Use Media report (with volumes listed by expiration date) showing only expired volumes as a picking list to select tapes to be used for the day's/night's saves. Report created with STRMNTTRK.
- Run SAVSAVFTRK specifying a backup set to write unattended save data to tape.
- Check Save Strategy Exceptions report produced by STRMNTTRK and follow up libraries listed with owners of these libraries, with the possibility of adding them to a backup set for regular backup. If some are already in a backup set (as shown on the report), then investigate why the backup set has not been run.
- Check Media Volume Statistics report (print file QP1EVU) for:
 - Volumes with high usage.
 - Check number of available volumes in each density, and order or enroll new tapes as required.
 - If new (ordered) tapes have arrived, use the ADDMEDTRK or ADDMLMTRK command to enroll and initialize the tapes.

In the Evening

- To save the USER backup set, issue the STRBKUTRK SET (USER) command (or have it set up as a menu option or to run automatically using a scheduler).
- To save the SYSTEM backup set, issue the STRBKUTRK SET (SYSTEM) command (or have it set up as a menu option or to run automatically using a scheduler).
- For saves to save files, submit the STRBKUTRK command to batch, or if set up on a menu, select the option to start the save job. (Again, save file save jobs are excellent candidates for submission using a job scheduler.)

Index

*

*DATA · 18, 140
*DEVICE · 18, 140
*EJECT · 177
*INSERT · 20, 21, 128, 177
*IPL · 177
*NL · 177
*NOSHARE · 177
*SHARE400 · 176, 177

A

add job command · 98
Add Multiple Devices · 58, 59
Adding a Job to the Job Scheduler · 94
adding media contents to the history file · 33
Adding Systems to Network Group · 105
ADDMEDTRK · 29, 30, 31, 32, 33, 37, 117, 118, 146, 192
ADDMLMTRK · 20, 29, 128, 146, 192
ASP · 8, 13, 45, 46, 58, 75, 79, 80, 82, 92, 114, 115, 161, 162, 173
Auto enroll · 19, 29, 39, 101
Auto Enroll Media · 102
Automatic Job Scheduling · 94

B

backup · 7, 8, 9, 10, 13, 14, 15, 16, 18, 19, 28, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 69, 73, 74, 75, 78, 79, 82, 83, 84, 88, 92, 94, 97, 99, 101, 102, 103, 104, 105, 110, 111, 112, 113, 114, 116, 118, 131, 133, 135, 143, 144, 148, 151, 152, 153, 154, 155, 158, 159, 161, 163, 171, 173, 184, 186, 188, 190, 191, 192, 193
Backup Items · 15, 44
Backup Lists · 46, 50
backup procedures · 40, 41, 44, 46, 53, 54, 61, 64, 73
Backup procedures · 53, 54
backup set · 8, 9, 10, 15, 19, 37, 40, 42, 43, 45, 46, 47, 50, 51, 52, 53, 54, 57, 59, 60, 62, 63, 64, 73, 75, 82, 103, 113, 114, 116, 143, 144, 152, 161, 163, 173, 192
SYSTEM · 8, 42, 151, 171
USER · 8, 42, 151, 163, 171, 173
Backup sets · 8
Backup Sets · 40, 41, 42, 82

C

Change Backup Procedure · 54, 55, 56, 58, 65, 115, 116
Change Defaults · 53
change presentation controls · 109
Changing Tape Devices · 18
Changing the System Name · 106
Character for first day of week · 103
Character for full backup · 102

Character for general activity · 103
Character for incremental backup · 102
CHGMEDTRK · 28, 131
CHGSCDTRK · 15, 97, 98, 99, 100, 133
complete system save · 10
Complete System Save · 63
console monitor · 62, 64, 65

D

Day in the Life of A TRAC/400 Operator · 192
directory · 72, 90, 91, 106, 167
Displaying the Recovery Process · 92
DLO · 45, 68, 70, 83, 86, 88, 178, 179, 190
Download · 17
DSPLOGTRK · 92, 93, 109, 110, 135, 184, 192

E

Earliest Time to Allow an IPL · 102
enrolling existing volumes · 33

F

file system · 47, 49, 50, 71, 90, 166
Folder List · 48

I

IBM Job Scheduler for AS/400 · 99
incomplete save · 11
incremental type · 57
initialize once · 32
initialize tape · 31
Initializing a Volume · 31
Initializing a Volume using the INZMEDTRK Command · 32
Initializing Multiple Volumes · 32
Inquiry Message Reply · 102
Installation · 7, 16, 17, 19
CD-ROM · 17
Tape · 17
integrated file system · 43, 45, 47, 49, 50, 90, 91, 92, 166, 167
INZMEDTRK · 31, 32, 138
INZTRK · 18, 19, 20, 106, 108, 140

J

job log information · 96
Joining Two TRAC/400 Networks · 107
Journal entries pending · 108

L

Latest Time to Allow an IPL · 102
Library List · 48
Link List · 50
list jobs command · 98
load media information · 141
LODMEDITRK · 33, 141

M

Maintenance · 51, 52, 60, 111, 112, 154
Managing Your Media · 11
Media and Storage Extensions · 16
Media Expiration · 111, 154, 185
Media Handling Techniques · 36
Media Information · 21, 22, 38, 39, 57, 59, 60, 66, 67, 68,
79, 84, 85, 106, 154, 172, 173, 175, 186
Media Inventory · 29, 30, 34, 35
Media Libraries · 19, 20, 22, 23
 Third-Party · 23
Media Library Device · 20, 23, 25
media management · 7, 8, 9, 14, 15, 16, 26, 28, 31, 32, 35,
37, 39, 97, 135, 156, 192
Media Management · 18, 20, 21, 26, 27, 34
Media Monitor · 102
Media Movement · 145, 146, 187, 192
Media Protection · 39
Media Report · 154, 184, 185
Media Scratch Pool · 36, 37
Media Set Rotation · 36, 37
Media Strategy · 11, 12
Message Queue for Notification · 102
Message Severity for Notification · 102
MONSWATRK · 143, 144
MSE · 16

N

network group · 95, 97, 98, 99, 101, 103, 104, 105, 106,
107, 108, 109, 113
Network Group · 107, 108
Network Groups · 104
Network job queue status · 108
Network job status · 108
Network subsystem status · 108
Notification of Failure to Process STRMNTTRK · 113

O

Object List · 48
operational menu · 15

P

PRTMOVTRK · 145, 187

R

Receive media info · 108
Recovering a Specific Auxiliary Storage Pool · 82
Recovering a Specific Library · 81
Recovering all Document Library Objects · 83
Recovering All User Libraries · 81
Recovering IBM Libraries · 80
Recovering the Full System · 80
recovery · 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 40, 43, 44, 45,
57, 59, 60, 63, 75, 76, 77, 78, 79, 80, 82, 83, 84, 85, 86,
92, 93, 94, 110, 112, 113, 136, 148, 149, 156, 158, 159,
161, 162, 163, 184, 187, 188, 189, 190, 191, 192
Recovery Activities · 76, 77, 78, 113, 155, 158, 187, 188
Recovery Analysis · 79, 80, 111, 113, 158, 159, 161, 188,
191, 192
Recovery Analysis report · See Recovery Report. See
Recovery Report. See Recovery Report. See Recovery
Report. See Recovery Report. See Recovery Report.
See Recovery Report. See Recovery Report. See
Recovery Report. See Recovery Report
Recovery Based on Backup Sets · 82
Recovery Contacts · 75, 76
Remote local location name · 108
Remote network ID · 108
Removing TRAC/400 · 16, 17
Reporting · 9
Resuming a Recovery · 83
Retention · 55, 56
Retrieve Size using TRAC/400 · 61, 147
RMVMEDTRK · 15, 146
RTVSIZTRK · 61, 147

S

Sample Save and Restore Strategies · 10
save access paths · 58
Save Files · 114, 115, 116, 147
Save History · 65
Save Strategy Exceptions · 67, 68, 113, 154, 158, 191, 192
Save While Active · 50
SAVSAVFTRK · 114, 115, 116, 147, 192
SAVSYS · 9, 10, 11, 12, 13, 32, 43, 45, 46, 51, 62, 63, 64,
73, 80, 82, 83, 84, 118, 138, 159, 160, 172, 188
Scheduling Commands · 94
Scheduling Recovery · 96
Scheduling STRMNTTRK · 111
Security · 7, 11, 15
select jobs command · 99
Selecting Items to Omit from Backup Processing · 73
Setting Up a Recovery Activity · 76
Setting up a Recovery Contact · 75
Sign-Off Exceptions · 103
Spooled File List · 49
Storage locations
 *HOME · 19, 26, 30, 32, 35, 38, 80, 82, 83, 120, 131,
132, 145, 146, 159, 163, 168, 170, 185, 187
 VAULT · 26, 32, 38, 131, 185, 187
Storage Locations · 13, 21, 26, 27, 120
StorageTek · 19, 22
STRBKUTRK · 54, 60, 61, 62, 100, 133, 147, 151, 193
stream file · 75
STRMNTTRK · 60, 67, 111, 112, 113, 154, 155, 156, 157,
158, 185, 186, 187, 188, 191, 192
STRRCYTRK · 78, 79, 80, 82, 83, 84, 92, 96, 111, 154, 159,
188, 189, 190
Substitution Variables · 100
Subsystems · 54, 63, 64, 104

SYSTEM · 8, 35, 41, 42, 61, 62, 63, 66, 67, 80, 82, 83, 84,
97, 98, 100, 115, 133, 134, 147, 151, 159, 161, 171, 184,
189, 193
System Policy · 8, 63, 101

T

Tape device · 19
Tape Devices · 18
Tape Drive · 13
TRAC/400 Jobs · 97
TRAC/400 Log · 92, 109, 110, 137, 184, 192
TRAC400 · 16, 17, 23, 39, 44, 45, 67, 68, 69, 80, 81, 85, 86,
87, 95, 105, 110, 157, 184, 186

U

USER · 8, 35, 37, 41, 42, 61, 62, 63, 66, 67, 84, 110, 115,
137, 147, 151, 163, 171, 173, 181, 184, 186, 187, 191,
193
user commands · 14
user exits · 15

user-controlled operations · 14

V

Verifying the TRAC/400 Network · 107

W

Weekly Activity · 46
Work with Backup Procedures · 54, 113
Work with Lists · 47, 49, 50, 74
work with schedules · 53
WRKFLRTRK · 66, 69, 79, 88, 164
WRKLNKTRK · 66, 71, 72, 79, 90, 166
WRKMEDITRK · 38, 39, 66, 67, 79, 80, 84, 111, 154, 158,
172, 186, 187
WRKMEDTRK · 27, 34, 35, 111, 168, 184, 185
WRKMLMTRK · 21, 176
WRKOBJTRK · 66, 68, 69, 70, 79, 85, 86, 178
WRKSPLFTRK · 66, 70, 71, 79, 89, 180, 181, 190