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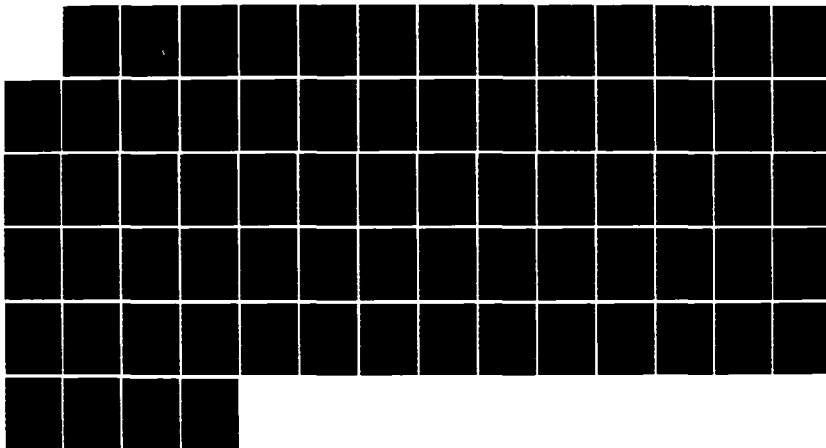
ACCEPTANCE TEST PLAN FOR TACTICAL INTERFACE SYSTEM(U)
ANALYTICS INC MCLEAN VA 05 NOV 82 1585-TR-07
DRAK00-81-C-0010

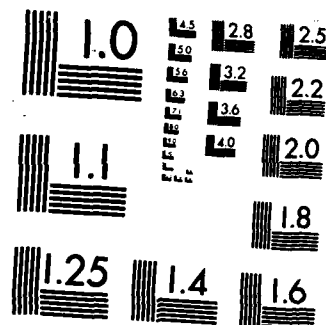
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Technical Report 1585-TR-07

SDSS-MMP-T1
Code Ident 56496

AD-A173 430

ACCEPTANCE TEST PLAN
FOR
TACTICAL INTERFACE SYSTEM
(FINAL)

Submitted to:
CENTACS
System Validation Division
Ft. Monmouth, New Jersey 07703

Contract Number DAAK80-81-C-0010
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Prepared by the Staff of Analytics

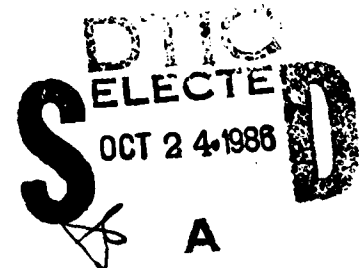
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APPENDIX A



Accession For	
TIS GRA&I	☒
DISC TAB	☐
Unannounced	☐
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By <i>[Signature]</i>	
Distribution/	
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Dist	Avail and/or Special
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1. INTRODUCTION

This report presents the plan for test and verification of the Tactical Interface System (TIS) computer program, identified as SDSS-MMP-B1 and specified in the Analytics Technical Report 1585-TR-02, Computer Program Development Specification for Tactical Interface Systems, dated 31 July 1981. The purpose of this program is to interface the Software Development Support System (SDSS) to the AN/GYK-12 executing the Programming Support System (PSS) software.

As described in the TIS Computer Program Development Specification (CPDS), three levels of TIS testing will be performed — unit, system, and acceptance level testing. The remainder of this report describes Analytics' plan for performing each testing level.

2. UNIT TESTING

TIS is composed of the following computer program components (CPCs):

- ICE Handle Process
- Job Operations Process
- File Operations Process
- Tape Operations Process
- PSS Data Manager
- Command Language Interpreter
- User Message Process
- System Initiator/Terminator Process
- TIS Run Time Library
- Utilities
- JBDriver

Unit tests of each routine and service comprising a CPC will be conducted. This testing will begin with each unit of code and continue until the entire CPC is developed and tested. The object of this testing is to assure the internal accuracy and consistency of each CPC before it is integrated as part of the TIS Computer Program Configuration Item (CPCI).

In addition, each CPC will be tested as a unit to verify that:

- All possible inputs to the CPC are correctly interpreted.
- Arithmetic and logical functions assigned to the CPC are correctly processed.
- Outputs are correct and consistent with the input data.

3. SYSTEM TESTING

System testing primarily will be a dry run of the acceptance testing to verify that the TIS CPCI meets all the requirements stated for it in the TIS CPDS. Therefore, the functions to be verified will be the same as those stated for acceptance testing.

System testing originally was to be supported by means of a test driver developed to simulate the PSS interface, as described in the TIS CPDS. However, an AN/GYK-12 has been acquired which can be interfaced with the VAX-11/780 software development facility and can operate the PSS. This approach, using the AN/GYK-12 to actually operate the PSS, eliminates the need for developing the test driver.

4. ACCEPTANCE TESTING

TIS acceptance testing will consist of a comprehensive group of tests of the integrated CPCI performed by Analytics to verify to CENTACS that the TIS CPCI meets the performance requirements stated in the TIS CPDS.

The following paragraphs describe the acceptance testing requirements.

4.1 INITIAL TEST CONDITIONS

Following are the initial test condition requirements:

- (1) The Software Development Support System (SDSS) VAX-11/780 (see Figure 1) Virtual Memory System (VMS) operating system is "up" and an operator has logged on in Digital Command Language (DCL) mode.
- (2) The AN-GYQ-12 is interfaced with the VMS via the two Support System Interface Modules (SSIMs) as shown in Figure 3. Table 1 describes the SSIM signal line functions. Up to two AN-GYQ-12s may be connected.
- (3) The TIS CPCI is resident as a group of files on the SDSS VMS disk.
- (4) The AN/GYK-12 Programming Support System (PSS) is resident as a file on the SDSS VMS disk and on tape.
- (5) A PSS data base is resident on the SDSS VMS disk consisting of the following files:
 - PSS JCL files
 - TACPOL source files
 - PSS block-formatted files.

The PSS files will be created using the VMS editors. The files will consist of several jobs containing correct job control records and several that contain incorrect records. Also, at least one series of jobs will call for a system generation (SYSGEN). System capacities will be tested by selecting one of

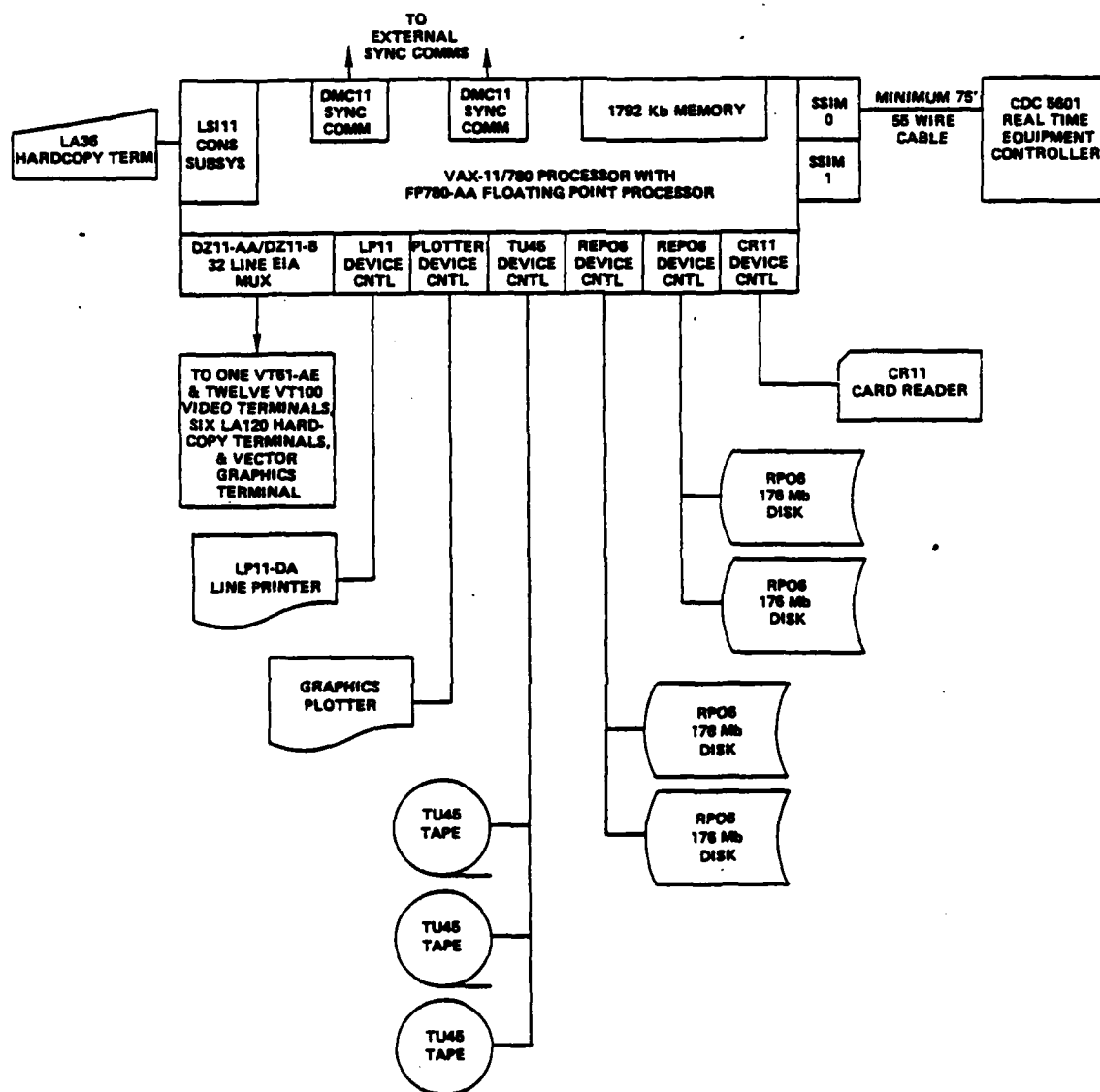


FIGURE 1. SDSS VAX-11/780 COMPUTER SYSTEM CONFIGURATION

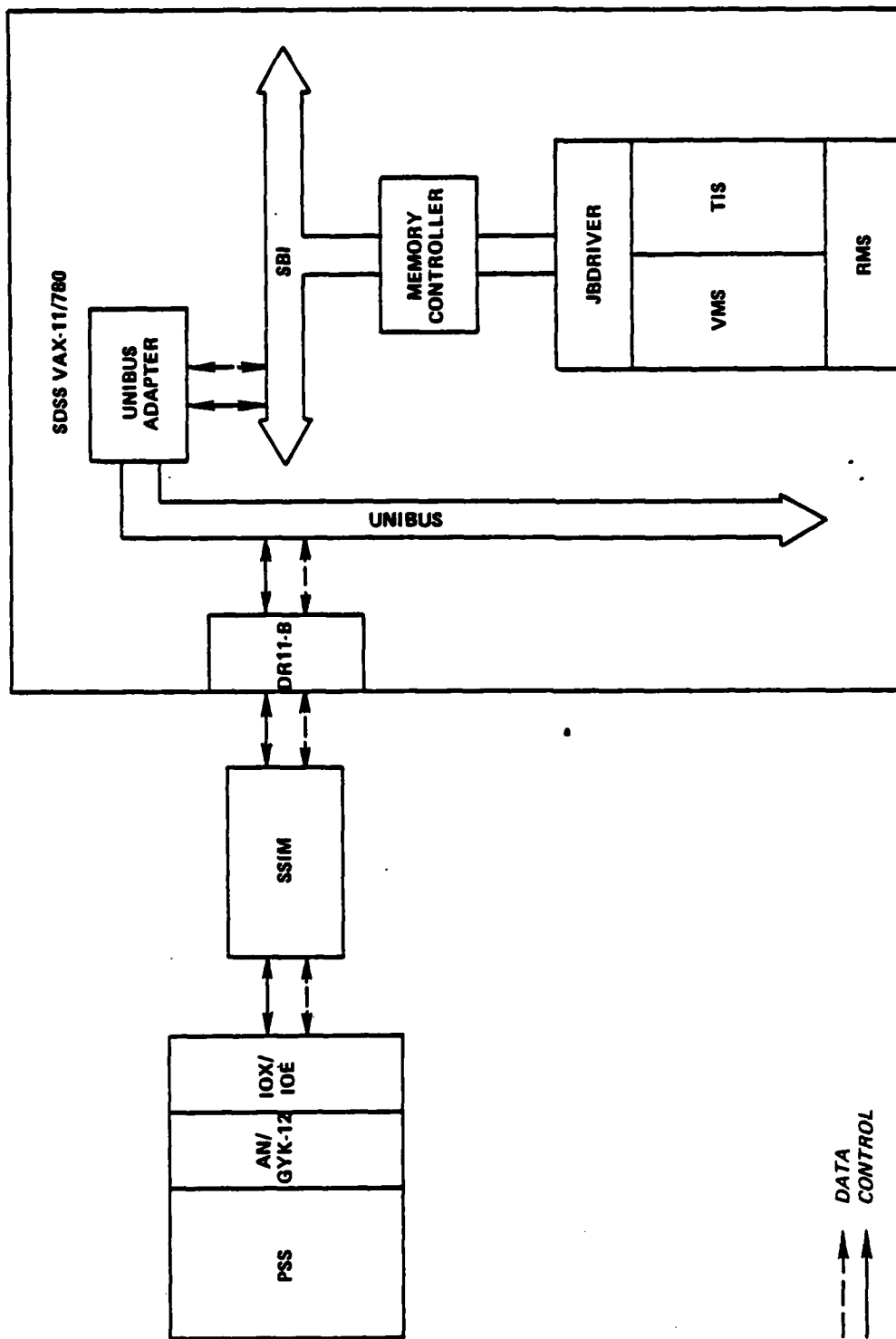


FIGURE 2. AN/GYK-12 INTERFACE TO VAX-11/780

Table 1. Functions of SSIM Signal Lines to the DR11-B Interface

1. DATO 15-00: Sixteen lines are used to transfer information from the SSIM to SDSS VAX-11/780 memory.
2. C₁C₀: Two lines are used by the SSIM to specify that either an input or output transfer is to take place. When C₀ is zero and C₁ is zero, 16 bits of data will be transferred from the SDSS to the SSIM. When C₀ is zero and C₁ is one, 16 bits of data will be transferred from the SSIM to the SDSS.
3. Cycle Request: This line will be used by the SSIM to signal the start of a data transfer, either to or from the SDSS.
4. DSTAT 09, 10, 11 Device status bits:
 - a. DSTAT 09 (PE) will be set by the SSIM to indicate a parity error has been detected on the MMP interface during a transfer from the MMP to the SSIM.
 - b. DSTAT 10 (Busy) is set by the SSIM to indicate to the SDSS that a loop-back test of the MMP interface is in progress or that the SSIM is presently transferring information to or from the MMP.
 - c. DSTAT 11 (CIF, Control Information Flag.) This bit will be set by the SSIM when a request to output control information (ICE packets) to the SDSS has been received by the SSIM from the MMP.
5. ATTN: The Attention line is automatically set when the SSIM detects a parity error on the MMP interface or when the SSIM sets the control information flag.
6. DATI 15-00 OUT: Sixteen lines are used to transfer information from SDSS VAX-11/780 memory to the SSIM.
7. Initialize: This line, when set by the SDSS, will cause a reset in the SSIM. The SSIM logic will return to the standby mode upon receipt of this signal.
8. FNCT 3-2-1: These bits will be used in seven combinations to define a command for the SSIM.

Table 1. Functions of SSIM Signal Lines to the DR11-B Interface
(continued)

001	Initiate an interrupt sequence to the MMP on channel
010	16 (001) or channel 17 (010). Loads internal SSIM DRDB register with value currently in DR11-B DRDB.
011	Enables SSIM to accept commands from channel 11 for bootstrap load.
100	Start I/O transfer.
101	Reset Parity Error (PE) flag.
110	Reset SSIM to standby mode.
9.	<u>Busy</u> : The Busy signal, generated by the SDSS, is an indication that the SDSS has received a Cycle Request. The Busy signal will be used to clear the Cycle Request logic in the SSIM.
10.	<u>End Cycle</u> : This line is pulsed when the SDSS has completed a cycle transferring information to or from the SSIM.
11.	<u>GO</u> : A pulse on the GO line transfers a status, function, or data word into or out of the SDSS.
12.	<u>Ready</u> : Ready is used in conjunction with a GO pulse to indicate a valid function command to the SSIM.

the job files developed for disk input and one developed for punch input, and continuously changing the job name of the file so that the same file can be used to represent numerous simultaneous job submissions.

Minimum test personnel requirements should include a TIS Manager and a TIS User. Also available should be a person familiar with the operation of PSS and its use in TACFIRE job control operations.

4.2 FUNCTIONS TO BE VERIFIED

Following are the functions to be verified during TIS acceptance testing. The functions are grouped under the following categories:

- TIS Setup and Control
- User Prompt Functions
- Job Control Functions
- PSS Master User File Directory Operations
- TIS Utility Functions

Primarily, these tests will utilize the TIS Command Language to exercise all required TIS functions, using both valid and invalid entries.

4.2.1 TIS Setup and Control

TIS functions to be tested under this group are:

- Entering the TIS Command Language Mode (TCL) from the Digital Command Language (DCL) mode.
- Downline loading of the PSS file to the MMP (BOOT):
 - From tape
 - From disk.
- Downline loading of a PSS block-formatted file.
- Initializing the TIS CPCI for PSS processing without input queue recovery (cold start).

- Initializing the TIS CPCI for PSS processing with input queue recovery (warm start).
- Sending a test message to the PSS (TEST Command):
 - In periodic mode
 - Via an interactive command.
- Sending an operator message to the PSS (SEND Command).
- Setting and changing values of TIS CPCI variables that control TIS and PSS processing including:
 - Assigning the TIS Manager
 - Changing the maximum number of PSS files that can be simultaneously open.
- Enabling a PSS User to perform the TIS Manager functions, which consist of:
 - Downline loading
 - Setting and changing TIS variables
 - Initializing the TIS CPCI.
- Providing a report on the current internal statistics that record processing loads (SHOW Perf).
- Stopping execution of a PSS and performing recovery of queued batch jobs (CLUP).

4.2.2 User Prompt Functions

TCL contains the following constructs:

- An imperative verb to indicate the command to be performed.
- A noun that indicates the direct object of the verb.
- A value that further qualifies the direct object of the verb.

To assist the user, prompts are provided for all three constructs via the HELP Command.

The user prompt functions to be tested under this group are:

- Use of the HELP Command without any qualifier to obtain a list of all TCL verbs.
- Use of the command after entry of a TCL verb to generate a prompt explaining the use of the verb.

- Use of the command after entry of the noun that follows a DCL verb to generate a prompt explaining the values that are required to complete the command.

4.2.3 Job Control Functions

TIS provides two modes, interactive and batch, in which job inputs can be submitted to the PSS and monitored. In the interactive mode a VAX-11 RMS disk file containing the PSS JCL can be submitted to the PSS for execution. The job control functions that are used to enter, monitor, and control these modes and that will be tested under this group are:

- Scanning a PSS JCL file for correctness prior to submission to the PSS (SUBMIT/SCAN).
- Scanning the PSS JCL file for correctness and, if correct, initiating the job (SUBMIT), including jobs that require:
 - Creating new files
 - Accessing permanent files
 - Compiling a program.
- Submitting to PSS a series of jobs that perform a system generation (SYSGEN) of selected portions of the TACFIRE system.
- Cancelling a PSS job.
- Converting a PSS block-formatted file to VAX-11 RMS format (CONVERT VMS).
- Converting a VAX-11 RMS-formatted file to PSS block format (CONVERT PSS).
- Controlling the PSS input and output queues (SET/QUEUE).
- Retrieving status information for a specific PSS job that was submitted (SHOW STATUS/FULL).
- Retrieving status information for all PSS jobs currently executing in PSS (SHOW STATUS/ALL).
- Retrieving a report on the status of the job entries in the PSS batch input queue for the terminal user (SHOW STATUS).
- Retrieving the TIS variables that affect PSS processing and TIS outputs (SHOW Param).

- Retrieving a report on the status of (SHOW/QUEUE):
 - Input queue
 - Print queue

4.2.4 PSS Master User File Directory Operations

Whenever PSS file names update the TIS data base, the appropriate information must be entered in the PSS MUFD file via TCL commands. TIS functions to be tested under this group are:

- Add a file name to the PSS data base.
- Display the TIS table of PSS file names:
 - Display only
 - Display and print on SDSS line printer.
- Update TIS table of PSS file names.
- Remove an entry from the table.

4.2.5 TIS Utility Functions

The TIS utilities are four stand-alone functions that must be operated under Digital Command Language (DCL) mode. They consist of a Disk Purge function (DISKPURG), TISGBL Dump function (ADUMP), Tape Utilities function (TUT), and a Print or Punch Tape Output function (POPTOP), and are described as follows:

- (1) Testing of the DISPURG function will consist of using the function to specify a disk drive number containing the disk to be purged, inspecting the output of the purge, and attempting to read information from the purged disk.
- (2) Testing of the ADUMP function will consist of using the function to dump TISGBL and inspecting the output of the TISGBL listing.
- (3) Testing of the TUT function will consist of using the function to perform tape labeling and positioning operations and inspecting the results. Specific operations will include:
 - Scratch Tape
 - Tape Label ANSI
 - Tape Label EBCDIC
 - Rewind

- Rewind and Unload
- Write Tape Mark
- Skip Files
- Skip Records.

- (4) Testing of the POPTOP function will consist of using the function to cause queue files to be written to a tape mounted on a specific tape drive and inspecting the results. Specific tests will include writing the:
- Print Queue
 - Punch Queue
 - Both Queues.

5. TEST VERIFICATION METHODS

Verification of unit test results will consist of analysis of the results of the output data from each test case. All test case data inputs will include nominal, default, null, critical, maximum, and minimum data values.

During system and acceptance level testing, the following methods will be used to verify that the responses to the functions under test are correct:

- (1) Visual observation of the required user displays presenting:
 - Status messages
 - Prompts
 - Error messages.
- (2) Analysis of the TIS History Log.
- (3) Analysis of the TIS Error Log.
- (4) Analysis of completed PSS job outputs.

An Acceptance Test Report will be written to present the results of all tests and inspections conducted in accordance with this plan.

6. TEST PROCEDURES

The test procedures specified in this section provide the scenario for the Acceptance Test of the Tactical Interface System to be conducted for CENTACS at Ft. Monmouth and for FATDS Software Support Group at Ft. Sill. These procedures specify the steps to be performed and the expected results.

The Acceptance Test consists of five separate tests. These tests are:

- (1) TIS Installation
- (2) Starting TIS
- (3) PSS Operations
- (4) TIS Termination
- (5) Utilities

With these five tests all functions of the system can be verified including the capability to build the system from source.

The test procedures are designed to test TIS functions, not the AN/GYK-12 operating system PSS. However, many of the test procedures depend upon PSS performing correctly to produce the expected results.

The first test, TIS Installation, tests the capability to generate a viable TIS from a TIS backup tape. The procedures in this test restore all files to the disk, create the necessary logical names, build the system from

source, build the utilities from source, install the device driver, and create all the necessary symbols and messages. When this test is complete, TIS is ready to run on the VAX-11/780.

The second test, Starting TIS, tests the capability to run and configure TIS by the TIS manager(s). The procedures in this test demonstrate the capability to enter and exit TIS command language mode, start the system, configure the User Status Table, set up TIS dynamic parameters, and configure tape drives. When this test is complete, TIS is running and configured for operations with PSS.

The third test, PSS Operations, tests the operational interface with PSS. The procedures in this test down-line load the PSS system, process the job input queue, process the job output, perform PSS operator communications, and execute a system generation to build a V0 12 PSS system. Included in this test are various TIS commands to monitor the operations.

The fourth test, TIS Termination, tests the capability to terminate the system in the normal mode and when the PSS crashes. TIS recovery is also tested as a part of this test.

The fifth test, TIS Utilities, tests the utility ADUMP functions POPTOP, TAPEUTIL and DISKPURGE.

The TIS error logging, history logging, and ADUMP functions are used throughout the tests to verify correct operation.

6.1 TIS INSTALLATION

Test Procedure 1.1 Restore TIS

Purpose: To test restoring the TIS from tape to disk.

Required data: A TIS backup tape.

STEP 1

The TIS backup tape must be mounted foreign with the VMS command:

\$MOUNT/FOREIGN device name.

Expected result: When the mount operation is complete, VMS will respond with a message indicating that the tape is mounted. The VMS BACKUP UTILITY is used to restore the TIS directory and all subdirectories to the disk. All files necessary for the Acceptance Test will be restored.

STEP 2

Enter the VMS command:

\$BACKUP/LIST

Tape Device Name: TISBAK.BCK

Disk device name: [* . . .]

Expected result: The BACKUP utility will transfer the save set to the specified disk, and list all files transferred. Inspect TIS directory and all subdirectories using the VMS directory command.

Test Procedure 1.2 Create Logical Names

Purpose: To create the process, group, and system logical names required by TIS.

Required date: ASSIGNS.COM, GROUPNAMS.COM

STEP 1

To assign the process logical names, run the command procedure:

@ASSIGNS.COM

Normally, this is done in the LOGIN.COM procedure, and therefore the user does not need to run ASSIGNS.COM when he logs on.

STEP 2

Enter the VMS command:

SHOW LOGICAL/PROC

Expected result: The TIS process logical names as shown in Table 2.

STEP 3

To create the TIS group local names for group 300, run the command procedure:

@GROUPNAMS.COM

Once this procedure is run the NAMES remain in the VMS Group Logical Name Table until the system is shut down or crashes.

STEP 4

Enter the VMS command:

SHOW LOGICAL/GROUP

Expected result: The TIS group logical names as shown in Table 3.

Test 1.2 continued

STEP 5

To create the system Logical Name TIS\$SYSTEMs, enter the VMS command:

ASSIGN/SYS device name: [TISEXE] TIS\$SYSTEM

Normally, this will be done in the site specific start up procedure.

STEP -6

Enter the VMS command:

SHOW LOGICAL/SYS

Expected result: TIS\$SYSTEM is in the VMS System Logical Name Table.

Test Procedure 1.3 Assemble/Compile TIS

Purpose: To build the TIS object modules from source.

Required data: BUILDTIS.COM

STEP 1

To assemble/compile all or some of the TIS modules, enter the VMS command:

SET DEFAULT TIS\$BUILD

and run the command procedure:

@BUILDTIS

and enter response to prompts.

Expected result: The directory TIS\$OBJECTS will contain the object modules for all the TIS components. The list files will also be in this directory if the list option was selected.

Test Procedure 1.4 Link TIS

Purpose: To link all TIS modules and install the TIS global area and run time library.

Required data: BUILDTIS.COM

STEP 1

Run the command procedure BUILDTIS by entering the VMS command:

@BUILDTIS

STEP 2

Answer no to the compilation prompt. Answer yes to the prompt:

Do you want to link any TIS modules?

If maps are desired, answer yes to the next prompt. The procedure prompts the user component by component. Answer yes to all prompts.

Expected results: Executable images for CMDINTRP, FILEOPS, JOBOPS, ICEHANDLE, JBDriver, SYSINITRM, TAPEOPS, and USERMSGP will exist in TIS\$SYSTEM. Executable images for TISGLOBAL and TISRTL will exist in SYS\$LIBRARY.

Test Procedure 1.5 Install JB DRIVER

Purpose: To install into the VMS system the DR-11B device driver - JBDRIVER.

Required data: JBCONNECT.COM

STEP 1

To load and connect JBDRIVER from the command procedure JBCONNECT.COM by entering:

```
@TIS$SYSTEM:JBCONNECT
```

Expected result: The driver will be installed in VMS with a CSR of octal 772414 and vector address octal 124.

STEP 2

Verify the driver is installed by entering the VMS commands:

```
RUN SYS$SYSTEM:SYSGEN  
SHOW/DEVICE=JB:
```

Expected result: Information about JBDRIVER will be displayed.

Test Procedure 1.6 Compile and Link Utilities

Purpose: To compile the TIS utility programs.

Required data: BUILDUTL.COM

STEP 1

Set default to TIS\$BUILD and run the command procedure BUILDUTL by entering:

@BUILDUTL

STEP 2

Answer yes to the prompt: Do you want to compile any TIS utilities?

If listings are desired, answer yes to the next prompt. The command procedure will prompt the user for each utility. Answer yes to all prompts.

Expected results: Object modules for ADUMP, POPTOP, DISKPURGE, TAPEUTIL, SSIMTEST, and TISMSGGEN will exist in TIS\$UTILITIES.

STEP 3

Answer yes to the prompt: Do you want to link any TIS utilities? Link the utilities by answering yes to each prompt.

Expected result: Executable images for all utilities will exist in TIS\$UTILITIES.

Test Procedure 1.7 Create TIS Symbols

Purpose: To create the symbols for running TIS.

Required data: SYMBOLS.COM

STEP 1

To create the TIS symbols, run the command procedure SYMBOLS.COM by entering the VMS command:

@SYMBOLS

Normally this procedure is executed in the LOGIN.COM command procedure.

STEP 2

Verify the symbols were created by entering the VMS command:

SHOW SYMBOL/ALL/GLOBAL

Expected result: The TIS symbols will be displayed.

6.2 STARTING TIS

Test Procedure 2.1, Enter/Exit TIS

Purpose: To test the capability to enter and exit TIS Command Language Mode.

Required data: None.

STEP 1

Enter the symbol TIS, which was created in test 1.8.

Expected result: The TIS prompt.

STEP 2

To ensure TIS command language mode active, enter aaaa.

Expected result: TIS — Invalid Command.

STEP 3

To ensure CNTRL Y disabled, enter CNTRL Y

Expected result: TIS prompt.

STEP 4

To exit TIS, enter Cntrl Z.

Expected result: Return to DCL.

Test Procedure 2.2, Start System — Cold

Purpose: To test the creation of the TIS detached processes.

Required data: None.

STEP 1

Enter TIS mode and enter the TIS command START/COLD.

STEP 2

Exit TIS and do a SHOW SYSTEM.

Expected result: The process name table will contain ICEHANDLE, FILEOPS, JOBOPS, TAPEOPS, USERMSGP, and SYSINITRM.

STEP 3

At a different terminal, enter TIS and the command START/COLD.

Expected result: System Initiator Terminator already active, start operation cancelled.

Test Procedure 2.3, Start System — Warm

Purpose: To test that the Job Input Queue is restored on a warm start.

Required data: MSGJOB JCL in TIS\$TEST.

STEP 1

Enter the TIS command: SUBMIT TIS\$TEST:MSGJOB

Enter the TIS command: SHOW/QUEUE INPUT

Expected result: The job MSGJOB will be in the queue.

STEP 2

Enter the TIS command: STOP

Exit TIS and do a SHOW SYSTEM

Expected result: The VMS process name table does not contain any TIS processes.

STEP 3

Enter the TIS command: START/WARM

Enter the TIS command: SHOW/QUEUE INPUT

Expected result: The job MSGJOB will be in the queue.

Test Procedure 2.4, Set User

Purpose: To test the capability to configure TIS users in the TIS User Authorization Table, which allows users access to TIS and defines their TIS privileges.

Required data: None.

STEP 1

Enter the following TIS commands for each user:

SET/PARAM USER — Username/PRIV=(PRIVNAME 1, PRIVNAME 2, . . .)

where Username is the VMS account name and PRIVNAME = TBD

STEP 2

Enter the TIS command: SHOW/PARAM USER

Expected result: The users have the username and privileges set in Step 1.

STEP 3

The users log onto the system and enter TIS.

Expected result: TIS prompt.

STEP 4

Log onto system from an account not entered in Step 1, and attempt to enter TIS.

Expected result: TBD.

Test Procedure 2.5, Set AN/GYK-12

Purpose: To test the capability to set the AN/GYK-12 On Line and Off Line by a TIS manager.

Required data: None.

STEP 1

From a TIS managers account, enter the TIS command:

SET/PARAM SSIM ZERO ON

STEP 2

Enter the TIS command:

SHOW/PARAM SSIM ZERO

Expected result: The display will show SSIM zero on line.

6.3 PSS OPERATIONS

Test Procedure 3.1 Down Line Load

Purpose: To down line load the AN/GYK-12 with the V042 PSS residing on a disk file.

Required data: V042.DAT

STEP 1

Enter TIS command:

BOOT ZERO TIS\$PSSLOAD:V042.DAT

Expected result: TIS -- PSS bootstrap beginning.

****Waiting for Channel 11 Load pushbutton.

STEP 2

Set 07 in the test switches and set 16 in the ACC ADDRESS switches. Put instruction stop up. Push COMPUTER RESTART. Push the Channel 11 load pushbutton.

The boot terminal will display the message:

TIS -- PSS initial bootstrap successfully completed.

Final SSIM I/O status (success) 1.

Total SSIM I/O byte count 31800.

STEP 3

On the AN/GYK-12 put INSTRUCTION STOP down and push START.

Expected result: A TIS message from SYSINITRM indicating the PSS initialization is beginning.

A TIS message from ICEHANDLE indicating that a PSS class list was received.

A TIS message from JOBOPS indicating that no jobs are eligible for execution.

PSS initializations messages.

Test 3.1 continued

STEP 4

On the AN/GYK-12 put XFR Switch 8 up. With XFR Switch 1 down the Swapper will be started by PSS.

Expected result: A TIS message from JOBOPS indicating that a utility job has started execution in job slot 10. This job is the Swapper.

SYSINITRM will output messages indicating that loading the System File is in progress.

When the load is complete, PSS messages indicating the Version number, no RAAM, the number of pages on line, and that initialization is complete.

SYSINITRM will output a message indicating that PSS initialization is complete.

ICEHANDLE will display the class list received.

STEP 5

Run ADUMP to verify state of system after the load is complete.

Test Procedure 3.2 Send Command

Purpose: To test the PSS operator communications using the SEND command.

Required data: None.

STEP 1

Enter the TIS command:

SEND 0:1 D ddmon YR, time

Expected result: PSS message indicating what day of week it is.

STEP 2

Enter the TIS command:

SEND 0:1 LD ALL

Expected result: PSS report of peripheral device status, device address, usage, error and retry statistics for all devices.

Test Procedure 3.3 Test Message

Purpose: To test the automatic and manual test messages initiated by TIS.

Required data: None.

STEP 1

To test the manual test message enter the TIS command:

TEST 0

Expected result: A TIS message for ICEHANDLE indicating that PSS responded to the test message.

STEP 2

To test the automatic test message enter the TIS command:

SET/PARAM AUTO-TEST ON

Expected result: TIS will periodically send a test ICE to PSS but will not issue a message unless the test fails. To validate that the test is successful, periodically run ADUMP. The last ICE received should be a test ICE.

Test Procedure 3.4 Execute a PSS Job

Purpose: To test the capability to start a PSS job slot, dequeue the job submitted in Test Procedure 2.3, and execute the job.

STEP 1

Enter the TIS command:

SEND 0:1 S 3

Expected result: A PSS message — Input Stream 3 started on the PSS operators manual.

A TIS message form JOBOPS indicating that the job MSGJOB is executing in job slot 3.

When the job terminates the output will be printed.

Test Procedure 3.5 Suspend Job Input Queue

Purpose: To suspend the Job Input Queue

Required data: None.

STEP 1

After the job terminated in Test Procedure 3.4, PSS attempts to start a job every six seconds. To suspend the Job Input Queue, enter the TIS command:

SET/QUEUE INPUT HOLD

Expected result: A TIS message from JOBOPS indicating that the Job Input Queue has been suspended.

Test Procedure 3.6 Job Input Queue Entry On Hold

Purpose: To release the queue suspended in procedure 3.5, submit a job and put that entry on hold.

Required data: MSGJOB.JCL in TIS\$TEST

STEP 1

To release the Job Input Queue, enter the TIS command:

SET/QUEUE INPUT RELEASE

STEP 2

To submit the job, enter the TIS command:

SUBMIT/HOLD TIS\$TEST:MSGJOB.JCL

STEP 3

Check that the job is in the queue and on Hold; enter the TIS command:

SHOW/QUEUE INPUT

Expected result: The display will show the job MSGJOB on Hold, and no jobs will be dequeued for execution.

STEP 4

Enter the TIS command:

SET/QUEUE INPUT MSGJOB RELEASE

Expected result: The job MSGJOB will execute.

Test Procedure 3.7 Cancel a Previously Submitted Job

Purpose: To remove a job from the input queue.

Required data: MSGOUT.JCL in TIS\$TEST

STEP 1

Submit the job MSGJOB by entering the TIS command:

SUBMIT TIS\$TEST:MSGJOB.JCL/PRINT

STEP 2

Enter the TIS command:

SHOW/QUEUE INPUT

Expected result: The job MSGJOB will be in the queue.

STEP 3

Enter the TIS command:

CANCEL MSGJOB

STEP 4

Enter the TIS command:

SHOW/QUEUE INPUT

Expected result: The queue will be empty.

Test Procedure 3.8 MUFD Manipulation

Purpose: To test the capability to add, remove, display and update the MUFD.

Required data: None.

STEP 1

To print the current MUFD, enter the TIS command:

```
DISPLAY/PRINT
```

Expected result: A listing of all PSS filenames and the corresponding VMS device and directory and the default blocksize and filetype for all entries in the MUFD will be printed on the line-printer defined by the VMS logical name SYS\$PRINT.

STEP 2

To add PSS filenames to the MUFD, enter the TIS commands:

```
CREATE/SRC72/BL:126 TSTNAME1 TIS$TEST  
CREATE/SRC80/BL:126 TSTNAME2 TIS$TEST  
CREATE/OTHER/BL:120 TSTNAME3 TIS$TEST
```

STEP 3

To display the entries created, enter

```
DISPLAY TSTNAME1  
DISPLAY TSTNAME2  
DISPLAY TSTNAME3
```

Expected results: Display of filename, VMS device and directory, blocksize and type for each PSS file.

Test 3.8 continued

STEP 4

To update a MUFD entries, enter the TIS commands:

```
UPDATE TSTNAME1 TIS$DATA
UPDATE/SRC72 TSTNAME2
UPDATE/BL:800 TSTNAME3
```

Expected result: The VMS device and directory for TSTNAME1 will be equivalence name for TIS\$DATA.

The tyep for TSTNAME2 will not be Type 1.

The blocksize for TSTNAME3 will now be 800.

STEP 5

To remove MUFD entries, enter the TIS commands:

```
REMOVE TSTNAME1
REMOVE TSTNAME2
REMOVE TSTNAME3
DISPLAY/PRINT
```

Expected result: The entries created in this procedure will not be in the MUFD.

Test Procedure 3.9 TACPOL Compile

Purpose: To test the capability to perform a PSS compilation.

Required data: REALSTUF.JCL in TIS\$TEST.

STEP 1

To enqueue the job enter the TIS command:

SUBMIT INPUT TIS\$TEST:REALSTUF.JCL/PRINT

STEP 2

Start the job by entering the TIS command:

SEND 0:1 S 4

Expected result: The compilation will run in job slot 4.
The job output will be printed and an object file for the
job will be created.

Test Procedure 3.10 Cancel a Job with a Dump

Purpose: To test the capability to process job termination with a PSS OSDUMP.

Required data: REALSTUF.JCL in TIS\$TEST.

STEP 1

Perform the steps in Test Procedure 3.7. After the job begins execution, enter the TIS command:

SEND 0:1 C 4, DUMP

Expected result: JOBOPS will output a TIS message indicating that UTILITY job is executing in job slot 11.

When this job terminates the dump will be printed.

The job running in job slot 4 will terminate and its output will be printed.

Test Procedure 3.11 Scroll Output

Purpose: To test holding the job output for scrolling by the user.

Required data: REALSTUF.JCL in TIS\$TEST.

STEP 1

To hold the job output for scrolling, enter the TIS command:

SUBMIT TIS\$TEST:REALSTUF.JCL/SCROLL

STEP 2

Enter the TIS command:

SEND 0:1 S 4

Expected result: The job will run in job slot 4. When the compilation is complete, JOBOPS will output a message indicating that the output is held for scrolling.

STEP 3

Set the default directory by entering the VMS command:

SET DEFAULT TIS\$OUTFILES

STEP 4

Scroll the job output by entering the VMS command:

TYPE REALSTUF.LIS

Expected result: The listing for the job with the logger file will be displayed on the screen.

STEP 5

Put the Job Input Queue on hold by entering the TIS command:

SET/QUEUE INPUT HOLD

Test Procedure 3.12 PSS Job Requiring Tape Drives

Purpose: To test the Attach/Detach commands and dequeuing of PSS jobs requiring VMS tape drives.

Required data: TAPEJOB.JCL in TIS\$TEST.

STEP 1

Enter the job on the Job Input Queue by entering the TIS command:

SUBMIT TIS\$TEST:TAPEJOB.JCL/PRINT

STEP 2

Release the queue by entering the TIS command:

SET/QUEUE INPUT RELEASE

Expected result: JOBOPS will output a message indicating no jobs eligible for execution since the tape drive has not been attached to the job.

STEP 3

Enter the TIS command:

ATTACH TAPEJOB VMS device name

Expected result: The job TAPEJOB will execute.

STEP 4

After the job terminates, detach the tape drive by entering the TIS command:

DETACH TAPEJOB VMS device name

STEP 5

Resubmit the job.

Expected result: The job will not execute because the tape drive is not attached.

Test Procedure 3.13 Class List Dequeuing

Purpose: To test that only one job of the class K-N can execute; i.e., if a class K job is running then another class K job will not be dequeued until the current one terminates.

Required data: CLASKJOB.JCL in TIS\$TEST
CLASNJOB.JCL in TIS\$TEST

STEP 1

Submit first class K job for execution by entering the TIS command:

SUBMIT CLASKJOB.JCL/PRINT

STEP 2

Submit second class K job for execution by entering the TIS command:

SUBMIT CLASKJOB.JCL/PRINT

STEP 3

Start the first job by entering the TIS command:

SEND 0:1 5 9

Expected result: The JOBOPS will output TIS message that the job CLASKJOB has begun execution.

STEP 4

Attempt to start the second class K job by entering the TIS command:

SEND 1: 1 5 8

Expected result: JOBOPS will output a TIS message indicating no jobs are eligible for execution. When the first job terminates then the second job will execute.

STEP 5

Repeat Steps 1-4 with the class N job.

Test Procedure 3.14 SYSGEN

Purpose: To test the capability to perform a PSS system generation.

Required data: PSIN.JCL, PSAF.JCL, PSSY.JCL and PSSC.JCL in TIS\$TEST. The JCL listing is provided in Appendix 1.

STEP 1

To execute the first step of the sytem generation process, INITGEN, enter the TIS command:

```
SUBMIT TIS$TEST:ASIN.JCL/PRINT
```

STEP 2

Start INITGEN by entering the TIS command:

```
SEND 0:1 5 6
```

Expected result: The job CQATPSIN will execute in job slot 6. The job will create three members of file PSS CMPSYSF-CPU042, INIT042, TPE042. Enter the VMS commands:

```
SET DEFAULT CMPSYSF
```

```
DIR/FU
```

To display the directories for these files.

STEP 3

To exeucte the second step of the SYSGEN, AFFIN, enter the TIS command:

```
SUBMIT TIS$TEST:PSAF.JCL/PRINT
```

Expected result: The job will run in job slot 6 and create the member PSSA042 of PSS file CMPSYSF. Enter the VMS command DIR/FU PSSA042.DAT to display the directory for this file.

Test 3.14 continued

STEP 4

The third phase of the SYSGEN PROCESS, STPGEN, is executed by entering the TIS command:

SUBMIT TIS\$TEST:PSSY.JCL/PRINT

Expected result: The job CQATPSSY will run in job slot 6. The job will create the PSS member C042 of the PSS file. Enter VMS command:

DIR/FU C042.DAT

To display the directory for this file.

STEP 5

The final step of the SYSGEN process, PBBSC, is executed by entering the TIS command:

SUBMIT TIS\$TEST:PSSC.JCL/PRINT

Expected result: The job CQATPSSC will execute in job slot 6. The system file for version 42, V042.DAT will be created.

STEP 6

To verify the SYSGEN process was correctly done, boot the new SYSTEM FILE with the TIS command:

BOOT ZERO device-name [CMPSYSF] V042.DAT

When the boot operation is complete, run test procedures from the PSS operations test.

6.4 TIS TERMINATION

Test Procedure 4.1 Normal Termination

Purpose: To test the capability to stop TIS with an idle PSS.

Required data: None.

STEP 1

If any PSS job slots are started, but no jobs are active, enter the TIS command:

SEND 0:1 P job slot number

STEP 2

When all input streams have terminated, enter the TIS command:

STOP

Expected result: TIS -- STOP operation initiated.

STEP 3

Enter the VMS command:

SHOW SYSTEM .

Expected result: No TIS processes will be displayed.

Test Procedure 4.2 TIS Termination with Active PSS Jobs

Purpose: To test the logical disconnect between the TIS and PSS with graceful termination of active PSS jobs.

STEP 1

Start several PSS jobs with the TIS commands:

```
SUBMIT TIS$TEST:MSGJOB.JCL/PRINT
SUBMIT TIS$TEST:REALSTUF.JCL/PRINT
SUBMIT TIS$TEST:PSIN.JCL/PRINT
SEND 0:1 S 3
SEND 0:1 S 4
SEND 0:1 S 5
```

STEP 2

When all jobs have started, enter the TIS command:

```
CLUP ZERO
```

Expected result: All the active jobs will terminate and the entries deleted from the Job Input Queue. Run ADUMP to verify that GYK-STATE is a one and no entries exist on the JIQ.

Test Procedure 4.3 TIS Termination After a PSS Crash

Purpose: To test the logical disconnect between TIS and PSS after a PSS crash.

Required data: MSGJOB.JCL, REALSTUF.JCL, and PSIN.JCL

STEP 1

Enter the TIS commands in Step 1 of Test Procedure 4.2.

STEP 2

When all TIS jobs have started, set instruction Stop up on the AN/GYK-12 to simulate a crash.

STEP 3

Enter the TIS command:

CHOP ZERO

Expected result: All jobs will be forced to terminate and any output print data if it exists will be printed, but the job will not be deleted from the Job Input Queue.

STEP 4

To verify that the jobs have not been deleted from the JIQ, enter the TIS command:

SHOW/QUEUE INPUT

Expected result: The jobs submitted in Step 1 will be in the queue.

Test Procedure 4.4 TIS Backup

Purpose: To tes the capability to backup the TIS system.

Required data: BACKUP.COM command procedure.

STEP 1

Hang the backup tape.

STEP 2

Enter the VMS commands:

```
SET DEFAULT [TIS]
@BACKUP
```

STEP 3

Answer yes to the prompt:

'Initialize and mount mag tape'

Expected result: The VMS Backup Utility will save all TIS files in a save set on the magnetic tape. After each file is written to tape the file specification will be displayed.

STEP 4

If a listing of the save set is desired, answer yes to the save set listing prompt.

STEP 5

Answer yes to the prompt:

Dismount mag tape

6.5 TIS UTILITIES

Test Procedure 5.1 ADUMP

Purpose: To test the Articulated Dump utility which displays the TIS global area.

Required data: None

STEP 1

Enter the TIS symbol:

ADUMP

Expected result: The ADUMP utility program will execute and display on the terminal the contents of the TIS global area.

Test Procedure 5.2 DISKPURGE

Purpose: To test the Disk Purge Utility which declassifies a disk pack by overwriting with pseudo-random members.

Required data: None.

STEP 1

Mount the disk foreign with the VMS command:

MOUNT/FOREIGN device name volume label.

STEP 2

Run DISKPURGE by entering the VMS command:

RUN TISSUTILITIES DISKPURGE

Expected result: Disk Purge will output the prompt:

Enter VMS device name to be printed.

STEP 3

Enter device name such as DMA1.

Expected result: The disk will be purged and the program will terminate.
Any bad blocks on the disk pack will be reported.

Test Procedure 5.3 Tape Utility

Purpose: To test the TIS Tape Utility, TAPEUTIL, which provides user selected function to position the tape, write tape marks, or label the tape.

Required data: TSTTAPE1

STEP 1

Mount the tape foreign by entering the VMS command:

MOUNT/FOREIGN VMS device name TSTTAPE1

Expected result: VMS will mount the tape.

STEP 2

Run the Tape Utility program by entering the VMS command:

RUN TIS\$UTILITIES TAPEUTIL

Expected result: A menu of TIS functions will be displayed. These functions are:

1. Scratch the tape.
2. Write Tape Mark.
3. Rewind.
4. Rewind and unload.
5. Label tape (ASCII)
6. Label tape (EBCIDIC)
7. Skip record(s)
8. Skip file(s)

STEP 3

Enter 8 to select skip files.

Expected result: User prompt to:

ENTER NUMBER TO SPACE

Test 5.3 continued

STEP 4

Enter 3 to skip 3 files.

Expected result: The tape will move forward skipping 3 files. When complete the message:

SKIP complete. 3 files skipped.

Will be displayed, and the menu of functions will be displayed.

STEP 5

Enter 7 to select skip records.

Expected result: User prompt to:

ENTER NUMBER TO SPACE

STEP 6

Enter 1 to space 1 record.

Expected result: The tape will be spaced 1 record and the message:

SKIP complete. 1 record skipped.

Will be displayed and the menu will be displayed.

STEP 7

Enter 3 to rewind the tape.

Expected result: The tape will be rewinded, the completion displayed and the menu of functions displayed.

Test 5.3 continued

STEP 8

Enter 5 to label the tape in ASCII format.

Expected result: User prompt to enter 1-6 character label.

STEP 9

Enter label.

Expected result: The 80 character ANSI VCL 1 label will be written. A completion message and the menu of functions will be displayed.

STEP 10

Enter 2 to write a tape mark.

Expected result: One tape mark will be written, the completion message and menu of functions will be displayed.

STEP 11

Enter 6 to label the tape in EBCDIC format.

Expected result: User prompt to enter label.

STEP 12

Enter label.

Expected result: The 80 byte EBCDIC label will be written, the completion message and menu of functions displayed.

Test 5.3 continued

STEP 13

Enter 1 to scratch the tape.

Expected result: The tape will be scratched by rewinding the tape and writing two tape marks. The completion message and menu of functions will be displayed.

STEP 14

Enter 4 to rewind and unload the tape.

Expected result: The tape will be rewinded and unloaded. The completion message and menu of functions will be displayed.

STEP 15

Enter 9 to exit.

Test Procedure 5.4 POPTOP

Purpose: To test transferring an output file to tape.

Required data: TSTTAPE2, REALSTUF.LIS

STEP 1

Mount the tape foreign by entering the VMS command:

MOUNT/FOREIGN UMS device name TSTTAPE2

Expected result: VMS will mount the tape.

STEP 2

Run POPTOP by entering the VMS command:

RUN TIS\$UTILITIES POPTOP

Expected result: The user prompt: A labeled tape must be mounted foreign on drive. Enter volume serial number.

STEP 3

Enter volume serial number.

Expected result: A menu of functions is displayed, these functions are:

1. Print output to tape.
2. Punch output to tape.
3. Both print and punch output to tape.
4. Write end of volume and exit.

Test 5.4 continued

STEP 4

Enter 1 to select print output.

Expected result: The user prompt: Enter PSS job name (1-8 characters)

STEP 5

Enter PSS job name REALSTUF

Expected result: The header labels will be written, 14 print lines per block will be written to tape and the trailer records written.
When complete the menu of functions will be displayed.

STEP 6

Enter 4 to write end of volume and exit.

Expected result: Two tape masks will be written and the program will exit.

APPENDIX 1

SYSGEN JCL

NOT AVAILABLE TO THE PUBLIC

FILE ENVLOBUF, SGLOB, UNIT=7, DISK=KEEP, ACCESS=READ
 FILE ENVLOBUF, SGLOB, UNIT=7, DISK=KEEP, ACCESS=READ
 FILE ENVLOBUF, SGLOB, UNIT=7, DISK=KEEP, ACCESS=READ
 FILE ENVLOBUF, SGLOB, UNIT=7, DISK=KEEP, ACCESS=READ
 EXEC UNIT=7.

INITIAL

MPFIO2, 0, DEMODEUF, MPFIO2
 MPFIO3, 0, DEMODEUF, MPFIO3
 SUPPLER, 000, PS000BUF, SUPPLDR
 EXECUTIVE, 0, PS000BUF, EXECUTIVE
 SUPR, 0, PS000BUF, SUPR
 FAC0, 0000, PS000BUF, FAC0
 PSMDFIO4, 0000, PSMDFIO4, PSMDFIO4
 SUPR, 0000, PS000BUF, SUPR
 SUPR4, 0000, PS000BUF, SUPR4
 SP4, 0000, PS000BUF, SP4
 ENVLID, 0000

SGCONTROL, ENVLOBUF, SGCONTROL
 SGMBYTM, ENVLOBUF, SGMBYTM
 SGMBYTRM, ENVLOBUF, SGMBYTRM
 SGMBYTMF, ENVLOBUF, SGMBYTMF
 SGCBYTM, ENVLOBUF, SGCBYTM
 SGCBYTRM, ENVLOBUF, SGCBYTRM
 SGTBYTM, ENVLOBUF, SGTBYTM
 SGTBYTRM, ENVLOBUF, SGTBYTRM
 SGRESADR, ENVLOBUF, SGRESADR
 SGMDVBYT, ENVLOBUF, SGMDVBYT
 SGCOMPBYT, ENVLOBUF, SGCOMPBYT
 SGMBITM, ENVLOBUF, SGMBITM
 SGMBITRM, ENVLOBUF, SGMBITRM
 SGMBITMR, ENVLOBUF, SGMBITMR
 SGCBITM, ENVLOBUF, SGCBITM
 SGCBITMR, ENVLOBUF, SGCBITMR
 SGCBITMM, ENVLOBUF, SGCBITMM
 SGTBITMR, ENVLOBUF, SGTBITMR
 SGRBITMR, ENVLOBUF, SGRBITMR
 SGRESBIT, ENVLOBUF, SGRESBIT
 SGCBITM, ENVLOBUF, SGCBITM
 SGCBITM, ENVLOBUF, SGCBITM
 SGRARRY, ENVLOBUF, SGRARRY
 SGLCOMF, ENVLOBUF, SGLCOMF
 SGXACOS, ENVLOBUF, SGXACOS
 SGXASIN, ENVLOBUF, SGXASIN
 SGXATAN, ENVLOBUF, SGXATAN
 SGXALOG, ENVLOBUF, SGXALOG
 SGXBOOL, ENVLOBUF, SGXBOOL
 SGLREN, ENVLOBUF, SGLREN
 SGLADD, ENVLOBUF, SGLADD
 SGLEXP, ENVLOBUF, SGLEXP
 SGLMUL, ENVLOBUF, SGLMUL
 SGLDIV, ENVLOBUF, SGLDIV
 SGLCMP, ENVLOBUF, SGLCMP
 SGLABS, ENVLOBUF, SGLABS
 SGLMAX, ENVLOBUF, SGLMAX
 SGLMIN, ENVLOBUF, SGLMIN
 SGLRND, ENVLOBUF, SGLRND
 SGLTRN, ENVLOBUF, SGLTRN
 SGLSGM, ENVLOBUF, SGLSGM
 SGXLET, ENVLOBUF, SGXLET
 SGXIO, ENVLOBUF, SGXIO
 SGXEXP, ENVLOBUF, SGXEXP

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