HIRDLS

HIGH RESOLUTION DYNAMICS LIMB SOUNDER

Originator: Thomas J. Schapp, J.-P. Riley Date: 2003-06-12

Subject / Title: SAIL Test Report

Contents / Description / Summary:

Keywords: SAIL, IPU

Purpose (20 characters maximum): Report on Test of SAIL (Science Algorithm Implementation Language)

Reference:

Approvals

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EOS

WARNING

ESD sensitive components are contained in the assemblies called out in this procedure. All work must be done at an approved ESD station with wrist straps worn at all times. At the beginning of each day the wrist strap(s) used during this test shall be tested and logged or have a current verification sticker.

Log of Changes

Rev.	Date	Section	Change Description
A	2002-06-18	All	Added results of Software Acceptance Regression Test 1, Including Appendix of data files for the event, update to table 1-1 adding this test event.
A	2002-07-12	VCRM	Updated VCRM status column based on review held today and subsequent update of HIRDLS Comprehensive VCRM by SQE regarding requirements verification.
A	2002-07-22	6 Appendix	Added the text of all SAIL tasks used in Software Acceptance Regression Test 1 Added a Section 6 which contains all inspections. Updated the VCRM to trace to inspection reports.
A	2002-07-25	TOC VCRM List of Acronyms	Table of Contents, page viii, a "List of Tables" was added. In the VCRM (pages 48 - 54), the following requirements have been modified to replace "Yes" in the status column with "SQE Accepted" SAIL290, 465, 524, and 595. Note that SAIL290 was accepted with a waiver, hence that entry reads "SQE Accepted with Waiver W097". In the Acronym List (page 55), the acronym IPU was repeated, the second occurrence was removed.. In the Acronym List (page 55) the following acronyms have been added: SQE (Software Quality Engineer), VCRM (Verification Cross Reference Matrix).
B	2002-08-13	VCRM Software Acceptance Regression Test 1	Added requirements trace to all test case and task headers. Reworked VCRM to trace only to test case.
C	2003-06-12	All	Added results of SAIL Acceptance Regression Test 2

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TABLE 1-1 VERIFICATION EVENTS 1

1 Introduction

1.1 Scope

The purpose of this test is to provide confidence in the SAIL implementation including the Compiler, Assembler, Executive and Interpreter. This test will also provide confidence in SAIL's interface to the IPU application code.

As the SAIL test code is first sent through the compiler some outputs will need to be verified. Then after each of the test programs is assembled, converted, uploaded and run the telemetry will be analysed using the displays and the data_read program.

1.2 Test Report Format Description

Each test case report will begin by listing the test event.
The Software Acceptance Test occurred 2002-04-10 through 2002-04-12
The verification is provided by the test procedure document through test conductor initials The verification document for the Software Acceptance Test event is TP-LOC-803, dated 2002-04-09.
Each test case will state pass/fail, following the list of verification items.

For each step, Success/Failure/Partial Failure will indicate the result of the step.
Following that statement will follow a list of what verified this step, conductor, stol logs, data files.
Following the verification list, will be a list of any redlines formatted as noted below.

Any deviation between expected results will be classified in one of three ways:
Procedural Redline - A necessary step was missing, this redline does not indicate failure.
Failure Redline - A failure caused when expected results do not match actual results.
Discrepancy Redline - The test procedure and/or test plan do not agree. This may or may not have caused a failure/procedural redline.

Every redline will have two portions, a description of the problem, and a discussion of the reason and resolution of the problem.

1.3 Verification Events

All Verification Events which provide requirements verification or re-verification due to regression testing will be listed here. Each test/analysis/inspection case and appendix data file will have a sub-section noting the associated test event.

Test Event	Associated Test Plan Version	Date	SAIL Executive/Interpeter CSCI Software Version	SAIL Ground System Version
Software Acceptance Test	TP-LOC-854, Initial Release	2002-04-10 – 2002-04-12	6.0.0	2.3
Software Acceptance Regression Test 1	TP-LOC-854A	2002-06-17	6.1.0	2.4
Code Inspection Session 1	TP-LOC-854B	2002-06-22	6.1.2	2.4
SAIL Acceptance Regression Test 2	TP-LOC-854C	2003-06-05	6.3.0	2.5

Table 1-1 Verification Events

2 Applicable Documents

Dwg/Doc. Number	Description
SW-LOC-117	SAIL High-Level Specification
SW-LOC-127	SAIL Low-Level Specification
SW-HIR-147	SAIL Requirements Document
SW-LOC-854	SAIL Software Test Plan
TP-LOC-822C	SAIL Test Procedure

3 Required Equipment

3.1 HIRDLS Test Equipment

Description	Mfr./Model #	LMMS Tag #	Cal Due date
TEU connected to the IPU			N/A
PSA card running the IPU			N/A
PC	PC with SAIL compiler, assembler and a network interface		N/A
power supplies			N/A
Wrist straps			
IEGSE	With network interface		
Timing board			

3.2 Test layout

This test has two independent sections. First the test code gets compiled and assembled on a PC. Some error outputs are checked and one of the assembler files is changed and re-assembled. The second section requires IPU interfaced to the IEGSE. One of the test cases also require a interface to the TEU.

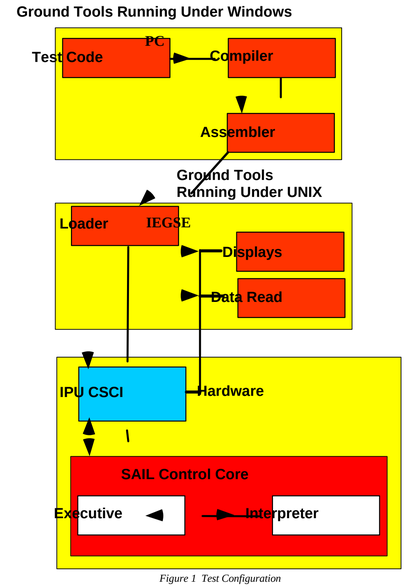

Figure 1 Test Configuration

WARNING

ESD sensitive components are contained in the assemblies called out in this procedure. All work must be done at an approved ESD station with wrist straps worn at all times. At the beginning of each day the wrist strap(s) used during this test shall be tested and logged or have a current verification sticker.

4 SECTION ONE: GROUND TESTING AND PROCEDURES

Section one is independent of section two and only needs to be rerun if the compiler or assembler were changed. If this test has already been run and the compiler and assembler have not been changed you may skip to section two.

4.1 Software Acceptance Regression Test 1 (2002-06-17)

4.1.1 Compiling Tasks

On the PC start a dos command interpreter, enter the test code directory:
F:\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC, replacing [SAIL_VERSION] with the version number of SAIL that is under test. Run the test code through the compiler and assembler by typing "MAKE_SAIL_SWACC > SAIL_SWACC_[DATE].txt" , replacing [DATE] with the date of the test event in the format YYYY_MM_DD, in the dos command interpreter. This file will contain the version number of all SAIL tasks used for the SAIL SWACC, and must be appended to the SAIL test report.

The associated SAIL source file for each of the below error files in sections 4.11 – 4.1.3 contains a list of the expected errors in comments.
Verify that only the expected errors are present in each error file. The column and line numbers for the error messages may not agree, and should be ignored. The error type and error messages will be identical.

4.1.1.1 Test Results

Success
Verfication Source:
SAIL_SWACC_2002_06_17.txt
SAIL_SWACC_2002_06_17.err
Test Conductor: JPR 2002-06-17, Day 168

4.1.2 SCERR Test Case (SAIL170, SAIL190, SAIL330)

List all error files with the command "dir *.err" from the dos prompt while in the directory "F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC". The following error files should have a non-zero size:
SCERR010.err
SCERR040.err (SAIL170, SAIL190)
SCERR050.err
SCERR060.err (SAIL330)

Test Engineer_____

4.1.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

4.1.3 SNSTERR Test Case

List all error files with the command "dir *.err" from the dos prompt while in the directory "F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC". The following error file should have a non-zero size:
SNSTERR.err

Test Engineer_____

4.1.3.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

4.1.4 SASM Test Case (SAIL540)

List all error files with the command "dir *.err" from the dos prompt while in the directory "F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC". The following error file should have a non-zero size:
SASMoverSizeLimit.err (Note: No associated SAIL source file, expected error: "Code size exceeds 64K at line 65539")

Test Engineer_____

4.1.4.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

4.1.5 SCMP Test Case (SAIL130)

Verify that the comments have been removed in SCMP010.p1 by checking it against SCMP010.sai

Comments removed OK

Test Engineer_____

4.1.5.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

4.1.6 SFERR Test Case

Edit the file SFERR050.a created in the "F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC" directory . Find the code section.

```
TESTEQ errortype err_call_during_error _it0
IFFALSE _it0 _Label8@error
JMP _Label9@error
_Label8@error:
_Label9@error:
```

Add the line

```
CALL function
```

between the IFFALSE line and the JMP line that follows. Assemble SFERR050a by typing

SC /ASM SFERR050

4.1.6.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

Test Engineer_____

Date_____

4.2 SAIL Acceptance Regression Test 2 (2003-06-05)

4.2.1 SCERR Test Case

List all error files with the command “dir *.err” from the dos prompt while in the directory “F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC”. The following error files should have a non-zero size:
SCERR010.err
SCERR040.err
SCERR050.err
SCERR060.err

Test Engineer_____

4.2.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10
Procedural Redline:
Line 323 of scerr040.sai needs updated to indicate that this error is now a warning instead of an error

4.2.2 SNSTERR Test Case

List all error files with the command “dir *.err” from the dos prompt while in the directory “F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC”. The following error file should have a non-zero size:
SNSTERR.err

Test Engineer_____

4.2.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

4.2.3 SASM020 Test Case

List all error files with the command “dir *.err” from the dos prompt while in the directory “F\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC”. The following error file should have a non-zero size:
SASMoverSizeLimit.err (Note: No associated SAIL source file, expected error: “Code size exceeds 64K at line 65539”)

Test Engineer_____

4.2.3.1 Test Results

Success
Test Conductor: JPR 2003-06-10

4.2.4 SCMP Test Case

Verify that the comments have been removed in SCMP010.p1 by checking it against SCMP010.sai

Comments removed OK

Test Engineer_____

4.2.4.1 Test Results

Success
Test Conductor: JPR 2003-06-10

4.2.5 SFERR Test Case

Edit the file SFERR050.a created in the "F:\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC" directory . Find the code section.

TESTEQ errortype err_call_during_error _it0
IFFALSE _it0 _Label8@error
JMP _Label9@error
_Label8@error:
_Label9@error:

Add the line

CALL function

between the IFFALSE line and the JMP line that follows. Assemble SFERR050a by typing

SC /ASM SFERR050

Test Engineer_____
Date_____

4.2.5.1 Test Results

Success
Test Conductor: JPR 2003-06-10

4.2.6 Transferring and Converting the test files

Open an FTP session to nimbus.spasci.com as the user hirdls, from the PC directory f:\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC. Once logged into nimbus, change to the sail/testcode directory from the hirdls home directory on nimbus. FTP all .C and .d files to the sail\testcode directory on nimbus. From the DOS prompt on the PC, in the directory. f:\SAIL\SAIL_CSCI\[SAIL_VERSION]\SAILtasks\SAIL_SWACC, type the command "CLEAN_SAIL_SWACC [DATE]", replacing [DATE] with the date of the test event in the format YYYY_MM_DD. The command will generate a file named SAIL_SWACC_[DATE].err. This file must be placed into the appendix of the test report. From fraser, open an FTP session to nimbus.spasci.com as the user hirdls. FTP all .C and .d files from sail\testcode to your dev\upload\MAKESTOL directory. Run the script ~tsadmin\rel\scripts\sailCheckOut to check out all sail testcode files. Run the script ~tsadmin\rel\scripts\makeSailSeg. This script will convert all sail files into seg files, and check them into RCS. Now, log in as user tsadmin. Change to the dev\upload\MAKESTOL directory from the tsadmin home directory. Run the script releaseSailSeg. Now, log in as user hirdls. Run the script releaseSailSeg once more. To run the releaseSailSeg script as user hirdls, the IEGSE must be running (see section 5.2 Starting the IEGSE). This script releases all seg files as user tsadmin,and compiles them into stol procedures as user hirdls. There are two additional stol procs needed.

em_sai_exec_tst
em_sai_diag_tst

5 SECTION TWO: RUNNING THE SAIL TASKS

5.1 Software Acceptance Test (2002-04-10 – 2002-04-12)

5.1.1 Starting the Hardware

Power on the instrument, ops order will direct which side to use:

Start hir_qba_on (a side) _____

Start hir_qbb_on (b side) _____

5.1.1.1 Test Results

Success
Test Conductor: JPR 2002/100
Procedural Redline:
@hir_bip_eeread 0
@hir_bip_boot
Reason/Resolution
Current configuration did not allow for autoboot, must boot manually.

5.1.2 Starting the IEGSE

Start a xterm on the IEGSE computer. In the xterm clean and start the IEGSE by typing

iegse_clean;iegse_start

Start the SAIL display.

start_testdisplay $IEGSE_DISPLAYS/sail

5.1.2.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.3 Aliveness Test

Power on the IPU and obtain data in the IEGSE displays.

5.1.4 Record Software Version Numbers

SAIL version number _____

IPU Application code version number _____

IEGSE version number _____

Test Engineer_____

Date_____

5.1.4.1 Test Results

Failure
Test Conductor: JPR 2002/100
Failure Redline:
SAIL version number is 0
Reason/Resolution
There is no SAIL version number, SAIL shares the version number of the IPU. Telemetry point is not connected.

DR AD6270 Addresses this failure. The resolution shall be that SAIL and the IPU CSCI share the same version number. The telemetry point for SAIL version will be removed in C&TH v6.15.

IPU Version Number: 3.6.0
IEGSE Version Number: 3.71

5.1.5 Start and Setup SAIL

Send the following set of commands:

start hir_sai_start
@hir_tlm_scifmt 1,0,0,0,0,0,0,0,0,1,1,0,1,x#1FFFFFF,1,1 // need to have room for one SAIL block 128*2 16bit words

@hir_tlm_diagfmt 5,1,258,128,0

5.1.5.1 Test Results

Success
Test Conductor: JPR 2002/100
Procedural Redline:
@hir_tlm_diagfmt 1,0,0,0,0
@hir_tlm_diagfmt 11, 0 ,0,0,0
@hir_tlm_diagfmt 14,0,0,0,0
Reason/Resolution
Current version of IPU CSCI enabled diagnostic items 1, 11, 14 by default. Test procedure was created under the assumption all diagnostic items would be off by default..

5.1.6 Test Cases

There is a stol proc for each of the test cases, most start by loading the code into SAIL memory block #4 and data into SAIL memory block #128. Next SAIL task #0 is created from those memory blocks and then run. The stol proc is halted waiting for input so the operator can verify that the task completed correctly. After verification, hit the Enter key to continue the stol proc which will kill the SAIL task and delete the used SAIL memory blocks, making SAIL ready for the next test case. Then hit Ctrl-C to close the stol proc window.

To start the stol proc
1) Input start *the stol proc's name* to the IEGSE.
2) Use TASK_STATUS for task 0 of the SAIL display to verify that the task ran, counter incremenated and the task suspended. Here are the task status meanings.

Halted = 0
Ready = 1
Running = 2
Suspended = 3
Wait = 4

This status nibble can be found in the lower nibble of the TASK_STATUS word. The upper nibble is a counter, which counts up to 0xF and then starts over with zero. This counter will change any time a task waits or ends.

3) Set memory dump to the start of task's data memory. Use data_read to Verify that the output array is correctly loaded. The contents of these arrays will not be in an exact location, but all that is required is to find the sequence somewhere in the diagnostic area for SAIL memory in the science packet. Somewhere in that block will be the sequence of numbers.

5.1.6.1 Test Case SARR010

Use the "sarr010" stol proc to load and run sarr010.
Task ran and suspended itself

Test Engineer_____

If it is not already set, set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 1's

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 1s.

Test Engineer_____

Date_____

5.1.6.1.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.2 Test Case SARR011

Use the "sarr011" stol proc to load and run sarr011.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFs

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 0xFFs.

Test Engineer_____

Date_____

5.1.6.2.1 Test Results

Success
Test Conductor: JPR 2002/100
Failure Redline:
The last 2 words of sail memory did not contain 0xFF, it contained 0xFFFFFFFF
Reason/Resolution:

The array was sized such that the size of the array plus the size of the local variables was one short of total available sail memory. The ability of an array to use all available memory successfully demonstrated in SARR010, no requirements impact as an array of logical values is functionally equivalent in memory usage to an array of ints.

5.1.6.3 Test Case SARR012

Use the "sarr012" stol proc to load and run sarr012.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFFFs

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 0xFFFFs.

Test Engineer_____

Date_____

5.1.6.3.1 Test Results

Success
Test Conductor: JPR 2002/100
Failure Redline:
The last 2 words of sail memory did not contain 0xFFFF, it contained 0xFFFFFFFF
Reason/Resolution:
The array was sized such that the size of the array plus the size of the local variables was one short of total available sail memory. The ability of an array to use all available memory successfully demonstrated in SARR010, no requirements impact as an array of unsigned values is functionally equivalent in memory usage to an array of logical values.

5.1.6.4 Test Case SARR013

Use the "sarr013" stol proc to load and run sarr013.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with numbers counting up starting from 0.

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with numbers counting up ending with 16349 or 0x3FDD.

Test Engineer_____

Date_____

5.1.6.4.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.5 Test Case SARR014

Use the “sarr014” stol proc to load and run sarr014.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 7FEF FFFF FFFF FFFB

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 1.797693134862315E+308s.

Test Engineer_____

Date_____

5.1.6.5.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.6 Test Case SARR020

This test case should generate an error. Use the “sarr020” stol proc to try to load sarr020.
Task did not load and SCCMD_REJCT ineremented with Result Code 0x1FCD (F_SAI_SEG_TOO_BIG)

Test Engineer_____

Date_____

5.1.6.6.1 Test Results

Success
Test Conductor: JPR 2002/100
Procedural Redline:
@hir_ipu_faultclr
Reason/Resolution:
SARR020 generates a known error, the procedure incorrectly does not issue @hir_ipu_faultclr to clear the error flag

5.1.6.7 Test Case SARR030

Use the “sarr030” stol proc to load and run sarr030.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x18

Test Engineer_____

Date_____

5.1.6.7.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.8 Test Case SCMP020

Use the “scmp020” stol proc to load and run scmp020.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x45

Test Engineer_____

Date_____

5.1.6.8.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.9 Test Case SCOMS010

Use the “scoms010” stol proc to load and run scoms010. This task will attempted to send a command which should be rejected the first time because the command has not been allowed. The operator must then allow the command and resume the task so that it can successfully send the command

Task ran and suspended itself

Test Engineer_____

SAIL command reject count increment

Test Engineer_____

Send the following commands

@hir_sai_command 1,39
@hir_sai_resum 0

This will allow SAIL to send command #39 and resume task 0. The SAIL task should then successfully send the command. Use the spu_serpts display to verify that the detector delay for #3 was set to 0x1234.

Verify Command executed.

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x07

Test Engineer_____

Date_____

5.1.6.9.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.10 Test Case SCOMS020

Use the "scoms020" stol proc to load and run scoms020. This task will attempt to overflow the IPU sail command queue by sending the HIR_SSH_DOORUNPROT command as fast as possible. This task is run once with control of the sunshield enabled and once with control disabled.

Before starting scoms020, send the following commands:
@hir_sai_command 1, 46
@hir_sai_control 1, 0
start scoms020

Task ran and suspended itself

Test Engineer_____

Use data_read to verify that int_array counts up to 40 and is terminated by a 1.

After the task is finished and killed, send the following commands:
@hir_sai_control 0, 0
start scoms020

Verify that in the SAIL display, the CMD_LAST_RC is 0x1fe5

Test Engineer_____

This task will generate errors, ignore errors and issue the following command when task is killed:

@hir_ipu_faultclr

Date_____

5.1.6.10.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.11 Test Case SEXEC000, - SEXEC016

Use the "em_sai_exec_tst" stol proc to load 17 tasks and run 16 of them. Use TASK_STATUS for each of the 16 tasks in the SAIL display to verify that the task run counter incriminates and the task status is ready, running or waiting or, 1, 2 or 4 until each task ran 15 times then all tasks should suspend.

All 16 tasks ran interleafed (not sequentially) 15 time and suspended

Test Engineer_____

Verify that the new task 1 ran and suspended.

Test Engineer_____

Date_____

5.1.6.11.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.12 Test Case SEXEC020, - SEXEC035

Use the "em_sai_diag_chk" stol proc to load and run the 16 tasks. Use TASK_STATUS for each of the 16 tasks in the SAIL display to verify that the task run counter incremented and each task suspended.

All 16 tasks ran and suspended

Test Engineer_____

Set memory dump to the first two blocks of SAIL shared memory with the following commands:

@hir_tlm_diagfmt 5,1,258,0,0
Run data_read
Verify that the first block of SAIL shared memory counts upwards from 0x00 to 32 bit dwords

@hir_tlm_diagfmt 5,1,258,1,0
Run data_read
Verify that the second block of SAIL shared memory finishes with 0xFF in 32 bit dwords

Test Engineer_____

Turn of SAIL memory dump and turn on diagnostic item #0 using the following commands

@hir_tlm_diagfmt 5,0,0,0,0
@hir_tlm_diagfmt 0,1,34,0xffff,0

Verify that SAIL task parameters in diagnostic item #0 count from 0x00 to 0xFF over 8 frames

Test Engineer_____

Turn of diagnostic item #0 and turn the SAIL memory dump back on.

@hir_tlm_diagfmt 0,0,0,0,0
@hir_tlm_diagfmt 5,1,258,128,0

Verify that SAIL shared shared memory parameters in the SAIL display count from 0x100 to 0x107 and SAIL engineering parameter count from 8 to 15.

Test Engineer_____

Date_____

5.1.6.12.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.13 Test Case SFERR010

This test case should generate errors. Use the “sferr010” stol proc to load and run sferr010.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

CURRENT ERROR
TASK NUM= 0
ERR TYPE = 253
LOCATON = 0x19

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.1.6.13.1 Test Results

Success

Test Conductor: JPR 2002/100

5.1.6.14 Test Case SFERR020

This test case should generate errors. Use the “sferr020” stol proc to load and run sferr020.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 253
LOCATION = 0xbf	LOCATION = 0x1f

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.1.6.14.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.15 Test Case SFERR030

This test case should generate errors. Use the “sferr030” stol proc to load and run sferr030.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 230
LOCATION = 0x25	LOCATION = 0xED

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.1.6.15.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.16 Test Case SFERR040

This test case should generate errors. Use the “sferr040” stol proc to load and run sferr040.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 234
LOCATION = 0x2B	LOCATION = 0xFD

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.1.6.16.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.17 Test Case SFERR050

This test case should generate errors. Use the “sferr050” stol proc to load and run sferr050.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 231
LOCATION = 0x31	LOCATION = 0xDE

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.

Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.1.6.17.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.18 Test Case SFUN010

Use the “sfun010” stol proc to load and run sfun010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x16

Test Engineer_____

Date_____

5.1.6.18.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.19 Test Case SIERR010

This test case should generate errors. Use the “sierr010” stol proc to load and run sierr010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x06

Test Engineer_____

Date_____

5.1.6.19.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.20 Test Case SMEM010

Use the “smem010” stol proc to load and run smem010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x40

Test Engineer_____

Verify that in the SAIL task data memory block MemoryArray counts down from 0x12345678 for 15 counts

Test Engineer_____

Set memory dump to the beginning of the shared memory with the following command

@hir_tlm_diagfmt 5,1,258,0,0

Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Set memory dump to the beginning of the common shared memory with the following command

@hir_tlm_diagfmt 5,1,258,2,0

Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Date_____

5.1.6.20.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.21 Test Case SNST010

Use the “snst010” stol proc to load and run snst010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3E

Test Engineer_____

Date_____

5.1.6.21.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.22 Test Case SOP010

Use the “sop010” stol proc to load and run sop010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x5E

Test Engineer_____

@hir_tlm_diagfmt 5,1,258,129,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x5F to 0x60

Test Engineer_____

Date_____

5.1.6.22.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.23 Test Case SOP020

Use the “sop020” stol proc to load and run sop020.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x1D

Test Engineer_____

Date_____

5.1.6.23.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.24 Test Case SOVR010

This test case should generate errors. Use the “sovr010” stol proc to load and run sovr010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x12

Test Engineer_____

Date_____

@hir_ipu_faultclr to clear SAIL error telemetry

5.1.6.24.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.25 Test Case SRTL010

Use the “srtl010” stol proc to load and run srtl010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x0D

Test Engineer_____

Date_____

5.1.6.25.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.26 Test Case SST010

Use the "sst010" stol proc to load and run sst010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3A

Test Engineer_____

Date_____

5.1.6.26.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.27 Test Case SDATA010

Note: This is part of SST and requires that the TEU be interfaced with the IPU.
Use the "sdata010" stol proc to load and run sdata010
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0
@hir_tlm_scifmt 1,0,1,1,1,0,0,0,0, 1,1,6,1,0x1fffff, 1,1

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x1700

Test Engineer_____

Date_____

5.1.6.27.1 Test Results

Success
Test Conductor: JPR 2002/100

Procedural Redline:
The hir_tlm_scifmt command was issued prior to the issuance of the sdata010 proc.
Reason/Resolution:
Need to have the test pattern set up before the test case begins running since the test case is comparing expected pattern data to the science data, which must be commanded to the pattern in order for a successful test.

Procedural Redline:
The diagfmt command was changed to use cyclic dumping instead of fixed.
Reason/Resolution:
The data for this test spans multiple SAIL blocks, and therefore multiple packets. A rolling dump is necessary to sequentially verify this data using the command @hir_tlm_diagfmt 5,1,258,0,1.

Procedural Redline:
The verification states that intArray counts to 0x1700, this is wrong.
Reason/Resolution:
Typo, 0x1700 should be 0x1080

5.1.6.28 Test Case STYPE010

Use the "stype010" stol proc to load and run stype010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x08

Test Engineer_____

Date_____

5.1.6.28.1 Test Results

Success
Test Conductor: JPR 2002/100

5.1.6.29 Test Case WAIT010 – WAIT020

Use the "wait010" stol proc to load and run wait010.
Task is running or waiting

Test Engineer_____

Suspend the task with the following

@hir_sai_supend 0

Verify that the task is suspended

Test Engineer_____

Resume the task with the following command

@hir_sai_resume 0

Load and run wait020 as task #1 using the "wait20" stol proc
Verify that task #1 ran and suspended.

Test Engineer_____

Verify that task #0 was suspended.

Test Engineer_____

Resume the task with the following command

@hir_sai_resume 0

Kill the task with the following

@hir_sai_kill 0

Verify that the task was killed

Test Engineer_____

Date_____

Enter “go” in the CSTOL window after the wait020 stol proc completes erasing task 1

Ignore errors in the wait010 stol proc, choosing “y” to continue after each error.

Clear all error flags with the following:

@hir_ipu_faultclr

5.1.6.29.1 Test Results

Success
Test Conductor: JPR 2002/100

Procedural Redline:
The procedure calls for a wait020 stol proc, but no such proc exists
Reason/Resolution:
Unknown why the proc does not exist, manually issued the following commands which accomplished the task of loading, creating, and resuming the wait020 SAIL task:
start wait020_d
start wait020_c
@hir_sai_create 1, 5, 129, 0
@hir_sai_resume 1

Procedural Redline:
Manually kill task 1
Reason/Resolution:
Wait020 stol proc did not exist, issued following commands to kill the task:
@hir_sai_kill 1
@hir_sai_erase 129
@hir_sai_erase 5

5.1.6.30 Test Case STOVR010

Use the “wait010” stol proc to load wait010 into task 0 and then start it running.
Task 0 is running or waiting

Test Engineer_____

Date_____

Use the “wait030” stol proc to load wait030 into task 2 and then start in running .
Task 2 is running or waiting

Test Engineer_____

Date_____

Use the “stovr010” stol proc to load stovr010 into task 1 and then start it running.
Task 1 suspended with error

Test Engineer_____

Date_____

Verify correct error generation
task = 1
type = 238

Test Engineer_____

Date_____

Verify task 0 is still running

Test Engineer_____

Date_____

Verify task 2 suspended

Test Engineer_____

Date_____

5.1.6.30.1 Test Results

Success
Test Conductor: JPR 2002/100

Procedural Redline:
The procedure calls for a wait030 stol proc, but no such proc exists
Reason/Resolution:
Unknown why the proc does not exist, manually issued the following commands which accomplished the task of loading, creating, and resuming the wait030 SAIL task:
start wait030_d
start wait030_c
@hir_sai_create 2, 6, 130, 0
@hir_sai_resume 2

Procedural Redline:
The procedure calls for a stovr010 stol proc, but no such proc exists
Reason/Resolution:
Unknown why the proc does not exist, manually issued the following commands which accomplished the task of loading, creating, and resuming the stovr010 SAIL task:
start stovr010_d
start stovr010_c
@hir_sai_create 1, 5, 129, 0
@hir_sai_resume 1

5.1.6.31 Test Case SASM

Use the "sasm" stol proc to load sasm.
Verify that the task was loaded

Test Engineer_____

Date_____

5.1.6.31.1 Test Results

Success
Test Conductor: JPR 2002/100

Procedural Redline:
Task 2 still running.
Reason/Resolution:
Not killed from previous test case, redlines:
@hir_sai_stop 0xdead
@hir_sai_start 4

Procedural Redline:
This Test case was incompletely entered into the test procedure.
Reason/Resolution
Unknown why it was not entered completely, redlined steps followed:
start sasmsizelimit_c
start sasmoversizelimit_c

5.2 Software Acceptance Regression Test 1 (2002-06-17)

5.2.1 Starting the Hardware

Power on the instrument, ops order will direct which side to use:
Start hir_qba_on (a side) _____
Start hir_qbb_on (b side) _____

5.2.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.2 Starting the IEGSE

Start a xterm on the IEGSE computer. In the xterm clean and start the IEGSE by typing

iegse_clean;iegse_start

Start the SAIL display.

start_testdisplay $IEGSE_DISPLAYS/sail

5.2.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.3 Aliveness Test

Power on the IPU and obtain data in the IEGSE displays.

5.2.4 Record Software Version Numbers

IPU Application code version number _____

IEGSE version number _____

Test Engineer_____

Date_____

5.2.4.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.5 Start and Setup SAIL

Send the following set of commands:

start hir_sai_start
@hir_tlm_scifmt 1,0,0,0,0,0,0,0,0,1,1,0,1,x#1FFFFFF,1,1 // need to have room for one SAIL block 128*2 16bit words
@hir_tlm_diagfmt 1,0,0,0,0
@hir_tlm_diagfmt 11, 0 ,0,0,0
@hir_tlm_diagfmt 14,0,0,0,0
@hir_tlm_diagfmt 5,1,258,128,0

5.2.5.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

Procedural Redline
The hir_sai_start STOL proc started the SAIL processor then unexpectedly loaded and started two additional unknown tasks.
Reason/Resolution
This proc was modified since the prior acceptance test event. The proc was canceled, and the SAIL processor was stopped and restarted manually with the following two commands:
@hir_sai_stop 0xdead
@hir_sai_start 4
The above two commands were sent prior to sending the @hir_tlm_scifmt command.

5.2.6 Test Cases/Tasks

There is a stol proc for each of the SAIL tasks, most start by loading the code into SAIL memory block #4 and data into SAIL memory block #128. Next SAIL task #0 is created from those memory blocks and then run. The stol proc is halted waiting for input so the operator can verify that the task completed correctly. After verification, hit the Enter key to continue the stol proc which will kill the SAIL task and delete the used SAIL memory blocks, making SAIL ready for the next task. Then hit Ctrl-C to close the stol proc window.

To start the stol proc
1) Input start *the stol proc's name* to the IEGSE.
2) Use TASK_STATUS for task 0 of the SAIL display to verify that the task ran, counter incremenated and the task suspended. Here are the task status meanings.

Halted = 0
Ready = 1
Running = 2

Suspended = 3
Wait = 4

This status nibble can be found in the lower nibble of the TASK_STATUS word. The upper nibble is a counter, which counts up to 0xF and then starts over with zero. This counter will change any time a task waits or ends.

3) Set memory dump to the start of task's data memory. Use data_read to Verify that the output array is correctly loaded. The contents of these arrays will not be in an exact location, but all that is required is to find the sequence somewhere in the diagnostic area for SAIL memory in the science packet. Somewhere in that block will be the sequence of numbers.

5.2.6.1 SARR Test Case (SAIL550, SAIL250)

5.2.6.1.1 SAIL Task SARR010 (SAIL250)

Use the "sarr010" stol proc to load and run sarr010.
Task ran and suspended itself

Test Engineer_____

If it is not already set, set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 1's

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 1s.

Test Engineer_____

Date_____

5.2.6.1.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.1.2 SAIL Task SARR011 (SAIL250)

Use the "sarr011" stol proc to load and run sarr011.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFs

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 0xFFs.

Test Engineer_____

Date_____

5.2.6.1.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.1.3 SAIL Task SARR012 (SAIL250)

Use the “sarr012” stol proc to load and run sarr012.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFFFs

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 0xFFFFs.

Test Engineer_____

Date_____

5.2.6.1.3.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.1.4 SAIL Task SARR013 (SAIL250)

Use the “sarr013” stol proc to load and run sarr013.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with numbers counting up starting from 0.

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with numbers counting up ending with 16349 or 0x3FDD.

Test Engineer_____

Date_____

5.2.6.1.4.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.1.5 SAIL Task SARR014 (SAIL250)

Use the “sarr014” stol proc to load and run sarr014.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 7FEF FFFF FFFF FFFB

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 1.797693134862315E+308s.

Test Engineer_____

Date_____

5.2.6.1.5.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.1.6 SAIL Task SARR020 (SAIL550)

This test case should generate an error. Use the “sarr020” stol proc to try to load sarr020.
Task did not load and SCCMD_REJCT ineremented with Result Code 0x1FCD (F_SAI_SEG_TOO_BIG)

Clear the error flag after stol proc is finished running.
@hir_ipu_faultclr Test Engineer_____

Test Engineer_____

Date_____

5.2.6.1.6.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168
Verification Source: sarr020_2002_06_17_verification.txt

Failure Redline
The expected result code was not F_SAI_SEG_TOO_BIG(0x1FCD) but instead appeared to be F_UPL_BLKNUM_SEQR.
Reason/Resolution
Upon examining the data post test, the result code 0x1FCD did correctly appear when the upload was initially rejected. This canceled the upload state such that subsequent upload commands generated the result code F_UPL_BLKNUM_SEQR which is used when data upload commands are unexpected or out of order, which is expected after the upload is canceled

5.2.6.1.7 SAIL Task SARR030

Use the "sarr030" stol proc to load and run sarr030.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x18

Test Engineer_____

Date_____

5.2.6.1.7.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

Procedural Redline:
The SAIL processor was manually stopped and started with the commands:
@hir_sai_stop 0xdead
@hir_sai_start 4
prior to the run of this test case.
Reason/Resolution
Manually cancelling the STOL script from the prior test case did not deallocate the SAIL memory. Starting and stopping the SAIL processor is the quickest way to recover from this state.

5.2.6.2 SCMP Test Case (SAIL280, SAIL290, SAIL300)

5.2.6.2.1 SAIL Task SCMP020 (Flight Portion) (SAIL280, SAIL290, SAIL300)

Use the "scmp020" stol proc to load and run scmp020.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x45

Test Engineer_____

Date_____

5.2.6.2.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.3 SCOMS Test Case (SAIL010, SAIL020, IPS1130)

5.2.6.3.1 SAIL Task SCOMS010 (SAIL010)

Use the "scoms010" stol proc to load and run scoms010. This task will attempted to send a command which should be rejected the first time because the command has not been allowed. The operator must then allow the command and resume the task so that it can successfully send the command

Task ran and suspended itself

Test Engineer_____

SAIL command reject count increment

Test Engineer_____

Send the following commands

@hir_sai_command 1,39
@hir_sai_resum 0

This will allow SAIL to send command #39 and resume task 0. The SAIL task should then successfully send the command. Use the spu_serpts display to verify that the detector delay for #3 was set to 0x1234.

Verify Command executed.

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x07

Test Engineer_____

Date_____

5.2.6.3.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.3.2 SAIL Task SCOMS020 (SAIL020, IPS1130)

Use the "scoms020" stol proc to load and run scoms020. This task will attempt to overflow the IPU sail command queue by sending the HIR_SSH_DOORUNPROT command as fast as possible. This task is run once with control of the sunshield enabled and once with control disabled.

Before starting scoms020, send the following commands:
@hir_sai_command 1, 46
@hir_sai_control 1, 0
start scoms020

Task ran and suspended itself

Test Engineer_____

Use data_read to verify that int_array counts up to 40 and is terminated by a 1.

After the task is finished and killed, send the following commands:
@hir_sai_control 0, 0
start scoms020

Verify that in the SAIL display, the CMD_LAST_RC is 0x1fe5

Test Engineer_____

This task will generate errors, ignore errors and issue the following command when task is killed:

@hir_ipu_faultclr

Date_____

5.2.6.3.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.4 SEXEC Test Case (SAIL480, SAIL490, SAIL580)

5.2.6.4.1 SAIL Tasks SEXEC000, - SEXEC016 (SAIL480, SAIL490, SAIL580)

Use the "em_sai_exec_tst" stol proc to load 17 tasks and run 16 of them. Use TASK_STATUS for each of the 16 tasks in the SAIL display to verify that the task run counter incriminates and the task status is ready, running or waiting or, 1, 2 or 4 until each task ran 15 times then all tasks should suspend.

All 16 tasks ran interleafed (not sequentially) 15 time and suspended

Test Engineer_____

Verify that the new task 1 ran and suspended.

Test Engineer_____

Date_____

5.2.6.4.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.4.2 SAIL Tasks SEXEC020, - SEXEC035

Use the “em_sai_diag_chk” stol proc to load and run the 16 tasks. Use TASK_STATUS for each of the 16 tasks in the SAIL display to verify that the task run counter incremented and each task suspended.

All 16 tasks ran and suspended

Test Engineer_____

Set memory dump to the first two blocks of SAIL shared memory with the following commands:

@hir_tlm_diagfmt 5,1,258,0,0
Run data_read
Verify that the first block of SAIL shared memory counts upwards from 0x00 to 32 bit dwords

@hir_tlm_diagfmt 5,1,258,1,0
Run data_read
Verify that the second block of SAIL shared memory finishes with 0xFF in 32 bit dwords

Test Engineer_____

Turn of SAIL memory dump and turn on diagnostic item #0 using the following commands

@hir_tlm_diagfmt 5,0,0,0,0
@hir_tlm_diagfmt 0,1,34,0xffff,0

Verify that SAIL task parameters in diagnostic item #0 count from 0x00 to 0xFF over 8 frames

Test Engineer_____

Turn of diagnostic item #0 and turn the SAIL memory dump back on.

@hir_tlm_diagfmt 0,0,0,0,0
@hir_tlm_diagfmt 5,1,258,128,0

Verify that SAIL shared shared memory parameters in the SAIL display count from 0x100 to 0x107 and SAIL engineering parameter count from 8 to 15.

Test Engineer_____

Date_____

5.2.6.4.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.5 SFERR Test Case (SAIL610)

5.2.6.5.1 SAIL Task SFERR010

This test case should generate errors. Use the “sferr010” stol proc to load and run sferr010.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

CURRENT ERROR
TASK NUM= 0
ERR TYPE = 253
LOCATON = 0x19

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.2.6.5.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.5.2 SAIL Task SFERR020

This test case should generate errors. Use the “sferr020” stol proc to load and run sferr020.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 253
LOCATION = 0xbf	LOCATION = 0x1f

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.2.6.5.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.5.3 SAIL Task SFERR030

This test case should generate errors. Use the "sferr030" stol proc to load and run sferr030.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 230
LOCATION = 0x25	LOCATION = 0xED

Test Engineer_____

Date_____

Continue after "SAILTASK_00_STAT bits 4-7 did not increment".
Continue "Hit <ENTER> when SAIL program completed".
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.2.6.5.3.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.5.4 SAIL Task SFERR040 (SAIL610)

This test case should generate errors. Use the "sferr040" stol proc to load and run sferr040.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 234
LOCATION = 0x2B	LOCATION = 0xFD

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.2.6.5.4.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.5.5 SAIL Task SFERR050

This test case should generate errors. Use the “sferr050” stol proc to load and run sferr050.
Task did not run to completion, did not increment the run counter, and killed itself.

Test Engineer_____

Verify correct error generation

PREVIOUS ERROR	CURRENT ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 231
LOCATION = 0x31	LOCATION = 0xDE

Test Engineer_____

Date_____

Continue after “SAILTASK_00_STAT bits 4-7 did not increment”.
Continue “Hit <ENTER> when SAIL program completed”.
Next command will fail two times.
Continue after the first error for @hir_sai_kill
Send fault clear command

@hir_ipu_faultclr

Continue after the second error for @hir_sai_kill

5.2.6.5.5.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.6 SFUN Test Case (SAIL310, SAIL320, SAIL400)

5.2.6.6.1 SAIL Task SFUN010 (SAIL310, SAIL320)

Use the “sfun010” stol proc to load and run sfun010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x16

Test Engineer_____

Date_____

5.2.6.6.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.6.2 SAIL Task SRTL010 (SAIL400)

Use the "srtl010" stol proc to load and run srtl010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x0D

Test Engineer_____

Date_____

5.2.6.6.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.7 SIERR010 Test Case (SAIL570)

5.2.6.7.1 SAIL Task SIERR010 (SAIL570)

This test case should generate errors. Use the "sierr010" stol proc to load and run sierr010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x06

Test Engineer_____

Date_____

5.2.6.7.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.8 SMEM Test Case (SAIL520, SAIL590, SAIL640)

5.2.6.8.1 SAIL Task SMEM010 (SAIL520, SAIL590, SAIL640)

Use the “smem010” stol proc to load and run smem010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x40

Test Engineer_____

Verify that in the SAIL task data memory block MemoryArray counts down from 0x12345678 for 15 counts

Test Engineer_____

Set memory dump to the beginning of the shared memory with the following command

@hir_tlm_diagfmt 5,1,258,0,0

Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Set memory dump to the beginning of the common shared memory with the following command

@hir_tlm_diagfmt 5,1,258,2,0

Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Date_____

5.2.6.8.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.9 SNST Test Case

5.2.6.9.1 SAIL Task SNST010

Use the “snst010” stol proc to load and run snst010.

Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3E

Test Engineer_____

Date_____

5.2.6.9.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.10 SOP Test Case (SAIL350, SAIL360, SAIL370, SAIL380, SAIL390, SAIL410, SAIL420, SAIL430)

5.2.6.10.1 SAIL Task SOP010 (SAIL350, SAIL360, SAIL370, SAIL380, SAIL390, SAIL410, SAIL420, SAIL430)

Use the “sop010” stol proc to load and run sop010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x5E

Test Engineer_____

@hir_tlm_diagfmt 5,1,258,129,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x5F to 0x60

Test Engineer_____

Date_____

5.2.6.10.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.10.2 SAIL Task SOP020

Use the “sop020” stol proc to load and run sop020.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x1D

Test Engineer_____

Date_____

5.2.6.10.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.11 SOVR Test Case (SAIL450, SAIL460)

5.2.6.11.1 SAIL Task SOVR010 (SAIL450, SAIL460)

This test case should generate errors. Use the “sovr010” stol proc to load and run sovr010.
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x12

Test Engineer_____

Date_____

@hir_ipu_faultclr to clear SAIL error telemetry

5.2.6.11.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.12 SST Test Case (SAIL050, SAIL070, SAIL080, SAIL090, SAIL100, SAIL160, SAIL260, SAIL340, SAIL470)

5.2.6.12.1 SAIL Task SST010 (SAIL050, SAIL090, SAIL100, SAIL160, SAIL260, SAIL340, SAIL470)

Use the “sst010” stol proc to load and run sst010.

Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3A

Test Engineer_____

Date_____

5.2.6.12.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.12.2 SAIL Task SDATA010 (SAIL070, SAIL080)

Turn on the SAIL test pattern
@hir_tlm_scifmt 1,0,1,1,1,0,0,0,0, 1,1,6,1,0x1fffff, 1,1

Test Engineer_____

Use the "sdata010" stol proc to load and run sdata010
Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,0,1

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x1080

Test Engineer_____

Date_____

5.2.6.12.2.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.13 STYPE Test Case (SAIL200, SAIL210, SAIL220, SAIL230, SAIL240, SAIL440)

5.2.6.13.1 SAIL Task STYPE010 (SAIL200, SAIL210, SAIL220, SAIL230, SAIL240, SAIL440)

Use the "stype010" stol proc to load and run stype010.

Task ran and suspended itself

Test Engineer_____

Set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x08

Test Engineer_____

Date_____

5.2.6.13.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.14 Test Case WAIT (SAIL600, SAIL640)

5.2.6.14.1 SAIL Tasks WAIT010 – WAIT020 (SAIL600, SAIL640)

Use the "wait010" stol proc to load and run wait010.
Task is running or waiting

Test Engineer_____

Suspend the task with the following

@hir_sai_supend 0

Verify that the task is suspended

Test Engineer_____

Resume the task with the following command

@hir_sai_resume 0

Load and run wait020 as task #1 with the following commands:
start wait020_d
start wait020_c
@hir_sai_create 1, 5, 129, 0
@hir_sai_resume 1

Verify that task #1 ran and suspended.

Test Engineer_____

Verify that task #0 was suspended.

Test Engineer_____

Resume the task with the following command

@hir_sai_resume 0

Kill the task with the following

@hir_sai_kill 0

Verify that the task was killed

Test Engineer_____

Ignore errors in the wait010 stol proc, choosing “y” to continue after each error.

Clear all error flags with the following:

@hir_ipu_faultclr

Erase task 1:

@hir_sai_kill 1

@hir_sai_erase 129

@hir_sai_erase 5

Test Engineer_____

Date_____

5.2.6.14.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.15 STOVR Test Case (SAIL510)

5.2.6.15.1 SAIL Task STOVR010 (SAIL510)

Use the “wait010” stol proc to load wait010 into task 0 and then start it running.
Task 0 is running or waiting

Test Engineer_____

Date_____

Load wait030 into task 2 and then start it running with the following commands.
start wait030_d
start wait030_c
@hir_sai_create 2, 6, 130, 0
@hir_sai_resume 2

Task 2 is running or waiting

Test Engineer_____

Date_____

Load stovr010 into task 1 and then start it running with the following commands.
start stovr010_d

start stovr010_c
@hir_sai_create 1, 5, 129, 0
@hir_sai_resume 1

Task 1 suspended with error

Test Engineer_____

Date_____

Verify correct error generation
task = 1
type = 238

Test Engineer_____

Date_____

Verify task 0 is still running

Test Engineer_____

Date_____

Verify task 2 suspended

Test Engineer_____

Date_____

5.2.6.15.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.16 Test Case SASM020 (SAIL540)

5.2.6.16.1 SAIL Task SASMsizeLimit (SAIL540)

Kill and restart sail
@hir_sai_stop 0xdead
@hir_sai_start 4

Test Engineer_____

Load task sasmsizelimit_c
Verify that the task was loaded

Test Engineer_____

5.2.6.16.1.1 Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

5.2.6.16.2 SAIL Task SASMoverSizeLimit (SAIL540)

Load task sasmoversizelimit_c

Test Engineer_____

Date_____

5.2.6.16.2.1Test Results

Success
Test Conductor: JPR 2002-06-17, Day 168

Failure Redline
The upload header command was not rejected as expected.
Reason/Resolution
The Upload header command contains two nibbles indicating the expected size of the upload. Those nibbles are now ignored. The SAIL processor will reject any attempt to load a task that is too large. This is verified by test case SARR020 which attempts to load a task which is too large and fails. The SAIL Processor no longer rejects uploads on the basis of the upload header command, but will reject any actual attemp to load to many blocks in a segment.

5.3 SAIL Acceptance Regression Test 2 (2003-06-05)

Starting the Hardware
On the SUN workstation connected via serial port to the ODP, log on as user hirdls, and open an xterm in the /hirdls/tornado/ipu/app_code/[IPU_VERSION]/build directory. Where IPU_VERSION is the name of the directory containing the current IPU code build. Now, run the script kermitA. Power on the ODP by pushing the large orange button on the top of the ODP lab power supply, then toggling the "b" reset switch on the ODP reset box. The Kermit window should show the ODP SUROM memory scrubbing or counting down to autoboot. Once the memory scrub is finished, run the script loadimage. You can hit the spacebar in the Kermit window to skip the memory scrub if desired. From the menu, select the PFM version. Wait until the image has successfully loaded and booted. If successful, the Kermit window will display the message "Jump to 0x30000" before closing down.

Image successfully loaded: _____

Starting the IEGSE
Start a xterm on the IEGSE computer. In the xterm clean and start the IEGSE by typing

iegse_clean;iegse_start

Start the SAIL display.

start_testdisplay $IEGSE_DISPLAYS/sail

Aliveness Test
Power on the IPU and obtain data in the IEGSE displays.
Record Software Version Numbers
IPU Application code version number 3.6.30_____
IEGSE version number 4.10_____
Test Engineer_____
Date_____

5.3.1 Test Results

Success
Test Conductor: JPR 2003-06-10
Procedural Redlines: Bulletize instructions for clearer reading in the future.
Include version numbers for any associated tools.
the loadimage tool is now started by: loadimage ipu a

5.3.2 Test Cases/Tasks

There is a stol proc to control each SAIL task.

Here are the task status meanings.

Halted = 0
Ready = 1
Running = 2
Suspended = 3
Wait = 4

This status nibble can be found in the lower nibble of the TASK_STATUS word. The upper nibble is a counter, which counts up to 0xF and then starts over with zero. This counter will change any time a task waits or ends.

Set memory dump to the start of task's data memory. Use data_read to Verify that the output array is correctly loaded. The contents of these arrays will not be in an exact location, but all that is required is to find the sequence somewhere in the diagnostic area for SAIL memory in the science packet. Somewhere in that block will be the sequence of numbers.

5.3.2.1 SARR Test Case

5.3.2.1.1 SAIL Task SARR010

From the CSTOL operator window, enter "start sarr010".
Initialize SAIL by entering 10 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

If it is not already set, set memory dump to the beginning of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,128,0

Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 1's from byte 67 to 257

Test Engineer_____

Set memory dump to the end of the task data memory with the following command

@hir_tlm_diagfmt 5,1,258,255,0

Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 1s up to byte 255.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.1.1.1 Test Results

Success

Test Conductor: JPR 2003-06-10
Procedural Redline:
Replace the @hir_tlm_diagfmt statements with a selection of menu option 8.
Note that the size of the words is 32bits when looking for the pattern with data_read.

5.3.2.1.2 SAIL Task SARR011

From the CSTOL operator window, enter “start sarr011”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFs ending with one entry on line 256.

Test Engineer_____

Set memory dump to the end of the task data memory by entering 8 when prompted to enter menu choice.
Enter 255 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFs up to line 248.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.1.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.1.3 SAIL Task SARR012

From the CSTOL operator window, enter “start sarr012”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFFFs ending with one entry on line 256.

Test Engineer_____

Set memory dump to the end of the task data memory by entering 8 when prompted to enter menu choice.
Enter 255 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 0xFFFFs up to line 248.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.1.3.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.1.4 SAIL Task SARR013

From the CSTOL operator window, enter “start sarr013”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with numbers counting up starting from 0.

Test Engineer_____

Set memory dump to the end of the task data memory by entering 8 when prompted to enter menu choice.
Enter 255 when asked to enter a SAIL block.
Run data_read
Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with numbers counting up to 16349 or 0x3FDD.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.1.4.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.1.5 SAIL Task SARR014

From the CSTOL operator window, enter “start sarr014”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the first SAIL task data memory block the data array is loaded with 7FEF FFFF FFFF FFFB starting at byte 64 up to 257.

Test Engineer_____

Set memory dump to the end of the task data memory by entering 8 when prompted to enter menu choice.
Enter 255 when asked to enter a SAIL block.
Run data_read
Use data_read to Verify that in the last SAIL task data memory block the data array is loaded with 7FEF FFFF FFFF FFFB up to byte 255.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.1.5.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.1.6 SAIL Task SARR020

From the CSTOL operator window, enter "start sarr020".
Load by entering 1 when prompted to enter menu choice.
This test case should generate an error.
Verify that the task did not load and SCCMD_REJCT incremented with Result Code 0x1FCD (F_SAI_SEG_TOO_BIG).

Test Engineer_____

Enter "n" when prompted to Continue after failure, then enter "go" in the CSTOL window.
From the CSTOL operator window, enter "start sarr020".
Halt SAIL by entering 11 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Initialize SAIL by entering 10 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.1.6.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.1.7 SAIL Task SARR030

From the CSTOL operator window, enter "start sarr030".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x18

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.1.7.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.2 SCMP Test Case

5.3.2.2.1 SAIL Task SCMP020 (Flight Portion)

From the CSTOL operator window, enter “start scmp020”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x45

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.2.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.3 SCOMS Test Case

5.3.2.3.1 SAIL Task SCOMS010

This task will attempted to send a command which should be rejected the first time because the command has not been allowed. The operator must then allow the command and resume the task so that it can successfully send the command

From the CSTOL operator window, enter “start scoms010”.
Load, Create, Resume, and Monitor task to suspension by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

SAIL command reject count increments

Test Engineer_____

Send the following command from the CSTOL operator window:

@hir_sai_command 1,41
Resume the task by entering 3 when prompted to enter menu choice.

This will allow SAIL to send command #41 and resume task 0. The SAIL task should then successfully send the command. Enter the following command in the CSTOL operator window:
write SPU_CH_01_ZERO

Verify procedure returns to main menu without error and SPU_CH_01_ZERO = 4660.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x07

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.3.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.3.2 SAIL Task SCOMS020

This task will attempt to overflow the IPU sail command queue by sending the HIR_SSH_DOORUNPROT command as fast as possible. This task is run once with control of the sunshield enabled and once with control disabled.

Send the following commands:
@hir_sai_command 1, 46
@hir_sai_control 1, 0
Verify that the reject count did not increment.

Test Engineer_____

From the CSTOL operator window, enter "start scoms020".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray starts at 0x2 and counts up to 0x40 and is terminated by 0xFFFF. Several numbers will repeat.

Test Engineer_____

Send the following commands:

@hir_sai_control 0, 0
Verify that the reject count did not increment.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify that in the SAIL display, the CMD_LAST_RC is 0x1fe5

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.3.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.4 SEXEC Test Case

5.3.2.4.1 SAIL Tasks SEXEC000 - SEXEC016

Use the "sexec" stol proc to load 17 tasks and run 16 of them. Use TASK_STATUS for each of the 16 tasks in the SAIL display to verify that the task run counter incriminates and the task status is ready, running or waiting or, 1, 2 or 4 until each task ran 15 times then all tasks should suspend.

From the CSTOL operator window, enter "start sexec".
Verify that all 15 tasks ran interleafed (not sequentially) 16 times and suspended, then enter "go" into the CSTOL window.

Test Engineer_____

Verify that the new task 1 ran and suspended, then enter "go" into the CSTOL window.

Test Engineer_____

Date_____

5.3.2.4.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.5 SFERR Test Case

5.3.2.5.1 SAIL Task SFERR010

This test case should generate errors. Task did not run to completion, did not increment the run counter, and killed itself.

From the CSTOL operator window, enter "start sferr010".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify correct error generation

CURRENT ERROR
TASK NUM= 0
ERR TYPE = 253
LOCATON = 0x1C

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.5.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.5.2 SAIL Task SFERR020

This test case should generate errors. Task should not run to completion, should not increment the run counter, and should kill itself.

From the CSTOL operator window, enter "start sferr020".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 253	ERR TYPE = 253
LOCATION = 0xc2	LOCATION = 0x22

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.5.2.1 Test Results

Success

Test Conductor: JPR 2003-06-10

5.3.2.5.3 SAIL Task SFERR030

This test case should generate errors. Task should not run to completion, should not increment the run counter, and should kill itself.

From the CSTOL operator window, enter "start sferr030".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 230	ERR TYPE = 253
LOCATION = 0xf0	LOCATION = 0x28

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.5.3.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.5.4 SAIL Task SFERR040

This test case should generate errors. Task should not run to completion, should not increment the run counter, and should kill itself.

From the CSTOL operator window, enter "start sferr040".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 234	ERR TYPE = 253
LOCATION = 0x100	LOCATION = 0x2E

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.5.4.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.5.5 SAIL Task SFERR050

This test case should generate errors. Task should not run to completion, should not increment the run counter, and should kill itself.

From the CSTOL operator window, enter "start sferr050".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify correct error generation

CURRENT ERROR	PREVIOUS ERROR
TASK NUM = 0	TASK NUM = 0
ERR TYPE = 231	ERR TYPE = 253
LOCATION = 0xE1	LOCATION = 0x34

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.5.5.1 Test Results

Success
Test Conductor: JPR 2003-06-10
Procedural Redline:
The location of the current error was actually 0xe4. The test procedure will be updated to reflect this. This occurred when the task was recompiled with SAIL v2.5, which shifted the location of the ASM instruction. The procedure was not updated to reflect this.

5.3.2.6 SFUN Test Case

5.3.2.6.1 SAIL Task SFUN010

From the CSTOL operator window, enter "start sfun010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x16

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.6.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.6.2 SAIL Task SRTL010

From the CSTOL operator window, enter “start srtl010”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x0D

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.6.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.6.3 SAIL Task SRTL020

From the CSTOL operator window, enter “start srtl020”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify that the SAIL task is suspended

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.
Clear the errors this task intentionally caused by sending the command:
@hir_ipu_faultclr
from the CSTOL operator window.

Test Engineer_____
Date_____

5.3.2.6.3.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.7 SIERR010 Test Case

5.3.2.7.1 SAIL Task SIERR010

From the CSTOL operator window, enter “start sierr010”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x06

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.7.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.8 SMEM Test Case

5.3.2.8.1 SAIL Task SMEM010

From the CSTOL operator window, enter “start smem010”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x40

Test Engineer_____

Verify that in the SAIL task data memory block MemoryArray counts down from 0x12345678 for 15 counts

Test Engineer_____

Set memory dump to the beginning of the private shared memory by entering 8 when prompted to enter menu choice.
Enter 0 when asked to enter a SAIL block.
Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Set memory dump to the beginning of the common shared memory by entering 8 when prompted to enter menu choice.

Enter 2 when asked to enter a SAIL block.
Run data_read
Verify that the SAIL shared memory block starts with 0x12345678and counts down for 15 counts

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.8.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.9 SNST Test Case

5.3.2.9.1 SAIL Task SNST010

From the CSTOL operator window, enter "start snst010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3E

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.9.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.10 SOP Test Case

5.3.2.10.1 SAIL Task SOP010

From the CSTOL operator window, enter "start sop010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x5E

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 129 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x5F to 0x60

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.10.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.10.2 SAIL Task SOP020

From the CSTOL operator window, enter "start sop020".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x1D

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.10.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.11 SOVR Test Case

5.3.2.11.1 SAIL Task SOVR010

From the CSTOL operator window, enter "start sovr010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.

Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x12

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.11.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.12 SST Test Case

5.3.2.12.1 SAIL Task SST010

From the CSTOL operator window, enter "start sst010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x3A

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.12.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.12.2 SAIL Task SDATA010

From the CSTOL operator window, enter "start sdata010".

Turn on the SAIL test pattern by entering 15 when prompted to enter menu choice
Verify procedure returns to main menu without error.

Test Engineer_____

Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
When the task starts, all the ENG WORDS are set to 0xFFFFFFFF. As each science data type is verified, the nibbles of the ENG WORDS will change to 0, or to 1 if there was an error.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in the SAIL display that ENG WORD 0 – 4 equals 0x00000000 and ENG WORD 5 – 7 equals 0xFFFF0000

Test Engineer_____

Turn off the SAIL test pattern by entering 16 when prompted to enter menu choice
Verify procedure returns to main menu without error.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.12.2.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.13 STYPE Test Case

5.3.2.13.1 SAIL Task STYPE010

From the CSTOL operator window, enter "start stype010".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Set memory dump to the beginning of the task data memory by entering 8 when prompted to enter menu choice.
Enter 128 when asked to enter a SAIL block.
Run data_read
Verify that in the SAIL task data memory block intArray counts from 0x00 to 0x08

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

5.3.2.13.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.14 Test Case WAIT

5.3.2.14.1 SAIL Tasks WAIT010 – WAIT020

From the CSTOL operator window, enter "start wait010".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Suspend task by entering 5 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Resume task by entering 3 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

From the CSTOL operator window, enter "start wait020".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify that task 0 and task 1 are now suspended, then enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

From the CSTOL operator window, enter "start wait010".
Resume the task by entering 3 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____

From the CSTOL operator window, enter "start wait020".
Kill/Erase the task by entering 14 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.14.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.15 STOVR Test Case

5.3.2.15.1 SAIL Task STOVR010

From the CSTOL operator window, enter "start wait010".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

From the CSTOL operator window, enter "start wait030".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

From the CSTOL operator window, enter "start stovr010".
Load, Create, and Resume task by entering 12 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify that task 1 is suspended

Test Engineer_____

Verify correct error generation
task = 1
type = 238

Test Engineer_____

Verify that task 2 is suspended

Test Engineer_____

Verify that task 0 is running

Test Engineer_____

Halt SAIL by entering 11 when prompted to enter menu choice.
Restart SAIL by entering 10 when prompted to enter menu choice.
Enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.15.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.16 SASM020 Test Case

5.3.2.16.1 SAIL Task SASMsizeLimit

From the CSTOL operator window, enter "start sasmsizelimit".
Load task by entering 1 when prompted to enter menu choice.

Verify procedure returns to main menu without error.

Test Engineer_____

Halt SAIL by entering 11 when prompted to enter menu choice.
Initialize SAIL by entering 10 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then enter "X" to exit when prompted to enter menu choice.

Test Engineer_____

Date_____

5.3.2.16.1.1 Test Results

Success
Test Conductor: JPR 2003-06-10

5.3.2.17 SPEC Test Case

5.3.2.17.1 SAIL Task sw_loc_117_3_1_1_01

From the CSTOL operator window, enter "start sw_loc_117_3_1_1_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.

Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that text diagnostic item is examined post-test for final verification.

5.3.2.17.1.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.2 SAIL Task sw_loc_117_3_1_1_02

From the CSTOL operator window, enter "start sw_loc_117_3_1_1_02".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 239.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.2.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.3 SAIL Task sw_loc_117_3_1_2_01

From the CSTOL operator window, enter "start sw_loc_117_3_1_2_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.3.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.4 SAIL Task sw_loc_117_3_1_2_02

From the CSTOL operator window, enter "start sw_loc_117_3_1_2_02".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.4.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.5 SAIL Task sw_loc_117_3_2_1_01

From the CSTOL operator window, enter "start sw_loc_117_3_2_1_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.5.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.6 SAIL Task sw_loc_117_3_3_1_2_1_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_2_1_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.6.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.7 SAIL Task sw_loc_117_3_3_1_2_1_02

From the CSTOL operator window, enter “start sw_loc_117_3_3_1_2_1_02”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.7.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.8 SAIL Task sw_loc_117_3_3_1_2_2_01

From the CSTOL operator window, enter “start sw_loc_117_3_3_1_2_2_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.8.1 Test Results

Test Successful

Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.9 SAIL Task sw_loc_117_3_3_1_2_3_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_2_3_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.9.1Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.10 SAIL Task sw_loc_117_3_3_1_2_4_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_2_4_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.10.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.11 SAIL Task sw_loc_117_3_3_1_2_5_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_2_5_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.11.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.12 SAIL Task sw_loc_117_3_3_1_3_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_3_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.12.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.13 SAIL Task sw_loc_117_3_3_1_4_01

From the CSTOL operator window, enter "start sw_loc_117_3_3_1_4_01".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.13.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.14 SAIL Task sw_loc_117_3_3_2_1_01

From the CSTOL operator window, enter “start sw_loc_117_3_3_2_1_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.14.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.15 SAIL Task sw_loc_117_3_3_2_2_01

From the CSTOL operator window, enter “start sw_loc_117_3_3_2_2_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.15.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.16 SAIL Task sw_loc_117_3_4_1_1_01

From the CSTOL operator window, enter “start sw_loc_117_3_4_1_1_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.16.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.17 SAIL Task sw_loc_117_3_4_1_2_01

From the CSTOL operator window, enter “start sw_loc_117_3_4_1_2_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.17.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.18 SAIL Task sw_loc_117_3_5_2_01

From the CSTOL operator window, enter “start sw_loc_117_3_5_2_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering “X” when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.18.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.19 SAIL Task sw_loc_117_6_01

From the CSTOL operator window, enter “start sw_loc_117_6_01”.
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.

Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is suspended.
Resume the task by entering 3 when prompted to enter menu choice.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.19.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.20 SAIL Task sw_loc_117_6_02

From the CSTOL operator window, enter "start sw_loc_117_6_02".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.20.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

5.3.2.17.21 SAIL Task sw_loc_117_6_03

From the CSTOL operator window, enter "start sw_loc_117_6_03".
Load, Create, Resume, and Monitor task to completion by entering 13 when prompted to enter menu choice.
Verify procedure returns to main menu without error.

Test Engineer_____

Verify in SAIL display that task 0 is halted and the current error is 235.

Test Engineer_____

Erase the task by entering 7 when prompted to enter menu choice.
Verify procedure returns to main menu without error, then exit by entering "X" when prompted to enter menu choice.

2003-06-12
Test Engineer_____
Date_____

Ensure that the text diagnostic item is examined post-test for final verification.

5.3.2.17.21.1 Test Results

Test Successful
Analysis Successful
Test Conductor: JPR 2003-06-10

6 Inspections and Analyses

6.1 Code Inspection Session 1 (2002-06-22)

6.1.1 IR_SAI_1000 Dynamic Memory Inspection (SAIL180)

In order for the SAIL language to support dynamic memory allocation, the language would need to be specifically designed with this support in mind.
The SAIL language was not designed to support dynamic memory.

6.1.2 IR_SAI_1010 Pointer Access Prohibited Inspection (SAIL270)

In order for the SAIL language to support pointer access, the language would need to be specifically designed with this support in mind.
The SAIL language was not designed to support pointer access, prohibiting such access by not providing it.

6.1.3 IR_SAI_1020 Non-Optimizing Compiler Inspection (SAIL270)

In order for the SAIL compiler to support optimization, the compiler would need to be specifically designed with this support in mind.
The SAIL compiler was not designed to perform optimization.

6.1.4 IR_SAI_1030 Memory Management Inspection (SAIL560, SAIL570)

The SAIL executive is not capable of allocating memory at any time other than task creation. This is ensured because the functions that assign memory to a task can only be called in response to the HIR_SAI_CREATE command, when creating a task.

The design of the SAIL system prevents a task from accessing memory outside of it's assigned space by design. There are no pointers, and all memory assignments for local variables are handled by the assembler, and the interpeter. There is no way to write a task that can access memory outside of it's area through task created variables.

6.1.5 IR_SAI_1040 Sail Task Starting (SAIL600)

The functions to start a sail task are accessible only via the command HIR_SAI_RESUME. This command cannot be issued by a SAIL task, and is allowed only from the ground.

6.1.6 IR_SAI_1050 Sail tasks and data (SAIL640)

The SAIL system provides access to shared memory. The contents of this shared memory is accessible to all tasks, and can be changed via ground uploads while any task is running. Any mutable data tables required by a task may be loaded into the shared memory. Also, each task is divided into two portions, a data section and a code section. A task is assigned a data section upon creation, and this data section is accessible only it's owner.

7 VERIFICATION CROSS-REFERENCE MATRIX

The traceability of the SAIL requirements from the parent specifications is provided in this table which is taken from the SAIL Requirements Document (SW-HIR-147).

See "Table 1-1 Verification Events" in this document for more detail on the entries listed in the Verification Event colum.

Document SW-HIR-147	Requirement	CSC	Test Method	Test Case	Status: Ready for SQE Review	Verification Event	Reqmnts ID
4.1.1	SAIL controls mechanisms	Compiler, Executive	T	SCOMS	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL010
4.1.1	Provide protection and override	IPU CSCI	T	SCOMS	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL020
4.1.2	DELETED						SAIL030
4.1.3	SAIL writes to housekeeping data stream	Executive	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL050
4.1.4	SAIL writes to diagnostic ports	Executive	T	ALL	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL060
4.1.5	SAIL reads all data buffers	Executive	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL070
4.1.6	SAIL accesses telemetry timing information	Executive	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL080
4.1.6	SAIL accesses spacecraft real-time info	Executive	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL090

4.1.7	Mnemonic access to all input to IPS	Compiler	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL100
4.2.1	Simple language	Compiler	Demonstration	N/A	SQE Accepted	N/A	SAIL120
4.2.2	Extensive comments	Compiler	T	SCMP	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17)	SAIL130
4.2.3	SAIL compiler and assembler language DELETED		Not Compliant		D016		
4.2.4	Non-optimizing compiler	Compiler	Inspection	IR_SAI_1020	SQE Accepted	Code Inspection Session 1 (2002-06-22)	SAIL150
4.2.5	Telemetry mnemonics in re-definable table	Compiler	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL160
4.2.6	All variables declared before use	Compiler	T	SCERR	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17)	SAIL170
4.2.7	No dynamic memory allocation	Compiler	Inspection	IR_SAI_1000	SQE Accepted	Code Inspection Session 1(2002-06-22)	SAIL180
4.2.8	No multiple assignments	Compiler	T	SCERR	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17)	SAIL190
4.2.9.1	Byte data type	Compiler, Interpreter	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL200
4.2.9.2	Unsigned data type	Compiler, Interpreter	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL210
4.2.9.3	Integer data type	Compiler, Interpreter	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-	SAIL220

						17)	
4.2.9.4	Float data type	Compiler, Interpreter	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL230
4.2.9.5	Logical data type	Compiler, Interpreter	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL240
4.2.9.6	Array type	Compiler, Interpreter	T	SARR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL250
4.2.9.7	Telemetry Access Methods	Compiler, Executive, Interpreter	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL260
4.2.9.8	Pointer access prohibited	Compiler	Inspection	IR_SAI_1010	SQE Accepted	Code Inspection Session 1 (2002-06-22)	SAIL270
4.2.10.1	Single IF…ELSE structure	Compiler	T	SCMP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL280
4.2.10.2	Single loop structure	Compiler	T	SCMP	SQE Accepted with Waiver W097	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL290
4.2.10.3	Jump to label	Compiler	T	SCMP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL300
4.2.10.4	Subprograms implemented	Compiler	T	SFUN	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance	SAIL310

						Regression Test 1 (2002-06-17)	
4.2.10.4	Subprogram parameter conformance	Compiler	T	SFUN	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL320
4.2.10.4	Prohibit recursion	Compiler	T	SCERR	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17)	SAIL330
4.2.10.5	Suspend till next frame command	Executive, Compiler	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL340
4.2.11.1	Assignment operator	Compiler, Interpreter	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL350
4.2.11.2	Arithmetic operators	Interpreter , Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL360
4.2.11.3	Bit manipulation	Interpreter , Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL370
4.2.11.4	Logical combination	Interpreter , Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL380
4.2.11.5	Relational operators	Interpreter , Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL390
4.2.12	Math functions	Interpreter	T	SFUN	SQE	Software Acceptance Test	SAIL400

		, Compiler			Accepted	(2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	
4.2.13.1	Defined operator precedence	Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL410
4.2.13.2	Defined expression evaluation	Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL420
4.2.13.3	Brackets to override operator precedence	Compiler	T	SOP	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL430
4.2.13.4	Evaluation of mixed type expressions	Compiler	T	STYPE	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL440
4.2.13.5	Treat underflow as zero	Interpreter	T	SOVR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL450
4.2.13.6	Flag overflow	Interpreter	T	SOVR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL460
4.2.14	SAIL High Level Specification Document		Demonstration	N/A	SQE Accepted	N/A	SAIL465
4.2.15	SAIL task ascertain millisecond left in MaF	Interpreter	T	SST	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL470

4.3.1	Up to 16 tasks	Executive	T	SEXEC	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL480
4.3.2	16 tasks/clock period	Executive	T	SEXEC	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL490
4.3.3	Task over-run	Executive	T	STOVR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL510
4.3.4	Inter-task communication	Executive, Compiler	T	SMEM	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL520
4.3.5	Executive documentation		Demonstration	N/A	SQE Accepted	N/A	SAIL524
4.4.1	SAIL code < 65536 bytes	Assembler Executive	T	SASM	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17)	SAIL540
4.4.2	SAIL variables < 65536 bytes	Compiler, Executive	T	SARR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL550
4.4.3	Memory allocation	Executive, Compiler	Inspection	IR_SAI_1030	SQE Accepted	Code Inspection Session 1 (2002-06-22)	SAIL560
4.4.4	Memory protection	Executive	Test, Inspection	SIERR IR_SAI_1030	SQE Accepted	Software Acceptance Regression Test 1 (2002-06-17) Code Inspection Session 1 (2002-06-22)	SAIL570
4.4.5	Spare task storage	Executive	T	SEXEC	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-	SAIL580

						17)	
4.4.6	SAIL reads IPU memory	Executive	T	SMEM	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL590
4.5.1	SAIL task info dump	IPU	T	TC_IPU_TLM_250 from TR-LOC-955A All Flight Test Cases	SQE Accepted	N/A	SAIL595
4.5.2	Starting and stopping tasks from ground	Executive, IPU CSCI	T	ALL	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL600
4.5.3a	Only start a task from ground	Executive	Inspection	IR_SAI_1040	SQE Accepted	Code Inspection Session 1 (2002-06-22)	“
4.5.3b	Suspended or Killed from ground	Executive	T	WAIT	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	“
4.5.3c	Suspending a task from SAIL	Executive	T	WAIT	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	“
4.5.3d	Killing a task from SAIL	Executive	T	SFERR	SQE Accepted	Software Acceptance Test (2002-04-10 - 2002-04-12), Software Acceptance Regression Test 1 (2002-06-17)	SAIL610
4.5.5	Complete tasks and data tables	Executive	Test, Inspection	WAIT SMEM IR_SAI_1050	SQE Accepted	Code Inspection Session 1 (2002-06-17)	SAIL640

8 LIST OF ACRONYMS

ASCII	American Standard Code for Information Interchange
ATC	Advanced Technology Center
CSC	Computer Software Component
CSCI	Computer Software Configuration Item
ESD	ElectroStatic Discharge
FTP	File Transfer Protocol
HIRDLS	High Resolution Dynamics Limb Sounder
I&T	Integration and Test
IEGSE	Instrument Electrical Ground Support Equipment
IPU	Instrument Processor Unit
MaF	Major Frame
PC	Personal Computer
PSA	Processor Sub Assembly
RCS	Revision Control System
SAIL	Science Algorithm Implementation Language
SQE	Software Quality Engineer
STOL	System Test and Operation Language
TEU	Telescope Electronics Unit
VCRM	Verification Cross Reference Matrix

9 Appendix

9.1 Software Regression Test 1 (2002-06-17)

9.1.1 SAIL_SWACC_2002_06_17.txt

```
F:\SAIL\SAIL_CSCI\SAIL_v2.4\SAILtasks\SAIL_SWACC>CALL SC /R /V /E SARR010

SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SARR010 /\/\/\/\/\/\/\/\


The file SARR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR010.sai
Working file: SARR010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================
```

```
RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.4\bin\RUNTIME_FILES\RCS\cmd.lib
Working file: cmd.lib
head: 1.3
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 3
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.4\bin\RUNTIME_FILES\RCS\comm.lib
Working file: comm.lib
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.4\bin\RUNTIME_FILES\RCS\sailrtl.lib
Working file: sailrtl.lib
head: 1.3
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 3
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.4\bin\RUNTIME_FILES\RCS\constant.sai
Working file: constant.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)
```

```
/\/\/\/\/\/\/\/\ COMPILING TASK SARR011 /\/\/\/\/\/\/\/\


The file SARR011.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR011.sai
Working file: SARR011.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SARR012 /\/\/\/\/\/\/\/\


The file SARR012.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR012.sai
Working file: SARR012.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------
```

```
--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SARR013 /\/\/\/\/\/\/\/\


The file SARR013.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR013.sai
Working file: SARR013.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SARR014 /\/\/\/\/\/\/\/\


The file SARR014.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR014.sai
Working file: SARR014.sai
head: 1.1
branch:
locks: strict
```

```
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SARR020 /\/\/\/\/\/\/\/\


The file SARR020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR020.sai
Working file: SARR020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SARR030 /\/\/\/\/\/\/\/\
```

```
The file SARR030.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SARR030.sai
Working file: SARR030.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCERR010 /\/\/\/\/\/\/\/\


The file SCERR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCERR010.sai
Working file: SCERR010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------

Error: An invalid preprocessor directive was found.
Error occured in file SCERR010.sai, line 16, column 26

Error: This include directive was improperly formatted.
Error occured in file SCERR010.sai, line 17, column 26
```

```
Error: A bad special character was encountered.
Error occured in file SCERR010.sai, line 18, column 2

Error: Only source files with a ".sai" extension can be processed.
Error occured in file xxxxxxxxx.h

Error: An error occured while trying to include a file.
Error occured in file SCERR010.sai, line 20, column 1

Error: The file unexpectedly ended.
Error occured in file scerr020.sai, line 12, column 2

Error: The end of the file was reached, but the comment was not terminated.
Error occured in file scerr030.sai, line 12, column 2

Error: An invalid floating point number was encountered.
Error occured in file SCERR010.sai, line 23, column 24

Error: This floating point number has no sign for its exponent.
Error occured in file SCERR010.sai, line 24, column 39

Error: An exponent was expected for this floating point number.
Error occured in file SCERR010.sai, line 25, column 42

Error: The exponent for this floating point number is too large.
Error occured in file SCERR010.sai, line 26, column 46

Error: This floating point number is too long.
Error occured in file SCERR010.sai, line 27, column 55

Error: This number has created overflow.
Error occured in file SCERR010.sai, line 28, column 31

Error: This floating point number has created overflow.
Error occured in file SCERR010.sai, line 29, column 31

Fatal Error: A symbol has violated the symbol size limitation.
Fatal Error occured in file SCERR010.sai, line 30, column 69

Fatal Error(s) encountered during first pass, exiting

SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCERR040 /\/\/\/\/\/\/\/\


The file SCERR040.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCERR040.sai
Working file: SCERR040.sai
head: 1.2
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Error: The type of the reference parameter badref must match the exact type of
the corresponding reference argument.
Error:  Line: 83 Column: 23 File: SCERR040.sai

Error: You cannot pass Immediates or Expressions by reference.
Error:  Line: 88 Column: 23 File: SCERR040.sai

Error: In an expression, the token [ can't be placed after the value intarray.
Error:  Line: 96 Column: 24 File: SCERR040.sai

Error: While passing baddimension to functionnormalarray, the dimension(s) of
baddimension did not match the dimension(s) of array as defined in the prototype
for functionnormalarray.
Error:  Line: 107 Column: 22 File: SCERR040.sai

Warning: The function functionwithreturn has a non-void return type, but it does
not appear to return a value.
Warning:  Line: 111 Column: 5 File: SCERR040.sai

Warning: The return value from function functionwithreturn was ignored.
Warning:  Line: 117 Column: 20 File: SCERR040.sai

Error: An incorrect number of parameters were passed to functionparameter.
Error:  Line: 128 Column: 20 File: SCERR040.sai

Error: A goto cannot jump to the label unplaced because it has not been placed.
Error:  Line: 135 Column: 2 File: SCERR040.sai

Error: The label alreadyplaced has already been placed.
Error:  Line: 143 Column: 2 File: SCERR040.sai

Error: The identifier undefined cannot be used until it is defined.
Error:  Line: 150 Column: 6 File: SCERR040.sai

Error: The the identifier name duplcate has already been used.
Error:  Line: 157 Column: 6 File: SCERR040.sai

Error: A non-zero, non-negative constant expression result was expected to
dimension an array, but the token -1 was found instead.
Error:  Line: 164 Column: 18 File: SCERR040.sai

Error: This expression is too complex.
Error:  Line: 172 Column: 56 File: SCERR040.sai

Error: This expression is missing parentheses.
Error:  Line: 180 Column: 20 File: SCERR040.sai

Error: Only functions may be called. An attempt was made to call the nonfunction
token callofnonfunction.
```

```
Error:  Line: 188 Column: 25 File: SCERR040.sai

Error: You cannot use the non-RTL function functioncallinsideerror while inside
the body of the error function.
Error:  Line: 200 Column: 13 File: SCERR040.sai

Error: The function functionwithoutaprototype cannot be defined until it has
been prototyped.
Error:  Line: 204 Column: 6 File: SCERR040.sai

Error: The function functionshouldnotreturn has a void return type, but it
returns a value.
Error:  Line: 211 Column: 4 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock05 is in an inner block relative to the jumping goto
statment.
Error:  Line: 249 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock06 is in an inner block relative to the jumping goto
statment.
Error:  Line: 252 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock07 is in an inner block relative to the jumping goto
statment.
Error:  Line: 253 Column: 2 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock08 is in an inner block relative to the jumping goto
statment.
Error:  Line: 260 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock09 is in an inner block relative to the jumping goto
statment.
Error:  Line: 261 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock01 is in an inner block relative to the jumping goto
statment.
Error:  Line: 229 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock02 is in an inner block relative to the jumping goto
statment.
Error:  Line: 236 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock03 is in an inner block relative to the jumping goto
statment.
Error:  Line: 237 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock04 is in an inner block relative to the jumping goto
statment.
Error:  Line: 246 Column: 4 File: SCERR040.sai

Error: The function functionwithoutreturn must have a non-void return type to be
used in an expression.
```

```
Error:  Line: 275 Column: 34 File: SCERR040.sai

Error: The function whoami must be called.
Error:  Line: 282 Column: 12 File: SCERR040.sai

Error: In an expression, the token = can't be placed in assignment.
Error:  Line: 289 Column: 10 File: SCERR040.sai

Error: You must define a main function.
Error:  Line: 290 Column: 1 File: SCERR040.sai

Error: The function main has been prototyped, but not defined.
Error:  Line: 290 Column: 1 File: SCERR040.sai


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

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/\/\/\/\/\/\/\/\ COMPILING TASK SCERR050 /\/\/\/\/\/\/\/\


The file SCERR050.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCERR050.sai
Working file: SCERR050.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Fatal Error: A constant expression attempted to divide by zero. The numerator
was: 1.
Fatal Error:  Line: 17 Column: 21 File: SCERR050.sai

Fatal Error(s) encountered during second pass, exiting

SAIL Compile Utility, Version:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)
```

```
/\/\/\/\/\/\/\/\ COMPILING TASK SCERR060 /\/\/\/\/\/\/\/\


The file SCERR060.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCERR060.sai
Working file: SCERR060.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Error: The function functionrecursion cannot call itself, directly or
indirectly.
Error:  Line: 37 Column: 6 File: SCERR060.sai


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCGOTO010 /\/\/\/\/\/\/\/\


The file SCGOTO010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCGOTO010.sai
Working file: SCGOTO010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------
```

```
--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCMP010 /\/\/\/\/\/\/\/\


The file SCMP010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCMP010.sai
Working file: SCMP010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SCMP020 /\/\/\/\/\/\/\/\


The file SCMP020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCMP020.sai
Working file: SCMP020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================
```

```
--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCOMS010 /\/\/\/\/\/\/\/\


The file SCOMS010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SCOMS010.sai
Working file: SCOMS010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SCOMS020 /\/\/\/\/\/\/\/\


The file SCOMS020.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\SCOMS020.sai
Working file: SCOMS020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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/\/\/\/\/\/\/\/\ COMPILING TASK SDATA010 /\/\/\/\/\/\/\/\


The file SDATA010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SDATA010.sai
Working file: SDATA010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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```

```
(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC000 /\/\/\/\/\/\/\/\


The file SEXEC000.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC000.sai
Working file: SEXEC000.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC001 /\/\/\/\/\/\/\/\


The file SEXEC001.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC001.sai
Working file: SEXEC001.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------
```

```
--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC002 /\/\/\/\/\/\/\/\


The file SEXEC002.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC002.sai
Working file: SEXEC002.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC003 /\/\/\/\/\/\/\/\


The file SEXEC003.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC003.sai
Working file: SEXEC003.sai
head: 1.1
```

```
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC004 /\/\/\/\/\/\/\/\


The file SEXEC004.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC004.sai
Working file: SEXEC004.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)
```

```
/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC005 /\/\/\/\/\/\/\/\


The file SEXEC005.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC005.sai
Working file: SEXEC005.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC006 /\/\/\/\/\/\/\/\


The file SEXEC006.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC006.sai
Working file: SEXEC006.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------
```

```
--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC007 /\/\/\/\/\/\/\/\


The file SEXEC007.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC007.sai
Working file: SEXEC007.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC008 /\/\/\/\/\/\/\/\


The file SEXEC008.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC008.sai
Working file: SEXEC008.sai
head: 1.1
branch:
locks: strict
access list:
```

```
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC009 /\/\/\/\/\/\/\/\


The file SEXEC009.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC009.sai
Working file: SEXEC009.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
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(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC010 /\/\/\/\/\/\/\/\
```

```
The file SEXEC010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC010.sai
Working file: SEXEC010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC011 /\/\/\/\/\/\/\/\


The file SEXEC011.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC011.sai
Working file: SEXEC011.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC012 /\/\/\/\/\/\/\/\


The file SEXEC012.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC012.sai
Working file: SEXEC012.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC013 /\/\/\/\/\/\/\/\


The file SEXEC013.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC013.sai
Working file: SEXEC013.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
```

```
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC014 /\/\/\/\/\/\/\/\


The file SEXEC014.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC014.sai
Working file: SEXEC014.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC015 /\/\/\/\/\/\/\/\


The file SEXEC015.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\SEXEC015.sai
Working file: SEXEC015.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC016 /\/\/\/\/\/\/\/\


The file SEXEC016.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC016.sai
Working file: SEXEC016.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $
```

```
SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SEXEC020 /\/\/\/\/\/\/\/\


The file SEXEC020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SEXEC020.sai
Working file: SEXEC020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFERR010 /\/\/\/\/\/\/\/\


The file SFERR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFERR010.sai
Working file: SFERR010.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
==============================================================================

--------------- First Pass Errors/Warnings -----------
```

```
--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFERR020 /\/\/\/\/\/\/\/\


The file SFERR020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFERR020.sai
Working file: SFERR020.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFERR030 /\/\/\/\/\/\/\/\


The file SFERR030.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFERR030.sai
```

```
Working file: SFERR030.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFERR040 /\/\/\/\/\/\/\/\


The file SFERR040.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFERR040.sai
Working file: SFERR040.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4
```

```
(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFERR050 /\/\/\/\/\/\/\/\


The file SFERR050.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFERR050.sai
Working file: SFERR050.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SFUN010 /\/\/\/\/\/\/\/\


The file SFUN010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SFUN010.sai
Working file: SFUN010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SIERR010 /\/\/\/\/\/\/\/\


The file SIERR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SIERR010.sai
Working file: SIERR010.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SMEM010 /\/\/\/\/\/\/\/\


The file SMEM010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SMEM010.sai
Working file: SMEM010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
```

```
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SNST010 /\/\/\/\/\/\/\/\


The file SNST010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SNST010.sai
Working file: SNST010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SNSTERR /\/\/\/\/\/\/\/\
```

```
The file SNSTERR.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SNSTERR.sai
Working file: SNSTERR.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Error: Calling depth may not exceed 32. While calling function function32 this
limit was exceeded.
Error:  Line: 444 Column: 10 File: SNSTERR.sai


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SOP010 /\/\/\/\/\/\/\/\


The file SOP010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SOP010.sai
Working file: SOP010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------
```

```
--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SOP020 /\/\/\/\/\/\/\/\


The file SOP020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SOP020.sai
Working file: SOP020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SOVR010 /\/\/\/\/\/\/\/\


The file SOVR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SOVR010.sai
Working file: SOVR010.sai
head: 1.2
branch:
locks: strict
access list:
```

```
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SRTL010 /\/\/\/\/\/\/\/\


The file SRTL010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SRTL010.sai
Working file: SRTL010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SST010 /\/\/\/\/\/\/\/\
```

```
The file SST010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\SST010.sai
Working file: SST010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK STYPE010 /\/\/\/\/\/\/\/\


The file STYPE010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\STYPE010.sai
Working file: STYPE010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK STOVR010 /\/\/\/\/\/\/\/\


The file STOVR010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\STOVR010.sai
Working file: STOVR010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK WAIT010 /\/\/\/\/\/\/\/\


The file WAIT010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\WAIT010.sai
Working file: WAIT010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
```

```
==================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK WAIT020 /\/\/\/\/\/\/\/\


The file WAIT020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\WAIT020.sai
Working file: WAIT020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SASMoverSizeLimit /\/\/\/\/\/\/\/\


RCS file: RCS\SASMoverSizeLimit.a
Working file: SASMoverSizeLimit.a
```

```
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- Assembler Pass Errors/Warnings -------

@Assembler errors
Code size exceeds 64K at line 65539
F:\SAIL\SAIL_CSCI\SAIL_v2.4\SAILtasks\SAIL_SWACC\SASMoverSizeLimit.a

SAIL Compile Utility, Version:
$Id: sc.bat 1.4 2002/06/07 07:38:42 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.4

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\/\/\ COMPILING TASK SASMsizeLimit /\/\/\/\/\/\/\/\


RCS file: RCS\SASMsizeLimit.a
Working file: SASMsizeLimit.a
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- Assembler Pass Errors/Warnings -------

F:\SAIL\SAIL_CSCI\SAIL_v2.4\SAILtasks\SAIL_SWACC\SASMsizeLimit.a
```

9.1.2 SAIL_SWACC_2002_06_17.err

```
------------ SCERR010 errors --------------
Error: An invalid preprocessor directive was found.
Error occured in file SCERR010.sai, line 16, column 26

Error: This include directive was improperly formatted.
Error occured in file SCERR010.sai, line 17, column 26

Error: A bad special character was encountered.
Error occured in file SCERR010.sai, line 18, column 2

Error: Only source files with a ".sai" extension can be processed.
Error occured in file xxxxxxxxx.h

Error: An error occured while trying to include a file.
Error occured in file SCERR010.sai, line 20, column 1
```

```
Error: The file unexpectedly ended.
Error occured in file scerr020.sai, line 12, column 2

Error: The end of the file was reached, but the comment was not terminated.
Error occured in file scerr030.sai, line 12, column 2

Error: An invalid floating point number was encountered.
Error occured in file SCERR010.sai, line 23, column 24

Error: This floating point number has no sign for its exponent.
Error occured in file SCERR010.sai, line 24, column 39

Error: An exponent was expected for this floating point number.
Error occured in file SCERR010.sai, line 25, column 42

Error: The exponent for this floating point number is too large.
Error occured in file SCERR010.sai, line 26, column 46

Error: This floating point number is too long.
Error occured in file SCERR010.sai, line 27, column 55

Error: This number has created overflow.
Error occured in file SCERR010.sai, line 28, column 31

Error: This floating point number has created overflow.
Error occured in file SCERR010.sai, line 29, column 31

Fatal Error: A symbol has violated the symbol size limitation.
Fatal Error occured in file SCERR010.sai, line 30, column 69

------------ SCERR040 errors --------------
Error: The type of the reference parameter badref must match the exact type of
the corresponding reference argument.
Error:  Line: 83 Column: 23 File: SCERR040.sai

Error: You cannot pass Immediates or Expressions by reference.
Error:  Line: 88 Column: 23 File: SCERR040.sai

Error: In an expression, the token [ can't be placed after the value intarray.
Error:  Line: 96 Column: 24 File: SCERR040.sai

Error: While passing baddimension to functionnormalarray, the dimension(s) of
baddimension did not match the dimension(s) of array as defined in the prototype
for functionnormalarray.
Error:  Line: 107 Column: 22 File: SCERR040.sai

Warning: The function functionwithreturn has a non-void return type, but it does
not appear to return a value.
Warning:  Line: 111 Column: 5 File: SCERR040.sai

Warning: The return value from function functionwithreturn was ignored.
Warning:  Line: 117 Column: 20 File: SCERR040.sai

Error: An incorrect number of parameters were passed to functionparameter.
Error:  Line: 128 Column: 20 File: SCERR040.sai

Error: A goto cannot jump to the label unplaced because it has not been placed.
Error:  Line: 135 Column: 2 File: SCERR040.sai

Error: The label alreadyplaced has already been placed.
Error:  Line: 143 Column: 2 File: SCERR040.sai
```

```
Error: The identifier undefined cannot be used until it is defined.
Error:  Line: 150 Column: 6 File: SCERR040.sai

Error: The the identifier name duplcate has already been used.
Error:  Line: 157 Column: 6 File: SCERR040.sai

Error: A non-zero, non-negative constant expression result was expected to
dimension an array, but the token -1 was found instead.
Error:  Line: 164 Column: 18 File: SCERR040.sai

Error: This expression is too complex.
Error:  Line: 172 Column: 56 File: SCERR040.sai

Error: This expression is missing parentheses.
Error:  Line: 180 Column: 20 File: SCERR040.sai

Error: Only functions may be called. An attempt was made to call the nonfunction
token callofnonfunction.
Error:  Line: 188 Column: 25 File: SCERR040.sai

Error: You cannot use the non-RTL function functioncallinsideerror while inside
the body of the error function.
Error:  Line: 200 Column: 13 File: SCERR040.sai

Error: The function functionwithoutaprototype cannot be defined until it has
been prototyped.
Error:  Line: 204 Column: 6 File: SCERR040.sai

Error: The function functionshouldnotreturn has a void return type, but it
returns a value.
Error:  Line: 211 Column: 4 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock05 is in an inner block relative to the jumping goto
statment.
Error:  Line: 249 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock06 is in an inner block relative to the jumping goto
statment.
Error:  Line: 252 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock07 is in an inner block relative to the jumping goto
statment.
Error:  Line: 253 Column: 2 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock08 is in an inner block relative to the jumping goto
statment.
Error:  Line: 260 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock09 is in an inner block relative to the jumping goto
statment.
Error:  Line: 261 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock01 is in an inner block relative to the jumping goto
statment.
```

```
Error:  Line: 229 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock02 is in an inner block relative to the jumping goto
statment.
Error:  Line: 236 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock03 is in an inner block relative to the jumping goto
statment.
Error:  Line: 237 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock04 is in an inner block relative to the jumping goto
statment.
Error:  Line: 246 Column: 4 File: SCERR040.sai

Error: The function functionwithoutreturn must have a non-void return type to be
used in an expression.
Error:  Line: 275 Column: 34 File: SCERR040.sai

Error: The function whoami must be called.
Error:  Line: 282 Column: 12 File: SCERR040.sai

Error: In an expression, the token = can't be placed in assignment.
Error:  Line: 289 Column: 10 File: SCERR040.sai

Error: You must define a main function.
Error:  Line: 290 Column: 1 File: SCERR040.sai

Error: The function main has been prototyped, but not defined.
Error:  Line: 290 Column: 1 File: SCERR040.sai

------------ SCERR050 errors --------------
Fatal Error: A constant expression attempted to divide by zero. The numerator
was: 1.
Fatal Error:  Line: 17 Column: 21 File: SCERR050.sai

------------ SCERR060 errors --------------
Error: The function functionrecursion cannot call itself, directly or
indirectly.
Error:  Line: 37 Column: 6 File: SCERR060.sai

------------ SNSTERR errors --------------
Error: Calling depth may not exceed 32. While calling function function32 this
limit was exceeded.
Error:  Line: 444 Column: 10 File: SNSTERR.sai

------- SASMoverSizeLimit errors ---------
@Assembler errors
Code size exceeds 64K at line 65539
```

9.1.3 Sarr020_2002_06_17_verification.txt

```
# Generated from data 2002/168-14:37:25 to 2002/168-14:39:55
#TIME_OF_DAY      SCCMD_LAST_CN     SCCMD_LAST_RC
14:37:24.814914    35   0x8000
14:37:26.740537    35   0x8000
14:37:26.836553   100   0x8000
14:37:37.486732   100   0x8000
```

```
14:37:37.582748   101   0x8000
14:37:42.387466   101   0x8000
14:37:42.483467   101   0x1FCD
14:37:42.867500   101   0x1FCD
14:37:42.963501   100   0x1FCD
14:37:47.764251   100   0x1FCD
14:37:47.860267   100   0x1FDE
14:37:48.244220   100   0x1FDE
14:37:48.340221   101   0x1FDE
14:37:48.525844   101   0x1FDE
14:37:48.621845   101   0x0FCE
14:39:44.974747   101   0x0FCE
14:39:45.070684    29   0x0FCE
14:39:45.262700    29   0x0FCE
14:39:45.358701    29   0x1FC4
14:39:55.060231    29   0x1FC4
```

9.1.4 Sail Task Code

9.1.4.1 SARR Test Case

9.1.4.1.1 SAIL TASK SARR010.sai

```
// SARR010.sal test     that SAIL can handle arrays of any type up to the
maximum size
//
// $Id: SARR010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int notUsedHere;
    int intVal = 1;
      int taskID;

      logical logicalVal = TRUE;

      // logical
      logical logicalArray[16350];

      while(TRUE)
      {
            for(intVal=0;intVal<16350;intVal = intVal + 1)
            {
                  logicalArray[intVal] = logicalVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
```

```
                    wait_frame(0);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
            // check all of SAIL memory
      }

}
```

9.1.4.1.2 SAIL TASK SARR011.sai

```
// SARR011.sal test     that SAIL can handle arrays of any type up to the
maximum size
//            Compile, assemble, load and run, check byteArray 0 - 16349
// $Id: SARR011.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR011.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;

      byte byteVal = 255;

      // logical
      byte byteArray[16350];

      while(TRUE)
      {
            for(intVal=0;intVal<16350;intVal = intVal + 1)
            {
                  byteArray[intVal] = byteVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            taskID = whoami();
```

```
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
            // check all of SAIL memory
      }

}
```

9.1.4.1.3 SAIL TASK SARR012.sai

```
// SARR012.sal test     that SAIL can handle arrays of any type up to the
maximum size
//              Compile, assemble, load and run, check unsignedArray 0 - 16349
// $Id: SARR012.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR012.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;

      unsigned unsignedVal = 65535;

      // logical
      unsigned unsignedArray[16350];

      while(TRUE)
      {
            for(intVal=0;intVal<16350;intVal = intVal + 1)
            {
                  unsignedArray[intVal] = unsignedVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }
```

```
}
```

9.1.4.1.4 SAIL TASK SARR013.sai

```
// SARR013.sal test     that SAIL can handle arrays of any type up to the
maximum size
//            Compile, assemble, load and run, check intArray 0 - 16349
// $Id: SARR013.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR013.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;

      // intiger
      int intArray[16350];

      while(TRUE)
      {
            for(intVal=0;intVal<16350;intVal = intVal + 1)
            {
                  intArray[intVal] = intVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            taskID = whoami();
         put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.1.5 SAIL TASK SARR014.sai

```
// SARR014.sai test     that SAIL can handle arrays of any type up to the
maximum size
```

```
//              Compile, assemble, load, run and, check floatArray 0 - 8174
// $Id: SARR014.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR014.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


//

void main(void)
{
    int intVal = 1;
      int taskID;

      float floatVal = 1.797693134862315E+308;

      // logical
      float floatArray[8175];

      while(TRUE)
      {
            for(intVal=0;intVal<8175;intVal = intVal + 1)
            {
                  floatArray[intVal] = floatVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.1.6 SAIL TASK SARR020.sai

```
// SARR020.sal test     that SAIL can handle arrays of any type up to the
maximum size
//              this file generates a array to large error
// $Id: SARR020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
```

```
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;

      int passIntVal = 0x12345678;

      // intiger
      int intArray[16350 + 10];

      while(TRUE)
      {
            for(intVal=0;intVal<16350;intVal = intVal + 1)
            {
                  intArray[intVal] = intVal;
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.1.7 SAIL TASK SARR030.sai

```
// SARR030.sal test     that SAIL can handle arrays in a veriety of condeitions
//                compile, assemble, load and run, check intArray in SAIL memory
0x00 - 0x18
// $Id: SARR030.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SARR030.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


//
```

```
int intFunction(int index);

int function1(int intArray[3][10],int index);
int function2(int intArray[3][10],int index);

void main(void)
{
    int intVal = 1;
      int taskID;

      int passedIntVal = 1;

      // logical
      int intArray[3][10];

      while(TRUE)
      {
            intArray[0][1] = function1(intArray,0);   // index = 0 ->
array[0][1] = 1;
            intArray[0][3] = function1(intArray,2);   // index = 2 ->
array[0][3] = 3;
            intArray[0][5] = function1(intArray,4);   // index = 4 ->
array[0][5] = 3;
            intArray[0][7] = function1(intArray,6);   // index = 6 ->
array[0][7] = 3;
            intArray[0][9] = function1(intArray,8);   // index = 8 ->
array[0][9] = 3;
            intArray[1][1] = intFunction(intArray[1][0] + 1);
            intArray[1][3] = intArray[1][intArray[0][2]] + 1;
            intArray[1][5] = intArray[1][intArray[0][2] + 2] + 1;
            intArray[1][7] = intArray[1][intArray[0][4 + 2]] +1;
            intArray[1][9] = intArray[1][7 + 1] + 1;
            intArray[2][intFunction(intArray[0][1] - 1)] = 20;
            intArray[2][intArray[0][1]] = 21;
            intArray[2][intArray[0][1] + 1] = 22;
            intArray[2][intArray[0][2 + 1]] = 23;
            intArray[2][3 + 1] = 24;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

int intFunction(int index)
{

   return index;
}

int function1(int intArray[3][10],int index)
{
     intArray[0][index] = function2(intArray,index); // array[0][0] = 0,
       return intArray[0][index] + 1;
}

int function2(int intArray[3][10],int index)
{
```

```
     intArray[1][index] = 0xA + index;    // array[1][0] = 0x0A,
     //intArray[1][index + 1] = 0xA + index + 1;      // array[1][1] = 0x0B,
       return index;
}
```

9.1.4.2 SCERR Test Case

9.1.4.2.1 SAIL TASK SCERR010.sai

```
// SCERR010.sai test that sail compiler pass #1 handles error correctly
// Tested OK 05/30/01 TJS
// $Id: SCERR010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCERR010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

// Run though pass 1 of the compiler only
// this file will include files "SCERR020.sai" and "SCERR030.sai"
// error file for pass #1 should include each of the errors listed here

#xxxxxxxxx
                        // INVALID_DIRECTIVE
#include
                        // INVALID_INCLUDE_FORMAT
$
                              // INVALID_SPECIAL_CHAR
#include "xxxxxxxxx.h"
                  // NOT_SAIL_FILE
#include "SCERR020.sai"
                  // ERROR_ON_INCLUDE & UNEXPECTED_EOF
#include "SCERR030.sai"
                  // COMMENT_OPEN_AT_EOF

float badFloat = 1234A.e-22;
            // NUMBER_BAD_FLOAT
float badFloatSignExpected = 1234.5e22;
            // NUMBER_BAD_FLOAT_SIGN_EXPECTED
float badFloatExponentExpected = 1234.5e-;
            // NUMBER_BAD_FLOAT_EXPONENT_EXPECTED
float badFloatExponentTooLarge = 1234.5e-2222;
      // NUMBER_BAD_FLOAT_EXPONENT_TOO_LARGE
float badFloatTooLong = 1234567890123456789012345 6e-22;
      // NUMBER_BAD_FLOAT_TOO_LONG
int intOverflow = ; 3000000000;
                  // NUMBER_OVERFLOW
float floatOverflow = 3.0e+308;
                  // NUMBER_FLOAT_OVERFLOW
int xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx;  //
SYMBOL_TOO_LONG

/*
```

```
Error: An invalid preprocessor directive was found.
Error occured in file SCERR010.sai, line 8, column 26

Error: This include directive was improperly formatted.
Error occured in file SCERR010.sai, line 9, column 26

Error: A bad special character was encountered.
Error occured in file SCERR010.sai, line 10, column 2

Error: Only source files with a ".sai" extension can be processed.
Error occured in file xxxxxxxxx.h

Error: An error occured while trying to include a file.
Error occured in file SCERR010.sai, line 12, column 1

Error: The file unexpectedly ended.
Error occured in file scerr020.sai, line 4, column 2

Error: The end of the file was reached, but the comment was not terminated.
Error occured in file scerr030.sai, line 4, column 2

Error: An invalid floating point number was encountered.
Error occured in file SCERR010.sai, line 15, column 24

Error: This floating point number has no sign for its exponent.
Error occured in file SCERR010.sai, line 16, column 39

Error: An exponent was expected for this floating point number.
Error occured in file SCERR010.sai, line 17, column 42

Error: The exponent for this floating point number is too large.
Error occured in file SCERR010.sai, line 18, column 46

Error: This floating point number is too long.
Error occured in file SCERR010.sai, line 19, column 55

Error: This number has created overflow.
Error occured in file SCERR010.sai, line 20, column 31

Error: This floating point number has created overflow.
Error occured in file SCERR010.sai, line 21, column 31

Fatal Error: A symbol has violated the symbol size limitation.
Fatal Error occured in file SCERR010.sai, line 22, column 69

*/
```

9.1.4.2.2 SAIL TASK SCERR020.sai

```
// SCERR020.sai included in SCERR010
// $Id: SCERR020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCERR020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */
```

"

9.1.4.2.3 SAIL TASK SCERR030.sai

```
// SCERR030.sai included in SCERR010
// $Id: SCERR030.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCERR030.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

/*
```

9.1.4.2.4 SAIL TASK SCERR040.sai

```
// SCERR040.sai test that sail compiler pass #2 handles error correctly
// Tested OK 06/01/01
// $Id: SCERR040.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SCERR040.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//              error file for pass #2 should include each of the errors listed
here
// E_RefArgTypeMismatch
// E_BadRefParameter
// E_ExpressionSyntax
// E_DimensionMismatch
// E_MustReturnValue
// E_ReturnIgnored
// E_ParameterMismatch
// E_GotoUnplacedLabel
// E_LabelAlreadyPlaced
// E_Undefined
// E_Duplicate
// E_Expected
// E_ExpressionTooComplex
// E_ExpressionParentheses
// E_CallOfNonfunction
// E_Disabled
// E_NoPrototype
// E_CantReturnValue
// E_GotoInnerBlock      9 times
// E_ExpressionFunction
// E_MustCallFunction
// E_ExpressionSyntax
// E_NoMain
// E_NoDefinition
```

```
void functionNormal(void);
void functionNormalArray(int array[4][5]);
void functionCallWithDemensionMismatch(void);
int  functionWithReturn(void);
void functionReturnIgnorde(void);
void functionWithOutReturn(void);
void functionShouldNotReturn(void);
void functionExpressionFunction(void);
void functionRefParameter(int& badRef);
void functionBadRefParameter(void);
void functionParameter(int parameterMismatch);
void functionParameterMismatch(void);
int  functionCallInsideError(void);
void functionGotoInnerBlock(void);
void functionGotoUnplacedLabel(void);
void functionLabelAlreadyPlaced(void);
void functionUndefined(void);
void functionDuplicate(void);
void functionBadArray(void);
void functionExpressionSyntax(void);
void functionExpressionTooComplex(void);
void functionExpressionParentheses(void);
void functionCallOfNonfunction(void);
void functionMustCallFunction(void);
void functionRefArgTypeMismatch(void);
void functionMultipleAssign(void);


/*****************************************************************************
*/
void functionNormal(void)
{
}

/*****************************************************************************
*/
void functionRefParameter(int& badRef)
{
   int i;
}

void functionRefArgTypeMismatch(void)
{
    float floatMismatch;
     functionRefParameter(floatMismatch); // E_RefArgTypeMismatch
}

void functionBadRefParameter(void)
{
     functionRefParameter(1); // E_BadRefParameter
}

/*****************************************************************************
*/
void functionExpressionSyntax(void)
{
     int assignTo;
     int intArray[5];
     assignTo = intArray[4][1]; // E_ExpressionSyntax
}
```

```
/*****************************************************************************
*/
void functionNormalArray(int array[4][5])
{
}

void functionCallWithDemensionMismatch(void)
{
    int badDimension[4][6];
      functionNormalArray(badDimension); // E_DimensionMismatch
}

/*****************************************************************************
*/
int functionWithReturn(void)
{
} // E_MustReturnValue

void functionReturnIgnorde(void)
{
      functionWithReturn(); // E_ReturnIgnored
}

/*****************************************************************************
*/
void functionParameter(int parameterMismatch)
{

}

void functionParameterMismatch(void)
{
      functionParameter(); // E_ParameterMismatch
}

/*****************************************************************************
*/
void functionGotoUnplacedLabel(void)
{
    label unplaced;
      goto unplaced; // E_GotoUnplacedLabel
}

/*****************************************************************************
*/
void functionLabelAlreadyPlaced(void)
{
    label alreadyPlaced;
      alreadyPlaced:
      alreadyPlaced: // E_LabelAlreadyPlaced
}

/*****************************************************************************
*/
void functionUndefined(void)
{
    int i;
      i = undefined; // E_Undefined
}
```

```
/*****************************************************************************
*/
void functionDuplicate(void)
{
      int duplcate;
      int duplcate; // E_Duplicate
    duplcate = 1;
}

/*****************************************************************************
*/
void functionBadArray(void)
{
    int badArray[-1]; // E_Expected
      ;
}

/*****************************************************************************
*/
void functionExpressionTooComplex(void)
{
      int a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z;
      a =
(b+c)+(d+e)+(f+g)+(h+i)+(j+k)+(l+m)+(n+o)+(p+q)+(r+s)+(t+u)+(v+w)+(x+y)+z; //
E_ExpressionTooComplex
}

/*****************************************************************************
*/
void functionExpressionParentheses(void)
{
      int assignTo;
      int assign;
      assignTo = (assign; // E_ExpressionParentheses
}

/*****************************************************************************
*/
void functionCallOfNonfunction(void)
{
      int x,y,z;
    int callOfNonfunction;
      x = y*callOfNonFunction() + z; // E_CallOfNonfunction
}

/*****************************************************************************
*/
int functionCallInsideError(void)
{
    return 1;
}

void error(void)
{
   int intVal;
   intVal = functionCallInsideError(); // E_Disabled
}

/*****************************************************************************
*/
void functionWithoutAPrototype(void) // E_NoPrototype
```

```
{
}

/*****************************************************************************
*/
void functionShouldNotReturn(void)
{
   return 1; // E_CantReturnValue
}

/*****************************************************************************
*/
void functionGotoInnerBlock(void)
{
      label InnerBlock01;
      label InnerBlock02;
      label InnerBlock03;
      label InnerBlock04;
      label InnerBlock05;
      label InnerBlock06;
      label InnerBlock07;
      label InnerBlock08;
      label InnerBlock09;
      label InnerBlock10;
    int i,j;

    goto InnerBlock01; // error #6 E_GotoInnerBlock
      for(i=0;i<10;i=i+1)
      {
        i = i + 1;
        InnerBlock01:
            InnerBlock06:
            InnerBlock08:
            goto InnerBlock02; // error #7 E_GotoInnerBlock
            goto InnerBlock03; // error #8 E_GotoInnerBlock

            for(j=0;j<10;j=j+1)
            {
            i = i + 1;
                  InnerBlock03:
                  InnerBlock05:
                  InnerBlock07:
                  InnerBlock09:
                  goto InnerBlock04; // error #9 E_GotoInnerBlock
            }

            goto InnerBlock05 // error #1 E_GotoInnerBlock
      }

    goto InnerBlock06; // error #2 E_GotoInnerBlock
      goto InnerBlock07; // error #3 E_GotoInnerBlock

      for(i=0;i<10;i=i+1)
      {
        i = i + 1;
        InnerBlock02:
            InnerBlock04:
            goto InnerBlock08; // error #4 E_GotoInnerBlock
            goto InnerBlock09; // error #5 E_GotoInnerBlock
      }
```

```
}

/*******************************************************************************
*/
void functionWithOutReturn(void)
{
}

void functionExpressionFunction(void)
{
      int assignTo;
      int assignFrom = 10;
      assignTo = functionWithOutReturn(); // E_ExpressionFunction
}

/*******************************************************************************
*/
void functionMustCallFunction(void)
{
      int x,y,z;
      x = whoami; // E_MustCallFunction
      y;
}

void functionMultipleAssign(void)
{
    int x,y;
      x = y = 4; // E_ExpressionSyntax
}

// E_NoMain
// E_NoDefinition

/********************************************** ERROR FILE
*****************************************8
Error: The type of the reference parameter badref must match the exact type of
the corresponding reference argument.
Error:  Line: 73 Column: 23 File: SCERR040.sai

Error: You cannot pass Immediates or Expressions by reference.
Error:  Line: 78 Column: 23 File: SCERR040.sai

Error: In an expression, the token [ can't be placed after the value intarray.
Error:  Line: 86 Column: 24 File: SCERR040.sai

Error: While passing baddimension to functionnormalarray, the dimension(s) of
baddimension did not match the dimension(s) of array as defined in the prototype
for functionnormalarray.
Error:  Line: 97 Column: 22 File: SCERR040.sai

Error: The function functionwithreturn has a non-void return type, but it does
not return a value.
Error:  Line: 101 Column: 5 File: SCERR040.sai

Warning: The return value from function functionwithreturn was ignored.
Warning:  Line: 107 Column: 20 File: SCERR040.sai

Error: An incorrect number of parameters were passed to functionparameter.
Error:  Line: 118 Column: 20 File: SCERR040.sai

Error: A goto cannot jump to the label unplaced because it has not been placed.
```

```
Error:  Line: 125 Column: 2 File: SCERR040.sai

Error: The label alreadyplaced has already been placed.
Error:  Line: 133 Column: 2 File: SCERR040.sai

Error: The identifier undefined cannot be used until it is defined.
Error:  Line: 140 Column: 6 File: SCERR040.sai

Error: The the identifier name duplcate has already been used.
Error:  Line: 147 Column: 6 File: SCERR040.sai

Error: A non-zero, non-negative constant expression result was expected to
dimension an array, but the token -1 was found instead.
Error:  Line: 154 Column: 18 File: SCERR040.sai

Error: This expression is too complex.
Error:  Line: 162 Column: 56 File: SCERR040.sai

Error: This expression is missing parentheses.
Error:  Line: 170 Column: 20 File: SCERR040.sai

Error: Only functions may be called. An attempt was made to call the nonfunction
 token callofnonfunction.
Error:  Line: 178 Column: 25 File: SCERR040.sai

Error: You cannot use the non-RTL function functioncallinsideerror while inside
the body of the error function.
Error:  Line: 190 Column: 13 File: SCERR040.sai

Error: The function functionwithoutaprototype cannot be defined until it has
been prototyped.
Error:  Line: 194 Column: 6 File: SCERR040.sai

Error: The function functionshouldnotreturn has a void return type, but it
returns a value.
Error:  Line: 201 Column: 4 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock05 is in an inner block relative to the jumping goto
statment.
Error:  Line: 239 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock06 is in an inner block relative to the jumping goto
statment.
Error:  Line: 242 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock07 is in an inner block relative to the jumping goto
statment.
Error:  Line: 243 Column: 2 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock08 is in an inner block relative to the jumping goto
statment.
Error:  Line: 250 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock09 is in an inner block relative to the jumping goto
statment.
Error:  Line: 251 Column: 3 File: SCERR040.sai
```

```
Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock01 is in an inner block relative to the jumping goto
statment.
Error:  Line: 219 Column: 5 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock02 is in an inner block relative to the jumping goto
statment.
Error:  Line: 226 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock03 is in an inner block relative to the jumping goto
statment.
Error:  Line: 227 Column: 3 File: SCERR040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock04 is in an inner block relative to the jumping goto
statment.
Error:  Line: 236 Column: 4 File: SCERR040.sai

Error: The function functionwithoutreturn must have a non-void return type to be
used in an expression.
Error:  Line: 265 Column: 34 File: SCERR040.sai

Error: The function whoami must be called.
Error:  Line: 272 Column: 12 File: SCERR040.sai

Error: In an expression, the token = can't be placed in assignment.
Error:  Line: 279 Column: 10 File: SCERR040.sai

Error: You must define a main function.
Error:  Line: 280 Column: 1 File: SCERR040.sai

Error: The function main has been prototyped, but not defined.
Error:  Line: 280 Column: 1 File: SCERR040.sai


*/
```

9.1.4.2.5 SAIL TASK SCERR050.sai

```
// SCERR050.sai test that sail compiler pass #2 handles error correctly
// Tested OK 06/01/01
// $Id: SCERR050.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCERR050.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

// error file for pass #2 should include each of the errors listed here
// only one of these error can occuer at a time

void functionNormal(void);
void functionRecursion(void);
int devideByZero = 1/0; // E_DivideByZero
```

```
void main(void)
{
    functionNormal();
}

void functionNormal(void)
{
    int i;
    float floatMismatch;

    functionRecursion();
    functionDevideByZero();
}

// this function must be called for the compiler to flag the error
void functionRecursion(void)
{

    // functionRecursion(); // E_Recursion
}

/********************************** ERROR FILE *********************************

Fatal Error: A constant expression attempted to divide by zero. The numerator
was: 1.
Fatal Error:  Line: 9 Column: 21 File: SCERR050.sai

*/
```

9.1.4.2.6 SAIL TASK SCERR060.sai

```
// SCERR050.sai test that sail compiler pass #2 handles error correctly
// Tested OK 06/01/02 TJS
// $Id: SCERR060.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCERR060.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

// error file for pass #2 should include each of the errors listed here
// E_Recursion
// only one of these error can occuer at a time

void functionNormal(void);
void functionRecursion(void);
// int devideByZero = 1/0; // E_DivideByZero

void main(void)
{
    functionNormal();
}

void functionNormal(void)
{
    int i;
    float floatMismatch;
```

```
    functionRecursion();
}

// this function must be called for the compiler to flag the error
void functionRecursion(void)
{

     functionRecursion(); // E_Recursion
}

/************************************** ERROR FILE ******************************

Error: The function functionrecursion cannot call itself, directly or
indirectly.
Error:  Line: 29 Column: 6 File: SCERR060.sai

*/
```

9.1.4.3 SCMP Test Case

9.1.4.3.1 SAIL TASK SCMP010.sai

```
// SCMP010.sai tests that pass1 removes both type of comments
//
// $Id: SCMP010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCMP010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

// run though first pass of the compiler only

main()
{

    /* first type of comment
         can be on multiple lines
         and should be removed */

   // second type of comment is on a hole single line
   int intVal; // or only part of it

   // check the SCMP010.p1 output file to verify that the comments, and only the
comments have bin removed
   // corect output is shown below


/*
84    103   0     6     1           main
85    21    0     6     5           (
86    22    0     6     6           )
87    49    0     7     1           {
88    2     0     14    4           int
89    104   0     14    8           intval
90    47    0     14    14          ;
91    50    0     17    1           }
```

```
*/
}
```

9.1.4.3.2 SAIL TASK SCMP020.sai

```
// SCMP020.c      test each of the condition statments
//               Compile, assemble, load and run, check the intArray 0 - 0x45
// $Id: SCMP020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCMP020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


// if()
//       else
// for()
// while()
// break
// continue
// goto()

void main(void)
{
      int index,secondIndex;
      int intVal = 1;
      int intArray[0x200];
      label label_1;
      int taskID;

      while(TRUE)
      {
      // simple if-else
            if(intVal == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1;  //  2
            if(intVal != 2)
                  intArray[intVal] = -intVal;
            else
                  intArray[intVal] = intVal;

            // short-circuit conditional processing
            intVal = intVal + 1;  // 3
            if(intVal == 0 && 10/(intVal - intVal) < 10)
                  intArray[intVal] = -intVal;
            else
                  intArray[intVal] = intVal;

            intVal = intVal + 1;  // 4
            if(intVal == intVal || 10/(intVal - intVal) < 10)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
```

```
// for loop
for(intVal = 5;intVal < 10;intVal = intVal + 1) // 5-A
      intArray[intVal] = intVal;

if(intVal != 10) // just a check
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;

intVal = intVal + 1; // B
// while loop
while(intVal < 15)
{
      intArray[intVal] = intVal;
      intVal = intVal + 1;  // C-F
}

if(intVal != 15) // just a check
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;

// break in a while
while(intVal < 20)
{
      if(intVal > 17)
            break;
      intArray[intVal] = intVal;
      intVal = intVal + 1;  // 11-12
}

if(intVal != 18) // just a check
      intArray[intVal] = -intVal;
else
    intArray[intVal] = intVal;

// continue in a while
while(intVal < 20)
{
      intVal = intVal + 1;  // 13-14
      intArray[intVal] = intVal;
      continue;
      intArray[intVal] = -intVal; // never exicuted;
}

// break in a for
for(intVal = intVal;intVal < 25;intVal = intVal + 1) // 15-17
{
      if(intVal > 22)
            break;
      intArray[intVal] = intVal;
}

if(intVal != 23) // just a check
      intArray[intVal] = -intVal;
else
    intArray[intVal] = intVal;

intVal = intVal + 1;  // 18
// continue in a for
```

```
            for(intVal = intVal;intVal < 30;intVal = intVal + 1) // 19-1F
            {
                  intArray[intVal] = intVal;
                  continue;
                  intArray[intVal] = -intVal; // never exicuted;
            }

            // goto
label_1:
            intArray[intVal] = intVal;
            intVal = intVal + 1;   // 0x20-0x25
            if(intVal < 0x25)
                  goto label_1;

            intArray[intVal] = intVal;

        // continue in while inside for inside while
            while(TRUE)
            {
                intVal = intVal + 1; // 0x26
                  intArray[intVal] = intVal;
                  for(index = intVal;index<0x28;index = index + 1)
                  {
                     intVal = intVal + 1; // 0x27 + 0x32
                     if(intVal > 0x27 && intVal < 0x31)
                        intArray[intVal] = -intVal; // while continue went to up
one lable
                     else
                        intArray[intVal] = intVal;
                     while(TRUE)
                     {
                          intVal = intVal + 1; // 0x28-0x30 + 0x33
                              intArray[intVal] = intVal;
                              if(intVal < 0x30)
                                 continue;
                              break;
                     }

                     intVal = intVal + 1; // 0x31     + 0x34
                     if(intVal < 0x31)
                        intArray[intVal] = -intVal; // while continue falled
                     else
                        intArray[intVal] = intVal;

                     continue;
                     intVal = intVal + 1;
                     intArray[intVal] = -intVal;
                  }

                  break;
            }

            intVal = intVal + 1; // 0x35
            if(intVal == 0x35)
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;

            // continue in for inside for inside while
            for(index = 0;index<1;index = index + 1)
            {
```

```
                intVal = intVal + 1; // 0x36
                  intArray[intVal] = intVal;
                  for(secondIndex = intVal;secondIndex<0x38;secondIndex =
secondIndex + 1)
                    {
                         intVal = intVal + 1; // 0x37 + 0x41
                         if(intVal > 0x37 && intVal < 0x41)
                              intArray[intVal] = -intVal;
                       else
                              intArray[intVal] = intVal;
                         while(TRUE)
                         {
                              intVal = intVal + 1; // 0x38 - 0x39   + 0x42
                              intArray[intVal] = intVal;
                              if(intVal < 0x3F)
                                   continue;
                                 break;
                       }

                         intVal = intVal + 1; // 0x40 + 0x43
                         if(intVal < 0x40)
                              intArray[intVal] = -intVal;
                         else
                              intArray[intVal] = intVal;

                        continue;
                        intVal = intVal + 1;
                        intArray[intVal] = -intVal;
                      }

                      intVal = intVal + 1; // 0x44
                      if(intVal == 0x44)
                        intArray[intVal] = intVal;
                     else
                        intArray[intVal] = -intVal;
            }

             intVal = intVal + 1; // 0x45
             if(intVal == 0x45)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.4 SCOMS Test Case

9.1.4.4.1 SAIL TASK SCOMS010.sai

```
// SCOMS010.sal test that SAIL can handle a allowed instrument commands
//              Compile, assemble, load and run
```

```
//              Send command to allow SAIL to send a hir_spu_timing command and
then
//              Restart task
//              Check intArray 0x00 - 0x07
//              Check the command output file
//              Check SAIL display command couners
// $Id: SCOMS010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCOMS010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

// Also checks the folowing communication varables
/*
_q_size           int      24 1 0
_cmd_received     int      26 1 0
_cmd_rejected     int      27 1 0
_cmd_result       int      28 1 0
_cmd_number       int      29 1 0
_executed_cmd_pktseq        int      31 1 0
_qued_cmd_pktseq int      32 1 0
*/
void main(void)
{
      int intArray[0x10];
      int intIndex;
    int q_size;
      int cmd_received;
      int cmd_rejected;
      int cmd_result;
    int executed_cmd_pktseq;
      int qued_cmd_pktseq;
      int taskID;

      while(TRUE)
      {
        // The operator must now send the command to not allow SAIL to send a
hir_spu_timing command
            intIndex = 0;
          intArray[intIndex] = -1;
            q_size = _q_size;
            cmd_received = _cmd_received;
            cmd_rejected = _cmd_rejected;
            command(hir_spu_timing,0,3,0x1234); // this command should be
rejected
            while(_q_size != q_size);           // wait for the command to be
taken of the q
            if(_cmd_rejected == cmd_rejected + 1)
                intArray[intIndex] = intIndex; // 0x00
            intIndex = intIndex + 1; // 0x01

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
```

```
        // The operator must now send the command to allow SAIL to send a
hir_spu_timing command
            // and then Resume the task
        put_ascii(88);

        executed_cmd_pktseq = _executed_cmd_pktseq;
        qued_cmd_pktseq = _qued_cmd_pktseq;

            q_size = _q_size;
            cmd_received = _cmd_received;
            cmd_rejected = _cmd_rejected;
            command(hir_spu_timing,0,3,0x1234); // this command should be
acceped
            if(_q_size == q_size + 1)
                intArray[intIndex] = intIndex; // 0x01
            intIndex = intIndex + 1; // 0x02
            if(_qued_cmd_pktseq == qued_cmd_pktseq + 1)
            intArray[intIndex] = intIndex; // 0x02
            intIndex = intIndex + 1; // 0x03
            while(_q_size != q_size);                // wait for the command to
be taken of the q
            intArray[intIndex] = intIndex; // 0x03
            intIndex = intIndex + 1; // 0x04
            if(_cmd_received == cmd_received + 1)
                intArray[intIndex] = intIndex; // 0x04
            intIndex = intIndex + 1; // 0x05
            if(_cmd_rejected == cmd_rejected)
                intArray[intIndex] = intIndex; // 0x05
            else
            {
                  put_int(2,FORMAT_DEC);
                  put_ascii(41);
                  put_ascii(32);
                  put_float(cmd_rejected,FORMAT_DEC);
                  put_ascii(61);
                  cmd_rejected = _cmd_rejected;
                  put_float(cmd_rejected,FORMAT_DEC);
                  put_ascii(13);
                  put_ascii(10);


                intArray[intIndex] = -intIndex; // 0x05
            }

            intIndex = intIndex + 1; // 0x06
            if(_cmd_number == 39) // hir_spu_timing
                intArray[intIndex] = intIndex; // 0x06
            intIndex = intIndex + 1; // 0x07
            if(_executed_cmd_pktseq == executed_cmd_pktseq + 1)
            intArray[intIndex] = intIndex; // 0x07
            intIndex = intIndex + 1; // 0x08

        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.4.2 SAIL TASK SCOMS020.sai

```
// SCOMS010.sal Tests the ability of the IPU to handle maximum
// SAIL commanding rate.  If IPU SAIL Cmd Q is full, the F_SAI_CMD_Q_FULL
// error should be set.  No further commands can be sent until the Q has free
room.
// $Id: SCOMS020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SCOMS020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//void error(void);
#define F_SAI_CMD_Q_FULL 0x1Fe4
//#define S_CMD_OK 0x8000

int intIndex;

void main(void)
{
      int intArray[0x200];
      int taskID;
      int counter;

      intIndex = 0;
      for(counter=0;counter<0x200;counter = counter + 1)
          intArray[counter] = 0xffff;

      taskID = whoami();

      while(TRUE)
      {
            for(counter=0;counter<32;counter =counter + 1)
            {

                  command(hir_ssh_doorunprot);
                  intArray[intIndex] = _q_size;
                  intIndex = intIndex + 1;
                        if(_cmd_result==F_SAI_CMD_Q_FULL)
                        intArray[intIndex] = 1;

            }
            if(_q_size >= 64)
                {
                  intArray[0] = _cmd_result;
                  suspend(taskID);
            }
            else
                    wait_frame(0);
      }
}
```

9.1.4.5 SST Test Case

9.1.4.5.1 SAIL TASK SDATA010.sai

```
// SDATA010.sal   Test each of the folowing comunication verables
/*
_cr_count          int      11 1 1     164
_hirdls_time_stamp       float    12 1 1      64
_spu_qhss_state    int      13 1 1      64
_spu_phase_state   int      14 1 1      64
_radiance          float    15 1 2     384 21  // [64 CRs*6 CC][21 Channal]
_tss_state         int      16 1 1      64     // CR*6 + CC
_elev1prim         int      17 1 2      64  6
_elev1sec          int      18 1 2      64  6
_elev2prim         int      19 1 2      64  6
_elev2sec          int      20 1 2      64  6
_azimprim            int      21 1 2      64  6
_azimsec             int      21 1 2      64  6
_gyro              int      22 1 2      64  4
*/
//              Before running this test programe load "decim_010" to set the
filter factors
//              Compile, assemble, load, run.
//              Check intArray counts from 0x00 to 0x??
//
// $Id: SDATA010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SDATA010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

#define MAX_MATH_ERROR 0.0000000000001
#define CR_COUNTS 64
#define CHANALS 6
#define DETECTORS 21

int intArray[0x1180];

void main(void)
{
      int cr_count;
      float hirdls_time_stamp = 0;
      int spu_qhss_state = 0;
      int spu_phase_state = 0;
      float radiance,radRead;
      int tss_state = 0;
      int elev1prim = 0x10000 + 0x200;
      int elev1sec =  0x20000 + 0x200;
      int elev2prim = 0x10000 + 0x400;
      int elev2sec =  0x20000 + 0x400;
      int azimprim =  0x10000;
      int azimsec =   0x20000;
      int gyro = 0xAAAA;

      int value;
      int intVal;
      int chopperRotation; // 0 - 36
      int cc; // 0 - 5
      int channal;

      int temp;
```

```
      float ftemp;
      int taskID;

    wait_frame(0);
      while(TRUE)
      {
          intVal = 0;

            //********** _cr_count **********//
OK
            // check that mod 64 of the _cr_count counts from 0 to 63
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                 intVal = intVal + 1;
               if(_cr_count[chopperRotation]%64 == chopperRotation)
                     intArray[intVal] = intVal;
                 else
                 {
                     intArray[intVal] = -intVal;
                       put_int(1,FORMAT_HEX);
                       put_ascii(41);
                       put_ascii(32);
                       put_int(intVal,FORMAT_HEX);
                       put_ascii(32);
                       put_int(chopperRotation,FORMAT_DEC);
                       put_ascii(61);
                       temp = _cr_count[chopperRotation]%64;
                       put_int(temp,FORMAT_DEC);
                       put_ascii(13);
                       put_ascii(10);
                 }

            }

        wait_frame(0);
            intVal = 0x40;

            //********** _hirdls_time_stamp **********//
OK
            // check that the _hirdls_time_stamp increces for each chopper
rotation
            hirdls_time_stamp = _hirdls_time_stamp[0]; // store the time of the
first Copper Rotation
            for(chopperRotation=1;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                 intVal = intVal + 1;
               if(_hirdls_time_stamp[chopperRotation] > hirdls_time_stamp) //
comper this to the privus Copper Rotation
                     intArray[intVal] = intVal;
                 else
                 {
                     intArray[intVal] = -intVal;
                       put_int(chopperRotation,FORMAT_DEC);
                       put_ascii(41);
                       put_ascii(32);
                       put_int(intVal,FORMAT_HEX);
                       put_ascii(32);
                       put_float(hirdls_time_stamp,FORMAT_SCI_FLOAT);
                       put_ascii(61);
```

```
                        ftemp = _hirdls_time_stamp[chopperRotation];
                        put_float(ftemp,FORMAT_SCI_FLOAT);
                        put_ascii(13);
                        put_ascii(10);
                    }

            hirdls_time_stamp = _hirdls_time_stamp[chopperRotation]; // store
this time for next check

            }

          intArray[intVal] = intVal; //just to keep it even
        wait_frame(0);
            intVal = 0x80;

            //********** _spu_qhss_state **********//
            //
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                  intVal = intVal + 1;
                  spu_qhss_state = 0; // input by test program
                if(_spu_qhss_state[chopperRotation] == spu_qhss_state)
                      intArray[intVal] = intVal;
                  else
                  {
                      intArray[intVal] = -intVal;
                        put_int(3,FORMAT_HEX);
                        put_ascii(41);
                        put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                        put_int(spu_qhss_state,FORMAT_HEX);
                        put_ascii(61);
                        temp = _spu_qhss_state[chopperRotation];
                        put_int(temp,FORMAT_HEX);
                        put_ascii(13);
                        put_ascii(10);
                    }

            }

        wait_frame(0);
            intVal = 0xC0;

            //********** _spu_phase_state **********//
            //
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                  intVal = intVal + 1;
                  spu_phase_state = 0; // ???;
                if(_spu_phase_state[chopperRotation] == spu_phase_state)
                      intArray[intVal] = intVal;
                  else
                  {
                      intArray[intVal] = -intVal;
                        put_int(4,FORMAT_HEX);
                        put_ascii(41);
                        put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
```

```
                        put_ascii(32);
                        put_int(spu_phase_state,FORMAT_HEX);
                        put_ascii(61);
                        temp = _spu_phase_state[chopperRotation];
                        put_int(temp,FORMAT_HEX);
                        put_ascii(13);
                        put_ascii(10);
                    }

            }

        wait_frame(0);
            intVal = 0x100;

            //********** _radiance **********//

            cc = 2; // let's just try this one channal
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                for(channal=0;channal<21;channal = channal + 1)
                  {
                      if(channal%8 == 0)
                    wait_frame(0);

                radiance = ((chopperRotation/8)<<13) + ((channal + 1)<<8) +
(((chopperRotation)%8)<<4) + 2*cc;
                        radRead = (_radiance[chopperRotation*6 + cc][channal]);

                        intVal = intVal + 1;
                        if(radRead >= radiance - MAX_MATH_ERROR
                           && radRead <= radiance + MAX_MATH_ERROR)
                              intArray[intVal] = intVal;
                        else
                        {
                              intArray[intVal] = -intVal;
                              put_int(5,FORMAT_HEX);
                              put_ascii(41);
                              put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                              put_float(radiance,FORMAT_SCI_FLOAT);
                              put_ascii(61);
                               ftemp = radRead;
                              put_float(ftemp,FORMAT_SCI_FLOAT);
                              put_ascii(13);
                              put_ascii(10);
                       }

                    }

            }

        wait_frame(0);
            intVal = 0x640;

            //********** _tss_state **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                    intVal = intVal + 1;
```

```
                tss_state = 0; // The TSS state must be a constant zero
              if(_tss_state[chopperRotation] == tss_state)
                  intArray[intVal] = intVal;
                else
                {
                    //intArray[intVal] = -intVal;
                      intArray[intVal] = ( (_tss_state[chopperRotation] << 16)
& 0xFFFF0000 ) | (tss_state & 0x0000FFFF);
                      put_int(6,FORMAT_HEX);
                      put_ascii(41);
                      put_ascii(32);
                      put_int(intVal,FORMAT_HEX);
                      put_ascii(32);
                      put_int(tss_state,FORMAT_HEX);
                      put_ascii(61);
                      temp = _tss_state[chopperRotation];
                      put_int(temp,FORMAT_HEX);
                      put_ascii(13);
                      put_ascii(10);
                }

            }

        wait_frame(0);
            intVal = 0x680;

            //********** _elev1prim **********//
            //
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                    if(chopperRotation%4 == 0)
                  wait_frame(0);

                for(cc=0;cc<6;cc = cc + 1)
                {
                      intVal = intVal + 1;
                      value = elev1prim + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                      if(_elev1prim[chopperRotation][cc] == value)
                            intArray[intVal] = intVal;
                      else
                      {
                            intArray[intVal] = -intVal;
                            put_int(7,FORMAT_HEX);
                            put_ascii(41);
                            put_ascii(32);
                      put_int(intVal,FORMAT_HEX);
                      put_ascii(32);
                            put_int(value,FORMAT_HEX);
                            put_ascii(61);
                            temp = _elev1prim[chopperRotation][cc];
                            put_int(temp,FORMAT_HEX);
                            put_ascii(13);
                            put_ascii(10);
                    }

                }

            }
```

```
        wait_frame(0);
            intVal = 0x800;

            //********** _elev1sec **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                      if(chopperRotation%4 == 0)
                    wait_frame(0);

                  for(cc=0;cc<6;cc = cc + 1)
                  {
                        intVal = intVal + 1;
                        value = elev1sec + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_elev1sec[chopperRotation][cc] == value)
                              intArray[intVal] = intVal;
                        else
                        {
                              intArray[intVal] = -intVal;
                              put_int(8,FORMAT_HEX);
                              put_ascii(41);
                              put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                              put_int(value,FORMAT_HEX);
                              put_ascii(61);
                              temp = _elev1sec[chopperRotation][cc];
                              put_int(temp,FORMAT_HEX);
                              put_ascii(13);
                              put_ascii(10);
                      }

                  }

            }

        wait_frame(0);
            intVal = 0x980;

            //********** _elev2prim **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                      if(chopperRotation%4 == 0)
                    wait_frame(0);

                  for(cc=0;cc<6;cc = cc + 1)
                  {
                        intVal = intVal + 1;
                        value = elev2prim + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_elev2prim[chopperRotation][cc] == value)
                              intArray[intVal] = intVal;
                        else
                        {
                              intArray[intVal] = -intVal;
                              put_int(9,FORMAT_HEX);
                              put_ascii(41);
                              put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
```

```
                        put_ascii(32);
                              put_int(value,FORMAT_HEX);
                              put_ascii(61);
                              temp = _elev2prim[chopperRotation][cc];
                              put_int(temp,FORMAT_HEX);
                              put_ascii(13);
                              put_ascii(10);
                      }

                }

            }

        wait_frame(0);
            intVal = 0xB00;

            //********** _elev2sec **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                      if(chopperRotation%4 == 0)
                    wait_frame(0);

                for(cc=0;cc<6;cc = cc + 1)
                {
                        intVal = intVal + 1;
                        value = elev2sec + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_elev2sec[chopperRotation][cc] == value)
                              intArray[intVal] = intVal;
                        else
                        {
                              intArray[intVal] = -intVal;
                              put_int(10,FORMAT_HEX);
                              put_ascii(41);
                              put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                              put_int(value,FORMAT_HEX);
                              put_ascii(61);
                              temp = _elev2sec[chopperRotation][cc];
                              put_int(temp,FORMAT_HEX);
                              put_ascii(13);
                              put_ascii(10);
                      }

                }

            }

        wait_frame(0);
            intVal = 0xC80;

            //********** _azimprim **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                      if(chopperRotation%4 == 0)
                    wait_frame(0);

                for(cc=0;cc<6;cc = cc + 1)
```

```
                {
                        intVal = intVal + 1;
                        value = azimprim + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_azimprim[chopperRotation][cc] == value)
                                intArray[intVal] = intVal;
                        else
                        {
                                intArray[intVal] = -intVal;
                                put_int(11,FORMAT_HEX);
                                put_ascii(41);
                                put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                                put_int(value,FORMAT_HEX);
                                put_ascii(61);
                                temp = _azimprim[chopperRotation][cc];
                                put_int(temp,FORMAT_HEX);
                                put_ascii(13);
                                put_ascii(10);
                    }

                }

            }

        wait_frame(0);
            intVal = 0xE00;

            //********** _azimsec **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                    if(chopperRotation%4 == 0)
                  wait_frame(0);

                for(cc=0;cc<6;cc = cc + 1)
                {
                        intVal = intVal + 1;
                        value = azimsec + ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_azimsec[chopperRotation][cc] == value)
                                intArray[intVal] = intVal;
                        else
                        {
                                intArray[intVal] = -intVal;
                                put_int(11,FORMAT_HEX);
                                put_ascii(41);
                                put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                                put_int(value,FORMAT_HEX);
                                put_ascii(61);
                                temp = _azimsec[chopperRotation][cc];
                                put_int(temp,FORMAT_HEX);
                                put_ascii(13);
                                put_ascii(10);
                    }

                }
```

```
            }

        wait_frame(0);
            intVal = 0xF80;

            //********** _gyro **********//
            for(chopperRotation=0;chopperRotation<64;chopperRotation =
chopperRotation + 1)
            {
                    if(chopperRotation%4 == 0)
                  wait_frame(0);

                  for(cc=0;cc<4;cc = cc + 1)
                  {
                        intVal = intVal + 1;
                        value =  ((chopperRotation/8)<<12) +
(((chopperRotation)%8)<<4) + cc;
                        if(_gyro[chopperRotation][cc] == value)
                              intArray[intVal] = intVal;
                        else
                        {
                              intArray[intVal] = -intVal;
                              put_int(12,FORMAT_HEX);
                              put_ascii(41);
                              put_ascii(32);
                        put_int(intVal,FORMAT_HEX);
                        put_ascii(32);
                              put_int(value,FORMAT_HEX);
                              put_ascii(61);
                              temp = _gyro[chopperRotation][cc];
                              put_int(temp,FORMAT_HEX);
                              put_ascii(13);
                              put_ascii(10);
                     }

                  }

            }

            intVal = 0x1180;

        taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.5.2 SAIL TASK SST010.sai

```
// SST010.sal     Test each of the folowing comunication verables
/*
_command          int       0 0 1      33  // filled with 0 - 0x19
```

```
_eng_packet_count       int       1 1 0          // read only
_sci_packet_count       int       2 1 0          // read only
_error_last_time  int       2 0 0          // filled with 0x23
_error_location   int       3 0 0          // filled with 0x24
_error_tag        int       4 0 0          // filled with 0x25
_error_type           int       5 0 0          // filled with 0x26
_mif              int       6 1 0          // read only
_fshared          float     7 0 1   16384  // filled with 8 copys of 1.2345E-67
_shared           int       8 0 1   16384  // filled with 0x2B - 0x3A but gets
overwritten
_maf              int       9 1 0          // read only
_currnet_cr       int      25 1 0          // read only
_hirdls_time        float    30 1 0          // read only
_spacecraft_time    float    31 1 0          // read only
*/
//              Compile, assemble, load, run and check the value of all
comuication variable
//              Check intArray counts from 0x00 to 0x3A and floatArray[8]
//
// $Id: SST010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SST010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

void main(void)
{
      int intVal;
      int index;
      int intArray[0x400];
      float floatArray[8];
      int taskID;
      float floatVal = 1.2345E-67;
      int packet_count;
      int mif;
    int maf;
      int current_cr;
      float hirdls_time;
      float spacecraft_time;
      unsigned time_code[4];

      while(TRUE)
      {
          intVal = 0;

            //********** _command **********//
            for(index=0;index<0x20;index = index + 1)
            {
                  _command[index] = intVal;
                  intVal = intVal + 1; // 0x19
            }

            for(index=0x20;index>0;index = index - 1)
            {
                  intVal = intVal - 1;
                  intArray[intVal] = _command[index - 1];
            }
```

```
        intVal = 0x20; // 0x20;

        //********** _eng_packet_count **********//
    packet_count = _eng_packet_count;
        wait_frame(6);
        if(_eng_packet_count > packet_count)
            intArray[intVal] = intVal;

        intVal = 0x21;

        //********** _sci_packet_count **********//
    packet_count = _sci_packet_count;
        wait_frame(6);
        if(_sci_packet_count > packet_count)
            intArray[intVal] = intVal;

        intVal = 0x22;

        //********** _error_XXXXX **********//
        _error_last_time = intVal;
        intVal = intVal + 1; // 0x23
        _error_location = intVal;
        intVal = intVal + 1; // 0x24
        _error_tag = intVal;
        intVal = intVal + 1; // 0x25
        _error_type = intVal;

        intArray[intVal] = _error_type;
        intVal = intVal - 1;
        intArray[intVal] = _error_tag;
        intVal = intVal - 1;
        intArray[intVal] = _error_location;
        intVal = intVal - 1;
        intArray[intVal] = _error_last_time;

        intVal = 0x26; // 0x26;

        // ********** _mif is read only **********//
        mif = _mif;
        wait_frame(1);
        if((_mif >= mif + 8) && (_mif <= mif + 16))
            intArray[intVal] = intVal;

        intVal = 0x27; // 0x27

    // _fshared and _shared are at the end of this file

        //********** _maf is read only **********//
        maf = _maf;
        wait_frame(0);
        if(_maf == maf + 1)
            intArray[intVal] = intVal;


        // _cr_count is read only @@@@@
        // _hirdls_time_stamp is read only @@@@@
        // _spu_qhss_state is read only @@@@@
        // _spu_phase_state is read only @@@@@
        // _radiance is read only @@@@@
        // _tss_state is read only @@@@@
        // _elev1prim is read only @@@@@
```

```
            // _elev1sec is read only @@@@@
            // _elev2prim is read only @@@@@
            // _elev2sec is read only @@@@@
            // _azimprim is read only @@@@@
            // _azimsec is read only @@@@@
            // _gyro is read only @@@@@
        // _hk_array is read only         int      22 1 1     798


        //********** _hk_array **********//
            /*
            for(index=0;index<0x31E;index = index + 1)
            {
                  _hk_array[index] = intVal;
                  intArray[intVal] = _hk_array[index];
                  intVal = intVal + 1; // 0x346
                  if(intVal%100 == 0)
                  {
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
                        wait_frame(0);
             }

            }

            intVal = intVal + 1;
            */

            // _eng is tested in "SEXEC020.sai"
            // _q_size is read only checked in "SCOMS010.sai"

            intVal = 0x28; // 0x28

            //********** _currnet_cr is read only **********//
            current_cr = _current_cr;
            wait_frame(1);
            if((_current_cr >= current_cr + 64) && (_current_cr <= current_cr +
128))
                intArray[intVal] = intVal; // 0x28

            intVal = 0x29; // 0x29


            // _cmd_received is read only checked in "SCOMS010.sai"
            // _cmd_rejected is read only checked in "SCOMS010.sai"
            // _cmd_result is read only checked in "SCOMS010.sai"
            // _cmd_number is read only checked in "SCOMS010.sai"
            // _executed_cmd_pktseq is read only checked in "SCOMS010.sai"
            // _qued_cmd_pktseq is read only checked in "SCOMS010.sai"

            //********** _hirdls_time is read only **********//
            hirdls_time = _hirdls_time;
            wait_frame(0);
            if(_hirdls_time > hirdls_time)
                intArray[intVal] = intVal; // 0x29
            else
            {
            put_int(1,FORMAT_DEC);
            put_ascii(41);
            put_ascii(32);
```

```
            put_float(hirdls_time,FORMAT_SCI_FLOAT);
            put_ascii(61);
            hirdls_time = _hirdls_time;
            put_float(hirdls_time,FORMAT_SCI_FLOAT);
            put_ascii(13);
            put_ascii(10);

        }

            intVal = 0x2A; // 0x2A

            //********** _spacecraft_time is read only **********//
        spacecraft_time = _spacecraft_time;
            wait_frame(1);
            if(_spacecraft_time > spacecraft_time)
                intArray[intVal] = intVal; // 0x2A
            else
            {
            put_int(2,FORMAT_DEC);
            put_ascii(41);
            put_ascii(32);
            put_float(spacecraft_time,FORMAT_SCI_FLOAT);
            put_ascii(61);
            spacecraft_time = _spacecraft_time;
            put_float(spacecraft_time,FORMAT_SCI_FLOAT);
            put_ascii(13);
            put_ascii(10);

        }


            intVal = 0x2B; // 0x2B

            // _time_code is read only not checked

            taskID = whoami();

            //********** _shared **********//
            for(index=0;index<0x10;index = index + 1)
            {
                  _shared[(taskID*16) + index] = intVal;
                  intVal = intVal + 1; // 0x3B
            }

            for(index=0x10;index>0;index = index - 1)
            {
                  intVal = intVal - 1;
                  intArray[intVal] = _shared[(taskID*16) + index - 1];
            }

            //suspend(taskID);

            //********** _fshared **********//
            for(index=0;index<0x8;index = index + 1)
            {
                  _fshared[(taskID*8) + index] = floatVal;
                  floatArray[index] = _fshared[(taskID*8) + index];
            }

        put_ascii(taskID + 48);
            put_ascii(13);
```

```
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.6 SEXEC Test Case

9.1.4.6.1 SAIL TASK SEXEC000.sai

```
// SEXEC000.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 0
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC000.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC000.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;
      int taskVal;
      int runCount = 0;

    taskVal = 0;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 0;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);

            runCount = runCount + 1;
      }

}
```

9.1.4.6.2 SAIL TASK SEXEC001.sai

```
// SEXEC001.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 1
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC001.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC001.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 1;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 1;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.3 SAIL TASK SEXEC002.sai

```
// SEXEC002.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 2
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC002.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC002.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
```

```
 */

//

void main(void)
{
    int intVal = 2;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 2;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 2;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.4 SAIL TASK SEXEC003.sai

```
// SEXEC003.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 3
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC003.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC003.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 3;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 3;
      while(TRUE)
```

```
      {

            taskID = whoami();
            taskVal = 3;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.5 SAIL TASK SEXEC004.sai

```
// SEXEC004.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 4
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC004.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC004.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 4;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 4;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 4;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
```

```
            runCount = runCount + 1;
      }

}
```

9.1.4.6.6 SAIL TASK SEXEC005.sai

```
// SEXEC005.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 5
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC005.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC005.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 5;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 5;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 5;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.7 SAIL TASK SEXEC006.sai

```
// SEXEC006.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 6
//              SAIL display should show the tasks as ready or waiting
```

```
//              and the number of runs increase up to 15
// $Id: SEXEC006.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC006.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 6;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 6;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 6;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.8 SAIL TASK SEXEC007.sai

```
// SEXEC007.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 7
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC007.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC007.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
```

```
{
    int intVal = 7;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 7;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 7;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.9 SAIL TASK SEXEC008.sai

```
// SEXEC008.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 8
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC008.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC008.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 8;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 8;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 8;
        put_int(taskVal,FORMAT_DEC);
```

```
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.10 SAIL TASK SEXEC009.sai

```
// SEXEC009.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 9
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC009.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC009.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 9;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 9;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 9;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.11 SAIL TASK SEXEC010.sai

```
// SEXEC010.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 10
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 10;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 10;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 10;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.12 SAIL TASK SEXEC011.sai

```
// SEXEC011.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 11
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC011.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC011.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
```

```
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 11;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 11;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 11;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.13 SAIL TASK SEXEC012.sai

```
// SEXEC012.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 12
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC012.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC012.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 12;
      int taskID;
      int taskVal;
    int runCount = 0;
```

```
    taskVal = 12;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 12;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.14 SAIL TASK SEXEC013.sai

```
// SEXEC013.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 13
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC013.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC013.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 13;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 13;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 13;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
```

```
            wait_frame(0);
        else
            suspend(taskID);
        runCount = runCount + 1;
    }

}
```

9.1.4.6.15 SAIL TASK SEXEC014.sai

```
// SEXEC014.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 14
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC014.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC014.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 14;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 14;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 14;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(10);
            put_ascii(13);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.16 SAIL TASK SEXEC015.sai

```
// SEXEC015.sal test that SAIL can handle 16 tasks
//              Compile, assemble, load, run and as task 15
//              SAIL display should show the tasks as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC015.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC015.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 15;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 15;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 15;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.17 SAIL TASK SEXEC016.sai

```
// SEXEC016.sal test that SAIL can handle a reserve tasks
//              Compile, assemble and load into memory locations 20 for code and
144 for data.
//              With 16 task loaded and running kill task 1 and creat a new task
1 from this task then run it
//              SAIL display should show the task as ready or waiting
//              and the number of runs increase up to 15
// $Id: SEXEC016.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC016.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
```

```
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;
      int taskVal;
    int runCount = 0;

    taskVal = 1;
      while(TRUE)
      {

            taskID = whoami();
            taskVal = 1;
        put_int(taskVal,FORMAT_DEC);
            put_ascii(44);
            put_int(16,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            if(runCount < 16)
                wait_frame(0);
            else
                suspend(taskID);
            runCount = runCount + 1;
      }

}
```

9.1.4.6.18 SAIL TASK SEXEC020.sai

```
// SEXEC020.sal load sail shared memory and Engneering data
//              Compile, assemble, load as task 0 - 15, run all 16 tasks
//              Check SAIL paramiters is diagnostic item 0 count for 0 to 0xFF
//              Check SAILprm display shared memory = address and engneering = 8
to 15
//
// $Id: SEXEC020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SEXEC020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

void main(void)
{
    int intVal = 1;
      int taskID;
      int taskVal;
    int index;

    taskVal = 0;
```

```
      taskID = whoami();
      while(TRUE)
      {
         for(index=0;index<16;index = index + 1)
               _shared[index + taskID*16] = index + taskId*16;
            if(taskID < 8)
                  _shared[taskID + 256] = taskID + 256;
            else
                  _eng[taskID - 8] = taskID;
            put_int(taskID,FORMAT_DEC);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.7 SFERR Test Case

9.1.4.7.1 SAIL TASK SFERR010.sai

```
// SFERR010.c test SAIL user defined error function
//           Compile, assemble, load and run, generates two SE_ERR_Divide_By_0s
and kills the task
// $Id: SFERR010.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SFERR010.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

int intVal;
int errorType;

int ERR_Dual_Errors = -19;
int ERR_No_Resume = -20;
int ERR_Call_During_Error = -21;
int ERR_Ret_During_Error = -22;
int ERR_Error_Kill = -23;

void function(void);

void main(void)
{

      intVal = 1;
      int taskID;
    int errorVal;

      while(TRUE)
```

```
      {
         // generate error to be handled by the error function
            // only one of the error can be generated at a time
            errorType = ERR_Dual_Errors;          // "Multiple Errors" OK
        errorVal = 1/0;
            errorType = ERR_No_Resume;            // "Can Not Resume" ?
        // errorVal = 1/0;
            errorType = ERR_Ret_During_Error;     // "Return in (error)" OK
        // errorVal = 1/0;
            errorType = ERR_Error_Kill;           // "Task Error Killed" OK
        // errorVal = 1/0;
            // the fucnction call must be add to the asseble code
            errorType = ERR_Call_During_Error;    // "Call in (error)" OK
        //errorVal = 1/0;

            // check error output from sail
            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

void function(void)
{

}

void error(void)
{
    int errorVal;

      if(_error_last_time == _error_location)
          error_kill();

    if(_error_type == ERR_Divide_By_0)
      {
            if(errorType == ERR_Dual_Errors)
                  error_retry();
            if(errorType == ERR_No_Resume)
                  errorVal = 1/0;
            if(errorType == ERR_Call_During_Error)
                  ;// function(); // must be added in assembler "CALL function"
            if(errorType == ERR_Ret_During_Error)
                  return;
            if(errorType == ERR_Error_Kill)
                  error_kill(); // kill the task, error is repeating

      }

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.7.2 SAIL TASK SFERR020.sai

```
// SFERR020.c test SAIL user defined error function
//              Compile, assemble, load and run, generates two SE_ERR_Divide_By_0,
and kills the task
//
// $Id: SFERR020.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SFERR020.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

int intVal;
int errorType;

int ERR_Dual_Errors = -19;
int ERR_No_Resume = -20;
int ERR_Call_During_Error = -21;
int ERR_Ret_During_Error = -22;
int ERR_Error_Kill = -23;

void function(void);

void main(void)
{

      intVal = 1;
      int taskID;
    int errorVal;

      while(TRUE)
      {
          // generate error to be handled by the error function
            // only one of the error can be generated at a time
            errorType = ERR_Dual_Errors;         // "Multiple Errors" OK
        // errorVal = 1/0;
            errorType = ERR_No_Resume;           // "Can Not Resume" ?
        errorVal = 1/0;
            errorType = ERR_Ret_During_Error;    // "Return in (error)" OK
        // errorVal = 1/0;
            errorType = ERR_Error_Kill;          // "Task Error Killed" OK
        // errorVal = 1/0;
            // the fucnction call must be add to the asseble code
            errorType = ERR_Call_During_Error;   // "Call in (error)" OK
        //errorVal = 1/0;

            // check error output from SAIL
            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

void function(void)
```

```
{

}

void error(void)
{
    int errorVal;

      if(_error_last_time == _error_location)
          error_kill();

    if(_error_type == ERR_Divide_By_0)
      {
            if(errorType == ERR_Dual_Errors)
                  error_retry();
            if(errorType == ERR_No_Resume)
                  errorVal = 1/0;
            if(errorType == ERR_Call_During_Error)
                  ;// function(); // must be added in assembler "CALL function"
            if(errorType == ERR_Ret_During_Error)
                  return;
            if(errorType == ERR_Error_Kill)
                  error_kill(); // kill the task, error is repeating

      }

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.7.3 SAIL TASK SFERR030.sai

```
// SFERR030.c test SAIL user defined error function
//            Compile, assemble, load and run, generates a SE_ERR_Divide_By_0, a
SE_ERR_Ret_During_Error and kills the task
//
// $Id: SFERR030.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SFERR030.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

int intVal;
int errorType;

int ERR_Dual_Errors = -19;
int ERR_No_Resume = -20;
int ERR_Call_During_Error = -21;
int ERR_Ret_During_Error = -22;
int ERR_Error_Kill = -23;

void function(void);
```

```
void main(void)
{

      intVal = 1;
      int taskID;
    int errorVal;

      while(TRUE)
      {
            // generate error to be handled by the error function
              // only one of the error can be generated at a time
              errorType = ERR_Dual_Errors;          // "Multiple Errors" OK
        // errorVal = 1/0;
              errorType = ERR_No_Resume;            // "Can Not Resume" ?
        // errorVal = 1/0;
              errorType = ERR_Ret_During_Error;     // "Return in (error)" OK
        errorVal = 1/0;
              errorType = ERR_Error_Kill;           // "Task Error Killed" OK
        // errorVal = 1/0;
              // the fucnction call must be add to the asseble code
              errorType = ERR_Call_During_Error;    // "Call in (error)" OK
        //errorVal = 1/0;

              // check error output from SAIL
              taskID = whoami();
        put_ascii(taskID + 48);
              put_ascii(13);
              put_ascii(10);
              suspend(taskID);
              // check the intArray
      }

}

void function(void)
{

}

void error(void)
{
    int errorVal;

      if(_error_last_time == _error_location)
          error_kill();

    if(_error_type == ERR_Divide_By_0)
      {
              if(errorType == ERR_Dual_Errors)
                    error_retry();
              if(errorType == ERR_No_Resume)
                    errorVal = 1/0;
              if(errorType == ERR_Call_During_Error)
                    ;// function(); // must be added in assembler "CALL function"
              if(errorType == ERR_Ret_During_Error)
                    return;
              if(errorType == ERR_Error_Kill)
                    error_kill(); // kill the task, error is repeating

      }
```

```
      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.7.4 SAIL TASK SFERR040.sai

```
// SFERR040.c test SAIL user defined error function
//            Compile, assemble, load and run, generates a SE_ERR_Divide_By_0, a
ERR_Error_Kill and kills the task
//
// $Id: SFERR040.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SFERR040.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

int intVal;
int errorType;

int ERR_Dual_Errors = -19;
int ERR_No_Resume = -20;
int ERR_Call_During_Error = -21;
int ERR_Ret_During_Error = -22;
int ERR_Error_Kill = -23;

void function(void);

void main(void)
{

      intVal = 1;
      int taskID;
    int errorVal;

      while(TRUE)
      {
          // generate error to be handled by the error function
            // only one of the error can be generated at a time
            errorType = ERR_Dual_Errors;          // "Multiple Errors" OK
        // errorVal = 1/0;
            errorType = ERR_No_Resume;            // "Can Not Resume" ?
        // errorVal = 1/0;
            errorType = ERR_Ret_During_Error;     // "Return in (error)" OK
        // errorVal = 1/0;
            errorType = ERR_Error_Kill;           // "Task Error Killed" OK
        errorVal = 1/0;
            // the fucnction call must be add to the asseble code
            errorType = ERR_Call_During_Error;    // "Call in (error)" OK
        //errorVal = 1/0;

            // check error output from SAIL
```

```
            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
            // check the intArray
      }

}

void function(void)
{

}

void error(void)
{
    int errorVal;

      if(_error_last_time == _error_location)
          error_kill();

    if(_error_type == ERR_Divide_By_0)
      {
            if(errorType == ERR_Dual_Errors)
                  error_retry();
            if(errorType == ERR_No_Resume)
                  errorVal = 1/0;
            if(errorType == ERR_Call_During_Error)
                  ;// function(); // must be added in assembler "CALL function"
            if(errorType == ERR_Ret_During_Error)
                  return;
            if(errorType == ERR_Error_Kill)
                  error_kill(); // kill the task, error is repeating

      }

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.7.5 SAIL TASK SFERR050.sai

```
// SFERR050.c test SAIL user defined error function
//             Compile, assemble, load and run, generates a SE_ERR_Divide_By_0, a
SE_ERR_Call_During_Error and kills the task
//
// $Id: SFERR050.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SFERR050.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */
```

```
int intVal;
int errorType;

int ERR_Dual_Errors = -19;
int ERR_No_Resume = -20;
int ERR_Call_During_Error = -21;
int ERR_Ret_During_Error = -22;
int ERR_Error_Kill = -23;

void function(void);

void main(void)
{

      intVal = 1;
      int taskID;
    int errorVal;

      while(TRUE)
      {
          // generate error to be handled by the error function
            // only one of the error can be generated at a time
            errorType = ERR_Dual_Errors;          // "Multiple Errors" OK
        // errorVal = 1/0;
            errorType = ERR_No_Resume;            // "Can Not Resume" ?
        //errorVal = 1/0;
            errorType = ERR_Ret_During_Error;     // "Return in (error)" OK
        //errorVal = 1/0;
            errorType = ERR_Error_Kill;           // "Task Error Killed" OK
        // errorVal = 1/0;
            // the fucnction call must be add to the asseble code
            errorType = ERR_Call_During_Error;    // "Call in (error)" OK
        errorVal = 1/0;

            // check error output from SAIL
            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

void function(void)
{

}

void error(void)
{
    int errorVal;

      if(_error_last_time == _error_location)
          error_kill();

    if(_error_type == ERR_Divide_By_0)
      {
            if(errorType == ERR_Dual_Errors)
                  error_retry();
```

```
            if(errorType == ERR_No_Resume)
                  errorVal = 1/0;
            if(errorType == ERR_Call_During_Error)
                  ;// function(); // must be added in assembler "CALL function"
            if(errorType == ERR_Ret_During_Error)
                  return;
            if(errorType == ERR_Error_Kill)
                  error_kill(); // kill the task, error is repeating

      }

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.8 SFUN Test Case

9.1.4.8.1 SAIL TASK SFUN010.sai

```
// SFUN010.c test the running of a function including passing perimeters and
getting a return value
//             Compile, assemble, load, run and check the intArray 0x00 - 0x16
// $Id: SFUN010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SFUN010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


// function();

int intVal = 1;
int intArray[100];

// functions passing and retruning each type
logical           functionLogical(logical logicalVal);
void        functionVoid(void);
byte        functionByte(byte byteVal);
unsigned    functionUnsigned(unsigned unsignedVal);
int               functionInt(int intValue);
float       functionFloat(float floatVal);
void        functionArray(int arrayVal[4][3]);

// functions passing by refferncd for each type
void        functionLogicalReff(logical &logicalVal);
void        functionByteReff(byte &byteVal);
void        functionUnsignedReff(unsigned &unsignedVal);
void        functionIntReff(int &intValue);
void        functionFloatReff(float &floatVal);

// function with multiple peramiters
void functionMultiple(logical logicalVal
                            ,byte byteVal
                                  ,unsigned unsignedVal
                                  ,int passIntVal
```

```
                                ,float floatVal
                                ,int arrayVal[4][3] );

// uses the passed value and reff in different ways
void functionUsing(int passIntVal,int &reffIntVal ,int arrayVal[4][3] );

void main(void)
{
      logical logicalVal = TRUE;
      byte byteVal;
      unsigned unsignedVal;
      int passIntVal;
      float floatVal = 0.123;
      int taskID;

      int arrayVal[4][3];

    intVal = 1;

      while(TRUE)
      {
            intArray[intVal] = intVal;

            intVal = intVal + 1; // 0x02
            // logical type function call
            intArray[intVal] = -intVal;
            if(functionLogical(logicalVal) == FALSE) // 0x03
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x04
            intArray[intVal] = -intVal;
            if(functionLogical(FALSE) == TRUE) // 0x05
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x06
            functionVoid();   // 0x07
            byteVal = intVal - 1;
            intArray[intVal] = functionByte(byteVal);
            intVal = intVal + 1; // 0x08
            unsignedVal = intVal - 1;
            intArray[intVal] = functionUnsigned(unsignedVal);
            intVal = intVal + 1; // 0x09
            passIntVal = intVal - 1;
            intArray[intVal] = functionInt(passIntVal);
            // test that passIntVal did not change
            intVal = intVal + 1; // 0x0A
            if(passIntVal == intVal - 2)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x0B
            floatVal = floatVal + (intVal - 1);
            intArray[intVal] = functionFloat(floatVal);
            intVal = intVal + 1; // 0x0C
            arrayVal[2][1] = intVal - 1;
            functionArray(arrayVal);
```

```
            intArray[intVal] = arrayVal[1][2];

            // pass by refference
            intVal = intVal + 1; // 0x0D
            logicalVal = TRUE;
            functionLogicalReff(logicalVal);
            if(logicalVal == FALSE)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x0E
            byteVal = intVal - 1;
            functionByteReff(byteVal);
            intArray[intVal] = byteVal;
            intVal = intVal + 1; // 0x0F
            unsignedVal = intVal - 1;
            functionUnsignedReff(unsignedVal);
            intArray[intVal] = unsignedVal;
            intVal = intVal + 1; // 0x10
            passIntVal = intVal - 1;
            functionIntReff(passIntVal);
            intArray[intVal] = passIntVal;
            intVal = intVal + 1; // 0x11
            floatVal = 0.123 + (intVal - 1);
            functionFloatReff(floatVal);
            intArray[intVal] = floatVal;

            // function with multiple peramiters
            intVal = intVal + 1; // 0x12
            functionMultiple(logicalVal  // = 0
                                    ,byteVal     // = 14
                                    ,unsignedVal // = 15
                                    ,passIntVal  // = 16
                                    ,floatVal    // = 17.123
                                    ,arrayVal);

            arrayVal[1][1] = 0;
            arrayVal[2][2] = 0;
            intVal = intVal + 1; // 0x13
            passIntVal = intVal;
            functionUsing(passIntVal,passIntVal,arrayVal);
            if(arrayVal[1][1] == 0x14)
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;
                  intVal = intVal + 1; // 0x16
            if(arrayVal[2][2] == 0x15)
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

```
logical functionLogical(logical logicalVal)
{
            intArray[intVal] = intVal;
            intVal = intVal + 1;
      if(logicalVal == TRUE)
            return FALSE;

    return TRUE;
}

void functionVoid(void)
{
    intArray[intVal] = intVal;
      intVal = intVal + 1;

}

byte functionByte(byte byteVal)
{

    return(byteVal + 1);
}

unsigned functionUnsigned(unsigned unsignedVal)
{

      return(unsignedVal + 1);
}

int functionInt(int intValue)
{
      intValue = intValue + 1;
    return intValue;
}

float functionFloat(float floatVal)
{

      return(floatVal + 1);
}

void functionArray(int arrayVal[4][3])
{
      arrayVal[1][2] = arrayVal[2][1] + 1;
}

void functionLogicalReff(logical &logicalVal)
{
      logicalVal = FALSE;
}

void functionByteReff(byte &byteVal)
{
      byteVal = byteVal + 1;
}

void functionUnsignedReff(unsigned &unsignedVal)
{
      unsignedVal = unsignedVal + 1;
}
```

```
void functionIntReff(int &intValue)
{
      intValue = intValue + 1;
}

void functionFloatReff(float &floatVal)
{
      floatVal = floatVal + 1;
}

// function with multiple peramiters
void functionMultiple(logical logicalVal
                           ,byte byteVal
                                 ,unsigned unsignedVal
                                 ,int passIntVal
                                 ,float floatVal
                                 ,int arrayVal[4][3])
{
    intArray[0x20] = logicalVal + byteVal + unsignedVal + passIntVal +
arrayVal[1][2];
      intArray[0x21] = logicalVal;
      intArray[0x22] = byteVal;
      intArray[0x23] = unsignedVal;
      intArray[0x24] = passIntVal;
      intArray[0x25] = arrayVal[1][2];
    // 0          14        15           16            12  =
      if(logicalVal + byteVal + unsignedVal + passIntVal  + arrayVal[1][2]
         == intVal*4 - (2 + 3 + 4 + 6) )
       // 18*4 = 72
         intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;


}

// uses the passed value and reff in different ways
void functionUsing(int passIntVal, int &reffIntVal, int arrayVal[4][3])
{
      intVal = passIntVal; // 0x13
    intArray[passIntVal] = intVal;
      intVal = intVal + 1; // 0x14
      arrayVal[passIntVal - 0x12][passIntVal - 0x12] = intVal;    // 1X1

    intArray[reffIntVal + 1] = intVal;
      intVal = intVal + 1;  // 0x15
      arrayVal[reffIntVal - 0x11][reffIntVal - 0x11] = intVal; // 2X2

}
```

9.1.4.8.2 SAIL TASK SRTL010.sai

```
// SRTL010.sai test run time library functions
//            Compile, assemble, load with purpose = 0, run and check intArray
in memory   0x00 - 0x0D
```

```
//
// $Id: SRTL010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SRTL010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

#define MAX_MATH_ERROR 0.0000000000001
int intVal;
int intArray[0x20];

void main(void)
{
    int a;
    float z,x;
    byte b = 0x31;

    while(TRUE)
      {
          intVal = 1;

            z = atan2(1.0,1.0);
            x = PI/4.0;


            if(z >= x - MAX_MATH_ERROR && z <= x + MAX_MATH_ERROR)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x02
            a = abs(-2);
            if(a == 2)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x03
            z = fabs(-1.234);
            if(z >= 1.234 - MAX_MATH_ERROR && z <= 1.234 + MAX_MATH_ERROR)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x04
            z = sin(PI/2.0);
            if(z >= 1.0 - MAX_MATH_ERROR && z <= 1.0 + MAX_MATH_ERROR)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            put_int(1,FORMAT_DEC);
            put_ascii(41);
            put_ascii(32);
            put_float(z,FORMAT_SCI_FLOAT);
            put_ascii(61);
            put_float(x,FORMAT_SCI_FLOAT);
            put_ascii(13);
```

```
      put_ascii(10);

      intVal = intVal + 1; // 0x05
      z = cos(PI);
      if(z >= -1.0 - MAX_MATH_ERROR && z <= -1.0 + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;

      intVal = intVal + 1; // 0x06
      z = exp(1.0);
      x = 2.718281828459045;
      if(z >= x - MAX_MATH_ERROR && z <= x + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;

      intVal = intVal + 1; // 0x07
      z = ln(1.6487212707001);
      if(z >= 0.5 - MAX_MATH_ERROR && z <= 0.5 + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;

      intVal = intVal + 1; // 0x08
      z = sqrt(2.0);
      x = 1.414213562373;
      if(z >= x - MAX_MATH_ERROR && z <= x + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;

      intVal = intVal + 1; // 0x09
      z = asin(0.7071067811865);
      x = PI/4.0;
      if(z >= x - MAX_MATH_ERROR && z <= x + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;

      intVal = intVal + 1; // 0x0A
      z = acos(0.7071067811865);
      x = PI/4.0;
      if(z >= x - MAX_MATH_ERROR && z <= x + MAX_MATH_ERROR)
         intArray[intVal] = intVal;
      else
         intArray[intVal] = -intVal;


      put_byte(b,FORMAT_HEX);
      put_logical(TRUE);
      put_int(a,FORMAT_BINARY);
      put_float(z,FORMAT_SCI_FLOAT);
      put_ascii(65);
   put_unsigned(12345,FORMAT_DEC);
      //b = get_ascii(); // ##### TJS this function is not implemented

      intVal = intVal + 1; // 0x0B
      a = fix(1.234);
      if(a == 1)
         intArray[intVal] = intVal;
```

```
            else
               intArray[intVal] = -intVal;

            nop();
            intVal = intVal + 1; // 0x0C
            z = real(1);
            if(z >= 1.0 - MAX_MATH_ERROR && z <= 1.0 + MAX_MATH_ERROR)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

            // send(); handled in SCOM010.sai
            intVal = intVal + 1; // 0x0D
            a = whoami();
            b = purpose(a);
            if(b == 0)
               intArray[intVal] = intVal;
            else
               intArray[intVal] = -intVal;

        put_ascii(a + 48);
            put_ascii(13);
            put_ascii(10);
        suspend(a);
      }

}
```

9.1.4.9 SIERR Test Case

9.1.4.9.1 SAIL TASK SIERR010.sai

```
// SIERR010.sai test that sail interpeter handles error correctly
//              Compile, assemble, load, run and check intArray in memory 0x00 -
0x06
//              This task generates errors
// $Id: SIERR010.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SIERR010.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

int intArray[0x10];
int intVal;
int error_type;
```

```
void main(void)
{
      intVal = 1;
      int taskID;

      int passIntVal = 2147483647;
      float floatVal = 1.797693134862315E+308;

      while(TRUE)
      {
          error_type = ERR_Domain;                    // Domain Error -2,254
            floatVal = ln(-1);
            //intVal = intVal + 1; // 0x02

          error_type = ERR_Divide_By_0;                // Divide by 0 -3,253
            passIntVal = passIntVal/0;
            //intVal = intVal + 1; // 0x03

          error_type = ERR_Bad_Index;                       // Bad Index -5,251
            intArray[0x11] = 1;
            //intVal = intVal + 1; // 0x04

          error_type = ERR_Mem_Read;                  // Mem Read Error -7,249
        intArray[9] = read_mem(0x02000001);
            //intVal = intVal + 1; // 0x05

          error_type = ERR_Mem_Write;                 // Mem Write Error -8,248
        _shared[0x18] = 1;
            //intVal = intVal + 1; // 0x06

          error_type = ERR_Bad_RTL;                   // Bad RTL Call -6,250
        bad_RTL();
            //intVal = intVal + 1; // 0x07

        // this gives a compiler error
            /*
          error_type = ERR_comm_write;                // Write to a read only
communication vareable
        _maf = 1;
            //intVal = intVal + 1; // 0x08
        */

            // this will cause a "Over Time"
          // error_type = ERR_Over_Time;               // Over Time -18,238
        // while(TRUE);
            // loading any task following this task         // Not Run
            // should generate a "Not Run"

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

void error(void)
{
    int local_error_type;
```

```
      local_error_type = error_type;
    put_int(local_error_type,FORMAT_DEC);
      if(_error_last_time == _error_location)
            error_kill();
      if(_error_type == error_type)
          intArray[intVal] = intVal;
      else
            intArray[intVal] = _error_type;

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.10 SMEM Test Case

9.1.4.10.1 SAIL TASK SMEM010.sai

```
// SMEM010.sai is a sail test program
//              it write 0x12345678 - index to 0x10 memory location;
//              it write 0x12345678 - index to 0x10 shared memory location;
//              IP pointer commented out must know location and input it befor
the compile
//              it write 0x12345678 - index to one IP memory location;
//              Check the SAIL memory above
//              Check intArray[0x01 - 0x40]
// $Id: SMEM010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SMEM010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

#define myvariable 0x12345678

void main(void)
{
    int MemoryArray[0x10];
    int index;
      int taskID;
      int location;
      int intVal;
      int intArray[100];

      while(TRUE)
      {
        intVal = 0;
            taskID = whoami();

        /*******************************************************/
        // write info

        // this task's write area
            for (index = 0; index<0x10; index = index + 1)
            {
                  _shared[(taskID*16) + index] = myvariable - index;
            }
```

```
        // any task write area
            for (index = 0; index<0x10; index = index + 1)
            {
                    _shared[(16*16) + index] = myvariable - index;
            }

            for (index = 0; index<0x10; index = index + 1)
            {
                     _command[index] = myvariable - index;
            }

            for (index = 0; index<0x10; index = index + 1)
            {
                    MemoryArray[index] = myvariable - index;
            }
/*
            location = 0x51a488;

                    write_mem(location,myvariable);
*/
        /*********************************************************/
        // read info;

        // this task's write area
            for (index = 0; index<0x10; index = index + 1)
            {
            intVal = intVal + 1; // 0x01 - 0x10
                  if(_shared[(taskID*16) + index] == myvariable - index)
                      intArray[intVal] = intVal;
                  else
                      intArray[intVal] = -intVal;
            }

        // any task write area
            for (index = 0; index<0x10; index = index + 1)
            {
            intVal = intVal + 1; // 0x11 - 0x20
                  if(_shared[(16*16) + index] == myvariable - index)
                      intArray[intVal] = intVal;
                  else
                      intArray[intVal] = -intVal;
            }

            for (index = 0; index<0x10; index = index + 1)
            {
            intVal = intVal + 1; // 0x21 - 0x30
                  if(_command[index] == myvariable - index)
                      intArray[intVal] = intVal;
                  else
                      intArray[intVal] = -intVal;
            }

            for (index = 0; index<0x10; index = index + 1)
            {
            intVal = intVal + 1; // 0x31 - 0x40
                  if(MemoryArray[index] == myvariable - index)
                        intArray[intVal] = intVal;
                  else
                        intArray[intVal] = -intVal;
            }
```

```
            location = 0x14BCDC;

        intVal = intVal + 1; // 0x41
            if(read_mem(location) == myvariable)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);

      }

}
```

9.1.4.11 SNST Test Case

9.1.4.11.1 SAIL TASK SNST010.sai

```
// SNST010.sal test for correct handling of the maximum nesting depth
//              Compile, assemble, load, run and check the intArray 0x01 - 0x3E
// $Id: SNST010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SNST010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


//

int intMainValue = 1;
int intArray[0x100];

int function01(int &intVal);
int function02(int &intVal);
int function03(int &intVal);
int function04(int &intVal);
int function05(int &intVal);
int function06(int &intVal);
int function07(int &intVal);
int function08(int &intVal);
int function09(int &intVal);
int function10(int &intVal);
int function11(int &intVal);
int function12(int &intVal);
int function13(int &intVal);
int function14(int &intVal);
int function15(int &intVal);
int function16(int &intVal);
```

```
int function17(int &intVal);
int function18(int &intVal);
int function19(int &intVal);
int function20(int &intVal);
int function21(int &intVal);
int function22(int &intVal);
int function23(int &intVal);
int function24(int &intVal);
int function25(int &intVal);
int function26(int &intVal);
int function27(int &intVal);
int function28(int &intVal);
int function29(int &intVal);
int function30(int &intVal);
int function31(int &intVal);
int function32(int &intVal);

void main(void)
{
      int taskID;
      int temp;

      while(TRUE)
      {
        intMainValue = 1;
            temp = function01(intMainValue);
        intArray[intMainValue] = temp;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

int function01(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x02
       temp = function02(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3E
     return intVal;
}

int function02(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x03
       temp = function03(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3D
     return intVal;
}
```

```
int function03(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x04
       temp = function04(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3C
     return intVal;
}

int function04(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; //0x05
       temp = function05(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3B
     return intVal;
}

int function05(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x06
       temp = function06(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3A
     return intVal;
}

int function06(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x07
       temp = function07(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x39
     return intVal;
}

int function07(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x08
       temp = function08(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x38
     return intVal;
}

int function08(int &intVal)
```

```
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x09
       temp = function09(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x37
     return intVal;
}

int function09(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0A
       temp = function10(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x36
     return intVal;
}

int function10(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0B
       temp = function11(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x35
     return intVal;
}

int function11(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0C
       temp = function12(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x34
     return intVal;
}

int function12(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0D
       temp = function13(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x33
     return intVal;
}

int function13(int &intVal)
{
```

```
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0E
       temp = function14(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x32
     return intVal;
}

int function14(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x0F
       temp = function15(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x31
     return intVal;
}

int function15(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x10
       temp = function16(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x30
     return intVal;
}

int function16(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x11
       temp = function17(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x2F
     return intVal;
}

int function17(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x12
       temp = function18(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x2E
     return intVal;
}

int function18(int &intVal)
{
     int temp;
```

```
        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x13
        temp = function19(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2D
      return intVal;
}

int function19(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x14
        temp = function20(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2C
      return intVal;
}

int function20(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x15
        temp = function21(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2B
      return intVal;
}

int function21(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x16
        temp = function22(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2A
      return intVal;
}

int function22(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x17
        temp = function23(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x09
      return intVal;
}

int function23(int &intVal)
{
      int temp;
```

```
        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x18
        temp = function24(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x28
      return intVal;
}

int function24(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x19
        temp = function25(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x27
      return intVal;
}

int function25(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x1A
        temp = function26(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x26
      return intVal;
}

int function26(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x1B
        temp = function27(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x25
      return intVal;
}

int function27(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x1C
        temp = function28(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x24
      return intVal;
}

int function28(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
```

```
        intVal = intVal + 1; // 0x1D
        temp = function29(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x23
      return intVal;
}

int function29(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x1E
        temp = function30(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x22
      return intVal;
}

int function30(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x1F
        temp = function31(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x21
      return intVal;
}

int function31(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x20
        //temp = function32(intVal);
        //intArray[intVal] = temp;
        //intVal = intVal + 1;
      return intVal;
}

int function32(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1;
      return intVal;
}
```

9.1.4.11.2 SAIL TASK SNSTERR.sai

```
// SNSTERR.sal test for correct handling of over maximum nesting depth error
//              Compile only
// Tested OK 06/01/01 TJS
// $Id: SNSTERR.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SNSTERR.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//             Check for "Call Overrun" error
/******************************** ERROR FILE ****************************

Error: Calling depth may not exceed 32. While calling function function32 this
 limit was exceeded.
Error:  Line: 436 Column: 10 File: SNSTERR.sai
*/


int intMainValue = 1;
int intArray[0x100];

int function01(int &intVal);
int function02(int &intVal);
int function03(int &intVal);
int function04(int &intVal);
int function05(int &intVal);
int function06(int &intVal);
int function07(int &intVal);
int function08(int &intVal);
int function09(int &intVal);
int function10(int &intVal);
int function11(int &intVal);
int function12(int &intVal);
int function13(int &intVal);
int function14(int &intVal);
int function15(int &intVal);
int function16(int &intVal);
int function17(int &intVal);
int function18(int &intVal);
int function19(int &intVal);
int function20(int &intVal);
int function21(int &intVal);
int function22(int &intVal);
int function23(int &intVal);
int function24(int &intVal);
int function25(int &intVal);
int function26(int &intVal);
int function27(int &intVal);
int function28(int &intVal);
int function29(int &intVal);
int function30(int &intVal);
int function31(int &intVal);
int function32(int &intVal);

void main(void)
```

```
{
      int taskID;
      int temp;

      while(TRUE)
      {
        intMainValue = 1;
            temp = function01(intMainValue);
        intArray[intMainValue] = temp;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
            // This should generate a "Call Overrun" error
      }

}

int function01(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x02
       temp = function02(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3E
     return intVal;
}

int function02(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x03
       temp = function03(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3D
     return intVal;
}

int function03(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x04
       temp = function04(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x3C
     return intVal;
}

int function04(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
```

```
        intVal = intVal + 1; //0x05
        temp = function05(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x3B
      return intVal;
}

int function05(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x06
        temp = function06(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x3A
      return intVal;
}

int function06(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x07
        temp = function07(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x39
      return intVal;
}

int function07(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x08
        temp = function08(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x38
      return intVal;
}

int function08(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x09
        temp = function09(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x37
      return intVal;
}

int function09(int &intVal)
{
      int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0A
```

```
        temp = function10(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x36
     return intVal;
}

int function10(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0B
        temp = function11(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x35
     return intVal;
}

int function11(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0C
        temp = function12(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x34
     return intVal;
}

int function12(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0D
        temp = function13(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x33
     return intVal;
}

int function13(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0E
        temp = function14(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x32
     return intVal;
}

int function14(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x0F
        temp = function15(intVal);
```

```
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x31
      return intVal;
}

int function15(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x10
        temp = function16(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x30
      return intVal;
}

int function16(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x11
        temp = function17(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2F
      return intVal;
}

int function17(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x12
        temp = function18(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2E
      return intVal;
}

int function18(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x13
        temp = function19(intVal);
        intArray[intVal] = temp;
        intVal = intVal + 1; // 0x2D
      return intVal;
}

int function19(int &intVal)
{
     int temp;

        intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x14
        temp = function20(intVal);
        intArray[intVal] = temp;
```

```
       intVal = intVal + 1; // 0x2C
     return intVal;
}

int function20(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x15
       temp = function21(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x2B
     return intVal;
}

int function21(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x16
       temp = function22(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x2A
     return intVal;
}

int function22(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x17
       temp = function23(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x09
     return intVal;
}

int function23(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x18
       temp = function24(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x28
     return intVal;
}

int function24(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x19
       temp = function25(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x27
```

```
     return intVal;
}

int function25(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1A
       temp = function26(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x26
     return intVal;
}

int function26(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1B
       temp = function27(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x25
     return intVal;
}

int function27(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1C
       temp = function28(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x24
     return intVal;
}

int function28(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1D
       temp = function29(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x23
     return intVal;
}

int function29(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1E
       temp = function30(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x22
     return intVal;
```

```
}

int function30(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x1F
       temp = function31(intVal);
       intArray[intVal] = temp;
       intVal = intVal + 1; // 0x21
     return intVal;
}

int function31(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1; // 0x20
       temp = function32(intVal);    // This call should generate a "Call
Overrun" error
       intArray[intVal] = temp;
       intVal = intVal + 1;
     return intVal;
}

int function32(int &intVal)
{
     int temp;

       intArray[intVal] = intVal;
       intVal = intVal + 1;
     return intVal;
}
```

9.1.4.12 SOP Test Case

9.1.4.12.1 SAIL TASK SOP010.sai

```
// SOP010.sal test verifys that SAIL handles all types of operators
//           Compile, assemble, load, run and check all of SAIL memory 0x01 -
0x60
// $Id: SOP010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SOP010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


// + - * / %
// -
// << >> ~ & ^ |
```

```
// == != < > <= >=
// ! && ||
// [] ()
// =

#define MAX_MATH_ERROR 0.0000000000001
int function(int input);
logical funcTrue(logical input);
unsigned funcUnsigned(unsigned input);

void main(void)
{
    int intArray[0x200];
    int intVal = 1;
      int resault;
      int array[10];
      unsigned unsignedArray[10];
      int taskID;
      unsigned unsignedOne,unsignedTwo;

      while(TRUE)
      {
            // operators
            if(10 + 10 == 20)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x02
            if(10 - 10 == 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x03
            if(10*10 == 100)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x04
            if(10/10 == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x05
            if(11%10 == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x06

            if(5 - 10 == -5)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x07

            if(0x10 << 4 == 0x100)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x08
            if(0x10 >> 4 == 0x1)
```

```
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x09
      unsignedOne = 0x1234; // 0b1010101010101010;
      unsignedTwo = 0xEDCB; // 0b1010101010101010;
      if(~unsignedTwo == unsignedOne)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0A
      if((0x7FFF0000 & 0x7F00FF00) == 0x7F000000)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0B
      if(0x7FFF0000 ^ 0x7F00FF00 == 0xFFFF00)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0C
      if(0x7FFF0000 | 0x7F00FF00 == 0x7FFFFF00)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0D

      if(10 == 10)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0E
      if(10 != 11)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x0F
      if(10 < 11)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x10
      if(11 > 10)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x11
      if(10 <= 10)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x12
      if(10 <= 11)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x13
      if(10 >= 10)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
```

```
intVal = intVal + 1; // 0x14
if(11 >= 10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x15

if(!FALSE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x16
if(TRUE && TRUE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x17
if(TRUE && FALSE) // S/B FALSE
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x18
if(FALSE && TRUE) // S/B FALSE
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x19
if(FALSE && FALSE) // S/B FALSE
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x1A
if(TRUE || TRUE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x1B
if(TRUE || FALSE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x1C
if(FALSE || TRUE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x1D
if(FALSE || FALSE) // S/B FALSE
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x1E

if(3*(2 + 1) == 9)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x1F

resault = 10;
if(resault == 10)
```

```
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x20

      // precedence
      // 6th priority befor 7th priority
      if(FALSE && FALSE == FALSE)   // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x21
      if(TRUE || TRUE == FALSE)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x22
      if(FALSE && FALSE != TRUE)    // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x23
      if(TRUE || TRUE != TRUE)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x24
      if(FALSE && FALSE < TRUE)     // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x25
      if(TRUE || TRUE < TRUE)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x26
      if(FALSE && TRUE > FALSE)     // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x27
      if(TRUE || TRUE > TRUE)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x28
      if(FALSE && FALSE <= TRUE)    // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x29
      if(TRUE || TRUE <= FALSE)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x2A
      if(FALSE && TRUE >= FALSE)    // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
```

```
intVal = intVal + 1; // 0x2B
if(FALSE >= TRUE || TRUE)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x2C

// 5th priority befor 6th priority
if(0x10 == 0x1 << 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x2D
if(0x10 != 0x10 << 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x2E
if(0x10 < 0x10 << 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x2F
if(0x10 > 0x1 << 4) // S/B FALSE
intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x30
if(0x10 <= 0x1 << 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x31
if(0x1 >= 0x1 << 4)     // S/B FALSE
intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x32

if(0x10 == 0x100 >> 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x33
if(0x10 != 0x10 >> 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x34
if(0x1 < 0x100 >> 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x35
if(0x10 > 0x10 >> 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x36
if(0x10 <= 0x100 >> 4)
      intArray[intVal] = intVal;
```

```
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x37
        if(0x1 >= 0x10 >> 4)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x38

        if(0x10 == 0x11 & 0x10)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x39
        if(0x10 != 0x10 & 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x3A
        if(0x10 < 0x11 & 0x1) // S/B FALSE
        intArray[intVal] = -intVal;
        else
              intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x3B
        if(0x11 > 0x11 & 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x3C
        if(0x11 <= 0x11 & 0x1) // S/B FALSE
        intArray[intVal] = -intVal;
        else
              intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x3D
        if(0x10 >= 0x11 & 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x3E

        if(0x11 == 0x1 ^ 0x1) // S/B FALSE
        intArray[intVal] = -intVal;
        else
              intArray[intVal] = intVal;
        intVal = intVal + 1; // 0x3F
        if(0 != 0x11 ^ 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x40
        if(0x10 < 0x110 ^ 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x41
        if(0x11 > 0x1 ^ 0x1)
              intArray[intVal] = intVal;
        else
              intArray[intVal] = -intVal;
        intVal = intVal + 1; // 0x42
        if(0x10 <= 0x11 ^ 0x1)
```

```
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x43
      if(0x11 >= 0x11 ^ 0x1)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x44

      if(0x10 == 0x10 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x45
      if(0x11 != 0x10 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x46
      if(0x11 < 0x10 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x47
      if(0x11 > 0x11 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x48
      if(0x11 <= 0x1 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x49
      if(0x10 >= 0x10 | 0x1) // S/B FALSE
      intArray[intVal] = -intVal;
      else
            intArray[intVal] = intVal;
      intVal = intVal + 1; // 0x4A

      // 4th priority befor 5th priority
      if(0x1 << 3 + 1 == 0x10)
      intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x4B
      if(0x10 >> 3 + 1 == 0x1)
      intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x4C
      if(0x10 & 0xF + 1 == 0x10)
      intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
      intVal = intVal + 1; // 0x4D
      if(0x10 ^ 0xF + 1 == 0)
            intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;
```

```
intVal = intVal + 1; // 0x4E
if(0x10 | 0xF + 1 == 0x10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x4F

if(0x1 << 5 - 1 == 0x10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x50
if(0x10 >> 5 - 1 == 0x1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x51
if(0x10 & 0x11 - 1 == 0x10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x52
if(0xF ^ 0x10 - 1 == 0)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x53
if(0xF | 0x10 - 1 == 0xF)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x54

// 3rd priority befor 4th priority
if(1 + 2*3 == 7)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x55
if(4 - 2*3 == -2)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x56
if(1 + 12/4 == 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x57
if(4 - 12/4 == 1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x58
if(1 + 11%4 == 4)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x59
if(1 - 12%4 == 1)
intArray[intVal] = intVal;
```

```
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x5A

            // 2nd priority befor 3rd priority
            unsignedOne = 0xEDCB;
            unsignedTwo = 0x1234;
            if(~unsignedOne*2 == unsignedTwo*2)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x5B

            // 1st priority befor 2nd priority
            // () already tested
            // if(-fabs(4.0) == -4.0)
            if(-abs(4) == -4)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -1; //-intVal;
            intVal = intVal + 1; // 0x5C
            array[4] = 5;
            if(-array[4] == -5)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;  // 0x5D
            if(!funcTrue(FALSE) == FALSE)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x5E
            array[FALSE] = TRUE;
            array[TRUE] = TRUE;
            if(!array[TRUE]   == FALSE)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x5F
            unsignedArray[1] = 0x1234;
            unsignedOne = 0xEDCB;
            if(~unsignedArray[1] == unsignedOne)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x60
            unsignedOne = 0xEDCB;
            if(~funcUnsigned(unsignedOne) == unsignedOne)
            intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

```
int function(int input)
{
       return input*4;
}

logical funcTrue(logical input)
{
       return TRUE;
}

unsigned funcUnsigned(unsigned input)
{
     return 0x1234;
}
```

9.1.4.12.2 SAIL TASK SOP020.sai

```
// SOP020.sal test verifys that SAIL handles all types of operators
//            Compile, assemble, load, run and check all of SAIL memory 0x01 -
0x1D
// $Id: SOP020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: SOP020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


// + - * / %
// -
// << >> ~ & ^ |
// == != < > <= >=
// ! && ||
// [] ()
// =

int function(int input);
logical funcTrue(logical input);

void main(void)
{
    int intArray[0x100];
    int intVal = 0;
      int resault;
      int array[10];
      int taskID;

      while(TRUE)
      {
            // operators
            if(-10 + 10 == 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1; // 0x01
```

```
if(-10 - 10 == -20)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x02
if(-10*10 == -100)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x03
if(-10/10 == -1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x04
if(-11%10 == -1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x05

if(-5 - 10 == -15)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x06

if(-10 == -10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x07
if(-10 != -11)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x08
if(-10 > -11)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x09
if(-11 < -10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x0A
if(-10 >= -10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x0B
if(-10 >= -11)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x0C
if(-10 <= -10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
```

```
intVal = intVal + 1; // 0x0D
if(-11 <= -10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x0E


// operators
if(-10 + -10 == -20)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x0F
if(-10 - -10 == 0)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x10
if(-10*-10 == 100)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x11
if(-10/-10 == 1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x12
if(-11%-10 == 1)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x13

if(-5 - -10 == 5)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x14

if(-10 == 10)
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x15
if(-10 != -10)
      intArray[intVal] = -intVal;
else
      intArray[intVal] = intVal;
intVal = intVal + 1; // 0x16
if(10 > -11)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1; // 0x17
if(-11 < 10)
      intArray[intVal] = intVal;
else
      intArray[intVal] = -intVal;
intVal = intVal + 1;// 0x18
```

```
            if(!~-1 == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x19

            if(~-!1 == -1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x1A

            if(4 - 2 + 2 == 4)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x1B

            if(11*5/7%3 == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x1C


            if(0xFFFFFFFF << 16 | 0xEE & 0x00FF00FF ^ 0x0055AA00 >> 1 ==
0x00555577)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x1D

            if(FALSE && FALSE || TRUE == TRUE)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;
            intVal = intVal + 1;// 0x1E


            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}

int function(int input)
{
      return input*4;
}

logical funcTrue(logical input)
{
      return TRUE;
}
```

9.1.4.13 SOVR Test Case

9.1.4.13.1 SAIL TASK SOVR010.sai

```
// SOVR010.c test SAIL user defined error function, overflows and underflows
//            Compile, assemble, load, run and check intArray in memory 0x00 -
0x12
//            Check errors in SAIL display
// $Id: SOVR010.sai 1.2 2002/06/16 12:17:42 jpriley Exp $
/*
 * $Log: SOVR010.sai $
 * Revision 1.2  2002/06/16 12:17:42  jpriley
 * Removed obsolete error function prototype.
 *
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

int intArray[0x20];
int errorArray[0x20];
int intVal;

void main(void)
{
      intVal = 1;
      int taskID;
    float floatVal;

      logical logicalVal;
      byte byteVal;
      unsigned unsignedVal;
      int passIntVal;

      while(TRUE)
      {
            // logical
            logicalVal = 2;
            if(logicalVal == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x02
            logicalVal = FALSE;
            logicalVal = logicalVal - 1;
            if(logicalVal == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            // byte
            intVal = intVal + 1; // 0x03
          byteVal = 255;
            byteVal = byteVal + 2;
            if(byteVal == 1)
                  intArray[intVal] = intVal;
```

```
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x04
            byteVal = byteVal - 3;
            if(byteVal == 254)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            // unsigned
            intVal = intVal + 1; // 0x05
          unsignedVal = 65535;
            unsignedVal = unsignedVal + 2;
            if(unsignedVal == 1)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x06
            unsignedVal = unsignedVal - 3;
            if(unsignedVal == 65534)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            // int
            intVal = intVal + 1; // 0x07
          passIntVal = 2147483647;
            _error_tag = 100;
            passIntVal = passIntVal + 1; // overflow 0x08
            passIntVal = -2147483648;
            _error_tag = 200;
            passIntVal = passIntVal - 1; // overflow 0x09
            _error_tag = 0;

            passIntVal = 0x123ABC; // hex input
            if(passIntVal == 1194684)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x0A
            passIntVal = 0b11111000011111;
            if(passIntVal == 15903)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            // float                      1234567890123
            intVal = intVal + 1; // 0x0B
          floatVal = 1.797693134862315E+308;
            _error_tag = 300;
            floatVal = floatVal + 0.000000000000002E+308; // overflow 0x0C and
0x0D
            floatVal = -1.797693134862315E+308;
            _error_tag = 400;
            floatVal = floatVal - 0.000000000000002E+308; // overflow 0x0E and
0x0F
        _error_tag = 0;
```

```
            floatVal = 9.8813129168249e-324;
            if(floatVal != 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x10
            floatVal = floatVal/4.0; // underflow set to zero
            if(floatVal == 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x11
            floatVal = -9.8813129168249e-324;
            if(floatVal != 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x12

            floatVal = floatVal/4.0; // underflow set to zero
            if(floatVal == 0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
            // check the intArray
      }

}

void error(void)
{
    errorArray[intVal] = _error_type;
      if(_error_last_time == _error_location)
            error_kill(); // suspend       the task error is repeting
      if(_error_type == ERR_OVERFLOW || _error_type == ERR_INF_NAN)
          intArray[intVal] = intVal;
      else
            intArray[intVal] = -intVal;

      intVal = intVal + 1;
      error_ignore();
}
```

9.1.4.14 STOVR Test Case

9.1.4.14.1 SAIL TASK STOVR010.sai

```
// STOVR010.sal test    SAIL program runs till task overrun
```

```
//              Compile, assemble, load as task #0 and run, task overruns it and
any following task are killed
// $Id: STOVR010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: STOVR010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;


      while(TRUE)
      {
            for(intVal=0;TRUE;intVal = intVal + 1)
            {
                  if(intVal%100 == 0)
                  {
                      intVal = 0;
                      put_int(intVal,0);
                        put_ascii(13);
                        put_ascii(10);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.15 STYPE Test Case

9.1.4.15.1 SAIL TASK STYPE010.sai

```
// STYPE010.c Test the sail types including all conversions
//              Compile, assemble, load, run and check the intArray 0x00 - 0x08

// $Id: STYPE010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: STYPE010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */
```

```
//

void main(void)
{
    int intArray[0x10];
    int intVal;
      int taskID;

      logical logicalVal1 = TRUE;
      logical logicalVal2;
      byte byteVal1 = 5;
      byte byteVal2;
      unsigned unsignedVal1 = 5;
      unsigned unsignedVal2;
      int passIntVal1 = 5;
      int passIntVal2;
      float floatVal = 5.123;

    while(TRUE)
      {
            // convert down
            intVal = 1;  // 0x01
            logicalVal2 = floatVal;
            if(logicalVal1 == logicalVal2)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x02
            byteVal2 = floatVal;
            if(byteVal1 == byteVal2)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x03
            unsignedVal2 = floatVal;
            if(unsignedVal1 == unsignedVal2)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x04
            passIntVal2 = floatVal;
            if(passIntVal1 == passIntVal2)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            // convert up
            intVal = intVal + 1; // 0x05
            floatVal = logicalVal1;
            if(floatVal == 1.0)
                  intArray[intVal] = intVal;
            else
                  intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x06
            floatVal = byteVal1;
            if(floatVal == 5.0)
```

```
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x07
            floatVal = unsignedVal1;
            if(floatVal == 5.0)
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;

            intVal = intVal + 1; // 0x08
            floatVal = passIntVal1;
            if(floatVal == 5.0)
                intArray[intVal] = intVal;
            else
                intArray[intVal] = -intVal;

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.16 WAIT Test Case

9.1.4.16.1 \SAIL TASK WAIT010.sai

```
// WAIT010.sal test     SAIL program runs and waits over and over
//              Compile, assemble, load as task #0 and run, kill with command,
suspend with command and from WAIT020
// $Id: WAIT010.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: WAIT010.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */

//

void main(void)
{
    int intVal = 1;
      int taskID;

      logical logicalVal = TRUE;

      while(TRUE)
      {
            for(intVal=0;TRUE;intVal = intVal + 1)
            {
                  if(intVal%10 == 0)
                  {
                      intVal = 0;
```

```
                    put_int(intVal,0);
                      put_ascii(13);
                      put_ascii(10);
                      wait_frame(0);
             }

            }

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.1.4.16.2 SAIL TASK WAIT020.sai

```
// WAIT020.sal test     SAIL program suspends task #0
//              Compile, assemble, load as not task #1. Compile, assemble, load
WAIT010.sal as task #0 and run.
//            Run this task to suspend task #0
// $Id: WAIT020.sai 1.1 2002/05/07 07:28:31 jpriley Exp $
/*
 * $Log: WAIT020.sai $
 * Revision 1.1  2002/05/07 07:28:31  jpriley
 * Initial revision
 *
 *
 */


void main(void)
{
      int taskID;

      while(TRUE)
      {

        suspend(0);

            taskID = whoami();
        put_ascii(taskID + 48);
            put_ascii(13);
            put_ascii(10);
            suspend(taskID);
      }

}
```

9.2 SAIL Regression Test 2 (2003-06-10)

9.2.1 SAIL_SWACC_2003_06_05.txt

```
F:\SAIL\SAIL_CSCI\SAIL_v2.5\SAILtasks\SAIL_SWACC>CALL SC /R /V /E /CLD 4 128 sarr010

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sarr010 /\/\/\/\/\/\


The file sarr010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sarr010.sai
Working file: sarr010.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\cmd.lib
Working file: cmd.lib
head: 1.3
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 3
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\comm.lib
Working file: comm.lib
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\sailrtl.lib
Working file: sailrtl.lib
head: 1.4
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 4
===================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\constant.sai
Working file: constant.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

--------------- First Pass Errors/Warnings ------------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sarr010_code.cld ...


Creating sarr010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK sarr011 /\\\\\\\\\


The file sarr011.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sarr011.sai
Working file: sarr011.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
```

```
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files -------------------

Creating sarr011_code.cld ...


Creating sarr011_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sarr012 /\/\/\/\/\/\


The file sarr012.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sarr012.sai
Working file: sarr012.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files -------------------

Creating sarr012_code.cld ...
```

```
Creating sarr012_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sarr013 /\\\\\\\\


The file sarr013.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sarr013.sai
Working file: sarr013.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sarr013_code.cld ...


Creating sarr013_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sarr014 /\\\\\\\\


The file sarr014.sai does not exist.
```

```
Attempting to retrieve from RCS ...


RCS file: RCS\sarr014.sai
Working file: sarr014.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files -----------------

Creating sarr014_code.cld ...


Creating sarr014_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sarr020 /\\\\\\\\


The file sarr020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sarr020.sai
Working file: sarr020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------
```

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sarr020_code.cld ...

Creating sarr020_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\ COMPILING TASK sarr030 /\/\/\/\/\/\

The file sarr030.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sarr030.sai
Working file: sarr030.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sarr030_code.cld ...

Creating sarr030_data.cld ...

SAIL Compile Utility, Version:

```
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK scerr010 /\/\/\/\/\/\


The file scerr010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scerr010.sai
Working file: scerr010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

--------------- First Pass Errors/Warnings -----------

Error: An invalid preprocessor directive was found.
Error occured in file scerr010.sai, line 19, column 26

Error: This include directive was improperly formatted.
Error occured in file scerr010.sai, line 20, column 26

Error: A bad special character was encountered.
Error occured in file scerr010.sai, line 21, column 2

Error: Only source files with a ".sai" extension can be processed.
Error occured in file xxxxxxxxx.h

Error: An error occured while trying to include a file.
Error occured in file scerr010.sai, line 23, column 1

Error: The file unexpectedly ended.
Error occured in file scerr020.sai, line 15, column 2

Error: The end of the file was reached, but the comment was not terminated.
Error occured in file scerr030.sai, line 15, column 2

Error: An invalid floating point number was encountered.
Error occured in file scerr010.sai, line 26, column 24

Error: This floating point number has no sign for its exponent.
Error occured in file scerr010.sai, line 27, column 39

Error: An exponent was expected for this floating point number.
Error occured in file scerr010.sai, line 28, column 42

Error: The exponent for this floating point number is too large.
Error occured in file scerr010.sai, line 29, column 46
```

```
Error: This floating point number is too long.
Error occured in file scerr010.sai, line 30, column 55

Error: This number has created overflow.
Error occured in file scerr010.sai, line 31, column 31

Error: This floating point number has created overflow.
Error occured in file scerr010.sai, line 32, column 31

Fatal Error: A symbol has violated the symbol size limitation.
Fatal Error occured in file scerr010.sai, line 33, column 69

Fatal Error(s) encountered during first pass, exiting

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK scerr040 /\/\/\/\/\/\


The file scerr040.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scerr040.sai
Working file: scerr040.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Error: The type of the reference parameter badref must match the exact type of the corresponding reference argument.
Error:  Line: 91 Column: 23 File: scerr040.sai

Error: You cannot pass Immediates or Expressions by reference.
Error:  Line: 96 Column: 23 File: scerr040.sai

Error: In an expression, the token [ can't be placed after the value intarray.
Error:  Line: 104 Column: 24 File: scerr040.sai

Error: While passing baddimension to functionnormalarray, the dimension(s) of baddimension did not match the
dimension(s) of array as defined in the prototype for functionnormalarray.
Error:  Line: 115 Column: 22 File: scerr040.sai
```

Warning: The function functionwithreturn has a non-void return type, but it does not appear to return a value.
Warning: Line: 119 Column: 5 File: scerr040.sai

Warning: The return value from function functionwithreturn was ignored.
Warning: Line: 125 Column: 20 File: scerr040.sai

Error: An incorrect number of parameters were passed to functionparameter1.
Error: Line: 141 Column: 24 File: scerr040.sai

Error: An incorrect number of parameters were passed to functionparameter2.
Error: Line: 142 Column: 32 File: scerr040.sai

Error: A goto cannot jump to the label unplaced because it has not been placed.
Error: Line: 150 Column: 2 File: scerr040.sai

Error: The label alreadyplaced has already been placed.
Error: Line: 158 Column: 2 File: scerr040.sai

Error: The identifier undefined cannot be used until it is defined.
Error: Line: 165 Column: 6 File: scerr040.sai

Error: The the identifier name duplcate has already been used.
Error: Line: 172 Column: 6 File: scerr040.sai

Error: A non-zero, non-negative constant expression result was expected to dimension an array, but the token -1 was found instead.
Error: Line: 179 Column: 18 File: scerr040.sai

Error: This expression is too complex.
Error: Line: 187 Column: 56 File: scerr040.sai

Error: This expression is missing parentheses.
Error: Line: 195 Column: 20 File: scerr040.sai

Error: Only functions may be called. An attempt was made to call the nonfunction token callofnonfunction.
Error: Line: 203 Column: 25 File: scerr040.sai

Error: You cannot use the non-RTL functioncallinsideerror while inside the body of the error function.
Error: Line: 215 Column: 13 File: scerr040.sai

Error: The function functionwithoutaprototype cannot be defined until it has been prototyped.
Error: Line: 219 Column: 6 File: scerr040.sai

Error: The function functionshouldnotreturn has a void return type, but it returns a value.
Error: Line: 226 Column: 4 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock05 is in an inner block relative to the jumping goto statment.
Error: Line: 264 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock06 is in an inner block relative to the jumping goto statment.
Error: Line: 267 Column: 5 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock07 is in an inner block relative to the jumping goto statment.
Error: Line: 268 Column: 2 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock08 is in an inner block relative to the jumping goto statment.

```
Error:  Line: 275 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock09 is in an inner block relative to the jumping goto statment.
Error:  Line: 276 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock01 is in an inner block relative to the jumping goto statment.
Error:  Line: 244 Column: 5 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock02 is in an inner block relative to the jumping goto statment.
Error:  Line: 251 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock03 is in an inner block relative to the jumping goto statment.
Error:  Line: 252 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock04 is in an inner block relative to the jumping goto statment.
Error:  Line: 261 Column: 4 File: scerr040.sai

Error: The function functionwithoutreturn must have a non-void return type to be used in an expression.
Error:  Line: 290 Column: 34 File: scerr040.sai

Error: The function whoami must be called.
Error:  Line: 297 Column: 12 File: scerr040.sai

Error: In an expression, the token = can't be placed in assignment.
Error:  Line: 304 Column: 10 File: scerr040.sai

Error: Check that all curly braces match, because an EOF in the middle of a function was unexpectedly found.
Error:  Line: 304 Column: 4 File: scerr040.sai

Error: You must define a main function.
Error:  Line: 304 Column: 4 File: scerr040.sai

Error: The function main has been prototyped, but not defined.
Error:  Line: 304 Column: 4 File: scerr040.sai


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK scerr050 /\/\/\/\/\/\


The file scerr050.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scerr050.sai
Working file: scerr050.sai
head: 1.1
```

```
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------

Fatal Error: A constant expression attempted to divide by zero. The numerator was: 1.
Fatal Error:  Line: 20 Column: 21 File: scerr050.sai

Fatal Error(s) encountered during second pass, exiting

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK scerr060 /\\\\\\\\


The file scerr060.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scerr060.sai
Working file: scerr060.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------

Error: The function functionrecursion cannot call itself, directly or indirectly.
Error:  Line: 40 Column: 6 File: scerr060.sai


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5
```

```
(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK scmp010 /\\\\\\\\\


The file scmp010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scmp010.sai
Working file: scmp010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK scmp020 /\\\\\\\\\


The file scmp020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scmp020.sai
Working file: scmp020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

---------- Creating .cld files ----------

Creating scmp020_code.cld ...

Creating scmp020_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\/\ COMPILING TASK scoms010 /\/\/\/\/\/\/\

The file scoms010.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\scoms010.sai
Working file: scoms010.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating scoms010_code.cld ...

Creating scoms010_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

```
/\/\/\/\/\/\ COMPILING TASK scoms020 /\/\/\/\/\/\


The file scoms020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\scoms020.sai
Working file: scoms020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating scoms020_code.cld ...


Creating scoms020_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sdata010 /\/\/\/\/\/\


The file sdata010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sdata010.sai
Working file: sdata010.sai
head: 1.4
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
```

```
total revisions: 4
=============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sdata010_code.cld ...


Creating sdata010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSC\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec000 /\/\/\/\/\/\


The file sexec000.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec000.sai
Working file: sexec000.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
=============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sexec000_code.cld ...
```

```
Creating sexec000_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec001 /\/\/\/\/\/\


The file sexec001.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec001.sai
Working file: sexec001.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sexec001_code.cld ...


Creating sexec001_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec002 /\/\/\/\/\/\
```

```
The file sexec002.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec002.sai
Working file: sexec002.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files -----------------

Creating sexec002_code.cld ...


Creating sexec002_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec003 /\/\/\/\/\/\


The file sexec003.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec003.sai
Working file: sexec003.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------
```

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sexec003_code.cld ...

Creating sexec003_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\/\ COMPILING TASK sexec004 /\/\/\/\/\/\/\

The file sexec004.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sexec004.sai
Working file: sexec004.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sexec004_code.cld ...

Creating sexec004_data.cld ...

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec005 /\/\/\/\/\/\


The file sexec005.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec005.sai
Working file: sexec005.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sexec005_code.cld ...


Creating sexec005_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec006 /\/\/\/\/\/\


The file sexec006.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\sexec006.sai
Working file: sexec006.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings --------


---------------- Creating .cld files ------------------

Creating sexec006_code.cld ...


Creating sexec006_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec007 /\/\/\/\/\/\


The file sexec007.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec007.sai
Working file: sexec007.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------
```

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sexec007_code.cld ...

Creating sexec007_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\ COMPILING TASK sexec008 /\/\/\/\/\/\

The file sexec008.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sexec008.sai
Working file: sexec008.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sexec008_code.cld ...

Creating sexec008_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:

```
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec009 /\/\/\/\/\/\


The file sexec009.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec009.sai
Working file: sexec009.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sexec009_code.cld ...


Creating sexec009_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec010 /\/\/\/\/\/\


The file sexec010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec010.sai
Working file: sexec010.sai
head: 1.1
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


-------------- Creating .cld files -----------------

Creating sexec010_code.cld ...


Creating sexec010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sexec011 /\\\\\\\\


The file sexec011.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec011.sai
Working file: sexec011.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

---------- Creating .cld files ----------

Creating sexec011_code.cld ...

Creating sexec011_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\ COMPILING TASK sexec012 /\/\/\/\/\/\

The file sexec012.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sexec012.sai
Working file: sexec012.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sexec012_code.cld ...

Creating sexec012_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

```
/\/\/\/\/\/\ COMPILING TASK sexec013 /\/\/\/\/\/\


The file sexec013.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec013.sai
Working file: sexec013.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sexec013_code.cld ...


Creating sexec013_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec014 /\/\/\/\/\/\


The file sexec014.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec014.sai
Working file: sexec014.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
```

```
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sexec014_code.cld ...


Creating sexec014_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSC\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec015 /\/\/\/\/\/\


The file sexec015.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec015.sai
Working file: sexec015.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sexec015_code.cld ...
```

```
Creating sexec015_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec016 /\/\/\/\/\/\


The file sexec016.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec016.sai
Working file: sexec016.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files -------------------

Creating sexec016_code.cld ...


Creating sexec016_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sexec020 /\/\/\/\/\/\
```

```
The file sexec020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sexec020.sai
Working file: sexec020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files -----------------

Creating sexec020_code.cld ...


Creating sexec020_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sferr010 /\\\\\\\\


The file sferr010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sferr010.sai
Working file: sferr010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

---------------- First Pass Errors/Warnings -----------
```

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sferr010_code.cld ...

Creating sferr010_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\/\ COMPILING TASK sferr020 /\/\/\/\/\/\/\

The file sferr020.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sferr020.sai
Working file: sferr020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sferr020_code.cld ...

Creating sferr020_data.cld ...

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sferr030 /\/\/\/\/\/\


The file sferr030.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sferr030.sai
Working file: sferr030.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sferr030_code.cld ...


Creating sferr030_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sferr040 /\/\/\/\/\/\


The file sferr040.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\sferr040.sai
Working file: sferr040.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sferr040_code.cld ...


Creating sferr040_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK sferr050 /\\\\\\\\\


The file sferr050.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sferr050.sai
Working file: sferr050.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------
```

---------- Creating .cld files ----------

Creating sferr050_code.cld ...

Creating sferr050_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\\\\\\\\\ COMPILING TASK sfun010 /\\\\\\\\\

The file sfun010.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sfun010.sai
Working file: sfun010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sfun010_code.cld ...

Creating sfun010_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

```
/\/\/\/\/\/\ COMPILING TASK sierr010 /\/\/\/\/\/\


The file sierr010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sierr010.sai
Working file: sierr010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sierr010_code.cld ...


Creating sierr010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK smem010 /\/\/\/\/\/\


The file smem010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\smem010.sai
Working file: smem010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
```

```
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings --------


---------------- Creating .cld files -------------------

Creating smem010_code.cld ...


Creating smem010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK snst010 /\/\/\/\/\/\


The file snst010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\snst010.sai
Working file: snst010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings --------


---------------- Creating .cld files -------------------

Creating snst010_code.cld ...
```

```
Creating snst010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK snsterr /\\\\\\\\


The file snsterr.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\snsterr.sai
Working file: snsterr.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------

Error: Calling depth may not exceed 32. While calling function function32 this limit was exceeded.
Error:  Line: 447 Column: 10 File: snsterr.sai


--------------- Assembler Pass Errors/Warnings -------


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sop010 /\\\\\\\\


The file sop010.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\sop010.sai
Working file: sop010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sop010_code.cld ...


Creating sop010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sop020 /\\\\\\\\


The file sop020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sop020.sai
Working file: sop020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------
```

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sop020_code.cld ...

Creating sop020_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\\\\\\\\ COMPILING TASK sovr010 /\\\\\\\\

The file sovr010.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sovr010.sai
Working file: sovr010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sovr010_code.cld ...

Creating sovr010_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:

```
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK srtl010 /\\\\\\\\


The file srtl010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\srtl010.sai
Working file: srtl010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating srtl010_code.cld ...


Creating srtl010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK srtl020 /\\\\\\\\


The file srtl020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\srtl020.sai
Working file: srtl020.sai
head: 1.1
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files -----------------

Creating srtl020_code.cld ...


Creating srtl020_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sst010 /\/\/\/\/\/\


The file sst010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sst010.sai
Working file: sst010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

```
---------------- Creating .cld files ------------------

Creating sst010_code.cld ...


Creating sst010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK stype010 /\/\/\/\/\/\


The file stype010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\stype010.sai
Working file: stype010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating stype010_code.cld ...


Creating stype010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)
```

```
/\\\\\\\\ COMPILING TASK stovr010 /\\\\\\\\


The file stovr010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\stovr010.sai
Working file: stovr010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings --------


---------------- Creating .cld files ------------------

Creating stovr010_code.cld ...


Creating stovr010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK wait010 /\\\\\\\\


The file wait010.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\wait010.sai
Working file: wait010.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
```

```
total revisions: 1
=============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating wait010_code.cld ...


Creating wait010_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSC\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK wait020 /\\\\\\\\


The file wait020.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\wait020.sai
Working file: wait020.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
=============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating wait020_code.cld ...
```

```
Creating wait020_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK wait030 /\/\/\/\/\/\


The file wait030.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\wait030.sai
Working file: wait030.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating wait030_code.cld ...


Creating wait030_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sasmoversizelimit /\/\/\/\/\/\
```

```
RCS file: RCS\sasmoversizelimit.a
Working file: sasmoversizelimit.a
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- Assembler Pass Errors/Warnings -------

@Assembler errors
Code size exceeds 64K at line 65539
F:\SAIL\SAIL_CSCI\SAIL_v2.5\SAILtasks\SAIL_SWACC\sasmoversizelimit.a

--------------- Creating .cld files ------------------

Creating sasmoversizelimit_code.cld ...



SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK sasmsizelimit /\\\\\\\\\


RCS file: RCS\sasmsizelimit.a
Working file: sasmsizelimit.a
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

--------------- Assembler Pass Errors/Warnings -------

F:\SAIL\SAIL_CSCI\SAIL_v2.5\SAILtasks\SAIL_SWACC\sasmsizelimit.a

--------------- Creating .cld files ------------------

Creating sasmsizelimit_code.cld ...



SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
```

```
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_1_1_01 /\\\\\\\\


The file sw_loc_117_3_1_1_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_1_1_01.sai
Working file: sw_loc_117_3_1_1_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\cmd.lib
Working file: cmd.lib
head: 1.3
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 3
============================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\comm.lib
Working file: comm.lib
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
============================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\sailrtl.lib
Working file: sailrtl.lib
head: 1.4
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 4
============================================================================

RCS file: f:\SAIL\SAIL_CSCI\SAIL_v2.5\bin\RUNTIME_FILES\RCS\constant.sai
Working file: constant.sai
head: 1.1
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files -----------------

Creating sw_loc_117_3_1_1_01_code.cld ...


Creating sw_loc_117_3_1_1_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sw_loc_117_3_1_1_02 /\/\/\/\/\/\


The file sw_loc_117_3_1_1_02.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_1_1_02.sai
Working file: sw_loc_117_3_1_1_02.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

---------- Creating .cld files ----------

Creating sw_loc_117_3_1_1_02_code.cld ...

Creating sw_loc_117_3_1_1_02_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\\\\\\\\ COMPILING TASK sw_loc_117_3_1_2_01 /\\\\\\\\

The file sw_loc_117_3_1_2_01.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sw_loc_117_3_1_2_01.sai
Working file: sw_loc_117_3_1_2_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_1_2_01_code.cld ...

Creating sw_loc_117_3_1_2_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

```
/\\\\\\\\ COMPILING TASK sw_loc_117_3_1_2_02 /\\\\\\\\


The file sw_loc_117_3_1_2_02.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_1_2_02.sai
Working file: sw_loc_117_3_1_2_02.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_3_1_2_02_code.cld ...


Creating sw_loc_117_3_1_2_02_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_2_1_01 /\\\\\\\\


The file sw_loc_117_3_2_1_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_2_1_01.sai
Working file: sw_loc_117_3_2_1_01.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
```

```
total revisions: 2
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_3_2_1_01_code.cld ...


Creating sw_loc_117_3_2_1_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSC\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_1_2_1_01 /\\\\\\\\


The file sw_loc_117_3_3_1_2_1_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_2_1_01.sai
Working file: sw_loc_117_3_3_1_2_1_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==============================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_3_3_1_2_1_01_code.cld ...
```

```
Creating sw_loc_117_3_3_1_2_1_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_1_2_1_02 /\\\\\\\\


The file sw_loc_117_3_3_1_2_1_02.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_2_1_02.sai
Working file: sw_loc_117_3_3_1_2_1_02.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
================================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_3_3_1_2_1_02_code.cld ...


Creating sw_loc_117_3_3_1_2_1_02_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_1_2_2_01 /\\\\\\\\
```

```
The file sw_loc_117_3_3_1_2_2_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_2_2_01.sai
Working file: sw_loc_117_3_3_1_2_2_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

---------------- First Pass Errors/Warnings -----------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_3_3_1_2_2_01_code.cld ...


Creating sw_loc_117_3_3_1_2_2_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sw_loc_117_3_3_1_2_3_01 /\/\/\/\/\/\


The file sw_loc_117_3_3_1_2_3_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_2_3_01.sai
Working file: sw_loc_117_3_3_1_2_3_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

---------------- First Pass Errors/Warnings -----------
```

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_3_1_2_3_01_code.cld ...

Creating sw_loc_117_3_3_1_2_3_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\/\/\/\/\/\ COMPILING TASK sw_loc_117_3_3_1_2_4_01 /\/\/\/\/\/\

The file sw_loc_117_3_3_1_2_4_01.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sw_loc_117_3_3_1_2_4_01.sai
Working file: sw_loc_117_3_3_1_2_4_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_3_1_2_4_01_code.cld ...

Creating sw_loc_117_3_3_1_2_4_01_data.cld ...

```
SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sw_loc_117_3_3_1_2_5_01 /\/\/\/\/\/\


The file sw_loc_117_3_3_1_2_5_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_2_5_01.sai
Working file: sw_loc_117_3_3_1_2_5_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sw_loc_117_3_3_1_2_5_01_code.cld ...


Creating sw_loc_117_3_3_1_2_5_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sw_loc_117_3_3_1_3_01 /\/\/\/\/\/\


The file sw_loc_117_3_3_1_3_01.sai does not exist.
Attempting to retrieve from RCS ...
```

```
RCS file: RCS\sw_loc_117_3_3_1_3_01.sai
Working file: sw_loc_117_3_3_1_3_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------


---------------- Assembler Pass Errors/Warnings --------


---------------- Creating .cld files -------------------

Creating sw_loc_117_3_3_1_3_01_code.cld ...


Creating sw_loc_117_3_3_1_3_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_1_4_01 /\\\\\\\\


The file sw_loc_117_3_3_1_4_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_1_4_01.sai
Working file: sw_loc_117_3_3_1_4_01.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
===================================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings -----------
```

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_3_1_4_01_code.cld ...

Creating sw_loc_117_3_3_1_4_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_2_1_01 /\\\\\\\\

The file sw_loc_117_3_3_2_1_01.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sw_loc_117_3_3_2_1_01.sai
Working file: sw_loc_117_3_3_2_1_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_3_2_1_01_code.cld ...

Creating sw_loc_117_3_3_2_1_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:

```
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_3_2_2_01 /\\\\\\\\


The file sw_loc_117_3_3_2_2_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_3_2_2_01.sai
Working file: sw_loc_117_3_3_2_2_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sw_loc_117_3_3_2_2_01_code.cld ...


Creating sw_loc_117_3_3_2_2_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_3_4_1_1_01 /\\\\\\\\


The file sw_loc_117_3_4_1_1_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_4_1_1_01.sai
Working file: sw_loc_117_3_4_1_1_01.sai
head: 1.1
branch:
```

```
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files -----------------

Creating sw_loc_117_3_4_1_1_01_code.cld ...


Creating sw_loc_117_3_4_1_1_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\\ COMPILING TASK sw_loc_117_3_4_1_2_01 /\\\\\\\\\


The file sw_loc_117_3_4_1_2_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_3_4_1_2_01.sai
Working file: sw_loc_117_3_4_1_2_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
===================================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------
```

---------- Creating .cld files ----------

Creating sw_loc_117_3_4_1_2_01_code.cld ...

Creating sw_loc_117_3_4_1_2_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

/\\\\\\\\ COMPILING TASK sw_loc_117_3_5_2_01 /\\\\\\\\

The file sw_loc_117_3_5_2_01.sai does not exist.
Attempting to retrieve from RCS ...

RCS file: RCS\sw_loc_117_3_5_2_01.sai
Working file: sw_loc_117_3_5_2_01.sai
head: 1.2
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 2
==========

---------- First Pass Errors/Warnings ----------

---------- Second Pass Errors/Warnings ----------

---------- Assembler Pass Errors/Warnings -------

---------- Creating .cld files ----------

Creating sw_loc_117_3_5_2_01_code.cld ...

Creating sw_loc_117_3_5_2_01_data.cld ...

SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)

```
/\\\\\\\\ COMPILING TASK sw_loc_117_6_01 /\\\\\\\\


The file sw_loc_117_6_01.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_6_01.sai
Working file: sw_loc_117_6_01.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
============================================================================

---------------- First Pass Errors/Warnings ------------


---------------- Second Pass Errors/Warnings ----------


---------------- Assembler Pass Errors/Warnings -------


---------------- Creating .cld files ------------------

Creating sw_loc_117_6_01_code.cld ...


Creating sw_loc_117_6_01_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSCI\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\\\\\\\\ COMPILING TASK sw_loc_117_6_02 /\\\\\\\\


The file sw_loc_117_6_02.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_6_02.sai
Working file: sw_loc_117_6_02.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
```

```
total revisions: 1
=============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sw_loc_117_6_02_code.cld ...


Creating sw_loc_117_6_02_data.cld ...


SAIL Compile Utility, Version:
$Id: sc.bat 1.8 2003/05/01 17:57:56 jpriley Exp $

SAIL Preprocessor\Compiler\Assembler Root Directory:
f:\SAIL\SAIL_CSC\SAIL_v2.5

(Note: To change Root directory, modify the SAIL_ROOT user environment variable)


/\/\/\/\/\/\ COMPILING TASK sw_loc_117_6_03 /\/\/\/\/\/\


The file sw_loc_117_6_03.sai does not exist.
Attempting to retrieve from RCS ...


RCS file: RCS\sw_loc_117_6_03.sai
Working file: sw_loc_117_6_03.sai
head: 1.1
branch:
locks: strict
access list:
symbolic names:
keyword substitution: kv
total revisions: 1
=============================================================================

--------------- First Pass Errors/Warnings -----------


--------------- Second Pass Errors/Warnings ----------


--------------- Assembler Pass Errors/Warnings -------


--------------- Creating .cld files ------------------

Creating sw_loc_117_6_03_code.cld ...
```

Creating sw_loc_117_6_03_data.cld ...

9.2.2 SAIL_SWACC_2003_06_05.err

```
------------ SCERR010 errors --------------
Error: An invalid preprocessor directive was found.
Error occured in file scerr010.sai, line 19, column 26

Error: This include directive was improperly formatted.
Error occured in file scerr010.sai, line 20, column 26

Error: A bad special character was encountered.
Error occured in file scerr010.sai, line 21, column 2

Error: Only source files with a ".sai" extension can be processed.
Error occured in file xxxxxxxxx.h

Error: An error occured while trying to include a file.
Error occured in file scerr010.sai, line 23, column 1

Error: The file unexpectedly ended.
Error occured in file scerr020.sai, line 15, column 2

Error: The end of the file was reached, but the comment was not terminated.
Error occured in file scerr030.sai, line 15, column 2

Error: An invalid floating point number was encountered.
Error occured in file scerr010.sai, line 26, column 24

Error: This floating point number has no sign for its exponent.
Error occured in file scerr010.sai, line 27, column 39

Error: An exponent was expected for this floating point number.
Error occured in file scerr010.sai, line 28, column 42

Error: The exponent for this floating point number is too large.
Error occured in file scerr010.sai, line 29, column 46

Error: This floating point number is too long.
Error occured in file scerr010.sai, line 30, column 55

Error: This number has created overflow.
Error occured in file scerr010.sai, line 31, column 31

Error: This floating point number has created overflow.
Error occured in file scerr010.sai, line 32, column 31

Fatal Error: A symbol has violated the symbol size limitation.
Fatal Error occured in file scerr010.sai, line 33, column 69

------------ SCERR040 errors --------------
Error: The type of the reference parameter badref must match the exact type of
the corresponding reference argument.
Error:  Line: 91 Column: 23 File: scerr040.sai

Error: You cannot pass Immediates or Expressions by reference.
Error:  Line: 96 Column: 23 File: scerr040.sai

Error: In an expression, the token [ can't be placed after the value intarray.
```

```
Error:  Line: 104 Column: 24 File: scerr040.sai

Error: While passing baddimension to functionnormalarray, the dimension(s) of
baddimension did not match the dimension(s) of array as defined in the prototype
for functionnormalarray.
Error:  Line: 115 Column: 22 File: scerr040.sai

Warning: The function functionwithreturn has a non-void return type, but it does
not appear to return a value.
Warning:  Line: 119 Column: 5 File: scerr040.sai

Warning: The return value from function functionwithreturn was ignored.
Warning:  Line: 125 Column: 20 File: scerr040.sai

Error: An incorrect number of parameters were passed to functionparameter1.
Error:  Line: 141 Column: 24 File: scerr040.sai

Error: An incorrect number of parameters were passed to functionparameter2.
Error:  Line: 142 Column: 32 File: scerr040.sai

Error: A goto cannot jump to the label unplaced because it has not been placed.
Error:  Line: 150 Column: 2 File: scerr040.sai

Error: The label alreadyplaced has already been placed.
Error:  Line: 158 Column: 2 File: scerr040.sai

Error: The identifier undefined cannot be used until it is defined.
Error:  Line: 165 Column: 6 File: scerr040.sai

Error: The the identifier name duplcate has already been used.
Error:  Line: 172 Column: 6 File: scerr040.sai

Error: A non-zero, non-negative constant expression result was expected to
dimension an array, but the token -1 was found instead.
Error:  Line: 179 Column: 18 File: scerr040.sai

Error: This expression is too complex.
Error:  Line: 187 Column: 56 File: scerr040.sai

Error: This expression is missing parentheses.
Error:  Line: 195 Column: 20 File: scerr040.sai

Error: Only functions may be called. An attempt was made to call the nonfunction
token callofnonfunction.
Error:  Line: 203 Column: 25 File: scerr040.sai

Error: You cannot use the non-RTL function functioncallinsideerror while inside
the body of the error function.
Error:  Line: 215 Column: 13 File: scerr040.sai

Error: The function functionwithoutaprototype cannot be defined until it has
been prototyped.
Error:  Line: 219 Column: 6 File: scerr040.sai

Error: The function functionshouldnotreturn has a void return type, but it
returns a value.
Error:  Line: 226 Column: 4 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock05 is in an inner block relative to the jumping goto
statment.
```

```
Error:  Line: 264 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock06 is in an inner block relative to the jumping goto
statment.
Error:  Line: 267 Column: 5 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock07 is in an inner block relative to the jumping goto
statment.
Error:  Line: 268 Column: 2 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock08 is in an inner block relative to the jumping goto
statment.
Error:  Line: 275 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock09 is in an inner block relative to the jumping goto
statment.
Error:  Line: 276 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock01 is in an inner block relative to the jumping goto
statment.
Error:  Line: 244 Column: 5 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock02 is in an inner block relative to the jumping goto
statment.
Error:  Line: 251 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock03 is in an inner block relative to the jumping goto
statment.
Error:  Line: 252 Column: 3 File: scerr040.sai

Error: A goto cannont jump from an outer code block into an inner code block.
The label innerblock04 is in an inner block relative to the jumping goto
statment.
Error:  Line: 261 Column: 4 File: scerr040.sai

Error: The function functionwithoutreturn must have a non-void return type to be
used in an expression.
Error:  Line: 290 Column: 34 File: scerr040.sai

Error: The function whoami must be called.
Error:  Line: 297 Column: 12 File: scerr040.sai

Error: In an expression, the token = can't be placed in assignment.
Error:  Line: 304 Column: 10 File: scerr040.sai

Error: Check that all curly braces match, because an EOF in the middle of a
function was unexpectedly found.
Error:  Line: 304 Column: 4 File: scerr040.sai

Error: You must define a main function.
Error:  Line: 304 Column: 4 File: scerr040.sai

Error: The function main has been prototyped, but not defined.
Error:  Line: 304 Column: 4 File: scerr040.sai
```

```
------------ SCERR050 errors --------------
Fatal Error: A constant expression attempted to divide by zero. The numerator
was: 1.
Fatal Error:  Line: 20 Column: 21 File: scerr050.sai

------------ SCERR060 errors --------------
Error: The function functionrecursion cannot call itself, directly or
indirectly.
Error:  Line: 40 Column: 6 File: scerr060.sai

------------ SNSTERR errors --------------
Error: Calling depth may not exceed 32. While calling function function32 this
limit was exceeded.
Error:  Line: 447 Column: 10 File: snsterr.sai

------- SASMoverSizeLimit errors ---------
@Assembler errors
Code size exceeds 64K at line 65539
```

9.2.3 SAIL SPEC Test Case Data Output File

```
Generated from data 2003/156-19:52:00 to 2003/156-20:23:00

ValidateDumpAddr item = 5,Enabled_P1 = 1,Length_P2 = 258,Address_P3 =
0x80,Cyclic_P4 = 0

ValidateDumpAddr item = 14,Enabled_P1 = 1,Length_P2 = 3,Address_P3 =
0x0,Cyclic_P4 = 0

3.1.1.01
3.1.1.02
3.1.2.01 5 6 5 2 7
3.1.2.02 7 -2 111 232 353 474 525 646 767 888
3.2.1.01 254 0 255 65534 0 65535 2147483646 E 0 -2
3.3.1.2.1.01 2.000000000000000 0.500000000000000 1.500000000000000 -
2.000000000000000 -0.500000000000000 -1.500000000000000 -2.000000000000000 -
0.500000000000000 -1.500000000000000 2.000000000000000 0.500000000000000
1.500000000000000 3 0 1 -3 0 -1 -3 0 -1 3 0 1
3.3.1.2.1.02 0 254 2 12 4 65535 -2 -15 -2.500000000000000 2.000000000000000e+06
0.250000000000000 True True False
3.3.1.2.2.01 256 0 2147483647 5 10 -2147483648 0xEDCB 0 42 0b00100010 0b11011001
0b11111011
3.3.1.2.3.01 2 1 0 1 2
3.3.1.2.4.01 True False True True False False True
3.3.1.2.5.01 17 25 -7 -13 0 4 3 1 0 2
3.3.1.3.01 32 28 716 -2 -3 0 -14 -16 0 -3 -2 7 -1 -1 0 79 3 6 -75 1 -2 524288 0
0 11 9 1 2 14 11 15 0 1 0 1 1 1 1 0 1
3.3.1.4.01 True False True True True False True True True False True True True True
False True False True 0 1 255 0 1 255 255 0 1 255 255 0 1 254 0 1 255 0 1 255
65535 0 1 65535 65535 0 1 65534 0 1 255 0 1 255 65535 0 1 65535 2147483647 0
2147483647 -2147483648 0.000000000000000 1.000000000000000 255.000000000000000
0.000000000000000 1.000000000000000 255.000000000000000 65535.000000000000000
0.000000000000000 1.000000000000000 65535.000000000000000
2147483647.000000000000000 0.000000000000000 -2147483648.000000000000000
3.3.2.1.01 -1 1 0 1 2 3 4 5 1 C D
3.3.2.2.01 0 1 2 10 11 12 13 5 7 9 11 25 39 53 67 81 95 109 95 81 67 53 39 25 11
1 2 4 5 7 8 10 11 13 12 11 9 8 7 6 4 3 2 A B
3.4.1.1.01 -1 1 1 255 255 65535 65535 1 1 1 -1.000000000000000 -
1.000000000000000 -2 -2 65534 65534 254 254 1 1 5
3.4.1.2.01 10 20 30 15 115 15 115 115 111 122 213 224 315 326
```

```
3.5.2.01 0.-1 A B
6.01 2 3 2.700000000000000 3.800000000000000 0.000000000000000 0.841470984807897
-1.000000000000000 1.000000000000000 0.540302305868140 0.000000000000000
1.000000000000000 2.718281828459046 22026.465794806728809 0.000000000000000
2.302585092994045 2.600000000000000 1.000000000000000 1.414213562373095
10.000000000000000 0.000000000000000 1.570796326794897 0.523598775598299
1.570796326794897 0.000000000000000 1.047197551196598 0.000000000000000
2.475818903561439 -2.475818903561439 A B -5 0 6 -10.000000000000000
201.000000000000000 3.000000000000000 True False 13 0xD 0b000001101 200 0xC8
0b11001000 13 0xD 0b0000000000001101 50000 0xC350 0b1100001101010000 27 0x1B
0b0000000000000000000000000000011011 1500000000 0x59682F00
0b01011001011010000010111100000000 -1500000000 0xA697D100
0b10100110100101111101000100000000 -123.456789012345695 -1.234567890123457e+02
0.000000012345679 1.234567890123457e-08
1234567890123457200000000000000000000000000000000000.000000000000000
1.234567890123457e+52 1 0 3.141592653589793 0 1 2 0 1 32768 0 -1 -2 -3 -4 -5 -6
-7 -8 -9 -10 -11 -12 -13 -14 -15 -16 -17 -18 -28 Y
Z
6.02 0 0
6.03 945827840 2086666532 1008730137 -1872755216
```