Section 2:

EWS Methodology

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DAISY/DNIX DESIGN METHODOLOGY

The following pages are taken from the AMCC EWS Design Methodology seminar for the DAISY Engineering Workstation under the DNIX operating system. No attempt has been made to include all of the course material from the AMCC seminar nor to replace the extensive DAISY reference and design manuals.

This section is designed to walk the user through an overview of the various steps in a design, from schematic capture to final AMCCSIMFMT execution.

AMCC MacroMatrix support software is integrated with the DAISY software to provide a comprehensive set of tools designed to simplify the user interface and allow the user to concentrate on the design rather than on the EWS system itself.

COMMANDS

For those users who are familiar with MAESTRO, the upgrade to DNIX is simplified by the fact that the MAESTRO commands, with minor modifications, work under DNIX. For those users who are familiar with UNIX or UNIX-clones, DNIX is a UNIX-like operating system and supports the lower-case commands as well.

For new users, since all files must be uppercase if they are to transfer to other computers, and since all directories must be uppercase, the MAESTRO commands may be easier to learn first.

DED

The DNIX system offers two graphics editors, DED and the newer DED2. DED and quickscreen editing (see Appendix B in this section) provide a fast graphics capture system. DED2 is oriented to window and mouse or puck operation. Either or both may be used to complete a schematic capture.

AMCC SHELL SCRIPTS

AMCC MacroMatrix support software includes preprogrammed shell scripts (also called shells) which minimize the effort required by the user when executing both the AMCC support software and the DAISY software. These shell scripts are documented in Appendix A at the back of this section.

Where a user does not need to alter these shells, they can be used to call and invoke all required steps up to DLS or DTV simulation. The very last step, AMCCSIMFMT, is called by typing its name and is run after simulation.

When the shells are not adequate for whatever reason, they can be edited or the commands can be entered without capture into a shell. DAISY also allows the user to program function keys with commonly used commands.

The commands are described on the following pages in sufficient detail to allow the user to evaluate the AMCC supplied shells. For further details, consult the DAISY reference manuals shipped with your system.

AMCC GLOSSARY OF EWS TERMS
SUMMARY

DAISY-SPECIFIC

ACE	Another editor - not in design center yet
AGIF	AMCC Generic Interface Format
RUN_AGIF.ERR	Error file
AMCCFRONT.LST	Error file
AMCCSIMFMT	AMCC simulation format program
AMCCSIMFMT.ERR	Error file
CONFIG	Configuration file
DANCE	DAISY Network Connectivity Extractor
DANCE.ERR	Concatenated Error file - from AMCC shell
DED	DAISY Drawing EDitor, used for schematic capture (DED II is also for operation under DNIX)
DFS **	DAISY Fault Simulator
DLS	DAISY Logical Simulator
DNIX	DAISY UNIX-like operating system
DRINK	DAISY Resolving LINKer
DRING.ERR	DRINK error file - from AMCC shell
DTV	DAISY Timing Verifier
DTA **	DAISY Testibility Analyzer
FMT_CSD.SING	Format source file
FMT	Default DLS/DTV format file
IMAGE.SOM	Circuit image for simulation, from SOM atep
INCR.DFR	DRINK Incremental Report
n.DRAW	Drawing page produced under DED; DED2
n.DFR	Dance report file
n.DIF	Dance Intermediate File
n.SFR	Sift report file
n.SIF	Sift Intermediate File
RUN-AMCC	Super-shell
RUN_AGIF	AGIF shell
RUN_DD	DANCE-DRINK shell
RUN_ERC	ERC shell
RUN_ANN	Front-Annotation shell; Back-Annotation shell
RUN_SIFT	SIFT shell
RUN_SMAKER	SOM_MAKER shell
RUN_SMT	AMCCSIMFMT shell
RUN_SOM	SOM and TCAL shell
RUN_VRC	AMCCVRC shell
SIFT	Simulator Intermediate Files Translator (Users choose between MIN, NOM, MIL and COM, COM4 or COM5 files)
SIFT.ERR	Error file
SING	Simulation Input Generation Program
SOM	Simulator Object Module Generator
SOM.ERR	SOM control file and error report

SOM_MCF.SING		Usual name for simulation control file
SPARC		Simulator Parameter Compiler (Used by AMCC to create the object SIFT files)
TCAL		Timing Calculator (part of the Front-Annotation/Back-Annotation software package, a joint DAISY-AMCC effort)
TCAL.ERR		Error file
TIN	**	Test Vector Generating Software
T0.SOM		State at time = 0, from SOM step
TREE.DFR		DRINK report file
TREE.DNLK		DRINK Intermediate File
TREE.SIF		Sift Intermediate File
TREE.SFR		Sift report file
VLAIF		Virtual Logic Analyzer Intermediate Format (also referred to as remote data-vector file; can be an output file as well) This formatted output is required for AMCCSIMFMT input
*.ERR		Transcript error file (AMCC shell)

** not covered in the AMCC DAISY seminar

ANNOTATION FILES:

```
Front-Annotation:
FNTMIL.DSY        Front-Annotation MILITARY file
FNTCOM.DSY        Front-Annotation COMMERCIAL file
FNTNOM.DSY        Front-Annotation NOMINAL file
FNTMIN.DSY        Front-Annotation MINIMUM file
Intermediate-Annotation (when available):
IBAMIL.DSY        Intermediate-Annotation MILITARY file
IBACOM.DSY        Intermediate-Annotation COMMERCIAL file
IBANOM.DSY        Intermediate-Annotation NOMINAL file
IBAMIN.DSY        Intermediate-Annotation MINIMUM file
Back-Annotation - Core data only; from AMCC)
CORMIL.DSY        Back-Annotation MILITARY file
CORCOM.DSY        Back-Annotation COMMERCIAL file
CORNOM.DSY        Back-Annotation NOMINAL file
CORMIN.DSY        Back-Annotation MINIMUM file
Back-Annotation - complete; from COR, CIRCUIT.PKG
                    and AMCCANN software
BCKMIL.DSY        Back-Annotation MILITARY file
BCKCOM.DSY        Back-Annotation COMMERCIAL file
BCKNOM.DSY        Back-Annotation NOMINAL file
BCKMIN.DSY        Back-Annotation MINIMUM file
```

AMCC FILES:

```
AMCCERC.LST    ERC report, error list
AMCCIO.LST     I/O signal list; SSO table
AMCCPKG.LST    Package data report
AMCCVRC.LST    AMCCVRC report and error list
AMCCXREF.LST   Cross-reference listing
CIRCUIT.PKG    AMCC Package Data report
CIRCUIT.SDI    AMCC Formatted Netlist
OUTPUT.DLY     loading data file - submit
```

LOGGING ON:

- TYPE YOUR LOGIN CODE (CLASS; DEW; etc.) AS ASSIGNED
- THE LOGIN IS NOT CASE-SPECIFIC
- IF YOU HAVE A PASSWORD DEFINED THEN TYPE THE PASSWORD
  - THE SYSTEM IS NOT SET UP FOR A PASSWORD AT PRESENT
  - A PASSWORD WILL NOT BE USED FOR THE LOGIN "CLASS"
  - PASSWORDS ARE CASE-SPECIFIC

LOGGING OFF:

- IN THE MAIN WINDOW TYPE "LOG"
  - LOGGING OFF DOES NOT CLOSE OPEN WINDOWS
  - CLOSE ALL SUB-WINDOWS BEFORE LOGGING OFF SYSTEM
- IN SUB-WINDOWS TYPE "CTL-E" OR "CTL-D"

PROMPT:

- THE SYSTEM PROMPT IS "$" FOR ALL WINDOWS
- UNDER "CLASS" THE PROMPT HAS BEEN DEFINED TO BE "CLASS>" FOR THE MAIN WINDOW
- YOU CAN DEFINE YOUR OWN PROMPT AND CAN DO SO FOR EACH WINDOW (WHY BOTHER?)
- DEFINITION IS IN THE loginfile AND IS FOR PS1 = '" ' WHICH STANDS FOR "prompt-string-1"

LOGIN FILE:

- ONE EXISTS FOR "CLASS" FOR THE Q3500
- CREATE ONE THE FIRST TIME ON THE SYSTEM
- USE TEC TO CREATE IT
- IT MUST CONTAIN A SUBMIT SUCH AS:
  %SUBMIT /AMCC/Qnnn_LIBS/QnnnnSETUP
  TO SELECT LBRARY Qnnnn
- EXIT TEC AND LOG OFF!
  (executing loginfile {RET} will NOT work)
- LOG BACK ON AND THE LIBRARY IS SELECTED
- THE FILE MUST BE NAMED "loginfile"
  - MUST BE LOWERCASE

IC INVADERS!

HOW TO CREATE AND DESTROY WINDOWS

- MULTIPLE WINDOWS SLOW DOWN THE SYSTEM
- TWO WINDOWS OR THREE IS ENOUGH (THE LIMIT DEPENDS ON WHAT THEY ARE DOING)
- IF THE DEFAULT SIZE IS OK, THEN TYPE
  {SHIFT}-{ZOOM}
  - THE "$" PROMPT IN THE WINDOW IS WHERE YOU ARE TYPING
  - YOU ARE STILL IN THE SAME CURRENT CONTEXT
- TO CLOSE - PUT THE CURSOR IN THE WINDOW TO BE CLOSED
  AND TYPE
  PAN/CTL-E
- CAN TYPE "NW command"
  - OPENS A WINDOW AND FIRES OFF PROCESS
  - WINDOW IS "FOREGROUND" (VISIBLE)
  - CLOSES WINDOW WHEN DONE
  - USE OF "NW" ALLOWS DIFFERENT WINDOW SIZES TO BE SPECIFIED

- CAN TYPE "command &" TO FIRE OFF A BACKGROUND OPERATION
  - system assigns a process number and returns a prompt to the user - hit <RET> and continue other tasks
  - ASSIGNS A PROCESS NUMBER TO THE TASK
  - DISPLAY THE TASKS IN PROCESS BY TYPING "ps"

  EXAMPLE:

  RUN_DD &

- TOGGLE BETWEEN WINDOWS BY THE YELLOW BUTTON ON THE "MOUSE"
  - PUT THE CURSOR ON THE TOP BANNER AND HIT YELLOW
  - NO WINDOW WILL COME UP IF ONE IS NOT THERE
  - TOP AND SMALLER WINDOWS CHANGE PLACE
  - KEEP THE CURSOR OUT OF THE BANNER
    - THE PROCESS WILL HALT

  IF THE CURSOR IS IN THE SELECT STATE (IN A BANNER)
- BLUE BUTTON IS A MENU BUTTON
  - BLUE IS MENU BANNER SELECT (SELECT AS FOR WINDOWS)
  - BLUE IS MENU OPTION SELECT
  - YELLOW CLOSES THE OPTION SELECTED
- LOCATOR OPTION - MOUSE CAN BE SET RELATIVE OR ABSOLUTE IN ITS MOTION
- FRONT/BACK IS THE SAME AS BANNER SELECT
- SHELL WINDOW IS ANOTHER WAY TO OPEN A WINDOW

OUTPUT CONTROL

- A LARGE ZOOMED "H" APPEARS IN THE UPPER CORNER

CURRENT CONTEXT

- APPEARS AT THE TOP OF THE SCREEN

WINDOW PANNING

- DEFAULT WINDOW CAN BE PANNED WITHIN ITS BORDERS
  - MUST BE AT THE BOTTOM TO SEE WHAT YOU ARE TYPING IN
- MAIN (LOGIN) WINDOW DOES NOT PAN OR SCROLL

TREE STRUCTURE

- AS BEFORE BUT CURRENT CONTEXT IS . INSTEAD OF -
- FILENAMES ARE AS BEFORE
  A-Z, 0-9 10 CHARACTER PRIMARY, 4 CHARACTER EXTENSION
  AVOID SPECIAL CHARACTERS, BE MEANINGFUL
  AVOID DAISY, TEGAS RESERVED WORDS (CONFUSING)
- {NEXT}, {PREVIOUS}, {CHANGE} KEYS ALL WORK AS BEFORE
- DESIGNS CAN BE FLAT, TREE HIERARCHY,
  NESTED BLOCKS, CELLS

COMMANDS

MAKE A DIRECTORY

```
MKDIR Q700LIB
MKDIR BARREL8
MKDIR APNOTE1
MKDIR CLASSEX
```

INVENTORY THE DIRECTORY OR THOSE AROUND IT

```
INV .                 CURRENT
INV . -DE             CURRENT, DEEP
INV . -S -L -DE       CURRENT, DEEP, SORTED, LONG
INV ..          (WAS INV +)  ONE UP
```

INITIALIZE A DISK

```
INITDISK -name      WHERE name UP TO 19 CHARACTERS
```

MOUNT A F

```
MOUNT /F
```

COPY FILES

```
COPY /F/TCAL_MIL.MCF TO .
COPY SOM_MCF.SING TO /NET/D_T/USER/DEW <--- NOTE
COPY SOM_MCF.SING TO /F/FULL_MCF.SING
COPY . TO /F -B
COPY *.DRAW TO /F/Q700
COPY /F/Q700/*.DRAW TO . -B
COPY 1.DRAW TO 2.DRAW
```

DISMOUNT A DISK

```
DIS
```

TYPE A FILE

```
TYPE SOM_MCF.SING
```

ERASE FILES, ETC.

```
    ERASE 1.DRAW
    ERASE *.BAK
```

CHECK YOUR CONTEXT FIRST!!!!
DO NOT DO THIS AT SYSTEM LEVEL!

```
    ERASE *.*              <---- ALL FILES
    ERASE *                <---- ALL FILES
                                 THEN ALL DIRECTORIES
```

YOU GET ONE CHANCE TO SAVE YOURSELF BEFORE
FULL DESTRUCTION

```
    ERASE CLASSEX          <---- ERASES CONTENTS
                                 OF DIRECTORY
                                 CLASSEX
    ERASE CLASSEX -0       <---- ERASES THE DIRECTORY
                                 CLASSEX
```

CHANGE A DIRECTORY

```
    CD ..              UP TREE
    CD Q700            DOWN TREE
    CD /USER/CLASS     GET WHERE YOU BELONG
    CD                 GOES TO LOGIN DIRECTORY   NEAT!
```

RENAME A FILE, ETC.

```
    RENAME XXX.DRAW TO 3.DRAW
    RENAME TEMP TO 1.DRAW
    RENAME TEMP_SOM TO SOM_MCF.SING
```

MOUSE OFF

- DON'T!
  - SOME OPERATIONS REQUIRE THE MOUSE
    (D_T, D_I WILL NEED MICE)
- SHIFT-WRAP WILL TOGGLE THE CURSOR-ACTIVE/INACTIVE

CALL DED

DED 1

DED 15

DED2 1 NEW DED (NOT COVERED HERE)
- SEE BOOK

- CAN USE DED AND DED 2 BACK AND FORTH ON PAGES

DED OR DED1 - THE OLD GRAPHICS EDITOR

- WORKS THE SAME AS BEFORE

- AFTER CAPTURE OF THE SCHEMATIC USING DED OR DED2 • • • •

DANCE: DAISY NETWORK CONNECTIVITY EXTRACTOR

DANCE PREREQUISITES:

- USES .DRAW FILES PRODUCED UNDER DED OR DED2
- REQUIRES PROFILE, CONTENTS, GLOBAL NAMES, PARAMETER AND NESTED REFERENCE FILE (THE LATTER WITH -N OPTION ONLY)
- RECOMMEND USE OF DANCE CONFIGURATION FILE
- PRODUCES n.DFR, n.DIF

```
n.DRAW ---> DANCE  ---> n.DFR
                   :--> n.DIF
```

- SHELL PUTS ALL n.DFR INTO DANCE.ERR
  - ALWAYS CHECK ERROR FILES!

- CHECKS DRAWING PAGES FOR BASIC DESIGN ERRORS
  - UNUSED PINS
  - DUPLICATE NAMES
  - DUPLICATE OR MISSING PARAMETERS
    (DAISY PARAMETERS)
  - MULTIPLE DRIVES (TWO OR MORE PAGE CONNECTORS HAVE THE SAME NAME)
  - NO DRIVES FOR SIGNALS
    (PAGE CONNECTOR - NO HIERARCHY CONNECTOR)
- COMPILES DATA FROM DRAWING PAGES (n.DRAW FILE) FOR TRANSLATION TO THE INTERMEDIATE FILE (n.DIF FILE) - A BINARY FILE
- GENERATES A REPORT FILE (n.DFR)

- DANCE CONFIGURATION FILE - LISTED IN THE PROFILE FILE

- THE DRAWING PAGES ARE NAMED 1.DRAW, 2.DRAW, ETC. UNLESS LEXICAL MODE IS SET IN THE CONFIGURATION FILE

```
INVOKE DANCE BY:

DANCE <drawing-page-name> [option]... {EXECUTE}
      <design-path>

The default drawing page name is 1
  • needed for P

The default design path is the current context
  • needed for B or T

Input-scope:
       -P  page                        the default
       -B  block
       -T  tree    <====

Input:
       -U  updated pages only          <====
       -N [<nest-file>]  nested (with T input scope only)
             • If not specified, default is Nested
               Reference file in PROFILE file
       -NC  no conditional nesteds processed

Message-level:
       -M0 lowest message level
       -M3 normal setting for errors  <=====     NO
DEFAULT

Help-display:
       -H    help display of all legal DANCE syntax
             elements
```

EXAMPLES

```
DANCE                 PAGE 1.DRAW ONLY
DANCE -M3 -T          ALL PAGES, INDIVIDUAL REPORTS, TREE
                        IN CURRENT CONTEXT
DANCE -M3 -T -ERR     ALL PAGES, CONCATENATED ERR REPORTS
DANCE /USER/CLASS/n   PAGE n ONLY
DANCE -M3 -T -N       ALL PAGES, NESTED MODE, TREE IN
                        CURRENT CONTEXT
```

SEE LOGICIAN DESIGN COMPILATION SECTION 3.5
FOR DANCE ERROR MESSAGES

****
SUMMARY
****

- DANCE -T -N -M3 -E3

  GENERATES n.DFR, n = 1, 2, 3, 4...

- INVOKE THE DANCE-DRINK SHELL BY:
  RUN_DD

- CHOOSE MENU OPTION "1" UNDER THE SUPER-SHELL

BOTH GENERATE: DANCE.ERR
DRINK.ERR

DRINK: DAISY RESOLVING LINKER

DRINK PREREQUISITES:

- USES .DIF FILES PRODUCED FROM DANCE

- REQUIRES PROFILE, GLOBAL NAMES, PARAMETER, NESTED REFERENCE FILES

- RECOMMEND USE OF DRINK CONFIGURATION FILE

- PRODUCES TREE.DFR or INCR.DFR

- LINKS THE DRAWING PAGES INTO A SINGLE DESIGN
- RESOLVES INTERPAGE REFERENCES
- TAKES DATA FROM THE n.DIF FILES, RESOLVES THE EXTERNAL REFERENCES AND PRODUCES THE GLOBAL REFERENCES
- THE GLOBAL FILE IS (TREE.DNLK)
- GENERATES A REPORT FILE (TREE.DFR)

- DRINK CONFIGURATION FILE - LISTED IN THE PROFILE FILE

- THE BINARY FILES ARE NAMED 1.DIF, 2.DIF, ETC. UNLESS LEXICAL MODE IS SET IN THE CONFIGURATION FILE

```
INVOKE BY:

DRINK <full-link-mode> [option]... {EXECUTE}
      <update-link-mode>

link-file:   default is 1.DIF

update-path:  default is top of tree

report:     TREE.DFR for a full link
            INCR.DFR for an update link

Help display:
       -H      provides chart of syntax elements

Support files - use to override the PROFILE file:

         C <configuration-file>
         N <nested-file>
         GLOBAL <global-file>
         PARAM <parameter-file>

NORMAL INVOCATION:

     DRINK            ALL PAGES   <====
     DRINK  -M3 -E3   ALL PAGES
                    - MESSAGES REPORTED TO SCREEN
     DRINK  -U        UPDATE LINK ON TREE IN
                       CURRENT CONTEXT

SEE LOGICIAN DESIGN COMPILATION SECTION 4.3
FOR DRINK ERROR MESSAGES

************************************************

• USE  DRINK -T -M3 -E3
       GENERATES TREE.DFR

• INVOKE THE DANCE-DRINK SHELL BY:
            RUN_DD

• CHOOSE MENU OPTION "1" UNDER THE SUPER-SHELL

GENERATES:   DANCE.ERR
             DRINK.ERR
```

SPARC: SIMULATOR PARAMETER COMPILER

- BUILDS A GENERIC LIBRARY CONTAINING FUNCTIONAL DESCRIPTIONS OF THE SCHEMATIC COMPONENTS
- THE FILE CONTAINS TECHNOLOGY, TIMING AND FUNCTIONS
- AMCC LIBRARIES HAVE ALREADY BEEN COMPILED
- DESIGNS SUBMITTED TO AMCC MAY NOT CONTAIN ANY COMPONENTS THAT THE DESIGNER CREATED - ONLY AMCC RELEASED MACROS OR AMCC APPROVED PATCHES ARE ALLOWED

SPARC IS BEYOND THE SCOPE OF THE BEGINNER

RUN AGIF - THE AMCC INTERFACE FORMAT

- BEFORE PROCEEDING WITH THE REST OF THE STEPS USING DAISY SOFTWARE, THE AMCC MACROMATRIX SOFTWARE TO PRODUCE THE AMCC GENERIC INTERFACE FORMAT FILE SHOULD BE RUN

- THE NEXT STEP IS TO RUN AND SUCCESSFULLY PASS THE AMCC ENGINEERING REPORTS AND CHECKS SOFTWARE OR ERCs

- FAILURE IN THE ERCs REQUIRES A RE-ENTRY INTO THE GRAPHICS EDITOR (DED1 OR DED2), THEN AN INCREMENTAL DANCE AND DRINK AND ANOTHER ERC EXECUTION

- ONCE THE ERCs ARE SUCCESSFUL, THE TIMING CALCULATION FRONT-ANNOTATION FILE SHOULD BE GENERATED

****

- INVOKE THE AGIF SHELL BY:

- DIRECT CALL:

  RUN_AGIF

- CHOOSE MENU OPTION "1" UNDER THE SUPER SHELL

GENERATES: RUN_AGIF.ERR
CIRCUIT.SDI
misc. files

****

THE ERCS

- THE AMCC MACROMATRIX SUPPORT SOFTWARE INCLUDES AN EXTENSIVE ENGINEERING RULES CHECKS (ERC) PROGRAM

- THE "ERC" PROGRAM DETECTS ERRORS, SUCH AS:
  - OVER-POPULATED ARRAYS
  - EXCESSIVE CURRENT
  - OVERLOADED MACROS
  - INCORRECT HOOK-UPS
  - INVALID TECHNOLOGY MIXES
  - PIN-CLASS ERRORS
  - INVALID LIBRARY

- THE ERC PROGRAM ISSUES REPORTS THAT ASSIST IN THE FINAL EVALUATION OF A DESIGN, SUCH AS:
  - POPULATION, INCLUDING EXTERNAL PIN COUNT
  - MACRO USAGE, MACRO OCCURRENCE AND POWER
  - FAN-OUT LOADING

- THE ERC PROGRAM SHOULD BE RUN PRIOR TO SIMULATION

****

- INVOKE THE ERC SHELL BY:

  RUN_ERC
  or **AMCCERC**
  or choose menu option "1" under the super shell

GENERATES:

AMCCERC.LST	ERC report
AMCCIO.LST	I/O list
AMCCXREF.LST	cross reference

all files are in the ERC subdirectory

****

FRONT-ANNOTATION
BACK-ANNOTATION

- THE AMCC MACROMATRIX SUPPORT SOFTWARE INCLUDES AN ANNOTATION PROGRAM THAT ALLOWS THE SIMULATION TO BE PERFORMED WITH LOADING DELAYS INCLUDED.

- THE FRONT-ANNOTATION DELAY FILE INCLUDES THE LOADING DELAYS ON A NET AS FOLLOWS:
  - ACTUAL FAN-OUT LOAD DELAY
  - ACTUAL WIRE-OR LOAD DELAY
  - STATISTICAL ESTIMATE OF THE METAL LOAD DELAY BASED ON THE NET SIZE
  - ACTUAL OUTPUT CAPACITIVE LOAD DELAY

- AFTER LAYOUT, THE BACK-ANNOTATION SOFTWARE WILL PROVIDE A BACK-ANNOTATION DELAY FILE THAT WOULD BE SUBSTITUTED FOR THE FRONT-ANNOTATION DELAY FILE .

****

- INVOKE THE ANNOTATION SHELL BY:

  RUN_ANN
  or **AMCCANN**
  or choose menu option "2" under the super shell

GENERATES: RUN_ANN.ERR

PRODUCES: FNTMIN.DSY the delay files
FNTMIL.DSY OR FNTCOM.DSY
(FNTNOM.DSY for your own use)
AMCCPKG.LST REPORT FILE
OUTPUT.DLY (DATA FILE)

****

SIFT: SIMULATOR INTERMEDIATE FILES TRANSLATOR

- PROCESSES INFORMATION GENERATED IN DANCE, DRINK PLUS THE SPARC-GENERATED AMCC LIBRARIES
- PREPARES DATA FOR USE BY DLS/MDLS/DTV
- SIFT DETERMINES ON A PAGE BASIS THE RELATIONSHIP BETWEEN COMPONENTS ON A PAGE AND THE INFORMATION IN THE LIBRARY

SIFT PREREQUISITES:

- USES n.DIF FILES PRODUCED FROM DANCE
- USES TREE.DNLK FILE PRODUCED FROM DRINK

- REQUIRES PROFILE, SIFT CONFIGURATION FILE, SPARC LIBRARY FILE(S) {AMCC LIBRARY}, PARAMETER AND NESTED REFERENCE FILES

- PRODUCES n.SIF AND TREE.SIF FILES
- OPTIONALLY PRODUCES n.SFR AND TREE.SFR FILES (NOT USUALLY REQUIRED WHEN RUNNING AN AMCC LIBRARY)

INVOKE BY:

SIFT [design-path] [option]... {EXECUTE}

NORMAL INVOCATION:

SIFT	PROCESSES FILES FOR TREE IN CURRENT CONTEXT
SIFT -M3	SAME BUT ADDS MESSAGES
SIFT -M3 -L -R	SAME BUT ALSO DISPLAYS CONFIGURATION FILE AND GENERATES TREE.SFR AND n.SFR FILES

SEE LOGICIAN DESIGN COMPILATION SECTION 6.9
FOR SIFT ERROR MESSAGES - TBS

****

SIFT SHELL USES:

SIFT -M3 -LIB $FAMILY/PATCH$1.SLIB .....

- INVOKE THE SIFT SHELL BY:
  RUN_SIFT [option] option = MIN
  NOM
  COM BIPOLAR
  COM4 OR COM5 BICMOS
  MIL
  THE OPTION IS REQUIRED

- OR CHOOSE MENU OPTION "3" UNDER THE SUPER-SHELL
  and follow the prompt (RECOMMENDED)

GENERATES: SIFT.ERR

****

SING: SIMULATION INPUT GENERATION

SING PREREQUISITES:

- USES THE BINARY FILES PRODUCED UNDER DANCE AND DRINK
- USES A SMALL NUMBER OF USER-WRITTEN PROGRAMS THAT EXTRACT AND FORMAT INFORMATION
- ALLOWS THE EXTRACTION OF INFORMATION FROM A DRAWING SUCH AS COMPONENT NAMES AND ATTRIBUTES, PAGE NUMBER, CONNECTIVITY, PARAMETER VALUES
- PRODUCES INPUT FILES FOR SIMULATORS AND OTHER DESIGN AUTOMATION TOOLS

SING IS BEYOND THE SCOPE OF A BEGINNER

**
****
SING "TO DAISY" SHELL:

USES: SING -T -M3 -MCF /AMCC/SOM_MAKER/SOM_MCF

- INVOKE THE SOM_MAKER SHELLS BY:
  RUN_SMAKER
- OR CHOOSE MENU OPTION "3" UNDER THE SUPER-SHELL

GENERATES: SOM_MAKER.ERR
****

OPTIONAL STEP

FMT_CSD.SING: FORMAT CONTROL FILE

- THIS IS THE FILE FROM WHICH THE DLS/DTV DEFAULT FORMAT IS CREATED - controls WAVE and LIST formats

---

- THIS FILE MAY BE EDITED USING TEC
- MOVE SIGNALS, ADD SIGNALS (ANY INTERNAL NET NAMED ON THE DRAWING -

- ADD SIGNALS BY DUPLICATING AN EXISTING LINE - THERE ARE SPECIAL CHARACTERS YOU CANNOT SEE OR DECIPHER
- USE TEC AND EXIT WHEN FINISHED
- THEN USE THE COMMAND:

  FMT_CSD.SING

  TO RE-CREATE THE FMT FILE USING THE NEW VERSION OF THE FMT_CSD.SING FILE

- THIS FILE IS A FOR-YOUR-OWN REFERENCE

- NOTE: FMT IS NO LONGER OF INTEREST TO AMCC

- EXIT THE SUPER SHELL BEFORE EDITING FMT_CSD.SING

- NOTE: YOU MUST RUN BOTH THE FMT_CSD.SING COMMAND AND STEP 3 (RUN_SOM) IF YOU EDIT FMT_CSD.SING

```
SOM SOM_MCF.SING -M3
DLS <<!
FORMAT
CARYIN@S16BITADR/3:CARYIN
3DATAØ@S16BITAOR/2:DATAØ
3DATA1@S16BITADR/2:DATA1
3DATA1Ø@S16BITADR/2:DATA1Ø
3DATA11@S16BITADR/2:DATA11
3DATA12@S16BITADR/3:DATA12
3DATA13@S16BITADR/3:DATA13
3DATA14@S16BITADR/3:DATA14
3DATA15@S16BITADR/3:DATA15
3DATA2@S16BITADR/2:DATA2
3DATA3@S16BITADR/2:DATA3
3DATA4@S16BITADR/2:DATA4
3DATA5@S16BITADR/2:DATA5
3DATA6@S16BITADR/2:DATA6
3DATA7@S16BITADR/2:DATA7
3DATA8@S16BITADR/2:DATA8
3DATA9@S16BITADR/2:DATA9
3DATBØ@S16BITADR/4:DATBØ
3DATB1@S16BITADR/4:DATB1
3DATB1Ø@S16BITADR/4:DATB1Ø
3DATB11@S16BITADR/4:DATB11
3DATB12@S16BITADR/3:DATB12
3DATB13@S16BITADR/3:DATB13
3DATB14@S16BITADR/3:DATB14
3DATB15@S16BITADR/3:DATB15
3DATB2@S16BITADR/4:DATB2
3DATB3@S16BITADR/4:DATB3
3DATB4@S16BITADR/4:DATB4
3DATB5@S16BITADR/4:DATB5
3DATB6@S16BITADR/4:DATB6
3DATB7@S16BITADR/4:DATB7
3DATB8@S16BITADR/4:DATB8
3DATB9@S16BITADR/4:DATB9
3EXTCLK@S16BITADR/1Ø:EXTCLK
3EXTRST@S16BITADR/1Ø:EXTRST
3MUXA@S16BITADR/2:MUXA
3MUXB@S16BITADR/4:MUXB
3CAROUT@S16BITADR/1Ø:CAROUT
3FZERO@S16BITADR/1Ø:FZERO
3NEXTØ@S16BITADR/6:NEXTØ
3NEXT1@S16BITADR/6:NEXT1
3NEXT1Ø@S16BITADR/8:NEXT1Ø
3NEXT11@S16BITADR/8:NEXT11
3NEXT12@S16BITADR/9:NEXT12
3NEXT13@S16BITADR/9:NEXT13
3NEXT14@S16BITADR/9:NEXT14
3NEXT15@S16BITADR/9:NEXT15
3NEXT2@S16BITADR/6:NEXT2
3NEXT3@S16BITADR/6:NEXT3
3NEXT4@S16BITADR/7:NEXT4
3NEXT5@S16BITADR/7:NEXT5
3NEXT6@S16BITADR/7:NEXT6
3NEXT7@S16BITADR/7:NEXT7
3NEXT8@S16BITADR/8:NEXT8
3NEXT9@S16BITADR/8:NEXT9
3SUMØ@S16BITADR/6:SUMØ
3SUM1@S16BITADR/6:SUM1
3SUM1Ø@S16BITADR/8:SUM1Ø
3SUM11@S16BITADR/8:SUM11
3SUM12@S16BITADR/9:SUM12
3SUM13@S16BITADR/9:SUM13
3SUM14@S16BITADR/9:SUM14
3SUM15@S16BITADR/9:SUM15
3SUM2@S16BITADR/6:SUM2
3SUM3@S16BITADR/6:SUM3
3SUM4@S16BITADR/7:SUM4
3SUM5@S16BITADR/7:SUM5
3SUM6@S16BITADR/7:SUM6
3SUM7@S16BITADR/7:SUM7
3SUM8@S16BITADR/8:SUM8
3SUM9@S16BITADR/8:SUM9
3S
PUT FMT
QUIT N
!
```

FMT CSD.SING

SOM CONTROL FILE

- PROVIDES SIGNAL STIMULUS
- PROVIDES OTHER INFORMATION FOR USE BY DTV/DLS/MDLS
- UP TO 9 SECTIONS MAY BE DEFINED:

```
$CAPACITANCE
$CONFIGURATION          * USE DEFAULT
$DATA                   * NOT FOR FUNCTIONAL, AC TEST
                          PARAMETRICS
$INITIALIZE             * NOT FOR FUNCTIONAL, AC TEST
                          PARAMETRICS
$INPUTS                 * FOR DATA FILE
$OUTPUTS                * FOR PRINT_ON_CHANGE
                        * FOR TEGAS TESTPATT FORMAT
                        * FOR OUTPUT FILE DESCRIPTION
$PMX_INFO
$SIGNAL_GENERATORS      * DEFAULT FOR TIME = 0
                        * USE IF SIGNAL NOT IN DATA
                          FILE
$TIMING
```

NOT USED:

```
CAPACITANCE
DATA
INITIALIZE
PMX_INFO
TIMING
```

- EITHER INPUTS OR SIGNAL_GENERATORS MUST BE USED

THE $END MUST BE AT THE END OF THE SOM CONTROL FILE

THE $CONFIGURATION SECTION

- SPECIFY VALUES USED BY THE SIMULATION PROGRAMS
- DEFAULT VALUES NORMALLY UNCHANGED

THE $DATA SECTION

- FOR ROMS, RAMS, PLAS - at-speed simulation only!
- DO NOT USE FOR FUNCTIONAL, AC TEST OR PARAMETRIC SIMULATIONS

THE $INITIALIZE SECTION

- SPECIFY INITIAL VALUES FOR A SIGNAL OR GROUP OF SIGNALS - WHEN IMPOSSIBLE TO DO OTHERWISE
- AMCC REQUIRES THAT A FUNCTIONAL SIMULATION BE INITIALIZED BY VECTORS. APPLIES TO AC TEST AND PARAMETRIC TESTS.

UNEDITED FILE

```
/****
*
* DESIGN PATH /USER/CLASS/S16BITADR   DATE 18 NOV 1990 16:34
*
* COMPANY _____ CIRCUIT_NAME _____
*
* ARRAY _____ PO# _____ REV _____
*
* DESIGNER _____
*
* What tests does this control file support: _____
*
* _____
*
* _____
*
****/

/***   Configuration section    ****/

$CONFIGURATION
GATE_ACTIVITY_LEVEL := 100;
IMMEDIATE_ACTIVITY_LEVEL := 100;
TIMING_CHECK := 1;

/***  Signal generator section  ****/

$SIGNAL_GENERATORS
@S16BITADR/3:CARYIN := @0:F0 ;
@S16BITADR/2:DATA0 := @0:F0 ;
@S16BITADR/2:DATA1 := @0:F0 ;
@S16BITADR/2:DATA10 := @0:F0 ;
@S16BITADR/2:DATA11 := @0:F0 ;
@S16BITADR/3:DATA12 := @0:F0 ;
@S16BITADR/3:DATA13 := @0:F0 ;
@S16BITADR/3:DATA14 := @0:F0 ;
@S16BITADR/3:DATA15 := @0:F0 ;
@S16BITADR/2:DATA2 := @0:F0 ;
@S16BITADR/2:DATA3 := @0:F0 ;
@S16BITADR/2:DATA4 := @0:F0 ;
@S16BITADR/2:DATA5 := @0:F0 ;
@S16BITADR/2:DATA6 := @0:F0 ;
@S16BITADR/2:DATA7 := @0:F0 ;
@S16BITADR/2:DATA8 := @0:F0 ;
@S16BITADR/2:DATA9 := @0:F0 ;
@S16BITADR/4:DATB0 := @0:F0 ;
@S16BITADR/4:DATB1 := @0:F0 ;
@S16BITADR/4:DATB10 := @0:F0 ;
@S16BITADR/4:DATB11 := @0:F0 ;
@S16BITADR/3:DATB12 := @0:F0 ;
@S16BITADR/3:DATB13 := @0:F0 ;
@S16BITADR/3:DATB14 := @0:F0 ;
@S16BITADR/3:DATB15 := @0:F0 ;
@S16BITADR/4:DATB2 := @0:F0 ;
@S16BITADR/4:DATB3 := @0:F0 ;
@S16BITADR/4:DATB4 := @0:F0 ;
@S16BITADR/4:DATB5 := @0:F0 ;
@S16BITADR/4:DATB6 := @0:F0 ;
@S16BITADR/4:DATB7 := @0:F0 ;
@S16BITADR/4:DATB8 := @0:F0 ;
@S16BITADR/4:DATB9 := @0:F0 ;
@S16BITADR/10:EXTCLK := @0:F0 ;
@S16BITADR/10:EXTRST := @0:F0 ;
@S16BITADR/2:MUXA := @0:F0 ;
@S16BITADR/4:MUXB := @0:F0 ;
```

SIGNAL GENERATOR EXAMPLES:

```
  @CLASS/1.SIGNAL := @0:F0;  AT TIME=ZERO,FORCE TO ZERO

@CLASS/1.EXTCLK := @0:F0, [10000:F0, 10000:F1];
                                  100ns CLOCK

  [10:F1,10:F0]**;  INDEFNITE REPEAT
                    RELATIVE - 10 STEPS EACH

  @1000:F1;         ABSOLUTE TIME
                    CANNOT USE IN A REPEAT STEP

  [1000:F1,1000:F0]*20;   20 CYCLES OF 10ns HIGH,
                          10ns LOW, THEN HOLD
                             (Q5000 scale)

 [10000:F1,10000:F0]*100, @2005000:F1;
 absolute must not be less than time passed
```

- RUN SMT TO CONVERT A MAESTRO SOM MCF.SING FILE TO A DNIX SOM_MCF.NEW FILE

  • • • BE AT THE SAME TREE NODE!

```
$SIGNAL_GENERATORS

/* ------------------------------------------------- */
/* INCLUDE ALL PRIMARY INPUTS EITHER IN THIS         */
/* SECTION OR IN AN "$INPUTS" SECTION, OR USE        */
/* BOTH SECTIONS - BUT AN INPUT CAN ONLY BE          */
/* DEFINED IN ONE PLACE OR THE OTHER AT ANY TIME     */
/* ------------------------------------------------- */

/* TRANSPARENT LOW LATCH DRIVEN BY SAME CLOCK AS RISING-EDGE  */
/* ACTIVE CLOCK    - THEREFORE, DATA CHANGES ON FALLING EDGE  */
/* ---------------------------------------------------------- */

@S16BITADR/18:EXTCLK := 00:F0, {10000:F0, 10000:F1}**;  ← careful!

/* FF13, FFF#2 RESET BY EXTRST = 1   */


@S16BITADR/18:EXTRST := 00:F0, 020000:F1, 040000:F0;

@S16BITADR/3:CARYIN := 00:F0, 0140000:F1, 0220000:F0     ;

@S16BITADR/2:DATA0 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA1 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA10 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA11 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/3:DATA12 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/3:DATA13 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/3:DATA14 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/3:DATA15 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA2 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA3 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA4 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA5 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;

@S16BITADR/2:DATA6 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA7 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA8 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;
@S16BITADR/2:DATA9 := 00:F0,060000:F1, 0100000:F0, 0140000:F1, 0180000:F0, 0220000:F1, 0260000:F0 ;

/* MUX A SELECTS 0 WHEN S = 1, SELECTS LATCHED DATA BUS WHEN S = 0  */

@S16BITADR/2:MUXA := 00:F0, 0220000:F1, 0300000:F0 ;

@S16BITADR/4:DATB0 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB1 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB10 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB11 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/3:DATB12 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/3:DATB13 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/3:DATB14 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/3:DATB15 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB2 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB3 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB4 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB5 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB6 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB7 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB8 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;
@S16BITADR/4:DATB9 := 00:F0, 000000:F1, 0120000:F0, 0160000:F1, 0200000:F0, 0240000:F1, 0280000:F0 ;

/* MUX B SELECTS SUM FEEDBACK WHEN S = 1, SELECTS LATCHED DATA BUS WHEN S = 0 */

@S16BITADR/4:MUXB := 00:F0, 0220000:F1, 0300000:F0 ;
```

THE $OUTPUTS SECTION - MANDATORY

- TO USE AMCCSIMFMT, THE OUTPUTS SECTION IS MANDATORY
  NOTE: THIS SECTION IS NOW REQUIRED IN LIEU OF THE FMT FILE

- ALL PRIMARY INPUTS, ALL PRIMARY OUTPUTS, AND ALL 3-STATE AND BIDIRECTIONAL ENABLE SIGNALS MUST BE LISTED IN THE OUTPUT FILE FOR FUNCTIONAL AND AC TEST VECTORS - USE SAME FORMAT FOR AT-SPEED

- FAILURE TO INCLUDE ALL REQUIRED SIGNALS CAN RESULT IN DESIGN SUBMISSION DELAYS

```
                SAMPLED
************************************************
     $OUTPUTS
     FILE /USER/CLASS/JOHN/DOE/OUT_DATA <-
     @DOE/1:VAR1, VAR2, VAR3,
     @DOE/2:SIG1, SIG2;
************************************************
```

- THE 5 SIGNALS ARE WRITTEN IN FIRST ON LEFT, ETC. ORDER IN THE FILE NAMED OUT_DATA IN THE PATH /USER/CLASS/JOHN/DOE

- NOTE PUNCTUATION
  - SEMICOLON ONLY AT THE END OF THE LIST
  - COMMAS AS SEPARATORS IN THE LIST
  - "<-" AT END OF FILE DEFINITION
  - SIGNALS ON THE SAME PAGE CAN BE GROUPED BUT DIFFERENT PAGES REQUIRE A NEW LINE
  - SIGNALS COULD EACH HAVE THEIR OWN LINE
  - ANY SIGNAL NAMED ON THE SCHEMATIC MAY APPEAR IN THE $OUTPUTS SECTION
  - "S" AT THE END OF THE "$OUTPUTS" - COMMON ERROR IS TO FORGET IT OR TO TYPE A "$"

- SUBMIT SAMPLED SIMULATION OUTPUTS FOR FUNCTIONAL, AT-SPEED AND AC TEST SIMULATIONS

```
/* ------------------------------------------------ */
/* OUTPUT FILE SECTION - YOU MUST ADD THIS          */
/* UNTIL AMCC CAN AUTOMATE ITS CREATION             */
/*  - IT IS REQUIRED FOR AMCCSIMFMT                 */
/* ------------------------------------------------ */

$OUTPUTS

/*  PRINT_ON_CHANGE */
/*  PUT THIS IN TO CHECK SKEW ON INPUTS  */

/* ------------------------------------------------ */
/* LIST THE FILE WHERE YOU WANT THE RESULTS         */
/* ------------------------------------------------ */

FILE /USER/CLASS/S16BITADR/OUTPUT.LST <-

/* ------------------------------------------------ */
/* INPUT SECTION    LIST ALL PRIMARY INPUTS HERE    */
/* ------------------------------------------------ */

@S16BITADR/10:EXTCLK, EXTRST,

@S16BITADR/3:CARYIN,

@S16BITADR/3:DATA15, DATA14, DATA13, DATA12,
@S16BITADR/2:DATA11, DATA10, DATA9, DATA8, DATA7, DATA6,
@S16BITADR/2:DATA5, DATA4, DATA3, DATA2, DATA1, DATA0,
@S16BITADR/2:MUXA,

@S16BITADR/3:DATB15, DATB14, DATB13, DATB12,
@S16BITADR/4:DATB11, DATB10, DATB9, DATB8, DATB7, DATB6,

@S16BITADR/4:DATB5, DATB4, DATB3, DATB2, DATB1, DATB0,
@S16BITADR/4:MUXB,

/* ------------------------------------------------ */
/* OUTPUT SECTION   LIST ALL PRIMARY OUTPUTS HERE   */
/* ------------------------------------------------ */

@S16BITADR/10:FZERO, CAROUT,

@S16BITADR/9:SUM15, SUM14, SUM13, SUM12,
@S16BITADR/8:SUM11, SUM10, SUM9, SUM8,
@S16BITADR/7:SUM7, SUM6, SUM5, SUM4,
@S16BITADR/6:SUM3, SUM2, SUM1, SUM0,

@S16BITADR/9:NEXT15, NEXT14, NEXT13, NEXT12,
@S16BITADR/8:NEXT11, NEXT10, NEXT9, NEXT8,
@S16BITAOR/7:NEXT7, NEXT6, NEXT5, NEXT4,
@S16BITAOR/6:NEXT3, NEXT2, NEXT1, NEXT0;

/* ------------------------------------------------ */
/* INTERNAL ENABLES   LIST HERE (IF ANY)            */
/* ------------------------------------------------ */




/* ------------------------------------------------ */
/* INCLUDE AN "$END" STATEMENT                      */
/* ------------------------------------------------ */


$END
```

SAMPLED FILE OUTPUT SECTION

```
/* ================================================== */

$OUTPUTS

FILE /USER/CLASS/MUX16/FUNCTION.VLAF <-

/* -------------------------------------------------- */
/* LIST ALL PRIMARY INPUTS EXCEPT THERMAL DIODES      */
/* AND VBB MACRO INPUTS                               */
/* -------------------------------------------------- */

@MUX16/2:EXTCLK, EXTRST,
@MUX16/3:SELCT3, SELCT2, SELCT1, SELCTØ,
@MUX16/3:DATØ, DAT1, DAT2, DAT3, DAT4, DAT5, DAT6, DAT7,
@MUX16/3:DAT8, DAT9, DAT1Ø, DAT11, DAT12, DAT13, DAT14, DAT15,

/* -------------------------------------------------- */
/* LIST ALL PRIMARY OUTPUTS EXCEPT THERMAL DIODES     */
/* -------------------------------------------------- */

@MUX16/2:YOUTPT;

/* -------------------------------------------------- */
/* LIST 3-STATE ENABLES AND BIDIRECTIONAL ENABLES HERE */
/*   IF ANY                                           */
/* -------------------------------------------------- */

$END
```

- FOR THE SAMPLED OUTPUTS SECTION
  DATA IS WRITTEN FOR EVERY "VIEW" (RECORDED) STEP BUT ONLY FOR THOSE SIGNALS LISTED IN THE $OUTPUTS SECTION (LIST RECORDS ALL SIGNALS LISTED IN THE FMT FILE)

- DIFFERENT APPROACH: PRINT_ON_CHANGE

```
            PRINT-ON-CHANGE
************************************************
     $OUTPUTS
     PRINT_ON_CHANGE
     FILE /USER/CLASS/JOHN/DOE/OUT_DATA <-
     @DOE/1:VAR1, VAR2, VAR3,
     @DOE/2:SIG1, SIG2;
************************************************
```

- THE USE OR PRINT_ON_CHANGE CAUSES DATA TO BE WRITTEN ANYTIME THAT ONE OF THE MONITORED SIGNALS CHANGES VALUE

- ITEMS IN EITHER THE LIST MAY BE INPUTS, INTERNAL NETS THAT HAVE BEEN NAMED ON THE SCHEMATIC, OUTPUTS

- ITEMS NOT NAMED CAN BE PIECED IN - NOT A GOOD POLICY TO DO THIS - PLAN AHEAD!

- SUBMIT PRINT-ON-CHANGE FILES FOR AT-SPEED AND AC TEST SIMULATION

THE $INPUTS SECTION - OPTIONAL

- IF INPUT VECTORS FOR THE SIMULATION ARE TO BE SUPPLIED BY A SEPARATE FILE, THIS SECTION DESCRIBES THAT FILE

- SIGNALS IN A SIGNAL GENERATOR SECTION CANNOT ALSO BE IN A "REMOTE" DATA FILE AND VISA VERSA

```
*******************************************************
     $INPUTS
     FILE /USER/CLASS/JOHN/DOE/DATA ->
     @DOE/1:VAR1, VAR2, VAR3,
     @DOE/2:SIG1, SIG2;
*******************************************************
```

- THE 5 SIGNALS ARE IN FIRST ON LEFT, ETC. ORDER IN THE FILE NAMED DATA IN THE PATH /USER/CLASS/JOHN/DOE

- NOTE PUNCTUATION
  - SEMICOLON ONLY AT THE END OF THE LIST
  - COMMAS AS SEPARATORS IN THE LIST
  - "->" AT END OF FILE DEFINITION
  - SIGNALS ON THE SAME PAGE CAN BE GROUPED BUT DIFFERENT PAGES REQUIRE A NEW LINE
  - SIGNALS COULD EACH HAVE THEIR OWN LINE
  - NO SIGNAL IN THE LIST MAY ALSO APPEAR IN THE $SIGNAL_GENERATOR SECTION
  - "S" AT THE END OF THE "$INPUTS" - COMMON ERROR IS TO FORGET IT OR TO TYPE A "$"

SAMPLE INPUT SECTION AND DATA FILE

Date: 28 MAY 86 11:06 File: REMOTE.SING

```
/****
*
* DESIGN PATH /USER/CLASS/BARREL   DATE 05-MAY-1986 14:34
*
* COMPANY _________________   CIRCUIT_NAME  _16 BIT BARREL
*
* ARRAY    _Q1300T__      PO#  ___________   REV  ______
*
* DESIGNER _______DEW_____________
*
* What tests does this control file support:  _________
*
* _______REMOTE DATA FILE_____________________________
*
* ____________________________________________________
*
****/

/***   Configuration section    ****/

$CONFIGURATION
GATE_ACTIVITY_LEVEL := 100;
IMMEDIATE_ACTIVITY_LEVEL := 100;
TIMING_CHECK := 1;

/***  Signal generator section  ****/

$INPUTS
FILE /USER/CLASS/BARREL16/INPUT.DAT ->

@BARREL16/2:D0 ,
@BARREL16/2:D1 ,
@BARREL16/2:D2 ,
@BARREL16/2:D3 ,
@BARREL16/2:D4 ,
@BARREL16/2:D5 ,
@BARREL16/2:D6 ,
@BARREL16/2:D7 ,
@BARREL16/2:D8 ,
@BARREL16/2:D9 ,
@BARREL16/2:D10 ,
@BARREL16/2:D11 ,
@BARREL16/2:D12 ,
@BARREL16/2:D13 ,
@BARREL16/2:D14 ,
@BARREL16/2:D15 ;

@BARREL16/2:SEL1,
@BARREL16/2:SEL2,
@BARREL16/2:SEL3,
@BARREL16/2:SEL4;
```

Date: 28 MAY 86 11:06 File: INPUT.DAT

```
$DATA_HEADER$
$TYPE$
I/O
$FORMAT$
TIME_VALUE
$TOTAL_COLUMNS$
8 2#
$BASE$
D B
$FIELD$
TIME
$FIELD$
VALUE
$END$
#0000000 ########################
#0010000 ########################
#0020000 ########################
#0030000 ########################
#0040000 ########################
#0050000 ########################
#0060000 ########################
#0070000 ########################
#0080000 ########################
#0090000 ########################
#0100000 ########################
#0110000 ########################
#0120000 ########################
#0130000 ########################
#0140000 ########################
#0150000 ########################
#0160000 ########################
#0170000 ########################
#0180000 ########################
#0190000 ########################
#0200000 ########################
#0210000 ########################
#0220000 ########################
#0230000 ########################
#0240000 ########################
#0250000 ########################
#0260000 ########################
#0270000 ########################
#0280000 ########################
#0290000 ########################
#0300000 ########################
#0310000 ########################
#0320000 ########################
#0330300 ########################
#0340000 ########################
#0350000 ########################
#0360000 ########################
#0370000 ########################
```

TO GENERATE FMT_CSD.SING AND A DRAFTED, UNEDITED SOM_MCF.SING FILE, INVOKE SMAKER:

****

- INVOKE RUN_SMAKER

  OR CHOOSE MENU OPTION 3 UNDER THE SUPER-SHELL

BOTH SHELLS WILL END WITH "TEC SOM_MCF.SING"

- PERFORM THE EDITS DESIRED
- SUPER SHELL WILL REDISPLAY ITS MENU WHEN TEC IS EXITED

****

IF YOU ARE GOING TO CREATE A DATA FILE
- EXIT THE SUPER-SHELL

```
/****
*
* DESIGN PATH /USER/CLASS/S16BITADR   DATE 18 NOV 1990 12:38
*
* COMPANY  __AMCC_____________   CIRCUIT_NAME  16 BIT ADDR
*
* ARRAY    Q13ØØS___      PO#  _____________   REV  _______
*
* DESIGNER _____DEW_____________________
*
* What tests does this control file support:  _________
*
* ____FUNCTIONAL VECTOR GNERATION FOR THE _____________
*
* ______ADDER - A CASE STUDY_____________________________
*
****/

/* ------------------------------------------------ */
/***   Configuration section     ****/
/* ------------------------------------------------ */

$CONFIGURATION
GATE_ACTIVITY_LEVEL := 1ØØ;
IMMEDIATE_ACTIVITY_LEVEL := 1ØØ;
TIMING_CHECK := 1;

/* ------------------------------------------------ */
/*     INPUT SECTION - YOU CREATE THIS              */
/* ------------------------------------------------ */

$INPUTS

/*  TELL THE SYSTEM WHERE TO FIND THE DATA          */

FILE /USER/CLASS/S16BITADR/INPUT.DAT ->


/* ------------------------------------------------ */
/* INCLUDE ALL PRIMARY INPUTS EITHER IN THIS        */
/* SECTION OR IN AN "$SIGNAL_GENERATORS SECTION     */
/* OR USE BOTH SECTIONS - BUT AN INPUT CAN ONLY BE  */
/* DEFINED IN ONE PLACE OR THE OTHER AT ANY TIME    */
/* ------------------------------------------------ */
/* LIST INPUTS IN THE ORDER THAT THEY ARE IN        */
/* IN THE REMOTE DATA FILE                          */
/* ------------------------------------------------ */


@S16BITADR/1Ø:EXTCLK,

@S16BITADR/1Ø:EXTRST,

@S16BITADR/3:CARYIN,

@S16BITADR/2:DATAØ,
@S16BITADR/2:DATA1,
@S16BITADR/2:DATA2,
@S16BITADR/2:DATA3,
@S16BITADR/2:DATA4,
@S16BITADR/2:DATA5,
@S16BITADR/2:DATA6,
@S16BITADR/2:DATA7,
@S16BITADR/2:DATA8,
@S16BITADR/2:DATA9,
```

```
@S16BITADR/2:DATA1Ø,
@S16BITADR/2:DATA11,
@S16BITADR/3:DATA12,
@S16BITADR/3:DATA13,
@S16BITADR/3:DATA14,
@S16BITADR/3:DATA15,

@S16BITADR/2:MUXA,

@S16BITADR/4:DATBØ,
@S16BITADR/4:DATB1,
@S16BITADR/4:DATB2,
@S16BITADR/4:DATB3,
@S16BITADR/4:DATB4,
@S16BITADR/4:DATB5,
@S16BITADR/4:DATB6,
@S16BITADR/4:DATB7,
@S16BITADR/4:DATB8,
@S16BITADR/4:DATB9,
@S16BITADR/4:DATB1Ø,
@S16BITADR/4:DATB11,
@S16BITADR/3:DATB12,
@S16BITADR/3:DATB13,
@S16BITADR/3:DATB14,
@S16BITADR/3:DATB15,

@S16BITADR/4:MUXB:


/* ------------------------------------------------ */
/* OUTPUT FILE SECTION - YOU MUST ADD THIS          */
/* UNTIL AMCC CAN AUTOMATE ITS CREATION             */
/*  - IT IS REQUIRED FOR AMCCSIMFMT                 */
/* ------------------------------------------------ */


$OUTPUTS

/*  PRINT_ON_CHANGE */
/*  PUT THIS IN TO CHECK SKEW ON INPUTS  */


/* ------------------------------------------------ */
/* LIST THE FILE WHERE YOU WANT THE RESULTS         */
/* ------------------------------------------------ */

FILE /USER/CLASS/S16BITADR/OUTPUT.LST <-

/* ------------------------------------------------ */
/* INPUT SECTION    LIST ALL PRIMARY INPUTS HERE    */
/* ------------------------------------------------ */

@S16BITADR/1Ø:EXTCLK, EXTRST,

@S16BITADR/3:CARYIN,

@S16BITADR/3:DATA15, DATA14, DATA13, DATA12,
@S16BITADR/2:DATA11, DATA1Ø, DATA9, DATA8, DATA7, DATA6,
@S16BITADR/2:DATA5, DATA4, DATA3, DATA2, DATA1, DATAØ,
@S16BITADR/2:MUXA,

@S16BITADR/3:DATB15, DATB14, DATB13, DATB12,
@S16BITADR/4:DATB11, DATB1Ø, DATB9, DATB8, DATB7, DATB6,
@S16BITADR/4:DATB5, DATB4, DATB3, DATB2, DATB1, DATBØ,
@S16BITADR/4:MUXB,
```

```
/* ------------------------------------------------ */
/* OUTPUT SECTION   LIST ALL PRIMARY OUTPUTS HERE   */
/* ------------------------------------------------ */

@S16BITADR/1Ø:FZERO, CAROUT,

@S16BITADR/9:SUM15, SUM14, SUM13, SUM12,
@S16BITADR/8:SUM11, SUM1Ø, SUM9, SUM8,
@S16BITADR/7:SUM7, SUM6, SUM5, SUM4,
@S16BITADR/6:SUM3, SUM2, SUM1, SUMØ,

@S16BITADR/9:NEXT15, NEXT14, NEXT13, NEXT12,
@S16BITADR/8:NEXT11, NEXT1Ø, NEXT9, NEXT8,
@S16BITADR/7:NEXT7, NEXT6, NEXT5, NEXT4,
@S16BITADR/6:NEXT3, NEXT2, NEXT1, NEXTØ;

/* ------------------------------------------------ */
/* INTERNAL ENABLES   LIST HERE (IF ANY)            */
/* ------------------------------------------------ */




/* ------------------------------------------------ */
/* INCLUDE AN "$END" STATEMENT                      */
/* ------------------------------------------------ */

$END
```

```
$DATA_HEADER$
$TYPE$
I/O
$FORMAT$
TIME_VALUE
$TOTAL_COLUMNS$
6  37
$BASE$
D B
$FIELD$
TIME
$FIELD$
VALUE

/* -------  EECDDDDDDDDDDDDDDDDMDDDDDDDDDDDDDDDM
            XXAAAAAAAAAAAAAAAAAUAAAAAAAAAAAAAAAAU
            TTRTTTTTTTTTTTTTTTTXTTTTTTTTTTTTTTTTX
            CRYAAAAAAAAAAAAAAAAABBBBBBBBBBBBBBBBB
            LSI11111119876543210 11111119876543210
            KTN543210            543210

------------------------------------------------ */
$END$
000000      1000000000000000000000000000000000000
010000      0000000000000000000000000000000000000
020000      1100000000000000000000000000000000000
030000      0100000000000000000000000000000000000
040000      1000000000000000000000000000000000000
050000      0000000000000000000000000000000000000
060000      1001111111111111111000000000000000000
070000      0001111111111111111000000000000000000
080000      1001111111111111110111111111111111110
090000      0001111111111111110111111111111111110
100000      1000000000000000001111111111111111110
110000      0000000000000000001111111111111111110
120000      1000000000000000000000000000000000000
130000      0000000000000000000000000000000000000
140000      1011111111111111111000000000000000000
150000      0011111111111111111000000000000000000
160000      1011111111111111110111111111111111110
170000      0011111111111111110111111111111111110
180000      1010000000000000001111111111111111110
190000      0010000000000000001111111111111111110
200000      1010000000000000000000000000000000000
210000      0010000000000000000000000000000000000
220000      1001111111111111111000000000000000001
230000      0001111111111111111000000000000000001
240000      1001111111111111111111111111111111111
250000      0001111111111111111111111111111111111
260000      1000000000000000001111111111111111111
270000      0000000000000000001111111111111111111
280000      1000000000000000001000000000000000001
290000      0000000000000000001000000000000000001
```

```
/*                                                                    */
/*                                                                    */
/* DESIGN PATH /USER/DICKS/ATOM1    DATE 26 JUN 1986 11:05            */
/*                                                                    */
/* COMPANY  LITTON ATD_____     CIRCUIT_NAME  ATOM1_____              */
/*                                                                    */
/* ARRAY    Q3500____      PO# ___________     REV  _____             */
/*                                                                    */
/* DESIGNER CHUCK MARLEY/DICK SPEHN__                                 */
/*                                                                    */
/* What tests does this control file support:  ALL _____              */
/*                                                                    */
/* ___________________________________________________________        */
/*                                                                    */
/* ___________________________________________________________        */
/*                                                                    */
/**                                                                   **/

/***   Configuration section    ****/

$CONFIGURATION
GATE_ACTIVITY_LEVEL := 100;
IMMEDIATE_ACTIVITY_LEVEL := 100;
TIMING_CHECK := 1;

/***  Signal generator section  ****/

$SIGNAL_GENERATORS

$INPUTS
FILE /USER/DICKS/ATOM1/NEWTERSE.LIS ->

@ATOM1/8:RESETN,
@ATOM1/8:B16MHZ,
@ATOM1/12:ASN,
@ATOM1/13:DSN,
@ATOM1/13:RW,
@ATOM1/7:FC2,
@ATOM1/12:FC1,
@ATOM1/12:FC0,
@ATOM1/12:PAD21,
@ATOM1/12:PAD20,
@ATOM1/7:PAD19,
@ATOM1/7:PAD18,
@ATOM1/7:PAD17,
@ATOM1/7:PAD16,
@ATOM1/16:PAD01,
```

$Inputs Section — with Bidirectionals

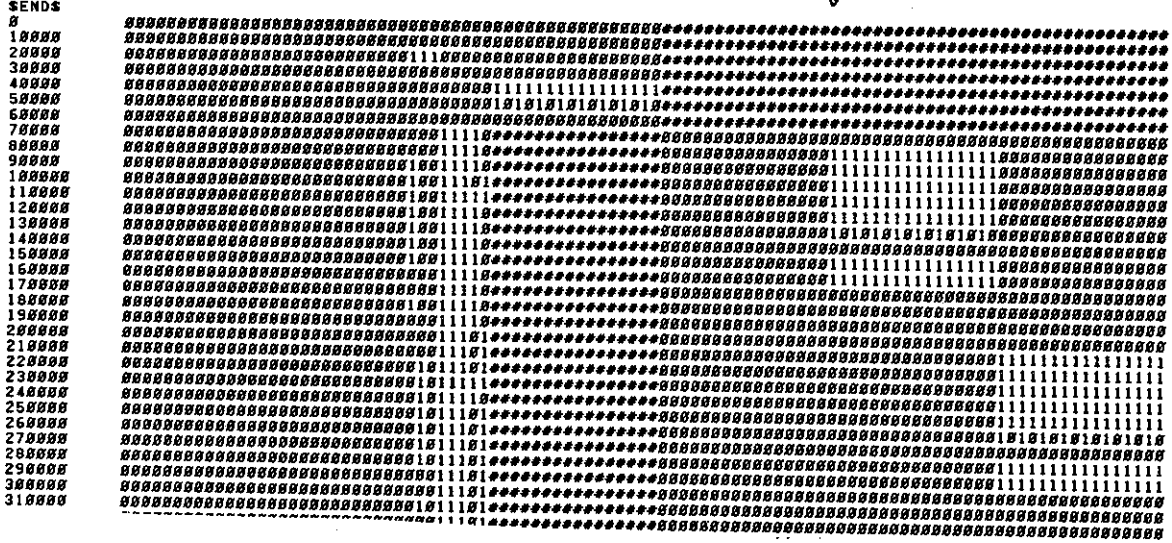
```
@ATOM1/2:MDEAN,
@ATOM1/3:MDEBN,
@ATOM1/4:MDEPN,
@ATOM1/5:DMUXA,
@ATOM1/5:DMUX8,
@ATOM1/5:TRID15::CON,
@ATOM1/5:TRID14::CON,
@ATOM1/5:TRID13::CON,
@ATOM1/5:TRID12::CON,
@ATOM1/5:TRID11::CON,
@ATOM1/5:TRID10::CON,
@ATOM1/5:TRID09::CON,
@ATOM1/5:TRID08::CON,
@ATOM1/5:TRID07::CON,
@ATOM1/5:TRID06::CON,
@ATOM1/5:TRID05::CON,
@ATOM1/5:TRID04::CON,
@ATOM1/5:TRID03::CON,
@ATOM1/5:TRID02::CON,
@ATOM1/5:TRID01::CON,
@ATOM1/5:TRID00::CON,
@ATOM1/4:PD31::CON,
@ATOM1/4:PD30::CON,
@ATOM1/4:PD29::CON,
@ATOM1/4:PD28::CON,
@ATOM1/4:PD27::CON,
@ATOM1/4:PD26::CON,
@ATOM1/4:PD25::CON,
@ATOM1/4:PD24::CON,
@ATOM1/4:PD23::CON,
@ATOM1/4:PD22::CON,
@ATOM1/4:PD21::CON,
@ATOM1/4:PD20::CON,
@ATOM1/4:PD19::CON,
@ATOM1/4:PD18::CON,
@ATOM1/4:PD17::CON,
@ATOM1/4:PD16::CON,
@ATOM1/2:ATAD15::CON,
@ATOM1/2:ATAD14::CON,
@ATOM1/2:ATAD13::CON,
@ATOM1/2:ATAD12::CON,
@ATOM1/2:ATAD11::CON,
@ATOM1/2:ATAD10::CON,
@ATOM1/2:ATAD09::CON,
@ATOM1/2:ATAD08::CON,
@ATOM1/2:ATAD07::CON,
@ATOM1/2:ATAD06::CON,
@ATOM1/2:ATAD05::CON,
```

```
@ATOM1/3:ATBD02::CON,
@ATOM1/3:ATBD01::CON,
@ATOM1/3:ATBD00::CON;

/* Timing section:    */

/* Print on change output file section */
$OUTPUTS
/* PRINT_ON_CHANGE */
FILE /USER/DICKS/ATOM1/FUN_POC.OUT <-

/* INPUT SECTION */

@ATOM1/8:RESETN,
@ATOM1/8:B16MHZ,
@ATOM1/12:ASN,
@ATOM1/13:DSN,
@ATOM1/13:RW,
@ATOM1/7:FC2,
@ATOM1/12:FC1,
@ATOM1/12:FC0,
@ATOM1/12:PAD21,
@ATOM1/12:PAD20,
@ATOM1/7:PAD19,
@ATOM1/7:PAD18,
@ATOM1/7:PAD17,
@ATOM1/7:PAD16,
@ATOM1/16:PAD01,
@ATOM1/16:PAD00,
@ATOM1/12:SIZ1,
@ATOM1/12:SIZ0,
@ATOM1/14:GSAKIN,
@ATOM1/14:GSAK0N,
@ATOM1/14:CSAKIN,
@ATOM1/14:CSAK0N,
@ATOM1/14:TPENN,
@ATOM1/9:HEAD,
@ATOM1/9:BPRI,
@ATOM1/12:RMCPN,
@ATOM1/11:BMAKN,
@ATOM1/2:PADEAN,
@ATOM1/3:PADEBN,
@ATOM1/4:PADEPN,
@ATOM1/2:MDEAN,
@ATOM1/3:MDEBN,
@ATOM1/4:MDEPN,
@ATOM1/5:DMUXA,
```

```
$DATA_HEADER$
$TYPE$
I/O
$FORMAT$
TIME_VALUE
$TOTAL_COLUMNS$
8 99
$BASE$
D B
$FIELD$
TIME
$FIELD$
VALUE
$END$
```

Input file

Bidirectionals



INVOKE BY:

SOM control-file [option]... {EXECUTE}

control-file is the name of the SOM control file as defined by the user and this MUST be supplied (no default to SOM_MCF.SING)

NORMAL INVOCATION:

```
   SOM SOM_MCF       USES SOM_MCF IN CURRENT CONTEXT
                     AS CONTROL FILE
   SOM SOM_MCF.SING -M3 -L SOM.ERR
            SAME AND DISPLAYS CONTROL FILE
            AND ERROR MESSAGES; CREATES
            AN ERROR FILE LISTING THE
            CONTROL FILE AND POINTING AT THE
            SUSPECTED ERROR(S)
```

SEE LOGICIAN DESIGN COMPILATION SECTION 7.6
FOR SOM ERROR MESSAGES - TBS

****

SOM - TCAL SHELL:

SOM <control file name> -M3 -L <error file name>

- INVOKE THE SOM - TCAL SHELL BY:

```
   RUN_SOM <som-ctl-filename> <tcal-delay-filename>
```

- OR CHOOSE MENU OPTION "4" UNDER THE SUPER-SHELL

GENERATES: SOM.ERR
TCAL.ERR

****

TCAL: TIMING CALCULATOR

TCAL PREREQUISITES:

- USES AGIF NETLIST PRODUCED FROM TREE.DNLK
  -- CIRCUIT.SDI

- PRODUCES FNTxxx.DSY ONE MIL AND ONE MIN
  OR ONE COM AND ONE MIN FILE
  - NOM file provided for convenience

- MODIFIES DELAYS IN A DTV/DLS INPUT FILE

- USED TO INCORPORATE LAYOUT-DEPENDENT DATA
  INTO THE DELAY TIMES CALCULATION

- USED FOR AMCC FRONT-ANNOTATION (BEFORE LAYOUT)

- USED FOR AMCC BACK-ANNOTATION (AFTER LAYOUT)
INVOKE BY CALLING IT OUT WITH THE RUN_SOM SHELL

SEE LOGICIAN DESIGN COMPILATION SECTION ....
FOR TCAL ERROR MESSAGES

NOTIFY AMCC ON RECEIVING ERROR MESSAGES
AFTER YOU VERIFY THAT THE FRONT-ANNOTATION
CIRCUIT AND THE VERSION YOU ARE NOW TO SIMULATE
ARE THE SAME.

- USE TEC TO EDIT THE FRONT-ANNOTATION FILE UNDER
  APPROVAL OF AMCC

- EDITING OF THE INTERMEDIATE-ANNOTATION FILE
  IS FORBIDDEN

- EDITING OF THE BACK-ANNOTATION FILE IS FORBIDDEN

****

- INVOKE THE SOM - TCAL SHELL BY:

- USE: RUN_SOM <som-ctl-filename> <tcal-delay-filename>

- OR CHOOSE MENU OPTION "4" UNDER THE SUPER SHELL

GENERATES: SOM.ERR
TCAL.ERR

.

****

DLS

THE SAME UNDER MAESTRO OR DNIX

DTV

THE SAME UNDER MAESTRO AND DNIX

For both:

- USE TEC TO CREATE A SHELL SCRIPT TO KEEP TRACK OF STEPS
- SHELL SCRIPT IS A REQUIRED PART OF THE DESIGN SUBMISSION PACKAGE
- EDIT THE MODE SCREEN FOR THE PROPER MULTIPLIER USE MAX FOR MILITARY AND COMMERCIAL WORST-CASE MAXIMUM AND USE MIN FOR THE NOMINAL OR MINIMUM LIBRARY WORST-CASE MINIMUM.

SAMPLE RUN_DLS SHELL: (USER-ENTERED)

```
TEC RUN_DLS
RUN_SOM
DLS <<!
GET DLS_FMT        <--- EDITED ON A PREVIOUS PASS
VIEW 9999 10000          (MODE AND FORMAT)
RUN 1000000
START 0
LIST S L1
{ENTER}
QUIT
N
!
```

- CALL ABOVE BY TYPING: RUN_DLS

Note: For Bipolar arrays, BiCMOS arrays, the VIEW step command for DLS for Functional and sampled AC Test simulations should be:

VIEW 9999 10000

to start sampling at 9999 simulator steps (99.99 ns) and sample every 10000 simulator steps (100ns).

AT-SPEED simulations will sample at a different time (based on the maximum frequency of operation).

This is a DNIX FMT window created from an edited FMT_CSD.SING file.
- This can be printed out with the DNIX op sys.
- or (better?) use a copied version of the FMT_CSD.SING to create an I/O list

USE FOR YOU OWN DEBUG - CONTROLS LIST AND WAVE FORMATS
- NOT USED IN DESIGN SUBMISSION

NAME	BASE	POLARITY	STRN	TRC?	SIGNAL_LIST
CLOCK	BIN	+	OFF	ON	@CLASS/2:CLOCK
YOUTPT	BIN	+	OFF	ON	@CLASS/2:YOUTPT
SELCT0	BIN	+	OFF	ON	@CLASS/1:SELCT0
SELCT1	BIN	+	OFF	ON	@CLASS/1:SELCT1
SELCT2	BIN	+	OFF	ON	@CLASS/1:SELCT2
SELCT3	BIN	+	OFF	ON	@CLASS/1:SELCT3
DAT0	BIN	+	OFF	ON	@CLASS/1:DAT0
DAT1	BIN	+	OFF	ON	@CLASS/1:DAT1
DAT2	BIN	+	OFF	ON	@CLASS/1:DAT2
DAT3	BIN	+	OFF	ON	@CLASS/1:DAT3
DAT4	BIN	+	OFF	ON	@CLASS/1:DAT4
DAT5	BIN	+	OFF	ON	@CLASS/1:DAT5
DAT6	BIN	+	OFF	ON	@CLASS/1:DAT6
DAT7	BIN	+	OFF	ON	@CLASS/1:DAT7
DAT8	BIN	+	OFF	ON	@CLASS/1:DAT8
DAT9	BIN	+	OFF	ON	@CLASS/1:DAT9
DAT10	BIN	+	OFF	ON	@CLASS/1:DAT10
DAT11	BIN	+	OFF	ON	@CLASS/1:DAT11
DAT12	BIN	+	OFF	ON	@CLASS/1:DAT12
DAT13	BIN	+	OFF	ON	@CLASS/1:DAT13
DAT14	BIN	+	OFF	ON	@CLASS/1:DAT14
DAT15	BIN	+	OFF	ON	@CLASS/1:DAT15

The DEFAULT MODE window on the DAISY - THIS MUST BE EDITED

SIMULATION MODE NOM

(reserved)
(reserved)
(reserved)

	ENABLE	TRC?	SORTED BY MAJOR KEY	SORTED BY MINOR KEY
SETUP/HOLD TIME	OFF	OFF	TIME	PATH
MINIMUM PULSE WIDTH	OFF	OFF	TIME	PATH
SIGNAL RELATIONSHIP	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH

The EDITED MODE window for MAXIMUM worst-case multiplier
within the timing library selected:
- USE WITH MILITARY OR COMMERCIAL SIFT LIBRARY

SIMULATION MODE MAX

(reserved)
(reserved)
(reserved)

	ENABLE	TRC?	SORTED BY MAJOR KEY	SORTED BY MINOR KEY
SETUP/HOLD TIME	ON	ON	TIME	PATH
MINIMUM PULSE WIDTH	ON	ON	TIME	PATH
SIGNAL RELATIONSHIP	ON	ON	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH

The EDITED MODE window for MIMIMUM worst-case multiplier
within the timing library selected:
- USE WITH THE MINIMUM SIFT LIBRARY

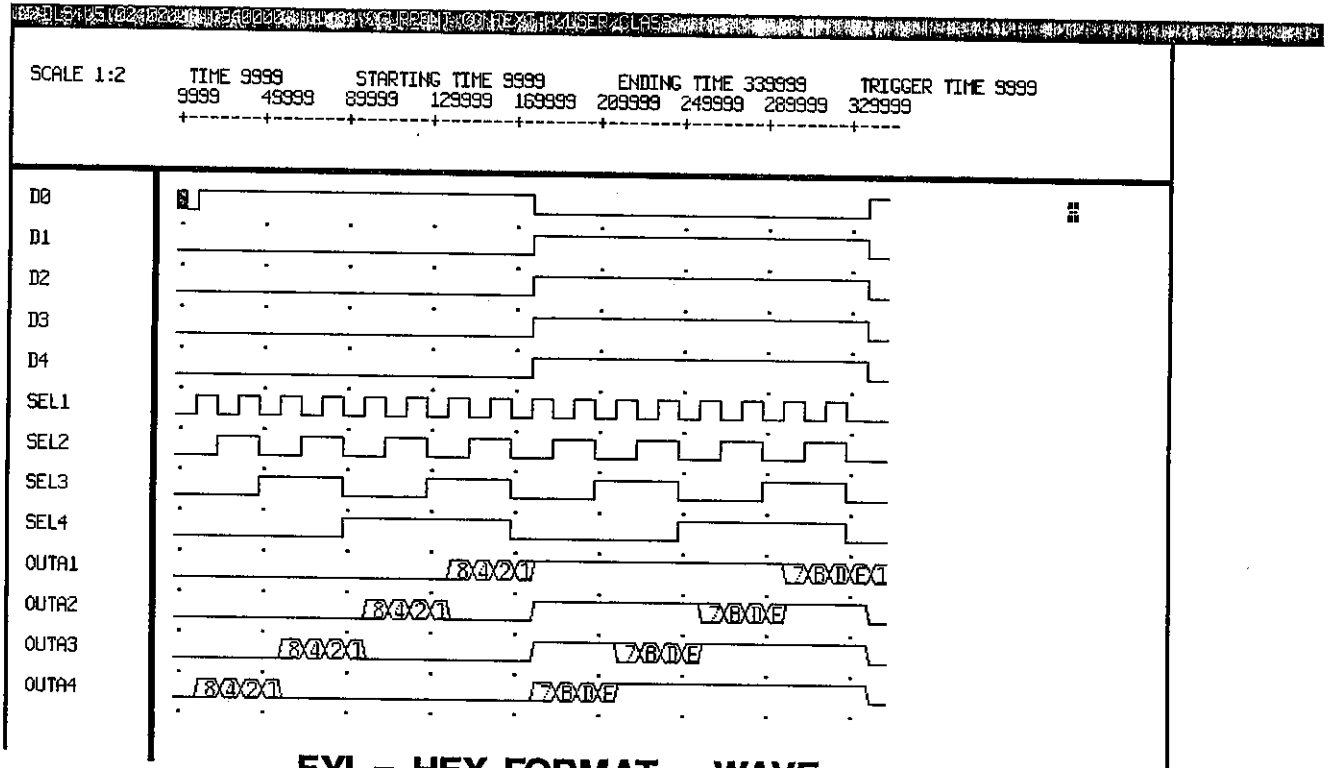
SIMULATION MODE MIN

(reserved)
(reserved)
(reserved)

	ENABLE	TRC?	SORTED BY MAJOR KEY	SORTED BY MINOR KEY
SETUP/HOLD TIME	ON	ON	TIME	PATH
MINIMUM PULSE WIDTH	ON	ON	TIME	PATH
SIGNAL RELATIONSHIP	ON	ON	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH
(reserved)	OFF	OFF	TIME	PATH

```
DLS/05.02.02                    CURRENT CONTEXT: /USER/CLASS/MUX16
** REPLACE **

NAME          BASE  POLARITY STRN TRC? SIGNAL_LIST


YOUTPT        BIN     +       OFF   ON  @MUX16/2:YOUTPT
DATA          HEX     +       OFF   ON  @MUX16/3:DAT15,DAT14,DAT13,DAT12
DATB          HEX     +       OFF   ON  @MUX16/3:DAT11,DAT10,DAT9,DAT8
DATC          HEX     +       OFF   ON  @MUX16/3:DAT7,DAT6,DAT5,DAT4
DATD          HEX     +       OFF   ON  @MUX16/3:DAT3,DAT2,DAT1,DAT0
EXTCLK        BIN     +       OFF   ON  @MUX16/2:EXTCLK
EXTRST        BIN     +       OFF   ON  @MUX16/2:EXTRST
SELCTA        HEX     +       OFF   ON  @MUX16/3:SELCT3,SELCT2,SELCT1,SELCT0
```

FYI – HEX FORMAT



FYI – HEX FORMAT – WAVE

LABEL BASE POLARITY STRENGTH	TIME	COUNT	D0 BIN + OFF	D1 BIN + OFF	D2 BIN + OFF	D3 BIN + OFF	D4 BIN + OFF	SEL1 BIN + OFF	SEL2 BIN + OFF	SEL3 BIN + OFF	SEL4 BIN + OFF	OUTA1 HEX + OFF	OUTA2 HEX + OFF	OUTA3 HEX + OFF	OUTA4 HEX + OFF
0	9999	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+1	19999	0	1	0	0	0	0	1	0	0	0	0	0	0	8
+2	29999	0	1	0	0	0	0	0	1	0	0	0	0	0	4
+3	39999	0	1	0	0	0	0	1	1	0	0	0	0	0	2
+4	49999	0	1	0	0	0	0	0	0	1	0	0	0	0	1
+5	59999	0	1	0	0	0	0	1	0	1	0	0	0	8	0
+6	69999	0	1	0	0	0	0	0	1	1	0	0	0	4	0
+7	79999	0	1	0	0	0	0	1	1	1	0	0	0	2	0
+8	89999	0	1	0	0	0	0	0	0	0	1	0	0	1	0
+9	99999	0	1	0	0	0	0	1	0	0	1	0	8	0	0
+10	109999	0	1	0	0	0	0	0	1	0	1	0	4	0	0
+11	119999	0	1	0	0	0	0	1	1	0	1	0	2	0	0
+12	129999	0	1	0	0	0	0	0	0	1	1	0	1	0	0
+13	139999	0	1	0	0	0	0	1	0	1	1	0	8	0	0
+14	149999	0	1	0	0	0	0	0	1	1	1	0	4	0	0
+15	159999	0	1	0	0	0	0	1	1	1	1	0	2	0	0
+16	169999	0	1	0	0	0	0	0	0	0	0	0	1	0	0
+17	179999	0	0	1	1	1	1	1	0	0	0	F	F	F	7
+18	189999	0	0	1	1	1	1	0	1	0	0	F	F	F	B
+19	199999	0	0	1	1	1	1	1	1	0	0	F	F	F	D
+20	209999	0	0	1	1	1	1	0	0	1	0	F	F	F	E
+21	219999	0	0	1	1	1	1	1	0	1	0	F	F	7	F
+22	229999	0	0	1	1	1	1	0	1	1	0	F	F	B	F
+23	239999	0	0	1	1	1	1	1	1	1	0	F	F	D	F
+24	249999	0	0	1	1	1	1	0	0	0	1	F	F	E	F
+25	259999	0	0	1	1	1	1	1	0	0	1	F	7	F	F
+26	269999	0	0	1	1	1	1	0	1	0	1	F	B	F	F
+27	279999	0	0	1	1	1	1	1	1	0	1	F	D	F	F
+28	289999	0	0	1	1	1	1	0	0	1	1	F	E	F	F
+29	299999	0	0	1	1	1	1	1	0	1	1	7	F	F	F
+30	309999	0	0	1	1	1	1	0	1	1	1	B	F	F	F
+31	319999	0	0	1	1	1	1	1	1	1	1	D	F	F	F
+32	329999	0	0	1	1	1	1	0	0	0	0	E	F	F	F
+33	339999	0	1	0	0	0	0	0	0	0	0	1	0	0	0

FYI – HEX FORMAT – LIST

• AFTER SIMULATION ---

AMCCSIMFMT - AMCC SIMULATION FILE FORMATTER

THE SOM_MCF.SING FILE (WHICH YOU RENAMED)
GENERATES A VLAF OUTPUT FILE (REQUIRED)

THE VLAF OUTPUT FILE IS PROCESSED THROUGH
AMCCSIMFMT TO PRODUCE A FORMATTED FILE THAT
THE AMCC TEST SOFTWARE WILL USE AS DATA
(FUNCTIONAL, AC AND PARAMETRIC)
- AT-SPEED FILES WILL NOT BE USED AS INPUT
TO A TESTER BUT MUST BE SUBMITTED IN THE
SAME FORMAT

AMCCSIMFMT CAN PROCESS SAMPLED OR PRINT_ON_CHANGE
FILES

ALL FILES ARE BINARY

****

• INVOKE AMCCSIMFMT BY:

AMCCSIMFMT

OR CHOOSE MENU OPTION "5" UNDER THE SUPER-SHELL

GENERATES: USER-NAMED REFORMATTED FILE
AMCCSIMFMT.ERR

****

AMCCVRC - AMCC VECTOR RULES CHECKER

- AFTER THE SIMULATION FILE ARE FORMATED, GENERATE A SIGNAL ANALYSIS FILE PER THE RULES IN VOL II, SECTION 8, APPENDIX B.

- THE SIGNAL ANALYSIS FILE STATES THE RELATIONSHIPS BETWEEN CLOCK AND DATA SIGNALS AND IS REQUIRED FOR ANY CLOCKED CIRCUIT

- WHEN THIS FILE IS CREATED, EXECUTE AMCCVRC

- ONLY THE SAMPLED, WORST-CASE MAXIMUM FUNCTIONAL, AC TEST AND PARAMETRIC FILES ARE SCREENED

- AC TEST - IGNORE TOGGLE TEST ERROR MESSAGES

- PARAMETRICS WILL HAVE THEIR OWN TESTS ADDED IN A LATER RELEASE. RUN CHECKS AS LISTED IN SECTION 4-5

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- INVOKE BY:

  AMCCVRC

  OR CHOOSE MENU OPTION "6" UNDER THE SUPER-SHELL

GENERATES: AMCCVRC.LST
AMCCVRC.ERR

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