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1- INTRODUCTION

Stage software allows the user to create a custom Signa software configuration suitable for use in software development, or system servicing. This is done by custom configuring the TPS (Transceiver Processing and Storage) and/or IPG (Integrated Pulse Generator) subsystems. Emulation of TPS and IPG hardware, or functionality, is accomplished by editing the `tardis_stage` or `ipg_stage` file. Emulation allows the system to run without specific hardware present, or specific functions activated; this may be helpful for problem isolation. After editing one of these files, the emulation selections are applied to the system by downloading the TPS/ISE. After emulation is complete, the original `tardis_stage` and `ipg_stage` files must be restored, and TPS/ISE downloaded to restore normal Signa Horizon functions.

2- CUSTOMIZING TPS AND IPG FUNCTIONS

2-1 Customizing the “tardis_stage” File

To customize the `tardis_stage` file, perform the following:

1. From the Service Desktop, select **[C Shell]**.
2. At the `sd` prompt type: `cd /w/config <Enter>`
3. To edit the file type either: `jot tardis_stage <Enter>` (easy-to-use text editor), or type `vi tardis_stage <Enter>` (command-based editor).
4. The Stage menu is displayed (refer to Table 2-1). Type the command letter(s) for the hardware you want to emulate after the ‘a’ at the top of the file.
5. To apply the emulation choices, save and exit the changed file then select **[TPS Reset]** on the Service Desktop.

TABLE 2-1
TARDIS_STAGE MENU

The Stage menu is as follows:

a **←Insert emulation commands after the 'a'!** (e.g. a**DEF** emulates CERD functions)

everything from here down is comment
Letters should be put in first line (near 'a' above).

What the letters stand for (these ARE case sensitive):

```
# hardware options (A-M available)
A -> MEDCAM CE 1 should be emulated
B -> MEDCAM CE 2 should be emulated
C -> MEDCAM BULK MEMORY should be emulated
D -> CERD DIGITAL should be emulated
E -> CERD RF EXCITER should be emulated
F -> CERD RF RECEIVER should be emulated
G -> EPI RECEIVER should be emulated
H -> BROADBAND RECEIVER should be emulated
I -> BROADBAND EXCITER should be emulated

# software processing options (N-Z available)
N -> Disable data acquisition timeouts
O -> Disable recon timeouts
P -> HPC emulation
Q -> HSERVER-NSP Polling off
R -> Feeder emulation
S -> Disable CERD watchdogging

a -> dummy place holder
```

The letter 'a' in the first line is a place holder and should not be deleted. The capital letters (commands are case-sensitive), which represent the desired commands, are entered immediately after (no space) the 'a' place holder on the first line. After you save and exit the changed file, the TPS/ISE is reset to invoke the emulation.

Below are some of the most commonly used *vi* commands if you are using that editor. For more information on *vi*, see procedure for File Editors.

Remember! All *vi* commands are case sensitive.

- Start *vi* editor: **vi filename**
- Enter Input mode: **i, a, o, O**
- Exit Input mode: **<ESC>**
- Cursor Position commands: **h, j, k, l** and **<ENTER>**
- Save and quit the editor: **:w, :q!, :wq**
- Delete or replace text: **x, dd, r, u**

2-2 Customizing the “ipg_stage” File

Some of the IPG functions and hardware controlled by the IPG can be emulated by using the *jot* or *vi* text editor to modify the `ipg_stage` file. This file is located in the `/w/config` directory. The first line in the file is the only one that is executed. The rest of the file text is all comments and gives a complete description of each emulation command; this same information is in Table 2-2 of this section.

To customize the `ipg_stage` file, perform the following:

1. From the Service Desktop, select **[C Shell]**.
2. At the `sd` prompt type: `cd /w/config <Enter>`
3. To edit the file type either: `jot ipg_stage <Enter>` (easy-to-use text editor), or type `vi ipg_stage <Enter>` (command-based editor).
4. The Stage menu is displayed (refer to Table 2-2). Type the command letter(s) for the hardware you want to emulate after the ‘a’ at the top of the file.
5. To apply the emulation choices, save and exit the changed file then select **[TPS Reset]** on the Service Desktop.

TABLE 2-2
IPG_STAGE EMULATION COMMANDS

<p>a ← Insert commands after the 'a'! (e.g. aT emulates all Table controls) # everything from here down is comment</p> <p>When the letter listed below is present in the first line (following the 'a', then the corresponding device is emulated, as described below (Note these ARE case sensitive):</p> <p>A -> emulate PAC. This command causes the SPU to generate canned cardiac and respiratory waveforms and to generate cardiac triggers. This should be used when no PAC is present, or if no cardiac simulator is available.</p> <p>B -> emulate TYME II. This command disables monitoring of TYME II switches. Commands are still sent to the TYME II, so the alignment lights, fan, and bore lights will still work if the TYME II is connected. However, the state of the PDU (PDU in overtemperature, stop, etc.), RF door, and cryogen monitor will not be checked.</p> <p>C -> emulate IWS-PC. This disables the SPI to IWS-PC interface. If this is done the start scan, stop scan, pause scan, adv to scan, stop table buttons on the IWS keyboard will not work. Also, the scan time will not be displayed on the IWS-PC LCD, and the waveform displays will not work. This should be used to allow scanning to continue if the SPI to IWS-PC link is not functioning correctly.</p> <p>D -> emulate T/R driver. When this is emulated, the SPI will not send commands to the T/R driver and dynamic disable board, and will not monitor its state. Therefore, scanning will be allowed no matter what the state of the board. This should never be done if pulsing with RF unless hardware jumpers have been used to set the board to the desired mode.</p> <p>E -> emulate WHOLE-BODY gradient of TRM. The system will be restricted to direct connection to ZOOM gradient without the gradient switch. <u>Note:</u> After removing this flag, Restore Info in Guided Install must be performed.</p> <p>F -> emulate ZOOM gradient of TRM. The system will be restricted to direct connection to WHOLE gradient without the gradient switch. <u>Note:</u> After removing this flag, Restore Info in Guided Install must be performed.</p> <p>G -> emulate gradient amps. When this is emulated, the SPI will not send commands to the gradient amplifier, and will not monitor its state. Therefore, the gradient amps will stay in standby, and no gradient waveforms will be put out. The gradient configuration will still be downloaded. Real time monitoring will not be performed if enabled in the MRconfig.cfg file. If the system has GRAM's, then digital tuning values will still be downloaded if digital tuning boards are selected in the MRconfig.cfg file.</p>

- H -> emulate RF amp(s). When this is emulated, the SPI will not send commands to the RF amplifiers (ERBTEC narrow band and spectroscopy's ENI broad band), and SPI will not monitor their state. Therefore, the ERBTEC RF amp will stay in standby, and no RF will be put out. The ENI amp has no standby state, and therefore will put out RF, but the correct filter will not be set.

- I -> emulate power monitor. This is meant to be used only on test systems where no power monitor is present. It disables SPI from sending out the proper power monitor settings selected by the PSD. If this is emulated when a power monitor is present, it will cause the power monitor to trip as soon as the scan/prescan begins. This will not fix RF amp 85 faults, but will instead cause them.

- M -> emulate entire MDS. This disables communication to all devices on the MDS link. It is equivalent to emulating all of the following: gradient amps, RF amp, T/R driver, power monitor, and TYME II, except that in this case the alignment lights, fan, and bore light will not work.

- O -> disable reporting of gradient overloads. Normally, overloads of the Gradient Driver Subsystem are reported to the error log. If this flag is set then overloads will not be reported. This has no effect on scan operation.

- Q -> emulate the peripheral pulse signal from the PAC. This command causes the SPU to generate a canned plethysmograph waveform and to generate PP triggers. This should be used when no PAC is present, and only with the VX option.

- R -> emulate SRI. This disables SPI communication to the SRI. It disables magnet shroud annunciators, the scan time display, and landmarking. The alignment lights, fan, and bore light will not work. However, if the SRI has had code downloaded at least once, then table positioning will still work.

- S -> emulate bore wall temperature sensor. This is meant only for test systems which do not have a temperature sensor.

- T -> emulate table. This emulates SRI cradle control. Therefore, the table positioning will not work. This eliminates the need to establish a landmark.

- V -> emulate vacuum monitor.
Note: System must be rebooted in order for the emulation to be effective.

- W -> disable watchdogging. During normal operation, both the HPC and SPI are watchdogged, so that if they hang, or go crazy, that any scan in progress will be stopped, and the IPG will be reset.

- X -> disable SRI errors. This allows SPI to send commands to the SRI, but any errors experienced by the SRI will be ignored, and scanning will be allowed to continue.

Y -> disable gradient errors. This allows SPI to send commands to the gradient amplifier (standby, ready, etc.). However, the state of the gradient amps is not monitored. Any gradient error that occurs will not be reported or recovered. This feature is only valid with 8607 gradient amplifiers.

Z -> enable watchdog debug mode. When watchdogging is enabled, this will cause IPG and SPI not to be reset if a watchdog occurs. This is meant to be used by software engineering to track down the source of the watchdog.

a -> dummy place holder

EXAMPLE:

If the first line of this file read:

aTYZ

then Table control would be emulated, gradient errors would be disabled, and watchdog debug mode would be enabled.

If the first line of this file read:

a

Then nothing would be emulated or disabled at all. This is normal product configuration.

/ software note: these letter options should mirror CFG_STRING in hpc_cfg.h */*

The letter ‘a’ in the first line is a place holder and should not be deleted. The capital letters (commands are case-sensitive), which represent the desired commands, are entered immediately after (no space) the ‘a’ place holder on the first line. After you save and exit the changed file, the TPS/ISE is reset to invoke the emulation.

Examples

- If the first line of this file read: aTYZ, then table control would be emulated, gradient errors would be disabled, and the watchdog debug mode would be enabled.
- If the first line of this file read: a, then nothing would be emulated or disabled at all. This is the normal product configuration.

3- RESTORATION OF NORMAL TPS & IPG FUNCTIONS

Following completion of emulation, the `ipg_stage` and `tardis_stage` files must be edited back to their original state using a text editor. Both of these files are located in the `/w/config` directory.

1. If using *jot*, type: **jot tardis_stage <Enter>** and/or **jot ipg_stage <Enter>**.
If using *vi*, type: **vi tardis_stage <Enter>** and/or **vi ipg_stage <Enter>**.
2. Edit the first line in either file so it only contains the letter 'a' (e.g. change `aTYZ` --> `a`).
3. After you save and exit the changed file(s), reset the TPS/ISE by selecting **[TPS Reset]** on the Service Desktop. After the TPS resets, normal Signa function is restored.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	Aug. 5, 1998	M. Whitlow	Initial conversion from Toolbook to Word.
1	Oct. 18, 1999	M. Keber	Added correct proprietary heading, added jot editor method, updated ipg_stage file contents, updated the restoration steps.
2	July 16, 2001	A. Nevelsky	Updated for TwinSpeed scanner for 9.0 release.