TESTSTATION SOFTWARE

***The files described in this document can be found at

http://hep.ucsb.edu/people/simms/hybrid_test.html

Installing and Using ARCS and ACDC

The following Document describes how to use the teststation software developed at CERN, and the differences between it and the software used at UCSB and FNAL up until March 2, 2004 (A little bit later for Fermilab). More information, software upgrades, and very helpful links can be found at http://hep.ucsb.edu/people/simms/hybrid_test.html

*****NOTE

The ISA Card that must be installed on the PC with which you are using ARCS should be configured as such

Dipswitch--	1 2 3 4 5 6 7 8	Where: 0 corresponds to down
	0 1 1 1 1 0 0 1	1 corresponds to up

To install and run software on new computer

1) Put all dlls located in \supplemental_arcs_dlls\dlls_for_winnt_system in the directory C:\%system_root%\system (where %system_root% is WINNT, WINDOWS, etc.).

2) Put the file \supplemental_arcs_dlls\files_for_winnt_system32_drivers_porttalk.sys (also available in Portalk22 folder) in the folder C:\%system_root%\system32\drivers.

   Follow the instructions in the porttalk22/readme.txt file (located in the porttalk22 folder). You will have to make an addition to the windows registry and use allowio.exe.

3) In order to install giveio.sys, take the file instdrv.exe from the directory instdrv (found at libraries and drivers link) and place it in C:\%system_root%\system. Then follow the instructions at

http://www.physik.rwth-aachen.de/group/IIIphys/CMS/tracker/en/silicon/arcs_nt.html

4) Place the directory TrackerDB in the C:\ directory so that C:\TrackerDB is a valid path and C:\TrackerDB\update.bat is a valid command, etc.

5) Install Labview 7.0 or 6.1 on the computer. To run the binaries, all that is needed is the labview 7.0 or 6.1 run-time engine (which can be downloaded for free from the

national instruments website: www.ni.com). To run the source, however, Labview 7.0 or 6.1 should be installed.

6) Create a directory called C:\CMS. Place the folders root_v3.05.02, xerces-c2_2_0-win32, ARCS, ARCS_source, ACDC, ACDC_soucre in this directory.

7) Start ARCS.exe (in folder ARCS).

   -Make sure that CERN_ARCS_MAIN_CONFIG.cfg is located in the same folder that contains ARCS.exe.

   -The file operators.cfg that is located in this same folder determines which names will be available in the operators pull-down menu and the files singltest.cfg, tencycle.cfg, etc. determine which tests will be available in the Choose Test pull-down menu.

   -The file tstset01.cfg, the path of which is set in the file CERN_ARCS_MAIN_CONFIG.cfg, determines the noise cuts and the open cuts that will be used for automatic testing. The only fields which are actually read by the program are min. noise, max, noise, slope, and abscissa. If this file is not in its specified path, the software will revert to the default cuts.

8) Start ACDC.exe (in folder ACDC)

   -Make sure that the file sensor.cfg contains the addresses of the temperature sensors you are using. (If you do not know these, you will have to use hyperterminal, found through Start->Programs->Accessories->Communications->hyperterminal to address one sensor at a time. The program will communicate to the serial port (COM1 or COM2) with the settings given in the cooli box manual found at http://hep.ucsb.edu/people/sburke/cms/cooli1.pdf. When doing this, all the jumpers on the Sensor I/O circuit should be removed except the one connected to the sensor you want to address.

   -A directory called "logs" should be in the same folder as acdc.exe.

Features of ARCS and ACDC

--The top vi of the ARCS hierarchy is teststation_start.vi. This is the vi that should
  be used as the top level vi when attempting to build an executable such as
CERN_ARCS.exe.

--The tests available when running CERN_ARCS.exe or Teststation_start.vi are
determined by the configuration files present in the directory that the latter are running
from. These configuration files are recognized by the tag "name" placed at their
beginning.

--The top vi of the ACDC hierarchy is acdc.vi. This is the vi that should be used as the
top level vi when building acdc.exe.

Changes from old software: ARCS

--With the old version of Teststation_start.vi, the only check on the hybrid serial number
was one that ensured it was 14 digits long. This check is implemented in
teststation_check_Hybrid_ID.vi. With the new version, there is an additional check
carried out in teststation_check_Hybrid_ID2.vi (located in teststation_init_arcs.vi)
that actually examines the first three digits of the number and then the next four to find
out if it is TEC or TOB, four or six chip, etc. If the number is fourteen digits long, but is
not recognized as a valid hybrid serial number, there will be a display in the string
indicator that says "No Hybrid Mounted".

--The old set-up had the 2-D cuts for finding opens hard-wired into the vi called
teststation_find_opens. Now they can be set using the configuration file tstset01.cfg. The
place where this file should be put is specified in CERN_ARCS_MAIN_CONFIG.cfg.
The default values for the open finder are the following:

Slope	-0.5	\\\\\Defaults set at CERN
Abscissa	140	\\\\\for teststation_find_opens.vi

However, these values did not properly identify the opens, so at UCSB we are using

Slope	-1.500	\\\\\Values used at UCSB
Abscissa	70	\\\\\for teststation_find_opens.vi

It would seem that these values should be toggled until true opens are consistently
flagged and as few false opens as possible are flagged.

The same thing goes for the min. and max. noise cuts for a given channel. They used to be hardwired into the program, but now they can be set in tstset01.cfg. If the noise of a channel falls outside of this range, it will be flagged as noisy.

--Each time that ARCS.exe is executed, the file ARCS_MAIN_CONFIG.cfg that is in the same directory as ARCS.exe is overwritten. When the source code teststation_start.vi is run, the copy of ARCS_MAIN_CONFIG.cfg that is in the Labview default directory is overwritten (this default directory can be specified by choosing Tools>>Options from the Labview toolbar and then clicking on paths. The default is C:/Program Files/National Instruments/Labview/). For each test run, ARCS writes a new value for the directory for data storage (line 4) called run_year_month_date_hour_month. Data files for the tests are stored in this directory.

Changes from Old Software: ACDC

--The vi called dewpoint.vi has been added to ACDC. This vi takes the regulation sensor temperature and the humidity and calculates the dewpoint inside the coldbox.

--Two controls have been added to the front panel. One is timescale and the other is cut. They can be used to change the way ACDC tells ARCS that it is okay to begin automatic testing. Basically, the cut gives the range centered around the nominal temperature at which the stability indicator will come on, and the timescale gives the range for the derivative of temperature with respect to time at which the stability indicator will come on. If a very stable and precise temperature is desired before testing begins, the cut should be low and the timescale should be high. Otherwise, the cut should be high and the timescale low.

--The teststation_measure_gas_flow.vi and teststation_measure_water_flow.vi have been changed in order to accommodate the water and flow sensors that are used at UCSB and FNAL. The calculation differs from the one at CERN and the calibration will vary between sensors, so each site will need to change these vis for proper readout. Also, these two vis now call teststation_get_adc_counts1.vi instead of teststation_get_acdc_counts.vi.

Errors that might be encountered when running the teststation software

*****A detailed list of many of the errors that will be encountered when running ARCS is included in Teststation_Error.vi.

--If the serial number entered into the dialog box of teststation_start.vi is not valid, the program will tell you that no hybrid is mounted.

--ERROR 5055: If the directory for data storage (line #4 of CERN_ARCS_MAIN_CONFIG.cfg) does not exist, this error will show. This directory must already exist in order for data to be stored and the program to work.

--An error will occur when opening ACDC if there is not a folder titled "logs" in the directory where ACDC is located.

--"Turn on the pulser/Turn off the pulser" ->> the TCP connection is not enabled.

--"There are problems with the pulser" ->> The UDP Address in the controlling tab of ACDC is not set correctly. This value should be set to "localhost" as this is the name expected by ARCS.

--Error at call_dll_DAQstart ->> This error indicates that arcs_dll.dll is not properly matched up with the executable that is running.

XML Files

ARCS.exe automatically generates an xml file for each hybrid that is tested, regardless of whether or not a thermal cycle is performed. The directory where this xml file is placed is set in the file CERN_ARCS_MAIN_CONFIG.cfg. If the directory that is pointed to does not exist, no error message will occur and the file will not be created.

There are two separate ARCS executables in the ARCS folder. One is ARCS.exe and the other is ARCS_AUTO_XML.exe. The former will generate an xml file and place it in the directory specified in CERN_ARCS_MAIN_CONFIG.cfg, leaving it there to be uploaded manually. The latter will create an xml file and store it temporarily in this directory, but immediately after this is accomplished, the file will be automatically uploaded into the database. Below is a description of automatic and manual uploading.

Manual Uploading

1) Open the file C:\TrackerDB\update.bat (in a text editor such as notepad). In the last line of the file, in the appropriate locations, enter the center name, tool id, and path where errors and duplicate files should be placed.(This line currently looks like …..Update SANTA-BARBARA 801 C:\TrackerDB\ouput….., corresponding to center, tool id, ouput path).

2) At the command line, type

     c:\>TrackerDB\update [path] \ [filename]

where path corresponds to the directory containing the xml file by the name of filename. (This can also be accomplished by entering the dos shell, cd'ing into c:\TrackerDB\, and typing update [path]\[filename]. Update is a .bat file in C:\TrackerDB.)

Automatic Uploading

When running ARCS_AUTO_XML.exe, the xml files will be automatically uploaded when teststation_final_report.vi is executed (this will make it run considerably slower than when teststation_final_report.vi is run through ARCS.exe).

One must make sure, however, that the settings in C:\TrackerDB\update.bat are configured properly and that the directories C:\TrackerDB\results and C:\TrackerDB\output exist.

In either case, if the upload succeeds, a replica file will be written to C:\TrackerDB\output\indb and if it fails, a file will be written to C:\TrackerDB\output\error.