barbee
ENGINEERED TESTING SYSTEMS

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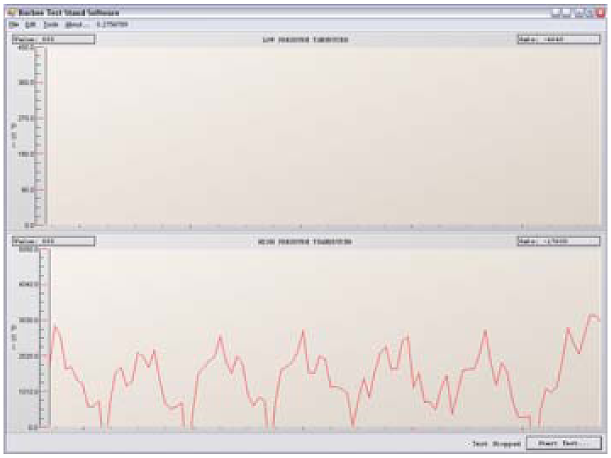
Data Acquisition System Operating Manual

BARBEE ENGINEERED TESTING SYSTEMS
San Diego, California

BARBEE TEST STAND SOFTWARE

Barbee Test Stand Software paired with any of Barbee's Test Stands provides a customizable software solution for all your testing needs. The Test Stand Software supports both video and analog inputs for a total of up to 8 inputs being monitored real-time.


Barbee Test Stand Software
LOW PRESSURE TRANSDUCER
HIGH PRESSURE TRANSDUCER
PSI
Test Stopped
Start Test...

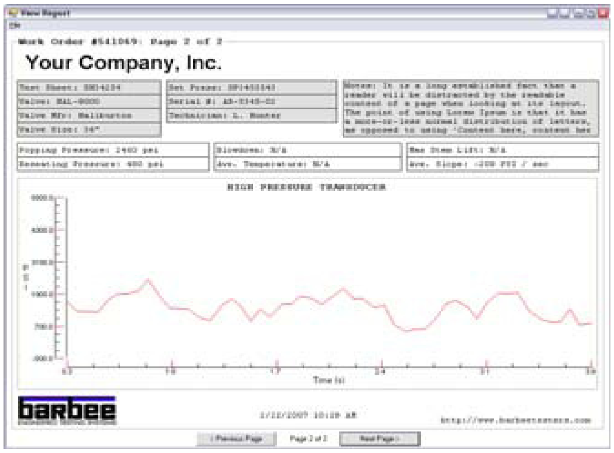
Barbee Test Stand Software GUI

Barbee Test Stand Software makes it easy to calibrate your test stand and generate dynamic reports for each test; with easy to use pull down menus, the test time, gui refresh rate, and all valve info is a breeze to enter, record and save. With the split screen ability of the software, it is possible to watch a real time data plot of the test pressures, as well as lift using an LVDT, and video all on one screen.

__Features__

- Up to 8 analog or video inputs
- Configurable data sampling rate and GUI refresh rate
- Optional barcode scanner integration
- Calibration assistance

o Wizard to guide user through calibration
o Print/Save calibration data for recordkeeping
o Maintain accuracy of system over time
o Dynamically generated reports
o Statistics generated automatically for each input
o Print/Save reports for recordkeeping
o Your company name in the report header



Work Order #541069: Page 2 of 2

Your Company, Inc.

Test Sheet: [illegible]
Valve: [illegible]
Valve Mfr: Halliburton
Valve Size: [illegible]
Set Press: [illegible]
Serial #: [illegible]
Technician: L. Hunter

Notes: It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content her

Popping Pressure: 2400 psi
Reseating Pressure: 400 psi
Blowdown: N/A
Ave. Temperature: N/A
Max Stem Lift: N/A
Ave. Slope: -200 PSI / sec

View Report
HIGH PRESSURE TRANSDUCER
PSI
Time (s)
barbee
< Previous Page
Page 2 of 2
Next Page >

Dynamically Generated Report

Table of Contents

Hardware installation……………………………………………………………………………….4

Using the Config Utility:
Overview…………………………………………………………………………………………….5
Adding a test stand input……………………………………………………………………….6
Adding an analog input………………………………………………………………………….7
Adding a video input……………………………………………………………………………..8
Saving your configuration……………………………………………………………………….9

Using the Barbee test stand software:
Overview…………………………………………………………………………………………….10
Calibration………………………………………………………………………………………….11
Before testing………………………………………………………………………………………12
Testing……………………………………………………………………………………………...12-14

Hardware Installation

To hook up your new Data Acquisition System, first you must add an auxiliary port to the gauge line. Once the auxiliary port is installed, please install the included quick connect fitting for the test hose connection.

Then connect the included test hose between the port you just added to the system and the quick disconnect port into the Data Acquisition System . Once the hose has been connected securely you now can turn on the power switch located on the side of the Data Acquisition System, and then proceed to turn on the computer.

Using the Barbee Test Stand Software

Overview

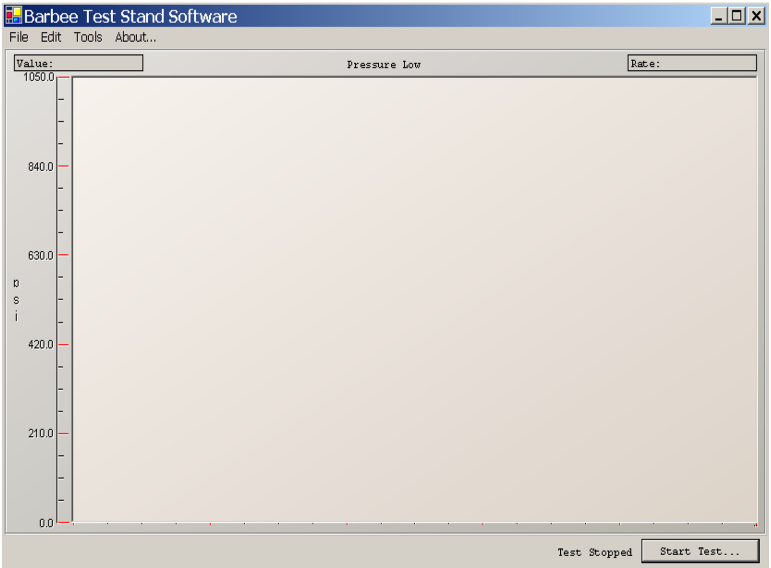

Barbee Test Stand Software
File
Edit
Tools
About...
Value:
Pressure Low
Rate:
1050.0
840.0
630.0
420.0
210.0
0.0
psi
Test Stopped
Start Test...

Figure 6. Main screen

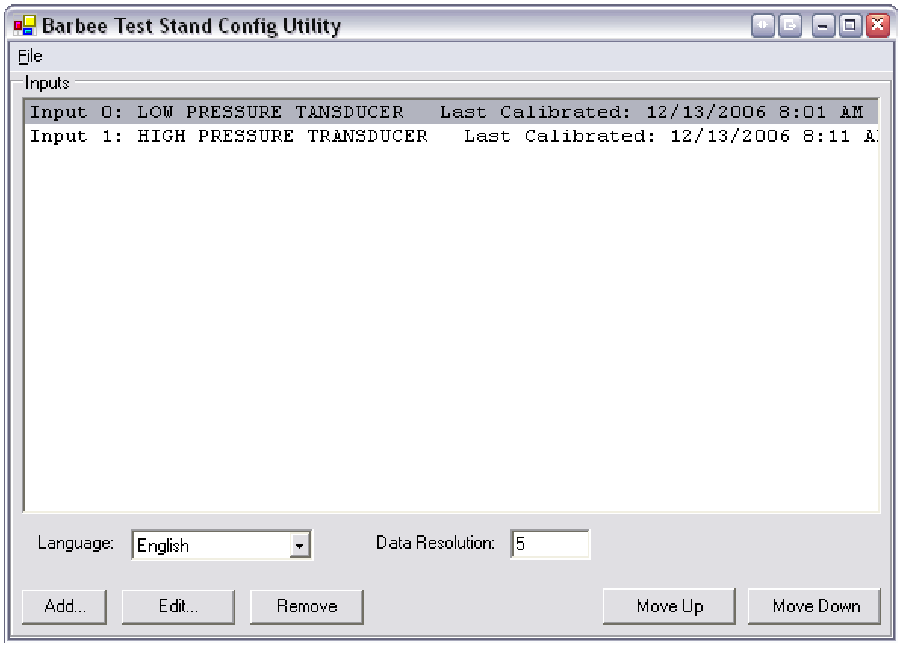
Figure 6 shows the main screen for the Barbee Test Stand Software. This is the screen where you will be able to view your data. X-axis corresponds to the time elapsed, while the Y-axis corresponds to the data units you chose back in the config. utility.

To navigate to the Barbee Test Stand Software, go to the Start Menu > Programs > Barbee Testers > Barbee Test Stand Software.

Using the Config. Utility

Overview

The Barbee Test Stand Config. Utility allows the operator to create configuration files for the Barbee Test Stand Software. These configuration files contain the details specific to each input being monitored by the Test Stand computer (analog and video inputs).



```
Input 0: LOW PRESSURE TANSDUCER   Last Calibrated: 12/13/2006 8:01 AM
Input 1: HIGH PRESSURE TRANSDUCER   Last Calibrated: 12/13/2006 8:11 A
```

Language: English

Data Resolution: 5

Figure 1. Example configuration of the *Utility Main Screen*

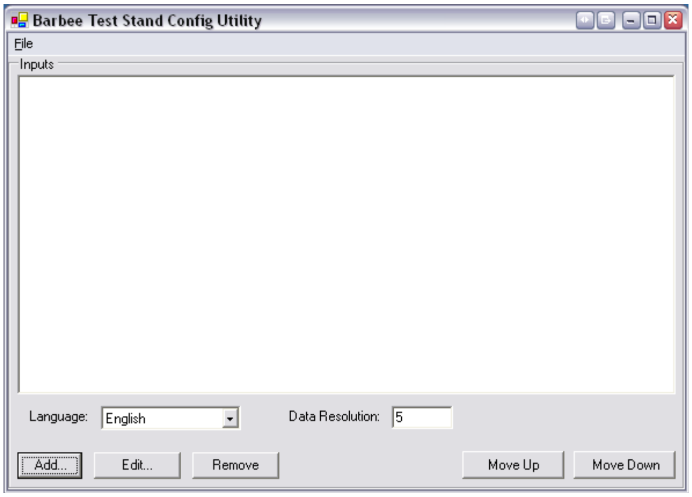
In addition to the input information are settings for language and the rounding interval for all raw analog data. The DAS-1000 hardware currently outputs values between 0-2048 for each input; this is the unit used for the rounding interval. The Test Stand Software must have a configuration file in order to run, so the configuration process must be repeated for each type of Test Stand. Note that configuration files may be re-used between different computers that have the same inputs.

To navigate to the Barbee Test Stand Config Utility, go to the Start Menu > Programs > Barbee Testers > Barbee Test Config Utility.

Using the Config Utility

Adding a Test Stand Input

When running the Config Utility for the first time, no inputs will be present in the list:


Barbee Test Stand Config Utility
File
Inputs
Add...
Edit...
Remove
Move Up
Move Down

Language: English

Data Resolution: 5

Figure 2. Config Utility after installation

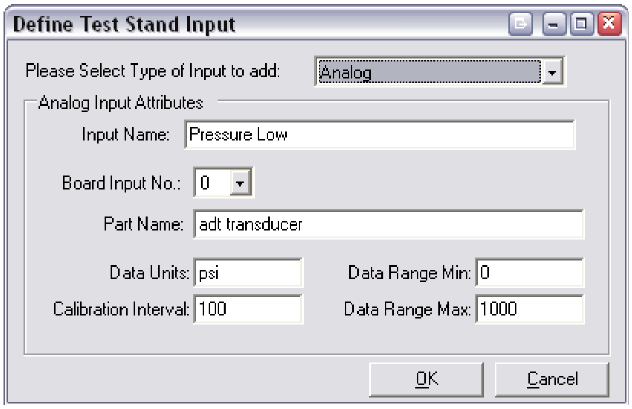
To create an input, click the Add… button.

If no Directx compatible video devices are detected, the user will be notified when clicking the “Add…” button. Video inputs can not be added unless a video device is connected.

Select the type of input (Analog or Video) you wish to add from the dropdown box on the Define Test Stand Input window.

Using the Config Utility

Adding an Analog Input



Please Select Type of Input to add: Analog

Analog Input Attributes

Input Name: Pressure Low

Board Input No.: 0

Part Name: adt transducer

Data Units: psi

Data Range Min: 0

Calibration Interval: 100

Data Range Max: 1000

Figure 3. Analog Input Settings

For each analog input you must specify an input name used to identify the input in the Test Stand Software. For multiple analog inputs, repeat the steps below.

The board input number may be any value 0 -7, corresponding to 8 differential inputs according to how the console was wired to the data acquisition chip. Refer to the data acquisition schematic to determine which transducer corresponds to which input.

The part name can be entered for informational purposes.

The data units textbox is used to label the axis in the Test Stand Software graph. If “psi” is entered for data units, pressure related statistics will be calculated when reports are generated. Generic reports are calculated for all other data unit values.

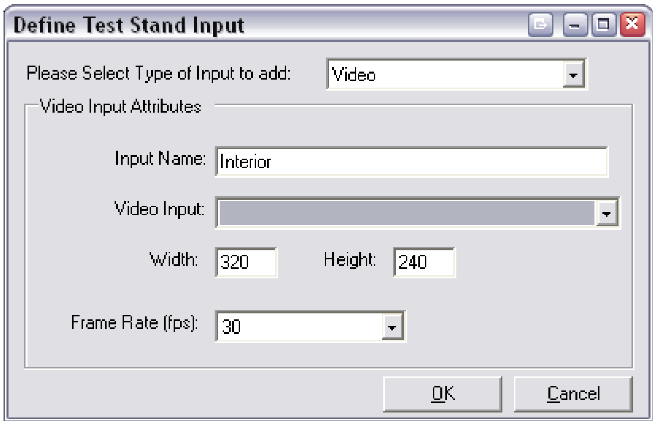
The data range min/max should match the range of values that are monitored on the attached transducer or other analog input device. In figure 3, this particular transducer has a range of 0-1000 psi.

The calibration interval determines which intervals the transducer will be calculated at. To determine a acceptable calibration interval, use the ratio between the “Data Range Max” and the “Calibration interval”. The lower the ratio, the more accurate the calibration will be. However, the lower the calibration interval, the longer it will take to calibrate the transducer. I.e. In figure 3, the calibration interval is 100:1000. An interval of 10:1000 would generate a more accurate calibration, but would take a longer time to calibrate.

Click OK to create the input or cancel if you do not want to make changes.

Using the Config Utility

Adding a Video Input



Please Select Type of Input to add: Video

Video Input Attributes

Input Name: Interior

Video Input:

Width: 320 Height: 240

Frame Rate (fps): 30

Figure 4. Video Input Settings

To add a video input to the configuration, select Video from the input type dropdown box.

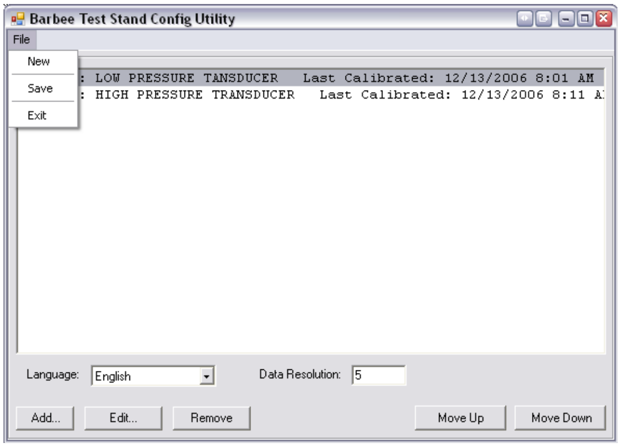
> The Test Stand Software can interface with any DirectX compatible video camera to display video data to the user.

Each connected video camera can be assigned to a different video input using the Config Utility. Currently width, height, and frame rate are fixed at 320x240@30fps.

Repeat these steps in order to add another input device.

Using the Config Utility

Saving your Configuration


Barbee Test Stand Config Utility
File
New
Save
Exit
Add...
Edit...
Remove
Move Up
Move Down

```
: LOW PRESSURE TANSDUCER   Last Calibrated: 12/13/2006 8:01 AM
: HIGH PRESSURE TRANSDUCER   Last Calibrated: 12/13/2006 8:11 A
```

Language: English

Data Resolution: 5

Figure 5. . Example configuration of the *Utility Main Screen*

When you are done configuring inputs for a system, be sure to save your changes via the File menu. If you would like to continue by creating a new configuration from scratch, you can select New.

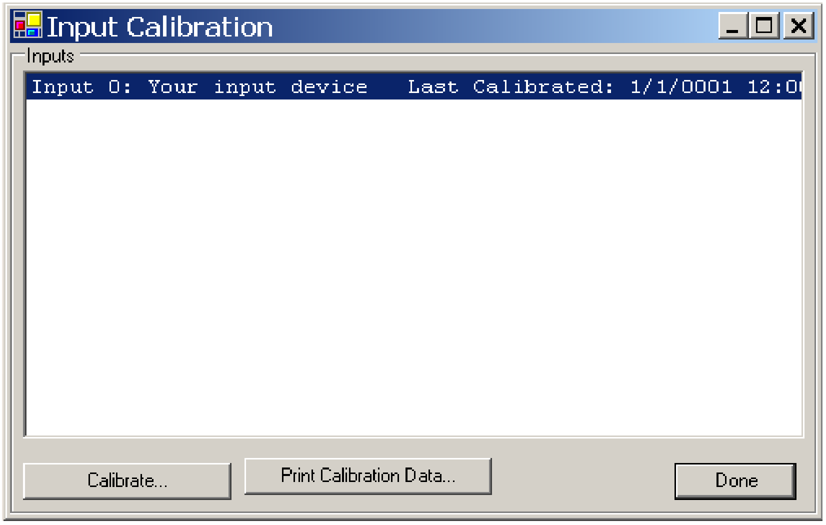
Enter a positive value for the data resolution box.

To exit the Config Utility select Exit – if you have made changes without saving them you will be prompted to save your changes, cancel the exit process, or exit without saving your changes.

Using the Barbee Test Stand Software

Calibration

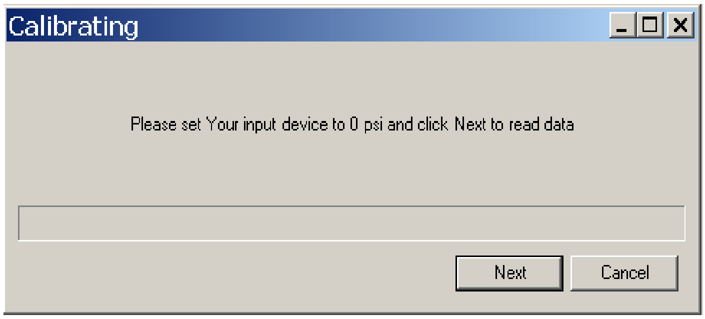
Before calibrating, the system needs to be able to be isolated. Connect a test pool to the test port, or connect the test port and the vent port together using a hose to begin calibration.



```
Input 0: Your input device    Last Calibrated: 1/1/0001 12:0
```

Figure 7. Input Calibration

To calibrate the test stand, go to Edit > “Calibrate Inputs…” Select the desired input, and then hit the “Calibrate” button.



Please set Your input device to 0 psi and click Next to read data

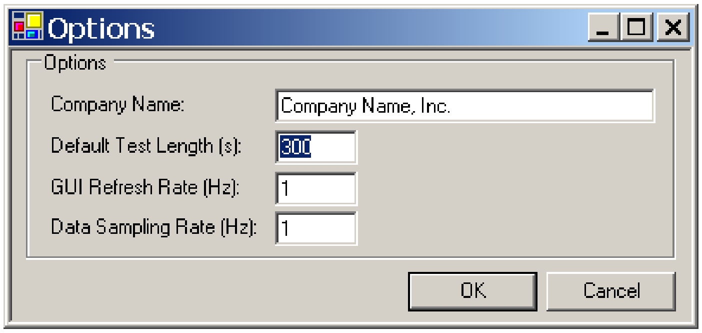
Figure 8. Calibrating Window

A new window will then appear. At this time, make sure the test stand reads 0 psi, and then click next. Again, another window will appear but will request a specific psi for the calibration. i.e. “Please set your input device to 250 psi and click Next to read data” will require the test stand to be brought up to a pressure of 250 psi.

Proceed to follow the directions until the completion of the calibration.

Using the Barbee Test Stand Software

Before Testing


Options
Options
OK
Cancel

Company Name: Company Name, Inc.
Default Test Length (s): 300
GUI Refresh Rate (Hz): 1
Data Sampling Rate (Hz): 1

Figure 9. Options menu

Before testing, please note that the test default time is ten minutes, if you would like to adjust this time go to Edit > Option in the top left hand side of the screen. In here you can adjust the time in seconds and also change the company name that appears on the test graph.

Testing

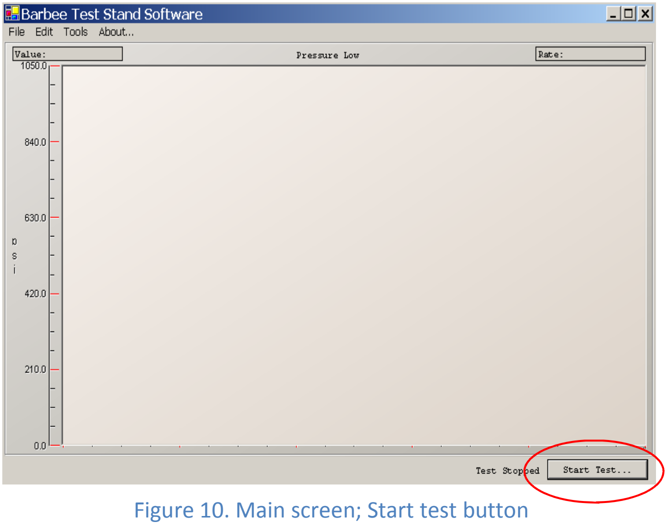
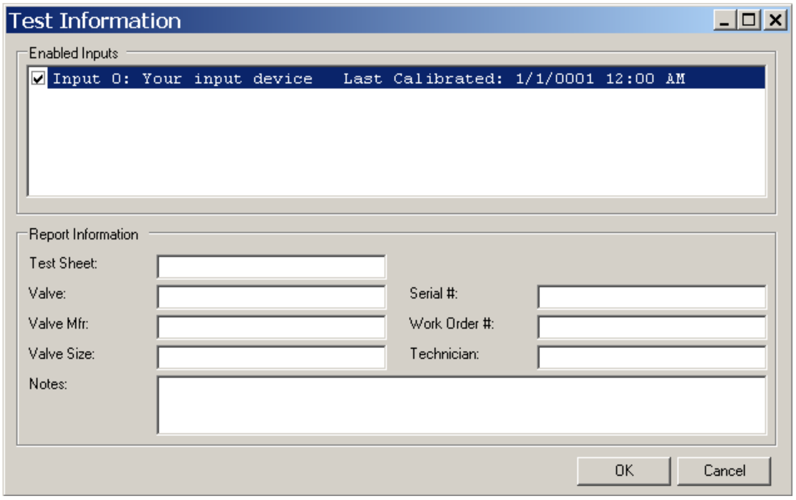

Barbee Test Stand Software
File
Edit
Tools
About...
Value:
Pressure Low
Rate:
1050.0
840.0
630.0
psi
420.0
210.0
0.0
Test Stopped
Start Test...

Figure 10. Main screen; Start test button

To begin testing, press the “Start Test…” button located on the bottom right corner of the main screen.

Using the Barbee Test Stand Software

Testing (cont.)


Test Information
Enabled Inputs
Report Information
Test Sheet:
Valve:
Serial #:
Valve Mfr:
Work Order #:
Valve Size:
Technician:
Notes:
OK
Cancel

☑ Input 0: Your input device Last Calibrated: 1/1/0001 12:00 AM

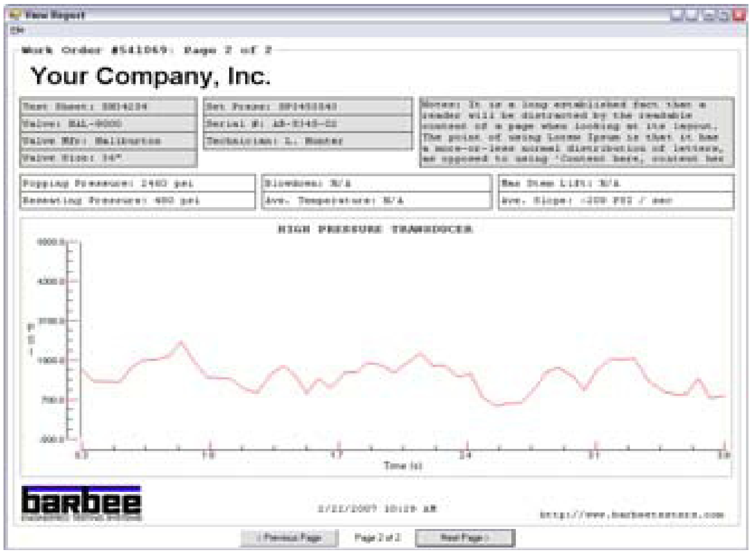
Figure 11. Test Information

A new screen will appear. Here you will enter all of the valve information such as the valve manufacturer, work order #, serial #, size, set pressure and operators name. You will also need to select which pressure transducer you will use depending on your test pressure by double clicking on the selected transducer.

Once you have entered all of the valve information press the ok button to commence the test. When the test is running the transducer that was selected graph will be the teal colored graph.

Using the Barbee Test Stand Software

Testing (cont.)



Work Order #541069: Page 2 of 2

Your Company, Inc.

Valve Mfr: Halliburton

Technician: L. Hunter

Notes: It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content her

Popping Pressure: 2400 psi

Reseating Pressure: 400 psi

Blowdown: N/A

Ave. Temperature: N/A

Max Stem Lift: N/A

Ave. Slope: -200 PSI / sec

Figure 13. Test Information

Once your test is complete and the time has ran out, the test result will automatically be generated. The test graph will have all the information that you entered with the time, date, popping pressure and reseat pressure. If you have completed your test and the system still has a lot of time left you can push the stop test button. This will stop the test time and generate your test graph.