

Eighth Annual QUIKLOOK Users Group Meeting

Marion, MA
August 20 & 21st, 2014

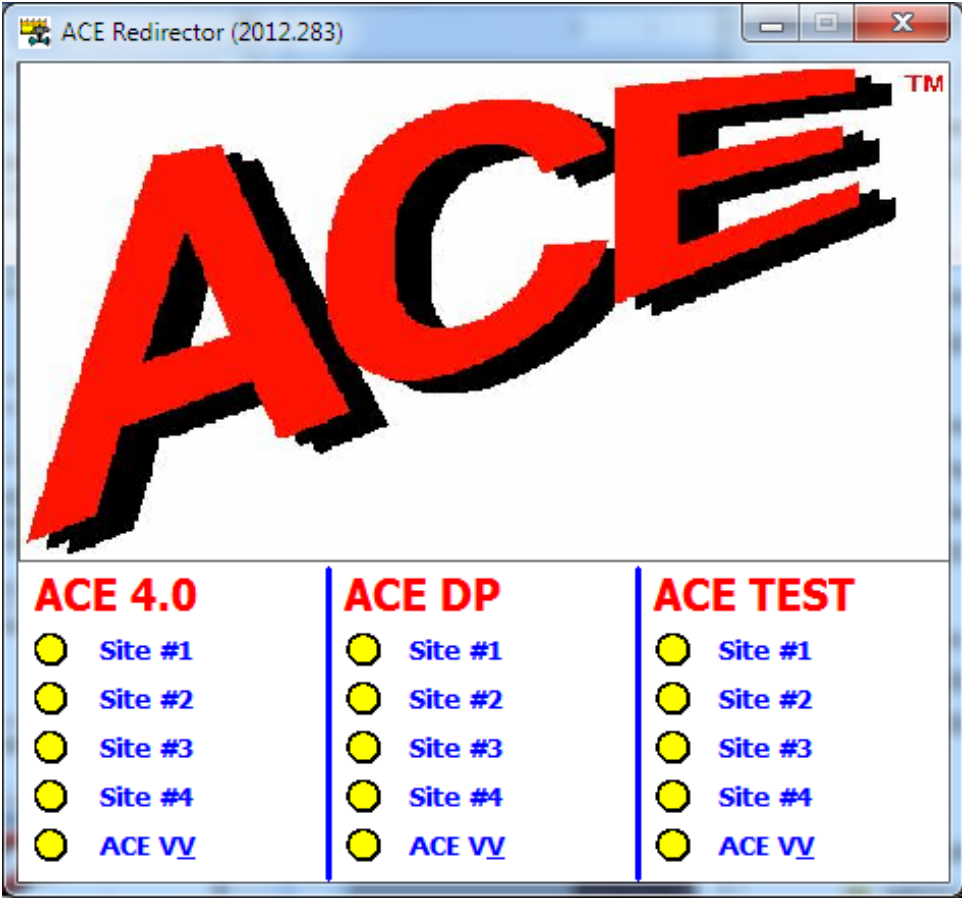
Eric Solla
QUIKLOOK Product Manager

ACE Software Suite



TELEDYNE TEST SERVICES
Everywhereyoulook™

ACE Software Suite



Design Calculation Software ACE

ACE Calculations

File Edits Tables References Tools Help

ZZ-RSTESTCASE

Globe - Balanced - Flow Over - Down to Close
Diaphragm - Reverse Acting

Packing Accessories Adjustment Factors Output
General Configuration Valve Actuator

Parameter	Dir	Value	Ref
Calculation Number		Unknown	1
Calculation Revision		0	1
System		011	959
Name		Name	970
Fail Position		Close	981
Media		Water	992
Flow Diagram / P&ID		P&ID	993
Max. Fluid Temperature (Deg F)		100	948
Line Pressure Upstream (psig)	(C)	200.00	970
Line Pressure Upstream (psig)	(O)	100.00	970
Line Pressure Downstream (psig)	(C)	20.00	992
Line Pressure Downstream (psig)	(O)	10.00	981
Category		1	993
Air System Name.		Air System	948
Stem Material		Stainless Steel	1
Young's Modulus (E)		29,000,000	1
Poisson's Ratio (v)		0.290	1

General Comments
Discussion on the method used to determine the line pressures. - LP Discussion

Eric Solla 10/10/2011 19:09 NOT APPROVED N/A

Test Analysis Software ACETEST

ACETEST for All Plants - ALL VALVES

File Tables Tools Help

BFN-1-PCV-001-0153

Globe - Balanced - Flow Over - Down to Close
Diaphragm - Reverse Acting

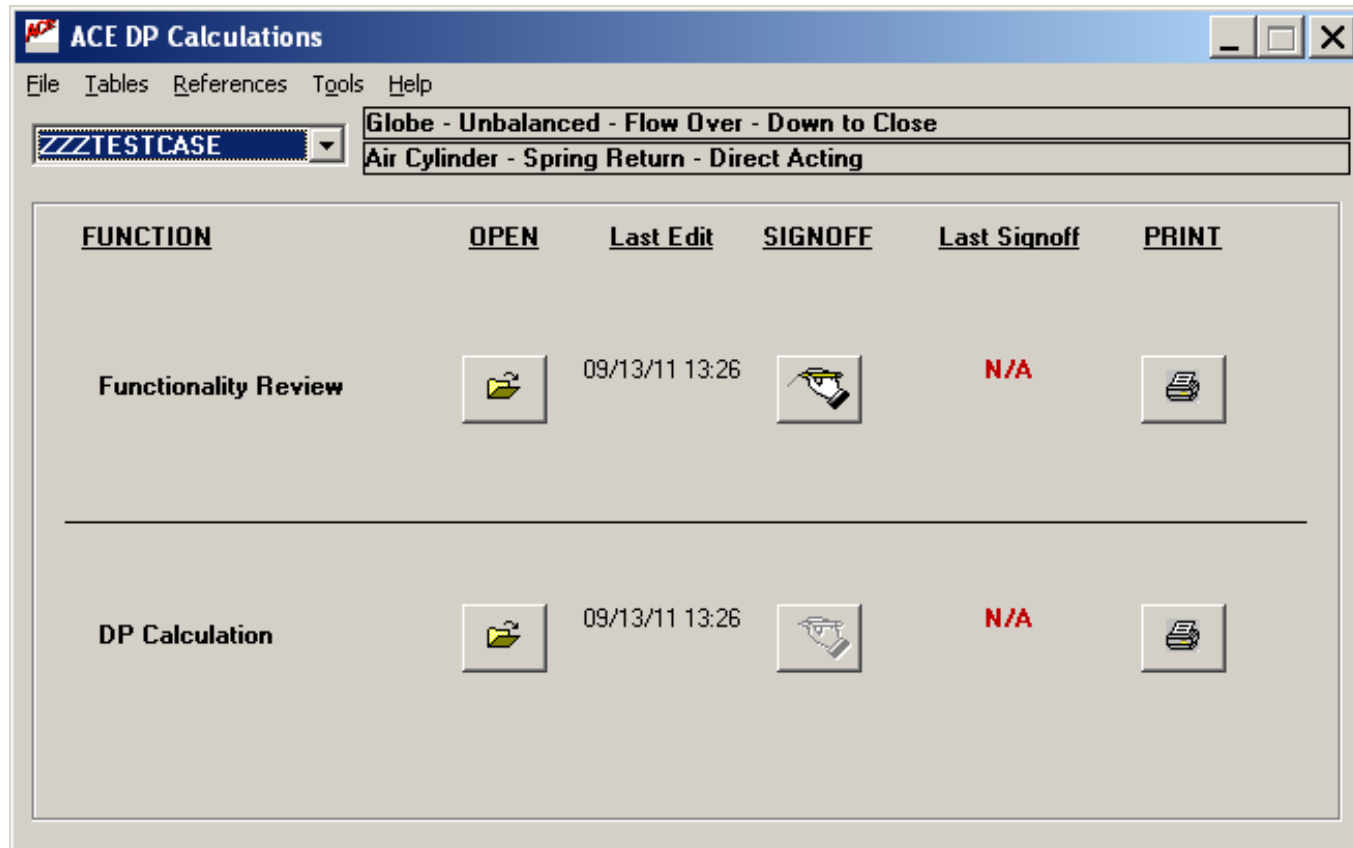
Design Data - Manual Input







FUNCTION	OPEN	Last Edit	SIGNOFF	Last Signoff	PRINT
Pre-Test		11/13/12 13:56		N/A	
Post Test Evaluation		11/13/12 13:58		N/A	

Add New Work Order

Work Order	AOVDR Rev	Status	Test Date	Test of Record
112585928	0	PreTest	11/10/2012	...
N/A	N/A	Legacy	11/11/2010	...

DP Calculation Software ACE DP



<u>FUNCTION</u>	<u>OPEN</u>	<u>Last Edit</u>	<u>SIGNOFF</u>	<u>Last Signoff</u>	<u>PRINT</u>
Functionality Review		09/13/11 13:26		N/A	
DP Calculation		09/13/11 13:26		N/A	



ACE History

- ACE 1.0 - Developed by the former Vectra group in Naperville IL
- ACE 2.0 - Duke Engineering & Services (DE&S) in Charlotte NC acquired Vectra in 1996 and later released ACE 2.0.
- ACE 3.0 - AREVA in Lynchburg VA acquired DE&S in 2002 and later released ACE 3.0
- ACE 4.0 - TTS purchased the rights to the ACE from AREVA in 2009 and released ACE 4.0 in 2012
- ACE 4.1 – Released in 2013



ACETest History

- 2008 – ACETest Rev 0
 - Initial Release for Entergy – Indian Point
- 2008 – ACETest Rev 1
 - Minor rev
- 2009 – ACETest Rev 2
 - Major changes for Entergy Corporate Use
- 2010 – ACETest Rev 3
 - Renamed Software to ACETest
- 2012 – ACETest Rev 4
 - Updated to Interface with ACE 4.0
- 2013 – ACETest Rev 4.1
 - Total rewrite of software

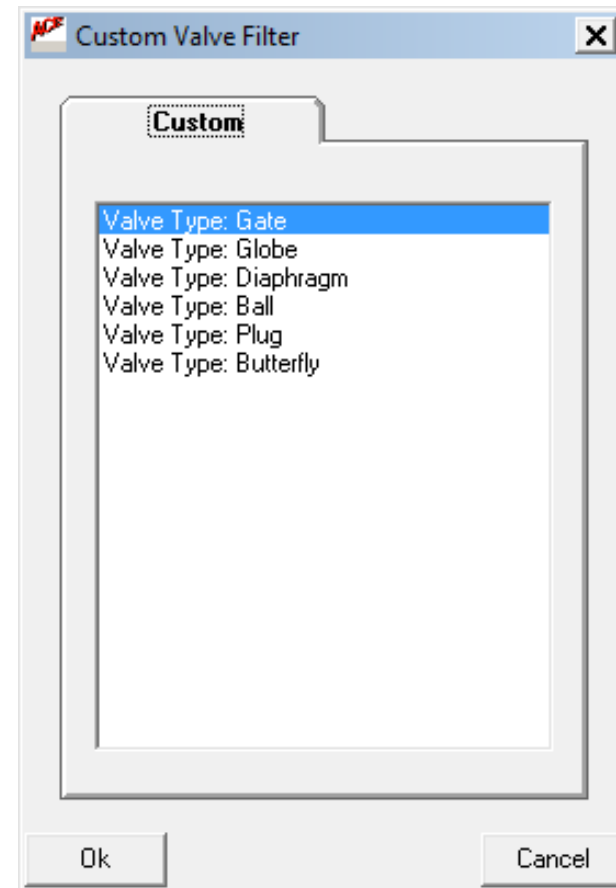
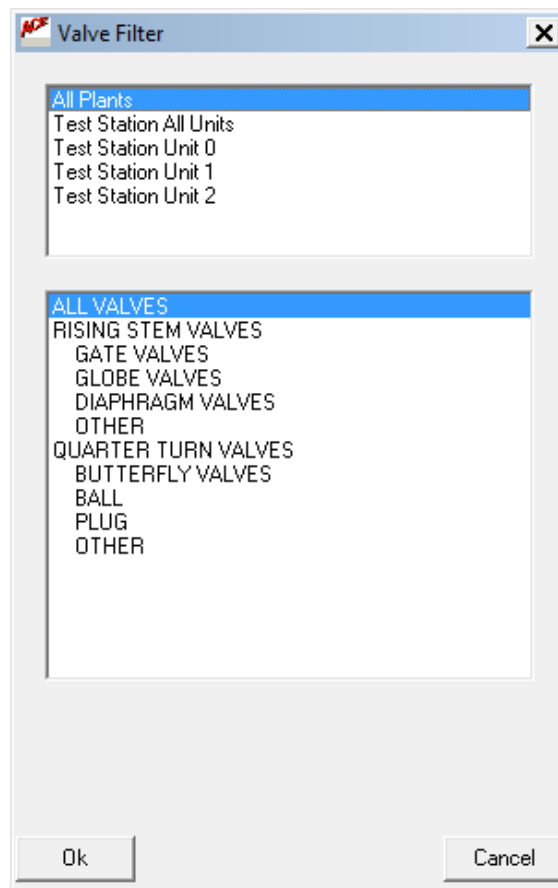


ACE, ACEDP & ACETest Version 4.1

- **SQL Compatible**

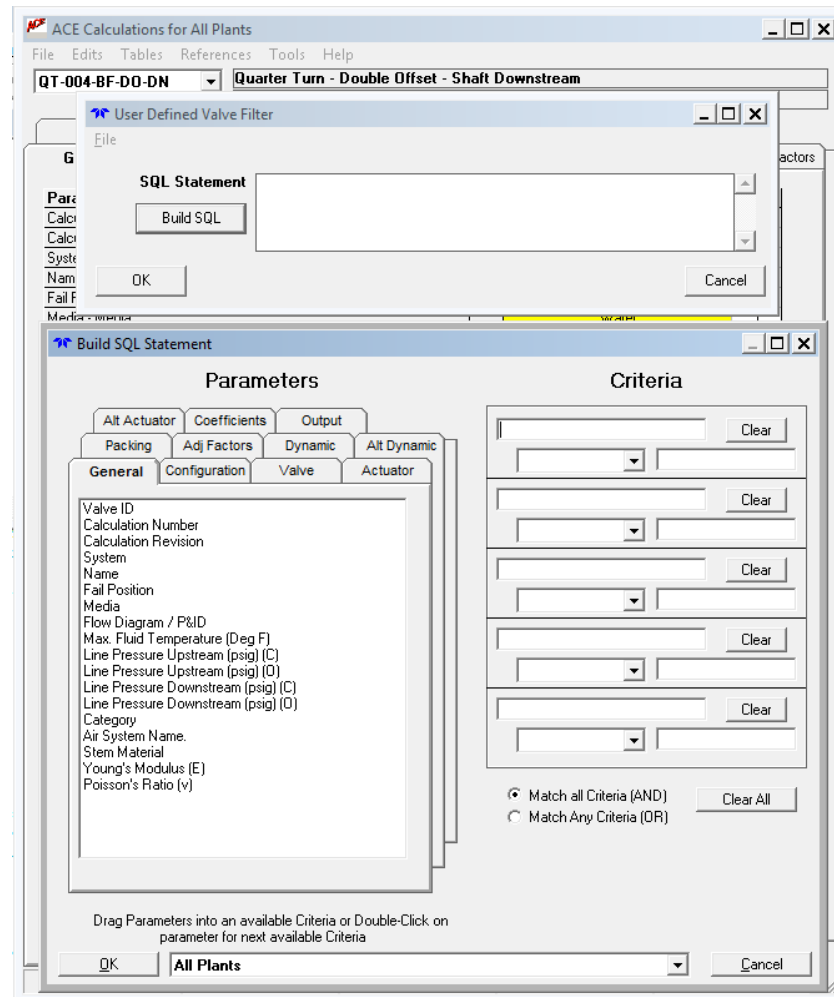
ACE, ACEDP & ACETest Version 4.1

- Custom Filters Added (Similar to Midas)



ACE, ACEDP & ACETest Version 4.1

- **User Defined Filter Added (Similar to Midas)**



ACE, ACEDP & ACETest Version 4.1

- Verify Software

Verification History for ACE 2012.318 11/13/2012 09:19:50 Version 4.1

Return

Double-Click on the desired row to view the Verification details

Test	Prepared By	Date of Test	Computer	Revision	Status
1	Eric Solla	11/13/12 09:20:14	MRNENPC34	2012.318	NOT ACCEPTABLE

Verification History Details for Test 1

Print Sort Return

ACE 2012.318 installed on MRNENPC34
 Test Prepared By: Eric Solla on 11/13/12 09:20:14
 Most Recent Date of Last Edit is 10/30/12 10:25:33 for QT-004-BF-DO-DN
OVERALL STATUS IS NOT ACCEPTABLE

Valve	Prepared By	Last Edit Information	Status	Notes
QT-001-BF-Sym	Eric Solla	10/12/12 15:19:39	FAIL	UNEXPECTED
QT-002-BF-SO-DN	Rich Enos	12/23/11 08:55:10	FAIL	UNEXPECTED
QT-003-BF-SO-UP	Rich Enos	12/23/11 12:10:47	FAIL	UNEXPECTED
QT-004-BF-DO-DN	Eric Solla	10/30/12 10:25:33	PASS	N/A
QT-005-BF-DO-UP	Rich Enos	12/23/11 17:03:31	FAIL	UNEXPECTED
QT-006-BF-TO-DN	Rich Enos	12/23/11 14:40:54	FAIL	UNEXPECTED
QT-007-BF-TO-UP	Rich Enos	12/23/11 13:59:36	FAIL	UNEXPECTED
QT-008-BF-Sym	Rich Enos	12/23/11 18:38:57	FAIL	UNEXPECTED
QT-009-BF-Sym	Rich Enos	12/23/11 18:39:39	FAIL	UNEXPECTED
QT-010-BF-SO-DN	Rich Enos	12/23/11 18:39:57	FAIL	UNEXPECTED
QT-011-BF-SO-UP	Rich Enos	12/23/11 18:40:48	FAIL	UNEXPECTED
QT-012-BF-DO-DN	Rich Enos	12/23/11 11:38:41	FAIL	UNEXPECTED
QT-013-BF-DO-UP	Rich Enos	12/23/11 18:38:04	FAIL	UNEXPECTED
QT-014-BF-TO-DN	Rich Enos	12/23/11 18:41:31	FAIL	UNEXPECTED
QT-015-Ball	Rich Enos	12/23/11 18:37:20	PASS	N/A
QT-016-Plug	Rich Enos	12/23/11 18:36:58	PASS	N/A
QT-017-Other	Rich Enos	12/23/11 18:36:03	PASS	N/A
RS-001-GT-FW	Rich Enos	12/22/11 08:39:10	PASS	N/A
RS-002-GT-SW	Rich Enos	12/22/11 08:01:34	PASS	N/A
RS-003-GT-DD	Rich Enos	12/22/11 08:47:16	FAIL	UNEXPECTED
RS-004-GT-SpW	Rich Enos	12/22/11 15:40:11	PASS	N/A
RS-005-GT-PS	Rich Enos	12/22/11 15:41:32	PASS	N/A

ACE Version 4.1 EPRI Butterfly Methodology

- Added Compressible Fluids
- Added Custom Form

EPRI Butterfly Methodology

Return

General Information

Parameter	Value	Ref
Shaft Location	Shaft Downstream	1
Shaft Type	Double Offset	1
Eccentricity Torque Calc Option	Calculated	1
Eccentricity Option	Assists Opening	1
Eccentricity	1.125	1
Valve Disc Aspect Ratio (thick/dia)	0.00	1
Valve Disk Diameter (in)	5.875	1
Valve Stem Orientation (deg from vertical)	0.00	1
Valve Stem Diameter	1.500	1
Packing Torque (ft-lbs)	6.0	1
Hydrostatic Torque	Assist Opening	1
	Alternate (ft-lbf)	1
Alt (lbf):	10.0	1

Packing Torque (TP)	6.0	ft-lbs.
Seating Torque (TS)	202.8	ft-lbs.
Unseating Torque (TUS)	21.6	ft-lbs.
Hydrostatic Torque (THS)	10.0	ft-lbs.
	Oper.	Setup
Total Seating Torque (TTS)	475.3	475.3 ft-lbs.
Total Unseating Torque (TTUS)	27.8	27.8 ft-lbs.



ACE Version 4.1 Bench Set Configuration

- **Added Custom Form**

Bench Set Configuration
✕

[Return](#)

Spring Rate

<input type="radio"/> Not Req'd Due to Field Upper Bench Set	Value	Ref		Value	Ref
<input type="radio"/> Measured (lbf/in):	0.0	1	+/-	0.000	1
<input checked="" type="radio"/> Vendor (lbf/in):	330.0	1	+/-	0.030	1

Bench Set / Spring Preload

	Value	Ref		Value	Ref
<input type="radio"/> Field Bench Settings (psig):	Lower: 0.00	1		Upper: 0.00	1
			+/-	0.000	1
<input type="radio"/> Measured Spring Preload (lbf):	Measured: 0.0	1	+/-	0.000	1
<input checked="" type="radio"/> Vendor Pressure-Nominal (psig):	Nominal: 18.00	1	+/-	0.050	1
<input type="radio"/> Vendor Pressure-Range (psig):	Min: 0.00	1	Max: 0.00	1	
<input type="radio"/> Vendor Force-Nominal (lbf):	Nominal: 0.0	1	+/-	0.000	1
<input type="radio"/> Vendor Force-Range (lbf):	Min: 0.0	1	Max: 0.0	1	
Vendor Upper Bench Set: (For Info Only)					
	lbf: 0.0	1	psig: 0.00	1	

ACE Version 4.1 Air Pressure Configuration

- Added Custom Form

✚ Air Pressure Configuration ✕

Return

Air Pressure

		<u>Value</u>	<u>Ref</u>		<u>Value</u>	<u>Ref</u>
<input type="radio"/> Air Regulator Setting(psig):		0.0	1	+/-	0.000	1
<input type="radio"/> System Supplied Air Pressure (psig):	Min:	0.0	1	Max:	0.0	1
<input checked="" type="radio"/> Vendor Recommended Min. Setting (psig):		30.0	1			
Vendor Actuator Maximum Rating (psig):		100.0	1			

ACE Version 4.2

- **Multiple References**

The screenshot shows the ACE Software Suite interface for 'ACE Calculations for All Plants'. The main window displays a configuration page for an 'Air Regulator' with various tabs like General, Configuration, Valve, Actuator, etc. A 'Select Reference' dialog box is open, showing a table of references for the 'Maximum Rated Pressure (psig)' parameter.

Parameter	Dir	Value	Ref
Equipment ID - EquipmentID		Air Regulator	1, 11
Manufacturer - Manufacturer		N/A	3
Model Number - Model		N/A	4
Shop Order Number - ShopOrdNo		N/A	5, 6
Serial Number - SN		N/A	7, 8
Current Air Regulator Setting (psig) - ARPSSetting		0.0	9, 10
Maximum Rated Pressure (psig) - Pmax		0.0	13, 22, 39

Ref	Document #	Rev #	Date	Title
13	Quiklook Test File 12070G05	0	3/10/2012	Quiklook Mechanical Properties Test Evaluation for Spring Rate and Bench Set
22	Teledyne ACE Calculation Methodology		9/30/2003	Methodology used for the software process
39	E-272992	4		Massonellan Valve Assembly Drawing





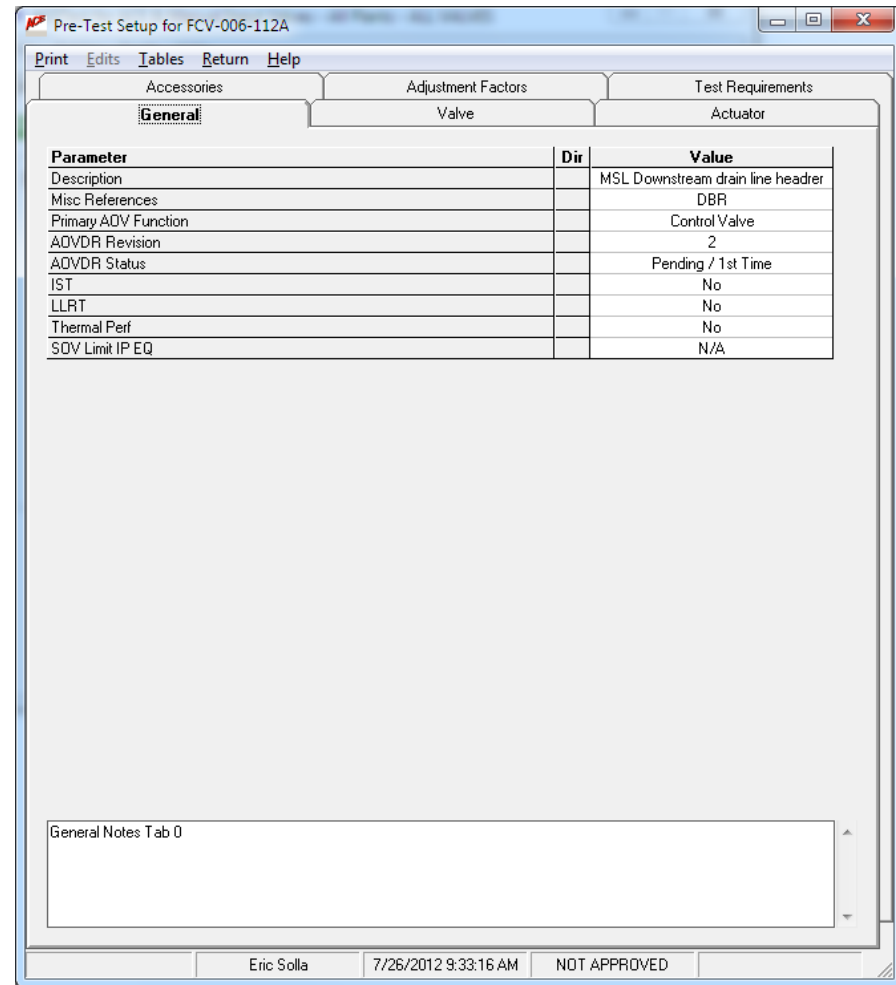
ACE Version 4.2

- **Multiple References**
- **As-Built & Historical Tables**
- **Help File**



ACETest Version 4.1

- Pre-Test Inputs
 - Similar layout to ACE



Parameter	Dir	Value
Description		MSL Downstream drain line header
Misc References		DBR
Primary ADV Function		Control Valve
ADVDR Revision		2
ADVDR Status		Pending / 1st Time
IST		No
LLRT		No
Thermal Perf		No
SOV Limit IP EQ		N/A



ACETest Version 4.1

- Design Inputs
 - Imported from ACE

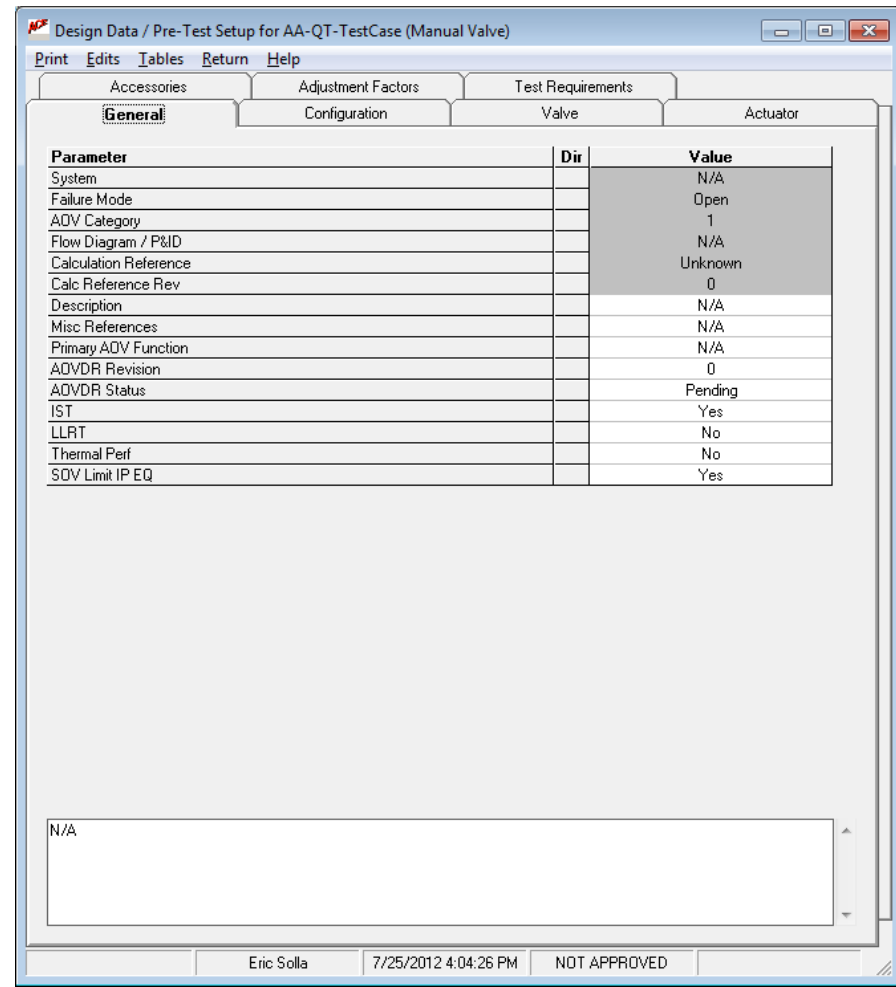
Design Data for RS-007-GL-B-O - Work Order 2013-0123

Print Return Update Design Data Show All

Parameter	Design WIP	Design As-Built	Test	Flag
System	FW	N/A	FW	
Description	Test Valve	N/A	Test Valve	
Fail Position	Close	N/A	Close	
AOV Category	3	N/A	3	
Flow Diagram / P&ID	M-207	N/A	M-207	
Calculation Reference	V&V Test Case RS-007	N/A	V&V Test Case RS-007	
Calc Reference Rev	1	N/A	1	
Valve Configuration	Rising Stem	N/A	Rising Stem	
Valve Type	Globe	N/A	Globe	
Balanced / Unbalanced	Balanced	N/A	Balanced	
Flow Direction	Flow Over	N/A	Flow Over	
Valve Action	Push Down to Close	N/A	Push Down to Close	
Actuator Type	Air Cylinder	N/A	Air Cylinder	
Air Cylinder Type	Single Acting- Spring Return	N/A	Single Acting- Spring Return	
Actuator Action	Reverse	N/A	Reverse	
Valve Manufacturer	Powell	N/A	Powell	
Valve Model	DR-6326	N/A	DR-6326	
Valve Size	6.00	N/A	6.00	
Valve Serial No	SF-012345	N/A	SF-012345	
Valve PO Number	N-987654	N/A	N-987654	
Valve Stem Diameter	1.000	N/A	1.000	
Stem Material	A182 Type F6	N/A	A182 Type F6	
Young's Modulus (E)	31,600,000	N/A	31,600,000	
(WIP) Rev 1 Rich Enos 12/22/11 15:53 NOT APPROVED N/A				

ACETest Version 4.1

- Pre-Test Inputs
 - Manual Valve
 - Includes Design & Pre-Test Inputs



Parameter	Dir	Value
System		N/A
Failure Mode		Open
ADV Category		1
Flow Diagram / P&ID		N/A
Calculation Reference		Unknown
Calc Reference Rev		0
Description		N/A
Misc References		N/A
Primary ADV Function		N/A
ADVDR Revision		0
ADVDR Status		Pending
IST		Yes
LLRT		No
Thermal Perf		No
SDV Limit IP EQ		Yes

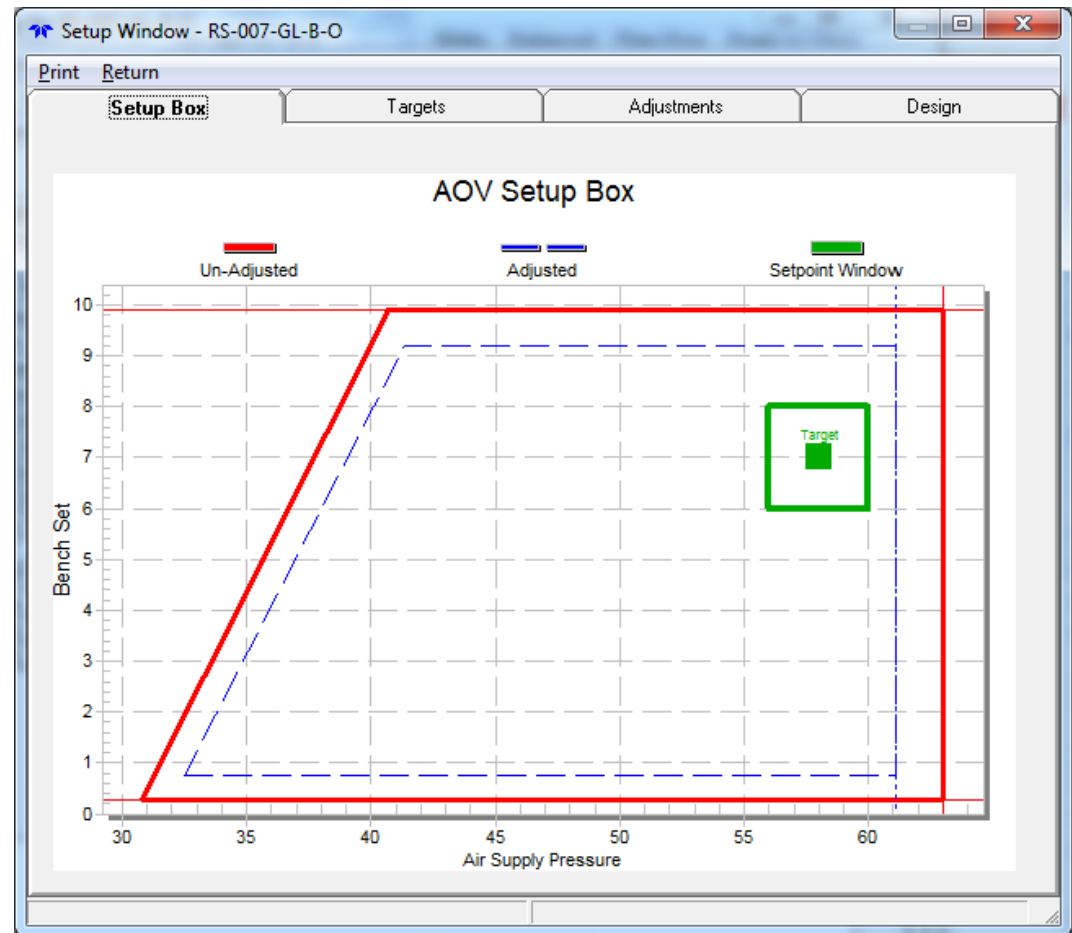
N/A

Eric Solla 7/25/2012 4:04:26 PM NOT APPROVED



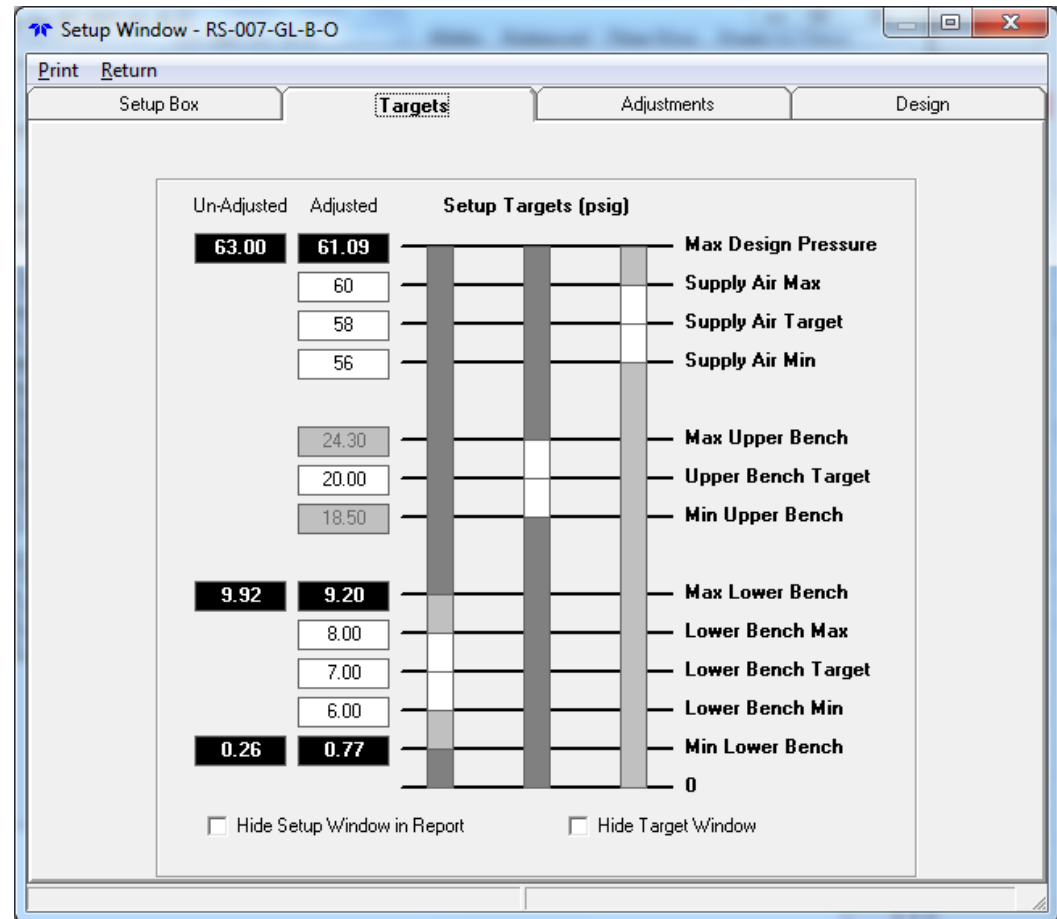
ACETest Version 4.1

- AOV Setup Box



ACETest Version 4.1

- AOV Setup Box Targets



ACETest Version 4.1

- Set Points
 - Used in Post Test Review

Edit Set Points - RS-007-GL-B-O

Edits Print Return

Parameters	Min Allowable	Desired Range			Max Allowable
		Min	Target	Max	
Total Travel (inch)	2.690		2.690		2.690
Linearity Error (%Decimal)		0.000		0.000	
Average Friction (lbf)		0.0		0.0	500
Lower Benchset (psig)	0.77	6.00	7.00	8.00	9.20
Upper Benchset (psig)	18.50		20.00		24.30
Spring Rate (lbf/in)	540				660
Seatload (lbf)		1,321		11,692	
Unseating Force (lbf)		171		10,715	
Signal Pressure Lift Off (psig)		0.00	0.00	0.00	
Signal Pressure Seat (psig)		0.00		0.00	
Signal Pressure Full Open (psig)		0.00		0.00	
Signal Pressure Start to Close (psig)		0.00	0.00	0.00	
Linearity Error Positioner (%Decimal)		0.000		0.000	
Minimum Signal I/P (psig)		0.0		0.0	
Maximum Signal I/P (psig)		0.0		0.0	
Linearity Error I/P (%Decimal)		0.000		0.000	
Regulator Pressure (psig)		56.0	58.0	60.0	61.09
Limit Switch (Control Signal (psig))		0.0	0.0	0.0	
Limit Switch - Reset (Control Signal (psig))		0.0	0.0	0.0	
Close Margin (%)		0.0			
Open Margin (%)		0.0			



ACETest Version 4.1

- Post Test Evaluation

- Summary
- Import Data
- Setpoints calculated
- Pass/Fail calculated with setpoints
- Adjusted
 - N/A
 - Yes
 - No

ACE Test Evaluation - RS-007-GL-B-O

Import Data Edit Print Return

Work Done **Summary** Evaluation Test Log

Parameters	As-Found	Min Setpoint	Max Setpoint	As-Left	Pass/Fail (As-Left)	Adjusted
Total Travel (inch)	0.000	2.690	2.690	0.000	Fail	
Linearity Error (%Decimal)	0.000	0.000	0.000	0.000		
Average Friction (lbf)	0.0	0.0	0.0	0.0		
Lower Benchset (psig)	0.00	0.26	9.92	0.00	Fail	
Upper Benchset (psig)	0.00	18.50	24.30	0.00	Fail	
Spring Rate (lbf/in)	0	540	660	0	Fail	
Seatload (lbf)	0	0	0	0		
Unseating Force (lbf)	0	N/A	N/A	0		
Signal Pressure Lift Off (psig)	0.00	0.00	0.00	0.00		
Signal Pressure Seat (psig)	0.00	0.00	0.00	0.00		
Signal Pressure Full Open (psig)	0.00	0.00	0.00	0.00		
Signal Pressure Start to Close (psig)	0.00	0.00	0.00	0.00		
Linearity Error Positioner (%Decimal)	0.000	0.000	0.000	0.000		
Regulator Pressure (psig)	0.0	5.0	75.0	0.0	Fail	
Limit Switch (Control Signal (psig))	0.0	0.0	0.0	0.0		
Close Margin (%)	N/A	0.0		0.0	Pass	
Open Margin (%)	N/A	0.0		0.0	Pass	

Disposition for Out of Tolerance Condition:
N/A

Rev 0 Eric Solla 07/17/2013 16:47 NOT APPROVED



ACETest Version 4.2

- Incorporating Design Criteria & Testing Requirements into Quiklook.
- This will be accomplished in three phases
- Phase 1:
 - Manual Input of all data into Quiklook
- Phase 2:
 - Import of Design Data & Criteria from ACETest
- Phase 3:
 - Identify valves for outage
 - One click – setup all config files and complete directory structure for use in outage testing



Any Questions?

THANK YOU



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Everywhereyoulook™