

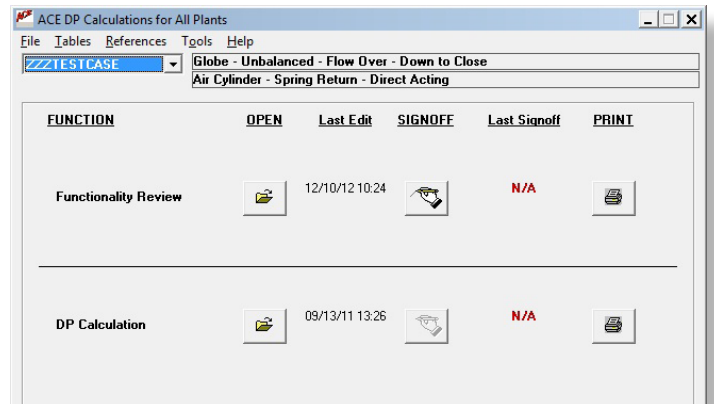
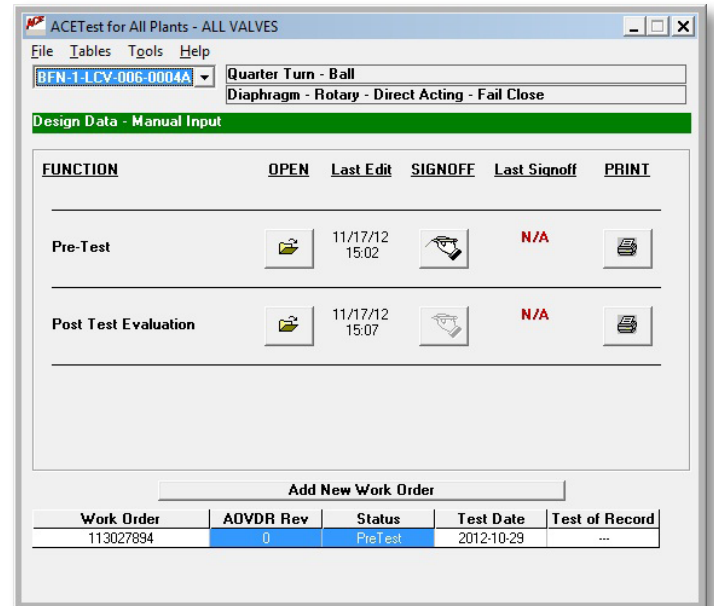
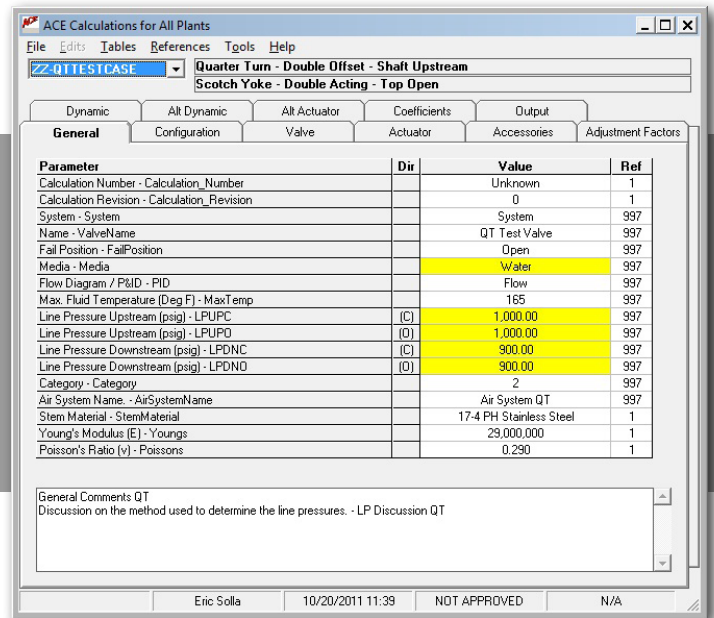
AOV Design & Test Database Software ACE, ACEDP & ACETest

Teledyne LeCroy Test Services (TLTS), together with our clients, have developed a comprehensive AOV Design (ACE), System Analysis (ACEDP) and Test (ACETest) Databases available to the industry for utility AOV program control.

The software is currently in use at Entergy, Exelon, TVA and Arizona Public Service.

ACE, ACEDP and ACETEST software are developed, maintained and documented using software Quality procedures developed by Teledyne. ACE, ACEDP and ACETEST are delivered with a Certificate of Conformance attesting to this fact.

Teledyne has developed a client/server implementation for ACE, ACEDP and ACETEST. This allows for a single installation on a server for the entire utility, including all remote sites. Teledyne provides an unlimited usage license for the entire utility.



AOV Design & Test Database Software

ACE is the primary AOV engineering tool for a utility. It provides -

- EPRI butterfly torque methodology
 - Compressible flow
 - Incompressible flow
- Margin Review
- Min Required Thrust / Torque
- Actuator Output
- Export to Excel reporting tool
- Self Verification

Margin Review for ZZ-QTTESTCASE

Graph Return

Act Capability Pressure Spring Structural Setpoints

Angle (degrees)	Field Setup						Operability	
	MRT	MRT	TA	TA	Margin	Margin	MRT	MRT
	Close (ft-lbs)	Open (ft-lbs)	Close (ft-lbs)	Open (ft-lbs)	Close (%)	Open (%)	Close (ft-lbs)	Open (ft-lbs)
0	320.0	29.3	634.8	649.4	98.4	2,116.4	320.0	42.5
1	18.2	0.0	613.4	627.5	3,270.3	0.0	29.3	0.0
2	19.4	0.0	593.4	607.1	2,958.8	0.0	30.5	0.0
3	20.6	0.0	574.7	588.0	2,689.8	0.0	31.7	0.0
4	21.8	0.0	557.3	570.1	2,456.4	0.0	32.9	0.0
5	22.9	0.0	540.9	553.3	2,262.0	0.0	34.0	0.0
10	28.7	0.0	473.0	483.9	1,548.1	0.0	39.8	0.0
15	35.0	0.0	423.2	433.0	1,109.1	0.0	46.1	0.0
20	38.4	0.0	386.4	395.3	906.3	0.0	49.5	0.0
25	46.1	0.0	359.5	367.7	679.8	0.0	57.2	0.0
30	58.4	0.0	340.2	348.0	482.5	0.0	68.5	0.0
35	71.1	0.0	327.3	334.8	360.3	0.0	82.2	0.0
40	92.8	0.0	319.8	327.2	244.6	0.0	103.9	0.0
45	123.5	0.0	317.4	324.7	157.0	0.0	134.6	0.0
50	162.3	0.0	319.8	327.2	97.0	0.0	173.4	0.0

Margin Review - Globe - Balanced - Flow Over - Down to Close for ZZ-RSTESTCASE

Optimize Return

Capability Margin Pressure Rating Spring Margin Weak Link Setpoints

	Close	Open	Full Open	
Operability Margin				
Min. Required Thrust (MRST):	1,016	1,000	1,000	lbf.
Actuator Output (FA):	713	-788	-3,758	lbf.
Margin (Margin):	-34.4	-173.6	-451.2	%
Setup Margin				
Min. Required Thrust (MRST):	1,016	1,000	1,000	lbf.
Actuator Output (FA):	713	-788	-3,758	lbf.
Margin (Margin):	-35.0	-173.0	-448.0	%

Minimum Required Torque for ZZ-QTTESTCASE

Graph Return

Constant Results Angle Dependant Results Choking

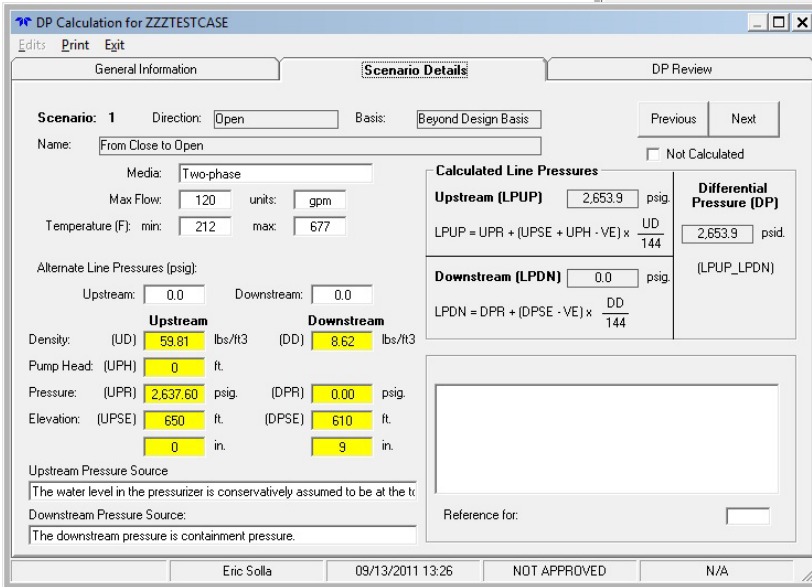
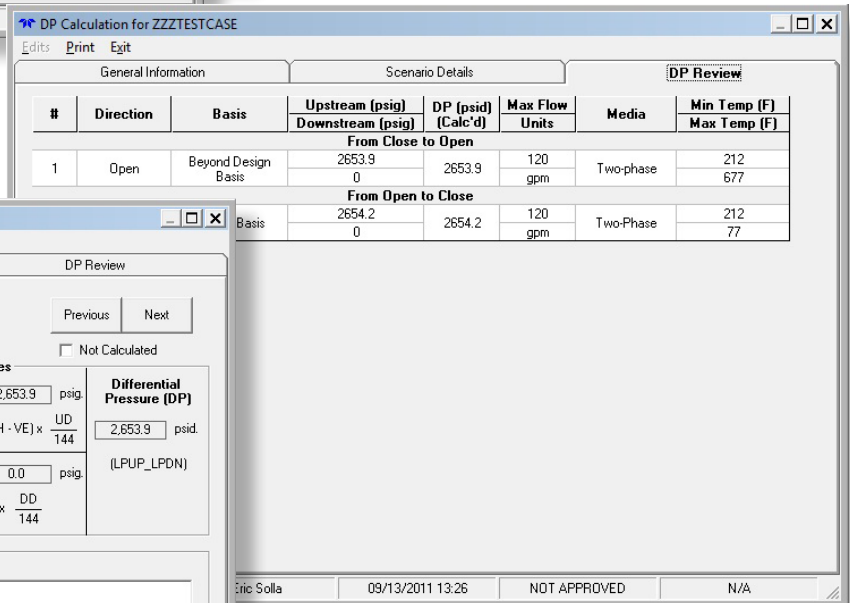
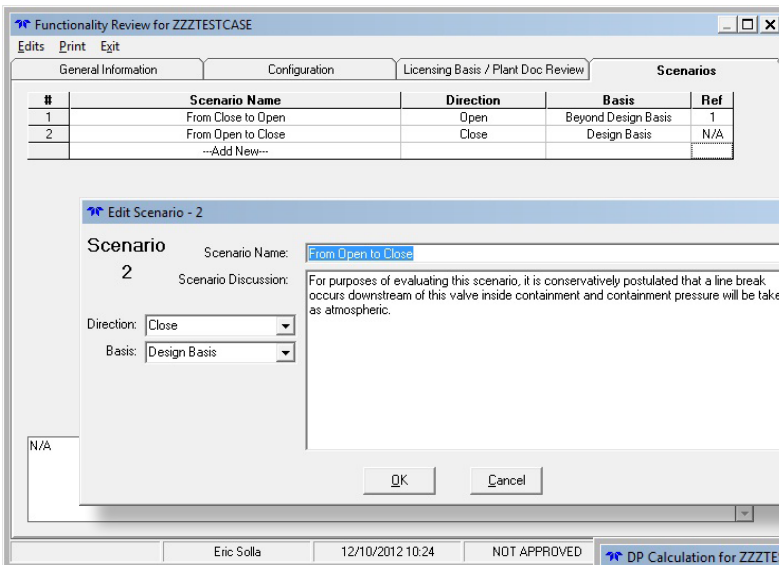
Angle (degrees)	Hydrodynamic Torque		Bearing Torque				Eccentricity	
	TD	TD	TB FS	TB FS	TB Op	TB Op	TE	TE
	Close (ft-lbs)	Open (ft-lbs)	Close (ft-lbs)	Open (ft-lbs)	Close (ft-lbs)	Open (ft-lbs)	Close (ft-lbs)	Open (ft-lbs)
0	0.00	0.00	13.3	13.3	26.5	26.5	0.0	0.0
1	1.19	-1.19	11.0	11.0	22.1	22.1	0.0	0.0
2	2.38	-2.38	11.0	11.0	22.1	22.1	0.0	0.0
3	3.56	-3.56	11.0	11.0	22.1	22.1	0.0	0.0
4	4.75	-4.75	11.0	11.0	22.1	22.1	0.0	0.0
5	5.94	-5.94	11.0	11.0	22.1	22.1	0.0	0.0
10	11.68	-11.68	11.0	11.0	22.1	22.1	0.0	0.0
15	18.02	-18.02	11.0	11.0	22.1	22.1	0.0	0.0
20	21.38	-21.38	11.0	11.0	22.1	22.1	0.0	0.0
25	29.11	-29.11	11.0	11.0	22.1	22.1	0.0	0.0
30	41.38	-41.38	11.0	11.0	22.1	22.1	0.0	0.0
35	54.05	-54.05	11.0	11.0	22.1	22.1	0.0	0.0
40	75.83	-75.83	11.0	11.0	22.1	22.1	0.0	0.0
45	106.52	-106.52	11.0	11.0	22.1	22.1	0.0	0.0
50	145.33	-145.33	11.0	11.0	22.1	22.1	0.0	0.0

AOV Design & Test Database Software

ACEDP is an engineering tool for the calculation of DP loads.

It includes:

- Licensing Basis / Plant Doc Review
- Multiple DP Scenarios
- DP Calculation for use in ACE
- Export to Excel reporting tool
- Self Verification



AOV Design & Test Database Software

Pre-Test Setup for ZZ-QITESTCASE

Parameter	Dir	Value
Location		N/A
Misc References		N/A
Primary ADV Function		N/A
ADV Data Record Revision		0
ADV Data Record Status		Pending
IST		No
LLRT		No
Thermal Perf		No
SOV Limit I/P EQ		N/A
Zero Control Signal		Closed
Include Packing on Report		Yes

Edit Criteria - ZZ-QITESTCASE

Parameters	Min Allowable	Desired Range			Max Allowable
		Min	Target	Max	
Dynamic Scan					
Total Travel (deg)	90.000		90.000		90.000
Average Friction (lbf)		0.0		0.0	6.0
Seating Torque (ft-lbs)		0		0	
Unseating Torque (ft-lbs)		0		0	
Linearity Error (%Decimal)		0.000		0.000	
Positioner					
Signal @ Lift Off	0.00	0.00	0.00	0.00	N/A
Signal @ Start to Close	0.00	0.00	0.00	0.00	N/A
Signal @ Seat	0.00	0.00	0.00	0.00	N/A
Signal @ Full Open	0.00	0.00	0.00	0.00	N/A
Linearity Error Positioner (%Decimal)	0.000	0.000	0.000	0.000	N/A
I/P					
Minimum Signal I/P (psig)	0.0	0.0	0.0	0.0	N/A
Maximum Signal I/P (psig)	0.0	0.0	0.0	0.0	N/A
Linearity Error I/P (%Decimal)	0.000	0.000	0.000	0.000	N/A

Post Test Evaluation - ZZ-QITESTCASE

Parameters	As-Found	Min	Max	As-Left	Pass/Fail (As-Left)	Adjusted
Dynamic Scan						
Total Travel (deg)	0.000	90.000	90.000	0.000	Fail	N/A
Average Friction (lbf)	0.0	0.0	0.0	0.0		N/A
Seating Torque (ft-lbs)	0.00	0	0	0.00		N/A
Unseating Torque (ft-lbs)	0.00	0	0	0.00		N/A
Linearity Error (%Decimal)	0.000	0.000	0.000	0.000		N/A
Positioner						
Signal @ Lift Off	0.00	0.00	0.00	0.00		N/A
Signal @ Start to Close	0.00	0.00	0.00	0.00		N/A
Signal @ Seat	0.00	0.00	0.00	0.00		N/A
Signal @ Full Open	0.00	0.00	0.00	0.00		N/A
Linearity Error Positioner (%Decimal)	0.000	0.000	0.000	0.000		N/A
I/P						
Minimum Signal I/P (psig)	0.0	0.0	0.0	0.0		N/A
Maximum Signal I/P (psig)	0.0	0.0	0.0	0.0		N/A
Linearity Error I/P (%Decimal)	0.000	0.000	0.000	0.000		N/A

Post Test Evaluation - ZZ-QITESTCASE

Yes	No	N/A
Static Closed Data Evaluation		
Sealhood is greater than the minimum required to close?		X
Valve Seating force profile has been reviewed for abnormalities and is acceptable?		X
Closed Stroke Diagnostic traces have been reviewed for abnormalities and are acceptable?		X
Closed Light Indication limit switch tripped within the ADVDR Closed Travel (if required)?		X
Static Open Data Evaluation		
Valve Unseating (Breakaway) force profile has been reviewed for abnormalities and is acceptable?		X
Open Stroke Diagnostic traces have been reviewed for abnormalities and are acceptable?		X
Open Light Indication limit switch tripped within the ADVDR Open Travel (if required)?		X
Valve Unseating (Breakaway) force is greater than the force required to open valve.		X
General Stroke Data Evaluation		
Has the max design pressures in the actuator and / or any related accessories been exceeded?		X
Is the Maximum Average Friction less than the specified Maximum AND within the acceptable range?		X
Valve Travel is within the limits specified?		X
Spring rate is within the limits specified?		X
As Supply Pressure setting is within the limits specified?		X
Lower Benchset is within the limits specified?		X
For Air to Close valves, Upper Benchset is acceptable?		X
Diagnostic Traces Reviewed with Previous Traces		X
Overall Performance of Valve		
Is the Travel smooth and linear?		X
Is the overall Friction smooth and constant?		X
Does the Travel appear to contact the seat as expected?		X
Does the Travel appear to contact the backseat as needed?		X
Justification for Any No Answers:		
N/A		

ACETEST is the primary AOV maintenance tool for a utility. It provides:

- Imports setup information from ACE
- AOV diagnostic test preparation
 - Criteria
 - Setup window
 - Test Setups
- Diagnostic test data review
 - Comparison to allowable
 - Trace evaluations
 - Test Log
- Direct import of as-found and as-left test data and results
- AOV data analysis and trending
- Export to Excel reporting tool
- Self Verification

Setup Box - RS-007-GL-B-O

Un-Adjusted	Adjusted	Setup Targets (psig)
63.00	60.70	Max Design Pressure
	60.0	Supply Air Max
	55.0	Supply Air Target
	50.0	Supply Air Min
	16.20	Max Upper Bench
	15.00	Upper Bench Target
	14.60	Min Upper Bench
16.42	14.78	Max Lower Bench
	7.50	Lower Bench Max
	4.50	Lower Bench Target
	3.00	Lower Bench Min
0.04	1.45	Min Lower Bench
	0	0

Hide Setup Window in Report
 Hide Target Window
 Hide Setup Table on Report



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For more information, please visit our website or email
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