

Eighth Annual QUIKLOOK Users Group Meeting

Marion, MA
August 20 & 21st, 2014

Eric Solla
QUIKLOOK Product Manager

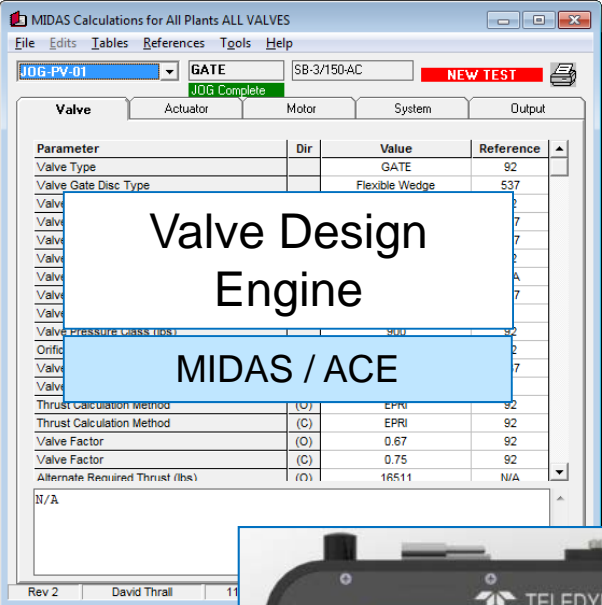
Software Suite Integration



TELEDYNE TEST SERVICES
Everywhereyoulook™

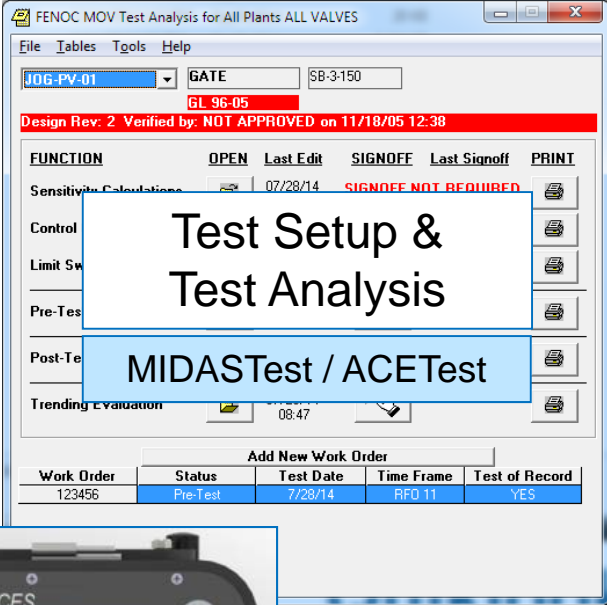


Software Suite Integration



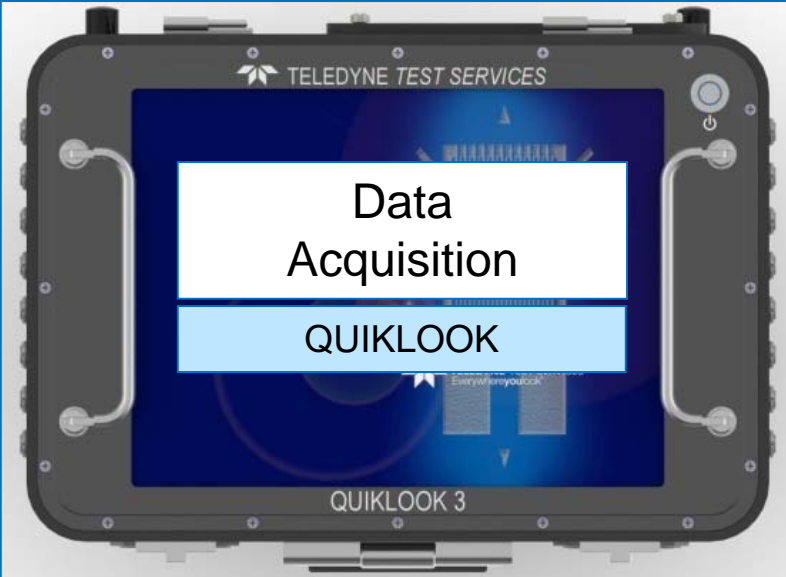
Valve Design Engine

MIDAS / ACE



Test Setup & Test Analysis

MIDASTest / ACETest



Software Suite Integration



Valve Design
Engine

MIDAS / ACE

- Valve Design is Created
- JOG Class & Test Frequencies Determined
- Min & Max Required Thrust calculated
- Min & Max Required Torque calculated
- Design Margins Calculated



Software Suite Integration

Required Thrust for JOG-PV-01

	CLOSE SAFETY	OPEN NON-SAFETY
Calculation Method	EPRI	EPRI
Valve Factor	0.7500	0.6700
Packing Load	11000	11000 (lbs)
Maximum DP	100.0	40.0 (psid)
Maximum LP	240.0	240.0 (psid)
Additional Thrust	0	
Design Thrust	32208	
Input Required Thrust	32111	
Required Thrust	32111	
Design Stem COF	0.2000	
Design Stem Factor	0.03153	
Required Torque	1012.5	

Stem Dia at Packing (in)
3.0000

Stem Dia at Stem Nut (in)
3.0000

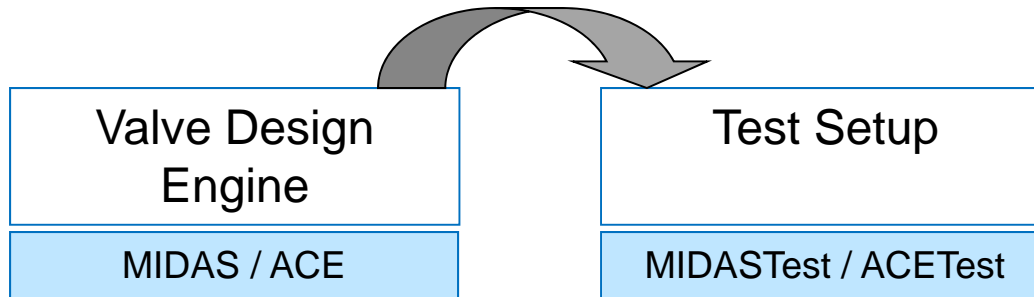
Seat Dia (in)
18.2000

Margin Review - Gate - Flex Wedge for RS-001-GT-FW

Optimize Exit

Capability Margin	Pressure Rating	Spring Margin	Weak Link	Setpoints
Operability Margin				
	Close	Open	Full Open	
Min. Required Thrust (MRST):	2,342	3,494	1,001	lbf.
Actuator Output (FA):	3,910	4,250	4,621	lbf.
Margin (Margin):	56.0	13.7	331.4	%
Setup Margin				
	Close	Open	Full Open	
Min. Required Thrust (MRST):	2,353	3,524	1,001	lbf.
Actuator Output (FA):	3,868	4,206	4,573	lbf.
Margin (Margin):	52.2	10.5	322.9	%

Software Suite Integration



- Valve Data imported from Midas / ACE
- Setup Window Defined
 - Thrust / Torque Target Values
 - Running Load Target
 - Max Stroke Times
- Test Requirements Defined
- Control Circuit Changes
- Limit Switch Settings



Software Suite Integration



Pre-Test Setup for JOG-PV-01 WO# 123456

Close Control Scheme: Torque Safety Function: CLOSE

Setup Torque Window Spring Pack

Thrust Parameters	CLOSE		OPEN	
	Design	Test	Design	Test
EE (%)	0.035	0.0350	0.035	0.0350
TSR (%)	0.05	0.050	0	0.000
ROLr (%)	0.16	0.160		
ROLb (%)	0.03	0.030		
SLDr (%)	0	0.000		
SLDb (%)	0	0.000		
SPRb (%)	0	0.000		
FSE (lbs)	0	0.0	0	0.0
Packing (lbs)	11000	11000	11000	11000

Limiting Parameters	CLOSE	OPEN
Valve	150503	150503
Seismic	0	0
Actuator TH	140000	140000
Actuator TQ / SF	104662	104662
Motor TQ / SF	154586	
*Spring Pack TQ/SF	77704	
*EPRI (Gate Only)	N/A	

*Not Included in Mechanical Limit

Normal Position is OPEN

Measured Parameters N/A

Thrust Derived from N/A

CLOSE THRUST SCALE

Eric Solla 7/28/14 08:47
NOT APPROVED 7/28/14 08:47

Pre-Test Setup for JOG-PV-01 WO# 123456

Close Control Scheme: Torque Safety Function: CLOSE

Thrust Window Torque Window Spring Pack

Setup Scheduled Work Previous Test

Reason For Diagnostic Test: GL96-05 PVT

Recommended Diagnostic Test System: QUIKLOOK Design Specification

Test Criteria Selection Basis: Thrust + Torque TH+TQ

Recommended Device to Acquire Thrust: QSS

Recommended Device to Acquire Torque: QSS

Packing Adjustment Method (select one)

- N/A
- Wrench Tight
- Maximum Packing Gland Torque and Expected Running Load Range: 40 (ft-lbs) Nut Size 0.917 Stud Size 0.625

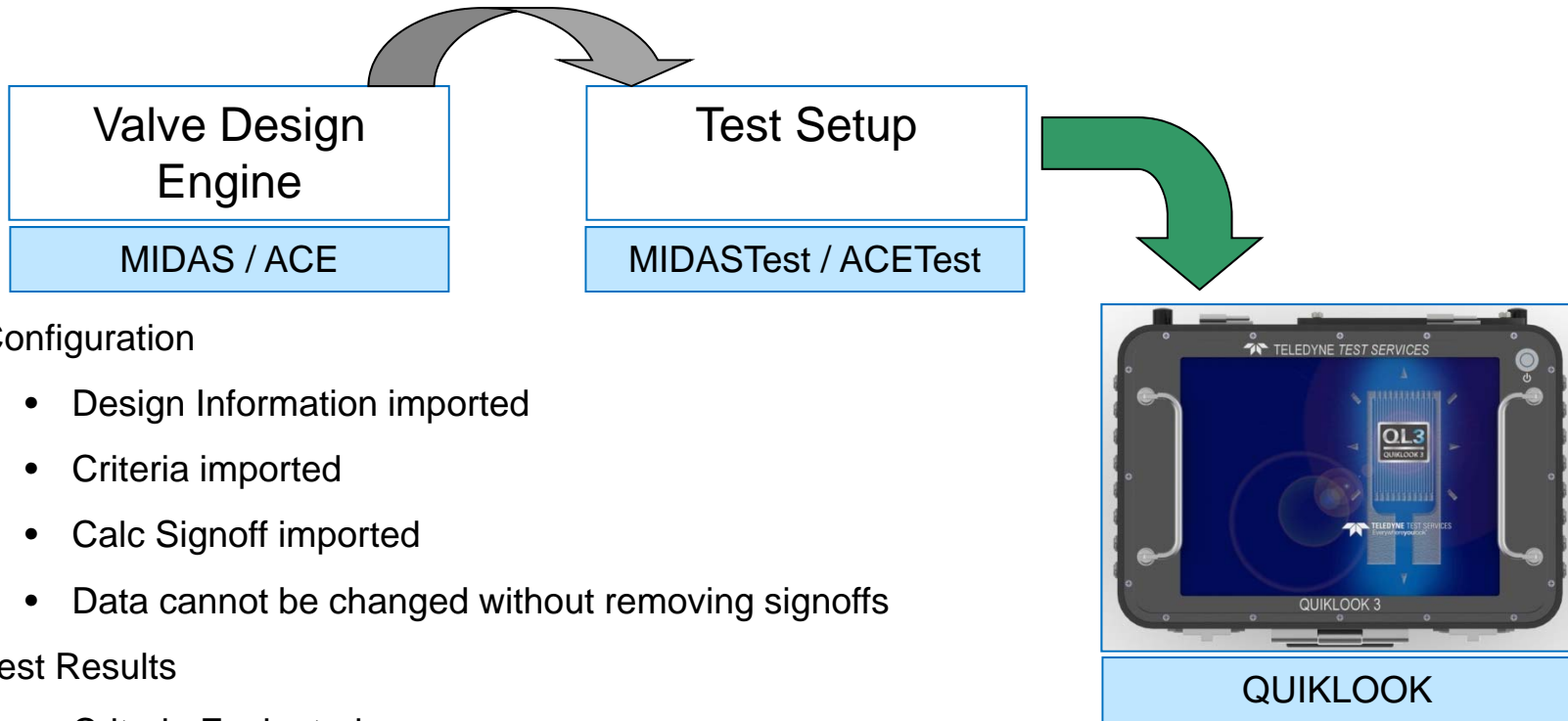
Maximum Allowable Running Current: 3.20

Expected CLOSE Stroke Time (sec): 22

Expected OPEN Stroke Time (sec): 22

Eric Solla 7/28/14 08:47
NOT APPROVED 7/28/14 08:47

Software Suite Integration



Configuration

- Design Information imported
- Criteria imported
- Calc Signoff imported
- Data cannot be changed without removing signoffs

Test Results

- Criteria Evaluated
- Stem Factor & COF Evaluated
- Running Loads Evaluated



Software Suite Integration



1FV0121 : Tag Information - Actuator Tab

Tag Number: 1FV0121

Actuator:

- Manufacturer: FISHER
- Model: 657
- Action Type: SINGLE
- Bench Set: 3.00 - 39.00 psi
- Spring Rate: 1870 lb/in
- Solenoid Valves: REF 1X4DB116-1
- Booster, Quick Release: [Empty]
- Booster Supply Setting: 0.00 psi

1FV0121 : Tag Information - Criteria Tab

Tag Number: 1FV0121, Serial Number: 5909866

Total Valve			
	Min	Tag	Max
Travel	87.000	2.000	93.000
Dyn Err Band	0	.	0
Linearity	0	.	0

Positioner			
	Min	Tag	Max
Zero Cal.	0	3	0
Full Cal.	0	15	0
Dyn Err Band	0	.	0
Linearity	0	.	0

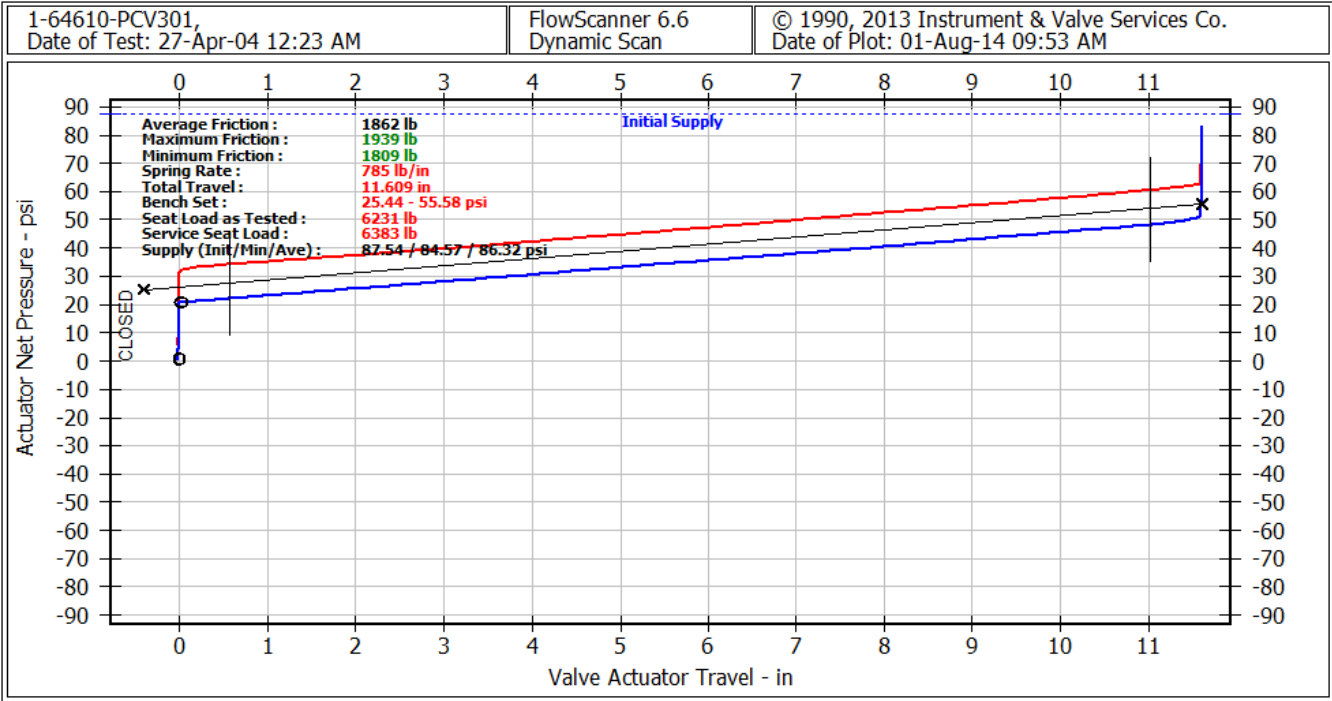
Regulator / Supply			
	Min	Tag	Max
Regulator Setpoint	0.00	0.00	0.00
Supply Min. Limit	0.00		
Supply Ave. Limit	0.00		

I/P			
	Min	Tag	Max
Zero Cal.	0.00		0.00
Full Cal.	0.00		0.00
Dyn Err Band	0	.	0
Linearity	0	.	0

Net Pressure			
	Min	Tag	Max
Low Bench	0.00	3.00	0.00
High Bench	0.00	39.00	0.00
Friction	0	529	0
Seat Load	0	1521	0
Svc Seat Ld	0	1521	0
Spring Rate	0	1870	0



Software Suite Integration



Serial Number :

Print Quick Report

I/P

	SPECIFIED	MEASURED
Pressure @ 0.00 mA :		0.01 psi
Pressure @ 0.00 mA :		96.34 psi
Average DEB :		0.28%
Maximum DEB :		3.83%
Minimum DEB :		0.01%
Dynamic Linearity :		+/- 10.52%

Plot Graph

Valve

	SPECIFIED	MEASURED
Average Friction :		1862 lb
Maximum Friction :	2941 lb	1939 lb
Minimum Friction :	1551 lb	1809 lb
Spring Rate :	708 lb/in	785 lb/in
Total Travel :	12.008 in	11.609 in
Bench Set (psi) :	23.21 - 50.47	25.44 - 55.58
Seat Load as Tested :	17600 lb	6231 lb
Service Seat Load :	17600 lb	6383 lb

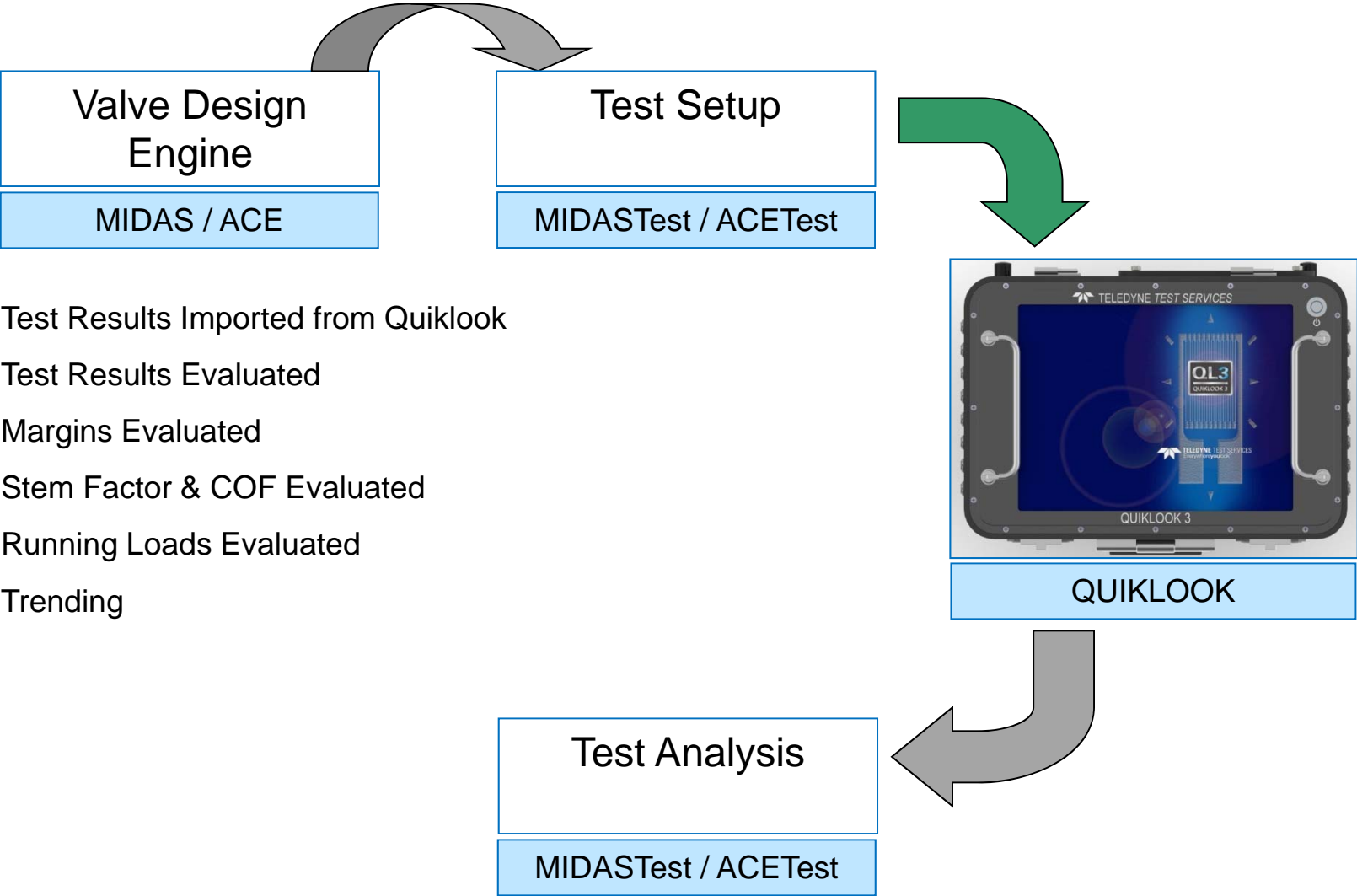
Plot Graph

Plot Positioner Graph | Plot Supply Graph

*Saved Manual Selections Have Been Applied



Software Suite Integration



Software Suite Integration



Post-Test Evaluation for JOG-PV-01 WO# 123456

As-Found Data		As-Left Data		Evaluations	
Work Done		Sensor Review		Data Review	
Actual Diagnostic Test System	N/A	PreTest Assumptions		Test Of Record?	
Actual Device to Acquire Thrust	N/A	N/A		<input type="radio"/> No <input checked="" type="radio"/> Yes	
Actual Device to Acquire Torque	N/A	N/A			
Stem Factor Analysis					
	Stem Factor	Error			
	As-found	As-Left			
Override (C)	0.000	0.000	SF (C)	0	0 < 0.03153
Override (D)	0.000	0.000	SF (D)	0	0 < 0.03153
			COF (C)	0	0 < 0.2
			COF (D)	0	0 < 0.2

OK Eric Solla 7/28/14 08:47
 NOT APPROVED 7/28/14 08:47

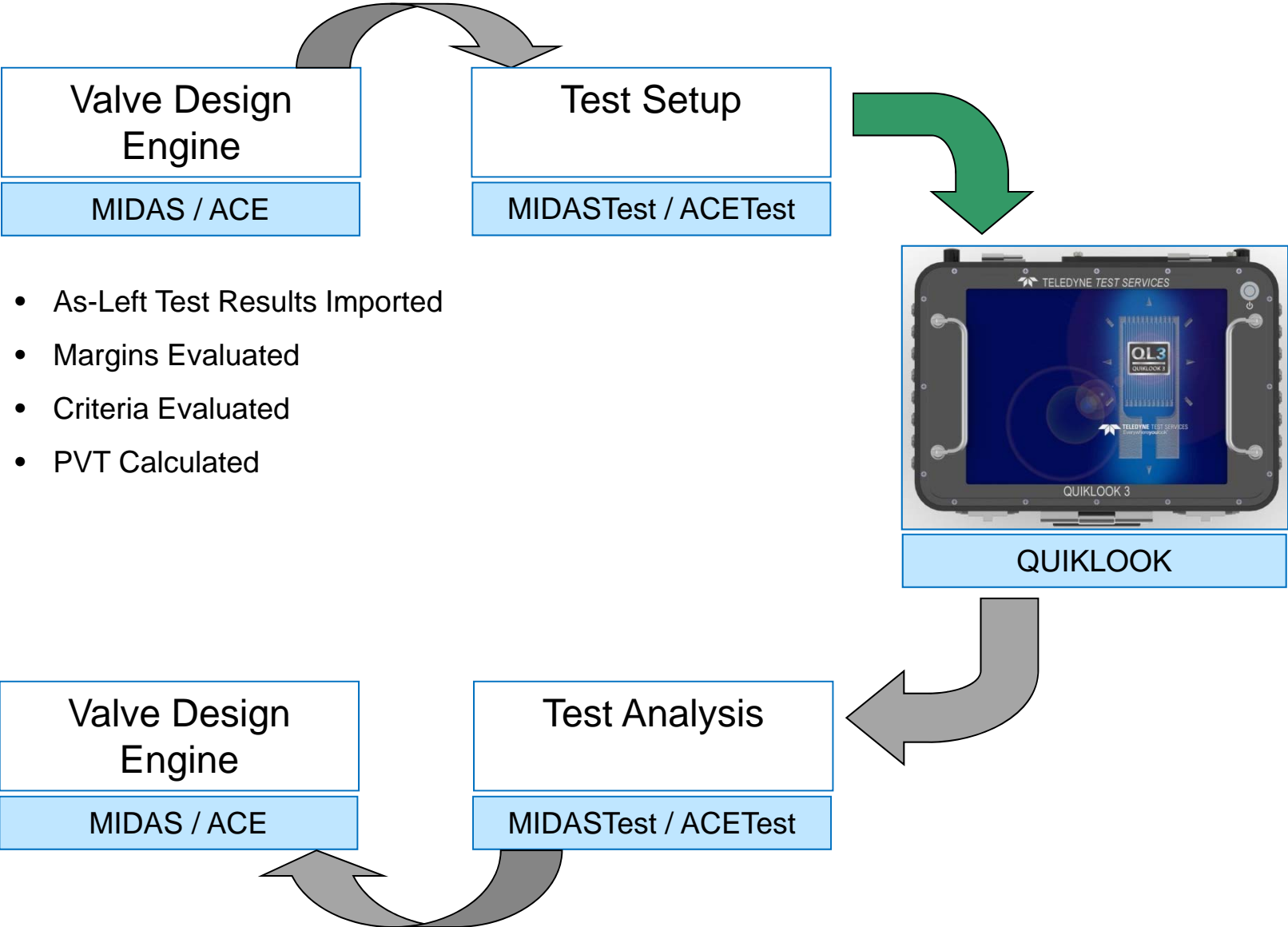
Post-Test Evaluation for JOG-PV-01 WO# 123456

Work Done		Sensor Review		Data Review	
As-Found Data		As-Left Data		Evaluations	
Parameter	As-Found	Close	Open	Parameter	As-Found
C14 UNDER THRUST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C14 OVER TORQUE	<input type="checkbox"/>
C16 OVER THRUST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C16 OVER TORQUE	<input type="checkbox"/>
O9 OVER THRUST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	O9 OVER TORQUE	<input type="checkbox"/>
O9 OVER THRUST (EPRI/PL)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C14 UNDER TORQUE (QT)	<input type="checkbox"/>
C14 OVER THRUST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RUN TORQUE HIGH/LOW	<input type="checkbox"/>
RUN THRUST HIGH/LOW	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SPRING PACK GAP HIGH	<input type="checkbox"/>
STEM FACTOR HIGH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
STEM WEAR TIME HIGH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Evaluation Notes					
N/A					

OK Eric Solla 7/28/14 08:47
 NOT APPROVED 7/28/14 08:47 Cancel



Software Suite Integration



Software Suite Integration



As-Left Test Data Margins for JOG-PV-01 (Work in Progress)

Show Print Exit

Schedule: **Outage** Risk: **L** Interval: **6.00** (years) < Max Interval: **10** (years) Margin: **89.8 %**

Current PVT vs Calculated PVT

Safety Function: CLOSE Close Control: Torque

Eq.	Parameter	Close	Open
D1	*Limit Control Margin	209.6	--
D2	*Limit Control Margin	--	516.5
D3	Capability Margin	289.9	--
D4	Capability Margin	--	1208.7
D5	Pullout Margin	--	1196.2
S1	*Min CST Thrust Margin	89.8	--
S2	Thrust Margin @C16	35.9	--
S3	Max CST Torque Margin	17.1	--
S4	Torque Margin @C16	7.2	--
S5	Torque Margin @O9	--	51.9
S6	*Thrust Margin @O9	--	249.5
S7	Running Load Margin	-6	--
S8	Running Load Margin	--	-8.6
S9	Min CST Torque Margin	154.6	--
S10	Max CST Thrust Margin	41.4	--
S11	EPRI Thrust Margin	--	226.3

What-If Calculator Test Data

Torque @TST: 2578 (ft-lbs)
 Total Torque: 2887 (ft-lbs)
 Pullout Torque: 1535 (ft-lbs)
 Run Torque (C): 287 (ft-lbs)
 Run Torque (O): 209 (ft-lbs)

Thrust @TST: 77378 (lbs)
 Total Thrust: 84599 (lbs)
 Pullout Thrust: 28142 (lbs)
 Run Thrust (C): 11657 (lbs)
 Run Thrust (O): 11950 (lbs)

TSS (Close): 2.5
 TSS (Open): 2.5

COF Analysis

As-Left Test COF (Close): 0.214
 As-Left Test COF (Open): 0.381
 MAX Design COF (Close): 0.56
 MAX Design COF (Open): 2.772
 UnderThrust COF Limit: 0.458

Valve Factor Capability

(Close): 1.903
 (Open): N/A

NOTE: Margin Notes can be entered in the History Table on the Margin Notes Tab. These Margin Notes will appear on the Margin report using the Print menu above.

Test of Record: R0700222 04/17/97 QUIKLOOK

As-Left Test Data Review for JOG-PV-01 (Work in Progress)

Show Print Exit

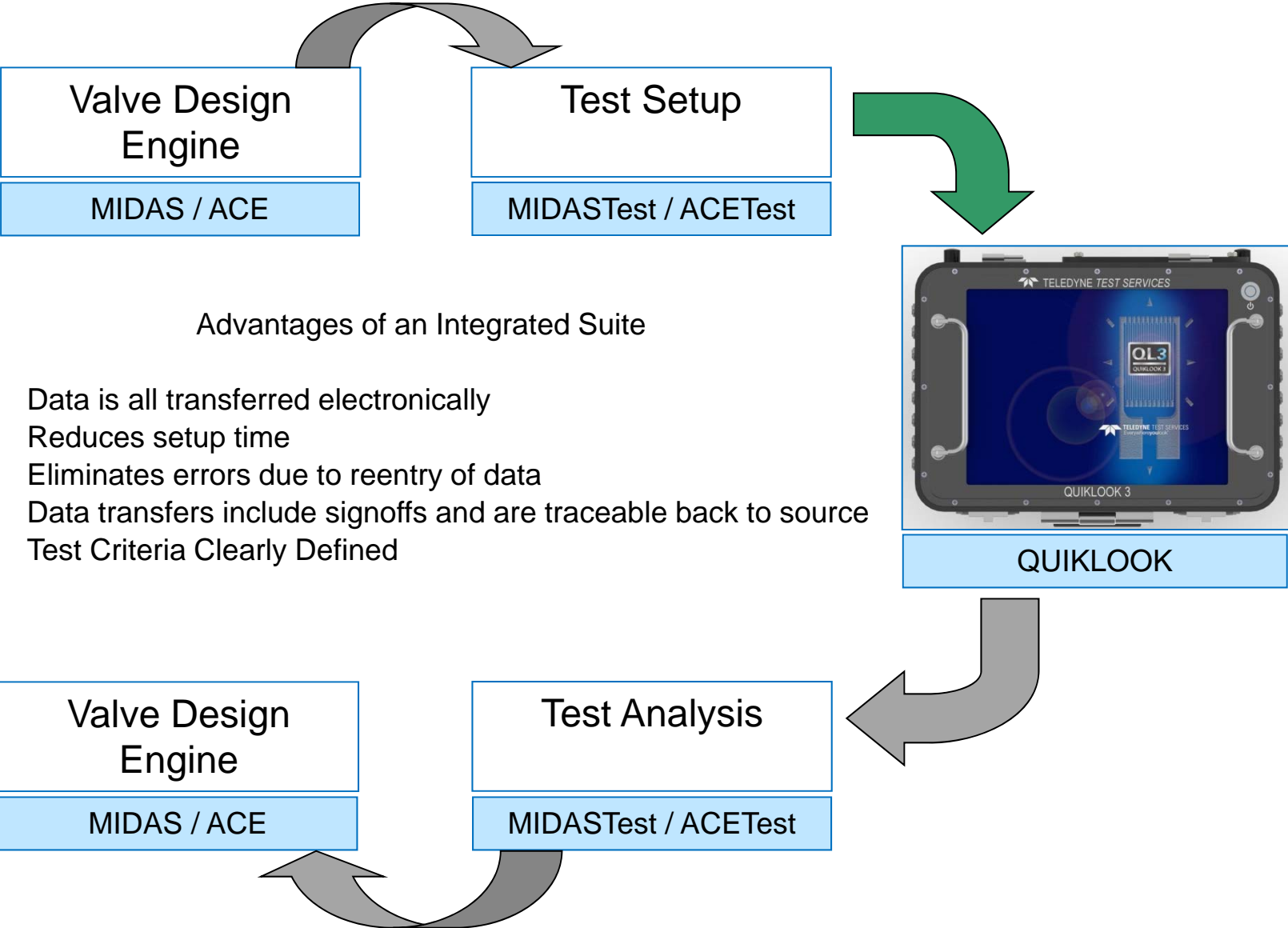
CLOSE CRITERIA	TRIP (MIN)	TRIP (As-Left)	TRIP (MAX)	TOTAL (As-Left)	TOTAL (MAX)	EPRI SEATING
THRUST AND TORQUE	39943	77378	131950	84599	131950	314210
TORQUE SWITCH SETTINGS	N/A	2578	3110.3	2887	3110.3	
OPEN CRITERIA	PULLOUT (As-Left)	PULLOUT (MAX)	EPRI UNSEATING	COF (As-Left)	COF (MAX)	
THRUST AND TORQUE	28142	135268	214017	TRIP 0.214	0.458	
	1535	3188.5	6748	PULLOUT 0.381	2.772	

TORQUE AS-LEFT: 2.5 < MAX-CALC: 4.5 < MAX-SP: 4.5

Close Control TORQUE: Close Safety Function CLOSE

Test of Record: R0700222 04/17/97 QUIKLOOK

Software Suite Integration



Any Questions?

THANK YOU



TELEDYNE TEST SERVICES
Everywhereyoulook™