

# Ninth Annual QUIKLOOK Users Group Meeting

Marion, MA  
August 19 & 20th, 2015

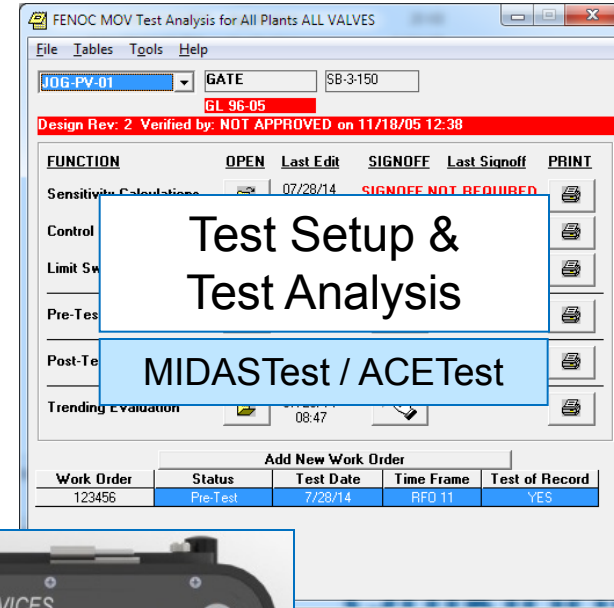
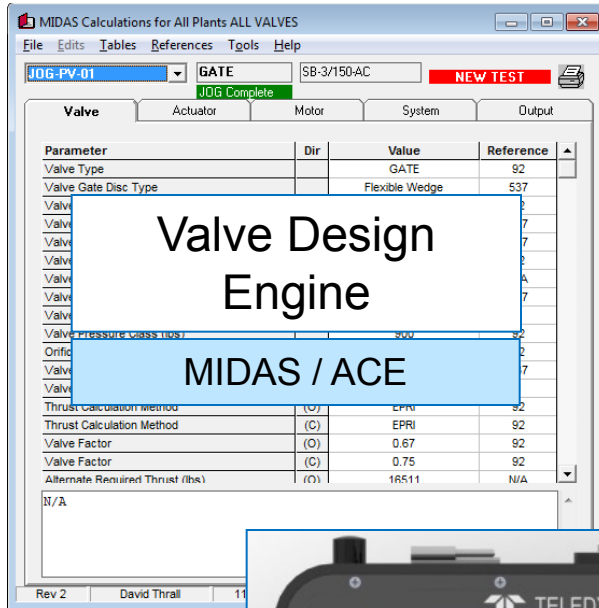
Eric Solla  
QUIKLOOK Product Manager  
Joe Santangelo  
Marketing & Technical Director

Software Suite Integration



**TELEDYNE TEST SERVICES**  
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# 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

**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	
<b>Design Thrust</b>	<b>32208</b>	
Input Required Thrust	32111	
<b>Required Thrust</b>	<b>32111</b>	
Design Stem COF	0.2000	
Design Stem Factor	<b>0.03153</b>	
<b>Required Torque</b>	<b>1012.5</b>	

Stem Dia at Packing (in)  
3.0000

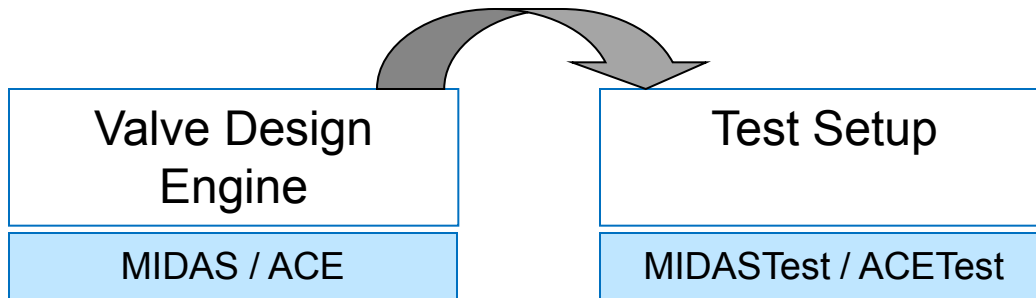
Stem Dia at Stem Nut (in)  
3.0000

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
<b>Operability Margin</b>				
	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	%
<b>Setup Margin</b>				
	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	%



- 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

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

Close Control Scheme: Torque      Safety Function: CLOSE

Setup      Scheduled Work      Previous Test

Thrust Window      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	[Hatched Area]	
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	104662
*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**

140000 — MECHANICAL LIMIT  
 131950 — UPPER LIMIT  
 131950 — MAX CST (for Thrust Only, Mechanical Limit with Motor)  
 39943 — LOWER LIMIT  
 32111 — RAW REQUIRED (EPRI)  
 0

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

Exit

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      Stud Size  
 1300 - 1600 lbs      0.917      0.625

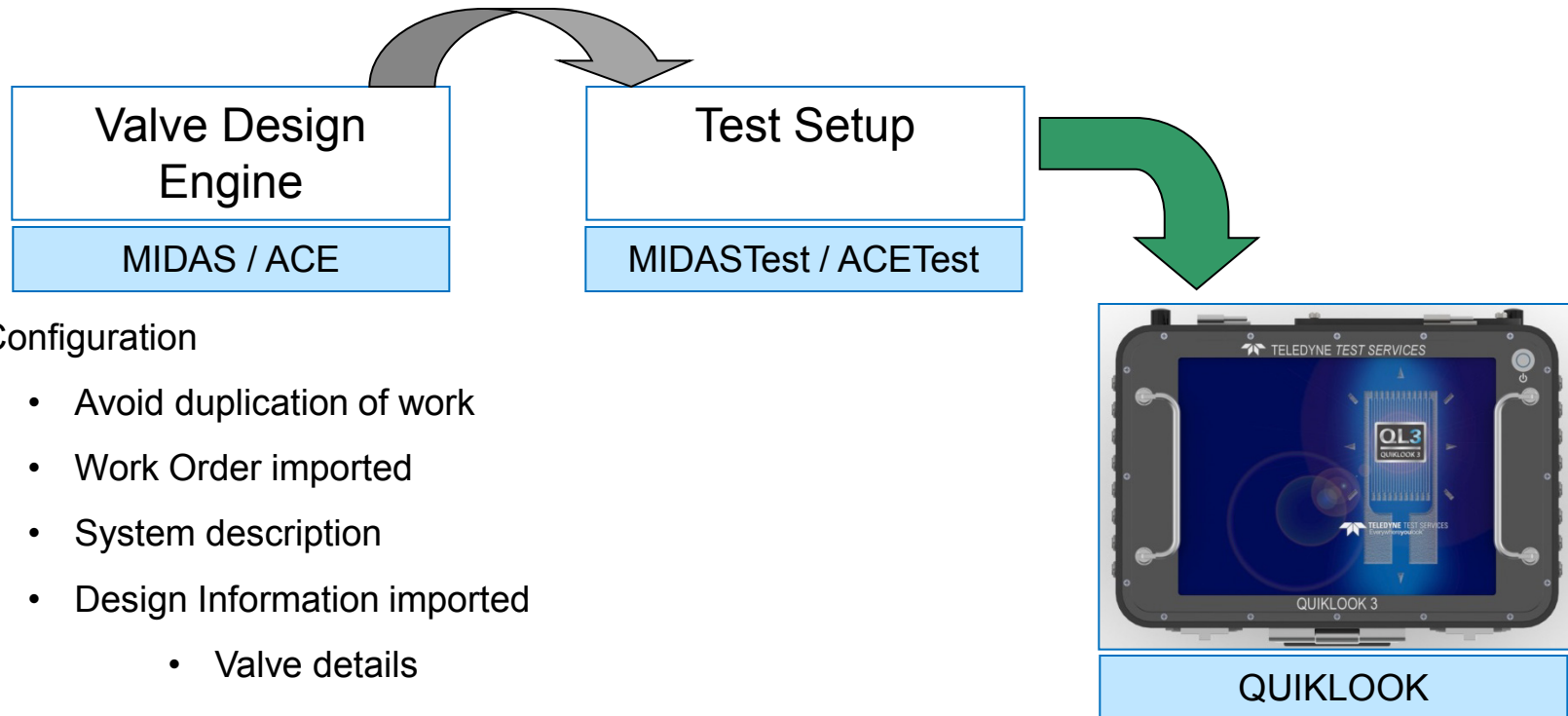
Maximum Allowable Running Current      3.20

Expected CLOSE Stroke Time (sec)      22

Expected OPEN Stroke Time (sec)      22

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Accept      List Edits      Cancel



## Configuration

- Avoid duplication of work
- Work Order imported
- System description
- Design Information imported
  - Valve details
  - Actuator details
  - Stem geometry
  - Motor sizes
  - Sensitivities
- Testing notes
- Criteria imported

# Software Suite Integration



Valve Explorer: Valve 1 - 10/14/2010 13:50:00

Compare to Valve Tag [Return](#)

Positioner Transducer I/P Criteria Accessories

General Body Irim **Actuator**

Valve Tag  Serial No

Actuator

Manufacturer  Action Type

Model  Retracted Area

Size Code  Extended Area

Air Pressure

Actuator Action

Bench Set   psig

Spring Rate  lbs/in

Valve Explorer: Valve 1 - 10/14/2010 13:50:00

Compare to Valve Tag [Return](#)

Positioner Transducer I/P Criteria Accessories

General **Body** Irim Actuator

Valve Tag  Serial No

Criteria

Total Valve			
	Min	Tag	Max
Travel	0.750	0.750	0.788
Dyn Err Band	1.00	.	0.00
Linearity	0.00	.	0.00

Positioner			
	Min	Tag	Max
Zero Cal.	0	4	0
Full Cal.	0	20	0
Dyn Err Band	0.00	.	0.00
Linearity	0.00	.	0.00

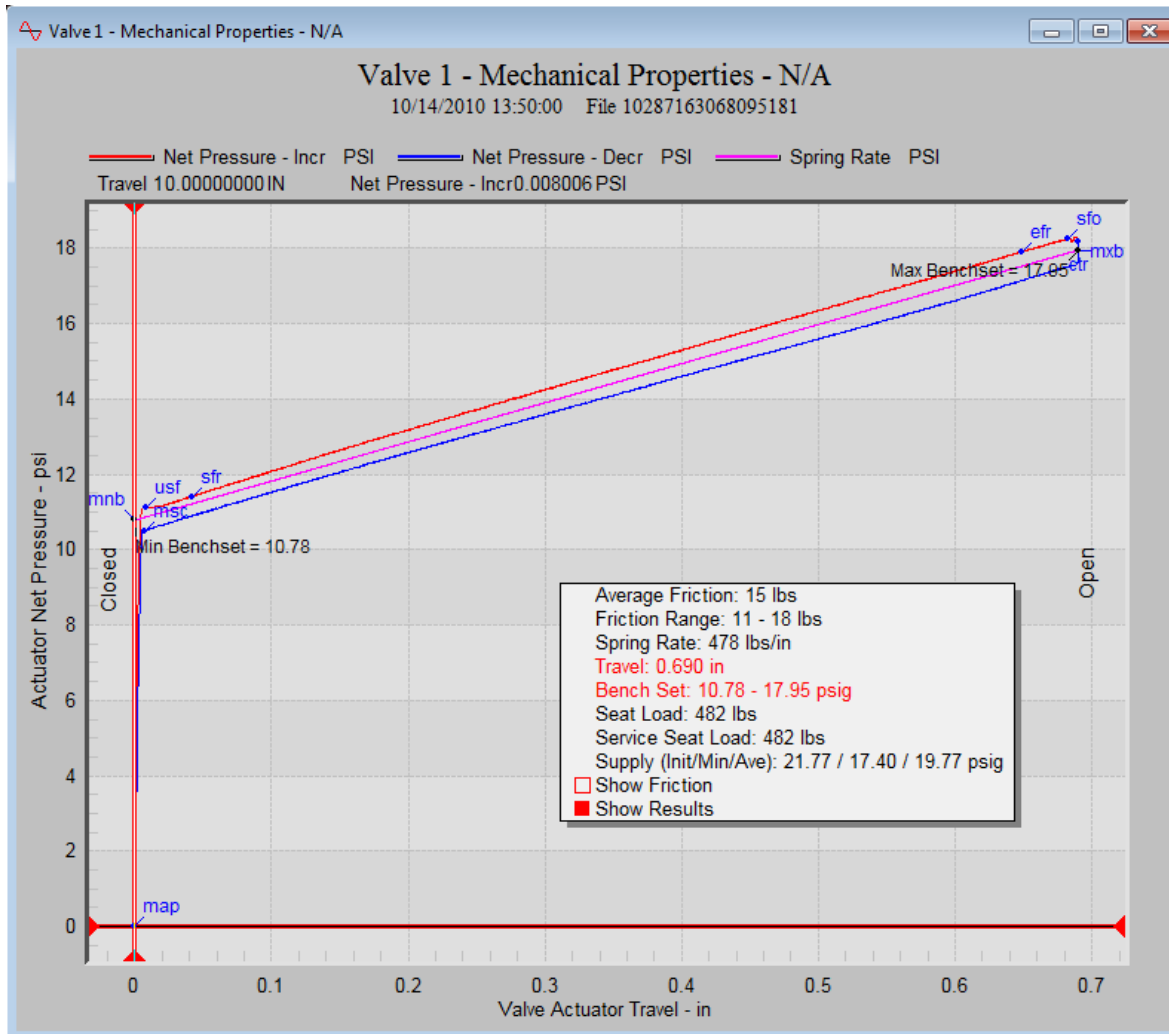
Regulator / Supply			
	Min	Tag	Max
Regulator Setpoint	0.00	0.00	0.00
Supply Min. Limit	0.00		
Supply Ave. Limit	0.00		

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

Net Pressure			
	Min	Tag	Max
Low Bench	6.00	7.00	8.00
High Bench	0.00	15.00	0.00
Friction	0	38	0
Seat Load	0	.	0
Svc Seat Ld	0	63	0
Spring Rate	0	0	0



# Software Suite Integration



Analysis Values

Serial Number : 13757363

Plot Setup

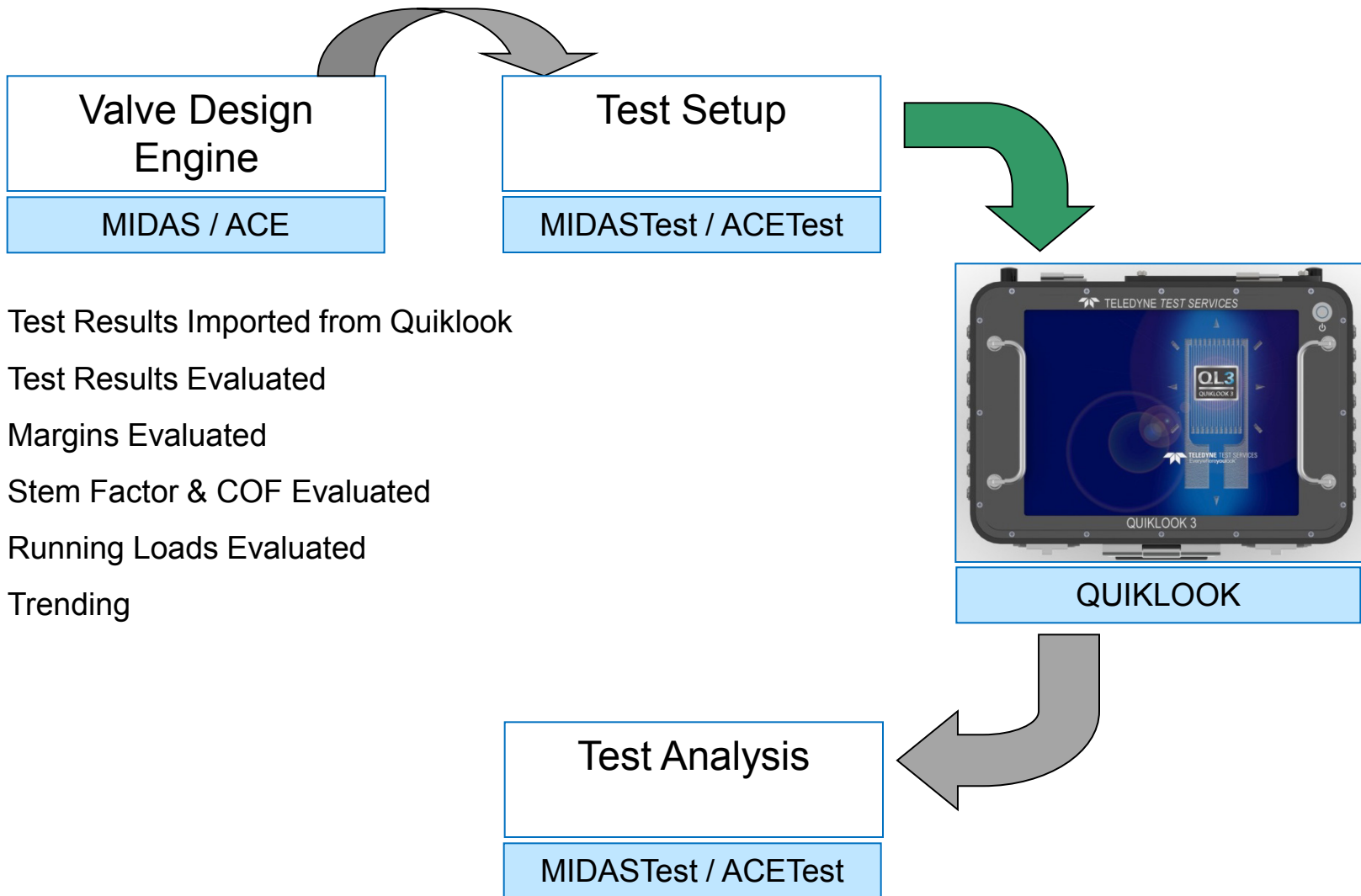
Specified	Measured	Specified	Measured
0.750 in	0.690 in	Pressure @ Zero Signal:	0.00 psig / 3.26 psig
20.00 mA	20.00 mA	Pressure @ Full Signal:	0.00 psig / 15.03 psig
20.00 mA	4.95 mA	Average DEB :	0.64 %
	1.56 %	Maximum DEB :	0.92 %
	1.91 %	Minimum DEB :	0.35 %
	1.18 %	Dynamic Linearity :	+/- 0.47 %
	+/- 1.22 %		

Plot Graph

Specified	Measured	Specified	Measured
		Average Friction :	15 lbs
		Maximum Friction :	38 lbs / 18 lbs
		Minimum Friction :	11 lbs
		Spring Rate :	0 lbs/in / 478 lbs/in
		Total Travel :	0.750 in / 0.690 in
		Bench Set (psi) :	7.00 - 15.00 / 10.78 - 17.95
		Seat Load as Tested :	482 lbs
		Service Seat Load :	63 lbs / NSC

Plot Graph

Plot Positioner Graph   Plot Supply Graph



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? <input type="radio"/> No <input checked="" type="radio"/> Yes	
Actual Device to Acquire Thrust	N/A		N/A			
Actual Device to Acquire Torque	N/A		N/A			
<b>Stem Factor Analysis</b>						
	Stem Factor	Error	Unadjusted		Adjusted	
	As-found	As-Left	As-Found	As-Left	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

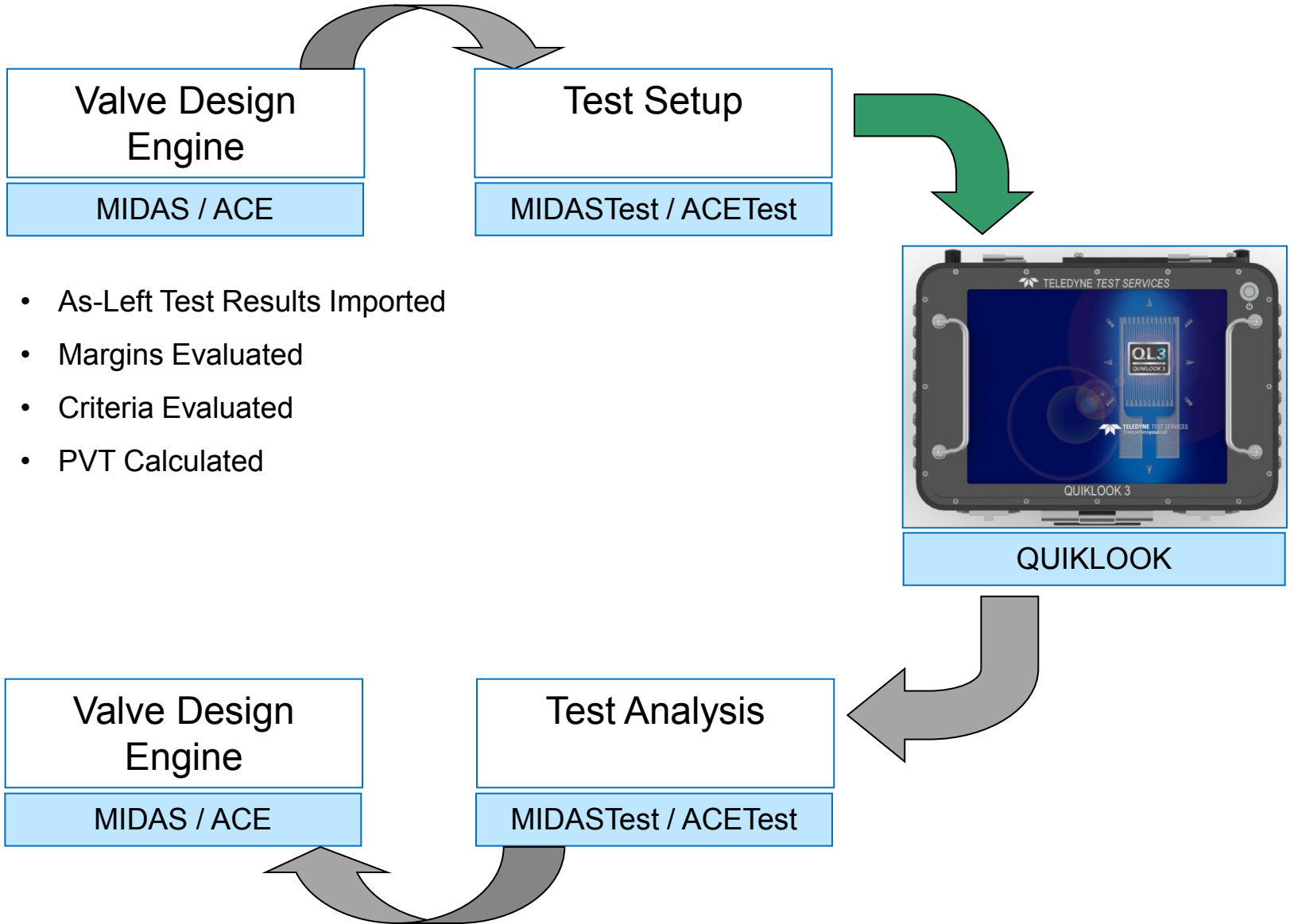
OK      Eric Solla    7/28/14 08:47  
NOT APPROVED    7/28/14 08:47

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

Work Done		Sensor Review		Data Review	
As-Found Data		As-Left Data		Evaluations	
<b>Parameter</b>	<b>As-Found</b>	<b>Close</b>	<b>Open</b>	<b>As-Found</b>	<b>As-Left</b>
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"/>
09 OVER THRUST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	09 OVER TORQUE	<input type="checkbox"/>
09 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



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

Show Print Exit

**Current PYT**      **Calculated PYT**

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

**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

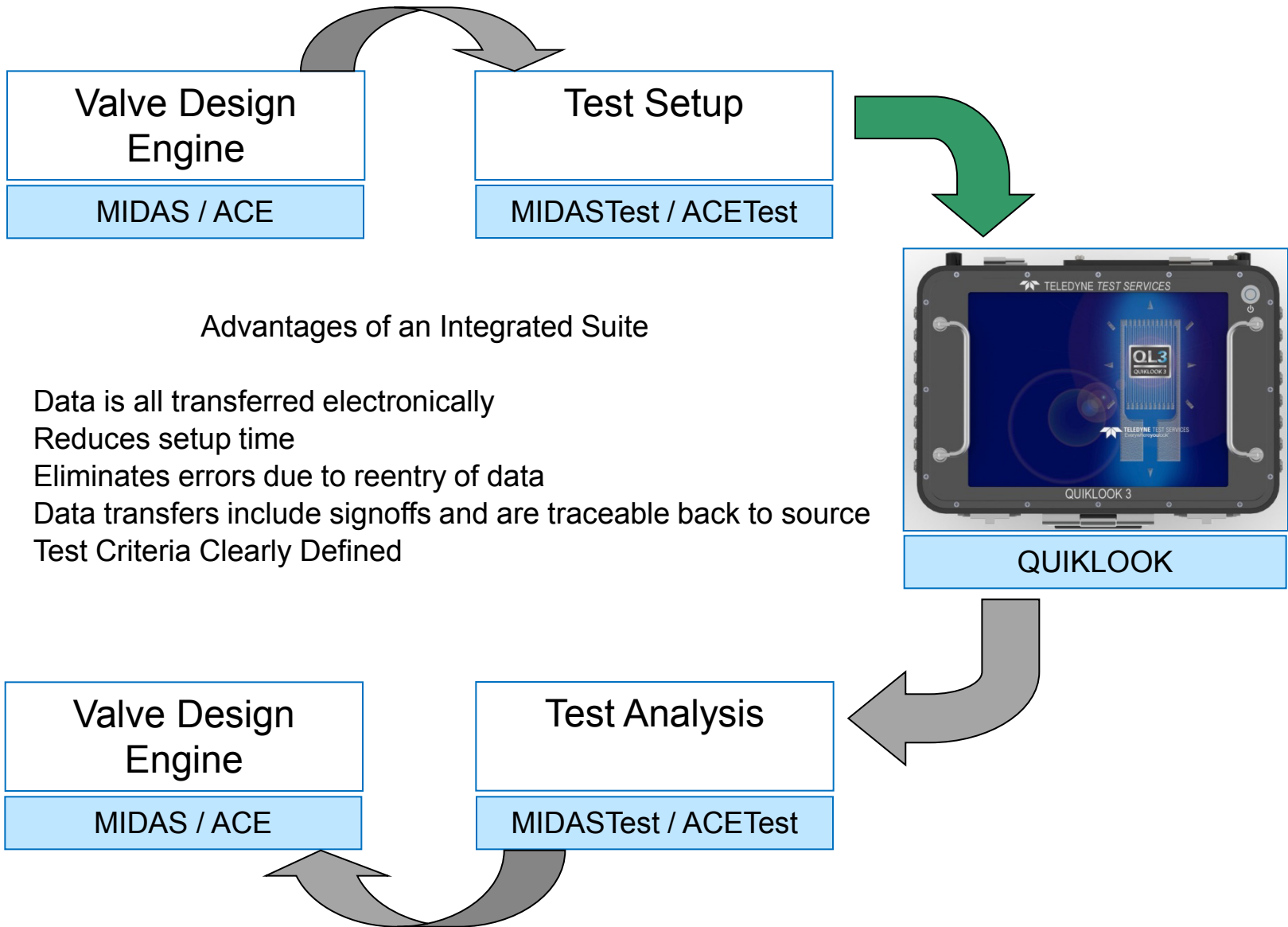
As-Left Test Data Review for JOG-PV-01 (Work in Progress)

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	AS-LEFT: 2.5	MAX-CALC: 4.5	MAX-SP: 4.5			Close Control TORQUE
OPEN CRITERIA	PULLOUT (As-Left)	PULLOUT (MAX)	EPRI UNSEATING			COF (As-Left)
THRUST AND TORQUE	28142	135268	214017			TRIP: 0.214
	1535	3188.5	6748	PULLOUT: 0.381		COF (MAX): 0.458

Thrust (lbs) vs Torque (ft-lbs) graph showing C14Mn and C16Mx limits.

Test of Record: R0700222      04/17/97      QUIKLOOK



# Any Questions?

## THANK YOU



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