Control Valve Diagnostic Testing

Tag Number:	**EASYTORK**
Mfgr. Serial Number:	**001**
Alt. Serial Number:	**N/A**
Unit Name:	**7444**
Plant Name:	**ROME MILL**
Company:	**INTERNATIONAL PAPER**
Location:	**ROME GA**
P&I Drawing Number:	
Valve Application:	

Date of Report:

12/04/2019

2:30:04PM

Report Prepared By:

IP ROME #3

238 M236-AYS BRIDGE ROAD SW

ROME, GEORGIA 30165

United States of America

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BenchMark
Control Valve Diagnostics

Valve Configuration Summary

Tag Number	**EASYTORK**
Mfgr. Serial #	**001**
Alt. Serial #	**N/A**

Valve Identification

Company	**INTERNATIONAL PAPER**	P&I Drawing Number	
Plant	**ROME MILL**	Valve Application	
Location	**ROME GA**	Year Installed	
Unit	**7444**	Risk Class	
Notes			

Valve Configuration

Configuration	**ROTARY**		Packing Type		
Manufacturer	**OTHER**		Packing Mat'l		
Valve Type	**V-BALL**		Stem (Shaft) Diameter	**0.00**	in
Valve Model	**OTHER**		Specified Friction		lbf
Pressure Class	**0**	psig	Specified Torque	**0.00**	in-lbf
Rotary Type			Moment Arm	**0.00**	in
Flow Direction			Link Arm	**0.00**	in
Valve Size		in			
Notes					

Valve Seat (Trim)

Seat Diameter	in	Balance / Unbalanced	
Rated Cv		PBal Seat Mat'l	
Seat Leak Class		Unbalance Area	in2
Flow Characteristic			
Notes			

Valve Actuator

Actuator Style	**DOUBLE ACTING**		Nominal Stroke	**90.0**	deg
Actuator Mfgr	**OTHER**		Spring Displ.	**0.00**	in
Actuator Model			Springrate		lbf/deg
Air Action	**ATO**		Benchset, Min.		psig
Fail Mode	**CLOSE**		Benchset, Max.		psig
Actuator Area	**37.00**	in2			
Bottom Area	**37.00**	in2			
Notes					

Valve Positioning System

Signal Range	**4-20 MA**		I/P Nominal, Min.	**3.00**	psig
Signal Source	**I/P DIRECT**		I/P Nominal, Max.	**15.00**	psig
Positioner	**NONE**		Air Pressure, Min.	**0**	psig
Cam Profile	**LINEAR**		Boosters/QExhaust		

BenchMark Baseline Test

Tag Number	**EASYTORK**
Mfgr. Serial #	**001**
Alt. Serial #	**N/A**

Test Identification

Test Number	**B90019L9**	Company	**INTERNATIONAL PAPER**
Test Date	**12/4/2019 14:13**	Plant	**ROME MILL**
Ramp Time	**50** sec (Nominal Span)	Unit	**7444**
Operator	**Brandon Allmon**	Location	**ROME GA**

Test Results

Parameter	Results	Units	Status	Max Std	Min Std	Comment
Measured Total Travel						
Measured Total Rotation	**91.8**	deg				
Signal, Min Travel	**3.93**	mA				
Signal, Max Travel	**19.98**	mA				
Signal, Nom Travel	**19.67**	mA				
HDL Error, Average	**1.18**	% fs				
HDL Error, Max	**2.04**	% fs				
Linearity Error	**0.61**	% fs				
Friction, Average	**134**	lbf				
Friction, Max	**171**	lbf				
Torque, Average	**123**	in-lbf				
Torque, Maximum	**155**	in-lbf				
Benchset, Min.						
Benchset, Max.						
Spring Rate	**0.1**	lbf/deg				
Seatload Act & Spring						
Seatload Spring Only						
Signal Pressure, Min Travel		psig				
Signal Pressure, Max Travel		psig				
Signal Pressure, Nom Travel		psig				
Pos HDL Error, Average		% fs				
Pos HDL Error, Max		% fs				
Pos Linearity Error		% fs				
Pos Balance Pressure	**65.4**	% nom				
I/P Output, Min Signal		psig				
I/P Output, Max Signal		psig				
I/P HDL Error, Average		% fs				
I/P HDL Error, Maximum		% fs				
I/P Linearity Error		% fs				
Nominal Air Supply	**58.6**	psig				
Air Supply Decrease	**5.9**	% nom				

Valve Configuration **[Partial Specification]**

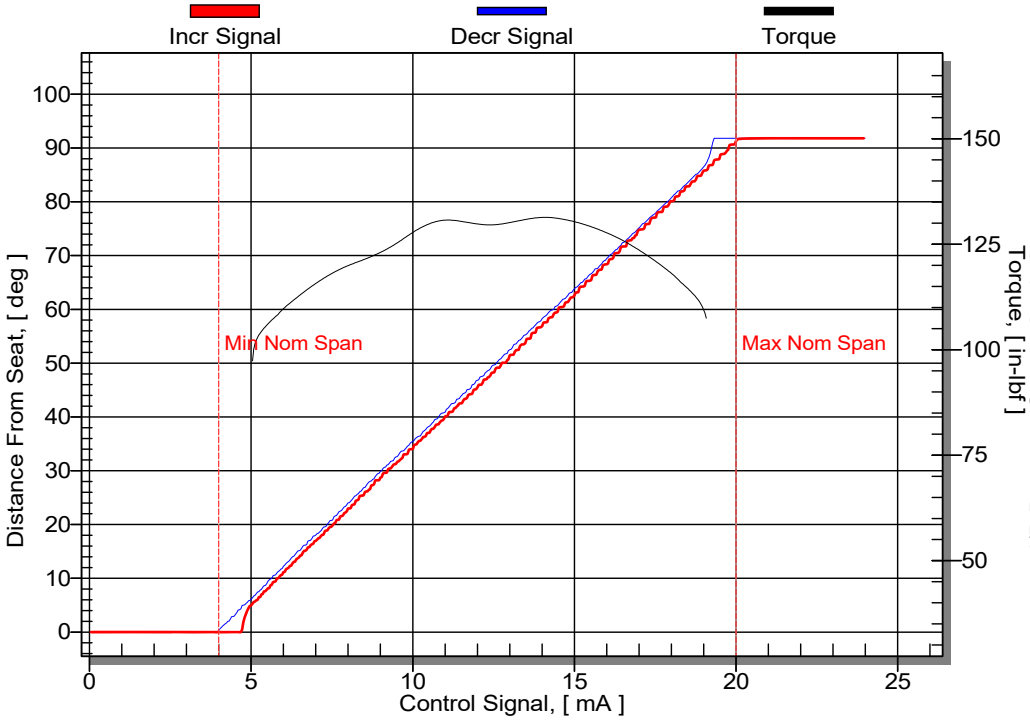
Manufacturer	OTHER	Actuator	OTHER	Positioner	NONE
Valve Size	0 in	Actuator Style	DOUBLE ACTING	Pos Cam	LINEAR
Configuration	ROTARY	Actuator Area	37 in	Signal Source	I/P DIRECT
Packing Style		Nominal Stroke	90.00 deg	Signal Range	4-20 MA
Packing Material		Air Action	ATO	Seat Leakage	
Flow Direction		Fail Mode	CLOSE	Rotary Type	

Test Notes

12/4/2019/14:13 /

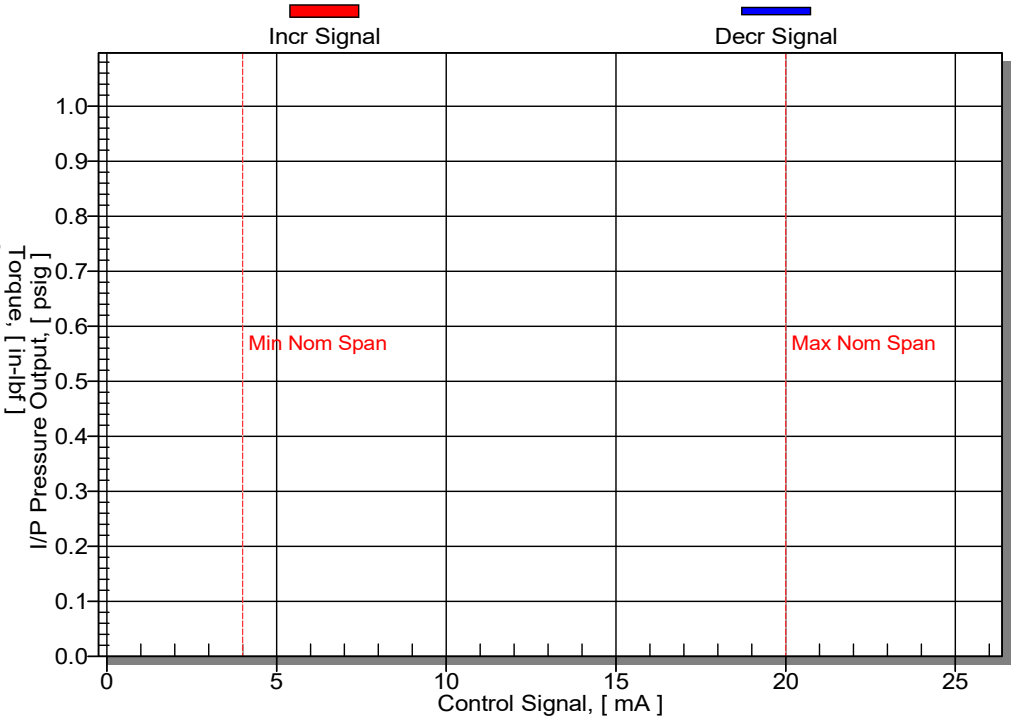
BenchMark Overall Valve Performance

B90019L9 / EASYTORK/001/N/A



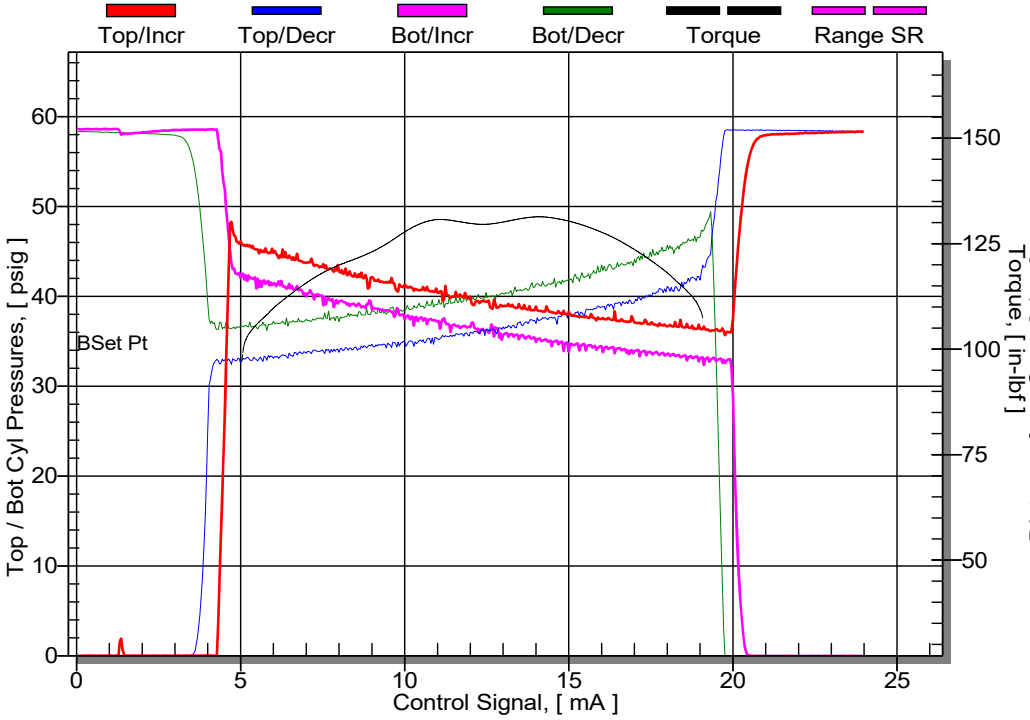
I/P Transducer Performance

B90019L9 / EASYTORK/001/N/A



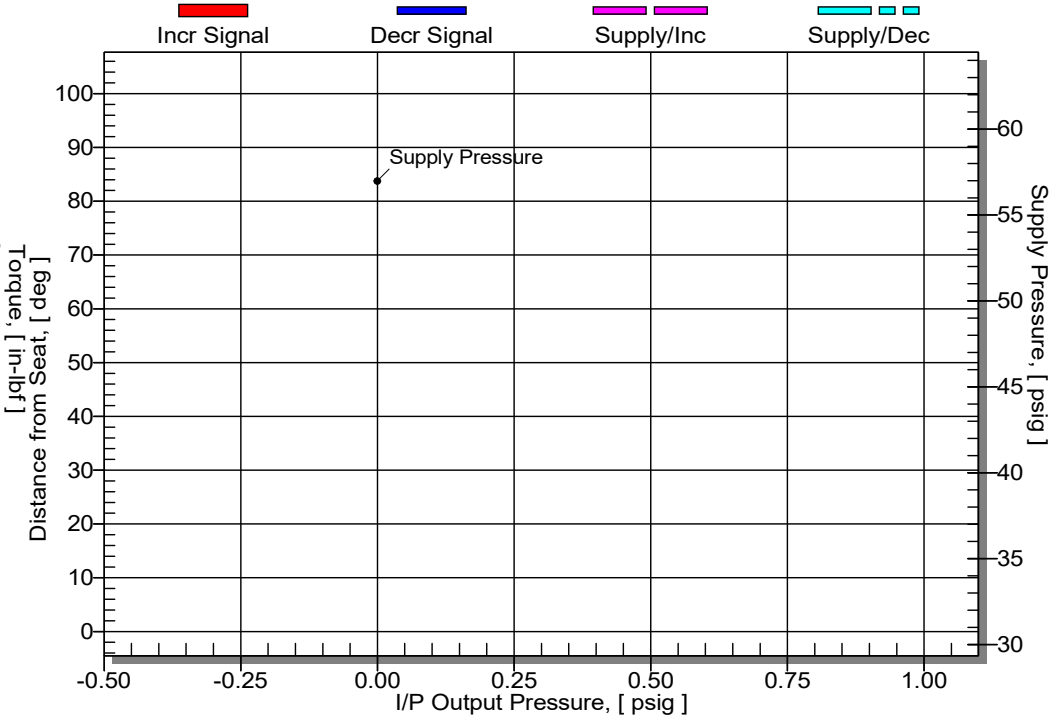
Actuator Performance

B90019L9 / EASYTORK/001/N/A



Valve Positioner Performance

B90019L9 / EASYTORK/001/N/A



BenchMark Sensitivity Test

Tag Number	**EASYTORK**
Mfgr. Serial #	**001**
Alt. Serial #	**N/A**

Test Identification

Test Number	**N90019L9**	Company	**INTERNATIONAL PAPER**
Test Date	**12/4/2019**	Plant	**ROME MILL**
Test Time	**14:09**	Unit	**7444**
Operator	**Brandon Allmon**	Location	**ROME GA**

Test Results

Parameter	Units	5%	5%	2%	2%	1%	1%	0.5%	0.5%
Signal		INCR	DECR	INCR	DECR	INCR	DECR	INCR	DECR
Ideal Step	deg	4.591	4.591	1.836	1.836	0.918	0.918	0.4591	0.4591
Actual Step	deg	4.561	4.575	1.716	1.868	0.953	0.925	0.5705	0.3690
Step Error	deg	-0.030	-0.016	-0.121	0.032	0.035	0.007	0.1114	-0.0901
Step Error	%step	-0.7	-0.4	-6.6	1.7	3.8	0.8	24.3	-19.6
Standard	%step								
Test Result									

HoldTime	20 sec	
Offset	50.0 % fs	
Measured Stroke	91.8	deg
HD Error		% fs

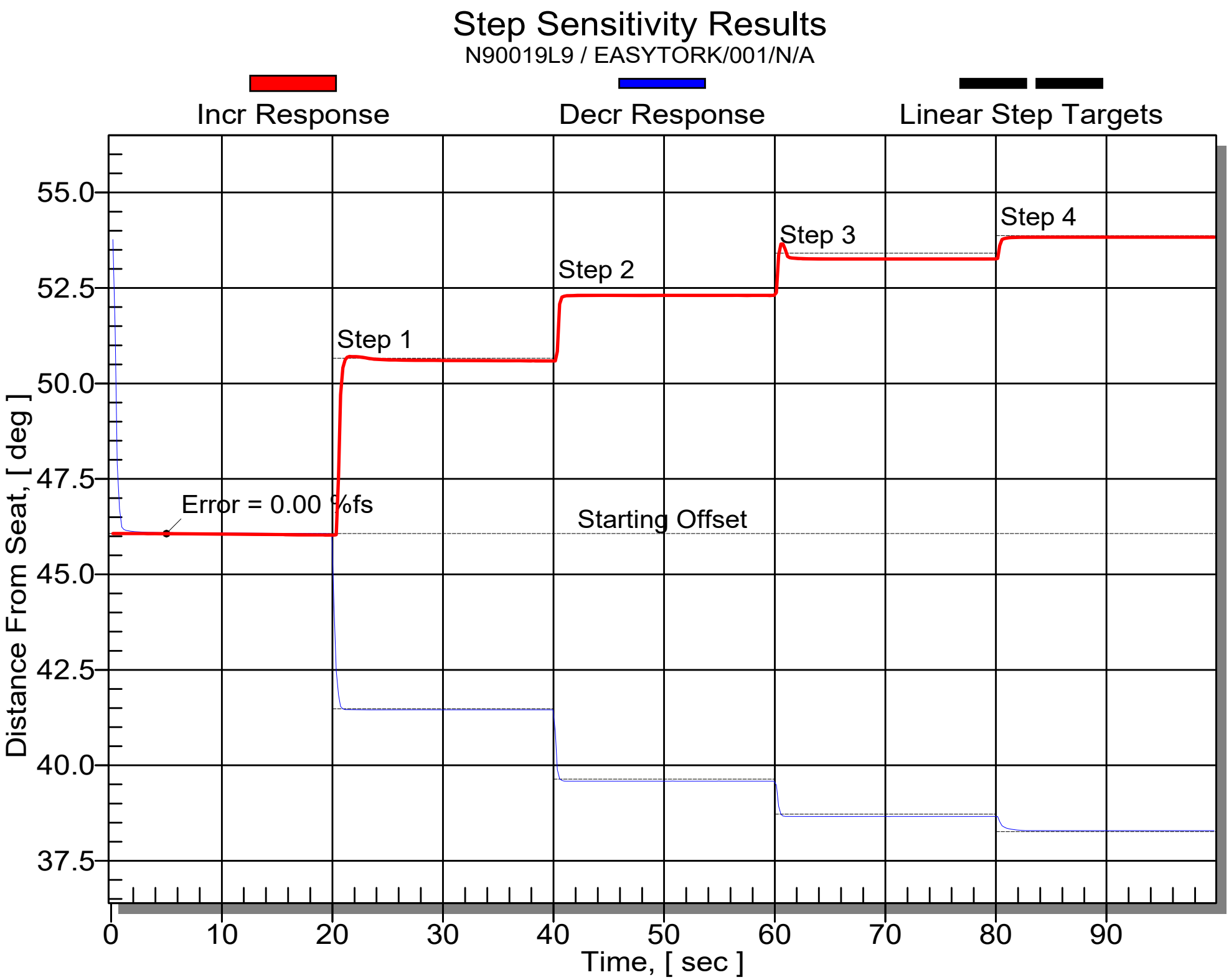
Valve Configuration

[Partial Specification]

Manufacturer	OTHER		Nominal Stroke	90.00	deg
Valve Size	0	in	Air Action	ATO	
Configuration	ROTARY		Fail Mode	CLOSE	
Packing Style			Positioner	NONE	
Packing Material			Pos Cam	LINEAR	
Flow Direction			Signal Source	I/P DIRECT	
Actuator	OTHER		Signal Range	4-20 MA	
Actuator Style	DOUBLE ACTING		Seat Leakage		
Actuator Area	37	in	Moment Arm		in

Test Notes

12/4/2019 / 14:09/


Step Sensitivity Results
N90019L9 / EASYTORK/001/N/A
Incr Response
Decr Response
Linear Step Targets
55.0
52.5
50.0
47.5
45.0
42.5
40.0
37.5
Distance From Seat, [deg]
Step 1
Step 2
Step 3
Step 4
Error = 0.00 %fs
Starting Offset
0
10
20
30
40
50
60
70
80
90
Time, [sec]

BenchMark Control Valve Diagnostics

Tag Number	**EASYTORK**
Mfgr. Serial #	**001**
Alt. Serial #	**N/A**

Test Identification

Test Number	**R90014L9**	Company	**INTERNATIONAL PAPER**
Test Date	**12/4/2019**	Plant	**ROME MILL**
Test Time	**14:22**	Unit	**7444**
Operator	**Brandon Allmon**	Location	**ROME GA**

Test Results

Parameter	**%**	**5%**	**5%**	**2%**	**2%**	**1%**	**1%**	**0.5%**	**0.5%**
Signal		INCR	DECR	INCR	DECR	INCR	DECR	INCR	DECR
Ideal Step	deg	4.591	4.591	1.836	1.836	0.918	0.918	0.4591	0.4591
Actual Step	deg	4.542	4.690	1.800	1.859	1.033	0.844	0.5452	0.7014
Step Error	deg	-0.049	0.099	-0.036	0.023	0.115	-0.074	0.0861	0.2423
Step Error	%step	-1.1	2.2	-2.0	1.2	12.5	-8.1	18.8	52.8
Standard	%step								
Test Result									

HoldTime	20 sec	
Offset	50.0 % fs	
Measured Stroke	91.8	deg

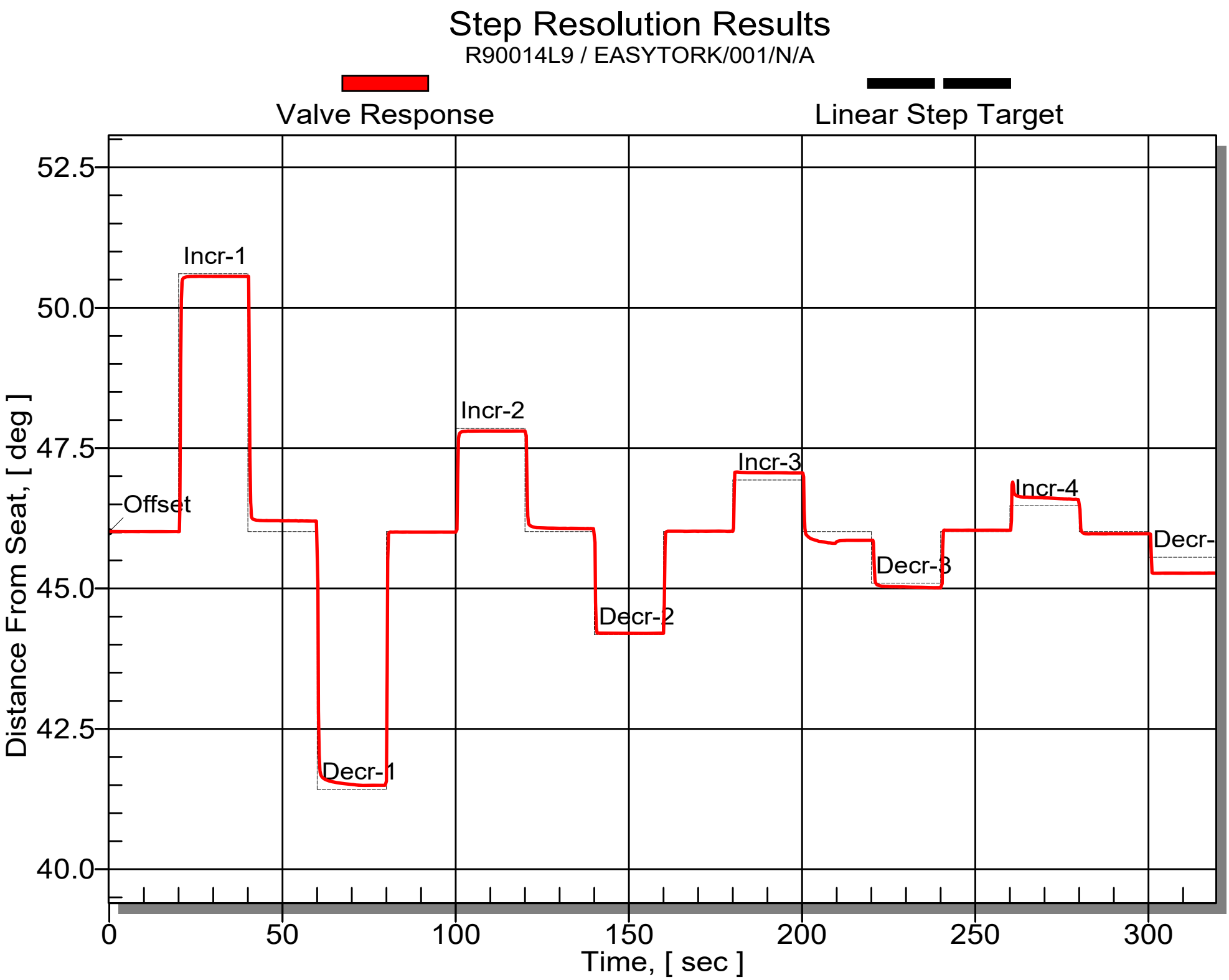
Valve Configuration

[Partial Specification]

Manufacturer	OTHER		Nominal Stroke	90.00	deg
Valve Size	0	in	Air Action	ATO	
Configuration	ROTARY		Fail Mode	CLOSE	
Packing Style			Positioner	NONE	
Packing Material			Pos Cam	LINEAR	
Flow Direction			Signal Source	I/P DIRECT	
Actuator	OTHER		Signal Range	4-20 MA	
Actuator Style	DOUBLE ACTING		Seat Leakage		
Actuator Area	37	in	Moment Arm		in

Test Notes

12/4/2019 / 14:22/


Step Resolution Results
R90014L9 / EASYTORK/001/N/A
Valve Response
Linear Step Target
52.5
50.0
47.5
45.0
42.5
40.0
Distance From Seat, [deg]
Offset
Incr-1
Decr-1
Incr-2
Decr-2
Incr-3
Decr-3
Incr-4
Decr-
0
50
100
150
200
250
300
Time, [sec]