V-SCAN CERTIFICATE AND REPORT No: XX-XXXX

CUSTOMER:	DATE RECEIVED:
CUSTOMER PO:	SCORE JOB No:

This report provides a summary of the findings and results of the V-Scan Control Valve Diagnostic testing completed on the below valve details. All tests were completed using Score developed and owned V-Scan software.

Tag Number:	XXXXXXXX		
Type:	ANGLE VALVE	**Actuator Model:**	XXXX
Size/Rating:	8"/150# X 6" /150#	**Actuator Size:**	XXXX
Manufacturer:	XXXXXXXX	**Actuator Fail mode:**	~~Open~~ / Close / ~~Stay Put~~
Type/Model No:	XXXX	**Positioner Model:**	XXXX
Serial No:	XXXX	**Signal Range**	4-20 mA

ACTUATOR PERFORMANCE: {Identify hysteresis, supply pressure, linearity, Total travel, min. & max. signal travel, Bench set, Seat load & Spring rate}

Supply pressure was found been sizing at 56.82 PSI. This slightly lower than stated in manufacturer schematic drawing which is 4 Bar.

DYNAMIC SIGNATURE: {Identify any anomalies during valve travel in from 2mA signal to 22 mA}

Valve was found have bad dynamic signature during travel with decreasing signal especially from 12mA to 4mA signal.

FRICTION: {Measure and Identify the value of stem & packing friction of the valve from 10% to 90% of travel}

The friction value was found high when valve travel in between 10% to 20%.

VALVE SIGNATURE: {Identify differential pressure during valve travel}

Differential pressure with decreasing signal was found badly fluctuated during travel from 40% to 0%.

STEP TEST: {Measure percentage deviation of percentage of valve travel against percentage of current signal}

No issue were noted. Valve was found travel at desired value with total percentage of deviation is below than 5%.

TRIP TEST: {Measure time of valve travel from 0 to 100% and vice-versa}

No Issue were noted during the trip test. Calculated Rising time (Time to Open) is 0.77 second and falling time (time to Close) is 1.02 second. Both rising and falling time was below than 5 second as per stated in the manufacturer datasheet.

NOTES: {Any additional issue noted during the testing}

No issue were noted.

Valve Tested By: **SCORE GROUP PLC** Date: **05/08/2015**

CONTROL VALVE

V-SCAN SIGNATURE CERTIFICATE

Score Asia Sdn Bhd
Intelligent Valve and Gas Turbine Solutions

Score Asia Sdn Bhd
Lot A-C Level 9
Tower 2 Etiqa Twins
11 Jalan Pinang
50450 Kuala Lumpur
Tel: +603 2161 6641
Fax: +603 2162 6640

Valve Identification	***8-5-2015***
Tag Number	
Manufacturer Serial	
Score URN	
Client	
Plant	
Location	

Valve Configuration		
Valve Manufacturer	**XXXX**	
Valve Configuration	**LINEAR**	
Valve Type	**ANGLE**	
Valve Model	**XXXX**	
Pressure Class	**150**	
Valve Size	**8 X 6 X 10**	in
Stem Packaging	**GRAPHOIL**	
Flow Direction	**OVER**	
Expected Packing Friction	**207.80**	lbf

Valve Trim		
Seat Diameter	**6**	
Expected Seat Load	**8192.50**	lbf
Flow Characteristics	**LINEAR**	
Stem Diameter	1.6	in
Seal Material	**METALLIC**	
Seat Leak Class	**CLASS V**	
Pressure Balance	**BALANCE**	
Trim Design	**BONNET GUIDED PLUG**	

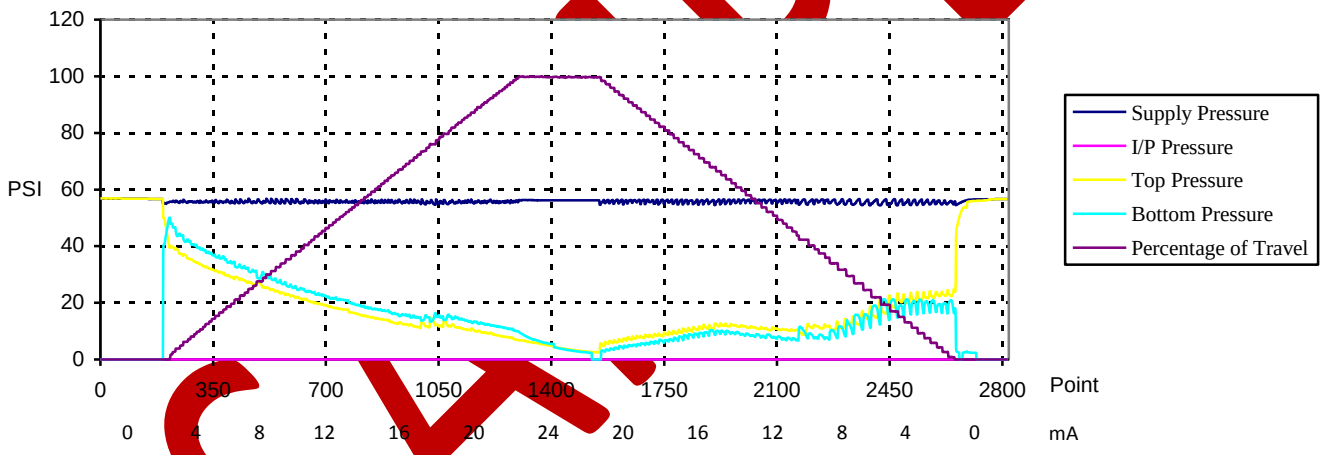
Actuator		
Actuator Manufacturer	**XXXX**	
Actuator Style	**DOUBLE ACTING WITHOUT SPRING PISTON**	
Actuator Model	**XXXX**	
Actuator Size	**XXXX**	mm
Top Area	**113**	in2
Bottom Area	**85**	in2
Nominal Stroke	**2.3622**	in
Fail Mode	**CLOSE, AIR TO OPEN**	
Nominal Spring Start Point	-	psig
Nominal Spring End Point	-	psig
Spring Rate	-	lbf/in

Valve Tested By: **SCORE GROUP PLC** Date: **05/08/2015**

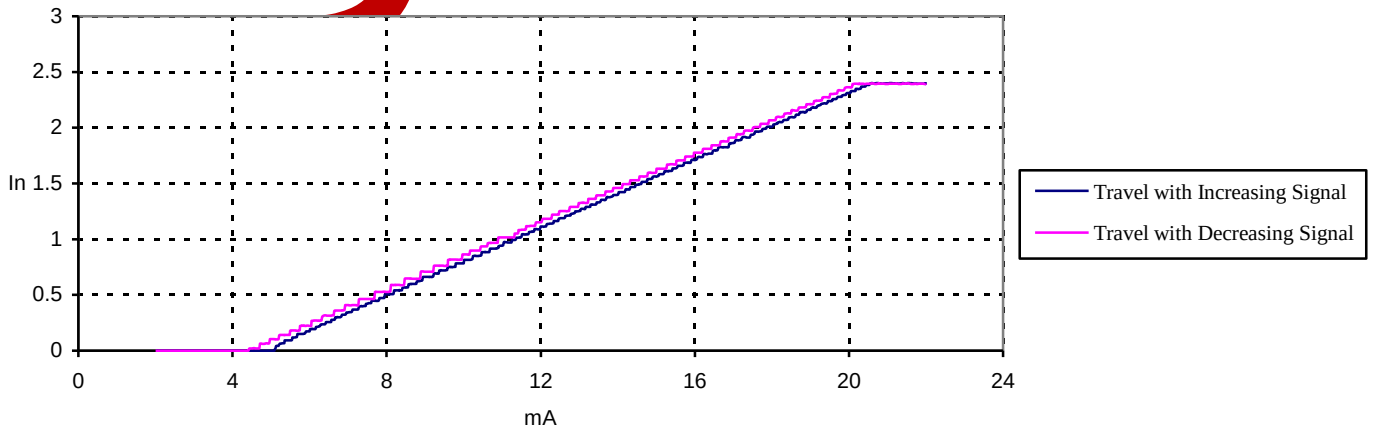
Valve Positioner		
Positioner	**XXXX**	
Signal Range	**4-20 MA**	
Positioner Style	**SMART HART**	
Positioner Model	**XXXX**	
Extras		

Performance	As Found	Acceptable	
Avg HD	2.46	≤ 5.00	%fs
Supply Pressure	56.82	58.00 – 137.75	PSI
Linearity	3.66	≤ 5.00	%fs
Measured Total Travel	2.40	2.45	in
Signal Minimum Travel	5.12	4.00 – 5.50	mA
Signal Maximum Travel	20.32	19.50 - 20.50	mA
Measured Spring Start Point	0.00	-	psig
Measured Spring End Point	0.00	-	psig
Seat Load as tested	6240.70	≤ 8192.50	lbf
Spring Rate	0.00	-	lbf/in

Actuator Performance



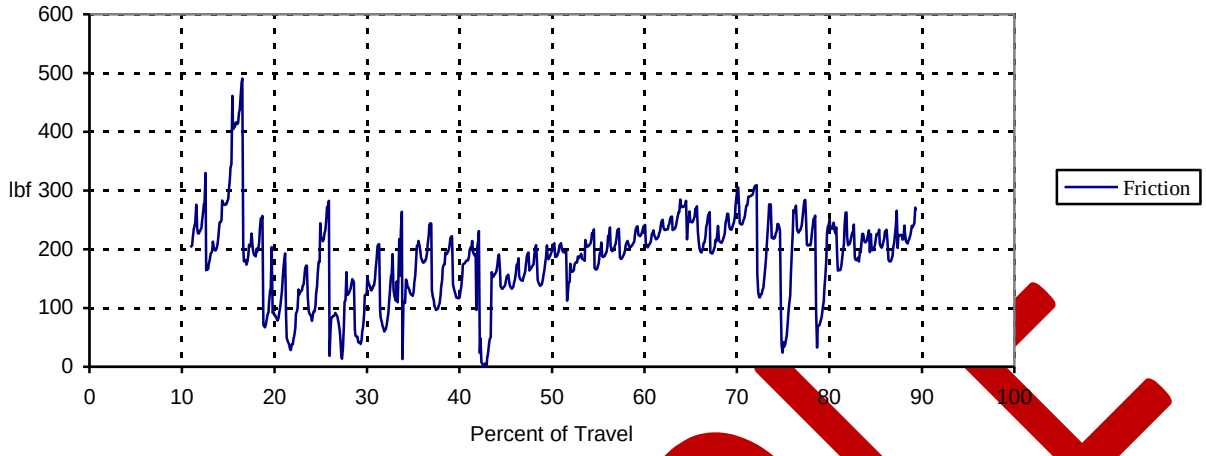
Dynamic Signature



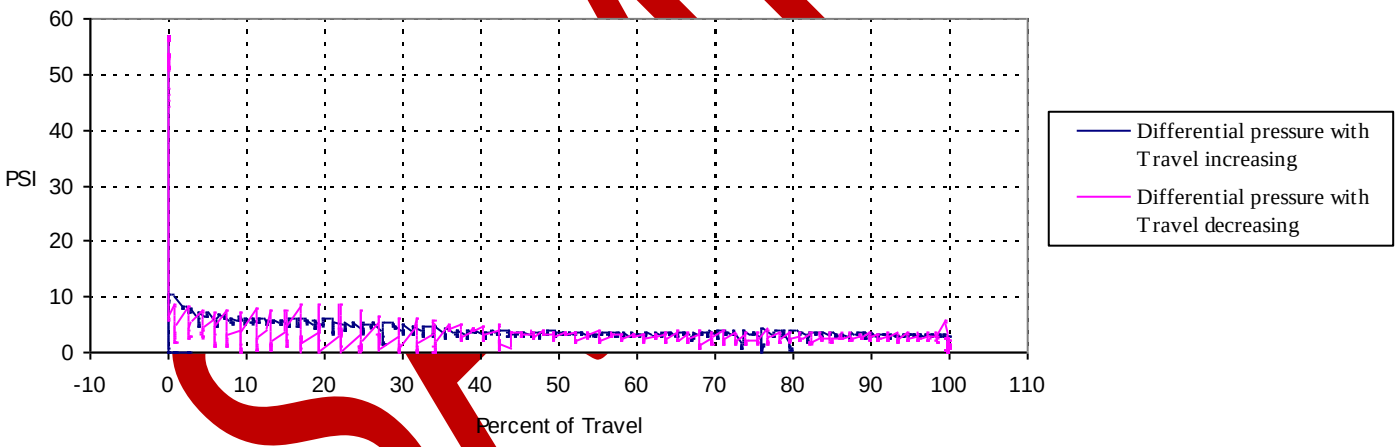
Valve Tested By: **SCORE GROUP PLC** Date: **05/08/2015**

Performance	As Found	Acceptable	
Avg Friction	185.92	284	lbf
Max Friction	490.88	284	lbf
Min Friction	0.61	284	lbf

Friction



Valve Signature



Diagnostic Tested By: **Zulhilmi Salihing**

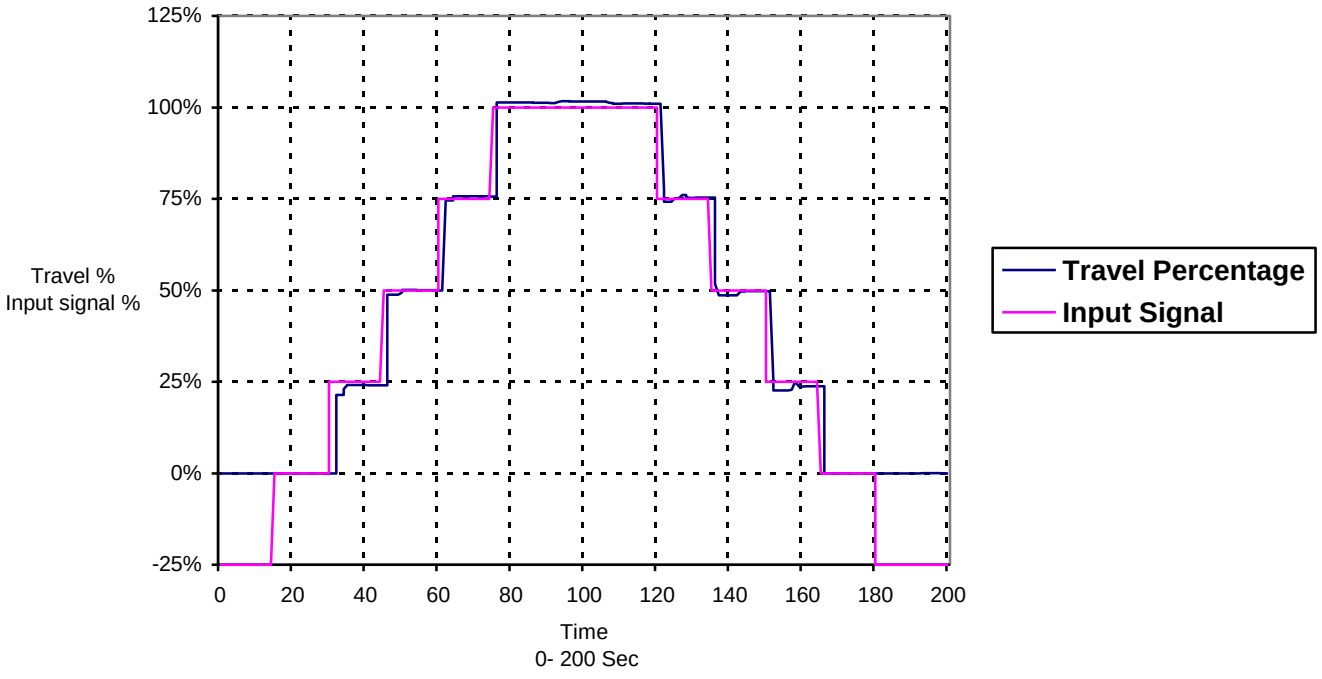
Valve Tested By: **SCORE GROUP PLC** Date: **05/08/2015**

Step Test

Valve Identification	8-5-2015		
Tag Number	XXXXX	***Actuator Model***	XXXX
Manufacturer Serial	XXXXX	***Air Action***	AIR TO OPEN
Company	XXXX	***Fail Mode***	CLOSE
Valve Manufacturer	XXXX	***Positioner***	XXXX
Valve Configuration	LINEAR	***Cam Profile***	BALANCE
Valve Type	ANGLE	***Signal Source***	SMART HART
Valve Model	XXXX	***Signal Range***	4-20 MA
Valve Size	8” X 6” X 10”	***Minimum Air Pressure***	20 PSI
Actuator Manufacturer	XXXX	***Extras***	
Actuator Style	DOUBLE ACTING WITHOUT SPRING PISTON		

Input	Output	%Dev
-25%	0.00%	0.00%
0%	0.00%	0.00%
25%	24.05%	0.95%
50%	50.04%	0.04%
75%	75.66%	0.66%
100%	101.29%	1.29%
125%	101.61%	1.61%
100%	101.06%	1.06%
75%	75.34%	0.34%
50%	49.79%	0.21%
25%	23.76%	1.24%
0%	0.00%	0.00%

Large Amplitude Step Response Test



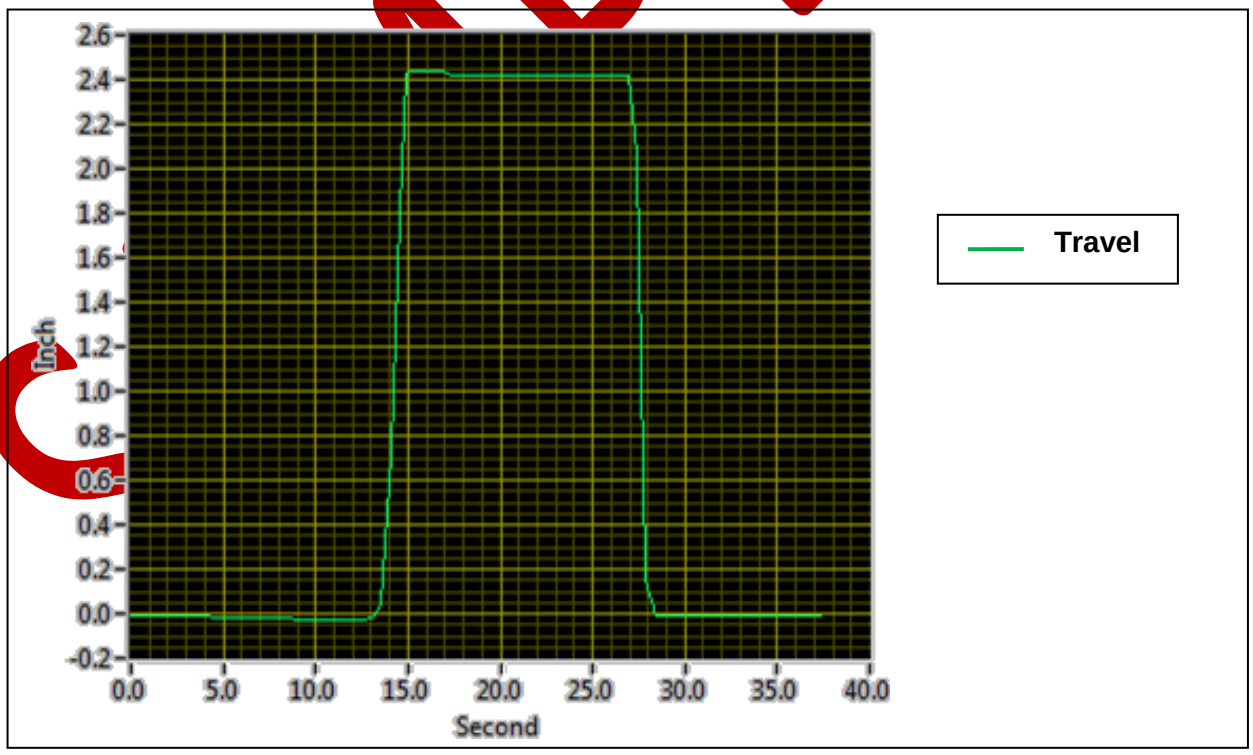
Valve Tested By: **SCORE GROUP PLC** Date: **05/08/2015**

Trip Test

Valve Identification	8-5-2015		
Tag Number	XXXXX	***Actuator Model***	XXXX
Manufacturer Serial	XXXXX	***Air Action***	AIR TO OPEN
Company	XXXX	***Fail Mode***	CLOSE
Valve Manufacturer	XXXX	***Positioner***	XXXX
Valve Configuration	LINEAR	***Cam Profile***	BALANCE
Valve Type	ANGLE	***Signal Source***	SMART HART
Valve Model	XXXX	***Signal Range***	4-20 MA
Valve Size	8" X 6" X 10"	***Minimum Air Pressure***	58 PSI
Actuator Manufacturer	XXXX	***Extras***	
Actuator Style	DOUBLE ACTING WITHOUT SPRING PISTON		

Item	Value	Unit
Rising Time	0.77	Second
Falling Time	1.02	Second

TRIP TEST GRAPH



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