REPORT NUMBER 124-GTL-10-005

SAFETY COMPLIANCE TESTING FOR FMVSS 124 ACCELERATOR CONTROL SYSTEMS

MAZDA MOTOR CORPORATION
2010 MAZDA 6, PASSENGER CAR
NHTSA NO. CA5403

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

May 7, 2010

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE., SE
WASHINGTON, D.C. 20590

Prepared By: Digitally signed by Debbie Messick
DN: cn=Debbie Messick, c=US, o=GTL, email=gtl@general-testing.com

Approved By: Digitally signed by Grant Farrand
DN: cn=Grant Farrand, c=US, o=GTL, email=gtl@general-testing.com

Approval Date: 05/07/10

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:

Acceptance Date: 5/7/10

Technical Report Documentation Page

1. Report No. 124-GTL-10-005	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of FMVSS 124 Compliance Testing of 2010 MAZDA 6 PASSENGER CAR NHTSA No. CA5403		5. Report Date May 7, 2010 6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-10-124-005
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443		10. Work Unit No. (TRAIS) 11. Contract or Grant No. DTNH22-06-C-00032
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Admin. Enforcement Office of Vehicle Safety Compliance (NVS-220) 1200 New Jersey Ave., S.E., Washington, DC 20590		13. Type of Report and Period Covered Final Test Report April 28-29, 2010 14. Sponsoring Agency Code NVS-221

15. Supplementary Notes

16. Abstract

Compliance tests were conducted on the subject 2010 Mazda 6 4-door Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-124-06 for the determination of FMVSS 124 compliance.

Test failures identified were as follows: None

17. Key Words Compliance Testing Safety Engineering FMVSS 124	18. Distribution Statement Copies of this report are available from NHTSA Technical Information Services (TIS) Room W45-212 (NPO-411) 1200 New Jersey Ave., S.E. Washington, DC 20590 Telephone No. (202) 366-4947

19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 73	22. Price

20. Security Classif. (of this page)
UNCLASSIFIED

Form DOT F 1700.7 (8-72)

TABLE OF CONTENTS

SECTION 1
PURPOSE OF COMPLIANCE TEST

FMVSS 124 specifies requirements for the return of a vehicle's throttle to the idle position when the driver removes the actuating force from the accelerator control, or in the event of a severance or disconnection in the accelerator control system. The purpose of FMVSS 124 is to reduce the number of deaths and injuries resulting from engine overspeed caused by malfunctions in the accelerator control system. This standard applies to passenger cars, multipurpose passenger vehicles (MPV's), trucks and buses.

SECTION 2
TEST PROCEDURES AND DISCUSSION OF RESULTS

Compliance testing was conducted on a 2010 Mazda 6 Passenger Car, NHTSA No. CA5403 in accordance with the National Highway Traffic Safety Administration (NHTSA) Laboratory Procedure TP-124-06.

The vehicle is equipped with two throttle position sensors (TPS) on the air throttle plate shaft. Output from one of the two sensors was used to measure throttle position and data was recorded at 100 HZ with GTL' s data acquisition system. Testing was conducted to simulate the normal removal of the driver's foot from the accelerator pedal. This was performed by depressing the accelerator with a control rod which incorporated an electrical contact strip in the depressing end. The accelerator was depressed to the required amount and then the control rod was quickly removed from the pedal, releasing the accelerator and activating the contact strip for time zero. Failures (excluding spring disconnect) were induced simultaneously with release of the accelerator pedal. Testing was performed with the vehicle in drive and the engine running. Testing could not be conducted in neutral as throttle plate movement in this condition was limited upon accelerator pedal application.

Return to idle times were determined for four throttle plate positions (25%, 50%, 75% and 100%) with the accelerator control system complete and with each of the two return springs in the accelerator pedal assembly independently disconnected and disconnection of the throttle body return spring #3. With each of the wires to the APS and throttle plate position sensor disconnected and shorted to ground, return to idle times were determined at the worst case condition – wide open throttle (100%).

In addition, tests were conducted with the APS and Throttle Body connectors disconnected.

A number of induced failures resulted in the throttle plate return to or below the idle state then shifting to a Limp-Home mode position which allows the vehicle to be removed from the roadway.

This testing was performed at mid ambient temperature of 10º C to 46º C, in accordance with the NHTSA Test Procedure TP-124-06.

SECTION 3
COMPLIANCE TEST DATA

Test data for this test can be found on the following pages. Photographs are found in Section 5 and Test Plots are found in Section 6.

DATA SHEET 1
VEHICLE DESCRIPTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
VEHICLE VIN: 1YVHZ8CH1A5M27369
DATE OF TEST: APRIL 28-29, 2010
TEST LAB: GENERAL TESTING LABORATORIES
VEHICLE ENGINE TYPE: GAS GVWR: 1996 KG
VEHICLE ENGINE SIZE: 2.5 L
VEHICLE ACCEL. CONTROL SYSTEM (ACS) (Air or Fuel Throttled): AIR
MAX. BHP ENGINE SPEED: 170 HP
MFR. IDLE RPM: 660 RPM
FUEL METERING DEVICE (Carburetor, fuel injection, etc): FUEL INJECTION

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/28/10

APPROVED BY: D. MESSICK

DATA SHEET 2
NORMAL OPERATION TEST
(fully operational system)

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 28, 2010

Check one:

Mid Temp. Test: X Low Temp. Test: High Temp. Test:

SYSTEM CONDITION: COMPLETE (no modifications) Normal Operation

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
6537	100%	99%	660	172	64	0%-5%	390	P
6538	75%	72%	660	172	64	0%-5%	210	P
6539	50%	54%	660	172	64	0%-5%	180	P
6540	25%	24%	660	172	64	0%-5%	150	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS X FAIL

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/28/10

APPROVED BY: D. MESSICK

DATA SHEET 3 (1 of 3)
FAIL-SAFE OPERATION
DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 28, 2010

Check one:

Mid Temp. Test: X Low Temp. Test: High Temp. Test:

SYSTEM CONDITION: #1 SPRING DISCONNECTED (OUTER SPRING) ON ACCELERATOR PEDAL ASSEMBLY

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
6541	100%	99%	660	172	67	0%-5%	180	P
6542	75%	68%	660	172	67	0%-5%	160	P
6543	50%	47%	660	173	67	0%-5%	190	P
6544	25%	23%	660	172	67	0%-5%	130	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS X FAIL

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/28/10

APPROVED BY: D. MESSICK

DATA SHEET 3 (2 of 3)
FAIL-SAFE OPERATION
DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 28, 2010

Check one:

Mid Temp. Test: X Low Temp. Test: High Temp. Test:

SYSTEM CONDITION: #2 SPRING DISCONNECTED (INNER SPRING) ON ACCELERATOR PEDAL ASSEMBLY

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
6545	100%	100%	660	172	67	0%-5%	460	P
6546	75%	71%	660	174	67	0%-5%	210	P
6547	50%	50%	660	175	67	0%-5%	160	P
6548	25%	26%	660	174	67	0%-5%	140	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS X FAIL

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/28/10

APPROVED BY: D. MESSICK

DATA SHEET 3 (3 of 3)
FAIL-SAFE OPERATION
DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 27, 2010

Check one:

Mid Temp. Test: X Low Temp. Test: High Temp. Test:

	SYSTEM CONDITION: #3 SPRING DISCONNECTED INSIDE THROTTLE BODY							
GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
6575	100%	99%	660	170	68	0%-5%	220	P
6576	75%	80%	660	170	68	0%-5%	170	P
6577	50%	37%	660	171	68	0%-5%	60	P
6578	25%	26%	660	172	68	0%-5%	160	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS X FAIL

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/29/10

APPROVED BY: D. MESSICK

DATA SHEET 4
FAIL-SAFE OPERATION
DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 29, 2010

Check one:

Mid Temp. Test: X Low Temp. Test: High Temp. Test:

SYSTEM CONDITION: SEVERANCE OF APS CONNECTOR

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
6549	100%	100%	660	172	66	0%-5%	300*	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18º C or less

PASS X FAIL

REMARKS: *Limp home mode at 1500 RPM at 7% throttle.

RECORDED BY: G. FARRAND DATE: 04/29/10

APPROVED BY: D. MESSICK

DATA SHEET 5
FMVSS 124

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 MAZDA 6 PASSENGER CAR
VEHICLE NHTSA NO.: CA5403
DATE OF TEST: APRIL 29, 2010

GTL #	CONNECTOR	WIRE/PIN DESCRIPTION	FAULT CONDITION	ENGINE TEMP. °F	% THROTTLE/ RETURN TIME (MS)	PASS/FAIL/NOTES
6550	APS	#1/Yellow/Silver	OPEN	172	100/200	P
6551	APS	#2/White /Silver	OPEN	172	100/190	P
6552	APS	#3/Brown/Silver	OPEN	173	100/780	P
6553	APS	#4/Red/Silver	OPEN	172	100/680	P
6554	APS	#5/White/Black	OPEN	172	100/350	P
6555	APS	#6/Yellow/Red	OPEN	172	100/790	P
6556	APS	#1/Yellow/Silver	SHORT	170	100/180	P
6557	APS	#2/White/Silver	SHORT	172	100/500	P
6558	APS	#3/Brown/Silver	SHORT	172	100/150	P
6559	APS	#4/Red/Silver	SHORT	172	100/180	P
6560	APS	#5/White/Black	SHORT	172	100/120	P
6561	APS	#6/Yellow/Red	SHORT	172	100/120	P
6562	TPS	#1/White/Blue	OPEN	172	100/210*	P
6563	TPS	#2/Yellow/Green	OPEN	172	100/270*	P
6564	TPS	#3/Brown	OPEN	172	100/<300*, **	P
6565	TPS	#4/White	OPEN	172	100/130	P
6566	TPS	#5/Yellow	OPEN	172	100/150*	P
6567	TPS	#6/White/Red	OPEN	173	100/<300*, **	P
6568	TPS	#1/White/Blue	SHORT	172	100/360*	P
6569	TPS	#2/Yellow/Green	SHORT	172	100/310*	P
6570	TPS	#3/Brown	SHORT	172	100/260	P
6571	TPS	#4/White	SHORT	172	100/440	P
6572	TPS	#5/Yellow	SHORT	173	100/<300*, **	P
6573	TPS	#6/White/Red	SHORT	172	100/300	P
6574	TPS	1 through 6	DISCONNECT	170	100/<300*, **	P

*Limp Home Mode at 1500 RPM and 7%.
**Estimated Return Time. Return to idle state time is based on Laboratory Observations and is estimated as the TPS output is lost during the failures.

REMARKS: Wires in TPS motor also control throttle plate motor.

RECORDED BY: G. FARRAND DATE: 04/29/10

APPROVED BY: D. MESSICK

SECTION 4
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
THERMOCOUPLES	OMEGA	43P136P	08/09	08/10
ENGINE RECORDING	GTL COMPUTER	CPU1	BEFORE USE	BEFORE USE
TACHOMETER	MONARCH	1444664	05/09	05/10

SECTION 5
PHOTOGRAPHS

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

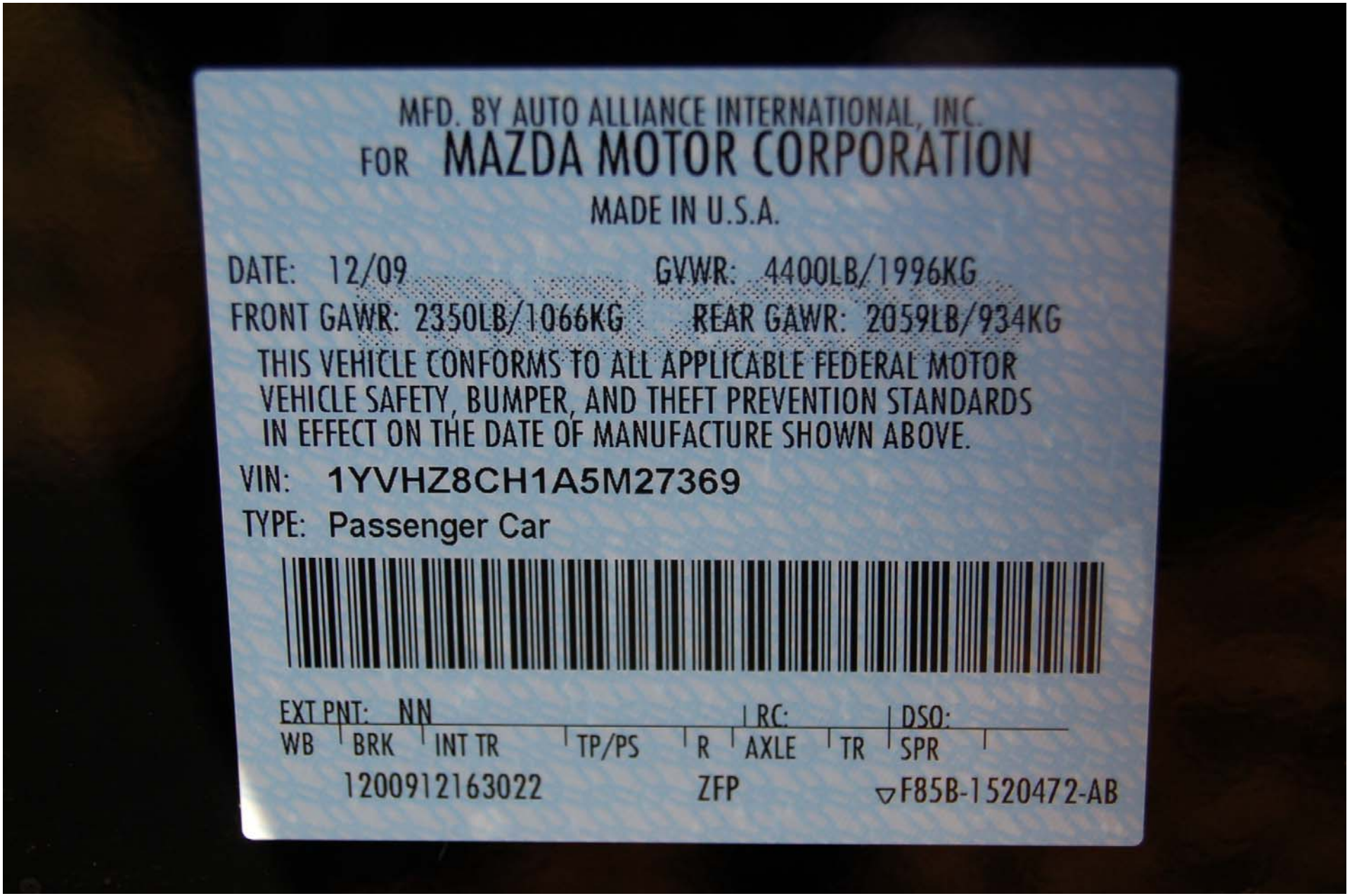
FIGURE 5.1
FRONT VIEW OF VEHICLE

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE



2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.4
CLOSE-UP VIEW OF VEHICLE CERTIFICATION LABEL

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

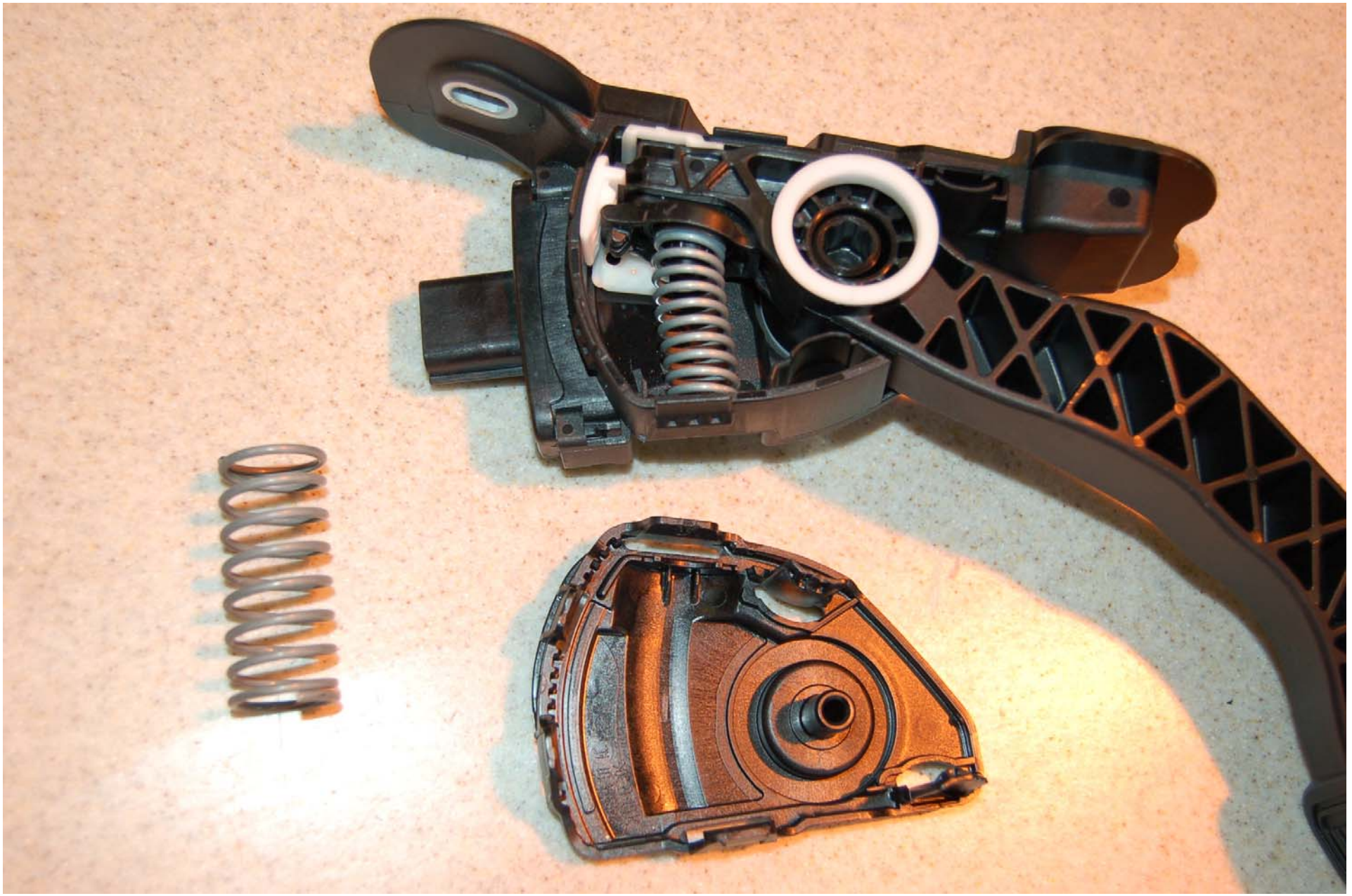
FIGURE 5.5
CLOSE-UP VIEW OF VEHICLE PLACARD

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.6
ACCELERATOR PEDAL ASSEMBLY

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.7
CLOSE-UP OF SPRINGS 1 & 2



2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.8
ACCELERATOR WITH SPRING 1 REMOVED

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

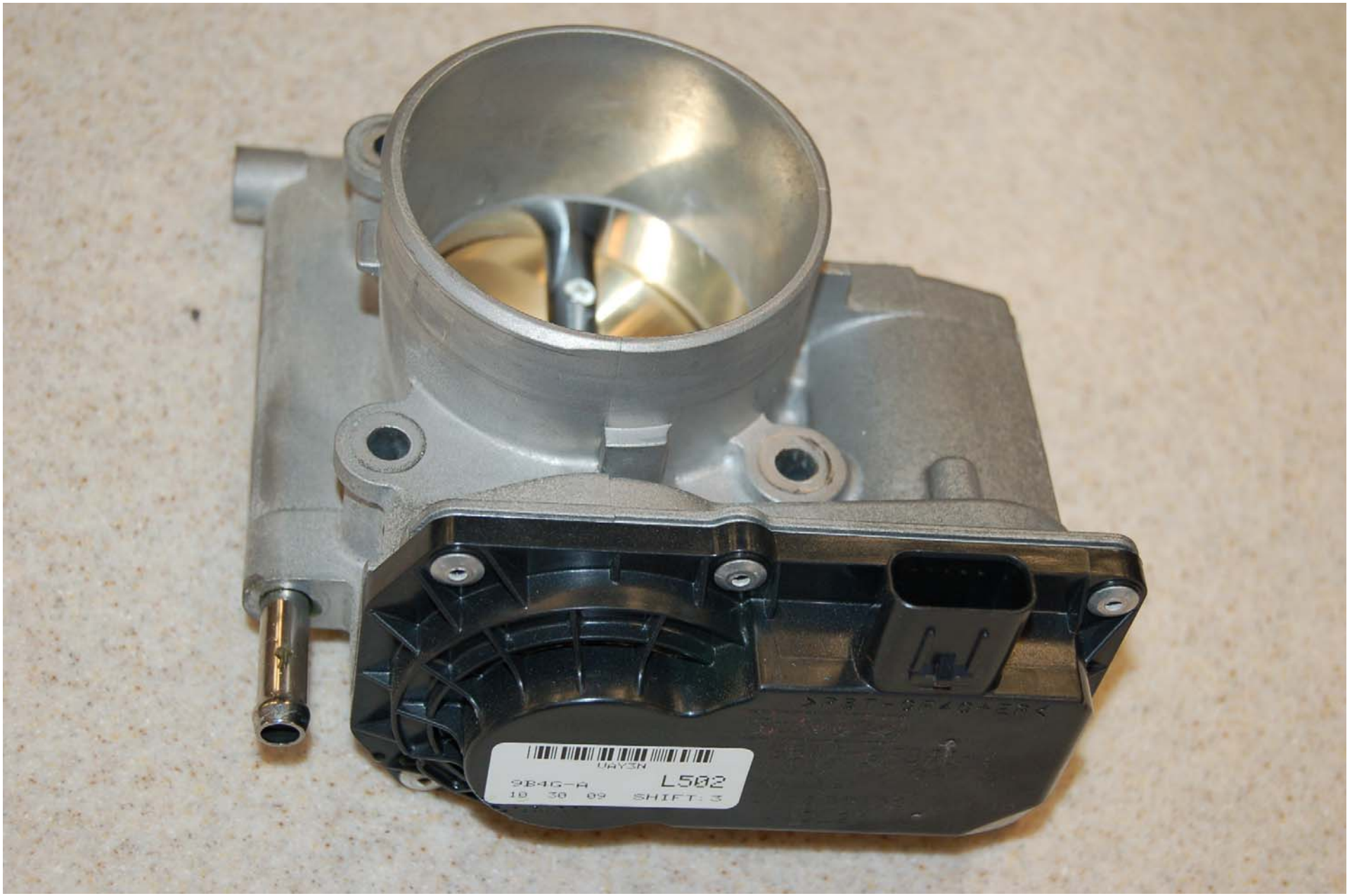
FIGURE 5.9
TEST SET-UP

2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.10
ACCELERATOR TEST SET-UP

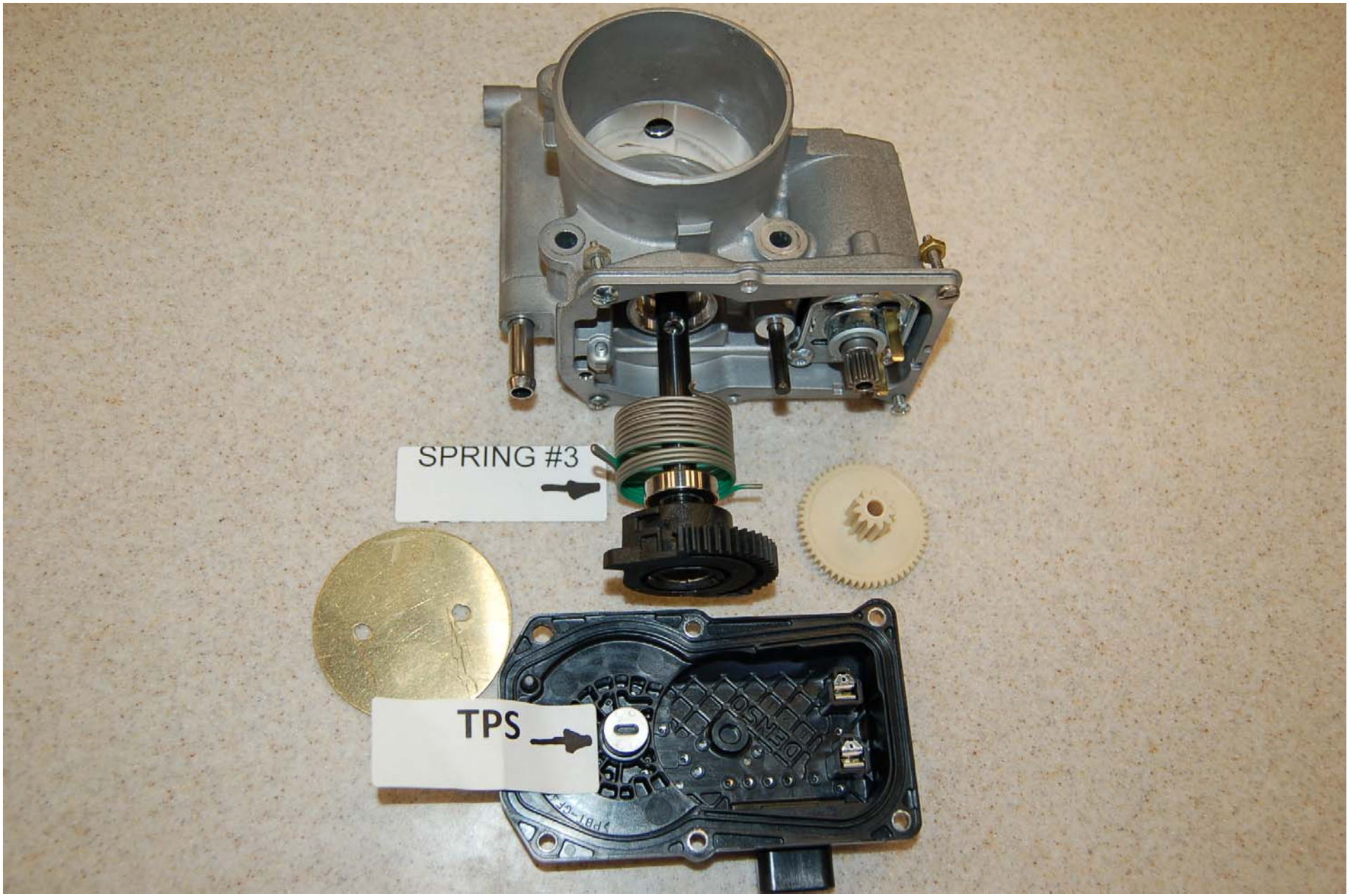
2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.11
THROTTLE BODY TEST SET-UP



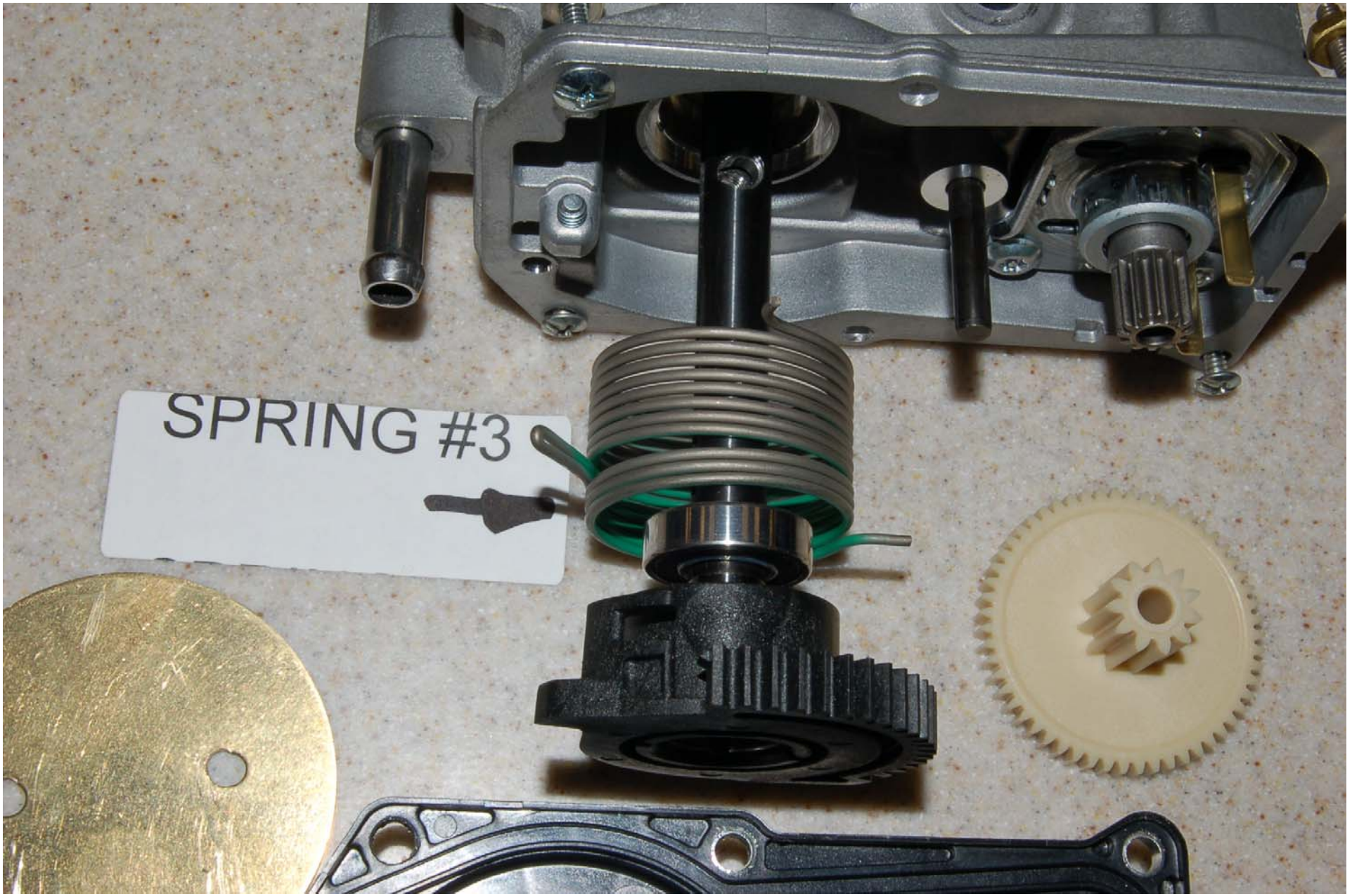
2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

FIGURE 5.12
THROTTLE BODY



2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

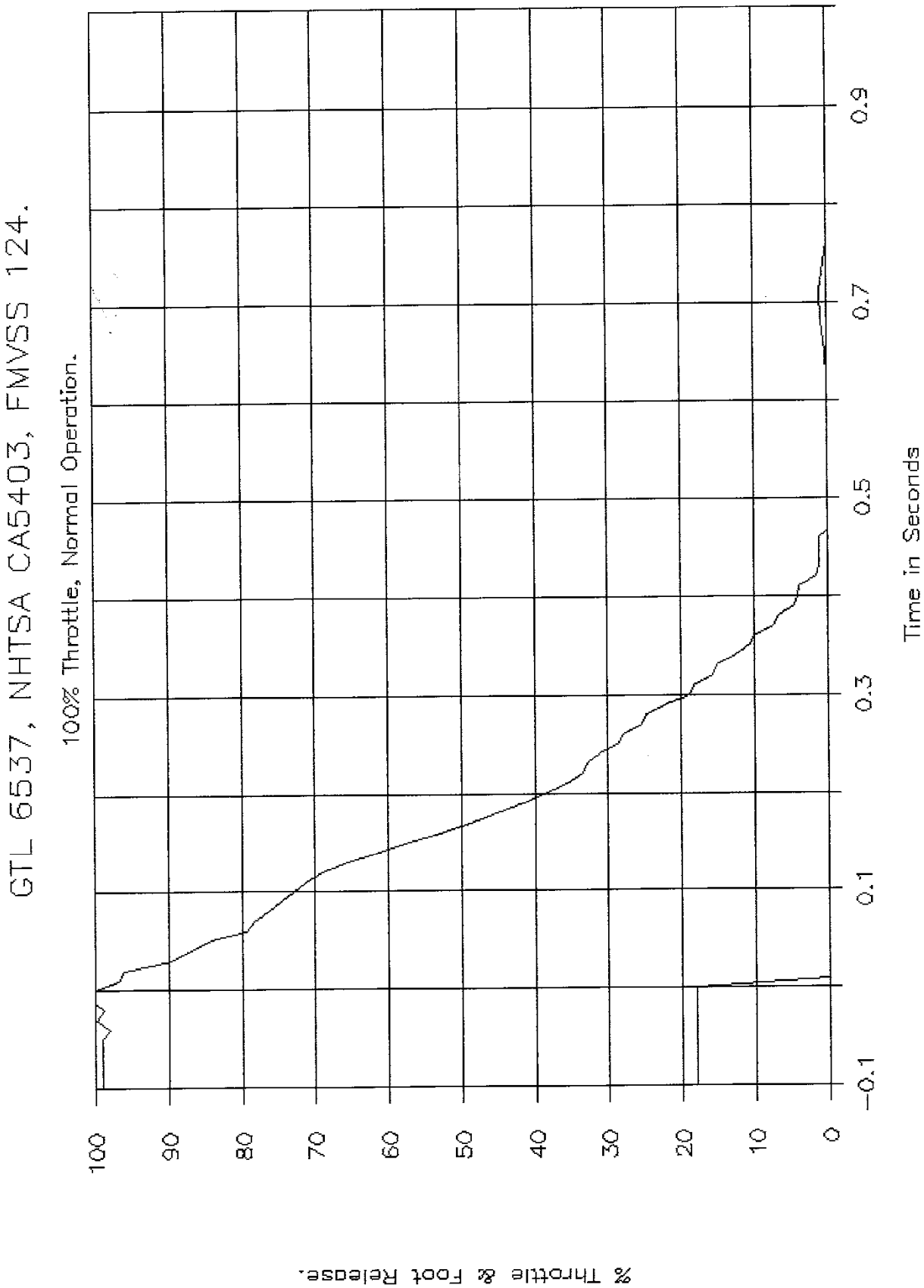
FIGURE 5.13
TPS AND SPRING 3

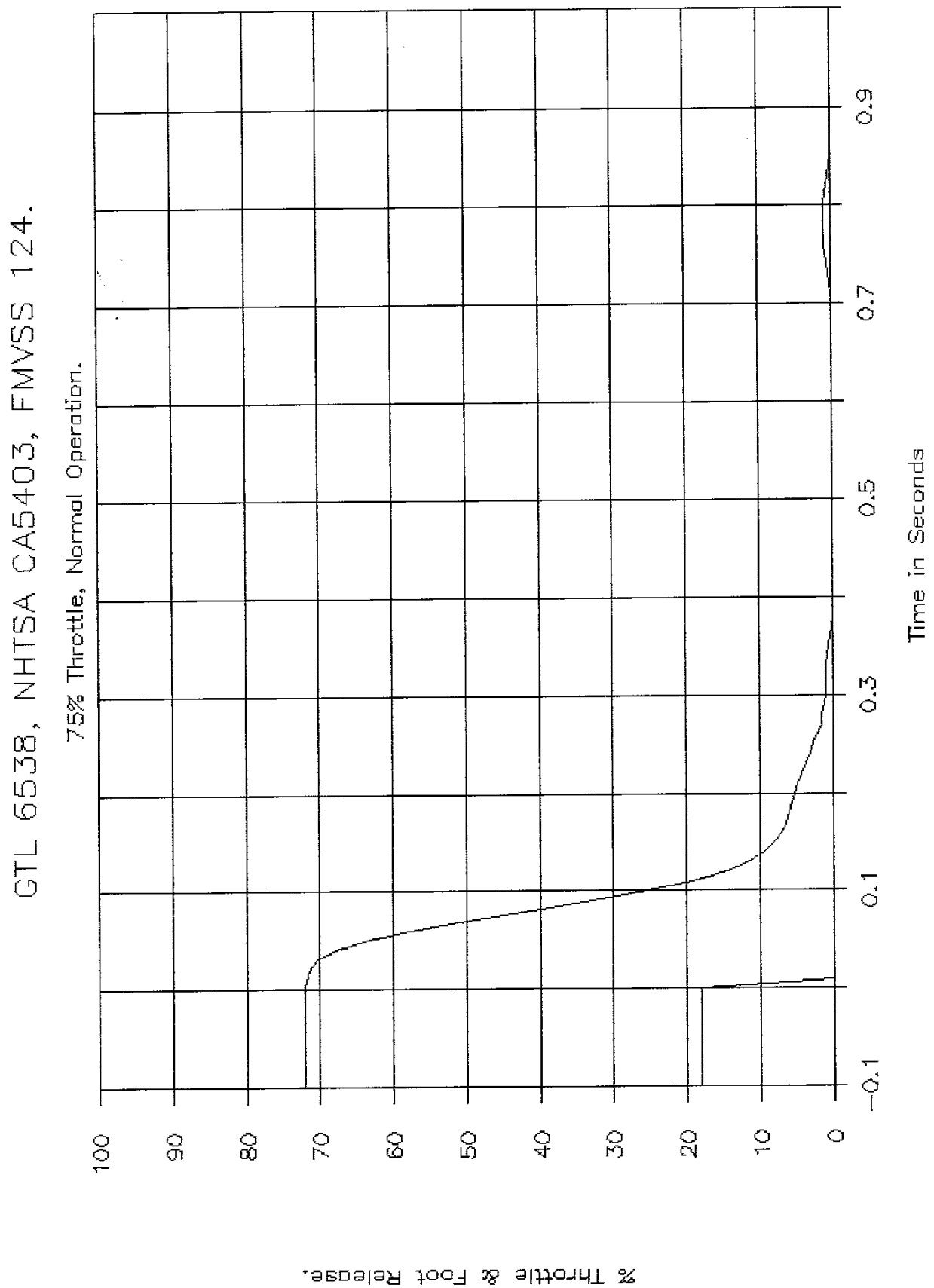


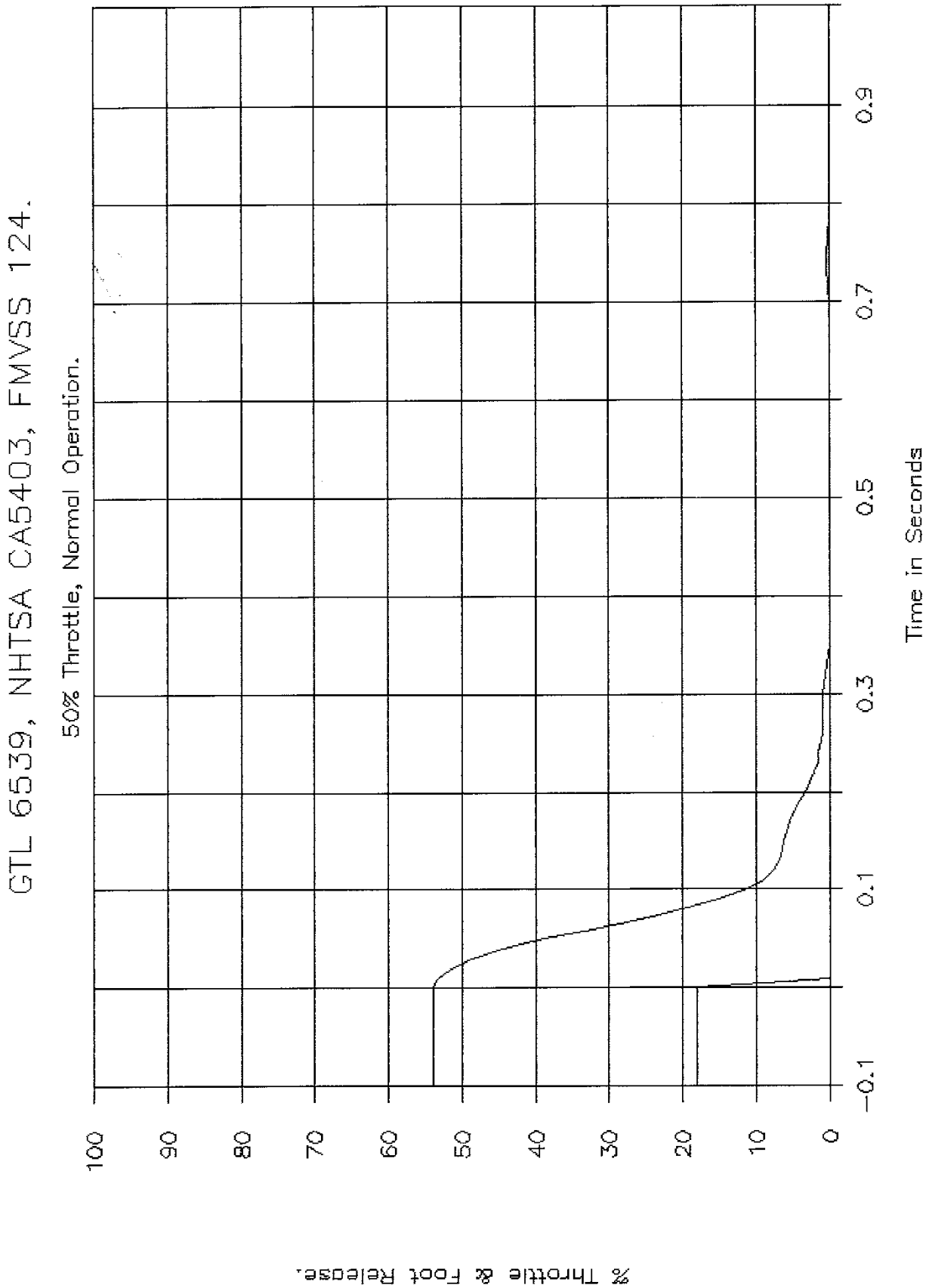
2010 MAZDA 6
NHTSA NO. CA5403
FMVSS NO. 124

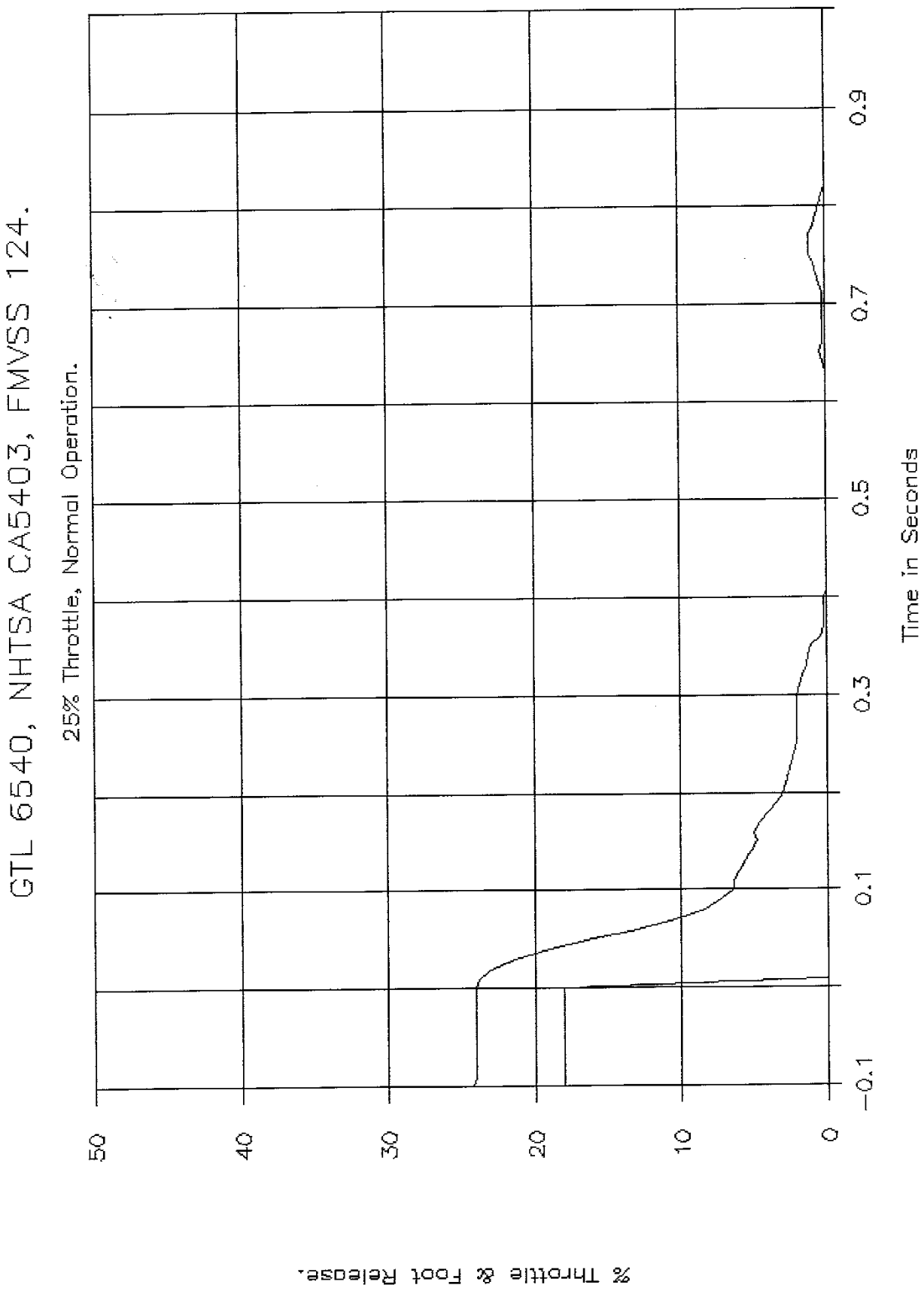
FIGURE 5.14
THROTTLE BODY SPRING 3 CLOSEUP

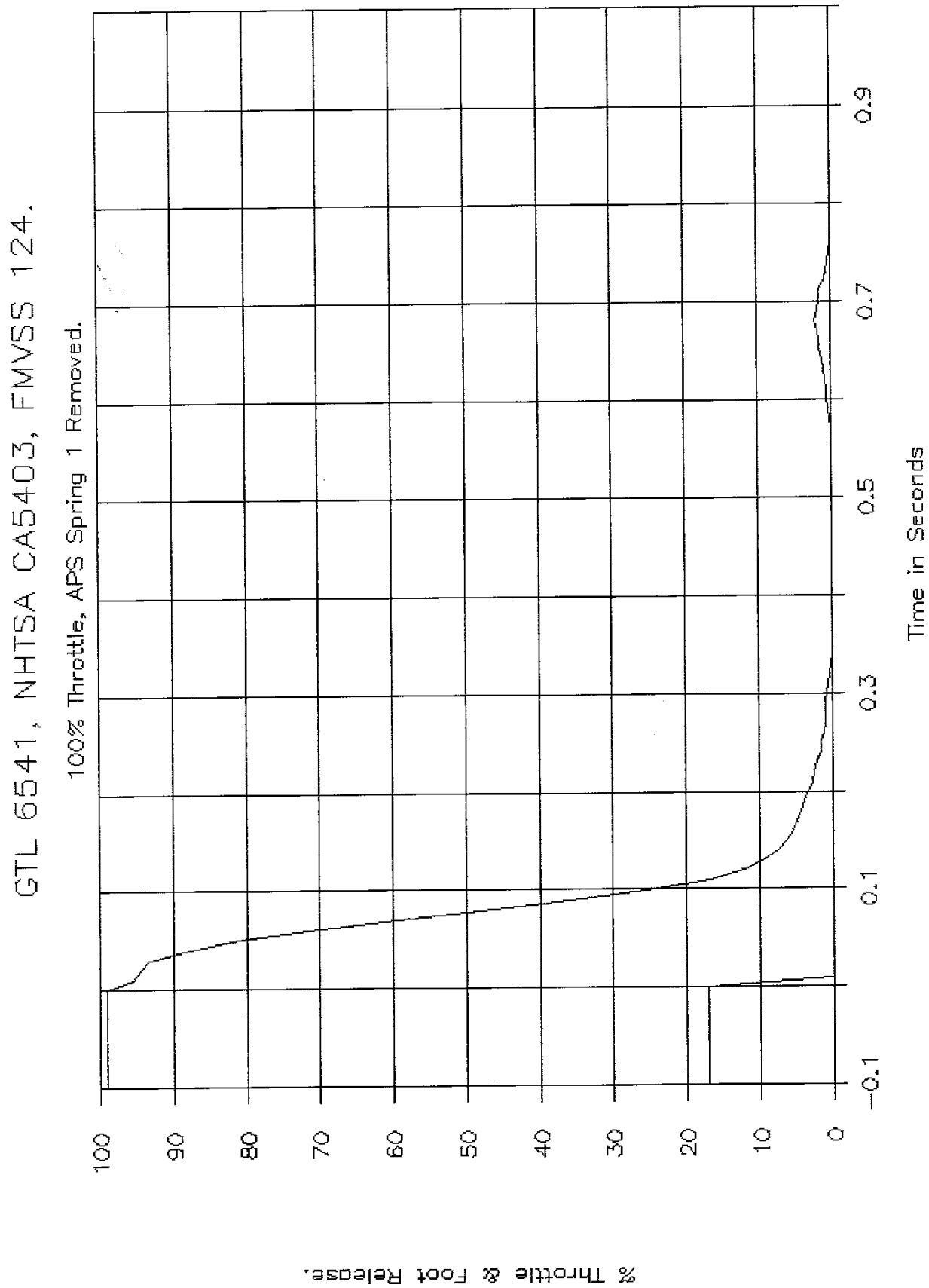
SECTION 6
PLOTS

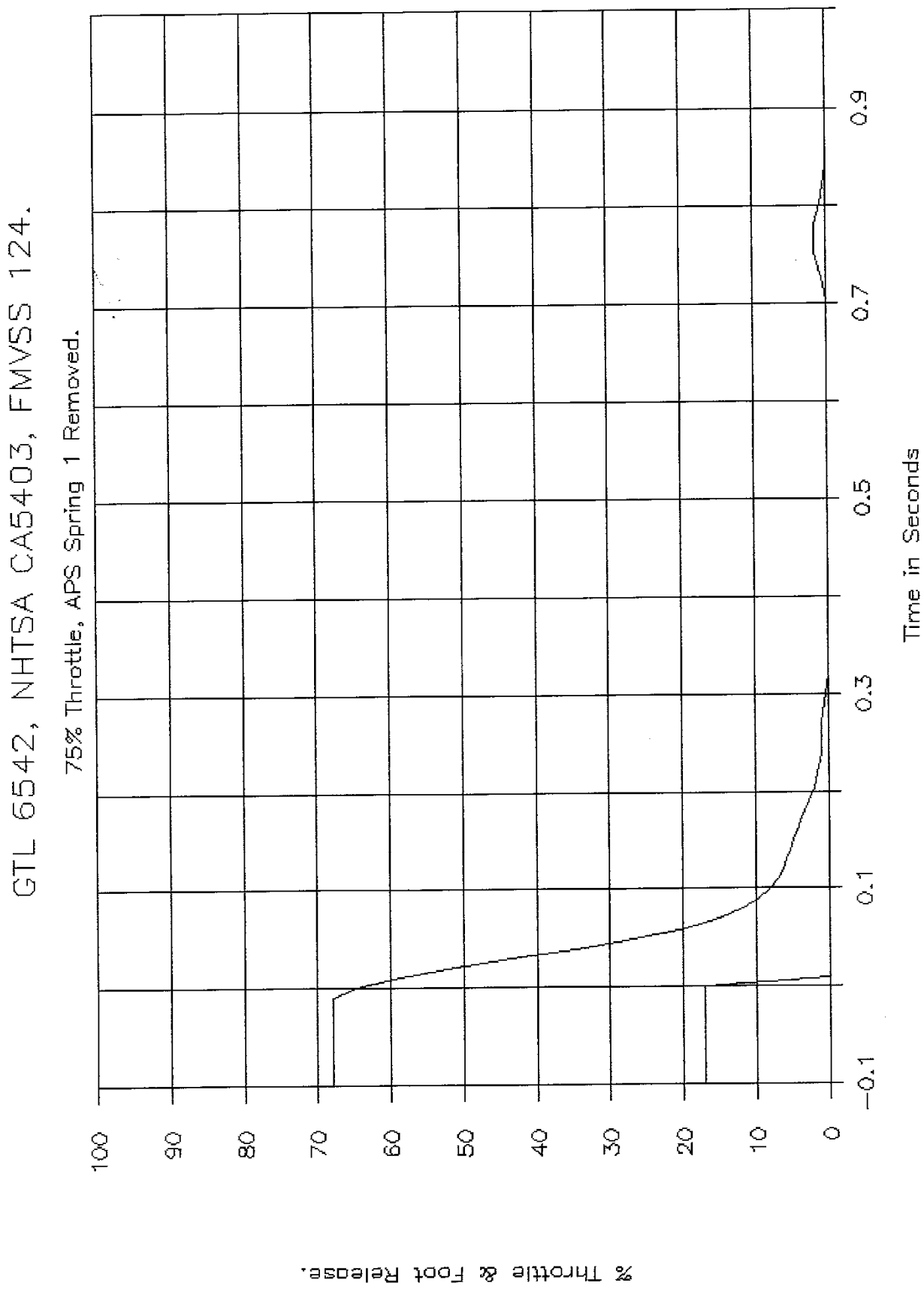

GTL 6537, NHTSA CA5403, FMVSS 124.
100% Throttle, Normal Operation.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

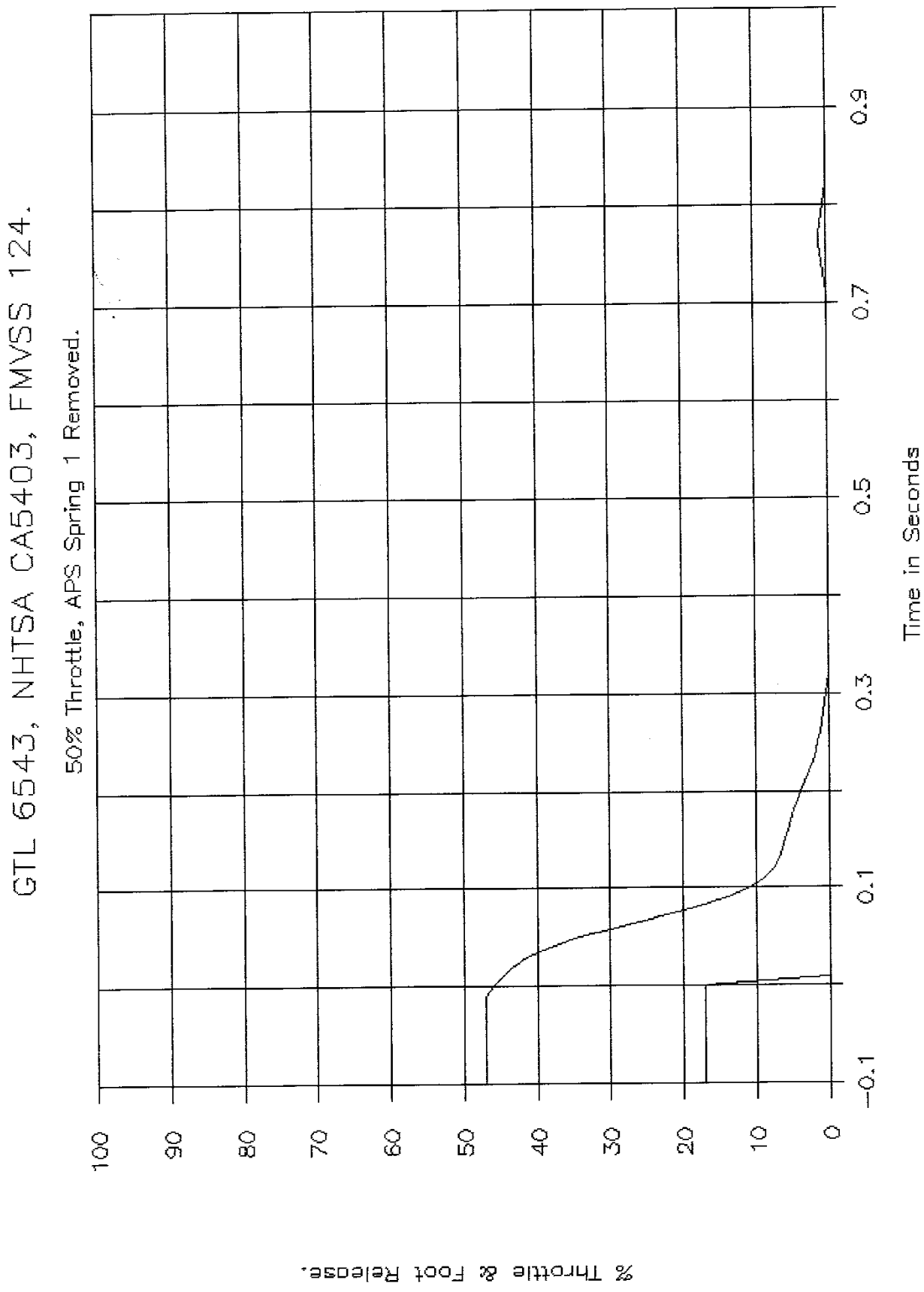

GTL 6538, NHTSA CA5403, FMVSS 124.
75% Throttle, Normal Operation.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

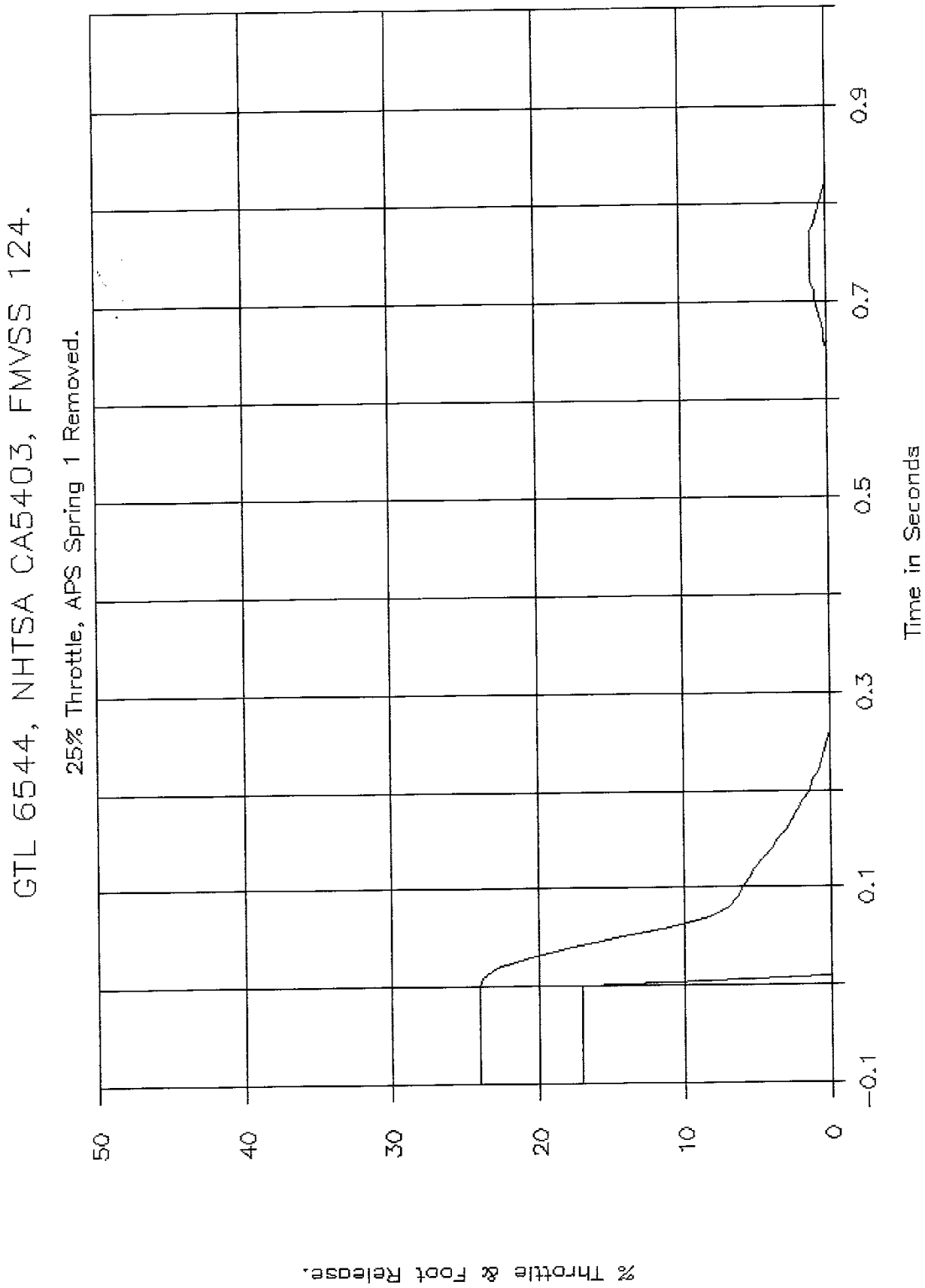

GTL 6539, NHTSA CA5403, FMVSS 124.
50% Throttle, Normal Operation.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

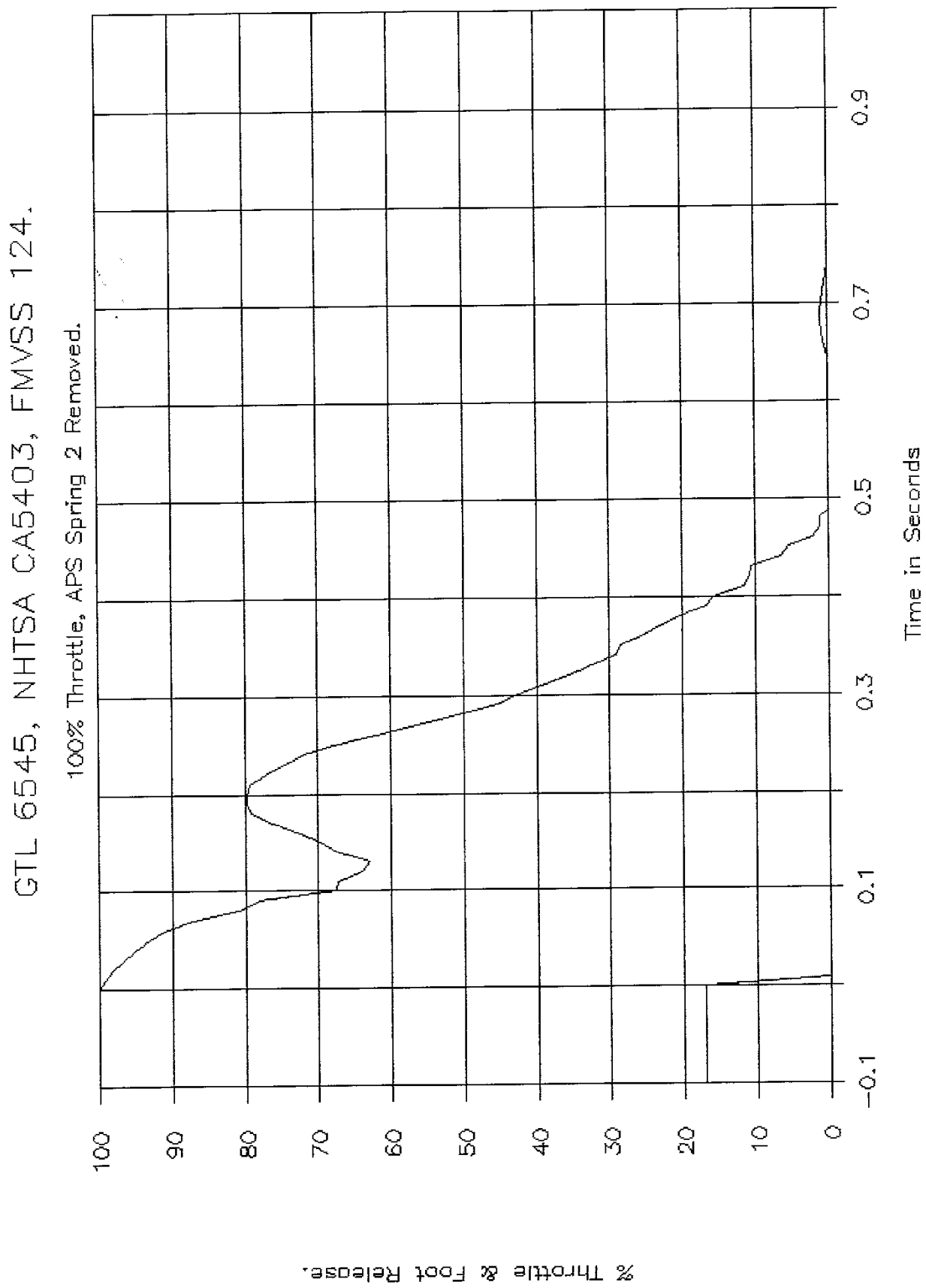

GTL 6540, NHTSA CA5403, FMVSS 124.
25% Throttle, Normal Operation.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

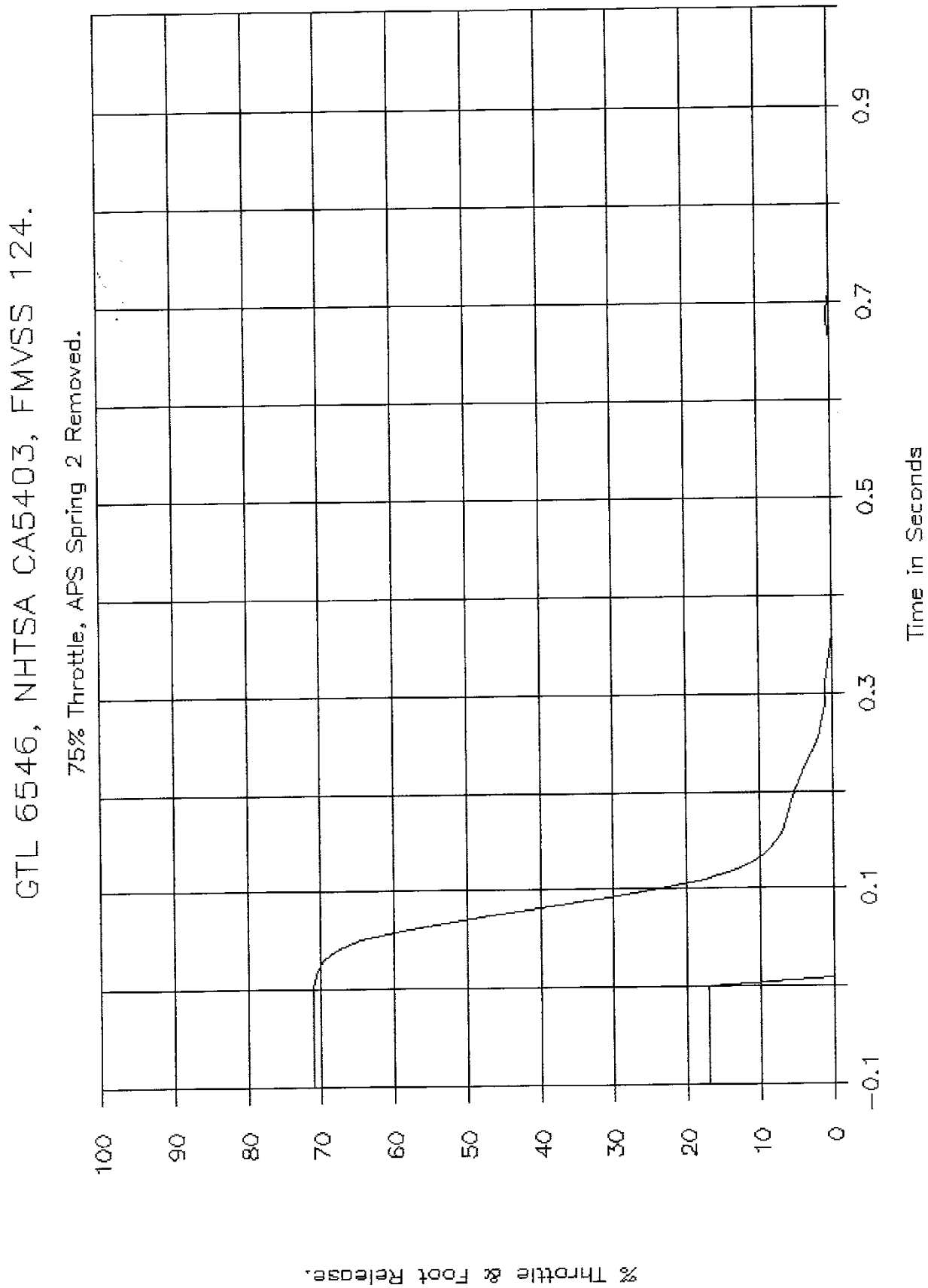

GTL 6541, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Spring 1 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

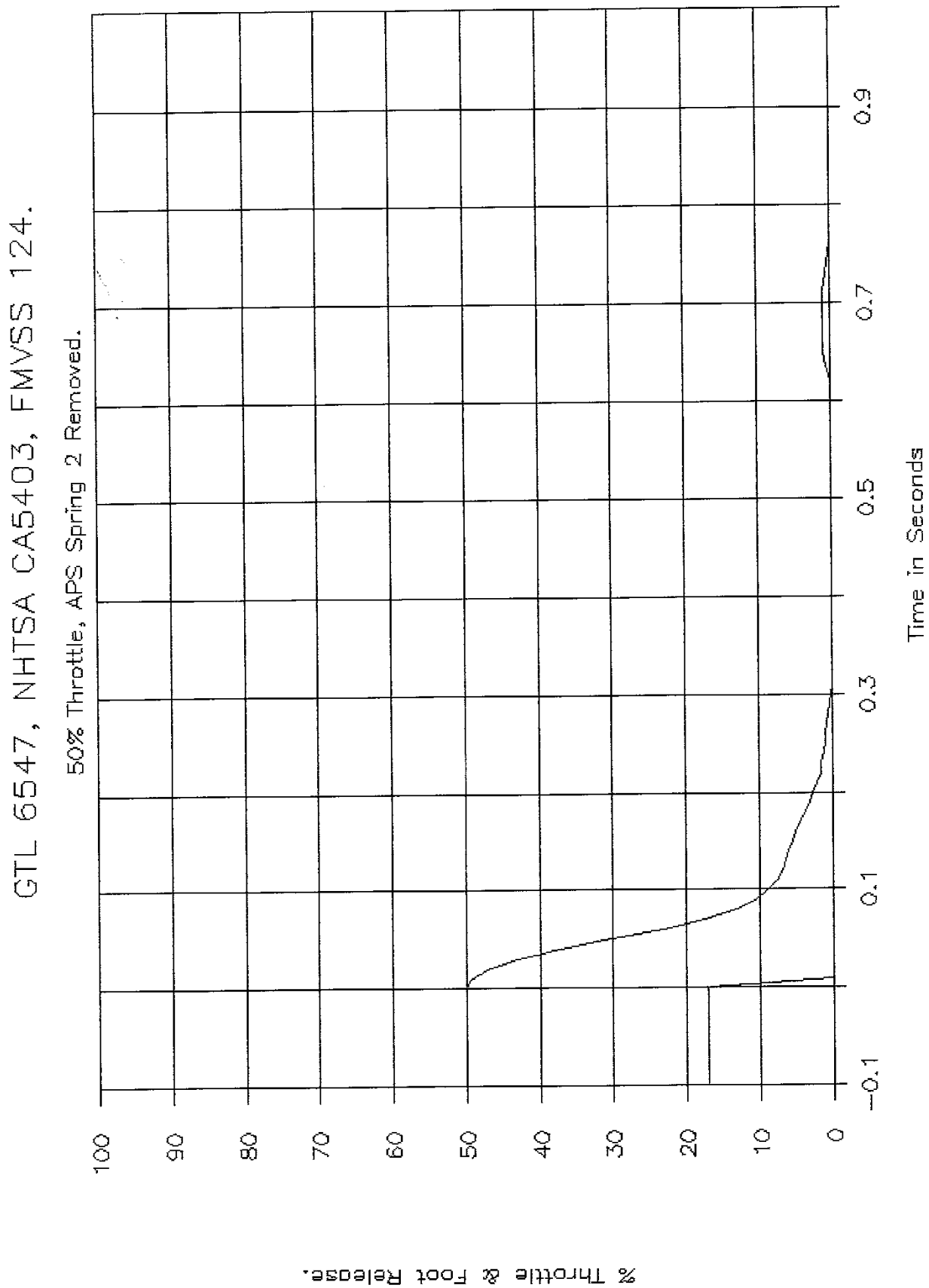

GTL 6542, NHTSA CA5403, FMVSS 124.
75% Throttle, APS Spring 1 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

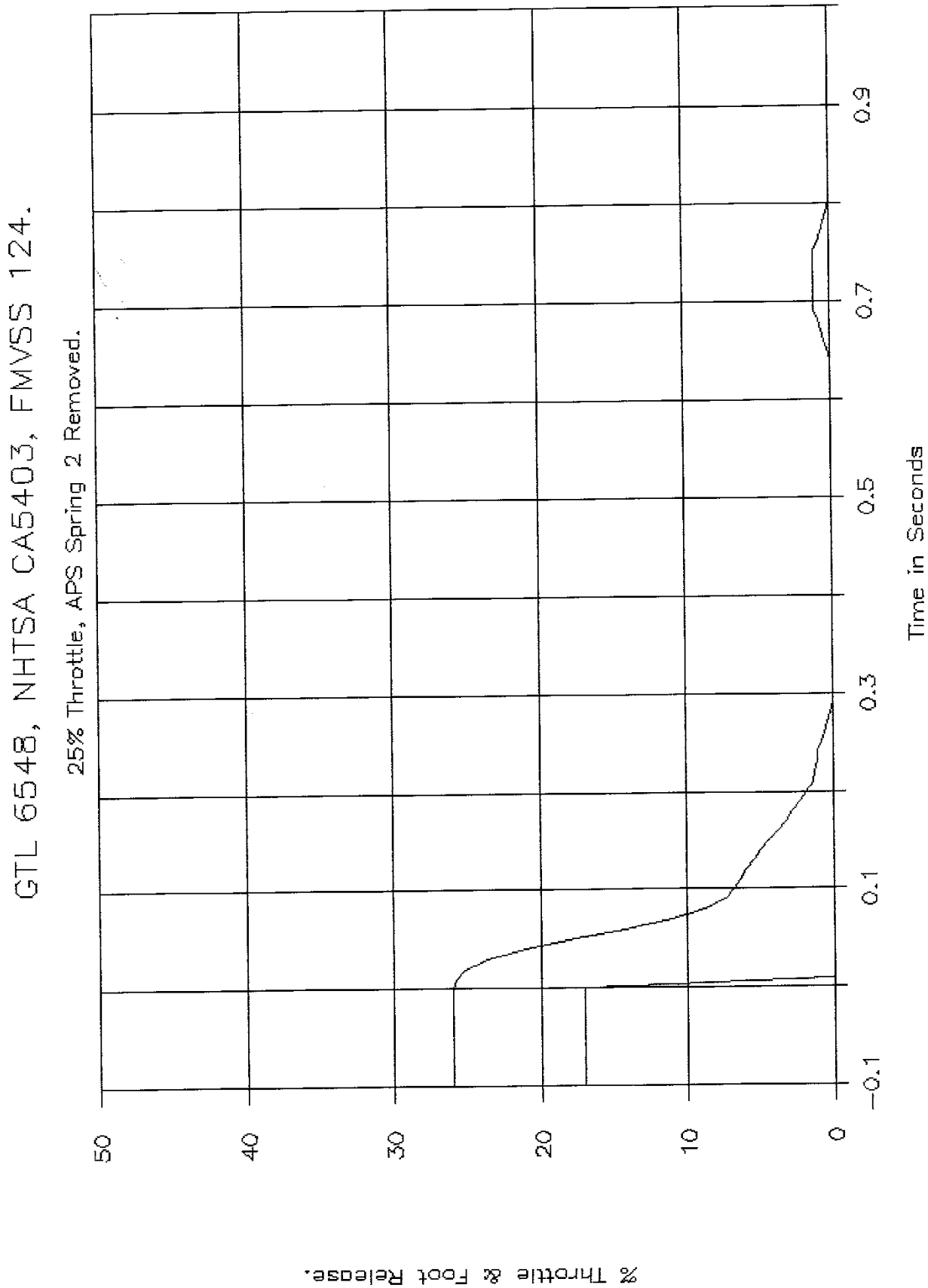

GTL 6543, NHTSA CA5403, FMVSS 124.
50% Throttle, APS Spring 1 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

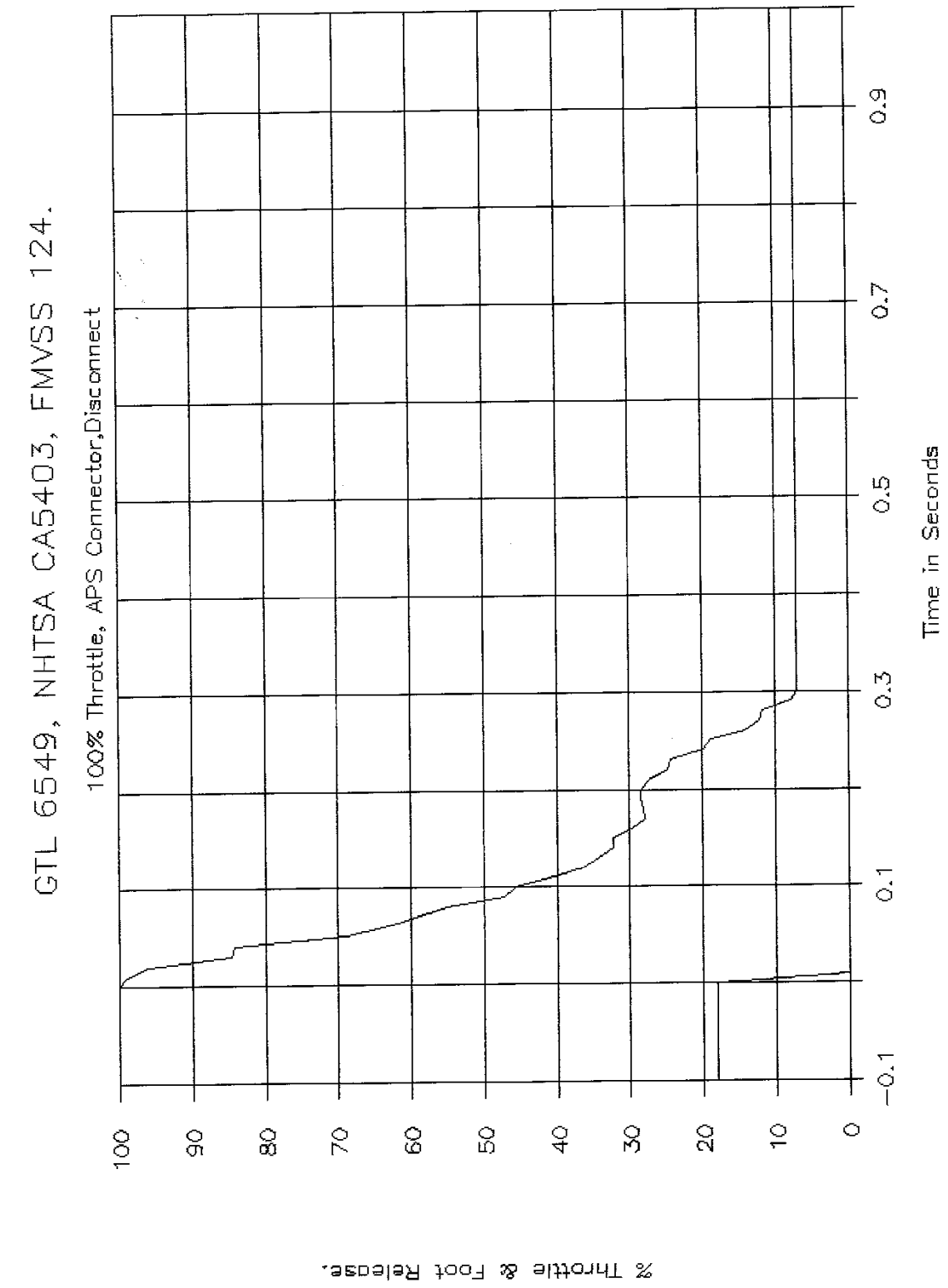

GTL 6544, NHTSA CA5403, FMVSS 124.
25% Throttle, APS Spring 1 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

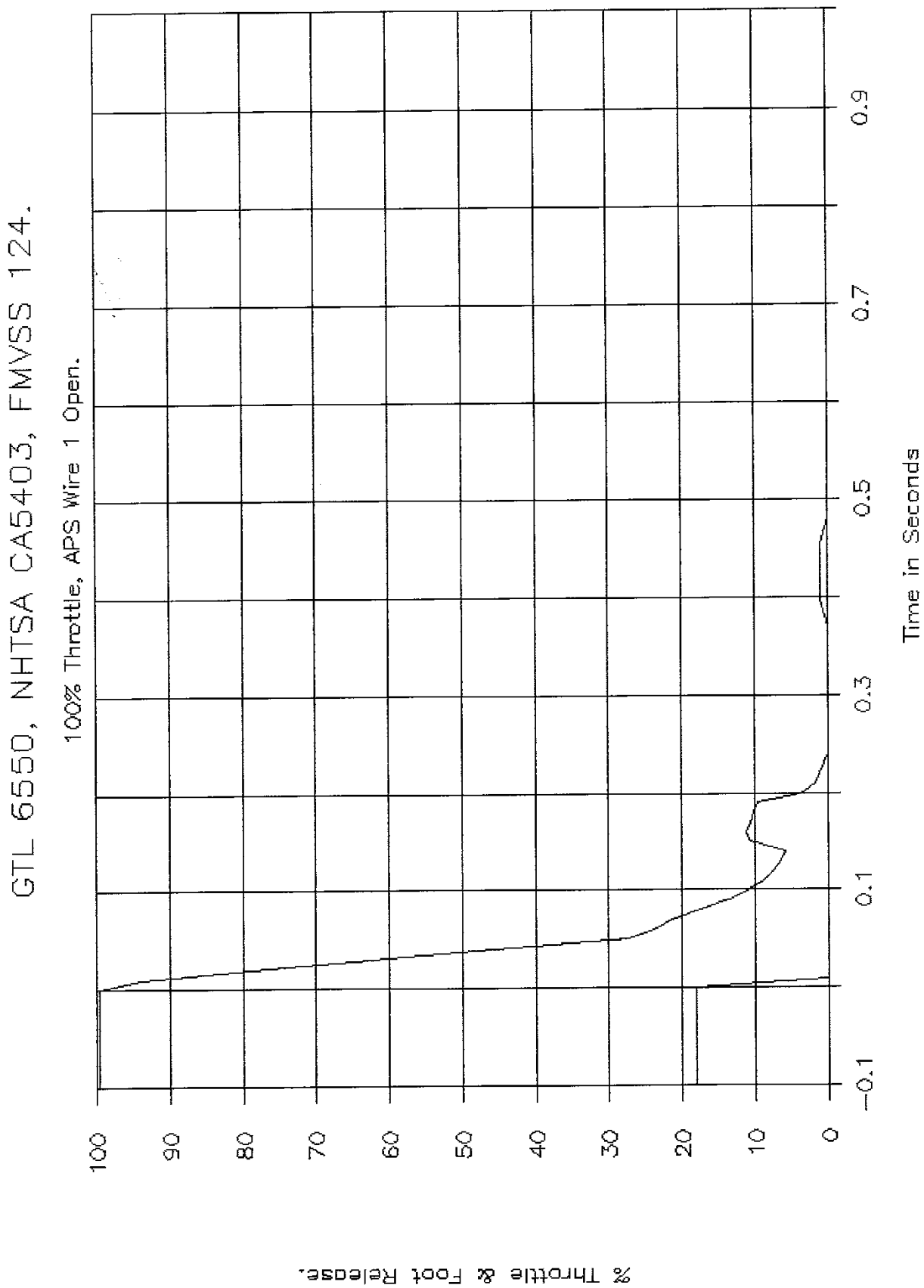

GTL 6545, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Spring 2 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

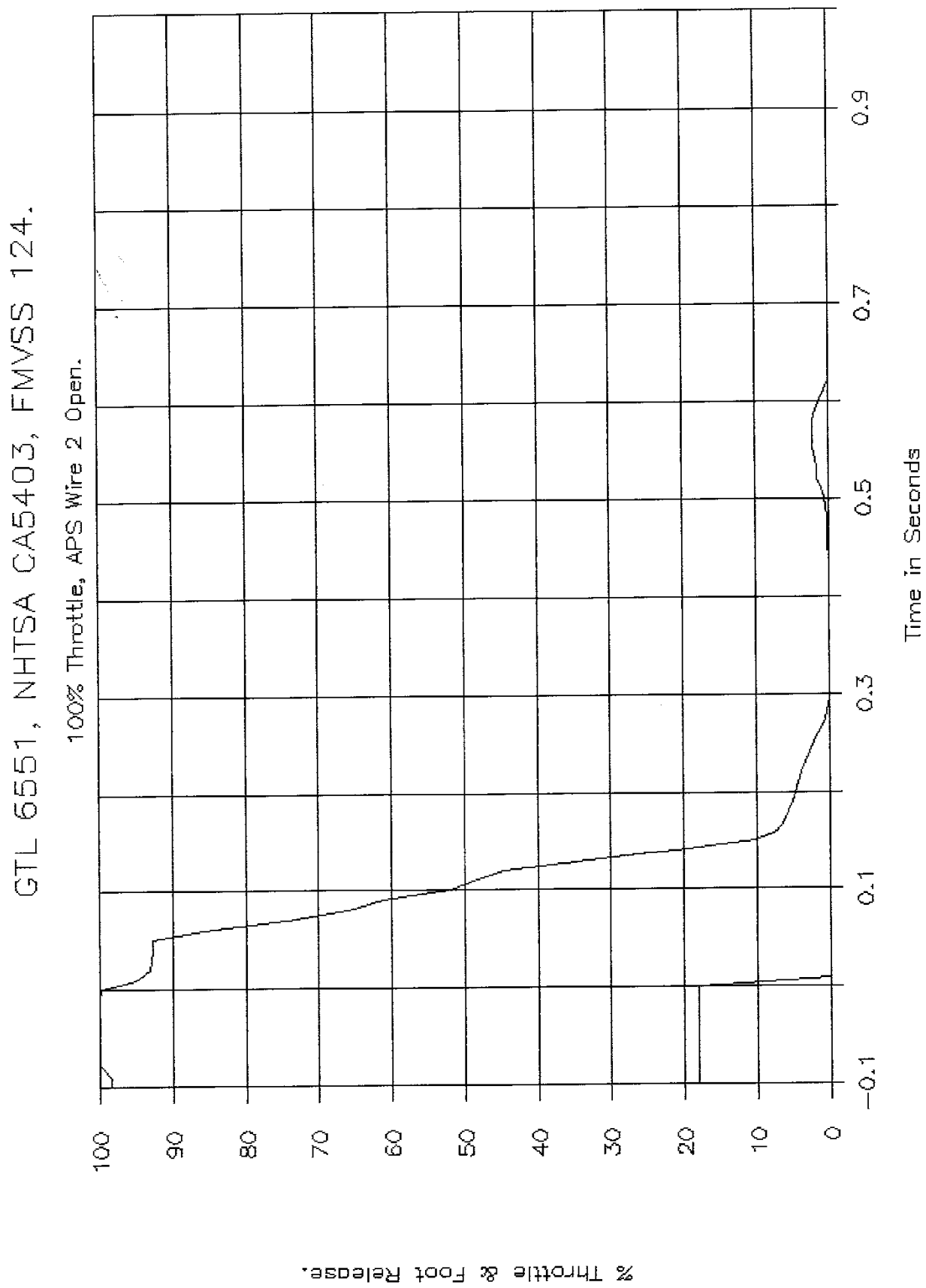

GTL 6546, NHTSA CA5403, FMVSS 124.
75% Throttle, APS Spring 2 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

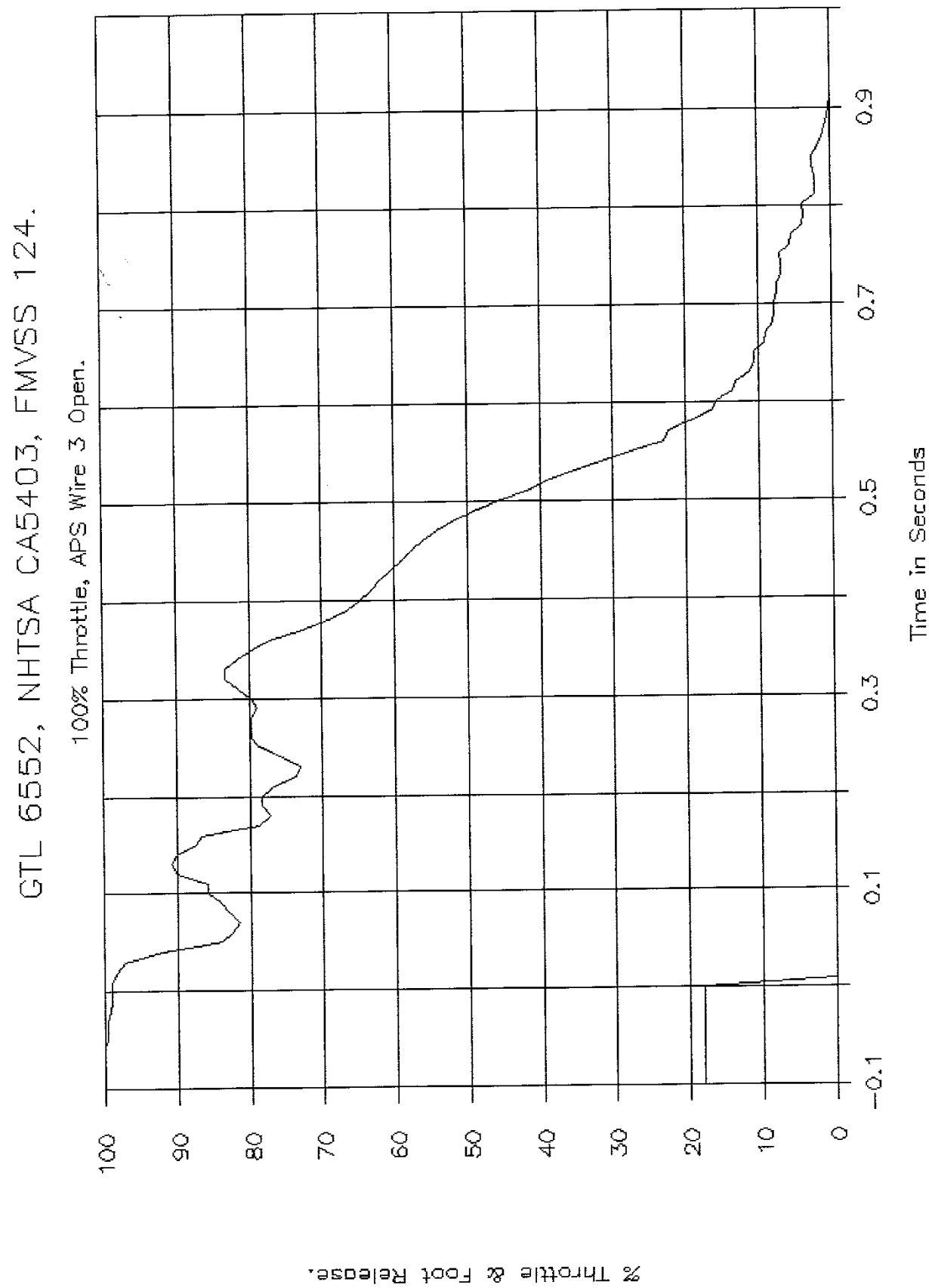

GTL 6547, NHTSA CA5403, FMVSS 124.
50% Throttle, APS Spring 2 Removed.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

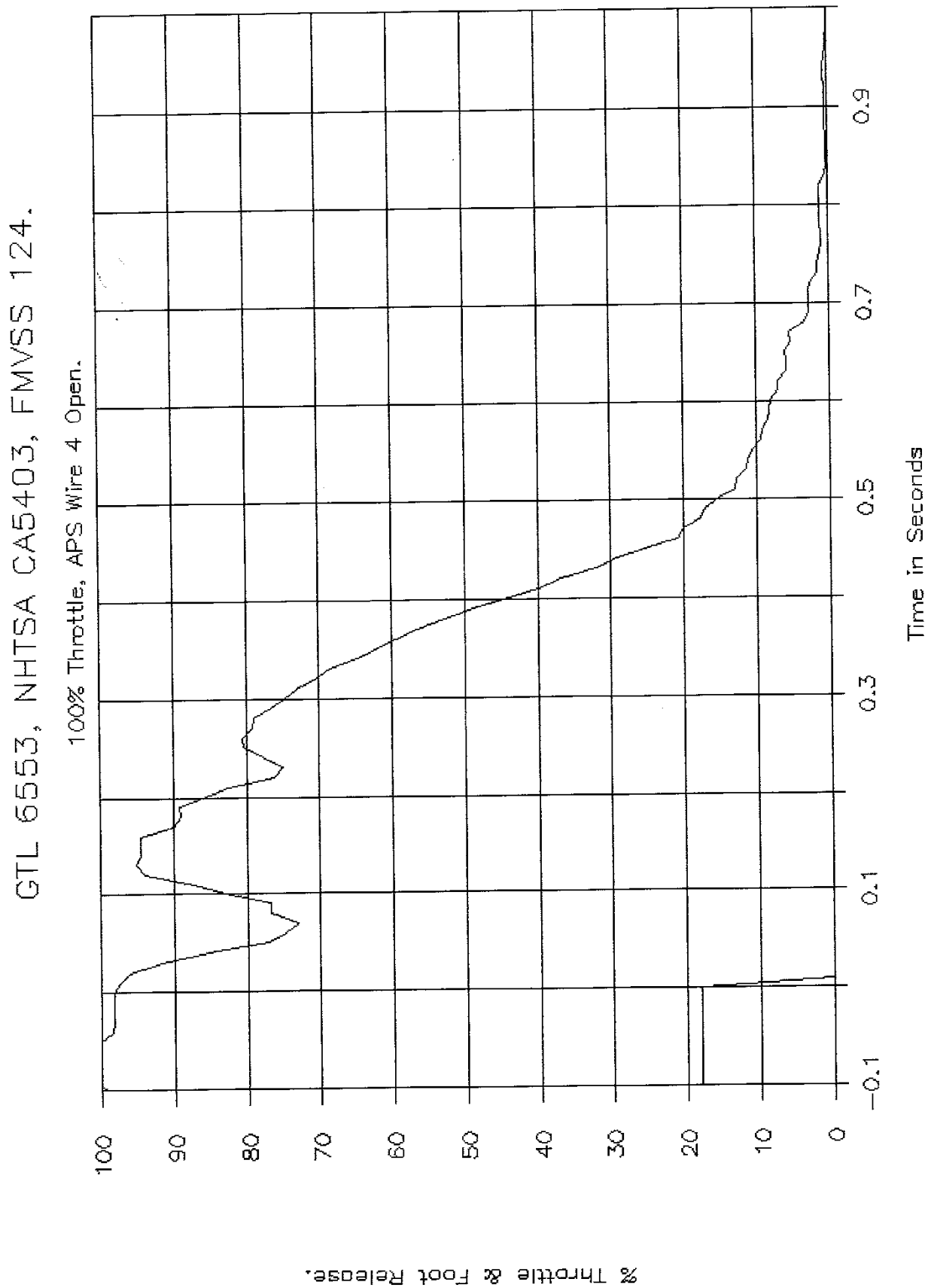

GTL 6548, NHTSA CA5403, FMVSS 124.
25% Throttle, APS Spring 2 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

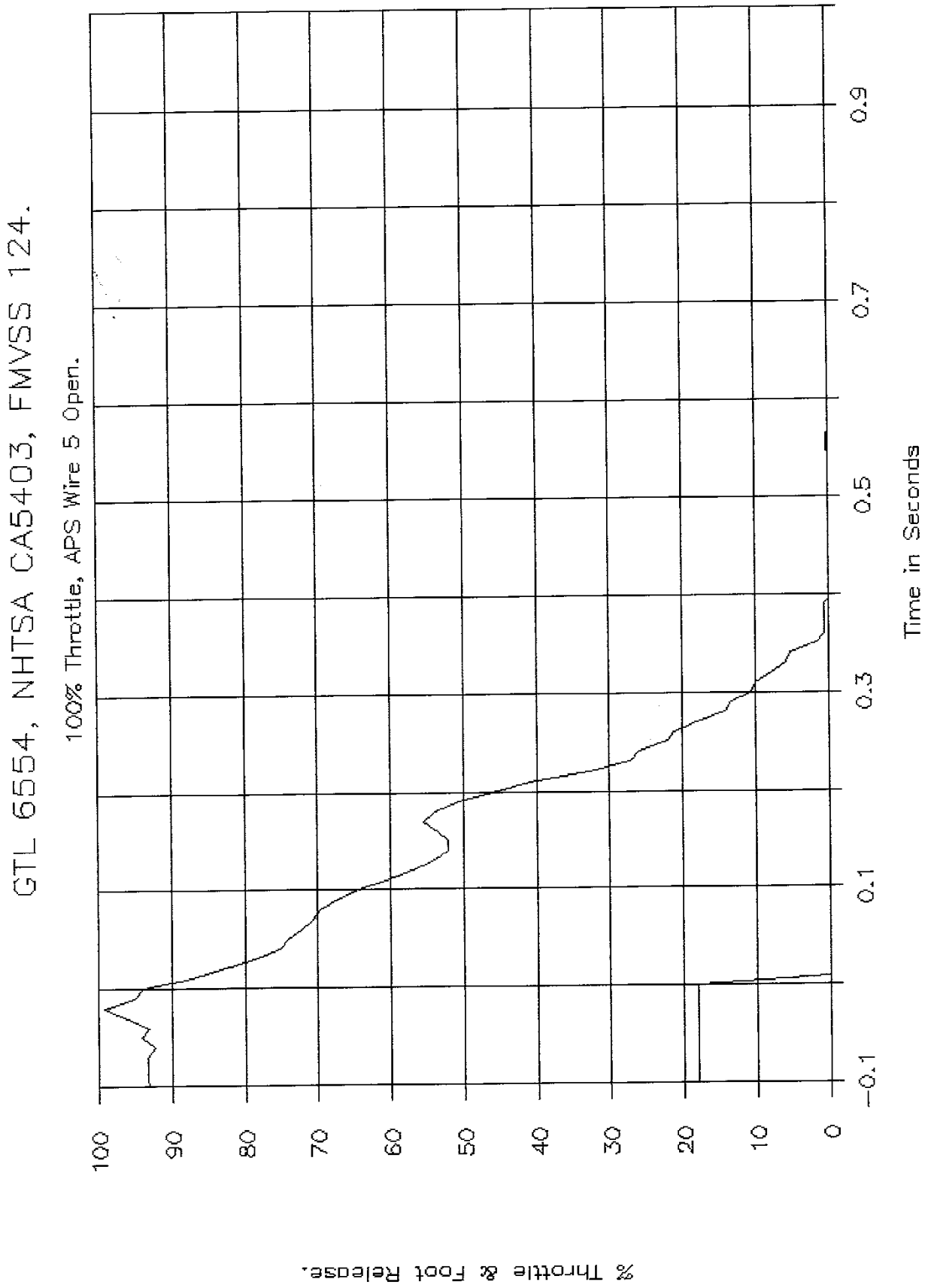

GTL 6549, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Connector,Disconnect
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

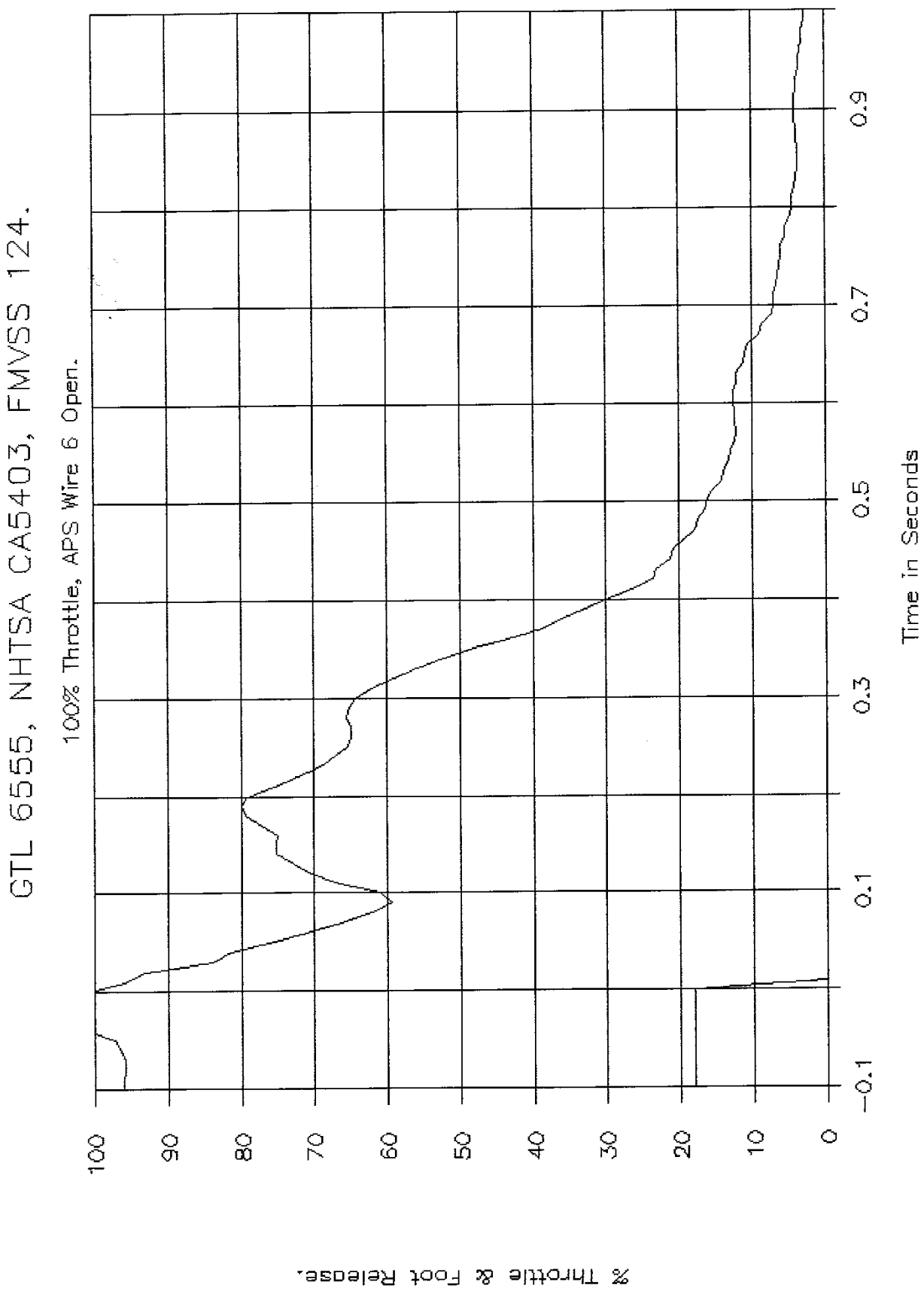

GTL 6550, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 1 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

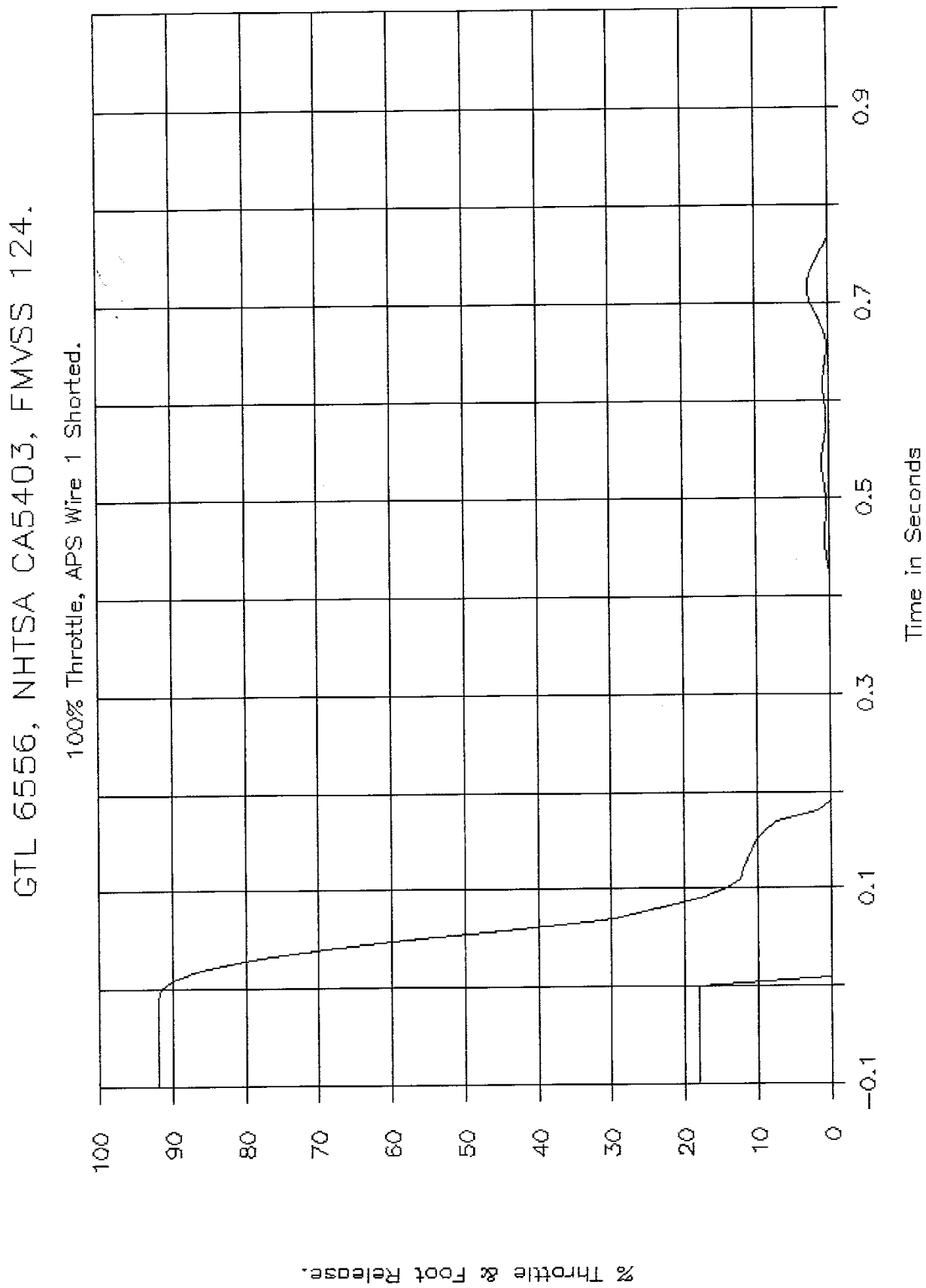

GTL 6551, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 2 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

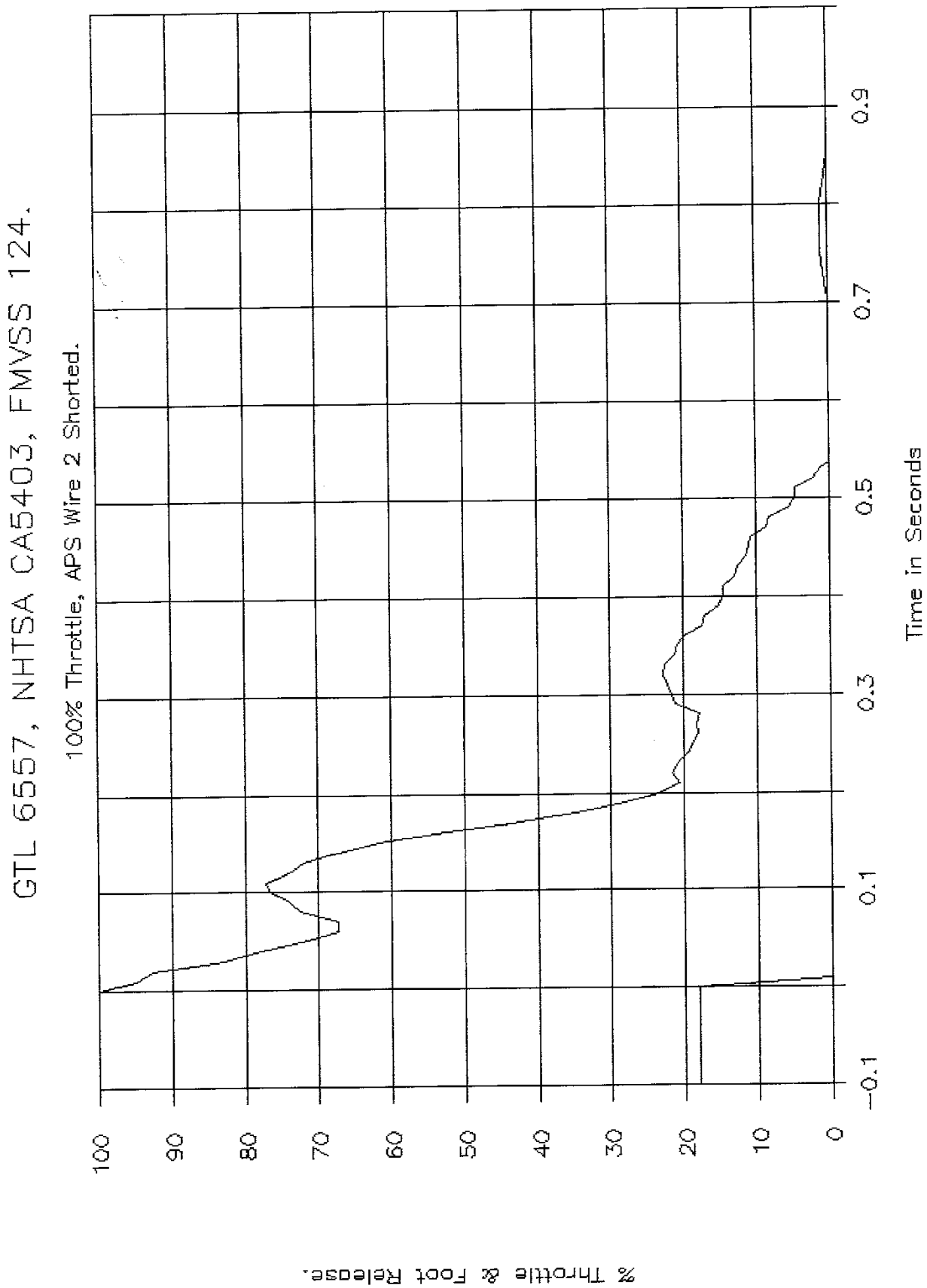

GTL 6552, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 3 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

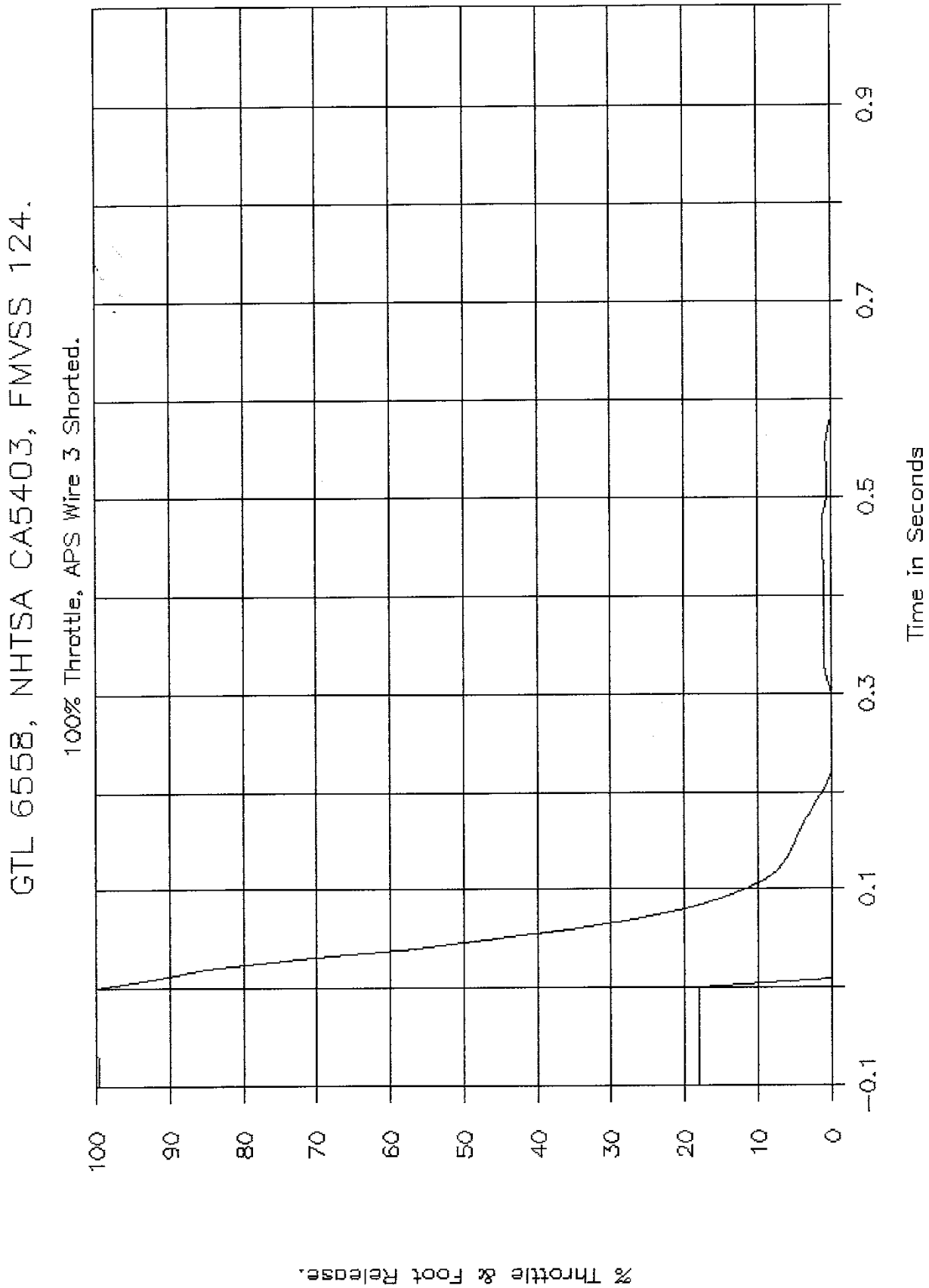

GTL 6553, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 4 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

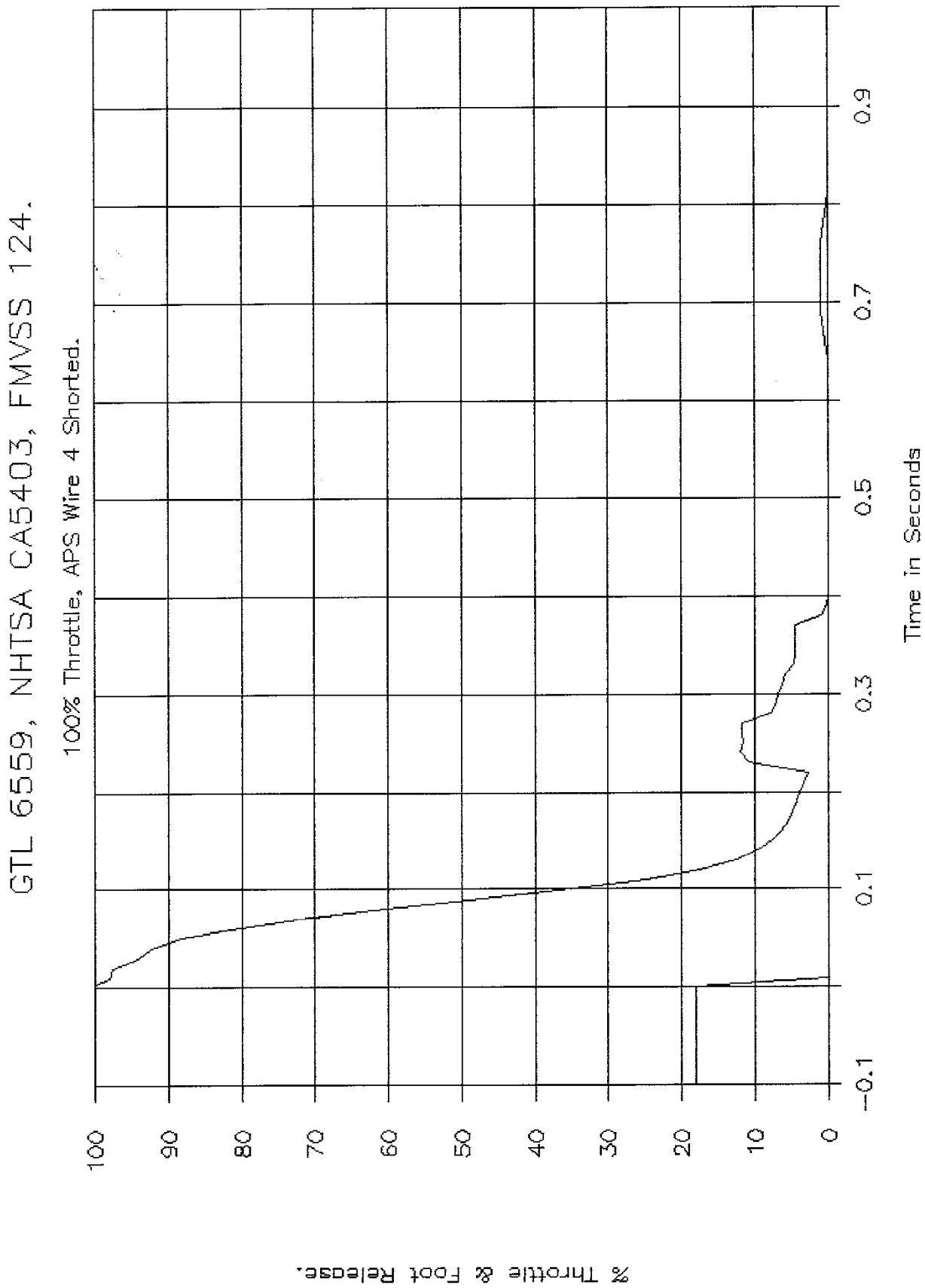

GTL 6554, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 5 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

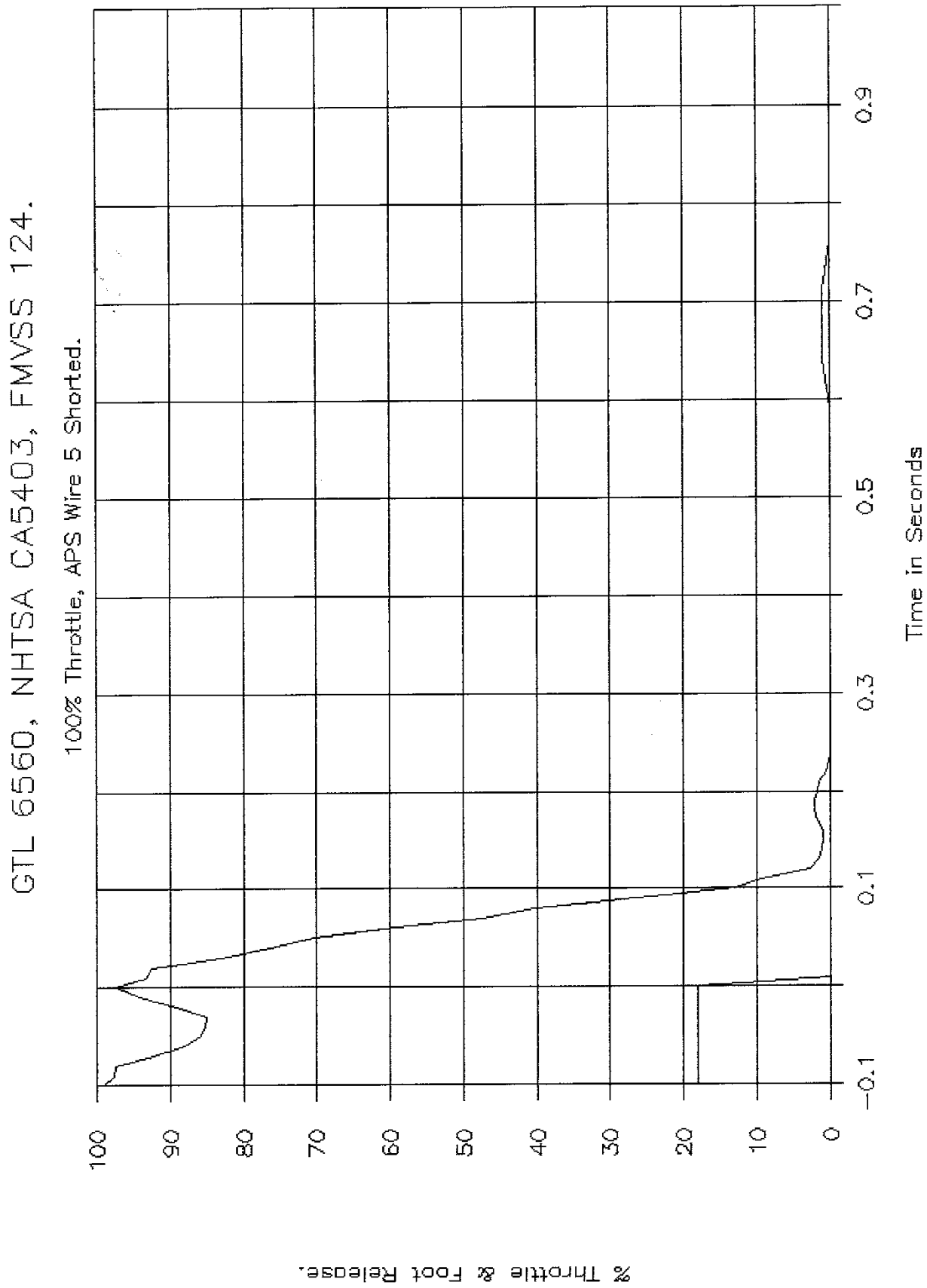

GTL 6555, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 6 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

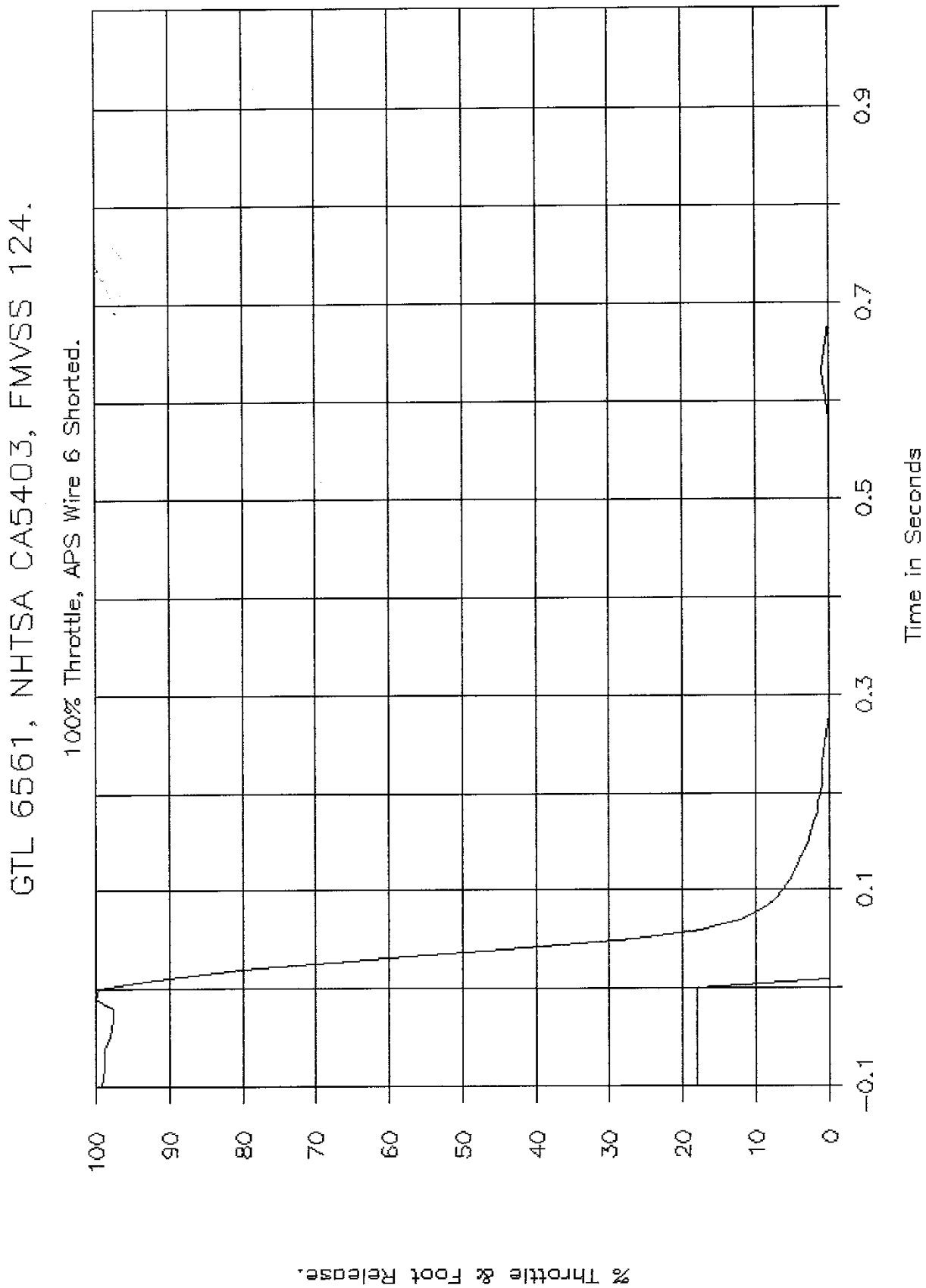

GTL 6556, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 1 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

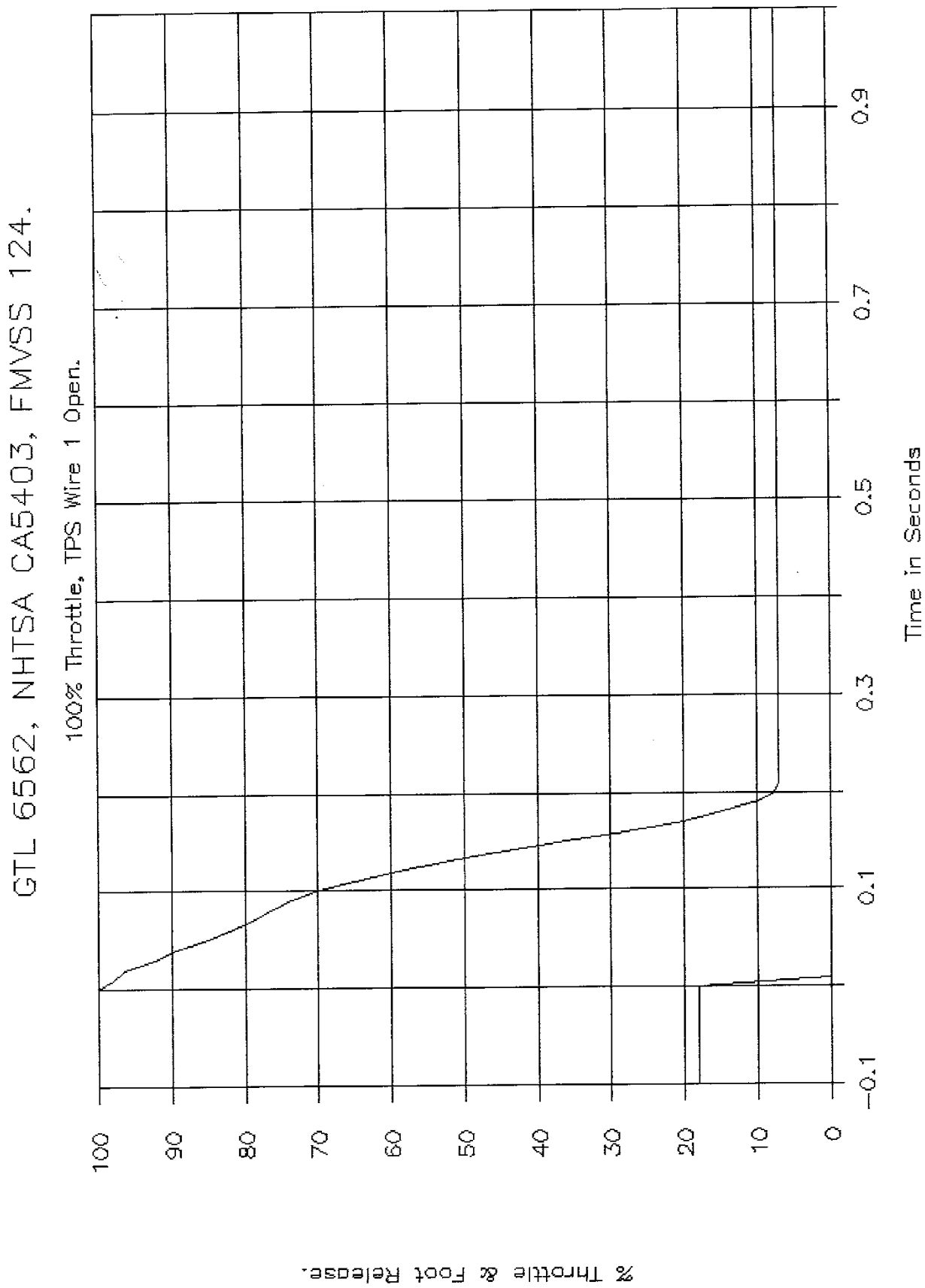

GTL 6557, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 2 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

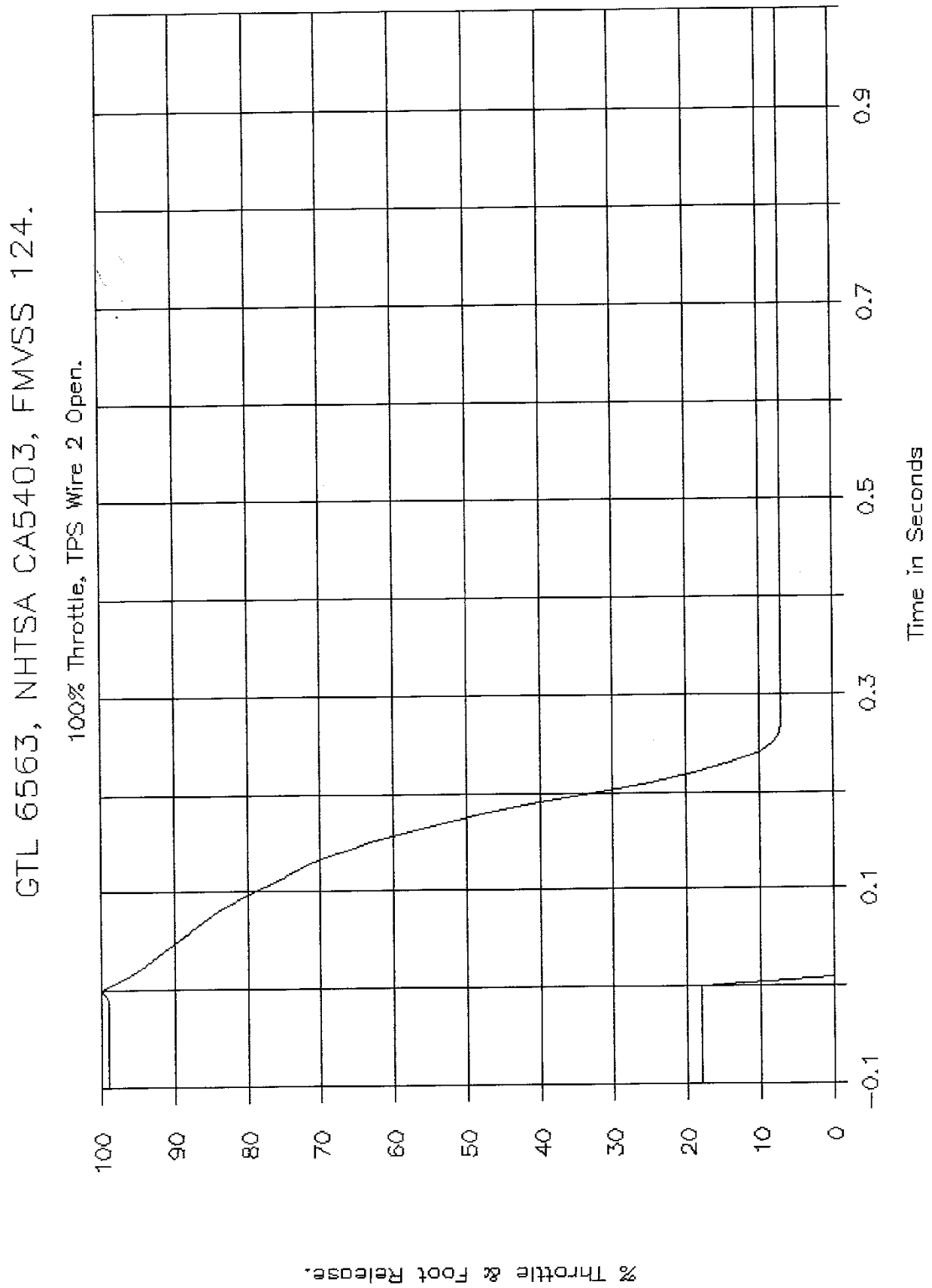

GTL 6558, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 3 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

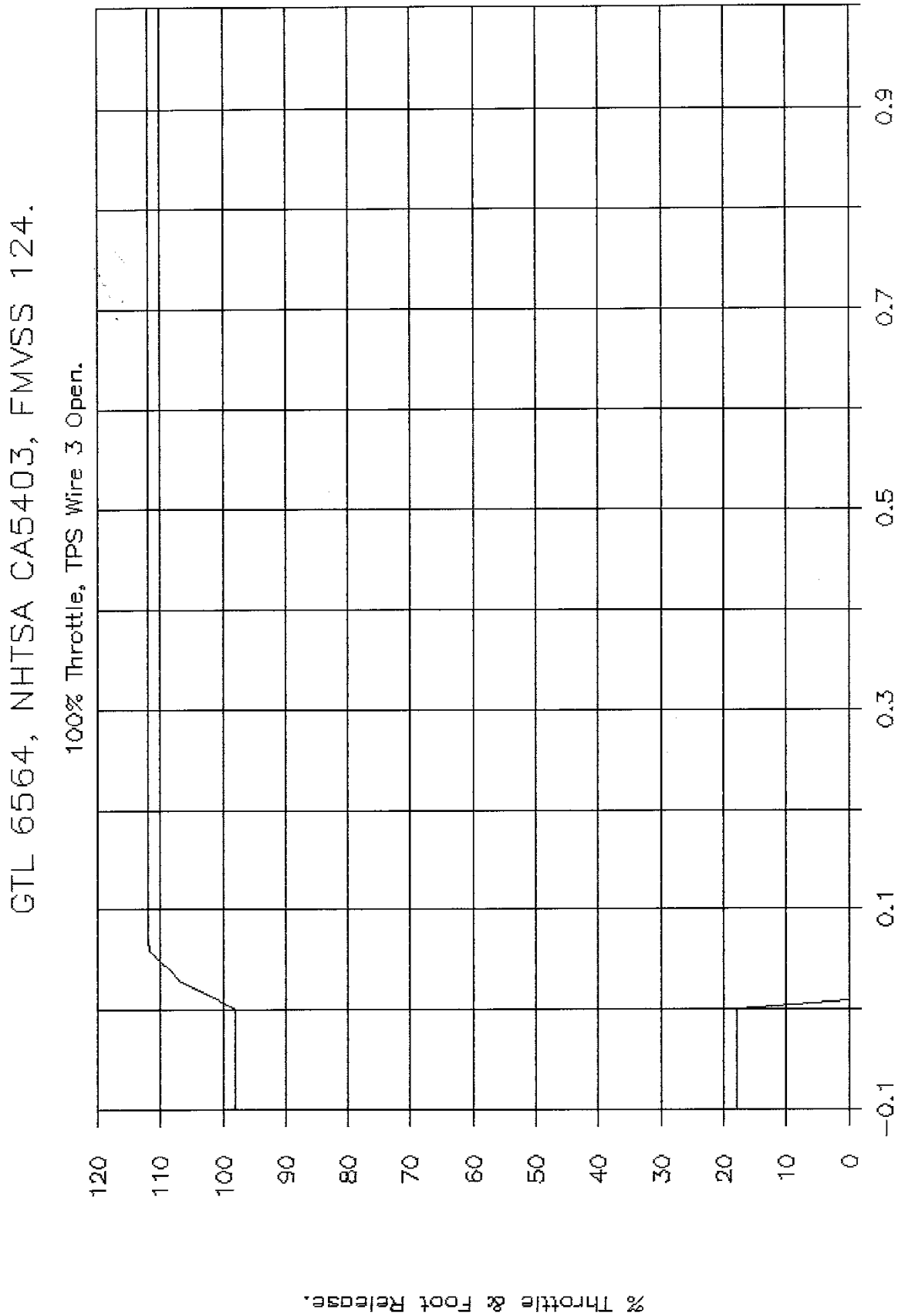

GTL 6559, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 4 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

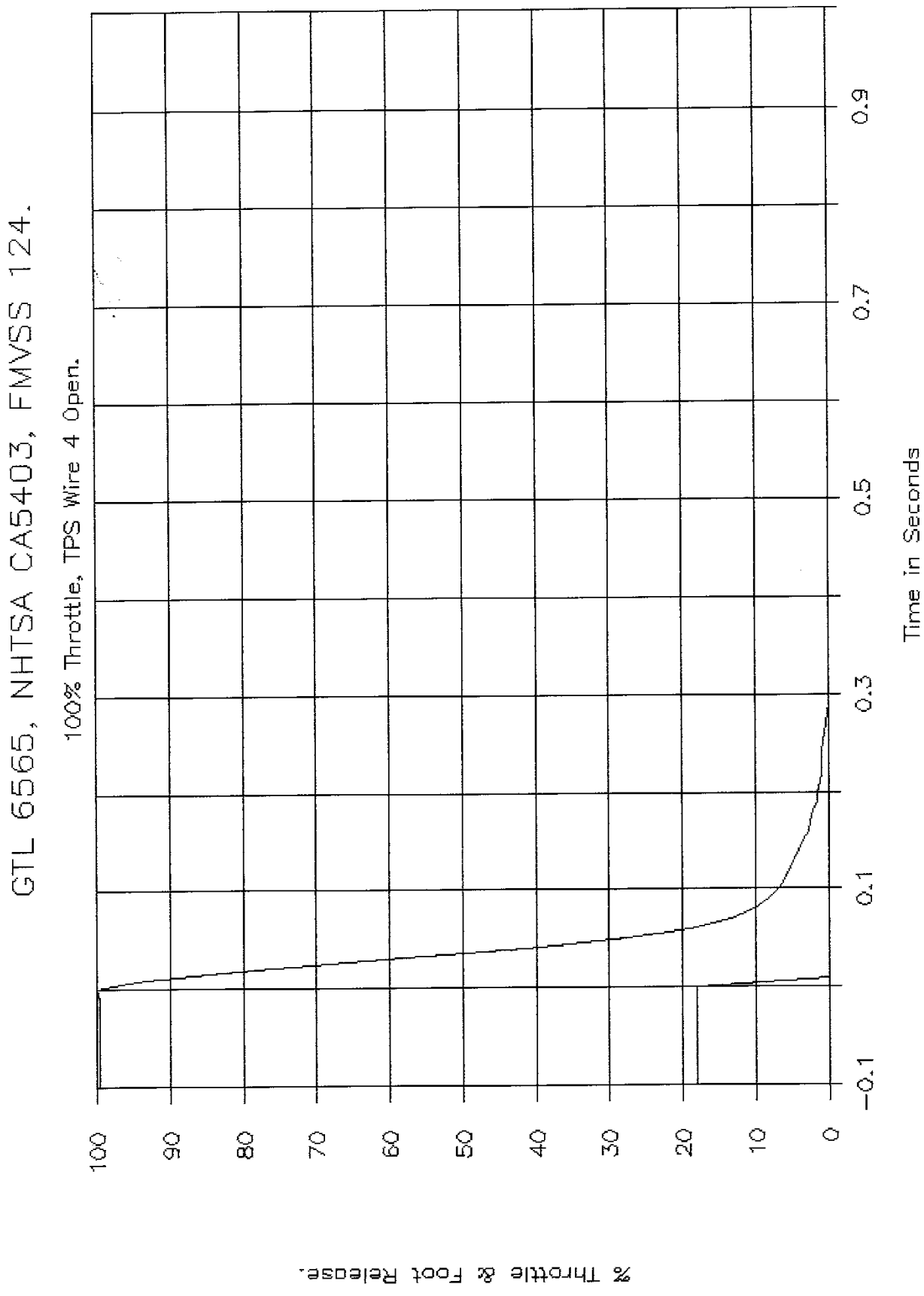

GTL 6560, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 5 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

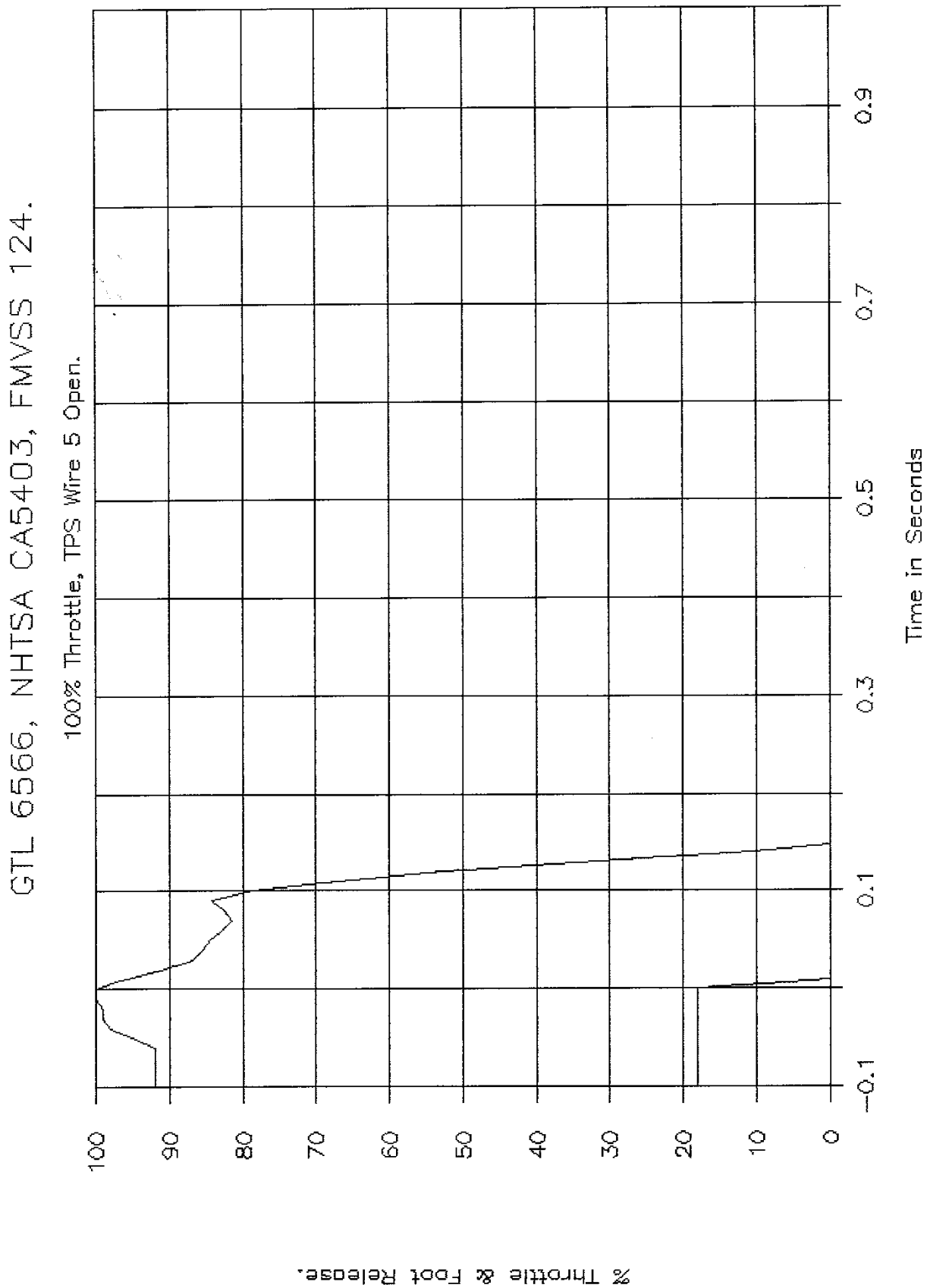

GTL 6561, NHTSA CA5403, FMVSS 124.
100% Throttle, APS Wire 6 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

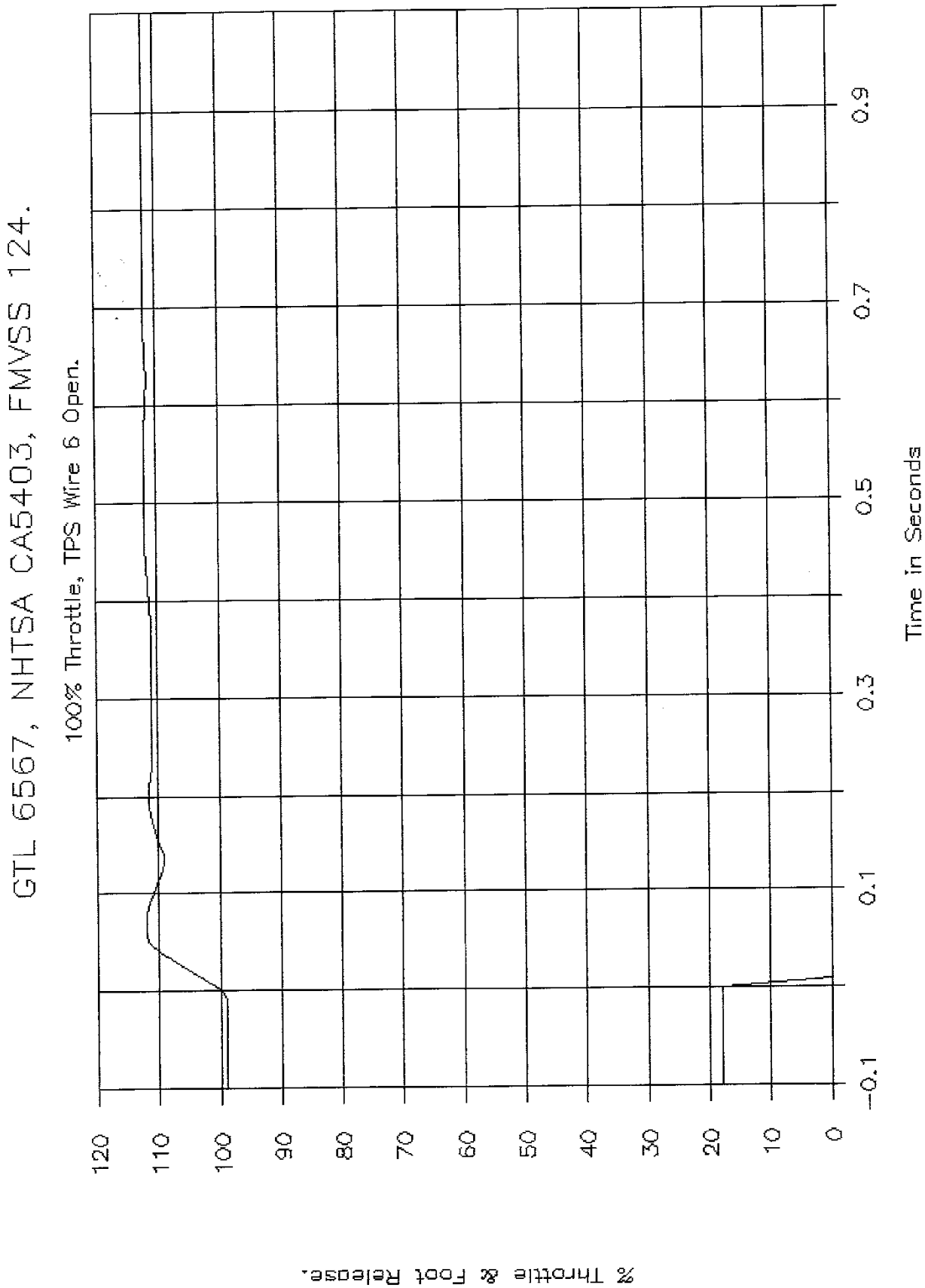

GTL 6562, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 1 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

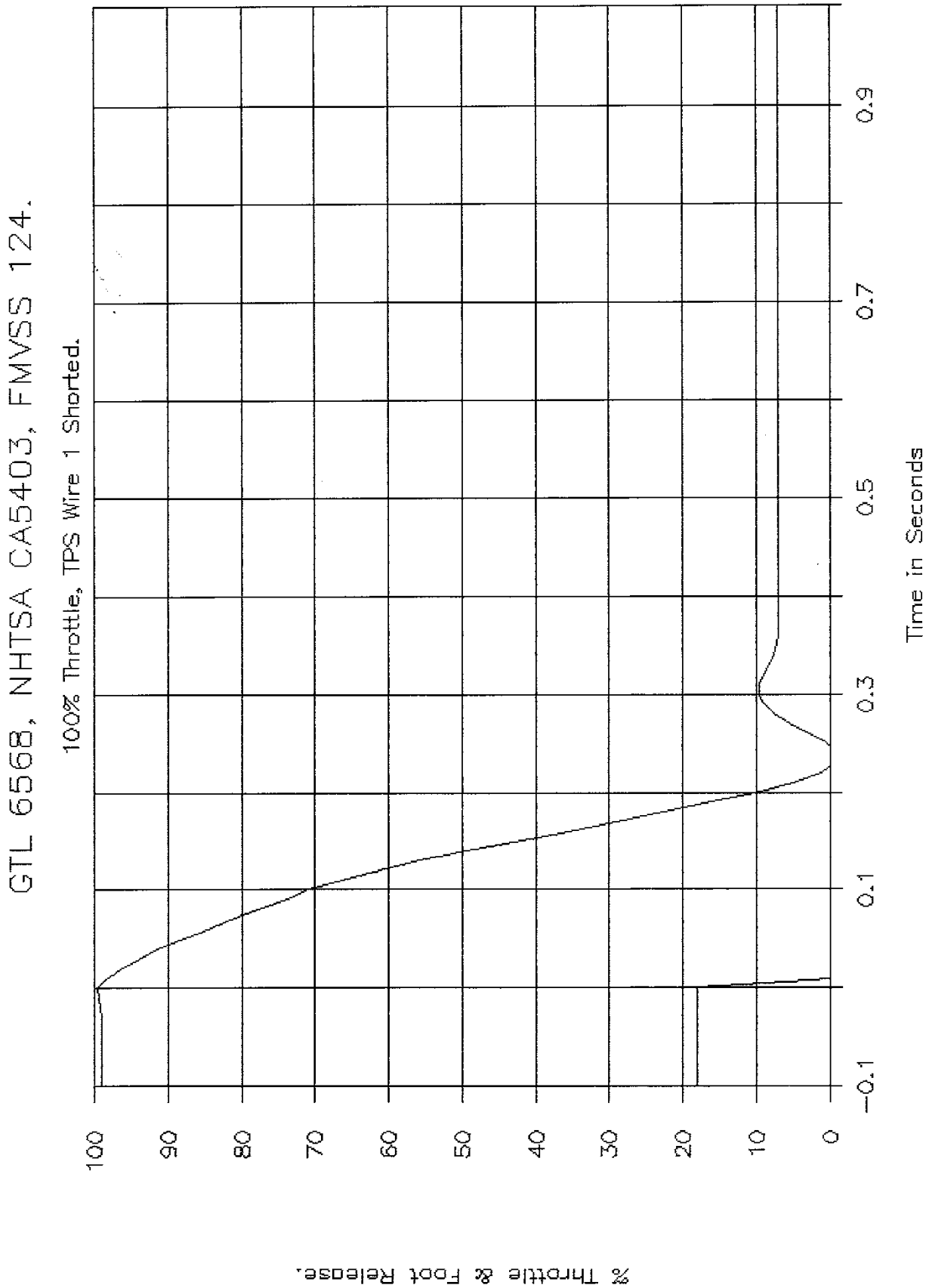

GTL 6563, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 2 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

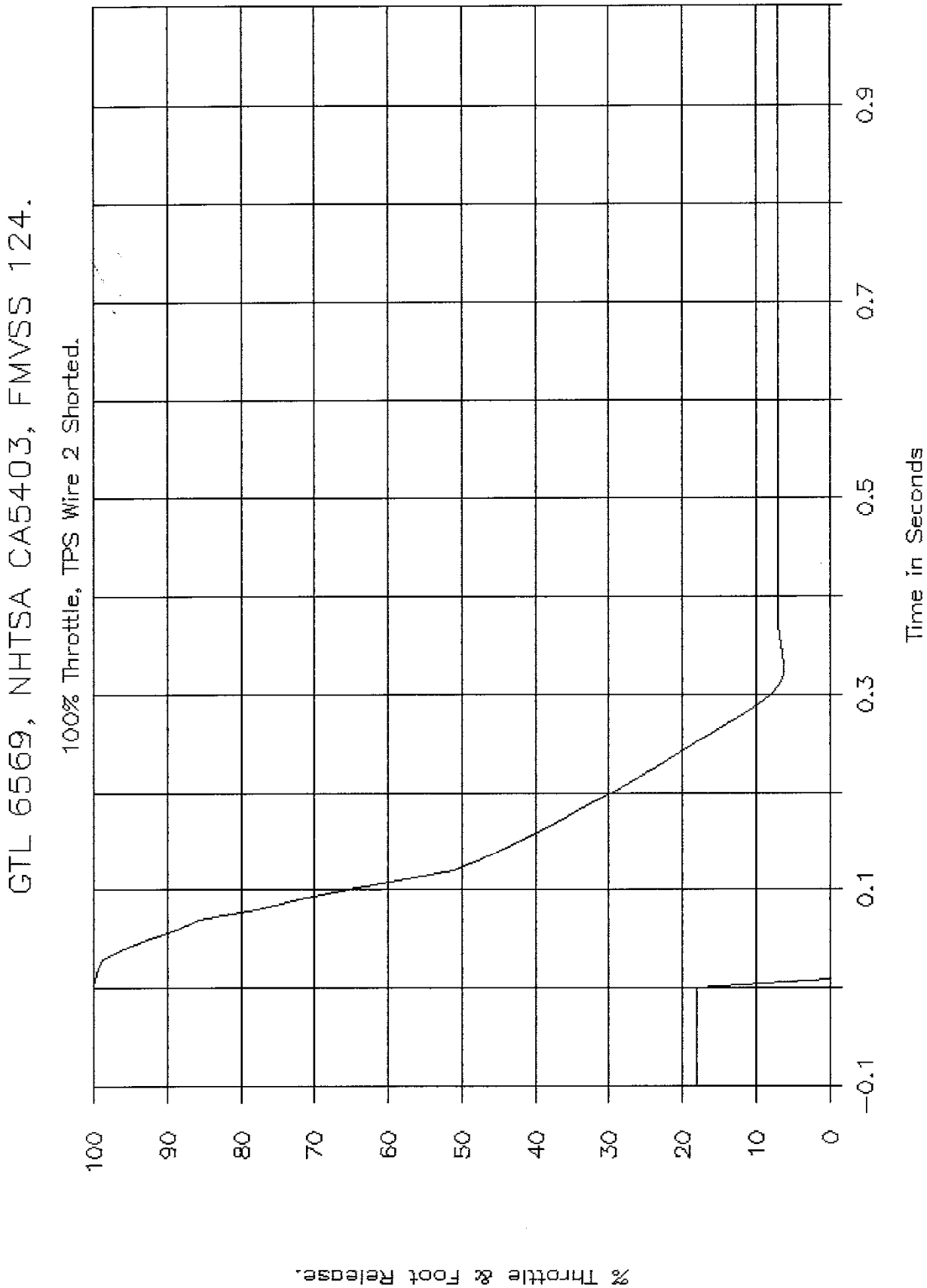

GTL 6564, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 3 Open.
% Throttle & Foot Release.
120
110
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

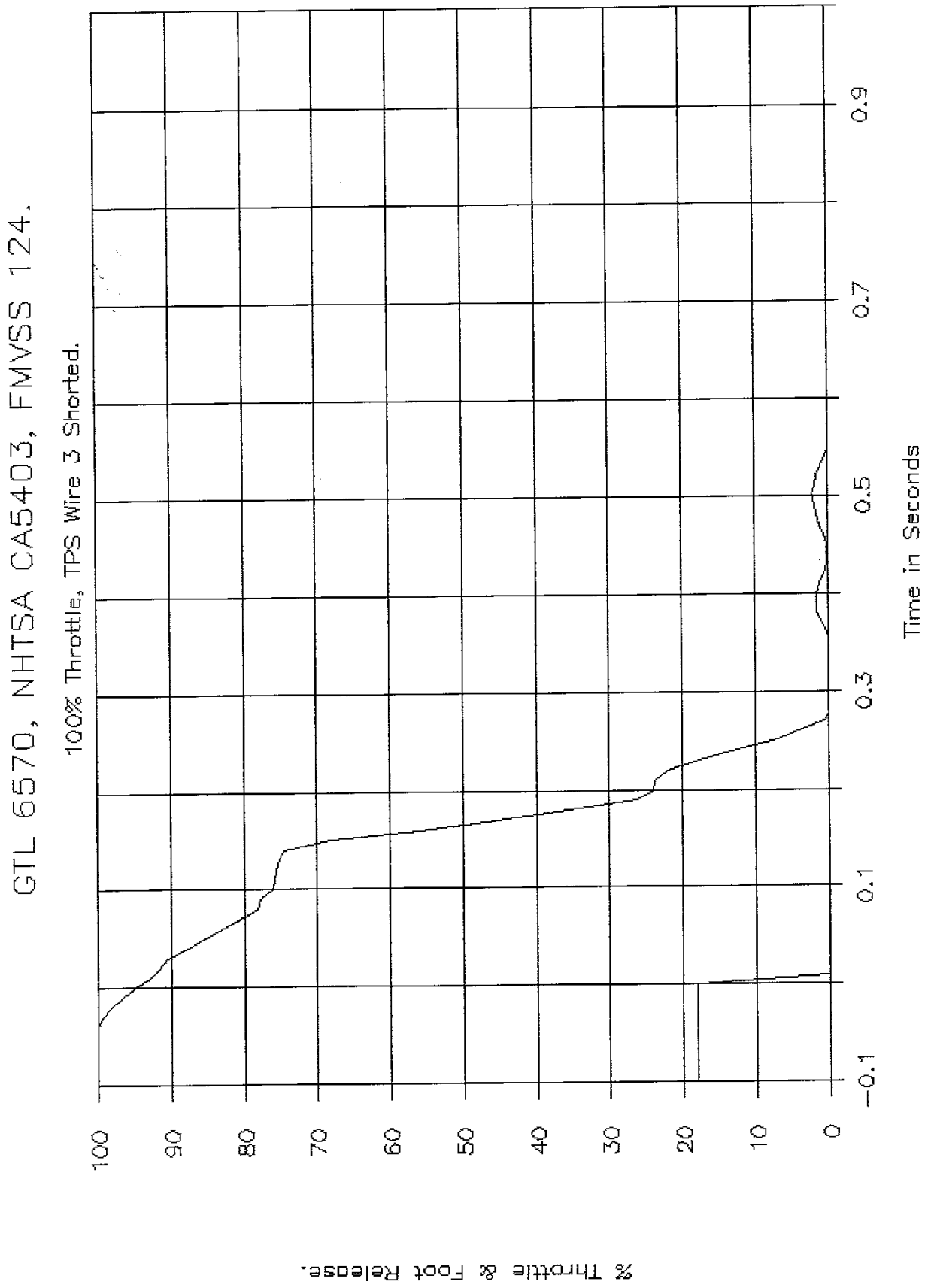

GTL 6565, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 4 Open.
% Throttle & Foot Release
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

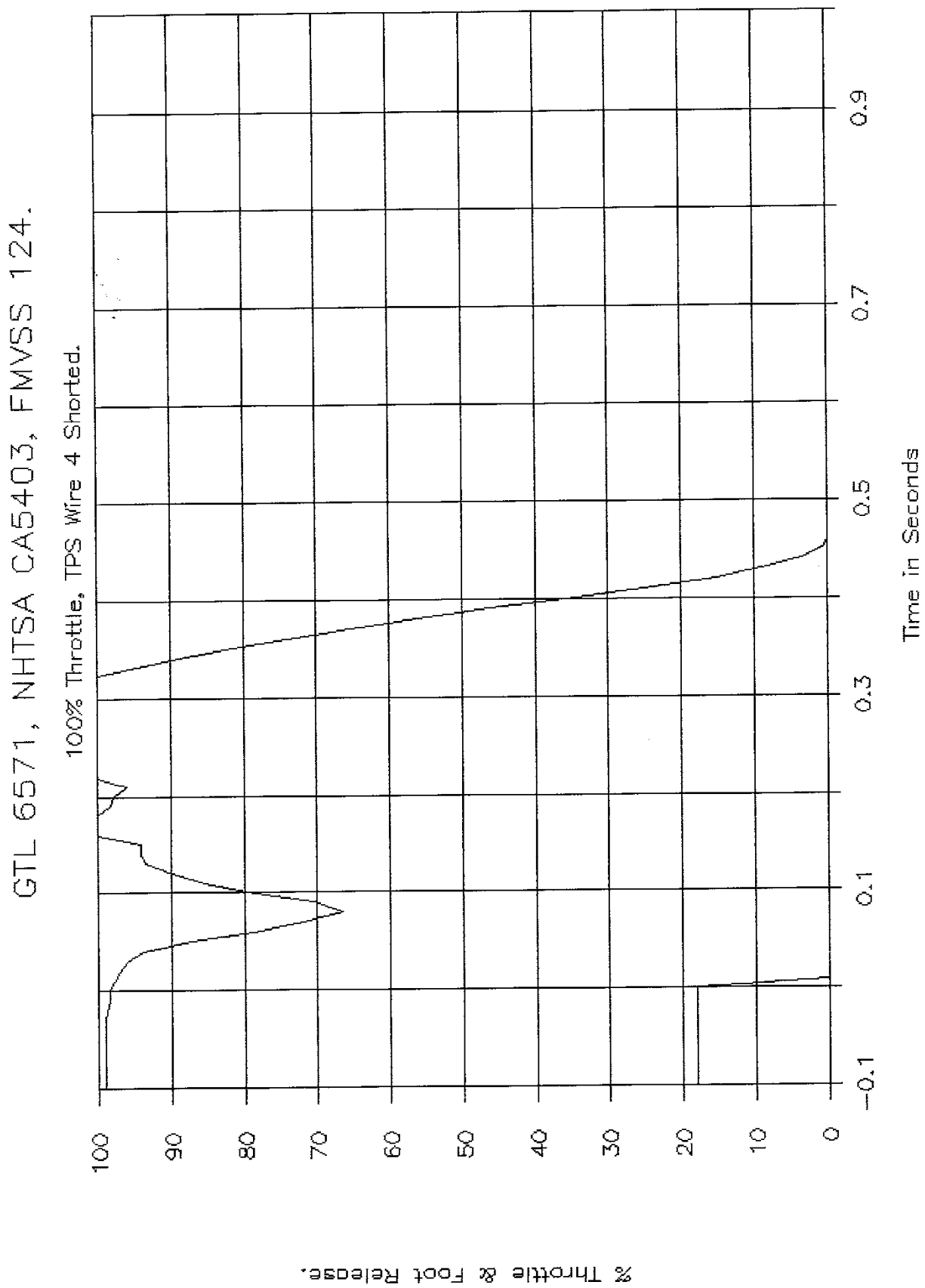

GTL 6566, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 5 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

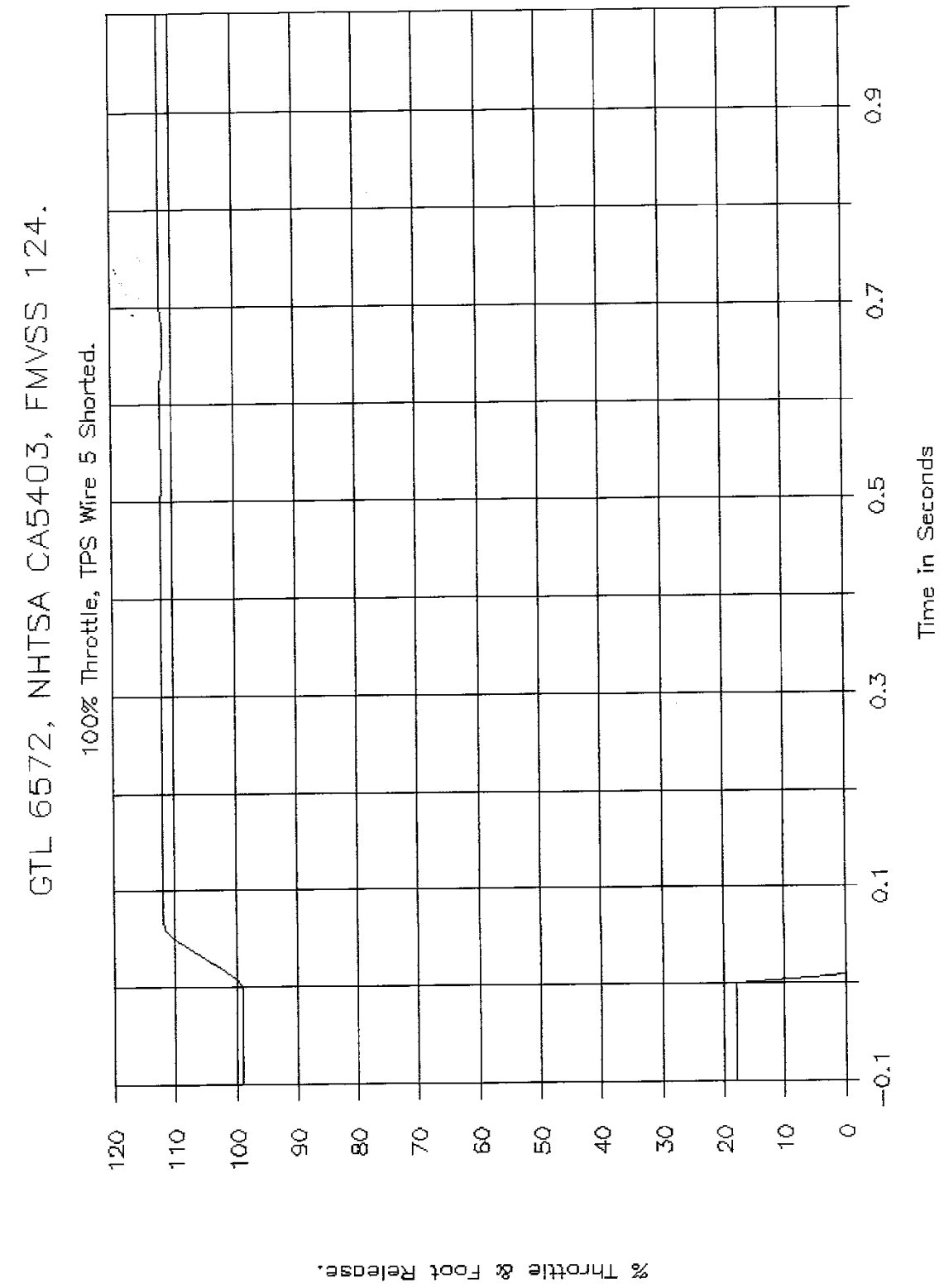

GTL 6567, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 6 Open.
% Throttle & Foot Release.
120
110
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

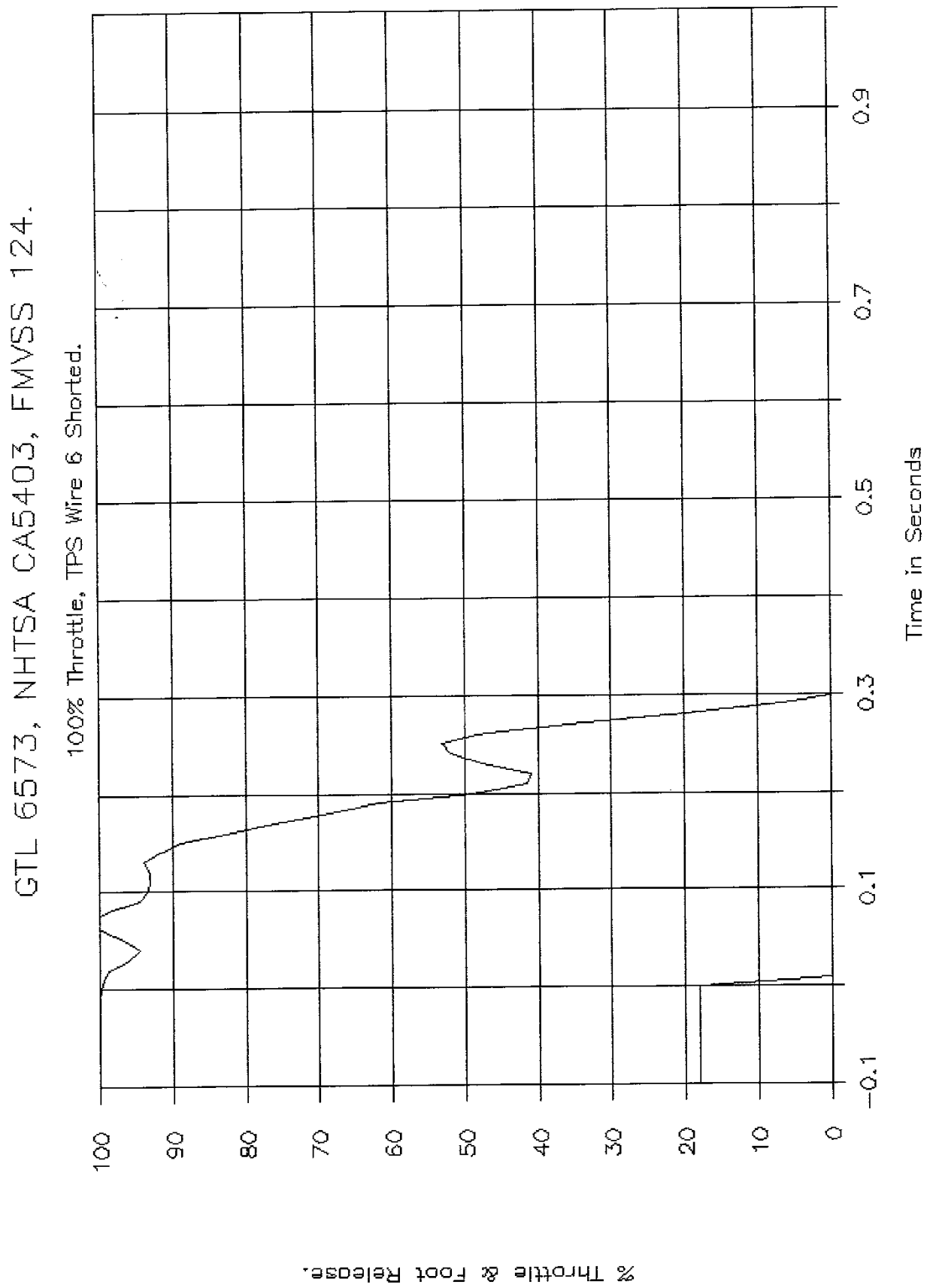

GTL 6568, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 1 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

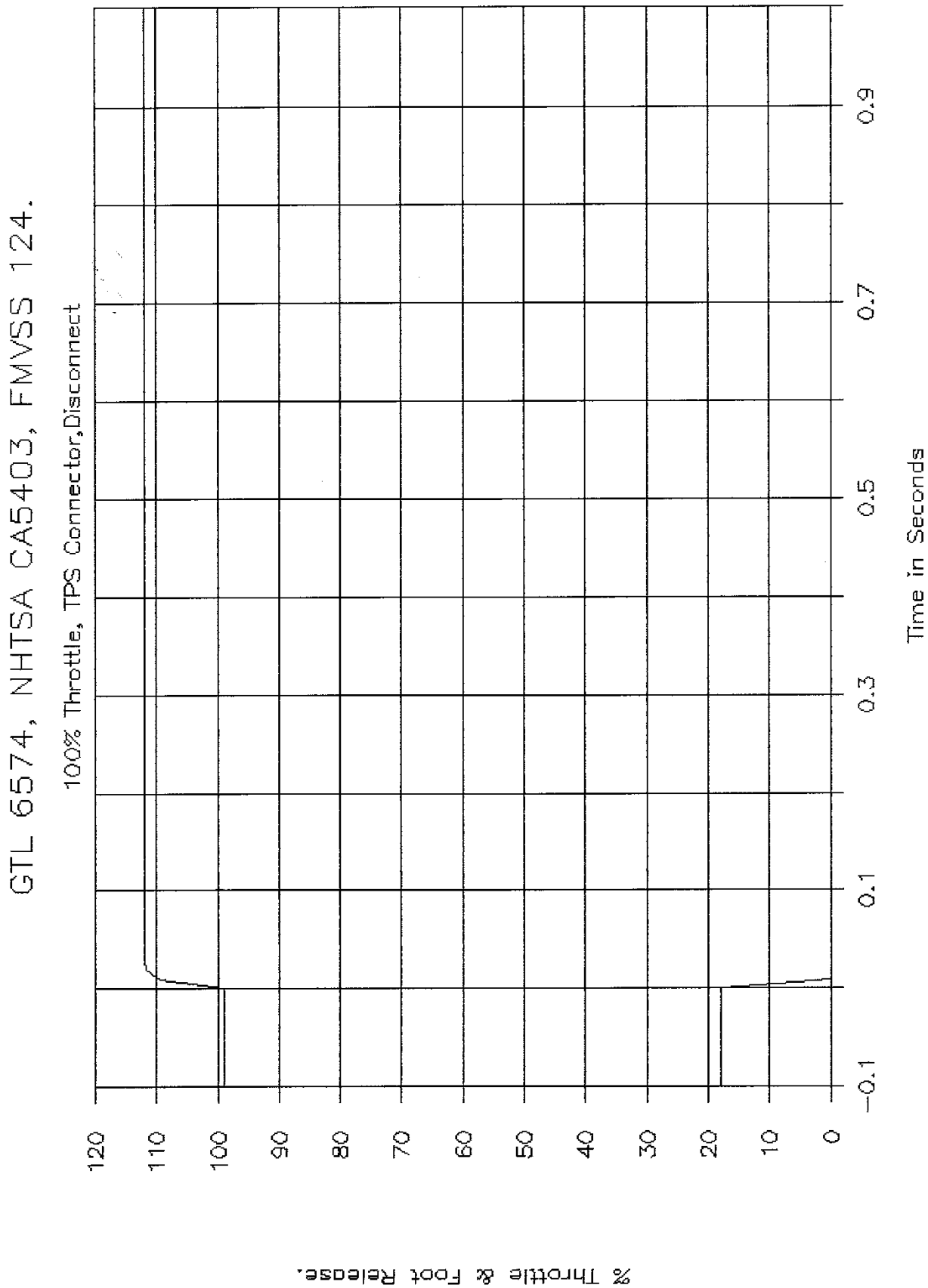

GTL 6569, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 2 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

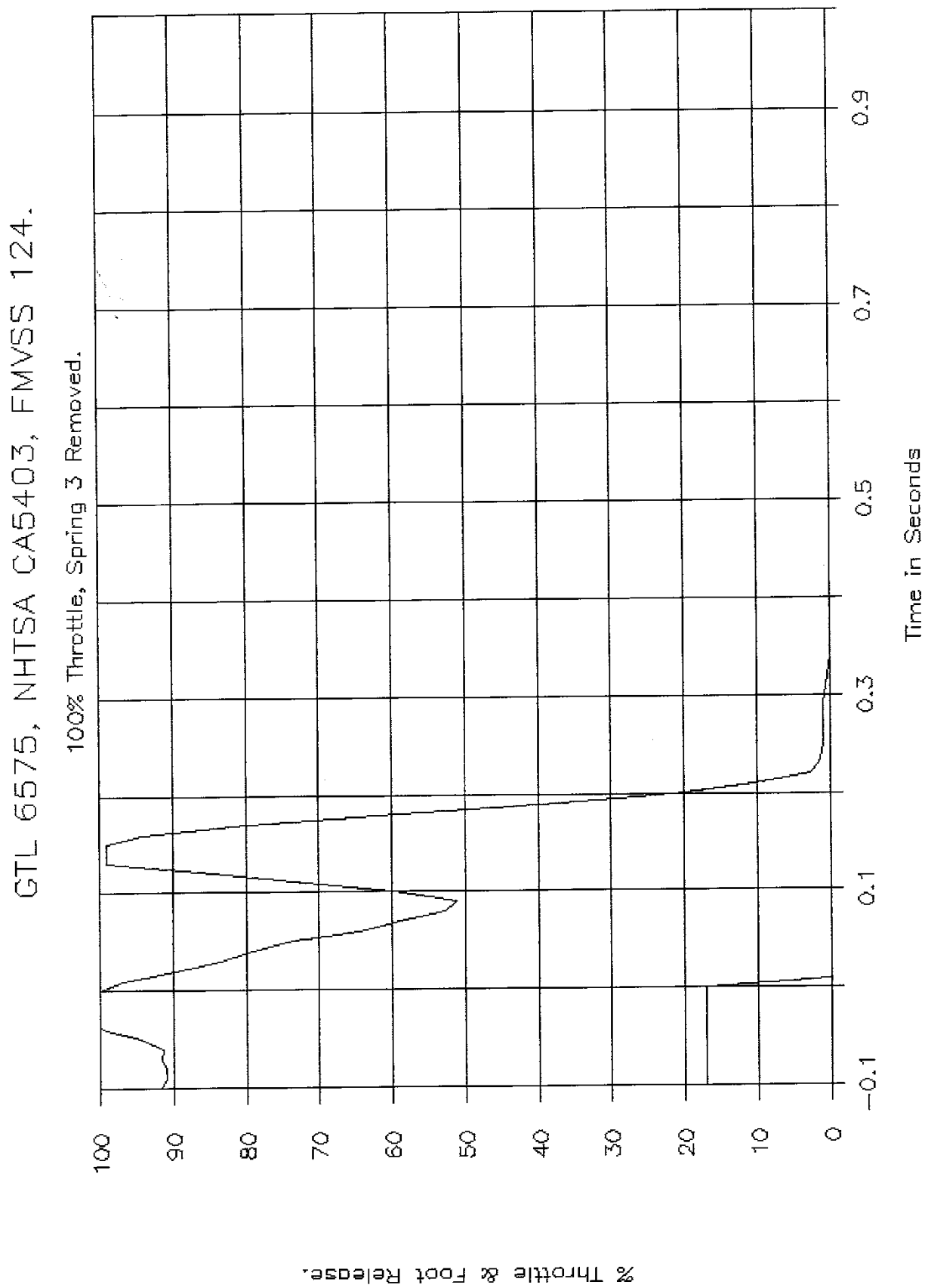

GTL 6570, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 3 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

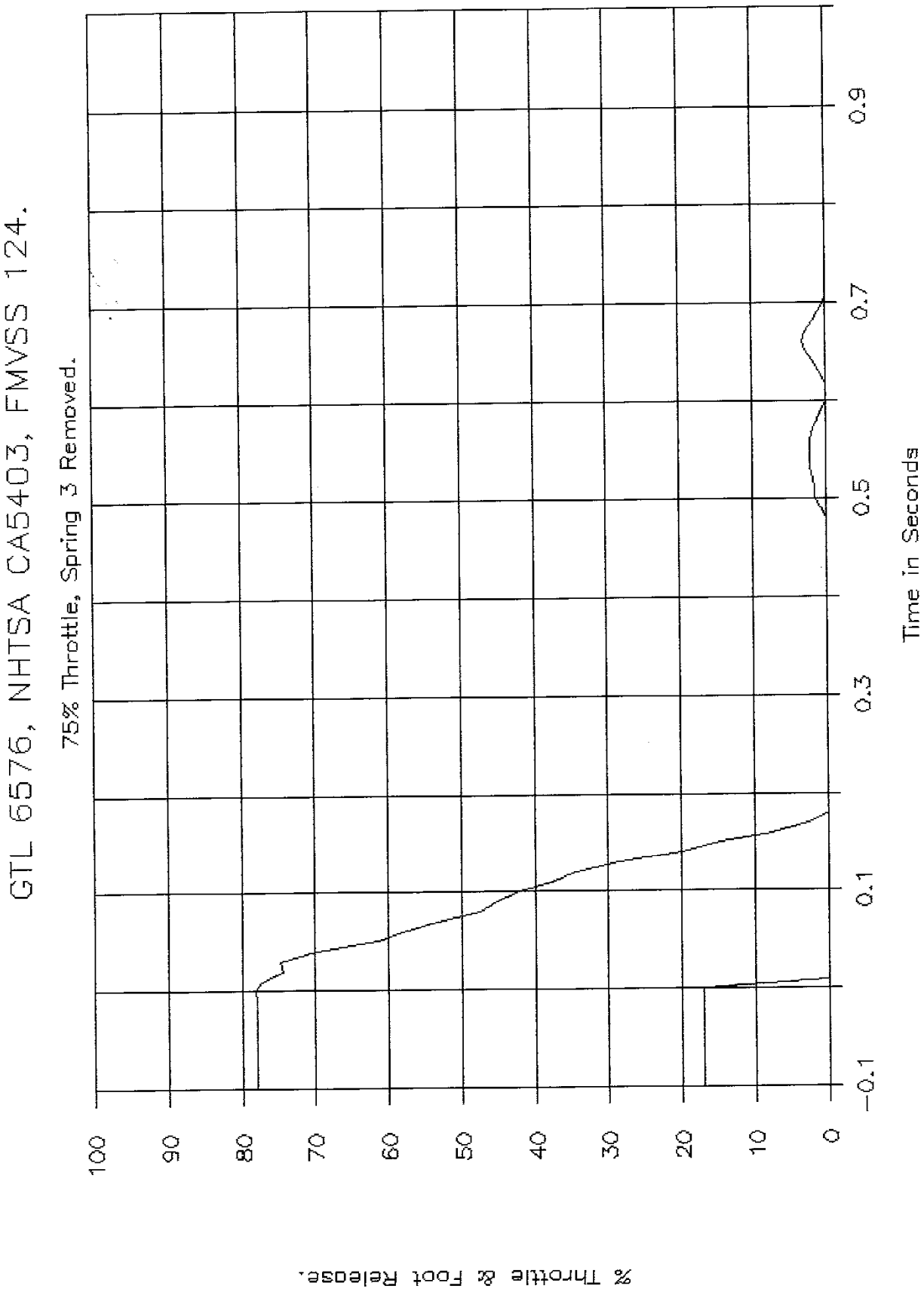

GTL 6571, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 4 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

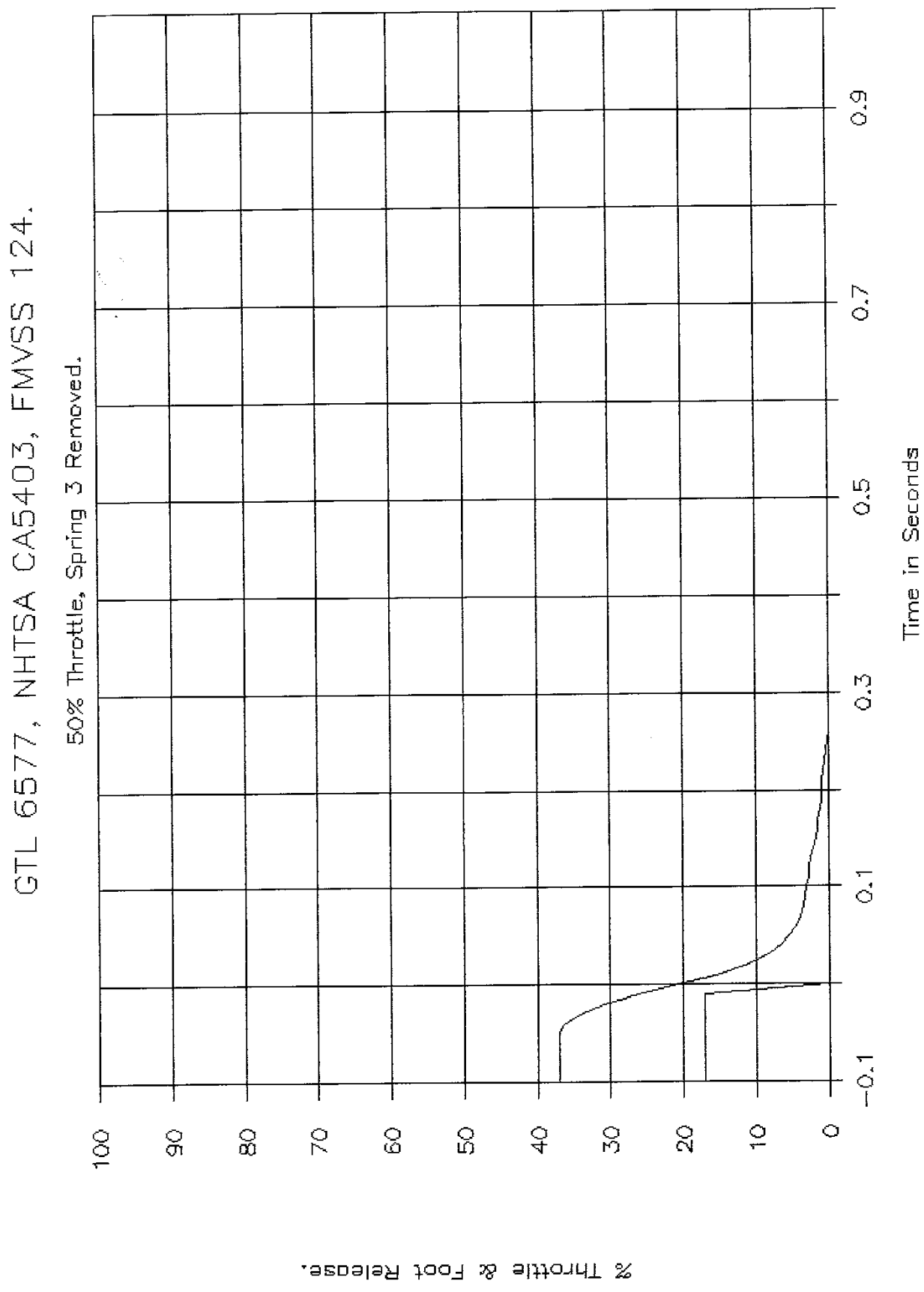

GTL 6572, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 5 Shorted.
% Throttle & Foot Release.
120
110
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

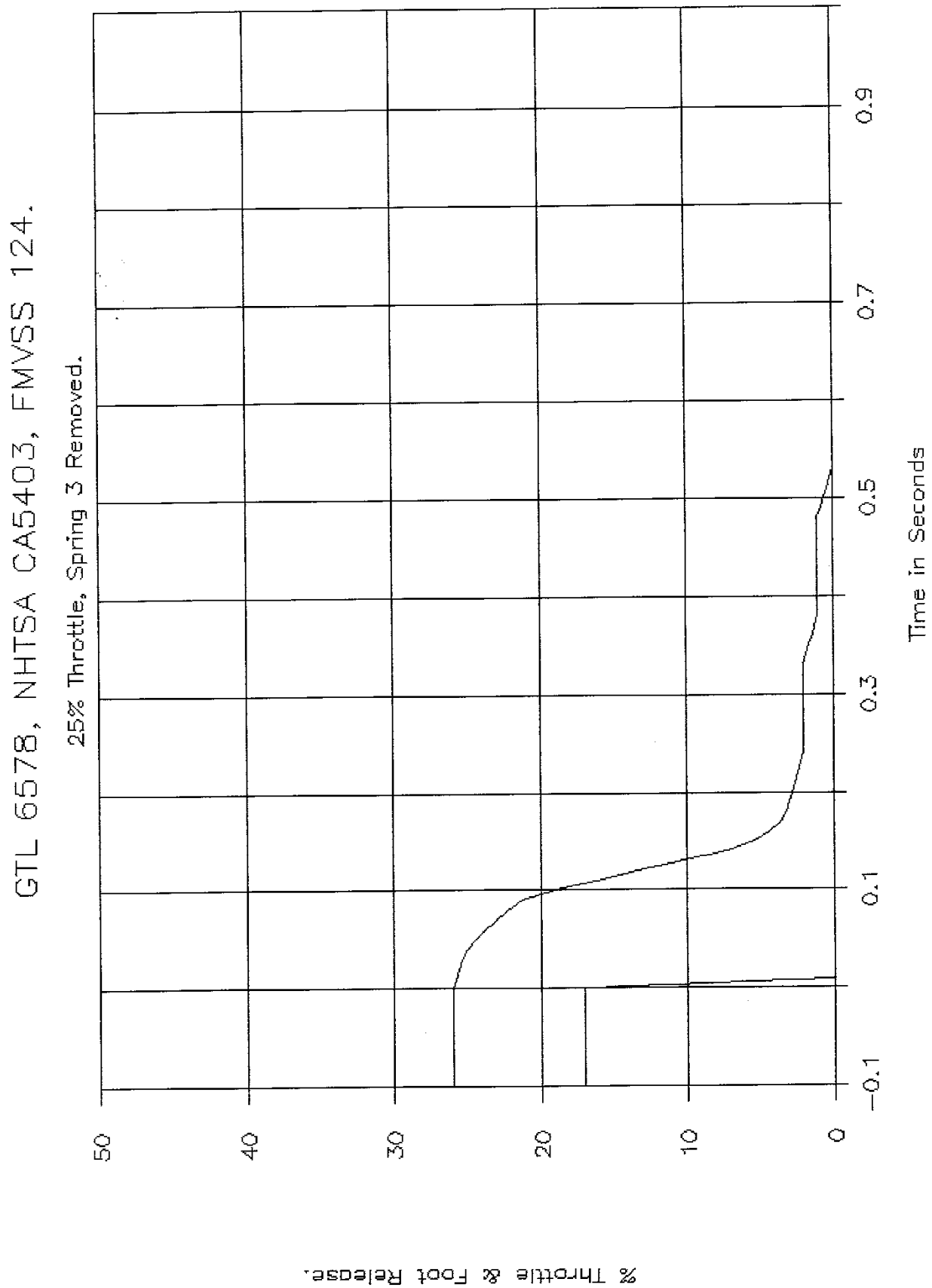

GTL 6573, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Wire 6 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6574, NHTSA CA5403, FMVSS 124.
100% Throttle, TPS Connector,Disconnect
% Throttle & Foot Release.
120
110
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6575, NHTSA CA5403, FMVSS 124.
100% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6576, NHTSA CA5403, FMVSS 124.
75% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6577, NHTSA CA5403, FMVSS 124.
50% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6578, NHTSA CA5403, FMVSS 124.
25% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds