REPORT NUMBER 124-GTL-10-004

SAFETY COMPLIANCE TESTING FOR FMVSS 124 ACCELERATOR CONTROL SYSTEMS

FORD MOTOR CO.
2010 LINCOLN MKS, PASSENGER CAR
NHTSA NO. CA0209

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

May 5, 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

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Approval Date: 05/05/10

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Accepted By: _____

Acceptance Date: 5/5/10

Technical Report Documentation Page

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15. Supplementary Notes

16. Abstract

Compliance tests were conducted on the subject 2010 Lincoln MKS 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

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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 Lincoln MKS Passenger Car, NHTSA No. CA0209 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 TPS 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 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
VEHICLE VIN: 1LNHL9DR0AG603297
DATE OF TEST: APRIL 26-27, 2010
TEST LAB: GENERAL TESTING LABORATORIES
VEHICLE ENGINE TYPE: GAS GVWR: 2404 KG
VEHICLE ENGINE SIZE: 3.7 L
VEHICLE ACCEL. CONTROL SYSTEM (ACS) (Air or Fuel Throttled): AIR
MAX. BHP ENGINE SPEED: Unknown
MFR. IDLE RPM: 625 RPM
FUEL METERING DEVICE (Carburetor, fuel injection, etc): FUEL INJECTION

REMARKS:

RECORDED BY: G. FARRAND DATE: 04/26/10

APPROVED BY: D. MESSICK

DATA SHEET 2
NORMAL OPERATION TEST
(fully operational system)

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
DATE OF TEST: APRIL 26, 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			
6493	100%	99%	625	200	76	17%-18%	580	P
6494	75%	68%	625	201	76	17%-18%	730	P
6495	50%	48%	625	200	76	17%-18%	620	P
6496	25%	25%	625	199	76	17%-18%	290	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: 04/26/10

APPROVED BY: D. MESSICK

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

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
DATE OF TEST: APRIL 26, 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			
6497	100%	99%	625	200	76	17%-18%	800	P
6498	75%	72%	625	202	76	17%-18%	720	P
6499	50%	47%	625	201	76	17%-18%	610	P
6500	25%	24%	625	204	76	17%-18%	310	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: 04/26/10

APPROVED BY: D. MESSICK

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

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
DATE OF TEST: APRIL 26, 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			
6501	100%	99%	625	200	76	17%-18%	790	P
6502	75%	72%	625	200	76	17%-18%	680	P
6503	50%	48%	625	201	76	17%-18%	590	P
6504	25%	25%	625	201	76	17%-18%	310	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: 04/26/10

APPROVED BY: D. MESSICK

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

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
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			
6520	100%	99%	625	198	67	17%-18%	830	P
6521	75%	82%	625	199	67	17%-18%	780	P
6522	50%	47%	625	200	67	17%-18%	630	P
6523	25%	25%	625	200	67	17%-18%	430	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: 04/27/10

APPROVED BY: D. MESSICK

DATA SHEET 4
FAIL-SAFE OPERATION
DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
DATE OF TEST: APRIL 26, 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			
6505	100%	99%	625	200	75	17%-18%	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: *Limp home mode at 840 RPM.

RECORDED BY: G. FARRAND DATE: 04/26/10

APPROVED BY: D. MESSICK

DATA SHEET 5
FMVSS 124

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2010 LINCOLN MKS PASSENGER CAR
VEHICLE NHTSA NO.: CA0209
DATE OF TEST: APRIL 27, 2010

GTL #	CONNECTOR	WIRE/PIN DESCRIPTION	FAULT CONDITION	ENGINE TEMP. °F	% THROTTLE/ RETURN TIME (MS)	PASS/FAIL/NOTES
6506	APS	#1/Purple/Green	OPEN	200	100/800	P
6507	APS	#2/Yellow/Orange	OPEN	200	100/610*	P
6508	APS	#3/Yellow/Green	OPEN	199	100/570	P
6509	APS	#4/Blue/White	OPEN	200	100/780	P
6510	APS	#5/Green/Yellow	OPEN	200	100/730	P
6511	APS	#6/Blue/Gray	OPEN	200	100/750	P
6512	APS	#7/Green/White	OPEN	199	100/780	P
6513	APS	#1/Purple/Green	SHORT	199	100/770	P
6514	APS	#2/Yellow/Orange	SHORT	200	100/720	P
6515	APS	#3/Yellow/Green	SHORT	199	100/770	P
6516	APS	#4/Blue/White	SHORT	198	100/590	P
6517	APS	#5/Green/Yellow	SHORT	199	100/20**	P
6518	APS	#6/Blue/Gray	SHORT	200	100/20**	P
6519	APS	#7/Green/White	SHORT	201	100/760	P
6524	TPS	#1/Brown	OPEN	200	100/350*	P
6525	TPS	#2/Blue/Orange	OPEN	200	100/300**	P
6526	TPS	#3/Yellow	OPEN	200	100/20**	P
6527	TPS	#4/Green/Brown	OPEN	199	100/230**	P
6528	TPS	#5/Yellow/Brown	OPEN	198	100/80*	P
6529	TPS	#6/Green/Black	OPEN	199	100/110*	P
6530	TPS	1 through 6	DISCONNECT	200	100/60**	P
6531	TPS	#1	SHORTED	200	100/730	P
6532	TPS	#2	SHORTED	198	100/900	P
6533	TPS	#3	SHORTED	199	100/10**	P
6534	TPS	#4	SHORTED	199	100/10	P
6535	TPS	#5	SHORTED	200	100/70*	P
6536	TPS	#6	SHORTED	200	100/240**	P

*Limp Home Mode at 840 RPM and 25%.
**Limp Home Mode at 1300 RPM and 27%.

REMARKS: Wires in TPS connector also control throttle plate motor.
Data trace #6525 and 6527 – Return to idle state time is based on Laboratory Observations and is estimated as the TPS output is lost during the failures.

RECORDED BY: G. FARRAND DATE: 04/27/10

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 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

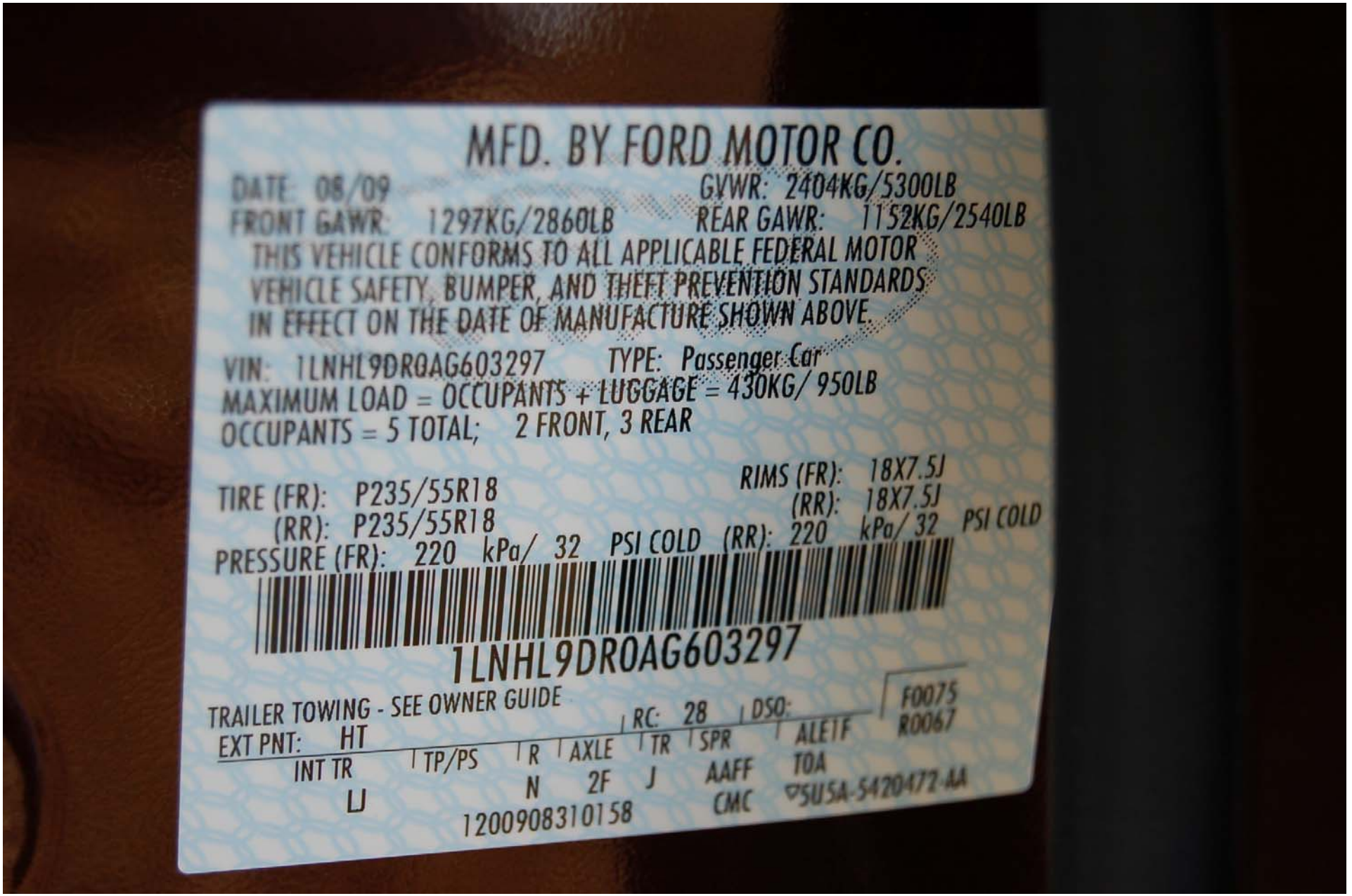
FIGURE 5.1
FRONT VIEW OF VEHICLE

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE

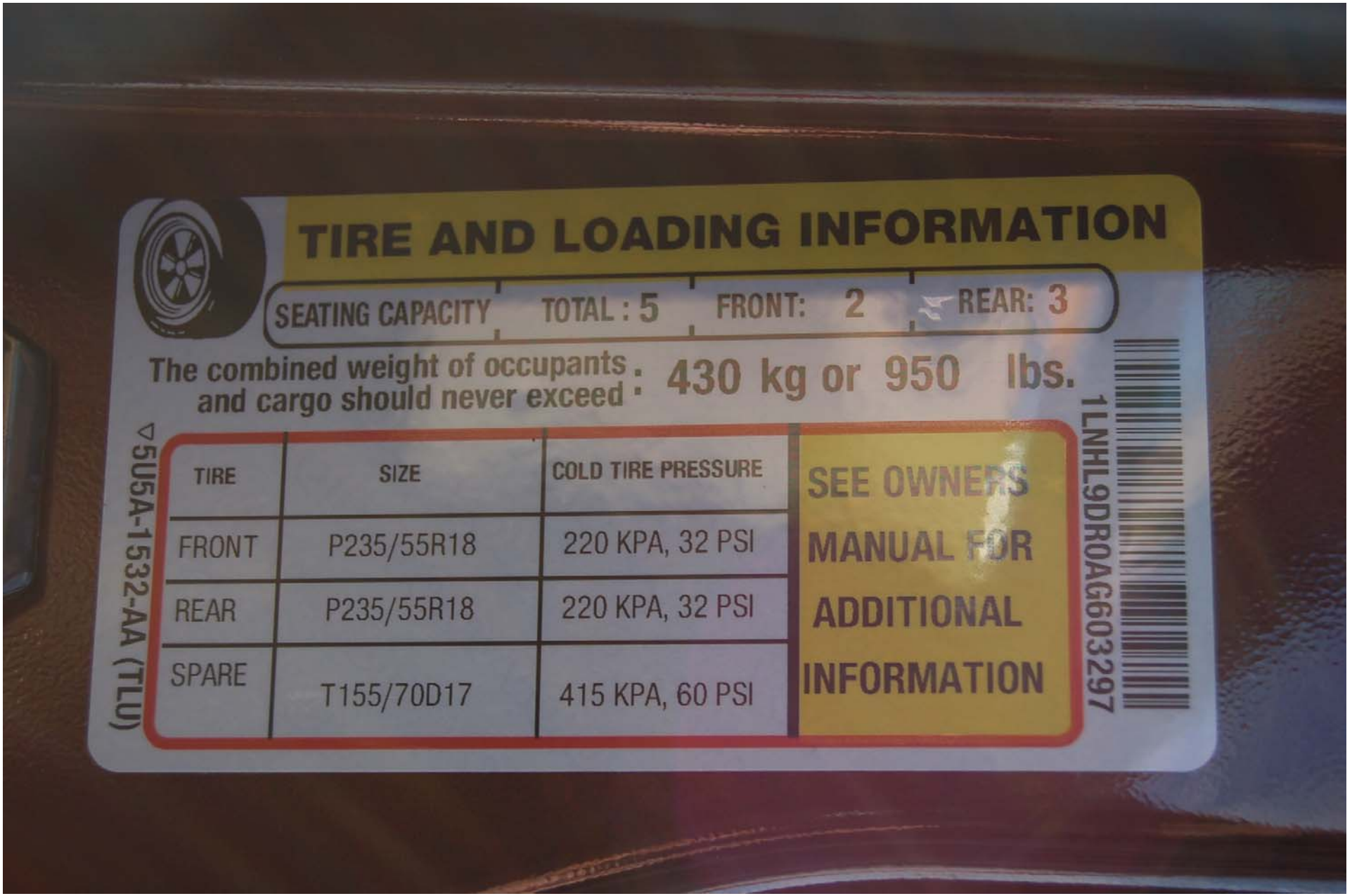
2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE



2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.4
CLOSE-UP VIEW OF VEHICLE CERTIFICATION LABEL



2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.5
CLOSE-UP VIEW OF VEHICLE PLACARD

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.6
APS AND ACCELERATOR PEDAL ASSEMBLY

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.7
CLOSE-UP OF SPRINGS 1 & 2

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.8
CLOSE-UP OF SPRINGS 1 & 2

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

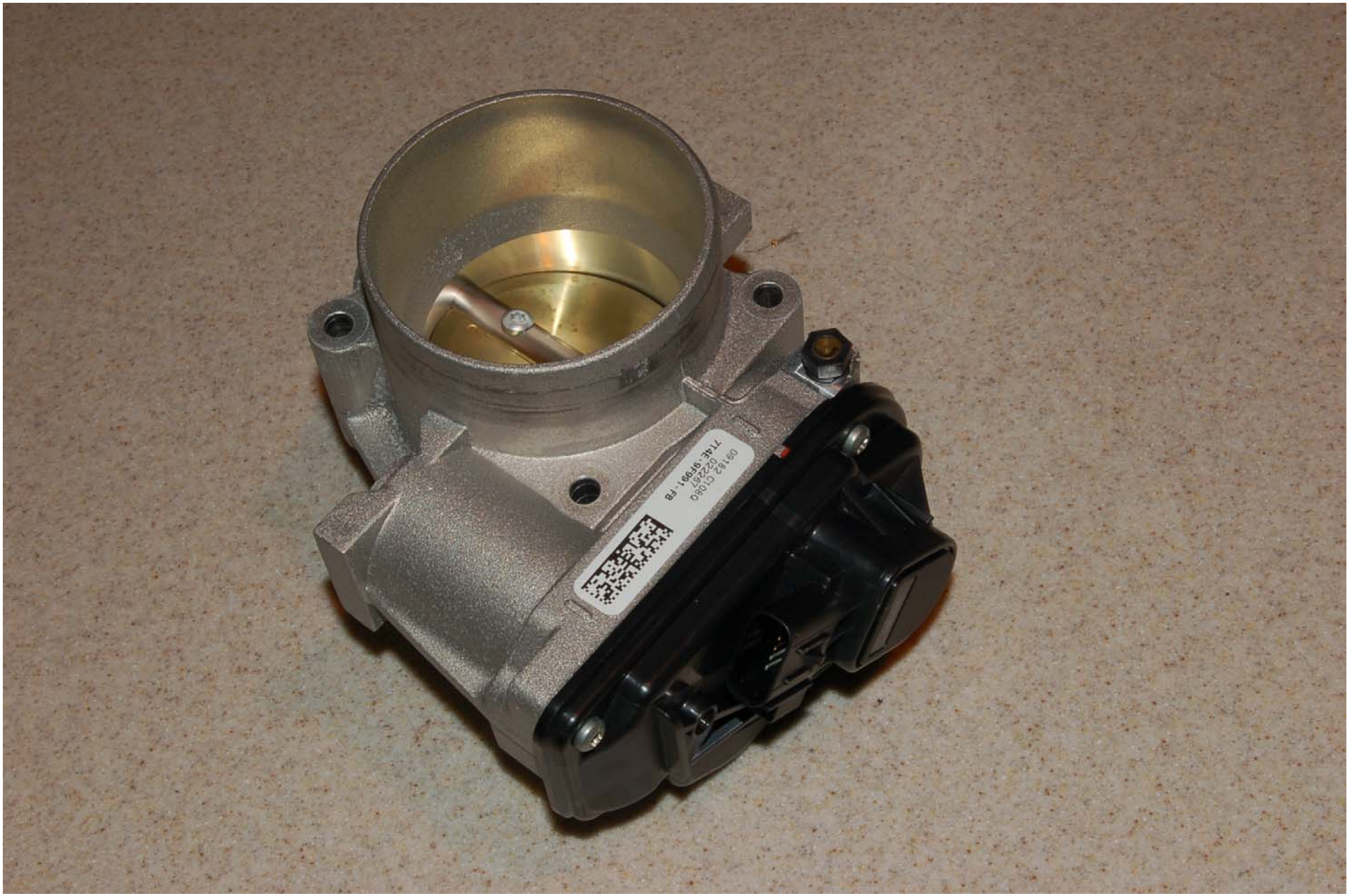
FIGURE 5.9
TEST SET-UP

2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.10
ACCELERATOR TEST SET-UP

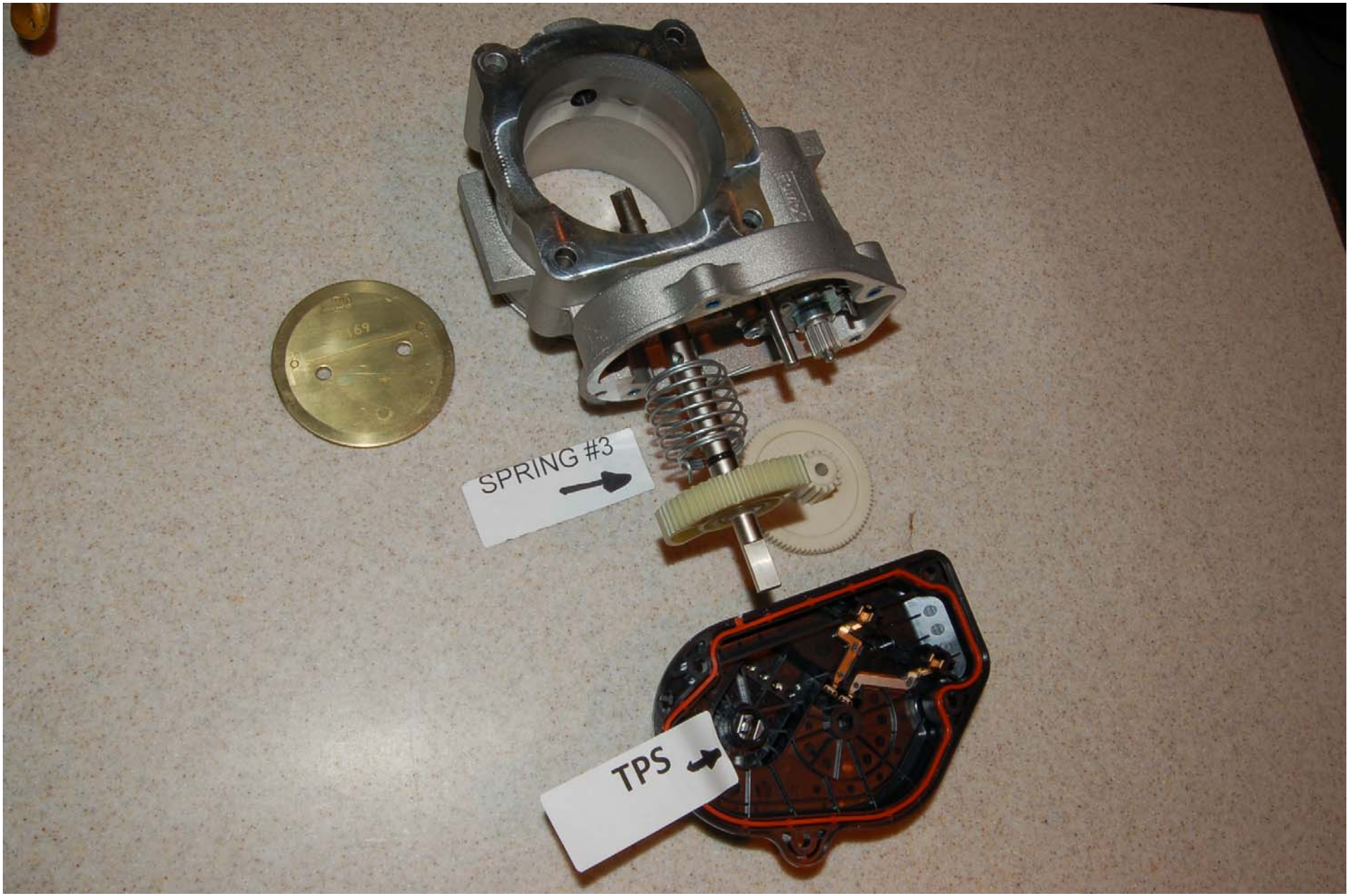
2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.11
ENGINE INSTRUMENTATION SET-UP



2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

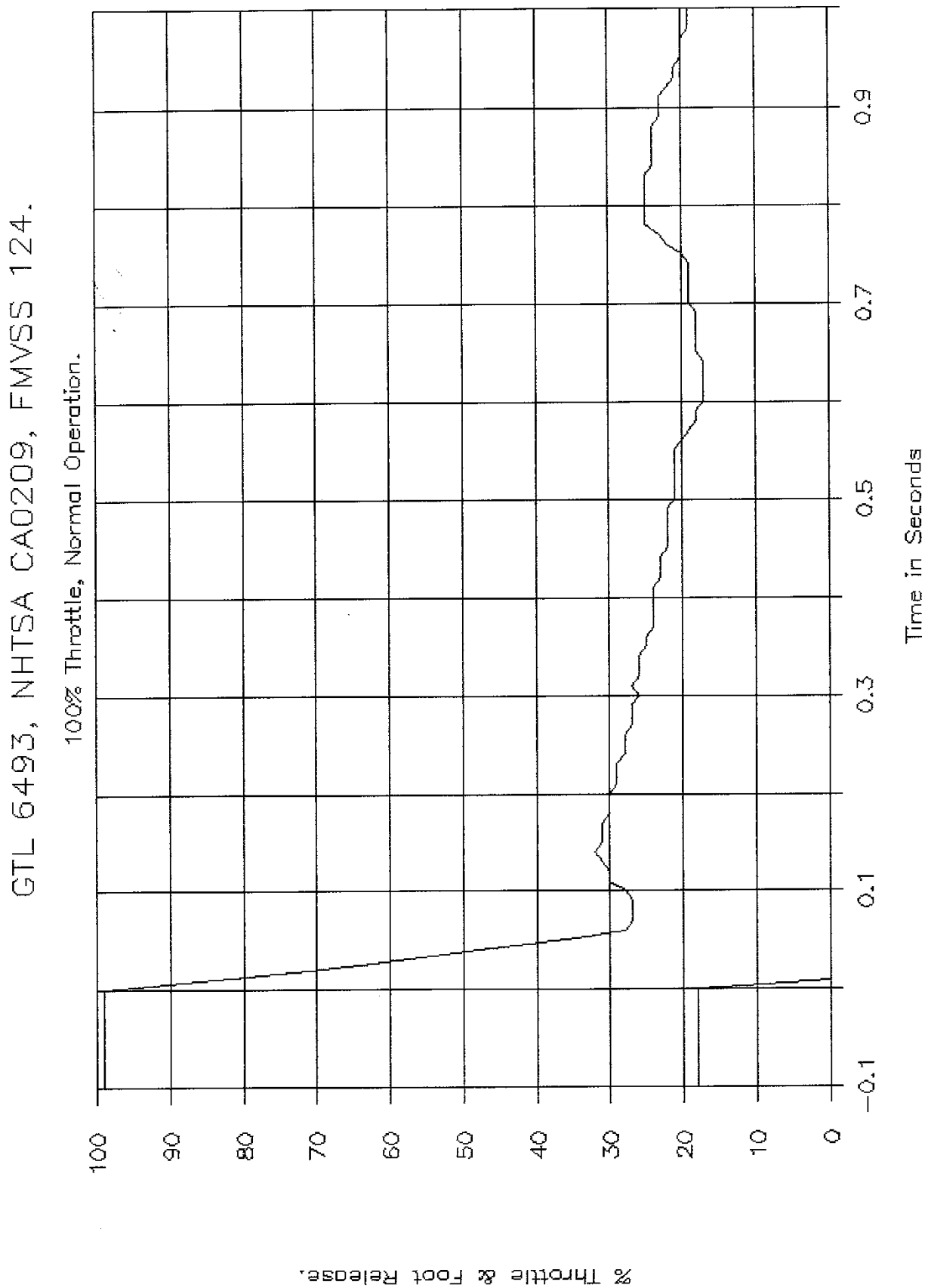
FIGURE 5.12
THROTTLE BODY

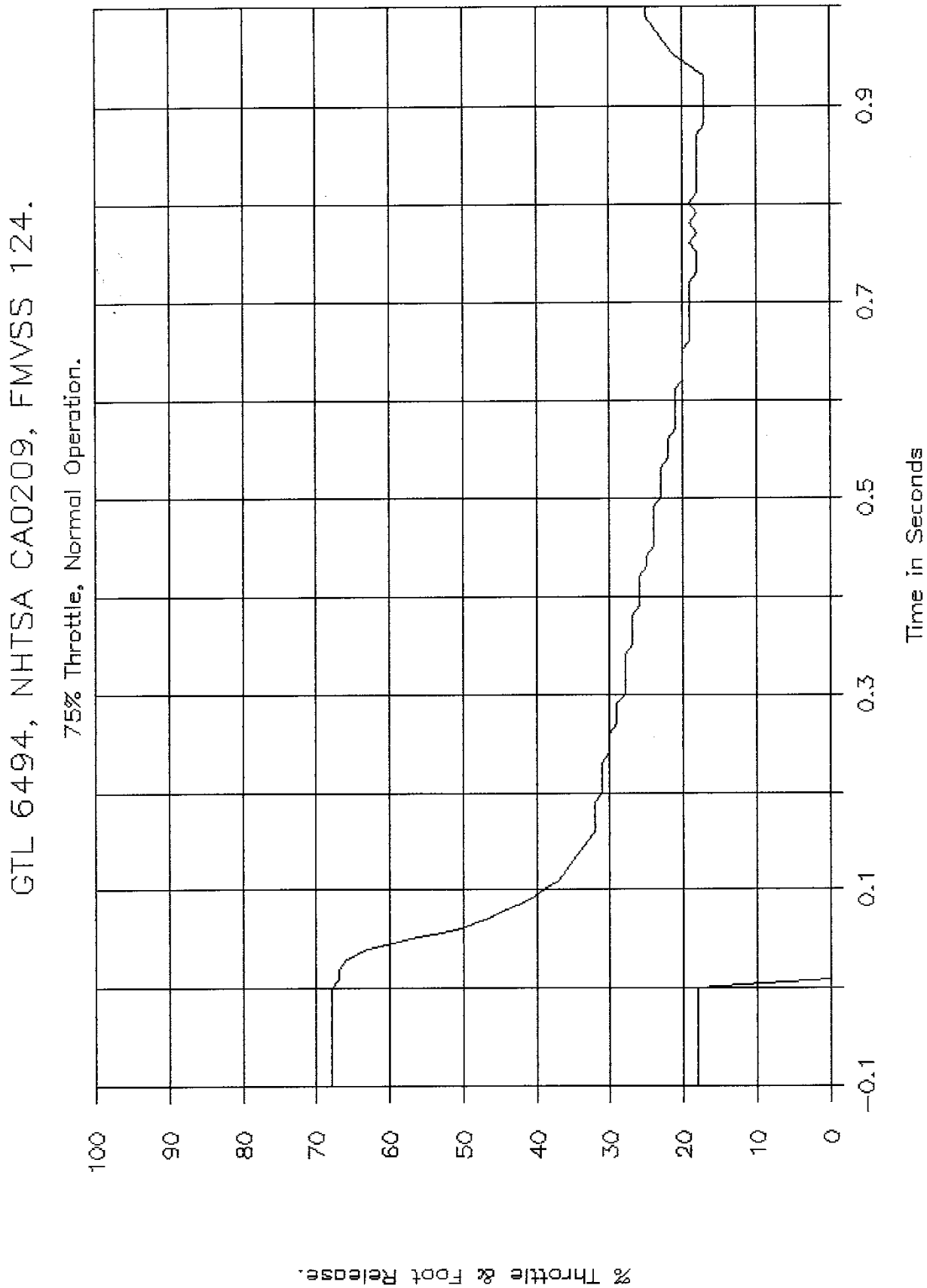


2010 LINCOLN MKS
NHTSA NO. CA0209
FMVSS NO. 124

FIGURE 5.13
TPS AND SPRING 3

SECTION 6
PLOTS


GTL 6493, NHTSA CA0209, FMVSS 124.
100% Throttle, Normal Operation.
% 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 6494, NHTSA CA0209, FMVSS 124.
75% Throttle, Normal Operation.
% Throttle & Foot Release.
Time in Seconds
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10
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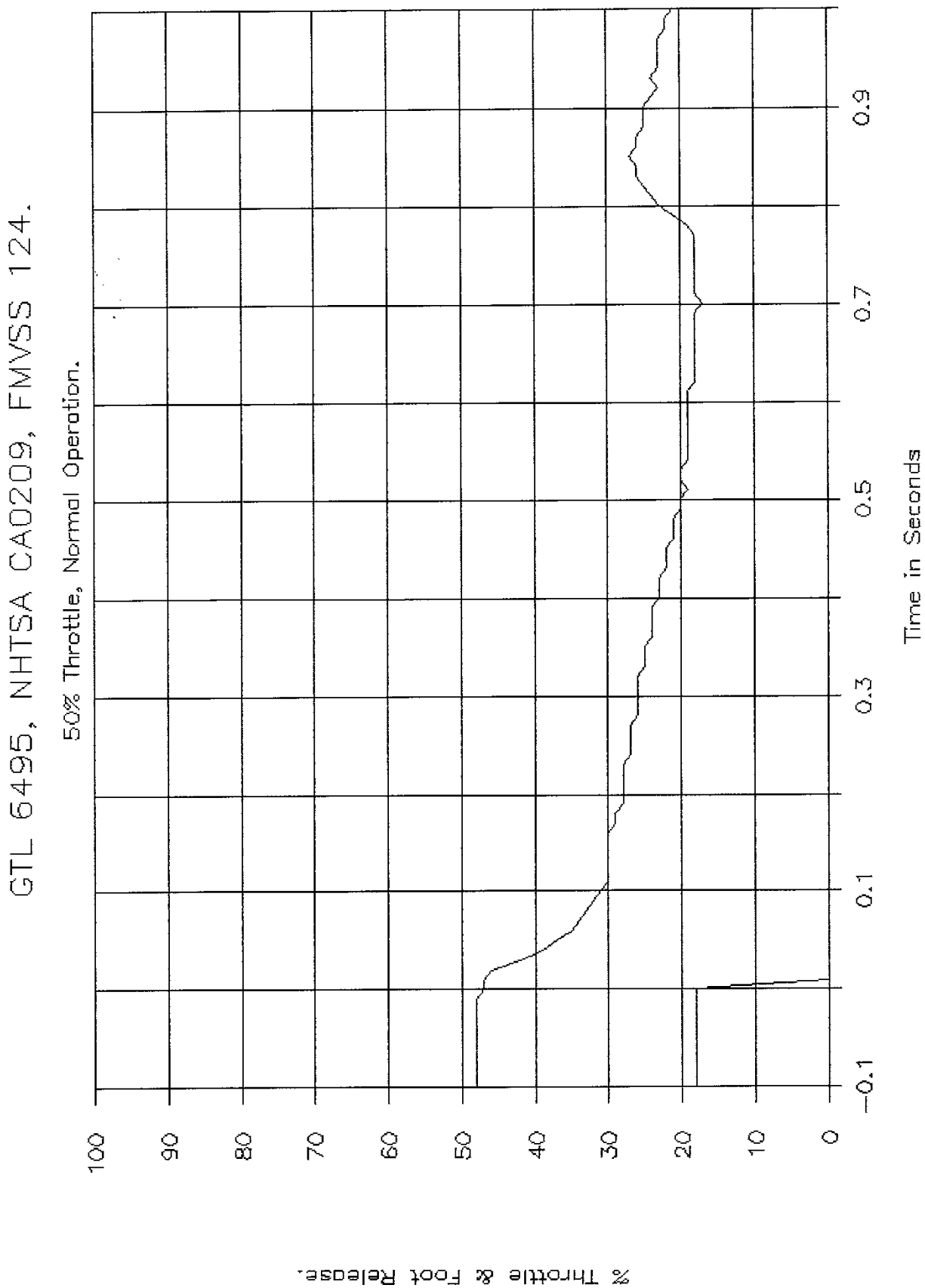
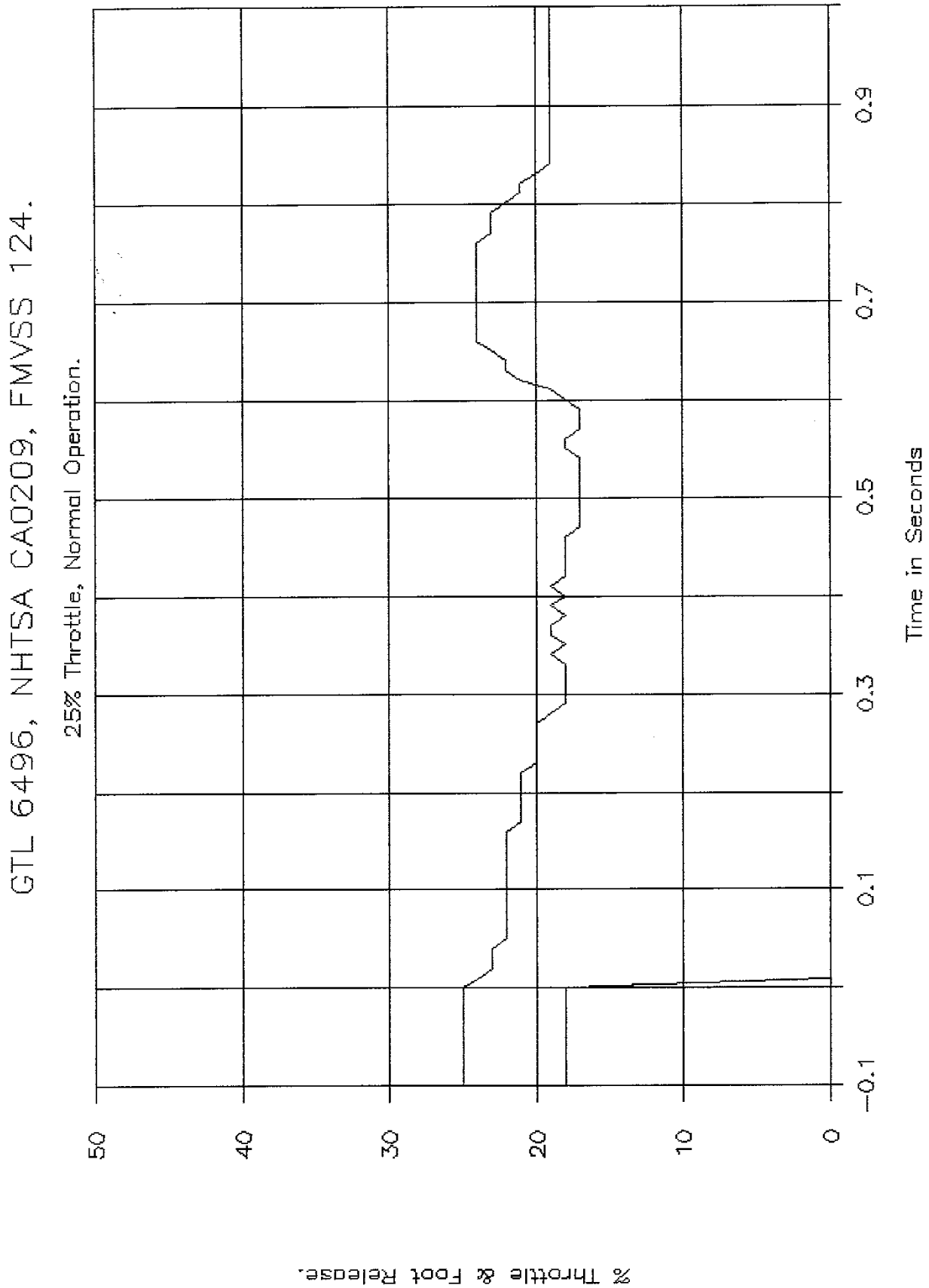
0.1
0.3
0.5
0.7
0.9


GTL 6495, NHTSA CA0209, 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 6496, NHTSA CA0209, FMVSS 124.
25% Throttle, Normal Operation.
% Throttle & Foot Release.
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30
20
10
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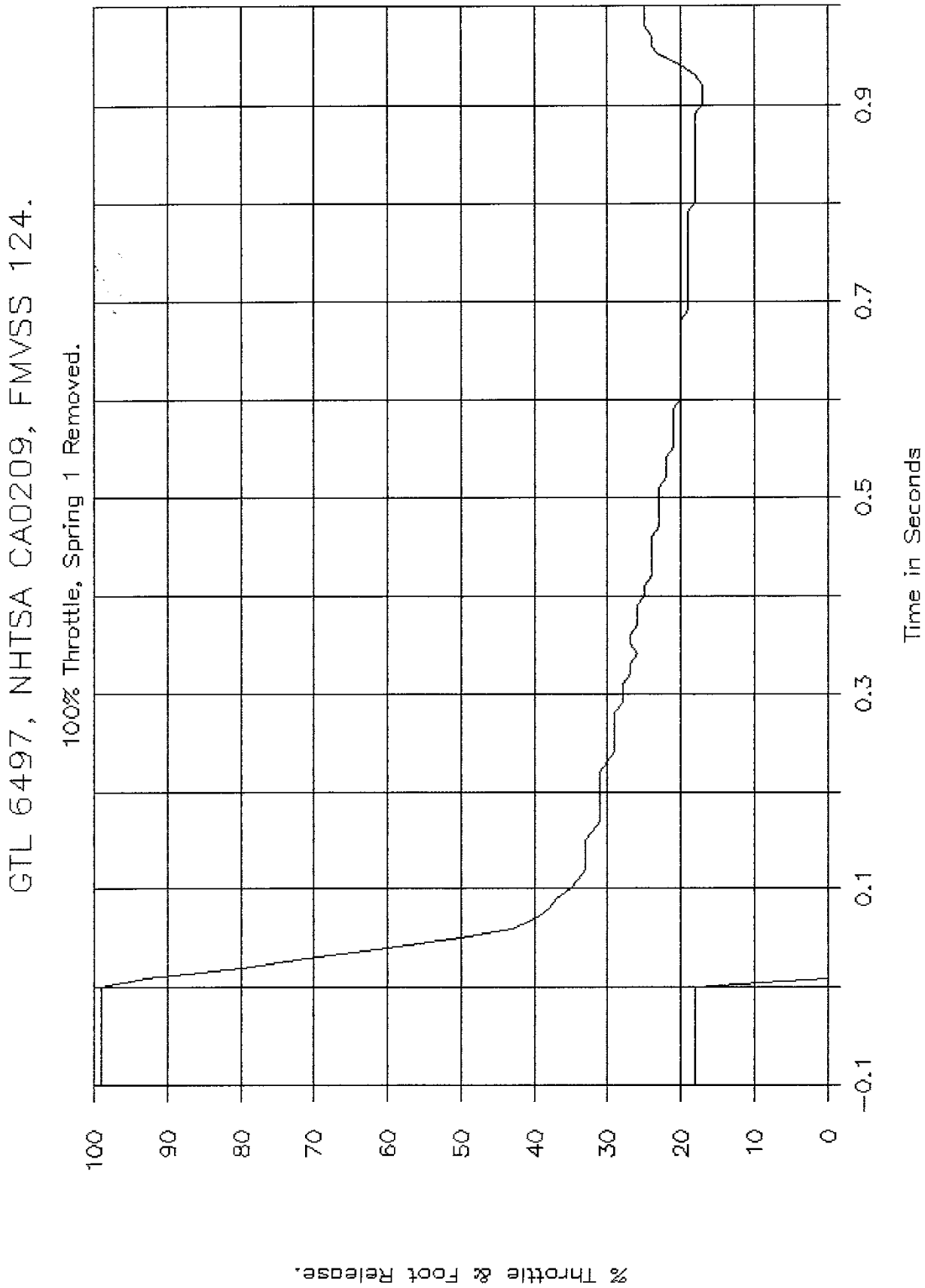
0.1
0.3
0.5
0.7
0.9
Time in Seconds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100% Throttle, Spring 1 Removed.
% Throttle & Foot Release.
100
90
80
70
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50
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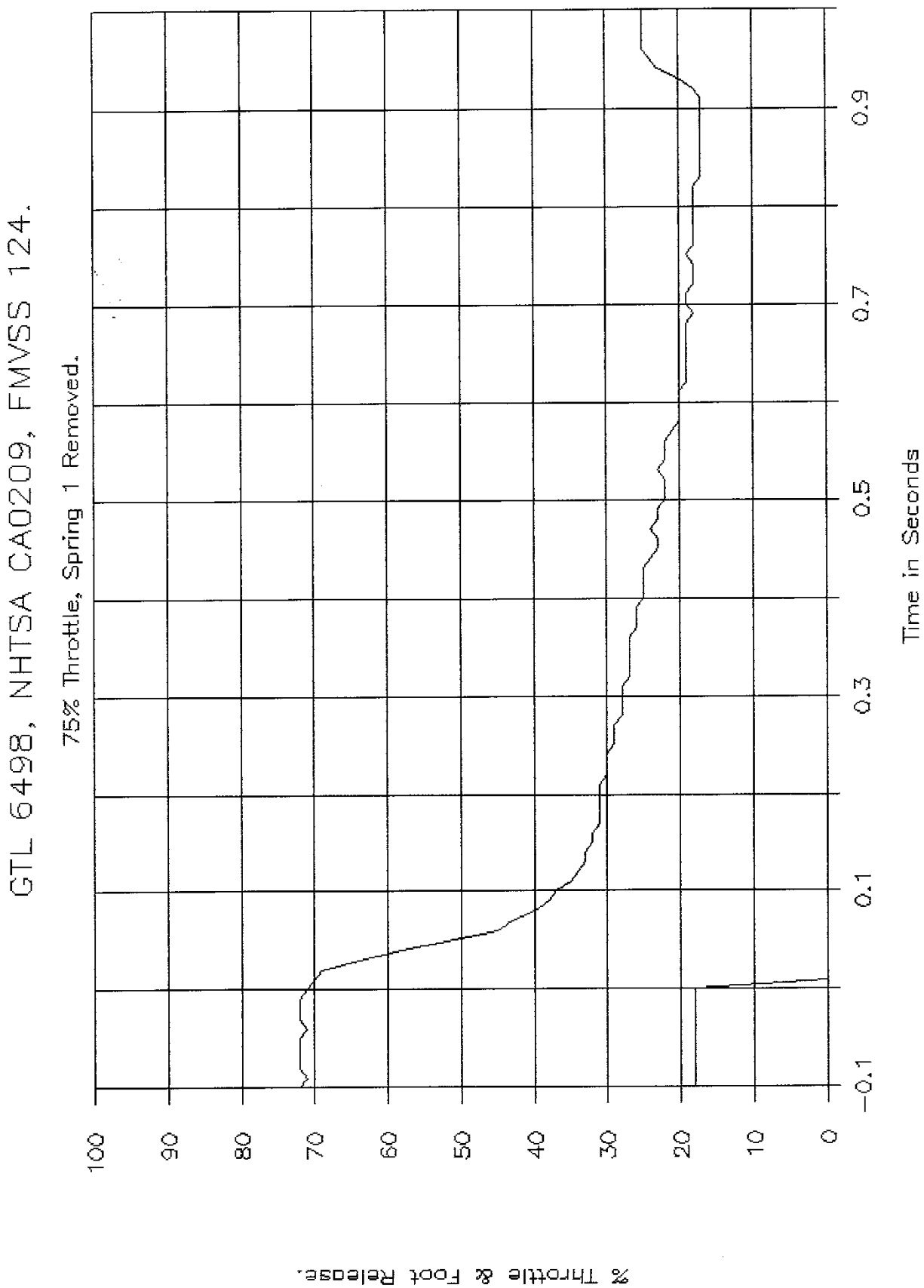
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds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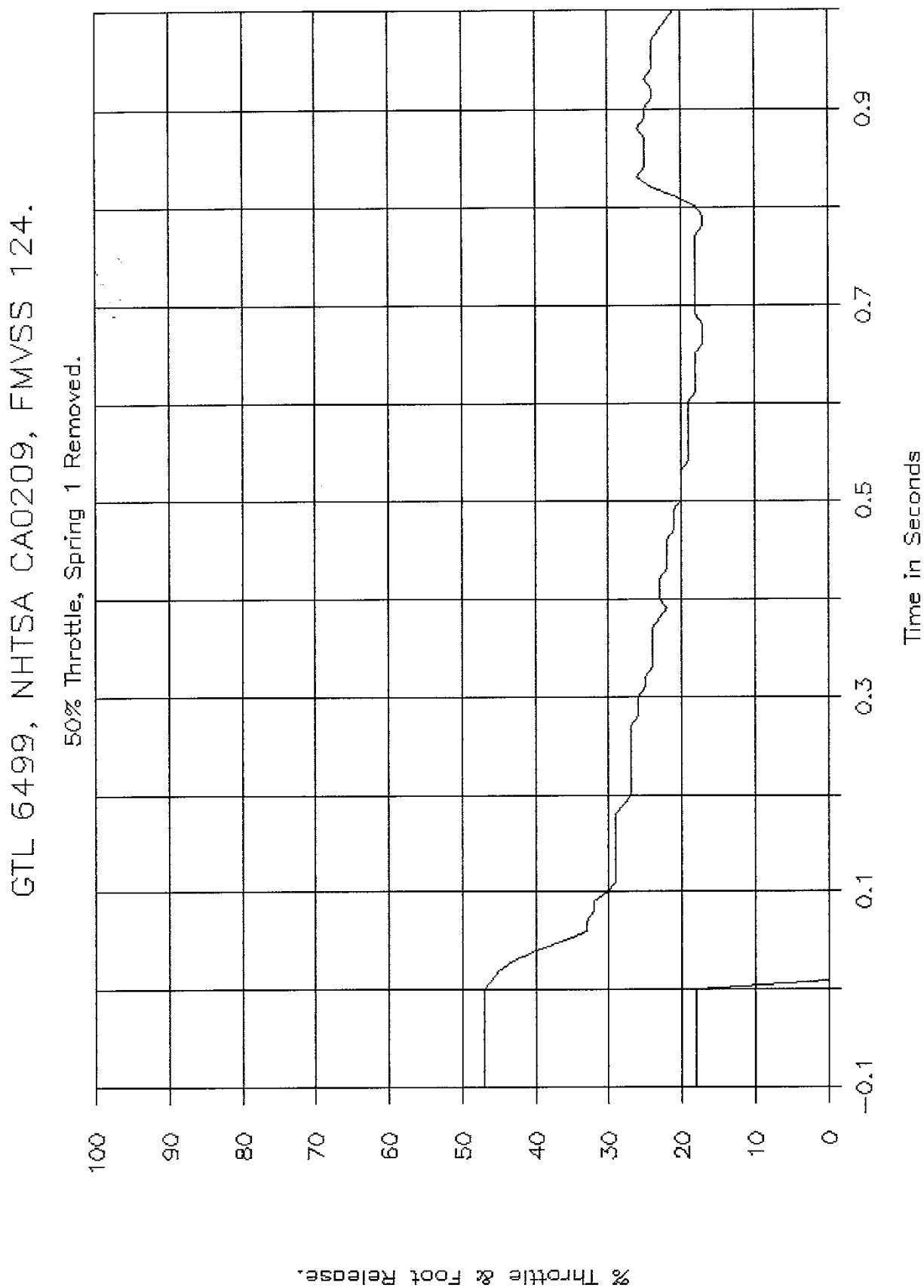
75% Throttle, Spring 1 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds


GTL 6499, NHTSA CA0209, FMVSS 124.
50% Throttle, Spring 1 Removed.
% Throttle & Foot Release.
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90
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70
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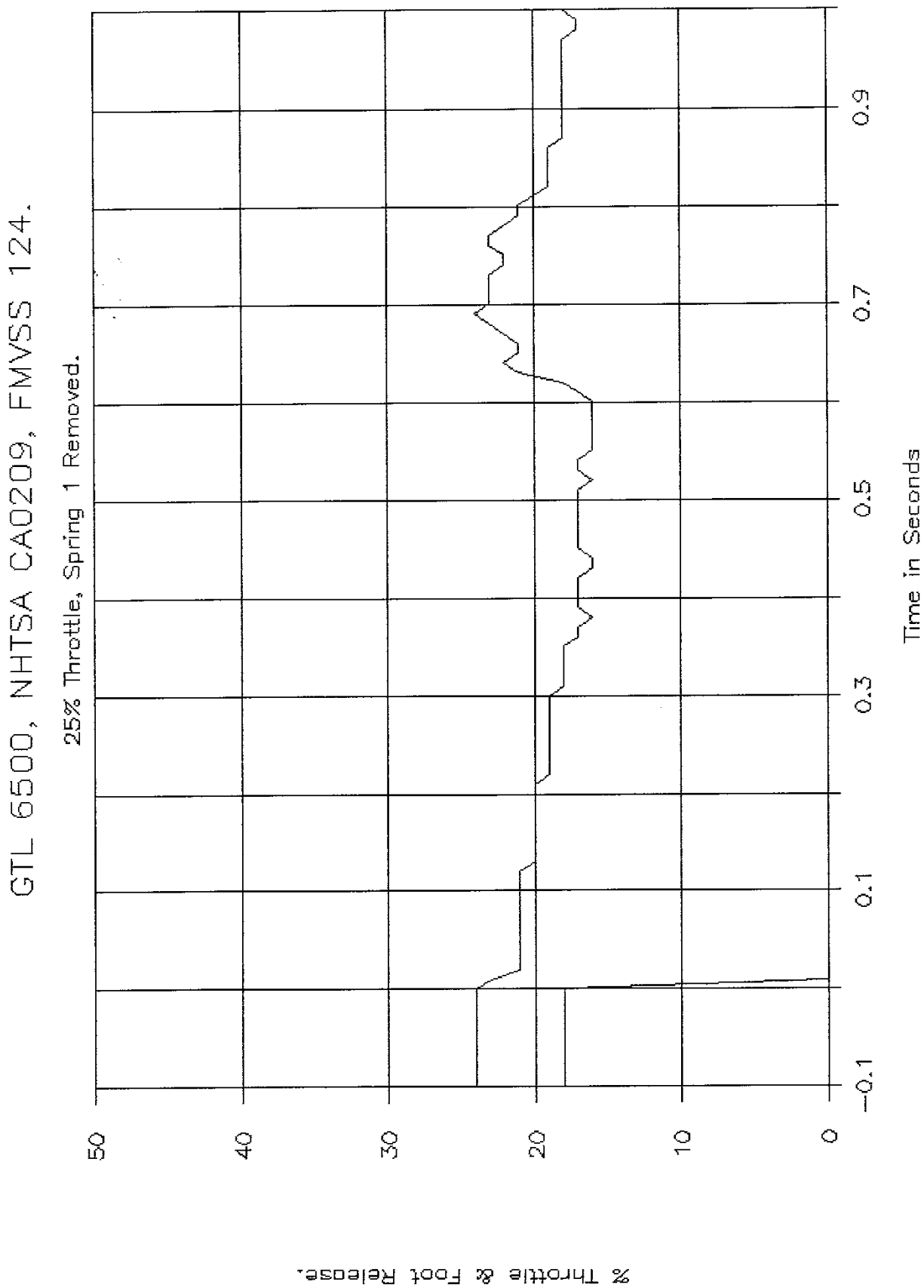
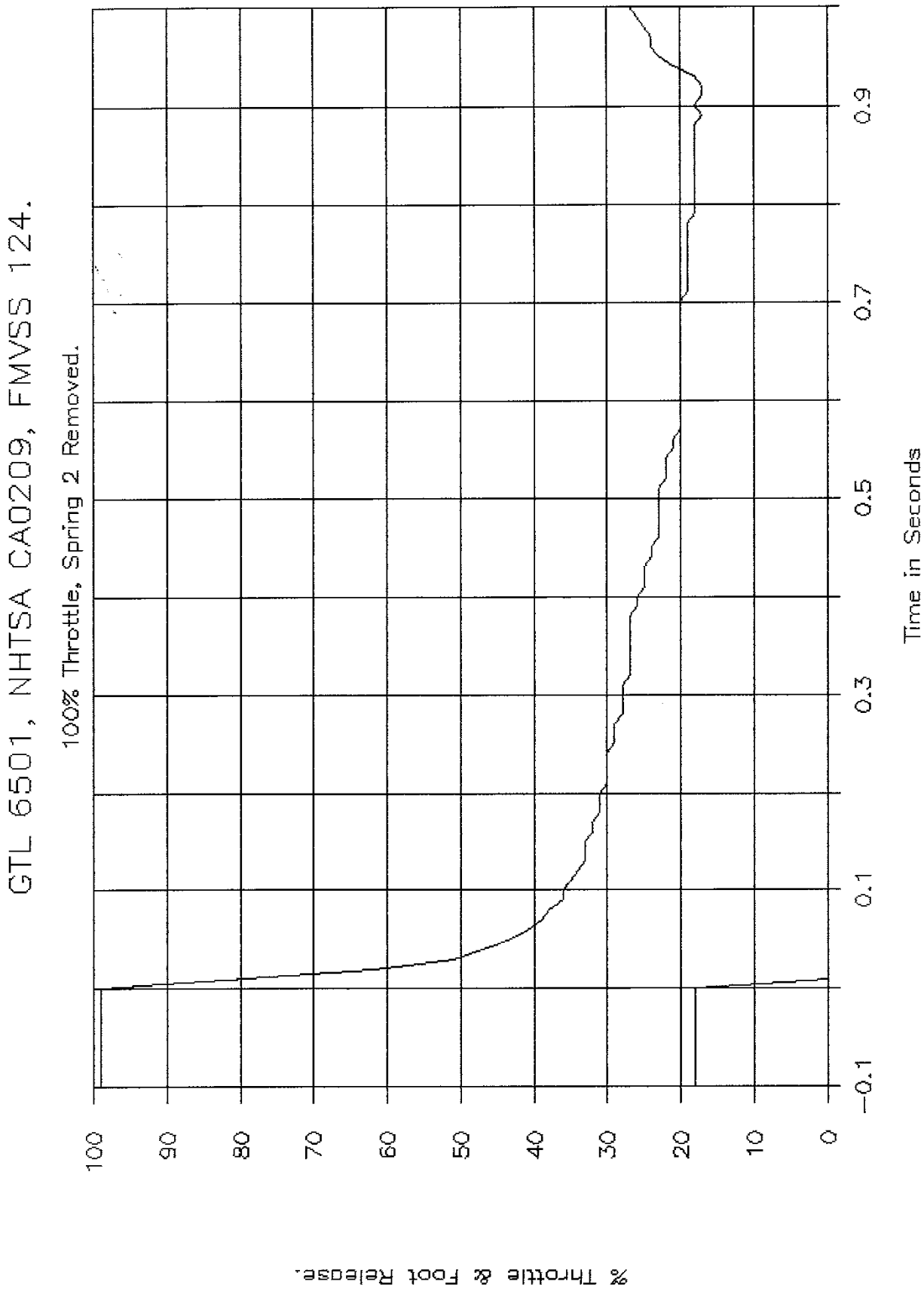
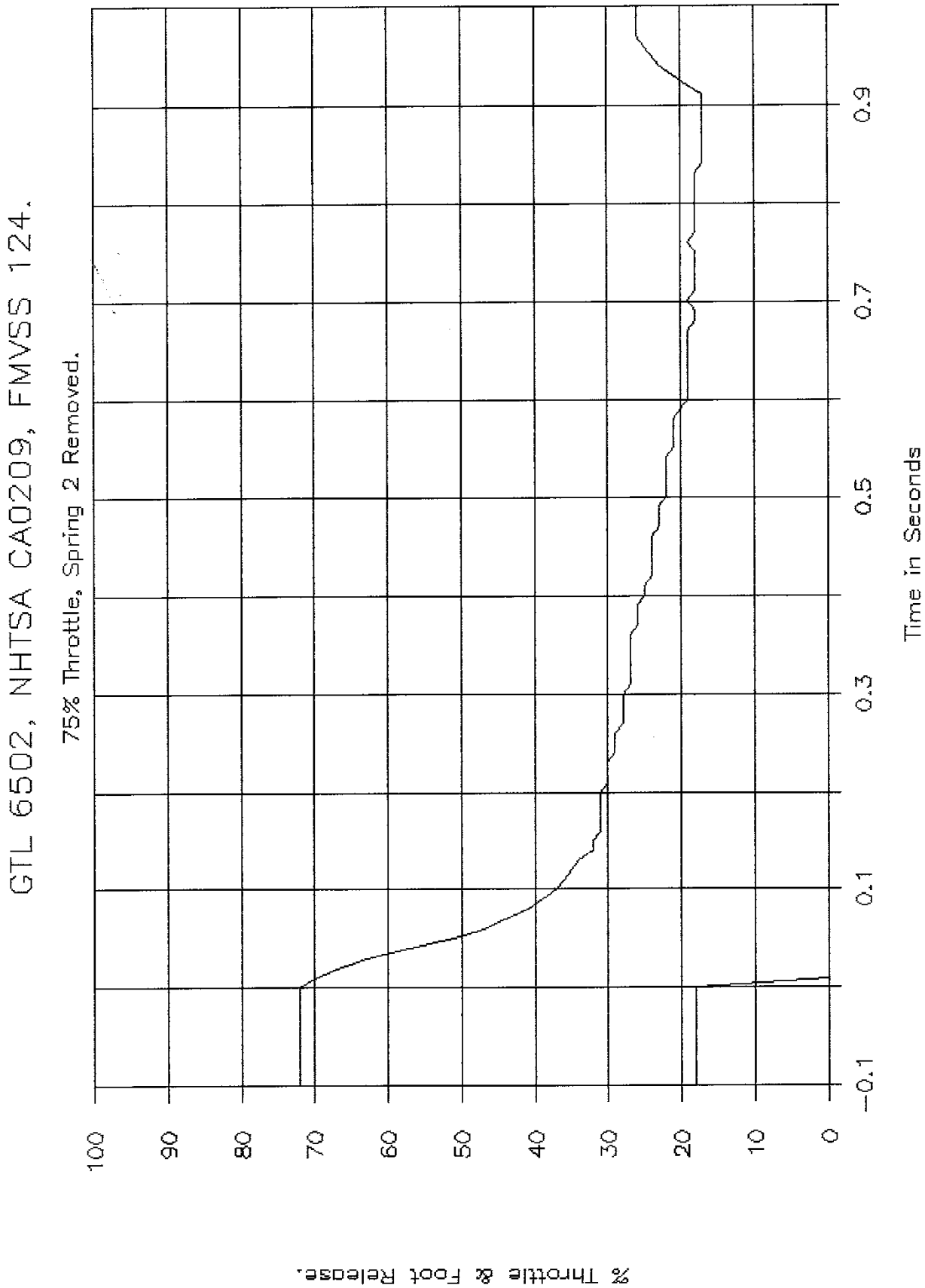
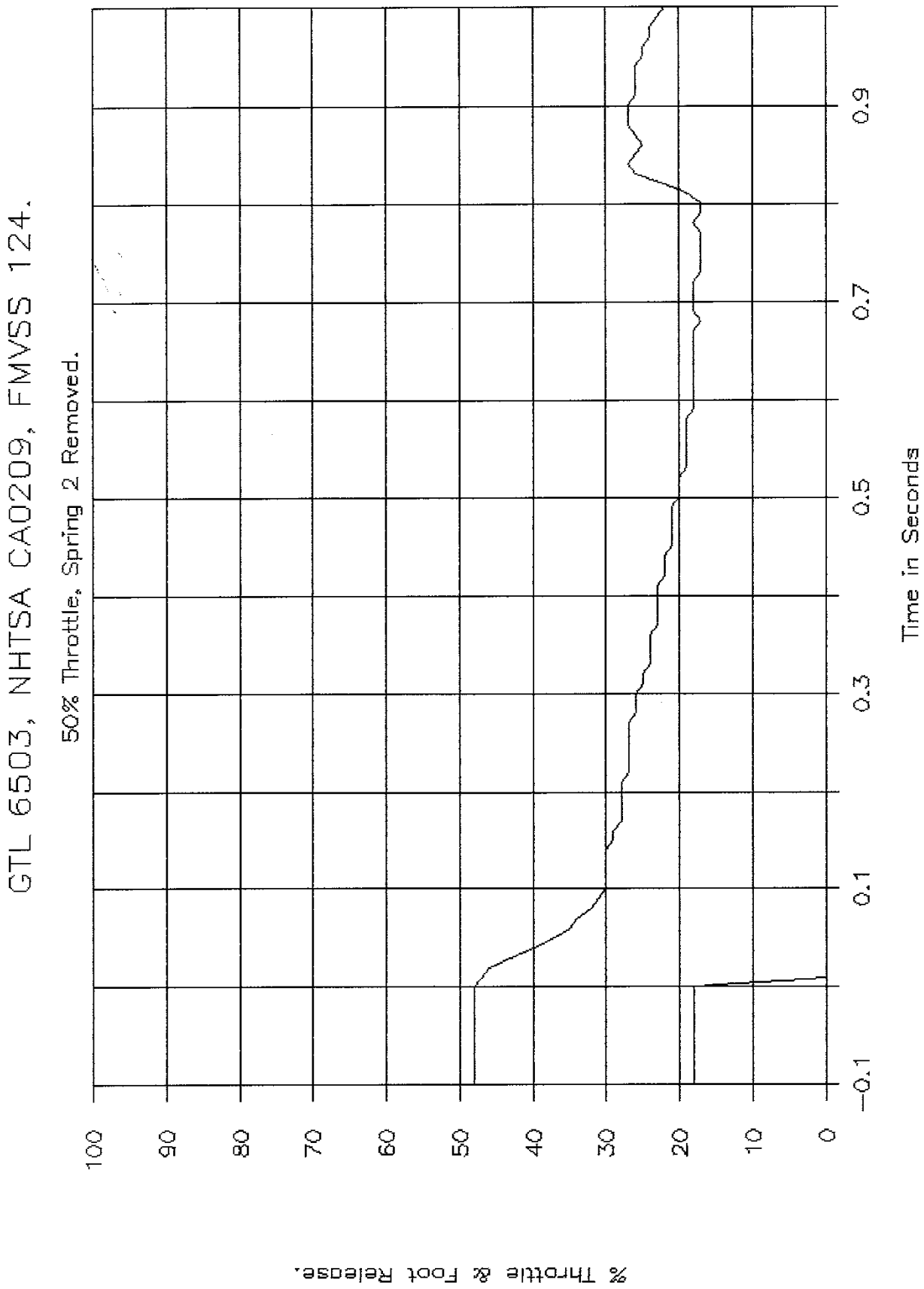
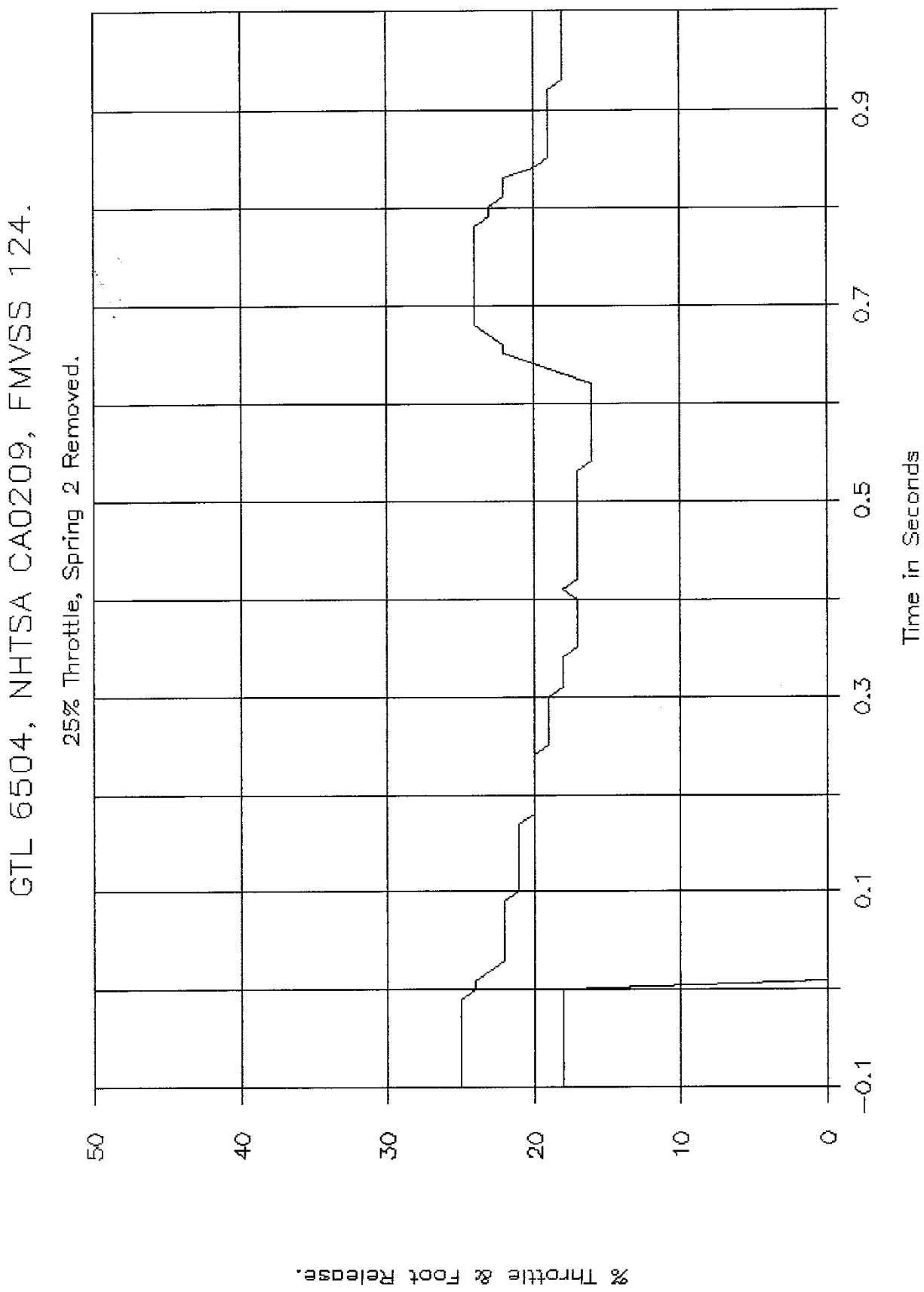
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

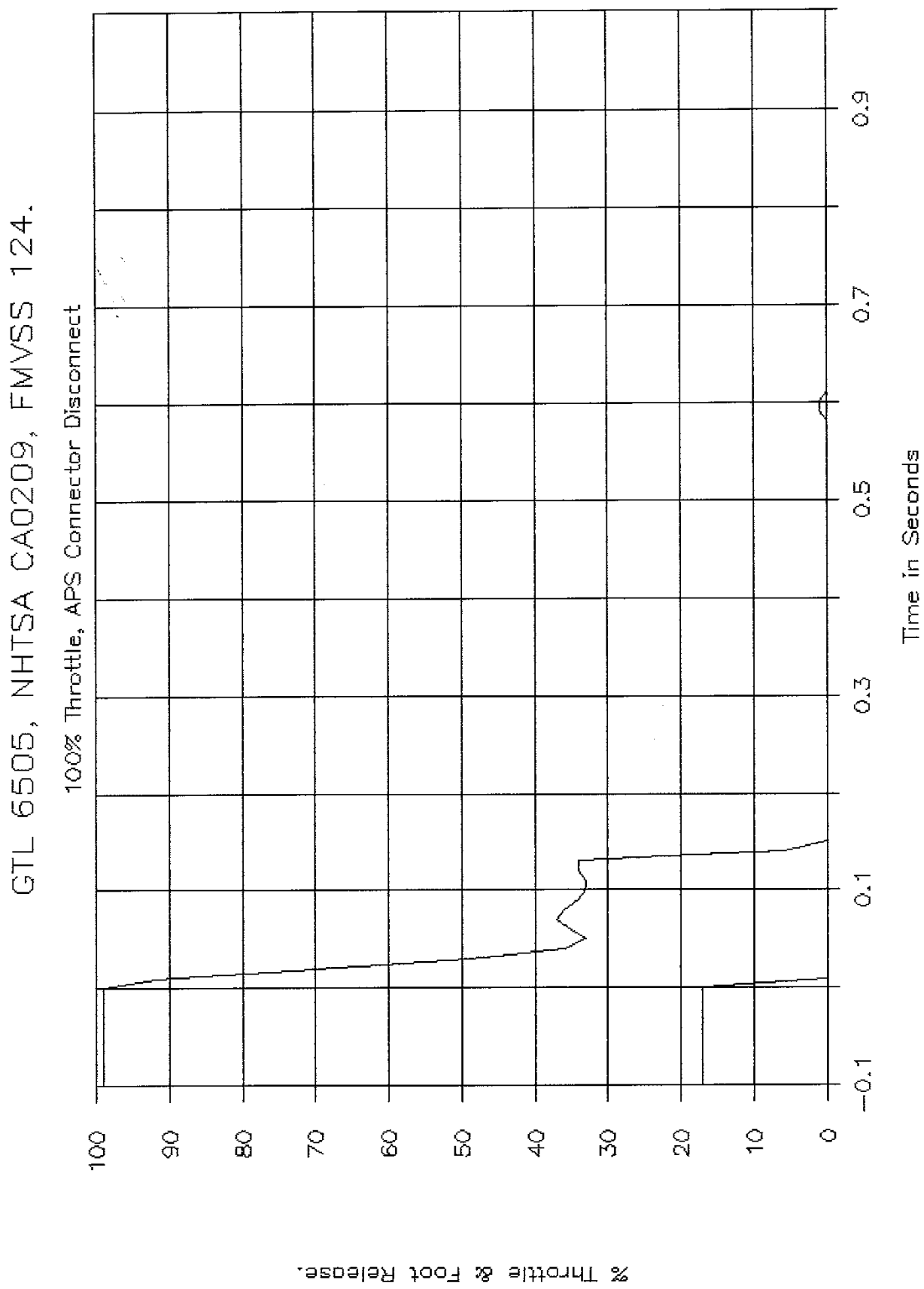

GTL 6500, NHTSA CA0209, FMVSS 124.
25% Throttle, Spring 1 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

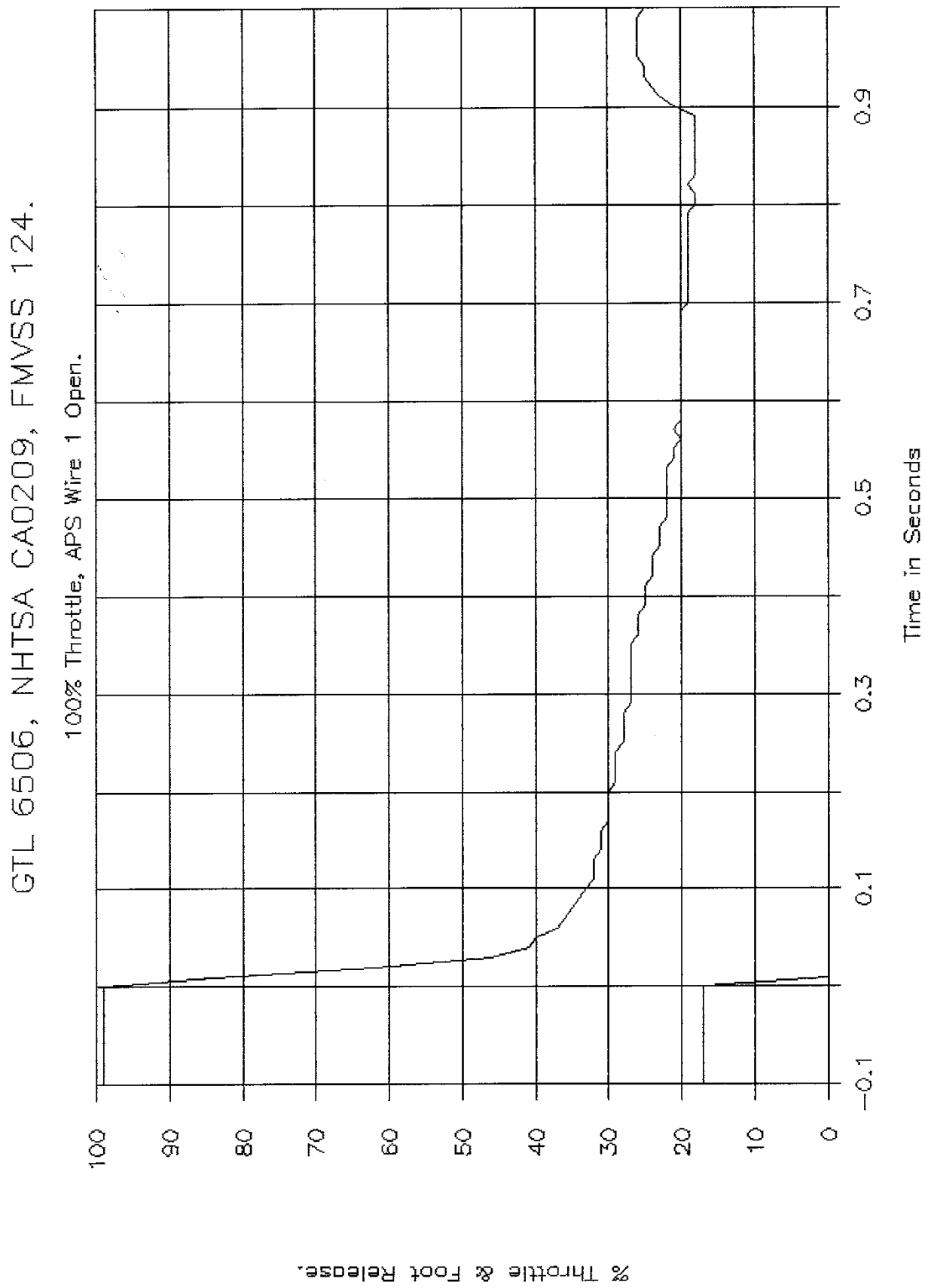

GTL 6501, NHTSA CA0209, FMVSS 124.
100% Throttle, Spring 2 Removed.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

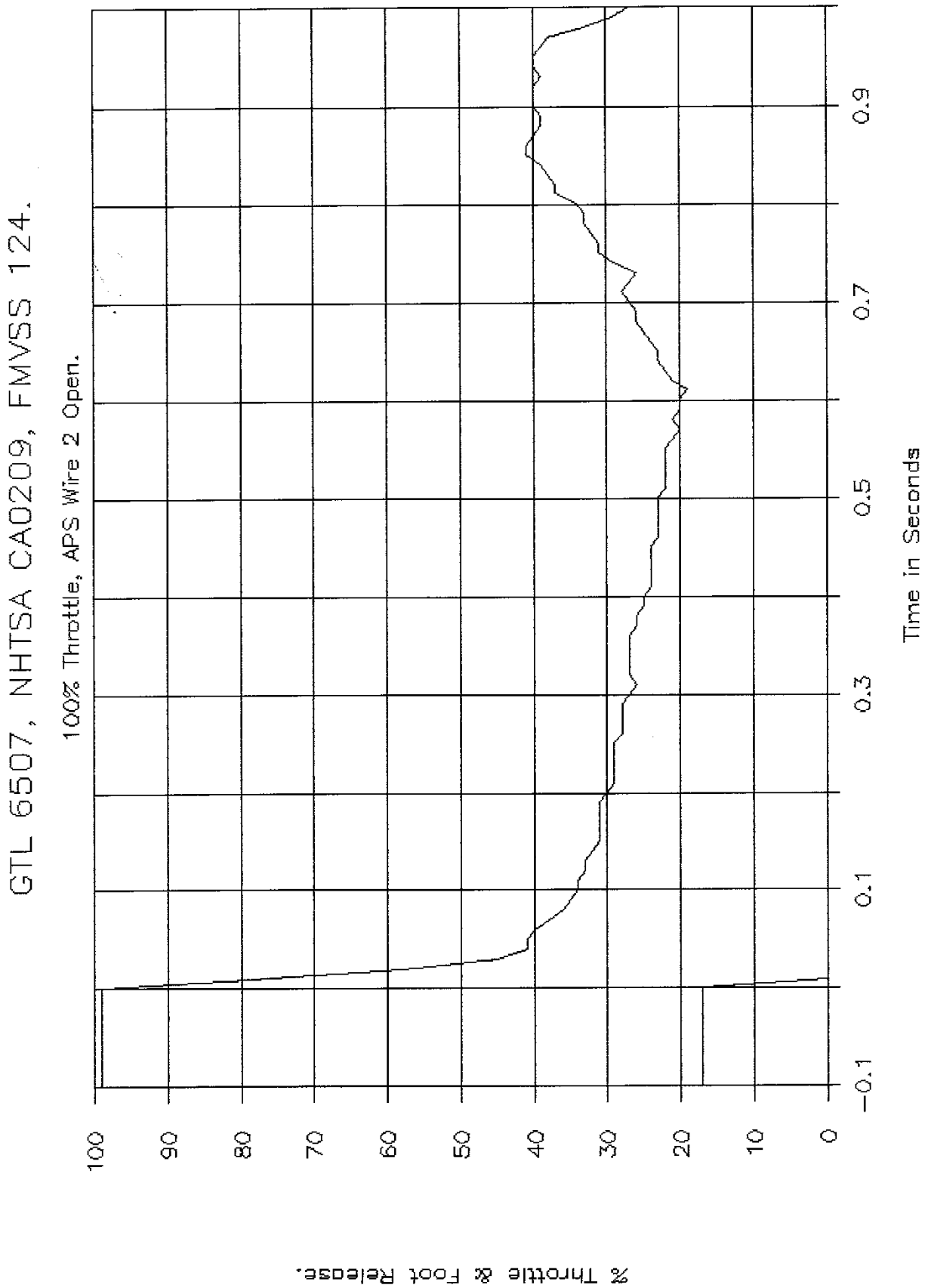

GTL 6502, NHTSA CA0209, FMVSS 124.
75% Throttle, Spring 2 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

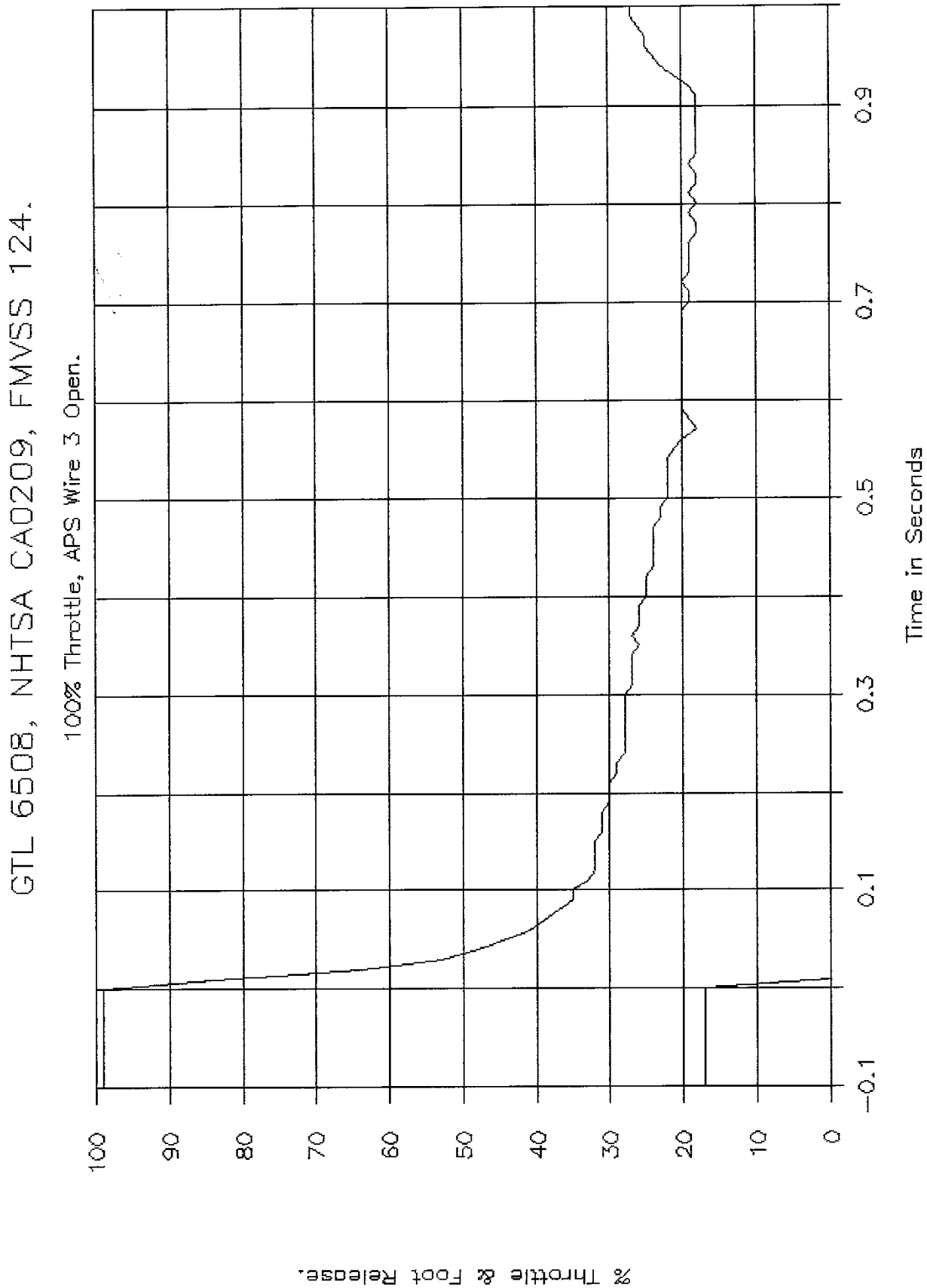

GTL 6503, NHTSA CA0209, FMVSS 124.
50% Throttle, Spring 2 Removed.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

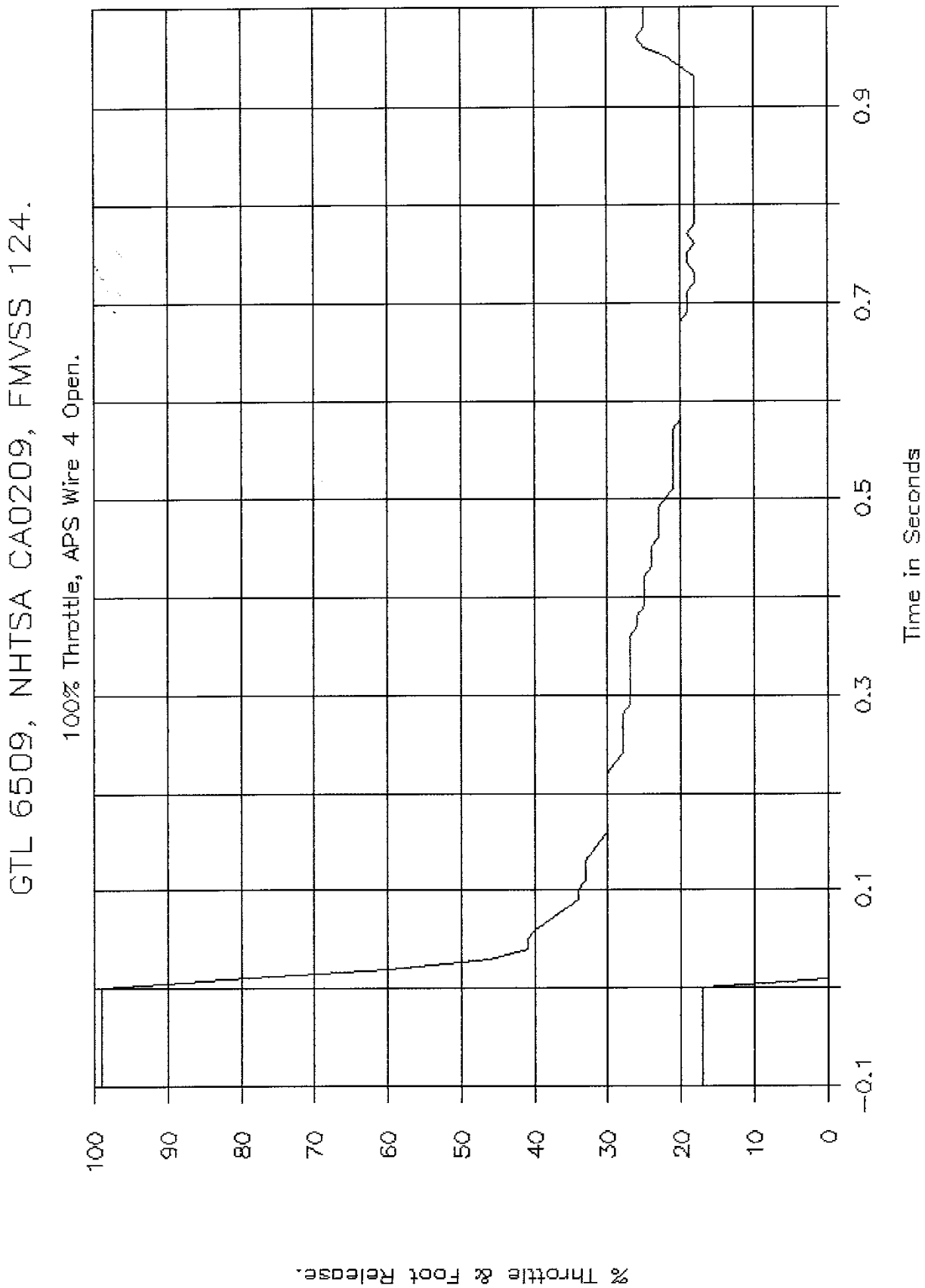

GTL 6504, NHTSA CA0209, FMVSS 124.
25% Throttle, Spring 2 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

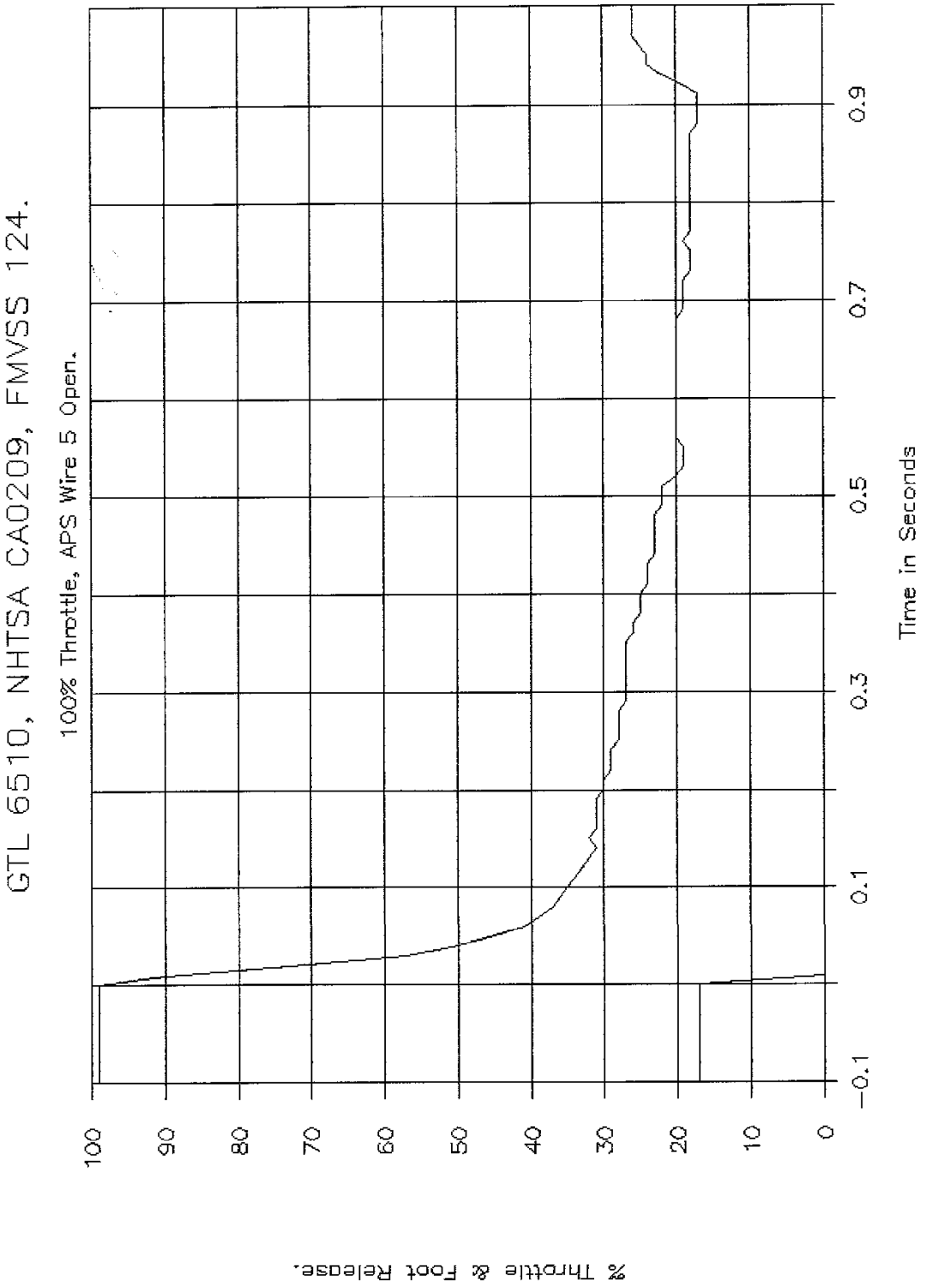

GTL 6505, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Connector Disconnect
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

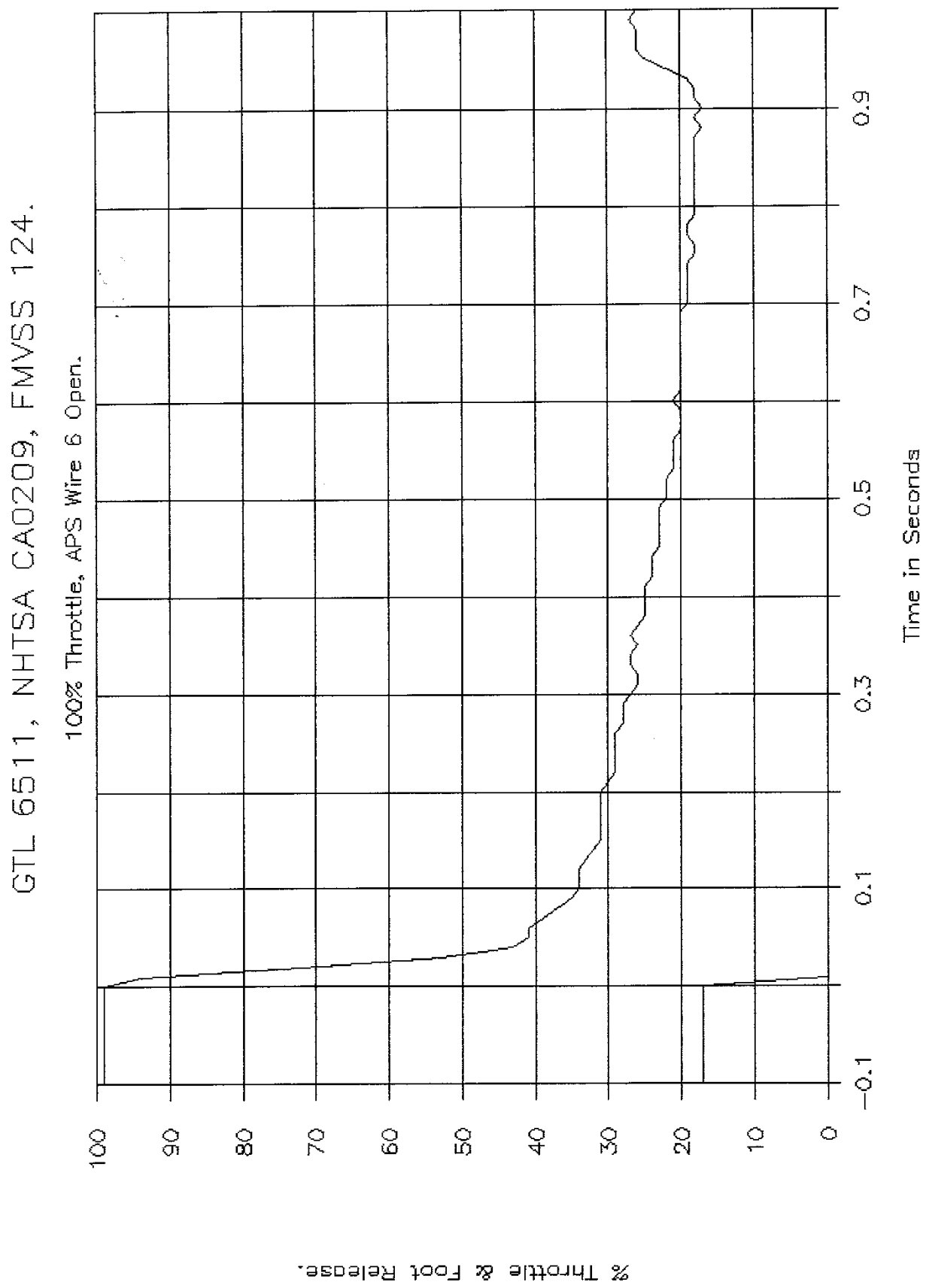

GTL 6506, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 1 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

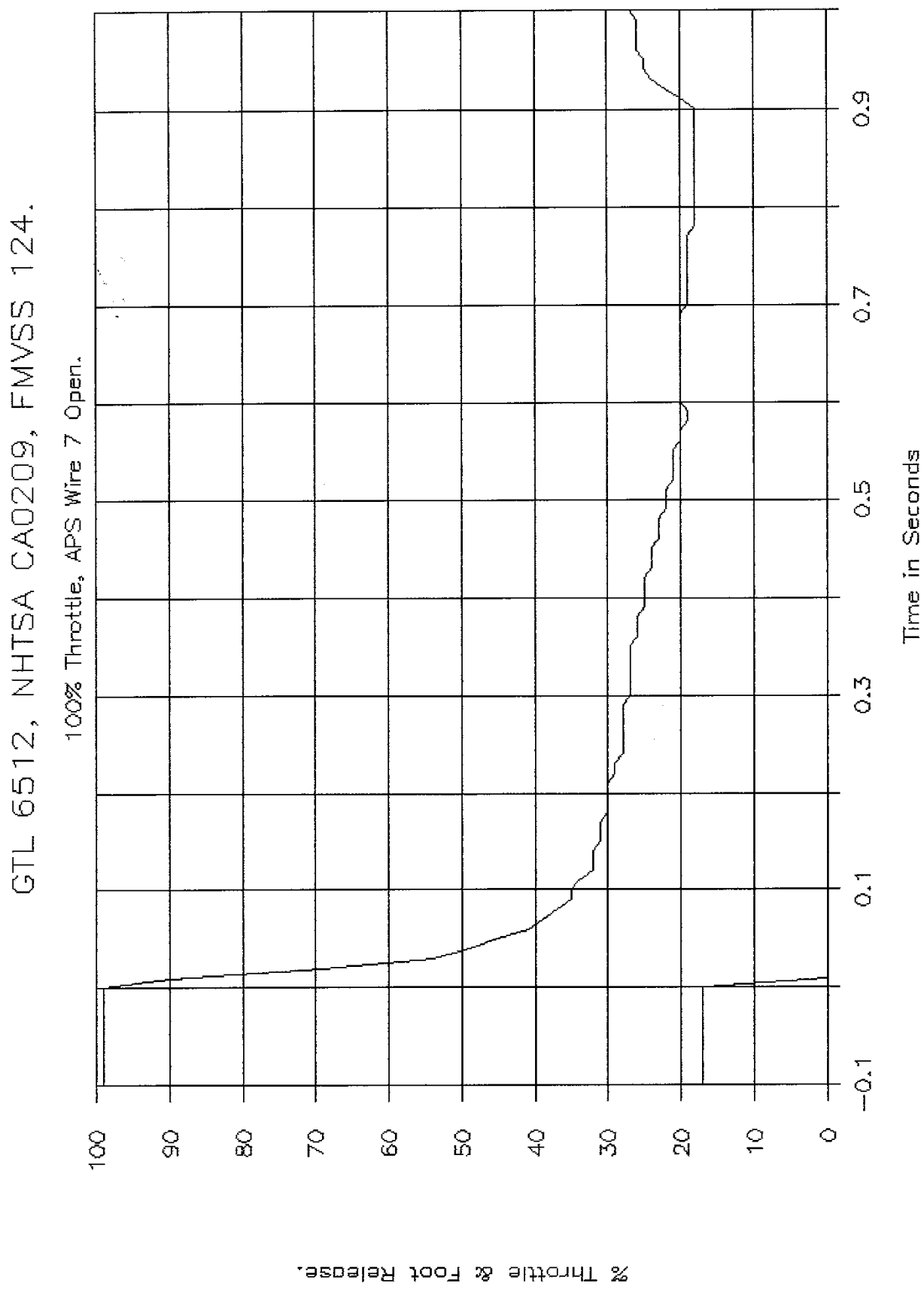

GTL 6507, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 2 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

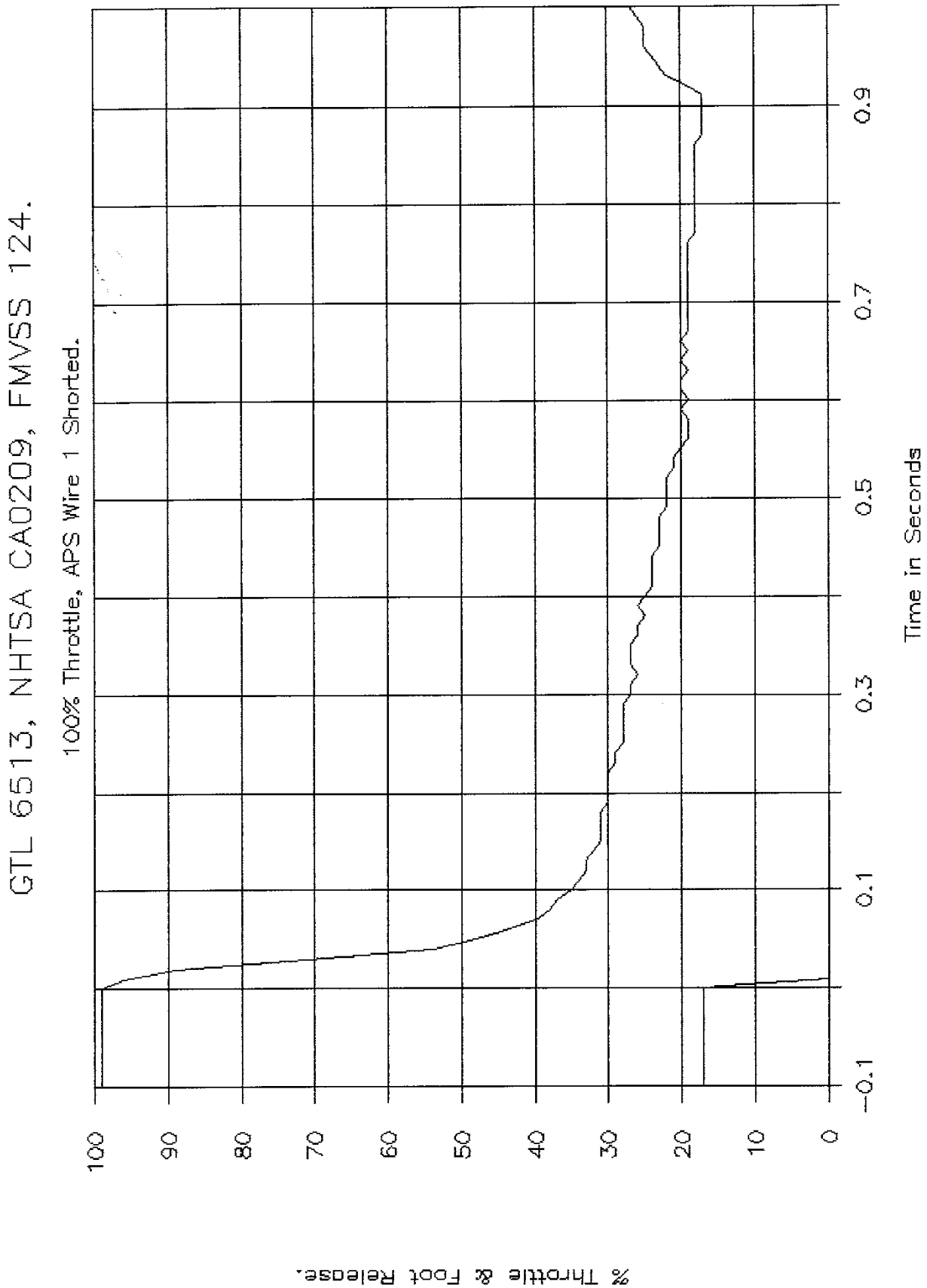

GTL 6508, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 3 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

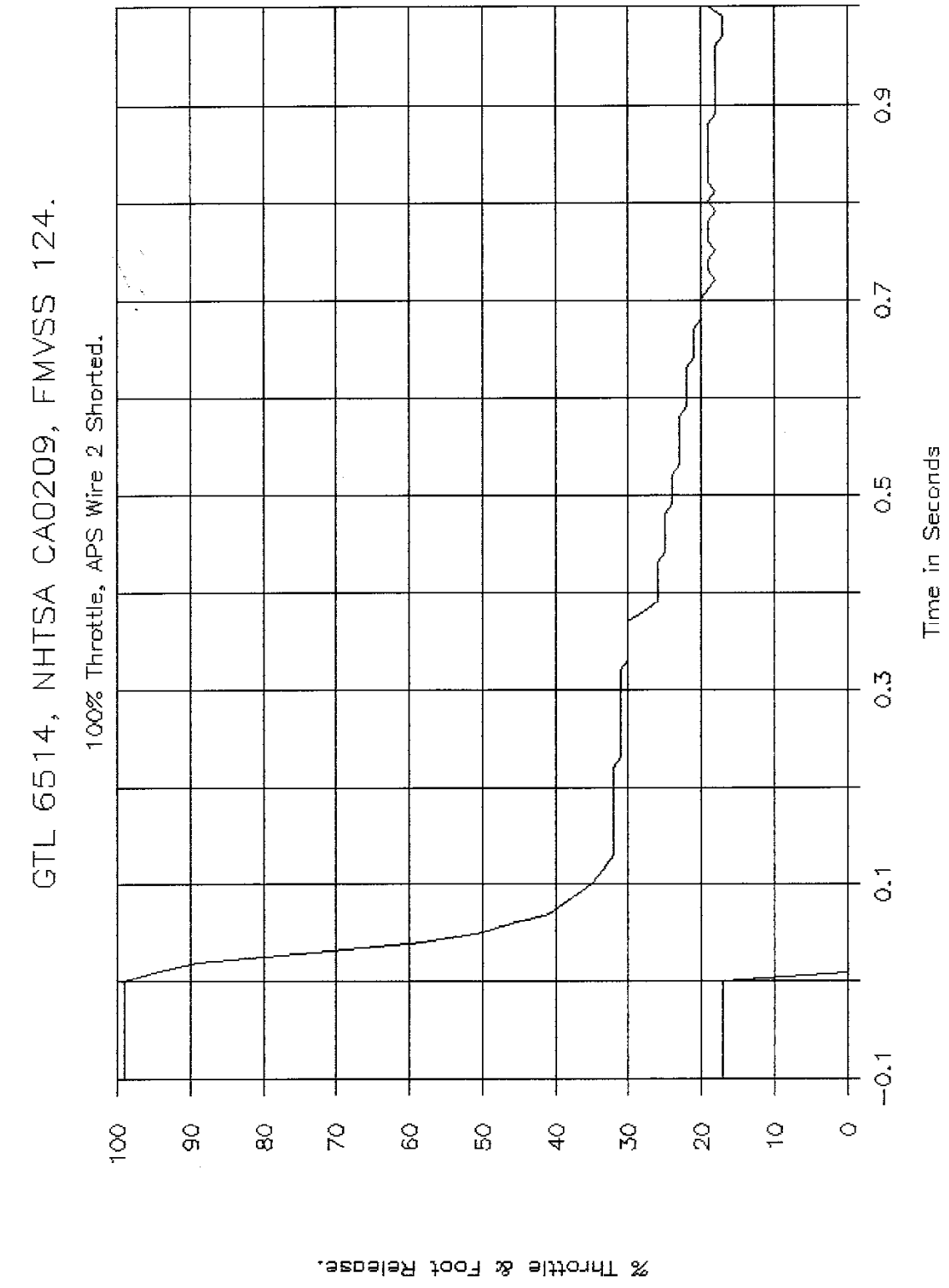

GTL 6509, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 4 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

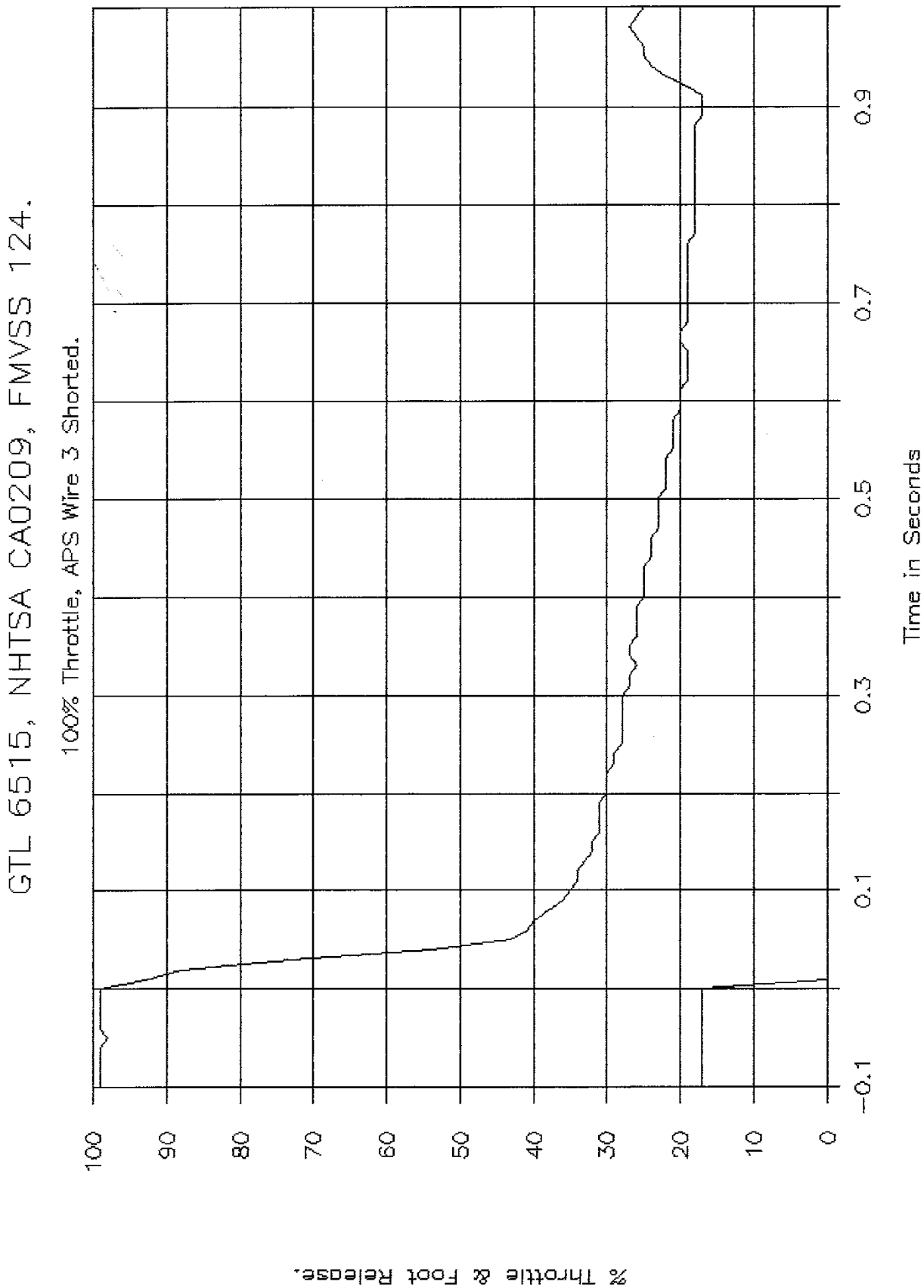

GTL 6510, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 5 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

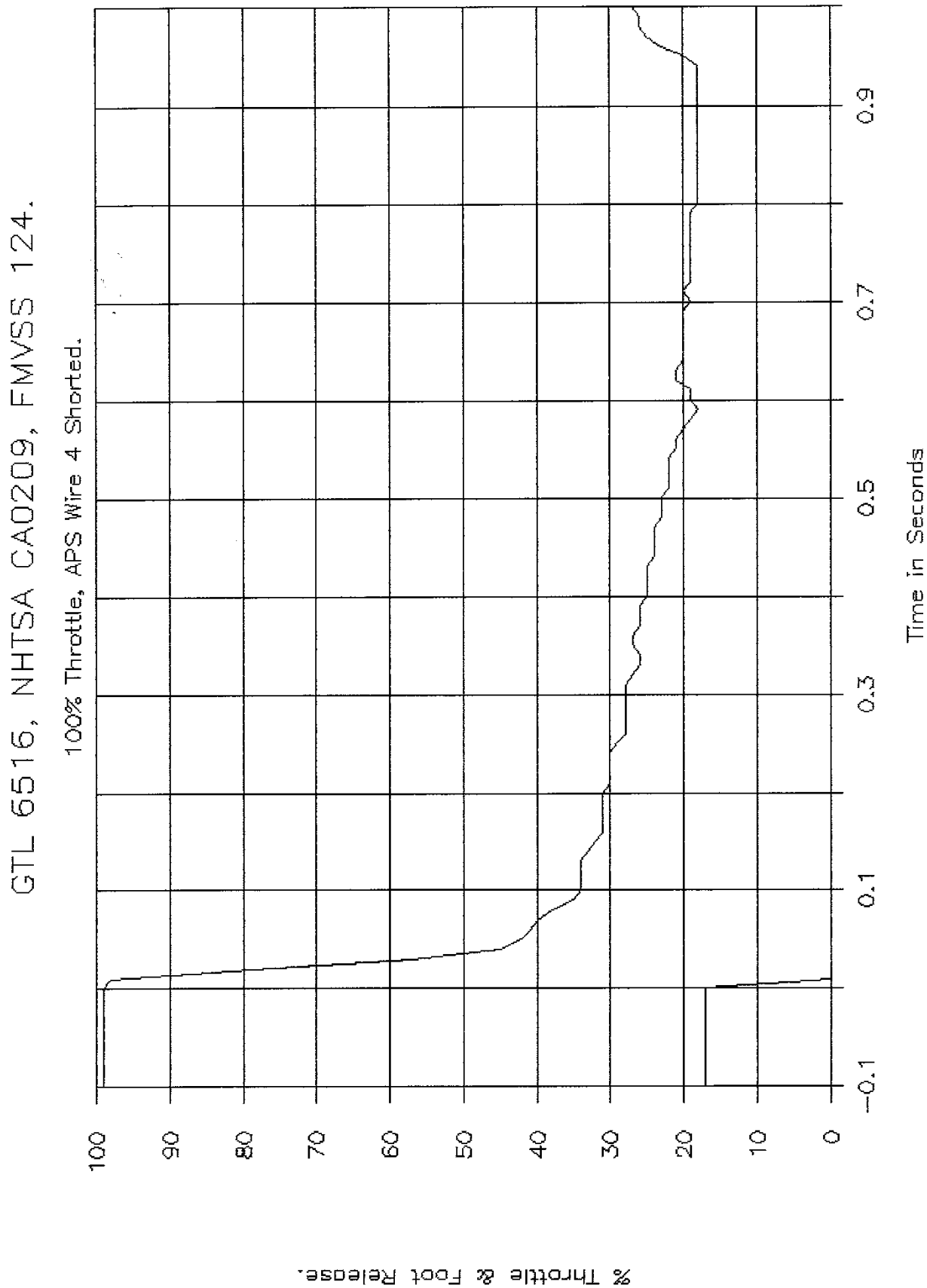

GTL 6511, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 6 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

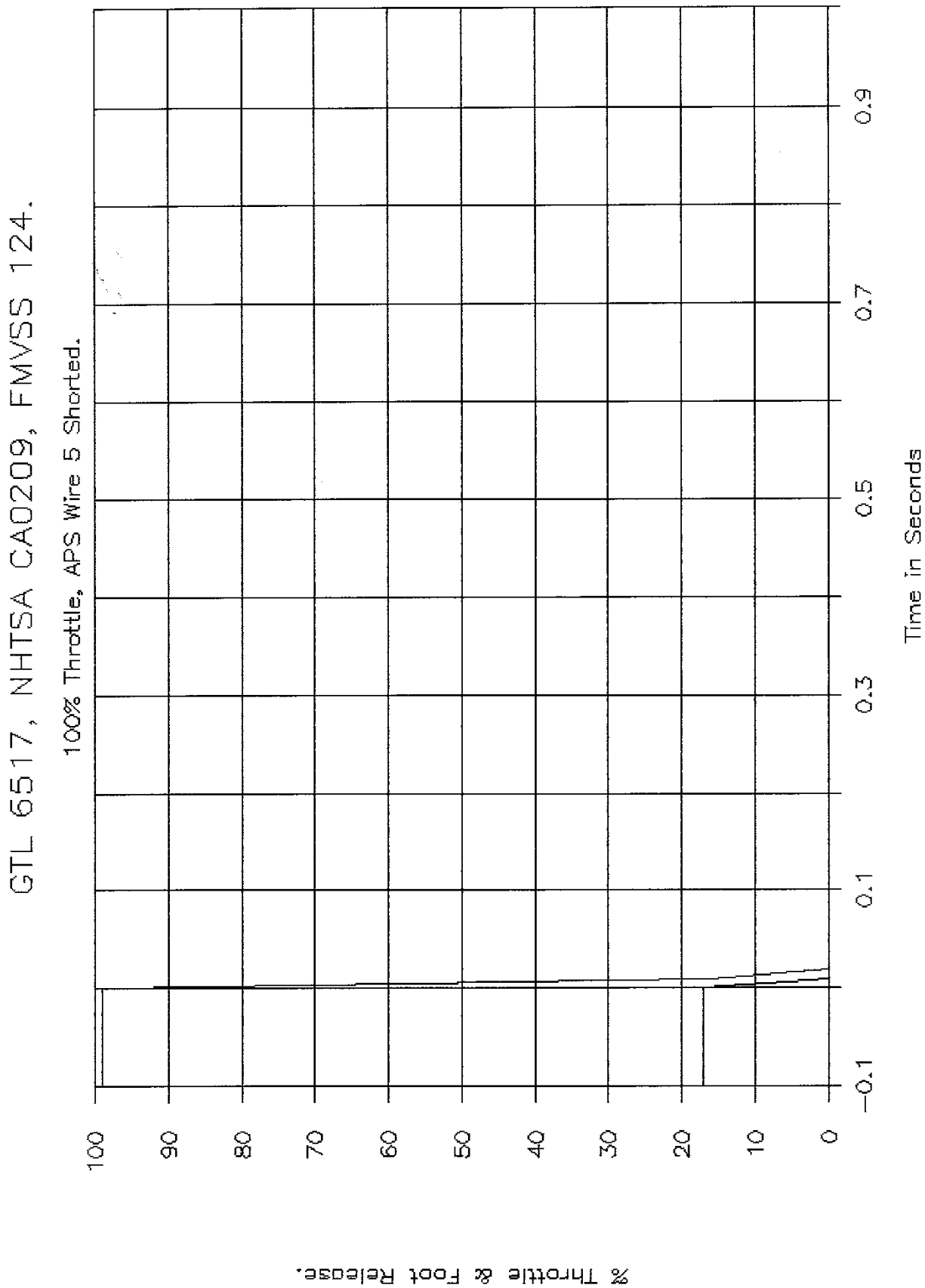

GTL 6512, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 7 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

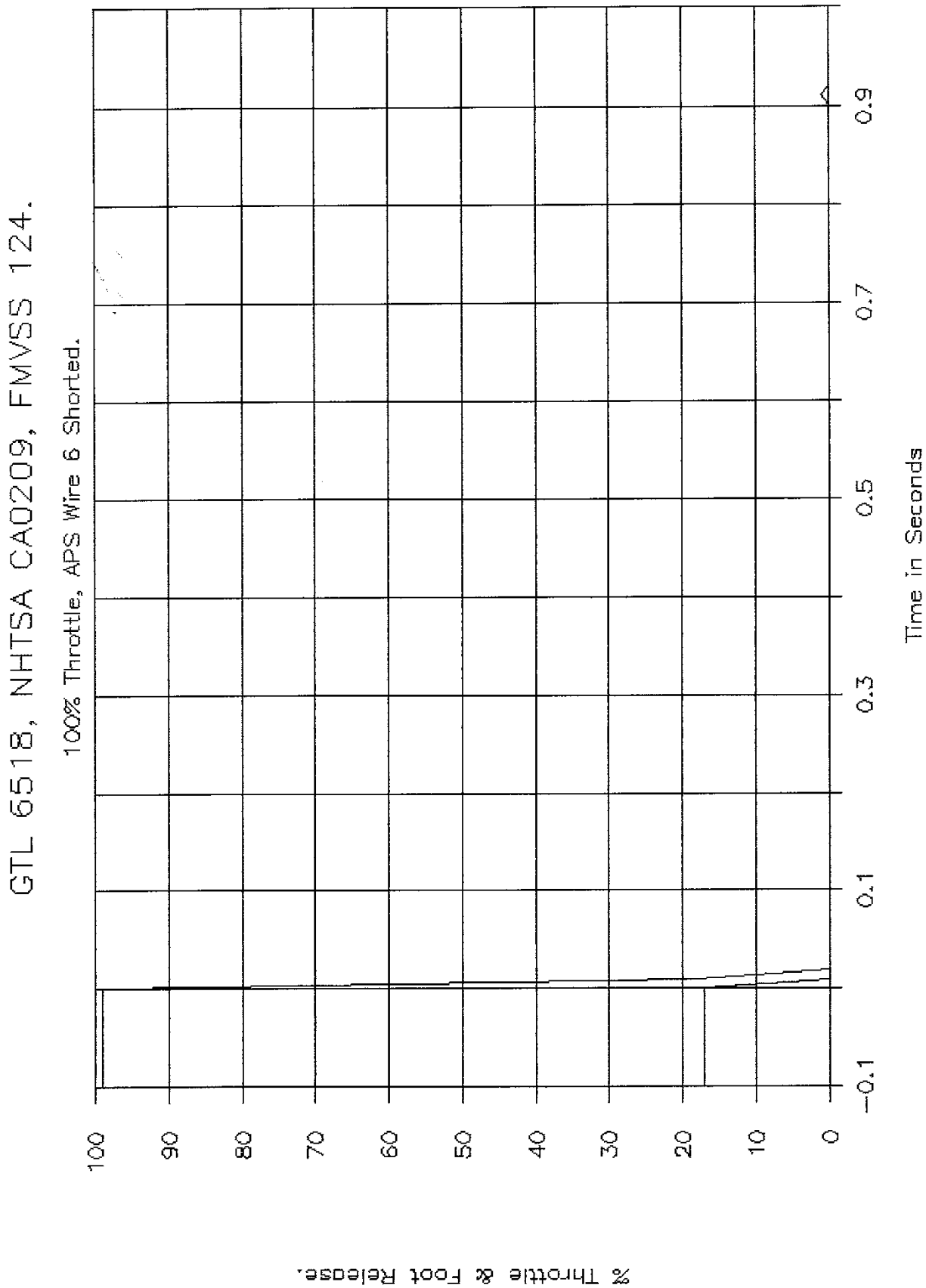

GTL 6513, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 1 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

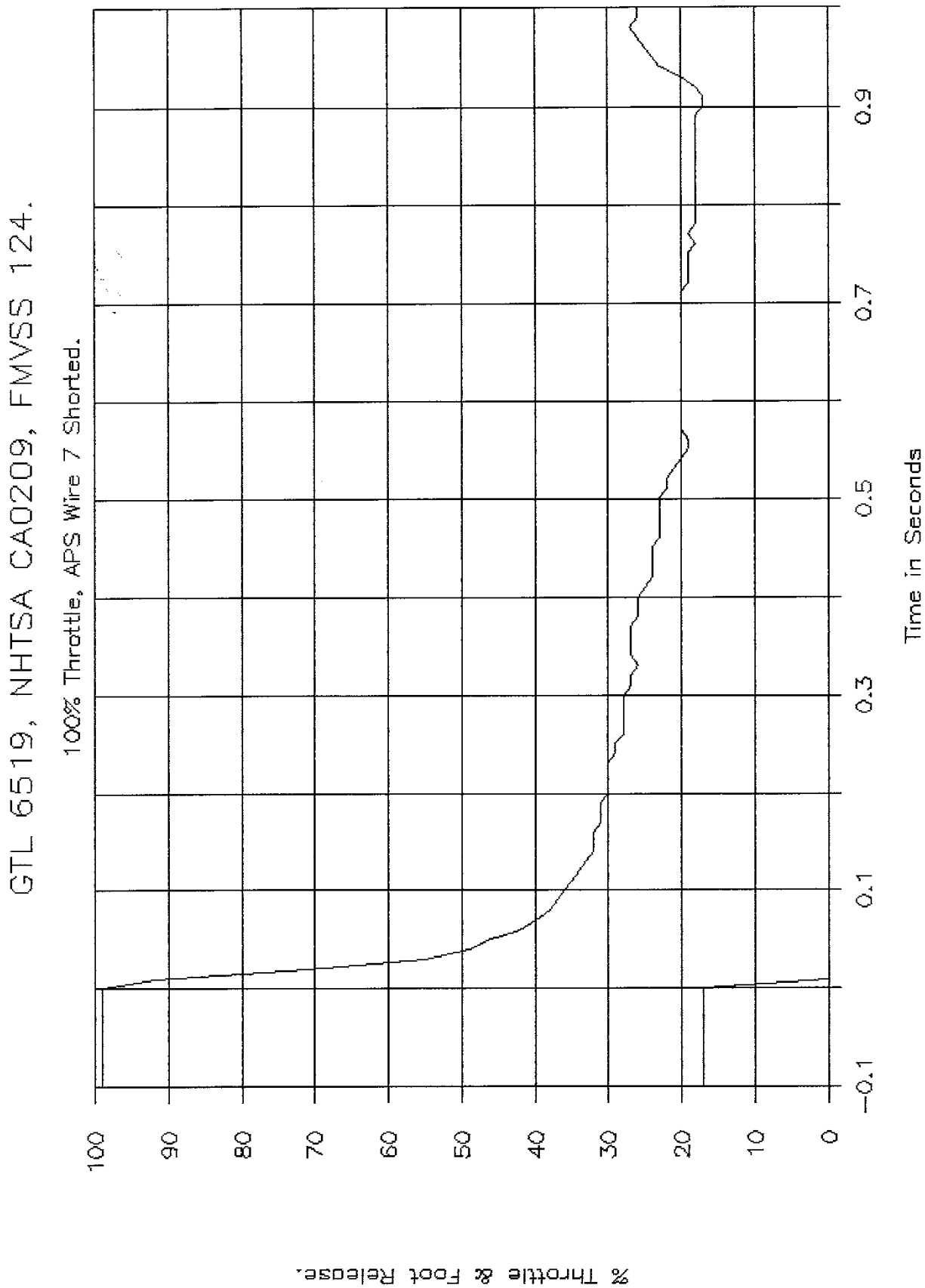

GTL 6514, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 2 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

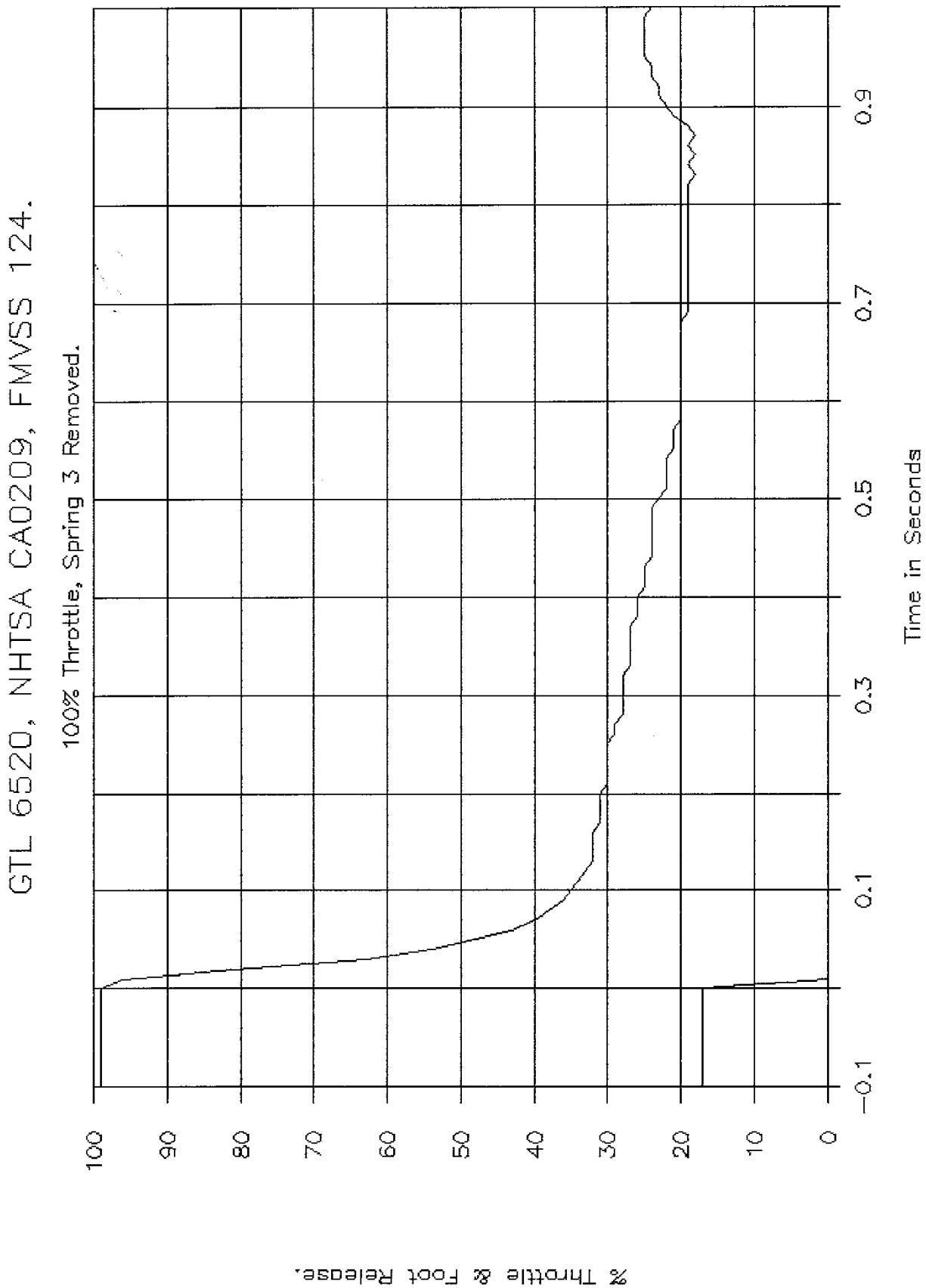

GTL 6515, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 3 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

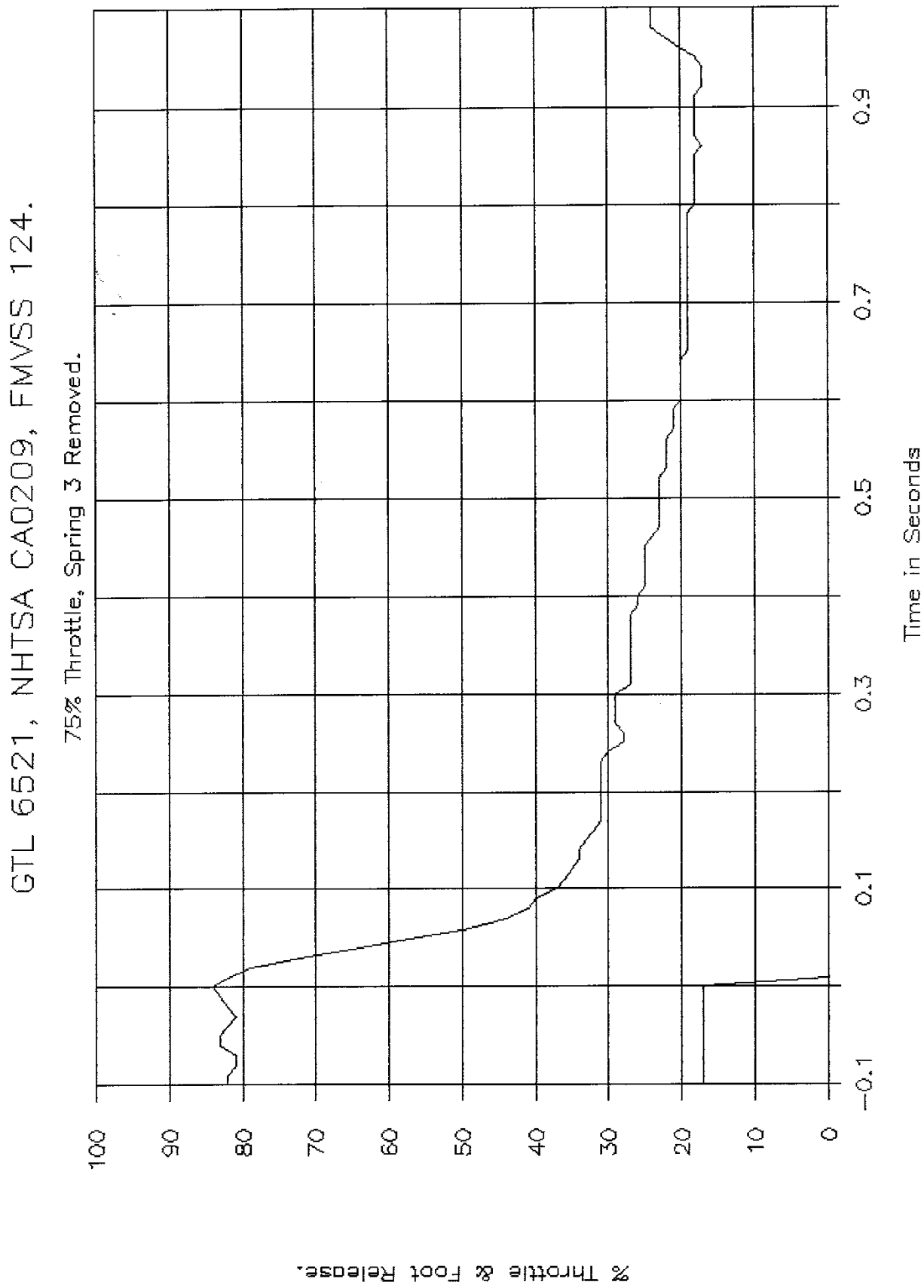

GTL 6516, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 4 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

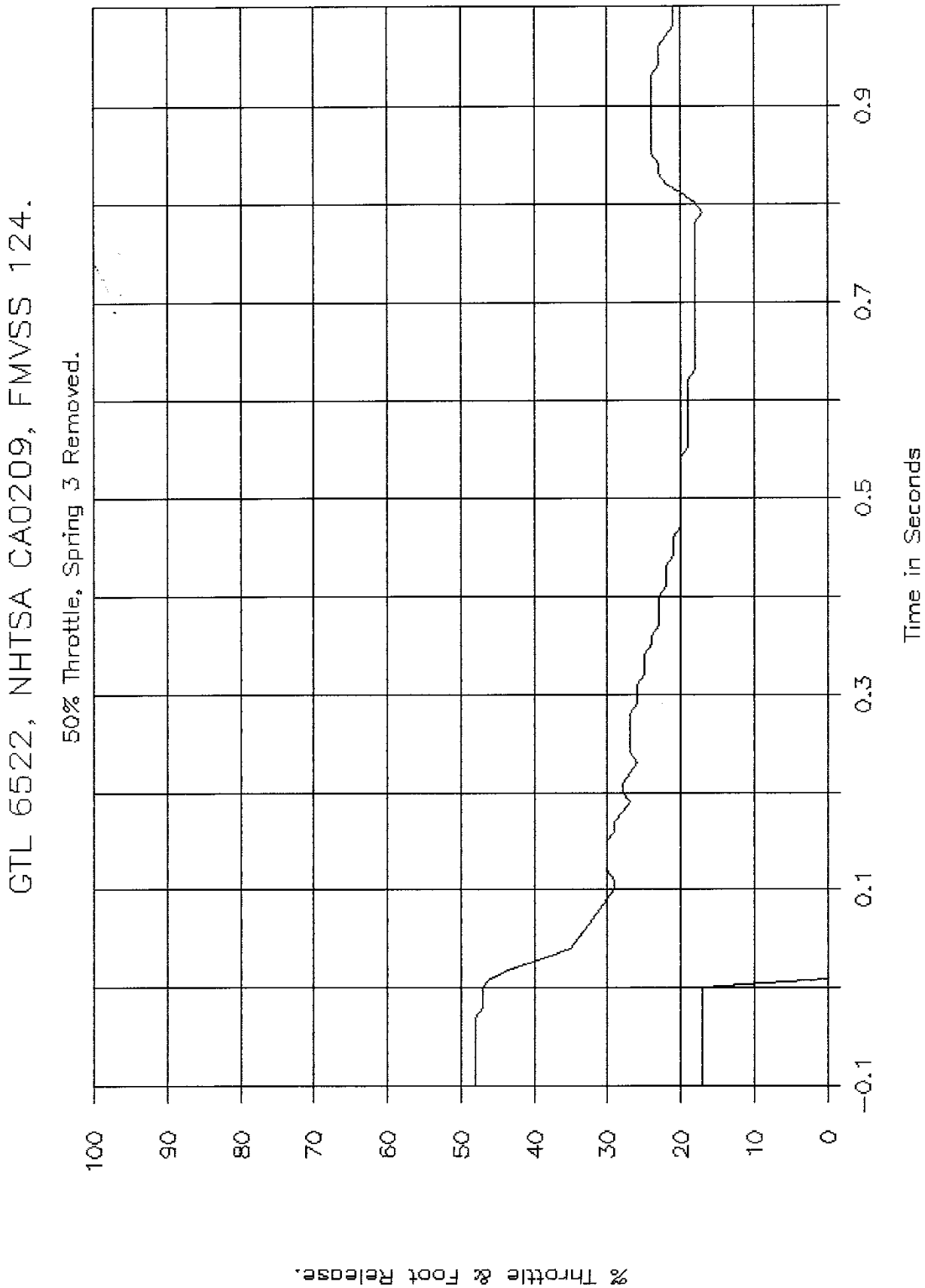

GTL 6517, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 5 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

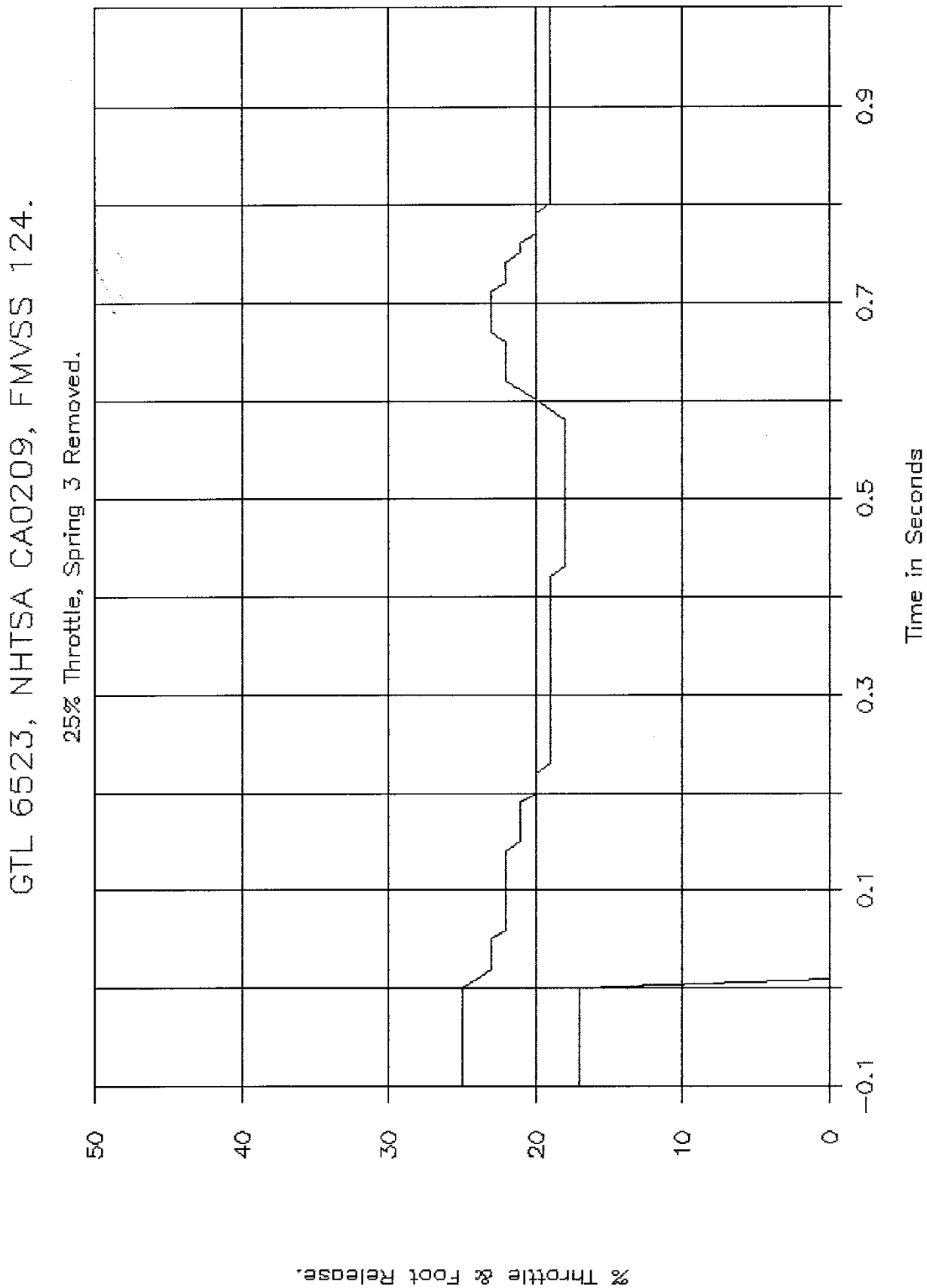

GTL 6518, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 6 Shorted.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

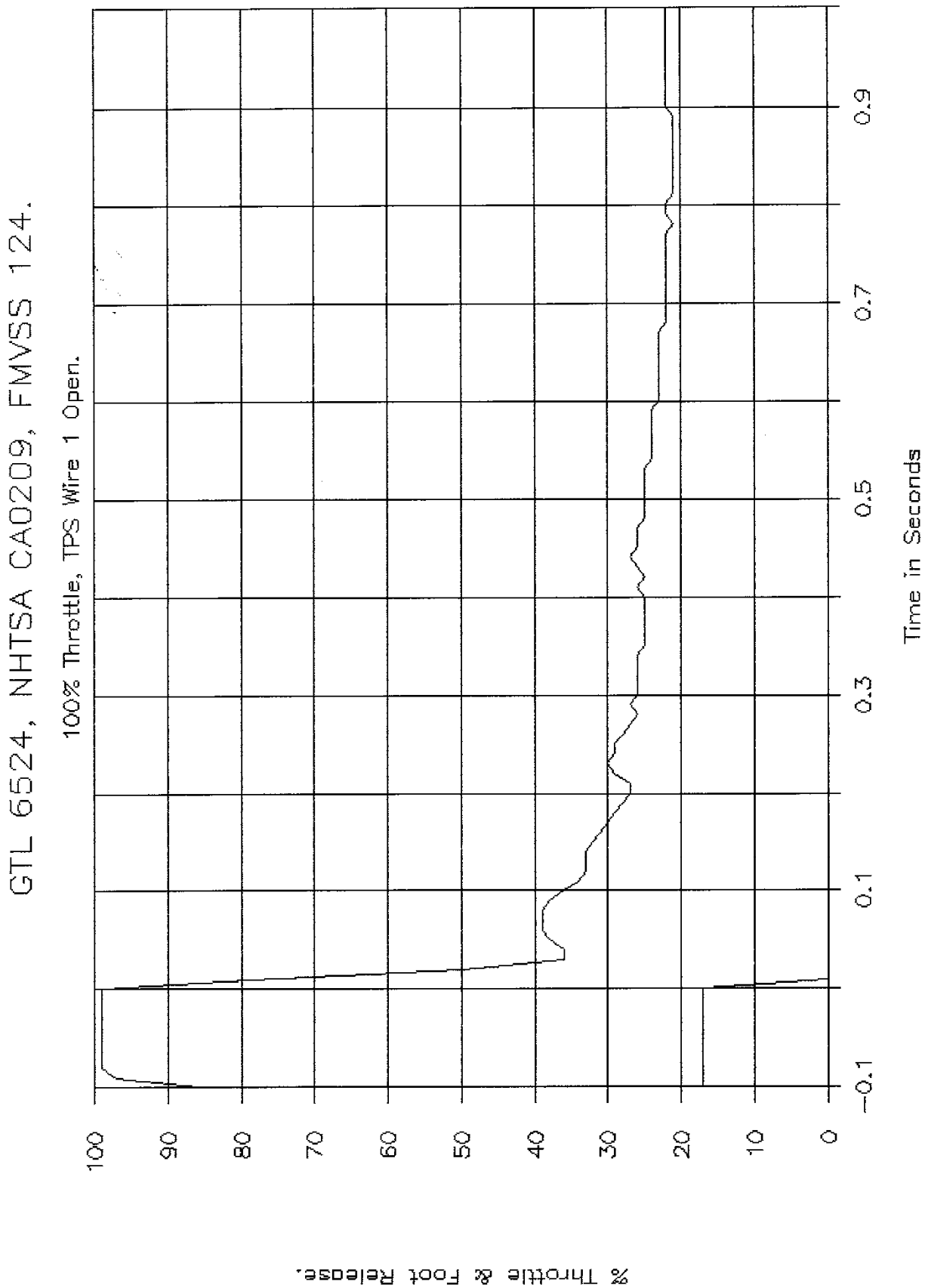

GTL 6519, NHTSA CA0209, FMVSS 124.
100% Throttle, APS Wire 7 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

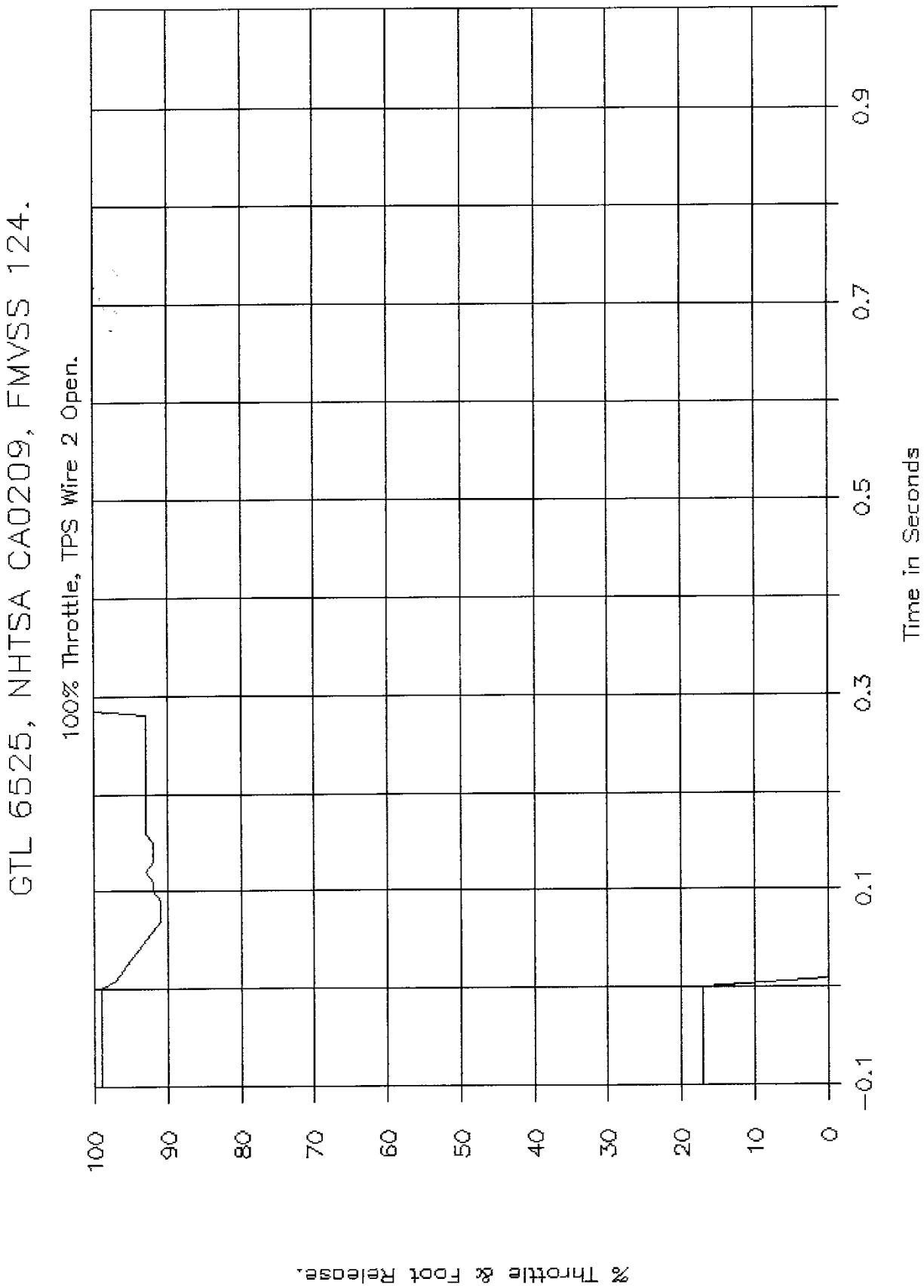

GTL 6520, NHTSA CA0209, FMVSS 124.
100% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

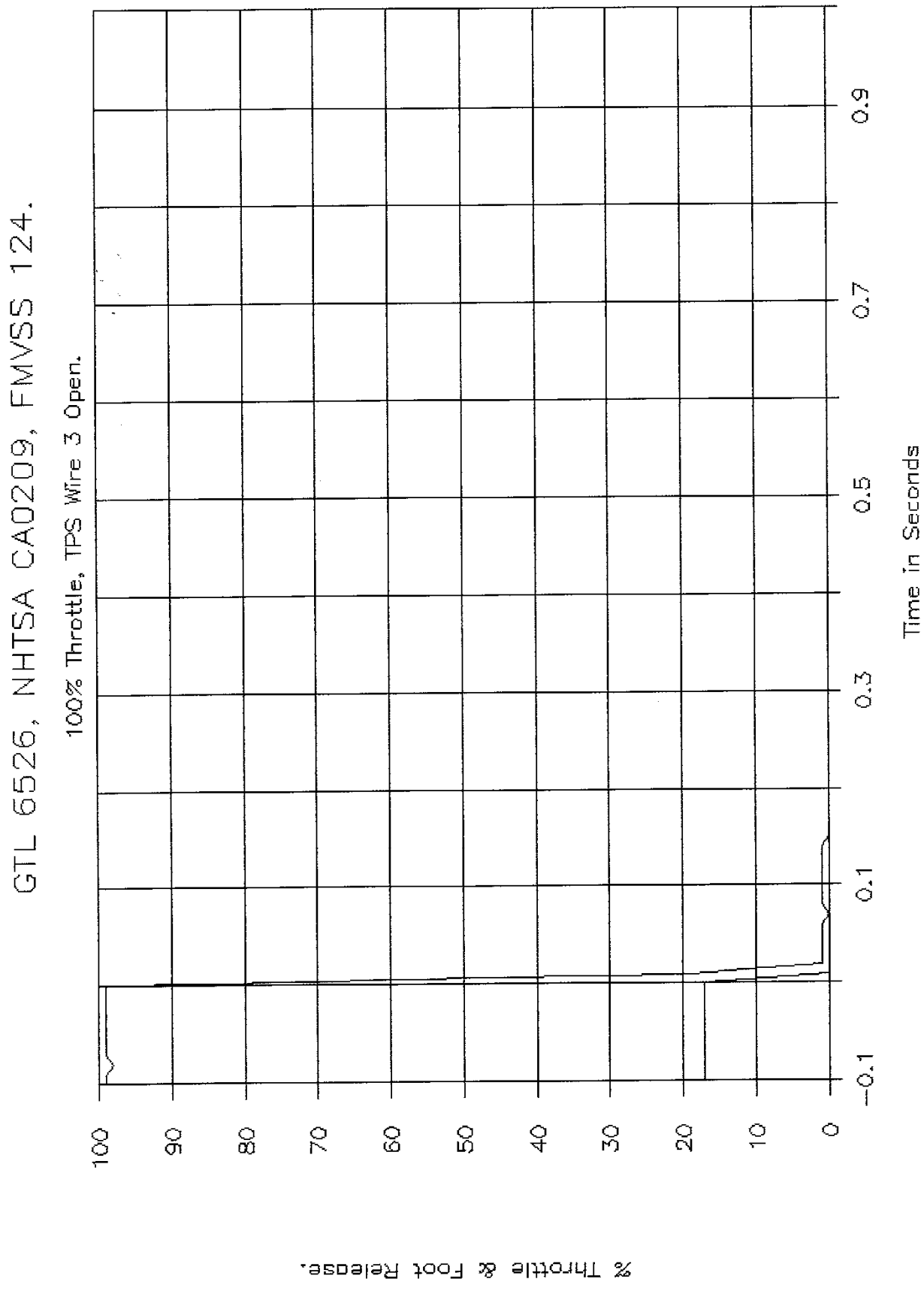

GTL 6521, NHTSA CA0209, FMVSS 124.
75% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

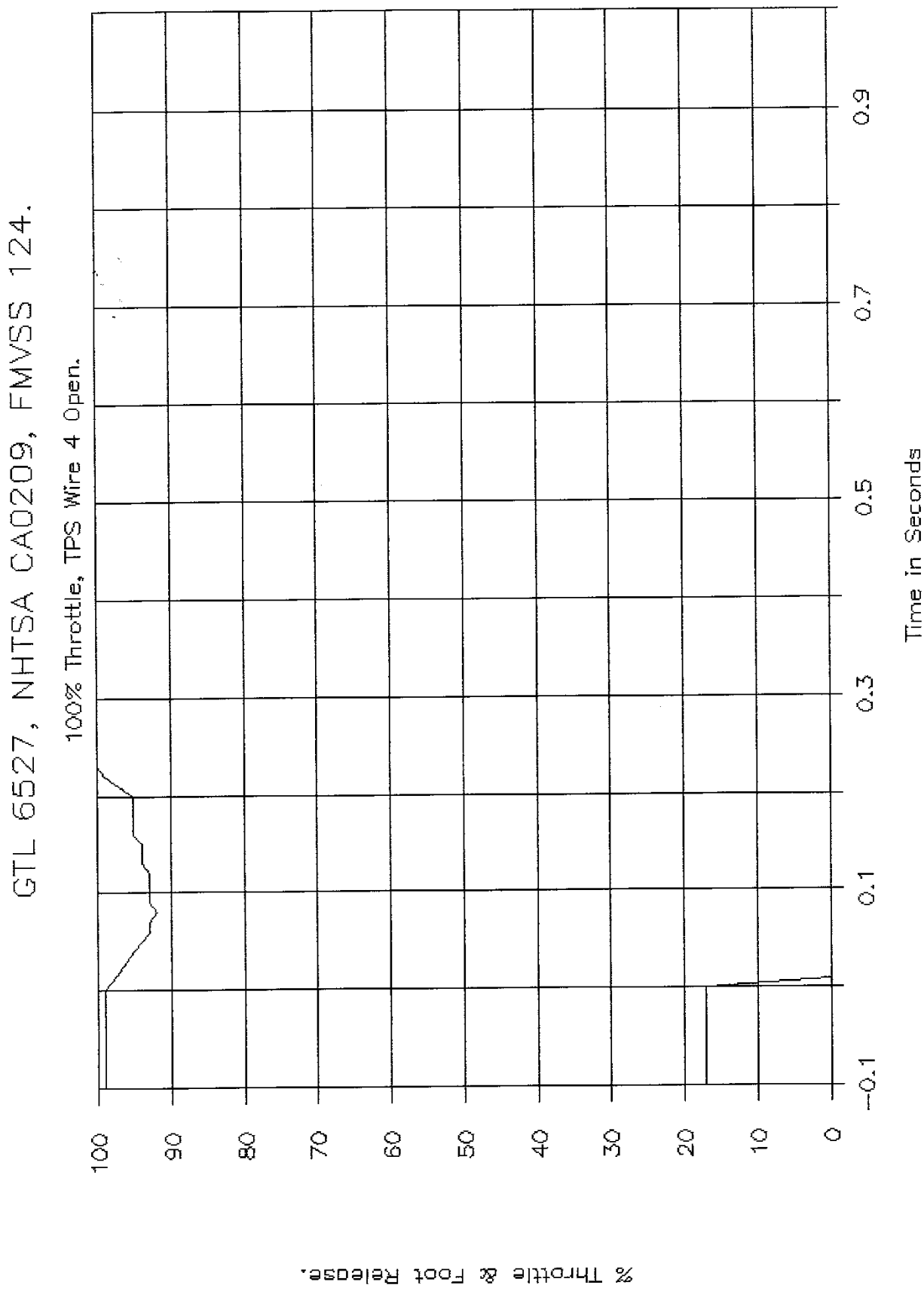

GTL 6522, NHTSA CA0209, FMVSS 124.
50% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

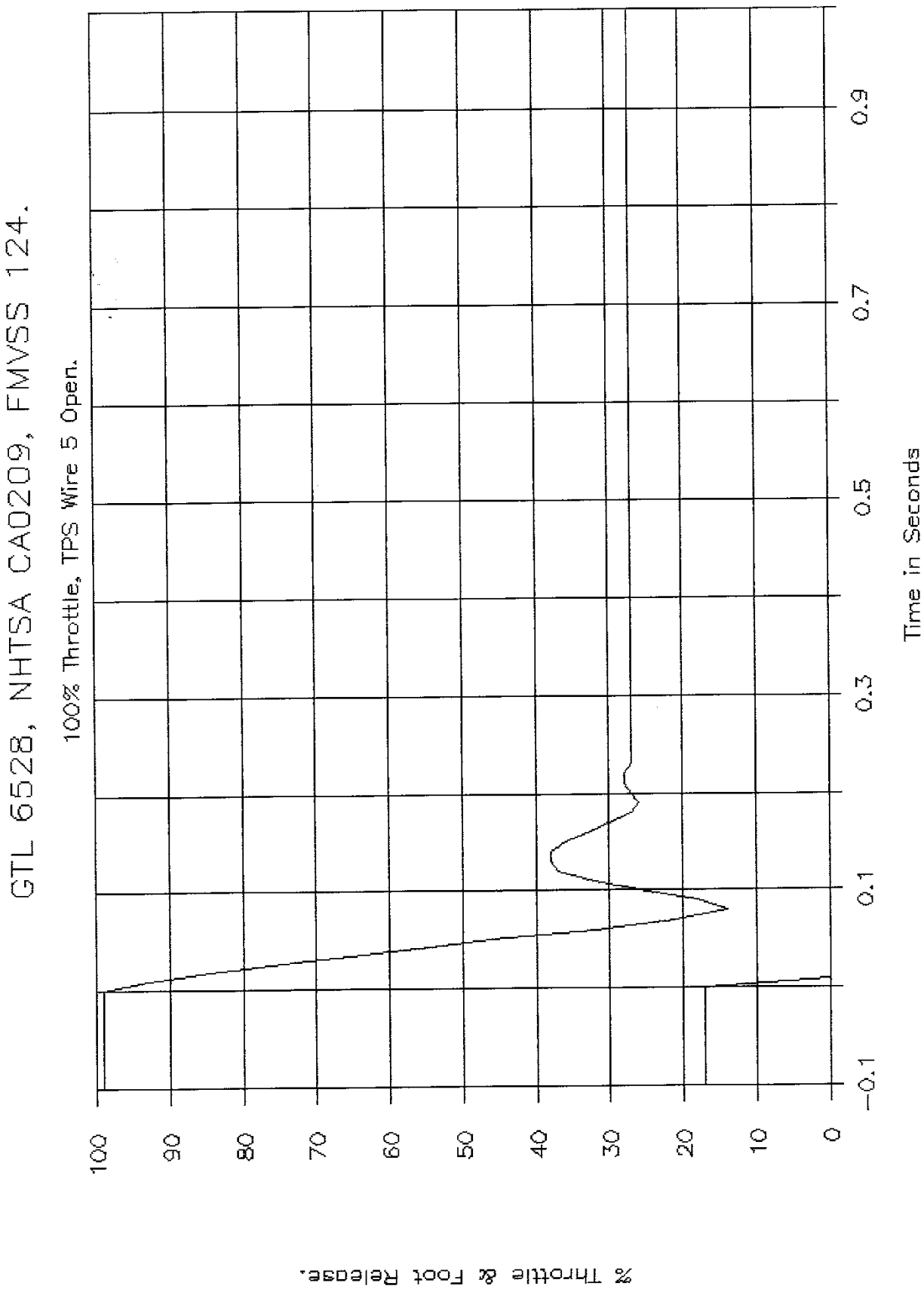

GTL 6523, NHTSA CA0209, FMVSS 124.
25% Throttle, Spring 3 Removed.
% Throttle & Foot Release.
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

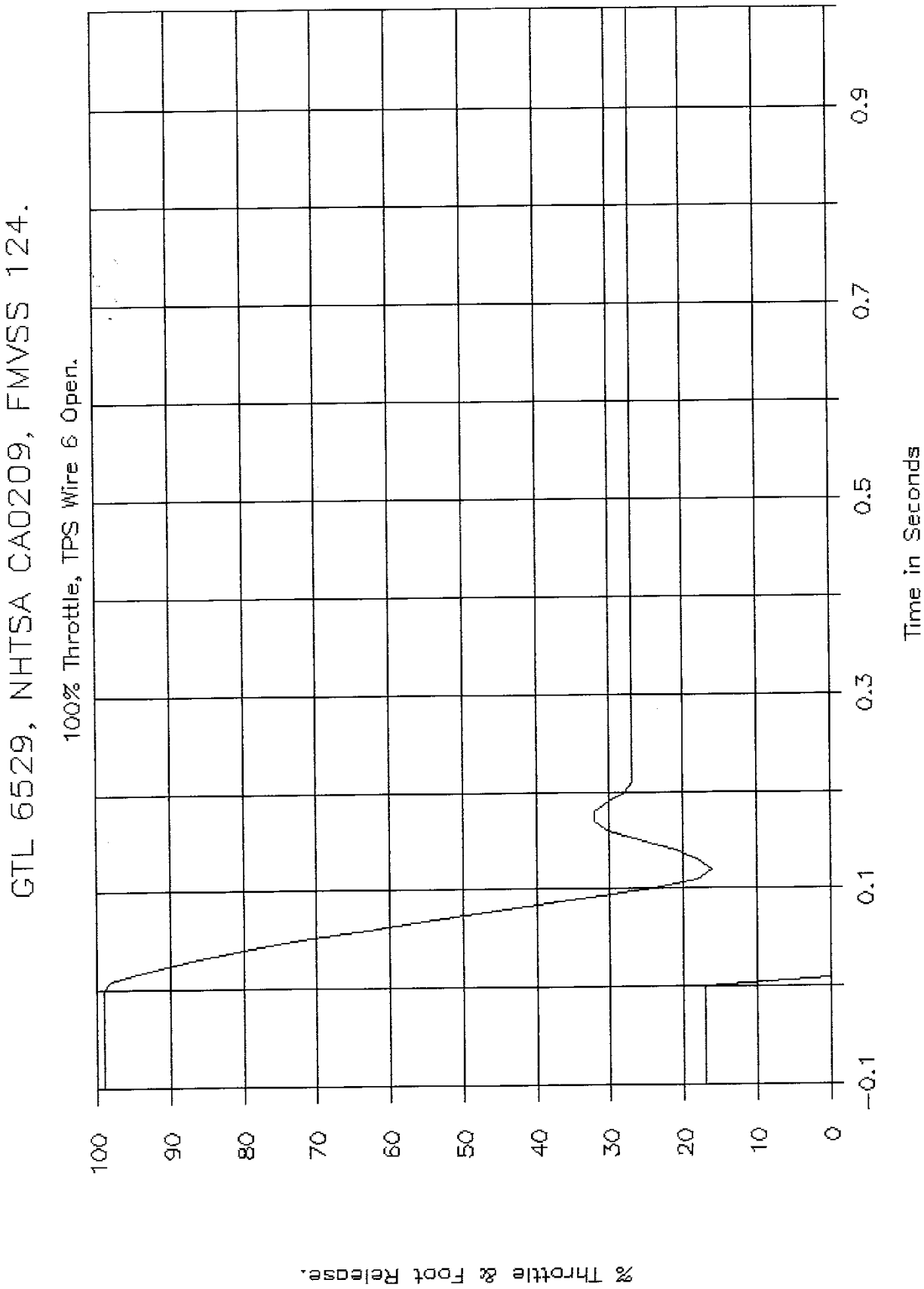

GTL 6524, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 1 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

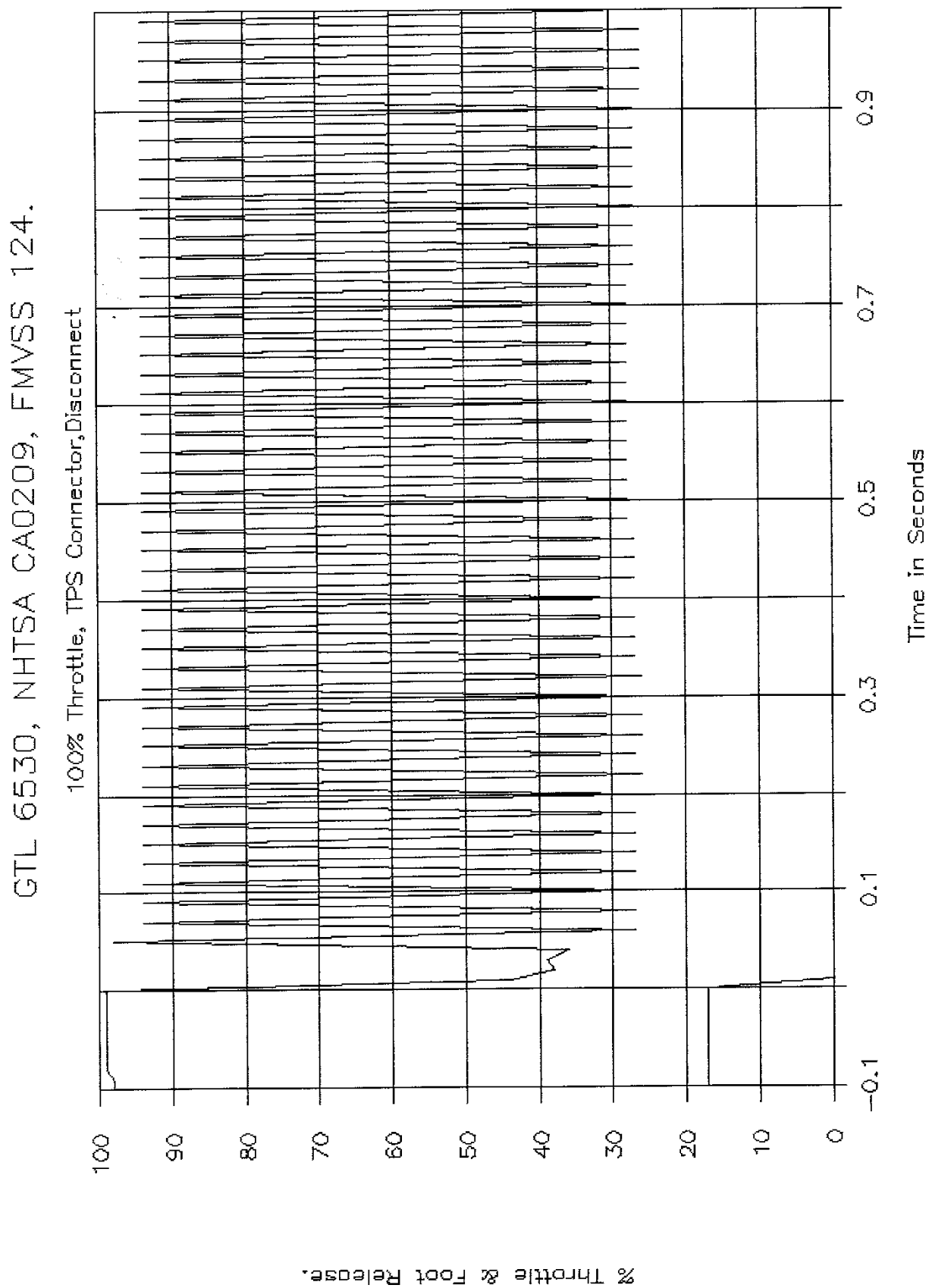

GTL 6525, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 2 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

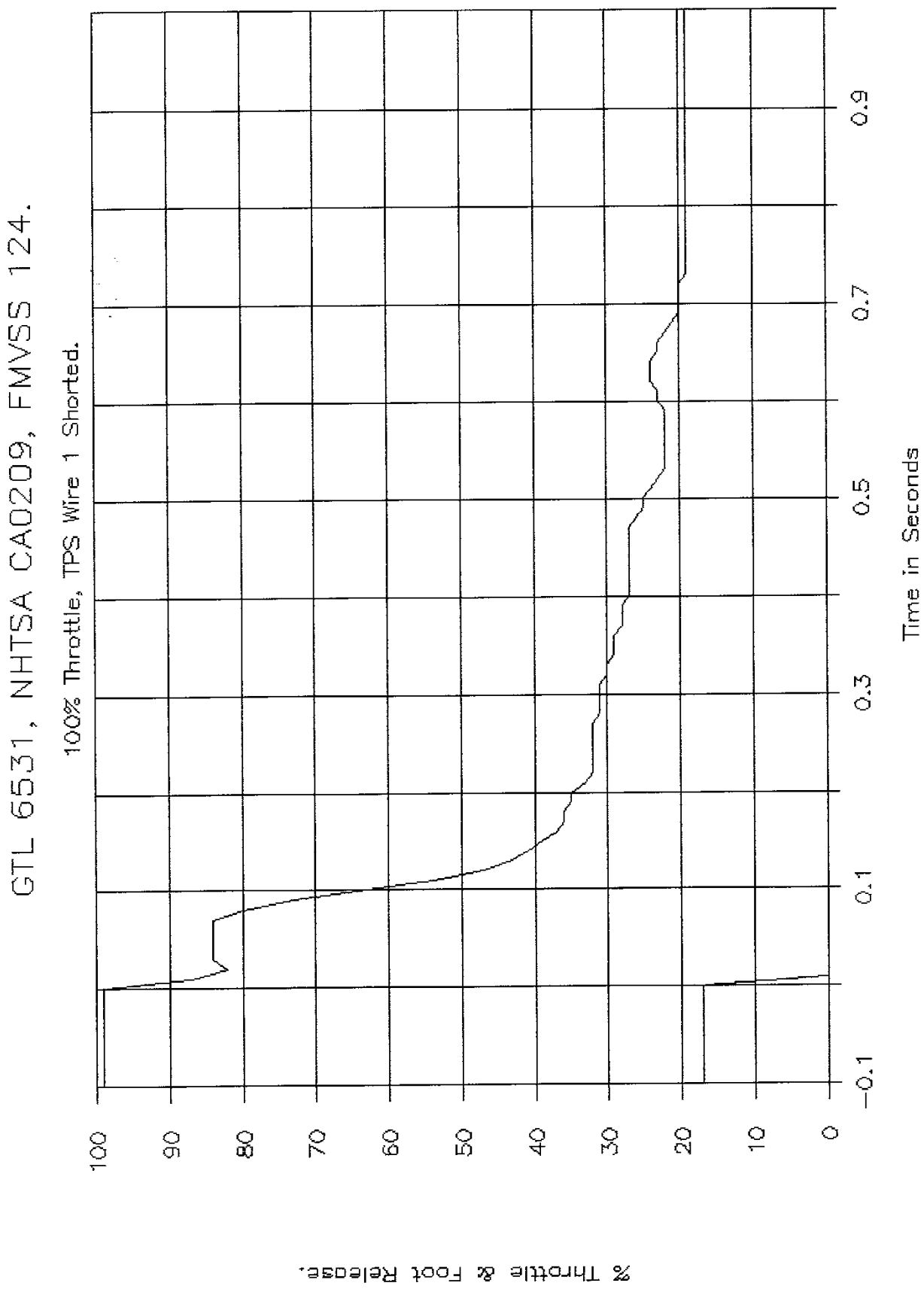

GTL 6526, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 3 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

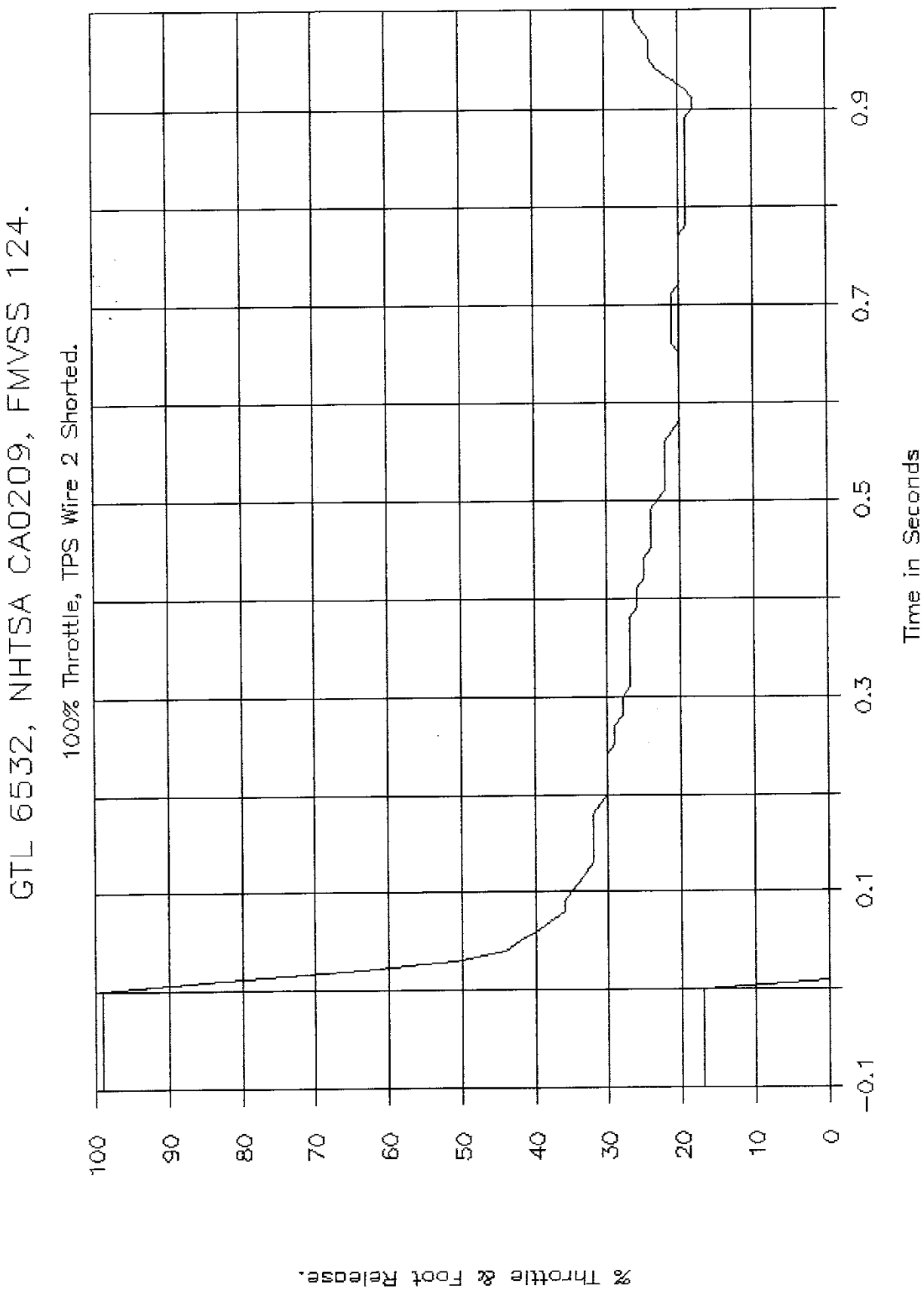

GTL 6527, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 4 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

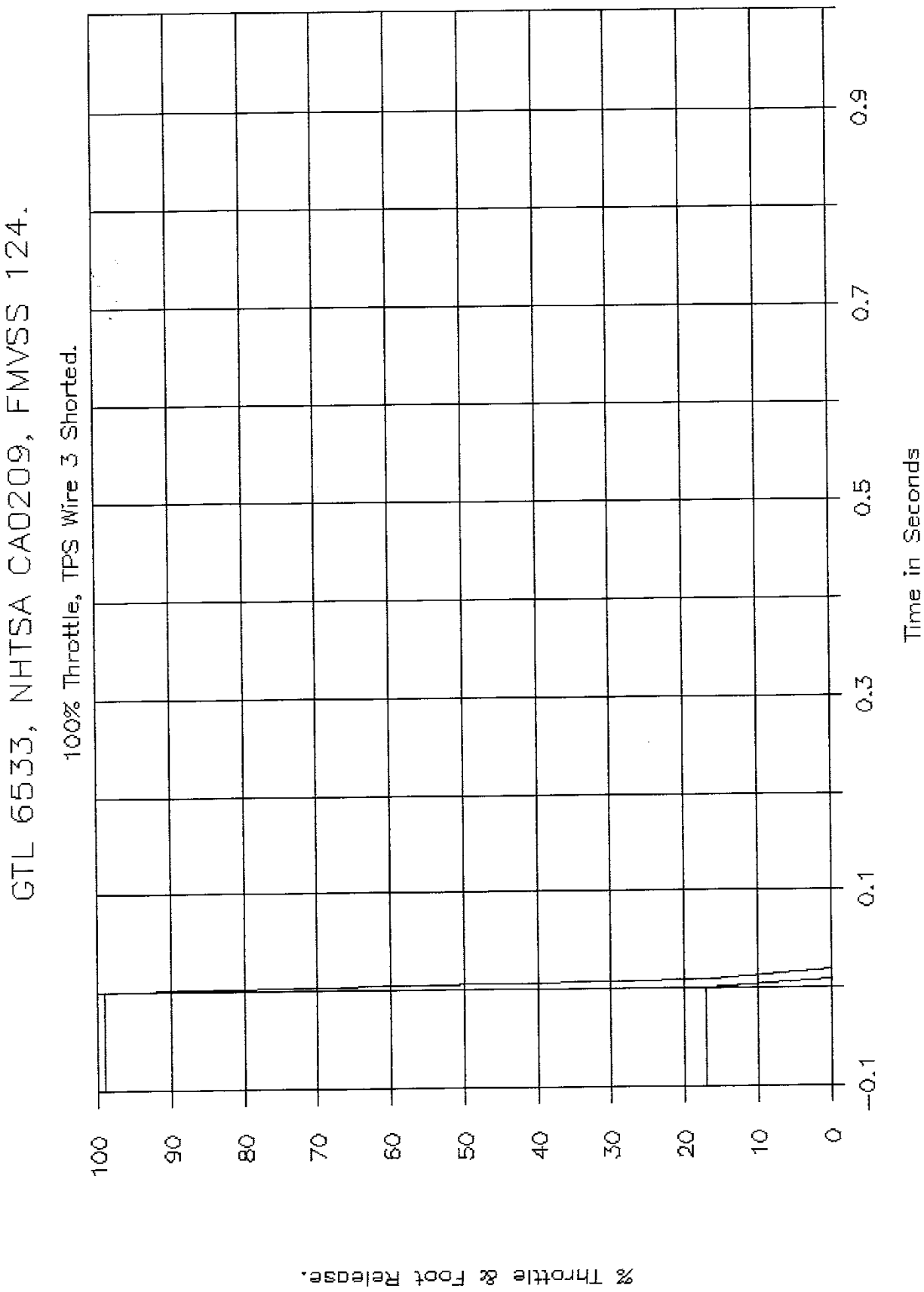

GTL 6528, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 5 Open.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9

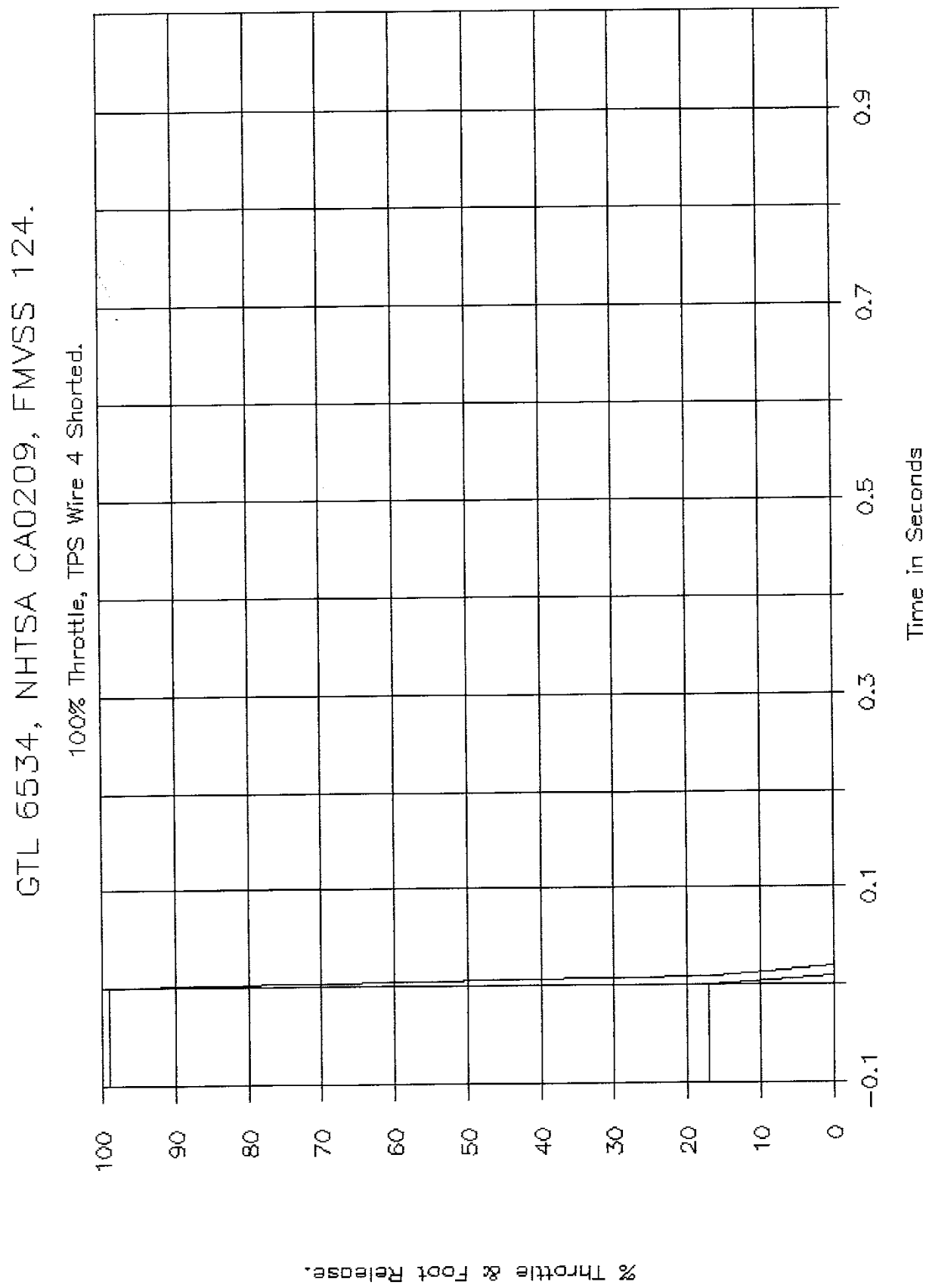

GTL 6529, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 6 Open.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

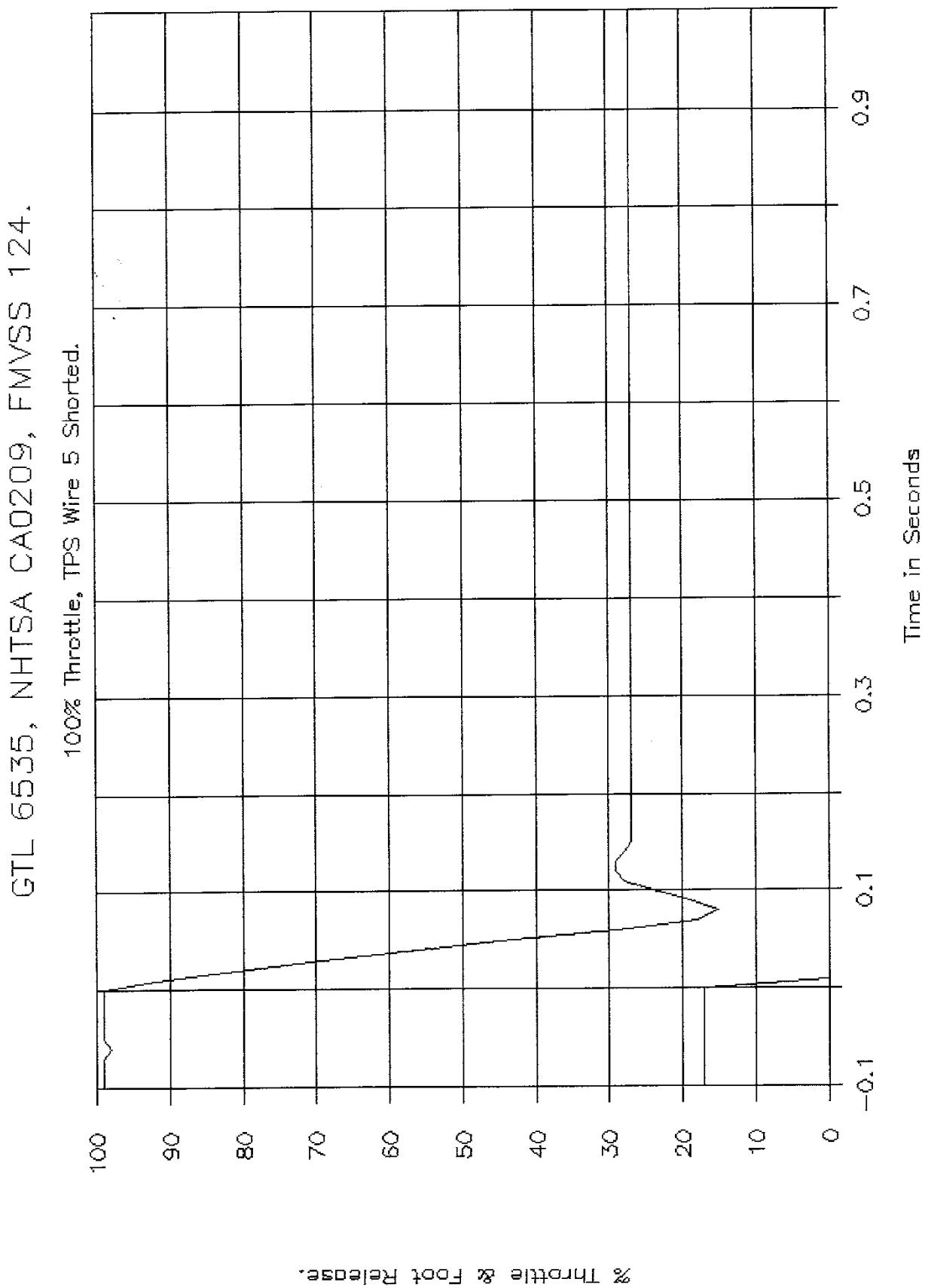

GTL 6530, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Connector,Disconnect
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9
Time in Seconds

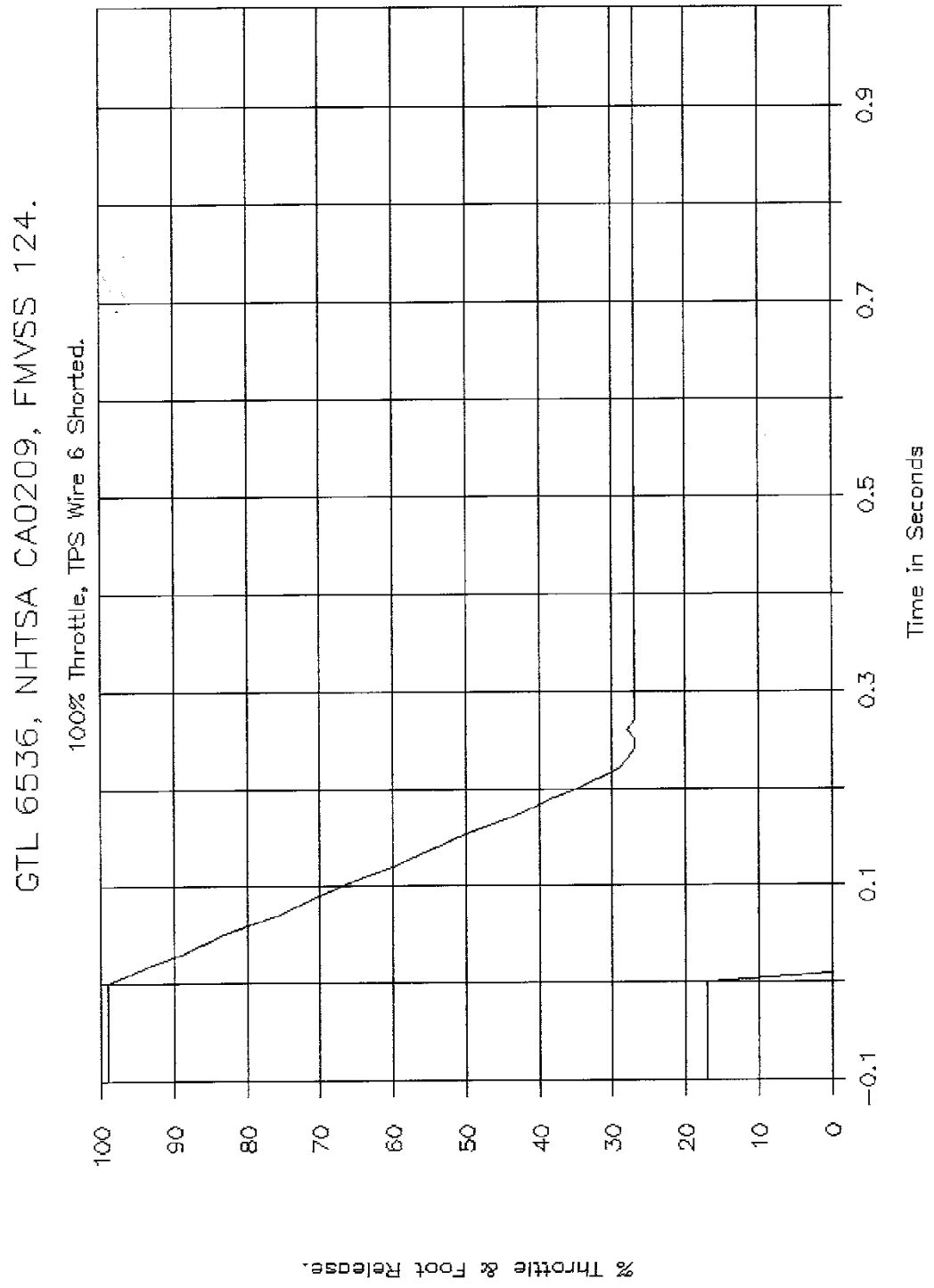

GTL 6531, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 1 Shorted.
% Throttle & Foot Release.
Time in Seconds
100
90
80
70
60
50
40
30
20
10
0
-0.1
0.1
0.3
0.5
0.7
0.9


GTL 6532, NHTSA CA0209, 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 6533, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS 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 6534, NHTSA CA0209, 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 6535, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 5 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 6536, NHTSA CA0209, FMVSS 124.
100% Throttle, TPS Wire 6 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