NO HYBRID III 1981 Plymouth Reliant K
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REPORT NO. TRC-85-NO2

DUMMY KINEMATICS IN CONTROLLED ROLLOVER CRASHES

PREPARED BY:
THE TRANSPORTATION RESEARCH CENTER OF OHIO
ST. RT. 33, LOGAN COUNTY
EAST LIBERTY, OHIO 43319

JUNE 1985
TEST REPORT

PREPARED FOR:
OFFICE OF MANAGEMENT SERVICES
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U.S. DEPARTMENT OF TRANSPORTATION
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WASHINGTON, DC 20590

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16 Abstract

A controlled rollover test was conducted on May 23, 1985 at the Transportation Research Center of Ohio in East Liberty, Ohio. A 1981 Plymouth Reliant K containing one Part 572 fully instrumented test dummy was placed onto the MGA Research Corporation's Rollover Device at 41 degrees above the horizontal and was released when the device had reached 21 mph.

Type of restraint system: A 3-point continuous webbing manual system was used in this 1981 Plymouth Reliant K.

17 Key Words	18 Distribution Statement
Dummy Kinematics Rollover Crash Test	Available from: National Technical Information Service Springfield, Virginia 22161

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Unclassified	Unclassified	76	

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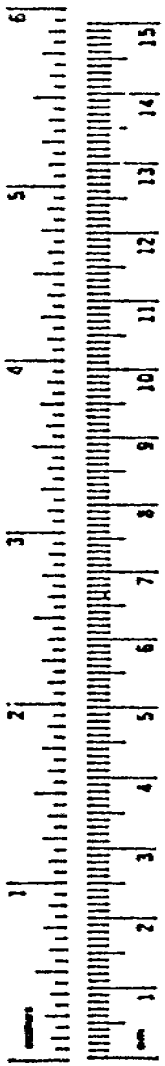
METRIC CONVERSION FACTORS

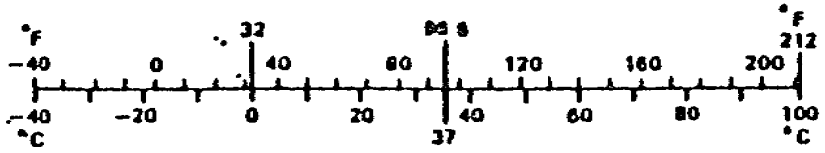
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	metric ton	t
	VOLUME			
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in^3	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10 000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton (1000 kg)	1.1	short tons	
	VOLUME			
mL	milliliters	0.03	fluid ounces	fl oz
mL	milliliters	0.06	cubic inches	in^3
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F





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SECTION 1.0
PURPOSE AND TEST PROCEDURE

This rollover crash test is the first test in the second task of a six test series. The test series has the main objective to document the motion of a fully instrumented dummy in rollover crash tests using the MGA Corporation Rollover Test Device. The purpose of this test was to evaluate the effectiveness of seat belts during a rollover.

This test was conducted by placing a 1981 Plymouth Reliant K on the rollover cart (developed by MGA Research Corporation under Contract No. DTNH22-82-C-07035) at an angle of 41° to the vertical, crabbed 45° clockwise and towing the rollover cart to 21 mph and releasing the test vehicle. The test vehicle contained an instrumented Part 572 dummy restrained by a production 3-point continous belt.

SECTION 2.0
SUMMARY OF ROLLOVER CRASH TEST

A 1981 Plymouth Reliant K containing one Part 572 fully instrumented test dummy was placed upon the rollover test device at 41 degrees above the horizontal and was released when the device had reached 21 mph. The device was attached to the tow cable of the drive system and crabbed 45° clockwise. After the vehicle had been released the device was brought to a stop with an auxiliary brake system. After release the vehicle impacted the ground on its left side. The vehicle made one and one-quarter complete rolls and came to rest on its roof. The rollover crash test was conducted by the Transportation Research Center of Ohio in East Liberty, Ohio on May 23, 1985. Post-test photographs of the test vehicle, dummy and device are shown in Appendix A.

The Part 572 50th percentile adult male anthropomorphic test device (ATD) was placed in the driver designated seating position according to the seating procedure in FMVSS 208. The ATD was instrumented with head and chest triaxial accelerometers and right/left femur load cells. A summary of Dummy Calibration test data can be found in Appendix C.

The crash event was recorded on 24 channels of data on one 14 track tape drive. Appendix B contains the vehicle, rollover device and dummy response data plots.

Photographic coverage of the event included eight high-speed cameras.

ROLLOVER TEST DEVICE SUMMARY

	POSITIVE DIRECTION*		NEGATIVE DIRECTION*	
	MAX	TIME (sec)	MAX	TIME (sec)
CENTER OF GRAVITY ACCELERATION (g)				
LONGITUDINAL (X-Axis)	13.19	1.50	10.55	1.53
LATERAL (Y-Axis)	8.84	0.84	14.52	0.85
VERTICAL (Z-Axis)	12.52	1.56	10.85	0.71
CENTER OF GRAVITY ANGULAR VELOCITY (Deg/Sec)				
PITCH (Y-Axis)	117.60	0.74	71.17	1.51
PNEUMATIC CYLINDERS				
ROTATION (Deg)	29.60	0.76	---	--- γ

*Positive X is Forward
Positive Y is Leftward
Positive Z is Upward
Positive Pitch is nose downward

γ See TEST ANOMALIES

FINAL RESTING PLACES OF PARTS AND CAR

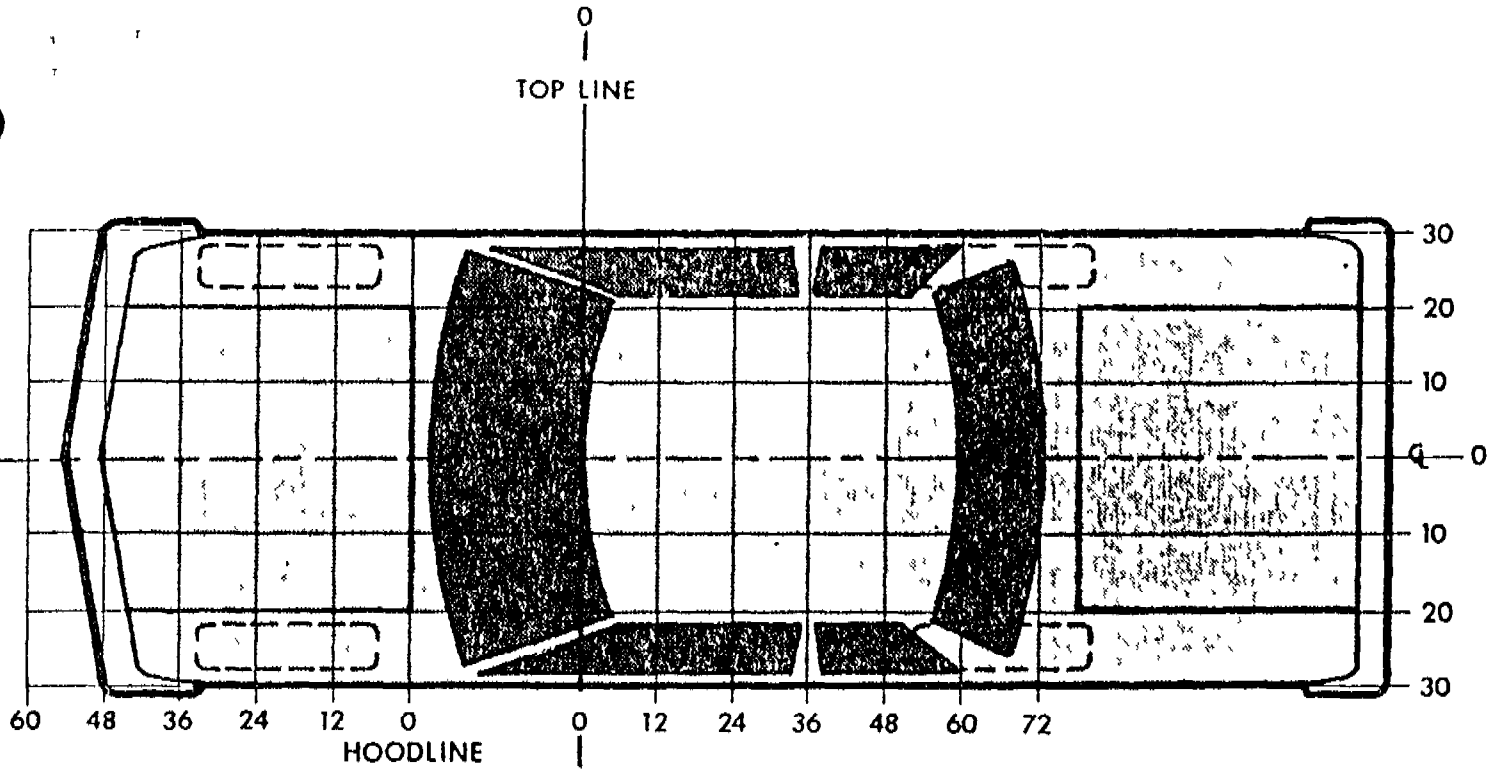
DESCRIPTION OF PART	X (FT)	Y (FT)
1981 Pymouth Reliant K	24 1/2	-11
Backlight	23 1/2	-13

Reference + X = Forward from release block reference point
+ Y = Rightward from release block reference point

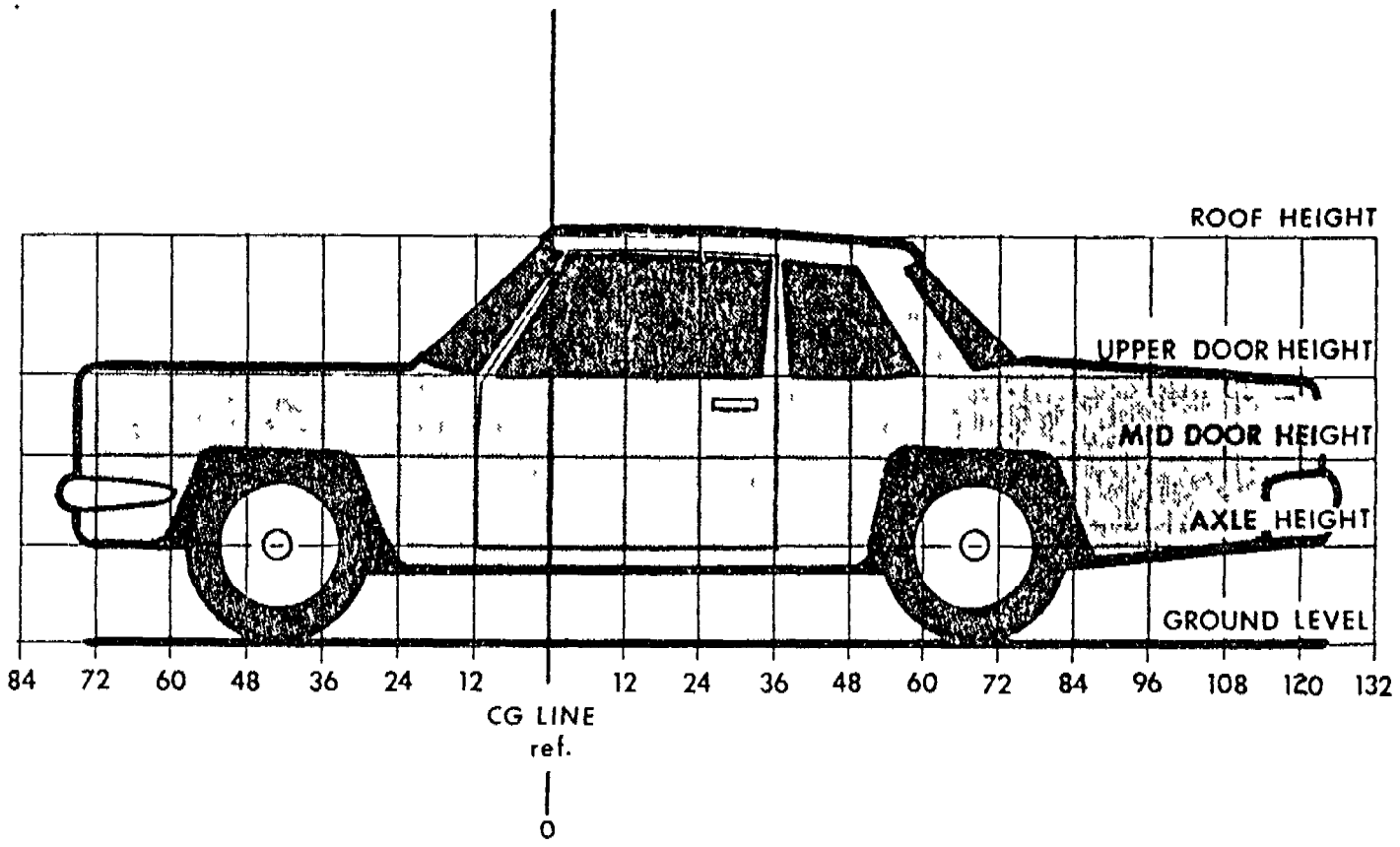
INTERIOR DIMENSIONS TAKEN

DESCRIPTION	PRE	POST	DIFF
Floor board to top of "A" post of left side	42.3	42.5	-0.2
Floor board to top of "A" post of right side	42.3	41.0	1.3
Door sill to top of "B" post of left side	39.3	39.6	-0.3
Door sill to top of "B" post of right side	39.3	38.8	0.5
Door sill to top of door opening of left side	39.0	39.0	0.0
Door sill to top of door opening of right side	39.0	36.1	2.9
Floor tunnel to windshield header	41.0	39.1	1.9
Floor tunnel to center of roof	41.0	39.6	1.4
Rear of floor tunnel to roof	42.5	42.3	0.2
Maximum width at "B" post	60.3	59.5	0.8
Maximum width at "A" post	63.0	45.3	7.7
Maximum width at top of door opening	47.3	46.6	0.7

ALL MEASUREMENTS IN INCHES



HOOD AND ROOF STATIC CRUSH LOCATIONS



LEFT AND RIGHT SIDE STATIC CRUSH LOCATIONS

VEHICLE HOOD EXTERIOR PROFILES
ZERO DISTANCE AT VEHICLE HOOD CENTERLINE*

LOCATION	30	20	10	0	10	20	30
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)							
Trailing edge of cowl at centerline	36.2	37.0	37.5	37.5	37.3	36.5	35.3
Trailing edge of cowl + 12 inches	35.4	36.0	36.7	36.7	36.3	35.4	34.5
Trailing edge of cowl + 24 inches	34.6	35.0	35.8	35.9	35.5	34.4	33.8
Trailing edge of cowl + 36 inches	33.2	33.5	34.2	34.4	34.0	33.0	32.4
Trailing edge of cowl + 42 inches	31.9	32.2	32.9	33.2	33.0	32.4	31.2
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)							
Trailing edge of cowl at centerline	35.3	37.2	38.3	38.5	38.0	38.0	36.2
Trailing edge of cowl + 12 inches	34.8	37.3	38.1	38.2	38.2	37.5	35.5
Trailing edge of cowl + 24 inches	33.0	36.3	37.7	37.8	37.5	36.7	34.5
Trailing edge of cowl + 36 inches	30.7	34.9	36.5	36.8	36.4	35.4	32.9
Trailing edge of cowl + 42 inches	31.8	33.8	35.3	35.8	35.4	34.7	30.0
STATIC CRUSH (IN)							
Trailing edge of cowl at centerline	-0.9	0.2	0.8	1.0	0.7	1.5	0.9
Trailing edge of cowl + 12 inches	-0.6	1.3	1.4	1.5	1.9	2.1	1.0
Trailing edge of cowl + 24 inches	-1.6	1.3	1.9	1.9	2.0	2.3	0.7
Trailing edge of cowl + 36 inches	-2.5	1.4	2.3	2.4	2.4	2.4	0.5
Trailing edge of cowl + 42 inches	-0.1	1.6	2.4	2.6	2.4	2.3	-1.2

* Column readings are left to right from left to right on vehicle.
** Reference plane is a horizontal plane at ground level.
+ Static crush means vehicle structure is bowed upward.
- Static crush means vehicle structure is crushed.

VEHICLE ROOF EXTERIOR PROFILES
ZERO DISTANCE AT VEHICLE ROOF CENTERLINE*

LOCATION	20	10	0	10	20
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)					
Longitudinal Center of Gravity	53.6	53.8	53.8	54.0	53.6
Longitudinal Center of Gravity + 12	54.3	55.0	55.2	55.0	54.2
Longitudinal Center of Gravity + 24	54.4	55.2	55.3	55.1	54.2
Longitudinal Center of Gravity + 36	54.3	55.1	55.2	54.9	54.0
Longitudinal Center of Gravity + 48	54.0	54.6	54.7	54.5	53.6
Longitudinal Center of Gravity + 60	52.8	53.1	53.1	53.0	52.5
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)					
Longitudinal Center of Gravity	49.8	51.6	52.8	53.3	53.8
Longitudinal Center of Gravity + 12	51.7	52.3	54.1	55.0	55.0
Longitudinal Center of Gravity + 24	53.0	54.4	54.3	56.1	55.3
Longitudinal Center of Gravity + 36	54.5	55.8	56.3	56.4	55.3
Longitudinal Center of Gravity + 48	55.1	55.7	56.0	55.8	55.0
Longitudinal Center of Gravity + 60	53.6	54.0	54.2	53.8	53.5
STATIC CRUSH (IN)					
Longitudinal Center of Gravity	-3.8	-2.2	-1.0	-0.7	0.2
Longitudinal Center of Gravity + 12	-2.6	-2.7	-1.1	0.0	0.8
Longitudinal Center of Gravity + 24	-1.4	-0.8	-1.0	1.0	1.1
Longitudinal Center of Gravity + 36	0.2	0.7	1.1	1.5	1.3
Longitudinal Center of Gravity + 48	1.1	1.1	1.3	1.3	1.4
Longitudinal Center of Gravity + 60	0.8	0.9	1.1	0.8	1.0

* Column readings are left to right from left to right on vehicle.
** Reference plane is a horizontal plane at ground level.
+ Static crush means vehicle structure is bowed upwards.
- Static crush means vehicle structure is crushed.

VEHICLE LEFT SIDE EXTERIOR PROFILES AND STATIC CRUSH

ZERO DISTANCE AT VEHICLE LONGITUDINAL CENTER OF GRAVITY*

LOCATION	HEIGHT (in)	72	60	48	36	24	12	0	12	24	36	48	60	72	84
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)															
Roof Height	53.1	X	X	X	X	X	X	24.9	24.8	24.6	24.6	24.8	25.1	X	X
Upper Door	35.0	X	X	16.8	16.1	15.8	15.5	15.5	15.5	15.5	15.5	15.7	15.0	16.5	17.1
Mid Door	28.5	X	16.1	15.4	14.9	14.5	14.5	14.4	14.3	14.3	14.3	14.4	14.5	14.8	15.4
Axle Height	14.0	X	X	X	X	17.0	17.0	17.0	17.0	15.9	15.8	16.8	X	X	X
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)															
Roof Height	53.1	X	X	X	X	X	X	21.4	21.4	21.4	21.8	22.0	22.5	X	X
Upper Door	35.0	X	X	16.6	17.1	15.6	15.3	14.5	14.1	14.2	14.0	14.0	16.5	17.0	16.5
Mid Door	28.5	X	16.0	14.8	15.1	14.1	13.9	13.5	13.1	13.3	13.0	13.1	15.0	15.4	15.5
Axle Height	14.0	X	X	X	X	15.6	15.8	15.4	15.0	15.8	15.5	15.7	X	X	X
STATIC CRUSH (IN)															
Roof Height	53.1	X	X	X	X	X	X	-3.5	-3.4	-3.2	-2.8	-2.8	-2.6	X	X
Upper Door	35.0	X	X	-0.2	1.0	-0.2	-0.2	-1.0	-1.4	-1.3	-1.5	-1.7	1.5	0.5	0.6
Mid Door	28.5	X	-0.1	-0.6	0.2	-0.4	-0.6	-0.9	-1.2	-1.0	-1.3	-1.3	0.5	0.6	0.1
Axle Height	14.0	X	X	X	X	-1.4	-1.2	-1.6	-2.0	-0.1	-0.3	-1.1	X	X	X

* Center of gravity is located 38.4 inches rearward of vehicle front wheels. Column readings are left to right from front to rear on vehicle.

* Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

+ Static crush means that vehicle structure is crushed.

- Static crush means that vehicle structure is bowed outward.

VEHICLE RIGHT SIDE EXTERIOR PROFILES AND STATIC CRUSH

ZERO DISTANCE AT VEHICLE LONGITUDINAL CENTER OF GRAVITY*

LOCATION	HEIGHT (in)	72	60	48	36	24	12	0	12	24	36	48	60	72	84
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)															
Roof Height	53.1	X	X	X	X	X	X	25.8	25.4	25.4	25.3	25.3	25.6	X	X
Upper Door	35.0	X	X	16.9	16.3	15.9	15.6	15.4	15.4	15.5	15.6	15.9	16.1	16.9	X
Mid Door	28.5	X	16.6	15.6	14.9	14.5	14.4	14.3	14.2	14.2	14.2	14.2	14.6	14.9	15.5
Axle Height	14.0	X	X	X	X	16.8	16.8	16.5	16.5	16.4	16.4	16.5	X	X	X
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)															
Roof Height	53.1	X	X	X	X	X	X	28.8	27.5	26.8	26.5	26.3	26.3	X	X
Upper Door	35.0	X	X	18.5	17.3	16.3	15.4	15.5	15.8	16.1	16.1	16.0	16.8	16.6	X
Mid Door	28.5	X	16.0	15.0	14.5	14.8	14.0	14.1	14.3	14.5	14.4	14.4	14.7	14.6	14.9
Axle Height	14.0	X	X	X	X	16.5	16.5	16.5	16.5	16.5	16.0	16.6	X	X	X
STATIC CRUSH (IN)															
Roof Height	53.1	X	X	X	X	X	X	3.0	2.1	1.4	1.2	1.0	0.7	X	X
Upper Door	35.0	X	X	1.6	1.0	0.4	-0.2	0.1	0.4	0.6	0.5	0.1	0.7	-0.3	X
Mid Door	28.5	X	-0.6	-0.6	-0.4	0.3	-0.4	-0.2	0.1	0.3	0.2	0.2	0.1	-0.3	-0.6
Axle Height	14.0	X	X	X	X	-0.3	-0.3	0.0	0.0	0.1	-0.4	0.1	X	X	X

* Center of gravity is located 38.4 inches rearward of vehicle front wheels. Co.umn readings are left to right from front to rear on vehicle.

** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

+ Static crush means that vehicle structure is crushed.

- Static crush means that vehicle structure is bowed outward.

TEST ANOMALIES

During the roll event, the vehicle right rear tire momentarily snagged the sill support member. The additional load caused an aluminum casting used to mount one pneumatic cylinder to break. Consequently a weldment attached to the opposite pneumatic cylinder snapped and the rollover platform continued rotation unrestrained until it impacted the concrete test surface. This action is reflected in data channel RCPDL - Roll Cart Left Cylinder Displacement.

SECTION 3.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Chrysler Corporation

MAKE/MODEL: Plymouth Reliant K VIN: 1P3BK46B3BC114613

BODY STYLE: 4-Door Sedan MODEL YEAR: 1981

NHTSA NO.: R & D COLOR: Green

ENGINE DATA: TYPE: Inline CYLINDERS: 4 DISPLACEMENT 135 cc

TRANSMISSION DATA: 3-speed Automatic X FWD, ____ RWD

DATE VEHICLE RECEIVED: 4/22/85 ODOMETER READING: 90145

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	No
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	No
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? Yes*
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Chrysler Corporation

DATE OF MANUFACTURE: 10/80

GVWR: 3665 LBS.,

GAWR: FRONT 1940 LBS., REAR 1775 LBS.

*Minor dent on left front fender.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE: Co-op P 185-80-R 13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? Yes

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT	764	LBS.	RIGHT REAR	426	LBS.
LEFT FRONT	816	LBS.	LEFT REAR	470	LBS.

TOTAL FRONT WEIGHT 1580 LBS. (63.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 896 LBS. (36.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 2476 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 27	;LF 26 1/2	;RR 26	;LR 25 3/8
PRE-TEST ATTITUDE:	RF 26 1/2	;LF 26 1/4	;RR 26 1/2	;LR 24 3/8
POST-TEST ATTITUDE:	RF 26 1/2	;LF 25 3/4	;RR 27	;LR 24 1/4

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 100 LBS. CARGO:

RIGHT FRONT	796	LBS.	RIGHT REAR	509	LBS.
LEFT FRONT	892	LBS.	LEFT REAR	543	LBS.

TOTAL FRONT WEIGHT 1688 LBS. (61.6 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1052 LBS. (38.4 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2740 LBS.

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: NA GALLONS (FURNISHED BY CTM)

TEST VOLUME: 0 GALLONS (92-94% OF USEABLE)

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 13 GALLONS

DETAILS OF FUEL SYSTEM: Electronic fuel control

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: No

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? Yes

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 35 psi; REAR 35 psi

RECOMMENDED TIRE SIZE: P175 R-13 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY: 3 FRONT
3 REAR
6 TOTAL

CARGO LOAD 115 LBS.

TOTAL 1015 LBS.

*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

TEST CONDITIONS

TEST NUMBER: 850523

DATE OF TEST: May 23, 1985 TIME OF TEST: 15:05

WIND VELOCITY: 7-14 mph @ 360° N HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 69°F

TEMPERATURE IN OCCUPANT COMPARTMENT: 69°F

SUBJECT VEHICLE DATA

	ACTUAL	INTENDED
TEST WEIGHT (LBS.)	2740	2755
VEHICLE ORIENTATION (DEGREES) YAW	45	45
VEHICLE ORIENTATION (DEGREES) ROLL	41	41
VEHICLE VELOCITY (mph)	21.	21.

DUMMIES

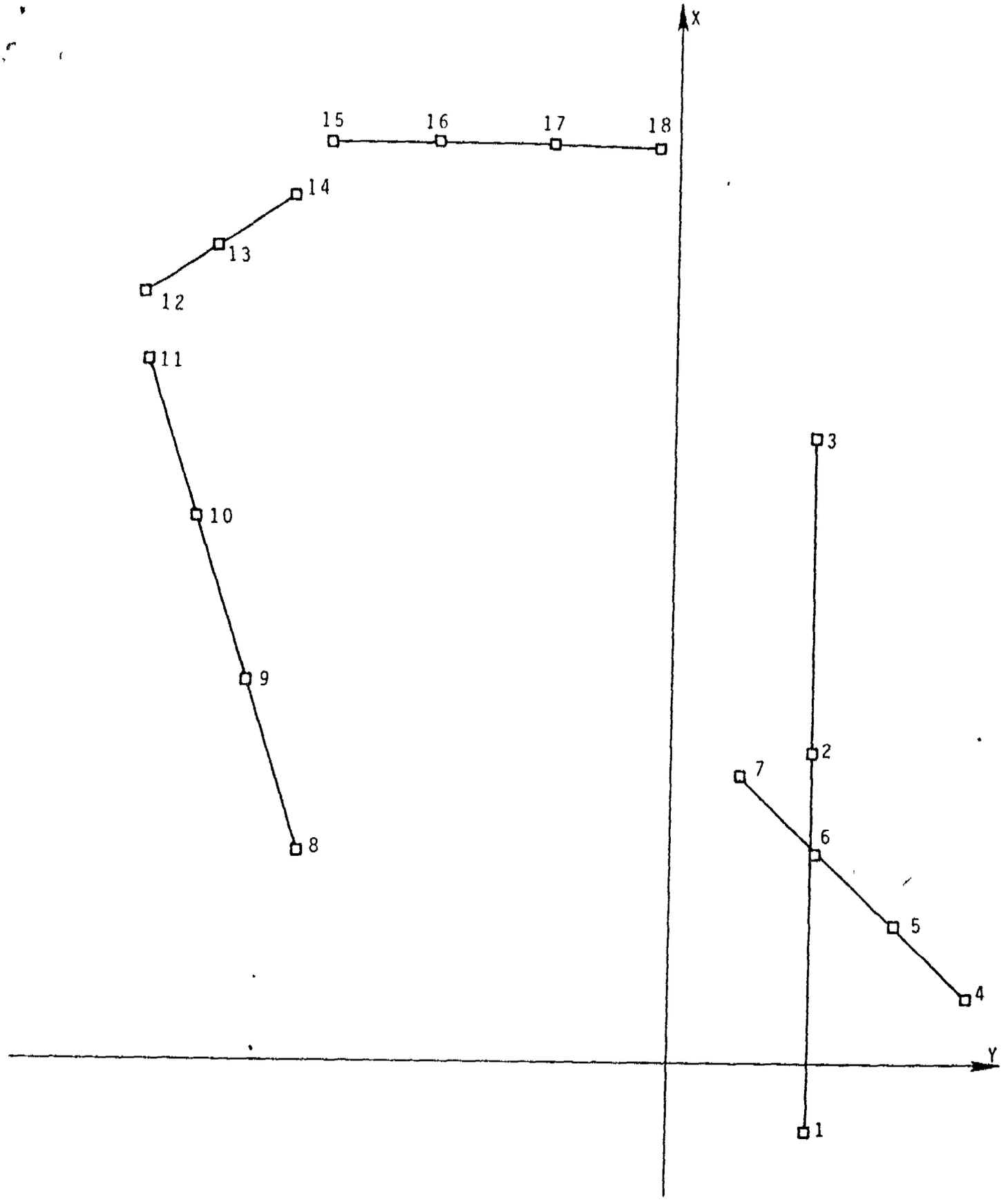
	DRIVER	MIDDLE PASSENGER	RT. FRONT PASSENGER	LEFT REAR PASSENGER	RT. REAR PASSENGER
TYPE:	572				
SERIAL NO.:	880				
INSTRUMENTATION:					
HEAD ACCEL.:	3				
CHEST ACCEL.:	3				
FEMUR L.C.'S:	2				
OTHER:					

RESTRAINT SYSTEM: 3-point continuous webbing

TEST VEHICLE DATA SUMMARY

	POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX	TIME (SEC)	MAX	TIME (SEC)
CENTER OF GRAVITY ACCELERATION (g)				
LONGITUDINAL	3.03	2.22	9.16	0.97
LATERAL	9.92	1.53	17.08	0.96
VERTICAL	13.94	2.26	15.15	1.54
RESULTANT		19.07 @ 0.96		
CENTER OF GRAVITY ANGULAR VELOCITY (deg/sec)				
ROLL (X-AXIS)	36.70	4.16	349.65	2.10
PITCH (Y-AXIS)	72.96	1.00	46.28	1.49
YAW (Z-AXIS)	35.02	2.34	40.26	2.33
SUSPENSION DISPLACEMENT (in)				
LEFT FRONT	0.57	0.98	2.81	2.29
RIGHT FRONT	0.25	1.49	3.62	1.95
LEFT REAR	0.21	1.37	6.54	2.25
RIGHT REAR	0.29	3.66	6.87	1.97

*	LONGITUDINAL:	FORWARD	PITCH:	NOSE DOWNWARD
	LATERAL:	LEFTWARD	ROLL:	TO RIGHT
	VERTICAL:	UPWARD	YAW:	COUNTERCLOCKWISE
**	LONGITUDINAL:	REARWARD	PITCH:	NOSE UPWARD
	LATERAL:	RIGHTWARD	ROLL:	TO LEFT
	VERTICAL:	DOWNWARD	YAW:	CLOCKWISE



STADIA POLE LAYOUT AND NUMBERING SYSTEM

STADIA POLE LOCATIONS

POLE NUMBER	X COORDINATE (FT)*		Y COORDINATE (FT)*	
1	-0.5	-6.0	10.5	126.0
2	23.4	281.0	10.6	127.0
3	47.1	565.0	10.6	127.0
4	5.3	64.0	22.8	274.0
5	10.8	130.0	17.0	204.0
6	16.4	197.0	11.0	132.0
7	21.9	263.0	5.1	61.0
8	15.8	190.0	-28.4	-341.0
9	28.5	342.0	-32.9	-395.0
10	40.5	486.0	-36.5	-438.0
11	52.2	626.0	-40.3	-484.0
12	57.2	686.0	-40.7	-488.0
13	60.8	729.0	-35.1	-421.0
14	64.5	774.0	-29.4	-353.0
15	68.5	822.0	-26.7	-320.0
16	68.5	822.0	-18.6	-223.0
17	68.4	821.0	-9.8	-118.0
18	68.2	818.0	-1.6	-19.0

* Reference
  +X = forward from release block reference point
  +Y = rightward from release block reference point

CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Right	Bolex	40	24	Panning Overall
2	Front ~~Tight~~ (DOWNSTREAM)	Photosonic 1B	25	498	Vehicle Kinematics
3	Left Wide	Photosonic 1B	13	495	Vehicle Kinematics
4	Overhead	Photosonic 1B	13	495	Vehicle Kinematics
5	Onboard Rear	Photosonic 1B	8	500	Dummy Kinematics
6	Onboard Passenger Side	Photosonic 1B	8	498	Dummy Kinematics
7	Right Wide	Photosonic 1B	13	500	Vehicle Kinematics
8	Right Tight (OBL SIDE)	Photosonic 1B	25	503	Vehicle Kinematics
9	Left Tight	Photosonic 1B	50	500	Vehicle Kinematics

Cameras are numbered according to splicing sequence of film.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	X* (ft)	Y* (ft)
2	145.7 (1748.4 in.)	-7.8 (-93.6 in.)
3	18.5 (222.0 in.)	-93.1 (-1117.2 in.)
7	60.3 (723.6 in.)	70.0 (840.0 in.)
8	21.7 (260.4 in.)	85.4 (1024.8 in.)
9	123.6 (1483.2 in.)	-84.0 (-1008.0 in.)

*Reference

+X = Forward from release block reference point.

+Y = Rightward from release block reference point.

SECTION 4.0
OCCUPANT INFORMATION

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 880	PASSENGER DNA
Head	Roof, Side Header	
Chest	Side of Thorax Into Door and B-Pillar	
Abdomen	No	
Left Knee	Door Panel	
Right Knee	Steering Wheel Rim	

DOOR OPENING:

	LEFT	RIGHT
Front	No Tools Required	No Tools Required
Rear	No Tools Required	No Tools Required

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	None	None
Rear	None	None

GLAZING DAMAGE: Windshield shattered but remained with vehicle; backlight shattered.

OTHER NOTABLE IMPACT EFFECTS:

DUMMY KINEMATIC SUMMARY

Upon vehicle impact with the ground, the dummy's head struck the roof and left side header and the left side of the upper torso struck the left door and B-pillar. As the vehicle rolled over onto its roof, the dummy's head remained in contact with the roof while the upper torso remained near the left door. As the vehicle continued to roll, the dummy rebounded into the driver's seat and began to lean towards the passenger door while sliding out from under the shoulder belt. The vehicle rolled again onto its left side and the dummy fell to the left side of the vehicle, its head striking the side header and the upper torso striking the left side interior. The vehicle rolled over onto its roof and remained there. The dummy came to rest with its head resting on the roof and the torso hanging by the lap belt.

PART 572 DUMMY DATA SUMMARY

DRIVER DUMMY

	POSITIVE DIRECTION* MAX (g)	TIME (sec)		NEGATIVE DIRECTION** MAX (g)	TIME (sec)
HEAD ACCELERATION					
LONGITUDINAL	4.43	0.01		17.50	2.31
LATERAL	12.52	2.33		98.90	2.31
VERTICAL	32.25	2.31		27.46	2.31
RESULTANT			103.81 @ 2.31		
HIC	81.63 (Computed here at KH75A)				
CHEST ACCELERATION					
LONGITUDINAL	15.65	2.30		11.99	1.08
LATERAL	6.05	3.89		102.97	2.30
VERTICAL	14.21	2.31		9.88	1.04
RESULTANT			104.19 @ 2.30		

	MAX (lb)	TIME (msec)	MAX (lb)	TIME (msec)
FEMUR FORCE***				
LEFT	123.17	1.01	202.81	2.25
RIGHT	125.30	1.07	123.17	2.35

* LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

***COMPRESSION NEGATIVE

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle and dummy were left inside the temperature controlled building 8 hours prior to the time the dummy was loaded into the vehicle. After the vehicle had been positioned on the rollover device it was towed outside for launch. At this point, heaters were placed inside the vehicle to maintain the temperature up to test time.

The procedure used to position the Part 572 dummy was per FMVSS 208 Seating Procedure which is summarized in the following table.

DUMMY PLACEMENT AND POSITIONING

PART 572 DUMMY	DRIVER DSP	PASSENGER DSP DNA
HEAD	Surface of transverse instrument mounting platform is horizontal & midsagittal plane falls in longitudinal plane.	Surface of transverse instrument mounting platform is horizontal & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical & longitudinal & passes through center point of steering wheel rim.	Placed against seat back. Midsagittal plane is vertical, longitudinal, & the same distance from vehicle longitudinal centerline as driver dummy midsagittal plane.
UPPER ARMS	Initially placed against seat back & tangent to side of upper torso. Push arms rearward into seat back with bending at elbows.	Initially placed against seat back & tangent to side of upper torso. Push arms rearward into seat back with bending at elbows. Remains tangent.
LOWER ARMS	Initially placed against the outside of the thighs. Centerline as close as possible in a vertical plane.	Initially placed against the outside of the thighs. Centerline as close as possible in a vertical plane.
HAND PALMS	Palms contact outer part of steering wheel rim at horizontal centerline.	Palms contact the outsides of the thighs.
HAND THUMBS	Placed over steering wheel rim.	
HAND LITTLE FINGERS		Barely in contact with the seat cushion.
LOWER TORSO	Centered on bucket seat cushion. Midsagittal plane is vertical & longitudinal. For bench seat, midsagittal plane is vertical & longitudinal & passes through center point of plane described by steering wheel rim.	Centered on bucket seat cushion. Midsagittal plane is vertical & longitudinal. For bench seat, midsagittal plane is vertical, and same distance from vehicle longitudinal centerline as driver dummy midsagittal plane.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Plane defined by femur and tibia centerlines is as close as possible to vertical.	Placed against seat cushion. Plane defined by femur and tibia centerlines is as close as possible to vertical.
RIGHT KNEE	Knees initially set 14.5" apart between pivot bolt head outer surfaces.	Located so that plane defined by femur and tibia centerlines is as close as possible to vertical.

PART 572 DUMMY	DRIVER DSP	PASSENGER DSP DNA
LEFT KNEE	Outer surface of pivot bolt head is 5.9" from midsagittal plane of dummy.	Located as above.
LOWER LEGS	Plane defined by femur and tibia centerlines is as close as possible to vertical longitudinal plane.	Plane defined by femur and tibia centerlines is as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerometer pedal -- rearmost point of heel on floorpan in plane of pedal.	Centerline falls in vertical longitudinal plane. Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan.
LEFT FOOT	Placed on towboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.	Centerline falls in vertical longitudinal plane. Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan.

PART 572 DUMMY IN-VEHICLE POSITION
RECORDING SHEET

VEHICLE NHTSA NO. R & D MFR./MAKE/MODEL: Plymouth Reliant K

SEAT TYPE: X Bench
___Bucket
___Split Bench

ADJUSTER TYPE: X Manual
___Power

BUCKET SEAT BACK TYPE: X Fixed
___Adjustable Reclining

POSITIONING DATE: May 23, 1985

AMBIENT TEMP.: 68° F. TIME: 11:00

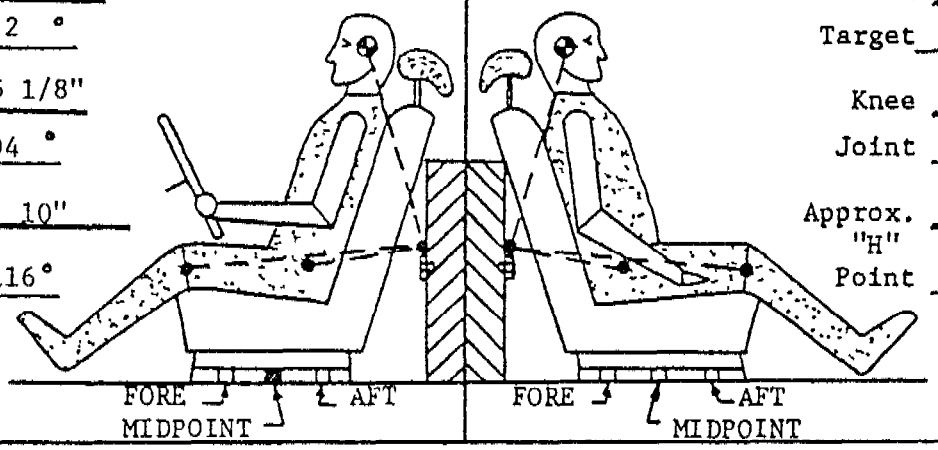
TECHNICIANS:
1. D. LeVally
2. B. Miller
3. M. Garrison
4.

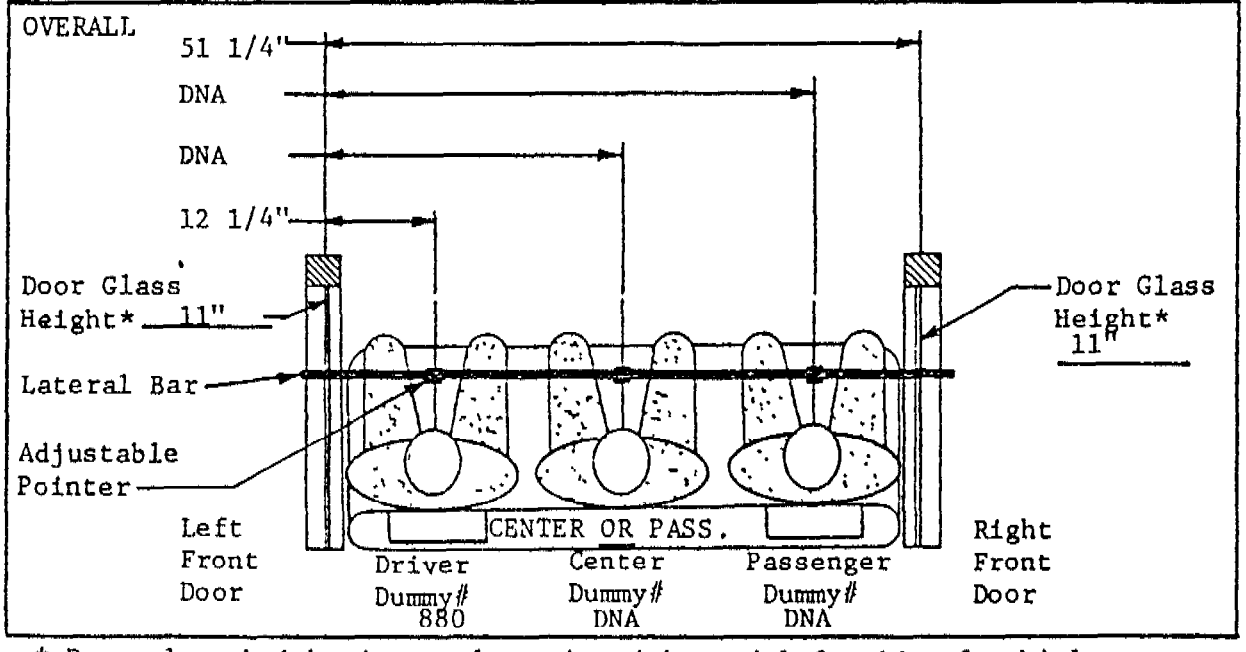
DRIVER DUMMY # 880

Head 22 1/2"
Target 2 °
Knee 25 1/8"
Joint 94 °
Approx. "H" Point 10" 116°

PASSENGER DUMMY # DNA

Head ____
Target ____ °
Knee ____
Joint ____ °
Approx. "H" Point ____ °

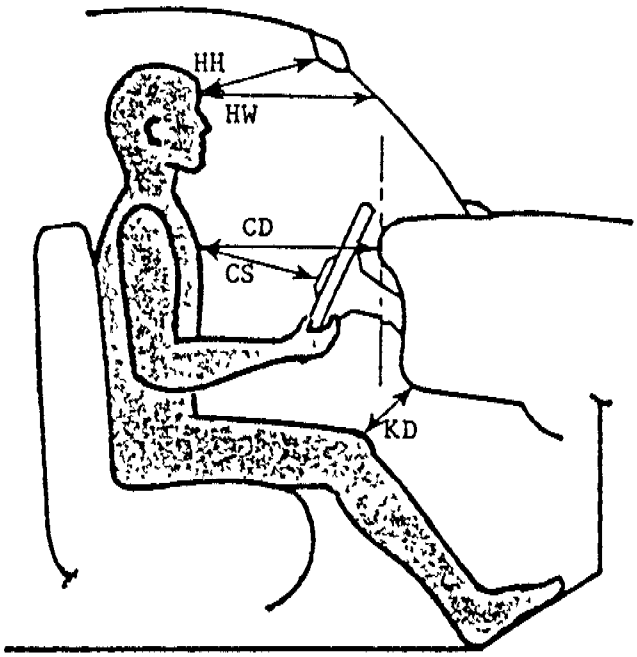




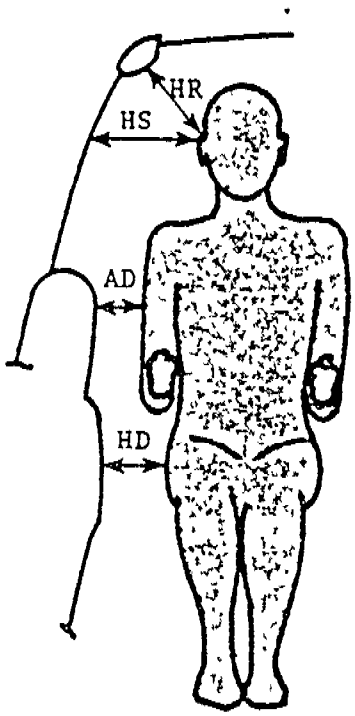
* Door glass height is equal on the right and left side of vehicle.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

	DRIVER 880	PASSENGER DNA
HH	13 3/4	
HW	17 5/16	
CD	23 1/4	
CS	16 3/4	
KDL	7 7/16	
KDR	6 13/16	



	DRIVER 880	PASSENGER DNA
HR	6 3/4	
HS	9 7/8	
AD	5 3/4	
HD	8 7/16	



APPENDIX A

PHOTOGRAPHS

1. POST-TEST OVERALL FRONT VIEW
2. POST-TEST OVERALL RIGHT SIDE VIEW
3. POST-TEST OVERALL REAR VIEW
4. POST-TEST OVERALL LEFT SIDE VIEW
5. POST-TEST DRIVER DUMMY - VIEW 1
6. POST-TEST DRIVER DUMMY - VIEW 2
7. POST-TEST VEHICLE ROOF DAMAGE - VIEW 1
8. POST-TEST VEHICLE ROOF DAMAGE - VIEW 2
9. POST-TEST VEHICLE ROOF DAMAGE - VIEW 3
10. POST-TEST VEHICLE ROOF DAMAGE - VIEW 4
11. POST-TEST VEHICLE HOOD DAMAGE VIEW

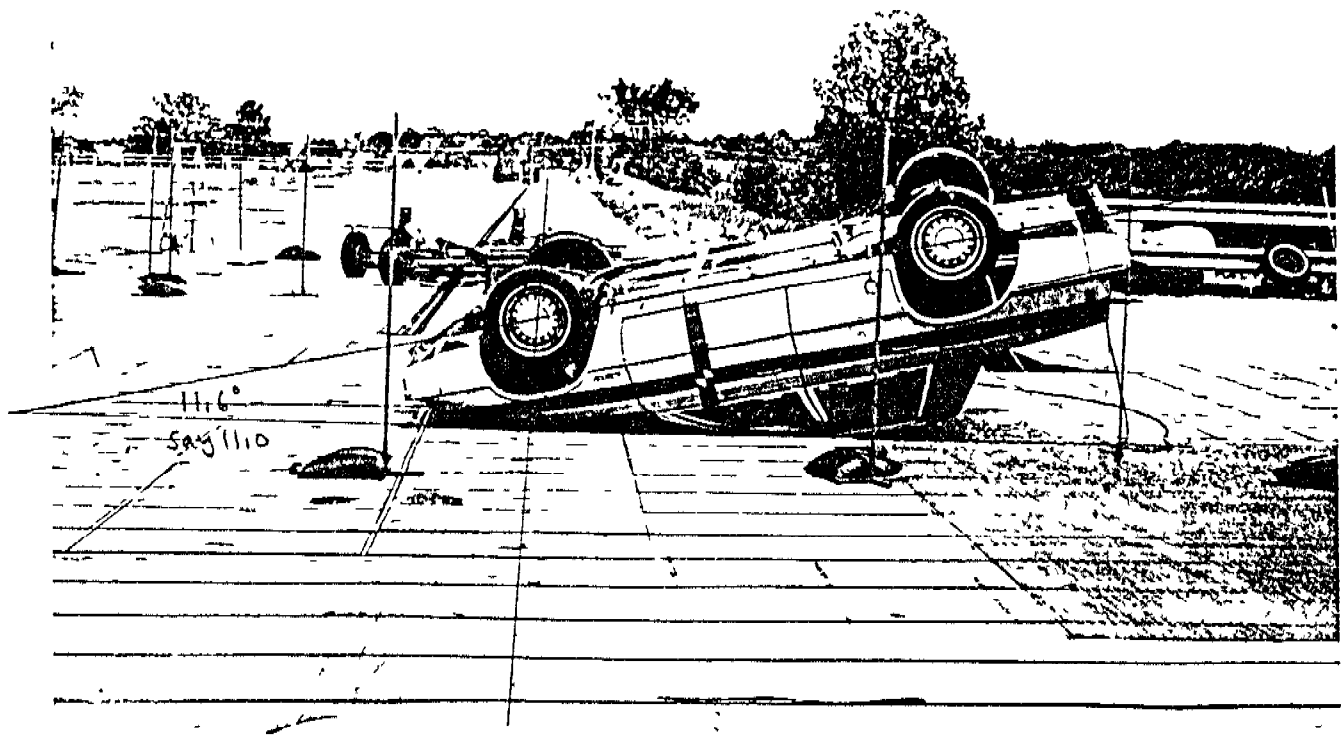


Figure A-1. POST-TEST OVERALL FRONT VIEW

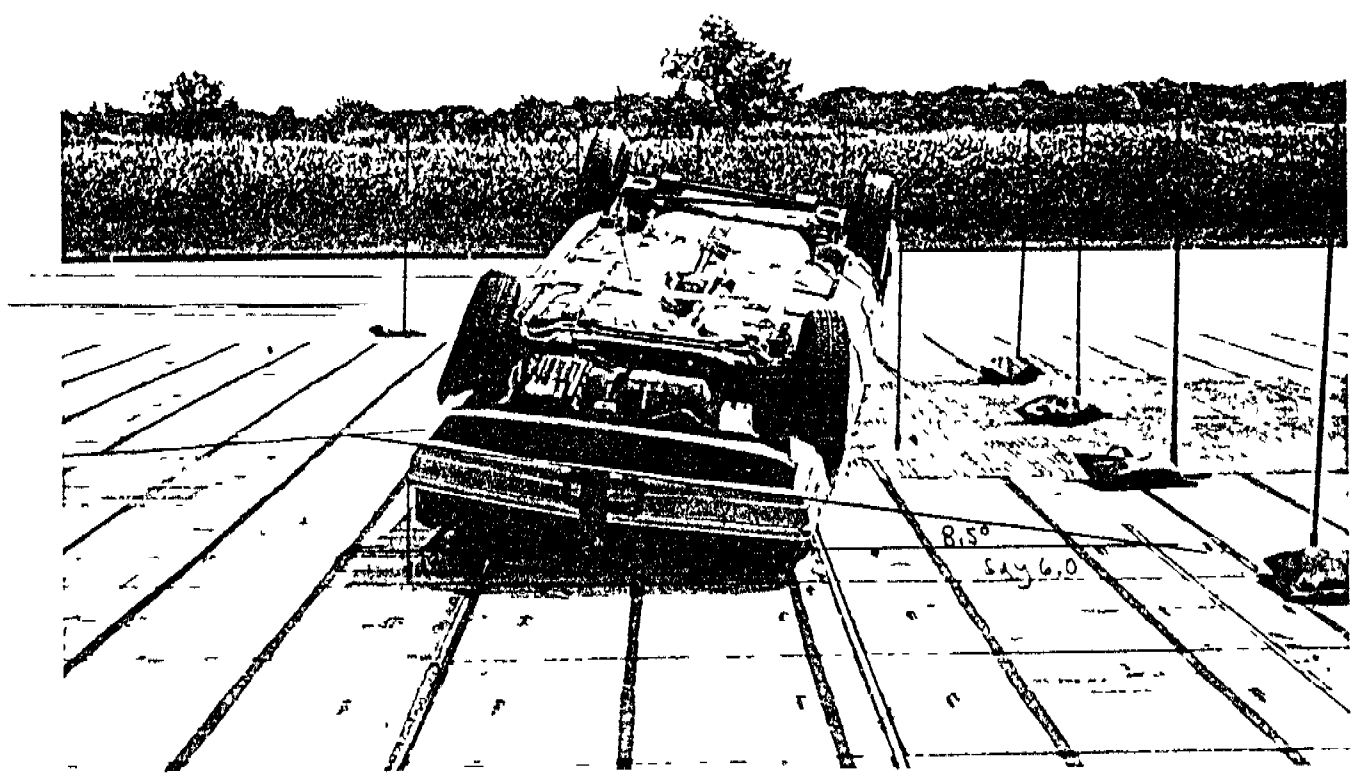


Figure A-2. POST-TEST RIGHT SIDE VIEW

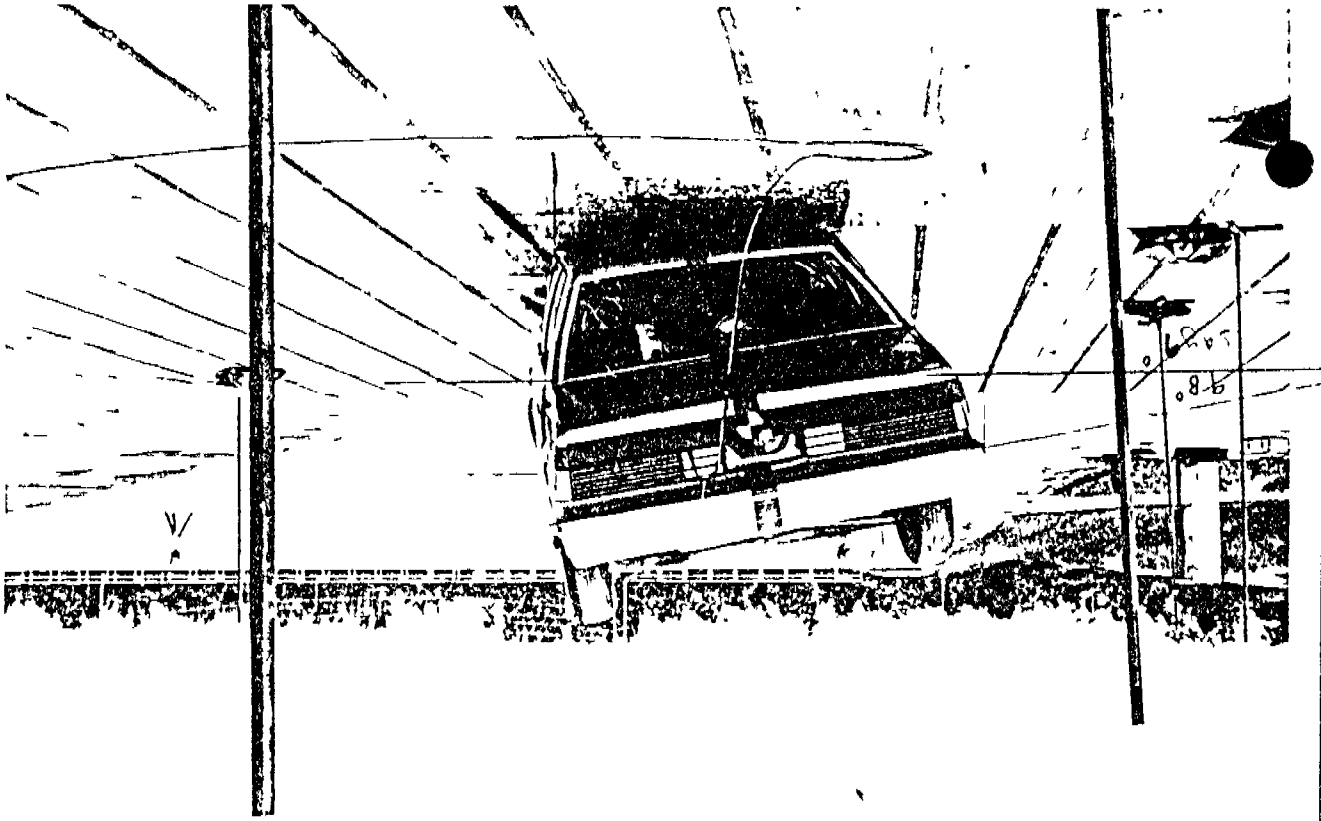


Figure A-3. POST-TEST REAR VIEW

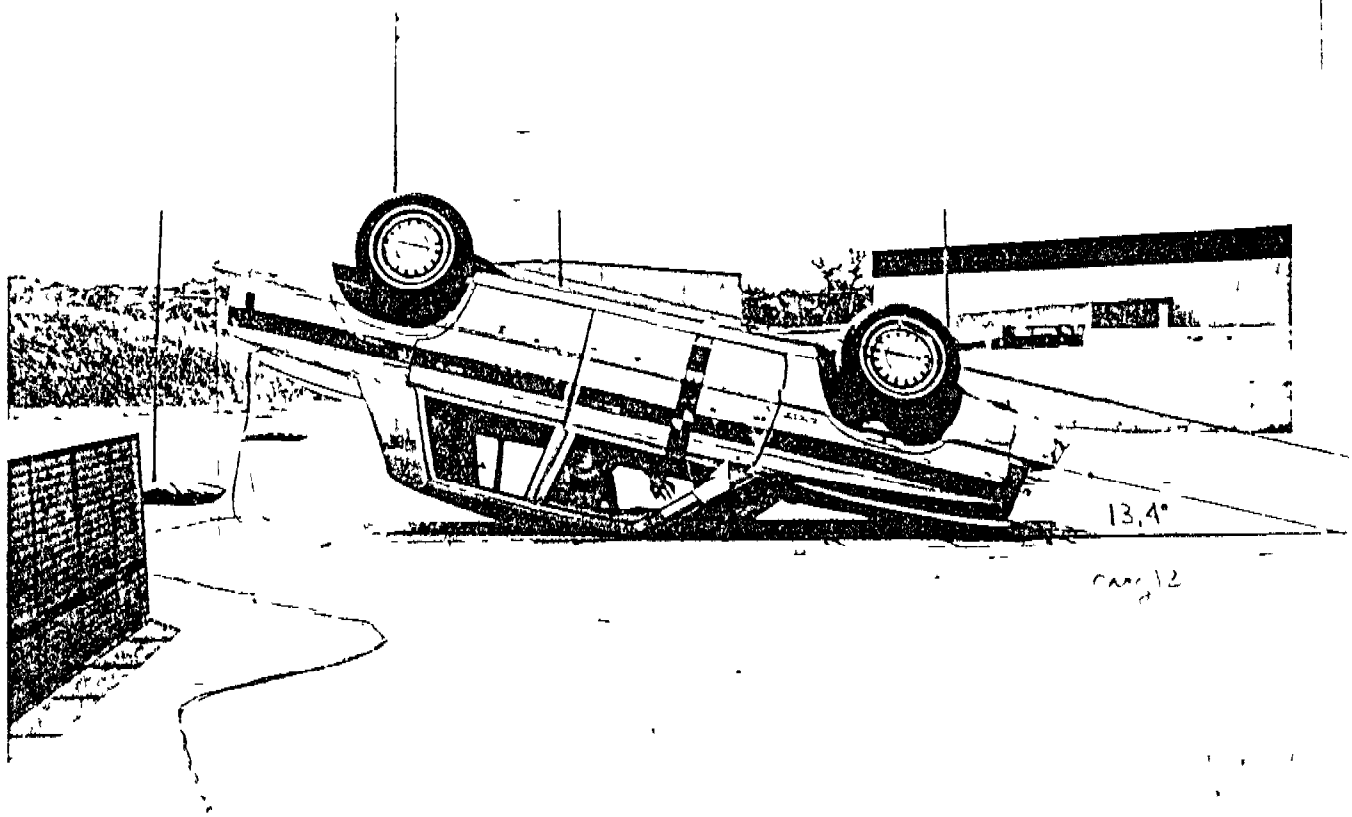


Figure A-4 POST-TEST LEFT SIDE VIEW

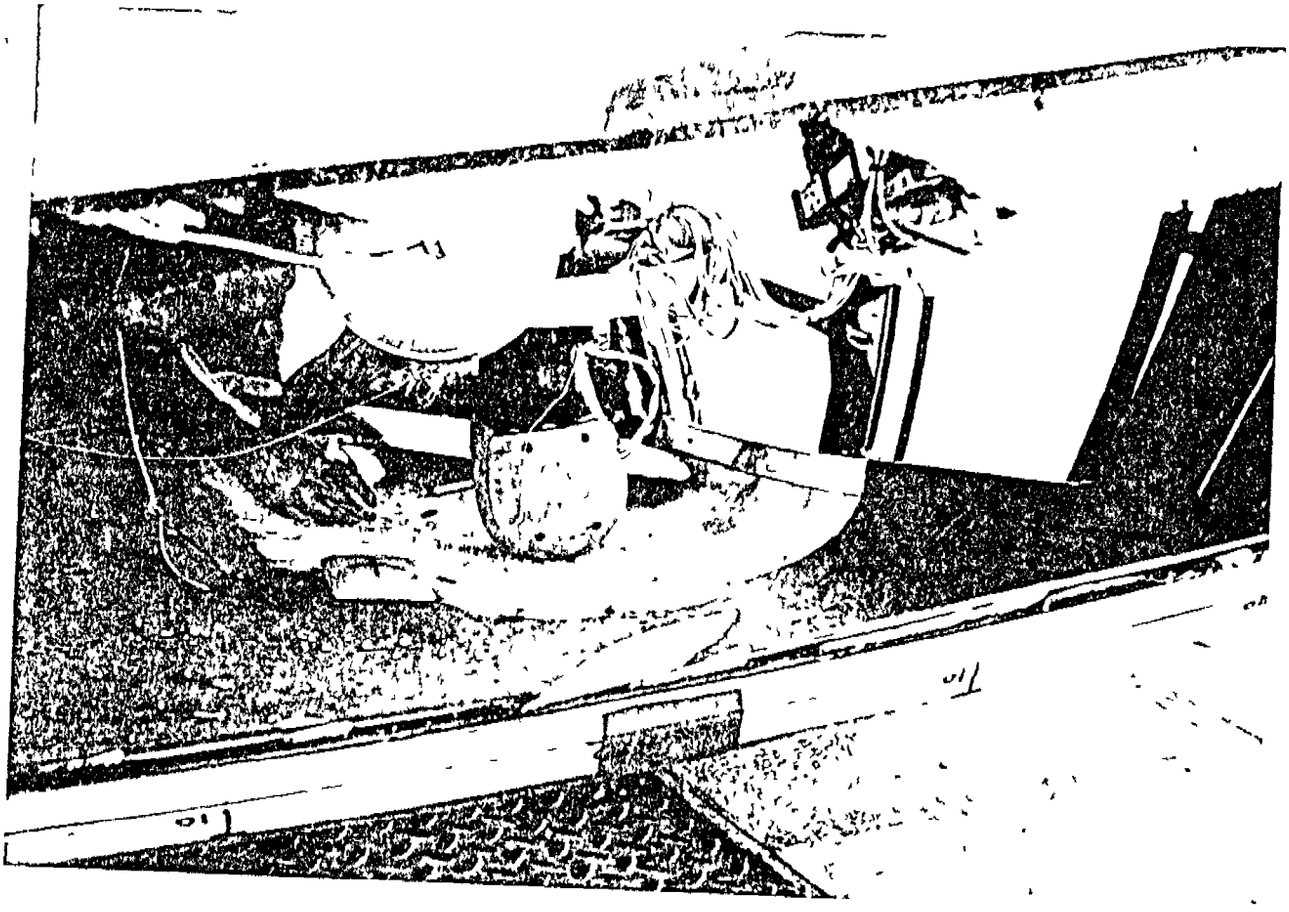


Figure A-5. POST-TEST DRIVER DUMMY - VIEW 1

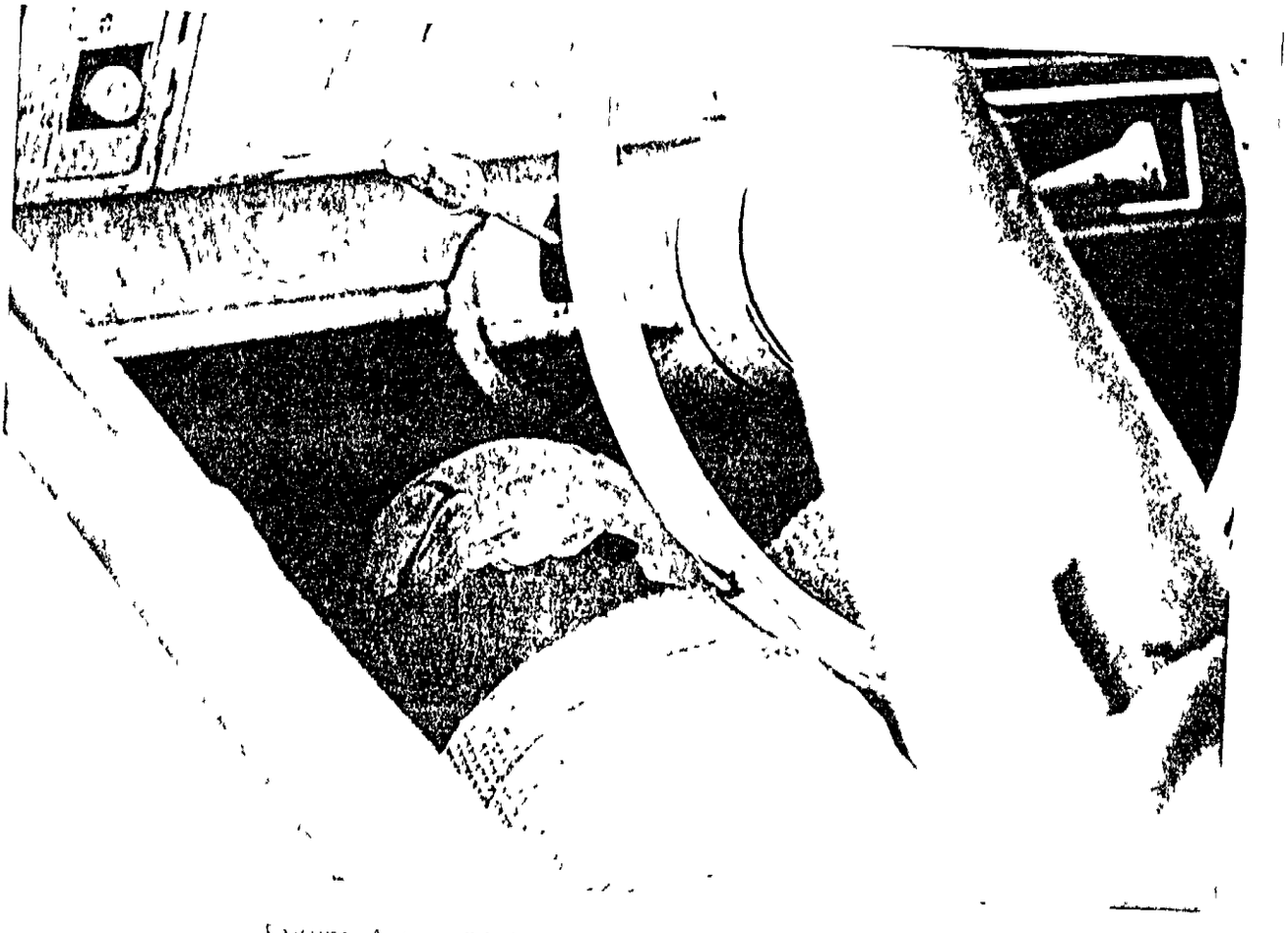


Figure A-6. POST-TEST DRIVER DUMMY - VIEW 2

Figure A-7. POST-TEST VEHICLE ROOF DAMAGE - VIEW 1

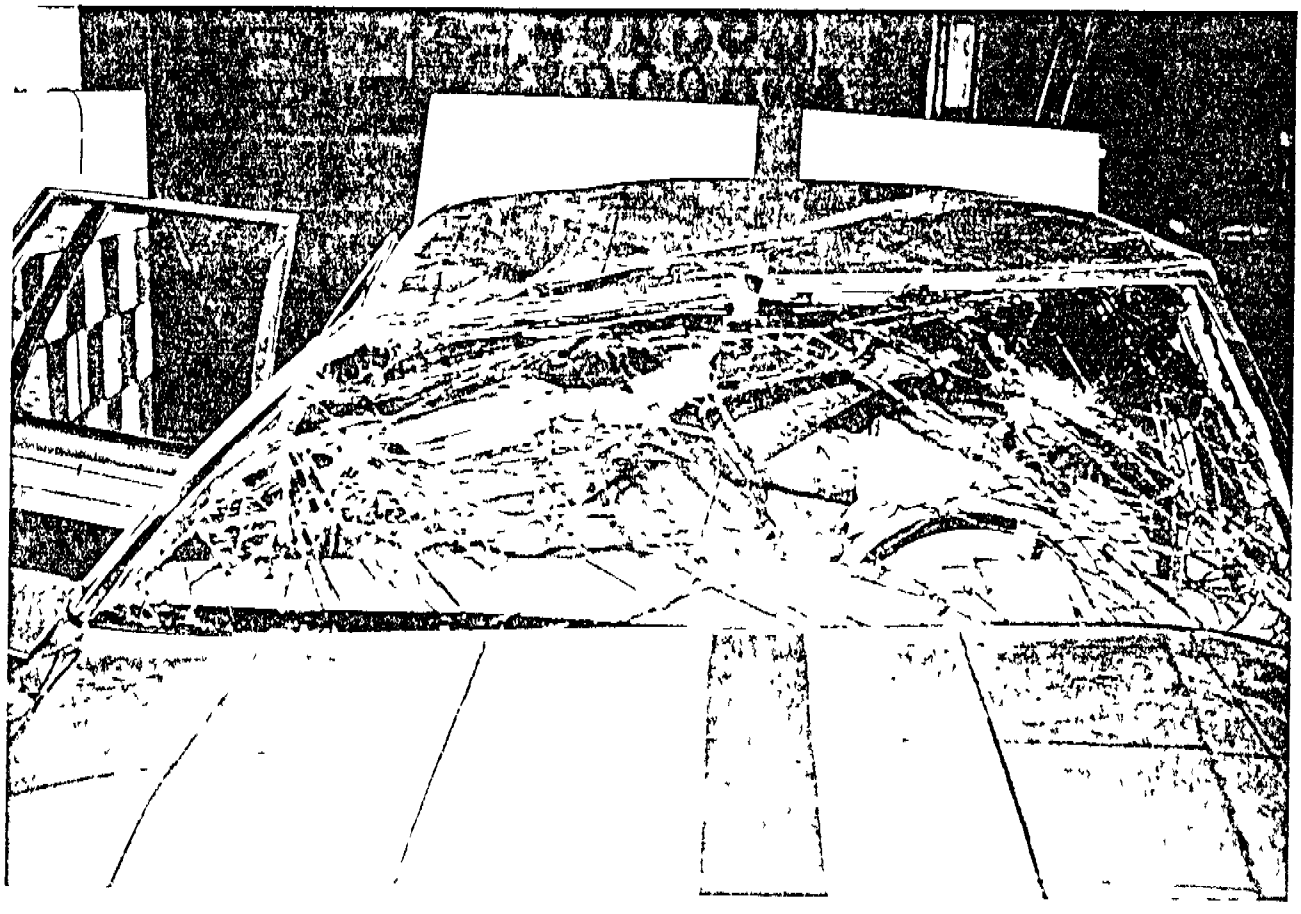


Figure A-8. POST-TEST VEHICLE ROOF DAMAGE - VIEW 2

Figure A-9. POST-TEST VEHICLE ROOF DAMAGE - VIEW 3

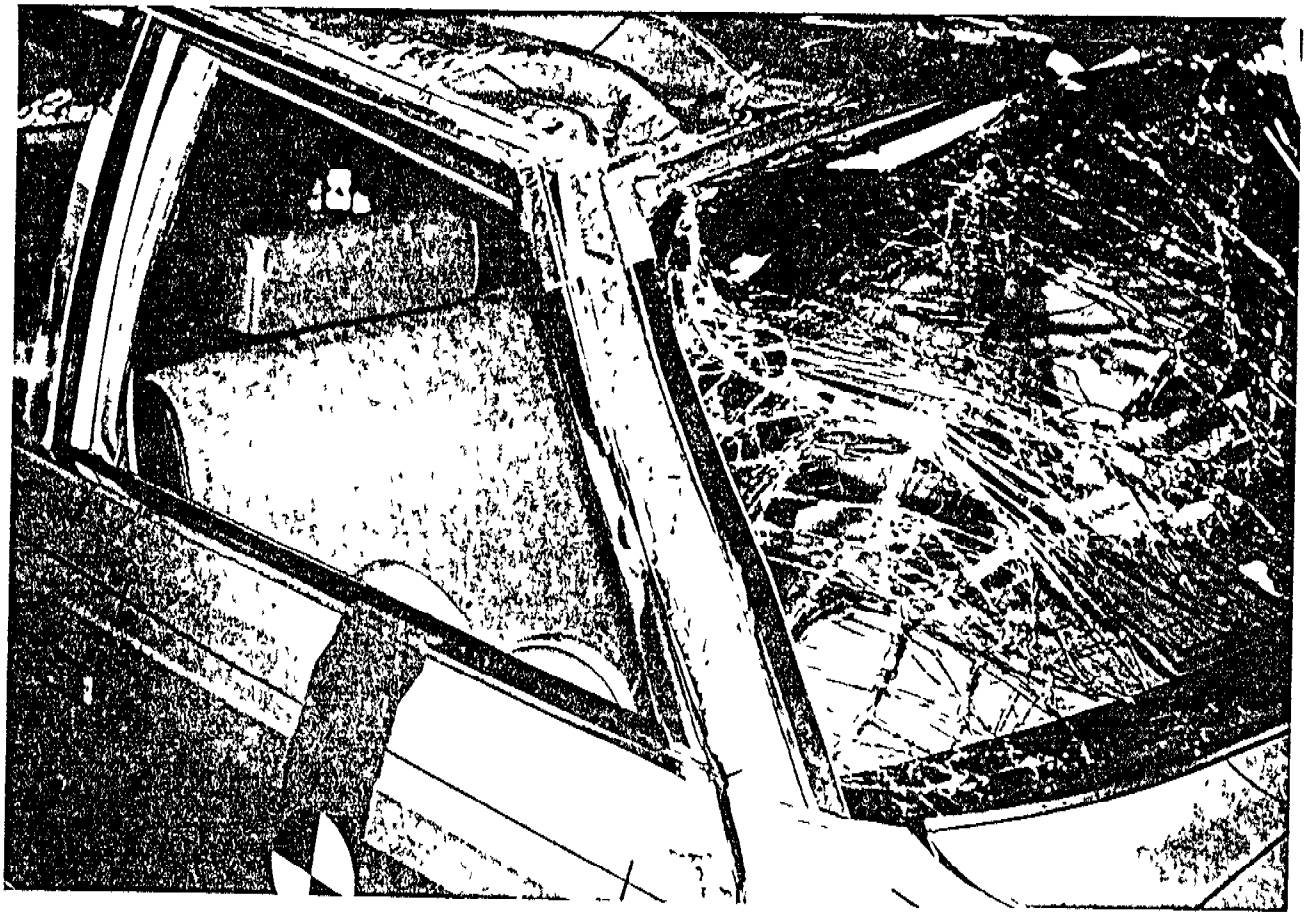


Figure A-10. POST-TEST VEHICLE ROOF DAMAGE - VIEW 4

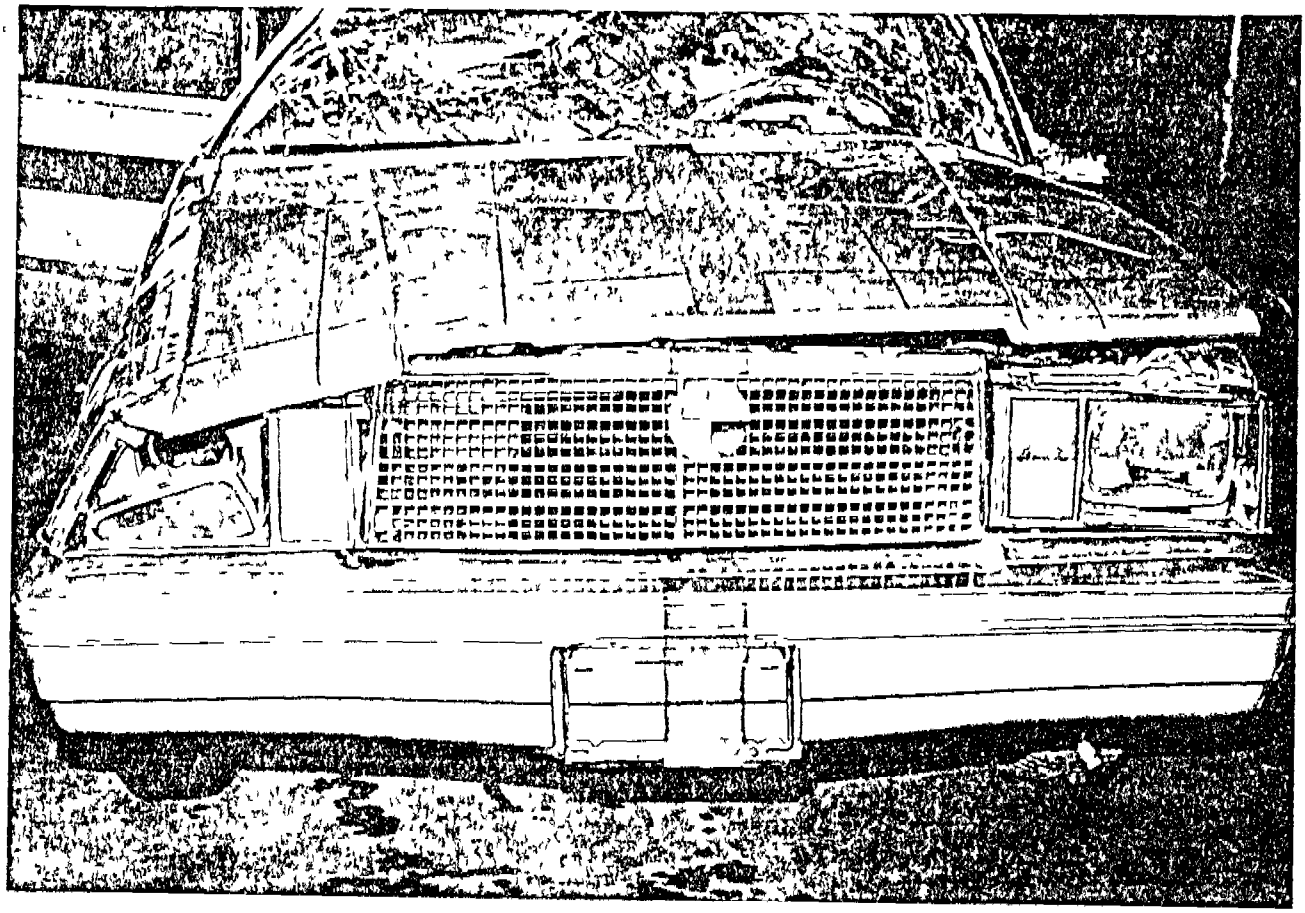
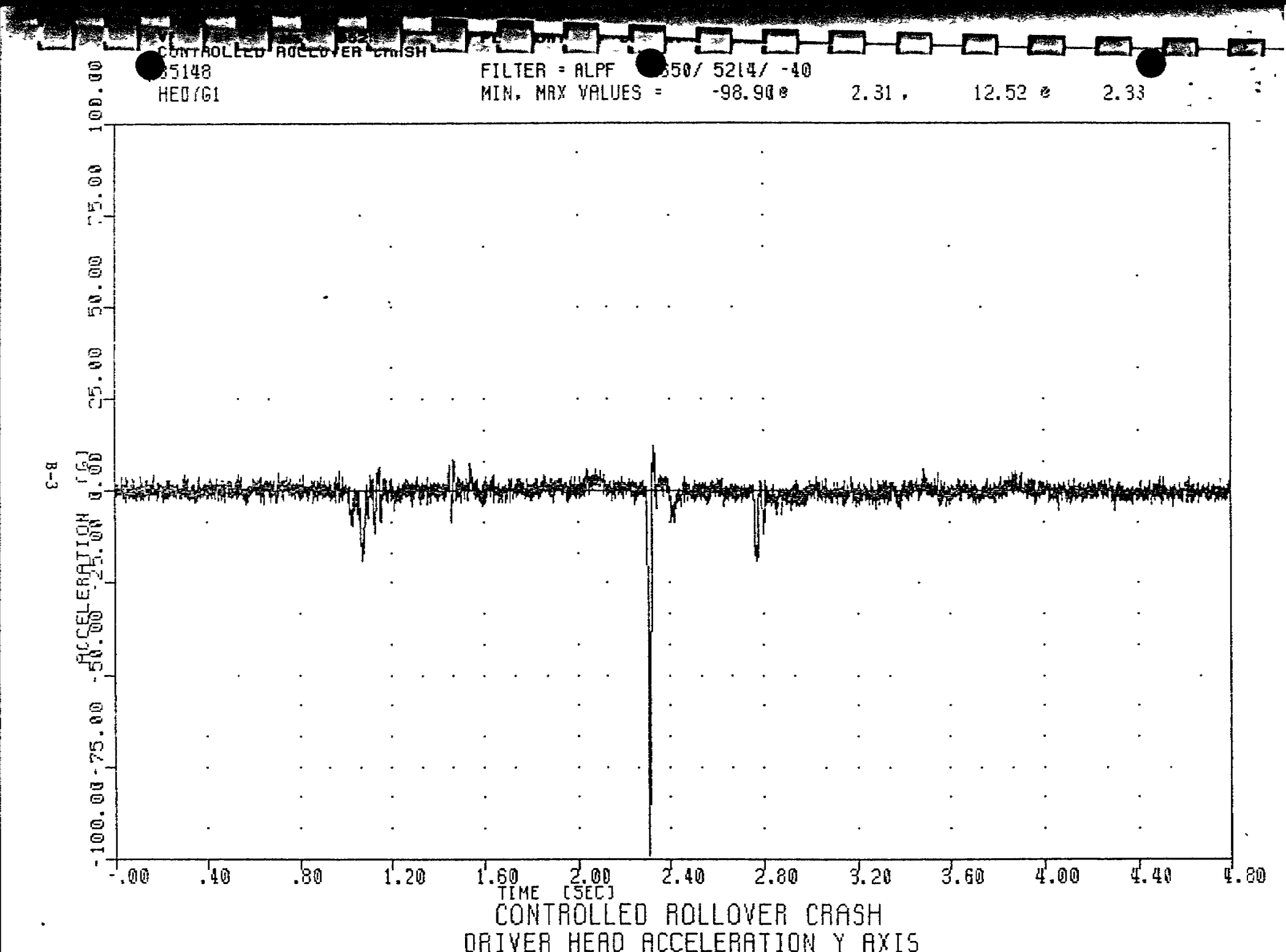


Figure A-11. POST-TEST VEHICLE HOOD DAMAGE VIEW

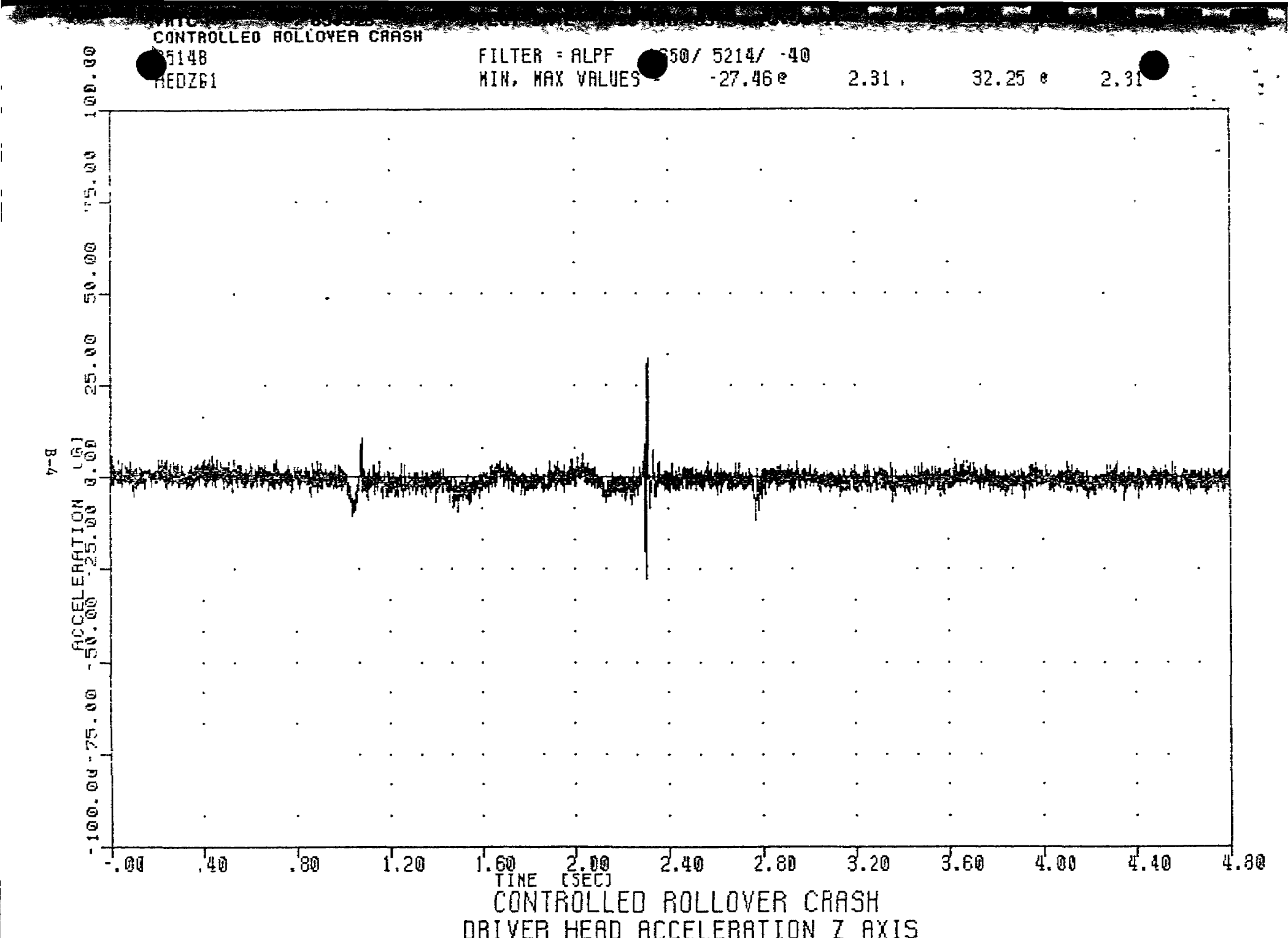
APPENDIX B

DATA PLOT PRESENTATION

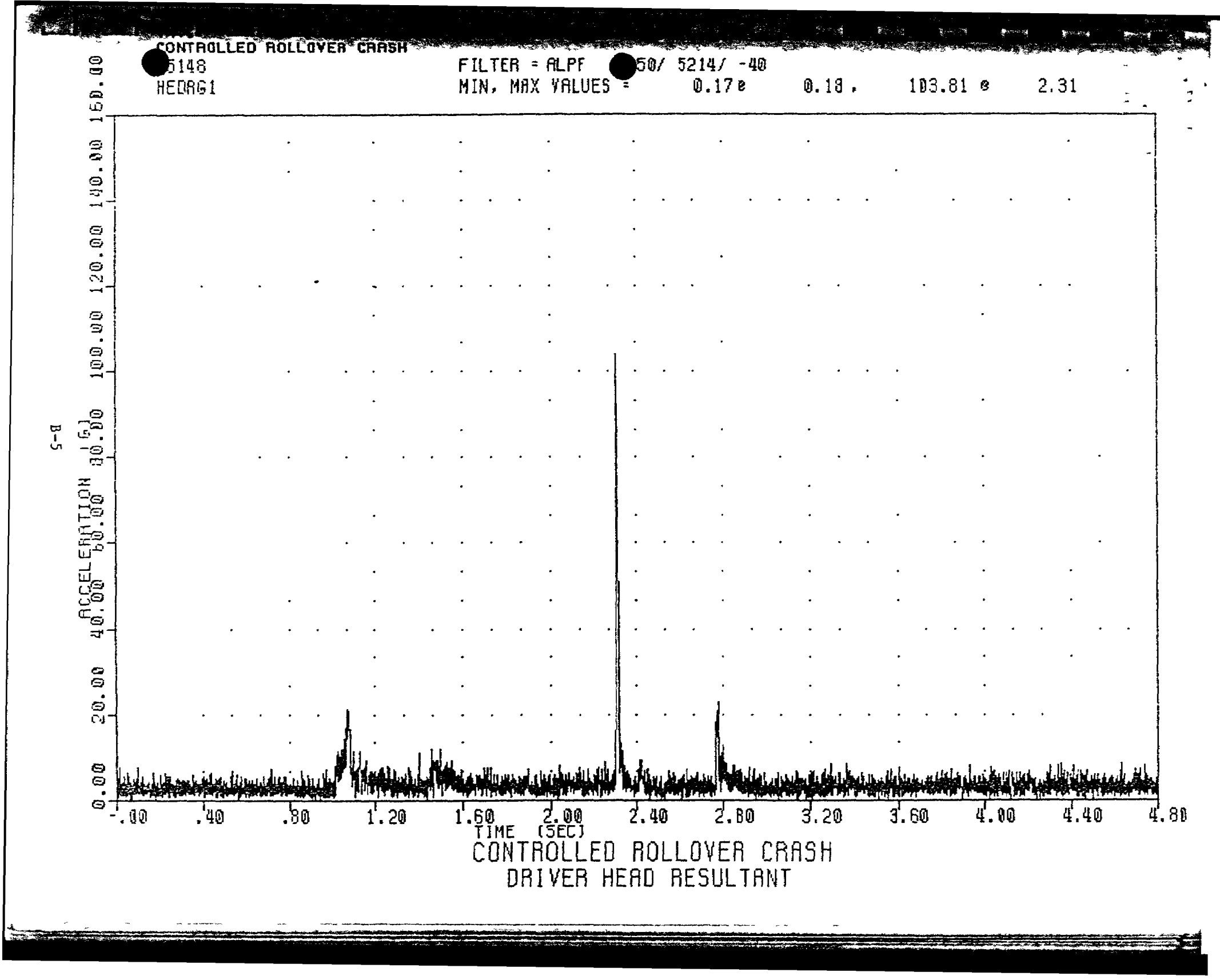
CONTROLLED ROLLOVER CRASH
DRIVER HEAD ACCELERATION X AXIS



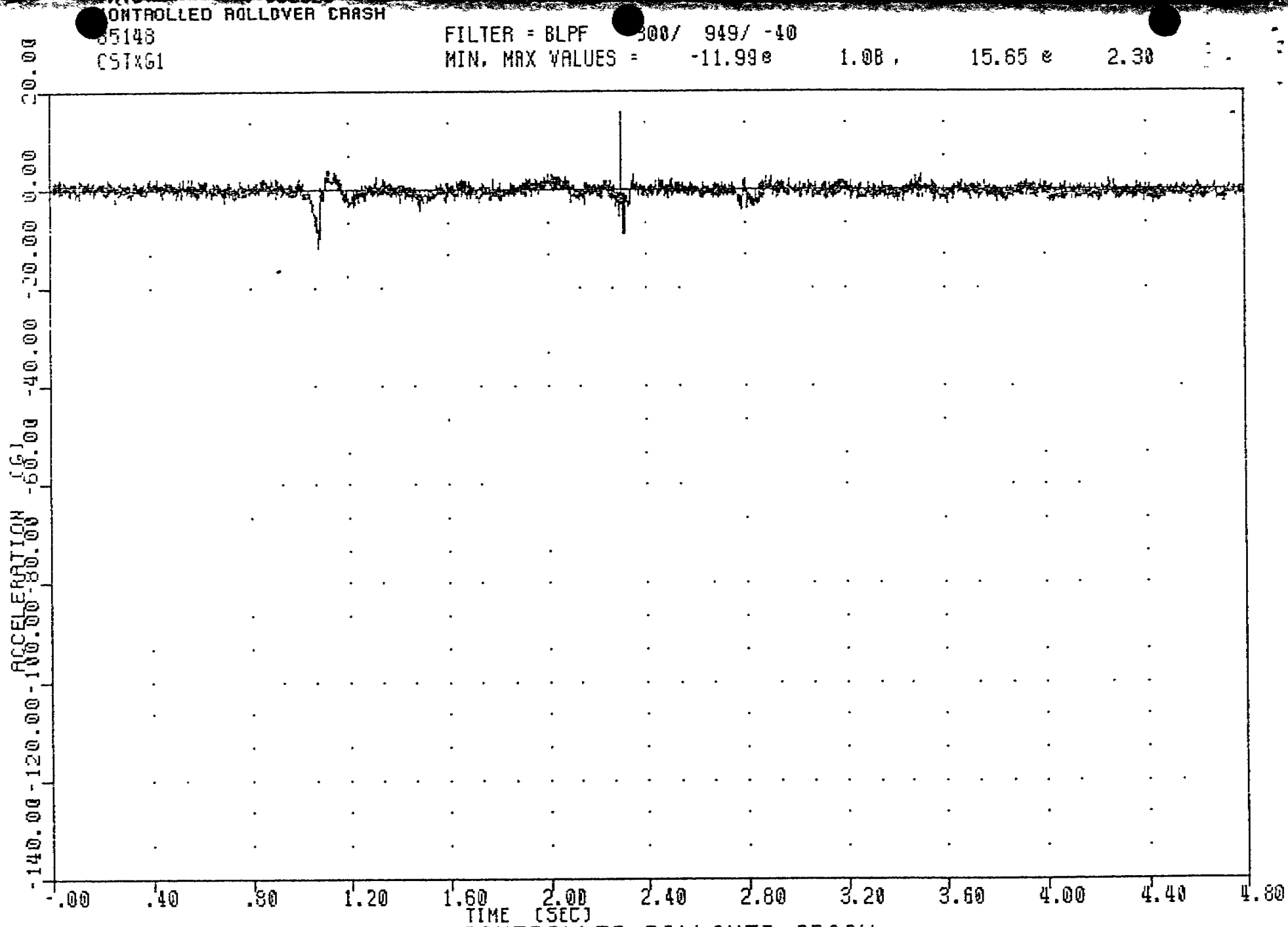
CONTROLLED ROLLOVER CRASH
DRIVER HEAD ACCELERATION Y AXIS



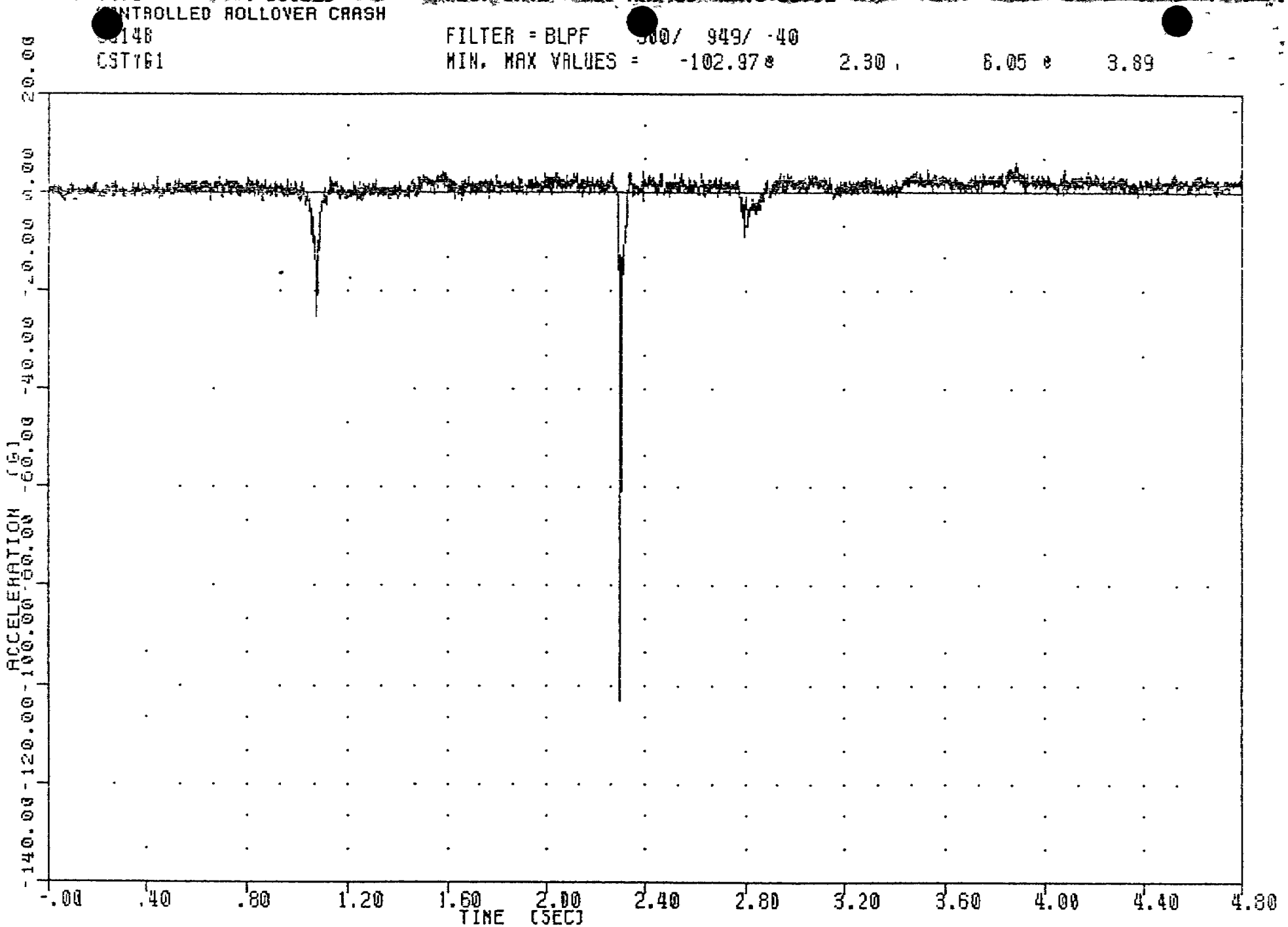
CONTROLLED ROLLOVER CRASH
DRIVER HEAD ACCELERATION Z AXIS



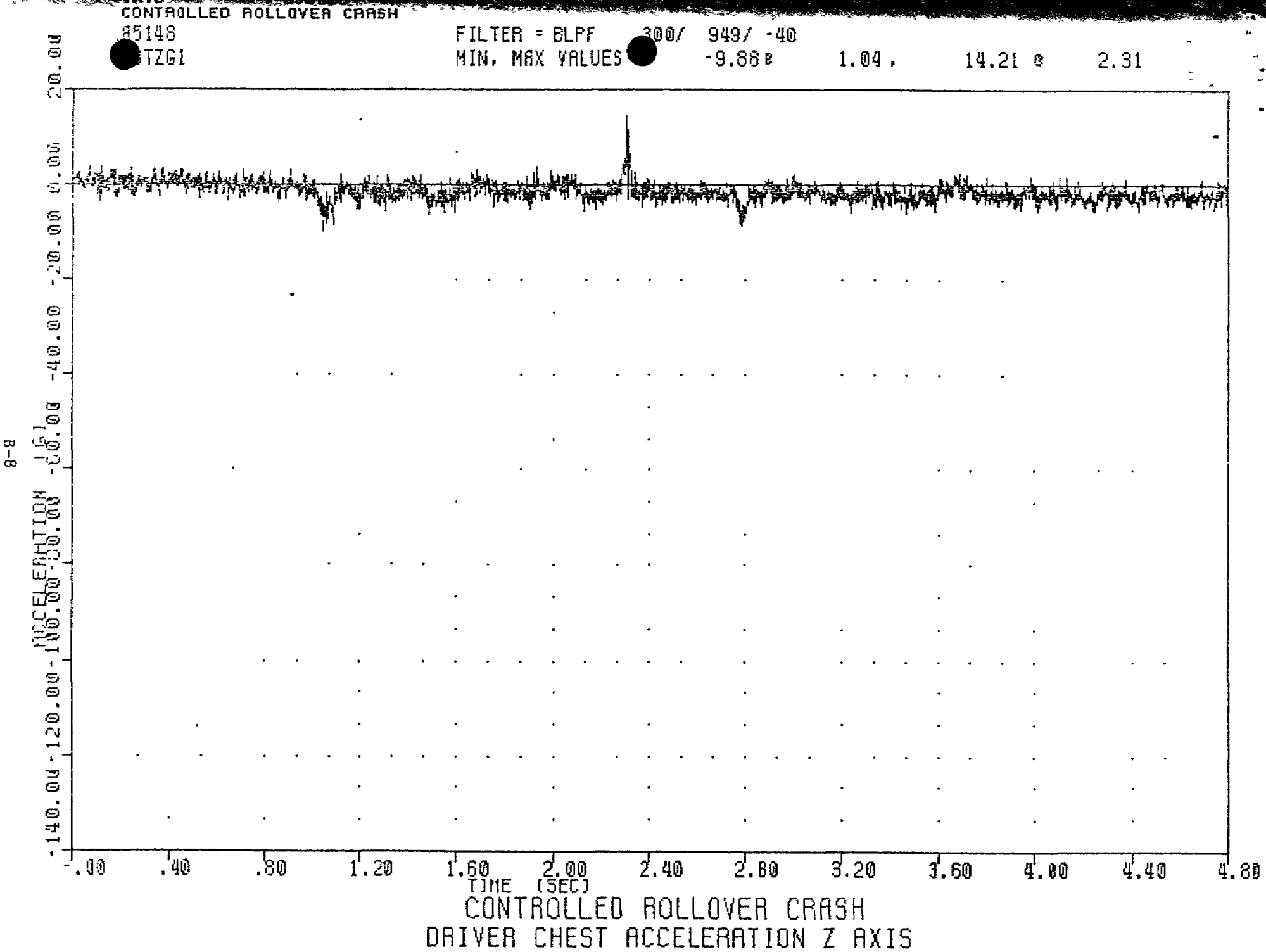
CONTROLLED ROLLOVER CRASH
DRIVER HEAD RESULTANT



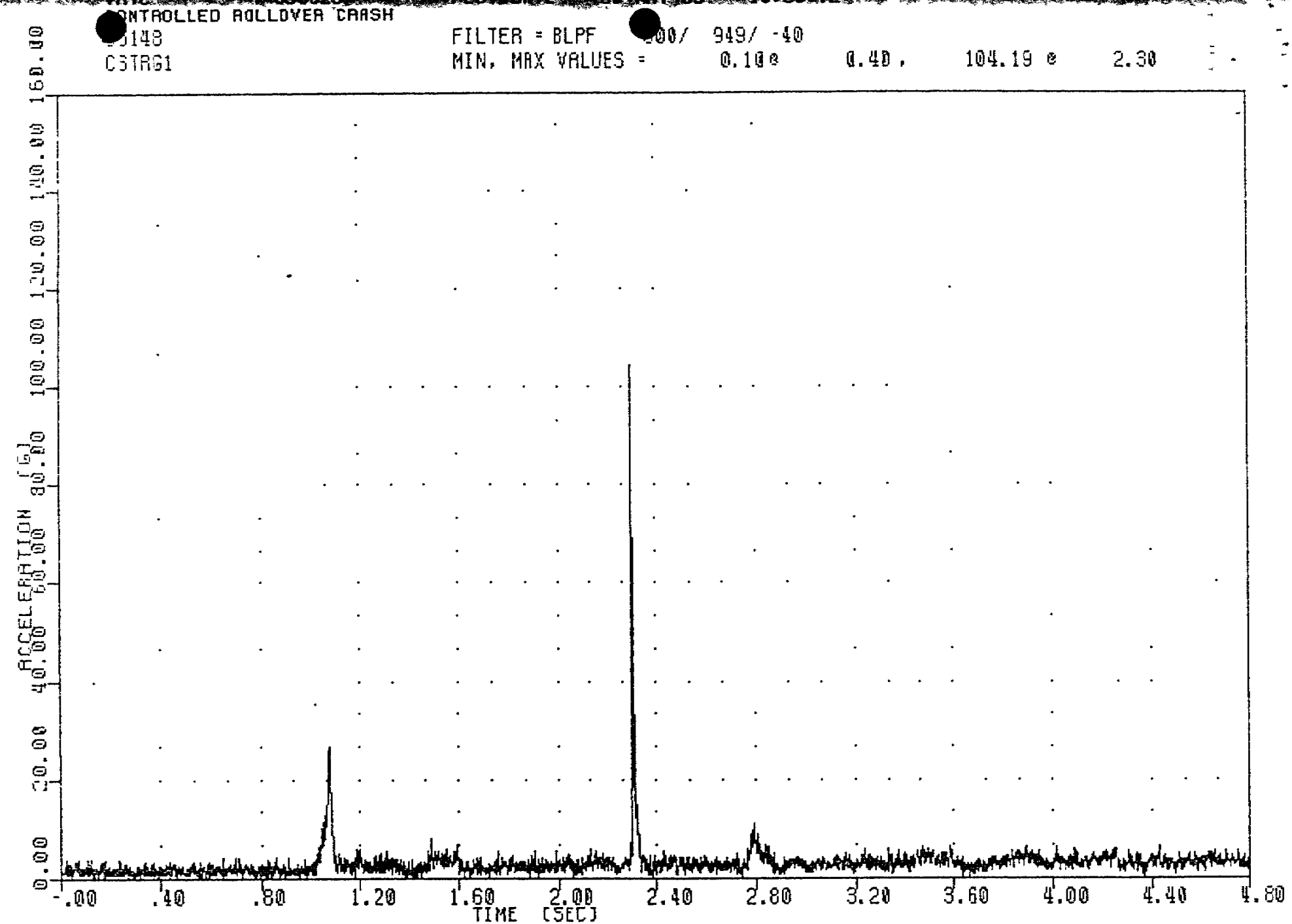
CONTROLLED ROLLOVER CRASH
DRIVER CHEST ACCELERATION X AXIS



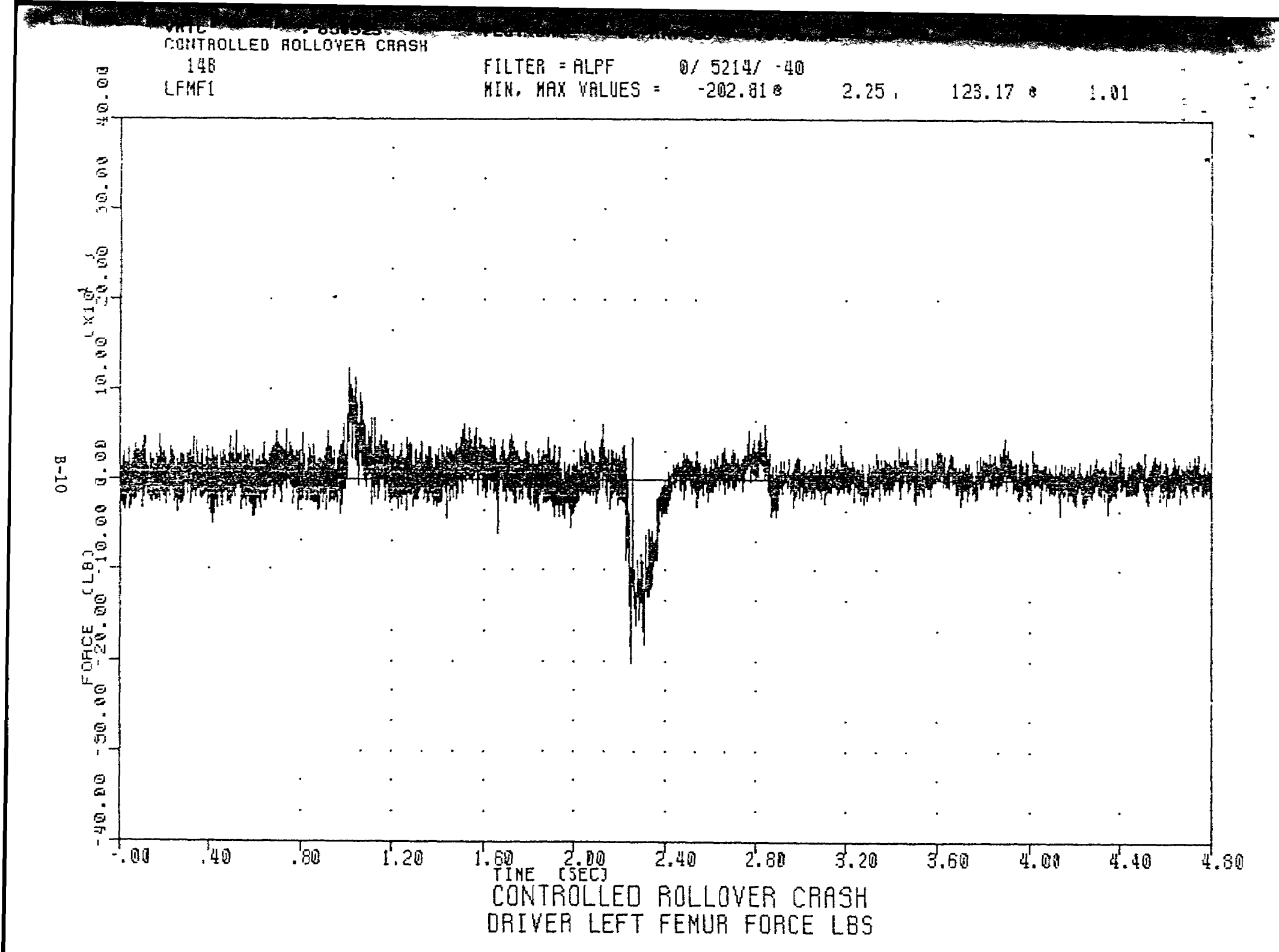
CONTROLLED ROLLOVER CRASH
DRIVER CHEST ACCELERATION Y AXIS



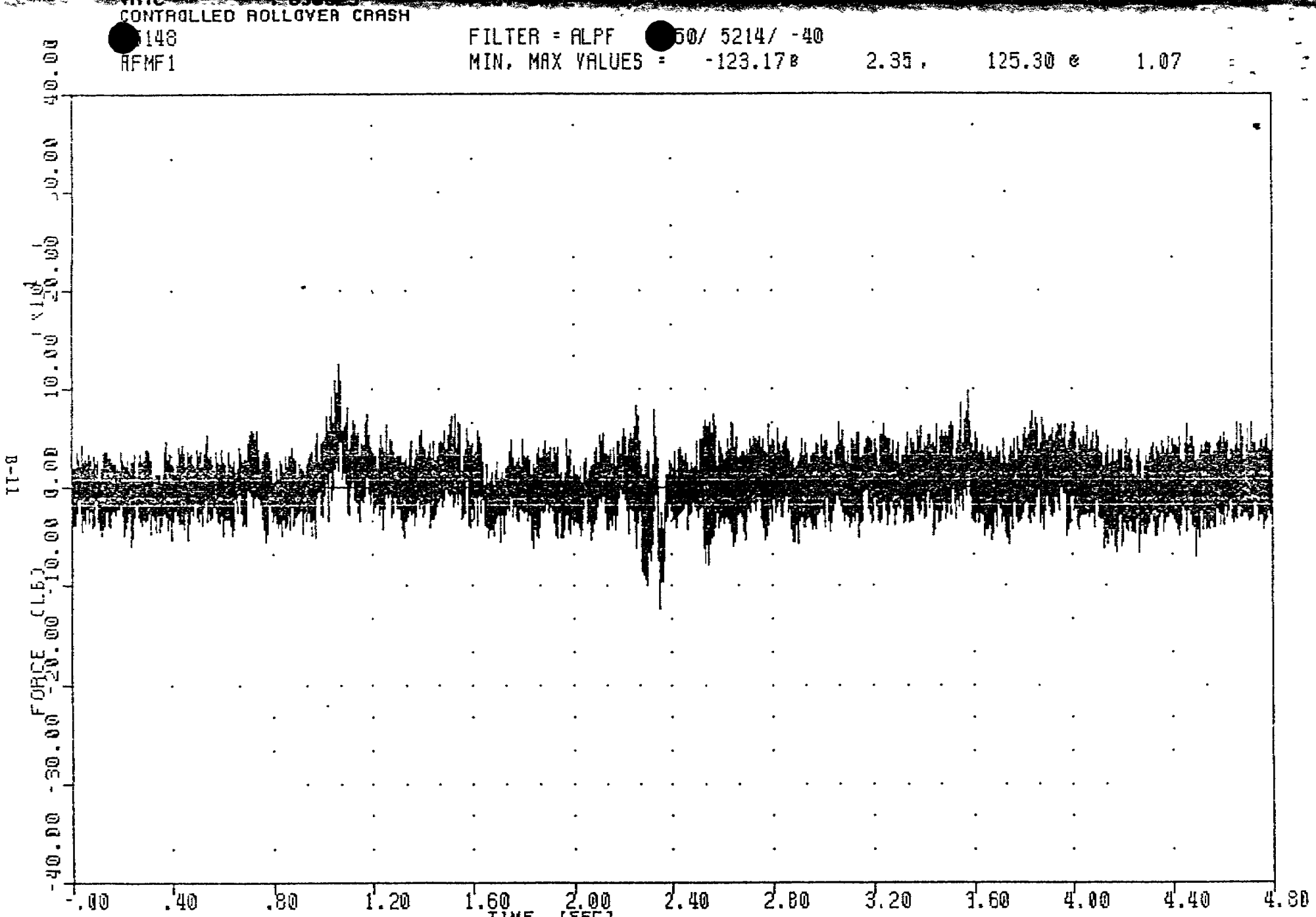
CONTROLLED ROLLOVER CRASH
DRIVER CHEST ACCELERATION Z AXIS



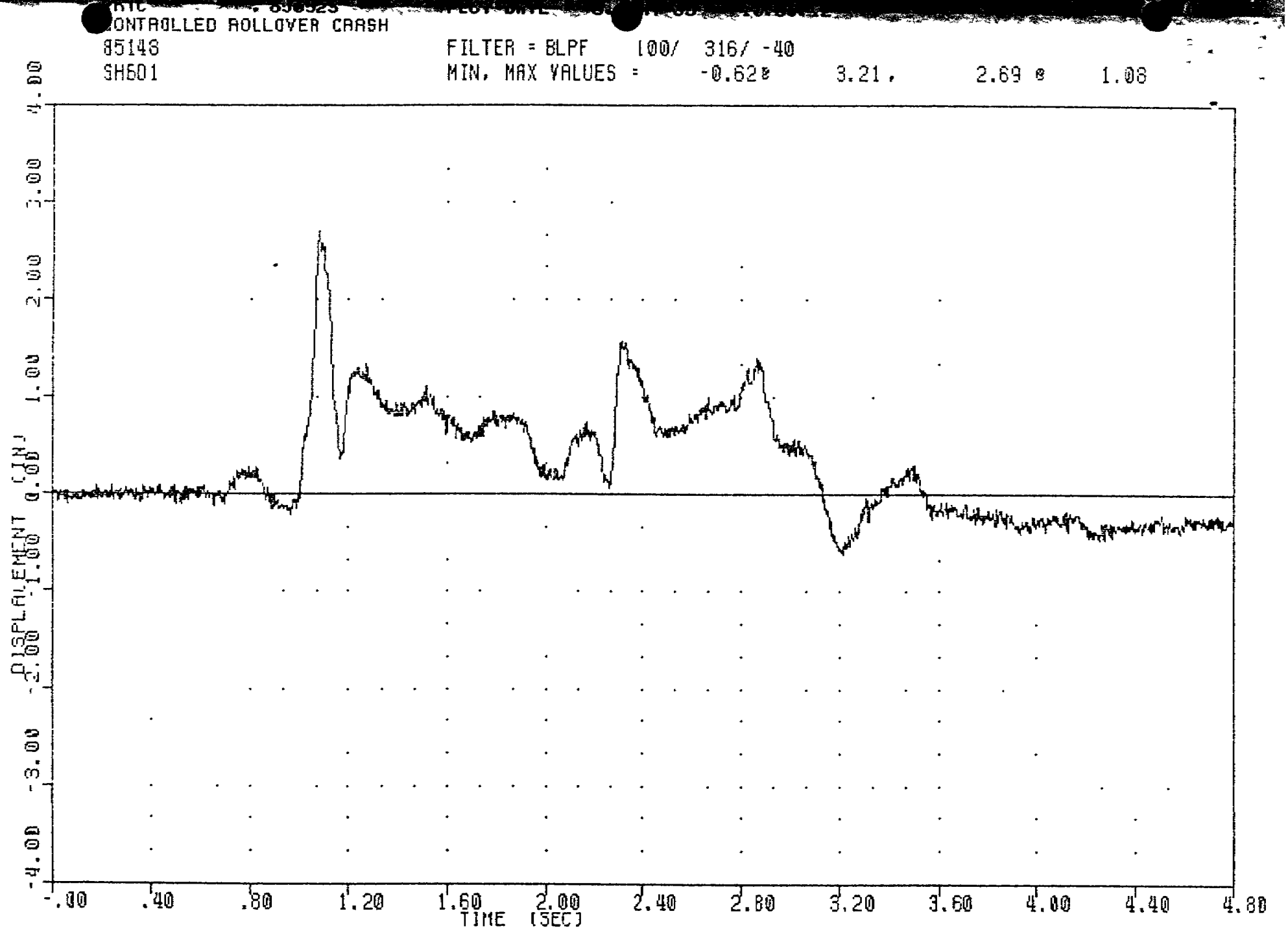
CONTROLLED ROLLOVER CRASH
DRIVER CHEST RESULTANT



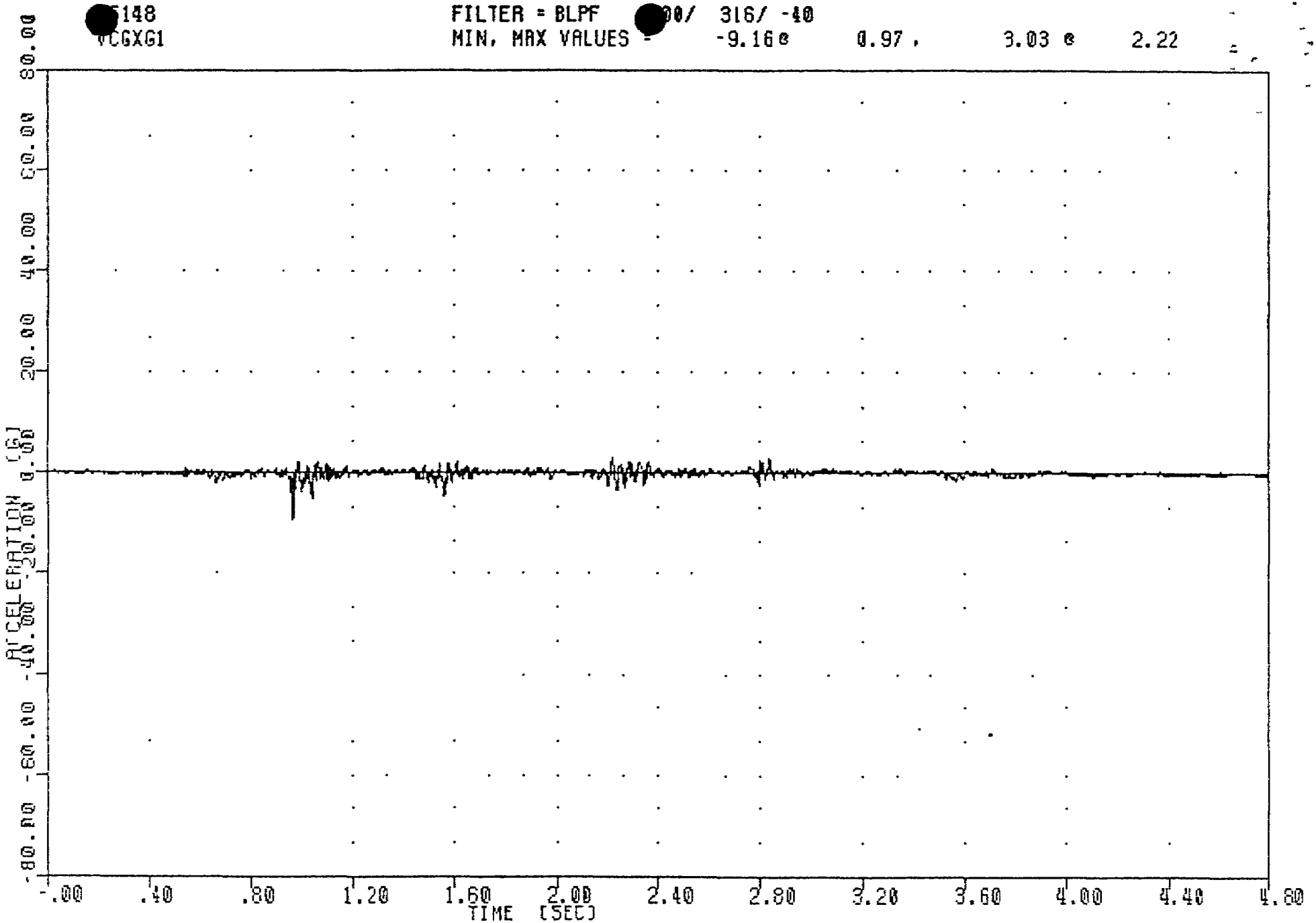
CONTROLLED ROLLOVER CRASH
DRIVER LEFT FEMUR FORCE LBS



CONTROLLED ROLLOVER CRASH
DRIVER RIGHT FEMUR FORCE LBS

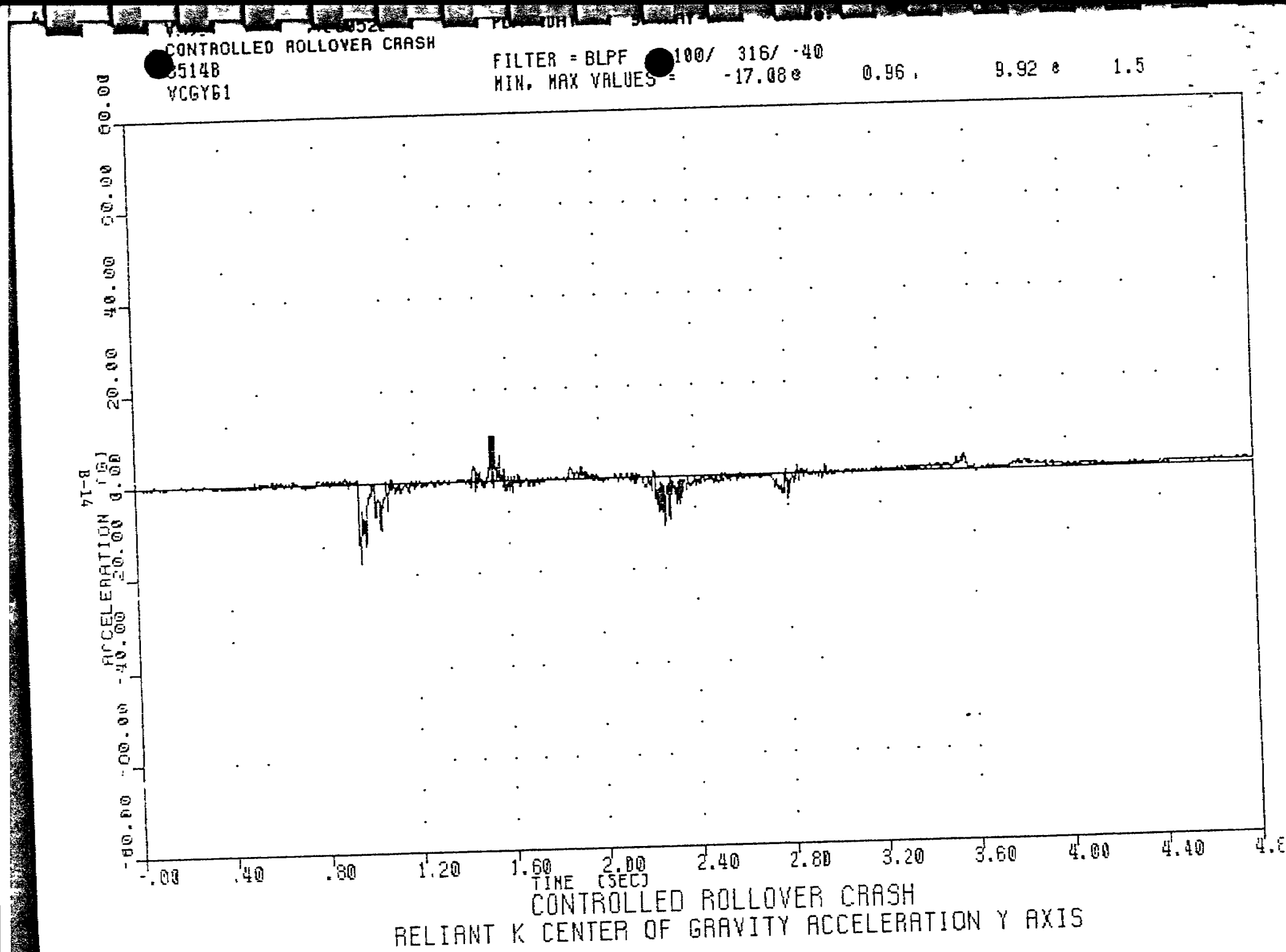


CONTROLLED ROLLOVER CRASH
SHOULDER BELT DISPLACEMENT



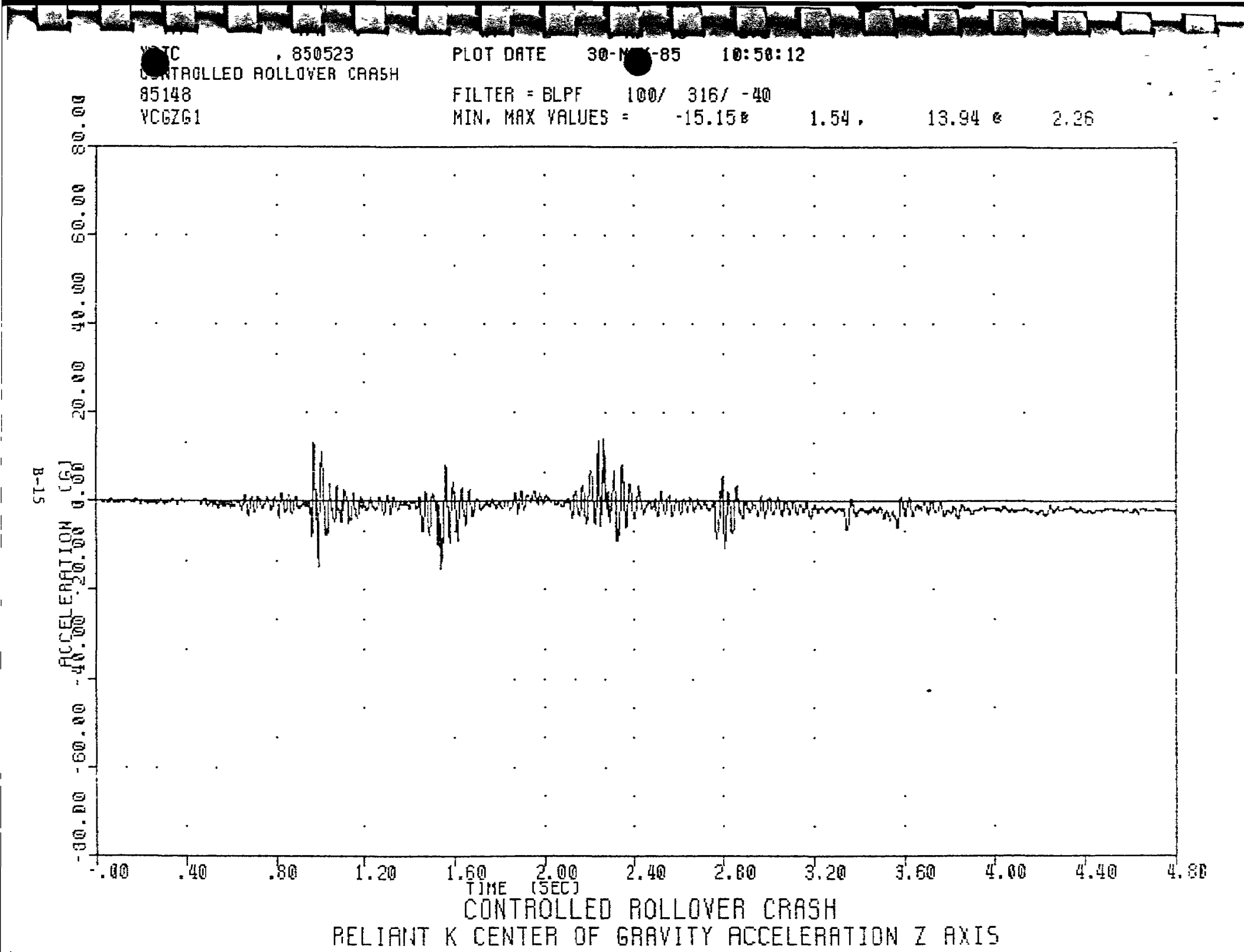
CONTROLLED ROLLOVER CRASH

RELIANT K CENTER OF GRAVITY ACCELERATION X AXIS



CONTROLLED ROLLOVER CRASH

RELIANT K CENTER OF GRAVITY ACCELERATION Y AXIS



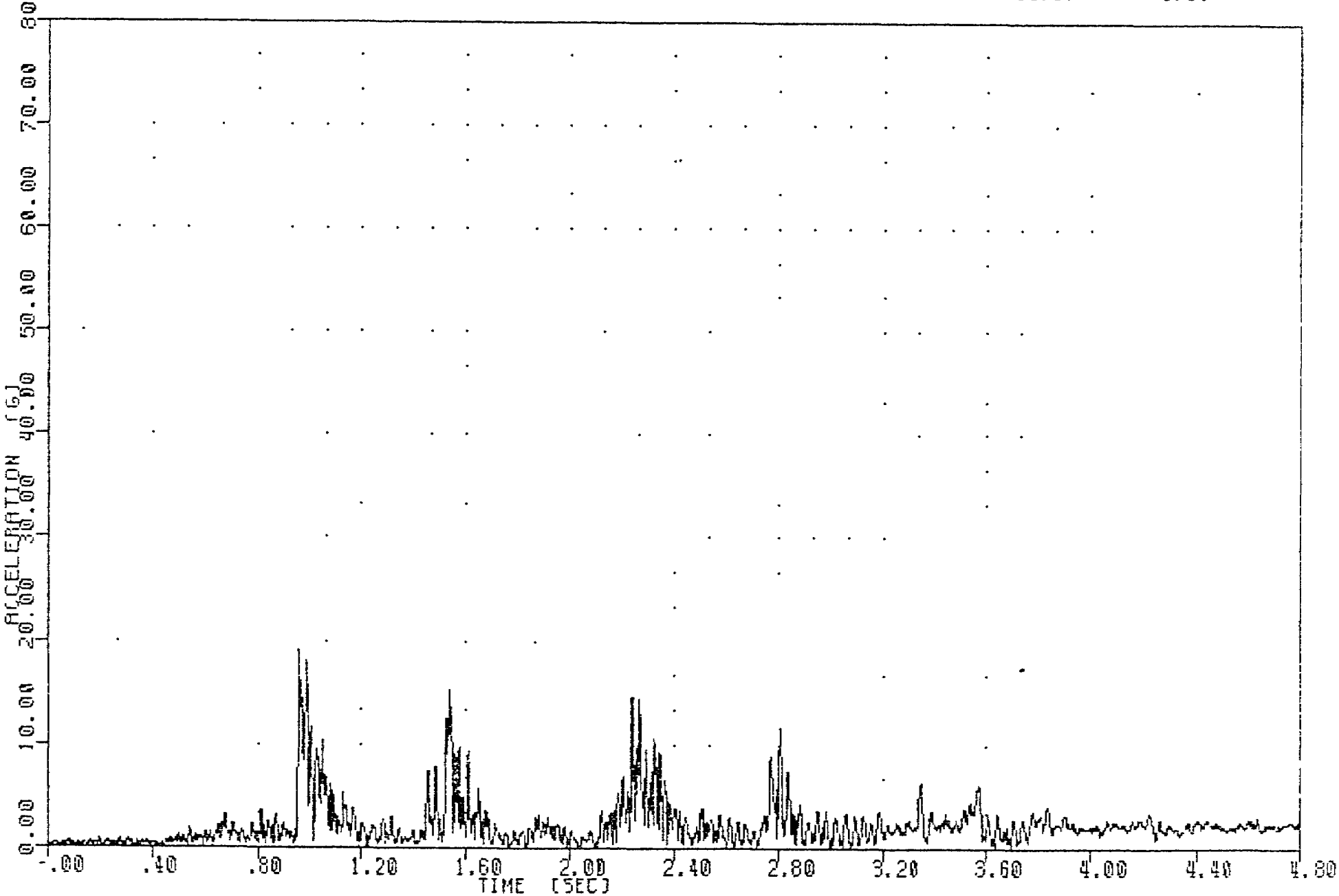
CONTROLLED ROLLOVER CRASH

RELIANT K CENTER OF GRAVITY ACCELERATION Z AXIS

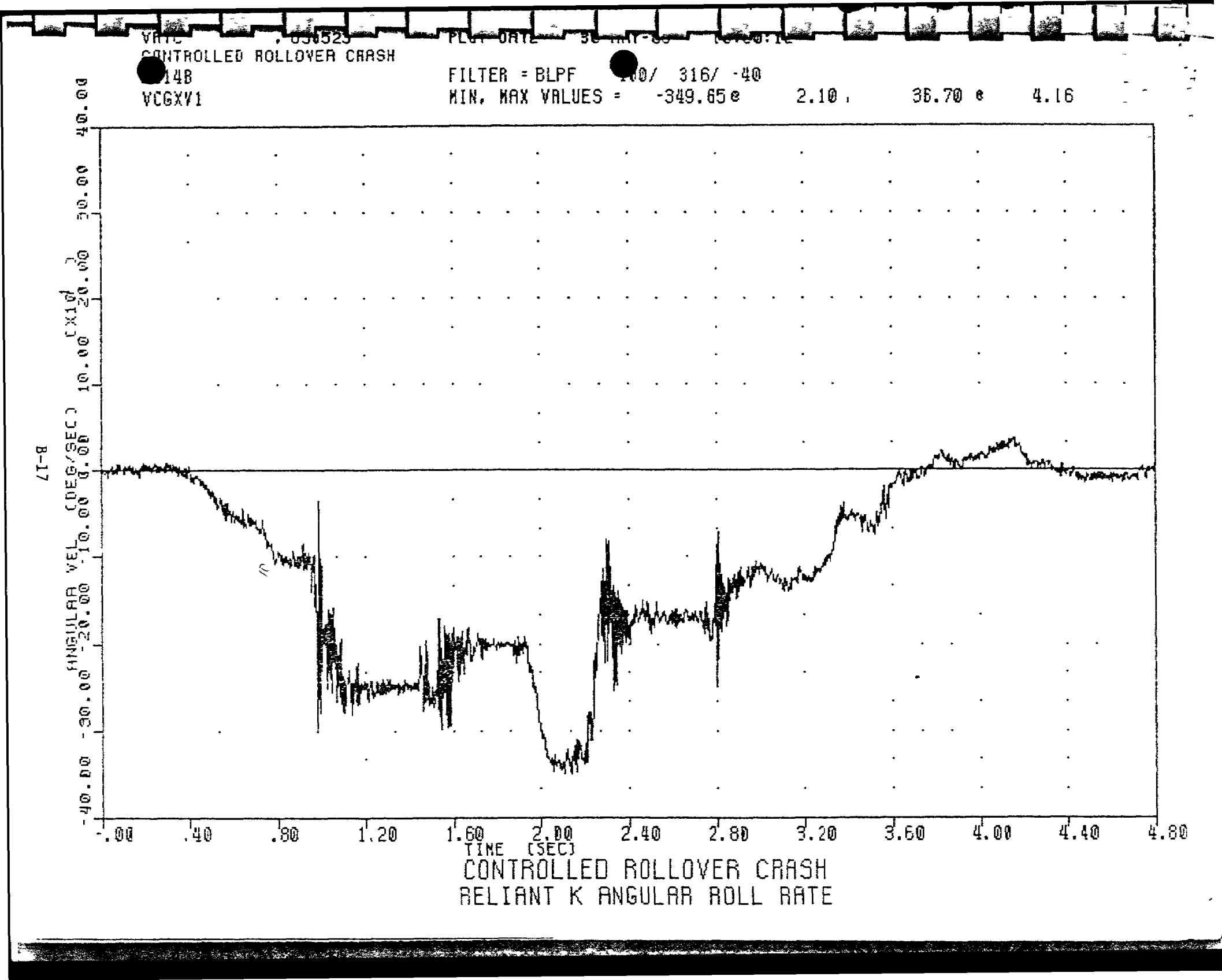
VRTC . 850523
CONTROLLED ROLLOVER CRASH
85148
VCGRG1

PLOT DATE 30-MAY-85 10:50:12

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = 0.02 @ 0.25 , 19.07 @ 0.96

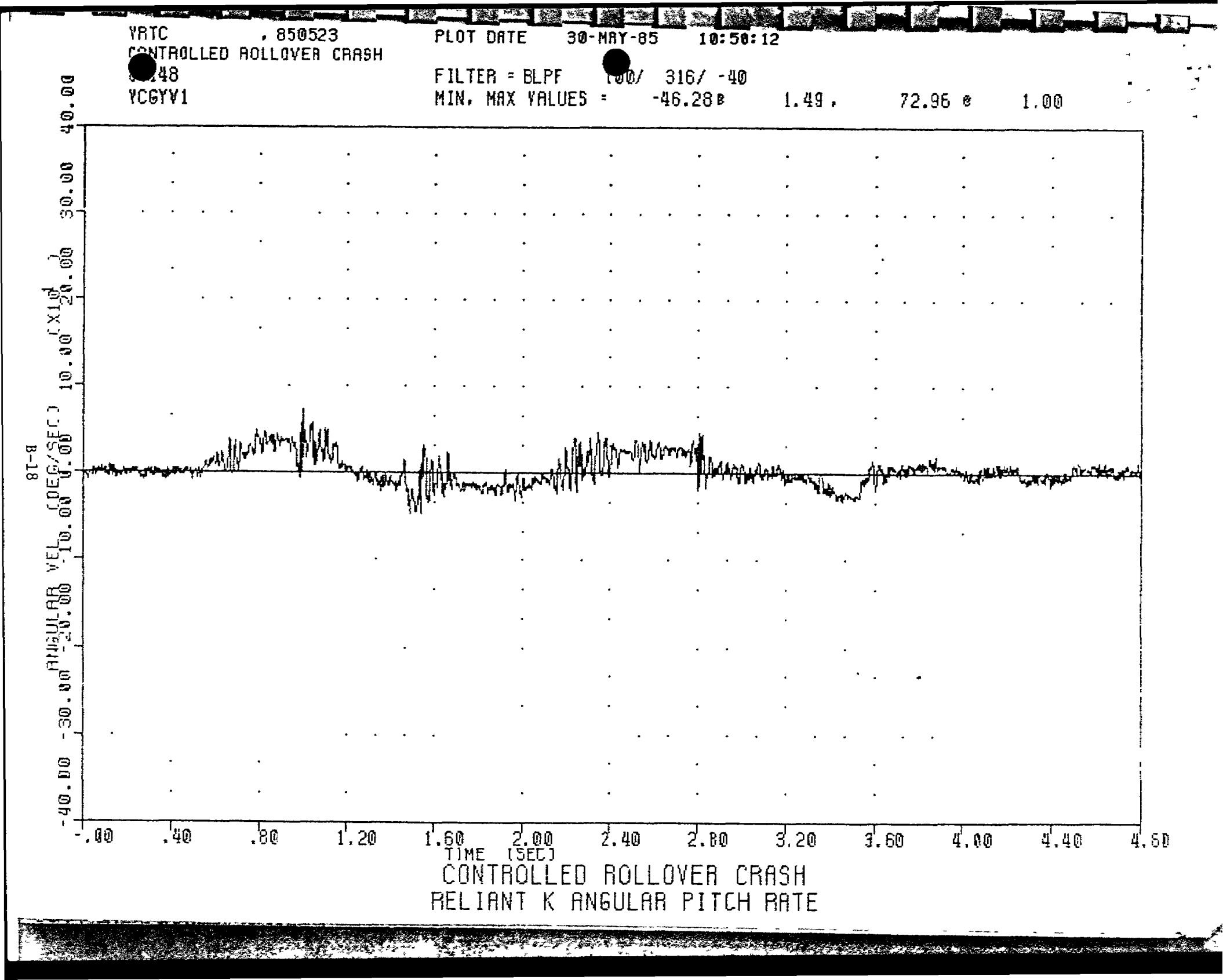


CONTROLLED ROLLOVER CRASH
RELIANT K CENTER OF GRAVITY RESULTANT ACCELERATION

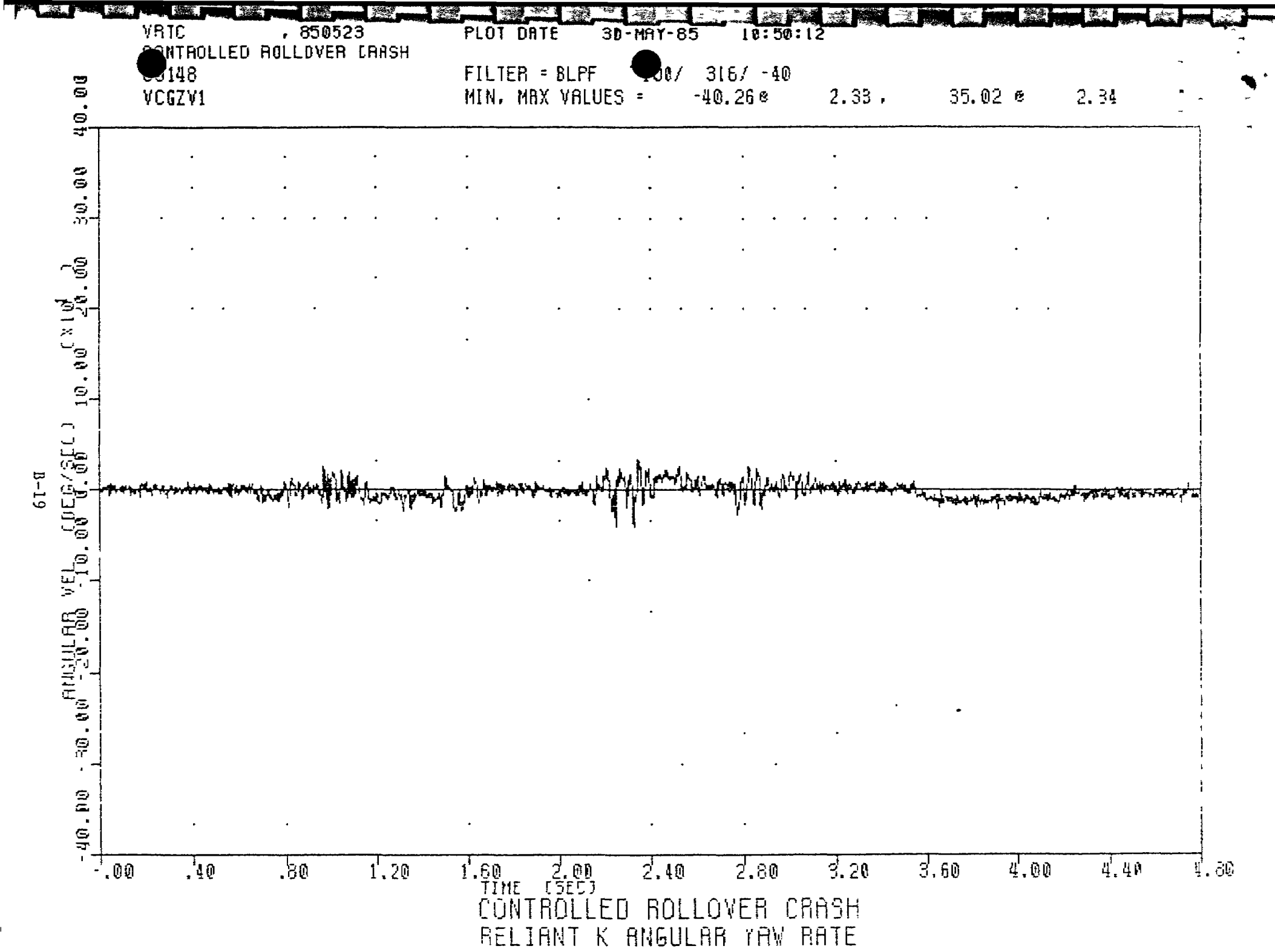


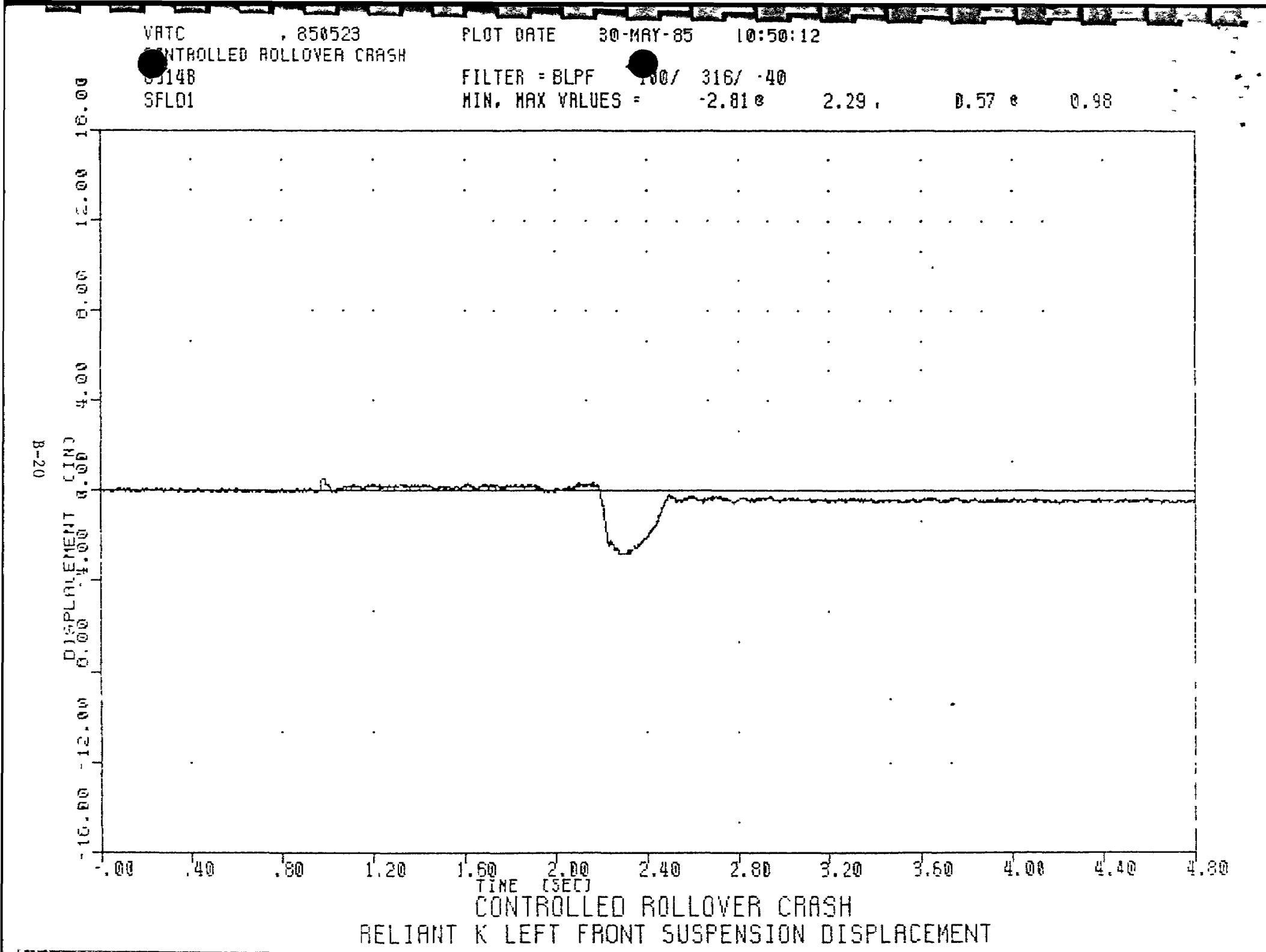
CONTROLLED ROLLOVER CRASH

RELIANT K ANGULAR ROLL RATE



CONTROLLED ROLLOVER CRASH
RELIANT K ANGULAR PITCH RATE


VRTC , 850523
PLOT DATE 30-MAY-85 10:50:12
CONTROLLED ROLLOVER CRASH
FILTER = BLPF
VCGZV1
MIN, MAX VALUES = -40.26 @ 2.33 , 35.02 @ 2.34
ANGULAR VEL (DEG/SEC)
TIME (SEC)
CONTROLLED ROLLOVER CRASH
RELIANT K ANGULAR YAW RATE



CONTROLLED ROLLOVER CRASH

RELIANT K LEFT FRONT SUSPENSION DISPLACEMENT

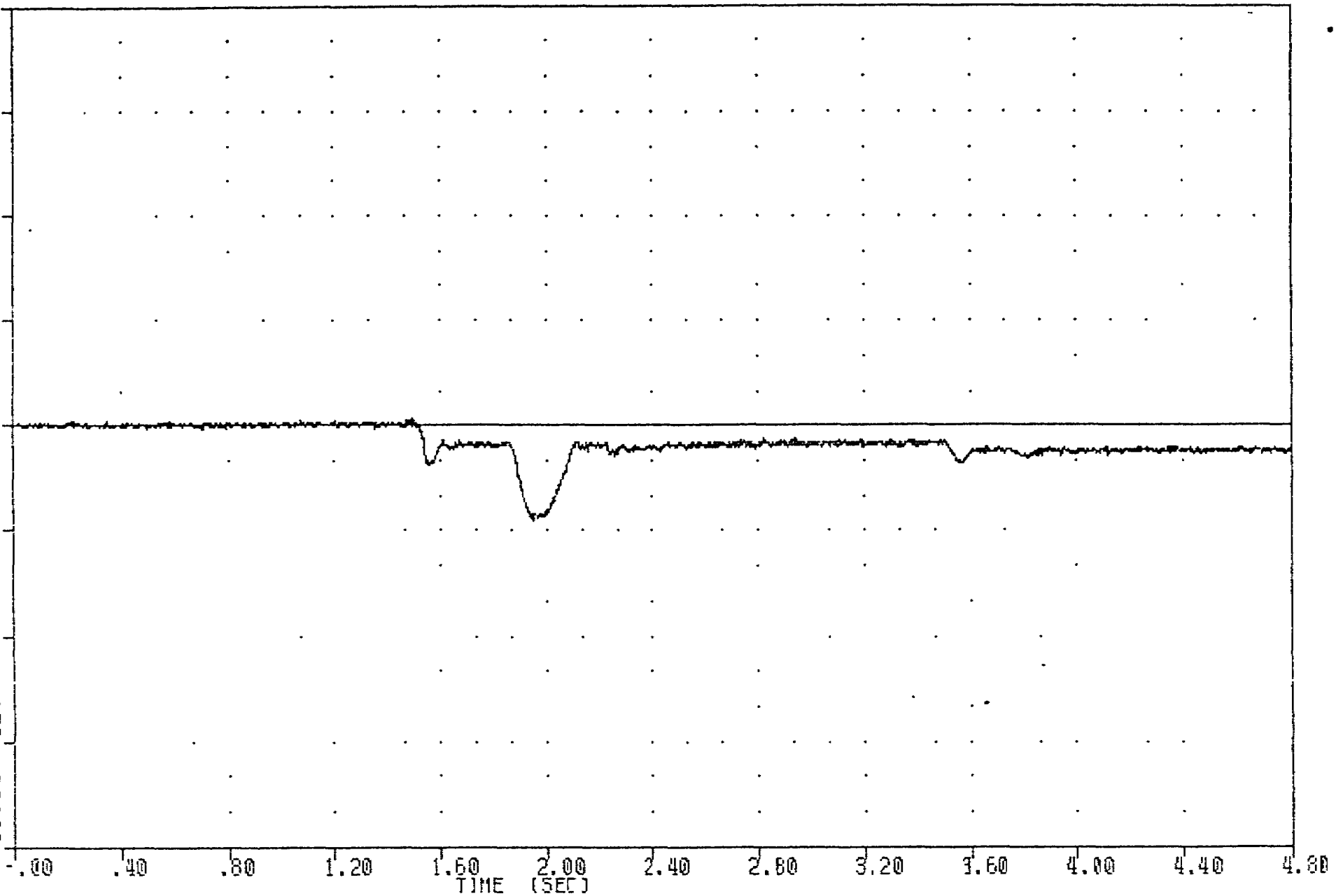
CONTROLLED ROLLOVER CRASH

5148

SFRD1

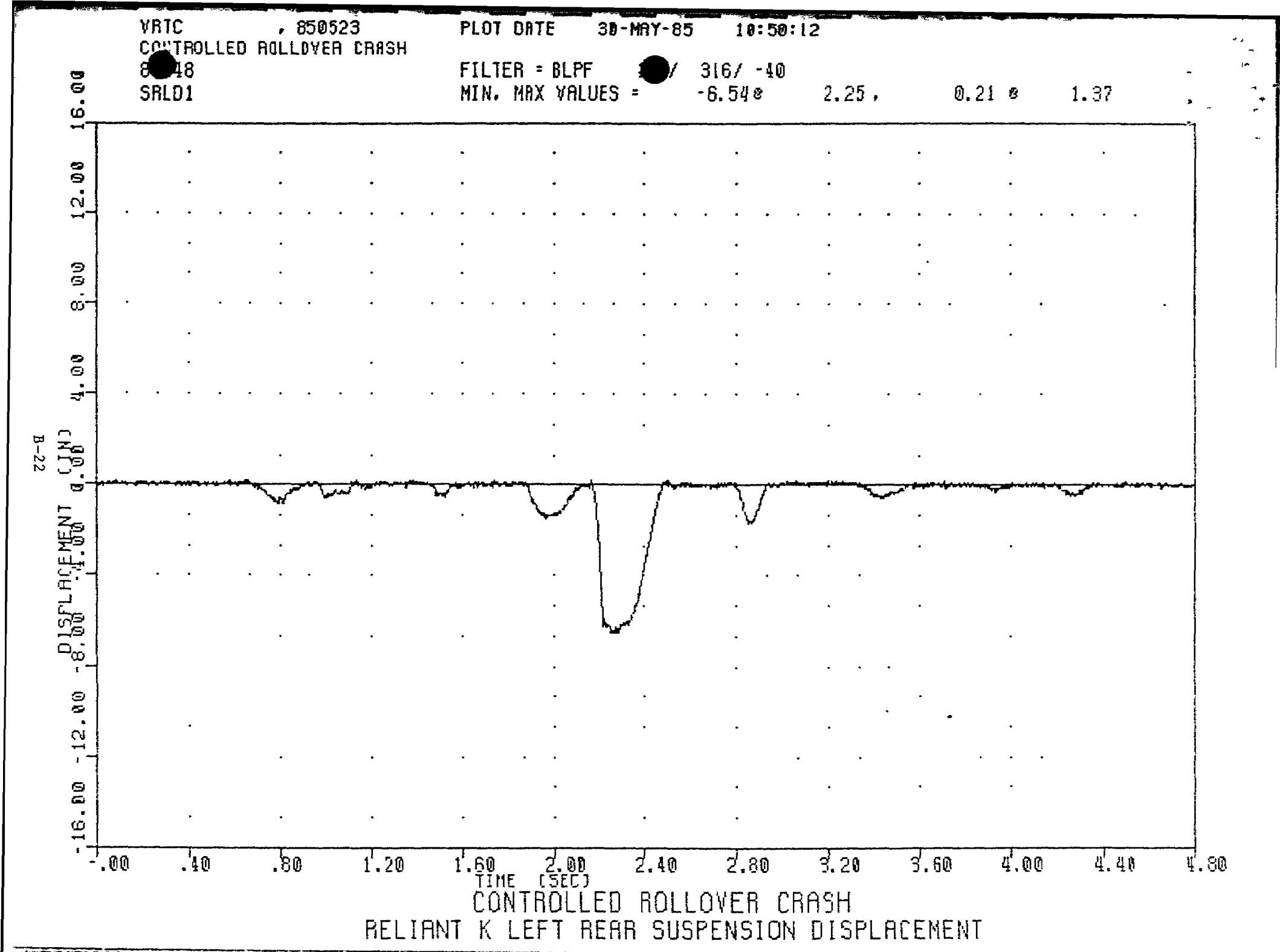
FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES -3.62 @ 1.95 , 0.25 @ 1.49



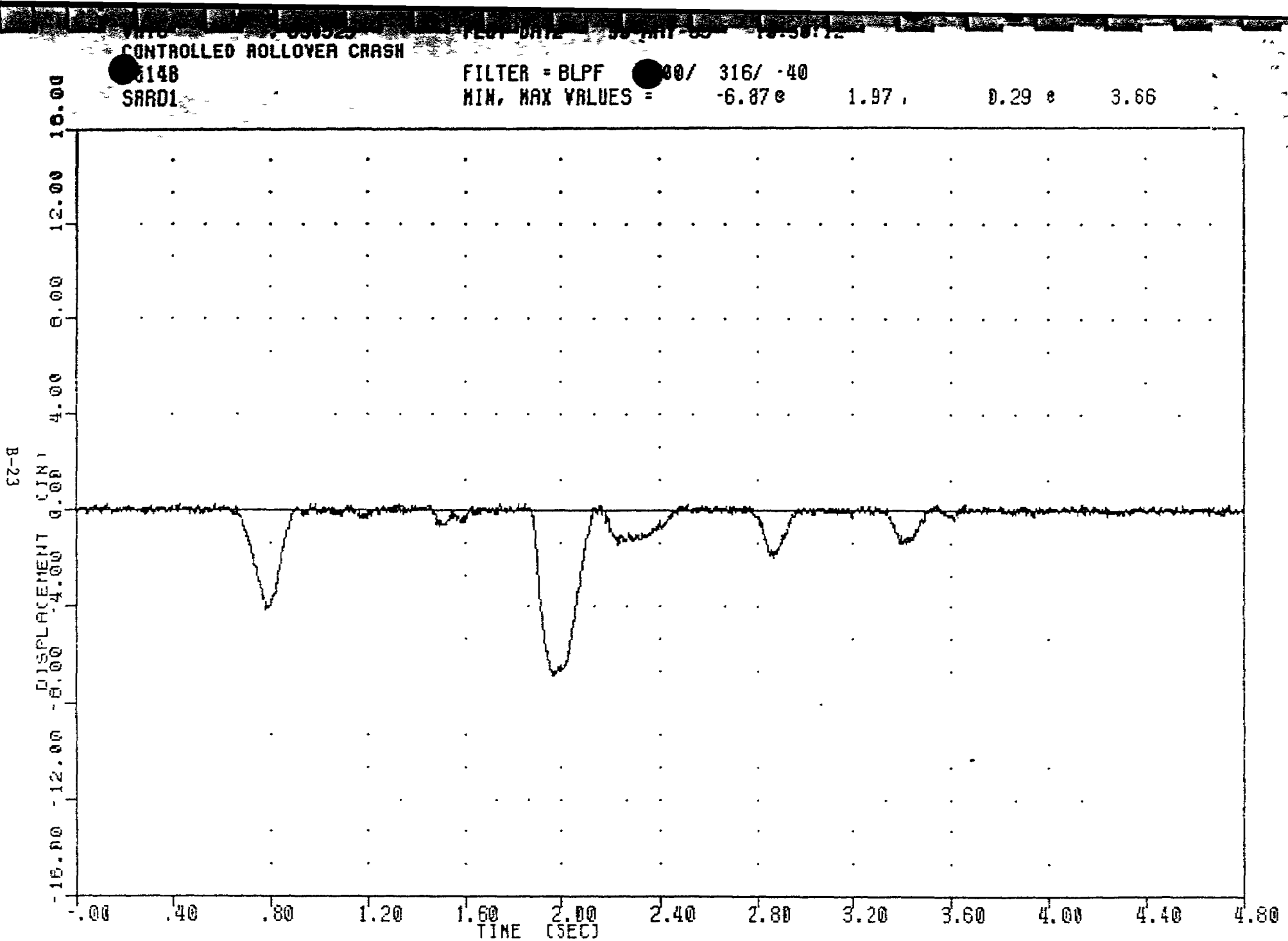
CONTROLLED ROLLOVER CRASH

RELIANT K RIGHT FRONT SUSPENSION DISPLACEMENT



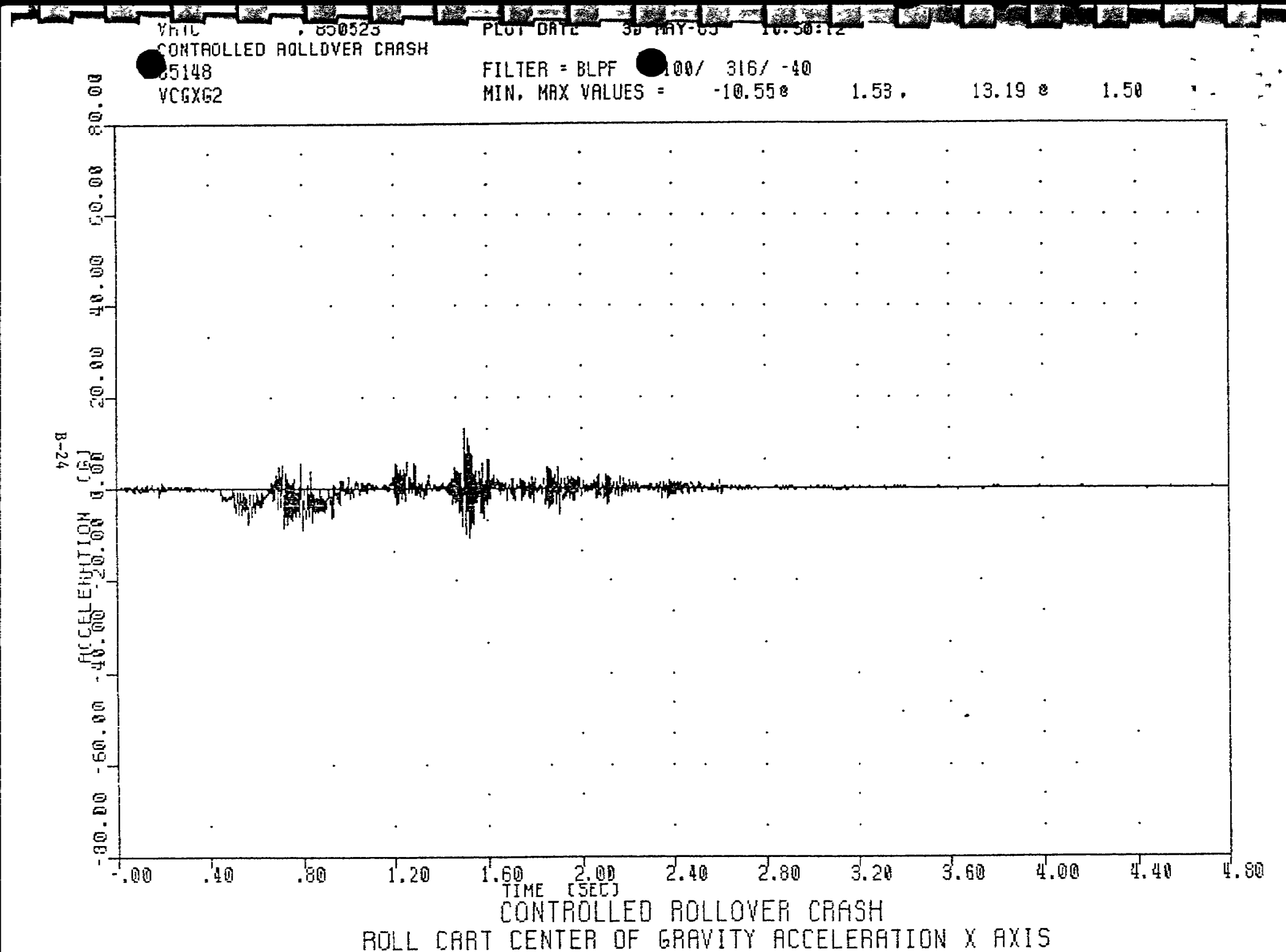
CONTROLLED ROLLOVER CRASH

RELIANT K LEFT REAR SUSPENSION DISPLACEMENT



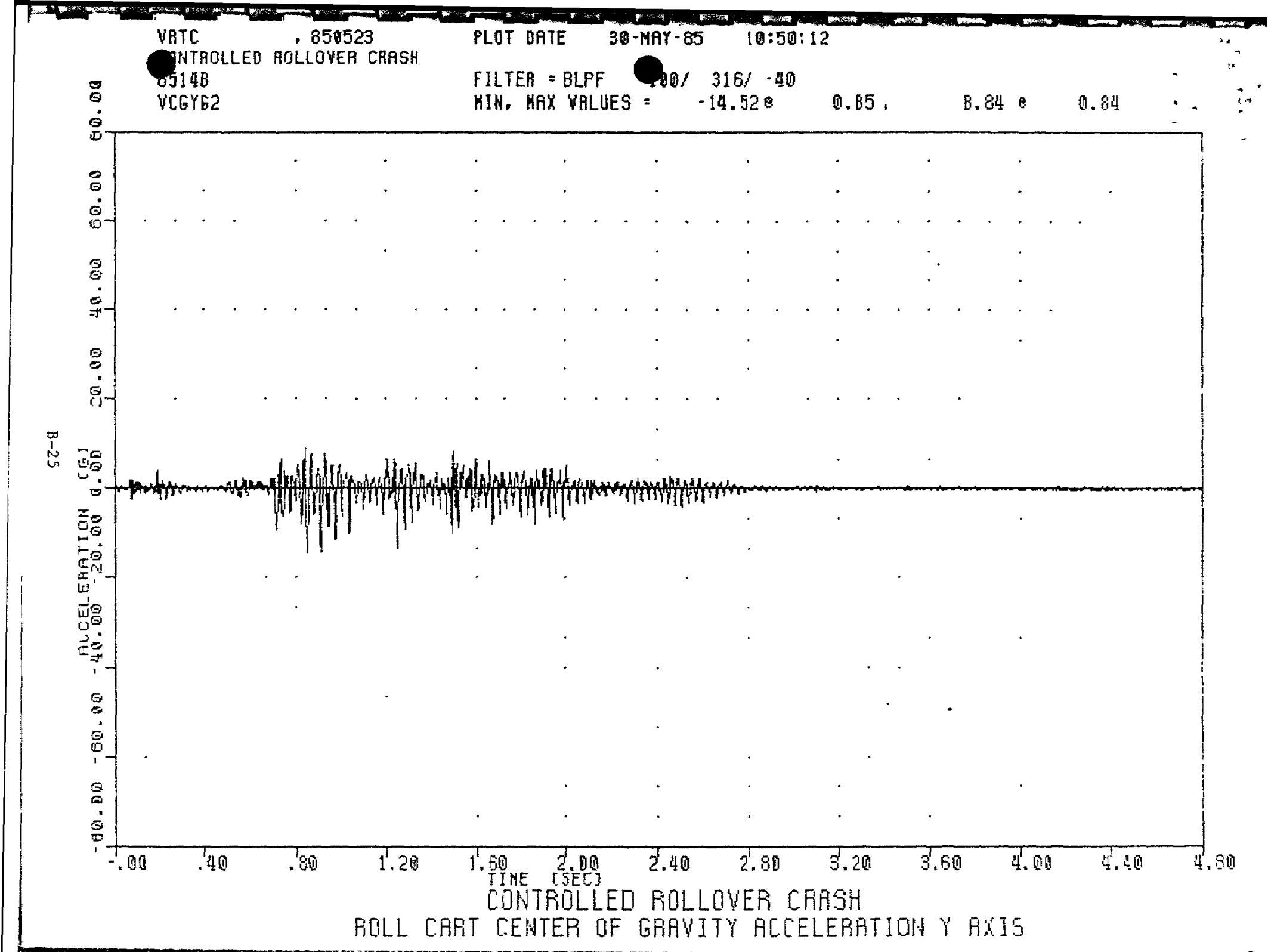
CONTROLLED ROLLOVER CRASH

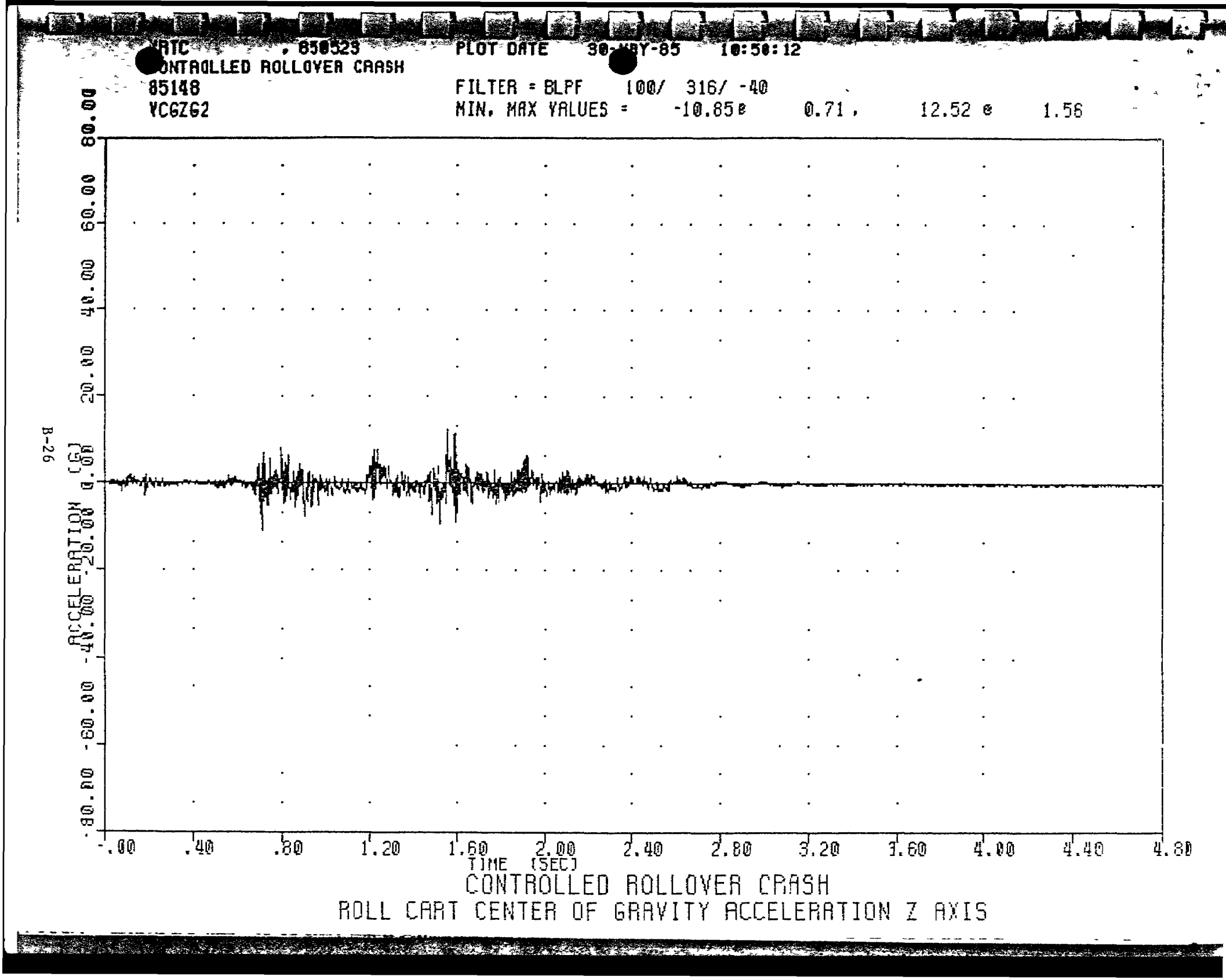
RELIANT K RIGHT REAR SUSPENSION DISPLACEMENT

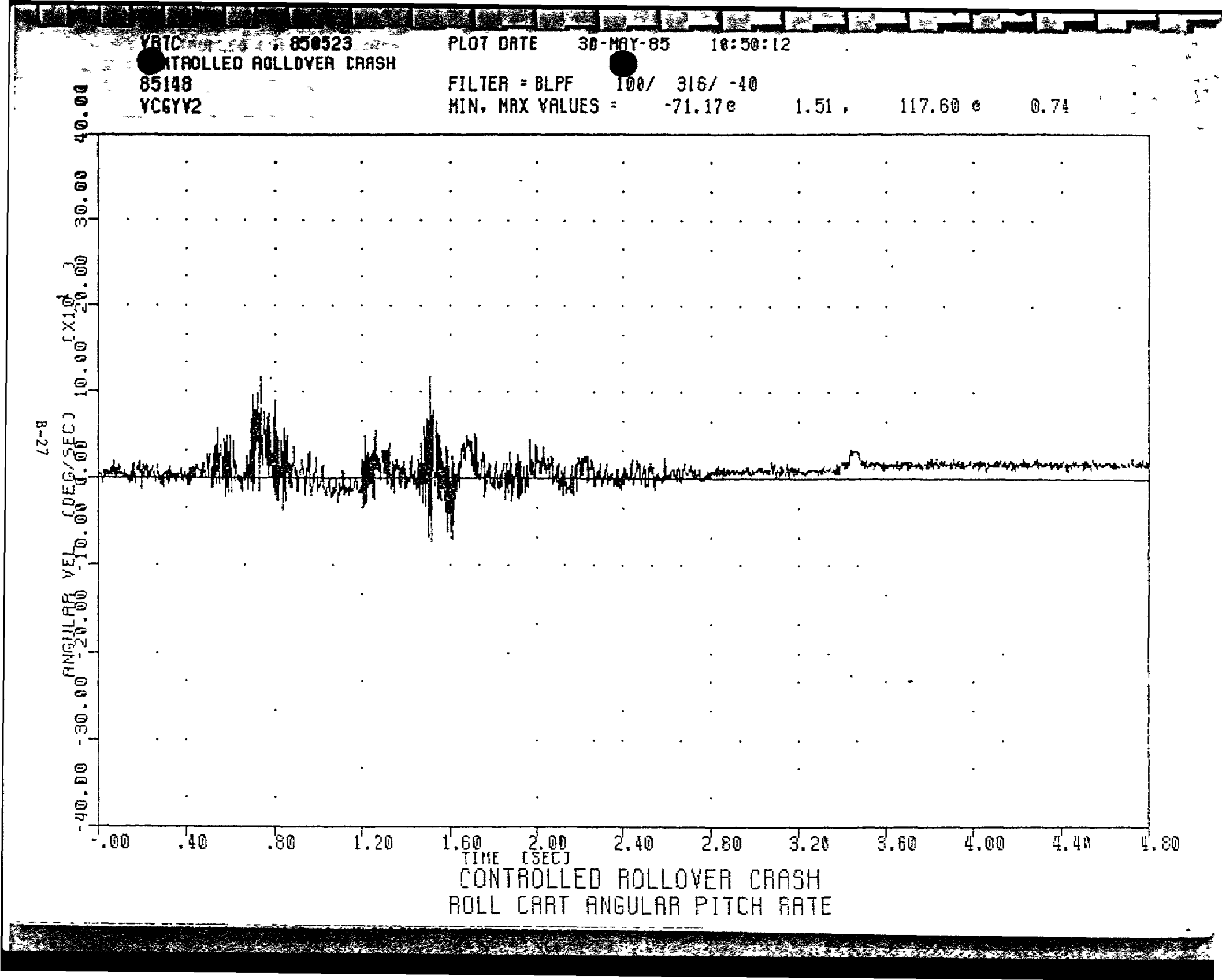


CONTROLLED ROLLOVER CRASH

ROLL CART CENTER OF GRAVITY ACCELERATION X AXIS

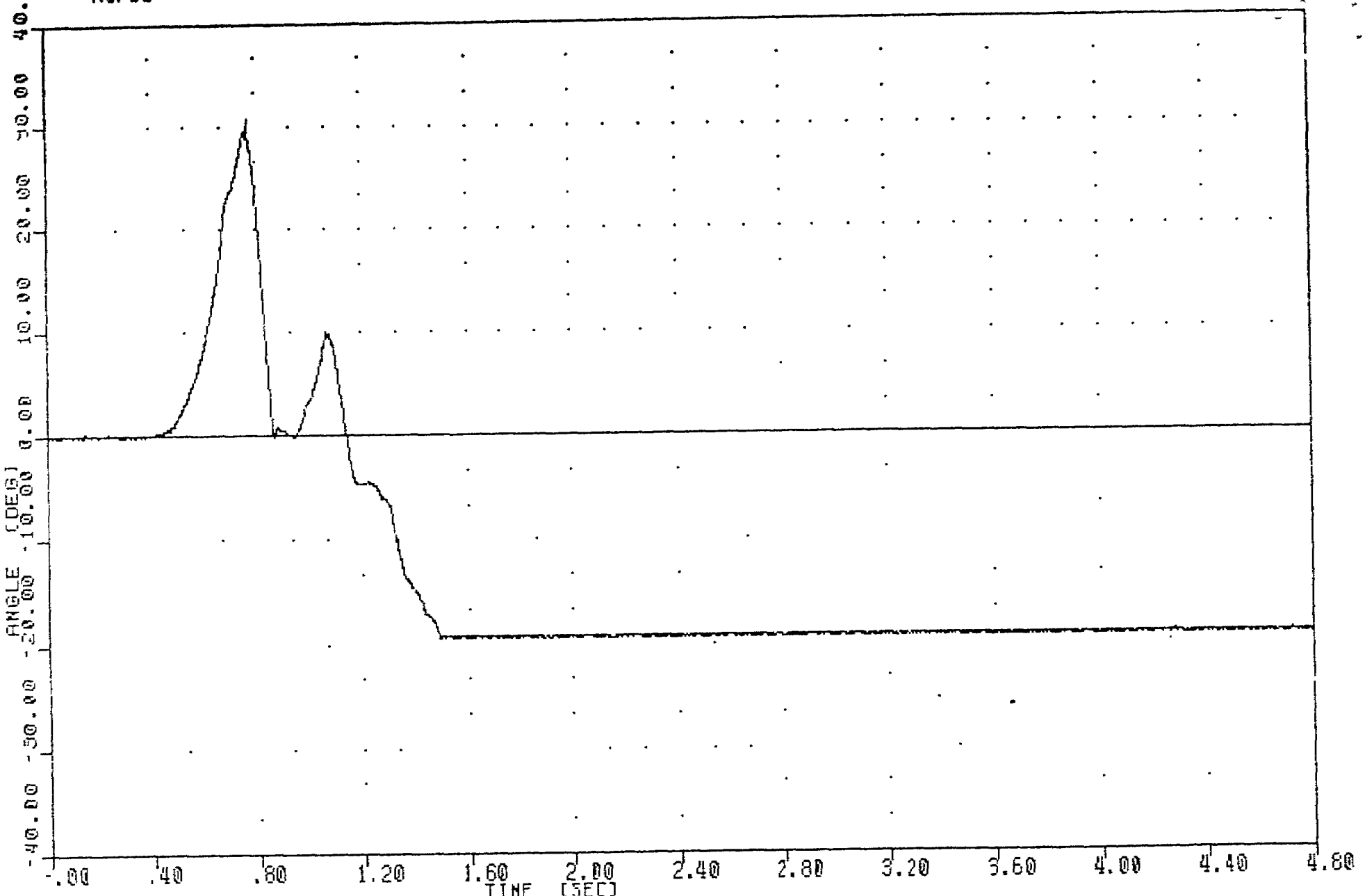

VRTC , 850523
PLOT DATE 30-MAY-85 10:50:12
CONTROLLED ROLLOVER CRASH
8514B
FILTER = BLPF 100/ 316/ -40
VCGY62
MIN, MAX VALUES = -14.52 @ 0.85 , 8.84 @ 0.84
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
ACCELERATION (G)
-.00
.40
.80
1.20
1.60
2.00
2.40
2.80
3.20
3.60
4.00
4.40
4.80
TIME (SEC)
CONTROLLED ROLLOVER CRASH
ROLL CART CENTER OF GRAVITY ACCELERATION Y AXIS


RTC , 850523 PLOT DATE 30-MAY-85 10:50:12
ONTROLLED ROLLOVER CRASH
85148
YCGZG2
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -10.85 @ 0.71 , 12.52 @ 1.56
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
ACCELERATION (G)
-.00
.40
.80
1.20
1.60
2.00
2.40
2.80
3.20
3.60
4.00
4.40
4.80
TIME (SEC)
CONTROLLED ROLLOVER CRASH
ROLL CART CENTER OF GRAVITY ACCELERATION Z AXIS


VRTC 850523
CONTROLLED ROLLOVER CRASH
85148
VCGYV2
PLOT DATE 30-MAY-85 10:50:12
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -71.17@ 1.51 , 117.60 @ 0.74
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
ANGULAR VEL [DEG/SEC] [X10]
.00
.40
.80
1.20
1.60
2.00
2.40
2.80
3.20
3.60
4.00
4.40
4.80
TIME [SEC]
CONTROLLED ROLLOVER CRASH
ROLL CART ANGULAR PITCH RATE

CONTROLLED ROLLOVER CRASH
6514B
RCPDL

FILTER = BLPF 0/ 316/ -40
MIN, MAX VALUES = -19.56 @ 2.17 , 29.60 @ 0.76



CONTROLLED ROLLOVER CRASH
ROLL CART LEFT CYLINDER DISPLACEMENT

APPENDIX C

DUMMY CERTIFICATION

TRANSPORTATION RESEARCH CENTER OF OHIO

EXTERNAL DIMENSIONS

PART 572 2-JAN-85 15:14:10

TEMPERATURE 70.00 F RELATIVE HUMIDITY 30.00 %
NHTSA ED86001 572 SN 880 EXT. DIMENSIONS 01

DESCRIPTION SN ALDERSON RESEARCH LAB 880	SPECIFICATION	TEST RESULTS
Sitting Height	35.6 - 35.81N	35.6 INS
Shoulder Pivot Height	21.8 - 22.41N	22.2 INS
Hip Pivot Height	3.9 IN (ref.)	3.9 INS
Hip Pivot From Backline	4.8 IN (ref.)	4.8 INS
Knee Pivot From Backline	20.1 - 20.71N	20.4 INS
Rear of Head From Backline	1.7 IN (ref)	1.7 INS
Chest Depth	9.1 - 9.6IN	9.4 INS
Shoulder Width	17.8 - 18.4IN	18.0 INS
Chest Circumference Over Nipples	36.8 - 40.01N	37.6 INS
Waist Circumference at Min. Girth	31.4 - 32.61N	32.2 INS
Hip Width	14.0 - 15.4IN	14.8 INS
Knee Pivot From Floor	19.3 - 19.9IN	19.4 INS

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Watters

TEST SUPERVISOR R.E. Lee

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572 24-NOV-84 14 24 38

TEMPERATURE 70 00 F
NHTSA LF88001

RELATIVE HUMIDITY 28 00 %
572 SN 880 LUMBAR FLEXION CAL 1

DEFLECTION	SPECIFICATION	TEST RESULTS
0 Deg.	0 LBS	0 00 LBS
20 Deg	22 00 - 34 00 LBS	34 00 LBS
30 Deg	34 00 - 46 00 LBS	43 00 LBS
40 Deg	46 00 - 58 00 LBS	50 00 LBS
NET RETURN ANGLE	< 12 DEG	2 00 DEG

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K. L. Watters
TEST SUPERVISOR R. E. Tokar

TRANSPORTATION RESEARCH CENTER OF OHIO

ABDOMINAL COMPRESSION TEST

PART 572 20-DEC-84 13 22 52

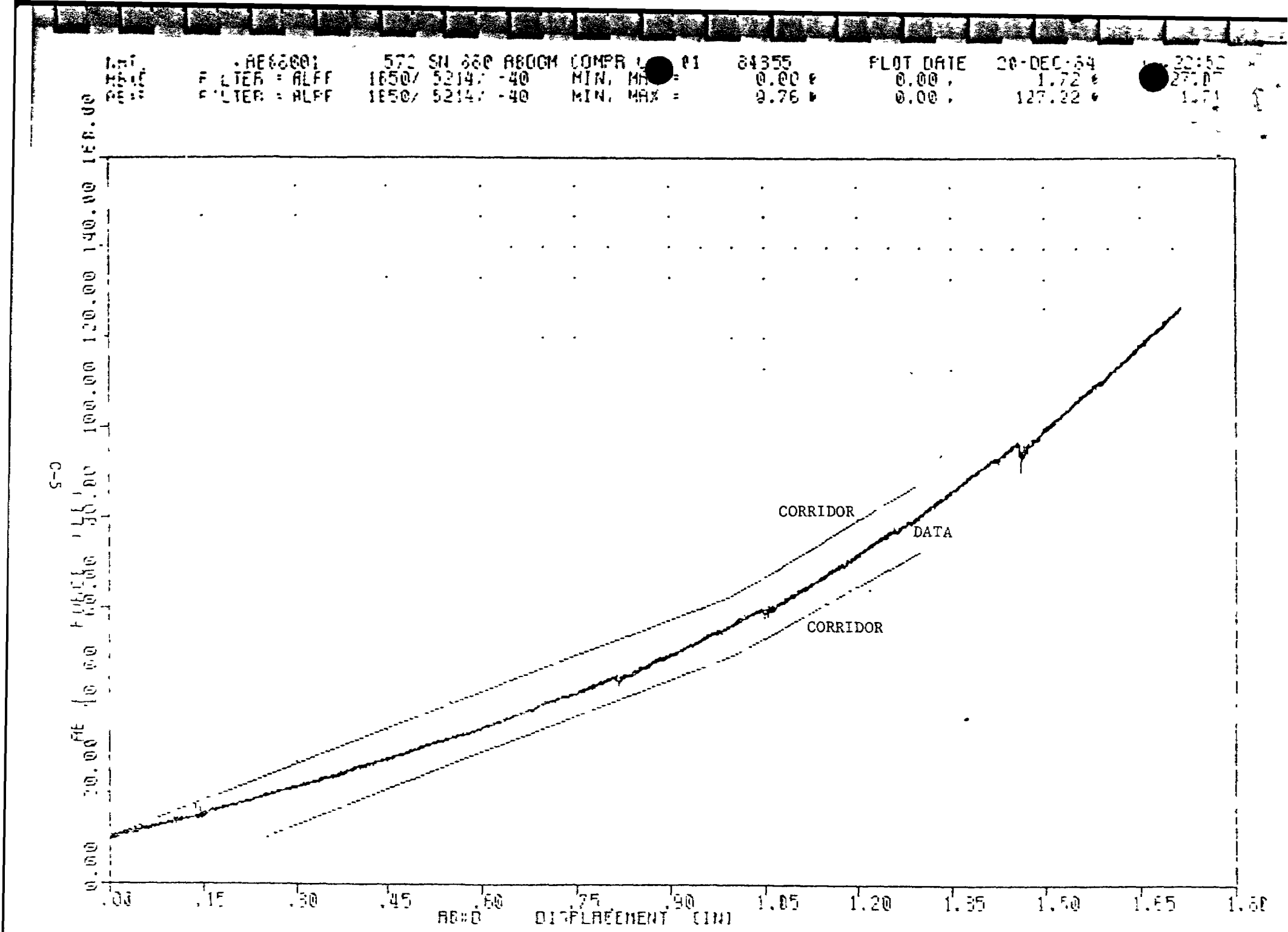
TEMPERATURE 70.00 F
NHTSA AB88001

RELATIVE HUMIDITY 29 00 %
572 SN 880 ABDOM COMPR CAL 01

TEST CORRIDORS DISPLACEMENT	FORCE	TEST RESULTS
0 IN.	10 LBS	10 LBS
.25 IN.	10 00 - 23 25 LBS	19 52 LBS
1.00 IN.	50 00 - 63 00 LBS	56 83 LBS
1.30 IN.	73 00 - 88 00 LBS	81 02 LBS

DUMMY MEETS SPECIFICATIONS

TECHNICIAN V. L. Watters
TEST SUPERVISOR R. E. LeVan



ABDOMINAL COMPRESSION VS DISPLACEMENT

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572 29 NOV-84 14:23:57

TEMPERATURE 70 F RELATIVE HUMIDITY 28 %
NHTSA HD88001 572 SN 880 HEAD DROP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PEAK RESULTANT ACCELERATION	210 - 260 G	257.40 G
TIME ABOVE 100 G LEVEL	0.9 - 1.5 MS	1.16 MS
PEAK LATERAL ACCELERATION	10 G MAX	8.45 G
IS ACCELERATION CURVE UNIMODAL?		YES

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Watters

TEST SUPERVISOR R. E. LeVan

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572 21-DEC-84 14:25:02

Flexion Test

TEMPERATURE 70.00 F RELATIVE HUMIDITY 37.00 %
NHTSA HN88001 572 SN 880 HEAD/NECK CAL 01

Test Parameter	Specification	Test Results
Pendulum velocity	21.5 to 25.5 fps	22.22 fps
Pendulum Deceleration:		
T1 - T2: 5 - 20 G	3 ms. max	1.57 ms.
T2 - T3: 20 - 20 G	25 - 30 ms.	26.76 ms.
T3 - T4: 20 - 5 G	10 ms. max	5.91 ms.
Avg. G level T2 - T3	20 - 24 G	23.83 G
Maximum Rotation Angle	63 - 73 deg.	72.35 deg.
Peak Head Resultant Accel	26 G max	23.45 G

Test Parameter	Specification		Test Results	
Rotation Angle (degrees)	Time (ms.)	Chordal Disp. (in.)	Time (ms.)	Chordal Disp. (in.)
0	0	-0.5 - +0.5	0.25	0.00
30	25.6 - 34.4	2.1 - 3.1	29.34	2.41
60	40.3 - 51.7	4.3 - 5.3	44.26	4.48
max	53.2 - 66.8	5.0 - 6.0	60.13	5.54
60	67.0 - 83.0	4.3 - 5.3	77.93	4.54
30	85.4 - 104.6	2.1 - 3.1	96.13	2.16
0	101.0 - 123.0	-0.5 - +0.5	110.28	0.16

* DUMMY MEETS SPECIFICATIONS

TECHNICAN K. E. Martin

TEST SUPERVISOR R. E. Lee

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572 27-DEC-84 22:19:36

TEMPERATURE 70 F RELATIVE HUMIDITY 43 %
NHTSA ROLL TL88001 572 SN 880 L.S.THORAX CAL 01

TEST PARAMETER	LOW SPEED TEST SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	13.86-14.14 FT/SEC	14.04 FT/SEC
PEAK DEFLECTION	1.1 INCHES MAX.	0.97 INCHES
PEAK RESISTIVE FORCE	1,450. POUNDS MAX.	1336. POUNDS
INTERNAL HYSTERESIS	50% - 70%	51.8%

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Wattley

TEST SUPERVISOR R.E. LeVan

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572 27-DEC-84 21:54:07

TEMPERATURE 70 F
NHTSA ROLL TH88001

RELATIVE HUMIDITY 43 %
572 SN 880 H.S.THORAX CAL 01

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	21.78-22.22 FT/SEC	22.22 FT/SEC
PEAK DEFLECTION	1.7 INCHES MAX.	1.50 INCHES
PEAK RESISTIVE FORCE	2,250. POUNDS MAX.	2119. POUNDS
INTERNAL HYSTERESIS	50% - 70%	56.7%

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Watts

TEST SUPERVISOR R. E. Lee

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572 28-DEC-84 23:37:06

TEMPERATURE 72 F RELATIVE HUMIDITY 54 %
LEFT KNEE
NHTSA ROLL LK88001 572 SN 880 L.KNEE IMP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	2076.72 LBS.
DURATION ABOVE 1000 LBS.	>=1.7 MS.	1.83 MS.

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Watters

TEST SUPERVISOR R.E. Lee

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572 28-DEC-84 17:19:15

TEMPERATURE 72 F RELATIVE HUMIDITY 56 %
RIGHT KNEE
NHTSA ROLL RK88001 572 SN 880 R.KNEE IMP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.90 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	2419.92 LBS.
DURATION ABOVE 1000 LBS.	>=1.7 MS.	1.77 MS.

DUMMY MEETS SPECIFICATIONS

TECHNICIAN K.L. Watters

TEST SUPERVISOR R. E. LeVan