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FULL-SCALE CRASH EVALUATION OF SIDEWALK-MOUNTED STEEL BRIDGE RAILING

NCHRP TEST 4-12
SwRI TEST NO. NETC-3

Research, Development, and Technology
Turner-Fairbank Highway Research Center
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McLean, Virginia 22101-2296

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16. Abstract

This report presents the results of a NCHRP Report 350 type 4-12 crash test conducted on a sidewalk-mounted steel bridge railing designed by the New England Transportation Consortium (NETC). The test utilized a 8108 kg (gross weight including ballast) single-unit van truck impacting at 80 km/h and a 15° angle to evaluate the strength of the barrier section to contain and redirect the heavy vehicle. The performance of the barrier was judged to pass most of the evaluation criteria of NCHRP Report 350; however, the entire front axle of the vehicle was dislodged by the impact, and its post-impact trajectory would have made it a hazard for adjacent traffic lanes. Barrier damage was limited to deflection of two rail sections and two posts.

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Crash test, bridge railing, barrier strength, single-unit van truck	No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
	AREA			
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yards	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
	VOLUME			
fl oz	fluid ounces	29.57	milliliters	ml
gal	gallons	3.785	liters	l
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
NOTE: Volumes greater than 1000 l shall be shown in m^3.				
	MASS			
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5(F-32)/9 or (F-32)/1.8	Celcius temperature	°C
	ILLUMINATION			
fc	foot-candles	10.76	lux	l
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
	FORCE and PRESSURE or STRESS			
lbf	poundforce	4.45	newtons	N
psi	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
	AREA			
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	ac
ha	hectares	2.47	acres	mi^2
km^2	square kilometers	0.386	square miles	
	VOLUME			
ml	milliliters	0.034	fluid ounces	fl oz
l	liters	0.264	gallons	gal
m^3	cubic meters	35.71	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
	MASS			
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg	megagrams	1.103	short tons (2000 lb)	T
	TEMPERATURE (exact)			
°C	Celcius temperature	1.8C + 32	Fahrenheit temperature	°F
	ILLUMINATION			
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
	FORCE and PRESSURE or STRESS			
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	psi

* SI is the symbol for the International System of Units. Appropriate

(Revised August 1992)

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INTRODUCTION

The purpose of this test was to evaluate the performance of the New England Transportation Consortium (NETC) 4-bar, sidewalk-mounted steel bridge railing. To accomplish this, a test designated as type 4-12 in NCHRP Report 350[1] was performed. Test 4-12 utilizes an 8000-kg single-unit van truck impacting at 80 km/h and a 15° impact angle to evaluate the strength of the barrier for containing and redirecting a heavy vehicle. The text in the following sections describes the test installation, vehicle, sequence, and resulting damage to both the installation and vehicle. In addition, conclusions regarding barrier performance are offered. Following the text, figures and tables which further describe the test setup, procedures, and results are presented.

TEST INSTALLATION

Facility

This test was performed along and adjacent to the inactive East Runway at Brooks Air Force Base, San Antonio, Texas. As shown in figure 1, a concrete approach and 34.1-m-long sidewalk were constructed at an angle to the runway and a 32.9-m-long bridge rail test article was erected on the sidewalk.

Test Article

Drawings of an elevation and cross section of the test installation are shown in figures 2 and 3, respectively. Briefly, the steel-reinforced, concrete sidewalk was 2.0 m wide by 203 mm high on the traffic side which sloped upward to a level 229 mm high where the bridge rail was mounted. The bridge rail utilized W6 x 25 steel posts welded to 25-m x 254-mm x 356-mm baseplates which were attached to the concrete with 25-mm anchor bolts. Post spacing was 2.44 m. Four longitudinal rails fabricated from steel structural tubing were attached to the posts with 19.1-mm diameter studs; rail heights, measured from the concrete sidewalk to the top of the rails, were 229 mm, 475 mm, 813 mm, and 1168 mm. Further details of the installation and its components are shown in the drawing of Appendix A.

Photographs of details of the barrier installation are shown in figure 4; damage to the installation which had occurred during the previous test was repaired. Table 1 summarizes the beam and post materials used in the installation and also lists dimensions of the key components of the system.

TEST VEHICLE, CONTROLS, AND DATA SYSTEMS

Vehicle and Dummy

The vehicle used for this test was a 1993 International Harvestor Model 4600LP step-van truck. To bring the test vehicle up to the desired curb weight, 2354 kg of ballast (bales of hay) were distributed and secured in the van cargo box. Gross test weight, including ballasting and vehicle instrumentation, was 8108 kg. Pre-test photographs of the vehicle are shown in figure 5.

Vehicle Controls

Target impact point of the vehicle was the centerline of post 6. It was guided to that location using a 6.4-mm diameter x 457.2-m-long steel cable which passed through a guide tube/bracket attached to the left front wheel spindle. The cable was pretensioned and located alongside the run-up strip where it would not interfere with post-impact vehicle trajectory. Just prior to impact, the guide tube/bracket was sheared off, allowing the vehicle free trajectory.

[1]Ross, H.E., Jr., Sicking, D.L., Zimmer, R.A., and Michie, J.D., "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances," NCHRP Report 350, Washington, D.C., 1993.

Braking of the test vehicle was accomplished by use of an air cylinder attached to its brake pedal. The air cylinder was activated by a gas-charged accumulator through an intermediate solenoid valve. The solenoid valve was remotely controlled by the test conductor.

The test vehicle was towed into the barrier using a cable/pulley system for reverse towing, i.e., the tow vehicle moved away from the barrier as the test vehicle moved toward it. The tow cable was attached to the underside of the test vehicle and released just prior to impact. Vehicle impact speed control was achieved by means of an automatic controller attached to the engine distributor of the tow vehicle. After the tow vehicle accelerated to its predetermined test speed, the controller pulsed the ignition, maintaining the tow vehicle at that speed.

Electronic Data Acquisition

The vehicle was instrumented with eleven accelerometers and one rate gyro; the location of each of these transducers in the vehicle is shown in table 2. The accelerometers were oriented to obtain data in directions parallel to the longitudinal, lateral, or vertical axes of the vehicle, and the rate gyro was oriented to measure the yaw angular rate change the vehicle experienced during the impact sequence. The transducer data was recorded by a Pacific Instruments Model 5600 Data Acquisition System (DAS) which contained signal conditioners, amplifiers, appropriate SAEJ211 filters and digitizers with on-board memory for up to 32 data channels at programmable sample rates to 100 kilohertz per channel. Digitized data was recorded in solid state non-volatile memory with a capacity of 65,000 data points per channel. For this test, twelve channels were used to measure and record X, Y, and Z accelerations as well as yaw rate of the vehicle.

In addition to the above, two accelerometers were mounted on the back flange of post 7 of the barrier installation. These were located 51 mm and 533 mm below the top of the post and were oriented to obtain data in a lateral direction to the barrier. These two transducers were connected to a signal conditioning unit for power, calibration and balancing, and their signals recorded by digital computer at a rate of 1 kilohertz.

Film Data Acquisition

In addition to the electronic data, high-speed film coverage of the event included cameras adjacent to and overhead of the barrier installation.

Data Processing

Vehicle transducer data were downloaded to a personal computer after the test and processed through an Institute-developed computer program. The program utilizes accelerometer and rate gyro data to determine vehicle acceleration (in longitudinal, lateral, and vertical directions), heading angle, velocity, and displacement as a function of time during the event. In addition, from this data the program calculates the highest 50-millisecond average accelerations for the vehicle as well as occupant risk data, including impact velocities (with the interior of the vehicle) and 10-millisecond average ridedown accelerations. The output of this data is provided in either tabular or graphical form.

Data from the two accelerometers mounted on post 7 were transferred to a floppy disk and then imported to a Microsoft Excel spreadsheet. These data were then converted to standard engineering units (g's) and output in both tabular and graphical form.

TEST DESCRIPTION

Ambient temperature at test time was 15°C. Actual impact conditions were 80 km/h and a 15° impact angle. As shown in the test summary diagram of figure 6, the vehicle traversed the sidewalk and impacted the barrier 610 mm upstream of post 6, deflecting

the two top rails approximately 25 mm at the splice between posts 6 and 7 while maintaining contact with the longitudinal rails for 12.19 m as it was redirected. The vehicle then exited the barrier at a 4.1° angle (calculated from measured tire marks). Maximum permanent rail deflection occurred at the splice upstream of post 7 and was measured as 13 mm. Figures 7 and 8 show the redirection sequence of the vehicle from overhead as well as behind the barrier viewpoints. Since the front axle was dislodged during the impact, the vehicle veered hard to the right after exiting and stopped 84 m downstream and 91 m normal to the test installation. Although some of the vehicle accelerometers had interruptions in their data due to the impact, only one suffered complete data loss - the longitudinal accelerometer mounted on the bottom of the engine. Maximum 50 msec average vehicle accelerations in the longitudinal and lateral directions were -2.72 G's and -5.79 G's, respectively. Occupant risk values were as follows: (1) the occupant impact velocities were 1.65 m/sec in the longitudinal direction and -2.89 m/sec in the lateral direction, and (2) the maximum occupant ridedown accelerations were -8.95 G's in the longitudinal direction and 14.30 G's in the lateral direction. Figures 9 through 23 contain plots of the transducer data recorded during the event, and tabular printouts of the transducer data are shown in Appendices B and C.

BARRIER DAMAGE

Barrier damage is shown in figure 24. Two sections of the top rail had permanent deflection (deflection occurred between posts 6 and 7), and posts 6 and 7 were tilted back; the baseplates of both posts were raised upward at the center approximately 3.5 mm. The remainder of the damage consisted of scuffing of all longitudinal rails between posts 6 and 11.

VEHICLE DAMAGE

As shown in figure 25, the test vehicle sustained extensive damage. As described previously, the entire front axle (axle/brakes/wheels/tires, etc.) was dislodged by the impact and later separated during its runout. In addition, the left corner of the front bumper was deflected rearward, a portion of the left front fender was torn away (the vehicle had a one piece, fiberglass front clip), the left step under the driver's door was torn away, the left rear, outside wheel was damaged, the cargo box was racked toward the left side, and the anti-underride assembly was fractured at the left rear corner. Since the exterior vehicle damage scales, i.e., the VDS system and the CDC system, are not applicable to this class of test vehicle, no assessment of that type was made. The OCDI system is also not applicable; however, there was no deformation or intrusion into the occupant compartment.

EVALUATION OF TEST RESULTS

Performance evaluation is based on the criteria shown in table 5.1 titled "Safety Evaluation Guidelines," of NCHRP Report 350. The specific requirements applicable for a Test Type 4-12 are shown in table 3 together with the test NETC-3 results. Barrier performance compared with recommended criteria indicates it passed all categories except category K for preferred no vehicle intrusion into adjacent traffic lanes. Even though the test vehicle exited the barrier at a shallow angle, the loss of the front axle assembly caused it to veer sharply to the right, and it would have been a hazard to adjacent traffic.

CONCLUSIONS

From the evaluation described in the preceding section, the NETC 4-bar, sidewalk-mounted steel bridge railing, as described in the section on "Test Article," appears to meet most of the requirements for a longitudinal barrier as applicable to a Test Type 4-12.

Since the front suspension of the test vehicle is representative of most vehicles of this class, loss of the front suspension and resulting steering loss may allow that class of vehicle to become a hazard to other traffic following an impact.

Table 1. Installation bill of material - Test NETC-3.

Bill of Material

Item	Quantity
TS 4 x 4 x 1/4 - 7.31 M long Rail	12
TS 8 x 4 x 5/16 - 7.31 M long Rail	4
TS 4 x 4 x 1/4 - 3.66 M long Rail	3
TS 8 x 4 x 5/16 - 3.66 M long Rail	1
W6 x 25 - 1.05 M high Post	14

Table 2. Vehicle data transducer locations - Test NETC-3.

Type	Location	Orientation
Accelerometer	Center of gravity	Longitudinal axis
Accelerometer	Center of gravity	Lateral axis
Accelerometer	Center of gravity	Vertical axis
Rate Gyro	Center of gravity	Longitudinal axis
Accelerometer	Over rear axle	Longitudinal axis
Accelerometer	Over rear axle	Lateral axis
Accelerometer	Over rear axle	Vertical axis
Accelerometer	Top engine block	Longitudinal axis
Accelerometer	Bottom of engine block	Longitudinal axis
Accelerometer	Right front disc brake caliper	Longitudinal axis
Accelerometer	Left front disc brake caliper	Longitudinal axis
Accelerometer	Center of instrument panel	Longitudinal axis
Accelerometer	Right rear brake backing plate	Vertical axis
Accelerometer	Left rear brake backing plate	Vertical axis

Table 3. Test assessment summary - NCHRP Report 350 test designation 4-12 - SwRI test number NETC-3.

Designation	Factor	Description	Test Results	Assessment
A	Structural Adequacy	Test article should contain and redirect the vehicle; the vehicle should not penetrate, underride, or override the installation although controlled lateral deflection of the test article is acceptable.	Vehicle contained and redirected.	**PASS**
D	Occupant Risk	Detached elements, fragments, or other debris from the test article shall not penetrate or show potential for penetrating the occupant compartment, or present an undue hazard to other traffic, pedestrians, or personnel in a work zone. Deformation of, or intrusions into, the occupant compartment that could cause serious injuries shall not be permitted.	This article and its elements did not penetrate the occupant compartment or present undue hazard to adjacent traffic or others. There was no deformation or intrusion into the occupant compartment.	**PASS**
G	Occupant Risk	It is preferable, although not essential, that the vehicle remain upright during and after the collision.	Vehicle remained upright during and after the collision.	**PASS**
K	Vehicle Trajectory	After collision, it is preferable that the vehicle's trajectory not intrude into adjacent traffic lanes.	Vehicle intruded into adjacent traffic lanes.	**DID NOT PASS**
M	Vehicle Trajectory	The exit angle from the test article preferably should be less than 60 percent of test impact angle, measured at time of vehicle loss of contact with test device.	Vehicle exit angle was 4.1 degrees.	**PASS**

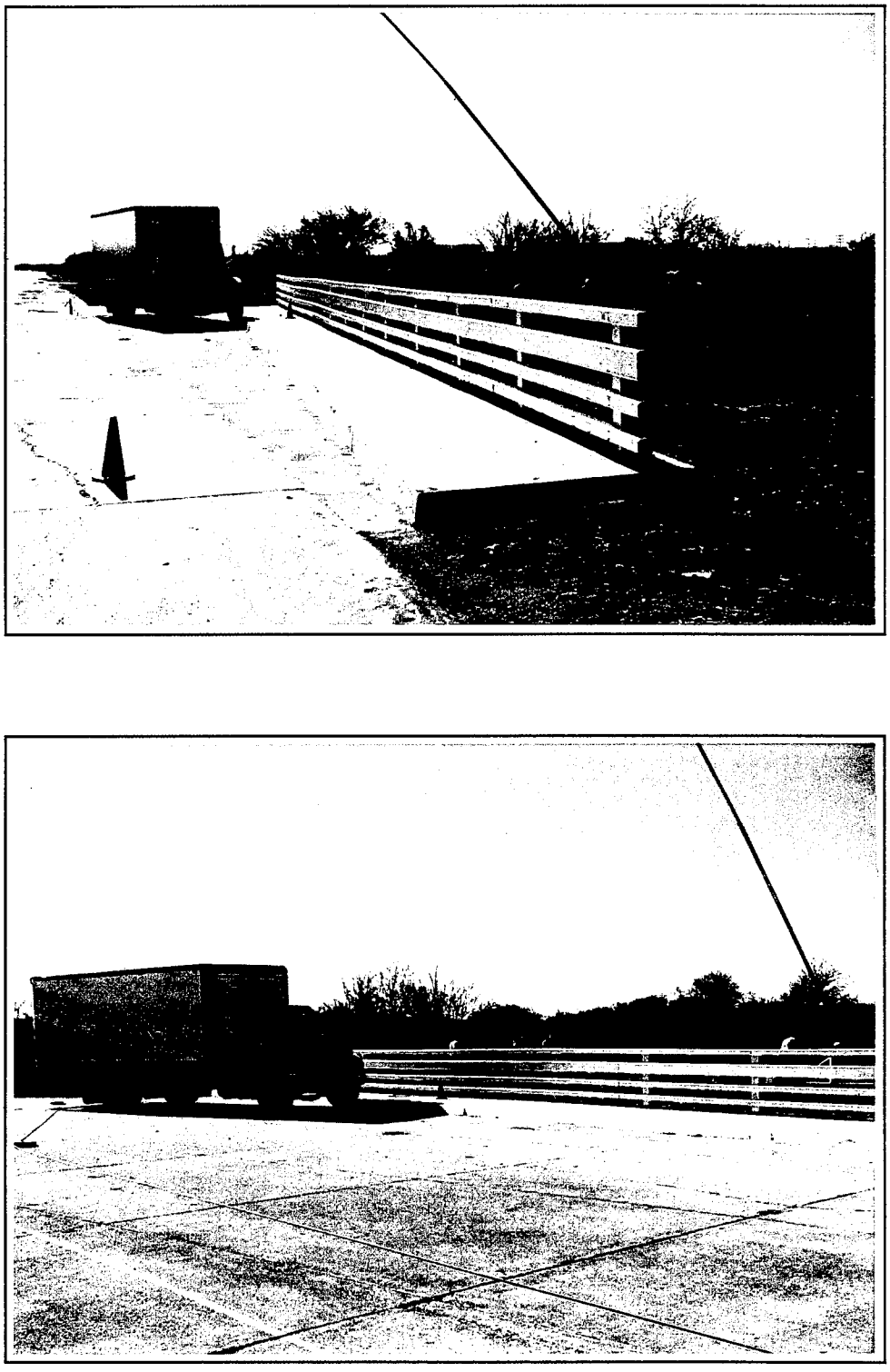


Figure 1. Barrier installation - Test NETC-3.

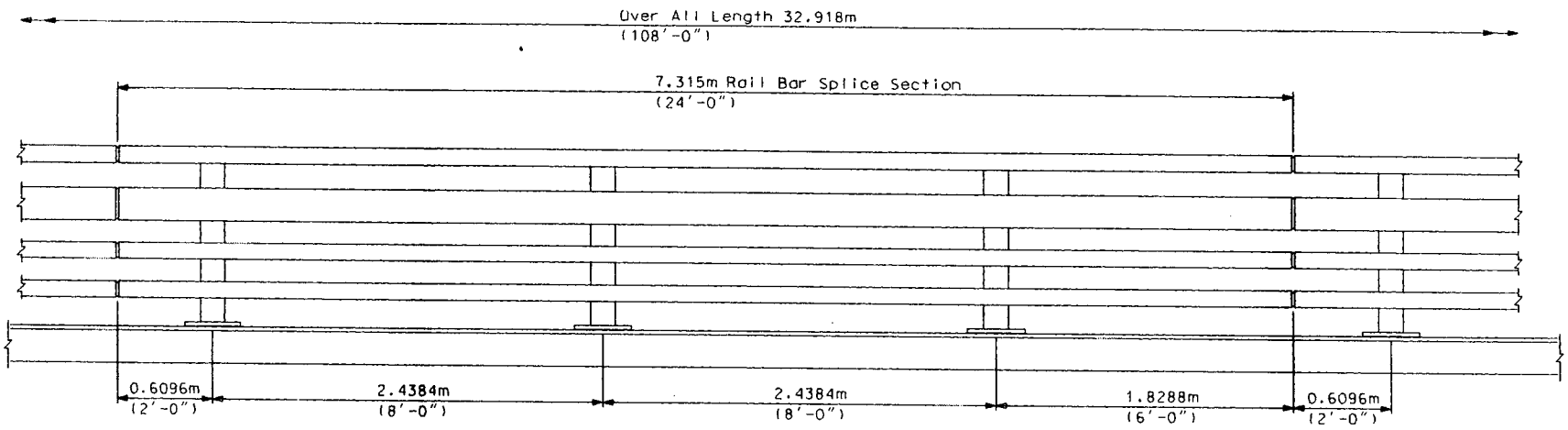


Figure 2. Barrier elevation drawing - Test NETC-3.

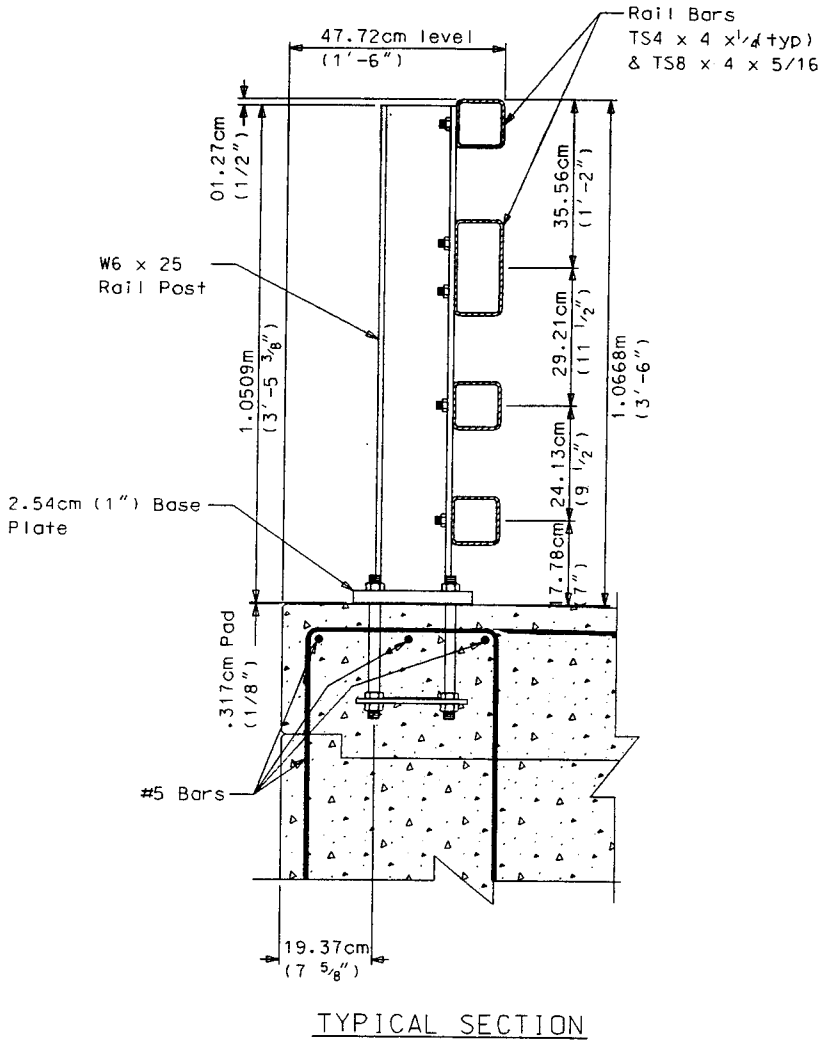
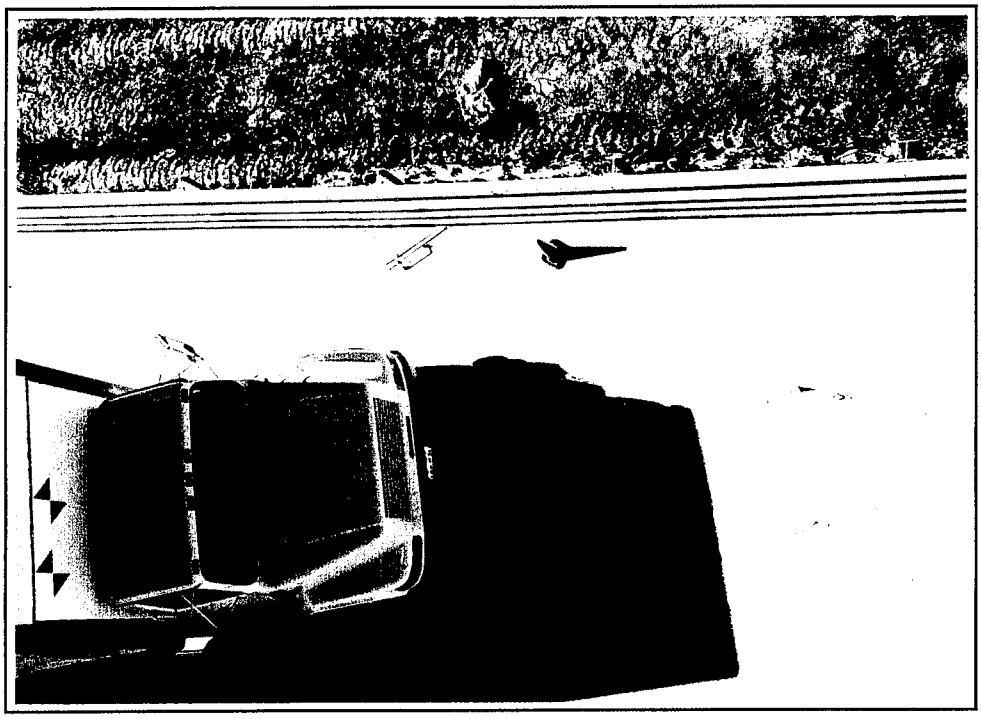


Figure 3. Barrier cross-section drawing - Test NETC-3.



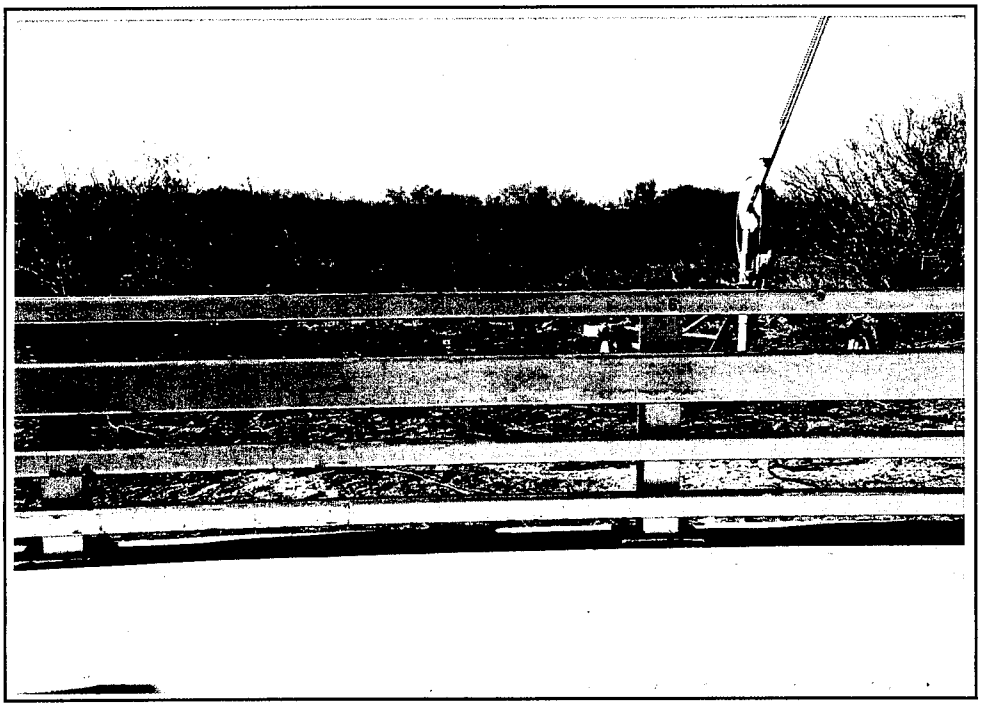


Figure 4. Barrier photographs - Test NETC-3.

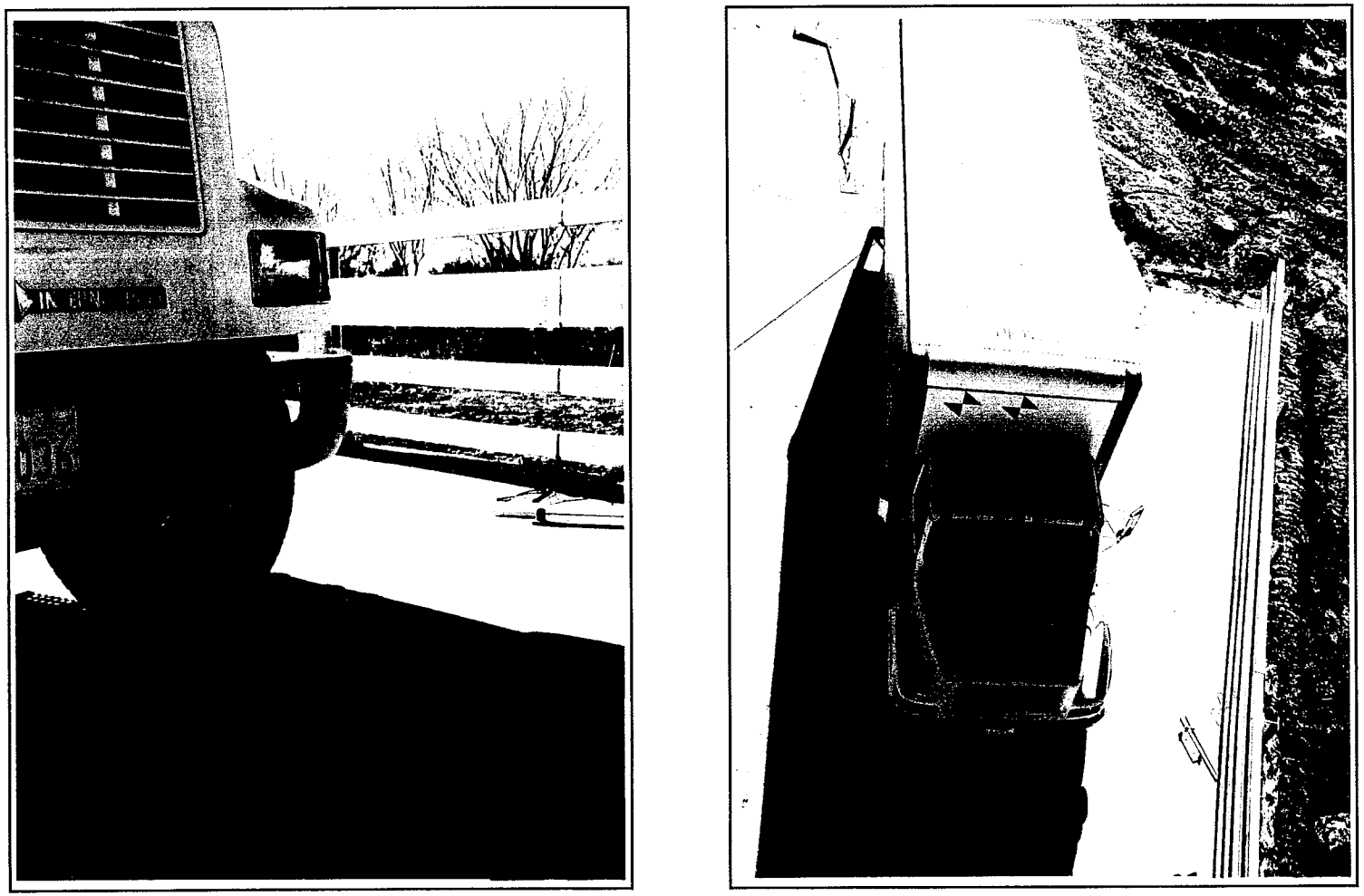
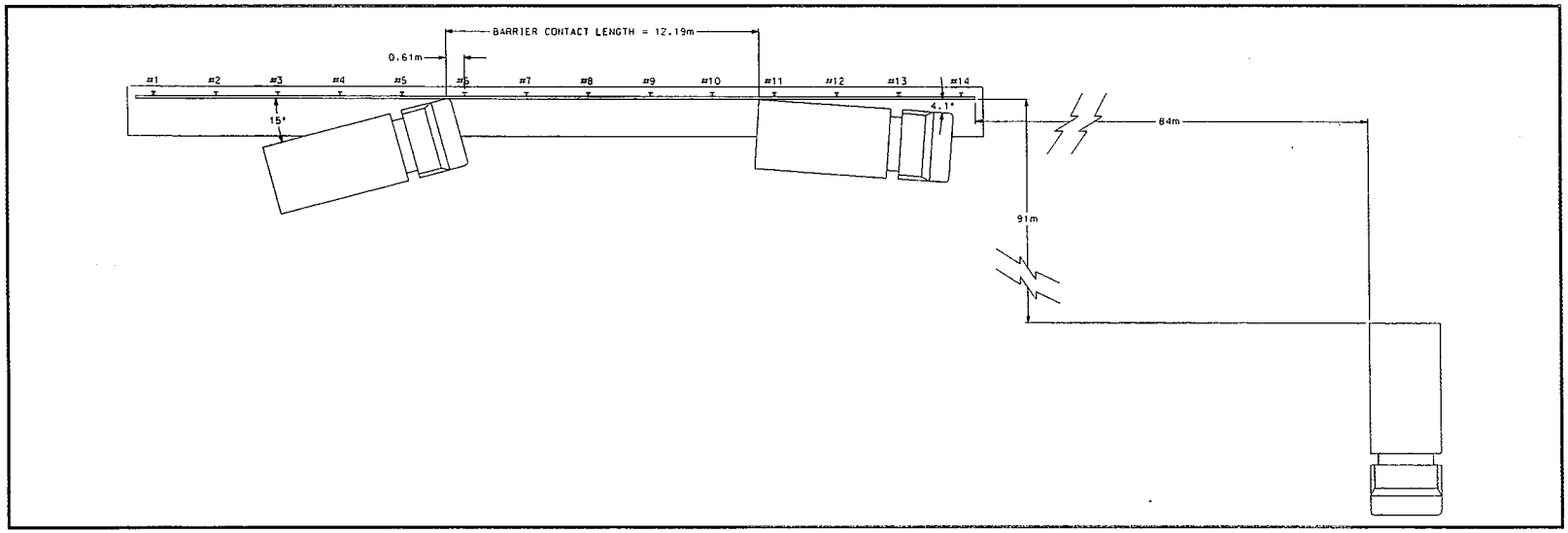


Figure 5. Vehicle photographs - Test NETC-3.



4. General Information		7. Test Vehicle (Continued)		10. Ridedown Acceleration (g's)	
Test Agency	Southwest Research Institute	Mass (kg) Dummy(s)	N/A	y-direction	14.30
Test Number	NETC-3	Mass (kg) Gross Static	8,108	11. Test Article Deflection (mm)	
Test Date	12/18/97	8. Impact Conditions		Dynamic	25
5. Test Article		Speed (km/h)	80	Permanent	13
Type	Bridge Rail	Angle (deg)	15.0	12. Vehicle Damage	
Installation Length (m)	34.1	9. Exit Conditions		Exterior	
Barrier	4 Rails, Sidewalk-Mounted	Speed (km/h)	57.6	VDS	N/A
6. Soil Type and Condition	N/A	Angle (deg)	4.1	CDC	N/A
7. Test Vehicle		10. Occupant Risk Values		Interior	
Type	Production	Impact Velocity (m/s)		OCDI	N/A
Designation	8000S	x-direction	1.65	13. Post-Impact Vehicular Behavior	
Model	1993 International 4600 LP	y-direction	-2.89	Maximum Roll Angle (deg)	20 Approximate
Mass (kg) Curb	8,108	Ridedown Acceleration (g's)		Maximum Pitch Angle (deg)	5 Approximate
Mass (kg) Test Inertial	8,108	X-direction	-8.95	Maximum Yaw Angle (deg)	N/A

Figure 6. Impact sequence and summary of test conditions and results - Test NETC-3.

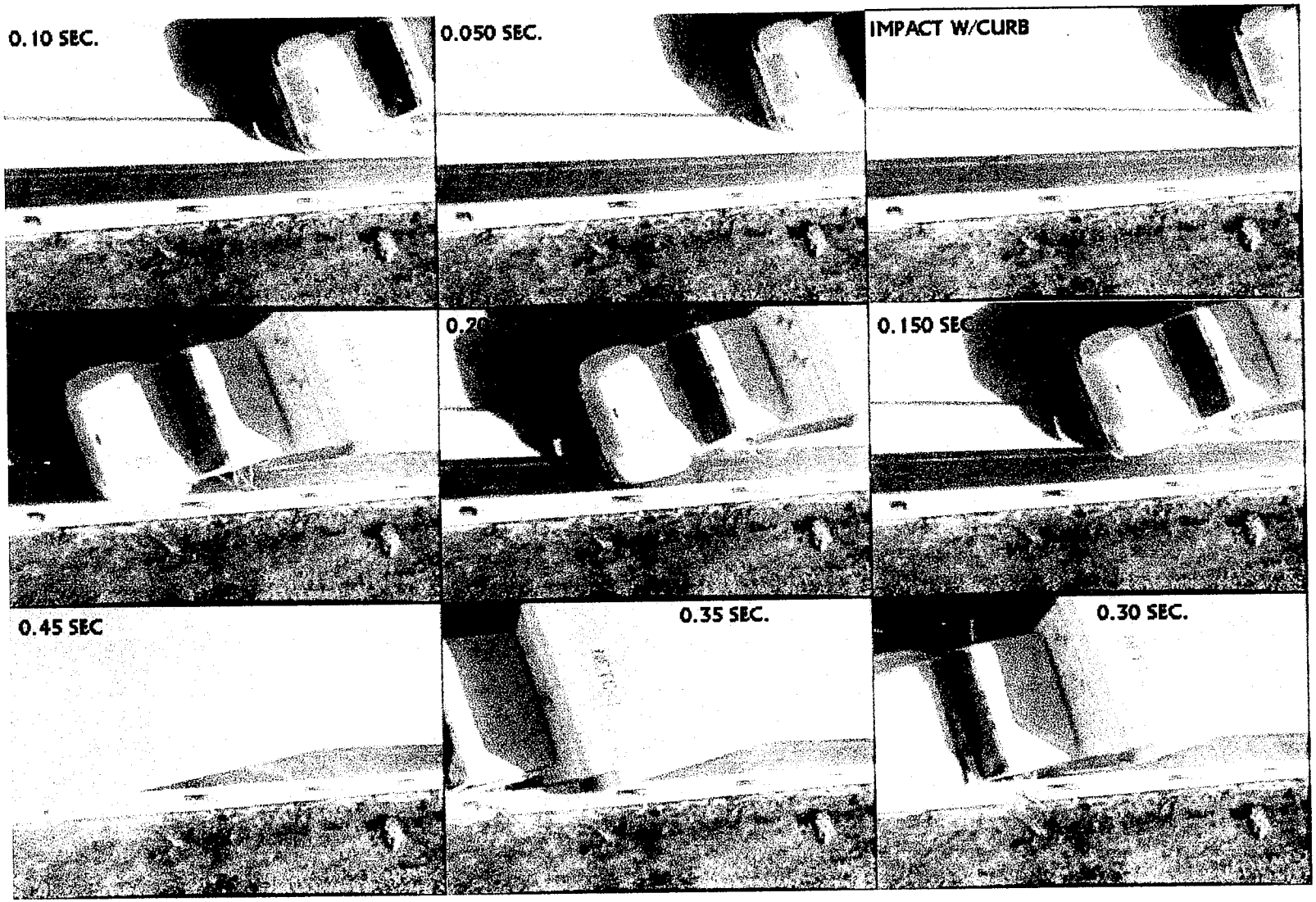


Figure 7. Overhead sequential photographs - Test NETC-3.

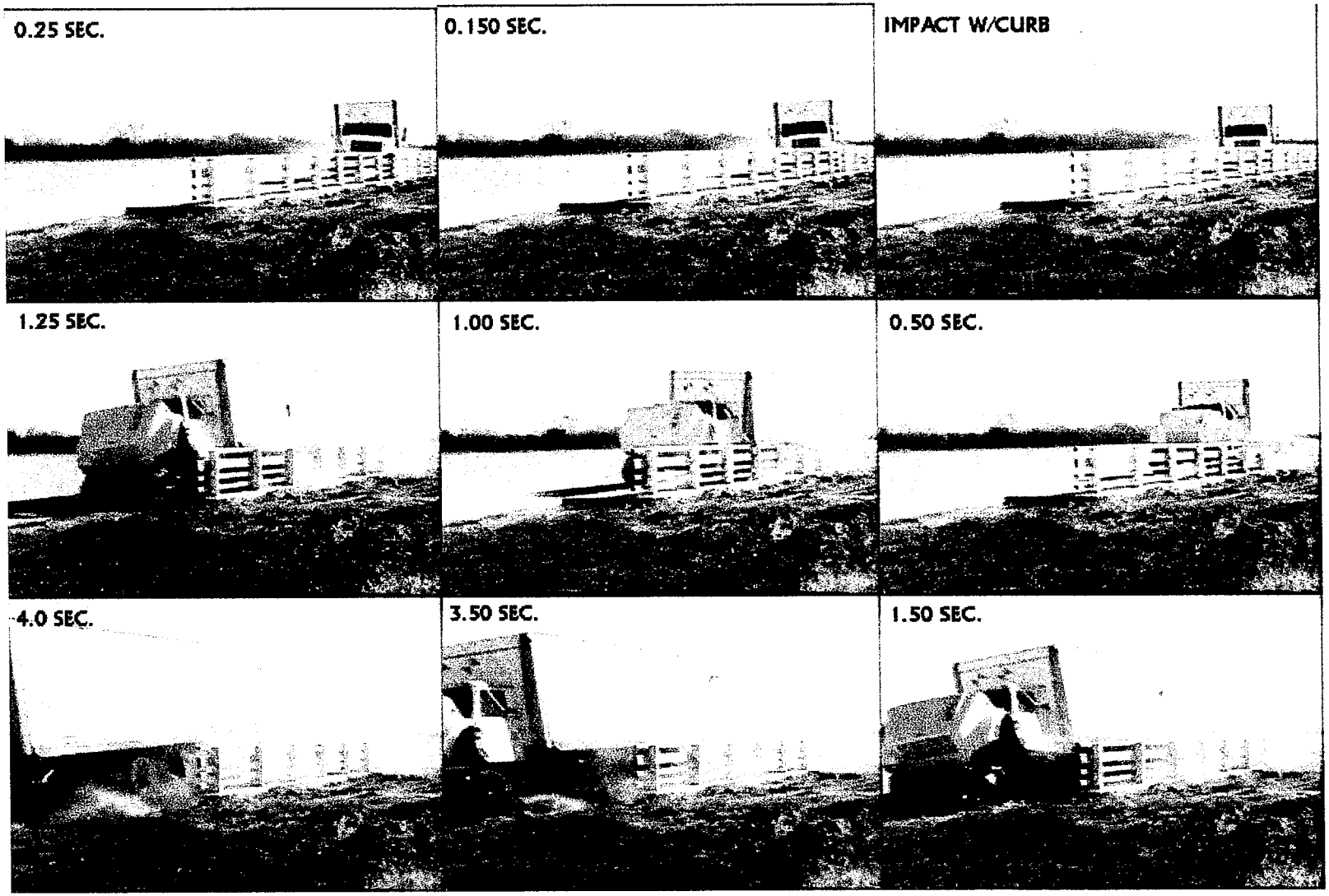


Figure 8. Sequential photographs - Test NETC-3.

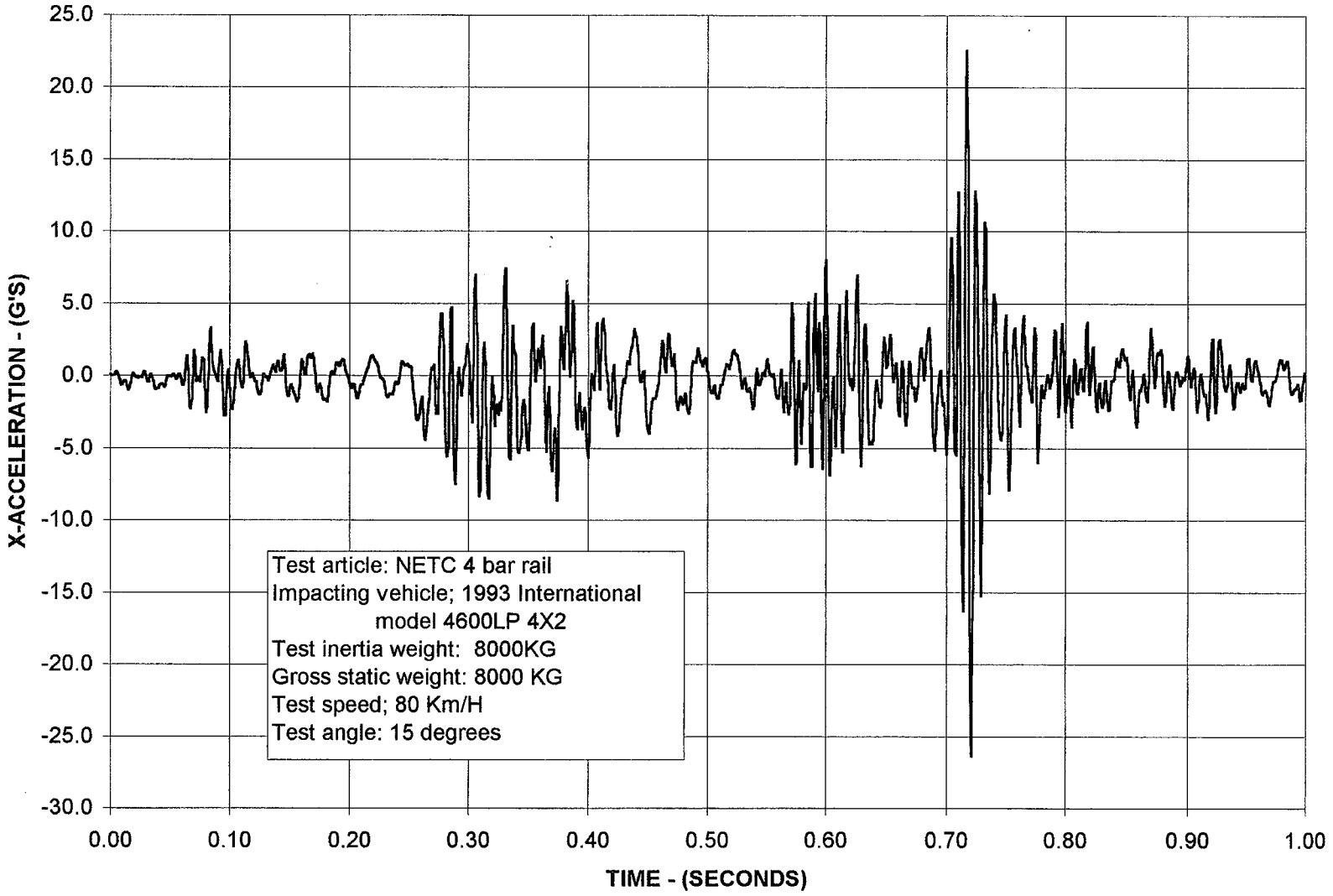


Figure 9. Vehicle C.G. longitudinal accelerometer plot - Test NETC-3.

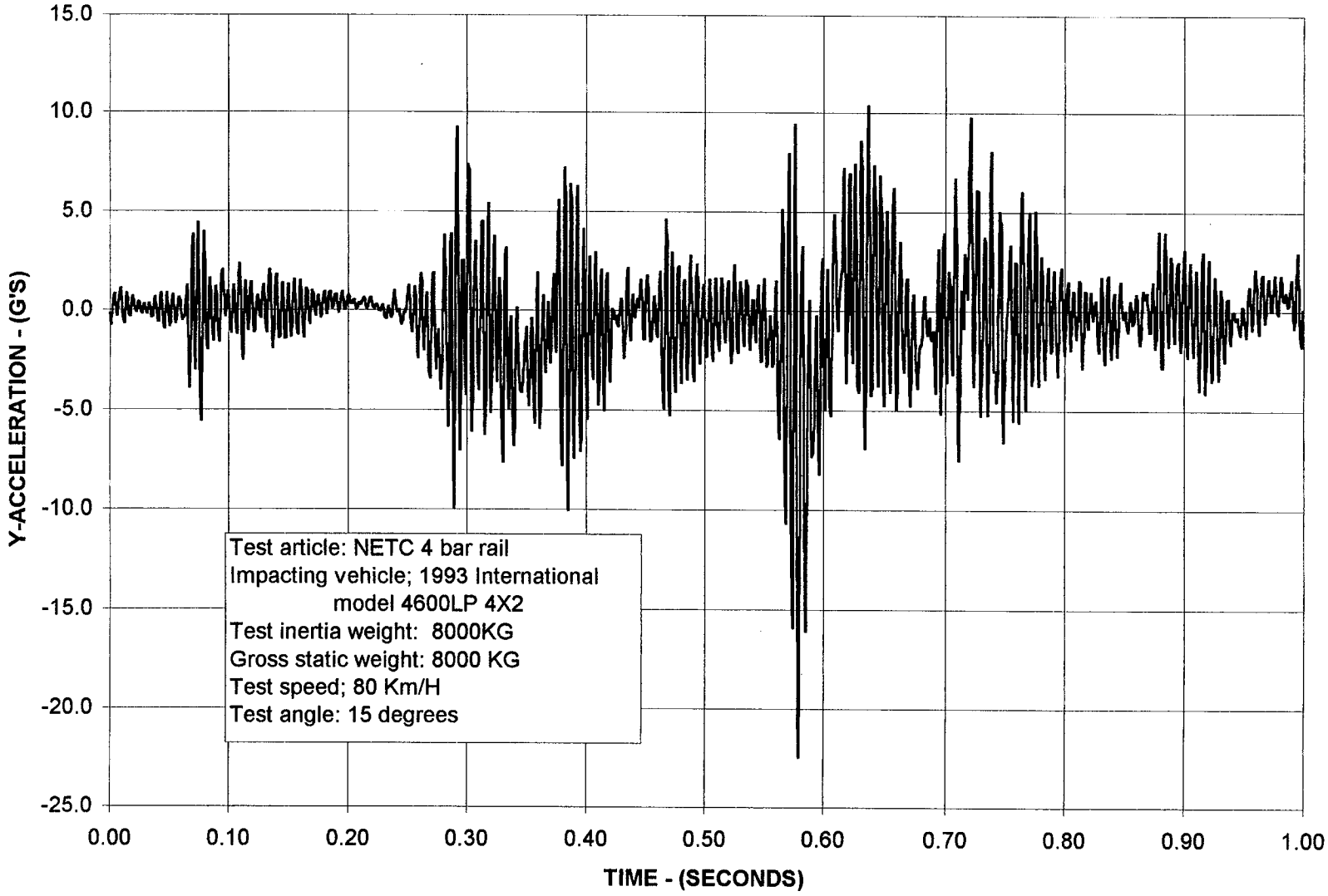


Figure 10. Vehicle C.G. lateral accelerometer plot - Test NETC-3.

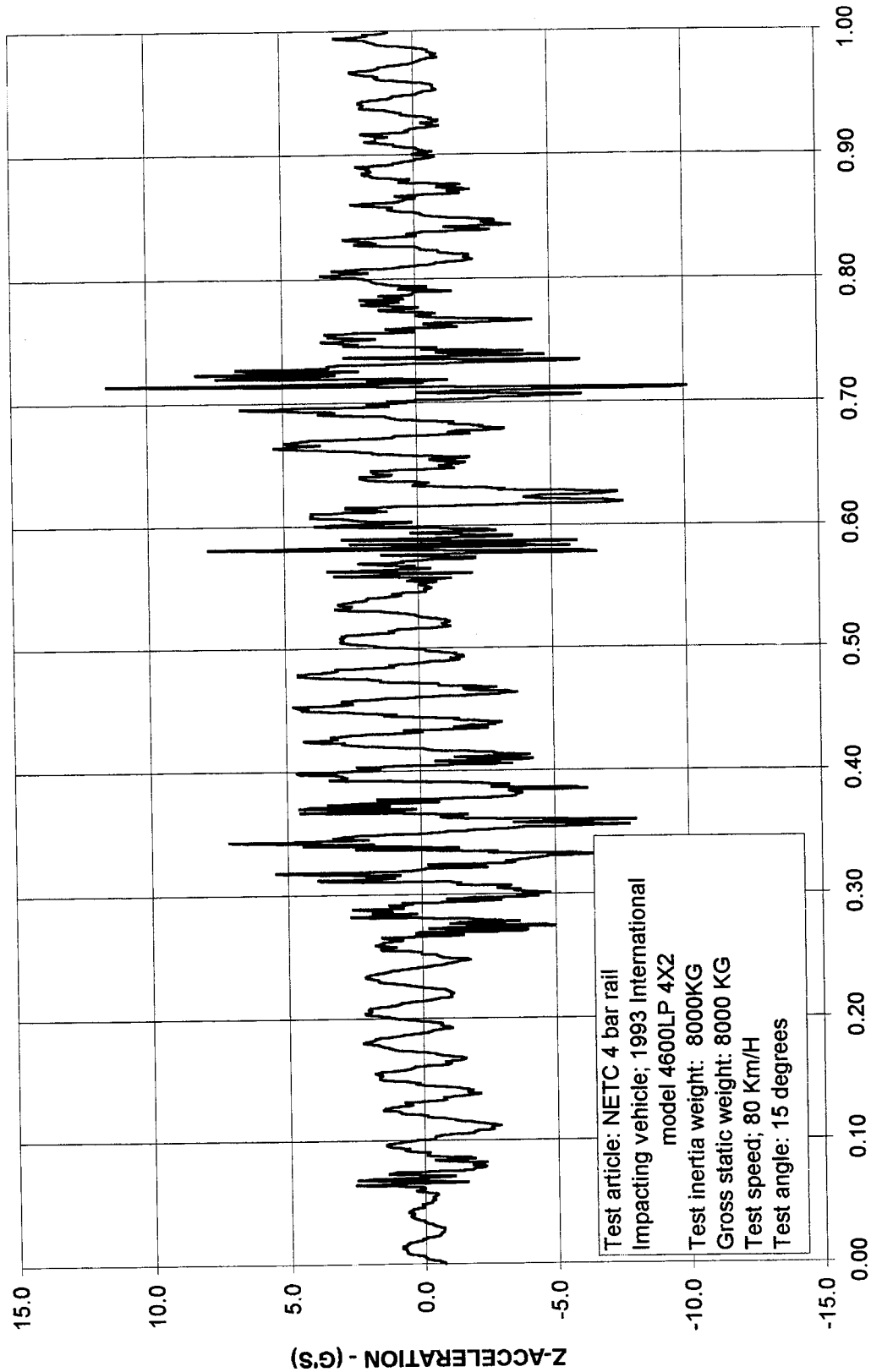


Figure 11. Vehicle C.G. vertical accelerometer plot - Test NETC-3.

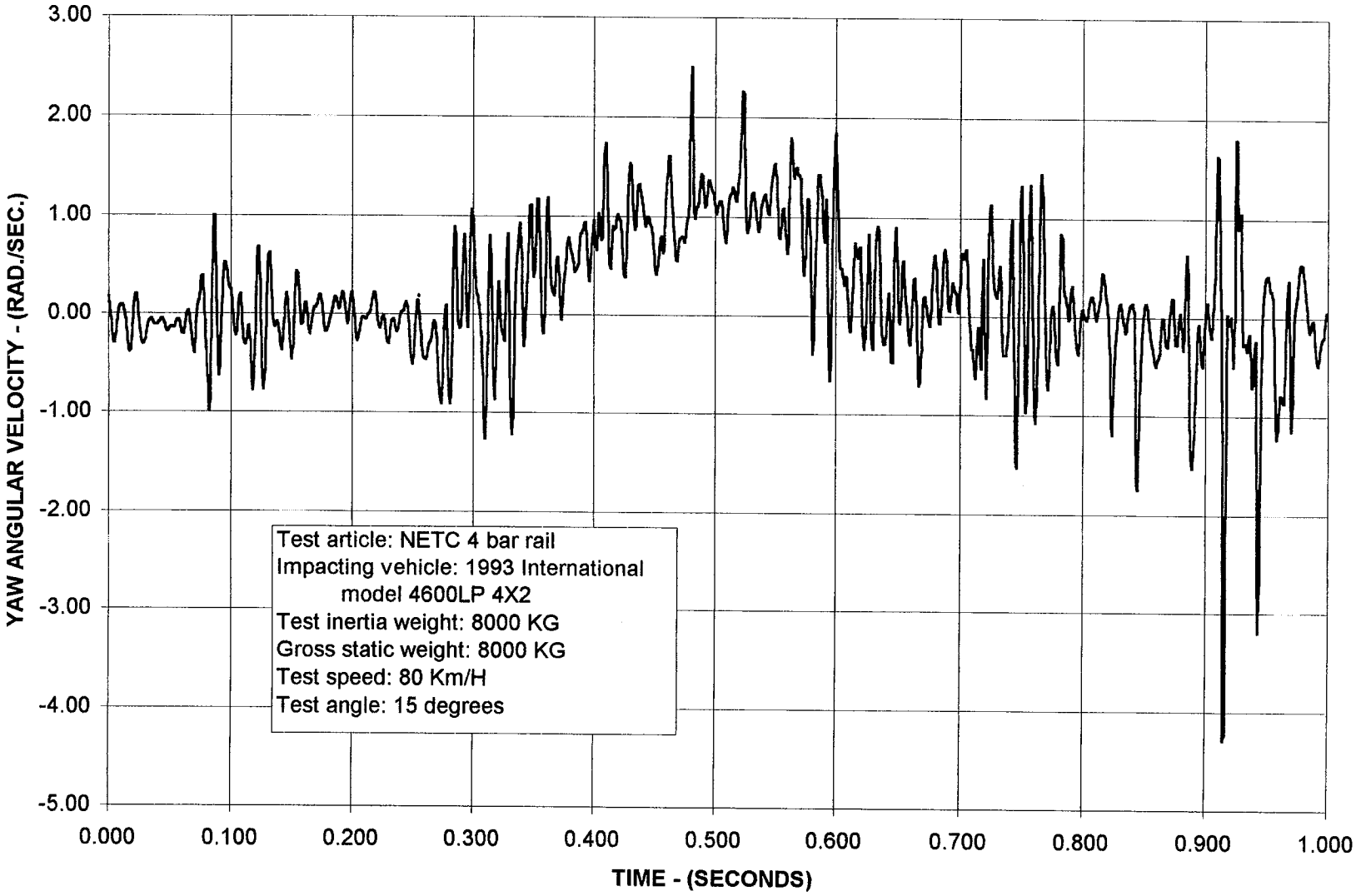


Figure 12. Rate gyro plot - Test NETC-3.

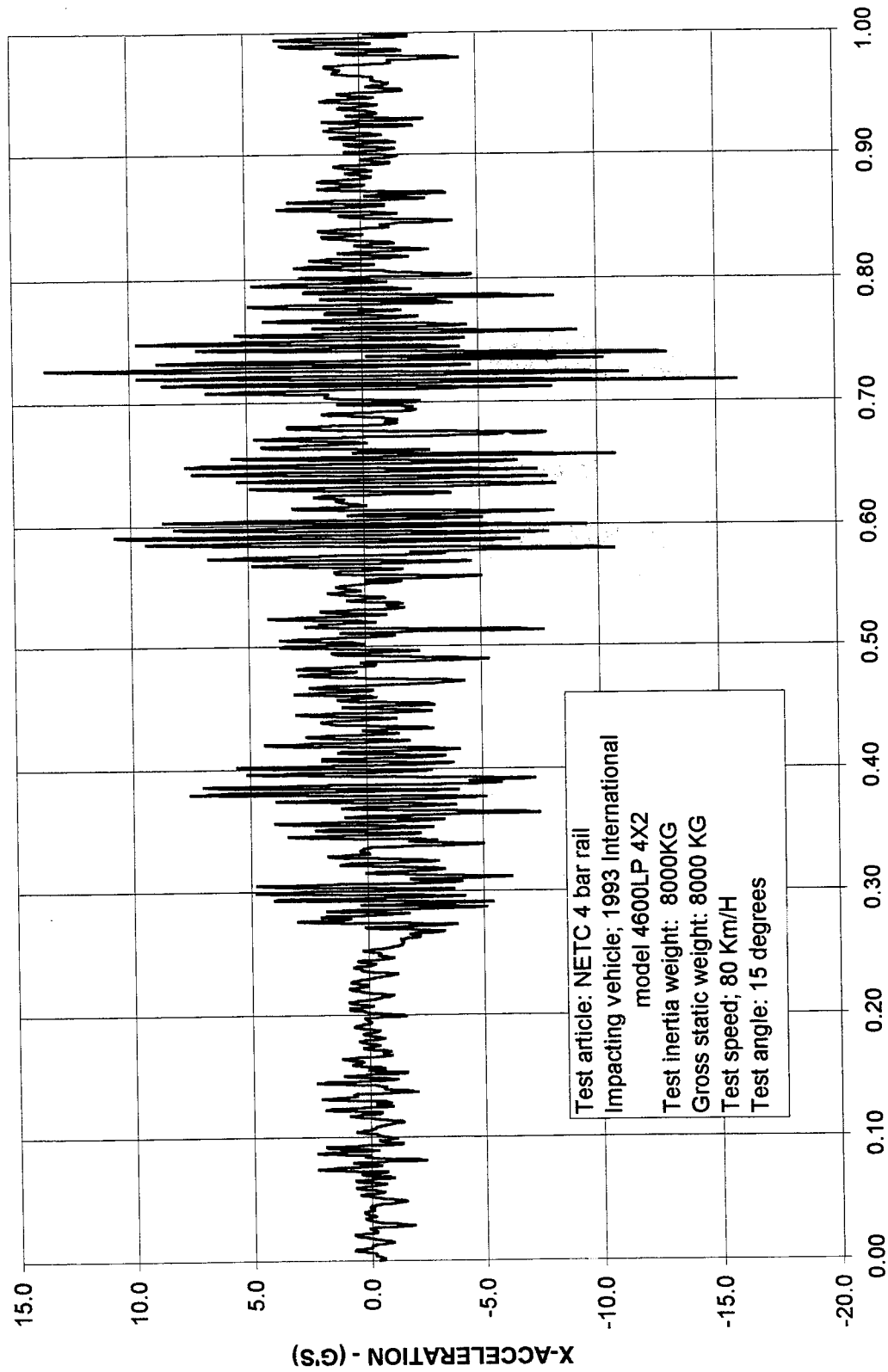


Figure 13. Rear axle longitudinal accelerometer plot - Test NETC-3.

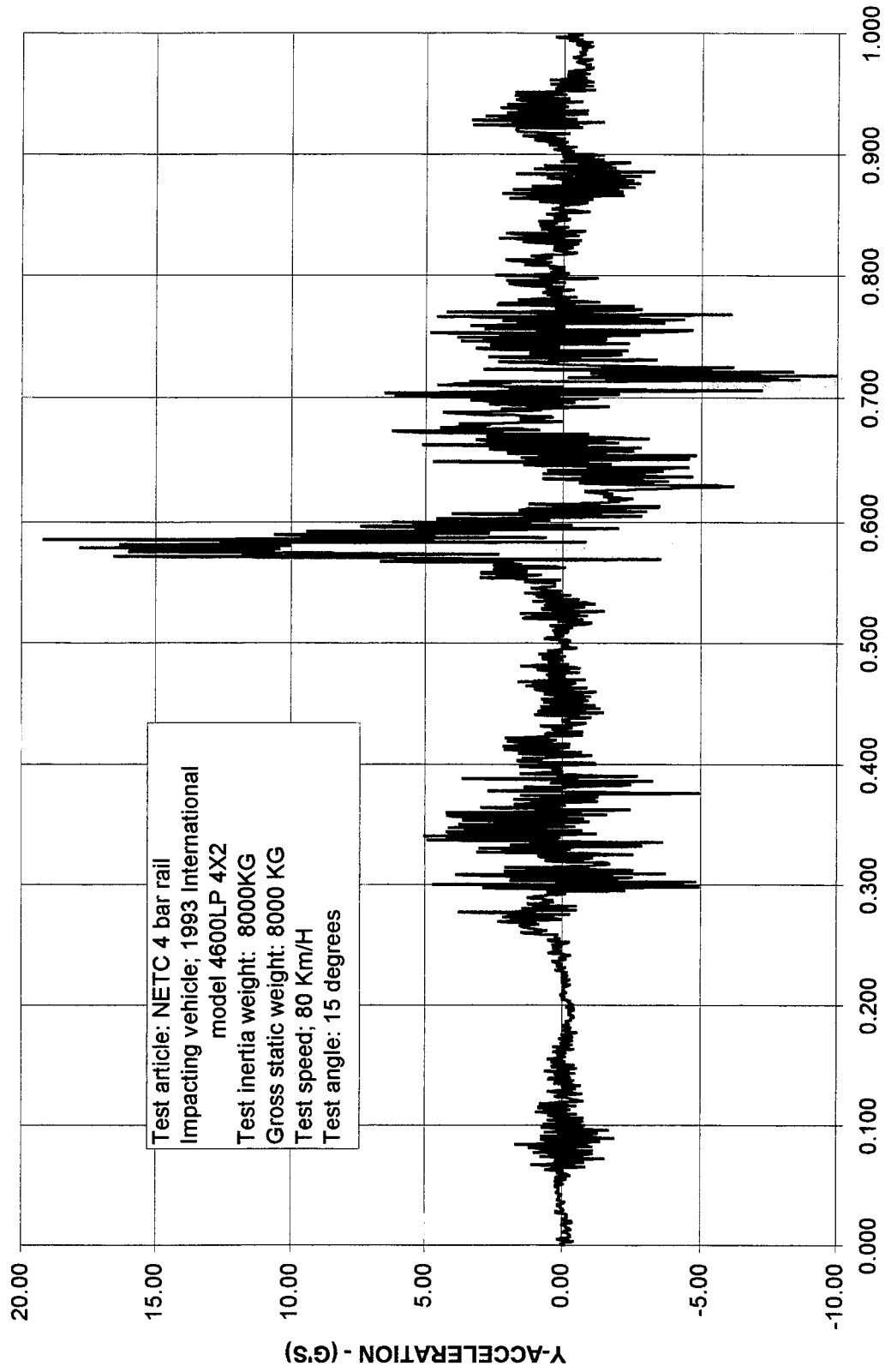


Figure 14. Rear axle lateral accelerometer plot - Test NETC-3.

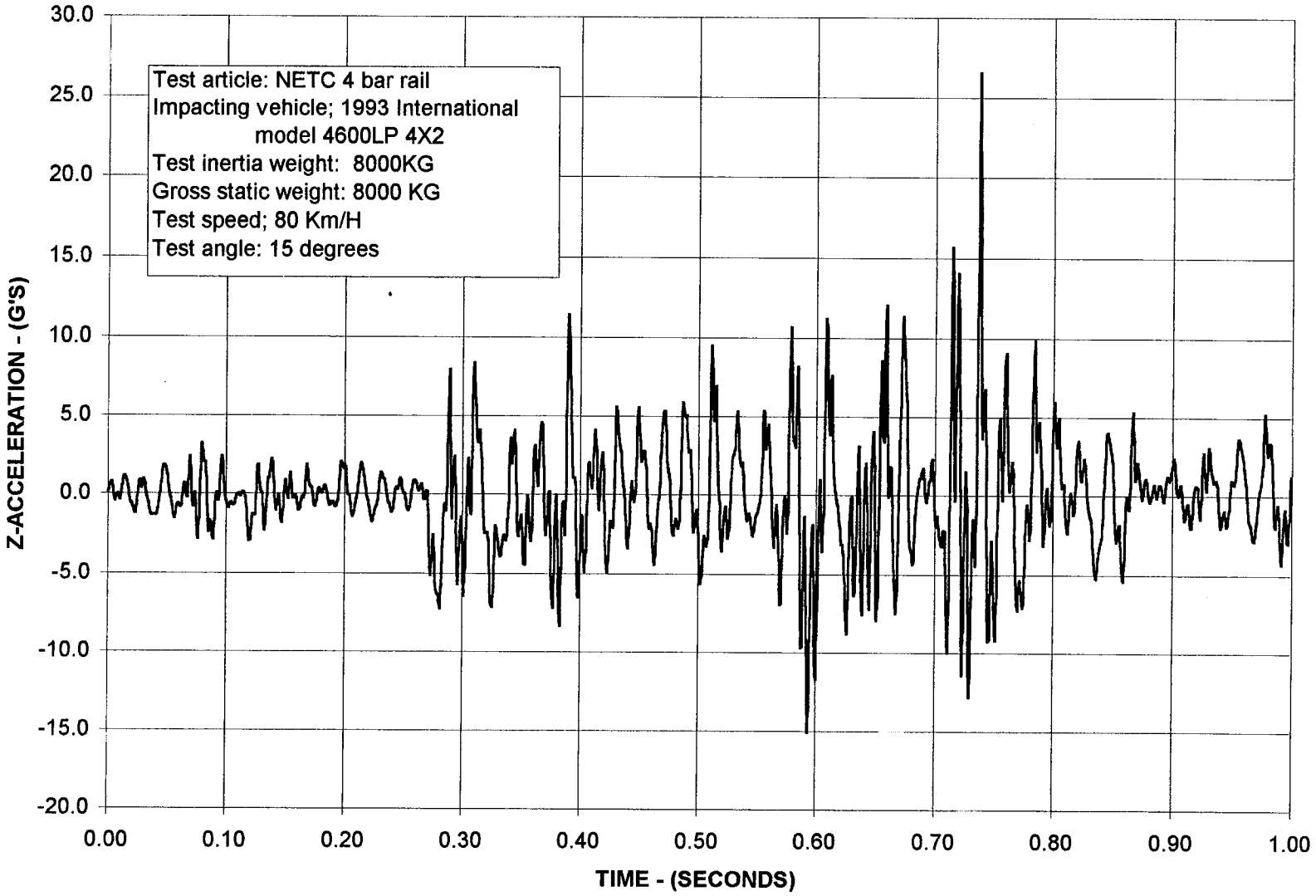


Figure 15. Rear axle vertical accelerometer plot - Test NETC-3.

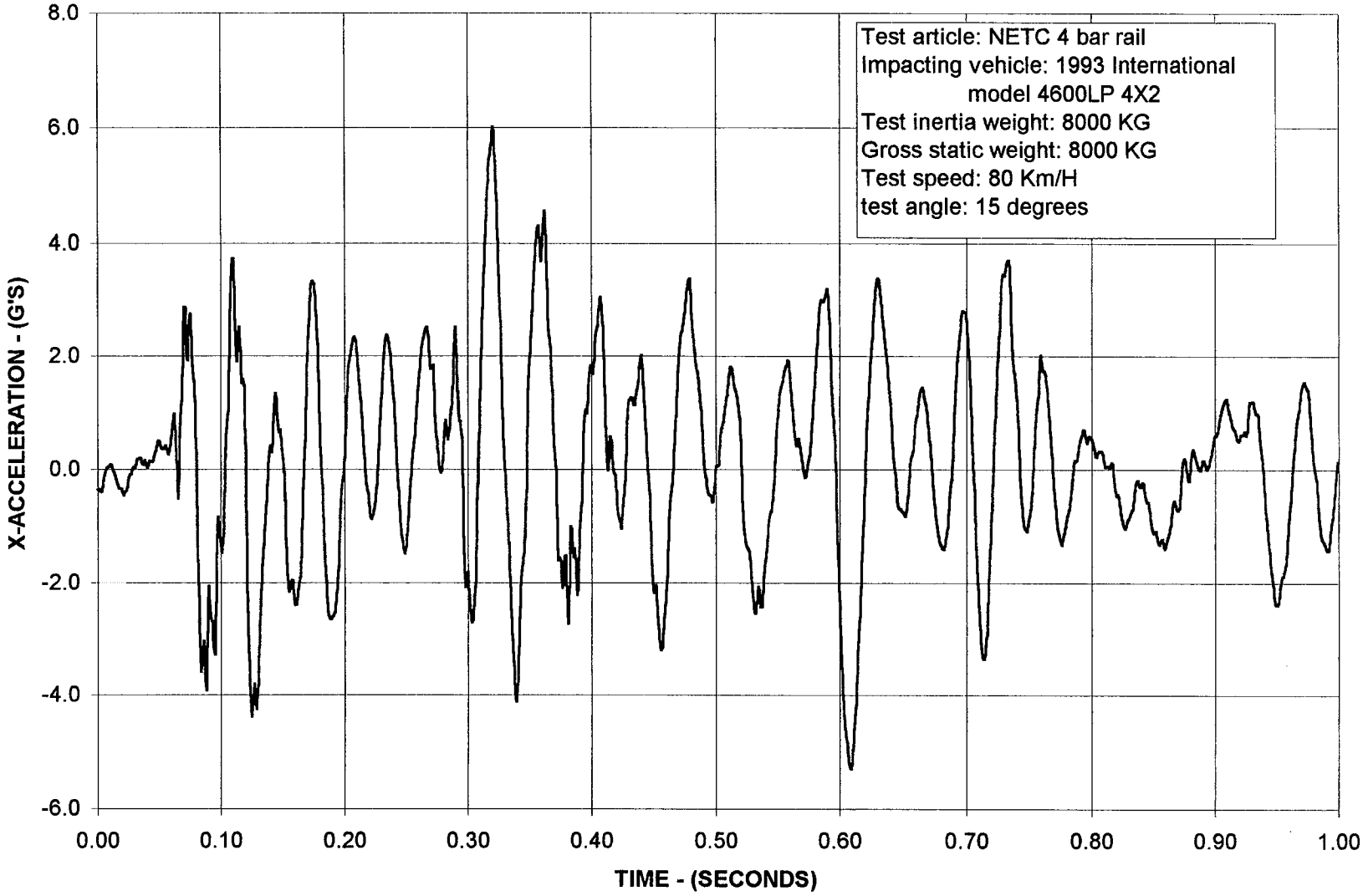


Figure 16. Top of engine longitudinal accelerometer plot - Test NETC-3.

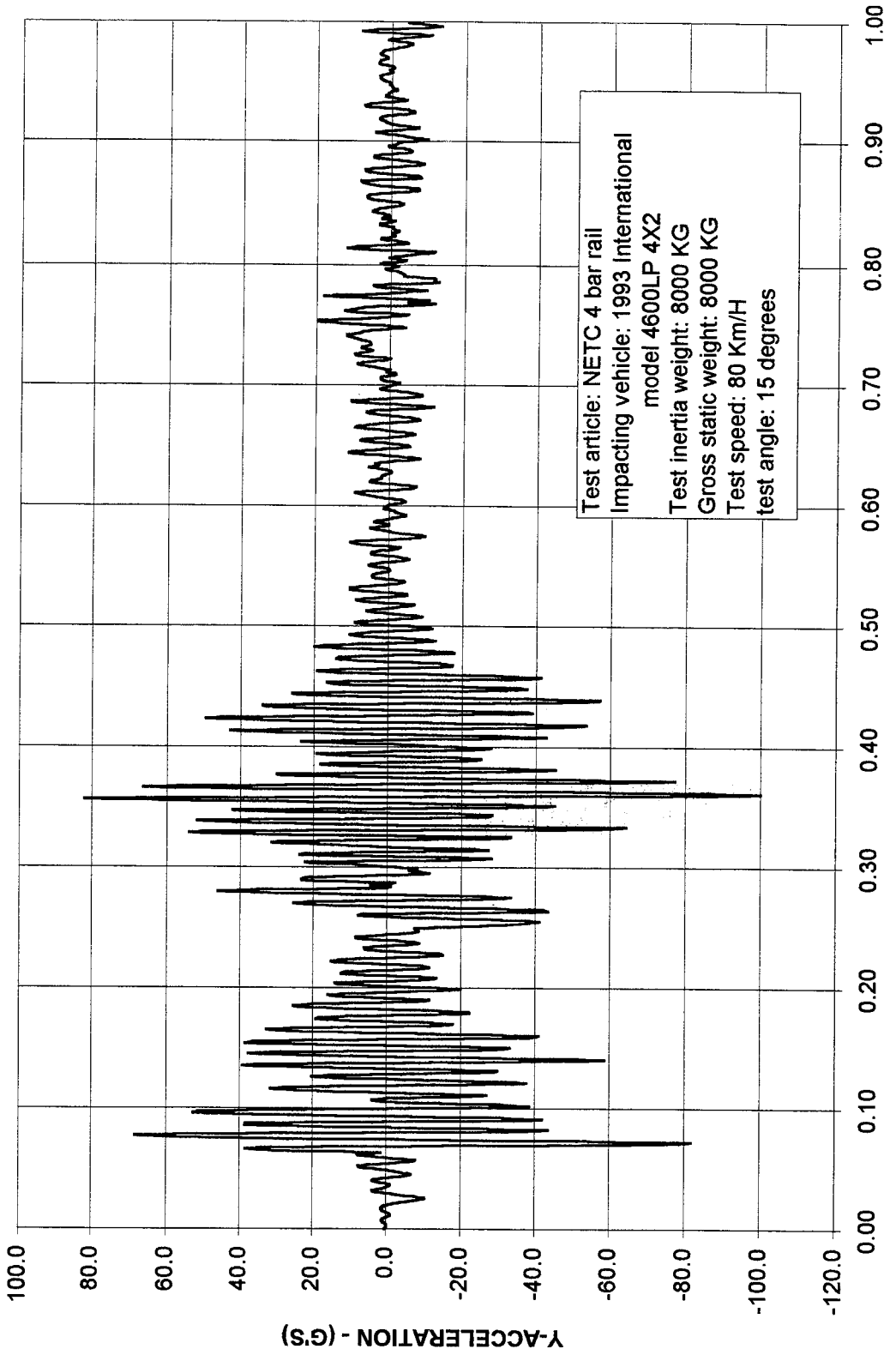


Figure 17. Right front disc brake longitudinal accelerometer plot - Test NETC-3.

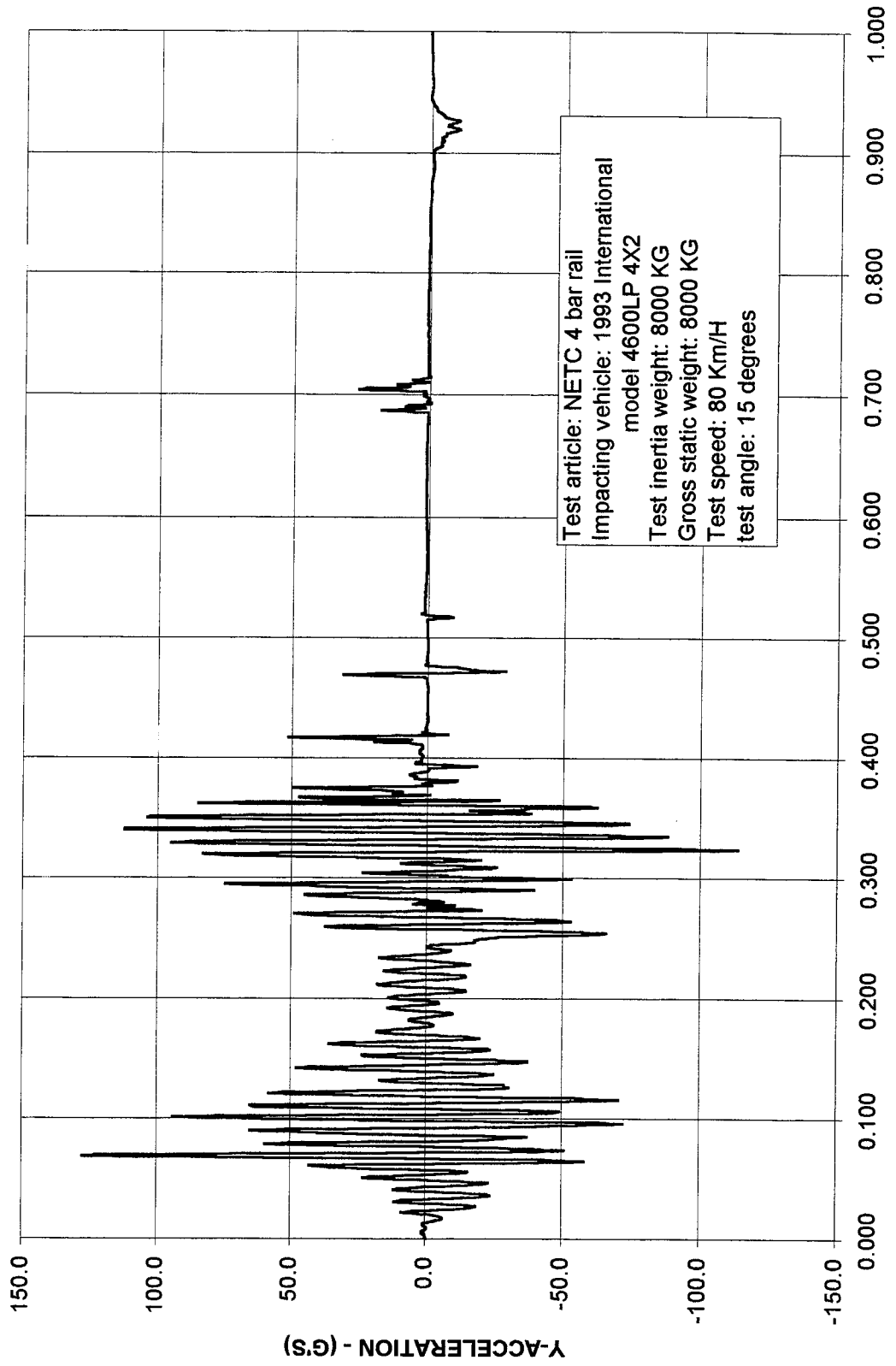


Figure 18. Left front disc brake longitudinal accelerometer plot - Test NETC-3.

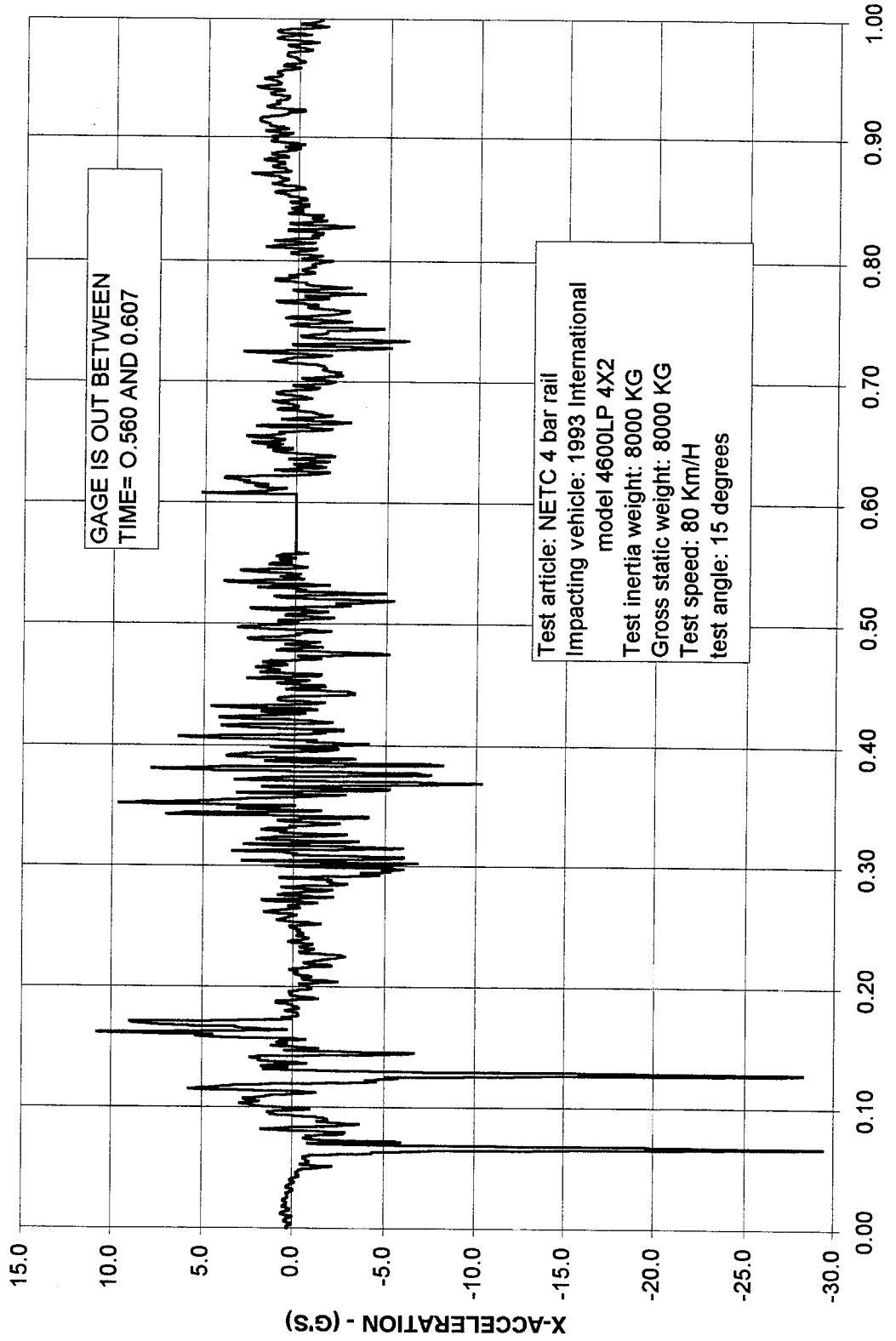


Figure 19. Instrument panel accelerometer plot - Test NETC-3.

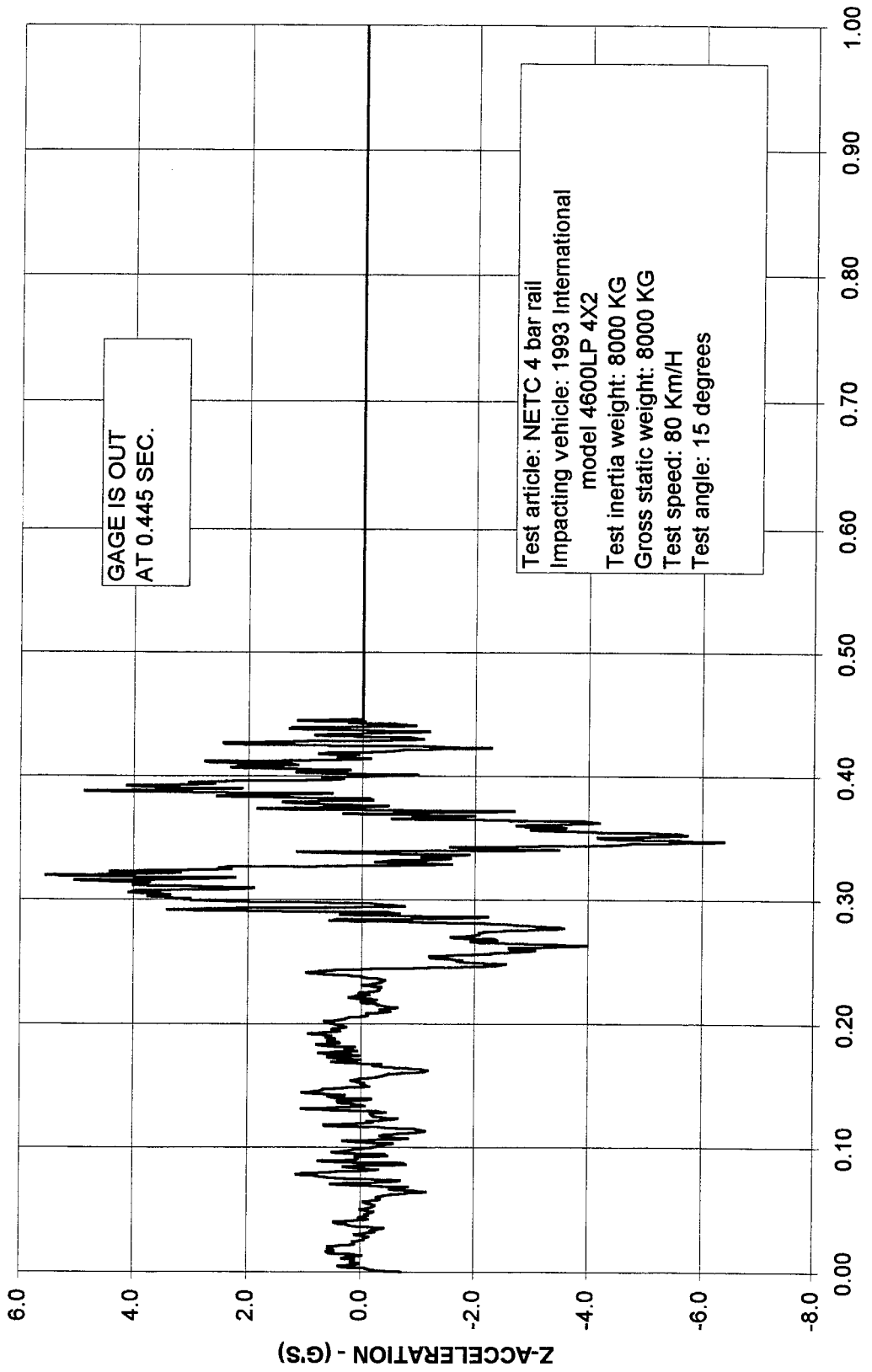


Figure 20. Right rear brake vertical accelerometer plot - Test NETC-3.

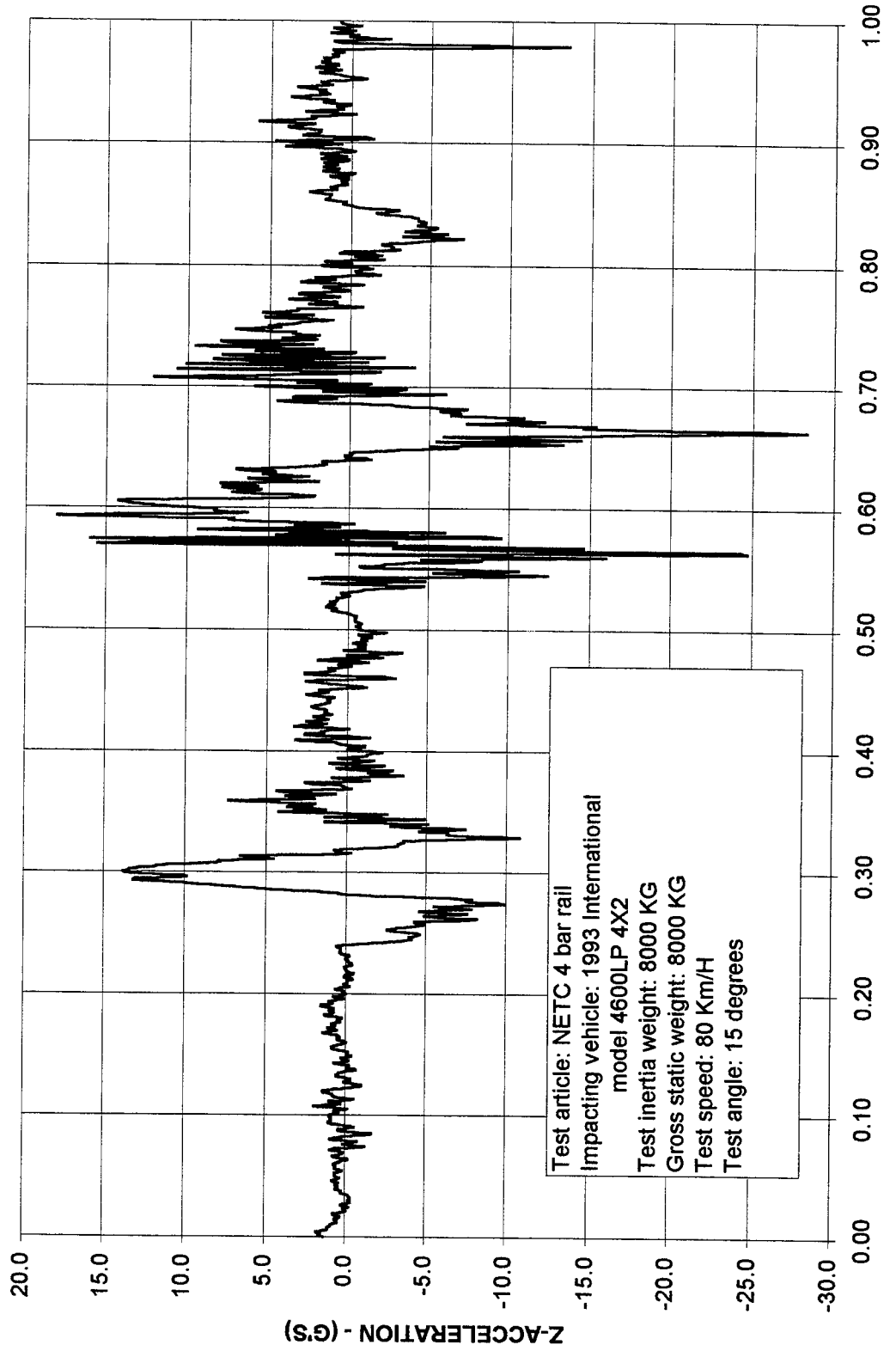


Figure 21. Left rear brake vertical accelerometer plot - Test NETC-3.

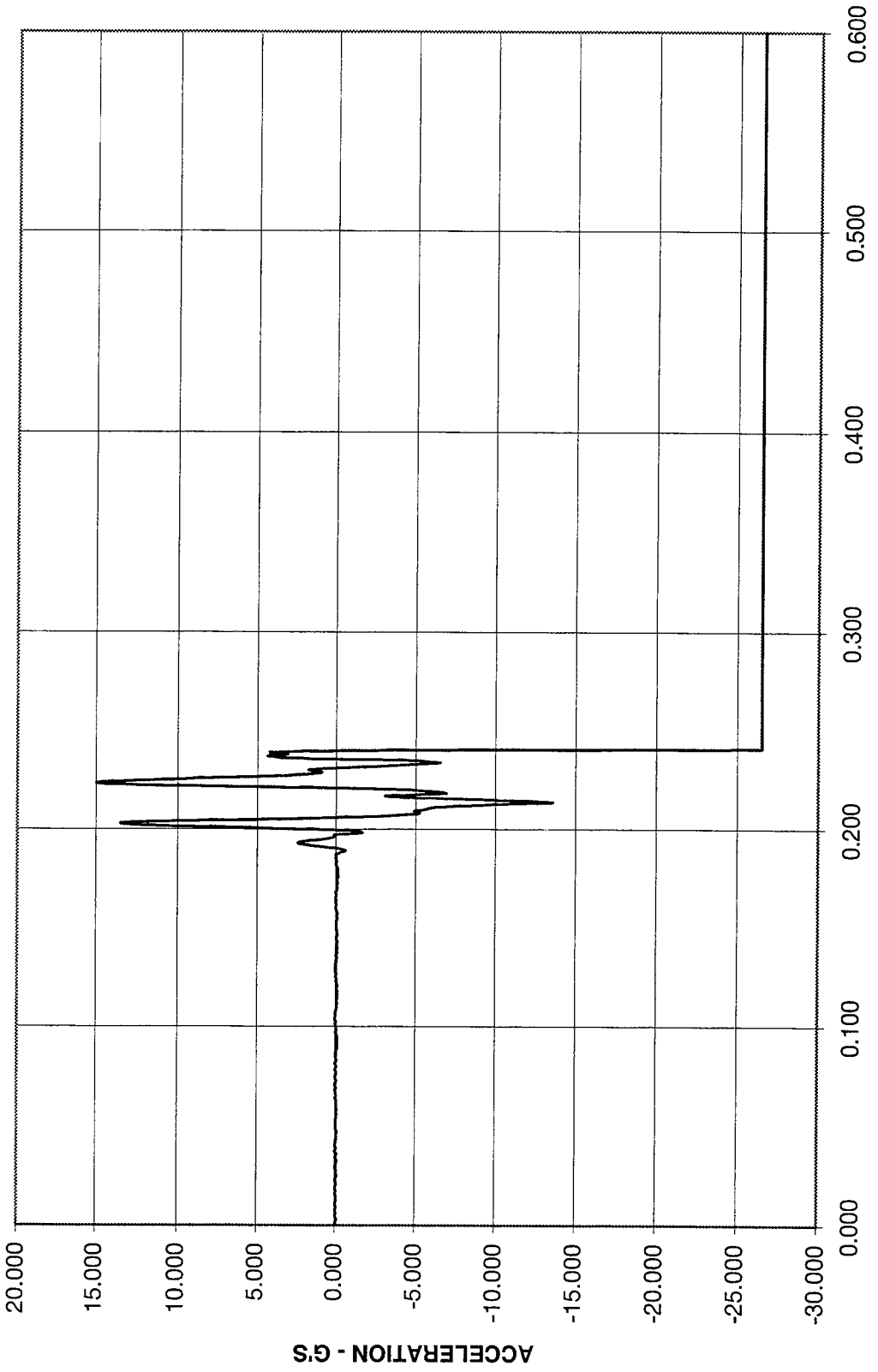


Figure 22. Top of post 7 lateral accelerometer plot - Test NETC-3.

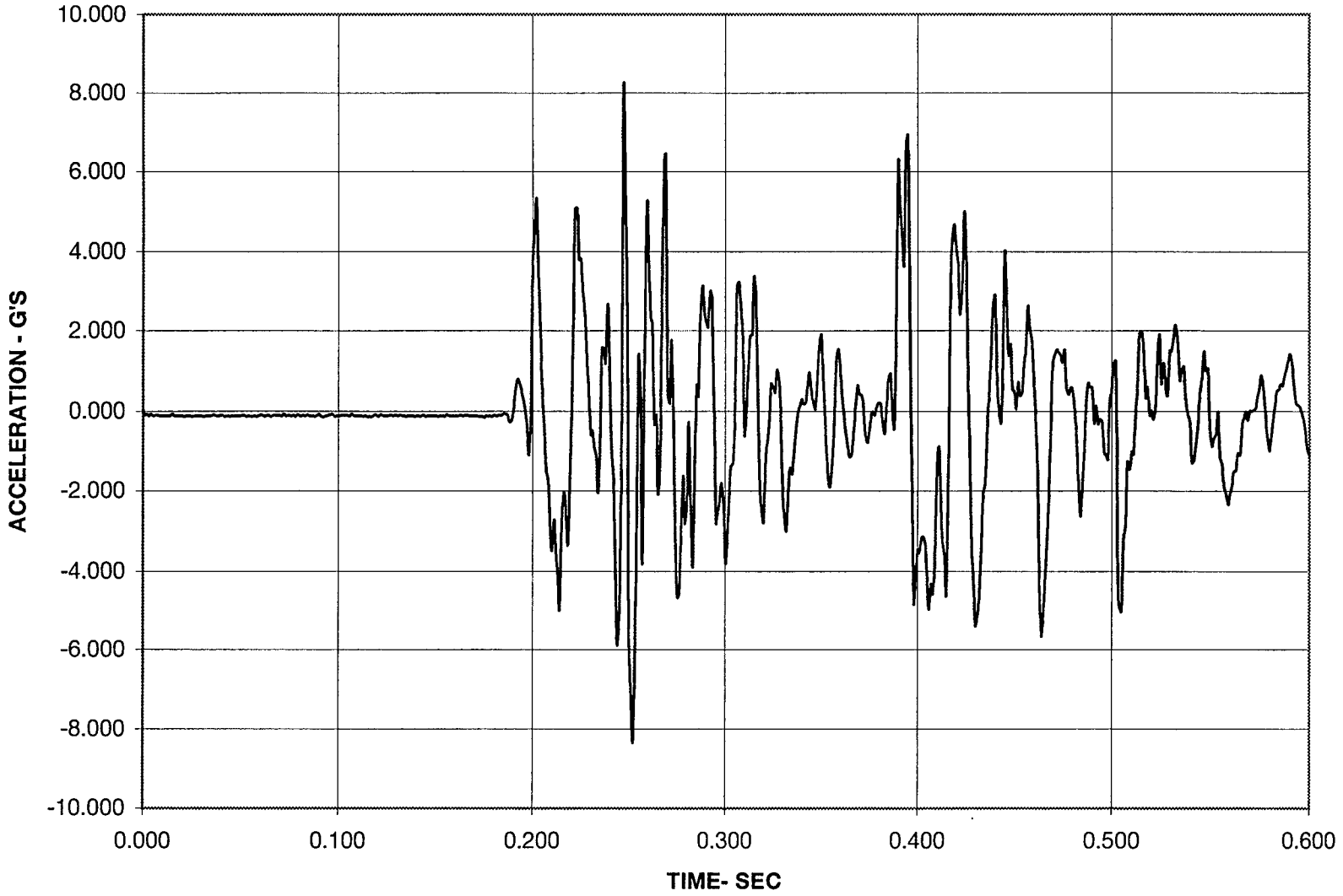


Figure 23. Bottom of post 7 lateral accelerometer plot - Test NETC-3.

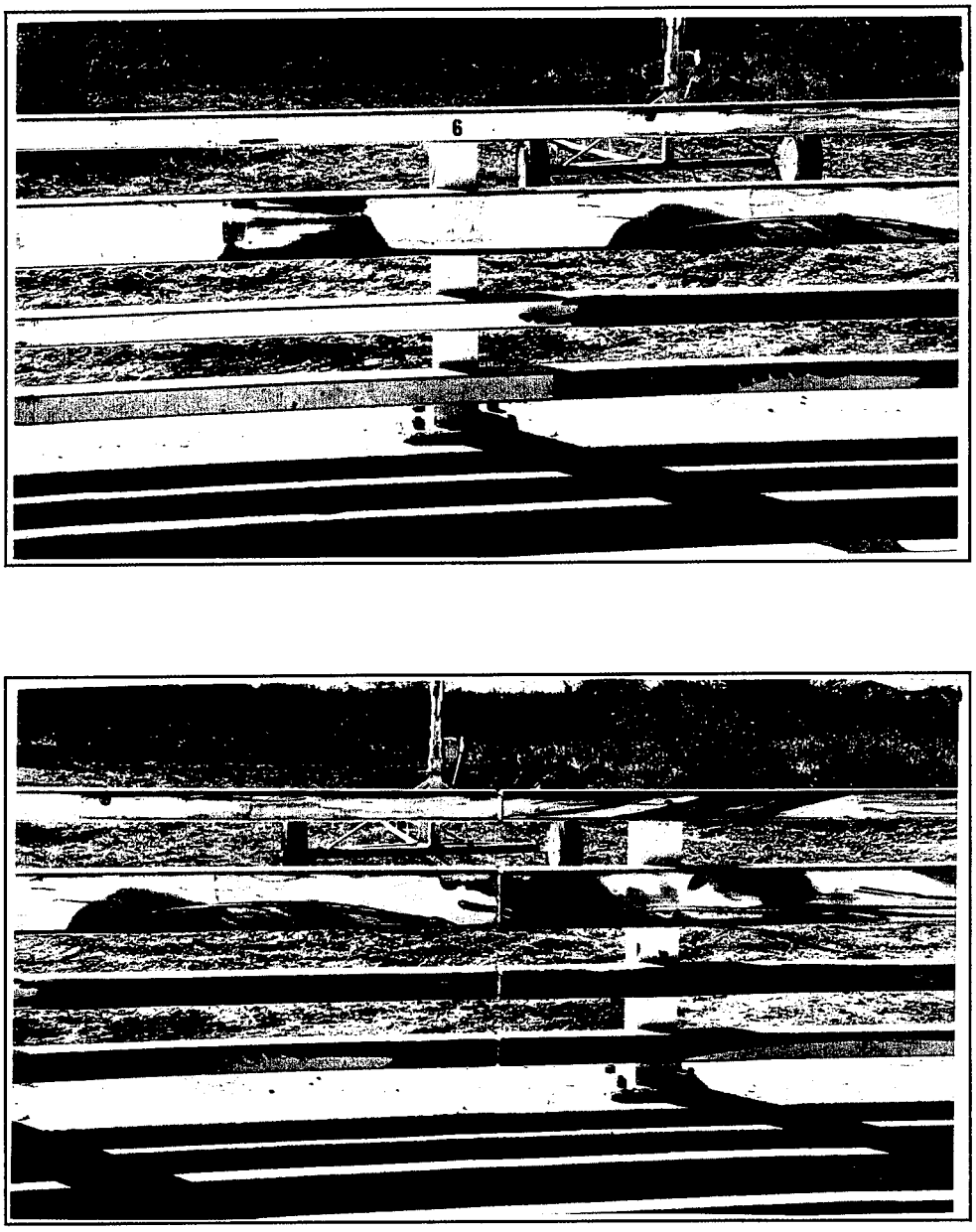
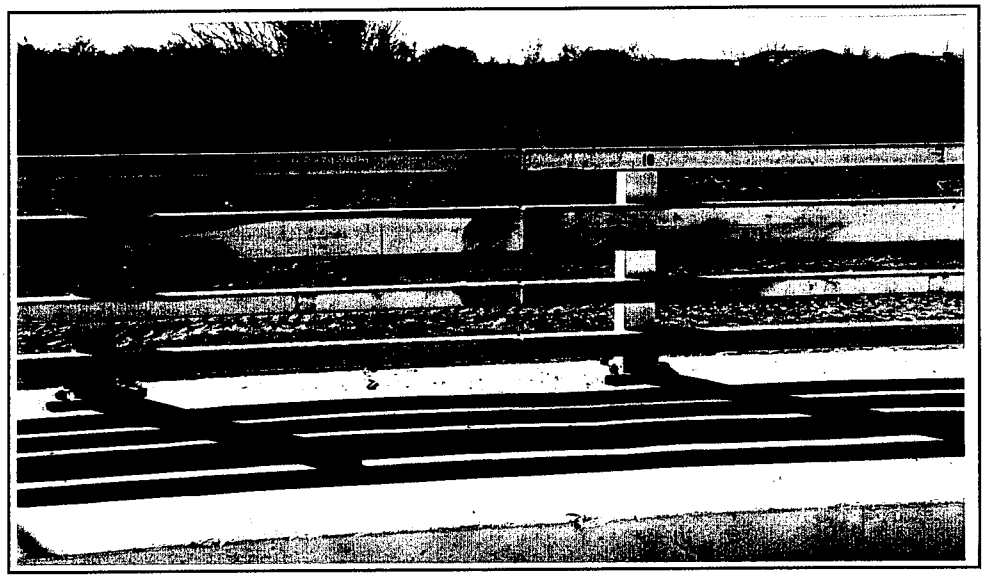


Figure 24. Barrier damage photographs - Test NETC-3.

Figure 24. Barrier damage photographs - Test NETC-3 (continued).



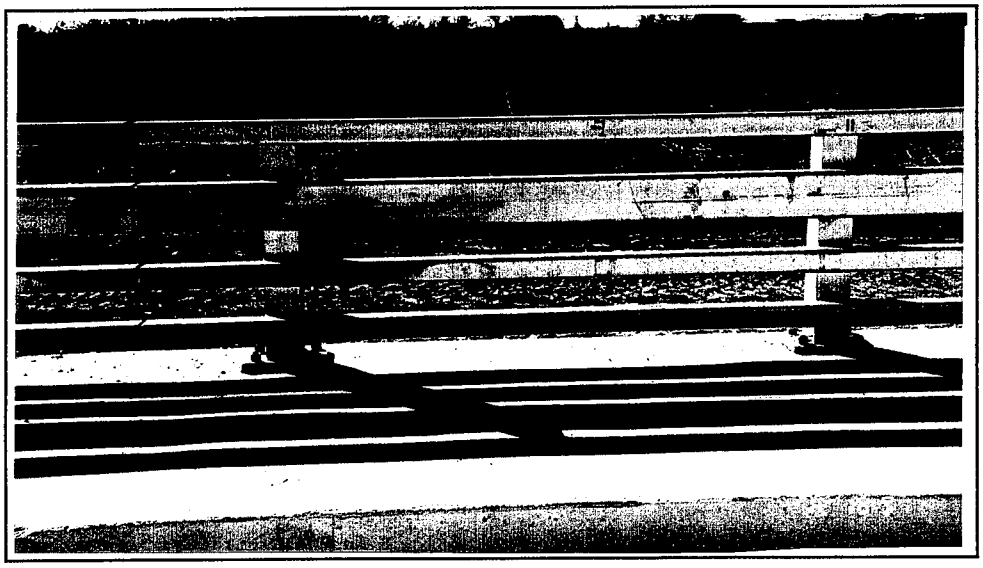
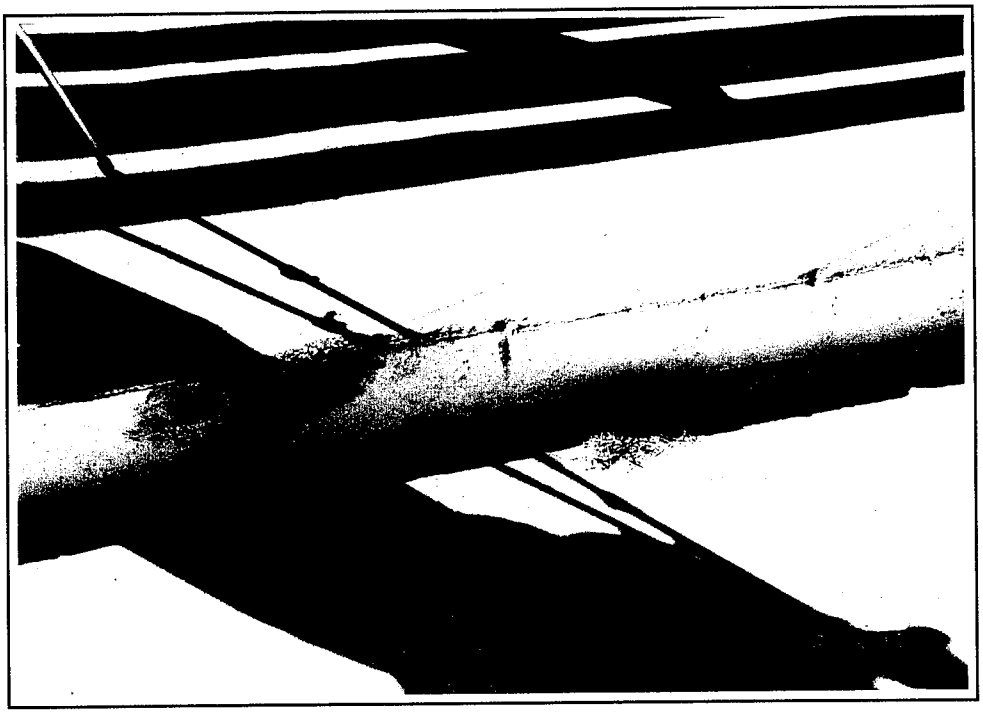


Figure 24. Barrier damage photographs - Test NETC-3 (continued).



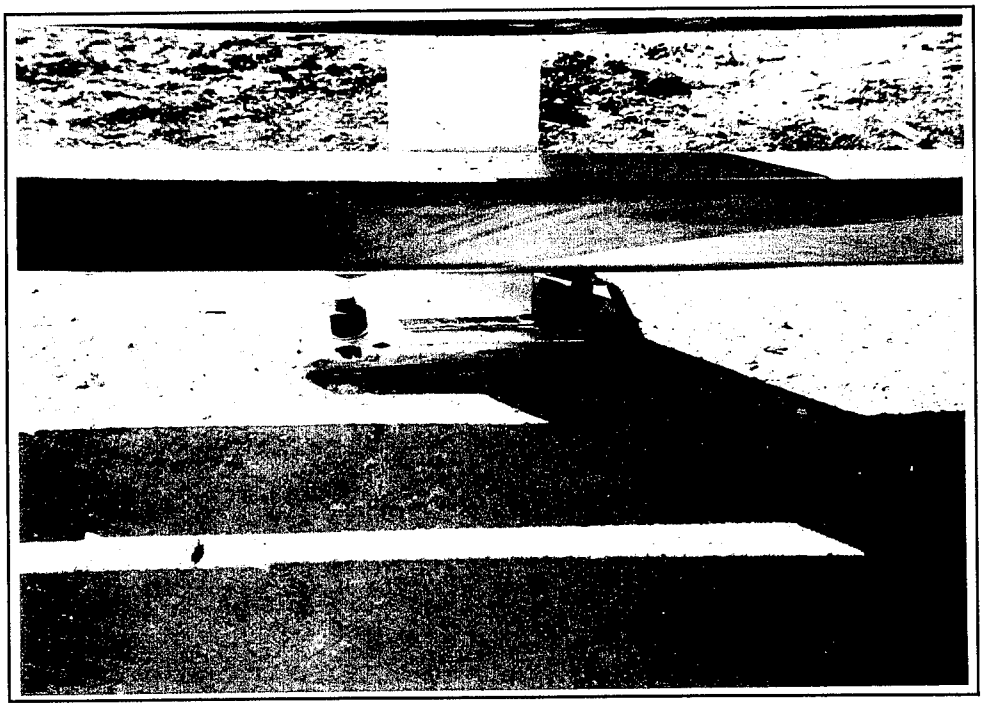


Figure 24. Barrier damage photographs - Test NETC-3 (continued).

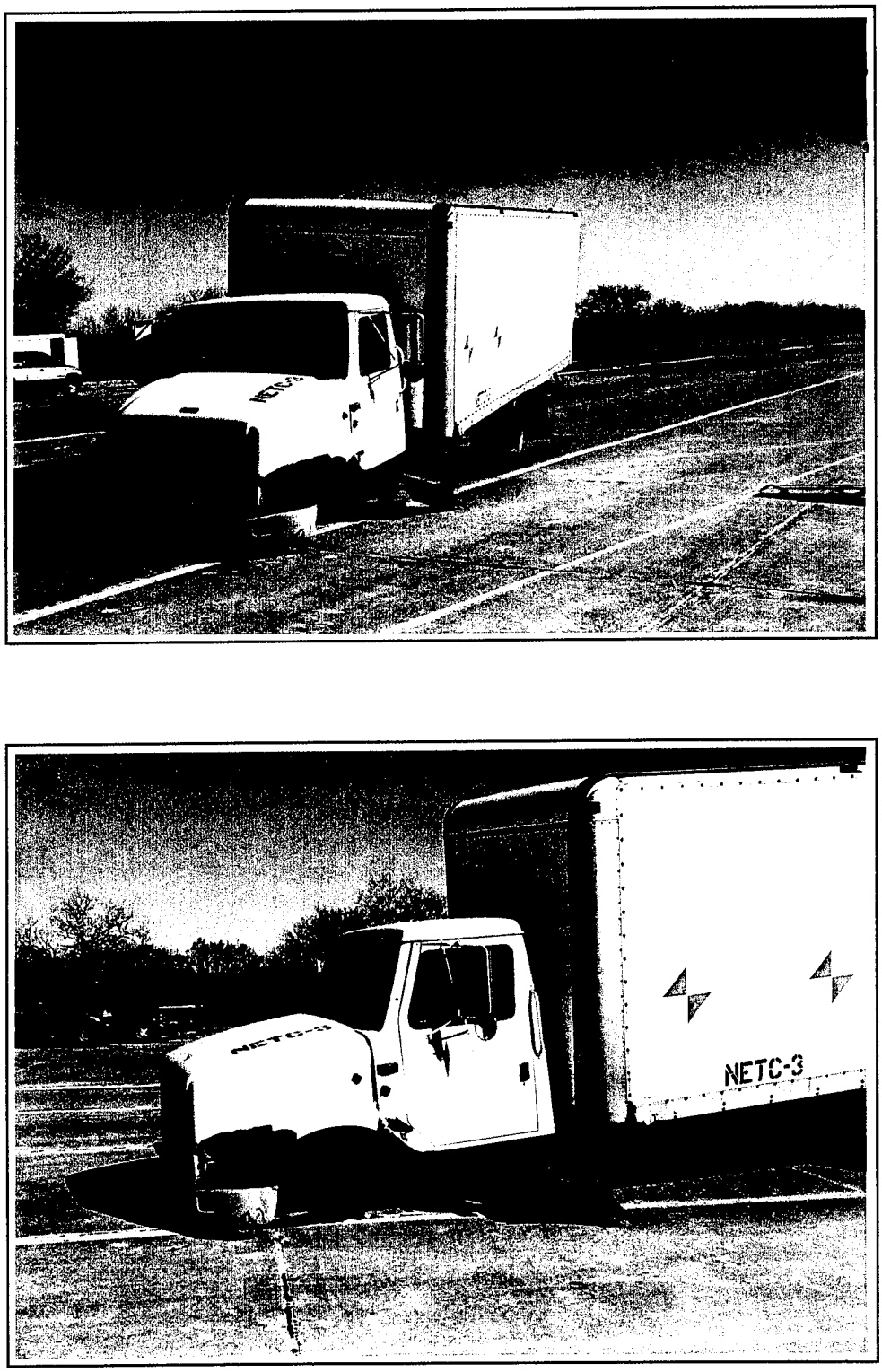
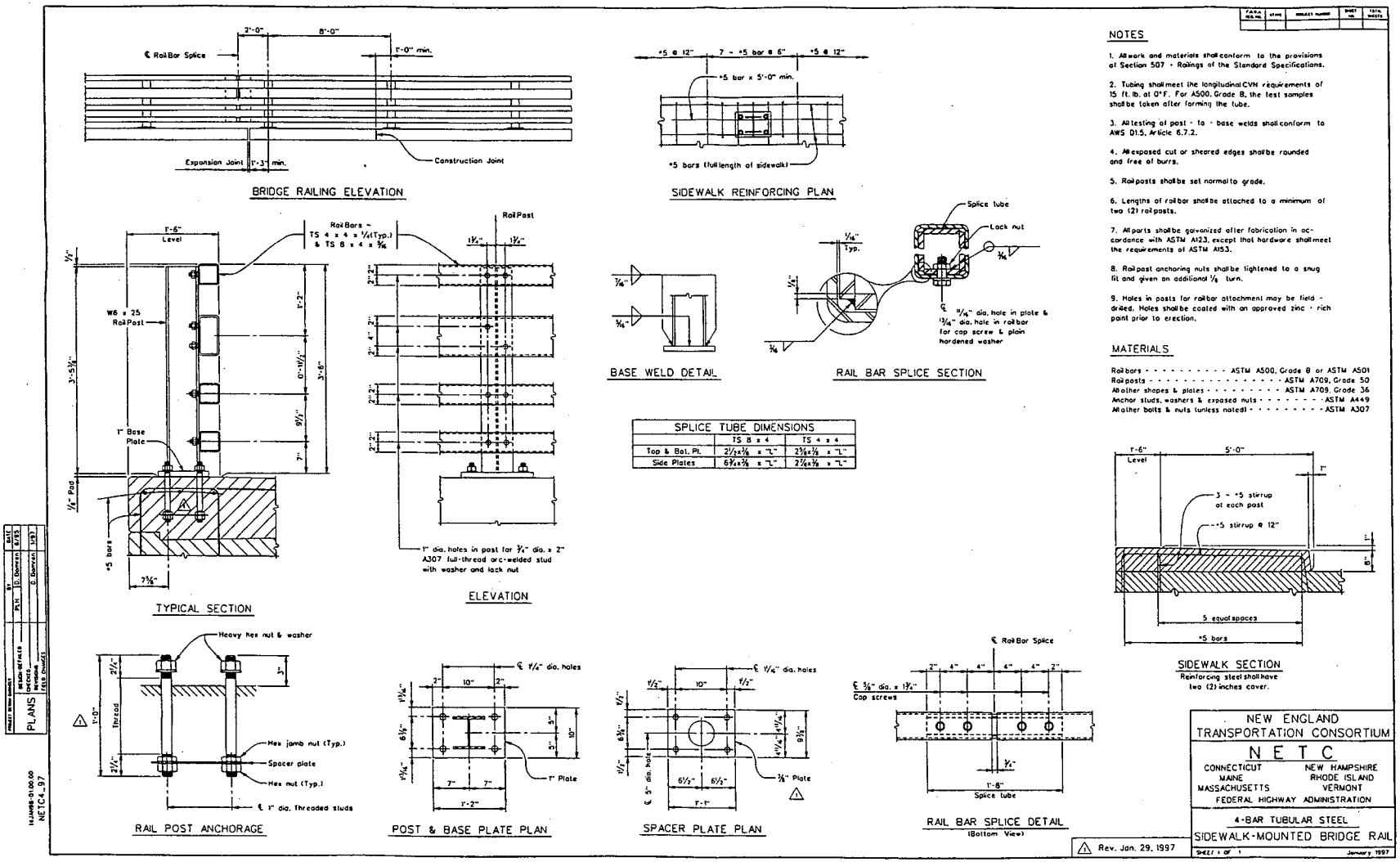


Figure 25. Vehicle damage photographs - Test NETC-3.

Figure 25. Vehicle damage photographs - Test NETC-3 (continued).

APPENDIX A - NETC CRASH TEST STEEL BRIDGE RAILING DRAWING



APPENDIX B - TRANSDUCER DATA WITH CALCULATED VEHICLE KINETICS AND OCCUPANT RISK SUMMARIES

TEST ID ------- NETC-3A
TEST DATE ----- 12-18-97
VEHICLE CLASS - OTHER
IMPACT SPEED -- 22.23 M/S

VEHICLE KINETICS SUMMARY
NOTE: VALUES ARE INSTANTANEOUS AT TIME

TIME	---ACCEL. (G'S)---			HEAD.	--VELOCITY (MPS)--			-----DISP. (M)----		
(S)	LONG.	LAT.	VERT.	ANG(D)	LONG.	LAT.	VERT.	X	Y	Z
.000	.1	-.4	-1.2	15.0	22.2	.0	.0	.0	.0	.0
.010	-1.0	.9	1.0	15.0	22.2	.1	.0	.2	.1	.0
.020	.1	.7	.2	15.1	22.2	.1	.1	.4	.1	.0
.030	.0	.1	-.8	15.2	22.2	.1	.0	.6	.2	.0
.040	-1.5	-1.2	.5	15.2	22.1	.2	.0	.9	.2	.0
.050	-.1	-1.7	-.5	15.3	22.0	.2	.1	1.1	.3	.0
.060	-1.1	-.4	.3	15.4	22.0	.2	.0	1.3	.3	.0
.070	3.6	7.7	-1.6	15.4	22.0	.2	.2	1.5	.4	.0
.080	-4.1	4.3	-2.7	15.4	22.0	.2	.0	1.7	.5	.0
.090	-1.1	1.5	-.7	15.4	22.1	.2	-.2	1.9	.5	.0
.100	-1.7	1.4	.6	15.3	22.0	.2	.0	2.1	.6	.0
.110	-1.4	2.0	-3.9	15.3	21.9	.3	-.2	2.3	.6	.0
.120	-.4	.1	-.3	15.5	22.0	.3	-.5	2.6	.7	.0
.130	-.3	1.1	1.0	15.6	21.9	.3	-.3	2.8	.7	.0
.140	1.8	3.4	-2.4	15.5	22.0	.3	-.5	3.0	.8	.0
.150	-1.1	2.7	2.5	15.6	22.0	.3	-.5	3.2	.8	.0
.160	2.1	2.9	.6	15.5	21.8	.3	-.3	3.4	.9	.0
.170	2.1	1.9	-1.0	15.5	22.0	.3	-.5	3.6	1.0	.0
.180	-2.6	1.9	3.7	15.5	21.9	.4	-.3	3.8	1.0	.0
.190	1.4	1.4	-.5	15.5	21.8	.4	-.2	4.0	1.1	.0
.200	-.9	1.4	1.7	15.4	21.9	.5	-.2	4.3	1.1	.0
.210	-.9	.4	1.9	15.5	21.8	.5	.0	4.5	1.2	.0
.220	2.0	.7	-1.9	15.5	21.8	.6	.0	4.7	1.2	.0
.230	-1.3	.1	2.6	15.5	21.9	.6	.0	4.9	1.3	.0
.240	-1.0	.7	.7	15.6	21.7	.7	.3	5.1	1.3	.0
.250	.9	1.4	-1.0	15.6	21.8	.6	.1	5.3	1.4	.0
.260	-2.5	-.9	2.3	15.7	21.6	.7	.2	5.5	1.4	.0
.270	.4	-1.8	-7.3	15.9	21.3	.6	.3	5.7	1.5	.0
.280	-4.6	1.5	-2.9	16.2	21.4	.5	-.1	5.9	1.5	.0
.290	-7.3	-8.1	1.5	16.2	21.0	.3	.1	6.1	1.6	.0
.300	2.6	2.0	-5.8	15.9	21.0	.2	-.2	6.3	1.7	.0
.310	-13.6	-7.6	-4.1	15.9	21.0	.3	-.6	6.6	1.7	.0
.320	1.1	-10.1	.4	16.1	20.5	.4	-.3	6.8	1.8	.0
.330	11.8	-13.8	-7.9	16.0	20.3	.1	-.6	6.9	1.8	.0
.340	-1.9	-10.5	10.6	16.0	20.5	-.2	-.9	7.1	1.9	.0
.350	-8.5	-.2	-1.4	15.8	19.9	-.7	-.5	7.3	1.9	-.1

TIME	---ACCEL. (G'S)---			HEAD.	--VELOCITY (MPS)--			-----DISP. (M)----		
(S)	LONG.	LAT.	VERT.	ANG(D)	LONG.	LAT.	VERT.	X	Y	Z
.360	-.1	-2.9	-15.4	15.5	20.0	-1.1	-1.1	7.5	2.0	-.1
.370	-10.5	-5.3	10.0	15.2	19.7	-1.5	-1.2	7.7	2.1	-.1
.380	-.6	-14.3	-5.8	15.0	19.3	-1.7	-1.0	7.9	2.1	-.1
.390	-5.8	-13.7	-3.1	14.6	19.7	-1.9	-1.6	8.1	2.2	-.1
.400	-8.6	-6.6	3.5	14.2	19.2	-2.1	-1.2	8.3	2.3	-.1
.410	-2.9	-9.2	-8.1	13.6	19.2	-2.5	-1.3	8.4	2.3	-.1
.420	-2.8	-6.7	2.4	13.1	19.3	-2.8	-1.6	8.6	2.4	-.1
.430	.1	1.0	3.7	12.6	19.0	-3.1	-1.1	8.8	2.5	-.2
.440	4.0	.2	-5.6	11.9	19.1	-3.3	-1.3	9.0	2.5	-.2
.450	-5.7	.8	7.5	11.4	19.1	-3.5	-1.2	9.2	2.6	-.2
.460	.5	-2.7	.0	11.0	18.8	-3.7	-.7	9.3	2.7	-.2
.470	.9	-10.1	-.4	10.4	19.0	-3.9	-1.1	9.5	2.8	-.2
.480	-3.1	-6.9	6.6	9.9	18.8	-4.2	-.7	9.7	2.8	-.2
.490	1.2	-6.0	-2.4	9.1	18.6	-4.5	-.5	9.9	2.9	-.2
.500	.4	-.5	.7	8.4	18.8	-4.8	-.7	10.1	3.0	-.2
.510	-1.8	1.6	4.5	7.8	18.5	-5.1	-.3	10.2	3.1	-.2
.520	1.8	3.0	-1.3	7.1	18.5	-5.3	-.2	10.4	3.1	-.2
.530	-.8	2.9	1.9	6.3	18.6	-5.7	-.3	10.6	3.2	-.2
.540	-1.0	1.4	3.0	5.7	18.3	-5.9	.1	10.8	3.3	-.2
.550	2.2	3.7	-.5	4.9	18.3	-6.2	.2	10.9	3.4	-.2
.560	-1.9	3.7	2.5	4.4	18.1	-6.6	.3	11.1	3.4	-.2
.570	.8	8.5	-.8	3.6	17.9	-7.2	.4	11.3	3.5	-.2
.580	-4.4	-17.5	.7	3.1	17.6	-8.3	.1	11.5	3.6	-.2
.590	7.2	-12.5	-3.8	2.6	17.4	-9.1	.1	11.6	3.7	-.2
.600	14.5	-5.3	6.4	2.3	17.6	-9.7	-.1	11.8	3.8	-.2
.610	5.1	4.1	6.6	1.9	17.2	-10.0	.3	12.0	3.9	-.2
.620	-1.2	-1.7	-11.9	1.7	17.3	-9.8	.2	12.2	4.0	-.2
.630	-6.7	5.2	-5.8	1.6	17.4	-9.6	-.6	12.3	4.1	-.2
.640	-4.0	-7.6	3.8	1.5	17.1	-9.3	-.6	12.5	4.2	-.2
.650	-.3	-9.8	-1.7	1.4	17.1	-9.1	-.5	12.7	4.3	-.2
.660	-4.4	-9.9	2.5	1.3	17.2	-8.9	-.6	12.8	4.4	-.2
.670	2.1	-3.0	7.2	1.4	17.0	-9.0	.0	13.0	4.5	-.2
.680	2.1	-2.7	-3.0	1.3	17.0	-9.3	-.1	13.2	4.6	-.2
.690	-8.9	-1.0	4.8	1.1	17.0	-9.5	-.2	13.3	4.7	-.2
.700	-9.7	-4.2	-1.2	1.0	16.7	-9.6	.3	13.5	4.8	-.2
.710	24.3	-7.8	-7.6	.8	16.9	-9.6	.0	13.7	4.9	-.2
.720	-38.4	14.2	16.1	1.0	17.2	-9.6	.0	13.8	5.0	-.2
.730	-17.6	-4.1	5.3	.8	16.4	-9.4	.7	14.0	5.1	-.2
.740	10.9	-5.9	.9	.8	16.6	-9.3	.5	14.2	5.2	-.2
.750	7.9	-.5	4.7	.8	16.6	-9.5	.6	14.3	5.3	-.2
.760	1.1	-1.5	1.0	.7	16.5	-9.5	.9	14.5	5.4	-.2
.770	-1.8	9.4	.3	.6	16.5	-9.5	.6	14.7	5.5	-.2
.780	-.4	5.2	3.2	.8	16.4	-9.5	.7	14.8	5.6	-.2
.790	1.7	2.3	-3.1	.6	16.3	-9.6	.8	15.0	5.7	-.2
.800	-4.1	-4.1	3.1	.6	16.4	-9.6	.9	15.1	5.8	-.2

TIME	---ACCEL. (G'S)---			HEAD.	--VELOCITY (MPS)--			-----DISP. (M)----		
(S)	LONG.	LAT.	VERT.	ANG(D)	LONG.	LAT.	VERT.	X	Y	Z
.810	-2.2	-2.7	1.0	.6	16.2	-9.6	1.2	15.3	5.9	-.2
.820	-3.1	-2.0	-3.4	.5	16.3	-9.7	1.0	15.5	6.0	-.2
.830	-3.5	-.6	2.8	.7	16.3	-9.7	1.0	15.6	6.1	-.2
.840	-.4	-2.8	-5.2	.7	16.1	-9.7	1.1	15.8	6.2	-.1
.850	2.4	.3	-1.2	1.0	16.3	-9.6	.8	16.0	6.3	-.1
.860	-2.2	1.4	4.1	1.1	16.1	-9.7	.8	16.1	6.4	-.1
.870	5.7	.3	-1.8	1.2	16.1	-9.6	.9	16.3	6.5	-.1
.880	-.7	2.4	.1	1.3	16.3	-9.5	.7	16.4	6.6	-.1
.890	.1	4.3	4.0	1.5	16.2	-9.4	1.0	16.6	6.7	-.1
.900	2.4	5.8	.5	1.8	16.2	-9.3	1.0	16.8	6.8	-.1
.910	.2	4.2	3.4	1.6	16.1	-9.3	1.0	16.9	6.8	-.1
.920	4.1	2.9	.0	2.1	16.1	-9.3	1.2	17.1	6.9	-.1
.930	-.5	-2.1	-.8	1.7	16.1	-9.5	1.1	17.2	7.0	-.1
.940	-1.9	-1.7	3.1	1.9	16.0	-9.5	1.3	17.4	7.1	.0
.950	2.1	.4	-.5	2.4	16.0	-9.5	1.4	17.5	7.2	.0
.960	.3	3.7	2.1	2.6	16.1	-9.4	1.4	17.7	7.3	.0
.970	-2.2	2.2	2.1	2.8	16.0	-9.3	1.6	17.9	7.4	.0
.980	1.3	1.5	-.8	2.8	16.0	-9.2	1.6	18.0	7.5	.0
.990	-1.4	2.9	2.2	2.8	16.0	-9.0	1.6	18.2	7.6	.0

HIGHEST 50.0-MS AVG. ACCEL.

	G'S	TIME (SEC) START	END
LONG.	-2.72	.308	.358
LAT.	-5.79	.557	.607

TEST ID ------- NETC-3A
TEST DATE ----- 12-18-97
VEHICLE CLASS - OTHER
IMPACT SPEED -- 22.23 M/S

OCCUPANT RISK SUMMARY
NOTE: INSTANTANEOUS 10-MS AVERAGE ACCELERATIONS

	(----- VEHICLE ------)			(---------- OCCUPANT ----------)			
TIME	ACCEL. (G'S)		ANG.VEL	VEL. (M/S)		DISP. (M)	
(S)	LONG.	LAT.	(RAD/S)	LONG.	LAT.	LONG.	LAT.
.000	.11	-.41	.17	.00	.00	.00	.00
.010	-.55	.38	.09	.14	.66	.00	.02
.020	-.30	.28	-.06	.44	1.78	.01	.04
.030	-.03	.08	-.26	.78	3.30	.01	.06
.040	-1.03	.03	-.11	.59	2.27	.02	.08
.050	-.23	-.17	-.14	.71	2.54	.03	.09
.060	.15	.08	-.20	.81	3.02	.03	.11
.070	-.63	.78	-.40	1.20	4.51	.04	.14
.080	.71	-.82	-.36	1.11	4.20	.04	.14
.090	.30	-.01	-.63	1.48	6.14	.05	.16
.100	-2.04	.51	.24	.09	-.18	.05	.16
.110	1.17	-.07	-.17	.86	2.79	.06	.17
.120	-.48	-.02	-.21	.84	3.27	.07	.21
.130	-.34	.55	.31	.05	-.53	.07	.22
.140	1.11	-.13	-.21	.88	3.25	.08	.22
.150	-1.20	-.02	-.46	1.28	5.06	.08	.24
.160	-.13	-.01	.02	.63	1.59	.09	.25
.170	.75	.48	.07	.37	1.19	.09	.26
.180	-1.67	.52	-.13	.85	2.73	.10	.27
.190	1.07	.65	.07	.54	1.27	.11	.28
.200	-.38	.70	.22	.20	.20	.11	.28
.210	-1.00	.54	-.04	.78	2.19	.12	.29
.220	1.51	.43	.11	.47	1.18*	.12	.30*
.230	-1.22	-.03	-.30	1.11	4.22	.13	.31
.240	-.45	.06	-.01	.78	2.16	.14	.33
.250	.43	-.12	-.51	1.53	5.76	.15	.34
.260	-4.58	-.40	-.45	1.66	5.39	.16	.37
.270	-1.61	-1.36	-.24	1.62	3.88	.17	.39
.280	-.12	-2.49	-.67	2.19	6.98	.19	.44
.290	-2.01	-1.08	-.12	1.66	2.75	.20	.45
.300	.95	.42	.97	-.18	-5.27	.21	.43
.310	-.86	.14	-1.26	3.60	11.05	.23	.45
.320	-5.96	-.91	-.04	2.03	2.27	.25	.48
.330	.27	-2.77	.03	2.10	1.54	.27	.48
.340	-2.89	-4.74	.63	.95	-3.17	.29	.50
.350	-1.98	-4.07	.38	1.96	-1.96	.31	.49

	(----- VEHICLE ------)			(---------- OCCUPANT ----------)			
TIME (S)	ACCEL. (G'S) LONG.	LAT.	ANG.VEL (RAD/S)	VEL. (M/S) LONG.	LAT.	DISP. (M) LONG.	LAT.
.360	.54	-3.66	.50	1.69	-3.32	.33	.47
.370	-7.78	-1.73	.58	1.84	-4.49	.35	.46
.380	3.19	-.82	.71	2.05	-5.69	.37	.46
.390	-.35	-.56	.83	1.41	-6.83	.39	.44
.400	-4.15	-2.19	.96	1.67	-8.17	.42	.41
.410	2.93	-2.09	1.74	.46	-14.39	.44	.37
.420	-1.95	-1.61	1.02	1.57	-9.81	.46	.33
.430	-1.43	-.29	1.54	1.00	-13.94	.48	.30
.440	2.59	.12	1.19	1.40	-11.99	.50	.24
.450	-3.00	.01	.61	2.41	-8.17	.52	.20
.460	.29	-1.00	1.24	1.69	-12.99	.55	.18
.470	1.41	-.86	.69	2.38	-9.52	.57	.13
.480	-2.91	-1.02	2.00	.36+	-19.48	.59+	.09
.490	1.24	-.57	1.41	1.52	-15.85	.60	.02
.500	.03	-.91	1.12	1.86	-14.39	.62	-.05
.510	-1.15	-.47	.86	2.50	-12.96	.64	-.09
.520	1.80	-.33	1.43	1.54	-17.65	.66	-.15
.530	-.46	-.36	1.16	1.93	-16.30	.67	-.23
.540	-1.38	-.32	1.18	2.11	-16.93	.69	-.28
.550	.48	-1.47	1.54	1.55	-20.09	.70	-.35
.560	-1.54	-2.65	.63	3.14	-14.11	.73	-.39
.570	-1.46	-5.47	1.43	2.06	-20.87	.74	-.47
.580	-1.17	-8.87*	.19	4.34	-13.15	.76	-.50
.590	.81	-7.54	.86	3.38	-19.05	.79	-.51
.600	-1.72	-3.26	1.85	1.55	-26.92	.83	-.50
.610	-2.00	.28	.14	4.76	-14.89	.86	-.49
.620	2.51	3.58	.70	3.69	-18.91	.90	-.46
.630	1.23	2.11	-.34	5.34	-11.14	.95	-.41
.640	-4.45	3.54	-.28	5.52	-11.35	.99	-.38
.650	1.80	.98	.50	4.27	-16.77	1.04	-.34
.660	-.68	.92	-.29	5.45	-10.98	1.09	-.30
.670	-1.82	-1.93	-.02	5.16	-12.93	1.14	-.24
.680	1.49	-2.39	.62	4.13	-17.98	1.19	-.21
.690	-1.79	-1.30	.30	4.64	-15.90	1.23	-.18
.700	.48	-.86	.30	4.96	-16.10	1.28	-.15
.710	-3.01	-1.43	-.33	5.78	-11.62	1.33	-.12
.720	2.17+	3.78	-.32	5.41	-11.61	1.39	-.05
.730	.87	.77	.19	5.36	-15.19	1.44	-.02
.740	-.75	-.16	.22	5.11	-15.25	1.49	.03
.750	-3.92	.26	1.33	3.27	-23.50	1.55	.08
.760	1.51	-.22	-.91	7.11	-7.34	1.60	.11
.770	1.21	-.39	-.54	6.47	-10.04	1.65	.15
.780	-2.81	-.06	-.28	6.20	-11.80	1.71	.23
.790	.26	-.56	.21	5.48	-15.51	1.77	.25
.800	-.57	.04	.08	5.59	-14.59	1.82	.31

TIME (S)	(----- VEHICLE ------) ACCEL. (G'S) LONG.	LAT.	ANG.VEL (RAD/S)	(---------- OCCUPANT ----------) VEL. (M/S) LONG.	LAT.	DISP. (M) LONG.	LAT.
.810	-.71	-.37	.02	5.85	-14.19	1.88	.35
.820	1.46	-.29	.14	5.56	-15.19	1.94	.39
.830	-2.26	-.99	.12	5.64	-14.98	2.00	.47
.840	-.28	-.56	.13	5.81	-15.10	2.06	.53
.850	.97	.02	.03	5.78	-14.11	2.13	.64
.860	-1.91	-.44	-.50	6.82	-10.30	2.19	.70
.870	.64	.67	-.19	6.34	-12.43	2.25	.78
.880	.57	.88	.04	5.76	-14.00	2.31	.84
.890	-1.12	.96	-1.39	8.31	-3.41	2.37	.93

OCCUP. RISK FACTORS		TIME (S)	VELOCITY (M/S)
>LONG. VEL. AFTER 0.6 M DISP.	--	.488	1.65
>LAT. VEL. AFTER 0.3 M DISP.	--	.222	-2.89

MAX. ACCEL. AFTER OCCUPANT IMPACT		TIME(S)	ACC.(GS)
>LONG. ACCELERATION	--	.725	-8.95
>LAT. ACCELERATION	--	.582	14.30

TEST ID ------- NETC-3B
TEST DATE ----- 12-18-97
VEHICLE CLASS - OTHER
IMPACT SPEED -- 22.23 M/S

TIME	(--- VEL. CG ACCEL.-(G'S) ---)				(-- VEL. REAR ACCEL.-(G'S) --)			
(SEC)	X	Y	Z	R	X	Y	Z	R
.000	.1	-.2	-.7	.7	-.3	-.1	.1	.4
.010	-.6	.5	.7	1.0	.2	-.2	-.4	.5
.020	.1	.4	.1	.5	.6	-.3	-.6	.9
.030	.0	.0	-.5	.5	-1.1	-.1	1.0	1.4
.040	-.9	-.6	.4	1.1	.2	.1	-1.3	1.4
.050	-.1	-.8	-.3	.9	-.9	.2	1.2	1.5
.060	-.6	-.2	.2	.7	.3	.2	-.7	.8
.070	1.8	3.8	-.5	4.2	.4	.2	1.5	1.6
.080	-2.5	2.5	-1.8	4.0	-.6	.2	2.8	2.8
.090	-.3	.8	-.2	.8	.1	-1.3	-1.7	2.1
.100	-.9	.6	.3	1.1	-.7	-.8	-.5	1.2
.110	-.8	.9	-2.5	2.8	-.7	-.1	.0	.7
.120	-.2	.1	-.1	.3	-.5	-.8	-2.9	3.0
.130	-.1	.6	.6	.9	1.0	-.5	.0	1.1
.140	1.0	1.8	-1.6	2.6	-.6	-.3	.7	1.0
.150	-.8	1.3	1.6	2.2	1.1	-.4	.9	1.5
.160	1.1	1.5	.3	1.9	.6	-.1	-.7	.9
.170	1.2	1.0	-.6	1.7	-.9	-.4	.7	1.2
.180	-1.7	.9	2.2	2.9	-.4	-.3	.1	.5
.190	.9	.8	-.4	1.3	.6	-.4	-.5	.9
.200	-.6	.8	1.0	1.4	-1.5	-.4	1.9	2.4
.210	-.6	.3	1.2	1.4	.8	-.1	-.2	.9
.220	1.3	.4	-1.1	1.8	.7	-.2	-.4	.9
.230	-.8	.0	1.6	1.8	-.2	.0	1.0	1.0
.240	-.6	.4	.4	.8	-.1	.0	-1.1	1.2
.250	.7	.8	-.6	1.2	-.4	.3	.1	.6
.260	-1.8	-.5	1.5	2.4	-1.4	1.5	.9	2.2
.270	.5	-1.0	-3.8	4.0	.0	1.9	.2	1.9
.280	-2.3	.9	-1.7	3.0	1.8	1.5	-6.9	7.3
.290	-4.3	-4.1	.8	6.0	-2.0	1.0	1.7	2.9
.300	1.7	1.3	-3.8	4.3	2.7	4.7	-3.0	6.2
.310	-7.9	-4.0	-1.1	8.9	-1.8	-1.6	8.4	8.8
.320	.0	-5.1	.2	5.1	-1.5	.6	-2.4	2.9
.330	6.9	-7.6	-4.5	11.2	.7	3.0	-3.0	4.3
.340	-1.4	-5.9	4.4	7.5	-3.2	5.0	2.7	6.5
.350	-5.1	-.9	-.4	5.2	2.2	3.8	-1.3	4.5
.360	.6	-1.8	-8.0	8.2	-1.3	4.2	.5	4.4
.370	-6.6	-2.6	4.6	8.4	-2.5	.7	-1.4	3.0
.380	.5	-7.8	-3.5	8.5	7.5	-.1	.0	7.5
.390	-3.0	-7.4	-2.3	8.3	-4.4	-2.7	11.4	12.5
.400	-5.6	-3.8	2.5	7.3	.8	-1.2	-3.8	4.0

TIME (SEC)	(--- VEL. CG ACCEL.-(G'S) ---) X	Y	Z	R	(-- VEL. REAR ACCEL.-(G'S) --) X	Y	Z	R
.410	-.9	-4.7	-4.2	6.4	-3.0	-.7	.4	3.1
.420	-1.5	-3.5	1.5	4.1	4.4	.3	1.6	4.7
.430	-.2	.4	2.0	2.1	-.7	-.3	3.0	3.1
.440	2.9	.2	-3.1	4.2	-.1	-.1	-3.1	3.1
.450	-3.7	.4	4.4	5.7	1.0	-.7	5.6	5.7
.460	.3	-1.3	.1	1.3	1.8	-1.2	-1.8	2.8
.470	.7	-5.3	-.8	5.4	-3.3	-.8	4.8	5.9
.480	-1.8	-3.6	4.1	5.8	1.8	-.5	-2.0	2.7
.490	.9	-3.2	-1.3	3.6	-4.0	.4	5.1	6.5
.500	.2	-.4	.5	.7	3.5	-.1	-2.5	4.2
.510	-1.1	.8	2.8	3.2	-.3	-.2	4.8	4.8
.520	1.2	1.5	-.9	2.1	-.4	-.7	-3.5	3.6
.530	-.5	1.4	1.4	2.1	.5	-.8	2.6	2.7
.540	-.6	.5	1.9	2.1	-.9	-.3	-1.2	1.5
.550	1.1	1.6	-.4	2.0	1.0	.3	-1.1	1.5
.560	-1.3	1.5	1.0	2.2	1.2	1.3	3.0	3.5
.570	1.0	4.5	.5	4.6	-4.6	-3.5	-6.8	9.0
.580	-2.9	-11.3	.7	11.7	-10.7	14.6	3.7	18.5
.590	4.3	-7.3	-1.5	8.6	10.2	10.6	-1.4	14.8
.600	8.0	-2.8	3.8	9.3	-9.5	6.2	-11.7	16.3
.610	2.8	2.5	4.0	5.5	-5.4	1.6	5.3	7.7
.620	-.6	-.5	-7.1	7.1	1.2	-2.0	-2.1	3.2
.630	-4.2	2.8	-3.3	6.0	4.9	-5.6	-.1	7.4
.640	-2.7	-3.9	2.1	5.1	-4.1	-2.6	-3.6	6.1
.650	.6	-4.7	-1.2	4.9	1.4	-2.0	-3.5	4.3
.660	-2.4	-4.9	1.7	5.7	-.1	-2.8	3.8	4.8
.670	.8	-1.8	4.0	4.5	4.7	.1	1.4	4.9
.680	1.1	-1.7	-2.4	3.1	3.2	1.6	-3.6	5.1
.690	-5.1	-1.0	2.8	5.9	1.7	.8	1.7	2.6
.700	-5.4	-1.7	.3	5.7	-2.2	.8	-1.5	2.8
.710	12.7	-4.1	-5.0	14.3	1.1	4.6	-8.3	9.6
.720	-22.5	8.6	7.5	25.2	9.7	-1.0	11.8	15.3
.730	-10.3	-3.2	2.9	11.2	-4.6	-.1	-11.6	12.4
.740	5.7	-3.0	-.8	6.5	-12.6	3.2	3.7	13.5
.750	4.2	-.9	2.7	5.1	1.9	1.3	-7.8	8.1
.760	.0	-1.8	.2	1.9	2.1	1.4	9.1	9.4
.770	-1.0	5.0	.0	5.1	-2.4	4.2	-7.2	8.7
.780	-.6	2.7	1.8	3.3	-.9	1.6	-2.8	3.3
.790	1.3	1.0	-1.3	2.1	2.4	.6	1.6	2.9
.800	-2.4	-2.2	1.9	3.8	1.7	2.5	4.2	5.2
.810	-1.2	-1.4	.5	1.9	2.3	.8	-.6	2.5
.820	-1.3	-.9	-2.0	2.5	.0	-.1	2.6	2.6
.830	-2.2	-.2	1.7	2.7	-1.3	.0	-1.1	1.7
.840	-.1	-1.5	-2.8	3.2	1.1	-.1	-2.9	3.1

TIME (SEC)	(--- VEL. CG ACCEL.-(G'S) ---) X	Y	Z	R	(-- VEL. REAR ACCEL.-(G'S) --) X	Y	Z	R
.850	1.3	.0	-1.0	1.6	.7	-.1	2.2	2.3
.860	-1.6	.8	2.3	3.0	-1.0	-.8	-4.3	4.5
.870	3.3	.2	-1.3	3.6	-3.5	-2.1	1.2	4.2
.880	-.4	1.3	.2	1.3	.7	.1	.1	.7
.890	-.1	2.3	2.2	3.2	1.1	-1.6	.7	2.1
.900	1.4	3.0	.0	3.3	-.9	-1.0	1.9	2.4
.910	-.2	2.0	1.8	2.7	-1.5	-.1	-1.5	2.2
.920	2.3	1.3	.1	2.7	1.2	1.8	.6	2.2
.930	-.3	-1.3	-.4	1.4	-.7	.1	3.1	3.2
.940	-1.2	-1.0	2.0	2.5	-.7	.0	-2.0	2.1
.950	1.1	.1	-.4	1.2	.2	.1	.9	.9
.960	.1	2.1	1.2	2.4	-.6	-.9	1.6	1.9
.970	-1.4	1.2	1.3	2.2	1.1	-1.0	-1.6	2.2
.980	.8	.9	-.7	1.4	-3.7	-.3	2.7	4.6
.990	-.9	1.5	1.5	2.3	1.4	-.5	-3.3	3.7

MAXIMUM VALUES AND TIME OF OCCURANCE

	X	X----SEC	Y	Y----SEC	Z	Z----SEC	R	R----SEC
- VEL. CG ACCEL.-(G'S)	-26.8	.721	-22.9	.579	11.5	.714	29.5	.721
VEL. REAR ACCEL.-(G'S)	-15.9	.717	19.2	.586	26.6	.737	26.7	.737

TEST ID ------- NETC-3C
TEST DATE ----- 12-18-97
VEHICLE CLASS - OTHER
IMPACT SPEED -- 22.23 M/S

	ACCELERATION-(G'S)				
			DISK BRAKE		
TIME	ENGIN BLOCK		CALIPERS		INSTRUMENT
(S)	TOP	BOTTOM	RIGHT	LEFT	PANEL
.000	-.4	-27.8	.5	-.3	.3
.010	.1	-28.3	-.3	-.1	.0
.020	-.4	-28.0	-.5	-1.8	.3
.030	.0	-29.2	1.2	5.0	.1
.040	.0	-29.5	3.7	5.5	.1
.050	.5	-30.3	3.5	14.7	-1.6
.060	.6	-27.1	3.3	37.7	-1.0
.070	2.9	32.6	-52.9	123.2	-.9
.080	.3	35.2	-2.2	50.4	-1.4
.090	-2.0	35.3	-31.7	65.0	-1.9
.100	-1.3	35.3	-6.1	67.8	1.0
.110	3.7	35.3	-23.0	63.6	1.2
.120	.4	-24.7	-26.5	33.6	-1.9
.130	-3.8	-27.8	-29.0	4.8	-4.2
.140	.4	-28.5	-58.7	12.6	1.8
.150	.2	-28.5	-33.3	-6.8	.0
.160	-2.4	-30.0	-40.9	10.3	4.4
.170	2.0	-29.7	-17.8	5.5	8.8
.180	.8	-29.0	-22.0	1.8	.4
.190	-2.6	-27.8	-11.5	4.4	-1.4
.200	.2	-28.6	-13.9	11.6	-.9
.210	2.0	-26.4	-.5	10.2	-.2
.220	-.6	37.3	3.9	-6.4	-.6
.230	1.3	35.3	-2.2	-8.6	-1.0
.240	1.2	35.3	3.8	-9.1	-.8
.250	-1.3	35.3	-13.0	-23.3	.2
.260	1.5	35.3	7.8	32.0	.1
.270	1.8	35.3	25.4	48.9	-.5
.280	.2	35.3	46.3	-6.4	-2.1
.290	2.5	35.3	23.3	-39.7	.8
.300	-1.8	-12.9	-2.3	-35.0	1.0
.310	1.4	-34.1	23.7	-11.1	-.2
.320	6.0	-9.3	31.4	82.8	-3.5
.330	-.1	-24.5	21.7	87.7	1.7
.340	-3.8	23.5	3.8	112.7	-4.0
.350	2.0	-13.4	-37.8	103.9	-.1

TIME (S)	ENGIN BLOCK TOP	BOTTOM	DISK BRAKE CALIPERS RIGHT	LEFT	INSTRUMENT PANEL
	ACCELERATION-(G'S)				
.360	3.9	-24.7	-88.7	-59.5	.4
.370	.3	-28.8	-27.7	12.7	-6.9
.380	-2.2	-27.8	-35.9	-10.1	5.7
.390	-1.4	35.2	-25.2	-.8	1.0
.400	1.8	35.1	-18.7	1.8	-2.3
.410	2.0	-28.9	-7.2	1.9	-1.7
.420	-.4	-29.4	-11.6	-.7	-.9
.430	1.2	-30.8	-18.1	.0	-.8
.440	2.0	-28.4	-41.7	.2	.2
.450	-2.2	-29.2	-20.0	.1	.1
.460	-2.3	-29.7	-11.1	.1	1.9
.470	1.8	-29.5	-6.5	19.2	-.2
.480	3.1	-29.5	-7.4	.3	-.4
.490	.3	-29.8	-3.6	.2	.4
.500	.1	-29.4	-5.6	.3	-.1
.510	1.5	-28.5	-3.2	.3	-1.8
.520	.5	-29.7	2.9	2.5	-2.9
.530	-2.3	-27.8	8.1	1.2	2.0
.540	-1.6	-28.4	2.1	1.2	.3
.550	1.0	-30.1	4.2	.9	1.3
.560	1.7	-2.3	4.6	.7	-3.5
.570	.1	35.3	10.5	.6	-151.7
.580	1.5	35.3	1.8	.6	-151.7
.590	3.2	35.3	-.9	.9	-151.7
.600	-2.3	-28.0	.5	1.0	-151.7
.610	-5.2	-28.1	8.1	1.1	1.4
.620	-.3	-30.4	5.3	1.1	3.9
.630	3.4	-30.4	.7	1.0	-1.4
.640	1.2	-30.6	-6.3	1.1	-.8
.650	-.8	-28.9	-4.9	1.2	2.4
.660	.9	-28.4	-6.0	1.0	-1.5
.670	.8	-28.3	-6.1	.9	.0
.680	-1.3	-28.8	-2.1	.8	-.1
.690	.6	-28.3	-6.4	9.0	1.1
.700	2.6	35.3	-.9	2.4	-2.1
.710	-2.5	35.3	-1.1	.5	-1.4
.720	-.8	35.3	4.1	.7	.1
.730	3.4	35.3	5.6	.7	.0
.740	1.2	35.3	10.2	.7	-1.5
.750	-.8	35.3	1.9	.8	-2.9
.760	1.9	-1.9	-.2	.8	-1.9
.770	-.4	-27.7	-4.8	.8	-1.1
.780	-.9	-28.3	-5.9	.8	-.6
.790	.4	-27.4	-7.3	.8	-.9
.800	.5	-28.8	-.5	.8	-1.9

TIME (S)	ACCELERATION-(G'S) ENGIN BLOCK TOP	BOTTOM	DISK BRAKE CALIPERS RIGHT	LEFT	INSTRUMENT PANEL
.810	.1	-29.5	-10.9	.7	-1.0
.820	-.5	-28.8	-1.1	.5	-.8
.830	-.9	-29.0	-.5	.3	.2
.840	-.3	-28.7	.7	.5	.3
.850	-1.1	-28.7	-3.2	.5	-.5
.860	-1.4	-28.9	-5.0	.2	-.2
.870	-.7	-29.6	-3.5	.2	2.0
.880	.0	-28.4	-3.3	-.3	.9
.890	.2	5.5	-1.3	-1.0	.1
.900	.6	35.3	-6.6	-.6	1.5
.910	1.2	35.3	-7.2	-4.3	1.6
.920	.6	35.3	1.6	-9.3	.6
.930	1.2	35.3	5.5	-4.4	1.0
.940	-.4	35.3	.1	-.5	1.9
.950	-2.4	35.3	2.5	.1	1.1
.960	-.9	35.3	-.5	-.2	.7
.970	1.4	35.3	1.9	.1	.6
.980	.1	35.3	-5.5	.2	-.6
.990	-1.4	35.3	-.5	.3	1.1

TEST ID ------- NETC-3D
TEST DATE ----- 12-18-97
VEHICLE CLASS - OTHER
IMPACT SPEED -- 22.23 M/S

	ACCELERATION-(G'S)				
			DISK BRAKE		
TIME	ENGIN BLOCK		CALIPERS-REAR		INSTRUMENT
(S)	TOP	BOTTOM	RIGHT	LEFT	PANEL
.000	-.4	-27.8	-.7	1.3	.3
.010	.1	-28.3	.1	.9	.0
.020	-.4	-28.0	.6	.3	.3
.030	.0	-29.2	.1	-.2	.1
.040	.0	-29.5	.5	.5	.1
.050	.5	-30.3	.0	.6	-1.6
.060	.6	-27.1	-.3	.6	-1.0
.070	2.9	32.6	.5	.3	-.9
.080	.3	35.2	.4	.9	-1.4
.090	-2.0	35.3	.1	-.6	-1.9
.100	-1.3	35.3	-.2	.9	1.0
.110	3.7	35.3	-.4	.8	1.2
.120	.4	-24.7	-.2	1.4	-1.9
.130	-3.8	-27.8	.7	-.3	-4.2
.140	.4	-28.5	.5	-.3	1.8
.150	.2	-28.5	-.1	-.1	.0
.160	-2.4	-30.0	-.7	-.1	4.4
.170	2.0	-29.7	.2	.5	8.8
.180	.8	-29.0	.2	.2	.4
.190	-2.6	-27.8	.5	1.6	-1.4
.200	.2	-28.6	.5	.0	-.9
.210	2.0	-26.4	-.5	-.1	-.2
.220	-.6	37.3	-.2	.0	-.6
.230	1.3	35.3	-.2	.0	-1.0
.240	1.2	35.3	.8	.2	-.8
.250	-1.3	35.3	-1.7	-4.4	.2
.260	1.5	35.3	-2.6	-5.4	.1
.270	1.8	35.3	-1.6	-7.8	-.5
.280	.2	35.3	-2.6	-3.6	-2.1
.290	2.5	35.3	-.4	9.5	.8
.300	-1.8	-12.9	3.1	13.8	1.0
.310	1.4	-34.1	1.9	6.7	-.2
.320	6.0	-9.3	5.6	-1.1	-3.5
.330	-.1	-24.5	-1.1	-9.7	1.7
.340	-3.8	23.5	-1.1	-5.1	-4.0
.350	2.0	-13.4	-4.3	4.3	-.1

	ACCELERATION-(G'S)				
			DISK BRAKE		
TIME	ENGIN BLOCK		CALIPERS-REAR		INSTRUMENT
(S)	TOP	BOTTOM	RIGHT	LEFT	PANEL
.360	3.9	-24.7	-2.7	5.4	.4
.370	.3	-28.8	.3	.1	-6.9
.380	-2.2	-27.8	.8	-3.5	5.7
.390	-1.4	35.2	2.1	1.1	1.0
.400	1.8	35.1	-.3	-1.5	-2.3
.410	2.0	-28.9	1.3	1.0	-1.7
.420	-.4	-29.4	-.4	3.3	-.9
.430	1.2	-30.8	-1.1	1.0	-.8
.440	2.0	-28.4	-.1	1.1	.2
.450	-2.2	-29.2	113.3	1.8	.1
.460	-2.3	-29.7	32.5	-3.0	1.9
.470	1.8	-29.5	113.3	-.2	-.2
.480	3.1	-29.5	113.3	-1.8	-.4
.490	.3	-29.8	113.3	-.6	.4
.500	.1	-29.4	113.3	-.6	-.1
.510	1.5	-28.5	113.3	-.5	-1.8
.520	.5	-29.7	113.3	1.2	-2.9
.530	-2.3	-27.8	113.3	.5	2.0
.540	-1.6	-28.4	113.3	-4.8	.3
.550	1.0	-30.1	113.3	-6.0	1.3
.560	1.7	-2.3	113.3	-16.0	-3.5
.570	.1	35.3	113.3	15.6	-151.7
.580	1.5	35.3	113.3	-6.0	-151.7
.590	3.2	35.3	113.3	7.4	-151.7
.600	-2.3	-28.0	113.3	9.6	-151.7
.610	-5.2	-28.1	113.3	2.2	1.4
.620	-.3	-30.4	113.3	7.9	3.9
.630	3.4	-30.4	113.3	4.7	-1.4
.640	1.2	-30.6	113.3	-1.4	-.8
.650	-.8	-28.9	113.3	-6.8	2.4
.660	.9	-28.4	113.3	-11.2	-1.5
.670	.8	-28.3	113.3	-7.3	.0
.680	-1.3	-28.8	113.3	-5.7	-.1
.690	.6	-28.3	113.3	.8	1.1
.700	2.6	35.3	113.3	5.9	-2.1
.710	-2.5	35.3	113.3	3.6	-1.4
.720	-.8	35.3	113.3	-1.1	.1
.730	3.4	35.3	113.3	4.5	.0
.740	1.2	35.3	113.3	4.3	-1.5
.750	-.8	35.3	113.3	5.1	-2.9
.760	1.9	-1.9	113.3	4.3	-1.9
.770	-.4	-27.7	113.3	.9	-1.1
.780	-.9	-28.3	113.3	.3	-.6
.790	.4	-27.4	113.3	2.2	-.9
.800	.5	-28.8	113.3	1.8	-1.9

TIME (S)	ACCELERATION-(G'S) ENGIN BLOCK TOP	BOTTOM	DISK BRAKE CALIPERS-REAR RIGHT	LEFT	INSTRUMENT PANEL
.810	.1	-29.5	113.3	.7	-1.0
.820	-.5	-28.8	113.3	-4.4	-.8
.830	-.9	-29.0	113.3	-5.2	.2
.840	-.3	-28.7	113.3	-3.7	.3
.850	-1.1	-28.7	113.3	.5	-.5
.860	-1.4	-28.9	113.3	2.6	-.2
.870	-.7	-29.6	113.3	.2	2.0
.880	.0	-28.4	113.3	1.8	.9
.890	.2	5.5	113.3	1.0	.1
.900	.6	35.3	113.3	1.4	1.5
.910	1.2	35.3	113.3	1.9	1.6
.920	.6	35.3	113.3	2.3	.6
.930	1.2	35.3	113.3	.1	1.0
.940	-.4	35.3	113.3	1.6	1.9
.950	-2.4	35.3	113.3	1.4	1.1
.960	-.9	35.3	113.3	1.1	.7
.970	1.4	35.3	113.3	1.1	.6
.980	.1	35.3	113.3	-8.5	-.6
.990	-1.4	35.3	113.3	1.4	1.1

APPENDIX C - POST NO. 7 ACCELEROMETER DATA

ACCELEROMETER DATA - TEST NETC-3		
TIME (SEC)	POST 7 TOP ACCEL (G'S)	POST 7 BOTTOM ACCEL (G'S)
0.000	0.000	0.013
0.001	-0.052	-0.091
0.002	-0.091	-0.065
0.003	-0.104	-0.104
0.004	-0.078	-0.065
0.005	-0.065	-0.104
0.006	-0.078	-0.104
0.007	-0.065	-0.091
0.008	-0.052	-0.117
0.009	-0.078	-0.104
0.010	-0.065	-0.104
0.011	-0.065	-0.117
0.012	-0.091	-0.117
0.013	-0.078	-0.117
0.014	-0.091	-0.117
0.015	-0.078	-0.065
0.016	-0.052	-0.117
0.017	-0.078	-0.117
0.018	-0.065	-0.117
0.019	-0.052	-0.104
0.020	-0.078	-0.117
0.021	-0.091	-0.130
0.022	-0.078	-0.104
0.023	-0.065	-0.117
0.024	-0.078	-0.117
0.025	-0.104	-0.130
0.026	-0.078	-0.117
0.027	-0.078	-0.104
0.028	-0.078	-0.104
0.029	-0.065	-0.117
0.030	-0.065	-0.104
0.031	-0.091	-0.130
0.032	-0.104	-0.117
0.033	-0.104	-0.104
0.034	-0.065	-0.117
0.035	-0.091	-0.117
0.036	-0.104	-0.078
0.037	-0.026	-0.117
0.038	-0.065	-0.117
0.039	-0.078	-0.117
0.040	-0.026	-0.091
0.041	-0.052	-0.117
0.042	-0.052	-0.130

0.043	-0.091	-0.104
0.044	-0.078	-0.130
0.045	-0.091	-0.117
0.046	-0.078	-0.117
0.047	-0.104	-0.117
0.048	-0.078	-0.117
0.049	-0.065	-0.117
0.050	-0.078	-0.104
0.051	-0.065	-0.091
0.052	-0.078	-0.104
0.053	-0.065	-0.130
0.054	-0.078	-0.117
0.055	-0.078	-0.130
0.056	-0.104	-0.104
0.057	-0.091	-0.117
0.058	-0.130	-0.130
0.059	-0.091	-0.104
0.060	-0.091	-0.078
0.061	-0.091	-0.091
0.062	-0.078	-0.130
0.063	-0.078	-0.091
0.064	-0.026	-0.091
0.065	-0.078	-0.130
0.066	-0.065	-0.104
0.067	-0.065	-0.091
0.068	0.000	-0.104
0.069	-0.078	-0.091
0.070	-0.013	-0.104
0.071	-0.013	-0.117
0.072	-0.039	-0.065
0.073	-0.078	-0.117
0.074	-0.013	-0.091
0.075	-0.065	-0.117
0.076	-0.065	-0.117
0.077	-0.091	-0.091
0.078	-0.026	-0.130
0.079	-0.065	-0.078
0.080	-0.091	-0.104
0.081	0.000	-0.104
0.082	-0.052	-0.091
0.083	-0.091	-0.104
0.084	-0.065	-0.078
0.085	-0.065	-0.117
0.086	-0.065	-0.104
0.087	-0.052	-0.104
0.088	-0.078	-0.130
0.089	-0.104	-0.091
0.090	-0.104	-0.065
0.091	-0.117	-0.130
0.092	-0.117	-0.143
0.093	-0.104	-0.130

	0.094	-0.104	-0.117
	0.095	-0.117	-0.091
	0.096	-0.091	-0.078
	0.097	-0.065	-0.065
	0.098	-0.091	-0.130
	0.099	-0.078	-0.117
	0.100	-0.052	-0.104
	0.101	0.000	-0.104
	0.102	-0.065	-0.091
	0.103	-0.013	-0.091
	0.104	0.013	-0.091
	0.105	-0.026	-0.104
	0.106	-0.026	-0.104
	0.107	-0.013	-0.065
	0.108	-0.039	-0.104
	0.109	-0.078	-0.117
	0.110	-0.078	-0.117
	0.111	-0.104	-0.104
	0.112	-0.104	-0.117
	0.113	-0.091	-0.130
	0.114	-0.117	-0.117
	0.115	-0.117	-0.143
	0.116	-0.130	-0.130
	0.117	-0.117	-0.143
	0.118	-0.104	-0.117
	0.119	-0.091	-0.078
	0.120	-0.130	-0.117
	0.121	-0.104	-0.130
	0.122	-0.091	-0.078
	0.123	-0.039	-0.117
	0.124	-0.078	-0.117
	0.125	-0.013	-0.104
	0.126	-0.039	-0.104
	0.127	-0.039	-0.091
	0.128	-0.013	-0.104
	0.129	-0.026	-0.091
	0.130	-0.026	-0.091
	0.131	-0.026	-0.104
	0.132	-0.039	-0.091
	0.133	-0.065	-0.104
	0.134	-0.078	-0.104
	0.135	-0.078	-0.143
	0.136	-0.065	-0.117
	0.137	-0.104	-0.117
	0.138	-0.078	-0.117
	0.139	-0.104	-0.130
	0.140	-0.117	-0.130
	0.141	-0.078	-0.117
	0.142	-0.078	-0.130
	0.143	-0.117	-0.117
	0.144	-0.065	-0.091

0.145	-0.052	-0.130
0.146	-0.104	-0.117
0.147	-0.078	-0.104
0.148	-0.091	-0.117
0.149	-0.078	-0.104
0.150	-0.052	-0.104
0.151	-0.052	-0.130
0.152	-0.065	-0.130
0.153	-0.065	-0.104
0.154	-0.091	-0.117
0.155	-0.104	-0.130
0.156	-0.091	-0.078
0.157	-0.117	-0.117
0.158	-0.091	-0.104
0.159	-0.065	-0.104
0.160	-0.026	-0.104
0.161	-0.052	-0.117
0.162	-0.052	-0.104
0.163	-0.026	-0.091
0.164	-0.039	-0.104
0.165	-0.026	-0.091
0.166	-0.039	-0.091
0.167	-0.039	-0.104
0.168	-0.026	-0.117
0.169	-0.078	-0.117
0.170	-0.078	-0.104
0.171	-0.091	-0.117
0.172	-0.104	-0.130
0.173	-0.130	-0.130
0.174	-0.091	-0.130
0.175	-0.117	-0.156
0.176	-0.143	-0.104
0.177	-0.130	-0.130
0.178	-0.104	-0.117
0.179	-0.104	-0.130
0.180	-0.104	-0.091
0.181	-0.078	-0.117
0.182	-0.013	-0.117
0.183	-0.039	-0.091
0.184	-0.052	-0.091
0.185	-0.013	-0.052
0.186	-0.013	-0.065
0.187	-0.013	-0.091
0.188	-0.259	-0.259
0.189	-0.583	-0.233
0.190	-0.130	0.052
0.191	0.868	0.492
0.192	1.983	0.790
0.193	2.397	0.726
0.194	1.749	0.544
0.195	0.700	0.324

	0.196	0.104	0.039
	0.197	0.091	-0.441
	0.198	-1.646	-1.089
	0.199	-1.361	0.168
	0.200	1.866	3.628
	0.201	8.073	4.574
	0.202	11.844	5.287
	0.203	13.412	3.214
	0.204	9.447	1.736
	0.205	3.745	0.376
	0.206	-1.011	-0.531
	0.207	-3.551	-1.490
	0.208	-5.209	-1.762
	0.209	-4.898	-3.084
	0.210	-5.572	-3.499
	0.211	-6.155	-2.708
	0.212	-7.931	-3.473
	0.213	-11.274	-4.147
	0.214	-13.554	-4.950
	0.215	-9.654	-2.864
	0.216	-4.315	-2.047
	0.217	-3.097	-2.242
	0.218	-6.881	-3.356
	0.219	-6.687	-2.410
	0.220	-4.224	-0.220
	0.221	2.320	2.773
	0.222	10.056	5.080
	0.223	14.941	5.067
	0.224	14.552	3.797
	0.225	10.561	3.823
	0.226	8.371	3.058
	0.227	3.564	2.397
	0.228	1.464	1.244
	0.229	0.881	0.596
	0.230	1.736	-0.583
	0.231	0.324	-0.479
	0.232	-2.916	-0.933
	0.233	-5.455	-1.166
	0.234	-6.518	-2.034
	0.235	-3.706	-0.311
	0.236	2.682	1.568
	0.237	4.341	1.555
	0.238	3.058	1.218
	0.239	4.108	2.656
	0.240	-4.743	0.402
	0.241	-26.539	-0.985
	0.242	-26.539	-1.814
	0.243	-26.539	-3.719
	0.244	-26.539	-5.870
	0.245	-26.539	-4.885
	0.246	-26.539	-1.451

0.247	-26.539	8.008
0.248	-26.539	6.000
0.249	-26.539	1.853
0.250	-26.539	-5.443
0.251	-26.539	-7.049
0.252	-26.539	-8.358
0.253	-26.539	-6.648
0.254	-26.539	-2.294
0.255	-26.539	1.361
0.256	-26.539	0.130
0.257	-26.539	-3.810
0.258	-26.539	1.490
0.259	-26.539	5.157
0.260	-26.539	4.095
0.261	-26.539	2.307
0.262	-26.539	2.203
0.263	-26.539	-0.324
0.264	-26.539	-0.091
0.265	-26.539	-2.073
0.266	-26.539	-1.192
0.267	-26.539	2.475
0.268	-26.539	5.935
0.269	-26.539	6.376
0.270	-26.539	0.389
0.271	-26.539	0.194
0.272	-26.539	1.762
0.273	-26.539	-0.544
0.274	-26.539	-2.773
0.275	-26.539	-4.652
0.276	-26.539	-4.548
0.277	-26.539	-3.123
0.278	-26.539	-1.620
0.279	-26.539	-2.812
0.280	-26.539	-2.358
0.281	-26.539	-0.272
0.282	-26.539	-2.462
0.283	-26.539	-3.888
0.284	-26.539	-1.646
0.285	-26.539	0.635
0.286	-26.539	0.376
0.287	-26.539	2.384
0.288	-26.539	3.136
0.289	-26.539	2.488
0.290	-26.539	2.177
0.291	-26.539	2.086
0.292	-26.539	2.993
0.293	-26.539	2.877
0.294	-26.539	0.272
0.295	-26.539	-2.799
0.296	-26.539	-2.540
0.297	-26.539	-2.242

	0.298	-26.539	-1.801
	0.299	-26.539	-2.358
	0.300	-26.539	-3.784
	0.301	-26.539	-3.214
	0.302	-26.539	-1.996
	0.303	-26.539	-1.374
	0.304	-26.539	-1.296
	0.305	-26.539	-0.272
	0.306	-26.539	3.123
	0.307	-26.539	3.227
	0.308	-26.539	2.644
	0.309	-26.539	1.672
	0.310	-26.539	-0.583
	0.311	-26.539	0.207
	0.312	-26.539	0.920
	0.313	-26.539	1.866
	0.314	-26.539	1.905
	0.315	-26.539	3.369
	0.316	-26.539	2.527
	0.317	-26.539	0.596
	0.318	-26.539	-1.866
	0.319	-26.539	-2.592
	0.320	-26.539	-2.760
	0.321	-26.539	-1.101
	0.322	-26.539	-0.803
	0.323	-26.539	-0.168
	0.324	-26.539	0.674
	0.325	-26.539	0.609
	0.326	-26.539	0.479
	0.327	-26.539	1.037
	0.328	-26.539	0.726
	0.329	-26.539	-0.052
	0.330	-26.539	-1.983
	0.331	-26.539	-2.799
	0.332	-26.539	-2.967
	0.333	-26.539	-1.762
	0.334	-26.539	-1.412
	0.335	-26.539	-1.568
	0.336	-26.539	-1.050
	0.337	-26.539	-0.415
	0.338	-26.539	0.000
	0.339	-26.539	0.130
	0.340	-26.539	0.298
	0.341	-26.539	0.181
	0.342	-26.539	0.220
	0.343	-26.539	0.687
	0.344	-26.539	0.959
	0.345	-26.539	0.441
	0.346	-26.539	0.246
	0.347	-26.539	0.052
	0.348	-26.539	0.544

0.349	-26.539	1.542
0.350	-26.539	1.879
0.351	-26.539	0.985
0.352	-26.539	-0.130
0.353	-26.539	-1.063
0.354	-26.539	-1.827
0.355	-26.539	-1.879
0.356	-26.539	-1.140
0.357	-26.539	-0.078
0.358	-26.539	1.231
0.359	-26.539	1.542
0.360	-26.539	1.179
0.361	-26.539	0.363
0.362	-26.539	-0.156
0.363	-26.539	-0.557
0.364	-26.539	-0.933
0.365	-26.539	-1.140
0.366	-26.539	-1.063
0.367	-26.539	-0.622
0.368	-26.539	0.104
0.369	-26.539	0.635
0.370	-26.539	0.428
0.371	-26.539	0.402
0.372	-26.539	0.233
0.373	-26.539	-0.531
0.374	-26.539	-0.790
0.375	-26.539	-0.583
0.376	-26.539	-0.130
0.377	-26.539	-0.013
0.378	-26.539	-0.091
0.379	-26.539	0.091
0.380	-26.539	0.207
0.381	-26.539	0.181
0.382	-26.539	-0.259
0.383	-26.539	-0.557
0.384	-26.539	-0.013
0.385	-26.539	0.790
0.386	-26.539	0.920
0.387	-26.539	0.143
0.388	-26.539	-0.389
0.389	-26.539	1.711
0.390	-26.539	6.194
0.391	-26.539	5.222
0.392	-26.539	4.406
0.393	-26.539	3.719
0.394	-26.539	6.414
0.395	-26.539	6.868
0.396	-26.539	3.136
0.397	-26.539	-1.387
0.398	-26.539	-4.782
0.399	-26.539	-4.367

0.400	-26.539	-3.473
0.401	-26.539	-3.551
0.402	-26.539	-3.201
0.403	-26.539	-3.136
0.404	-26.539	-3.304
0.405	-26.539	-4.250
0.406	-26.539	-4.963
0.407	-26.539	-4.315
0.408	-26.539	-4.561
0.409	-26.539	-3.732
0.410	-26.539	-1.801
0.411	-26.539	-0.894
0.412	-26.539	-2.320
0.413	-26.539	-3.201
0.414	-26.539	-3.667
0.415	-26.539	-4.535
0.416	-26.539	-1.425
0.417	-26.539	3.214
0.418	-26.539	4.315
0.419	-26.539	4.678
0.420	-26.539	4.082
0.421	-26.539	3.615
0.422	-26.539	2.410
0.423	-26.539	3.097
0.424	-26.539	4.989
0.425	-26.539	4.250
0.426	-26.539	0.778
0.427	-26.539	-0.829
0.428	-26.539	-3.343
0.429	-26.539	-4.432
0.430	-26.539	-5.378
0.431	-26.539	-5.054
0.432	-26.539	-4.652
0.433	-26.539	-3.291
0.434	-26.539	-2.086
0.435	-26.539	-1.749
0.436	-26.539	-0.220
0.437	-26.539	0.363
0.438	-26.539	1.542
0.439	-26.539	2.501
0.440	-26.539	2.864
0.441	-26.539	0.687
0.442	-26.539	0.130
0.443	-26.539	-0.285
0.444	-26.539	0.700
0.445	-26.539	3.952
0.446	-26.539	2.929
0.447	-26.539	1.400
0.448	-26.539	1.646
0.449	-26.539	0.544
0.450	-26.539	0.492

	0.451	-26.539	0.052
	0.452	-26.539	0.726
	0.453	-26.539	0.389
	0.454	-26.539	0.467
	0.455	-26.539	1.244
	0.456	-26.539	1.464
	0.457	-26.539	2.618
	0.458	-26.539	2.022
	0.459	-26.539	1.762
	0.460	-26.539	0.739
	0.461	-26.539	-0.078
	0.462	-26.539	-1.723
	0.463	-26.539	-4.121
	0.464	-26.539	-5.624
	0.465	-26.539	-5.248
	0.466	-26.539	-4.173
	0.467	-26.539	-3.084
	0.468	-26.539	-2.022
	0.469	-26.539	-0.013
	0.470	-26.539	1.179
	0.471	-26.539	1.400
	0.472	-26.539	1.529
	0.473	-26.539	1.451
	0.474	-26.539	1.374
	0.475	-26.539	1.205
	0.476	-26.539	1.516
	0.477	-26.539	0.596
	0.478	-26.539	0.428
	0.479	-26.539	0.596
	0.480	-26.539	0.557
	0.481	-26.539	0.065
	0.482	-26.539	-0.454
	0.483	-26.539	-1.711
	0.484	-26.539	-2.631
	0.485	-26.539	-1.957
	0.486	-26.539	-0.946
	0.487	-26.539	0.156
	0.488	-26.539	0.687
	0.489	-26.539	0.609
	0.490	-26.539	0.596
	0.491	-26.539	-0.285
	0.492	-26.539	0.143
	0.493	-26.539	-0.298
	0.494	-26.539	-0.194
	0.495	-26.539	-0.246
	0.496	-26.539	-1.037
	0.497	-26.539	-1.089
	0.498	-26.539	-1.192
	0.499	-26.539	0.246
	0.500	-26.539	0.479
	0.501	-26.539	1.179

0.502	-26.539	1.244
0.503	-26.539	-4.276
0.504	-26.539	-4.924
0.505	-26.539	-5.002
0.506	-26.539	-3.278
0.507	-26.539	-2.825
0.508	-26.539	-1.270
0.509	-26.539	-1.464
0.510	-26.539	-0.998
0.511	-26.539	-1.076
0.512	-26.539	0.052
0.513	-26.539	0.492
0.514	-26.539	1.931
0.515	-26.539	1.957
0.516	-26.539	1.646
0.517	-26.539	0.363
0.518	-26.539	0.609
0.519	-26.539	-0.091
0.520	-26.539	0.013
0.521	-26.539	-0.194
0.522	-26.539	0.207
0.523	-26.539	1.335
0.524	-26.539	1.879
0.525	-26.539	0.687
0.526	-26.539	1.192
0.527	-26.539	0.518
0.528	-26.539	0.402
0.529	-26.539	1.516
0.530	-26.539	1.490
0.531	-26.539	1.827
0.532	-26.539	2.125
0.533	-26.539	1.736
0.534	-26.539	0.778
0.535	-26.539	0.998
0.536	-26.539	1.101
0.537	-26.539	0.311
0.538	-26.539	-0.078
0.539	-26.539	-0.285
0.540	-26.539	-1.283
0.541	-26.539	-1.231
0.542	-26.539	-0.868
0.543	-26.539	-0.324
0.544	-26.539	0.376
0.545	-26.539	0.790
0.546	-26.539	1.490
0.547	-26.539	1.011
0.548	-26.539	1.063
0.549	-26.539	-0.428
0.550	-26.539	-0.881
0.551	-26.539	-0.674
0.552	-26.539	-0.583

	0.553	-26.539	-0.026
	0.554	-26.539	-1.153
	0.555	-26.539	-1.322
	0.556	-26.539	-1.853
	0.557	-26.539	-2.060
	0.558	-26.539	-2.333
	0.559	-26.539	-2.086
	0.560	-26.539	-1.827
	0.561	-26.539	-1.516
	0.562	-26.539	-1.490
	0.563	-26.539	-1.050
	0.564	-26.539	-1.089
	0.565	-26.539	-0.311
	0.566	-26.539	-0.181
	0.567	-26.539	-0.013
	0.568	-26.539	-0.220
	0.569	-26.539	0.000
	0.570	-26.539	0.000
	0.571	-26.539	0.026
	0.572	-26.539	0.078
	0.573	-26.539	0.363
	0.574	-26.539	0.596
	0.575	-26.539	0.894
	0.576	-26.539	0.531
	0.577	-26.539	-0.143
	0.578	-26.539	-0.622
	0.579	-26.539	-0.985
	0.580	-26.539	-0.661
	0.581	-26.539	-0.181
	0.582	-26.539	0.220
	0.583	-26.539	0.505
	0.584	-26.539	0.531
	0.585	-26.539	0.674
	0.586	-26.539	0.635
	0.587	-26.539	0.855
	0.588	-26.539	1.063
	0.589	-26.539	1.283
	0.590	-26.539	1.412
	0.591	-26.539	1.127
	0.592	-26.539	0.648
	0.593	-26.539	0.207
	0.594	-26.539	0.156
	0.595	-26.539	0.117
	0.596	-26.539	-0.052
	0.597	-26.539	-0.194
	0.598	-26.539	-0.531
	0.599	-26.539	-0.946
	0.600	-26.539	-1.089