SAFETY ASSESSMENT OF SEVERAL TRAFFIC CHANNELIZING DEVICES

VOLUME II – RESEARCH RESULTS

JUNE 1983

FINAL REPORT

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Prepared For

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
400 Seventh Street, S.W.
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16. ABSTRACT

Five channelizing devices were evaluated for safety via full scale crash tests at 60 mph using a minicompact sedan, a Volkswagen Rabbit. The five channelizing devices tested were the Plastibarrel 400-PB, the Channelizer, 55 gallon drums, the Wyoming WC-4 Barricade and the Virginia Simulated Barrel Panel. All impacts were surviveable by the vehicle occupants. Impact accelerations, occupant velocity, and occupant displacement data and plots of the vehicle accelerations for each device tested are included. Windshield impacts were also performed using a warning light. The light opened a hole in the test windshield but did not pass through at speeds between 40 mph and 60 mph.

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Dept./Agency	Phone # 366-2175
Fax # 624-5806	Fax # 366-2249

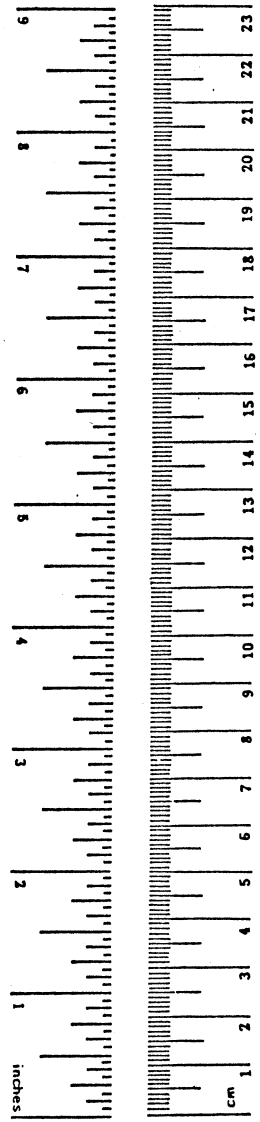
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METRIC CONVERSION FACTORS

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	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	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	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



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	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
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	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

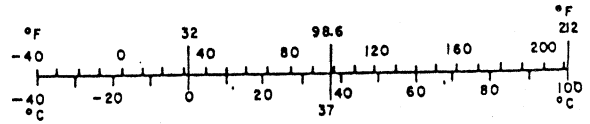


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INTRODUCTION

Mobility Systems and Equipment Company (MSE) conducted a project entitled "Safety Assessment of Several Traffic Channelizing Devices" for the Department of Transportation, Federal Highway Administration under Contract No. DTFH61-80-C-00074 from July 1981 through March 1983.

The project was sub-divided into the following tasks:

Task A - Review of Prior Research

Task B - Calculation and/or Measurement of Selected Parameters

Task C - Full Scale Crash Testing

This report presents the work performed and the results for each task.

SECTION 1

TASK A

Review of prior research information was collected from Data Centers, Testing Organizations, Libraries, Equipment Manufacturers, Designers, and State Highway Departments regarding the designs and uses of traffic channelizing devices.

1.1 DATA SEARCH

Five specific devices were identified as equipment to be considered within the scope of the project. The identified devices and the manufacturer or designer are listed below.

The Plastibarrel, Catalog No. 400PB, a plastic barrel surrogate manufactured by Best Barricade of Itasca, Illinois.

The Channelizer, a plastic barrel surrogate manufactured by Signal Division of Lear Siegler Inc., Los Angeles, California.

Metal drums of 55 gallon capacity having approximately a 22 inch diameter and 34 inch height.

The Wyoming Highway Department Standard WC-4 Barricade designed by the Wyoming Highway Department, Cheyenne, Wyoming and Manufactured by J & S Contractor's Supply, Denver, Colorado.

The Virginia Department of Highways simulated barrel panel. Richmond, Virginia.

1.2 INFORMATION SOURCES

Additional inquiries were made of Data Centers, Testing Organizations and Libraries. These include:

Texas Transportation Institute (TTI)
SRI International (Formerly Stanford Research Institute)
National Technical Information Service (NTIS)
Transportation Research Board (TRB)
National Cooperative Highway Research Program (NCHRP)
National Research Council (NRC)
Society of Automotive Engineers (SAE)
National Transportation Safety Board (NTSB)
Federal Highway Administration (FHWA)
American Association of State Highway and Transportation Officials (AASHTO)
Los Angeles Central Technical Library
MSE Library

The information gathered includes sales literature of commercial units, and construction drawings of State Highway Designs. A summary of this information is presented in Table 1.

1.2.1 STATE HIGHWAY DEPARTMENTS INFORMATION

All Continental U.S. State Highway Departments were contacted for information regarding the ballasting, placement and support including road surface and soil conditions. Most State Highway Departments had limited or no use of many of the specific items identified for this project.

TABLE 1 – INFORMATION SEARCH SUMMARY CHART

DEVICES	STATE HIGHWAYS DEPARTMENTS USING DEVICES	USES	METHODS FOR PLACEMENT & BALLASTING	SAFETY TEST OR RESEARCH DATA	DEVELOPERS	WEAKNESSES	STRONG POINTS
"PLASTI BARREL" CATALOG NO: 400–PB MANUFACTURED BY BEST BARRICADES	DELAWARE ILLINOIS UTAH MINNESOTA OHIO TEXAS (AUSTIN)	WARN TRAFFIC CHANNELIZING FUNCTION (LOW VOLUME TRAFFIC AREAS)	SECURED WITH SAND BAGS PLACED INSIDE	NOT AVAILABLE	PLASTIC BARREL SURROGATES OF SIMILAR DESIGN BAR–L–CADE MFG BY FLEX–O–LITE FITCH SAFETY MARKER MFG BY FIBCO CO. FLEX DRUM & DURA LAST SAFETY MARKER MFG BY NVF CO. TUFF BOY BARREL & FLASHER CONE MFG BY TODD ENTERPRISES & INC.	NARROW BASES DO NOT PROVIDE SUFFICIENT STABILITY TRAPS WATER WHICH FREEZES	EASY HANDLING AND STORAGE (CAN BE NESTED) EXCELLENT TARGET VALUE
"THE CHANNELIZER" MANUFACTURED BY ROYAL INDUSTRIES DIVISION OF LEAR SIEGLER INC.	NEW JERSEY KANSAS OHIO LOUISIANA MISSISSIPPI NEW MEXICO OKLAHOMA NEW HAMPSHIRE ARKANSAS MARYLAND	CHANNELIZING FUNCTION IN CONSTRUCTION ZONES	SAND BAGS ON THE BASE PIECE	COMPARISON WITH STEEL REFLECTORIZED DRUM (MISSOURI) INFORMAL TEST NO RESULTS AVAILABLE		NO SIGNIFICANT WEAKNESSES	WITHSTANDS NUMEROUS HITS HIGHLY RELIABLE AND DURABLE EXCELLENT TARGET VALUE
METAL DRUM 55 GALLON CAPACITY	TENN, MAINE, CONN, DEL, ILL, IND, KAN, UTAH, MINN, LA, ARK, W. VIR, N. DAK, VT, PA, OKL, SO. CAR, NO. CAR, MASS, TX (AU), MISS	CHANNELIZING FUNCTION IN CONSTRUCTION & MAINTENANCE AREAS WARN TRAFFIC MOUNT SIGNS	NO PLACEMENT ADJACENT TO WORKMEN & BETWEEN OPPOSING TRAFFIC BALAST WITH WATER OR LOOSE SAND (UP TO 1/3 BARREL)	COMPARISON WITH THE CHANNELIZER (MISSOURI) INFORMAL TEST NO RESULTS AVAILABLE	UNKNOWN	DIRECT HITS CAUSE UNUSABILITY BECOME PROJECTILES HANDLING & STORAGE ROLLING HAZARDS	LOW COST READILY AVAILABLE SATISFACTORY RESULTS EXCELLENT TARGET VALUE NOT PRONE TO INTENTIONAL HITS
WC–4 BARRICADE THE WYOMING HIGHWAY DEPARTMENT	WYOMING SOUTH CAROLINA	CONSTRUCTION & MAINTENANCE AREA MOUNT SIGNS	SAND BAGS ON THE BASE (IF NECESSARY)	NOT AVAILABLE	WYOMING HIGHWAY DEPARTMENT	DIFFICULT TO TRANSPORT	PROVEN SUCCESSFUL NOT PRONE TO INTENTIONAL HITS
"SIMULATED BARREL PANEL" THE VIRGINIA HIGHWAY DEPARTMENT	VIRGINIA	CHANNELIZING FUNCTION & WARN TRAFFIC	CAN BE PLACED BETWEEN TWO–WAY TRAFFIC SOMETIMES BALLASTED WITH SAND BAGS	NOT AVAILABLE	VIRGINIA HIGHWAY DEPARTMENT	LIGHTING DEVICES SHOULD NOT BE USED DUE TO INSTABILITY	GOOD TARGET VALUE LIGHTWEIGHT PORTABLE

1.3 TESTING

No State Highway Department had formally tested the channelizing devices nor has any in-service performance data been collected.

No testing organizations contacted had performed formal testing of any of the channelizing devices which had been identified and located in the market place.

1.4 OTHER DEVICES

Several Devices were found which were similar in design. These include:

- Bar-L-Cade manufactured by The Kelch Corporation, Cedarburg, Wisconsin
- Flex-Drum manufactured by NVF Company Container Division
- Duralast Safety Marker manufactured by NVF Company Container Division, Kennett Square, Pennsylvania
- Plastic Construction Barriers manufactured by Flex-O-Lite Division General Steel Industry, St. Louis, Missouri
- Fitch Safety Marker manufactured by Fibco Incorporated, Boston, Massachusettes
- Tuff Boy Barrels manufactured by Todd Enterprises Incorporated, Cranston, Rhode Island
- Traffic Cone manufactured by Signal Division Lear Siegler, Los Angeles, California

Devices such as the standard Type I and Type II barricades are used in various states. South Carolina State Highway Department also uses a Type III Breakaway Barricade made from 3 in PVC pipe loosely assembled and tensioned with springs to keep it upright.

1.5 DEVICES OF QUESTIONABLE DESIGN

The Fitch Safety Marker is singled out of the group of similar polyethylene barrels because the recommended specified location and type of ballast may create a safety problem. The ballast is sand or sand bags to be placed in an 8 in deep bin molded in the top of the 36 in high "Safety Marker". A sand bag could become a projectile especially dangerous at this height. The FHWA Project Manager was advised of the potential safety hazzard of this device. Readers should be alert to this condition of the potential safety hazzard of this device.

Also, traffic channelizing devices with open tops invite filling with materials and debris from the work site. Should such filled devices be impacted by a vehicle, potentially dangerous flying debris can result.

SECTION 2

TASK B CALCULATIONS AND/OR MEASUREMENTS OF SELECTED PARAMETERS

Selected channelizing devices were purchased and/or assembled. Calculations and measurements necessary to determine the following were performed:

- Weight
- Center of Gravity
- Attachment Strength of the Mounting for the Warning Light System
- Degree of Penetration into the Vehicle Windshield caused by the Warning Light during Impact

Two of the selected devices were designs developed by State Highway Departments. Design drawings were obtained for the Wyoming Standard WC-4 Barricade and the Virginia Simulated Barrel Panel. Material was acquired and the devices were constructed.

Great care was taken to construct these channelizing devices according to the latest practice in use by the developers. This was done primarily by telephone during the material acquisition and construction of the device to verify changes of design from the drawings.

The Wyoming WC-4 Barricade is being constructed by a commercial vendor, J & S Contractor's Supply, located in Denver, Colorado. Discussions were had with the Supervisor of the manufacturing operation to identify the precise practices and hardware types used to construct the Barricade. A significant construction detail is the method of attachment of the 6x6 vertical posts with the 6x6 base sections. This is done using a 12 in x 6 in x 1/2 in piece of plywood nailed to the sides of the vertical posts and base.

2.1 WEIGHT

The weight was determined for each of the channelizing devices to be tested. This was done by weighing the device on MS calibrated balance beam scales which have an accuracy better than 0.1% (0.02% midscale). This weight was compared to the data already obtained from drawings or sales literature. Any difference is noted. The weights are presented in Table 2-1.

2.2 BALLASTING

The plastic barrel surrogates were ballasted with two 25 lb (11.3 kg) sandbags which is the size commonly used by the State Highway Departments.

The 55 gallon drum had the top removed and was ballasted with two 25 lb (11.3 kg) sandbags.

The Wyoming WC-4 Barricade was not ballasted as indicated by the design drawings.

The Virginia Simulated Barrel Panel did not receive additional ballast as the concrete base is designed to keep the device in place. However, ballasting (one 25 lb sandbag) is frequently used in the field.

The channelizing devices which have mounting provisions for a warning light had the light attached for the test weight determination. These are the Channelizer and the Plastibarrel model number 400PB. The 55 gallon drum had a light attached to the inside of the top edge. The Wyoming WC-4 Barricade had a light attached to the right end of the center panel. All devices were reweighed after ballasting for determination of test weight.

TABLE 2 CHANNELIZING DEVICE WEIGHT

DEVICE	WEIGHT – LBS (KILOGRAMS)				
	PUBLISHED	MEASURED	WARNING LIGHT	BALLAST	TEST
PLASTIBARREL 400 PB	NONE	9 (4.1)	4.5 (2.0)	2 SANDBAGS 50 (22.7)	63.5 (28.8)
THE CHANNELIZER	12 (5.4)	12.5 (5.7)	4.5 (2.0)	2 SANDBAGS 50 (22.7)	67 (30.4)
55 GALLON DRUM (1)	NONE	28 (12.7)	4.5 (2.0)	2 SANDBAGS 50 (22.7)	82.5 (37.4)
WYOMING WC-4	NONE	324.5 (147.2)	4.5 (2.0)	NOT USED	329 (149)
VIRGINIA SIMULATED BARREL PANEL	NONE	68.5 (31.1)	NOT USED	NOT USED	68.5 (31.1)

(1) Top Removed

2.3 CENTER OF GRAVITY

The center of gravity of each of the devices to be tested was determined with ballast and warning light (when used) in place. The Wyoming WC-4 Barricade, 55 gallon drum and Virginia Simulated Barrel Panel are of symmetrical design and the center of gravity was determined by calculation.

The plastic barrel surrogates had some assymetry and the center of gravity had to be determined by using a knife edge. The vertical and longitudinal location of the center of gravity was determined for the Channelizer and the vertical location of the center of gravity was determined for the Plastibarrel using this method.

The vertical center of gravity of all channelizing devices to be tested is presented in Table 3. The individual devices are illustrated in Figures 1 through 5. These illustrations present all axes for the c.g. of the device. For reference Figure 6 is included showing the test vehicle, a Volkswagen Rabbit sedan, c.g.

2.4 WARNING LIGHT

The warning light selected for use on the channelizing devices was selected on the criteria that it not be manufactured by the same manufacturer of the plastic barrel surrogates and that it be a standard available light. This would provide the same conditions for each device being tested and would be representative of field conditions. The light selected was a Rhodes and Maine model RM 55 and was purchased from a local vendor with batteries and mounting hardware. The light is pictured in Figure 7.

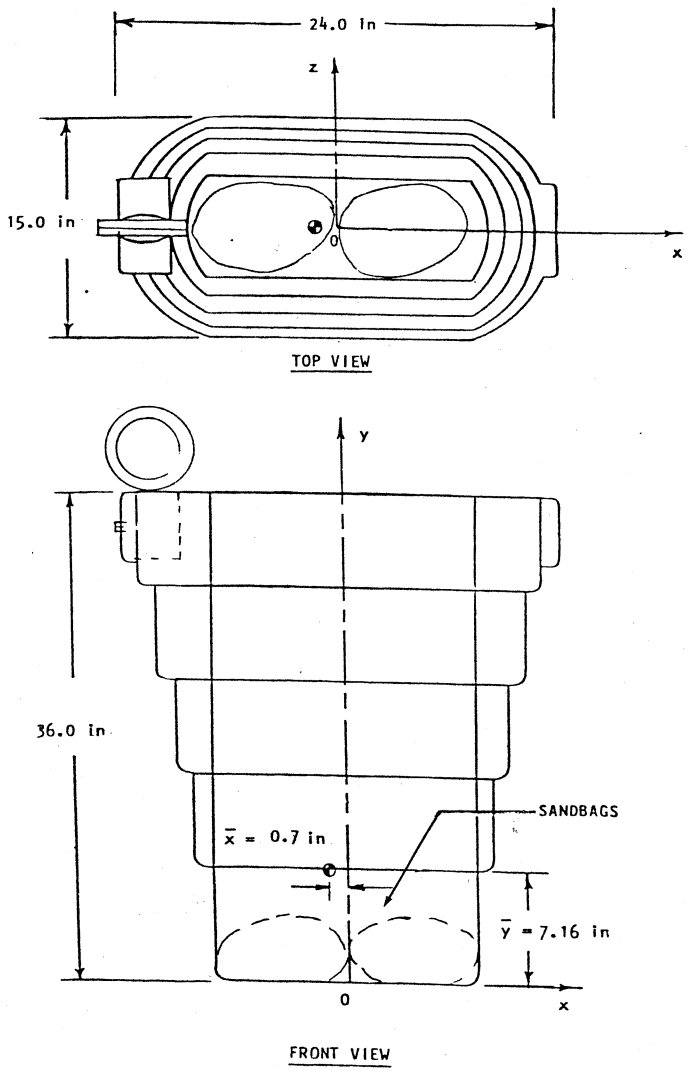
The warning light is a potential hazard which could become more severe should it separate from the channelizing device and become airborne. To assess this possibility pull tests were conducted on the light assembly.

TABLE 3 CHANNELIZING DEVICE VERTICAL CENTER OF GRAVITY (WITH BALLAST)

CHANNELIZING DEVICE	VERTICAL CENTER OF GRAVITY IN (CENTIMETERS)
PLASTIBARREL 400 PB	7.2 (18.3)
THE CHANNELIZER	8.6 (21.8)
55 GALLON DRUM	9.25 (23.5)
WYOMING WC-4	26.8 (68.1)
VIRGINIA SIMULATED BARREL PANEL	3.5 (8.9)

NOTES: 1) Vertical c.g. measured from ground level (mounting surface)

2) See Figures 1 through 5 for longitudinal and transverse location



NOT TO SCALE

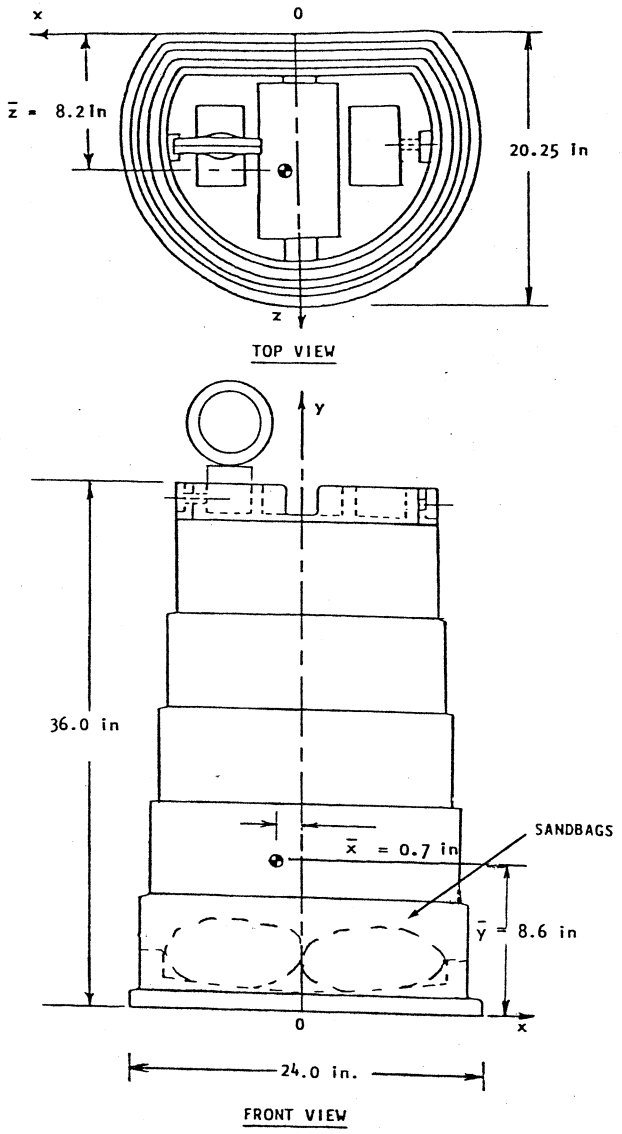
$\bar{y}$ = 7.16 in

$\bar{z}$ = 0.0 in

$\bar{x}$ = 0.7 in

Test Wt. = 63.5 lbs

FIGURE 1 PLASTIBARREL 400 PB



NOT TO SCALE

$\bar{y}$ = 8.6 in
$\bar{z}$ = 8.2 in
$\bar{x}$ = 0.7 in
Test Wt. = 67 lbs

FIGURE 2 THE CHANNELIZER

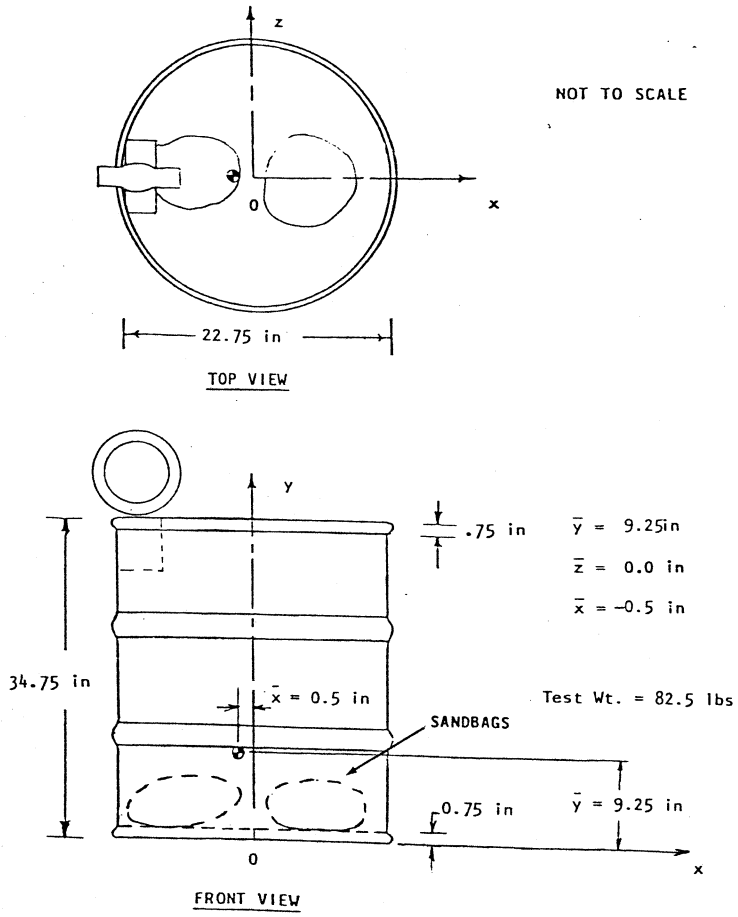


FIGURE 3 55 GALLON STANDARD METAL DRUM

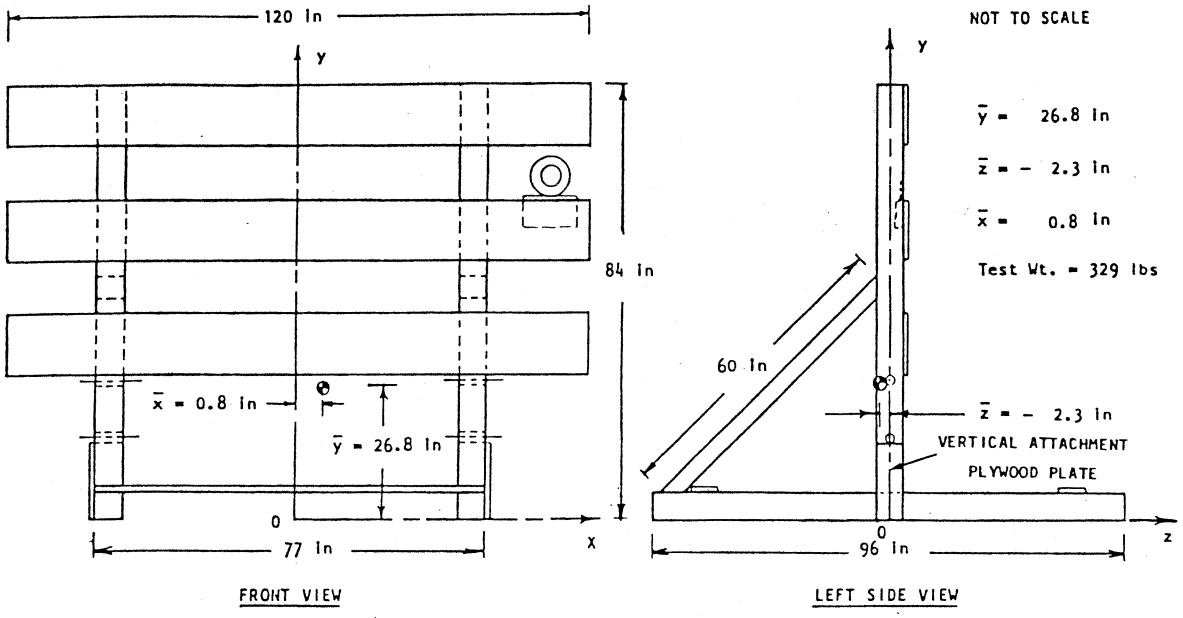


FIGURE 4 WYOMING WC-4 BARRICADE

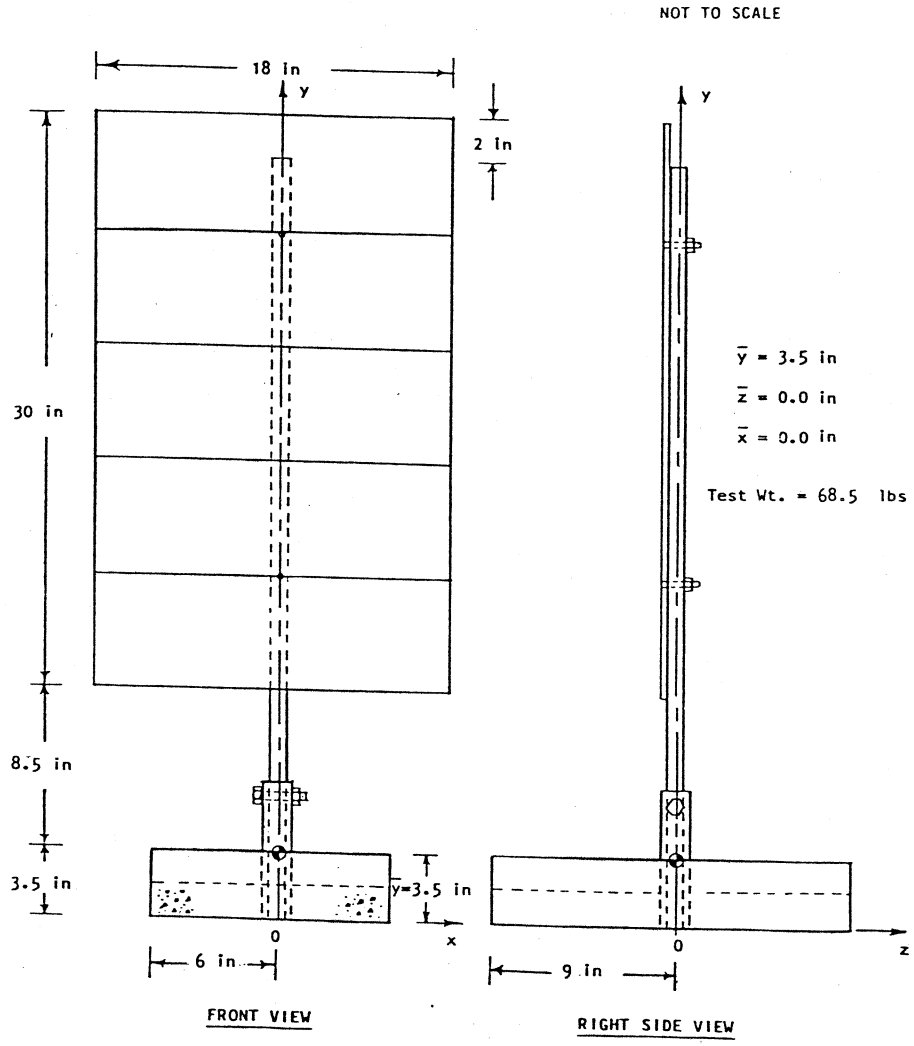
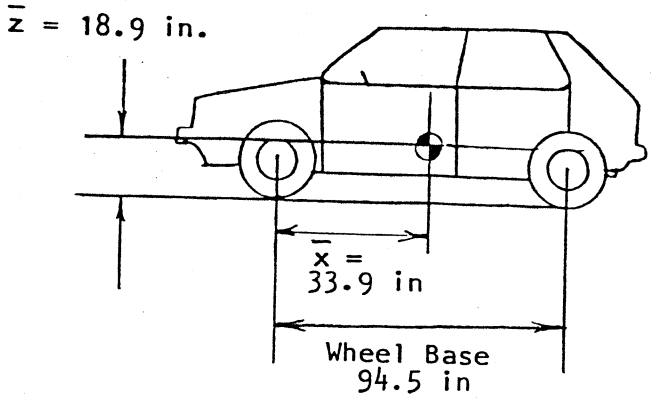
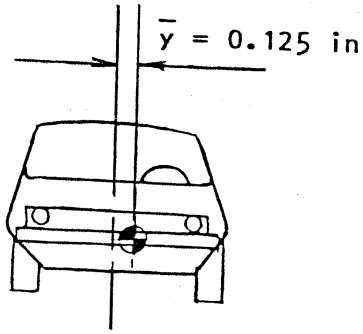


FIGURE 5 VIRGINIA SIMULATED BARREL PANEL





Test Inertial Weight(1)	1,819 lbs	(825 kg)
Gross Static Weight (1)	1,984 lbs	(900 kg)

(1) Vehicle weight nomenclature defined in NCHRP Report No. 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances".

FIGURE 6 TEST VEHICLE



FIGURE 7 WARNING LIGHT

2.4.1 WARNING LIGHT ATTACHMENT

The warning light was attached following the channelizing device and light manufacturers recommendations. The channelizing device was secured to a reaction structure. The mounting of the warning light was examined to determine load conditions which would most severely load the mounting area.

The test load was applied at essentially a single point attachment on the light assembly. The magnitude of the test load was determined based on the weight of the light assembly (4 1/2 lbs/2 kg) and the estimated acceleration level that the mounting surface will be subjected to during impact. It is expected that the maximum "g" level to be simulated will be 20 g's.

The center of gravity of a Rhodes and Maine model RM55 light with batteries included was determined. A harness assembly was constructed of glass filament tape to allow the force to be applied through the center of gravity of the light. The light assembly was attached in the normal manner using the mounting hardware provided at the location design by the channelizing device manufacturer.

The force was applied (20 x W) using a jack screw through a spring scale until the 90 lb (40.1 kg) level was reached. The load was then released, the channelizing devices disassembled from the fixture and inspected. No warning light mounting failure occurred. The mounting holes in the channelizing device showed no distortion or fracturing around the mounting hole. Photographs of the Channelizer are presented in Figure 8, the Plastibarrel in Figure 9, the 55 gallon drum in Figure 10, and the Wyoming WC-4 Barricade in Figure 11. It should be pointed out, however, that during actual full scale crash testing the warning light pulled away from two devices, the Plastibarrel and the Channelizer. A significant downward force appears to be applied when the channelizing devices crush. Consideration should be given to vertical and angular forces in future testing.



FIGURE 8 THE CHANNELIZER WARNING LIGHT LOAD

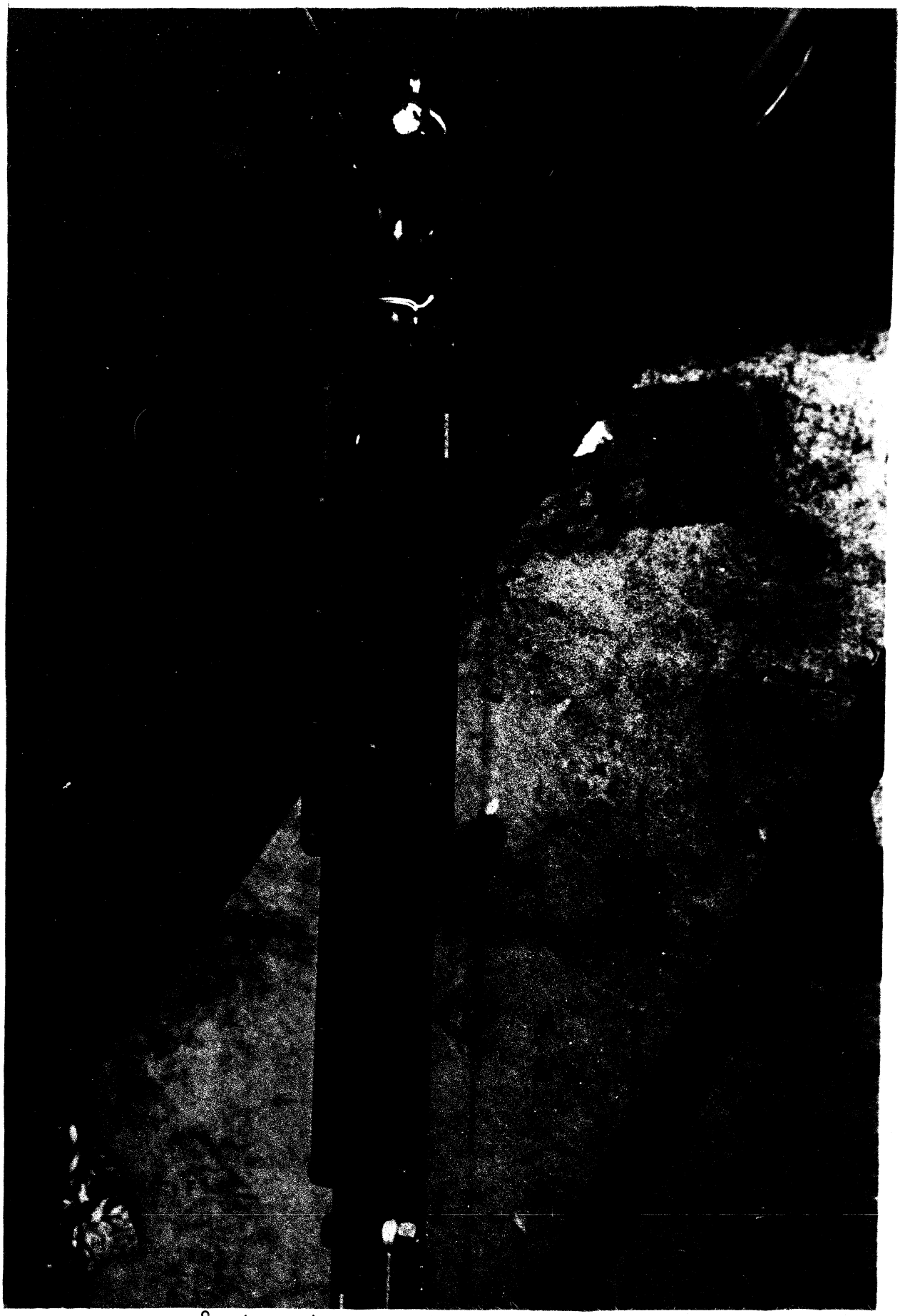


FIGURE 8 (CON'T) THE CHANNELIZER 90 LB LOAD ON LIGHT

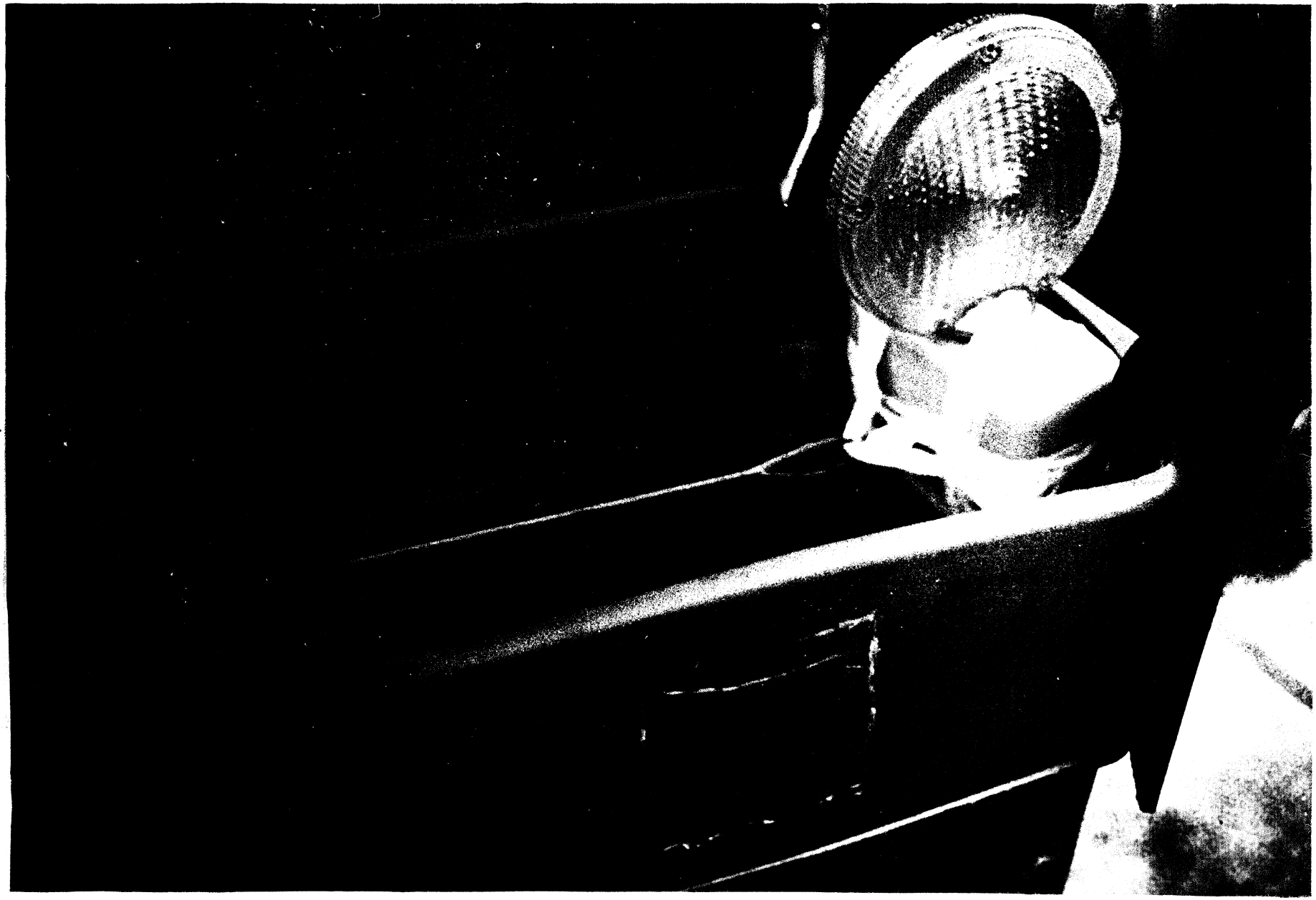


FIGURE 9 PLASTIBARREL WARNING LIGHT LOAD

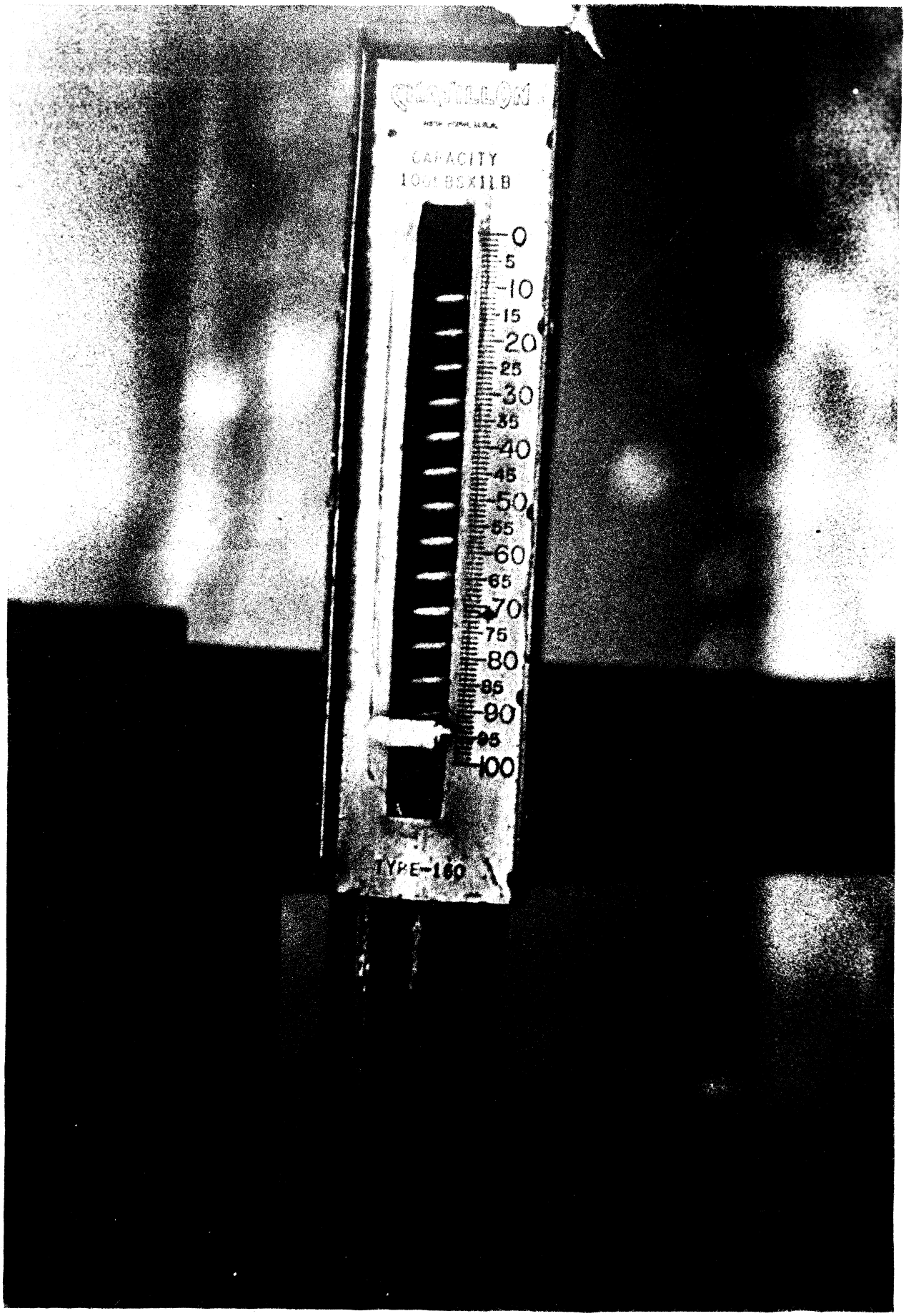


FIGURE 9 (CON'T) PLASTIBARREL 400-PB 90 LB LOAD ON LIGHT

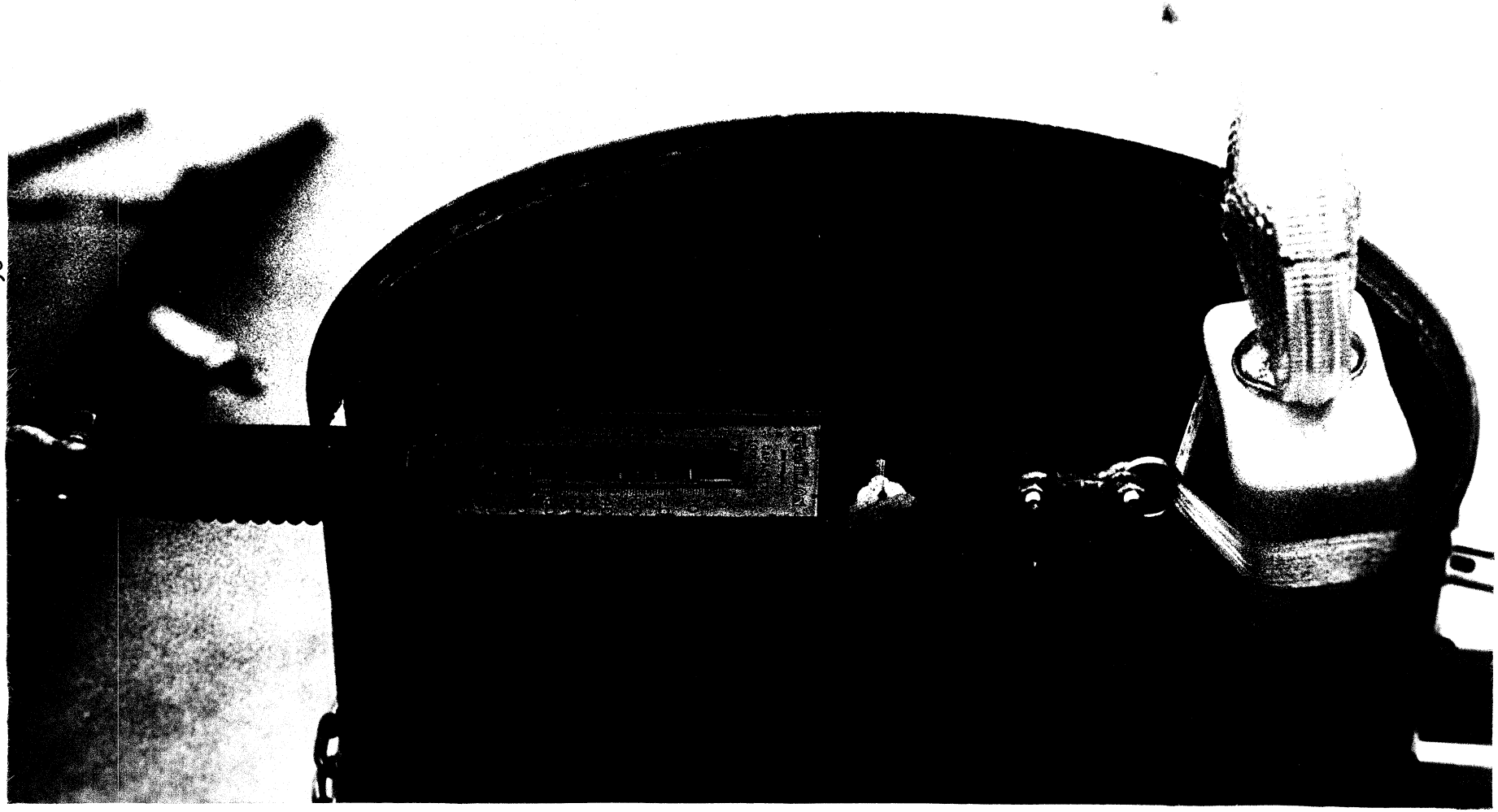


FIGURE 10 55 GALLON DRUM 90 LB LOAD ON LIGHT



FIGURE 11 WYOMING WC-4 BARRICADE 90 LB LOAD ON LIGHT

Because of the gross distortion of the sides of the plastic barrel type channelizing devices, the initial load displacement data taken on an x-y plotter provided no meaningful information. The selected method of applying the force using a jack screw and spring scale was chosen because of the high costs required to develop the necessary fixturing to allow automatic load application and data acquisition. Both tests provided pseudo static loading with visual data provided by photographs presented in Figure 8 through 11.

2.5 DETERMINATION OF THE WINDSHIELD PENETRATION HAZARD POSED BY THE WARNING LIGHT/BATTERY COMBINATION

A common type of warning light was purchased from a local vendor. This was a Rhodes and Maine model RM55. The warning light and associated batteries, two 6 volt lantern batteries, were suspended by light weight string oriented such that a corner of the warning light is presented to the impacting windshield. A Ford Fiesta windshield mounting was attached to Mobility Systems track dolley. A Ford Fiesta windshield was secured in the mounting frame. The test setup is illustrated in Figure 12.

A series of tests were performed to determine the velocity when windshield penetration occurs. The initial test was performed at a velocity of 30 mph (48.5 kph). The windshield was inspected for penetration (air passage from front to rear of the windshield). Penetration did not occur and the velocity was increased in nominally 5 mph (8 kph) increments. Substantial penetration occured at 60 mph (96.6 kph).

2.5.1 RESULTS

High speed motion pictures and 35mm still photographs were made during these tests. Photographs of the impact damage are shown in Figures 13 through 18. The impact penetration data is presented in Table 3.

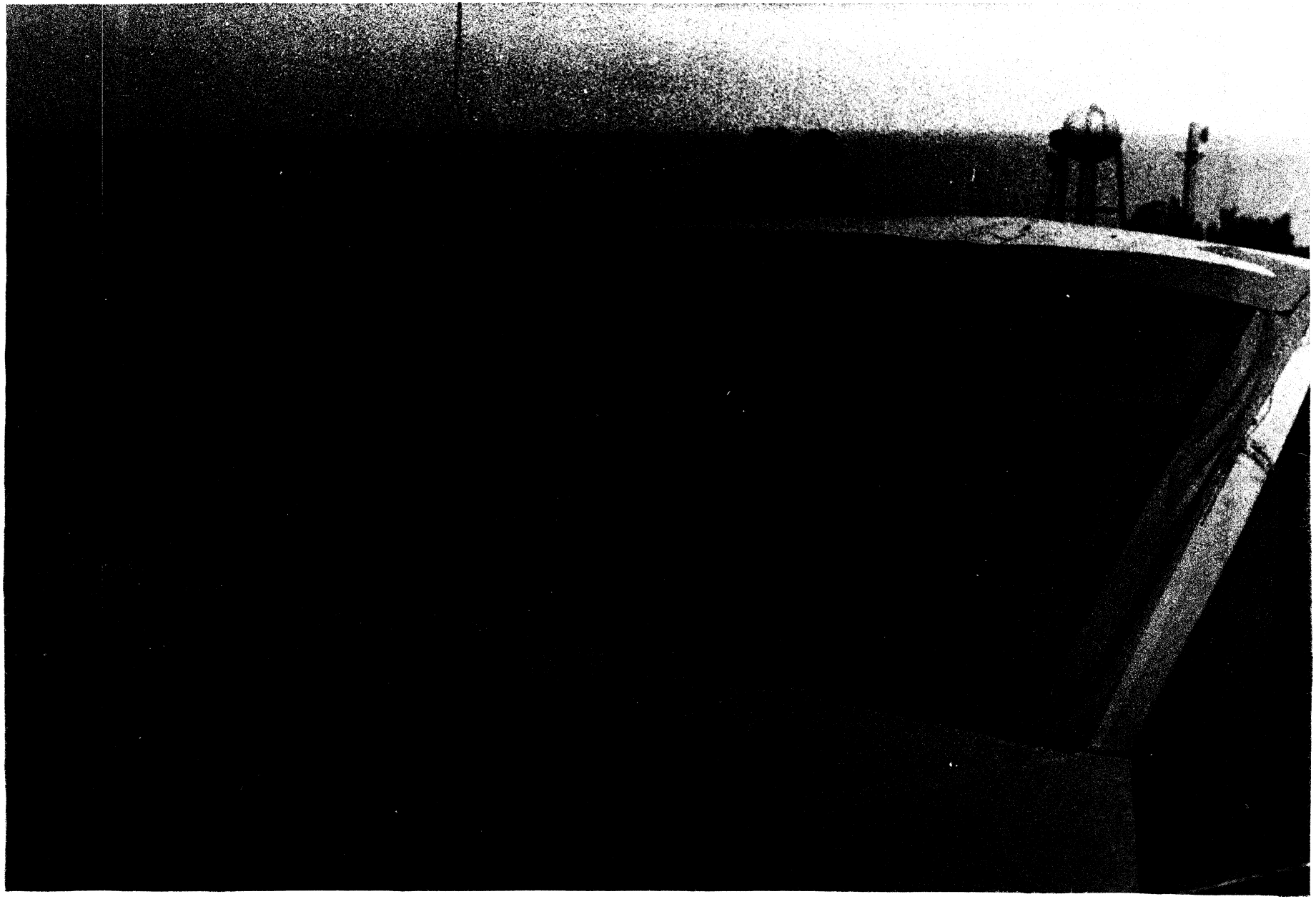


FIGURE 12 WINDSHIELD TEST SETUP

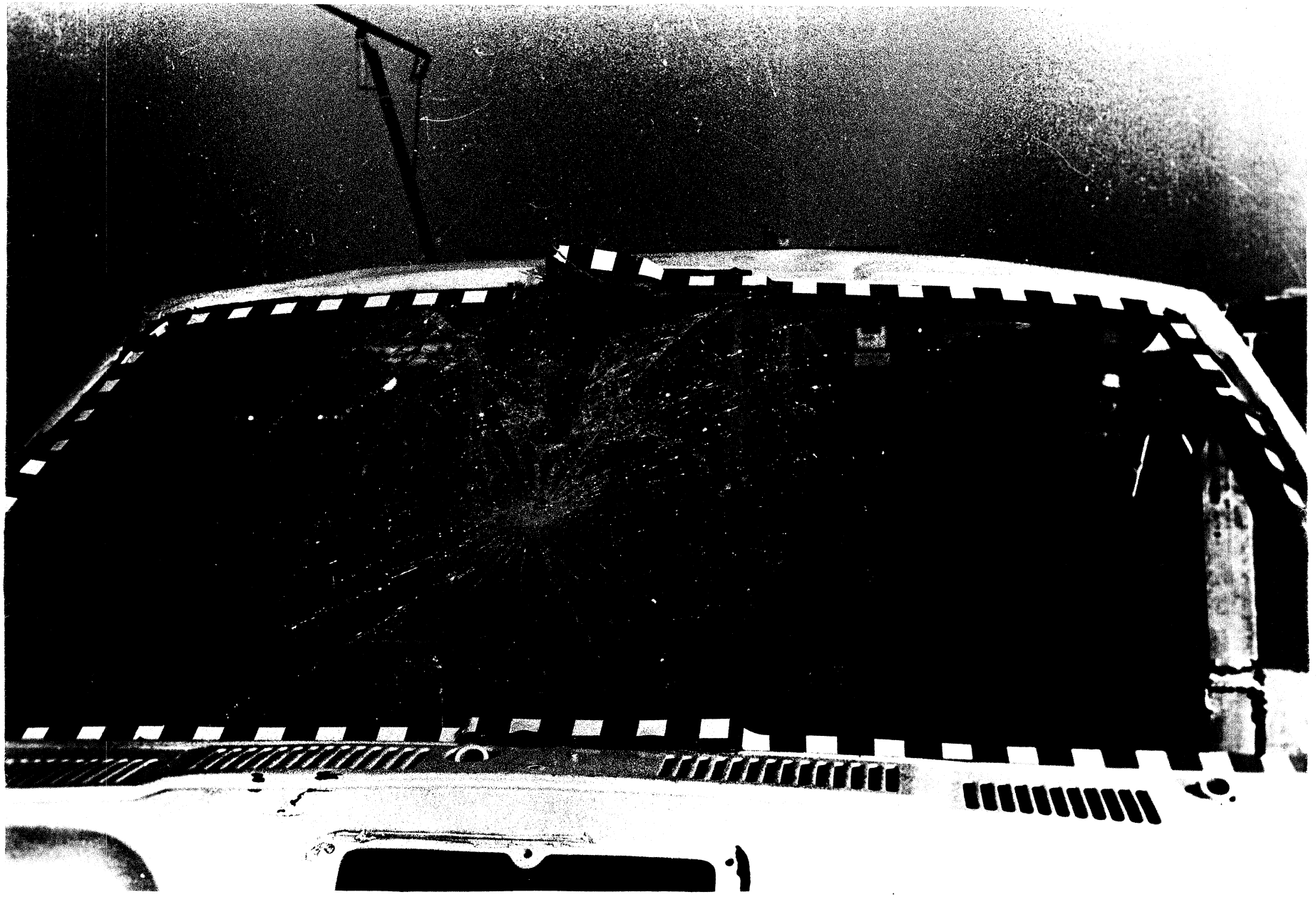


FIGURE 13 WINDSHIELD PENETRATION – POSTTEST – 30 MPH

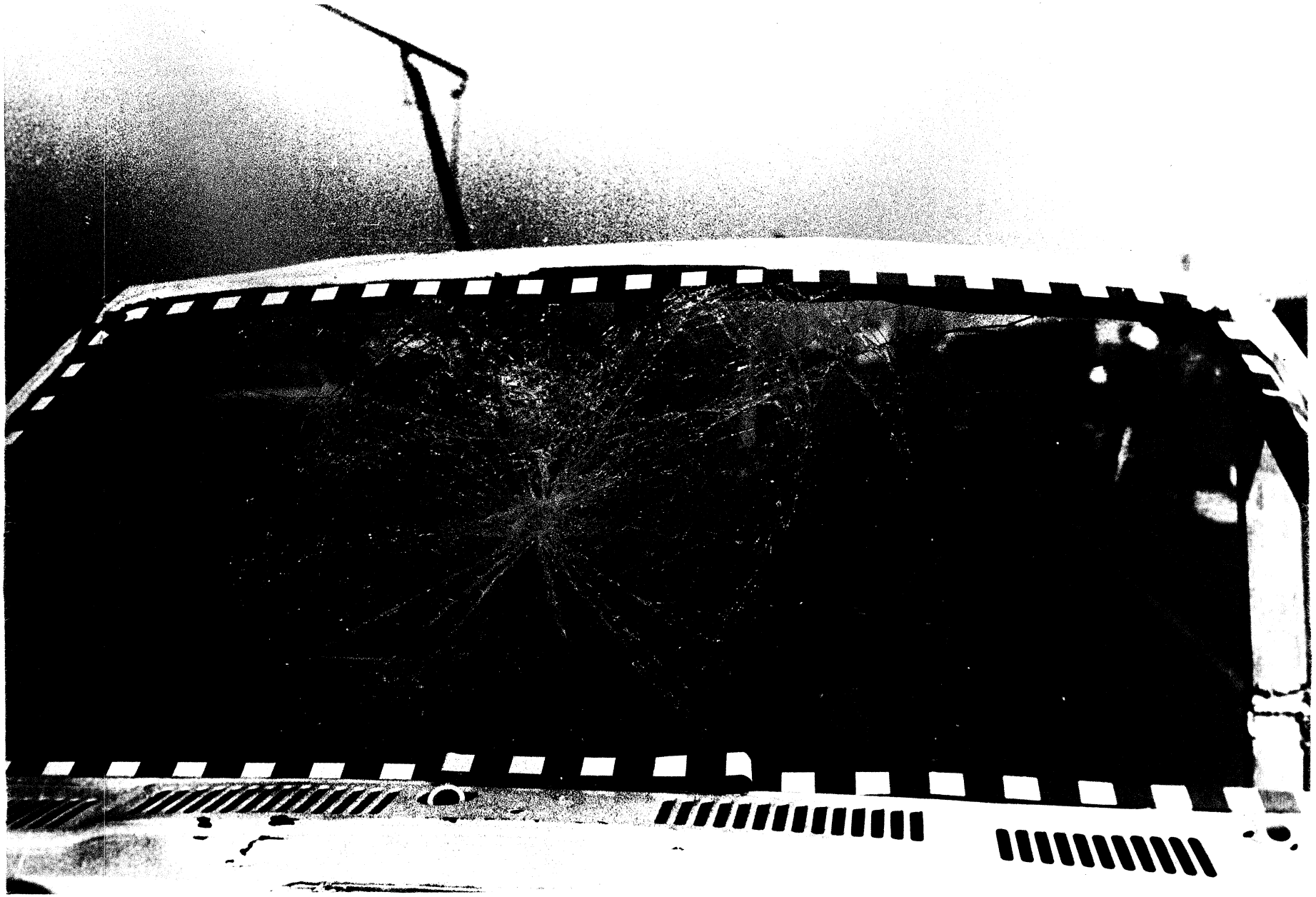


FIGURE 14 WINDSHIELD PENETRATION – POSTTEST – 35 MPH

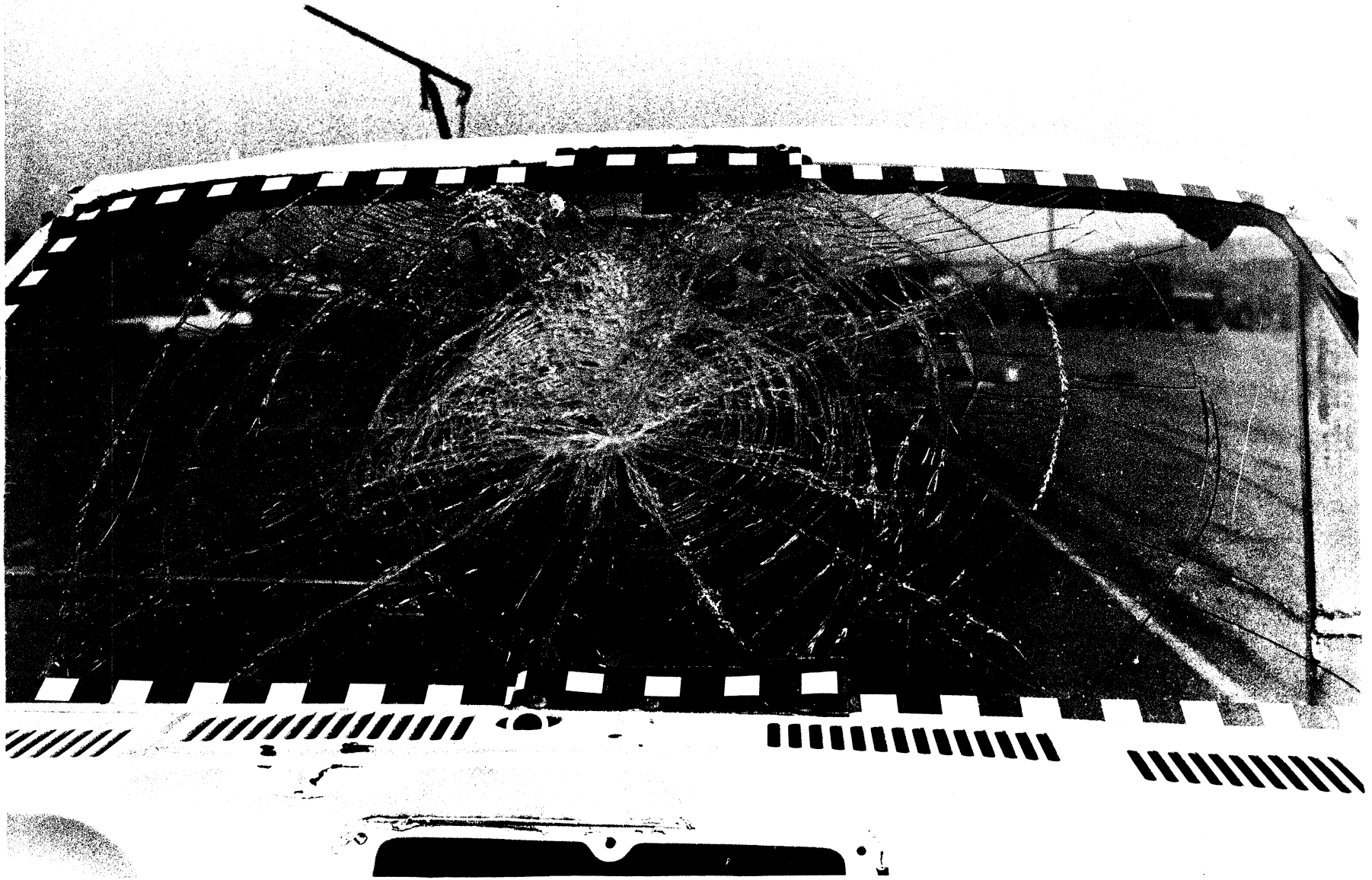


FIGURE 15 WINDSHIELD PENETRATION – POSTTEST – 40 MPH

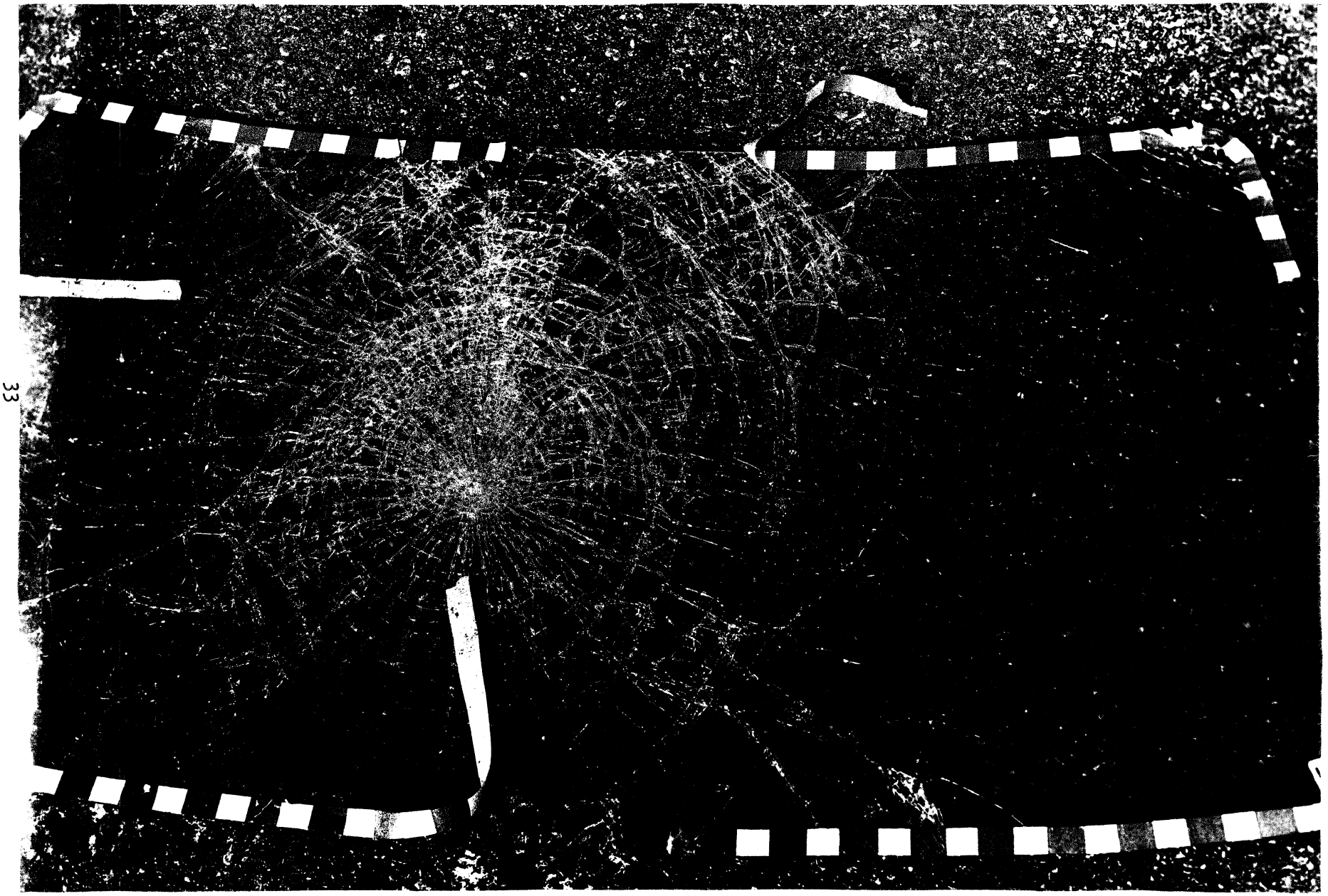


FIGURE 16 WINDSHIELD PENETRATION – POSTTEST – 45 MPH

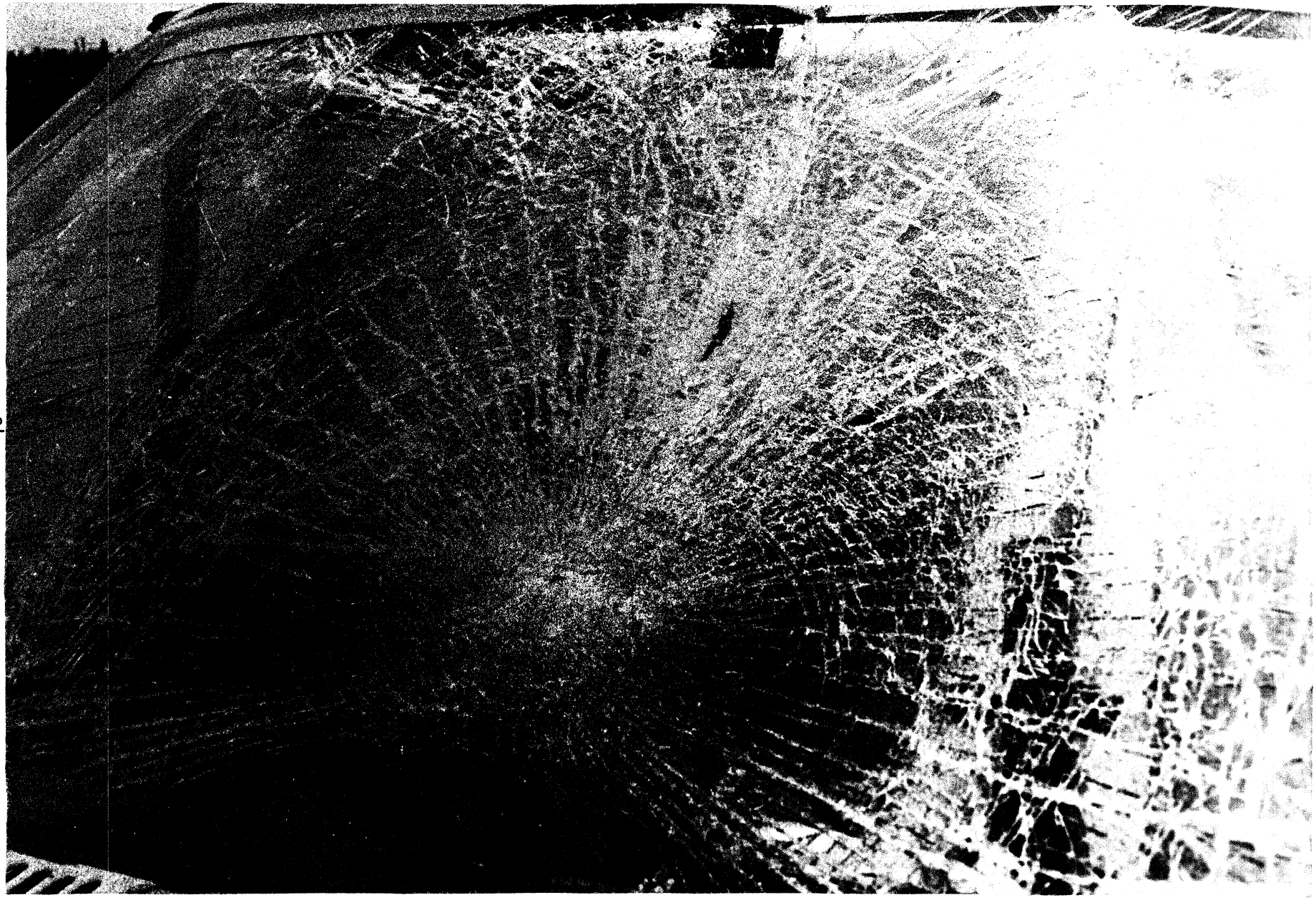


FIGURE 17 WINDSHIELD PENETRATION – POSTTEST – 55 MPH



FIGURE 18 WINDSHIELD PENETRATION – POSTTEST – 60 MPH

TABLE 4 IMPACT PENETRATION DATA

VELOCITY MPH (kph)	COMMENTS
30.1 (48.7)	Cracking mostly in middle 1/2 No penetration No noticeable 2nd impact
34.1 (55.1)	Cracking in middle 5/4 Very close to penetration No actual air passage - 2nd impact
43.7 (70.6)	Total cracking, penetration Opening 3/4 in - 2nd impact
46.1 (74.5)	Total cracking, penetration Opening 3in long - 2nd impact
55.2 (88.8)	Total cracking, penetration Opening 3 in long at lens - 2nd impact
60.3 (97.0)	Total cracking, penetration Opening 8 in long at lens - 2nd impact

NOTE: At low speeds (30 mph) the light moved away from the windshield immediately after impact. Subsequent impacts at high speeds caused the light to stay in contact with the windshield and the body and lens of the light were then impacted by the windshield after initial impact by the corner of the battery compartment of the light.

2.5.2 CONCLUSION

Penetration (previously defined as allowing air passage) of the vehicle test windshield occurred initially at 40 mph (64.4 kph). Windshield crush increased as the impact velocity increased with an accompanying small increase in hole size, 3/4 in (19 mm) to 3 in (76 mm), until an impact velocity of 60 mph (96.6 kph) was reached. At this velocity a large opening, approximately 8 in (203 mm) long by 1 in (25.4 mm) wide, developed.

These tests demonstrated that the light did not completely penetrate the windshield and thus enter the passenger compartment of the vehicle under the given test conditions. However, it should be noted that the loading caused a large opening and deep crush of the windshield at 60 mph (96.6 kph). As such, different results may occur when windshields from different vehicles are used or impacts at higher speeds occur.

SECTION 3

TASK C FULL SCALE CRASH TESTING

Full scale crash tests were performed to determine the dynamic behavior of a mini-size sedan when impacting channelizing devices. A mini-size vehicle was selected as a realistic "worst case" test vehicle due to a greater tendency toward rollover than large vehicles have. This tendency, caused primarily by lower rotary moments of inertia and narrower wheel bases and track widths, is inherent in the design of small vehicles.

Weight and Ballast information for the tested devices is presented in Section 2 paragraphs 2.1 and 2.2 and Table 1. Dimensions and c.g. of the devices and the vehicle used for these tests are presented in Section 2 paragraph 2.3, Table 2, and Figures 1 through 6.

The order of testing was as follows:

1. The Plastibarrel (Catalog No. 400-PB)
2. The Channelizer
3. Metal drums of 55 gallon (208 l)
4. Wyoming Highway Department's Standard WC-4 Barricade
5. The Virginia Department of Highway' simulated barrel panel

A 50th percentile Part 572 anthropomorphic uninstrumented dummy was placed unrestrained in the drivers seat.

The test vehicle, illustrated in Figure 6, was a 1976 Volkswagen Rabbit sedan with a test inertial weight(1) of 1,819 lbs (825 kg) and a test gross weight(1) of 1,984 lbs (900 kg). The bumper height was 17 in (43.2 cm), and c.g. height of 18.9 in (48 cm).

Instrumentation on board the vehicle was two longitudinal, one transverse, and one vertical accelerometer located essentially at the vehicle c.g. on the front floor pan. The accelerometers were connected to a multichannel FM tape recorder via an umbilical cord.

The accelerometer data recorded on FM tape was played back and digitized through MS data processing equipment using both SAE Class 60 and Class 180 filters. This was done to provide comparative data using both the old test procedures, TRC 191, and the new test procedures, NCHRP 230. The digitized data was then processed by computer to obtain the acceleration (g values) for the peak 50 msec moving average for the Class 60 filtered data, 10 msec moving average for the Class 180 filtered data, and the occupant velocity expressed as $V_{Ix} = \int_o^t a_x dt$ and occupant displacement expressed as $X = \int_o^t \int_o^t a_x dt^2$.

Additional recording equipment consisted of four (4) high speed motion picture cameras and a real time documentary camera panned to follow the vehicle throughout the event. The camera placement is shown in Figure 19 and described as follows:

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(1) Weight nomenclature defined in NCHRP Report No. 230, "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances".

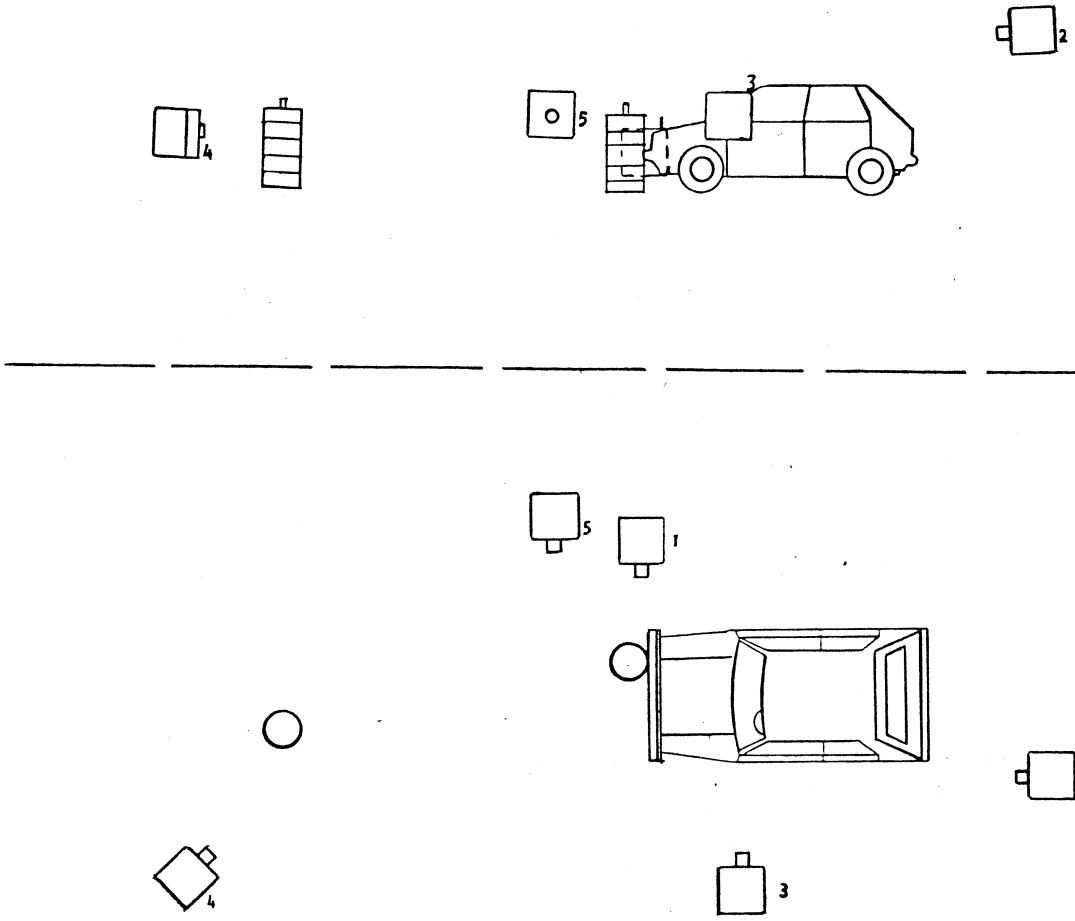


FIGURE 19 CAMERA POSITIONS

Camera 1 - Point of Impact, 600 fps
Camera 2 - Vehicle Track, 600 fps
Camera 3 - Dummy Reaction, 600 fps
Camera 4 - Vehicle Reaction to Second Device, 600 fps[1]
Camera 5 - Event Documentation, 24 fps

The documentary camera was also used to film pre and posttest static conditions.

The vehicle speed was recorded by two electro optical speed traps located approximately 25 ft (7.6 m) prior to the initial impact point.

3.1 TEST CONDUCT - PLASTIBARREL 400-PB

The test article was a plastic barrel type channelizing device manufactured by Best Barricade of Itasca, Illinois, designated Plastibarrel 400-PB.

A typical warning light was attached at the provided location on the left of the device. The light was a Rhodes and Maine model RM 55 and selected as a light commercially available but not manufactured by the manufacturer of the test article.

Two Plastibarrels were located for impact simulating the placement of two devices being used as a lane taper to channel traffic. The first device was placed at the right quarter point of the vehicle, 17 in (43.2 cm) from the vehicle centerline. The second device was placed 25 ft (7.6 m) behind the first device at the left quarter point of the vehicle 17 in (43.2 cm) from the vehicle centerline. These locations were chosen to provide a realistic but "worst case" force application to the front end of the impacting vehicle, and thus, to maximize the possibility of vehicle yaw and resultant tendenancy to rollover.

(1) A Second Device not used for Wyoming WC-4 Barricade impact because it is used primarily as a road closure device and not as a lane taper.

The test was conducted on Thursday July 29, 1982 at 2:15 p.m. at a speed of 60.2 mph (97 kph)

Pretest photographs are presented in Figures 20 and 21.

3.1.1 TEST RESULTS

The device first impacted on the right quarter point of the vehicle bumper and immediately wrapped around the bumper. The light separated from the Plastibarrel upon impact striking the vehicle hood, leaving an imprint, and continued to slide along the hood into the windshield of the vehicle. No windshield damage occurred. The Plastibarrel was then drawn under the vehicle and caught on the undercarriage just behind the front wheels.

The impact with the second device was similar in that the device wrapped around the vehicle bumper, the warning light separated immediately from the Plastibarrel, impacted the fender/hood near the left headlight and continued to slide along the vehicle hood until it impacted the windshield. Again no windshield damage occurred. The device was drawn under the vehicle and ejected behind the left front wheel.

The vehicle did not exhibit any yaw, pitch or roll instability and the dummy did not impact the interior of the vehicle due to the vehicle impact with the Plastibarrel 400 PB.

After application of the vehicle brakes the vehicle turned slightly left causing the dummy to fall over into the passenger seat, the head striking the passenger door window frame.

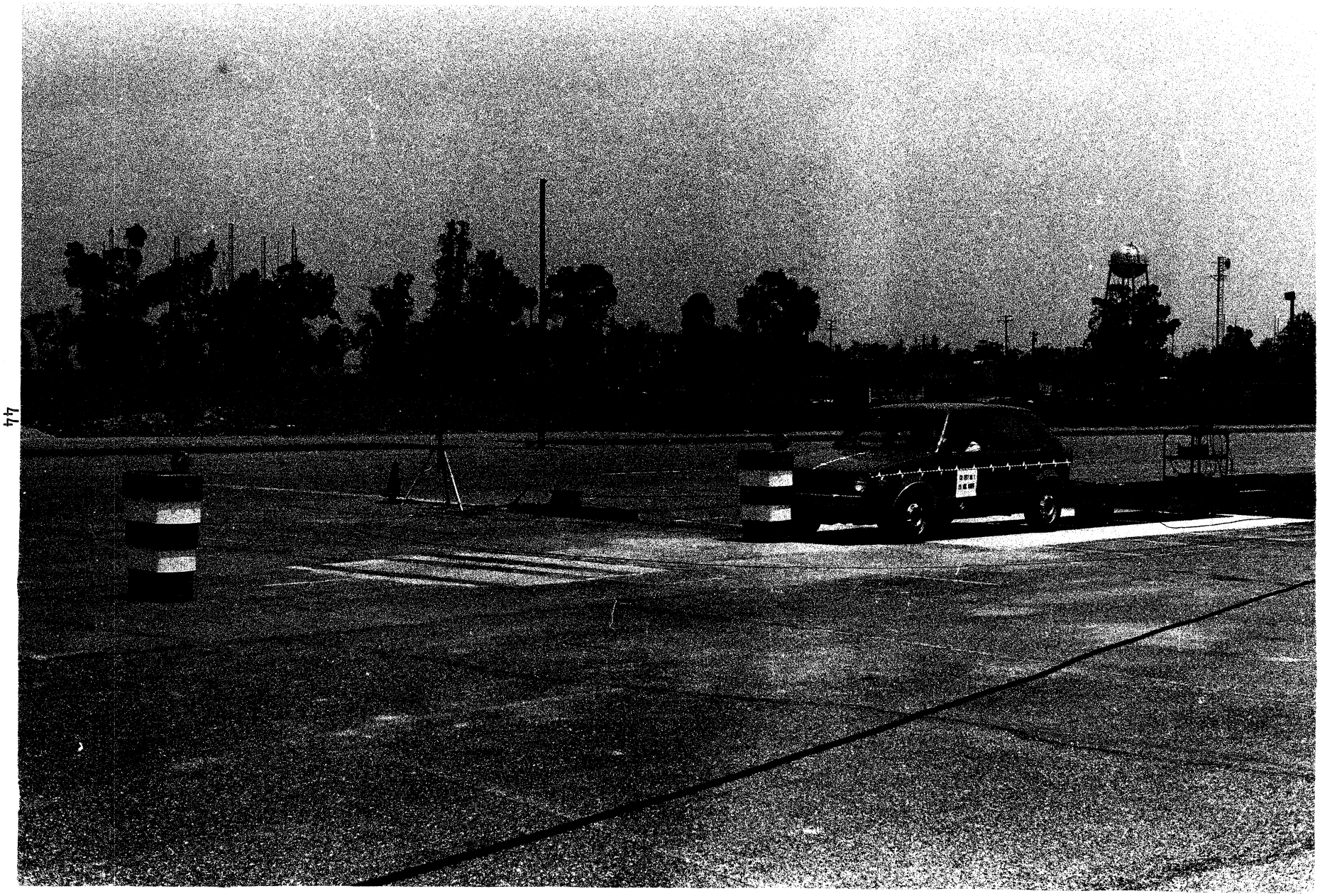


FIGURE 20 PRETEST SETUP

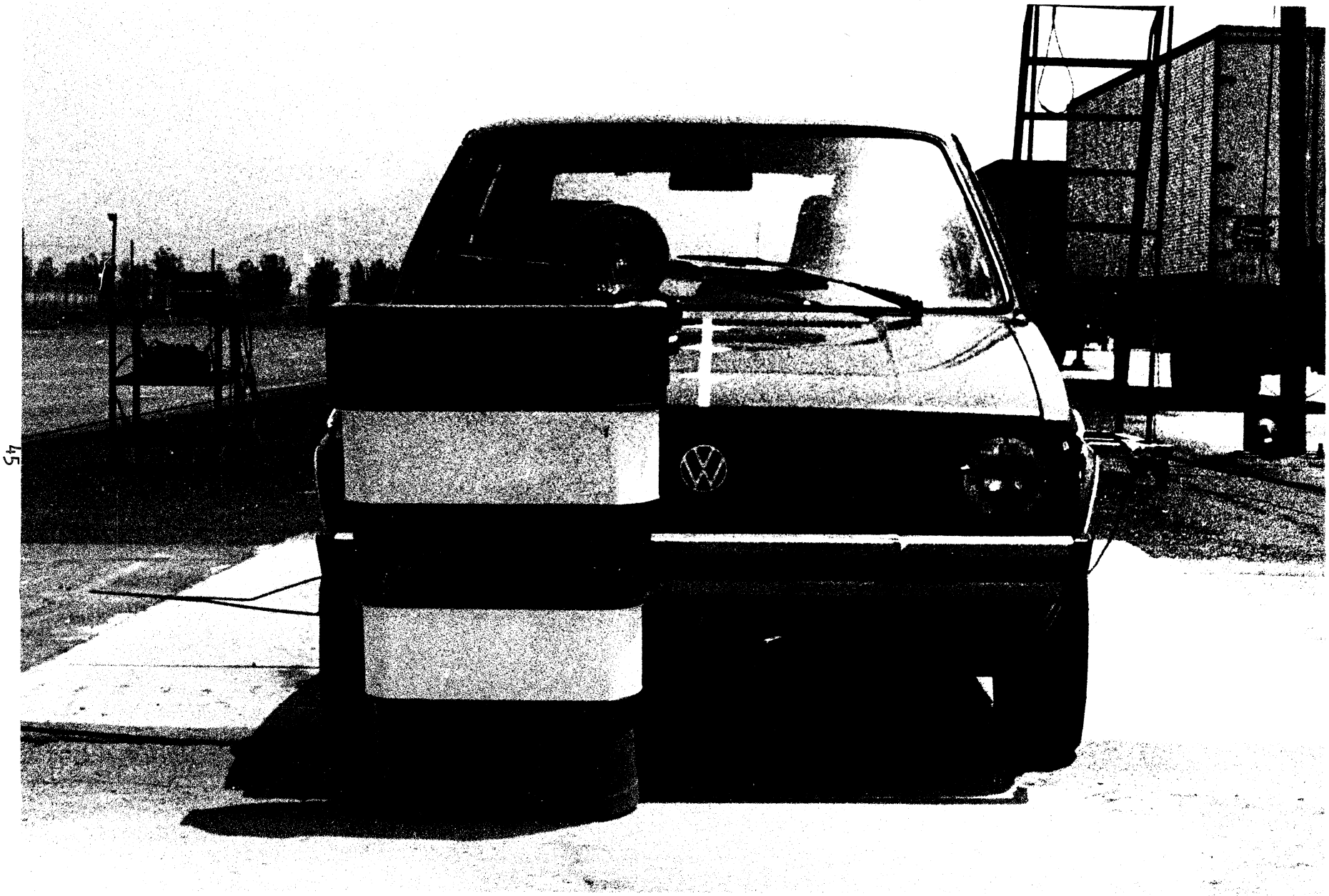


FIGURE 21 PRETEST FRONT

The vehicle damage due to impact was essentially restricted to the cosmetic damage caused when the warning light(s) impacted the hood as can be seen in the posttest photograph in Figure 22.

The Plastibarrel 400 PB channelizing devices were heavily damaged by crushing under the vehicle and sliding along the road surface. They could be pushed back to shape but would not regain the originial dimension and appearance. Posttest photographs are presented in Figures 22 through 24.

A possible unsafe condition existed when the warning light separated from the Plastibarrel. The warning lights were attached to the Plastibarrels using the light manufacturer's hardware and in accordance with literature supplied with the light. The impact caused the plastic at the warning light mounting hole to extrude and tear (Figures 23 and 24) around the mounting washer, and thus, free the light to impact the vehicle. This occurred at vehicle impact resulting in the warning light being a free body 32 in to 34 in above ground level. The warning light was initially deflected by the vehicle hood and subsequently impacted the windshield. The washer used on the light mounting bolt is cupped to protect the mounting bolt head offering a smooth transition to pass through the Plastibarrel light mounting hole. The Plastibarrel mounting is unreinforced flexible plastic.

Although in this test, the warning light did not fracture the windshield, it is possible that under similar conditions windshield fracture can occur. Tests have shown that the windshield will be cracked when impacted by free lights at 30 mph (48.7 kph) and a large hole occurs at 60 mph (97 kph). Impact penetration data is presented in Table 3. Metal reinforcement of the plastic material around the mounting hole (or a similar alteration) to prevent the warning light attachment from failing would substantially improve the safety performance of this channelizing device.

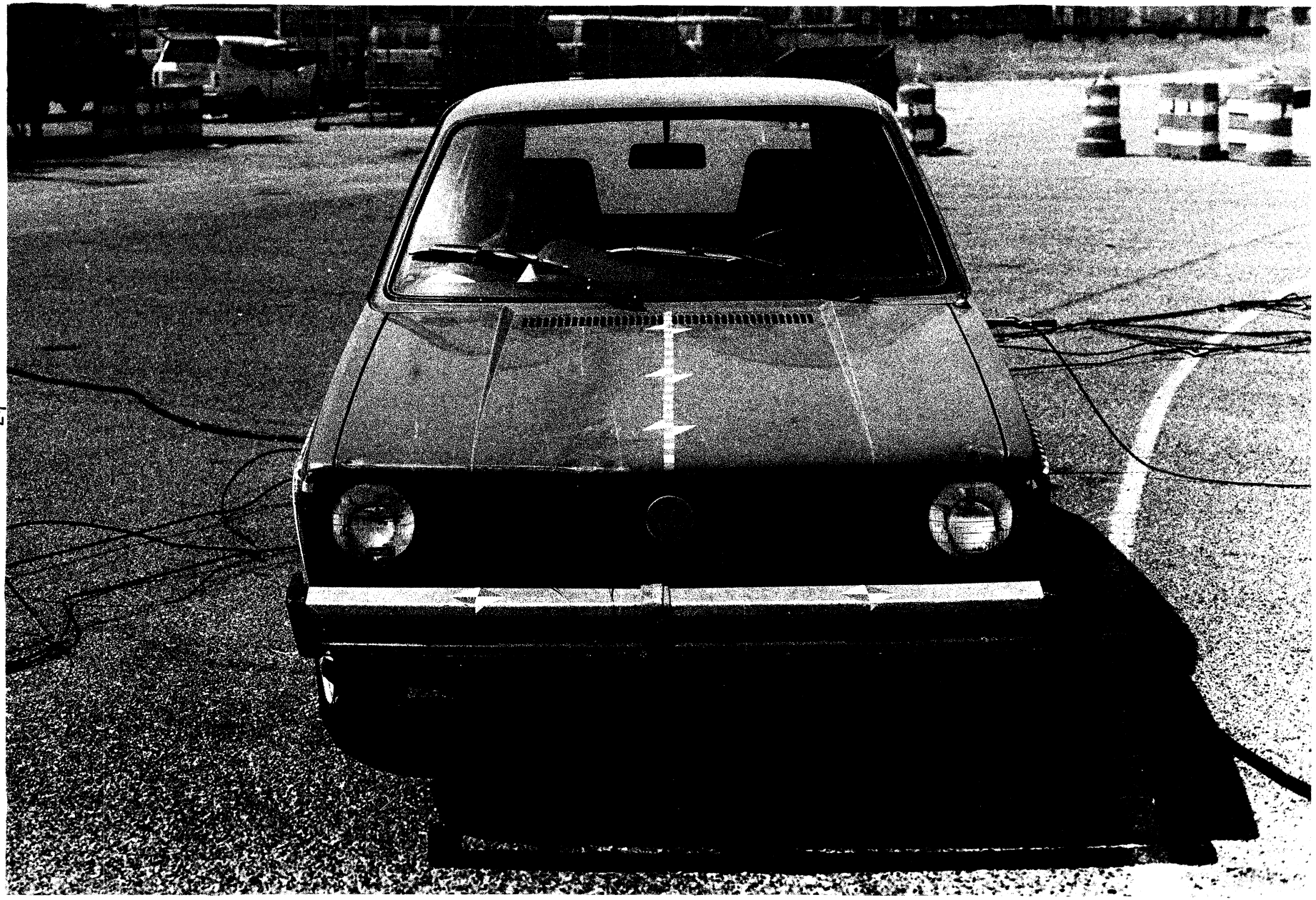


FIGURE 22 POSTTEST FRONT



FIGURE 23 POSTTEST SIDE



FIGURE 24 POSTTEST LIGHT MOUNTING HOLE – UNIT 2



FIGURE 25 POSTTEST LIGHT MOUNTING HOLE – UNIT 1

3.1.2 DATA PRESENTATION

During the time interval of interest the "flail space" [1] distance the occupant traveled did not exceed 8.45 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this the highest 10 msec and highest 50 msec averages are presented in Table 4. The recommended occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breadaway/Yielding Supports - Signs and Luminaire of NCHRP Report 230.

A computer printout of the vehicles acceleration data (class 180 filter) is presented in Table 5. Computer printouts of the first integral (occupant velocity) and second integral (occupant displacement) are presented in Tables 6 and 7.

A computer plot of the event using the class 180 filter is shown in Figure 26 and the class 60 filter is shown in Figure 27. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

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(1) Flail space approach is defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance evaluation of Highway Appurtenances"

TABLE 4 MOVING AVERAGE DATA - PLASTIBARREL 400PB

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel - g's	Time - Seconds
Impact with First Device	2.4335 (1)	.1620 to.1720
Impact with Second Device	4.3220 (1)	.3794 to.3894
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel - g's	Time - Seconds
Impact with First Device	0.98552	.1424 to.1924
Impact with Second Device	0.86563	.3476 to.3976
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact with First & Second Device	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 5 VEHICLE ACCELERATION DATA (CLASS 180 FILTER) - PLASTIBARREL 400PB

TIME	G'S .0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.130	.53	.53	.53	.09	.53	.53	.53	.53	.53	.53
.132	.09	.53	.09	-.35	-.79	-.79	-.79	-1.23	-1.67	-1.67
.134	-1.67	-1.67	-1.23	-.79	-.79	-.79	-1.23	-1.23	-1.67	-2.11
.136	-2.55	-2.11	-2.11	-1.67	-1.67	-1.23	-1.23	-.79	-.35	-.35
.138	-.35	-.79	-.79	-1.23	-1.23	-.79	-.79	-.79	-1.23	-2.55
.140	-3.86	-4.74	-5.62	-5.62	-5.18	-4.74	-3.42	-2.99	-2.55	-2.11
.142	-2.11	-2.11	-1.67	-1.67	-1.23	-.35	.09	.53	.53	.97
.144	.53	-.35	-.79	-1.23	-1.23	-1.67	-1.67	-1.23	-1.23	-1.67
.146	-1.67	-1.67	-2.11	-2.55	-2.99	-3.42	-3.42	-2.99	-2.55	-1.67
.148	-.79	-.35	.09	.09	.53	.97	.97	1.41	.97	.97
.150	.53	-.79	-1.23	-2.11	-2.99	-2.99	-2.55	-1.67	-.79	.53
.152	1.41	2.29	2.29	2.29	2.29	1.41	.53	-.79	-1.67	-2.11
.154	-2.11	-1.67	-1.23	-.79	-.79	-.35	.53	.53	.53	.09
.156	.09	.09	.09	.09	-.35	-1.23	-1.67	-1.67	-2.11	-2.11
.158	-2.55	-2.55	-2.99	-2.55	-2.55	-2.11	-1.23	-.35	.09	.97
.160	.97	.97	.53	-.35	-.79	-1.67	-1.67	-2.11	-2.99	-3.86
.162	-4.30	-4.74	-5.18	-5.18	-5.62	-5.18	-4.30	-3.86	-2.55	-1.67
.164	-.79	-.79	-.35	.09	.09	-.35	-.79	-2.11	-3.42	-5.62
.166	-7.38	-9.14	-9.14	-7.82	-5.18	-2.55	.53	3.16	4.92	6.24
.168	6.24	6.24	5.36	4.04	2.72	.53	-1.23	-2.99	-3.86	-5.18
.170	-6.06	-6.50	-7.38	-7.82	-7.82	-7.82	-7.38	-6.94	-5.62	-4.74
.172	-4.30	-3.42	-2.55	-2.11	-1.23	.09	.97	1.41	1.85	.97
.174	.53	.09	.09	.53	.97	1.85	2.72	2.29	2.29	1.41
.176	.09	-.35	-1.23	-2.11	-2.55	-2.99	-2.99	-3.42	-3.42	-2.99
.178	-1.67	-.79	.97	1.85	3.16	3.60	3.60	4.04	3.60	3.60
.180	3.60	3.60	2.72	2.29	1.41	.97	.09	-.35	-.79	-1.23
.182	-2.11	-2.55	-2.99	-3.42	-4.30	-3.86	-3.86	-3.86	-2.99	-2.55
.184	-2.11	-2.11	-2.11	-2.11	-1.67	-1.23	-.35	.53	1.41	1.85
.186	1.85	2.29	1.85	1.41	1.41	.53	.09	-.35	-1.23	-2.11
.188	-2.55	-2.55	-2.55	-2.99	-2.99	-2.55	-2.55	-2.11	-2.11	-1.23
.190	-.79	-.35	-.35	.53	.53	1.41	1.41	1.41	1.85	1.41
.192	1.85	1.41	.97	.97	.97	.53	.53	.53	.09	-.35
.194	-.79	-.79	-.79	-.79	-.35	.09	.97	1.41	1.85	2.29
.196	2.29	2.29	2.29	1.85	1.41	.97	.53	.09	.09	.09
.198	.53	.97	1.85	1.85	1.85	1.41	.53	.09	-.79	-1.67
.200	-2.11	-2.11	-2.11	-2.11	-1.67	-.79	-.35	.53	.97	1.85
.202	2.72	3.16	3.60	3.60	3.16	2.72	2.29	1.85	1.41	.97
.204	.97	.97	.97	.97	.53	.53	.53	.09	.09	.09
.206	.09	.53	.53	.53	.97	.97	.53	.53	.97	.97
.208	.97	.97	.53	.53	.53	.53	.97	1.41	1.41	1.41
.210	1.41	.97	.97	.09	-.35	-.35	-1.23	-1.23	-.79	-.79
.212	-.35	.09	.97	1.41	1.85	1.41	1.41	.97	.97	.53
.214	.09	-.35	-.79	-.79	-.79	-.79	-.79	-.35	-.79	-.35
.216	-.79	-.35	.09	-.35	-.35	.09	-.35	-.35	-.35	-.79
.218	-.35	-.35	-.35	-.35	-.79	-.79	-1.23	-1.23	-1.67	-1.67
.220	-1.67	-1.67	-2.11	-1.67	-1.67	-1.67	-.79	-.79	-.79	-.35
.222	-.35	.09	.09	.09	.09	.09	.09	-.35	.09	-.35
.224	.09	.09	.97	.97	2.29	2.72	3.16	3.16	2.72	2.29
.226	.97	.09	-.79	-1.23	-1.23	-.79	.53	1.85	3.16	4.48
.228	4.92	4.92	4.48	3.60	1.85	.53	-.35	-1.67	-2.55	-2.99
.230	-2.99	-2.99	-2.99	-2.11	-.79	-.79	.09	.53	.53	.53
.232	-.35	-.79	-1.67	-2.11	-2.99	-2.99	-2.99	-2.55	-2.11	-1.67
.234	-.35	.97	1.85	2.72	3.60	4.04	3.16	2.72	1.41	-.35
.236	-1.67	-2.55	-3.42	-3.42	-2.99	-2.11	-1.23	.09	1.41	1.85
.238	2.72	2.72	2.29	1.41	.53	-.79	-1.67	-2.11	-2.11	-1.67
.240	-1.23	-.35	.53	1.41	1.41	2.29	1.85	1.41	.97	.53
.242	-.79	-1.23	-1.23	-1.67	-1.23	-1.23	-.79	-.35	.09	.97
.244	1.85	1.85	1.41	1.41	.97	.53	.09	-.79	-.79	-1.23
.246	-1.67	-1.23	-.79	.09	.53	1.41	1.85	1.85	1.85	1.41
.248	.97	.09	-.35	-.79	-1.23	-1.67	-1.67	-1.67	-.79	-.35
.250	.09	.53	.97	1.41	1.41	1.41	.97	.97	.53	.09
.252	-.35	-.35	-.35	-.35	.09	.09	.09	.09	.53	.09

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 5 (CONT'D) VEHICLE ACCELERATION DATA (CLASS 180 FILTER) - PLASTIBARREL 400PB

	G'S									
TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.254	.09	-.35	.09	-.35	.09	.09	.53	.53	.53	.53
.256	.97	.97	.97	.97	.97	.53	.97	.97	.53	.53
.258	.09	.09	-.35	-.35	-.35	-.35	-.35	-.35	-.79	-.35
.260	-.35	.09	.09	.09	.09	.09	.09	.09	.09	.09
.262	.53	.53	.97	1.41	.97	.97	.97	.53	.53	.09
.264	-.35	-.79	-.79	-.79	-1.23	-1.23	-1.23	-1.67	-1.23	-.79
.266	-.35	-.35	-.35	-.35	-.35	-.35	.09	.09	.09	.09
.268	-.35	-.35	-.35	-.35	-.35	-.35	-.35	-.35	-.35	-.35
.270	-.35	-.35	-.79	-.79	-.79	-.79	-.79	-.79	-.79	-.35
.272	.09	.09	.53	.09	.09	-.35	-.35	-.79	-.35	-.35
.274	-.35	.09	.53	1.41	2.29	2.72	3.60	3.60	3.16	2.72
.276	1.85	.53	.09	-1.23	-2.11	-2.55	-2.55	-2.55	-2.11	-1.23
.278	-.79	.53	1.41	1.85	1.85	1.41	.97	-.35	-1.23	-1.67
.280	-1.67	-1.67	-1.23	-.79	.09	.97	2.29	2.29	2.72	2.29
.282	1.85	.97	-.35	-1.23	-2.11	-2.99	-2.99	-3.42	-2.99	-2.55
.284	-1.23	-1.23	-.35	.09	.53	.53	.53	.97	.53	.97
.286	.97	1.41	.97	1.41	.97	1.41	.53	.53	.09	.09
.288	-.35	-.79	-.79	-.79	-1.23	-1.23	-1.23	-.79	-.35	-.35
.290	-.35	.09	.09	.09	-.35	-.35	-.79	-.79	-.79	-.79
.292	-.79	-.79	-.79	-.35	-.35	.09	.53	.53	.97	.97
.294	.97	.97	.53	.53	.53	.09	.09	.09	.53	.53
.296	.53	.97	.97	.97	.97	.97	.97	.53	.09	.09
.298	.09	.09	.09	.09	.53	.53	.53	.97	.53	.97
.300	.53	.53	.53	.09	-.35	-.35	-.35	-.35	-.35	-.35
.302	.09	.53	.53	.53	.53	.53	.53	.09	-.35	-.79
.304	-.79	-.35	-.79	.09	.09	.09	.53	.97	.97	.97
.306	.97	.97	.53	.09	-.35	-.79	-.79	-.35	-.35	.09
.308	.09	.09	.09	.53	.53	.53	.97	.97	.53	.53
.310	.09	.09	-.35	-.35	-.35	.09	.09	.09	.09	.09
.312	.09	.09	-.35	-.35	-.35	-.35	-.35	-.35	.09	.09
.314	.53	.53	.53	.09	.09	.53	.53	.97	.97	1.41
.316	.97	.97	.53	.53	-.35	-.79	-.79	-1.23	-1.23	-1.23
.318	-1.23	-1.23	-.79	-.79	-.79	.09	.09	.53	.97	.97
.320	.97	1.41	1.85	1.41	1.41	1.41	.97	.53	.09	.09
.322	-.35	.09	.09	.09	.53	.09	.09	.09	.09	.09
.324	.09	.09	.09	.09	.09	.09	.53	.97	.97	1.41
.326	1.41	1.85	1.41	.97	.53	.53	.09	.09	.09	.09
.328	.09	.53	.53	.53	.53	.09	.53	.09	.09	.09
.330	-.35	-.35	-.35	.09	.09	.53	.97	1.41	1.85	1.41
.332	1.85	1.41	.97	.53	.09	.09	-.35	-.79	-.35	-.35
.334	-.35	-.35	.09	.09	.53	.53	.53	.53	.53	.09
.336	-.35	.09	.09	.09	.09	.09	.09	-.35	.09	.09
.338	.53	.09	.09	.09	.09	-.35	-.35	.09	.09	.09
.340	.09	.09	.53	.09	.09	.53	.09	.09	.53	.09
.342	-.35	.09	-.35	-.35	-.35	-.35	.09	.09	.09	.53
.344	.09	.09	.53	.53	.53	.53	.09	.09	-.35	.09
.346	.09	.09	-.35	.09	-.35	-.35	-.35	.09	-.35	-.35
.348	-.35	-.35	-.35	-.35	-.35	-.35	-.35	-.35	.09	.09
.350	-.35	-.35	-.35	-.35	-.35	.09	.53	.97	1.41	1.85
.352	1.85	1.85	1.41	.97	.97	.53	.53	.09	-.35	-.79
.354	-1.23	-.79	-.79	.09	.53	1.41	1.85	1.85	1.85	1.41
.356	.97	.09	-.35	-.79	-1.23	-1.67	-1.67	-1.23	-1.23	-.79
.358	-.35	.09	.09	.09	.53	.53	.53	.09	.09	-.35
.360	-.79	-1.67	-1.67	-1.67	-2.11	-2.11	-2.55	-2.55	-2.55	-2.55
.362	-2.55	-2.55	-2.11	-2.99	-2.99	-2.55	-2.55	-2.11	-1.23	-.79
.364	-.35	-.35	.53	.09	-.35	-.35	-1.23	-2.11	-2.99	-3.86
.366	-4.74	-5.62	-6.50	-6.94	-6.94	-6.50	-6.06	-6.06	-4.74	-4.30
.368	-3.42	-1.67	-.79	.09	.97	1.41	1.85	1.85	.97	.53
.370	-.35	-.79	-.79	-1.67	-1.67	-2.55	-3.42	-4.74	-5.62	-6.06
.372	-5.62	-5.18	-3.86	-2.55	-.79	.53	2.29	4.04	5.80	7.12
.374	7.56	7.56	6.68	5.80	4.48	2.72	1.85	.97	.53	-.35

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 5 (CONT'D) VEHICLE ACCELERATION DATA (CLASS 180 FILTER) - PLASTIBARREL 400PB

	G'S									
TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.376	-.35	-.79	-.35	-.35	-.35	-.79	-.79	-.79	-.79	-.35
.378	.53	1.85	2.29	2.72	2.29	2.29	2.72	2.72	2.72	3.16
.380	3.60	3.60	3.60	3.16	2.72	1.85	1.41	.53	.53	.09
.382	-.35	-.35	.09	-.35	-.35	-.35	.09	.09	.97	1.41
.384	1.85	1.85	1.41	.97	-.35	-1.67	-2.99	-5.18	-6.94	-8.70
.386	-10.81	-11.33	-12.65	-13.53	-14.41	-14.85	-15.72	-16.60	-18.36	-18.36
.388	-17.92	-17.04	-16.16	-15.72	-13.97	-10.45	-6.06	.09	5.80	9.75
.390	12.39	12.39	11.07	9.75	8.44	6.68	4.48	1.41	-1.67	-5.18
.392	-6.94	-7.82	-7.82	-6.50	-5.62	-3.42	-.79	2.29	4.92	7.56
.394	10.19	11.51	10.63	9.31	6.24	3.60	.53	-.35	-1.67	-2.55
.396	-2.55	-2.11	-2.11	-2.55	-4.30	-5.62	-6.94	-7.82	-7.82	-6.94
.398	-5.62	-4.74	-3.86	-2.55	-1.67	-.35	1.41	2.29	3.60	4.48
.400	4.48	4.04	2.72	1.85	.97	.09	-.35	-.79	-.79	-.79
.402	-1.23	-1.67	-1.67	-1.23	-.35	.97	1.41	1.85	1.85	.53
.404	-.35	-1.67	-2.11	-2.11	-1.23	.09	1.41	3.16	4.48	5.36
.406	6.24	6.24	6.24	5.80	4.48	3.16	1.85	.53	-.79	-1.23
.408	-1.23	-1.23	-1.23	-.79	-.35	.09	-.35	-.79	-.79	-1.23
.410	-1.67	-1.67	-1.67	-1.67	-1.67	-1.23	-.79	-.79	.09	.97
.412	1.85	2.29	2.72	2.29	2.29	1.41	.53	.53	.09	-.35
.414	-.79	-.79	-.79	-.79	-.35	.09	.09	.53	.53	.97
.416	.53	.53	.97	.09	.09	.09	.53	.53	.53	.97
.418	.97	2.29	2.29	2.29	2.29	1.41	1.41	.97	1.41	1.41
.420	1.85	1.85	2.29	1.41	1.41	.53	.09	-.79	-.79	-2.11
.422	-2.55	-2.99	-3.42	-3.42	-3.86	-3.42	-2.99	-2.55	-1.23	-.79
.424	.53	.97	1.41	2.29	2.29	2.29	2.29	2.29	2.29	2.72
.426	2.72	3.16	3.16	3.16	2.72	1.85	1.41	.09	-.79	-1.23
.428	-1.67	-1.23	-.79	.09	.53	1.41	1.41	1.85	2.29	2.29
.430	1.85	1.85	.97	.97	.97	1.41	1.41	1.41	1.41	.97
.432	.97	.53	.53	.53	.53	.09	.53	.09	.09	.09
.434	.09	-.35	-.79	-1.23	-2.11	-2.11	-2.55	-1.67	-2.11	-1.67
.436	-1.23	-1.23	-.79	-.35	.09	.97	1.41	1.41	1.85	1.41
.438	1.41	.97	1.41	1.41	.97	.53	.09	-.35	-1.23	-1.23
.440	-1.67	-2.11	-2.11	-1.67	-1.67	-1.23	-.79	.09	.53	.97
.442	1.41	.97	.97	.53	.09	-.35	-.79	-.79	-.79	-1.23
.444	-1.67	-2.11	-2.11	-2.11	-2.11	-1.67	-1.67	-2.11	-2.11	-2.11
.446	-2.55	-2.55	-2.11	-2.11	-2.11	-1.67	-1.23	-.79	-.35	-.35
.448	.09	.53	.97	.97	.97	.97	.97	.53	.09	.09
.450	-.35	-.35	-.79	-.79	-.79	-.79	-.79	-.79	-1.23	-.79
.452	-1.23	-1.23	-1.23	-1.23	-.79	-.79	-.35	-.35	.53	.53
.454	.97	.53	.97	.97	.97	.97	1.41	.97	1.41	1.41
.456	1.85	1.85	2.29	2.29	1.85	1.85	1.41	1.85	.97	.97
.458	1.41	1.85	1.85	1.85	2.29	1.85	1.85	1.85	1.85	1.85
.460	1.85	1.85	1.41	1.41	.97	.53	.09	.09	-.35	.09
.462	-.35	-.35	.09	-.35	.09	.09	.09	.09	.53	.97
.464	1.41	1.41	1.41	1.85	1.85	1.85	1.85	1.85	1.85	1.41
.466	.97	.97	.53	.53	-.35	.09	-.35	-.79	-.79	-.79
.468	-.79	-.79	-.79	-.35	.53	.97	.97	1.85	1.85	1.85
.470	1.41	.53	-.35	-.79	-1.67	-2.11	-2.11	-2.55	-2.11	-1.23
.472	-.35	.53	.97	.97	.97	.53	-.35	-.35	-1.23	-1.23
.474	-1.23	-.79	-.79	-.35	.09	.53	.53	.53	.97	.09
.476	.09	-.79	-.79	-1.23	-.79	-.79	-.79	-.79	-.35	.09
.478	.53	.97	.97	.97	.97	.97	.53	.09	.09	.09
.480	.09	.09	-.35	-.35	-.79	-.79	-.79	-.35	-.35	-.79
.482	-.35	.09	.09	.53	.97	.97	1.41	1.85	1.41	1.41
.484	.97	.53	.09	.09	-.35	-.35	-.79	-1.23	-.79	-.79
.486	-.79	-.79	-.79	-.35	-.35	-.35	.09	.53	.53	.53
.488	.97	.97	.97	.53	.97	.97	.53	.53	.09	-.35
.490	-.35	-.35	-1.23	-.79	-1.23	-1.23	-1.23	-.79	-.79	-.79
.492	-.79	-.79	-.35	-.79	-.79	-.35	.09	.09	.53	.97
.494	1.41	1.41	.97	.53	.53	.09	.09	-.35	-.35	.09
.496	.09	.53	.53	.53	.53	.53	.09	.09	.53	.53
.498	.53	.09	.53	.53	.53	1.41	.97	.97	.97	.97

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 6 OCCUPANT VELOCITY PLASTIBARREL 400PB

INCHES/SECOND

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.130	.04	.08	.12	.13	.17	.21	.25	.29	.33	.37
.132	.38	.42	.43	.46	.34	.28	.22	.12	-.00	-.13
.134	-.26	-.39	-.49	-.55	-.61	-.67	-.76	-.86	-.99	-1.15
.136	-1.35	-1.51	-1.67	-1.80	-1.93	-2.02	-2.12	-2.18	-2.21	-2.23
.138	-2.26	-2.32	-2.38	-2.48	-2.57	-2.63	-2.69	-2.76	-2.85	-3.05
.140	-3.34	-3.71	-4.14	-4.58	-4.98	-5.34	-5.61	-5.84	-6.04	-6.20
.142	-6.36	-6.52	-6.65	-6.78	-6.88	-6.90	-6.90	-6.86	-6.82	-6.74
.144	-6.70	-6.73	-6.79	-6.88	-6.98	-7.11	-7.23	-7.33	-7.42	-7.55
.146	-7.68	-7.81	-7.97	-8.17	-8.40	-8.66	-8.93	-9.16	-9.36	-9.49
.148	-9.55	-9.57	-9.57	-9.56	-9.52	-9.44	-9.37	-9.26	-9.19	-9.11
.150	-9.07	-9.13	-9.23	-9.39	-9.62	-9.85	-10.05	-10.17	-10.24	-10.20
.152	-10.09	-9.91	-9.73	-9.56	-9.38	-9.27	-9.23	-9.29	-9.42	-9.58
.154	-9.75	-9.88	-9.97	-10.03	-10.09	-10.12	-10.08	-10.04	-10.00	-9.99
.156	-9.98	-9.98	-9.97	-9.96	-9.99	-10.08	-10.21	-10.34	-10.50	-10.67
.158	-10.86	-11.06	-11.29	-11.49	-11.68	-11.85	-11.94	-11.97	-11.96	-11.89
.160	-11.81	-11.74	-11.70	-11.72	-11.78	-11.91	-12.04	-12.20	-12.43	-12.73
.162	-13.07	-13.43	-13.83	-14.23	-14.67	-15.07	-15.40	-15.70	-15.89	-16.02
.164	-16.08	-16.14	-16.17	-16.16	-16.16	-16.18	-16.24	-16.41	-16.67	-17.11
.166	-17.67	-18.38	-19.09	-19.69	-20.09	-20.29	-20.24	-20.00	-19.62	-19.14
.168	-18.66	-18.18	-17.76	-17.45	-17.24	-17.20	-17.29	-17.52	-17.82	-18.22
.170	-18.69	-19.19	-19.76	-20.36	-20.97	-21.57	-22.14	-22.68	-23.11	-23.48
.172	-23.81	-24.07	-24.27	-24.43	-24.53	-24.52	-24.45	-24.34	-24.19	-24.12
.174	-24.08	-24.07	-24.07	-24.02	-23.95	-23.81	-23.60	-23.42	-23.24	-23.14
.176	-23.13	-23.16	-23.25	-23.41	-23.61	-23.84	-24.07	-24.34	-24.60	-24.83
.178	-24.96	-25.02	-24.95	-24.80	-24.56	-24.28	-24.00	-23.69	-23.41	-23.13
.180	-22.86	-22.58	-22.37	-22.19	-22.08	-22.01	-22.00	-22.03	-22.09	-22.18
.182	-22.35	-22.54	-22.77	-23.04	-23.37	-23.67	-23.97	-24.26	-24.49	-24.69
.184	-24.85	-25.02	-25.18	-25.34	-25.47	-25.57	-25.59	-25.55	-25.44	-25.30
.186	-25.16	-24.98	-24.84	-24.73	-24.62	-24.58	-24.57	-24.60	-24.70	-24.86
.188	-25.06	-25.25	-25.45	-25.68	-25.91	-26.11	-26.30	-26.47	-26.63	-26.72
.190	-26.78	-26.81	-26.84	-26.80	-26.76	-26.65	-26.54	-26.43	-26.29	-26.18
.192	-26.04	-25.93	-25.85	-25.78	-25.70	-25.66	-25.62	-25.58	-25.57	-25.60
.194	-25.66	-25.72	-25.78	-25.85	-25.87	-25.87	-25.79	-25.68	-25.54	-25.36
.196	-25.19	-25.01	-24.83	-24.69	-24.58	-24.51	-24.47	-24.46	-24.45	-24.45
.198	-24.41	-24.33	-24.19	-24.05	-23.90	-23.79	-23.75	-23.75	-23.81	-23.94
.200	-24.10	-24.26	-24.42	-24.59	-24.72	-24.78	-24.80	-24.76	-24.69	-24.55
.202	-24.34	-24.09	-23.81	-23.54	-23.29	-23.08	-22.90	-22.76	-22.65	-22.58
.204	-22.50	-22.43	-22.35	-22.28	-22.24	-22.20	-22.16	-22.15	-22.14	-22.14
.206	-22.13	-22.09	-22.05	-22.01	-21.93	-21.86	-21.82	-21.78	-21.70	-21.63
.208	-21.55	-21.48	-21.44	-21.40	-21.35	-21.31	-21.24	-21.13	-21.02	-20.91
.210	-20.80	-20.73	-20.66	-20.65	-20.68	-20.70	-20.80	-20.89	-20.95	-21.01
.212	-21.04	-21.03	-20.96	-20.85	-20.71	-20.60	-20.49	-20.42	-20.34	-20.30
.214	-20.29	-20.32	-20.38	-20.44	-20.50	-20.56	-20.63	-20.65	-20.71	-20.74
.216	-20.80	-20.83	-20.82	-20.85	-20.88	-20.87	-20.90	-20.92	-20.95	-21.01
.218	-21.04	-21.06	-21.09	-21.12	-21.18	-21.24	-21.34	-21.43	-21.56	-21.69
.220	-21.82	-21.95	-22.11	-22.24	-22.37	-22.49	-22.56	-22.62	-22.68	-22.70
.222	-22.73	-22.72	-22.72	-22.71	-22.70	-22.70	-22.69	-22.72	-22.71	-22.74
.224	-22.73	-22.72	-22.65	-22.57	-22.40	-22.19	-21.94	-21.70	-21.49	-21.31
.226	-21.24	-21.23	-21.29	-21.39	-21.48	-21.54	-21.50	-21.36	-21.11	-20.77
.228	-20.39	-20.01	-19.66	-19.38	-19.24	-19.20	-19.23	-19.36	-19.55	-19.78
.230	-20.01	-20.24	-20.47	-20.64	-20.70	-20.76	-20.75	-20.71	-20.67	-20.63
.232	-20.66	-20.72	-20.85	-21.01	-21.24	-21.47	-21.70	-21.90	-22.06	-22.19
.234	-22.22	-22.14	-22.00	-21.79	-21.51	-21.20	-20.95	-20.74	-20.63	-20.66
.236	-20.79	-20.99	-21.25	-21.52	-21.75	-21.91	-22.00	-22.00	-21.89	-21.75
.238	-21.54	-21.33	-21.15	-21.04	-21.00	-21.06	-21.19	-21.35	-21.51	-21.64
.240	-21.74	-21.76	-21.72	-21.62	-21.51	-21.33	-21.19	-21.08	-21.00	-20.96
.242	-21.02	-21.12	-21.21	-21.34	-21.44	-21.53	-21.59	-21.62	-21.61	-21.54
.244	-21.40	-21.25	-21.15	-21.04	-20.96	-20.92	-20.91	-20.98	-21.04	-21.13
.246	-21.26	-21.35	-21.42	-21.41	-21.37	-21.26	-21.12	-20.97	-20.83	-20.72
.248	-20.65	-20.64	-20.67	-20.73	-20.82	-20.95	-21.08	-21.21	-21.27	-21.30
.250	-21.29	-21.25	-21.18	-21.07	-20.96	-20.85	-20.78	-20.76	-20.66	-20.65
.252	-20.68	-20.71	-20.73	-20.76	-20.75	-20.75	-20.74	-20.73	-20.69	-20.69

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 6 (CONT'D) OCCUPANT VELOCITY PLASTIBARREL 400PB

INCHES/SECOND

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.254	-20.68	-20.71	-20.70	-20.73	-20.72	-20.71	-20.67	-20.63	-20.59	-20.55
.256	-20.47	-20.40	-20.33	-20.25	-20.18	-20.13	-20.06	-19.99	-19.94	-19.90
.258	-19.90	-19.89	-19.92	-19.94	-19.97	-20.00	-20.03	-20.05	-20.11	-20.14
.260	-20.17	-20.16	-20.15	-20.15	-20.14	-20.13	-20.13	-20.12	-20.11	-20.11
.262	-20.06	-20.02	-19.95	-19.84	-19.77	-19.69	-19.62	-19.58	-19.53	-19.53
.264	-19.55	-19.62	-19.68	-19.74	-19.83	-19.93	-20.02	-20.15	-20.25	-20.31
.266	-20.33	-20.36	-20.39	-20.41	-20.44	-20.47	-20.46	-20.45	-20.45	-20.44
.268	-20.47	-20.50	-20.52	-20.55	-20.58	-20.60	-20.63	-20.66	-20.68	-20.71
.270	-20.74	-20.77	-20.83	-20.89	-20.95	-21.01	-21.07	-21.13	-21.19	-21.22
.272	-21.21	-21.21	-21.16	-21.16	-21.15	-21.18	-21.20	-21.27	-21.29	-21.32
.274	-21.35	-21.34	-21.30	-21.19	-21.01	-20.80	-20.53	-20.25	-20.00	-19.79
.276	-19.65	-19.61	-19.60	-19.70	-19.86	-20.06	-20.25	-20.45	-20.61	-20.71
.278	-20.77	-20.73	-20.62	-20.48	-20.33	-20.22	-20.15	-20.18	-20.27	-20.48
.280	-20.53	-20.66	-20.75	-20.81	-20.81	-20.73	-20.56	-20.38	-20.17	-19.99
.282	-19.85	-19.78	-19.80	-19.90	-20.06	-20.29	-20.52	-20.79	-21.02	-21.21
.284	-21.31	-21.40	-21.43	-21.42	-21.38	-21.34	-21.30	-21.23	-21.18	-21.11
.286	-21.03	-20.93	-20.85	-20.74	-20.67	-20.56	-20.52	-20.48	-20.47	-20.46
.288	-20.49	-20.55	-20.61	-20.67	-20.77	-20.86	-20.96	-21.02	-21.05	-21.07
.290	-21.10	-21.09	-21.09	-21.08	-21.11	-21.13	-21.19	-21.26	-21.32	-21.38
.292	-21.44	-21.50	-21.56	-21.59	-21.61	-21.61	-21.57	-21.53	-21.45	-21.38
.294	-21.30	-21.23	-21.19	-21.15	-21.10	-21.10	-21.09	-21.08	-21.04	-21.00
.296	-20.96	-20.89	-20.81	-20.74	-20.66	-20.59	-20.51	-20.47	-20.47	-20.46
.298	-20.45	-20.44	-20.44	-20.43	-20.39	-20.35	-20.31	-20.23	-20.19	-20.12
.300	-20.08	-20.04	-20.00	-19.99	-20.02	-20.04	-20.07	-20.10	-20.12	-20.15
.302	-20.14	-20.10	-20.06	-20.02	-19.98	-19.94	-19.90	-19.89	-19.92	-19.98
.304	-20.04	-20.07	-20.13	-20.12	-20.12	-20.11	-20.07	-19.99	-19.92	-19.84
.306	-19.77	-19.69	-19.65	-19.65	-19.67	-19.73	-19.80	-19.82	-19.85	-19.84
.308	-19.84	-19.83	-19.82	-19.78	-19.74	-19.70	-19.63	-19.55	-19.51	-19.47
.310	-19.46	-19.46	-19.48	-19.51	-19.54	-19.53	-19.52	-19.52	-19.51	-19.50
.312	-19.49	-19.49	-19.51	-19.54	-19.57	-19.60	-19.62	-19.65	-19.64	-19.64
.314	-19.60	-19.55	-19.51	-19.51	-19.50	-19.46	-19.42	-19.34	-19.27	-19.16
.316	-19.09	-19.01	-18.97	-18.93	-18.96	-19.02	-19.08	-19.17	-19.27	-19.36
.318	-19.46	-19.55	-19.61	-19.67	-19.74	-19.73	-19.72	-19.68	-19.61	-19.53
.320	-19.46	-19.35	-19.21	-19.10	-18.99	-18.88	-18.80	-18.76	-18.76	-18.75
.322	-18.78	-18.77	-18.76	-18.76	-18.72	-18.71	-18.70	-18.70	-18.69	-18.68
.324	-18.67	-18.67	-18.66	-18.65	-18.65	-18.64	-18.60	-18.52	-18.45	-18.34
.326	-18.23	-18.09	-17.98	-17.91	-17.87	-17.83	-17.82	-17.81	-17.80	-17.80
.328	-17.79	-17.75	-17.71	-17.67	-17.63	-17.62	-17.58	-17.57	-17.57	-17.56
.330	-17.59	-17.61	-17.64	-17.63	-17.63	-17.59	-17.51	-17.40	-17.26	-17.15
.332	-17.01	-16.90	-16.83	-16.78	-16.78	-16.77	-16.80	-16.86	-16.89	-16.91
.334	-16.94	-16.97	-16.96	-16.95	-16.91	-16.87	-16.83	-16.79	-16.75	-16.74
.336	-16.77	-16.76	-16.76	-16.75	-16.74	-16.73	-16.73	-16.75	-16.75	-16.74
.338	-16.70	-16.69	-16.69	-16.68	-16.67	-16.70	-16.73	-16.72	-16.71	-16.71
.340	-16.70	-16.69	-16.65	-16.64	-16.64	-16.60	-16.59	-16.58	-16.54	-16.54
.342	-16.56	-16.56	-16.58	-16.61	-16.64	-16.66	-16.66	-16.65	-16.64	-16.60
.344	-16.60	-16.59	-16.55	-16.51	-16.47	-16.43	-16.42	-16.41	-16.44	-16.43
.346	-16.42	-16.42	-16.44	-16.44	-16.46	-16.49	-16.52	-16.51	-16.54	-16.57
.348	-16.59	-16.62	-16.65	-16.67	-16.70	-16.73	-16.76	-16.78	-16.78	-16.77
.350	-16.80	-16.82	-16.85	-16.88	-16.90	-16.90	-16.86	-16.78	-16.67	-16.53
.352	-16.39	-16.24	-16.14	-16.06	-15.99	-15.95	-15.91	-15.90	-15.93	-15.99
.354	-16.08	-16.14	-16.20	-16.20	-16.16	-16.05	-15.90	-15.76	-15.62	-15.51
.356	-15.44	-15.43	-15.46	-15.52	-15.61	-15.74	-15.87	-15.96	-16.06	-16.12
.358	-16.15	-16.14	-16.13	-16.13	-16.09	-16.04	-16.00	-16.00	-15.99	-16.02
.360	-16.08	-16.21	-16.34	-16.46	-16.63	-16.79	-16.99	-17.18	-17.38	-17.58
.362	-17.77	-17.97	-18.13	-18.36	-18.59	-18.79	-18.99	-19.15	-19.24	-19.30
.364	-19.33	-19.36	-19.32	-19.31	-19.34	-19.36	-19.46	-19.62	-19.85	-20.15
.366	-20.52	-20.95	-21.45	-21.99	-22.52	-23.03	-23.49	-23.96	-24.33	-24.66
.368	-24.92	-25.05	-25.11	-25.11	-25.03	-24.92	-24.78	-24.64	-24.56	-24.52
.370	-24.55	-24.61	-24.67	-24.80	-24.93	-25.13	-25.39	-25.76	-26.19	-26.66
.372	-27.09	-27.49	-27.79	-27.99	-28.05	-28.01	-27.83	-27.52	-27.07	-26.52
.374	-25.94	-25.35	-24.84	-24.39	-24.05	-23.84	-23.69	-23.62	-23.58	-23.60

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 6 (CONT'D) OCCUPANT VELOCITY PLASTIBARREL 400PB

INCHES/SECOND

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.376	-23.63	-23.69	-23.72	-23.75	-23.77	-23.83	-23.89	-23.96	-24.02	-24.04
.378	-24.00	-23.86	-23.68	-23.47	-23.30	-23.12	-22.91	-22.70	-22.49	-22.25
.380	-21.97	-21.69	-21.41	-21.17	-20.96	-20.81	-20.71	-20.66	-20.62	-20.62
.382	-20.64	-20.67	-20.66	-20.69	-20.72	-20.74	-20.74	-20.73	-20.66	-20.55
.384	-20.41	-20.26	-20.15	-20.08	-20.11	-20.24	-20.47	-20.87	-21.40	-22.07
.386	-22.85	-23.72	-24.70	-25.74	-26.85	-28.00	-29.21	-30.50	-31.91	-33.33
.388	-34.71	-36.03	-37.28	-38.49	-39.57	-40.38	-40.84	-40.84	-40.39	-39.64
.390	-38.68	-37.72	-36.87	-36.12	-35.46	-34.95	-34.60	-34.49	-34.62	-35.02
.392	-35.56	-36.16	-36.77	-37.27	-37.70	-37.97	-38.03	-37.85	-37.47	-36.89
.394	-36.10	-35.21	-34.39	-33.67	-33.19	-32.91	-32.87	-32.98	-33.03	-33.22
.396	-33.42	-33.58	-33.75	-33.94	-34.27	-34.71	-35.24	-35.85	-36.45	-36.99
.398	-37.42	-37.79	-38.09	-38.28	-38.41	-38.44	-38.33	-38.15	-37.87	-37.53
.400	-37.18	-36.87	-36.66	-36.52	-36.44	-36.44	-36.46	-36.52	-36.58	-36.65
.402	-36.74	-36.87	-37.00	-37.09	-37.12	-37.04	-36.94	-36.79	-36.65	-36.61
.404	-36.64	-36.77	-36.93	-37.09	-37.19	-37.18	-37.07	-36.83	-36.48	-36.07
.406	-35.59	-35.10	-34.62	-34.17	-33.83	-33.58	-33.44	-33.40	-33.46	-33.56
.408	-33.65	-33.75	-33.84	-33.90	-33.93	-33.92	-33.95	-34.01	-34.07	-34.17
.410	-34.29	-34.42	-34.55	-34.68	-34.81	-34.90	-34.97	-35.03	-35.02	-34.94
.412	-34.80	-34.63	-34.42	-34.24	-34.06	-33.95	-33.91	-33.87	-33.87	-33.89
.414	-33.95	-34.01	-34.08	-34.14	-34.16	-34.16	-34.15	-34.11	-34.07	-33.99
.416	-33.95	-33.91	-33.84	-33.83	-33.82	-33.82	-33.78	-33.73	-33.69	-33.62
.418	-33.54	-33.37	-33.19	-33.01	-32.84	-32.73	-32.62	-32.55	-32.44	-32.33
.420	-32.19	-32.04	-31.87	-31.76	-31.65	-31.61	-31.60	-31.66	-31.72	-31.89
.422	-32.08	-32.31	-32.58	-32.84	-33.14	-33.41	-33.64	-33.83	-33.93	-33.99
.424	-33.95	-33.87	-33.76	-33.59	-33.41	-33.24	-33.06	-32.88	-32.71	-32.58
.426	-32.29	-32.04	-31.80	-31.55	-31.34	-31.20	-31.09	-31.08	-31.14	-31.24
.428	-31.37	-31.46	-31.52	-31.52	-31.48	-31.37	-31.26	-31.12	-30.94	-30.76
.430	-30.62	-30.48	-30.40	-30.33	-30.25	-30.15	-30.04	-29.93	-29.82	-29.75
.432	-29.67	-29.63	-29.59	-29.55	-29.51	-29.50	-29.46	-29.45	-29.45	-29.44
.434	-29.43	-29.46	-29.52	-29.62	-29.78	-29.94	-30.14	-30.27	-30.43	-30.56
.436	-30.65	-30.75	-30.81	-30.83	-30.83	-30.75	-30.64	-30.54	-30.39	-30.28
.438	-30.18	-30.10	-29.99	-29.88	-29.81	-29.77	-29.76	-29.79	-29.88	-29.98
.440	-30.11	-30.27	-30.43	-30.56	-30.69	-30.78	-30.85	-30.84	-30.80	-30.72
.442	-30.61	-30.54	-30.47	-30.42	-30.42	-30.44	-30.51	-30.57	-30.63	-30.72
.444	-30.85	-31.01	-31.18	-31.34	-31.50	-31.63	-31.76	-31.92	-32.08	-32.25
.446	-32.44	-32.64	-32.80	-32.97	-33.13	-33.26	-33.35	-33.41	-33.44	-33.47
.448	-33.46	-33.42	-33.34	-33.27	-33.20	-33.12	-33.05	-33.00	-33.00	-32.99
.450	-33.02	-33.05	-33.11	-33.17	-33.23	-33.29	-33.35	-33.41	-33.51	-33.57
.452	-33.66	-33.76	-33.85	-33.95	-34.01	-34.07	-34.09	-34.12	-34.08	-34.04
.454	-33.97	-33.92	-33.85	-33.78	-33.70	-33.63	-33.52	-33.44	-33.33	-33.23
.456	-33.08	-32.94	-32.76	-32.59	-32.44	-32.30	-32.19	-32.05	-31.98	-31.90
.458	-31.79	-31.65	-31.51	-31.37	-31.19	-31.05	-30.90	-30.76	-30.62	-30.48
.460	-30.33	-30.19	-30.08	-29.97	-29.90	-29.86	-29.85	-29.84	-29.87	-29.86
.462	-29.89	-29.92	-29.91	-29.94	-29.93	-29.93	-29.92	-29.91	-29.87	-29.80
.464	-29.69	-29.58	-29.47	-29.33	-29.19	-29.04	-28.90	-28.76	-28.61	-28.51
.466	-28.43	-28.36	-28.32	-28.28	-28.30	-28.30	-28.32	-28.38	-28.44	-28.51
.468	-28.57	-28.63	-28.69	-28.72	-28.67	-28.60	-28.52	-28.38	-28.24	-28.10
.470	-27.99	-27.95	-27.97	-28.04	-28.16	-28.33	-28.49	-28.69	-28.85	-28.94
.472	-28.97	-28.93	-28.86	-28.78	-28.71	-28.67	-28.69	-28.72	-28.81	-28.91
.474	-29.00	-29.06	-29.13	-29.15	-29.15	-29.10	-29.06	-29.02	-28.95	-28.94
.476	-28.93	-29.00	-29.06	-29.15	-29.21	-29.27	-29.33	-29.40	-29.42	-29.42
.478	-29.37	-29.30	-29.23	-29.15	-29.08	-29.00	-28.96	-28.95	-28.95	-28.94
.480	-28.93	-28.93	-28.95	-28.98	-29.04	-29.10	-29.16	-29.19	-29.22	-29.28
.482	-29.30	-29.30	-29.29	-29.25	-29.18	-29.10	-28.99	-28.85	-28.74	-28.63
.484	-28.56	-28.52	-28.51	-28.50	-28.53	-28.56	-28.62	-28.71	-28.77	-28.83
.486	-28.90	-28.96	-29.02	-29.04	-29.07	-29.10	-29.09	-29.05	-29.01	-28.97
.488	-28.89	-28.82	-28.75	-28.70	-28.63	-28.55	-28.51	-28.47	-28.47	-28.49
.490	-28.52	-28.55	-28.64	-28.70	-28.80	-28.89	-28.99	-29.05	-29.11	-29.17
.492	-29.23	-29.29	-29.32	-29.38	-29.44	-29.47	-29.46	-29.45	-29.41	-29.34
.494	-29.23	-29.12	-29.05	-29.01	-28.97	-28.96	-28.95	-28.98	-29.01	-29.00
.496	-28.99	-28.95	-28.91	-28.87	-28.83	-28.79	-28.78	-28.77	-28.73	-28.69
.498	-28.65	-28.64	-28.60	-28.56	-28.52	-28.41	-28.34	-28.26	-28.19	-28.11

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 7 OCCUPANT DISPLACEMENT PLASTIBARREL 400PB

	INCHES									
TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.130	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.132	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.134	.00	.0*	.0*	.0*	.0*	.0*	.0*	-.0*	-.0*	-.0*
.136	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.138	-.00	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.140	-.01	-.01	-.01	-.01	-.01	-.01	-.02	-.02	-.02	-.02
.142	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.03	-.03	-.03
.144	-.03	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.05	-.05
.146	-.05	-.05	-.05	-.05	-.06	-.06	-.06	-.06	-.06	-.06
.148	-.07	-.07	-.07	-.07	-.07	-.08	-.08	-.08	-.08	-.08
.150	-.08	-.09	-.09	-.09	-.09	-.09	-.10	-.10	-.10	-.10
.152	-.10	-.11	-.11	-.11	-.11	-.11	-.12	-.12	-.12	-.12
.154	-.12	-.13	-.13	-.13	-.13	-.13	-.14	-.14	-.14	-.14
.156	-.14	-.15	-.15	-.15	-.15	-.15	-.16	-.16	-.16	-.16
.158	-.16	-.17	-.17	-.17	-.17	-.18	-.18	-.18	-.18	-.18
.160	-.19	-.19	-.19	-.19	-.20	-.20	-.20	-.20	-.21	-.21
.162	-.21	-.21	-.22	-.22	-.22	-.23	-.23	-.23	-.24	-.24
.164	-.24	-.24	-.25	-.25	-.25	-.26	-.26	-.26	-.27	-.27
.166	-.27	-.28	-.28	-.29	-.29	-.29	-.30	-.30	-.31	-.31
.168	-.31	-.32	-.32	-.32	-.33	-.33	-.33	-.34	-.34	-.35
.170	-.35	-.35	-.36	-.36	-.37	-.37	-.37	-.38	-.38	-.39
.172	-.39	-.40	-.40	-.41	-.41	-.42	-.42	-.43	-.43	-.44
.174	-.44	-.45	-.45	-.46	-.46	-.47	-.47	-.47	-.48	-.48
.176	-.49	-.49	-.50	-.50	-.51	-.51	-.52	-.52	-.53	-.53
.178	-.54	-.54	-.55	-.55	-.56	-.56	-.57	-.57	-.58	-.58
.180	-.58	-.59	-.59	-.60	-.60	-.61	-.61	-.62	-.62	-.62
.182	-.63	-.63	-.64	-.64	-.65	-.65	-.66	-.66	-.67	-.67
.184	-.68	-.68	-.69	-.69	-.70	-.70	-.71	-.71	-.72	-.72
.186	-.73	-.73	-.74	-.74	-.75	-.75	-.76	-.76	-.77	-.77
.188	-.78	-.78	-.79	-.79	-.80	-.80	-.81	-.81	-.82	-.82
.190	-.83	-.83	-.84	-.85	-.85	-.86	-.86	-.87	-.87	-.88
.192	-.88	-.89	-.89	-.90	-.90	-.91	-.91	-.92	-.92	-.93
.194	-.93	-.94	-.94	-.95	-.95	-.96	-.96	-.97	-.97	-.98
.196	-.98	-.99	-.99	-1.00	-1.00	-1.01	-1.01	-1.02	-1.02	-1.03
.198	-1.03	-1.04	-1.04	-1.05	-1.05	-1.06	-1.06	-1.07	-1.07	-1.08
.200	-1.08	-1.09	-1.09	-1.10	-1.10	-1.11	-1.11	-1.12	-1.12	-1.13
.202	-1.13	-1.14	-1.14	-1.15	-1.15	-1.15	-1.16	-1.16	-1.17	-1.17
.204	-1.18	-1.18	-1.19	-1.19	-1.20	-1.20	-1.20	-1.21	-1.21	-1.22
.206	-1.22	-1.23	-1.23	-1.24	-1.24	-1.24	-1.25	-1.25	-1.26	-1.26
.208	-1.27	-1.27	-1.27	-1.28	-1.28	-1.29	-1.29	-1.30	-1.30	-1.30
.210	-1.31	-1.31	-1.32	-1.32	-1.32	-1.33	-1.33	-1.34	-1.34	-1.35
.212	-1.35	-1.35	-1.36	-1.36	-1.37	-1.37	-1.37	-1.38	-1.38	-1.39
.214	-1.39	-1.39	-1.40	-1.40	-1.41	-1.41	-1.42	-1.42	-1.42	-1.43
.216	-1.43	-1.44	-1.44	-1.44	-1.45	-1.45	-1.46	-1.46	-1.47	-1.47
.218	-1.47	-1.48	-1.48	-1.49	-1.49	-1.49	-1.50	-1.50	-1.51	-1.51
.220	-1.52	-1.52	-1.53	-1.53	-1.53	-1.54	-1.54	-1.55	-1.55	-1.56
.222	-1.56	-1.57	-1.57	-1.57	-1.58	-1.58	-1.59	-1.59	-1.60	-1.60
.224	-1.61	-1.61	-1.62	-1.62	-1.62	-1.63	-1.63	-1.64	-1.64	-1.65
.226	-1.65	-1.65	-1.66	-1.66	-1.67	-1.67	-1.68	-1.68	-1.68	-1.69
.228	-1.69	-1.70	-1.70	-1.70	-1.71	-1.71	-1.72	-1.72	-1.72	-1.73
.230	-1.73	-1.74	-1.74	-1.74	-1.75	-1.75	-1.76	-1.76	-1.77	-1.77
.232	-1.77	-1.78	-1.78	-1.79	-1.79	-1.79	-1.80	-1.80	-1.81	-1.81
.234	-1.82	-1.82	-1.83	-1.83	-1.83	-1.84	-1.84	-1.85	-1.85	-1.85
.236	-1.86	-1.86	-1.87	-1.87	-1.88	-1.88	-1.88	-1.89	-1.89	-1.90
.238	-1.90	-1.91	-1.91	-1.92	-1.92	-1.92	-1.93	-1.93	-1.94	-1.94
.240	-1.94	-1.95	-1.95	-1.96	-1.96	-1.97	-1.97	-1.97	-1.98	-1.98
.242	-1.99	-1.99	-2.00	-2.00	-2.00	-2.01	-2.01	-2.02	-2.02	-2.03
.244	-2.03	-2.03	-2.04	-2.04	-2.05	-2.05	-2.06	-2.06	-2.06	-2.07
.246	-2.07	-2.08	-2.08	-2.09	-2.09	-2.09	-2.10	-2.10	-2.11	-2.11
.248	-2.11	-2.12	-2.12	-2.13	-2.13	-2.14	-2.14	-2.14	-2.15	-2.15
.250	-2.16	-2.16	-2.17	-2.17	-2.17	-2.18	-2.18	-2.19	-2.19	-2.19
.252	-2.20	-2.20	-2.21	-2.21	-2.22	-2.22	-2.22	-2.23	-2.23	-2.24

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 7 (CONT'D) OCCUPANT DISPLACEMENT PLASTIBARREL 400PB

INCHES

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.254	-2.24	-2.24	-2.25	-2.25	-2.26	-2.26	-2.26	-2.27	-2.27	-2.28
.256	-2.28	-2.29	-2.29	-2.29	-2.30	-2.30	-2.31	-2.31	-2.31	-2.32
.258	-2.32	-2.33	-2.33	-2.33	-2.34	-2.34	-2.35	-2.35	-2.35	-2.36
.260	-2.36	-2.37	-2.37	-2.37	-2.38	-2.38	-2.39	-2.39	-2.39	-2.40
.262	-2.40	-2.41	-2.41	-2.41	-2.42	-2.42	-2.43	-2.43	-2.43	-2.44
.264	-2.44	-2.45	-2.45	-2.45	-2.46	-2.46	-2.46	-2.47	-2.47	-2.48
.266	-2.48	-2.49	-2.49	-2.49	-2.50	-2.50	-2.51	-2.51	-2.51	-2.52
.268	-2.52	-2.53	-2.53	-2.53	-2.54	-2.54	-2.55	-2.55	-2.56	-2.56
.270	-2.56	-2.57	-2.57	-2.58	-2.58	-2.58	-2.59	-2.59	-2.60	-2.60
.272	-2.61	-2.61	-2.61	-2.62	-2.62	-2.63	-2.63	-2.64	-2.64	-2.64
.274	-2.65	-2.65	-2.66	-2.66	-2.66	-2.67	-2.67	-2.68	-2.68	-2.69
.276	-2.69	-2.69	-2.70	-2.70	-2.70	-2.71	-2.71	-2.72	-2.72	-2.73
.278	-2.73	-2.73	-2.74	-2.74	-2.75	-2.75	-2.75	-2.76	-2.76	-2.77
.280	-2.77	-2.77	-2.78	-2.78	-2.79	-2.79	-2.79	-2.80	-2.80	-2.81
.282	-2.81	-2.81	-2.82	-2.82	-2.83	-2.83	-2.84	-2.84	-2.84	-2.85
.284	-2.85	-2.86	-2.86	-2.86	-2.87	-2.87	-2.88	-2.88	-2.89	-2.89
.286	-2.89	-2.90	-2.90	-2.91	-2.91	-2.92	-2.92	-2.92	-2.93	-2.93
.288	-2.94	-2.94	-2.94	-2.95	-2.95	-2.96	-2.96	-2.96	-2.97	-2.97
.290	-2.98	-2.98	-2.99	-2.99	-2.99	-3.00	-3.00	-3.01	-3.01	-3.02
.292	-3.02	-3.02	-3.03	-3.03	-3.04	-3.04	-3.05	-3.05	-3.05	-3.06
.294	-3.06	-3.07	-3.07	-3.08	-3.08	-3.08	-3.09	-3.09	-3.10	-3.10
.296	-3.11	-3.11	-3.11	-3.12	-3.12	-3.13	-3.13	-3.13	-3.14	-3.14
.298	-3.15	-3.15	-3.15	-3.16	-3.16	-3.17	-3.17	-3.17	-3.18	-3.18
.300	-3.19	-3.19	-3.19	-3.20	-3.20	-3.21	-3.21	-3.21	-3.22	-3.22
.302	-3.23	-3.23	-3.24	-3.24	-3.24	-3.25	-3.25	-3.26	-3.26	-3.26
.304	-3.27	-3.27	-3.28	-3.28	-3.28	-3.29	-3.29	-3.30	-3.30	-3.30
.306	-3.31	-3.31	-3.31	-3.32	-3.32	-3.33	-3.33	-3.33	-3.34	-3.34
.308	-3.35	-3.35	-3.35	-3.36	-3.36	-3.37	-3.37	-3.37	-3.38	-3.38
.310	-3.39	-3.39	-3.39	-3.40	-3.40	-3.41	-3.41	-3.41	-3.42	-3.42
.312	-3.42	-3.43	-3.43	-3.44	-3.44	-3.44	-3.45	-3.45	-3.46	-3.46
.314	-3.46	-3.47	-3.47	-3.48	-3.48	-3.48	-3.49	-3.49	-3.50	-3.50
.316	-3.50	-3.51	-3.51	-3.51	-3.52	-3.52	-3.53	-3.53	-3.53	-3.54
.318	-3.54	-3.54	-3.55	-3.55	-3.56	-3.56	-3.56	-3.57	-3.57	-3.58
.320	-3.58	-3.58	-3.59	-3.59	-3.60	-3.60	-3.60	-3.61	-3.61	-3.61
.322	-3.62	-3.62	-3.63	-3.63	-3.63	-3.64	-3.64	-3.64	-3.65	-3.65
.324	-3.66	-3.66	-3.66	-3.67	-3.67	-3.67	-3.68	-3.68	-3.69	-3.69
.326	-3.69	-3.70	-3.70	-3.70	-3.71	-3.71	-3.71	-3.72	-3.72	-3.72
.328	-3.73	-3.73	-3.74	-3.74	-3.74	-3.75	-3.75	-3.75	-3.76	-3.76
.330	-3.76	-3.77	-3.77	-3.77	-3.78	-3.78	-3.78	-3.79	-3.79	-3.80
.332	-3.80	-3.80	-3.81	-3.81	-3.81	-3.82	-3.82	-3.82	-3.83	-3.83
.334	-3.83	-3.84	-3.84	-3.84	-3.85	-3.85	-3.85	-3.86	-3.86	-3.86
.336	-3.87	-3.87	-3.87	-3.88	-3.88	-3.88	-3.89	-3.89	-3.89	-3.90
.338	-3.90	-3.90	-3.91	-3.91	-3.91	-3.92	-3.92	-3.92	-3.93	-3.93
.340	-3.93	-3.94	-3.94	-3.94	-3.95	-3.95	-3.95	-3.96	-3.96	-3.96
.342	-3.97	-3.97	-3.97	-3.98	-3.98	-3.98	-3.99	-3.99	-3.99	-4.00
.344	-4.00	-4.00	-4.01	-4.01	-4.01	-4.02	-4.02	-4.02	-4.03	-4.03
.346	-4.03	-4.04	-4.04	-4.04	-4.05	-4.05	-4.05	-4.06	-4.06	-4.06
.348	-4.07	-4.07	-4.07	-4.08	-4.08	-4.08	-4.09	-4.09	-4.09	-4.10
.350	-4.10	-4.10	-4.11	-4.11	-4.11	-4.12	-4.12	-4.12	-4.13	-4.13
.352	-4.13	-4.14	-4.14	-4.14	-4.15	-4.15	-4.15	-4.15	-4.16	-4.16
.354	-4.16	-4.17	-4.17	-4.17	-4.18	-4.18	-4.18	-4.19	-4.19	-4.19
.356	-4.20	-4.20	-4.20	-4.21	-4.21	-4.21	-4.21	-4.22	-4.22	-4.22
.358	-4.23	-4.23	-4.23	-4.24	-4.24	-4.24	-4.25	-4.25	-4.25	-4.26
.360	-4.26	-4.26	-4.27	-4.27	-4.27	-4.28	-4.28	-4.28	-4.29	-4.29
.362	-4.29	-4.30	-4.30	-4.30	-4.31	-4.31	-4.32	-4.32	-4.32	-4.33
.364	-4.33	-4.34	-4.34	-4.34	-4.35	-4.35	-4.35	-4.36	-4.36	-4.37
.366	-4.37	-4.37	-4.38	-4.38	-4.39	-4.39	-4.40	-4.40	-4.41	-4.41
.368	-4.42	-4.42	-4.43	-4.43	-4.44	-4.44	-4.45	-4.45	-4.46	-4.46
.370	-4.47	-4.47	-4.48	-4.48	-4.49	-4.49	-4.50	-4.50	-4.51	-4.51
.372	-4.52	-4.52	-4.53	-4.53	-4.54	-4.55	-4.55	-4.56	-4.56	-4.57
.374	-4.57	-4.58	-4.58	-4.59	-4.59	-4.60	-4.60	-4.61	-4.61	-4.62

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 7 (CONT'D) OCCUPANT DISPLACEMENT PLASTIBARREL 400PB

INCHES

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.376	-4.62	-4.63	-4.63	-4.63	-4.64	-4.64	-4.65	-4.65	-4.66	-4.66
.378	-4.67	-4.67	-4.68	-4.68	-4.69	-4.69	-4.70	-4.70	-4.71	-4.71
.380	-4.71	-4.72	-4.72	-4.73	-4.73	-4.74	-4.74	-4.74	-4.75	-4.75
.382	-4.76	-4.76	-4.76	-4.77	-4.77	-4.78	-4.78	-4.78	-4.79	-4.79
.384	-4.80	-4.80	-4.81	-4.81	-4.81	-4.82	-4.82	-4.83	-4.83	-4.83
.386	-4.84	-4.84	-4.85	-4.85	-4.86	-4.86	-4.87	-4.88	-4.88	-4.89
.388	-4.90	-4.90	-4.91	-4.92	-4.93	-4.93	-4.94	-4.95	-4.96	-4.97
.390	-4.98	-4.98	-4.99	-5.00	-5.00	-5.01	-5.02	-5.03	-5.03	-5.04
.392	-5.05	-5.05	-5.06	-5.07	-5.08	-5.08	-5.09	-5.10	-5.11	-5.11
.394	-5.12	-5.13	-5.13	-5.14	-5.15	-5.15	-5.16	-5.17	-5.17	-5.18
.396	-5.19	-5.19	-5.20	-5.21	-5.21	-5.22	-5.23	-5.24	-5.24	-5.25
.398	-5.26	-5.27	-5.27	-5.28	-5.29	-5.30	-5.30	-5.31	-5.32	-5.33
.400	-5.33	-5.34	-5.35	-5.36	-5.36	-5.37	-5.38	-5.39	-5.39	-5.40
.402	-5.41	-5.41	-5.42	-5.43	-5.44	-5.44	-5.45	-5.46	-5.47	-5.47
.404	-5.48	-5.49	-5.50	-5.50	-5.51	-5.52	-5.53	-5.53	-5.54	-5.55
.406	-5.55	-5.56	-5.57	-5.58	-5.58	-5.59	-5.60	-5.60	-5.61	-5.62
.408	-5.62	-5.63	-5.64	-5.64	-5.65	-5.66	-5.66	-5.67	-5.68	-5.68
.410	-5.69	-5.70	-5.70	-5.71	-5.72	-5.72	-5.73	-5.74	-5.75	-5.75
.412	-5.76	-5.77	-5.77	-5.78	-5.79	-5.79	-5.80	-5.81	-5.81	-5.82
.414	-5.83	-5.83	-5.84	-5.85	-5.86	-5.86	-5.87	-5.88	-5.88	-5.89
.416	-5.90	-5.90	-5.91	-5.92	-5.92	-5.93	-5.94	-5.94	-5.95	-5.96
.418	-5.96	-5.97	-5.98	-5.98	-5.99	-6.00	-6.00	-6.01	-6.02	-6.02
.420	-6.03	-6.04	-6.04	-6.05	-6.05	-6.06	-6.07	-6.07	-6.08	-6.09
.422	-6.09	-6.10	-6.11	-6.11	-6.12	-6.13	-6.13	-6.14	-6.15	-6.15
.424	-6.16	-6.17	-6.17	-6.18	-6.19	-6.19	-6.20	-6.21	-6.21	-6.22
.426	-6.23	-6.23	-6.24	-6.24	-6.25	-6.26	-6.26	-6.27	-6.28	-6.28
.428	-6.29	-6.29	-6.30	-6.31	-6.31	-6.32	-6.33	-6.33	-6.34	-6.34
.430	-6.35	-6.36	-6.36	-6.37	-6.38	-6.38	-6.39	-6.39	-6.40	-6.40
.432	-6.41	-6.42	-6.42	-6.43	-6.43	-6.44	-6.45	-6.45	-6.46	-6.46
.434	-6.47	-6.48	-6.48	-6.49	-6.49	-6.50	-6.51	-6.51	-6.52	-6.52
.436	-6.53	-6.54	-6.54	-6.55	-6.55	-6.56	-6.57	-6.57	-6.58	-6.59
.438	-6.59	-6.60	-6.60	-6.61	-6.62	-6.62	-6.63	-6.63	-6.64	-6.64
.440	-6.65	-6.66	-6.66	-6.67	-6.68	-6.68	-6.69	-6.69	-6.70	-6.71
.442	-6.71	-6.72	-6.72	-6.73	-6.74	-6.74	-6.75	-6.75	-6.76	-6.77
.444	-6.77	-6.78	-6.79	-6.79	-6.80	-6.80	-6.81	-6.82	-6.82	-6.83
.446	-6.84	-6.84	-6.85	-6.86	-6.86	-6.87	-6.88	-6.88	-6.89	-6.90
.448	-6.90	-6.91	-6.92	-6.92	-6.93	-6.94	-6.94	-6.95	-6.96	-6.96
.450	-6.97	-6.98	-6.98	-6.99	-7.00	-7.00	-7.01	-7.02	-7.02	-7.03
.452	-7.04	-7.04	-7.05	-7.06	-7.06	-7.07	-7.08	-7.08	-7.09	-7.10
.454	-7.10	-7.11	-7.12	-7.12	-7.13	-7.14	-7.14	-7.15	-7.16	-7.16
.456	-7.17	-7.18	-7.18	-7.19	-7.20	-7.20	-7.21	-7.22	-7.22	-7.23
.458	-7.24	-7.24	-7.25	-7.25	-7.26	-7.27	-7.27	-7.28	-7.29	-7.29
.460	-7.30	-7.30	-7.31	-7.32	-7.32	-7.33	-7.33	-7.34	-7.35	-7.35
.462	-7.36	-7.36	-7.37	-7.38	-7.38	-7.39	-7.39	-7.40	-7.41	-7.41
.464	-7.42	-7.42	-7.43	-7.44	-7.44	-7.45	-7.45	-7.46	-7.46	-7.47
.466	-7.48	-7.48	-7.49	-7.49	-7.50	-7.50	-7.51	-7.52	-7.52	-7.53
.468	-7.53	-7.54	-7.54	-7.55	-7.56	-7.56	-7.57	-7.57	-7.58	-7.58
.470	-7.59	-7.59	-7.60	-7.61	-7.61	-7.62	-7.62	-7.63	-7.63	-7.64
.472	-7.65	-7.65	-7.66	-7.66	-7.67	-7.67	-7.68	-7.69	-7.69	-7.70
.474	-7.70	-7.71	-7.72	-7.72	-7.73	-7.73	-7.74	-7.74	-7.75	-7.76
.476	-7.76	-7.77	-7.77	-7.78	-7.78	-7.79	-7.80	-7.80	-7.81	-7.81
.478	-7.82	-7.83	-7.83	-7.84	-7.84	-7.85	-7.86	-7.86	-7.87	-7.87
.480	-7.88	-7.88	-7.89	-7.90	-7.90	-7.91	-7.91	-7.92	-7.92	-7.93
.482	-7.94	-7.94	-7.95	-7.95	-7.96	-7.97	-7.97	-7.98	-7.98	-7.99
.484	-7.99	-8.00	-8.01	-8.01	-8.02	-8.02	-8.03	-8.03	-8.04	-8.05
.486	-8.05	-8.06	-8.06	-8.07	-8.08	-8.08	-8.09	-8.09	-8.10	-8.10
.488	-8.11	-8.12	-8.12	-8.13	-8.13	-8.14	-8.14	-8.15	-8.16	-8.16
.490	-8.17	-8.17	-8.18	-8.18	-8.19	-8.20	-8.20	-8.21	-8.21	-8.22
.492	-8.22	-8.23	-8.24	-8.24	-8.25	-8.25	-8.26	-8.27	-8.27	-8.28
.494	-8.28	-8.29	-8.30	-8.30	-8.31	-8.31	-8.32	-8.32	-8.33	-8.34
.496	-8.34	-8.35	-8.35	-8.36	-8.36	-8.37	-8.38	-8.38	-8.39	-8.39
.498	-8.40	-8.40	-8.41	-8.42	-8.42	-8.43	-8.43	-8.44	-8.44	-8.45

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

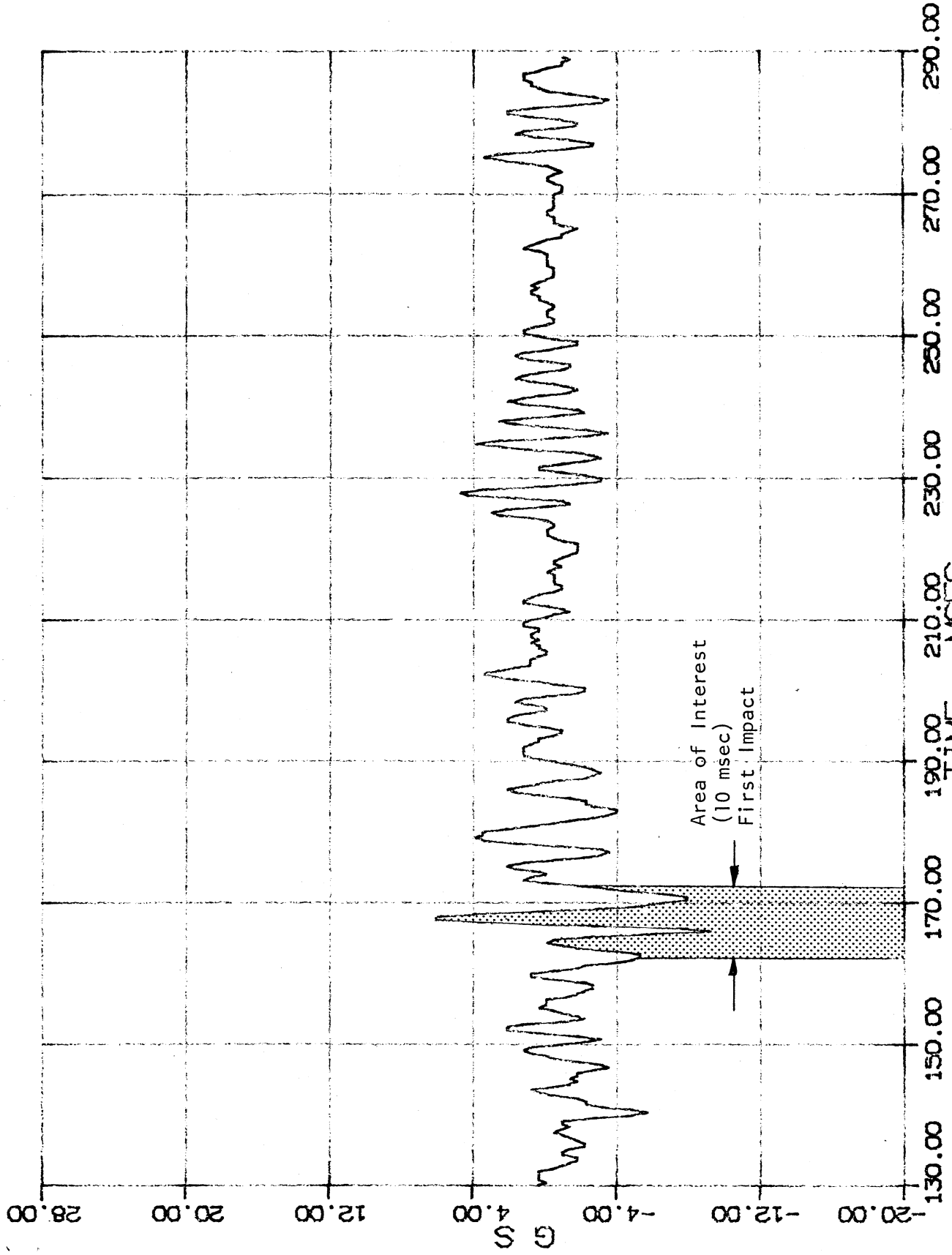


FIGURE 26 PLASTIBARREL 400PB IMPACT, CLASS 180 FILTER

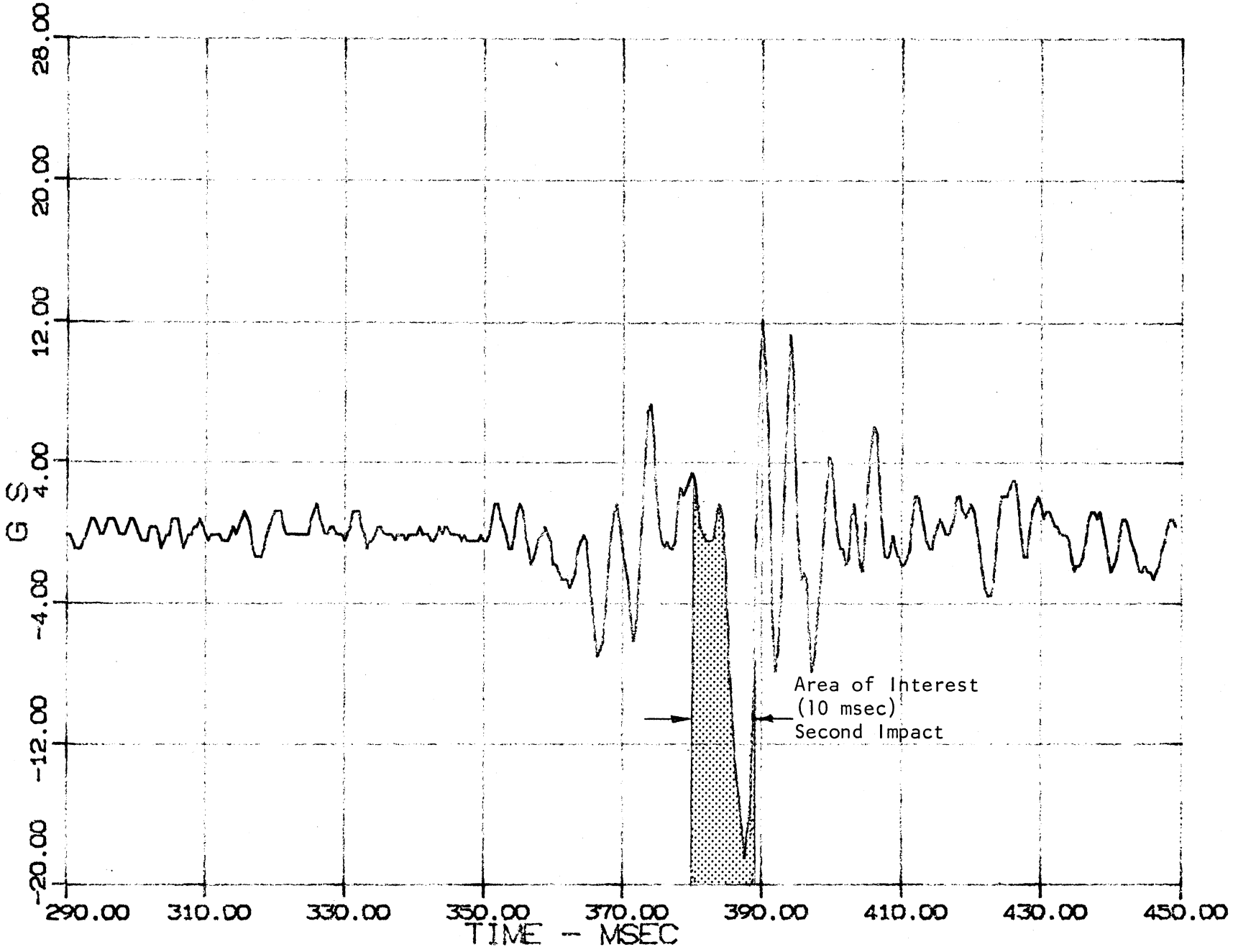


FIGURE 26 (CONT'D) PLASTIBARREL 400PB IMPACT, CLASS 180 FILTER

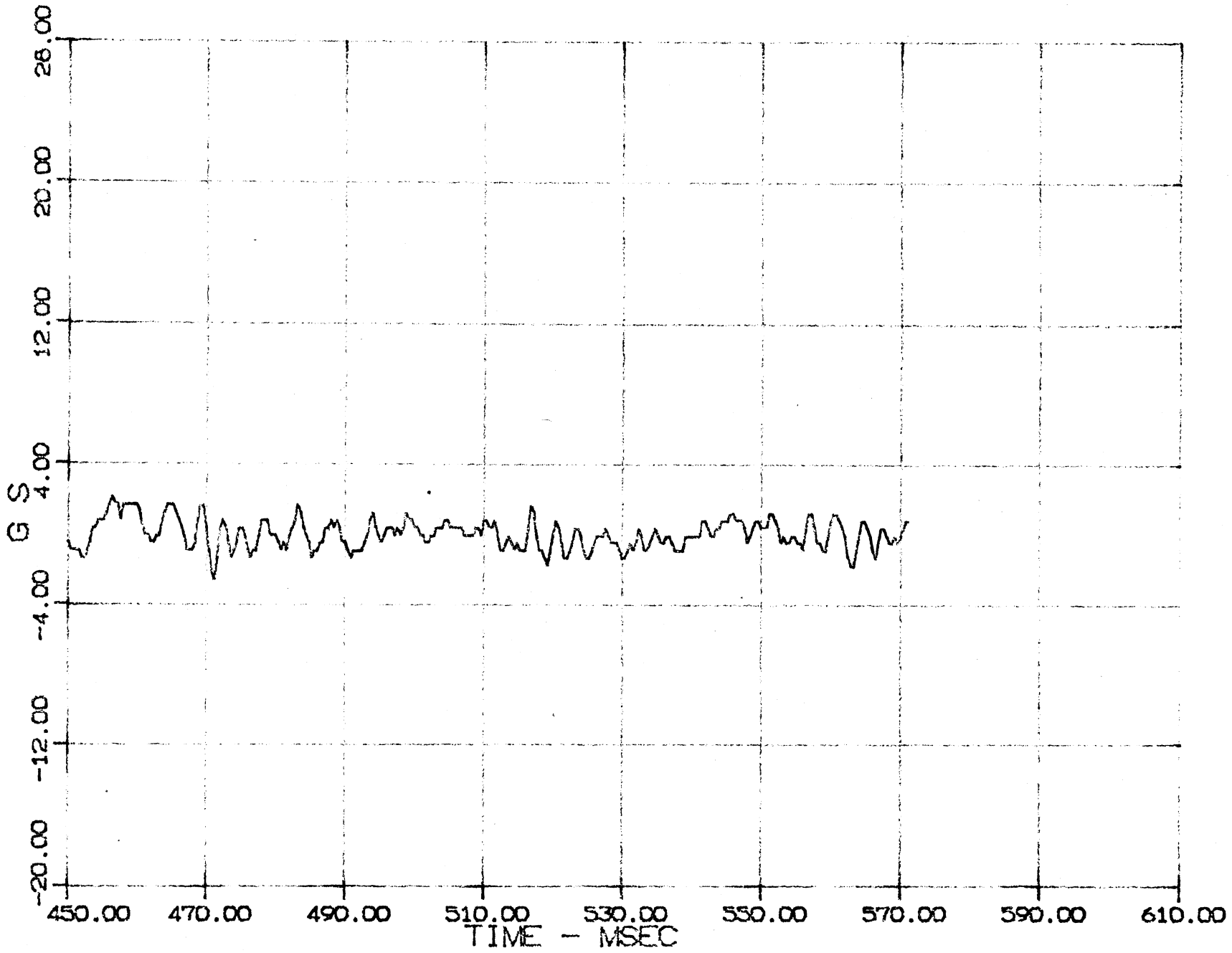


FIGURE 26 (CONT'D) PLASTIBARREL 400PB IMPACT, CLASS 180 FILTER

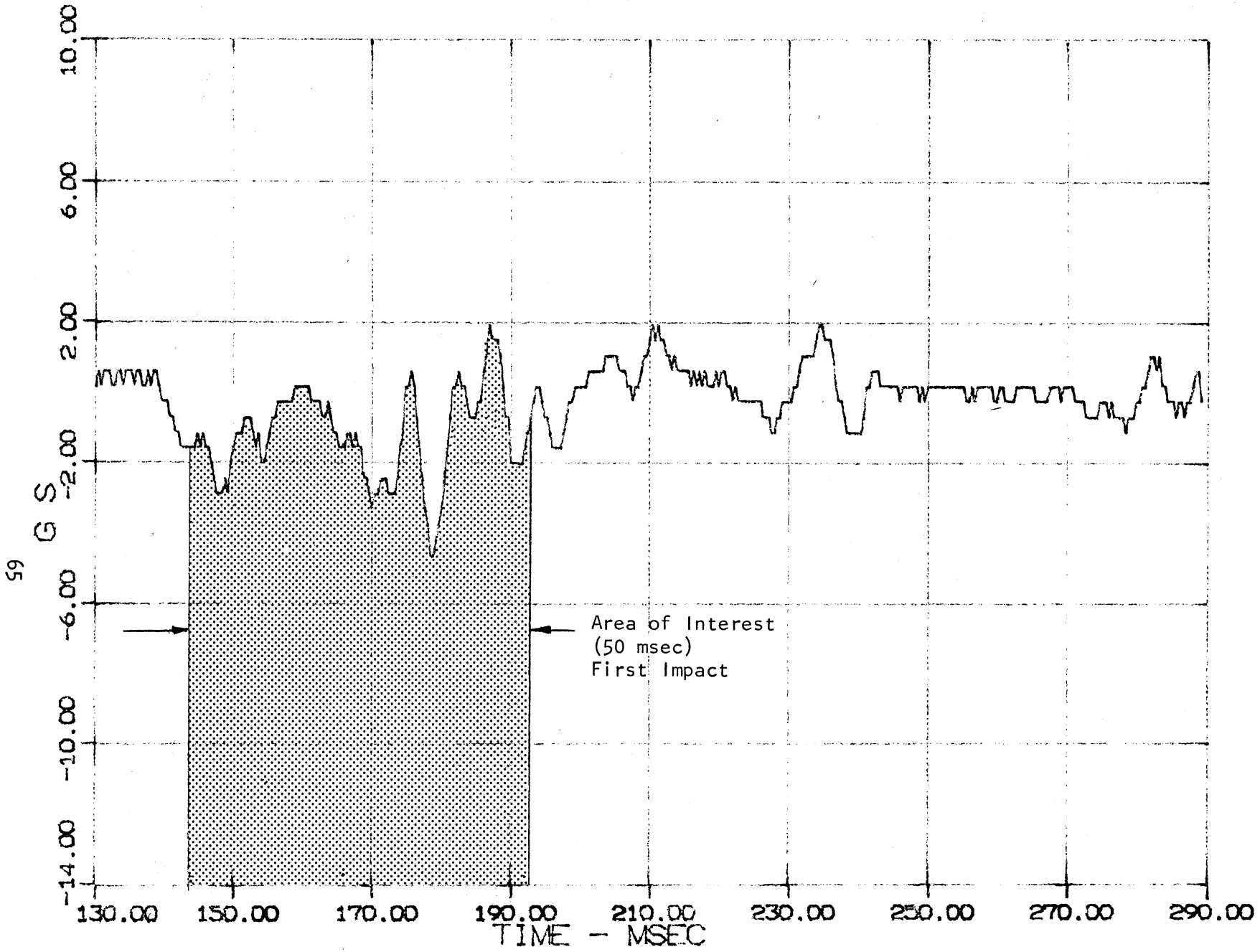


FIGURE 27 PLASTIBARREL 400PB IMPACT, CLASS 60 FILTER

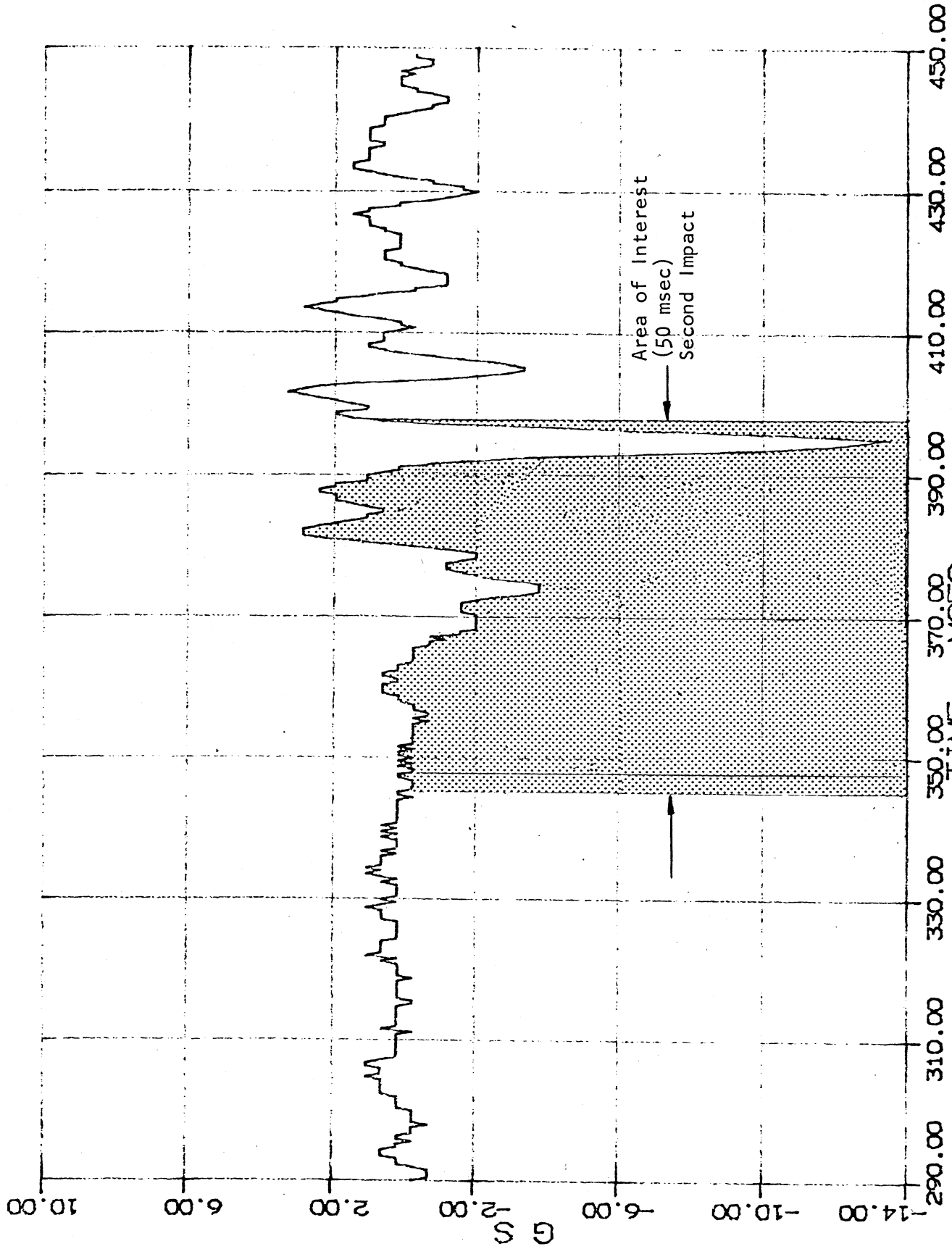


FIGURE 27 (CONT'D) PLASTIBARREL 400PB IMPACT, CLASS 60 FILTER

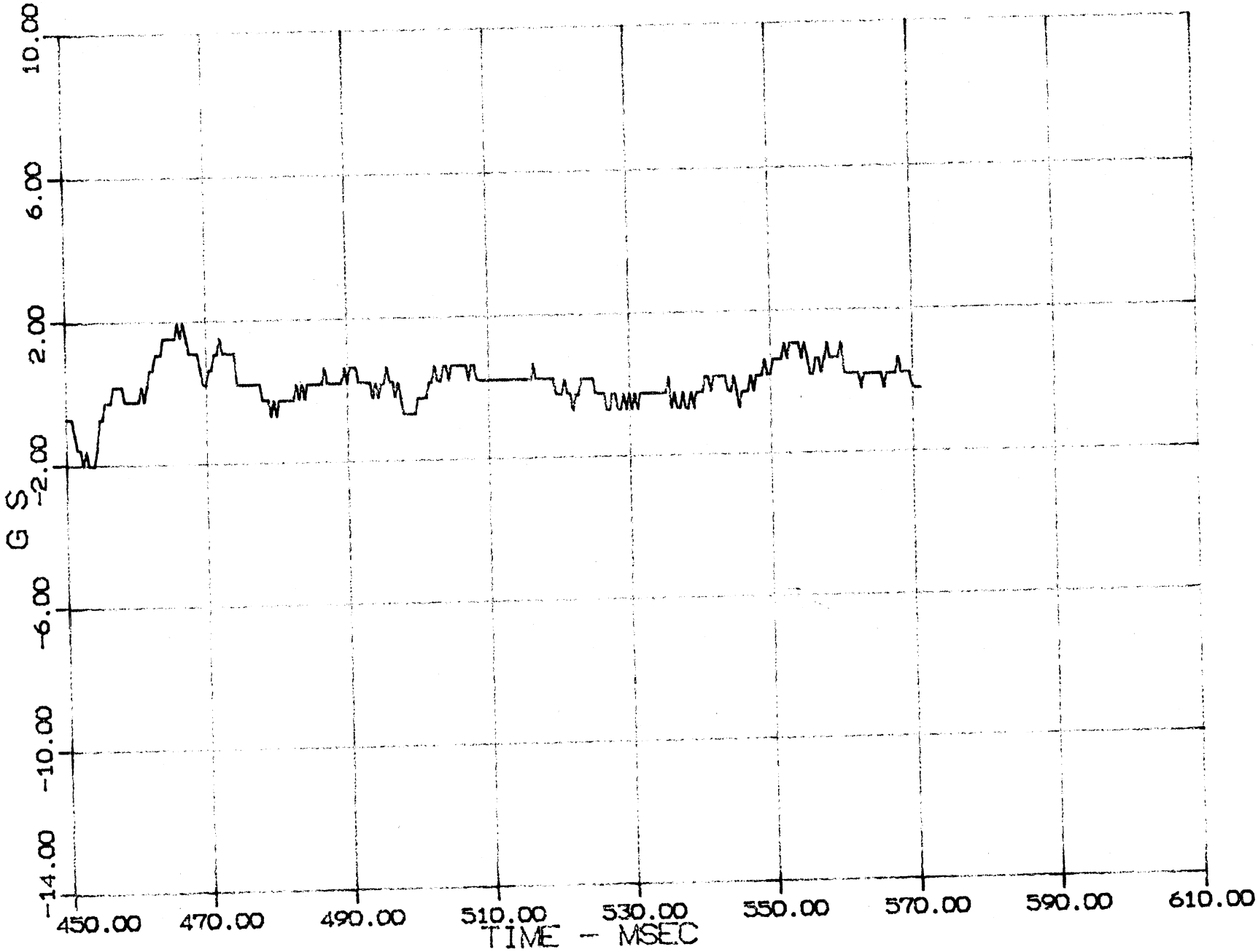


FIGURE 27 (CONT'D) PLASTIBARREL 400PB IMPACT, CLASS 60 FILTER

3.2 TEST CONDUCT - THE CHANNELIZER

The test article was a plastic barrel type channelizing device manufactured by Signal Division of Lear Siegler, Los Angeles, California, designated The Channelizer. The Channelizer is a two part device. A low base section is secured with sandbags at the desired location. The top "barrel" section is snapped onto protrusions securing it to the base.

A typical warning light was attached at the provided location on the left of the device. The light was a Rhodes and Maine model RM 55 and selected as a light commercially available but not manufactured by the manufacturer of the test article.

Two Channelizers were located for impact simulating the placement of two devices being used as a lane taper to channel traffic. The first device was placed at the right quarter point of the vehicle, 17 in (43.2 cm) from the vehicle centerline. The second device was placed 25 ft (7.6 m) behind the first device at the left quarter point of the vehicle 17 in (43.2 cm) from the vehicle centerline. As was the case with the test on the Plastibarrel 400-PB, these locations were chosen to provide a realistic but "worst case" force application to the front of the test vehicle. They were selected to maximize the possibility of vehicle yaw and resultant tendency to roll.

The test was conducted on Thursday July 29, 1982 at 4:30 p.m. at a speed of 60.2 mph (97 kph).

Pretest photographs are presented in Figures 28 and 29.



FIGURE 28 PRETEST SETUP



FIGURE 29 PRETEST FRONT

3.2.1 I.C. - TEST RESULTS

The first device impacted on the right quarter point of the vehicle bumper. The top section separated from the base, the warning light was torn from the mounting and traveled with the top section into the upper part of the windshield. The base and sandbags were caught on the undercarriage of the vehicle and were moved a car length down the track. The second device when impacted, separated from the base, collapsed, and was pushed to the left. The base was slightly displaced. The vehicle did not exhibit any yaw, pitch or roll instability and the dummy did not impact the interior of the vehicle due to impact of the vehicle with the Channelizer.

After application of the vehicle brakes, the vehicle slowed, but did not stop, and impacted a restraining barrier. The dummy torso fell forward.

The Channelizer channelizing devices were slightly damaged by crushing and the pulling off of the warning light. They were reusable with near original appearance and dimension.

The vehicle damage due to impact with the Channelizers was essentially non-existant. The windshield was not damaged by the warning light nor was any sheet metal damage evident as shown in Figure 30.



FIGURE 30 POSTTEST FRONT

A possible unsafe condition existed when the warning light separated from the Channelizer. The warning light was attached to the Channelizers with the light manufacturer's hardware and in accordance with the literature supplied with the light. The impact caused the plastic at the warning light mounting hole to extrude and tear around the mounting washer, and thus, free the light to impact the vehicle. This is shown in Figures 31 and 32. This occurred at vehicle impact. The Channelizer has a pocket molded in the top into which the warning light is placed and retained by a bolt. The light was deflected upward with the top section of the Channelizer and struck the top of the windshield. The pocket for the warning light caused the light to travel in nearly the same direction as the Channelizer top, deflecting the light upward. Even with the pocket for the light the forces were such that the plastic extruded and tore away from the mounting bolt and washer.

Although in this test, the warning light did not fracture the windshield, it is possible that under similar conditions, windshield fracture can occur. Tests have shown that the windshield will be cracked when impacted by free lights at 30 mph (48.7 kph) and a large hole occurs at 60 mph (97 mph). Impact penetration data is presented in Table 3. Metal reinforcement of the plastic material around the mounting hole (or a similar alteration) to prevent the warning light attachment from failing would substantially improve the safety performance of this channelizing device.

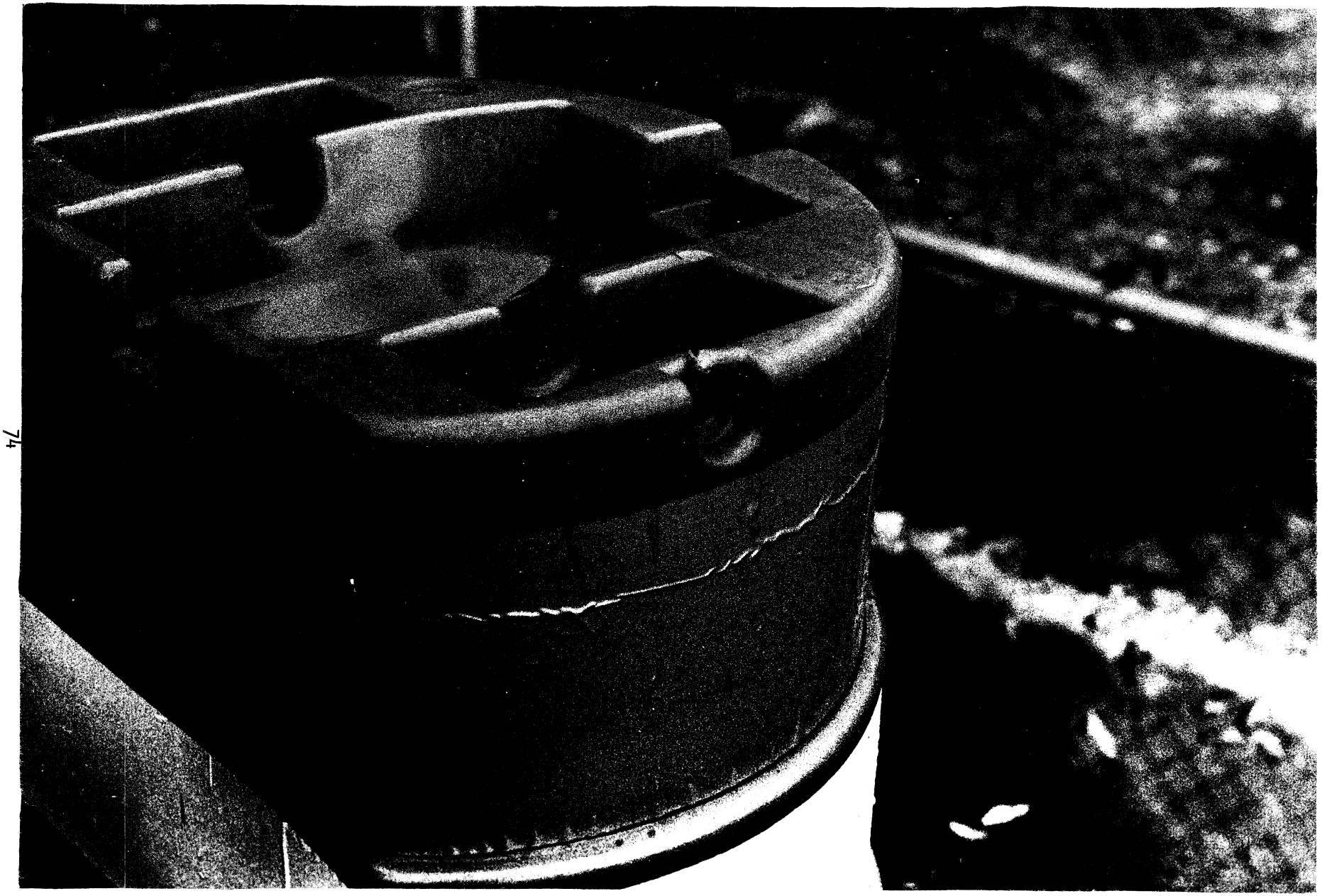


FIGURE 31 POSTTEST LIGHT MOUNTING HOLE – UNIT 1

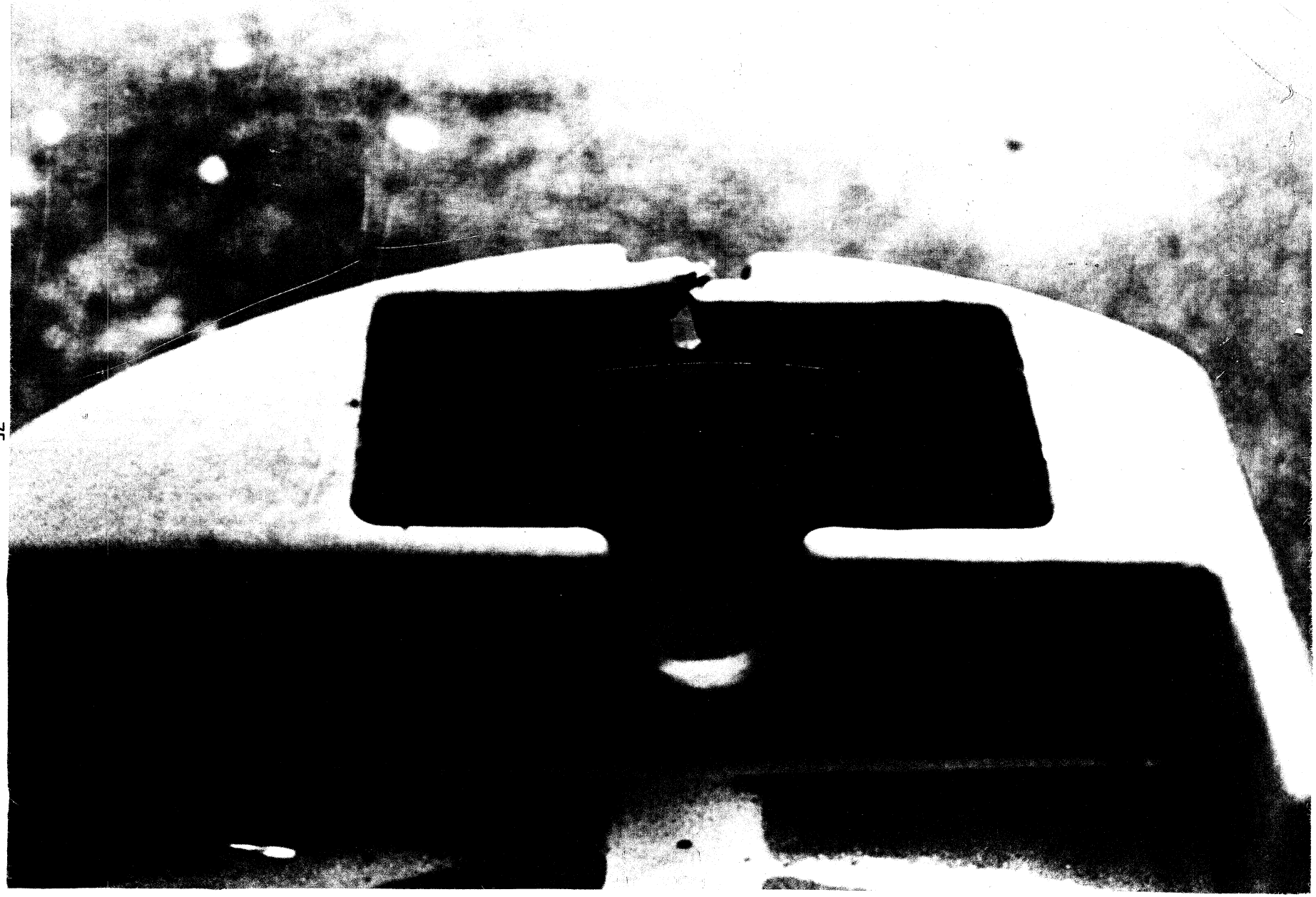


FIGURE 32 POSTTEST LIGHT MOUNTING HOLE – UNIT 1

3.2.1 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 7.30 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this the highest 10 msec and highest 50 msec averages are presented in Table 8. The recommended occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the longitudinal (x) Direction for Breadaway/Yielding Supports - Signs and Luminaire of NCHRP Report 230.

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 9. Computer printouts of the first integral (occupant velocity) and second integral (occupant displacement) are presented in Tables 10 and 11.

A computer plot of the event using the class 180 filter is shown in Figure 33 and for the class 60 filter in Figure 34. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

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(1) Flail space approach is defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance evaluation of Highway Appurtenances"

TABLE 8 MOVING AVERAGE DATA THE CHANNELIZER

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	2.3794 (1)	.1154 to .1254
Impact with Second Device	1.4221 (1)	.3600 to .3700
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	0.9817	.1126 to .1626
Impact with Second Device	0.3564	.4200 to .4700
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact with First & Second Device	≈0
Recommended Limit	15. 0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 9 VEHICLE ACCELERATION DATA – THE CHANNELIZER

G'S

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	-.06	.40	.86	.86	.86	.86	.40	.40	-.06	-.06
.062	-.52	-.52	-.99	-.99	-1.45	-1.45	-1.45	-.99	-.52	-.06
.064	.40	.86	.86	.86	.40	-.06	-.52	-.52	-.99	-1.45
.066	-.99	-.99	-.99	-.52	-.52	-.52	-.06	-.06	-.06	-.06
.068	-.06	-.06	-.52	-.52	-.52	-.52	-.52	.40	.40	.40
.070	.86	1.32	1.79	1.79	1.32	1.32	.86	.86	.40	.40
.072	-.06	-.06	-.52	-.06	-.06	-.06	-.06	-.52	-.52	-.52
.074	-.06	-.52	-.06	-.06	-.06	-.06	-.06	-.52	-.06	-.06
.076	-.06	-.06	-.06	.40	.40	.40	-.06	-.06	-.06	-.52
.078	-.52	-.52	-.52	-.52	-.52	-.06	-.06	-.06	.40	.40
.080	.86	.40	.86	.40	.40	.40	.40	-.06	-.06	.40
.082	.40	.40	.40	.40	.40	.40	.40	-.06	-.06	-.06
.084	-.06	-.06	-.06	-.06	-.52	-.52	-.06	-.52	-.52	-.52
.086	-.99	-.99	-.52	-.99	-.99	-.99	-.52	-.99	-.52	-.52
.088	-.06	-.06	-.06	-.06	-.06	-.06	.40	-.06	-.06	.40
.090	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06
.092	.40	.40	1.32	1.32	1.79	2.25	2.25	2.25	1.79	1.32
.094	1.32	.40	.40	.40	-.06	-.52	-.52	-.52	-.99	-.99
.096	-.99	-1.91	-1.91	-2.37	-1.91	-2.37	-2.37	-2.84	-2.84	-2.84
.098	-2.37	-1.45	-.99	-.06	.40	.86	.86	.86	1.32	1.79
.100	1.79	2.25	1.79	1.79	1.32	.40	-.52	-1.45	-1.91	-2.37
.102	-2.84	-2.84	-2.37	-1.91	-1.45	-.99	-.99	-.99	-.99	-.99
.104	-.99	-.52	-.52	-.06	-.06	.40	.40	1.32	1.32	2.25
.106	2.25	2.25	1.32	.86	.40	-.52	-.99	-1.91	-2.37	-2.37
.108	-1.91	-1.45	-.52	-.52	.40	-.06	-.52	-.52	-.99	-.99
.110	-.99	-.99	-.99	-.52	-.06	-.52	-.99	-1.45	-3.30	-4.69
.112	-5.15	-6.07	-5.15	-4.69	-2.84	-2.37	-.52	-.06	.86	1.32
.114	2.25	2.71	3.17	3.64	3.17	3.17	2.71	1.79	.86	-.06
.116	-.99	-1.91	-2.37	-2.37	-1.91	-1.45	-.52	-.52	-.52	-.99
.118	-1.91	-2.84	-3.30	-4.22	-4.22	-4.22	-4.22	-4.22	-3.76	-3.76
.120	-3.76	-3.76	-3.76	-2.84	-1.45	-.52	.86	1.32	2.25	1.79
.122	1.79	.86	-.06	-.99	-2.37	-3.30	-4.22	-4.69	-5.15	-5.15
.124	-5.15	-6.07	-7.00	-7.00	-6.07	-4.22	-1.91	.40	3.17	5.49
.126	7.88	9.19	8.72	7.88	5.49	3.17	.86	-1.45	-2.37	-2.84
.128	-2.84	-2.37	-1.45	-.99	-.52	-.52	-.99	-.99	-.99	-.99
.130	-.52	-.99	-1.45	-2.37	-2.84	-2.84	-2.84	-1.91	-1.45	-.99
.132	-.99	-1.91	-2.37	-2.84	-3.30	-3.76	-4.69	-4.69	-4.22	-3.76
.134	-2.84	-1.91	-.06	.86	1.79	.86	-.06	-1.91	-2.84	-3.76
.136	-4.22	-3.30	-1.91	-.52	.86	.86	-.06	-.99	-.99	-.06
.138	1.32	2.71	3.64	4.56	5.02	5.02	4.56	3.64	1.79	-.06
.140	-2.37	-4.69	-6.07	-7.46	-7.92	-6.54	-4.22	-.99	1.32	2.71
.142	4.10	4.56	4.10	3.17	1.79	-.06	-1.91	-4.22	-6.07	-6.54
.144	-6.54	-5.15	-2.84	-.99	1.79	3.17	4.56	5.02	4.10	2.25
.146	-.52	-2.37	-4.22	-5.61	-5.61	-5.15	-3.30	-1.45	.40	1.32
.148	1.79	1.32	.86	-.06	-.52	-.99	-.99	-1.45	-.99	-.52
.150	-.06	-.06	-.06	-.99	-.99	-1.45	-1.91	-2.37	-2.37	-2.37
.152	-1.45	-.52	.86	1.32	1.32	1.32	.86	.40	-.52	-1.45
.154	-1.91	-1.91	-1.45	-.99	-.06	.86	1.32	1.79	1.79	1.32
.156	.86	-.06	-.99	-1.91	-2.84	-3.76	-4.22	-3.76	-3.76	-2.37
.158	-.99	-.06	.40	.86	.86	.86	.40	.86	.86	1.32
.160	2.25	2.25	2.25	1.79	1.32	-.06	-.99	-1.91	-1.91	-2.37
.162	-1.91	-.99	-.06	.40	1.79	3.17	4.10	4.10	4.10	3.64
.164	2.25	.86	.40	-.99	-1.45	-.99	-.52	-.06	.86	2.25
.166	2.25	2.71	3.17	2.71	2.71	2.25	1.32	.86	-.06	-.52
.168	-.99	-.52	-.52	-.06	.40	1.32	1.32	1.32	1.79	1.32
.170	.86	.86	.40	-.52	-.52	-.99	-.99	-.99	-.99	-.52
.172	-.52	-.52	.40	.86	1.32	1.32	1.79	1.79	1.79	1.32
.174	.86	-.06	-.06	-.99	-1.45	-1.45	-1.45	-1.45	-1.45	-.52
.176	-.52	-.06	.40	-.06	.40	-.06	-.52	-.52	-.52	-.52
.178	-.52	.40	.86	.86	1.32	1.32	1.32	1.32	.86	.40
.180	-.52	-.06	-.06	-.06	-.06	-.06	.40	-.06	-.06	-.52
.182	-.99	-.99	-1.45	-1.45	-.99	-.52	-.06	-.06	.40	.40
.184	.86	.40	.40	.40	.40	.40	.40	.86	.86	.86
.186	.86	.86	.40	.40	.40	-.06	-.06	-.06	-.06	-.06
.188	-.52	-.06	-.06	-.06	-.06	-.06	-.06	.40	-.06	-.06
.190	.40	-.06	-.06	-.06	-.52	-.52	-.52	-.99	-.52	-.52
.192	-.06	-.06	-.06	.40	.40	.86	.86	1.32	.86	.86
.194	.40	-.06	-.52	-.99	-.99	-1.45	-.99	-1.45	-.99	-1.45
.196	-.99	-.99	-.99	-.99	-.52	-.99	-.52	-.06	-.06	.40
.198	.86	.86	1.32	1.32	1.32	.86	.40	-.06	-.52	-.52

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 9 (CONT'D) VEHICLE ACCELERATION DATA - THE CHANNELIZER

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-.99	-.52	-.52	-.06	-.52	-.52	-.52	-.52	-.52	-.99
.202	-.99	-.52	-.52	-.52	.40	.40	-.06	.40	-.06	-.52
.204	-.52	-.52	-.99	-.52	-.99	-.06	-.06	.40	.86	.86
.206	1.32	1.32	.86	.40	.40	-.06	-.52	-.99	-.99	-.99
.208	-.99	-1.45	-1.45	-1.45	-.52	-.52	-.06	.86	1.32	1.32
.210	1.32	.86	.40	.86	.40	-.06	.40	-.06	-.06	-.52
.212	-.52	-.99	-1.45	-1.91	-1.45	-.99	-.52	.40	.86	1.32
.214	1.32	1.32	.86	-.06	-.52	-.52	-.52	-.52	-.06	-.06
.216	-.06	.40	.40	.40	-.06	-.99	-.99	-1.45	-1.45	-1.45
.218	-.99	-.52	-.06	.40	.86	.86	.86	.86	.40	-.52
.220	-.52	-.52	-.52	-.52	-.52	-.06	-.06	.40	-.06	.40
.222	-.06	-.52	-.99	-.99	-1.45	-1.91	-1.91	-1.91	-1.45	-.99
.224	-.06	.40	.86	1.32	1.32	.86	.86	.40	-.06	-.06
.226	-.06	-.06	-.06	.40	.40	.40	-.06	.40	-.06	-.06
.228	.40	-.06	-.06	-.52	-.52	-.52	-.52	-.99	-.52	-.52
.230	-.06	-.52	-.06	-.06	-.06	-.06	-.06	-.06	-.06	.86
.232	.86	1.32	.86	.86	.86	.40	.40	-.06	-.52	-.52
.234	-.06	-.06	-.52	-.06	-.06	-.06	-.06	-.06	-.52	-.06
.236	-.06	-.06	-.06	-.06	-.06	.40	-.06	-.06	-.06	-.06
.238	-.99	-.52	-.52	-.52	-.52	-.99	-.52	-.52	-.06	-.52
.240	-.06	-.52	-.52	-.52	-.52	-.06	-.06	-.06	-.06	.40
.242	.40	-.06	.40	-.06	-.06	-.06	-.06	-.06	-.52	-.52
.244	-.52	-.52	-.99	-.99	-.06	-.52	-.06	-.52	-.52	-.52
.246	-.52	-.06	.40	-.06	.40	.40	.86	.40	.40	.40
.248	.40	.40	.40	.40	.40	-.06	.40	.40	.40	.86
.250	.86	.86	.40	.86	.40	.40	.40	.40	.40	.40
.252	.86	.40	.40	.40	.40	-.06	-.06	-.52	-.52	-.52
.254	-.06	-.06	-.06	-.06	.40	.40	.40	.40	-.06	-.06
.256	-.06	-.06	-.06	-.06	.40	.40	.40	.86	.86	.86
.258	.86	.40	.40	-.06	-.06	-.52	-.52	-.52	-.52	-.06
.260	-.06	.40	.86	.86	.86	.40	-.06	-.06	-.06	.40
.262	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.52	-.52	-.52
.264	-.52	-.52	-.52	-.52	-.52	-.52	-.52	-.52	-.52	-.52
.266	-.52	-.06	.40	.40	1.32	.86	1.32	.86	.86	.40
.268	-.06	-.06	-.52	-.52	-.99	-.52	-.52	-.52	-.06	-.06
.270	-.06	.40	.40	.40	.40	.40	-.06	-.52	-.06	-.52
.272	-.52	-.06	-.06	-.06	.40	-.06	-.06	-.06	-.52	-.06
.274	-.52	-.06	-.52	-.52	-.52	-.52	-.52	-.06	.40	.40
.276	.40	.86	.40	.40	.86	.86	.86	.86	.86	1.32
.278	.86	.86	.86	.86	.86	.40	-.06	-.52	-.52	-.52
.280	-.52	-.52	-.52	-.52	-.52	-.52	-.06	.40	.40	.40
.282	.40	.86	.40	.40	.40	.40	.40	.40	.40	.40
.284	.86	.40	.40	.40	.40	.40	-.06	-.06	-.06	-.06
.286	-.06	-.06	.40	-.06	-.06	.40	.40	-.06	.40	.40
.288	-.06	-.06	-.06	-.06	-.52	-.52	-.99	-.99	-.52	-.99
.290	-.52	-.52	-.06	-.06	-.06	-.06	.40	-.06	-.06	-.06
.292	-.06	-.52	-.06	-.06	-.06	-.06	-.52	-.06	-.06	-.06
.294	-.06	-.52	-.52	-.52	-.52	-.99	-.99	-.99	-.52	-.99
.296	-.99	-.52	-.52	-.52	-.52	-.52	-.52	-.52	-.06	-.06
.298	-.06	-.06	.40	.40	.40	.86	.86	.86	.86	.40
.300	.40	-.06	-.06	-.52	-.52	-.99	-.99	-.99	-.99	-.99
.302	-.52	-.99	-.52	-.06	-.06	-.06	.40	.40	.40	.40
.304	.40	.40	-.52	-.06	-.52	-.99	-.52	-.52	-.06	-.52
.306	-.06	-.06	.40	.40	.40	.40	.40	-.06	-.06	-.06
.308	-.06	-.52	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06
.310	-.06	-.06	-.06	-.06	-.52	-.06	-.52	-.52	-.52	-.99
.312	-.52	-.99	-.52	-.99	-.99	-.06	-.06	.40	.40	.40
.314	.86	.86	.40	.40	-.06	.40	-.06	.40	.40	.40
.316	.40	.86	.86	.86	.86	.40	.86	.40	.40	.40
.318	-.06	-.06	-.52	-.52	-.52	-.52	-.52	-.52	-.06	-.06
.320	-.52	-.52	-.52	-.52	-.52	-.52	-.99	-.06	-.52	-.06
.322	-.06	-.06	.40	.40	.40	.40	.40	.86	.40	.40
.324	.40	.40	-.06	-.06	-.52	-.52	-.06	-.52	-.06	-.06
.326	-.06	.40	.40	-.06	.40	-.06	-.06	-.06	-.06	-.06
.328	-.06	-.52	-.06	-.06	-.06	-.06	-.06	.40	-.06	-.06
.330	-.06	-.06	.40	-.06	.40	-.06	.40	.40	-.06	-.06
.332	.40	.40	.40	.40	.40	.40	.86	.40	.40	.40
.334	-.06	-.06	.40	-.06	-.06	-.06	-.06	-.52	-.52	-.06
.336	-.52	-.06	-.99	-.52	-.52	-.52	-.52	-.52	-.06	-.52
.338	-.06	-.06	.40	-.06	.40	-.06	-.06	-.06	-.52	-.52

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 9 (CONT'D) VEHICLE ACCELERATION DATA – THE CHANNELIZER

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.340	-.99	-.99	-1.45	-1.45	-1.45	-1.45	-1.45	-.99	-.99	-.52
.342	-.52	-.52	-.06	-.06	-.06	.40	.40	.40	.40	-.06
.344	-.06	-.06	-.52	-.52	-.06	-.52	-.52	-.52	-.06	.86
.346	.86	1.32	.86	1.32	1.32	.86	.40	.40	-.06	.40
.348	.40	-.06	-.06	.40	.40	-.06	-.06	-.06	.40	.40
.350	.40	-.06	-.06	.40	.40	.40	.40	.86	.86	.86
.352	.40	.40	-.06	-.52	-.52	-.52	-.52	-.06	-.52	-.06
.354	-.06	.40	.40	.86	.86	.86	.40	-.06	-.06	-.52
.356	-.99	-.99	-.99	-1.45	-.99	-1.45	-.99	-.99	-.52	-.06
.358	-.06	-.06	-.06	-.52	-.52	-.52	-.52	-.52	-.52	-.52
.360	-.52	-.99	-.99	-1.91	-2.37	-3.30	-3.76	-4.69	-4.69	-4.69
.362	-4.22	-2.84	-2.37	-1.45	-.52	-.06	.40	.40	.86	1.32
.364	2.25	2.25	2.25	2.25	2.25	1.79	1.32	1.32	1.32	.86
.366	.86	.86	.86	-.06	-.52	-.99	-1.91	-2.84	-2.84	-4.22
.368	-4.69	-5.15	-5.61	-5.15	-5.61	-5.15	-4.22	-3.30	-1.91	-.99
.370	-.52	-.99	-.99	-.99	-.52	-.52	-.52	-.52	-.52	-.99
.372	-1.45	-1.91	-1.91	-1.91	-1.45	-1.45	-.52	.86	1.79	3.17
.374	4.56	5.49	5.49	5.02	4.10	2.71	1.32	-.06	-.99	-1.45
.376	-.99	-.52	.86	1.32	2.25	2.71	2.25	1.79	.40	-.99
.378	-2.84	-3.76	-4.69	-4.69	-4.22	-2.37	-1.45	.40	1.32	1.79
.380	1.79	1.32	.86	-.06	-.99	-1.91	-1.45	-.99	.86	2.71
.382	4.56	5.95	6.41	5.95	5.02	4.56	3.17	2.25	2.25	1.79
.384	1.79	2.25	2.25	2.25	1.79	1.32	.40	-.06	-.52	-.99
.386	-.99	-1.45	-.99	-.99	-.52	-.06	-.06	.40	.86	1.32
.388	1.32	.86	1.32	.86	.86	1.32	1.32	.86	.40	.40
.390	-.06	-.99	-1.45	-1.91	-2.84	-2.84	-3.76	-4.22	-3.76	-3.76
.392	-3.30	-2.84	-2.37	-2.37	-1.45	-.99	-.99	-.06	.40	.86
.394	1.79	2.71	3.64	3.64	3.64	2.25	.40	-1.91	-3.76	-5.15
.396	-6.54	-6.54	-6.07	-5.15	-3.76	-2.84	-.99	.40	1.32	2.25
.398	2.71	2.25	2.25	2.25	1.79	1.32	.86	1.32	1.79	2.71
.400	3.64	4.56	4.10	3.64	2.71	1.32	-.06	-.99	-.99	-.99
.402	.40	1.32	1.79	2.71	3.17	3.64	3.64	4.10	3.64	3.17
.404	2.25	1.32	.40	-.99	-1.45	-1.91	-2.37	-2.37	-1.91	-1.45
.406	-1.45	-1.91	-1.91	-1.45	-.99	-.06	.86	1.79	2.25	1.79
.408	1.32	.40	-.99	-1.91	-2.84	-2.84	-2.84	-2.37	-1.91	-.52
.410	.40	.86	.86	.86	.86	.40	.86	.86	.86	.40
.412	.86	1.32	1.32	2.25	3.17	3.64	4.10	4.10	3.64	3.64
.414	2.71	2.25	1.79	1.32	1.32	.86	-.06	.40	.40	-.06
.416	-.06	-.06	.40	-.06	-.52	-.52	-1.45	-1.91	-2.37	-2.84
.418	-2.84	-2.84	-2.84	-1.91	-1.45	-.99	-.52	-.52	-.06	-.06
.420	-.06	-.06	.40	-.06	-.52	-.52	-1.45	-1.91	-2.37	-2.84
.422	-2.84	-3.30	-3.30	-2.84	-2.84	-2.37	-1.91	-1.91	-1.91	-1.91
.424	-1.91	-1.91	-1.45	-.99	-.99	-.99	-.52	-.52	-.52	-.06
.426	.86	1.32	1.32	1.79	1.79	1.32	.86	.40	.40	-.06
.428	-.52	-.52	-.99	-1.45	-1.45	-1.91	-1.91	-1.91	-1.91	-1.45
.430	-1.45	-.99	-.99	-.99	-.52	-.06	.86	1.32	1.79	2.25
.432	2.25	2.25	2.25	1.79	1.79	1.79	1.79	1.79	1.79	1.32
.434	1.32	.86	.40	.40	-.06	-.06	-.52	-.52	-.99	-1.45
.436	-1.45	-.99	-.99	-.99	-.99	-.99	-.99	-.99	-.99	-.52
.438	-.06	.86	1.32	2.25	2.25	2.25	1.79	1.32	.40	-.52
.440	-.52	-1.45	-1.91	-2.37	-2.37	-2.84	-2.84	-2.84	-3.76	-3.76
.442	-3.76	-3.76	-2.84	-2.37	-1.45	-.99	-.06	.86	.86	.86
.444	.86	.86	.86	.40	-.06	-.52	-1.91	-2.84	-4.22	-4.22
.446	-4.69	-4.69	-4.69	-3.76	-2.84	-1.91	-.99	-.99	-.06	-.06
.448	.86	-.06	-.06	.40	.40	.40	.86	1.32	1.79	1.32
.450	.40	-.52	-.52	-1.45	-1.91	-1.45	-.99	-.52	-.06	.86
.452	1.32	1.32	1.32	1.32	1.32	.86	.40	-.52	-.52	-.99
.454	-1.45	-1.45	-.52	-.06	.40	1.32	1.32	1.79	1.32	1.32
.456	1.32	.40	-.06	-.52	-.99	-.52	-.52	-.06	.40	.86
.458	.86	.86	.86	.40	.86	.40	-.06	-.06	.40	.40
.460	-.06	-.06	.40	.40	.40	.86	.86	-.06	-.52	-.52
.462	-.52	-.06	.40	.40	.40	.40	-.52	-.99	-.99	-.99
.464	-.52	.40	1.79	2.25	1.79	1.32	.40	-.52	-.52	-.52
.466	-.06	.40	.86	.86	.40	-.06	-.52	-.52	-.06	-.52
.468	-.52	-.52	-.06	-.06	.40	.40	.86	.86	1.32	.86
.470	.86	-.06	-.52	-.99	-.99	-1.45	-1.91	-1.91	-1.91	-2.37
.472	-1.91	-1.45	-.99	-.06	.86	1.32	1.32	1.32	.86	.40
.474	-.06	-.06	-.52	-.52	-.52	-.52	-.52	-.06	.40	.86
.476	1.79	1.79	1.79	1.32	.86	-.06	-.99	-1.45	-1.91	-1.91
.478	-1.45	-.52	.86	1.32	1.79	2.25	1.79	1.79	1.32	.86

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 10 OCCUPANT VELOCITY – THE CHANNELIZER

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	-.00	.03	.09	.16	.23	.29	.32	.35	.35	.34
.062	.30	.26	.19	.11	-.00	-.11	-.22	-.30	-.34	-.35
.064	-.32	-.25	-.18	-.12	-.08	-.09	-.13	-.17	-.25	-.36
.066	-.44	-.51	-.59	-.63	-.67	-.71	-.71	-.72	-.72	-.73
.068	-.73	-.74	-.78	-.82	-.86	-.90	-.94	-.91	-.88	-.85
.070	-.78	-.68	-.54	-.40	-.30	-.20	-.13	-.07	-.03	-.00
.072	-.01	-.01	-.05	-.06	-.06	-.07	-.07	-.11	-.15	-.19
.074	-.20	-.24	-.24	-.25	-.25	-.26	-.26	-.30	-.31	-.31
.076	-.32	-.32	-.33	-.30	-.27	-.24	-.24	-.25	-.25	-.29
.078	-.33	-.37	-.41	-.45	-.49	-.50	-.50	-.51	-.48	-.45
.080	-.38	-.35	-.28	-.25	-.22	-.19	-.16	-.16	-.17	-.14
.082	-.11	-.08	-.05	-.01	.02	.05	.08	.07	.07	.06
.084	.06	.05	.05	.04	.00	-.04	-.04	-.08	-.12	-.16
.086	-.24	-.32	-.36	-.43	-.51	-.58	-.62	-.70	-.74	-.78
.088	-.79	-.79	-.80	-.80	-.81	-.81	-.78	-.79	-.79	-.76
.090	-.76	-.77	-.77	-.78	-.78	-.79	-.79	-.80	-.80	-.81
.092	-.78	-.75	-.64	-.54	-.40	-.23	-.06	.12	.26	.36
.094	.46	.49	.52	.55	.55	.51	.47	.43	.35	.27
.096	.20	.05	-.10	-.28	-.43	-.61	-.79	-1.01	-1.23	-1.45
.098	-1.63	-1.75	-1.82	-1.83	-1.80	-1.73	-1.66	-1.60	-1.50	-1.36
.100	-1.22	-1.05	-.91	-.77	-.67	-.64	-.68	-.79	-.94	-1.12
.102	-1.34	-1.56	-1.74	-1.89	-2.00	-2.08	-2.15	-2.23	-2.31	-2.38
.104	-2.46	-2.50	-2.54	-2.54	-2.55	-2.52	-2.49	-2.38	-2.28	-2.11
.106	-1.93	-1.76	-1.66	-1.59	-1.56	-1.60	-1.68	-1.83	-2.01	-2.19
.108	-2.34	-2.45	-2.49	-2.53	-2.50	-2.51	-2.55	-2.59	-2.66	-2.74
.110	-2.82	-2.89	-2.97	-3.01	-3.01	-3.06	-3.13	-3.24	-3.50	-3.86
.112	-4.26	-4.73	-5.12	-5.49	-5.70	-5.89	-5.93	-5.93	-5.87	-5.76
.114	-5.59	-5.38	-5.14	-4.86	-4.61	-4.37	-4.16	-4.02	-3.95	-3.96
.116	-4.03	-4.18	-4.36	-4.55	-4.69	-4.81	-4.85	-4.89	-4.93	-5.00
.118	-5.15	-5.37	-5.63	-5.95	-6.28	-6.60	-6.93	-7.26	-7.55	-7.84
.120	-8.13	-8.42	-8.71	-8.93	-9.04	-9.08	-9.01	-8.91	-8.74	-8.60
.122	-8.46	-8.39	-8.40	-8.48	-8.66	-8.91	-9.24	-9.60	-10.00	-10.40
.124	-10.79	-11.26	-11.80	-12.34	-12.81	-13.14	-13.29	-13.26	-13.01	-12.59
.126	-11.99	-11.28	-10.60	-10.00	-9.58	-9.33	-9.27	-9.38	-9.56	-9.78
.128	-10.00	-10.18	-10.29	-10.37	-10.41	-10.45	-10.53	-10.60	-10.68	-10.76
.130	-10.80	-10.87	-10.98	-11.17	-11.39	-11.61	-11.82	-11.97	-12.08	-12.16
.132	-12.24	-12.38	-12.57	-12.79	-13.04	-13.33	-13.69	-14.06	-14.38	-14.67
.134	-14.89	-15.04	-15.04	-14.98	-14.84	-14.77	-14.78	-14.93	-15.14	-15.43
.136	-15.76	-16.02	-16.16	-16.20	-16.14	-16.07	-16.08	-16.15	-16.23	-16.23
.138	-16.13	-15.92	-15.64	-15.29	-14.90	-14.51	-14.16	-13.88	-13.74	-13.75
.140	-13.93	-14.29	-14.76	-15.34	-15.95	-16.45	-16.78	-16.85	-16.75	-16.54
.142	-16.23	-15.87	-15.56	-15.31	-15.17	-15.18	-15.33	-15.65	-16.12	-16.63
.144	-17.13	-17.53	-17.75	-17.82	-17.69	-17.44	-17.09	-16.70	-16.38	-16.21
.146	-16.25	-16.44	-16.76	-17.19	-17.63	-18.03	-18.28	-18.39	-18.36	-18.26
.148	-18.12	-18.02	-17.95	-17.96	-18.00	-18.07	-18.15	-18.26	-18.34	-18.38
.150	-18.38	-18.39	-18.39	-18.47	-18.55	-18.66	-18.80	-18.99	-19.17	-19.35
.152	-19.47	-19.51	-19.44	-19.34	-19.24	-19.13	-19.07	-19.04	-19.08	-19.19
.154	-19.34	-19.48	-19.60	-19.67	-19.68	-19.61	-19.51	-19.37	-19.23	-19.13
.156	-19.06	-19.07	-19.14	-19.29	-19.51	-19.80	-20.13	-20.42	-20.71	-20.89
.158	-20.97	-20.97	-20.94	-20.88	-20.81	-20.74	-20.71	-20.64	-20.58	-20.48
.160	-20.30	-20.13	-19.95	-19.82	-19.71	-19.72	-19.80	-19.94	-20.09	-20.27
.162	-20.42	-20.50	-20.50	-20.47	-20.33	-20.09	-19.77	-19.46	-19.14	-18.86
.164	-18.68	-18.62	-18.59	-18.66	-18.78	-18.85	-18.89	-18.90	-18.83	-18.66
.166	-18.48	-18.27	-18.03	-17.82	-17.61	-17.44	-17.33	-17.27	-17.27	-17.31
.168	-17.39	-17.43	-17.47	-17.47	-17.44	-17.34	-17.24	-17.14	-17.00	-16.90
.170	-16.83	-16.76	-16.73	-16.77	-16.81	-16.89	-16.97	-17.04	-17.12	-17.16
.172	-17.20	-17.24	-17.21	-17.14	-17.04	-16.94	-16.80	-16.66	-16.52	-16.42
.174	-16.36	-16.36	-16.37	-16.44	-16.55	-16.67	-16.78	-16.89	-17.00	-17.04
.176	-17.08	-17.09	-17.06	-17.06	-17.03	-17.03	-17.08	-17.12	-17.16	-17.20
.178	-17.24	-17.21	-17.14	-17.07	-16.97	-16.87	-16.77	-16.66	-16.60	-16.57
.180	-16.61	-16.61	-16.62	-16.62	-16.63	-16.63	-16.60	-16.61	-16.61	-16.65
.182	-16.73	-16.80	-16.92	-17.03	-17.10	-17.14	-17.15	-17.15	-17.12	-17.09
.184	-17.03	-16.99	-16.96	-16.93	-16.90	-16.87	-16.84	-16.77	-16.71	-16.64
.186	-16.57	-16.51	-16.48	-16.45	-16.41	-16.42	-16.42	-16.43	-16.43	-16.44
.188	-16.48	-16.48	-16.49	-16.49	-16.50	-16.50	-16.51	-16.48	-16.48	-16.49
.190	-16.46	-16.46	-16.47	-16.47	-16.51	-16.55	-16.59	-16.67	-16.71	-16.75
.192	-16.75	-16.76	-16.76	-16.73	-16.70	-16.64	-16.57	-16.47	-16.40	-16.33
.194	-16.30	-16.31	-16.35	-16.42	-16.50	-16.61	-16.69	-16.80	-16.88	-16.99
.196	-17.06	-17.14	-17.22	-17.29	-17.33	-17.41	-17.45	-17.46	-17.46	-17.43
.198	-17.36	-17.30	-17.19	-17.09	-16.99	-16.92	-16.89	-16.90	-16.94	-16.98

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 10 (CONT'D) OCCUPANT VELOCITY – THE CHANNELIZER

INCHES/SECOND

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-17.05	-17.09	-17.13	-17.14	-17.18	-17.22	-17.26	-17.30	-17.34	-17.42
.202	-17.49	-17.54	-17.58	-17.62	-17.59	-17.55	-17.56	-17.53	-17.53	-17.57
.204	-17.61	-17.65	-17.73	-17.77	-17.85	-17.85	-17.86	-17.83	-17.76	-17.69
.206	-17.59	-17.49	-17.42	-17.39	-17.36	-17.37	-17.41	-17.48	-17.56	-17.63
.208	-17.71	-17.82	-17.93	-18.05	-18.09	-18.13	-18.13	-18.07	-17.96	-17.86
.210	-17.76	-17.69	-17.66	-17.59	-17.56	-17.57	-17.54	-17.54	-17.55	-17.59
.212	-17.63	-17.70	-17.82	-17.96	-18.08	-18.15	-18.19	-18.16	-18.10	-17.99
.214	-17.89	-17.79	-17.72	-17.73	-17.77	-17.81	-17.85	-17.89	-17.89	-17.90
.216	-17.90	-17.87	-17.84	-17.81	-17.82	-17.89	-17.97	-18.08	-18.19	-18.30
.218	-18.38	-18.42	-18.43	-18.39	-18.33	-18.26	-18.19	-18.13	-18.10	-18.14
.220	-18.18	-18.22	-18.26	-18.30	-18.34	-18.35	-18.35	-18.32	-18.32	-18.29
.222	-18.30	-18.34	-18.41	-18.49	-18.60	-18.75	-18.90	-19.05	-19.16	-19.23
.224	-19.24	-19.21	-19.14	-19.04	-18.94	-18.87	-18.80	-18.77	-18.78	-18.78
.226	-18.79	-18.79	-18.80	-18.77	-18.74	-18.70	-18.71	-18.68	-18.68	-18.69
.228	-18.66	-18.66	-18.67	-18.71	-18.75	-18.79	-18.83	-18.91	-18.95	-18.99
.230	-18.99	-19.03	-19.04	-19.04	-19.05	-19.05	-19.06	-19.06	-19.07	-19.00
.232	-18.93	-18.83	-18.76	-18.70	-18.63	-18.60	-18.57	-18.57	-18.61	-18.65
.234	-18.66	-18.66	-18.70	-18.71	-18.71	-18.72	-18.72	-18.73	-18.77	-18.77
.236	-18.78	-18.78	-18.79	-18.79	-18.80	-18.77	-18.77	-18.78	-18.78	-18.79
.238	-18.86	-18.90	-18.94	-18.98	-19.02	-19.10	-19.14	-19.18	-19.19	-19.23
.240	-19.23	-19.27	-19.31	-19.35	-19.39	-19.40	-19.40	-19.41	-19.41	-19.38
.242	-19.35	-19.36	-19.33	-19.33	-19.34	-19.34	-19.34	-19.35	-19.39	-19.43
.244	-19.47	-19.51	-19.59	-19.66	-19.67	-19.71	-19.71	-19.75	-19.80	-19.84
.246	-19.88	-19.88	-19.85	-19.86	-19.82	-19.79	-19.73	-19.70	-19.67	-19.63
.248	-19.60	-19.57	-19.54	-19.51	-19.48	-19.48	-19.45	-19.42	-19.39	-19.33
.250	-19.26	-19.19	-19.16	-19.09	-19.06	-19.03	-19.00	-18.97	-18.94	-18.91
.252	-18.84	-18.81	-18.78	-18.75	-18.72	-18.72	-18.73	-18.77	-18.81	-18.85
.254	-18.86	-18.86	-18.87	-18.87	-18.84	-18.81	-18.78	-18.75	-18.75	-18.76
.256	-18.76	-18.77	-18.77	-18.78	-18.74	-18.71	-18.68	-18.62	-18.55	-18.48
.258	-18.42	-18.39	-18.35	-18.36	-18.36	-18.40	-18.45	-18.49	-18.53	-18.53
.260	-18.54	-18.51	-18.44	-18.37	-18.31	-18.27	-18.28	-18.28	-18.29	-18.26
.262	-18.26	-18.27	-18.27	-18.28	-18.28	-18.29	-18.29	-18.33	-18.37	-18.41
.264	-18.45	-18.49	-18.54	-18.58	-18.62	-18.66	-18.70	-18.74	-18.78	-18.82
.266	-18.86	-18.86	-18.83	-18.80	-18.70	-18.63	-18.53	-18.46	-18.40	-18.37
.268	-18.37	-18.38	-18.42	-18.46	-18.53	-18.57	-18.62	-18.66	-18.66	-18.67
.270	-18.67	-18.64	-18.61	-18.58	-18.55	-18.52	-18.52	-18.56	-18.57	-18.61
.272	-18.65	-18.65	-18.66	-18.66	-18.63	-18.64	-18.64	-18.64	-18.69	-18.69
.274	-18.73	-18.74	-18.78	-18.82	-18.86	-18.90	-18.94	-18.94	-18.91	-18.88
.276	-18.85	-18.78	-18.75	-18.72	-18.66	-18.59	-18.52	-18.46	-18.39	-18.29
.278	-18.22	-18.15	-18.09	-18.02	-17.95	-17.92	-17.93	-17.97	-18.01	-18.05
.280	-18.09	-18.13	-18.17	-18.21	-18.25	-18.29	-18.30	-18.27	-18.24	-18.20
.282	-18.17	-18.11	-18.08	-18.05	-18.01	-17.98	-17.95	-17.92	-17.89	-17.86
.284	-17.79	-17.76	-17.73	-17.70	-17.67	-17.64	-17.64	-17.65	-17.65	-17.66
.286	-17.66	-17.67	-17.64	-17.64	-17.65	-17.62	-17.59	-17.59	-17.56	-17.53
.288	-17.53	-17.54	-17.54	-17.55	-17.59	-17.63	-17.70	-17.78	-17.82	-17.90
.290	-17.94	-17.98	-17.98	-17.99	-17.99	-18.00	-17.97	-17.97	-17.98	-17.98
.292	-17.99	-18.03	-18.03	-18.04	-18.04	-18.05	-18.09	-18.09	-18.10	-18.10
.294	-18.11	-18.15	-18.19	-18.23	-18.27	-18.34	-18.42	-18.50	-18.54	-18.61
.296	-18.69	-18.73	-18.77	-18.81	-18.85	-18.89	-18.93	-18.97	-18.98	-18.98
.298	-18.99	-18.99	-18.96	-18.93	-18.90	-18.83	-18.77	-18.70	-18.63	-18.60
.300	-18.57	-18.58	-18.58	-18.62	-18.66	-18.74	-18.82	-18.89	-18.97	-19.04
.302	-19.08	-19.16	-19.20	-19.21	-19.21	-19.22	-19.18	-19.15	-19.12	-19.09
.304	-19.06	-19.03	-19.07	-19.08	-19.12	-19.19	-19.23	-19.27	-19.28	-19.32
.306	-19.32	-19.33	-19.30	-19.27	-19.24	-19.21	-19.17	-19.18	-19.18	-19.19
.308	-19.19	-19.23	-19.24	-19.24	-19.25	-19.25	-19.26	-19.26	-19.27	-19.27
.310	-19.28	-19.28	-19.29	-19.29	-19.33	-19.34	-19.38	-19.42	-19.46	-19.53
.312	-19.58	-19.65	-19.69	-19.77	-19.84	-19.85	-19.85	-19.82	-19.79	-19.76
.314	-19.70	-19.63	-19.60	-19.57	-19.57	-19.54	-19.55	-19.51	-19.48	-19.45
.316	-19.42	-19.36	-19.29	-19.22	-19.16	-19.12	-19.06	-19.03	-19.00	-18.97
.318	-18.97	-18.98	-19.02	-19.06	-19.10	-19.14	-19.18	-19.22	-19.22	-19.23
.320	-19.27	-19.31	-19.35	-19.39	-19.43	-19.47	-19.55	-19.55	-19.59	-19.60
.322	-19.60	-19.61	-19.58	-19.55	-19.51	-19.48	-19.45	-19.39	-19.36	-19.32
.324	-19.29	-19.26	-19.27	-19.27	-19.31	-19.35	-19.36	-19.40	-19.40	-19.41
.326	-19.41	-19.38	-19.35	-19.36	-19.33	-19.33	-19.34	-19.34	-19.34	-19.35
.328	-19.35	-19.39	-19.40	-19.40	-19.41	-19.41	-19.42	-19.39	-19.39	-19.40
.330	-19.40	-19.41	-19.38	-19.38	-19.35	-19.36	-19.32	-19.29	-19.30	-19.30
.332	-19.27	-19.24	-19.21	-19.18	-19.15	-19.12	-19.05	-19.02	-18.99	-18.96
.334	-18.96	-18.97	-18.94	-18.94	-18.95	-18.95	-18.96	-19.00	-19.04	-19.04
.336	-19.08	-19.09	-19.16	-19.20	-19.25	-19.29	-19.33	-19.37	-19.37	-19.41
.338	-19.42	-19.42	-19.39	-19.40	-19.36	-19.37	-19.37	-19.38	-19.42	-19.46

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 10 (CONT'D) OCCUPANT VELOCITY – THE CHANNELIZER

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.340	-19.54	-19.61	-19.72	-19.84	-19.95	-20.06	-20.17	-20.25	-20.32	-20.37
.342	-20.41	-20.45	-20.45	-20.46	-20.46	-20.43	-20.40	-20.37	-20.34	-20.34
.344	-20.35	-20.35	-20.39	-20.43	-20.44	-20.48	-20.52	-20.56	-20.56	-20.56
.346	-20.43	-20.33	-20.26	-20.16	-20.06	-19.99	-19.96	-19.93	-19.93	-19.96
.348	-19.87	-19.88	-19.88	-19.85	-19.82	-19.82	-19.83	-19.83	-19.80	-19.77
.350	-19.74	-19.75	-19.75	-19.72	-19.69	-19.66	-19.63	-19.56	-19.49	-19.43
.352	-19.40	-19.37	-19.37	-19.41	-19.45	-19.49	-19.53	-19.54	-19.58	-19.58
.354	-19.59	-19.56	-19.53	-19.46	-19.39	-19.33	-19.30	-19.30	-19.31	-19.35
.356	-19.42	-19.50	-19.57	-19.69	-19.76	-19.87	-19.95	-20.03	-20.07	-20.07
.358	-20.08	-20.08	-20.09	-20.13	-20.17	-20.21	-20.25	-20.29	-20.33	-20.37
.360	-20.41	-20.49	-20.56	-20.71	-20.89	-21.15	-21.44	-21.80	-22.16	-22.53
.362	-22.85	-23.07	-23.25	-23.37	-23.41	-23.41	-23.38	-23.35	-23.28	-23.18
.364	-23.01	-22.83	-22.66	-22.49	-22.31	-22.17	-22.07	-21.97	-21.87	-21.80
.366	-21.73	-21.67	-21.60	-21.61	-21.65	-21.72	-21.87	-22.09	-22.31	-22.63
.368	-23.00	-23.39	-23.83	-24.22	-24.66	-25.06	-25.38	-25.64	-25.78	-25.86
.370	-25.90	-25.98	-26.05	-26.13	-26.17	-26.21	-26.25	-26.29	-26.33	-26.41
.372	-26.52	-26.67	-26.82	-26.96	-27.07	-27.19	-27.23	-27.16	-27.02	-26.78
.374	-26.43	-26.00	-25.58	-25.19	-24.87	-24.66	-24.56	-24.57	-24.64	-24.76
.376	-24.83	-24.87	-24.81	-24.70	-24.53	-24.32	-24.15	-24.01	-23.98	-24.05
.378	-24.27	-24.56	-24.93	-25.29	-25.61	-25.80	-25.91	-25.88	-25.78	-25.64
.380	-25.50	-25.40	-25.33	-25.34	-25.41	-25.56	-25.67	-25.75	-25.68	-25.47
.382	-25.12	-24.66	-24.16	-23.71	-23.32	-22.97	-22.72	-22.55	-22.37	-22.23
.384	-22.10	-21.92	-21.75	-21.58	-21.44	-21.34	-21.30	-21.31	-21.35	-21.43
.386	-21.50	-21.61	-21.69	-21.77	-21.81	-21.81	-21.82	-21.79	-21.72	-21.62
.388	-21.51	-21.45	-21.35	-21.28	-21.21	-21.11	-21.01	-20.94	-20.91	-20.88
.390	-20.88	-20.96	-21.07	-21.22	-21.44	-21.66	-21.95	-22.28	-22.57	-22.86
.392	-23.11	-23.33	-23.51	-23.70	-23.81	-23.88	-23.96	-23.97	-23.93	-23.87
.394	-23.73	-23.52	-23.24	-22.96	-22.68	-22.50	-22.47	-22.62	-22.91	-23.31
.396	-23.81	-24.32	-24.79	-25.19	-25.48	-25.69	-25.77	-25.74	-25.64	-25.46
.398	-25.25	-25.08	-24.91	-24.73	-24.60	-24.49	-24.43	-24.32	-24.19	-23.98
.400	-23.70	-23.34	-23.03	-22.75	-22.54	-22.44	-22.44	-22.52	-22.59	-22.67
.402	-22.64	-22.54	-22.40	-22.19	-21.94	-21.66	-21.38	-21.07	-20.78	-20.54
.404	-20.37	-20.26	-20.23	-20.31	-20.42	-20.57	-20.75	-20.93	-21.08	-21.19
.406	-21.31	-21.45	-21.60	-21.71	-21.79	-21.79	-21.73	-21.59	-21.42	-21.28
.408	-21.18	-21.15	-21.22	-21.37	-21.59	-21.81	-22.03	-22.21	-22.36	-22.46
.410	-22.37	-22.30	-22.23	-22.17	-22.10	-22.07	-22.00	-21.94	-21.87	-21.84
.412	-21.77	-21.67	-21.57	-21.39	-21.15	-20.87	-20.55	-20.24	-19.95	-19.67
.414	-19.46	-19.29	-19.15	-19.05	-18.95	-18.88	-18.89	-18.86	-18.82	-18.83
.416	-18.83	-18.84	-18.81	-18.81	-18.85	-18.89	-19.01	-19.15	-19.34	-19.56
.418	-19.77	-19.99	-20.21	-20.36	-20.47	-20.55	-20.59	-20.63	-20.63	-20.64
.420	-20.64	-20.65	-20.62	-20.62	-20.66	-20.70	-20.82	-20.96	-21.15	-21.37
.422	-21.58	-21.84	-22.09	-22.31	-22.53	-22.72	-22.86	-23.01	-23.16	-23.31
.424	-23.45	-23.60	-23.71	-23.79	-23.87	-23.94	-23.98	-24.02	-24.06	-24.07
.426	-24.06	-23.98	-23.88	-23.66	-23.52	-23.42	-23.35	-23.32	-23.29	-23.30
.428	-23.34	-23.38	-23.45	-23.56	-23.68	-23.82	-23.97	-24.12	-24.27	-24.38
.430	-24.49	-24.57	-24.64	-24.72	-24.76	-24.77	-24.70	-24.60	-24.46	-24.28
.432	-24.11	-23.94	-23.76	-23.63	-23.49	-23.35	-23.21	-23.07	-22.94	-22.83
.434	-22.73	-22.66	-22.63	-22.60	-22.61	-22.61	-22.65	-22.69	-22.77	-22.88
.436	-22.99	-23.07	-23.15	-23.22	-23.30	-23.37	-23.45	-23.53	-23.60	-23.64
.438	-23.65	-23.58	-23.48	-23.31	-23.13	-22.96	-22.82	-22.72	-22.69	-22.73
.440	-22.77	-22.88	-23.03	-23.21	-23.39	-23.61	-23.83	-24.05	-24.34	-24.63
.442	-24.92	-25.21	-25.43	-25.62	-25.73	-25.80	-25.81	-25.74	-25.68	-25.61
.444	-25.54	-25.48	-25.41	-25.38	-25.38	-25.42	-25.57	-25.79	-26.12	-26.44
.446	-26.80	-27.17	-27.53	-27.82	-28.04	-28.19	-28.26	-28.34	-28.34	-28.35
.448	-28.28	-28.29	-28.29	-28.26	-28.23	-28.20	-28.13	-28.03	-27.89	-27.79
.450	-27.76	-27.80	-27.84	-27.95	-28.16	-28.21	-28.29	-28.33	-28.33	-28.27
.452	-28.16	-28.06	-27.96	-27.86	-27.75	-27.69	-27.66	-27.70	-27.74	-27.81
.454	-27.93	-28.04	-28.08	-28.08	-28.05	-27.95	-27.85	-27.71	-27.61	-27.51
.456	-27.40	-27.37	-27.38	-27.42	-27.49	-27.53	-27.57	-27.58	-27.55	-27.48
.458	-27.42	-27.35	-27.28	-27.25	-27.18	-27.15	-27.16	-27.16	-27.13	-27.10
.460	-27.11	-27.11	-27.08	-27.05	-27.02	-26.95	-26.89	-26.89	-26.93	-26.97
.462	-27.01	-27.02	-26.99	-26.95	-26.92	-26.89	-26.93	-27.01	-27.09	-27.16
.464	-27.20	-27.17	-27.03	-26.86	-26.72	-26.62	-26.59	-26.63	-26.67	-26.71
.466	-26.72	-26.68	-26.62	-26.55	-26.52	-26.53	-26.57	-26.61	-26.61	-26.65
.468	-26.69	-26.73	-26.74	-26.74	-26.71	-26.68	-26.61	-26.55	-26.45	-26.38
.470	-26.31	-26.32	-26.36	-26.43	-26.51	-26.62	-26.77	-26.92	-27.06	-27.25
.472	-27.40	-27.51	-27.58	-27.59	-27.52	-27.42	-27.32	-27.22	-27.15	-27.12
.474	-27.12	-27.13	-27.17	-27.21	-27.25	-27.29	-27.33	-27.33	-27.30	-27.24
.476	-27.16	-26.96	-26.82	-26.72	-26.65	-26.66	-26.74	-26.85	-27.00	-27.14
.478	-27.25	-27.30	-27.23	-27.13	-26.99	-26.81	-26.68	-26.54	-26.44	-26.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 11 OCCUPANT DISPLACEMENT – THE CHANNELIZER

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	-.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.062	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.064	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	-.0*
.066	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.00	-.00	-.00
.068	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.070	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.072	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.074	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.076	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.078	-.00	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.080	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.082	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.084	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.086	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.088	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.090	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.092	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.094	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.096	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.098	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.100	-.01	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02
.102	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02
.104	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.03
.106	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03
.108	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03
.110	-.03	-.03	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.04
.112	-.04	-.04	-.04	-.04	-.05	-.05	-.05	-.05	-.05	-.05
.114	-.05	-.05	-.05	-.06	-.06	-.06	-.06	-.06	-.06	-.06
.116	-.06	-.06	-.06	-.06	-.06	-.07	-.07	-.07	-.07	-.07
.118	-.07	-.07	-.07	-.07	-.08	-.08	-.08	-.08	-.08	-.08
.120	-.08	-.09	-.09	-.09	-.09	-.09	-.09	-.10	-.10	-.10
.122	-.10	-.10	-.10	-.11	-.11	-.11	-.11	-.11	-.12	-.12
.124	-.12	-.12	-.12	-.13	-.13	-.13	-.14	-.14	-.14	-.14
.126	-.15	-.15	-.15	-.15	-.15	-.16	-.16	-.16	-.16	-.16
.128	-.16	-.17	-.17	-.17	-.17	-.18	-.18	-.18	-.18	-.18
.130	-.19	-.19	-.19	-.19	-.19	-.20	-.20	-.20	-.20	-.21
.132	-.21	-.21	-.21	-.22	-.22	-.22	-.22	-.23	-.23	-.23
.134	-.24	-.24	-.24	-.25	-.25	-.25	-.25	-.26	-.26	-.26
.136	-.27	-.27	-.27	-.28	-.28	-.28	-.29	-.29	-.29	-.30
.138	-.30	-.30	-.31	-.31	-.31	-.31	-.32	-.32	-.32	-.33
.140	-.33	-.33	-.33	-.34	-.34	-.34	-.35	-.35	-.35	-.36
.142	-.36	-.36	-.37	-.37	-.37	-.38	-.38	-.38	-.38	-.39
.144	-.39	-.40	-.40	-.40	-.41	-.41	-.41	-.42	-.42	-.42
.146	-.43	-.43	-.43	-.44	-.44	-.44	-.45	-.45	-.45	-.46
.148	-.46	-.46	-.47	-.47	-.48	-.48	-.48	-.49	-.49	-.49
.150	-.50	-.50	-.50	-.51	-.51	-.52	-.52	-.52	-.53	-.53
.152	-.54	-.54	-.54	-.55	-.55	-.55	-.56	-.56	-.57	-.57
.154	-.57	-.58	-.58	-.59	-.59	-.59	-.60	-.60	-.60	-.61
.156	-.61	-.62	-.62	-.62	-.63	-.63	-.64	-.64	-.64	-.65
.158	-.65	-.66	-.66	-.67	-.67	-.67	-.68	-.68	-.69	-.69
.160	-.69	-.70	-.70	-.71	-.71	-.71	-.72	-.72	-.73	-.73
.162	-.73	-.74	-.74	-.75	-.75	-.75	-.76	-.76	-.77	-.77
.164	-.77	-.78	-.78	-.78	-.79	-.79	-.80	-.80	-.80	-.81
.166	-.81	-.81	-.82	-.82	-.83	-.83	-.83	-.84	-.84	-.84
.168	-.85	-.85	-.85	-.86	-.86	-.86	-.87	-.87	-.87	-.88
.170	-.88	-.88	-.89	-.89	-.89	-.90	-.90	-.90	-.91	-.91
.172	-.91	-.92	-.92	-.92	-.93	-.93	-.93	-.94	-.94	-.94
.174	-.95	-.95	-.95	-.96	-.96	-.96	-.97	-.97	-.97	-.98
.176	-.98	-.98	-.99	-.99	-1.00	-1.00	-1.00	-1.01	-1.01	-1.01
.178	-1.02	-1.02	-1.02	-1.03	-1.03	-1.03	-1.04	-1.04	-1.04	-1.05
.180	-1.05	-1.05	-1.06	-1.06	-1.06	-1.07	-1.07	-1.07	-1.08	-1.08
.182	-1.08	-1.09	-1.09	-1.09	-1.10	-1.10	-1.10	-1.11	-1.11	-1.11
.184	-1.12	-1.12	-1.12	-1.13	-1.13	-1.13	-1.14	-1.14	-1.14	-1.15
.186	-1.15	-1.15	-1.16	-1.16	-1.16	-1.17	-1.17	-1.17	-1.18	-1.18
.188	-1.18	-1.19	-1.19	-1.19	-1.20	-1.20	-1.20	-1.21	-1.21	-1.21
.190	-1.22	-1.22	-1.22	-1.23	-1.23	-1.23	-1.24	-1.24	-1.24	-1.25
.192	-1.25	-1.25	-1.26	-1.26	-1.26	-1.27	-1.27	-1.27	-1.28	-1.28
.194	-1.28	-1.29	-1.29	-1.29	-1.30	-1.30	-1.30	-1.31	-1.31	-1.31
.196	-1.32	-1.32	-1.32	-1.33	-1.33	-1.33	-1.34	-1.34	-1.34	-1.35
.198	-1.35	-1.35	-1.36	-1.36	-1.36	-1.37	-1.37	-1.37	-1.38	-1.38

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 11 (CONT'D) OCCUPANT DISPLACEMENT – THE CHANNELIZER

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-1.38	-1.39	-1.39	-1.39	-1.40	-1.40	-1.41	-1.41	-1.41	-1.42
.202	-1.42	-1.42	-1.43	-1.43	-1.43	-1.44	-1.44	-1.44	-1.45	-1.45
.204	-1.45	-1.46	-1.46	-1.46	-1.47	-1.47	-1.48	-1.48	-1.48	-1.49
.206	-1.49	-1.49	-1.50	-1.50	-1.50	-1.51	-1.51	-1.51	-1.52	-1.52
.208	-1.52	-1.53	-1.53	-1.54	-1.54	-1.54	-1.55	-1.55	-1.55	-1.56
.210	-1.56	-1.56	-1.57	-1.57	-1.57	-1.58	-1.58	-1.59	-1.59	-1.59
.212	-1.60	-1.60	-1.60	-1.61	-1.61	-1.61	-1.62	-1.62	-1.62	-1.63
.214	-1.63	-1.64	-1.64	-1.64	-1.65	-1.65	-1.65	-1.66	-1.66	-1.66
.216	-1.67	-1.67	-1.67	-1.68	-1.68	-1.69	-1.69	-1.69	-1.70	-1.70
.218	-1.70	-1.71	-1.71	-1.71	-1.72	-1.72	-1.73	-1.73	-1.73	-1.74
.220	-1.74	-1.74	-1.75	-1.75	-1.75	-1.76	-1.76	-1.77	-1.77	-1.77
.222	-1.78	-1.78	-1.78	-1.79	-1.79	-1.80	-1.80	-1.80	-1.81	-1.81
.224	-1.81	-1.82	-1.82	-1.83	-1.83	-1.83	-1.84	-1.84	-1.84	-1.85
.226	-1.85	-1.86	-1.86	-1.86	-1.87	-1.87	-1.87	-1.88	-1.88	-1.89
.228	-1.89	-1.89	-1.90	-1.90	-1.90	-1.91	-1.91	-1.92	-1.92	-1.92
.230	-1.93	-1.93	-1.93	-1.94	-1.94	-1.95	-1.95	-1.95	-1.96	-1.96
.232	-1.97	-1.97	-1.97	-1.98	-1.98	-1.98	-1.99	-1.99	-2.00	-2.00
.234	-2.00	-2.01	-2.01	-2.01	-2.02	-2.02	-2.03	-2.03	-2.03	-2.04
.236	-2.04	-2.04	-2.05	-2.05	-2.06	-2.06	-2.06	-2.07	-2.07	-2.07
.238	-2.08	-2.08	-2.09	-2.09	-2.09	-2.10	-2.10	-2.10	-2.11	-2.11
.240	-2.12	-2.12	-2.12	-2.13	-2.13	-2.14	-2.14	-2.14	-2.15	-2.15
.242	-2.15	-2.16	-2.16	-2.17	-2.17	-2.17	-2.18	-2.18	-2.19	-2.19
.244	-2.19	-2.20	-2.20	-2.21	-2.21	-2.21	-2.22	-2.22	-2.22	-2.23
.246	-2.23	-2.24	-2.24	-2.24	-2.25	-2.25	-2.26	-2.26	-2.26	-2.27
.248	-2.27	-2.28	-2.28	-2.28	-2.29	-2.29	-2.30	-2.30	-2.30	-2.31
.250	-2.31	-2.32	-2.32	-2.32	-2.33	-2.33	-2.33	-2.34	-2.34	-2.35
.252	-2.35	-2.35	-2.36	-2.36	-2.36	-2.37	-2.37	-2.38	-2.38	-2.38
.254	-2.39	-2.39	-2.39	-2.40	-2.40	-2.41	-2.41	-2.41	-2.42	-2.42
.256	-2.42	-2.43	-2.43	-2.44	-2.44	-2.44	-2.45	-2.45	-2.45	-2.46
.258	-2.46	-2.47	-2.47	-2.47	-2.48	-2.48	-2.48	-2.49	-2.49	-2.49
.260	-2.50	-2.50	-2.51	-2.51	-2.51	-2.52	-2.52	-2.52	-2.53	-2.53
.262	-2.54	-2.54	-2.54	-2.55	-2.55	-2.55	-2.56	-2.56	-2.56	-2.57
.264	-2.57	-2.58	-2.58	-2.58	-2.59	-2.59	-2.59	-2.60	-2.60	-2.61
.266	-2.61	-2.61	-2.62	-2.62	-2.62	-2.63	-2.63	-2.64	-2.64	-2.64
.268	-2.65	-2.65	-2.65	-2.66	-2.66	-2.66	-2.67	-2.67	-2.68	-2.68
.270	-2.68	-2.69	-2.69	-2.69	-2.70	-2.70	-2.71	-2.71	-2.71	-2.72
.272	-2.72	-2.72	-2.73	-2.73	-2.74	-2.74	-2.74	-2.75	-2.75	-2.75
.274	-2.76	-2.76	-2.77	-2.77	-2.77	-2.78	-2.78	-2.78	-2.79	-2.79
.276	-2.80	-2.80	-2.80	-2.81	-2.81	-2.81	-2.82	-2.82	-2.83	-2.83
.278	-2.83	-2.84	-2.84	-2.84	-2.85	-2.85	-2.85	-2.86	-2.86	-2.87
.280	-2.87	-2.87	-2.88	-2.88	-2.88	-2.89	-2.89	-2.89	-2.90	-2.90
.282	-2.91	-2.91	-2.91	-2.92	-2.92	-2.92	-2.93	-2.93	-2.93	-2.94
.284	-2.94	-2.94	-2.95	-2.95	-2.96	-2.96	-2.96	-2.97	-2.97	-2.97
.286	-2.98	-2.98	-2.98	-2.99	-2.99	-2.99	-3.00	-3.00	-3.00	-3.01
.288	-3.01	-3.02	-3.02	-3.02	-3.03	-3.03	-3.03	-3.04	-3.04	-3.04
.290	-3.05	-3.05	-3.05	-3.06	-3.06	-3.07	-3.07	-3.07	-3.08	-3.08
.292	-3.08	-3.09	-3.09	-3.09	-3.10	-3.10	-3.10	-3.11	-3.11	-3.12
.294	-3.12	-3.12	-3.13	-3.13	-3.13	-3.14	-3.14	-3.14	-3.15	-3.15
.296	-3.16	-3.16	-3.16	-3.17	-3.17	-3.17	-3.18	-3.18	-3.19	-3.19
.298	-3.19	-3.20	-3.20	-3.21	-3.21	-3.21	-3.22	-3.22	-3.22	-3.23
.300	-3.23	-3.24	-3.24	-3.24	-3.25	-3.25	-3.25	-3.26	-3.26	-3.27
.302	-3.27	-3.27	-3.28	-3.28	-3.28	-3.29	-3.29	-3.30	-3.30	-3.30
.304	-3.31	-3.31	-3.32	-3.32	-3.32	-3.33	-3.33	-3.33	-3.34	-3.34
.306	-3.35	-3.35	-3.35	-3.36	-3.36	-3.37	-3.37	-3.37	-3.38	-3.38
.308	-3.38	-3.39	-3.39	-3.40	-3.40	-3.40	-3.41	-3.41	-3.42	-3.42
.310	-3.42	-3.43	-3.43	-3.43	-3.44	-3.44	-3.45	-3.45	-3.45	-3.46
.312	-3.46	-3.47	-3.47	-3.47	-3.48	-3.48	-3.49	-3.49	-3.49	-3.50
.314	-3.50	-3.51	-3.51	-3.51	-3.52	-3.52	-3.52	-3.53	-3.53	-3.54
.316	-3.54	-3.54	-3.55	-3.55	-3.56	-3.56	-3.56	-3.57	-3.57	-3.57
.318	-3.58	-3.58	-3.59	-3.59	-3.59	-3.60	-3.60	-3.61	-3.61	-3.61
.320	-3.62	-3.62	-3.62	-3.63	-3.63	-3.64	-3.64	-3.64	-3.65	-3.65
.322	-3.66	-3.66	-3.66	-3.67	-3.67	-3.68	-3.68	-3.68	-3.69	-3.69
.324	-3.69	-3.70	-3.70	-3.71	-3.71	-3.71	-3.72	-3.72	-3.73	-3.73
.326	-3.73	-3.74	-3.74	-3.74	-3.75	-3.75	-3.76	-3.76	-3.76	-3.77
.328	-3.77	-3.78	-3.78	-3.78	-3.79	-3.79	-3.80	-3.80	-3.80	-3.81
.330	-3.81	-3.81	-3.82	-3.82	-3.83	-3.83	-3.83	-3.84	-3.84	-3.85
.332	-3.85	-3.85	-3.86	-3.86	-3.86	-3.87	-3.87	-3.88	-3.88	-3.88
.334	-3.89	-3.89	-3.90	-3.90	-3.90	-3.91	-3.91	-3.91	-3.92	-3.92
.336	-3.93	-3.93	-3.93	-3.94	-3.94	-3.94	-3.95	-3.95	-3.96	-3.96
.338	-3.96	-3.97	-3.97	-3.98	-3.98	-3.98	-3.99	-3.99	-4.00	-4.00

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 11 (CONT'D) OCCUPANT DISPLACEMENT – THE CHANNELIZER

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.340	-4.00	-4.01	-4.01	-4.01	-4.02	-4.02	-4.03	-4.03	-4.03	-4.04
.342	-4.04	-4.05	-4.05	-4.06	-4.06	-4.06	-4.07	-4.07	-4.08	-4.08
.344	-4.08	-4.09	-4.09	-4.10	-4.10	-4.10	-4.11	-4.11	-4.12	-4.12
.346	-4.12	-4.13	-4.13	-4.14	-4.14	-4.14	-4.15	-4.15	-4.16	-4.16
.348	-4.16	-4.17	-4.17	-4.18	-4.18	-4.18	-4.19	-4.19	-4.20	-4.20
.350	-4.20	-4.21	-4.21	-4.22	-4.22	-4.22	-4.23	-4.23	-4.24	-4.24
.352	-4.24	-4.25	-4.25	-4.26	-4.26	-4.26	-4.27	-4.27	-4.27	-4.28
.354	-4.28	-4.29	-4.29	-4.29	-4.30	-4.30	-4.31	-4.31	-4.31	-4.32
.356	-4.32	-4.33	-4.33	-4.33	-4.34	-4.34	-4.35	-4.35	-4.35	-4.36
.358	-4.36	-4.37	-4.37	-4.37	-4.38	-4.38	-4.39	-4.39	-4.39	-4.40
.360	-4.40	-4.41	-4.41	-4.41	-4.42	-4.42	-4.43	-4.43	-4.44	-4.44
.362	-4.44	-4.45	-4.45	-4.46	-4.46	-4.47	-4.47	-4.48	-4.48	-4.49
.364	-4.49	-4.50	-4.50	-4.50	-4.51	-4.51	-4.52	-4.52	-4.53	-4.53
.366	-4.54	-4.54	-4.54	-4.55	-4.55	-4.56	-4.56	-4.57	-4.57	-4.57
.368	-4.58	-4.58	-4.59	-4.59	-4.60	-4.60	-4.61	-4.61	-4.62	-4.62
.370	-4.63	-4.63	-4.64	-4.65	-4.65	-4.66	-4.66	-4.67	-4.67	-4.68
.372	-4.68	-4.69	-4.69	-4.70	-4.70	-4.71	-4.71	-4.72	-4.73	-4.73
.374	-4.74	-4.74	-4.75	-4.75	-4.76	-4.76	-4.77	-4.77	-4.78	-4.78
.376	-4.79	-4.79	-4.80	-4.80	-4.81	-4.81	-4.82	-4.82	-4.82	-4.83
.378	-4.83	-4.84	-4.84	-4.85	-4.85	-4.86	-4.86	-4.87	-4.88	-4.88
.380	-4.89	-4.89	-4.90	-4.90	-4.91	-4.91	-4.92	-4.92	-4.93	-4.93
.382	-4.94	-4.94	-4.95	-4.95	-4.96	-4.96	-4.96	-4.97	-4.97	-4.98
.384	-4.98	-4.99	-4.99	-5.00	-5.00	-5.00	-5.01	-5.01	-5.02	-5.02
.386	-5.03	-5.03	-5.03	-5.04	-5.04	-5.05	-5.05	-5.06	-5.06	-5.06
.388	-5.07	-5.07	-5.08	-5.08	-5.09	-5.09	-5.09	-5.10	-5.10	-5.11
.390	-5.11	-5.12	-5.12	-5.12	-5.13	-5.13	-5.14	-5.14	-5.15	-5.15
.392	-5.16	-5.16	-5.16	-5.17	-5.17	-5.18	-5.18	-5.19	-5.19	-5.20
.394	-5.20	-5.21	-5.21	-5.22	-5.22	-5.23	-5.23	-5.23	-5.24	-5.24
.396	-5.25	-5.25	-5.26	-5.26	-5.27	-5.27	-5.28	-5.28	-5.29	-5.29
.398	-5.30	-5.30	-5.31	-5.31	-5.32	-5.32	-5.33	-5.33	-5.34	-5.34
.400	-5.35	-5.35	-5.36	-5.36	-5.37	-5.37	-5.38	-5.38	-5.38	-5.39
.402	-5.39	-5.40	-5.40	-5.41	-5.41	-5.42	-5.42	-5.42	-5.43	-5.43
.404	-5.44	-5.44	-5.44	-5.45	-5.45	-5.46	-5.46	-5.47	-5.47	-5.47
.406	-5.48	-5.48	-5.49	-5.49	-5.50	-5.50	-5.50	-5.51	-5.51	-5.52
.408	-5.52	-5.53	-5.53	-5.53	-5.54	-5.54	-5.55	-5.55	-5.56	-5.56
.410	-5.56	-5.57	-5.57	-5.58	-5.58	-5.59	-5.59	-5.60	-5.60	-5.60
.412	-5.61	-5.61	-5.62	-5.62	-5.63	-5.63	-5.63	-5.64	-5.64	-5.65
.414	-5.65	-5.65	-5.66	-5.66	-5.67	-5.67	-5.67	-5.68	-5.68	-5.68
.416	-5.69	-5.69	-5.70	-5.70	-5.70	-5.71	-5.71	-5.71	-5.72	-5.72
.418	-5.73	-5.73	-5.73	-5.74	-5.74	-5.75	-5.75	-5.75	-5.76	-5.76
.420	-5.77	-5.77	-5.78	-5.78	-5.78	-5.79	-5.79	-5.80	-5.80	-5.80
.422	-5.81	-5.81	-5.82	-5.82	-5.83	-5.83	-5.84	-5.84	-5.85	-5.85
.424	-5.85	-5.86	-5.86	-5.87	-5.87	-5.88	-5.88	-5.89	-5.89	-5.90
.426	-5.90	-5.91	-5.91	-5.92	-5.92	-5.93	-5.93	-5.94	-5.94	-5.94
.428	-5.95	-5.95	-5.96	-5.96	-5.97	-5.97	-5.98	-5.98	-5.99	-5.99
.430	-6.00	-6.00	-6.01	-6.01	-6.02	-6.02	-6.03	-6.03	-6.04	-6.04
.432	-6.05	-6.05	-6.06	-6.06	-6.07	-6.07	-6.07	-6.08	-6.08	-6.09
.434	-6.09	-6.10	-6.10	-6.11	-6.11	-6.12	-6.12	-6.12	-6.13	-6.13
.436	-6.14	-6.14	-6.15	-6.15	-6.16	-6.16	-6.17	-6.17	-6.18	-6.18
.438	-6.18	-6.19	-6.19	-6.20	-6.20	-6.21	-6.21	-6.22	-6.22	-6.23
.440	-6.23	-6.24	-6.24	-6.24	-6.25	-6.25	-6.26	-6.26	-6.27	-6.27
.442	-6.28	-6.28	-6.29	-6.29	-6.30	-6.30	-6.31	-6.31	-6.32	-6.32
.444	-6.33	-6.33	-6.34	-6.35	-6.35	-6.36	-6.36	-6.37	-6.37	-6.38
.446	-6.38	-6.39	-6.39	-6.40	-6.40	-6.41	-6.41	-6.42	-6.43	-6.43
.448	-6.44	-6.44	-6.45	-6.45	-6.46	-6.47	-6.47	-6.48	-6.48	-6.49
.450	-6.49	-6.50	-6.50	-6.51	-6.52	-6.52	-6.53	-6.53	-6.54	-6.54
.452	-6.55	-6.56	-6.56	-6.57	-6.57	-6.58	-6.58	-6.59	-6.59	-6.60
.454	-6.61	-6.61	-6.62	-6.62	-6.63	-6.63	-6.64	-6.64	-6.65	-6.66
.456	-6.66	-6.67	-6.67	-6.68	-6.68	-6.69	-6.69	-6.70	-6.71	-6.71
.458	-6.72	-6.72	-6.73	-6.73	-6.74	-6.74	-6.75	-6.75	-6.76	-6.77
.460	-6.77	-6.78	-6.78	-6.79	-6.79	-6.80	-6.80	-6.81	-6.81	-6.82
.462	-6.82	-6.83	-6.84	-6.84	-6.85	-6.85	-6.86	-6.86	-6.87	-6.87
.464	-6.88	-6.88	-6.89	-6.89	-6.90	-6.91	-6.91	-6.92	-6.92	-6.93
.466	-6.93	-6.94	-6.94	-6.95	-6.95	-6.96	-6.96	-6.97	-6.97	-6.98
.468	-6.99	-6.99	-7.00	-7.00	-7.01	-7.01	-7.02	-7.02	-7.03	-7.03
.470	-7.04	-7.04	-7.05	-7.05	-7.06	-7.06	-7.07	-7.08	-7.08	-7.09
.472	-7.09	-7.10	-7.10	-7.11	-7.11	-7.12	-7.12	-7.13	-7.14	-7.14
.474	-7.15	-7.15	-7.16	-7.16	-7.17	-7.17	-7.18	-7.18	-7.19	-7.20
.476	-7.20	-7.21	-7.21	-7.22	-7.22	-7.23	-7.23	-7.24	-7.24	-7.25
.478	-7.25	-7.26	-7.27	-7.27	-7.28	-7.28	-7.29	-7.29	-7.30	-7.30

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

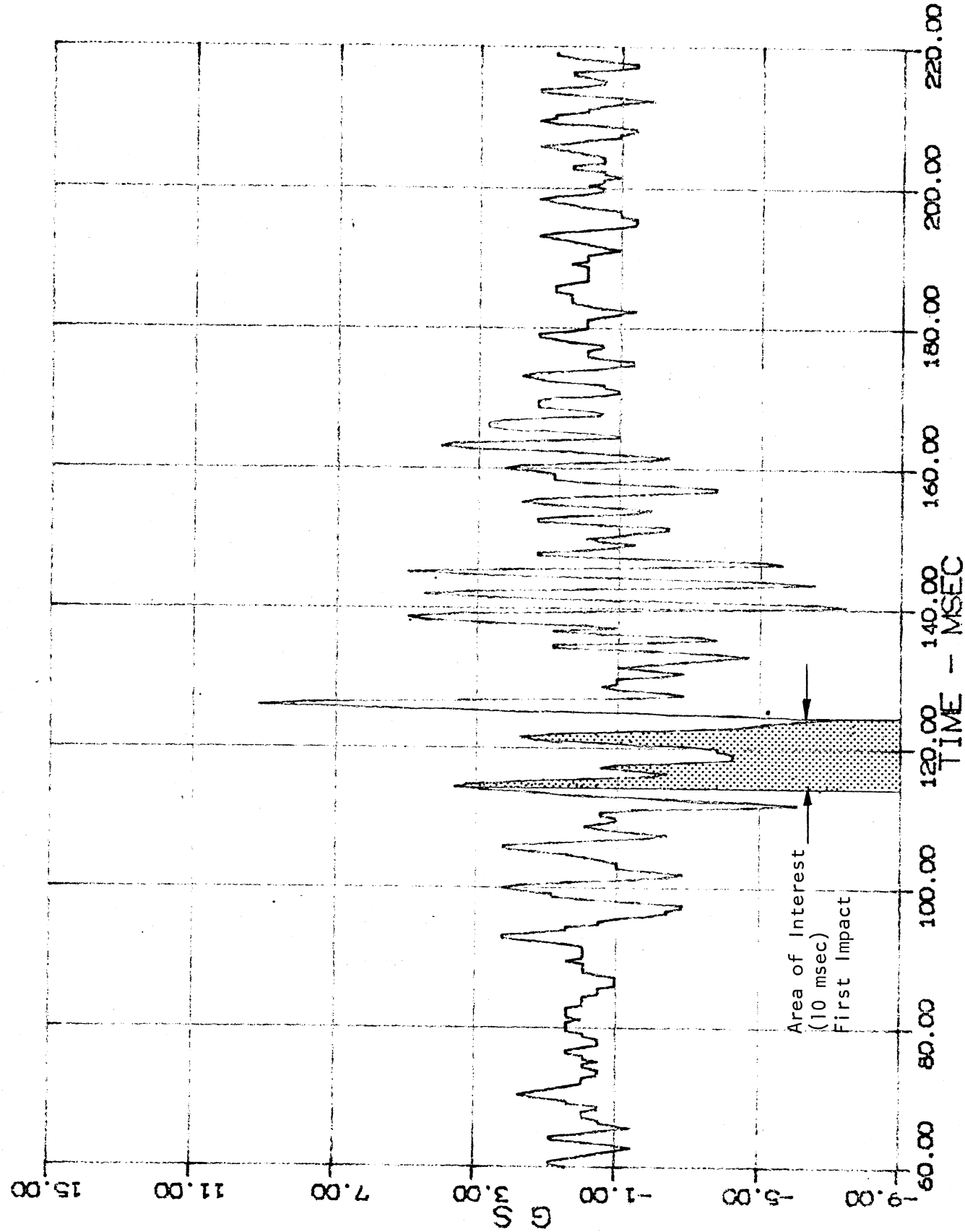


FIGURE 33 CHANNELIZER IMPACT, CLASS 180 FILTER

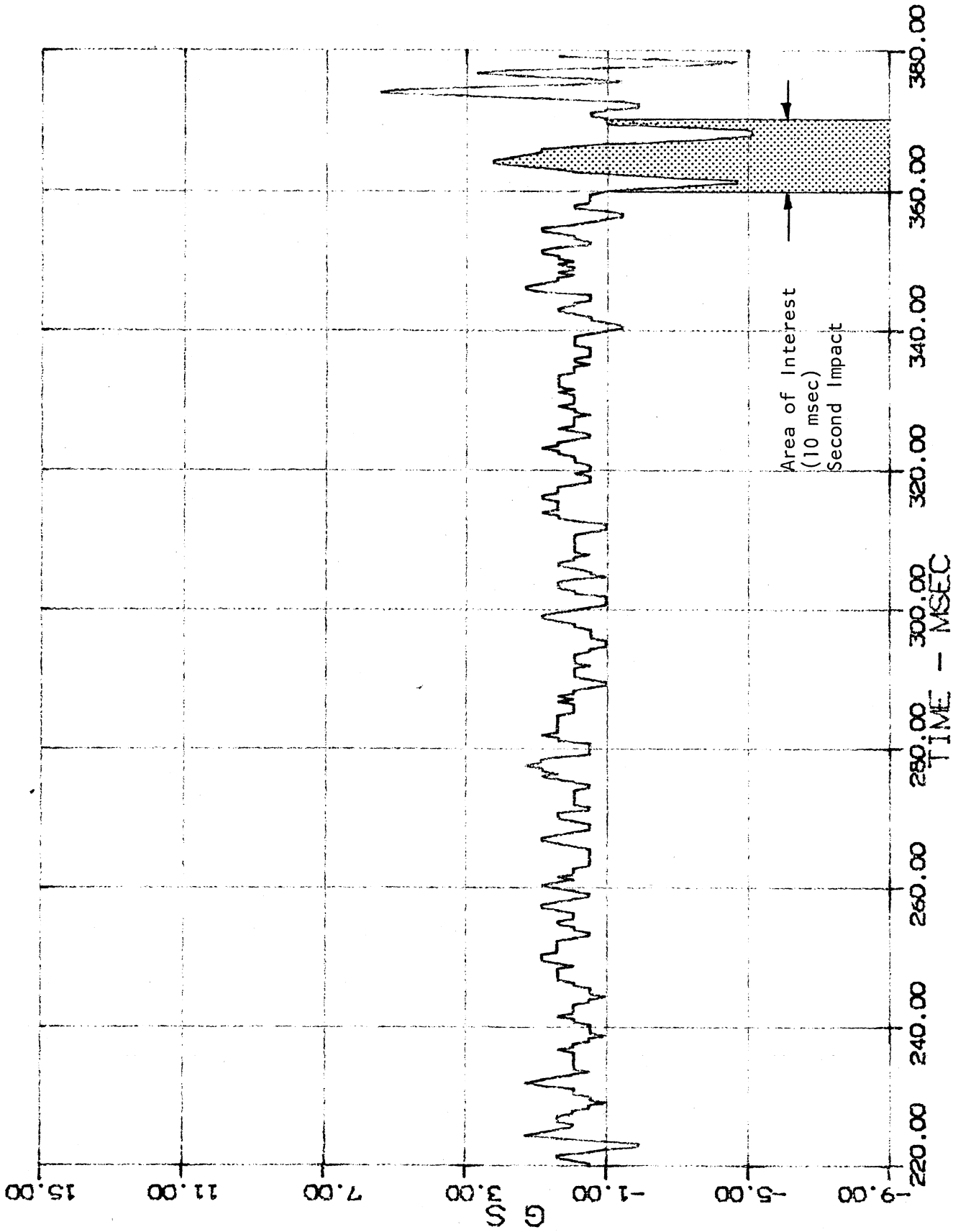


FIGURE 33 (CONT'D) CHANNELIZER IMPACT, CLASS 180 FILTER

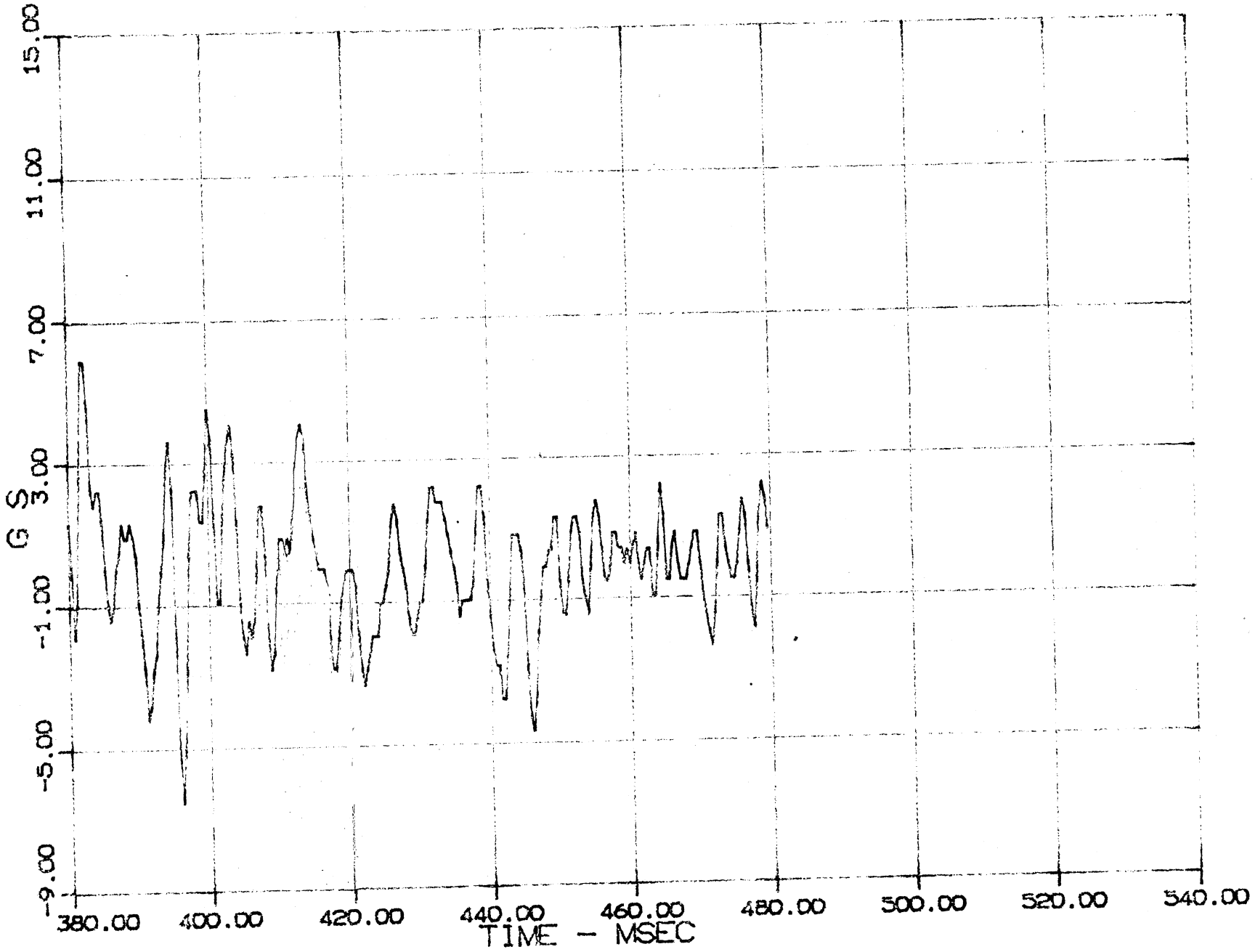


FIGURE 33 (CONT'D) CHANNELIZER IMPACT, CLASS 180 FILTER

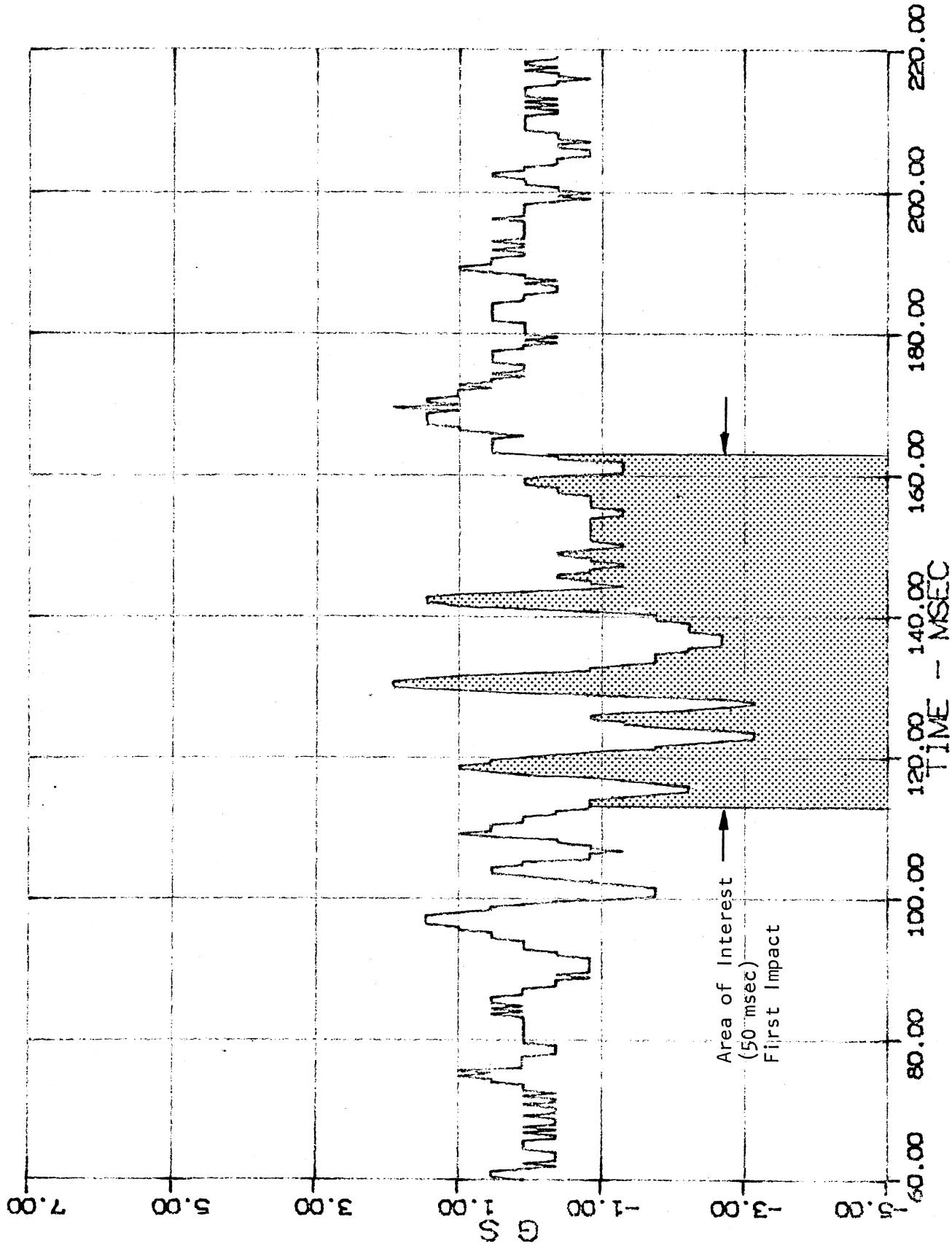


FIGURE 34 CHANNELIZER IMPACT, CLASS 60 FILTER

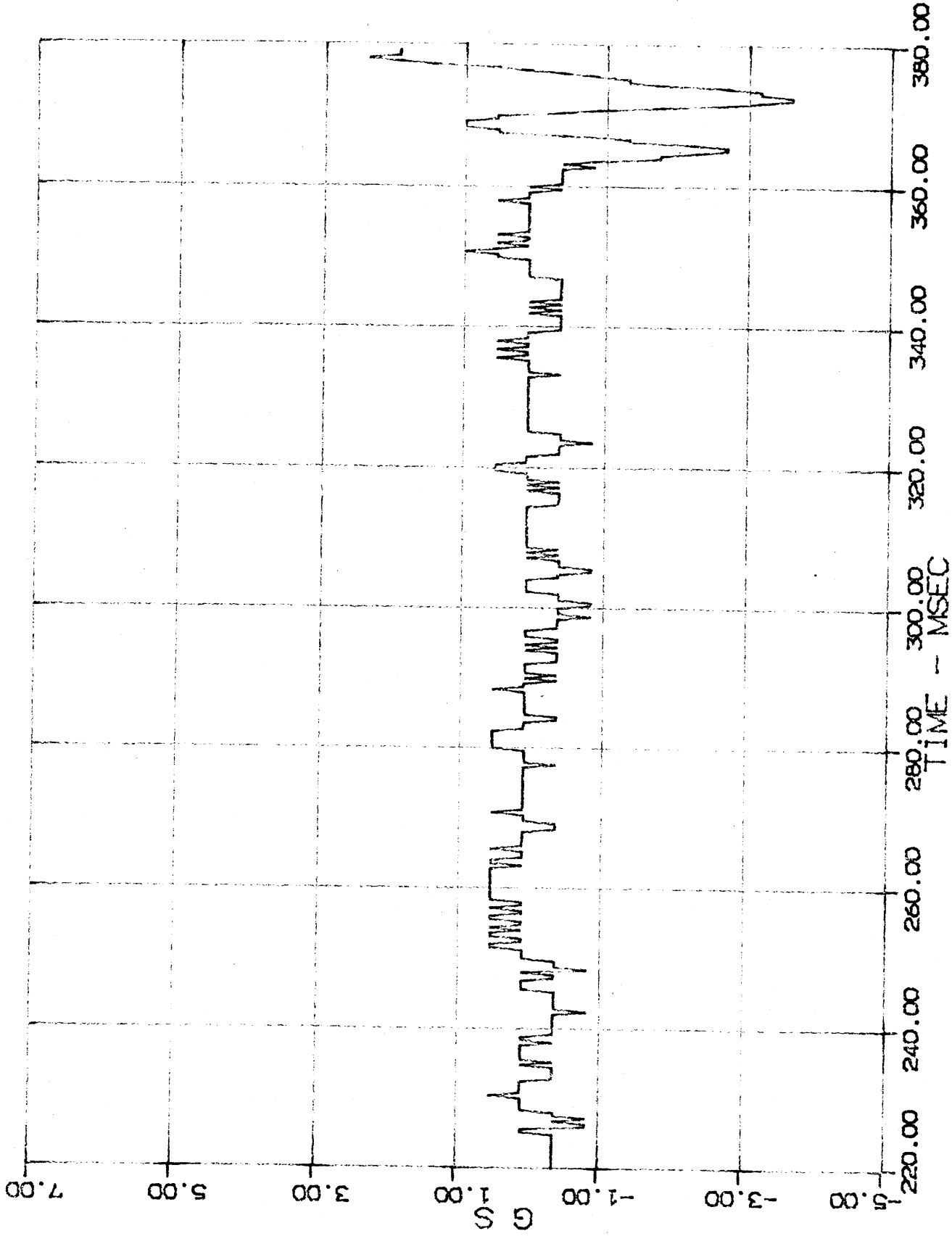


FIGURE 34 (CONT'D) CHANNELIZER IMPACT, CLASS 60 FILTER

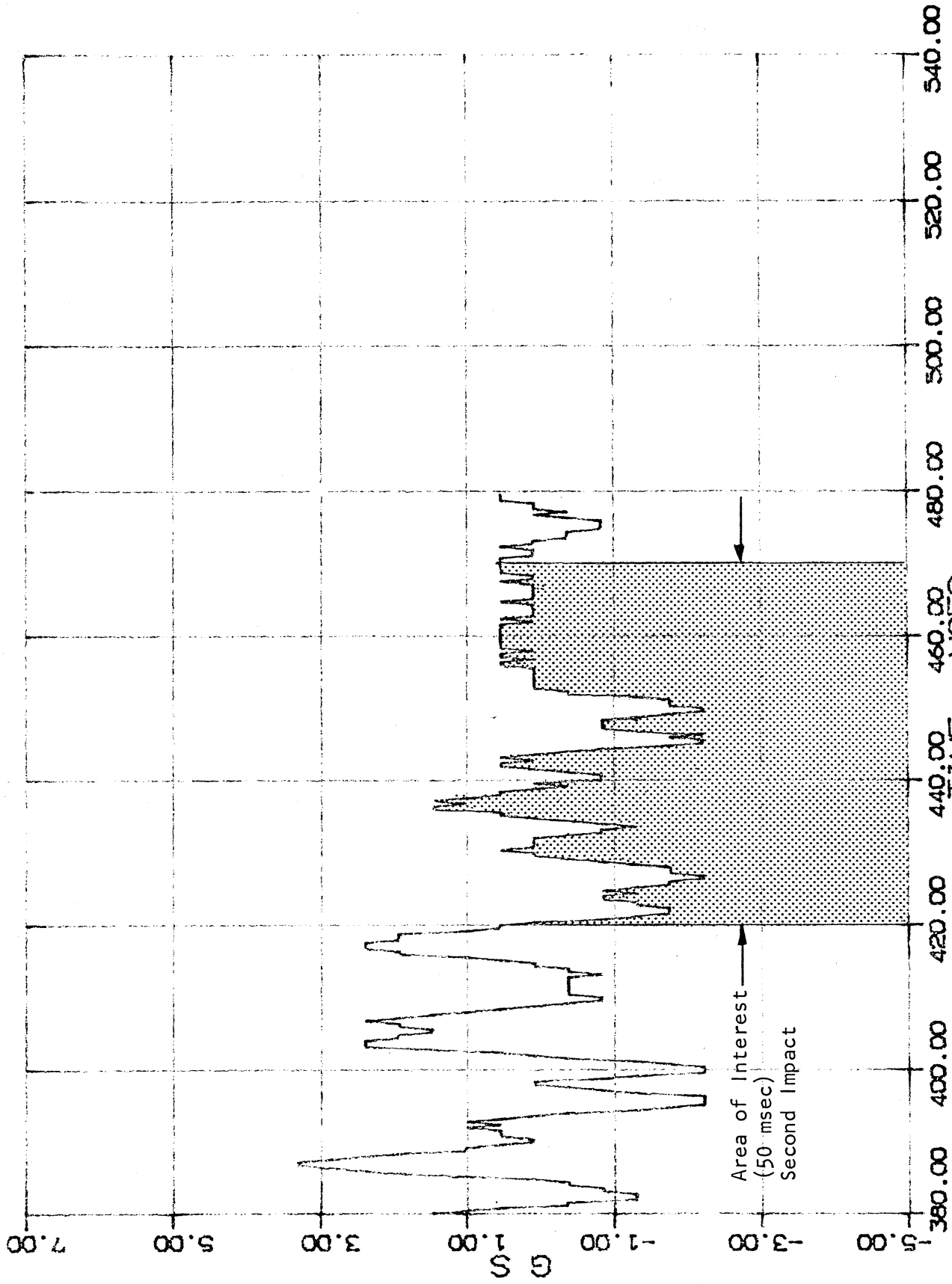


FIGURE 34 (CONT'D) CHANNELIZER IMPACT, CLASS 60 FILTER

3.3 TEST CONDUCT - 55 GALLON DRUM

The test article was a 55 gallon metal drum used as a channelizing device.

A typical warning light was attached at the provided location on the left of the device. The light was a Rhodes and Maine model RM 55 and selected as a light commercially available.

Two 55 gallon drums were located for impact simulating the placement of two devices being used as a lane taper to channel traffic. The first device was placed at the right quarter point of the vehicle, 17 in (43.2 cm) from the vehicle centerline. The second device was placed 25 ft (7.6 m) behind the first device at the left quarter point of the vehicle 17 in (43.2 cm) from the vehicle centerline. As was the case with the test on the Plastibarrel 400PB and Channelizer, these locations were chosen to provide a realistic but "worst case" force application to the front of the test vehicle. They were selected to maximize the possiblity of vehicle yaw and resultant tendency to roll.

The test was conducted on Friday July 30, 1982 at 2:00 p.m. at a speed of 59.2 mph (95.3 kph).

Pretest photographs are presented in Figures 35 and 36.

3.3.1 I.C. - TEST RESULTS

The first device impacted on the right quarter point of the vehicle bumper and crushed around the bumper. It then folded over and crushed under the front of the vehicle lifting the right front wheel and jamming under the engine and running gear.

The second device was impacted at a slightly higher point, the front of the vehicle being suspended atop the first crushed drum. This drum also crushed around the bumper, folded over and was crushed beneath the engine area of the vehicle remaining under the vehicle. Posttest photographs are presented in Figures 37 and 38.



FIGURE 35 PRETEST SETUP – FRONT VIEW



FIGURE 36 PRETEST – SIDE VIEW



FIGURE 37 POSTTEST – FRONT VIEW



FIGURE 38 POSTTEST – DRUMS

Both 55 gallon drums retained the warning lights and ballast. Both devices were damaged beyond repair. Retention of the warning light to the 55 gallon drums eliminated the potential hazard of the light penetrating the windshield as exhibited during the crash tests of the two previous channelizing devices.

The two drums that were lodged under the vehicle raised the front of the vehicle approximately 2 in off of the ground eliminating steering control. No yaw, pitch or roll instability was observed. The vehicle brakes were applied and the vehicle stopped in a straight line.

The nose of the dummy appeared to strike the steering wheel when the second drum was impacted. Vehicle body damage was cosmetic with some additional denting and scratching of sheet metal and breaking of the left headlight. The sheet metal engine oil pan was badly dented and the cast gear box (transaxle) case was cracked.

3.3.1 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 20.96 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this data, the highest 10 msec and highest 50 msec averages are presented in Table 12.

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(1) Flail space approach defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances"

The occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breakaway/Yielding Supports - Signs and Luminaire.

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 13. Computer printouts of the first integral (occupant velocity) and second integral (occupant displacement) are presented in Tables 14 and 15.

TABLE 12 MOVING AVERAGE DATA 55 GALLON DRUM

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	4.3828 (1)	.1468 to.1568
Impact with Second Device	4.3784 (1)	.4170 to.4270
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	2.2818	.1446 to.1946
Impact with Second Device	2.1253	.3846 to.4346
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact with First & Second Device	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 13 VEHICLE ACCELERATION DATA - 55 GALLON DRUM

G'S

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.02	.02	-.42	.02	-.42	-.42	-.42	-.42	.02	.02
.142	.02	.02	.46	.46	.90	.90	.46	.46	.02	.02
.144	.02	-.42	-.42	-.42	-.86	-1.31	-1.75	-1.75	-1.75	-2.19
.146	-2.63	-3.08	-3.96	-3.96	-4.40	-4.84	-4.40	-5.29	-5.29	-5.73
.148	-6.17	-6.17	-6.17	-5.73	-5.29	-4.40	-3.96	-2.19	-1.75	-1.31
.150	-.86	-.86	-1.31	-1.31	-1.75	-2.63	-3.08	-3.52	-3.96	-3.52
.152	-3.52	-3.96	-4.40	-5.29	-5.73	-6.61	-6.61	-6.61	-5.73	-5.29
.154	-5.29	-4.84	-4.40	-3.52	-3.08	-3.08	-3.96	-4.84	-5.73	-5.73
.156	-6.17	-6.17	-6.17	-5.29	-4.84	-4.40	-3.52	-2.63	-1.75	-1.31
.158	-.86	-.42	-.42	.02	.46	.46	.46	.46	.90	.90
.160	.90	1.35	.90	.46	-.42	-2.19	-3.52	-5.29	-7.06	-7.50
.162	-8.38	-8.38	-7.50	-7.06	-4.84	-3.08	-1.31	.46	1.35	1.79
.164	1.79	.46	-.42	-1.31	-2.19	-2.63	-3.08	-2.63	-2.19	-1.75
.166	-1.31	-1.75	-1.75	-2.19	-3.08	-3.52	-4.40	-4.40	-3.96	-3.96
.168	-3.08	-3.08	-2.63	-2.63	-2.19	-1.75	-2.19	-2.19	-2.63	-2.63
.170	-2.63	-2.19	-1.75	-.86	.02	.90	1.35	1.79	1.79	1.35
.172	.46	-.42	-.86	-1.31	-1.31	-1.31	-.86	-.86	-.86	-1.31
.174	-1.75	-2.63	-3.52	-4.40	-4.84	-5.29	-5.29	-4.84	-3.96	-3.52
.176	-3.52	-2.19	-1.75	-.86	-.86	-.42	.46	.46	.90	2.23
.178	2.67	2.23	2.23	2.23	.90	.02	-.86	-1.75	-2.63	-3.52
.180	-3.96	-4.40	-4.40	-3.96	-3.96	-3.52	-3.52	-3.52	-3.96	-4.40
.182	-4.40	-5.29	-4.84	-4.84	-3.96	-3.52	-2.63	-1.75	-.86	.02
.184	.90	.90	1.35	.46	.02	-.86	-1.75	-3.08	-3.96	-4.40
.186	-4.40	-3.96	-3.52	-3.08	-3.08	-3.08	-3.52	-3.52	-3.08	-3.52
.188	-3.08	-3.08	-3.08	-3.08	-2.63	-2.63	-2.19	-1.75	-1.75	-1.31
.190	-1.31	-.86	-.42	-.42	.02	.02	.46	.46	.46	-.42
.192	-.42	-.86	-1.31	-2.19	-2.19	-2.19	-2.63	-2.63	-2.63	-2.19
.194	-1.31	-.86	.46	.46	.90	.90	.90	.02	.02	.02
.196	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42
.198	.02	-.42	-.42	-.86	-.86	-.86	-.86	.62	.46	.90
.200	1.35	1.35	1.79	1.79	1.35	.90	.90	.90	.90	1.35
.202	1.35	1.79	1.79	1.79	1.79	.90	.46	.02	-.42	-1.31
.204	-1.75	-2.19	-2.63	-2.63	-3.08	-2.63	-3.52	-3.52	-3.52	-3.96
.206	-3.08	-3.08	-2.19	-1.75	-1.31	-.86	-.42	.02	.02	.46
.208	.02	-.42	-.86	-1.31	-1.75	-1.75	-2.19	-2.19	-1.75	-.86
.210	-.42	.02	.90	1.35	1.79	2.23	2.23	1.79	1.35	.90
.212	.46	-.42	.02	-.42	.02	.02	.90	.90	1.35	1.35
.214	1.35	.90	.90	.90	.46	.02	.02	-1.31	-1.75	-2.19
.216	-2.19	-2.63	-1.75	-.42	.90	2.67	3.56	4.88	5.33	5.33
.218	5.33	4.44	3.56	1.79	.46	-1.31	-3.08	-3.96	-4.40	-4.84
.220	-3.52	-3.08	-1.31	.90	2.67	3.12	3.56	3.12	2.23	.90
.222	-.42	-1.31	-2.19	-2.63	-2.63	-1.75	-.86	.02	1.35	2.67
.224	4.00	4.44	5.33	4.88	4.00	2.67	1.35	.02	-1.75	-2.63
.226	-3.96	-4.40	-4.40	-4.40	-3.52	-3.52	-3.08	-2.19	-1.31	.02
.228	.46	1.35	2.23	2.67	2.67	2.67	3.12	2.67	1.79	1.79
.230	.90	.02	-.42	-.86	-.86	-1.75	-1.75	-1.75	-1.75	-1.75
.232	-1.75	-1.31	-1.75	-1.75	-2.19	-2.19	-2.63	-2.19	-2.19	-2.19
.234	-1.75	-.86	.02	.90	1.79	2.67	3.12	3.56	3.56	3.12
.236	2.67	2.67	1.35	.90	.02	-.86	-.86	-1.75	-1.75	-1.75
.238	-1.75	-1.31	-.86	-.42	.02	.02	.02	.46	.46	.46
.240	.90	.46	.90	.90	.90	.90	.90	1.35	.90	.90
.242	.90	.46	.02	-.42	-.42	-.86	-1.31	-1.31	-1.31	-1.31
.244	-.86	-.42	.02	.46	.46	.90	.46	.46	.46	.02
.246	.02	.02	.02	.02	.02	.02	.02	.02	.02	-.42
.248	-.42	-.42	-.42	-.42	-.86	-1.31	-1.31	-1.31	-1.75	-.86
.250	-.42	.02	.46	.46	.90	1.35	.90	.90	1.35	1.35
.252	1.79	1.79	1.79	1.79	1.35	1.35	.90	.46	.02	.46
.254	.46	.02	.46	.46	.46	.46	.46	.90	1.35	.90
.256	1.35	1.35	.90	1.35	.90	.90	.90	1.35	1.35	.90
.258	.90	.46	.02	-.42	-.86	-.86	-.86	-.86	-.86	-.42

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 13 (CONT'D) VEHICLE ACCELERATION DATA - 55 GALLON DRUM

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-.42	-.42	-.42	-.42	-.42	-.86	-.86	-1.31	-.86	-1.31
.262	-1.75	-1.31	-.86	-.86	-.86	.02	-.42	-.42	-.86	-1.31
.264	-1.31	-1.75	-1.31	-1.75	-1.31	-.86	-1.31	-1.31	-1.31	-.86
.266	-.86	-1.31	-.86	-1.31	-.86	-.86	-.42	-.42	.02	.02
.268	.02	.02	-.42	.02	.02	.46	.46	.46	.02	.02
.270	-.42	-.86	-1.31	-1.31	-1.31	-1.31	-1.31	-.86	-.86	-.86
.272	-.86	-.42	-.42	-.86	-.86	-.42	-.86	-.42	-.42	.02
.274	.02	.46	.46	.46	.46	.02	.46	.46	.02	.02
.276	.02	.02	-.42	-.86	-.86	-1.31	-1.31	-1.31	-1.31	-.86
.278	-.42	.02	.46	.46	.46	.90	.46	.02	.02	-.42
.280	.02	.02	.02	-.42	-.42	-.42	-.42	-.86	-.42	-.42
.282	-.42	-.42	.02	-.42	.02	.02	-.42	.02	.02	-.86
.284	-.86	-1.31	-1.75	-1.75	-1.75	-2.19	-1.31	-1.31	-.86	-.86
.286	-.86	-.86	-.86	-.42	-.42	.02	.02	.02	.02	.02
.288	.02	.46	.02	.46	.02	.02	.46	.02	.02	.02
.290	.02	.02	.02	.02	.02	.02	.02	.02	-.42	.02
.292	.02	.02	.02	.46	.46	.46	.90	.90	.46	.46
.294	.90	1.35	.90	.90	.90	.46	.46	.02	.02	.02
.296	.02	.02	.02	.02	.02	.02	.46	.02	-.42	-.42
.298	-.86	-.86	-1.31	-1.31	-1.31	-1.31	-.86	-.86	-.42	.02
.300	.02	.02	.02	.02	.46	.02	-.42	-.42	-.42	-.42
.302	-.86	-.42	-.42	.02	-.42	-.86	-.42	-.42	-.42	-.42
.304	-.42	.02	.02	.02	.02	.46	.46	.02	.46	.46
.306	.02	.02	.02	-.42	.02	-.42	-.42	-.86	-.42	-.42
.308	.02	.02	.02	.02	.46	.02	.02	.02	.02	-.42
.310	-.42	-.42	-.42	-.86	-.86	-.86	-.42	-.42	.02	.02
.312	.02	.02	.46	.46	.02	.02	.02	.02	.46	.46
.314	.46	1.35	1.35	.90	.46	.46	.46	.46	.46	.46
.316	.02	.02	.02	-.42	.02	.02	.02	.02	.02	.02
.318	.90	.46	.90	.46	.46	.02	.02	-.86	-.42	-.86
.320	-.86	-.42	-.86	-.42	.02	.02	.46	.46	.46	.46
.322	.02	.02	.02	-.42	-.42	-.42	.02	.02	.02	.46
.324	.46	.46	.46	.90	.90	.46	.46	.02	-.42	-.86
.326	-1.31	-1.31	-1.75	-1.75	-1.31	-.86	.02	.02	.90	.90
.328	.90	.46	.46	.46	.02	-.42	-.42	-.86	-.42	-.86
.330	-.42	.02	.46	.90	1.35	.90	.90	.46	-.42	-.86
.332	-.86	-1.31	-1.75	-1.75	-1.75	-1.75	-1.31	-.86	.02	.02
.334	.90	.90	1.35	1.35	.46	.46	.02	.02	-.42	.02
.336	-.42	.02	.02	.46	.90	.90	.46	.46	.02	-.42
.338	-.42	-.42	-.86	-.86	-.86	-.86	-.42	-.42	.02	.46
.340	.46	.90	.90	.90	.90	.90	.46	.46	.46	.02
.342	.02	.02	.02	.02	.02	.46	.46	.46	.46	.46
.344	.46	.46	.02	.02	.02	.02	.02	.02	.02	.46
.346	.46	.46	.90	.46	.90	.46	.90	.46	.46	.46
.348	.46	.46	.46	.46	.46	.02	.02	.02	.02	.02
.350	.02	.02	.02	.02	.02	.02	-.42	-.42	-.42	.02
.352	.02	.02	.02	.46	.02	.02	-.42	-.42	-.42	.02
.354	-.42	.02	-.86	-.86	-.86	-1.31	-1.31	-1.31	-.86	-.86
.356	-.86	-.86	-.42	.02	.46	.46	.46	.46	.46	.46
.358	.02	.46	.02	.02	.02	-.42	.02	-.42	.02	.02
.360	-.42	-.42	-.42	.02	.02	-.42	.02	-.42	-.42	.02
.362	-.42	.02	.02	.02	.02	.46	.02	.02	.02	.02
.364	.02	.02	-.42	-.42	-.42	-.42	-.86	-.42	-.86	-.86
.366	-.86	-.86	-.86	-.86	-.86	-.86	-.86	-.42	.02	.02
.368	.46	.46	.46	.46	.02	.02	-.42	-.42	-.42	-.42
.370	-.42	-.42	-.42	.02	.02	-.42	.02	-.42	-.42	-.86
.372	-.86	-.86	-.86	-.86	-.86	-.86	-.86	-.42	-.42	.02
.374	.46	.46	.46	.46	.46	.46	.46	.90	.90	.46
.376	.90	.46	.02	.02	-.42	-.86	-.86	-.86	-.86	-.86
.378	-.86	-.86	-.42	-.42	-.42	.02	.46	.90	.90	.46

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 13 (CONT'D) VEHICLE ACCELERATION DATA – 55 GALLON DRUM

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	.46	.02	.02	.02	.02	-.42	-.42	-.86	-1.31	-1.75
.382	-1.75	-1.75	-2.19	-1.75	-1.75	-1.31	-.42	.02	.46	1.35
.384	1.79	2.23	2.23	1.79	.90	.02	-.86	-1.75	-3.08	-3.96
.386	-4.84	-5.29	-5.73	-5.73	-5.29	-5.29	-4.40	-4.84	-4.40	-4.40
.388	-4.40	-4.40	-4.40	-4.40	-3.96	-3.52	-2.19	-1.75	-1.31	-.42
.390	.02	.90	1.79	1.35	1.79	.90	.02	-.86	-2.63	-3.52
.392	-4.40	-4.40	-4.40	-4.40	-3.96	-3.52	-2.19	-1.31	-.86	.46
.394	.90	.90	.46	.02	.02	-.42	.02	.46	.90	.90
.396	.90	.46	.02	-.42	-1.75	-3.08	-4.40	-5.73	-7.06	-7.50
.398	-7.50	-7.06	-6.17	-4.84	-3.52	-2.63	-1.75	-1.75	-1.75	-1.75
.400	-2.19	-1.75	-1.31	-.86	-.86	-.86	-1.75	-2.19	-3.08	-3.96
.402	-4.40	-4.84	-4.84	-4.84	-4.84	-5.29	-4.84	-4.84	-5.29	-5.29
.404	-4.40	-3.96	-3.52	-2.63	-2.19	-1.75	-1.75	-1.31	-.86	-.42
.406	.46	.90	.90	1.35	.90	.90	.46	.02	-.86	-2.63
.408	-3.96	-5.29	-5.73	-5.29	-4.84	-4.40	-3.52	-2.63	-1.75	-.86
.410	.02	.90	1.79	1.35	.90	.90	.02	-.42	-.42	-.86
.412	-.86	-1.31	-1.75	-1.75	-1.75	-1.31	-1.31	-.86	-.42	-.42
.414	.46	.46	1.79	2.23	3.12	3.56	3.56	3.56	3.12	2.67
.416	1.79	.90	.02	-.86	-1.75	-3.08	-4.40	-5.73	-7.06	-8.38
.418	-8.83	-7.94	-7.06	-4.84	-3.96	-2.63	-2.19	-2.63	-3.52	-4.84
.420	-5.73	-7.06	-7.50	-8.83	-8.83	-8.83	-9.27	-8.83	-8.38	-8.38
.422	-7.94	-7.94	-7.50	-7.50	-7.50	-7.06	-7.06	-5.73	-4.40	-2.63
.424	-.86	.46	1.79	2.23	2.67	2.67	2.23	1.79	1.35	.46
.426	-.42	-1.31	-1.75	-2.63	-2.63	-3.08	-3.08	-3.08	-2.63	-2.63
.428	-2.63	-2.19	-1.75	-1.75	-.86	.02	.90	1.79	2.67	3.12
.430	3.12	3.56	3.12	2.67	2.67	1.79	1.35	.02	-1.31	-1.75
.432	-2.19	-2.19	-2.19	-2.19	-3.52	-4.84	-6.61	-8.38	-9.27	-8.38
.434	-6.61	-4.40	-2.19	.02	1.35	1.35	2.23	2.67	3.12	3.56
.436	4.44	4.88	5.33	5.77	5.33	4.00	1.79	-.42	-2.63	-4.84
.438	-6.17	-6.61	-6.17	-5.73	-4.84	-3.52	-3.08	-2.19	-1.75	-1.31
.440	-.86	.46	1.35	2.67	2.67	2.67	1.79	.90	.46	.02
.442	.46	.90	1.79	2.67	3.56	4.00	3.56	2.67	1.35	.02
.444	-1.31	-2.19	-3.96	-4.84	-5.29	-5.73	-5.73	-5.29	-3.96	-3.08
.446	-1.75	-.86	-.42	-.86	-1.75	-2.19	-2.63	-3.08	-3.52	-3.52
.448	-3.08	-2.63	-2.19	-1.75	-1.75	-.86	-.86	-.42	.02	.46
.450	.90	.46	.90	.90	.90	.46	.02	-.86	-1.75	-1.75
.452	-2.19	-1.75	-1.31	-.86	.02	.46	1.35	1.79	1.79	1.79
.454	1.79	1.79	1.79	1.79	1.79	2.67	2.23	2.23	2.67	1.79
.456	1.79	1.35	1.35	1.35	.90	.90	.90	1.35	1.79	2.23
.458	3.12	3.56	4.00	4.00	3.56	2.67	1.79	.90	.46	.02
.460	.02	.46	.46	.46	.02	-.42	-.42	-.42	.02	.46
.462	1.35	1.35	1.35	1.35	.90	.02	-.42	-.86	-.86	-.86
.464	-.42	.02	.46	.90	1.79	2.67	3.12	3.56	3.56	2.67
.466	1.79	.90	-.42	-1.75	-2.19	-3.08	-3.52	-3.08	-2.63	-3.08
.468	-2.19	-1.75	-1.31	-.42	.90	2.23	3.12	3.56	4.00	3.56
.470	3.12	1.79	.02	-1.31	-2.19	-2.63	-3.08	-2.19	-1.75	-1.31
.472	-.86	-.86	-.42	-.42	-.86	-1.75	-2.19	-2.19	-2.19	-2.19
.474	-2.63	-2.19	-1.75	-1.31	-.42	.02	.46	.46	.46	.02
.476	.02	-.86	-1.31	-1.75	-1.75	-2.19	-2.19	-2.19	-2.19	-1.75
.478	-.86	-.42	.02	-.42	-.42	-.42	-.42	-.42	.02	.02
.480	.46	.90	.46	.46	.46	.46	.46	.02	.46	.46
.482	.90	.46	.46	.02	.02	-.42	-.86	-1.31	-1.75	-2.19
.484	-2.19	-2.19	-2.19	-1.75	-1.75	-1.31	-1.31	-1.31	-1.31	-.86
.486	-.86	-.42	-.42	-.86	-.42	-.42	.02	.02	.46	.90
.488	.02	.46	.46	.90	.90	1.35	.90	.90	.46	.02
.490	-.86	-.86	-1.31	-1.75	-1.31	-.86	-.42	.46	1.35	1.79
.492	2.23	2.67	2.67	2.67	2.67	2.23	1.79	1.35	.90	.46
.494	.90	1.35	1.79	1.79	2.23	1.79	1.35	.46	-.86	-1.75
.496	-2.63	-3.96	-3.96	-3.96	-3.52	-3.08	-2.19	-.86	.02	1.35
.498	1.79	2.67	3.12	3.12	2.67	1.79	.90	-.42	-.86	-2.19

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.00	.00	-.03	-.03	-.06	-.09	-.13	-.16	-.16	-.16
.142	-.15	-.15	-.12	-.08	-.01	.06	.09	.13	.13	.13
.144	.13	.10	.07	.04	-.03	-.13	-.27	-.40	-.54	-.70
.146	-.91	-1.15	-1.45	-1.76	-2.10	-2.47	-2.81	-3.22	-3.63	-4.07
.148	-4.55	-5.02	-5.50	-5.94	-6.35	-6.69	-6.99	-7.16	-7.30	-7.40
.150	-7.47	-7.53	-7.63	-7.74	-7.87	-8.07	-8.31	-8.58	-8.89	-9.16
.152	-9.43	-9.74	-10.08	-10.49	-10.93	-11.44	-11.95	-12.46	-12.90	-13.31
.154	-13.72	-14.09	-14.43	-14.70	-14.94	-15.18	-15.48	-15.86	-16.30	-16.74
.156	-17.22	-17.70	-18.17	-18.58	-18.95	-19.29	-19.57	-19.77	-19.90	-20.01
.158	-20.07	-20.10	-20.14	-20.14	-20.10	-20.06	-20.03	-19.99	-19.92	-19.85
.160	-19.78	-19.68	-19.61	-19.57	-19.61	-19.78	-20.05	-20.46	-21.00	-21.58
.162	-22.23	-22.87	-23.45	-24.00	-24.37	-24.61	-24.71	-24.67	-24.57	-24.43
.164	-24.29	-24.26	-24.29	-24.39	-24.56	-24.76	-25.00	-25.20	-25.37	-25.51
.166	-25.61	-25.74	-25.88	-26.05	-26.29	-26.56	-26.90	-27.24	-27.54	-27.85
.168	-28.09	-28.32	-28.53	-28.73	-28.90	-29.03	-29.20	-29.37	-29.58	-29.78
.170	-29.98	-30.15	-30.29	-30.35	-30.35	-30.28	-30.18	-30.04	-29.90	-29.80
.172	-29.76	-29.80	-29.86	-29.96	-30.06	-30.16	-30.23	-30.30	-30.36	-30.47
.174	-30.60	-30.80	-31.08	-31.42	-31.79	-32.20	-32.61	-32.98	-33.29	-33.56
.176	-33.83	-34.00	-34.13	-34.20	-34.27	-34.30	-34.26	-34.23	-34.16	-33.99
.178	-33.78	-33.61	-33.43	-33.26	-33.19	-33.19	-33.26	-33.39	-33.60	-33.87
.180	-34.17	-34.51	-34.85	-35.16	-35.46	-35.74	-36.01	-36.28	-36.59	-36.93
.182	-37.27	-37.67	-38.05	-38.42	-38.73	-39.00	-39.20	-39.34	-39.48	-39.48
.184	-39.33	-39.26	-39.16	-39.12	-39.12	-39.19	-39.32	-39.56	-39.87	-40.21
.186	-40.55	-40.85	-41.12	-41.36	-41.60	-41.84	-42.11	-42.38	-42.62	-42.89
.188	-43.13	-43.36	-43.60	-43.84	-44.04	-44.24	-44.41	-44.55	-44.68	-44.78
.190	-44.89	-44.95	-44.98	-45.02	-45.02	-45.01	-44.98	-44.94	-44.91	-44.94
.192	-44.97	-45.04	-45.14	-45.31	-45.48	-45.65	-45.85	-46.05	-46.26	-46.43
.194	-46.53	-46.59	-46.56	-46.52	-46.45	-46.38	-46.31	-46.31	-46.31	-46.31
.196	-46.34	-46.37	-46.41	-46.44	-46.47	-46.50	-46.54	-46.57	-46.60	-46.63
.198	-46.63	-46.67	-46.70	-46.77	-46.83	-46.90	-46.97	-46.96	-46.93	-46.86
.200	-46.75	-46.65	-46.51	-46.37	-46.27	-46.20	-46.13	-46.06	-45.99	-45.89
.202	-45.78	-45.64	-45.51	-45.37	-45.23	-45.16	-45.12	-45.12	-45.16	-45.26
.204	-45.39	-45.56	-45.76	-45.97	-46.21	-46.41	-46.68	-46.95	-47.22	-47.53
.206	-47.77	-48.00	-48.17	-48.31	-48.41	-48.48	-48.51	-48.51	-48.51	-48.47
.208	-48.47	-48.50	-48.57	-48.67	-48.80	-48.94	-49.11	-49.28	-49.41	-49.48
.210	-49.51	-49.51	-49.44	-49.34	-49.20	-49.03	-48.85	-48.71	-48.61	-48.54
.212	-48.51	-48.54	-48.54	-48.57	-48.57	-48.57	-48.50	-48.43	-48.32	-48.22
.214	-48.11	-48.04	-47.97	-47.90	-47.87	-47.87	-47.87	-47.97	-48.10	-48.27
.216	-48.44	-48.64	-48.78	-48.81	-48.74	-48.54	-48.26	-47.88	-47.47	-47.06
.218	-46.65	-46.31	-46.03	-45.89	-45.86	-45.96	-46.20	-46.50	-46.84	-47.22
.220	-47.49	-47.73	-47.83	-47.76	-47.55	-47.31	-47.03	-46.79	-46.62	-46.55
.222	-46.58	-46.69	-46.85	-47.06	-47.26	-47.40	-47.46	-47.46	-47.36	-47.15
.224	-46.84	-46.50	-46.09	-45.71	-45.40	-45.20	-45.09	-45.09	-45.23	-45.43
.226	-45.73	-46.07	-46.41	-46.75	-47.03	-47.30	-47.53	-47.70	-47.80	-47.80
.228	-47.77	-47.66	-47.49	-47.28	-47.08	-46.87	-46.63	-46.43	-46.29	-46.15
.230	-46.08	-46.08	-46.11	-46.18	-46.24	-46.28	-46.51	-46.65	-46.78	-46.92
.232	-47.05	-47.15	-47.29	-47.42	-47.59	-47.76	-47.97	-48.14	-48.30	-48.47
.234	-48.61	-48.68	-48.67	-48.60	-48.47	-48.26	-48.02	-47.74	-47.47	-47.23
.236	-47.02	-46.82	-46.71	-46.64	-46.64	-46.71	-46.77	-46.91	-47.04	-47.18
.238	-47.31	-47.42	-47.48	-47.51	-47.51	-47.51	-47.51	-47.47	-47.44	-47.40
.240	-47.33	-47.30	-47.23	-47.16	-47.09	-47.02	-46.95	-46.84	-46.77	-46.70
.242	-46.64	-46.60	-46.60	-46.63	-46.66	-46.73	-46.83	-46.93	-47.03	-47.13
.244	-47.20	-47.23	-47.23	-47.20	-47.16	-47.09	-47.05	-47.02	-46.98	-46.98
.246	-46.98	-46.98	-46.98	-46.98	-46.97	-46.97	-46.97	-46.97	-46.97	-47.00
.248	-47.03	-47.07	-47.10	-47.13	-47.20	-47.30	-47.40	-47.50	-47.63	-47.70
.250	-47.73	-47.73	-47.70	-47.66	-47.59	-47.49	-47.42	-47.35	-47.24	-47.14
.252	-47.00	-46.86	-46.73	-46.59	-46.48	-46.38	-46.31	-46.27	-46.27	-46.24
.254	-46.20	-46.20	-46.16	-46.13	-46.09	-46.06	-46.02	-45.95	-45.85	-45.78
.256	-45.67	-45.57	-45.50	-45.40	-45.33	-45.26	-45.19	-45.08	-44.98	-44.91
.258	-44.84	-44.80	-44.80	-44.83	-44.90	-44.97	-45.03	-45.10	-45.17	-45.20

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 (CONT'D) OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-45.23	-45.27	-45.30	-45.33	-45.36	-45.43	-45.50	-45.60	-45.66	-45.77
.262	-45.96	-46.00	-46.07	-46.13	-46.20	-46.20	-46.23	-46.26	-46.33	-46.43
.264	-46.53	-46.67	-46.77	-46.90	-47.01	-47.07	-47.17	-47.27	-47.37	-47.44
.266	-47.51	-47.61	-47.68	-47.78	-47.84	-47.91	-47.94	-47.98	-47.97	-47.97
.268	-47.97	-47.97	-48.00	-48.00	-48.00	-47.96	-47.93	-47.89	-47.89	-47.89
.270	-47.92	-47.99	-48.09	-48.19	-48.29	-48.39	-48.49	-48.56	-48.63	-48.69
.272	-48.76	-48.79	-48.82	-48.89	-48.96	-48.99	-49.06	-49.09	-49.12	-49.12
.274	-49.12	-49.08	-49.05	-49.01	-48.98	-48.98	-48.94	-48.90	-48.90	-48.90
.276	-48.90	-48.90	-48.93	-49.00	-49.06	-49.16	-49.27	-49.37	-49.47	-49.53
.278	-49.57	-49.56	-49.53	-49.49	-49.46	-49.39	-49.35	-49.35	-49.35	-49.38
.280	-49.38	-49.38	-49.38	-49.41	-49.44	-49.48	-49.51	-49.57	-49.61	-49.64
.282	-49.67	-49.70	-49.70	-49.74	-49.73	-49.73	-49.77	-49.76	-49.76	-49.83
.284	-49.90	-50.00	-50.13	-50.27	-50.40	-50.57	-50.67	-50.77	-50.84	-50.91
.286	-50.97	-51.04	-51.11	-51.14	-51.17	-51.17	-51.17	-51.17	-51.17	-51.16
.288	-51.16	-51.13	-51.13	-51.09	-51.09	-51.09	-51.05	-51.05	-51.05	-51.05
.290	-51.04	-51.04	-51.04	-51.04	-51.04	-51.04	-51.04	-51.03	-51.07	-51.06
.292	-51.06	-51.06	-51.06	-51.02	-50.99	-50.95	-50.88	-50.81	-50.78	-50.74
.294	-50.67	-50.57	-50.50	-50.43	-50.36	-50.32	-50.29	-50.29	-50.28	-50.28
.296	-50.28	-50.28	-50.28	-50.28	-50.27	-50.27	-50.24	-50.24	-50.27	-50.30
.298	-50.37	-50.43	-50.54	-50.64	-50.74	-50.84	-50.91	-50.97	-51.00	-51.00
.300	-51.00	-51.00	-51.00	-51.00	-50.96	-50.96	-50.99	-51.02	-51.06	-51.09
.302	-51.16	-51.19	-51.22	-51.22	-51.25	-51.32	-51.35	-51.38	-51.42	-51.45
.304	-51.48	-51.48	-51.48	-51.48	-51.48	-51.44	-51.41	-51.40	-51.37	-51.33
.306	-51.33	-51.33	-51.33	-51.36	-51.36	-51.39	-51.42	-51.49	-51.52	-51.56
.308	-51.55	-51.55	-51.55	-51.55	-51.51	-51.51	-51.51	-51.51	-51.51	-51.54
.310	-51.57	-51.61	-51.64	-51.70	-51.77	-51.84	-51.87	-51.90	-51.90	-51.90
.312	-51.90	-51.90	-51.86	-51.83	-51.82	-51.82	-51.82	-51.82	-51.78	-51.75
.314	-51.71	-51.61	-51.56	-51.44	-51.40	-51.36	-51.33	-51.29	-51.26	-51.22
.316	-51.22	-51.22	-51.22	-51.25	-51.25	-51.25	-51.24	-51.24	-51.24	-51.24
.318	-51.17	-51.13	-51.06	-51.03	-50.99	-50.99	-50.99	-51.06	-51.09	-51.16
.320	-51.22	-51.26	-51.32	-51.35	-51.35	-51.35	-51.32	-51.28	-51.24	-51.21
.322	-51.21	-51.21	-51.20	-51.24	-51.27	-51.30	-51.30	-51.30	-51.30	-51.26
.324	-51.23	-51.19	-51.15	-51.08	-51.01	-50.98	-50.94	-50.94	-50.97	-51.04
.326	-51.14	-51.24	-51.38	-51.51	-51.61	-51.68	-51.68	-51.68	-51.61	-51.54
.328	-51.47	-51.43	-51.40	-51.36	-51.36	-51.39	-51.42	-51.49	-51.52	-51.59
.330	-51.62	-51.62	-51.59	-51.52	-51.41	-51.34	-51.27	-51.24	-51.27	-51.34
.332	-51.40	-51.50	-51.64	-51.77	-51.91	-52.04	-52.14	-52.21	-52.21	-52.21
.334	-52.14	-52.07	-51.97	-51.86	-51.83	-51.79	-51.79	-51.79	-51.82	-51.82
.336	-51.85	-51.85	-51.85	-51.81	-51.74	-51.67	-51.64	-51.60	-51.60	-51.63
.338	-51.66	-51.70	-51.76	-51.83	-51.90	-51.96	-52.00	-52.03	-52.03	-51.99
.340	-51.96	-51.89	-51.82	-51.75	-51.68	-51.61	-51.57	-51.54	-51.50	-51.50
.342	-51.50	-51.50	-51.49	-51.49	-51.49	-51.45	-51.42	-51.38	-51.35	-51.31
.344	-51.28	-51.24	-51.24	-51.24	-51.24	-51.23	-51.23	-51.23	-51.23	-51.19
.346	-51.16	-51.12	-51.05	-51.02	-50.95	-50.91	-50.84	-50.81	-50.77	-50.73
.348	-50.70	-50.66	-50.63	-50.59	-50.56	-50.55	-50.55	-50.55	-50.55	-50.55
.350	-50.55	-50.55	-50.54	-50.54	-50.54	-50.54	-50.57	-50.60	-50.64	-50.64
.352	-50.63	-50.63	-50.63	-50.60	-50.59	-50.59	-50.62	-50.66	-50.69	-50.69
.354	-50.72	-50.72	-50.79	-50.85	-50.92	-51.02	-51.12	-51.22	-51.29	-51.36
.356	-51.42	-51.49	-51.52	-51.52	-51.48	-51.45	-51.41	-51.38	-51.34	-51.31
.358	-51.30	-51.27	-51.27	-51.27	-51.26	-51.30	-51.30	-51.33	-51.33	-51.33
.360	-51.36	-51.39	-51.42	-51.42	-51.42	-51.45	-51.45	-51.48	-51.52	-51.51
.362	-51.55	-51.55	-51.54	-51.54	-51.54	-51.51	-51.50	-51.50	-51.50	-51.50
.364	-51.50	-51.50	-51.53	-51.56	-51.59	-51.63	-51.69	-51.73	-51.79	-51.86
.366	-51.93	-51.99	-52.06	-52.13	-52.19	-52.26	-52.33	-52.36	-52.36	-52.36
.368	-52.32	-52.28	-52.25	-52.21	-52.21	-52.21	-52.24	-52.28	-52.31	-52.34
.370	-52.37	-52.41	-52.44	-52.44	-52.44	-52.47	-52.47	-52.50	-52.53	-52.60
.372	-52.66	-52.73	-52.80	-52.87	-52.93	-53.00	-53.07	-53.10	-53.13	-53.13
.374	-53.09	-53.06	-53.02	-52.99	-52.95	-52.91	-52.88	-52.81	-52.74	-52.70
.376	-52.63	-52.60	-52.60	-52.60	-52.63	-52.69	-52.76	-52.83	-52.89	-52.96
.378	-53.03	-53.10	-53.13	-53.16	-53.19	-53.19	-53.16	-53.09	-53.02	-52.98

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 (CONT'D) OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	-52.94	-52.94	-52.94	-52.94	-52.94	-52.97	-53.00	-53.07	-53.17	-53.31
.382	-53.44	-53.58	-53.75	-53.88	-54.02	-54.12	-54.15	-54.15	-54.11	-54.01
.384	-53.87	-53.70	-53.53	-53.39	-53.32	-53.32	-53.38	-53.52	-53.75	-54.06
.386	-54.43	-54.84	-55.29	-55.73	-56.14	-56.54	-56.88	-57.26	-57.60	-57.94
.388	-58.28	-58.62	-58.96	-59.30	-59.60	-59.87	-60.04	-60.18	-60.28	-60.31
.390	-60.31	-60.24	-60.10	-60.00	-59.86	-59.79	-59.79	-59.86	-60.06	-60.33
.392	-60.67	-61.01	-61.35	-61.69	-62.00	-62.27	-62.44	-62.54	-62.60	-62.57
.394	-62.50	-62.43	-62.39	-62.39	-62.39	-62.42	-62.42	-62.39	-62.32	-62.25
.396	-62.18	-62.14	-62.14	-62.17	-62.31	-62.54	-62.88	-63.33	-63.87	-64.45
.398	-65.03	-65.57	-66.05	-66.42	-66.70	-66.90	-67.03	-67.17	-67.30	-67.44
.400	-67.61	-67.74	-67.84	-67.91	-67.98	-68.04	-68.18	-68.35	-68.59	-68.89
.402	-69.23	-69.61	-69.98	-70.35	-70.73	-71.14	-71.51	-71.88	-72.29	-72.70
.404	-73.04	-73.35	-73.62	-73.82	-73.99	-74.12	-74.26	-74.36	-74.43	-74.46
.406	-74.42	-74.35	-74.28	-74.18	-74.11	-74.04	-74.01	-74.00	-74.07	-74.27
.408	-74.58	-74.99	-75.43	-75.84	-76.21	-76.55	-76.82	-77.03	-77.16	-77.23
.410	-77.23	-77.16	-77.02	-76.92	-76.85	-76.78	-76.77	-76.81	-76.84	-76.91
.412	-76.97	-77.07	-77.21	-77.34	-77.48	-77.58	-77.68	-77.75	-77.78	-77.81
.414	-77.78	-77.74	-77.60	-77.43	-77.19	-76.92	-76.64	-76.37	-76.13	-75.92
.416	-75.78	-75.71	-75.71	-75.78	-75.91	-76.15	-76.49	-76.93	-77.48	-78.12
.418	-78.80	-79.42	-79.96	-80.34	-80.64	-80.85	-81.01	-81.22	-81.49	-81.86
.420	-82.31	-82.85	-83.43	-84.11	-84.79	-85.47	-86.19	-86.87	-87.52	-88.16
.422	-88.78	-89.39	-89.97	-90.55	-91.13	-91.67	-92.22	-92.66	-93.00	-93.20
.424	-93.27	-93.23	-93.09	-92.92	-92.72	-92.51	-92.34	-92.20	-92.10	-92.06
.426	-92.09	-92.19	-92.33	-92.53	-92.73	-92.97	-93.21	-93.45	-93.65	-93.85
.428	-94.06	-94.23	-94.36	-94.56	-94.56	-94.56	-94.49	-94.35	-94.15	-93.91
.430	-93.67	-93.39	-93.15	-92.94	-92.74	-92.60	-92.50	-92.49	-92.60	-92.73
.432	-92.90	-93.07	-93.24	-93.41	-93.68	-94.05	-94.56	-95.21	-95.93	-96.57
.434	-97.08	-97.42	-97.59	-97.59	-97.49	-97.38	-97.21	-97.00	-96.76	-96.49
.436	-96.15	-95.77	-95.36	-94.91	-94.50	-94.19	-94.05	-94.09	-94.29	-94.66
.438	-95.14	-95.65	-96.13	-96.57	-96.94	-97.22	-97.45	-97.62	-97.76	-97.86
.440	-97.93	-97.89	-97.79	-97.58	-97.37	-97.17	-97.03	-96.96	-96.92	-96.92
.442	-96.89	-96.82	-96.68	-96.47	-96.20	-95.89	-95.61	-95.41	-95.30	-95.30
.444	-95.40	-95.57	-95.88	-96.25	-96.66	-97.10	-97.54	-97.95	-98.26	-98.49
.446	-98.63	-98.76	-98.73	-98.80	-98.93	-99.10	-99.30	-99.54	-99.81	-100.08
.448	-100.32	-100.52	-100.69	-100.83	-100.96	-101.03	-101.10	-101.13	-101.13	-101.09
.450	-101.02	-100.99	-100.92	-100.85	-100.78	-100.74	-100.74	-100.81	-100.94	-101.08
.452	-101.25	-101.38	-101.48	-101.55	-101.55	-101.51	-101.41	-101.27	-101.13	-100.99
.454	-100.86	-100.72	-100.58	-100.44	-100.30	-100.10	-99.92	-99.75	-99.55	-99.41
.456	-99.27	-99.17	-99.06	-98.96	-98.89	-98.82	-98.75	-98.64	-98.51	-98.33
.458	-98.09	-97.82	-97.51	-97.20	-96.93	-96.72	-96.58	-96.51	-96.48	-96.47
.460	-96.47	-96.44	-96.40	-96.37	-96.36	-96.40	-96.43	-96.46	-96.46	-96.43
.462	-96.32	-96.22	-96.11	-96.01	-95.94	-95.94	-95.97	-96.04	-96.10	-96.17
.464	-96.20	-96.20	-96.17	-96.10	-95.96	-95.75	-95.51	-95.24	-94.96	-94.76
.466	-94.62	-94.55	-94.58	-94.72	-94.88	-95.12	-95.39	-95.63	-95.83	-96.07
.468	-96.24	-96.38	-96.48	-96.51	-96.44	-96.27	-96.03	-95.75	-95.44	-95.17
.470	-94.93	-94.79	-94.79	-94.89	-95.06	-95.26	-95.50	-95.67	-95.80	-95.90
.472	-95.97	-96.04	-96.07	-96.10	-96.17	-96.30	-96.47	-96.64	-96.81	-96.98
.474	-97.18	-97.35	-97.49	-97.59	-97.62	-97.62	-97.59	-97.55	-97.51	-97.51
.476	-97.51	-97.58	-97.68	-97.81	-97.95	-98.12	-98.29	-98.46	-98.63	-98.76
.478	-98.83	-98.86	-98.86	-98.89	-98.92	-98.96	-98.99	-99.02	-99.02	-99.02
.480	-98.98	-98.91	-98.88	-98.84	-98.81	-98.77	-98.73	-98.73	-98.70	-98.66
.482	-98.59	-98.56	-98.52	-98.52	-98.52	-98.55	-98.62	-98.72	-98.85	-99.02
.484	-99.19	-99.36	-99.53	-99.66	-99.80	-99.90	-100.00	-100.10	-100.20	-100.27
.486	-100.34	-100.37	-100.40	-100.47	-100.50	-100.53	-100.53	-100.53	-100.49	-100.42
.488	-100.42	-100.39	-100.35	-100.28	-100.21	-100.11	-100.04	-99.97	-99.93	-99.93
.490	-100.00	-100.06	-100.17	-100.30	-100.40	-100.47	-100.50	-100.46	-100.36	-100.22
.492	-100.05	-99.84	-99.64	-99.43	-99.22	-99.05	-98.91	-98.81	-98.74	-98.70
.494	-98.64	-98.53	-98.39	-98.25	-98.08	-97.94	-97.84	-97.80	-97.87	-98.01
.496	-98.21	-98.52	-98.82	-99.13	-99.40	-99.64	-99.81	-99.87	-99.87	-99.77
.498	-99.63	-99.42	-99.18	-98.94	-98.73	-98.60	-98.53	-98.56	-98.63	-98.80

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.00	.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.142	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.144	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.146	-.00	-.0*	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.01
.148	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.02	-.02
.150	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.03	-.03	-.03
.152	-.04	-.04	-.04	-.04	-.04	-.05	-.05	-.05	-.05	-.06
.154	-.06	-.06	-.07	-.07	-.07	-.07	-.08	-.08	-.08	-.09
.156	-.09	-.09	-.10	-.10	-.10	-.11	-.11	-.12	-.12	-.12
.158	-.13	-.13	-.14	-.14	-.14	-.15	-.15	-.16	-.16	-.16
.160	-.17	-.17	-.18	-.18	-.18	-.19	-.19	-.20	-.20	-.21
.162	-.21	-.21	-.22	-.22	-.23	-.23	-.24	-.24	-.25	-.25
.164	-.26	-.26	-.27	-.27	-.28	-.28	-.29	-.29	-.30	-.30
.166	-.31	-.31	-.32	-.32	-.33	-.33	-.34	-.34	-.35	-.36
.168	-.36	-.37	-.37	-.38	-.38	-.39	-.40	-.40	-.41	-.41
.170	-.42	-.43	-.43	-.44	-.44	-.45	-.46	-.46	-.47	-.47
.172	-.48	-.49	-.49	-.50	-.50	-.51	-.52	-.52	-.53	-.53
.174	-.54	-.55	-.55	-.56	-.57	-.57	-.58	-.58	-.59	-.60
.176	-.60	-.61	-.62	-.63	-.63	-.64	-.65	-.65	-.66	-.67
.178	-.67	-.68	-.69	-.69	-.70	-.71	-.71	-.72	-.73	-.73
.180	-.74	-.75	-.75	-.76	-.77	-.78	-.78	-.79	-.80	-.80
.182	-.81	-.82	-.83	-.83	-.84	-.85	-.86	-.87	-.87	-.88
.184	-.89	-.90	-.91	-.91	-.92	-.93	-.94	-.94	-.95	-.96
.186	-.97	-.98	-.99	-.99	-1.00	-1.01	-1.02	-1.03	-1.04	-1.04
.188	-1.05	-1.06	-1.07	-1.08	-1.09	-1.10	-1.11	-1.11	-1.12	-1.13
.190	-1.14	-1.15	-1.16	-1.17	-1.18	-1.19	-1.20	-1.20	-1.21	-1.22
.192	-1.23	-1.24	-1.25	-1.26	-1.27	-1.28	-1.29	-1.29	-1.30	-1.31
.194	-1.32	-1.33	-1.34	-1.35	-1.36	-1.37	-1.38	-1.39	-1.40	-1.41
.196	-1.42	-1.42	-1.43	-1.44	-1.45	-1.46	-1.47	-1.48	-1.49	-1.50
.198	-1.51	-1.52	-1.53	-1.54	-1.55	-1.56	-1.56	-1.57	-1.58	-1.59
.200	-1.60	-1.61	-1.62	-1.63	-1.64	-1.65	-1.66	-1.67	-1.68	-1.69
.202	-1.69	-1.70	-1.71	-1.72	-1.73	-1.74	-1.75	-1.76	-1.77	-1.78
.204	-1.79	-1.79	-1.80	-1.81	-1.82	-1.83	-1.84	-1.85	-1.86	-1.87
.206	-1.88	-1.89	-1.90	-1.91	-1.92	-1.93	-1.94	-1.95	-1.96	-1.97
.208	-1.98	-1.98	-1.99	-2.00	-2.01	-2.02	-2.03	-2.04	-2.05	-2.06
.210	-2.07	-2.08	-2.09	-2.10	-2.11	-2.12	-2.13	-2.14	-2.15	-2.16
.212	-2.17	-2.18	-2.19	-2.20	-2.21	-2.22	-2.23	-2.24	-2.25	-2.26
.214	-2.27	-2.28	-2.29	-2.30	-2.31	-2.32	-2.33	-2.34	-2.34	-2.35
.216	-2.36	-2.37	-2.38	-2.39	-2.40	-2.41	-2.42	-2.43	-2.44	-2.45
.218	-2.46	-2.47	-2.48	-2.49	-2.50	-2.51	-2.52	-2.52	-2.53	-2.54
.220	-2.55	-2.56	-2.57	-2.58	-2.59	-2.60	-2.61	-2.62	-2.63	-2.64
.222	-2.65	-2.66	-2.67	-2.68	-2.68	-2.69	-2.70	-2.71	-2.72	-2.73
.224	-2.74	-2.75	-2.76	-2.77	-2.78	-2.79	-2.80	-2.81	-2.81	-2.82
.226	-2.83	-2.84	-2.85	-2.86	-2.87	-2.88	-2.89	-2.90	-2.91	-2.92
.228	-2.93	-2.94	-2.95	-2.96	-2.97	-2.97	-2.98	-2.99	-3.00	-3.01
.230	-3.02	-3.03	-3.04	-3.05	-3.06	-3.07	-3.08	-3.09	-3.09	-3.10
.232	-3.11	-3.12	-3.13	-3.14	-3.15	-3.16	-3.17	-3.18	-3.19	-3.20
.234	-3.21	-3.22	-3.23	-3.24	-3.25	-3.26	-3.27	-3.28	-3.29	-3.30
.236	-3.31	-3.31	-3.32	-3.33	-3.34	-3.35	-3.36	-3.37	-3.38	-3.39
.238	-3.40	-3.41	-3.42	-3.43	-3.44	-3.45	-3.46	-3.47	-3.48	-3.48
.240	-3.49	-3.50	-3.51	-3.52	-3.53	-3.54	-3.55	-3.56	-3.57	-3.58
.242	-3.59	-3.60	-3.61	-3.62	-3.63	-3.63	-3.64	-3.65	-3.66	-3.67
.244	-3.68	-3.69	-3.70	-3.71	-3.72	-3.73	-3.74	-3.75	-3.76	-3.77
.246	-3.78	-3.79	-3.79	-3.80	-3.81	-3.82	-3.83	-3.84	-3.85	-3.86
.248	-3.87	-3.88	-3.89	-3.90	-3.91	-3.92	-3.93	-3.94	-3.95	-3.96
.250	-3.96	-3.97	-3.98	-3.99	-4.00	-4.01	-4.02	-4.03	-4.04	-4.05
.252	-4.06	-4.07	-4.08	-4.09	-4.10	-4.11	-4.12	-4.12	-4.13	-4.14
.254	-4.15	-4.16	-4.17	-4.18	-4.19	-4.20	-4.21	-4.22	-4.23	-4.24
.256	-4.24	-4.25	-4.26	-4.27	-4.28	-4.29	-4.30	-4.31	-4.32	-4.33
.258	-4.33	-4.34	-4.35	-4.36	-4.37	-4.38	-4.39	-4.40	-4.41	-4.42

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 (CONT'D) OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-4.42	-4.43	-4.44	-4.45	-4.46	-4.47	-4.48	-4.49	-4.50	-4.51
.262	-4.52	-4.53	-4.53	-4.54	-4.55	-4.56	-4.57	-4.58	-4.59	-4.60
.264	-4.61	-4.62	-4.63	-4.64	-4.65	-4.66	-4.66	-4.67	-4.68	-4.69
.266	-4.70	-4.71	-4.72	-4.73	-4.74	-4.75	-4.76	-4.77	-4.78	-4.79
.268	-4.80	-4.81	-4.82	-4.83	-4.84	-4.85	-4.86	-4.87	-4.88	-4.88
.270	-4.89	-4.90	-4.91	-4.92	-4.93	-4.94	-4.95	-4.96	-4.97	-4.98
.272	-4.99	-5.00	-5.01	-5.02	-5.03	-5.04	-5.05	-5.06	-5.07	-5.08
.274	-5.09	-5.10	-5.11	-5.12	-5.13	-5.14	-5.15	-5.16	-5.17	-5.18
.276	-5.19	-5.20	-5.21	-5.22	-5.23	-5.24	-5.25	-5.26	-5.27	-5.28
.278	-5.29	-5.30	-5.31	-5.32	-5.33	-5.33	-5.34	-5.35	-5.36	-5.37
.280	-5.38	-5.39	-5.40	-5.41	-5.42	-5.43	-5.44	-5.45	-5.46	-5.47
.282	-5.48	-5.49	-5.50	-5.51	-5.52	-5.53	-5.54	-5.55	-5.56	-5.57
.284	-5.58	-5.59	-5.60	-5.61	-5.62	-5.63	-5.64	-5.65	-5.66	-5.67
.286	-5.68	-5.69	-5.70	-5.71	-5.72	-5.74	-5.75	-5.76	-5.77	-5.78
.288	-5.79	-5.80	-5.81	-5.82	-5.83	-5.84	-5.85	-5.86	-5.87	-5.88
.290	-5.89	-5.90	-5.91	-5.92	-5.93	-5.94	-5.95	-5.96	-5.97	-5.98
.292	-5.99	-6.00	-6.01	-6.02	-6.03	-6.04	-6.05	-6.06	-6.07	-6.08
.294	-6.09	-6.10	-6.11	-6.12	-6.13	-6.14	-6.15	-6.16	-6.17	-6.18
.296	-6.19	-6.20	-6.21	-6.22	-6.23	-6.24	-6.25	-6.26	-6.27	-6.28
.298	-6.29	-6.30	-6.31	-6.32	-6.33	-6.34	-6.35	-6.36	-6.37	-6.38
.300	-6.40	-6.41	-6.42	-6.43	-6.44	-6.45	-6.46	-6.47	-6.48	-6.49
.302	-6.50	-6.51	-6.52	-6.53	-6.54	-6.55	-6.56	-6.57	-6.58	-6.59
.304	-6.60	-6.61	-6.62	-6.63	-6.64	-6.65	-6.66	-6.67	-6.68	-6.69
.306	-6.70	-6.71	-6.72	-6.73	-6.74	-6.75	-6.76	-6.77	-6.78	-6.80
.308	-6.81	-6.82	-6.83	-6.84	-6.85	-6.86	-6.87	-6.88	-6.89	-6.90
.310	-6.91	-6.92	-6.93	-6.94	-6.95	-6.96	-6.97	-6.98	-6.99	-7.00
.312	-7.01	-7.02	-7.03	-7.04	-7.05	-7.06	-7.07	-7.08	-7.10	-7.11
.314	-7.12	-7.13	-7.14	-7.15	-7.16	-7.17	-7.18	-7.19	-7.20	-7.21
.316	-7.22	-7.23	-7.24	-7.25	-7.26	-7.27	-7.28	-7.29	-7.30	-7.31
.318	-7.32	-7.33	-7.34	-7.35	-7.36	-7.37	-7.38	-7.39	-7.40	-7.41
.320	-7.42	-7.43	-7.44	-7.45	-7.46	-7.47	-7.48	-7.50	-7.51	-7.52
.322	-7.53	-7.54	-7.55	-7.56	-7.57	-7.58	-7.59	-7.60	-7.61	-7.62
.324	-7.63	-7.64	-7.65	-7.66	-7.67	-7.68	-7.69	-7.70	-7.71	-7.72
.326	-7.73	-7.74	-7.75	-7.76	-7.77	-7.78	-7.79	-7.80	-7.81	-7.82
.328	-7.83	-7.84	-7.85	-7.86	-7.87	-7.88	-7.90	-7.91	-7.92	-7.93
.330	-7.94	-7.95	-7.96	-7.97	-7.98	-7.99	-8.00	-8.01	-8.02	-8.03
.332	-8.04	-8.05	-8.06	-8.07	-8.08	-8.09	-8.10	-8.11	-8.12	-8.13
.334	-8.14	-8.15	-8.16	-8.17	-8.18	-8.20	-8.21	-8.22	-8.23	-8.24
.336	-8.25	-8.26	-8.27	-8.28	-8.29	-8.30	-8.31	-8.32	-8.33	-8.34
.338	-8.35	-8.36	-8.37	-8.38	-8.39	-8.40	-8.41	-8.42	-8.43	-8.44
.340	-8.45	-8.46	-8.47	-8.49	-8.50	-8.51	-8.52	-8.53	-8.54	-8.55
.342	-8.56	-8.57	-8.58	-8.59	-8.60	-8.61	-8.62	-8.63	-8.64	-8.65
.344	-8.66	-8.67	-8.68	-8.69	-8.70	-8.71	-8.72	-8.73	-8.74	-8.75
.346	-8.76	-8.77	-8.78	-8.79	-8.80	-8.81	-8.82	-8.83	-8.84	-8.85
.348	-8.86	-8.87	-8.88	-8.89	-8.90	-8.91	-8.93	-8.94	-8.95	-8.96
.350	-8.97	-8.98	-8.99	-9.00	-9.01	-9.02	-9.03	-9.04	-9.05	-9.06
.352	-9.07	-9.08	-9.09	-9.10	-9.11	-9.12	-9.13	-9.14	-9.15	-9.16
.354	-9.17	-9.18	-9.19	-9.20	-9.21	-9.22	-9.23	-9.24	-9.25	-9.26
.356	-9.27	-9.28	-9.29	-9.30	-9.31	-9.32	-9.33	-9.34	-9.35	-9.36
.358	-9.37	-9.38	-9.39	-9.40	-9.41	-9.42	-9.43	-9.44	-9.46	-9.47
.360	-9.48	-9.49	-9.50	-9.51	-9.52	-9.53	-9.54	-9.55	-9.56	-9.57
.362	-9.58	-9.59	-9.60	-9.61	-9.62	-9.63	-9.64	-9.65	-9.66	-9.67
.364	-9.68	-9.69	-9.70	-9.71	-9.72	-9.73	-9.74	-9.75	-9.76	-9.77
.366	-9.78	-9.80	-9.81	-9.82	-9.83	-9.84	-9.85	-9.86	-9.87	-9.88
.368	-9.89	-9.90	-9.91	-9.92	-9.93	-9.94	-9.95	-9.96	-9.97	-9.98
.370	-9.99	-10.00	-10.01	-10.03	-10.04	-10.05	-10.06	-10.07	-10.08	-10.09
.372	-10.10	-10.11	-10.12	-10.13	-10.14	-10.15	-10.16	-10.17	-10.18	-10.19
.374	-10.20	-10.22	-10.23	-10.24	-10.25	-10.26	-10.27	-10.28	-10.29	-10.30
.376	-10.31	-10.32	-10.33	-10.34	-10.35	-10.36	-10.37	-10.38	-10.39	-10.41
.378	-10.42	-10.43	-10.44	-10.45	-10.46	-10.47	-10.48	-10.49	-10.50	-10.51

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 (CONT'D) OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	-10.52	-10.53	-10.54	-10.55	-10.56	-10.58	-10.59	-10.60	-10.61	-10.62
.382	-10.63	-10.64	-10.65	-10.66	-10.67	-10.68	-10.69	-10.70	-10.71	-10.73
.384	-10.74	-10.75	-10.76	-10.77	-10.78	-10.79	-10.80	-10.81	-10.82	-10.83
.386	-10.84	-10.85	-10.87	-10.88	-10.89	-10.90	-10.91	-10.92	-10.93	-10.95
.388	-10.96	-10.97	-10.98	-10.99	-11.00	-11.02	-11.03	-11.04	-11.05	-11.06
.390	-11.08	-11.09	-11.10	-11.11	-11.12	-11.14	-11.15	-11.16	-11.17	-11.18
.392	-11.20	-11.21	-11.22	-11.23	-11.25	-11.26	-11.27	-11.28	-11.30	-11.31
.394	-11.32	-11.33	-11.35	-11.36	-11.37	-11.38	-11.40	-11.41	-11.42	-11.43
.396	-11.45	-11.46	-11.47	-11.48	-11.50	-11.51	-11.52	-11.53	-11.55	-11.56
.398	-11.57	-11.58	-11.60	-11.61	-11.62	-11.64	-11.65	-11.66	-11.68	-11.69
.400	-11.71	-11.72	-11.73	-11.75	-11.76	-11.77	-11.79	-11.80	-11.81	-11.83
.402	-11.84	-11.86	-11.87	-11.88	-11.90	-11.91	-11.93	-11.94	-11.96	-11.97
.404	-11.98	-12.00	-12.01	-12.03	-12.04	-12.06	-12.07	-12.09	-12.10	-12.12
.406	-12.13	-12.15	-12.16	-12.18	-12.19	-12.21	-12.22	-12.24	-12.25	-12.27
.408	-12.28	-12.30	-12.31	-12.33	-12.34	-12.36	-12.37	-12.39	-12.40	-12.42
.410	-12.43	-12.45	-12.46	-12.48	-12.50	-12.51	-12.53	-12.54	-12.56	-12.57
.412	-12.59	-12.60	-12.62	-12.63	-12.65	-12.67	-12.68	-12.70	-12.71	-12.73
.414	-12.74	-12.76	-12.77	-12.79	-12.80	-12.82	-12.84	-12.85	-12.87	-12.88
.416	-12.90	-12.91	-12.93	-12.94	-12.96	-12.97	-12.99	-13.00	-13.02	-13.03
.418	-13.05	-13.07	-13.08	-13.10	-13.11	-13.13	-13.15	-13.16	-13.18	-13.20
.420	-13.21	-13.23	-13.24	-13.26	-13.28	-13.30	-13.31	-13.33	-13.35	-13.37
.422	-13.38	-13.40	-13.42	-13.44	-13.46	-13.47	-13.49	-13.51	-13.53	-13.55
.424	-13.57	-13.59	-13.60	-13.62	-13.64	-13.66	-13.68	-13.70	-13.71	-13.73
.426	-13.75	-13.77	-13.79	-13.81	-13.83	-13.84	-13.86	-13.88	-13.90	-13.92
.428	-13.94	-13.96	-13.98	-13.99	-14.01	-14.03	-14.05	-14.07	-14.09	-14.11
.430	-14.13	-14.15	-14.16	-14.18	-14.20	-14.22	-14.24	-14.26	-14.27	-14.29
.432	-14.31	-14.33	-14.35	-14.37	-14.39	-14.41	-14.42	-14.44	-14.46	-14.48
.434	-14.50	-14.52	-14.54	-14.56	-14.58	-14.60	-14.62	-14.64	-14.66	-14.68
.436	-14.70	-14.71	-14.73	-14.75	-14.77	-14.79	-14.81	-14.83	-14.85	-14.87
.438	-14.89	-14.90	-14.92	-14.94	-14.96	-14.98	-15.00	-15.02	-15.04	-15.06
.440	-15.08	-15.10	-15.12	-15.14	-15.16	-15.18	-15.20	-15.22	-15.24	-15.25
.442	-15.27	-15.29	-15.31	-15.33	-15.35	-15.37	-15.39	-15.41	-15.43	-15.45
.444	-15.47	-15.48	-15.50	-15.52	-15.54	-15.56	-15.58	-15.60	-15.62	-15.64
.446	-15.66	-15.68	-15.70	-15.72	-15.74	-15.76	-15.78	-15.80	-15.82	-15.84
.448	-15.86	-15.88	-15.90	-15.92	-15.94	-15.96	-15.98	-16.00	-16.02	-16.04
.450	-16.06	-16.08	-16.10	-16.12	-16.14	-16.16	-16.18	-16.20	-16.22	-16.24
.452	-16.26	-16.28	-16.30	-16.32	-16.34	-16.36	-16.38	-16.40	-16.42	-16.44
.454	-16.47	-16.49	-16.51	-16.53	-16.55	-16.57	-16.59	-16.61	-16.63	-16.65
.456	-16.67	-16.68	-16.70	-16.72	-16.74	-16.76	-16.78	-16.80	-16.82	-16.84
.458	-16.86	-16.88	-16.90	-16.92	-16.94	-16.96	-16.98	-17.00	-17.02	-17.04
.460	-17.06	-17.08	-17.09	-17.11	-17.13	-17.15	-17.17	-17.19	-17.21	-17.23
.462	-17.25	-17.27	-17.29	-17.31	-17.33	-17.35	-17.36	-17.38	-17.40	-17.42
.464	-17.44	-17.46	-17.48	-17.50	-17.52	-17.54	-17.56	-17.58	-17.59	-17.61
.466	-17.63	-17.65	-17.67	-17.69	-17.71	-17.73	-17.75	-17.77	-17.78	-17.80
.468	-17.82	-17.84	-17.86	-17.88	-17.90	-17.92	-17.94	-17.96	-17.98	-18.00
.470	-18.01	-18.03	-18.05	-18.07	-18.09	-18.11	-18.13	-18.15	-18.17	-18.19
.472	-18.21	-18.22	-18.24	-18.26	-18.28	-18.30	-18.32	-18.34	-18.36	-18.38
.474	-18.40	-18.42	-18.44	-18.46	-18.48	-18.50	-18.52	-18.53	-18.55	-18.57
.476	-18.59	-18.61	-18.63	-18.65	-18.67	-18.69	-18.71	-18.73	-18.75	-18.77
.478	-18.79	-18.81	-18.83	-18.85	-18.87	-18.89	-18.91	-18.93	-18.95	-18.97
.480	-18.99	-19.01	-19.03	-19.05	-19.07	-19.09	-19.11	-19.13	-19.15	-19.17
.482	-19.19	-19.21	-19.22	-19.24	-19.26	-19.28	-19.30	-19.32	-19.34	-19.36
.484	-19.38	-19.40	-19.42	-19.44	-19.46	-19.48	-19.50	-19.52	-19.54	-19.56
.486	-19.58	-19.60	-19.62	-19.64	-19.66	-19.68	-19.70	-19.72	-19.74	-19.76
.488	-19.78	-19.80	-19.82	-19.84	-19.86	-19.88	-19.90	-19.92	-19.94	-19.96
.490	-19.98	-20.00	-20.02	-20.04	-20.06	-20.08	-20.10	-20.12	-20.14	-20.16
.492	-20.18	-20.20	-20.22	-20.24	-20.26	-20.28	-20.30	-20.32	-20.34	-20.36
.494	-20.38	-20.40	-20.42	-20.44	-20.46	-20.48	-20.50	-20.52	-20.54	-20.56
.496	-20.58	-20.60	-20.62	-20.64	-20.66	-20.68	-20.70	-20.72	-20.74	-20.76
.498	-20.78	-20.80	-20.82	-20.84	-20.86	-20.88	-20.90	-20.92	-20.94	-20.96

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

Computer plots of the event using the class 180 filter are shown in Figure 39 and for the class 60 filter in Figure 40. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

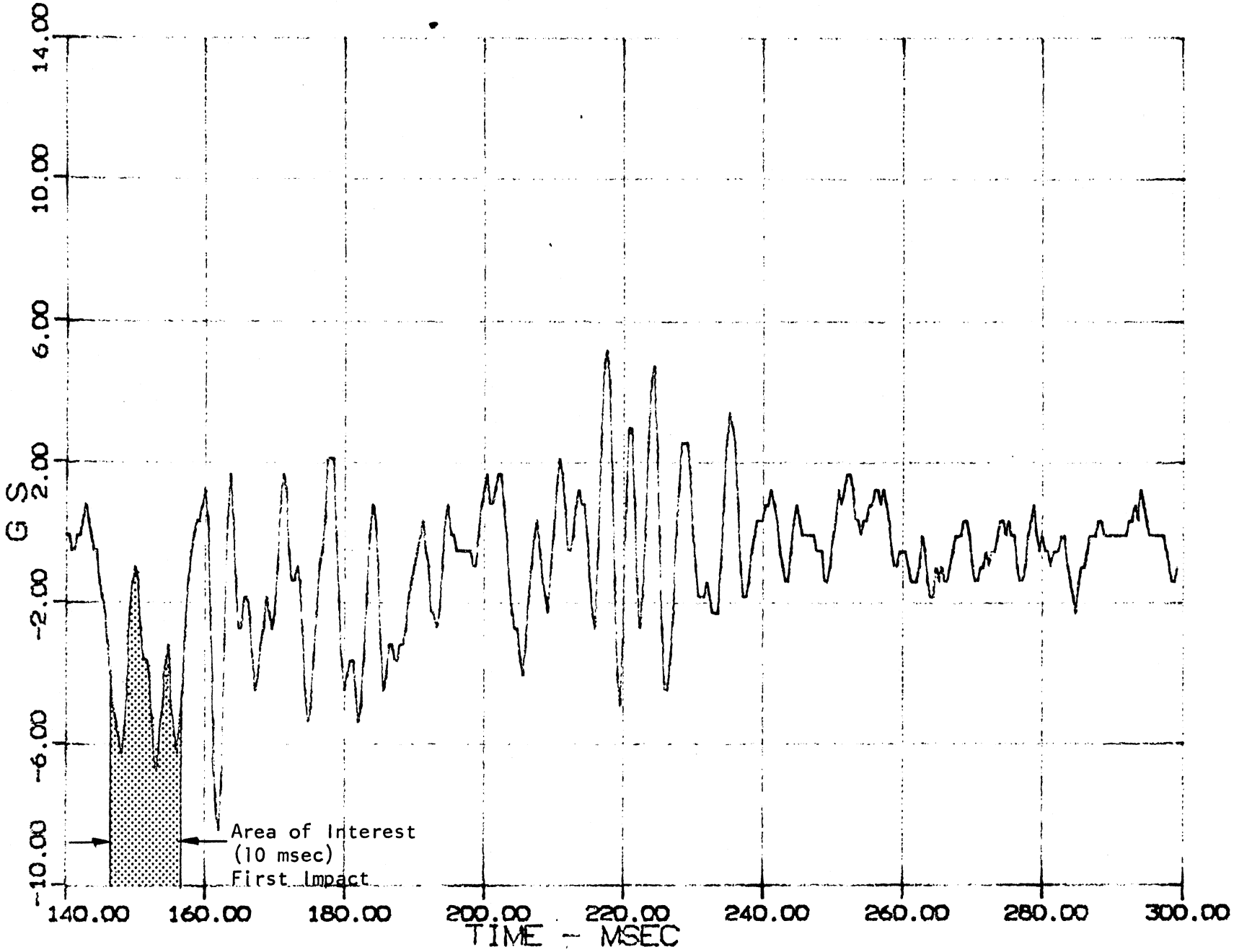


FIGURE 39 55 GALLON DRUM IMPACT, CLASS 180 FILTER

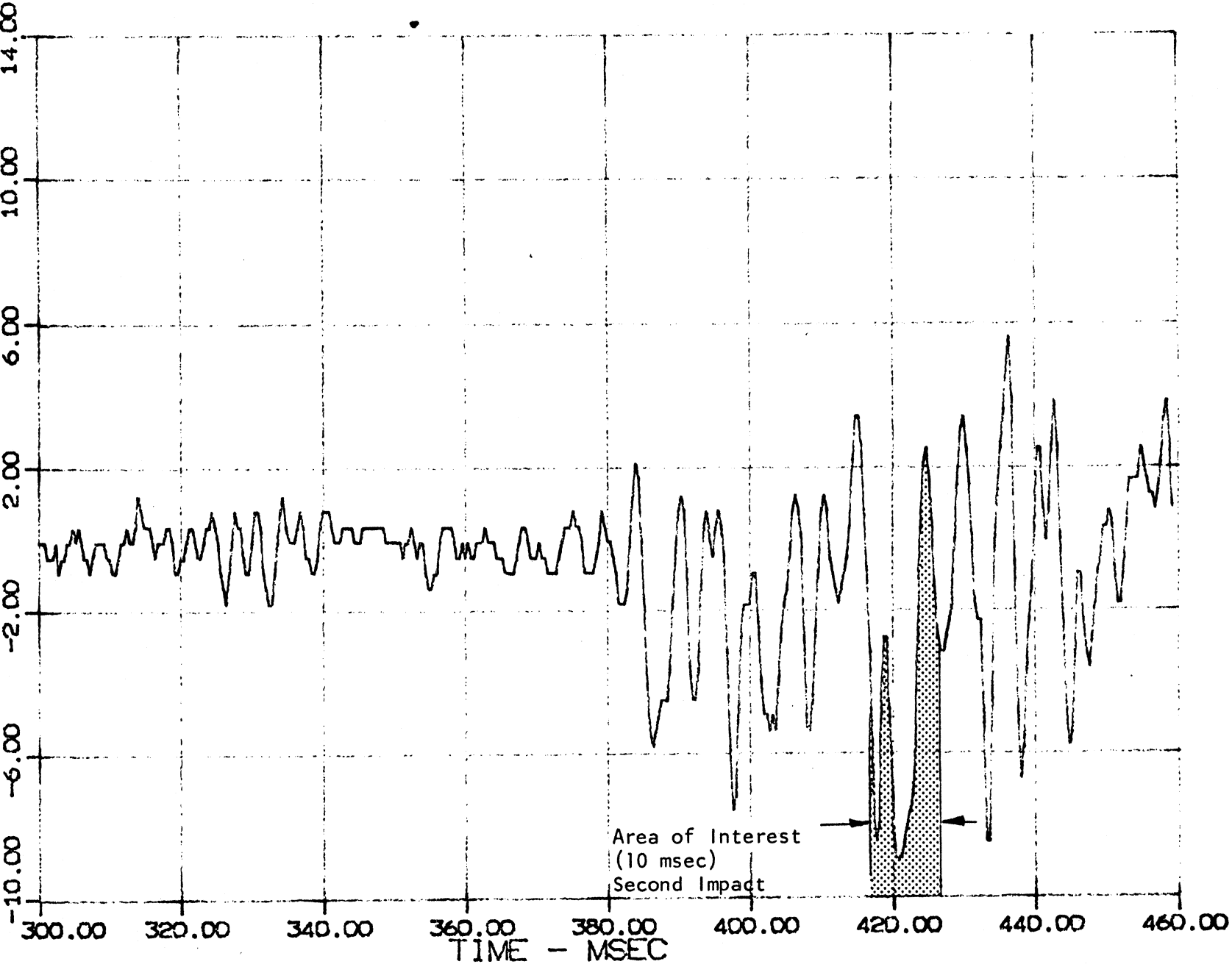


FIGURE 39 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 180 FILTER

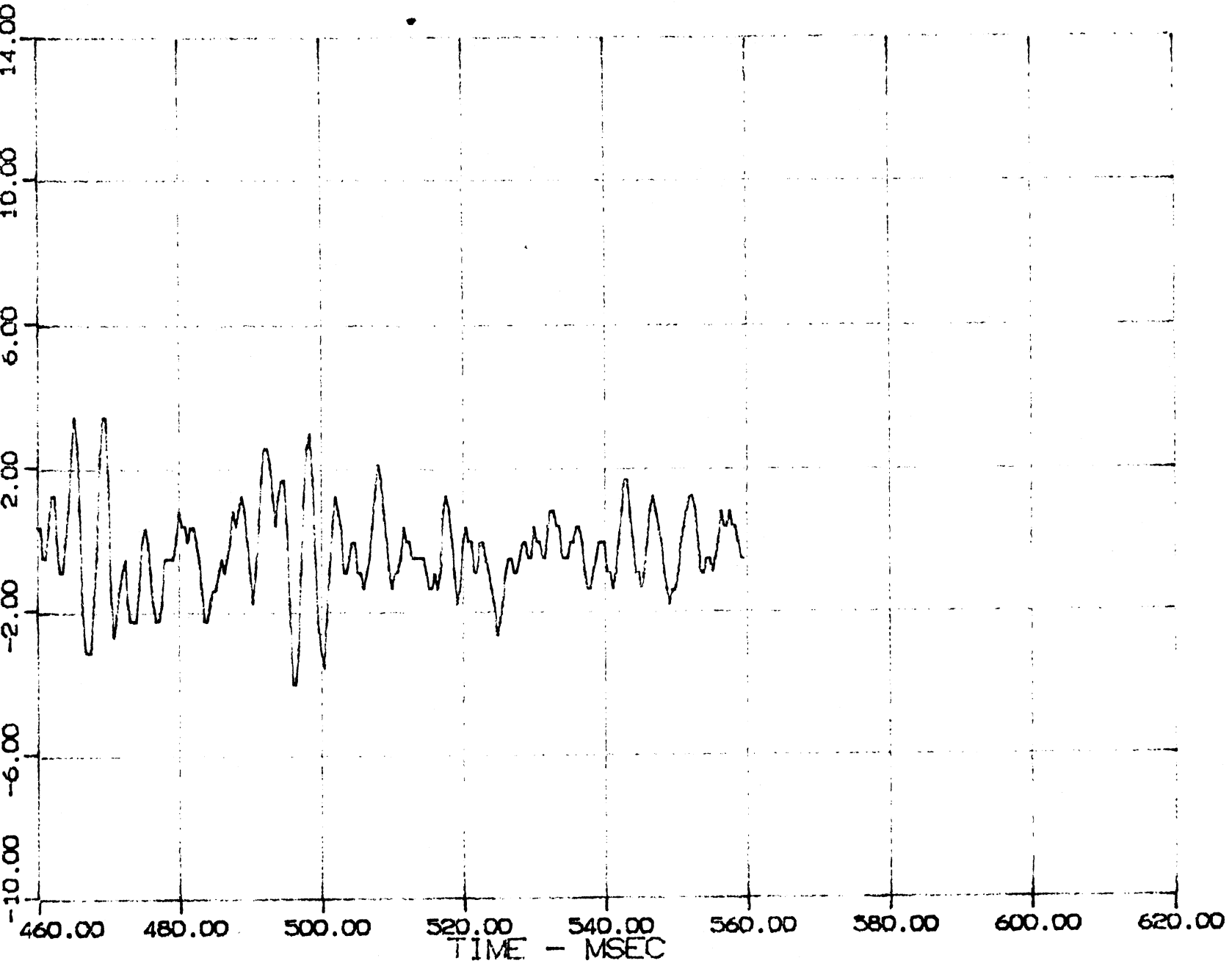


FIGURE 39 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 180 FILTER

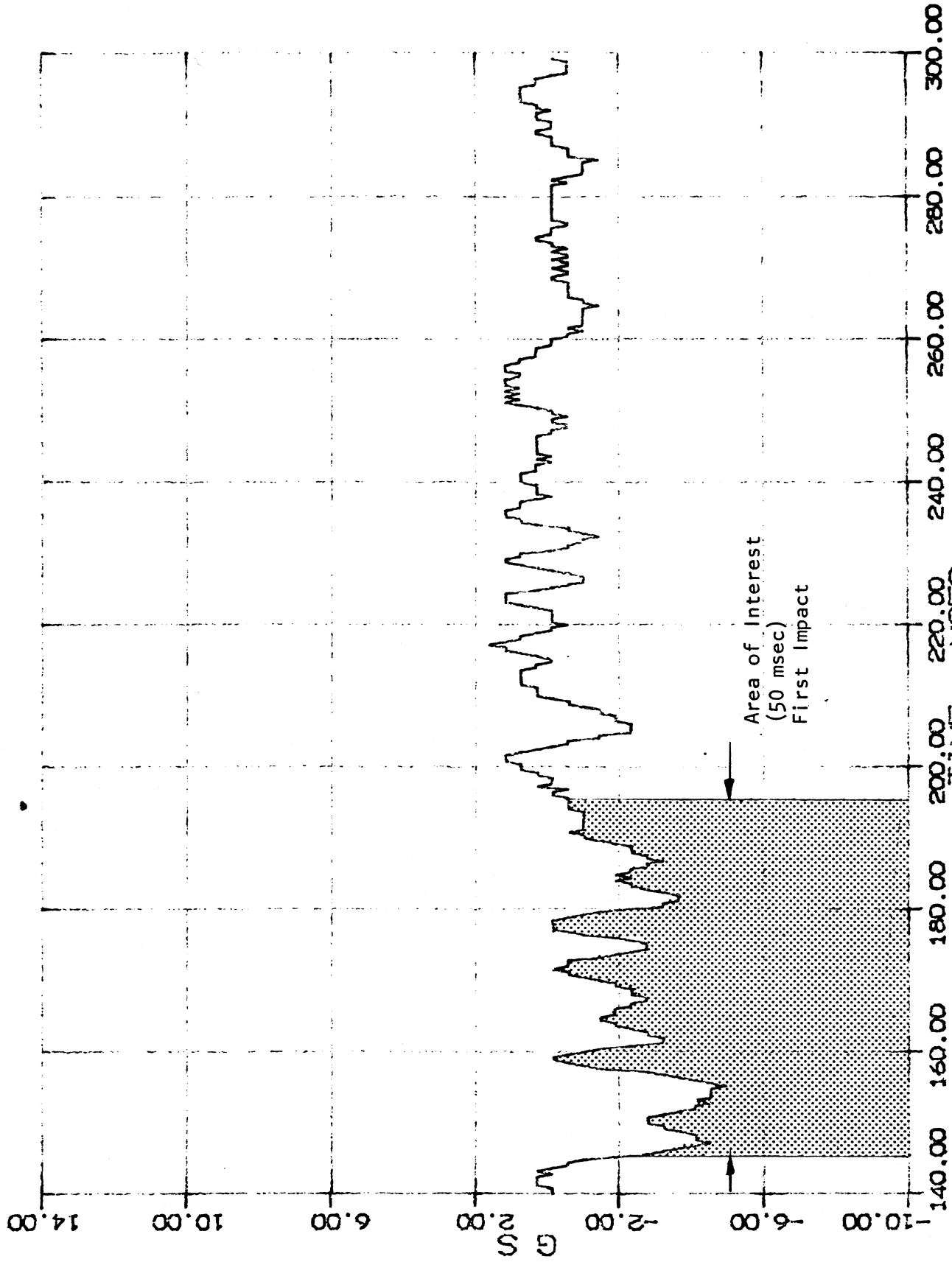


FIGURE 40 55 GALLON DRUM IMPACT, CLASS 60 FILTER

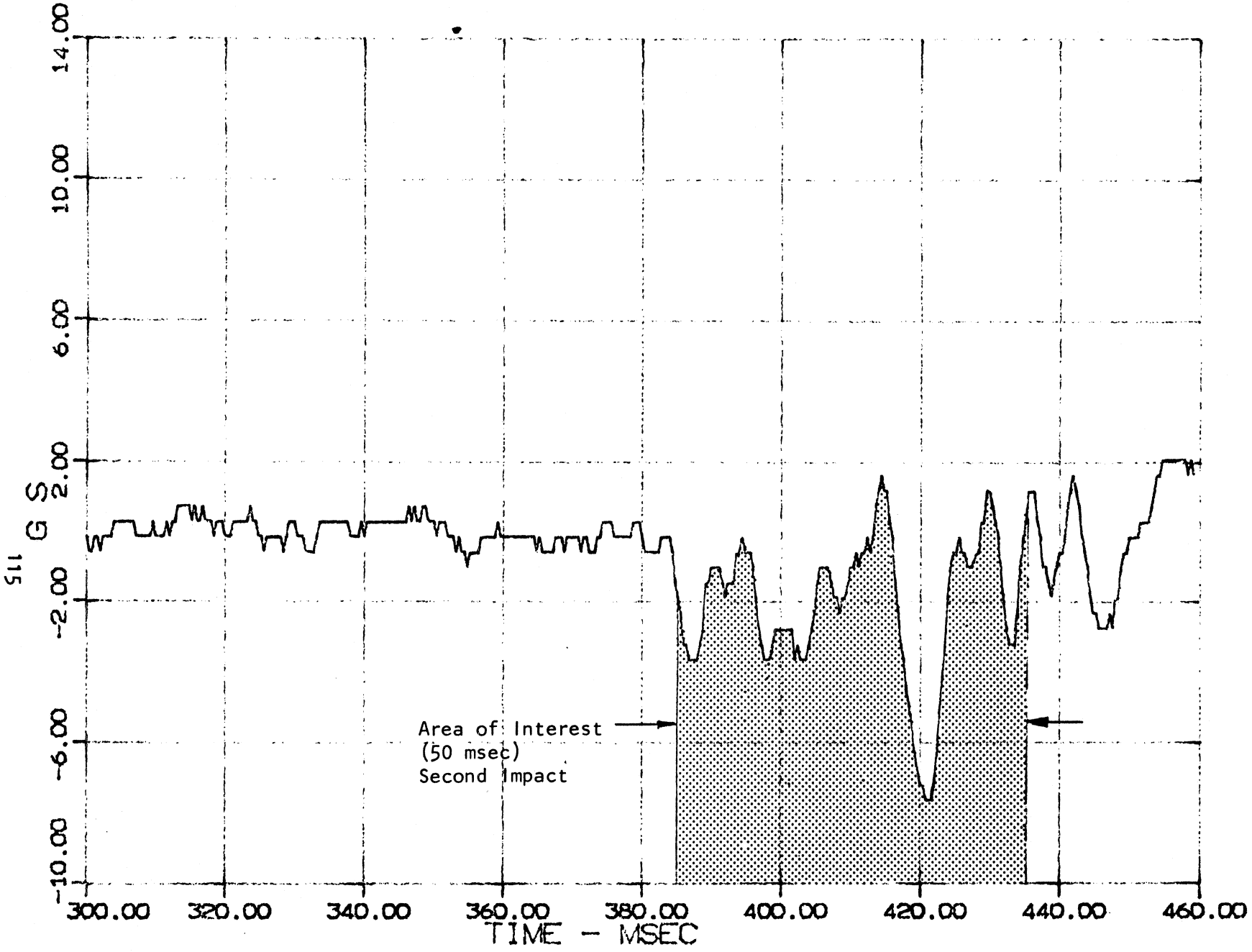


FIGURE 40 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 60 FILTER

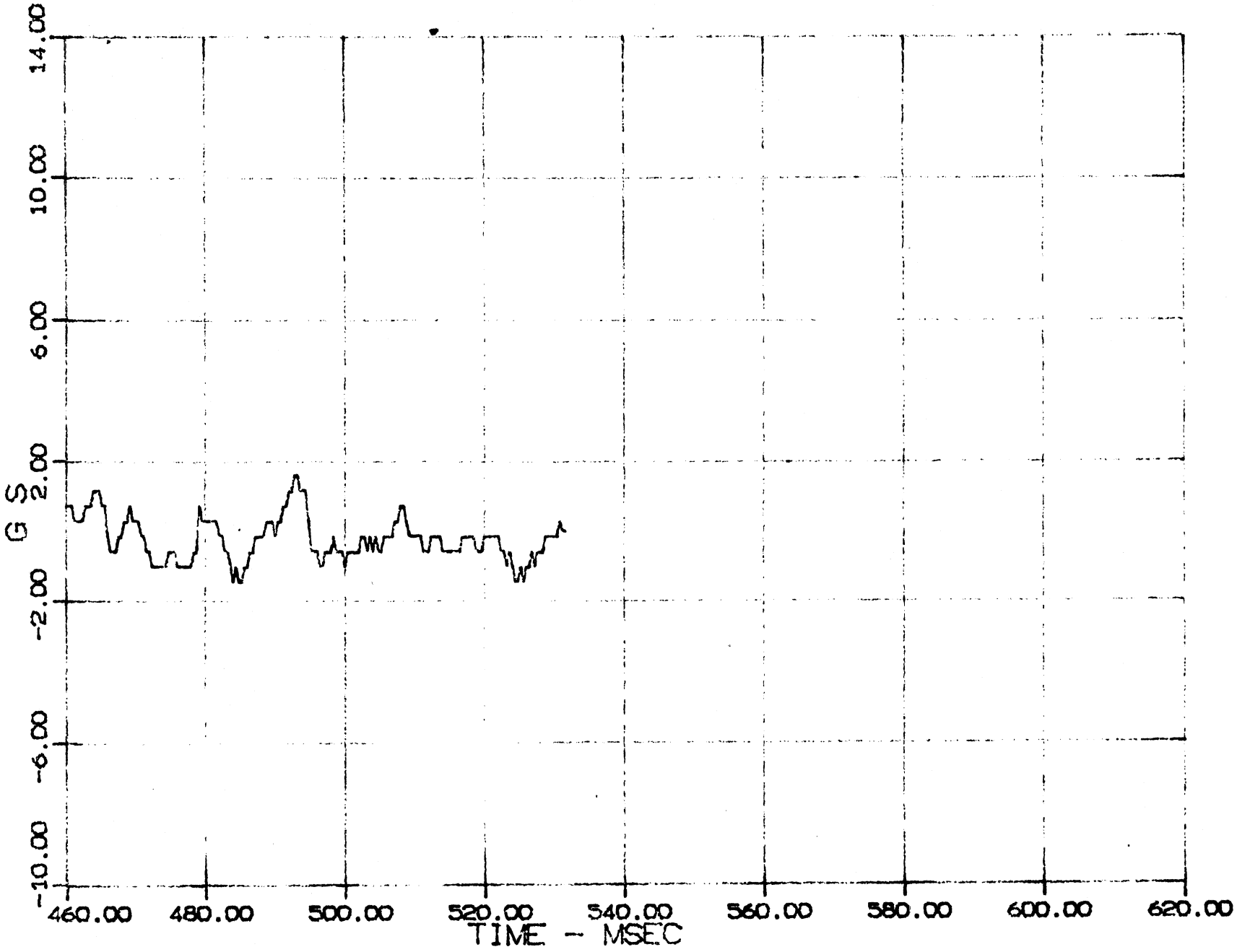


FIGURE 40 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 60 FILTER

3.4 TEST CONDUCT - WYOMING WC-4 BARRICADE

The test article was a wooden barricade device manufactured to the specifications of the Wyoming Highway Department, Cheyenne, Wyoming, designated the Wyoming WC-4 Barricade.

A warning light was attached on the right end of the center panel outboard of the vertical support approximately 5 ft (15.24 mm) from ground level. This conforms with the Manual on Uniform Traffic Control Devices (MUTCD) requirements and also places the light in a location that is highly visible to the vehicle driver. It is also in a position to become a possible hazard to the vehicle occupants if knocked free at impact. The WC-4 Barricade was impacted by the quarter point of the bumper on the passenger side of the vehicle striking the right vertical support of the barricade.

One Wyoming WC-4 Barricade with one warning light attached was located on the test track without additional ballast and was not anchored to the test track.

The test was conducted on Wednesday August 11, 1982 at 4:00 p.m. at a speed of 60.3 mph (97 mph).

Pretest photographs are presented in Figures 41 and 42.

3.3 TEST CONDUCT - 55 GALLON DRUM

The test article was a 55 gallon metal drum used as a channelizing device.

A typical warning light was attached at the provided location on the left of the device. The light was a Rhodes and Maine model RM 55 and selected as a light commercially available.

Two 55 gallon drums were located for impact simulating the placement of two devices being used as a lane taper to channel traffic. The first device was placed at the right quarter point of the vehicle, 17 in (43.2 cm) from the vehicle centerline. The second device was placed 25 ft (7.6 m) behind the first device at the left quarter point of the vehicle 17 in (43.2 cm) from the vehicle centerline. As was the case with the test on the Plastibarrel 400PB and Channelizer, these locations were chosen to provide a realistic but "worst case" force application to the front of the test vehicle. They were selected to maximize the possiblity of vehicle yaw and resultant tendency to roll.

The test was conducted on Friday July 30, 1982 at 2:00 p.m. at a speed of 59.2 mph (95.3 kph).

Pretest photographs are presented in Figures 35 and 36.

3.3.1 I.C. - TEST RESULTS

The first device impacted on the right quarter point of the vehicle bumper and crushed around the bumper. It then folded over and crushed under the front of the vehicle lifting the right front wheel and jamming under the engine and running gear.

The second device was impacted at a slightly higher point, the front of the vehicle being suspended atop the first crushed drum. This drum also crushed around the bumper, folded over and was crushed beneath the engine area of the vehicle remaining under the vehicle. Posttest photographs are presented in Figures 37 and 38.



FIGURE 35 PRETEST SETUP – FRONT VIEW



FIGURE 36 PRETEST – SIDE VIEW



FIGURE 37 POSTTEST – FRONT VIEW



FIGURE 38 POSTTEST – DRUMS

Both 55 gallon drums retained the warning lights and ballast. Both devices were damaged beyond repair. Retention of the warning light to the 55 gallon drums eliminated the potential hazard of the light penetrating the windshield as exhibited during the crash tests of the two previous channelizing devices.

The two drums that were lodged under the vehicle raised the front of the vehicle approximately 2 in off of the ground eliminating steering control. No yaw, pitch or roll instability was observed. The vehicle brakes were applied and the vehicle stopped in a straight line.

The nose of the dummy appeared to strike the steering wheel when the second drum was impacted. Vehicle body damage was cosmetic with some additional denting and scratching of sheet metal and breaking of the left headlight. The sheet metal engine oil pan was badly dented and the cast gear box (transaxle) case was cracked.

3.3.1 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 20.96 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this data, the highest 10 msec and highest 50 msec averages are presented in Table 12.

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(1) Flail space approach defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances"

The occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breakaway/Yielding Supports - Signs and Luminaire.

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 13. Computer printouts of the first integral (occupant velocity) and second integral (occupant displacement) are presented in Tables 14 and 15.

TABLE 12 MOVING AVERAGE DATA 55 GALLON DRUM

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	4.3828 (1)	.1468 to.1568
Impact with Second Device	4.3784 (1)	.4170 to.4270
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	2.2818	.1446 to.1946
Impact with Second Device	2.1253	.3846 to.4346
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact with First & Second Device	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 13 VEHICLE ACCELERATION DATA – 55 GALLON DRUM

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.02	.02	-.42	.02	-.42	-.42	-.42	-.42	.02	.02
.142	.02	.02	.46	.46	.90	.90	.46	.46	.02	.02
.144	.02	-.42	-.42	-.42	-.86	-1.31	-1.75	-1.75	-1.75	-2.19
.146	-2.63	-3.08	-3.96	-3.96	-4.40	-4.84	-4.40	-5.29	-5.29	-5.73
.148	-6.17	-6.17	-6.17	-5.73	-5.29	-4.40	-3.96	-2.19	-1.75	-1.31
.150	-.86	-.86	-1.31	-1.31	-1.75	-2.63	-3.08	-3.52	-3.96	-3.52
.152	-3.52	-3.96	-4.40	-5.29	-5.73	-6.61	-6.61	-6.61	-5.73	-5.29
.154	-5.29	-4.84	-4.40	-3.52	-3.08	-3.08	-3.96	-4.84	-5.73	-5.73
.156	-6.17	-6.17	-6.17	-5.29	-4.84	-4.40	-3.52	-2.63	-1.75	-1.31
.158	-.86	-.42	-.42	.02	.46	.46	.46	.46	.90	.90
.160	.90	1.35	.90	.46	-.42	-2.19	-3.52	-5.29	-7.06	-7.50
.162	-8.38	-8.38	-7.50	-7.06	-4.84	-3.08	-1.31	.46	1.35	1.79
.164	1.79	.46	-.42	-1.31	-2.19	-2.63	-3.08	-2.63	-2.19	-1.75
.166	-1.31	-1.75	-1.75	-2.19	-3.08	-3.52	-4.40	-4.40	-3.96	-3.96
.168	-3.08	-3.08	-2.63	-2.63	-2.19	-1.75	-2.19	-2.19	-2.63	-2.63
.170	-2.63	-2.19	-1.75	-.86	.02	.90	1.35	1.79	1.79	1.35
.172	.46	-.42	-.86	-1.31	-1.31	-1.31	-.86	-.86	-.86	-1.31
.174	-1.75	-2.63	-3.52	-4.40	-4.84	-5.29	-5.29	-4.84	-3.96	-3.52
.176	-3.52	-2.19	-1.75	-.86	-.86	-.42	.46	.46	.90	2.23
.178	2.67	2.23	2.23	2.23	.90	.02	-.86	-1.75	-2.63	-3.52
.180	-3.96	-4.40	-4.40	-3.96	-3.96	-3.52	-3.52	-3.52	-3.96	-4.40
.182	-4.40	-5.29	-4.84	-4.84	-3.96	-3.52	-2.63	-1.75	-.86	.02
.184	.90	.90	1.35	.46	.02	-.86	-1.75	-3.08	-3.96	-4.40
.186	-4.40	-3.96	-3.52	-3.08	-3.08	-3.08	-3.52	-3.52	-3.08	-3.52
.188	-3.08	-3.08	-3.08	-3.08	-2.63	-2.63	-2.19	-1.75	-1.75	-1.31
.190	-1.31	-.86	-.42	-.42	.02	.02	.46	.46	.46	-.42
.192	-.42	-.86	-1.31	-2.19	-2.19	-2.19	-2.63	-2.63	-2.63	-2.19
.194	-1.31	-.86	.46	.46	.90	.90	.90	.02	.02	.02
.196	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42	-.42
.198	.02	-.42	-.42	-.86	-.86	-.86	-.86	.62	.46	.90
.200	1.35	1.35	1.79	1.79	1.35	.90	.90	.90	.90	1.35
.202	1.35	1.79	1.79	1.79	1.79	.90	.46	.02	-.42	-1.31
.204	-1.75	-2.19	-2.63	-2.63	-3.08	-2.63	-3.52	-3.52	-3.52	-3.96
.206	-3.08	-3.08	-2.19	-1.75	-1.31	-.86	-.42	.02	.02	.46
.208	.02	-.42	-.86	-1.31	-1.75	-1.75	-2.19	-2.19	-1.75	-.86
.210	-.42	.02	.90	1.35	1.79	2.23	2.23	1.79	1.35	.90
.212	.46	-.42	.02	-.42	.02	.02	.90	.90	1.35	1.35
.214	1.35	.90	.90	.90	.46	.02	.02	-1.31	-1.75	-2.19
.216	-2.19	-2.63	-1.75	-.42	.90	2.67	3.56	4.88	5.33	5.33
.218	5.33	4.44	3.56	1.79	.46	-1.31	-3.08	-3.96	-4.40	-4.84
.220	-3.52	-3.08	-1.31	.90	2.67	3.12	3.56	3.12	2.23	.90
.222	-.42	-1.31	-2.19	-2.63	-2.63	-1.75	-.86	.02	1.35	2.67
.224	4.00	4.44	5.33	4.88	4.00	2.67	1.35	.02	-1.75	-2.63
.226	-3.96	-4.40	-4.40	-4.40	-3.52	-3.52	-3.08	-2.19	-1.31	.02
.228	.46	1.35	2.23	2.67	2.67	2.67	3.12	2.67	1.79	1.79
.230	.90	.02	-.42	-.86	-.86	-1.75	-1.75	-1.75	-1.75	-1.75
.232	-1.75	-1.31	-1.75	-1.75	-2.19	-2.19	-2.63	-2.19	-2.19	-2.19
.234	-1.75	-.86	.02	.90	1.79	2.67	3.12	3.56	3.56	3.12
.236	2.67	2.67	1.35	.90	.02	-.86	-.86	-1.75	-1.75	-1.75
.238	-1.75	-1.31	-.86	-.42	.02	.02	.02	.46	.46	.46
.240	.90	.46	.90	.90	.90	.90	.90	1.35	.90	.90
.242	.90	.46	.02	-.42	-.42	-.86	-1.31	-1.31	-1.31	-1.31
.244	-.86	-.42	.02	.46	.46	.90	.46	.46	.46	.02
.246	.02	.02	.02	.02	.02	.02	.02	.02	.02	-.42
.248	-.42	-.42	-.42	-.42	-.86	-1.31	-1.31	-1.31	-1.75	-.86
.250	-.42	.02	.46	.46	.90	1.35	.90	.90	1.35	1.35
.252	1.79	1.79	1.79	1.79	1.35	1.35	.90	.46	.02	.46
.254	.46	.02	.46	.46	.46	.46	.46	.90	1.35	.90
.256	1.35	1.35	.90	1.35	.90	.90	.90	1.35	1.35	.90
.258	.90	.46	.02	-.42	-.86	-.86	-.86	-.86	-.86	-.42

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 13 (CONT'D) VEHICLE ACCELERATION DATA – 55 GALLON DRUM

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-.42	-.42	-.42	-.42	-.42	-.86	-.86	-1.31	-.86	-1.31
.262	-1.75	-1.31	-.86	-.86	-.86	.02	-.42	-.42	-.86	-1.31
.264	-1.31	-1.75	-1.31	-1.75	-1.31	-.86	-1.31	-1.31	-1.31	-.86
.266	-.86	-1.31	-.86	-1.31	-.86	-.86	-.42	-.42	.02	.02
.268	.02	.02	-.42	.02	.02	.46	.46	.46	.02	.02
.270	-.42	-.86	-1.31	-1.31	-1.31	-1.31	-1.31	-.86	-.86	-.86
.272	-.86	-.42	-.42	-.86	-.86	-.42	-.86	-.42	-.42	.02
.274	.02	.46	.46	.46	.46	.02	.46	.46	.02	.02
.276	.02	.02	-.42	-.86	-.86	-1.31	-1.31	-1.31	-1.31	-.86
.278	-.42	.02	.46	.46	.46	.90	.46	.02	.02	-.42
.280	.02	.02	.02	-.42	-.42	-.42	-.42	-.86	-.42	-.42
.282	-.42	-.42	.02	-.42	.02	.02	-.42	.02	.02	-.86
.284	-.86	-1.31	-1.75	-1.75	-1.75	-2.19	-1.31	-1.31	-.86	-.86
.286	-.86	-.86	-.86	-.42	-.42	.02	.02	.02	.02	.02
.288	.02	.46	.02	.46	.02	.02	.46	.02	.02	.02
.290	.02	.02	.02	.02	.02	.02	.02	.02	-.42	.02
.292	.02	.02	.02	.46	.46	.46	.90	.90	.46	.46
.294	.90	1.35	.90	.90	.90	.46	.46	.02	.02	.02
.296	.02	.02	.02	.02	.02	.02	.46	.02	-.42	-.42
.298	-.86	-.86	-1.31	-1.31	-1.31	-1.31	-.86	-.86	-.42	.02
.300	.02	.02	.02	.02	.46	.02	-.42	-.42	-.42	-.42
.302	-.86	-.42	-.42	.02	-.42	-.86	-.42	-.42	-.42	-.42
.304	-.42	.02	.02	.02	.02	.46	.46	.02	.46	.46
.306	.02	.02	.02	-.42	.02	-.42	-.42	-.86	-.42	-.42
.308	.02	.02	.02	.02	.46	.02	.02	.02	.02	-.42
.310	-.42	-.42	-.42	-.86	-.86	-.86	-.42	-.42	.02	.02
.312	.02	.02	.46	.46	.02	.02	.02	.02	.46	.46
.314	.46	1.35	1.35	.90	.46	.46	.46	.46	.46	.46
.316	.02	.02	.02	-.42	.02	.02	.02	.02	.02	.02
.318	.90	.46	.90	.46	.46	.02	.02	-.86	-.42	-.86
.320	-.86	-.42	-.86	-.42	.02	.02	.46	.46	.46	.46
.322	.02	.02	.02	-.42	-.42	-.42	.02	.02	.02	.46
.324	.46	.46	.46	.90	.90	.46	.46	.02	-.42	-.86
.326	-1.31	-1.31	-1.75	-1.75	-1.31	-.86	.02	.02	.90	.90
.328	.90	.46	.46	.46	.02	-.42	-.42	-.86	-.42	-.86
.330	-.42	.02	.46	.90	1.35	.90	.90	.46	-.42	-.86
.332	-.86	-1.31	-1.75	-1.75	-1.75	-1.75	-1.31	-.86	.02	.02
.334	.90	.90	1.35	1.35	.46	.46	.02	.02	-.42	.02
.336	-.42	.02	.02	.46	.90	.90	.46	.46	.02	-.42
.338	-.42	-.42	-.86	-.86	-.86	-.86	-.42	-.42	.02	.46
.340	.46	.90	.90	.90	.90	.90	.46	.46	.46	.02
.342	.02	.02	.02	.02	.02	.46	.46	.46	.46	.46
.344	.46	.46	.02	.02	.02	.02	.02	.02	.02	.46
.346	.46	.46	.90	.46	.90	.46	.90	.46	.46	.46
.348	.46	.46	.46	.46	.46	.02	.02	.02	.02	.02
.350	.02	.02	.02	.02	.02	.02	-.42	-.42	-.42	.02
.352	.02	.02	.02	.46	.02	.02	-.42	-.42	-.42	.02
.354	-.42	.02	-.86	-.86	-.86	-1.31	-1.31	-1.31	-.86	-.86
.356	-.86	-.86	-.42	.02	.46	.46	.46	.46	.46	.46
.358	.02	.46	.02	.02	.02	-.42	.02	-.42	.02	.02
.360	-.42	-.42	-.42	.02	.02	-.42	.02	-.42	-.42	.02
.362	-.42	.02	.02	.02	.02	.46	.02	.02	.02	.02
.364	.02	.02	-.42	-.42	-.42	-.42	-.86	-.42	-.86	-.86
.366	-.86	-.86	-.86	-.86	-.86	-.86	-.86	-.42	.02	.02
.368	.46	.46	.46	.46	.02	.02	-.42	-.42	-.42	-.42
.370	-.42	-.42	-.42	.02	.02	-.42	.02	-.42	-.42	-.86
.372	-.86	-.86	-.86	-.86	-.86	-.86	-.86	-.42	-.42	.02
.374	.46	.46	.46	.46	.46	.46	.46	.90	.90	.46
.376	.90	.46	.02	.02	-.42	-.86	-.86	-.86	-.86	-.86
.378	-.86	-.86	-.42	-.42	-.42	.02	.46	.90	.90	.46

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 13 (CONT'D) VEHICLE ACCELERATION DATA – 55 GALLON DRUM

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	.46	.02	.02	.02	.02	-.42	-.42	-.86	-1.31	-1.75
.382	-1.75	-1.75	-2.19	-1.75	-1.75	-1.31	-.42	.02	.46	1.35
.384	1.79	2.23	2.23	1.79	.90	.02	-.86	-1.75	-3.08	-3.96
.386	-4.84	-5.29	-5.73	-5.73	-5.29	-5.29	-4.40	-4.84	-4.40	-4.40
.388	-4.40	-4.40	-4.40	-4.40	-3.96	-3.52	-2.19	-1.75	-1.31	-.42
.390	.02	.90	1.79	1.35	1.79	.90	.02	-.86	-2.63	-3.52
.392	-4.40	-4.40	-4.40	-4.40	-3.96	-3.52	-2.19	-1.31	-.86	.46
.394	.90	.90	.46	.02	.02	-.42	.02	.46	.90	.90
.396	.90	.46	.02	-.42	-1.75	-3.08	-4.40	-5.73	-7.06	-7.50
.398	-7.50	-7.06	-6.17	-4.84	-3.52	-2.63	-1.75	-1.75	-1.75	-1.75
.400	-2.19	-1.75	-1.31	-.86	-.86	-.86	-1.75	-2.19	-3.08	-3.96
.402	-4.40	-4.84	-4.84	-4.84	-4.84	-5.29	-4.84	-4.84	-5.29	-5.29
.404	-4.40	-3.96	-3.52	-2.63	-2.19	-1.75	-1.75	-1.31	-.86	-.42
.406	.46	.90	.90	1.35	.90	.90	.46	.02	-.86	-2.63
.408	-3.96	-5.29	-5.73	-5.29	-4.84	-4.40	-3.52	-2.63	-1.75	-.86
.410	.02	.90	1.79	1.35	.90	.90	.02	-.42	-.42	-.86
.412	-.86	-1.31	-1.75	-1.75	-1.75	-1.31	-1.31	-.86	-.42	-.42
.414	.46	.46	1.79	2.23	3.12	3.56	3.56	3.56	3.12	2.67
.416	1.79	.90	.02	-.86	-1.75	-3.08	-4.40	-5.73	-7.06	-8.38
.418	-8.83	-7.94	-7.06	-4.84	-3.96	-2.63	-2.19	-2.63	-3.52	-4.84
.420	-5.73	-7.06	-7.50	-8.83	-8.83	-8.83	-9.27	-8.83	-8.38	-8.38
.422	-7.94	-7.94	-7.50	-7.50	-7.50	-7.06	-7.06	-5.73	-4.40	-2.63
.424	-.86	.46	1.79	2.23	2.67	2.67	2.23	1.79	1.35	.46
.426	-.42	-1.31	-1.75	-2.63	-2.63	-3.08	-3.08	-3.08	-2.63	-2.63
.428	-2.63	-2.19	-1.75	-1.75	-.86	.02	.90	1.79	2.67	3.12
.430	3.12	3.56	3.12	2.67	2.67	1.79	1.35	.02	-1.31	-1.75
.432	-2.19	-2.19	-2.19	-2.19	-3.52	-4.84	-6.61	-8.38	-9.27	-8.38
.434	-6.61	-4.40	-2.19	.02	1.35	1.35	2.23	2.67	3.12	3.56
.436	4.44	4.88	5.33	5.77	5.33	4.00	1.79	-.42	-2.63	-4.84
.438	-6.17	-6.61	-6.17	-5.73	-4.84	-3.52	-3.08	-2.19	-1.75	-1.31
.440	-.86	.46	1.35	2.67	2.67	2.67	1.79	.90	.46	.02
.442	.46	.90	1.79	2.67	3.56	4.00	3.56	2.67	1.35	.02
.444	-1.31	-2.19	-3.96	-4.84	-5.29	-5.73	-5.73	-5.29	-3.96	-3.08
.446	-1.75	-.86	-.42	-.86	-1.75	-2.19	-2.63	-3.08	-3.52	-3.52
.448	-3.08	-2.63	-2.19	-1.75	-1.75	-.86	-.86	-.42	.02	.46
.450	.90	.46	.90	.90	.90	.46	.02	-.86	-1.75	-1.75
.452	-2.19	-1.75	-1.31	-.86	.02	.46	1.35	1.79	1.79	1.79
.454	1.79	1.79	1.79	1.79	1.79	2.67	2.23	2.23	2.67	1.79
.456	1.79	1.35	1.35	1.35	.90	.90	.90	1.35	1.79	2.23
.458	3.12	3.56	4.00	4.00	3.56	2.67	1.79	.90	.46	.02
.460	.02	.46	.46	.46	.02	-.42	-.42	-.42	.02	.46
.462	1.35	1.35	1.35	1.35	.90	.02	-.42	-.86	-.86	-.86
.464	-.42	.02	.46	.90	1.79	2.67	3.12	3.56	3.56	2.67
.466	1.79	.90	-.42	-1.75	-2.19	-3.08	-3.52	-3.08	-2.63	-3.08
.468	-2.19	-1.75	-1.31	-.42	.90	2.23	3.12	3.56	4.00	3.56
.470	3.12	1.79	.02	-1.31	-2.19	-2.63	-3.08	-2.19	-1.75	-1.31
.472	-.86	-.86	-.42	-.42	-.86	-1.75	-2.19	-2.19	-2.19	-2.19
.474	-2.63	-2.19	-1.75	-1.31	-.42	.02	.46	.46	.46	.02
.476	.02	-.86	-1.31	-1.75	-1.75	-2.19	-2.19	-2.19	-2.19	-1.75
.478	-.86	-.42	.02	-.42	-.42	-.42	-.42	-.42	.02	.02
.480	.46	.90	.46	.46	.46	.46	.46	.02	.46	.46
.482	.90	.46	.46	.02	.02	-.42	-.86	-1.31	-1.75	-2.19
.484	-2.19	-2.19	-2.19	-1.75	-1.75	-1.31	-1.31	-1.31	-1.31	-.86
.486	-.86	-.42	-.42	-.86	-.42	-.42	.02	.02	.46	.90
.488	.02	.46	.46	.90	.90	1.35	.90	.90	.46	.02
.490	-.86	-.86	-1.31	-1.75	-1.31	-.86	-.42	.46	1.35	1.79
.492	2.23	2.67	2.67	2.67	2.67	2.23	1.79	1.35	.90	.46
.494	.90	1.35	1.79	1.79	2.23	1.79	1.35	.46	-.86	-1.75
.496	-2.63	-3.96	-3.96	-3.96	-3.52	-3.08	-2.19	-.86	.02	1.35
.498	1.79	2.67	3.12	3.12	2.67	1.79	.90	-.42	-.86	-2.19

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.00	.00	-.03	-.03	-.06	-.09	-.13	-.16	-.16	-.16
.142	-.15	-.15	-.12	-.08	-.01	.06	.09	.13	.13	.13
.144	.13	.10	.07	.04	-.03	-.13	-.27	-.40	-.54	-.70
.146	-.91	-1.15	-1.45	-1.76	-2.10	-2.47	-2.81	-3.22	-3.63	-4.07
.148	-4.55	-5.02	-5.50	-5.94	-6.35	-6.69	-6.99	-7.16	-7.30	-7.40
.150	-7.47	-7.53	-7.63	-7.74	-7.87	-8.07	-8.31	-8.58	-8.89	-9.16
.152	-9.43	-9.74	-10.08	-10.49	-10.93	-11.44	-11.95	-12.46	-12.90	-13.31
.154	-13.72	-14.09	-14.43	-14.70	-14.94	-15.18	-15.48	-15.86	-16.30	-16.74
.156	-17.22	-17.70	-18.17	-18.58	-18.95	-19.29	-19.57	-19.77	-19.90	-20.01
.158	-20.07	-20.10	-20.14	-20.14	-20.10	-20.06	-20.03	-19.99	-19.92	-19.85
.160	-19.78	-19.68	-19.61	-19.57	-19.61	-19.78	-20.05	-20.46	-21.00	-21.58
.162	-22.23	-22.87	-23.45	-24.00	-24.37	-24.61	-24.71	-24.67	-24.57	-24.43
.164	-24.29	-24.26	-24.29	-24.39	-24.56	-24.76	-25.00	-25.20	-25.37	-25.51
.166	-25.61	-25.74	-25.88	-26.05	-26.29	-26.56	-26.90	-27.24	-27.54	-27.85
.168	-28.09	-28.32	-28.53	-28.73	-28.90	-29.03	-29.20	-29.37	-29.58	-29.78
.170	-29.98	-30.15	-30.29	-30.35	-30.35	-30.28	-30.18	-30.04	-29.90	-29.80
.172	-29.76	-29.80	-29.86	-29.96	-30.06	-30.16	-30.23	-30.30	-30.36	-30.47
.174	-30.60	-30.80	-31.08	-31.42	-31.79	-32.20	-32.61	-32.98	-33.29	-33.56
.176	-33.83	-34.00	-34.13	-34.20	-34.27	-34.30	-34.26	-34.23	-34.16	-33.99
.178	-33.78	-33.61	-33.43	-33.26	-33.19	-33.19	-33.26	-33.39	-33.60	-33.87
.180	-34.17	-34.51	-34.85	-35.16	-35.46	-35.74	-36.01	-36.28	-36.59	-36.93
.182	-37.27	-37.67	-38.05	-38.42	-38.73	-39.00	-39.20	-39.34	-39.40	-39.40
.184	-39.33	-39.26	-39.16	-39.12	-39.12	-39.19	-39.32	-39.56	-39.87	-40.21
.186	-40.55	-40.85	-41.12	-41.36	-41.60	-41.84	-42.11	-42.38	-42.62	-42.89
.188	-43.13	-43.36	-43.60	-43.84	-44.04	-44.24	-44.41	-44.55	-44.68	-44.78
.190	-44.89	-44.95	-44.98	-45.02	-45.02	-45.01	-44.98	-44.94	-44.91	-44.94
.192	-44.97	-45.04	-45.14	-45.31	-45.48	-45.65	-45.85	-46.05	-46.26	-46.43
.194	-46.53	-46.59	-46.56	-46.52	-46.45	-46.38	-46.31	-46.31	-46.31	-46.31
.196	-46.34	-46.37	-46.41	-46.44	-46.47	-46.50	-46.54	-46.57	-46.60	-46.63
.198	-46.63	-46.67	-46.70	-46.77	-46.83	-46.90	-46.97	-46.96	-46.93	-46.86
.200	-46.75	-46.65	-46.51	-46.37	-46.27	-46.20	-46.13	-46.06	-45.99	-45.89
.202	-45.78	-45.64	-45.51	-45.37	-45.23	-45.16	-45.12	-45.12	-45.16	-45.26
.204	-45.39	-45.56	-45.76	-45.97	-46.21	-46.41	-46.68	-46.95	-47.22	-47.53
.206	-47.77	-48.00	-48.17	-48.31	-48.41	-48.48	-48.51	-48.51	-48.51	-48.47
.208	-48.47	-48.50	-48.57	-48.67	-48.80	-48.94	-49.11	-49.28	-49.41	-49.48
.210	-49.51	-49.51	-49.44	-49.34	-49.20	-49.03	-48.85	-48.71	-48.61	-48.54
.212	-48.51	-48.54	-48.54	-48.57	-48.57	-48.57	-48.50	-48.43	-48.32	-48.22
.214	-48.11	-48.04	-47.97	-47.90	-47.87	-47.87	-47.87	-47.97	-48.10	-48.27
.216	-48.44	-48.64	-48.78	-48.81	-48.74	-48.54	-48.26	-47.88	-47.47	-47.06
.218	-46.65	-46.31	-46.03	-45.89	-45.86	-45.96	-46.20	-46.50	-46.84	-47.22
.220	-47.49	-47.73	-47.83	-47.76	-47.55	-47.31	-47.03	-46.79	-46.62	-46.55
.222	-46.58	-46.69	-46.85	-47.06	-47.26	-47.40	-47.46	-47.46	-47.36	-47.15
.224	-46.84	-46.50	-46.09	-45.71	-45.40	-45.20	-45.09	-45.09	-45.23	-45.43
.226	-45.73	-46.07	-46.41	-46.75	-47.03	-47.30	-47.53	-47.70	-47.80	-47.80
.228	-47.77	-47.66	-47.49	-47.28	-47.08	-46.87	-46.63	-46.43	-46.29	-46.15
.230	-46.08	-46.08	-46.11	-46.18	-46.24	-46.38	-46.51	-46.65	-46.78	-46.92
.232	-47.05	-47.15	-47.29	-47.42	-47.59	-47.76	-47.97	-48.14	-48.30	-48.47
.234	-48.61	-48.68	-48.67	-48.60	-48.47	-48.26	-48.02	-47.74	-47.47	-47.23
.236	-47.02	-46.82	-46.71	-46.64	-46.64	-46.71	-46.77	-46.91	-47.04	-47.18
.238	-47.31	-47.42	-47.48	-47.51	-47.51	-47.51	-47.51	-47.47	-47.44	-47.40
.240	-47.33	-47.30	-47.23	-47.16	-47.09	-47.02	-46.95	-46.84	-46.77	-46.70
.242	-46.64	-46.60	-46.60	-46.63	-46.66	-46.73	-46.83	-46.93	-47.03	-47.13
.244	-47.20	-47.23	-47.23	-47.20	-47.16	-47.09	-47.05	-47.02	-46.98	-46.98
.246	-46.98	-46.98	-46.98	-46.98	-46.97	-46.97	-46.97	-46.97	-46.97	-47.00
.248	-47.03	-47.07	-47.10	-47.13	-47.20	-47.30	-47.40	-47.50	-47.63	-47.70
.250	-47.73	-47.73	-47.70	-47.66	-47.59	-47.49	-47.42	-47.35	-47.24	-47.14
.252	-47.00	-46.86	-46.73	-46.59	-46.48	-46.38	-46.31	-46.27	-46.27	-46.24
.254	-46.20	-46.20	-46.16	-46.13	-46.09	-46.06	-46.02	-45.95	-45.85	-45.78
.256	-45.67	-45.57	-45.50	-45.40	-45.33	-45.26	-45.19	-45.08	-44.98	-44.91
.258	-44.84	-44.80	-44.80	-44.83	-44.90	-44.97	-45.03	-45.10	-45.17	-45.20

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 (CONT'D) OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-45.23	-45.27	-45.30	-45.33	-45.36	-45.43	-45.50	-45.60	-45.66	-45.77
.262	-45.96	-46.00	-46.07	-46.13	-46.20	-46.20	-46.23	-46.26	-46.33	-46.43
.264	-46.53	-46.67	-46.77	-46.90	-47.01	-47.07	-47.17	-47.27	-47.37	-47.44
.266	-47.51	-47.61	-47.68	-47.78	-47.84	-47.91	-47.94	-47.98	-47.97	-47.97
.268	-47.97	-47.97	-48.00	-48.00	-48.00	-47.96	-47.93	-47.89	-47.89	-47.89
.270	-47.92	-47.99	-48.09	-48.19	-48.29	-48.39	-48.49	-48.56	-48.63	-48.69
.272	-48.76	-48.79	-48.82	-48.89	-48.96	-48.99	-49.06	-49.09	-49.12	-49.12
.274	-49.12	-49.08	-49.05	-49.01	-48.98	-48.98	-48.94	-48.98	-48.98	-48.98
.276	-48.98	-48.98	-48.93	-49.00	-49.06	-49.16	-49.27	-49.37	-49.47	-49.53
.278	-49.57	-49.56	-49.53	-49.49	-49.46	-49.39	-49.35	-49.35	-49.35	-49.38
.280	-49.38	-49.38	-49.38	-49.41	-49.44	-49.48	-49.51	-49.57	-49.61	-49.64
.282	-49.67	-49.70	-49.70	-49.74	-49.73	-49.73	-49.77	-49.76	-49.76	-49.83
.284	-49.90	-50.00	-50.13	-50.27	-50.40	-50.57	-50.67	-50.77	-50.84	-50.91
.286	-50.97	-51.04	-51.11	-51.14	-51.17	-51.17	-51.17	-51.17	-51.17	-51.16
.288	-51.16	-51.13	-51.13	-51.09	-51.09	-51.09	-51.05	-51.05	-51.05	-51.05
.290	-51.04	-51.04	-51.04	-51.04	-51.04	-51.04	-51.04	-51.03	-51.07	-51.06
.292	-51.06	-51.06	-51.06	-51.02	-50.99	-50.95	-50.88	-50.81	-50.78	-50.74
.294	-50.67	-50.57	-50.50	-50.43	-50.36	-50.32	-50.29	-50.29	-50.28	-50.28
.296	-50.28	-50.28	-50.28	-50.28	-50.27	-50.27	-50.24	-50.24	-50.27	-50.30
.298	-50.37	-50.43	-50.54	-50.64	-50.74	-50.84	-50.91	-50.97	-51.00	-51.00
.300	-51.00	-51.00	-51.00	-51.00	-50.96	-50.96	-50.99	-51.02	-51.06	-51.09
.302	-51.16	-51.19	-51.22	-51.22	-51.25	-51.32	-51.35	-51.38	-51.42	-51.45
.304	-51.48	-51.48	-51.48	-51.48	-51.48	-51.44	-51.41	-51.40	-51.37	-51.33
.306	-51.33	-51.33	-51.33	-51.36	-51.36	-51.39	-51.42	-51.49	-51.52	-51.56
.308	-51.55	-51.55	-51.55	-51.55	-51.51	-51.51	-51.51	-51.51	-51.51	-51.54
.310	-51.57	-51.61	-51.64	-51.70	-51.77	-51.84	-51.87	-51.90	-51.90	-51.90
.312	-51.90	-51.90	-51.86	-51.83	-51.82	-51.82	-51.82	-51.82	-51.78	-51.75
.314	-51.71	-51.61	-51.56	-51.44	-51.40	-51.36	-51.33	-51.29	-51.26	-51.22
.316	-51.22	-51.22	-51.22	-51.25	-51.25	-51.25	-51.24	-51.24	-51.24	-51.24
.318	-51.17	-51.13	-51.06	-51.03	-50.99	-50.99	-50.99	-51.06	-51.09	-51.16
.320	-51.22	-51.26	-51.32	-51.35	-51.35	-51.35	-51.32	-51.28	-51.24	-51.21
.322	-51.21	-51.21	-51.20	-51.24	-51.27	-51.30	-51.30	-51.30	-51.30	-51.26
.324	-51.23	-51.19	-51.15	-51.08	-51.01	-50.98	-50.94	-50.94	-50.97	-51.04
.326	-51.14	-51.24	-51.38	-51.51	-51.61	-51.68	-51.68	-51.68	-51.61	-51.54
.328	-51.47	-51.43	-51.40	-51.36	-51.36	-51.39	-51.42	-51.49	-51.52	-51.59
.330	-51.62	-51.62	-51.59	-51.52	-51.41	-51.34	-51.27	-51.24	-51.27	-51.34
.332	-51.40	-51.50	-51.64	-51.77	-51.91	-52.04	-52.14	-52.21	-52.21	-52.21
.334	-52.14	-52.07	-51.97	-51.86	-51.83	-51.79	-51.79	-51.79	-51.82	-51.82
.336	-51.85	-51.85	-51.85	-51.81	-51.74	-51.67	-51.64	-51.60	-51.60	-51.63
.338	-51.66	-51.70	-51.76	-51.83	-51.90	-51.96	-52.00	-52.03	-52.03	-51.99
.340	-51.96	-51.89	-51.82	-51.75	-51.68	-51.61	-51.57	-51.54	-51.50	-51.50
.342	-51.50	-51.50	-51.49	-51.49	-51.49	-51.45	-51.42	-51.38	-51.35	-51.31
.344	-51.28	-51.24	-51.24	-51.24	-51.24	-51.23	-51.23	-51.23	-51.23	-51.19
.346	-51.16	-51.12	-51.05	-51.02	-50.95	-50.91	-50.84	-50.81	-50.77	-50.73
.348	-50.70	-50.66	-50.63	-50.59	-50.56	-50.55	-50.55	-50.55	-50.55	-50.55
.350	-50.55	-50.55	-50.54	-50.54	-50.54	-50.54	-50.57	-50.60	-50.64	-50.64
.352	-50.63	-50.63	-50.63	-50.60	-50.59	-50.59	-50.62	-50.66	-50.69	-50.69
.354	-50.72	-50.72	-50.79	-50.85	-50.92	-51.02	-51.12	-51.22	-51.29	-51.36
.356	-51.42	-51.49	-51.52	-51.52	-51.48	-51.45	-51.41	-51.38	-51.34	-51.31
.358	-51.30	-51.27	-51.27	-51.27	-51.26	-51.30	-51.30	-51.33	-51.33	-51.33
.360	-51.36	-51.39	-51.42	-51.42	-51.42	-51.45	-51.45	-51.48	-51.52	-51.51
.362	-51.55	-51.55	-51.54	-51.54	-51.54	-51.51	-51.50	-51.50	-51.50	-51.50
.364	-51.50	-51.50	-51.53	-51.56	-51.59	-51.63	-51.69	-51.73	-51.79	-51.86
.366	-51.93	-51.99	-52.06	-52.13	-52.19	-52.26	-52.33	-52.36	-52.36	-52.36
.368	-52.32	-52.28	-52.25	-52.21	-52.21	-52.21	-52.24	-52.28	-52.31	-52.34
.370	-52.37	-52.41	-52.44	-52.44	-52.44	-52.47	-52.47	-52.50	-52.53	-52.60
.372	-52.66	-52.73	-52.80	-52.87	-52.93	-53.00	-53.07	-53.10	-53.13	-53.13
.374	-53.09	-53.06	-53.02	-52.99	-52.95	-52.91	-52.88	-52.81	-52.74	-52.70
.376	-52.63	-52.60	-52.60	-52.60	-52.63	-52.69	-52.76	-52.83	-52.89	-52.96
.378	-53.03	-53.10	-53.13	-53.16	-53.19	-53.19	-53.16	-53.09	-53.02	-52.98

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 14 (CONT'D) OCCUPANT VELOCITY – 55 GALLON DRUM

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	-52.94	-52.94	-52.94	-52.94	-52.94	-52.97	-53.00	-53.07	-53.17	-53.31
.382	-53.44	-53.58	-53.75	-53.88	-54.02	-54.12	-54.15	-54.15	-54.11	-54.01
.384	-53.87	-53.70	-53.53	-53.39	-53.32	-53.32	-53.38	-53.52	-53.75	-54.06
.386	-54.43	-54.84	-55.29	-55.73	-56.14	-56.54	-56.88	-57.26	-57.60	-57.94
.388	-58.28	-58.62	-58.96	-59.30	-59.60	-59.87	-60.04	-60.18	-60.28	-60.31
.390	-60.31	-60.24	-60.10	-60.00	-59.86	-59.79	-59.79	-59.86	-60.06	-60.33
.392	-60.67	-61.01	-61.35	-61.69	-62.00	-62.27	-62.44	-62.54	-62.60	-62.57
.394	-62.50	-62.43	-62.39	-62.39	-62.39	-62.42	-62.42	-62.39	-62.32	-62.25
.396	-62.18	-62.14	-62.14	-62.17	-62.31	-62.54	-62.88	-63.33	-63.87	-64.45
.398	-65.03	-65.57	-66.05	-66.42	-66.70	-66.90	-67.03	-67.17	-67.30	-67.44
.400	-67.61	-67.74	-67.84	-67.91	-67.98	-68.04	-68.18	-68.35	-68.59	-68.89
.402	-69.23	-69.61	-69.98	-70.35	-70.73	-71.14	-71.51	-71.88	-72.29	-72.70
.404	-73.04	-73.35	-73.62	-73.82	-73.99	-74.12	-74.26	-74.36	-74.43	-74.46
.406	-74.42	-74.35	-74.28	-74.18	-74.11	-74.04	-74.01	-74.00	-74.07	-74.27
.408	-74.58	-74.99	-75.43	-75.84	-76.21	-76.55	-76.82	-77.03	-77.16	-77.23
.410	-77.23	-77.16	-77.02	-76.92	-76.85	-76.78	-76.77	-76.81	-76.84	-76.91
.412	-76.97	-77.07	-77.21	-77.34	-77.48	-77.58	-77.68	-77.75	-77.78	-77.81
.414	-77.78	-77.74	-77.60	-77.43	-77.19	-76.92	-76.64	-76.37	-76.13	-75.92
.416	-75.78	-75.71	-75.71	-75.78	-75.91	-76.15	-76.49	-76.93	-77.48	-78.12
.418	-78.80	-79.42	-79.96	-80.34	-80.64	-80.85	-81.01	-81.22	-81.49	-81.86
.420	-82.31	-82.85	-83.43	-84.11	-84.79	-85.47	-86.19	-86.87	-87.52	-88.16
.422	-88.78	-89.39	-89.97	-90.55	-91.13	-91.67	-92.22	-92.66	-93.00	-93.20
.424	-93.27	-93.23	-93.09	-92.92	-92.72	-92.51	-92.34	-92.20	-92.10	-92.06
.426	-92.09	-92.19	-92.33	-92.53	-92.73	-92.97	-93.21	-93.45	-93.65	-93.85
.428	-94.06	-94.23	-94.36	-94.50	-94.56	-94.56	-94.49	-94.35	-94.15	-93.91
.430	-93.67	-93.39	-93.15	-92.94	-92.74	-92.60	-92.50	-92.49	-92.60	-92.73
.432	-92.90	-93.07	-93.24	-93.41	-93.68	-94.05	-94.56	-95.21	-95.93	-96.57
.434	-97.08	-97.42	-97.59	-97.59	-97.49	-97.38	-97.21	-97.00	-96.76	-96.49
.436	-96.15	-95.77	-95.36	-94.91	-94.50	-94.19	-94.05	-94.09	-94.29	-94.66
.438	-95.14	-95.65	-96.13	-96.57	-96.94	-97.22	-97.45	-97.62	-97.76	-97.86
.440	-97.93	-97.89	-97.79	-97.58	-97.37	-97.17	-97.03	-96.96	-96.92	-96.92
.442	-96.89	-96.82	-96.68	-96.47	-96.20	-95.89	-95.61	-95.41	-95.30	-95.30
.444	-95.40	-95.57	-95.88	-96.25	-96.66	-97.10	-97.54	-97.95	-98.26	-98.49
.446	-98.63	-98.76	-98.73	-98.80	-98.93	-99.10	-99.30	-99.54	-99.81	-100.08
.448	-100.32	-100.52	-100.69	-100.83	-100.96	-101.03	-101.10	-101.13	-101.13	-101.09
.450	-101.02	-100.99	-100.92	-100.85	-100.78	-100.74	-100.74	-100.81	-100.94	-101.08
.452	-101.25	-101.38	-101.48	-101.55	-101.55	-101.51	-101.41	-101.27	-101.13	-100.99
.454	-100.86	-100.72	-100.58	-100.44	-100.30	-100.10	-99.92	-99.75	-99.55	-99.41
.456	-99.27	-99.17	-99.06	-98.96	-98.89	-98.82	-98.75	-98.64	-98.51	-98.33
.458	-98.09	-97.82	-97.51	-97.20	-96.93	-96.72	-96.58	-96.51	-96.48	-96.47
.460	-96.47	-96.44	-96.40	-96.37	-96.36	-96.40	-96.43	-96.46	-96.46	-96.43
.462	-96.32	-96.22	-96.11	-96.01	-95.94	-95.94	-95.97	-96.04	-96.10	-96.17
.464	-96.20	-96.20	-96.17	-96.10	-95.96	-95.75	-95.51	-95.24	-94.96	-94.76
.466	-94.62	-94.55	-94.58	-94.72	-94.88	-95.12	-95.39	-95.63	-95.83	-96.07
.468	-96.24	-96.38	-96.48	-96.51	-96.44	-96.27	-96.03	-95.75	-95.44	-95.17
.470	-94.93	-94.79	-94.79	-94.89	-95.06	-95.26	-95.50	-95.67	-95.80	-95.90
.472	-95.97	-96.04	-96.07	-96.10	-96.17	-96.30	-96.47	-96.64	-96.81	-96.98
.474	-97.18	-97.35	-97.49	-97.59	-97.62	-97.62	-97.59	-97.55	-97.51	-97.51
.476	-97.51	-97.58	-97.68	-97.81	-97.95	-98.12	-98.29	-98.46	-98.63	-98.76
.478	-98.83	-98.86	-98.86	-98.89	-98.92	-98.96	-98.99	-99.02	-99.02	-99.02
.480	-98.98	-98.91	-98.88	-98.84	-98.81	-98.77	-98.73	-98.73	-98.70	-98.66
.482	-98.59	-98.56	-98.52	-98.52	-98.52	-98.55	-98.62	-98.72	-98.85	-99.02
.484	-99.19	-99.36	-99.53	-99.66	-99.80	-99.90	-100.00	-100.10	-100.20	-100.27
.486	-100.34	-100.37	-100.40	-100.47	-100.50	-100.53	-100.53	-100.53	-100.49	-100.42
.488	-100.42	-100.39	-100.35	-100.28	-100.21	-100.11	-100.04	-99.97	-99.93	-99.93
.490	-100.00	-100.06	-100.17	-100.30	-100.40	-100.47	-100.50	-100.46	-100.36	-100.22
.492	-100.05	-99.84	-99.64	-99.43	-99.22	-99.05	-98.91	-98.81	-98.74	-98.70
.494	-98.64	-98.53	-98.39	-98.25	-98.08	-97.94	-97.84	-97.80	-97.87	-98.01
.496	-98.21	-98.52	-98.82	-99.13	-99.40	-99.64	-99.81	-99.87	-99.87	-99.77
.498	-99.63	-99.42	-99.18	-98.94	-98.73	-98.60	-98.53	-98.56	-98.63	-98.80

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.140	.00	.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.142	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.144	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.146	-.00	-.0*	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.01
.148	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.02	-.02
.150	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.03	-.03	-.03
.152	-.04	-.04	-.04	-.04	-.04	-.05	-.05	-.05	-.05	-.06
.154	-.06	-.06	-.07	-.07	-.07	-.07	-.08	-.08	-.08	-.09
.156	-.09	-.09	-.10	-.10	-.10	-.11	-.11	-.12	-.12	-.12
.158	-.13	-.13	-.14	-.14	-.14	-.15	-.15	-.16	-.16	-.16
.160	-.17	-.17	-.18	-.18	-.18	-.19	-.19	-.20	-.20	-.21
.162	-.21	-.21	-.22	-.22	-.23	-.23	-.24	-.24	-.25	-.25
.164	-.26	-.26	-.27	-.27	-.28	-.28	-.29	-.29	-.30	-.30
.166	-.31	-.31	-.32	-.32	-.33	-.33	-.34	-.34	-.35	-.36
.168	-.36	-.37	-.37	-.38	-.38	-.39	-.40	-.40	-.41	-.41
.170	-.42	-.43	-.43	-.44	-.44	-.45	-.46	-.46	-.47	-.47
.172	-.48	-.49	-.49	-.50	-.50	-.51	-.52	-.52	-.53	-.53
.174	-.54	-.55	-.55	-.56	-.57	-.57	-.58	-.58	-.59	-.60
.176	-.60	-.61	-.62	-.63	-.63	-.64	-.65	-.65	-.66	-.67
.178	-.67	-.68	-.69	-.69	-.70	-.71	-.71	-.72	-.73	-.73
.180	-.74	-.75	-.75	-.76	-.77	-.78	-.78	-.79	-.80	-.80
.182	-.81	-.82	-.83	-.83	-.84	-.85	-.86	-.87	-.87	-.88
.184	-.89	-.90	-.91	-.91	-.92	-.93	-.94	-.94	-.95	-.96
.186	-.97	-.98	-.99	-.99	-1.00	-1.01	-1.02	-1.03	-1.04	-1.04
.188	-1.05	-1.06	-1.07	-1.08	-1.09	-1.10	-1.11	-1.11	-1.12	-1.13
.190	-1.14	-1.15	-1.16	-1.17	-1.18	-1.19	-1.20	-1.20	-1.21	-1.22
.192	-1.23	-1.24	-1.25	-1.26	-1.27	-1.28	-1.29	-1.29	-1.30	-1.31
.194	-1.32	-1.33	-1.34	-1.35	-1.36	-1.37	-1.38	-1.39	-1.40	-1.41
.196	-1.42	-1.42	-1.43	-1.44	-1.45	-1.46	-1.47	-1.48	-1.49	-1.50
.198	-1.51	-1.52	-1.53	-1.54	-1.55	-1.56	-1.56	-1.57	-1.58	-1.59
.200	-1.60	-1.61	-1.62	-1.63	-1.64	-1.65	-1.66	-1.67	-1.68	-1.69
.202	-1.69	-1.70	-1.71	-1.72	-1.73	-1.74	-1.75	-1.76	-1.77	-1.78
.204	-1.79	-1.79	-1.80	-1.81	-1.82	-1.83	-1.84	-1.85	-1.86	-1.87
.206	-1.88	-1.89	-1.90	-1.91	-1.92	-1.93	-1.94	-1.95	-1.96	-1.97
.208	-1.98	-1.98	-1.99	-2.00	-2.01	-2.02	-2.03	-2.04	-2.05	-2.06
.210	-2.07	-2.08	-2.09	-2.10	-2.11	-2.12	-2.13	-2.14	-2.15	-2.16
.212	-2.17	-2.18	-2.19	-2.20	-2.21	-2.22	-2.23	-2.24	-2.25	-2.26
.214	-2.27	-2.28	-2.29	-2.30	-2.31	-2.32	-2.33	-2.34	-2.34	-2.35
.216	-2.36	-2.37	-2.38	-2.39	-2.40	-2.41	-2.42	-2.43	-2.44	-2.45
.218	-2.46	-2.47	-2.48	-2.49	-2.50	-2.51	-2.52	-2.52	-2.53	-2.54
.220	-2.55	-2.56	-2.57	-2.58	-2.59	-2.60	-2.61	-2.62	-2.63	-2.64
.222	-2.65	-2.66	-2.67	-2.68	-2.68	-2.69	-2.70	-2.71	-2.72	-2.73
.224	-2.74	-2.75	-2.76	-2.77	-2.78	-2.79	-2.80	-2.81	-2.81	-2.82
.226	-2.83	-2.84	-2.85	-2.86	-2.87	-2.88	-2.89	-2.90	-2.91	-2.92
.228	-2.93	-2.94	-2.95	-2.96	-2.97	-2.97	-2.98	-2.99	-3.00	-3.01
.230	-3.02	-3.03	-3.04	-3.05	-3.06	-3.07	-3.08	-3.09	-3.09	-3.10
.232	-3.11	-3.12	-3.13	-3.14	-3.15	-3.16	-3.17	-3.18	-3.19	-3.20
.234	-3.21	-3.22	-3.23	-3.24	-3.25	-3.26	-3.27	-3.28	-3.29	-3.30
.236	-3.31	-3.31	-3.32	-3.33	-3.34	-3.35	-3.36	-3.37	-3.38	-3.39
.238	-3.40	-3.41	-3.42	-3.43	-3.44	-3.45	-3.46	-3.47	-3.48	-3.48
.240	-3.49	-3.50	-3.51	-3.52	-3.53	-3.54	-3.55	-3.56	-3.57	-3.58
.242	-3.59	-3.60	-3.61	-3.62	-3.63	-3.63	-3.64	-3.65	-3.66	-3.67
.244	-3.68	-3.69	-3.70	-3.71	-3.72	-3.73	-3.74	-3.75	-3.76	-3.77
.246	-3.78	-3.79	-3.79	-3.80	-3.81	-3.82	-3.83	-3.84	-3.85	-3.86
.248	-3.87	-3.88	-3.89	-3.90	-3.91	-3.92	-3.93	-3.94	-3.95	-3.96
.250	-3.96	-3.97	-3.98	-3.99	-4.00	-4.01	-4.02	-4.03	-4.04	-4.05
.252	-4.06	-4.07	-4.08	-4.09	-4.10	-4.11	-4.12	-4.12	-4.13	-4.14
.254	-4.15	-4.16	-4.17	-4.18	-4.19	-4.20	-4.21	-4.22	-4.23	-4.24
.256	-4.24	-4.25	-4.26	-4.27	-4.28	-4.29	-4.30	-4.31	-4.32	-4.33
.258	-4.33	-4.34	-4.35	-4.36	-4.37	-4.38	-4.39	-4.40	-4.41	-4.42

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 (CONT'D) OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.260	-4.42	-4.43	-4.44	-4.45	-4.46	-4.47	-4.48	-4.49	-4.50	-4.51
.262	-4.52	-4.53	-4.53	-4.54	-4.55	-4.56	-4.57	-4.58	-4.59	-4.60
.264	-4.61	-4.62	-4.63	-4.64	-4.65	-4.66	-4.66	-4.67	-4.68	-4.69
.266	-4.70	-4.71	-4.72	-4.73	-4.74	-4.75	-4.76	-4.77	-4.78	-4.79
.268	-4.80	-4.81	-4.82	-4.83	-4.84	-4.85	-4.86	-4.87	-4.88	-4.88
.270	-4.89	-4.90	-4.91	-4.92	-4.93	-4.94	-4.95	-4.96	-4.97	-4.98
.272	-4.99	-5.00	-5.01	-5.02	-5.03	-5.04	-5.05	-5.06	-5.07	-5.08
.274	-5.09	-5.10	-5.11	-5.12	-5.13	-5.14	-5.15	-5.16	-5.17	-5.18
.276	-5.19	-5.20	-5.21	-5.22	-5.23	-5.24	-5.25	-5.26	-5.27	-5.28
.278	-5.29	-5.30	-5.31	-5.32	-5.33	-5.33	-5.34	-5.35	-5.36	-5.37
.280	-5.38	-5.39	-5.40	-5.41	-5.42	-5.43	-5.44	-5.45	-5.46	-5.47
.282	-5.48	-5.49	-5.50	-5.51	-5.52	-5.53	-5.54	-5.55	-5.56	-5.57
.284	-5.58	-5.59	-5.60	-5.61	-5.62	-5.63	-5.64	-5.65	-5.66	-5.67
.286	-5.68	-5.69	-5.70	-5.71	-5.72	-5.74	-5.75	-5.76	-5.77	-5.78
.288	-5.79	-5.80	-5.81	-5.82	-5.83	-5.84	-5.85	-5.86	-5.87	-5.88
.290	-5.89	-5.90	-5.91	-5.92	-5.93	-5.94	-5.95	-5.96	-5.97	-5.98
.292	-5.99	-6.00	-6.01	-6.02	-6.03	-6.04	-6.05	-6.06	-6.07	-6.08
.294	-6.09	-6.10	-6.11	-6.12	-6.13	-6.14	-6.15	-6.16	-6.17	-6.18
.296	-6.19	-6.20	-6.21	-6.22	-6.23	-6.24	-6.25	-6.26	-6.27	-6.28
.298	-6.29	-6.30	-6.31	-6.32	-6.33	-6.34	-6.35	-6.36	-6.37	-6.38
.300	-6.40	-6.41	-6.42	-6.43	-6.44	-6.45	-6.46	-6.47	-6.48	-6.49
.302	-6.50	-6.51	-6.52	-6.53	-6.54	-6.55	-6.56	-6.57	-6.58	-6.59
.304	-6.60	-6.61	-6.62	-6.63	-6.64	-6.65	-6.66	-6.67	-6.68	-6.69
.306	-6.70	-6.71	-6.72	-6.73	-6.74	-6.75	-6.76	-6.77	-6.78	-6.80
.308	-6.81	-6.82	-6.83	-6.84	-6.85	-6.86	-6.87	-6.88	-6.89	-6.90
.310	-6.91	-6.92	-6.93	-6.94	-6.95	-6.96	-6.97	-6.98	-6.99	-7.00
.312	-7.01	-7.02	-7.03	-7.04	-7.05	-7.06	-7.07	-7.08	-7.10	-7.11
.314	-7.12	-7.13	-7.14	-7.15	-7.16	-7.17	-7.18	-7.19	-7.20	-7.21
.316	-7.22	-7.23	-7.24	-7.25	-7.26	-7.27	-7.28	-7.29	-7.30	-7.31
.318	-7.32	-7.33	-7.34	-7.35	-7.36	-7.37	-7.38	-7.39	-7.40	-7.41
.320	-7.42	-7.43	-7.44	-7.45	-7.46	-7.47	-7.48	-7.50	-7.51	-7.52
.322	-7.53	-7.54	-7.55	-7.56	-7.57	-7.58	-7.59	-7.60	-7.61	-7.62
.324	-7.63	-7.64	-7.65	-7.66	-7.67	-7.68	-7.69	-7.70	-7.71	-7.72
.326	-7.73	-7.74	-7.75	-7.76	-7.77	-7.78	-7.79	-7.80	-7.81	-7.82
.328	-7.83	-7.84	-7.85	-7.86	-7.87	-7.88	-7.90	-7.91	-7.92	-7.93
.330	-7.94	-7.95	-7.96	-7.97	-7.98	-7.99	-8.00	-8.01	-8.02	-8.03
.332	-8.04	-8.05	-8.06	-8.07	-8.08	-8.09	-8.10	-8.11	-8.12	-8.13
.334	-8.14	-8.15	-8.16	-8.17	-8.18	-8.20	-8.21	-8.22	-8.23	-8.24
.336	-8.25	-8.26	-8.27	-8.28	-8.29	-8.30	-8.31	-8.32	-8.33	-8.34
.338	-8.35	-8.36	-8.37	-8.38	-8.39	-8.40	-8.41	-8.42	-8.43	-8.44
.340	-8.45	-8.46	-8.47	-8.49	-8.50	-8.51	-8.52	-8.53	-8.54	-8.55
.342	-8.56	-8.57	-8.58	-8.59	-8.60	-8.61	-8.62	-8.63	-8.64	-8.65
.344	-8.66	-8.67	-8.68	-8.69	-8.70	-8.71	-8.72	-8.73	-8.74	-8.75
.346	-8.76	-8.77	-8.78	-8.79	-8.80	-8.81	-8.82	-8.83	-8.84	-8.85
.348	-8.86	-8.87	-8.88	-8.89	-8.90	-8.91	-8.93	-8.94	-8.95	-8.96
.350	-8.97	-8.98	-8.99	-9.00	-9.01	-9.02	-9.03	-9.04	-9.05	-9.06
.352	-9.07	-9.08	-9.09	-9.10	-9.11	-9.12	-9.13	-9.14	-9.15	-9.16
.354	-9.17	-9.18	-9.19	-9.20	-9.21	-9.22	-9.23	-9.24	-9.25	-9.26
.356	-9.27	-9.28	-9.29	-9.30	-9.31	-9.32	-9.33	-9.34	-9.35	-9.36
.358	-9.37	-9.38	-9.39	-9.40	-9.41	-9.42	-9.43	-9.44	-9.46	-9.47
.360	-9.48	-9.49	-9.50	-9.51	-9.52	-9.53	-9.54	-9.55	-9.56	-9.57
.362	-9.58	-9.59	-9.60	-9.61	-9.62	-9.63	-9.64	-9.65	-9.66	-9.67
.364	-9.68	-9.69	-9.70	-9.71	-9.72	-9.73	-9.74	-9.75	-9.76	-9.77
.366	-9.78	-9.80	-9.81	-9.82	-9.83	-9.84	-9.85	-9.86	-9.87	-9.88
.368	-9.89	-9.90	-9.91	-9.92	-9.93	-9.94	-9.95	-9.96	-9.97	-9.98
.370	-9.99	-10.00	-10.01	-10.03	-10.04	-10.05	-10.06	-10.07	-10.08	-10.09
.372	-10.10	-10.11	-10.12	-10.13	-10.14	-10.15	-10.16	-10.17	-10.18	-10.19
.374	-10.20	-10.22	-10.23	-10.24	-10.25	-10.26	-10.27	-10.28	-10.29	-10.30
.376	-10.31	-10.32	-10.33	-10.34	-10.35	-10.36	-10.37	-10.38	-10.39	-10.41
.378	-10.42	-10.43	-10.44	-10.45	-10.46	-10.47	-10.48	-10.49	-10.50	-10.51

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 15 (CONT'D) OCCUPANT DISPLACEMENT – 55 GALLON DRUM

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.380	-10.52	-10.53	-10.54	-10.55	-10.56	-10.58	-10.59	-10.60	-10.61	-10.62
.382	-10.63	-10.64	-10.65	-10.66	-10.67	-10.68	-10.69	-10.70	-10.71	-10.73
.384	-10.74	-10.75	-10.76	-10.77	-10.78	-10.79	-10.80	-10.81	-10.82	-10.83
.386	-10.84	-10.85	-10.87	-10.88	-10.89	-10.90	-10.91	-10.92	-10.93	-10.95
.388	-10.96	-10.97	-10.98	-10.99	-11.00	-11.02	-11.03	-11.04	-11.05	-11.06
.390	-11.08	-11.09	-11.10	-11.11	-11.12	-11.14	-11.15	-11.16	-11.17	-11.18
.392	-11.20	-11.21	-11.22	-11.23	-11.25	-11.26	-11.27	-11.28	-11.30	-11.31
.394	-11.32	-11.33	-11.35	-11.36	-11.37	-11.38	-11.40	-11.41	-11.42	-11.43
.396	-11.45	-11.46	-11.47	-11.48	-11.50	-11.51	-11.52	-11.53	-11.55	-11.56
.398	-11.57	-11.58	-11.60	-11.61	-11.62	-11.64	-11.65	-11.66	-11.68	-11.69
.400	-11.71	-11.72	-11.73	-11.75	-11.76	-11.77	-11.79	-11.80	-11.81	-11.83
.402	-11.84	-11.86	-11.87	-11.88	-11.90	-11.91	-11.93	-11.94	-11.96	-11.97
.404	-11.98	-12.00	-12.01	-12.03	-12.04	-12.06	-12.07	-12.09	-12.10	-12.12
.406	-12.13	-12.15	-12.16	-12.18	-12.19	-12.21	-12.22	-12.24	-12.25	-12.27
.408	-12.28	-12.30	-12.31	-12.33	-12.34	-12.36	-12.37	-12.39	-12.40	-12.42
.410	-12.43	-12.45	-12.46	-12.48	-12.50	-12.51	-12.53	-12.54	-12.56	-12.57
.412	-12.59	-12.60	-12.62	-12.63	-12.65	-12.67	-12.68	-12.70	-12.71	-12.73
.414	-12.74	-12.76	-12.77	-12.79	-12.80	-12.82	-12.84	-12.85	-12.87	-12.88
.416	-12.90	-12.91	-12.93	-12.94	-12.96	-12.97	-12.99	-13.00	-13.02	-13.03
.418	-13.05	-13.07	-13.08	-13.10	-13.11	-13.13	-13.15	-13.16	-13.18	-13.20
.420	-13.21	-13.23	-13.24	-13.26	-13.28	-13.30	-13.31	-13.33	-13.35	-13.37
.422	-13.38	-13.40	-13.42	-13.44	-13.46	-13.47	-13.49	-13.51	-13.53	-13.55
.424	-13.57	-13.59	-13.60	-13.62	-13.64	-13.66	-13.68	-13.70	-13.71	-13.73
.426	-13.75	-13.77	-13.79	-13.81	-13.83	-13.84	-13.86	-13.88	-13.90	-13.92
.428	-13.94	-13.96	-13.98	-13.99	-14.01	-14.03	-14.05	-14.07	-14.09	-14.11
.430	-14.13	-14.15	-14.16	-14.18	-14.20	-14.22	-14.24	-14.26	-14.27	-14.29
.432	-14.31	-14.33	-14.35	-14.37	-14.39	-14.41	-14.42	-14.44	-14.46	-14.48
.434	-14.50	-14.52	-14.54	-14.56	-14.58	-14.60	-14.62	-14.64	-14.66	-14.68
.436	-14.70	-14.71	-14.73	-14.75	-14.77	-14.79	-14.81	-14.83	-14.85	-14.87
.438	-14.89	-14.90	-14.92	-14.94	-14.96	-14.98	-15.00	-15.02	-15.04	-15.06
.440	-15.08	-15.10	-15.12	-15.14	-15.16	-15.18	-15.20	-15.22	-15.24	-15.25
.442	-15.27	-15.29	-15.31	-15.33	-15.35	-15.37	-15.39	-15.41	-15.43	-15.45
.444	-15.47	-15.48	-15.50	-15.52	-15.54	-15.56	-15.58	-15.60	-15.62	-15.64
.446	-15.66	-15.68	-15.70	-15.72	-15.74	-15.76	-15.78	-15.80	-15.82	-15.84
.448	-15.86	-15.88	-15.90	-15.92	-15.94	-15.96	-15.98	-16.00	-16.02	-16.04
.450	-16.06	-16.08	-16.10	-16.12	-16.14	-16.16	-16.18	-16.20	-16.22	-16.24
.452	-16.26	-16.28	-16.30	-16.32	-16.34	-16.36	-16.38	-16.40	-16.42	-16.44
.454	-16.47	-16.49	-16.51	-16.53	-16.55	-16.57	-16.59	-16.61	-16.63	-16.65
.456	-16.67	-16.68	-16.70	-16.72	-16.74	-16.76	-16.78	-16.80	-16.82	-16.84
.458	-16.86	-16.88	-16.90	-16.92	-16.94	-16.96	-16.98	-17.00	-17.02	-17.04
.460	-17.06	-17.08	-17.09	-17.11	-17.13	-17.15	-17.17	-17.19	-17.21	-17.23
.462	-17.25	-17.27	-17.29	-17.31	-17.33	-17.35	-17.36	-17.38	-17.40	-17.42
.464	-17.44	-17.46	-17.48	-17.50	-17.52	-17.54	-17.56	-17.58	-17.59	-17.61
.466	-17.63	-17.65	-17.67	-17.69	-17.71	-17.73	-17.75	-17.77	-17.78	-17.80
.468	-17.82	-17.84	-17.86	-17.88	-17.90	-17.92	-17.94	-17.96	-17.98	-18.00
.470	-18.01	-18.03	-18.05	-18.07	-18.09	-18.11	-18.13	-18.15	-18.17	-18.19
.472	-18.21	-18.22	-18.24	-18.26	-18.28	-18.30	-18.32	-18.34	-18.36	-18.38
.474	-18.40	-18.42	-18.44	-18.46	-18.48	-18.50	-18.52	-18.53	-18.55	-18.57
.476	-18.59	-18.61	-18.63	-18.65	-18.67	-18.69	-18.71	-18.73	-18.75	-18.77
.478	-18.79	-18.81	-18.83	-18.85	-18.87	-18.89	-18.91	-18.93	-18.95	-18.97
.480	-18.99	-19.01	-19.03	-19.05	-19.07	-19.09	-19.11	-19.13	-19.15	-19.17
.482	-19.19	-19.21	-19.22	-19.24	-19.26	-19.28	-19.30	-19.32	-19.34	-19.36
.484	-19.38	-19.40	-19.42	-19.44	-19.46	-19.48	-19.50	-19.52	-19.54	-19.56
.486	-19.58	-19.60	-19.62	-19.64	-19.66	-19.68	-19.70	-19.72	-19.74	-19.76
.488	-19.78	-19.80	-19.82	-19.84	-19.86	-19.88	-19.90	-19.92	-19.94	-19.96
.490	-19.98	-20.00	-20.02	-20.04	-20.06	-20.08	-20.10	-20.12	-20.14	-20.16
.492	-20.18	-20.20	-20.22	-20.24	-20.26	-20.28	-20.30	-20.32	-20.34	-20.36
.494	-20.38	-20.40	-20.42	-20.44	-20.46	-20.48	-20.50	-20.52	-20.54	-20.56
.496	-20.58	-20.60	-20.62	-20.64	-20.66	-20.68	-20.70	-20.72	-20.74	-20.76
.498	-20.78	-20.80	-20.82	-20.84	-20.86	-20.88	-20.90	-20.92	-20.94	-20.96

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

Computer plots of the event using the class 180 filter are shown in Figure 39 and for the class 60 filter in Figure 40. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

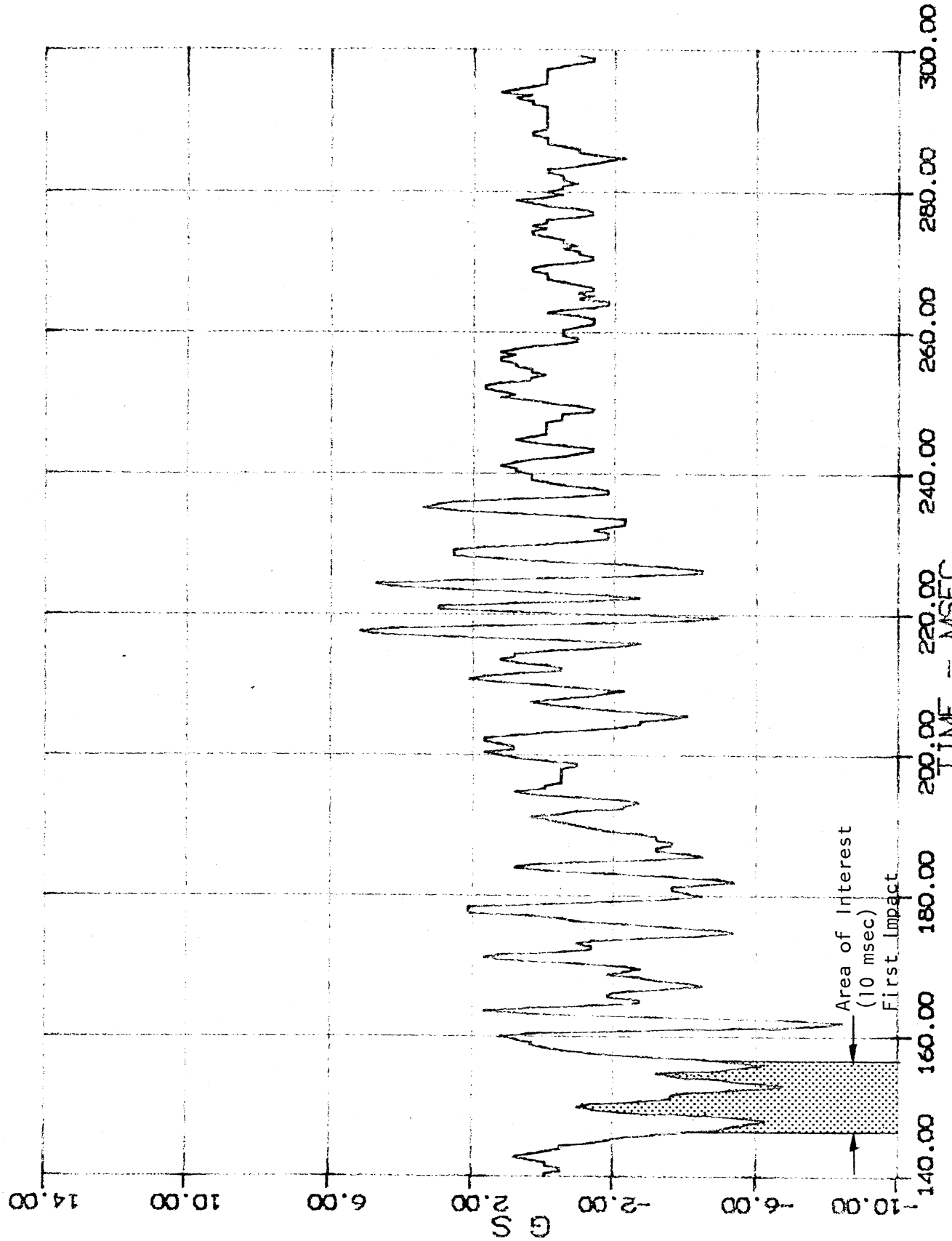


FIGURE 39 55 GALLON DRUM IMPACT, CLASS 180 FILTER

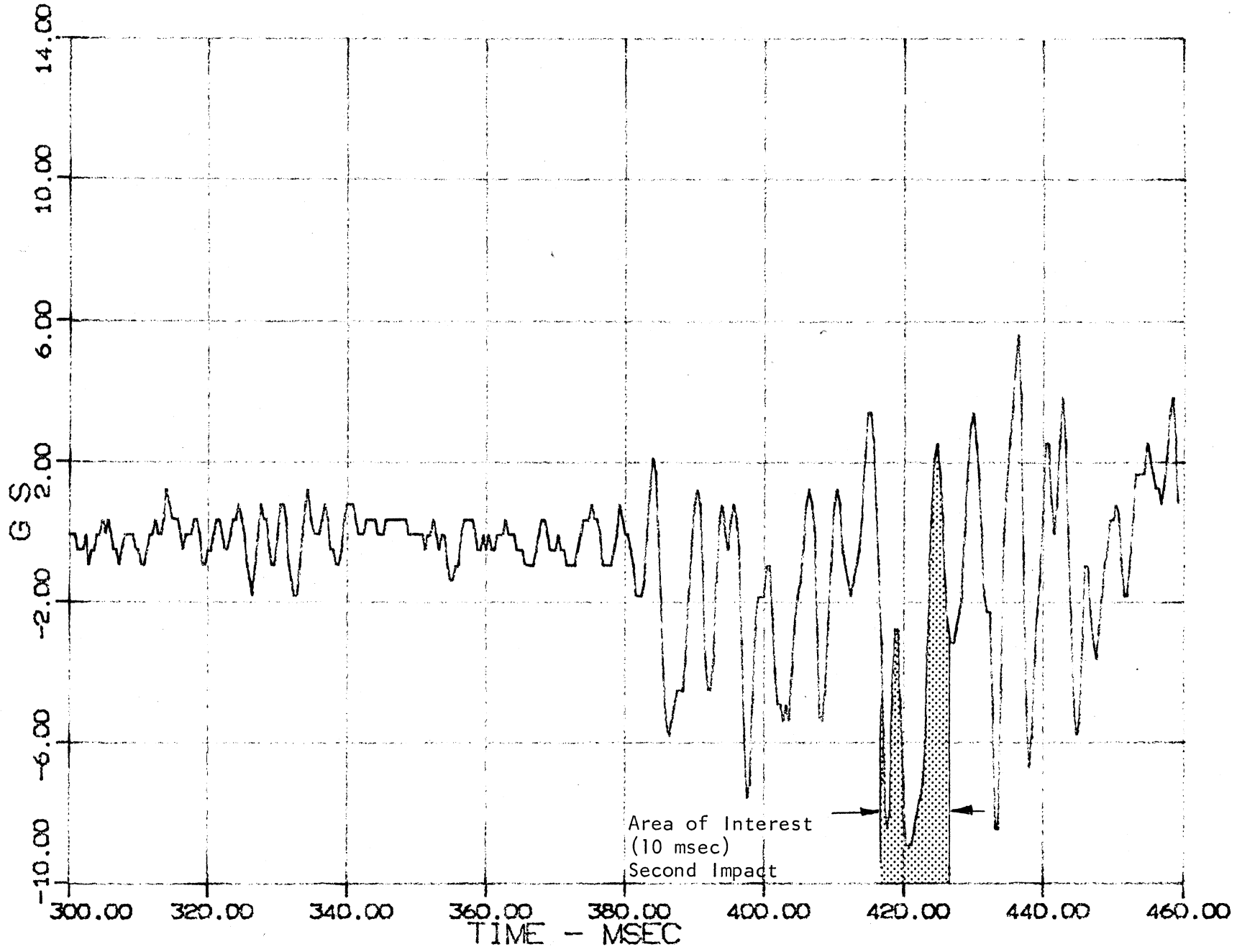


FIGURE 39 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 180 FILTER

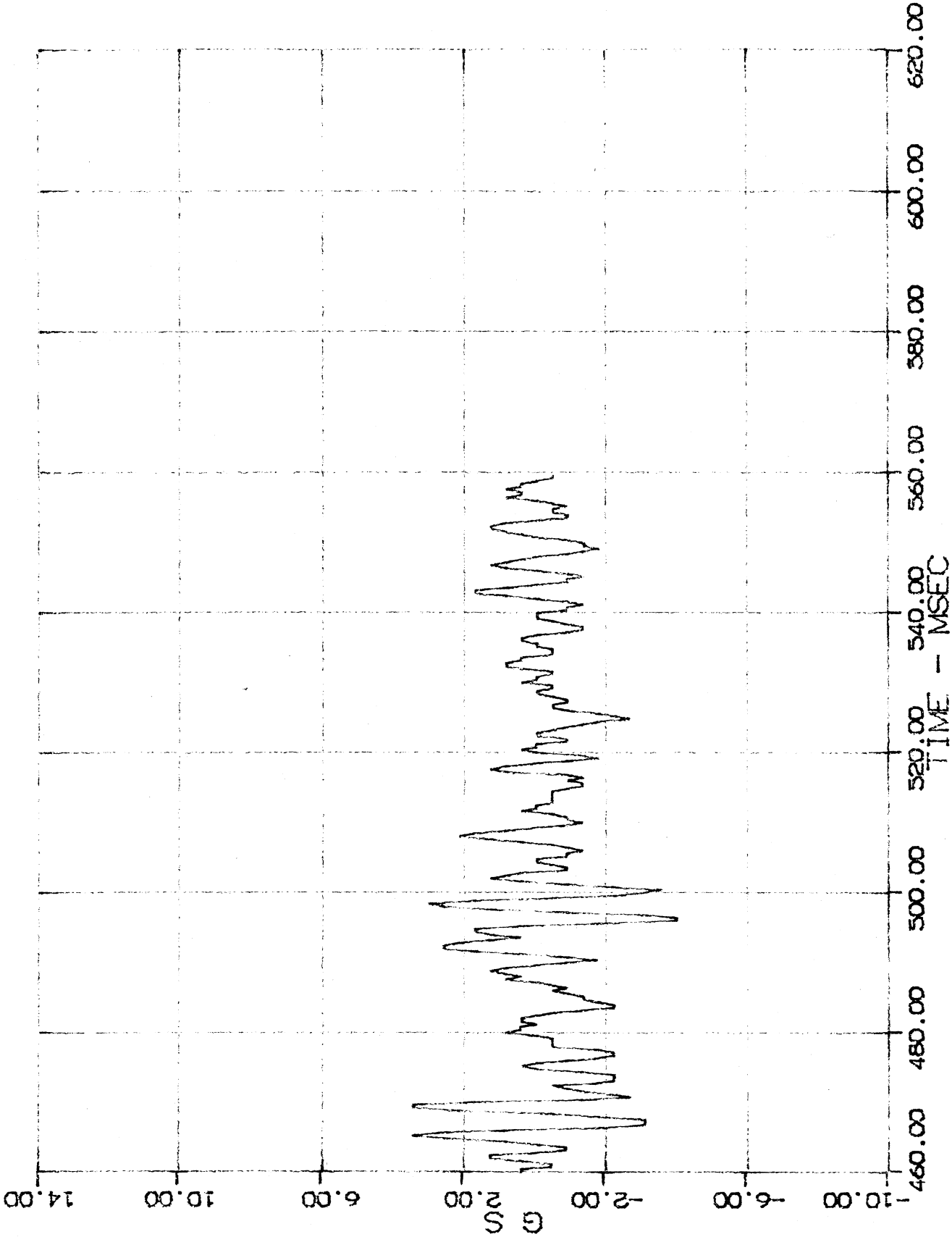


FIGURE 39 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 180 FILTER

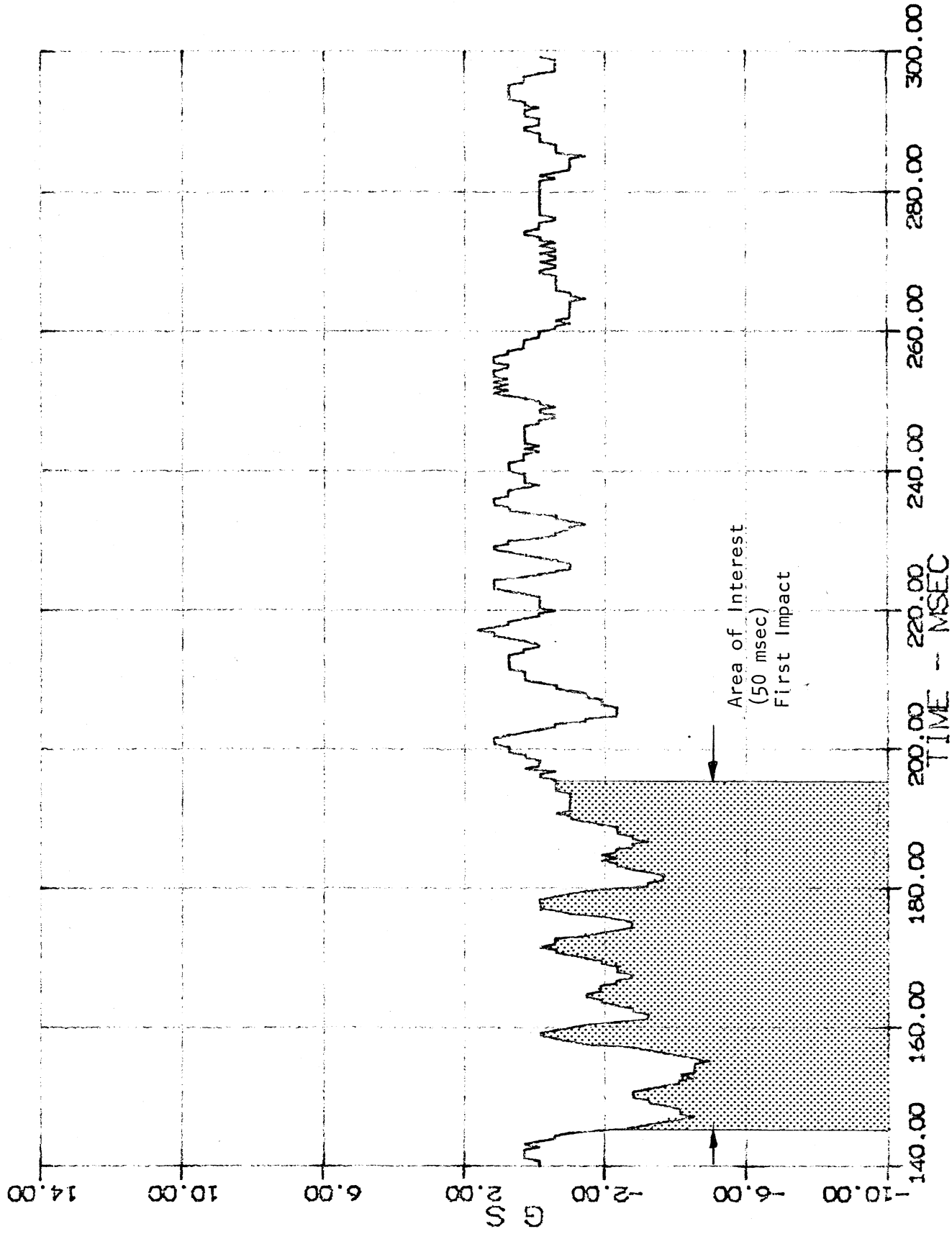


FIGURE 40 55 GALLON DRUM IMPACT, CLASS 60 FILTER

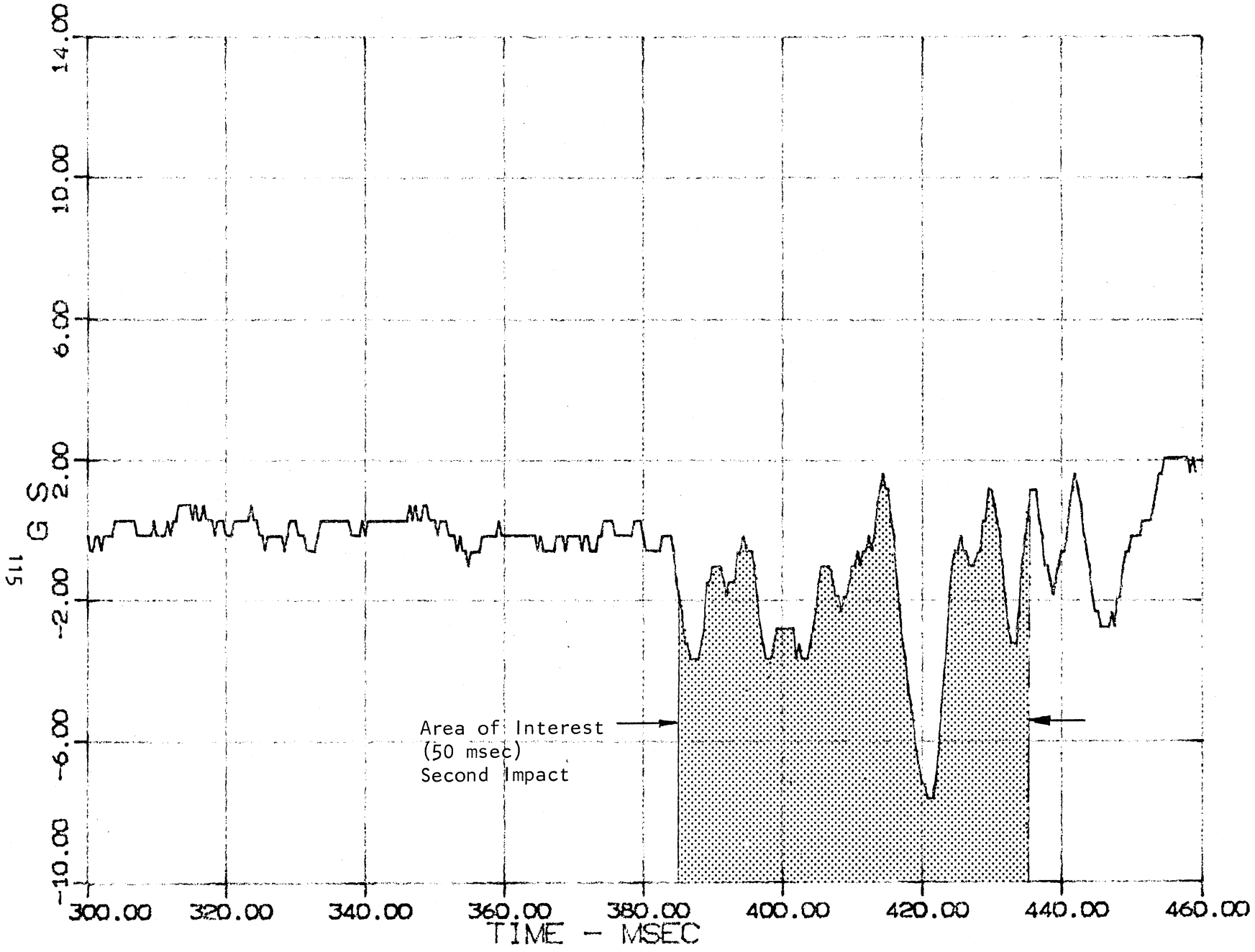


FIGURE 40 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 60 FILTER

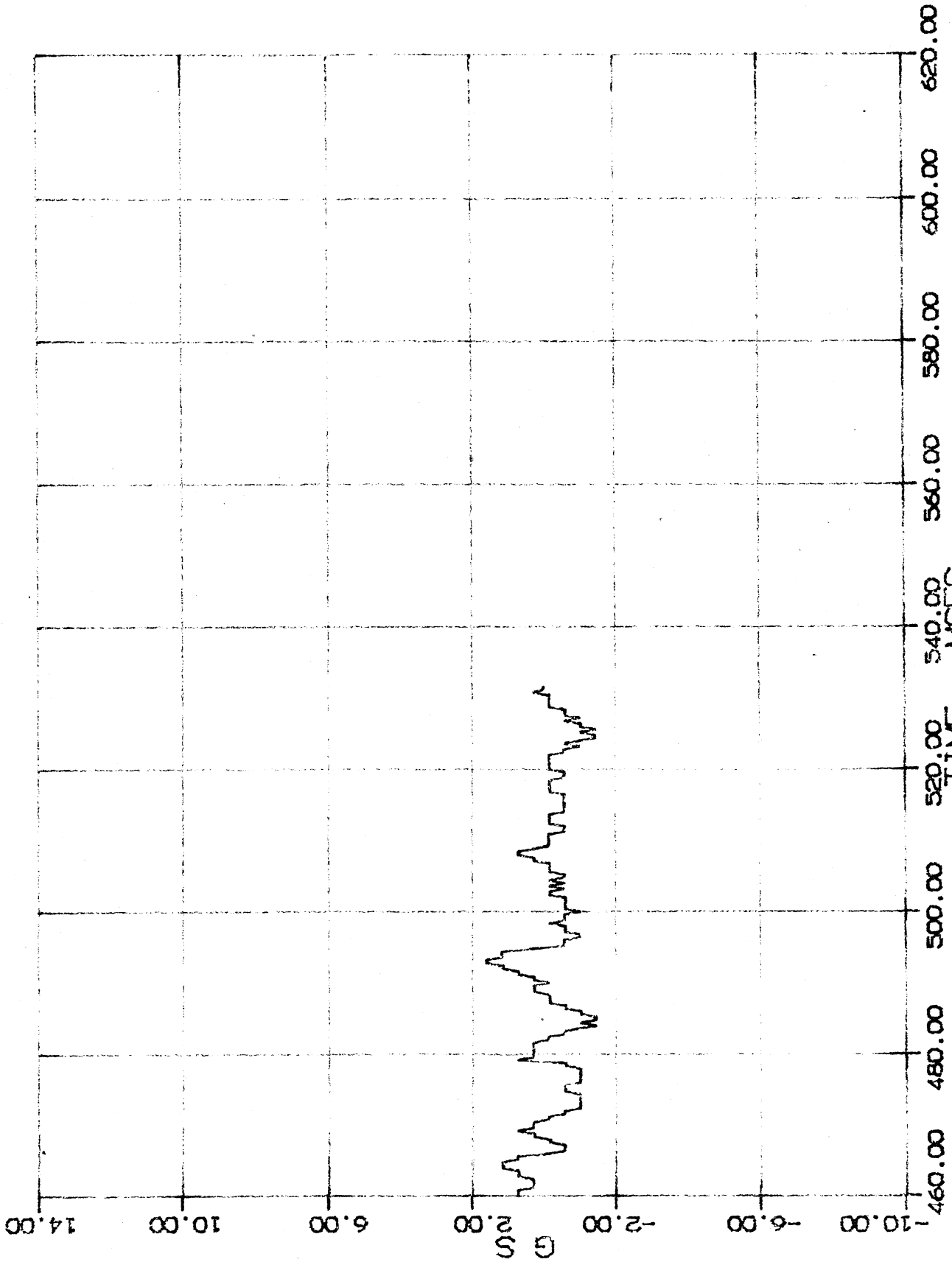


FIGURE 40 (CONT'D) 55 GALLON DRUM IMPACT, CLASS 60 FILTER

3.4 TEST CONDUCT - WYOMING WC-4 BARRICADE

The test article was a wooden barricade device manufactured to the specifications of the Wyoming Highway Department, Cheyenne, Wyoming, designated the Wyoming WC-4 Barricade.

A warning light was attached on the right end of the center panel outboard of the vertical support approximately 5 ft (15.24 mm) from ground level. This conforms with the Manual on Uniform Traffic Control Devices (MUTCD) requirements and also places the light in a location that is highly visible to the vehicle driver. It is also in a position to become a possible hazard to the vehicle occupants if knocked free at impact. The WC-4 Barricade was impacted by the quarter point of the bumper on the passenger side of the vehicle striking the right vertical support of the barricade.

One Wyoming WC-4 Barricade with one warning light attached was located on the test track without additional ballast and was not anchored to the test track.

The test was conducted on Wednesday August 11, 1982 at 4:00 p.m. at a speed of 60.3 mph (97 mph).

Pretest photographs are presented in Figures 41 and 42.

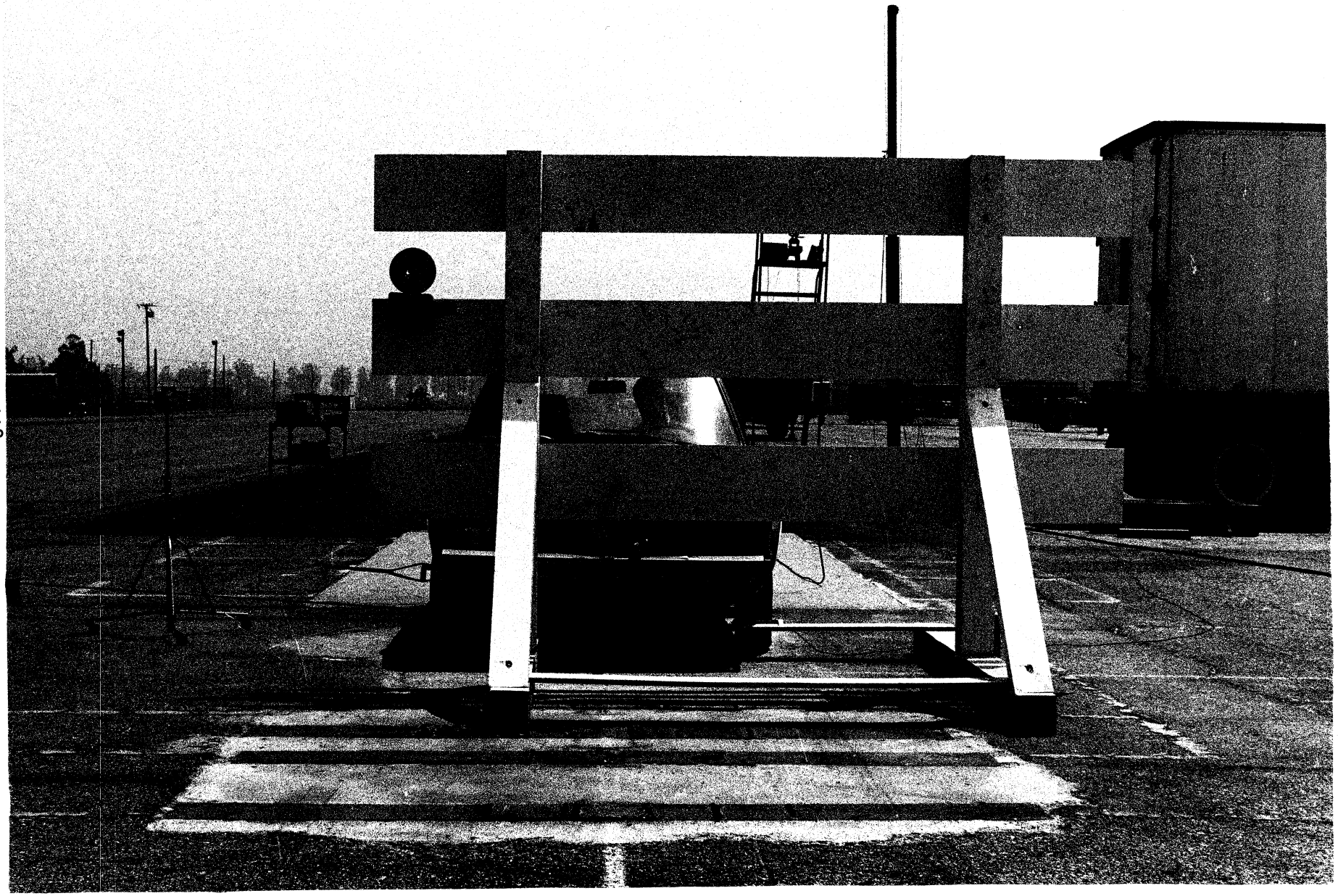


FIGURE 41 PRETEST – FRONT VIEW



FIGURE 42 PRETEST – SIDE VIEW

3.4.1 TEST RESULTS

The device was impacted such that the right vertical post and the right quarter point of the vehicle bumper were aligned. As with previous tests, this impact location was chosen to provide a realistic but "worst case" force application to the test vehicle. This impact was chosen to again maximize the possibility of vehicle yaw and roll. The barricade broke apart leaving the base members, left vertical support, and portions of the horizontal panels at the impact location. The right vertical support and pieces of the horizontal panels were carried approximately 20 ft down the test track and were deposited just to the right of the vehicle track with the warning light still attached in its original position on the end of the panel. In addition, the right vertical support did not separate at the breakaway holes that had been added near the base rather the base separated at its attachment points.

The vehicle damage was essentially cosmetic. The right parking light was broken out, the right leading edge of the hood was indented slightly and marked with paint. The left upper corner of the windshield was cracked by the top horizontal panel of the Wyoming WC-4 Barricade and the roof was paint marked along the full length of the left edge. Although in this test the loose debris caused only minor damage to the vehicle, a potential hazard exists to vehicle occupants and oncomming traffic. This is particularly true of the horizontal panel which still contained the warning light.

Posttest photographs are presented in Figure 43 and 44.

The Wyoming WC-4 Barricade was damaged beyond repair.

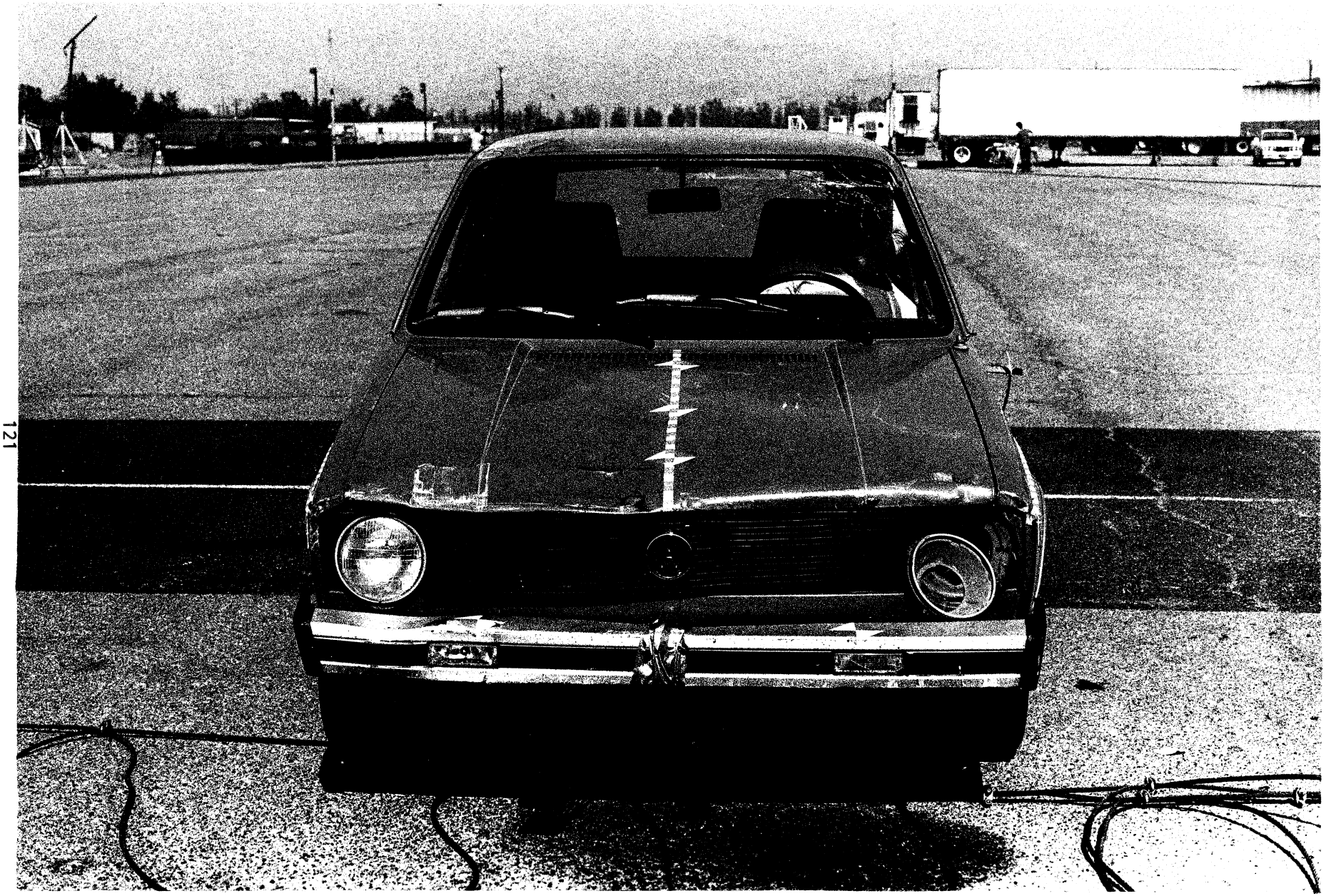


FIGURE 43 POSTTEST – FRONT

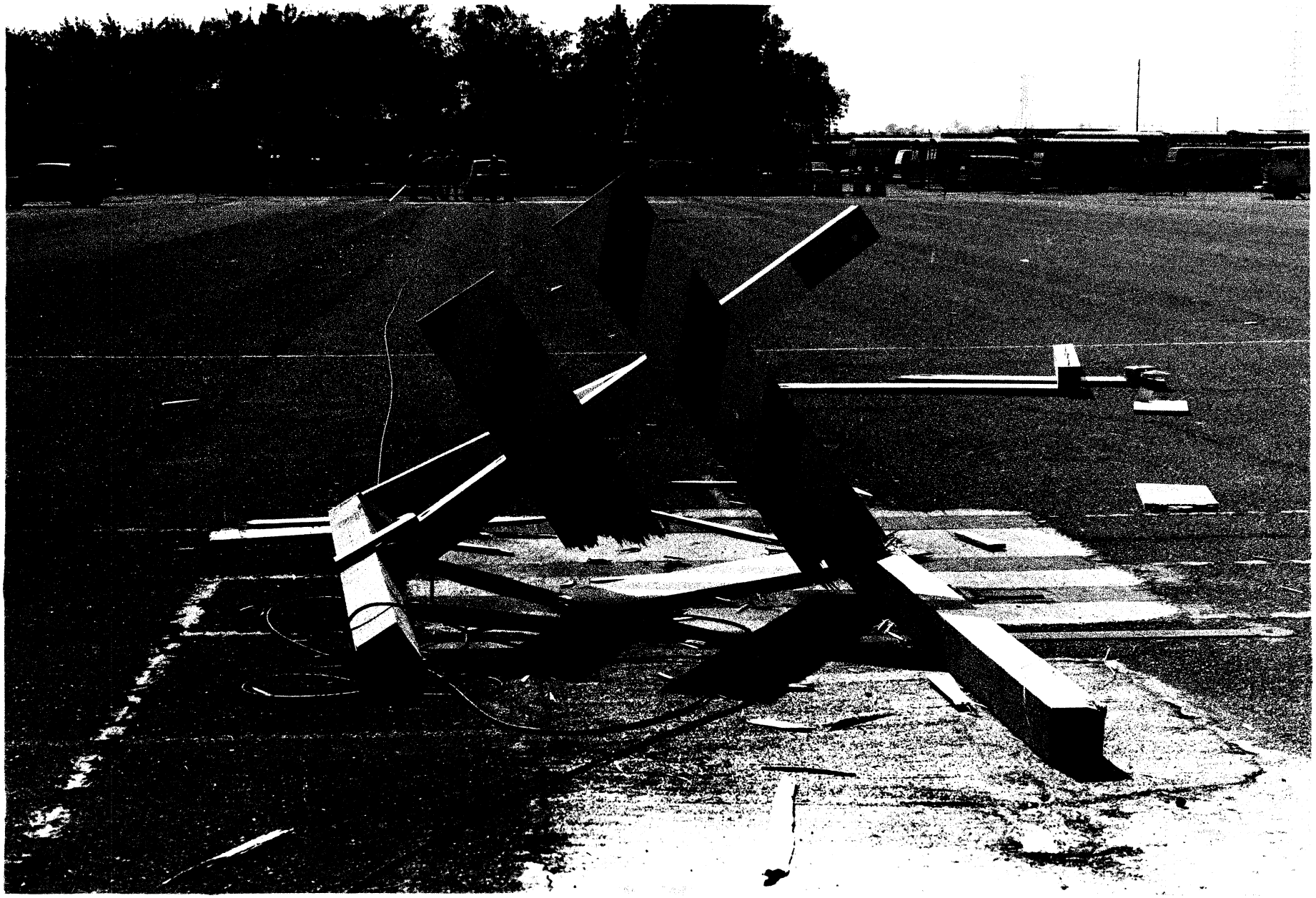


FIGURE 44 POSTTEST – BARRICADE

3.4.2 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 6.48 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this data, the highest 10 msec and highest 50 msec averages are presented in Table 16.

The occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breakaway/Yielding Supports - Signs and Luminaire.

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 17. Computer printouts of the first integral (occupant velocity) and the second integral (occupant displacement) are presented in Tables 18 and 19.

Computer plots of the event using the class 180 filter is shown in Figure 45 and the for class 60 filter in Figure 46. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

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(1) Flail space approach defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances"

TABLE 16 MOVING AVERAGE DATA WYOMING WC-4 BARRICADE

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact	6.1809 (1)	.0848 to.0948
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact	1.0115	.0676 to.1176
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 17 VEHICLE ACCELERATION DATA - WYOMING WC-4 BARRICADE

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.37	-.10	-.57	-.10	-.10	-.10	-.10	-.10	-.10	-.10
.062	-.57	-.57	-.57	-.57	-.57	-.10	-.10	-.10	.37	.37
.064	.37	.37	.37	.37	.37	.37	.37	.83	.37	.37
.066	.37	.37	-.10	-.10	-.10	-.10	-.10	-.10	-.57	-.10
.068	-.10	.37	.37	.37	.37	.37	.37	.37	.37	-.57
.070	.37	.37	-.10	-.57	-.10	-.57	-.57	-.10	-.10	-.10
.072	1.77	1.30	1.30	.83	.83	.37	.37	.37	.37	.37
.074	.37	.37	-.57	-.57	-1.03	-1.03	-1.03	-1.03	-1.50	-1.50
.076	-1.50	-1.50	-1.50	-.57	.37	.83	2.24	3.17	3.64	3.17
.078	3.17	2.24	1.30	-.10	-1.50	-2.44	-2.90	-2.90	-2.44	-1.97
.080	-1.03	-.57	-.10	-.10	-.10	-.10	.37	.37	.37	.83
.082	.37	.83	.37	-.57	-1.03	-2.44	-3.37	-3.84	-3.37	-2.44
.084	-1.03	.37	1.30	1.30	.83	.37	-1.50	-3.84	-6.17	-9.44
.086	-11.78	-14.12	-15.05	-15.52	-13.65	-10.38	-7.11	-4.77	-3.84	-5.24
.088	-8.51	-11.78	-14.58	-15.52	-14.58	-11.31	-8.04	-4.30	-1.97	-1.50
.090	-3.37	-5.24	-7.11	-8.98	-8.98	-8.51	-7.11	-4.77	-2.44	.37
.092	2.24	4.57	5.04	4.57	2.24	-1.50	-5.24	-8.04	-10.38	-11.31
.094	-10.38	-8.51	-5.24	-2.44	.37	2.24	4.10	5.97	6.91	8.31
.096	9.71	11.11	11.58	11.11	8.31	5.51	2.70	-.10	-2.44	-2.90
.098	-2.44	-1.50	.37	1.77	3.17	4.57	5.04	5.04	4.57	3.17
.100	1.77	.83	.37	.37	.83	2.24	4.10	5.04	5.97	5.97
.102	4.57	3.17	2.24	.83	.37	.37	.37	-.10	-1.03	-1.03
.104	-1.97	-2.44	-3.37	-3.84	-3.37	-2.90	-2.44	-1.97	-1.50	-1.03
.106	-.57	.83	1.30	2.24	3.17	3.17	2.24	.83	-.57	-1.50
.108	-1.97	-2.44	-1.97	-1.50	-.57	-.57	-1.03	-1.03	-1.50	-1.97
.110	-2.44	-2.44	-1.50	-1.50	-2.44	-2.90	-4.30	-5.24	-6.17	-6.64
.112	-6.64	-6.64	-6.17	-5.71	-6.17	-5.71	-5.71	-5.24	-4.30	-3.84
.114	-2.90	-2.44	-1.50	-1.97	-2.44	-2.90	-3.37	-3.37	-3.37	-2.44
.116	-1.97	-1.03	-.57	.37	1.30	2.24	2.70	3.64	4.57	4.57
.118	4.57	3.64	2.24	1.30	.37	-1.03	-1.50	-1.03	-.10	.83
.120	2.24	2.70	3.17	3.64	3.64	4.10	4.10	3.17	2.24	1.30
.122	-.57	-2.44	-4.77	-6.17	-6.64	-5.24	-3.84	-1.97	.37	2.24
.124	4.10	5.04	5.97	6.91	8.31	8.78	8.78	7.38	6.44	4.57
.126	3.17	.37	-1.97	-4.30	-5.24	-6.17	-5.24	-3.84	-1.50	.83
.128	2.70	3.64	4.10	3.64	2.70	1.77	.83	-1.03	-3.84	-5.71
.130	-8.04	-10.38	-12.25	-11.78	-10.38	-7.11	-3.37	1.30	5.04	8.31
.132	10.65	12.51	12.51	12.05	11.58	9.71	6.91	2.70	-2.44	-8.51
.134	-13.18	-16.92	-19.25	-20.19	-18.79	-16.45	-13.65	-9.91	-6.64	-3.84
.136	.37	3.17	6.91	8.31	8.31	6.91	4.10	1.77	-.10	-1.97
.138	-3.37	-3.84	-4.77	-4.77	-4.30	-3.37	-2.90	-1.50	-.57	-.10
.140	.37	.37	.37	-1.03	-2.44	-3.37	-4.30	-4.30	-4.77	-4.30
.142	-3.84	-1.97	-.57	1.30	3.17	4.57	5.97	6.44	6.44	5.51
.144	4.57	3.64	3.17	2.24	1.30	.83	.37	.37	1.30	2.24
.146	4.10	5.04	5.97	5.97	5.04	3.64	2.70	.83	-1.50	-2.90
.148	-5.71	-8.04	-9.91	-10.85	-11.78	-10.85	-10.38	-8.98	-7.11	-5.24
.150	-3.37	-2.44	-1.03	.83	2.24	3.64	5.04	5.51	5.97	5.04
.152	3.17	1.77	-.10	-1.50	-1.97	-1.50	-1.03	.37	.83	1.77
.154	2.24	1.77	1.30	.37	-1.50	-2.44	-3.37	-3.84	-3.84	-3.37
.156	-2.90	-2.44	-1.50	-1.03	-.57	-.10	.37	.37	.83	1.30
.158	1.77	1.77	1.77	1.30	.83	.37	.37	.37	-.57	.37
.160	1.30	2.24	3.64	4.10	4.10	3.17	2.24	1.30	.37	-.57
.162	-.57	-.57	.37	1.30	2.70	3.64	4.10	4.57	5.04	5.04
.164	4.57	4.10	3.64	2.24	.83	.37	-1.03	-2.44	-2.44	-1.97
.166	-1.50	-.57	1.30	2.24	2.70	2.70	2.70	2.24	1.77	1.30
.168	.37	-.10	-.57	-1.03	-1.50	-1.50	-1.50	-1.50	-1.03	-.57
.170	.37	1.30	2.24	3.64	4.10	4.10	3.64	2.70	1.77	.37
.172	-1.03	-1.50	-2.44	-2.44	-1.97	-1.97	-1.50	-1.03	-1.03	-1.03
.174	-.57	-.10	.37	.37	-.10	-.57	-.57	-1.50	-1.97	-1.97
.176	-1.97	-1.50	-1.03	-.10	.37	1.30	1.30	1.30	1.30	.83
.178	.37	-.10	.37	.37	-.10	-1.03	-1.50	-2.44	-1.97	-2.44
.180	-1.97	-1.50	-1.50	-1.50	-1.50	-1.50	-1.50	-1.03	-.57	-.57
.182	-.57	-.57	.37	-.10	.37	.37	.37	.37	.37	.37
.184	.37	.37	.37	.37	-.10	-.57	-1.03	-.57	.37	1.30
.186	2.24	2.24	2.70	2.24	1.77	.83	-.10	-1.03	-1.50	-1.50
.188	-1.50	-1.97	-1.97	-1.50	-1.50	-1.03	-1.03	-.10	.37	.37
.190	.83	.83	.83	.83	.37	.37	.37	-.57	-.57	-.57
.192	-.57	-.57	-.10	-.57	-1.03	-1.03	-1.03	-1.03	-1.03	-.57
.194	-.57	-.10	-.57	-.57	-.57	-.10	.37	.37	.37	.37
.196	.37	-.57	-.57	.37	-.10	-.10	-.57	-.57	-1.03	-1.03
.198	-1.50	-1.50	-1.03	-1.03	-1.03	-.57	.37	-.10	-.10	-.57

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 17 (CONT'D) VEHICLE ACCELERATION DATA – WYOMING WC–4 BARRICADE

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-1.03	-1.50	-1.50	-2.44	-1.50	-1.50	-1.03	-.57	-.10	.37
.202	.37	1.30	1.30	1.30	.83	.83	.37	.37	.37	.37
.204	.37	.37	.37	.37	.37	.83	1.30	1.77	1.77	2.24
.206	1.77	.83	.83	-.10	-.57	-.57	-1.50	-1.50	-1.03	-.57
.208	-.10	.37	1.30	1.77	2.70	3.17	3.64	3.17	2.70	2.24
.210	1.30	.37	-.57	-1.50	-2.90	-3.37	-4.30	-4.77	-5.24	-5.24
.212	-6.17	-6.17	-5.71	-5.71	-4.77	-3.84	-2.90	-1.50	-.10	1.30
.214	2.70	4.10	4.57	5.04	5.04	5.04	4.57	4.10	3.64	2.70
.216	1.30	.83	-.10	-1.03	-1.50	-1.97	-2.44	-2.44	-2.90	-3.84
.218	-3.84	-4.30	-5.24	-5.24	-6.17	-6.17	-6.17	-5.71	-5.24	-4.30
.220	-3.37	-1.97	-1.03	.37	1.30	2.24	2.70	3.17	3.17	3.17
.222	2.70	2.24	1.30	.83	-.10	-1.50	-1.97	-2.44	-2.90	-1.97
.224	-1.97	-1.50	-.57	.37	.37	.37	.37	.37	-.10	-.57
.226	-1.03	-1.03	-.57	-.57	.37	.37	.83	1.30	2.24	2.70
.228	3.17	3.64	3.64	3.64	3.17	3.17	2.70	2.24	2.24	1.30
.230	1.30	1.30	.83	.83	1.30	1.30	1.30	1.30	1.77	1.77
.232	1.77	1.77	.83	.37	.37	.37	-.10	.37	.37	-.10
.234	.37	.37	.37	.83	1.30	1.77	1.77	2.24	2.24	2.70
.236	2.24	2.70	2.70	2.24	2.24	1.30	1.30	.83	.37	.37
.238	-.10	-.57	-.57	-.57	-.57	-.57	-.57	-.57	-.10	-.57
.240	-.57	.37	.37	.37	.37	.37	.37	.37	.37	.37
.242	.83	.37	.37	.37	.37	.37	.37	.37	-.10	-.57
.244	-.57	-.57	-1.03	-1.50	-1.50	-1.50	-1.03	-1.50	-1.50	-1.03
.246	-1.03	-.57	-.57	-.57	-.57	-.57	-1.03	-.57	-1.03	-.57
.248	-1.03	-1.03	-.57	-.57	-.10	.37	.37	.83	.83	.37
.250	.37	.37	.37	-.10	-.10	-.57	-1.03	-1.50	-1.50	-1.50
.252	-1.03	-1.03	-.57	.37	.37	.83	1.30	1.30	1.30	1.77
.254	1.77	1.77	1.77	1.30	1.30	.83	.83	.37	.37	.37
.256	.83	.83	1.30	1.30	.83	.83	.83	.83	.37	.37
.258	.37	-.57	-.57	-1.03	-1.03	-.57	-.57	.37	.37	.37
.260	.83	1.30	1.30	1.77	1.77	1.30	1.77	1.30	.83	.37
.262	-.10	-.57	-.57	-.57	-.57	-.57	-.57	-.57	-.57	.37
.264	.37	.37	.37	.37	.37	-.10	-.57	-1.03	-1.03	-1.03
.266	-1.03	-.57	-1.03	-.57	-.57	-.57	-.10	-.10	.37	.37
.268	.37	.37	-.57	.37	-.57	-1.03	-.57	-1.03	-1.50	-1.50
.270	-1.50	-1.97	-1.97	-1.50	-1.50	-1.03	-.57	-.57	-.10	.37
.272	.37	.37	.83	.37	.37	.37	.83	-.10	-.57	-.10
.274	-.10	-.10	-.10	.37	.37	-.10	.37	.37	-.10	-.10
.276	-.57	-.57	-1.03	-1.03	-1.03	-1.50	-1.03	-.57	-.57	-.10
.278	-.10	.37	.83	.83	1.30	1.30	1.30	.83	.37	.37
.280	.37	.37	-.10	-.57	-.57	-1.03	-1.03	-1.03	-.10	-.10
.282	.37	.37	.37	.37	-.57	-.10	-.10	-.57	-.57	-.57
.284	-1.03	-1.03	-.57	-.57	-.57	-.10	-.57	.37	-.10	.37
.286	.37	.37	-.57	-.57	-.57	-1.03	-1.50	-1.03	-1.50	-1.03
.288	-1.03	-1.03	-.57	.37	.37	.37	.83	.83	.83	.83
.290	.37	.37	.37	-.10	-.10	-.10	-.57	.37	-.10	.37
.292	.83	.83	.83	1.30	1.30	1.30	.83	.83	.37	.37
.294	.37	.37	-.10	-.10	-.57	.37	.37	.37	.37	.37
.296	.37	.37	.37	.37	.37	.37	.37	-.10	-.57	-.57
.298	-.10	.37	.37	.37	.37	.37	.37	.37	.37	.37
.300	-.57	-.10	.37	.37	.83	.83	.83	1.30	1.30	1.30
.302	1.77	1.30	1.30	.37	-.10	-1.03	-.57	-.57	-.57	-.10
.304	-.57	-.57	-.57	-1.03	-1.03	-1.03	-.57	.37	1.30	2.70
.306	3.17	2.70	2.70	1.77	.83	.37	-.10	-.57	-.57	-.57
.308	-1.03	-1.50	-1.50	-1.97	-1.50	-1.03	-.10	.83	1.30	1.77
.310	1.77	1.77	1.30	.83	.37	.37	-.57	-1.50	-1.50	-2.44
.312	-2.44	-2.44	-1.03	-.57	.37	.83	1.30	2.24	2.24	2.24
.314	2.24	1.77	1.30	.37	-.57	-1.03	-1.50	-2.44	-3.37	-3.37
.316	-2.44	-1.97	-.57	.37	1.77	1.77	2.24	2.24	2.24	2.24
.318	2.24	1.77	1.30	.37	-.10	-1.03	-1.50	-1.50	-1.50	-1.03
.320	-.57	-.10	.37	.37	.37	.83	.83	.37	.83	.37
.322	-.10	-.10	-.57	-.57	-1.03	-1.03	-.57	-1.03	-.57	.37
.324	-.10	.83	.83	.83	.83	.83	.37	.37	-.10	-.57
.326	-.57	-.57	-.57	-.57	.37	.37	.37	.37	.37	.37
.328	.83	.83	.37	.37	-.57	-1.03	-1.03	-1.50	-1.03	-1.03
.330	-1.03	-1.03	-.57	-.57	.37	.37	.37	.37	.37	.37
.332	.37	.37	-.10	-.57	-1.03	-.57	-.57	-.57	-.57	-.57
.334	.37	.83	.83	.83	1.30	.83	.83	.37	.37	-.57
.336	-1.03	-1.03	-1.03	-1.03	-1.03	-.57	-.10	.37	.37	.83
.338	.83	1.30	1.30	.83	1.30	.37	.37	.37	.37	.37
.340	.37	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 18 OCCUPANT VELOCITY – WYOMING WC–4 BARRICADE

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.03	.02	-.02	-.03	-.04	-.05	-.05	-.06	-.07	-.08
.062	-.12	-.16	-.21	-.25	-.30	-.30	-.31	-.32	-.29	-.26
.064	-.23	-.21	-.18	-.15	-.12	-.09	-.06	.00	.03	.06
.066	.09	.11	.11	.10	.09	.08	.08	.07	.02	.02
.068	.01	.04	.06	.09	.12	.15	.18	.21	.23	.19
.070	.22	.25	.24	.20	.19	.14	.10	.09	.09	.08
.072	.21	.31	.42	.48	.54	.57	.60	.63	.66	.69
.074	.71	.74	.70	.65	.58	.50	.42	.34	.22	.10
.076	-.01	-.13	-.24	-.29	-.26	-.20	-.02	.22	.50	.75
.078	.99	1.17	1.27	1.26	1.14	.95	.73	.51	.32	.17
.080	.09	.04	.03	.03	.02	.01	.04	.07	.10	.16
.082	.19	.25	.28	.24	.16	-.03	-.29	-.59	-.85	-1.03
.084	-1.11	-1.09	-.99	-.89	-.82	-.79	-.91	-1.20	-1.68	-2.41
.086	-3.32	-4.41	-5.57	-6.77	-7.82	-8.62	-9.17	-9.54	-9.84	-10.24
.088	-10.90	-11.81	-12.93	-14.13	-15.26	-16.13	-16.75	-17.08	-17.24	-17.35
.090	-17.61	-18.02	-18.57	-19.26	-19.95	-20.61	-21.16	-21.53	-21.71	-21.69
.092	-21.51	-21.16	-20.77	-20.42	-20.25	-20.36	-20.77	-21.39	-22.19	-23.06
.094	-23.86	-24.52	-24.92	-25.11	-25.08	-24.91	-24.59	-24.13	-23.60	-22.96
.096	-22.21	-21.35	-20.46	-19.60	-18.96	-18.53	-18.32	-18.33	-18.52	-18.74
.098	-18.93	-19.05	-19.02	-18.88	-18.64	-18.28	-17.90	-17.51	-17.15	-16.91
.100	-16.77	-16.71	-16.68	-16.65	-16.59	-16.41	-16.10	-15.71	-15.25	-14.79
.102	-14.43	-14.19	-14.02	-13.95	-13.92	-13.89	-13.87	-13.87	-13.95	-14.03
.104	-14.19	-14.37	-14.63	-14.93	-15.19	-15.41	-15.60	-15.75	-15.87	-15.95
.106	-15.99	-15.93	-15.83	-15.66	-15.41	-15.17	-14.99	-14.93	-14.97	-15.09
.108	-15.24	-15.43	-15.58	-15.70	-15.74	-15.78	-15.86	-15.94	-16.06	-16.21
.110	-16.40	-16.59	-16.70	-16.82	-17.01	-17.23	-17.56	-17.97	-18.45	-18.96
.112	-19.47	-19.98	-20.46	-20.90	-21.38	-21.82	-22.26	-22.66	-23.00	-23.29
.114	-23.52	-23.70	-23.82	-23.97	-24.16	-24.38	-24.64	-24.90	-25.16	-25.35
.116	-25.50	-25.58	-25.63	-25.60	-25.50	-25.33	-25.12	-24.84	-24.48	-24.13
.118	-23.78	-23.50	-23.33	-23.22	-23.20	-23.28	-23.39	-23.47	-23.48	-23.42
.120	-23.24	-23.03	-22.79	-22.51	-22.23	-21.91	-21.59	-21.35	-21.18	-21.08
.122	-21.12	-21.31	-21.68	-22.15	-22.67	-23.07	-23.37	-23.52	-23.49	-23.32
.124	-23.00	-22.61	-22.15	-21.62	-20.98	-20.30	-19.62	-19.05	-18.55	-18.20
.126	-17.96	-17.93	-18.08	-18.41	-18.82	-19.29	-19.70	-19.99	-20.11	-20.05
.128	-19.84	-19.56	-19.24	-18.96	-18.75	-18.61	-18.55	-18.63	-18.92	-19.36
.130	-19.99	-20.79	-21.73	-22.64	-23.44	-23.99	-24.25	-24.15	-23.76	-23.12
.132	-22.30	-21.33	-20.37	-19.44	-18.54	-17.79	-17.26	-17.05	-17.24	-17.90
.134	-18.91	-20.22	-21.71	-23.27	-24.72	-25.99	-27.04	-27.80	-28.32	-28.61
.136	-28.58	-28.34	-27.81	-27.17	-26.52	-25.99	-25.67	-25.54	-25.54	-25.70
.138	-25.96	-26.25	-26.62	-26.99	-27.32	-27.58	-27.81	-27.92	-27.97	-27.97
.140	-27.95	-27.92	-27.89	-27.97	-28.16	-28.42	-28.75	-29.08	-29.45	-29.78
.142	-30.08	-30.23	-30.27	-30.17	-29.93	-29.58	-29.12	-28.62	-28.12	-27.70
.144	-27.34	-27.06	-26.82	-26.64	-26.54	-26.48	-26.45	-26.42	-26.32	-26.15
.146	-25.83	-25.44	-24.98	-24.52	-24.13	-23.85	-23.64	-23.58	-23.69	-23.92
.148	-24.36	-24.98	-25.75	-26.58	-27.49	-28.33	-29.13	-29.82	-30.37	-30.78
.150	-31.04	-31.22	-31.30	-31.24	-31.07	-30.79	-30.40	-29.97	-29.51	-29.12
.152	-28.88	-28.74	-28.75	-28.87	-29.02	-29.13	-29.21	-29.18	-29.12	-28.98
.154	-28.81	-28.67	-28.57	-28.55	-28.66	-28.85	-29.11	-29.41	-29.70	-29.96
.156	-30.19	-30.37	-30.49	-30.57	-30.61	-30.62	-30.59	-30.57	-30.50	-30.40
.158	-30.26	-30.13	-29.99	-29.89	-29.83	-29.80	-29.77	-29.74	-29.78	-29.76
.160	-29.66	-29.48	-29.20	-28.89	-28.57	-28.32	-28.15	-28.05	-28.02	-28.07
.162	-28.11	-28.15	-28.13	-28.02	-27.82	-27.54	-27.22	-26.87	-26.48	-26.09
.164	-25.73	-25.42	-25.14	-24.96	-24.90	-24.87	-24.95	-25.14	-25.33	-25.48
.166	-25.60	-25.64	-25.54	-25.37	-25.16	-24.95	-24.74	-24.57	-24.43	-24.33
.168	-24.30	-24.31	-24.35	-24.43	-24.55	-24.67	-24.78	-24.90	-24.98	-25.02
.170	-24.99	-24.89	-24.72	-24.44	-24.12	-23.80	-23.52	-23.32	-23.18	-23.15
.172	-23.23	-23.35	-23.53	-23.72	-23.87	-24.03	-24.14	-24.22	-24.30	-24.38
.174	-24.43	-24.43	-24.40	-24.38	-24.38	-24.43	-24.47	-24.59	-24.74	-24.89
.176	-25.04	-25.16	-25.24	-25.25	-25.22	-25.12	-25.02	-24.92	-24.82	-24.75
.178	-24.72	-24.73	-24.70	-24.67	-24.68	-24.76	-24.88	-25.07	-25.22	-25.41
.180	-25.56	-25.67	-25.79	-25.91	-26.02	-26.14	-26.25	-26.33	-26.38	-26.42
.182	-26.47	-26.51	-26.48	-26.49	-26.46	-26.43	-26.40	-26.38	-26.35	-26.32
.184	-26.29	-26.26	-26.23	-26.20	-26.21	-26.26	-26.34	-26.38	-26.35	-26.25
.186	-26.08	-25.91	-25.70	-25.52	-25.39	-25.32	-25.33	-25.41	-25.53	-25.64
.188	-25.76	-25.91	-26.06	-26.18	-26.29	-26.37	-26.45	-26.46	-26.43	-26.41
.190	-26.34	-26.28	-26.21	-26.15	-26.12	-26.09	-26.06	-26.11	-26.15	-26.19
.192	-26.24	-26.28	-26.29	-26.33	-26.41	-26.49	-26.57	-26.65	-26.73	-26.78
.194	-26.82	-26.83	-26.87	-26.92	-26.96	-26.97	-26.94	-26.91	-26.88	-26.85
.196	-26.83	-26.87	-26.91	-26.88	-26.89	-26.90	-26.94	-26.99	-27.07	-27.15
.198	-27.26	-27.38	-27.46	-27.54	-27.62	-27.66	-27.63	-27.64	-27.65	-27.69

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 18 (CONT'D) OCCUPANT VELOCITY – WYOMING WC-4 BARRICADE

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-27.77	-27.89	-28.01	-28.19	-28.31	-28.42	-28.50	-28.55	-28.56	-28.53
.202	-28.50	-28.40	-28.30	-28.20	-28.13	-28.07	-28.04	-28.01	-27.98	-27.96
.204	-27.93	-27.90	-27.87	-27.84	-27.81	-27.75	-27.65	-27.51	-27.38	-27.20
.206	-27.07	-27.00	-26.94	-26.95	-26.99	-27.03	-27.15	-27.27	-27.35	-27.39
.208	-27.40	-27.37	-27.27	-27.13	-26.92	-26.68	-26.40	-26.15	-25.94	-25.77
.210	-25.67	-25.64	-25.69	-25.80	-26.03	-26.29	-26.62	-26.99	-27.39	-27.80
.212	-28.27	-28.75	-29.19	-29.63	-30.00	-30.29	-30.52	-30.63	-30.64	-30.54
.214	-30.33	-30.02	-29.66	-29.27	-28.89	-28.50	-28.14	-27.83	-27.55	-27.34
.216	-27.24	-27.17	-27.18	-27.26	-27.38	-27.53	-27.72	-27.90	-28.13	-28.42
.218	-28.72	-29.05	-29.46	-29.86	-30.34	-30.81	-31.29	-31.73	-32.14	-32.47
.220	-32.73	-32.88	-32.96	-32.93	-32.83	-32.66	-32.45	-32.21	-31.96	-31.72
.222	-31.51	-31.34	-31.23	-31.17	-31.18	-31.29	-31.45	-31.63	-31.86	-32.01
.224	-32.16	-32.28	-32.32	-32.29	-32.27	-32.24	-32.21	-32.18	-32.19	-32.23
.226	-32.31	-32.39	-32.44	-32.48	-32.45	-32.42	-32.36	-32.26	-32.08	-31.88
.228	-31.63	-31.35	-31.07	-30.79	-30.54	-30.30	-30.09	-29.92	-29.75	-29.64
.230	-29.54	-29.44	-29.38	-29.32	-29.21	-29.11	-29.01	-28.91	-28.78	-28.64
.232	-28.50	-28.37	-28.30	-28.27	-28.25	-28.22	-28.23	-28.20	-28.17	-28.18
.234	-28.15	-28.12	-28.09	-28.03	-27.93	-27.79	-27.65	-27.48	-27.31	-27.16
.236	-26.93	-26.72	-26.51	-26.34	-26.16	-26.06	-25.96	-25.90	-25.87	-25.84
.238	-25.85	-25.89	-25.94	-25.98	-26.02	-26.07	-26.11	-26.16	-26.16	-26.21
.240	-26.25	-26.22	-26.19	-26.17	-26.14	-26.11	-26.08	-26.05	-26.02	-26.00
.242	-25.93	-25.90	-25.88	-25.85	-25.82	-25.79	-25.76	-25.73	-25.74	-25.79
.244	-25.83	-25.87	-25.95	-26.07	-26.18	-26.30	-26.38	-26.50	-26.61	-26.69
.246	-26.77	-26.82	-26.86	-26.90	-26.95	-26.99	-27.07	-27.11	-27.19	-27.24
.248	-27.32	-27.40	-27.44	-27.49	-27.49	-27.46	-27.44	-27.37	-27.31	-27.28
.250	-27.25	-27.22	-27.19	-27.20	-27.21	-27.25	-27.33	-27.45	-27.56	-27.68
.252	-27.76	-27.84	-27.88	-27.86	-27.83	-27.76	-27.66	-27.56	-27.46	-27.33
.254	-27.19	-27.05	-26.92	-26.82	-26.71	-26.65	-26.59	-26.56	-26.53	-26.50
.256	-26.44	-26.37	-26.27	-26.17	-26.11	-26.04	-25.98	-25.91	-25.88	-25.86
.258	-25.83	-25.87	-25.92	-26.00	-26.08	-26.12	-26.16	-26.13	-26.11	-26.08
.260	-26.01	-25.91	-25.81	-25.68	-25.54	-25.44	-25.30	-25.20	-25.14	-25.11
.262	-25.12	-25.16	-25.20	-25.25	-25.29	-25.34	-25.38	-25.42	-25.47	-25.44
.264	-25.41	-25.38	-25.35	-25.33	-25.30	-25.31	-25.35	-25.43	-25.51	-25.59
.266	-25.67	-25.71	-25.79	-25.84	-25.88	-25.92	-25.93	-25.94	-25.91	-25.88
.268	-25.85	-25.83	-25.87	-25.84	-25.88	-25.96	-26.01	-26.09	-26.20	-26.32
.270	-26.44	-26.59	-26.74	-26.86	-26.97	-27.05	-27.10	-27.14	-27.15	-27.12
.272	-27.09	-27.06	-27.00	-26.97	-26.94	-26.91	-26.85	-26.86	-26.90	-26.91
.274	-26.91	-26.92	-26.93	-26.90	-26.87	-26.88	-26.85	-26.82	-26.83	-26.84
.276	-26.88	-26.93	-27.01	-27.09	-27.17	-27.28	-27.36	-27.41	-27.45	-27.46
.278	-27.47	-27.44	-27.37	-27.31	-27.21	-27.11	-27.01	-26.94	-26.91	-26.89
.280	-26.86	-26.83	-26.84	-26.88	-26.92	-27.00	-27.08	-27.16	-27.17	-27.18
.282	-27.15	-27.12	-27.09	-27.07	-27.11	-27.12	-27.13	-27.17	-27.21	-27.26
.284	-27.34	-27.42	-27.46	-27.50	-27.55	-27.56	-27.60	-27.57	-27.58	-27.55
.286	-27.52	-27.49	-27.54	-27.58	-27.63	-27.71	-27.82	-27.90	-28.02	-28.10
.288	-28.18	-28.26	-28.30	-28.27	-28.24	-28.22	-28.15	-28.09	-28.02	-27.96
.290	-27.93	-27.90	-27.87	-27.88	-27.89	-27.90	-27.94	-27.91	-27.92	-27.89
.292	-27.83	-27.76	-27.70	-27.60	-27.50	-27.40	-27.33	-27.27	-27.24	-27.21
.294	-27.18	-27.15	-27.16	-27.17	-27.21	-27.18	-27.16	-27.13	-27.10	-27.07
.296	-27.04	-27.01	-26.99	-26.96	-26.93	-26.90	-26.91	-26.95	-27.00	-27.04
.298	-27.05	-27.02	-26.99	-26.96	-26.93	-26.91	-26.88	-26.85	-26.82	-26.79
.300	-26.84	-26.84	-26.82	-26.79	-26.72	-26.66	-26.59	-26.49	-26.39	-26.29
.302	-26.16	-26.06	-25.96	-25.93	-25.93	-26.01	-26.06	-26.10	-26.15	-26.15
.304	-26.20	-26.24	-26.28	-26.36	-26.44	-26.52	-26.57	-26.54	-26.44	-26.23
.306	-25.99	-25.78	-25.57	-25.43	-25.37	-25.34	-25.35	-25.39	-25.43	-25.48
.308	-25.56	-25.67	-25.79	-25.94	-26.06	-26.14	-26.15	-26.08	-25.98	-25.84
.310	-25.71	-25.57	-25.47	-25.41	-25.38	-25.35	-25.39	-25.51	-25.63	-25.81
.312	-26.00	-26.19	-26.27	-26.31	-26.28	-26.22	-26.12	-25.95	-25.77	-25.60
.314	-25.43	-25.29	-25.19	-25.16	-25.21	-25.29	-25.40	-25.59	-25.85	-26.11
.316	-26.30	-26.45	-26.50	-26.47	-26.33	-26.19	-26.02	-25.85	-25.68	-25.50
.318	-25.33	-25.19	-25.09	-25.07	-25.07	-25.15	-25.27	-25.39	-25.50	-25.58
.320	-25.62	-25.63	-25.60	-25.58	-25.55	-25.48	-25.42	-25.39	-25.33	-25.30
.322	-25.31	-25.31	-25.36	-25.40	-25.48	-25.56	-25.60	-25.68	-25.73	-25.70
.324	-25.71	-25.64	-25.58	-25.51	-25.45	-25.38	-25.36	-25.33	-25.34	-25.38
.326	-25.42	-25.47	-25.51	-25.55	-25.53	-25.50	-25.47	-25.44	-25.41	-25.38
.328	-25.32	-25.26	-25.23	-25.20	-25.24	-25.32	-25.40	-25.52	-25.60	-25.68
.330	-25.76	-25.84	-25.88	-25.93	-25.90	-25.87	-25.84	-25.81	-25.78	-25.76
.332	-25.73	-25.70	-25.71	-25.75	-25.83	-25.87	-25.92	-25.96	-26.01	-26.05
.334	-26.02	-25.96	-25.89	-25.83	-25.73	-25.66	-25.60	-25.57	-25.54	-25.59
.336	-25.67	-25.75	-25.82	-25.90	-25.98	-26.03	-26.04	-26.01	-25.98	-25.92
.338	-25.85	-25.75	-25.65	-25.59	-25.48	-25.46	-25.43	-25.40	-25.37	-25.34
.340	-25.31	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 19 OCCUPANT DISPLACEMENT – WYOMING WC–4 BARRICADE

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.00	.0*	.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.062	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.064	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.066	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.068	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.070	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.072	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.074	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.076	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.078	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.080	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.082	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.084	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.086	.00	-.0*	-.00	-.00	-.00	-.01	-.01	-.01	-.01	-.01
.088	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.04	-.04	-.04
.090	-.05	-.05	-.05	-.06	-.06	-.07	-.07	-.08	-.08	-.08
.092	-.09	-.09	-.10	-.10	-.10	-.11	-.11	-.12	-.12	-.13
.094	-.13	-.14	-.14	-.15	-.15	-.16	-.16	-.17	-.17	-.17
.096	-.18	-.18	-.19	-.19	-.20	-.20	-.20	-.21	-.21	-.21
.098	-.22	-.22	-.23	-.23	-.23	-.24	-.24	-.24	-.25	-.25
.100	-.25	-.26	-.26	-.26	-.27	-.27	-.27	-.28	-.28	-.28
.102	-.29	-.29	-.29	-.29	-.30	-.30	-.30	-.31	-.31	-.31
.104	-.31	-.32	-.32	-.32	-.33	-.33	-.33	-.33	-.34	-.34
.106	-.34	-.35	-.35	-.35	-.36	-.36	-.36	-.37	-.37	-.37
.108	-.38	-.38	-.38	-.38	-.39	-.39	-.39	-.40	-.40	-.40
.110	-.41	-.41	-.41	-.42	-.42	-.42	-.43	-.43	-.43	-.44
.112	-.44	-.45	-.45	-.45	-.46	-.46	-.47	-.47	-.48	-.48
.114	-.49	-.49	-.50	-.50	-.51	-.51	-.51	-.52	-.52	-.53
.116	-.54	-.54	-.55	-.55	-.56	-.56	-.57	-.57	-.58	-.58
.118	-.59	-.59	-.59	-.60	-.60	-.61	-.61	-.62	-.62	-.63
.120	-.63	-.64	-.64	-.65	-.65	-.65	-.66	-.66	-.67	-.67
.122	-.68	-.68	-.68	-.69	-.69	-.70	-.70	-.71	-.71	-.72
.124	-.72	-.73	-.73	-.73	-.74	-.74	-.75	-.75	-.75	-.76
.126	-.76	-.76	-.77	-.77	-.78	-.78	-.78	-.79	-.79	-.80
.128	-.80	-.80	-.81	-.81	-.81	-.82	-.82	-.83	-.83	-.83
.130	-.84	-.84	-.85	-.85	-.86	-.86	-.87	-.87	-.87	-.88
.132	-.88	-.89	-.89	-.90	-.90	-.90	-.91	-.91	-.91	-.92
.134	-.92	-.93	-.93	-.93	-.94	-.94	-.95	-.96	-.96	-.97
.136	-.97	-.98	-.98	-.99	-.99	-1.00	-1.00	-1.01	-1.01	-1.02
.138	-1.03	-1.03	-1.04	-1.04	-1.05	-1.05	-1.06	-1.06	-1.07	-1.07
.140	-1.08	-1.09	-1.09	-1.10	-1.10	-1.11	-1.11	-1.12	-1.13	-1.13
.142	-1.14	-1.14	-1.15	-1.16	-1.16	-1.17	-1.17	-1.18	-1.18	-1.19
.144	-1.20	-1.20	-1.21	-1.21	-1.22	-1.22	-1.23	-1.23	-1.24	-1.24
.146	-1.25	-1.25	-1.26	-1.26	-1.27	-1.27	-1.28	-1.28	-1.29	-1.29
.148	-1.30	-1.30	-1.31	-1.31	-1.32	-1.32	-1.33	-1.34	-1.34	-1.35
.150	-1.35	-1.36	-1.37	-1.37	-1.38	-1.39	-1.39	-1.40	-1.40	-1.41
.152	-1.41	-1.42	-1.43	-1.43	-1.44	-1.44	-1.45	-1.46	-1.46	-1.47
.154	-1.47	-1.48	-1.48	-1.49	-1.50	-1.50	-1.51	-1.51	-1.52	-1.52
.156	-1.53	-1.54	-1.54	-1.55	-1.56	-1.56	-1.57	-1.57	-1.58	-1.59
.158	-1.59	-1.60	-1.60	-1.61	-1.62	-1.62	-1.63	-1.63	-1.64	-1.65
.160	-1.65	-1.66	-1.66	-1.67	-1.67	-1.68	-1.69	-1.69	-1.70	-1.70
.162	-1.71	-1.71	-1.72	-1.73	-1.73	-1.74	-1.74	-1.75	-1.75	-1.76
.164	-1.76	-1.77	-1.77	-1.78	-1.78	-1.79	-1.79	-1.80	-1.80	-1.81
.166	-1.81	-1.82	-1.82	-1.83	-1.83	-1.84	-1.84	-1.85	-1.85	-1.86
.168	-1.86	-1.87	-1.87	-1.88	-1.88	-1.89	-1.89	-1.90	-1.90	-1.91
.170	-1.91	-1.92	-1.92	-1.93	-1.93	-1.94	-1.94	-1.95	-1.95	-1.96
.172	-1.96	-1.96	-1.97	-1.97	-1.98	-1.98	-1.99	-1.99	-2.00	-2.00
.174	-2.01	-2.01	-2.02	-2.02	-2.03	-2.03	-2.04	-2.04	-2.05	-2.05
.176	-2.06	-2.06	-2.07	-2.07	-2.08	-2.08	-2.09	-2.09	-2.10	-2.10
.178	-2.11	-2.11	-2.12	-2.12	-2.13	-2.13	-2.14	-2.14	-2.15	-2.15
.180	-2.16	-2.16	-2.17	-2.17	-2.18	-2.18	-2.19	-2.19	-2.20	-2.20
.182	-2.21	-2.21	-2.22	-2.23	-2.23	-2.24	-2.24	-2.25	-2.25	-2.26
.184	-2.26	-2.27	-2.27	-2.28	-2.28	-2.29	-2.29	-2.30	-2.30	-2.31
.186	-2.31	-2.32	-2.33	-2.33	-2.34	-2.34	-2.35	-2.35	-2.36	-2.36
.188	-2.37	-2.37	-2.38	-2.38	-2.39	-2.39	-2.40	-2.40	-2.41	-2.41
.190	-2.42	-2.42	-2.43	-2.43	-2.44	-2.44	-2.45	-2.46	-2.46	-2.47
.192	-2.47	-2.48	-2.48	-2.49	-2.49	-2.50	-2.50	-2.51	-2.51	-2.52
.194	-2.52	-2.53	-2.53	-2.54	-2.55	-2.55	-2.56	-2.56	-2.57	-2.57
.196	-2.58	-2.58	-2.59	-2.59	-2.60	-2.60	-2.61	-2.62	-2.62	-2.63
.198	-2.63	-2.64	-2.64	-2.65	-2.65	-2.66	-2.66	-2.67	-2.68	-2.68

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 19 (CONT'D) OCCUPANT DISPLACEMENT – WYOMING WC-4 BARRICADE

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-2.69	-2.69	-2.70	-2.70	-2.71	-2.72	-2.72	-2.73	-2.73	-2.74
.202	-2.74	-2.75	-2.76	-2.76	-2.77	-2.77	-2.78	-2.78	-2.79	-2.79
.204	-2.80	-2.81	-2.81	-2.82	-2.82	-2.83	-2.83	-2.84	-2.84	-2.85
.206	-2.86	-2.86	-2.87	-2.87	-2.88	-2.88	-2.89	-2.89	-2.90	-2.90
.208	-2.91	-2.91	-2.92	-2.93	-2.93	-2.94	-2.94	-2.95	-2.95	-2.96
.210	-2.96	-2.97	-2.97	-2.98	-2.98	-2.99	-2.99	-3.00	-3.00	-3.01
.212	-3.02	-3.02	-3.03	-3.03	-3.04	-3.05	-3.05	-3.06	-3.06	-3.07
.214	-3.08	-3.08	-3.09	-3.09	-3.10	-3.11	-3.11	-3.12	-3.12	-3.13
.216	-3.13	-3.14	-3.14	-3.15	-3.15	-3.16	-3.17	-3.17	-3.18	-3.18
.218	-3.19	-3.19	-3.20	-3.21	-3.21	-3.22	-3.22	-3.23	-3.24	-3.24
.220	-3.25	-3.26	-3.26	-3.27	-3.28	-3.28	-3.29	-3.30	-3.30	-3.31
.222	-3.32	-3.32	-3.33	-3.33	-3.34	-3.35	-3.35	-3.36	-3.37	-3.37
.224	-3.38	-3.38	-3.39	-3.40	-3.40	-3.41	-3.42	-3.42	-3.43	-3.44
.226	-3.44	-3.45	-3.46	-3.46	-3.47	-3.48	-3.48	-3.49	-3.49	-3.50
.228	-3.51	-3.51	-3.52	-3.53	-3.53	-3.54	-3.54	-3.55	-3.56	-3.56
.230	-3.57	-3.57	-3.58	-3.59	-3.59	-3.60	-3.60	-3.61	-3.61	-3.62
.232	-3.63	-3.63	-3.64	-3.64	-3.65	-3.65	-3.66	-3.67	-3.67	-3.68
.234	-3.68	-3.69	-3.69	-3.70	-3.70	-3.71	-3.72	-3.72	-3.73	-3.73
.236	-3.74	-3.74	-3.75	-3.75	-3.76	-3.76	-3.77	-3.77	-3.78	-3.78
.238	-3.79	-3.79	-3.80	-3.81	-3.81	-3.82	-3.82	-3.83	-3.83	-3.84
.240	-3.84	-3.85	-3.85	-3.86	-3.86	-3.87	-3.87	-3.88	-3.88	-3.89
.242	-3.89	-3.90	-3.90	-3.91	-3.91	-3.92	-3.93	-3.93	-3.94	-3.94
.244	-3.95	-3.95	-3.96	-3.96	-3.97	-3.97	-3.98	-3.98	-3.99	-3.99
.246	-4.00	-4.00	-4.01	-4.01	-4.02	-4.03	-4.03	-4.04	-4.04	-4.05
.248	-4.05	-4.06	-4.06	-4.07	-4.07	-4.08	-4.09	-4.09	-4.10	-4.10
.250	-4.11	-4.11	-4.12	-4.12	-4.13	-4.13	-4.14	-4.15	-4.15	-4.16
.252	-4.16	-4.17	-4.17	-4.18	-4.18	-4.19	-4.20	-4.20	-4.21	-4.21
.254	-4.22	-4.22	-4.23	-4.23	-4.24	-4.24	-4.25	-4.25	-4.26	-4.27
.256	-4.27	-4.28	-4.28	-4.29	-4.29	-4.30	-4.30	-4.31	-4.31	-4.32
.258	-4.32	-4.33	-4.33	-4.34	-4.34	-4.35	-4.35	-4.36	-4.36	-4.37
.260	-4.37	-4.38	-4.39	-4.39	-4.40	-4.40	-4.41	-4.41	-4.42	-4.42
.262	-4.43	-4.43	-4.44	-4.44	-4.45	-4.45	-4.46	-4.46	-4.47	-4.47
.264	-4.48	-4.48	-4.49	-4.49	-4.50	-4.50	-4.51	-4.51	-4.52	-4.52
.266	-4.53	-4.53	-4.54	-4.54	-4.55	-4.55	-4.56	-4.56	-4.57	-4.57
.268	-4.58	-4.58	-4.59	-4.59	-4.60	-4.60	-4.61	-4.62	-4.62	-4.63
.270	-4.63	-4.64	-4.64	-4.65	-4.65	-4.66	-4.66	-4.67	-4.67	-4.68
.272	-4.68	-4.69	-4.70	-4.70	-4.71	-4.71	-4.72	-4.72	-4.73	-4.73
.274	-4.74	-4.74	-4.75	-4.75	-4.76	-4.77	-4.77	-4.78	-4.78	-4.79
.276	-4.79	-4.80	-4.80	-4.81	-4.81	-4.82	-4.83	-4.83	-4.84	-4.84
.278	-4.85	-4.85	-4.86	-4.86	-4.87	-4.87	-4.88	-4.89	-4.89	-4.90
.280	-4.90	-4.91	-4.91	-4.92	-4.92	-4.93	-4.93	-4.94	-4.94	-4.95
.282	-4.96	-4.96	-4.97	-4.97	-4.98	-4.98	-4.99	-4.99	-5.00	-5.00
.284	-5.01	-5.02	-5.02	-5.03	-5.03	-5.04	-5.04	-5.05	-5.05	-5.06
.286	-5.06	-5.07	-5.08	-5.08	-5.09	-5.09	-5.10	-5.10	-5.11	-5.11
.288	-5.12	-5.13	-5.13	-5.14	-5.14	-5.15	-5.15	-5.16	-5.17	-5.17
.290	-5.18	-5.18	-5.19	-5.19	-5.20	-5.20	-5.21	-5.22	-5.22	-5.23
.292	-5.23	-5.24	-5.24	-5.25	-5.25	-5.26	-5.27	-5.27	-5.28	-5.28
.294	-5.29	-5.29	-5.30	-5.30	-5.31	-5.31	-5.32	-5.33	-5.33	-5.34
.296	-5.34	-5.35	-5.35	-5.36	-5.36	-5.37	-5.37	-5.38	-5.38	-5.39
.298	-5.40	-5.40	-5.41	-5.41	-5.42	-5.42	-5.43	-5.43	-5.44	-5.44
.300	-5.45	-5.45	-5.46	-5.47	-5.47	-5.48	-5.48	-5.49	-5.49	-5.50
.302	-5.50	-5.51	-5.51	-5.52	-5.52	-5.53	-5.53	-5.54	-5.54	-5.55
.304	-5.55	-5.56	-5.56	-5.57	-5.58	-5.58	-5.59	-5.59	-5.60	-5.60
.306	-5.61	-5.61	-5.62	-5.62	-5.63	-5.63	-5.64	-5.64	-5.65	-5.65
.308	-5.66	-5.66	-5.67	-5.67	-5.68	-5.68	-5.69	-5.69	-5.70	-5.70
.310	-5.71	-5.72	-5.72	-5.73	-5.73	-5.74	-5.74	-5.75	-5.75	-5.76
.312	-5.76	-5.77	-5.77	-5.78	-5.78	-5.79	-5.79	-5.80	-5.80	-5.81
.314	-5.81	-5.82	-5.82	-5.83	-5.83	-5.84	-5.84	-5.85	-5.85	-5.86
.316	-5.86	-5.87	-5.87	-5.88	-5.89	-5.89	-5.90	-5.90	-5.91	-5.91
.318	-5.92	-5.92	-5.93	-5.93	-5.94	-5.94	-5.95	-5.95	-5.96	-5.96
.320	-5.97	-5.97	-5.98	-5.98	-5.99	-5.99	-6.00	-6.00	-6.01	-6.01
.322	-6.02	-6.02	-6.03	-6.03	-6.04	-6.04	-6.05	-6.05	-6.06	-6.06
.324	-6.07	-6.07	-6.08	-6.08	-6.09	-6.09	-6.10	-6.10	-6.11	-6.11
.326	-6.12	-6.12	-6.13	-6.14	-6.14	-6.15	-6.15	-6.16	-6.16	-6.17
.328	-6.17	-6.18	-6.18	-6.19	-6.19	-6.20	-6.20	-6.21	-6.21	-6.22
.330	-6.22	-6.23	-6.23	-6.24	-6.24	-6.25	-6.25	-6.26	-6.26	-6.27
.332	-6.27	-6.28	-6.28	-6.29	-6.29	-6.30	-6.30	-6.31	-6.31	-6.32
.334	-6.32	-6.33	-6.34	-6.34	-6.35	-6.35	-6.36	-6.36	-6.37	-6.37
.336	-6.38	-6.38	-6.39	-6.39	-6.40	-6.40	-6.41	-6.41	-6.42	-6.42
.338	-6.43	-6.43	-6.44	-6.44	-6.45	-6.45	-6.46	-6.46	-6.47	-6.47
.340	-6.48	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

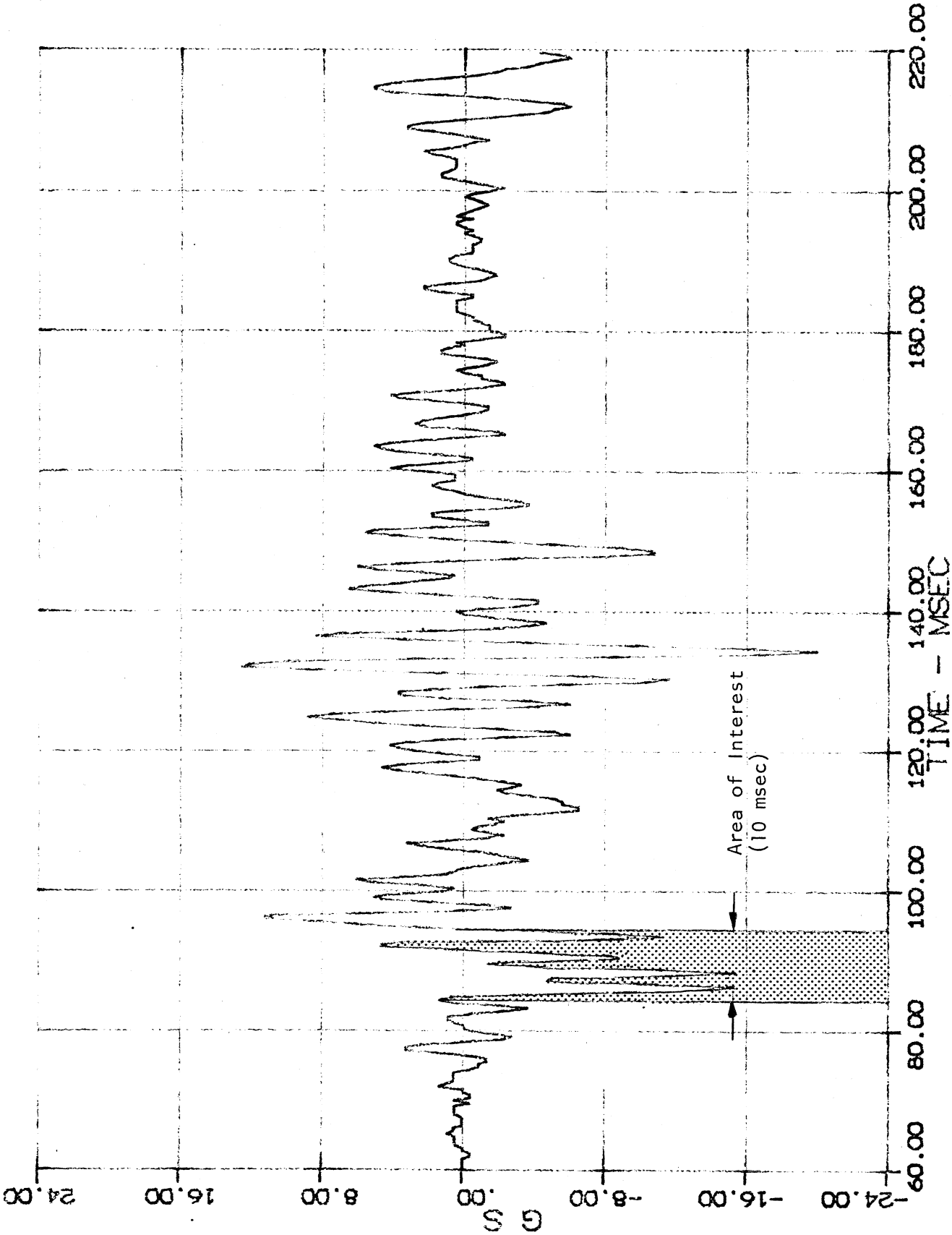


FIGURE 45 WYOMING WC-4 BARRICADE IMPACT, CLASS 180 FILTER

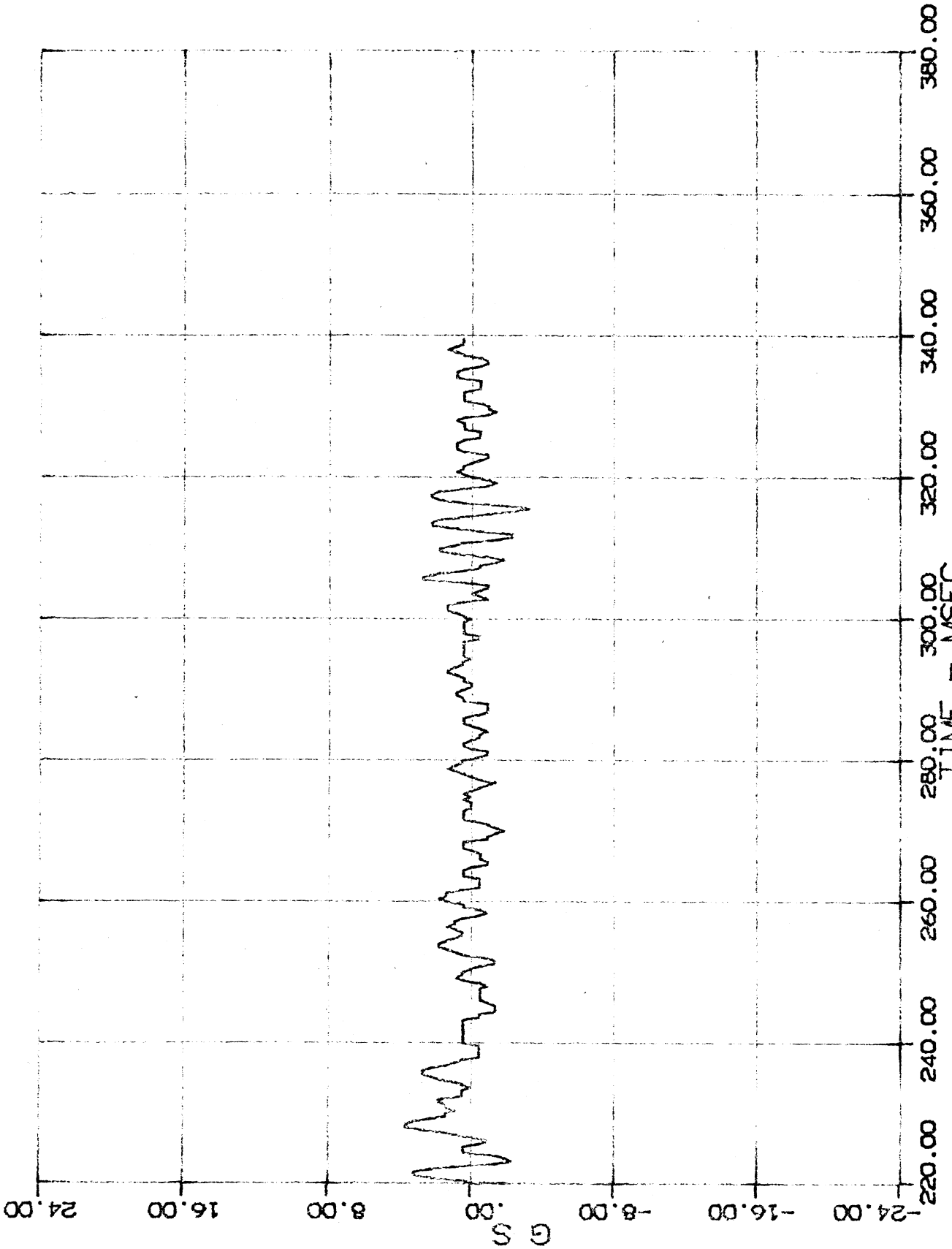


FIGURE 45 (CONT'D) WYOMING WC-4 BARRICADE IMPACT, CLASS 180 FILTER

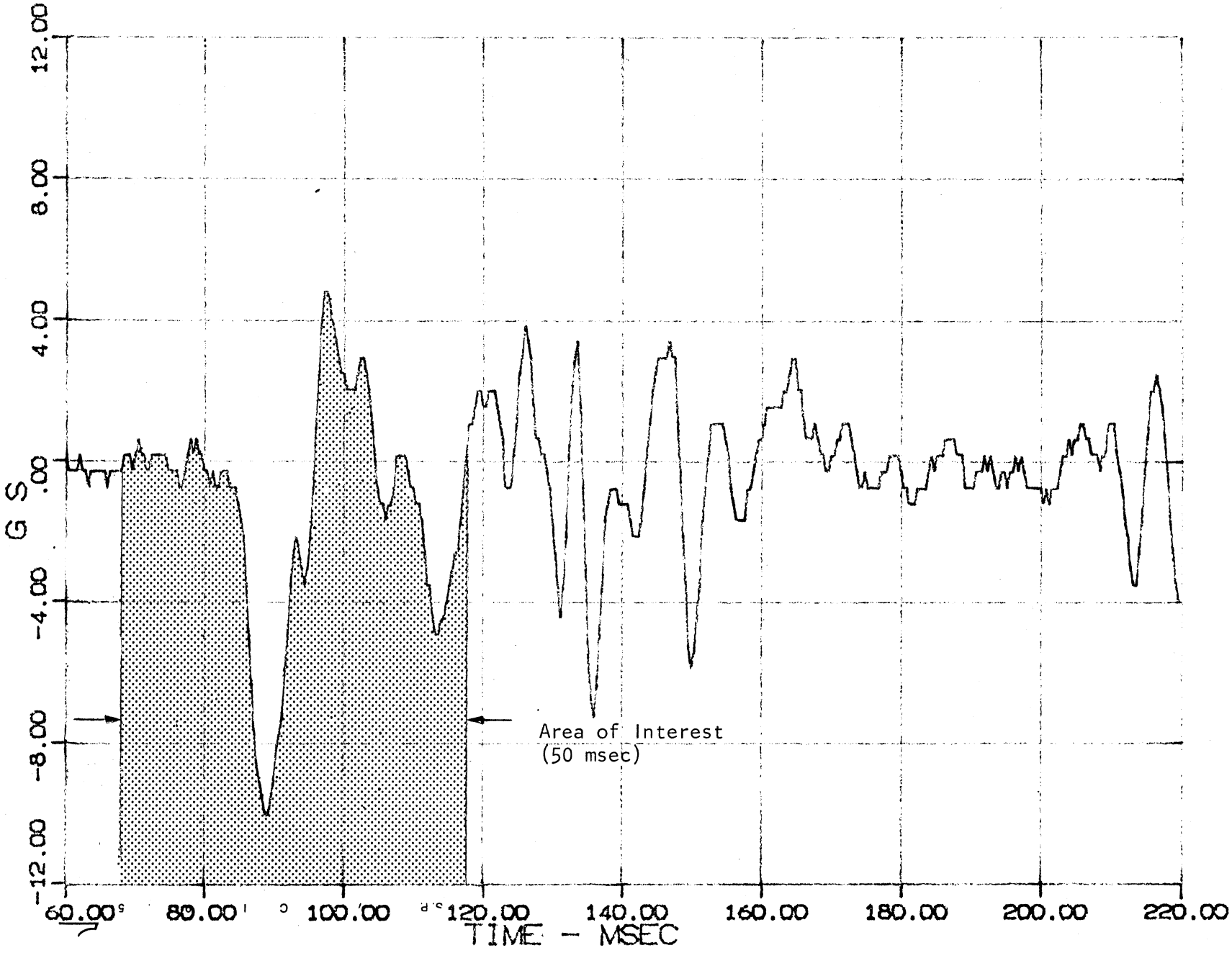


FIGURE 46 WYOMING WC-4 BARRICADE IMPACT, CLASS 60 FILTER

3.4 TEST CONDUCT - WYOMING WC-4 BARRICADE

The test article was a wooden barricade device manufactured to the specifications of the Wyoming Highway Department, Cheyenne, Wyoming, designated the Wyoming WC-4 Barricade.

A warning light was attached on the right end of the center panel outboard of the vertical support approximately 5 ft (15.24 mm) from ground level. This conforms with the Manual on Uniform Traffic Control Devices (MUTCD) requirements and also places the light in a location that is highly visible to the vehicle driver. It is also in a position to become a possible hazard to the vehicle occupants if knocked free at impact. The WC-4 Barricade was impacted by the quarter point of the bumper on the passenger side of the vehicle striking the right vertical support of the barricade.

One Wyoming WC-4 Barricade with one warning light attached was located on the test track without additional ballast and was not anchored to the test track.

The test was conducted on Wednesday August 11, 1982 at 4:00 p.m. at a speed of 60.3 mph (97 mph).

Pretest photographs are presented in Figures 41 and 42.

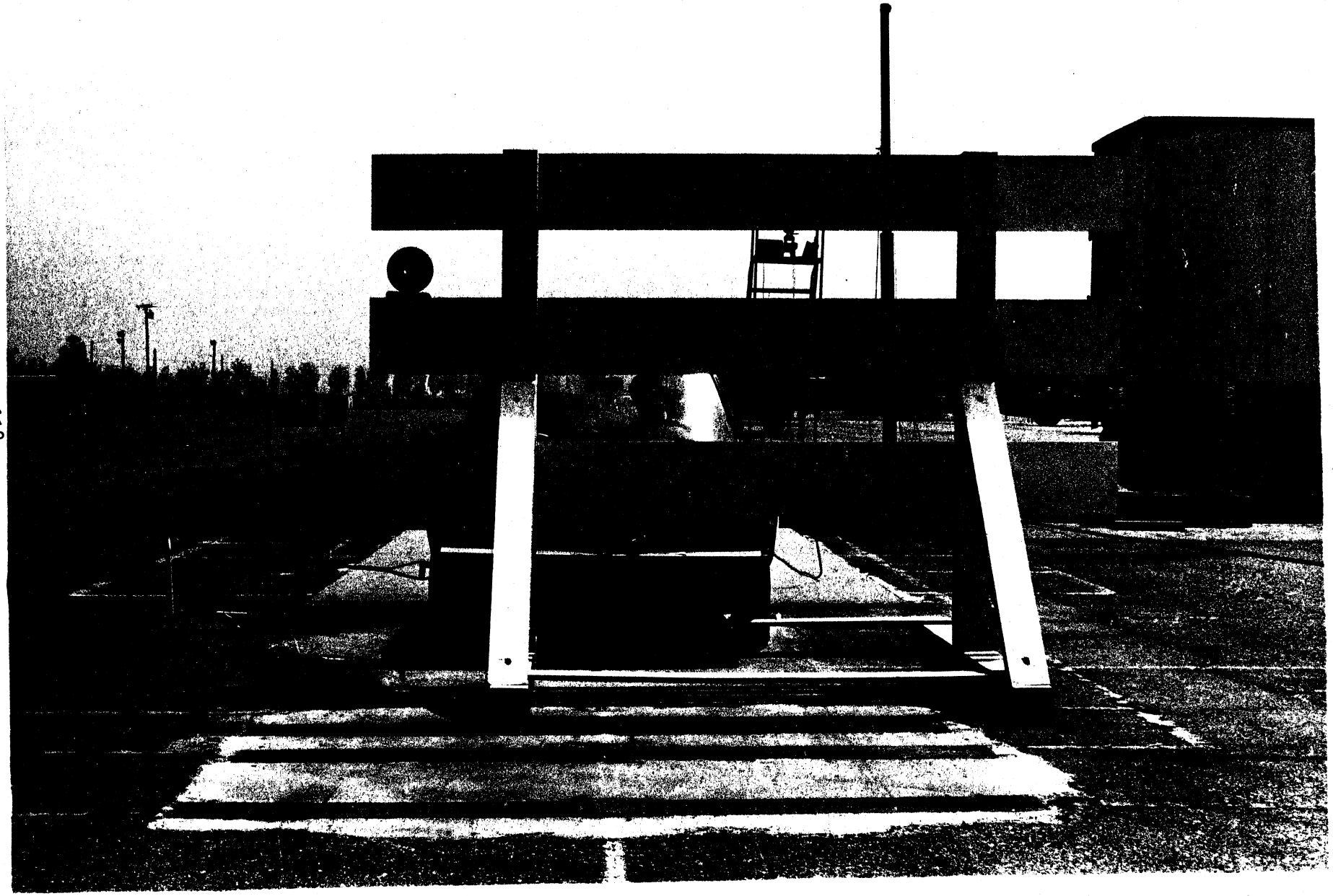


FIGURE 41 PRETEST – FRONT VIEW



FIGURE 42 PRETEST – SIDE VIEW

3.4.1 TEST RESULTS

The device was impacted such that the right vertical post and the right quarter point of the vehicle bumper were aligned. As with previous tests, this impact location was chosen to provide a realistic but "worst case" force application to the test vehicle. This impact was chosen to again maximize the possibility of vehicle yaw and roll. The barricade broke apart leaving the base members, left vertical support, and portions of the horizontal panels at the impact location. The right vertical support and pieces of the horizontal panels were carried approximately 20 ft down the test track and were deposited just to the right of the vehicle track with the warning light still attached in its original position on the end of the panel. In addition, the right vertical support did not separate at the breakaway holes that had been added near the base rather the base separated at its attachment points.

The vehicle damage was essentially cosmetic. The right parking light was broken out, the right leading edge of the hood was indented slightly and marked with paint. The left upper corner of the windshield was cracked by the top horizontal panel of the Wyoming WC-4 Barricade and the roof was paint marked along the full length of the left edge. Although in this test the loose debris caused only minor damage to the vehicle, a potential hazard exists to vehicle occupants and oncomming traffic. This is particularly true of the horizontal panel which still contained the warning light.

Posttest photographs are presented in Figure 43 and 44.

The Wyoming WC-4 Barricade was damaged beyond repair.



FIGURE 43 POSTTEST – FRONT

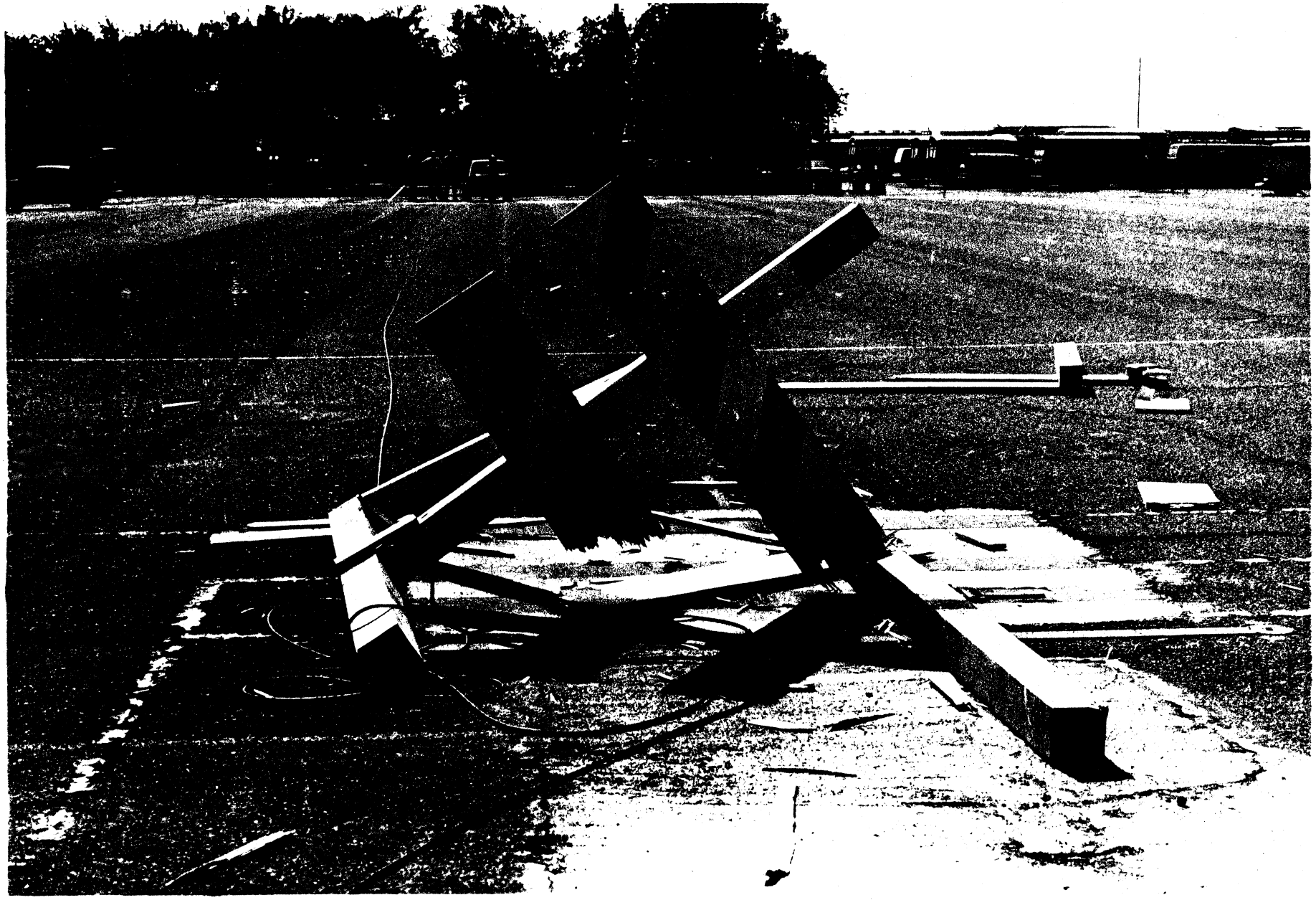


FIGURE 44 POSTTEST – BARRICADE

3.4.2 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 6.48 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this data, the highest 10 msec and highest 50 msec averages are presented in Table 16.

The occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breakaway/Yielding Supports - Signs and Luminaire.

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 17. Computer printouts of the first integral (occupant velocity) and the second integral (occupant displacement) are presented in Tables 18 and 19.

Computer plots of the event using the class 180 filter is shown in Figure 45 and the for class 60 filter in Figure 46. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

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(1) Flail space approach defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances"

TABLE 16 MOVING AVERAGE DATA WYOMING WC-4 BARRICADE

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact	6.1809 (1)	.0848 to.0948
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact	1.0115	.0676 to.1176
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

TABLE 17 VEHICLE ACCELERATION DATA – WYOMING WC-4 BARRICADE

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.37	-.10	-.57	-.10	-.10	-.10	-.10	-.10	-.10	-.10
.062	-.57	-.57	-.57	-.57	-.57	-.10	-.10	-.10	.37	.37
.064	.37	.37	.37	.37	.37	.37	.37	.83	.37	.37
.066	.37	.37	-.10	-.10	-.10	-.10	-.10	-.10	-.57	-.10
.068	-.10	.37	.37	.37	.37	.37	.37	.37	.37	-.57
.070	.37	.37	-.10	-.57	-.10	-.57	-.57	-.10	-.10	-.10
.072	1.77	1.30	1.30	.83	.83	.37	.37	.37	.37	.37
.074	.37	.37	-.57	-.57	-1.03	-1.03	-1.03	-1.03	-1.50	-1.50
.076	-1.50	-1.50	-1.50	-.57	.37	.83	2.24	3.17	3.64	3.17
.078	3.17	2.24	1.30	-.10	-1.50	-2.44	-2.90	-2.90	-2.44	-1.97
.080	-1.03	-.57	-.10	-.10	-.10	-.10	.37	.37	.37	.83
.082	.37	.83	.37	-.57	-1.03	-2.44	-3.37	-3.84	-3.37	-2.44
.084	-1.03	.37	1.30	1.30	.83	.37	-1.50	-3.84	-6.17	-9.44
.086	-11.78	-14.12	-15.05	-15.52	-13.65	-10.38	-7.11	-4.77	-3.84	-5.24
.088	-8.51	-11.78	-14.58	-15.52	-14.58	-11.31	-8.04	-4.30	-1.97	-1.50
.090	-3.37	-5.24	-7.11	-8.98	-8.98	-8.51	-7.11	-4.77	-2.44	.37
.092	2.24	4.57	5.04	4.57	2.24	-1.50	-5.24	-8.04	-10.38	-11.31
.094	-10.38	-8.51	-5.24	-2.44	.37	2.24	4.10	5.97	6.91	8.31
.096	9.71	11.11	11.58	11.11	8.31	5.51	2.70	-.10	-2.44	-2.90
.098	-2.44	-1.50	.37	1.77	3.17	4.57	5.04	5.04	4.57	3.17
.100	1.77	.83	.37	.37	.83	2.24	4.10	5.04	5.97	5.97
.102	4.57	3.17	2.24	.83	.37	.37	.37	-.10	-1.03	-1.03
.104	-1.97	-2.44	-3.37	-3.84	-3.37	-2.90	-2.44	-1.97	-1.50	-1.03
.106	-.57	.83	1.30	2.24	3.17	3.17	2.24	.83	-.57	-1.50
.108	-1.97	-2.44	-1.97	-1.50	-.57	-.57	-1.03	-1.03	-1.50	-1.97
.110	-2.44	-2.44	-1.50	-1.50	-2.44	-2.90	-4.30	-5.24	-6.17	-6.64
.112	-6.64	-6.64	-6.17	-5.71	-6.17	-5.71	-5.71	-5.24	-4.30	-3.84
.114	-2.90	-2.44	-1.50	-1.97	-2.44	-2.90	-3.37	-3.37	-3.37	-2.44
.116	-1.97	-1.03	-.57	.37	1.30	2.24	2.70	3.64	4.57	4.57
.118	4.57	3.64	2.24	1.30	.37	-1.03	-1.50	-1.03	-.10	.83
.120	2.24	2.70	3.17	3.64	3.64	4.10	4.10	3.17	2.24	1.30
.122	-.57	-2.44	-4.77	-6.17	-6.64	-5.24	-3.84	-1.97	.37	2.24
.124	4.10	5.04	5.97	6.91	8.31	8.78	8.78	7.38	6.44	4.57
.126	3.17	.37	-1.97	-4.30	-5.24	-6.17	-5.24	-3.84	-1.50	.83
.128	2.70	3.64	4.10	3.64	2.70	1.77	.83	-1.03	-3.84	-5.71
.130	-8.04	-10.38	-12.25	-11.78	-10.38	-7.11	-3.37	1.30	5.04	8.31
.132	10.65	12.51	12.51	12.05	11.58	9.71	6.91	2.70	-2.44	-8.51
.134	-13.18	-16.92	-19.25	-20.19	-18.79	-16.45	-13.65	-9.91	-6.64	-3.84
.136	.37	3.17	6.91	8.31	8.31	6.91	4.10	1.77	-.10	-1.97
.138	-3.37	-3.84	-4.77	-4.77	-4.30	-3.37	-2.90	-1.50	-.57	-.10
.140	.37	.37	.37	-1.03	-2.44	-3.37	-4.30	-4.30	-4.77	-4.30
.142	-3.84	-1.97	-.57	1.30	3.17	4.57	5.97	6.44	6.44	5.51
.144	4.57	3.64	3.17	2.24	1.30	.83	.37	.37	1.30	2.24
.146	4.10	5.04	5.97	5.97	5.04	3.64	2.70	.83	-1.50	-2.90
.148	-5.71	-8.04	-9.91	-10.85	-11.78	-10.85	-10.38	-8.98	-7.11	-5.24
.150	-3.37	-2.44	-1.03	.83	2.24	3.64	5.04	5.51	5.97	5.04
.152	3.17	1.77	-.10	-1.50	-1.97	-1.50	-1.03	.37	.83	1.77
.154	2.24	1.77	1.30	.37	-1.50	-2.44	-3.37	-3.84	-3.84	-3.37
.156	-2.90	-2.44	-1.50	-1.03	-.57	-.10	.37	.37	.83	1.30
.158	1.77	1.77	1.77	1.30	.83	.37	.37	.37	-.57	.37
.160	1.30	2.24	3.64	4.10	4.10	3.17	2.24	1.30	.37	-.57
.162	-.57	-.57	.37	1.30	2.70	3.64	4.10	4.57	5.04	5.04
.164	4.57	4.10	3.64	2.24	.83	.37	-1.03	-2.44	-2.44	-1.97
.166	-1.50	-.57	1.30	2.24	2.70	2.70	2.70	2.24	1.77	1.30
.168	.37	-.10	-.57	-1.03	-1.50	-1.50	-1.50	-1.50	-1.03	-.57
.170	.37	1.30	2.24	3.64	4.10	4.10	3.64	2.70	1.77	.37
.172	-1.03	-1.50	-2.44	-2.44	-1.97	-1.97	-1.50	-1.03	-1.03	-1.03
.174	-.57	-.10	.37	.37	-.10	-.57	-.57	-1.50	-1.97	-1.97
.176	-1.97	-1.50	-1.03	-.10	.37	1.30	1.30	1.30	1.30	.83
.178	.37	-.10	.37	.37	-.10	-1.03	-1.50	-2.44	-1.97	-2.44
.180	-1.97	-1.50	-1.50	-1.50	-1.50	-1.50	-1.50	-1.03	-.57	-.57
.182	-.57	-.57	.37	-.10	.37	.37	.37	.37	.37	.37
.184	.37	.37	.37	.37	-.10	-.57	-1.03	-.57	.37	1.30
.186	2.24	2.24	2.70	2.24	1.77	.83	-.10	-1.03	-1.50	-1.50
.188	-1.50	-1.97	-1.97	-1.50	-1.50	-1.03	-1.03	-.10	.37	.37
.190	.83	.83	.83	.83	.37	.37	.37	-.57	-.57	-.57
.192	-.57	-.57	-.10	-.57	-1.03	-1.03	-1.03	-1.03	-1.03	-.57
.194	-.57	-.10	-.57	-.57	-.57	-.10	.37	.37	.37	.37
.196	.37	-.57	-.57	.37	-.10	-.10	-.57	-.57	-1.03	-1.03
.198	-1.50	-1.50	-1.03	-1.03	-1.03	-.57	.37	-.10	-.10	-.57

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 17 (CONT'D) VEHICLE ACCELERATION DATA – WYOMING WC–4 BARRICADE

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-1.03	-1.50	-1.50	-2.44	-1.50	-1.50	-1.03	-.57	-.10	.37
.202	.37	1.30	1.30	1.30	.83	.83	.37	.37	.37	.37
.204	.37	.37	.37	.37	.37	.83	1.30	1.77	1.77	2.24
.206	1.77	.83	.83	-.10	-.57	-.57	-1.50	-1.50	-1.03	-.57
.208	-.10	.37	1.30	1.77	2.70	3.17	3.64	3.17	2.70	2.24
.210	1.30	.37	-.57	-1.50	-2.90	-3.37	-4.30	-4.77	-5.24	-5.24
.212	-6.17	-6.17	-5.71	-5.71	-4.77	-3.84	-2.90	-1.50	-.10	1.30
.214	2.70	4.10	4.57	5.04	5.04	5.04	4.57	4.10	3.64	2.70
.216	1.30	.83	-.10	-1.03	-1.50	-1.97	-2.44	-2.44	-2.90	-3.84
.218	-3.84	-4.30	-5.24	-5.24	-6.17	-6.17	-6.17	-5.71	-5.24	-4.30
.220	-3.37	-1.97	-1.03	.37	1.30	2.24	2.70	3.17	3.17	3.17
.222	2.70	2.24	1.30	.83	-.10	-1.50	-1.97	-2.44	-2.90	-1.97
.224	-1.97	-1.50	-.57	.37	.37	.37	.37	.37	-.10	-.57
.226	-1.03	-1.03	-.57	-.57	.37	.37	.83	1.30	2.24	2.70
.228	3.17	3.64	3.64	3.64	3.17	3.17	2.70	2.24	2.24	1.30
.230	1.30	1.30	.83	.83	1.30	1.30	1.30	1.30	1.77	1.77
.232	1.77	1.77	.83	.37	.37	.37	-.10	.37	.37	-.10
.234	.37	.37	.37	.83	1.30	1.77	1.77	2.24	2.24	2.70
.236	2.24	2.70	2.70	2.24	2.24	1.30	1.30	.83	.37	.37
.238	-.10	-.57	-.57	-.57	-.57	-.57	-.57	-.57	-.10	-.57
.240	-.57	.37	.37	.37	.37	.37	.37	.37	.37	.37
.242	.83	.37	.37	.37	.37	.37	.37	.37	-.10	-.57
.244	-.57	-.57	-1.03	-1.50	-1.50	-1.50	-1.03	-1.50	-1.50	-1.03
.246	-1.03	-.57	-.57	-.57	-.57	-.57	-1.03	-.57	-1.03	-.57
.248	-1.03	-1.03	-.57	-.57	-.10	.37	.37	.83	.83	.37
.250	.37	.37	.37	-.10	-.10	-.57	-1.03	-1.50	-1.50	-1.50
.252	-1.03	-1.03	-.57	.37	.37	.83	1.30	1.30	1.30	1.77
.254	1.77	1.77	1.77	1.30	1.30	.83	.83	.37	.37	.37
.256	.83	.83	1.30	1.30	.83	.83	.83	.83	.37	.37
.258	.37	-.57	-.57	-1.03	-1.03	-.57	-.57	.37	.37	.37
.260	.83	1.30	1.30	1.77	1.77	1.30	1.77	1.30	.83	.37
.262	-.10	-.57	-.57	-.57	-.57	-.57	-.57	-.57	-.57	.37
.264	.37	.37	.37	.37	.37	-.10	-.57	-1.03	-1.03	-1.03
.266	-1.03	-.57	-1.03	-.57	-.57	-.57	-.10	-.10	.37	.37
.268	.37	.37	-.57	.37	-.57	-1.03	-.57	-1.03	-1.50	-1.50
.270	-1.50	-1.97	-1.97	-1.50	-1.50	-1.03	-.57	-.57	-.10	.37
.272	.37	.37	.83	.37	.37	.37	.83	-.10	-.57	-.10
.274	-.10	-.10	-.10	.37	.37	-.10	.37	.37	-.10	-.10
.276	-.57	-.57	-1.03	-1.03	-1.03	-1.50	-1.03	-.57	-.57	-.10
.278	-.10	.37	.83	.83	1.30	1.30	1.30	.83	.37	.37
.280	.37	.37	-.10	-.57	-.57	-1.03	-1.03	-1.03	-.10	-.10
.282	.37	.37	.37	.37	-.57	-.10	-.10	-.57	-.57	-.57
.284	-1.03	-1.03	-.57	-.57	-.57	-.10	-.57	.37	-.10	.37
.286	.37	.37	-.57	-.57	-.57	-1.03	-1.50	-1.03	-1.50	-1.03
.288	-1.03	-1.03	-.57	.37	.37	.37	.83	.83	.83	.83
.290	.37	.37	.37	-.10	-.10	-.10	-.57	.37	-.10	.37
.292	.83	.83	.83	1.30	1.30	1.30	.83	.83	.37	.37
.294	.37	.37	-.10	-.10	-.57	.37	.37	.37	.37	.37
.296	.37	.37	.37	.37	.37	.37	-.10	-.57	-.57	-.57
.298	-.10	.37	.37	.37	.37	.37	.37	.37	.37	.37
.300	-.57	-.10	.37	.37	.83	.83	.83	1.30	1.30	1.30
.302	1.77	1.30	1.30	.37	-.10	-1.03	-.57	-.57	-.57	-.10
.304	-.57	-.57	-.57	-1.03	-1.03	-1.03	-.57	.37	1.30	2.70
.306	3.17	2.70	2.70	1.77	.83	.37	-.10	-.57	-.57	-.57
.308	-1.03	-1.50	-1.50	-1.97	-1.50	-1.03	-.10	.83	1.30	1.77
.310	1.77	1.77	1.30	.83	.37	.37	-.57	-1.50	-1.50	-2.44
.312	-2.44	-2.44	-1.03	-.57	.37	.83	1.30	2.24	2.24	2.24
.314	2.24	1.77	1.30	.37	-.57	-1.03	-1.50	-2.44	-3.37	-3.37
.316	-2.44	-1.97	-.57	.37	1.77	1.77	2.24	2.24	2.24	2.24
.318	2.24	1.77	1.30	.37	-.10	-1.03	-1.50	-1.50	-1.50	-1.03
.320	-.57	-.10	.37	.37	.37	.83	.83	.37	.83	.37
.322	-.10	-.10	-.57	-.57	-1.03	-1.03	-.57	-1.03	-.57	.37
.324	-.10	.83	.83	.83	.83	.83	.37	.37	-.10	-.57
.326	-.57	-.57	-.57	-.57	.37	.37	.37	.37	.37	.37
.328	.83	.83	.37	.37	-.57	-1.03	-1.03	-1.50	-1.03	-1.03
.330	-1.03	-1.03	-.57	-.57	.37	.37	.37	.37	.37	.37
.332	.37	.37	-.10	-.57	-1.03	-.57	-.57	-.57	-.57	-.57
.334	.37	.83	.83	.83	1.30	.83	.83	.37	.37	-.57
.336	-1.03	-1.03	-1.03	-1.03	-1.03	-.57	-.10	.37	.37	.83
.338	.83	1.30	1.30	.83	1.30	.37	.37	.37	.37	.37
.340	.37	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 18 OCCUPANT VELOCITY – WYOMING WC–4 BARRICADE

INCHES/SECOND

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.03	.02	-.02	-.03	-.04	-.05	-.05	-.06	-.07	-.08
.062	-.12	-.16	-.21	-.25	-.30	-.30	-.31	-.32	-.29	-.26
.064	-.23	-.21	-.18	-.15	-.12	-.09	-.06	.00	.03	.06
.066	.09	.11	.11	.10	.09	.08	.08	.07	.02	.02
.068	.01	.04	.06	.09	.12	.15	.18	.21	.23	.19
.070	.22	.25	.24	.20	.19	.14	.10	.09	.09	.08
.072	.21	.31	.42	.48	.54	.57	.60	.63	.66	.69
.074	.71	.74	.70	.65	.58	.50	.42	.34	.22	.10
.076	-.01	-.13	-.24	-.29	-.26	-.20	-.02	.22	.50	.75
.078	.99	1.17	1.27	1.26	1.14	.95	.73	.51	.32	.17
.080	.09	.04	.03	.03	.02	.01	.04	.07	.10	.16
.082	.19	.25	.28	.24	.16	-.03	-.29	-.59	-.85	-1.03
.084	-1.11	-1.09	-.99	-.89	-.82	-.79	-.91	-1.20	-1.68	-2.41
.086	-3.32	-4.41	-5.57	-6.77	-7.82	-8.62	-9.17	-9.54	-9.84	-10.24
.088	-10.90	-11.81	-12.93	-14.13	-15.26	-16.13	-16.75	-17.08	-17.24	-17.35
.090	-17.61	-18.02	-18.57	-19.26	-19.95	-20.61	-21.16	-21.53	-21.71	-21.69
.092	-21.51	-21.16	-20.77	-20.42	-20.25	-20.36	-20.77	-21.39	-22.19	-23.06
.094	-23.86	-24.52	-24.92	-25.11	-25.08	-24.91	-24.59	-24.13	-23.60	-22.96
.096	-22.21	-21.35	-20.46	-19.60	-18.96	-18.53	-18.32	-18.33	-18.52	-18.74
.098	-18.93	-19.05	-19.02	-18.88	-18.64	-18.28	-17.90	-17.51	-17.15	-16.91
.100	-16.77	-16.71	-16.68	-16.65	-16.59	-16.41	-16.18	-15.71	-15.25	-14.79
.102	-14.43	-14.19	-14.02	-13.95	-13.92	-13.89	-13.87	-13.87	-13.95	-14.03
.104	-14.19	-14.37	-14.63	-14.93	-15.19	-15.41	-15.60	-15.75	-15.87	-15.95
.106	-15.99	-15.93	-15.83	-15.66	-15.41	-15.17	-14.99	-14.93	-14.97	-15.09
.108	-15.24	-15.43	-15.58	-15.70	-15.74	-15.78	-15.86	-15.94	-16.06	-16.21
.110	-16.40	-16.59	-16.70	-16.82	-17.01	-17.23	-17.56	-17.97	-18.45	-18.96
.112	-19.47	-19.98	-20.46	-20.90	-21.38	-21.82	-22.26	-22.66	-23.00	-23.29
.114	-23.52	-23.70	-23.82	-23.97	-24.16	-24.38	-24.64	-24.90	-25.16	-25.35
.116	-25.50	-25.58	-25.63	-25.60	-25.50	-25.33	-25.12	-24.84	-24.48	-24.13
.118	-23.78	-23.50	-23.33	-23.22	-23.20	-23.28	-23.39	-23.47	-23.48	-23.42
.120	-23.24	-23.03	-22.79	-22.51	-22.23	-21.91	-21.59	-21.35	-21.18	-21.08
.122	-21.12	-21.31	-21.68	-22.15	-22.67	-23.07	-23.37	-23.52	-23.49	-23.32
.124	-23.00	-22.61	-22.15	-21.62	-20.98	-20.30	-19.62	-19.05	-18.55	-18.20
.126	-17.96	-17.93	-18.08	-18.41	-18.82	-19.29	-19.70	-19.99	-20.11	-20.05
.128	-19.84	-19.56	-19.24	-18.96	-18.75	-18.61	-18.55	-18.63	-18.92	-19.36
.130	-19.99	-20.79	-21.73	-22.64	-23.44	-23.99	-24.25	-24.15	-23.76	-23.12
.132	-22.30	-21.33	-20.37	-19.44	-18.54	-17.79	-17.26	-17.05	-17.24	-17.90
.134	-18.91	-20.22	-21.71	-23.27	-24.72	-25.99	-27.04	-27.80	-28.32	-28.61
.136	-28.58	-28.34	-27.81	-27.17	-26.52	-25.99	-25.67	-25.54	-25.54	-25.70
.138	-25.96	-26.25	-26.62	-26.99	-27.32	-27.58	-27.81	-27.92	-27.97	-27.97
.140	-27.95	-27.92	-27.89	-27.97	-28.16	-28.42	-28.75	-29.08	-29.45	-29.78
.142	-30.08	-30.23	-30.27	-30.17	-29.93	-29.58	-29.12	-28.62	-28.12	-27.70
.144	-27.34	-27.06	-26.82	-26.64	-26.54	-26.48	-26.45	-26.42	-26.32	-26.15
.146	-25.83	-25.44	-24.98	-24.52	-24.13	-23.85	-23.64	-23.58	-23.69	-23.92
.148	-24.36	-24.98	-25.75	-26.58	-27.49	-28.33	-29.13	-29.82	-30.37	-30.78
.150	-31.04	-31.22	-31.30	-31.24	-31.07	-30.79	-30.40	-29.97	-29.51	-29.12
.152	-28.88	-28.74	-28.75	-28.87	-29.02	-29.13	-29.21	-29.18	-29.12	-28.98
.154	-28.81	-28.67	-28.57	-28.55	-28.66	-28.85	-29.11	-29.41	-29.70	-29.96
.156	-30.19	-30.37	-30.49	-30.57	-30.61	-30.62	-30.59	-30.57	-30.50	-30.40
.158	-30.26	-30.13	-29.99	-29.89	-29.83	-29.80	-29.77	-29.74	-29.78	-29.76
.160	-29.66	-29.48	-29.20	-28.89	-28.57	-28.32	-28.15	-28.05	-28.02	-28.07
.162	-28.11	-28.15	-28.13	-28.02	-27.82	-27.54	-27.22	-26.87	-26.48	-26.09
.164	-25.73	-25.42	-25.14	-24.96	-24.90	-24.87	-24.95	-25.14	-25.33	-25.48
.166	-25.60	-25.64	-25.54	-25.37	-25.16	-24.95	-24.74	-24.57	-24.43	-24.33
.168	-24.30	-24.31	-24.35	-24.43	-24.55	-24.67	-24.78	-24.90	-24.98	-25.02
.170	-24.99	-24.89	-24.72	-24.44	-24.12	-23.80	-23.52	-23.32	-23.18	-23.15
.172	-23.23	-23.35	-23.53	-23.72	-23.87	-24.03	-24.14	-24.22	-24.30	-24.38
.174	-24.43	-24.43	-24.40	-24.38	-24.38	-24.43	-24.47	-24.59	-24.74	-24.89
.176	-25.04	-25.16	-25.24	-25.25	-25.22	-25.12	-25.02	-24.92	-24.82	-24.75
.178	-24.72	-24.73	-24.70	-24.67	-24.68	-24.76	-24.88	-25.07	-25.22	-25.41
.180	-25.56	-25.67	-25.79	-25.91	-26.02	-26.14	-26.25	-26.33	-26.38	-26.42
.182	-26.47	-26.51	-26.48	-26.49	-26.46	-26.43	-26.40	-26.38	-26.35	-26.32
.184	-26.29	-26.26	-26.23	-26.20	-26.21	-26.26	-26.34	-26.38	-26.35	-26.25
.186	-26.08	-25.91	-25.70	-25.52	-25.39	-25.32	-25.33	-25.41	-25.53	-25.64
.188	-25.76	-25.91	-26.06	-26.18	-26.29	-26.37	-26.45	-26.46	-26.43	-26.41
.190	-26.34	-26.28	-26.21	-26.15	-26.12	-26.09	-26.06	-26.11	-26.15	-26.19
.192	-26.24	-26.28	-26.29	-26.33	-26.41	-26.49	-26.57	-26.65	-26.73	-26.78
.194	-26.82	-26.83	-26.87	-26.92	-26.96	-26.97	-26.94	-26.91	-26.88	-26.85
.196	-26.83	-26.87	-26.91	-26.88	-26.89	-26.90	-26.94	-26.99	-27.07	-27.15
.198	-27.26	-27.38	-27.46	-27.54	-27.62	-27.66	-27.63	-27.64	-27.65	-27.69

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 18 (CONT'D) OCCUPANT VELOCITY – WYOMING WC–4 BARRICADE

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-27.77	-27.89	-28.01	-28.19	-28.31	-28.42	-28.50	-28.55	-28.56	-28.53
.202	-28.50	-28.40	-28.30	-28.20	-28.13	-28.07	-28.04	-28.01	-27.98	-27.96
.204	-27.93	-27.90	-27.87	-27.84	-27.81	-27.75	-27.65	-27.51	-27.38	-27.20
.206	-27.07	-27.00	-26.94	-26.95	-26.99	-27.03	-27.15	-27.27	-27.35	-27.39
.208	-27.40	-27.37	-27.27	-27.13	-26.92	-26.68	-26.40	-26.15	-25.94	-25.77
.210	-25.67	-25.64	-25.69	-25.80	-26.03	-26.29	-26.62	-26.99	-27.39	-27.80
.212	-28.27	-28.75	-29.19	-29.63	-30.00	-30.29	-30.52	-30.63	-30.64	-30.54
.214	-30.33	-30.02	-29.66	-29.27	-28.89	-28.50	-28.14	-27.83	-27.55	-27.34
.216	-27.24	-27.17	-27.18	-27.26	-27.38	-27.53	-27.72	-27.90	-28.13	-28.42
.218	-28.72	-29.05	-29.46	-29.86	-30.34	-30.81	-31.29	-31.73	-32.14	-32.47
.220	-32.73	-32.88	-32.96	-32.93	-32.83	-32.66	-32.45	-32.21	-31.96	-31.72
.222	-31.51	-31.34	-31.23	-31.17	-31.18	-31.29	-31.45	-31.63	-31.86	-32.01
.224	-32.16	-32.28	-32.32	-32.29	-32.27	-32.24	-32.21	-32.18	-32.19	-32.23
.226	-32.31	-32.39	-32.44	-32.48	-32.45	-32.42	-32.36	-32.26	-32.08	-31.88
.228	-31.63	-31.35	-31.07	-30.79	-30.54	-30.30	-30.09	-29.92	-29.75	-29.64
.230	-29.54	-29.44	-29.38	-29.32	-29.21	-29.11	-29.01	-28.91	-28.78	-28.64
.232	-28.50	-28.37	-28.30	-28.27	-28.25	-28.22	-28.23	-28.20	-28.17	-28.18
.234	-28.15	-28.12	-28.09	-28.03	-27.93	-27.79	-27.65	-27.48	-27.31	-27.10
.236	-26.93	-26.72	-26.51	-26.34	-26.16	-26.06	-25.96	-25.90	-25.87	-25.84
.238	-25.85	-25.89	-25.94	-25.98	-26.02	-26.07	-26.11	-26.16	-26.16	-26.21
.240	-26.25	-26.22	-26.19	-26.17	-26.14	-26.11	-26.08	-26.05	-26.02	-26.00
.242	-25.93	-25.90	-25.88	-25.85	-25.82	-25.79	-25.76	-25.73	-25.74	-25.79
.244	-25.83	-25.87	-25.95	-26.07	-26.18	-26.30	-26.38	-26.50	-26.61	-26.69
.246	-26.77	-26.82	-26.86	-26.90	-26.95	-26.99	-27.07	-27.11	-27.19	-27.24
.248	-27.32	-27.40	-27.44	-27.49	-27.49	-27.46	-27.44	-27.37	-27.31	-27.28
.250	-27.25	-27.22	-27.19	-27.20	-27.21	-27.25	-27.33	-27.45	-27.56	-27.68
.252	-27.76	-27.84	-27.88	-27.86	-27.83	-27.76	-27.66	-27.56	-27.46	-27.33
.254	-27.19	-27.05	-26.92	-26.82	-26.71	-26.65	-26.59	-26.56	-26.53	-26.50
.256	-26.44	-26.37	-26.27	-26.17	-26.11	-26.04	-25.98	-25.91	-25.88	-25.86
.258	-25.83	-25.87	-25.92	-26.00	-26.08	-26.12	-26.16	-26.13	-26.11	-26.08
.260	-26.01	-25.91	-25.81	-25.68	-25.54	-25.44	-25.30	-25.20	-25.14	-25.11
.262	-25.12	-25.16	-25.20	-25.25	-25.29	-25.34	-25.38	-25.42	-25.47	-25.44
.264	-25.41	-25.38	-25.35	-25.33	-25.30	-25.31	-25.35	-25.43	-25.51	-25.59
.266	-25.67	-25.71	-25.79	-25.84	-25.88	-25.92	-25.93	-25.94	-25.91	-25.88
.268	-25.85	-25.83	-25.87	-25.84	-25.88	-25.96	-26.01	-26.09	-26.20	-26.32
.270	-26.44	-26.59	-26.74	-26.86	-26.97	-27.05	-27.10	-27.14	-27.15	-27.12
.272	-27.09	-27.06	-27.00	-26.97	-26.94	-26.91	-26.85	-26.86	-26.90	-26.91
.274	-26.91	-26.92	-26.93	-26.90	-26.87	-26.88	-26.85	-26.82	-26.83	-26.84
.276	-26.88	-26.93	-27.01	-27.09	-27.17	-27.28	-27.36	-27.41	-27.45	-27.46
.278	-27.47	-27.44	-27.37	-27.31	-27.21	-27.11	-27.01	-26.94	-26.91	-26.89
.280	-26.86	-26.83	-26.84	-26.88	-26.92	-27.00	-27.08	-27.16	-27.17	-27.18
.282	-27.15	-27.12	-27.09	-27.07	-27.11	-27.12	-27.13	-27.17	-27.21	-27.26
.284	-27.34	-27.42	-27.46	-27.50	-27.55	-27.56	-27.60	-27.57	-27.58	-27.55
.286	-27.52	-27.49	-27.54	-27.58	-27.63	-27.71	-27.82	-27.90	-28.02	-28.10
.288	-28.18	-28.26	-28.30	-28.27	-28.24	-28.22	-28.15	-28.09	-28.02	-27.96
.290	-27.93	-27.90	-27.87	-27.88	-27.89	-27.90	-27.94	-27.91	-27.92	-27.89
.292	-27.83	-27.76	-27.70	-27.60	-27.50	-27.40	-27.33	-27.27	-27.24	-27.21
.294	-27.18	-27.15	-27.16	-27.17	-27.21	-27.18	-27.16	-27.13	-27.10	-27.07
.296	-27.04	-27.01	-26.99	-26.96	-26.93	-26.90	-26.91	-26.95	-27.00	-27.04
.298	-27.05	-27.02	-26.99	-26.96	-26.93	-26.91	-26.88	-26.85	-26.82	-26.79
.300	-26.84	-26.84	-26.82	-26.79	-26.72	-26.66	-26.59	-26.49	-26.39	-26.29
.302	-26.16	-26.06	-25.96	-25.93	-25.93	-26.01	-26.06	-26.10	-26.15	-26.15
.304	-26.20	-26.24	-26.28	-26.36	-26.44	-26.52	-26.57	-26.54	-26.44	-26.23
.306	-25.99	-25.78	-25.57	-25.43	-25.37	-25.34	-25.35	-25.39	-25.43	-25.48
.308	-25.56	-25.67	-25.79	-25.94	-26.06	-26.14	-26.15	-26.08	-25.98	-25.84
.310	-25.71	-25.57	-25.47	-25.41	-25.38	-25.35	-25.39	-25.51	-25.63	-25.81
.312	-26.00	-26.19	-26.27	-26.31	-26.28	-26.22	-26.12	-25.95	-25.77	-25.60
.314	-25.43	-25.29	-25.19	-25.16	-25.21	-25.29	-25.40	-25.59	-25.85	-26.11
.316	-26.30	-26.45	-26.50	-26.47	-26.33	-26.19	-26.02	-25.85	-25.68	-25.50
.318	-25.33	-25.19	-25.09	-25.07	-25.07	-25.15	-25.27	-25.39	-25.50	-25.58
.320	-25.62	-25.63	-25.60	-25.58	-25.55	-25.48	-25.42	-25.39	-25.33	-25.30
.322	-25.31	-25.31	-25.36	-25.40	-25.48	-25.56	-25.60	-25.68	-25.73	-25.70
.324	-25.71	-25.64	-25.58	-25.51	-25.45	-25.38	-25.36	-25.33	-25.34	-25.38
.326	-25.42	-25.47	-25.51	-25.55	-25.53	-25.50	-25.47	-25.44	-25.41	-25.38
.328	-25.32	-25.26	-25.23	-25.20	-25.24	-25.32	-25.40	-25.52	-25.60	-25.68
.330	-25.76	-25.84	-25.88	-25.93	-25.90	-25.87	-25.84	-25.81	-25.78	-25.76
.332	-25.73	-25.70	-25.71	-25.75	-25.83	-25.87	-25.92	-25.96	-26.01	-26.05
.334	-26.02	-25.96	-25.89	-25.83	-25.73	-25.66	-25.60	-25.57	-25.54	-25.59
.336	-25.67	-25.75	-25.82	-25.90	-25.98	-26.03	-26.04	-26.01	-25.98	-25.92
.338	-25.85	-25.75	-25.65	-25.59	-25.48	-25.46	-25.43	-25.40	-25.37	-25.34
.340	-25.31	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 19 OCCUPANT DISPLACEMENT – WYOMING WC-4 BARRICADE

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.00	.0*	.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.062	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.064	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.066	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.068	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.070	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.072	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*
.074	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.076	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.078	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.080	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.082	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.084	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.086	.00	-.0*	-.00	-.00	-.00	-.01	-.01	-.01	-.01	-.01
.088	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.04	-.04	-.04
.090	-.05	-.05	-.05	-.06	-.06	-.07	-.07	-.08	-.08	-.08
.092	-.09	-.09	-.10	-.10	-.10	-.11	-.11	-.12	-.12	-.13
.094	-.13	-.14	-.14	-.15	-.15	-.16	-.16	-.17	-.17	-.17
.096	-.18	-.18	-.19	-.19	-.20	-.20	-.20	-.21	-.21	-.21
.098	-.22	-.22	-.23	-.23	-.23	-.24	-.24	-.24	-.25	-.25
.100	-.25	-.26	-.26	-.26	-.27	-.27	-.27	-.28	-.28	-.28
.102	-.29	-.29	-.29	-.29	-.30	-.30	-.30	-.31	-.31	-.31
.104	-.31	-.32	-.32	-.32	-.33	-.33	-.33	-.33	-.34	-.34
.106	-.34	-.35	-.35	-.35	-.36	-.36	-.36	-.37	-.37	-.37
.108	-.38	-.38	-.38	-.38	-.39	-.39	-.39	-.40	-.40	-.40
.110	-.41	-.41	-.41	-.42	-.42	-.42	-.43	-.43	-.43	-.44
.112	-.44	-.45	-.45	-.45	-.46	-.46	-.47	-.47	-.48	-.48
.114	-.49	-.49	-.50	-.50	-.51	-.51	-.51	-.52	-.52	-.53
.116	-.54	-.54	-.55	-.55	-.56	-.56	-.57	-.57	-.58	-.58
.118	-.59	-.59	-.59	-.60	-.60	-.61	-.61	-.62	-.62	-.63
.120	-.63	-.64	-.64	-.65	-.65	-.65	-.66	-.66	-.67	-.67
.122	-.68	-.68	-.68	-.69	-.69	-.70	-.70	-.71	-.71	-.72
.124	-.72	-.73	-.73	-.73	-.74	-.74	-.75	-.75	-.75	-.76
.126	-.76	-.76	-.77	-.77	-.78	-.78	-.78	-.79	-.79	-.80
.128	-.80	-.80	-.81	-.81	-.81	-.82	-.82	-.83	-.83	-.83
.130	-.84	-.84	-.85	-.85	-.86	-.86	-.87	-.87	-.87	-.88
.132	-.88	-.89	-.89	-.90	-.90	-.90	-.91	-.91	-.91	-.92
.134	-.92	-.93	-.93	-.93	-.94	-.94	-.95	-.96	-.96	-.97
.136	-.97	-.98	-.98	-.99	-.99	-1.00	-1.00	-1.01	-1.01	-1.02
.138	-1.03	-1.03	-1.04	-1.04	-1.05	-1.05	-1.06	-1.06	-1.07	-1.07
.140	-1.08	-1.09	-1.09	-1.10	-1.10	-1.11	-1.11	-1.12	-1.13	-1.13
.142	-1.14	-1.14	-1.15	-1.16	-1.16	-1.17	-1.17	-1.18	-1.18	-1.19
.144	-1.20	-1.20	-1.21	-1.21	-1.22	-1.22	-1.23	-1.23	-1.24	-1.24
.146	-1.25	-1.25	-1.26	-1.26	-1.27	-1.27	-1.28	-1.28	-1.29	-1.29
.148	-1.30	-1.30	-1.31	-1.31	-1.32	-1.32	-1.33	-1.34	-1.34	-1.35
.150	-1.35	-1.36	-1.37	-1.37	-1.38	-1.39	-1.39	-1.40	-1.40	-1.41
.152	-1.41	-1.42	-1.43	-1.43	-1.44	-1.44	-1.45	-1.46	-1.46	-1.47
.154	-1.47	-1.48	-1.48	-1.49	-1.50	-1.50	-1.51	-1.51	-1.52	-1.52
.156	-1.53	-1.54	-1.54	-1.55	-1.56	-1.56	-1.57	-1.57	-1.58	-1.59
.158	-1.59	-1.60	-1.60	-1.61	-1.62	-1.62	-1.63	-1.63	-1.64	-1.65
.160	-1.65	-1.66	-1.66	-1.67	-1.67	-1.68	-1.69	-1.69	-1.70	-1.70
.162	-1.71	-1.71	-1.72	-1.73	-1.73	-1.74	-1.74	-1.75	-1.75	-1.76
.164	-1.76	-1.77	-1.77	-1.78	-1.78	-1.79	-1.79	-1.80	-1.80	-1.81
.166	-1.81	-1.82	-1.82	-1.83	-1.83	-1.84	-1.84	-1.85	-1.85	-1.86
.168	-1.86	-1.87	-1.87	-1.88	-1.88	-1.89	-1.89	-1.90	-1.90	-1.91
.170	-1.91	-1.92	-1.92	-1.93	-1.93	-1.94	-1.94	-1.95	-1.95	-1.96
.172	-1.96	-1.96	-1.97	-1.97	-1.98	-1.98	-1.99	-1.99	-2.00	-2.00
.174	-2.01	-2.01	-2.02	-2.02	-2.03	-2.03	-2.04	-2.04	-2.05	-2.05
.176	-2.06	-2.06	-2.07	-2.07	-2.08	-2.08	-2.09	-2.09	-2.10	-2.10
.178	-2.11	-2.11	-2.12	-2.12	-2.13	-2.13	-2.14	-2.14	-2.15	-2.15
.180	-2.16	-2.16	-2.17	-2.17	-2.18	-2.18	-2.19	-2.19	-2.20	-2.20
.182	-2.21	-2.21	-2.22	-2.23	-2.23	-2.24	-2.24	-2.25	-2.25	-2.26
.184	-2.26	-2.27	-2.27	-2.28	-2.28	-2.29	-2.29	-2.30	-2.30	-2.31
.186	-2.31	-2.32	-2.33	-2.33	-2.34	-2.34	-2.35	-2.35	-2.36	-2.36
.188	-2.37	-2.37	-2.38	-2.38	-2.39	-2.39	-2.40	-2.40	-2.41	-2.41
.190	-2.42	-2.42	-2.43	-2.43	-2.44	-2.44	-2.45	-2.46	-2.46	-2.47
.192	-2.47	-2.48	-2.48	-2.49	-2.49	-2.50	-2.50	-2.51	-2.51	-2.52
.194	-2.52	-2.53	-2.53	-2.54	-2.55	-2.55	-2.56	-2.56	-2.57	-2.57
.196	-2.58	-2.58	-2.59	-2.59	-2.60	-2.60	-2.61	-2.62	-2.62	-2.63
.198	-2.63	-2.64	-2.64	-2.65	-2.65	-2.66	-2.66	-2.67	-2.68	-2.68

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 19 (CONT'D) OCCUPANT DISPLACEMENT - WYOMING WC-4 BARRICADE

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.200	-2.69	-2.69	-2.70	-2.70	-2.71	-2.72	-2.72	-2.73	-2.73	-2.74
.202	-2.74	-2.75	-2.76	-2.76	-2.77	-2.77	-2.78	-2.78	-2.79	-2.79
.204	-2.80	-2.81	-2.81	-2.82	-2.82	-2.83	-2.83	-2.84	-2.84	-2.85
.206	-2.86	-2.86	-2.87	-2.87	-2.88	-2.88	-2.89	-2.89	-2.90	-2.90
.208	-2.91	-2.91	-2.92	-2.93	-2.93	-2.94	-2.94	-2.95	-2.95	-2.96
.210	-2.96	-2.97	-2.97	-2.98	-2.98	-2.99	-2.99	-3.00	-3.00	-3.01
.212	-3.02	-3.02	-3.03	-3.03	-3.04	-3.05	-3.05	-3.06	-3.06	-3.07
.214	-3.08	-3.08	-3.09	-3.09	-3.10	-3.11	-3.11	-3.12	-3.12	-3.13
.216	-3.13	-3.14	-3.14	-3.15	-3.15	-3.16	-3.17	-3.17	-3.18	-3.18
.218	-3.19	-3.19	-3.20	-3.21	-3.21	-3.22	-3.22	-3.23	-3.24	-3.24
.220	-3.25	-3.26	-3.26	-3.27	-3.28	-3.28	-3.29	-3.30	-3.30	-3.31
.222	-3.32	-3.32	-3.33	-3.33	-3.34	-3.35	-3.35	-3.36	-3.37	-3.37
.224	-3.38	-3.38	-3.39	-3.40	-3.40	-3.41	-3.42	-3.42	-3.43	-3.44
.226	-3.44	-3.45	-3.46	-3.46	-3.47	-3.48	-3.48	-3.49	-3.49	-3.50
.228	-3.51	-3.51	-3.52	-3.53	-3.53	-3.54	-3.54	-3.55	-3.56	-3.56
.230	-3.57	-3.57	-3.58	-3.59	-3.59	-3.60	-3.60	-3.61	-3.61	-3.62
.232	-3.63	-3.63	-3.64	-3.64	-3.65	-3.65	-3.66	-3.67	-3.67	-3.68
.234	-3.68	-3.69	-3.69	-3.70	-3.70	-3.71	-3.72	-3.72	-3.73	-3.73
.236	-3.74	-3.74	-3.75	-3.75	-3.76	-3.76	-3.77	-3.77	-3.78	-3.78
.238	-3.79	-3.79	-3.80	-3.81	-3.81	-3.82	-3.82	-3.83	-3.83	-3.84
.240	-3.84	-3.85	-3.85	-3.86	-3.86	-3.87	-3.87	-3.88	-3.88	-3.89
.242	-3.89	-3.90	-3.90	-3.91	-3.91	-3.92	-3.93	-3.93	-3.94	-3.94
.244	-3.95	-3.95	-3.96	-3.96	-3.97	-3.97	-3.98	-3.98	-3.99	-3.99
.246	-4.00	-4.00	-4.01	-4.01	-4.02	-4.03	-4.03	-4.04	-4.04	-4.05
.248	-4.05	-4.06	-4.06	-4.07	-4.07	-4.08	-4.09	-4.09	-4.10	-4.10
.250	-4.11	-4.11	-4.12	-4.12	-4.13	-4.13	-4.14	-4.15	-4.15	-4.16
.252	-4.16	-4.17	-4.17	-4.18	-4.18	-4.19	-4.20	-4.20	-4.21	-4.21
.254	-4.22	-4.22	-4.23	-4.23	-4.24	-4.24	-4.25	-4.25	-4.26	-4.27
.256	-4.27	-4.28	-4.28	-4.29	-4.29	-4.30	-4.30	-4.31	-4.31	-4.32
.258	-4.32	-4.33	-4.33	-4.34	-4.34	-4.35	-4.35	-4.36	-4.36	-4.37
.260	-4.37	-4.38	-4.39	-4.39	-4.40	-4.40	-4.41	-4.41	-4.42	-4.42
.262	-4.43	-4.43	-4.44	-4.44	-4.45	-4.45	-4.46	-4.46	-4.47	-4.47
.264	-4.48	-4.48	-4.49	-4.49	-4.50	-4.50	-4.51	-4.51	-4.52	-4.52
.266	-4.53	-4.53	-4.54	-4.54	-4.55	-4.55	-4.56	-4.56	-4.57	-4.57
.268	-4.58	-4.58	-4.59	-4.59	-4.60	-4.60	-4.61	-4.62	-4.62	-4.63
.270	-4.63	-4.64	-4.64	-4.65	-4.65	-4.66	-4.66	-4.67	-4.67	-4.68
.272	-4.68	-4.69	-4.70	-4.70	-4.71	-4.71	-4.72	-4.72	-4.73	-4.73
.274	-4.74	-4.74	-4.75	-4.75	-4.76	-4.77	-4.77	-4.78	-4.78	-4.79
.276	-4.79	-4.80	-4.80	-4.81	-4.81	-4.82	-4.83	-4.83	-4.84	-4.84
.278	-4.85	-4.85	-4.86	-4.86	-4.87	-4.87	-4.88	-4.89	-4.89	-4.90
.280	-4.90	-4.91	-4.91	-4.92	-4.92	-4.93	-4.93	-4.94	-4.94	-4.95
.282	-4.96	-4.96	-4.97	-4.97	-4.98	-4.98	-4.99	-4.99	-5.00	-5.00
.284	-5.01	-5.02	-5.02	-5.03	-5.03	-5.04	-5.04	-5.05	-5.05	-5.06
.286	-5.06	-5.07	-5.08	-5.08	-5.09	-5.09	-5.10	-5.10	-5.11	-5.11
.288	-5.12	-5.13	-5.13	-5.14	-5.14	-5.15	-5.15	-5.16	-5.17	-5.17
.290	-5.18	-5.18	-5.19	-5.19	-5.20	-5.20	-5.21	-5.22	-5.22	-5.23
.292	-5.23	-5.24	-5.24	-5.25	-5.25	-5.26	-5.27	-5.27	-5.28	-5.28
.294	-5.29	-5.29	-5.30	-5.30	-5.31	-5.31	-5.32	-5.33	-5.33	-5.34
.296	-5.34	-5.35	-5.35	-5.36	-5.36	-5.37	-5.37	-5.38	-5.38	-5.39
.298	-5.40	-5.40	-5.41	-5.41	-5.42	-5.42	-5.43	-5.43	-5.44	-5.44
.300	-5.45	-5.45	-5.46	-5.47	-5.47	-5.48	-5.48	-5.49	-5.49	-5.50
.302	-5.50	-5.51	-5.51	-5.52	-5.52	-5.53	-5.53	-5.54	-5.54	-5.55
.304	-5.55	-5.56	-5.56	-5.57	-5.58	-5.58	-5.59	-5.59	-5.60	-5.60
.306	-5.61	-5.61	-5.62	-5.62	-5.63	-5.63	-5.64	-5.64	-5.65	-5.65
.308	-5.66	-5.66	-5.67	-5.67	-5.68	-5.68	-5.69	-5.69	-5.70	-5.70
.310	-5.71	-5.72	-5.72	-5.73	-5.73	-5.74	-5.74	-5.75	-5.75	-5.76
.312	-5.76	-5.77	-5.77	-5.78	-5.78	-5.79	-5.79	-5.80	-5.80	-5.81
.314	-5.81	-5.82	-5.82	-5.83	-5.83	-5.84	-5.84	-5.85	-5.85	-5.86
.316	-5.86	-5.87	-5.87	-5.88	-5.89	-5.89	-5.90	-5.90	-5.91	-5.91
.318	-5.92	-5.92	-5.93	-5.93	-5.94	-5.94	-5.95	-5.95	-5.96	-5.96
.320	-5.97	-5.97	-5.98	-5.98	-5.99	-5.99	-6.00	-6.00	-6.01	-6.01
.322	-6.02	-6.02	-6.03	-6.03	-6.04	-6.04	-6.05	-6.05	-6.06	-6.06
.324	-6.07	-6.07	-6.08	-6.08	-6.09	-6.09	-6.10	-6.10	-6.11	-6.11
.326	-6.12	-6.12	-6.13	-6.14	-6.14	-6.15	-6.15	-6.16	-6.16	-6.17
.328	-6.17	-6.18	-6.18	-6.19	-6.19	-6.20	-6.20	-6.21	-6.21	-6.22
.330	-6.22	-6.23	-6.23	-6.24	-6.24	-6.25	-6.25	-6.26	-6.26	-6.27
.332	-6.27	-6.28	-6.28	-6.29	-6.29	-6.30	-6.30	-6.31	-6.31	-6.32
.334	-6.32	-6.33	-6.34	-6.34	-6.35	-6.35	-6.36	-6.36	-6.37	-6.37
.336	-6.38	-6.38	-6.39	-6.39	-6.40	-6.40	-6.41	-6.41	-6.42	-6.42
.338	-6.43	-6.43	-6.44	-6.44	-6.45	-6.45	-6.46	-6.46	-6.47	-6.47
.340	-6.48	-.10	-.10	.37	.37	.37	.37	-.10	.37	.37

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

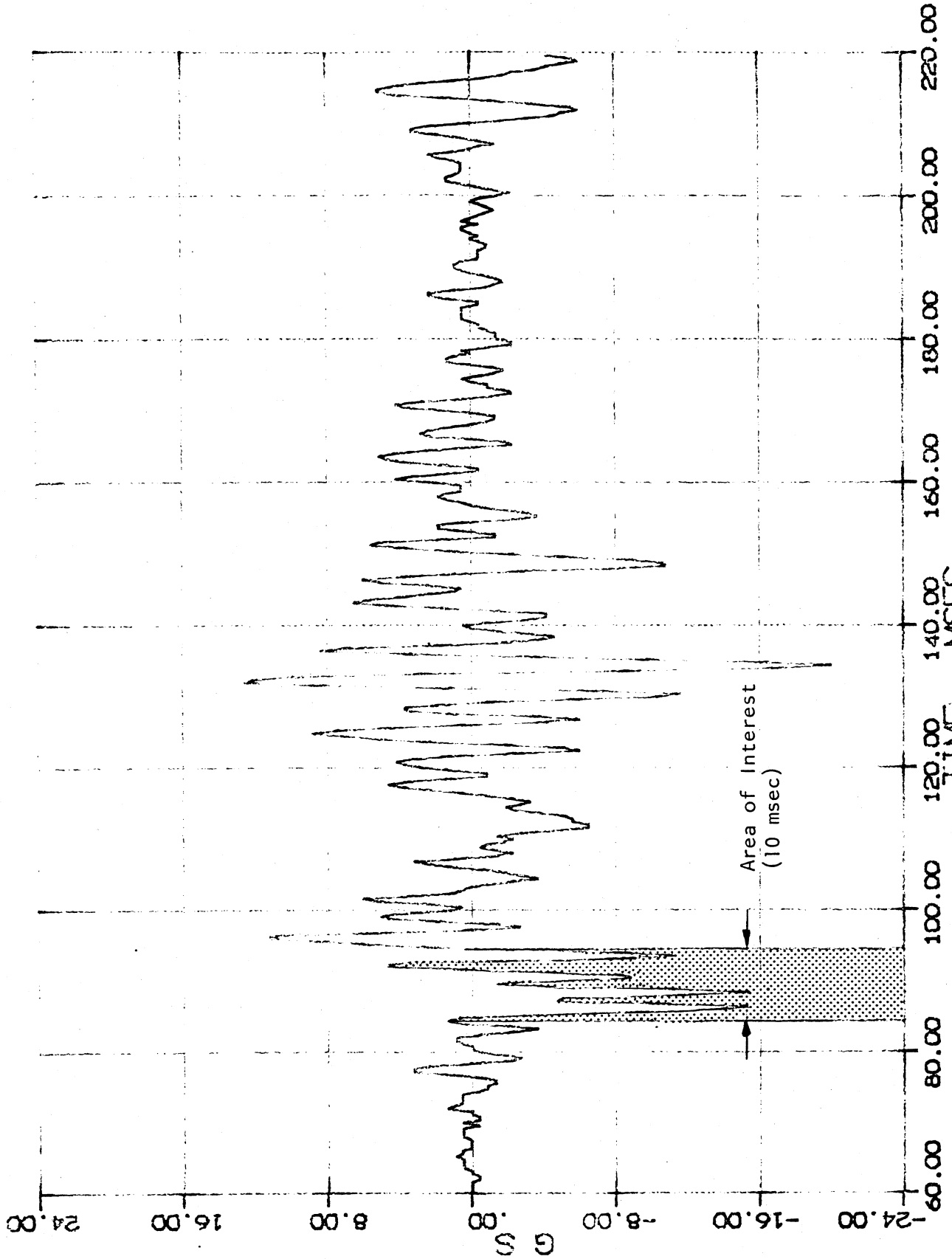


FIGURE 45 WYOMING WC-4 BARRICADE IMPACT, CLASS 180 FILTER

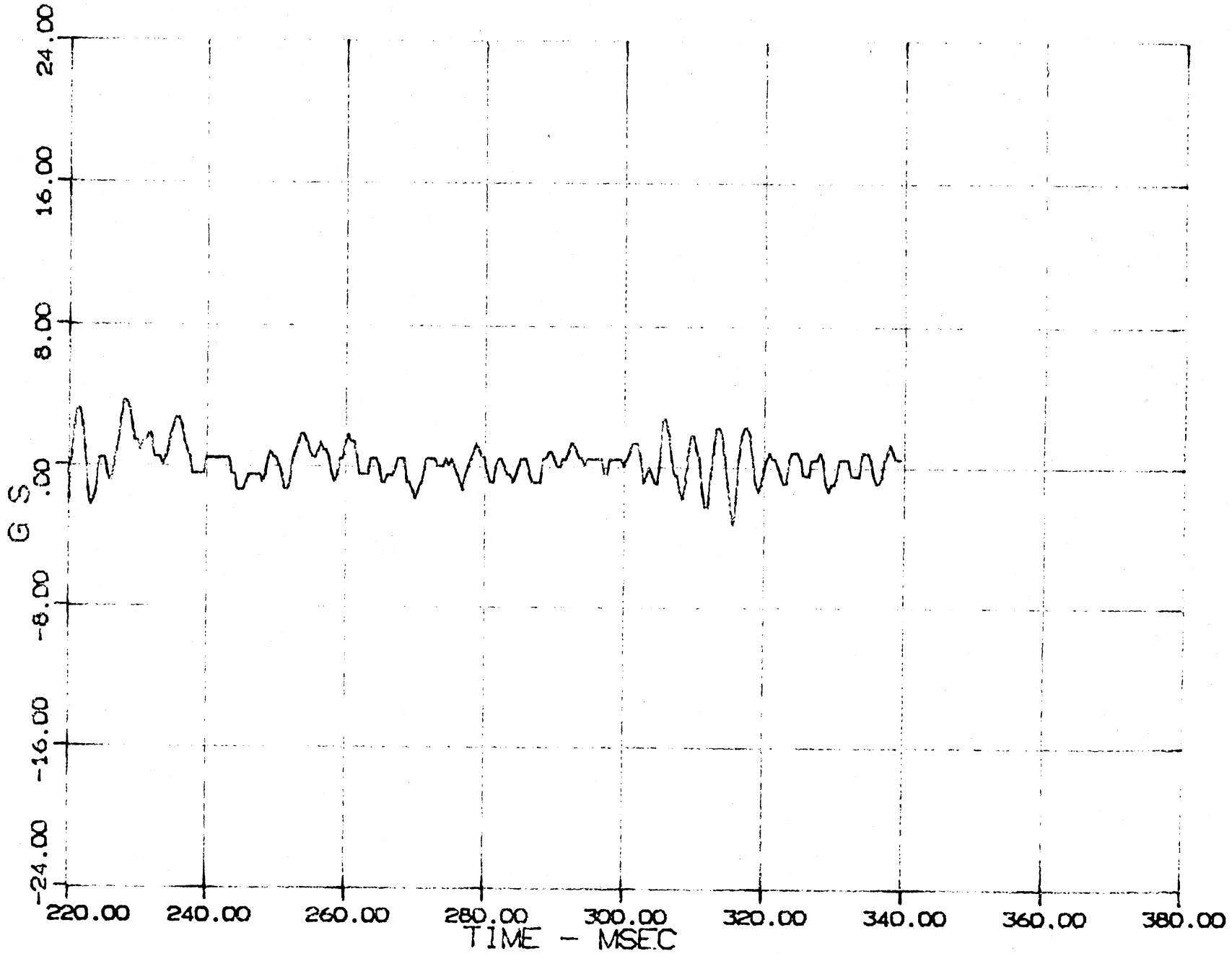


FIGURE 45 (CONT'D) WYOMING WC-4 BARRICADE IMPACT, CLASS 180 FILTER

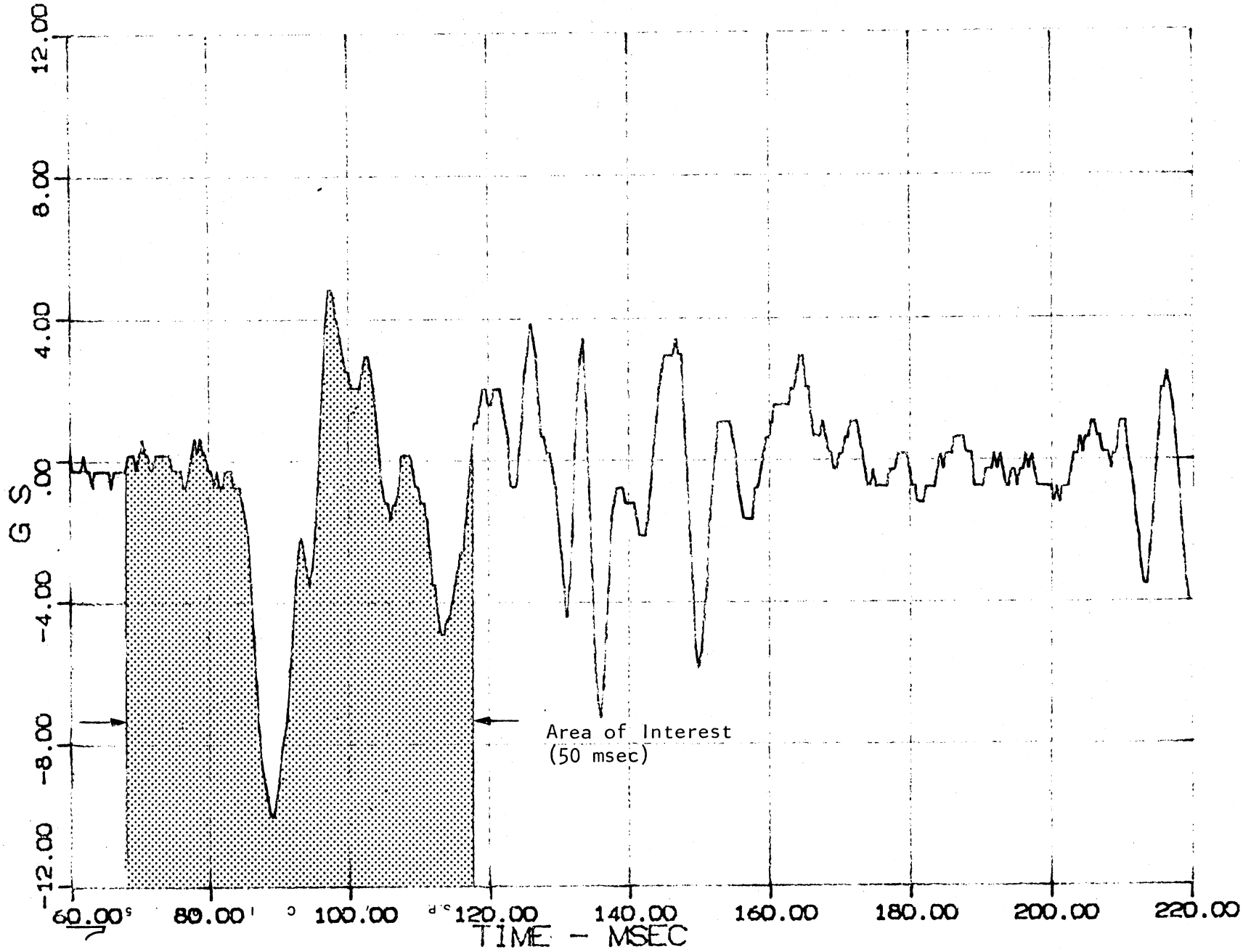


FIGURE 46 WYOMING WC-4 BARRICADE IMPACT, CLASS 60 FILTER

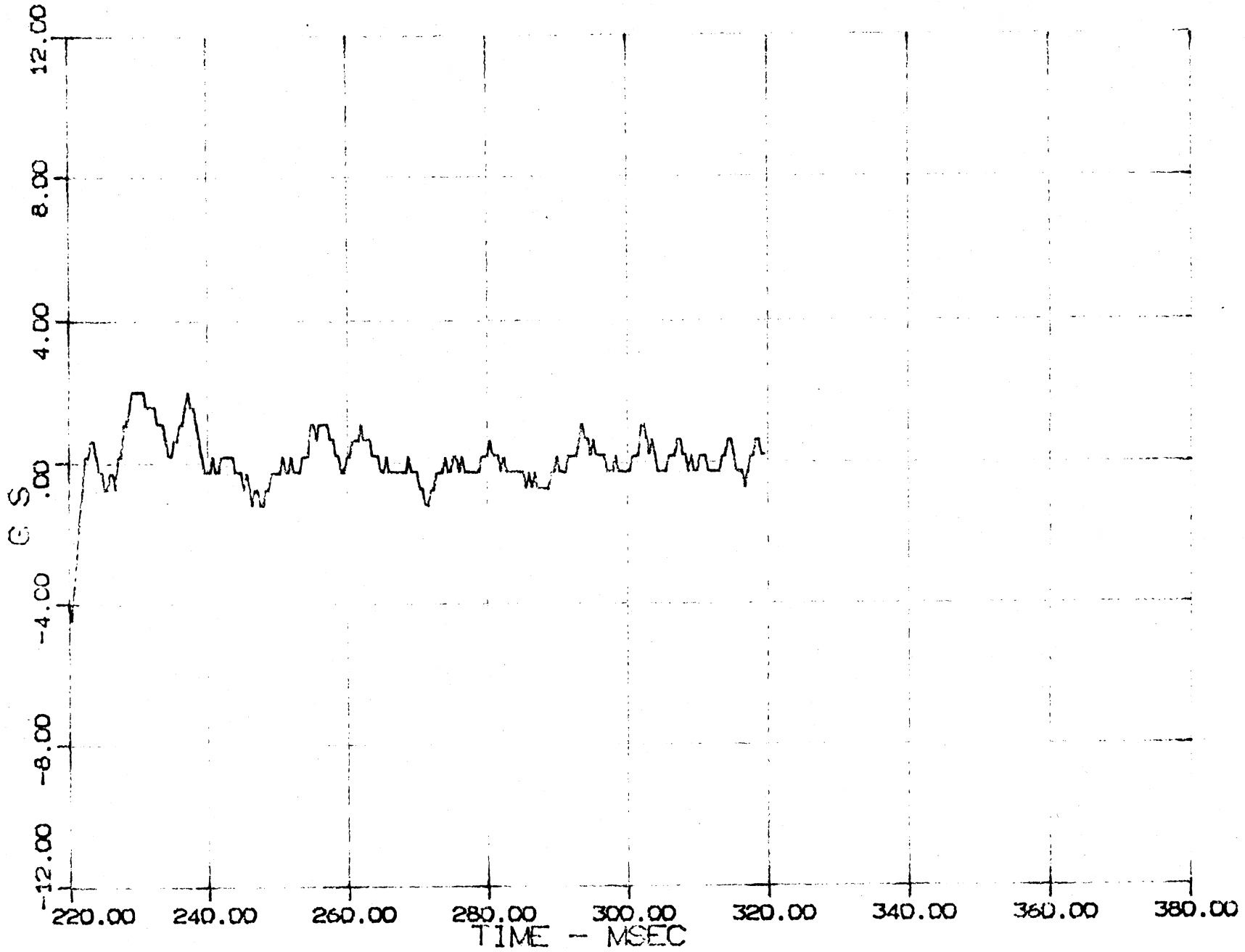


FIGURE 46 (CONT'D) WYOMING WC-4 BARRICADE IMPACT, CLASS 60 FILTER

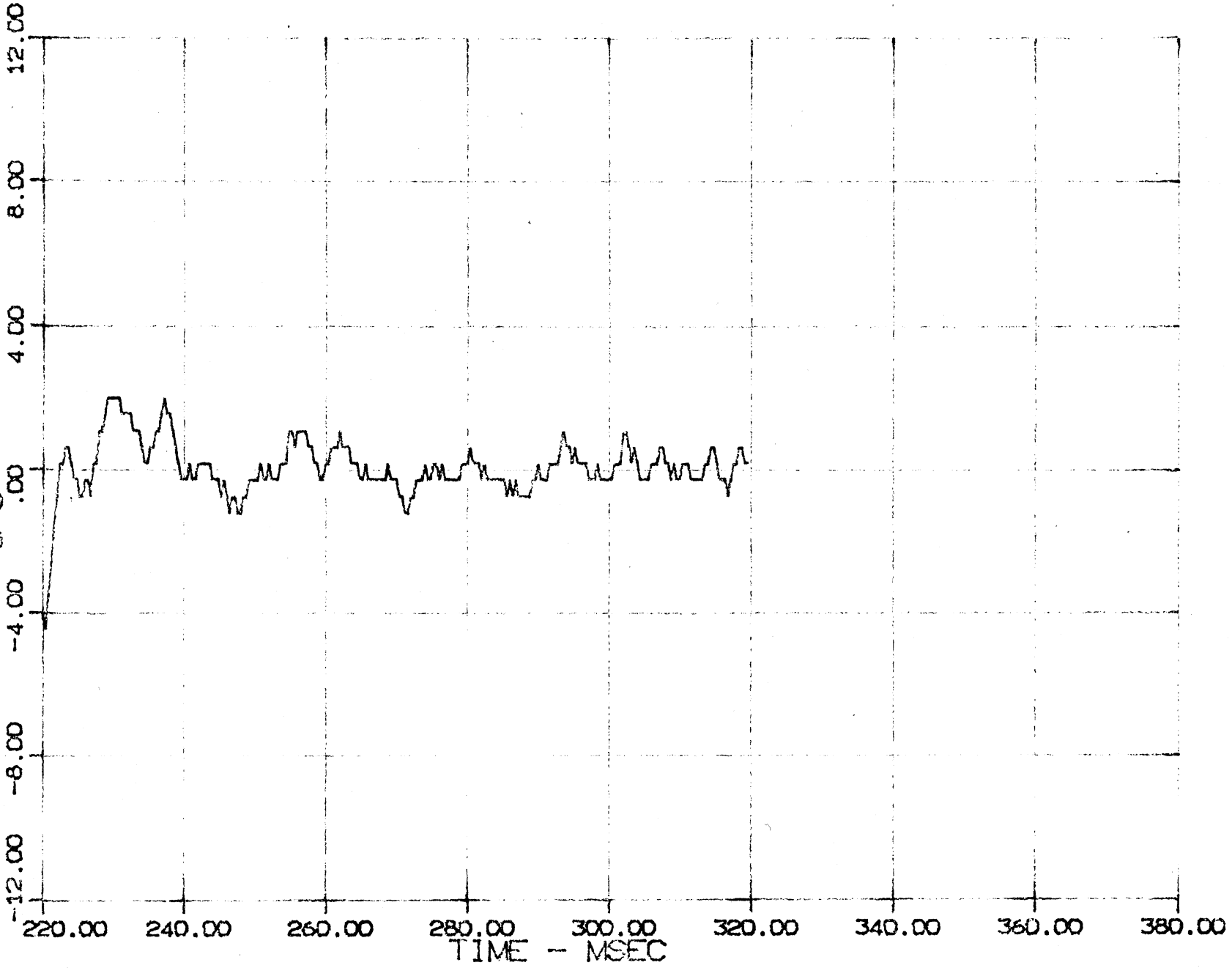


FIGURE 46 (CONT'D) WYOMING WC-4 BARRICADE IMPACT, CLASS 60 FILTER

3.5 TEST CONDUCT - VIRGINIA SIMULATED BARREL PANEL

The test article was a simulated barrel type channelizing device manufactured by Mobility Systems using design drawings provided by the Virginia Highway Department, Richmond, Virginia, designated Virginia Simulated Barrel Panel.

Two Virginia Simulated Barrel Panels were located for impact simulating the placement of two devices being used as a lane taper to channel traffic. The first device was placed in an upright position at the right quarter point of the vehicle, 17 in (43.2 cm) from the vehicle centerline. The second device was laid down with the top portion away from the vehicle in the direction of travel of the vehicle and was placed 25 ft (7.6 m) behind the first device at the left quarter point of the vehicle 17 in (43.2 cm) from the vehicle centerline. The base located in the path of the left front tire tended to form a ramp for the wheel to ride up on. These positons were chosen to maximize the possibility of vehicle yaw and overturn.

The test was conducted on Tuesday August 31, 1982 at 1:30 p.m. at a speed of 59.9 mph (96.4 mph).

Pretest photographs are presented in Figures 47 and 48.

3.5.1 TEST RESULTS

The first device impacted on the right quarter point of the vehicle bumper. The post sheared off at the base and the panel separated from the post and was run over by the vehicle. The right headlamp was broken by the panel at impact.



FIGURE 47 PRETEST SETUP – FRONT VIEW



FIGURE 48 PRETEST – 3/4 VIEW

The second device, which was laying down, was impacted on the left quarter point of the bumper and the concrete base disintegrated from around the reinforcing wire. The post and panel remained together and were propelled approximately 30 ft in the direction of travel of the vehicle. The second base left an imprint on the bumper and the sheet metal beneath the bumper.

The vehicle did not exhibit any yaw, pitch or roll instability and the dummy did not impact the interior of the vehicle due to the vehicle impact with the Virginia Simulated Barrel Panel. The vehicle was brought to a straight stop using the vehicle brakes.

The vehicle damage was restricted to a broken right headlight, left bumper and pan damage.

Posttest photographs are presented in Figures 49 through 51.

3.5.2 DATA PRESENTATION

During the time interval of interest the "flail space"[1] distance the occupant traveled did not exceed 1.69 in which is less than the 2 ft assumed distance to the vehicle interior and therefore no contact occurred.

Since no contact occurred, the highest 10 msec average after contact during the ridedown phase cannot be computed. In lieu of this data, the highest 10 msec and highest 50 msec averages are presented in Table 19.

The occupant risk values shown in this table are taken from the Recommended Occupant Risk Values for the Longitudinal (x) Direction for Breakaway/Yielding Supports - Signs and Luminaire.

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(1) Flail space approach defined in NCHRP Report 230 "Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances"



FIGURE 49 POSTTEST – FRONT

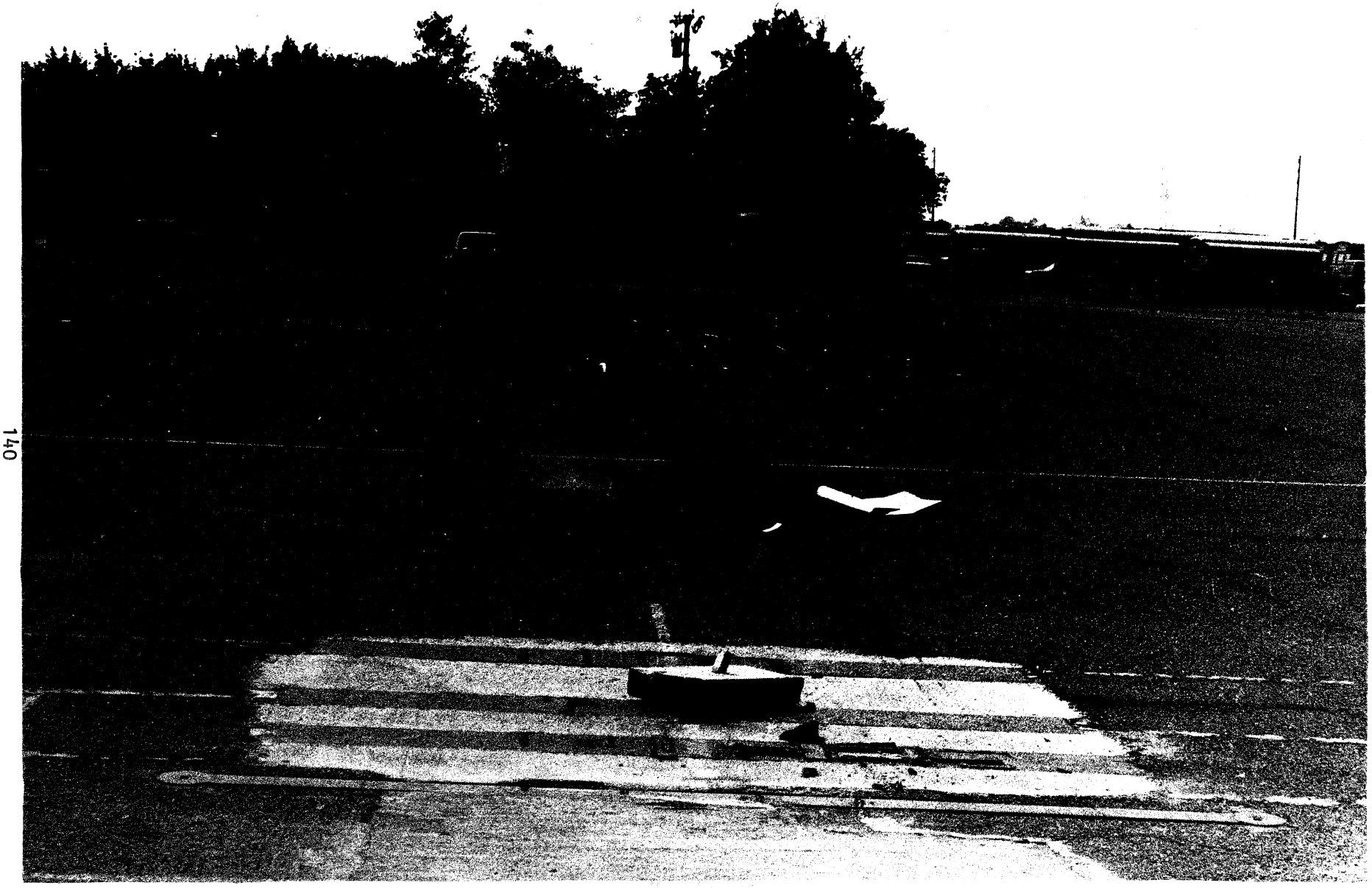


FIGURE 50 POSTTEST – PANELS

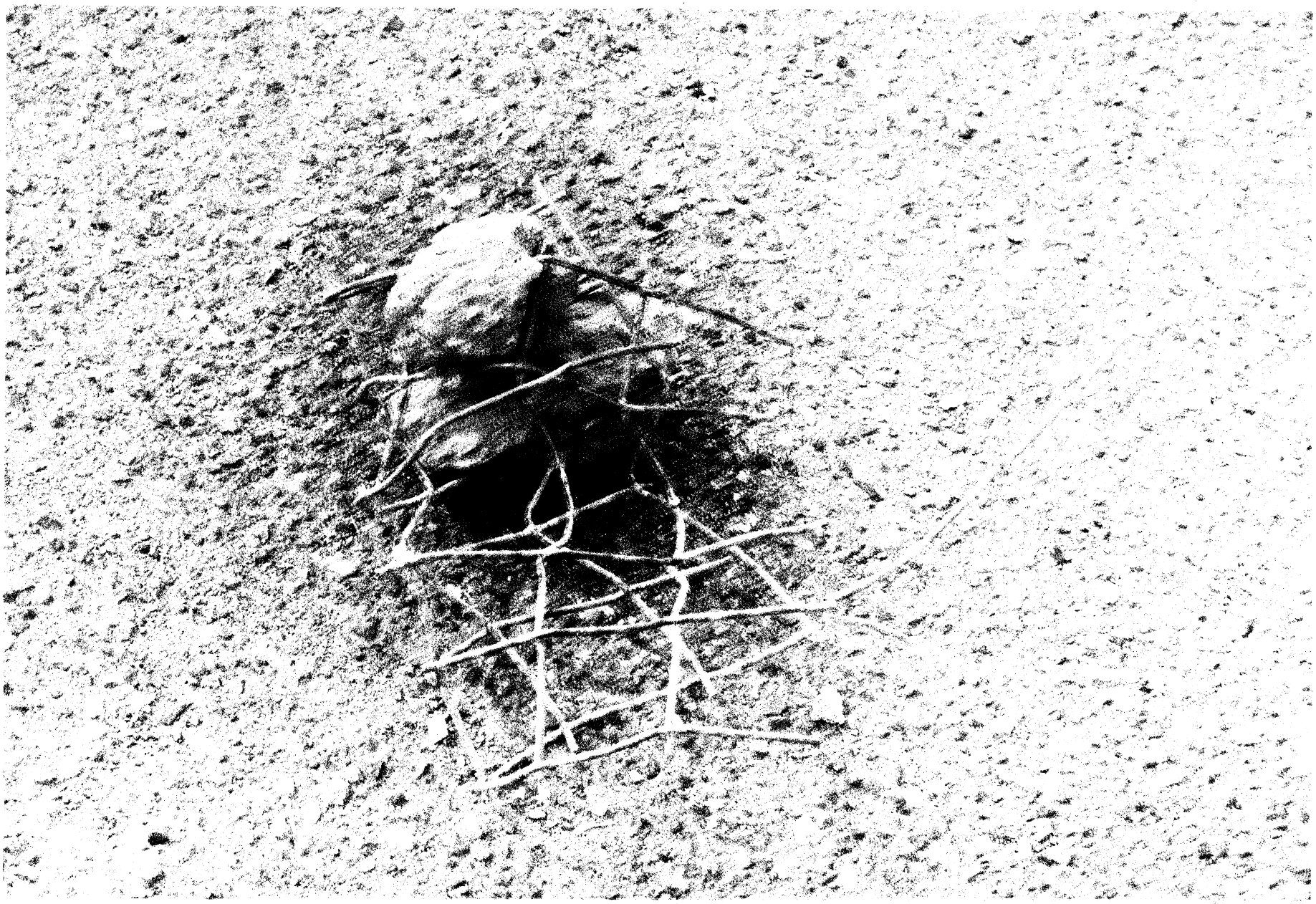


FIGURE 51 POSTTEST – BASE 2

TABLE 20 MOVING AVERAGE DATA VIRGINIA SIMULATED BARREL PANEL

Class 180 Filter 10 msec Average Acceleration (per NCHRP Report No. 230):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	0.7191 (1)	.1052 to.1152
Impact with Second Device	2.7889 (1)	.4160 to.4260
Recommended Limit	15.0 (2)	

Class 60 Filter 50 msec Average Acceleration (per TRB Circular No. 191):

	Maximum Longitudinal Accel. - g's	Time - Seconds
Impact with First Device	0.16979	.1046 to.1546
Impact with Second Device	0.4534	.3904 to.4404
Recommended Limit	10.0 (3)	

Occupant Impact Velocity:	Longitudinal Δ Vel - fps
Impact with First & Second Device	≈0
Recommended Limit	15.0 (2)

(1) The values listed are maximum values and are presented for reference. Occupant moves less than 24 in. and thus ride down period does not occur.

(2) Reference NCHRP Report No. 230, Pg. 32 (Breakaway signs & luminaires criteria used).

(3) Reference TRB Circular No. 191, Pg. 10 (Redirectional barrier criteria used).

A computer printout of the vehicle acceleration data (class 180 filter) is presented in Table 21. Computer printouts of the first integral (occupant velocity) and second integral (occupant displacement) are presented in Tables 22 and 23.

Computer plots of the event using the class 180 filter is shown in Figure 52 and for the class 60 filter in Figure 53. The flat portions of the curve represents a change of data below the resolution of the analysis equipment for the sampled period.

TABLE 21 VEHICLE ACCELERATION DATA – VIRGINIA SIMULATED BARREL PANEL

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.660	.10	-.30	-.30	-.30	-.30	.10	-.30	.10	.10	.49
.662	.49	.49	.49	.49	.49	.10	.10	.10	.10	-.30
.664	-.30	-.30	-.30	-.70	-.70	-.70	-.70	-.70	-.70	-.70
.666	.10	.10	-.30	-.30	-.30	.10	-.30	-.30	.10	.10
.668	.49	.49	.89	.49	.10	.49	.10	-.70	-.70	-.70
.670	-.70	-.30	.10	-.30	.10	.49	.49	.10	.49	.10
.672	-.30	-.30	.10	.49	.49	.89	.49	.49	.49	.10
.674	.10	-.30	-.30	-.30	-.30	-.30	.10	.10	.10	.10
.676	.10	.49	.10	.49	.49	.49	.49	.49	.49	.49
.678	.10	-.30	-.30	-.30	-.70	-.30	-.70	.10	-.70	-.30
.680	-.30	-.70	-.70	-.70	-.70	-.30	.10	.10	.10	.49
.682	.89	.89	.89	.89	.89	.49	.49	.10	.10	-.70
.684	-.30	-.70	-.70	-.30	-.30	-.30	-.30	-.30	-.30	-.30
.686	-.30	-.30	-.30	.10	-.30	.10	.49	.49	.10	.89
.688	.89	.89	.89	.89	.49	.10	.10	-.30	-.30	-.70
.690	-.70	-.30	.10	.49	.49	.89	1.28	1.28	1.28	1.28
.692	.89	.49	.10	.10	.10	-.30	-.30	.10	.10	.10
.694	.10	.10	.10	-.30	-.30	-.30	-.30	-.30	-.30	.10
.696	.10	.49	.49	1.28	.89	1.28	.89	.89	.89	.49
.698	.49	.49	.10	.10	-.30	-.30	-.30	-.30	-1.09	-1.49
.100	-1.88	-1.49	-1.88	-1.88	-1.49	-1.09	-1.09	-.70	.10	.10
.102	.49	.89	.89	.89	1.28	1.28	1.28	1.28	1.28	.89
.104	.10	-.30	-.70	-1.49	-1.88	-1.88	-1.49	-1.49	-1.09	-1.09
.106	-1.09	-1.49	-2.28	-3.86	-4.64	-5.04	-4.25	-3.07	-1.88	-1.09
.108	.10	1.67	3.65	5.23	6.02	6.02	5.23	4.84	3.65	2.07
.110	.10	-2.67	-5.04	-6.62	-6.22	-5.04	-3.46	-.30	2.07	4.05
.112	4.84	3.65	2.07	.10	-1.88	-2.67	-2.67	-1.88	-.30	2.47
.114	5.63	8.39	10.36	11.15	9.18	5.23	.10	-4.25	-7.80	-9.39
.116	-10.18	-9.39	-7.41	-4.64	-1.49	2.47	4.44	5.63	4.44	2.86
.118	.10	-1.49	-2.28	-1.88	-1.09	.10	.89	.89	.10	-1.88
.120	-3.86	-6.22	-7.41	-7.41	-5.83	-3.07	.49	4.84	7.21	8.78
.122	8.00	6.81	4.44	2.07	-.30	-1.49	-2.28	-2.28	-1.09	.49
.124	1.28	2.47	2.86	2.07	1.28	.10	-1.49	-2.67	-3.46	-3.86
.126	-3.46	-2.67	-1.49	-.30	.89	1.28	1.28	1.28	.89	.49
.128	.49	.49	.49	.89	.89	.89	.49	-.30	-1.09	-1.09
.130	-1.88	-2.28	-1.88	-1.09	-.30	.49	1.28	1.28	1.28	.89
.132	.49	.10	-.30	-.70	-1.09	-1.09	-.30	.49	.89	1.67
.134	2.07	1.67	.49	.10	-1.09	-1.09	-1.09	-1.09	.10	.89
.136	1.67	2.07	2.86	2.86	2.86	2.86	2.47	2.07	1.67	1.28
.138	.89	.10	.10	-.30	-.70	-1.09	-1.49	-1.49	-1.49	-1.09
.140	-1.09	-.30	.10	.49	.89	1.28	2.07	2.07	2.07	2.07
.142	1.67	1.28	.10	-1.09	-2.28	-3.46	-4.64	-5.43	-5.83	-5.83
.144	-5.43	-4.64	-3.86	-2.67	-1.49	.10	2.07	4.05	5.23	6.02
.146	6.02	5.63	4.84	4.44	3.26	3.26	2.86	2.47	2.07	1.67
.148	1.28	.49	.49	.10	-.70	-1.49	-1.88	-2.28	-2.67	-2.28
.150	-2.28	-2.28	-2.28	-2.28	-2.67	-2.28	-2.28	-1.88	-1.09	-.30
.152	1.28	2.07	2.86	3.65	3.65	3.26	2.47	1.28	.10	-1.49
.154	-2.67	-3.46	-3.46	-3.07	-1.88	-1.09	.49	2.07	3.26	4.05
.156	4.44	4.44	4.05	3.26	2.07	.89	.10	-.70	-1.09	-1.09
.158	-1.49	-1.09	-.70	-.70	-.70	.10	.49	.49	.89	.49
.160	.10	.49	.49	.10	.10	.49	.49	.89	.89	1.67
.162	1.28	1.28	1.28	1.28	1.28	.89	.89	.49	.49	.10
.164	-.70	-1.09	-1.88	-2.67	-3.07	-3.07	-3.07	-2.28	-1.88	-1.09
.166	-.70	.10	.10	.10	-.30	-.30	.49	.49	.49	.89
.168	1.67	1.67	1.67	.89	.49	-.70	-1.49	-2.67	-2.67	-3.07
.170	-3.07	-2.28	-1.88	-1.49	-1.09	-.30	-.30	-.30	.49	.49
.172	1.28	1.28	1.67	1.67	1.67	1.28	.89	.89	.49	.49
.174	.10	.10	-.30	-.30	-.30	-.70	-.70	-1.09	-.70	-.70
.176	.10	.49	.49	.89	.89	1.28	1.28	1.67	1.28	.89
.178	.49	.49	.49	.49	.10	-.30	-1.09	-1.49	-1.88	-1.88
.180	-2.28	-2.28	-2.28	-1.49	-1.49	-1.09	-.70	-.30	.10	.10
.182	.49	.89	1.28	1.28	1.67	1.67	1.28	1.28	.49	.10
.184	-.70	-1.09	-1.49	-1.88	-2.28	-2.28	-2.28	-2.67	-2.67	-2.28
.186	-1.88	-1.49	-1.09	-.70	-.30	.49	.49	.49	.89	1.28
.188	1.67	1.28	1.28	1.28	.89	.89	.10	-.30	-.30	-.70
.190	-.70	-1.09	-.70	-.70	-.70	-.70	-.30	-.30	-.30	-.30
.192	-.30	-.30	.10	.10	.49	.89	1.28	1.67	2.07	1.67
.194	1.28	.89	.89	.49	.49	.10	-.30	-.70	-.70	-.70
.196	-.30	-.70	-.30	.10	-.30	-.30	-.70	-.30	-.30	-.30
.198	-.30	-.30	-.30	.10	.49	.49	.49	.49	.10	-.30
.200	-.30	-.70	-.30	-.30	.10	.89	.89	1.28	1.28	.89
.202	.49	.49	.10	-.70	-1.09	-1.09	-1.09	-1.49	-1.49	-1.49
.204	-2.28	-2.67	-2.67	-2.67	-2.28	-1.88	-1.09	-.30	.49	1.28
.206	1.67	1.28	1.28	.89	.49	.10	.10	.49	.89	.89
.208	1.28	1.28	1.28	.49	-.30	-1.09	-2.28	-3.07	-3.46	-3.86
.210	-3.07	-2.67	-1.49	-.70	.49	1.28	2.47	2.47	2.86	2.86
.212	2.47	2.07	1.67	.89	.49	.10	.10	-.30	-.30	-.30
.214	-.30	.10	.10	-.30	-.30	-.70	-1.09	-1.09	-.70	-1.09
.216	-1.09	-.70	-.70	-.30	.10	.89	1.28	1.28	2.07	2.07
.218	2.07	2.47	2.07	1.28	.49	-.70	-1.49	-1.49	-1.09	-.70
.220	-.70	-1.09	-1.88	-3.07	-3.07	-3.07	-3.07	-2.67	-1.88	-1.49

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 21 (CONT'D) VEHICLE ACCELERATION DATA - VIRGINIA SIMULATED BARREL PANEL

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.222	-1.09	.10	.49	.89	.89	1.67	1.67	2.47	3.26	3.65
.224	3.65	3.65	2.86	2.07	1.28	.49	-.30	-1.09	-1.49	-2.28
.226	-2.28	-1.88	-1.88	-1.09	-1.09	-1.09	-.70	-.70	-1.09	-1.49
.228	-1.88	-1.49	-1.49	-1.09	-.70	.10	.49	.89	1.67	1.67
.230	1.67	1.28	.89	.10	-.70	-1.09	-1.49	-2.28	-2.28	-1.88
.232	-1.88	-1.49	-.30	.49	.89	1.67	2.07	2.47	2.47	2.07
.234	1.67	.49	-.30	-.70	-1.49	-1.49	-1.09	-.70	.49	1.28
.236	2.07	2.47	2.47	2.07	1.28	-.30	-1.49	-3.07	-3.46	-3.46
.238	-2.67	-1.49	-.30	.49	.89	1.67	1.67	1.67	1.28	1.28
.240	.49	.10	-.30	-.70	-1.09	-.70	-1.09	-.70	-.30	-.30
.242	-.30	-.30	-.30	.10	.10	-.30	-.30	-.30	-.70	-.70
.244	-.70	-1.09	-.70	-.70	.10	.49	1.67	2.07	2.07	2.07
.246	1.67	.49	-.30	-1.09	-1.49	-2.28	-2.67	-2.67	-1.49	-1.09
.248	-.70	.49	.89	1.67	1.67	1.67	1.67	1.28	1.28	.89
.250	.89	.49	.49	.49	.49	.10	.10	-.30	-.30	-.30
.252	-.70	-1.09	-1.49	-1.88	-2.28	-2.28	-2.28	-1.88	-1.88	-1.09
.254	-1.09	-.30	.49	.89	1.67	1.67	1.67	1.67	1.28	.89
.256	.10	.10	-.30	-.70	-1.09	-1.49	-1.49	-1.88	-1.88	-1.88
.258	-1.88	-1.09	-1.09	-.70	-.30	.10	.89	1.28	1.67	1.67
.260	2.07	2.07	1.28	.89	.89	.89	.10	.10	-.30	-.30
.262	-.70	-.70	-1.09	-1.09	-1.49	-1.49	-1.09	-1.09	-1.09	-.30
.264	-.30	.10	.49	.89	1.28	1.67	1.67	1.67	1.67	1.67
.266	1.28	.89	.10	-.30	-.70	-1.09	-1.49	-1.88	-1.88	-1.88
.268	-1.09	-.70	-.30	-.30	.10	.10	.49	.49	.89	.89
.270	.89	1.28	.89	.89	.89	.89	.49	.49	.10	.10
.272	-.30	-.70	-1.09	-.70	-.70	-.70	-.70	-.30	-.70	-.30
.274	-.30	-.30	.10	.10	.49	.49	.89	1.28	1.28	1.28
.276	1.28	1.28	.89	.89	.49	.10	-.30	-.30	-.30	-1.09
.278	-1.09	-.70	-.70	-.30	-.30	-.30	-.30	.10	-.30	-.30
.280	-.30	-.30	.10	-.30	.10	.10	.10	.49	.10	.10
.282	.10	-.30	-.30	-.70	-.70	-1.09	-1.09	-1.09	-1.09	-.70
.284	-.70	-.70	.10	.10	.10	.10	.10	.10	.10	-.30
.286	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.288	.10	-.30	-.30	-.30	.10	.10	.10	.49	.10	.10
.290	.49	.49	.49	.49	.49	.49	.10	.10	-.30	-.30
.292	.10	.10	.10	-.30	-.30	-.30	.10	-.30	-.30	.10
.294	-.30	-.30	-.30	-.30	-.30	-.30	.10	.10	.49	.49
.296	.49	.89	.89	.49	.10	.10	-.30	-.30	-.30	-.30
.298	-.30	-.30	-.30	-.70	-.30	-.70	-.30	-.30	-.30	.10
.300	.10	.10	.10	.10	-.30	-.30	-.30	-.30	-.30	-.30
.302	-.30	.10	-.30	-.30	-.30	-.30	-.30	-.30	-.70	-.30
.304	-.70	-.30	-.30	-.30	-.30	-.30	-.30	-.30	-.30	-.30
.306	.10	.10	.10	.10	.10	.10	-.30	-.30	-.30	-.30
.308	-.30	-.70	-.70	-.30	-.30	.10	-.30	.10	.49	.89
.310	.89	.89	.49	-.30	-1.49	-2.28	-2.28	-2.28	-1.09	.49
.312	2.86	4.05	5.23	4.84	3.26	.89	-1.88	-3.86	-5.43	-5.43
.314	-4.25	-2.67	-.30	2.07	3.26	3.65	3.26	2.07	.89	-.70
.316	-1.49	-1.88	-1.88	-1.49	-.70	.10	.89	1.28	1.28	1.28
.318	1.28	1.28	.89	.49	-.30	-.30	-.30	-1.09	-1.09	-1.09
.320	-1.09	-1.09	-1.09	-1.09	-.70	-.30	.10	.10	.49	.49
.322	.49	.49	.10	.10	.10	.49	.49	.89	.89	.89
.324	.49	.49	-.30	-.30	-1.09	-1.09	-.70	-.30	.10	.10
.326	.89	.89	.89	.89	.89	.89	.49	.49	.10	-.30
.328	-.30	-.70	-.70	-.70	-1.49	-.70	-1.09	-1.09	-1.09	-.70
.330	-.70	.10	-.30	.10	.10	.10	.49	.10	.49	.49
.332	.49	.10	.10	.10	.10	.10	.10	.10	.49	.49
.334	.49	.49	.49	.49	.10	.10	-.30	-.70	-1.09	-1.09
.336	-.70	-1.09	-.70	-.30	.10	.10	.10	.10	.10	.10
.338	.10	.10	-.30	.10	.10	.10	.10	.10	.10	.10
.340	.10	.10	.10	-.30	.10	.10	.10	.49	.49	.10
.342	.10	-.30	-.30	-.30	-.70	-1.09	-1.09	-1.09	-.70	-.30
.344	.10	.49	.89	.89	.49	.89	.49	.49	.49	.49
.346	.10	.10	.10	.10	.10	.10	.10	.10	.10	-.30
.348	-.30	.10	-.30	-.70	-.30	-.30	-.30	-.30	-.30	-.30
.350	.10	.10	.10	.49	.49	.10	.49	.10	.10	.10
.352	.10	.10	.10	.10	.10	.49	.10	.49	.49	.49
.354	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.356	.10	.49	.10	.49	.10	.10	.10	-.30	.10	.10
.358	-.30	-.30	-.30	.10	-.30	.10	-.30	-.30	-.30	-.30
.360	-.30	.10	.10	.49	.49	.49	.89	.49	.49	.49
.362	.10	-.30	-.30	-.30	-1.09	-.70	-.70	-.70	-.70	-.30
.364	-.30	-.30	.10	.10	.10	.10	.49	.10	.10	.49
.366	.49	.89	.89	.89	.89	.49	.10	.10	-.30	-.70
.368	-.70	-.70	-.70	-.30	-.30	-.30	.10	.10	.49	.49
.370	.10	.10	.10	-.30	-.30	-.30	-.30	-.30	.10	-.30
.372	-.30	.10	.10	.10	-.30	.10	-.30	-.70	-.70	-.70
.374	-.70	-.30	-.30	-.30	.10	.10	.10	.10	.49	.49
.376	.49	.49	.49	.49	.89	.89	.49	.49	.49	.10
.378	-.30	-.30	-.70	-.70	-.70	-.70	-.30	-.30	.10	.10
.380	.10	.10	.49	.49	.10	.10	.10	.10	.10	.10

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 21 (CONT'D) VEHICLE ACCELERATION DATA - VIRGINIA SIMULATED BARREL PANEL

TIME	G'S									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.382	.10	.10	.49	.10	.10	.10	.10	.10	.10	-.30
.384	-.30	-.30	-.30	-.70	-.30	-.30	-.30	-.30	.10	.10
.386	.10	.10	.10	.49	.49	.10	.10	-.30	-.30	.10
.388	.10	-.30	-.30	-.30	.10	-.30	-.30	-.30	-.30	-.30
.390	-.30	-.30	.10	.10	.10	.49	.10	.10	.49	.49
.392	.49	.10	.10	.10	.10	-.30	.10	.10	.49	.49
.394	.10	.10	.10	.10	.10	.10	.10	-.30	.10	.10
.396	.10	.10	.10	.10	-.30	-.30	-.30	-.70	-1.09	-.70
.398	-1.09	-.30	-.30	-.30	-.30	-.70	-.70	-1.09	-1.49	-2.28
.400	-3.46	-4.64	-5.83	-5.43	-5.43	-5.04	-4.64	-4.25	-3.46	-3.46
.402	-3.07	-2.67	-2.28	-2.28	-1.88	-1.09	.10	.89	2.07	2.86
.404	3.26	3.65	3.26	2.07	.89	-.30	-1.09	-1.88	-2.28	-2.28
.406	-2.67	-3.07	-3.46	-4.25	-4.64	-4.64	-4.64	-3.86	-2.67	-.70
.408	.89	1.67	2.47	3.26	3.26	3.26	3.65	3.65	4.05	4.05
.410	3.65	3.65	3.26	2.86	2.86	2.47	1.67	.89	.10	-1.09
.412	-2.28	-2.67	-3.46	-3.46	-2.67	-1.88	-.30	.89	1.28	.49
.414	.10	-.30	-1.09	-2.67	-4.25	-6.22	-9.39	-11.76	-13.34	-12.15
.416	-9.39	-7.41	-5.04	-2.67	-1.49	-1.09	-1.88	-2.67	-4.64	-7.01
.418	-7.01	-3.86	2.07	9.18	15.50	19.84	23.00	24.98	24.98	22.61
.420	18.26	12.74	6.81	.89	-3.86	-7.41	-9.39	-9.39	-8.99	-8.20
.422	-8.99	-10.97	-14.13	-16.50	-16.50	-13.73	-8.60	-3.07	.10	2.86
.424	6.02	10.36	15.50	18.66	21.03	23.00	22.61	18.26	11.15	2.07
.426	-7.80	-16.89	-24.79	-28.74	-29.53	-27.16	-22.82	-17.68	-13.34	-8.60
.428	-4.64	-1.49	.49	2.07	4.84	8.39	12.74	19.06	24.58	29.72
.430	32.09	30.90	26.56	18.66	8.78	-1.09	-8.60	-13.73	-16.10	-16.89
.432	-16.50	-16.50	-16.89	-18.08	-19.26	-20.45	-20.84	-18.08	-13.73	-7.41
.434	.49	9.57	18.66	25.77	29.32	27.74	21.42	11.15	.49	-9.39
.436	-17.29	-21.24	-21.63	-19.66	-15.31	-10.18	-5.43	-.70	2.07	3.26
.438	3.65	2.47	.89	.10	-.30	.89	3.26	6.42	10.36	13.13
.440	15.11	15.11	13.92	11.15	7.60	4.05	.49	-2.28	-5.04	-7.80
.442	-10.18	-12.55	-14.52	-16.50	-16.89	-16.10	-13.34	-10.18	-5.43	-.30
.444	5.23	9.97	14.71	18.26	21.03	22.22	21.03	19.06	14.71	9.57
.446	4.05	-1.49	-6.62	-10.97	-14.13	-16.50	-17.68	-17.29	-15.71	-12.55
.448	-9.39	-5.43	-1.88	1.67	4.05	6.81	8.39	9.57	9.97	9.97
.450	9.57	8.78	8.39	6.81	5.23	2.86	.89	-1.49	-3.86	-5.43
.452	-6.22	-7.01	-7.41	-7.01	-7.01	-7.41	-7.01	-6.62	-6.22	-5.43
.454	-3.86	-2.28	.10	2.07	4.05	6.42	8.00	9.57	9.57	9.57
.456	8.00	6.42	4.05	1.67	-1.09	-3.46	-5.83	-7.80	-8.99	-10.18
.458	-10.57	-10.18	-8.99	-7.01	-3.86	-1.49	1.67	4.84	6.81	8.78
.460	9.57	10.36	9.97	8.78	7.60	6.02	4.05	2.07	.89	-1.09
.462	-2.67	-3.86	-5.04	-5.83	-6.22	-6.62	-6.22	-6.22	-5.83	-5.04
.464	-4.25	-3.46	-1.88	-.30	1.28	2.86	4.84	6.42	7.60	8.00
.466	8.00	7.21	5.63	4.05	2.47	.89	.10	-1.49	-2.28	-3.46
.468	-3.86	-5.04	-5.43	-5.83	-6.22	-6.22	-5.43	-4.64	-2.67	-1.09
.470	.89	2.86	4.84	6.42	7.21	7.60	7.21	6.42	4.84	3.26
.472	1.28	-.70	-3.07	-4.25	-5.83	-6.22	-6.22	-6.62	-5.83	-5.04
.474	-3.86	-2.67	-1.49	-.30	.49	1.28	1.67	2.47	3.26	3.26
.476	3.26	2.86	2.47	1.67	1.28	.49	.10	-.30	-1.09	-1.49
.478	-1.88	-2.28	-2.67	-3.46	-4.25	-4.25	-4.25	-3.86	-3.07	-2.28
.480	-.30	1.28	2.86	4.44	5.63	6.02	6.42	6.02	4.84	3.65
.482	2.07	.89	-.30	-1.88	-3.07	-3.86	-4.25	-4.25	-4.25	-3.86
.484	-3.46	-2.67	-2.28	-1.09	-.30	.89	1.28	2.07	2.47	2.47
.486	1.67	1.67	1.67	1.28	1.67	2.07	2.07	2.07	1.67	1.28
.488	.89	-.30	-1.09	-2.28	-2.67	-3.07	-3.07	-2.67	-1.88	-1.49
.490	-.70	.10	.89	1.28	1.67	2.07	2.07	2.07	2.07	1.67
.492	1.67	.89	.49	-.30	-.70	-1.09	-1.49	-1.88	-1.88	-1.88
.494	-1.88	-1.49	-1.09	-1.09	-1.09	-.70	-.30	-.30	.10	.10
.496	.49	.49	.89	.89	.89	.49	.49	.10	-.30	-.70
.498	-1.09	-1.49	-1.49	-1.88	-1.88	-1.49	-1.49	-1.49	-.70	-.30
.500	.10	.10	.89	1.28	1.28	1.67	2.07	2.07	1.67	1.67
.502	1.67	1.28	1.28	.89	.49	.49	.10	-.30	-.70	-1.09
.504	-1.49	-1.88	-1.88	-1.88	-1.49	-1.09	-.30	-.30	.49	.89
.506	1.28	1.67	2.07	2.07	2.07	2.07	1.28	1.28	.89	.10
.508	-.30	-.30	-.70	-.70	-1.09	-1.09	-1.09	-.70	-.70	-.30
.510	-.30	.10	.10	.49	.89	.89	.89	.89	.89	.89
.512	.89	.49	.49	.10	-.30	-.70	-1.09	-1.88	-1.88	-2.28
.514	-2.67	-2.67	-3.07	-2.67	-3.07	-2.28	-2.28	-2.28	-2.28	-1.88
.516	-1.49	-1.49	-1.49	-1.09	-.70	-.30	.10	.10	.10	.10
.518	-.30	-.30	-.70	-1.09	-1.49	-1.88	-1.88	-2.28	-2.28	-2.28
.520	-1.88	-1.09	-.30	-.30	.10	.49	.89	1.67	1.67	1.67
.522	2.07	2.07	2.47	2.07	2.07	2.47	1.67	1.67	1.67	1.67
.524	1.67	1.28	.89	1.28	1.28	1.28	1.28	.89	.89	.49
.526	.10	.10	-.30	-.30	-.30	-.30	.10	.49	.89	.89
.528	1.28	1.67	1.28	1.28	.89	.89	.89	.49	-.30	-.30
.530	-.30	-.30	.10	.10	.10	.10	.10	.10	.10	-.30
.532	.10	-.30	.10	.10	.10	.49	.49	.49	.89	.49
.534	.49	.49	.10	.10	.10	-.30	-.30	-.70	-.30	-.70
.536	-.70	-.70	.10	-.30	.10	.10	.49	.10	.10	-.30
.538	-.30	-.70	-1.09	-.70	-1.09	-1.09	-.70	-.70	-.70	-.70
.540	-.70									

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 22 OCCUPANT VELOCITY – VIRGINIA SIMULATED BARREL PANEL

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.01	-.02	-.04	-.06	-.09	-.08	-.10	-.09	-.09	-.05
.062	-.01	.03	.06	.10	.14	.15	.16	.16	.17	.15
.064	.12	.10	.08	.02	-.03	-.08	-.14	-.19	-.24	-.30
.066	-.29	-.28	-.31	-.33	-.35	-.35	-.37	-.39	-.38	-.38
.068	-.34	-.36	-.23	-.20	-.19	-.15	-.14	-.20	-.25	-.30
.070	-.36	-.38	-.37	-.40	-.39	-.35	-.31	-.31	-.27	-.26
.072	-.28	-.31	-.30	-.26	-.22	-.16	-.12	-.08	-.04	-.04
.074	-.03	-.05	-.07	-.10	-.12	-.14	-.14	-.13	-.12	-.11
.076	-.11	-.07	-.06	-.02	.01	.05	.09	.13	.16	.20
.078	.21	.19	.16	.14	.09	.06	.01	.02	-.04	-.06
.080	-.08	-.14	-.19	-.24	-.30	-.32	-.31	-.31	-.30	-.26
.082	-.19	-.12	-.06	.01	.08	.12	.16	.16	.17	.12
.084	.09	.04	-.01	-.04	-.06	-.08	-.11	-.13	-.15	-.17
.086	-.20	-.22	-.24	-.24	-.26	-.25	-.22	-.18	-.17	-.10
.088	-.03	.04	.10	.17	.21	.22	.22	.20	.18	.12
.090	.07	.05	.05	.09	.13	.20	.30	.40	.50	.59
.092	.66	.70	.71	.71	.72	.70	.68	.68	.69	.70
.094	.71	.71	.72	.70	.67	.65	.63	.60	.58	.59
.096	.60	.63	.67	.77	.84	.94	1.01	1.07	1.14	1.18
.098	1.22	1.26	1.26	1.27	1.25	1.22	1.20	1.18	1.09	.98
.100	.83	.72	.57	.43	.31	.23	.15	.09	.10	.11
.102	.14	.21	.28	.35	.45	.55	.65	.74	.84	.91
.104	.92	.90	.84	.73	.58	.44	.32	.21	.12	.04
.106	-.04	-.16	-.33	-.63	-.99	-1.38	-1.71	-1.94	-2.09	-2.17
.108	-2.17	-2.04	-1.76	-1.35	-.89	-.42	-.02	.36	.64	.80
.110	.80	.60	.21	-.30	-.78	-1.17	-1.44	-1.46	-1.30	-.99
.112	-.62	-.34	-.18	-.17	-.31	-.52	-.73	-.87	-.89	-.70
.114	-.27	.38	1.18	2.04	2.75	3.15	3.16	2.83	2.23	1.50
.116	.72	-.01	-.58	-.94	-1.05	-.86	-.52	-.08	.26	.48
.118	.49	.37	.20	.05	-.03	-.02	.04	.11	.12	-.03
.120	-.32	-.80	-1.38	-1.95	-2.40	-2.63	-2.60	-2.22	-1.67	-.99
.122	-.37	.15	.50	.66	.63	.52	.34	.17	.08	.12
.124	.22	.41	.63	.79	.89	.90	.78	.58	.31	.01
.126	-.26	-.46	-.58	-.60	-.53	-.43	-.33	-.24	-.17	-.13
.128	-.09	-.05	-.02	.05	.12	.19	.23	.20	.12	.04
.130	-.11	-.28	-.43	-.51	-.54	-.50	-.40	-.30	-.20	-.13
.132	-.10	-.09	-.11	-.17	-.25	-.33	-.36	-.32	-.25	-.12
.134	.04	.17	.20	.21	.13	.04	-.04	-.12	-.12	-.05
.136	.08	.24	.46	.68	.90	1.12	1.31	1.47	1.60	1.70
.138	1.77	1.78	1.78	1.76	1.71	1.62	1.51	1.39	1.28	1.20
.140	1.11	1.09	1.10	1.13	1.20	1.30	1.46	1.62	1.78	1.94
.142	2.07	2.17	2.18	2.09	1.92	1.65	1.29	.87	.42	-.03
.144	-.45	-.81	-1.11	-1.31	-1.43	-1.42	-1.26	-.95	-.54	-.08
.146	.39	.82	1.19	1.54	1.79	2.04	2.26	2.45	2.61	2.74
.148	2.84	2.88	2.91	2.92	2.87	2.75	2.61	2.43	2.23	2.05
.150	1.87	1.70	1.52	1.35	1.14	.97	.79	.65	.56	.54
.152	.64	.80	1.02	1.30	1.58	1.83	2.02	2.12	2.13	2.01
.154	1.81	1.54	1.27	1.04	.89	.81	.85	1.01	1.26	1.57
.156	1.91	2.25	2.57	2.82	2.98	3.05	3.05	3.00	2.92	2.83
.158	2.72	2.63	2.58	2.53	2.47	2.48	2.52	2.55	2.62	2.66
.160	2.67	2.71	2.74	2.75	2.76	2.80	2.83	2.90	2.97	3.10
.162	3.20	3.30	3.40	3.50	3.59	3.66	3.73	3.77	3.81	3.81
.164	3.76	3.68	3.53	3.32	3.09	2.85	2.61	2.44	2.29	2.21
.166	2.16	2.16	2.17	2.18	2.16	2.13	2.17	2.21	2.25	2.31
.168	2.44	2.57	2.70	2.77	2.81	2.75	2.64	2.43	2.23	1.99
.170	1.75	1.58	1.43	1.32	1.23	1.21	1.19	1.16	1.20	1.24
.172	1.34	1.44	1.57	1.70	1.83	1.92	1.99	2.06	2.10	2.14
.174	2.14	2.15	2.13	2.11	2.08	2.03	1.98	1.89	1.84	1.78
.176	1.79	1.83	1.87	1.94	2.00	2.10	2.20	2.33	2.43	2.50
.178	2.54	2.57	2.61	2.65	2.66	2.63	2.55	2.43	2.29	2.14
.180	1.97	1.79	1.62	1.50	1.39	1.30	1.25	1.23	1.23	1.24
.182	1.28	1.35	1.45	1.55	1.67	1.80	1.90	2.00	2.04	2.05
.184	1.99	1.91	1.79	1.65	1.47	1.30	1.12	.92	.71	.53
.186	.39	.27	.19	.14	.11	.15	.19	.23	.30	.39
.188	.52	.62	.72	.82	.89	.96	.96	.94	.92	.86
.190	.81	.73	.67	.62	.57	.51	.49	.47	.44	.42
.192	.40	.37	.38	.39	.42	.49	.59	.72	.88	1.01
.194	1.11	1.18	1.25	1.28	1.32	1.33	1.31	1.25	1.20	1.14
.196	1.12	1.07	1.04	1.05	1.03	1.01	.95	.93	.91	.88
.198	.86	.84	.81	.82	.86	.90	.93	.97	.98	.96
.200	.93	.88	.86	.83	.84	.91	.98	1.08	1.17	1.24
.202	1.28	1.32	1.33	1.27	1.19	1.10	1.02	.91	.79	.68
.204	.50	.29	.09	-.12	-.29	-.44	-.52	-.55	-.51	-.41
.206	-.28	-.18	-.08	-.01	.02	.03	.04	.08	.14	.21
.208	.31	.41	.51	.55	.52	.44	.26	.03	-.24	-.54
.210	-.77	-.98	-1.09	-1.15	-1.11	-1.01	-.82	-.63	-.41	-.19
.212	.00	.16	.29	.36	.40	.40	.41	.39	.36	.34
.214	.32	.33	.33	.31	.29	.23	.15	.06	.01	-.07
.216	-.16	-.21	-.26	-.29	-.28	-.21	-.11	-.01	.15	.30
.218	.46	.66	.81	.91	.95	.90	.78	.67	.58	.53
.220	.48	.39	.25	.01	-.23	-.46	-.70	-.90	-1.05	-1.16

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 22 (CONT'D) OCCUPANT VELOCITY - VIRGINIA SIMULATED BARREL PANEL

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.222	-1.25	-1.24	-1.20	-1.14	-1.07	-.94	-.81	-.62	-.37	-.08
.224	.20	.48	.70	.86	.96	1.00	.97	.89	.77	.60
.226	.42	.28	.13	.05	-.04	-.12	-.17	-.23	-.31	-.43
.228	-.57	-.69	-.80	-.88	-.94	-.93	-.89	-.82	-.70	-.57
.230	-.44	-.34	-.27	-.26	-.32	-.46	-.51	-.69	-.87	-1.01
.232	-1.16	-1.27	-1.29	-1.26	-1.19	-1.06	-.90	-.71	-.52	-.36
.234	-.23	-.19	-.21	-.27	-.38	-.50	-.58	-.64	-.60	-.50
.236	-.34	-.15	.04	.20	.30	.28	.16	-.07	-.34	-.61
.238	-.81	-.93	-.95	-.91	-.85	-.72	-.59	-.46	-.36	-.26
.240	-.22	-.22	-.24	-.29	-.38	-.43	-.51	-.57	-.59	-.61
.242	-.64	-.66	-.68	-.68	-.67	-.69	-.72	-.74	-.79	-.85
.244	-.98	-.98	-1.04	-1.09	-1.08	-1.05	-.92	-.76	-.60	-.44
.246	-.31	-.27	-.29	-.38	-.49	-.67	-.87	-1.08	-1.19	-1.28
.248	-1.33	-1.29	-1.23	-1.10	-.97	-.84	-.71	-.61	-.51	-.44
.250	-.37	-.34	-.30	-.26	-.22	-.22	-.21	-.23	-.25	-.28
.252	-.33	-.42	-.53	-.68	-.85	-1.03	-1.20	-1.35	-1.49	-1.58
.254	-1.66	-1.68	-1.65	-1.58	-1.45	-1.32	-1.19	-1.06	-.96	-.89
.256	-.89	-.88	-.90	-.96	-1.04	-1.15	-1.27	-1.41	-1.56	-1.70
.258	-1.85	-1.93	-2.02	-2.07	-2.09	-2.09	-2.02	-1.92	-1.79	-1.66
.260	-1.50	-1.34	-1.24	-1.17	-1.11	-1.04	-1.03	-1.02	-1.05	-1.07
.262	-1.12	-1.18	-1.26	-1.35	-1.46	-1.57	-1.66	-1.74	-1.83	-1.85
.264	-1.87	-1.87	-1.83	-1.76	-1.66	-1.53	-1.40	-1.27	-1.14	-1.01
.266	-.92	-.85	-.84	-.86	-.92	-1.00	-1.12	-1.26	-1.41	-1.55
.268	-1.64	-1.69	-1.71	-1.74	-1.73	-1.72	-1.68	-1.65	-1.58	-1.51
.270	-1.44	-1.34	-1.27	-1.20	-1.14	-1.07	-1.03	-.99	-.99	-.98
.272	-1.00	-1.05	-1.14	-1.19	-1.25	-1.30	-1.35	-1.38	-1.43	-1.45
.274	-1.48	-1.50	-1.49	-1.48	-1.45	-1.41	-1.34	-1.24	-1.14	-1.04
.276	-.95	-.85	-.78	-.71	-.67	-.67	-.69	-.71	-.73	-.82
.278	-.90	-.96	-1.01	-1.03	-1.06	-1.08	-1.10	-1.10	-1.12	-1.14
.280	-1.16	-1.19	-1.18	-1.20	-1.20	-1.19	-1.18	-1.14	-1.14	-1.13
.282	-1.12	-1.15	-1.17	-1.22	-1.28	-1.36	-1.44	-1.53	-1.61	-1.67
.284	-1.72	-1.77	-1.77	-1.76	-1.75	-1.74	-1.74	-1.73	-1.72	-1.75
.286	-1.74	-1.73	-1.72	-1.72	-1.71	-1.70	-1.69	-1.69	-1.68	-1.67
.288	-1.66	-1.69	-1.71	-1.73	-1.73	-1.72	-1.71	-1.67	-1.67	-1.66
.290	-1.62	-1.58	-1.55	-1.51	-1.47	-1.43	-1.43	-1.42	-1.44	-1.46
.292	-1.46	-1.45	-1.44	-1.47	-1.49	-1.51	-1.50	-1.53	-1.55	-1.54
.294	-1.57	-1.59	-1.61	-1.64	-1.66	-1.68	-1.67	-1.67	-1.63	-1.59
.296	-1.55	-1.49	-1.42	-1.38	-1.37	-1.36	-1.39	-1.41	-1.43	-1.46
.298	-1.48	-1.50	-1.53	-1.58	-1.60	-1.66	-1.68	-1.70	-1.73	-1.72
.300	-1.71	-1.70	-1.70	-1.69	-1.71	-1.74	-1.76	-1.78	-1.81	-1.83
.302	-1.85	-1.85	-1.87	-1.89	-1.91	-1.94	-1.96	-1.98	-2.04	-2.06
.304	-2.11	-2.14	-2.16	-2.18	-2.21	-2.23	-2.25	-2.28	-2.30	-2.32
.306	-2.32	-2.31	-2.30	-2.29	-2.29	-2.28	-2.30	-2.33	-2.35	-2.37
.308	-2.39	-2.45	-2.50	-2.53	-2.55	-2.54	-2.56	-2.56	-2.52	-2.45
.310	-2.38	-2.31	-2.28	-2.30	-2.41	-2.59	-2.77	-2.94	-3.03	-2.99
.312	-2.77	-2.45	-2.05	-1.68	-1.43	-1.36	-1.50	-1.80	-2.22	-2.64
.314	-2.97	-3.17	-3.20	-3.04	-2.79	-2.50	-2.25	-2.09	-2.02	-2.08
.316	-2.19	-2.34	-2.48	-2.60	-2.65	-2.64	-2.58	-2.48	-2.38	-2.28
.318	-2.18	-2.08	-2.01	-1.98	-2.00	-2.02	-2.05	-2.13	-2.21	-2.30
.320	-2.38	-2.47	-2.55	-2.63	-2.69	-2.71	-2.70	-2.70	-2.66	-2.62
.322	-2.58	-2.54	-2.54	-2.53	-2.52	-2.49	-2.45	-2.38	-2.31	-2.24
.324	-2.20	-2.17	-2.19	-2.21	-2.30	-2.38	-2.43	-2.46	-2.45	-2.44
.326	-2.38	-2.31	-2.24	-2.17	-2.10	-2.03	-2.00	-1.96	-1.95	-1.97
.328	-2.00	-2.05	-2.10	-2.16	-2.27	-2.33	-2.41	-2.49	-2.58	-2.63
.330	-2.69	-2.68	-2.70	-2.69	-2.69	-2.68	-2.64	-2.63	-2.60	-2.56
.332	-2.52	-2.51	-2.51	-2.50	-2.49	-2.48	-2.48	-2.47	-2.43	-2.39
.334	-2.36	-2.32	-2.28	-2.24	-2.24	-2.23	-2.25	-2.30	-2.39	-2.47
.336	-2.53	-2.61	-2.66	-2.69	-2.68	-2.67	-2.67	-2.66	-2.65	-2.64
.338	-2.64	-2.63	-2.65	-2.64	-2.64	-2.63	-2.62	-2.62	-2.61	-2.60
.340	-2.59	-2.59	-2.58	-2.60	-2.59	-2.59	-2.58	-2.54	-2.50	-2.50
.342	-2.49	-2.51	-2.54	-2.56	-2.61	-2.70	-2.78	-2.87	-2.92	-2.94
.344	-2.93	-2.90	-2.83	-2.76	-2.72	-2.65	-2.62	-2.58	-2.54	-2.50
.346	-2.50	-2.49	-2.48	-2.47	-2.47	-2.46	-2.45	-2.44	-2.44	-2.46
.348	-2.48	-2.48	-2.50	-2.55	-2.58	-2.60	-2.62	-2.65	-2.67	-2.69
.350	-2.68	-2.68	-2.67	-2.63	-2.59	-2.59	-2.55	-2.54	-2.53	-2.53
.352	-2.52	-2.51	-2.50	-2.50	-2.49	-2.45	-2.44	-2.41	-2.37	-2.33
.354	-2.32	-2.32	-2.31	-2.30	-2.29	-2.29	-2.28	-2.27	-2.27	-2.26
.356	-2.25	-2.21	-2.21	-2.17	-2.16	-2.15	-2.15	-2.17	-2.16	-2.15
.358	-2.18	-2.20	-2.22	-2.22	-2.24	-2.23	-2.26	-2.28	-2.30	-2.32
.360	-2.35	-2.34	-2.33	-2.30	-2.26	-2.22	-2.15	-2.11	-2.08	-2.04
.362	-2.03	-2.05	-2.08	-2.10	-2.18	-2.24	-2.29	-2.35	-2.40	-2.42
.364	-2.45	-2.47	-2.46	-2.45	-2.45	-2.44	-2.40	-2.39	-2.39	-2.35
.366	-2.31	-2.24	-2.17	-2.11	-2.04	-2.00	-1.99	-1.99	-2.01	-2.06
.368	-2.12	-2.17	-2.22	-2.25	-2.27	-2.29	-2.29	-2.28	-2.24	-2.20
.370	-2.19	-2.19	-2.18	-2.20	-2.23	-2.25	-2.27	-2.30	-2.29	-2.31
.372	-2.33	-2.33	-2.32	-2.31	-2.34	-2.33	-2.35	-2.41	-2.46	-2.51
.374	-2.57	-2.59	-2.61	-2.64	-2.63	-2.62	-2.61	-2.61	-2.57	-2.53
.376	-2.49	-2.46	-2.42	-2.38	-2.31	-2.24	-2.21	-2.17	-2.13	-2.12
.378	-2.15	-2.17	-2.22	-2.28	-2.33	-2.38	-2.41	-2.43	-2.42	-2.41
.380	-2.41	-2.40	-2.36	-2.32	-2.32	-2.31	-2.30	-2.30	-2.29	-2.28

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 22 (CONT'D) OCCUPANT VELOCITY – VIRGINIA SIMULATED BARREL PANEL

TIME	INCHES/SECOND									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.382	-2.27	-2.27	-2.23	-2.22	-2.21	-2.21	-2.20	-2.19	-2.18	-2.21
.384	-2.23	-2.25	-2.28	-2.33	-2.35	-2.38	-2.40	-2.42	-2.42	-2.41
.386	-2.40	-2.39	-2.39	-2.35	-2.31	-2.30	-2.30	-2.32	-2.34	-2.33
.388	-2.33	-2.35	-2.37	-2.40	-2.39	-2.41	-2.44	-2.46	-2.48	-2.51
.390	-2.53	-2.55	-2.54	-2.54	-2.53	-2.49	-2.48	-2.48	-2.44	-2.40
.392	-2.36	-2.36	-2.35	-2.34	-2.33	-2.36	-2.35	-2.34	-2.31	-2.27
.394	-2.26	-2.25	-2.25	-2.24	-2.23	-2.22	-2.22	-2.24	-2.23	-2.22
.396	-2.22	-2.21	-2.20	-2.20	-2.22	-2.24	-2.26	-2.32	-2.40	-2.46
.398	-2.54	-2.56	-2.59	-2.61	-2.63	-2.69	-2.74	-2.82	-2.94	-3.11
.400	-3.38	-3.74	-4.19	-4.61	-5.03	-5.42	-5.78	-6.11	-6.37	-6.64
.402	-6.88	-7.08	-7.26	-7.43	-7.58	-7.66	-7.66	-7.59	-7.42	-7.21
.404	-6.96	-6.67	-6.42	-6.26	-6.19	-6.22	-6.30	-6.45	-6.62	-6.86
.406	-7.00	-7.24	-7.51	-7.84	-8.19	-8.55	-8.91	-9.21	-9.42	-9.47
.408	-9.40	-9.27	-9.08	-8.83	-8.58	-8.33	-8.05	-7.76	-7.45	-7.14
.410	-6.86	-6.58	-6.32	-6.10	-5.88	-5.69	-5.56	-5.49	-5.49	-5.57
.412	-5.75	-5.95	-6.22	-6.49	-6.69	-6.84	-6.86	-6.79	-6.69	-6.66
.414	-6.65	-6.67	-6.76	-6.96	-7.29	-7.77	-8.50	-9.40	-10.43	-11.37
.416	-12.10	-12.67	-13.06	-13.26	-13.38	-13.46	-13.61	-13.81	-14.17	-14.71
.418	-15.25	-15.55	-15.39	-14.68	-13.49	-11.96	-10.18	-8.25	-6.32	-4.58
.420	-3.17	-2.18	-1.66	-1.59	-1.89	-2.46	-3.18	-3.91	-4.60	-5.24
.422	-5.93	-6.78	-7.87	-9.14	-10.41	-11.47	-12.14	-12.37	-12.37	-12.15
.424	-11.68	-10.88	-9.68	-8.24	-6.62	-4.84	-3.10	-1.69	-.83	-.67
.426	-1.27	-2.57	-4.49	-6.71	-8.99	-11.08	-12.84	-14.21	-15.24	-15.90
.428	-16.26	-16.37	-16.34	-16.18	-15.80	-15.16	-14.17	-12.70	-10.80	-8.51
.430	-6.03	-3.65	-1.60	-.16	.52	.44	-.23	-1.29	-2.53	-3.83
.432	-5.11	-6.38	-7.68	-9.08	-10.56	-12.14	-13.75	-15.15	-16.21	-16.78
.434	-16.74	-16.00	-14.56	-12.57	-10.31	-8.17	-6.51	-5.65	-5.61	-6.34
.436	-7.67	-9.31	-10.98	-12.50	-13.68	-14.47	-14.89	-14.94	-14.78	-14.53
.438	-14.25	-14.06	-13.99	-13.98	-14.00	-13.94	-13.68	-13.19	-12.39	-11.38
.440	-10.21	-9.04	-7.97	-7.11	-6.52	-6.21	-6.17	-6.35	-6.74	-7.34
.442	-8.12	-9.09	-10.21	-11.49	-12.79	-14.03	-15.06	-15.85	-16.27	-16.29
.444	-15.89	-15.12	-13.98	-12.57	-10.95	-9.23	-7.61	-6.14	-5.00	-4.26
.446	-3.95	-4.07	-4.58	-5.42	-6.51	-7.79	-9.15	-10.49	-11.76	-12.67
.448	-13.39	-13.81	-13.96	-13.83	-13.52	-12.99	-12.34	-11.60	-10.83	-10.06
.450	-9.32	-8.65	-8.00	-7.47	-7.07	-6.85	-6.78	-6.89	-7.19	-7.61
.452	-8.09	-8.63	-9.21	-9.75	-10.29	-10.86	-11.40	-11.91	-12.39	-12.81
.454	-13.11	-13.29	-13.28	-13.12	-12.81	-12.31	-11.70	-10.96	-10.22	-9.48
.456	-8.86	-8.37	-8.05	-7.92	-8.01	-8.27	-8.72	-9.33	-10.02	-10.81
.458	-11.62	-12.41	-13.10	-13.64	-13.94	-14.06	-13.93	-13.55	-13.03	-12.35
.460	-11.61	-10.81	-10.04	-9.36	-8.78	-8.31	-8.00	-7.84	-7.77	-7.85
.462	-8.06	-8.36	-8.75	-9.20	-9.68	-10.19	-10.67	-11.15	-11.60	-11.99
.464	-12.32	-12.58	-12.73	-12.75	-12.65	-12.43	-12.06	-11.56	-10.98	-10.36
.466	-9.74	-9.19	-8.75	-8.44	-8.25	-8.18	-8.18	-8.29	-8.47	-8.73
.468	-9.03	-9.42	-9.84	-10.29	-10.77	-11.25	-11.67	-12.03	-12.23	-12.32
.470	-12.25	-12.03	-11.66	-11.16	-10.60	-10.02	-9.46	-8.97	-8.59	-8.34
.472	-8.24	-8.30	-8.53	-8.86	-9.31	-9.79	-10.27	-10.78	-11.23	-11.62
.474	-11.92	-12.13	-12.24	-12.26	-12.23	-12.13	-12.00	-11.81	-11.56	-11.31
.476	-11.05	-10.83	-10.64	-10.51	-10.42	-10.38	-10.37	-10.39	-10.48	-10.59
.478	-10.74	-10.91	-11.12	-11.39	-11.71	-12.04	-12.37	-12.67	-12.90	-13.08
.480	-13.10	-13.00	-12.78	-12.44	-12.01	-11.54	-11.05	-10.58	-10.21	-9.93
.482	-9.77	-9.70	-9.72	-9.87	-10.10	-10.40	-10.73	-11.06	-11.39	-11.68
.484	-11.95	-12.16	-12.33	-12.42	-12.44	-12.37	-12.27	-12.11	-11.92	-11.73
.486	-11.60	-11.47	-11.34	-11.24	-11.12	-10.96	-10.80	-10.64	-10.51	-10.41
.488	-10.34	-10.36	-10.45	-10.62	-10.83	-11.07	-11.30	-11.51	-11.65	-11.77
.490	-11.82	-11.81	-11.75	-11.65	-11.52	-11.36	-11.20	-11.04	-10.88	-10.75
.492	-10.62	-10.55	-10.51	-10.54	-10.59	-10.67	-10.79	-10.93	-11.08	-11.22
.494	-11.37	-11.48	-11.57	-11.65	-11.74	-11.79	-11.81	-11.84	-11.83	-11.82
.496	-11.78	-11.75	-11.68	-11.61	-11.54	-11.50	-11.47	-11.46	-11.48	-11.54
.498	-11.62	-11.73	-11.85	-11.99	-12.14	-12.25	-12.37	-12.48	-12.54	-12.56
.500	-12.55	-12.55	-12.48	-12.38	-12.28	-12.15	-11.99	-11.83	-11.70	-11.57
.502	-11.44	-11.34	-11.24	-11.18	-11.14	-11.10	-11.09	-11.12	-11.17	-11.25
.504	-11.37	-11.51	-11.66	-11.80	-11.92	-12.00	-12.03	-12.05	-12.01	-11.94
.506	-11.84	-11.72	-11.56	-11.40	-11.24	-11.08	-10.98	-10.88	-10.81	-10.80
.508	-10.83	-10.85	-10.90	-10.96	-11.04	-11.12	-11.21	-11.26	-11.32	-11.34
.510	-11.36	-11.36	-11.35	-11.31	-11.24	-11.17	-11.11	-11.04	-10.97	-10.90
.512	-10.83	-10.79	-10.76	-10.75	-10.77	-10.83	-10.91	-11.06	-11.20	-11.38
.514	-11.58	-11.79	-12.02	-12.23	-12.47	-12.64	-12.82	-12.99	-13.17	-13.32
.516	-13.43	-13.54	-13.66	-13.74	-13.80	-13.82	-13.81	-13.81	-13.80	-13.79
.518	-13.81	-13.84	-13.89	-13.97	-14.09	-14.23	-14.38	-14.56	-14.73	-14.91
.520	-15.05	-15.14	-15.16	-15.18	-15.17	-15.14	-15.07	-14.94	-14.81	-14.68
.522	-14.52	-14.36	-14.17	-14.01	-13.85	-13.66	-13.53	-13.40	-13.27	-13.14
.524	-13.01	-12.92	-12.85	-12.75	-12.65	-12.55	-12.45	-12.38	-12.32	-12.28
.526	-12.27	-12.26	-12.29	-12.31	-12.33	-12.36	-12.35	-12.31	-12.24	-12.17
.528	-12.07	-11.95	-11.85	-11.75	-11.68	-11.61	-11.54	-11.51	-11.53	-11.55
.530	-11.57	-11.60	-11.59	-11.58	-11.58	-11.57	-11.56	-11.55	-11.55	-11.57
.532	-11.56	-11.59	-11.58	-11.57	-11.56	-11.53	-11.49	-11.45	-11.38	-11.34
.534	-11.31	-11.27	-11.26	-11.25	-11.25	-11.27	-11.29	-11.35	-11.37	-11.42
.536	-11.48	-11.53	-11.52	-11.55	-11.54	-11.52	-11.49	-11.49	-11.48	-11.50
.538	-11.53	-11.58	-11.66	-11.72	-11.80	-11.88	-11.94	-11.99	-12.05	-12.10
.540	-12.15									

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 23 OCCUPANT DISPLACEMENT – VIRGINIA SIMULATED BARREL PANEL

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.060	.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.062	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	.0*	.0*	.0*	.0*
.064	.00	.0*	.0*	.0*	.0*	.0*	.0*	.0*	.0*	-.0*
.066	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*
.068	-.00	-.0*	-.0*	-.0*	-.0*	-.00	-.00	-.00	-.00	-.00
.070	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.072	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.074	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.076	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.078	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.080	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.082	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.084	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.086	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.088	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.090	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.092	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.0*
.094	-.00	-.0*	-.0*	-.0*	-.0*	-.0*	-.0*	.0*	.0*	.0*
.096	.00	.0*	.0*	.0*	.00	.00	.00	.00	.00	.00
.098	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.100	.00	.00	.00	.01	.01	.01	.01	.01	.01	.01
.102	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.104	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.106	.01	.01	.01	.01	.01	.01	.01	.01	.01	.00
.108	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.112	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.114	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
.116	.01	.01	.01	.00	.00	.00	.00	.00	.00	.00
.118	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.122	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.124	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.126	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.128	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.130	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.132	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.134	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.136	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.138	.00	.00	.00	.00	.01	.01	.01	.01	.01	.01
.140	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.142	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.144	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.146	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.148	.01	.02	.02	.02	.02	.02	.02	.02	.02	.02
.150	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.152	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.154	.02	.03	.03	.03	.03	.03	.03	.03	.03	.03
.156	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.158	.03	.03	.03	.03	.04	.04	.04	.04	.04	.04
.160	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
.162	.04	.04	.05	.05	.05	.05	.05	.05	.05	.05
.164	.05	.05	.05	.05	.05	.05	.06	.06	.06	.06
.166	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.168	.06	.06	.06	.06	.06	.06	.06	.06	.07	.07
.170	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.172	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.174	.07	.07	.07	.07	.07	.07	.08	.08	.08	.08
.176	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
.178	.08	.08	.08	.08	.08	.08	.08	.08	.08	.09
.180	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.182	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.184	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.186	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.188	.09	.10	.10	.10	.10	.10	.10	.10	.10	.10
.190	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.192	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.194	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.196	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.198	.10	.10	.10	.10	.10	.10	.10	.10	.10	.11
.200	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.202	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.204	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.206	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.208	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.210	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.212	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.214	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.216	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.218	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.220	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 23 (CONT'D) OCCUPANT DISPLACEMENT – VIRGINIA SIMULATED BARREL PANEL

INCHES

TIME	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.222	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.224	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.226	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.228	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.230	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
.232	.11	.11	.11	.11	.10	.10	.10	.10	.10	.10
.234	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.236	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.238	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.240	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.242	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.244	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.246	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.248	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.250	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.252	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.254	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.256	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.258	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
.260	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
.262	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
.264	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
.266	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.268	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.270	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.272	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
.274	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.276	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.278	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.280	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.282	.06	.06	.06	.06	.05	.05	.05	.05	.05	.05
.284	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
.286	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
.288	.05	.05	.05	.05	.04	.04	.04	.04	.04	.04
.290	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
.292	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
.294	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
.296	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.298	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.300	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.302	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.304	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.306	.02	.02	.01	.01	.01	.01	.01	.01	.01	.01
.308	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.310	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
.312	.00	.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
.314	-.00	-.00	-.00	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.316	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
.318	-.01	-.01	-.01	-.01	-.02	-.02	-.02	-.02	-.02	-.02
.320	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02
.322	-.02	-.02	-.02	-.02	-.02	-.03	-.03	-.03	-.03	-.03
.324	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.03
.326	-.03	-.03	-.03	-.03	-.03	-.03	-.03	-.04	-.04	-.04
.328	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.04
.330	-.04	-.04	-.04	-.04	-.04	-.04	-.04	-.05	-.05	-.05
.332	-.05	-.05	-.05	-.05	-.05	-.05	-.05	-.05	-.05	-.05
.334	-.05	-.05	-.05	-.05	-.05	-.05	-.05	-.05	-.06	-.06
.336	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.06
.338	-.06	-.06	-.06	-.06	-.06	-.06	-.06	-.07	-.07	-.07
.340	-.07	-.07	-.07	-.07	-.07	-.07	-.07	-.07	-.07	-.07
.342	-.07	-.07	-.07	-.07	-.07	-.07	-.07	-.08	-.08	-.08
.344	-.08	-.08	-.08	-.08	-.08	-.08	-.08	-.08	-.08	-.08
.346	-.08	-.08	-.08	-.08	-.08	-.09	-.09	-.09	-.09	-.09
.348	-.09	-.09	-.09	-.09	-.09	-.09	-.09	-.09	-.09	-.09
.350	-.09	-.09	-.09	-.09	-.09	-.10	-.10	-.10	-.10	-.10
.352	-.10	-.10	-.10	-.10	-.10	-.10	-.10	-.10	-.10	-.10
.354	-.10	-.10	-.10	-.10	-.10	-.11	-.11	-.11	-.11	-.11
.356	-.11	-.11	-.11	-.11	-.11	-.11	-.11	-.11	-.11	-.11
.358	-.11	-.11	-.11	-.11	-.11	-.11	-.11	-.11	-.12	-.12
.360	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12
.362	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12	-.12
.364	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13
.366	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13	-.13
.368	-.13	-.13	-.13	-.14	-.14	-.14	-.14	-.14	-.14	-.14
.370	-.14	-.14	-.14	-.14	-.14	-.14	-.14	-.14	-.14	-.14
.372	-.14	-.14	-.14	-.14	-.14	-.15	-.15	-.15	-.15	-.15
.374	-.15	-.15	-.15	-.15	-.15	-.15	-.15	-.15	-.15	-.15
.376	-.15	-.15	-.15	-.15	-.15	-.16	-.16	-.16	-.16	-.16
.378	-.16	-.16	-.16	-.16	-.16	-.16	-.16	-.16	-.16	-.16
.380	-.16	-.16	-.16	-.16	-.16	-.16	-.17	-.17	-.17	-.17

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

TABLE 23 (CONT'D) OCCUPANT DISPLACEMENT – VIRGINIA SIMULATED BARREL PANEL

TIME	INCHES									
	.0000	.0002	.0004	.0006	.0008	.0010	.0012	.0014	.0016	.0018
.382	-.17	-.17	-.17	-.17	-.17	-.17	-.17	-.17	-.17	-.17
.384	-.17	-.17	-.17	-.17	-.17	-.17	-.17	-.17	-.18	-.18
.386	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.18
.388	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.18	-.19
.390	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19
.392	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19	-.19
.394	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20
.396	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20	-.20
.398	-.20	-.20	-.21	-.21	-.21	-.21	-.21	-.21	-.21	-.21
.400	-.21	-.21	-.21	-.21	-.21	-.21	-.22	-.22	-.22	-.22
.402	-.22	-.22	-.22	-.23	-.23	-.23	-.23	-.23	-.23	-.23
.404	-.24	-.24	-.24	-.24	-.24	-.24	-.24	-.24	-.25	-.25
.406	-.25	-.25	-.25	-.25	-.25	-.26	-.26	-.26	-.26	-.26
.408	-.27	-.27	-.27	-.27	-.27	-.27	-.28	-.28	-.28	-.28
.410	-.28	-.28	-.28	-.29	-.29	-.29	-.29	-.29	-.29	-.29
.412	-.29	-.29	-.30	-.30	-.30	-.30	-.30	-.30	-.30	-.31
.414	-.31	-.31	-.31	-.31	-.31	-.31	-.32	-.32	-.32	-.32
.416	-.32	-.33	-.33	-.33	-.33	-.34	-.34	-.34	-.35	-.35
.418	-.35	-.35	-.36	-.36	-.36	-.37	-.37	-.37	-.37	-.37
.420	-.37	-.37	-.37	-.37	-.37	-.37	-.38	-.38	-.38	-.38
.422	-.38	-.38	-.38	-.38	-.39	-.39	-.39	-.39	-.40	-.40
.424	-.40	-.40	-.40	-.41	-.41	-.41	-.41	-.41	-.41	-.41
.426	-.41	-.41	-.41	-.41	-.41	-.42	-.42	-.42	-.43	-.43
.428	-.43	-.43	-.44	-.44	-.44	-.45	-.45	-.45	-.46	-.46
.430	-.46	-.46	-.46	-.46	-.46	-.46	-.46	-.46	-.46	-.46
.432	-.46	-.46	-.46	-.47	-.47	-.47	-.47	-.48	-.48	-.48
.434	-.49	-.49	-.49	-.49	-.50	-.50	-.50	-.50	-.50	-.50
.436	-.50	-.51	-.51	-.51	-.51	-.52	-.52	-.52	-.53	-.53
.438	-.53	-.53	-.54	-.54	-.54	-.55	-.55	-.55	-.55	-.56
.440	-.56	-.56	-.56	-.56	-.56	-.57	-.57	-.57	-.57	-.57
.442	-.57	-.57	-.58	-.58	-.58	-.58	-.59	-.59	-.59	-.60
.444	-.60	-.60	-.61	-.61	-.61	-.61	-.61	-.61	-.62	-.62
.446	-.62	-.62	-.62	-.62	-.62	-.62	-.62	-.63	-.63	-.63
.448	-.63	-.64	-.64	-.64	-.65	-.65	-.65	-.65	-.66	-.66
.450	-.66	-.66	-.66	-.66	-.67	-.67	-.67	-.67	-.67	-.67
.452	-.67	-.68	-.68	-.68	-.68	-.68	-.69	-.69	-.69	-.69
.454	-.70	-.70	-.70	-.70	-.71	-.71	-.71	-.71	-.72	-.72
.456	-.72	-.72	-.72	-.72	-.73	-.73	-.73	-.73	-.73	-.74
.458	-.74	-.74	-.74	-.75	-.75	-.75	-.75	-.76	-.76	-.76
.460	-.76	-.77	-.77	-.77	-.77	-.77	-.77	-.78	-.78	-.78
.462	-.78	-.78	-.78	-.79	-.79	-.79	-.79	-.79	-.80	-.80
.464	-.80	-.80	-.81	-.81	-.81	-.81	-.82	-.82	-.82	-.82
.466	-.83	-.83	-.83	-.83	-.83	-.83	-.84	-.84	-.84	-.84
.468	-.84	-.84	-.85	-.85	-.85	-.85	-.86	-.86	-.86	-.86
.470	-.87	-.87	-.87	-.87	-.87	-.88	-.88	-.88	-.88	-.88
.472	-.88	-.89	-.89	-.89	-.89	-.89	-.90	-.90	-.90	-.90
.474	-.91	-.91	-.91	-.91	-.91	-.92	-.92	-.92	-.92	-.93
.476	-.93	-.93	-.93	-.94	-.94	-.94	-.94	-.94	-.95	-.95
.478	-.95	-.95	-.95	-.96	-.96	-.96	-.96	-.97	-.97	-.97
.480	-.97	-.98	-.98	-.98	-.98	-.99	-.99	-.99	-.99	-.99
.482	-1.00	-1.00	-1.00	-1.00	-1.00	-1.01	-1.01	-1.01	-1.01	-1.02
.484	-1.02	-1.02	-1.02	-1.03	-1.03	-1.03	-1.03	-1.04	-1.04	-1.04
.486	-1.04	-1.04	-1.05	-1.05	-1.05	-1.05	-1.06	-1.06	-1.06	-1.06
.488	-1.06	-1.07	-1.07	-1.07	-1.07	-1.07	-1.08	-1.08	-1.08	-1.08
.490	-1.09	-1.09	-1.09	-1.09	-1.10	-1.10	-1.10	-1.10	-1.10	-1.11
.492	-1.11	-1.11	-1.11	-1.12	-1.12	-1.12	-1.12	-1.12	-1.13	-1.13
.494	-1.13	-1.13	-1.14	-1.14	-1.14	-1.14	-1.14	-1.15	-1.15	-1.15
.496	-1.15	-1.16	-1.16	-1.16	-1.16	-1.17	-1.17	-1.17	-1.17	-1.17
.498	-1.18	-1.18	-1.18	-1.18	-1.19	-1.19	-1.19	-1.19	-1.20	-1.20
.500	-1.20	-1.20	-1.21	-1.21	-1.21	-1.21	-1.22	-1.22	-1.22	-1.22
.502	-1.23	-1.23	-1.23	-1.23	-1.23	-1.24	-1.24	-1.24	-1.24	-1.25
.504	-1.25	-1.25	-1.25	-1.26	-1.26	-1.26	-1.26	-1.26	-1.27	-1.27
.506	-1.27	-1.27	-1.28	-1.28	-1.28	-1.28	-1.29	-1.29	-1.29	-1.29
.508	-1.29	-1.30	-1.30	-1.30	-1.30	-1.31	-1.31	-1.31	-1.31	-1.31
.510	-1.32	-1.32	-1.32	-1.32	-1.33	-1.33	-1.33	-1.33	-1.33	-1.34
.512	-1.34	-1.34	-1.34	-1.35	-1.35	-1.35	-1.35	-1.35	-1.36	-1.36
.514	-1.36	-1.36	-1.37	-1.37	-1.37	-1.37	-1.38	-1.38	-1.38	-1.38
.516	-1.39	-1.39	-1.39	-1.39	-1.40	-1.40	-1.40	-1.41	-1.41	-1.41
.518	-1.41	-1.42	-1.42	-1.42	-1.42	-1.43	-1.43	-1.43	-1.44	-1.44
.520	-1.44	-1.45	-1.45	-1.45	-1.45	-1.46	-1.46	-1.46	-1.47	-1.47
.522	-1.47	-1.48	-1.48	-1.48	-1.48	-1.49	-1.49	-1.49	-1.49	-1.50
.524	-1.50	-1.50	-1.50	-1.51	-1.51	-1.51	-1.51	-1.52	-1.52	-1.52
.526	-1.52	-1.53	-1.53	-1.53	-1.53	-1.54	-1.54	-1.54	-1.54	-1.55
.528	-1.55	-1.55	-1.55	-1.56	-1.56	-1.56	-1.56	-1.57	-1.57	-1.57
.530	-1.57	-1.57	-1.58	-1.58	-1.58	-1.58	-1.59	-1.59	-1.59	-1.59
.532	-1.60	-1.60	-1.60	-1.60	-1.60	-1.61	-1.61	-1.61	-1.61	-1.62
.534	-1.62	-1.62	-1.62	-1.63	-1.63	-1.63	-1.63	-1.63	-1.64	-1.64
.536	-1.64	-1.64	-1.65	-1.65	-1.65	-1.65	-1.66	-1.66	-1.66	-1.66
.538	-1.66	-1.67	-1.67	-1.67	-1.67	-1.68	-1.68	-1.68	-1.68	-1.69
.540	-1.69									

Positive numbers indicate vehicle acceleration in the direction of vehicle travel, negative numbers indicate vehicle acceleration opposite the direction of vehicle travel (deceleration).

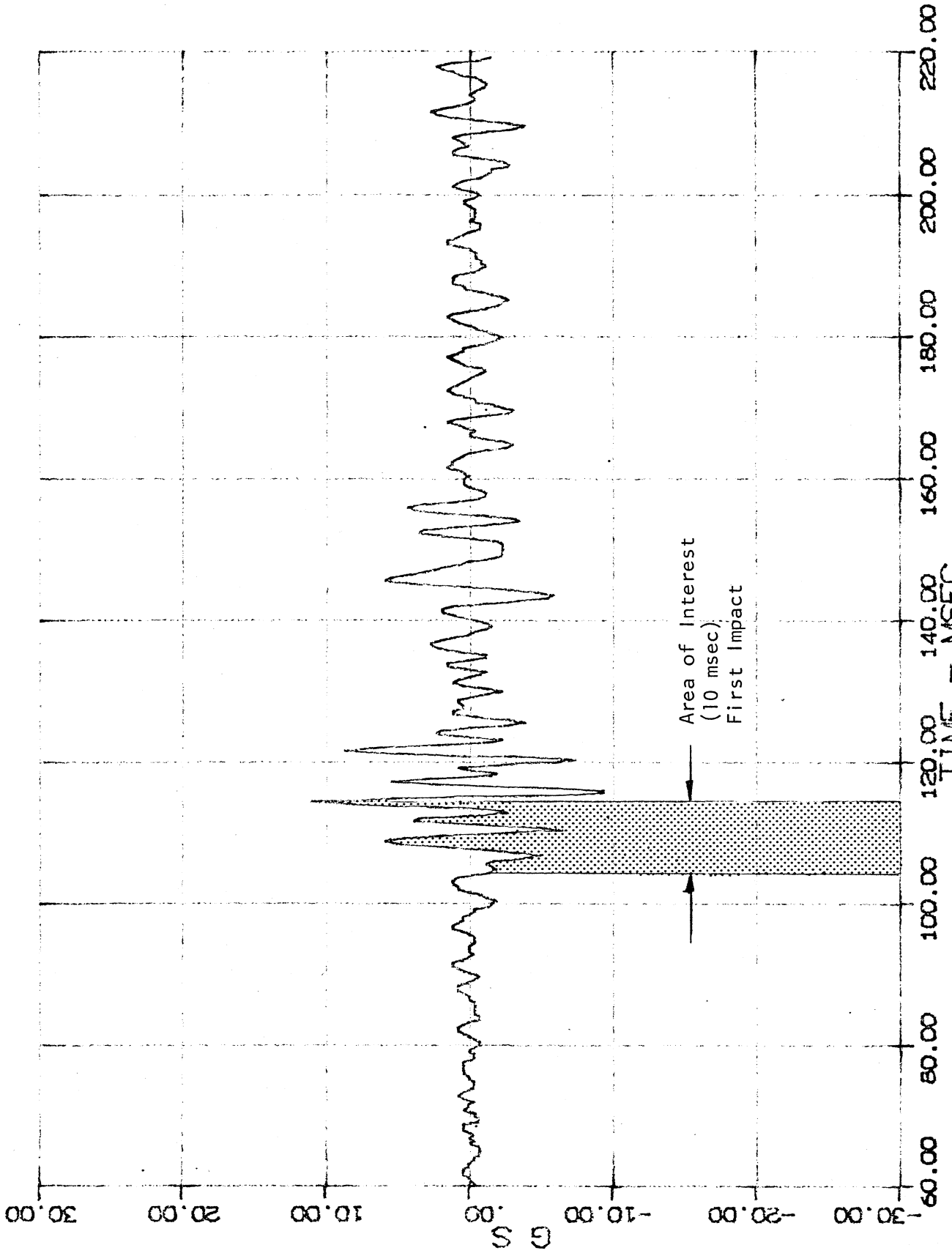


FIGURE 52 VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 180 FILTER

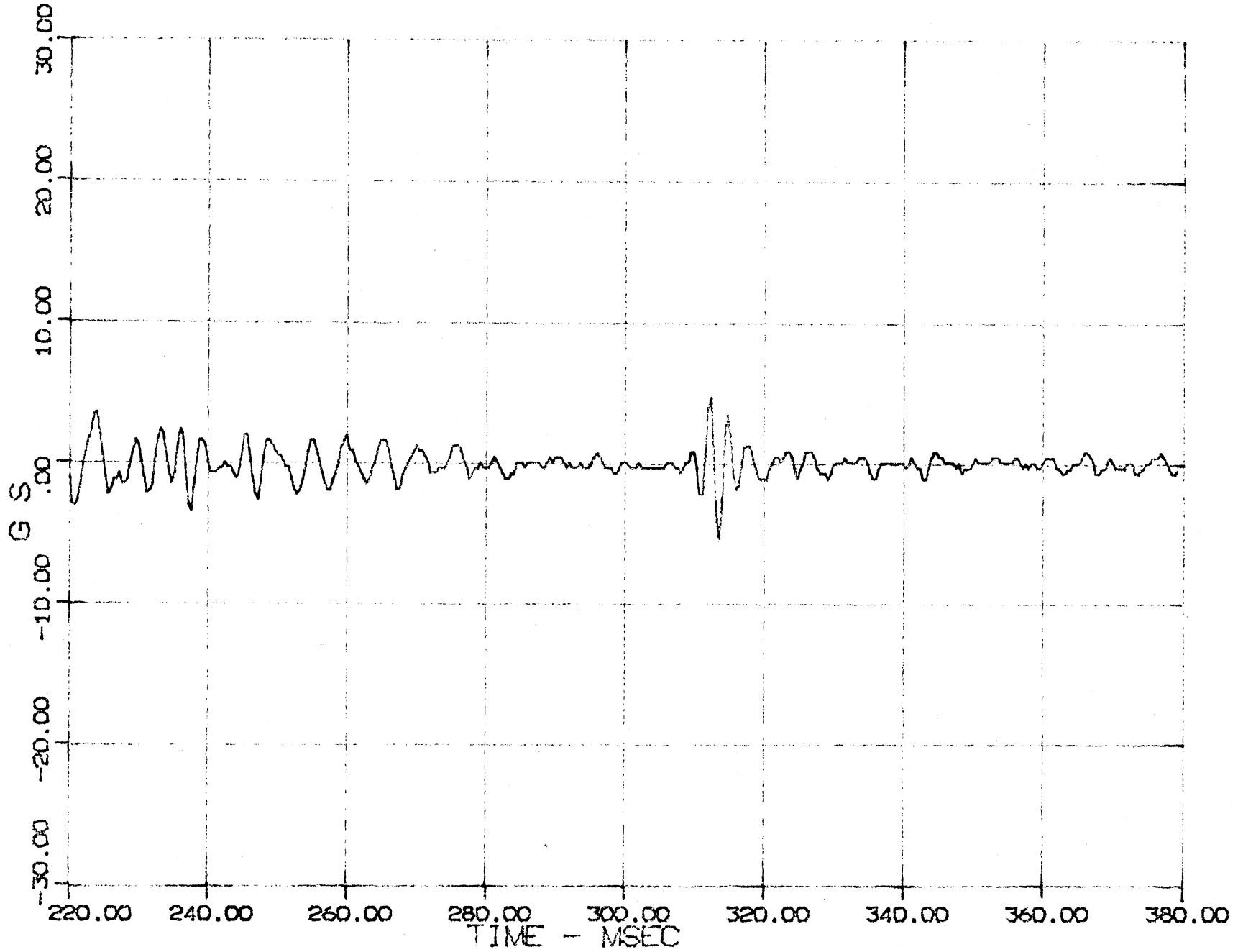


FIGURE 52 (CONT'D) VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 180 FILTER

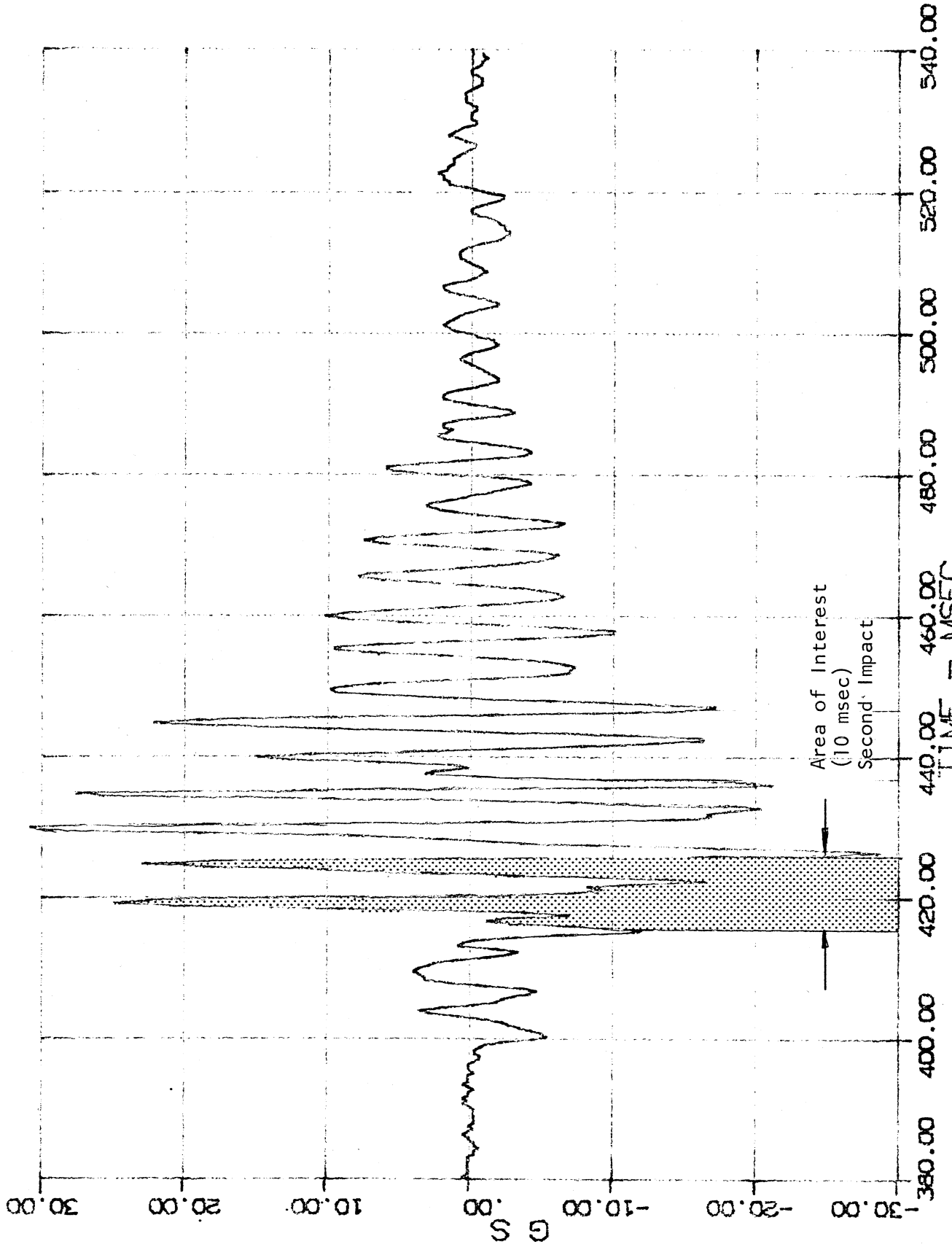


FIGURE 52 (CONT'D) VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 180 FILTER

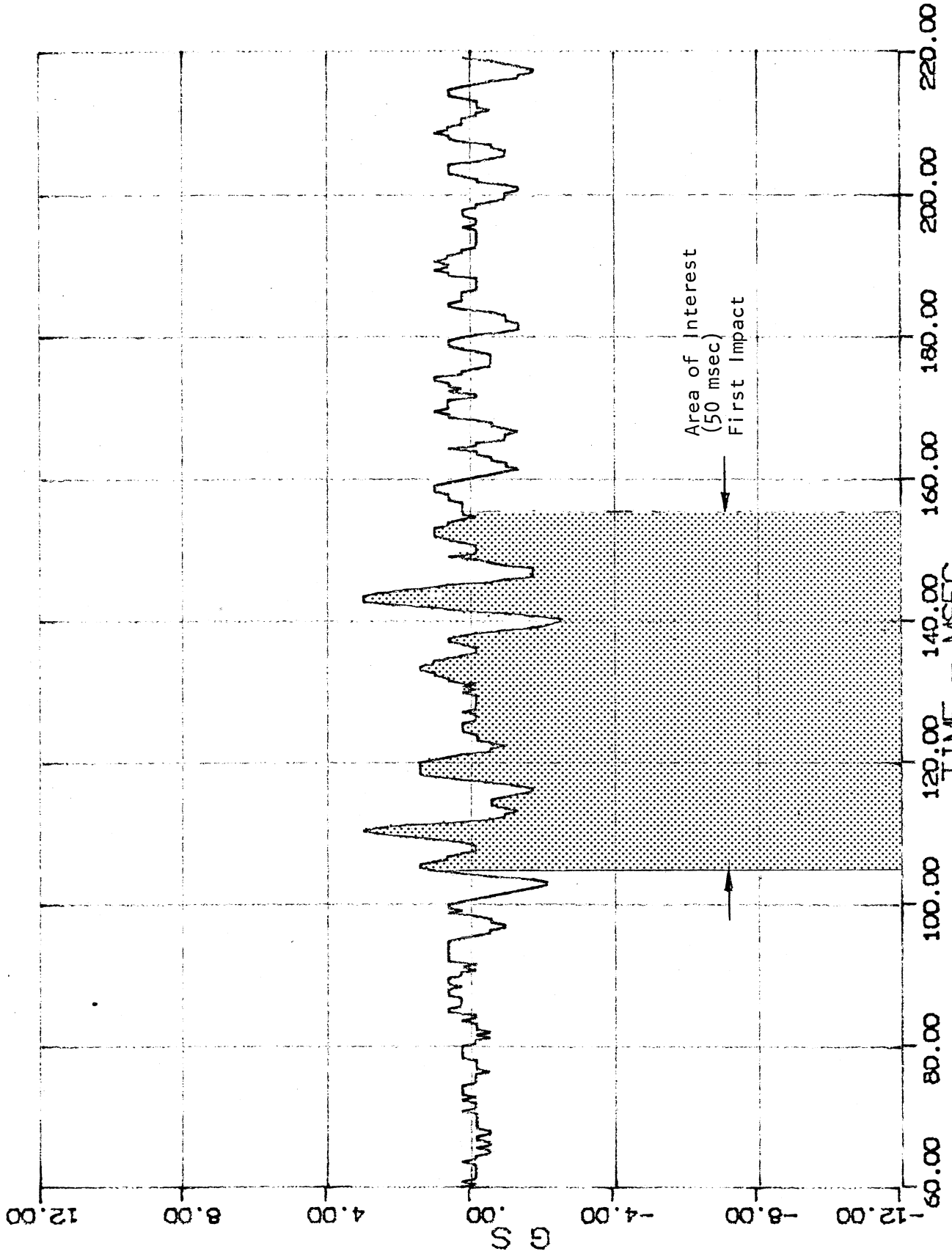


FIGURE 53 VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 60 FILTER

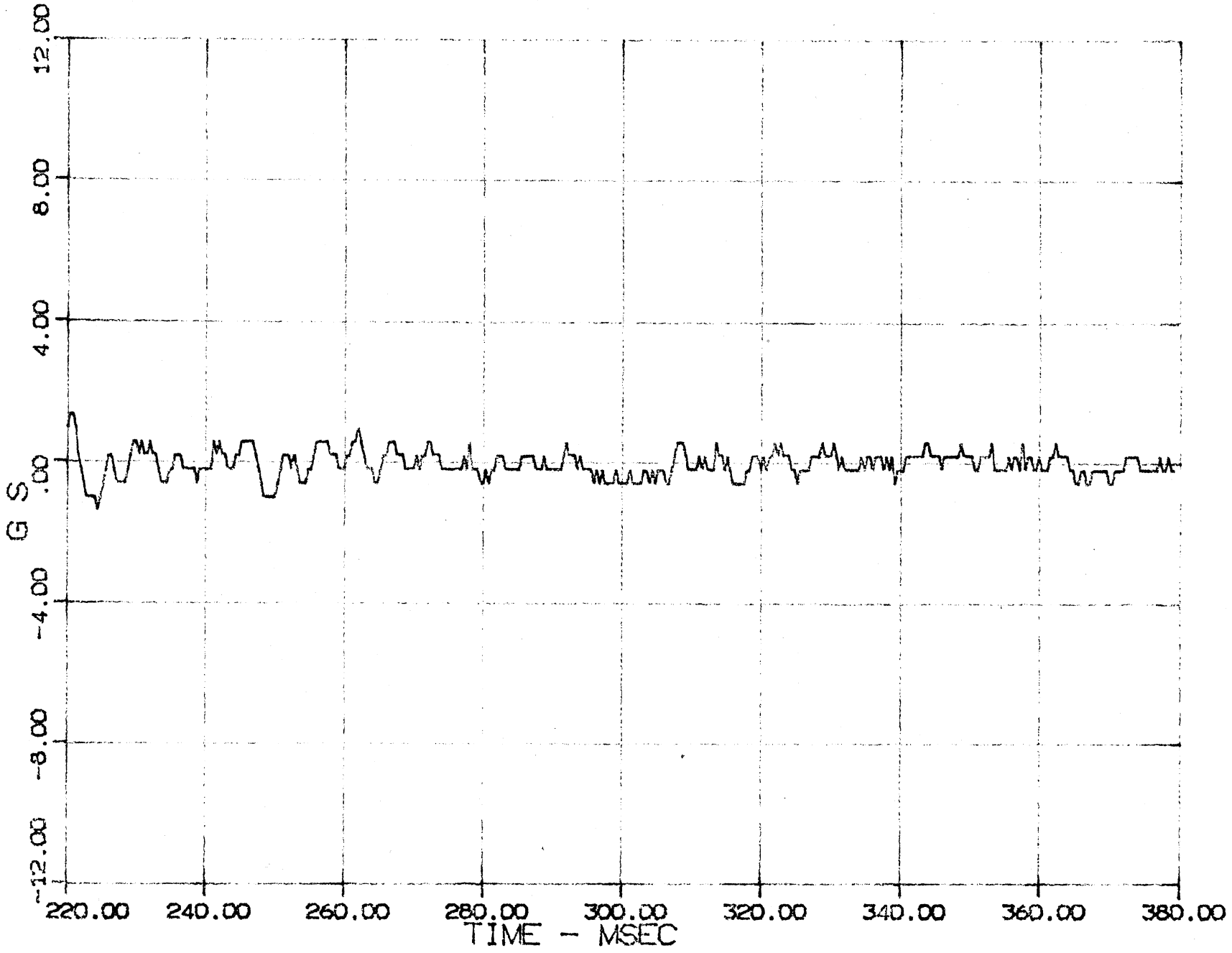


FIGURE 53 (CONT'D) VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 60 FILTER

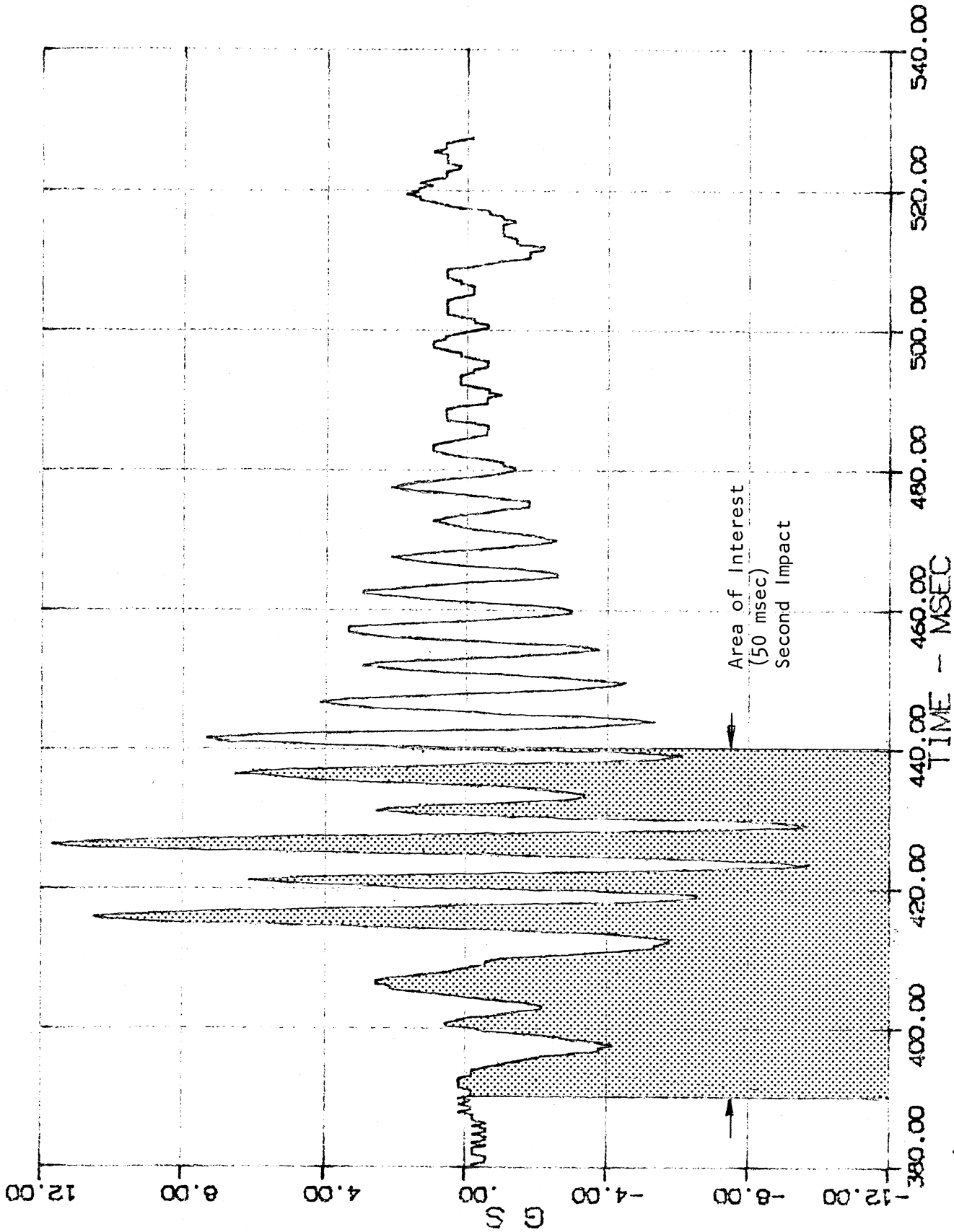


FIGURE 53 (CONT'D) VIRGINIA SIMULATED BARREL PANEL IMPACT, CLASS 60 FILTER

SECTION 4

CONCLUSIONS

The results of the full scale crash tests indicate that occupants of a minicompact sedan would survive an impact with the five devices selected for testing in this study, namely the;

Plastibarrel 400-PB
Channelizer
55 Gallon Metal Drum (Top Removed)
Wyoming WC-4 Barricade
Virginia Simulated Barrel Panel

4.1 STRUCTURAL ADEQUACY

The channelizing devices all appeared to react predictably. The Plastibarrel 400 PB was crushed, folded over the ballast and ejected from beneath the vehicle. The Channelizer separated from the base on which the ballast was located and drawn under the vehicle or pushed away. The 55 gallon drum was crushed and folded over the ballast and drawn under the vehicle. Both plastic barrel surrogates, although presenting as formidable appearance as the 55 gallon drum, present an impact hazard of minimal consequence as shown by the preceding data. The warning lights tore loose from both the Plastibarrel and Channelizer when impacted and became free bodies. This may present a serious hazard regarding passenger compartment penetration. Reinforcement around the attachment hole of each channelizing device with a metal (or similar strength) reinforcement is recommended. The warning light did not tear loose from the 55 gallon drum when impacted - a definite plus. However, due to the stiffness of the metal barrels the vehicle was lifted off of the ground because of barrels lodged underneath. A resultant loss of steering control occurred. This may present a hazard to oncomming traffic if the impacting vehicle is redirected back into the travelled way.

The Wyoming WC-4 Barricade, by virtue of the vertical attachment method using nails, provides for break away. Although these tests indicate readily survivable conditions exist for occupants, the size and quantity of flying debris (which includes the warning light) as the result of the impact could cause more hazardous conditions to exist both to the impacting and the oncomming vehicle occupants.

The Virginia Simulated Barrel Panel when upright, folded over and tore away from the base creating a minimal hazard, however, the concrete base from the Barrel Panel that was laid on its side caused more vehicle damage. This impact shattered the concrete base and did not overturn the test vehicle. Since this impact was with the sheet metal beneath the bumper, steering and stability were not affected. However, different results may be occur with other vehicle designs, particularly those which allow the base to impact the steering linkage and suspension components.

4.2 OCCUPANT RISK

All impacts resulted in conditions of vehicle stability after impact. With the exception of the impact with the 55 gallon drum the vehicle was mobile and controllable (after impact the vehicle was atop the 55 gallon drums resulting in loss of driver control).

The acceleration values were within the recommended limits of acceptability as shown in Tables 4, 8, 13, 16, 20 and 23. Occupant displacement did not exceed 24 in forward or 12 in laterally and theoretically no impact existed and therefore no ridedown acceleration was calculated. The maximum acceleration level is presented in the tables as listed above for reference and in summary Table 24.

4.3 VEHICLE TRAJECTORY

The vehicle trajectory was nearly a straight line for all impacts and the vehicle did not intrude into adjacent traffic lanes. A potential problem exists where there is loss of driver control as was the case with the 55 gallon drums or if the steering linkage is impacted by an overturned Virginia Barrel Panel base.

TABLE 24 SUMMARY DATA

CHANNELIZING DEVICE	10 MSEC ACCEL - G'S		50 MSEC ACCEL - G'S	
	1ST IMPACT	2ND IMPACT	1ST IMPACT	2ND IMPACT
PLASTIBARREL 400PB	2.4335	4.3220	0.98552	0.86563
CHANNELIZER	2.3794	1.4221	0.98170	0.35640
55 GALLON DRUM	4.3828	4.3784	2.2818	2.1253
WYOMING WC-4 BARRICADE	6.1809	-- (1)	1.0115	-- (1)
VIRGINIA SIMULATED BARREL PANEL	0.7191	2.7889	0.16979	0.4534

(1) A second device not used for Wyoming WC-4 Barricade because it is used primarily as a road closure device and not as a lane taper.