13. POST TEST REQUIREMENTS

The contractor shall verify all instrumentation and check data sheets and photographs. Make sure data is recorded in all data blocks on every performance calibration test data sheet.

14. REPORTS

14.1 APPARENT NONCONFORMANCE

During the post test calibration, any indication of apparent nonconformance to the requirements of Regulation P572 shall be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). Written notification shall be submitted with a copy of the particular test data sheet(s) and preliminary data plot(s).

In the event of an apparent nonconformance, a post test calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

14.2 FINAL PERFORMANCE CALIBRATION REPORTS

14.2.1 COPIES

A report containing the pre and post test calibration data for each Part 572E dummy used in the vehicle compliance test shall be submitted with FMVSS 208 final test report for the vehicle tested.

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

14.2.2 REQUIREMENTS

Performance calibration report Table of Contents shall include the following:

A. Section 1 — Purpose of Calibration Test
B. Section 2 — Calibration Data Summary
C. Section 3 — Test Data
D. Section 4 — Test Equipment List and Calibration Information
E. Section 5 — Photographs (if applicable)

The test data for each dummy will be presented in separate sections. Each section shall contain a title page, test results summary and the test data. The title page shall include the dummy's serial number and he manufacturer's name. It will also indicate whether the calibration data is pre or post test. The test results sheets will provide a

14. REPORTS....Continued

summary of each test and describe any damage, failures and/or corrective action taken. The test data shall include the pass/fail data sheets, the time histories for each data channel used to determine the pass or fail status, and instrumentation calibration data sheets.

14.2.3 FIRST PAGE

FRONT COVER

A heavy paperback cover (or transparency) shall be provided for the protection of the final report. The information required on the cover is as follows:

A. Final Report Title And Subtitle such as

DUMMY PERFORMANCE CALIBRATION
IN SUPPORT OF
VEHICLE SAFETY COMPLIANCE TESTING
FOR OCCUPANT CRASH PROTECTION

B. Contractor's Name and Address such as

ABC TESTING LABORATORIES, INC.
405 Main Street
Detroit, Michigan 48070

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (B) AND (C)

C. Date of Final Performance Calibration Report completion

D. The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6115 (NSA-30)
Washington, DC 20590

15. DATA SHEETS (EXAMPLES)

PART 572E EXTERNAL DIMENSIONS

MANUFACTURER/ID NO.			
CALIBRATION DATE			
TEST PARAMETER		**SPECIFICATION**	**TEST RESULT**
TEMPERATURE			72.0ºF
RELATIVE HUMIDITY			27.0%
LOCATION FOR CHEST CIRCUMFERENCE	AA	16.9" - 17.1"	17.0"
LOCATION FOR WAIST CIRCUMFERENCE	BB	8.9" - 9.1"	9.0"
CHEST CIRCUMFERENCE (WITH JACKET)	Y	38.2" - 39.4"	38.6"
WAIST CIRCUMFERENCE	Z	32.9" - 34.1"	33.7"
CHEST DEPTH	O	8.4" - 9.0"	8.7"
H-POINT HEIGHT	C	3.3" - 3.5"	3.4"
H-POINT FROM BACKLINE	D	5.3" - 5.5"	5.4"
SKULL CAP TO BACKLINE	H	1.6" - 1.8"	1.7"
TOTAL SITTING HEIGHT	A	34.6" - 35.0"	34.6"
THIGH CLEARANCE	F	5.5" - 6.1"	6.0"
BUTTOCK KNEE LENGTH	K	22.8" - 23.8"	23.1"
BUTTOCK POPLITEAL LENGTH	N	17.8" - 18.8"	18.6"
POPLITEAL HEIGHT	L	16.9" - 17.9"	17.4"
KNEE PIVOT HEIGHT	M	19.1" - 19.7"	19.6"
FOOT LENGTH	P	9.9" - 10.5"	10.1"
FOOT BREADTH	W	3.6" - 4.2"	4.1"
SHOULDER PIVOT FROM BACKLINE	E	3.3" - 3.7"	3.4"
SHOULDER BREADTH	V	16.6" - 17.2"	16.8"
SHOULDER PIVOT HEIGHT	B	19.9" - 20.5"	20.1"
ELBOW REST HEIGHT	J	7.5" - 8.3"	8.1"
SHOULDER - ELBOW LENGTH	I	13.0" - 13.6"	13.5"
BACK OF ELBOW TO WRIST PIVOT	G	11.4" - 12.0"	11.4"

LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
HEAD DROP TEST

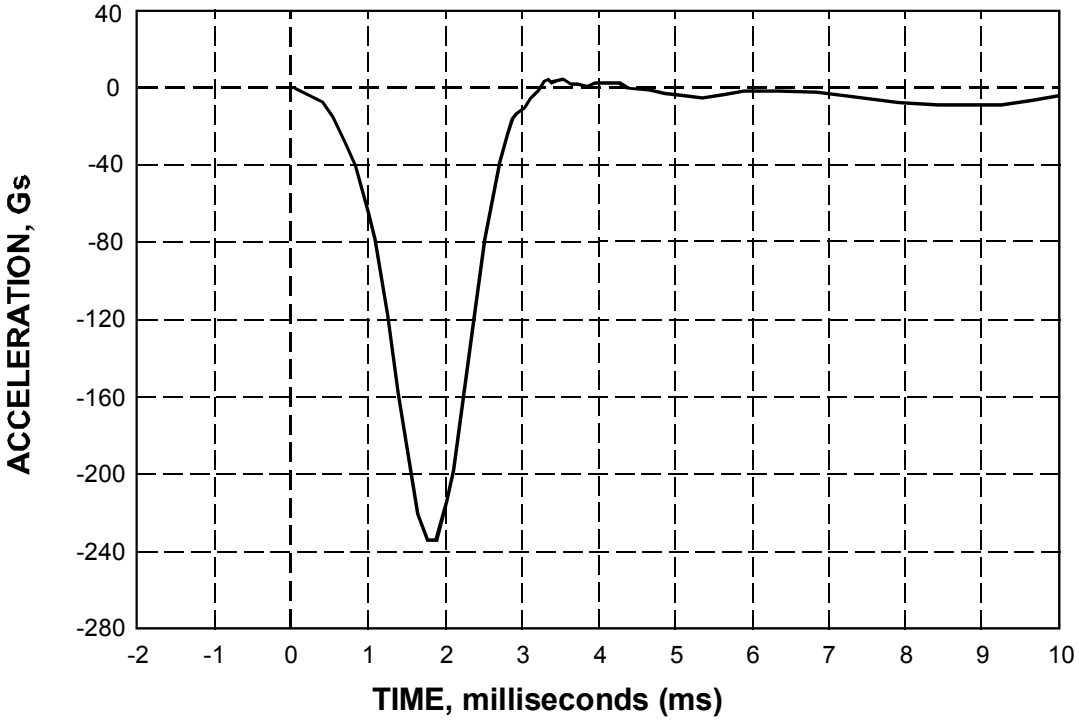
MANUFACTURER/ID NO.		
CALIBRATION DATE		
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	66ºF - 78ºF	72ºF
RELATIVE HUMIDITY	10% - 70%	27%
PEAK RESULTANT ACCELERATION	225 Gs - 275 Gs	270.63 Gs
PEAK LATERAL ACCELERATION	15 Gs Maximum	-7.43 Gs
IS ACCELERATION CURVE UNIMODAL?	YES	YES

REMARKS:

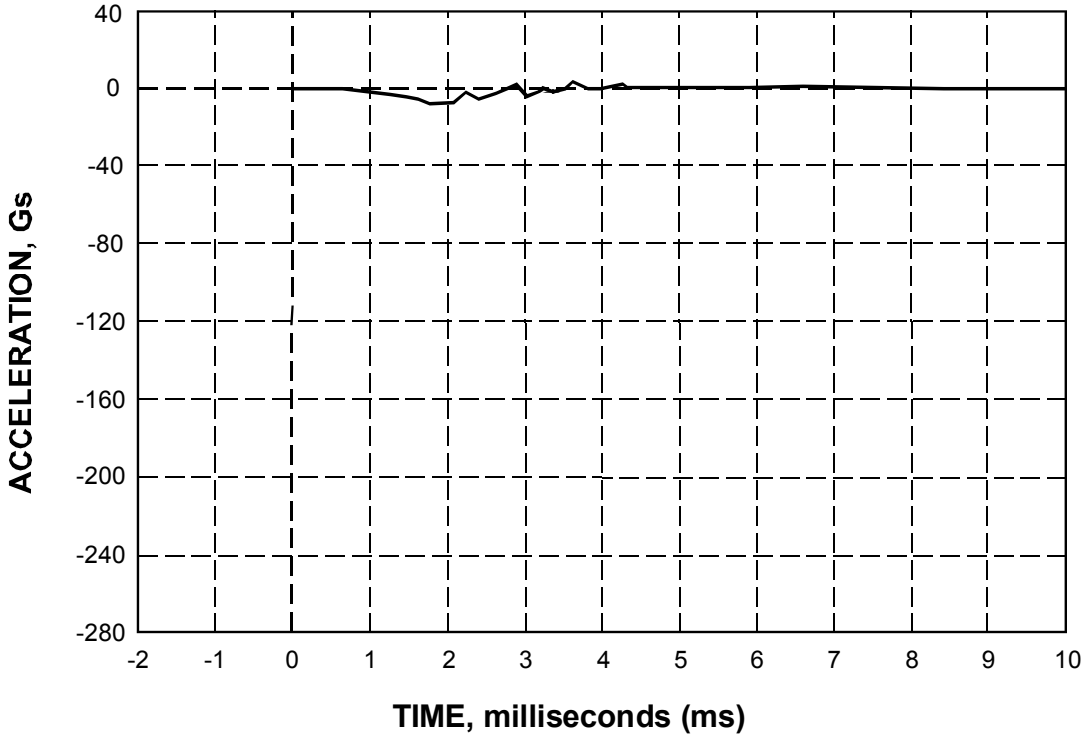
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

PART 572-E HYBRID III HEAD CALIBRATION - HEAD ACCELERATION X AXIS

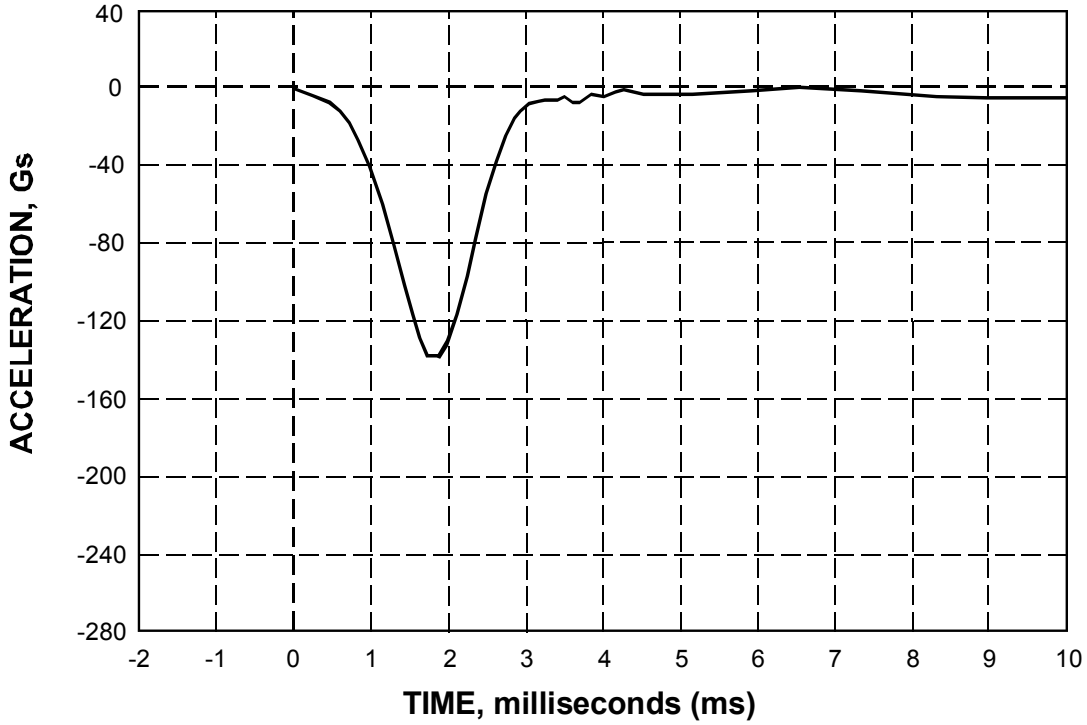


PART 572-E HYBRID III HEAD CALIBRATION - HEAD ACCELERATION Y AXIS

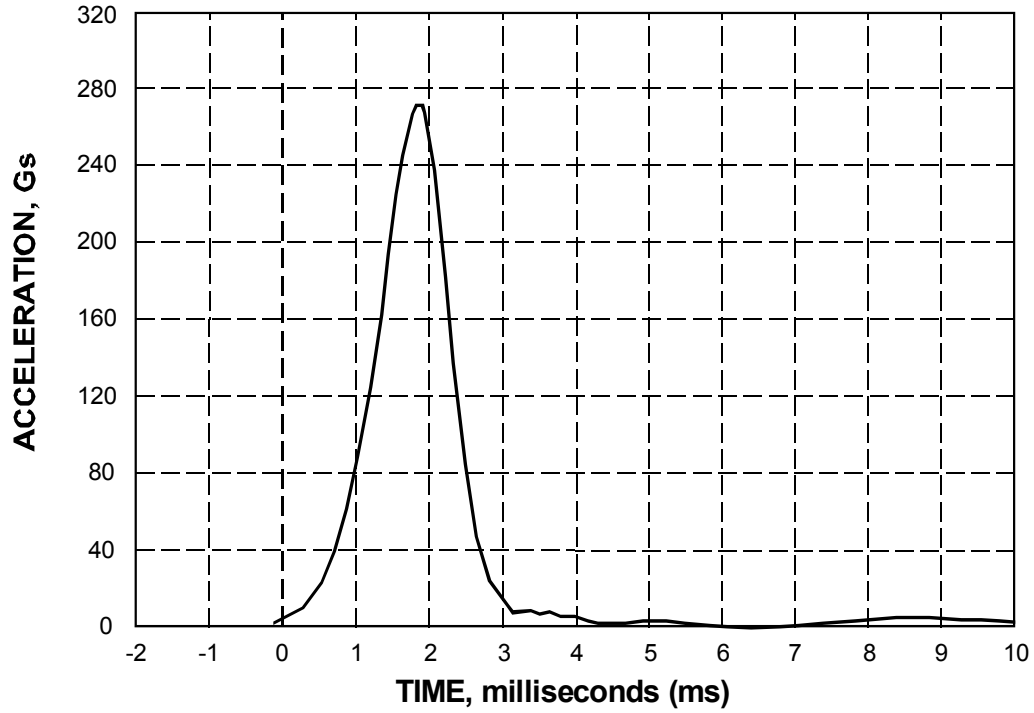


15. DATA SHEETS (EXAMPLES)....Continued

PART 572-E HYBRID III HEAD CALIBRATION - HEAD ACCELERATION Z AXIS



PART 572-E HYBRID III HEAD CALIBRATION - HEAD RESULTANT ACCELERATION



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
NECK FLEXION TEST

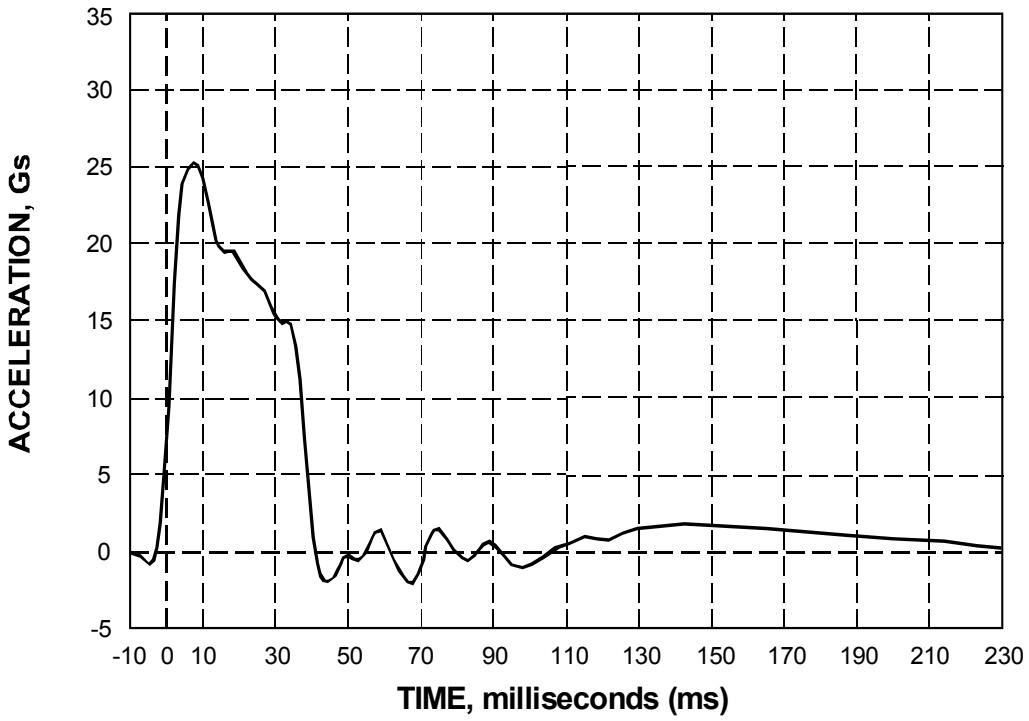
MANUFACTURER/ID NO.			
CALIBRATION DATE			
TEST PARAMETER		**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE		69ºF - 72ºF	72ºF
RELATIVE HUMIDITY		10% - 70%	49%
IMPACT VELOCITY		22.6 - 23.4 ft/sec	23.30 ft/sec
PENDULUM DECELERATION	10 ms	22.50 Gs - 27.50 Gs	23.51 Gs
	20 ms	17.60 Gs - 22.60 Gs	18.57 Gs
	30 ms	12.50 Gs - 18.50 Gs	15.03 Gs
MAX PENDULUM G ABOVE 30 MS		29 Gs	14.99 Gs
DECELERATION - TIME CURVE DECAY TIME TO 5 Gs		34 ms - 42 ms	38.13 ms
D PLANE ROTATION		64ºF - 78ºF Maximum	71.46ºF
		TIME: 57 ms - 64 ms	60.13 ms
MOMENT ABOUT OCCIPITAL CONDYLE		65 - 80 ft-lbs Maximum	76.32 ft-lbs
		TIME: 47 ms - 58 ms	52.88 ms
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 ms - 128 ms	115.75 ms
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 ms - 107 ms	100.25 ms

REMARKS:

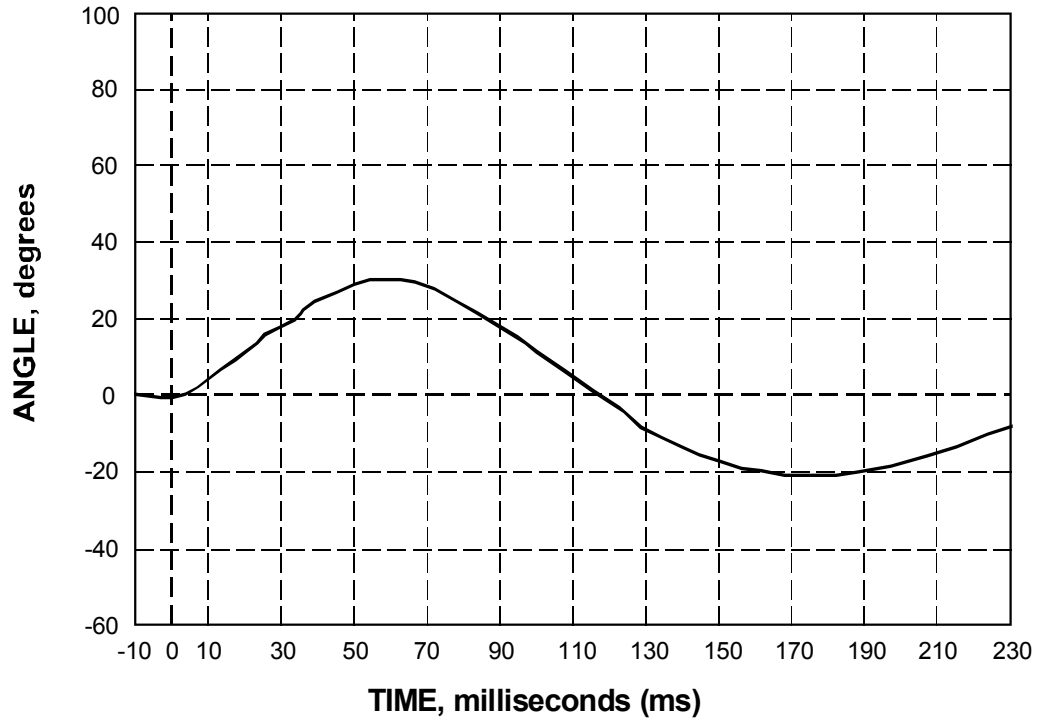
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

PART 572-E HYBRID III NECK FLEXION CALIBRATION - PENDULUM DECELERATION

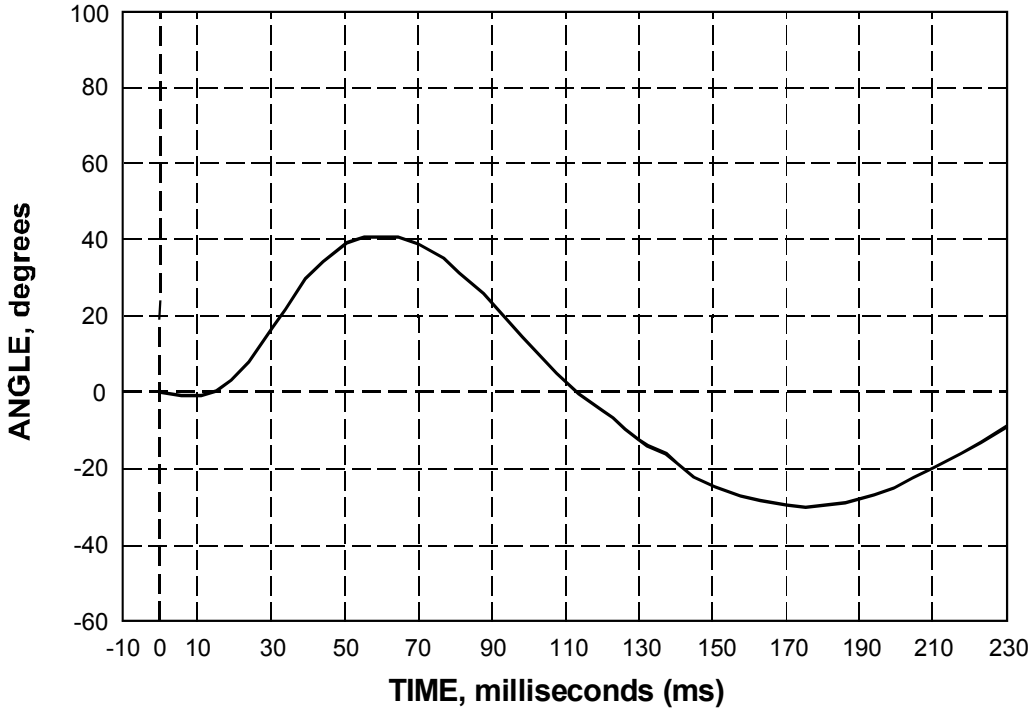


P572-E HYBRID III NECK FLEXION CALIBRATION - ROTATION ABOUT BASE OF NECK

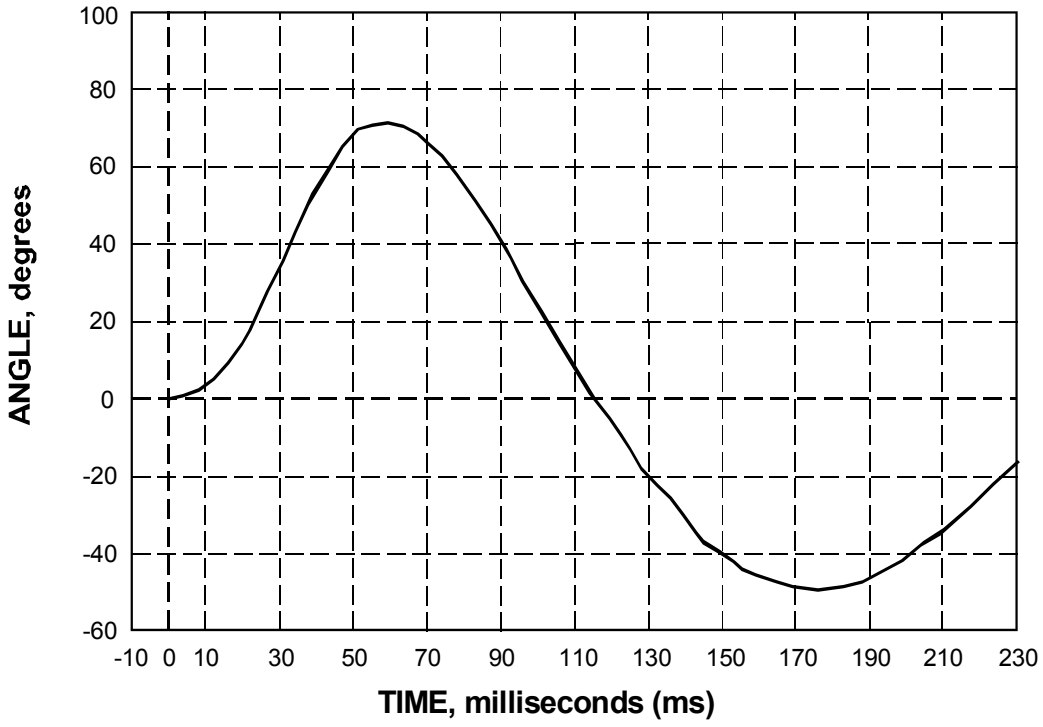


15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK FLEXION CALIBRATION - ROTATION ABOUT OCCIPITAL CONDYLE

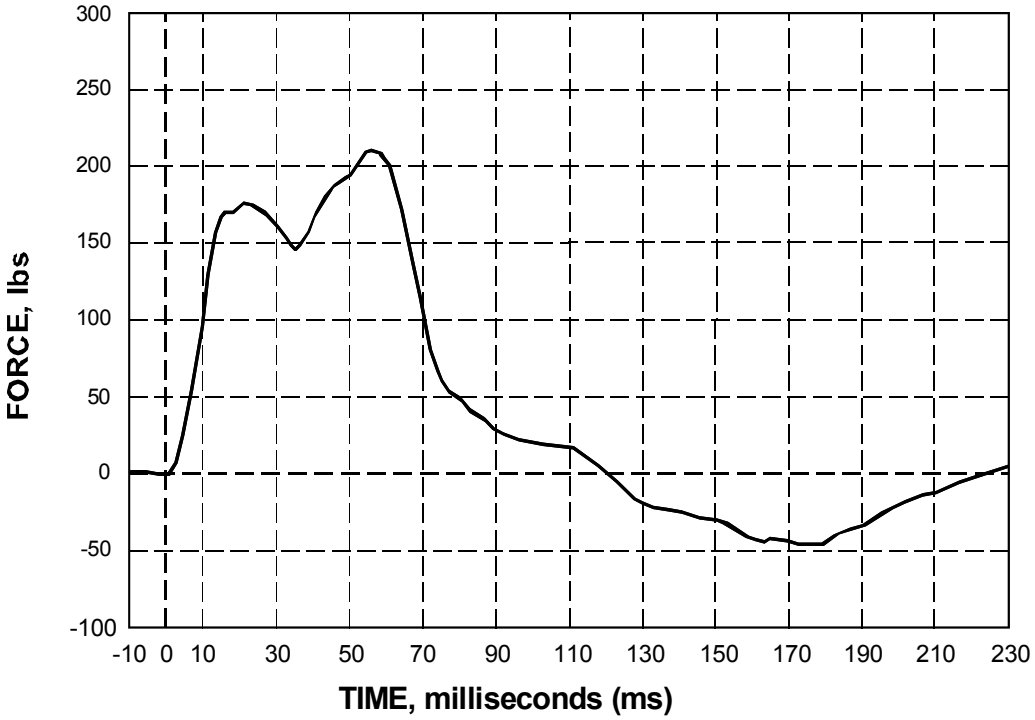


P572-E HYBRID III NECK FLEXION CALIBRATION - TOTAL ROTATION

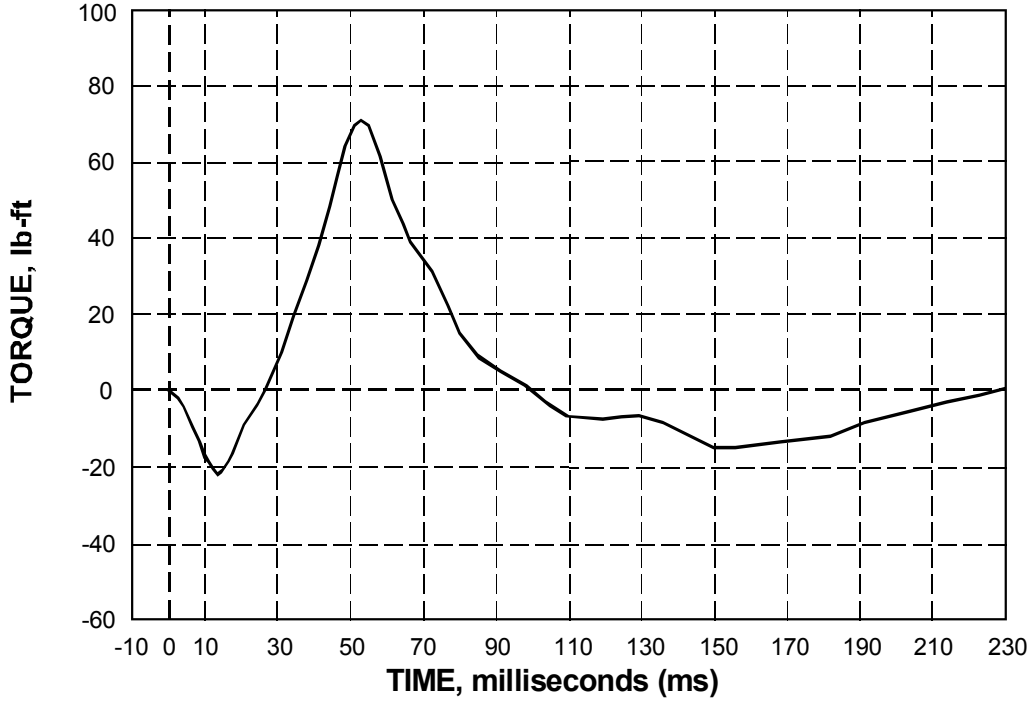


15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK FLEXION CALIBRATION - NECK FORCE X AXIS

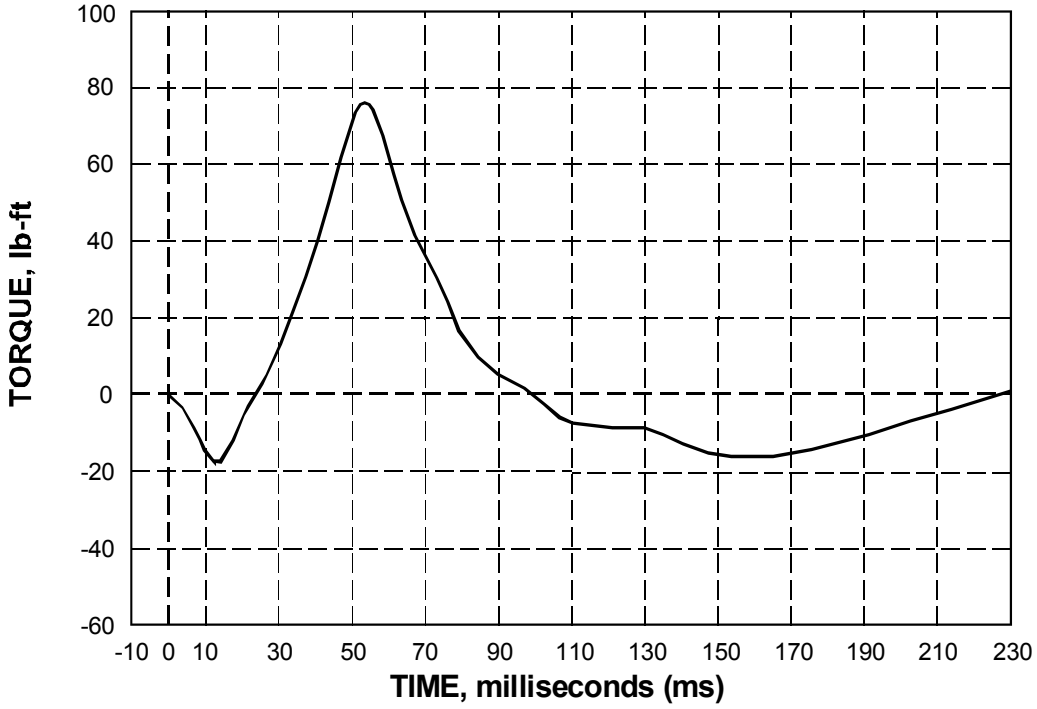


P572-E HYBRID III NECK FLEXION CALIBRATION - NECK MOMENT Y AXIS



15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK FLEXION CALIBRATION - TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
NECK EXTENSION TEST

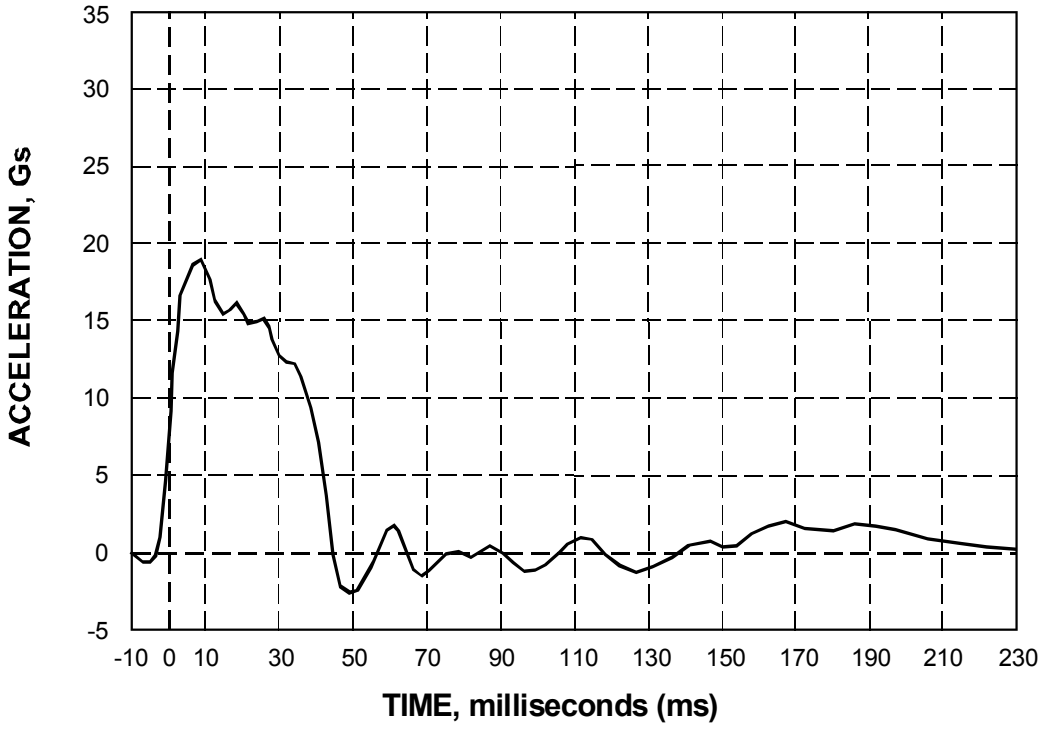
MANUFACTURER/ID NO.			
CALIBRATION DATE			
TEST PARAMETER		**SPECIFICATION**	**TEST RESULTS**
TEMPERATURE		69ºF - 72ºF	72ºF
RELATIVE HUMIDITY		10% - 70%	49%
IMPACT VELOCITY		19.50 - 20.30 ft/sec	19.67 ft/sec
PENDULUM DECELERATION	10 ms	17.20 Gs - 21.20 Gs	18.03 Gs
	20 ms	14.00 Gs - 19.00 Gs	15.26 Gs
	30 ms	11.00 Gs - 16.00 Gs	12.65 Gs
MAX PENDULUM G ABOVE 30 MS		22 Gs	12.61 Gs
DECELERATION - TIME CURVE DECAY TIME TO 5 G's		38 ms - 46 ms	41.50 ms
D PLANE ROTATION		81ºF - 106ºF Maximum	90.54ºF
		TIME: 72 ms - 82 ms	77.75 ms
MOMENT ABOUT OCCIPITAL CONDYLE		-59.0 - 39.0 ft-lbs Max.	-52.41 ft-lbs
		TIME: 65 ms - 79 ms	71.25 ms
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 ms - 174 ms	152.75 ms
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 ms - 148 ms	134.00 ms

REMARKS:

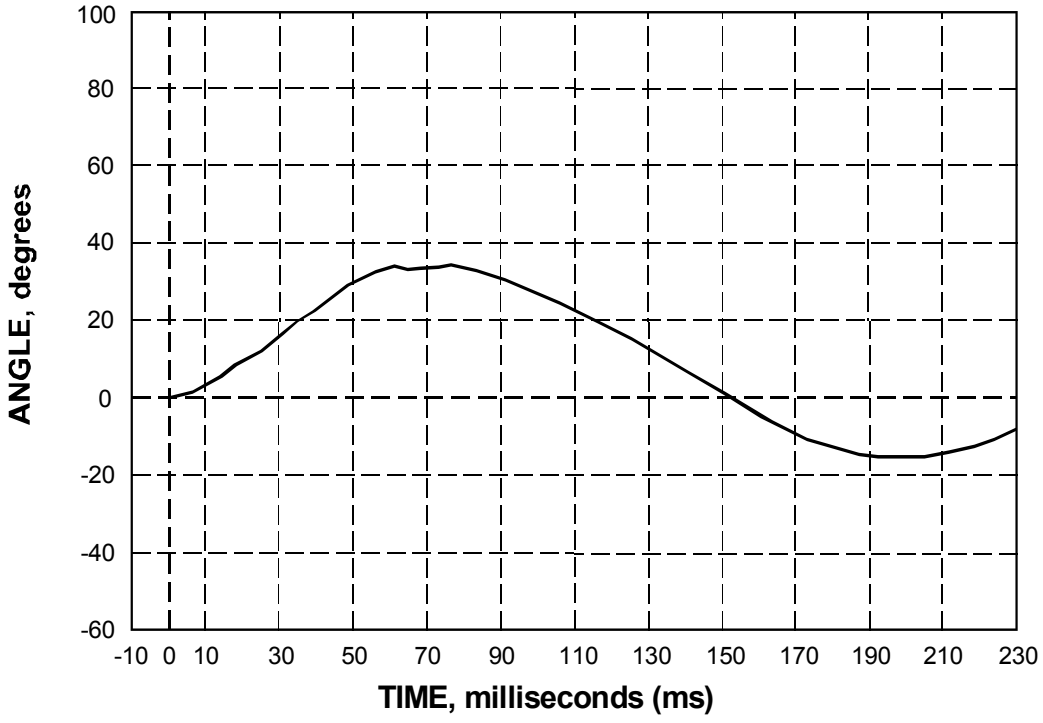
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK EXTENSION CALIBRATION - PENDULUM DECELERATION

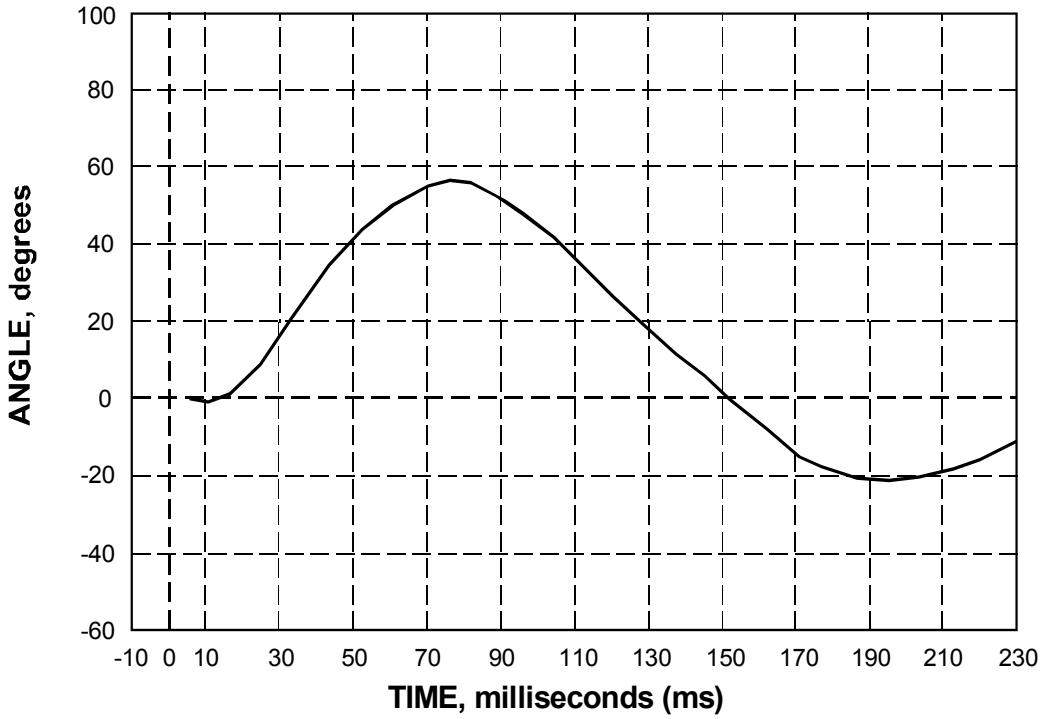


P572-E HYBRID III NECK EXTENSION CALIBRATION - ROTATION ABOUT BASE OF NECK

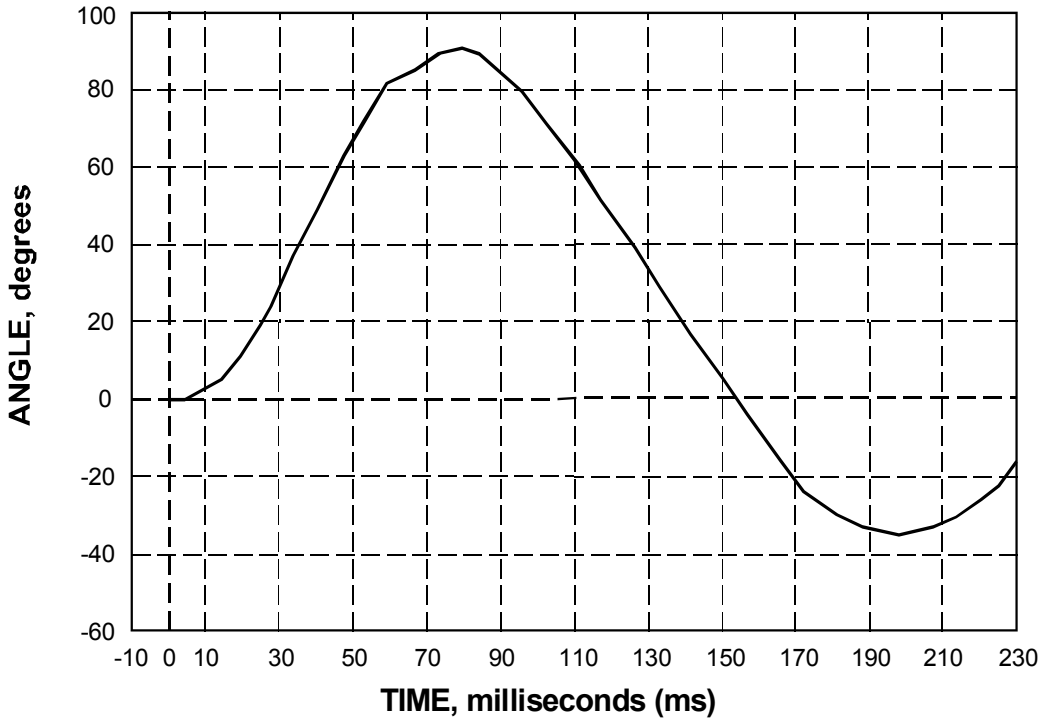


15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK EXTENSION CALIBRATION - ROTATION ABOUT OCCIPITAL CONDYLE

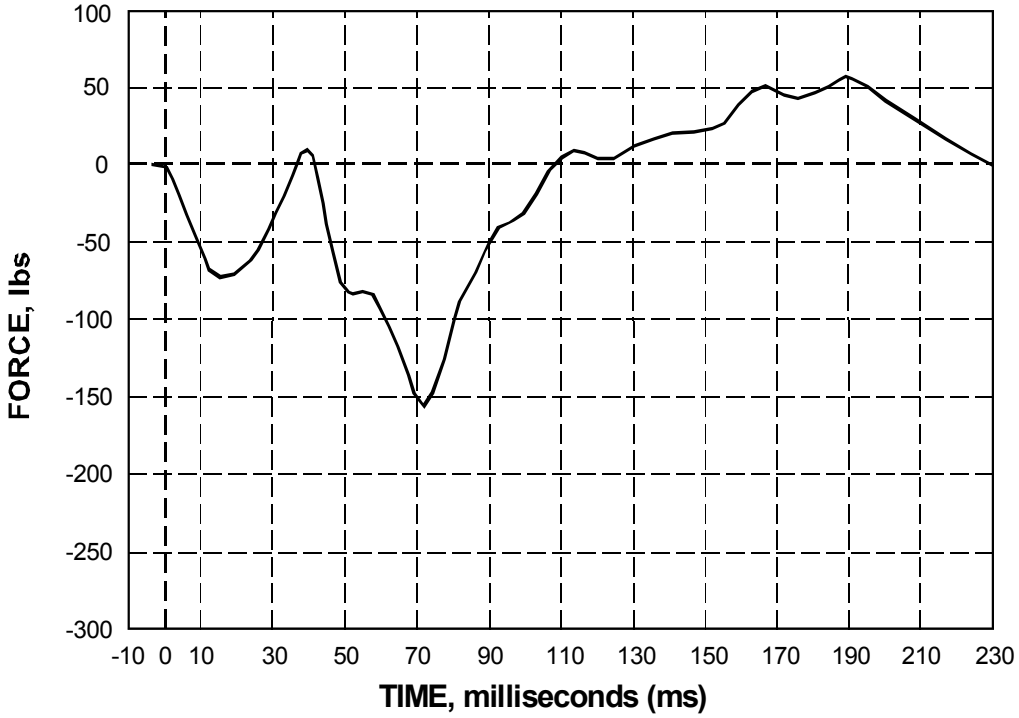


P572-E HYBRID III NECK EXTENSION CALIBRATION - TOTAL ROTATION

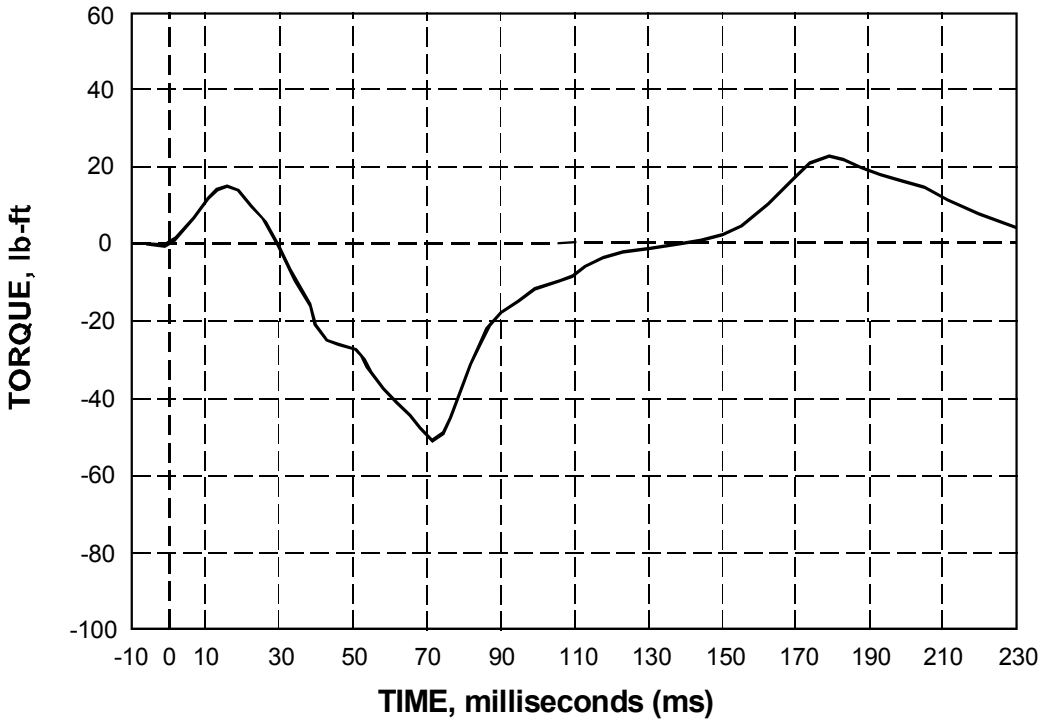


15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK EXTENSION CALIBRATION - NECK FORCE X AXIS

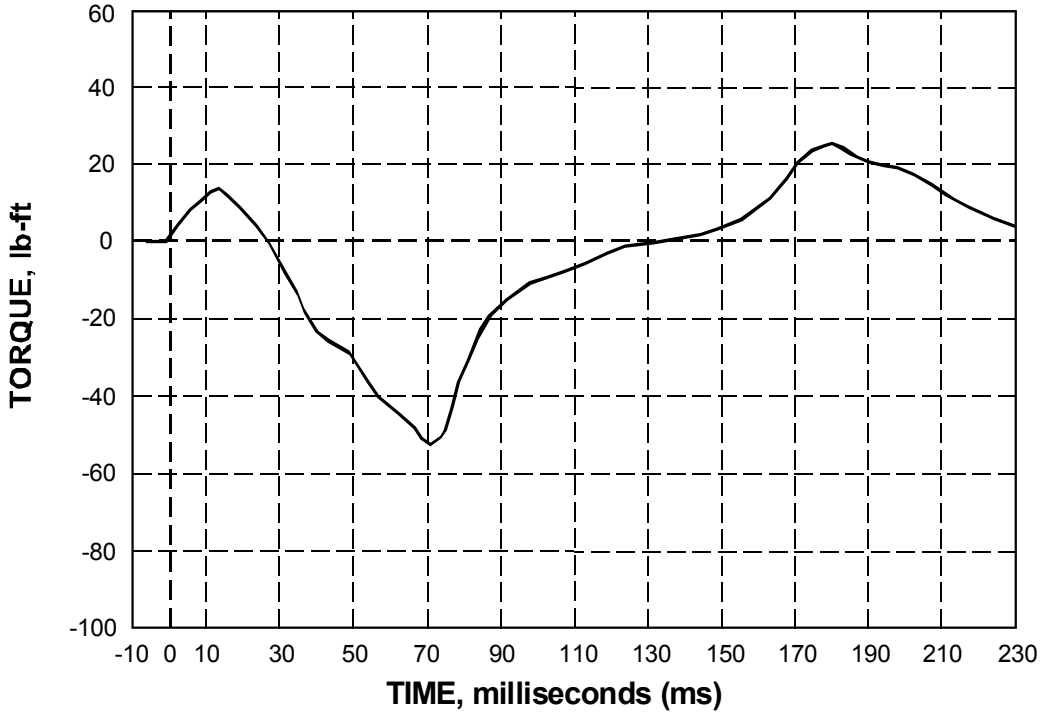


P572-E HYBRID III NECK EXTENSION CALIBRATION - NECK MOMENT Y AXIS



15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III NECK EXTENSION CALIBRATION - TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
LEFT KNEE IMPACT TEST

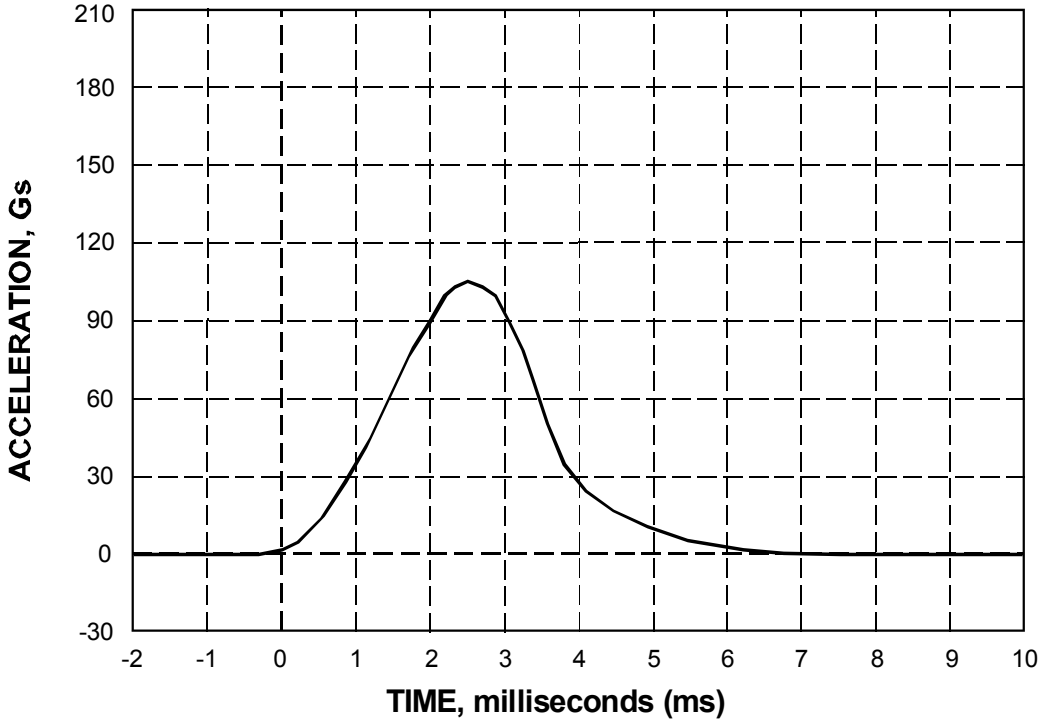
MANUFACTURER/ID NO.		
CALIBRATION DATE		
TEST PARAMETER	**SPECIFICATION**	**TEST RESULT**
TEMPERATURE	66ºF - 78ºF	72ºF
RELATIVE HUMIDITY	10% - 70%	27%
PROBE VELOCITY	6.8 - 7.0 ft/sec	6.91 ft/sec
PEAK KNEE IMPACT FORCE	1060 lbs - 1300 lbs	1156.55 lbs
PROBE WEIGHT	11.0 lbs	

REMARKS:

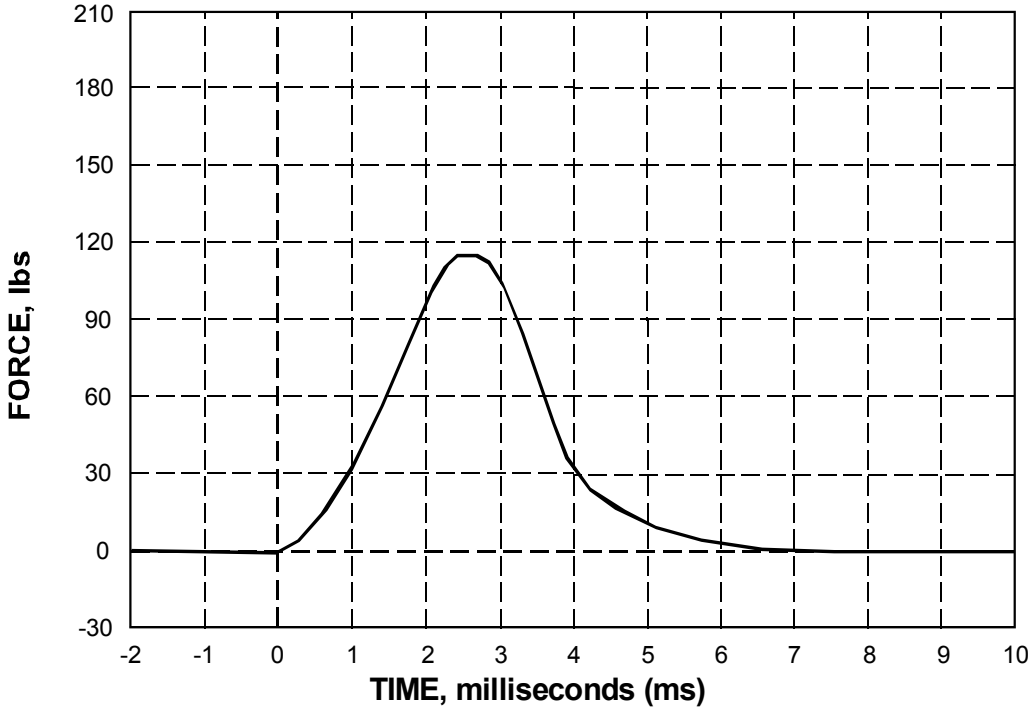
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III LEFT KNEE CALIBRATION - PENDULUM DECELERATION (11 LB PEND.)



P572-E HYBRID III LEFT KNEE CALIBRATION - PENDULUM FORCE (11 LB PEND.)



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
RIGHT KNEE IMPACT TEST

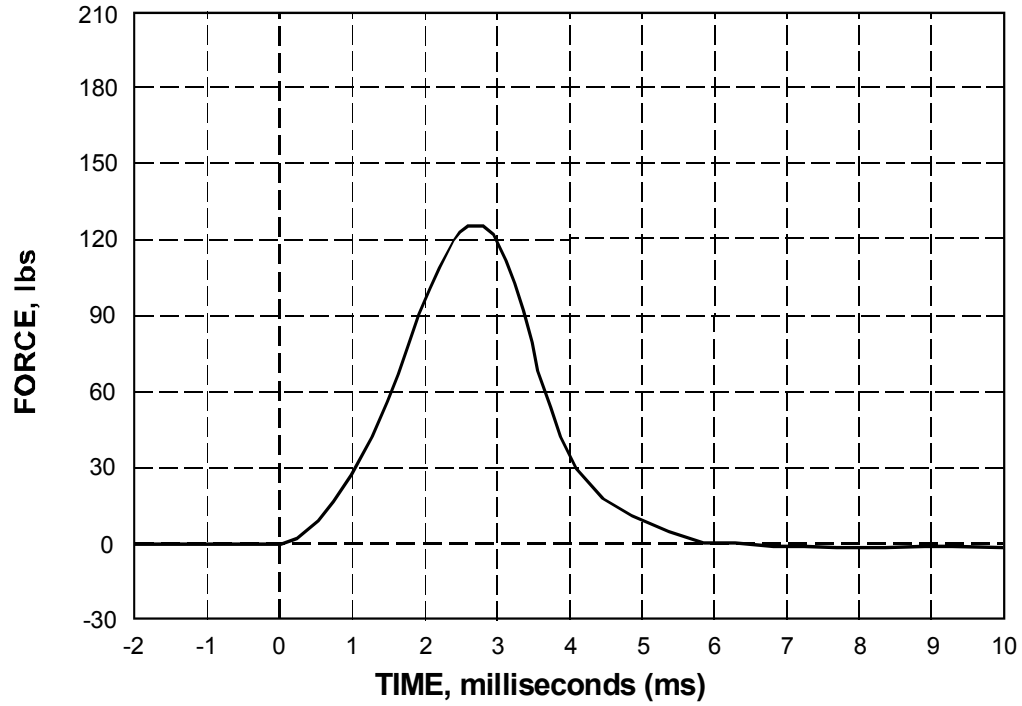
MANUFACTURER/ID NO.		
CALIBRATION DATE		
TEST PARAMETER	**SPECIFICATION**	**TEST RESULT**
TEMPERATURE	66ºF - 78ºF	70ºF
RELATIVE HUMIDITY	10% - 70%	34%
PROBE VELOCITY	6.8 - 7.0 ft/sec	6.84 ft/sec
PEAK KNEE IMPACT FORCE PROBE WEIGHT	1060 lbs - 1300 lbs 11.0 lbs	1258.57 lbs

REMARKS:

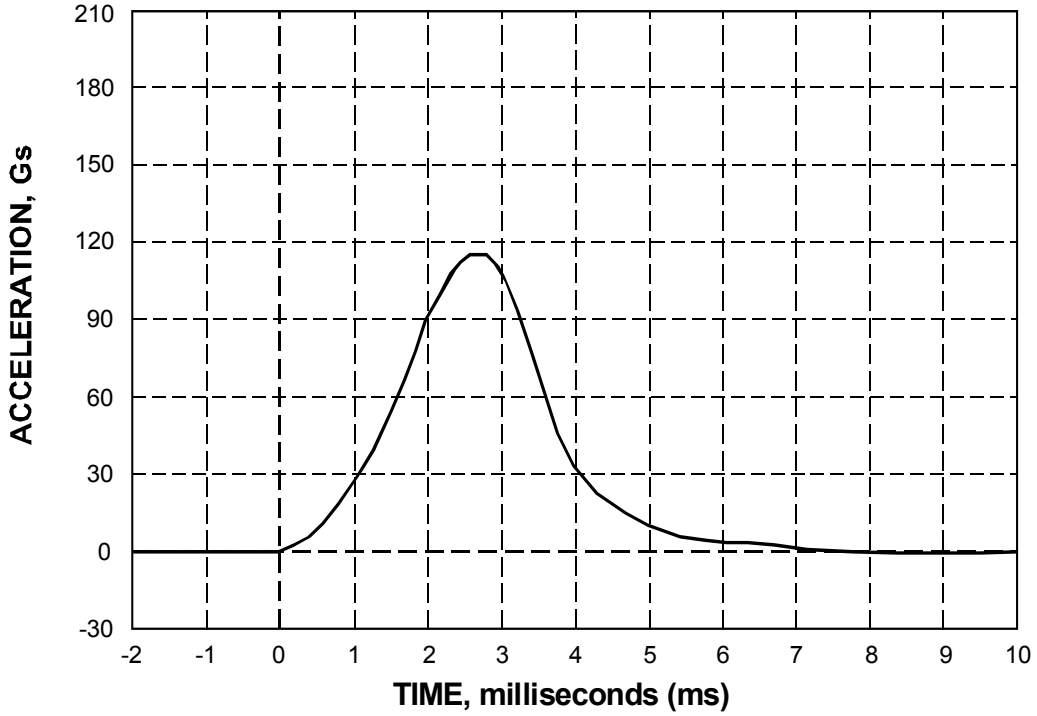
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III RIGHT KNEE CALIBRATION - PENDULUM FORCE (11 LB PEND.)



P572-E HYBRID III RIGHT KNEE CALIBRATION - PENDULUM DECELERATION (11 LB PEND.)



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
THORAX IMPACT TEST

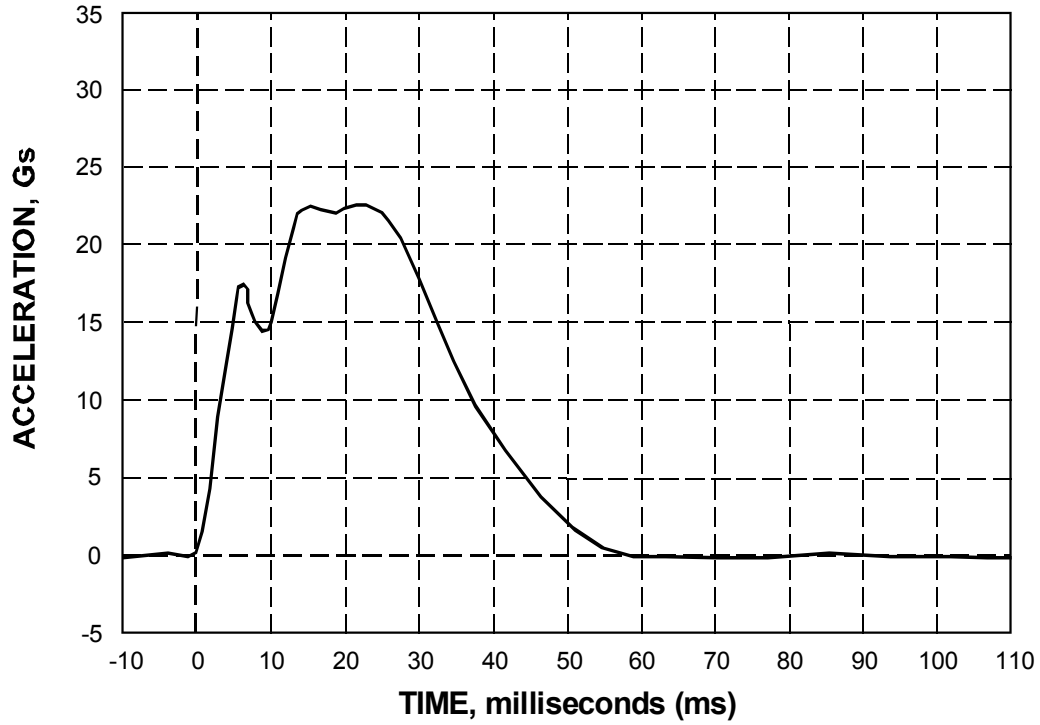
MANUFACTURER/ID NO.		
CALIBRATION DATE		
TEST PARAMETER	**HIGH SPEED TEST SPECIFICATION**	**TEST RESULTS**
TEMPERATURE	69ºF - 72ºF	72ºF
RELATIVE HUMIDITY	10% - 70%	48%
PENDULUM VELOCITY	21.6 - 22.4 ft/sec	21.77 ft/sec
MAXIMUM DEFLECTION	2.50 in - 2.86 in	2.80 in
MAXIMUM RESISTIVE FORCE	1160 lbs - 1325 lbs	1168.0 lbs
INTERNAL HYSTERESIS	69% - 85%	72.00%

REMARKS:

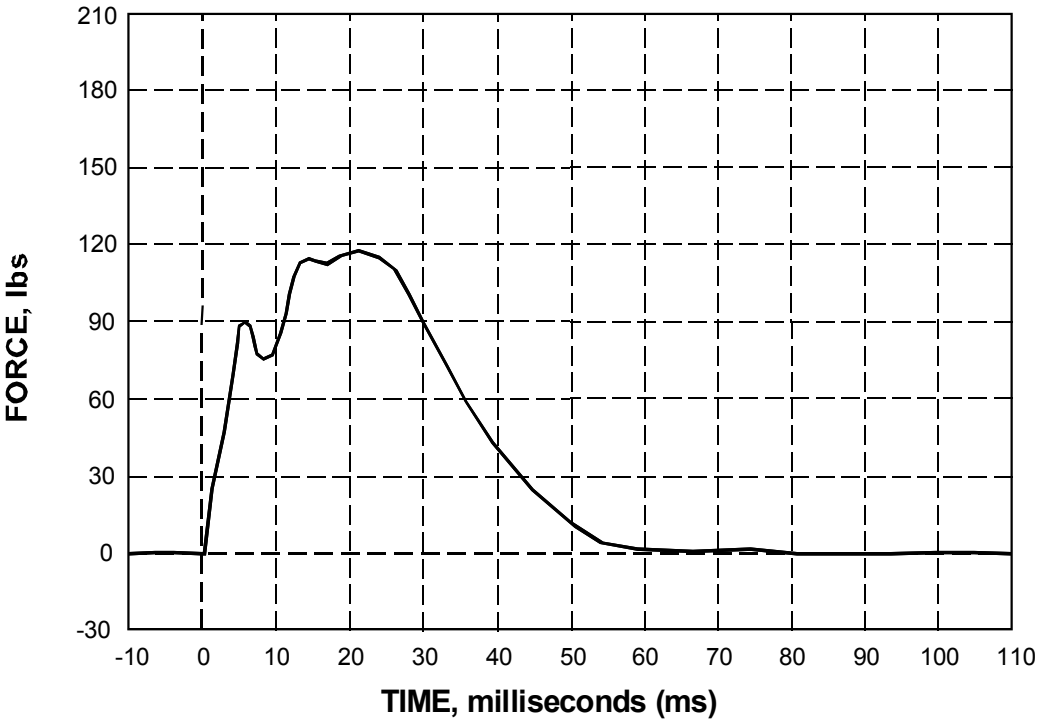
LABORATORY TECHNICIAN: _____

15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III THORAX CALIBRATION - PENDULUM DECELERATION

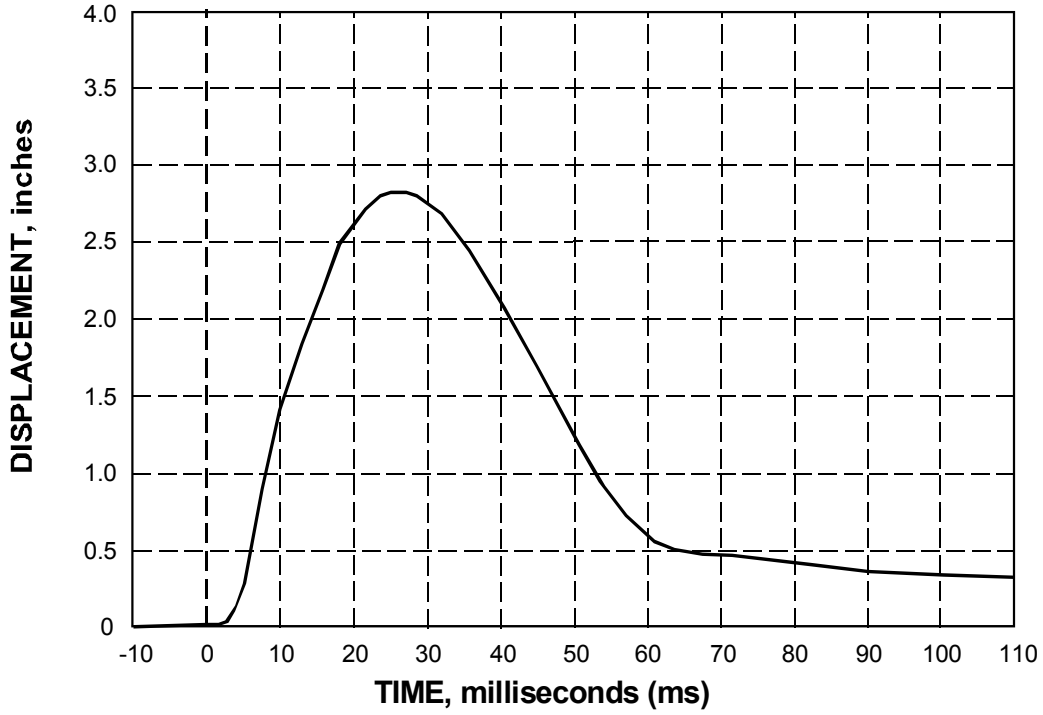


P572-E HYBRID III THORAX CALIBRATION - PENDULUM FORCE

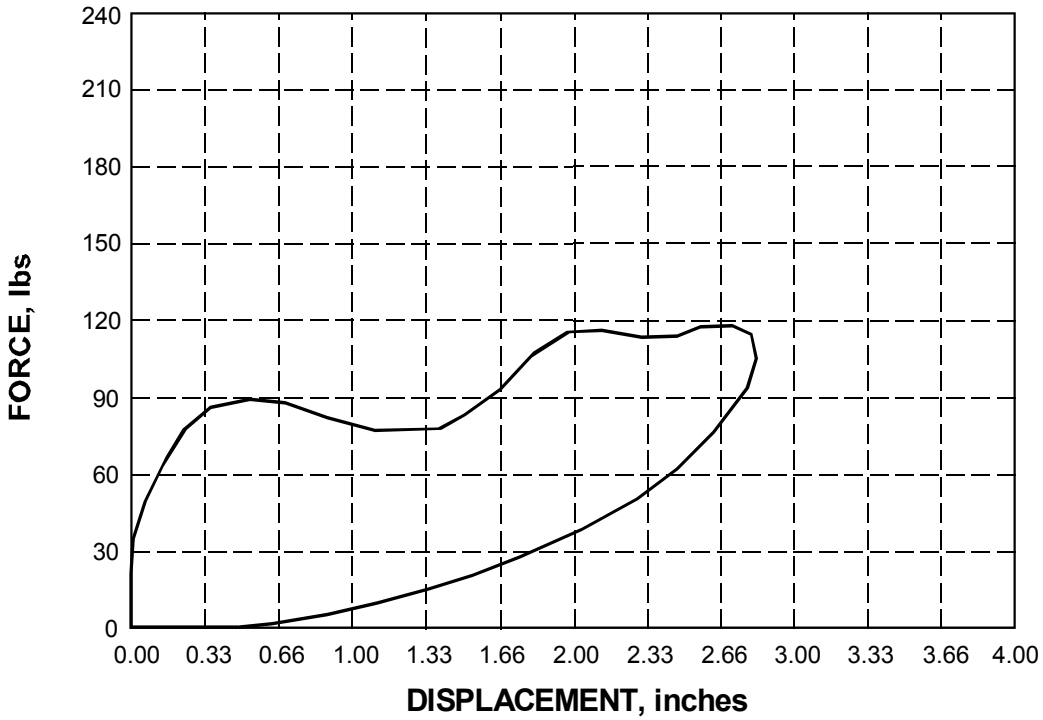


15. DATA SHEETS (EXAMPLES)....Continued

P572-E HYBRID III THORAX CALIBRATION - STERNUM DISPLACEMENT



P572-E HYBRID III THORAX CALIBRATION - CHEST DISPLACEMENT VS PENDULUM FORCE



15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
HIP JOINT-FEMUR FLEXION TEST

Test Parameter	Test Specification	Test Results
Temperature	66^{O} - 78^{O} F	
Relative Humidity	10% to 70%	
Rotation Rate	5-10 deg./sec.	Yes/No
30 degree rotation	70 ft-lbf	
150 ft-lbf	40 to 50 degree rotation	

PART 572 HYBRID III CALIBRATION - HIP JOINT-FEMUR FLEXION

15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
DUMMY DAMAGE CHECKLIST

Dummy Serial No.: _____; Project No. _____

OK	DAMAGED	(Begin with general cleaning)	
____	_____	Outer skin on entire dummy -	Check for gashes, rips, etc.
____	_____	Head -	Check that ballast is secure
____	_____		Gashes, rips, general appearance, etc.
____	_____	Neck -	Broken or cracks in rubber
____	_____		Check that upper neck bracket is firmly attached to lower neck bracket
____	_____		Check for looseness at the condyle joint
____	_____		Nodding blocks - cracked or out of position
____	_____	Spine -	Broken or cracks in rubber
____	_____	Ribs -	Check all ribs and rib supports for damage (bent or broken)
____	_____		Check damping material or separation or cracks
____	_____		Three rubber bumpers in place
____	_____	Chest displacement assembly -	Bent shaft - slider arm riding correctly in track
____	_____	Transducer Leads -	Torn cables
____	_____	Accelerometer Mountings (head, thorax, pelvis) -	Check for secure mounting
____	_____	Knees -	Check outer skin, insert and casting (without removing insert)
____	_____	Limbs -	Check for normal movement and adjustment
____	_____	Knee sliders -	Wires intact - rubber returned to "at rest" position
____	_____	Pelvis -	Inspect for breakage, esp. at iliac crest

15. DATA SHEETS (EXAMPLES)....Continued

OK	DAMAGED		
____	_____	Ankle -	Inspect ankle blocks for breakage
____	_____	Other -	_____

If upon visual examination, damage is apparent in any of these areas, the appropriate engineer or engineering technician is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement approved by:

_____; _____
Signature Date

COMMENTS ON REPAIR OR REPLACEMENT OF PARTS:

Checked By: _____ Date: _____

15. DATA SHEETS (EXAMPLES)....Continued

PART 572E
SAMPLE INSTRUMENTATION CALIBRATION INFORMATION

I.D. NO.	MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
DUMMY INSTRUMENTATION					
HEAD ACCELEROMETERS					
(1) LONGITUDINAL	ENDEVCO	7231C-750	CG21		
(2) LATERAL	ENDEVCO	7231C-750	CD74		
(3) VERTICAL	ENDEVCO	7231C-750	CE23		
NECK TRANSDUCER	GSE	186007-0100	182		
CHEST ACCELEROMETERS					
(1) LONGITUDINAL	ENDEVCO	7231C-750			
(2) LATERAL	ENDEVCO	7231C-750			
(3) VERTICAL	ENDEVCO	7231C-750			
CHEST POTENTIOMETER	VERNITECH	81422	85427-29		
FEMUR LOAD CELLS					
(1) RIGHT FEMUR	GSE	2430			
(2) LEFT FEMUR	GSE	2430			
LABORATORY INSTRUMENTATION					
NECK PENDULUM ACCELEROMETER	ENDEVCO	7232C-750	CC59		
THORAX PENDULUM ACCELEROMETER	ENDEVCO	7231C-750	CG83		
KNEE PENDULUM ACCELEROMETER	ENDEVCO	7264-2000	CH15H		
NECK ROTATION TRANSDUCER 1 (OPTIONAL)	BOURNS	35435-001-102			
NECK ROTATION TRANSDUCER 2 (OPTIONAL)	BOURNS	35435-001-102			

LABORATORY TECHNICIAN: _____

APPENDIX B
DUMMY POSITIONING PROCEDURES
FOR TEST DUMMY CONFORMING TO SUBPART E OF PART 572

DUMMY PLACEMENT

1. HEAD

The transverse instrumentation platform of the head shall be horizontal within 0.5º. To level the head of the test dummy, the following sequences must be followed. First adjust the position of the H-point within the limits set forth in Section 4.B(1) If the transverse instrumentation platform of the head is still not level, then adjust the pelvic angle of the test dummy within the limits provided in Section 4.B(2). If the transverse instrumentation platform of the head is still not level, adjust the neck bracket of the test dummy the minimum amount necessary from the non-adjusted "0" setting to ensure that the transverse instrumentation platform of the head is horizontal within 0.5º. The test dummy shall remain within the limits specified for the H-point and pelvic angle after any adjustment of the neck bracket. (S10.1)

2. ARMS

A. Driver

The driver's upper arms shall be adjacent to the torso with the centerlines as close to a vertical plane as possible. (S10.2.1)

B. Passenger

The passenger's upper arms shall be in contact with the seat back and the sides of the torso. (S10.2.2)

3. HANDS

A. Driver

The palms of the driver test dummy shall be in contact with the outer part of the steering wheel rim at the rim's horizontal centerline. The thumbs shall be over the steering wheel rim and shall be lightly taped to the steering rim so that if the hand of the test dummy is pushed upward by a force of not less than 2 pounds and not more than 5 pounds, the tape shall release the hand from the steering wheel rim. (S10.3.1)

B. Passenger

The palms of the passenger test dummy shall be in contact with the outside of the thigh. The little finger shall be in contact with the seat cushion. (S10.3.2)

DUMMY PLACEMENT....Continued

4. TORSO

A. Upper Torso

(1) Bench Seats

In vehicles equipped with bench seats, the upper torso of the driver and passenger test dummies shall rest against the seat back. The midsagittal plane of the driver dummy shall be vertical and parallel to the vehicles longitudinal centerline, and pass through the center of the steering wheel rim. The midsagittal plane of the passenger dummy shall be vertical and parallel to the vehicle's longitudinal centerline and the same distance from the vehicle's longitudinal centerline as the midsagittal plane of the driver dummy. (S10.4.1.1)

(2) Bucket Seats

In vehicles equipped with bucket seats, the upper torso of the driver and passenger test dummies shall rest against the seat back. The midsagittal plane of the driver and the passenger dummy shall be vertical and shall coincide with the longitudinal centerline of the bucket seat. (S10.4.1.2)

(3) Split Bench Seats

In vehicles equipped with split bench seats, the dummies will be placed as specified by the vehicle manufacturer.

B. Lower Torso

(1) H-Point. The H-point of the driver and passenger test dummies shall coincide within 0.5 inch in the vertical dimension and 0.5 inch in the horizontal dimension of a point 0.25 inch below the position of the H point determined by using the equipment and procedures specified in SAE J826 (Apr 80) except that the length of the lower leg and thigh segments of the H-point machine shall be adjusted to 16.3 and 15.8 inches respectively, instead of the 50th percentile values specified in Table 1 of SAE J826. (S10.4.2.1)

(2) Pelvic Angle. As determined using the pelvic angle gage (GM drawing 78051-532 incorporated by reference in Part 572, Subpart E) which is inserted into the H-point gaging hole of the dummy, the angle measured from the horizontal on the 3 inch flat surface of the gage shall be 22.5 degrees ± 2.50 degrees. (S10.4.2.2)

DUMMY PLACEMENT....Continued

5. LEGS

The upper legs of the driver and passenger test dummies shall rest against the seat cushion to the extent permitted by placement of the feet. The initial distance between the outboard knee clevis flange surfaces shall be 10.6 inches. To the extent practicable, the left leg of the driver dummy and both legs of the passenger dummy shall be in vertical longitudinal planes. To the extent practicable, the right leg of the driver dummy shall be in a vertical plane. Final adjustment to accommodate placement of feet in accordance with Section 6 for various passenger compartment configurations is permitted. (S10.5.2)

6. FEET

A. Driver Feet Placement

Rest the right foot of the test dummy on the undepressed accelerator pedal with the rearmost point of the heel on the floor pan in the plane of the pedal. If the foot cannot be placed on the accelerator pedal, set it initially perpendicular to the lower leg and place it as far forward as possible in the direction of the pedal centerline with the rearmost point of the heel resting on the floor pan. (S10.6.1.1)

Place the left foot on the toeboard with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toeboard and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toeboard, set it initially perpendicular to the lower leg and place it as far forward as possible with the heel resting on the floor pan. If necessary to avoid contact with the vehicle's brake or clutch pedal, rotate the test dummy's left foot about the lower leg. If there is still pedal interference, rotate the left leg outboard about the hip the minimum distance necessary to avoid the pedal interference. For vehicles with a foot rest that does not elevate the left foot above the level of the right foot, place the left foot on the foot rest so that the upper and lower leg centerlines fall in a vertical plane. (S10.6.1.2)

B. Passenger Feet Placement

(1) Flat floor pan/toeboard:

Place the right and left feet on the vehicle's toeboard with the heels resting on the floor pan as close as possible to the intersection point with the toeboard. If the feet cannot be placed flat on the toeboard, set them perpendicular to the lower leg centerlines and place them as far forward as possible with the heels resting on the floor pan. (S10.6.2.1)

DUMMY PLACEMENT....Continued

(2) Wheelhouse projections:

Place the right and left feet in the well of the floor pan/toeboard and not on the wheelhouse projection. If the feet cannot be placed flat on the toeboard, initially set them perpendicular to the lower leg centerlines and then place them as far forward as possible with the heels resting on the floor pan. (S10.6.2.2)

DUMMY PLACEMENT....Continued

TABLE 1B - DUMMY POSITION		
P572E	DRIVER DSP	PASSENGER DSP
UPPER TORSO	BENCH SEAT: Placed against seat back. Midsagittal plane is vertical & parallel to vehicle C/L passing thru center of steering wheel rim. NOTE: Split bench seat - as in manufacturer's certification test(s).	BENCH SEAT: Placed against seat back. Midsagittal plane is vertical and longitudinal located the same distance from the vehicle longitudinal C/L as the midsagital plane of the driver dummy. NOTE: Split bench seat - as in manufacturer's certification test(s).
	BUCKET SEAT: Placed against seat back. Midsagittal plane is vertical and parallel to C/L of the seat cushion.	BUCKET SEAT: Placed against seat back. Midsagittal plane is vertical and parallel to C/L of the seat cushion.
UPPER ARMS	Initially placed against seat back & tangent to side of upper torso. Push arms rearward into the seat back with bending at elbows.	Initially placed against seat back & tangent to side of upper torso. Push arms rearward into seat back with bending at elbows. Remains tangent.
LOWER ARMS	Initially placed against the outside of the thighs. C/L as close as possible in a vertical plane.	Initially placed against the outside of the thighs. C/L as close as possible in a vertical plane.
HAND PALMS	Palms contact outer part of steering wheel rim at horizontal C/L.	Palms contact the outside of the thighs.
HAND THUMBS	Placed over steering wheel rim	
HAND LITTLE FINGERS		Barely in contact with the seat cushion.
LOWER TORSO	H-point shall coincide within 0.50 inch in the vertical and horizontal dimension of a point 0.25 inch below the position established by the SAE J826 (APR 80) with thigh/leg segments adjusted to 16.3/15.8 inches. Pelvic angle shall be 22.50 ± 0.50 degrees.	H-point shall coincide within 0.50 inch in the vertical and horizontal dimension of a point 0.25 inch below the position established by the SAE J826 (APR 80) with thigh/leg segments adjusted to 16.3/15.8 inches. Pelvic angle shall be 22.50 ± 0.50 degrees.
UPPER LEGS	Placed against seat cushion. Plane defined by femur & tibia C/Ls is as close as possible to vertical.	Placed against seat cushion. Located so that plane defined by femur & tibia C/Ls is as close as possible to vertical/longitudinal for left leg, vertical for right leg.
KNEES	Initially set 10.6 inches apart between outboard knee clevis flange.	Initially set 10.6 inches apart between outboard knee clevis flange.
LOWER LEGS	Plane defined by upper and lower leg C/Ls as close as possible to vertical plane.	Plane defined by upper and lower leg C/Ls is as close as possible to vertical, longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal. Rearmost point of heel on floorpan in plane of pedal.	Place on toeboard rearmost point of heel on floorpan as close as possible to intersection of toeboard & floor pan.
LEFT FOOT	Placed on toeboard. Rearmost point of heed on floorpan as close as possible to intersection of toeboard & floor pan.	Place on toeboard rearmost point of heel on floorpan as close as possible to intersection of toeboard & floor pan.

DUMMY PLACEMENT....Continued

7. TEST DUMMY POSITIONING FOR LATCHPLATE ACCESS

Position the test dummy in the driver's seat or passenger's seat in its forwardmost adjustment position. Attach the lines for the inboard and outboard arms to the test dummy as described in Appendix D. Extend each line backward and outboard to generate the compliance arcs of the outboard reach envelope of the test dummy's arms. (S10.7)

8. TEST DUMMY POSITIONING FOR BELT CONTACT FORCE

The seats shall be positioned as specified for the impact test (TP208-09 Section 12). Position the test dummy in the vehicle in accordance with the requirements specified in Section 1 through Section 6, above, in its designated seating position. Pull the belt webbing three inches from the test dummy's chest and release until the webbing is within 1 inch of the test dummy's chest and measure the belt contact force. (S10.8) Except for seat belt assemblies that incorporate a webbing tension-relieving device, the upper torso webbing of any seat belt assembly shall not exert more than 0.7 pounds of contact force when measured normal to and one inch from the chest of the dummy at the point where the centerline of the torso belt crosses the midsagittal line on the dummy's chest. (S7.4.3)

9. MANUAL BELT ADJUSTMENT FOR DYNAMIC TESTING

The seats shall be positioned as specified for the impact test (TP208S-01 Section 12). Position the test dummy in the vehicle in accordance with the requirements specified in Section 1 through Section 6, above, in its designated seating position.

Place the Type 2 manual belt around the test dummy and fasten the latch. Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 2 pound to 4 pound tension load to the lap belt. If the belt system is equipped with a tension-relieving device introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer for normal use in the owners manual for the vehicle. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S10.9)

APPENDIX C
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TESTS

1. BELT CONTACT FORCE (S7.4.3)

Test Vehicle NHTSA No.: _____
Veh. Model Year/Make/Model/Body Style: _____
Designated Seating Position Tested:_____
Date of Comfort/Convenience Check: _____
Technician Performing Check: _____
GVWR: _____

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

1.1 Does the vehicle incorporate a webbing tension-relieving device?

___Yes - go to latchplate access

___No - continue with this check sheet

1.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

[__] - CHECK

[__] - N/A

1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

[__] - CHECK

[__] - N/A

1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

[__] - CHECK

[__] - N/A

1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

[__] - CHECK

[__] - N/A

1. BELT CONTACT. . . .continued

1.6 Place each adjustable head restraint in its highest adjustment position.

[__] - CHECK

[__] - N/A

1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

[__] - CHECK

[__] - N/A

1.8 Position the test dummies according to dummy position placement instructions in Appendix B.

[__] - CHECK

1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.

Contact force _____lb. ___0.0 to 0.7 pounds - Pass

___greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

REMARKS:

2. LATCHPLATE ACCESS (S7.4.4)

Test Vehicle NHTSA No.: _____
Veh. Model Year/Make/Model/Body Style: _____
Designated Seating Position Tested:_____
Date of Comfort/Convenience Check: _____
Technician Performing Check: _____
GVWR: _____

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

2.1 Position the seat in its forward most adjustment position. [__] - CHECK

2.2 Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.)

[__] - CHECK

2.3 Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.

[__] – CHECK

2.4 Attach the inboard and outboard reach string following the instructions on Figure 1C.

[__] – CHECK

2.5 Place the latch plate in the stowed position. [__] - CHECK

2.6 Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

___Yes - Pass

___**NO - FAIL**

2.7 Using the clearance test block, specified in Figure 2C, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

___Yes - Pass

___**NO - FAIL**

3. RETRACTION (S7.4.5)

Test Vehicle NHTSA No :_____
Veh. Model Year/Make/Model/Body Style: _____
Designated Seating Position Tested:_____
Date of Comfort/Convenience Check: _____
Technician Performing Check: _____
GVWR: _____

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

3.1 Is the vehicle a passenger car or walk-in van-type vehicle?
___Yes ___No

If yes, go to seat belt guides and hardware.

3.2 Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

[__] – CHECK

3.3 If separately adjustable in a vertical direction, the seats are at the lowest position.

[__] – CHECK

3.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

[__] - CHECK

3.4 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

[__] - CHECK

3.5 Place each adjustable head restraint in its highest adjustment position.

[__] - CHECK

3.6 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

[__] - CHECK

3. RETRACTION....Continued

3.4 Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B.

[__] - CHECK

3.5 Restrain the dummies using the belt systems for the position being tested.

[__] - CHECK

3.6 Stow outboard armrests which are capable of being stowed.

[__] - CHECK

3.7 Check the statement that applies to this test vehicle:

A. The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.

[__] - Pass

B. The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.

[__] - Pass

C. Neither A or B apply. ___**FAIL**

3.7 With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

___Yes - Pass ___**NO - FAIL**

3.8 If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

___N/A

___Yes - Pass ___NO - FAIL

4. SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle NHTSA No.: _____
Veh. Model Year/Make/Model/Body Style: _____
Designated Seating Position Tested:_____
Date of Comfort/Convenience Check: _____
Technician Performing Check: _____
GVWR: _____

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))

B. Seats which are removable

C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function

If the seats in this vehicle are different than the criteria above determine the following:

4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
___Yes: go to 4.2 ___No: this form is complete.

4.2. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
___Yes - Pass ___**NO - FAIL**

4.3. Are the remaining two seat belt parts accessible under normal conditions?
___Yes - Pass ___**NO - FAIL**

4.4. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

4. SEAT BELT GUIDES AND HARDWARE....Continued

A. The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

[__] - CHECK

B. The seat is moved to any position to which it is designed to be adjusted.

[__] - CHECK

C. The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

[__] - CHECK

___Yes - Pass ___**NO - FAIL**

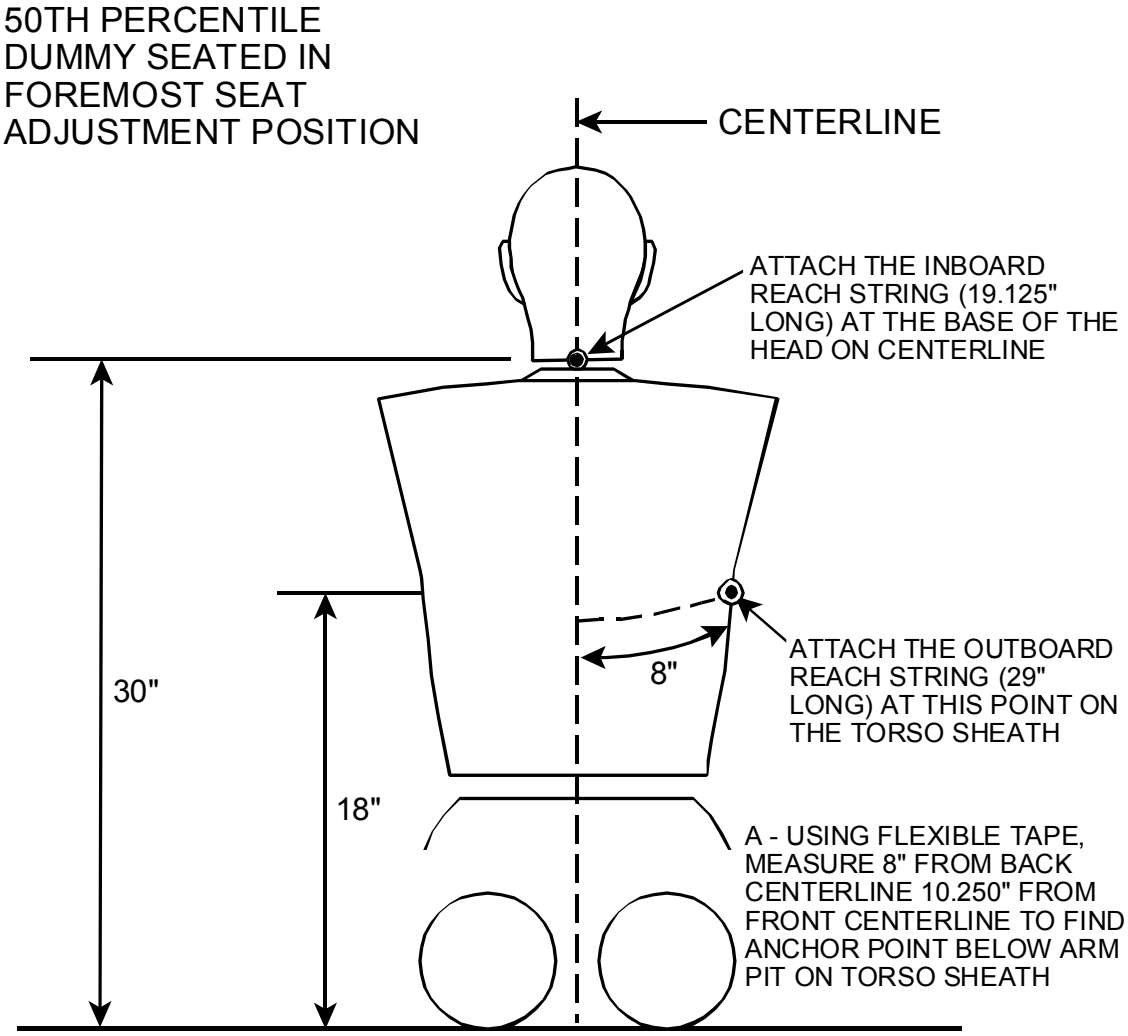
4.5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

___Yes - Pass ___NO - FAIL

APPENDIX C. . . .Continued

LOCATION OF ANCHORING POINTS FOR LATCHPLATE REACH LIMITING CHAINS OR STRINGS TO TEST FOR LATCHPLATE ACCESSIBILITY

PART 572E DUMMY



SEAT PLANE IS 90 DEGREES TO THE TORSO LINE

REAR VIEW

FIGURE 1C

APPENDIX C....Continued

USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

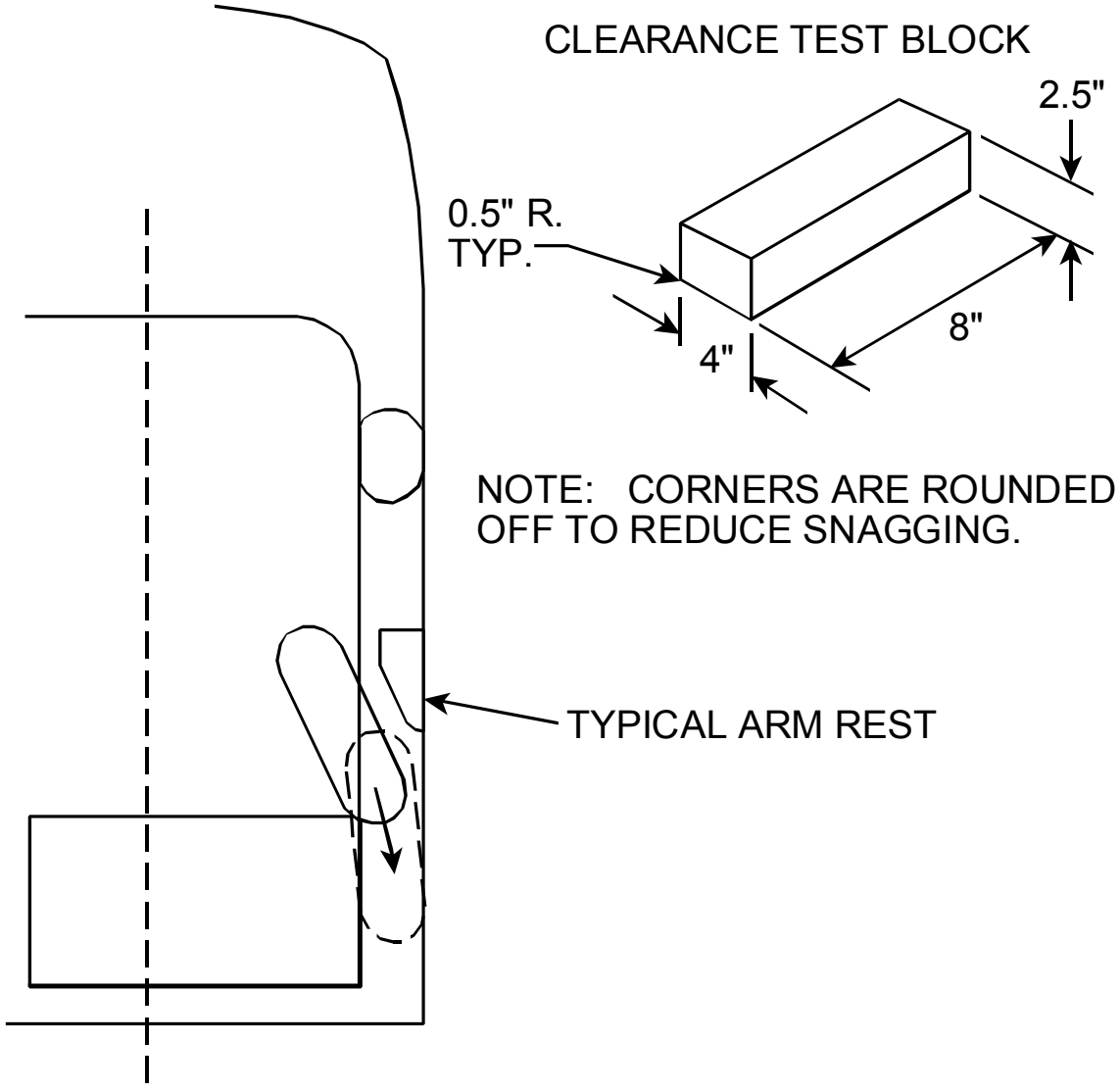


FIGURE 2C

APPENDIX D
EVALUATION OF DATA ACQUISITION SYSTEM USING A SIGNAL WAVE GENERATOR

1. REFERENCES

A. MGA Research Corporation, **Operator's Manual for Waveform Generator Model RPG-6236-A**, (U. S. Department of Transportation, National Highway Traffic Safety Administration, February 1988)

B. **NHTSA Data Tape Reference Guide - Volume I, Vehicle Crash Tests**, (U.S. Department of Transportation, National Highway Traffic Safety Administration, August 1985)

C. Attachment 1 - **Data Tape Header Codes For Tests Using The SWG**.

D. **SAE J211/1 MAR95 - Instrumentation for Impact Test**

2. DEFINITIONS

ATD	Anthropomorphic Test Device
Channel	Entire data path from sensor output interface, through the signal conditioner, the umbilical cable, and the DAS, to the digital data recorded on magnetic tape
Contractor	Owner(s) and operating personnel of the vehicle crash test facility
DAS	Data Acquisition System
DOT	United States Department of Transportation
NHTSA	National Highway Traffic Safety Administration
SWG	Signal Waveform Generator
TTM	Task Technical Monitor

3. OBJECTIVE

The purpose of this task is to evaluate all of the data acquisition channels used for recording signals in vehicle crash and sled tests conducted at contractor test facilities for the U.S. Department of Transportation, including signals from ATD and vehicle sensors. The primary and redundant channels used for the sensors are to be evaluated by injecting standard signals from a SWG furnished by the government into the sensor input interface of each channel and recording these signals on magnetic

3. OBJECTIVE....Continued

tape. The data recorded on magnetic tape will be analyzed by government personnel at a government facility.

The evaluation testing shall be performed as directed by NHTSA (It is intended that this be performed every six months or at the beginning and the end of a test program.) at the contractor's test facilities, normally before a series of tests that are scheduled to be conducted (Please see Section 6, below). The evaluation testing shall also be performed on an as needed basis if a question regarding the performance of the DAS at the contractor's facilities arises during a series or part of a series of scheduled tests.

4. GOVERNMENT FURNISHED EQUIPMENT

One SWG, with three cable connectors that mate with the output jacks of the SWG, and one copy of Reference A, will be furnished to the Contractor.

5. ITEMS OF WORK

5.1 PREPARATION FOR TESTING

5.1.1 SHIPPING

After unpacking the SWG and inspecting the instrument for possible shipping damage, the SWG shipping container and its foam packing should be retained in dry storage for future shipping use. When the SWG is next shipped, the Contractor shall be responsible for packing and shipping the SWG so that likelihood of damage in shipment is minimized. To accomplish this, the SWG shall be repacked in air bubble plastic wrap and polystyrene packing peanuts as it was when shipped to the contractor. Outer package labels shall specify correct orientation, "FRAGILE", and "DO NOT DROP". The use of shipping damage indicators, such as "Drop(N)Tell", is required.

5.1.2 CABLE PREPARATION

After receiving the SWG, the Contractor shall assemble the cabling necessary to connect the SWG outputs to the sensor output/signal conditioner input interfaces. The Contractor shall supply the connectors that mate with the Contractor's signal conditioner inputs (or umbilical cable, as appropriate) and the wire or cable necessary to transmit signals from the SWG to the signal conditioner inputs. The Contractor shall verify that the SWG input power marking is appropriate for the available local power.

5.1.3 SWG PERFORMANCE CHECK-OUT

The Contractor shall check-out the SWG performance by displaying each waveform and time reference output on a storage oscilloscope (of which the amplitude display has been calibrated to ± 3%) and comparing the displayed waveform with Figure 5-1 in

5. ITEMS OF WORK....Continued

Reference A. If significant differences such as loss of signal output from one or more channels, differences between positive and negative amplitude peaks greater than ± 5%, or irregularities where straight lines are shown in Figure 5-1 are observed, the Contractor shall call the TTM.

The Contractor shall notify the TTM of the test schedule at least two weeks prior to start of test in case the Government desires to witness the test.

5.2 TESTING

5.2.1 OPERATING ENVIRONMENT

The SWG shall not be operated outside the environmental limits of -10ºC to 50ºC and relative humidity of 0% to 94%. The SWG shall not be in contact with water, ice, or snow.

5.2.2 SWG to DAS CONNECTIONS

The ±100 mV output level ("piezo resistive" setting) signals from the SWG shall be connected to the facility instrumentation and DAS so that these signals pass through both the signal conditioning electronics and the crash or sled test umbilical cable, in the same sequence as is used in vehicle crash or sled testing. If the signal conditioners on any channel are designed to handle only lower level signals, resistive shunts shall be installed at the instrumentation interface to reduce the SWG signal voltage level to the full input range of the channel under test. The SWG output impedance is 348 Ohms.

In cases where the signals from two or more channels are combined during later processing, such as driver head x, y, and z accelerations, the channels used to collect these data shall be tested simultaneously. The channel used for the x-axis signal shall receive a "Group 1 waveform" input (SWG channels 1, 2, 3, 4, 9, 10, 11, and 12). The channel used for the z-axis signal shall receive a "Group 2 waveform" input (SWG channels 5, 6, 7, 8, 13, 14, 15, and 16). The channel used for the y-axis signal may be tested with either waveform input.

Each time waveform data is recorded, one channel of time synchronization data shall be recorded. The channel used for the time synchronization data shall be capable of accepting and recording a "TTL" pulse (0 to +5V), 10 milliseconds wide. It is expected that this would be the channel or channels used by the Contractor to record "time zero" signals during vehicle crash and sled testing.

The Contractor shall set up to test as many channels simultaneously as is practical, up to the limit of 16 set by the SWG. The Contractor shall record the identity of each DAS input channel connected to each SWG output channel.

5. ITEMS OF WORK....Continued

5.2.3 SIGNAL CONDITIONERS

For each data channel to be tested, the signal conditioner used with that channel for crash or sled testing shall be set up. Setup and calibration of each signal conditioner shall be performed exactly as is done for a DOT contracted vehicle crash or sled test in accordance with SAE J211/1 MAR95 - Instrumentation for Impact Test (Reference D).

5.2.4 SWG POWER

The SWG furnished for use in the United States is wired to accept 120 VAC 60 Hz electrical power. The acceptable tolerances on 120 volt input power are 120 VAC, +10%, -13%, and frequency variation from 47Hz to 63 Hz. The SWG furnished for use in Europe is wired to accept 230 VAC, 50 Hz electrical power. The acceptable tolerances on 230 volt input power are 230 VAC, +15%, -10%, and frequency variation from 47 to 63 Hz. Each SWG will be marked with a label, located over the AC power input connector, that identifies the input power setting for that unit. For use with input voltage levels outside the marked range, the SWG power input transformer must be re-connected in accordance with Appendix B of Reference A.

The contractor shall apply power to SWG, signal conditioners, and DAS; and allow the SWG self-test to complete as described in Section 3 of Reference A. If a failure is indicated, the Contractor shall call the TTM.

5.2.5 TEST

The Contractor shall start the DAS recording mechanism, press and release the "RECORD" switch, and one-half to one second after the "RECORDING" light turns "OFF", press the calibration switch for approximately one-half second or more. If it is not possible to record waveform data and calibration data in the sequence described in the previous sentence, the calibration data and the waveform data shall be recorded in as close time proximity as possible by the facility. If more than five minutes separates recording of the waveforms and calibration signals, please contact the TTM.

The Contractor shall repeat steps 5.2.2 through 5.2.5 until all data acquisition channels have been tested. After each test run, the Contractor shall check the recorded data for anomalies, to assure that valid waveform data has been recorded for each channel.

The Contractor shall record SWG ambient temperature at the start and at the end of testing.

5. ITEMS OF WORK....Continued

5.3 DATA TAPE REQUIREMENTS

The Contractor shall provide the digitized data on a magnetic tape written in the format specified for vehicle crash test data in References B and C. Digitizing of the data that has been recorded on analog magnetic tape shall be performed in exactly the same manner as in a DOT contracted vehicle crash or sled test. If it is possible, the digitizing process shall be initiated by the "pretime zero" pulse in the SWG time synchronization output.

During each run when waveform data are digitized, the corresponding SWG time synchronization output shall also be digitized. This time channel shall be the first in the sequence of channels to be digitized. Channels of signals that will be combined during later processing, such as driver head x, y, and z accelerations, shall be digitized during the same run. The digital data files corresponding to the time synchronization channel and each of the waveform channels shall be identified. Waveform outputs shall be scaled so that ± full scale corresponds to ± 200.

In creating the data tape, the Contractor shall provide the information required for the GENERAL TEST INFORMATION and the INSTRUMENTATION INFORMATION tape headers. The exceptions to the header code assignments of Reference B, given in Reference C, shall govern.

5.4 REPORT

A letter report on the DAS testing performed under this TTD shall be prepared. The report for this test shall include the date and time of the test, the names of the test performers and the responsible supervisor, the environmental conditions during the test a complete description of the test set-up, including a list identifying each SWG output channel connected to each DAS input channel, and a list of equipment used in the data acquisition channels tested (e.g. signal conditioners, filters, digitizing hardware).

The report shall also include plots of data from all channels tested, a description of anything that occurred during the test that might affect the data or the results of the test, and a description of any data processing algorithms (such as zero offset removal, detrending, scaling) used on the data from the digitizing through to the final recording process.

6. DELIVERABLES AND SCHEDULE

All deliverables shall be delivered to:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Mail Code: NRD-11
400 Seventh Street, S.W.
Washington, DC 20590
Attn: Ms. Randa Radwan Samaha

A. Evaluation test completion:

As directed by NHTSA.

B. Digital data tape written in NHTSA vehicle crash test format:

within 1 week after the evaluation test.

C. Test report:

Three copies of final report two weeks after the evaluation test.

Attachment:

Data Tape Header Codes For Tests Using The SWG

DATA TAPE HEADER CODES FOR TESTS USING THE SWG

NOTE: Where any of these header code assignments differ from those presented in Reference B, the assignments of this attachment shall govern.

VERSION NO. S2

TSTREF DDMMYYxxxx

DDMMYY Test date where - -

DD - - 2 digit day
MM - -2 digit month
YY - - 2 digit year
xxxx - 4 characters for contractor's reference use

TSTTYP SWG Signal Waveform Generator test of the DAS

CURNO
001 Channel 1 of DAS
002 Channel 2 of DAS
nnn Channel nnn of DAS

SENTYP
LL Low level signal (Strain gage)
HL High level signal (Piezoresistive)
ET Event time indicator (Code already exists)

SENLOC
01 Driver side (Code already exists)
02 Passenger side (Code already exists)

SENATT The four character code for SENATT from Reference B that designates the location of the sensor to which the channel under test would normally be connected. When a sensor is not assigned to the channel under test, the SWG channel connected to this channel shall be identified here using the code shown under INSCOM (below).

AXIS
XL Sensitive axis of sensor that would be connected to DAS channel under test is X axis.

YL Sensitive axis of sensor that would be connected to DAS channel under test is Y axis.

ZL Sensitive axis of sensor that would be connected to DAS channel under test is Z axis.

INSMAN Serial number of SWG used for the test

DATA TAPE HEADER CODES FOR TESTS USING THE SWG....Continued

CALDAT — Last calibration date for instrumentation used in data acquisition channel tested.

INSCOM — Commentary field. The Contractor shall identify the SWG channel connected to the DAS channel under test. The code listed below may be used to identify the SWG channel. In addition, such information as run number, amplifier, tape recorder, tape recorder channel, or anything else required to uniquely identify the DAS channel equipment shall be included. There are only 70 characters available. Do the best that you can!

SWG01	Channel 1 of signal waveform generator
SWG02	Channel 2 of signal waveform generator
SWG16	Channel 16 of signal waveform generator
SWGH1	High level signal of Group 1 waveform
SWGH2	High level signal of Group 2 waveform
SWGE1	Event time indicator (Time zero)
SWGE2	Event time indicator (Delayed time zero)
SWGI1	Event time indicator (Inverted time zero)
SWGI2	Event time indicator (Inverted delayed time zero)