

DP92-017:NEF-12jad
Supplement
November 17, 1992

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OFFICE
DEFECTS INVESTIGATION

Robert H. Munson
Director
Automotive Safety Office
Environmental and Safety
Engineering Staff

Ford Motor Company
330 Town Center Drive
Dearborn, Michigan 48126

November 17, 1992

Mr. Charles L. Gauthier, Director
Office of Defects Investigations, Enforcement
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Gauthier:

Subject: DP92-017:NEF-12jad

This supplements our letter dated October 30, 1992, and contains our answer to Question No. 4 and the remainder of our answer to Question Nos. 2 and 3 of your September 21, 1992 letter concerning the Institute for Injury Reduction petition regarding alleged "inadvertent" seat belt buckle "unlatching" from inertial forces.

The scope of the searches conducted to locate materials potentially responsive to your request included inquiries to those Ford employees in the Dearborn, Michigan area most likely to be cognizant of the subject matter about which you inquired, and review of those Ford office files in the Dearborn, Michigan area in which material such as that requested ordinarily would be expected to be found. It did not extend, nor could it reasonably have been extended, to "all the personnel and files of the Ford Motor Company including field personnel." We, of course, will answer any questions you may have as to the scope or the specific nature of the searches that were made.

Answers to your specific questions which were not completed in our October 30, 1992 letter are presented below. As requested, after each numeric designation, we have set forth verbatim the request for information followed by our response to it.

Request No. 2

"Furnish the number and copies of all owner complaints, field reports, studies, surveys, or investigations from all sources which have been received or authorized by Ford or of which Ford is

aware, pertaining to the alleged defect in the subject vehicles. This should include information pertaining to any reports included with this letter. Separate the number and copies of owner complaints from other sources. Also, if Ford has issued any service or technical bulletins, advisories, or other communications to dealers pertaining to the alleged defect in the subject vehicles, provide a copy of each such document. If no such documents have been issued, so state."

and

Request No. 3

"Identify and describe all accidents, subrogation claims or lawsuits known to Ford pertaining to the alleged defect in the subject vehicles (where Ford is or was a defendant or codefendant). Provide Ford's analysis of each item, clearly identifying the vehicle (model year and VIN), the vehicle owner, and any injuries or property damage which may have occurred. We recognized that some material responsive to our inquiry may be in Ford's opinion, protected by attorney-client privileges. If Ford decides not to submit any requested documents or information in response to our inquiry for these or any other reasons, it must furnish a complete description of each document or item of information withheld, and state the basis for such withholding."

Supplemental Answer

Completion of our review of files of accidents, subrogation claims, and lawsuits that could possibly pertain to "the alleged defect" located an additional eight allegations that a seat belt had inadvertently opened or released during an accident. As noted in our previous letter, while some files contain occasional references to "inertial unlatching", few, if any, contain sufficient details to determine with certainty that they allege "... inadvertent release or opening of a safety belt latch due to inertial loading of the release button or latching mechanism caused by external forces acting on the back side of the latch housing." Most of the allegations in the eight identified records simply involve a general claim that the seat belt buckle opened or released at some point during an accident sequence.

Attachment I contains a list and summary of the additional eight reports of accidents, subrogation claims, and lawsuits identified in our continued searches that arguably may pertain to "the alleged defect." To the extent the information is available within our files, the requested information as to vehicle VIN, model year and model; accident date, description, and alleged injuries; and Ford's post-accident analysis of the seat belt assembly is included in Attachments I-A and I-B for side-release and end-release button assemblies, respectively.

Copies of the reports or complaints associated with these incidents are included in Attachments I-C and I-D, respectively. Copies of reports or complaints associated with the incidents summarized in our October 30, 1992 response are presently being compiled and will be forwarded as soon as they are available.

Note, that with certain exceptions, Ford does not retain information of the type requested for an indefinite period of time. We are unable to estimate the extent to which, since 1970, information that might now be encompassed by this inquiry may have been disposed of in accordance with Corporate records management practices in effect at the time of disposal.

From a source outside Ford, we have recently secured a copy of a May, 1966 document summarizing the results of various tests and analyses performed by General Motors, Ford, and several seat belt suppliers in rebuttal to allegations of "inertial unlatching" apparently made in testimony before the House Committee on Interstate and Foreign Commerce in hearings on HR 13228 and other bills before the 89th Congress relating to traffic safety*, and before a public forum labeled a "Consumer's Assembly". A copy of this document is included in Attachment II. Neither this document nor information concerning the Ford tests and Ford test films that it references had been located in the file searches conducted in response to your information request in this matter. Although, with the passage of twenty-six years since the document was prepared, it is likely that such material no longer exists, we are renewing our search efforts and will provide any pertinent information that is located.

Request No. 4

"Furnish a description of and the results of any tests performed by Ford or for Ford with respect to the alleged defect. Include all dynamic and static testing, all testing using anthropometric dummies and live subjects, and all vehicle and sled testing concerning the alleged defect."

Answer

Our search of files for reports of tests performed by Ford or for Ford concerning "the alleged defect" located four potentially pertinent reports. Copies of these reports, conducted in 1971 and 1973 by Ford's Body Engineering Office, are contained in Attachment III-A through III-D. These reports identify laboratory tests in which combinations of acceleration levels and webbing tension levels necessary to induce "inertial unlatching" of seat belt buckle samples were measured. The relationship of these test conditions to the

* See Reports 89-37 and 89-38 covering hearings between March 15 and May 13, 1966.

vehicle environment is not addressed by these reports. Due to the age of these reports, we have been unable to locate information that would enable us to provide further insight regarding the reasons the tests were requested, the design characteristics of the different test samples, the test instrumentation, etc. Another, more recent, study addressing the physics involved in the "inertial unlatching" parlor trick was undertaken in anticipation of and preparation for litigation. Because that study would be protected from discovery in private civil litigation by the Attorney Work Product doctrine, it is not being submitted in response to this inquiry.

All testing and analyses known to Ford indicate that acceleration levels of at least 150 to 350 g's, with a pulse width minimum of 3 to 4 milliseconds applied to the back side of the buckle is required to unlatch a seat belt under a 5 lb webbing tension; this increases to 750 to 900 g's at 150 lb webbing tension. A decrease of the pulse width to 2 milliseconds more than doubles the minimum acceleration level required to produce the phenomenon. Not surprisingly, it becomes impossible to "inertially unlatch" a buckle when it is under the thousands of pounds of webbing tension normally experienced in vehicle impacts. Although, obviously, we have not measured the range of acceleration pulses that can occur under every conceivable vehicle crash condition, we are not aware of any crash sequence that will provide the required acceleration pulse to the back of the seat belt buckle (adjacent to the occupant's torso) without locking the buckle under webbing tension.

Discussion

As is evident from the material provided to the agency by Ford and others, the parlor trick by which a sharp blow on the back side of a seat belt buckle can induce "inertial unlatching" has been known for more than a quarter century. Equally evident is that when quantified by either vehicle or seat belt manufacturers, the conditions necessary to produce the parlor trick involve low to non-existent belt webbing tensions and simultaneous application of high, short duration acceleration forces -- a combination of circumstances inconsistent with the forces real people impart to seat belt buckles in real crashes. During the period covered by your inquiry, hundreds of millions of seat belts (Ford alone has manufactured over 67 million vehicles with an average of at least five seat belts per vehicle) have demonstrated injury preventing and life saving performance in vehicle accidents with no known instance of "inertial unlatching" in actual use.

Since Ford's initial installation of seat belts in 1955 model year vehicles, we have received reports concerning virtually all possible aspects of seat belt function, fit, and performance. As should be obvious from the reports submitted in response to this inquiry, only a very small percentage of these pertain to seat belt buckle unlatching; even fewer may claim to involve "inertial unlatching".

Our searches of accident, subrogation claim, and lawsuit files located a total of 64 reports (8 herein and 56 with our October 30th letter), that allege seat belt unbuckling. This number is remarkably small considering the number of seat belts installed in vehicles by Ford and the number of years that they have been in service. These 64 allegations represent approximately one per-one-million vehicles or, using nominal vehicle attrition rates, one per-thirty-million seat belt years in service (assumes a 1970-1992 model year vehicle population and an average of five seat belts per vehicle). Post-accident investigations revealed that, in some cases, the seat belts would not latch or were otherwise not functional. In other cases, there is evidence that the belt was not being worn as claimed. Some cases involve accident scenarios (e.g., hard braking or direct frontal impacts) totally inconsistent with the circumstances theoretically associated with inertial actuation. One claim involved a Festiva which utilizes a "Takata" design buckle which, according to information supplied at a press conference held by the petitioner, should not be susceptible to so-called "inertial unlatching". In short, the claims provided with this and Ford's October 30th response prove nothing except that there is no pattern or evidence that suggests that "inertial unlatching" actually occurs in real-world crashes, much less that the phenomenon represents an unreasonable risk to motor vehicle safety.

Very truly yours,



R. H. Munson

SIDE-RELEASE BUCKLES

ACCIDENTS/CLAIMS/LAWSUITS

ALLEGED SEAT BELT BUCKLE RELEASE

<u>VIN</u>	<u>Model Yr/Model</u>	<u>Claimant</u>	<u>Incident Date</u>	<u>Alleged Injuries</u>	<u>Accident Description</u>	<u>Analysis</u>
Unknown	1987 Ranger	[REDACTED]	07/25/87	[REDACTED] alleges that the seat belt worn by her fiancée's daughter unbuckled and that she suffered minor cuts, scrapes, and bruises.	[REDACTED] alleges that due to a brake failure, her vehicle rear-ended a second vehicle. [REDACTED] and her fiancée occupied the front seat and his daughter, the rear seat.	After investigation, a Ford representative concluded that "there was no indication of any type of defect."
1FMCU14T5HU [REDACTED]	1987 Bronco II	[REDACTED]	08/14/92	[REDACTED] alleges that at the time of impact, the front passenger seat belt unbuckled, allowing her child to be thrown forward resulting in a small laceration on her cheek and a black eye.	[REDACTED] alleges that her vehicle struck a vehicle that had run a stop sign.	No record of seat belt inspection or analysis was found in Ford files.
1MEBP5423DW [REDACTED]	1983 Lynx	[REDACTED]	10/24/92	[REDACTED] alleges that a rear seat belt, restraining her daughter, [REDACTED] in a child car seat, unbuckled and the child car seat slipped forward. No specific injuries were alleged.	[REDACTED] was stopped and attempting to make a left turn, when her vehicle was rear-ended.	A Ford representative inspected the seat belt and found that "the belts did not appear deformed, nor did they malfunction when they were secured and pulled on."

ACCIDENTS/CLAIMS/LAWSUITS

ALLEGED SEAT BELT BUCKLE RELEASE

<u>VIN</u>	<u>Model Yr/Model</u>	<u>Claimant</u>	<u>Incident Date</u>	<u>Alleged Injuries</u>	<u>Accident Description</u>	<u>Analysis</u>
1FMCU1452FU [REDACTED]	1985 Bronco II	[REDACTED]	08/01/86	[REDACTED] alleges that during the rollover, his son's seat belt failed and that he was ejected and suffered a compression fracture of L1 and L2 vertebrae, crush-type lacerations of the scalp, and lacerations to the shoulders, arms, and knees.	[REDACTED] was in the rear seat of a vehicle owned by [REDACTED] and being driven by [REDACTED]. The police report states that [REDACTED] was braking and turning, trying to avoid hitting another vehicle which had pulled in front of her, causing her vehicle to roll over several times.	Ford files state that the vehicle was sold before an inspection or analysis of the seat belts could be performed.
1FABP30U3GG [REDACTED]	1986 Taurus	[REDACTED]	07/18/88	[REDACTED] alleges that the seat belt buckle restraining his son's car seat "cracked", allowing his son to be thrown around in the vehicle. No specific information was found in Ford files regarding injuries.	[REDACTED] alleges that [REDACTED], while avoiding an approaching vehicle that was apparently out of control, turned to the right and drove down an embankment.	Ford inspection/testing of the seat belt buckle found three cracks on the cover, pressure marks on the tongue opening, and that the buckle latched, held, and unbuckled in a normal manner.

END-RELEASE BUCKLES

ACCIDENTS/CLAIMS/LAWSUITS

ALLEGED SEAT BELT BUCKLE RELEASE

<u>VIN</u>	<u>Model Yr/Model</u>	<u>Claimant</u>	<u>Incident Date</u>	<u>Alleged Injuries</u>	<u>Accident Description</u>	<u>Analysis</u>
1FACP57U4LA [REDACTED]	1990 Taurus	[REDACTED]	Unknown	[REDACTED] alleges her one-year-old child sustained minor head injuries due to "a back seat safety restraint unlatching at buckle and clasp." The child, while still in a child's car seat, was thrown forward and wedged between front and back seats.	Only accident description found in Ford files is "... front-end accident."	No record of a seat belt analysis or inspection was found in Ford files.
1FACP50U7LA [REDACTED]	1990 Taurus	[REDACTED]	12/18/90	[REDACTED] alleges that his seat belt became unlatched, and after he hit the steering wheel, the air bag deployed. (The claim was subsequently amended to delete that portion pertaining to the air bag.) [REDACTED] allegedly sustained pain in his right leg, ankle and neck, and received contusions to his face.	[REDACTED] was driving during a snowstorm, lost control of his vehicle, crossed the center line, and struck a pick-up truck head-on.	A Ford representative checked the seat belt and found it would not properly latch.

ACCIDENTS/CLAIMS/LAWSUITS

ALLEGED SEAT BELT BUCKLE RELEASE

<u>VIN</u>	<u>Model Yr/Model</u>	<u>Claimant</u>	<u>Incident Date</u>	<u>Alleged Injuries</u>	<u>Accident Description</u>	<u>Analysis</u>
3MABM1350JR [REDACTED]	1988 Tracer	[REDACTED]	03/04/89	[REDACTED] alleges that her daughter's seat belt unbuckled and that she was thrown against the dashboard. She alleges that her daughter suffered bruises and scrapes to her forehead and knees.	[REDACTED] alleges that she rear-ended a second car.	Ford files state that the vehicle was sold before an inspection or analysis of the seat belts could be performed.

F

N/A
P.1
cc: [unclear]
Chief, [unclear]

V.1
TRIO
5101

August 4, 1987

[Redacted]
Waupun, WI [Redacted]

Ford Customer Information System
P.O. Box 95427
Atlanta, Georgia 30347

Dear Sir:

On Saturday, July 25, 1987, my fiancée-[Redacted] his daughter [Redacted] and I were in an auto-truck accident. Due to break failure, our 1987 Ranger S with 760 miles on it, rear ended another automobile.

In addition to the break failure, on-the-floor stick shift came un-attached from the floor when my fiancée was attempting to downshift and apply the emergency brake.

Still more critical was the seat belt restraining [Redacted] came unbuckled! She suffered minor (in consideration to how critical it could have been) cuts, scraps, and bruises. As for myself, I incurred spinal injuries. I am currently being treated for these.

We expect the Ford Motor Corporation to make reasonable compensation for the truck, for medical expenses, for lost wages, and for pain and suffering.

Sincerely,

[Redacted Signature]

'87 AUG 24 9:48
MEDIATION



0216 1648

UD-10 (Rev. 9-85) State of Michigan Department Name LEIN Number Department Complaint No. 2088-89
OFFICIAL TRAFFIC ACCIDENT REPORT Johnson G. Strickland 15-5
 DO NOT USE

County No. 53	City No. 10	Twp. No. 02	Section No. 02	Day of Week S M O N T F S	Accident Date: Mo/Da/Yr 10-24-89	Time 5:04	A.M. P.M.
Name Johnson Rd		Route No. 20		Intersection Nelson Rd		Route Nos.	

WEATHER		LIGHT		ROAD SURFACE		TOTAL LANES		TOTAL NO. VEHICLES	
1 Clear or Cloudy	3 Rain	1 Day	3 Street Lights	1 Dry	3 Snowy or Icy	1 Divided	Y N Construction Zone	2	
2 Fog	4 Snow	2 Dawn or Dusk	4 Dark	2 Wet	4 Other	2 Limited Access	Y N Investigated at Scene		
						3 Other			

VEHICLE DRIVER NO. 1

State: MI Driver's License: [Redacted] DOB: Mo/Da/Yr: [Redacted] Hazardous Action No. 8 Citation Charge: [Redacted] HBD Test: Y N Helmet: Y N

Driver's Name: [Redacted] Address: Ludington, MI City: [Redacted] State: MI Age: 25 Sex: M Inj.: 0

Year: 79 Make No.: 0161 Type: Trailer: [Redacted] Reg: [Redacted] Yr/State: 90 MI VIN: 9E814 [Redacted] Removed to/by: CHUMAC

Y N Haz. Citation	*Y N Driver Re-exam	*Y N Vehicle Defect	*Y N Fuel Leakage	Impact Severity 1, 2	Truck Cargo: Y N Cargo Spillage	Class
Y N Other Citation	*Y N Vision Obstruct.	Y N Veh. Driveable	*Y N Vehicle Fire	Cargo Description		

Restraints by occupants pos.	Name	Address	Pos.	Age	Sex	Inj.	Helmet
B1 2 3							Y N
4 5 6							Y N

Total Occupants: 1 Local Use/Owner: [Redacted] B. List Carrier: [Redacted] Insurance Co.: Cadillac Ins Agency Address: Ludington, MI Injured taken to/by: N/A

VEHICLE DRIVER NO. 2

State: MI Driver's License: [Redacted] DOB: Mo/Da/Yr: [Redacted] Hazardous Action No. 0 Citation Charge: N/A HBD Test: Y N Helmet: Y N

Driver's Name: [Redacted] Address: Manistee, MI City: [Redacted] State: MI Age: 30 Sex: F Inj.: C

Year: 83 Make No.: 101 Type: Trailer: [Redacted] Reg: [Redacted] Yr/State: 90 MI VIN: 1MEBPS423DW [Redacted] Removed to/by: Annee.

Y N Haz. Citation	*Y N Driver Re-exam	*Y N Vehicle Defect	*Y N Fuel Leakage	Impact Severity 5, 3	Truck Cargo: Y N Cargo Spillage	Class
Y N Other Citation	*Y N Vision Obstruct.	Y N Veh. Driveable	*Y N Vehicle Fire	Cargo Description		

Restraints by occupants pos.	Name	Address	Pos.	Age	Sex	Inj.	Helmet
B1 2 B3		Manistee, MI	3	63	F	C	Y N
4 5 E6		Same As Driver	6	2	F	0	Y N

Total Occupants: 3 Local Use/Owner: [Redacted] B. List Carrier: [Redacted] Insurance Co.: CUNA Agency Address: Fife City, MI Injured taken to/by: N/A

ACCIDENT DESCRIPTION AND REMARKS (*Explain)

NORTH

#1 was w/s on Johnson Rd, #2 was stopped waiting to make a turn. #1 stated that he was distracted, because of vehicle turning off to the shoulder & a vehicle backed down along the shoulder. #1 looked back viewed #2 but was unable to stop. Minor Damage to Both Vehicles

Reported: Mo/Da/Yr 10-24-89 Time 5:09 A.M. (P.M.) Investigators: [Redacted] #11

Photos by: [Redacted] Comp. Disposition: [Redacted] Reviewer: [Redacted]

Person Advised of Damaged Traffic Control Device: [Redacted]

Name: [Redacted] Date: [Redacted] Time: [Redacted]

Owner: [Redacted] Address: [Redacted]

Badged No. [Redacted] Damaged Property Other Than Vehicle: [Redacted]

CRT SCREEN

VH

ANALYST _____ FILE _____ ORIGIN GO MICRO _____ OPEN DATE _____
 CUSTOMER TITLE Mr FI _____ HI. _____ L. NAME _____
 ADDR _____ CTY Nowistec ST Mo ZIP _____
 PHONE BUS * _____ HOME * _____

FILE TYPE NORMAL STATUS OPEN CONTACT DATE _____ DISTRICT _____
 CLOSED DATE _____
 MAKE 83 MOD YEAR LYEX MILEAGE * 60,000 VIN * 1ME8P5423DW _____
 WSD * 10-25-83 DEALER Dick Boyd Ford ZONE _____
 PROB CD1 5F PROB CD2 _____ PROB CD3 _____ PROB CD4 _____
 SAFETY Y CAUSAL CD 02 SERV-SALES 1 MEDICALS 89 LITIGATE 08 SECTION 30
 CATEGORY Legal RECALL * _____ EXEC CONTACT _____ GOODWILL BBBBB
 WARRANTY OWN NOT DENIED ADDCO BB
 EXP AUD RES WANT TO CLOSE ACK IND _____
 AUDIT DATE MICRO TRANS DATE TRANS DIST
 Q1 Q2A Q2B Q3 Q4 Q5

S/B01
P-1
CC: 155.55
Ed Draboyk
Joulyf...

- C1 - Owner says ~~that~~ rear seat belt fail when vehicle in accident - vehicle
- C2 - totaled. Owner says child who had been secured by seat belt was
- C3 - seriously injured because seat belt failed accident 10/24/80
- C4 - Vehicle at Abrahamson's Towing Trucking ton
- C5 - _____

7/11/1

MANDATORY ENTRY

This is a recorded statement between Roger D. Jones of Burns & Bowne Adjusting Company and [REDACTED] of Manistee, Michigan. Today's date is November 9, 1989. The time is approximately 2:35 p.m.

Q. Could you state your full name and spell your last name, please?

A. [REDACTED]

Q. Do you have a middle name?

A. [REDACTED]

Q. What is your date of birth?

A. [REDACTED]

Q. And are you married?

A. Yes.

Q. May I ask your husband's name, please?

A. [REDACTED]

Q. And you have a daughter, correct?

A. Yes.

Q. What is her name?

A. [REDACTED]

Q. And what is her date of birth?

A. Um.. [REDACTED] She's two years old.

Q. She just turned?

A. Just turned two.

Q. Okay. Ah...are you employed?

A. Yes, I am.

Q. Could you explain to me what you do?

A. I subcontract through DSS in Manistee, and I go to people's homes and take care of the shut-in people, and I'm a...a nursing assistant.

Q. Do you have a nursing degree?

A. No, I am working on it at this time and almost through.

Q. Okay. Now would that be for your practical?

A. Practical nursing.

Q. Okay.

A. I'm a certified nurses aid.

Q. Okay. Ah...the reason that I'm recording this statement is in regards to an accident that occurred on 10/24/89, correct?

A. Right.

Q. And according to the accident report, it happened about a little after 9:00. Was that in the evening? Would that be 5:00 p.m. roughly?

A. Um...roughly 5:00 p.m.

Q. Okay. Ah...the accident happened in Ludington?

A. Yes.

Q. Okay. Now in regards to the accident, could you explain to me what happened?

A. I was stopped completely to make a left hand turn when a gentleman rear-ended me.

Q. And when this happened, what happened to your vehicle?

A. My vehicle was totalled in the crash.

Q. What kind of vehicle were you driving?

A. A 1983 Mercury Linx.

Q. And you bought that vehicle new, correct?

A. Right.

Q. And I think you bought that from a dealer in Ludington?

A. Yes.

Q. Okay. Ah...when the accident occurred, did the impact cause injury to you and your passenger?

A. I was jarred. I was seen for whiplash and they stated there were other problems. My daughter has been quite crabby since the accident. We are taking her to a...the pediatrician in Manistee.

Q. Can I ask...ah...the name of the pediatrician, please?

A. Dr. Paul Gunnerson will be seeing her.

Q. Okay. Has...has she been examined before this?

A. She hasn't, no.

Q. Okay. The other lady that was with you in the right front seat, was she injured?

A. At the time we were checked at West Shore Hospital in Manistee, [REDACTED] got a clear bill of health. The doctor distinctly told her she was fine, that they...they figured she...after X-rays and everything, nothing showed on her X-rays. Dr. Bosler was the attending physician and he seen me and said that I did have whiplash and there was a shadow on one of my vertebrae.

Q. Okay. Um...now lets get into the aspect of the...ah...child restraining seat. That was secured in the right rear, correct?

A. Correct.

Q. And do you remember the name of that seat?

A. It's a Schoolcraft...um...toddler's seat, Flip and Go toddler's seat, and...um...it's...it's approved by FCA. It meets...um..safety standards.

Q. Okay. Ah...now your daughter was secured in that seat, correct?

A. Correct.

Q. Okay. Now at the time if the accident what happened?

A. I heard her yell and cry and say somebody ranned us over, mama. I turned around and she was frantic. Um...the seat belt had sprung from her child proof seat...her child seat and was...and she was left with nothing to protect her.

Q. Okay. Ah...now I hear your daughter in the background now. Is it necessary for you to go attend to her?

A. Yes, I have to go get her.

Q. Okay. This will be stopped during the period of time that [REDACTED] is attending to her daughter. (pause) At this time [REDACTED] is back, the statement is proceeding. We have had a three minute delay. [REDACTED]

[REDACTED] there has been approximately a three minute delay in this recording because of the fact that you went to attend your daughter, correct?

A. Correct.

Q. Okay. You were talking about the...ah..child seat and you indicated it was a Schoolcraft, and that it's approved and...ah...it was...that your daughter was in that seat buckled in, is that correct?

A. Correct.

Q. Okay.

A. And I double check it every time.

Q. Okay. Now how long have you been using the Schoolcraft seat?

A. I believe it was purchased when she outgrew her infant seat in June of '89.

Q. Okay. Then...ah...you secure her in that seat by setting her in it and is there some adjustment or anything that you have to make when you secure her in there?

A. No, there is no adjustment.

Q. Are there...then the seat belt fastens over the restraint seat, correct?

A. That's right.

Q. And then that holds the seat and your daughter in place?

A. That's right.

Q. Okay. Now at the time of the accident you indicated that...ah...the seat belt did not function correctly?

A. That's right.

Q. Okay. Can you explain to me what part of the belt did not work? Was it the...ah...fastening device that's on the end or what?

A. Um...the...the...I guess you would say the male part and the female part came off..came apart. They just sprung and left her without any...any safety.

Q. Now did the child's...ah...seat...ah...go flying forward at the time that this occurred?

A. The very top, the flip part...ah...was still secure to her stomach, but the seat belt had sprung and she had slid a little bit in...off onto the seat. Um...she wasn't secured right to the back as if the seat belt was holding her. Upon the impact the seat was pushed to almost the edge of where the seat was.

Q. Okay. Ah...did she...okay, then do you have knowledge whether or not...ah...

she actually hit the front seat in front of her or not? Do you know whether she did or not?

A. I don't know if she did or not. I just heard her cry after we got hit.

Q. Okay. Now have you ever had the seat belt malfunction before?

A. No, I didn't. We use it every...every time we go for a ride and it never has.

Q. Now when the seat belt is fastened onto her, the one portion of it, I think it's the male portion, pulls out quite a distance, is that correct, and will wrap around?

A. Yes, that's correct.

Q. Okay. And then it will slide back in...ah...after you have it fastened so that there's not a lot of slack?

A. That's right.

Q. Okay. Ah...the grabbing portion of that belt, that part of the seat belt seemed to have worked, didn't it?

A. When I put her in the seat it seemed to work.

Q. Okay.

A. And I always pull on it where it comes out and until it locks, and I can feel it lock and there's no resistance.

Q. Okay. When that fastens, does the seat belt part fasten in the front of the child restraining seat or does it fasten to the side?

A. It fastens to the right hand side.

Q. Okay. When you say the right hand side, that would be the right hand side of the seat?

A. Of the seat that she sits in.

Q. Okay, and that would also be the right hand side of the vehicle?

A. That's right.

Q. Okay. Now at this time who normally services your vehicle?

A. We have had it serviced once since I purchased it new and that was at...um...

Manistee Ford Mercury, I believe it used to be. I don't know the name.

It's Manistee Ford Mercury, the only dealer we have in town that deals with Ford Cars.

Q. Okay. Now you purchased the vehicle in 1983, correct?

A. Correct.

Q. And then who normally changes oil and keeps plugs and things like that?

Who takes care of that type of work?

A. My husband does. It's just general maintenance. He does that for us.

Q. Okay. May I ask how long you've been married now?

A. Ah...we'll be married three years on Valentine's Day.

Q. Okay. Now at this time you have an attorney in regards to the benefits under your policy...ah...for the property damage, is that correct?

A. Correct.

Q. Okay. Now could I have his name, please?

A. Dennis Krolczyk.

Q. Okay, now he's representing you in regards to collecting the collision portion from your policy and the...ah...personal injury benefits, is that correct?

A. Correct.

Q. Okay. Now he's not representing you at this time in regards to a claim against Ford Motor Company, is he?

A. At this time I have no comment.

Q. Okay. Ah...I did explain to you at the beginning of this that I did not want to be unethical in that it was my understand that at this point you're not presenting a claim because you do not know whether there are injuries, is that correct?

A. At this point that's correct.

Q. Okay, so I explained to you very adamantly that I did not want to be unethical that if he was representing you against a claim for Ford Motor that I wanted to be ethical and not take a statement. Is that correct?

A. That's correct, and I don't wish to have this statement used, but only to benefit the...the company and to...um...correct the problem with the seat belt.

Q. Okay. Has everything you stated been true to the best of your knowledge?

A. It is.

Q. Okay. This will be the end of the recorded statement between Roger Jones and [REDACTED] of Manistee, Michigan.

RDJ/scp

PLACE WHERE ACCIDENT OCCURRED
 COUNTY Nueces CITY OR TOWN Coyne Christi LOC. NO. **86542**

IF ACCIDENT WAS OUTSIDE CITY LIMITS, INDICATE DISTANCE FROM NEAREST TOWN _____ MILES NORTH SOUTH EAST WEST OF _____ CITY OR TOWN

ROAD ON WHICH ACCIDENT OCCURRED S.H. 286 S.B CONSTR. YES NO SPEED ZONE 35 LIMIT 35

INTERSECTING STREET OR RR X'ING NUMBER 200 BLOCK NUMBER _____ STREET OR ROAD NAME _____ ROUTE NUMBER OR STREET CODE _____ CONSTR. YES NO SPEED ZONE YES NO LIMIT _____

NOT AT INTERSECTION FT. MI. N S E W OF Baldwin Express GRID SQUARE _____

SHOW MILEPOST OR NEAREST INTERSECTING NUMBERED HIGHWAY. IF NONE, SHOW NEAREST INTERSECTING STREET OR REFERENCE POINT.

DATE OF ACCIDENT August 01 19 86 DAY OF WEEK Friday HOUR 11:51 A.M. IF EXACTLY NOON P.M. OR MIDNIGHT, SO STATE

UNIT NO. 1 - MOTOR VEHICLE VEH. IDENT. NUMBER 1FMCU 1432FU

YEAR 85 COLOR & MAKE Beige Ford MODEL NAME Bronco BODY STYLE 2/Dr. 3/4 LICENSE PLATE 87 Tex

DRIVER'S NAME [REDACTED] PHONE NUMBER [REDACTED] CITY Portland Tex STATE Texas NUMBER [REDACTED]

DRIVER'S LICENSE Tex STATE Texas NUMBER [REDACTED] CLASS/TYPE C D.O.B. [REDACTED] MONTH-DAY-YEAR [REDACTED] RACE H SEX F OCCUPATION MANAGER MAJ. MCK

LESSEE OWNER NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER) STATE Farm Co. Mutual ADDRESS Portland Tex CITY Portland STATE Texas PEACE OFFICER OR FIRE FIGHTER ON EMERGENCY NO YES IF YES, DESCRIBE IN NARRATIVE

LIABILITY YES NO INSURANCE NO INSURANCE COMPANY NAME STATE Farm Co. Mutual POLICY NUMBER [REDACTED] VEHICLE DAMAGE RATING 9-RS

UNIT NO. 2 - MOTOR VEHICLE TRAIN PEDALCYCLIST PEDESTRIAN TOWED OTHER VEH. IDENT. NUMBER _____

YEAR _____ COLOR _____ MAKE _____ MODEL NAME _____ BODY STYLE _____ LICENSE PLATE _____

DRIVER'S NAME _____ PHONE YEAR STATE NUMBER _____

DRIVER'S LICENSE _____ STATE _____ NUMBER _____ CLASS/TYPE _____ D.O.B. _____ MONTH-DAY-YEAR _____ RACE _____ SEX _____ OCCUPATION _____

LESSEE OWNER NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER) _____ ADDRESS _____ CITY _____ STATE _____ PEACE OFFICER OR FIRE FIGHTER ON EMERGENCY NO YES IF YES, DESCRIBE IN NARRATIVE

LIABILITY YES NO INSURANCE NO INSURANCE COMPANY NAME _____ POLICY NUMBER _____ VEHICLE DAMAGE RATING _____

DAMAGE TO PROPERTY OTHER THAN VEHICLES

OBJECT None NAME AND ADDRESS OF OWNER _____ FEET FROM CURB _____ DAMAGE ESTIMATE _____

OBJECT _____ NAME AND ADDRESS OF OWNER _____ FEET FROM CURB _____ DAMAGE ESTIMATE _____

LIGHT CONDITION <input checked="" type="checkbox"/>	WEATHER <input checked="" type="checkbox"/>	SURFACE CONDITION <input checked="" type="checkbox"/>	TYPE ROAD SURFACE <input checked="" type="checkbox"/>	DESCRIBE ROAD CONDITIONS (INVESTIGATOR'S OPINION) <u>comes for const, in one lane set up</u>
1-DAYLIGHT 2-DAWN 3-DARK-NOT LIGHTED 4-DARK-LIGHTED 5-DUSK	1-CLEAR/CLOUDY 2-RAINING 3-SNOWING 4-FOG 5-BLOWING DUST 6-SMOKE 7-SLEETING 8-HIGH WINDS 9-OTHER	1-DRY 2-WET 3-MUDDY 4-SNOWY/ICY 5-OTHER	1-BLACKTOP 2-CONCRETE 3-GRAVEL 4-SHELL 5-DIRT 6-OTHER	

IN YOUR OPINION, DID THIS ACCIDENT RESULT IN AT LEAST \$250.00 DAMAGE TO ANY ONE PERSON'S PROPERTY? YES NO

CHARGES FILED

NAME _____	CHARGE _____	CITATION NUMBER _____
NAME _____	CHARGE _____	CITATION NUMBER _____

TIME NOTIFIED OF ACCIDENT 08-01-86 DATE 11:51 HOUR Radio HOW

TIME ARRIVED AT SCENE OF ACCIDENT 08-01-86 DATE 11:51 HOUR

SIGNATURE Bull Gomez INVESTIGATOR'S NAME 52 IDENTIFICATION NUMBER CCPD DEPARTMENT Uniform DIST/AREA

DATE REPORT MADE 08-01-86 IS REPORT COMPLETE?

CODE FOR TYPE SPECIMEN TAKEN
OR ALCOHOL/DRUG ANALYSIS
B-Breast
Bl-Blood
O-Other
N-None
R-Refused

CODE FOR TYPE RESTRAINT USED
A-Seat Belt & Shoulder Strap
B-Seat Belt & No Shoulder Strap
C-Child Restraint
D-Air Bag
E-Other Passive Restraint
N-None

CODE FOR INJURY SEVERITY (Use only the most serious injury in each space for injury.)
K-Killed
A-Incapacitating Injury - Severe injury which prevents continuation of normal activities. Includes broken or distorted limbs, internal injuries, crushed chest, etc.
B-Nonincapacitating Injury - Evident injury such as bruises, abrasions, minor lacerations which do not incapacitate.
C-Possible Injury - Injury which is claimed, reported or indicated by behavior, but without visible wounds. Includes II momentary unconsciousness or complaint of pain.
N-Not Injured

UNIT NO. 1
DAMAGE RATING **9-RS-T6**
VEHICLE REMOVED TO **2530 Holly**
BY **E. H. Wrecker**

Item No.	OCCUPANT'S POSITION	NAME (LAST NAME FIRST)	ADDRESS	TYPE SPECIMEN TAKEN	RESULT	TYPE RESTRAINT USED	AGE	SEX
1	DRIVER	See Front		N	N	A	33	F
2	FR			N	N	A	33	F
3	BR			N	N	A	76	M
4								
5								
6								

UNIT NO. 2 (Complete only if Unit No. 2 was a motor vehicle.)
DAMAGE RATING
VEHICLE REMOVED TO
BY

Item No.	OCCUPANT'S POSITION	NAME (LAST NAME FIRST)	ADDRESS	TYPE SPECIMEN TAKEN	RESULT	TYPE RESTRAINT USED	AGE	SEX
7	DRIVER	See Front						
8								
9								
10								
11								
12								

COMPLETE IF CASUALTIES NOT IN MOTOR VEHICLE

Item No.	PEDESTRIAN, PEDALCYCLIST ETC.	CASUALTY NAME (LAST NAME FIRST)	CASUALTY ADDRESS	TYPE SPECIMEN TAKEN	RESULT	AGE	SEX
13		NA					
14							

DISPOSITION OF KILLED AND INJURED

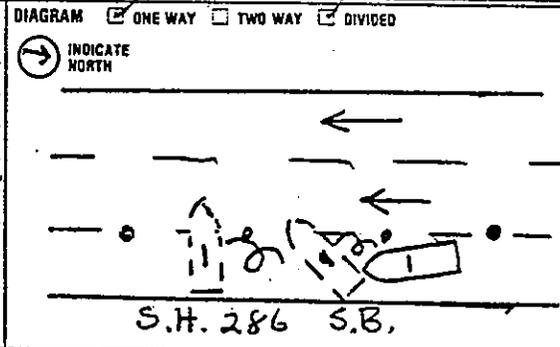
ITEM NUMBERS	TAKEN TO	BY	TIME NOTIFIED	TIME ARRIVED AT SCENE	NO. ATTE. INC. DR.
1	MMCEER	Aid Ambulance	1151	1155	3
2	MMCEER	" "	1151	1155	3
3	MMCEER	" "	1151	1155	3

INVESTIGATOR'S NARRATIVE OPINION OF WHAT HAPPENED (ATTACH ADDITIONAL SHEETS IF NECESSARY)

Veh # 2 traveling SB on S.H. 286. She got over in middle lane as a flashing red sign adviced lane was closed. A red truck pulled in her lane, she braked to avoid hitting truck and turned wheel locking brakes. Veh # 1 flipped over. Skidded & flipped over two more times coming to rest on side.

WITNESS: [Redacted]

Port Avenue



FACTORS AND CONDITIONS LISTED ARE THE INVESTIGATOR'S OPINION

FACTORS/CONDITIONS CONTRIBUTING				OTHER FACTORS/CONDITIONS MAY OR MAY NOT HAVE CONTRIBUTED			
UNIT 1	1	2	3	UNIT 1	1	2	3
UNIT 2	1	2	3	UNIT 2	1	2	3

1. Animal on Road - Domestic
2. Animal on Road - Wild
3. Backed Without Safety
4. Changed Lane When Unsafe
5. Defective or No Headlamps
6. Defective or No Stop Lamps
7. Defective or No Tail Lamps
8. Defective or No Turn Signal Lamps
9. Defective or No Trailer Brakes
10. Defective or No Vehicle Brakes
11. Defective Steering Mechanism
12. Defective or Slick Tires
13. Defective Trailer Hitch
14. Disabled in Traffic Lane
15. Disregarded Stop and Go Signal
16. Disregarded Stop Sign or Light
17. Disregarded Turn Marks at Intersection
18. Disregarded Warning Sign at Construction
19. Distraction in Vehicle
20. Driver Inattention
21. Drove Without Headlights
22. Failed to Control Speed
23. Failed to Drive in Single Lane
24. Failed to Give Half of Roadway
25. Failed to Heed Warning Sign
26. Failed to Pass to Left Safely
27. Failed to Pass to Right Safely
28. Failed to Signal or Gave Wrong Signal
29. Failed to Stop at Proper Place
30. Failed to Stop for School Bus
31. Failed to Stop for Train
32. Failed to Yield ROW - Emergency Vehicle
33. Failed to Yield ROW - Open Intersection
34. Failed to Yield ROW - Private Drive
35. Failed to Yield ROW - Stop Sign
36. Failed to Yield ROW - To Pedestrian
37. Failed to Yield ROW - Turning Left
38. Failed to Yield ROW - Turn on Red
39. Failed to Yield ROW - Yield Sign
40. Fatigued or Asleep
41. Faulty Evasive Action
42. Fire in Vehicle
43. Fleeing or Evading Police
44. Followed too Closely
45. Had Been Drinking
46. Handicapped Driver (Explain in Narrative)
47. ILL (Explain in Narrative)
48. Impaired Visibility (Explain in Narrative)
49. Improper Start From Parked Position
50. Load Not Secured
51. Opened Door Into Traffic Lane
52. Oversize Vehicle or Load
53. Overtake and Pass Insufficient Clearance
54. Parked and Failed to Set Brakes
55. Parked in Traffic Lane
56. Parked Without Lights
57. Passed in No Passing Zone
58. Passed on Right Shoulder
59. Pedestrian Failed to Yield ROW to Vehicle
60. Speeding - Unsafe (Under Limit)
61. Speeding - Over Limit
62. Taking Medication (Explain in Narrative)
63. Turned Improperly - Cut Corner on Left
64. Turned Improperly - Wide Right
65. Turned Improperly - Wrong Lane
66. Turned When Unsafe
67. Under Influence - Alcohol
68. Under Influence - Drug
69. Wrong Side - Approach or in Intersection
70. Wrong Side - Not Passing
71. Wrong Way - One Way Road
72. Other Factor (Write in on Line Below)

Veh turned into lane of traffic no contin

5150

MIT 12-2

ANALYST 1594H FILE ORIGIN GO MICRO OPEN DATE 11 86

CUSTOMER TITLE MR L. NAME

ADDR CTY PORTLAND ST TX ZP

PHONE BUS HOME

FILE TYPE LEGAL STATUS OPEN CLOSED DATE DISTRICT 57

ESP1 ESP2 ESP3

MAKE BRUN MOD YR 85 MILEAGE 000001 VIN NEW-USED

WSD 01 01 85 DEALER 157325 ZONE F

PROB CD1 5F PRUB CD2 PROB CD3 PROB CD4

SAFETY MEANS A CASE TYPE 7

WARRANTY OWN NOT DENIED GOODWILL 00000

WANT TO CLS ADDCD 00 TRANS DATE TRANS DIST

R1 R2 R3 R4 R5 R6 R7 R8

ATTORNEY NAME NONE CITY STATE

CROSS RE NAME CITY STATE

01- NOTE THIS CASE HAS NOT BEEN ASSIGNED TO DISTRICT. SERIOUS PERSONAL INJURY

02- INCURRED WITH OWNER'S SON DURING AN ACCIDENT THE SEAT BELT

03- ALLEGEDLY FAILED AND SON WAS THROWN THROUGH BACK WINDOW. SON HURT BADLY.

01-

02-

03-

Severe lacerations from neck up including head - seat belt popped open when vehicle rolled over.

Father has ~~police report~~ police report - over 500 stitches from neck up -



TELEPHONE CONFERENCE

WITH: Clarence Holcomb DATE: 7/18/88
OF: O.R.M - St Louis TIME: _____
RE: [REDACTED] PHONE: _____

MESSAGE

Customer reported in 1986 Taurus
during accident; child was ejected
from car when rear seat belt
"cracked" Child was in child seat
No info on injuries.
Cost wants inspection by FOMoCo.
VIN IFABP3043GG [REDACTED] - #4,000 miles
Advised Holcomb our engineer would
contact customer for inspection
DI# - unknown.

ACTION TO BE TAKEN

Customer: [REDACTED]
Manchester, MO
Home - [REDACTED]
Work [REDACTED]

7/18 ESIS - St Louis MO - Bill Nistendirk
File # 53-570-401258. Send claim to
Bob Newell.

TELEPHONE CONFERENCE

WITH: Bob Kramer DATE: 7/19/88
OF: FPSD TIME: _____
RE: _____ PHONE: _____

MESSAGE

D/E Sat 7/16 1p.m.

Child not injured, but under supervision

Located at Beuckman Ford
Ellisville, Mo

Ins. State Farm - totalled the car

Struck Broadside 45 mph by a
Nissan. Child was thrown into

ACTION TO BE TAKEN

backseat. Was in a child's seat in
front

Safety belt broke - latch cracked near

* Bob Kramer at District will attempt
to obtain possession of belt & ship.
to AAD



03/06/92

Front End Accident.

Customer alleges 1yr old child sustained minor head injury due to back seat safety restraint malfunctioning at buckle and clasp. Child was thrown forward and wedged between back seat and back of passenger (front seat) while still in car seat ('90' century infant car seat). Child was seen by Nurse practitioner at Johnathan Sutton's office (Pediatrician) child is currently at home under 24 hr observation. Customer seeks new seat belt immediately.

JACK J. ACKERMAN
ATTORNEY AT LAW
503 Seattle Tower
Third Avenue at University Street
Seattle, Washington 98101
(206) 682-2306

February 7, 1991

Irene Reynolds
Ford Motor Company
1 Parklane Blvd Ste 300
Dearborn MI 48126

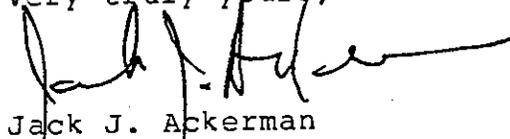
Dear Ms. Reynolds

I have discussed my client, [REDACTED] with you by telephone on a couple of occasions. [REDACTED] was injured on December 18, 1990, when his Ford Taurus automobile was involved in a head on collision. I am enclosing, for your information, a copy of the Police Traffic Collision Report. Following the accident, the automobile was taken to Bill Pierre Ford, a dealership in Seattle: I recently advised you of this and of the fact that the automobile was regarded as damaged beyond repair. I can only assume that you have contacted Bill Pierre Ford. I am hopeful that if any representative of the Ford Motor Company comes to examine the care that you will contact me about that.

The automobile was equipped with an air bag and seat belt. It appears that both of these malfunctioned in the accident. [REDACTED] description of what occurred with regard to the air bag indicates that it was late in inflating and inflated in a rather curious manner. The seat belt posed a problem. It is apparent from the injuries suffered by [REDACTED] that he was not restrained by the seat belt at the time of the collision. Following the accident the seat belt, which did not appear at all to be damaged, would not engage properly. Repeated efforts were made to engage or connect the seat belt. Each time it appeared to "click" into place. However, a slight strain on the belt caused it to release.

It is our position that [REDACTED] would have suffered negligible or no injuries in the accident had either the seat belt or air bag functioned properly. He has suffered fairly severe and quite painful injury. I expect to obtain medical records as soon as his treatment has progressed further. I hope to discuss this matter with you in the near future.

Very truly yours,



Jack J. Ackerman

JJA:pc
Enc.



STATE OF WASHINGTON POLICE TRAFFIC COLLISION REPORT

TRAFFICWAY
 PRIVATE WAY

No. 591108

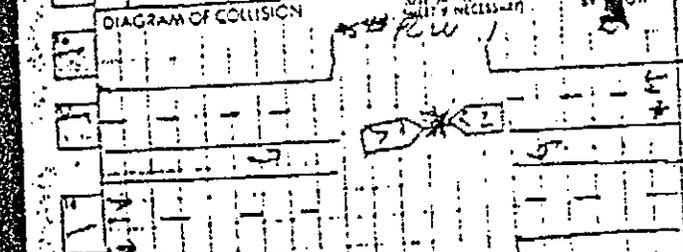
DATE OF COLLISION: 12-18-90
 COUNTY NO: 31
 CITY NO: 163
 COUNTY: Snohomish
 CITY: Edmonds
 STREET: EDWARDS ON EDWARDS WAY

INTERSECTION: 95th PLW
 BETWEEN: STREET 4
 STREET: STREET
 ACCIDENT MILEAGE CODE: 8
 DAMAGE DATA: 1258
 TOTAL NO. OF VEHICLES: 2
 DAMAGE TO VEHICLES: 1

UNIT NO. 1
 DRIVER'S NAME: [REDACTED]
 STREET ADDRESS: [REDACTED]
 CITY: Seattle WA
 STATE: WA
 DATE OF BIRTH: [REDACTED]
 OCCUPATION: Sales Alimax
 COCES: 13
 MAKE: Ford
 MODEL: Taurus
 YEAR: 1990
 COLOR: White
 REGISTRATION: WA
 LICENSE: WA

UNIT NO. 2
 DRIVER'S NAME: [REDACTED]
 STREET ADDRESS: [REDACTED]
 CITY: Duvallen WA
 STATE: WA
 DATE OF BIRTH: [REDACTED]
 OCCUPATION: Landscaper
 COCES: 13
 MAKE: Ford
 MODEL: F1
 YEAR: 1985
 COLOR: Black
 REGISTRATION: WA
 LICENSE: WA

INSURANCE AGENT: Texas Auto Continental
 DAMAGE TO VEHICLES: 1258
 DAMAGE TO PROPERTY: 0
 DAMAGE TO PERSONS: 0
 DAMAGE TO OTHERS: 0



DESCRIPTION OF COLLISION: Vehicle #1 was on Edwards Way attempting to make a left turn into 95th PLW when it lost control in the snow crossing over into the WB lane of travel. Striking vehicle #2 head on. Veh #2 was WB on Edwards way.

NAME, ADDRESS & INJURIES OF PERSONS INVOLVED
 OCCUPANTS / WITNESSES
 NAME: [REDACTED]
 ADDRESS: [REDACTED]
 NAME: [REDACTED]
 ADDRESS: [REDACTED]
 NAME: [REDACTED]
 ADDRESS: [REDACTED]
 NAME: [REDACTED]
 ADDRESS: [REDACTED]

INVESTIGATING OFFICER'S NAME: K. Greenhouse
 OFFICER'S NO.: 11443
 DATE: 12-20-90

POLICE AGENCY COPY 1

Page of Pages
Local Codes
SP NORWICH
BE# 475

Accident Date 03/04/89 Day of Week SA Time 5:30 AM No. of Vehicles 2 No. Injured 4 No. Killed 0 Non-Highway Not Investigated at Scene Left Scene Police Photos Yes No

VEHICLE 1
Name - exactly as printed on license
Number and Street
City NORWICH State NY Zip Code

VEHICLE 2
Name - exactly as printed on license
Number and Street
City OXFORD State N.Y. Zip Code

Date of Birth Sex Un-Licensed No. of Occup. Public Property Damaged State of License
M 1 NY

Date of Birth Sex Un-Licensed No. of Occup. Public Property Damaged State of License
F 4 NY

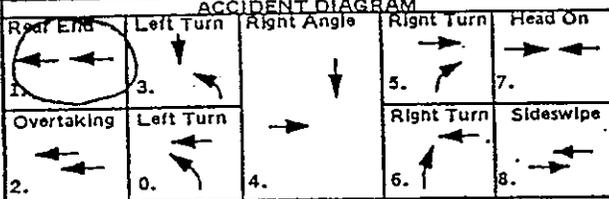
Name - exactly as printed on registration
Date of Birth
Number and Street
City NORWICH State NY Zip Code

Name - exactly as printed on registration
Date of Birth
Number and Street
City OXFORD State NY Zip Code

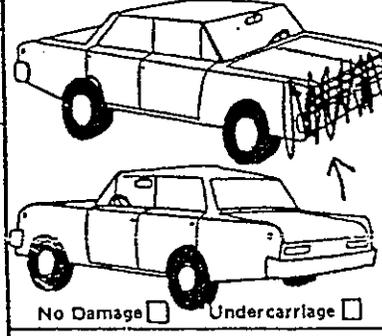
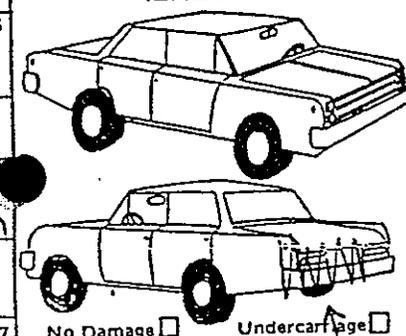
Plate Number State of Reg. Yr. & Vehicle Make Vehicle Type Ins. Code
NY 81 CHEVR 405 231

Plate Number State of Reg. Yr. & Vehicle Make Vehicle Type Ins. Code
NY 88 MERC SW 416

If damaged vehicle is truck, check if width is 96" 102"



If damaged vehicle is truck, check if width is 96" 102"



No Damage Undercarriage
Vehicle Towed To

No Damage Undercarriage
Vehicle Towed To SAME

Reference	Marker	DMV USE ONLY
1	2	
9	2	0
1	2	4
1	2	4

County CHEN City NORWICH
Route No. and Street Name on ST-12
Miles Feet S W of At Intersection with

Ticket/Arrest Other Ticket/Arrest Number(s) #1) 76936915-0 + 76936916-1 #2) 76936914-6 CR-32B
Opr 1 Pedestrian Violation Section(s) #1) 509-1 + 1229-C(3) V+TL #2) 1129(6) V+TL
Opr 2 Bicyclist

Accident Description/Officer's Notes VEH #1 NORTHBOUND ST-12 T/NORWICH STOPPED TO MAKE LEFT TURN. VEH#2 ALSO NORTHBOUND ST-12 DID STRIKE VEH#1 IN THE REAR.

8	9	10	11	12	13	14	15	16	17	18	Names - If Deceased, Give Date of Death
1	1	4	1	17	M	4	12	6	9998	0801	
2	1	4	1	42	F	-	-	6	9994	0801	
3	3	4	1	15	F	11	10	6	9995	0801	
4	4	1	1	16	M	4	12	6	9995	0801	
6	6	1	1	18	M	2	10	6	9995	0801	

Officer's Rank and Name: Sgt. L. Connolly
Badge No. 3407 Department 10801 Precinct/Post Troop/Zone C151 Station/Beat/Sector NOR313 Reviewing Office [Signature] Date/Time Reviewed 3/6/89

19
20
21
22
23
24
25
26
27
28
29
30
USE COVER SHEET
F

DMV FORM 100-101 (1-80)

CO96

20 Wisconsin Ferry Charge

PEDESTRIAN LOCATION
 1. Pedestrian at Intersection
 2. Pedestrian Not at Intersection

PEDESTRIAN ACTION
 1. Crossing, With Signal
 2. Crossing, Against Signal
 3. Crossing, No Signal, Marked Crosswalk
 4. Crossing, No Signal or Crosswalk
 5. Walking Along Highway With Traffic
 6. Walking Along Highway Against Traffic
 7. Emerging from in Front of/Behind Parked Vehicle
 8. Going To/From Stopped School Bus
 9. Getting On/Off Vehicle Other Than School Bus
 10. Pushing/Working On Car
 11. Working in Roadway
 12. Playing in Roadway
 13. Other Actions in Roadway*
 14. Not in Roadway (Indicate)*

TRAFFIC CONTROL
 1. None
 2. Traffic Signal
 3. Stop Sign
 4. Flashing Light
 5. Yield Sign
 6. Officer/Guard
 7. No Passing Zone
 8. RR Crossing Sign
 9. RR Crossing Flashing Lt.
 10. RR Crossing Gates
 11. Stopped School Bus - Red Lights Flashing
 12. Highway Work Area
 20. Other *

APPARENT CONTRIBUTING FACTORS

HUMAN
 1. Alcohol Involvement
 2. Backing Unsafely
 3. Driver Inattention (Indicate)*
 4. Driver Inexperience (Indicate)*
 5. Drugs (Illegal)
 6. Failure to Yield Right-of-Way
 7. Fall Asleep
 8. Following Too Closely
 9. Illness
 10. Lost Consciousness
 11. Passenger Distraction
 12. Passing or Lane Usage Improper
 13. Pedestrian's Error/Confusion
 14. Physical Disability
 15. Prescription Medication
 16. Traffic Control Disregarded
 17. Turning Improperly
 18. Unsafe Speed
 19. Other Human *

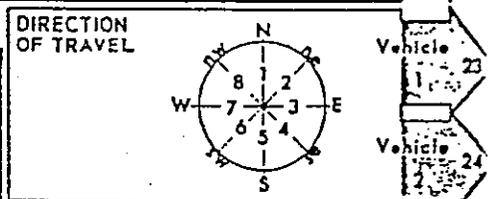
VEHICULAR
 41. Accelerator Defective
 42. Brakes Defective
 43. Headlights Defective
 44. Other Lighting Defects
 45. Oversized Vehicle
 46. Steering Failure
 47. Tire Failure/Inadequate
 48. Tow Hitch Defective
 49. Windshield Inadequate
 60. Other Vehicular *

ENVIRONMENTAL
 61. Animal's Action
 62. Glare
 63. Lane Marking Improper/Inadequate
 64. Obstruction/D debris
 65. Pavement Defective
 66. Pavement Slippery
 67. Shoulders Defective/Improper
 68. Traffic Control Device Improper/Non-Working
 69. View Obstructed/Limited
 80. Other Environmental *



LIGHT CONDITIONS
 1. Daylight
 2. Dawn
 3. Dusk
 4. Dark-Road Lighted
 5. Dark-Road Unlighted

State of New York
 Department of Motor Vehicles
POLICE ACCIDENT REPORT
 MV-104A (11/78)



ROADWAY CHARACTER
 1. Straight and Level
 2. Straight and Grade
 3. Straight at Hillcrest
 4. Curve and Level
 5. Curve and Grade
 6. Curve at Hillcrest

EXPLAIN IN ACCIDENT DESCRIPTION
 IF A QUESTION DOES NOT APPLY, ENTER A DASH (—).
 IF AN ANSWER IS UNKNOWN, ENTER AN "X"

PRE-ACCIDENT VEHICLE ACTION
 1. Going Straight Ahead
 2. Making Right Turn
 3. Making Left Turn
 4. Making U Turn
 5. Starting from Parking
 6. Starting in Traffic
 7. Slowing or Stopping
 8. Stopped in Traffic
 9. Entering Parked Position
 10. Parked
 11. Avoiding Object in Roadway
 12. Changing Lanes
 13. Overtaking
 14. Merging
 15. Backing
 20. Other*

ROADWAY SURFACE CONDITION
 1. Dry
 2. Wet
 3. Muddy
 4. Snow/Ice
 5. Slush
 10. Other*

LOCATION OF MOST SEVERE PHYSICAL COMPLAINT
 1. Head
 2. Face
 3. Eye
 4. Neck
 5. Chest
 6. Back
 7. Shoulder-Upper Arm
 8. Elbow-Lower Arm-Hand
 9. Abdomen - Pelvis
 10. Hip-Upper Leg
 11. Knee-Lower Leg-Foot
 12. Entire-Body

LOCATION OF FIRST EVENT
 1. On Roadway
 2. Off Roadway

WEATHER
 1. Clear
 2. Cloudy
 3. Rain
 4. Snow
 5. Sleet/Hail/Freezing Rain
 6. Fog/Smog/Smoke
 10. Other*

TYPE OF PHYSICAL COMPLAINT
 1. Amputation
 2. Concussion
 3. Internal
 4. Minor Bleeding
 5. Severe Bleeding
 6. Minor Burn
 7. Moderate Burn
 8. Severe Burn
 9. Fracture - Dislocation
 10. Contusion - Bruise
 11. Abrasion
 12. Complaint of Pain
 13. None Visible

TYPE OF ACCIDENT COLLISION WITH
 1. Other Motor Vehicle
 2. Pedestrian
 3. Bicyclist
 4. Animal
 5. Railroad Train
 10. Other Object (Not Fixed)*

COLLISION WITH FIXED OBJECT
 11. Light Support/Utility Pole
 12. Guide Rail
 13. Crash Cushion
 14. Sign Post
 15. Tree
 16. Building/Wall
 17. Curbing
 18. Fence
 19. Bridge Structure
 20. Culvert/Head Wall
 21. Median/Barrier
 22. Snow Embankment
 23. Earth Embankment/Rock Cut/Ditch
 24. Fire Hydrant
 30. Other Fixed Object*

WHICH VEHICLE OCCUPIED
 1. Vehicle No. 1 B. Bicyclist O. Other*
 2. Vehicle No. 2 P. Pedestrian

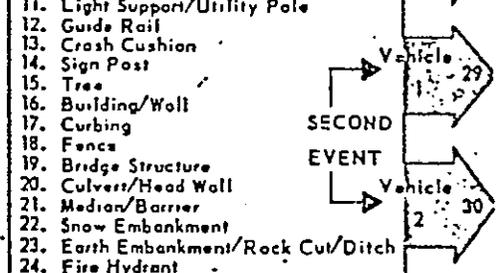
VICTIM'S PHYSICAL AND EMOTIONAL STATUS
 1. Apparent Death
 2. Unconscious
 3. Semiconscious
 4. Incoherent
 5. Shock
 6. Conscious

TYPE OF ACCIDENT COLLISION WITH
 1. Other Motor Vehicle
 2. Pedestrian
 3. Bicyclist
 4. Animal
 5. Railroad Train
 10. Other Object (Not Fixed)*

COLLISION WITH FIXED OBJECT
 11. Light Support/Utility Pole
 12. Guide Rail
 13. Crash Cushion
 14. Sign Post
 15. Tree
 16. Building/Wall
 17. Curbing
 18. Fence
 19. Bridge Structure
 20. Culvert/Head Wall
 21. Median/Barrier
 22. Snow Embankment
 23. Earth Embankment/Rock Cut/Ditch
 24. Fire Hydrant
 30. Other Fixed Object*

POSITION IN/ON VEHICLE
 1. Driver 2-7. Passengers
 8. Riding/Hanging On Outside

SAFETY EQUIPMENT USED
 1. None
 2. Lap Belt
 3. Harness
 4. Lap Belt and Harness
 5. Child Restraint
 6. Helmet
 10. Other*



EJECTION FROM VEHICLE
 1. Not Ejected
 2. Partially Ejected
 3. Ejected

AGE SEX
 12 13
 14 15 16

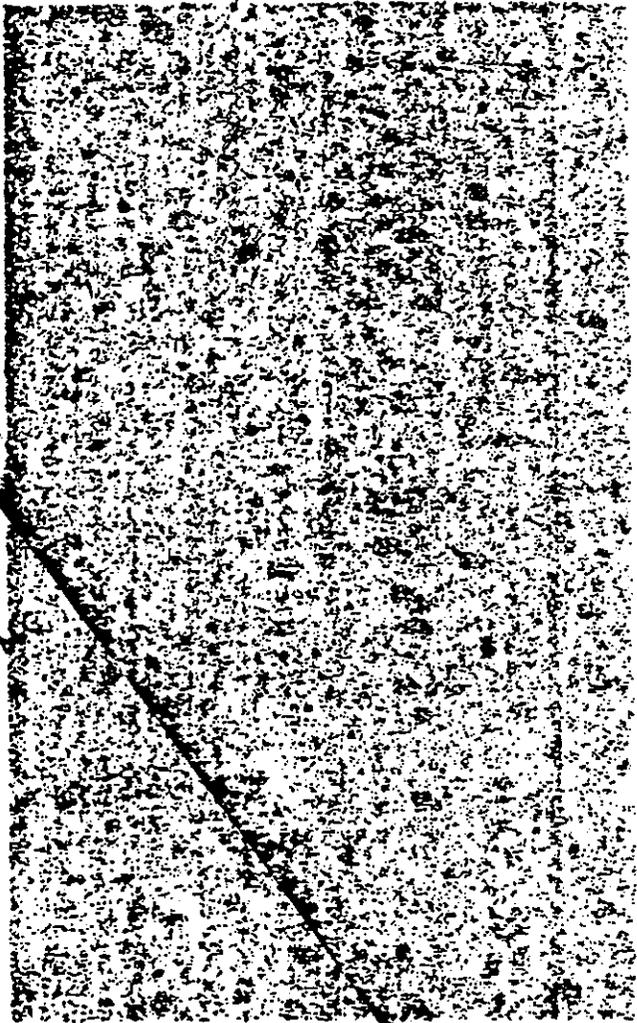
INJURED TAKEN
 17 BY 18

NON-COLLISION
 31. Overturned
 32. Fire/Explosion
 33. Submersion
 34. Ran Off Roadway Only
 40. Other*

COVER SHEET
 C

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RAY AVERETT VS GMC



**seat belt
safety
presentation**

RESUANT TO ORDER
MAY 17, 1966

000922

ABSTRACT

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The purpose of this report is to answer the charges which critics have made concerning the safety of the General Motors and Ford Motor Company deluxe push button seat belt. It is our intention to show that the push button seat belt buckle is thoroughly engineered, tested and manufactured to the highest possible standards to guarantee the utmost in safety for the public seat belt users.

The basis of the most severe criticism has been the fact that the push button seat belt buckle can be "parlor tricked" open. It is a fact that all seat belt buckles can be "tricked" open in one way or another, but these "tricks" have nothing to do with the safety of belt assemblies.

Contrary to the critics' charge, the inertia forces created in an accident situation tend to latch the push button buckle mechanism more tightly. In addition, the operation of the buckle is more convenient than other types, and it is our opinion that this encourages its use by more people.

This presentation includes the General Motors and Ford Motor Company engineering proof and test results which refute the critics' charges.

(1)

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200 400 600 800 1000 1200 1400 1600 1800 2000

PERCENT (%)

UPPER

20

FUSH

40

60

80

100

120

140

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RESEARCH GENERAL MOTOR

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Graph No. 1

000925

(2)

This is a "parlor trick". It is fact that all seat belts can be "parlor tricked" in some manner. This can be demonstrated.

This "parlor trick" has nothing to do with the safety of these seat belts. They are merely "tricks". The point is that all belts can be tricked.

General Motors engineers have determined that the seat belts will not open in an automobile accident when the belt is properly secured.

The safety of seat belts has been substantiated by the fact that they are credited with saving 50,000 lives per year and experts say that if more people used belts, 12,000 lives per year would be saved.

The reason that a seat belt buckle can be "tricked" open is, that with the belt held in your hand or tensed on a table, high inertia loads can be produced in the buckle without the proportionate strain on the webbing which occurs in an accident situation. In a car crash, loads are transferred from the webbing to the buckle which resist unlatching.

The buckle latching mechanism is designed so that when a load is applied to the belt, it requires increasingly high force to release the buckle.

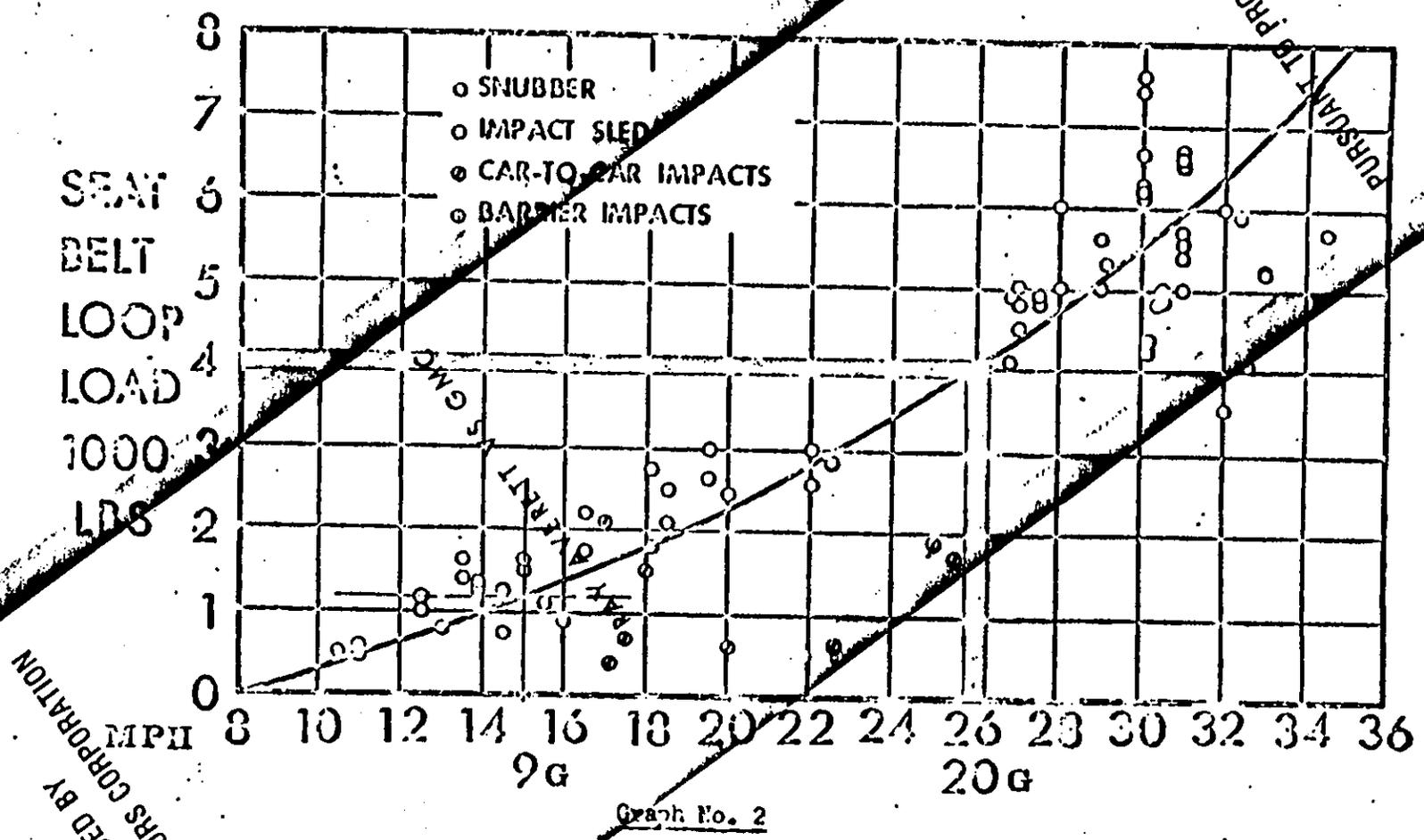
This graph shows the passenger loop load on the belt versus the push button force to release the buckle. The higher the belt load, the higher the release force. For example, if the belt is loaded at 1000# in an accident, it would require a 115# force to release the buckle. (See Graph #1).

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Graph No. 2

226000

(4)

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By actual test, we have proven that when the belt is loaded in excess of 1000#, the push button buckle cannot be physically opened until the belt tension is lowered. This results because the geometry of the latch mechanism is designed so that the forces from the webbing create a locking condition and the latching parts cannot be separated.

Crash tests conducted at the General Motors Proving Grounds have shown that as the car crash speed is increased, the load from a passenger on the belt is also increased.

For example, this graph shows that in a 26 MPH crash, the belt load is 4000#. This is greater than the load at which the release mechanism becomes locked. (see Graph #2)

The point of this explanation is that the car crash speed, seat belt load, and release effort of the push button are all directly related in a car accident.

Tests prove that the inertia forces created in an accident are never high enough to unlatch the push button buckle.

In fact, to trick open the push button buckle, the inertia loads must be applied in the reverse direction to those produced in an accident. The forces developed by a crashing car are in the direction to more tightly latch the push button buckle and make it safer. (See Illustration #3).

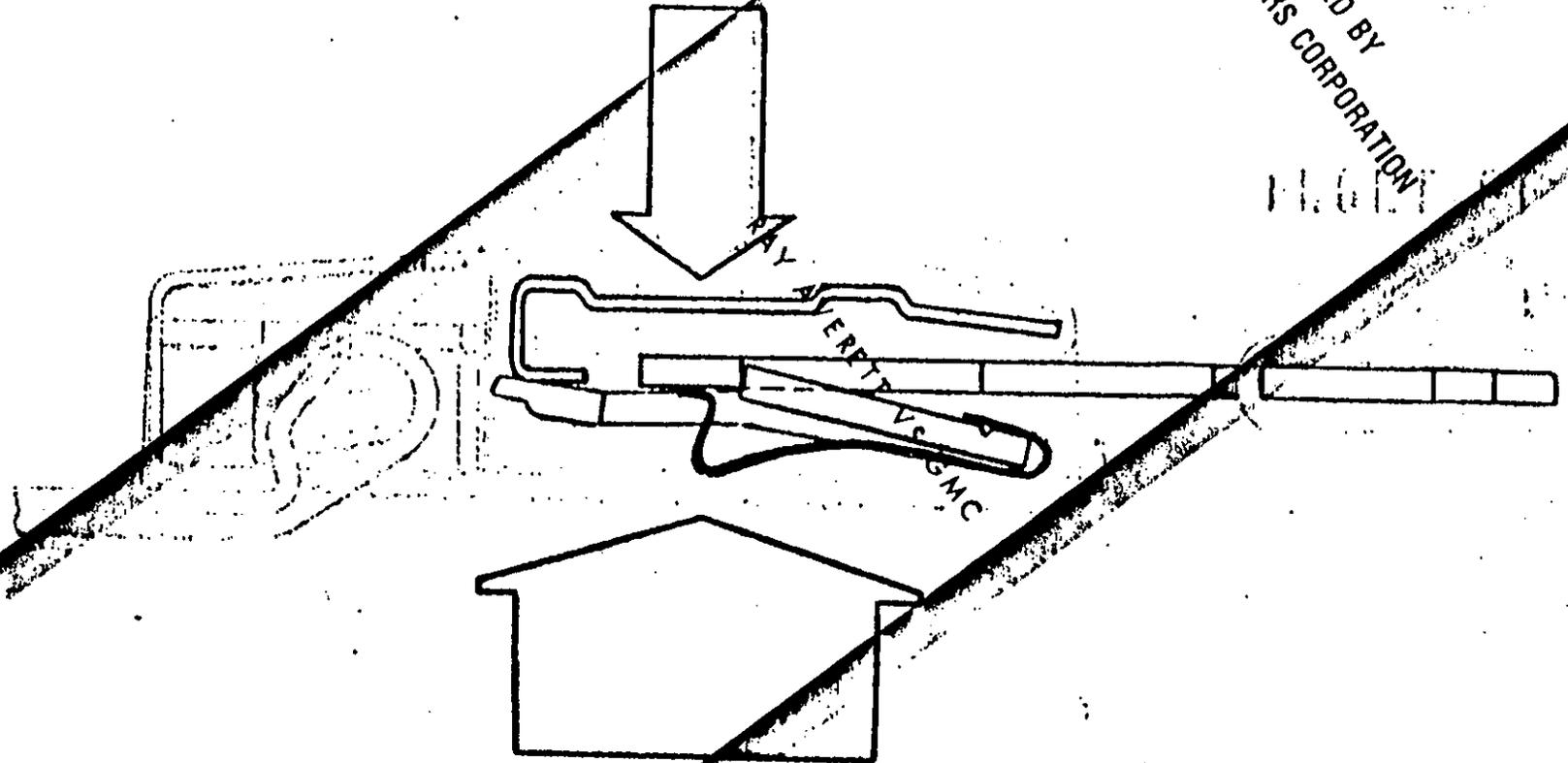
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FORCE TO UNLATCH

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DIRECTION OF FORCE CREATED
BY HORIZONTAL IMPACT

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ILLUSTRATION #3

REBUTTAL - (FORD)

The Ford Motor Company made a careful study of the California tests of the buckle and also conducted its own laboratory evaluation. This included a thorough study of the buckle release effort as specified by S.A.E. Requirements. Ford engineers tested to verify that the 30 pound release effort under 150 loop load was met. They also determined that the average button effort on the unloaded belt was more than two pounds. This was acceptable to Ford although California would permit the effort to be as low as one pound.

The performance of the buckle in dynamic situations was also examined. It not only had passed the California dynamic tests but also had passed car-to-barrier crash tests at Ford. The inertial characteristics of the buckle latch were therefore considered acceptable at that time.

In late October, 1965, Ford, General Motors, and Hamill were notified that the push button buckle had failed to pass recent tests in California's dynamic test fixture. Upon receipt of the latest test information, representatives of the three firms began continuous work with California personnel to resolve this apparent contradiction with previous results.

It was soon noted that certain changes had taken place with the California dynamic testing equipment when compared to its original design.

What in effect had occurred by virtue of these changes to the testing equipment was an innocent application of the parlor trick employed by critics of the buckle.

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Specifically, the explanation of the change to the California test result is that the seat belt system, including anchors, retractors, belt and buckle, take the minimum 5000 pound system load upon initial impact in the testing equipment. The seat belt system and the body block and its sled are then rebounded in a fashion not found in a car crash situation. It was here that the changes to the equipment were made. California test engineers had added two rubber bumpers in the body block suspension system which reversed the direction of the body block upon rebound. This reversal caused the seat belt buckle to slap into the body block during the rebound with no load on the belt. This is the identical phenomenon that takes place in the "parlor trick". Films taken during the tests demonstrated this fact conclusively.

After the action of bumpers was nullified, thus reverting the equipment to its original design intent, the belts were retested and the buckles stayed latched at all times. It is important to note also that subsequent to this test the buckles were tested in California's dynamic car body sled test equipment. Again the buckles stayed latched at all times.

The seat belt and buckle were then given a clean Bill of Health by California which noted in its letter of acceptance that "the cause of the buckle opening was ... found to be the fault of our test sled. The sled rebounded causing unnatural forces upon the rear of the buckle."

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RA. AVE. BETT
S. GM

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During this time, Ford Engineers re-examined all of the test data they had accumulated. These included not only successfully passing the J4-C series requirements, but also car-to-barrier crash tests. In no instance could Ford Engineers find a failure in the seat belt system attributable to the inertial unlatching of the seat belt buckle, as experienced in the "parlor trick".

Since these car crash tests used the anthropomorphic dummies, Ford Engineers wished to make certain that there were no differences between the results obtained with dummies compared to those with the human body. Therefore, beginning on November 22, 1965, sled tests were run at Wayne State University's testing laboratories using its dynamic testing equipment with both cadavers and dummies. These Wayne tests were run at approximately 25 mph impact velocity with varying degrees of looseness to the seat belt, up to and including five inches of slack. There was no discernible difference in results obtained with either the dummies or cadavers and in no case could the buckle be inertially unlatched because of belt slack. (Ford Film #1)

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R.A.

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II. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

"The type of blow on the buckle can occur in accident situations where the buckle strikes the steering wheel rim, or one's arm or fist is shoved onto the buckle or a package is thrown against it."

STATEMENT BEFORE CONSUMERS ASSEMBLY: 4/26/66

"The motorist is being lured into paying more for a materially more dangerous seat belt, in terms of opening under accident conditions, than the lower cost, safer standard type belt. It is estimated that there are over two million automobiles with such belts today and the number is growing rapidly."

REBUTTAL - (GENERAL MOTORS)

The critics have concluded from the "parlor tricks" that the push button buckle can be opened on impact with a steering wheel.

Special tests were conducted in which the seat belt, worn by a dummy, was impacted against the steering wheel in a simulated 35 mph barrier impact.

It should be noted that extreme care had to be taken just to make sure that this buckle would come in contact with the wheel. This type of impact is extremely improbable in an accident because the extendable tilt steering wheel, seat adjuster, and belt adjustment must all be adjusted and located in just the right relationship to each other so that the buckle will not slip off the steering wheel. In this test, even though the wheel was severely damaged, the belt did not open.

(Reference: Test Film General Motors #1)

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REBUTTAL (FORD)

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In answer to the charge that the buckle may be opened by impact with the steering wheel, it should be pointed out that the design of the installation of the belt precludes this type impact from taking place.

This is due to the fixed length of outboard belt end which controls the buckle position relative to the steering wheel. Occupant kinematics also play an important part in preventing this impact from occurring.

This design criteria notwithstanding, critical buckle positions which appear to have impact potential were explored using dynamic test equipment.

For example, one condition positions the inboard corner of the buckle cover just touching the steering wheel rim to the left of the steering wheel centerline. This could only occur if a short, obese driver were wearing the belt, or if a short, thin person were wearing the belt loosely. The seat would have to be in the full forward position in either case.

To evaluate this extreme condition, a vehicle body was impact tested on Ford's full-scale test sled, simulating a 25 mph barrier collision. The test dummy in the driver's seat was positioned against the steering wheel rim by utilizing foam cushions between his back and the seat back. High speed films of the impact clearly show that the seat belt forces the occupant's body down into the seat cushion, causing the buckle to pass under the steering wheel rim.

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Another condition of extreme belt usage, which might conceivably cause the buckle to impact the steering wheel rim, positions the buckle slightly with the wheel centerline in the plan view. Due to the controlled length of the non-adjustable, outboard belt-end, however, the buckle must be several inches to the rear of, and be slightly below the steering wheel rim. An evaluation of this buckle-steering wheel relationship was also made under the previously mentioned conditions. As in the previous test, the buckle did not impact the steering wheel. The belt stretched forward, but the buckle again passed below the steering wheel rim.

SECRET VS G.M.C.

To further explore the steering wheel impact situation, Ford Engineers resorted to certain non-representative, non-attainable dummy, seat belt, and steering wheel relationships. These unorthodox test conditions were simulated in a test fixture which swung the dummy into a steering wheel across the rim of which was stretched a seat belt. The face of the buckle squarely rested on the steering wheel rim. Even in this contrived situation with a minimal amount of load on the seat belt (180 pounds) it was impossible to open the seat belt buckle. The explanation of this fact lies in the design of the buckle. The latch system in the buckle is such that the higher the belt load, the more firmly it is latched.

Only when there was virtually no load on the seat belt could the swinging dummy unlatch the buckle. This occurred when the buckle was aligned with the spoke on the steering wheel... in which case the spoke depressed the button. This contrived condition cannot be achieved in actual car usage. (Reference Test Film Ford #2 and #3).

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III. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

"An open buckle in collision becomes a deadly, leashed missile which can and has caused the most serious injuries."

STATEMENT BEFORE CONSUMER ASSEMBLY: 4/26/66

Not Covered

REBUTTAL -(GENERAL MOTORS)

We have shown that the buckle does not open in an accident. Furthermore, we have conducted tests which prove that in a car crash, the inertia forces cause the passengers and the buckles on loose seat belts to move in the same direction. They do not collide.

In addition, General Motors has investigated all available sources of crash injury data, including the A.C.I.R., State and County Medical Injury Research Groups, and the better known independent injury researchers. We have not been able to find one case of a reported injury caused by a flying seat belt buckle.

It is a fact that General Motors has had only one questionable report of a buckle opening in an accident from the more than 6,000,000 push button buckles already sold in General Motors cars.

REBUTTAL -(FORD)

No Rebuttal

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IV CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

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"Ford and General Motors know of this weakness in the deluxe belt and have tried to find a "fix" for it. Yet notwithstanding their inability to do so, they are continuing to sell this more profitable belt and the consumer is continuing to believe that he is getting the safest possible belt on the market by paying an extra \$12 or \$15 for a set of four above the cheaper and safer standard type lift up belt."

"About the only things the deluxe seat belt has to offer the consumer is a higher price and possibly a more attractive buckle centering around an insignia-laden push button - a deadly king of pop art ..."

STATEMENT BEFORE CONSUMERS ASSEMBLY: 4/26/66

"To what depths will corporate immorality and the lust for the lucre extend? Late last year, reports of failures in accidents, such as the buckle hitting the lower steering wheel rim and other obvious evidence of weakness, finally moved Ford and General Motors Management to launch a crash program to find a design correction, or in engineering cant -- a "fix". Several months have now passed. Yet no "fix" has been devised. Yet neither Ford nor General Motors have had the decency to warn motorists and call back existing Deluxe belts and to stop putting these Deluxe belts on their cars presently being produced."

"The frightening fact is that while Ford and General Motors Engineers are working feverishly to try and fix what many of them believe is an unfixable belt design -- whose deficiencies have been worriedly discussed off the record at recent engineering meetings -- top management is bent on continuing the sales of these booby-traps no matter how many people are exposed to the risk, and in fact have reportedly pitched into windshields, spilled out of doors or slammed into steering wheels. The auto companies have received reports of such seat belt failures - in the casual way that a minority of such incidents filter back to the home office."

REBUTTAL -(GENERAL MOTORS)

What weakness do these statements refer to? If by this it means the "parlor trick" unlatching of the push button belt, than we do not recognize this as a weakness. As we have already proven in our earlier presentation

PURSUANT TO PROTECTIVE ORDER

material, this characteristic does not affect the safety for which the belt was intended.

The supplier of the push button belt has been working to eliminate the "parlor trick" characteristic, but it has never been on a crash or panic basis.

He has been motivated because he knew that this type of trick does not look good and can easily be misinterpreted by those not familiar with the principles involved.

No such accident reports as those described have been received by General Motors.

REBUTTAL - (FORD)

Allegations were made that the push button seat belt is a booby trap; that it has necessitated a "fix" which General Motors and Ford are unable to attain, and pops open under so-called simple empirical tests. We contend these charges are ridiculous and without foundation. We trust the foregoing documentation of exhaustive testing under the most sophisticated test conditions, and conducted by experienced test engineers both within and outside the automotive industry, provides full proof that the push button seat belt is indeed as safe as any seat belt thus far designed.

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SEAT BELT ULTIMATE STRENGTH

6260000
(25)

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HIGH LOW AVERAGE NO. OF SAMPLES

625 627 627

DELIVER SEAT BELT

HEAVY DUTY

7300

6200

7100

25 ASSEMBLIES

GENERAL SAFETY

6500

6230

7390

120 ASSEMBLIES

WEIGHTED AVERAGE

7310

213 ASSEMBLIES

RAY AVERETT VS GMC

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Chart #4

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(GENERAL MOTORS)

The assumption has been made that the standard type seat belt provides greater safety at lower cost than the push button deluxe belt. This is not true.

The major difference and hence, the difference in cost between deluxe and standard belts is that the deluxe belt is designed to use more attractive and expensive materials on the exposed cover, and is provided with extra convenience features. It is traditional that the consumer who is more selective in his aesthetic tastes will pay a higher price for that which pleases him and is in excess of the bare necessity. General Motors is providing deluxe belts in order to offer the customer more selectivity.

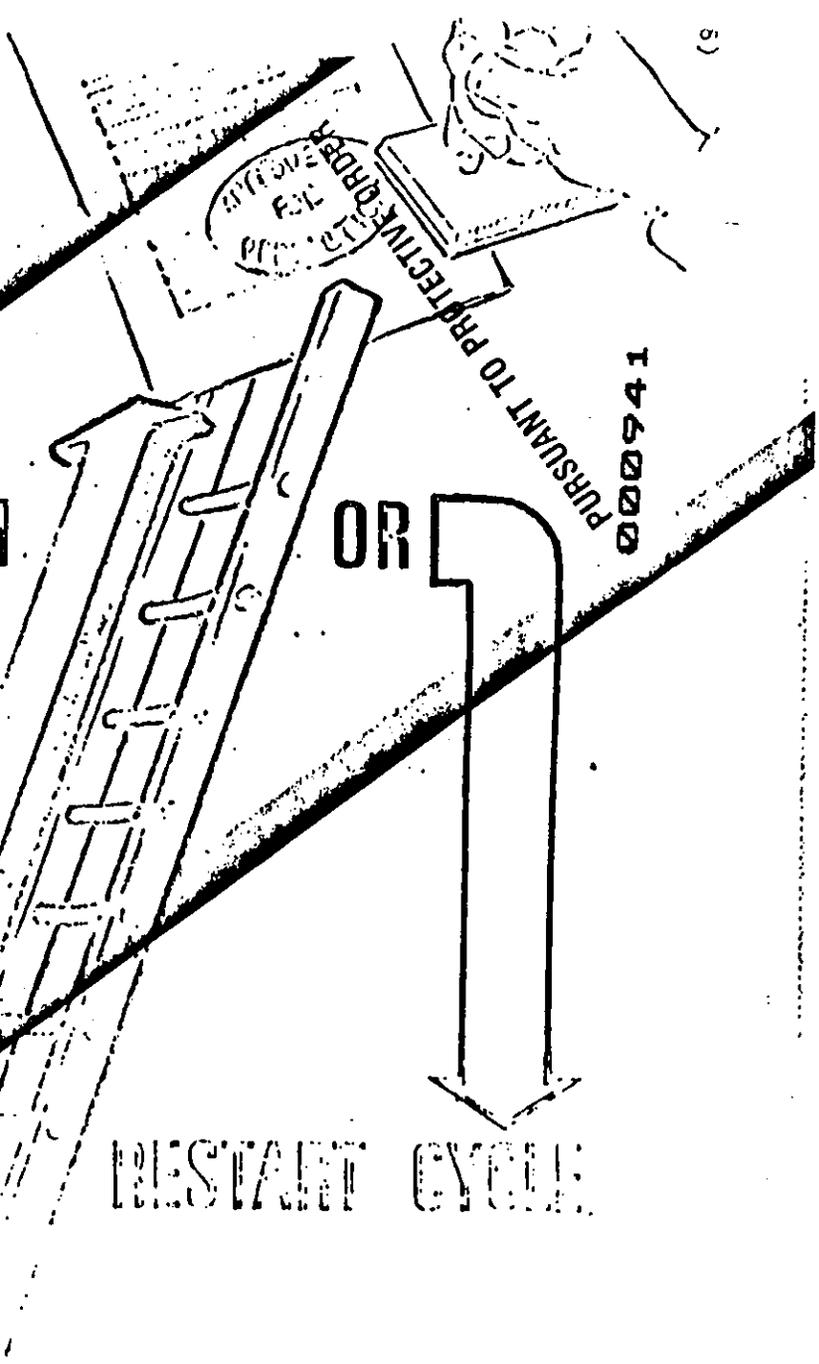
RAY AVERETT V. GMC

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000940

NEW SEAT BELT DESIGN & ACCEPTANCE PROCEDURE

TO PRODUCTION
INCORPORATION PROGRAM
GM & VENDOR CONFERENCES
DETAILED ENGINEERING STUDIES
DYNAMIC EVALUATION TESTS
SPECIFIED OPERATIONAL TESTS
STATIC STRENGTH TESTS
ENGINEERING EVALUATION
VENDOR SUBMITS DESIGN



GENERAL MOTORS CORPORATION
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V. STATEMENT BEFORE CONSUMERS ASSEMBLY: 4/26/66

"The rub in this profitable merchandising scheme is that the device is poorly engineered, highly unreliable, and ineffective."

REBUTTAL - (GENERAL MOTORS)

On the Contrary! This belt is one of the most thoroughly engineered, tested, and stringently controlled products available to a consumer today.

The General Motors engineering program on the push button seat belt began at Fisher Body Division when the vendor submitted the design for consideration.

Every year, many new designs are submitted by many potential suppliers and each is given thorough engineering consideration even though it may not be accepted for production use. Fisher Body Engineering had evaluated 46 other seat belt designs before deciding to use the push button design.

Any seat belt which reaches public use must first undergo the exhaustive testing and engineering program shown here and must start at the bottom of this ladder. (See Illustration #5).

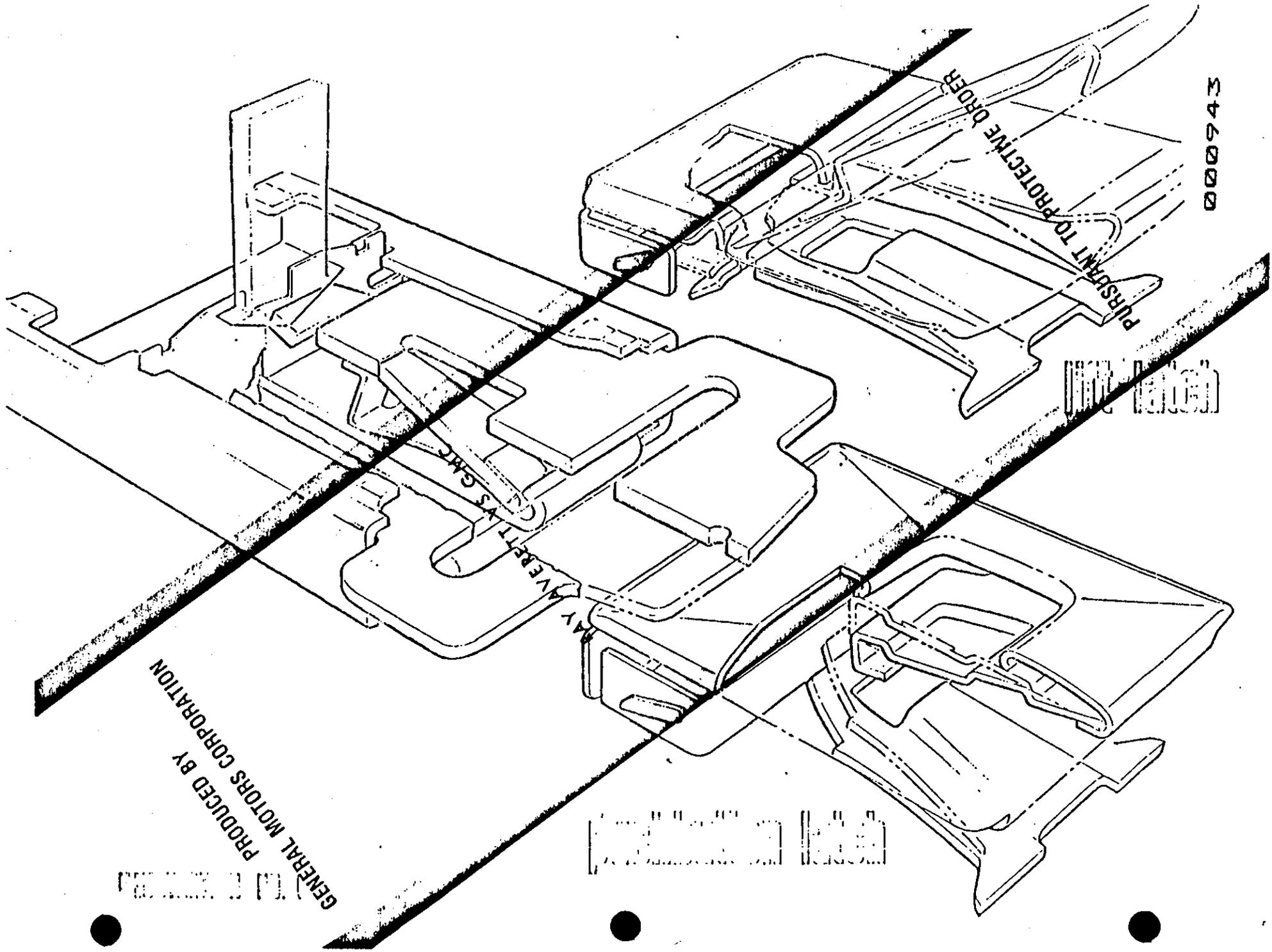
Prototype samples of the push button buckle were laboratory tested for static strength and operation to the S.A.E. and various Government Specifications. Dynamic tests were conducted at the General Motors Proving Grounds using dummies and crash-simulating equipment.

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ALBERT VS GMC

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GENERAL MOTORS CORPORATION
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000943

1950

General Motors

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Consistent with these tests, detailed drawings studies of the latch mechanism were made by engineers to determine if satisfactory manufacturing controls and tolerances could be maintained during production.

All items which were found discrepant to the General Motors requirements were discussed in engineering conference with the vendor and modifications were made to the design.

The cycle of tests, engineering investigation and changes was continued over 6 months until the buckle was approved as meeting all requirements. In addition, the push button release was only an improvement on the existing deluxe lift cover buckle which General Motors had been using for the previous two years. The major portion of the latch mechanism was not changed. (See Illustration #6)

In the program of the push button belt over 2,100 separate tests covering 22 various specification categories were completed before the final design was accepted for use.

The push button seat belt meets or exceeds the published S.A.E., various State and Federal Requirements.

One of these, the 5000# minimum belt loop strength, merits some special attention here. This specification is more than adequate to restrain a passenger in an accident. It is interesting to note that both

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The General Motors deluxe and standard seat belts have an average test breakage load in excess of 7000#.

A film is available which shows a test of a push button seat belt for ultimate loop strength and the release effort under load. This is conducted on a machine designed specifically for this purpose. The belt is installed in the machine, and the 5000# test load applied. The load is then reduced to 150# at which point the force required to unlatch the buckle is measured.

The belt is then loaded to failure to determine the ultimate strength. In this case the assembly sustains almost 7,800 lbs., which is not unusual for a push button seat belt assembly (Reference: Test Film General Motors #2).

Another short film shows what a seat belt that meets the 5,000# requirement will do.

Here a production push button seat belt is attached under a body block. The body block supports the weight of a Cadillac 4-door hardtop sedan. The belt carries the load of the car even with the extra inertia forces caused by the jiggling of the crane. There is one close-up view of the belt sustaining the 400 lb. plus load, and another close-up of the push button buckle for identification. (See Test Film General Motors #2)

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To verify the ability of the push button buckles to release while rescuing an upside down passenger, a rollover test was devised. The engineer fastens his seat belt in the normal manner and adjusts it snugly. The rollover rig is then inverted and, with all his weight supported by the belt, he unlatches the buckle and drops to the roof of the body. Close-ups illustrate the release of the buckle by the occupant and also by a would-be rescuer reaching through an open window. (See Test Film General Motors #4)

MAY 1967
AVERT V5 GMC

Many dynamic tests are conducted. One film shows a slow motion sequence of a push button seat belt on a body block. The body block surges against the seat belt loop, loading it just as it would be in an accident. Even with a loose belt setting, the buckle did not open. (See Test Film General Motors #5)

Actual car-to-barrier and car-to-car crash tests are typical of accident conditions. No failure of the push button buckle has ever occurred in any of the impact tests.

The tests are intended to prove the effectiveness of the belt design in any accident situation. The success of the push button belt in this comprehensive test program demonstrates that it is a safe and effective device (Reference Test Film General Motors #6 & #7).

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REBUTTAL - (FORD)

The Hamill push button buckle was first introduced on the Cadillac by General Motors in the middle of the 1965 Model Year. The buckle had passed all pertinent S.A.E. Requirements. A partial listing of the more important of these requirements are:

- Load Resistance (5,000#)
- Buckle Latch Performance,
i.e., Wear, Galling, or any other
type of failure from normal usage
- Webbing Tilt Lock Adjustment
- Adjustment Force (11#)
- Buckle Release Force (30# with 150# Loop load)
- Temperature Resistance
- Corrosion Resistance

In addition the belt had been tested under the auspices of and approved by the California State Highway Patrol. It is important to note that California tests included dynamic tests, whereas S.A.E. requires static tests. The California tests are considered by engineers of the industry as the most stringent for any item tested. This state was one of the earliest to have its own dynamic testing facilities and its tests go beyond the S.A.E. Requirements.

Because of the unique characteristics of the push button seat belt, Ford test engineers have used the belt exclusively in all dynamic crash tests since it was decided to use these belts in Ford products. In addition to the

PURSUANT TO PROTECTIVE ORDER

thousands of static tests to which the belt has been subjected, more than 100 of these belts have been tested by Ford thus far in dynamic and sled crash tests. There has not been one instance of malfunction of the seat belt because of inertial unlatching of the buckle under these crash conditions.

REBUTTAL - (GENERAL MOTORS)

In addition to the previous specifications and tests, General Motors has established the following additional standards.

1. CUSTOMER ACCEPTANCE

The buckle design must be such so as to prevent injury to a customer by:

- a) Finger pinching
- b) Cutting or snagging by sharp edges & burrs
- c) Breaking of fingernails

2. ACCIDENTAL OPERATION

The buckle release must be designed to minimize the possibility of accidental unlatching such as:

- a) Sleeve catching
- b) Bumping
- c) Operation by foreign objects - such as a package

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3. FALSE LATCHING OR RECEPTIVE ENTRY

The design of the buckle must be such that the tongue can enter the buckle in the correct manner only.

The tongue must latch securely in the buckle when fully engaged. No false latching may occur.

4. BELT SLIPPAGE

The belt must not slip at the adjustable end in excess of 1.00 inch under:

- a) 5000 pounds proof load
- b) 100 passenger squirm cycles on the test machines

After the push button buckle test program was completed and tentative approval of the seat belt design was given, the vendor fabricated his high volume production tooling.

Samples from these tools were submitted for testing and final approval. All of the previous tests were re-conducted.

After final approval, the vendor obtained certified testing data from an independent testing laboratory which also conducted all of the static tests over again. He then submitted the certified tests and some samples to the Government Agencies of 33 states. These states must approve a new seat belt design and test results before that belt can be sold there for public use.

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An inspection program was conducted in the seat belt manufacturer's plant, the production tooling, his audit inspection methods, assembly methods and production testing equipment and facilities were evaluated. These all meet established General Motors Standards.

Seat belt assemblies produced by the vendor during the inspection period were then shipped to the Fisher Body Assembly Plants and installed in cars under engineering direction as a final check.

General Motors conducts a continuing quality audit program to guarantee maximum reliability of seat belts.

This program includes tests each week of belt assemblies procured from production lots from the Fisher Body Plants. To date, 14,000 individual tests have been conducted on the push button belts, and this is in addition to the supplier's control tests.

The audit program includes unscheduled visits to the seat belt suppliers' plants to observe their manufacturing and testing methods.

The General Motors deluxe push button belt is engineered, tested and manufactured to the highest standards for maximum safety and reliability.

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VI. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

Mr. John Bugas of Ford Motor Company, representing the industry was before this committee, denied that the belts had this weakness on impact to the buckle. He said that these belts meet Federal and SAE standards, and that tests showed that no such problem existed. Mr. Bugas did not provide the test results."

STATEMENT BEFORE CONSUMERS' ASSEMBLY: 4/26/66

"How can such a situation develop? The answer is simple. The two companies simply either did not test these belts or they did not care about what they found. Now, the latter seems to be quite evident because they know. Either behavior deserves the severest censure."

REBUTTAL:

The tests discussed previously in this presentation disprove this charge. The test results are included in the accompanying documentation data.

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VII. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

"The Federal and SAE standards do not have a specific standard and test for this type of failure."

STATEMENT BEFORE CONSUMERS ASSEMBLY: 4/26/66

"It will be interesting to see how these two companies react to this disclosure. They may at first try to cover up what is a real closed door potboiler within these companies by saying officially that these belts meet the Federal seat belt specifications. It is not that facile, however. The Federal seat belt specifications, which first went into effect on December 11, 1965 (thus applying only to belts manufactured after that date) do not cover this type of seat belt failure. Moreover, government personnel (too few and with too little funds) have not yet tested the deluxe-type push button belt."

REBUTTAL - (GENERAL MOTORS)

Again, the parlor trick is being referred to. It is obvious that since neither the automotive industry nor those groups charged with protecting the public safety consider this parlor trick to be a safety failure, there would be no standard test for this type of operation.

Furthermore, we would not propose that a standard of this type would be practical since each belt buckle design would have to be analyzed as to its individual geometry and the mass of its locking components. This is the responsibility of the design engineers who must analyze and test each buckle design considered for public usage.

One of the most basic engineering considerations in any latching mechanism is to determine whether or not inertia forces developed during the intended or accidental usage would cause it to unlatch.

REBUTTAL - (FORD)

No rebuttal.

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VIII. HEARINGS BEFORE CONGRESSIONAL COMMITTEE: 5/6/66

"The front seat retractors, which are believed to increase usage, could be placed just as easily on the standard-type seat belt."

STATEMENT BEFORE CONSUMERS' ASSEMBLY: 4/29/66

"At the present time, one of the most closely guarded secrets at General Motors and Ford Motor Company involves one of the cruelest hoaxes these companies have ever perpetuated on the unwary motorist. Over a year ago, these two manufacturers began selling a deluxe seat belt. The deluxe belt has a push button design imbedded in the buckle. This design produces a slightly lighter and more stylized belt and is more convenient to open than the standard, lift-up belt (the metal-on-metal belt)--but it is a very minor convenience."

"The motivation behind the offering of the deluxe belt at extra cost to the motorist was purely profit, not safety. These two car makers gross around \$10.00 for four deluxe belts over and above the cost range of standard seat belts. General Motors sells at least half of its cars with such deluxe belts and Ford somewhat less than half of its automobiles. Deluxe belt sales will bring General Motors some \$24 million during the current model year."

REBUTTAL - (GENERAL MOTORS)

General Motors also believes that retractors increase customer usage of seat belts. However, the retractor assembly does not have any bearing on the physical safety of the seat belt.

A man wearing the standard seat belt without a retractor is just as safe as one wearing a deluxe seat belt with a retractor. He may not wish to spend the extra cost for the retractor assembly, and we do not wish to force our customers into buying any items which only improves convenience and does not add to his safety.

REBUTTAL - (FORD)

No Rebuttal.

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IX. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

Perhaps the major supplier of these belts to the auto companies, Hamill Manufacturing Company, of Washington, Michigan, should explain how it could produce a belt that took between 2 and 2-1/2 lbs. of pressure on the push button to open and why it very recently stiffened the spring so that it would take 3-1/2 lbs. of pressure."

NO STATEMENT AT CONSUMERS' ASSEMBLY

REBUTTAL - (GENERAL MOTORS)

There was concern by a critic as to why the push button spring was changed from 2 to 2-1/2 pounds free release force to a 3-1/2 pound release force.

There was no such spring change. The Fisher Body specification drawing shows a 2 pound minimum release requirement. We have never gone to a 3-1/2 pound specification and we have no intention of doing so.

REBUTTAL - (FORD)

With regard to the spring change, it should be pointed out that as production of an item, such as the push button seat belts, evolves from low to high volumes, engineering changes are required. This, quite naturally, took place at the Hamill Plants where requirements for both General Motors and Ford car lines are made. As production increased, tolerance relationships between detailed parts had to be adjusted. Material and heat treat changes effected, and typical improvements in process control were made. This raised the quality of the belt system to the highest level. These factors are standard practice in the industry as production progresses from prototype to low volume to high

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REBUTTAL - (FORD) - Continued

volume production. They represented an orderly evolution to high volume production -- not, certainly, a "fix".

Therefore, the change to the spring in the buckle by Hamill constituted a normal adjustment to meet production variations. It represents an action on the part of the manufacturer to insure that a two pound minimum push button effort is maintained. The change to the spring load was minimal and specifically increased the spring thickness from .0145 to .0155 inches in thickness.

Since the change was not outside normal tolerances for parts of this type, it was treated as a tolerance change only and not a specification change.

Changes will continue to be made to the buckle design as a definite need or product improvement is demonstrated. For example, Ford engineers have noticed that the buckle cover can be damaged, if it is inadvertently pinched between the cushion and back of a bucket seat or a 2-door car front seat. In order to minimize this potential, a change to the buckle cover is in progress which will significantly increase its dent resistance.

REBUTTAL - (HAMILL MANUFACTURING AND GENERAL SAFETY COMPANIES)

Limited production of the 1965 push button buckle for Cadillac only, approximately 3,000 per day, started in October of 1964. Some 17 changes in the spring design were made from the above date until June of 1965, when mass production started.

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REBUTTAL - (AMMIL MANUFACTURING AND GENERAL SAFETY COMPANIES) - Continued

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As a result of running larger quantities, it was found that a large percentage of springs warped after heat treat. This warpage tended to put more force on the anti-rattle portion of the spring and, in turn, less force on the latch and push button. On July 21, 1965, a change was made to decrease the pressure on the anti-rattle portion, in turn increasing the force on the latch and push button. After this change variations from warpage had much less effect on latch force or push button effort, but would occasionally let a tongue rattle in an unused latched buckle lying on the seat.

On September 20th, Pontiac Division of General Motors asked that these rattles be removed.

On September 22nd, development of more changes that made the latch force and anti-rattle feature of the spring essentially independent of each other were finished. On October 1st, these changes were approved by the Fisher Body Division. The tools were changed and on October 29th the first production of what is now called the dual spring was run.

Immediately it was found that this change did everything it was expected to do, but by splitting the main beam of the spring and thus reducing the cross section the average forces on the push button were slightly reduced. On December 10th, .001 of an inch was added to the thickness of the spring material to make up for the reduced cross section.

RAY
VERETT V. GMC

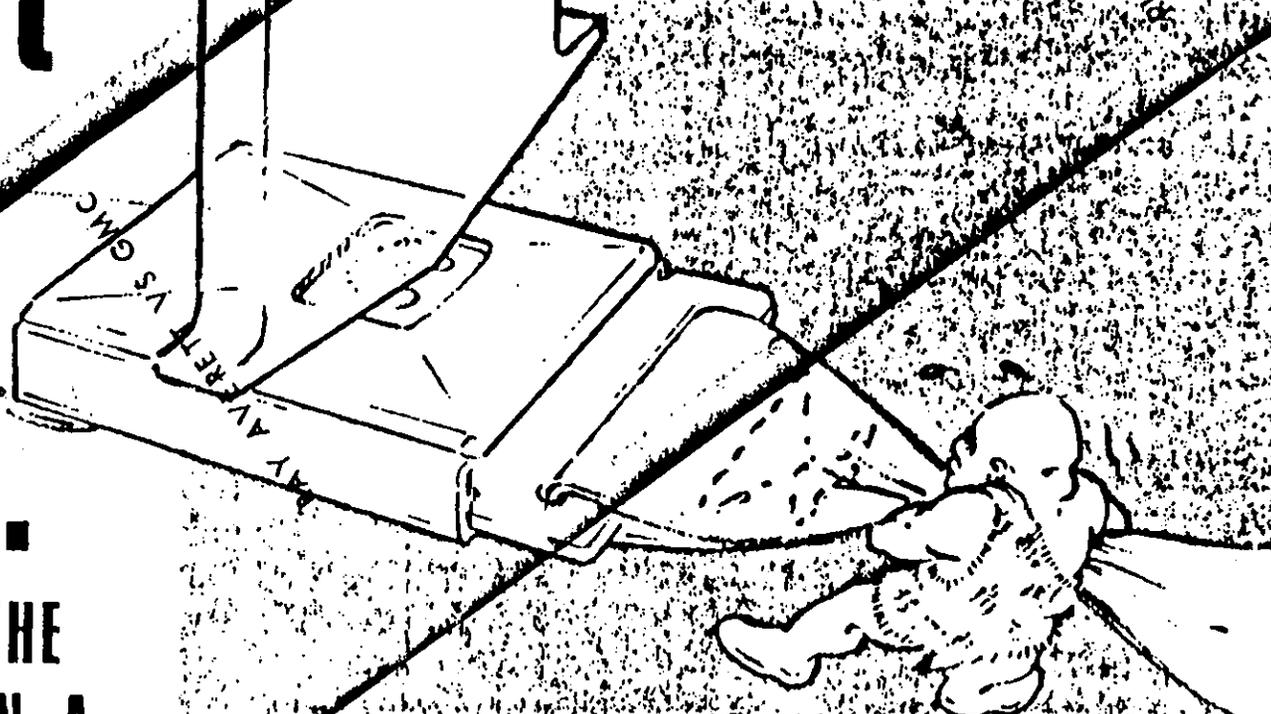
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**push button
effort**

2 lb. min.

**TO DEPRESS THE
PUSHBUTTON ON A
3 LB. LOADED BELT**



000957
PUSHBUTTON EFFORT

AVERT V5 GMC

GENERAL CORPORATION

CHA 47

REBUTTAL (HAMILL MANUFACTURING AND GENERAL SAFETY COMPANIES) - Continued

On January 3, 1966, a print was received from Fisher Body Division requiring a minimum release effort of 2 lbs., with 3 lbs. pull on the belt. (See Chart #7).

Up until this time the only requirement on initial release force was that of the State of California, which was and is one pound. There has never been any trouble maintaining California's minimum specifications; in fact, no changes were required to meet the new General Motors specification, which is double that of California.

The General Motors specification was written at the request of the Pontiac Motor Division, to insure a better feel to the push button, and not as an added safety factor.

Special buckles with less than the minimum specified release effort have been tested, both by the General Safety and Hamill Manufacturing Companies and the State of California, and were found to be completely satisfactory from a safety standpoint.

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BAY VERT V. GMC

X. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

The witness asserted that inventors are not given a fair evaluation of their inventions by the auto industry because of concentration and other factors. He called for an appropriate federal unit to assess the safety value of any invention at the request of the inventor."

REBUTTAL - (GENERAL MOTORS)

This statement is untrue. Both General Motors and Ford Motor Company have a Patents and New Devices Section where inventors and interested parties can submit new ideas for consideration. These departments handle thousands of submitted ideas each year, and many eventually reach production use.

In addition, many new ideas are presented directly to the engineering and various purchasing sections by manufacturers. It is a fact that at General Motors, for example, the engineering department analyzed and tested 46 different seat belt and buckle designs which were submitted by 35 various manufacturers and inventors before the push button seat belt buckle was chosen for use.

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GMC

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XI. CHARGE BEFORE CONGRESSIONAL COMMITTEE: 5/4/66

"Mr. Nader called for public disclosure of matters relating to safety. He said the auto manufacturers told the committee thousands of standards currently are in effect but observed that they had 'made no offer to make these standards public.'"

REBUTTAL - (GENERAL MOTORS)

This is a fabrication! The SAE seat belt standards and the Federal Government Specifications are a matter of public record. Anyone who desires to be knowledgeable in these specifications can obtain them from the SAE on the Federal Register. These published specifications serve as the guidelines for all engineering and testing of seat belts used in the automotive industry.

In fact, every single seat belt sold for public use is required, by law, to be labeled as having been tested and accepted under the SAE and Federal Specifications.

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TEST REPORT

REPORT NO. PG-18488

DATE July 23, 1964

MILFORD, MICHIGAN

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1965 CADILLAC SEAT BELT ASSEMBLY DYNAMIC TEST

P. O. No. ^{MC}NGO-86119
Impact Test No. 3911
PG Job No. 03-4254

RAY AVERETT

GM CONFIDENTIAL

Prepared for the use of the Fisher Body Division. Distribution other than as specified must be authorized by the Proving Ground and the Chief Engineer, Fisher Body Division.

REQUESTED BY

Fisher Body Division

REPORT SENT TO

A. S. Bassette

AUTHOR R. LeFevre

APPROVED

William F. Link

Head

Experimental Engineering Department

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000962

The Fisher Body Division requested the Experimental Engineering Department to evaluate the 1965 Cadillac lap belt assembly using the Impact Sled Facility. The test was conducted to establish the ability of the assembly to carry a dynamically applied loop load of 5000 pounds. Of particular interest was the action around the belt retractor located at the front end of the assembly.

The test, authorized by A. S. Bassette of Fisher Body Division, was run on July 10, 1964.

TEST RESULTS

The belt sample successfully withstood a dynamically applied loop load of 4920 pounds. The data obtained during the test are as follows:

Peak Sled Acceleration	18 g
Peak Body Block Acceleration	36 g
Peak Belt Load - "D" Ring Side	2200 Pounds
Peak Belt Load - Buckle Side	2720 Pounds
Peak Loop Load	4920 Pounds

DISCUSSION

The 1965 Cadillac belt assembly supplied by Fisher Body Division was significantly different from the current (1964) version. The "D" ring unlatches by depressing the button recessed in the buckle cover and the integral retractor assembly has been revised to facilitate mounting on the horizontal (top) surface of the rocker panel. The frame of the retractor is designed so that the belt webbing is oriented at 55° relative to the retractor mounting plane. The usual decorative cover on the retractor was not installed for this test. Figure 1 shows the belt assembly.

Due to its inherent simplicity the dynamic seat belt tester was selected for this evaluation. See Figure 2. A special bracket was fabricated for mounting the retractor at the desired angle of 27°. Fisher Body specified this angle so as to duplicate the expected orientation which would occur in the vehicle installation during peak impact loading. The bracket supported the retractor only in the immediate area of the anchor bolt. A layer of carpeting was located between the bracket and retractor. A standard SAE washer and 7/16" hardened bolt torqued to approximately 25 ft. lbs were used to secure the retractor as shown in Figure 3. The inboard belt anchor was secured by a 1/2" shoulder bolt passing through the hardware and a layer of ensolite.

000963

An oscillograph was used to record the data obtained during the test. The accelerations of the sled and body block and the loads in each belt half were measured. A feed-through type force transducer was used on the "D" ring side webbing because of the unique mounting and an in-line tensiometer measured the buckle side webbing load. The output of a timing pulse generator was also recorded to provide for correlating time on the oscillograph record and movie film. Figure 4 shows the oscillograph record.

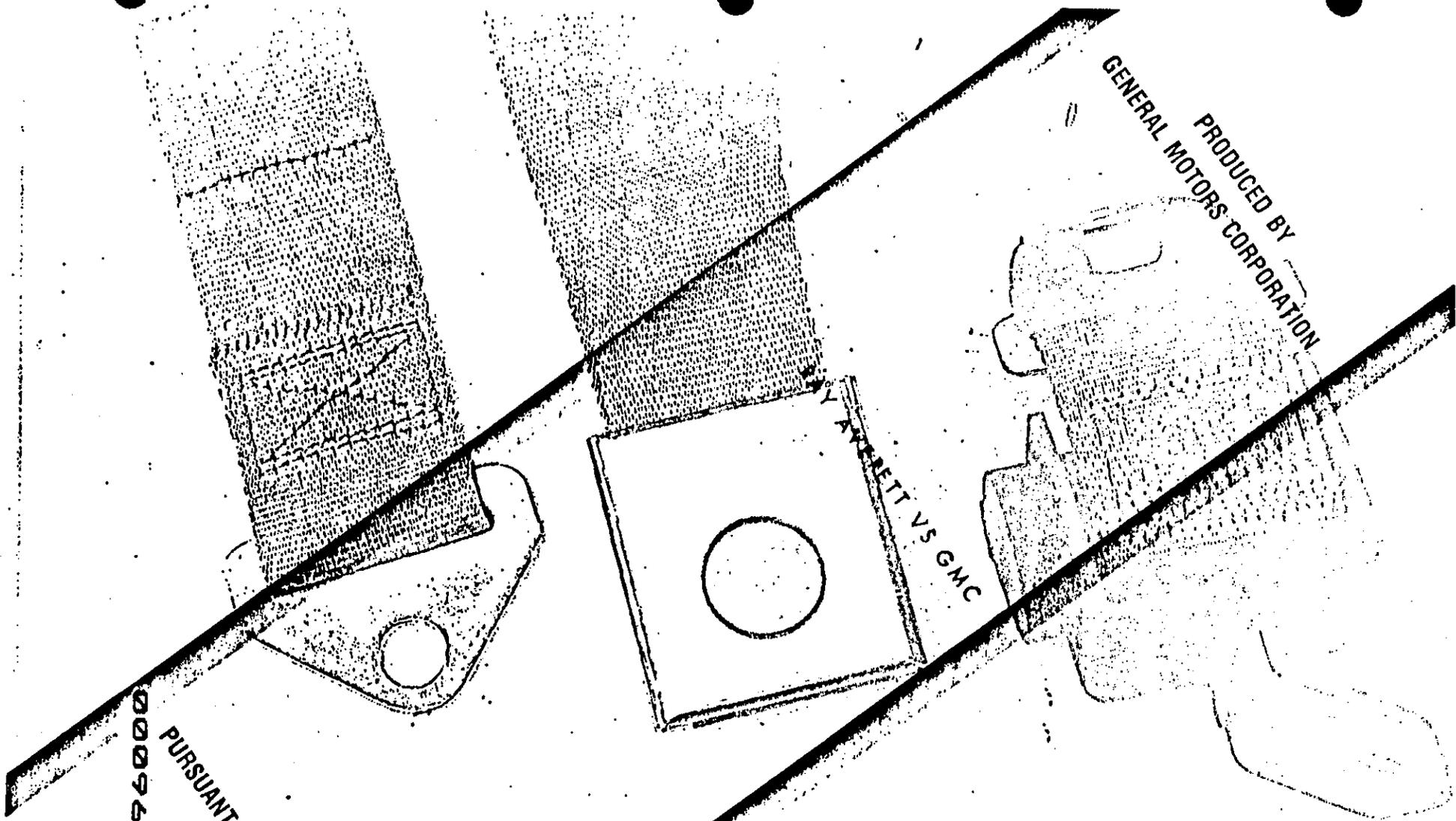
A camera running at 1000 fps recorded the deformation of the retractor frame on black and white film. One copy and the original of this film have been delivered to C. J. Hendricks of Fisher Body Division.

Impact Sled Test No. 5911 subjected the seat belt to a simulated 18 g impact. There was no failure of the buckle, webbing, or stitching. Webbing slippage through the buckle was about 1/8 inch. The load bent the retractor frame until it was oriented in line with the direction of the applied force. The permanent set in the frame was slightly less than the maximum deflection of about 27 degrees. Two spot welds which were the closest to the retractor roller failed. Load concentration caused by the anchor bolt resulted in bending of the retractor frame and washer. The damaged parts are shown in Figure 5.

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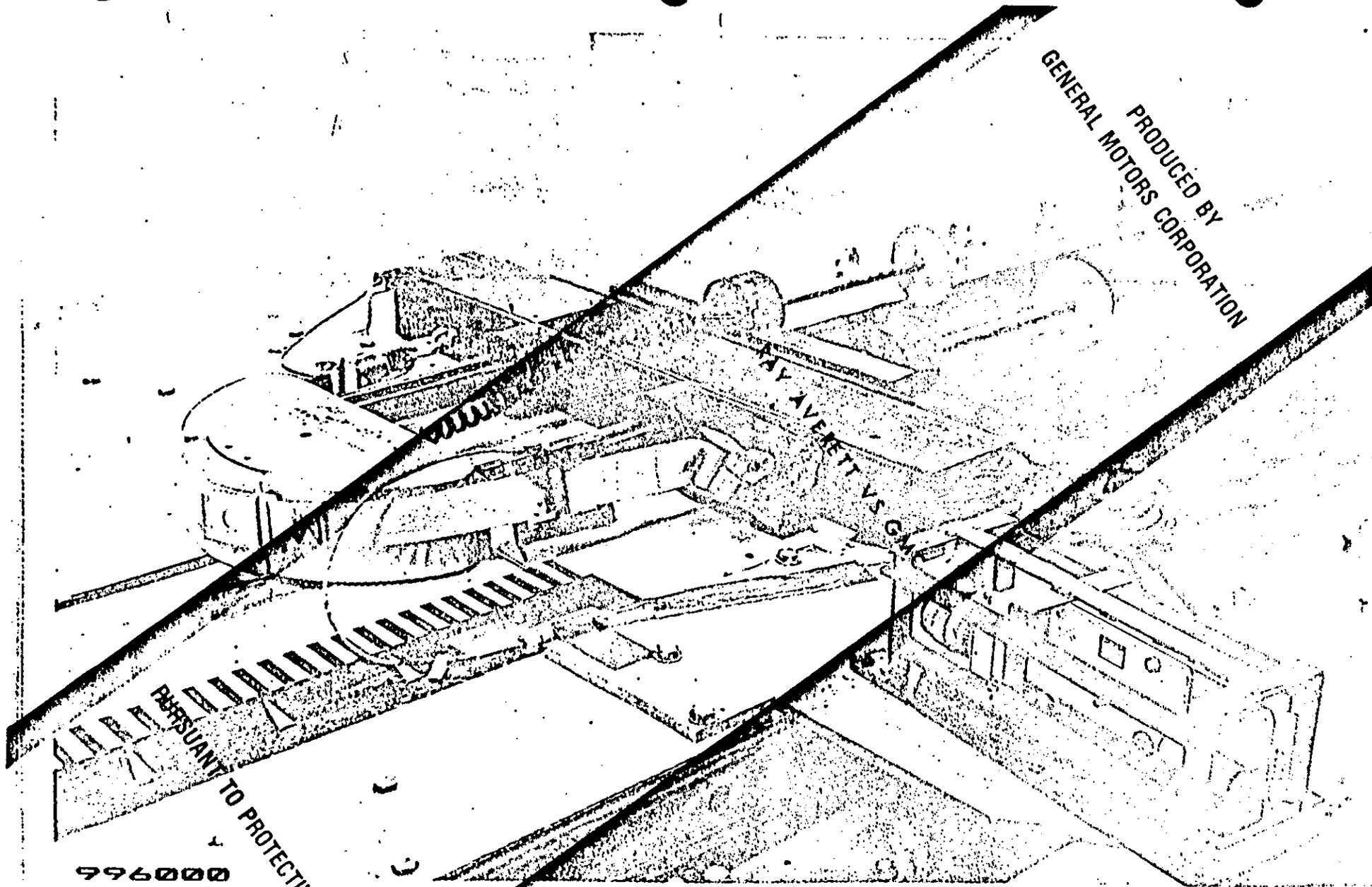
Y. AYRETT VS GMC

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PURSUANT TO PROTECTIVE ORDER

64629.066	GENERAL MOTORS PROVING GROUND	Report No. PG-10463
FIGURE 1	1965 Cadillac Seat Belt Assembly	

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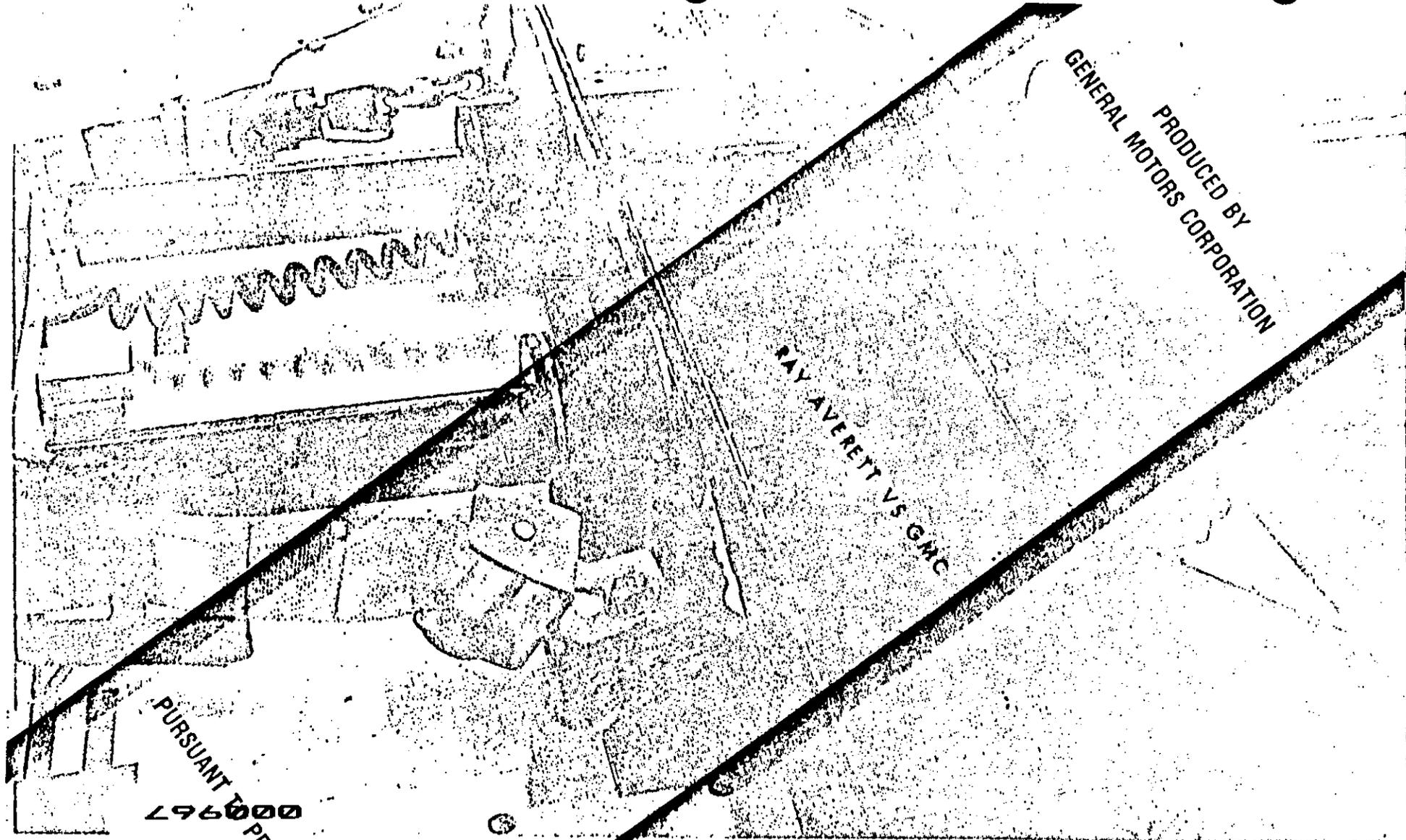
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FIGURE 2

GENERAL MOTORS PROVING GROUND

Special setup of dynamic seat belt tester for
evaluation of 1965 Cadillac belt.

Report No. PG-18488



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1967

64629.071

FIGURE 3

GENERAL MOTORS PROVING GROUND

Close-up view of Retractor Mounting
1965 Cadillac belt

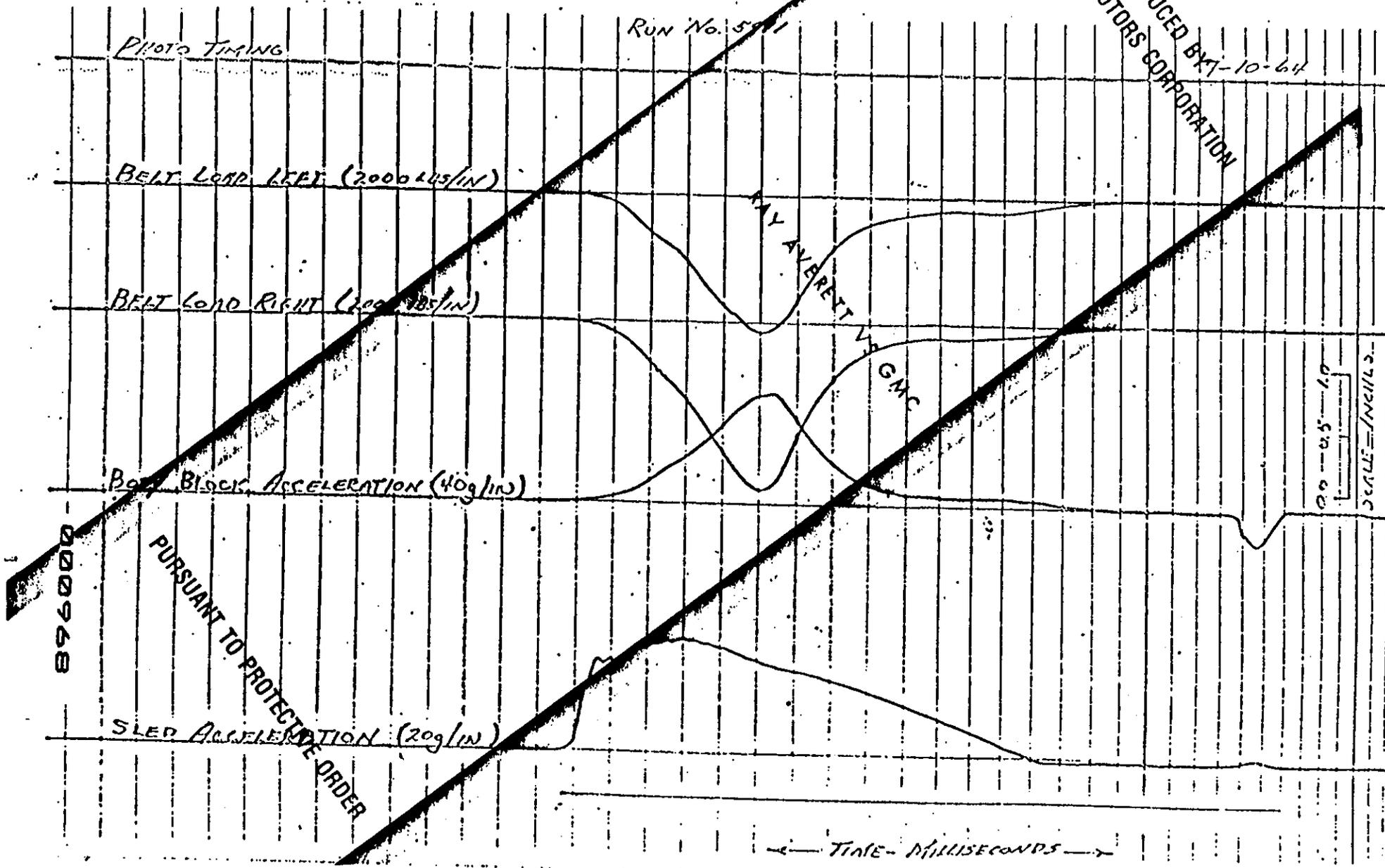
Report No. PG-18488

FIGURE 4
DYNAMIC SEAT BELT TEST
1965 CADILLAC BELT ASSEMBLY

Report No. PG-18488

GENERAL MOTORS CORPORATION
PRODUCED BY 7-10-64

Run No. 5011



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del RCF-50
LENGTH REVISIONS
Pursuant to Protective Order

64629.070

FIGURE 5

GENERAL MOTORS PROVING GROUND

Damaged retractor and washer from impact sled test 5911 on 1965 Cadillac belt assembly.

Report No., PG-18488

Please Fill in
Applicable
Unshaded Spaces

TEST OR WORK REQUEST
(Three Copies Required By PG Section)

PG 19487
AUTHOR
K. La Jara

PROJECT, TEST, WORK ORDER OR P.O. REL	CL. PURCHASE ORDER	OTHER IDENT	PG JOB NUMBER
	4976149		334254

NAME OF TEST OPERATION OR PROJECT REQUESTED: SENT BELT TEST ON 1966 CADILLAC

DIV: _____ PRINT CODE: _____

GENERAL MOTORS PROVING GROUND

REQUESTED BY: _____ DEPARTMENT: _____ DATE: 7-10-64

DIVISION CONTACT: _____ DIVISION: _____

DESIGNATION: _____ COMPLETION DATE: _____ PROCEDURE REPORT NO. PG: _____

PRELIMINARY DATA BY: _____ (DATE): _____ SEND _____ COPIES TO: _____ OVERTIME AUTHORIZED? _____ PHONE NO. _____

FINAL REPORT: SEND _____ COPIES TO: _____

SPECIAL REPORT DISTRIBUTION: SEND _____ COPIES TO: _____

TEST OBJECTIVES (USE EXTRA SHEETS AS REQUIRED):

Mercedes-Benz vs GM

to test the reliability of the engine in the Mercedes-Benz vs GM

to test the reliability of the engine in the Mercedes-Benz vs GM

to test the reliability of the engine in the Mercedes-Benz vs GM

VEHICLE DESCRIPTION

ESSENTIAL DATA

VEHICLE NO.	_____	_____	_____	_____
MAKE	_____	_____	_____	_____
YEAR	_____	_____	_____	_____
MODEL (BODY STYLE)	_____	_____	_____	_____
TRANSMISSION	_____	_____	_____	_____
AXLE RATIO	_____	_____	_____	_____
TIRE MAKE	_____	_____	_____	_____
SIZE	_____	_____	_____	_____
PRESSURE (COLD)	F _____ R _____			
FUEL TYPE	_____	_____	_____	_____
ENGINE OIL BRAND AND WEIGHT	_____	_____	_____	_____
VEHICLE WEIGHT	_____	_____	_____	_____
TEST WEIGHT	_____	_____	_____	_____
SPECIAL DATA	_____	_____	_____	_____
ENGINE DISPLACEMENT	_____	_____	_____	_____
BORE X STROKE	_____ X _____	_____ X _____	_____ X _____	_____ X _____
NOMINAL COMPRESSION RATIO	_____	_____	_____	_____
FIRING ORDER	_____	_____	_____	_____

AUTHORIZED SIGNATURE: *Anthony L. Brantley* POSITION: _____

DIVISION: *Test Dept*

PROVING GROUND - DEPT. COPY

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FISHER BODY DIVISION

GENERAL MOTORS CORPORATION

GENERAL OFFICES

WARREN, MICHIGAN 48090

September 30, 1964

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MEETING MINUTES - 1965 DELUXE SEAT BELTS

Present (9-24-64):

Messrs:	G. Beatty	P. O. Johnson	W. West
	H. Beckerleg	G. Leopold	
	J. Bougine	E. Martin	
	N. Feles	E. McKenna	
	G. M. Haviland	C. Nowak	
	L. Hurst	R. Sander	
	A. Jueckstock	W. Wells	

Present (9-25-64):

Messrs:	S. Antonow	F. O. Johnson
	H. V. Beckerleg	C. Nowak
	J. Bougine	R. C. Fisher - Fisher Industries

The following are the items discussed during a meeting on 1965 deluxe seat belts held in the Lab Conference room on 9-24-64. Disposition for each item is a result of a meeting held the following day with Mr. R. C. Fisher representing Fisher Industries and Hamill Manufacturing Co., Inc.

I. RCF-53 Buckle Assembly (All Divisions)

A. Chevrolet and Pontiac complain that buckle cover rattles when laying on front seat cushion.

DISPOSITION: Mr. Fisher stated that a tooling charge improving but not eliminating the condition, can be made but that he hasn't had the chance to shut down tooling in his attempt to meet production requirements.

II. RCF-65 Buckle Assembly (Cadillac Push Button Type)

A. Sharp edges on T.V. screen opening of metal cover,

DISPOSITION: A coining operation will be incorporated in tooling.

B. Fatigue life of spring questionable.

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DISPOSITION: Mr. Fisher assures that this will be made adequate. Lab is presently checking in and out cycle life of springs on submitted samples.

Release effort of 26-12 lbs. (minimum requirement, 30 lbs.).

DISPOSITION: No immediate solution is seen to lower this amount from the 27# average; however, it was mutually recognized to proceed—although borderline, and to continue development.

D. Lack of vendor drawings for checking detail parts of buckle assembly.

DISPOSITION: Plant Contact and Quality Control Department (S. Antonow) agrees that until drawings become available Vendor can submit (Attention: D. G. Domes) one complete set of buckle details and 10 complete buckle assemblies. These will be retained in lieu of a marked print. In the event any significant changes are made to any of the detail parts, new detail samples are to be forwarded along with new buckle assemblies.

E. Samples required for Engineering approval.

DISPOSITION: In addition to samples required for checking of buckle assembly (item D. Above) the following are required for checking of belt assemblies:

1. Twenty-five (25) complete belt assemblies (any color) for Physical Test Lab.
2. Three (3) complete belt assemblies of each color for dimensional checks.

F. Can Hamill meet Purchasing's projected schedule dates?

DISPOSITION: This was thought possible, based on the following:
*10-12-64 - Date of submitting samples for engineering approval.
*11-2-64 - Date of shipping.
*11-16-64 - Date of installation in bodies.

G. Emblem color background is not registered properly to pass Trim & Hardware Styling Department approval.

DISPOSITION: New samples to be submitted to M. Haviland on 10-1-64,

H. Butler finish requirements on buckle cover. M. Haviland informed that three (3) sources were under consideration for furnishing material requirements for cover and the status of each was as follows:

1. Jones & McLaughlin - Most desirable finish; however, no promised delivery date,
2. Allegheny - Next most desirable but promise date uncertain.
3. McLouth - Material obtainable but too bright and brush appearance not suitable,

DISPOSITION: Mr. Fisher informed that material from Allegheny is now available and they will be his source.

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SECRET

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I. Who assembles buckle; belt assembly?

DISPOSITION: The complete buckle will be assembled at Fisher Industries with a strip of paper passed through the webbing slot on the underside of buckle case, instead of webbing. Buckle assembly will then be shipped to plant where paper strip will act as means of feeding webbing through slot without disassembling of buckle.

Approvals?

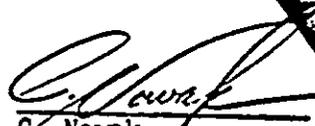
DISPOSITION: Hunt Lab approval has been obtained by Vendor; however, he was urged to start obtaining the individual State approvals.

K. Future usage of buckle (1966).

DISPOSITION: Mr. Fisher informed that the buckle has been shown to Chevrolet and Pontiac; also, that samples have been given to Ford Motor Co. Exclusive usage of the buckle, other than Cadillac for 1965, would depend on date of receipt of a purchase requisition and the extent of usage given the buckle;

III. FUTURE DEVELOPMENT

During the meeting of September 25th, Mr. Fisher was informed that Fisher Body will be interested in an outboard side, automatic locking retractor for 1966.


C. Nowak
#123 Engineering Building
Extension 3773

- cc: O. Beaman
- G. Bouwens
- G. Cook
- D. G. Domes
- V. Grimaldi
- D. Harcourt
- T. Morton
- W. Sehn
- C. Schamel
- J. Tessmar
- F. Wickert
- R. Anderson - Cadillac
- N. Wyles
- D. McDaniel - Cadillac

CN/pn

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RAY AVERETT

JOB # 99 PRIORITY
ATTENTION OF: J. Bougine (3)
GROUPS: 1-1B-1H-49-74-76B-77A-84A-89A-309-320-327B-332-340-347-347B-
348-349-349A-351-351B-HW G. Beatty, M. Fischer

ENGINEERING RELEASE
FISHER BODY DIVISION BODY ENGINEERING ACTIVITY

GENERAL MOTORS CORPORATION
PRODUCED BY

NO. 5-51555
Page #1
DATE 9-29-64
DRWGS. 9. M. CODE #. 281

A	B	E	X	Z
X	X	X		

U	I
	X

WE ARE FORWARDING HERewith NEW & REVISED PRINTS AND INFORMATION

1965 PONTIAC, OLDSMOBILE, BUICK AND CADILLAC STYLES

DELUXE TYPE SEAT BELT ASSEMBLIES AND COMPONENTS

In order to accommodate latest requirements for Deluxe type Seat Belt Assemblies, several changes are being made. Drawings for these changes are being released herewith including explanation of the changes.

Changes and additions to specifications are to be made on supplements to this release as indicated below.

Effective: See below

Examples of New and Revised Belt Assemblies are required.

Service is affected.

Requested By: For New Cadillac Belts - Cadillac Motor Division (Adv 60, #14)

Reason: To accommodate Division requirements

Requested By: For balance of changes - Body Engineering Activity

Reason: As indicated below

DRAWINGS AFFECTED

4526544

P

Seat Assembly-Front Seat

65 Pontiac, Oldsmobile & Buick "A-B-C-E" Styles

Drawings 4526544 Change #8-9-10-11-12, Prints Herewith, Identification is required

000974

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(OVER)

ISSUED BY: W. C. MCRTS
APPROVED BY: J. SCHMIDTNER, JR.

5-51555
Revised #2
GENERAL MOTORS CORPORATION

Change #8: Buckle #506561 revised to detail to show optional construction in agreement with changes released on ER-51282-G.

Change #9: General notes and test information revised to agree with lab test methods.

Change #10: Retractor #526322-3 revised to detail to agree with changes whereby Right and Side were reversed. See ER-51282-U for changes to specifications.

Effective: Drawing changes only. Specifications and production are in accord.

Change #11: Drawing revised to reverse identification label and overlap to opposite side of webbing as part of changes made on ER-51282-U whereby R & L Side usage was reversed.

Effective: As soon as method of assembly can be revised. Use all stock.

Change #12: New Belt Assembly #536536-7 added for Buick "E" Styles and views and notes added and revised to agree. Specifications and color charts for this new Belt will be released on ER-51555-A.

Effective: As soon as sufficient stock is available to maintain production requirements. Use all stock without obsolescence.

4502450 P

Belt Assembly-Seat
1965 Cadillac "C & D" Styles

Drawing 4502450, Change #6-7-8-9, Prints Herein Identification is not required

Change #6: General notes and test information revised to agree with lab test methods.

Change #7: Identification label and overlap reversed to opposite side of webbing to correct drawing information.

Change #8: Retractor #526322-3 revised to detail to correct drawing information.

Effective: Drawing changes only. Specifications and production are in accord.

Change #9: New parts #50857 thru 60 incorporating a Push-Button Type of Buckle Assembly have been added with views and charts in agreement. Specifications and color charts for these Belts will be released on ER-51555-B.

000975

PURSUANT TO PROTECTIVE ORDER

SECRET V. G. M. C.

5-51555
Page #3
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GENERAL MOTORS CORPORATION

Effective: As soon as sufficient stock of these New Belt Assemblies is available to maintain production.

Disposition: Use all stock of Belts cancelled on ER-51555-B without obsolescence. These new Belts are to be used in matched sets and are not to be intermixed in any one body with any other Belts.

4526636

P Belt Assembly-Seat
1965 Cadillac "C" Styles
Drawing 4526636, Change #6, Prints Herewith, Identification is not required

Change #6: New Part #4526636 incorporating a Push-Button type of Buckle Assembly has been added with views and charts in agreement. Specifications and color charts for this new Belt will be released on ER-51555-B.

Effective: As soon as stock is available. This new Belt is to be used on a required basis for service use.

4526322

P Retractor Assembly-Front Seat Belt (POPCA)
1965 Pontiac, Oldsmobile, Buick and Cadillac "A-B-C-E" Styles
Drawing 4526322, Change #1 & 2, Prints Herewith

Change #1: Direction of webbing travel roll-up and rewinding spring plastic protector cover identification notes added. Test cycle requirements revised.

Change #2: Cover 4525954-5 revised to detail to agree with specification changes released on ER-51282-U and to be released on ER-51555-A & C.

Effective: Drawing changes only.

4525954

P Cover-Front Seat Belt Retractor (POPCA)
1965 Pontiac, Oldsmobile, Buick and Cadillac "A-B-C-E" Styles
Drawing 4525954, Change #1, Prints Herewith

Change #1: Drawing revised to agree with specification changes released on ER-51282-U and to be released on ER-51555-A & C

000976

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RAA ALBERT V. GMC

(OVER)

5-51555
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Effective: Drawing changes only.

4526578 P Retractor Assembly - Front Seat Belt (POPCA)
65 Buick "E" styles
Drawing 4526578, Changes #3-4-5. Prints herewith.

Change #3: Direction of webbing travel roll-up and revised spring plastic protector cover identification notes added. Test cycle requirements revised.

Change #4: Retractor 4526322-3 revised to detail to agree with changes to specifications to be made on ER 51555-A.

Effective: Drawing changes only.

Change #5: New part 4536540-1 added to be released as a component of the new Belt Assembly 4536536-7 on ER 51555-A.

Effective: As soon as stock is available.

4526074 R Lettering Data Sheet - Seat Belt Buckle
Cadillac styles
Drawing 4526074, Change #1. Prints herewith.

Change #1: Information added to drawing to include new Cadillac Push Button Type Buckle. Specifications will be added on ER 51555-C.

Effective: Upon availability of new Push Button Belts to be released on ER 51555-B.

The following new drawings being released herewith are for components to new Cadillac Belt Assemblies. Specifications for these parts will be released on ER 51555-C.

4539867 P Buckle Assembly - Seat Belt (POPCA)
65 Cadillac "C & D" styles
Drawing 4539867, New, Prints herewith.

4536440 P Emblem - Seat Belt Buckle (POPCA)
65 Cadillac "C & D" styles
Drawing 4536440, New, Prints herewith.

0000977

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4532523 P Lid - Seat Belt Buckle (POPCA)
65 Cadillac "C & D" Styles
Drawing 4532523, New, New Prints herewith

Effective: Upon availability of new Push Button Belt Assemblies for Cadillac

Code #2 - Responsibility: For new Cadillac Belts: Cadillac Motor Division (Adv. 60 #14).

Code #12 - Responsibility: For Balance of Changes: ^{RY}Trim Engineering Activity.

Authority: DR-1289, 128913, 128918, 128924, 133745, 133746,
133747, 133756, C. Nowak

JWM/emr

RY
AVERETT VS GMC

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0000978

RECORD OF BUSINESS CALL

Date: _____
 Represented by: Robert Fisher
 Date: 10-2-64
 Subject: Finish approval for 1965 Cadillac (push-button) Seat Belt
 Buckle and "D" rings

Number of Parts Received (Items): Four buckle covers

Number of Parts Given Out (Items): Two photographed original buckles for standards
 use at Fisher Industries.

Was Discussed: Approval of the finish treatment of the case, cover and
 "D" ring.

- Result of Discussion: Finishes approved for production as follows:
1. Cover - Allegheny-Ludlum stainless steel pre-burnished
and classified as M-2 medium to be Z-1 chromed finished per
color.
 2. Case - ZB-50 brass chrome min. acceptable standard
designated.
 3. D-ring, to remain same live frost finish as currently
used in 1964 and 1965.

Made by: J. W. Haviland ✓
 Checked by: _____
 Date: _____
 At: Mr. C. Dougine & R. Fisher

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000979

FILE IN IMMEDIATELY AFTER DEPARTURE OF VISITOR.
 FORWARD TO THE PATENT ACTIVITY - ROOM 4 IN RESEARCH BUILDING

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RAY AVERETT VS GMC

PHYSICAL TESTING LABORATORY REPORT

Fisher Body Engineering Section

Copies To:

H.W. Be...
W.E. ...
W. ...
P.H. ...
V. ...

C. Nowa...
G.M. Bea...
L.E. Hurs...
P.O. Johnso...
W.F. Karber...

Report No. 6909

Procedure No. Seat Belts

Program 1965

Date 10-9-64

Page 1 of 1

PRODUCED BY
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SUBJECT - 1965 Prototype Cadillac Push-Button Type Seat Belt Assembly (RCF-65),
Manufactured by Fisher Industries - Spring Fatigue Life Evaluation

FOREWORD

A 1965 prototype push-button seat belt, submitted by Mr. R.C. Fisher, containing a production spring, was subjected to 5100,000 in and out cycles of the spring to determine fatigue life.

CONCLUSION

Cycling of the push button for 100,000 cycles had no effect on the operational characteristics of the buckle assembly.

BY AVERETT V. G.M.C.

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000980

Test Conducted 10-8-64
Log Book Reference 1867-10
Reported By: R. Carr

Approved By: E. R. McKenna

PONTIAC MOTOR DIVISION

INTER-ORGANIZATION LETTERS ONLY

TO Mr. W. D. Wells

ADDRESS Fisher Body Division
Warren, Michigan

FROM J. H. Lagergren

ADDRESS Pontiac, Michigan

SUBJECT 1966 Pontiac Deluxe Hamill
Seat Belts

DATE October 14, 1964

PRODUCED BY
GENERAL MOTORS CORPORATION

Pontiac intends to release, for 1966 deluxe usage, the new Hamill Seat Belt proposal which restyles the buckle and changes the release lever to a push button.

The buckle finish will be "satellite" or "butler" chrome, similar to what is going into production for Cadillac.

Please furnish samples of the proposed buckle as quickly as possible for Pontiac's evaluation and approval.

A cost comparison of the new buckle is also requested.

J. H. Lagergren
J. H. Lagergren

JHL/cr

- c.c. Mr. H. S. Kaiser
- Mr. S. P. Malone
- Mr. J. Whitesell
- Mr. T. W. Sherwood
- Mr. E. V. Beckerleg - Fisher Body
- Mr. W. D. Wells - Fisher Body
- Mr. R. H. Lee - Fisher Body

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000981

R... - 45

File 13

Copies To:

- H.V. Beckerleg
- W.E. Sehn
- W.D. Wells
- W.H. ...
- C. ...
- M. ...
- P.O. Johnson
- W.F. ...
- G.M. ...

Report No. 6921

Procedure No. Seat Belts

Program 1965

Date 10-27-64

Page 1 of 2

Requested by: Physical Test. Lab.

PRODUCED BY
GENERAL MOTORS CORPORATION

SUBJECT 1965 Cadillac Buckle Assemblies (Model No. RCF-65), Manufactured by Fisher Industries - First Submission for Production Approval - 10-15-64

FOREWORD

Twenty-three (23) 1965 Cadillac buckle assemblies (Model RCF-65) with 1965 Cadillac "C" rear seat belt webbing and anchors were submitted by Plant Contact (D.G. Domes) for production approval. Approval had been previously given on all Cadillac seat belt assemblies using buckle RCF-50 so that this submission requires only the tests applicable to the buckle design.

Tests were run by the Physical Testing Lab to determine adjustment effort, release effort, ultimate load strength, and release and latching characteristics under no-load conditions according to S.A.E. specifications.

Tests were run on two samples by the Material Testing Lab to determine resistance to corrosion, plating characteristics, and label adhesion according to S.A.E. and Fisher specifications.

CONCLUSION

The seat belt assemblies were considered unsatisfactory for production for two reasons:

1. One sample had a release effort of 32 lbs. (The S.A.E. specification is 30 lbs. max.)
2. One sample failed at the frame on the first loading at 4900 lbs. and two samples failed at the frame on the second loading at 4590 lbs. and 4900 lbs. respectively (The S.A.E. specification is 5000 lbs. min.)

Mr. R.C. Fisher informed us prior to testing that due to improper grain direction in the buckle frame, premature frame failure may be a problem on these samples. He further stated that corrections could be made and additional samples would be submitted.

Test Conducted 10-15-64
 Log Book Reference 1867-13
 Reported By: R. Carr

Approved By: W. McKenna 000982

PURSUANT TO PROTECTIVE ORDER

RESULTS OF TESTS

Physical Testing Laboratory

Sample No.	Adj. Effort (40 Lbs. Max.)	Effort (50 Lbs. Max.)	Ult. Strength (5000 Lbs. Min.)	Type Failure
1	24	26	5440	Frame
2			4900*	Frame
3	27	26	5110	Frame
4	25	27	5660	Frame
5	25	27	6080	Frame
	27	-	-	Rel. & latch mechanism cycling
7	24	24	6400	Frame
8	26	27	6080	Frame
9	25	27	(5000)	Frame at 4590 lbs.
10	26	26	5610	Stitching at anchor
11	26	27	5220	Frame
12	25	25	5380	Frame
13	26	26	5220	Frame
14	22	26	5880	Frame
15	25	24	6080	Frame
16	25	29	6400	Frame
17	27	29	5980	Frame
18	24	25	5980	Frame
19	27	26	(5000)	Frame at 4900 lbs.
20	26	32*	-	Saved for inspection
21	24	28	5880	Frame

*Sample #2 and #20 were unsatisfactory according to S.A.E. specification J4a.

Material Testing Laboratory

Buckle Assembly (Lab. No. 8540)

Resistance to corrosion was satisfactory.

Plating was satisfactory.

Label adhesion was satisfactory.

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000983

PHYSICAL TESTING LABORATORY REPORT

Fisher Body Engineering Section

Copies To:

H.V. Beckerleg
W.E. Sehn
W.D. West
W.H. [unclear]
G.M. [unclear]

M. Sales
P.C. Johnson
W.F. Barber
G.M. [unclear]

Report No. 6921-A

Procedure No. Seat Belts

Program 1965

Date 10-28-64

Page 1 of 2

Requested by: Physical Test. Lab.

SUBJECT 1965 Cadillac Buckle Assemblies (Model No. R.C.F.-65) Manufactured by Fisher Industries - Second Submission for Production Approval

FOREWORD

Twenty-two 1965 Cadillac buckle assemblies (R.C.F.-65), with 1965 Cadillac "C" rear seat belt webbing and anchors, were submitted by Plant Contact (D.G. Domes) for production approval. Previous static tests to determine conformance to S.A.E. specifications were considered unsatisfactory and were reported on P.T.L. Report No. 6921.

Tests performed on the second submission buckle samples were adjustment effort, release effort, ultimate load strength, releasing and latching characteristics under no load conditions, plating and corrosion resistance per S.A.E. specifications. Label adhesion tests were considered satisfactory on the first submission and were not repeated.

CONCLUSIONS

The submitted 1965 Cadillac buckle assemblies (Model No. R.C.F.-65) were considered satisfactory and conform to the requirements of S.A.E. specifications.

Test Conducted 10-23-64
Log Book Reference 1834-30
Reported By: G.R. Staton

Approved By: E.R. McKenna

000984

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SECRET VS GM

RESULTS OF TESTS

<u>Sample</u>	<u>Latch Engagement Effort (lb.)</u>	<u>Adjust Effort (lb. max)</u>	<u>Release Effort (30# max)</u>	<u>Ultimate Strength (5000# min)</u>	<u>Type of Failure</u>
---------------	--------------------------------------	--------------------------------	---------------------------------	--------------------------------------	------------------------

test results of this sample as it was used to adjust test setup

2	2	20	27	7300	Frame
3	2	20	27	7050	Frame
4	2	19	27	6650	Frame
5	3	20	28	7450	Frame
6	2	21	27	7700	Frame
7	2	21	27	6850	Frame
8	2	20	29	6850	D-Ring
9	3	20	27½	7575	Frame
10	3	21	27½	7000	Frame
11	3	19	28	6600	Frame
12	3	21	28	7675	Frame
13	3	20	28	6700	Frame
14	2	20	28	7000	Frame
15	2	20	26	6875	Frame
16	2	20	24	6950	D-Ring
17	2	22	27½	8025	Frame
18	3	23	28	7450	Frame
19	4	23	28½	8400	Frame
20	4	24	29	7500	Webbing

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RAY EVERETT VS GMC

Two samples were subjected to plating and corrosion resistance tests with satisfactory results (Ref: Report Nos. 8653 and 8540).

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000985

ATTENTION

LABORATORY REPORT

Handwritten signatures and initials

No. West _____

Engineering Section

This is the only copy of Proving Ground Report No. PG-18973 for distribution to E & D personnel. Please forward to _____

Report No. 7010

Procedure No. _____

Program _____

Date 11-12-64

Page _____ of _____

Eng. Staff
Ternstedt

**PRODUCED BY
GENERAL MOTORS CORPORATION**

SUBJECT

Seat Belt Dynamic Tests on Hamill Seat Belt
With Fisher Industrial RCF65 Buckle
for Fisher Body Division

RAY AVERETT VS GMC

Tests were conducted by the G.M. Proving Ground and reported on their report PG-18973 copy enclosed.

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000986

Test Conducted _____
Log Book Reference _____
Reported By: _____

Approved **A.S. Bassette**



Proving
Ground

TEST REPORT

Report No. PG-18973
Date November 12, 1964

PRODUCED BY
GENERAL MOTORS CORPORATION

SEAT BELT DYNAMIC TEST ON HAMILL SEAT BELT WITH FISHER INDUSTRIES RCF65 BUCKLE FOR FISHER BODY DIVISION

Impact Sled Tests No. 6014 Through 6018

P.O. No. 86149
PG Job No. 03-4364

RAY AVERT VS GPC

GM CONFIDENTIAL

Prepared for the use of the Fisher Body Division. Distribution other than as specified must be authorized by the Proving Ground and the Chief Engineer, Fisher Body Division.

Requested By

Fisher Body Division

Report Made To

C. J. Henricks

Test Conducted By Experimental Engineering Dept.

Report Prepared By L. E. Macconi

Approved By

William B. Smith

Staff Engineer

Experimental Engineering Department

General Motors Proving Ground, Milford, Michigan

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000987

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FOREWORD

Mr. C. J. Hendricks of Fisher Body Division requested the Experimental Engineering Department to subject two Hamill seat belts with Fisher Industries, RCF 65 push-button buckles, to a dynamic load test using the Impact Sled Facility. For the first test, the buckle was mounted with the push-button of the buckle against the body block. In the second test, there was to be six inches of clearance between the body block and the push-button on the buckle.

In order to determine the acceleration level at the buckle, simulated buckles with an accelerometer mounted on them were subjected to various accelerations. In the first test, the simulated buckle was mounted against the body block. For the second and third tests, there were 3 inches and 6 inches of clearance between the simulated buckle and the body block, respectively.

The purpose of these tests was to determine if the buckle would unlatch under impact or inertia conditions. The tests were conducted on October 28, 1964, with the technical assistance of J. VanHaften and R. Ballmer.

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000988

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TEST RESULTS

The two push-button buckle assemblies tested did not unlatch during any of the tests.

TESTED TEST NO.	6014	6015	6016	6017	6018
Buckle Type		S*	S*	PB**	PB**
Peak Side Acceleration (g)	16	17.5	8	19	8
Peak Body Block Acceleration (g)	17.5	49.5	29.5	41	29.5
Peak Simulated Buckle Acceleration (g)	17.5	105	74.5	N.A.***	N.A.***
Load on Buckle Side (Pounds)	1320	3750	2220	3000	2150
Load on "D" Ring Side (Pounds)	1350	3050	2400	3470	2850
Peak Belt Loop Load (Pounds)	2670	7700	4620	6470	5000
Clearance Between Body Block and Buckle (Inches)	0	3	6	0	6

RAY AVRETT VS GMC

- *Simulated Buckle
- **Push-button Buckle
- ***Not Applicable

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000989

DISCUSSION

Mr. C. J. Hendricks of Fisher Body Division requested dynamic tests on two Hamill seat belts with Fisher's RCF 65 push-button buckles, to determine if the buckles would unlatch due to inertia of buckle components under impact conditions. The push-button side of the buckle assembly was to be accelerated into the body block on the dynamic seat belt tester. For the first test on the push-button buckle, the push-button side was to be against the body block as shown in Figure 1. The sled acceleration was to be 20 g for this test. In the second test on the push-button buckle the sled acceleration was to be 8 g, with 6 inches clearance between the push-button and the body block. The area on the body block in contact with the buckle was covered with 1/8 inch approximately 60 durometer rubber.

In order to determine the acceleration levels of the buckle, three preliminary tests were performed with simulated buckle assemblies. These buckles consisted of rectangular pieces of steel approximately the same size as the push-button buckles to be tested. An accelerometer was mounted in the center of each plate and seat belt webbing was connected to two sides of the plates. For the first test, the simulated buckle was mounted against the body block as shown in Figure 2. The sled acceleration was 10 g. In the second test, the sled acceleration was 17.5 g, with 3 inches of clearance between the body block and the simulated buckle. For the third test, the sled acceleration was 8 g with 6 inches of clearance between the body block and the simulated buckle.

The combined weight of the simulated buckle and the accelerometer was 11.25 oz. while the weight of the buckle and tab was 11 oz.

Instrumentation

For the simulated buckle tests, one accelerometer was mounted on the simulated buckle, a second accelerometer on the body block, and the third accelerometer on the sled. Force transducers were used at each belt anchor point to provide data on the loads on each belt half. The output of the transducers were recorded on an oscillograph. The oscillograph records are shown in Figures 3, 4, and 5.

For the push-button buckle tests, the instrumentation was identical to that for the simulated buckle tests, except the accelerometer on the dummy buckle was omitted. The oscillograph records are shown in Figures 6 and 7.

The acceleration of the simulated buckle opposite to that of the body block, although both are shown as increasing in the same direction on the oscillograph records in Figures 3, 4, and 5.

Sled Test No. 0014

The first seat belt with a simulated buckle was subjected to 10 g sled acceleration. The buckle was against the body block at the beginning of the test. The peak acceleration on the simulated buckle was 17.5 g. The peak belt loop load was 2670 pounds.

000990

Sled Test No. 6015

The second seat belt with a simulated buckle was subjected to a 17.5 g sled acceleration. The distance from the body block to the buckle was 3 inches at the beginning of the test. A peak acceleration of 10.5 g was recorded on the buckle. The peak acceleration of the body block was 4.9 g and the peak belt loop load was 7700 pounds.

Sled Test No. 6016

The third seat belt with a simulated buckle was subjected to an 8 g sled acceleration. The distance from the body block to the buckle was 6 inches at the beginning of the test. A peak acceleration of 74.5 g was recorded on the buckle. The peak acceleration of the body block was 29.5 g and the peak belt loop load was 4620 pounds.

Sled Test No. 6017

The first Hamill seat belt with the Fisher Industries CF 65 push-button buckle was subjected to a 19 g sled acceleration. The push-button on the buckle was inward against the body block as shown in Figure 2 at the onset of the test. The peak body block acceleration was 41 g, and the peak belt loop load was 6470 pounds. The buckle did not open during the test.

Sled Test No. 6018

The second Hamill seat belt was subjected to an 8 g sled acceleration. The push-button on the buckle was inward, toward the body block. The distance from the body block to the push-button was 6 inches at the onset of the test. The peak body block acceleration was 29.5 g, and the peak belt loop load was 5000 pounds. The buckle did not open during the test.

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000991

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GMC

6014

Report No. PG-16973

GENERAL MOTORS PROVING GROUND

Simulated Seat Belt Buckle and Accelerometer
Mounted on Dynamic Seat Belt Tester

67/29.328

FIGURE 1

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RAY AVERETT'S
GMC

6017

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666000

64729.330

11-2-64

GENERAL MOTORS PROVING GROUND

Report No. PG-19973

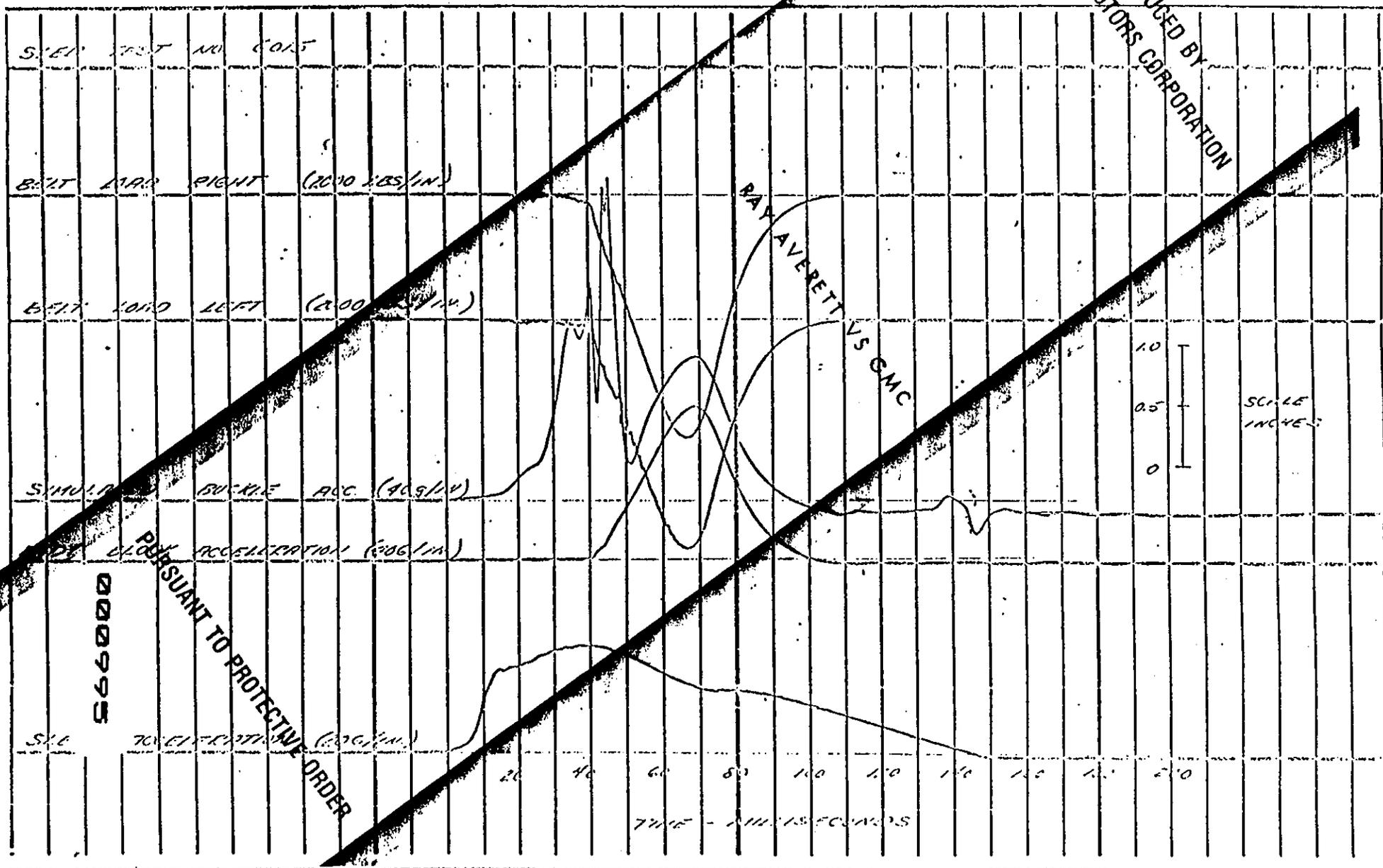
FIGURE 2

Hamill Seat Belt with Fisher Industries RCF 65 Buckle
Mounted on Dynamic Seat Belt Tester

FIGURE 4
 DYNAMIC SEAT BELT TEST
 SIMULATED BUCKLE 3 INCHES FROM BODY BLOCK

Report No. PG-18973
 Date: 11-2-64

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FIGURE 5
 DYNAMIC SEAT BELT TEST
 SIMULATED BUCKLE 6 INCHES FROM BODY BLOCK

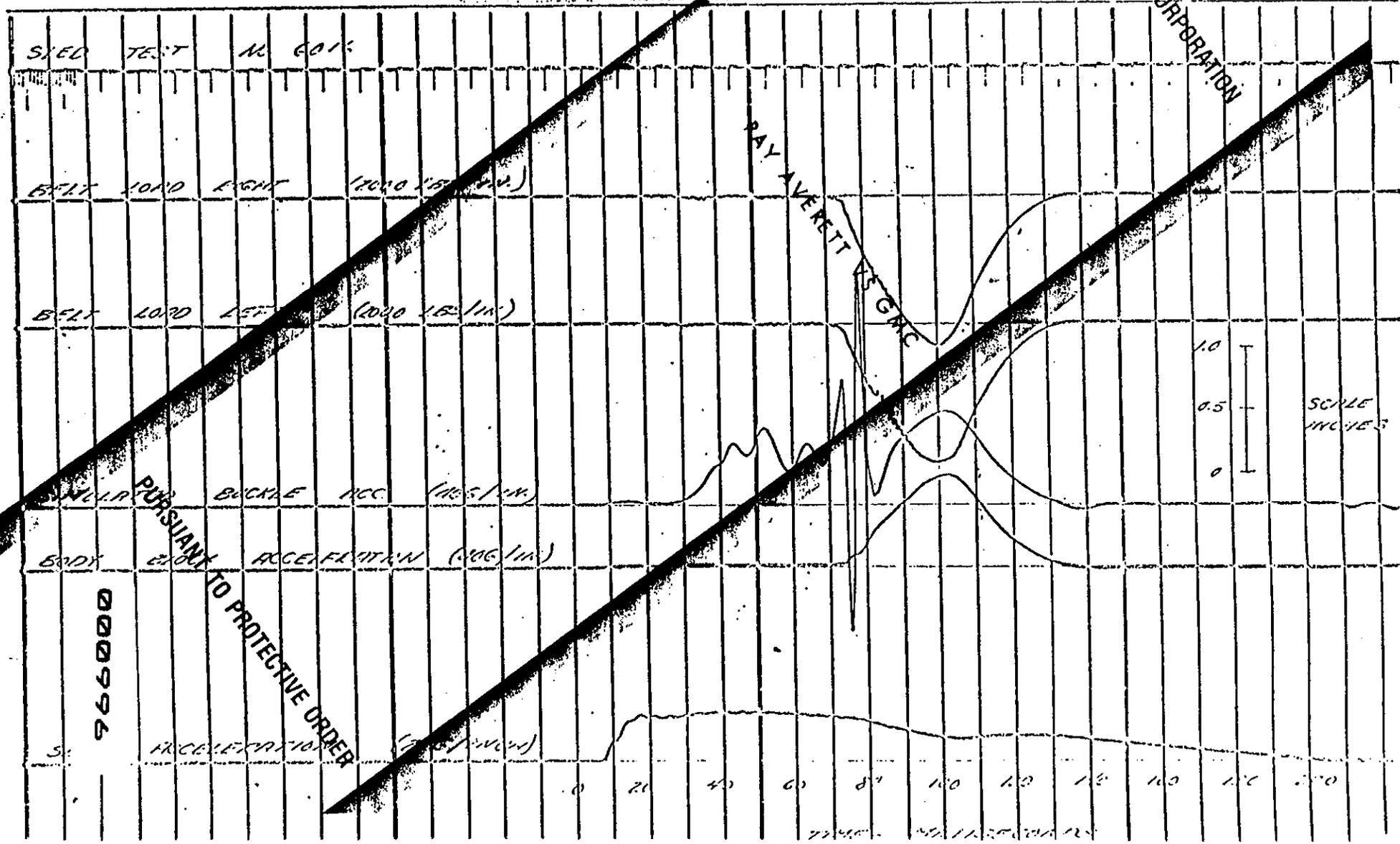


FIGURE 6
 DYNAMIC SEAT BELT TEST
 HAMILL SEAT BELT WITH FISHER INDUSTRIES RCF 65 BUCKLE
 BUCKLE AGAINST BODY BLOCK

Report No. PG-189

Date: 11-2-6

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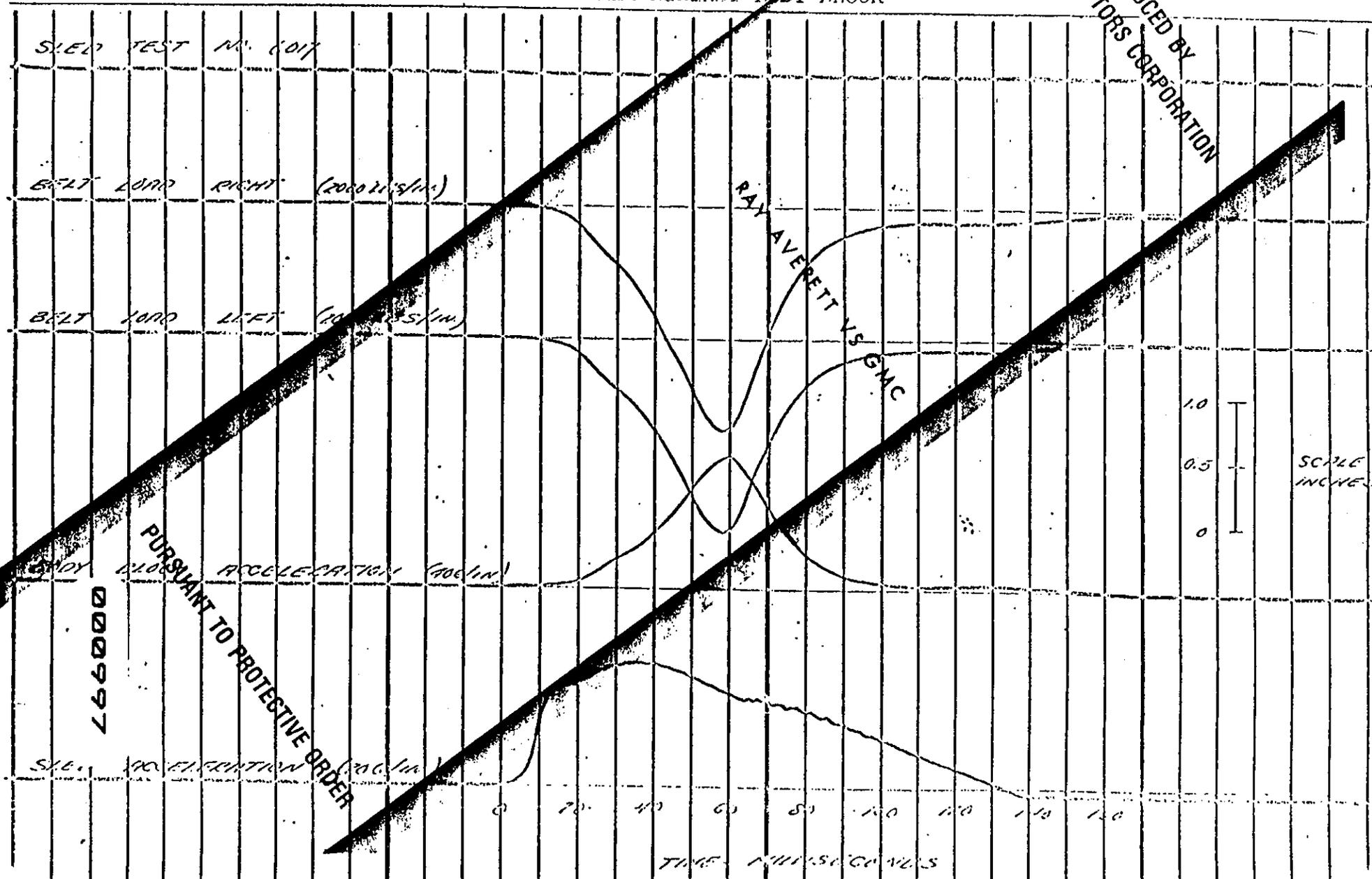
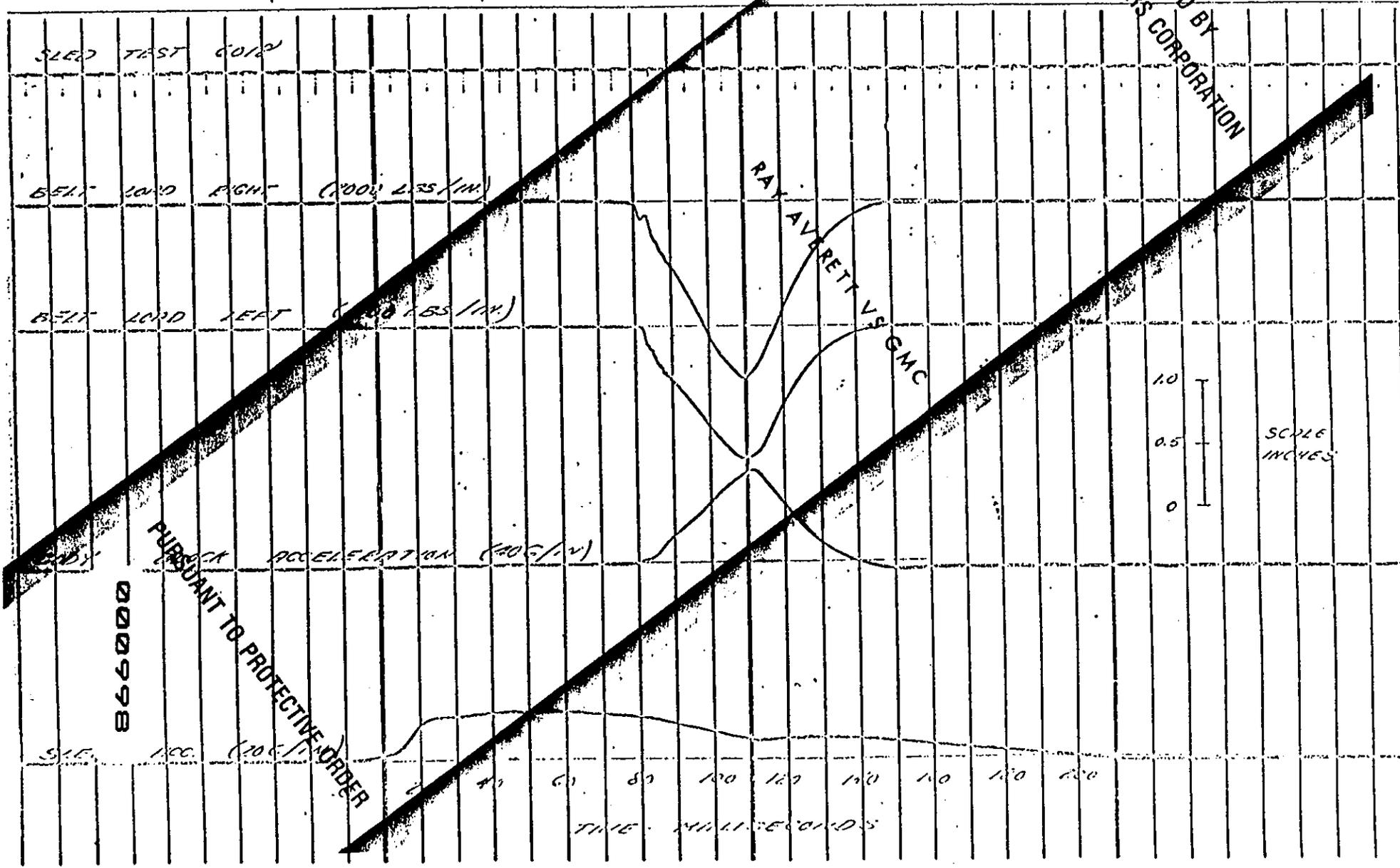


FIGURE 7
 DYNAMIC SEAT BELT TEST
 HAMILL SEAT BELT WITH FISHER INDUSTRIES RCF 65 BUCKLE
 BUCKLE 6 INCHES FROM BODY BLOCK

Report No. PG-18973
 Date: 11-2-64

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REQUESTING DIVISION:

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Applicable

Unshaded Spaces

TEST OR WORK REQUEST

(Three Copies Required By PG Section)

REPORT NO.

PG-18973

AUTHOR

L. Moriconi

PROJECT, TEST, WORK ORDER, OR PG. REL

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OTHER IDENT

PG JOB NUMBER

6026149

0314364

NAME OF TEST OPERATION OR PROJECT REQUESTED

DIV

PRINT CODE

TO: GENERAL MOTORS PROVING GROUND

DATE 10-16-64

REQUESTED BY

DIVISION

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NAME OF TEST

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TEST OBJECTIVES (USE EXTRA SHEETS AS REQUIRED)

Please arrange to conduct that
 test on 1965 Cadillac - SM - 4 door
 bucket back. Body black as shown
 with special arrangement for E. Mark
 gun. Body black with red & black stripes
 for high speed rig at this time.

VEHICLE DESCRIPTION

ESSENTIAL DATA

VEHICLE NO.

MAKE

YEAR

MODEL (BODY STYLE)

TRANSMISSION

AXLE RATIO

TIRE MAKE

SIZE

PRESSURE (COLD)

FUEL TYPE

ENGINE OIL BRAND AND WEIGHT

VEHICLE WEIGHT

TEST WEIGHT

SPECIAL DATA

ENGINE DISPLACEMENT

BORE X STROKE

NOMINAL COMPRESSION RATIO

FIRING ORDER

PURSUANT TO PROTECTIVE ORDER

000999

AUTHORIZED SIGNATURE

J. Henderson

POSITION

DIVISION

Fisher Body

PROVING GROUND - KINGPIN COPY

1965 CADILLAC PUSH-BUTTON SEAT BELT BUCKLE

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A meeting was held on this date in Mr. Schachinger's office to discuss the safety characteristics of the 1965 Cadillac push-button seat belt buckle. Present were:

- John Schachinger
- G. M. Schamel
- H. V. Beckerling
- G. M. Berry
- W. Feles
- P. O. Johnson
- R. F. Fisher

This meeting was called to discuss the "parlor-trick" opening of the push-button buckle that can be accomplished by rapping the buckle sharply on the back.

Sled test results were presented and discussed. Four sled runs were conducted with various degrees of deceleration and belt slack. Two sled runs were conducted with the buckle wrong-side-forward. In all cases the buckle satisfactorily withstood the impact without unlatching. Laboratory tests were conducted which determined that a 50g minimum acceleration is required to unlatch the buckle when there is zero belt tension. Note that this acceleration is in the opposite direction to the acceleration caused by primary vehicle impact. Two additional sled runs measured buckle accelerations under slack belt conditions, but no large accelerations were found in the direction to cause opening or while the belt was under essentially zero load.

It was concluded that the "parlor-trick" did not affect the safety of the belt and that the condition had been given good engineering evaluation.

Mr. Fisher was asked if the condition could be designed out of the buckle. He replied that it could not be done for 1965 production, but that he thought it could be accomplished by 1966. He was urged to keep working on this as any "parlor-trick" is basically undesirable.

It was decided to proceed with this buckle as now released for 1965 Cadillac production.

Mr. Johnson was requested to discuss the performance of this buckle with Messrs. Stoner and Lundstrom so that they will be knowledgeable of the characteristics of this buckle design.

P. O. Johnson
 P. O. Johnson
 Physical Testing Laboratory
 Extension 4067

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cc: C. E. Haden
ECS/br

001000

INCLUDES:

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1. Summary, in chronological order, of the development of the pushbutton brake

2. All letters and test reports used in the summary

RAY AVERETT VS GMC

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001001

CHRONOLOGICAL DEVELOPMENT OF "PUSH BUTTON" SEAT BELT

PRODUCED BY
GENERAL MOTORS CORPORATION

Nov., 1963

Mr. R. Fisher showed first idea on "push button"
release for existing Fisher Body deluxe seat belt buckle.
No general Fisher Body interest.

April 13, 1964

Mr. R. Fisher showed first version of Model #65
Buckle. General Fisher Body interest.

April 23, 1964

Mr. R. Fisher showed again above buckle. Same
interest.

May 6, 1964

Mr. R. Fisher showed "push button" buckle to
Mr. F. Arnold, Cadillac. He liked it very much and asked
for samples.

May 28, 1964

Two (2) samples of "push button" RCF 65 given to
Cadillac by Mr. R. Fisher for general observations.

June 1, 1964

Cadillac Motor asked Fisher Body to incorporate
"push button" buckle in their car line for start of production
on 1965 model. Mr. R. Fisher stated that start would have
to be a running change because of time to tool and test.

June 3, 1964

Fisher Body requested Cadillac release #60-111 request-
ing "push button" seat belt buckle.

EVERETT VS GMC

PURSUANT TO PROTECTIVE ORDER

June 5, 1964

Mr. R. Fisher made first strength and release effort check on new buckle. Strength OK - Push button effort high.

PRODUCED BY
GENERAL MOTORS CORPORATION

June 10, 1964

Mr. R. Fisher made first dynamic test on buckle (Hamill Drop Test) satisfactory results.

June 22, 1964

Three (3) samples submitted to Fisher Body for test. Results shown on Mr. P. O. Johnson's letter of 6-24-64. Mr. R. Fisher to proceed with prototype tooling.

June 23, 1964

Button release effort tested on test. Noted will be tested - letter of 6-24-64.

July 10, 1964

Buckle sled tested at Proving Ground - Information purposes. See PG Report #18488 (7-23-64).

Sept. 17, 1964

Eight (8) samples from prototype tools submitted for test.

Sept. 24, 1964

Meeting held with Fisher Body Personnel to discuss results of test.

See Meeting Minutes dated 9-30-64.

Sept. 25, 1964

Results of test discussed with Mr. R. Fisher
See Meeting Minutes dated 9-30-64.

PURSUANT TO PROTECTIVE ORDER

001003

Sept. 29, 1964

New "push button" released for Cadillac production.

TELEPHONE NUMBER 5-51555.

Oct. 2, 1964

Cover design and finish approved by Fisher Body.

See Record of Business Call 10-2-64.

Oct. 8, 1964

"Push button" buckle test completed - OK.

See Lab Report #690

Oct. 14, 1964

Samples for complete approval submitted in accordance with meeting of 9-25-64.

See Meeting Minutes 9-30-64.

Oct. 14, 1964

Pontiac Motor asked for samples and cost of new buckle for possible incorporation into 1966 model cars.

See letter of 10-14-64.

Oct. 15, 1964

Samples submitted 10-14-64 unsatisfactory for strength and release effort.

See Lab Report #6921.

Oct. 22, 1964

New samples submitted.

Oct. 23, 1964

Samples approved. See Lab Report #6921-A.

Oct. 28, 1964

Samples checked on sled at Proving Ground Satisfactory.

See PG Report #18973.

PRODUCED BY
GENERAL MOTORS CORPORATION

RAY AVERETT VS GM

PURSUANT TO PROTECTIVE ORDER

001004

Oct. 28, 1964

Meeting held in Mr. J. Schachinger's office to discuss parlor trick opening of buckle. See Meeting Minutes of 10-28-64.

Nov. 3, 1964

First 500 buckles shipped from Fisher Industries to Hamill Manufacturing.

Nov. 4, 1964

Buckle shown and discussed with Mr. K. Stonex by Mr. P. O. Johnson on "parlor tricking" of buckle. See letter of 11-4-64.

Nov. 30, 1964

First production shipment of new belt assemblies shipped to Fleetwood by Hamill Manufacturing.

PRODUCED BY DISCUSSION
GENERAL MOTORS CORPORATION

AVERETT VS GMC

PURSUANT TO PROTECTIVE ORDER

001005

PRODUCED BY
GENERAL MOTORS CORPORATION

RAY AVERETT VS GMC

PURSUANT TO PROTECTIVE ORDER

001006



FISHER BODY DIVISION
GENERAL MOTORS CORPORATION
GENERAL OFFICES
WARREN, MICHIGAN 48090

RECEIVED
Fisher...
JUN 24 1964
Patents & New Devices

PRODUCED BY
GENERAL MOTORS CORPORATION

June 24, 1964

To: Mr. H. V. Beckerleg
From: P. O. Johnson
Subj: Meeting with R. C. Fisher on June 22, 1964

On Monday afternoon Mr. Fisher brought in some of his latest design push-button seat belt buckles. These were made off temporary tools but were said to be structurally and functionally representative of the proposed design.

The biggest question on this design is whether the release effort with 150 pounds residual load is satisfactory. While there are no actual legal regulations or specifications, it is obvious we could not exceed the 30 pounds allowed for lever-release buckles. There is some question whether 30 pounds can be tolerated as a push-button effort.

To get some information on this problem, the buckles Mr. Fisher brought in were tested both by measuring the release effort and by releasing them by hand. Three buckles tested all had release efforts between 23 and 27 pounds. It was possible to release these buckles by hand. One of our secretaries accomplished the release left-handed.

Two buckles were tested for ultimate strength. One failed attachment hardware and is, therefore, not significant with regard to the buckle. The other failed at 2,400 pounds. It can be safely concluded that the strength of the buckle is the same as the present Hamill buckle.

More work will be done to prove the 30 pounds release effort. Since there is no opportunity for mechanical advantage in this push button, it appears we must accept the 30 pounds release effort or reject the push-button concept. We have no additional buckles which we are setting up on a seat buck in a manner that will realistically demonstrate the release effort. We will then get sufficient personnel to evaluate the effort so that we can reach a firm conclusion.

- cc: C. E. Hedeon W. Wells
- C. H. Schamel G. Beatty
- D. Campbell C. Nowak
- E. McKenna N. Feles

POJ/br

P. O. Johnson
P. O. Johnson
Physical Testing Laboratory

PURSUANT TO PROTECTIVE ORDER

001007

W.H. West

LABORATORY REPORT

This is the only copy of _____
Ground Report No. PG-18488
Distribution to E & D _____

Engineering Section

Report No. 6776

Procedure No. _____

Program _____

Date 8-13-64

Page _____ of _____

**PRODUCED BY
GENERAL MOTORS CORPORATION**

Eng. Staff
L.B. Ragsdale - Ternstedt

SUBJECT 1965 Cadillac Seat Belt Assembly Dynamic Test

Tests were conducted by the G.M. Proving Ground and reported on their report PG-18488 copy enclosed.

KAY AVERETT VS GMC

PURSUANT TO PROTECTIVE ORDER
001008

Test Conducted _____

Log Book Reference _____

Reported By: _____

Approved By: A.S. Bassette



1

BODY AND ASSEMBLY OPERATIONS

BODY ENGINEERING OFFICE

TEST REPORT

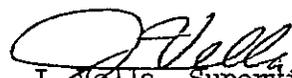
MESSRS. L. J. Krywko
J. T. Thode

TEST ORDER NO.	SEB-53442
DATE ORDER	11-19-71
TEST REQUEST NO.	33-2A-082
WORK TASK NO.	BA
FILE CODE	1.20
TEST DATES	11-21 to 12-4-71
DATE REPORTED	12-23-71

PROCEDURE NO.	
CONTROL ITEM	
COMPLIES WITH	NA
GOV'T. REGULATIONS	

SUBJECT: Impact Test - Seat Belt Buckle Assemblies
1972 Ford

REQUESTED BY: Locks, Latches, Wipers and Washers Department
Body Engineering Office - L. J. Krywko


J. Vella, Supervisor
Electrical and Mechanical
Testing Section
Body Testing Department

PREPARED BY: 
P. J. Cotter
Test Engineer

RCB/pn

TEST REPORT

CONTINUATION SHEET

FOREWORD:

The object of the test was to determine the acceleration ("g" value) required to release the buckles under a low tensile force without applying a force to the release button. Also to relate values of impact to the values required to release buckles that could easily be released or not released by the "parlor" trick.

Items tested -

One sample deluxe buckle with accelerometer attached

One sample standard buckle with accelerometer attached

5 samples buckles (Standard) susceptible to the parlor trick release

5 samples buckles (Standard) not susceptible to the parlor trick release

30 samples buckles (Standard) from production

30 samples buckles (Deluxe) from production

SUMMARY OF
TEST RESULTS:

On both buckles that were fitted with accelerometer, the impact "g" required on the Avco Shock Test Machine was within the range required to release the buckle on a parlor trick type release.

The five Standard samples tested that were susceptible to release by parlor trick released at a slightly lower average value than those that were allegedly ok but were above the average of the 30 Standard buckles tested.

The release acceleration required for the Deluxe buckles was lower than any of the Standard buckles on an equal quantity of samples. See graph.

There was no indication that the buckles release effort had any relationship to the release force that was achieved by the parlor trick.

PROCEDURE:

An accelerometer was attached to one sample of Standard buckle and one sample of Deluxe buckle. An oscillograph trace of the impact was recorded under the following conditions for both buckles:

TEST REPORT

CONTINUATION SHEET

Procedure concluded...

- a. Maximum impact by the parlor trick without release with the accelerometer on buckle.
- b. Minimum impact to cause release by the parlor trick with the accelerometer on buckle.
- c. Maximum impact recorded while demonstrating the parlor trick.
- d. Maximum impact that could be applied and not effect release on the Avco tester (Figure 1).
- e. Minimum impact to effect release on the Avco tester (Figure 1).
- f. D and e were repeated with the accelerometer on the table.

Thirty samples of Standard and Deluxe buckles were impact tested on the Avco Machine. Impact pads were selected to give the greatest time duration within the release range for the different types of buckles. The highest value without release and the lowest release value was recorded for each sample. Five lb. tension was applied to the buckle on the fixture, Figure 2.

A similar test was conducted on the five samples (PT-1/2/3/4/5) susceptible to the parlor trick release and the five samples (OK - 1/2/3/4/5) not susceptible to the parlor trick. The buckle release effort was measured in accordance with F.M.V.S.S. 209 on both groups (PT-1/2/3/4/5 and OK-1/2/3/4/5).

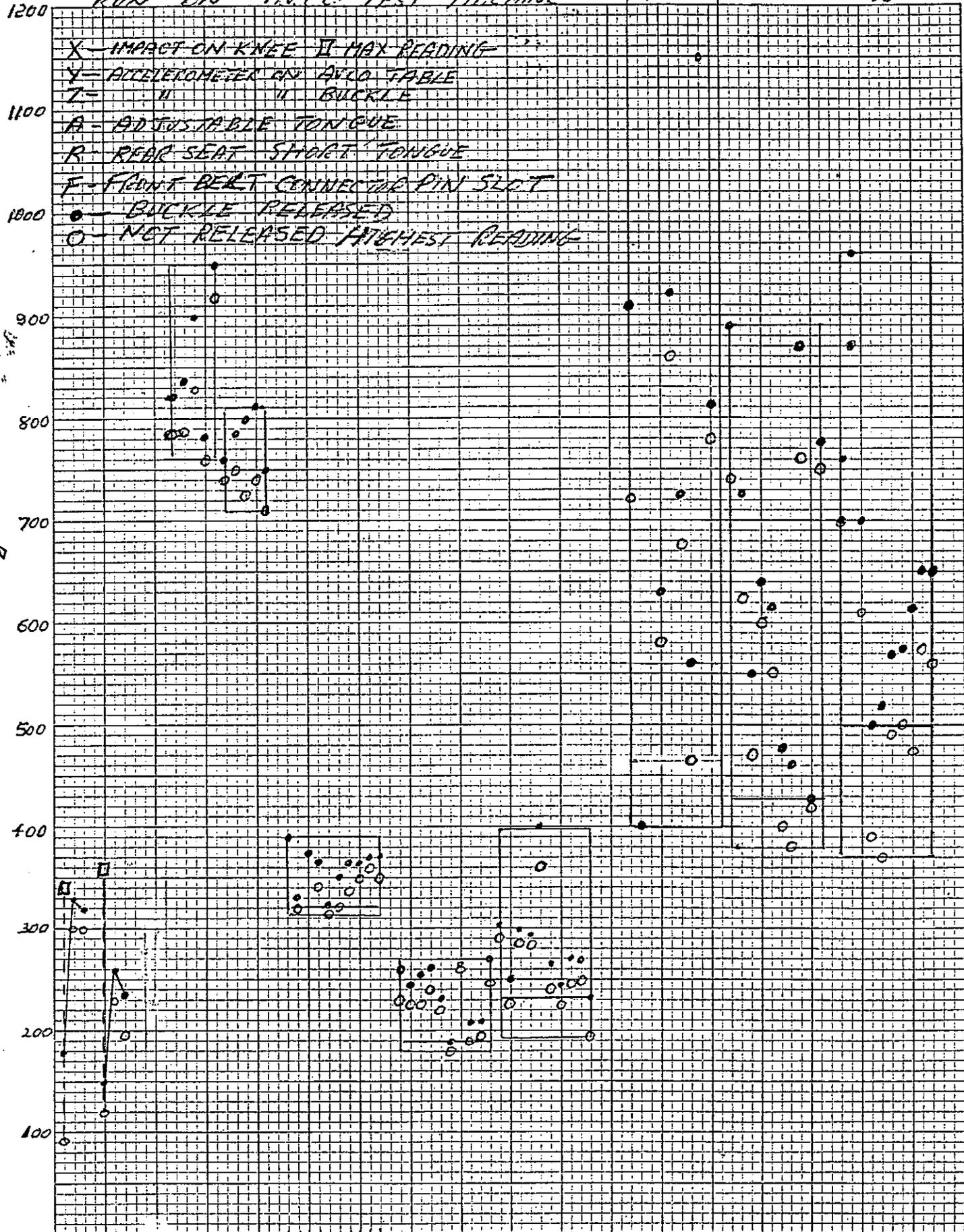


BUCKLE TYPE	TONGUE TYPE	SAMPLE NO	RELEASED 'G'		REMARKS
			NO	YES	
Standard	W/Slot (f)	1	120	150	Parlor Trick
		1	---	360	Parlor Trick - Max reading
		1	196	235	Avco - Accelerometer on Table
		1	230	258	Avco - Accelerometer on buckle
Deluxe	W/Slot (f)	1	92	180	Parlor trick
		1	--	340	Parlor trick max. reading
		1	300	330	Avco - Accelerometer on table
		1	300	320	Avco - Accelerometer on buckle
Deluxe	Adjustable (a)	1	390		Avco tester (10 m.s.)
		2	320	330	Avco tester (10 m.s.)
		3	375	Bent	Avco tester (10 m.s.)
		4	340	365	Avco tester (10 m.s.)
		5	315	325	Avco tester (10 m.s.)
		6	320	250	Avco tester (10 m.s.)
		7	335	365	Avco tester (10 m.s.)
		8	350	365	Avco tester (10 m.s.)
		9	360	370	Avco tester (10 m.s.)
		10	350	370	Avco tester (10 m.s.)
Deluxe	W/Slot (f)	1	290	305	Avco tester (10 m.s.)
		2	225	250	Avco tester (10 m.s.)
		3	285	300	Avco tester (10 m.s.)
		4	285	295	Avco tester (10 m.s.)
		5	360	400	Avco tester (10 m.s.)
		6	240	268	Avco tester (10 m.s.)
		7	225	245	Avco tester (10 m.s.)
		8	248	270	Avco tester (10 m.s.)
		9	250	270	Avco tester (10 m.s.)
		10	190	235	Avco tester (10 m.s.)
Deluxe	Rear Seat (r)	1	230	260	Avco tester (10 m.s.)
		2	225	245	Avco tester (10 m.s.)
		3	225	255	Avco tester (10 m.s.)
		4	240	260	Avco tester (10 m.s.)
		5	270	230	Avco tester (10 m.s.)
		6	180	190	Avco tester (10 m.s.)
		7	260	265	Avco tester (10 m.s.)
		8	190	207	Avco tester (10 m.s.)
		9	195	208	Avco tester (10 m.s.)
		10	245	270	Avco tester (10 m.s.)

BUCKLE TYPE	TONGUE TYPE	SAMPLE NO	RELEASED "G"		REMARKS	IMPACT DURATION
			NO	YES		
Standard	W/Slot (f)	1	700	760	Avco Tester	2.0 m.s. (approx)
		2	870	960	Avco Tester	2.0 m.s. (approx)
		3	610	700	Avco Tester	2.0 m.s. (approx)
		4	390	500	Avco Tester	2.0 m.s. (approx)
		5	370	520	Avco Tester	2.0 m.s. (approx)
		6	490	570	Avco Tester	2.0 m.s. (approx)
		7	425	575	Avco Tester	2.0 m.s. (approx)
		8	500	565	Avco Tester	2.0 m.s. (approx)
		9	575	650	Avco Tester	2.0 m.s. (approx)
		10	560	650	Avco Tester	2.0 m.s. (approx)
Standard	Adjustable (a)	1	1550	1390	Avco Tester	2.0 m.s. (approx)
		2	910	720	Avco Tester	2.0 m.s. (approx)
		3	400	---	Avco Tester	2.0 m.s. (approx)
		4	---	1575	Avco Tester	2.0 m.s. (approx)
		5	630	580	Avco Tester	2.0 m.s. (approx)
		6	920	860	Avco Tester	2.0 m.s. (approx)
		7	725	675	Avco Tester	2.0 m.s. (approx)
		8	560	465	Avco Tester	2.0 m.s. (approx)
		9	1230	1150	Avco Tester	2.0 m.s. (approx)
		10	810	780	Avco Tester	2.0 m.s. (approx)
Standard	Rear Seat (r)	1	890	740	Avco Tester	2.0 m.s. (approx)
		2	725	625	Avco Tester	2.0 m.s. (approx)
		3	550	470	Avco Tester	2.0 m.s. (approx)
		4	640	600	Avco Tester	2.0 m.s. (approx)
		5	615	550	Avco Tester	2.0 m.s. (approx)
		6	475	400	Avco Tester	2.0 m.s. (approx)
		7	460	380	Avco Tester	2.0 m.s. (approx)
		8	870	760	Avco Tester	2.0 m.s. (approx)
		9	425	420	Avco Tester	2.0 m.s. (approx)
		10	775	750	Avco Tester	2.0 m.s. (approx)

BUCKLE TYPE	TONGUE TYPE	SAMPLE NO	RELEASED "G"		IMPACT DURATION	BUCKLE RELEASE WITH 150LB. LOAD	REMARKS
			NO	YES			
Standard	Adjustable	OK-1	825	780	2 m.s. (approx)	15.8 lb.	Buckle not possible to release by parlor trick
		OK-2	840	780	2 m.s. (approx)	19.8 lb.	
		OK-3	900	830	2 m.s. (approx)	22.0 lb.	
		OK-4	760	760	2 m.s. (approx)	18.2 lb.	
		OK-5	950	920	2 m.s. (approx)	27.2 lb.	
Standard	Adjustable	PT-1	760	740	2 m.s. (approx)	22.0 lb.	Buckles easy to release by parlor trick
		PT-2	835	800	2 m.s. (approx)	21.8 lb.	
		PT-3	800	725	2 m.s. (approx)	18.2 lb.	
		PT-4	810	740	2 m.s. (approx)	24.8 lb.	
		PT-5	750	710	2 m.s. (approx)	18.8 lb.	

GRAPH SHOWING G READINGS
FOR VARIOUS TYPE BUCKLES.
RUN ON AVCC TEST MACHINE

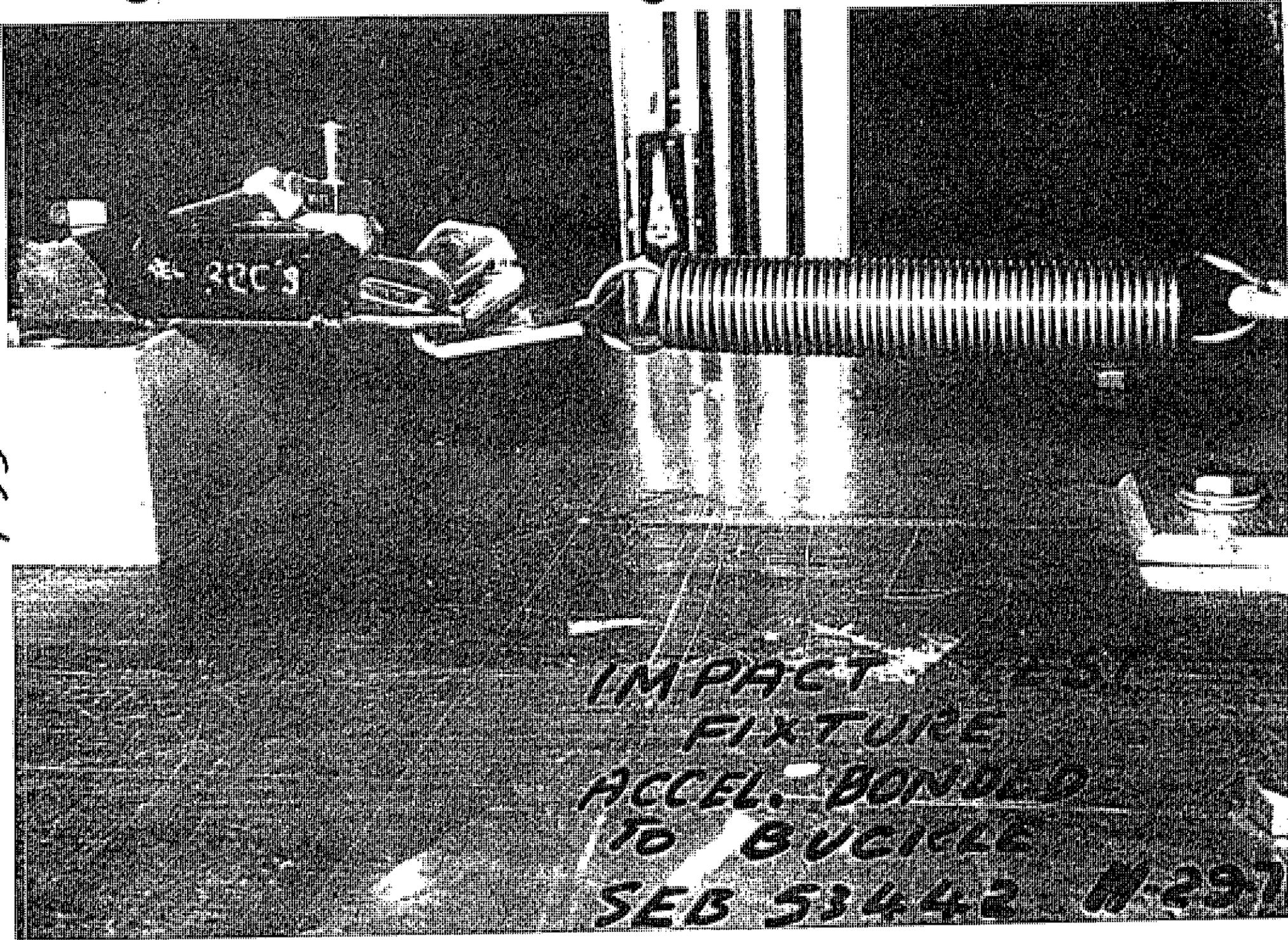


X - IMPACT ON KNEE II MAX READING
Y - ACCELEROMETER ON AVCC TABLE
Z - " " " BUCKLE
A - ADJUSTABLE TONGUE
R - REAR SEAT STRAP TONGUE
F - FRONT BELT CONNECTOR PIN SLOT
● - BUCKLE RELEASED
○ - NOT RELEASED HIGHEST READING

KEUFFEL & ESSER CO.
 14 X 24 CM
 5 X 5 TO THE CENTIMETER 46 1612
 MADE IN U.S.A.

0 XYZ XYZ	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	
	OK PT	A	R	F	A	R	F
DELUXE STD	STANDARD BUCKLES	DELUXE BUCKLES			STANDARD MINI BUCKLE		
	ADJ TONGUE						

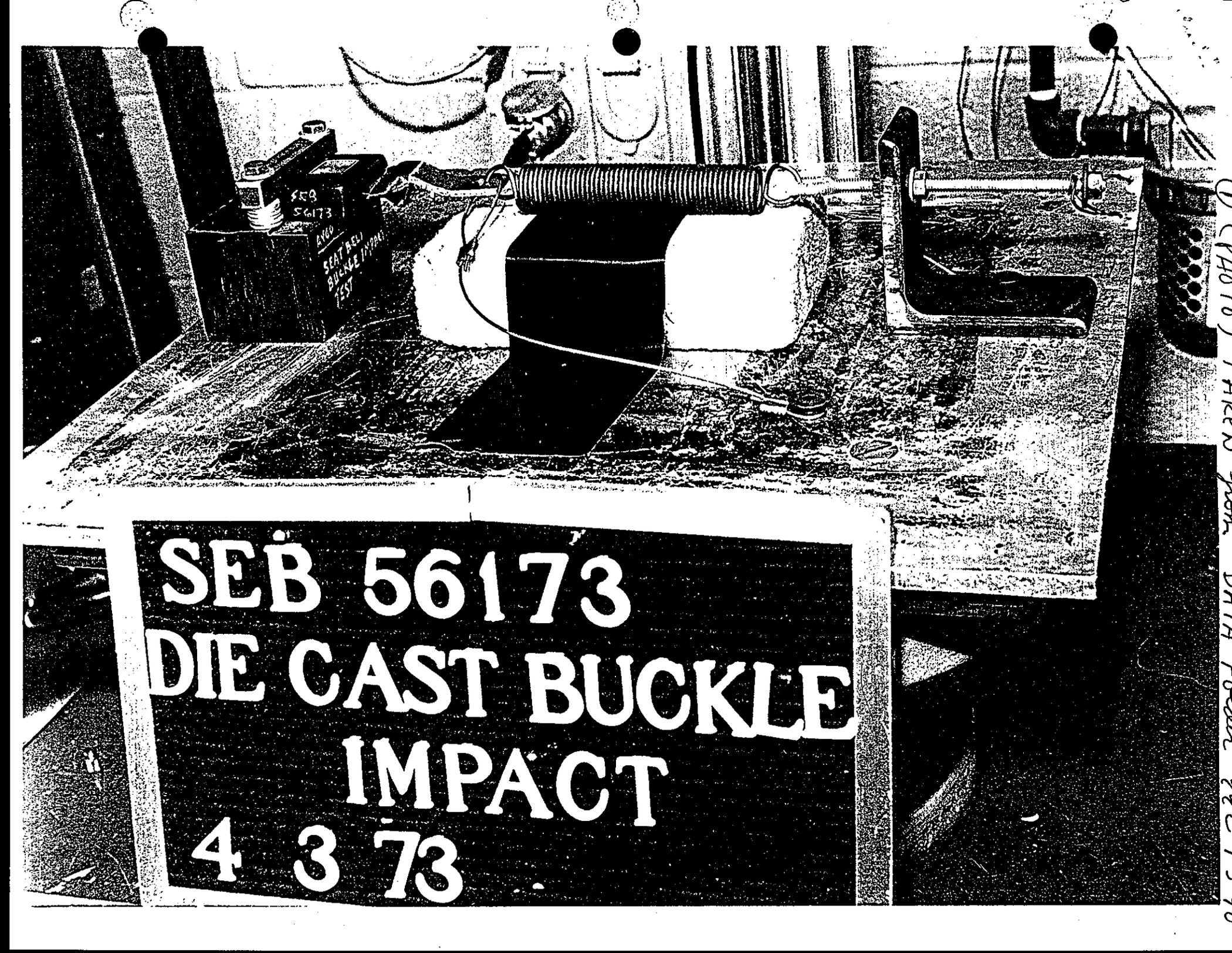
FIG 1



IMPACT
FIXTURE
ACCEL. BONDED
TO BUICKLE
SEB 53442 W-297

FIG 2

IMPACT TEST
FIXTURE
FOR RYCO MACHINE
ACCELERATOR ATTACHED
TO TABLE OF MACHINE
SEB-53442 12-2-71



SEB 56173
DIE CAST BUCKLE
IMPACT
4 3 73

DIE CAST BUCKLE
SEB 56173
SEAT BELT BUCKLE IMPACT TEST



(2)

BODY AND ASSEMBLY OPERATIONS
BODY ENGINEERING OFFICE
TEST REPORT

MESSRS.

F. J. Schultz
J. T. Thode

TEST ORDER NO.	SEB-55879
DATE ORDER	2-15-73
TEST REQUEST NO.	33-4A-131
WORK TASK NO.	B4AF
FILE CODE	1.20
TEST DATES	2/15/73--2/19/73
DATE REPORTED	3-14-73

PROCEDURE NO.	N/A
CONTROL ITEM	N/A
COMPLIES WITH	
GOV'T. REGULATIONS	N/A

Subject: Impact Test and Insertion-Withdrawal Efforts -
Seat Belt Buckle Assemblies - 1974 All Car Lines

Requested by: Hardware Department -
Body Engineering Office - F. J. Schultz

W. R. Callow
W. R. Callow, Supervisor
Body Electrical and
Mechanical Testing Section
Body Testing Department

Prepared by:

J. Myszka
J. Myszka
Test Engineer

WRC/RCB/ao

TEST REPORT

CONTINUATION SHEET

Foreword:

Three samples each of front seat belt buckles manufactured by Jim Robbins (D22B-6261208-AWA) and by Hamill (D0AB-7661208-B) were impacted to determine the 'g' force required to release the buckles under a low tensile force. An additional Robbins reworked production assembly was also impacted. This sample was revised by decreasing the internal spring force by one-half (18/22 oz.). The second part of the test consisted of estimating the friction force between the seat belt tongue and the die cast housing of the belt buckle.

Conclusion:

The Robbins production buckle required the higher impact release values. The estimated friction force of the die cast housing was 2.5 lb. at insertion and 0.90 lb. at withdrawal.

Summary of Test Results:

The Robbins production buckle required the higher impact 'g' level to release the seat belt tongue. The impact forces required to release the seat belt tongues are listed as follows:

<u>Sample</u>	<u>Pulse Duration (millisec.)</u>	<u>Max. 'g' Level for Retention</u>	<u>Min. 'g' Level for Release</u>
Robbins Production			
#1	3.6	290	296
#2	3.8	292	296
#3	<u>4.0</u>	<u>290</u>	<u>292</u>
Average	3.8	291	295
Robbins Revised	3.8	236	238
Hamill Production			
#1	3.9	196	200
#2	4.1	214	228
#3	<u>4.2</u>	<u>186</u>	<u>188</u>
Average	4.1	199	205



TEST REPORT

CONTINUATION SHEET

Summary of
Test Results:

(continued)

The estimated friction force of the belt buckle die cast housing was 2.50 lb. on insertion and 0.90 lb. on withdrawal of the seat belt tongue. The recorded loads were:

<u>Insertion Effort</u> (lb)	<u>Withdrawal Effort</u> (lb)	
3.5	1.65	Robbins Production Buckle
<u>1.0</u>	<u>0.75</u>	Buckle with Friction Points Removed
2.5	0.90	Estimated Friction Force

Test
Procedure:

Each sample belt buckle with its associated belt tongue was mounted on the AVCO shock machine. A 5-lb. tension load was applied to the buckle. Each sample was then impacted to measure the maximum 'g' level required to retain the tongue in the belt buckle and the minimum 'g' level to release the belt tongue. All impacts had a pulse duration of 3.6 to 4.2 milliseconds. A photograph of the test setup is attached - Figure 1 (Negative No. 157354-2).

The friction force of the die cast housing on the belt tongue was estimated by first measuring the insertion and withdrawal efforts of a production Robbins buckle. Then all the points where the die cast housing contacted the belt tongue were milled out. Next two roller bearings were placed in contact with the belt tongue for retention. Finally, the insertion and withdrawal efforts were again measured. The difference of the two readings was the estimated friction force. A photograph of the test setup is attached - Figure 2 (Negative No. 157354-1).

TEST REPORT

CONTINUATION SHEET

Discussion:

The impact results did not correlate with those measured in a previous test (SEB-53442). The possible explanation lies in the difference in pulse duration (2 vs. 4 milliseconds). The buckles may have a characteristic response to impact loads that may be exponential. If this is the case, a 2-millisecond difference in pulse duration may result in a 100g difference in 'g' level. It is recommended that a test be conducted to determine the characteristic curve of each type seat buckle by impacting them at different pulse durations. Then any future testing could be correlated to these results.





3

BODY AND ASSEMBLY OPERATIONS

BODY ENGINEERING OFFICE

TEST REPORT

MESSRS.

F. J. Schultz
J. T. Thode

TEST ORDER NO.	SEB-56110
DATE ORDER	3-27-73
TEST REQUEST NO.	33-4A-155
WORK TASK NO.	B4AF
FILE CODE	1.20
TEST DATES	3-21-73
DATE REPORTED	4-10-73

PROCEDURE NO.	NA
CONTROL ITEM	NA
COMPLIES WITH	
GOV'T. REGULATIONS	NA

Subject: Impact Release Values -
Seat Belt Buckle Assemblies - New Latch Spring -
1974 Ford

Requested by: Body Hardware Department -
Body Engineering Office - F. J. Schultz

W. R. Callow
W. R. Callow, Supervisor
Body Electrical and
Mechanical Testing Section
Body Testing Department

Prepared by: *P. J. Adams / J. Myszyka*
P. J. Adams / J. Myszyka
Test Engineers

WRC/RCB/ao



TEST REPORT

CONTINUATION SHEET

Foreword:

Two front seat belt buckle assemblies were tested to determine the 'g' force at which the seat belt buckle would separate from the tongue. The seat belt buckle assemblies (D4AB-6561208-CA) were manufactured by Jim Robbins.

Summary of Test Results:

Sample No. 1 was tested from 340 to 482 g, with an average millisecond duration of 3.1. An open buckle condition first occurred at 356 g.

Sample No. 2 was tested from 99 to 141 g with an average millisecond duration of 4.1. An open buckle condition first occurred at 101 g. A table listing g's and millisecond duration follows.

Sample No. 1 (compared to Sample No. 2) required higher 'g' efforts for separation of buckle and tongue.

Sample No. 1			Sample No. 2		
	Pulse Duration			Pulse Duration	
'g' Level	(M.S.)	Result	'g' Level	(M.S.)	Result
340	3.0	No release	99	4.4	No release
356	3.0	Released	99	4.6	No release
369	3.2	Released	101	4.5	Released
378	3.3	No release	110	4.3	Released
380	2.7	Released	119	4.1	Released
384	3.1	No release	124	4.0	Released
390	3.2	Released	128	4.0	Released
390	3.3	Released	131	4.0	No release
392	3.3	No release	131	4.0	Released
424	3.3	Released	134	4.1	Released
450	3.2	Released	135	4.1	Released
482	3.1	Released	136	4.1	Released
			137	4.0	No release
			138	3.9	Released
			140	4.1	Released
			141	4.1	Released



TEST REPORT

CONTINUATION SHEET

Test Procedure:

Each sample belt buckle with its associated tongue was mounted on the Avco Shock Test Machine. A 5-lb. tension load was applied to the assembly. Each sample was then impacted to measure the 'g' level versus pulse duration required to cause a tongue-buckle release or a no release condition.



ADVANCE COPY
TEST REQUEST

BODY ENGINEERING OFFICE

TEST TO BE CONDUCTED TO CERTIFY THAT A CONTROL ITEM IS IN COMPLIANCE WITH GOVERNMENT REGULATIONS.

YES NO

TO: **J.D. VELLA**

CC: **H.C. NIEN W.C. SHELTON
F.J. SCHULTE**

NOTE: ONE LETTER PER BLOCK IF HAND LETTERED - USE ONE LINE ONLY IF TYPED.

1	2	3	4	5	6	7	8	9	10	11	12
C	2										
											MYS

1	2	3	4	5	6	7	8	9	10
	REQUESTED BY	SECTION NO.	PHONE NO.	DATE ISSUED	DATE REC'D.	TEST REQUEST NO.			
	F.J. SCHULTE	5332	25296	03 12/173	03 12/173	33-4A-155			

TO BE COMPLETED BY TESTING DEPARTMENT

46	47	48	49	50	51	52	53	54	55	56
ASSIGNED TO	CODE	DATE REC'D	EST. START	FIXTURE HRS	TEST HOURS	% COMP.	REPORT NO.			
MYSZKA	AA	03 21/73	03 21/73	8	6	10	3EB-56110			

TYPE OF TEST <input type="checkbox"/> VEHICLE <input checked="" type="checkbox"/> LABORATORY <input type="checkbox"/> BENCH <input type="checkbox"/> BUCK <input type="checkbox"/> OTHER	VEHICLE NUMBER OR OTHER IDENTIFICATION		VEHICLE MODEL AND YEAR		SYSTEM CODE				
			ALL 1974		1-20				
PRINCIPAL ENGINEER		ISSUED BY		PHONE		PRODUCT OR ENG. LETTER		PROBLEM NUMBER	
W.C. SHELTON		F.J. BARTON		27427					
REPORT CATEGORIES		PARTS DUE		TEST START		TEST COMPL		REPORT DUE	
<input checked="" type="checkbox"/> ENGINEERING <input type="checkbox"/> DATA <input type="checkbox"/> RAW DATA		EST 3/21-73		EST 3/21		EST 3/21		EST 4/15	
P.N./E.S.O.NO.		ACT		ACT		ACT		ACT	
<input type="checkbox"/> FMVSS CERTIFICATION <input type="checkbox"/> FMVSS VALIDATION									

OBJECT: **DETERMINE IMPACT RELEASE VALUES**

PRIOR-1

SPECIFICATIONS AND SPECIFICATION REVISIONS

LH - 6
EH - 2

TEST INSTRUCTIONS

DETERMINE IMPACT RELEASE VALUE FOR DIE CAST BUCKLES WITH REVISED LATCH SE. CHNG (LEAF DESIGN)

(ATTACH ADDITIONAL SHEETS AS REQUIRED)

ITEMS TO BE TESTED: (QUANTITY, NAME, PART NO., MFR., ETC.)

2 BUCKLE ASSY - FRT. ST. BELT D4AB-656120BCA ROBBINS

CHARGE NO.	BUDGET APPROV.	DISPOSITION OF PARTS	<input checked="" type="checkbox"/>
B4AF		TO BE PICKED UP BY REQUESTER	<input type="checkbox"/>
		TO BE SCRAPPED	<input type="checkbox"/>
		TO BE FURTHER TESTED ON REQUEST NO.	

CONCURRED	APPROVED	APPROVED	DIVISION



4

BODY AND ASSEMBLY OPERATIONS
BODY ENGINEERING OFFICE
TEST REPORT

MESSRS.

F. J. Schultz
J. T. Thode

TEST ORDER NO.	<u>SEB-56173</u>
DATE ORDER	<u>3-21-73</u>
TEST REQUEST NO.	<u>33-4A-157</u>
WORK TASK NO.	<u>B4AF</u>
FILE CODE	<u>1.20</u>
TEST DATES	<u>4-3-73 - 4-30-73</u>
DATE REPORTED	<u>7-13-73</u>

PROCEDURE NO.	<u> </u>
CONTROL ITEM	<u> </u>
COMPLIES WITH	<u> </u>
GOV'T. REGULATIONS	<u> </u>

Subject: Impact Release Values -
Seat Belt Buckle Assemblies - New Latch Spring -
1974 All Car Lines

Requested by: Body Hardware Department -
Body Engineering Office - F. J. Schultz

W. R. Callow
W. R. Callow, Supervisor
Body Electrical and
Mechanical Testing Section
Body Testing Department

Prepared by: *J. Myszka*
J. Myszka
Test Engineer

WRC/RCB/ao



TEST REPORT

CONTINUATION SHEET

Foreword:

Thirty-five sample die cast seat belt buckle assemblies (D4AB-6561208-CA) were impacted to determine the 'g' force at which the tongue would separate from the buckle. The seat belt buckle assemblies were manufactured by Jim Robbins incorporating a new release spring design. Instead of a coil spring, the samples had L-shaped springs. The samples were delivered in two lots (10 and 25 samples) at an interval of three weeks.

Conclusion:

After the seat belt buckle assemblies were impacted a few times, the release spring would weaken resulting in a lower impact level required for release.

Summary of Test Results:

The initial sample lot (10 pieces) had lower release and insertion efforts, and required less impact energy for release than the second sample lot (35 pieces). The release and insertion efforts for the lot of 35 samples decreased after being impacted. In fact, after the assemblies were impacted a few times, the spring force lessened resulting in a lower energy level required for release. For example, Sample No. 16 opened at 556 g and remained closed at 551 g. The buckle then released on the third impact at 551 g. The assembly then released on each subsequent impact. It finally remained closed at a 451 g impact level.

Sample No. 19 failed when the whole assembly fell apart at an impact level of 591 g. Data sheets are attached.

Test Procedure:

Prior to impact evaluation, the efforts required to insert and release the tongue and buckle was measured and recorded. Then each sample belt buckle with its associated tongue was mounted on the Avco shock machine. A 5-lb. tension load was applied to the assembly. Each sample was then impacted to measure the 'g' level versus pulse duration required to cause a tongue-buckle release or no-release condition. After each sample was impacted, the insertion and release efforts were measured and recorded.

TECH.	DATE	SAMPLE NUMBER	RELEASE EFFORT lbs	INSERT EFFORT lbs	AFTER IMPACT RELEASE EFFORT	AFTER IMPACT INSERT EFFORT	REMARKS
TSN	4-27-73	11	5.5	6.0	5.0	4.8	① RELEASE
		12	5.0	5.5	5.0	5.5	EFFORT TAKE
		13	5.8	6.0	6.0	4.0	WITH 5 lb.
		14	5.2	5.5	5.2	3.8	PRELOAD
		15	5.5	6.0	5.2	4.0	
		16	5.0	5.0	3.8	2.8	
		17	5.5	6.0	4.2	2.8	
		18	5.5	6.0	4.0	3.8	
		19	5.2	6.5	BUTTON	SPRING ASSY.	FELL APART
		20	6.0	4.8	3.0	4.8	
		21	5.2	5.0	5.0	3.8	
		22	5.5	5.2	3.8	3.8	
		23	5.0	6.2	3.5	3.0	
		24	6.0	5.5	4.0	3.5	
		25	5.0	5.8	4.5	3.5	
		26	5.0	4.5	4.5	4.0	
		27	5.5	6.0	4.5	3.0	
		28	5.0	5.0	5.5	3.0	
		29	6.0	5.5	4.0	3.5	
		30	6.0	6.0	4.5	3.0	
		31	6.0	5.0	3.8	3.0	
		32	6.0	5.8	6.0	4.0	
		33	6.0	7.0	5.0	3.0	
		34	6.0	5.5	5.5	4.0	
		35	5.5	5.2	4.2	3.5	

80-66-925

O - CLOSE X - OPEN

SAMPLE No.	Gs	M.S.	CONDITION	SAMPLE No.	Gs	M.S.	CONDITION
1	310	3.3	O	7	210	4	O
	330	3.3	O		216	3.8	O
	330	3.4	X		218	3.8	X
	340	3	X		220	3.8	X
2	296	3.7	O	8	345	3.3	O
	304	3.8	O		348	3.4	O
	308	3.5	X		350	3.1	X
	312	3.4	X		355	3.3	O
					360	3.2	X
3	300	3.5	O	9	288	3.4	O
	303	3.5	X		302	3.5	X
	304	3.4	O		320	3.4	X
	312	3.4	O				
	316	3.3	O				
4	250	3.9	O	10	335	2.9	O
	260	3.5	X		336	3.3	O
	264	4	X		340	3.5	X
			345		3.2	X	
			345		3	X	
5	246	3.6	O		350	3.2	X
	250	3.5	O		350	3.5	X
	250	3.9	X	11	427	3.8	X
	252	3.9	X		421	3.8	O
	256	3.9	X		427	3.6	X
6	228	3.3	O		423	3.4	X
	236	3.3	X		421	3.4	X
	236	3.5	O		420	3.7	X
	243	3.9	X		415	3.4	X
	243	3.4	O		409	3.8	O
	243	3.8	O	12	428	3.6	X
	247	3.8	X		431	3.7	O
	251	4	X		445	3.8	O
			433		3.4	X	
			421		3.5	O	

O - CLOSE X - OPEN

SAMPLE No.	G's	M.S.	CONDITION	SAMPLE No.	G's	M.S.	CONDITION
13	435	3.5	X	17	581	3.3	X
	422	3.5	O		566	3.2	X
	428	3.8	O		556	3.5	X
	441	3.5	X		546	3.3	X
	440	3.5	X		531	3.4	X
	436	4.0	X		521	3.1	X
	431	3.4	X		521	3.3	X
	422	2.3	X		516	3.6	X
	411	3.6	X		511	3.4	X
	407	3.8	O		486	3.1	X
					461	3.1	X
14	377	3.9	X		440	3.8	X
	355	4.0	O		423	3.8	X
	373	4.0	O		409	3.8	X
	391	3.9	X		384	3.8	X
	381	3.9	X		356	3.9	X
	372	4.5	X		315	4.1	O
	361	3.9	X				
	357	3.9	X	18	449	3.8	O
	349	3.9	X		483	3.8	X
	339	3.3	O		461	3.8	X
					467	3.9	X
15	451	3.9	X		441	3.7	X
	441	3.5	O		446	3.8	X
	457	3.5	X		423	3.8	X
	449	3.4	O		406	4.0	X
					397	3.9	X
16	556	3.4	X		383	3.6	X
	551	3	O		356	4	X
	551	3.2	X		341	3.6	X
	546	3.3	X		318	4.1	X
	541	3.2	X		308	4	O
	531	3.6	X		321	4.1	O
	521	2.9	X		334	3.9	X
	471	3.3	X				
	451	3.5	O	19	596	3.4	X
					581	3.0	O
					591	3.3	O

80-66-925

O - CLOSE X - OPEN

SAMPLE No.	G's	M.S.	CONDITION	SAMPLE No.	G's	M.S.	CONDITION
20	581	3.9	X	22	386	3.8	X
	581	3.8	O	(CONT.)	377	4	X
	576	3.6	X		364	4.1	X
	566	3.0	O		351	3.9	X
					340	3.8	X
21	576	3.8	O		326	3.9	X
	586	3.4	X		304	3.9	O
	571	3.3	X				
	571	3.3	X	23	581	3.2	O
	561	3.6	X		600	3.4	X
	551	3.7	X		591	3.2	X
	541	3.8	X		546	3.9	X
	541	3.3	X		536	3.0	X
	495	3.9	X		521	3.8	X
	491	4.0	O		476	3.9	X
	496	3.7	X		451	3.8	X
	497	3.8	O		427	3.6	X
					407	3.9	X
22	510	3.9	X		397	3.9	X
	500	3.9	O		388	4	X
	511	3.8	X		376	4	X
	512	4	X		355	4	X
	515	3.8	X		352	4	X
	504	3.9	X		337	4	O
	513	3.9	X		330	3.9	O
	511	3.8	X				
	500	4	X	24	621	3.4	X
	500	3.8	X		601	3.5	X
	486	3.8	X		561	3.5	X
	468	3.8	X		531	3.4	X
	448	3.8	X		501	3.5	X
	441	3.9	X		447	3.7	X
	427	3.9	X		381	3.9	X
	426	4	X		325	4.1	O
	420	3.6	X		354	3.9	X
	410	3.8	X		379	3.9	O
	396	3.9	X		411	3.9	O

80-66-925

O-Close X-OPEN

Sample No.	G's	M.S.	CONDITION	Sample No.	G's	M.S.	CONDITION
24	423	3.8	O	27	555	2.8	X
(CONT.)	491	3.2	X	(CONT.)	562	2.7	X
	463	3.9	X		558	2.8	X
	429	3.9	O		561	2.8	X
					541	2.7	X
25	509	2.8	X		511	2.7	O
	501	2.9	X				
	498	2.9	X	28	520	3.1	O
	481	3.0	X		580	2.7	X
	471	3.1	X		571	2.7	X
	453	3.3	X		560	2.8	X
	387	3.4	O		520	2.9	X
	419	3.2	X		510	3	X
	411	3.3	X		497	2.9	X
	399	3.1	X		461	2.9	X
	400	3.2	X		437	3.2	X
	387	3.5	X		421	3.3	X
	375	3.4	X		423	3.4	X
	363	3.2	X		397	3.5	O
	347	3.6	X		413	3.2	X
	345	3.3	O		403	3.3	X
					401	3.2	O
26	405	3.1	O				
	451	2.8	X	29	568	2.8	O
	439	2.9	X		581	2.8	X
	427	2.9	X		568	2.9	X
	413	3.0	X		562	2.8	X
	391	3.1	O		556	2.9	X
	417	3.2	X		531	2.8	X
	411	2.9	X		505	3	X
	393	3.2	O		485	2.9	X
					451	2.8	X
27	469	3	O		437	3.3	O
	496	2.9	O		431	3.2	X
	575	2.8	O		425	3.1	O
	591	3	X				
	578	2.9	X				

O-Close X-OPEN

SAMPLE No.	G's	M.S.	CONDITION	SAMPLE No.	G's	M.S.	CONDITION
30	427	3	0	32	490	2.9	X
	515	3.1	X	(CONT.)			
	495	2.9	X				
	486	3	X	33	505	2.9	0
	460	2.9	X		538	3	0
	455	2.9	X		558	2.7	0
	427	3.3	X		568	2.9	X
	385	3.2	X		571	3	X
	365	3.3	X		561	2.7	X
	341	3.4	0		538	2.9	X
	358	3.2	X		525	3	X
	355	3.5	X		491	3.2	0
	343	3.5	X		511	3	0
					541	2.8	0
31	562	3	0		551	2.9	X
	572	2.8	X				
	564	3	X	34	565	3	X
	561	2.7	0		548	3.1	0
	561	2.8	X		563	3	0
	551	2.9	X		571	2.8	X
	533	2.7	0		561	2.8	X
					551	3	X
32	583	2.8	X		532	3	X
	492	3	0		527	2.9	X
	520	2.8	0		503	2.8	X
	527	2.8	0		498	2.9	X
	545	2.7	0		491	3.1	X
	579	2.7	0		461	2.9	X
	583	2.9	X		451	3	X
	571	2.6	X		421	2.9	X
	562	2.7	X				
	549	2.8	X				
	543	2.8	X				
	531	2.7	X				
	511	3	X				
	501	2.8	X				
	461	2.9	0				

EPP - NO FOLDER NEEDED

LCB

BODY ENGINEERING OFFICE		TEST REQUEST				TEST TO BE CONDUCTED TO CERTIFY THAT A CONTROL ITEM IS IN COMPLIANCE WITH GOVERNMENT REGULATIONS.								
TO: J.D. VELLA		CC: H.C. NIVEN W.G. SHELTON F.J. SCHULTZ				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO								
1	2	3	4	5	NOTE: ONE LETTER PER BLOCK IF HAND LETTERED - USE ONE LINE ONLY IF TYPED.									
C	24	DIE CAST SEAT BELT BUCKLE IMPACT RELEASE - REVISED SPRING												
1	2	3	4	5	6	7	8	9	10					
+	REQUESTED BY F.J. SCHULTZ	20	SECTION NO. 5332	PHONE NO. 25898	24	DATE ISSUED 3/22/73	30	DATE REQ'D. 3/26/73	36	TEST REQUEST NO. 33-4A-159				
TO BE COMPLETED BY TESTING DEPARTMENT														
46	CODE	48	DATE REC'D 1/1	54	EST. START 1/1	60	FIXTURE HRS	63	TEST HOURS	67	% COMP.	70	REPORT NO. SER-56173	80
TYPE OF TEST		VEHICLE NUMBER OR OTHER IDENTIFICATION				VEHICLE MODEL AND YEAR			SYSTEM CODE					
<input type="checkbox"/> VEHICLE <input checked="" type="checkbox"/> LABORATORY <input type="checkbox"/> BENCH <input type="checkbox"/> BUCK <input type="checkbox"/> OTHER		PRINCIPAL ENGINEER W.G. SHELTON				ISSUED BY F.T. GASTON			PHONE 27487					
P.N./E.S.O. NO.		REPORT CATEGORIES <input checked="" type="checkbox"/> ENGINEERING <input type="checkbox"/> DATA <input type="checkbox"/> RAW DATA				PARTS DUE EST 3-22		TEST START EST		TEST COMPL EST		REPORT DUE EST		
		<input type="checkbox"/> FMVSS CERTIFICATION <input type="checkbox"/> FMVSS VALIDATION				ACT		ACT		ACT		ACT		
OBJECT DETERMINE IMPACT RELEASE VALUES														
SPECIFICATIONS AND SPECIFICATION REVISIONS														
TEST INSTRUCTIONS 1. MEASURE INSERTION EFFORT & RECORD 2. MEASURE PUSH BUTTON RELEASE EFFORT & RECORD 3. DETERMINE IMPACT RELEASE VALUE FOR DIE CAST BUCKLES WITH REVISED LATCH SPRING (LEAF DESIGN)														
(ATTACH ADDITIONAL SHEETS AS REQUIRED)														
ITEMS TO BE TESTED: (QUANTITY, NAME, PART NO., MFR., ETC.) 24 BUCKLE 1754 - FRT. ST. BELT D4AB-6561208-CA ROBBINS														
CHARGE NO. 84AF		BUDGET APP. APPROV. APK 4/5/73		DISPOSITION OF PARTS TO BE PICKED UP BY REQUESTER TO BE SCRAPPED TO BE FURTHER TESTED ON REQUEST NO.				<input checked="" type="checkbox"/> <input type="checkbox"/>						
CONCURRED		APPROVED [Signature]		APPROVED [Signature]				DIVISION						

