Form Approved: O.M.B. No. 2127-0038

U.S. Department of Transportation
National Highway Traffic Safety Administration

DOT Auto Safety Hotline

Vehicle Owner's Questionnaire (VOQ)

NATIONWIDE 1-888-DASH-2-DOT
1-888-327-4236
www.nhtsa.dot.gov/hotline

FOR AGENCY USE ONLY 436	
Date Received 31-MAY-2000	Od_or ____ ____ rt_dt ____ ____ od_rt ____ ____ up_ltr ____ ____
Reference No. 862777	

[redacted]

Do you authorize NHTSA to provide a copy of report to the manufacturer of your vehicle? ☐ YES ☐ NO
In the absence of an authorization, NHTSA WILL NOT provide your name and address to the vehicle manufacturer.

Signature of Owner _____ Date____/____/____

VEHICLE INFORMATION

Vehicle Ident. No. (VIN.) (Located at bottom of windshield on driver's side)	Vehicle Make	Vehicle Model	Vehicle Year	Current Odometer Reading
1GNEK13K8SJ401707	CHEVROLET TRU	TAHOE	1995	

Purchase Date
☐ New ☒ Used

Dealer's Name_____
City_____ State_____ Zip Code_____

Engine Size (CID/CC/L _____
No Cylinders _____

☐ Turbo
☐ Diesel
☐ Gas
☐ Fuel Injection
☐

Transmission Type	Antilock Brakes	Restraint System	Cruise Control	Drive Train	Vehicle Type	Body Style
☐ Manual ☐ Automatic	☐ Yes ☒ No	☐ 3-Point Belt ☐ Driverside Airbag ☐ Passengerside Airbag ☐ Motorbelt ☐ 2-Point Belt	☐ Yes ☒ No	☐ Front ☐ Rear ☐ 4-Wheel	☐ Car ☐ Van ☐ Minivan ☐ Other_____ ☐ Sport Utl ☐ Truck ☐ Motorcycle	☐ 2-Door ☐ 4-Door ☐ Stationwagon ☐ Pick Up Truck ☐ Other_____ ☒

FAILED COMPONENT(S)/PART(S) INFORMATION

Component	Par. Name(s)	Location	Failed Part(s)
12310000	INTERIOR SYSTEMS:SEAT TRACKS AND ANCHORS	☐ Left ☐ Right ☐ Front ☐ Rear	☐ Original ☐ Replacement

No of Failures		Failed Part(s) Available?	NHTSA Previously Contacted?
	Date(s) of Failure(s) 27-MAY-2000 Mileage at Failure(s)_____ Vehicle Speed at Failure(s)_____	| |Yes | |No	| | Yes | |No

APPLICATION INCIDENT INFORMATION

(Please describe in detail the incident(s), Failure(s), Crash(es), and injury(ies) on the back of this form)

Crash	Fire	Number of Persons Injured	Number of Fatalities	Estimated Property Damage	Reported to Police
☐ Yes ☒ No	☐ Yes ☒ No				☐ Yes ☒ No

NARRATIVE DESCRIPTION OF FAILURE(S), INCIDENT(S), INJURY(IES)

DRIVER SEAT BROKE WHILE DRIVING. DEALER WILL REPAIR AT CONSUMER'S COST."AK

CONTINUE ON BACK IF NEEDED

Form Approved. O.M.B. No. 2127-0006

U.S. Department of Transportation
National Highway Traffic Safety Administration

DOT Auto Safety Hotline

Vehicle Owner's Questionnaire (VOQ)

NATIONWIDE 1-888-DASH-2-DOT
1-888-327-4236
www.nhtsa.dot.gov/hotline

00 JUL 31 AM 11:52
OFFICE OF DEFECTS INVESTIGATION

FOR AGENCY USE ONLY 436

Date Received: 31-MAY-2000

Od_or
rt_dt
od_rt
up_ltr

Reference No.: 862777

Work Number

Home Num [redacted]

OWNER INFORMATION (Type or Print)

[redacted] 611599

Do you authorize NHTSA to provide a copy of report to the manufacturer of your vehicle? ☑ YES ☐ NO
In the absence of an authorization, NHTSA WILL NOT provide your name and address to the vehicle manufacturer.

Signature of Owner [redacted] Date ___/___/___

VEHICLE INFORMATION

Vehicle Ident. No. (VIN.) (Located at bottom of windshield on driver's side)	Vehicle Make	Vehicle Model	Vehicle Year	Current Odometer Reading
1GNEK13K8SJ401707	CHEVROLET TRU	TAHOE	1995	99,062

Purchase Date: September 1998 ☐ New ☒ Used

Dealer's Name _____
City _____ State _____ Zip Code _____

Engine Size (CID/CC/L): 5.7L ☐ Turbo ☐ Diesel ☐ Gas ☑ Fuel Injection
No Cylinders: 8

Transmission Type	Antilock Brakes	Restraint System	Cruise Control	Drive Train	Vehicle Type	Body Style
☒ Manual ☐ Automatic	☐ Yes ☒ No	☐ 3-Point Belt ☐ Motorbelt ☒ Driverside Airbag ☐ 2-Point Belt ☐ Passengerside Airbag	☒ Yes ☐ No	☐ Front ☐ Rear ☑ 4-Wheel	☐ Car ☒ Sport Utl ☐ Van ☐ Truck ☐ Minivan ☐ Motorcycle ☐ Other	☐ 2-Door ☒ 4-Door ☐ Stationwagon ☐ Pick Up Truck ☒ Other

FAILED COMPONENT(S)/PART(S) INFORMATION

Component	Part Name(s)	Location	Failed Part(s)
12310000	INTERIOR SYSTEMS:SEAT TRACKS AND ANCHORS	☐ Left ☐ Right ☐ Front ☐ Rear	☑ Original ☐ Replacement

No of Failures

Date(s) of Failure(s): 27-MAY-2000
Mileage at Failure(s): 99,133
Vehicle Speed at Failure(s): 30 mph

Failed Part(s) Available? ☑ Yes ☐ No

NHTSA Previously Contacted? ☐ Yes ☑ No

APPLICATION INCIDENT INFORMATION

(Please describe in detail the incident(s), Failure(s), Crash(es), and Injury(ies) on the back of this form)

Crash	Fire	Number of Persons Injured	Number of Fatalities	Estimated Property Damage	Reported to Police
☐ Yes ☒ No	☐ Yes ☒ No			$ 2,354.26	☐ Yes ☒ No

NARRATIVE DESCRIPTION OF FAILURE(S), INCIDENT(S), INJURY(IES)

DRIVER SEAT BROKE WHILE DRIVING. DEALER WILL REPAIR AT CONSUMER'S COST.*AK

CONTINUE ON BACK IF NEEDED

14 July, 2000
Reference: VIN 1GNEK13K8SJ401707

General Motors
PO Box 33170
Detroit, MI 48232-5170

Dear Sir,
Subject: Failed Drivers Seat Frame in 1995 Tahoe, FP-Number, 12472585, Frame 16.716

On 27 May 2000 the drivers seat lower frame failed at the forward left hand side attachment point to the sliding frame attached to the vehicle body. This failure was particularly troubling in that it occurred while driving the vehicle, nearly causing the driver to lose control with two small children seated in the rear.

Taking the vehicle into George White Chevrolet, Ames, IA. their service technicians determined that the entire lower seat frame would require replacement. We were informed that there was not service bulletin on this part. In addition, since the vehicle was no longer under warranty, no repairs would be covered.

Through casual conversation with other Chevrolet/GM Tahoe and Suburban owners of the same vintage all confirmed that they too have had similar seat failures. This is not an isolated event and is due to a fundamental design flaw in this part.

The vehicle I own, VIN 1GNEK13K8SJ401707 had 77,000 miles on the odometer at the time of failure, >99% of all driving is on paved highway. It is reasonable to assume that the average speed of the vehicle is approximately 45 mph. This would suggest that the vehicle has been in operation for nearly 1,700 hours. The two primary operators of the vehicle weight 145 pounds and 185 pounds respectively.

It is reasonable to suggest that as the driver of the vehicle sits in the seat, the vehicle pitching occur at a frequency less than 10 Hz. This would indicate that the seat had fewer than 61.6e6 cycles of reversing load. See Figure 1 for illustration:

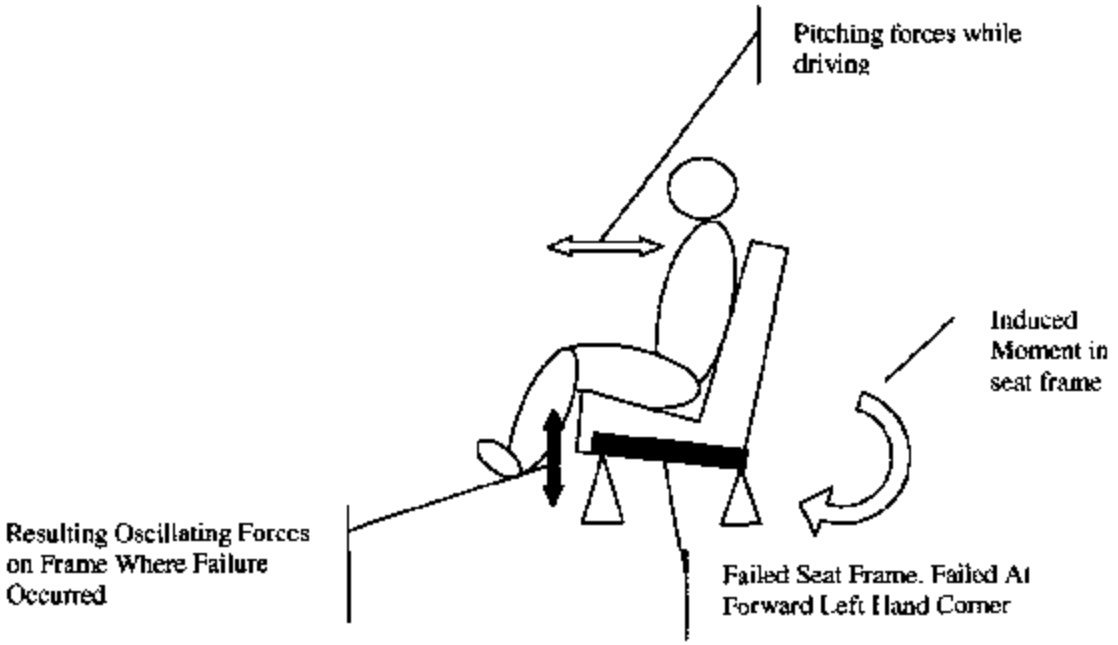

Figure 1. General description of forces and point of failure

Assuming the load distribution is equally distributed between all four attachment points, the average loading would be 46.25 pounds. The metal stamping was measured at a thickness of 0.40 of an inch thick with the spot weld diameter of 0.375 inches. The backing plate is welded at 4 spots. Therefore the static working stresses should be on the order of 2,500 psi in the weld. The reversing stress to cause failure within 61.6e6 cycles is on the order of 20,000 psi. Knowing that the force at the seat attachment point is 46 pounds, this would indicate an acceleration of 7.6 g's, not exactly positive marketing data for operator comfort and vehicle smoothness. Clearly, there are other design flaws at work for this failure to occur.

Examination of the seat frame at the failure location clearly shows multiple cracks emanating from multiple stress risers in the stamped frame material. The metal stamping had a backing plate spot-welded to the frame. The frame had a stamped hole where a fastener could be run through to the backing plate. The backing plate was formed with a hole where threads would be formed upon insertion of a fastener. The sheet metal stamping also has multiple holes stamped into the surface where various components may be attached or bolt fasteners attached to the nut backing plates. The initial source of the cracking occurred at the hole punched through the sheet metal to form the hole where the fastener from the seat frame attached to the chassis to the seat itself. The yellow arrow highlights the remainder of the stamped hole in the following Figure 2. The red arrows show the initial crack that lead to the ultimate failure.

Figure 2. Frame Point of Failure.

Secondary failure points were located where the backing nut was spot welded to the stamped cross member. The blue arrows in Figure 3 points to two of four spot welds where the crack continued to propagate leading to the ultimate failure of the seat frame. Also visible in Figures 2 and 3 are the multiple cracks that developed during the point of initiation to failure. All of these cracks lead to a dramatic loss in strength of the frame, making for a potentially very dangerous situation for the driver and passengers of the vehicle.

Assuming the load distribution is equally distributed between all four attachment points, the average loading would be 46.25 pounds. The metal stamping was measured at a thickness of 0.40 of an inch thick with the spot weld diameter of 0.375 inches. The backing plate is welded at 4 spots. Therefore the static working stresses should be on the order of 2,500 psi in the weld. The reversing stress to cause failure within 61,600 cycles is on the order of 20,650 psi. Knowing that the force at the seat attachment point is 46 pounds, this would indicate an acceleration of 7.6 g's, not exactly positive marketing data for operator comfort and vehicle smoothness. Clearly, there are other design flaws at work for this failure to occur.

Examination of the seat frame at the failure location clearly shows multiple cracks emanating from multiple stress risers in the stamped frame material. The metal stamping had a backing plate spot-welded to the frame. The frame had a stamped hole where a fastener could be run through to the backing plate. The backing plate was formed with a hole where threads would be formed upon insertion of a fastener. The sheet metal stamping also has multiple holes stamped into the surface where various components may be attached or bolt fasteners attached to the nut backing plates. The initial source of the cracking occurred at the hole punched through the sheet metal to form the hole where the fastener from the seat frame attached to the chassis to the seat itself. The yellow arrow highlights the remainder of the stamped hole in the following Figure 2. The red arrows show the initial crack that lead to the ultimate failure.

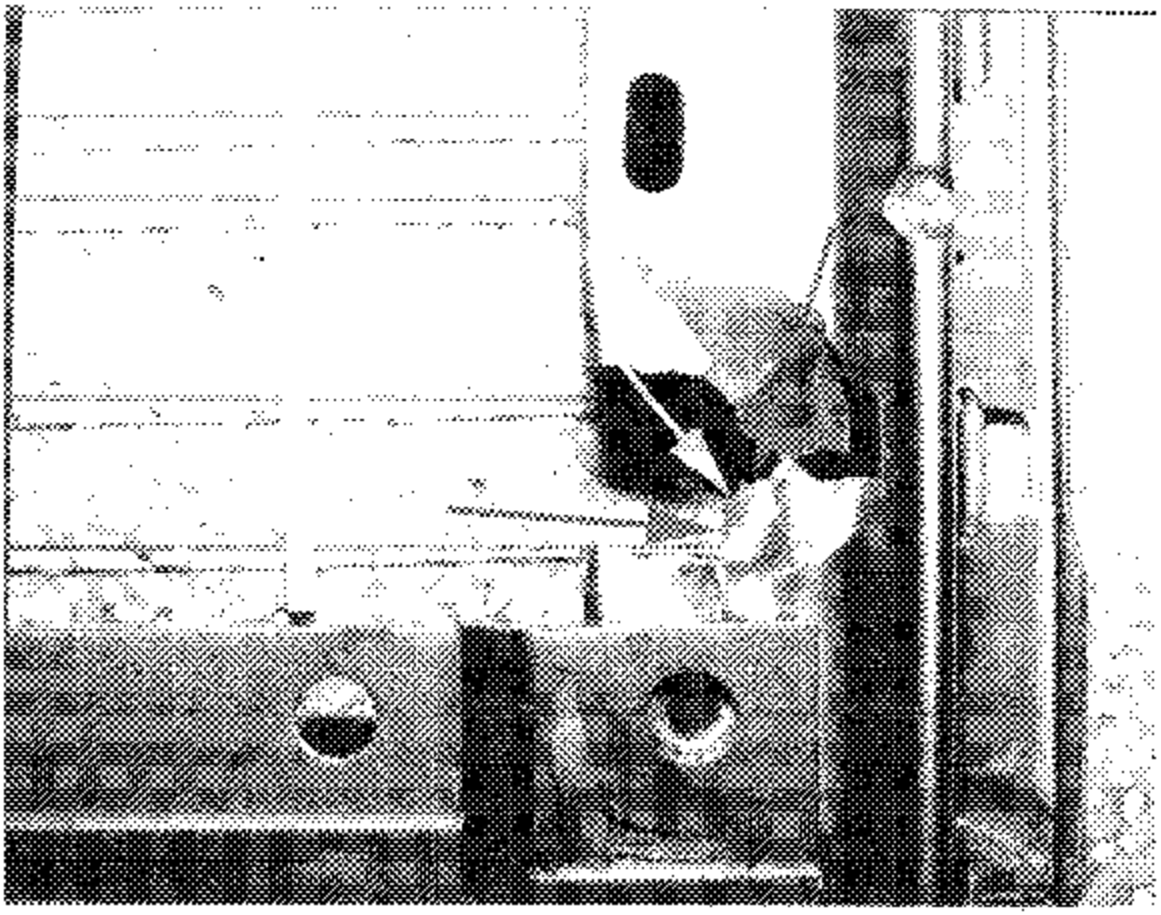

Figure 2. Frame Point of Failure.

Secondary failure points were located where the backing nut was spot welded to the stamped cross members. The blue arrows in Figure 3 points to two of four spot welds where the crack continued to propagate leading to the ultimate failure of the seat frame. Also visible in Figures 2 and 3 are the multiple cracks that developed during the point of initiation to failure. All of these cracks lead to a dramatic loss in strength of the frame, making for a potentially very dangerous situation for the driver and passengers of the vehicle.

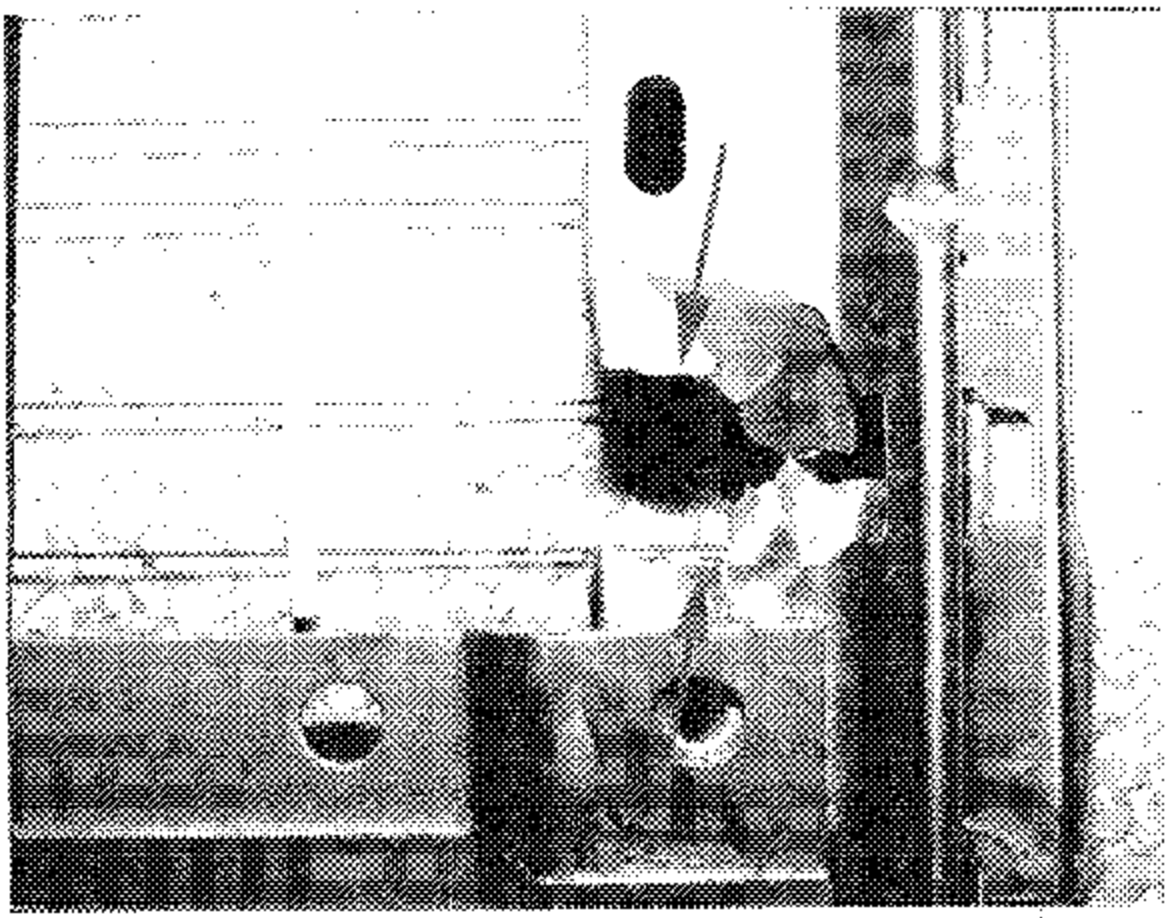

Figure 3 Secondary Cracks Leading to Ultimate Failure

Figure 4 is a micrograph of the surface of the crack indicated by the upper blue arrow in Figure 3. This crack surface shows fatigue failure by its smooth appearance. This location is where one of the spot welds was made to hold the backing plate/nut in place.

Figure 4. Micrograph of Crack Surface at Spot Weld.

Figure 5 shows crack surface one half the distance between the edge of the stamping and the spot weld in Figure 4. This is the surface indicated by the upper blue arrow in Figure 3. The interesting feature of this picture, Figure 5, is that the upper surface is smooth and shiny indicating fatigue failure causing the propagation of the crack. The lower half of the crack surface shows the result of the final failure mode when the material became overstressed and failed.

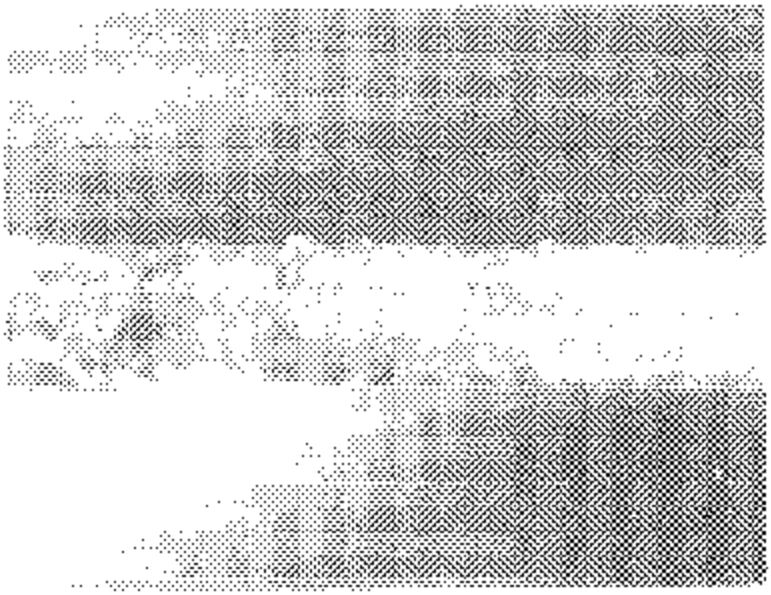

Figure 5. Crack Surface Showing Upper Fatigue and Lower Overstress Failure

Figure 4 is a micrograph of the surface of the crack indicated by the upper blue arrow in Figure 3. This crack surface shows fatigue failure by its smooth appearance. This location is where one of the spot welds was made to hold the backing plate/nut in place.

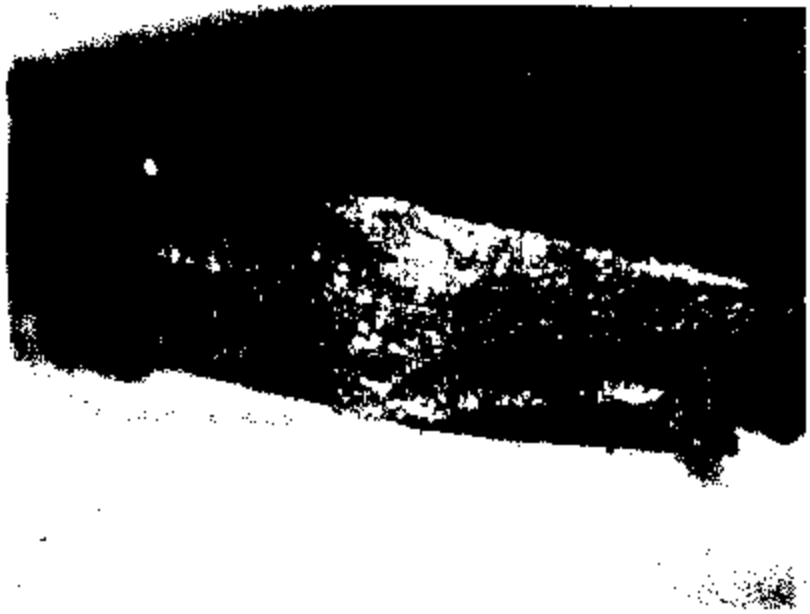

Figure 4. Micrograph of Crack Surface at Spot Weld.

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Figure 5. Crack Surface Showing Upper Fatigue and Lower Overstress Failure.

The body of evidence shows that the seat frame failed due to fatigue. The source of the fatigue failure is due to an improper design or material defect. This problem could have been much more serious. It is however, not reasonable to charge me, the owner of the vehicle to repair what is clearly a design defect. A design defect that could have caused serious loss of life and property.

It is therefore requested that I be reimbursed in the amount of $234.26, the cost to repair the vehicle. Attached is the invoice CTCS28388 from George White of Ames, IA

Sincerely,

[redacted]

cc: NHTSA
Information Management, Staff NSA-10.01
400 7th Street, SW
Washington, DC 20590

George White
AMES, IOWA 50010
Highway 30 & 69 S. P.O. Box 845
Phone (515) 233-2211
1-800-262-3834

CHEVROLET | Geo | PONTIAC

CUSTOMER NO. 35595	ADVISOR SCOTT T HOLBACH 1202	TAG NO. 42	INVOICE DATE 06/01/00	INVOICE NO. CTCS28388
[redacted]	LABOR RATE / LICENSE NO.	MILEAGE 77133	COLOR WHITE/	STOCK NO.
	YEAR / MAKE / MODEL 95/CHEVROLET TRUCK/TAHOE		DELIVERY DATE 06/14/95	DELIVERY MILES
	VEHICLE ID. NO. 1GNEK13K8SJ401707		SELLING DEALER NO.	PRODUCTION DATE
	F. T. E. NO.	P. O. NO.	R. O. DATE 05/30/00	
BUSINESS PHONE	COMMENTS			

```
LABOR & PARTS-------------------------------------------------------------
J# 1 77CVZ          INTERIOR TRIM WORK               TECH(S):1202

PARTS------QTY---FP-NUMBER--------------DESCRIPTION-----------------UNIT PRICE-
JOB # 1     1     12472585              FRAME 16.716                   136.00        136.00
                                                    JOB # 1 TOTAL PARTS              136.00

                                             JOB # 1 TOTAL LABOR & PARTS             136.00
-------------------------------------------------------------------------------------
SUBLET-----PO#--------VEND INV#-INV.DATE-DESCRIPTION---------------------
JOB # 1    99276      38037    06/01/00 REPLACE SEAT FRAME                            85.00
                                                        TOTAL - SUBLET                85.00

TOTALS-------------------------------------------------------------------------------

                                                        TOTAL LABOR....                0.00
[] Cash   [] Check #........    [] Charge               TOTAL PARTS....              136.00
                                                        TOTAL SUBLET...               85.00
[] Visa/MasterCard    [] American Express               TOTAL G.O.G....                0.00
                                                        TOTAL MISC CHG.                0.00
***IT'S FAST OR IT'S FREE***                            TOTAL MISC DISC                0.00
GM GOODWRENCH QUICKLUBE PLUS                            TOTAL TAX......               13.26
IN 29 MINUTES OR LESS WE WILL CHANGE YOUR OIL AND FILTER                           ---------
TOP OFF VITAL FLUIDS AND INSPECT VEHICLE AND IF IT TAKES  TOTAL INVOICE $            234.26
MORE THAN 29 MINUTES, THE NEXT ONE IS FREE
NO APPOINTMENT IS NEEDED FOR GM GOODWRENCH QUICKLUBE PLUS

NON-GM PARTS ARE INDICATED WITH AN @ PRECEDING THE PART
NUMBER
```

[redacted]

GEORGE WHITE CHEVROLET INC
HWY 30 & 69 S
AMES IA 50010
(515) 233-2211
5:20 PM 06/01/00
[redacted]
SALE TERMN 0001
AMOUNT $ 234.26
REF #016 AP #01847
BATCH #133
RC N28388
I AGREE TO COMPLY WITH
THE CARDHOLDER AGREEMENT
SIGNATURE
WHITE-MERCHANT YELLOW-CUSTOMER

JUN - 1 2000

END OF INVOICE]   14:36:02