



U.S. Department
of Transportation

National Highway
Traffic Safety
Administration

DOT Auto Safety Hotline

Vehicle Owner's Questionnaire

To Report Vehicle Safety Defects

1-888-DASH-2-DOT

(1-888-327-4236)

INTERNET: www.nhtsa.dot.gov/hotline

FOR AGENCY USE ONLY 100148

Date Received

19-JAN-2007 9:10

Repository

Reference No.

10179108

OWNER INFORMATION (Type or Print)

Name [Redacted]
Address [Redacted]
City WHEELING State WV Zip Code [Redacted]

Daytime Telephone Number

Evening Telephone Number

E-mail Address

Do you authorize NHTSA to contact the manufacturer of your vehicle? YES NO
In the absence of an authorized representative, please provide the name and address to the vehicle manufacturer.
Signature of Owner [Redacted] Date 2.5.07

VEHICLE INFORMATION

17 digit Vehicle Identification Number Located at bottom of windshield on driver's side: 5NPEU46F66H [Redacted]
Make HYUNDAI Model SONATA Model Year 2006
Date Purchased 01-MAR-06 Dealer's Name and Telephone Number Strub Hyundai 304 233-2222 Engine: No: Cylinders 6 Fuel Type: Gas
Original Owner Dealer's City Wheeling, W.V. State WV Zip Code 26003
Transmission Type Antilock Brakes Powertrain Vehicle Component Code 181000 VEHICLE SPEED CONTROL:ACCELERATOR PEDAL
AUTOMATIC Cruise Control FRONT WHEEL DRIVE Multiple Failure: 1

FAILED COMPONENT(S) /PART(S) INFORMATION

Incident Date(s) 03-JAN-2007 Failure Mileage 28000 Failure Speed 30
Approx.

ADDITIONAL ITEMS TO BE COMPLETED WHEN REPORTING A TIRE FAILURE

Tire Make [Redacted] Tire Model (Name or Number) [Redacted] Tire Size (Example P215/65R15) [Redacted]
DOT No. (Example: DOTM19ABC036) Original Equipment Prior Repair Failure Location: [Redacted]
Tire Component Code [Redacted] Tire Failure Type [Redacted]

ADDITIONAL ITEMS TO BE COMPLETED WHEN REPORTING A CHILD SEAT FAILURE

Make: [Redacted] Date Manufactured: [Redacted] Model No./Name: [Redacted]
Seat Type: [Redacted] Installation System: [Redacted]
Child Seat Component Code: [Redacted] Failed Part: [Redacted]

APPLICABLE INCIDENT INFORMATION

(Please describe in detail the incident(s), failure(s), crash(es), and injury(ies).)

Crash Yes No Injury Yes No
Number of Persons Injured 0 Number of Deaths 0 Reported to Police Y

Narrative Description of Incident(S), Crash(es), and Injury(ies).
Please describe (1) events leading up to the failure, (2) failure and its consequences, and (3) what was done to correct the failure; i.e., parts repaired or replaced (and if old part is available).

TL* - WHILE DRIVING UP A HILL AT A SPEED OF 45 MPH, THE CONTACT WAS APPLYING THE BRAKE PEDAL TO SLOW DOWN, BUT THE ACCELERATOR PEDAL BECAME STUCK, CAUSING THE ENGINE TO ROAR LOUDLY. THE VEHICLE ACCELERATED UNEXPECTEDLY AND THE CONTACT TRIED TO APPLY THE BRAKE PEDAL, BUT THE PEDAL WOULD ONLY GO DOWN APPROXIMATELY AN INCH. THE CONTACT CONTINUED TO APPLY BRAKE PEDAL WITH BOTH FEET, BUT WITH NO RESULTS. AT THIS POINT CONTACT WENT TO THE MIDDLE LANE OF THE ROAD CHANGING THE VEHICLE FROM AUTOMATIC TRANSMISSION TO MANUAL MODE. THE CONTACT DOWN SHIFTED FROM 5 TO 4 GEAR WHILE THE ENGINE WAS STILL REVVING. AT THIS POINT CONTACT TURN THE IGNITION OFF, BUT THE ENGINE DIDN'T GO OFF CAUSING THE CONTACT TO REAR END ANOTHER VEHICLE AT A SPEED OF 30 MPH. TWICE BEFORE THIS ACCIDENT, THE CONTACT EXPERIENCE THE BATTERY LOSING POWER TO THE VEHICLE. THE FIRST INCIDENT OCCURRED 24 HOURS AFTER PURCHASING THE VEHICLE AND THE SECOND WAS IN DECEMBER 06. WHEN THE CONTACT TOOK VEHICLE TO THE DEALER THEY STATED THAT THERE WASN'T ANYTHING WRONG WITH THE VEHICLE. THE CONTACT CAN PROVIDE COPIES OF INVOICE REPAIR AND POLICE REPORT. *JB

Include, if available: Police/Fire Department Report, Photos, and Repair Invoice. ATTACH ADDITIONAL SHEETS IF NECESSARY

The Privacy Act of 1974 - Public Law 93-579 This information is requested pursuant to authority vested in the National Highway Traffic Safety Act and subsequent amendments. You are under no obligation to respond to this questionnaire. Your response may be used to assist the NHTSA in determining whether a Manufacturer should take appropriate action to correct a safety defect. If the NHTSA proceeds with administrative enforcement or litigation against a manufacturer, your response, or a statistical summary thereof, may be used in support of the agency's action.

Date of accident 1/3/2007

Location of accident-Pittsburgh, Pennsylvania

This car is a 2006 Hyundai, Sonata. Champagne color and a 4 door. This car is used to get me to and from work (80 miles round trip per day) as well as a family car.

I, along with a co-worker [REDACTED], was attending a business meeting in Pittsburgh. We left the meeting at approximately 4:45pm. I had no problem with my car going to and through the Fort Pitt tunnels from the location of the meeting. As soon as I exited the tunnel, I accelerated because I-279 goes uphill outside of the tunnel. I immediately felt the pedal leave my foot and go to the floor of the car. I heard the engine rev loudly and we took off. I put my foot on the brake but the brake wouldn't go down more than 1/2" to an inch. I looked at my dashboard but nothing was unusual. The cruise light was on so I pushed the cruise button to turn it off but the cruise wouldn't go off. I had the cruise system on but not activated when I left the meeting to begin my drive home (70 miles). I put my flashers on, put my left thumb on the horn, and put both of my feet on the brake and pushed as hard as I could but the car did not slow down and the brake pedal still wouldn't go down more than 1/2" to an inch. I felt no ABS response at all. I realized I had to move over to the middle lane where the traffic was slower, afraid that I was going to get killed or kill someone else. I began downshifting my car in the manual mode. The engine was roaring. I kept trying to downshift and once I was safely in the middle lane I turned my ignition off. The engine didn't stop and I hit the car in front of me. (This woman said she felt my car continue to push her car after we collided and she had her foot on the brake. She realized I had a problem with my car and continued to keep her foot on the brake to hold me back.) I turned the key to the right and back off again and this time the engine stopped. While I was in the middle lane there was a car in the right lane with a girl on the phone. I was honking my horn the entire time this was happening with my flashers on to warn those around me that I had a runaway car. This girl didn't bother to look but continued to try to squeeze into my lane and I had no way of stopping to let her in. We also collided. My passenger was on her phone calling 911 for help. Everything they suggested I do, I had already done to try to stop the car. The girl in the right lane said she heard my horn but didn't look over.

I didn't move my car until the state trooper arrived. He saw me directly behind the car that I hit. The girl in the car in the right hand lane had moved her car into the middle lane in front of the car that I hit from behind. Trooper Leonard said I would not be cited, this was clearly a car out of control and not my fault. He said I did exactly what I should have done to avoid this being a fatal accident. He gave me a copy of the report along with his badge number and phone number at the police station and said for my insurance company to contact him if they had any questions.



Hyundai Motor America
 10550 Talbert Avenue, P.O. Box 20850, Fountain Valley, CA 92728-0850
 TEL: 714-965-3000 FAX: 714-965-3816
 WEB: HyundaiUSA.com

copy to Hyundai

OWNER AUTHORIZATION REQUEST

HYUNDAI MOTOR AMERICA HAS BEEN ASKED TO INSPECT THE FOLLOWING:

Customer [Redacted]
 VIN # 5NPEU46F66H
 Model Sonata, 4 Door,
 Year 2006
 HMA File # 102644
 Vehicle Location Straub Hyundai

The vehicle is located in your insurance/salvage yard. Please authorize a representative from Hyundai Motor America to perform the necessary interior/exterior inspection of the vehicle. Thank you in advance for your cooperation.

Present Owner:

I, [Redacted] authorize and consent the inspection of the
 [Printed Name]

following vehicle, (VIN) 5NPEU46F66H regarding the retrieval of any
 [Vehicle Identification Number]

electronically-stored data in the vehicle (if applicable), at our insurance/salvage yard.

[Redacted Signature]
 [Signature]

1-14-07
 [Date]

[Redacted] Home #
[Redacted] -work #

PENNSYLVANIA STATE POLICE
NOTICE OF CRASH INVESTIGATION

copy to
Hypack

REPORTED ON A COMMONWEALTH OF PENNSYLVANIA POLICE CRASH REPORT FORM, FORM AA-500, THE CRASH IN WHICH YOU WERE INVOLVED HAS BEEN REPORTED TO THE PENNSYLVANIA STATE POLICE AND WILL BE INVESTIGATED IN ACCORDANCE WITH SECTION 3746(C) OF THE PENNSYLVANIA VEHICLE CODE.

CERTIFIED COPIES OF THE COMMONWEALTH OF PENNSYLVANIA POLICE CRASH REPORT FORM (EXCLUDING APPENDED DOCUMENTS AND PHOTOGRAPHS) FOR CRASHES REPORTED TO THE PENNSYLVANIA STATE POLICE ARE AVAILABLE TO AUTHORIZED PERSONS UPON COMPLETION OF THE REVERSE SIDE OF THIS FORM AND ACCOMPANIED BY A CHECK OR MONEY ORDER IN THE AMOUNT OF \$8.00. THE CHECK OR MONEY ORDER SHALL BE MADE PAYABLE TO THE COMMONWEALTH OF PENNSYLVANIA. GOVERNMENT AGENCIES ARE EXEMPT FROM PAYMENT OF THIS FEE.

A POLICE CRASH REPORT FORM MAY BE VIEWED OR PHOTOGRAPHED (WITH PERSONAL EQUIPMENT) BY ANY PERSON INVOLVED (NOT WITNESSES), THEIR ATTORNEY, INSURER, AND CERTAIN GOVERNMENT OFFICIALS ONLY AT THE PENNSYLVANIA STATE POLICE STATION LISTED BELOW.

| | |
|---|---|
| DATE AND TIME OF CRASH <i>01/03/07 1702 HOURS</i> | INCIDENT NUMBER <i>B 0 3 - 1 5 5 7 4 6 1</i> |
| LOCATION OF CRASH <i>SR 279 SOUTHBOUND 1 mile south GREENTOWN</i> | COUNTY <i>ALLEGHENY</i> |
| INVESTIGATING OFFICER'S SIGNATURE <i>Det. Leonard</i> | BADGE NUMBER <i>5562</i> |
| PENNSYLVANIA STATE POLICE STATION <i>PITTSBURGH</i> | STATION TELEPHONE NUMBER <i>412 - 787 - 2000</i> |

IT IS RECOMMENDED THAT YOU OBTAIN, AT A MINIMUM, THE FOLLOWING INFORMATION FROM THE OTHER INVOLVED PERSON(S) BEFORE LEAVING THE SCENE OF THE CRASH. THIS INFORMATION CAN BE OBTAINED FROM THE DRIVER'S LICENSE, VEHICLE REGISTRATION CARD, AND ANY PROOF OF FINANCIAL RESPONSIBILITY.

| DRIVER/PEDESTRIAN/PROPERTY OWNER INFORMATION | VEHICLE OWNER INFORMATION |
|---|---|
| NAME | NAME |
| ADDRESS | ADDRESS |
| CITY STATE ZIP CODE | CITY STATE ZIP CODE |
| TELEPHONE NUMBER <i>— —</i> | TELEPHONE NUMBER <i>— —</i> |

| | |
|---|--------------------------------------|
| DRIVER'S/OPERATOR'S LICENSE NUMBER | YEAR, MAKE, AND MODEL OF VEHICLE |
| STATE OF ISSUANCE | REGISTRATION/LICENSE PLATE NUMBER |
| DRIVER'S/OPERATOR'S LICENSE EXPIRATION DATE | VEHICLE REGISTRATION EXPIRATION DATE |

| | | |
|-----------------------------------|---------------|------------------------|
| NAME OF VEHICLE INSURANCE COMPANY | POLICY NUMBER | POLICY EXPIRATION DATE |
|-----------------------------------|---------------|------------------------|

| |
|---------------|
| REMARKS/NOTES |
|---------------|



MV ENGINEERING COMPANY

3666 Paxton Road
Cincinnati OH 45208
(513) 321-6889
(513) 871-8469 FAX
daerni@mvengr.com

(800) 227-6833
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345 Mt. Lebanon Boulevard
Pittsburgh PA 15234-1505
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January 26, 2007

Mr. John Ratti
Erie Insurance
P.O. Box 96
Tiltonsville, OH 43963

Re: Unintended Acceleration Investigation
Wheeling, WV
Your Client: Michael Kovach
Your File No.: 100510256538
MV Engineering Project No.: 5472-22

Dear Mr. Ratti:

You had requested an engineering evaluation of a reported unintended acceleration incident regarding a 2006 Hyundai Sonata operated by [REDACTED]. Reportedly, on January 3, 2007, [REDACTED] was driving the Sonata on the Parkway west near Pittsburgh, Pennsylvania, exiting the Fort Pitt tunnel toward Greentree hill, when the car's engine throttle malfunctioned. You had requested an examination of the car in an attempt to identify what caused the reported problems.

I spoke with [REDACTED] on January 18, 2007. She said there had been no symptoms of any operational problem on that day prior to the incident but relayed that the battery had fully discharged while the car was parked overnight on two separate occasions. [REDACTED] was reportedly accelerating moderately to go up the hill and the cruise control ON but not SET. She described removing her foot from the accelerator, but the "pedal pulled away from my foot" and the engine throttle moved to high acceleration level. [REDACTED] stated that she then pressed on the brake pedal with both feet to regain control of the car but the pedal moved only a 1/2 inch with little braking effect. The engine throttle remained high, "screaming". She estimated the car's speed at about 45 mph as she first came from the tunnel and estimated that it had accelerated up to 55 mph during this process. [REDACTED] shifted the transmission lever into manual mode and attempted to downshift from fifth to fourth gear to control the car's speed and at all times the engine was whining at a high rpm. She described activating the emergency flashers and honking the horn to alert other drivers of her problem. The passenger in the car with [REDACTED] dialed 911 and requested assistance. [REDACTED] pulled the emergency brake ON while traveling in the middle lane and said that that seemed to slow the car to some extent. She then attempted to turn the ignition key OFF. She recalled the engine continued "screaming" when she struck a car ahead of her and she was pushing the car forward. During her second attempt, shortly after the impact, she was able to get the ignition to turn OFF.

MOTOR VEHICLE ENGINEERING EVALUATIONS

██████████ said the airbags in the car did not deploy and when the police responded to the accident scene, she was hesitant to get back in her vehicle to move it to the side of the road. However, after the impact, the car started normally and it moved to the side of the road without any symptom of the prior problem.

██████████ said that in talking with others about her experience she found another woman who owns a Hyundai Sonata who described having a similar throttle control problem.

I examined the car on Monday, January 22, 2007 at Straub Hyundai Service Center in Wheeling, West Virginia. The car is a four-door sedan with very minor passenger side front fender damage and minor damage to the front bumper. The level of damage on the car indicates that the closing velocity during the impact had necessarily been no more than approximately 8 mph to 10 mph. Photographs taken during the inspection are attached.

The Sonata's vehicle identification number was 1FNPEU46F66H██████████. The odometer displayed 28,826 miles. The accelerator pedal was free and unobstructed. The floor mat was setting level on the floor well away from the throttle pedal. None of the adjacent carpeting curled or positioned close to the throttle pedal.

This is a "fly by wire" throttle system in which throttle pedal movement controls a position sensor that is read by the engine control module. There is no throttle cable making a mechanical link between the throttle pedal and the engine throttle body. The throttle pedal's return spring worked properly, moving the pedal back to an idle position when released. There was no excessive lateral play detected and no evidence of binding.

A six-wire harness connects the throttle pedal to the engine throttle control. The connector felt tight and dry. The wires from the pedal assembly looped close to the steering column and a shiny spot on the steering column, as well as dirt on a foam wrap around the harness, indicated that there had been some incidental contact. There was no wear mark through the wrap to indicate any damage to the wires as a result of this contact. A length of used tape was visible hanging loosely to this wire harness near the firewall. Contact between the wire harness and a moving part is a manufacturing or design flaw, because over time the contact will wear away the protective cover and wiring insulation and lead to a short circuit of the electric signal in the wiring. While the observed contact is irregular and inappropriate, the absence of damage to the wire insulation suggests that the electrical fault had not yet occurred.

In a fly by wire system, there is no mechanical feedback between the throttle plate mounted on the engine and the accelerator pedal set on the driver's floor. As such, the driver's description of the accelerator pedal "moving away from her foot" is not an indication of a throttle movement on the engine, such as a cruise control mechanism inducing movement to the pedal. Her observation may suggest a pedal that had become stuck in an applied position and failed to rebound to idle as she release her foot's press on the pedal.

The brake light switch was tight and properly secured on the frame next to the brake pedal. The brake light circuit functioned normally when the pedal was pressed and released; the

brake lights came ON and OFF, respectively. The brake light switch circuit provides the signal that disengages the cruise control system SET.

The brake pedal had a normal stiffness or "feel" and moved through a typical range of motion. The pedal had a softer "feel" and moved closer to the floor with the engine ON, indicating the vacuum "power" boost was functioning properly.

The Hyundai is equipped with four-wheel disk brakes and all four were visibly in fine condition. The rear brake rotors appeared a little darker with a tint of blue consistent with potential overheating. The parking brake/emergency brake cables are a manual system operated from a lever arm on the center console through cables to the rear brakes. The rear brakes showed some minor bluing (due to emergency brake application?) while the front brake rotors showed no indication of overheating.

Per the service manager (Rick), the scan tool for the Hyundai indicated that no diagnostic trouble codes (DTC) were stored in the system. They had reportedly checked the engine codes, ABS codes and cruise control system codes with no evidence of any problem. Further, the car had been through a test drive the vehicle with the scanner tool installed and everything was found to be in the normal operating range. The ignition key had been turned OFF while driving and everything shut down normally.

I visually examined the throttle body control assembly mounted on the air intake manifold of the engine. The throttle plate was free of obstruction or evidence of contact. It moved freely and rapidly sprung back to an idle position when released. There were no contact marks or scrapes around the plate's edges. A screen and air filter were installed just upstream of the throttle body to prevent debris from entering the airway. All of the movable linkages for the throttle control were enclosed in housings on the throttle body. The electrical connectors were tight and there were no moving parts near any of the wire harnesses. No evidence of moisture was found on any of the connectors and they were note to be located well away from the edges of the hood.

Because this is a fly by wire system, there is no separate stepper motor or control cable for the cruise control system. The cruise control function is part of the engine control unit module with wiring inputs from the buttons mounted on the driver's steering column. The throttle control is conducted through electrical signals from the ECU.

I took the car for a test drive with John, a technician from the dealership, riding shotgun with the scan tool attached. There were no diagnostic trouble codes on the engine module when we started. The car ran normally. The ignition key turned the engine ON and OFF as expected with a clockwise and counterclockwise movement respectively. The throttle pedal behaved normally, always rebounding to an idle position when released and the engine response matched my throttle pedal inputs. The four-wheel disk brakes provided good braking and provided substantially more braking force than the engine output from a moderate throttle setting. That is, using one foot to hold the throttle pedal down on a high throttle setting, aggressive brake application with my left foot overcame the engine power and stopped the car from speeds of 40 to 50 mph.

I operated the car with the cruise control ON and the set ON and OFF. The vehicle maintained speed in a normal fashion. The buttons to turn the cruise system OFF or to CANCEL the set point worked normally. On each occasion that I pressed the brake pedal, the cruise system turned OFF normally. I conducted tests with the cruise system ON and holding down each of the buttons to simulate a stuck button or contact. I found that the brake pedal caused the system to turn OFF promptly and the engine idled and the car coasted in a normal fashion on each occasion.

With the throttle pedal pressed to the floor, the vacuum boost feature of the brakes was shown to dissipate if the brake pedal is pumped. A light application of the brake once or twice resulted in a high hard pedal with only ½ inch of movement when no vacuum boost pressure was dissipated. In such a case, the force required at the brake pedal increases substantially and stopping distance is extended. However, the car did decelerate down to 5 or 10 mph with the engine throttle at maximum while pushing on this high hard brake pedal.

When we returned to the garage, there were no diagnostic trouble codes in the engine system control that related to the throttle. Two diagnostic trouble code in the ABS/EBS system indicated time out errors on the electronic communications area network (CAN) within the system.

My inspection did not identify a specific cause of the "stuck throttle" condition described by [REDACTED]. Her description of a high hard brake pedal was recreated by having the engine throttle at maximum while attempting to brake from highway speeds. This is a normal response for a vacuum boost power assist system. The ignition key system worked normally. Similarly, the transmission gearshift worked normally in both the automatic and sport shift modes.

One concern with her description of the event are the perceived malfunctions in several different independent systems within the car; transmission shift, brake system, throttle system, ignition key system. And with hindsight we can second-guess a more effective driver response to the problem. Nevertheless, the fundamental problem that she described is an engine that was revving to very high rates even after she removed her foot from the throttle pedal and she reportedly has a passenger and witness to corroborate that claim. Further, the condition persisted for 30 or 40 seconds, sufficient time for her passenger to call 911 to request assistance; it was clearly not a driver that became momentarily disoriented.

The throttle response problem could not be recreated during the test drives or a specific problem identified during the inspection.

There are only a few components that could directly affect the engine throttle, the throttle pedal assembly, the throttle position control motor mounted on the throttle body, the engine control module that coordinates the electrical signals between those two systems (and functions as a cruise control system module) and the wiring harnesses that connects these units. Being electro-mechanical systems, the throttle pedal and the throttle control motor are the two parts that interface the electrical/computer system with the outside world

facilitating mechanical movements, i.e. the throttle pedal movement provides a signal and the throttle plate movement is driven by an electrical signal.

The only anomaly that was observed during the inspection was the harness from the throttle pedal was rubbing on the steering column. Theoretically, wear to the wire insulation caused by this contact could short one of the wires to the steering column/ground and cause an inaccurate throttle pedal position reading in the system. This could bias the reading from the throttle pedal position sensor and cause the engine to move to a high throttle setting. This is described as a theoretical issue because no wiring wear was found during this investigation. However, the section of used tape found on the harness indicated that someone had been handling the wiring in this area prior to my inspection.

In my opinion, the available evidence, namely, the driver's description of the event, the witnesses and 911 call, provide a compelling account of a problem with the engine throttle control. The descriptions of the various things attempted by the driver are, in my opinion, reasonably consistent with a stuck high throttle position engine condition. However, the cause of the behavior is readily identifiable.

In an attempt to repair this intermittent problem I would recommendation consideration of the following:

1. At the very least, the wire harness should not be making contact with the steering column and the harness should be adjusted to get it away from the steering column.
2. The DTCs that were present after the test drive should be resolved through the defined service repairs.
3. Serious consideration should be given to replacing the three key modules that makeup the throttle control system, i.e. the throttle pedal assembly, the engine throttle body and the engine control module. The problem is most likely an intermittent operating defect in one of these parts. The driver's description of the throttle pedal's behavior suggests that it would be the #1 candidate.

This report summaries my observations, analysis and opinions regarding the requested evaluation of [REDACTED] 2006 Hyundai Sonata. If you have any questions, or if additional information becomes available, please do not hesitate to call. I have appreciated the opportunity to have been of service.

Sincerely,



e-sign

Steven M. Pustay, P.E.