TOYOTA

TOYOTA MOTOR NORTH AMERICA, INC.

WASHINGTON OFFICE
1850 M STREET, NW, SUITE 600, WASHINGTON, DC 20036

TEL: (202) 775-1700
FAX: (202) 463-8513

April 28, 2005

for ODI

Mr. Jeffrey Quandt
Chief – Vehicle Controls Division
Office of Defects Investigation
National Highway Traffic Safety Administration
400 Seventh St., SW
Washington, DC 20590

without confidential

Re: NVS-213kmb; PE05-009

Dear Mr. Quandt:

This letter is being sent in response to your February 25, 2005 letter regarding PE05-009. Per our agreement, this letter completes our response to your inquiry.

Please note that the information included in Attachments 8-1 through 8-5 and Attachments 9-1 and 13-1 is confidential. Toyota has made a request for the confidential treatment of these documents to the Office of Chief Counsel.

Enclosed you will find two copies of this final response and a CD-ROM containing updates to Attachments 3 and 6. Should you have any questions about this response, please contact Mr. Chris Santucci or Mr. Tsuyoshi Yokoi at (202) 775-1707.

Sincerely,

for Chris Tinto
Vice President
TOYOTA MOTOR NORTH AMERICA, INC.

CT:cs
Attachment

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WASHINGTON OFFICE
1850 M STREET, NW, SUITE 600, WASHINGTON, DC 20036

TEL: (202) 775-1700
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April 28, 2005

Mr. Otto Matheke, Attorney
Office of Chief Counsel, NCC-110
National Highway Traffic Safety Administration
400 Seventh Street, SW, Room 5219
Washington, D.C. 20590

Subject: NVS-213kmb; PE05-009
Confidential Information

Dear Mr. Matheke:

In accordance with 49 CFR 512.4, enclosed is Toyota's response to NHTSA's February 25, 2005 letter concerning PE05-009, a defect investigation into Lexus RX330 vehicles.

Toyota claims that the information contained in Attachments 8-1 through 8-5 and Attachments 9-1 and 13-1 herein contains confidential information, specifically detailed engineering information on the electronic braking system, strategy, and performance requirements used in the subject vehicles. Toyota considers this information to be proprietary, and reflective of the company's significant technological and intellectual investment, and would not be available to others without similar efforts.

Release of this confidential material would aid Toyota's competitors in learning details of Toyota's specifications, performance requirements, and control strategies for the electronic braking system, closely guarded information in the motor vehicle industry. Disclosure of this information would likely result in competitive harm. Therefore, Toyota requests that this material be treated permanently as confidential. Such information has historically been so recognized by the agency, and confidential treatment has been granted.

If this request and supporting affidavit are found to be insufficient to establish Toyota's entitlement to confidential treatment, we ask that, pursuant to 49 CFR 512.19, you afford us the opportunity to supplement this request.

If you have any questions about these materials, please contact Mr. Chris Santucci or Mr. Tsuyoshi Yokoi at (202) 775-1707.

Sincerely,

K. S. Ro

for Chris Tinto
Vice President
TOYOTA MOTOR NORTH AMERICA, INC.

CT:cs
Enclosure

CERTIFICATE IN SUPPORT OF
REQUEST FOR CONFIDENTIALITY

I, Chris Tinto, pursuant to the provisions of 49 CFR 512, state as follows:

(1) I am Chris Tinto, Vice President, Toyota Motor North America, Inc., and I am authorized by Toyota Motor Corporation (Japan) to execute this certificate on its behalf;

(2) I certify that the information contained in "Attachments 8-1 through 8-5 and Attachments 9-1 and 13-1" in the response to NHTSA's February 25, 2005 letter [NVS-213kmb; PE05-009] is confidential and proprietary data and is being submitted with the claim that it is entitled to confidential treatment under 5 U.S.C. 552(b)(4) (as incorporated by reference in and modified by the statute under which the information is being submitted);

(3) I hereby request that the information contained in "Attachments 8-1 through 8-5 and Attachments 9-1 and 13-1" be protected permanently;

(4) This certification is based on the information provided by the responsible Toyota Motor Corporation and affiliate personnel who have authority in the normal course of business to release the information for which a claim of confidentiality has been made to ascertain whether such information has ever been released outside Toyota Motor Corporation;

(5) Based upon that information, to the best of my knowledge, information and belief, the information for which Toyota Motor Corporation and their affiliates have claimed confidential treatment has never been released or become available outside Toyota Motor Corporation or their affiliates;

(6) I make no representations beyond those contained in this certificate and, in particular, I make no representations as to whether this information may become available outside Toyota Motor Corporation and their affiliates because of unauthorized or inadvertent disclosure (except as stated in paragraph 5); and

(7) I certify under penalty of perjury that the foregoing is true and correct. Executed on this, the 28th day of April 2005.

Executed on this, the 28th day of April 2005.

for Chris Tinto
Vice President
TOYOTA MOTOR NORTH AMERICA, INC.

04MY Lexus RX330 Brake Booster Investigation (PE05-009)

1. State, by model and model year, the number of subject vehicles Toyota has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Toyota, state the following:
   a. Vehicle identification number (VIN);
   b. Make;
   c. Model;
   d. Model Year;
   e. Date of manufacture;
   f. Date warranty coverage commenced; and
   g. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

   Provide the table in Microsoft Access 2000, or a compatible format, entitled "PRODUCTION DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Response 1

The number of MY 2004-2005 (until Feb. 28, 2005) Lexus RX330 vehicles Toyota has manufactured for sale or lease in the United States by model year and production facility is as follows:

Model	Model Year	Production Facility	Number of Vehicles	Total
RX330	2004	Toyota Motor Kyushu (Japan)	98,267	120,917
	2005		22,650	
	2004	Toyota Motor Manufacturing Canada	49,802	80,190
	2005		30,388	
Total				201,107

In addition, detailed information for each vehicle is provided electronically on CD-ROM, in Microsoft Access 2000 format entitled "Attachment 1-PRODUCTION DATA (PE05-009)".

2. State the number of each of the following, received by Toyota, or of which Toyota is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:
    a. Consumer complaints, including those from fleet operators;
    b. Field reports, including dealer field reports;
    c. Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
    d. Property damage claims;
    e. Third-party arbitration proceedings where Toyota is or was a party to the arbitration; and
    f. Lawsuits, both pending and closed, in which Toyota is or was a defendant or codefendant.

    For subparts "a" through "d," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

    In addition, for items "c" through "d," provide a summary description of the alleged problem and causal and contributing factors and Toyota's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Response 2

Using the method for tabulation detailed in your question, there are 149 complaint reports that may relate to the alleged defect. Please note that Toyota did not include any consumer complaints where the customer did not actually experience the alleged defect, but had called to complain because they had heard about the issue from other sources.

There are 19 (nineteen) field reports that may relate to the alleged defect.

In the consumer complaints, 5 incidents have been reported where a vehicle crash was alleged. In addition, Toyota has received one legal related claim (i.e., PL claim) involving a crash that may relate to the alleged defect. There are no reports alleging that an injury and/or a fatality had occurred as well.

Toyota has received one property damage claim that may relate to the alleged defect, and this is duplicated with the previous legal claim.

There is one buy-back arbitration claim in process that may relate to the alleged defect.

There are no lawsuits in which Toyota is or was a defendant or codefendant.

In addition, Toyota has summarized the consumer complaints relating to the specific descriptions as requested under separate enclosure. Please see "Attachment 2-Consumer Complaints" and "Attachment 5b-Legal Claim Data" stored in Microsoft Excel 2000 format on the enclosed CD-ROM.

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
    a. Toyota's file number or other identifier used;
    b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
    c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
    d. Vehicle's VIN;
    e. Vehicle's make, model and model year;
    f. Vehicle's mileage at time of incident;
    g. Incident date;
    h. Report or claim date;
    i. Whether a crash is alleged;
    j. Whether property damage is alleged;
    k. Number of alleged injuries, if any; and
    l. Number of alleged fatalities, if any.

    Provide this information in Microsoft Access 2000, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a preformatted table which provides further details regarding this submission.

Response 3

The information for each item (complaint, report, claim, or matter) is provided electronically on CD-ROM, in Microsoft Access 2000 format entitled "Attachment 3-REQUEST NUMBER TWO DATA (PE05-009)."

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Toyota used for organizing the documents.

Response 4

Copies of all consumer complaints (Attachment 2), and all field information (Attachment 4-Field Information) are provided electronically on CD-ROM. In addition, paper copies of the legal related claims are included as Attachment 5a.

5. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Toyota to date that relate to, or may relate to, the alleged defect in the subject vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

   Separately, for each such claim, state the following information:

   a. Toyota's claim number;
   b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
   c. VIN;
   d. Repair date;
   e. Vehicle mileage at time of repair;
   f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
   g. Labor operation number;
   h. Problem code;
   i. Replacement part number(s) and description(s);
   j. Concern stated by customer; and
   k. Comment, if any, by dealer/technician relating to claim and/or repair.

   Provide this information in Microsoft Access 2000, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Response 5

The total count of the warranty claims paid by Toyota that may relate to the alleged defect on the MY 2004-2005 Lexus RX330 is as follows. Warranty claims are separated for the 2004 MY by "Pre-CM" and "Post-CM," where "CM" refers to the countermeasure taken on June 17, 2004. All of the affected vehicles are within the original warranty coverage period; there were no extended warranty claims or goodwill claims.

Model	Model Year	Produced Plant	Number of Claims	
RX330	2004	Toyota Motor Kyushu (Japan)	87	
	2005		6	
	2004	Toyota Motor Manufacturing Canada	Pre-CM	Post-CM
			3,459	35
	2005		21	
Total			3,608	

The information for each claim is provided electronically on CD-ROM, in Microsoft Access 2000 format entitled "Attachment 6-WARRANTY DATA (PE05-009)".

6. Describe in detail the search criteria used by Toyota to identify the claims identified in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by Toyota on the subject vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that Toyota offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

Response 6

The search criteria used by Toyota to identify the claims are the following:
Toyota searched the warranty database for those claims that replaced part numbers of 44610-***** (brake booster) and 47028-***** (brake master cylinder) on the all MY 2004-2005 RX330s. Toyota reviewed the comments in the claims to determine if it may be related to the alleged defect.
In the data the following labor operation codes were found:

46301 (brake booster assembly remove and replacement)
46110 (brake master cylinder assembly remove and replacement)

The terms that Toyota offers for new vehicle warranty coverage on MY 2004-2005 RX330 vehicles is 48 month or 50,000 miles from the vehicle's date-of-first-use (DFU or DOFU) whichever occurs first.

7. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Toyota has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that Toyota is planning to issue within the next 120 days.

Response 7

Toyota issued a Technical Service Information Bulletin, titled "Brake Booster" (BR005-04), which may relate to the alleged defect. A copy of the bulletin is included as Attachment 7, and on CD-ROM in PDF format.

8. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Toyota. For each such action, provide the following information:
    a. Action title or identifier;
    b. The actual or planned start date;
    c. The actual or expected end date;
    d. Brief summary of the subject and objective of the action;
    e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
    f. A brief summary of the findings and/or conclusions resulting from the action.

    For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

Response 8

Please see "Attachment 10 Investigation Summaries."

9. Provide a table summarizing all testing conducted by, or for, Toyota to assess the performance of the brake system in the subject vehicles in the normal condition and in any and all "backup" conditions (e.g., loss of brake power assist, partial system failure). Include the following information in the table: (1) test number; (2) test date; (3) test vehicle description; (4) test description/configuration; and (5) the brake pedal effort, brake pedal travel, maximum deceleration, and stopping distance for each test run. Include in this response all material related to compliance testing/certification for Federal Motor Vehicle Safety Standard No. 135 S7.11, "Passenger Car Brake Systems/ Brake Power Unit or Brake Power Assist Unit Inoperative (Depleted)." Provide copies of all test reports.

Response 9

The brake performance varies, based on brake pedal application force and vehicle speed. Therefore, Toyota has conducted "slow speed", "medium speed" and "high speed" confirmation tests as shown in the following table.

(1)	Test Number	No Specific Test Number is Available (Attachment 8-3)	No Specific Test Number is Available (Attachment 8-5)	FMVSS No.135 S7.11 Compliance Test (Attachment 9-1)
(2)	Test Date	June 29, 2004	Feb. 23, 2005	June 5-6, 2003
(3)	Test Vehicle	04MY RX330 4WD, USA Spec, 1,800kg total vehicle weight: passengers/cargo	04MY RX330 4WD, USA Spec, 1,800kg total vehicle weight: passengers/cargo	04MY RX330 4WD, USA Spec, GVW condition
(4)	Test Description/ Configuration	From a garage, reverse or "backing-out" mode confirmation with and without brake booster assist	Medium speed brake performance confirmation with and without the brake booster assist	High speed brake performance confirmation with and without the brake booster assist
(5)	Brake Pedal Effort, deceleration, etc.	Please refer to Attachment 8-3	Please refer to Attachment 8-5	Please refer to Attachment 9-1

10. Describe all modifications or changes made by, or on behalf of, Toyota in the design, material composition, manufacture, quality control, supply, or installation of the subject components, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:
    a. The date or approximate date on which the modification or change was incorporated into vehicle production;
    b. A detailed description of the modification or change;
    c. The reason(s) for the modification or change;
    d. The part numbers (service and engineering) of the original component;
    e. The part number (service and engineering) of the modified component;
    f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
    g. When the modified component was made available as a service component; and
    h. Whether the modified component can be interchanged with earlier production components.

    Also, provide the above information for any modification or change that Toyota is aware of which may be incorporated into vehicle production within the next 120 days.

Response 10

Toyota changed the supplying plant of the brake booster diaphragm for North American-production RX330 vehicles. The details of this change, in response to the items in your question, are described below.

a. Approximately June 17, 2004.
b. Japanese-production brake booster diaphragm is introduced in the North American-production vehicles.
c. The reason for the change is described in Response 8 (Investigation # 1).
d. Brake Booster Assembly: 44610-0E010 (2WD), 44610-0E020 (4WD)
   (booster diaphragm: 131137-10290; this number is used only at ADVICS-NA)
e. Brake Booster Assembly: 44610-0E010 (2WD), 44610-0E020 (4WD)
   (booster diaphragm: 131137-10280; this number is used only at ADVICS-NA and Japan)
f. The unmodified part was withdrawn from the production line on approximately June 17, 2004. The service part of the unmodified part was changed at the same time.
g. Approximately June 17, 2004
h. The modified component is interchangeable with the unmodified component (as related to the vehicle assembly).

11. Produce one of each of the following:
    a. Exemplar samples of each design version of the subject components;
    b. Field return samples of the subject components exhibiting the alleged defect; and
    c. Any kits that have been released, or developed, by Toyota for use in service repairs to the subject components/assemblies which relate, or may relate, to the alleged defect in the subject vehicles.

Response 11

a. Toyota has provided one new (current North American-production) brake booster assembly. Toyota does not have in its possession a new (unused) brake booster of the previous design.
b. Toyota has provided a field return part of the previous design.
c. The new brake booster is also available as a service part, and is the same part as referenced in 11a.

12. State the number of each of the following that Toyota has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale *(including the cut-off date for sales, if applicable)*:
    a. Subject components; and
    b. Any kits that have been released, or developed, by Toyota for use in service repairs to the subject components/assemblies.

For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number) Also identify by make, model and model year, any other vehicles of which Toyota is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage

Response 12

Part sales records of the subject vehicle "brake booster assembly" and "brake master cylinder" monthly sales volume is provided electronically in Microsoft Excel 2000 format, and submitted as "Attachment 8-Part Sales History."

Supplier information for both the brake booster and the brake master cylinder is as follows, by production facility:

Toyota Motor Manufacturing Canada:

Manufacturer Name:	ADVICS North America, Inc.
Address:	45300 Polaris Ct., Plymouth, MI 48170-6039
Telephone:	(734)-414-5100

Toyota Motor Kyushu (Japan):

Manufacturer Name:	ADVICS Japan, Corporation
Address:	2-1 Showa-cho, Kariya-shi, Aichi-kan, Japan, 448-8688
Telephone	+81-566-63-8000

13. Describe (and represent graphically) the amount of boost gain provided by the vacuum brake booster assembly, measured in terms of hydraulic brake line pressure as a function of the force applied to the brake pedal by the driver, when the vacuum brake booster assembly is both normally functioning and inoperative/depleted. Also describe (and represent graphically) the relationship between brake pedal travel and the force applied to the brake pedal by the driver when the vacuum brake booster assembly is both normally functioning and inoperative/depleted. In addition, state the following information:
    a. The brake pedal lever ratio;
    b. The maximum achievable brake pedal height;
    c. The maximum achievable range of brake pedal free play; and
    d. The minimum achievable pedal reserve distance for a normally functioning brake system.

Response 13

The amount of boost gain varies, based on the brake pedal application force and the vehicle speed. Please refer to "Attachment 8-3" for an analysis of the vehicle operating at a slow speed. Please refer to "Attachment 8-5" for an analysis of vehicle operating at a medium speed, and "Attachment 9-1" for an analysis of vehicle operating at a high speed. The relationship between brake pedal force and brake pedal stroke were measured and the results submitted as "Attachment 13-1". In addition, the follwing items refer to those in Question 13:

a. The brake pedal lever ratio; 2.366
b. The maximum achievable brake pedal height; 155 +/- 5mm (from floor panel to the pedal)
c. The maximum achievable range of brake pedal free play; 2.5 +/- 0.5mm
d. The minimum achievable pedal reserve distance for a normally functioning brake system.
   → 80mm (from floor panel to the pedal) at 490N pedal force.

14. Furnish Toyota's assessment of the alleged defect in the subject vehicle, including:
    a. The causal or contributory factor(s);
    b. The failure mechanism(s);
    c. The failure mode(s);
    d. The risk to motor vehicle safety that it poses; and
    e. The reports included with this inquiry.

Response 14

Based upon our investigation, we believe that the alleged defect is related to the North American-production brake booster diaphragm, and is only applicable to certain MY2004 North American-production RX330 vehicles.

Investigation

As a result of our investigation, it was found that the North American-production brake booster diaphragms may allow a larger clearance (0.6mm maximum) in the area where the brake booster body (front and rear) is joined together because they are not as stiff as the Japanese-production diaphragm. In addition, the North American-production diaphragm has a reduced ability to return to shape when compared to the Japanese-production diaphragm, especially in extremely cold conditions. The combination of the larger clearance and the reduced ability to return to shape may cause insufficient sealing of the brake booster body when the brake booster loses vacuum. In order to lose brake booster vacuum, it is required to operate (depress) the brake pedal three times or more prior to starting the vehicle engine.

According to our investigation, the brake booster power assist failure can occur for a maximum of 95 seconds at –20 degrees Celsius or below, if the vehicle is parked for a long time and the operator depresses the brake pedal three times or more prior to starting the vehicle engine. Therefore, it is possible that brake power assist failure may occur when an operator is leaving a garage or a parking space while traveling at a slow speed. However, even if this type of brake booster failure occurs, the RX330

vehicles have a back-up function that uses the ABS actuator reservoir pressure, and will assist in reducing the brake pedal operation effort. In addition, after the engine vacuum replenishes the brake booster, full power assist is restored to these vehicles. The investigation results are evidenced by almost of all the customer complaints, field information (technical reports), and the minor accident reports.

Field Incidents

Toyota has included six incidents alleging that a crash had occurred due to brake power assist failure. However, three of the six cases resulted in very minor damage (i.e., the vehicle bumper touched the garage door, etc) after starting the vehicle in the morning. One of the incidents has been confirmed by both a Lexus dealer representative and a Toyota Motor Sales (TMS) representative that the vehicle's brake assist system had not failed, but rather a minor accident occurred due to snow covering the roadway. Please refer the "Attachment 14-1" to confirm the investigation results.

Also, only one consumer complaint stated that "...brakes completely out while traveling down a highway at 70MPH...". We have tried to investigate this condition, however, we found that the vehicle has had the brake booster replaced, and there was no crash or damage due to the alleged failure. We can only speculate that the vehicle may have some other, unrelated problem.

Vehicle Braking Ability

It is important to note that some customers have stated that "the brake pedal went to the floor" or similar. When the brake booster loses vacuum on startup, the brake pedal may feel harder to depress, with a short pedal stroke. We believe that these customers may mistake this hard brake pedal for the pedal touching the floor. Furthermore, if the ABS actuator activates in this condition, the brake pedal will loosen a slight amount, and appear to sink a small amount under foot. An operator may misunderstand this condition as the pedal touching the floor.

Regardless, as evidenced in our investigation results, the brake pedal height will be higher in normal conditions than when the brake booster has failed. In addition, in our investigation, Toyota has confirmed that the subject vehicle's brakes still perform well when experiencing the failure mode, as evidenced by reasonable brake pedal application forces when the vehicle is traveling at a low or medium speed.

Conclusion

In summary, based on our investigation, Toyota believes that the failure mode does not constitute an unreasonable risk to safety because of the following points:

- The brake booster failure can only occur in a rare combination of brake operation three times or more prior to starting the vehicle engine and extremely cold weather.
- The duration of power assist failure is quite short (e.g. 95 seconds maximum at –20 degree Celsius or below), with full power assist restored to the braking system after this time.
- The ABS actuator back-up function maintains the brake pedal operational force within a reasonable range for stopping the vehicle from both slow and medium vehicle speeds.

- Only a few very minor accidents (i.e. contacting a garage door) were reported.
- The vehicle braking system continues to operate, and the vehicle can still be stopped when experiencing the failure mode. The failure of the brake booster cannot result in a total loss of the vehicle braking system.

However, in order to ensure utmost customer confidence and satisfaction, Toyota is planning to conduct a field action to replace the brake booster on all potentially affected 2004MY North American-production RX330 vehicles. At this time the plan for this field action has not been finalized; Toyota will inform your office of the details as soon as they are available.

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In early June 2004, Toyota duplicated the failure mode, and confirmed the problem lies in the North American-production brake booster diaphragm characteristics:

Brake booster and master cylinder cut-away view

Toyota found that the area where the brake booster body (front and rear) is joined together and retains the diaphragm is a key element of the problem.

Toyota's Decision/Action

Toyota has decided to introduce the Japanese-production brake booster diaphragms into the North America-production brake boosters in early June 2004.

[Attachment 8-2]

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Cause of the problem

- There are two types of brake booster diaphragm; one is produced in North America and has been used on North American-production RX330 vehicles (until June 2004), and the other is produced in Japan and has been used on Japanese-production RX330 vehicles and recent North America-production RX330 vehicles (from June 17, 2004).
- While running the vehicle engine, vacuum is applied to the brake booster front body, rear body and the booster diaphragm. The vacuum causes the diaphragm to deform in the retaining groove of the brake booster body.
- The amount of deformation that the diaphragm experiences is different between the North American-production diaphragm and Japanese-production diaphragm. [redacted]

  Confidential Information Removed
- If the brake booster temperature decreases to equal the atmospheric temperature, and operator depresses the brake pedal three times or more after stopping the engine (prior to re-starting the engine), remaining vacuum in the brake booster will be released fully. [redacted]

  Confidential Information Removed
- This deformation may cause the clearance "X" in the chart below, and causes an insufficient sealing condition until the diaphragm returns to the original shape.
- The ability to return to shape on the North American-production diaphragm is worse than that of the Japanese-production diaphragm.
- A combination of a large clearance "X" and reduced ability to return to shape on the North American-production diaphragm causes insufficient brake booster body sealing (i.e., brake assist failure) for a few seconds after starting the engine.

Vehicle Condition	Parked for a Prolonged Period		Brake Pedal Operation	Start Engine
Booster Temperature	70 degree C	20 degree C		
Booster body and diaphragm rubber condition	[redacted]			
	Diaphragm rubber is deformed due to vacuum	Diaphragm retains shape as pedal is depressed	When depressing the brake pedal 3 times or more vacuum in the booster is released, allowing the body to separate and causing the clearance "X".	After starting the engine, the diaphragm rubber returns to its original shape, restoring the vacuum seal between the front and rear booster body.

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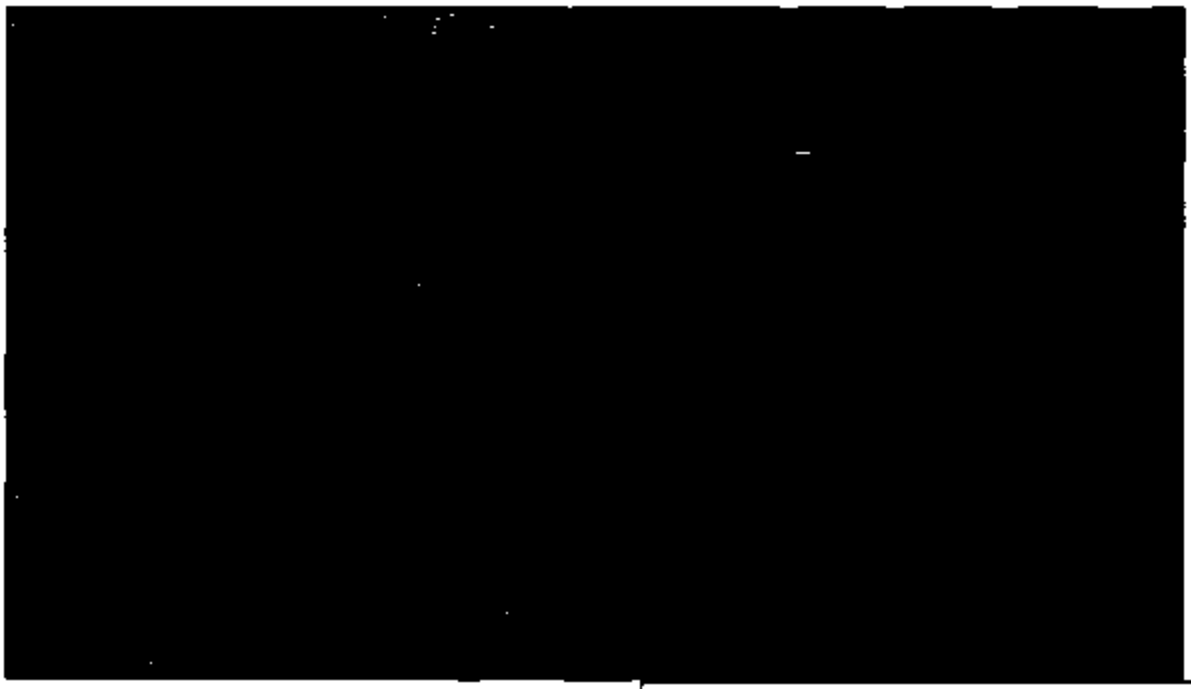
Performance of braking system in failed condition (low speed)

- Based on the investigation into the cause of the failure, it is believed that the power assist failure may occur for a few seconds after starting the vehicle after being parked for a prolonged period. In most cases, vehicles experiencing this failure mode would be involved in maneuvers such as backing out of a garage.
- The vehicle speed is set to a creeping speed, and a comparison is made between the brake pedal application force of the normal power assist mode and the failed mode.
- As a result, Toyota has confirmed that the brake pedal application force increased for those vehicles experiencing the failure. However, the vehicle could be stopped with a reasonable brake application force of less than 90N (approx. 8kg-f).



Test Date: June 29, 2004
Test Vehicle: RX330, USA spec,
Vehicle Weight: approx 1,800kg

Note: The RX330 has a fail-safe function for brake hydraulic pressure support (i.e., brake pedal force assist) system by using the ABS actuator reservoir pressure. A bold arrow in the graph above shows this fail-safe function.

Toyota's Decision/Action

Based upon the investigation above, Toyota believes that the failure may occur on a small number of the subject vehicles, since only a few customers will depress the brake pedal three times or more prior

to starting the engine. Therefore, this does not represent an unreasonable risk to vehicle safety. However, in order to maintain customer satisfaction, Toyota determined a corrective action and published a TSIB to all Lexus dealers.

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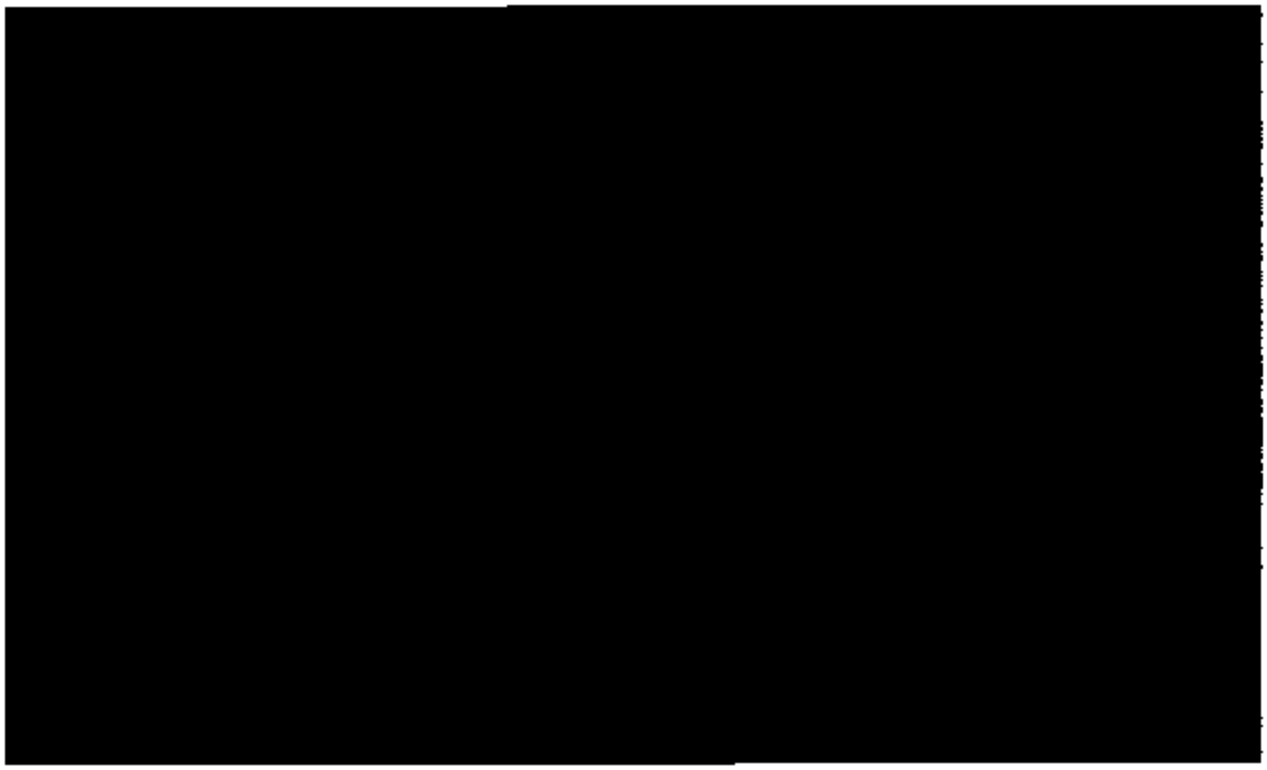
Toyota found that if the brake booster diaphragm becomes extremely cold, the duration of the brake power assist failure (after starting the vehicle) may increase to a maximum of 95 seconds. This investigation was in response to a rise in warranty claims in December 2004.

Review of failure mode-Warranty Claim increase

- Toyota found that the North American-production brake booster diaphragm has a reduced ability to return to shape when compared to the Japanese-production diaphragm under extreme cold (less than –20 degree C) conditions.



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Performance of braking system in failed condition (medium speed)

- Based upon the warranty claim investigation, which determined an issue with cold weather performance of the diaphragm, the brake power assist failure may occur for a maximum of 95 seconds.
- Toyota believes that it is an extremely rare case, however, it is possible that the vehicle may begin operating directly onto a service road. Therefore, Toyota evaluated the performance of the braking system of the vehicle traveling at a medium speed and experiencing the failure mode.
- The vehicle speed was set at 50km/h (31MPH), and a comparison was made between the brake pedal application force and the vehicle deceleration rate of the normal power assist mode and the failed mode.
- As a result, we have confirmed that under a general braking deceleration of –0.4G, both normal and failed mode vehicles could be stopped within almost the same time frame (distance) due to the fail-safe function of the ABS actuator back-up operation. The only difference between the two is the brake pedal application force. However, even in the failed mode, the brake pedal operation force was reasonable, in the range of less than 300N.
- Therefore, Toyota believes that there is no unreasonable safety risk with this condition.

[With the Brake Assist System Normal]

Test Date: Feb. 23, 2005
Test Vehicle: RX330, USA spec
Vehicle Weight: approx. 1,800kg

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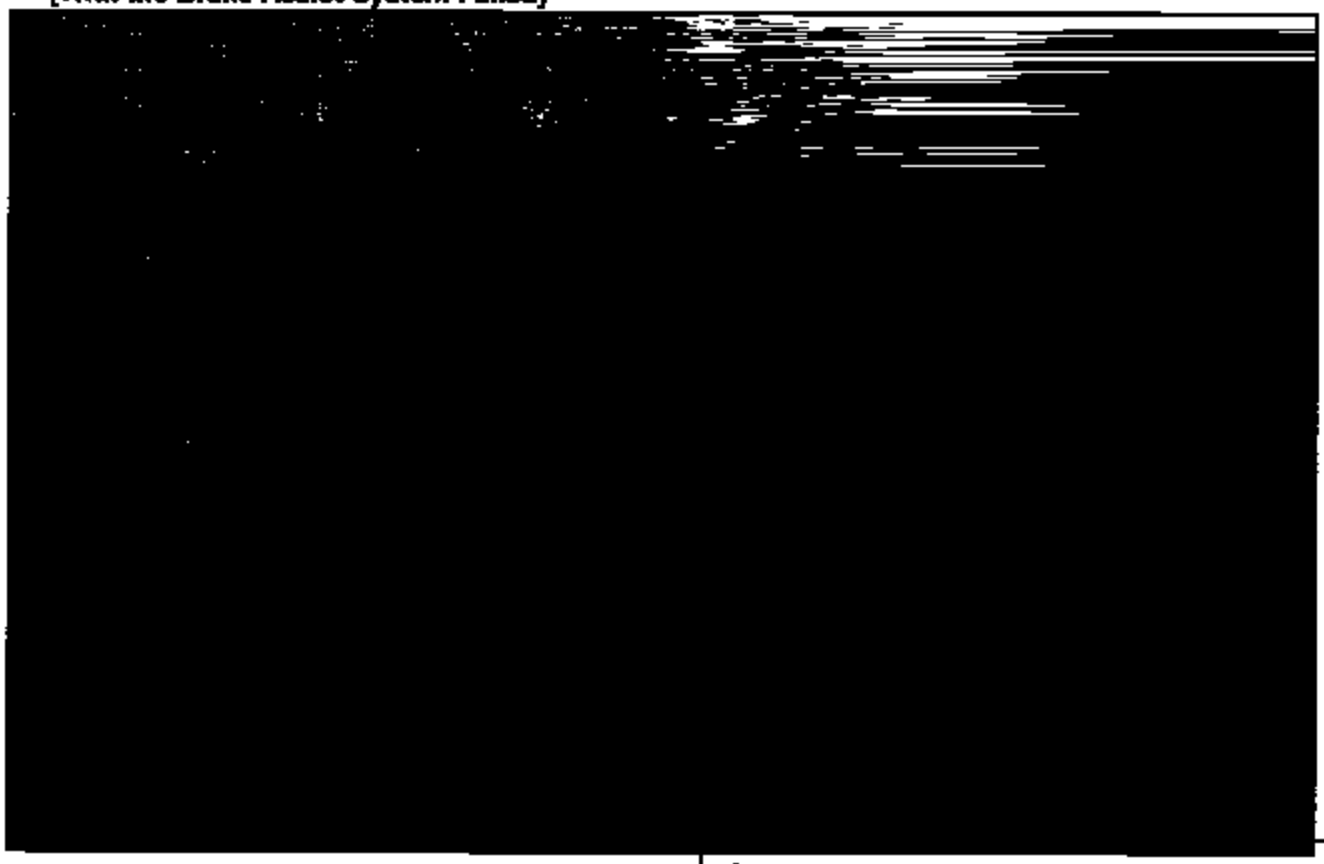
[With the Brake Assist System Failed]

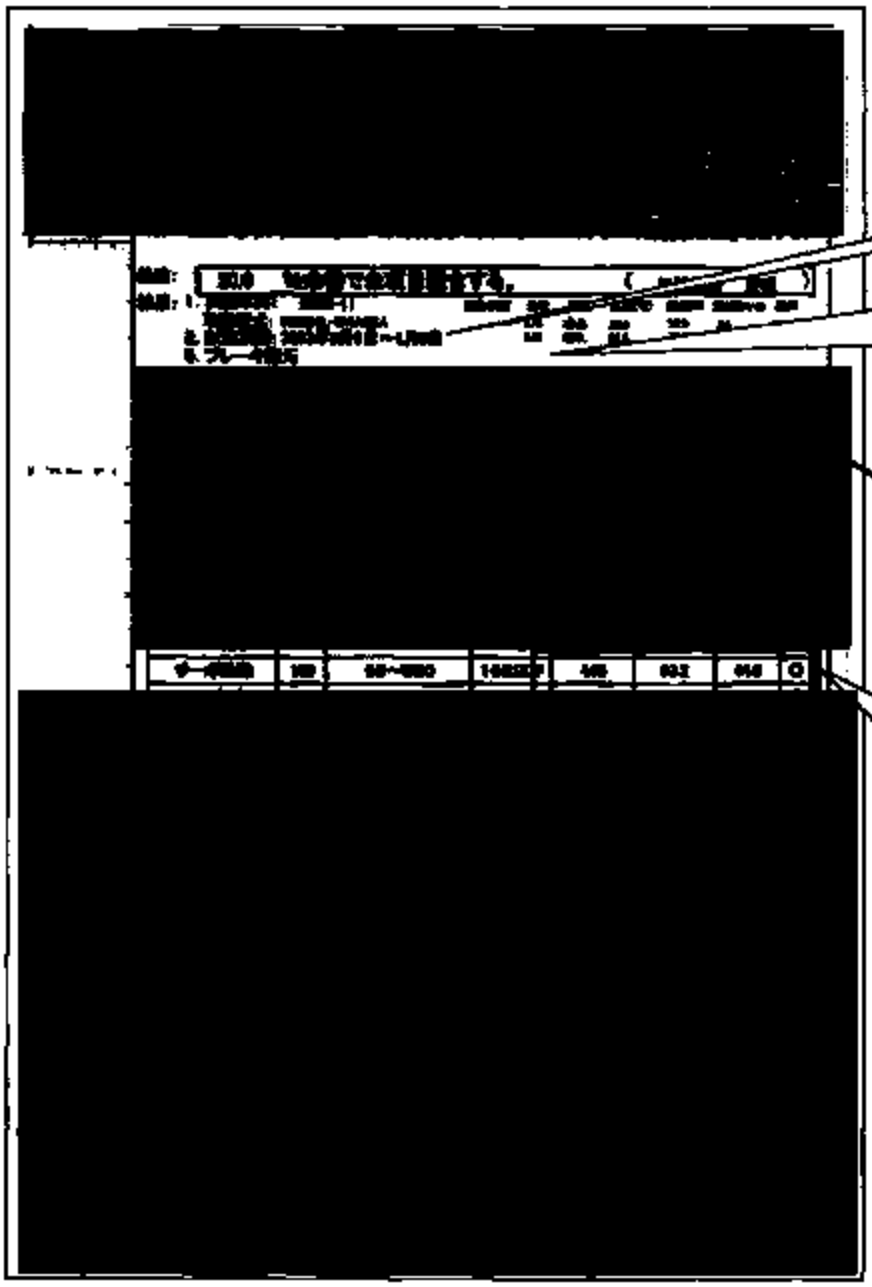


Test Date: Feb. 23, 2005

Test Vehicle: RX330, USA spec,

Vehicle Weight: approx. 1,800kg

CONFIDENTIAL



Test Date: June 5-6, 2003

Test Vehicle Spec
- RX330, 4WD, USA Spec
- GVW: 2388kg

Tire Spec

FMVSS No. 135 S7.11 Evaluation result summary
- Pedal Force: 495N
- Stopping Distance: 93.2m
- Margin to the STD: 44.5%

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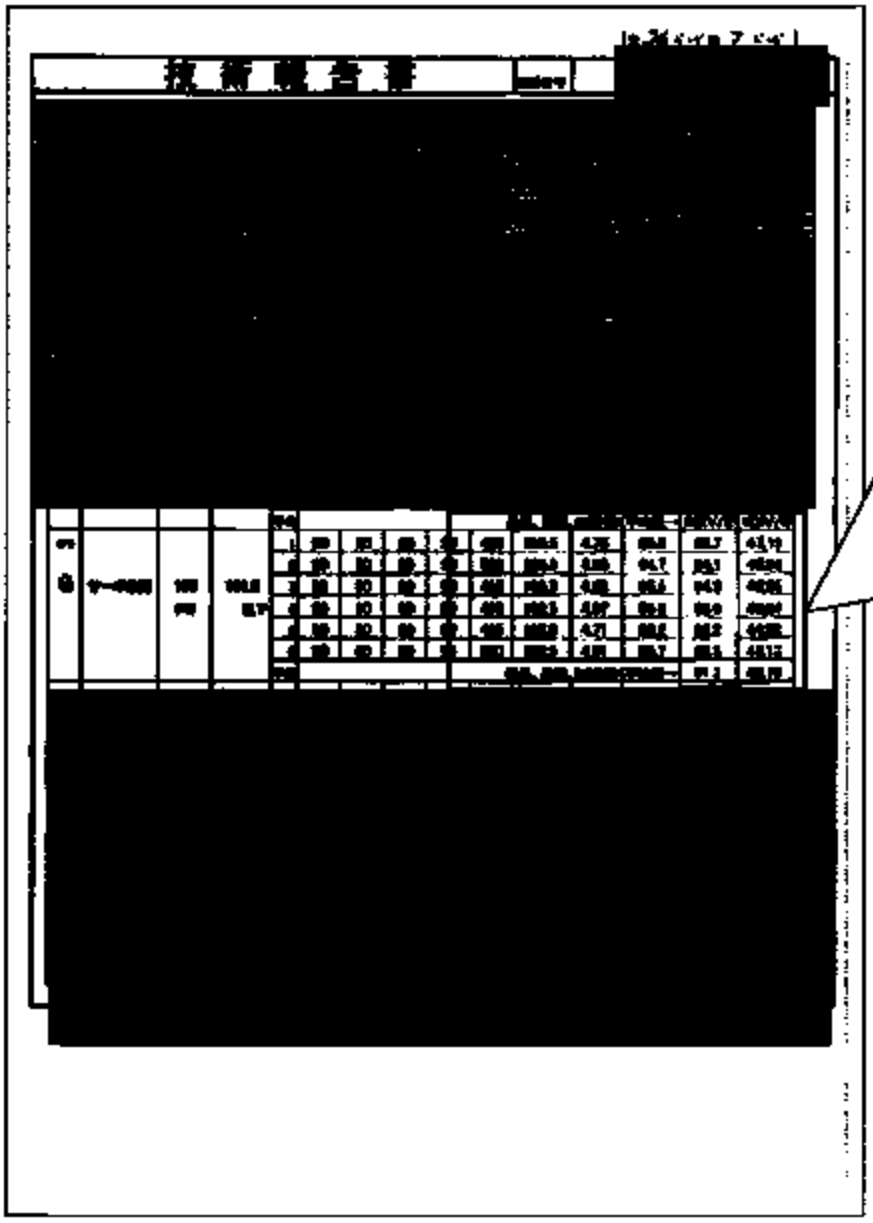
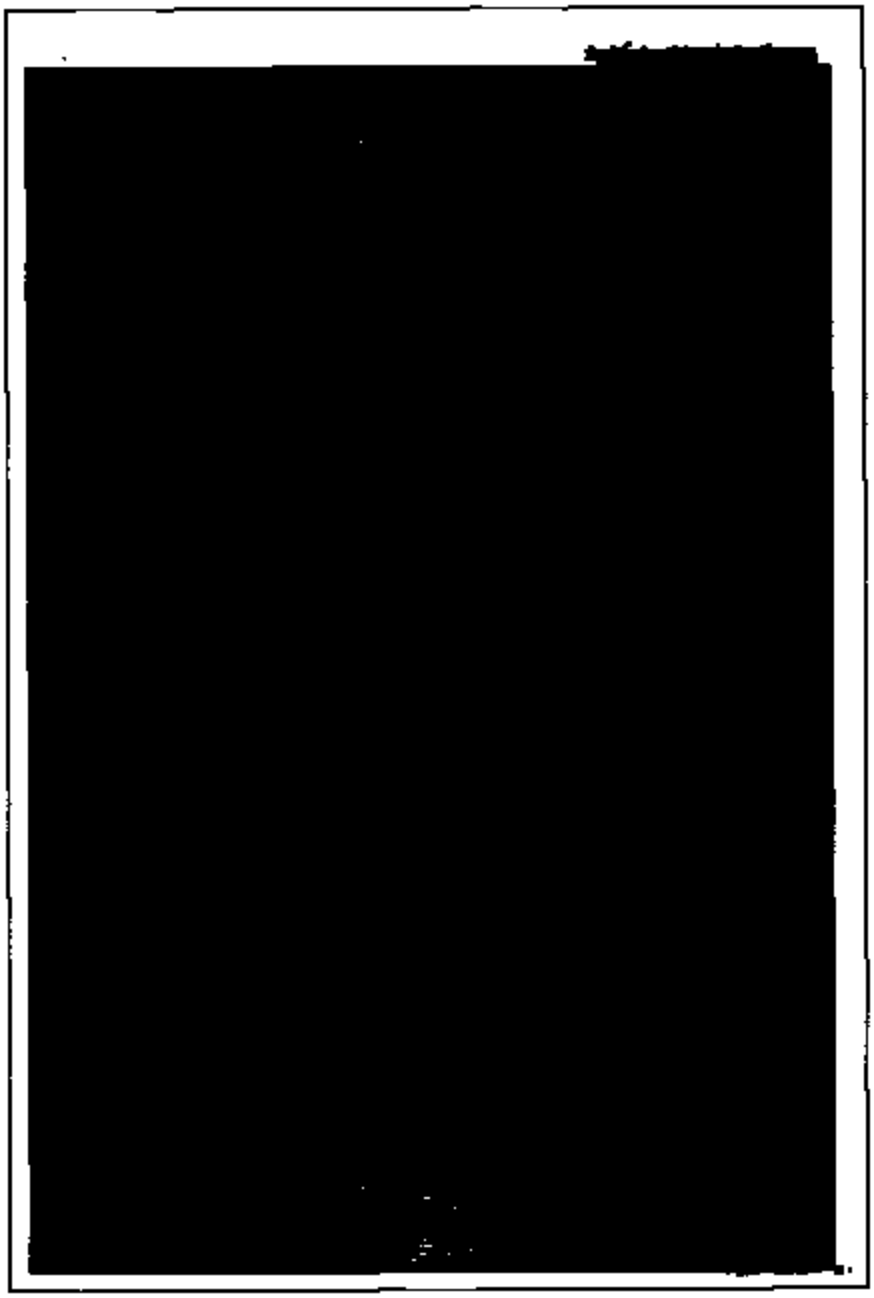


Six trials of FMVSS No. 135 S7.11. test.

From left:

- Maximum Pedal Force
- Initial Vehicle Speed
- MFDD
- Actual Stopping Distance
- Compensated stopping distance
- Margin to the std (regulation).

Raw data from each evaluation [pedal force vs. stopping duration (in seconds)]



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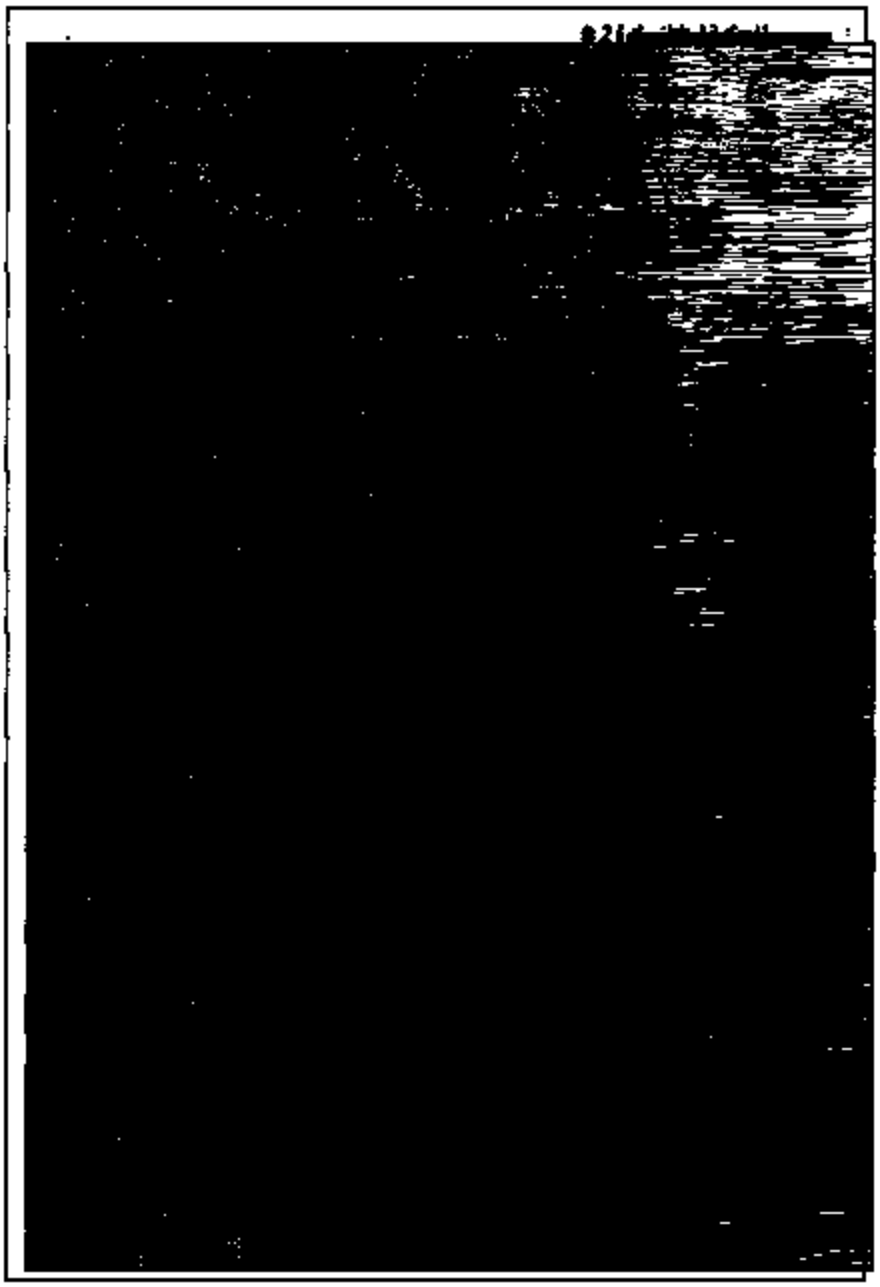
Attachment 9-1
p. 4of 4



Attachment 10 Investigation Summary

Investigation #1

a. Action Title or identifier:
Confirmation of Failure Mode (Cause and Condition)

b. The Actual or Planned Start Date:
Early May 2004

c. The Actual or Expected End Date:
June 9, 2004

d. Brief summary of the subject and objective of the action:
Toyota Motor Corporation Japan ["TMC"] requested that Toyota Motor Manufacturing North America Customer Quality Engineering Division [CQE-NA] and ADVICS-NA to investigate the failure mode, recover the affected parts, and determine the cause of the problem.

Objective:

1. To confirm the occurrence of the problem.
2. To identify the cause of the problem.

d. Eng. Group/supplier Responsible for Designing and for Conducting the Action:
Evaluation Design: Lexus Chassis Engineering Division- TMC
Evaluation Conducted: CQE-NA, ADVICS-NA, ADVICS-Japan

f. A Brief Summary of the Finding and/or Conclusion Resulting from the Action:

1. The problem is related to the brake booster.
2. An air leak was found on the brake booster, at the joint between the front and rear of the brake booster body, where the diaphragm is retained.
   Please refer to "Attachment 8-1" to confirm the relevant area.
3. The air leak was caused due to the physical characteristics of the booster diaphragm of the North America production brake booster.
   Please refer to "Attachment 8-2" to confirm the detailed cause description.
4. It was decided that the brake booster diaphragms on the North America production RX330s be changed to the Japanese production diaphragm.

Investigation #2

a. Action Title or identifier:

Performance of braking system in failed condition (low speed)

b. The Actual or Planned Start Date:

June 28, 2004

c. The Actual or Expected End Date:

June 29, 2004

d. Brief summary of the subject and objective of the action:

TMC requested ADVICS-NA and ADVICS-Japan to investigate the performance of the braking system of the vehicle traveling at a low speed and experiencing the failure mode.

Objective:

To determine the effect of the failure mode on the performance of the braking system

d. Eng. Group/supplier Responsible for Designing and for Conducting the Action:

Evaluation Design: Lexus Chassis Engineering Division- TMC

Evaluation Conducted: ADVICS-NA, ADVICS-Japan

f. A Brief Summary of the Finding and/or Conclusion Resulting from the Action:

1. The brake system provides acceptable performance with a reasonable brake pedal force application under the failed condition.

   Please refer to "Attachment 8-3" to confirm the evaluation results.
2. Toyota decided to publish a technical service bulletin to inform Lexus dealers of the proper repair method for customer vehicles experiencing the failed condition.

Investigation #3

a. Action Title or identifier:

Review of failure mode-Warranty Claim increase

b. The Actual or Planned Start Date:

Late December, 2004

c. The Actual or Expected End Date:

March 8, 2005

d. Brief summary of the subject and objective of the action:

TMC requested ADVICS-Japan to investigate the cause of a rise in warranty claims (December 2004).

Objective:

To identify the reasons for the recent spike in warranty claims

d. Eng. Group/supplier Responsible for Designing and for Conducting the Action:

Evaluation Design: Lexus Chassis Engineering Division- TMC

Evaluation Conducted: ADVICS-Japan

f. A Brief Summary of the Finding and/or Conclusion Resulting from the Action:

The brake booster diaphragm's ability to retain its shape is reduced in extremely cold conditions, exacerbating the duration of the loss of power assist failure mode.

Please refer to "Attachment 8-4" to confirm the investigation results.

Investigation #4

a. Action Title or identifier:

Performance of braking system in failed condition (medium speed)

b. The Actual or Planned Start Date:

Feb. 22, 2005

c. The Actual or Expected End Date:

Feb. 23, 2005

d. Brief summary of the subject and objective of the action:

TMC requested ADVICS-Japan to investigate the performance of the braking system of the vehicle traveling at a medium speed and experiencing the failure mode.

Objective:

To determine the effect of the failure mode on the performance of the braking system

d. Eng. Group/supplier Responsible for Designing and for Conducting the Action:

Evaluation Design: Lexus Chassis Engineering Division- TMC

Evaluation Conducted: ADVICS-Japan, TMC Vehicle Evaluation Engineering Div.

f. A Brief Summary of the Finding and/or Conclusion Resulting from the Action:

1. The brake system provides acceptable performance with a reasonable brake pedal force application under the failed condition.

   Please refer the "Attachment 8-5" to confirm the evaluation results.

2. Toyota believes that the failure mode does not constitute an unreasonable risk to safety.

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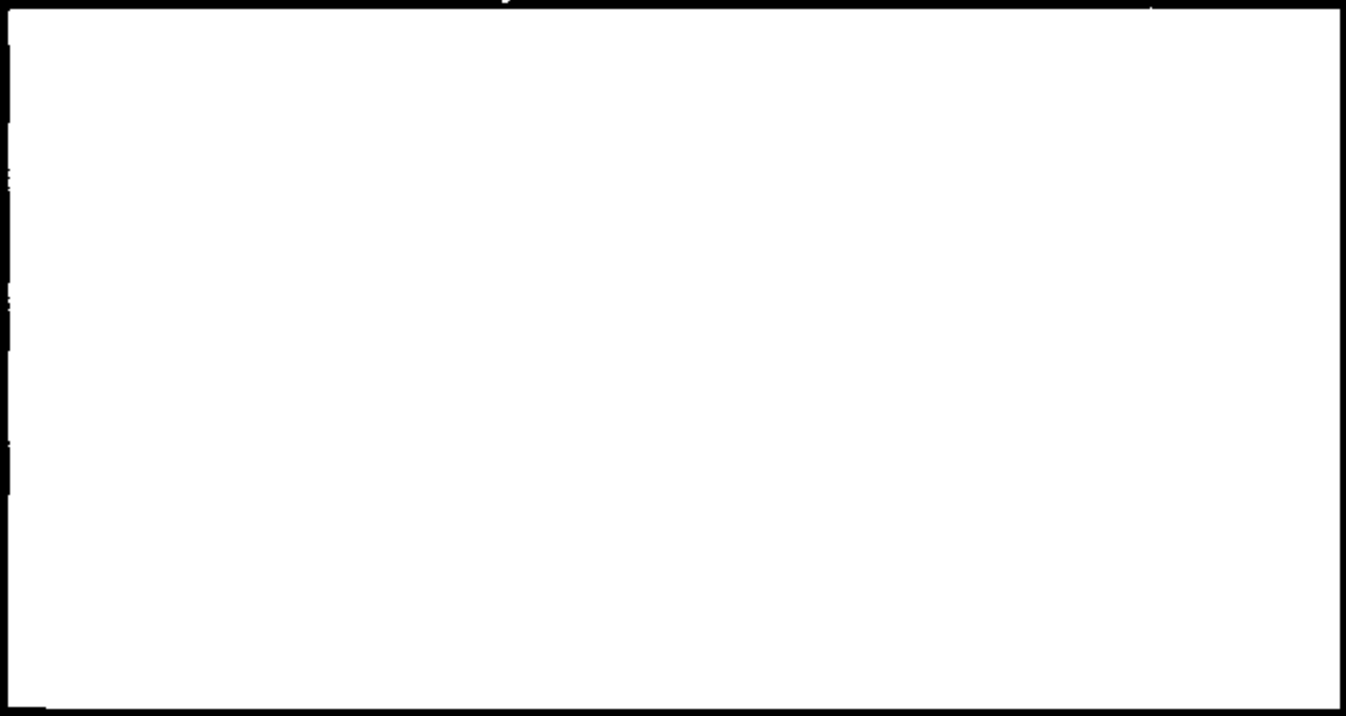
Attachment 13-1

Relationship between Brake Pedal Force and Pedal Stroke

When the Brake Assist System is "Normal"



With the Brake Assist Systems "Failed"
(both the "brake booster assist" and the "ABS actuator assist" fail)

VIN	Accident occurred right after start up? (less than 95 seconds?)	Minor/Major Damage?	Cust Fname	Cust Lname
JTJHA31U240[redacted]	Vehicle was not in an accident according to Lexus of Manhatton. Eastern Area has been contacted to confirm that a PIR was not completed. No PIR was completed.	No Damage	[redacted]	
JTJHA31U940[redacted]	Yes, accident occurred right after start up.	Minor		
2T2HA31U34C[redacted]	No, accident did not occur right after start up. However, the accident did occur when the customer was driving in stop and go traffic in 4 to 5 inchs of snow. The Service Manager does not feel that the accident was related to the braking system of the vehicle. No PIR was completed.	Minor		
2T2HA31U34C[redacted]	Yes, vehicle hit garage door.	Minor		
2T2HA31UX4C[redacted]	Yes, vehicle hit garage door.	Minor		
2T2HA31UX4C[redacted]	NO, customer had been driving the vehicle a while and was going up a hill when the booster failed. A Lexus Field Technical Specialist confirmed vehicle, and found no brake booster failure (refer attached PIR for details).	Minor		

PRELIMINARY INVESTIGATION REPORT

Privileged and confidential information for the use of Toyota Motor Sales, U.S.A. Inc., only.

1)

OWNER, DRIVER CLAIMANT

DATE OF REPORT: 12/22/04 REPORT MADE BY: Mike Zarnecki

OWNER: [redacted] IL [redacted]
Name Address

DRIVER: [redacted]
Name Address

LOCATION OF VEHICLE: Highland Park IL
City State

DATE AND TIME OF ACCIDENT: 12/05/04 X AM ____ PM

LOCATION OF ACCIDENT: Libertyville IL
City State

2)

VEHICLE IDENTIFICATION

YEAR: 2004 MODEL: RX330 SERIAL #: 2T2HA31U34[redacted]

ODOMETER: 13841 LIC.#: [redacted] STATE: IL

3)

DAMAGE TO AUTOMOBILE (LEXUS)

DAMAGE/REPAIR ESTIMATE:
Damage to the vehicle consists of 2 small dents to the rear hatch door and a scratched rear bumper cover. Estimate cost of repair: $350.00. Estimate damage to the garage door: $620.00.

4)

AVAILABLE INFORMATION ON BODILY INJURY

COMPLETE IN FULL, INDICATING BY CODE (A, B, C, D) WHERE INJURED PERSON(S) WERE
(A) IN TOYOTA VEHICLE (B) OTHER VEHICLE C) PEDESTRAIN (D) OTHER

NAME	ADDRESS	AGE	CODE	NATURE OF ALLEGED INJURY

5)

INVESTIGATION

VEHICLE VIEWED AT: Lexus of Highland Park ON 12/22/04

VIEWED BY: Mike Zanecki (Name) Lexus/Division of Toyota Motor Sales, USA (Employed By) District Technical Manager (Title)

OTHERS PRESENT: Bob Arnold (Name) Lexus of Highland Park (Employed By) Service Manager (Title)

(Name) (Employed By) (Title)

DESCRIBE FINDINGS/OBSERVATIONS OF ALLEGED DEFECTIVE PART /SYSTEM:
Upon inspection of the brake booster assembly with a smoke generator, I noted that the smoke was leaking out of the assembly between the two half shells of the assembly. The smoke was leaking between the 11 o'clock and 1 o'clock positions on the brake booster assembly.

INTERPRETATION OF FINDINGS:
The leak indicated by the smoke generator could cause the brake pedal to have a different feel during cold starts. Should this happen, the brake pedal would require greater effort to obtain the desired braking.

CONDITION OF ABJOINING OR RELATED PART/SYSTEM:
The hydraulic brake system, which includes the master cylinder and the four brake calipers, were not compromised by the different feel of the brake pedal. The hydraulic brake system is still working as designed and the vehicle will stop when braking is required.

6)

STATEMENT

DRIVER'S STATEMENT OF HOW THE ACCIDENT/FIRE HAPPENED:
Customer states that when she started the vehicle in the morning, she had the garage door opening with

the garage door opener and placed the vehicle in reverse while pushing down on the brake pedal. The customer states the brake pedal did not move. The vehicle started to move backwards before the garage door was fully open, striking the garage door with the rear of the vehicle and causing damage to both her vehicle and her garage door.

7)

PRELIMINARY FIELD INVESTIGATION

PHOTOGRAPHS OF VEHICLE SHOWING ALL DAMAGE, FORWARD ORIGINAL PHOTOGRAPHS TO TMS LEGAL DEPARTMENT, RETAINING NEGATIVES IN REGIONAL OFFICE.

IDENT. #	BRIEF DESCRIPTION OF CONTENT (DO NOT WRITE ON PHOTOGRAPHS)
1	Full right side view of vehicle
2	Full left side view of vehicle
3	Full front view of vehicle
4	Full rear view of vehicle
5	Close up of rear door showing the small dents
6	Rear door, showing close up of dent to the left side of the door
7	Rear door, showing close up of dent to the right side of the door
8	Aftermarket floor mats installed on the drivers side
9	Close up of aftermarket floor mat on the drivers side
10	VIN of vehicle
11	
12	
13	
14	
15	
16	
17	
18	
19	

PHOTOGRAPHS OF SCENE OF ACCIDENT

IDENT. #	BRIEF DESCRIPTION OF CONTENT
11	Outside view of customers garage door, damage located in the center between the 2nd and 3rd door panel
12	Closer view of garage door damage

14	Inside view of damage to garage door
15	Inside view of damage to garage door
16	Right side, inside view of damaged garage door
17	Left side, inside view of damaged garage door

ATTACH ADDITIONAL PAGE IF MORE PHOTOS ARE REQUIRED FOR REPORT

8)

SERVICE HISTORY

WHERE IS VEHICLE NORMALLY SERVICED? Lexus of Highland Park
WAS VEHICLE RECENTLY SERVICED OR REPAIRED? Yes DATE 11/10/04
WAS THE SERVICE/REPAIR RELATED TO THE DAMAGE? No

ATTACHED RO'S AND OTHER INFORMATION ON SERVICE HISTORY OF VEHICLE.

9)

FIRE ANALYSIS

WHERE WAS THE MOST INTENSE POINT OF HEAT: _____

WHERE WAS THERE MINOR OR MODERATE FIRE DAMAGE: _____

WHAT WAS THE MAJOR SOURCE OF FUEL TO FEED THE FIRE: _____

WHAT WERE THE SECONDARY FUELS: _____

DESCRIBE THE BURN PATTERNS OBSERVED
(EXTERNALLY AND INTERNALLY): _____

IS THERE ANY INDICATION OF THE PRESENCE OF
ACCELERANTS (GASOLINE, LIGHTER FLUID, MATCHES, ETC.) _____

DO OPERATORS SMOKE: _____

USING A REPAIR MANUAL TO IDENTIFY THE ELECTRICAL SYSTEM, INDICATED THE CIRCUITRY

UNDAMAGED AND THAT WHICH WAS BURNED: _____

WERE THE WIRES IN THE FIRE BRITTLE AND/OR BROKEN: _____

WERE THEIR ANY BEADED ENDS, TRACES OF ARCING OR

WELDING FOUND AMONG THE WIRE DEBRIS: _____

WERE THE FUSES BLOWN – WHICH ONES: _____

ARE THE FUSIBLE LINKS BURNED OPEN. IF SO WERE OPEN ENDS BRITTLE, POINTED AND BEADED: _____

IS THE BLACK PLASTIC TAPE-BINDING CHARRED OR BURNED AWAY: _____

WHAT SWITCHES WERE ON (HEATER, LIGHTS, ETC.): _____

WHAT UNITS WERE IN OPERATION (RADIO, A/C, ETC): _____

WHAT IS THE CONDITION OF THE FUEL SYSTEM, GAS TANK, EMISSION, AND MOTOR REGIONS: _____

ANY EVIDENCE OF ARSON: _____

OBTAIN A COPY OF FIRE DEPARTMENT AND SUBMIT TO TMS.

10)

ADDITIONAL INFORMATION OR COMMENTS

The inspection of the vehicle was performed after the brake booster assembly was replaced per Technical Service Information Bulletin BR005-04. The repair was performed by Lexus of Highland Park on 12/06/04. With the repair completed, the alleged condition could not be duplicated on the vehicle. The replaced booster assembly was bench tested utilizing a smoke generator.

Also during the inspection, it was noted that aftermarket floor mats are being utilized. See photographs.

REPORT: _____ INVESTIGATOR SIGNATURE: _____

CAN
PD only
R: 1277.52
Brakes

David Ballantyne/Lexus/Toyota
09/13/2004 02:31 PM

To Carole Hargrave/TMS/Toyota@Toyota
cc
bcc
Subject The Lexus store of Lexington Legal Case # needed

Customer [redacted]

Hello Carole,

Thanks for the follow up call the other day.

Here is all of the information that I have regarding the claim at the dealer

Warranty Claim #:	106960
VIN:	2T2HA31UX4[redacted]
Model	RX330
Mileage:	4127
Total Claim Amount	1277.52 $643.28 of this is for the repairs that were done to the customers

vehicle. The customer was backing out of their garage
with their door open and the brake booster failed to stop the vehicle properly. We did not create a Legal Case nor did an FTS
inspect the damage. I made the call and apologize for not following the protocol. Please let me know if you need further information.

Thanks

David

David Ballantyne
District Operations Manager

LEXUS CENTRAL
450 East Diehl
Naperville, IL 60563
[illegible] 630 298 2543
Office: 630-505-4415
Fax: 310-381-5943
david_ballantyne@toyota.com
WWW.LEXUS.COM

95 seconds? Yes.
Minor Damage? Yes.

T # 2004-09-23015

PRELIMINARY INVESTIGATION REPORT

Privileged and confidential information for the use of Toyota Motor Sales, U.S.A., Inc., only.

1 **OWNER, DRIVER, CLAIMANT**

DATE OF REPORT: 1/6/05 REPORT MADE BY: Rick Holden

OWNE[redacted] oylestown, PA [redacted]

Name Address Phone

DRIVER: Same as above

Name Address Phone

LOCATION OF VEHICLE: Doylestown PA

City State

DATE AND TIME OF ACCIDENT 12/30/04 AM ____ PM 2:50

LOCATION OF ACCIDENT: Doylestown PA

City State

South Easton Road

2 **VEHICLE IDENTIFICATION**

YEAR 2004 MODEL RX330 SERIAL # 2T2HA31UX4[redacted]

ODOMETER 13,489 LIC.[redacted] STATE PA

3 **DAMAGE TO AUTOMOBILE (TOYOTA)**

DAMAGE/REPAIR ESTIMATE: Front bumper cover cracked

4 **AVAILABLE INFORMATION ON BODILY INJURY**

COMPLETE IN FULL, INDICATING BY CODE (A,B,C,D) WHERE INJURED PERSONS WERE.

(A) IN TOYOTA VEHICLE (B) OTHER VEHICLE (C) PEDESTRIAN (D) OTHER

NAME	ADDRESS	AGE	CODE	NATURE OF ALLEGED INJURY

5 **INVESTIGATION**

VEHICLE VIEWED AT: Thompson Lexus ON: 1/6/05

VIEWED BY: Rick Holden (name) Lexus (employed by) FTS (title)

OTHERS PRESENT: Brian Reek (name) Thompson Lexus (employed by) Svc. Mgr. (title)

(name) (employed by) (title)

DESCRIBE FINDINGS/OBSERVATIONS OF ALLEGED DEFECTIVE PART/SYSTEM:

FTS found brake system to be operating as designed. There were no diagnostic trouble codes in ABS, TRAC and VSC system and no codes present in any other system that is monitored.

INTERPRETATION OF FINDINGS:

FTS drove vehicle with service manager, found brake system to be operating as designed, with no hard Brake pedal or brake light on in combination meter.

CONDITION OF ADJOINING OR RELATED PART/SYSTEM:

6 STATEMENT

DRIVER'S STATEMENT OF HOW THE ACCIDENT/FIRE HAPPENED:

7 PRELIMINARY FIELD INVESTIGATION

PHOTOGRAPHS OF VEHICLE SHOWING ALL DAMAGE, FORWARD ORIGINAL PHOTOGRAPHS TO TMS LEGAL DEPARTMENT, RETAINING NEGATIVES IN REGIONAL OFFICE.

IDENT.#	BRIEF DESCRIPTION OF CONTENT (DO NOT WRITE ON PHOTOGRAPHS)
1	Full Right Side View of Vehicle
2	Full Left Side View of Vehicle
3	Full Front View of Vehicle
4	Full Rear View of Vehicle

5	Vehicle Identification Plate

PHOTOGRAPHS OF SCENE OF ACCIDENT

IDENT.#	BRIEF DESCRIPTION OF CONTENT

ATTACH ADDITIONAL PAGE IF MORE PHOTOS ARE REQUIRED FOR REPORT.

8 **SERVICE HISTORY**

WHERE IS VEHICLE NORMALLY SERVICED? Wilkie Lexus
WAS THE VEHICLE RECENTLY SERVICED OR REPAIRED? NO DATE:
WAS THE SERVICE/REPAIR RELATED TO THE DAMAGE?

ATTACH RO'S AND OTHER INFORMATION ON SERVICE HISTORY OF VEHICLE.

9 **FIRE ANALYSIS**

WHERE WAS THE MOST INTENSE POINT OF HEAT:
WHERE WAS THERE MINOR OR MODERATE FIRE DAMAGE:
WHAT WAS THE MAJOR SOURCE OF FUEL TO FEED THE FIRE:
WHAT WERE THE SECONDARY FUELS:
DESCRIBE THE BURN PATTERNS OBSERVED (EXTERNALLY AND INTERNALLY):

IS THERE ANY INDICATION OF THE PRESENCE OF ACCELERANTS (GASOLINE, LIGHTER FLUID, MATCHES, ETC.):
LIST THE ITEMS IN THE CAR:
DO OPERATORS SMOKE:
USING A REPAIR MANUAL TO IDENTIFY THE ELECTRICAL SYSTEM, INDICATE THE CIRCUITRY THAT REMAINED UNDAMAGED AND THAT WHICH WAS BURNED:

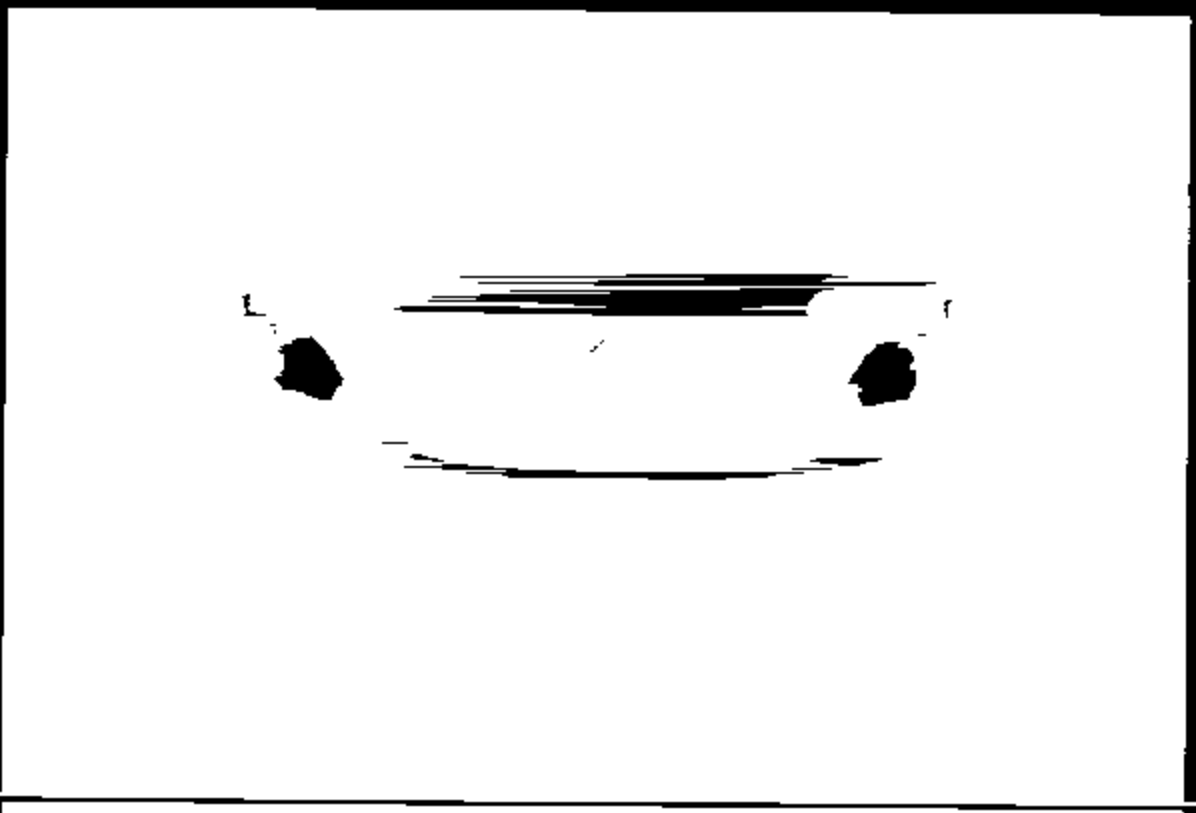
WERE THE WIRES IN THE FIRE BRITTLE AND/OR BROKEN:
WERE THERE ANY BEADED ENDS, TRACES OF ARCING OR WELDING FOUND AMONG THE WIRE DEBRIS:

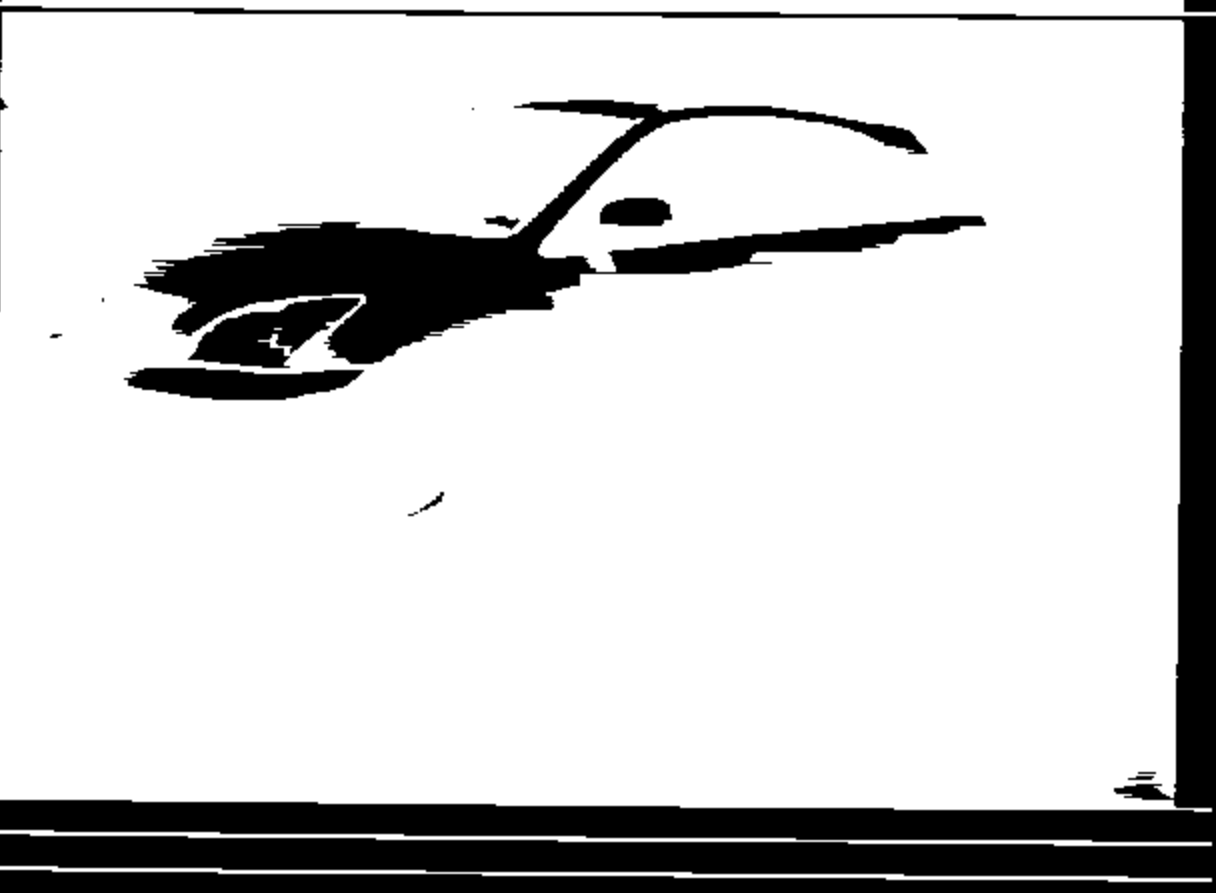
WERE THE FUSES BLOWN - WHICH ONES:
ARE THE FUSIBLE LINKS BURNED OPEN. IF SO WERE OPEN ENDS BRITTLE, POINTED AND BEADED:

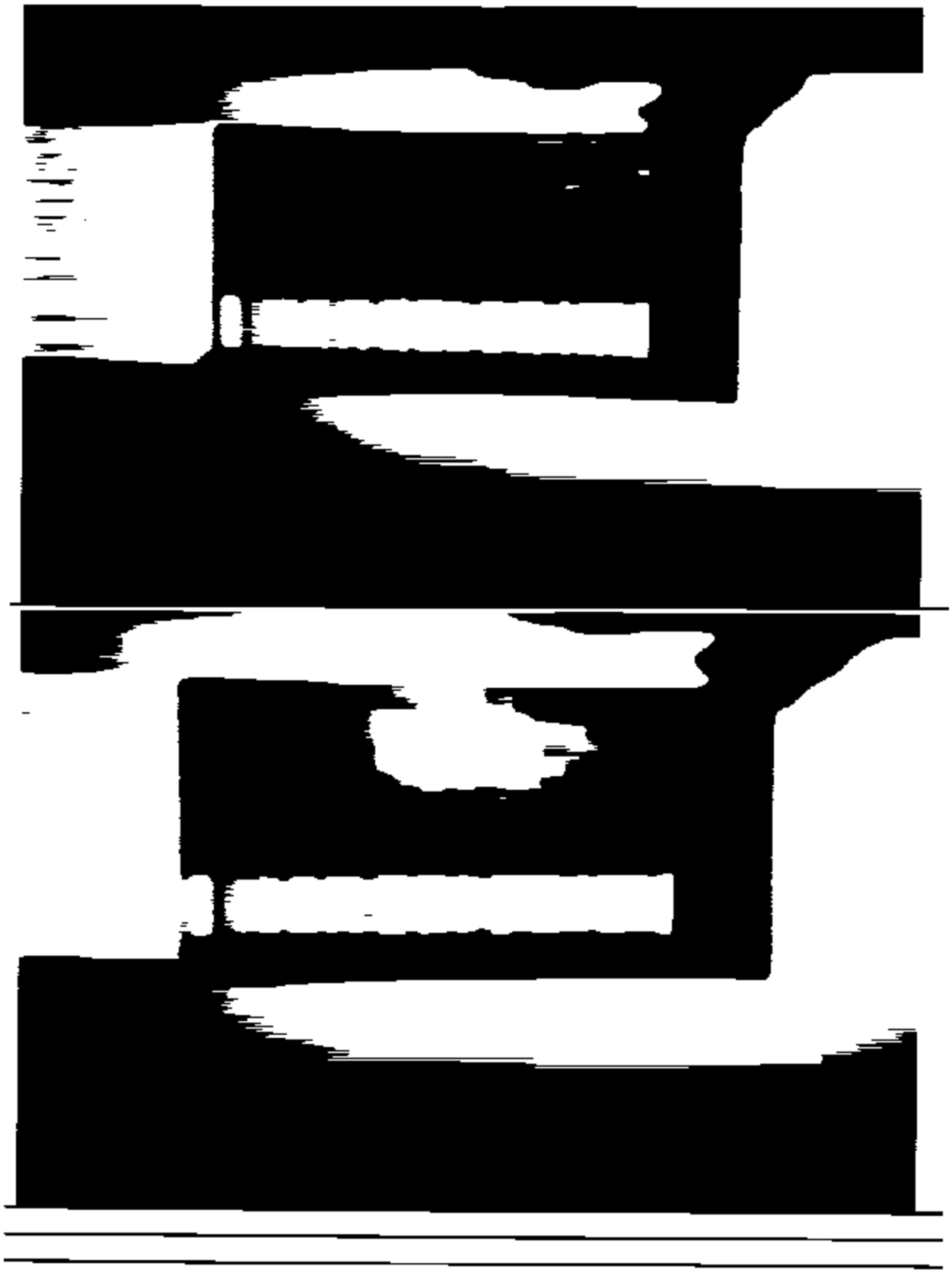
IS THE BLACK PLASTIC TAPE-BINDING CHARRED OR BURNED AWAY:
WHAT SWITCHES WERE ON (HEATER, LIGHTS, ETC.)
WHAT IS THE CONDITION OF THE FUEL SYSTEM, GAS TANK, EMISSION, AND MOTOR REGIONS:
ANY EVIDENCE OF ARSON:

OBTAIN A COPY OF FIRE DEPARTMENT REPORT AND SUBMIT TO TMS.

10 **ADDITIONAL INFORMATION OR COMMENTS**







Date of Report 1/11/05 Investigator Signature: Rick Holden