

Response to PE23-023

INTRODUCTION

In responding to this Information Request ("IR"), information has been obtained from those places within Nissan likely to contain such information in the regular and ordinary course of business. When a particular Request seeks "documents" as defined in the IR, reasonable, good faith searches have also been made of corporate records that are likely to contain responsive information in those places where such records are likely to be found. We have not checked such documents as "calendars", "appointment books", "financial statements" and "personnel records" even though they are included in the definition of "documents" because such documents would not contain owner complaints, field reports, technical analyses or other information sought by Requests 2, 5, and 9-12 pertaining to the Subject Component in the Subject Vehicles. We have also searched for responsive documents and information only with respect to vehicles manufactured for sale in the United States, which we understand to be the scope for which the IR seeks information. Nissan has searched for responsive documents and information with the understanding that the Alleged Defect as identified in the IR is interpreted as complaints of a loss of power and does not include complaints involving only a reduction of power or limited acceleration. Nissan has searched for and produced records that were created through February 16, 2024.

By email dated March 20, 2024, NHTSA granted an extension of time through April 15, 2024 for Nissan to respond to requests 10-13 that require additional time for analysis. In finalizing this partial response, Nissan has determined its responses to questions 1.e and 1.f is dependent on the modifications being identified in response to request 11. Therefore Nissan has notified NHTSA that it will need to respond to requests 1.e and 1.f when it submits the response to request 11 on April 15th.

Responses are provided after each request, and Attachments are utilized as appropriate. The source of information used as a basis for the data in each Attachment, including the date the data were updated and retrieved, is identified at the beginning of each Attachment, as applicable. If a document itself is the source for the requested information and it is provided, we assume no further source identification is called for. If a document, drawing or component is requested, or if no responsive information is available, we assume no further source identification is called for.

With regard to claims of privilege, Nissan understands that it is acceptable to the Agency for Nissan to identify specific categories of privileged documents rather than any specific document. These specific categories are: 1) communications between outside counsel and Nissan Legal Department employees, other Nissan employees, or other Nissan-represented parties in litigation or claims; 2) communications between Nissan Legal Department employees and other Nissan employees or other Nissan-represented parties in litigation or claims; 3) notes and other work product of outside counsel or of Nissan Legal Department employees concerning communications with Nissan employees or consultants, and the work product of those employees or consultants done for or at the request of outside counsel or Legal Department employees; and 4) other categories to be identified later as necessary. For any privileged documents that are not included in these categories, such documents, if any, will be specifically identified on a separate privilege index at a later time. To the extent that a document is furnished, and unless the production of that document is inadvertent, Nissan is not asserting a privilege claim for that document, although the disclosure of such document does not waive the attorney-client privilege or work-product protection with respect to other documents prepared in connection with the specific litigation or claim or other litigation or claims. In addition, in submitting such documents, we reserve our right to claim the attorney-client privilege and/or work-product protection with respect to analyses that may be prepared subsequently in connection with these and other cases. Also, we understand documents specifically related to the preparation of the responses are not sought.

Nissan believes NHTSA's policy is to protect the privacy of individuals under exemption 6 of the Freedom of Information Act, 5 U.S.C. Section 552(b)(6). We understand that name, address, and other personal information of owners or other individuals, including Nissan personnel, contained in any of the attachments in this response will not be made available to the public. Therefore, Nissan is not requesting confidential treatment for this information pursuant to 49 CFR, Part 512, but we believe any private information concerning individuals should not be made public.

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The National Highway Traffic Safety Administration (NHTSA) in its Preliminary Evaluation PE23-023 investigation of allegations of KR15DDT and KR20DDET engine failures while driving in certain model year 2021-2023 Nissan Rogue, model year 2019-2021 Nissan Altima and model year 2019-2021 Infiniti QX50 vehicles has requested information from Nissan North America, Inc. ("NNA"). In regards to NHTSA's questions and requests PE23-023, NHTSA is seeking information on Subject Vehicles identified as "all MY 2021-2023 Nissan Rogue, MY 2019-2021 Nissan Altima, and MY 2019-2021 Infiniti QX50 manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia, and current U.S. territories and possessions." The Subject Component has been identified as "all variable compression KR15DDT and KR20DDET engines." NHTSA has specifically requested information related to the Alleged Defect defined as "subject component failure or malfunction leading to loss of motive power which required an engine replacement to repair the vehicle."

1. State, by model and model year, the number of subject vehicles Nissan has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Nissan, state the following:
 - a. Vehicle identification number (17-character VIN);
 - b. Make;
 - c. Model;
 - d. Model Year;
 - e. Subject component engine installed as original equipment;
 - f. Subject component engine design version installed as original equipment;
 - g. If subject component has been replaced,
 - h. Date of manufacture (MM/DD/YYYY);
 - i. Date warranty coverage commenced (MM/DD/YYYY); and
 - j. The State in the United States where the vehicle was originally sold or leased, or delivered for sale or lease (postal abbreviation).

Provide the table in Microsoft Access 2010, or a compatible format, entitled "PRODUCTION DATA." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

Table 1. Production Data Summary

	<u>Model Year</u>				
MODEL	2019	2020	2021	2022	2023
ALTIMA	2,081	4,255	2,283	N/A	
QX50	38,404	18,399	24,055		
ROGUE	N/A		572	78,278	374,332

The information requested in 1.a through 1.j, when known, is being uploaded to the NHTSA designated SFTP site as Attachment A in a Microsoft Access database titled "PE23-023_DATA" that contains a table titled "PRODUCTION_DATA."

2. State the number of each of the following, received by Nissan, or of which Nissan 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;
- d. Property damage claims; and
- e. Third-party arbitration proceedings, both pending and closed, where Nissan is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which Nissan is or was a defendant or codefendant.

For subparts "a" through "f" 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 "f" provide a summary description of the alleged problem and causal and contributing factors and Nissan'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.

- a. Consumer complaints, including those from fleet operators;

Table 2. Consumer Complaints Summary

Make	Model	Total Consumer Complaints
Nissan	Altima	3
Nissan	Rogue	80
Infiniti	QX50	30

- b. Field reports, including dealer field reports;

Table 3. Field Reports Summary

Make	Model	Total Field Reports
Nissan	Altima	8
Nissan	Rogue	222
Infiniti	QX50	95

- c. Reports involving a crash, injury or fatality;

Table 4. Crash, Injury & Fatality Reports

Make	Model	Total Reports of All Crashes	Total Reported Injuries	Total Reported Fatalities
Nissan	Altima	0	0	0
Nissan	Rogue	0	0	0
Infiniti	QX50	0	0	0

Nissan found zero (0) reports of crashes and zero (0) reported injuries.

Nissan is not aware of any reports involving a fatality.

d. Property damage claims:

NNA found zero (0) reports of property damage claims relating to the Subject Component in the Subject Vehicles.

e. Third-party arbitration proceedings, both pending and closed, where Nissan is or was a party to the arbitration; and

Nissan found one (1) third party arbitration proceeding where Nissan is or was a party to the arbitration, which relate to, or may relate to, the Subject Component in the Subject Vehicles.

f. Lawsuits, both pending and closed, in which Nissan is or was a defendant or codefendant.

Table 5. Lawsuits

Make	Model	Total Lawsuits
Nissan	Altima	1
Nissan	Rogue	7
Infiniti	QX50	2

Nissan found 10 lawsuits (1 of which also included a BBB arbitration proceeding), in which Nissan is or was a defendant or co-defendant, which relate to, or may relate to, the Alleged Defect in the Subject Vehicles. These matters each asserted a breach of warranty.

A summary description of each of the above ten (10) lawsuits is being uploaded to the NHTSA designated SFTP site as Attachment A in a folder titled "REQUEST NUMBER 2 DOCUMENTS" stored as an Adobe PDF file titled "REQUEST NUMBER 2.F. SUMMARIES".

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. Nissan'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), email address and

- telephone number (please use distinct fields for each data type);
- d. Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
 - e. Vehicle's 17-character VIN;
 - f. Vehicle's make, model and model year (please use distinct fields for each data type);
 - g. Vehicle's mileage at time of incident (numeric data type);
 - h. Incident date (MM/DD/YYYY);
 - i. Report or claim date (MM/DD/YYYY);
 - j. Whether a crash is alleged;
 - k. Whether property damage is alleged;
 - l. Number of alleged injuries, if any; and
 - m. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

The information available to Nissan requested in 3.a through 3.m, when known, is being uploaded to the NHTSA designated SFTP site as Attachment A in a Microsoft Access database titled "PE23-023 DATA" which contains a table titled "REQUEST_NUMBER_TWO_DATA."

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., dealer service history, consumer complaints, field reports, etc.) and describe the method Nissan used for organizing the documents. Describe in detail the search methods and search criteria used by Nissan to identify the items in response to Request No. 2.

Documents requested within the scope of "Request No. 2" are being uploaded to the NHTSA designated SFTP site as Attachment A in a folder titled "REQUEST NUMBER 2 DOCUMENTS". The documents are organized by category and stored as Adobe pdf files.

The search criteria used by Nissan to identify the documents in response to "Request No. 2" are set forth below.

Nissan searched for all documents related to Production Codes T33 (Rogue) between model years 2021-2023, L34 (Altima), & J55 (QX60) between model years 2019 – 2021 (inclusive) equipped with the Subject Component and contained the following words (case insensitive). Commas below represent an "OR" statement.

- "long block, replace engine, replaced engine, short block, engine died, car died, vehicle died, blew up, shut off, engine shut down, engine turned off, chunk, replacing engine, blow up, engine failed, engine failure"

AND NOT

- "tie, tire, windshield, seat, carpet, wheel, share with dealer, radio, AC, Air conditioning"

The documents must also have been opened/created on or before February 16, 2024.

Nissan manually reviewed all of the resulting set of documents and is reporting those relevant to this investigation.

For litigation files Nissan searched for all matters with TREAD code [06/Engine] on the following vehicles: Nissan Rogue (model year 2021-2023), Nissan Altima (model years 2019-2021) and Infiniti QX50 (model years 2019-2021). Results were then filtered for VIN (4th digit) Engine Codes of the Subject Component. Finally, results were then searched for the following keywords: *stall**; *loss & power*; *engine & fail**; *towed*; *shaving*; *debris*; *knock**; *noise*.

The litigation files must also have been opened/created on or before February 16, 2024.

Nissan manually reviewed all the resulting set of litigation files for relevancy to the request. Any non-relevant lawsuits were excluded. Any lawsuits where relevancy could not be clearly determined are included in the submission.

5. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Nissan 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. Nissan's claim number;
- b. Vehicle owner or fleet name (and fleet contact person), email address and telephone number (please use distinct fields for each data type);
- c. Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
- d. 17-character VIN;
- e. Vehicle's make/model/model year (please use distinct fields for each data type);
- f. Repair date (MM/DD/YYYY);
- g. Vehicle mileage at time of repair (numeric data type);
- h. Repairing dealer's or facility's name, telephone number, city and state or ZIP code (please use distinct fields for each data type);
- i. Labor operation number(s);
- j. Problem code(s);
- k. Diagnostic trouble code(s);
- l. Replacement part number(s) and description(s);
- m. Concern stated by customer;
- n. Cause as stated on the repair order;
- o. Correction as stated on the repair order; and
- p. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

Table 5. Warranty Data Summary

Model Year Model	2019	2020	2021	2022	2023	Total Warranty Claims
Altima	4	9	8			21
Rogue			4	392	190	586
QX50	203	37	42			282

The information available to Nissan requested in 5.a through 5.p, when known, is being uploaded to the NHTSA designated SFTP site as a Microsoft Access database titled "PE23-023 DATA" which contains a table titled "WARRANTY_DATA."

6. Describe in detail the search methods and search criteria used by Nissan to identify the claims in response to Request No. 5, including the labor operations, problem codes, diagnostic trouble codes, part numbers and any other pertinent parameters used.

The search criteria used by Nissan to identify the documents in response to "Request No. 5" are set forth below.

Nissan searched warranty records for all documents related to Production Codes T33 (Rogue) between model years 2021-2023, L34 (Altima), & J55 (QX50) between model years 2019 – 2021 (inclusive) equipped with the Subject Component. Within that set of data Nissan sought warranty claims for VINs with a Global Market Code = USA which used the long or short block engine part numbers 10102 and/or 10103.

The claims must also have been opened/created on or before February 16, 2024.

Nissan manually reviewed all the resulting set of documents for loss of motive power allegations and is reporting those relevant to this investigation.

7. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions, diagnostic trouble codes and diagnostic trouble code descriptions applicable to the alleged defect in the subject vehicles. State whether the diagnostic trouble codes are automatically reported to the warranty database electronically or manually entered into the warranty database by a claims administrator.

Descriptions of each labor operation code and problem code are being uploaded to the NHTSA designated SFTP site as Attachment A and are contained within the "WARRANTY_DATA" table included in the Microsoft Access database entitled "PE23-023 DATA."

Diagnostic trouble codes must be manually entered into the warranty database for them to appear with the claim.

8. State, by make and model year, the terms of the new vehicle warranty coverage offered by Nissan 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 Nissan 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.

Table 6. New Vehicle Warranty Coverage

	<u>Infiniti QX50</u> <u>2019-2021</u>	<u>Nissan Rogue</u> <u>2021-2023</u>	<u>Nissan Altima</u> <u>2019-2021</u>
<u>Basic Coverage</u>	<u>48mo/60,000mi</u>	<u>36mo/36,000mi</u>	
<u>Corrosion Coverage</u>	<u>84mo/unlimited mileage</u>	<u>60mo/unlimited mileage</u>	
<u>Powertrain Coverage</u>	<u>72mo/70,000mi</u>	<u>60mo/60,000mi</u>	
<u>Federal Emission Performance</u>	<u>24mo/24,000mi</u>	<u>24mo/24,000mi</u>	
<u>Federal Emission Defect</u>	<u>48mo/60,000mi</u>	<u>36mo/36,000mi</u>	
<u>Federal Emission Long Term Defect</u>	<u>96mo/80,000mi</u>	<u>96mo/80,000mi</u>	
<u>California Emission Performance and Defect</u>	<u>48mo/60,000mi</u>	<u>36mo/50,000mi</u>	
<u>California Emission Long Term Defect</u>	<u>84mo/70,000mi</u>	<u>84mo/70,000mi</u>	
<u>Seat Belt</u>	<u>120mo/unlimited mileage</u>	<u>120mo/unlimited mileage</u>	

Nissan has also provided new vehicle warranty coverage documents outlining vehicle systems covered as part of the new vehicle warranty coverage. Those documents are being uploaded to the NHTSA designated SFTP site as Attachment A in a file folder titled "REQUEST NUMBER 8 DOCUMENTS". The documents are stored as Adobe pdf files.

Table 7. Extended Warranty Summary

Make	Model	Model Year	Gold Preferred	Silver Preferred	Powertrain Preferred	BASIC	BASIC PLUS	INFINITI ELITE
INFINITI	QX50	2019	N/A			249	2,185	6,309
INFINITI	QX50	2020				412	667	2,780
INFINITI	QX50	2021				398	716	2,026
NISSAN	Altima	2019	326	9	1	N/A		
NISSAN	Altima	2020	480	9	2			
NISSAN	Altima	2021	382	11	0			
NISSAN	Rogue	2021	7	0	0			
NISSAN	Rogue	2022	9,315	255	8			
NISSAN	Rogue	2023	76,110	633	32			
Coverages up to 8 years, 120,000 miles								

9. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Nissan 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. This request applies irrespective of the form in which such material was transmitted and expressly includes materials issued in electronic formats, including but not limited to, electronic communications, videos, recordings, photographs, images, and other electronically stored information. Also include the latest draft copy of any communication that Nissan is planning to issue within the next 120 days.

To date, Nissan has not issued any documents related to the Alleged Defect in the Subject Vehicles to any dealers, regional or zone offices, field offices fleet purchasers or other entities.

Nissan does not currently plan to issue any documents to dealers, regional or zone offices, field offices, fleet purchasers or other entities that relate to, or may relate to, the Alleged Defect in the Subject Vehicles within the next 120 days.

10. 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, Nissan. 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;
 - f. A brief summary of the findings and/or conclusions resulting from the action; and
 - g. For each subject component replaced as a result of the alleged defect and examined by Nissan or on behalf of Nissan, provide a spreadsheet summarizing the returned subject components, to include the following in separate columns; engine displacement, donor vehicle make/model/model year/VIN, mileage, description of the methods used for analysis, what components were found to have failed, and how those components failed. Separately provide documents related to returned parts analyses/actions related to the alleged defect in the subject vehicles, to include photos and video, and oil sample analyses.

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.

The information available to Nissan requested in 10.a through 10.f, when known, is being uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment B in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST NUMBER 10.a – 10.f RESPONSE."

Documents requested within the scope of "Request No. 10.a through 10.f" are being uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment B in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST NUMBER 10.a through 10.f DOCUMENTS". The documents are organized chronologically by action.

The information available to Nissan requested in 10.g, when known, is being

uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment B in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST NUMBER 10.g RESPONSE."

Documents requested within the scope of "Request No. 10.g" are being uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment B in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST 10.g TEARDOWN ATTACHMENTS". The documents are organized by Engine Type, Engine S/N, and Last 6 digits of Vehicle Identification Number (VIN).

11. Describe all countermeasures, process improvement, modifications or changes made by, or on behalf of, Nissan in the design, material composition, manufacture, quality control, supply, or installation of the subject component, 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 number(s) (service and engineering) of the original component;
- e. The part number(s) (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 Nissan is aware of which may be incorporated into vehicle production within the next 120 days.

The information available to Nissan requested in 11.a through 11.h, when known, is being uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment C in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST NUMBER 11 RESPONSE."

12. State the number of each of the following that Nissan 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 component; and
- b. Any kits that have been released, or developed, by Nissan for use in service repairs to the subject component/assembly.

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 Nissan is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

The information available to Nissan requested in 12.a through 12.b, when known, as well

as the supplier information is being uploaded to the NHTSA designated SFTP site as CONFIDENTIAL Attachment D in an Adobe PDF file titled "CONFIDENTIAL BUSINESS INFORMATION - REQUEST NUMBER 12 RESPONSE."

13. Furnish Nissan's assessment of the alleged defect in the subject vehicles, including:

- a. The root causal and all 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. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring, or subject component was malfunctioning; and
- f. The reports included with this inquiry.

Engine Design

Nissan developed and introduced the first mass-produced variable compression turbo (VCT) engine with the release of the 2.0-liter KR20DDET engine in model year 2019. After this release, Nissan developed and manufactured a second VCT engine with the 1.5-liter KR15DDT released in model year 2022. Although similar insofar as they are both variable compression engines, they differ greatly in design beginning with their maximum (and minimum) overall displacement and subsequent internal forces created within the engine during the combustion cycle. Nissan has closely monitored the launch of these innovative turbocharged engines, and has had several quality investigations and countermeasures to improve performance and customer satisfaction.

Root Cause, Failure Mechanism, Failure Mode & Warnings

Documents provided in response to Requests 10 and 11 show ten projects opened to investigate bearing failure and one project opened to investigate injector tips. These documents explain the root cause for these issues and failure mechanisms involved in each. In certain cases and with sufficient time, after multiple types of warnings, these mechanisms and causes could potentially lead to a complete loss of motive power (LOMP) in either the KR20DDET or KR15DDT engine. In addition, review of the Consumer Complaints, Field Reports and Warranty Claims documents provided in response to Request 4 also demonstrates that warnings (visual, audible or a combination of both) are often provided prior to a complete loss of motive power. Approximately 63% of the unique VINs provided in this Response include an express indication of the presence of some advance warning.

Nissan has identified bearing failures within the KR20DDET and KR15DDT engines. Bearings are in multiple locations within an engine providing support to components as they rotate. In a conventional internal combustion engine (ICE), bearings support rotation of the crankshaft, camshaft and connecting rod. In VCT engines, additional bearings are required to support rotation of the A-Link, C-Link, L-Link and other rotating components not present in conventional ICE vehicles. With respect to the VCT engines produced by Nissan, the specific bearings Nissan has investigated vary among the two engines. For the KR20DDET engine, the C-Link and/or L-Link bearings are noted as the primary causes, whereas the main bearing supporting the crankshaft is a primary cause for the KR15DDT engine.

Rarely are bearing failures instantaneous and Nissan has not found any reports indicative of an instantaneous bearing failure. Rather, bearings have some period of in-use service life before a potential failure could occur. As such, bearing failures progress over time and provide drivers with multiple forms of audible and visible warnings including abnormal noise, rough running, malfunction indicator lights (MIL) and warning messages in the instrument cluster, depending on progression and design logic.

KR20DDET

As provided in the response to Request 11, the KR20DDET engine has undergone manufacturing quality process improvements to address reported bearing seizure in the C-Link and L-Link. The warnings discussed above, such as abnormal noise and rough running are expected to be present for some time before engine bearing failure progresses to the point of a complete loss of motive power. Noise and rough running may also be coupled with a MIL or warning message within the instrument cluster as the condition progresses. This advanced warning to a driver is further reinforced by data:

- only 15.8% of service part replacements were due to a complete loss of motive power
- the remaining 84.2% of service part replacements may not all have been replaced due to bearing failure; however, the symptoms and customer verbatim presented in field data among the 84% indicates the majority would be related to a bearing-type failure and would therefore have presented enough warning to the customer to have the engine diagnosed and replaced prior to a complete loss of motive power

Among those engines replaced due to a reported loss of motive power, some warning, either audible or visual, was noted. Given the failure mode of bearings, the warning should have been present even if it was not expressly stated within the recorded complaint. Even if the absence of information on prior warning is interpreted as worst case condition, it would indicate a maximum incident rate (IR) for KR20DDET LOMP without warning of 0.14 %, and likely less. The total IR for KR20DDET LOMP (with or without warning) would stand at 0.39%.

KR15DDT

Among the failure mechanisms for the KR15DDT engine, the most common is bearing failure, specifically main bearing supporting the crankshaft. However, as provided in the response to Request 11, the KR15DDT engine has not only undergone manufacturing quality process improvements to address main bearing seizure, but also a limited number of design changes to address broken fuel injector tips.

Again, Nissan's understanding of advanced warning prior to any loss of motive power is reinforced by the data:

- only 24.7% of the engines sold as service parts have been due to a complete loss of motive power.
- The remaining 75.3% of engines sold as service parts may not all have been due to any type of bearing failure; however, the symptoms and customer verbatim presented in that field data indicates the majority would be related to a bearing-type failure and would therefore have presented enough warning to the customer to have the engine diagnosed and replaced prior to a complete loss of motive power.

The data provided in this Response shows abnormal noise detectable inside the driver/passenger area during vehicle operation, rough running of the engine, as well as visual warnings presented to the driver in the form of a MIL or a message within the

instrument cluster may be present for some time prior to an engine's main bearing progressing to the point of a complete loss of motive power. Among the engines reportedly replaced due to a loss of motive power, some warning, either audible or visual, was indicated in 62% of reports. Once again, given the failure mode of bearings, the warning should have been present even if it was not expressly stated within the recorded complaint. Even if the absence of information on prior warning is interpreted as worst case condition, it would indicate a maximum incident rate (IR) for KR15DDT LOMP without warning of 0.06%, and likely less. The total IR for KR15DDT LOMP (with or without warning) would stand at 0.15%.

Continued Decrease of Field Incidents

KR20DDET

Field data for KR20DDET engines shows a marked reduction in the Alleged Defect for vehicles built after October 2018.

Subject Vehicles equipped with the KR20DDET engine were produced in vehicle assembly plants in both COMPAS Aguascalientes, Mexico and Smyrna, Tennessee. The vehicles built in Aguascalientes, Mexico from SOP through December 2017 had the highest cumulative incident rate, which since then has decreased to 0.7% through August 2018 production and further decreased to a rate of only 0.4% through the most recent production month (October 2021). Vehicles built in Smyrna, Tennessee prior to August 23, 2018 have seen similar improvements, with vehicles built prior to then having had the highest incident rate which decreased to 0.47% by November 2018 production and continued to decrease to 0.3% by the end of production in October 2021.

KR15DDT

Analysis of field data for the KR15DDT engine shows that the number of monthly new reported incidents related to the Alleged Defect peaked in July 2023 and have declined each month since. Furthermore, vehicles produced prior to January 2023 account for 95% of all incidents. This trend of decreasing newly reported incidents is expected to continue given the reduction in incident rates seen after the implementation of production countermeasures.

Subject Vehicles equipped with the KR15DDT engine are produced in vehicle assembly plants in both Kyushu, Japan and Smyrna, Tennessee. The limited number of vehicles (571) built in Kyushu, Japan from the initial start of production (SOP) through July 2021 had the highest cumulative incident rate. However, the cumulative IR for Kyushu production began to decrease with September 2021 production and has steadily decreased in subsequent manufacturing months to a rate of only 0.09% by February 2024. Vehicles built in Smyrna, Tennessee before or during January 2022 had the highest cumulative incident rate, which decreased to 0.9% by May of 2022 production and continued to decrease to 0.19% by February 2024 production.

No Unreasonable Risk to Motor Vehicle Safety

Nissan believes the Alleged Defect in the Subject Vehicles poses no unreasonable risk to motor vehicle safety for several reasons:

First, bearing seizures are the end result of a process that must progress over time, with various warnings to the driver well before a loss of motive power would occur. This condition is evident by the fact that the majority of known occurrences of bearing failure

do not result in a loss of motive power, but are presented as noise, rough running/vibration, MIL, instrument cluster messages or other forms of complaint.

Second, the trend of field data has a distinct decreasing trend. With the KR20DDET engine, reports of the Alleged Defect have tended to decrease since July 2018, and overall incident rates for Mexico- and Smyrna-produced vehicles currently are less than half of 1%. This effect is seen in both the vehicle repair date and manufacturing date for the KR15DDT engine where monthly repairs due to the Alleged Defect have continually decreased since July 2023, and vehicles produced after January 2023 account for less than 5% of all incidents.

Finally, and most importantly, even with a total of 1,012 unique VINs among the Subject Vehicles involving claims of the Alleged Defect, Nissan has received reports of zero (0) accidents, zero (0) injuries, zero (0) fatalities, zero (0) property damages, and zero (0) significant thermal events.

Nissan will continue to monitor the field data and reevaluate the situation if necessary.

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