

LANGE TECHNICAL SERVICES, LTD.

Investigative and Forensic Engineering Services

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QUALITY OF REPAIR ASSESSMENT REPORT

Date: November 28, 2014

To: Elizabeth Wells, Esq. Brudge Law Office

Vehicle Owner: Jeremy Williams

Repair Order No: N/A

Our File No: 1410-AT-431

The following is a report of our findings and opinions regarding the evaluation of the above vehicle to determine the level or degree of collision and or mechanical repair quality as a result of the sustained damage on the vehicle(s) attributed to the incident as described and understood. The opinions expressed are based on the findings and conditions of the examination, information available at the time of examination and accuracy of reported statements. The methods of assessment include:

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- ***Dimensional Analysis*** which utilizes measurements taken of the vehicle structural component and mechanical component reference locations and suspension components when compared to the OEM and or measuring equipment manufactures specifications.
- ***Damage Pattern Analysis*** which compares the area(s) of reported damage and deformity sustained by involved vehicle(s), which includes an understanding of the anticipated characteristics of the impact area(s), structural integrity of involved systems and response of the vehicle to the repairs performed and or attempted to the required corrective repair protocols.
- ***Relative Severity*** which considers the structural aspects of the impact areas to establish the extent of damage expected and sustained. Collision repair protocols, tool mark analysis, crash test findings and other technologies may also be utilized.
- ***Visibility*** which establishes the visibility of the damage in question to the vehicle owner, operator or other witness. Damage in question will be identified as “visible” or “hidden.” Hidden damage is damage that requires disassembly to be seen. Visible damage is identifiable to an untrained observed and does not require removal of components to see.
- ***Damageability*** which establishes the level or degree of the damage to the safe operation and drivability of the vehicle during normal operation and the safety of the occupants in a subsequent collision event. OEM and collision repair protocols, weld quality, weld fusion, component manufacture, attachment methods, collision repair equipment usage and materials and other technical information may also be utilized. The level or degree of damageability can be classified as:
 - ***Cosmetic Damage*** – damage that is attributed to a visual representation of lack of quality, color match, luster, shine and or sheen of the finish or a visual representation of the levelness of the body components, closure panels and or their feature lines. This type of damage is considered unrelated to the safety, structural integrity and or operational condition of the vehicle and as such the vehicle would be considered safe to operate.

- **Repair Quality Damage** – damage that is attributed to a visual representation of missing trim mounting hardware, positioning of emblems, moldings and exterior accent trim components, areas of overspray, compound and polish residue and or tape lines. This type of damage is considered unrelated to the safety, structural integrity and or operational condition of the vehicle and as such the vehicle would be considered safe to operate.
- **Safety Related Damage** – damage that is attributed to the integrity or inoperative condition and or intermittent operation of the supplementary restraint system components, steering and suspension components, closure panels, seats and or mechanical components. This type of damage is considered related to the safety, structural integrity and or operational condition of the vehicle and as such the vehicle may be considered unsafe to operate.
- **Inoperative Precarious Damage** – damage that is attributed to the integrity or visual condition of the structural components, component mounting brackets, component mounting areas, weld fusion and quality, corrosion resistant materials, mounting hardware and or mechanical components. This type of damage is considered related to the safety, structural integrity and or operational condition of the vehicle and as such the vehicle may be considered unsafe to operate.

Additional information, laboratory analysis and/or subsequent examination may change the expressed opinions.

Damage Classifications: After consideration and analysis of the evidence provided and collected, the component damage to the vehicle(s) was classified under one or more of the following:

- **Damage consistent with the facts of the loss** - collision induced damage that may have or did result from the event in question.
- **Collision induced, non-loss related damage** - damage that is the result of a collision event but not under the reported circumstances.
- **Non-collision, non-loss related damage** – damage that cannot be attributed to either to the event in question or a vehicle to vehicle even. Such damage could include “wear and tear” items.
- **Intentionally induced/fabricated damage** - created damage on panels or parts that would not have been damage during the event.
- **Intentionally induced damage enhancement(s)** - intentionally altered or created damage on a panel or part that sustained actual collision damage.
- **Repair related damage enhancement(s)** - damage that was incurred during handling, disassembly, diagnosis and/or necessary to facilitate repair.
- **Repair related/unrepaired damage(s)** – damage that was improperly or incorrectly repaired or not repaired from a previous loss.
- **Undetermined/unclassified damage(s)** - damage that could not be confirmed or denied as related to the incident in question based on the available evidence.

Incident Report: It is our understanding that on or about October 13, 2012, the Nissan was impacted to the rear, by an unidentified vehicle, causing the Nissan to impact another unidentified vehicle in the front. The

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Nissan sustained damage to the front bumper fascia and air conditioning condenser and to the rear bumper fascia, deck lid and rear body panel, as a result of the incident. Vehicle repairs were performed by Sharon Woods Collision Center, Inc., 11445 U.S. 42, Cincinnati, OH 45241.

Source: Client from claim file

Examination and Analysis:

The following reflects our findings and opinions regarding the damage to the vehicle and its components as it relates to the incident as described and understood.

- Annotated photo slides will be prepared upon request.
- Annotated photo slides are attached. Review will assist in understanding the findings and opinions.
- Annotated photo slides are being prepared and will be submitted separately from report
- All photographs have been or will be submitted
- Additional photographs are available upon request

Vehicle: 2010 Nissan Maxima S

Owner: Jeremy Williams

VIN: [REDACTED]

Mileage: 80,955 miles (42,420 miles on final repair invoice. 38,535 miles since repairs were completed)

Data source: Vehicle exam and submitted documents/photos

Location of examination: Classic Resurrection 2160 Southwest Blvd., Grove City OH.

Date of examination: November 21, 2014

Vehicle status: Vehicle required our disassembly of, front lower splash shield, trunk trim panels and destructive testing of the rear body panel to trunk floor mating flange area.

Analysis:

At the time of the examination, the Nissan was parked in a repair bay at the above facility with all related components available for examination. During the examination, the vehicle was later placed on a two post lift and hoisted in the air to examine the underside of the vehicle. Some disassembly and destructive testing was performed. Examination of the vehicle revealed the following:

- Front bumper fascia: Visible color mismatch of the fascia to the hood and left and right front fender panels. Excessive left and right headlamp to fascia panel gap. Excessive fascia to left and right fender panel gaps, 4mm gap was measured. Gap is supposed to be less than 1mm, as the fascia butts up flush to the leading edge of the fender panels. Hood to the fascia gap is 11mm on the left side, 14mm in the middle and 7mm on the right side. Hood to fascia gap should be 4mm to 6mm. Multiple plastic retaining clips were used and in need of replacement, as the clips did not hold the fascia snug to the frontal components. We lifted the fascia up and pushed it rearward and acceptable gaps and fit were achieved. The front fascia was an OEM replacement component.
- Hood panel to left and right front fender panels: Right side rear measurement (6mm) and middle area (6mm) were acceptable, but on the wide side. Right front area was 7mm, slightly positive. Measurements of the panels gaps were excessively wide on the left side. Rear area was 8mm, middle

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area was 7mm, and front area 7mm which are slightly excessively wide. Acceptable hood to fender panel gaps are 4mm to 6mm.

- Under hood area: A mounting bolt for the air conditioning lines, on the right front area, that attaches the lines to the fiber reinforced radiator core support was missing. Indications of slight corrosion residue from the bolt and a bolt washer impression were visible. The air conditioning condenser was an OEM replacement component.
- Battery: No evidence of tool type impact markings to the positive or negative cable mounting nuts. During collision repairs, the battery should be disconnected to prevent any electrical component failure, deltopion of the battery, explosions and fires. It is extremely important to disconnect the battery and isolate the cables during Metal Active Gas (MAG) welding and/or Squeeze Type Resistance Spot Welding (STRSW) procedures.
- Front under splash shields: The left and right mounting retainer clips were worn and not seated tightly, causing the front fascia to move easily and sit forward and downward. Movement of the front fascia was 10mm to 12mm, this is the root cause of the misalignment of the upper area of the front fascia to the hood, fenders and headlamp assemblies. The right front fender splash shield to engine cradle-mounting strap was separated and missing. This is causing the shield to flap back and forth against the lower front uni-rail, during operation, causing a slapping noise.
- Rocker panel lower mounting flanges: No evidence of any mounting clamp markings were observed to the mounting flanges on the left and right side. No indications of attempted repairs, the mating flanges were unremarkable. Additional examination of the underside revealed no indications of hooks or other items placed in to any other area to hold the vehicle. There is no evidence to support the vehicle was mounted on a structural repair apparatus and structurally realigned, although the final invoice from the repair facility, Sharon Woods Collision Center, Inc. included a charge for "Set-Up and Measure" for two hours and a charge for "Unibody/Full Frame Pull & Square" for three hours.
- Deck lid and left and right quarter panels: Measurements of the deck lid to the left and right quarter panels revealed panel gaps of 6mm, which is acceptable.
- Left and right rear tail lamps: Measurements taken of the lower areas of the tail lamp gaps to the quarter panels revealed a gap of 6mm on the left side and a gap of 5mm on the right side. The tail lamp panel gap should be even and 1mm to 2mm. The mounting bolts on the lamps were tight and this misalignment shows evidence to suggest the left and right tail lamp mounting panels are deformed forward. This misalignment would be anticipated due to the applied collision impact forces to the rear body panel. This misalignment also shows evidence to suggest the vehicle was not mounted in a structural realignment apparatus, corrective realignment pulls, and trail fitting of replacement components and/or measurements were not attempted.
- Trunk trim panels: One of the upper mounting clips on the left side had indications of multiple ductile fractures and missing pieces.

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- Trunk floor panel: Multiple indications of a sprayable type seam sealer application to the spare tire well and to the rear body panel to trunk floor panel mating flange were observed. According to Nissan, repair information the spare tire well should have sound dampening pads installed. Sprayable seam sealer is utilized for underbody/undercarriage repairs. The seam between the rear body panel and truck floor panel should have pumpable/brushable seam sealer applied and not sprayable material.
- Rear body panel: The left side remote deck lid release cable-mounting clip was separated and a tab was missing from one of the sides. The rear body panel to truck floor panel mating flange showed evidence of sprayable seam sealer and inconsistent and uneven applications of pumpable/brushable seam sealer. Examination of the underside backside of the rear body panel to trunk floor panel revealed multiple areas of corrosion and lack of proper weld fusion to the area where the panel mates to the left and right lower rear uni-rails. No evidence of corrosion resistant primers was observed. Additional examination of the area revealed multiple 1/8" of an inch (3mm) drill holes unfilled. We were given permission by Mr. Williams to remove the seam sealer and perform a stress test of the rear body panel to trunk floor panel mating flange. A light body hammer and gasket scraper were utilized to remove the seam sealer and then were used to wedge between the panel mating flange to test the strength of the welds. Destructive test of the lower right backside lower weld, at the mating area to the right lower rear uni-rail, failed. Only a small 3mm to 4mm nugget hole was pulled. MAG plug welds must pull an 8mm to 10mm nugget hole. Destructive testing of the right inside rear body panel to trunk floor panel mating flange required lightly applied pressure to separate 150mm of the flange. No evidence of MAG or STRSW were observed to the area. Also noted on the gasket scraper was uncured black material. Destructive testing of the center lower rear body panel to trunk floor panel mating flange required lightly applied pressure to separate the entire flange. No evidence of MAG or STRSW were observed to the area and there were indications of adhesion failure to the rear body panel mating flange. Generally, temperatures of 350 degrees Fahrenheit to 400 degrees Fahrenheit are required to "soften the bonding adhesive enough to be able to separate the bond. No heat was utilized during the destructive testing.

Vehicle Condition: Unsafe and Non-Operational Condition

Additional notes: Review of Nissan Repair Information BL-174 specifies the use of Gas Metal Arc Welding (GMAW), commonly referred to as Metal Active Gas (MAG) or incorrectly as Metal Inert Gas (MIG) welding or Squeeze Type Resistance Spot Welding (STRSW). Nissan does not allow any weld-bonding (STRSW through structural bonding adhesive) or full bonding with with structural adhesive. The repairs performed by Sharon Woods Collision Center are incorrect, as per Nissan repair standards and protocols and industry accepted practices. Additionally, information from the Inter-Industry Conference on Auto Collision Repair, commonly referred to as I-CAR states in their classes to follow all OEM repair procedures and protocols. Only when repair information does not exist may a repair facility make a business decision. In this particular case, the OEM, Nissan, repair procedures and protocols were ignored. Additionally, the repair attempts were incorrect and under destructive testing failed, due to improper preparation and application.

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Review of the expert reports, supplied by Sharon Woods Collision Center, submitted by Mr. David Damon and Mr. Geoffery A. Overley are incorrect in their analysis and in their theory. Both state that the repair has made the vehicle stronger than originally designed, by meeting or exceeding the quality of repair procedures. Additionally, they both state that the repairs were very high quality and in a workman like manner. Mr. Overley mentions "Weld-Bonding Procedure" in the I-CAR program ADH01 (Adhesive Bonding). He is incorrect, as the I-CAR program that discusses Weld-Bonding is WCS04, Squeeze Type Resistance Spot Welding, in module 4 of the program.

It is the repair facilities sole responsibility to ensure that the manufacture repair procedures and protocols for attachment and materials are adhered to. In this case, Sharon Woods Collision neglected those procedures and there is evidence to suggest procedures that were charged for and paid for were not performed.

Any damage not addressed or otherwise specified above is considered a correct and or proper repair and of acceptable quality as per OEM standards, protocols and procedures and within accepted collision and or mechanical industry standards.

Scene Examination: Not performed

Evidence:

- Event Data Recorder: Not supported
- Engine oil: No sample taken
- Transmission fluid: No sample taken
- Paint sample: No sample(s) taken
- Paint Film Thickness Readings: No readings taken
- Other: n/a

Additional Notes: n/a

Engine oil, transmission fluid and untested fire debris samples taken during the exam are held for 90 days prior to disposal. No disposal notification will be sent.

Conclusions: In our opinion, based on the above findings, available information, accuracy of reported statements, conditions of the examination and with a reasonable degree of scientific certainty, of the repairs performed and/or attempted presented on the above vehicle, repair related/unrepaired damages were identified. As such, the allegation that the damage presented on the vehicle as a whole represents damaged sustained during the repairs performed from the incident of October 13, 2012, can be substantiated.

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Recommendations: Vehicle is in an unsafe condition to operate and as such, cannot be driven in its current condition. The rear body panel requires replacement.

The above represents the more significant repair related issues identified during the examination and analysis. Any corrective or additional repairs to the vehicle, as well as the repair methodologies utilized are the sole responsibility of the collision repair facility.

Should questions remain or additional analysis be required, please contact our office.

LANGE TECHNICAL SERVICES, LTD.

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