



Project No: **CO0825**

Re: **Nissan GU Patrol Radius Arm and Drop-Box  
Assembly (RAPATGQGU)  
Finite Element Analysis Engineering Report**

Certification Number: **CO0825-20190628-1**

Prepared for:

**CalOffroad**

Date: **28<sup>th</sup> June 2019**

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**Project No: CO0825-1**  
**Nissan GU Patrol Radius Arm and Drop-Box Assembly (RAPATGQGU)**  
**1800kg front axle rating to VSB14**

To whom it may concern,

As requested, we have assessed the aftermarket Nissan Patrol GQ/GU radius arm to VSB14 loads for a front axle rating of 1800kg using FEA analysis. This analysis was based on the supplied geometry of the forged radius arm and welded drop-box. Details of this design and the FEA analysis results are described in the following project data:

- Analysis Report: CO0825-20190628-1

A brief overview of the upper control design is provided over-page.

Only the radius arm design has been assessed and the remainder of the front suspension has not been considered as part of this analysis. Furthermore, this analysis only considers the VSB14 loads and is in no way an assessment of the overall durability or manufacturing quality.

Finite Element Analysis (FEA) has been used to assess the performance of the radius arm design subject to loads and limits set out in the following reference documents:

- VSB14 "National Code of Practice for Light Vehicle Construction and Modification"

Based on the loading conditions and material properties used, the radius arm design is considered to comply with the strength requirements of VSB14 for a maximum front axle rating of 1800kg under the following conditions:

1. The forged radius arm of 640MPa capacity and welded drop-box of 300MPa capacity with nominal minimum dimensions as per the specification.
2. Forging parameters such as the forging temperature, heat treatment and cooling rate, and their effect on material properties and residual stresses were beyond the scope of this study
3. All welds are performed subject to any relevant standards for the intended application.
4. Full details of the analysis and results are provided in report CO0825-20190628-1, and any other conditions or requirements specified in the most recent version of that report must also be implemented

Kind Regards,

Brett Longhurst,  
Managing Director,  
Bremar Automotion Australia Pty Ltd

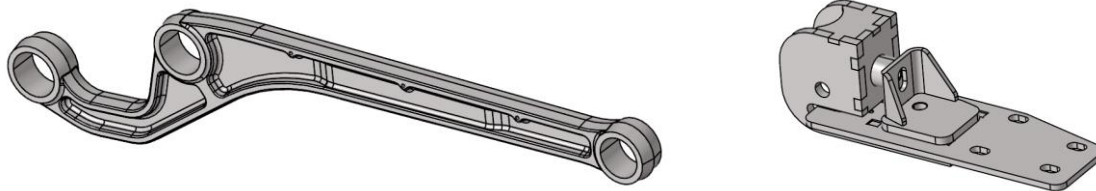


Figure 1: Radius Arm and Drop-Box Design

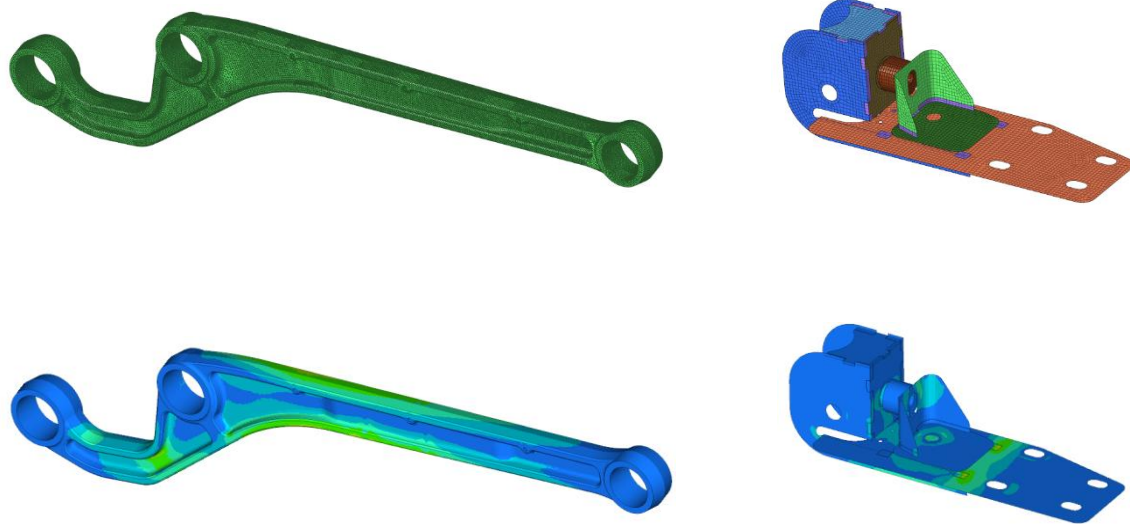


Figure 2: Radius Arm and Drop-Box Mesh and Stress Contour