

WRITTEN TECHNICAL REPORT

Weighting: 70%

Module: ACMA4039 – Engineering Applications & Study Skills

Assessment: Root Cause Analysis – Technical Report

Student: Ben Cole

Student ID: 2502891

Engagement with Literature Skills (15 marks)

Mark awarded: 13 / 15

Ben demonstrated strong engagement with relevant professional and regulatory literature linked to risk management and RCA within the manufacturing sector. The report makes effective use of the IMechE Code of Conduct, Aston Martin internal documentation, the Health and Safety at Work Act (1974), and HSE guidance on ergonomics. These sources are well chosen and clearly aligned with the assignment brief.

The literature is integrated into the discussion to support key arguments, for example when linking manual handling risks to musculoskeletal disorders and absenteeism, and when referencing professional responsibility in engineering practice.

What was done well

- Appropriate and relevant use of professional standards and legislation.
- Clear connection between literature and the real manufacturing case study.
- Correct use of Harvard-style referencing.

What could be improved

- Greater use of peer-reviewed academic journal articles would strengthen scholarly depth.
- Some sections rely more on organisational guidance than wider academic discussion.

Suggested enhancement

- Add a short comparison table summarising *IMechE Code of Conduct*, *HSE guidance*, and *Health & Safety at Work Act* and how each informs RCA decisions in this case.

Knowledge and Understanding Skills (25 marks)

Mark awarded: 22 / 25

The report shows a very strong understanding of risk management, RCA, and ergonomic risk within manufacturing environments. Ben clearly explains how PFMEA is used at Aston Martin, how Severity, Occurrence, and Detection are determined, and how these influence decision-making.

The explanation of the rear squab installation process and its link to both quality defects and technician health demonstrates sound understanding of manufacturing systems and human factors.

What was done well

- Clear explanation of RCA and PFMEA processes used in industry.
- Strong understanding of ergonomics and health and safety implications.
- Effective linkage between quality defects, cost, and employee wellbeing.

What could be improved

- Some explanations could be expanded further to show how RCA supports longer-term organisational learning.
- A brief comparison with alternative RCA tools (e.g. Fishbone or 5 Whys) would add depth.

Suggested enhancement

- Include a simple process flow diagram showing the rear squab installation process and where the risk is introduced.

Cognitive and Intellectual Skills (20 marks)

Mark awarded: 17 / 20

Ben demonstrated good analytical reasoning when justifying the Severity, Occurrence, and Detection scores. The explanation for assigning a severity score of 6 based on musculoskeletal disorder risk is clearly reasoned and supported by external data.

The discussion linking technician strain, absenteeism, and production impact shows good evaluative thinking, and the escalation from temporary to permanent solutions is logically explained.

What was done well

- Logical justification of scoring decisions.
- Clear evaluation of ergonomic risk and its wider implications.
- Sensible progression from short-term to long-term solutions.

What could be improved

- Residual risk after the permanent solution could be discussed more explicitly.
- More quantitative comparison of risk before and after mitigation would strengthen evaluation.

Suggested enhancement

- Add a before-and-after RPN comparison chart showing the impact of the trolley redesign and training.

Practical Application Skills (20 marks)

Mark awarded: 19 / 20

The practical application of RCA is a key strength of this report. The use of a real Aston Martin manufacturing issue, supported by FLAGS data, photographs, and PFMEA documentation, demonstrates excellent application of engineering principles in context.

The proposed permanent solution (trolley redesign with drawer runners) is realistic, well justified, and clearly linked to risk reduction and improved ergonomics.

What was done well

- Excellent real-world case study grounded in industry practice.
- Clear linkage between RCA findings and corrective actions.
- Appropriate use of engineering and ergonomic controls.

What could be improved

- Further discussion of implementation challenges (cost, downtime, approval) would add realism.

Suggested enhancement

- Include a simple schematic or annotated image of the redesigned trolley layout to clearly show how the solution reduces strain.

Transferable Skills for Life & Professional Practice (20 marks)

Mark awarded: 18 / 20

The report is professionally presented, clearly structured, and follows the technical report format outlined in the brief. The use of photographs, screenshots, and tables enhances clarity and demonstrates strong professional communication skills.

The writing style is appropriate for an engineering audience and clearly explains technical issues.

What was done well

- Clear structure and logical flow.
- Effective integration of images and figures.
- Professional tone suitable for industry reporting.

What could be improved

- Minor repetition could be reduced for conciseness.
- Some figures could be referenced more explicitly in the discussion.

Suggested enhancement

- Add a final summary diagram linking *problem* → *RCA* → *solution* → *benefits* to strengthen the conclusion.

Written Report Mark Summary (70%)

Criterion	Mark
Engagement with Literature	13 / 15
Knowledge & Understanding	22 / 25

Criterion	Mark
Cognitive & Intellectual Skills	17 / 20
Practical Application Skills	19 / 20
Transferable Skills	18 / 20
Total (Written Report)	89 / 100

Weighted Contribution to Module (70%):
62.3 / 70