

# WRITTEN TECHNICAL REPORT

Weighting: 70%

Module: ACMA4039 – Engineering Applications & Study Skills

Assessment: Root Cause Analysis – Technical Report

Student: Lloyd Thomas

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## Engagement with Literature Skills (15 marks)

Mark awarded: 14 / 15

Lloyd showed very strong engagement with relevant academic, professional, and regulatory literature. The report makes effective use of UK legislation (HSWA, PUWER, COSHH, RIDDOR), British Standards (BS EN ISO 12100, ISO 13849-1), and recognised frameworks such as ISO 31000 and ISO 45001. The IMechE Code of Conduct is also appropriately referenced and applied.

The literature review is detailed and demonstrates a clear understanding of how legal duties, professional obligations, and risk management frameworks apply to manufacturing environments.

What was done well

- Excellent breadth and relevance of sources.
- Clear understanding of UK legal and professional requirements.
- Strong explanation of risk management frameworks (PDCA, hierarchy of controls).

What could be improved

- Some sections could synthesise sources more directly rather than listing them.
- A small number of peer-reviewed academic journal articles would further strengthen academic depth.

Suggested enhancement

- Add a summary table linking *key legislation and standards* to specific risks identified in the RCA case study.

## Knowledge and Understanding Skills (25 marks)

Mark awarded: 23 / 25

The report demonstrates a very high level of understanding of risk management and RCA within manufacturing. Lloyd clearly explains ALARP, PDCA, hierarchy of controls, and how RCA tools support systematic risk reduction.

The explanation of the misuse of production order plans shows strong understanding of planning, programming, and production interdependencies, as well as the potential safety and efficiency consequences.

What was done well

- Clear explanation of risk management theory and practice.
- Strong understanding of legal, ethical, and organisational responsibilities.
- Effective explanation of why RCA is appropriate for this case.

What could be improved

- Manufacturing process detail could be expanded slightly earlier in the report.
- A short comparison with quantitative risk tools (e.g. FMEA) would add further depth.

Suggested enhancement

- Include a simple process map showing the intended production order flow versus the incorrect process used.

## Cognitive and Intellectual Skills (20 marks)

Mark awarded: 18 / 20

Lloyd demonstrated strong analytical thinking through the structured use of 5 Whys and Fishbone analysis. The reasoning clearly shows how pressures, planning gaps, communication failures, and training issues interact rather than existing in isolation.

The discussion around potential severe outcomes (e.g. unsafe processing of hazardous components) shows good awareness of latent risk escalation.

What was done well

- Logical and well-structured analysis.
- Clear identification of systemic rather than individual failure.
- Good evaluation of RCA strengths and limitations.

What could be improved

- Residual risk after corrective actions could be discussed more explicitly.
- Some conclusions could be supported with clearer numerical prioritisation.

Suggested enhancement

- Add a risk ranking table summarising severity, likelihood, and priority before and after corrective actions.

## Practical Application Skills (20 marks)

Mark awarded: 17 / 20

The RCA application to production order misuse at Safran Seats GB is realistic and industry-relevant. The use of real operational issues (routing cards, planning changes, OEE data) strengthens the practical credibility of the report.

The corrective and preventive actions are comprehensive and focus on system improvement rather than individual blame, which aligns well with good engineering practice.

What was done well

- Realistic industrial case study.
- Strong focus on organisational and procedural controls.
- Clear translation of RCA findings into actions.

What could be improved

- More explicit prioritisation of corrective actions would strengthen implementation clarity.
- Brief consideration of cost, time, or feasibility would add realism.

Suggested enhancement

- Include an annotated example of a corrected routing card showing best practice.

## Transferable Skills for Life & Professional Practice (20 marks)

Mark awarded: 17 / 20

The report is clearly structured and professionally written, with logical headings and a clear progression from theory to application. The tone is appropriate for both academic and industrial audiences.

Some language accuracy issues slightly affect fluency, but overall communication is effective.

What was done well

- Clear structure aligned with the brief.
- Professional and reflective writing style.
- Good explanation of learning points and wider implications.

What could be improved

- Proofreading would improve grammatical accuracy.
- Some sections could be more concise.

Suggested enhancement

- Add a final summary flowchart showing *planning error* → *RCA* → *corrective actions* → *safer, efficient production*.

## Written Report Mark Summary (70%)

| Criterion                       | Mark     |
|---------------------------------|----------|
| Engagement with Literature      | 14 / 15  |
| Knowledge & Understanding       | 23 / 25  |
| Cognitive & Intellectual Skills | 18 / 20  |
| Practical Application Skills    | 17 / 20  |
| Transferable Skills             | 17 / 20  |
| Total (Written Report)          | 89 / 100 |

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