**ENGG404 TEAM PROJECT FINAL TECHNICAL REPORT:**

**Submitted by Team #: < enter team # >**

**Case Study: <enter loss incident under study:   
Organization name, nature of incident, location, date of incident.>**

**Date submitted: < enter date submitted >**

|  |  |  |
| --- | --- | --- |
| **Team Members** | **Student #s** | **Signatures** |
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**< Insert a graphic of the incident here. >**

**< Use this template to create your report. Replace “Template” in the filename with “Team xx” where xx is your team number.>**

**TABLE OF CONTENTS**

[**EXECUTIVE SUMMARY** - 3 -](#_Toc17715030)

[**Incident Description and Losses:** - 3 -](#_Toc17715031)

[**Context and Purpose:** - 3 -](#_Toc17715032)

[**Root Cause Analysis:** - 3 -](#_Toc17715033)

[**List of Latent Causes:** - 3 -](#_Toc17715034)

[**Key Recommendations and Alignment to Elements:** - 3 -](#_Toc17715035)

[**Business Case Analysis:** - 3 -](#_Toc17715036)

[**Issues with Implementation and Next Steps:** - 3 -](#_Toc17715037)

[**CHAPTERS:** - 4 -](#_Toc17715038)

[**Chapter 1: Incident Description and Losses:** - 4 -](#_Toc17715039)

[**Chapter 2: Context and Purpose:** - 5 -](#_Toc17715040)

[**Chapter 3: Root Cause Analysis – Discussion:** - 6 -](#_Toc17715041)

[**Chapter 4: Application of the Cause and Effect Model – Discussion:** - 7 -](#_Toc17715042)

[**Chapter 5: Key Recommendations:** - 8 -](#_Toc17715043)

[**Chapter 6: Business Case Analysis:** - 9 -](#_Toc17715044)

[**Chapter 7: Issues with Implementation** - 10 -](#_Toc17715045)

[**Chapter 8: Next Steps** - 11 -](#_Toc17715046)

[**References:** - 12 -](#_Toc17715047)

[**Appendix A: Root Cause Analysis – Chart:** - 13 -](#_Toc17715048)

*< To update the3 Table of Contents, opposite mouse-button click anywhere on the field of the* **Table of Contents***, select “update field”, and select “update entire table”. Delete this paragraph when preparing your report. >*

**EXECUTIVE SUMMARY**

**Incident Description and Losses:**

< Enter your content here. >

**Context and Purpose:**

< Enter your content here. >

**Root Cause Analysis:**

< Enter your content here. >

**List of Latent Causes:**

< Enter your content here. >

**Key Recommendations and Alignment to Elements:**

< Enter your content here. >

**Business Case Analysis:**

< Enter your content here. >

**Issues with Implementation and Next Steps:**

<Enter your content here.>

**CHAPTERS:**

**Chapter 1: Incident Description and Losses:**

**Incident Description:**

< Enter your content here. >

**Losses:**

People: < Enter your content here. >

Environment: < Enter your content here. >

Assets: < Enter your content here. >

Production: < Enter your content here. >

**Chapter 2: Context and Purpose:**

**Context:**

< Enter your content here. >

**Purpose:**

< Enter your content here. >

**Chapter 3: Root Cause Analysis – Discussion:**

**Scope and Boundaries:**

< Describe the scope and boundaries of the root cause investigation i.e. what is inside the scope of root cause analysis, and what is outside the scope i.e. what you won’t consider. >

**Key Latent Cause #1: <state your first selected latent cause here >**

< Describe in detail, a narrative of the first of two of the most important latent causes: start at the incident description and describe the most important or critical roots from the top, down through the root including immediate cause, basic cause, and ending at the latent cause. >

**Key Latent Cause #2: <state your first selected latent cause here >**

< Describe in detail, a narrative of the second of two of the most important latent causes. >

**Chapter 4: Application of the Cause and Effect Model – Discussion:**

**Immediate Causes:**

Substandard Conditions:

* List the applicable sub-categories, state the immediate causes under this category / sub-category specific to your loss incident and root cause analysis, and details from your analysis for each.

Substandard Work Practices:

* List the applicable sub-categories, state the immediate causes under this category / sub-category specific to your loss incident and root cause analysis, and details from your analysis for each.

**Basic Causes:**

Engineering Design Factors:

* List the applicable sub-categories
* Under each of the applicable sub-categories, state the basic causes under this category / sub-category specific to your loss incident and root cause analysis, and describe the details from your analysis.
* Use a bullet list.

Job Factors:

* List the applicable sub-categories
* Under each of the applicable sub-categories, state the basic causes under this category / sub-category specific to your loss incident and root cause analysis, and describe the details from your analysis.
* Use a bullet list.

Personal Factors:

* List the applicable sub-categories
* Under each of the applicable sub-categories, state the basic causes under this category / sub-category specific to your loss incident and root cause analysis, and describe the details from your analysis.
* Use a bullet list.

**Latent Causes (weaknesses in Management System Elements):**

* List each of the applicable Risk Management System Elements.
* Under each of the applicable RMS Elements, state the latent causes under this category / sub-category specific to your loss incident and root cause analysis, and describe the details from your analysis.
* Use a bullet list.

**Chapter 5: Key Recommendations:**

< Enter your content here. >

State Your Gain Index Criteria and State Your Effort Index Criteria, and the source of your Criteria i.e. textbook reference.

You can adapt the **Complex Effort v Gain Tool** as per handbook chapter **Tools for How to Prioritize Recommendations** and insert the table here. If you have modified your Gain Index and/or Effort Index, provide a brief description of the modifications i.e. one or two sentences; there is no need to state the rationale for the changes.

Describe each of your Top 4 recommendations in order of priority (highest to lowest) and in the manner as shown here.

1. Insert a short description of your first recommendation:

* Longer description in more detail and broader in scope of the recommendation with specific deliverable actions or executable actions as sub-bullets.
  + Deliverable #1
  + Deliverable #2
  + Etc.
* Gain Index and rationale why this recommendation has this Gain Index.
* Effort Index and rationale why this recommendation has this Effort Index, including scores and descriptions for each of the six sub-factors:
  + Sub-factor #1
  + Sub-factor #2
  + Etc.
* Total Score and “bucket” i.e. “Low Hanging Fruit”.
* Nature of Fix:
* State the specific latent cause(s) addressed by this recommendation.
* Alignment to RM Element(s):

1. Repeat same above for the second, third, and fourth recommendations.
2. Present a summary table of the top 4 recommendations:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Rank** | **Recommendation** | **Gain Index** | **Effort Index** | **Total Score** | **Nature of Fix** | **Latent Cause Addressed** | **Applicable RME** |
| 1 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |

**Chapter 6: Business Case Analysis:**

*Apply this business analysis tool. Combine your top two recommendations only i.e. apply the total costs for the top two, and assume one-thirtieth the avoidance of costs for your loss incident under study. Note: “one-thirtieth” is used because the current expectation rate for a major loss incident is “1 in 30 years or more”. Note that although the costs of improvements are real (hard) dollars, the benefits are based on a reduction in the “annual risk exposure without and with improvements”; these are not real (hard) dollar and should not be referred to or considered as savings.*

|  |  |
| --- | --- |
|  | **Top Two Recommendations** |
| **Cost Avoidance of a Loss Incident** |  |
| **Initial Costs of Improvements** |  |
| **On-going Costs of Improvements per Year** |  |
| **Life of Project** |  |
| **Total Cost of Improvements** |  |
| **Annual Risk Exposure without Improvements** |  |
| **Annual Risk Exposure with Improvements** |  |
| **Gross Benefit** |  |
| **Net Benefit** |  |

*< Enter your content here in response to these questions. No need to re-state the questions, although no penalty if you do. Numbering your responses is very helpful. >*

1. Referring to the Complex Effort v Gain Tool, in which quadrant does this case fall? Explain.
2. What conclusion do you draw about this Business Case Analysis? Explain.
3. What other factors must you consider as it pertains to the application of this business case analysis? Hint: Recall that this approach is a preliminary assessment of the loss incident under study and is definitely not a sound basis on which to make a final decision.
4. If you have chosen only one recommendation or a different set of recommendations on which to apply the business case analysis (instead of the top two combined), provide a brief explanation as to which one(s) and your rationale.

**Chapter 7: Issues with Implementation**

< Enter your content here. Paragraphs and bullets are extremely helpful.>

**Chapter 8: Next Steps**

< Enter your content here. Paragraphs and bullets are extremely helpful.>

**References:**

< Enter your content here. >

**Appendix A: Root Cause Analysis – Chart:**

< Append the PDF of the chart for the Root Cause Analysis. No other discussion is needed here, as it is in an earlier chapter. Also append the RCA chart from the progress report for comparison purposes. >