RISK ASSESSMENT
Buffalo Rail Bender
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   Buffalo Rail Bender
1 INTRODUCTION

This supplier’s risk assessment was conducted for *Buffalo Rail Bender*.

2 SCOPE OF THIS ASSESSMENT

The scope of this risk assessment is to identify and evaluate all activities and equipment that could lead to injuries, production loss or property damage as a result of poor manufacturing, incorrect storing, transporting and using the *Buffalo Rail Bender*.

3 OBJECTIVES

To identify, evaluate and risk rank the hazards and associated risks and to identify the required controls to eliminate or reduce the severity of the outcomes should an incident occur.

4 METHODOLOGY

In general, a risk assessment involved identifying the hazards present in some work activity or associated with the layout of premises, the construction of machinery or the failure of critical parts. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken. In this guidance the following definitions will apply.

a) **HAZARD** is something that has the potential to cause **HARM**. This includes substances, machines, and methods of work or other aspects of work organisation;

b) **RISK** is the **PROBABILITY** that the harm from a particular hazard will occur;

c) The extent of the risk depends on not only the severity of the harm to a person but also the number of people who will be harmed and the severity of a possible incident or production loss.

Risk therefore reflects both the probability that the harm will occur and it’s severity in terms of the degree of harm and the number of people harmed.

**Bottom-up risk assessment Techniques**

In this case the approach is one of breaking down the system or problems into small components and then seeing how they or others may fail building up to a major event. Examples of this type of technique include hazard and operability studies (HAZOP) which may address both hardware and people-ware systems. Failure Modes Effects Analysis and its extension in terms of Criticality Analysis (FMECA) will be applied.
5 RISK MEASUREMENTS

Once hazards have been identified, it is necessary to prioritise them so that action can be programmed and so that they can be dealt within a way, which will satisfy the REASONABLY PRACTICABLE requirement in the Mine Health and Safety Act. The aim of risk assessment is to enable management to make decisions based on the information reflected in the assessment and identify possible training needs. Risk assessment itself does not make decisions, it only provides the basis for the decision making process. The setting of priorities is an important way to change employee understanding and to build hazard awareness. It also sets the direction for management.

The matrix below was used to determine the criticality and risk ranking of the hazards and associated risks identified.

**RISK MATRIX**

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>PROBABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1 Fatality or permanent disability</td>
<td>25</td>
</tr>
<tr>
<td>2 Serious loss time injury/illness</td>
<td>24</td>
</tr>
<tr>
<td>3 Moderate loss time injuries/illness</td>
<td>22</td>
</tr>
<tr>
<td>4 Minor loss time injuries/illness</td>
<td>19</td>
</tr>
<tr>
<td>5 No loss</td>
<td>15</td>
</tr>
</tbody>
</table>

**RISK RANKING**

- Between 1 and 10 is a LOW risk
- Between 11 and 19 is a MEDIUM risk
- Between 20 and 25 is a HIGH risk

Probability C with Severity 3 = Risk Ranking Of 13 which falls in the MEDIUM RISK Range
When assessing the risk the one with the highest risk ranking with regard to people, equipment or production loss will be used to rank that particular hazard and associated risk

CONSEQUENCE / SEVERITY ASSESSMENT
Here consequence will relate to the POTENTIAL SEVERITY or degree of harm / injury or losses that could result of an event taking place.

PROBABILITY
This is a compound of two separate factors the one being EXPOSURE which gives an indication of how often and how long employees are exposed to the hazard, the second includes the PROBABILITY that a person or a number of persons will be harmed or production may suffer and property damaged may occur.

6 EXECUTIVE SUMMARY

SUMMARY OF ALL THE HIGHEST RISKS (BETWEEN 20–25)

Nil

DISCUSSION
The following advantages can be gained from using the Buffalo Rail Bender

1. Productive and safe way to bend rails.
2. Relatively light weight in comparison.
3. Robust and corrosive resistant frame.

Position. Name. Experience
1. Technical Director ............... Clive W Holleran 28 years
2. Sales Director..................... Andre Human 31 years
3. National Sales Manager... Brian Stolz 22 years
4. Area Sales Manager ............. Christo Rudman 24 years
5. Technical Manager......... Paul Brown 21 years
SECTION 1– FMECA (EQUIPMENT - BASED RISK ASSESSMENT) CONDUCTED ON THE: Buffalo Rail Bender

<table>
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</tbody>
</table>
# SECTION 1 – (EQUIPMENT - BASED RISK ASSESSMENT) CONDUCTED ON THE: Buffalo Rail Bender

<table>
<thead>
<tr>
<th>Component &amp; function</th>
<th>Functional failure</th>
<th>Cause of failure</th>
<th>Failure effect or consequence</th>
<th>RR No control</th>
<th>Supplier’s Strategies or controls</th>
<th>Recommended controls to be implemented by the User</th>
<th>RR With control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Frame</td>
<td>Structural alignment and assembly.</td>
<td>Incorrect welding practices and assembly.</td>
<td>Frame can Bend or miss aligned with fabrication.</td>
<td>6</td>
<td>1.1. The adherence of the correct code of practice for welding. 1.2 Use of assembly Jig. 1.3. Quality checks after manufacturing.</td>
<td>Visual quality checks with delivery.</td>
<td>1</td>
</tr>
<tr>
<td>5. Hydraulic Pump</td>
<td>Pump does not operate</td>
<td>Leaking oil due to worn seals</td>
<td>To be sent for repair</td>
<td>6</td>
<td>Quality check- no oil leaks</td>
<td>Check that pump operates and there are no oil leaks.</td>
<td>1</td>
</tr>
<tr>
<td>3. Piston</td>
<td>Bent piston rod</td>
<td>Mishandling or negligence</td>
<td>Bent Piston can damage seals.</td>
<td>6</td>
<td>3.1 Correct assembly and handling procedures. 3.2 Quality checks after assembly.</td>
<td>Check that rail bender is stored with the Piston retracted in to the cylinder.</td>
<td>1</td>
</tr>
<tr>
<td>4. Hooks</td>
<td>Bent and/or Damaged.</td>
<td>Incorrect placing of the rail bender</td>
<td>Hooks can bend, worn hooks can damage piston</td>
<td>6</td>
<td>Robust hooks and one way attachment</td>
<td>Insure hooks are firmly over rail.</td>
<td>1</td>
</tr>
<tr>
<td>5. Hydraulic pipe</td>
<td>No pressure at piston.</td>
<td>Leaking oil due to damaged pipe</td>
<td>Inoperable rail bender due to no oil.</td>
<td>6</td>
<td>5.1 Protective guards 5.2. Quality checks after assembly.</td>
<td>Correct handling, transporting and storage procedure.</td>
<td>1</td>
</tr>
<tr>
<td>6. Release valve</td>
<td>Damaged or lost</td>
<td>Mishandling or negligence</td>
<td>Loss of oil</td>
<td>6</td>
<td>Protective guard</td>
<td>Check that the guard are still in the right position.</td>
<td>1</td>
</tr>
<tr>
<td>7. Carry Handle/Guard</td>
<td>Carry handle and guards bent or broken off.</td>
<td>7.1 Incorrect welding practices</td>
<td>Handle/Guard can Bend</td>
<td>6</td>
<td>7.1.1 The adherence of the correct code of practice for welding. 7.1.2 Quality checks after manufacturing.</td>
<td>7. 1Visual quality checks with delivery.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.2 Mishandled</td>
<td></td>
<td></td>
<td>7.2 Correct loading and storage procedures</td>
<td>7.2 Check that carry handle and guards are secure.</td>
<td>1</td>
</tr>
</tbody>
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Equipment Base Risk Profile

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</table>
SECTION 2– TASK BASED RISK ASSESSMENT

<table>
<thead>
<tr>
<th>TASK</th>
<th>HAZARD</th>
<th>UNDESIRED EVENT</th>
<th>Risk Matrix No control</th>
<th>Suppliers Strategies or Controls</th>
<th>Recommended Control to be implemented by the User</th>
<th>Risk Matrix With control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bending rail</td>
<td>Fall of ground</td>
<td>Serious injuries to person/s and damage to equipment.</td>
<td>25</td>
<td>Adhere to Mine policies, procedures and standards.</td>
<td>Making safe procedure</td>
<td>16</td>
</tr>
<tr>
<td>2. Transport and/or installation.</td>
<td>Dropping Rail Bender</td>
<td>Damage to equipment and injury to persons</td>
<td>19</td>
<td>2.1 Adhere to correct transport and installation procedures. 2.2 Wear PPE</td>
<td>1 Adhere to correct transport and installation procedures. 2.2 Wear PPE</td>
<td>10</td>
</tr>
<tr>
<td>3.1 Bending Rail</td>
<td>3.1 Negligence</td>
<td>Damage to equipment and injury to persons</td>
<td>14</td>
<td>Adhere to correct procedures.</td>
<td>Adhere to standard procedure</td>
<td>2</td>
</tr>
<tr>
<td>3.2 Inserting objects between piston and rail.</td>
<td></td>
<td>Object may jump out and cause serious injury.</td>
<td>13</td>
<td>Adhere to correct procedures.</td>
<td>Adhere to standard procedure</td>
<td>4</td>
</tr>
</tbody>
</table>
Task Base Risk Profile

Risk

Value

0 2 4 6 8 10 12 14 16

1 2 3 4

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SECTION 3- PROCEDURE FOR USE OF the Buffalo Rail Bender.

3.1 OPERATIONAL REQUIREMENTS

1. Personal protective equipment (PPE) required by the mine standard / COP. (Correct type of gloves, Safety Shoes / boots)
2. Buffalo Rail Bender.
3. Rail Tongs.
4. Paint.
5. Sleepers.
6. Rail clips or dog spikes.
7. Fish Plates and bolts.

3.2 Operational Procedure

Ensure Pump is in an operational condition.

Bending the rail.

1. Always wear PPE.
2. Lay sleepers at correct spacing.
3. Lay only the inside rail on sleepers.
4. Fasten rail to previous rail with fishplates and bolts.
5. Always bend the inside rail first.
6. Determine where rail bend should start and place rail bender on rail. (This should not be closer than 500mm from the end of the rail.)
7. Make a mark on the rail both side of the rail bender.
8. Pump up until the piston of the Railbender is against the rail, and then pump 10 strokes.
9. Release the pressure and move Railbender so that the centre of the Railbender is on the mark on the rail.
10. Make a new mark on the rail.
11. Repeat points 5, 6 and 7, up to where the bend should stop. (This should not be closer than 500mm from the end of the rail.)
12. If at this stage the bend is not enough, repeat from point 3 until rail bend is correct.
13. Fasten rail to next rail with fishplate and bolts.
15. Repeat the whole procedure on the outside rail. Ensure that the rail gauge is maintained.
16. Connect the sleepers to the outside rail.
17. Retention the bolts on joints.

Note: At end of shift, always remove all equipment from tracks and store in safe place.

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