Inspection & Response Strategy

Develop a risk based inspection and response strategy for the structures:

- Minimize risk of catastrophic failure
- Eliminate unscheduled stoppages
- Ensure/enabled targeted inspections (know exactly when and where to inspect)
- Enabling factually-based decision making (when should repairs be conducted)

The strategy identifies:

- Location and failure probability as a function of criticality
- Inspection frequency based on criticality and crack growth rates
- Detailed Inspection checklists
- Standardised inspection procedures (inspection methodology – visual, UT etc.)
- Critical crack sizes derived from fracture mechanics
- Criticality and repair/monitoring strategy ranked based on crack size detected (stop machine, next service day, within 3 months etc)
- Monitoring procedures – tracking status of defects
Inspection & Response Strategy

- Where to inspect
- Frequency of inspection for specific locations

See Boom point box inspection locations for details.
Response Strategy - How to assess defect and respond

- Critical crack size for safe operation
- Specifies monitoring to be conducted until repairs are conducted

<table>
<thead>
<tr>
<th>Defect and Location</th>
<th>Response Category 1</th>
<th>Response Category 2</th>
<th>Response Category 3</th>
<th>Response Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracks at main chord plate to casting weld (Location A Figure 1.2) Criticality: H</td>
<td>• &gt;350mm</td>
<td>• 225 – 350mm</td>
<td>• 100 – 225mm</td>
<td>• 50 – 100mm</td>
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<tr>
<td><strong>Defect:</strong></td>
<td>• Stop machine and repair immediately</td>
<td>• VI at weekly intervals</td>
<td>• VI on PM</td>
<td>• VI on PM</td>
</tr>
<tr>
<td><strong>Response:</strong></td>
<td></td>
<td>• Increase inspection frequency with crack length</td>
<td>• Increase inspection frequency with crack length</td>
<td>• Can decrease inspection frequency if crack not growing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Schedule repair for next PM</td>
<td>• Schedule repair for future PM</td>
<td>• Schedule repair for future PM</td>
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</tbody>
</table>

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Strategies developed and implemented on over 50 draglines:

- Entire dragline fleet in BHP Mitsubishi Alliance
- All draglines at Rio Tinto Coal Australia (RTCA)
- Anglo and West farmers

- Strategies are being developed for 2 draglines at Navajo mine in USA