



Anderson Group of Companies

BULLETIN NO: NSW 01-07
DATE 15.03.07

Safety Alert

INCIDENT:

It was identified by a NSW U/G coal mine and by the investigation following, that a 913-6 LHD vehicle with a DES approval held by Anderson Industries PTY LTD was driven underground in a service bay area with the engine running for 4 to 5 minutes without any water in the scrubber. It was found as part of the investigation that the plastic floats in the scrubber were melted as a result. At the time the machine was fitted with an “Out of Service Tag” stating that there were repairs in progress and waiting for parts.

The investigation concerning this report is “how was the machine able to be started without any water in the scrubber?”. It is also being assumed (as reported) that no adjustment was made by the operator to the safety circuit system and that the machine started without interference.

CIRCUMSTANCES:

The LHD in question had been experiencing recent reliability issues with the low water shut down protection system and a number of authorised and unauthorised personnel had been adjusting the safety system pressure to attempt to rectify the problem.

INVESTIGATION:

The investigation focused on two areas, one being possible mechanical component failure and the other being adjustment by unauthorised personnel.

To determine if there was component failure a check list was developed as below

1. Verify the integrity of the existing pressure regulator gauge. This was done by fitting an additional gauge between the pressure regulator and the flow control and one after the flow control valve.
2. Regulated pressure stability to be confirmed to ensure the pressure was not creeping up or down on its own.
3. Adjustment of flow control valve to be confirmed to match the approval specifications
4. Set and check the complete system to ensure it is compliant as per the approval.
5. Evaluate to determine the upper pressure setting required to render the safety system inoperable, to be done with all other related parts/components in their existing state . This would effectively override the circuit at a certain high setting by supplying more air to the system than the system could exhaust in the shutdown mode.
6. Once the system was evaluated the original pressure regulator was to be replaced and then stripped and internally inspected.

To prevent adjustment of the safety circuit by unauthorised personnel

Limit/restrict access to operators or unauthorised personnel by modifying the cover over the top of the safety circuit adjusting valves by replacing the hexagon headed bolts with button head bolts.

To further restrict access under this cover, fit raised rings welded around the button head bolt areas, therefore requiring different tools than those regularly carried by the majority of personnel underground.

Results

1. The pressure gauge was verified as serviceable but slightly inaccurate as the original gauge pressure was showing 26 psi (185 kPa) and the two new gauges fitted were showing 24 psi (170 kPa), therefore 2 psi (15 kPa) lower. This setting was still within approval specifications.
2. Regulated pressure set at 26 psi (185 kPa) was checked for creep over 10 minutes and the pressure did not change within this period, therefore the regulator was operating correctly.
3. Flow control valve was adjusted to as per the procedure. No problems with flow control valve found.
4. A complete check of the system components was carried out and confirmed there was no incorrect hosing or unapproved items fitted.

5. The pressure regulator and the flow control valve were replaced, disassembled and showed some evidence of contamination, but it was not determined that any of the contamination actually caused a system failure.
6. Machine had a very recent Code D mechanical inspection completed and a 1000 hour service prior to delivery to the mine. This included inspection and verification of the shutdown system, scrubber floats and the DES system.
7. Two separate 913-6 vehicles with the same DES system were also tested to check the upper pressure to make the safety system inoperable. With the flow restrictor set in a similar position, it was confirmed once the regulated pressure was at 38 psi (270 kPa) and above the system becomes inoperable and was not able to be shut down.

Summary:- The findings did conclude that if the pressure regulator was set at 38 PSI (270 kPa) or above, the safety system could be rendered inoperative and therefore not shut the engine down if a fault occurred in the safety system. Recommended pressure is and always was 26 psi (185 kPa) therefore allowing 30 % variance as a minimum.

RECOMMENDATIONS:

1. Anderson's as the designers of the system are to review the design risk assessment and come up with solutions to reduce the risk of unauthorised personnel tampering with safety system.
2. Anderson's as designers to carry out a design risk assessment (FMEA) on the control circuit and implement the outcomes.
3. Personnel are not to operate machinery, equipment fitted with "Out of service Tag" unless they are competent and understand the consequences in doing so and the mine isolation procedure allows them to do it.
4. Controllers of work premises, are reminded of their responsibilities under the "Occupational Health and safety Act, 2000", section 10 "Duties of controllers of work premises, plant or substances"
5. Employees are also reminded of their responsibilities under section 20 "Duties of employees" of the Occupational Health and Safety Act, 2000.
6. All persons are reminded of the responsibilities under the Occupational Health and safety Act, 2000, Section 21 "Persons not to interfere with or misuse things provided for health, safety and welfare"

For further information please contact

Dominic Posavec

NSW General Manager - Anderson Group of Companies

Phone :- 02 49494900

Mobile :- 0412601294

e-Mail – d.posavec@anderson-group.com.au

