SF310 Near miss investigation report

In relation to BAM Nuttall activities a near miss is defined as a situation or incident which could have resulted in an injury or material damage. Also situations or incidents were material damage actually occur but are not reportable as a dangerous occurrence under RIDDOR.

Data from these reports is pooled to identify trends and learn lessons, which can then be used to prevent re occurrence.

Contract/Location :	Markinch	**Contract no:**	5718
Date of incident:	15/04/2015	**Time of incident:**	1535 hours

Description of incident:

On Wednesday, 15th April, 2015, Lead Driller and Assistant Driller were engaged in cable percussion duties at Markinch for the purposes of a ground investigation there.

The lead driller was advancing his casing. To carry out this task the lead driller had a fixed slotted sinker bar (top) screwed directly on to an intermediate sinker bar (bottom) and thereafter an eight inch shell. This combination is attached to his 16mm main winch rope using a 4.75 tonne 'D' shackle on to a fixed swivel.

An eight inch drive head is screwed on to the top of the casing that is protruding abovethe ground. This has two 60mm holes centred to the drive head. The sinker bars and shell are inserted inside the 8 inch casing and a 48mm surging bar is placed through the 60mm holes in the 8 inch drive head and through the 50mm hole at the top of the slotted sinker bar, this then connects the casing to the sinker bar.

When advancing the casing, the lead driller would raise the casing / tooling then using the free fall, main winch, allow it to drop in the hole using its own weight. Once the casing / tooling have been advanced to ground level, another length of casing is added and process repeated until the required depth is reached.

About 1535 hours, same date, Lead Driller was advancing the casing / tooling when the 16mm main winch rope lost tension and it became apparent that the casing / tooling had separated from the rope.

On closer inspection it could be seen that the fixed swivel on the top sinker bar had detached from the sinker bar itself.

Cause of incident:

The nut has pulled free from the thread of the top sinker bar. Contained within the nut is a roll pin to prevent movement of the nut. A further measure to prevent movement is the welding the top of the thread and nut together. The nut and roll pin were not recovered post event however it can be clearly observed that the threading of the top sinker bar has failed; potentially caused by continuous movement. Once the top sinker bar and swivel were returned to the BAM Ritchies Yard and new roll pin was inserted it was noted that the opening created for the roll pin was enlarged and as such would no longer fit. This suggests that the roll pin and the weld had failed prior to the disconnection of the swivel.

Actions taken to prevent re occurrence:	**By who**	**By when**
Inspection of all sinker bars in BAM Ritchies Fleet by Works Manager	**X**	**06/05/15**
Re-briefing of all operatives in duties, responsibilities and procedures of all drilling equipment and plant, with focused attention on sinker bars	**X**	**07/05/15**

***Figure 1*; -** **This image shows the original top weight sinker bar, protruding threaded section and swivel. The highlighted section shows the remaining threaded portion of the extension that should house the nut, roll pin and weld. The yellow paint is a secondary measure to clearly display that this item is not fit for use.**

Figure 2; - **This image shows the original top weight sinker bar, the threaded extension and the opening created for the roll pin.**

Figure 3; - This image shows the threaded extension and the opening created for the roll pin, magnified. Section 1 illustrates the elongation of the opening for the roll pin and Section 2 illustrated the smoothing of the threads, both caused by movement of the nut. The Section 3 iillustrates the remaining weld that initially connects the threaded extension to the nut.

Figure 4; - This image shows the side profile of the swivel. It can be seen to lean slightly to the right. This deformation is caused when the tool is not placed on the ground carefully. Continued handling in this fashion results in undue stresses being placed on the nut, threaded extension, roll pin and welds and manifests in this deformation.

Figure 5; - This image shows the swivel. The highlighted area illustrates slight deformation of the swivel at the bow section. This is caused by the fixed eye connection to the 16mm wire rope of the cable percussion rig. This deformation is well within tolerance and would not require to be changed. Again a slight leaning to the right can be observed.

Figure 6; - This image illustrates a replacement roll pin placed within the opening on the threaded extension. This insertion would always require to be carried out using force; however it can be observed, due to elongation of the opening, that the roll pin can slid easily into the opening. There is also further evidence of stripping of the threads that would have housed the nut. The two red lines give clear indication of the deformity between the roll pin and the created opening.

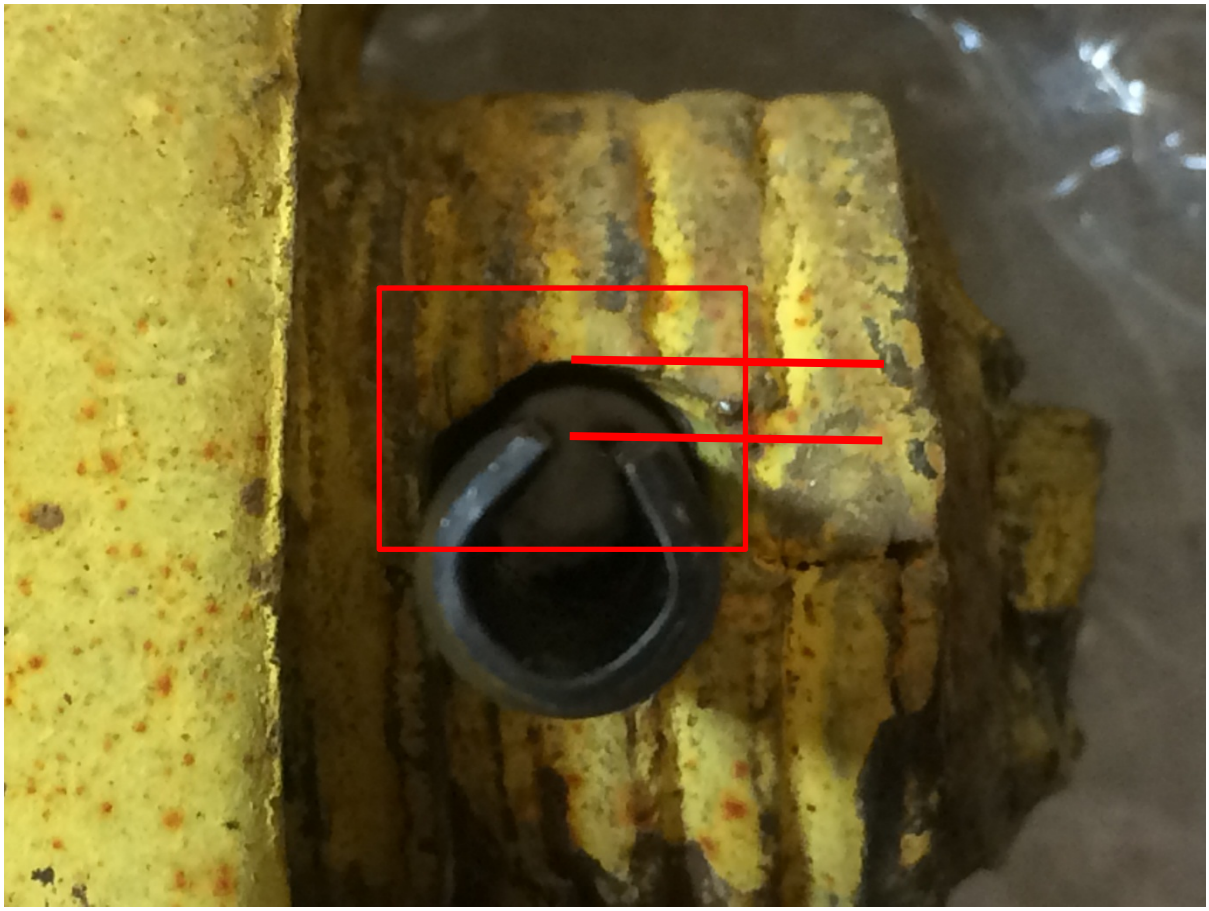

Figure 7; - **This image illustrates a roll pin. The gap that runs the length is to allow for a tight and secure fit and the roll pin is forced within the created opening.**

Figure 8; - **This image shows the remaining weld at the top of the threaded extension.**

Figure 9; - **This image shows a closer image of the remaining weld left at the top of the threaded extension.**

Figure 10; - This image shows a closer view of the stripping that has occurred prior to the nut coming free from the threaded extension. Smoothing areas have occurred at the section of the extension where the nut would have met the swivel, as indicated in Section 1. Section 2 illustrates rutting to the threads.

Figure 11; - **This image shows a new top weight sinker bar, swivel, inserted roll pin and nut. It is clear that there is no threaded extension visible.**

Figure 11; - **This image shows the weld in place to connect the nut to the threaded extension.**