



## Foreword

**We should celebrate two of our major successes of the past year. The achievement of getting our AFR down to 0.14 at the year end and the number of near misses reported for both Safety and Environment.**

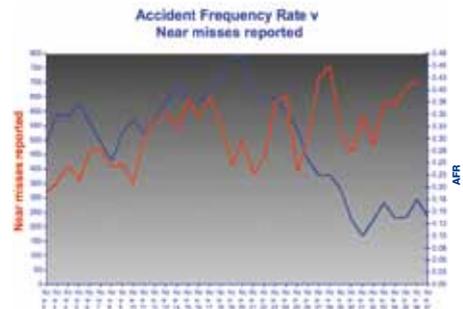
By the end of 2009 we reported over 7000 safety and 1450 environmental near misses and potential incidents. The results providing us with a clear focus on areas for improvement such as: use of PPE; moving vehicles; slips/trips/falls; falls from height; and fuel spills and leaks.

Our focus on near misses has definitely helped to reduce our AFR. The “closing the loop” process helps to eliminate local hazards as well as helping to find practical corrective actions. Part of the process is to understand why they are occurring. For example an analysis of the PPE

near misses indicates that in almost all cases the appropriate PPE is not being worn when required. This could be due to a lack of understanding of the rules or it may be that the PPE is not fit for purpose and consequently the rules were disregarded.

Two initiatives have already been started to help improve our focus on near misses. The introduction of Safe and UnSafe Acts (SUSA) has now been launched and this will be rolled out across the business during 2010. In addition, we have set up PPE working groups to focus on the most appropriate PPE for our work activities.

From an environmental perspective, as a result of the near misses reported associated with leaks and spills, we have made it mandatory for all equipment containing any fuel or oils to be stored on plant nappies or drip trays, including a need for



weekly monitoring.

The correlation between AFR and Near Misses is shown on the graph above and clearly demonstrates the relationship between AFR and near misses.

Well done to all and let's keep it up! Your proactive approach to near miss reporting is helping Barhale to reduce the likelihood of significant accidents and injuries.

## Eastern H&S stand down day – Time to think about safety.

**The @one Alliance (Eastern Region Anglian Water Framework Alliance) downed tools for half a day to concentrate on health and safety as part of the European H&S Week in October.**

In all, 700 people were involved in the day with 55 Alliance construction sites and three main offices “stood down for safety”. Barhale played its part providing 4 host sites at Burstall, Sutton St James, Wreningham and Saltfleetby that were attended by nearly 300 people. The day focused on the key message of “Nothing we do is so important that we cannot take the time to do it safely”. This was followed by presentations, quizzes and activities centred on manual handling and hazard spotting.

For the @one Alliance to allocate

half a day to safety at the expense of production speaks volumes about their commitment to safety.



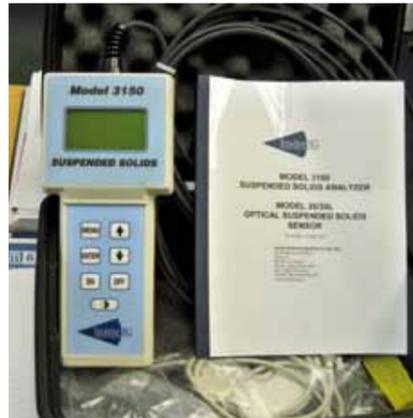
## Winter working

**Remember, cold, frost, snow and rain all spell danger.**

- Make rock salt available for slippery paths and walkways,
- Take care stepping onto plant when icy.
- Effects of cold whilst using small tools and the increased exposure to the effects of vibration white finger. Ensure HAVS Assessments are reviewed and re briefed to personnel.
- Consider security guards welfare, lone working, heating, lighting
- Is everyone fit and well after a lengthy break and really focused on the task ahead?
- Check welfare facilities, i.e. frozen pipes, heaters etc.

### Suspended solids meter now available

Tunnelling Services have acquired a device for measuring Total Suspended Solids (TSS). We can now test the effectiveness of our settling tanks, filters and separation equipment prior to discharge without waiting for analysis results from a laboratory. It is simple to use and will help demonstrate compliance when we are discharging to surface waters or sewers.



### The most important meal of the day

A recent study on a major construction project in the Southern region highlighted 50% of workers who took part in the studies did not eat breakfast regularly with 17% having below normal blood sugar levels.

Symptoms of low blood sugar levels can include a feeling of weakness, agitation, shaking, difficulty concentrating, fatigue and blurred vision, all of which could jeopardise safe working.



### Flood preparation and evacuation

From the outset of the contract at Llandinam, mid Wales, where we were installing a water main under the river Severn, the site team were aware of the potential dangers of flooding as the work was situated in a major floodplain.

For this reason measures were put in place to manage the risk of flooding, including situating the main compound out of the flood plain. A programme of monitoring Flood Alerts from the Environment Agency and weather forecasts was put in place. Finally, farmers and villagers were contacted to get some knowledge of previous flooding.

Mid-November saw some heavy and prolonged rain in mid Wales, and on the 17th the Banksman at the drive shaft reported that the

river had breached and was rising. Regular monitoring was initiated with between 25mm and 50mm rises recorded every half hour to the point where an evacuation of site was agreed to be implemented.

Small equipment was removed to higher ground and excavators climbed to a place of safety on berms about 2 metres high. The site team then left, with the Banksman checking everyone off site and joined rest of the team back at the main compound, where everyone was accounted for. The last thing was to shut off the shaft pumps, allowing the shaft to flood in a controlled way.

Another full scale evacuation was needed the following week which was just as successful as the first.



### Coloured cones

The Eastern region have been trialing the use of coloured cones as an additional measure to highlight high risk areas. For example the cones delineate an area with overhead telephone cables. We are working with BCS to further develop this idea across the business.

### The Claw on Barhale excavators

BCS have purchased and fitted the Geith Auto Lock 'The Claw' quick hitches to all excavators above 9 tonne in accordance with the Barhale Quick Hitch Statement of Intent (PL29) requirements.

The decision to work closely with Geith International followed a number of trials with equipment from other quick hitch manufacturers. However, 'The Claw' was seen as the best hitch to meet Barhale requirements.

The Geith Claw quick hitch offers several safety features:

- Automatic Safety Lock fully visible from the operator cabin
- The quick hitch has a "dual locking" feature with a "third back up lock" via the check valves fitted within the rams of the hitch
- Fully compliant with UK HSE safety standards and regulations, e.g. EN474
- Can only be used in the safest "curled" position
- Hydraulic Circuit Control feature to minimize risks of machine hydraulic failure



### MGF excavation protection systems

The Earls Colne site (Eastern Region) set up a series of excellent edge protection, access and rescue systems designed as an integral part of the excavation support.

The systems are suitable for use with MGF sheet and frame and trench box systems and are very easy to fit. The ladder access point provides a neat and consistently high standard of access point, suitable for sheeted pits, shafts and larger trenches. The Davit Arm neatly plugs the gap left following the ban on use of excavators for lifting people. It provides a pivoted lifting point into which is fitted a standard man riding winch that is suitable for casualty evacuation in the event of an emergency.

Although not required on this occasion, the system can also provide a method of fixing rigid or fixed edge protection to sheets and frames which has traditionally been difficult to achieve for trenches where it is not practical to project sheets above ground level.



### Backwash system in use at Mainstream Way

Tunnelling Services has developed another technique for treatment of groundwater loaded with suspended solids. It is being used on the Mainstream Way scheme in Saltely, Birmingham where water samples indicated levels of almost 6000ppm (parts per million) would be encountered.

The process is in three stages, firstly using a polymer flocculant which encourages the suspended solids to bond together and create larger particles (flocs) that settle rapidly and are more easily filtered. The next stage is traditional settlement and finally the resulting liquid is then passed through a new piece of equipment, the Back Wash system.

The Back Wash system is a mixed media filter containing 5 layers filter media including magnetite, garnet and anthracite. When the system begins to clog the flow can be reversed using cleaned water allowing reuse of the filter. Results showed that suspended solids were reduced to 39ppm, below the typical limit set by the Environment Agency for discharges to surface waters.

The photograph shows three stages of cleaning. Prior to treatment; after flocculation and settlement; final effluent after passing through Back wash vessel.



# Learning opportunities

Three reportable accidents have occurred over the last 6 months. Summaries are outlined below.

## Hydrogen gas explosion

Whilst cutting hand-railing as part of a decommissioning activity in a pumping station, an explosion occurred injuring two operatives. The decommissioning required the infill of wells with foam concrete. In this project, Incinerator Bottom Ash (IBA) was used as the aggregate. After investigation it was determined that aluminium particles in the IBA can react with the water and cement contents of the concrete to generate hydrogen gas. In this case the gas appears to have built up beneath metal flooring and is likely to have been ignited by a spark created by a grinder.

### Learning Points

- The use of foam concrete containing IBA is no longer permitted for Barhale projects. Only foam concrete using inert materials will be permitted. Examples of inert materials used in foam mix designs include sand, gravel or crushed stone. Always seek confirmation from the Supplier that the materials are safe to use.
- Contact your Supplier for clarification if you are unsure of the ingredients used in specified mixes before authorising use.



Scene inside the pumping station after the explosion

## Severe laceration to finger

Barhale operatives were in the process of placing a 12m length of 250mm diameter HPPE pipe onto the rollers to carry out a butt welding operation. This operation had been ongoing for 3 days and

both operatives were trained and experienced in the use of butt fusion equipment. However due to wet weather conditions, the IP had removed his gloves to handle the pipe and lifted it by placing one hand in the open end of the pipe. When the pipe was placed on the rollers it appears that the other operative slipped, pushing the pipe forward. As the IP attempted to remove his hand, his finger became trapped between the pipe and the shaver plate on the butt fusion equipment; this resulted in the injury.

### Learning points

- The risk of injury from a hand being trapped between the pipe and the butt fusion equipment had not been identified.
- The change in conditions was overlooked by the site team, removing the opportunity to stop, report and discuss alternative safer methods of work.
- The IP removed his gloves to manually handle the pipe due to the weather conditions which increased the severity of his injury.
- Risk assessments need to assess changes brought about by different weather conditions.



Butt welding working conditions

## Manual handling injury

While moving a fence line a ground worker pulled a muscle when manually removing from the ground a concrete post 2.3m long and weighed approximately 50kg. Two factors that contributed to the cause were the post was located by a tree, an

obstruction that made the operation very awkward, and the other operative had an existing back condition that prevented him from effectively lifting. Consequently while restraining the post the man doing the lifting strained his neck and shoulder resulting in him being off work for several days.

### Learning points

- Do not underestimate what are considered routine tasks, assess them for access and egress, slippery, wet conditions or obstructions
- Never allocate persons with limiting medical conditions to manual handling tasks.
- Individuals must make known to their line managers any existing medical conditions or limitations which could affect their ability to carry out their work safely.



Position of tree contributing to difficulty of manual handling

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Always remember – problems can be ‘learning opportunities’