

Near miss at Maesyfelin bridge, near Pontyclun, 8 April 2016

1. Important safety messages

Safe systems of work are intended to protect staff from the movement of trains. Implementing unauthorised systems of work is dangerous and can lead to fatal accidents.

Using a single safe system of work plan for multiple sites or long mileages can reduce the ability of planners to select the appropriate safe system for the location and task being undertaken. It can also make it more difficult for responsible managers to approve plans and for controllers of site safety to verify that the proposed safe system is appropriate and can be implemented on site.

Using hand-held radios to provide warning of approaching trains is unsafe and not permitted by the Rule Book.

It is important that everyone working on the railway challenges any unsafe system of work, for example, by invoking the Worksafe procedure.

2. Summary of the accident

On 8 April 2016, a group of track workers were crossing Maesyfelin bridge when a passenger train travelling at 75 mph (120 km/h) approached them. There was no position of safety on the bridge and the group had to either run off the bridge or jump onto its parapet to avoid being struck. No-one was injured as a result of the incident and no damage was caused. However, the train missed striking members of the group by only a few seconds.



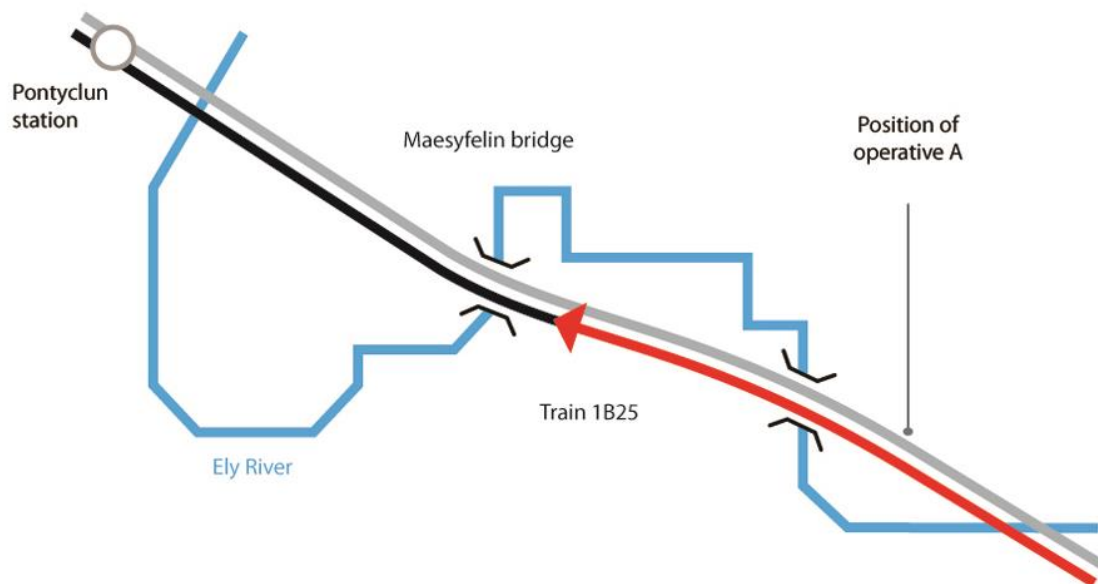
Library image of Maesyfelin bridge (courtesy Network Rail)

3. Cause of the incident

Maesyfelin bridge carries the South Wales main line over the River Ely. The bridge is situated around 530 metres south-east of Pontyclun station and on the exit of a curve for trains approaching from Cardiff. The railway consists of the up and down main lines, and the maximum permitted line speed for trains approaching the bridge on either line is 75 mph (120 km/h).

The work group involved in the incident consisted of six contract staff, including a controller of site safety (COSS), who was leading the group. The COSS had six years' experience in the role and was familiar with the area. Two other members of the group held probationary competencies as Lookout/Site Warden and another member of the group had only recently qualified to work on operational railway lines. At the time the incident occurred, the work group were carrying out inspections related to an upcoming possession.

The systems of work to be used for the inspections were planned on 29 March 2016, 10 days in advance of when they were to be undertaken. The planner decided that the work group should walk on or near the line when travelling to and from the inspection sites, with protection provided by a lookout, who would warn the group of any approaching trains (a system of work known as 'red zone with warning given by lookout'). The planner also decided that, when the work group was carrying out inspections, it should remain a safe distance from the track and that a site warden should be appointed to warn any staff who approached too close to open lines (a system of work known as 'separated green zone'). Systems of this type are collectively known as 'safe systems of work' (SSOW) and the plans for a particular task are recorded in a set of documents known as the safe system of work pack (SSOW pack).



Simplified map showing route of the train and position of operative A (not to scale)

Network Rail standard NR/L2/OHS/019 requires planners to consider a number of factors when developing SSOW plans. These include the number of people involved, the nature and location of the work, the availability of opportunities to block the line to traffic, the layout of the railway, the maximum permitted linespeeds and the length of warning time and number of lookouts required.

The Rule Book requires staff working on or near the line under a red zone with warning given by lookout to be in a position of safety at least 10 seconds before any train passes. For lines with a maximum permitted line speed of 100 mph (160 km/h) or less, this position of safety must be at least 1.25 metres from the nearest running rail. When staff are working within a separated green zone, the Rule Book requires the safe distance between the site of work and the nearest open line maintained by the site warden to be at least 2 metres.

The SSOW pack produced by the planner included details of the planned SSOW, task briefing sheets and extracts from the sectional appendix and the national hazard directory. The SSOW pack produced covered almost 14 route miles and was 89 pages long. Although the pack included a 13 page extract from the national hazard directory, the hazards listed in this extract did not include any reference to limited clearances or limited sighting distances at Maesyfelin bridge. The planner submitted the SSOW pack to the responsible manager, who reviewed and accepted it on 30 March 2016. On 6 April 2016, the COSS verified that, in his opinion, the SSOW pack was accurate and could be implemented as planned.

Although both of the proposed SSOW for the inspections had been planned, approved and verified, a preliminary investigation undertaken by the rail industry found that there was inadequate space between the bridge parapet and the nearest running rail for a person to stand in while maintaining the required 1.25 metres clearance needed to implement a red zone with warning given by lookout SSOW. The investigation also concluded that there was not enough space in the cess on the immediate approach to the bridge to implement a separated green zone SSOW.

On the morning of 8 April 2016, the work group initially went to sidings where the COSS briefed the workgroup on the SSOW and the group completed a RT9909 'Record of arrangements and briefing' form to confirm that this had been done. The work group then drove to several different locations to undertake inspections before arriving at the Miskin scout hut access point, where they inspected two bridges. After these inspections were completed, the COSS asked one of the probationary lookouts in the group, operative A, to remain at the access point while the COSS and the remainder of the group drove up to the nearby Pontyclun station and walked down from there to Maesyfelin bridge. The COSS briefed operative A on the direction of traffic and line speeds and asked him to provide a warning of any approaching trains using a hand-held back-to-back radio.

Although operative A held a probationary competency as a lookout, the arrangements made by the COSS were not authorised by the relevant rules and standards. The rail industry investigation found that the COSS adopted this system because he knew from his local knowledge that there was no position of safety on Maesyfelin bridge and that the sighting distance at the bridge would be limited, due to the curvature of the railway.

Witness evidence shows that the COSS repeated the SSOW briefing once he and the remaining members of the work group arrived at Pontyclun. The COSS stated that he had also given a similar SSOW briefing at the other inspection sites. However, because only a single RT9909 form had been included in the SSOW pack, and as this had been completed at the sidings, there is no record of any of these later briefings. Once the briefing was completed and the COSS was satisfied that he had radio communication with operative A, the work group walked in the down cess to Maesyfelin Bridge. The COSS stated that he continued to check that radio communications with operative A were satisfactory while walking to the bridge.

The work group reached the bridge where the COSS undertook an inspection on the Pontyclun side. He then decided that he needed to make a further inspection on the Cardiff side of the bridge and used his radio to contact operative A to confirm that the line was clear of approaching trains. Operative A confirmed that no trains were approaching and, after a delay of about 30 seconds, the work group started to walk over the bridge using the down main. However, as they crossed the bridge, the work group felt the track vibrate and the COSS saw a train coming towards them. The COSS shouted a warning to the group and he then ran back off the bridge with another member of the group. The three remaining members of the group had to jump onto the bridge parapet to avoid being struck by the train.

Operative A stated that he had seen the approaching train and had radioed a warning to the COSS, which he then repeated twice, but that he had not received any acknowledgement to his warnings. Witness evidence was that the radio was working when the COSS contacted operative A immediately following the near-miss.

4. Previous similar occurrences

The importance of the COSS in leading safety discipline on site, their role in ensuring that SSOW are implemented in accordance with rules and standards and the necessity for unsafe practices to be challenged by team members are discussed in RAIB's reports into fatal accidents near [Newark North Gate](#) station on 22 January 2014 and at [Saxilby](#) on 4 December 2012.

The need for planners to select SSOW which are appropriate for the location and work being undertaken is discussed in RAIB's reports into a track worker struck by a train at [Bulwell](#), Nottingham on 6 August 2012 and a near miss near to [Roydon station](#), Essex on 16 July 2012.