



Responsibility for the regulation of health and safety on the railways was transferred from the Health and Safety Commission (HSC) and Health and Safety Executive (HSE) to the Office of Rail Regulation (ORR) on 1 April 2006.

This document was originally produced by HSC/E but responsibility for the subject/work area in the document has now moved to ORR.

If you would like any further information, please contact the ORR's Correspondence Section - [contact.cct@orr.gsi.gov.uk](mailto:contact.cct@orr.gsi.gov.uk)

# HM RAILWAY INSPECTORATE NATIONAL

## TOPIC 1999/2000 - TOPIC 6

### RED/GREEN ZONE WORKING - A REPORT ON THE PROGRESS WITH MAXIMISATION OF GREEN ZONE WORKING ON RAILTRACK INFRASTRUCTURE.

## 1. Background

1. Trackside workers are exposed to the highest risk of a fatality in the railway industry. After a period of intense focus in relation to the risks to trackside workers fatalities dropped from 14 in 1990 to just one in 1996.
2. Nevertheless fatality rates for the periods 1997/98 and 1998/99 exceeded Railway Group objectives of one fatality per 10,000 workers per annum. This fatality rate can be compared to that in the construction industry which has traditionally been considered as high risk.
3. The concept of segregating work from trains utilising red/green zones was introduced on 1st April 1995 when revised working procedures were introduced by Railtrack. HMRI have undertaken a previous study of red/green zone working which is detailed in Chapter 11 of the HMRI Annual Report 1995/6. The purpose of the inspection program described here was to review the issue further and develop a strategy to secure further improvements.

## 2. Method of Protection

4. Methods of protection involve fairly complex systems of work which are not described in detail in this report. The systems of work can be classified as those where "permit to work" systems segregate track workers from lines on which trains are running and those where work occurs with the line open to traffic and track workers are warned of approaching trains in time to move to a place of safety.
5. The systems of work classify segregated worksites by the term "green zones" while non segregated worksites are known as "red zones". Where work is pre planned, generally known as an "engineering possession", similar segregation procedures to green zone are applied, although strictly within the

definition of the Railtrack Rule Book these arrangements do not fall within the term green zone. This can lead to confusion where monitoring of the amount of green zone working is undertaken. Following the findings of the previous study Railtrack issued a Line Standard RT/D/P/050 "Maximisation of Green Zones" in 1996.

### 3. Methodology

6. A question set was developed for use by field inspectors. Four key areas were highlighted related to zonal publications, monitoring of red and green zone working, the red zone risk assessment process and feedback from front line staff. Resources for this project were affected by HMRI's response to the Ladbroke Grove accident, however, inspection activity was undertaken in Railtrack's Scotland, North West, Anglia, Great Western and Southern Zones.

### 4. Summary of findings and Issues Arising

7. All of the zones examined had a Zonal Hazard Directory (ZHD) which detailed availability of green zones. The information content and presentation varied between Zones. As an example, in Railtrack Scotland Zone Information is presented in the context of time scales annotated with high medium or low availability while in Railtrack Great Western Zone intervals are identified based on the working timetable. Concerns were expressed regarding updating of this information and usefulness of the information contained in it in planning work. In general signallers appeared to have access to ZHD and have been briefed on the information therein. It was identified by a number of COSS that the indication of an available slot was no guarantee that one would be available as a number of factors can affect granting of green zones, such as service disruption.

**Recommendation 1.** Effective procedures should be in place to ensure that Zone Hazard Directories are up-to-date in respect of green zone availability.

**Recommendation 2.** Railtrack Zones should adopt uniform means of presenting information contained in Zone Hazard Directories.

8. The procedure which Railtrack Zones have in place for monitoring the amounts of green zone working varied considerably. In Railtrack Scotland Zone statistics were produced stating that 69% of work was carried out green zone and 31% red zone. These figures originated from examination of PICOW forms analysed by the Infrastructure Maintenance Contractor in one period during September 1998 and appeared to be on a per site basis. The Scotland figures appear to include work carried out in TIII possessions, which although providing similar segregation between staff and trains, are not strictly within the definition of green zones and can mask high levels of red zone working out with such engineering possessions. Railtrack North West Zone had started to collect data by analysing COSS risk assessment forms on a per site

basis. Green zone working appeared to be variable between in the region of 30% and 45%. There appeared to be no separation of possessions and other works where high amounts of possession working may hide significant amounts of unplanned work being carried out red zone.

9. Railtrack Southern Zone carries out annual surveys with COSS but no other monitoring of site numbers and types is carried out. A claimed 11% increase in green zone working, when analysed, represents a reduction in the proportion of green zone working because of a rise in the number of worksites (38% to 33% approx. over a twelve month period. The Railway Group Safety Performance Report 1998/99 has identified a need to provide information on an, "exposed hours" basis for monitoring purposes.

**Recommendation 3.** Action needs to be taken to provide information on a uniform basis to enable effective monitoring. This should ensure that work carried out under engineering possession TIII procedures does not distort monitoring of work carried out under TII procedures. Uniform units should be used for monitoring purposes and Railtrack should implement, "hours exposed" on a uniform basis across Zones as identified in the Railway Group Safety Performance Report.

10. Monitoring of safe systems of work in respect of red/green zones is carried out by Railtrack field managers using end product check procedures.. It appears that no emphasis is placed on the choice of green or red zone working but that the emphasis is on safety within the chosen zone. Problems were identified in the determining red zone sites where signallers do not record refusals.

11. The area of target setting related to red and green zone working was explored during the audit. Railtrack North West Zone had set a target of a 3% reduction per annum but as the Zone do not, as yet, have an accurate assessment of how much work is currently done red zone then the validity of the target and measure of achievement is questionable. Southern Zone and Scotland Zone had not set targets in relation to green zone working. Railtrack Anglia Zone had a stated target of 60% work green zone and had stated objectives in relation to reducing red zone working. Railtrack Anglia Zone were using the basis of hours worked and achievement appeared to range from 16.7% on GELTS (Great Eastern, London Tilbury & Southend) to 36% on WANLL (West Anglia & North London Lines).

**Recommendation 4.** Urgent action needs to be taken to set and implement robust targets for reducing red zone working.

12. The Railtrack Line Procedure RT/D/P/050 "Facilitation of Green Zone Working" allows the contractor to undertake red zone working when "his risk assessment demonstrates that the risk to his staff and others affected by the work through adoption of this method would be reasonably practicable". The Zones examined and their contractors had adopted the COSS Briefing and Risk Assessment" defined in the Railtrack Rule Book GO/RT3000. In practice

this process is a record of arrangements and not a risk assessment, for example as defined in HSG L21 Management of Health and Safety at Work. There is, for example, no rating system that would identify red zone working with advance lookouts on a high speed line as presenting greater risk than use of an automatic warning system. This process has, in the authors opinion, facilitated almost unchanged protection for workgroups outwith traditional possessions. Questioning of COSS's reveal a very high percentage of weekday working remains red zone with a number reporting no change. The identification and reduction of such areas should be a priority.

**Recommendation 5.** Railtrack should submit proposals to amend Line Procedure RT/D/P/050 and GO/RT 3000 COSS Briefing and Risk Assessment Form to include a risk ranking process together with a cut off point where red zone working is prohibited. The identification and reduction of areas of work activity with high amounts of red zone working must be a priority.

13. Red zone restricted areas are detailed in Zone Hazard Directories and generally relate to areas where geographical limitations, such as curves, make the use of lookout protection difficult. Railtrack LNW are developing a process where if a risk assessment by a competent person shows risk can be controlled by a automatic track warning system then the prohibition will be wavered where such systems are utilised.

**Recommendation 6.** Railtrack should ensure, where arrangements to ensure health and safety are changed, that risks are minimised, so far as is reasonably practicable, and there is no increase in risk. It is important where previous prohibitions are removed that a full and comprehensive documented risk assessment is completed by a competent person and controls clearly identified.

14. In the 2000/2001 Safety plan objective 5a the aim is stated to ensure that the risk of accidental fatality to any group of workers on rail track controlled infrastructure and station will be no greater than one in 20,000 per annum by 2009. It also states that after April 2001 when green zones are not available use must be made of red zones protected by approved automatic warning systems except where a risk assessment supports unprotected red zone working.

**Recommendation 7.** Railtrack should mandate that this risk assessment process must be carried out by a person competent in both risk assessment techniques and a knowledge of the work activity to be undertaken. Such a process should include risk ranking. If continued use is made of the process documented in the current Rule Book there is a likelihood of little change in current levels of red zone working.

15. Minime 90 was approved for UK use in December 1998 but has only seen limited use. A number of enquiries from contractors are documented but take-up has been disappointingly small. Approval issues for other systems appear

to be a matter for resolution between Railtrack and HMRI in relation to the quality of approval submissions and time taken to process.

**Recommendation 8.** Difficulties with the approvals process and approval submissions must be resolved by Railtrack and HMRI.

16. Certain types of work which have site activity of long duration involving many staff such as track renewal or major infrastructure works may have substantial amounts of preparatory works outside of traditional possessions. Health and safety plans for such works, prepared to meet the requirements of the Construction (Design and Management) Regulations 1994 should detail the decision process associated with the protection of work trackside.

**Recommendation 9.** Railtrack should require the use of automatic track warning systems for large scale works and those of significant duration, unless it is not reasonably practicable to do so. Such decisions should be clearly documented in the project safety plan.

**Recommendation 10.** HMRI should implement a strategy to encourage the increased use of automatic track warning systems at such locations, both through liaison with Railtrack Headquarters and Zones, and when considering the robustness of safety plans associated with CDM Regulations. Formal enforcement should be taken where justified.

## 5. Conclusion

17. In general, documentation associated with track workers protection procedures appear to have developed in the period between 1996 and the present. There is still evidence that red zone working remains the norm in work situations associated with between trains infrastructure maintenance in traffic hours. Monitoring the situation will remain difficult until a uniform method of measuring amounts of work and method of protection is implemented across all zones.

18. Stringent targets have been set to reduce the risk of fatal accidents by 2009. Proposals are developing related to restrictions of red zone working unless protected by automatic warning systems. Such proposals must be closely reviewed by HMRI to ensure they are robust and do not allow easy use of higher risk alternatives.

19. Protection arrangements must be closely examined by all parties when investigating accidents. Where investigation shows that inadequate protection was provided appropriate enforcement action should be taken.