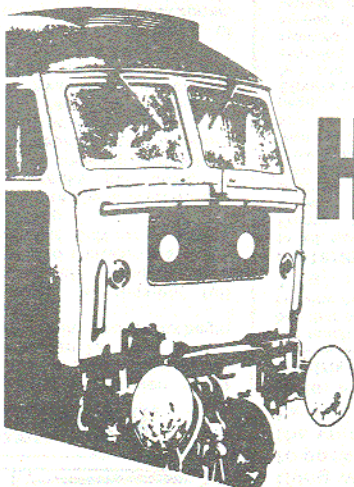
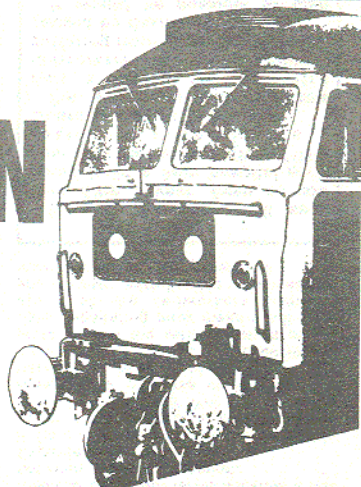


FLEXIBLE ROSTERING



THE HUMAN COST



'Flexibility' sounds such a nice, modern, efficient word,

but please, travelling public, think of the human cost.

I have been a train-driver's wife for forty-two years. My life, like my husband's, has been ruled by the railway timetable - and what a timetable!

When Len's on 'earlies' he has to be at the depot between 1.30 and 4.30 a.m. - it's different every day - and of course there are no buses at that time, so it means leaving the house an hour earlier to walk.

Then next week he'll be on 'lates', leaving home some time after tea and coming home in the small hours - again, there's no transport till the buses start running, so it's either a long walk or waiting around in the mess room for an hour or two. There's no comforts in the mess room, no armchairs or anything like that, just stacking plastic chairs, a bare floor and a table. It's not a place you can relax and unwind like at home, he's not getting paid for sitting around there killing time.

If he's at home one Saturday in six we're lucky and I can't remember when we last went out together. Work and rest is his whole life, and mine is clock-watching and cooking.

There's no canteen at work, so if he didn't get a cooked meal at home he would be living on sandwiches all week. In the old days of the steam-locomotives, they could have a fry-up on the shovel. Now if he can grab some fish and chips he thinks he's got it made. If he's delayed coming in, he may give up part or all of his meal break in order to get the next train out for the passengers. It does terrible things to your digestion, this shift work, as well as to your sleep.

My son's a loco-man too. Now he's married I see the struggle my daughter-in-law's having and I feel for her. She does a little part-time job, which means she often doesn't see her husband except in bed - they just leave notes for each other. Naturally the tension

builds up. A lot of the younger loco-men's marriages break up. But it's hardest for the kids. They have to creep around the house when their Dad's sleeping. They can't have their friends round. Sometimes they don't see their Dad except for a few minutes a day; they're at school when he's home, or else he's sleeping, and Joan sends them out to play. There's no family life. The needs of the railway comes first.

Over the years I've got used to it - not flushing the toilet if he's sleeping in the day, vacuuming at night, eating Christmas dinners by myself, pleading with the neighbours to turn the television down.

Now they tell us we've got to be 'flexible', and the whole dispute on the railways is being presented as an example of union bloodmindedness. But it's not that - there's just no room in our lives for any more flexibility. Our lives just wouldn't be worth living.

Starting an hour earlier or later means little on a 9 to 5 job. But when you're having to change all the time with just twelve hours for your body to adjust to eating, sleeping and working at opposite times of the clock, your system can only cope with so much.

Len brings home between £76 and £89 a week depending on the shift, but as he says, "It's not more money, it's more time at home we need."

That's why the railwaymen are so firm on the issue, and that's why their families are right behind them. If Britain wants an effective railway system, the cost of it has to be shared by the whole community, not just carried by the railway workers and their families. 'Flexibility' sounds such a nice, modern, efficient word, but please, travelling public, think of the human cost.

A train driver's wife 3rd July 1982

Written by the Working Environment Research Group, Bradford University.

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FLEXIBLE ROSTERING - AT WHAT COST?

Nowhere in the Government and media tirade against the train drivers has there been any serious consideration of the effects of flexible rostering on train drivers and their families. British Rail has not considered the health and safety risks to drivers, their families and passengers, or if they have then they are ignoring those risks. We challenge BR to refute the evidence presented here that flexible rostering will lead to ill-health and early deaths.

This broadsheet describes the stresses train drivers already face with their current shift system, the hazards posed by flexible rostering and guidelines for reducing the hazards of flexible rostering or any other kind of shiftwork. On the back page, research on the health effects of flexible rostering in Europe is summarised.

Stress in train driving

Train drivers must pass strict medical examinations as Traction Trainees at age 20 then more periodic examinations. These medicals make certain that train drivers are a fitter group than the average working population - and yet one in every ten footplate staff are unfit for normal duties. Train drivers in Britain and abroad are very likely to be retired through ill-health well before they reach the age of 60. In the Soviet Union, for example, train drivers have a 10 per cent chance of being retired from work through hypertension alone.

Huge changes have taken place in the railway industry in recent years; the age of steam has given over to the age of diesel and electric trains. High Speed Trains (HSTs) are now commonplace. The physical burdens previously faced by drivers and firemen have been replaced by very different stress factors which can be more serious in their health consequences.

Some stress factors faced by train drivers

- need to have good knowledge of over 12 different train types, all with different cab layouts, and engine room layouts.
- having to drive several different train types per shift.
- operating HSTs.
- keeping up route knowledge of many different routes (signals, speeds, track condition etc).
- poor track maintenance.
- greater mental and emotional stress through having to maintain high concentration levels, tight timetabling, responsibility for passenger safety, vandalism and physical attacks on crews.
- inadequate meal and rest breaks, no canteen facilities.
- difficulty in getting transport to and from work (on nights, drivers without cars have to walk or get last bus several hours early).
- SHIFTWORK

Shiftwork and health

The percentage of train drivers already working shifts (96 per cent) is higher than for any other group of workers. The health

and social effects of shiftwork have been thoroughly researched (see the references on the back page for example). There is little doubt that the health of railworkers like all other shiftworkers is being undermined by the shifts they presently work. Research has shown that shiftworkers suffer more than non-shiftworkers from the following:

Health effects

- Disruption of circadian rhythms (body time);
- Sleep loss, poor quality sleep;
- Digestive disorders, gastric & duodenal ulcers;
- Constipation & diarrhoea;
- Respiratory problems;
- Low back pain;
- Neurosis;
- Cardiovascular disease;
- Chronic fatigue;
- Depression;
- Irritability.
- The death rates of ex-shiftworkers are also higher than others.

Social effects

- Accidents;
- Disturbed social & family lives, domestic friction;
- Strained sexual relations;
- Higher divorce rate;
- Loss of contact, loneliness;
- Social & political passivity;

Train drivers' rosters

Train drivers already work considerably flexible rosters. Further flexibility can

"There was a pneumatic drill keeping me awake, so I called the Environmental Health. The bloke came but said: If it had been two in the morning instead of 2pm I could have stopped him" (A driver)

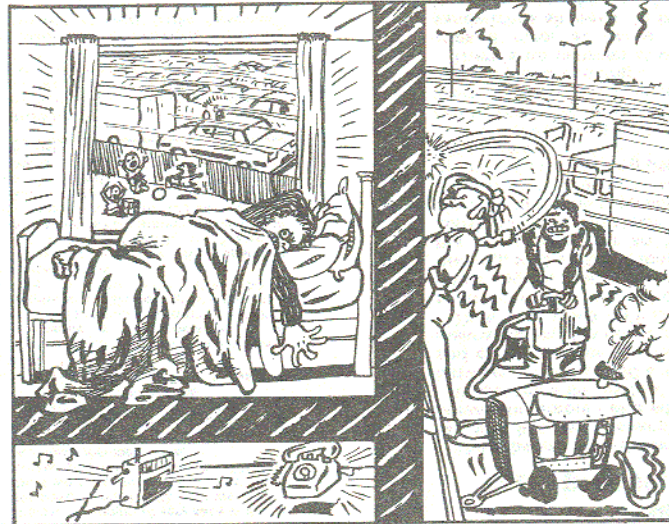
occur through (a) 'advices' or notices handed out by management that can change shift starting times by up to two hours, earlier or later - these advices are handed out at work or even delivered to the driver's home; (b) trains running late also extend shift time.

Even so train drivers' existing rosters are relatively regular at least on a weekly basis; without advice changes, starting times are almost the same day by day within each week. The weekly rosters are usually put together in 24 week periods known as "links". The daily shift is based on the eight hour day established in 1919. Overtime is normally worked only to cover other staff (holidays etc) or if the service is running late. A driver's duty period, or 'diagram' may mean that he or she has to work several different trains and routes on one shift.

Flexible rosters

BR originally wanted to get the maximum variation in shift length possible. It wanted the new rosters based on a range of between 4 hr - 10 hr shifts. This was later

BRITISH RAIL, strongly backed by the Tory Government, has demanded that railworkers start working new flexible shift rosters. Investment cash is being withheld unless railworkers accept huge productivity changes. These will not only cut jobs but will also seriously worsen working conditions. BR made its intentions clear in 1981 when it presented a package of proposals that would cut jobs by 38,500 or 23 per cent of the workforce by 1985. The centrepiece of this package was a new shift system known as flexible rostering



GUIDELINES FOR SHIFTWORK

Shiftwork should be avoided if at all possible - clearly this depends on whether society accepts as a priority the health, well being and quality of life of its members or profit-oriented maximum utilisation of machinery and labour.

Specific recommendations to reduce the harmful effects of shiftwork are:

1. Shift rosters should be regular and predictable, so that people can plan their lives ahead;
2. Flexibility is important but for individuals - workers should be able to swap and change their shift times if necessary;
3. Shift rosters should have as few nights in succession as possible;
4. Weekly hours of shiftworkers should be limited to 40 maximum and where work loads are high hours should be further reduced; night shifts should be shortest of all;

5. Rest periods between shifts should be at least 16 hours and not less than 12;
6. Morning shifts should not begin too early;
7. As many as possible full weekends off should be made available to shiftworkers;
8. Duration of shift cycles should not be long;
9. There should be at least 45 min meal breaks per shift; in shiftwork covering midnight a short sleeping period (2 hours in 8) should be available;
10. Special facilities should be made available, especially catering, rest rooms and transport to and from work;
11. Better sound - proofing of houses; creation of quiet zones;
12. Full participation of trade unions at all levels in designing shift rosters with facilities for unions to call in their own specialists for advice.

reduced through negotiations to a range of between 7hr - 9 hr shifts. BR has to take into account several statutory requirements. One of these is for a 12 hour rest period separating one shift from another.

For maximum safety the rest period should be much longer than 12 hours, but under flexible rostering the rest period more often comes down to barely minutes longer than 12 hours. Within the same week starting times would vary from 7.40 to 13.11, or over five hours. In some of the rosters already being worked by NUR members, the range of variation is even greater.

Flexible rostering means:

- Widely ranging shift starting times in the same week.
- Daily shifts of 7hr - 9 hr instead of standard 8hr ones.
- Widely ranging weekly working hours: 30hrs - 45hrs (but advices can change this as well).
- Less regular free Saturdays: under existing shifts drivers have one off in four to six but with flexible rosters this can change to ten Saturdays on the trot.
- Swapping shifts between drivers for social and family reasons becomes impossible.
- Working full trains at the end of shifts, instead of empties as at present.
- Possibly fewer unsocial early morning starts, but this could be changed by advice notices.

Most train drivers believe that BR is initially proposing flexible rosters that are

"BR want blood. The best thing would be to tell the men to pack their gear up and live at the station, there's no point in having a home. I feel very bitter about flexible rostering." (A driver's wife)

not much different from existing rosters, but that once accepted the flexibility will become more extreme.

The impact of flexible rostering

In all four countries examined by BR - France, West Germany, Holland and Sweden - variable day rostering is normal practice. In all four countries studies of the effects of irregular shift systems on train drivers' health and well being have been made in the last decade. The evidence is summarized in more detail on the back page.

Effects on health

Not one of the studies discussed finds anything to recommend flexible shift systems. On the contrary they are all agreed that the irregular shift systems worked contribute to ill-health in the railworkers working them. The Dutch and Swedish studies showed the role of irregularity: the more flexible shifts are related to ill-health (insomnia and stomach illness especially) and poor social well-being (especially disrupted domestic lives).

Irregularity is seen as a major stress factor along with high work load and particular job demands.

Effects on sleep loss

The French study showed that train drivers working irregular schedules suffered sleep loss from which they never recovered. This has severe implications for the health of workers and also for the safety of passengers.

Risks of accidents

All the studies agree that the shift systems operating collide with workers' circadian rhythms (body time). When combined with the effects of fatigue and inadequate rest periods drivers' health is put at risk, but also the lives of passengers are put at risk. This is most evident in the German study of performance efficiency and vigilance.

Rest periods

Rest periods between shifts are of vital importance in jobs like train driving. Flexible rosters are more likely to compress rest periods to well below the 16 hours agreed as a necessary standard for maintaining good health. This was clearly part of the problem in France, and is already an apparent problem in BR's proposals.

BR's plans

BR's original plans for flexibility were far more extreme than the shifts drivers are presently being ordered to operate. This reveals that BR has consistently failed to ask certain kinds of questions about flexible rostering (the health questions). Even those questions it has asked - How much will it save? - have not been properly answered. It has made no attempt to examine the health costs in either financial or human terms because it has not even asked the question.

Experiment

If there is to be any experiment in flexible rostering how is it to be organised and how will it be monitored? Will the rosters be designed to decrease or increase the hazards we have listed here? Will it be monitored only in terms of productivity and profit? Given the serious nature of the risks, monitoring *must* mean a full scale study of the railworkers' working environment, with flexible rosters as one important factor amongst several.

Flexible rostering "will save over £9m a year. Even so you could build a new hospital each year with the money." (from "The roster of intransigence", Guardian Editorial, 3.7.82)

Precisely, then these hospitals can steadily fill up with railworkers and their families, suffering from increased ill-health caused by flexible rostering.

It would be possible to plan ahead for such hospitals; carefully stipulating which kind of specialist wards would be needed - cardiac, psychiatric etc.

EUROPEAN EVIDENCE

France: sleep deprivation

French electric train drivers, who had worked flexible rosters for many years, became worried in the late 1960's about: safety (especially dozing off while at the controls), difficulties in family and social relationships and body exhaustion and premature retirement.

As a result, the sleep of train drivers was studied to measure the effects of the irregular schedules they worked. It was found that the drivers did not recover from the sleep deprivation they suffered as a result of irregular working:

- The later they went to bed after midnight the less they slept;
- whereas normally the percentage of deep sleep increases during the nights following sleep deprivation, in the drivers it did not.
- There was a strong relationship between sleep loss and not remaining vigilant, especially at four to five am.
- The drivers did not make up their sleep loss because their circadian rhythms could not adapt to the changing work patterns.

Circadian rhythms or body rhythms are regular daily dips and peaks in heart beat, body temperature, breathing rate and your general alertness. You are most alert in the afternoon, least in the early hours of the morning, though it varies a bit from person to person. Work patterns that conflict with these body rhythms result in premature bodily exhaustion and can lead to an early death.

NATO

In the Chairman's summary at a NATO Conference on sleep loss and efficiency he had this to say of the French research:

"...the work pattern looks as if it could be reorganised into a straightforward three shift systems. Why do men and their unions not apply pressure to have the hours of work rationalised.

Certainly, too, driving anything in the hours from 1am to 5am is soporific. In Britain we recently had a crash where both the train driver and his fireman were asleep, and the ergonomic 'dead man's handle' did not save them. A train driver is more restricted than a car or lorry driver, in that he cannot accelerate to increase the external stimulation, nor can he pull into a layby to take a nap."

West Germany: vigilance and accidents

In 1974 Hildebrandt and his fellow researchers made a study of 1000 different train drivers working on 10 locomotives for a total of 6304 hours. The object of the research was to examine the relationship between fatigue, rest periods, circadian rhythms and their influence on performance efficiency of train drivers (the likelihood of accidents).

They recorded how often the warning hooter sounded. It was sounded when the driver did not respond to a warning light. Thus the number of times the hooter went off each hour was a measure of a drop in vigilance by the driver. Their research found minimum vigilance (the highest error frequency) at 0300 and 1500 hours. The effect was strongest when the accumulated fatigue was highest; the earlier the shifts started, the greater was the error frequency in the afternoon. The length of the rest period preceding the shift influences the error frequency (loss of vigilance): drivers were least vigilant after 10 to 16 hours break and best after 24 hours rest.

For safety, they concluded that shift starting times should not be too early and shift duration should not be too long. Also, variation between people in circadian

BR argued in a paper on flexible rostering that as French, German, Dutch and Swedish railworkers work flexible rosters so should British railworkers. And yet the most powerful evidence against flexible shifts comes from four studies of train drivers in France, West Germany, Holland and Sweden.

rhythms means that shifts should be made flexible for individuals to suit them. Rest periods between shifts should be well over 16 hours.

Holland: flexibility, fatigue and stomach complaints

Hak and Kaupmann carried out a study in 1979 on Dutch train drivers. They looked at fatigue, stomach complaints and sleep quality. Dutch train drivers work flexible rosters and many report it as being very fatiguing.

The study found that the most fatiguing shifts were those starting before 0600 while the least fatiguing were those starting between 0800-1000. This is in line with other research in Germany and Sweden.

Stomach complaints

A comparison was made between shifts and between two different workplaces:

- Night shift workers suffered from two and three times the incidence of stomach complaints than did other shiftworkers.
- The Central Station drivers working the most flexible system suffered 50 per cent higher rates of stomach complaints as did the freight drivers (shunters) who worked the least flexible:

Comparison of Central Station and Freight drivers in incidence of stomach complaints by shift.

Central Station Drivers

Early shift 7.0%

Evening shift 9.0%

Night shift 13.3%

Freight Drivers

Early shift 4.6%

Evening shift 4.1%

Night shift 12.2%

Central Station drivers had twice the incidence of stomach complaints on evening shifts as did freight drivers, and almost twice the incidence on early shift. Night shifts were similar, once again bearing out the results on many other studies.

Stomach complaints may develop into more serious stress - related problems like stomach ulcers. They can also be a warning sign or other stress diseases such as heart disease.

Sleep quality was found to be worse the earlier the shift starting times, and was bad after night shift.

IGNORED BY BR

Sweden: irregular hours are unhealthy

In 1980, a nationwide study of the working environment of bus, tram and suburban train drivers was carried out by Aronsson and Barkhof. In comparing the effects of different shift patterns, they concluded:

- Schedules involving alternating hours (consecutive and mixed schedules) lead to more insomnia and stomach disorders than permanent schedules;
- Those assigned on a day basis were absent more often through tiredness and dread of going to work, than permanently assigned workers;
- Those on rolling free-time schedules have considered leaving their jobs more often than those on permanent schedules;
- Those on consecutive and mixed schedules find their hours of work more disruptive of family relationships than those permanently assigned;
- Those daily assigned consider to a greater extent than do permanently assigned workers that their hours of work disrupted their marriages;
- Morning and afternoon shifts were the most fatiguing while those with high work loads were worst of all.

Recommendations

- Shorten the length of very early and very late shifts to make a 33 hour week;
- Use a work load time rule to count hours worked before 0600 and after 2200 as two hours instead of one;
- Reduce irregularity in shift patterns;
- Mix permanent fixed schedules with alternating schedules to reduce the number of alternating ones.

Modernising Gothenburg's Transport System

Improvement of the working environment is a priority in the modernisation of Gothenburg's transport system in Sweden. Work schedules will be designed to minimise stress in line with the above recommendations.

A greater contrast with BR's approach could not be found. In Sweden modernisation is built around the workers in the transport system; the upgrading of their working environment is the priority. In Britain BR is modernising to the detriment of railworkers, and some might say, in order to crush them.

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