

22 June 1999

Ms Meg Crooks
Committee Secretary
House of Representatives Standing Committee
on Communications, Transport and the Arts
Parliament House
CANBERRA ACT 2600

Dear Ms Crooks,

INQUIRY INTO MANAGING FATIGUE IN TRANSPORT

Thank you for the opportunity for the Speedrail Group to provide a submission to the inquiry on the benefits of the Sydney-Canberra Very High Speed Train (VHST) project in managing fatigue in the transport industry.

Diversion of People from 'High Fatigue' Transport Modes on Road to High Speed Rail

The Speedrail proposal will result in significant diversion of people from existing transport modes on road (both car and coach) to the much safer mode of TGV high speed rail.

The diversion projections on Sydney Canberra alone will result in at least 2 million existing road users per annum switching to high speed rail as the preferred mode of transport. This level of diversion on the Sydney Canberra highway is estimated to save at least \$10 million annually (95/96 dollars) in the cost of road accidents alone.

On a future national system along the eastern seaboard from Brisbane to Sydney and Melbourne, high speed rail will without doubt result in significant benefits in fatigue management by providing a 'fatigue free' transport mode.

TGV Safety Systems

The technology utilised by the Speedrail project is state of the art in passenger rail technology and provides for the highest standards of safety.

The Speedrail project will use ALSTOM's proven TGV technology - the world's leading rail technology.

Over 400 TGV trains are in service around the world and every day cover a combined distance equal to that between the earth and the moon. More than 500 trains have been built or are on order. More than 500 million passengers have been carried safely and more than 1 billion kilometres travelled.

Speedrail's high speed operation on a dedicated line has inherently lower risk than conventional rail operations. Since the start of the TGV operation in 1981 there has not been a single fatality on TGV's dedicated high speed lines. Railways are synonymous with safety. They are the safest means of ground transport. TGV trains are the safest form of passenger rail travel.

The advent of high speed rail travel has brought the need for advanced safety systems in specific areas, including:

- on-board signalling and control systems, replacing signals alongside the track and which monitor the observance by drivers of speed limits;
- improved rolling stock, both in terms of construction standards and surveillance systems to detect on-board faults which affect safety;
- protection of the track and adjacent areas from intrusion, by fencing along the right-of-way and extending to protection from falling vehicles or rocks by detector wires and other devices. There are no level crossings;
- the design and alignment of the track;
- maintenance procedures for both fixed infrastructure and rolling stock.

The systems and procedures discussed are those which apply to TGV operations throughout Europe. The same systems and procedures will be adopted by Speedrail.

In relation to rail safety there are two levels of risk:

- risk of a catastrophic accident. In the case of conventional railways it is often dependent on the responsibility of the driver in carrying out his or her duties. The sophisticated control and monitoring system of the TGV almost completely eliminates this risk.
- Individual risk. This is met by protective measures to avoid accident or injury to train crew and maintenance personnel.

Surveillance of the Activities of the Driver and the Monitoring of Speed

The following measures are fundamental in averting the effects of driver fatigue and error.

The system which monitors the activities of a driver on a TGV is known by the acronym VACMA. The essential function of the VACMA system is to allow the train to be driven by a single operator. Its function is similar to, but more extensive than, that of the vigilance control familiar in Australian railway operations.

This equipment is designed to verify the active presence of the driver and works to ensure fatigue of the operator is not an issue. If the driver does not push the vigilance control activators within the pre-determined period, or operate the train controls, a warning device sounds. If there is no response, the VACMA system initiates emergency braking of the train. Further functions, not familiar to Australian operators, include the automatic sending of a warning message by radio to the train control centre. A call is also sent automatically to staff on board the train.

Special operational procedures must be followed to restore a train to service after the VACMA system has brought it to an emergency stop.

The driving recorder carries out roles similar to those of other data recorders. It records the basic parameters of speed, distance and time, allowing the train's journey to be reconstructed if needed. The system used on TGVs in addition records the speed instructions given by the TVM 430 control system. It also records driver actions and the operation of the train in terms of the application of power or braking.

Collision protection on the high speed railways in France and elsewhere is provided by the TVM system. TVM stands for Transmission Voie-Machine, which means track-to-train data transmission. This distinguishes TVM from systems which transmit data through a cable between the tracks, or by intermittent transmission of data from lineside equipment.

In the TVM 430 system, the train driver is presented with speed information, which may allow him to operate at the maximum line speed or at eleven reduced speeds ranging down to zero. The system indicates the speed to be maintained or not to be exceeded at the next marker board, and indicates also whether a more restrictive speed will apply in the next block section.

If a driver does not conform to the specified speed, the train is brought to a stop.

The TVM 430 system can process certain additional information, including the:

- fall of a vehicle from a bridge onto the track, or a rock thrown from a bridge, or the fall of a rock following a landslip – provided the bridge or risk zone is equipped with detectors which is standard practice on high speed lines;
- exceeding of a threshold water level in a flood-prone areas;
- detection of a “hotbox” by devices installed alongside the track to detect any excess operating temperature within the rollingstock bogies.

Depending on the circumstances, either a speed reduction or emergency braking will be activated. Excess speed is not allowed by the TVM 430, eliminating this as a cause of derailment.

The above initiatives represent the highest possible standards to maintain rail travel as the safest form of ground transport. These measures in conjunction with rigorous

maintenance and appropriate human resource policies eg. rostering and ceilings on the maximum number of days worked, minimise the potential for driver fatigue.

SYDNEY-CANBERRA VHST

BACKGROUND

Following the Prime Minister's announcement of 4 August 1998 that the Speedrail Group had been selected as the preferred proponent for Sydney-Canberra VHST, the Commonwealth, NSW and ACT Governments have embarked on a proving up process with the Speedrail Group.

The Speedrail Group is a 50/50 venture between ALSTOM which will provide the TGV system including the trains, and Leighton Contractors which brings significant expertise in developing and constructing infrastructure. Other project participants are shown in Attachment I.

A brief description of the project follows.

The Speedrail route has a total length of 270km, 50km shorter than the existing railway between Sydney and Canberra. An express journey from Sydney to Canberra will take 81 minutes.

The high speed line runs for 220km and begins just south of Campbelltown and connects with Canberra. From Central to the commencement of the high speed line, Speedrail will run on the existing CityRail network.

Planned stops on the route will include:

- Sydney Central
- Domestic Airport Terminal (using New Southern Railway station)
- International Airport Terminal (using New Southern Railway station)
- Campbelltown
- the Southern Highlands
- Goulburn
- Canberra (Canberra Airport).

The benefits of the Speedrail Project include:

- A \$3.7 billion injection into the Australian economy
- Creating 18,500 jobs in construction and supply of components - similar in size to the Olympics
- Delivering 1,800 permanent jobs in New South Wales and ACT when operations commence
- Delivering 4,500 jobs as regional development induced by the train occurs

- Substantial benefits including jobs to rural Australia, especially along the route
- Creating significant efficiencies at Sydney airport; at present Canberra flights account for 60 take-offs and landings each day at Sydney Airport
- Potentially servicing a “Second Airport” serving Sydney
- Opportunities for Canberra as a regional hub airport for domestic and international traffic
- Additional capacity on the existing line between Campbelltown and Canberra for freight
- Ready for competitive extensions to Melbourne, Newcastle, Brisbane, or Adelaide.
- An early upgrade of East Hills line in Sydney providing capacity for additional trains for existing CityRail customers
- Using less than half as much energy per passenger as cars, a quarter as much per passenger as aircraft, and has a lower level of carbon dioxide emissions

CONCLUSION

The net economic benefit to Australia of the project has been calculated to be around \$6 billion.

The project provides an opportunity to reduce transport fatigue by diverting a significant number of Sydney-Canberra road journeys to the safer mode of rail transport.

The Speedrail Group is prepared to appear before the Committee to expand on this submission and answer any questions from Committee members.

Mr Dale Budd, Director of Public Affairs for the Speedrail Group, can be contacted in Canberra on (02) 6247 8898 if any additional information is required.

Yours sincerely,

BOB MORRIS
Director

ATTACHMENT I**SPEEDRAIL - GROUP PARTICIPANTS**

The Speedrail Group is a 50/50 venture between ALSTOM which will provide the TGV system, including the trains, and Leighton Contractors which brings significant expertise in developing and constructing privatised infrastructure. Leighton and ALSTOM are the sponsors of Speedrail Group Pty Limited and its proposal.

- **Leighton** - Australia's largest contracting and project development group with annual turnover in excess of \$3.5 billion and around 12,000 employees.
- **ALSTOM** - Worldwide annual turnover of more than \$25 billion and around 110,000 employees. Sales in Australia exceed \$500 million annum.

Key associated companies include:

- **Financial Adviser** - ABN AMRO
- **Debt Financiers** - Commonwealth Bank of Australia
- National Australia Bank
- Société Générale Australia
- Bank of America
- West LB
- Royal Bank of Scotland
- **Equity** - ALSTOM
- Leighton
- Commonwealth Bank
- National Australia Bank
- **Ticketing and services** - QANTAS
- **Technical Support** - Sinclair Knight Merz, Maunsell McIntyre Pty Ltd
- SNCF and Group SYSTRA (French National Railways)
- **Legal Advisers** - Mallesons Stephen Jaques

