



The Times

February 2013

A journal of transport timetable history and analysis



**Inside: Sydney named bus routes #1
Big Brother is always watching #1&2
High-speed Long-distance rail**

RRP \$4.95
Incl. GST

The Times

Journal of the Australian Association of Time Table Collectors Inc. (A0043673H)

Print Publication No: 349069/00070, ISSN 0813-6327

February 2013

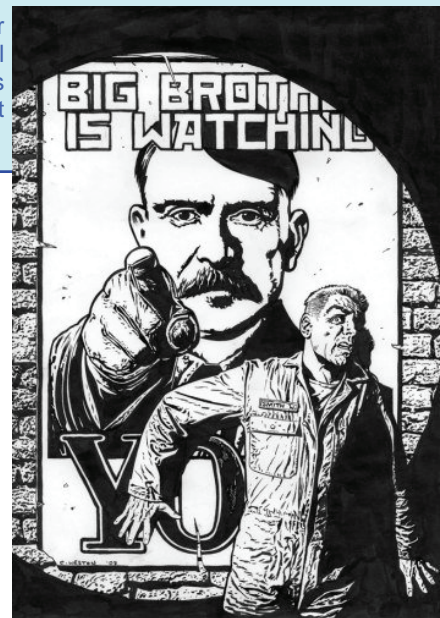
Issue No. 348 Vol 30 No. 02

—Contents—

WHAT'S IN A NAME?	3
BIG BROTHER IS ALWAYS WATCHING: PART 1	7
BIG BROTHER IS ALWAYS WATCHING: PART 2	8
THE WORLD'S LONGEST VFT ROUTE AND ITS TIMETABLES	12

On the front cover

Top Traffic operations controller Melinda Eisele is the overseer of traffic flows over Sydney Harbour Bridge, Australia's busiest traffic corridor. Photo: Dean Sewell
Bottom Ian Freeman, the air traffic control line manager at Sydney airport shows us what it is like working in the tower. Below— how people like Blair Kooistra do it at BNSF.



Contributors *The Times*

Robert Henderson, Nick Galvin, Blair Kooistra, David Cranney welcomes articles and letters. Send paper manuscripts or word-processor files on disk or via e-mail to the editor at the address below. Illustrations should be submitted as clean sharp photocopies on white paper or scanned GIF or TIF format images with at least 300 dpi resolution on disk or via e-mail.

Reproduction **Disclaimer**

Material appearing in *The Times* or *Table Talk* may be reproduced in other publications, if acknowledgment is made. Opinions expressed in *The Times* are not necessarily those of the Association or its members. We welcome a broad range of views on timetabling matters.

The Times on-line

AATTC's home page: <http://www.aatc.org.au> has colour PDF versions of *The Times*

President **Secretary** **Editor, The Times** **Editors, Table Talk**

Victor Isaacs 43 Lowanna Street BRADDON ACT 2612
Michael Smith
Geoff Lambert
Craig Halsall 27 Edithvale Rd EDITHVALE VIC 3196
Victor Isaacs 43 Lowanna Street BRADDON ACT 2612
Len Regan PO Box 21 YEA VIC 3717

abvi@iinet.net.au
volvob10m0007@hotmail.com

Distribution Officer

Len Regan

craig.halsall@gmail.net
abvi@webone.com.au
0409 209114
aatc.do@hunterlink.net.au

Membership Officer **Webmaster** **Adelaide Convenor** **Canberra Convenor** **Brisbane Convenor** **Melbourne Convenor** **Sydney Convenor**

Dennis McLean P.O. Box 1253 NORTH LAKES 4503
Lourie Smit lsmit@ozemail.com.au
Roger Wheaton 2C Bakewell Street, TUSMORE SA 5065
David Cranney 8 Coachwood St KEPERA Qld 4054
Brian Webber
David Hennell
Geoffrey Clifton PO Box 5062 OLD TOONGABBIE NSW 2146

(07) 3491 3734
(02) 9527 6636
(08) 8331 9043
cranney@iinet.com.au
(07) 3354 2140
(03) 983 01802
0405 387478

What's in a name?

Named Sydney private bus routes, by ROBERT HENDERSON

Most bus routes are known solely by their number and end destinations. However, a small number of Sydney private bus routes have also had names attached to them, even if only for short periods of time. This is the first in a series, briefly surveying those that spring to mind.

WEEKEND CONNEXTOR

The Connexor was a route in southern Sydney, which ran on Saturdays, Sundays and Public Holidays, except Christmas Day, for less than ten months in 2002/3. Its operator was the company then known as Connex NSW. The company's name was altered to Veolia Transport in 2006. Two complete routes plus part of another one were combined into a bidirectional loop running from Sutherland station via Menai, Illawong, Padstow, Peakhurst, Penshurst, Hurstville, Blakehurst, Sylvania, Miranda and back to Sutherland.

The routes which the Connexor replaced at weekends were:

The whole of 971 between Hurstville and Miranda via Sylvania and Bellingara Road

The whole of 962 between Miranda and Padstow via Sutherland and Menai

That part of 948 between Padstow and Hurstville.

The Connexor commenced on Saturday 27 July 2002. A range of other route and timetable alterations on Connex routes in the St George, Sutherland/Cronulla and

Menai areas had also started the previous Monday. The Connexor continued until Sunday 11 May 2003, when all the routes and timetables that had been altered the previous July reverted almost identically to their previous formats.

The route operated hourly throughout its period of operation. As can be seen from the attached timetable, it ran between 6 am and almost 10pm on Saturdays and between 7 am and almost 8pm on Sundays and Public Holidays. Departures from Sutherland were all on the hour. On Saturdays, the last trip of the day (8.00pm from Sutherland) was an additional trip in the anticlockwise direction compared with the clockwise direction. But on Sundays and Public Holidays the last trip of the day (6.00pm from Sutherland) was an additional trip in the reverse direction.

Every trip was timed at one hour and 52 minutes from Sutherland back to Sutherland. The one-way street system in Hurstville required buses to take slightly different routes in each direction to negotiate the trip from one side of the railway to the other, for which eight minutes were allowed in each direction. Otherwise the route followed the same roadways in either direction.

Some of the services the Connexor replaced had previously run at hourly frequencies, but others varied, as shown below.

Because the Connexor did not replace the whole of Route 948 (Hurstville-Padstow-

Bankstown), a new route, 948L, had to be created for the sector it missed, that is, Padstow-Bankstown. Similarly another new route, 962H, was created to cater for residents of Hall Drive loop, Menai, which the Connexor also missed. Both these routes only existed as separate entities during the period of the Connexor's life.

None of Connex's timetable material displayed a route number for the Connexor. But Lourie Smit tells me that the number 976 appeared on the Transport Infoline's on-line timetables at the time.

In regard to fares and vehicles, Connex's publicity material stated:

"Enjoy the convenience of a seamless service without the need to change buses. Adults can travel all day for just \$5.00. All day pensioner concession fares are as low as \$2.00. Please note normal fares can still apply. For your comfort all vehicles on the Connexor service are air-conditioned, have easy access 'stepless' entry and are wheelchair accessible."

For various reasons, the timetables (including that for the Connexor) introduced by Connex NSW on 22 July 2002 did not work satisfactorily. The imbalance in some of the scheduled frequencies of the Connexor, compared with the routes it replaced, may have been a factor. Connex NSW decided to completely revert to the previous weekend (and weekday) timetables for all routes concerned as from Saturday, 17 May 2003. That marked the end of the Connexor.

Sector	Saturdays			Sundays & Public Holidays		
	Previous Route no	Previous frequency (mins)	Connexor frequency (mins)	Previous Route no	Previous frequency (mins)	Connexor frequency (mins)
Sutherland-Padstow	962	60	60	962	60	60
Padstow-Hurstville	948	30	60	948	60	60
Hurstville-Miranda	971	60	60	971	120	60
Miranda-Sutherland	962	60*	60#	962	120*	60#

* Via Thomas Holt Village

Direct route (not via Thomas Holt Village)



WEEKEND connexor

SUTHERLAND - MENAI - PADSTOW
- HURSTVILLE - MIRANDA - SUTHERLAND



SATURDAY	MORNINGS						AFTERNOONS							
	6.00	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
SUTHERLAND Interchange	6.00	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
MENAI Market Place	6.15	7.15	8.15	9.15	10.15	11.15	12.15	1.15	2.15	3.15	4.15	5.15	6.15	7.15
MENAI DEPOT	6.17	7.17	8.17	9.17	10.17	11.17	12.17	1.17	2.17	3.17	4.17	5.17	6.17	7.17
ILLAWONG Shops	6.27	7.27	8.27	9.27	10.27	11.27	12.27	1.27	2.27	3.27	4.27	5.27	6.27	7.27
PADSTOW Station	6.40	7.40	8.40	9.40	10.40	11.40	12.40	1.40	2.40	3.40	4.40	5.40	6.40	7.40
HURSTVILLE Station	7.03	8.03	9.03	10.03	11.03	12.03	1.03	2.03	3.03	4.03	5.03	6.03	7.03	8.03
HURSTVILLE Ormonde Pd	7.11	8.11	9.11	10.11	11.11	12.11	1.11	2.11	3.11	4.11	5.11	6.11	7.11	8.11
SOUTHGATE Port Hacking Road	7.24	8.24	9.24	10.24	11.24	12.24	1.24	2.24	3.24	4.24	5.24	6.24	7.24	8.24
MIRANDA Station	7.40	8.40	9.40	10.40	11.40	12.40	1.40	2.40	3.40	4.40	5.40	6.40	7.40	8.40
SUTHERLAND Interchange	7.52	8.52	9.52	10.52	11.52	12.52	1.52	2.52	3.52	4.52	5.52	6.52	7.52	8.52

SUNDAY	MORNINGS						AFTERNOONS						
	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
SUTHERLAND Interchange	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
MENAI Market Place	7.15	8.15	9.15	10.15	11.15	12.15	1.15	2.15	3.15	4.15	5.15	6.15	7.15
MENAI DEPOT	7.17	8.17	9.17	10.17	11.17	12.17	1.17	2.17	3.17	4.17	5.17	6.17	7.17
ILLAWONG Shops	7.27	8.27	9.27	10.27	11.27	12.27	1.27	2.27	3.27	4.27	5.27	6.27	7.27
PADSTOW Station	7.40	8.40	9.40	10.40	11.40	12.40	1.40	2.40	3.40	4.40	5.40	6.40	7.40
HURSTVILLE Station	8.03	9.03	10.03	11.03	12.03	1.03	2.03	3.03	4.03	5.03	6.03	7.03	8.03
HURSTVILLE Ormonde Pd	8.11	9.11	10.11	11.11	12.11	1.11	2.11	3.11	4.11	5.11	6.11	7.11	8.11
SOUTHGATE Port Hacking Road	8.24	9.24	10.24	11.24	12.24	1.24	2.24	3.24	4.24	5.24	6.24	7.24	8.24
MIRANDA Station	8.40	9.40	10.40	11.40	12.40	1.40	2.40	3.40	4.40	5.40	6.40	7.40	8.40
SUTHERLAND Interchange	8.52	9.52	10.52	11.52	12.52	1.52	2.52	3.52	4.52	5.52	6.52	7.52	8.52

WEEKEND connexor

SUTHERLAND - MIRANDA - HURSTVILLE
- PADSTOW - MENAI - SUTHERLAND



SATURDAY	MORNINGS						AFTERNOONS								
	6.00	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
SUTHERLAND Interchange	6.00	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
MIRANDA Station	6.12	7.12	8.12	9.12	10.12	11.12	12.12	1.12	2.12	3.12	4.12	5.12	6.12	7.12	8.12
Bellingara Rd & The Boulevard	6.23	7.23	8.23	9.23	10.23	11.23	12.23	1.23	2.23	3.23	4.23	5.23	6.23	7.23	8.23
HURSTVILLE Ormonde Pd	6.41	7.41	8.41	9.41	10.41	11.41	12.41	1.41	2.41	3.41	4.41	5.41	6.41	7.41	8.41
HURSTVILLE Station	6.49	7.49	8.49	9.49	10.49	11.49	12.49	1.49	2.49	3.49	4.49	5.49	6.49	7.49	8.49
PADSTOW Station	7.13	8.13	9.13	10.13	11.13	12.13	1.13	2.13	3.13	4.13	5.13	6.13	7.13	8.13	9.13
ILLAWONG Shops	7.25	8.25	9.25	10.25	11.25	12.25	1.25	2.25	3.25	4.25	5.25	6.25	7.25	8.25	9.25
MENAI DEPOT	7.35	8.35	9.35	10.35	11.35	12.35	1.35	2.35	3.35	4.35	5.35	6.35	7.35	8.35	9.35
MENAI Market Place	7.37	8.37	9.37	10.37	11.37	12.37	1.37	2.37	3.37	4.37	5.37	6.37	7.37	8.37	9.37
SUTHERLAND Interchange	7.52	8.52	9.52	10.52	11.52	12.52	1.52	2.52	3.52	4.52	5.52	6.52	7.52	8.52	9.52

SUNDAY	MORNINGS						AFTERNOONS						
	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
SUTHERLAND Interchange	7.00	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
MIRANDA Station	7.12	8.12	9.12	10.12	11.12	12.12	1.12	2.12	3.12	4.12	5.12	6.12	7.12
Bellingara Rd & The Boulevard	7.16	8.16	9.16	10.16	11.16	12.16	1.16	2.16	3.16	4.16	5.16	6.16	7.16
HURSTVILLE Ormonde Pd	7.41	8.41	9.41	10.41	11.41	12.41	1.41	2.41	3.41	4.41	5.41	6.41	7.41
HURSTVILLE Station	7.49	8.49	9.49	10.49	11.49	12.49	1.49	2.49	3.49	4.49	5.49	6.49	7.49
PADSTOW Station	8.13	9.13	10.13	11.13	12.13	1.13	2.13	3.13	4.13	5.13	6.13	7.13	8.13
ILLAWONG Shops	8.25	9.25	10.25	11.25	12.25	1.25	2.25	3.25	4.25	5.25	6.25	7.25	8.25
MENAI DEPOT	8.35	9.35	10.35	11.35	12.35	1.35	2.35	3.35	4.35	5.35	6.35	7.35	8.35
MENAI Market Place	8.37	9.37	10.37	11.37	12.37	1.37	2.37	3.37	4.37	5.37	6.37	7.37	8.37
SUTHERLAND Interchange	8.52	9.52	10.52	11.52	12.52	1.52	2.52	3.52	4.52	5.52	6.52	7.52	8.52

CONNEX NSW PTY LTD

PHONE: 9540 2277
 FAX: 9540 1720
 POST: PO Box 3287
 Bangor NSW 2234
 DEPOT: 33-39 Bay Road
 Taren Point NSW 2229
 EMAIL: businfo@connexnsw.com.au
 WEB: www.connexnsw.com.au

GENERAL INFORMATION

- **Concession Fares:** Concession fare passes must be shown to the driver or full fare will be charged.
- **Lost Property:** Enquiries can be made at our Taren Point bus depot during office hours.
- **Office Hours:** For any further information please call our customer service staff between 9am-5pm Monday to Friday.

PUBLIC HOLIDAYS

The Sunday timetables operates on all Public Holidays except:
 - Easter Saturday (Saturday timetable operates)
 - Christmas Day (no service).

Weekend Connexor



The weekend Connexor is an integrated loop service operating on weekends between Sutherland, Menai, Padstow, Hurstville and Miranda, both clockwise and anti-clockwise.

Saturday services operate every hour between 6.00am & 10.00pm. Sunday services operate every hour between 8.00am & 8.00pm.



Every Connexor bus offers stepless entry, providing userfriendly access, particularly for less mobile travellers.



Rest assured that every time you travel on a Connexor bus, you will do so in air-conditioned comfort.



WEEKEND connexor



ISSUE 27 JULY 2002



Connex NSW Pty Ltd
ABN 66 087 535 153



Weekend Connexor

Sutherland
Menai
Padstow
Hurstville
Miranda

Connecting Services. Refer to separate Travel Guides.

WEEKEND *connextor*

**Connecting people to
the Sutherland Shire
& St. George Area**

Starting 27 July 2002 an integrated
loop service will connect

**PADSTOW HURSTVILLE
SYLVANIA MIRANDA
SUTHERLAND MENAI**

The Weekend Connextor is a cross regional service connecting Padstow, Hurstville, Sylvania, Miranda, Sutherland and Menai. It operates as a circular loop in both directions.

Enjoy the convenience of a seamless service without the need to change buses. Adults can travel all day for just \$5.00. All day pensioner concession fares are as low as \$2.00. Please note normal fares can still apply. For your comfort all vehicles on the Connextor service are air-conditioned, have easy access 'stepless' entry and are wheelchair accessible. Passengers who travel on 948, 960, 962, 963, 971 & 972 bus services will need to use the Connextor for their weekend travel.

948, 960, 962, 963, 971 & 972 timetables will take effect on the 22 July 2002 and the Weekend Connextor supplementing these services will begin on the 27 July 2002.

For additional information, pick up a timetable from your local bus driver. Alternatively phone 9540 2277 or look us up on the web at:

www.connexnsw.com.au

 **connex**

Big Brother is always watching: Part 1

NICK GALVIN *meets the people who really run Sydney.*



All around the city, tucked away in soundproof, blast-proof, high-security rooms, teams of men and women (but mostly men) stare intently into banks of computer screens, monitoring, correcting, fixing, tweaking and handling crises large and small. Day and night they each play their vital role in a real-world, high-stakes version of *The Truman Show*.

These are Sydney's control centres. From water, traffic, buses and trains to planes, electricity, bushfires and security, these rooms touch almost every aspect of our daily lives and most of us don't even know they are there.

If Sydney were a living creature, they'd be the organs controlling all the vital processes that keep it alive.

At the Sydney Transport Management Centre (TMC) in Eveleigh, about 18 specialists sit at desks staring at horseshoe arrays of four or five computer screens. Most of the wall at one end of the room is taken up by a vast video screen split into 20 or more smaller screens showing camera footage of rush-hour traffic around the city, interspersed with maps and bar charts.

Bus, rail and ferry specialists sit alongside operators monitoring traffic lights and congestion, each concentrating on their little piece of the transport jigsaw and working together to solve problems that pop up minute to minute.

At any moment they are ready to deal with anything from a car inconsiderately left in a clearway to a collapsing crane, as happened in Broadway in November [2012].

"You never know what you're going to get in this place," spokesman Dave Wright says. "You've got to keep your cool. Everyone knows their job and everyone is an expert in their field."

"I've been here for three years and I've never seen anyone lose it. We just do the best with what we've got. There is a lot of pressure and assertiveness and after a major incident, we all go home pretty exhausted."

The minute level of control the operators have is astonishing. From manually tweaking the phasing of a particular set of traffic lights to ease traffic flow to shifting the median strips on the Harbour Bridge with the flick of a joystick, they are truly masters of all they survey on their screens.

But regardless of how much the technology puts them in control, they are still at the mercy of natural events – particularly the weather – which can have enormous

Video link- Controlling Sydney - Air traffic control: Alan Freeman, the air traffic control line manager at Sydney airport shows us [in this video] what it is like working in the tower. Enter the following link in your browser to see and hear the video:

<http://www.smh.com.au/technology/technology-news/big-brother-is-always-watching-20130108-2cef3.html>

This article originally appeared in the SMH, at the link above. Nick Galvin has previously written stories on the AATTC

knock-on effects throughout the whole complex system.

While it's not quite the flapping of a butterfly's wing in the Amazon causing a tornado in China, rain can cause traffic problems right around the city simply because fiddling with umbrellas means passengers take that much longer to get on and off buses.

The TransGrid control centre in Eastern Creek is a smaller version of the TMC with the video of streams of traffic replaced by a huge diagram of the state's electricity network, rendered in pleasing tones of white, green and purple. And here the weather is also a major preoccupation for the three operators sitting at their terminals making sure the huge network is ticking over efficiently, providing the right amount of power in the right places to meet demand.

"If nothing is going on, it can be a deadly boring job because they are sitting there, waiting for something to happen," says Lionel Smyth, the manager in charge of the network. "They are constantly looking at what happens next. What's the weather doing? Are there storms or wind? And they are looking at the load [demand], which is dependent on the weather."

And what happens when everyone switches on the kettle at half-time during the grand final? Smyth says it barely registers. It's the weather – particularly all those air conditioners – that drives demand above everything else.

It's the same story at Sydney Water's Parramatta control room, where three operators watch over the health of the state's water supply, also keeping a wary eye on weather patterns. The atmosphere is calm and subdued.

"It won't be quite as relaxed as it is now if we have a big storm come through," the manager, Mike Wassell, says. "One of the key things is that they understand procedure and how to keep calm in a crisis – of which there are many, the least of which might be a severe rainstorm that tends to

fill up all the sewers. The most extreme could be severe bushfire, major weather events, giardia incidents . . ."

The system is designed to be automatic, with the operators there only to monitor and arrange repairs, but the computers have their limits.

"If, with the best of intentions and planning, a whole bunch of things that you could never have thought of happening do happen, it comes down to three people in there making decisions," Wassell says.

For the operators in the City of Sydney's security camera control room at Town Hall, making split-second decisions is second nature.

The three technicians stare intently at their screens, each showing vision from one of the 80-plus cameras around the city. It's weirdly hypnotic as the lenses pick up a corner of George Street, then a snippet of Chinatown, then a section of Hyde Park. And through it all, streams of people go about their business, largely unaware of the team watching over them. All the operators become expert in sensing when trouble is brewing among the weekend crowds, at which point they call in the police.

"You're looking for the way people are walking, the way they are carrying themselves," a supervisor, Paul Spyrakis, says.

"Quite often it doesn't start with a punch; it starts a lot more subtly than that. Even walking down the street I can pick people and think, 'I'm avoiding that guy.'"

Inevitably, the operators witness some unpleasant incidents, particularly in hot spots such as Kings Cross and the southern end of George Street.

"I've monitored awful things that have stayed with me but you have to detach yourself from it," Spyrakis says. "At that point you are just focusing on helping the person who needs help." But, ideally, the operators should be able to intervene before the problems start. "If we can get in early, get the police there and stop things

escalating, then it's a great thing to do," Spyrakis says.

Sky-high demands

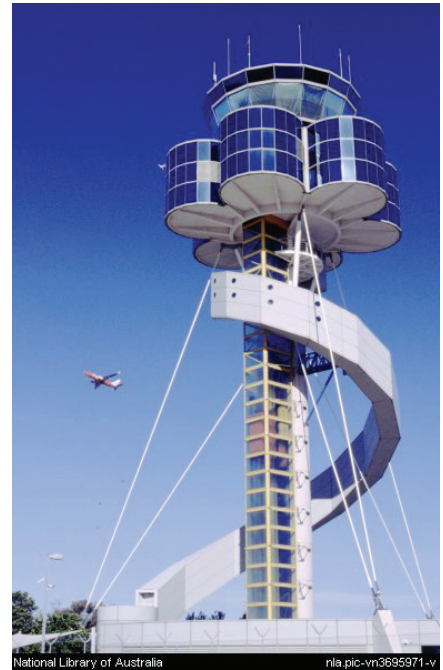
There are two things you notice immediately on stepping into the air-traffic control tower at Sydney Airport: the view and the atmosphere.

The view is extraordinary. There are hundreds of taller vantage points around the city but, while the tower is barely 50 metres tall, the unrestricted vista around 360 degrees is stunning. Then there's the atmosphere. In popular imagination it should be tense and perhaps a little frenetic, but here all is calm and quiet as the seven controllers, mostly dressed in jeans and T-shirts, go about their business directing the complex activity in front of them. "What did you expect?" Alan Freeman asks, drily. "You don't want stressed controllers." This is a fair point — calm and deliberate is what you want to see in such a high-stakes role. "You need to be cold," he says. "You want a controller who can watch something go wrong and make sure nothing else goes wrong so it doesn't escalate. The last thing you want is someone throwing their arms up and walking away from the con-

sole."

Freeman is a tall man with a shaved head, big moustache and killer handshake. He's been in the business 32 years and loves everything about airports and aeroplanes. He's also fiercely proud of the people he supervises. "This is first-grade," he says. "Australian controllers are employed all over the world, and this is the busiest airport in the southern hemisphere." The controllers look after the traffic on the ground and airborne within six kilometres of the airport. What does it take to do that efficiently and safely? "It requires a spatial imagination," he says. "It really is like three-dimensional chess. The good controllers only realise the aircraft that are con-

Some of these aircraft are never going to come near each other, so you take them out of your mind and you put your whole concentration on the ones that are conflicts and developing the best order." It's clear that, after more than three decades, Freeman still gets an enormous kick out of what he does. "Look at it," he says, indicating the runways and aircraft in front of him. "It's like the greatest train set ever."



National Library of Australia nla.pic-vr3695971-v

Big Brother is always watching: Part 2

Aussie Dispatchin'-under the weather by BLAIR KOOISTRA (<http://undertheweatherblog.blogspot.com.au>), a BNSF dispatcher, who visited ARTC's control centre.



Since Lance and I are train dispatchers here in the states, it's only natural that we'd be curious as to how our counterparts in Australia do the same job. So, with the help of Pacific National yardmaster Gary Nicolle, we were put in touch with Joe Costello, a train controller (dispatcher) for Australian Rail Train Corporation, the company that has the responsibility for scheduling and controlling movements across 4400 kilometers of standard-gauge railway across Western and South Australia, Victoria and New South Wales states.

ARTC was formed in 1997 to administer access and maintenance across the network that had recently been "opened up" to competition among railway operating companies.

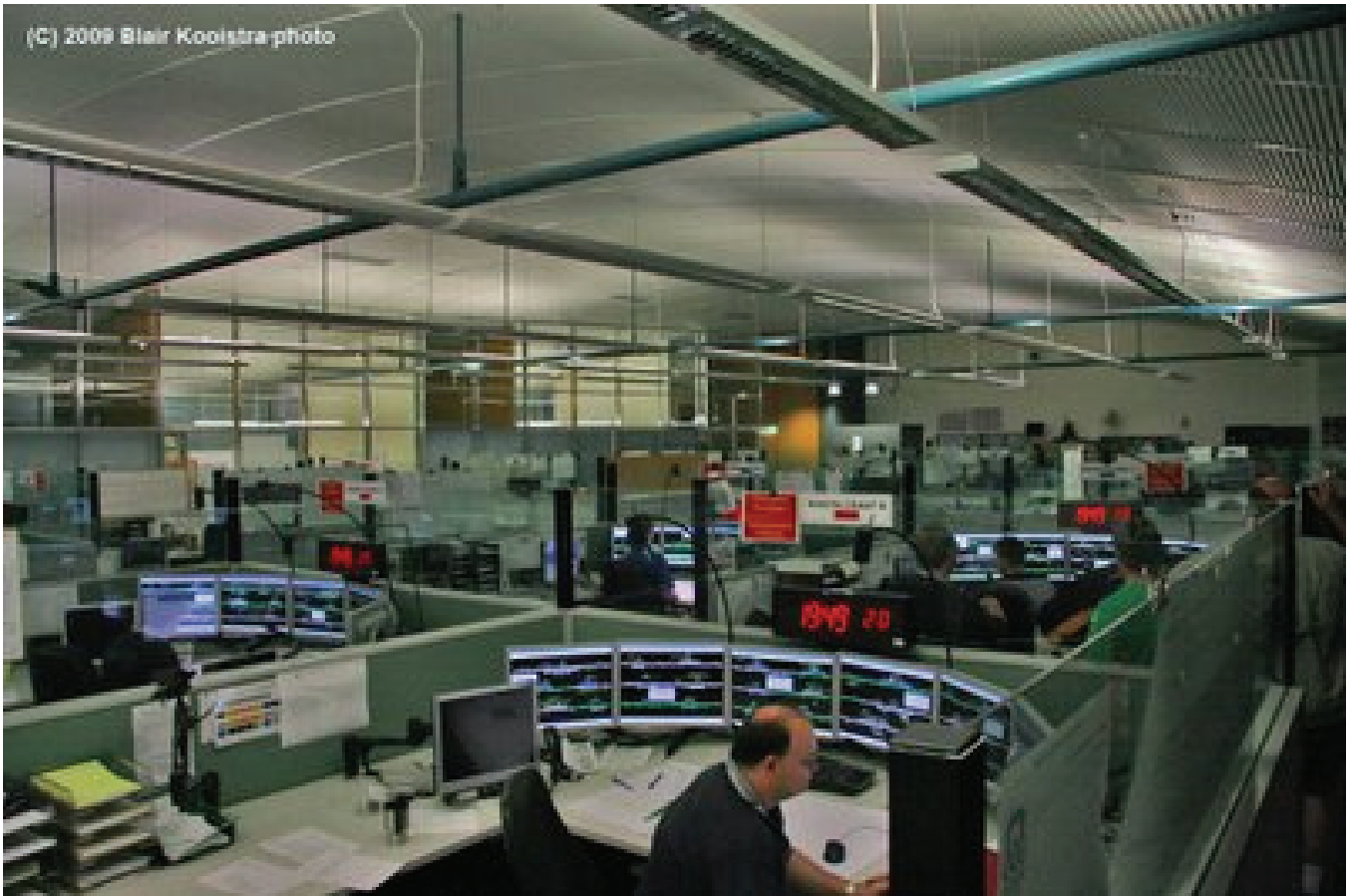
ARTS has two control centres in NSW, out in Junee, in far west, and at Broadmeadow, a suburb of Newcastle, around 90 miles north of Sydney. Broadmeadow's responsibility extends from the Queensland border to Newcastle, north and west including the lines to Moree and Tamworth, across to Dubbo and Cobar, and on the Main West line from Lithgow to Parkes and associated branches. The railway from Broadmeadow through Sydney and south to Nowra on the coast, Campbell-

town in the southern suburbs, and across the Blue Mountains to Lithgow is administered by RailCorp.

Joe met us at the front door, and after signing in, let Gary, Lance and myself to a very informative tour of the Broadmeadow facility, lasting nearly two hours. We would've stayed longer, but we'd told Charlie and Paul we'd be back to join them for dinner. As we discovered, though, train dispatchers just love to bullshit, compare notes and generally complain about the company, their fellow dispatchers, and the train crews. But in a nice way.

While Broadmeadow is a much smaller facility than our BNSF Network Operations Center, their function is the same. Within one room are train controllers, managers, and support personnel to help smoothly expedite train movements. The office is split up into about a dozen territory desks; some jobs are relatively compact and high-density in train movements, as in the lower Hunter Valley with numerous passenger movements and coal trains in out of the port. Other jobs are somewhat disjointed and their territories are scattered and not always contiguous.

One big difference between BNSF dispatchers and their Aussie counterparts is the planning component. We were surprised to see such a reliance on "train graphs," a representation of traffic across a territory described by lines moving across an X and Y axis representing distance and time. Controllers at Broadmeadow plan out their railroad well in advanced using these graphs which are generated at midnight each day with the "paths" of contracted train movements lightly printed across the sheet. These are the "ideal paths" that these trains will operate upon. Yes, Australian trains are highly scheduled--since the access is "open," each operator must have an equal opportunity to access, and scheduling trains to slots with specific running times between sections, required maximum train lengths, trailing tonnages, and adequate power to move the trains to the schedule are all important for the network to run as planned. It's fascinating to us as purely (well, mostly) reactive train dispatchers to see the railroad unfold in advance on the train graph. Each dispatcher's station includes the big train sheet, numerous colored pens and pencils, a healthy eraser and a drafting triangle.



Inside the airy, spacious, uncrowded ARTC Broadmeadow Control Centre: they're not overly concerned about pod walls with pieces of paper stuck on them that "reflect noise" and don't "look professional".

Their issuance of Train Order authorities was much more streamlined than are cumbersome TWC. The computer generates an automatic authority "key" of five numbers, non-sequential and not specific to district. Once the authority has been given, the number key becomes hidden as a security against accidentally releasing a wrong authority

The issuance of authority through CTC and Train Orders (i.e. Track Warrants) is very similar. The hardware and software is very similar to the TMDS we use (though hopefully much-less error prone!). Unlike our CTC, it appears the ARTC installations permit "call on" restrictive signalling to expedite movements back to trains in switching situations (we have to verbally authorize by a red block). Interestingly, though, the CTC we saw in operation on our trip didn't have intermediate signals, in effect creating a CTC-controlled Absolute Block railroad. On the double- and four-main track Hunter Valley line, dispatchers also controlled a CTC railroad with absolute signals but no crossovers. . in the states, we'd have automatic block intermediates in this instance, and there would be numerous crossovers to "sort" trains out.

And I'll give the Australians big props on this one: controllers talk with train crews via telephone--when a train is ready to depart, they activate the radio/telephone on

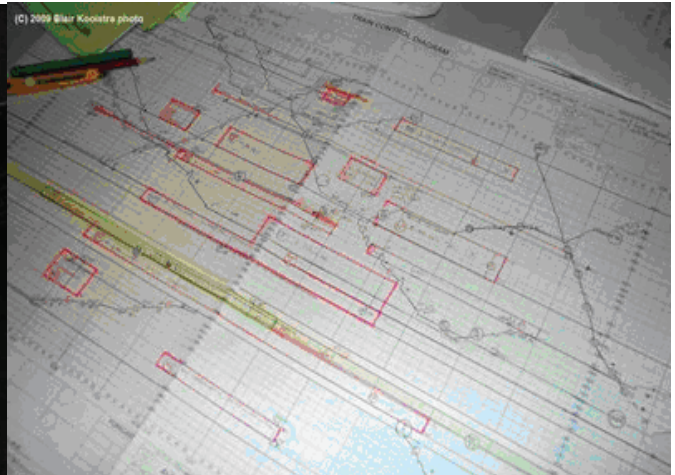
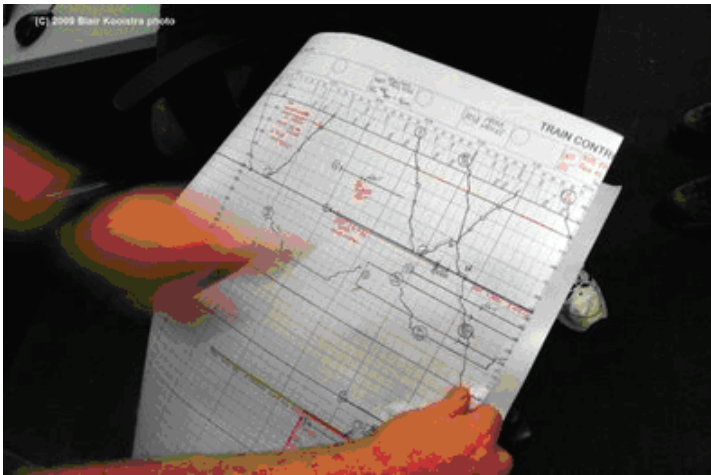
their lead locomotive, which becomes a GPS marker as well. Train controllers contact trains by dialing the lead locomotive. Communication is clear and private, without other interference from hand-held open-access radio channels. Imagine that!

ARTC controllers earn about what we do at BNSF. They work 6 1/2 hour shifts, get

six-week vacations to start, and rostering according to jobs a controller knows rather than seniority is how shifts are filled. Dispatchers work up from grades 1-4 depending upon knowledge of jobs, and pay is raised accordingly. And the atmosphere at ARTC was very good-natured and low-key: no uptight asshole managers running



Communication is done via telephone handsets, not headsets.



Joe shows us a control train graph. If you know how to decipher this, you can replay the entire day's events on a section of railroad.

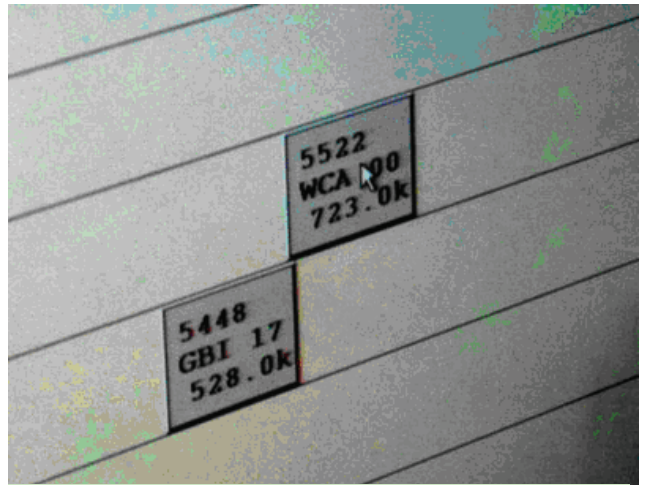
A close-up of a train graph: diagonal lines are trains moving across the territory. Delays are noted in pen. Red boxes are train authorities--"possessions"--for rail workers. A lot of work, sure, but I bet their dispatchers have a better understanding of what's going on at any one time than most dispatchers in the states



Overview screen for the train authority computer, automatically updates the location of trains via the GPS on locomotives and advances their location on the graph.



The Train Order screen at ARTC. Very similar to our own TWC, but with a lot less repeat scenarios that could result in errors.



Communication is done controller-to-train, instead of controller-to-radio tower-to-train. Each locomotive has a unique radio address the controller to contact, and their precise location is given via GPS.



Typical work station, with radio console, and CTC panel displays



Another view of ARTC Broadmeadow: looks like a nice work environment.

around with their heads cut off. Dispatchers could wear shorts to work as well. Imagine that! And it didn't affect safety on the trains!

The whole feeling was sort of what the small offices at the BN were like before the merger and office consolidation. I'm wondering if they're hiring. . .and if they include a good moving package!



It was getting late when we cut the tour off. Charlie and Paul had already eaten dinner, and were joined by Stuart Ellis, editor of Motive Power magazine and a driver for Pacific National. The kitchen at the Belmore was soon to close, so we invited Gary and Joe to join us for another round of Schnitzel and phoned in the order so it'd be ready when we got back. You can only imagine, with three drivers, a yard-master and three dispatchers how much jawbonin' and bull-shittin' were going on until late in the evening in the dining room at the Belmore. It was another great day.

Glossary for foreigners

TWS: Track Warrant Control– a type of Train Order system. ARTC uses it in some places in NSW.

TMDS: Train Management and Dispatch-

ing System. This is a BNSF term. A photo of its control centre appears at lower left.

Editor's note: This article, from Blair's blog (address above) was uncovered by the Editor in the writing of a monograph on the ARTC's train control system, as described in The Times issue of February 2012.



China commences world's longest operation of VHS trains

David Cranney

News outlets around the world have reported that Chinese Railways commenced operating the world's longest scheduled run by a very high speed (VHS) train on 26 December 2012. The Chinese media understandably carried a range of stories related to the occasion of such a newsworthy event.

While this occasion was considerably important in itself, it also marked another chapter in the rapid modernisation of railways in China, spearheaded by the construction of a network of high speed passenger lines. As well as greatly improving passenger train services, the new high speed network will also free up capacity on existing lines for more freight traffic.

Progress hasn't been without significant setbacks. As summarised in Wikipedia from various media sources: "The pace of China's high-speed rail expansion slowed sharply in 2011 after the removal of Chinese Railways Minister Liu Zhijun in February pending investigation for corruption and a fatal high-speed railway accident near Wenzhou in July. Concerns about safety, high ticket prices, low ridership, financial sustainability of high speed rail projects and environmental impact have drawn greater scrutiny from the Chinese press."

Nonetheless, the high speed rail network continues to expand rapidly and important milestones are justifiably given consider-



My photo taken in Sept 2012 of a CRH380 VHS train approaching Nanjing South station en route from Shanghai to Beijing. There are various models of CRH380 units but something similar would be operating Beijing – Guangzhou.

able publicity. The network is marketed as "CRH" (China Rail High Speed) and this branding is used to distinguish these services from traditional rail services. Generally speaking, there are two classes of high speed lines and associated rolling stock:

lines with a maximum 200 km/h speed

limit (temporarily reduced from 250 km/h following the 2011 crash) and lines with a maximum 300 km/h limit (temporarily reduced from 350 km/h).

The Beijing to Guangzhou VHS service that commenced on 26 December 2012 was made possible by the completion of

All trains from Beijing to Guangzhou

Train No.	Train journey	Stops en route	Dep. Beijing	Arr. Guangzhou	Travel Time
K599	Beijing W. to Guangzhou	25	05:25	10:50+1	29h 25m
G71	Beijing W. to Guangzhou S.	14	08:00	17:38	9h 38m
G79	Beijing W. to Guangzhou S.	4	10:00	17:59	7h 59m
T15	Beijing W. to Guangzhou	3	11:01	07:32+1	20h 31m
G81	Beijing W. to Guangzhou S.	12	13:05	22:32	9h 27m
T97	Beijing W. to Guangzhou E.	3	13:08	10:10+1	21h 02m
T13	Beijing to Guangzhou E.	8	15:00	12:43+1	21h 43m
T201	Beijing W. to Guangzhou	6	18:11	15:04+1	20h 53m

All trains from Guangzhou to Beijing

Train No.	Train journey	Stops en route	Dep. Guangzhou	Arr. Beijing	Travel Time
G72	Guangzhou S. to Beijing W.	13	08:30	18:21	9h 51m
T202	Guangzhou to Beijing W.	6	09:47	06:42+1	20h 55m
G80	Guangzhou S. to Beijing W.	4	10:00	17:59	7h5 9m
G82	Guangzhou S. to Beijing W.	15	12:43	22:23	9h 40m
K600	Guangzhou to Beijing W.	25	14:52	20:02+1	29h 10m
T14	Guangzhou E. to Beijing	8	16:24	14:14+1	21h 50m
T16	Guangzhou to Beijing W.	3	16:48	13:27+1	20h 39m
T98	Guangzhou E. to Beijing W.	3	18:05	14:56+1	20h 51m

the second last link in the major north-south route between Beijing and Hong Kong. Shorter distance services have already been operating on completed sections of this line and there will continue to be very heavy traffic between cities on the line, including interconnections with other rail routes.

Currently the line extends southwards beyond Guangzhou to Shenzhen North (Shenzhen is on the border with China's Special Administrative Region of Hong Kong). The remaining portion through Shenzhen city and Hong Kong territory to a terminus at West Kowloon is scheduled for completion in 2015. Currently the line is 2,298 km from Beijing West station to Guangzhou South station and 2,400 to the existing terminus at Shenzhen North.

Timetable information for Chinese Railways trains is available in English through various commercial or community websites that all presumably access the same database. As at 18 January 2013, there were eight daily trains in each direction between Beijing and Guangzhou. Of these, three were the 300 km/h CRH services on the new line with the remainder being conventional passenger services on the existing mainline. The daily schedules southbound and northbound are shown below. Note that Beijing and Guangzhou each have more than one rail terminus, the new VHS line running between Beijing West and Guangzhou South. All trains operate daily.

By way of explanation, every Chinese Railways train service has a unique identifier. Train type (except for the slower and

cheaper trains) is signified by an alpha character. Thus on this timetable summary 'G' signifies the fastest 300/350 km/h CRH trains on the new high speed tracks, 'T' signifies the second fastest conventional trains on existing tracks and 'K' those stopping at more stations than 'T' trains. Other train types do not travel directly between Beijing and Guangzhou. 'Down' trains head away from Beijing and have an odd number, correspondingly in the opposite direction.

To give an idea how busy this high speed line is with other 'G' trains, the section between Guangzhou and Wuhan that opened at the end of 2009 carries over 60 trains daily in each direction. Other sections of this line are equally busy.

Of the three daily 'G' trains shown above,

Details of Train G79 (fastest CRH train southbound)

Station	Arr. Time	Dep. Time	Distance (km)
Beijing West	-	10:00	0
Shijiazhuang	11:07	11:09	281
Zhengzhou East	12:30	12:33	693
Wuhan	14:17	14:20	1229
Changsha South	15:38	15:41	1591
Guangzhou South	17:59	-	2298

Details of Train G80 (fastest CRH train northbound)

Station	Arr. Time	Dep. Time	Distance (km)
Guangzhou South	-	10:00	0
Changsha South	12:17	12:20	707
Wuhan	13:38	13:41	1069
Zhengzhou East	15:26	15:29	1605
Shijiazhuang	16:50	16:52	2017
Beijing West	17:59	-	2298

Details of Train G71 (World's longest VHS service)

Station	Arr. Time	Dep. Time	Distance (km)
Beijing West	-	08:00	0
Baoding East	08:41	08:43	139
Shijiazhuang	09:19	09:22	281
Handan East	10:01	10:03	456
Xinxiang East	10:41	10:43	626
Zhengzhou East	11:04	11:07	693
Zhumadian West	11:53	11:55	912
Xiaogan North	12:33	12:35	1103
Wuhan	13:06	13:09	1229
Yueyang East	13:58	14:00	1444
Changsha South	14:34	14:38	1591
Hengshan West	15:07	15:09	1727
Hengyang East	15:22	15:24	1768
Leiyang West	15:41	15:48	1823
Chenzhou West	16:09	16:17	1921
Guangzhou South	17:38	17:47	2298
Shenzhen North	18:16	-	2400

Details of Train T15 (fastest train on conventional tracks)

Station	Arr. Time	Dep. Time	Distance (km)
Beijing West	-	11:01	0
Zhengzhou	16:34	16:40	689
Wuhan	21:10	21:16	1225
Changsha	00:29	00:35	1587
Guangzhou	07:32	-	2294

only one (G79/G80) manages the symbolic transit time of 7h 59 m for the Beijing – Guangzhou journey. The other two take longer as they stop at more intermediate stations. Also, G71/G72 continue past Guangzhou to Shenzhen, making them actually the world's longest VHS services at 2,400 km. When the line is completed to Hong Kong the service run will be extended a short distance further.

It is important to note that the 'T' trains on conventional tracks are still quite fast by Australian and US standards. The fastest service by T15 takes 20h 31m over 2,294 km. Also the trains on conventional tracks carry sleeping cars as well as seated carriages.

Timetable details are shown below for trains G79/G80 (fastest southbound and northbound), G71 (world's longest journey by VHS train Beijing – Guangzhou – Shenzhen) and T15 (fastest train on con-

ventional tracks).

It is obviously too early to tell whether an eight hour journey by 'G' train will divert passengers from conventional trains and, more importantly, from the airlines. Railway ticket prices, for any given distance, are set according to type of train with a premium for speed and comfort as well as type of accommodation (seat class and sleeping berth layout). VHS travel accordingly is a lot more expensive and this has caused public criticism, leading in some cases to lower fares than originally announced. However in general, rail fares are very stable compared to air fares which vary in response to supply and demand. Basic air fares are the same for all airlines on any given route but are routinely discounted to sell empty seats. Rail tickets are generally not available until around 1-3 weeks before the date of travel and are not subject to discounting. Therefore an air/rail fare comparison can be difficult.

Travel time comparisons are easier but are subject to the time it takes for local connections at the origin and destination points. While conventional railway stations are usually centrally located in cities, many new VHS stations have been constructed in the outer parts of cities or literally in greenfields areas. Usually of course, they are closer to city centres than airports but, being new, may not initially have good local transport connections.

It is clear that VHS rail is considerably more expensive than conventional rail for a seat but closer in price compared to a sleeping berth. Heavy airline discounting on this long route makes the plane not much more expensive than the train but the lower airfares may result from competition between airlines as there are many flights each day.

The rail journey time of a minimum eight hours limits the number of feasible depar-

A rough comparison between high speed rail, conventional rail and air travel between Beijing and Guangzhou

	High speed rail	Conventional rail	Air travel
Minimum travel time (without connections at each end)	8hrs	20h 30m	3h 15m
Recommended check-in time ahead of travel	30min (barriers close about 5min before departure)	30min (barriers close about 5min before departure)	1hr or more (check-in closes at least 30min before flight)
Fare (yuan - divide by 6 for approx \$ amount)	862 (2nd seat) 1380 (1st seat)	251 (hard seat) 426+ (hard sleeper) 784+ (soft sleeper)	1880 full fare economy but mostly 1370

tures each day although the main daylight run from 10:00 to 17:59 is well suited to leisure travellers but not necessarily business people. One thing that might persuade some air travellers to switch to rail is the ongoing problem of air traffic delays across China; in my experience published airline schedules seem to include a time allowance for delays at departure or arrival. In contrast to air travel, the VHS lines are not generally subject to delays. There are no overnight trains on these lines.

All in all, the world's longest VHS rail line is a significant achievement and is worthy of the publicity it has been given. However it is but one component of the rapidly growing network of such lines across China for which they can justifiably claim credit in any international comparison.



The map above copied from Wikipedia at http://en.wikipedia.org/wiki/Beijing-Guangzhou-Shenzhen-Hong_Kong_High-Speed_Railway

