



J. X. Robinson

*Report dated 30/10/84 from
Laboratory attached.*

*Sharon - F. K. R. R. R. R. R.
Jurnal Test 21/8/84
dir Guality*

*Mr S. B. B. B. B. B.
Sharon Knight & Partners P. Ltd. 230-4363
31/10/84
Transport House
Room 201
224633*

STATE RAIL AUTHORITY OF NEW SOUTH WALES.

From
CHIEF MECHANICAL ENGINEER
Superintendent of Laboratories
To
Chief Design Engineer
2nd Floor
TRANSPORT HOUSE
In reply to your
BV:CJ:48
In reply please quote
X97L

30 October 19 84

Attention Mr P. Robinson
Telephone: 9.4347

ZIG ZAG TUNNELS - FUME TESTS

Further to our report of fume concentrations in Zig Zag Tunnel Tests of 21.8.84: -

The criterion which is used to assess the potential hazard to workers is the Threshold Limit Value (T.L.V.) which is the time weighted average concentration for a normal 8 hour workday and a 40 hour week to which nearly all workers may be repeatedly exposed day after day, without adverse effect.

To aid in the evaluation of short term exposures a Threshold Limit Value - Short Term Exposure Limit (S.T.E.L.) is used. This is defined as a 15 - minute average exposure which should not be exceeded.

The relevant limits are :

T.L.V.	Carbon Monoxide	50	400
T.L.V. (S.T.E.L.)	Nitric Oxide	25	35

These limits were not exceeded except for the tunnel start when the contaminant concentrations exceeded the range of instrumentation for three minutes in the immediate vicinity of the locomotives.

Heat stress measurements carried out showed no indication of hazardous conditions since temperature rises in the tunnel were lesser than expected. The Heat Stress Index readings ranged from 12°C to 13°C which are well below the Permissible T.L.V.'s.

B.P. LAWSON
Superintendent of Laboratories

Per

Zig-Zag #10 Tunnel - Fume Tests

Sample Positions:

- A. LOCOMOTIVE :
 1. From Engine Air Intake (1) and radiator air intake (1) on tunnel wall side.
 2. Interior of No 2 cab (trailing end 2nd loc adjacent to driver breathing zone).

B. GUARDS VAN :

1. Exterior of van, tunnel wall side,
2. Interior of van, 2m above floor.

C. TUNNEL

- Test 1: on tunnel wall, 2m above rail, Down the
- approx 470m along tunnel.
- Test 2: on tunnel wall, 2m above rail, Up track,
- approx 430m along tunnel.

Instrumentation:

- Locomotive
- VAN
- TUNNEL
- ECOLYSIC / RECORDER
- ECOLYSIC Co ANALYSER (*)
- MILKMAN MIRACON ANALYSER + RECORDER (*)

(*) Supplemented by Indicating Rhos (Draeger)

Time	Locomotive	Van	Engine/roadster	Exterior	Interior	Co	No
10.19			Start ca Zug Zug	0	0	0	0
10.22			in Tunnel No 10	0	0	0	0
27			Start up in tunnel	2	0	0	0
28				5	0	0	0
29				40	0	0	0
30				65	20	0	0
31				40	20	0	0
32				25	0	0	0
33				20	2	6	0
34				25	6	5	0
35				30	8	4	0
36				20	18	4	0
37				5	8	4	0
38				25	2	3	0
39				25	6	2	0
40				5	2	2	0
41				0	2	2	0
42				0	0	2	0
43				0	0	2	0
44				0	0	2	1
45				0	0	5	3
46				0	0	11	6
47				0	0	15	13
48						31	17
49						20	4
50						15	1
51						8	0
52						5	2
53						2	0

Time	Co. Locomotive	Van	Tunnel
2:35	Engine/Radiator	Engine/Radiator	Engine/Radiator
3:04	Stop	Stop	Stop
3:11	Start	Start	Start
3:23	Begin	Begin	Begin
3:24	End	End	End
2:35	Reverse	Reverse	Reverse
4:27	Move out	Move out	Move out

TEST OF Class Technical+Running Times 80K SPEED

FROM Walkerawang TO Enfield DATE 21-9-81

ENGINE NO. 8117 8114 And 8129 TRAIN NO. 7374 DMC # 1902 YES/NO

WEATHER RANGE

FUEL DRIVER INSPECTOR

STATION	DISTANCE	SCHEDULED			ACTUAL			RUNNING		PER WAY AND OTHER RESTRICTIVE
		Arr.	Pass	Dep.	Arr.	Pass	Dep.	Tab- led	Actual	

Walkerawang 171.261

5-52.40

DMC on rear of Train

Walkerawang 171.261

Althgow 155.780

7-35.00 9-39.35

Log Zyg

10-07.30 10-18.00

Tunnel Test

10-22.50 10-25.00

3ell

137.125

Mt. Victoria 126.719

11-01.40 11-19.05

Locos at Platform

Walkerawang

11-52.00

Leventworth

12-03.30

Ausson

12-13.30