

28th August

84

DW:MN:63
Lab 83/1187-81

CHIEF MECHANICAL ENGINEER
(Superintendent of Laboratories)

Manager Design,
2nd Floor,
TRANSPORT HOUSE

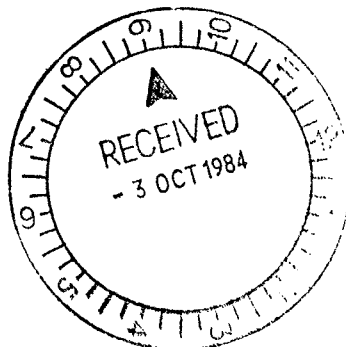
9-1902

MALDON-PORT KEMBLA RAILWAY - AVON TUNNEL
ZIG ZAG No.10 TUNNEL - TEMPERATURE TEST

Please find enclosed copy of temperature test results obtained on the 21st August 1984.

In all, two tests were conducted, speeds and thermocouple locations have been noted on result sheets, other information has been tabulated below.

Lead Engine - 8114	No. 1 end leading
Trailing Engine - 8117	No. 1 end leading
Test Car - DMC 1902	Coupled in front of the guards van
Guards Van	
Thermocouples	Type "T" copper-constantan
Recorders	(1) Kay Digistrip 11 Data Logger recording locomotive test points
	(2) Kay Digistrip 111 Data Logger recording guards van, coal wagon test points
Thermocouple Locations	as per attached sheet.
Test 1	- Mt. Victoria-Lithgow, stopping test.
Test 2	- Lithgow-Mt. Victoria, starting test.

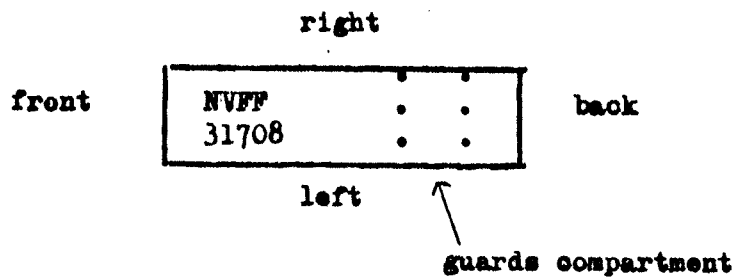


B.P. Lawson
SUPERINTENDENT OF LABORATORIES

Per: *[Signature]*

ZIG ZAG No.10 TUNNEL - TEMPERATURE TEST

THERMOCOUPLE LOCATIONS



<u>CHANNEL</u>	<u>LOCATION</u>
101	exterior of guards compartment 2m above rail level left side
102	" " " " 3.5m " " " " "
103	" " " " 2m " " " right "
104	" " " " 3.5m " " " " "
105	" " " " roof level at the front
106	centre " " " 2m above van floor
107	skin temperature of coal waggon. 2m above rail level
108	
109	
110	
111	ambient temperature at rear of train
112	
113	wet bulb temperature in side guards compartment
114	globe temperature " " " "
115	heat stress value: Wbgt
116	

ZIG ZAG No.10 TUNNEL - TEMPERATURE TEST

SEQUENCE OF EVENTS

TEST 1:

15.20.00	142.2km	40mph
15.21.00	144.1km	"
15.22.00	145.1km	"
15.23.00	146km	" tunnel
15.24.00	147.1km	"
15.25.00	148.1km	" tunnel
15.26.00	149km	35mph "
15.26.30	enter tunnel No.10	
15.27.07	149.8km	stationary
15.41.00	stationary in tunnel No.10	
16.20.40	take off	
16.21.00	15mph	
16.22.00	exit tunnel No.10 20mph	
16.23.00	150.8km	21mph
16.24.00	151.2km	19mph
16.25.00	151.8km	21mph
16.26.00	152.2km	18mph
16.27.00	152.6km	5mph
16.29.00	152.9km	
16.30.00	153km	stationary
16.32.00	153.2km	
16.33.00	153.4	5mph
16.34.00	stationary Lithgow yards	

ZIG ZAG No. 10 TUNNEL - TEMPERATURE TEST

SEQUENCE OF EVENTS

TEST 2

21.59.20	depart Lithgow Yard.
22.00.00	154 Km
22.01.00	153.3 Km 15mph
22.02.00	153.1km "
22.03.00	152.9km 16mph
22.04.00	152.5km 15mph
22.05.00	152km "
22.06.00	151.7km "
22.07.00	151.4km
22.07.26	" stationary, detach lead loco.
22.08.00	" "
22.17.53	take off
22.19.00	151.1km 10mph
22.20.20	loco in tunnel No.10 8mph
22.21.10	150.8km 8mph
22.22.60	150.7km Crawl
22.23.30	Stop
22.24.50	take off
22.25.20	150.6km 7mph
22.26.00	150.5km
22.26.40	700m line in tunnel No.10
22.27.00	stop point " " " "
22.27.40	400m line " " " "
22.28.10	250m " " " "
22.28.30	100m " " " "
22.28.40	50m " " " "
22.28.50	exit tunnel No.10
22.29.10	149.4km
22.30.00	Tunnel No. 9
22.30.30	148.8km
22.31.10	148.6km
22.32.00	148.3km
22.32.40	148km
22.33.30	147.6km
22.35.00	146.9km 18mph
22.36.00	146.7km 15mph
22.37.00	146.1km 17mph
22.38.00	145.6km 23mph
22.39.00	144.9km 30mph
27.40.00	144.1km 33mph
22.41.00	143.2km 37mph
22.42.00	142.3km 30mph
22.43.00	141.5km "
22.45.00	140.1km 24mph

Adapt
for
entering
tunnel

offset
time
correct

* TIME TRAIN IN
TUNNEL
OSCILLOGRAPH INDICATES
2 MIN 20 SEC.
WHICH IS IN
REASONABLE AGREEMENT
WITH SEQUENCE OF
EVENTS SHOWN WE SAY
HAS INCORRECT SOME
TIME.
WHEREAS DIFFERENCE
HERE IS 4 MIN.

Continued:

22.46.00	139.4km	29mph
22.47.00	138.9km	40mph
22.48.00	137.7km	30mph
22.49.00	136.8km	40mph
22.50.00	135.7km	"

0006	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100 Guards Van Test points SEE ATTACHED SHEET FOR THERMOCOUPLE LOCATIONS																
15:16:00	7.20	6.70	6.60	6.90	9.00	14.40	17.00				11.00					
15:17:00	7.00	7.50	6.30	6.70	8.20	13.90	16.20				6.80					
15:18:00	6.60	6.40	6.90	7.10	7.20	13.40	15.10				7.10					
15:19:00	6.70	7.00	7.80	7.50	7.50	14.20	14.20				7.80					
15:20:00	6.90	7.10	6.20	6.20	7.00	12.90	13.90				6.30					
15:21:00	7.30	7.60	8.90	8.70	8.40		13.50				9.60					
15:22:00	6.40	6.50	7.30	7.40	7.00	11.10	12.80				7.40					
15:23:00	7.50	7.80	8.10	8.40	8.00		12.70				8.70					
15:24:00	7.40	7.50	8.00	8.60	7.40		12.30				8.50					
15:25:00	8.40	8.30	8.80	8.80	8.60		12.30				9.00					
15:26:00	7.30	7.60	7.80	7.90	7.20		11.80				8.00					
15:26:36	8.00	8.20	8.30	8.30	7.90		11.80				8.70					
15:26:49	8.40	8.60	8.80	8.90	8.80		11.70				7.90					
15:26:58	8.50	8.70	8.80	9.00	8.80		11.80				7.80					
15:27:07	8.50	8.70	8.90	9.00	8.80		11.90				7.90					
15:27:30	8.40	8.50	8.60	8.80	8.50		12.00				8.80					
15:27:40	8.30	8.40	8.60	8.60	8.50		12.00				8.70					
15:27:50	8.30	8.40	8.50	8.60	8.40		12.00				8.60					
15:28:00	8.20	8.30	8.50	8.60	8.30		12.00				8.50					
15:28:10	8.20	8.40	8.50	8.50	8.30		12.00				8.40					
15:28:20	8.30	8.40	8.40	8.50	8.30		11.90				8.30					
15:28:30	8.20	8.50	8.40	8.50	8.30		11.90				8.20					
15:28:40	8.50	8.60	8.60	8.60	8.50		11.90				8.10					
15:28:50	8.50	8.50	8.40	8.50	8.80		11.90				8.00					
15:29:00	8.40	8.40	8.30	8.50	8.90		11.90				8.70					
15:29:10	8.50	8.40	8.40	8.50	8.90		11.90				8.60					
15:29:20	8.50	8.50	8.40	8.50	9.00		11.90				8.50					
15:29:30	8.40	8.60	8.40	8.50	9.10		11.90				8.40					
15:29:40	8.60	8.60	8.50	8.70	9.20		11.90				8.30					
15:29:50	8.70	8.70	8.50	8.70	9.10		11.80				8.20					
15:30:00	8.80	8.70	8.50	8.80	9.30		11.80				8.10					
15:30:10	9.00	8.80	8.50	8.80	9.40		11.80				8.00					
15:30:20	8.80	8.90	8.50	8.80	9.30		11.80				7.90					
15:30:30	9.00	9.00	8.40	8.70	9.40		11.80				7.80					
15:30:40	9.00	9.00	8.50	8.80	9.50		11.80				7.70					
15:30:50	9.00	8.90	8.50	8.80	9.60		11.80				7.60					
15:31:00	9.10	8.90	8.60	8.80	9.50		11.70				7.50					
15:31:10	9.10	9.10	8.50	8.70	9.70		11.70				7.40					
15:31:20	9.00	8.90	8.40	8.60	9.50		11.70				7.30					
15:31:30	9.10	8.90	8.30	8.50	9.50		11.70				7.20					
15:31:40	9.00	8.90	8.20	8.40	9.30		11.70				7.10					
15:31:50	9.00	9.00	8.10	8.30	9.40		11.60				7.00					
15:32:00	9.00	8.90	8.10	8.30	9.30		11.60				6.90					
2:10	8.90	8.70	7.80	8.10	9.10		11.50				6.80					

Guarda Van Test Pointa

15:32:50	9.00	8.90	8.00	8.20	9.30	11.60	74.8	35.01	38.8	32.11	30.51	38.8	34.8	31
15:33:00	9.00	8.80	7.90	8.20	9.20	11.50		8.40	8.20	8.80	12.10	8.79	9.79	
15:33:10	9.00	8.80	8.10	8.30	8.70	11.40		8.20	8.40	8.80	12.10	9.79	9.79	
15:33:20	8.70	8.80	7.90	8.10	8.90	11.50		8.20	8.20	8.80	12.00	9.76	9.76	
15:33:30	8.80	8.80	8.00	8.30	8.90	11.40		8.30	8.30	8.80	12.10	9.79	9.79	
15:33:40	9.20	9.00	8.20	8.30	8.80	11.40		8.30	8.30	8.80	12.10	9.86	9.86	
15:33:50	8.80	8.80	8.30	8.30	8.80	11.40		8.40	8.40	8.80	12.10	9.79	9.79	
15:34:00	8.80	8.80	8.30	8.30	8.80	11.40		8.50	8.50	8.80	12.10	9.79	9.79	
15:34:10	8.80	8.80	8.30	8.30	8.50	11.30	12.80	8.40	8.40	8.80	12.10	9.79	9.79	
15:34:20	8.60	8.70	8.10	8.20	8.70	11.30		8.30	8.30	8.80	12.10	9.79	9.79	
15:34:30	8.60	8.80	8.10	8.20	9.00	11.30		8.30	8.30	8.80	12.10	9.86	9.86	
15:34:40	8.80	8.80	8.10	8.30	8.60	11.30		8.20	8.20	8.80	12.10	9.86	9.86	
15:34:50	8.60	8.60	8.00	8.10	8.50	11.30		8.10	8.10	8.80	12.10	9.86	9.86	
15:35:00	8.60	8.60	7.80	8.10	8.70	11.30		8.30	8.30	8.80	12.20	9.89	9.89	
15:35:10	8.70	8.80	7.90	8.10	8.80	11.30		8.20	8.20	8.80	12.20	9.96	9.96	
15:35:20	8.80	8.90	7.90	8.10	8.80	11.20		8.10	8.10	9.00	12.20	9.96	9.96	
15:35:30	8.90	8.70	7.80	8.00	8.60	11.30		8.20	8.20	9.00	12.20	9.96	9.96	
15:35:40	9.00	8.80	7.80	8.20	8.90	11.20		8.30	8.30	9.00	12.20	9.96	9.96	
15:35:50	9.00	8.70	8.00	8.20	8.80	11.20		8.10	8.10	9.00	12.20	9.96	9.96	
15:36:00	8.80	8.80	7.90	8.00	8.80	11.20	12.30	8.10	8.10	9.00	12.20	9.96	9.96	
15:37:00	8.80	8.90	8.00	8.10	8.80	11.10		8.10	8.10	9.00	12.30	9.99	9.99	
15:38:00	8.80	8.80	8.00	8.10	8.50	11.00	12.90	8.30	8.30	9.10	12.30	10.06	10.06	
15:39:00	9.00	9.00	7.90	8.20	9.00	10.90	12.90	8.40	8.40	9.20	12.30	10.13	10.13	
15:40:00	9.10	8.90	7.90	8.00	9.20	10.90		8.20	8.20	9.20	12.30	10.13	10.13	
15:41:00	8.90	8.80	7.90	7.90	8.90	10.80		8.10	8.10	9.20	12.30	10.13	10.13	
15:42:00	8.90	8.80	7.90	8.00	8.90	10.80	12.90	8.10	8.10	9.20	12.30	10.13	10.13	
15:43:00	8.80	8.80	7.80	8.00	8.10	10.70		8.00	8.00	9.20	12.30	10.13	10.13	
15:44:00	9.00	8.80	7.70	7.90	8.60	10.60	12.90	8.10	8.10	9.30	12.30	10.2	10.2	
15:45:00	8.80	8.70	7.80	7.90	8.80	10.50		8.10	8.10	9.30	12.30	10.2	10.2	
15:46:00	8.90	8.80	7.80	7.90	8.70	10.50	12.90	8.00	8.00	9.30	12.30	10.23	10.23	
15:47:00	8.50	8.60	7.70	7.80	8.60	10.30		8.20	8.20	9.30	12.40	10.23	10.23	
15:48:00	8.40	8.50	7.60	7.70	8.20	10.30	12.90	8.10	8.10	9.30	12.40	10.23	10.23	
15:49:00	8.80	8.90	7.80	8.00	8.50	10.30		8.10	8.10	9.20	12.40	10.16	10.16	
15:50:00	8.60	8.70	7.60	7.70	8.50	10.20	12.90	8.00	8.00	9.30	12.40	10.23	10.23	
15:51:00	8.60	8.60	7.70	7.90	8.70	10.20		8.10	8.10	9.40	12.40	10.3	10.3	
15:52:00	8.60	8.50	7.60	7.80	8.70	10.10	12.90	8.30	8.30	9.30	12.40	10.23	10.23	
15:53:00	8.80	8.70	7.60	7.70	8.70	10.00		8.10	8.10	9.30	12.40	10.23	10.23	
15:54:00	8.70	8.50	7.50	7.70	8.80	9.90	12.90	8.20	8.20	9.40	12.40	10.3	10.3	
15:55:00	8.60	8.60	7.60	7.80	8.20	10.00		8.10	8.10	9.40	12.40	10.33	10.33	
15:56:00	8.60	8.50	7.60	7.80	8.80	9.90	12.90	8.30	8.30	9.50	12.50	10.4	10.4	
15:57:00	8.20	8.40	7.60	7.70	8.50	9.90		8.10	8.10	9.50	12.50	10.4	10.4	
15:58:00	8.40	8.40	7.80	7.80	8.10	9.80	12.80	7.90	7.90	9.50	12.50	10.4	10.4	
15:59:00	8.50	8.40	7.50	7.60	8.50	9.80	12.80	7.80	7.80	9.60	12.50	10.47	10.47	
16:00:00	8.60	8.50	7.60	7.60	8.50	9.80	12.90	7.70	7.70	9.60	12.50	10.47	10.47	

0006	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
SEE ATTACHED SHEET FOR THERMOCOUPLE LOCATIONS																
100 Guards Van test points	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
16:01:00	8.60	8.40	7.60	7.70	8.60	13.00	9.70				8.20		9.70	12.60	10.57	
16:02:00	8.60	8.50	7.60	7.80	8.30	13.00	9.70				8.10		9.70	12.60	10.57	
16:03:00	8.60	8.40	7.50	7.60	8.60	12.90	9.70				7.90		9.60	12.60	10.5	
16:04:00	8.40	8.30	7.50	7.60	8.60	12.90	9.60				7.90		9.70	12.60	10.57	
16:05:00	8.40	8.30	7.60	7.70	8.10	13.10	9.50				7.70		9.70	12.60	10.57	
16:06:00	8.50	8.50	7.60	7.70	8.60	13.00	9.50				7.90		9.70	12.60	10.57	
16:07:00	8.60	8.40	7.50	7.70	7.50	12.90	9.50				7.60		9.70	12.60	10.57	
16:08:00	8.40	8.30	7.50	7.60	8.40	12.80	9.50				7.70		9.70	12.60	10.64	
16:09:00	8.40	8.40	7.50	7.60	8.70	12.90	9.40				7.70		9.80	12.60	10.67	
16:10:00	8.50	8.30	7.30	7.50	8.30	12.90	9.40				7.60		9.80	12.70	10.67	
16:11:00	8.40	8.30	7.50	7.60	8.00	13.00	9.30				7.60		9.70	12.60	10.57	
16:12:00	8.40	8.30	7.50	7.60	8.00	13.00	9.30				8.20		9.80	12.70	10.67	
16:13:00	8.50	8.30	7.50	7.60	8.30	13.00	9.40				8.20		9.80	12.70	10.67	
16:14:00	8.50	8.30	7.60	7.70	8.40	13.00	9.30				8.00		9.90	12.70	10.74	
16:15:00	8.50	8.30	7.40	7.50	8.50	13.00	9.30				8.20		9.90	12.70	10.74	
16:16:00	8.60	8.30	7.30	7.50	8.50	12.90	9.30				7.60		9.80	12.70	10.67	
16:17:00	8.70	8.30	7.50	7.60	8.60	12.80	9.30				8.30		9.70	12.80	10.63	
16:18:00	8.70	8.30	7.40	7.60	8.60	12.70	9.20				8.50		9.70	12.80	10.63	
16:19:00	8.60	8.40	7.60	7.60	8.30	12.70	9.20				8.50		9.70	12.80	10.63	
16:20:00	8.50	8.30	7.50	7.60	8.20	12.70	9.20				8.60		9.60	12.70	10.53	
16:20:45	8.40	8.40	7.50	7.60	8.30	12.50	9.20				8.60		9.50	12.70	10.46	
16:21:00	8.30	8.20	7.50	7.60	8.20	12.60	9.10				8.90		9.50	12.70	10.46	
16:22:00	7.60	7.50	7.20	7.20	7.40	12.40	9.00				8.50		9.50	12.70	10.46	
16:23:00	6.80	6.70	6.60	6.60	6.20	12.40	8.80				7.60		9.30	12.60	10.29	
16:24:00	6.50	6.50	6.50	6.50	6.40	12.30	8.70				6.90		9.20	12.70	10.25	
16:25:00	6.90	6.80	6.60	6.60	6.70	12.20	8.80				6.70		9.00	12.60	10.08	
16:26:00	7.00	7.00	6.60	6.60	6.70	12.30	8.70				6.80		8.90	12.60	10.01	
16:27:00	6.40	6.40	7.00	6.90	6.70	12.30	8.50				7.00		8.90	12.50	9.84	
16:28:00	6.30	6.50	6.90	6.90	6.50	12.10	8.40				7.20		8.70	12.50	9.84	
16:29:00	7.30	7.10	6.90	6.80	6.80	12.10	8.70				7.00		8.50	12.40	9.67	
16:30:00	7.00	6.90	7.20	7.20	6.80	12.30	8.50				7.40		8.60	12.40	9.74	
16:31:00	6.90	6.80	6.50	6.50	6.40	12.30	8.50				6.50		8.70	12.40	9.81	
16:32:00	7.20	7.00	6.80	6.80	6.90	12.10	8.50				6.70		8.60	12.30	9.71	
16:33:00	7.00	6.80	6.70	6.70	6.60	12.00	8.40				6.60		8.60	12.30	9.71	
16:34:00	7.30	7.10	7.10	6.90	6.70	12.10	8.50				6.60		8.60	12.30	9.71	
16:35:00	7.30	7.00	6.50	6.60	6.40	10.60	8.40				6.60		8.60	12.30	9.71	
16:36:00	7.20	7.10	6.60	6.60	6.40	11.00	8.30				6.60		7.60	12.10	8.95	
16:37:00	7.40	7.10	6.60	6.60	6.40	11.00	8.30				6.40		7.60	11.80	8.86	
16:38:00	7.20	7.00	6.50	6.50	6.30	11.20	8.20				6.40		7.60	11.70	8.83	
16:39:00	7.30	7.10	6.70	6.80	6.60	11.10	8.30				6.30		7.50	11.60	8.73	
16:40:00	7.40	7.20	6.70	6.70	6.70	11.00	8.30				6.60		7.40	11.50	8.63	
16:41:00	6.90	6.80	6.40	6.50	6.20	11.40	8.20				6.60		7.60	11.40	8.74	
16:42:00	7.10	6.90	6.90	6.90	6.40	11.30	8.10				6.20		7.60	11.40	8.88	
16:43:00	6.70	6.50	6.70	6.60	6.40	11.30	8.10				6.50		7.90	11.50	8.99	
16:44:00	7.30	7.10	6.60	6.60	6.30	11.30	8.00				6.20		7.90	11.50	8.98	
											6.20		8.00	11.50	9.05	

16:36:00	7.20	7.10	6.60	6.60	6.40	11.00	8.30	7.60	12.10	8.10
16:37:00	7.40	7.10	6.60	6.60	6.50	11.00	8.30	7.60	11.80	8.86
16:38:00	7.20	7.00	6.50	6.50	6.30	11.20	8.20	7.60	11.70	8.83
16:39:00	7.30	7.10	6.70	6.80	6.60	11.10	8.30	7.50	11.60	8.73
16:40:00	7.40	7.20	6.70	6.70	6.70	11.00	8.30	7.40	11.50	8.63
16:41:00	6.90	6.80	6.40	6.50	6.20	11.40	8.20	7.60	11.40	8.74
16:42:00	7.10	6.90	6.90	6.90	6.40	11.30	8.10	7.80	11.40	8.88
16:43:00	6.70	6.50	6.70	6.60	6.40	11.30	8.10	7.90	11.50	8.98
16:44:00	7.30	7.10	6.60	6.60	6.30	11.30	8.00	7.90	11.50	8.98
								8.00	11.50	9.05

Test 1

1	0006	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	Guards Van	test points	SEE ATTACHED SHEET FOR THERMOCOUPLE LOCATIONS														
16:45:00	7.00	6.80	6.50	6.60	6.20	11.20	8.00	8.00	8.00	8.00	8.00	6.10	6.10	8.00	11.60	9.08	
16:46:00	6.90	6.70	6.40	6.50	6.10	11.40	7.80	7.80	7.80	7.80	7.80	6.00	6.00	8.00	11.60	9.08	
16:47:00	6.60	6.70	6.60	6.60	6.20	11.40	7.80	7.80	7.80	7.80	7.80	6.40	6.40	8.10	11.60	9.15	
16:48:00	6.90	6.90	6.60	6.60	6.30	11.10	7.70	7.70	7.70	7.70	7.70	6.30	6.30	7.80	11.70	8.97	
16:49:00	6.70	6.60	6.20	6.30	6.00	10.7	7.60	7.60	7.60	7.60	7.60	6.00	6.00	7.50	11.70	8.76	

1 Test 2		ZIG ZAG NO 10 TUNNEL TEMPERATURE TEST										21ST AUGUST 1984			
0000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
100 Amada van test points SEE ATTACHED SHEET FOR THERMOCUPLE LOCATIONS															
21:59:20	4.70	4.80	4.90	5.10	4.60	14.00	4.70				5.00		8.80	13.30	10.15
22:00:00	4.70	4.80	5.00	5.10	4.70	14.00	4.70				5.00		8.80	13.40	10.19
22:01:00	5.00	4.90	5.00	5.20	4.90	14.00	4.70				5.00		8.70	13.40	10.11
22:02:00	4.90	4.90	4.90	5.00	4.70	13.90	4.70				4.90		8.60	13.40	10.04
22:03:00	4.80	4.80	4.80	5.00	4.60	13.90	4.60				4.80		8.60	13.40	10.04
22:04:00	4.60	4.70	4.70	4.80	4.60	13.90	4.60				4.70		8.90	13.40	10.25
22:05:00	4.50	4.60	4.70	4.80	4.50	13.90	4.50				4.80		9.00	13.50	10.35
22:06:00	4.50	4.50	4.70	4.80	4.60	13.90	4.60				4.70		9.00	13.50	10.35
22:07:00	4.40	4.40	4.60	4.70	4.20	13.80	4.40				4.60		8.90	13.50	10.28
22:07:26	4.30	4.40	4.60	4.70	4.20	13.80	4.40				4.60		9.00	13.50	10.35
22:08:00	4.30	4.40	4.60	4.70	4.20	13.80	4.40				4.80		9.00	13.40	10.32
22:09:00	4.30	4.30	4.50	4.70	4.20	14.70	4.30				4.50		9.00	13.50	10.35
22:10:00	4.30	4.40	4.50	4.60	4.20	14.60	4.30				4.50		9.10	13.50	10.42
22:11:00	4.20	4.30	4.50	4.60	4.10	14.10	4.30				4.60		8.90	13.50	10.28
22:12:00	4.20	4.20	4.40	4.60	4.10	13.80	4.30				4.50		9.00	13.50	10.75
22:13:00	4.10	4.20	4.40	4.60	4.00	13.80	4.20				4.40		9.00	13.50	10.35
22:14:00	4.10	4.30	4.40	4.60	4.10	13.90	4.10				4.40		9.00	13.40	10.32
22:15:00	4.20	4.20	4.50	4.60	4.10	14.90	4.10				4.50		9.20	13.40	10.46
22:16:00	4.20	4.20	4.40	4.60	4.10	14.50	4.10				4.40		9.20	13.50	10.49
22:17:00	4.10	4.20	4.40	4.60	4.10	14.10	4.10				4.40		8.90	13.40	10.25
22:17:53	4.20	4.20	4.40	4.60	4.00	13.80	4.00				4.40		9.00	13.40	10.32
22:19:00	4.10	4.10	4.30	4.50	4.00	13.90	4.10				4.30		9.10	13.40	10.39
22:20:00	4.10	4.10	4.30	4.50	4.20	13.70	4.10				4.30		8.80	13.40	10.18
22:20:10	4.00	4.10	4.30	4.50	4.20	13.70	4.00				4.30		8.90	13.40	10.25
22:20:20	4.00	4.10	4.40	4.50	4.20	13.70	4.10				4.30		9.00	13.40	10.32
22:20:30	4.00	4.00	4.30	4.50	4.20	13.70	4.10				4.30		9.00	13.40	10.32
22:20:40	4.00	4.10	4.30	4.50	4.20	13.70	4.10				4.30		9.00	13.40	10.32
22:20:50	4.00	4.20	4.30	4.50	4.00	13.70	4.10				4.20		9.00	13.40	10.32
22:21:00	4.00	4.10	4.30	4.40	4.00	13.70	4.10				4.30		9.00	13.40	10.32
22:21:10	4.00	4.10	4.30	4.50	4.00	13.80	4.10				4.30		9.10	13.40	10.39
22:21:20	4.00	4.00	4.30	4.40	4.00	13.90	4.10				4.30		9.10	13.40	10.39
22:21:30	4.00	4.00	4.30	4.40	3.90	14.00	4.10				4.30		9.10	13.40	10.39
22:21:40	4.00	4.00	4.30	4.50	4.10	14.10	4.10				4.30		9.10	13.40	10.39
22:21:50	4.00	4.10	4.30	4.50	4.00	14.00	4.20				4.30		9.20	13.40	10.46
22:22:00	4.10	4.10	4.30	4.50	4.00	13.90	4.10				4.30		9.20	13.40	10.46
22:22:10	4.10	4.10	4.20	4.50	3.90	13.90	4.10				4.20		9.20	13.40	10.46
22:22:20	4.10	4.10	4.20	4.40	3.80	13.90	4.10				4.10		9.20	13.40	10.46
22:22:30	4.10	4.10	4.20	4.40	3.80	14.10	4.10				4.10		9.30	13.40	10.53
22:22:40	4.10	4.10	4.20	4.40	3.90	14.40	4.10				4.10		9.30	13.40	10.53
22:22:50	4.10	4.10	4.20	4.40	3.80	15.40	4.10				4.10		9.20	13.40	10.46
22:23:00	4.10	4.10	4.20	4.40	3.80	14.90	4.10				4.10		9.20	13.40	10.46
22:23:10	4.10	4.20	4.20	4.40	3.70	14.90	4.10				4.20		9.20	13.40	10.46
22:23:20	4.10	4.20	4.20	4.30	3.70	16.20	4.10				4.20		9.20	13.40	10.46
22:23:30	4.10	4.10	4.20	4.30	3.70	15.40	4.10				4.10		9.20	13.40	10.46
22:23:40	4.10	4.10	4.20	4.30	3.70	15.10	4.10				4.10		9.20	13.40	10.46

1 Test 2

0006

Van Test points

02

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SEE ATTACHED SHEET FOR THERMOCOUPLE LOCATIONS

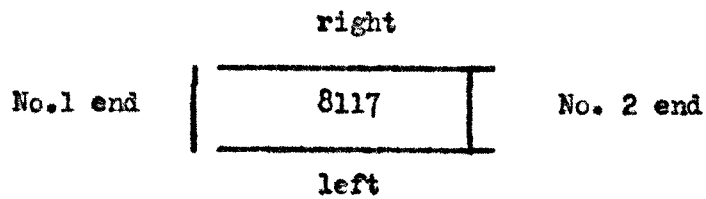
TUNNEL TEMPERATURE

21ST AUGUST 1984

100 Grunds	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
22:23:50	4.10	4.20	4.20	4.30	3.70	14.80	4.10				4.00		9.30	13.40	10.53	
22:24:20	4.10	4.10	4.20	4.40	3.70	14.50	4.10				4.00		9.40	13.40	10.6	
22:24:30	4.10	4.10	4.10	4.50	3.70	14.40	4.10				4.10		9.40	13.40	10.6	
22:24:40	4.10	4.10	4.20	4.40	3.70	14.40	4.10				4.10		9.40	13.40	10.6	
22:24:50	4.10	4.20	4.20	4.40	3.70	14.60	4.10				4.20		9.40	13.40	10.6	
22:25:00	4.00	4.10	4.20	4.40	3.80	14.50	4.10				4.30		9.50	13.40	10.67	
22:25:10	4.10	4.10	4.20	4.40	4.10	14.50	4.10				4.20		9.50	13.40	10.67	
22:25:20	4.20	4.20	4.20	4.40	4.10	14.60	4.20				4.30		9.60	13.40	10.74	
22:25:30	4.10	4.10	4.20	4.40	4.20	14.50	4.20				4.40		9.60	13.40	10.74	
22:25:40	4.10	4.10	4.30	4.50	4.10	14.60	4.20				4.30		9.50	13.40	10.67	
22:25:50	4.10	4.10	4.20	4.40	4.00	14.50	4.20				4.30		9.60	13.40	10.74	
22:26:00	4.20	4.20	4.30	4.40	4.20	14.60	4.20				2.90		9.60	13.40	10.74	
22:26:10	4.30	4.20	4.40	4.50	4.30	14.70	4.20				4.40		9.60	13.40	10.74	
22:26:20	4.20	4.30	4.40	4.40	4.20	14.50	4.20				4.50		9.50	13.40	10.67	
22:26:30	4.20	4.20	4.30	4.40	4.60	14.30	4.20				4.50		9.50	13.40	10.67	
22:26:40	4.70	5.10	5.00	5.20	7.00	14.40	4.30				5.60		9.50	13.40	10.67	
22:26:50	5.40	5.90	5.60	5.80	8.40	14.30	4.40				6.20		9.50	13.40	10.67	
22:27:00	6.00	6.70	6.30	6.50	9.70	14.30	4.40				7.00		9.50	13.40	10.67	
22:27:10	6.20	6.90	6.60	7.00	11.00	14.30	4.50				7.50		9.60	13.40	10.74	
22:27:20	6.80	7.70	7.10	7.40	11.90	14.30	4.50				8.20		9.60	13.40	10.74	
22:27:30	6.80	7.80	7.40	7.70	12.10	14.40	4.50				8.40		9.70	13.40	10.81	
22:27:40	7.10	8.00	7.60	7.90	12.10	14.40	4.60				8.60		9.70	13.40	10.81	
22:27:50	7.50	8.40	8.10	8.70	12.40	14.40	4.70				9.40		9.80	13.40	10.88	
22:28:00	7.70	8.40	8.40	8.90	12.80	14.50	4.70				9.50		9.80	13.40	10.88	
22:28:10	8.10	8.90	8.70	8.90	13.20	14.50	4.80				9.80		9.90	13.40	10.95	
22:28:20	7.90	8.60	8.80	9.30	13.50	14.50	4.80				9.90		9.90	13.40	10.95	
22:28:30	7.90	8.60	8.90	9.60	14.10	14.50	4.90				10.10		10.00	13.40	11.02	
22:28:40	8.30	9.20	9.20	9.90	14.70	14.50	4.90				10.70		10.00	13.40	11.02	
22:28:50	8.60	9.30	9.60	10.00	14.10	14.50	5.00				10.70		10.10	13.40	11.09	
22:29:00	8.40	8.30	6.30	6.60	7.50	14.50	4.80				5.90		10.10	13.40	11.09	
22:29:10	6.20	5.80	5.20	5.10	5.30	14.50	4.60				5.20		10.10	13.40	11.09	
22:29:20	5.10	5.10	4.70	4.90	4.80	14.50	4.60				4.70		10.10	13.40	11.09	
22:29:30	4.60	4.60	4.70	4.80	4.50	14.40	4.50				4.50		10.00	13.40	11.02	
22:29:40	4.90	4.90	4.90	5.10	4.90	14.40	4.60				4.90		9.90	13.40	10.95	
22:29:50	4.50	4.50	4.60	4.70	4.40	14.40	4.50				4.40		9.90	13.40	10.95	
22:30:00	4.50	4.50	4.50	4.60	4.40	14.40	4.50				4.40		9.90	13.40	10.95	
22:30:10	4.40	4.50	4.50	4.70	4.40	14.40	4.60				4.40		9.80	13.40	10.88	
22:30:20	4.80	4.80	4.60	4.80	4.60	14.30	4.60				4.60		9.80	13.40	10.88	
22:30:30	4.90	4.90	4.70	4.90	4.60	14.30	4.60				4.60		9.70	13.40	10.81	
22:30:40	4.30	4.30	4.60	4.70	4.30	14.30	4.60				4.60		9.80	13.50	10.91	
22:30:50	4.20	4.30	4.30	4.60	4.20	14.20	4.50				4.30		9.60	13.40	10.74	
22:31:00	4.40	4.50	4.40	4.70	4.30	14.10	4.60				4.40		9.60	13.40	10.74	
22:31:10	4.70	4.80	4.60	4.70	4.40	14.10	4.60				4.50		9.60	13.40	10.74	
22:31:20	5.00	5.00	4.70	4.80	4.60	14.10	4.60				4.70		9.60	13.40	10.74	
22:31:30	4.90	5.10	4.80	5.00	4.80	14.00	4.60				4.80		9.60	13.40	10.74	

ZIG ZAG No.10 TUNNEL TEMPERATURE TEST

THERMOCOUPLE LOCATIONS



<u>CHANNEL</u>	<u>LOCATION</u>
101	Ambient
102	Cabin Temperature, head height of driver No.2 end
103	Radiator Air Inlet Right No. 1 end
104	" " " centre
105	" " " No. 2 end
106	" " Left No. 1 end
107	" " " centre
108	" " " No. 2 end
109	Water into Radiator
110	" out of "
111	Engine Air Inlet Right No. 1 end
112	" " " No. 2 end
113	" " Left No. 1 end
114	" " " No. 2 end
115	" " Inside

Tel: 9.1902

DW:AV:63

Testing Laboratories
REDFERN

ZIG ZAG NO. 10 TUNNEL - TEMPERATURE TEST

Test 1

<u>Time</u>	<u>Sequence of events</u>
14.44.50	Depart Mt. Victoria Siding
14.54.30	135 Km peg.
14.58.00	137 Km peg.
14.58.30	Bell Station
15.00.30	138 Km peg.
15.02.30	139 Km peg.
15.05.00	141 Km peg.
15.08.00	Arrive Newnes Junction
15.19.30	Depart Newnes Junction
15.20.30	142 Km peg.
15.24.30	Enter No 1 tunnel
15.25.00	Leave No 1 tunnel
15.25.30	Enter No 2 tunnel
15.25.50	Enter No 3 tunnel
15.26.10	Enter No 4 tunnel
15.26.40	Enter No 5 tunnel
15.26.50	Enter No 6 tunnel
15.27.10	Enter No 7 tunnel
15.27.30	Enter No 8 tunnel
15.27.50	Enter No 9 tunnel
15.28.10	Enter No 10 tunnel
15.29.10	Leave No 10 tunnel
15.29.30	Stop - Outside No 10 tunnel

Testing Laboratories
REDFERN

ZIG ZAG NO. 10 TUNNEL TEMPERATURE TEST

TIMES INCORRECT SEE DATA FOR GUMPS VAN.
 PAGE 3 OF THIS REPORT, FOR CORRECT TIMES.

Test No. 2

<u>Time</u>	Dynamometer Car Times.	*Note same time basis as Steve White ie 4 secs behind DIGIRECORPER. <u>Sequence of events</u>
22.00.00	(21.59.35)	Depart Lithgow
22.08.30	(22.07.30)	Stop-Top of zig zag
22.18.30	(22.18.00)	Take off - from top of zig zag
22.21.20		No 1 loco enters No 10 tunnel
22.21.40		No 2 loco enters No 10 tunnel
22.22.40		650 m mark
22.22.50		600 m mark
22.23.10		550 m mark
22.23.50	(22.22.50)	Stop
22.25.50	(22.25.00)	take off in tunnel
22.27.00		400 m mark
22.27.40		250 m mark
22.27.50		150 m mark
22.28.00		100 m mark
22.28.20		50 m mark
22.28.30		Out of No 10 tunnel
22.29.10		Enter No 9 tunnel
22.37.30		Leave No 1 tunnel
22.43.10		Newnes Junction
22.48.00		End Test

START
 TIME
 BELIEVED
 INCORRECT

2 MINS 40 SEC
 agrees
 with
 OSCILLOGRAPH

Test 1

3217	01	02	03	04	05	06	07	08	09	10	11	12		
100	Location	Test Point	SEE ATTACHED SHEET FOR THERMOCOUPLE LOCATIONS										21ST AUGUST 1984	
14-44-00	OPEN C	16.60	39.40	44.80	41.80	13.00	8.80	9.90	60.10	59.40	7.10	6.80		
14-47-00	OPEN C	16.70	21.20	29.60	26.60	23.60	24.10	26.30	71.10	70.10	7.40	7.40		
14-49-00	OPEN C	16.70	11.60	24.60	31.10	7.40	15.20	20.40	82.90	78.80	8.40	8.20		
14-50-00	OPEN C	16.60	10.80	27.90	37.60	6.20	7.70	9.80	82.00	77.80	7.60	7.60		
14-51-00	OPEN C	16.60	15.40	18.90	25.90	8.20	8.40	8.70	79.20	75.20	8.80	8.70		
14-52-00	OPEN C	16.60	10.70	15.20	21.00	8.10	16.90	20.70	76.30	71.90	7.90	7.80		
14-53-00	OPEN C	16.40	8.90	27.10	42.80	6.90	7.80	11.60	75.50	71.80	7.20	6.90		
14-54-00	OPEN C	15.60	11.10	17.30	28.10	6.60	11.70	14.40	73.90	74.80	9.80	9.60		
14-56-00	OPEN C	16.50	8.70	37.60	41.30	10.60	12.70	23.40	86.00	81.30	7.90	8.10		
14-57-00	OPEN C	16.80	8.60	8.90	26.80	6.80	6.70	10.90	84.30	77.60	8.50	8.10		
14-58-00	OPEN C	16.90	10.60	12.60	45.90	6.70	7.20	10.60	82.30	77.60	9.60	8.80		
14-59-00	OPEN C	16.90	9.80	17.80	31.80	6.60	17.10	17.70	86.30	82.10	8.90	8.90		
15-00-00	OPEN C	16.30	6.80	6.70	13.40	10.00	10.30	20.90	84.60	77.00	6.20	6.20		
15-01-00	OPEN C	16.70	9.30	10.70	36.90	6.80	6.80	14.50	82.30	77.80	8.10	7.90		
15-02-00	OPEN C	16.80	9.60	12.70	45.90	8.20	8.60	13.40	88.60	82.20	7.30	7.20		
15-04-00	OPEN C	17.10	8.70	8.70	16.70	10.90	11.20	15.30	82.40	75.90	6.60	6.40		
15-05-00	OPEN C	17.10	16.60	19.80	23.00	11.10	9.40	10.10	85.20	73.20	10.40	10.20		
15-06-00	OPEN C	15.00	12.30	21.20	32.70	7.60	10.10	14.10	83.10	78.60	9.30	9.10		
15-07-00	OPEN C	15.40	11.50	16.30	22.30	6.90	13.10	19.80	81.40	76.70	9.10	9.10		
15-08-00	OPEN C	16.10	13.20	32.30	33.90	7.30	11.40	15.10	75.30	75.00	8.50	8.40		
15-09-00	OPEN C	15.30	12.80	33.30	34.40	6.90	8.60	10.30	77.50	74.20	8.50	8.50		
15-10-00	OPEN C	15.90	25.10	49.70	44.00	8.30	7.90	9.10	67.80	67.30	7.90	7.90		
15-17-00	OPEN C	15.70	23.10	31.60	26.30	10.10	10.60	12.60	63.50	67.80	7.70	7.60		
15-20-00	OPEN C	16.30	36.50	36.60	38.20	10.60	10.90	17.60	69.70	69.00	8.30	7.80		
15-24-00	OPEN C	16.60	20.70	22.60	26.60	14.90	15.90	18.50	60.10	78.90	8.60	8.60		
15-25-00	OPEN C	16.90	7.10	8.80	13.40	12.40	16.10	31.60	82.60	77.00	6.40	6.20		
15-27-00	OPEN C	17.10	9.90	10.40	14.40	11.10	25.10	42.10	84.50	78.80	9.20	9.00		
15-28-00	OPEN C	17.30	10.20	11.70	18.40	6.60	8.50	16.60	86.10	81.20	8.90	9.10		
15-29-00	OPEN C	17.30	20.70	19.40	16.10	52.30	43.90	39.70	84.10	78.60	10.10	11.40		
15-26-00	OPEN C	17.30	12.90	12.10	12.40	56.20	33.10	27.30	82.70	76.70	7.90	8.00		
15-27-00	OPEN C	17.30	15.90	15.00	15.10	41.60	41.30	38.20	81.90	77.90	8.30	8.50		
15-28-00	OPEN C	17.30	11.20	12.10	13.60	30.60	34.30	36.80	85.00	79.40	8.30	8.30		
15-28-00	OPEN C	17.30	14.40	14.70	15.20	15.10	17.90	22.20	85.30	73.40	8.70	8.80		
15-28-00	OPEN C	17.40	14.40	14.30	15.00	16.20	16.90	19.20	85.30	77.60	8.30	8.30		
15-28-00	OPEN C	17.50	14.60	14.10	14.20	16.60	17.40	19.30	84.60	77.40	8.10	8.20		
15-28-00	OPEN C	17.40	15.40	14.90	14.60	14.60	15.60	17.40	83.70	77.40	8.10	8.40		
15-28-00	OPEN C	17.40	14.90	15.00	14.80	14.30	15.40	16.70	83.00	76.90	8.20	8.30		
15-24-00	OPEN C	17.40	14.60	14.60	14.70	16.10	17.10	17.70	82.50	76.60	7.90	8.20		
15-24-00	OPEN C	17.40	13.90	15.80	18.40	11.80	14.70	17.30	81.90	76.60	7.80	7.80		
15-29-00	OPEN C	17.40	11.70	14.50	18.10	10.60	13.50	15.90	81.30	76.20	8.60	8.20		

ZIG ZAG NO 10 TUNNEL TEMPERATURE TEST																
SEE ATTACHED SHEET FOR THERMOCUPLE LOCATIONS																
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	
21ST AUGUST 1984																
0218	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
22-03-00	6.30	15.60	19.30	22.40	32.20	29.90	22.50	22.60	76.30	75.20	7.00	6.60	5.30	5.30	7.70	
22-05-00	6.60	15.60	5.80	9.90	19.40	5.60	21.60	47.30	83.80	79.60	5.50	5.40	5.20	5.20	8.40	
22-07-00	7.10	15.70	7.80	7.90	14.20	6.20	8.00	13.20	84.60	77.30	7.00	6.70	5.60	5.40	9.90	
22-09-00	6.20	15.30	6.90	8.20	15.90	5.70	6.70	12.10	79.50	74.40	6.20	6.10	4.60	4.50	9.30	
22-11-00	5.30	15.20	11.70	14.60	19.40	9.10	11.30	14.10	68.90	68.20	6.10	5.30	5.00	4.70	9.40	
22-21-00	5.40	15.30	8.30	14.70	23.60	6.70	10.30	13.20	81.10	79.20	5.30	5.30	4.60	4.70	8.80	
22-21-30	5.40	15.40	6.70	18.90	28.40	5.70	8.80	20.80	80.70	76.20	5.60	5.60	5.50	5.30	9.80	
22-21-40	5.60	15.30	7.30	16.50	28.70	5.90	8.20	18.60	80.20	76.30	6.40	6.00	5.10	5.10	9.80	
22-21-50	5.80	15.30	9.10	14.80	35.90	41.50	18.10	19.30	79.80	75.60	6.50	6.40	7.60	8.30	10.40	
22-22-00	5.90	15.30	8.30	18.40	48.40	45.50	25.20	21.40	76.60	75.50	6.90	6.90	9.20	9.90	10.80	
22-22-10	5.90	15.30	9.60	24.00	52.60	45.10	24.70	22.20	76.40	75.40	7.20	7.20	10.70	11.40	10.90	
22-22-20	5.90	15.40	13.30	32.90	57.30	39.90	26.30	24.60	79.20	75.60	7.50	7.90	11.60	11.50	11.00	
22-22-30	5.90	15.40	13.30	35.90	60.80	40.40	27.70	26.50	79.20	75.60	8.30	8.30	11.20	11.30	11.10	
22-22-40	6.10	15.40	14.50	33.70	62.10	38.30	28.10	26.90	79.20	75.60	8.30	8.30	11.20	11.30	11.10	
22-22-50	6.10	15.40	18.00	35.00	62.40	34.40	29.30	26.90	79.20	75.60	8.30	8.30	11.20	11.30	11.10	
22-23-00	6.10	15.40	18.30	35.90	63.60	30.20	31.20	26.00	79.10	75.70	8.10	8.90	11.70	11.60	11.10	
22-23-10	6.10	15.40	19.70	30.20	57.80	30.60	29.70	28.90	79.10	75.70	10.20	12.00	12.20	12.90	11.70	
22-23-20	6.20	15.40	19.70	22.20	41.00	34.00	31.60	30.00	79.10	75.70	13.60	15.20	15.10	14.00	12.00	
22-23-30	6.20	15.50	20.30	19.60	30.80	31.50	30.70	33.90	79.10	75.70	20.40	24.70	15.40	17.90	15.00	
22-23-40	6.30	15.50	19.60	21.20	29.30	36.60	30.50	34.70	79.20	74.60	28.80	21.10	23.40	14.90	15.30	
22-23-50	6.50	15.60	19.10	25.60	30.30	35.60	32.90	35.70	77.90	74.40	22.90	24.20	23.30	19.20	18.40	
22-24-00	6.60	15.60	21.90	29.40	31.00	38.10	33.40	37.20	77.90	74.20	26.30	21.80	23.90	16.70	17.90	
22-24-10	6.70	15.60	18.90	30.60	32.80	39.20	33.90	37.30	77.90	74.40	25.30	22.40	23.80	17.30	17.30	
22-24-20	6.70	15.70	17.20	29.60	32.60	35.10	34.40	37.10	77.70	74.20	21.30	22.40	20.80	22.40	17.20	
22-24-30	6.70	15.80	15.90	25.40	30.60	37.40	33.60	36.10	77.60	73.70	19.40	16.30	17.30	17.90	16.70	
22-24-40	6.70	15.70	15.70	22.90	29.20	33.80	32.10	33.90	77.30	73.40	17.10	15.60	17.10	16.10	16.50	
22-24-50	6.80	15.70	14.90	21.60	29.00	35.10	32.40	34.00	77.20	73.20	16.40	14.30	17.30	17.70	16.40	
22-25-00	6.70	15.60	14.60	19.40	26.10	35.70	29.10	34.20	76.90	72.90	14.60	13.80	15.60	15.20	15.90	
22-25-10	6.50	15.60	14.20	18.80	25.60	36.70	30.50	30.70	76.70	72.80	14.80	13.60	14.80	14.60	15.70	
22-25-20	6.40	15.60	14.80	17.80	24.30	36.40	31.30	30.30	76.50	72.60	14.90	12.90	15.70	14.40	15.50	
22-25-30	6.50	15.50	13.60	17.40	23.70	35.00	29.60	30.30	76.30	72.30	16.20	12.20	15.30	14.30	15.50	
22-25-40	6.40	15.40	13.40	16.40	21.50	34.80	29.80	29.00	76.10	72.20	15.40	12.50	14.90	15.80	15.60	
22-25-50	6.30	15.40	12.20	15.40	21.60	33.60	28.60	31.10	75.70	72.00	13.20	12.00	14.90	15.60	15.30	
22-26-00	6.40	15.40	15.90	14.40	18.10	29.30	34.40	34.20	75.10	71.60	18.40	15.40	20.40	20.50	15.30	
22-26-10	6.30	15.40	28.20	21.80	17.20	35.30	41.30	35.00	74.90	71.70	18.90	18.50	25.60	20.20	15.90	
22-26-20	6.30	15.60	16.90	31.20	29.70	41.30	43.50	37.20	75.10	72.30	22.30	24.40	15.90	19.80	16.30	
22-26-30	6.30	15.60	18.20	36.90	46.10	38.30	23.10	29.40	75.40	71.90	15.60	23.90	16.20	16.70	17.40	
22-26-40	6.30	15.60	24.80	40.10	50.80	36.20	34.40	29.90	75.70	72.60	9.40	17.80	18.00	19.70	16.60	
22-26-50	6.30	15.60	19.70	41.60	57.00	44.80	38.60	35.60	75.30	73.10	8.80	10.30	14.40	16.80	15.50	
22-27-00	6.20	15.50	18.00	38.20	60.10	40.90	37.10	35.30	76.70	73.30	8.30	8.60	13.90	14.40	14.80	
22-27-10	6.30	15.50	20.40	47.20	62.40	42.10	38.40	37.30	77.00	73.80	10.30	10.50	14.40	15.20	14.60	
22-27-20	6.20	15.60	17.20	46.40	63.90	50.30	33.50	33.50	77.30	74.80	12.40	12.40	14.90	14.80	14.50	
22-27-30	6.20	15.60	16.90	52.10	65.20	52.30	35.90	33.10	77.80	74.60	13.20	12.90	17.80	16.10	14.90	
22-27-40	6.30	15.60	23.30	58.40	66.60	42.70	33.70	32.80	78.40	75.50	17.80	17.70	17.40	15.90	16.20	
22-27-50	6.30	15.60	28.20	65.10	68.00	40.20	32.60	31.90	78.60	76.10	23.60	24.20	18.10	17.00	16.20	

Test 2

ZIG ZAG HD 10 TUNNEL TEMPERATURE TEST

0218	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
107	Locomotive test points															
22-28:20	6.30	15.60	30.10	64.40	68.80	38.60	32.30	31.80	79.20	76.60	26.80	25.60	19.70	17.30	20.60	
22-28:30	5.90	15.70	24.10	62.80	69.60	31.20	31.40	31.60	79.30	76.80	21.60	22.90	15.40	14.70	20.70	
22-28:40	5.60	15.80	7.60	24.20	48.90	9.60	22.20	40.20	79.40	75.40	7.20	7.90	8.80	7.90	16.80	
22-28:50	5.30	15.70	6.10	14.90	42.40	6.20	16.40	42.80	79.00	75.20	6.20	5.90	6.50	6.30	14.90	
22-29:00	5.20	15.80	5.60	12.10	41.60	8.60	25.50	50.70	79.00	75.10	5.40	5.30	7.40	7.50	13.70	
22-29:10	5.00	15.90	14.40	39.70	54.80	39.40	27.10	29.90	79.60	76.60	13.30	14.20	12.70	13.00	15.90	
22-29:20	5.60	16.00	28.40	43.80	55.30	31.50	25.40	29.50	79.80	77.30	24.60	22.90	17.90	17.10	16.70	
22-29:30	5.00	16.00	7.60	17.70	32.70	11.70	23.80	44.30	82.40	77.50	6.40	7.70	8.00	7.10	17.90	
22-29:40	5.60	16.00	28.60	59.10	62.80	45.30	32.80	30.20	82.90	80.00	30.20	26.70	27.30	23.30	20.90	
22-29:50	5.20	16.20	15.00	32.80	52.60	35.10	28.30	39.80	85.40	81.20	12.90	13.30	15.40	14.00	19.20	
22-30:00	5.30	16.20	10.20	21.40	45.00	12.10	13.00	26.20	86.40	81.10	9.80	11.10	8.60	8.40	18.50	
22-30:10	5.10	16.20	24.40	25.80	36.10	48.00	35.80	32.80	83.80	78.30	18.30	17.20	15.20	15.50	18.10	
22-30:20	5.10	16.20	22.60	24.50	29.70	49.30	38.10	32.20	82.80	77.00	16.40	16.10	16.70	15.80	17.00	
22-30:30	5.30	16.20	23.80	26.80	30.30	54.40	37.80	33.70	85.30	77.30	16.40	16.60	18.80	17.80	18.00	
22-30:40	5.80	16.30	35.30	38.80	33.90	55.90	43.10	42.30	84.00	78.80	29.10	28.00	25.10	26.70	22.50	
22-30:50	4.90	16.40	22.20	22.10	32.80	37.20	29.70	27.40	82.60	77.00	18.10	17.90	16.70	16.20	18.50	
22-31:00	4.60	16.60	6.50	7.00	16.70	10.60	10.20	21.20	81.10	74.40	6.60	7.30	7.80	7.80	16.80	
22-31:10	4.40	16.70	15.80	17.80	41.10	46.10	31.20	26.30	79.40	75.10	12.10	11.50	15.40	15.80	15.30	
22-31:20	4.80	16.70	5.70	7.80	41.30	5.30	6.90	18.00	81.60	77.20	6.10	5.70	5.90	5.30	14.20	
22-31:30	4.40	16.70	4.40	6.40	12.80	8.30	14.50	40.20	83.10	78.30	4.50	4.30	7.60	7.40	13.80	
22-31:40	4.80	16.70	25.30	57.70	60.90	45.70	32.80	32.10	84.60	81.40	19.40	15.70	16.30	16.40	17.10	
22-31:50	5.10	16.70	15.80	58.50	55.50	56.20	44.60	41.30	86.70	82.10	36.10	35.30	27.60	24.60	24.60	
22-32:00	5.20	16.70	42.20	57.80	42.00	63.10	43.70	49.50	86.20	81.40	38.50	37.70	26.30	26.20	25.00	
22-32:10	4.60	16.90	5.60	5.90	13.70	7.00	8.10	23.80	83.40	76.10	5.60	5.50	6.70	6.20	16.90	
22-32:20	4.60	16.70	7.20	7.60	25.10	7.00	7.80	21.10	80.90	74.90	7.20	6.90	5.40	5.60	14.70	
22-32:30	4.90	16.70	4.50	5.70	21.30	5.70	6.60	20.30	81.30	76.10	5.20	4.50	5.40	4.90	12.50	
22-32:40	4.60	16.80	7.20	11.80	37.60	4.20	7.40	22.90	85.80	81.30	6.40	6.10	4.10	4.00	12.60	
22-32:50	4.50	17.10	19.30	9.60	17.40	6.20	6.00	9.10	84.60	77.30	6.60	6.60	4.90	4.70	13.10	
22-33:00	4.50	17.30	7.10	9.50	37.10	4.00	4.90	10.90	83.40	78.60	6.60	6.70	4.20	3.90	12.00	
22-33:10	4.20	17.50	3.80	6.00	14.60	8.20	15.20	35.80	88.90	81.30	3.60	3.60	6.30	6.10	12.10	
22-33:20	4.20	17.30	4.70	4.70	6.70	9.50	9.00	28.10	83.60	75.70	4.90	4.50	5.90	5.60	12.10	
22-33:30	4.30	17.30	5.80	5.90	9.10	10.60	11.60	41.40	84.60	78.40	4.60	4.60	5.50	5.70	11.70	
22-33:40	4.10	17.30	8.00	7.40	19.70	4.10	4.20	15.40	88.50	79.40	6.30	6.30	4.30	4.80	11.30	
22-33:50	4.20	24.70	6.20	6.80	10.10	4.90	4.30	49.60	83.10	75.50	5.80	5.40	3.70	3.70	10.60	
22-34:00	3.90	26.60	7.40	10.60	16.70	16.70	17.00	20.20	81.90	73.40	4.70	4.40	6.60	6.30	11.80	

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