

15 April 1985

OPERATIONAL INSTRUCTIONS FOR LOCOMOTIVE TESTS  
IN WOY WOY TUNNEL

TEST RUN A

The following applies:

REMARKS

1. Laboratory crew to synchronise time with DMC.
2. Laboratory crew in tunnel to have anemometer set up prior to test run.
3. On departing Gosford train to be operated normally to Woy Woy, but with rear locomotive operating in notch 1 for commutation. DMC to commence recording at Gosford.
4. Dynamic brake to be applied on rear locomotive passing Woy Woy and front locomotives operated such that they will be in notch 8 on the approach grade to Woy Woy tunnel and through the tunnel.

Sound whistle approaching tunnel to warn tunnel crew.

Dynamic brake on rear locomotive to be adjusted so that train speed is a constant 36km/hr through the tunnel.

On-train Laboratory instrumentation to be switched on at start of approach grade to tunnel using DMC as time base.

Air quality readings to be taken at DMC and brakevan at one minute intervals from approach to tunnel to after departing tunnel.

Anemometer readings to be taken inside tunnel from prior to train entering tunnel to after train departs.

5. On leaving tunnel train to be operated normally to Hawkesbury River, the rear locomotive again operating in notch 1.
6. At Hawkesbury River instrumentation is to be disconnected between the lead locomotive and 8117 and the lead locomotive then run around the train.
7. Train to be hauled back to Gosford, 8117 at rear in notch 1, and the lead locomotive run around at Gosford and instrumentation recoupled for the next test run.

15 April 1985

OPERATIONAL INSTRUCTIONS FOR LOCOMOTIVE TESTS  
IN WOY WOY TUNNEL

TEST RUN B

The following applies:

REMARKS

Procedure as for Test Run A except Clause 4 to be:

4. Dynamic brake to be applied on rear locomotive passing Woy Woy and front locomotives operated such that they will be in notch 6 on the approach grade to Woy Woy tunnel and through the tunnel.

Sound whistle approaching tunnel to warn tunnel crew.

Dynamic brake on rear locomotive to be adjusted so that train speed is a constant 21km/hr through the tunnel.

On-train Laboratory instrumentation to be switched on at start of approach grade to tunnel using DMC as time base.

Air quality readings to be taken at DMC and brakevan at one minute intervals from approach to tunnel to after departing tunnel.

Anemometer readings to be taken inside tunnel from prior to train entering tunnel to after train departs.

15 April 1985

OPERATIONAL INSTRUCTIONS FOR LOCOMOTIVE TESTS  
IN WOY WOY TUNNEL

TEST RUN C

The following applies:

REMARKS

Procedure as for Test Run A except Clause 4 to be:

4. Dynamic brake to be applied on rear locomotive passing Woy Woy and front locomotives operated such that they will be in notch 8 on the approach grade to Woy Woy tunnel and through the tunnel.

Sound whistle approaching tunnel to warn tunnel crew.

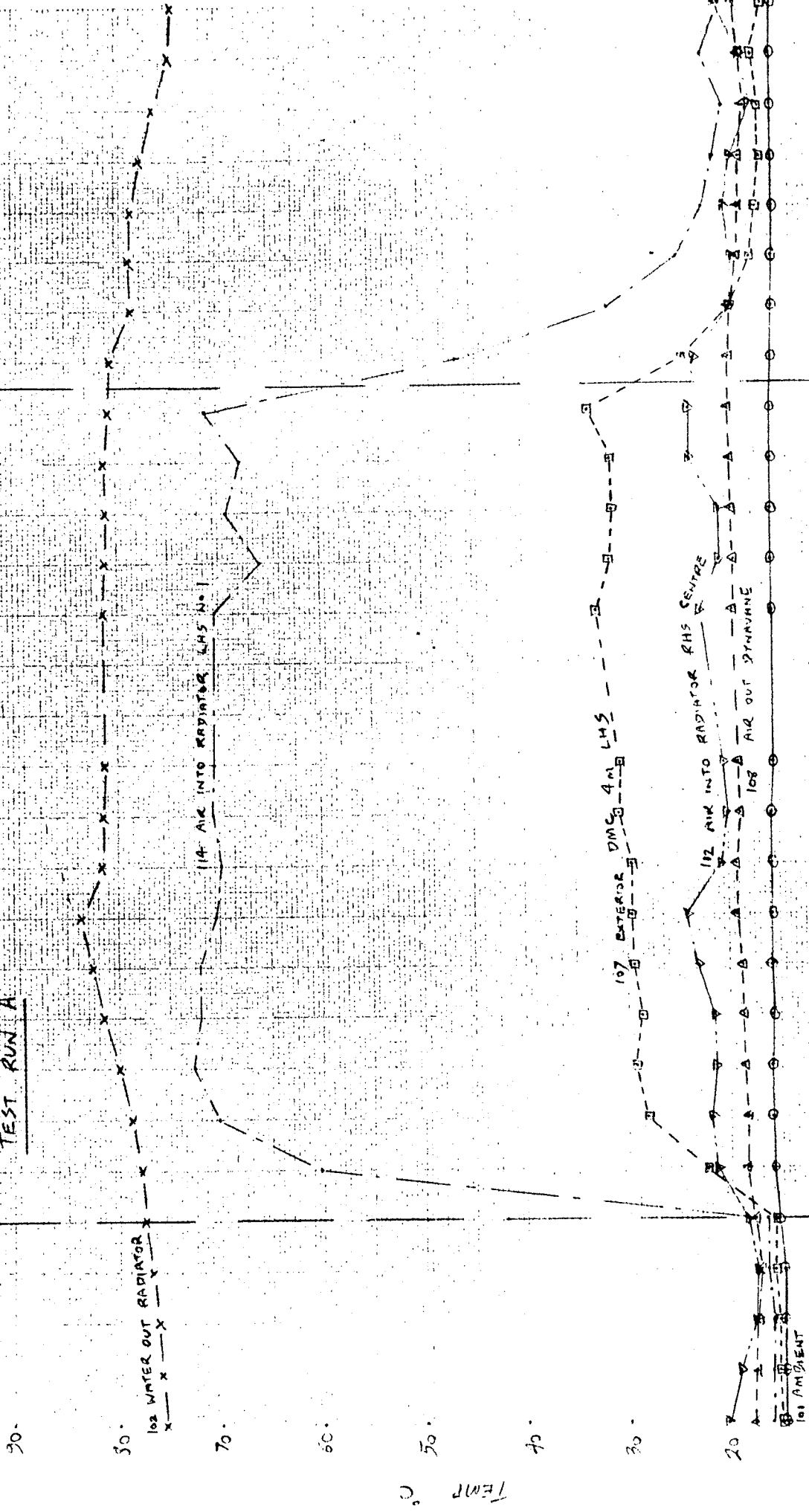
Dynamic brake on rear locomotive to be adjusted so that train speed is a constant 25 km/hr through the tunnel.

On-train Laboratory instrumentation to be switched on at start of approach grade to tunnel using DMC as time base.

Air quality readings to be taken at DMC and brakevan at one minute intervals from approach to tunnel to after departing tunnel.

Anemometer readings to be taken inside tunnel from prior to train entering tunnel to after train departs.

# TEST RUN A



39

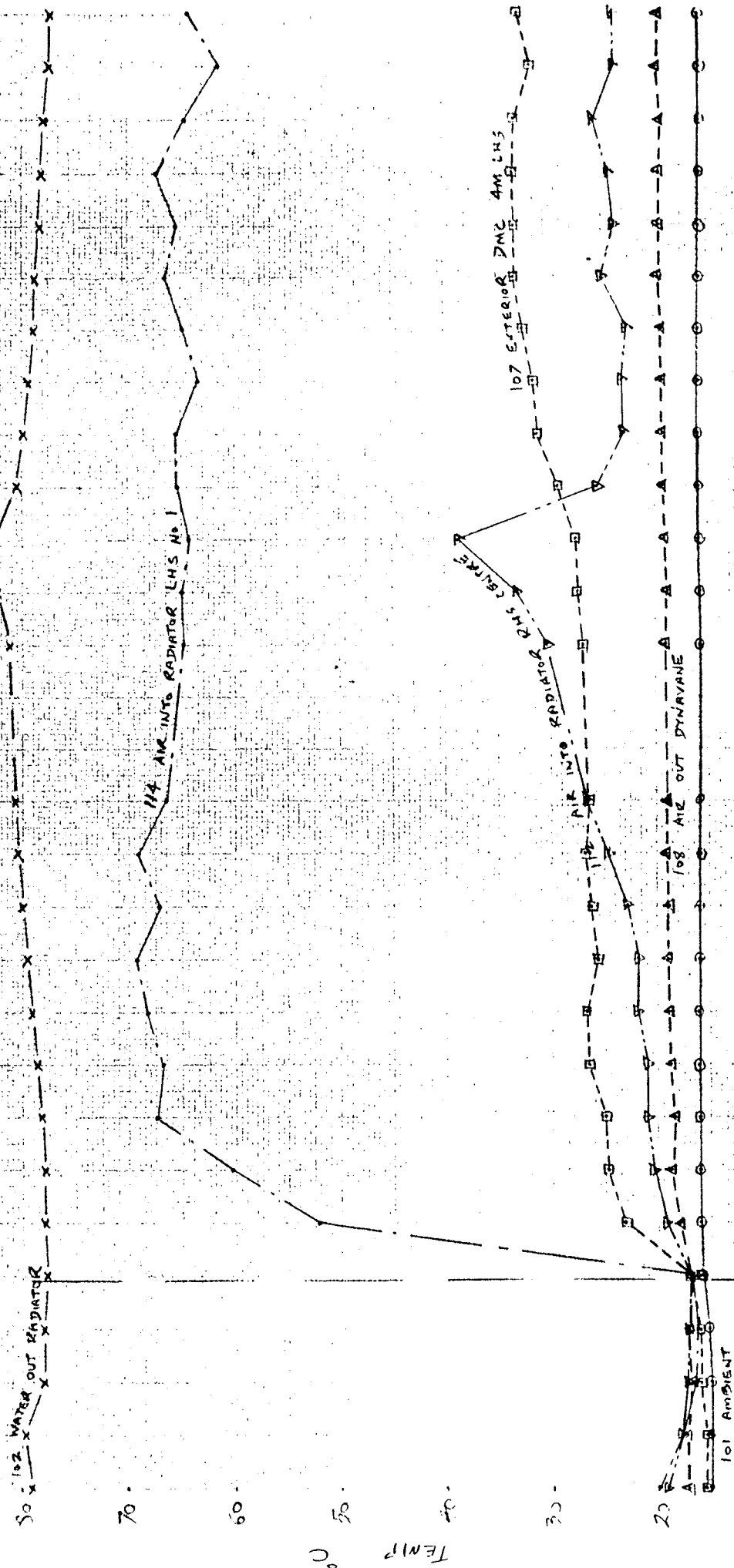
33 MIN.

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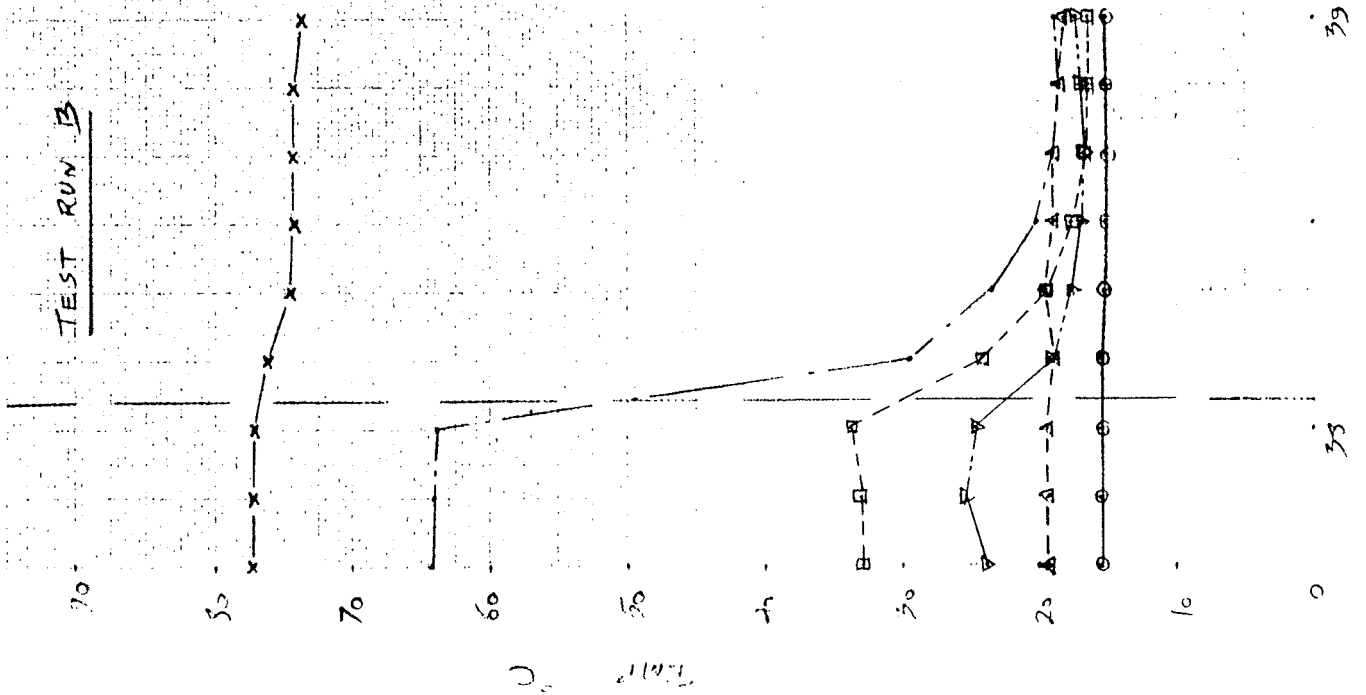
35

# TEST RUN B

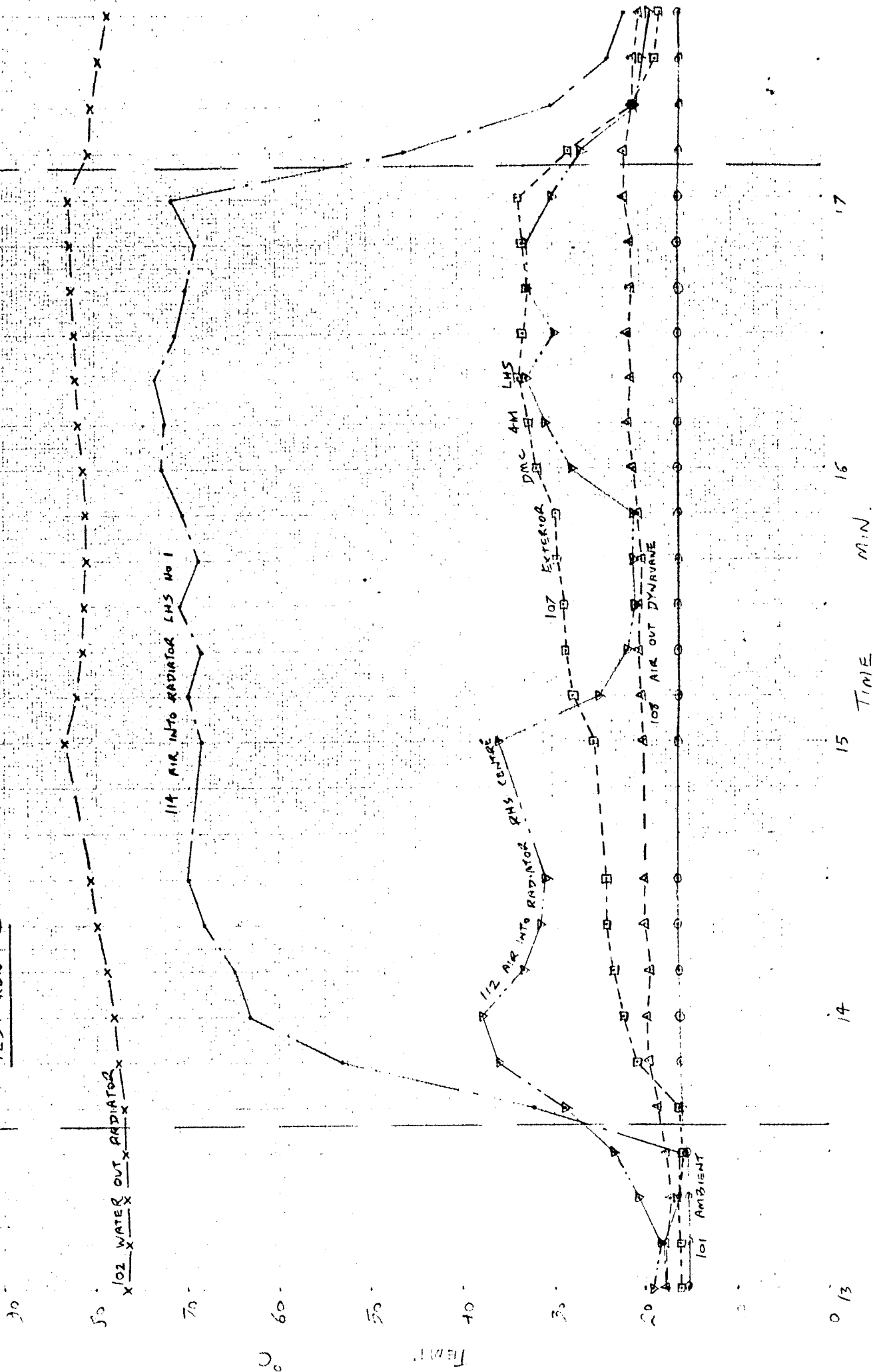


33 34 35 36 37

# TEST RUN B



# TEST RUN C



1 May

85

TH:RJ:63

CHIEF MECHANICAL ENGINEER  
Superintendent of  
Laboratories

Manager Design  
2nd Floor  
TRANSPORT HOUSE

9.1902

MALDON - PORT KEMBLA - AVON TUNNEL  
WOY WOY TUNNEL - TEMPERATURE TEST

Please find enclosed copy of Temperature test obtained on the 28 April 1985.

In all three tests were conducted, Time and thermocouple locations have been noted on Result sheets. Other information has been tabulated below.

Train consists -

Lead engine - 81 class	- No. 2 end leading
Trailing engine - 8117	- No. 1 end leading
Test Car - DMC 1902	- Coupled behind 8117
Train Load	- 21 Coal wagons
Brake Van	
Rear engine 81 class	

Test Run Type A

Speed approximately 36-40 km/hr  
Dynamic brake applied to rear locomotive  
Front locomotive in Notch 8.

Test Run B

Speed approximately 25 km/hr  
Dynamic brake applied to rear locomotive  
Front loco in Notch 6

Test Run C

Speed approximately 34-35 km/hr  
Dynamic brake applied to rear locomotive  
Front loco in Notch 8.

Temperature sensors : Thermocouple Type T premium grade  
Calibrated to I.P.T.S. 68.

- Recorders (1) Ray Digistrip 111 Data logger Serial No. 8318  
Recording locomotive and DMC test points.
- (2) Honeywell brown Data logger Serial No. A0476-1606.  
Recording guards van test points.
- (3) Hand held 9004KC Thermometer Lab No. 556.  
Recording Temperatures in Woy Woy Tunnel.



Thermocouples locations as per attached sheet.

R.J. MAHER

A/Superintendent of Laboratories

Per:

*J. J. Hill*

WOY WOY TUNNEL - TEMPERATURE TEST

SEQUENCE OF EVENTS.      TIME TAKEN FROM DMC TEST CAR

TEST RUN TYPE A

<u>TIME</u>	<u>EVENT</u>
00:32:52	71km post
00:33:58	70km post
00:35:24	69km post
00:35:40	Enter Woy Woy Tunnel
00:36:58	68km post
00:38:25	Exit Woy Woy Tunnel
00:40:02	66km post

TEST RUN TYPE B

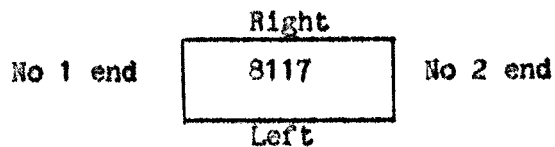
<u>TIME</u>	<u>EVENT</u>
02:29:45	71km post
02:31:01	70km post
02:33:10	69km post
02:33:39	Enter Woy Woy Tunnel
02:35:50	68km post
02:38:04	Exit Woy Woy Tunnel
02:39:56	66km post

TEST RUN TYPE C

<u>TIME</u>	<u>EVENT</u>
04:04:07	71km post
04:05:37	70km post
04:12:54	69km post
04:13:36	Enter Woy Woy Tunnel
04:15:30	68km post
04:17:07	Exit Woy Woy Tunnel
04:18:55	66km post

All times synchronise with DMC.

# WOY WOY TUNNEL - TEMPERATURE TEST



## Thermocouple Locations

<u>CHANNEL</u>	<u>LOCATION</u>
101	Ambient before leading Loco
102	Water out of Radiator on 8117 loco
103	Water into Radiator on 8117 loco
104	Exterior of DMC 2 m above rail level Right side
105	Exterior of DMC 4 m above rail level Right side
106	Exterior of DMC 2 m above rail level Left side
107	Exterior of DMC 4 m above rail level Left side
108	Air out of dynavane on 8117 loco
109	Air into dynavane Left side on 8117 loco
110	Air into dynavane Right side on 8117 loco
111	Air into radiator Right side No 1 end
112	Air into radiator Right side, centre
113	Air into radiator Right side No 2 end
114	Air into radiator Left side No 1 end
115	Air into radiator Left side, Centre
116	Air into radiator Left side No 2 end

MALDON-PT KENBLA RAILWAY TEST IN WDY WDY TUNNEL				TEST RUN TYPE A							28TH APRIL 1985					
0001	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
100	SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS															
00:29:30	15.20	76.50	77.70	16.20	16.30	15.40	15.40	17.90	15.50	16.60	23.00	22.90	24.40	23.80	21.10	24.50
00:29:40	15.20	76.90	77.70	16.40	16.30	15.30	15.30	17.70	15.60	16.50	22.90	22.50	24.70	23.70	21.50	25.50
00:29:50	15.20	76.90	77.60	16.40	16.30	15.40	15.40	17.70	15.50	16.60	23.10	22.80	24.30	25.20	22.50	25.20
00:30:00	15.20	76.90	77.70	16.40	16.10	15.40	15.40	17.70	15.60	16.30	23.10	22.50	24.50	24.30	22.60	24.80
00:30:10	15.20	76.90	77.70	16.30	16.20	15.40	15.40	17.70	15.50	16.30	23.10	22.40	24.40	23.90	20.80	23.80
00:30:20	15.20	77.00	77.70	16.20	16.00	15.40	15.50	17.80	15.60	16.40	23.50	22.30	24.50	23.20	21.10	23.20
00:30:30	15.20	77.00	77.70	16.10	16.20	15.40	15.40	17.80	15.50	16.50	23.70	22.50	24.30	23.00	19.90	22.60
00:30:40	15.20	77.00	77.70	16.10	16.20	15.40	15.40	17.70	15.50	16.20	23.90	22.40	24.40	22.80	20.20	22.40
00:30:50	15.20	77.20	77.90	16.30	16.30	15.40	15.40	17.60	15.50	16.20	23.90	22.10	24.00	24.20	21.70	22.40
00:31:00	15.20	77.50	78.50	16.40	16.40	15.40	15.40	17.60	15.60	16.30	25.20	22.50	24.40	23.80	21.40	22.10
00:31:10	15.20	77.60	79.30	16.70	16.60	15.50	15.40	17.30	15.60	16.20	19.60	21.20	29.90	18.80	18.70	20.90
00:31:20	15.20	76.00	79.70	16.40	16.00	15.50	15.50	17.30	15.60	15.70	17.60	22.00	38.60	17.20	17.80	23.60
00:31:30	15.20	75.70	79.40	16.20	15.90	15.70	15.60	17.40	15.60	15.70	17.30	20.80	39.20	16.70	17.50	24.10
00:31:40	15.20	75.50	79.10	16.20	16.00	15.70	15.60	17.60	15.70	16.20	18.30	20.70	41.50	16.60	17.80	27.40
00:31:50	15.20	75.40	79.20	16.30	15.90	15.70	15.60	17.90	15.60	17.60	19.70	20.90	39.30	16.40	17.10	23.30
00:32:00	15.20	75.50	79.40	16.30	16.30	15.70	15.60	18.00	15.70	17.20	19.80	21.00	38.80	16.40	17.00	22.00
00:32:10	15.20	75.70	79.60	16.40	16.10	15.70	15.60	18.00	15.60	16.50	19.70	20.40	34.50	16.40	16.90	22.40
00:32:20	15.20	75.90	79.90	16.30	16.10	15.70	15.60	17.80	15.70	16.40	18.80	20.40	31.60	16.50	17.00	23.00
00:32:30	15.20	76.30	80.30	16.20	16.20	15.70	15.60	18.10	15.60	16.30	18.90	19.80	30.70	16.30	16.70	21.50
00:32:40	15.20	76.60	80.70	16.30	16.20	15.70	15.50	18.10	15.60	17.70	20.40	20.20	30.90	16.30	17.00	22.20
00:32:50	15.20	76.90	81.10	16.30	15.90	15.60	15.50	17.70	15.60	17.10	19.60	19.50	26.90	16.20	17.00	23.00
00:33:00	15.20	77.20	81.40	17.40	17.30	15.70	15.60	18.70	15.70	17.90	21.70	21.20	26.70	16.60	16.90	20.20

MALDON-FT KEMBLA RAILWAY TEST IN WDV WDV TUNNEL										TEST RUN TYPE A					28TH APRIL 1985			
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	A-10%		
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS																		
00:33:10	15.20	76.00	81.70	17.50	18.10	15.80	15.70	18.70	16.10	17.70	23.30	26.60	17.90	17.90	20.10			
00:33:40	15.20	76.20	81.00	17.50	17.90	15.50	15.50	19.10	16.00	17.70	24.40	26.60	17.40	17.40	18.50			
00:33:50	15.20	75.80	80.60	17.40	18.00	15.70	15.90	18.80	16.20	17.40	23.70	25.90	18.20	18.00	19.60			
00:34:00	15.10	74.70	80.20	16.30	16.70	16.10	16.60	18.00	16.50	16.30	22.10	23.90	20.50	21.40	22.80			
00:34:10	15.10	74.30	79.80	16.60	16.90	16.30	17.30	18.10	17.00	16.60	21.70	23.60	22.60	23.50	25.30			
00:34:20	15.00	74.40	78.80	16.30	16.00	16.40	16.90	17.90	16.80	16.70	20.20	21.30	22.00	21.40	24.00			
00:34:30	15.00	74.30	78.10	16.60	17.20	15.70	15.70	19.30	16.20	19.00	21.30	23.80	18.00	18.60	25.50			
00:34:40	15.00	74.10	78.20	16.10	15.90	15.60	15.50	18.10	15.60	15.70	17.10	19.50	16.90	17.60	27.70			
00:34:50	15.00	74.70	78.80	16.00	15.90	15.50	15.40	18.70	15.50	18.10	20.00	21.70	16.30	16.70	24.50			
00:35:00	15.00	75.50	79.40	16.40	16.40	15.50	15.40	17.90	15.50	16.10	17.60	20.30	16.20	16.50	22.80			
00:35:10	15.00	75.90	79.90	16.10	15.90	15.50	15.50	17.60	15.50	15.60	16.50	19.20	16.20	18.40	33.00 2313			
00:35:20	15.00	76.30	80.80	15.80	15.50	15.60	15.50	17.50	15.40	15.30	15.80	17.80	16.20	20.90	47.00 2415			
00:35:30	15.00	76.80	81.30	15.70	15.50	15.90	15.90	17.20	15.60	15.40	16.60	17.60	16.70	19.50	50.40 2416			
00:35:40	15.50	77.60	81.80	16.00	15.80	16.00	15.90	17.70	15.70	16.20	17.80	18.50	16.50	18.00	40.20 2313			
00:35:50	15.90	77.90	82.50	17.30	16.80	18.90	22.30	18.30	17.50	16.60	24.60	21.30	24.30	46.00	43.80 2313			
00:36:00	16.00	78.90	83.60	18.10	17.70	21.60	28.10	18.30	18.20	17.00	25.70	21.90	23.40	50.30	48.80 2416			
00:36:10	16.00	80.10	84.70	18.00	18.00	22.30	29.30	18.60	19.40	16.80	24.10	21.50	24.50	49.20	50.00 2416			
00:36:20	15.90	81.60	86.00	18.40	18.90	25.00	28.70	18.70	20.00	16.90	24.40	21.60	28.30	50.70	49.00 2416			
00:36:30	15.90	82.60	87.00	18.40	19.00	25.90	29.50	18.80	21.10	17.20	23.80	23.10	35.50	51.70	48.10 2413			
00:36:40	15.80	83.60	87.90	19.10	19.30	26.60	29.70	19.30	21.20	17.30	22.20	24.10	42.40	50.50	47.40 2413			
00:36:50	15.80	81.70	88.70	19.70	20.10	27.00	29.70	19.20	21.40	17.30	22.60	20.70	31.40	53.00	46.30 2416			
00:37:00	15.80	81.50	88.40	20.50	21.40	28.00	30.90	18.90	21.60	17.50	23.30	20.10	26.80	50.90	44.30 2415			

MALDON-PT KENBLA RAILWAY TEST IN WDV WDV TUNNEL										TEST RUN TYPE A					28TH APRIL 1985										
0001 100										01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS																									
00:37:10	15.70	81.40	88.20	20.50	21.50	28.10	30.70	19.20	21.20	17.60	23.80	20.30	27.80	70.60	48.50	42.90	40.12								
00:37:40	15.60	81.40	88.00	24.90	25.20	28.00	32.70	19.50	22.90	18.00	23.30	22.50	31.30	70.40	49.70	44.80	40.12								
00:37:50	15.60	81.30	88.10	24.80	25.90	28.40	31.40	19.20	21.70	17.80	22.20	20.70	29.10	65.90	47.10	41.20	37.7								
00:38:00	15.60	81.10	88.00	25.00	25.30	27.80	31.10	19.40	21.40	17.80	21.90	20.60	28.70	69.10	47.30	41.10	38.7								
00:38:10	15.50	81.30	88.10	26.40	26.50	28.80	31.20	19.50	23.70	18.30	23.30	23.50	36.10	67.70	50.80	41.80	40.5								
00:38:20	15.50	80.80	88.30	26.90	27.60	29.50	33.30	19.60	24.80	17.80	27.70	23.50	32.70	71.20	54.60	45.70	42.7								
00:38:30	15.40	80.60	88.40	21.60	21.50	23.60	24.00	19.40	22.10	17.50	25.60	22.90	28.90	46.40	30.70	38.30	30.1								
00:38:40	15.20	78.50	88.50	18.60	18.40	19.00	19.20	19.30	18.90	16.60	20.10	19.40	24.50	31.30	23.30	30.60	24.8								
00:38:50	15.10	78.70	87.90	16.80	16.70	17.50	17.40	18.60	17.40	16.60	20.00	19.20	21.80	24.50	21.40	24.70	21.4								
00:39:00	15.00	78.50	86.80	16.50	16.40	16.60	16.80	18.40	16.40	17.00	20.30	19.80	20.80	21.90	20.20	22.60	20.7								
00:39:10	15.10	77.50	85.70	16.40	16.30	16.30	16.30	18.30	16.20	16.20	19.90	19.10	20.30	20.80	19.50	21.60									
00:39:20	15.10	76.20	83.20	15.80	15.80	16.50	16.30	17.90	16.20	15.50	17.60	17.30	18.60	19.80	19.40	22.00									
00:39:30	15.10	74.60	81.80	15.90	15.70	16.50	16.90	18.10	16.10	15.80	18.60	18.10	18.30	21.80	20.80	23.10									
00:39:40	14.90	74.40	80.60	16.50	17.60	16.00	15.90	18.60	15.70	18.90	21.80	20.50	22.10	19.90	18.60	21.30									
00:39:50	15.00	74.30	79.50	16.70	16.60	15.70	16.20	18.60	15.90	17.90	21.60	21.40	22.70	22.50	21.90	21.60									
00:40:00	14.90	73.40	78.80	16.40	16.70	15.80	16.50	18.70	16.80	17.10	19.80	20.20	21.40	23.50	23.30	26.10									
00:40:10	14.90	73.30	78.20	16.10	16.20	16.30	16.90	18.80	16.80	18.50	20.60	20.60	22.60	23.90	23.00	26.60									
00:40:20	15.00	72.90	77.70	16.20	17.10	16.00	16.70	18.60	16.30	16.70	19.60	20.10	22.80	20.60	19.90	25.00									
00:40:30	15.00	72.30	77.30	15.70	15.70	15.80	16.00	18.30	16.40	16.60	17.80	18.60	20.90	21.80	21.50	26.40									
00:40:40	15.00	71.80	77.00	15.70	15.70	16.30	17.30	18.50	17.30	17.10	20.80	18.00	19.60	24.30	23.60	32.40									
00:40:50	15.00	71.90	76.60	15.60	15.90	16.50	16.80	18.80	16.90	16.10	17.90	18.80	20.00	23.70	22.80	33.30									
00:41:00	14.90	71.30	76.40	16.40	16.20	16.50	16.90	18.10	16.40	16.70	20.80	19.90	23.20	21.80	20.90	27.10									

## MALDON-PT KEMBLA RAILWAY TEST IN WDY WDY TUNNEL

## TEST RUN TYPE A

28TH APRIL 1985

1  
0001  
100

16

SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS

00:41:10	15.00	70.90	76.40	16.10	16.50	15.90	17.10	18.50	16.00	16.80	21.60	20.90	22.60	22.00	21.80	24.00
00:41:40	14.90	70.80	75.80	15.90	15.90	16.10	16.30	18.30	16.40	16.10	19.10	20.10	21.60	21.50	20.20	22.00
00:41:50	14.90	70.90	75.60	16.00	16.20	15.70	15.90	18.20	15.90	16.10	18.50	18.90	20.80	19.80	19.10	19.80
00:42:00	15.00	70.60	75.70	15.70	15.60	16.10	17.10	18.00	16.20	15.80	18.50	18.30	20.00	19.70	20.30	22.20
00:42:10	15.10	70.80	75.80	16.80	17.00	15.80	15.70	19.10	15.70	18.80	21.60	20.20	22.00	17.60	17.70	20.00
00:42:20	15.00	71.20	76.00	17.40	18.40	15.40	15.40	19.20	15.40	18.60	23.30	22.40	24.40	17.50	17.50	18.80
00:42:30	15.00	70.40	76.10	16.60	16.70	15.80	16.40	18.80	15.80	17.10	21.80	22.00	23.30	19.80	20.10	20.60
00:42:40	14.90	70.30	75.70	16.10	16.90	16.10	16.70	18.50	15.70	17.00	21.80	22.20	22.90	19.70	19.20	20.00
00:42:50	14.90	70.10	75.10	15.80	16.20	16.10	16.30	18.20	16.00	16.10	20.00	20.00	21.00	20.10	19.70	20.50
00:43:00	14.80	69.70	74.90	15.50	15.50	16.30	16.90	18.10	17.30	15.50	17.10	18.10	19.40	24.10	22.70	24.80
00:43:10	14.80	69.20	74.90	15.40	15.30	16.50	17.10	18.40	17.50	15.20	16.20	17.00	18.70	25.80	24.10	30.10
00:43:20	14.90	69.60	75.00	15.60	15.30	16.40	17.40	17.70	17.90	15.40	16.10	16.60	18.40	28.00	24.50	30.90
00:43:30	14.90	70.20	75.10	16.40	16.80	15.70	15.90	18.10	15.90	17.10	19.20	18.50	20.00	19.10	18.50	22.40
00:43:40	14.90	70.00	75.30	16.00	15.90	15.70	16.30	18.30	15.90	16.30	18.90	18.30	19.80	19.10	18.40	20.90
00:43:50	14.90	70.00	75.20	16.20	16.60	15.60	15.70	18.10	15.70	16.80	20.00	19.20	20.40	18.20	17.90	19.90
00:44:00	15.00	70.10	75.00	16.10	17.20	15.60	15.50	18.10	15.60	16.90	20.70	19.80	21.80	17.80	17.40	18.40
00:44:10	14.90	69.40	75.10	15.90	16.60	15.90	16.20	18.00	15.90	16.40	21.10	20.50	21.80	19.60	19.70	19.60
00:44:20	14.90	69.50	75.00	16.10	16.90	16.00	16.10	17.90	15.90	16.40	21.00	20.80	22.20	19.10	18.90	19.50
00:44:30	15.00	69.30	74.80	16.00	16.80	15.90	16.00	17.90	16.10	16.40	20.50	20.10	21.10	20.00	19.60	20.40
00:44:40	14.90	69.50	74.80	16.80	18.20	15.50	15.50	18.90	15.70	18.10	23.70	23.50	25.10	18.00	17.70	18.20

1 MALDON-PT KEMBLA RAILWAY TEST IN WDV WDV TUNNEL  
0001 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16  
100 SEE ATTACHED SHEETS FOR THERMOCUPLE LOCATIONS

28TH APRIL 1985

TEST RUN TYPE B

02:27:30	15.40	72.90	78.10	16.20	16.80	16.10	16.20	17.80	16.20	17.30	19.30	19.80	19.90	18.50	19.00	19.10
02:27:40	15.40	72.30	77.50	16.00	16.60	16.60	16.50	17.80	16.40	16.70	18.60	19.10	19.00	19.00	19.60	20.20
02:27:50	15.50	72.10	77.10	16.10	16.60	16.20	16.10	17.70	16.30	16.70	19.50	19.90	20.10	18.50	18.90	19.20
02:28:00	15.40	71.80	76.70	16.30	16.90	16.00	16.00	18.00	16.30	16.90	19.80	20.30	20.10	18.30	19.00	19.20
02:28:10	15.40	71.20	76.30	15.90	15.90	16.30	16.60	17.60	16.60	16.00	17.80	18.50	18.80	20.50	21.00	22.10
02:28:20	15.40	70.30	75.90	15.70	15.60	16.50	17.10	17.40	16.60	15.70	17.60	17.80	17.80	20.90	22.60	24.10
02:28:30	15.40	70.10	75.60	15.80	15.80	16.40	17.30	17.50	16.40	15.90	18.30	18.10	18.10	20.50	20.80	22.70
02:28:40	15.40	69.70	75.20	15.80	15.70	16.30	17.30	17.40	16.80	15.80	17.70	17.90	17.90	21.00	20.90	22.50
02:28:50	15.40	69.30	74.90	16.30	17.20	16.20	16.70	17.50	16.60	16.70	18.60	18.20	18.20	20.70	20.80	22.90
02:29:00	15.40	69.70	74.50	15.80	15.90	16.10	16.30	17.60	16.60	16.00	17.60	18.30	18.50	19.40	19.50	23.20
02:29:10	15.30	68.70	74.20	15.70	15.60	16.80	17.30	17.60	17.40	15.60	16.70	17.20	17.60	22.20	22.80	25.10
02:29:20	15.30	68.40	73.90	15.60	15.50	16.30	16.90	17.60	17.20	15.50	16.30	16.80	17.20	22.40	22.10	24.60
02:29:30	15.30	68.20	73.70	15.60	15.50	16.30	16.70	17.20	16.70	15.60	16.40	16.80	17.20	21.10	20.40	24.80
02:29:40	15.30	68.40	73.10	15.70	15.50	16.20	16.50	17.30	16.80	15.70	16.20	16.60	17.30	21.20	21.80	30.20
02:29:50	15.30	68.40	72.90	16.00	15.60	15.90	16.30	17.70	16.20	16.00	17.30	17.20	17.80	19.60	19.10	26.50
02:30:00	15.30	68.20	72.90	15.70	15.50	16.00	16.70	17.50	16.30	15.50	16.20	16.80	17.70	19.70	19.00	26.60
02:30:10	15.30	67.90	72.90	15.70	15.50	16.50	17.00	17.40	16.80	15.50	16.10	16.40	17.50	20.00	21.00	33.70
02:30:20	15.30	68.10	72.80	15.70	15.60	15.90	16.10	17.40	16.40	15.60	16.70	16.60	17.60	19.40	19.00	25.60
02:30:30	15.30	68.50	72.80	16.20	16.30	16.00	16.00	17.60	16.20	16.60	18.10	17.60	18.30	19.40	18.40	23.30
02:30:40	15.40	67.60	72.70	15.90	15.80	16.50	17.50	17.70	16.80	16.00	16.80	17.10	17.70	20.90	20.70	27.30
02:30:50	15.40	68.30	72.50	16.50	16.90	16.20	16.20	17.60	16.30	17.20	19.00	17.90	18.20	18.60	18.40	23.30
02:31:00	15.30	67.90	72.40	16.10	16.70	16.30	16.70	17.90	16.10	18.00	19.40	18.90	18.90	19.40	19.90	22.00



0001 100	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS																
02:31:10	15.30	67.20	72.50	16.40	17.60	15.80	15.90	18.00	16.00	17.20	20.10	20.30	20.30	19.00	18.70	19.60
02:31:40	15.20	69.90	72.00	15.60	15.50	16.60	17.60	17.60	16.70	16.60	17.30	17.80	17.70	21.80	21.90	24.00
02:31:50	15.10	70.90	72.50	16.20	16.40	15.80	15.80	17.70	15.70	16.40	18.10	18.70	19.00	19.60	18.90	20.70
02:32:00	15.10	71.90	73.70	16.10	16.00	15.60	15.50	17.70	15.50	16.10	18.00	18.70	19.30	19.20	18.60	19.60
02:32:10	15.10	73.20	74.90	16.20	15.90	15.60	15.60	17.30	15.50	15.70	17.70	18.90	19.50	19.30	18.60	19.60
02:32:20	15.10	74.40	76.00	16.00	15.90	15.70	15.70	17.60	15.40	15.90	17.80	18.70	19.50	19.30	18.80	20.20
02:32:30	15.10	75.60	77.10	16.20	15.90	15.70	15.70	17.10	15.40	15.60	18.00	18.90	19.60	19.40	18.80	19.90
02:32:40	15.10	76.90	78.20	16.10	15.90	15.80	15.80	17.30	15.30	15.60	17.90	18.80	19.40	19.80	19.20	20.30
02:32:50	15.10	78.10	79.50	15.90	15.70	15.80	15.70	17.30	15.20	15.30	17.90	18.60	19.40	19.70	19.40	20.40
02:33:00	15.10	79.10	80.60	15.80	15.60	15.90	15.60	17.10	15.30	15.30	18.30	19.20	19.40	19.80	19.20	20.20
02:33:10	15.10	79.70	81.60	15.80	15.70	15.80	15.60	17.30	15.60	15.40	16.60	17.90	19.40	17.90	18.90	20.80
02:33:20	15.10	78.00	82.20	15.70	15.50	16.20	16.10	16.90	15.60	15.40	15.80	17.20	22.80	16.60	18.70	37.40
02:33:30	15.20	78.00	81.80	15.70	15.50	16.30	16.20	17.10	15.70	15.60	15.60	17.00	26.90	16.40	26.00	46.50
02:33:40	15.80	77.70	81.80	15.70	15.40	16.30	16.10	17.00	16.10	15.90	15.80	17.00	28.40	16.90	30.80	53.20
02:33:50	16.00	77.90	81.70	17.20	17.40	21.00	23.10	18.00	18.60	16.50	21.30	19.20	26.50	52.10	43.20	46.50
02:34:00	16.10	77.90	81.90	17.90	18.30	23.00	24.80	18.80	20.40	17.00	21.70	20.40	30.10	60.40	45.70	44.10
02:34:10	16.10	78.20	82.30	18.30	18.30	23.40	25.00	18.50	20.40	16.90	21.30	21.00	30.30	67.40	46.00	45.70
02:34:20	16.10	78.70	82.60	18.40	18.50	24.10	26.60	18.90	20.90	16.90	22.80	21.00	28.90	66.90	45.80	44.30
02:34:30	16.10	79.10	83.10	18.40	18.60	24.20	26.70	19.00	20.70	17.00	22.60	21.80	32.50	68.40	47.00	44.10
02:34:40	16.00	79.50	83.50	18.30	19.50	23.90	25.60	19.10	20.90	17.00	21.30	21.80	34.90	69.40	46.90	44.70
02:34:50	16.00	80.00	83.90	18.70	19.30	26.00	26.30	18.90	20.80	17.50	20.90	22.90	37.70	67.20	47.60	43.80
02:35:00	15.90	80.40	84.30	19.40	19.50	26.10	26.80	19.20	21.30	17.60	21.20	24.70	42.30	69.20	47.60	43.70

HELDON-KEMBLA RAILWAY TUNNEL										TEST RUN TYPE B					28TH APRIL 1985										
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS										01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
0001 100	02:35:10	15.90	80.80	84.60	20.00	19.80	26.80	26.80	26.40	19.00	21.70	17.70	20.00	26.70	45.20	66.50	45.30	42.70	41						
	02:35:40	15.80	81.80	85.70	22.10	21.40	25.50	26.90	26.90	19.10	20.70	17.80	20.50	30.40	50.70	64.90	45.40	41.50	42						
	02:35:50	15.80	82.30	86.10	22.20	23.00	25.90	27.40	27.40	18.90	20.90	18.00	20.30	33.20	53.70	65.00	45.10	41.50	43						
	02:36:00	15.80	82.60	86.40	22.70	23.20	25.60	27.50	27.50	19.10	21.10	18.00	21.00	38.70	56.10	64.30	45.30	40.60	44						
	02:36:10	15.80	80.50	86.60	23.80	23.50	25.10	29.10	29.10	19.20	22.10	17.90	20.80	25.50	39.20	65.30	47.70	41.70	45						
	02:36:20	15.80	79.90	86.30	24.60	24.50	29.20	31.10	31.10	19.20	21.40	18.20	22.10	22.80	33.90	65.40	49.30	42.00	46						
	02:36:30	15.80	79.40	85.70	25.60	25.20	29.30	31.50	31.50	19.30	22.60	18.40	22.30	23.00	30.90	63.30	48.20	42.40	47						
	02:36:40	15.80	78.80	85.30	25.80	26.00	30.00	32.50	32.50	19.30	22.90	18.20	23.10	22.60	31.10	64.80	48.90	42.50	48						
	02:36:50	15.70	78.80	84.80	27.80	27.30	32.00	33.40	33.40	19.70	23.30	18.50	24.20	25.00	31.60	66.50	50.00	43.70	49						
	02:37:00	15.70	78.40	84.70	28.40	27.10	31.20	33.30	33.30	19.60	23.20	18.10	23.40	23.80	33.00	65.30	47.90	43.40	50						
	02:37:10	15.70	78.20	84.40	27.90	27.10	31.00	33.40	33.40	19.50	21.40	18.00	23.60	24.40	31.50	67.20	46.00	41.00	51						
	02:37:20	15.70	78.00	84.20	29.10	27.00	30.70	33.10	33.10	19.40	21.00	18.10	24.00	25.80	32.30	64.60	43.30	40.20	52						
	02:37:30	15.60	77.50	83.90	29.30	27.20	30.60	31.70	31.70	19.70	20.80	18.00	22.20	23.90	31.10	61.50	43.30	39.70	53						
	02:37:40	15.60	77.40	83.70	28.60	28.00	31.30	32.80	32.80	19.30	21.00	18.00	22.60	23.90	31.80	64.20	48.20	41.40	54						
	02:37:50	15.60	77.30	83.50	32.50	28.00	30.60	32.90	32.90	19.40	21.50	18.00	23.90	25.40	32.40	64.00	48.00	41.70	55						
	02:38:00	15.50	77.20	83.40	30.50	28.10	29.90	33.70	33.70	19.40	22.30	17.90	23.00	24.60	32.80	63.80	48.00	42.20	56						
	02:38:10	15.50	76.20	83.40	23.30	22.30	24.70	24.70	24.20	18.90	18.30	16.50	18.60	19.20	26.90	29.40	22.90	33.20	57						
	02:38:20	15.30	74.70	83.40	18.90	18.60	21.00	19.70	19.70	19.50	17.20	16.00	17.40	17.70	23.40	23.20	19.30	26.70	58						
	02:38:30	15.20	74.40	82.90	17.70	16.90	18.50	17.60	17.60	18.90	16.40	15.70	16.70	16.90	20.60	20.10	17.90	24.40	59						
	02:38:40	15.10	74.50	81.90	16.60	16.30	17.20	16.50	16.50	18.90	15.90	15.40	16.90	16.70	20.00	18.90	17.80	22.70	60						
	02:38:50	15.10	74.40	80.80	16.10	15.80	16.60	16.40	16.40	18.40	15.70	15.30	17.10	17.00	19.50	18.60	17.90	20.80	61						
	02:39:00	15.10	73.70	80.10	16.00	15.80	16.50	16.40	16.40	18.10	15.70	15.30	17.20	17.30	19.50	18.80	18.60	19.90	62						

## MALDON-PT KEMBLA RAILWAY TEST IN WDV WDV TUNNEL

1  
0001  
100TEST RUN TYPE B  
08 09 10  
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS28TH APRIL 1985  
13 14 15 16

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
02:39:10	15.10	73.20	79.60	16.20	15.90	16.70	17.80	18.20	16.10	15.80	18.50	17.90	19.40	20.30	20.90
02:39:40	15.10	73.60	77.40	18.20	18.60	15.90	19.00	15.60	19.20	24.60	23.40	26.70	19.70	20.30	22.00
02:39:50	15.10	72.80	76.90	17.70	18.80	16.50	17.60	19.20	16.00	19.60	23.20	23.20	25.40	23.70	25.30
02:40:00	15.00	71.60	76.50	16.40	16.10	16.50	17.20	18.20	16.60	16.30	17.30	19.10	21.50	24.80	38.00
02:40:10	15.00	71.30	76.20	16.40	15.90	16.60	17.70	18.10	16.80	15.70	16.20	17.70	19.70	24.60	41.10
02:40:20	15.10	71.30	75.80	16.50	16.10	16.60	17.30	18.10	16.80	16.20	17.60	18.30	19.90	23.80	37.20
02:40:30	15.00	70.70	75.40	16.10	15.80	16.60	17.30	17.80	17.00	15.50	16.30	17.40	19.40	22.40	42.00
02:40:40	15.10	70.60	75.10	16.10	15.70	16.90	18.00	18.00	17.10	15.80	17.20	17.80	20.00	22.20	37.60
02:40:50	15.20	70.20	74.70	16.10	15.70	16.70	17.30	17.70	16.60	15.60	16.50	17.60	19.50	21.00	40.20
02:41:00	15.10	69.90	74.50	16.80	16.40	16.10	17.40	17.50	16.50	16.50	18.50	18.50	21.70	21.50	32.40
02:41:10	15.10	69.60	74.50	16.90	17.40	15.90	16.30	17.80	16.30	16.40	21.10	19.90	23.30	21.50	26.20
02:41:20	15.20	69.60	74.30	16.60	16.70	16.20	16.50	18.20	16.50	17.10	20.30	20.00	22.40	20.20	23.60
02:41:30	15.10	69.30	73.80	16.70	16.40	16.90	17.90	18.60	17.30	16.10	18.00	19.00	20.60	22.30	25.80
02:41:40	15.20	68.90	73.80	16.50	16.20	16.70	17.10	18.30	16.70	16.20	17.90	18.40	20.10	19.30	24.50
02:41:50	15.20	69.30	73.90	16.50	16.10	16.40	17.20	18.40	16.60	16.00	17.40	18.10	20.40	19.50	27.00
02:42:00	15.20	69.00	73.90	16.30	15.80	17.10	17.70	18.10	17.00	15.70	16.60	17.50	19.60	19.80	34.20
02:42:10	15.30	69.60	74.10	17.10	17.10	16.40	16.30	18.80	16.30	18.30	20.00	18.90	20.80	18.10	27.80
02:42:20	15.20	70.10	74.30	18.60	18.60	15.80	15.70	18.90	15.80	17.70	21.10	21.20	23.30	17.20	22.40
02:42:30	15.20	69.50	74.40	16.60	16.40	16.10	16.30	18.10	16.50	16.70	19.00	18.90	20.80	19.80	23.50
02:42:40	15.20	69.70	74.60	17.00	17.10	16.20	16.20	18.40	16.40	16.90	20.00	19.60	21.20	18.70	21.50
02:42:50	15.10	69.40	74.50	16.20	16.00	16.80	17.60	18.60	17.20	15.80	17.40	18.30	19.60	21.80	28.00
02:43:00	15.10	68.70	74.60	15.90	15.60	17.50	17.70	18.40	18.60	15.60	16.60	17.40	18.80	26.50	30.40

MALDON-PT KENBLA RAILWAY TEST IN WDV WDV TUNNEL																TEST RUN TYPE C					28TH APRIL 1983		
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS																08	09	10	11	12	13	14	15
0001	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15								
100																							
04:02:49	15.50	73.80	78.90	17.60	17.60	16.00	15.90	19.00	16.30	18.30	24.00	25.50	26.10	19.10	19.20								
04:03:00	15.50	73.50	78.40	16.80	17.10	16.10	16.30	18.60	16.50	17.50	22.50	24.40	24.40	19.80	19.80								
04:03:10	15.50	73.20	77.80	17.50	17.70	16.00	15.90	19.10	16.30	17.90	23.60	25.70	26.20	18.70	18.70								
04:03:20	15.50	72.90	77.30	17.50	18.30	15.90	15.80	19.00	16.20	18.40	23.50	25.40	26.40	18.80	18.90								
04:03:30	15.50	72.40	76.90	17.40	17.40	15.90	15.90	19.10	16.30	17.90	24.00	25.80	26.20	18.60	18.60								
04:03:40	15.50	72.10	76.40	17.00	17.40	15.80	15.70	18.90	16.20	17.70	22.90	26.10	26.20	18.20	18.40								
04:03:50	15.50	71.50	76.10	17.40	17.10	15.80	16.00	18.90	16.20	17.90	22.40	26.40	26.40	18.50	18.50								
04:04:00	15.40	71.10	75.70	17.20	16.90	15.90	16.20	19.20	16.60	17.50	22.10	24.10	25.40	19.50	18.80								
04:04:10	15.40	70.90	75.40	17.30	16.90	15.70	15.70	19.20	16.30	18.40	23.50	24.60	25.40	18.10	18.10								
04:04:20	15.40	70.70	75.00	17.10	17.00	15.80	15.70	18.90	16.20	17.80	22.40	24.10	25.20	18.20	18.60								
04:04:30	15.40	70.30	74.70	17.70	17.70	15.80	15.70	19.40	16.20	18.10	24.00	25.10	25.90	17.80	17.80								
04:04:40	15.40	69.60	74.30	17.30	18.20	16.00	16.00	19.20	16.30	17.60	21.60	22.80	23.50	18.60	18.60								
04:04:50	15.40	69.00	74.10	16.50	16.30	16.20	16.80	18.70	16.90	16.40	19.60	21.30	21.70	20.40	20.20								
04:05:00	15.40	68.60	73.80	16.70	16.50	16.20	16.50	18.70	17.20	16.30	20.10	21.00	21.40	20.40	20.40								
04:05:10	15.50	68.50	73.50	17.20	17.50	16.00	16.10	18.80	16.50	17.20	21.70	22.00	22.70	19.30	19.10								
04:05:20	15.60	68.80	73.30	17.60	17.30	15.70	15.70	18.90	16.20	17.80	21.20	22.80	25.80	17.90	21.40								
04:05:30	15.50	68.80	73.00	17.60	17.30	15.70	16.10	19.20	16.40	17.30	20.40	22.00	25.00	18.60	20.10								
04:05:40	15.40	68.30	72.70	16.90	16.80	15.90	16.00	18.90	16.20	18.00	20.80	21.40	24.20	18.10	18.70								
04:05:50	15.40	68.90	72.50	16.90	16.70	15.70	15.70	19.00	15.90	17.00	20.00	22.10	27.70	17.10	17.90								
04:06:00	15.30	68.70	72.40	16.70	16.40	15.60	15.60	18.60	15.80	16.30	17.30	20.20	29.50	16.70	20.70								
04:06:10	15.40	68.60	72.00	16.60	16.10	15.50	15.60	18.30	16.30	15.90	16.80	19.10	26.80	17.20	21.70								
04:06:20	15.40	68.50	72.10	16.20	15.80	15.60	15.70	18.00	16.40	16.20	16.50	19.40	27.70	17.40	22.20								

# 1 0001 100

## HALEIGH-PT KEMBLA RAILWAY TUNNEL

TEST IN WDV WDV TUNNEL

TEST RUN TYPE C

28TH APRIL 1985

11 12 13 14 15 16

0001  
100

04 05 06 07 08 09 10

SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS

04:06:30 04:07:00 04:07:10 04:07:20 04:07:30 04:07:40 04:07:50 04:08:00 04:08:10 04:08:20 04:08:30 04:08:40 04:08:50 04:09:00 04:09:10 04:09:20 04:09:30 04:09:40 04:09:50 04:10:00 04:10:10 04:10:20

15.40 15.30 15.30 15.30 15.30 15.30 15.30 15.30 15.30 15.30 15.30 15.30 15.20 15.20 15.20 15.20 15.20 15.20 15.30 15.30 15.30

68.60 69.10 68.90 69.10 69.00 68.60 68.30 68.20 67.80 67.60 67.90 68.30 68.50 68.70 68.90 69.00 69.30 69.70 70.20 70.60 71.20 71.90

72.30 72.80 72.90 72.70 72.30 72.00 71.80 71.60 71.60 71.40 71.10 70.90 70.80 70.80 70.80 70.90 70.90 71.00 71.20 71.70 72.40 73.10

16.70 16.70 16.60 16.50 16.00 15.70 15.70 15.50 15.50 15.50 15.40 15.30 15.40 15.50 15.40 15.30 15.30 15.30 15.50 15.50 16.00 16.90

15.70 15.60 15.70 15.60 15.70 15.60 15.80 15.70 15.60 15.60 15.60 15.60 15.50 15.50 15.40 15.30 15.30 15.30 15.40 15.40 15.50 15.80

15.70 15.60 15.60 15.60 15.60 17.60 17.40 17.60 17.60 17.60 17.70 17.60 17.80 17.70 17.40 17.70 17.40 17.70 17.60 17.40 17.60 16.00

16.00 15.80 16.00 15.80 16.00 17.30 16.80 15.60 16.50 17.60 16.40 15.50 17.20 16.90 16.70 16.70 16.70 16.90 16.60 16.00 16.50 18.10

16.90 16.40 16.30 15.80 16.30 15.80 15.50 15.50 15.50 15.40 15.40 15.30 15.50 15.50 15.40 15.40 15.40 15.50 15.90 15.90 16.20 16.50

18.40 17.60 17.60 16.60 17.60 16.60 16.00 16.00 16.00 16.80 17.40 17.40 17.60 17.20 16.90 16.70 16.70 16.90 16.60 16.00 16.50 18.10

20.60 22.50 24.50 20.90 19.00 19.00 18.30 19.10 18.40 18.20 18.40 18.30 18.30 18.60 18.40 18.40 18.70 18.90 19.40 19.90 20.10 20.50

27.10 38.30 33.60 32.10 28.40 26.90 25.10 22.70 21.20 21.30 21.30 20.90 20.80 20.90 20.90 20.90 20.40 20.40 21.10 22.50 24.10 23.80

16.80 16.50 16.70 17.70 17.00 17.30 17.90 17.80 17.10 17.60 17.60 17.60 17.60 17.80 18.20 18.10 18.20 18.40 18.40 19.00 19.90 20.80

28.10 26.00 26.90 21.50 19.60 19.30 18.90 18.30 19.90 20.60 22.70 21.40 19.70 19.10 19.30 20.10 21.90 21.60 19.30 21.30 21.20 21.60

31.20 36.60 35.90 30.70 27.50 26.90 25.60 24.80 23.60 23.60 23.10 23.40 22.10 22.00 21.70 21.40 21.70 21.60 22.00 23.00 24.60 25.30

0001  
100  
MILWAUKEE RAILWAY TEST IN GUY WUY TUNNEL  
SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS

TEST RUN TYPE C

28TH APRIL 1985

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16

04:10:30	15.30	72.70	74.10	17.10	16.60	15.90	15.90	16.10	15.80	16.20	20.10	21.00	24.00	20.50	20.40	24.90
04:11:00	15.40	75.10	76.30	16.80	16.30	15.80	15.70	17.90	15.70	16.10	20.90	21.80	23.70	20.60	20.40	22.40
04:11:10	15.30	75.90	76.90	16.80	16.30	16.10	16.00	18.20	16.00	16.30	21.00	21.70	23.70	21.80	20.90	22.80
04:11:20	15.30	76.60	77.80	16.60	16.20	16.10	16.00	17.80	16.00	16.00	21.20	21.80	23.90	21.10	21.20	22.80
04:11:30	15.20	77.40	78.60	16.40	15.90	16.20	16.20	17.90	16.40	16.20	21.20	21.90	23.70	21.90	22.60	23.90
04:11:40	15.20	78.40	79.70	16.40	15.90	16.20	16.30	17.90	16.40	16.10	21.20	21.90	23.90	22.30	23.60	24.20
04:11:50	15.20	79.30	80.50	16.10	15.70	16.50	16.40	18.00	16.50	15.90	21.20	21.60	23.80	23.50	23.70	25.10
04:12:00	15.30	78.20	81.20	16.10	15.70	16.30	16.10	18.20	16.40	15.70	17.70	19.70	23.70	19.40	28.30	35.10
04:12:10	15.30	77.30	81.40	16.20	15.70	16.20	16.10	17.60	16.00	15.70	16.80	20.40	30.60	16.90	27.00	47.10
04:12:20	15.30	77.40	81.10	16.40	16.10	15.90	15.70	17.70	15.60	15.80	16.90	22.30	42.90	16.10	22.60	45.50
04:12:30	15.30	77.10	80.80	16.30	16.00	15.90	15.70	17.80	15.50	15.90	16.70	21.30	46.60	16.00	28.00	51.60
04:12:40	15.40	76.90	80.60	16.40	16.10	16.00	15.80	17.70	15.60	16.30	16.50	23.50	51.80	16.10	27.30	53.20
04:12:50	15.30	76.80	80.50	16.40	16.10	16.00	15.80	17.80	15.80	16.10	16.60	22.70	52.80	16.10	22.40	48.10
04:13:00	15.40	76.60	80.50	16.30	15.90	16.10	16.20	17.90	16.40	15.50	15.90	19.30	48.90	17.40	31.00	50.90 30.6
04:13:10	15.30	76.40	80.40	15.90	15.60	16.30	16.30	17.90	16.70	15.70	15.80	18.50	37.20	18.20	36.00	49.30
04:13:20	15.40	76.70	80.30	15.90	15.70	16.60	16.70	17.40	16.10	15.80	16.50	20.90	40.80	16.40	27.00	46.20 27.9
04:13:30	15.50	76.80	80.40	16.20	16.10	16.10	15.90	17.90	16.50	16.00	16.40	23.50	46.20	16.50	27.10	43.90
04:13:40	16.10	77.10	80.50	20.20	19.20	16.20	16.40	18.60	18.50	17.60	19.40	28.90	48.00	32.20	35.90	39.40 33.9
04:13:50	16.20	77.60	81.00	22.20	21.00	21.90	20.80	19.60	20.10	18.30	19.30	36.00	58.30	53.10	43.00	40.20 41.7
04:14:00	16.20	78.10	81.70	22.60	21.80	23.90	22.40	19.80	20.70	18.40	19.70	37.80	63.20	63.20	45.20	40.00 44.35
04:14:10	16.30	78.90	82.70	22.50	21.40	24.40	23.50	19.50	20.80	18.10	20.00	33.40	66.50	64.90	47.40	43.00 45.3
04:14:20	16.30	79.90	83.60	21.50	20.70	24.40	24.20	20.00	20.90	18.00	20.50	31.40	67.80	68.10	51.60	45.30 47.4

MALDON-PT KEMBLA RAILWAY TEST IN WDV WDV TUNNEL																	TEST RUN TYPE C					28TH APRIL 1985				
0001	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16										
100	SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS																									
04:14:30	16.30	80.70	84.60	21.30	20.70	25.30	24.20	19.80	21.00	17.80	20.00	30.80	68.70	69.90	51.70	45.30	47.7									
04:15:00	16.10	83.50	87.40	22.70	21.80	26.10	25.40	20.00	20.80	18.10	20.40	35.80	73.40	68.50	49.10	43.70	45.5									
04:15:10	16.10	82.10	88.10	24.50	22.80	27.10	27.60	20.10	20.90	18.20	21.00	24.80	45.20	69.80	51.20	46.10	43									
04:15:20	16.10	81.50	88.10	26.10	24.40	27.80	28.30	20.30	20.90	18.10	20.90	21.60	34.10	68.50	48.20	42.00	39.2									
04:15:30	16.10	81.30	87.70	25.30	24.70	28.20	28.60	20.20	21.10	18.60	21.70	20.90	31.80	70.80	48.40	43.40	39.5									
04:15:40	16.00	81.10	87.50	25.90	25.10	27.90	29.30	20.00	21.10	18.20	22.00	21.00	31.80	68.70	48.40	42.40										
04:15:50	16.00	81.10	87.50	26.70	26.20	25.80	29.30	20.30	21.90	18.80	22.30	20.90	34.90	70.40	50.90	42.00	48.2									
04:16:00	16.00	81.40	87.50	28.00	27.00	26.80	31.50	20.80	25.00	18.50	27.50	27.70	39.70	72.60	52.00	46.80	44.3									
04:16:10	15.90	81.80	87.70	27.50	27.80	29.90	32.20	21.20	26.00	18.70	27.30	30.40	43.80	72.30	55.10	46.90	45.9									
04:16:20	15.90	82.10	88.00	29.20	28.20	31.60	33.30	21.00	27.00	18.50	28.50	32.50	49.20	73.40	55.00	47.60										
04:16:30	15.90	82.20	88.30	27.30	27.80	30.40	32.90	21.40	25.90	18.60	28.40	29.40	43.00	71.10	51.00	45.20	44.7									
04:16:40	15.80	82.60	88.50	29.00	28.40	30.50	32.40	20.80	25.20	18.30	28.70	32.20	46.70	70.00	50.80	45.20										
04:16:50	15.80	82.70	88.70	29.40	29.00	31.60	33.00	21.00	24.90	18.00	28.90	32.40	44.90	68.90	52.60	44.50	45.6									
04:17:00	15.70	82.80	88.90	30.20	29.10	31.70	33.40	21.60	24.70	18.20	27.60	29.60	43.40	71.50	55.40	46.20	45.1									
04:17:10	15.60	80.60	89.40	22.70	23.00	25.20	27.60	21.60	21.60	17.90	27.00	26.30	31.10	45.80	35.20	40.30	34.3									
04:17:20	15.50	80.30	89.20	18.90	19.20	20.00	20.50	20.60	19.30	16.60	19.90	20.50	25.10	29.70	23.20	31.30	25									
04:17:30	15.40	79.50	88.40	17.50	16.90	18.30	18.00	20.40	17.30	16.10	20.00	19.50	22.50	23.30	19.40	26.80	22									
04:17:40	15.20	78.50	87.10	16.50	16.20	17.20	17.30	19.60	16.70	15.90	18.70	18.60	21.20	21.40	19.00	24.40										
04:17:50	15.20	77.70	86.10	16.40	16.00	16.70	16.70	19.00	16.20	15.80	18.40	18.20	20.20	20.70	19.90	22.10										
04:18:00	15.30	76.60	85.10	16.30	15.90	16.80	17.20	19.20	16.30	15.90	19.70	20.60	19.90	22.00	22.50	21.80										
04:18:10	15.20	75.90	84.20	15.90	15.70	16.90	17.00	19.00	16.50	16.00	19.40	19.00	20.10	21.60	22.30	21.70										
04:18:20	15.10	76.00	82.40	16.20	16.10	16.60	16.80	19.40	16.10	16.40	20.70	20.00	20.80	20.80	18.90	20.90										

1 0001 100	MALDON-PT KENNELA RAILWAY TEST IN WBY WBY TUNNEL										TEST RUN TYPE C					28TH APRIL 1985				
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	SEE ATTACHED SHEETS FOR THERMOCOUPLE LOCATIONS			
04:18:30	15.20	73.80	80.90	16.00	15.80	16.20	16.20	18.50	16.40	15.70	17.00	17.10	19.30	22.30	21.50	23.00				
04:19:00	15.10	72.60	78.00	15.90	15.70	15.80	16.10	18.50	16.30	15.90	16.60	17.10	18.90	21.70	20.90	25.20				
04:19:10	15.10	72.20	77.50	16.00	15.60	16.20	16.40	18.00	16.40	15.30	16.10	16.80	18.60	22.40	23.20	28.40				
04:19:20	15.20	72.30	77.10	16.10	15.90	16.20	16.30	18.50	16.60	16.20	18.10	18.30	19.80	20.50	21.00	28.60				
04:19:30	15.10	71.80	76.70	16.00	15.60	16.00	16.10	18.40	16.90	15.60	16.80	17.40	19.90	21.00	21.20	28.90				
04:19:40	15.20	71.70	76.20	16.80	15.90	16.50	17.20	18.70	17.00	15.50	17.40	17.70	20.00	20.90	21.30	29.30				
04:19:50	15.20	71.40	76.00	16.00	15.70	16.20	16.10	18.60	16.50	15.90	17.80	17.90	20.60	20.50	20.40	28.70				
04:20:00	15.20	70.40	76.10	16.50	16.00	15.90	16.00	18.30	16.20	16.10	19.40	18.90	21.00	21.80	21.80	24.70				
04:20:10	15.10	70.40	76.00	16.10	15.70	16.10	16.30	18.60	16.40	15.60	17.80	18.50	20.20	22.10	21.90	23.80				
04:20:20	15.10	70.90	75.40	16.20	15.70	16.00	16.00	18.50	16.50	15.40	16.30	17.60	19.90	20.60	20.40	24.30				
04:20:30	15.10	70.90	75.30	16.30	15.70	16.40	16.10	18.70	16.30	15.30	16.50	17.60	20.50	18.20	18.80	24.90				
04:20:40	15.10	70.70	75.60	15.90	15.50	16.40	16.20	18.40	16.30	15.30	15.80	17.20	20.00	18.40	19.80	32.60				
04:20:50	15.20	71.30	75.80	16.30	15.70	16.00	15.80	18.00	15.80	15.40	16.30	17.20	20.00	17.00	18.40	29.20				
04:21:00	15.20	71.30	76.20	16.10	15.60	15.90	15.90	18.20	15.90	15.70	16.80	17.20	19.90	17.40	18.10	28.10				
04:21:10	15.10	71.50	76.40	16.00	15.60	16.10	16.10	18.00	16.60	15.30	15.80	16.80	19.40	19.50	21.60	34.60				
04:21:20	15.10	71.20	76.70	16.10	15.50	16.80	17.00	17.90	17.60	15.30	15.70	16.40	18.70	22.00	25.60	45.90				
04:21:30	15.20	71.80	77.00	16.20	15.70	16.20	16.30	17.90	16.80	15.30	15.70	16.40	19.00	20.80	22.40	41.90				
04:21:40	15.10	71.40	77.40	16.00	15.70	16.40	17.30	18.30	16.50	15.50	17.00	17.20	18.90	20.90	21.30	30.60				
04:21:50	15.00	71.00	77.60	15.80	15.50	17.00	18.00	18.20	17.40	15.30	17.50	17.80	18.80	23.80	23.00	27.20				
04:22:00	15.10	71.30	77.50	15.90	15.50	16.60	16.90	17.90	17.30	15.30	17.30	18.00	18.70	24.20	24.40	26.80				
04:22:10	15.10	71.20	77.20	16.00	15.60	16.70	17.10	17.60	17.30	15.30	17.10	17.70	18.40	24.50	24.00	25.90				
04:22:20	15.10	71.00	77.10	16.10	15.80	16.20	17.40	18.00	17.50	15.60	16.90	17.50	18.30	24.50	24.50	26.20				



**MALDON - PORT KEMBLA RAILWAY  
TEMPERATURE TEST IN WOY WOY TUNNEL**

The following are temperature recording taken inside the tunnel at the 68km post.

TEST RUN TIME	TYPE A TEMPERATURE °C	TEST RUN TIME	TYPE B TEMPERATURE °C	TEST RUN TIME	TYPE C TEMPERATURE °C
00.35.00	17	02.32.00	17.0	04.11.45	17.3
00.35.30	18	02.32.30	17.0	04.12.00	17.3
00.36.00	18	02.33.00	17.0	04.12.30	17.2
00.36.30	18	02.33.30	17.2	04.13.00	17.2
00.37.00	29	02.34.00	17.4	04.13.30	17.1
00.37.30	26	02.34.30	17.1	04.14.00	17.4
00.38.00	26	02.35.00	17.1	04.14.30	17.4
00.38.30	23	02.35.30	17.2	04.15.00	17.4
00.39.00	21	02.36.00	30.1	04.14.30	35.0
00.39.30	19	02.36.30	23.7	04.16.00	26.5
00.40.00	19	02.37.00	23.7	04.16.30	26.8
00.40.30	18	02.37.30	24.0	04.17.00	24.6
00.41.00	18	02.38.00	22.6	04.17.30	22.6
00.41.30	18	02.38.30	21.4	04.18.00	20.6
00.42.00	18	02.39.00	20.1	04.18.30	18.9
00.42.30	18	02.39.30	18.4	04.19.00	18.2
00.43.00	18	02.40.00	17.8	04.19.30	17.9
00.43.30	18	02.40.30	17.5	04.20.00	17.8
00.44.00	18	02.41.00	17.4	04.20.30	17.7
00.44.30	18	02.41.30	17.4	04.21.00	17.6
00.45.00	18	02.42.00	17.3	04.21.30	17.6
00.45.30	18	02.42.30	17.3	04.22.00	17.6
00.46.00	18	02.43.00	17.3	04.22.30	17.5
00.46.30	18	02.43.30	17.2	04.23.00	17.5
00.47.00	18	02.44.00	17.2	04.23.30	17.5
		02.44.30	17.2	04.24.00	17.5
		02.45.00	17.2	04.24.30	17.5
		02.45.30	17.2	04.25.00	17.5
		02.46.00	17.2	04.25.30	17.5
		02.46.30	17.2	04.26.00	17.5
				04.26.30	17.5
				04.27.00	17.5
				04.27.30	17.5
				04.28.00	17.5

**NOTE :**

Max temperature reached on test Run type A was 32°C between the times 00.37.00 and 00.37.30.

Maximum temperature reached on Test run type C was 35.4°C between the times 04.15.30 and 04.16.30.

The following results are the temperatures obtained on the guards van

THERMOCOUPLE LOCATIONS

THERMOCOUPLE NO

LOCATION

1	Exterior of guards compartment	2m above rail level Right side.
2	Exterior of guards compartment	4m above rail level Right side.
3	Exterior of guards compartment	2m above rail level Left side.
4	Exterior of guards compartment	4m above rail level Left side.

All thermocouple were placed approximately centre of guards compartment.

SEQUENCE OF EVENTS TAKEN AT THE GUARDS VAN

TEST RUN TYPE A

<u>TIME</u>	<u>EVENT</u>
00:36:19.2	Enter Tunnel
00:39:14.4	Exit Tunnel

TEST RUN TYPE B

<u>TIME</u>	<u>EVENT</u>
02:34:50.4	Enter Tunnel
02:39:00	Exit Tunnel

TEST RUN TYPE C

<u>TIME</u>	<u>EVENT</u>
04:14:40	Enter Tunnel
04:17:43	Exit Tunnel

TEMPERATURES ON GUARDS VAN

TIME	THERMOCOUPLE NO	TEMP	TIME	THERMOCOUPLE NO	TEMP	TIME	THERMOCOUPLE NO	TEMP
00:35:02.4	1	15	00:37:43.2	4	21	00:40:33.6	3	15
00:35:04.8	2	14	00:37:55.2	1	20.5	00:40:36	4	14.5
00:35:07.2	3	14.5	00:37:57.6	2	21.5	00:40:48	1	15
00:35:09.6	4	14.5	00:38:00	3	20	00:40:50.4	2	14.5
00:35:21.6	1	14.5	00:38:02.4	4	22	00:40:52.8	3	14.5
00:35:24	2	14.5	00:38:14.4	1	21	00:40:55.2	4	14.5
00:35:26.4	3	14.5	00:38:16.8	2	21.5			
00:35:28.8	4	14.5	00:38:19.2	3	20			
00:35:40.8	1	14.5	00:38:21.6	4	22.5			
00:35:43.2	2	14	00:38:33.6	1	22			
00:35:45.6	3	14	00:38:36	2	22			
00:35:48	4	14	00:38:38.4	3	20.5			
00:36:00	1	14.5	00:38:40.8	4	22.5			
00:36:02.4	2	14	00:38:52.8	1	22			
00:36:04.8	3	14	00:38:55.2	2	22			
00:36:07.2	4	14	00:38:57.6	3	21			
00:36:19.2	1	16	00:39:00	4	23			
00:36:21.6	2	16.5	00:39:12	1	19			
00:36:24.0	3	16.5	00:39:14.4	2	17			
00:36:26.4	4	17.5	00:39:16.8	3	18			
00:36:38.4	1	18	00:39:19.2	4	17			
00:36:40.8	2	18.5	00:39:31.2	1	16			
00:36:43.2	3	18	00:39:36.6	2	15			
00:36:43.6	4	18.5	00:39:36	3	15			
00:36:57.6	1	18.5	00:39:38.4	4	14.5			
00:37:00	2	19	00:39:50.4	1	15			
00:37:02.4	3	18.5	00:39:52.8	2	14.5			
00:37:04.8	4	19.5	00:39:55.2	3	15			
00:37:16.8	1	19	00:39:57.6	4	14.5			
00:37:19.2	2	19.5	00:40:09.6	1	15			
00:37:21.6	3	19	00:40:12	2	14.5			
00:37:24	4	20	00:40:14.4	3	14.5			
00:37:36	1	20	00:40:16.8	4	14.5			
00:37:38.4	2	21	00:40:28.8	1	15			
00:37:40.8	3	20	00:40:31.2	2	14.5			

TIME	THERMOCOUPLE		TIME	THERMOCOUPLE		TIME	THERMOCOUPLE	
	NO	TEMP		NO	TEMP		NO	TEMP
02:33:00	2	14	02:35:52.8	1	19	02:38:33.6	4	22.5
02:33:02.4	3	14	02:35:55.2	2	19	02:38:45.6	1	21.5
02:33:04.8	4	14	02:35:57.6	3	19	02:38:48	2	21.5
02:33:16.8	1	14.5	02:36:00	4	19.5	02:38:50.4	3	20
02:33:19.2	2	14	02:36:12	1	19	02:38:52.8	4	22
02:33:21.6	3	14.5	02:36:14.4	2	19	02:39:02.4	1	20
02:33:24.0	4	14	02:36:16.8	3	19	02:39:04.8	2	18
02:33:36.0	1	14	02:36:19.2	4	20	02:39:07.2	3	19
02:33:38.4	2	14	02:36:31.2	1	19.5	02:39:09.6	4	17.5
02:33:40.8	3	14	02:36:33.6	2	19.5	02:39:21.6	1	15
02:33:43.2	4	14	02:36:36	3	19.5	02:39:24	2	15
02:33:55.2	1	14	02:36:38.4	4	20.5	02:39:26.4	3	15
02:33:57.6	2	14	02:36:50.4	1	19.5	02:39:28.8	4	15
02:34:00	3	14	02:36:52.8	2	19.5	02:39:40.8	1	15
02:34:02.4	4	14	02:36:55.2	3	19.5	02:39:43.2	2	15
02:34:14.4	1	14	02:36:57.6	4	20.5	02:39:45.6	3	15
02:34:16.8	2	14	02:37:09.6	1	19.5	02:39:48	4	15
02:34:19.2	3	14	02:37:12	2	19.5	02:40:00	1	15
02:34:21.6	4	14	02:37:14.4	3	19.5	02:40:02.4	2	14.5
02:34:33.6	1	14.5	02:37:16.8	4	21	02:40:04.8	3	14.5
02:34:38.4	2	14	02:37:28.8	1	20	02:40:07.2	4	14.5
02:34:40.8	3	14.5	02:37:31.2	2	20	02:40:19.2	1	15.2
02:34:43.2	4	14	02:37:33.6	3	20	02:40:21.6	2	15
02:34:55.2	1	16.5	02:37:36	4	22	02:40:24	3	15
02:34:57.6	2	16.5	02:37:48	1	21	02:40:26.4	4	15
02:35:00	3	16.5	02:37:50.4	2	20	02:40:38.4	1	14.5
02:35:03.4	4	17.5	02:37:52.8	3	20	02:40:40.8	2	14.5
02:35:14.4	1	17	02:37:55.2	4	21.5	02:40:43.2	3	14.5
02:35:16.8	2	17	02:38:07.2	1	20	02:40:45.6	4	14.5
02:35:19.2	3	17	02:38:09.6	2	19.5			
02:35:21.6	4	18	02:38:12	3	19			
02:35:33.6	1	18.5	02:38:14.4	4	22			
02:35:36.0	2	18.5	02:38:26.4	1	21.5			
02:35:38.4	3	18.5	02:38:28.8	2	20.5			
02:35:40.8	4	19.5	02:38:31.2	3	20			

TIME	THERMOCOUPLE NO	TEMP	TIME	THERMOCOUPLE NO	TEMP	TIME	THERMOCOUPLE NO	TEMP
04:13:45.6	1	14.5	04:16:24	4	21.5	04:19:09.6	3	14.5
04:13:48	2	14	04:16:36	1	23	04:19:12	4	14.5
04:13:50.4	3	14.5	04:16:38.4	2	21			
04:13:52.8	4	14	04:16:40.8	3	21.5			
04:14:04.8	1	14.5	04:16:43.2	4	22			
04:14:07.2	2	14	04:16:55.2	1	23.5			
04:14:09.6	3	14	04:16:57.6	2	21.5			
04:14:12	4	14	04:17:00	3	22			
04:14:21.6	1	14.5	04:17:02.4	4	22.5			
04:14:24	2	14.5	04:17:14.4	1	24			
04:14:26.4	3	14.5	04:17:16.8	2	21.5			
04:14:28.8	4	14.5	04:17:19.2	3	22.5			
04:14:40.8	1	15.5	04:17:21.6	4	22.5			
04:14:43.2	2	16.5	04:17:33.6	1	24			
04:14:45.6	3	16.5	04:17:36	2	21.5			
04:14:48	4	17.5	04:17:38.4	3	22.5			
04:15:00	1	19	04:17:40.8	4	22.5			
04:15:02.4	2	18	04:17:50.4	1	24			
04:15:04.8	3	19	04:17:52.8	2	21.5			
04:15:07.2	4	19	04:17:55.2	3	22			
04:15:19.2	1	20	04:17:57.6	4	20.5			
04:15:21.6	2	18.5	04:18:07.2	1	16			
04:15:24	3	19.5	04:18:09.6	2	15.5			
04:15:26.4	4	19.5	04:18:12	3	16			
04:15:38.4	1	20.5	04:18:14.4	4	15.5			
04:15:40.8	2	19	04:18:26.4	1	15.5			
04:15:43.2	3	20	04:18:28.8	2	15			
04:15:45.6	4	20	04:18:31.2	3	15.5			
04:15:57.6	1	21	04:18:33.6	4	15			
04:16:00	2	20	04:18:4	1	15			
04:16:02.4	3	20.5	04:18:48	2	14.5			
04:16:04.8	4	21	04:18:50.4	3	15			
04:16:16.8	1	22.5	04:18:52.8	4	14.5			
04:16:19.2	2	20.5	04:19:04.8	1	15			
04:16:21.6	3	21.5	04:19:09.2	2	14.5			