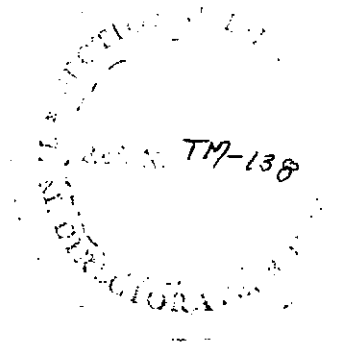


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**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS**

**Research Designs and Standards Organisation  
LUCKNOW-226011**

**FIELD VALIDATION REPORT  
OF  
TRACK RECORDING SYSTEM  
(TRC-7967)**

04701

**REPORT NO. TM - 138**

**TRACK MACHINES & MONITORING DIRECTORATE**

**MARCH 2010**

This report is based on study made by the Track Machines and Monitoring Directorate of RDSO. Every care has been taken in recording the data accurately and in analysing it objectively. The views expressed in this report are subject to modifications from time to time in the light of fresh data. Further, they do not necessarily represent the views of the Ministry of Railways (Railway Board), Government of India.

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Vijay Sharma  
Exec. Director/TM

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## 1. Introduction

The work of supply, installation and commissioning of one Track Recording system was awarded to M/s Systems Aids Bangalore vide P.O. No 036X0385-N-08035166 dated 04.04.2008. The lab validation and inspection of the system to be installed in TRC-7967 was carried out by nominated RDSO officials in November-2008 and December-2008 respectively. The lab validation report TM-133 (TRC-7967) was also prepared. The detailed system description has been given in the lab validation reports. Subsequent to lab validation, the field trials of the system were conducted in January-2010. The field trial details and results have been discussed in the report.

## 2. Objective and scope of field trials:

The objective of the field trials is to assess the efficacy of upgraded Track Geometry Measurement system installed in TRC-7967 under actual field conditions.

The scope of field trials is limited to verification of accuracy figures specified in technical specification in repeat run at different speeds. The method for assessment of accuracy has been specified in para 5.2 of technical specification, which is reproduced below:

### a) Repeatability for SD values of sample to sample variation:

- i) Blocks of 200m stretch of track shall be the unit of comparison for the purpose of accuracy.
- ii) Repeatability shall be checked for variations in the values recorded in various runs at the same speed and/or different speeds in the speed band of 20 kmph to 160 kmph (both values inclusive).
- iii) The repeatability shall be checked for short chord (3.6m for unevenness and twist and 7.2m for alignment), the long chord (9.6m for unevenness and alignment and 4.8m for twist).
- iv) The repeatability tests can be done on any type of track (CWR, SWR or fish-plated or mixed) in well maintained or run down condition of Indian Railways, including straight, curves and station yards.
- v) The runs can be forward and/or reverse directions. Following shall be the limits for acceptance.

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- b) For repeatability, the standard deviation of sampled values between two repeat runs will be calculated e.g. if  $D(i)$  and  $d(i)$  are the sampled values for any parameter between two runs then SD of all  $D(i)$  in a block of 200 m shall be worked out. These calculated values for different parameter shall in no case exceed the following limits:

<u>Parameter:</u>	<u>Maximum permissible limits</u>
Gauge	$\pm 1.5$ mm
Alignment (on short chord)	$\pm 2.0$ mm
Alignment (on long chord)	$\pm 2.0$ mm
Unevenness (on short chord)	$\pm 1.5$ mm
Unevenness (on long chord)	$\pm 2.0$ mm
Twist (3.6 m base)	$\pm 1.5$ mm
Twist (4.8 m base)	$\pm 1.5$ mm
Super elevation	$\pm 3.0$ mm

- c) The ground measurements shall be taken in floating condition. The TRC results shall tally reasonably with the ground measurements to the satisfaction of authorized engineers of RDSO.

### 3. Field Trials

a) Selection of section:

Sultanpur (SLN) – Shiv Nagar (SHNG) section of Northern Railway has been selected to conduct field trials. The section consisted of straight as well as curved track and station yard. Thus the section fulfills the requirement of para 5.2 of the specifications.

b) Speed of Recording:

As per para 5.2 of technical specification the system is to be tested in field at various speed in a speed band of 20 – 160 kmph. The speed of coach in which the system has been installed is limited to 120 kmph and contact feelers have limitation to record up to 100 kmph. The field trials have been conducted in a speed band of 25-100 kmph. The following four speeds were selected to conduct the field trials and assess the accuracy of system in repeat runs.

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1. 25 kmph
2. 50 kmph
3. 75 kmph
4. 100 kmph

**c) Details of trial runs:**

**i) Window Trailing-**

S.No.	H.C.S.	Speed	SLN - SHNG (WT)		
			Run No	Km.	
				From	To
1	79	25	120110G	918	936
2	"	50	120110D	918	936
3	"	75	120110J	918	936
4	"	100	130110N	918	936

**ii) Window Leading-**

S.No.	H.C.S.	Speed	SLN - SHNG (WL)		
			Run No	Km.	
				From	To
1	79	25	110110I	936	918
2	"	50	120110F	936	918
3	"	75	120110K	936	918
4	"	100	110110G	936	918

**4.0 Analysis of results:**

The repeatability between a pair of repeat runs is verified in same direction i.e. run with window trailing position is compared with another run of window trailing position and similarly the run with window leading position is compared with another run of window leading position.

Two repeat runs cannot start with exactly same location due to manual error involved in punching of start kilometer. For exact matching of start point of two runs the chord data of any one parameter is exported in excel format in two consecutive columns of an excel sheet. The X-Y Graph of sampled values of selected parameter in two repeat runs v/s sample no is plotted. The two graphs are exactly overlaid one above the other by sliding of one graph above other. This is done by cutting the samples from the column which is lagging. When the graphs are exactly overlaid the number of samples cut from one run is noted and same number of samples are deleted from the entire file and edited file is saved. A sample print out of overlaid (matched) and distorted (mismatched) data of engine parameter is placed as Annexure I. Now when the data of

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any parameter is exported in excel format from the two run files their location exactly matches with one another. Now data for all parameters in two repeat runs are exported in one excel sheet. After exporting the data the difference between sampled values of all parameters data in repeat runs is worked out in adjacent columns. After calculating the difference the standard deviation of difference values for 667 samples, equivalent to 200 m length of track is calculated for each parameter on long and short chord.

Similarly SD values of all subsequent blocks are calculated in the selected section. This analysis is repeated in all speed combinations in both forward (Inspection window trailing) and reverse (inspection window leading) runs with the selected speeds. Following speed combinations are selected for analysis:

25 - 50 Kmph

25 - 75 Kmph

25 - 100 Kmph

50 - 75 Kmph

50 - 100 Kmph

75 - 100 Kmph

The results of data analysis in various speed combinations in forward and reverse direction have been worked out and tabulated in table No. 1 to 12 which are given below:

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Window Leading : (Reverse Direction)

Table No.-1

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7967

SPEED : 25-50 KMPH

Run No. : 110110I and 120110F

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.5	0.6	0.9	1.4	1.5	0.2	0.8	1.0	1.1	2.0	2.0	0.7
	3	0.5	0.5	0.7	1.0	0.9	0.2	0.7	0.8	0.7	1.5	1.6	0.2
	4	0.5	0.5	0.8	0.7	0.7	0.2	0.6	0.7	0.9	1.2	1.2	0.2
	5	0.6	0.6	1.0	0.6	0.6	0.2	0.8	0.9	1.2	1.1	1.0	0.2
	1	0.5	0.5	0.8	0.8	0.8	0.2	0.8	0.9	1.0	1.3	1.4	0.7
922-921	2	0.5	0.5	0.8	0.8	0.8	0.3	0.8	0.8	0.9	1.2	1.4	1.2
	3	0.6	0.6	0.7	1.2	1.3	0.3	0.7	0.8	0.8	2.0	2.0	1.3
	4	0.6	0.6	1.0	0.9	1.0	0.2	0.9	1.1	1.1	1.5	1.5	0.7
	5	0.7	0.7	1.2	1.8	1.9	0.2	1.2	1.4	1.5	2.0	2.0	1.7
	1	0.7	0.7	1.2	1.0	1.1	0.2	1.2	1.3	1.4	1.6	1.6	1.2
921-920	2	0.7	0.8	1.2	1.0	1.1	0.2	1.2	1.3	1.4	1.6	1.9	0.8
	3	0.6	0.6	1.2	1.1	1.2	0.3	1.1	1.0	1.4	1.5	1.8	1.1
	4	0.5	0.6	0.8	1.0	1.0	0.2	0.8	0.8	0.9	1.4	1.6	0.8
	5	0.5	0.5	1.1	0.9	1.0	0.2	0.9	1.1	1.3	1.4	1.6	0.7
	1	0.6	0.6	1.0	1.4	1.5	0.3	1.1	1.0	1.2	2.0	2.0	0.9
920-919	2	0.6	0.6	1.2	1.4	1.5	0.3	1.2	1.1	1.4	2.0	2.0	1.6
	3	0.6	0.6	1.1	1.7	1.8	0.2	1.1	1.1	1.3	2.0	1.9	1.2
	4	0.5	0.5	1.0	1.0	1.0	0.2	1.0	0.8	1.3	1.4	1.5	0.8
	5	0.5	0.5	0.8	1.0	0.9	0.2	0.8	0.8	1.0	1.5	1.5	0.7

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Table No.-2

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7967

SPEED : 25-75 KMPH

Run No. : 110110I and 120110K

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.6	0.6	1.3	1.1	1.1	0.2	1.1	1.1	1.5	1.7	1.7	0.9
	3	0.6	0.6	1.5	1.2	1.1	0.2	1.1	1.0	1.5	1.9	1.7	0.9
	4	0.6	0.6	1.3	1.5	1.5	0.2	0.9	1.1	1.5	2.0	2.0	0.8
	5	0.6	0.6	0.9	1.4	1.4	0.3	1.0	1.1	1.1	2.0	2.0	1.4
	922-921	1	0.5	0.6	0.8	0.9	0.9	0.3	0.8	1.0	0.8	1.5	1.5
922-921	2	0.6	0.5	0.8	0.7	0.7	0.3	0.7	0.8	1.0	1.0	1.1	0.8
	3	0.6	0.7	1.4	1.4	1.5	0.3	1.0	1.5	1.5	2.0	2.0	2.8
	4	0.7	0.7	1.3	1.1	1.1	0.3	1.1	1.1	1.5	1.6	1.7	1.3
	5	0.6	0.6	0.8	1.0	1.0	0.3	1.0	1.1	0.9	1.6	1.5	2.0
	921-920	1	0.6	0.6	1.0	1.1	1.2	0.3	0.9	0.9	1.2	1.9	2.0
921-920	2	0.6	0.6	0.9	1.0	1.0	0.3	1.1	1.0	1.0	1.5	1.6	2.6
	3	0.6	0.6	0.7	1.1	1.1	0.3	0.9	0.9	0.8	1.7	1.7	2.1
	4	0.6	0.6	1.0	1.2	1.3	0.4	0.9	0.8	1.2	1.8	2.0	1.7
	5	0.6	0.6	1.3	1.5	1.6	0.3	1.1	1.1	1.5	2.0	2.0	1.6
	920-919	1	0.6	0.6	1.3	1.4	1.5	0.3	1.2	1.1	1.4	2.0	2.0
920-919	2	0.6	0.6	1.1	1.1	1.1	0.2	1.1	1.1	1.3	1.7	1.7	2.0
	3	0.6	0.5	0.9	0.9	0.8	0.2	1.0	0.9	1.0	1.3	1.3	2.1
	4	0.6	0.6	1.2	0.9	0.9	0.3	1.0	0.9	1.4	1.4	1.4	2.3
	5	0.6	0.6	1.0	1.1	1.2	0.3	1.0	1.0	1.2	1.8	1.8	2.1

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Table No.-3

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7967

SPEED : 25-100 KMPH

Run No. : 110110I and 110110G

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.7	0.7	0.9	0.8	0.9	0.5	1.0	1.0	1.1	1.3	1.4	1.8
	3	0.7	0.7	0.7	0.6	0.8	0.3	0.8	0.9	0.8	1.0	1.2	1.2
	4	0.7	0.7	0.7	0.6	0.6	0.4	0.7	0.9	0.7	0.8	0.9	1.1
	5	0.7	0.7	0.8	0.6	0.6	0.4	0.9	0.9	0.8	0.9	1.0	1.1
	922-921	1	0.7	0.7	0.6	0.5	0.6	0.3	0.8	0.9	0.7	0.8	0.9
922-921	2	0.6	0.6	0.6	0.5	0.6	0.4	0.7	0.8	0.6	0.8	0.9	1.9
	3	0.7	0.6	0.6	0.4	0.6	0.4	0.7	0.8	0.6	0.7	0.9	1.7
	4	0.7	0.7	1.0	1.0	1.2	0.5	1.0	1.2	1.1	1.5	1.7	1.3
	5	0.8	0.7	1.4	1.5	1.5	0.4	1.2	1.3	1.5	2.0	2.0	1.3
	921-920	1	0.7	0.7	1.1	1.1	1.1	0.3	1.1	1.2	1.4	1.7	1.7
921-920	2	0.6	0.7	1.0	1.1	1.1	0.3	1.1	1.0	1.2	1.8	1.3	2.6
	3	0.7	0.6	0.9	1.2	1.2	0.3	1.2	0.9	1.1	1.8	1.9	1.9
	4	0.7	0.6	0.7	1.1	1.1	0.3	1.0	0.8	0.8	1.7	1.7	1.4
	5	0.7	0.6	0.8	1.0	1.1	0.4	1.0	1.0	0.9	1.5	1.6	1.2
	920-919	1	0.7	0.7	1.1	1.4	1.5	0.4	1.1	1.2	1.2	2.0	2.0
920-919	2	0.7	0.7	1.2	1.5	1.6	0.4	1.3	1.1	1.5	2.0	2.0	2.0
	3	0.6	0.6	1.1	1.3	1.4	0.3	1.1	1.0	1.3	2.0	1.9	1.5
	4	0.6	0.6	1.0	0.8	0.9	0.3	1.1	0.9	1.1	1.3	1.4	1.1
	5	0.6	0.6	0.8	0.9	0.9	0.3	0.8	1.0	0.9	1.4	1.6	1.7

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**Table No.-4**

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7967

SPEED : 50-75 KMPH

Run No. : 120110F and 120110K

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.6	0.5	1.4	1.5	1.5	0.2	1.4	1.1	1.5	2.0	2.0	1.3
	3	0.5	0.5	0.7	1.3	1.2	0.2	0.8	0.8	0.8	2.0	2.0	0.8
	4	0.5	0.5	0.8	1.4	1.4	0.2	0.7	0.8	0.9	2.0	2.0	0.3
	5	0.5	0.5	1.1	0.5	0.6	0.2	0.8	0.9	1.3	0.8	0.9	1.1
922-921	1	0.5	0.5	0.7	0.9	0.9	0.3	0.7	0.9	0.9	1.4	1.5	1.4
	2	0.5	0.5	0.6	0.6	0.7	0.3	0.8	0.8	0.6	1.0	1.0	1.1
	3	0.6	0.6	0.8	0.7	0.7	0.3	0.9	0.9	0.9	1.3	1.2	1.6
	4	0.6	0.6	0.6	0.8	0.9	0.3	1.0	1.0	0.7	1.2	1.4	1.5
	5	0.5	0.5	0.8	0.9	0.9	0.2	0.8	0.8	0.8	1.5	1.5	1.9
921-920	1	0.5	0.5	0.9	0.7	0.7	0.3	0.8	0.9	1.0	1.2	1.1	1.7
	2	0.6	0.6	0.9	0.8	0.8	0.3	0.7	0.8	1.1	1.3	1.3	0.7
	3	0.6	0.6	0.9	1.0	1.1	0.3	1.0	1.0	1.0	1.6	1.7	1.1
	4	0.7	0.7	0.9	1.3	1.3	0.3	1.0	0.8	1.0	2.0	2.0	0.9
	5	0.6	0.6	0.7	0.6	0.7	0.2	0.8	0.8	0.8	1.0	1.0	1.4
920-919	1	0.6	0.6	0.8	0.7	0.7	0.2	0.8	0.8	1.0	1.0	1.1	1.6
	2	0.7	0.6	1.2	0.6	0.6	0.3	1.1	0.9	1.4	0.9	0.9	1.8
	3	0.9	0.9	0.6	1.1	1.1	0.3	1.2	1.2	0.7	1.6	1.7	1.0
	4	1.0	0.8	0.8	0.6	0.5	0.3	1.2	1.0	0.9	0.7	0.7	1.4
	5	0.9	1.0	0.8	0.8	0.7	0.3	1.3	1.2	0.8	1.1	1.1	1.3

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Table No.-5

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7967

SPEED : 50-100 KMPH

Run No. : 120110F and 110110G

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.5	0.6	0.7	1.2	1.2	0.5	0.7	0.9	0.8	1.9	1.9	2.0
	3	0.6	0.6	0.7	0.8	0.8	0.3	0.7	1.0	0.6	1.3	1.3	1.1
	4	0.5	0.6	0.8	0.7	0.7	0.3	0.6	0.9	0.9	1.0	1.1	0.8
	5	0.5	0.6	0.9	0.7	0.8	0.4	0.7	0.9	1.0	1.1	1.1	0.9
922-921	1	0.5	0.6	0.8	0.7	0.8	0.3	0.7	0.9	0.9	1.2	1.3	1.4
	2	0.5	0.6	0.8	1.1	1.2	0.4	0.7	0.8	0.8	1.8	1.9	1.3
	3	0.5	0.5	0.7	0.7	0.8	0.4	0.7	0.7	0.8	1.1	1.2	1.0
	4	0.5	0.5	0.8	0.7	0.8	0.4	0.7	0.9	0.8	1.1	1.2	1.3
	5	0.5	0.5	0.6	0.7	0.8	0.3	0.7	0.7	0.7	1.2	1.2	1.2
921-920	1	0.5	0.5	0.6	0.8	0.8	0.3	0.7	0.8	0.7	1.2	1.2	2.0
	2	0.5	0.6	0.7	0.6	0.6	0.3	0.8	0.8	0.7	1.0	1.0	1.9
	3	0.5	0.6	0.7	1.1	1.1	0.4	0.8	0.9	0.7	1.7	1.7	1.6
	4	0.5	0.5	0.7	0.7	0.7	0.3	0.7	0.7	0.8	1.1	1.1	1.2
	5	0.5	0.5	0.8	0.6	0.7	0.4	0.7	0.7	0.9	0.9	1.1	1.1
920-919	1	0.5	0.5	0.8	0.7	0.7	0.4	0.7	0.9	0.8	1.0	1.1	1.6
	2	0.5	0.5	0.8	1.2	1.2	0.3	0.8	0.8	0.9	2.0	2.0	1.4
	3	0.5	0.5	0.7	1.2	1.2	0.2	0.8	0.7	0.8	1.8	1.8	1.2
	4	0.5	0.5	0.6	0.7	0.6	0.2	0.7	0.7	0.7	1.1	1.1	1.0
	5	0.5	0.6	0.9	0.7	0.6	0.2	0.7	0.8	1.0	1.0	1.0	1.3

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Table No.-6

SECTION : SHIVNAGAR-SULTANPUR  
SPEED : 75-100 KMPH

TRC : 7967  
Run No. : 120110K and 110110G

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
923-922	2	0.5	0.6	1.5	1.2	1.3	0.4	1.1	1.1	1.5	1.7	1.6	1.5
	3	0.6	0.6	1.2	1.3	1.4	0.3	1.0	0.9	1.4	2.0	2.0	1.4
	4	0.6	0.6	1.4	1.2	1.3	0.4	1.1	0.9	1.5	1.9	2.0	2.0
	5	0.5	0.5	0.8	1.0	1.1	0.4	0.8	0.8	0.9	1.7	2.0	1.5
922-921	1	0.6	0.6	0.8	0.8	0.9	0.5	0.8	1.0	0.9	1.2	1.6	1.5
	2	0.6	0.5	0.9	0.5	0.7	0.4	0.7	0.8	1.0	0.8	1.4	1.1
	3	0.5	0.5	0.4	0.7	0.7	0.2	0.6	0.6	0.4	1.1	1.7	1.0
	4	0.5	0.5	0.3	0.4	0.4	0.2	0.5	0.6	0.3	0.7	0.9	1.4
	5	0.5	0.5	0.4	0.5	0.5	0.2	0.6	0.6	0.4	0.7	1.3	2.4
921-920	1	0.6	0.5	0.4	0.4	0.4	0.3	0.7	0.7	0.4	0.6	1.3	0.9
	2	0.5	0.5	0.3	0.5	0.5	0.2	0.7	0.7	0.3	0.7	1.3	1.0
	3	0.6	0.6	0.5	0.5	0.5	0.2	0.7	0.7	0.6	0.8	1.4	1.0
	4	0.6	0.7	0.8	0.6	0.7	0.3	0.8	0.9	0.9	0.9	1.4	1.0
	5	0.7	0.7	0.8	0.8	0.9	0.4	1.1	0.9	0.9	1.3	1.6	1.8
920-919	1	0.7	0.6	0.6	0.5	0.5	0.2	0.9	0.8	0.6	0.8	1.0	1.1
	2	0.6	0.6	0.4	0.4	0.4	0.2	0.7	0.7	0.4	0.6	1.1	0.6
	3	0.6	0.6	0.6	0.3	0.4	0.2	0.7	0.8	0.7	0.5	0.9	0.9
	4	0.6	0.6	0.7	0.6	0.6	0.2	0.8	0.8	0.8	0.9	1.4	2.5
	5	0.7	0.7	0.9	0.7	0.7	0.2	0.9	1.0	1.0	1.1	1.4	1.9

04714

Window Trailing (Forward Direction)

Table No.-7

SECTION : SULTANPUR- SHIVNAGAR

TRC : 7967

SPEED : 25-100 KMPH

Run No. : 120110G and 130110N

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.5	0.5	0.5	0.9	0.9	0.3	0.8	0.7	0.5	1.5	1.4	1.1
	2	0.5	0.5	0.5	0.6	0.6	0.2	0.8	0.6	0.5	0.9	0.9	0.7
	3	0.5	0.5	0.5	0.7	0.7	0.2	0.9	0.7	0.5	1.0	1.0	0.9
	4	0.6	0.6	0.7	1.2	1.0	0.5	1.4	1.3	0.7	1.8	1.6	1.3
	5	0.4	0.5	0.7	1.1	1.0	0.3	1.0	1.0	0.8	1.7	1.6	1.0
919-920	1	0.5	0.5	0.9	0.9	0.8	0.3	0.9	1.0	1.0	1.4	1.3	1.5
	2	0.5	0.5	0.8	1.0	0.9	0.3	0.9	1.1	0.9	1.5	1.5	1.2
	3	0.5	0.5	0.8	1.3	1.0	0.7	0.9	1.0	0.9	1.9	1.6	1.1
	4	0.6	0.6	1.0	1.4	1.3	0.3	1.1	1.2	1.2	2.0	2.0	1.5
	5	0.5	0.5	1.1	1.0	1.0	0.4	1.3	0.9	1.4	1.6	1.6	2.2
920-921	1	0.5	0.6	0.7	1.2	1.1	0.3	0.9	1.0	0.8	1.9	1.7	1.4
	2	0.7	0.7	1.0	1.2	1.3	0.4	1.2	1.3	1.1	2.0	2.0	1.9
	3	0.6	0.7	0.9	0.9	0.8	0.4	0.9	1.2	1.0	1.3	1.2	1.2
	4	0.5	0.5	0.7	1.1	1.0	0.3	0.9	0.8	0.8	1.6	1.7	0.9
	5	0.5	0.5	0.6	1.0	0.9	0.3	1.1	1.1	0.6	1.6	1.4	0.9
921-922	1	0.8	0.7	0.7	1.1	1.0	0.3	1.3	1.0	0.8	1.6	1.5	1.0
	2	0.5	0.6	0.6	1.2	1.1	0.3	1.1	1.1	0.6	1.9	1.8	1.2
	3	0.7	0.7	0.6	1.2	1.1	0.3	1.2	1.2	0.6	1.8	1.7	0.4
	4	0.6	0.6	0.5	1.3	1.2	0.3	1.1	1.0	0.5	1.8	1.8	0.4
	5	0.6	0.6	0.5	1.3	1.2	0.4	1.1	1.0	0.5	1.9	1.9	0.5

04715

Table No.-8

SECTION : SULTANPUR- SHIVNAGAR

TRC : 7967

SPEED : 25-75 KMPH

Run No. : 120110G and 120110J

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.5	0.5	0.5	0.7	0.7	0.2	0.7	0.6	0.5	1.2	1.1	0.5
	2	0.5	0.5	0.5	0.8	0.8	0.2	0.9	0.7	0.5	1.3	1.3	0.7
	3	0.5	0.5	0.5	0.9	0.8	0.2	0.9	0.7	0.5	1.4	1.3	0.7
	4	0.6	0.6	0.6	1.3	1.3	0.2	1.1	1.0	0.6	2.0	2.0	1.1
	5	0.7	0.7	0.6	1.2	1.3	0.2	1.1	1.1	0.6	1.9	1.9	0.7
919-920	1	0.8	0.9	0.8	1.2	1.2	0.2	1.2	1.4	0.7	1.9	1.9	1.0
	2	0.7	0.8	0.6	1.2	1.2	0.2	1.4	1.5	0.6	1.9	1.9	0.8
	3	0.7	0.8	0.7	1.3	1.3	0.3	1.3	1.4	0.7	2.0	2.0	0.8
	4	1.1	1.0	1.0	1.3	1.3	0.2	1.4	1.4	1.0	2.0	2.0	1.3
	5	0.7	0.7	0.9	1.0	0.9	0.3	1.4	1.1	1.0	1.5	1.5	1.6
920-921	1	0.7	0.9	0.7	1.1	1.1	0.3	1.0	1.2	0.7	1.7	1.7	1.2
	2	1.2	1.2	1.0	1.2	1.2	0.3	1.6	1.8	1.0	1.9	2.0	1.7
	3	1.0	1.0	1.0	1.1	1.1	0.3	1.5	1.4	1.0	1.7	1.7	1.2
	4	0.8	0.7	0.7	1.5	1.6	0.2	1.3	1.1	0.7	2.0	2.0	0.7
	5	0.7	0.6	0.6	1.0	0.9	0.2	1.2	1.1	0.6	1.5	1.4	0.6
921-922	1	1.0	1.0	0.8	1.3	1.2	0.3	1.3	1.5	1.0	1.9	1.8	1.0
	2	0.7	0.9	0.9	1.0	1.0	0.3	1.2	1.5	0.8	1.6	1.5	1.3
	3	0.9	0.9	0.8	1.0	1.0	0.2	1.3	1.2	0.8	1.5	1.5	1.0
	4	0.7	0.7	0.9	1.0	1.0	0.2	1.2	1.0	1.0	1.5	1.6	1.3
	5	0.8	0.7	0.8	1.0	1.0	0.3	1.1	0.9	0.8	1.6	1.6	1.1

04713



Table No.-9

SECTION : SULTANPUR-SHIVNAGAR

TRC : 7967

SPEED : 25-50 KMPH

Run No. : 120110G and 120110D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
118-919	1	0.5	0.5	0.5	1.0	1.0	0.2	0.8	0.6	0.6	1.5	1.6	0.6
	2	0.5	0.5	0.5	0.9	0.9	0.2	0.7	0.7	0.5	1.4	1.4	0.6
	3	0.5	0.5	0.5	0.8	0.9	0.2	0.8	0.8	0.5	1.3	1.3	0.6
	4	0.6	0.6	0.6	1.2	1.2	0.2	1.1	1.1	0.6	1.9	1.9	1.1
	5	0.5	0.5	0.5	1.0	1.0	0.2	1.0	1.0	0.6	1.5	1.5	0.8
919-920	1	0.6	0.5	0.6	0.9	0.9	0.1	1.0	0.9	0.6	1.3	1.4	1.1
	2	0.5	0.5	0.5	1.1	1.1	0.1	0.9	1.0	0.5	1.7	1.7	0.7
	3	0.5	0.5	0.5	0.9	0.9	0.2	0.9	0.8	0.5	1.4	1.4	0.5
	4	0.6	0.5	0.6	1.3	1.3	0.2	1.0	1.0	0.6	2.0	2.0	0.9
	5	0.6	0.6	0.7	1.0	1.0	0.2	1.0	1.1	0.8	1.6	1.5	1.3
920-921	1	0.5	0.5	0.5	1.1	1.1	0.2	0.8	1.0	0.5	1.7	1.6	0.9
	2	0.7	0.6	0.6	1.3	1.4	0.2	1.0	1.0	0.7	1.9	2.0	1.1
	3	0.6	0.6	0.6	1.1	1.1	0.2	0.9	1.1	0.7	1.7	1.6	0.8
	4	0.5	0.5	0.5	1.3	1.3	0.2	1.0	0.9	0.5	1.9	2.0	0.6
	5	0.6	0.6	0.5	0.9	0.9	0.2	1.0	1.2	0.5	1.6	1.5	0.6
921-922	1	0.5	0.5	0.5	1.0	1.0	0.2	1.1	1.1	0.6	1.6	1.6	0.9
	2	0.6	0.5	0.6	1.0	1.0	0.2	1.0	1.0	0.7	1.5	1.4	1.2
	3	0.6	0.6	0.5	1.0	1.1	0.1	0.8	1.0	0.5	1.5	1.6	0.6
	4	0.6	0.6	0.6	1.1	1.2	0.2	1.1	1.0	0.6	1.4	1.6	0.8
	5	0.5	0.5	0.5	1.1	1.1	0.2	1.0	0.9	0.5	1.7	1.9	0.7

04717

Table No.-10

SECTION : SULTANPUR- SHIVNAGAR

TRC : 7967

SPEED : 50-75 KMPH

Run No. : 120110D and 120110J

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.5	0.5	0.5	0.8	0.8	0.1	0.8	0.7	0.5	1.3	1.3	0.3
	2	0.5	0.5	0.5	0.9	1.0	0.1	0.7	0.8	0.5	1.5	1.5	0.3
	3	0.5	0.5	0.5	0.9	0.9	0.2	0.7	0.7	0.5	1.5	1.5	0.2
	4	0.6	0.6	0.5	0.9	0.9	0.2	0.8	0.8	0.5	1.4	1.4	0.3
	5	0.8	0.7	0.6	0.9	0.9	0.2	1.0	1.0	0.7	1.4	1.4	0.4
919-920	1	0.8	1.1	0.8	1.1	1.1	0.2	1.0	1.3	0.7	1.7	1.7	0.5
	2	0.8	0.8	0.6	0.8	0.8	0.2	1.3	1.4	0.6	1.3	1.3	0.5
	3	0.8	0.9	0.7	1.1	1.0	0.2	1.4	1.4	0.7	1.7	1.6	0.5
	4	1.2	1.1	0.9	0.8	0.8	0.3	1.4	1.4	0.9	1.2	1.3	0.6
	5	0.9	0.9	0.8	0.8	0.8	0.3	1.3	1.3	0.8	1.3	1.3	0.7
920-921	1	0.8	1.1	0.8	0.9	0.9	0.3	1.0	1.3	0.8	1.3	1.4	0.7
	2	1.5	1.5	1.1	0.9	0.9	0.3	1.8	2.0	1.1	1.4	1.4	0.9
	3	1.2	1.2	1.0	1.0	0.9	0.3	1.4	1.5	1.0	1.5	1.5	0.8
	4	0.9	0.9	0.8	1.2	1.2	0.3	1.3	1.3	0.8	1.9	1.9	0.3
	5	0.8	0.9	0.7	0.7	0.7	0.2	0.9	1.0	0.7	1.1	1.1	0.2
921-922	1	1.0	1.0	0.8	1.0	0.9	0.3	1.1	1.1	0.9	1.4	1.3	0.5
	2	0.9	1.1	1.0	0.8	0.8	0.3	1.5	1.6	0.9	1.1	1.2	0.5
	3	1.3	1.1	1.0	0.8	0.9	0.3	1.6	1.4	0.9	1.3	1.3	0.6
	4	1.0	0.9	0.9	0.7	0.7	0.2	1.2	1.2	1.0	1.0	1.0	0.8
	5	0.9	0.8	0.8	0.8	0.8	0.3	1.0	0.9	0.8	1.2	1.2	0.7

04718

Table No.-11

SECTION : SULTANPUR- SHIVNAGAR

TRC : 7967

SPEED : 50-100 KMPH

Run No. : 120110D and 130110N

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.4	0.5	0.4	0.9	1.0	0.2	0.8	0.8	0.4	1.4	1.5	0.9
	2	0.5	0.4	0.4	0.8	0.9	0.2	0.7	0.7	0.4	1.3	1.4	0.3
	3	0.5	0.5	0.5	0.6	0.6	0.2	0.7	0.7	0.5	1.0	1.0	0.5
	4	0.6	0.6	0.6	0.8	0.7	0.4	0.9	0.8	0.6	1.2	1.1	0.6
	5	0.5	0.5	0.6	0.6	0.6	0.3	0.8	0.7	0.7	0.9	0.9	0.8
919-920	1	0.6	0.6	0.7	0.6	0.6	0.3	0.9	0.8	0.8	1.0	1.0	0.8
	2	0.6	0.5	0.8	0.6	0.6	0.3	0.9	0.7	0.9	1.0	0.9	1.1
	3	0.6	0.5	0.8	0.9	0.7	0.6	0.8	0.9	0.9	1.3	1.0	0.9
	4	0.7	0.6	1.0	0.8	0.8	0.3	1.0	1.0	1.1	1.2	1.2	1.2
	5	0.7	0.6	0.9	0.8	0.9	0.5	1.0	0.9	1.1	1.2	1.4	1.5
920-921	1	0.5	0.7	0.7	0.7	0.8	0.3	0.8	0.9	0.7	1.2	1.3	1.0
	2	1.0	1.0	1.0	1.0	1.0	0.4	1.2	1.5	1.1	1.5	1.5	1.3
	3	0.8	0.8	1.0	0.7	0.8	0.4	0.9	1.2	1.0	1.1	1.2	1.0
	4	0.6	0.6	0.7	0.7	0.8	0.3	0.8	1.0	0.8	1.1	1.2	0.7
	5	0.6	0.7	0.6	0.6	0.7	0.2	0.8	0.8	0.6	1.0	1.1	0.5
921-922	1	0.7	0.7	0.6	0.7	0.7	0.3	0.9	0.8	0.6	1.1	1.1	0.8
	2	0.7	0.8	0.7	0.9	0.9	0.4	1.1	1.0	0.7	1.4	1.3	0.4
	3	1.0	0.9	0.8	1.0	1.0	0.3	1.3	1.2	0.7	1.5	1.5	0.4
	4	0.9	0.8	0.7	0.8	0.9	0.3	1.1	1.1	0.7	1.2	1.3	0.6
	5	0.7	0.7	0.6	1.0	1.0	0.4	0.9	0.9	0.6	1.6	1.6	0.4

04719

Table No.-12

SECTION : SULTANPUR- SHIVNAGAR

TRC : 7967

SPEED : 75-100 KMPH

Run No. : 120110J and 130110N

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.5	0.5	0.4	0.9	1.0	0.2	0.9	0.8	0.5	1.5	1.5	0.9
	2	0.4	0.4	0.4	0.8	0.8	0.2	0.6	0.6	0.4	1.2	1.2	0.5
	3	0.5	0.5	0.5	0.9	0.9	0.2	0.8	0.7	0.5	1.4	1.3	0.4
	4	0.6	0.6	0.6	1.0	1.0	0.4	0.9	0.9	0.6	1.6	1.6	0.6
	5	0.6	0.6	0.6	1.1	1.1	0.3	0.9	0.8	0.7	1.7	1.6	0.9
919-920	1	0.7	0.8	0.8	1.1	1.1	0.2	1.0	1.1	0.9	1.7	1.7	1.0
	2	0.6	0.7	0.8	0.7	0.7	0.3	1.1	1.4	0.9	1.2	1.2	1.1
	3	0.6	0.7	0.9	1.0	1.0	0.5	1.2	1.0	1.0	1.5	1.5	1.0
	4	0.9	0.9	1.0	0.7	0.7	0.3	1.2	0.9	1.1	1.0	1.1	1.1
	5	0.6	0.6	0.9	0.6	0.7	0.3	0.9	0.8	1.0	1.0	1.0	1.2
920-921	1	0.6	0.6	0.6	0.7	0.7	0.4	0.6	0.7	0.7	1.1	1.1	0.9
	2	0.8	0.8	0.8	0.7	0.8	0.3	1.0	0.9	0.9	1.1	1.2	1.0
	3	0.8	0.8	0.8	0.8	0.8	0.4	1.2	1.0	0.9	1.3	1.2	0.9
	4	0.6	0.6	0.7	1.4	1.3	0.3	1.1	0.9	0.7	2.0	2.0	0.8
	5	0.5	0.5	0.6	0.8	0.8	0.2	0.7	0.6	0.6	1.4	1.3	0.6
921-922	1	0.6	0.6	0.5	1.0	1.0	0.3	0.8	0.9	0.6	1.5	1.5	0.7
	2	0.5	0.6	0.6	1.0	1.0	0.3	1.0	1.1	0.6	1.6	1.5	0.6
	3	0.6	0.5	0.5	0.9	0.9	0.3	1.0	0.8	0.5	1.4	1.4	0.7
	4	0.5	0.5	0.7	0.8	0.8	0.4	0.8	0.8	0.7	1.3	1.2	1.1
	5	0.6	0.5	0.6	0.7	0.7	0.3	0.7	0.8	0.7	1.2	1.2	0.9

04720

## 5.0 Reporting of Results:

### On line Reports:

Two types of on line report have been generated by the system. One is digital exception report and other is analog or graphical report of sampled values. These reports are generated both in chord mode and profile mode. SD values, various indices, peak distribution, peak information and category information being reported in exception reports of chord mode and profile mode were calculated and found correct. The sample of exception report and analog or graphical report in chord and profile mode are placed as annexure II to V.

### Off line Reports:

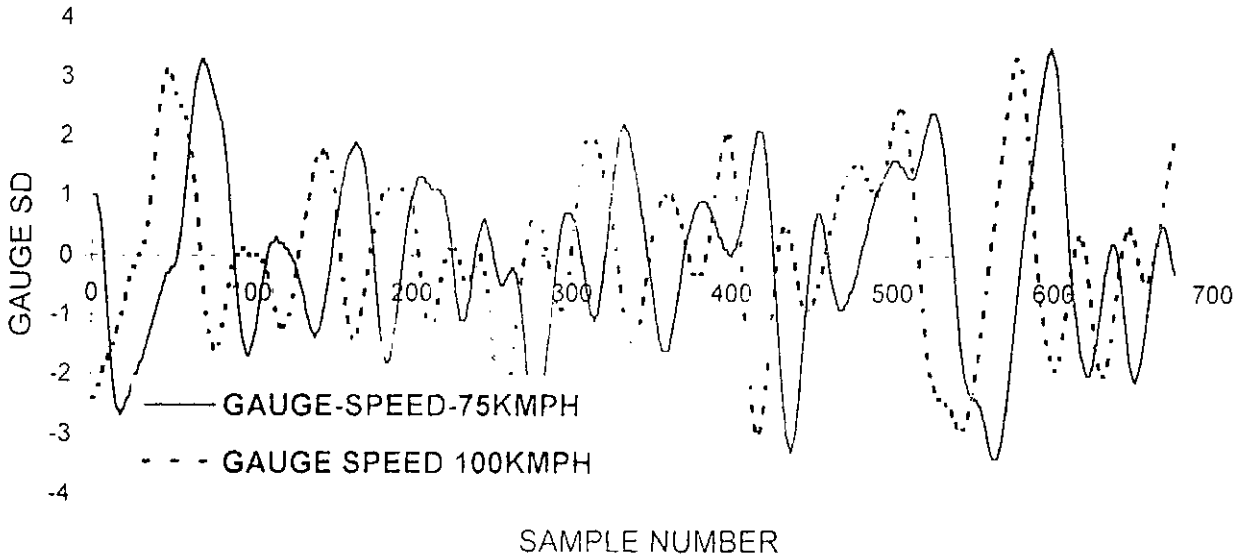
Various off-line reports are required to be generated using the processed/chord/profile data being stored during recording. All reports have been generated, values reported in off line reports have been compared with the values in On-line reports and various calculated values have been verified by manual calculation. All Reports have been generated and placed as annexure VI to XIII.

## 6.0 Conclusion:

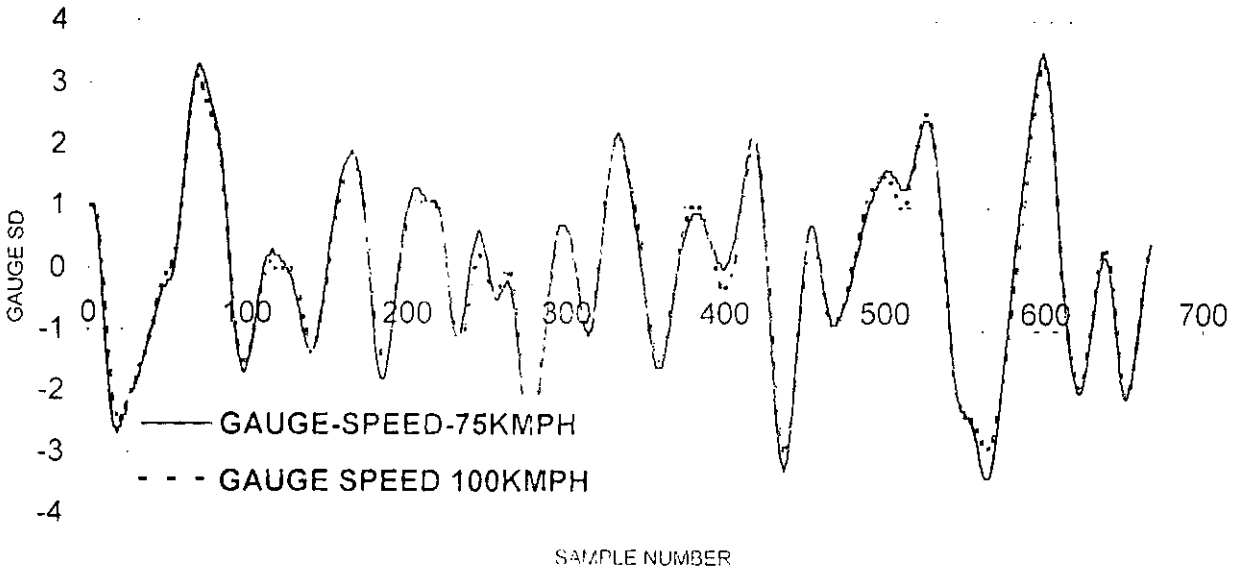
After examination of results of analysis given in Table No. 1 to 12 it is concluded that all values are within the accuracy limits prescribed in Para 5.2 of technical specifications. The Off-line reports generated using the on line report has been checked and found correct.

04721

SECTION:-SLN-SHNG TRC-7967  
JAN-2010 KM 922 BLOCK-1 MISMATCHED DATA



SECTION:-SLN-SHNG TRC-7967  
JAN-2010 KM 922 BLOCK-1 MATCHED DATA



04722

TRACK RECORDING RESULTS (CHORD MODE)

ROUTE CODE : 1108

DATE : 13/1/2010

RUN NO: N

KM : 926 To 927

LOC	SHORT CHORD							RIDE INDEX		TRACK INDICES			LONG CHORD					PARAMETER WISE INDICES			
	UN1L	UN1R	TW1	G	AL1L	AL1R	AVG-G	RIV	RIL	GF/TGI	SPD	MI	UN2L	UN2R	AL2L	AL2R	TW2	UNI	TWI	GI	ALI
Blk 1	2.4	2.3	1.6	1.1	1.1	1.2	19.4	2.53	2.59	110	78		4.1	4.3	1.5	1.6	1.2	71	106	96	126
Blk 2	3.3	3.0	2.5	1.0	1.7	2.0	18.2	2.50	2.98	77	86	**	5.3	4.5	2.6	2.8	2.3	61	74	100	79
Blk 3	2.2	2.5	2.8	1.2	1.9	1.7	19.6	2.89	3.38	77	93		5.0	4.7	2.9	2.5	2.5	62	65	93	82
Blk 4	2.7	2.5	2.6	1.3	1.6	1.7	20.5	2.54	3.22	82	96		5.3	4.4	2.2	2.3	2.2	62	71	89	90
Blk 5	2.7	2.7	1.9	1.0	1.3	1.3	19.3	2.55	3.09	100	99		5.0	5.2	1.8	1.7	1.7	59	94	100	114
1000											KM										

PEAK DISTRIBUTION

BAND	SHORT CHORD						LONG CHORD						IRPWM - 607						
	UN1L	UN1R	TW1	G	AL1L	AL1R	BAND	UN2L	UN2R	AL2L	AL2R	TW2	BAND	UN1L	UN1R	TW1	G	AL1L	AL1R
A	18	17	17	2	18	18	W	27	17	0	0	0	> LL <= HL	1	0	2	2	1	1
B	1	0	2	0	1	1	X	1	0	0	0	0	> HL	0	0	0	0	0	0
C	0	0	0	0	0	0	Y	0	0	0	0	0	Conc'd						
D	0	0	0	0	0	0	Z	0	0	0	0	0							

CATEGORY INFORMATION

B1 B0 B2 A0 B1 B1

TGI 89

Avg:Speed 90 KM/HR

PEAK INFORMATION

UN1L	-11/373	-10/924	10/316	-8/297	8/188	-7/847	-7/423	6/897	6/784	6/746
UN1R	-9/793	-9/423	9/338	-8/298	7/882	-7/847	-7/373	7/153	-6/946	6/609
TW1	9/487	8/579	7/795	-7/632	-7/351	7/319	6/852	6/690	6/277	-5/927
AL1L	6/496	-5/551	5/421	-4/801	-4/635	-4/523	-4/384	-4/313	-4/283	-4/247
AL1R	7/383	-5/620	-5/496	5/325	-5/281	5/248	-4/711	-4/550	4/512	-4/421
G	4/536	-4/483	3/757	3/701	-3/677	-3/384	-3/188	3/127	-2/917	2/877
UN2L	-18/368	-14/881	14/711	14/690	13/404	13/319	12/923	12/779	-12/187	11/574
UN2R	-15/368	14/923	14/614	-14/426	-14/152	13/838	-12/796	-11/851	11/348	10/710
TW2	-7/619	7/580	6/489	-6/353	5/692	4/893	4/797	-4/731	4/512	4/415
AL2L	9/498	6/636	-6/551	6/524	6/422	-6/385	6/283	-6/248	5/314	5/171
AL2R	9/385	-7/498	-7/283	6/628	6/552	-6/422	6/249	-5/712	-5/700	-5/545
VACC	0.13/423	-0.08/154	0.07/148	-0.06/910	0.06/891	-0.06/706	-0.06/342	0.06/297	0.05/840	0.05/779
LACC	-0.14/496	-0.10/420	0.09/692	0.09/643	0.09/551	0.09/531	-0.09/257	-0.08/832	-0.08/777	0.07/910

04723

CHORD MODE  
± 33 mm  
AL1L  
H=15 L=10

TRC NO : 7967  
± 33 mm  
AL1R  
H=10 L=6

RT CODE : 1108  
± 33 mm  
UN1L  
H=10 L=5

RLY : Northern Railway  
± 33 mm  
UN1R  
H=10 L=5

DIV : LKO  
From Km : 926  
To Km : 927

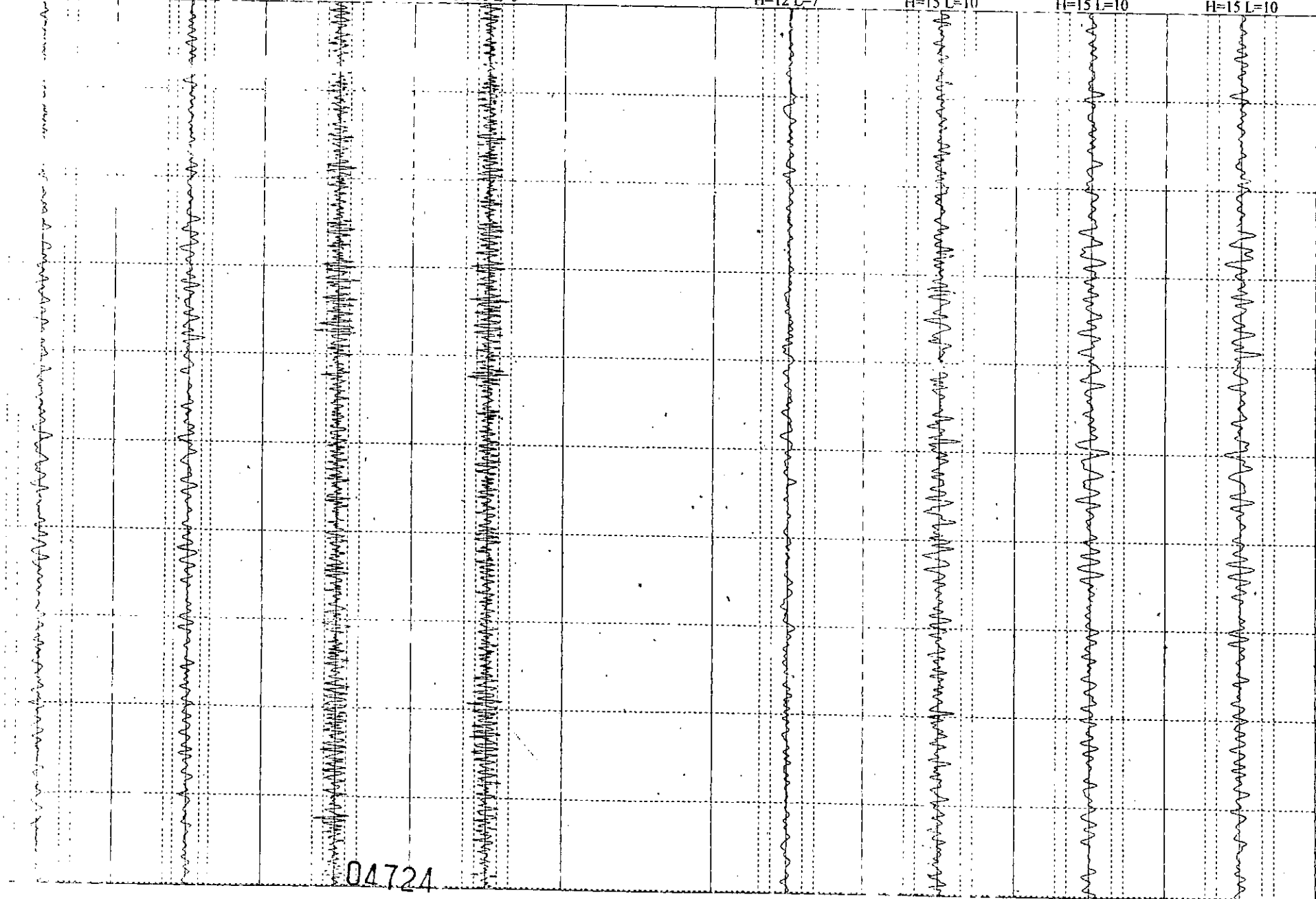
SEC : SLN-SHING  
± 33 mm  
GAUGE  
H=12 L=7

± 33 mm  
TW1  
H=15 L=10

DATE : 13/1/2010  
± 33 mm  
AL2L  
H=15 L=10

RUN NO : n  
± 33 mm  
AL2R  
H=15 L=10

AVG SPD



77kmph  
86kmph  
93kmph  
96kmph  
85kmph

Annexure-III



LOC	PROFILE - 1							RIDE INDEX		TRACK INDICES			PROFILE - 2					PARAMETER WISE INDICES			
	UN1L	UN1R	TW1	G	AL1L	AL1R	AVG-G	RIV	RIL	GF/TGI	SPD	MI	UN2L	UN2R	AL2L	AL2R	TW2	UNI	TWI	GI	ALI
Blk 1	2.4	2.3	1.5	1.3	3.0	3.1	20.6	1.77	1.95	62	37	***	6.8	7.1	7.9	7.8	1.6	26	111	89	61
Blk 2	2.3	2.4	1.6	0.8	2.9	2.8	20.4	2.10	2.15	76	50	***	4.2	4.4	8.4	8.3	1.8	49	106	108	65
Blk 3	2.4	2.9	1.6	1.0	1.5	1.4	20.7	2.21	2.40	94	61	***	3.2	3.6	4.9	5.2	1.6	61	106	100	102
Blk 4	4.9	6.1	3.1	1.2	2.3	2.1	20.2	2.96	2.59	67	74	***	7.4	8.8	5.8	5.8	3.4	20	58	93	80
Blk 5	2.6	3.5	2.1	1.1	1.9	1.9	20.8	2.55	2.67	81	83	**	3.9	4.6	4.1	4.0	2.2	70	87	96	88
1000												KM									

PEAK DISTRIBUTION

BAND	PROFILE - 1						PROFILE - 2					
	UN1L	UN1R	TW1	G	AL1L	AL1R	BAND	UN2L	UN2R	AL2L	AL2R	TW2
P1	20	26	21	2	24	22	P2	33	35	45	42	21
Q1	4	10	6	0	7	8	Q2	16	25	32	32	9
R1	0	3	0	0	1	0	R2	7	7	12	15	1
S1	0	1	0	0	0	0	S2	0	2	3	4	0

CATEGORY INFORMATION

B4 B10 B6 A0 B7 B8 TGI 75 Avg.Speed 61 KMPH

PEAK INFORMATION

UN1L	15/894	15/707	13/594	-10/762	10/600	9/695	-7/905	7/360	6/253	-6/206
UN1R	21/744	-20/755	17/594	15/893	11/600	-10/681	-8/905	8/496	8/308	6/253
TW1	-10/766	8/745	8/308	7/872	7/497	6/693	-6/589	6/137	-4/913	4/608
AL1L	11/314	-9/27	-8/761	-6/801	-6/285	6/163	5/600	5/400	5/200	-5/148
AL1R	-10/313	-9/163	8/25	6/805	-6/783	6/147	5/293	-4/669	-4/600	-4/544
G	5/756	-4/913	3/674	3/425	-3/184	-3/130	-3/28	-2/894	-2/829	2/748
UN2L	17/752	17/669	17/601	17/197	-16/704	15/895	14/595	14/202	12/29	-9/800
UN2R	26/752	-21/704	20/669	19/601	15/198	-14/890	13/201	13/31	-12/800	-12/590
TW2	-11/767	9/309	-8/868	-8/734	-7/590	7/498	7/137	6/693	-5/604	-4/902
AL2L	20/308	-20/16	-16/268	15/770	-15/187	14/237	-13/929	12/537	12/394	-11/631
AL2R	-21/308	21/19	17/281	-16/770	13/748	-13/237	13/188	12/929	-12/537	11/631
VACC	-0.15/744	-0.09/894	-0.09/760	-0.09/595	-0.07/914	0.07/692	0.07/605	0.04/312	-0.03/831	0.03/503
LACC	0.06/781	-0.05/858	-0.05/591	-0.04/941	0.04/738	0.04/687	0.04/498	0.04/416	-0.03/845	-0.03/642

04725

Annexure-V

AVG SPD

RUN NO : n

DATE : 13/1/2010

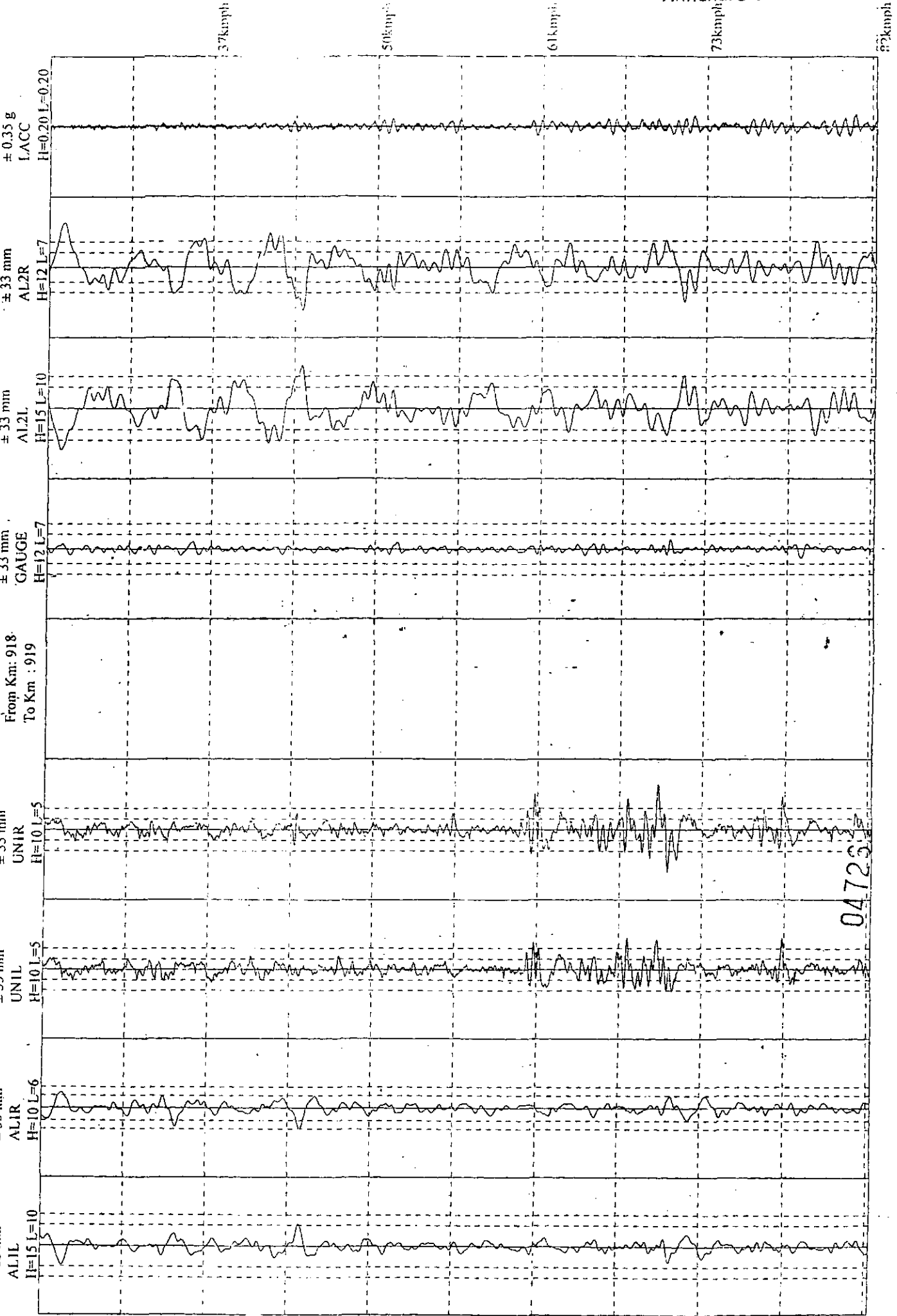
SEC : SLN:SHNG

DIV : LKO

RT CODE : 1108 RLY : North,cmRailway

TRC NO : 7967

PROFILE MODE



± 0.35 g

± 33 mm

± 33 mm

± 33 mm

From Km: 918  
To Km : 919

± 33 mm

± 33 mm

± 33 mm

± 33 mm

04723

83kmph

## SUMMARY REPORT - INDEX OF TRACK RECORDING RESULTS

(PRINTED ON - 18/02/2010)

TRC No. : 7967  
 RUN NUMBER : 13012010n  
 RAILWAY : Northern  
 SECTION : SLN-SHNG  
 DIRECTION : UP  
 KM : 916 to 936

S.N.	KM		PARAMETER WISE CATEGORY OF TRACK				CTR	TGI	TQI	SPEED (KMPH)
	FROM	TO	UI	TI	AI	GI				
1	916	917	64	80	75	74	-13	73	108	33
2	917	918	NON RECORDED							
3	918	919	83	98	113	94	48	103	78	61
4	919	920	64	84	118	91	29	101	92	95
5	920	921	72	86	114	95	26	101	88	86
6	921	922	91	95	101	95	82	98	75	43
7	922	923	87	90	98	102	62	95	79	49
8	923	924	43	51	68	70	-103	61	144	28
9	924	925	NON RECORDED							
10	925	926	72	90	100	96	60	93	87	56
11	926	927	63	82	99	96	44	90	96	90
12	927	928	81	97	105	85	58	97	80	102
13	928	929	76	89	100	87	55	93	87	95
14	929	930	66	93	108	92	43	96	88	85
15	930	931	69	97	107	99	60	97	83	30
16	931	932	56	86	104	99	31	92	97	89
17	932	933	74	94	104	94	55	96	85	93
18	933	934	70	93	106	98	70	97	85	89
19	934	935	96	111	121	99	90	113	63	86
20	935	936	78	100	114	89	64	103	79	78
Section average			72.50	89.78	103.06	91.94	42.28	94.39	88.56	74.33

## SECTION SUMMARY

TOTAL KMs : 20  
 TOTAL NR KMs : 2  
 TOTAL RECORDED KMs : 18

## NR SUMMARY

## TGI SUMMARY

		No. of KMs	% of Recorded Kms
1	KMs with TGI ( >= 80 )	16	88.89
2	KMs with TGI ( >= 50 < 80 )	2	11.11
3	KMs with TGI ( >= 36 < 50 )	0	0.00

04727

					Recorded KM
1.	Km with CTR (100 to 60)	7	39	7	39
2.	Km with CTR (59 to 30)	7	39	14	78
3.	Km with CTR (29 to 0)	2	11	16	89
4.	Km with CTR (-1 to -50)	1	6	17	94
5.	Km with CTR (-51 to -100)	0	0	17	94
6.	Km with CTR (< -100)	1	6	18	100

## CATEGORY SUMMARY

		UNEVENNESS		TWIST		ALIGNMENT		GAUGE	
		No. of KMs	%age	No. of KMs	%age	No. of KMs	%age	No. of KMs	%age
1.	Km in category A	2	11	10	56	9	50	16	89
2.	Km in category B	16	89	7	39	7	39	2	11
3.	Km in category C	0	0	1	6	2	11	0	0
4.	Km in category D	0	0	0	0	0	0	0	0

UNI : Unevenness Left

UNR : Unevenness Right

TW : Twist

ALI : Alignment Left

ALR : Alignment Right

G : Gauge

CTR : Cumulative Track Record

TQI : Track Quality Index

TGI : Track Geometry Index

NR : Non Recording

04728

## SUMMARY REPORT - CATEGORY OF TRACK RECORDING RESULTS (CHORD MODE)

(PRINTED ON - 18/02/2010)

TRC No. : 7967  
 RUN NUMBER : 13012010n  
 RAILWAY : Northern Railway  
 SECTION : SLN-SHNG  
 DIRECTION : UP  
 KM : 916 to 936

S.N.	KM		PARAMETER WISE CATEGORY OF TRACK						CTR	TGI	TQI	SPEED (KMPH)
	FROM	TO	UNL	UNR	TW	ALL	ALR	G				
1.	916	917	B5	B0	B5	C11	B8	B1	-13	73	108	33
2.	917	918	NON RECORDED									
3.	918	919	B5	B4	A5	A1	A0	A0	48	103	78	61
4.	919	920	B0	B1	B3	A0	A0	A0	29	101	92	95
5.	920	921	B2	B3	B4	A0	A0	A0	26	101	88	86
6.	921	922	A1	A0	A0	B0	B0	A0	82	98	75	43
7.	922	923	A0	B1	B6	B3	B4	A0	62	95	79	49
8.	923	924	B3	B5	C24	C14	C13	B5	-103	61	144	28
9.	924	925	NON RECORDED									
10.	925	926	A0	B1	A1	B3	B2	A0	60	93	87	56
11.	926	927	B1	B0	B2	B1	B1	A0	44	90	96	90
12.	927	928	B0	B1	A1	A0	A0	A0	58	97	80	102
13.	928	929	B0	B0	B0	B2	B2	A0	55	93	87	95
14.	929	930	B1	B0	A0	A0	A0	A0	43	96	88	85
15.	930	931	B1	B0	A1	A0	A1	A0	60	97	83	80
16.	931	932	B1	B3	B2	B0	A1	A0	31	92	97	89
17.	932	933	B1	B0	A2	B0	A0	A0	55	96	85	93
18.	933	934	A0	B0	A1	A0	A0	A0	70	97	85	89
19.	934	935	A0	A0	A0	A0	A0	A0	90	113	63	86
20.	935	936	A0	B1	A0	A0	A0	A0	64	103	79	78
Section average									42.28	94.39	88.56	74.33

## SECTION SUMMARY

TOTAL Km : 20  
 TOTAL NR Km : 2  
 TOTAL Km Recorded : 18

## NR SUMMARY

## PEAK SUMMARY (SHORT CHORD)

	UNEVENNESS ( > 6 mm )	TWIST ( > 5 mm )	ALIGNMENT ( > 3 mm )	GAUGE ( > 5 mm )
I. Peaks per km	37	12	27	1

## CTR SUMMARY

No. of KMs	% of Recorded KMs	Cumulative No of KMs	Cumulative % of

				Recorded KM	
1.	Km with CTR (100 to 60)	7	39	7	39
2.	Km with CTR ( 59 to 30)	7	39	14	78
3.	Km with CTR ( 29 to 0)	2	11	16	89
4.	Km with CTR ( -1 to -50)	1	6	17	94
5.	Km with CTR (-51 to -100)	0	0	17	94
6.	Km with CTR ( < -100)	1	6	18	100

## CATEGORY SUMMARY

		UNEVENNESS		TWIST		ALIGNMENT		GAUGE	
		No. of KMs	%age	No. of KMs	%age	No. of KMs	%age	No. of KMs	%age
1.	Km in category A	2	11	10	56	9	50	16	89
2.	Km in category B	16	89	7	39	7	39	2	11
3.	Km in category C	0	0	1	6	2	11	0	0
4.	Km in category D	0	0	0	0	0	0	0	0

UNL : Unneveness Left

UNR : Unneveness Right

TW : Twist

ALL : Alignment Left

ALR : Alignment Right

G : Gauge

CTR : Cumulative Track Record

TQI : Track Quality Index

TGI : Track Geometry Index

NR : Non Recording

04730

## ANALYSIS w.r.t. PARA 607(2) OF IRPWM - 1986

RAILWAY : Northern Railway  
SECTION : SLN-SHNG  
DIRECTION : UP  
TRC NO. : 7967  
MONTH OF RUN : 13-01-2010 n  
Km FROM : 916 TO 936

SNO.	KM		PARAMETERWISE NUMBER OF PEAKS						
	FROM	TO	UNEVENNESS		TWIST		GAUGE	ALIGNMENT	
			> 10 <= 15mm	> 15mm	> 7 <= 12mm	> 12mm	> 6mm	> 5 <= 10mm	> 10mm
1	916	917	5	0	5	0	#1	#18	#1
2	922	923	1	0	5	#1	0	7	0
3	923	924	8	0	#24	0	#5	#27	0
4	930	931	1	0	0	#1	0	1	0
5	935	936							

## SECTION SUMMARY

UNEVENNESS (Peaks > 10 mm <= 15 mm) = 0 (Km)  
UNEVENNESS (Peaks > 15 mm) = 0 (Km)  
TWIST (Peaks > 7 mm <= 12 mm) = 1 (Km)  
TWIST (Peaks > 12 mm) = 2 (Km)  
ALIGNMENT (Peaks > 5 mm <= 10 mm) = 2 (Km)  
ALIGNMENT (Peaks > 10 mm) = 1 (Km)  
GAUGE (Peaks > 6 mm) = 2 (Km)

TOTAL KM RECORDED = 20 (Km)

KM ON ACCOUNT OF UNEVENNESS = 0 (0.00%)  
KM ON ACCOUNT OF TWIST = 3 (15.00%)  
KM ON ACCOUNT OF ALIGNMENT = 2 (10.00%)  
KM ON ACCOUNT OF GAUGE = 2 (10.00%)  
TOTAL (After accounting for common kms) = 4 (20.00%)

04731

## PWI / ADEN / DEN SECTION WISE SUMMART OF TRACK RESULTS

TRC NO : 7967  
RAIL WAY : Northern

SECTION	LINE	DATE	%NR	KM FROM	KM TO	UI	TI	AI	GI	TGI	%BUM	%BPM
PWI/SLN	UP	13-01-2010n	25	916	920	73	89	100	87	93	16	21
PWI/SHNG	UP	13-01-2010n	6	920	936	73	90	103	93	95	13	21
AEN/SLN	UP	13-01-2010n	10	916	936	73	90	102	92	94	14	21

UI : Unevenness Index  
 TI : Twist Index  
 AI : Alignment Index  
 GI : Gauge Index  
 TGI : Track Geometry Index  
 NR : Non Recording

04732



**EXCEPTION REPORT OF PEAKS (CHORD MODE) EXCEEDING THE 'B' LIMITS (SHORT CHORD) FOR ATTENDING ISOLATED DEFECTS**

TRC NO: 7967 RT CODE: 1108  
RAILWAY: Northern Railway

LINE: UP DATE OF RECORDING: 13/01/2010  
KM FROM 916 KM TO: 936

RUN NO: n SECTION: SLN-SHING

KM		Para	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist
From	To																													
916	917	UNL	-14	135	-14	129	-12	579	11	478	-11	590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
916	917	TWI	-11	928	-9	922	8	917	8	22	-8	639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
916	917	ALL	11	925	8	42	-8	937	-7	647	7	321	7	634	-6	62	-6	639	6	99	-6	34	6	423	-	-	-	-		
916	917	ALR	-9	925	-8	43	8	938	-7	634	7	111	7	478	-6	105	6	58	-	-	-	-	-	-	-	-	-	-		
916	917	G	-8	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
917	918																													
NON RECORDED																														
918	919	UNI	-13	706	-12	600	11	597	11	709	11	896	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
918	919	UNR	-13	600	13	597	-12	706	12	754	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
918	919	TWI	-10	767	8	498	8	746	-8	756	8	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
918	919	ALL	7	759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
919	920	UNR	-12	712	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
919	920	TWI	-10	753	9	818	-8	704	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
920	921	UNL	11	298	-11	307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
920	921	UNR	-14	302	14	300	-12	333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
920	921	TWI	9	462	-9	476	8	330	8	611	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
921	922	UNL	-11	516	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
922	923	UNR	-12	687	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
922	923	TWI	14	763	11	690	8	107	-8	759	8	651	-8	942	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
922	923	ALL	9	118	-7	126	6	699	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
922	923	ALR	-7	118	6	126	-6	196	-6	699	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
923	924	UNL	12	745	-11	693	11	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
923	924	UNR	-12	382	12	887	11	745	11	867	-11	489	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
923	924	TWI	12	861	11	827	-11	661	-10	674	-10	600	10	517	10	911	9	773	9	191	9	362	9	899	-9	907	9	571	9	990
923	924		8	398	-8	582	-8	847	-8	464	-8	895	-8	393	8	606	8	632	-8	938	-8	526	-	-	-	-	-	-	-	
923	924	ALL	9	164	8	200	8	201	8	604	7	569	-7	573	7	323	-6	170	-6	328	-6	477	6	786	6	873	-6	903	-6	972
923	924	ALR	-8	603	8	903	7	574	7	478	-7	897	-7	527	6	536	-6	365	-6	373	-6	634	-6	700	6	173	-6	199	-	-
923	924	G	10	565	9	610	-8	592	8	362	-7	356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
924	925																													
NON RECORDED																														
925	926	UNR	-11	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
925	926	TWI	-8	419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
925	926	ALL	7	309	-7	664	-6	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
925	926	ALR	7	664	-6	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
926	927	UNL	-11	373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
926	927	TWI	9	487	8	579	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
926	927	ALL	6	496	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
926	927	ALR	7	383	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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927	928	UNR	-12	976	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
927	928	TWI	8	978	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
928	929	ALL	-6	249	6	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
928	929	ALR	-6	347	6	359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
929	930	UNL	-11	672	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
930	931	UNL	12	753	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
930	931	TWI	13	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
930	931	ALR	6	766	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
931	932	UNL	-14	997	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
931	932	UNR	-12	997	-11	982	-11	629	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
931	932	TWI	-9	662	8	525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
931	932	ALR	-6	666	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
932	933	UNL	-11	843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
932	933	TWI	10	466	-8	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
933	934	TWI	-9	406	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
935	936	UNR	-11	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Average TGI : 94

Abbreviations:

UL1: Unevenness Left 1, UR1: Unevenness Right 1,

UL2: Unevenness Left 2, UR2: Unevenness Right 2,

TW1: Twist 1, TW2: Twist 2,

AL1: Alignment Left 1, AR1: Alignment Right 1,

AL2: Alignment Left 2, AR2: Alignment Right 2,

GA: Gauge

TGI: Track Geometry Index

**EXCEPTION REPORT OF PEAKS (CHORD MODE) EXCEEDING THE 'X' LIMITS (LONG CHORD) FOR ATTENDING ISOLATED DEFECTS**

TRC NO: 7967 RT CODE: 1108  
RAILWAY: Northern Railway

LINE: UP DATE OF RECORDING: 13/01/2010  
KM FROM: 916 KM TO: 936

RUN NO: n SECTION: SLN-SHNG

From	To	Para	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	Peak	Dist	
916	917	UNL	25	935	-23	922	-21	630	19	643	19	597	19	474	18	635	-18	582	-17	485	-17	593	-	-	-	-	-	-	-
916	917	UNR	-18	593	17	474	17	97	17	597	-16	582	16	588	-16	469	-16	22	-	-	-	-	-	-	-	-	-	-	
916	917	ALL	16	927	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
917	918	NON RECORDED																											
918	919	UNL	-18	596	-18	709	18	749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
918	919	UNR	-25	595	-21	708	21	734	19	749	19	756	-19	761	17	591	17	765	-17	894	16	672	16	599	-	-	-	-	
919	920	UNL	-18	382	-17	530	16	535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
919	920	UNR	-19	738	-16	530	16	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
920	921	UNL	17	301	16	369	16	484	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
920	921	UNR	19	302	-18	298	18	322	18	332	-17	328	-17	318	-17	356	-16	305	16	196	-16	479	-	-	-	-	-	-	
921	922	UNL	16	291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
922	923	UNR	-16	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
923	924	UNL	26	890	-25	895	21	714	19	566	-19	941	-18	619	-18	719	-18	753	17	748	-17	831	17	870	16	802	-16	575	-16
923	924	UNR	-16	971	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
923	924	UNR	29	890	-25	941	-23	895	23	870	-22	619	22	748	22	610	21	714	20	937	-19	752	19	566	-19	571	-18	719	18
923	924	UNL	-17	386	17	206	16	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
924	925	NON RECORDED																											
925	926	UNR	-16	93	16	353	16	362	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
926	927	UNL	-18	368	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
929	930	UNL	-21	659	-19	675	16	671	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
929	930	UNR	-19	521	-19	659	18	526	17	188	16	664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
930	931	UNL	19	756	-18	247	-18	104	-17	202	-16	751	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
930	931	UNR	21	756	-18	760	17	765	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
931	932	UNL	-25	1000	-20	444	-18	985	-16	969	-16	662	16	989	16	666	-	-	-	-	-	-	-	-	-	-	-		
931	932	UNR	-25	1000	-20	985	-19	443	19	989	-19	691	18	981	17	686	-16	699	-	-	-	-	-	-	-	-	-		
932	933	UNL	-20	70	19	4	-19	0	-19	200	-19	400	-19	600	-19	800	17	74	-	-	-	-	-	-	-	-	-		
932	933	UNR	-19	0	19	110	-19	200	-19	400	-19	600	-19	800	17	4	-	-	-	-	-	-	-	-	-	-	-		
933	934	UNL	-16	403	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
933	934	UNR	22	406	-21	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
934	935	UNL	16	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
935	936	UNL	-22	4	20	604	-17	599	-17	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
935	936	UNR	-22	3	19	604	-18	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Average TGI : 94

Abbreviations:

UL1: Unevenness Left 1, UR1: Unevenness Right 1,

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Annexure-XI/1

UL2: Unevenness Left 2, UR2: Unevenness Right 2,  
TW1: Twist 1, TW2: Twist 2,  
AL1: Alignment Left 1, AR1: Alignment Right 1,  
AL2: Alignment Left 2, AR2: Alignment Right 2,  
GA: Gauge  
TGI: Track Geometry Index

Annexure-X-2

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# EXCEPTION REPORT FOR BLOCKS REQUIRING PLANNED OR URGENT MAINTENANCE (CHORD MODE)

RAILWAY : NORTHERN

SECTION : SLN-SHING

KM FROM : 916

KM TO : 936

LINE : UP

DATE OF RUN : 13 - 01 - 2010 n

TRC NO : 7967

KILOMETER		BLOCK NO	SPEED	Normalised value of SD												MAX VALUE	
FROM	TO			On short chord						On long chord							
				UL1	UR1	TW1	AL1	AR1	GA	UL2	UR2	TW2	AL2	AR2			
916	917	1	30	0.82	0.73	0.60	0.68	0.71	0.67		0.65	0.68	0.52	0.65	0.65	0.82	62
916	917	3	33	1.09	0.85	0.52	0.53	0.55	0.42		0.84	0.76	0.36	0.46	0.51	1.09	71
916	917	4	36	0.82	0.73	0.50	0.53	0.53	0.33		0.77	0.61	0.34	0.44	0.46	0.82	78
916	917	5	39	0.76	0.70	0.69	0.68	0.55	0.61		0.78	0.58	0.54	0.65	0.52	0.78	66
918	919	4	74	0.94	1.06	0.67	0.42	0.29	0.36		0.76	1.01	0.48	0.32	0.25	1.06	88
919	920	1	91	0.67	0.94	0.52	0.32	0.26	0.39		0.51	0.68	0.32	0.24	0.21	0.94	102
919	920	4	97	1.03	0.97	0.69	0.32	0.37	0.33		0.78	0.81	0.44	0.25	0.29	1.03	91
920	921	1	94	0.61	0.85	0.52	0.32	0.29	0.36		0.42	0.64	0.33	0.27	0.25	0.85	102
920	921	2	92	1.09	1.21	0.69	0.34	0.32	0.31		0.85	1.03	0.46	0.29	0.25	1.21	91
920	921	3	89	0.79	0.79	0.60	0.39	0.37	0.31		0.58	0.65	0.46	0.35	0.32	0.79	91
923	924	1	38	0.85	0.88	0.62	0.58	0.55	0.47		0.77	0.73	0.52	0.51	0.48	0.88	71
923	924	2	27	0.91	1.03	0.71	0.63	0.58	0.61		0.69	0.86	0.58	0.57	0.51	1.03	65
923	924	3	24	1.00	0.94	0.88	0.63	0.68	0.75		0.91	0.85	0.72	0.57	0.62	1.00	58
923	924	4	22	1.03	0.97	0.90	0.68	0.68	0.61		0.97	1.07	0.74	0.62	0.62	1.07	55
923	924	5	30	1.06	1.06	0.98	0.66	0.66	0.31		1.14	1.15	0.68	0.57	0.59	1.15	58
925	926	1	42	0.82	1.00	0.55	0.47	0.39	0.33		0.69	0.76	0.40	0.40	0.37	1.00	85
925	926	2	51	0.70	0.94	0.52	0.50	0.45	0.28		0.62	0.80	0.36	0.44	0.41	0.94	83
926	927	2	86	1.00	0.91	0.60	0.45	0.53	0.28		0.72	0.61	0.46	0.41	0.44	1.00	81
926	927	3	93	0.67	0.76	0.67	0.50	0.45	0.33		0.68	0.64	0.50	0.46	0.40	0.76	81
926	927	4	96	0.82	0.76	0.62	0.42	0.45	0.36		0.72	0.59	0.44	0.35	0.37	0.82	85
926	927	5	99	0.82	0.82	0.45	0.34	0.34	0.28		0.68	0.70	0.34	0.29	0.27	0.82	97
927	928	2	102	0.76	0.64	0.43	0.32	0.34	0.33		0.54	0.45	0.28	0.27	0.30	0.76	102
928	929	1	99	0.85	0.82	0.52	0.29	0.34	0.42		0.69	0.57	0.40	0.25	0.29	0.85	98
929	930	3	86	0.82	0.88	0.55	0.34	0.34	0.39		0.69	0.74	0.40	0.30	0.29	0.88	93
929	930	4	84	1.00	0.91	0.55	0.45	0.45	0.28		0.86	0.77	0.38	0.41	0.41	1.00	83
930	931	1	80	0.97	0.88	0.48	0.32	0.37	0.36		0.76	0.66	0.36	0.29	0.30	0.97	95
931	932	3	90	0.79	0.85	0.55	0.39	0.34	0.31		0.68	0.66	0.44	0.35	0.32	0.85	93
931	932	4	92	0.97	1.00	0.62	0.45	0.42	0.31		0.81	0.85	0.14	0.38	0.37	1.00	93
931	932	5	94	1.06	1.09	0.50	0.39	0.39	0.28		0.88	0.96	0.38	0.37	0.37	1.09	8
932	933	1	94	0.85	0.82	0.57	0.45	0.45	0.36		0.93	0.86	0.44	0.40	0.40	0.93	80

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Annexure-XI.1

932	933	5	91	0.76	0.73	0.40	0.42	0.34	0.39	0.53	0.53	0.30	0.37	0.30	0.76	95
933	934	2	90	0.76	0.82	0.55	0.42	0.39	0.33	0.65	0.66	0.42	0.38	0.37	0.82	

Abbreviations:

U1.1: Unevenness Left 1, UR1: Unevenness Right 1,

U1.2: Unevenness Left 2, UR2: Unevenness Right 2,

TW1: Twist 1, TW2: Twist 2,

AL1: Alignment Left 1, AR1: Alignment Right 1,

AL2: Alignment Left 2, AR2: Alignment Right 2,

GA: Gauge

IGI: Track Geometry Index

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