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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
Research Designs and Standards Organisation
LUCKNOW

FIELD VALIDATION REPORT
OF
UPGRADED TRACK RECORDING SYSTEM
(TRC 7965 & 7966)

TECHNICAL REPORT NO. TM - 114

05489

TRACK MACHINES & MONITORING DIRECTORATE

AUGUST 2007

This report is based on study made by the Track Machines and Monitoring Dte. of RDSO. Although, every care has been taken 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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Exec. Director/TM

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1. Introduction

The work of Upgradation of two Track Recording Cars (7973 & 803) was awarded to M/s Systems Aids Bangalore vide P.O. No SP3/001/GM/OT/94/0025 dated 12.7.2000. The lab validation and inspection of the systems to be installed in TRC-7966 and TRC-7965 was carried out by nominated RDSO officials in December-2003 and November-2004 respectively. The lab validation reports TM-67 (TRC-7966) and TM-78 (TRC-7965) were 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 February-2006. 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 Movement system installed in TRC-7965 and 7966 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 2.11 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.

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- v) The runs can be forward and/or reverse directions. Following shall be the limits for acceptance.
- b) For repeatability, the standard deviation of difference in 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)-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	1.5 mm
Alignment	1.5 mm
Unevenness	1.5 mm
Twist	1.5 mm
Super elevation	2.0 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 consists straight as well as curved track and station yard. Thus the section fulfills the requirement of para 2.11.1(iv) of the specifications. This section has been selected as there is a low traffic density on this route which provides through path for conducting the trial even at low speed. The section being on Lucknow division, it was easy to make arrangements for trials. The arrangement includes getting loco and confirmation of trial program.

b) **Speed of Recording:**

As per para 2.11.1 (ii) 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

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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.

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

b) Details of trial runs:

Window Trailing

S.No.	TRC-No.	SLN - SHNG (WT)			
		Speed	Run No	Km.	
				From	To
1	7966	25	080206A	918	936
2	"	50	080206C	918	936
3	"	75	070206D	918	936
3	"	100	090206B	918	936
4	7965	25	090206A	918	936
5	"	50	090206C	918	936
6	"	100	080206E	918	936

Window Leading

S.No.	TRC-No.	SLN - SHNG (WL)			
		Speed	Run No	Km.	
				From	To
1	7966	25	090206E	936	918
2	"	50	070206C	936	918
3	"	75	090206C	936	918
4	"	100	080206D	936	918
5	7965	25	070206C	936	918
6	"	75	070206E	936	918
7	"	100	080206B	936	918
8	"	50	080206D	936	918

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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 with 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 gauge parameter is placed as annexure I. Now when the data of 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 21 which are given below:

Window Leading : (Reverse Direction)**Table No.-1**SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-50 KMPHTRC : 7965
Run No. : 070206C and 080206D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	1.1	0.9	0.9	0.8	0.7	0.6	1.3	1.3	0.9	1.2	1.1	0.8
	2	0.9	0.8	0.7	0.8	0.7	0.5	1.2	1.1	0.8	1.2	1.2	0.6
	3	0.9	0.7	0.7	0.9	0.8	0.7	0.9	0.8	0.7	1.3	1.3	0.6
	4	0.9	0.8	0.6	0.9	0.9	0.5	1.1	1.0	0.6	1.4	1.3	0.5
	5	0.9	0.8	0.6	0.7	0.7	0.5	1.0	1.1	0.7	1.0	1.0	0.6
934-933	1	0.9	0.8	0.6	0.6	0.6	0.5	1.1	1.1	0.7	1.0	0.9	0.6
	2	0.9	0.8	0.7	0.7	0.6	0.5	1.1	1.1	0.8	1.0	1.0	0.7
	3	0.8	0.6	0.6	0.8	0.8	0.6	1.0	0.9	0.7	1.2	1.3	0.6
	4	0.8	0.7	0.6	0.7	0.8	0.5	0.9	0.9	0.7	1.1	1.2	0.5
	5	0.8	0.6	0.4	0.8	0.7	0.3	0.8	0.9	0.4	1.2	1.1	0.4

Table No.-2SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-75 KMPHTRC : 7965
Run No. : 070206C and 070206E

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	1.5	1.3	1.4	0.6	0.7	0.9	1.5	1.3	1.3	0.9	1.0	1.1
	2	1.3	1.1	1.0	0.8	0.8	0.7	1.4	1.4	1.1	1.2	1.3	1.0
	3	1.2	1.0	1.1	1.0	1.0	0.9	1.3	1.2	1.1	1.5	1.5	0.9
	4	1.1	1.0	0.8	0.8	0.8	0.6	1.4	1.3	0.8	1.2	1.1	0.7
	5	1.2	1.0	0.9	0.8	0.8	0.6	1.3	1.4	1.0	1.2	1.2	0.8
934-933	1	1.2	1.0	1.0	1.0	0.9	1.0	1.2	1.3	1.5	1.5	1.2	1.0
	2	1.1	1.1	1.0	0.9	0.8	1.1	1.3	1.0	1.4	1.5	1.3	1.3
	3	1.0	1.2	1.2	1.1	1.0	1.2	1.4	1.3	1.5	1.5	1.4	1.1
	4	1.2	1.0	1.3	1.2	1.1	1.0	1.5	1.2	1.4	1.4	1.0	1.0
	5	1.1	1.4	1.5	1.5	1.2	1.0	1.2	1.5	1.3	1.4	1.1	1.1

Table No.-3SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-100 KMPHTRC : 7965
Run No. : 070206C and 080206B

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	0.5	0.5	0.8	0.8	0.8	1.0	1.2	1.1	1.0	1.3	1.3	1.9
	2	0.4	0.4	0.8	0.8	0.9	0.7	1.3	1.0	1.0	1.3	1.4	2.0
	3	0.3	0.4	0.7	0.9	0.9	1.0	0.8	0.7	0.8	1.4	1.4	2.0
	4	0.3	0.3	0.5	0.7	0.6	0.6	0.7	0.9	0.6	1.0	1.0	1.9
	5	0.3	0.3	0.7	0.7	0.7	0.6	0.7	0.9	0.8	1.1	1.1	1.8
934-933	1	0.3	0.3	0.7	0.9	0.9	0.9	1.0	0.9	0.8	1.4	1.4	1.6
	2	0.4	0.4	1.0	0.7	0.8	0.7	1.1	1.1	1.2	1.1	1.1	1.9
	3	0.5	0.5	0.9	1.0	0.9	1.5	1.0	1.1	1.1	1.5	1.5	1.8
	4	0.5	0.5	0.8	0.9	0.9	1.2	1.1	1.1	0.9	1.4	1.3	1.4
	5	0.5	0.5	0.6	0.8	0.8	1.0	1.0	0.9	0.7	1.2	1.3	1.5

Table No.-4

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7965

SPEED : 50-75 KMPH

Run No. : 080206D and 070206E

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	0.7	0.6	0.6	0.7	0.7	0.6	0.8	0.7	0.6	1.0	1.0	0.5
	2	0.5	0.4	0.6	0.7	0.7	0.4	0.7	0.5	0.6	1.1	1.0	0.5
	3	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.8	0.8	0.6
	4	0.4	0.4	0.4	0.9	1.0	0.4	0.5	0.5	0.4	1.0	1.0	0.4
	5	0.5	0.4	0.4	0.5	0.5	0.3	0.5	0.5	0.5	0.5	0.7	0.7
934-933	1	0.7	0.4	0.4	0.6	0.4	0.6	0.4	0.4	0.4	0.4	1.0	1.0
	2	0.5	0.5	0.5	0.4	0.5	0.7	0.5	0.5	0.5	0.5	0.4	1.4
	3	0.5	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5	1.0
	4	0.4	0.5	0.6	0.4	0.5	0.6	0.6	0.5	0.7	1.0	0.4	1.6
	5	0.5	0.6	0.7	0.7	0.6	0.4	0.7	0.6	0.8	1.0	1.0	1.6

Table No.-5

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7965

SPEED : 50-100 KMPH

Run No. : 080206D and 080206B

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	0.9	0.7	0.6	0.8	0.8	0.8	1.3	1.0	0.7	1.3	1.2	1.5
	2	0.9	0.7	0.7	0.9	0.9	0.5	1.4	1.1	0.8	1.4	1.4	2.0
	3	0.9	0.7	0.6	0.9	0.9	0.8	1.0	0.9	0.7	1.4	1.4	2.0
	4	0.9	0.6	0.4	0.9	0.9	0.5	1.0	0.8	0.5	1.5	1.5	2.0
	5	0.9	0.7	0.6	0.7	0.7	0.5	1.0	0.9	0.7	1.1	1.1	1.7
934-933	1	0.8	0.6	0.5	0.8	0.7	0.7	1.1	0.9	0.7	1.1	1.1	1.6
	2	0.9	0.7	0.7	0.7	0.7	0.6	1.2	1.1	0.8	1.1	1.0	1.9
	3	0.8	0.6	0.7	1.0	0.9	1.3	1.0	1.0	0.8	1.5	1.3	2.0
	4	0.9	0.7	0.6	0.9	0.8	1.0	1.3	1.2	0.7	1.4	1.2	1.4
	5	0.8	0.6	0.5	0.8	0.7	0.8	1.1	0.9	0.5	1.2	1.1	1.4

Table No.-6

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7965

SPEED : 75-100 KMPH

Run No. : 070206E and 080206B

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
935-934	1	0.7	0.5	0.5	0.8	0.8	0.8	1.1	0.7	0.6	1.2	1.2	1.4
	2	0.8	0.7	0.6	0.8	0.8	0.6	1.2	0.9	0.7	1.3	1.2	2.0
	3	0.8	0.6	0.5	0.7	0.8	0.8	0.9	0.7	0.6	1.2	1.2	2.0
	4	0.8	0.6	0.5	0.7	0.7	0.5	0.9	0.8	0.5	1.1	1.1	1.9
	5	0.8	0.6	0.5	0.7	0.8	0.6	0.9	0.8	0.6	1.2	1.2	1.8
934-933	1	0.5	0.8	0.8	0.9	0.5	0.9	0.5	0.9	0.5	1.0	0.5	1.4
	2	0.6	0.8	0.8	0.8	0.6	0.8	0.6	0.8	0.6	1.1	0.6	1.0
	3	0.5	0.7	0.7	0.7	0.5	0.7	0.5	0.7	0.5	1.4	0.5	1.6
	4	0.5	0.7	0.7	0.9	0.5	0.6	0.5	0.9	0.5	1.5	0.5	1.9
	5	0.5	0.9	0.8	0.9	0.5	0.8	0.5	0.8	0.5	1.4	0.5	2.0

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Table No.-7

SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-50 KMPH

TRC : 7966
Run No. : 090206E and 070206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	1.5	1.4	0.8	1.5	1.5	0.7	1.5	1.5	1.1	1.5	1.5	2.0
	2	1.3	0.7	0.9	1.1	1.1	0.8	1.4	1.4	1.0	1.4	1.4	1.2
	3	1.5	0.8	0.6	1.1	1.1	0.8	1.4	1.4	0.7	1.3	1.5	1.3
	4	1.4	1.2	1.2	1.5	1.4	1.4	1.5	1.5	1.3	1.5	1.3	2.0
	5	1.4	1.1	1.3	1.5	1.5	1.0	1.4	1.5	1.4	1.4	1.2	2.0
928-927	1	0.7	0.6	0.8	1.2	1.2	1.0	1.1	0.9	0.9	1.5	1.3	1.9
	2	0.7	0.6	0.7	1.4	1.4	1.0	1.0	1.2	0.8	1.4	1.3	1.8
	3	0.7	0.6	0.8	1.5	1.5	1.0	1.0	1.2	0.9	1.4	1.5	1.6
	4	0.8	0.7	0.8	1.4	1.4	0.6	1.2	1.3	1.0	1.5	1.4	2.0
	5	0.8	0.7	0.8	1.5	1.5	0.9	1.4	1.2	0.9	1.5	1.5	1.9

Table No.-8

SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-75 KMPH

TRC : 7966
Run No. : 090206E and 090206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	0.8	0.4	0.8	1.4	1.4	0.3	1.5	1.4	1.0	1.5	1.4	1.1
	2	1.0	0.5	0.9	1.1	1.1	0.5	1.4	1.5	1.1	1.4	1.5	0.9
	3	1.5	0.6	0.6	1.4	1.4	0.5	1.2	1.4	0.6	1.3	1.2	0.6
	4	1.2	1.1	1.0	1.5	1.4	0.8	1.3	1.3	1.1	1.2	1.5	1.4
	5	1.1	1.1	1.3	1.5	1.5	0.5	1.5	1.4	1.5	1.5	1.4	1.5
928-927	1	0.4	0.4	0.9	0.9	0.9	0.3	0.8	1.0	1.1	1.5	1.5	2.0
	2	0.3	0.4	0.9	1.1	1.1	0.4	0.7	1.2	1.1	1.5	1.4	1.2
	3	0.4	0.6	0.9	1.3	1.3	0.4	0.7	1.4	1.1	1.4	1.3	1.4
	4	0.4	0.6	0.9	1.4	1.5	0.3	1.0	1.1	1.1	1.4	1.5	1.2
	5	0.5	0.6	0.9	1.3	1.4	0.4	1.3	1.3	0.9	1.3	1.4	0.7

Table No.-9

SECTION : SHIVNAGAR-SULTANPUR
SPEED : 25-100 KMPH

TRC : 7966
Run No. : 090206E and 080206D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	1.1	0.7	0.9	1.5	1.5	0.7	1.5	1.5	1.1	1.5	1.5	2.0
	2	1.3	0.7	0.9	1.1	1.1	0.8	1.4	1.4	1.0	1.4	1.4	1.2
	3	1.5	0.8	0.6	1.1	1.1	0.8	1.4	1.4	0.7	1.3	1.5	1.3
	4	1.4	1.2	1.2	1.5	1.4	1.4	1.5	1.5	1.3	1.5	1.3	2.0
	5	1.4	1.1	1.3	1.5	1.5	1.0	1.4	1.5	1.4	1.4	1.2	2.0
928-927	1	0.7	0.6	0.8	1.2	1.2	1.0	1.1	0.9	0.9	1.5	1.3	1.9
	2	0.7	0.6	0.7	1.4	1.4	1.0	1.0	1.2	0.8	1.4	1.3	1.8
	3	0.7	0.6	0.8	1.5	1.5	1.0	1.0	1.2	0.9	1.4	1.5	1.6
	4	0.8	0.7	0.8	1.4	1.4	0.6	1.2	1.3	1.0	1.5	1.4	2.0
	5	0.8	0.7	0.8	1.5	1.5	0.9	1.4	1.2	0.9	1.5	1.5	1.9

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Table No.-10

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7966

SPEED : 50-75 KMPH

Run No. : 070206C and 090206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	0.9	0.8	0.9	1.1	1.1	0.3	1.5	1.4	1.0	1.5	1.4	1.1
	2	1.1	0.5	0.9	1.1	1.1	0.5	1.4	1.5	1.1	1.4	1.5	0.9
	3	1.5	0.6	0.6	1.4	1.4	0.5	1.2	1.4	0.6	1.3	1.2	0.6
	4	1.2	1.1	1.0	1.5	1.4	0.8	1.3	1.3	1.1	1.2	1.5	1.4
	5	1.1	1.1	1.3	1.5	1.5	0.5	1.5	1.4	1.5	1.5	1.4	1.5
928-927	1	0.4	0.4	0.9	0.9	0.9	0.3	0.8	1.0	1.1	1.5	1.5	2.0
	2	0.3	0.4	0.9	1.1	1.1	0.4	0.7	1.2	1.1	1.5	1.4	1.2
	3	0.4	0.6	0.9	1.3	1.3	0.4	0.7	1.4	1.1	1.4	1.3	1.4
	4	0.4	0.6	0.9	1.4	1.5	0.3	1.0	1.1	1.1	1.4	1.5	1.2
	5	0.5	0.6	0.9	1.3	1.4	0.4	1.3	1.3	0.9	1.3	1.4	0.7

Table No.-11

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7966

SPEED : 50-100 KMPH

Run No. : 070206C and 080206D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	1.1	0.9	0.9	1.0	0.9	0.6	1.0	1.0	0.7	1.5	1.5	2.0
	2	0.9	0.5	0.6	0.8	0.7	0.6	0.9	0.7	0.7	1.2	1.1	1.0
	3	0.4	0.6	0.5	0.9	0.9	0.5	0.8	0.8	0.6	1.3	1.2	1.0
	4	0.7	0.6	0.8	1.0	1.0	1.2	1.2	1.1	0.9	1.5	1.5	2.0
	5	0.8	0.7	0.7	0.8	0.9	0.8	1.2	0.9	0.8	1.2	1.3	2.0
928-927	1	0.3	0.6	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.3	1.3	2.0
	2	0.6	0.7	0.9	0.9	1.0	0.9	1.0	1.1	1.0	1.4	1.5	2.0
	3	0.7	0.9	0.9	1.2	1.1	0.9	1.1	1.3	1.1	1.5	1.5	2.0
	4	0.9	0.7	0.9	1.0	1.0	0.7	1.3	1.2	1.1	1.5	1.5	1.9
	5	0.7	0.6	0.9	0.8	0.8	0.9	1.2	1.1	0.9	1.3	1.2	1.9

Table No.-12

SECTION : SHIVNAGAR-SULTANPUR

TRC : 7966

SPEED : 75-100 KMPH

Run No. : 090206C and 080206D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
929-928	1	0.8	0.6	0.6	1.0	0.9	0.6	1.0	1.0	0.7	1.5	1.5	2.0
	2	0.7	0.5	0.6	0.8	0.7	0.6	0.9	0.7	0.7	1.2	1.1	1.0
	3	0.7	0.6	0.5	0.9	0.9	0.5	0.8	0.8	0.6	1.3	1.2	1.0
	4	0.7	0.6	0.8	1.0	1.0	1.2	1.2	1.1	0.9	1.5	1.5	2.0
	5	0.8	0.7	0.7	0.8	0.9	0.8	1.2	0.9	0.8	1.2	1.3	2.0
928-927	1	0.8	0.6	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.3	1.3	2.0
	2	0.9	0.7	0.9	0.9	1.0	0.9	1.0	1.1	1.0	1.4	1.5	2.0
	3	0.8	0.8	0.9	1.2	1.1	0.9	1.1	1.3	1.1	1.5	1.5	2.0
	4	0.9	0.8	0.9	1.0	1.0	0.7	1.3	1.2	1.1	1.5	1.5	1.9
	5	0.9	0.8	0.9	0.8	0.8	0.9	1.2	1.1	0.9	1.3	1.2	1.9

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Window Trailing (Forward Direction)

Table No.-13

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 25-50 KMPH

Run No. : 080206A and 080206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.36	0.39	0.49	0.81	0.79	0.21	0.85	0.66	0.57	1.26	1.23	0.39
	2	0.38	0.40	0.42	0.64	0.65	0.21	0.91	0.90	0.50	0.98	0.99	0.40
	3	0.36	0.36	0.66	1.00	0.98	0.22	1.09	0.76	0.82	1.50	1.50	0.70
	4	0.33	0.38	0.56	0.79	0.78	0.25	0.94	0.74	0.63	1.26	1.24	0.48
	5	0.33	0.36	0.79	1.09	1.07	0.24	1.09	0.86	0.94	1.50	1.50	1.28
919-920	1	0.26	0.33	0.34	0.80	0.78	0.19	0.56	0.53	0.40	1.29	1.26	0.56
	2	0.44	0.49	0.86	0.90	0.88	0.23	1.28	1.32	1.05	1.41	1.40	0.77
	3	0.37	0.40	0.88	1.33	1.30	0.22	1.35	0.94	1.07	1.50	1.50	0.72
	4	0.39	0.55	0.69	0.83	0.82	0.22	1.16	1.50	0.81	1.35	1.33	0.67
	5	0.36	0.44	0.69	0.70	0.72	0.14	1.10	1.00	0.85	1.10	1.10	0.63

Table No.-14

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 25-75 KMPH

Run No. : 080206A and 070206D

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.42	0.50	0.36	0.69	0.73	0.99	0.63	0.77	0.42	1.08	1.10	1.39
	2	0.49	0.48	0.39	0.68	0.75	0.61	0.77	0.84	0.45	1.06	1.15	1.07
	3	0.38	0.46	0.44	0.89	0.92	0.66	0.65	0.82	0.54	1.46	1.50	1.54
	4	0.37	0.44	0.41	0.67	0.72	0.53	0.58	0.71	0.47	1.08	1.13	1.47
	5	0.32	0.36	0.49	0.84	0.86	0.59	0.66	0.61	0.59	1.36	1.40	1.73
919-920	1	0.33	0.38	0.32	0.72	0.70	0.46	0.48	0.49	0.37	1.21	1.18	1.83
	2	0.45	0.45	0.56	0.94	0.93	0.57	0.72	0.75	0.66	1.50	1.50	2.00
	3	0.36	0.41	0.45	0.87	0.83	0.44	0.77	0.68	0.53	1.43	1.37	1.85
	4	0.39	0.53	0.42	0.72	0.91	1.16	0.71	1.50	0.47	1.17	1.32	1.86
	5	0.36	0.44	0.37	0.58	0.61	0.55	0.60	0.95	0.45	0.93	0.93	1.26

Table No.-15

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 25-100 KMPH

Run No. : 080206A and 090206B

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.47	0.43	0.42	0.62	0.76	1.29	0.72	0.75	0.47	0.94	1.06	1.47
	2	0.45	0.37	0.41	0.57	0.63	0.77	0.85	0.73	0.47	0.87	0.96	1.49
	3	0.41	0.41	0.53	0.98	0.95	1.19	0.70	0.85	0.67	1.50	1.50	2.00
	4	0.49	0.46	0.57	0.77	0.79	0.98	0.73	0.75	0.67	1.20	1.23	1.90
	5	0.39	0.34	0.57	0.92	0.93	0.99	0.74	0.75	0.70	1.50	1.50	1.80
919-920	1	0.36	0.26	0.38	0.78	0.81	0.60	0.50	0.44	0.46	1.35	1.41	2.00
	2	0.59	0.49	0.63	0.97	0.92	1.18	0.96	0.97	0.73	1.50	1.49	1.70
	3	0.53	0.38	0.62	0.84	0.78	0.83	1.15	0.74	0.71	1.37	1.31	2.00
	4	0.45	0.53	0.56	0.68	0.91	1.34	0.80	1.50	0.65	1.09	1.29	1.60
	5	0.42	0.35	0.57	0.67	0.66	0.80	0.81	0.99	0.66	1.02	0.99	1.77

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Table No.-16

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 50-75 KMPH

Run No. : (080206C and 070206D)

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.34	0.45	0.50	0.75	0.81	0.98	0.65	0.64	0.56	1.18	1.23	1.31
	2	0.42	0.44	0.47	0.64	0.69	0.54	0.77	0.72	0.55	1.01	1.08	0.91
	3	0.36	0.44	0.56	0.89	0.86	0.57	0.95	0.77	0.69	1.40	1.36	1.34
	4	0.39	0.50	0.63	0.75	0.79	0.41	0.90	0.81	0.72	1.17	1.24	1.37
	5	0.38	0.46	0.77	0.79	0.82	0.56	1.09	0.95	0.92	1.24	1.28	2.00
919-920	1	0.35	0.46	0.36	0.63	0.63	0.40	0.58	0.52	0.41	0.97	0.97	1.80
	2	0.50	0.53	0.65	0.70	0.74	0.56	0.95	1.00	0.73	1.05	1.09	2.00
	3	0.40	0.45	0.76	1.18	1.15	0.42	1.24	0.87	0.90	1.50	1.50	1.79
	4	0.38	0.42	0.61	0.78	0.86	1.05	0.92	0.71	0.67	1.24	1.29	1.80
	5	0.31	0.38	0.63	0.37	0.42	0.54	0.85	0.65	0.74	0.57	0.63	1.09

Table No.-17

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 50-100 KMPH

Run No. : (080206C and 070206D)

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.38	0.42	0.51	0.72	0.86	1.28	0.65	0.62	0.53	1.12	1.25	1.43
	2	0.40	0.39	0.49	0.62	0.64	0.77	0.73	0.69	0.53	0.91	0.95	1.34
	3	0.36	0.46	0.52	1.04	0.92	1.12	0.86	0.79	0.60	1.50	1.48	1.73
	4	0.49	0.57	0.77	0.88	0.84	0.97	0.84	0.89	0.83	1.35	1.32	2.00
	5	0.43	0.48	0.91	0.93	0.91	1.02	1.09	1.03	1.07	1.46	1.47	2.00
919-920	1	0.44	0.45	0.42	0.59	0.60	0.58	0.58	0.48	0.48	0.91	0.96	1.90
	2	0.60	0.58	0.82	0.67	0.65	1.23	0.96	0.90	0.92	0.94	0.92	1.80
	3	0.54	0.50	0.75	1.22	1.19	0.82	1.35	0.81	0.84	1.50	1.50	1.70
	4	0.43	0.39	0.68	0.56	0.78	1.27	0.91	0.56	0.71	0.90	1.08	1.90
	5	0.31	0.38	0.59	0.50	0.58	0.79	0.79	0.54	0.66	0.75	0.86	1.60

Table No.-18

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7966

SPEED : 75-100 KMPH

Run No. : (070206D and 090206B)

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
918-919	1	0.28	0.34	0.33	0.32	0.34	0.73	0.31	0.40	0.38	0.48	0.49	1.16
	2	0.33	0.37	0.34	0.41	0.43	0.61	0.38	0.46	0.40	0.63	0.65	1.11
	3	0.27	0.37	0.41	0.49	0.37	0.84	0.37	0.53	0.48	0.68	0.57	1.81
	4	0.44	0.47	0.53	0.47	0.48	0.95	0.59	0.61	0.59	0.67	0.72	1.90
	5	0.38	0.39	0.59	0.54	0.54	0.68	0.59	0.62	0.72	0.83	0.86	1.80
919-920	1	0.29	0.40	0.36	0.33	0.35	0.52	0.37	0.43	0.44	0.53	0.58	1.70
	2	0.39	0.42	0.50	0.49	0.40	0.98	0.55	0.54	0.58	0.68	0.60	1.90
	3	0.43	0.45	0.54	0.39	0.40	0.64	0.80	0.62	0.64	0.60	0.62	2.00
	4	0.42	0.41	0.42	0.52	0.54	0.70	0.44	0.49	0.47	0.80	0.79	1.90
	5	0.24	0.35	0.38	0.32	0.30	0.53	0.38	0.42	0.46	0.47	0.47	1.90

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Table No.-19

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7965

SPEED : 25-50 KMPH

Run No. : 090206A and 090206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
926-927	1	0.43	0.55	0.55	0.59	0.61	0.28	0.80	1.03	0.58	0.94	0.94	0.84
	2	0.45	0.68	1.10	0.87	0.88	0.16	1.30	1.50	1.31	1.39	1.40	1.29
	3	0.43	0.82	0.66	0.65	0.66	0.15	1.28	1.40	0.81	0.99	1.01	1.14
	4	0.37	0.64	0.65	0.60	0.60	0.11	0.91	1.46	0.78	0.92	0.92	0.79
	5	0.43	0.55	0.62	0.64	0.63	0.12	1.37	1.29	0.74	0.98	0.96	0.83
927-928	1	0.46	0.57	0.66	0.76	0.76	0.13	1.23	1.16	0.81	1.13	1.12	1.04
	2	0.19	0.40	0.63	0.65	0.64	0.10	0.44	0.83	0.77	1.04	1.04	0.98
	3	0.35	0.57	0.83	0.79	0.80	0.13	1.11	1.37	1.03	1.27	1.27	1.29
	4	0.36	0.52	0.58	1.02	1.02	0.13	1.18	1.34	0.66	1.30	1.40	2.00
	5	0.23	0.34	0.34	0.63	0.64	0.11	0.69	0.85	0.37	0.93	0.95	0.67

Table No.-20

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7965

SPEED : 25-100 KMPH

Run No. : 090206A and 080206E

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
926-927	1	0.58	0.90	0.86	0.89	0.91	0.55	0.71	1.14	0.94	1.46	1.47	2.00
	2	0.64	1.03	1.36	1.10	1.09	0.49	1.22	1.40	1.40	1.50	1.40	1.90
	3	0.84	1.12	1.50	0.85	0.82	0.54	1.25	1.50	1.50	1.40	1.37	1.80
	4	0.49	1.04	1.10	0.76	0.76	0.43	0.87	1.30	1.16	1.27	1.25	1.70
	5	0.49	1.08	1.40	0.75	0.74	0.38	0.98	1.20	1.50	1.25	1.25	2.00
927-928	1	0.50	1.18	1.30	0.73	0.75	0.41	1.08	1.50	1.50	1.20	1.24	1.90
	2	0.33	0.69	0.96	0.83	0.81	0.37	0.48	1.25	1.07	1.40	1.37	1.80
	3	0.36	0.95	1.25	1.01	1.05	0.39	0.70	1.40	1.34	1.50	1.40	1.90
	4	0.68	0.70	1.40	0.86	0.90	0.36	1.50	1.50	1.40	1.39	1.45	1.89
	5	0.34	0.42	0.63	0.89	0.84	0.64	0.50	0.76	0.78	1.49	1.43	1.70

Table No.-21

SECTION : -SULTANPUR- SHIVNAGAR

TRC : 7965

SPEED : 50-100 KMPH

Run No. : 090206A and 090206C

KM	BLK	UN1L	UN1R	TW1	AL1L	AL1R	G	UN2L	UN2R	TW2	AL2L	AL2R	XL
926-927	1	0.35	0.66	0.75	0.55	0.49	0.46	0.67	0.86	0.82	0.84	0.77	2.00
	2	0.47	0.84	1.10	0.84	0.79	0.44	1.25	1.50	1.24	1.27	1.20	1.80
	3	0.76	0.73	1.50	0.83	0.75	0.45	1.50	1.40	1.40	1.24	1.15	1.90
	4	0.30	0.75	0.98	0.64	0.64	0.40	0.67	1.18	0.99	1.01	1.03	2.00
	5	0.37	0.91	1.50	0.65	0.63	0.32	0.96	1.50	1.50	1.00	0.99	1.80
927-928	1	0.34	1.16	1.40	0.79	0.78	0.38	0.80	1.40	1.50	1.33	1.31	2.00
	2	0.29	0.56	0.99	0.66	0.60	0.35	0.49	1.30	1.09	1.06	0.97	1.90
	3	0.35	0.75	1.17	0.76	0.72	0.34	1.12	1.33	1.30	1.22	1.16	1.96
	4	0.70	0.68	1.50	0.71	0.73	0.32	1.50	1.30	1.50	1.15	1.18	1.95
	5	0.37	0.31	0.65	0.72	0.69	0.62	0.81	0.63	0.81	1.13	1.11	1.74

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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.

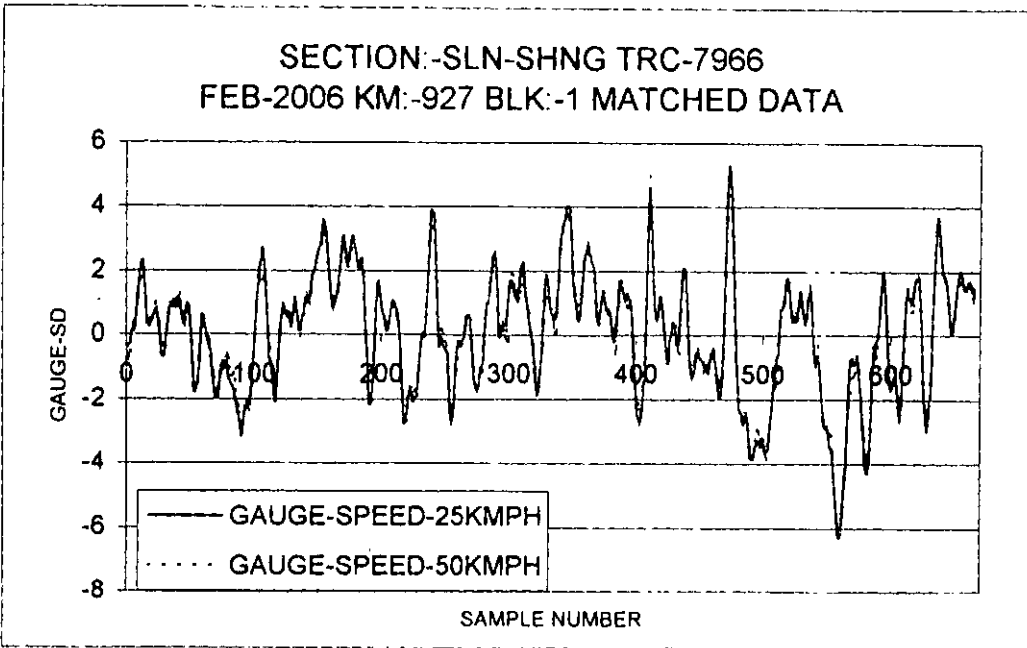
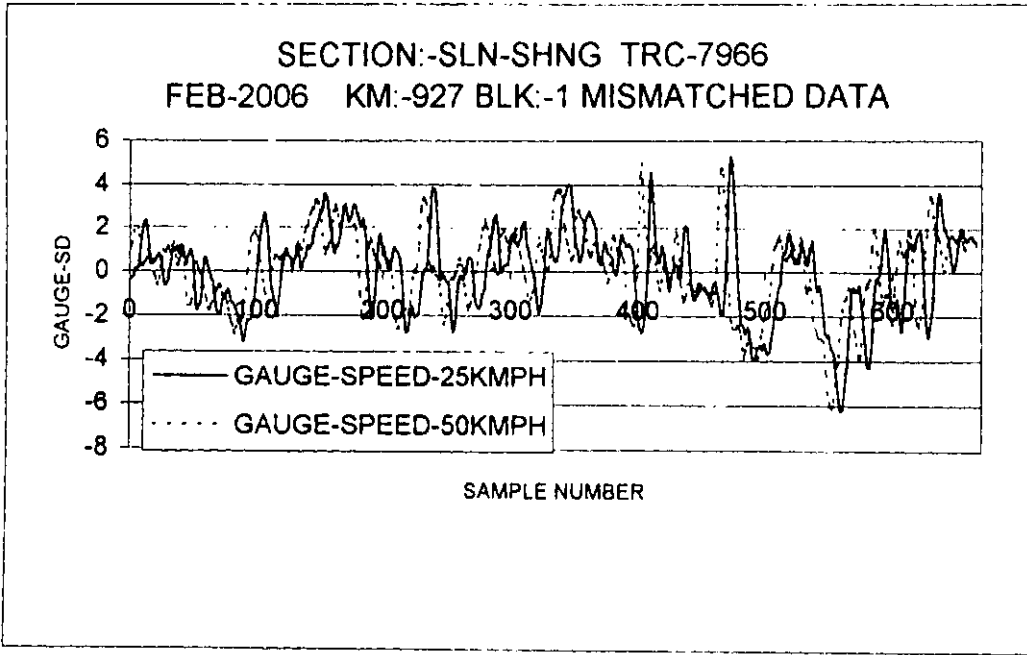
Off-line Reports:

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. 2 to 21 it is concluded that all values are within the accuracy limits prescribed in Para 2.11 of technical specifications. The off line reports generated using the on line report has been checked and found correct.

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TRACK RECORDING RESULTS (CHORD MODE)

ROUTE CODE : 9041

DATE : 16/2/2007

RUN NO : B

KM : 465 To 466

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	2.0	1.9	1.9	1.7	1.7	1.8	-5.3	2.57	3.08	86	98		3.1	2.8	2.2	2.6	2.2	91	94	76	85
Blk 2	2.1	2.2	2.4	1.8	1.6	2.2	-5.3	2.81	3.15	77	97		3.6	3.7	2.1	3.2	2.6	79	77	74	77
Blk 3	2.3	2.3	2.0	1.5	1.9	1.9	-5.2	2.82	2.98	79	97		3.8	3.7	2.7	2.8	2.1	77	90	83	77
Blk 4	2.3	2.2	2.2	1.3	2.4	2.2	-5.5	2.72	3.12	69	97		3.6	3.6	3.4	3.2	2.4	80	83	89	59
Blk 5	2.5	2.0	2.3	1.6	1.7	1.9	-5.0	2.62	3.08	81	98		3.9	3.5	2.3	2.7	2.4	78	80	79	82
1027											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	25	23	17	17	24	35	W	5	5	2	0	3	>LL <= HL	0	1	4	17	3	4
B	0	1	4	0	3	4	X	0	1	0	0	0	>HL	0	0	0	0	0	0
C	0	0	0	0	1	0	Y	0	0	0	0	0	Concrd				#		
D	0	0	0	0	0	0	Z	0	0	0	0	0							

CATEGORY INFORMATION

B0 B1 B4 B0 B3 B4

TGI 78

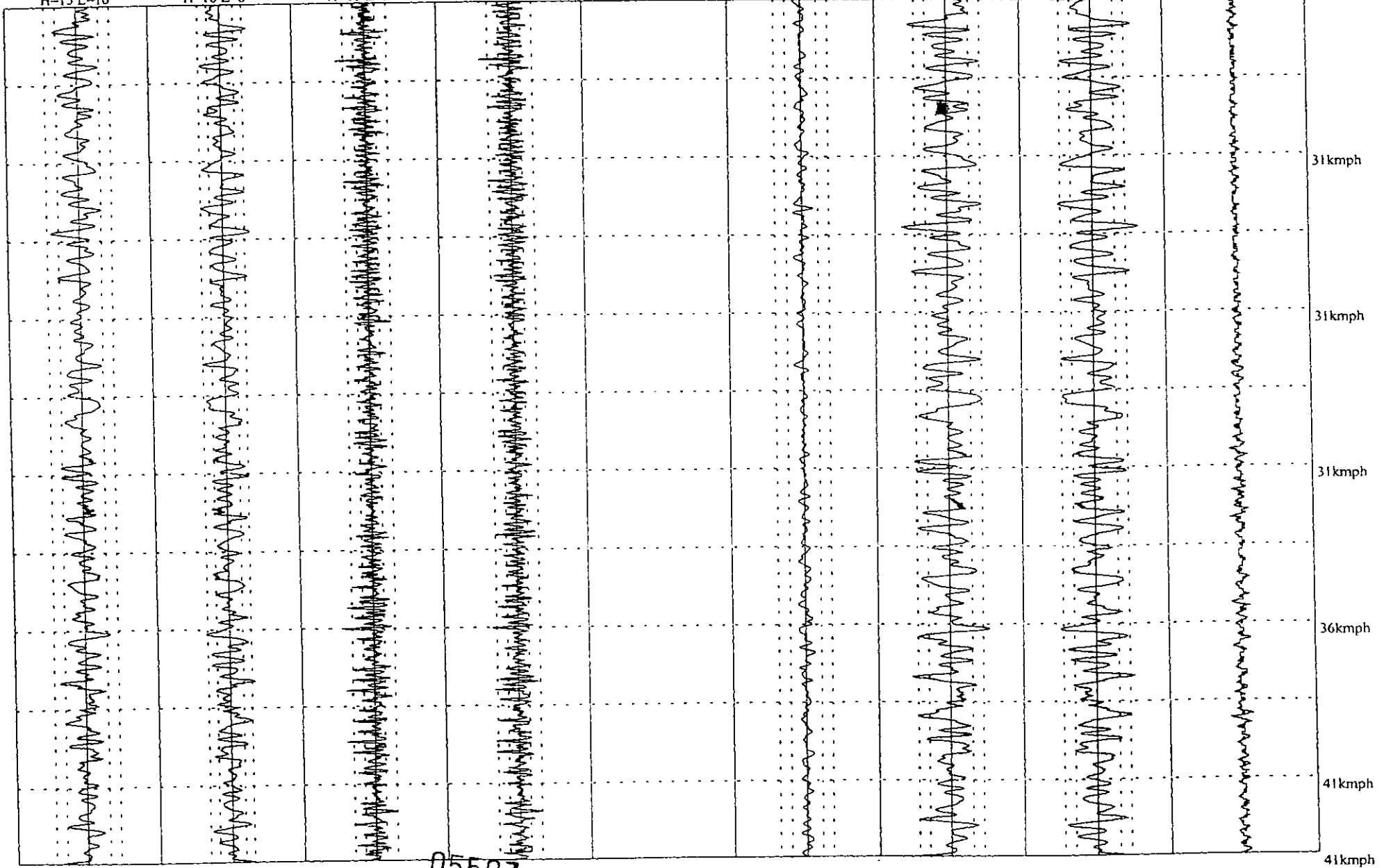
Avg.Speed 97 KMPH

PEAK INFORMATION

UN1L
 UN1R -12/403
 TW1
 AL1L
 AL1R
 G
 UN2L
 UN2R
 TW2
 AL2L
 AL2R
 VACC
 LACC

05506

CHORD MODE ± 33 mm AL1L H=15 L=10	TRC NO . 7966 ± 33 mm AL1R H=10 L=6	RT CODE : 9036 R.L.Y : WestCentral ± 33 mm UN1L H=10 L=5	DIV : JBP From Km: 1074 To Km : 1073 ± 33 mm UN1R H=10 L=5	SEC : KTE-ET ± 33 mm GAUGE H=12 L=7	DATE : 13/2/2007 ± 33 mm AL2L H=15 L=10	RUN NO : b ± 0.35 g LACC H=0.20 L=0.20	AVG SPD
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05507

Annexure-III

TRACK RECORDING RESULTS (PROFILE2 MODE)

ROUTE CODE : 9036

DATE : 13/2/2007

RUN NO : B

KM : 1041 To 1040

PROFILE - 1								RIDE INDEX		TRACK INDICES			PROFILE - 2					PARAMETER WISE INDICES			
LOC	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	2.5	2.7	2.0	1.0	1.6	1.4	0.1	2.52	2.65	91	94	**	3.6	3.3	3.7	3.8	2.1	60	90	100	100
Blk 2	1.9	2.0	1.8	1.0	1.9	1.7	0.9	1.98	2.57	88	95	**	2.8	2.9	3.8	4.0	2.0	69	98	100	91
Blk 3	3.0	2.5	1.5	1.1	1.8	2.0	0.4	2.46	2.98	84	95	***	4.8	3.4	4.7	4.7	1.7	51	111	96	88
Blk 4	4.4	3.9	2.3	1.0	2.9	3.0	0.4	2.76	3.05	61	96	***	8.0	6.6	5.9	5.7	2.6	24	80	100	63
Blk 5	2.9	2.3	2.2	0.9	2.4	2.3	-0.1	2.40	2.98	74	97	***	5.3	3.4	5.3	5.4	2.3	48	83	104	76
1012												KM									

PEAK DISTRIBUTION

PROFILE - 1							PROFILE - 2						
BAND	UN1L	UN1R	TW1	AL1L	AL1R	G	BAND	UN2L	UN2R	TW2	AL2L	AL2R	
P1	13	17	9	0	24	20	P2	30	26	67	71	14	
Q1	1	0	1	0	6	5	Q2	7	4	44	42	1	
R1	0	0	0	0	0	0	R2	4	2	12	11	0	
S1	0	0	0	0	0	0	S2	0	0	1	0	0	

CATEGORY INFORMATION

B1 B0 A1 A0 B6 B5

TGI 80

Avg:Speed 95 KMPH

PEAK INFORMATION

UN1L -13/593 -10/637

UN1R

TW1

AL1L

AL1R

G

UN2L

UN2R

TW2

AL2L

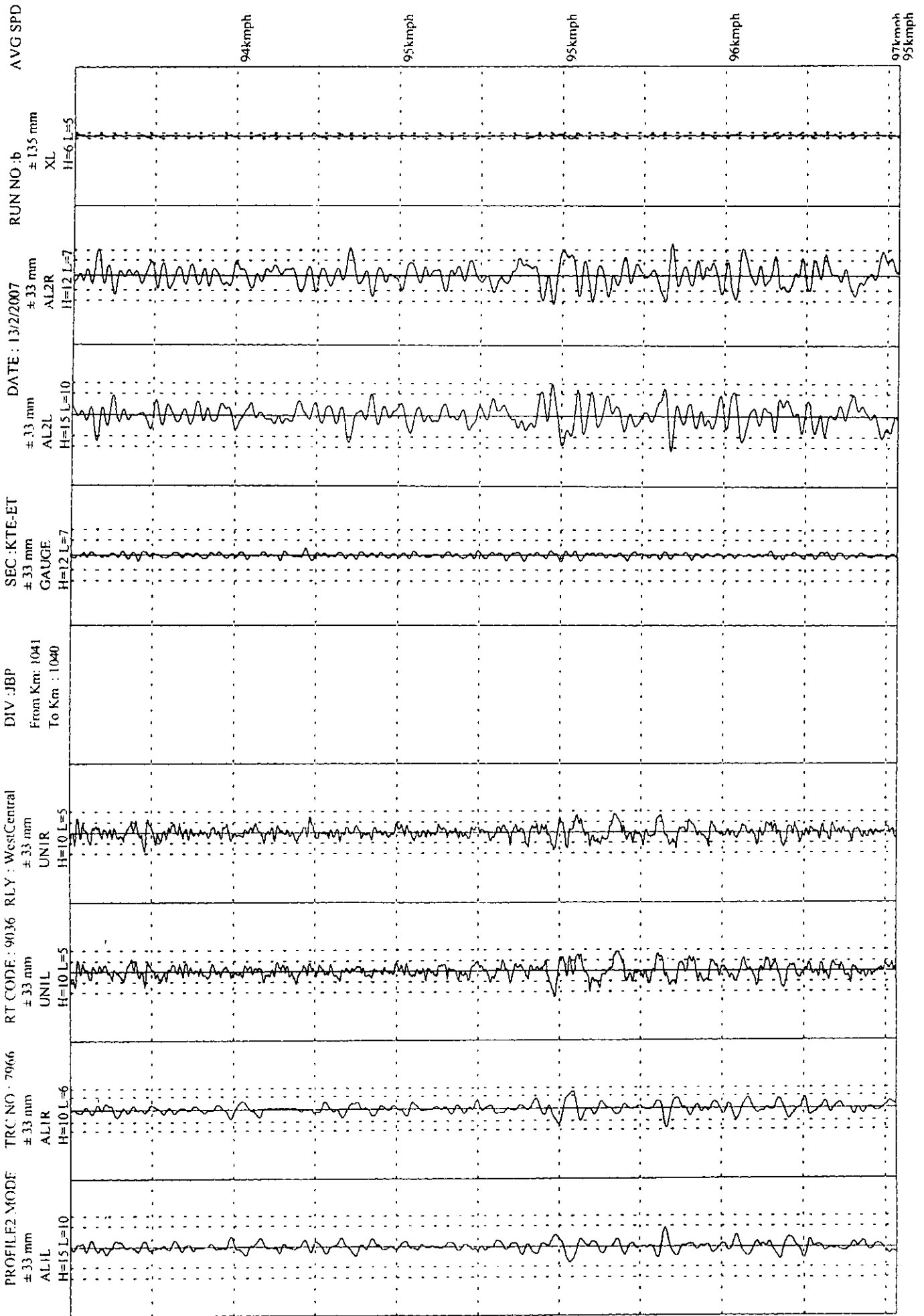
AL2R

VACC

LACC

05508

Annexure-V



05509

SUMMARY REPORT - INDEX OF TRACK RECORDING RESULTS

(PRINTED ON - 06/09/2007)

TRC No : 7965
 RUN NUMBER : 06122006a
 RAILWAY : Northern
 SECTION : CNI-BNDIS
 DIRECTION : UP
 KM : 1191 to 1200

S.N.	KM		PARAMETER WISE CATEGORY OF TRACK				CTR	TGI	TQI	SPEED (KMPH)
	FROM	TO	UI	TI	AI	GI				
1	1191	1192	115	94	79	83	96	88	72	100
2	1192	1193	92	78	85	75	84	85	90	100
3	1193	1194	95	80	114	79	69	103	83	100
4	1194	1195	94	81	114	87	85	104	81	100
5	1195	1196	95	83	117	91	84	106	78	100
6	1196	1197	104	89	118	92	87	110	71	100
7	1197	1198	101	84	123	85	80	111	76	99
8	1198	1199	82	82	122	93	66	107	84	91
9	1199	1200	95	93	113	89	66	105	75	68
Section average			97.00	84.89	109.44	86.00	79.67	102.11	78.89	95.33

SECTION SUMMARY

NR SUMMARY

TOTAL KMs : 9
 TOTAL NR KMs : 0
 TOTAL RECORDED KMs : 9

TGI SUMMARY

		No. of KMs	% of Recorded Kms
1	KMs with TGI (>= 80)	9	100.00
2	KMs with TGI (>= 50 - 80)	0	0.00
3	KMs with TGI (>= 36 - 50)	0	0.00
4	KMs with TGI (< 36)	0	0.00

UI : Unnevenness Index

TI : Twist Index

AI : Alignment Index

GI : Gauge Index

CTR : Cumulative Track Record

TQI : Track Quality Index

TGI : Track Geometry Index

NR : Non Recording

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

(PRINTED ON - 01/05/2007)

TRC No. : 7966
 RUN NUMBER : 13022007b
 RAILWAY : West Central Railway
 SECTION : KHE-14
 DIRECTION : DOWN
 KM : 1070 to 1050

S.N.	KM		PARAMETER WISE CATEGORY OF TRACK					G	CTR	TGI	TQI	SPEED (KMPH)
	FROM	TO	UNL	UNR	TW	ALL	ALR					
1	1070	1069	A0	B0	B9	B1	A0	A0	15	93	99	76
2	1069	1068	A0	B1	C16	B0	A0	B0	-6	91	107	69
3	1068	1067	B1	B4	C25	C11	C15	B4	-59	60	123	67
4	1067	1066	B0	B1	D30	C12	C17	B1	-64	67	135	65
5	1066	1065	A0	B0	B7	B7	B6	B4	7	71	104	78
6	1065	1064	A0	B1	C16	B2	B5	B1	15	77	98	96
7	1064	1063	A0	A0	B7	B1	B3	B0	40	85	91	94
8	1063	1062	A0	A0	B5	B6	B1	B3	37	81	92	97
9	1062	1061	A0	A0	B4	B3	B2	B5	19	82	96	98
10	1061	1060	B0	A0	B3	B1	B0	B0	24	91	93	98
11	1060	1059	B1	B2	C12	B1	B1	A0	29	93	96	98
12	1059	1058	B1	B0	B2	B1	B0	B0	30	85	97	97
13	1058	1057	A0	A0	B10	C12	B6	B0	9	62	117	95
14	1057	1056	B0	A0	C18	B6	B9	B3	-18	62	129	97
15	1056	1055	A0	B1	C13	B6	B7	B0	4	68	117	96
16	1055	1054	B0	B0	C31	C11	B6	B0	-64	66	129	90
17	1054	1053	A0	B1	C24	B6	B8	B1	-17	60	134	82
18	1053	1052	B2	B3	C31	C13	C13	B3	-55	57	136	75
19	1052	1051	B0	B0	C26	B10	B8	B4	-25	60	137	86
20	1051	1050	A0	A0	B5	B0	B0	A0	70	94	91	99
Section average									-0.45	75.25	111.05	87.65

SECTION SUMMARY

TOTAL Km : 20
 TOTAL NR Km : 0
 TOTAL Km Recorded : 20

NR SUMMARY

PEAK SUMMARY (SHORT CHORD)

	UNEVENNESS (> 6 mm)	TWIST (> 5 mm)	ALIGNMENT (> 3 mm)	GAUGE (> 5 mm)
1	Peaks per km	25	44	65

CTR SUMMARY

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

				Recorded KM	
1.	Km with CTR (100 to 60)	1	5	1	5
2.	Km with CTR (59 to 30)	3	15	4	20
3.	Km with CTR (29 to 0)	8	40	12	60
4.	Km with CTR (-1 to -50)	4	20	16	80
5.	Km with CTR (-51 to -100)	4	20	20	100
6.	Km with CTR (< -100)	0	0	20	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	5	25	0	0	0	0	3	15
2.	Km in category B	15	75	9	45	15	75	17	85
3.	Km in category C	0	0	10	50	5	25	0	0
4.	Km in category D	0	0	1	5	0	0	0	0

UNI : Unevenness Left

UNR : Unevenness Right

TW : Twist

A.L. : Alignment Left

A.R. : Alignment Right

G : Gauge

CTR : Cumulative Track Record

TQI : Track Quality Index

TGI : Track Geometry Index

NR : Non Recording

05512

PWI / ADEN / DEN SECTION WISE SUMMART OF TRACK RESULTS

TRC NO : 7966

RAIL WAY : West

SECTION	LINE	DATE	%NR	KM FROM	KM TO	LI	TI	AI	GI	CTR	TGI	TQI	%BUM	%BPM
PWI/KTE-ET	DOWN	13-02-2007b	0	1070	1050	73	63	78	74	-0	75	111	12	19
PWI/KTE-ET1	DOWN	13-02-2007b	0	1070	1065	74	58	80	74	-21	76	114	16	24
PWI/KTE-ET2	DOWN	13-02-2007b	0	1065	1055	78	71	81	74	19	79	102	2	6
PWI/KTE-ET3	DOWN	13-02-2007b	0	1055	1050	63	51	71	76	-18	68	125	27	38

LI Unevenness Index

TI Twist Index

AI Alignment Index

GI Gauge Index

CTR Cumulative Track Record

TQI Track Quality Index

TGI Track Geometry Index

NR Non Recording

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

RAILWAY : West Central Railway
SECTION : KTE-ET
DIRECTION : DOWN
TRC NO. : 7966
MONTH OF RUN : 13-02-2007 to
Km FROM : 1070 TO 1061

SNO.	KM		PARAMETER WISE NUMBER OF PEAKS								
	FROM	TO	UNEVENNESS		TWIST		GAUGE	ALIGNMENT			
			10 : 15mm	15mm	7 : 12mm	12mm	6mm	5 : 10mm	10mm	10mm	
1	1069	1068	1	0	#15	#1	0	0	0		
2	1068	1067	5	0	#24	#1	#4	#26	0		
3	1067	1066	1	0	#23	#7	#1	#28	#1		
4	1066	1065	0	0	7	0	#4	#13	0		
5	1065	1064	1	0	#16	0	#1	7	0		
6	1063	1062	0	0	5	0	#3	7	0		
7	1062	1061	0	0	4	0	#5	5	0		

SECTION SUMMARY

UNEVENNESS (Peaks :- 10 mm :- 15 mm)	0	(Km)
UNEVENNESS (Peaks :- 15 mm)	0	(Km)
TWIST (Peaks :- 7 mm :- 12 mm)	4	(Km)
TWIST (Peaks :- 12 mm)	3	(Km)
ALIGNMENT (Peaks :- 5 mm :- 10 mm)	3	(Km)
ALIGNMENT (Peaks :- 10 mm)	1	(Km)
GAUGE (Peaks :- 6 mm)	6	(Km)
TOTAL KM RECORDED	=	9 (Km)
KM ON ACCOUNT OF UNEVENNESS	0	(0.00%)
KM ON ACCOUNT OF TWIST	4	(44.44%)
KM ON ACCOUNT OF ALIGNMENT	3	(33.33%)
KM ON ACCOUNT OF GAUGE	6	(66.67%)
TOTAL (After accounting for common kms)	=	7 (77.78%)

05514

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

RAILWAY	West Central Railway
SECTION	K11-31
DIRECTION	DOWN
TRC NO.	7966
MONTH OF RUN	13-02-2007 to
Km FROM	1070 (10106)

SECTION SUMMARY

UNEVENNESS (Peaks 10 mm - 15 mm)	0 (Km)
UNEVENNESS (Peaks 15 mm)	0 (Km)
TWIST (Peaks 7 mm - 12 mm)	4 (Km)
TWIST (Peaks 12 mm)	3 (Km)
ALIGNMENT (Peaks - 5 mm - 10 mm)	3 (Km)
ALIGNMENT (Peaks - 10 mm)	1 (Km)
GAUGE (Peaks 6 mm)	6 (Km)
TOTAL KM RECORDED	9 (Km)
KM ON ACCOUNT OF UNEVENNESS	0 (0.00%)
KM ON ACCOUNT OF TWIST	4 (44.44%)
KM ON ACCOUNT OF ALIGNMENT	3 (33.33%)
KM ON ACCOUNT OF GAUGE	6 (66.67%)
TOTAL (After accounting for common kms)	7 (77.78%)

05515

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

TRC NO: 7966 RT CODE: 9036 LINE: DOWN DATE OF RECORDING: 13 02 2007 RUN NO: b SECTION: KTE-ET
 RAILWAY: West Central Railway KM FROM 1070 KM TO: 1061

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		
1070	1069	TWI	11	810	-10	687	10	243	9	147	9	321	-9	832	-9	1003	8	942	-8	248	-	-	-	-	-	-	-	-		
1069	1068	UNR	-13	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1069	1068	TWI	15	76	12	405	12	733	11	561	11	212	11	933	10	367	-10	287	10	444	-9	25	9	22	-9	557	-8	363	8	892
1069	1068		8	919	-8	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1068	1067	UNL	-13	702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1068	1067	UNR	13	145	-12	142	-12	304	-12	615	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1068	1067	TWI	-13	715	11	133	11	68	10	156	10	178	-10	194	-10	313	10	621	-10	693	-10	147	9	144	9	720	9	727	-9	748
1068	1067		9	770	-9	848	8	122	8	55	-8	208	8	223	-8	137	8	578	-8	832	8	840	8	166	-	-	-	-	-	-
1068	1067	G	-10	622	9	628	9	713	-7	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1067	1066	UNR	-12	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1067	1066	TWI	20	649	-18	629	-18	695	18	848	15	656	-15	674	13	678	12	575	11	732	11	880	11	982	-10	844	10	622	-9	28
1067	1066		9	348	-9	876	9	96	9	927	9	587	-9	1001	8	110	-8	603	8	606	-8	427	8	468	8	639	8	514	-8	331
1067	1066		-8	665	-8	583	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1067	1066	G	7	661	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1066	1065	TWI	10	750	9	698	9	210	-8	241	-8	746	8	493	-8	772	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1066	1065	G	8	526	-7	507	-7	454	7	542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1065	1064	UNR	-11	546	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1065	1064	TWI	-12	506	12	538	-11	541	-11	122	-	180	9	87	-9	635	-8	256	-8	368	-8	367	-8	170	8	131	8	208	-8	626
1065	1064		8	214	8	818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1065	1064	G	-7	638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1064	1063	TWI	9	498	-8	293	-8	367	-8	452	-8	122	-8	650	-8	796	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1063	1062	TWI	-12	505	10	77	10	508	9	287	8	486	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1063	1062	G	-7	562	7	648	7	1028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1062	1061	TWI	-12	152	11	521	9	155	-8	407	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1062	1061	G	8	998	-7	96	-7	692	-7	850	-7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Average TGI: 79

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.
- G: Gauge
- TGI: Track Geometry Index

05516

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

TRC NO: 7966 RT CODE: 9036 LINE: DOWN DATE OF RECORDING: 13/02/2007 RUN NO: b SECTION: KTE-ET
 RAILWAY: West Central Railway KM FROM: 1075 KM TO: 1070

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		
From	To																													
1075	1074		NON RECORDED																											
1074	1073	UNL	28	887	-27	948	-26	803	24	89	24	1036	-23	882	-23	1041	-22	749	21	966	-21	1054	-20	776	-20	124	-20	895	-20	856
1074	1073		-19	602	-19	95	-19	42	19	289	19	808	19	490	-19	565	-18	77	18	570	18	595	-18	379	18	680	-18	711	18	409
1074	1073		18	250	-18	789	-18	537	17	781	-17	312	-17	906	17	608	16	355	-16	961	16	543	-16	483	16	317	16	943	16	1084
1074	1073	UNR	-26	1042	25	250	-24	77	-23	803	23	887	-23	894	23	88	-22	948	22	1047	21	1037	-20	1054	19	288	19	966	-19	231
1074	1073		-18	671	18	236	17	808	17	1059	16	595	-16	961	-16	281	-16	98	-	-	-	-	-	-	-	-	-	-	-	-
1074	1073	TWI	20	930	-19	33	-17	71	-16	453	16	38	15	876	14	478	-14	816	-14	3	-14	11	-13	481	13	282	-13	871	13	98
1074	1073		13	902	13	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1074	1073	ALL	21	38	18	297	-16	217	-16	590	15	354	-15	346	15	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1074	1073	ALR	-20	38	-19	298	19	218	-16	354	15	466	-15	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1073	1072	UNL	-23	62	-19	367	-17	23	-17	453	16	56	16	184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1073	1072	UNR	-22	367	-21	61	-18	275	-18	124	-17	604	16	461	16	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1073	1072	TWI	18	222	-13	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1073	1072	ALL	-25	153	-16	117	-16	24	-16	281	-16	398	15	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1073	1072	ALR	29	152	19	24	-15	158	15	281	15	397	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1072	1071	UNR	-17	830	16	793	-16	142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1072	1071	TWI	15	789	15	312	15	815	13	803	-13	794	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Average TGI : 52

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

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

RAILWAY WEST

SECTION KTE-FT

KM FROM 1070

KM TO 1061

LINE DOWN DATE OF RUN : 13 - 02 - 2007 b

TRC NO : 7966

KILOMETER		BLOCK NO	SPEED	Normalised value of SD												MAX VALUE	TGI
FROM	TO			On short chord						On long chord							
				UL1	UR1	TW1	AL1	AR1	GA	UL2	UR2	TW2	AL2	AR2			
1070	1069	2	76	0.61	0.69	0.79	0.57	0.43	0.36		0.41	0.51	0.82	0.48	0.38	0.82	91
1069	1068	1	74	0.75	0.94	0.81	0.50	0.47	0.33		0.54	0.74	0.80	0.42	0.42	0.94	89
1068	1067	1	66	0.86	1.03	0.95	0.87	0.83	0.58		0.78	0.91	0.93	0.78	0.74	1.03	50
1068	1067	4	69	0.78	0.78	0.93	0.97	1.00	0.86		0.64	0.62	0.98	0.84	0.86	1.00	44
1067	1066	1	68	0.75	0.86	0.71	0.60	0.60	0.58		0.57	0.65	0.71	0.54	0.52	0.86	75
1067	1066	2	66	0.81	0.86	0.64	0.47	0.37	0.44		0.58	0.65	0.62	0.40	0.32	0.86	99
1067	1066	4	63	0.72	0.58	1.64	1.07	1.10	0.61		0.82	0.72	1.91	0.94	0.98	1.91	37
1067	1066	5	63	0.47	0.67	1.00	0.87	1.00	0.56		0.55	0.61	1.04	0.78	0.88	1.04	50
1066	1065	1	66	0.61	0.61	0.62	0.87	0.87	0.72		0.42	0.41	0.64	0.78	0.80	0.87	59
1066	1065	3	80	0.53	0.56	0.62	0.83	0.60	0.86		0.34	0.36	0.62	0.72	0.54	0.86	70

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

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- | | | |
|----|---------------------|--------------------|
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- | | | |
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