GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No.2011/M(Safety)/7/10/Misc. Accident Proforma New Delhi, dated 29.3.2012

The Chief Mechanical Engineers
All Indian Railways

Sub: Revised Proforma for recording measurement of Rolling Stock and track in case of accident

A Committee of Sr.EDs/EDs of RDSO has proposed a revised Proforma for recording measurement of Rolling Stock in case of accidents. A copy of the revised proforma proposed by RDSO and comments of the CE Dte. of Railway Board on the revised proforma are enclosed.

Existing proforma for Rolling Stock measurement and Track measurement are also enclosed.

You are requested to peruse the proformas and furnish comments on both the Rolling Stock and Track proformas latest by 10th April 2012.

This may be treated as **MOST IMPORTANT**

A. Mittal

(Archana Mittal)
Director Mech. Engg. (Frt.)
Railway Board

Cut the letter on.
Www.indianrailways.gov.in
↓
Railway Board
↓
Mech. Dte
↓
Circulars
↓
M(Safety)

DA As above

Email: ag@rdso

D.O.No.GE/GEN/Revision of Proformae (Accident) Dated : 17.06.2010

My dear Gupta,

Sub : Revision of the Proforma for recording measurements of Rolling stock after accident.

Ref : (i) RDSO letter No.CT/Safety (pt.) dated 15.5.2007.
(ii) Your D.O.No.2009/Safety (A &R)/1/1 dated 24.11.2009.

In reference to Board's directives, the revised proformae for Recording measurement of Rolling stocks after accident have since been finalized after number of deliberations by the Committee of Sr.EDs /EDs in RDSO. The proformae for recording measurement in case of Loco (both Electrical and Diesel), Wagon & Carriage have been since finalized and are enclosed as Annexure. The proformae for measurement of wheel dia difference on same axle and secondary air spring camber under load for LHB coaches will follow as the simulation study for these parameters is in progress at present in RDSO.

Further, it is mentioned that these proformae are indicative of the parameters which are to be measured for rolling stocks after accidents. It is suggested that a suitable format which suits the field requirement may be evolved in Board's office so as to give instant comparative value measurement with respect to standard value of particular parameters. Once Board approves these revised proformae, same will be sent to to CCRS for his perusal/comments.

With best wishes,

(K B L. Mittal)

Shri Kamlesh Gupta
Advisor (Safety)
Railway Board
Rail Bhawan,
New Delhi 110 001.

Proforma For Wagon

Measurement Table for Wagon Involved in Accident

Note: Details regarding all derailed vehicles should be given except:-

(i) Where vehicles have derailed due to locomotive derailment

(ii) When the first derailed vehicle is obvious from examination of marks on wheel, then the details for first derailed vehicle need only be given

(iii) When the obvious and indisputable cause is sabotage or an obstruction on track

(iv) Front and rear and left (L) and right (R) are with respect to direction of movement.

(v) For an obvious cause of derailment such as a broken axle, spring dropping off the run, and/or some part of under gear hanging loose and causing obstruction only relevant particulars need be filled

(vi) Particulars for each derailing vehicle should be given in one sheet. Information against columns (5), (6), (8), (16), (17), (21),(22) should invariably be given for adjacent wagons on the same sheet.

S.No.	Date of Incident	Train No.	Details of BPC along with the name of station where it is issued and Engineer (C&W) who issued it	Wagon No.	Type	Mech. Code	Tare in Tonnes	Carrying Capacity	Built Date	Return Date
1	2	3	4	5	6	7	8	9	10	11

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

POH Particulars		ROH Particulars		Payload in Tonnes		Commodity loaded and remarks regarding uneven loading (give sketch for details of uneven loading)	Station		Position fro Engine
Date	Shop	Date	Depot	From Lables	From Actual Weighment		From	To	
12	13	14	15	16	17	18	19	20	21

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Buffer/Coupler Height	Wheel and axle face Particulars (in case of breakage of wheel/axle)			
1. Measure Buffer/Coupler height after uncoupling & rerailing on uncanted level track 2. Record whether there is buffer entanglement (Yes/No)	Axle face particulars	Ultrasonic particulars on the hub of the disc	Stamping particulars on wheel disc regarding Manufacturer/RA/RD	
22	23	24	25	
End IL	IL	IL	IL	
	IR	IR	IR	
End IR	2L	2L	2L	
	2R	2R	2R	
End 2L	3L	3L	3L	
	3R	3R	3R	
End 2R	4L	4L	4L	
	4R	4R	4R	

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Wheel and Axle								
Wheel diameter below condemning size	*Wheel gauge in mm * (taken at three places)*	*Observation after measuring the profile with tyre defect gauge (Good/Rejectable)***						
26	*27*	*28*						
			Thin flange	*Sharp flange*	*Worn out root*	*Deep flange*	*Hollow tyre*	*Flat tyre*
YES/ NO	*1*	*1L*						
		1R						
	2	*2L*						
		2R						
	3	*3L*						
		3R						
	4	*4L*						
		4R						

*The wheel gauge is to be measured in empty condition and at the horizontal plane passing through the center of the axle

**The wheel profile is to be checked with tyre defect gauge only (Ref: IRCA Pt. III Rule No. 3.2.2 (d) and 4.18.1 Plate No. 57 to 66)

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Roller Bearing (To be recorded only when Roller bearing is involved as a cause)			Axle Box (for IRS Stock/UIC) (To be recorded only when failure of plain bearing is involved as a cause)				
Condition of face cover plate	Condition of locking plates & studs	Condition of Roller Bearing and its components	Brass thickness mm	Condition of box and brass	Condition of sole plates	Condition of journals	Clearance between brass and collar of journal in mm
29	30	31	32	33	34	35	36

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Axle Guard (for IRS/UIC Stock)				For Casnub			
Lateral clearance between axle box and axle guard in mm.	Whether axle guard can work clear of axle box	Are the axle guard bent or otherwise damaged to prevent free movement of axle box	Remark regarding bridle bar	Type of Bogie	Lateral clearance between side frame & bolster in mm	Lateral clearance between side frame & axle box adopter in mm	Longitudinal clearance between side frame & axle box adopter in mm
37	38	39	40	41	42	43	44

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P Way)

SPRING AND SPRING GEAR					
Any broken/cracked/missing/Clearance of shackle and shackle pin and general condition (for UIC/IRS)	Thickness of packing plate under spring seat in mm	Remarks whether any spring eye touches sole bar	Condition of suspension springs i.e. normal broken/fresh and old fractured or deformities occurred after derailment due to sudden impact(for Casnub)	Camber of spring in mm after re-railing on a level uncanted track (for laminated spring only)	Deflection of coil spring in mm after re-railing on a level uncanted track(for Casnub)
45	46	47	48	49	50

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Bogie		
Vertical clearance at side bearers in mm. (for stock having clearance type side bearers only)	Whether a load is placed on more than one wagon	Any other defect in vehicles which may have contributed to or caused the derailment
51	52	53

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Details of broken parts giving location w.r.t. point of mount and derailment	List of damages to the wagon due to accident	Other observations
54	55	56

To be jointly signed by		
Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P.Way)

Proforma for Carriage

Coaches ---- Proforma to be filled in case of Derailments:

Note: Details regarding all derailed vehicles should be given except :-

1. (i) Where vehicles have derailed due to locomotive derailment.
   (ii) When the first derailed vehicle is obvious from examination of marks on the wheel, then the details for first derailed vehicle need only be given.
   (iii) When the obvious or indisputable cause is sabotage or an obstruction on the track.
2. Particulars for each derailing vehicles should be given in one sheet. Information against columns nos (5), (6), (7), (14), (70) and (71) should invariably be given for adjacent coaches on the same sheet.
3. Front and Rear, Left (L) and Right (R) are with respect to direction of movement.
4. For an obvious case of derailment such as a broken axle, spring dropping off on run, and/or some part of undergear hanging loose and causing obstruction, only relevant particulars need to be filled.

S.No.	Date of Incident	Train No.	Details of BPC alongwith name of the stn where issued and Engineer (C&W) who issued it	Vehicle no.	Type	Tare in tones	Carrying capacity in tones	Building date	Return date	POH
1	2	3	4	5	6	7	8	9	10	11

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Station		Position from engine	Wheel gauge in mm (to be measured at three locations and average value to be taken)Measured in empty condition at the horizontal plane passing through the centre of the axle.	Wheel diameter below condemning size	Any indication of bent axle or wheel having shifted on axle	Wheel and axle face particulars (In case of breakage of any wheel / axle)		Stamping particulars on wheel discs regarding Manufacturer / RA/ RD (In case of breakage of any wheel / axle)		Observation after measuring the profile with wheel defect gauge (Good/Rejectable)	
						Axle Face Particulars	Ultrasonic particulars on the hub of the disc				
From	To									L	R
12	13	14	15	16	17	18	19	20		21	22
				Yes/No		1L	1L	1L			
						1R	1R	1R			
						2L	2L	2L			
						2R	2R	2R			
						3L	3L	3L			
						3R	3R	3R			
						4L	4L	4L			
						4R	4R	4R			

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

ROLLER BEARING (When Roller Bearing is involved as cause)			
Condition of axle box, rear and front covers	Condition of face cover plate	Condition of locking plate and studs	Condition of Roller bearing and its components
23	24	25	26

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Axle Box										Axle guard				Spring and spring gear					
Brass thickness in mm		Condition of box and brass		Condition of sole plates		Condition of journals		Clearance between brass and collar of journal in mm		Clearance between axle box groove and axle guard in mm		Whether axle guard can work clear of axle box groove		Are the axle guard bent or otherwise damaged to prevent the free movement of axle box		Remarks regarding bridle bar	Free camber in mm		Camber of springs under load in mm after rerailing on a level uncanted track	
L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R		L	R	L	R
27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Spring and spring gear										
Thickness of packing plate under spring seat in mm		Remarks regarding condition of spring plates and buckle		Clearance between shackle plate and pin in mm				Remarks regarding condition of shackle plate and pins		Remarks whether any spring eye touches sole bar
L	R	L	R	Front	Rear	Front	Rear	L	R	
48	49	50	51	52	53	54	55	56	57	58

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Type	Rigid wheel base in mm	Vertical clearance at side bearers in mm				Remarks regarding free movement bolster and pivot and there condition	Bolster spring camber under tare in mm			
		Front Bogie		Rear Bogie			Front		Rear	
		L	R	L	R		L	R	L	R
59	60	61	62	63	64	65	66	67	68	69

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Buffer / Coupler height (to be taken on a level uncanted track after uncoupling and rerailing) (in mm)		Condition of Side Buffers (**only if Derailment is on Curves**) Working, dead, drooping, entanglement.	Details of broken parts giving location w.r.t. point of mount and derailment and whether breakage considered due to accident	Any other defect in the vehicles which may have contributed to or caused the derailment such as condition of coupler, draft gear pocket, shearing plates etc.	List of Damages to the Coach due to accident	Other Observations
Front	Rear					
70	71	72	73	74	75	76

TO BE JOINTLY SIGNED BY		
SUPERVISOR (C&W)	SUPERVISOR (TRAFFIC)	SUPERVISOR (P WAY)

Proforma for Motive Power (Diesel & Electric)

Locomotive (Diesel & Electric): Proforma To Be Filled In Case Of Accident Derailment When Loco Is Involved In Accident

INFORMATION TO BE FURNISHED BY THE LOCO DEPTT

1. Basic information:
   a. Date of Accident :
   b. Train No. :
   c. Loco Class :
   d. Loco Number :
   e. Loco manufacture year and place :
   f. Base Shed of Loco :
   g. Date & Place last POH :
   h. Kilometres earned after last POH :
   i. Date & place of last major inspection :
   j. Date & place of last schedule inspection :
   k. Whether any schedule is overdue? :

2. Give brief particulars of the safety items not provided or provided but missing/not working

   Whether Loco is provided with:

Safety fittings	Provided	Working
Headlight		
Speedometer		
Speed Recorder		
Flasher light		
Horn		
Brake System		

3. a. Damage to the Loco (brief description)

   b. Cost of damage to the Loco (in Rs.)

INFORMATION TO BE FURNISHED BY THE LOCO DEPTT.(CONT.)

Check & record the observations as follows:

(a) Position of control handles, cutout cocks etc after the accident.

(b) Functioning of brake synchronising valve-whether working or not.

(c) Position of brake blocks after the accident- whether applied or not.

(d) Condition of cattle guard.

(e) Any sign of seizure of roller bearing in axle box (Relevant in case of derailed axle).

(f) Condition of pivot of bogie.

(g) Any other observation in respect to mechanical defect of the locomotive, which might have any bearing on safe running of loco.

Note: Defective or broken material should be sent to CMT for testing, if necessary.

TO BE JOINTLY SIGNED BY		
SUPERVISOR(Loco)	SUPERVISOR(TRAFFIC)	SUPERVISOR(P. WAY)

Measurement for Wheels for All Classes of Locomotives with wheel gauge (tyre defect gauge)
04 locations applicable for Bo-Bo Locos)

Sl.	Description	Observed Value(In mm)			Remarks
1.	Particulars of axle (ID No.)	1			
		2			
		3			
		4			
		5			
		6			
2.	Diameter of wheel at tread		LH	RH	Measure to see if any wheel dia is below condemning limits permitted by RDSO.
		1			
		2			
		3			
		4			
		5			
		6			
3.	Wheel Flange thickness		LH	RH	Information is normally relevant in case of two road case
		1			
		2			
		3			
		4			
		5			
		6			
4.	Wheel Root wear		LH	RH	
		1			
		2			
		3			
		4			
		5			
		6			
5.	Tread wear		LH	RH	Tread wear should be measured from tread at 63.5mm from wheel gauge face(from the back face of flange) in BG and at 57 mm from wheel gauge face(from the back face of the flange) in MG.
		1			
		2			
		3			
		4			
		5			
		6			
6.	UST of axle: Give the date of last UST test done	Axle	Observation		Information is relevant in case of axle breakage
		1			
		2			
		3			
		4			
		5			
		6			

- Measurement for Wheels for All Classes of Locomotives with wheel gauge (tyre defect gauge) (04 locations applicable for Bo-Bo Locos) (continued)

Notes:

1. Wheel number one is the outer end axle of truck under the short hood and wheel count increases towards the Long hood on diesel loco, where as for Electric Loco, wheel number one is the outer end axle under Cab-1(Cab-1 is that side of the loco which has the compressors and Cab-2 is that side of the loco which has the ARNO convertor) and wheel count increases towards the Cab-2.
2. The measurements of wheels are to be done using wheel gauges to RDSO drawing No.SKDL-3592 for all BG locomotives except WAP5 locos. For WAP5 locos RDSO's drawing No. SKDL-4446 and SKDL-4447 may be followed.
3. All measurements are to be taken in shed on a level, un-canted track.
4. Service limits given in the Maintenance Manual are for good maintenance practice and these are not safety limits.

Sl.	Description	Observed Value(In mm)		Remarks
7.	Wheel gauge: For checking wheel gauge, average of three measurements at equal spacing on the inner periphery of the two wheels on the same axle is to be recorded. Check for bent axle, if any.	1		All measurements shall be taken on a level tangent un-canted track. These measurements are for unloaded wheels, should be taken in workshop after dismantling. Information is relevant in case of wheel disc shifting /bent axle only. For safety, similar limits as applicable for track gauge are relevant for wheel gauge also.
		2		
		3		
		4		
		5		
		6		

TO BE JOINTLY SIGNED BY		
SUPERVISOR(Loco)	SUPERVISOR(TRAFFIC)	SUPERVISOR(P WAY)

6. Proforma for measurement of Locomotive after accident

Sl.	Description		Observed Value(In mm)	Remarks
1	Buffer /coupler height Measurement of parameters such as buffer length etc may also be done to check possibility of buffer entanglement.			All measurement shall be taken on a level tangent un-canted track. This measurement is required to be taken only in case of trailing stock is with buffers.
2	Lateral clearances	End Axles (1,3,4 & 6)		-
		Middle Axles (2 & 5)		-
3	Lateral clearances	End Axles (1,2,3 & 4)		Applicable for Bo-Bo locomotives only.
4	Longitudinal clearances between axle box & bogie pedestal liner (for all axles)			Except WDP3A, WDG4, WDP4, WDP4B, WAP5, WAP7, WAG9 locomotives.
5	Longitudinal clearances between axle box & bogie pedestal liner (for middle axles)			Applicable to WDP3A locomotive only.
6	Height of Rail Guard from rail level			-
7	Condition of suspension springs i.e. normal/ broken fresh and old fracture or deformities occurred after derailment due to sudden impact.			-

TO BE JOINTLY SIGNED BY		
SUPERVISOR(Loco)	SUPERVISOR(TRAFFIC)	SUPERVISOR(P WAY)

No.2002/CE-II/Accd. Policy/1 Pt.

SM 2/11.

Sub: Revision of Proforma for recording measurement of Rolling Stock after accident

Ref : Adv(Safety)'s note No. 2009/Safety(A&R)/1/1 dated 06/07/10

Vide above referred note (SN-~~2~~), Adv Safety has sent a copy of proforma for taking measurement of rolling stock (wagon, carriage, motive power) after accident which has been finalized jointly by concerned Dtes of RDSO and has asked for examination and approval of the same.

The proforma has been examined in detail and it has been noticed that several important parameters having crucial role in suspension system of the rolling stock are missing. Even some parameters measured prior to 2001 are missing. Further some qualifying remarks/ notes related with contribution of that item with accident have been added. These explanatory notes/remarks are not at all warranted while recording measurement as this will influence the Field Officials and Enquiry Committee.

In view of the above, some modifications and additions to the revised proforma are suggested. A note to Adv(Safety) along with proposed additions and modifications is put up at F/A for kind perusal and signature please.

Dy. 7.10
Dir E(P)
09/07/10

~~EDCE(P)~~ Borde 7 10/7/10

~~Addl~~

[ME]

12/7/10

~~Adv/Safety~~ The observations / recommendation of CE dte may kindly be transferred to Safety dte's relevant file and put up.

AME/CE

11/7/2010

~~JO/Safety-IV~~

12/7/10

Dir Mys.
SO/Safety(A&R)

No.2002/CE-II/Accd. Policy/1 Pt.

S.N.

Sub: Revision of Proforma for recording measurement of Rolling Stock after accident

Ref : Adv(Safety)'s note No. 2009/Safety(A&R)/1/1 dated 06/07/10

Vide above reference, Safety Directorate has asked for examination of revised proforma (for taking measurement of rolling stock after accident) as finalized by RDSO. In this connection views of CE Dte are as under;

(1) Measurements in accident cases are taken not only to establish cause of accident but also to find out shortcomings existing in the maintenance and operation system so as to avoid future recurrence of similar accidents. Further except in an obvious case of breakage of critical rolling stock/track components, finding cause of the derailment is a difficult task due to complexity of rail-wheel interaction. At times derailment may be combined effect of several factors and it will not be possible to know the contribution of each factor unless measurements pertaining to such factors are taken. Inquiry Officers should be given enough data to visualize the picture correctly to reach proper conclusion.

(2) Guidelines for general observations as stipulated in the pre 2001 Accident Manual of WR may be prefixed before the proformas for measurement for better guidance of the field staff recording measurements. A copy of the same is enclosed as annexure-I. Alternately reference to IRCA Conference Rules may be given.

(3) Comments of this Dte against proforma for measurement of wagon, coach and motive power are enclosed as Annexure-II, III & IV respectively.

(4) Measurement of wheel diameter was in vogue as per the proforma in vogue prior to 2001 IRCA conference rules lay down in clear cut terms the permissible wheel dia difference limits and no rolling stock can be permitted to leave workshops with excessive wheel dia difference. Therefore measurement of wheel dia should be included in the revised proforma. Not much purpose will be served by conducting simulation study for this item as simulation studies need to be carried out for all the factors/parameters to arrive at safety limits.

(5) Since rail wheel interaction is a complex phenomenon and it may not be advisable to lay down safety tolerances for individual items as these limits will be very slack. Moreover, several factors together may lead to accident/derailment even when individual factors may be within its safety tolerance. The cause of the accident has to be arrived at by the Inquiry Officials after considering all the measurements, observations, stipulations of codes and manuals etc. and visualizing the picture in totality. In view of this standard value of particular parameter cannot be provided.

(6) It is suggested that views of CCRS on the revised proforma may be taken before the approval by the Board.

Encl: As above

9/8/10
DCE(P)
06/08/10

EDC (HP)

AMCE

ME

Adv(Safety)

An effort has been made to complete the proforma in all respects by suggesting modifications / additions. It will be desireable to obtain CCRS comments on all these items before Board's approval if obtained by Safety Dte.

Put up for consideration please.

10/8
EDC(P)

S.T.O.

Annexure-I

Appendix 'O' (ii)

READINGS AND OBSERVATIONS IN CASE OF DERAILMENT

(Vehicles and Wagons)

When examining evidence, to ascertain the cause of a derailment of a vehicle / wagon particulars in respect of the following should be recorded where applicable and considered:-

1. *Wheels and Axles*—Gauge wheels at three or four quarters as convenient and record (i) tightness or slackness of gauge, and (ii) whether any axle is bent or wheel is shifted on axle. Examine tyres with tyre defect gauge for all possible defects, where there is excessive wear on tread or flange is worn thin sharp or deep, record profile. Check diameters of wheels and note if the difference in diameters between individual pairs is within the permissible limit.

2. *Springs and Spring Gear*—Examine bearing springs for variation in the type of bearing spring under the same vehicle or wagon (difference in the number, thickness and width of spring plate). For displaced plates, for broken plates or buckle and for displacement of spring assembly; record camber of springs free and under load, record clearance between wheel flange and wagon floor.

Check spring attachments for shackle plates or pins deficient, broken, bent or excessively worn scroll iron insecurely fitted or out of alignment, shoe fractured or shoe rivet broken or deficient. Examine whether any bearing spring eye or shackle plate is touching the sole bar. Examine condition of auxiliary springs and spring hangers.

3. Loading—Check and record buffer heights. Check contents of wagon for uneven loading or loading in excess of capacity (arrange actual weighment of contents in cases where an axle is broken through overheating or buffer heights are below the minimum permissible). Where the difference in heights of 2 buffers on the same wagon exceeds 64 mm arrange weighment of wagon and record weight on each wheel.

Where a consignment is loaded in more than one wagon (due to its unusual length or weight) examine for possibility of the free movement of the wagons concerned, when negotiating curves, being restricted, due to improper loading.

4. Axle Boxes—Examine condition of axle boxes, bearing brasses, sole plates journals and record defects observed, record side-play of brasses relative to the journals and of axle boxes relative to horns/axle guards.

5. Examine axle guards for expansion or wear such as to permit them to work [illegible] arrange to adjust to allow

free movement of axle box. Check tightness of axle guards rivets and records number of slack rivet. Examine condition of bridle bars.

6. Buffing and Draw Gear—Examine condition of buffers and screw couplings for any tendency for buffers to interlock or screw couplings to trail on ground. If a derailment has occurred on a curve, examine buffers for possibility of a dead buffer over inner rail causing interlocking of outer buffers on adjacent wagon (The distance from head stock to buffing space to be recorded in respect of buffers concerned of the adjoining wagons).

S.No-29/5

APPENDIX O (iii)

Readings and Observations in case of Derailment (Locomotives)

Diesel Locomotives

When enquiring into accidents involving derailment of diesel locomotives, particulars relating to the following items should be recorded at site and in shed.

(i) (a) Buffer heights and differences in level if any between the short-Hood end and long Hood end of the locomotive.

(b) Clearances between axle-boxes in relation to horn stays and frame.

(ii) Wheel gauge of the derailed axle to check whether these axles are bent or straight. Reading should be recorded at four quarters of the wheel.

(iii) Tread diameter and profile of the tyres of every pair of wheels derailed must invariably be recorded.

(iv) Free and loaded height of the bogie coil springs to be recorded. Also condition of coil springs i.e., normal, broken, new breakage or old fracture.

(v) Any signs of jammed springs and jammed compensating beams.

(vi) Condition of pivot of tri-mount bogies and its clearance and condition of load pads to be examined.

(vii) Any signs of seizure of roller bearings in the axle boxes.

(viii) Side play of axle boxes to be recorded.

(ix) Any signs of axle-boxes coming in contact with horn stays.
Any signs of wheels binding against bogie-frame.

(x) Particulars of replacement of roller bearings, springs, wheels etc.

(xi) Date when the locomotive was given last major schedule in the shed and kilometerage earned by the locomotive since the last POH.

(xii) Approximate total quantity of HSD oil, Lub-oil and water in the locomotive.

(xiii) Any previous booked repair that may have a bearing upon the case. It should be particularly recorded whether the locomotive had been booked as "Riding rough" prior to the accident (say in the previous fortnight).

(xiv) Any other mechanical defect of the locomotive which might have contributed to or caused the derailment.

2. In all cases, given in para 1 above, where a defect on the locomotive is found, attempts should be made to explain why it developed and, if necessary enquiries should be pursued to determine the causes. Defective or broken material should be sent to CMT for testing if necessary.

APPENDIX O (iii)

Readings and Observations in case of Derailment (Locomotives)

Electric Locomotives

1. When enquiring into accidents involving derailment of electric locomotives particulars relating to the following items should be recorded at site and in shed.

(i) Buffer heights and differences in level, if any between the Cab 1 end and Cab 2 end of the locomotive.

(ii) Clearances between axle-boxes in relation to horn stays and frame.

(iii) Wheel gauge of the derailed axles. Reading should be recorded at four quarters of the wheels.

(iv) Tread diameter and profile of the tyres of every pair of wheels derailed must invariably be recorded.

(v) Free and loaded height of the bogie coil springs to be recorded. Also condition of coil springs i.e., normal, broken, new breakage or old fracture.

(vi) Any sign of jammed springs and jammed compensating beams.

(vii) Condition of pivot of tri-mount bogies and its clearance and condition of load pads to be examined.

(viii) Any signs of seizure of roller bearings in the axle boxes.

(ix) Side play of axle boxes.

(x) Any signs of axle-boxes coming in contact with bogie-frame and horn cheeks.

(xi) Any signs of wheel binding against bogie frame.

(xii) Particulars of replacement of roller bearings, springs wheels etc.

(xiii) Date when the locomotive was given last major schedule in the shed and kilometerage earned by the locomotive since the last POH

(xiv) Any previous booked repair that may have a bearing upon the case. It should be particularly recorded whether the locomotive had been booked as "Riding rough" prior to the accident (say in the previous fortnight).

(xv) Any other mechanical defect of the locomotive which might have contributed to or caused the derailment.

2. In all cases, given in para 1 above, where a defect on the locomotive is found, attempts should be made to explain why it developed and, if necessary, enquiries should be pursued to determine the causes. Defective or broken material should be sent to CMT for testing, if necessary.

S.No

ANNEXURE-II

COMMENTS OF CE DTE ON MEASUREMENT PROFORMA OF WAGON

(A) NEW ITEMS TO BE INCLUDED

SN	Topic/Parameter	Comments of CE Directorate
1	Measurement for vehicles on either in the accident plus two vehicles in rear and two vehicles in front should be recorded	This note should be included in the beginning of the proforma Measurements of vehicles involved in the accident including 2 nos. of 4 rear vehicles are necessary to assess overall level of maintenance of wagons and contribution of adjacent wagons in the accident. Similar practice exists for taking track measurements
-	Presence of plunger and its effectiveness	Ineffective plungers may cause horizontal eccentric forces which may cause derailment due to angular running of wheels. Hence the measurements are required.
3.	Wheel Dia (At quarter Points)	Actual measurement of the Wheel Dia at quarter points is essential to work out the difference in Dia of the wheels on the same axle, on the same trolley and on the same wagon. Any excessive difference in wheel dia will lead to angular running of axle(s) persistently and may thus lead to derailment. Such measurements were prescribed in earlier pro forma (prior to 2001). IRCA Conference rule Part-III also stipulates the maximum permissible limits.
4.	Axle Guard (For IRS Stock only) - Longitudinal clearance between axle box and axle guard in mm	Excessive clearances may lead to increased angular running of the wagon leading to its derailment.
5	Axle Guard (For IRS Stock only) - Longitudinal clearance between axle box and axle guard in mm	do
6	Axle Guard (For IRS Stock only) - Lateral distance between lugs of axle box.	do
-	Casnub Bogie - Longitudinal clearance between side frame & bolster in mm	do

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8	Casnub Bogi- · Cl-arance between anti rotation lug & bolster in mm	
9	Detailed measurement of springs (laminated or coil)	Whenever found relevant and required to find out the cause of accident
10	Wear and condition of centre pivot and pin l-arances of side bearers	Whenever found relevant and required to find out the cause of accident.
11	In case accident has occurred on or near points and crossings then the measurements are to be jointly signed by supervisor (S&T) also.	This note should be included in the beginning of the proforma.

ANNEXURE-III

COMMENTS OF CE DTE ON MEASUREMENT PROFORMA OF CARRIAGE

(A) NEW ITEMS TO BE INCLUDED

SN	Topic/Parameter	Comments of CE Directorate
1.	Measurement for vehicles involved in the accident plus four vehicles in rear and two vehicles in front should be recorded	This note should be included in the beginning of the proforma. Measurements of vehicles involved in the accident including adjacent vehicles are necessary to assess general level of maintenance of wagons and condition of adjacent wagons to be accident. Similar practice exists in taking track measurements
2	Projection of plunger and its effectiveness	In-effective buffers may cause horizontal component of buffing forces, which may cause derailment due to angular running of wheels. Hence, the measurements are required.
3.	'C' schedule/IOH particulars Date Shop	This is to be retained as the same was available proforma prior to 2001 and the proforma in vogue on date.
4.	Type of brake Air/Vacuum	-do-
5.	Wheel Dia (At quarter Points)	Actual measurement of the Wheel Dia at quarter points is essential to work out the difference in Dia of the wheels on the same axle on the same trolley and on the same wagon. Any excessive difference in wheel dia will lead to angular running of axle(s) persistently and may thus lead to derailment. Such measurements were prescribed in earlier pro forma (prior to 2001). IRCA Conference rule Part-III also stipulates the maximum permissible limits.
6.	Wheel and Axle - Observation after measuring the profile with tyre defect gauge (i) Thin flange (ii) Sharp flange (iii) Worn flange (iv) Deep flange (v) Hollow tyre (vi) Flat tyre	Separate columns for all these tyre defects to be provided to make entries of the measurements separately. This will also be in line with proforma of wagon.

S.No. 29/10

7.	ICF ALL COIL BOGIE - SIDE BEARERS (i) Height and physical condition of wearing plate (ii) Height and physical condition of wearing piece (iii) Oil level	A defect inside bearer or loss of oil will increase the bogie rotational resistance, which will result in increased lateral forces, causing instability leading to a derailment. Hence, the proposed measurements are required.
6	ICF ALL COIL BOGIE - ANCHOR LINKS Physical condition of anchor links and silent blocks	A defect in anchor link may cause jerk, causing a derailment. Hence recording of the physical condition is required.
7.	ICF ALL COIL BOGIE - EQUALISING STAY ASSEMBLY Physical condition of equalizing stay assembly and bushes	This assembly is a critical part of suspension system and therefore, recording of the physical condition is required.
8	ICF ALL COIL BOGIE - DASH POT (i) Location (ii) Physical Condition (iii) Oil Level (mm)	Dash pot also performs the function of axle guard. Hence, its breakage etc. may cause a derailment. The oil level has to be maintained at optimum level to avoid any under-damping/over-damping of wheel oscillations, which may cause a derailment. Justice Venkatachala's Commission of Inquiry Report on the derailment of 8448 Hirakund Express on 01.06.95 in Sambalpur division of SER may be referred to where non-replenishing of dash pot oil was held responsible in contributing to the derailment. No simulation can be relied upon until & unless all parameters involved in Derailment are measured and incorporated exactly in simulation trials.
9	ICF ALL COIL BOGIE - SWING LINK & STONE Location Physical Condition	Swing link plays a very important role in the suspension system and any crack/breakage/missing may lead to immediate derailment. Defective Swing Link or stones may not allow free movement of bolster, creating large lateral forces, lead into derailment.
10	ICF ALL COIL BOGIE -	Clearance less than the prescribed limit will

S.No.25(i)

	CLEARANCES (i) Crown clearances (A dimension) (ii) Bolster clearance (B dimension)	cause hitting of the trolley sole plate by the axle box, leading to derailment.
11	[illegible] Squareness, Twist etc	In case of the bogie frame [illegible] square is with lead [illegible] fanning of the [illegible] derailment also Skew [illegible] the bogie frame may lead [illegible] the wheels and at times [illegible] derailment.
12	In case accident has occurred on or near points and crossings then the measurements are to be jointly signed by supervisor (S&T) also.	This note should be included in the beginning of the proforma.
13	In case accident involving EMU or AC coaches, then the measurements are to be jointly signed by supervisor (Electrical) also.	This note should be included in the beginning of the proforma.

(B) MODIFICATIONS REQUIRED

Page No.	Col. No.	Topic/Parameter	Remarks of CE Dte
2	18,19	Wheel and axle [illegible] particulars in case of [illegible] wheel and axle [illegible] particulars Ultra sonic particulars [illegible] hub of the disc	Highlighted portion to be deleted as details need to be [illegible] to ascertain proper functioning of the maintenance system. The aim of [illegible] should not only be to [illegible] the axles but also [illegible] defects in the system.
2	20	Stamping particulars [illegible] wheel discs [illegible] manufacturer [illegible] PART in case of breakers [illegible] any [illegible] axle)	do
3	22,24 [illegible]	Roller Bearing (Axle roller Bearing is the critical cause) condition of axle box, face	do

S.No.2912

Page No.	Col. No.	Topic/Parameter	Remarks of CE Dte
		cover plate locking plate and roller bearing	
7	72	Condition of side Buffers only if Derailment is on Curves Working, dead, drooping entanglement.	...

S.No.29/13

ANNEXURE-IV

COMMENTS OF CE DTE ON MEASUREMENT PROFORMA OF MOTIVE POWER (DIESEL AND ELECTRIC)

1.0 NEW ITEMS TO BE INCLUDED

1.1 For all types of locomotives

SN	Topic/Parameter	Comments of CE Directorate
1.	Suspension springs Free height & grouping Working height & group	The measured free height of a spring compared to its designed height indicates loss in elasticity. This will cause wheel offloading & derailment. This was being recorded in the earlier proforma also. The springs have to belong to the same group otherwise it is equivalent to a twist in the track causing wheel offloading & derailment. Various RDSO standards stipulate this aspect. Hence, it is necessary to check spring heights & groupings.
2.	Suspension springs characteristics	Springs are not only provided for ride comfort, but also for safety. Springs enable the loco to negotiate track twist. If the springs do not have the designed characteristics to negotiate permissible track twists the loco will derail or wheel offloading will occur being recorded in the earlier proforma also. Hence it is necessary to check various spring characteristics.
3.	In case accident involving Electric Locomotives then the measurements are to be jointly signed by supervisor (Electrical) also.	This note should be included in the beginning of the proforma.

1.2 For WDM2, WDS5, WDS6, WAM4A, WCG2, YDM4 & YDM4A locomotives

SN	Topic/Parameter	Comments of CE Directorate
1.2.1	Wear on equalizer beam & axle box equalizer beam saddle	
1.	Sitting of Equalizer beam roller pin on the seat	Any defect in this will cause unequal distribution of wheel loads, causing derailment by wheel offloading.
2.	Combined wear of the equalizer & equalizer seat	

S.No-25/14

3.	Condition of wear on equalizer beams & hard face	
1.2.2	Friction Snubber	
1.	Inside dia, of the friction sleeve	Any defect in this will cause inadequate damping, leading to uncontrolled oscillations & derailment.
2.	Dimensions of the shoes	
3.	General condition	
1.2.3	Centre Pivot & Loading pad	
1.	Height of centre pivot	Excessive rotational friction at pivot may lead to angular running of axles and derailment. Therefore it is important to find out condition of centre pivot.
2.	Height of loading pad liners	
3.	Oil Level	

1.3 For WDP2 locomotives

SN	Topic/Parameter	Comments of CE Directorate
1.	Centre Pivot Horizontal liner wear	Excessive wear will increase the bogie rotational resistance, which will result in increased lateral forces, leading to a derailment.
2.	Centre Pivot vertical liner wear	
3.	Hydraulic Damper General condition	Any defect in the above will cause inadequate damping, leading to uncontrolled oscillations & derailment.
4.	Hydraulic Damper Oil leakage	
5.	Hydraulic Damper Characteristics	

1.4 For WAP1 locomotives

SN	Topic/Parameter	Comments of CE Directorate
1.4.1	Friction Damping Device	
1.	Check phenolic piston & piston cross pin for crack or excessive wear	Excessive wear & inadequate oil level will increase the bogie rotational, resistance which will result in increased lateral forces, leading to a derailment.
1.4.2	Bolster Pivot bowls	
1.	Outside dia of the under frame pivot assembly	Excessive wear & inadequate oil level will increase the bogie rotational, resistance which will result in increased lateral forces, leading to a derailment.
2.	Inside dia of the under frame pivot assembly	
3.	Oil level	

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1.5 For WAG7 & WDG3A locomotives

SN	Topic/Parameter	Comments of CE Directorate
1.5.1	Centre Pivot Pin & Housing	
1.	Centre Pivot Housing (Between liners)	These defects will increase the bogie rotational resistance, which will result in increased lateral forces, leading to a derailment.
2.	Centre Pivot Housing (Over liners)	
3.	General condition of rubber bush	
1.5.2	Side Bearers (Secondary Rubber Spring)	
1	Crack in rubber/metal	These defects will increase the bogie rotational resistance, which will result in increased lateral forces leading to a derailment.
2	Crack length on rubber surface	
3.	Bond failure length	
4	Crushing or crumbling signs	These defects will increase the bogie rotational resistance, which will result in increased lateral forces, leading to a derailment.
5	Permanent set.	

2.0 MODIFICATIONS REQUIRED

Page No.	Sl. No.	Topic/parameter	Remarks of CE Dte
3	2	Diameter of wheel at tread Remarks – Measure to see if any wheel dia is below condemning limits permitted by RDSO.	The remark should be removed as it is irrelevant and shall influence the Enquiry Committee. All the MIs for locos stipulate service limits with regard to variation in wheel dia. A significant difference in diameter of wheels on the same axle/bogie wall lead to persistent angular running causing excessive forces at rail wheel interface thus causing derailment.
3	3	Wheel flange thickness Remarks – Information is normally relevant in case of two road case	The remarks should be removed as it is irrelevant and shall influence the Enquiry committee. A thin flange may cause increased lateral oscillations & angularity, causing a derailment. Besides, it may damage the tongue rail while passing through switch flange

Page No.	Sl. No.	Topic/parameter	Remarks of CE Dte
			way gap of a points & crossings. Effect of wear on the rail is inbuilt in the measurement of gauge which is measured at 13mm below the rail table
3	4	Notes at bottom of [illegible] measurement of wheel roughness	Extracts from the maintenance instructions issued by RDSO are reproduced – 'Flanges of reworked wheels should have a surface of at least 250 micro inches which is the same as on new wheels. This is important because a rough finish in this area will contribute to the tendency for wheels to climb the rail Hence it is necessary to check the wheel roughness
4	Note No.3	All measurements are to be taken in shed on a level, un-canted track.	The remark should be removed as lateral and longitudinal clearances can be taken at site.
4	Note No.4	Service limits given in the Maintenance Manual are for good maintenance practice and these are not safety limits.	This note is proposed for deletion, as the following columns are for recording the measurements only. This Para will unnecessary influence the Enquiry committee as well as the Joint measurement recording Team.
4	7	Remarks - All measurements shall be taken on a level tangent un-canted track. These measurements are for unloaded wheels, should be taken in workshop after dismantling. Information is relevant in case of wheel disc shifting/bent axle only. For safety, similar limits as applicable for track gauge are relevant for wheel gauge also.	The remark has no meaning at this place, as the columns are meant for recording measurements only. The interpretation should be left to the Enquiry Committee. The limits are defined in relevant Manuals. No such remarks were in the earlier proforma. Hence, to be deleted.

Government of India
Ministry of Railways
(Railway Board)

No.2000/M(Safety)/7/Annual Report CRS-1999-00 **July 20, 2001**

The Chief Mechanical Engineers
The Chief Safety Officers
(All Indian Railways)

Sub **Revision of the proforma for rolling stock in the accident manual.**

Vide Para No.5.9 of CCRS Annual Report 1999-00, the Commission observed that railways are still following the proforma relevant to steam locos, IRS and plain bearing stock. Rolling stock such as WDM2, WAM4, WAG5 & WAG9, ICF all coil coaches etc. do not find mention in the proforma in vogue. Therefore, the commission reiterated their recommendation that unified revised proforma to cater to different types of rolling stock be issued by Railway Board for incorporation in Railway Accident Manual.

In view of above, the accident proforma for locomotive, wagon & coach has been revised in consultation with CAMTECH and RDSO. A copy of the revised accident proforma is enclosed herewith. Zonal railways may adopt this unified revised proforma and include the same in their accident manual. This has the approval of Safety Directorate of the Railway Board.

(ARUN ARORA)
Director, Mech. Engg. (Fr.)

NB: ***A copy of the unified revised proforma has been sent to CMEs (All Indian Railways) which may be incorporated in the Accident Manual***

/Correspo2001(Part-II)/

Locomotive (Diesel & Electric): Pro-forma To Be Filled In Case Of Accident Derailment When Loco Is Involved In Accident.

INFORMATION TO BE FURNISHED BY THE LOCO DEPTT.

1. Basic Information:
   (a) Date of Accident
   (b) Train No.
   (c) Loco Class:
   (d) Loco Number:
   (e) Loco manufacture Year and Place:
   (f) Base Shed of loco.
   (g) Date & place last POH.
   (h) Kilometres earned after last POH.
   (i) Date & Place of last major inspection.
   (j) Date & Place of last schedule inspection.
   (k) Whether any schedules are overdue?

2. Give brief particulars of the safety items not provided or provided but missing/ not working.

   Whether Loco is provided with:

Safety fittings	Provided	Working
Headlight		
Speedometer		
Speed Recorder		
Flasher light		
Horn		
Brake System		

   Particulars of electrical protection (for electric loco in case of fire only)

Relay	Working/Not Working/Isolated
Earth Fault in Auxiliary circuit (QOA)	
Over current in power circuit (QLM)	
Over current in Rectifier Block (QRSi)	
Earth Fault in Power circuit (QOP)	
Time Lag Relay (Q44)	

3. (a) Damage to the loco (brief description).
   (b) Cost of damage to the loco (in Rs.).

INFORMATION TO BE FURNISHED BY THE LOCO DEPTT. (CPT)

4. Check & Record the observations as follows:

(a) Position of control handles, cutout cocks etc. after the accident.
(b) Functioning of brake synchronising valve – Whether working or not.
(c) Position of brake blocks after the accident – whether applied or not.
(d) Condition of cattle guard.
(e) Any sign of seizure of roller bearing in axle box.
(f) Comments if any coil spring is broken or displaced.
(g) Any other observation in respect to mechanical defect of the locomotive which might have any bearing on safe running of loco.

To be jointly Signed		
Supervisor (Loco)	Supervisor (Traffic)	Supervisor (P. Way)

Measurement For Wheels For All Classes Of Locomotives (continued)

Electric loco, wheel number one is the outer end axle under Cab –1(Cab – 1 is that side of the loco which has the compressors and cab –2 is that side of the loco which has the ARNO converter) and wheel count increases towards the Cab –2.

2. The measurements of wheels are to be done using wheel gauges to RDSO drawing No.SK.DL-3592 for all BG locomotives except WAG, except WAP5 locos. For WAP5 locos RDSO's drawing No.SKDL 4446 and SKDL 4447 may be followed.
3. All measurements are to be taken in Shed on a level, un-canted track.
4. Service limits given in the Maintenance Manual are for good maintenance practice and these are not safety limits.

Sl	Description	Observed Value (in mm)	Remarks
	Wheel gauge: For checking wheel gauge, average of three measurements at equal spacing on the inner periphery of the two wheels on the same axle is to be recorded	1 2 3	All measurements shall be taken on a level tangent un-canted track. These measurement are for un-loaded wheels should be taken in workshop after dismantling. In formation is relevant in case of wheel set/ bent axle only. For Safety, similar limits as applicable to track gauge are relevant for wheel gauge.

To be jointly Signed

Supervisor (Loco)	Supervisor (Traffic)	Supervisor (P. Way)

5. Measurement For Wheels For All Classes Of Locomotives

Sl.	Description	Observed Value (in mm)		Remarks
		Left	Right	
1.	Diameter of Wheel at tread			Wheel size below condemning limit to be ... in case of wheel breakages to ... thickness.
		1		
		2		
		3		
		4		
		5		
		6		
2.	Wheel flange thickness	Left	Right	... measurement is normally relevant in case of two-... case
		1		
		2		
		3		
		4		
		5		
	Wheel Root wear	Left	Right	
		1		
		2		
		3		
		4		
		5		
		6		
	Tread wear	Left	Right	Tread wear should be measured from tread at 63.5 ... from the back face (from the ... and at 70 mm from the ... from the back face of the ...
		1		
		2		
		3		
		4		
		5		
		6		
	UST of axle. Give the date of last UST ... done:	1 & 6	2 & 5	... in case of axle breakages.
		1		
		2		
		3		
		4		
		5		
		6		

Notes

1. Wheel number one is the outer end axie of truck under the Short hood and wheel count increases towards the Long hood on diesel loco, where as for

6. **Pro-forma for measurement of Electric and Diesel Locomotive after accident**

(Locomotives, which are not mentioned in this pro-forma, may be measured in similar manner.)

Sl.	Description		Observed Value (in mm)	Remarks
	Buffer Height			Measurement shall be taken on level tangent track. The measurement should be taken with [illegible]
	Lateral Clearances	End Axles (1,4 & 6)		Applicable for WDM2, WDM2c, WDS6, WAM4, WCG2, WCAM1, WCAM2, YDM4, WDP4, WDP4B, WAG5, WAG5A, WAG7, WAG9, WAP1, WAG1 & WAP5 locomotives only.
		Middle Axle (2 & 5)		Applicable for WDM2, WDM2c, WDS6, WAM4, WCG2, WCAM1, WCAM2, YDM4, WDP4, WDP4B, WAG5, WAG5A, WAG7, WAG9, WDP2, WAP3, WAP6, WAP5 & WCAG1 locomotives only.
	Lateral clearances between axle box and pedestal liner (for end axles)			Applicable for WDP1 & WAP5 locomotives only.
	Longitudinal clearances between axle box and pedestal liner (for end axles)			Applicable for WDM2, WDM2c, WDS6, WAM4, WCG2, WAG5, YDM4, WDP4, WDP4B, WCAM3, WAG7, WAP5, WDP1 & WAG1 & WAP1 locomotives only.
	Longitudinal clearances between axle box and pedestal liner (for middle axle)			Applicable for WAP3, WAP6, WDP2 locomotives only.
	Height of Rail Guard from level			

To be jointly Signed		
Supervisor (Loco)	Supervisor (Traffic)	Supervisor (P. Way)

MEASUREMENT TABLE FOR COACH INVOLED IN ACCIDENT

Note: ***Details regarding all derailed vehicles should be given except***

(i) Where vehicles have derailed due to locomotive derailment.

(ii) Where the first derailed vehicle is obvious from examination of marks on wheel from the details of which accident can be given.

(iii) Where the cause is beyond reasonable doubt.

Sr. NO.	DATE OF INCIDENT	TRAIN NO.	Details of BPC along with the name of station where it is issued and Engineer (C&W) who issued it	COACH NO.	TYPE	MECH CODE	TARE IN TONNES	CARRYING CAPACITY	BUILT DATE	RETURN DATE
1	2	3	4	5	6	7	8	9	10	11

To be jointly signed by

Supervisor (C&W) Supervisor (Traffic) Supervisor (P.Way)

POH PARTICULARS		IOH SCHEDULE/ION PARTICULARS		TYPE OF BRAKE AIR / VACUUM	POSITION FROM ENGINE	WHEEL AND AXLE FACT PARTICULARS (In case of breakage of any wheel/axle)	
DATE	SHOP	DATE	SHOP			Axle face particulars	Ultrasonic particulars on the hub of the disc
12	13	14	15	16	17	18	19
						1L	1L
						1R	1R
						2L	2L
						2R	2R
						3L	3L
						3R	3R
						4L	4L
						4R	4R

To be found Loaded

Supervisor (C&W)

Supervisor (Traffic)

Supervisor (P. Way)

WHEEL AND AXLE

Stamping particulars on wheel discs regarding Manufacturer / RA / RD (In case of breakage of any wheel/axle) 20	Wheel gauge in mm. ^ (Taken in four places) 21	Any indication of bent axle or wheel having shifted on axle 22	Observation after measuring the profile with tyre defect gauge (Good / Rejectable)** 23
1L	1		1L
1R			1R
2L	2		2L
2R			2R
3L	3		3L
3R			3R
4L	4		4L
4R			4R

^ The wheel gauge is to be measured at the horizontal plane passing through the centre of axle.

** The wheel profile is to be checked with tyre defect gauge only (Ref.. IRCA PCIV Rule No.2.95, 3.2.2 and S4.22.1 Plate No.45 to 53)

To be jointly signed by

Supervisor (C&W)	Supervisor (Traffic)	Supervisor (P Way)

ROLLER BEARING
(When Roller Bearing is involved as cause)

Condition of axle box, rear and front covers 24	Condition of face cover plate 25	Condition of locking plate and studs 26	Condition of Roller bearing and its components 27

To be jointly signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P Way)

	Buffer height (to be measured on a level track in mm after uncoupling & re-coupling)	Details of broken parts giving location w.r.t. point of mount and derailment & whether breakage considered due to accident	Any other defect in the coach contributed to or caused the derailment	List of damages to the coach due to accident	Other observations
	28	29	30	31	32
End 1L					
End 1R					
End 2L					
End 2R					

To be jointly signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P. Way)

MEASUREMENT TABLE FOR WAGON INVOLED IN ACCIDENT

Note: ***Details regarding all derailed vehicles should be given except :-***

(i) *Where vehicles have derailed due to the reason of ve derailment.*

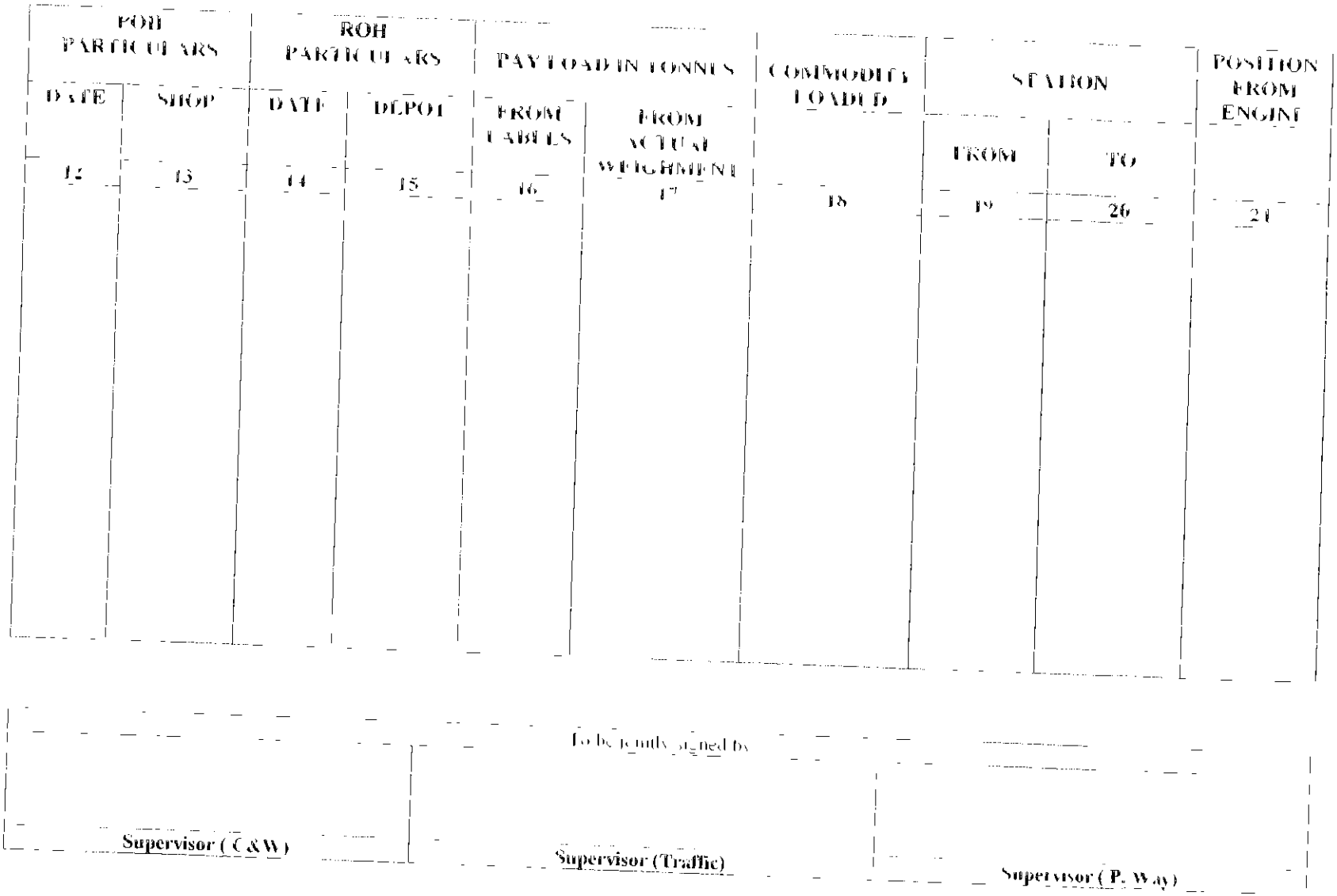
(ii) *When the first derailed vehicle is CBC as from examination of the next wheel then the details for first derailed vehicle need only be given.*

(iii) *Brake Vans and inspection saloons attached to the rear of the train.*

SR. NO	DATE OF INCIDENT	TRAIN NO.	Details of ISA along with the name of station where it is issued and Engineer (C&W) who issued it	WAGON NO.	TYPE	MECH. CODE	TARE IN TONNES	CARRYING CAPACITY	BUILT DATE	RETURN DATE
1	2	3	4	5	6	7	8	9	10	11

To be paid signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P Way)


POH PARTICULARS
DATE
SHOP
12
13
ROH PARTICULARS
DATE
DEPOT
14
15
PAYLOAD IN TONNES
FROM TABLES
16
FROM ACTUAL WEIGHMENT
17
COMMODITY LOADED
18
STATION
FROM
TO
19
26
POSITION FROM ENGINE
21
To be jointly signed by
Supervisor (C&W)
Supervisor (Traffic)
Supervisor (P. Way)

BUFFER HEIGHT Buffer height to be taken after uncoupling & rerailing on uncanted level track)	WHEEL AND AXLE FACT PARTICULARS (In case of breakage of wheel/axle) Axle face particulars	Ultrasonic particulars on the hub of the disc	Stamping particulars on wheel disc regarding Manufacturer / RA / RD
22	23	24	25
End 1L	1L	1L	1L
	1R	1R	1R
End 1R	2L	2L	2L
	2R	2R	2R
End 2L	3L	3L	3L
	3R	3R	3R
End 2R	4L	4L	4L
	4R	4R	4R

To be jointly signed by

Supervisor (C&W)

Supervisor (Traffic)

Supervisor (P Way)

WHEEL AND AXLE

	Wheel gauge in mm. * (Taken at four places) 26	Observation after measuring the profile with tyre defect gauge (Good / Rejectable) ** 27
1		
2		
3		
4		

The wheel gauge is to be measured in empty condition and at the horizontal plane passing through the center of the axle
The wheel profile is to be checked with tyre defect gauge only (Ref. IRCA P/ WAY Rule No 3.2.2(d) and 4.18.1, Plate No. 57 to 66).

To be jointly signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P. Way)

AXLE BOX (FOR BG'S STOCK ONLY)

(To be recorded only when failure of plain bearing is involved as a cause)

Brass thickness in mm.	Condition of box and brass	Condition of sole plate	Condition of journal	Clearance between brass and collar of journal in mm.
28	29	30	31	32

To be jointly signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P Way)

AXLE GUARD (FOR IRS STOCK ONLY) (to be recorded only when failure of plain bearing is involved as a cause.)				ROLLER BEARING (When Roller Bearing is involved as a cause)		
Lateral clearance between axle box and axle guard in mm.	Whether axle guard can work clear of axle box	Are the axle guard bent or otherwise damaged to prevent free movement of axle box	Remark regarding briddle bar	Condition of race cover plate	Condition of locking plates & studs	Condition of Roller Bearing and its components
33	34	35	36	37	38	39

To be jointly signed by

Supervisor (C&W) Supervisor (Traffic) Supervisor (P.Way)

SPRING AND SPRING GEAR (FOR IRS STOCK ONLY)

any broken/ cracked/ missing shackle and shackle pin	Camber of spring in mm. under tare after re- tailing on a level uncanted track (for laminated spring only)	Axle load
40	41	42

To be jointly signed by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P Way)

Vertical clearance at side bearers in mm (For stock having clearance type side bearers only)	Weight Whether a load is placed on more than one wagon	Any other defect in vehicles which may have contributed to or caused the derailment
43	44	45

To be jointly signed by

Supervisor (C&W)

Supervisor (Traffic)

Supervisor (P. Way)

Details of broken parts giving locations w.r.t. point of mount and derailment 46	List of damages to the wagon due to accident 47	Other observations 48

To be jointly enquired by

Supervisor (C&W) | Supervisor (Traffic) | Supervisor (P Way)

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ANNEXURE

PROFORMA FOR OBSERVATIONS DURING DERAILMENT

1. **Details of the Accident**

(1) The Proforma given in this appendix are required to be filled at the site by the Sr. Supervisors of the respective department in presence of the TI/Representative of traffic department and signed jointly by them and countersigned by the senior most Officer present at the site.

(2) The Proforma should form a part of the proceedings of the inquiry.

2. **The sketch of site of the accident :** The engineering representative should prepare dimensioned sketches adequate for the preparation of a scale plan covering the entire site of the accident. In preparing the sketch due care should be paid to the following instructions : -

(1) The sketch giving train number, date, kilometerage of the site of accident should be properly labeled.

(2) The north point should be indicated.

(3) It should indicate prominently the direction of movement and also the names of stations in rear and advance of the accident site.

(4) It should cover a length of about 300 meters behind the point of mount and almost an equal distance in front.

(5) A pair of the lines must denote each track of the P. WAY.

(6) The position of the level crossing, Telegraph post/OHE Masts, Bridges, tunnels, gradient, post with gradient symbols, curves, de-marking the beginning and end length of transitions should be indicated. It should also indicate:-

(a) The position of the all derailed vehicles and the marks left by them either on sleepers, rails or ballast.
(b) Point of mount with position of rail joints on either side.
(c) Point of drop.
(d) The pair of the wheels of the first derailed vehicle.
(e) The position in which every displaced rail/wagon or part of a rail/wagon and detachable components were found.
(f) In all cases dimension form nearest kilometer post and centre line of track should be given.

(7) In case of accident within station limit, sufficient details about the station layout should be shown in order to fully explain the movement of the affected train in relation to the topography of the place. The signal aspects at the time of accident should be correctly depicted.

(8) The distance of the site of accident from a permanent structure to fix the site of accident precisely should be indicated.

(9) The distances should be indicated to show the extent of the disturbance caused in the P. Way or train composition on account of the accident.

(10) A good sketch should always accompany the proceedings duly signed by the president. If necessary, more than one sketch should be enclosed, one clarifying the yard layout and the system of working it and other giving details, such as, position of wheels, wheel marks, etc. In the former, one line should be used to represent both rails of a track and as such portion of the station yard (in case of accident within station limit) should be covered as may be necessary. All necessary details relevant to the issue must be embodied in the sketch. The terminal station on the Down side should be mentioned on the right extremity of the sketch, the terminal station on the up side being mentioned on the left extremely. If the accident takes place within station limits the shorter sketch should be based on the SWR diagram.

(11) Any other details considered necessary.

APPENDIX-I

Proforma to be filled in case of Derailment

Details of the accident

(1) The Proforma given in this appendix are required to be filled at the Site by the Sr. Supervisors of the respective department in presence of the TI/Representative of traffic department and Signed jointly by them and countersigned by the senior most Officer present at the Site.

(2) The Proforma should form a part of the proceedings of the enquiry.

The sketch of Site of the accident

The engineering representative should prepare dimensioned sketches adequate for the preparation of a scale plan covering the entire Site of the accident. In preparing the sketch due care should be paid to the following instructions:-

(1) The sketch giving train number, date, kilometerage of the Site of accident should be properly labeled.

(2) The North Point should be indicated.

(3) It should indicated prominently the direction of movement and also the names of stations in rear and advance of the accident site.

(4) It should cover a length of about 300 meters behind the point of mount and almost an equal distance in front.

(5) A pair of the lines must denote each track of the P.Way.

(6) The position of the level crossing, Telegraph post/OHE Masts, Bridges, tunnels, gradient post with gradient symbols, curves, demarking the beginning and end giving details of degree of curvature prescribed, super-elevation and length of transitions should be indicated. It should also indicate:-

(a) The position of all the derailed vehicles and the marks left by them either on sleepers, rails or ballast.

(b) Point of mount with position of rail joints on either Side.

(c) Point of drop.

(d) The pair of the wheels of the first derailed vehicle.

(e) The position in which every displaced rail/wagon or part of a rail/wagon and detachable components were found.

(f) In all cases dimension form nearest kilometer post and centre line of track should be given.

(7) In case of accident within station limit, sufficient details about the station layout should be shown in order to fully explain the movement of the affected train in relation to the topography of the place. The Signal aspects at the time of accident should be correctly depicted.

(8) The distance of the Site of accident from a permanent structure to fix the Site of accident precisely should be indicated.

(9) The distances should be indicated to show the extent of the disturbance caused in the P.Way or train composition on account of the accident.

(10) Any marks on sleepers or other track fittings should be clearly indicated in their exact position in relation to the track or vehicles.

(11) Broken parts of other extraneous material, if found on the site of accident, should be shown in the sketch, giving their precise position in relation to track.

(12) A good sketch should always accompany the proceedings duly Signed by the President. If necessary, more than one sketch should be enclosed, one clarifying the yard layout and the

system of working it and other giving details, such as position of wheels, wheel marks, etc. In the former, one line should be used to represent both rails of a track and as much portion of the station yard (in case of accidents within station limits) should be covered as may be necessary. All necessary details relevant to the issue must be embodied in the sketch. The terminal station on the Down Side should be mentioned on the right extremity of the sketch, the terminal station on the Up Side being mentioned on the left extremity. If the accident takes place within station limits the shorter sketch should be based on the SWR diagram.

(13) Examine the derailed vehicle or vehicles, for defects not caused by the derailment, but which may have been the cause of derailment and make notes.

(14) Examine the gang chart/diary book to ascertain the date when the track was last attended to.

(15) Any other details considered necessary.

Permanent Way

SOIL				
SL. No. loam Clay,	Type e.g. Sandy, wet, Slushy etc Moorum, Black Cotton etc.	Condition-Firm,	Formation	Rainfall
1	2	3	4	5

BALLAST							
Type-Stone, Moorum, Sand, Ash etc.	Depth below sleeper bottom in cms. Stating whether cleaned or chocked.	Drainage	Packing loose or sound	Width of shoulder in cm. From Rail outside of Sleeper			
				Left	Right	Left	Right
6	7	8	9	10	11	12	13

SLEEPER				RAILS	
Type- Wooden, CST 9, steel trough etc.	Condition- New, second hand, damaged, unserviceable etc.	Density	Square or not	Weight	Condition of wear (attach rail profile if wear is large)
14	15	16	17	18	19

Rail fastenings like dog spikes keys, tie-bars, cotterds, loose jaws etc.		**Rail Joints**		
Number per sleeper seat	Condition: tight or loose	Condition: Hogged, Battered, low etc.	Staggered or square	Extent of creep in the affected section
20	21	22	23	24

General remarks about cracks or fractured of fish plates, fish bolts and other components.	Description of anti sabotage measures like reversed jaws welded rails etc.	Location of point of mount		Location of point of Derailment	
		Whether on straight, curve or transition	Whether on a falling grade, level or rising grade & on sag.	Whether on straight, curve or transition	Whether on a falling grade, level or rising grade & on sag.
25	26	27	28	29	30

Note: (1) Left and right are with respect to direction of Train movement.

(2) The data in col. (2) to (25) need not be collected when the defect is obviously and indisputably on account of sabotage and/or obstruction on track.

(3) Only broken track material which is not indisputably established to be broken after the accident should be included in col.(25) and should be preserved.

(4) Col. (26) need be filled in only when there is a suspicion about sabotage being the cause of derailment.

(5) Sag extends 90 metres on either Side of theoretical junction of the grade lines (Col. 28 and 30).

(6) Entry in col. 14 and 15 must invariably be filled for wooden sleepers in case of derailment on curves indicating further whether bearing plates were provided.

Track Measurements			**Versine**					**Cross level in mm (+) High (-) Low**	
Station No.	Distance apart in meters	Gauge Slack or tight from the exact, correct to 3 mm	Cross level in mm (+) High (-) Low			Grinding or rubbing marks on rails	On 62ft.or 40ft. (12m.) chord depen-ding on practice prevalent on the railway for flat curves	On 31ft. or such shorter chord as consi dered necessary for sharp curves (sharper than 30 on BG & MG)	Remarks regarding length of transition degree of curve and specified super elevation general alignment etc
			Under no load condition	Under load condition	Marks on sleepers or rail top				
1	2	3	4	5	6	7	8	9	10