

Sr DOM's & Traffic Officer's Course

IRITM

30 th June, 2011

Safety in Train Operations
Rules for Safety

Classification of Train Accidents

Consequential Accidents

Defined as –

- **Loss of Life, Injury to Passengers, Greivous or Simple – Prevented from work > 48 hrs**
- **Loss of Property over a defined Value- Rs 1 Lakh**
- **Dislocation to Train Operations – beyond a specified time (Threshold Limit) – Limits Based on Importance of Route**
- **- 3 Hrs if Total Interruption on 'A' Route, etc.**
- **Bds Circular no. 2000/Safety(A&R)/19/20 dt 31.10.2000**

Intermediate Block Signals on Gradients

- IBS can be provided on Sections with Gradients upto 1 in 80 provided Brake Power of Train Adequate to Stop Train at IBS
- As per SOD, the Block Stns are not to be located where there is a steep Gradient as per outer limits prescribed; for Automatic Territory these limits do not apply
- Bd has approved as a Policy that the SOD for Stns (ie 1 in 400 for existing works & 1 in 1200 for new works) do not apply to IBS as no Stn Section exists
- Para 7.169 of SEM applicable to IBS also in addition to Auto Signalling- Bds Letter no. 2007/SIG/M/5(81st SSC) dt 19.1.2009.

Stabling of Load at Stations on Gradients - Operational Restrictions

- Schedule of Dimensions – ‘SOD’ lays down that Operational Restrictions to be in SWR’s for Stns on Gradients Steeper than 1 in 400
- Rly Bds Instns provide that Stns may be **avoided** in Gradients between 1 in 400 to 1 in 1200. In no case, except with prior approval of CRS, Stns can be on Gradients 1 in 260 and Steeper.
- Some Rlys have imposed Restns in SWR’s for Stns with Gradients flatter than 1 in 400.
- CRS has accordingly not agreed to open Stns unless a similar Restn imposed for New Stns also even for those on Gradient flatter than 1 in 400

ACCIDENT MANUAL

Deals With :-

- Classification of Accidents – Threshold Value
- Time for Turning out ART, ARME & CRANE
- Beats of ART, ARME & Crane
- Accident Restoration
- Accident Inquiry

Only Accident Inquiry a subject of CSO, rest items in the purview of COM's

Hence Accident Manual prepared/updated by COM's Bd's letter no. 2002/Safety(A&R)/19/29Pt dt 27.7.09 & 2002/Safety(A&R)/19/20 dt 21.8.2009

Shunting Facility

- In Shunting a longer load from one Line to another, at large Stns, often 2 Shunt Signals, in sequence, need to be taken 'Off'
- If Shunting Movt is not required to go beyond the 2nd return Shunt Signal, in such cases Load is backed from the 1st Return Shunt Signal only.
- Cancellation, in such cases, of the Route, through use of Emergency Button – is a valid means of Shunting, & is not an unsafe practice
- Bds Letter no. 2009/Safety(A&R)/19/20 dt 8.10.09

Safety Camp-Background & Purpose

- Recommended as a Scheme by GM / WR- 1962
- Scheme - Conducting Accdt Prevention Courses
- 1965, Rly Bd directed all Rlys, S/ Camps be held- Drivers, Guards, ASM/SM, TXR, C/Man etc
- Kunzru Committee Recommended Safety Camps
- Of a Short Duration- 3 or 4 days, every 3 years
- Inter-mingling of Ideas in Group Discussion under Guidance of Instructor, no defined Syllabus
- Can be held in continuation of Refresher Course

Signal Lighting (CLS) & Back-up Power Supply

- Important from Safety View that Colour Light Signals (CLS) Always Lit
 - Power Supply Arrangements for CLS to be Reliable – Adequate Back up Necessary
 - Cases of Averted Collision (SPAD) have occurred when Signal Extinguished
 - Power Supply Arrangements in OHE & non-OHE areas defined in Chapter XVI of SEM Pt II, Paras 16.2.1.1 (RE Area) & 16.2.2.1/2 (Non RE Area) ----
- RE Area –
- On **D/Line** Power Supply from 25 KV OHE through AT's on UP & DN Lines separately
 - On **S/Line** where Power drawn from AT, a DG Set be Installed
- Non RE Area –
- Power Supply from Station Feeder; in Addition
 - 2 Stand – by Deisel Generators, standard make & adequate capacity
 - Output Supply- DG Sets in ASM's Office, connected to Auto/Manual Change-over Mode

When Power Restored --- Signal Go Back to its Original Status, or Revised Status if a Movt has taken place in the Mean-time

Signal Dte, Rly Bd Letter no 2002/Sig/A/Misc Dt 25.09.2009, & 28.07.2010

Track Circuiting – Policy on E Routes

- Priority to Track Circuiting on all Routes where longer Trains (43 BCN, 59 BOXN) run, including TC on Point Zones
- Track Circuiting to be Programmed on ‘E’ Routes at Stns with Std III Inter locking
 - Bds Letter 2009/Safety/Signal/26/2 dt 10.11.09
 - Bds Letter 2003/Sig/W/5/1 dt 13.10.2003
 - ML’s (Rly Bd) Letter 2003/Sig/W/5/1 dt 27.08.03
 - Bds Letter no. 2006/Safety-I/23/4 dt 25.11.09

Block Proving by Axle Counters Policy

- Reliable BPAC with Block Panel took a lot of time to develop. Initial Policy issued by Board-
- All Stns on 'A' & 'B' Routes to be provided with Axle Counters along with Block Instts
- D, D Spl, & E Spl Routes to be provided Axle Counters with Block Instts
- Where Central Panel provided w/o BPAC, Rlys to get Works Sanctioned for their provision
- Now reliable BPAC available- all B/Instts (Block Panel) to be with BPAC on Imp routes

BPAC Failures

Analyses of BPAC Failure has revealed :-

- In most Rlys, BPAC provided with B/Instt cannot be re-set by SM, even after Complete Arrival of Train is ensured physically
- This is because the Axle Counter goes in 'Preparatory Reset Mode'- consequently B/Instt also fails & PLC is to be issued
- On SR & CR, BPAC's can be reset by ASM with cooperation of adjacent ASM, Subject to a Physical check of Arrival of last Train. Contd-

BPAC Failures Contd.

- Para 17.48 of SEM Pt II stipulates that Axle Counter (provided with Block Working) can be reset with cooperation of ASM's of Despatching/Receiving Stns after Physically verifying the clearance of B/Section under exchange of Pvt No.
- This Para does not stipulate issue of PLC for first Train after failure of Axle Counter
- Zonal Rlys have to adopt the Model of BPAC's of SR & CR

ART/140 Ton Crane- Composition/Speed

❖ Board's Instructions – Letter No. 99/M(M&P)/7/6 dt 24.4.2003 ----- ***provides Speed of ART's & B/Down Cranes to be 100 kmph***

❖ Board's Instns –

Some ART's having as many as 8 to 18 Vehicles.
Letter No. 99M(M&P)/7/6 dt 24.9.1999 lays down ***Composition of ART*** –

Normally 6 Vehicles, in 8 wheelers. In no case should exceed 7 Vehicles; in OHE Territory upto 8 eight wheelers, & be fit to run & cleared to run at 100 kmph

Train Accidents – Failure of Rly Staff

Provisions in Stats Manual

- Accdts on a/c of 'Failure of Rly Staff' - 45 %
- Accdts on a/c of 'Equipment Failure' - < 2 %
- Statistical Manual defines System of Reporting
- In Case of a Signal Failure – if ASM commits a mistake in Abnormal Working, Accdt is on a/c of – 'Failure of Rly Staff' & not 'Equipment Failure'
- Statement 18 of Stats Manual, Vol I, Table 1-7

Mobility of Section Affected by Accdt

- A review of a no. of Train Accidents revealed unlimited no. of ART/ARME's sent to Site
- Undue Congestion affects quick Restoration
- Reason is Operating officers not involving themselves in Restoration Planning
- Have also given up preparation of Log of Accdts
- Information flow from Site earlier always through Control, now through Mobile Phones
- Tfc Deptt Fn of 'Command & Control' given up

Classification of Accident- Amendment

- In Threshold Value – Interruption to Through Communication defined in Para 4(b) & 10(vii)-
- *“Duration from the time of Accdt till Starting of first train on Line Clear from adjacent Stn for movement over affected line in that Section”*
- Vide Bds Letter no. 2000/Safety(A&R)/19/20 dt 16.8.2010 Board (MT/CRB) has Instructed – *“Time of Movement of First Commercial Train (Goods or Pass.) shall be reckoned for considering Restoration as Complete”*

Importance of General Rules

- Statutory Provisions Framing GR - Powers given to Central Govt, & laid down in Section 60 of Rly Act, to frame General Rules
- Any Statutory Rule made under Powers conferred by an Act (passed by Parliament) has the same Powers as the Act itself; i.e. they have the full Authority of the Legislature
- GR's have this Authority and Status. This Power is not with P Way Manual, Signalling Manual, Optg Manual etc.

- Subsidiary Rules are not issued by Central Govt; hence they do not have this power/status
- Central Govt. means the Minister of the Deptt
- Rly Board Act, 1905, delegates Powers of the Central Govt to the Board, i.e. to Board Members
- Hence Board (MT) authorised to issue GR's
- Parliamentary Control & Scrutiny to Amendment to Provisions of GR (New/Revisions) is done – For 30 Consecutive Days the Gazette Notification of the A/Slip is placed on the Floor of the Parliament. In case of any dissent/objection issue is discussed in Parliament
- Even before this, any Amendment has to be ratified by the Ministry of Law & Justice
- Procedure for change in GR is cumbersome

- Hence Rly Board often in the past issued Circulars and Instructions, & USR's and avoided making changes in General Rules
- Few Decades back, Rly Board started a system of issue of 'Unified SR'; i.e. all COM's were told to issue a SR – this was called a 'Unified SR'.
- A Year back a decision taken to discontinue issue of 'Unified SRs', and to issue Amendments to GR's
- Vide Bds Letter dt 18.8.2010, Zonal Rlys (COM's) empowered to Amend, Delete even 'Unified SRs' (old USR's) under certain conditions especially when Signalling changes made USR's redundant

Role of CSO/Sr DSO's in Optg Rules

- Till over 30-35 years back, the post of DSO was under DOM/Sr DOM nomenclature as DOM/G, the post of CSO was under COPS (now called COM) & called TS/Safety (CTSS)
- The TS/Safety in Hd Qrs & DOM/G in Divns were to assist COPS & Sr DOS respectively in work of Optg/Safety, i.e. Rules, SWR,s etc
- To make Safety an Independent entity, DSO & CSO's now no longer under Sr DOM & COM
- However, Power to make Rules, Frame SWR's was not taken over by Sr DOM's & COM's

- This created an abnormal situation with the Powers of Tfc Officers Curtailed, unlike in other Deptts where Power did not pass on to CSO
- Sr DOM's in Divns & COM's in Hd Qrs continued to use Sr DSO/CSO for the Optg Safety work
- As Safety Officer's were also from Tfc Deptt, working arrangement did not initially create much problems; gradually this started changing
- However, Optg Officers stopped taking responsibility of making Rules, and stopped looking after Optg Safety Issues
- Every Deptt Defines its own Safety Parameters, makes its own Rules, Checks, Inspections, Trg

Twin Single Line Working

- Existing GR does not recognise 'Twin S/Line Wkg' as one of the Systems of Working.
- System Exists on most Rlys due to pressing Requirement of Traffic Movt in specific conditions
- Board (with approval of ML, MT & CRB) now permitted (Letter dt 12.7.2010), & Authorised Rlys subject to –
 - TC should exist at both Stns at ends of Twin S/L Section
 - Separate S/Line Block Instts for each line provided
 - At Jn Stns, train can be advanced upto last Int Str, under Spl Instns, provided area b/w Str & A/S is Track Circuited
 - During Abnormal Working, Trains will be worked under conventional Double Line Working

Shunting during Reception of Train

GR 5.16 - “*Shunting During Reception of Trains-*

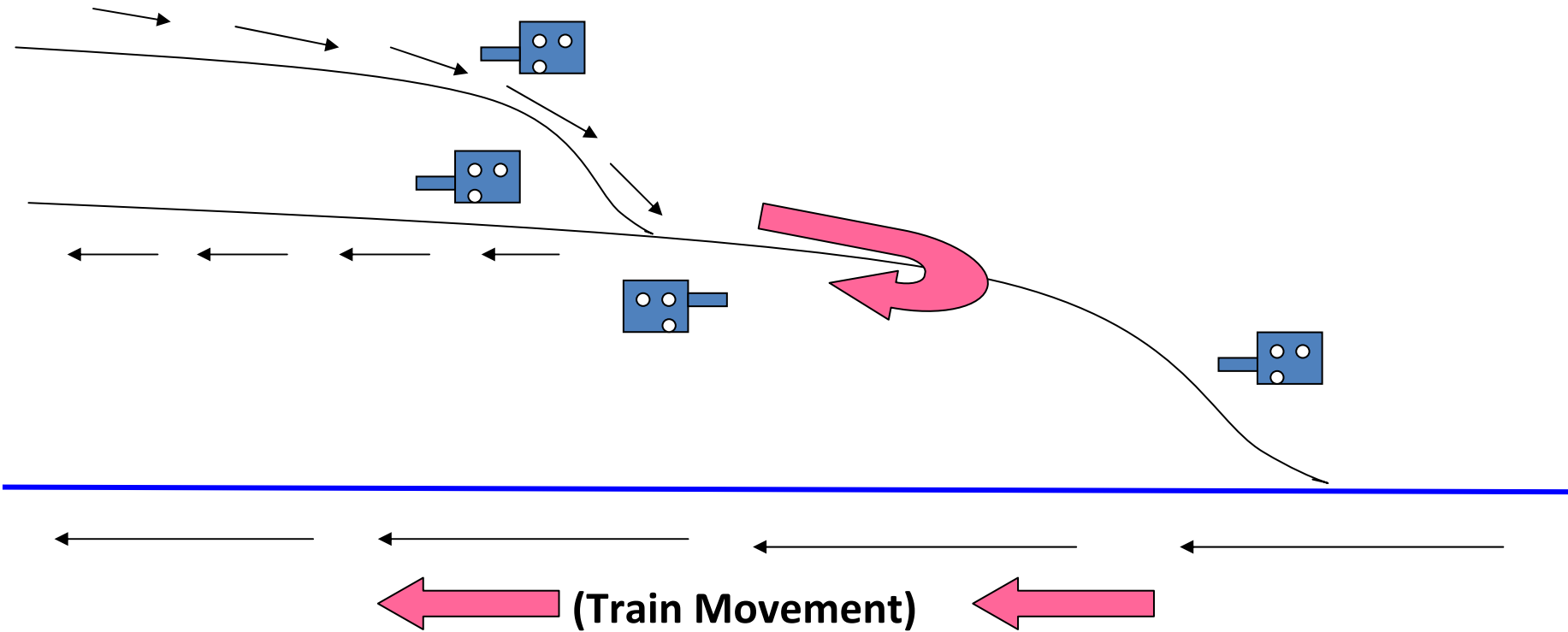
When Signals have been taken off for an incoming Train on to a Line which is not Isolated, no Shunt Movement shall be carried out towards Points over which Train is scheduled to pass.”

- In case of a Stn Provided with Track Circuiting and having Shunt Signals – Shunting is permitted under certain situations, as
 - ***Shunt Signals have No Over-Lap***
 - ***Shunting Movt is upto the Shunt Signal, & not upto the Point Beyond***

Illustration – GR 5.16

Eg.

SHUNTING MOVEMENT



Addition of Subsidiary Rule

- N. Rly & later C. Rly (after fiasco at Pune) have issued a Subsidiary Rule, as Rule 5.16/1, permitting Shunting under conditions laid down in GR 5.16
- Seperately Board (MT) has also approved this concept. Bds Letter 2008/Safety(A&R)/19/5 dt 14.05.2010 circulated to all COM's

Policy on Use of Frequency- Walkie Talkie Sets

- Frequency Allocation vide Bds Letter 2004/Tele /WL/2/Misc – Use Standardised/ Streamlined
- Deptt Wise Allocation made; Salient Features :
 - RPF, Mech, Civil Engg, S&T, Elect, - Allotted Separate & Independent Frequency
 - Separate Freq - Accdt Site Commn (ART Freq)
 - Separate Freq – Driver & Guard, & ASM's of all Stations
 - Shtg & Yard Freq – Shtg Staff & all Stns (ASM's)

Standardisation of Frequency - contd

- Train Escorting Staff – RPF & Comml Staff
- Station to L C Gate – ASM & Gateman
- 3 Freq for 3 adjacent Sections – Use in PLC & TFC etc

***Use of Driver/Guard & ASM Freq most sacred
Above Rationisation Hardly being Followed***