CHAPTER IX

INVESTIGATION AND INQUIRIES

901 Investigation on the spot: The Officers and Senior Subordinates present at the site of accident must jointly investigate the cause and advise DRM and other Officers concerned, their opinion, mentioning the department or departments responsible and person or persons responsible for the occurrence. The investigation on the spot includes recording of statements of staff concerned and, if necessary, other independent witnesses. These depositions shall be produced at any subsequent enquiry and included in the general evidence.

901.1 Staff alleged to be guilty of offences which, in the opinion of the Divisional Railway Manager or the concerned Divisional Officer would, if proved, amounting in their removal from service /dismissal, shall be placed under suspension, pending the result of the inquiry.

901.2 In case of a Loco Pilot passing a fixed stop signal at ON or Engineering Stop Indicator or running into banner flags, and if there are grounds for suspecting that the accident may be due to defective vision, the Loco Pilot shall be placed under suspension and directed immediately for vision test.

901.3 Whenever any member of the staff is placed under suspension in consequence of an accident, the usual procedure regarding suspension of staff shall be observed.

902 Information to be collected on the spot to facilitate Inquiry Committee to arrive at the cause of the Accident: After every accident certain vital information bearing on the cause of the accident is to be collected on the spot which may not be available later, on account of clearance operations undertaken and the resumption of normal traffic. If such information is not collected, it often becomes difficult for the Inquiry Committee to ascertain the cause of that accident. The information to be collected in different cases is given below:

902.1 Loco Pilot passing Signal at Danger:

i. In order to avoid any dispute later, the fact that a Loco Pilot has passed a signal at danger, should be formally brought to his notice through a written memo by the station master of the concerned station.
ii. The SM / ASM / Points-man must confront the Loco Pilot and Guard with regard to the position of the signal and the position of the lever / knob concerned. The position of the signal and route should be recorded by the SM and signed by the SM, Loco Pilot, Guard and other witnesses, if available.
iii. The distance by which the train has passed the signal shall be recorded with respect to the length of engine + coach/wagons and / or telegraph/OHE posts, or by measuring the actual distance in metres.
iv. In the night time, the brightness of the signals should be noted. The weather condition such as foggy/tempestuous condition shall also be recorded.
v. If the Loco Pilot is required to use glasses, it should be checked whether he was in possession of them and using them.
vi. Arrangement for testing brake power of the train shall be made by Officers / Sr. Subordinates at the nearest C&W examination point.
vii. Breathalyzer test on the Loco Pilot/ALP should be done immediately and blood samples of LP/ALP shall be collected. The Loco Pilot /ALP shall be sent for further medical examination.
viii. Data logger output in relation to this incident should be obtained from S&T officials.

902.2 Collision and Averted Collision:

i. The aspect of the signal and position of point levers/ knobs in the panel, and block instruments shall be checked and noted down immediately.

ii. The train signal register should be signed so as to indicate the last entry made and then seized.

iii. Line Nomination Books if any are in force, they shall be seized from the concerned staff immediately.

iv. The position of the two trains or train and obstruction shall be marked on the sleepers. The distance between them shall be measured in metres in case of Averted Collision. A rough sketch shall be drawn showing their position vis-à-vis signals, station platform, turnouts and other fixed land marks.

v. Arrangement for testing brake power of the train/trains shall be made by the Officers / Sr. Subordinates at the nearest C&W examination point.

vi. Breathalyzer test on the Loco Pilot/ALP shall be done immediately and blood samples taken and then sent for further medical examination.

vii. Breathalyzer test & Medical examination shall be conducted for on duty station operating staff.

902.3 Derailments:

i. There are two broad categories of derailment.

a) **Sudden derailment** is caused by wheel set jumping of the rails. Such a derailment indicates that the derailing forces were high enough to suddenly force the wheel off the rail. These are typically caused by failure of vehicle/track components, obstruction on track, entanglement of hanging parts of rolling stock etc. These derailments are characterized by a short mark on rail table between Point of Mount and Point of Drop. In some cases the Point of Mount may even be absent.

b) **Derailment by flange climbing** is caused by wheel mounting the rail in a relatively gradual manner. It indicates that the derailing forces were powerful enough to overcome the normal stabilizing forces, yet not sufficient to cause a sudden derailment. Such derailments are characterized by a longer mark on the rail table between Point of Mount and Point of Drop. Track and rolling stock parameters and operating features influence the rail-wheel interaction forces and hence, their complete record and a comprehensive analysis is required to arrive at the mechanism of derailment. Cause and consequence of derailment are required to be differentiated through this comprehensive analysis.

ii. Derailment proneness increases with increased Lateral wheel force, reduced Vertical wheel load (Offloading) and increased Positive Angularity of wheel. Derailment proneness becomes substantially higher in case of axle moving with a persistently positive angularity. Track and rolling stock parameters and operating features should be critically analysed for their contribution towards these causes. In case of derailments in curve, proper functioning of Bogie rotation system to ensure undue angularity needs close examination. Contribution of track twist and spring defects and twist in bogie frame/vehicle under frame to derailments caused by wheel Offloading needs to be analyzed. In case of derailments at high speed, parameters affecting vehicle oscillation and damping thereof needs a close analysis.

iii. While analysing the mechanism of derailment, relative contribution of track and rolling stock parameters to the rail-wheel interaction forces needs a comprehensive analysis. Reference should be made to the safety limits/ Maintenance limits specified in IRPWM/IRCA/Maintenance Manuals.

iv. Locating and examining the wheel mounting mark(s) at the initial point of derailment is very important for identifying the category of derailment. Precise measurements and critical and detailed examination of the wheel mounting marks should be made e.g. their length, strong or faint, broken or continuous, single or multiple, etc. Photographs should be taken of such marks, not only on the rail, but also on the fastenings, sleepers and ballast. *(Item No.6 of AS-6)*

v. Point of mount and drop, if available, should be marked.

vi. Track measurements shall be taken and a sketch shall be drawn.

vii. Measurements of rolling stock shall be taken.

viii. For locomotive derailments, examination of locomotives shall be done.

ix. The rail fittings and the point readings including the locking arrangement should be examined. It shall be seen whether there was any obstruction resulting in gap in the points. Marks on the rails and sleepers shall be observed.

x. In cases of derailments during shunting operations, it should be noted as to who was actually supervising the shunting.

xi. The position of the shunt signals, point / trap indicators/ any point levers concerned shall be recorded. Shunting order, if any, shall be seized.

902.4 Accident at Manned Level Crossing:

i. Location, number and classification of the gate.

ii. Whether engineering or traffic?

iii. Whether interlocked or non-interlocked?

iv. Gate working instructions – validity.

v. Visibility of signals, if the gate is interlocked.

vi. Condition of the road surface / approaches of the level crossing.

vii. Duty roster of the Gatemen.

viii. Competency Certificate of the Gateman on duty.

ix. Last census – date and TVUs.

x. Length of the check rails and clearance.

xi. Availability of the safety equipment.

xii. Frequency of inspections and last inspection by Officers / Supervisors.

xiii. Availability of whistle boards, road signs, speed breakers and stop boards etc

902.5 Accident at Unmanned Level Crossing:

i. Location number and classification of the level crossing.
ii. Curve or straight for railway track and road separately.
iii. Visibility for road users and the Loco Pilot separately.
iv. Condition of the road surface and approaches of the level crossing.
v. Last census – date and TVUs.
vi. Length the check rails and clearance.
vii. Availability of whistle boards, road signs, speed breakers and stop boards etc.

Note:

(1) In all the accidents, Photographs from different angles shall be taken and submitted through e-mail within 24 hours of the accident to Chief Safety Officer for onward transmission to Railway Board. Where necessary, videography may also be recorded.

(2) No enquiry shall be completed before the complete measurement of rolling stock and track is available and made part of the enquiry report. Enquiry Committee may get additional measurements done as per requirement of the derailment case. *(Item No.7 of AS-6)*