

**SOUTH CENTRAL RAILWAY
HEADQUARTERS SAFETY ORGANISATION
BI-MONTHLY SAFETY BULLETIN – MARCH & APRIL 2023**

DETAILS OF ACCIDENT AND UNUSUAL THAT OCCURED DURING FEBRUARY 2023.

Brief of the Accident : On 15.02.2023 at 06:08 hrs., while Train No. 12727 (Godavari Express from Visakhapatnam to Hyderabad) was on run, the rear most 6 coaches (S-4 to S-1, GS & SLR) derailed on UP line at Km. 219/31-29 in the curve portion of 2.84° degree in mid-section between Bibinagar (BN) – Ghatkesar (GT) Stations of Kazipet – Secunderabad section, broad gauge double line electrified section of Secunderabad Division resulting in disruption of train services on UP line. The train came to a halt after the accident, with the train engine at Km.218/29-27 (about 950 m from the location of derailment).

There was no casualty / injury to any person.

The prima facie cause of the accident “**Rail fracture of outer rail (LH) on 2.84°- degree curve at Km. No. 219/31-29 on Up line in mid-section between Bibinagar (BN) – Ghatkesar (GT)**”. The derailment is categorized as Consequential Accident – D3.

Cause of the Accident : In view of the above discussion, the committee has come to a conclusion that derailment of Train No. 12727 (UP) Godavari Express from Visakhapatnam to Hyderabad between BIBINAGAR (BN) – GHATKESAR (GT) Stations on Kazipet – Secunderabad Section on Secunderabad Division in South Central Railway at 06:08 hrs. on 15.02.2023 occurred due to rail fracture of outer rail (LH) on 2.84° degree curve at Km.219/31-29 on UP line.

Out of the multiple fractures (13 Nos.) of the outer rail, the rail fracture RF-5 could be the first fracture that caused derailment, while the other fractures occurred subsequently as after effect of this fracture and the derailment.

The cause of this derailment is categorized as “**Failure of Equipment.**”

RESPONSIBILITY : - NIL -

PRIMARY : - NIL -

SECONDARY : - NIL -

BLAMEWORTHY : - NIL -

NOTE :

- (a) The last USFD test was conducted on 09.01.2023 i.e., about 36 days only prior to the accident. USFD test at this location was not overdue as on the date of accident. There was no visible flaw at rail fracture (RF – 5) (which triggered the derailment).
- (b) It may not be possible to detect the vertical flaw in the gauge face corner of the rail due to the limitation of the prevailing system of USFD test of rails. RDSO in their report concluded that “the rail pieces at RF – 1 contain fatigue defect in head at gauge side covering about 40% (approx.) of rail head area with orientation of non-ideal for detection by USFD testing. These rail samples also contain shear cracks on rail table at gauge side with wear (changed profile on gauge face side) slight metal flow covering shear crack caused gauge face corner fatigue. Considering the above factors, the probability of detection of this fatigue defect at the time of last USFD testing is very low. The detection of fatigue defect by USFD testing in samples RF-4, RF-5, RF-12, RF-13 is not certain due to small size.”
- (c) In all probability fractures at RF – 5 could be due to fatigue.

RULES VIOLATED : – Not Applicable –

MATTERS BROUGHT TO LIGHT

- 1. It is noted that MRV was ordered 5 minutes later to the ordering of the ART. Para 314.1 of Accident Manual clearly stipulates that in case of an accident involving passenger carrying train, MRV shall be ordered first invariably irrespective of the information received or otherwise about casualties.
- 2. There has been some delay in intimation of the accident to the concerned / designated officers in the Division and HQ as laid down in Para 402.1 of the Accident Manual.
- 3. ART/KZJ was ordered, but not brought to site due to operational requirements and priorities. At least some BD staff should have been moved to the site by road vehicle for assisting in restoration.

SUGGESTIONS AND RECOMMENDATIONS

- 1. At present USFD on Group – A routes is being done by B – Scan USFD machine whereas for rest of the routes, it is being done by A – Scan machine. B – Scan machine keeps record of all the scanning and flaw patterns and also tags the GPS coordinates and time with scanning records. So, with B – Scan USFD machines, it is possible to review the peaks as well as the

classification of flaws even after completion of day's work. The B – Scan machine is capable of storing work of few days in its own memory. With A – Scans it is not possible to verify at a later stage whether the USFD was done properly since scanning records are not preserved. In this regard following recommendations are made :

- (i) All the USFD machines including DRT and SRT on all routes irrespective of “D” marked railor single line section shall be replaced with B – Scan USFD machine, without waiting for completion of codal life of existing A – Scan USFD machines.
 - (ii) A proper system of preservation of continuous scanning record of B – Scan may be designed and implemented.
2. It may be appropriate to stipulate relatively lower service life in terms of GMT carried for the rails laid in sharp curves (In this regard, PCE/SCR has made reference to Railway Board vide letter No. 413/1/Policy, dated 21.02.2023).
 3. Procurement of USFD B – Scan machines and deployment of the same on all the routes as advised by Railway Board vide letter No. Track/21/2004/0902/7 Vol.III dated 15.02.2023 to be expedited.
 4. The gauge in the circular portion of 2.84⁰ degree curve in the rear of the rail fracture was observed to be varying from +2 to +15 mm which is within limits. In terms of Para No. 525 (1), the gauge of the track in curves of 4⁰ degree and flatter, can be from – 6 mm to + 15 mm. In terms of Para No. 7.3 of USFD Manual, it is stated that USFD trolley has been designed to operate under normal conditions of the gauge. It is possible that probes are not properly contacting the rail surface in sharp curves. In this regard, it is suggested advisable to stipulate the limit of slack gauge in curves beyond which DRT rail tester may not be deployed and instead SRT may be deployed, so as to ensure that probes are in proper contact with rail surface and to effecting direct flaws.
 5. Regular Refresher Course / workshops with practical training may be conducted to Sectional ADENs, DENs / Sr. DENs in USFD Testing of rails & welds so as to enable them to conduct proper test check of the USFD work carried out by JE/SSE/USFD.
 6. Mobile ambulance at accident site: During restoration, one C&W staff of ART/SC was bitten by snake while working at site, he was shifted to AIIMS/BN. To enable better initial first aid and quicker movement of injured (working staff at restoration site) to nearby hospitals, one road mobile ambulance may be kept ready near to accident site.
 7. RDSO has recommended that “the gauge corner fatigue cracks are not avoidable in service specifically at turnouts. However, these cracks may be detected by Eddy current testing and be removed by regular rail grinding before it reaches to critical limit.”

ATTENTION STATION MASTERS

S.R. 5.20.3. Hand shunting of any vehicle fitted with roller bearings is strictly prohibited at a Station yard where the outermost points are on a grade steeper than 1 in 400 or situated within 100 meters of such a gradient.

S.R. 5.20.4. Shunting of any vehicle fitted with other than roller bearings shall be done at a station yard where the outermost points are on a grade steeper than 1 in 260 only with locomotive attached towards the falling side of the gradient.

ATTENTION Engineering

S.R. 15.26.2.8. Immediately a Trolley is permitted to be placed on the line, the Station Master shall place the 'Trolley on Line' cap on the plunger of the block instruments to serve as a reminder for the issue of Caution Order.

S.R. 15.26.2.9. During the period the Trolley is working on the section, the Station Masters at either end of the block section shall issue Caution Orders for all trains entering the section.

S.R. 15.26.2.10. The official in-charge of the Trolley is responsible for the safe working of the Trolley. He shall ensure that rules for the working of the Trolley are strictly adhered to, and always be alert to guard against accidents. The issue of Caution Orders by the Station Master does not absolve the official in-charge of the Trolley from his responsibility for protecting the Trolley.

ATTENTION LOCO PILOTS / ASISTANT LOCO PILOTS/GUARDS

6.03. Protection of trains stopped between stations. :-

SR 6.03.7. The Loco Pilot shall then ascertain either by going personally or deputing his Assistant Loco Pilot or any other qualified railway servant available that any part of the disabled train (or traction over head equipment or masts in the electrified section) is not obstructing the adjacent track, if any.

The Flasher Light shall be switched off only when the Loco Pilot finds that his train is in a position to proceed or after it had been assured that the adjacent line, if any, is free from obstruction and it is not necessary to stop any approaching train to obtain assistance.