



GOVERNMENT OF INDIA
MINISTRY OF TOURISM AND CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

RAILWAY ACCIDENT INVESTIGATION REPORT

ON

**Collision between MBE Down Goods and No. EG-18 Up Suburban
Local trains at Gummidipundi station on Madras-Gudur Broad
Gauge Double line Electrified section of Southern Railway
on 3-6-1982**

SUMMARY

1. Date 3rd June 1982.
2. Time At about 14-22 hours.
3. Railway Southern.
4. Gauge Broad—1676 mm.
5. Location Gummidipundi Station (Km. 45/6-8).
6. Nature of Accident Collision.
7. Trains involved (i) MBE Down Goods train.
(ii) No. EG-18 Up Suburban Local.
8. Consisting of (i) 66 vehicles, hauled by WAM-4 locomotive No. 21270.
(ii) Two units of four coaches each.
9. Estimated speed at the moment of collision (i) About 25 Km/h.
(ii) Between 20 & 25 Km/h.
10. System of Operation Absolute Block System.
11. Number of Tracks Double line.
12. Gradient Level.
13. Alignment Straight preceded and followed by a 2° curve.
14. Weather Clear.
15. Visibility Good.
16. Casualties Killed—9
Injured—26 (Grievous—9 Minor—17).
17. Cost of Damage 3.72 lakhs.
18. Cause The Goods train having been driven past the Down Home Signal at 'ON'.
19. Responsibility (i) Locomotive Driver working MBE Goods train.
(ii) Assistant Driver of MBE Goods train.
20. **Important Recommendations in brief :**
 - (i) Ministry of Railways may consider reviewing their orders about keeping wagons in service "for any length of time irrespective of their Return date" if they are found fit for service "on normal train examination" and issue such revised directives as may help in promoting safety.
 - (ii) Close surveillance by higher categories of Supervisors to be ensured by conducting surprise checks of Goods trains at a convenient point soon after their departure from the originating Train Examining Depot after examination, to serve as a feed back information to the Railway Administration about the quality of the performance of Train Examiners.
 - (iii) Power failures in Route Relay Interlocking installations not be allowed to interfere with the digital counters meant for cancellation of routes. Time-relays to be made to function as designed for and not release a route in less than the prescribed time limit.
 - (iv) The design of colour light signals to be modified such that there won't be any flickering of signal aspects under any circumstances. In Colour Light Signals on Southern Railway, the next more restrictive aspect is cut in when the main filament of a bulb fuses with the possibility of two or more aspects simultaneously being displayed on the signal, confusing the Driving crew. This deficiency has to be removed.
 - (v) Southern Railway Administration may seriously view the practice of cannibalising the fittings of wagons due to short supply of spares at Train Examining Depots and take such steps as would help in getting over the problem in the interest of safe train operation.
 - (vi) Southern and South Central Railway Administrations may ensure that their Driving crews possess the relevant Rules Books and Working Time Tables of both the Railways when working trains in each other's jurisdiction.

CONFIDENTIAL

GOVERNMENT OF INDIA
MINISTRY OF TOURISM AND CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

From : The Commissioner of Railway Safety,
Southern Circle,
Bangalore.

To : The Secretary to the Govt. of India,
Ministry of Tourism and Civil Aviation,
Sardar Patel Bhavan,
New Delhi.

Through : The Chief Commissioner of
Railway Safety, Lucknow.

Sir,

In accordance with Rule 4 of the Statutory Investigation into Railway Accidents Rules, 1973 (published under the Ministry's Notification No. RS. 13-T(8)/71, dated 19th April 1973), I have the honour to report the results of my Inquiry into the collision between MBE Down Goods train and No. EG-18 Up Suburban Local train at Gummidipundi station on Madras-Gudur Broad Gauge Double line Electrified section of Southern Railway at about 14-22 hours on 3-6-1982.

1.2 I was in Madras on 3-6-1982 in connection with the visit of the Chief Commissioner of Railway Safety, Lucknow, and on being informed of the accident, both of us visited the site. I made a quick survey of the location and the condition of the colliding trains and noted the indications of points and signals on the Panel instrument and the position of Relays connected with the movements of the two trains before returning to Madras the same evening.

1.3 On 5-6-1982 I visited the site again and went into various issues connected with the accident in detail. The same afternoon, I inspected Kavaraipettai station where the locomotive and the Goods train formation involved in the accident were kept. I had also undertaken a visibility test on a WAM-4 locomotive working a Goods train under conditions of visibility similar to those at the time of the accident. Level Crossing No. 33 situated close to the Down Home Signal of Gummidipundi station was also inspected later that evening.

1.4 The Deputy Commissioner of Railway Safety (S&T), Bombay, joined me on 5-6-1982 and tested in detail the signalling equipment at Gummidipundi on the 5th and 6th and submitted a report of his observations.

1.5 A Press Notification was issued inviting members of the public having knowledge of the accident or related matters to tender evidence at the inquiry which I commenced at Gummidipundi on 5-6-1982 or to communicate with me by post.

1.6 The Civil and Police authorities having jurisdiction over the site of occurrence were duly notified.

1.7 The Senior Administrative Officers of Southern Railway present at the inquiry which was held at Gummidipundi on the 5th and 6th of June and at Madras on the 7th were :—

- (1) Shri M. V. Subramanian, Chief Traffic Safety Superintendent.
- (2) Shri V. Narayanan, Chief Rolling Stock Engineer.
- (3) Shri H. J. Pavamani, Divisional Railway Manager.
- (4) Shri M. D. David, Addl. Chief Signal and Telecommunication Engineer (G).
- (5) Shri T. A. A. Rahim, Addl. Chief Electrical Engineer.

1.8 Evidence of 25 witnesses was recorded and relevant exhibits filed.

Note : In this Report—

- (i) the expression "The Goods train" wherever used refers to MBE Down Goods train which left Tondiarpet Marshalling Yard near Madras on the afternoon of 3-6-1982 and the expression "The Suburban Local" refers to No. EG-18 Up EMU Suburban Local train which left Gummidipundi at 14-20 hours for Madras Central ;

- (ii) the terms 'right'/'left', 'leading'/'trailing' and 'front'/'rear' where used are in reference to the direction of travel of the respective trains; and
- (iii) the abbreviation Km./Kms. denote kilometre/kilometres with reference to the painted number plates fixed on the OHE masts. Km./h. stands for kilometre per hour. There are 16 OHE masts per kilometre on either side of the track in the vicinity of the accident site. These are numbered 2, 4, 6, etc. on the Down line side and 1, 3, 5, etc. on the UP line side.

1.9 The Accident

At about 14-22 hours on the bright sunny afternoon of 3-6-1982, while No. EG-18 Up Electric Multiple Unit Suburban Local train which had just departed from Road No. 4 of Gummidipundi station was still negotiating the cross-over leading to the Up Main line, MBE Down Goods train which had minutes earlier left Kavaraipettai, a station adjacent to Gummidipundi towards Madras side-swiped with its rear portion. As a result of the impact, the Suburban Local parted between the 6th and 7th coaches and the rear two coaches got pushed by nearly 100 metres before the Goods train came to a stop. [Some of the photographs are at Annexure III.] While the locomotive of the Goods train remained on rails, three wagons immediately behind it derailed, as also coaches 6th, 7th and 8th of the Suburban Local.

1.10 Passenger Occupation

Gummidipundi was the starting point for the Suburban Local and, as it was not a rush hour, occupation was very light. It was estimated that about 150 persons were in the train at the time of the accident as against its capacity for 800 passengers.

1.11 Casualties

I regret to report that as a result of the accident five passengers of the Suburban Local were found killed on the spot and three others died on their way to Hospital. 27 persons with injuries were admitted to various hospitals in Madras City where one injured person died on the 6th. Of the other injured, nine were classified as having received grievous injuries and 17 sustained minor injuries. I visited the General Hospital and the Southern Railway Headquarters Hospital on 7-6-1982 and spoke to some of the injured receiving treatment there. They were found to be progressing satisfactorily.

II. RELIEF MEASURES

2.1 Intimation

2.1.1 The accident having occurred within station limits, the Assistant Station Master on duty informed the Divisional Controller and others concerned within minutes of the occurrence and asked for immediate medical relief.

2.1.2 The Guard of the Suburban Local and the Assistant Station Master of Gummidipundi rendered limited first-aid to the injured. They were soon joined by the local Doctors and a little later by Doctors of the nearby Government Hospital at Ponneri. By the time the Railway Assistant Divisional Medical Officer and others from Madras reached the site by road at about 15-50 hours, all the injured had been shifted to Ponneri, a nearby town with medical facilities. Soon thereafter they were transported by Accident Relief Medical Van and Road ambulances to Madras and admitted as in-patients at the Government General Hospital (20), the Government Stanley Hospital (3) and the Southern Railway Head Quarters Hospital (4).

2.2 Restoration

2.2.1 Both the lines remained blocked for about 16 hours due to the derailed and capsized vehicles infringing running dimensions. The vehicles were removed and track restored at about 06-00 hours on the 4th for Diesel and steam services. Electric traction was made available after another 3½ hours.

2.2.2 Due to this dislocation, several important Mail and Express services were cancelled or terminated short of destination and some others were diverted by an alternate route. The Madras bound No. 122 Up Tamil Nadu Express was terminated at Sullurupeta, about 80 Kms. from Madras Central and the stranded passengers were cleared by Road transport buses of Pallavan Transport Corporation. No. 15 Grand Trunk Express, No. 4 Howrah Mail and No. 53 Hyderabad Express were some of the important out-going trains which were diverted via Arakkonam, Renigunta and Gudur. Besides, several outgoing and incoming trains were either cancelled or were subjected to detentions.

III. THE TRAINS

3.1 The composition of the Suburban Local which consisted of two units of four coaches each, was as under:—

Coach No.	Body & type	Year built	Date of last POH
1. Motor Coach No. 12036	ICF built EMU	1980	Not yet due
2. Trailer Coach No. 12286			
3. Trailer Coach No. 12536			
4. Driving Coach No. 12786			
5. Driving Coach No. 12787			
6. Trailer Coach No. 12537			
7. Trailer Coach No. 12287			
8. Motor Coach No. 12037			

The total length of the train was 172.6 metres and weight 310 tonnes.

3.2 The Goods train consisted of 66 vehicles equivalent to 69 units hauled by WAM-4 locomotive No. 21270. Particulars of the three derailed vehicles marshalled immediately behind the locomotive were as under :—

S.No.	Wagon No. and type	Year built	last POH	Return Date
1.	PW C 46309	—	1-8-81	2/84
2.	ERKC 83360	—	—	2/84
3.	WR C 28402	1966	15-4-77	10/80

The total length of the train including the locomotive was 579 metres and its weight was 2062 tonnes.

3.3 Damage to Rolling Stock

3.3.1 Suburban Local

There was no damage to the front five coaches of the train. They remained on rails. The 6th and 7th coaches got derailed and extensively damaged while the 8th coach was only derailed of the leading pair of wheels.

Coach No. 12537, sixth from the front, had its near schaku coupler and sole bar damaged ; its body had suffered abrasions and end side panel extensively damaged.

Coach No. 12287, seventh from the front, had one side of its body and interior and schaku coupler severely damaged. Except for fittings and electrical equipment, its body may not be fit for further use.

The cost of damage is estimated to be Rs. 1.9 lakhs.

3.3.2 Goods train

WAM-4 locomotive No. 21270 had its right hand side of Cab 2 (Assistant Driver's side) extensively damaged.

The cost of damage is estimated to be Rs. 95,000.

Wagon No. PWC 46309 marshalled next to the locomotive had its right trailing wheel dropped inside the rail. Wagon No. ERKC 83360 and No. WRC 28402, marshalled second and third from the locomotive, had their right leading and trailing wheels dropped inside. There was no damage to any of these stock. All other vehicles on the train were unaffected and remained on rails.

3.4 Damage to Permanent Way

Two numbers of crossings 1 in 12, 90 R, 4 tongue rails, 90 R, 20 class-II rails and 200 wooden sleepers and 45 pre-stressed concrete sleepers were damaged due to the accident. The total estimated cost of damage is Rs. 75,000.

3.5 Damage to Overhead Equipment

One OHE mast got twisted and damaged together with its insulators. The cost of damage is estimated to be Rs. 10,000.

3.6 Damage to S&T Equipment

Damage to S&T field equipment was of a minor nature and is estimated to be Rs. 2,000.

3.7 There was no damage to any other Railway asset.

3.8 The cost of damage to various Railway assets aggregates to Rs. 3.72 lakhs.

IV. LOCAL FEATURES AND METHOD OF WORKING

4.1 Description of the Site

4.1.1 The accident occurred in Gummidipundi station yard, about 140 metres inside the Down Home Signal on the cross-over connecting the Down line with the Up line at the Madras end of the station. Gummidipundi is situated in Chengalpattu District of Tamil Nadu, forty six kilometres from Madras.

4.1.2 The track alignment after leaving Kavaraipettai station is on a right handed curve of 873 metre radius for about a kilometre in length. Thereafter, it is straight for about three kilometres before swinging to the left on another curve of 873 metre radius. A short straight intervenes between this and the next curve of 873 metre radius which is right handed. The collision occurred on the straight alignment between these two curves.

4.1.3 The alignment between Kavaraipettai and Gummidipundi is on level ground or flat gradients not steeper than 1 in 500 and is parallel to and not far from the Bay of Bengal. The nature of the country is open with cultivable lands on both sides. The bank in the approaches of Gummidipundi is shallow, being 1 to 1.5 m: in height. Although the section upto Gummidipundi is classified as Suburban and many EMU trains run upto Gummidipundi and a few upto Elavur, the next station towards Gudur, the general look of the area is rural. The direction of the line between Kavaraipettai and Gummidipundi is generally from South to North. A sketch showing the site of the accident and the approaches including Gummidipundi station yard is at Annexure IV.

4.2 System of Working

4.2.1 Gummidipundi is for the purpose of Block working a 'B' Class station interlocked to Standard III. The station is equipped with Route Relay Interlocking and Multiple Aspect colour light Signalling and trains are worked between Kavaraipettai and Gummidipundi under the system of working known as Absolute Block System.

4.2.2 There are six lines in the yard, Roads 2 and 3 being the Up and Down Main lines.

While Roads 1 and 2 are provided with signals for reception and despatch of Up trains only and Road 3 for Down trains only, Roads 4, 5 and 6 are equipped with signals for reception and despatch of trains from and to both the directions. All except a few of the Suburban trains terminate at Gummidipundi and such trains coming from Madras side are generally received on Roads 4 and 5 which have platform faces and on their return journey towards Madras Central are despatched from the same lines. A Down train which terminates on one of the Roads 4 and 5 and departs from the same road as an Up train towards Madras Central has to negotiate two 1 in 12 cross-overs, one between Road 4 and the Down Main line and the other between the Down and Up Main lines.

4.2.3 The Route Relay Interlocking Panel and SGE Block Instruments are provided in the station house situated on the island platform between Roads 1 and 2. All the points and signals (except some siding points and trap points) are operated from the Control Panel which consists of a console offering a clear picture of the tracks, points and signals over the entire area controlled by the Panel. Adjacent to each controlled signal on the Panel, there is an entrance knob and at the end of the route there is an exit button. The points can also be operated individually by knobs which are provided on the top of the Panel.

4.2.4 An Up train, when despatched from Road No. 4 has to receive the relevant Starter Signal and the Up Last Stop Signal. It has to negotiate two 1 in 12 cross-overs before entering the Block section. A Down train while being received at the station encounters Distant Signal (of level crossing No. 33 at Km. 44/28-30) situated at a distance of about 1876 metres from the level crossing, Gate-cum-Distant Signal (of Gummidipundi station) at a distance of about 876 metres from the level crossing and Down Home Signal situated 275 metres from the level crossing towards the station. The Down Home Signal is practically opposite the Up Last Stop Signal of the station.

4.2.5 There are two level crossing at the Madras end of the yard-level crossing No. 34 at Km. 45/30-32 cutting across Roads 1 to 6 and interlocked with Down reception and Up despatch signals and level crossing No. 33 at Km. 44/28-30 beyond the Up Last Stop Signal and Down Home Signal and about 272 metres away from them. In the Down direction it has a Distant Signal and a Gate Signal, the latter being a combined Gate-cum-Distant signal of Gummidipundi station. For clearing the Down Home Signal for reception of a train no slot is necessary from the Gateman as per the interlocking arrangements provided but for clearing the Down Home with Green aspect (for a run through train), the Gateman has to give a slot to the Panel Assistant Station Master which will only be effective after the gate is closed and locked for road traffic. For des-

patch of Up trains also the Gateman has to give a slot to the Panel Assistant Station Master after closing and locking the gate and then only will the Assistant Station Master be able to clear the Up Last Stop Signal.

4.2.6 Power for working the Panel and the points and signals in the yard is normally obtained from OHE through step-down Auxiliary Transformers. There is provision for switching over from Up OHE to Down OHE when need arises. There is also an independent standby for use when both Up and Down OHE power fails. This standby power is obtained from Tamil Nadu Electricity Board.

4.3 The kilometerages of various stations/locations referred to in the Report are as under:—

Madras Central	00-00
Ponneri	33-48
Kavaraipettai	40-16
Level Crossing No. 33	44/28-30
Site of Accident	45/6-8
Gummidipundi	46-08
Eliver	51-69
Gudur	136-04

V. SUMMARY OF EVIDENCE

5.1.1 Shri C. H. Venkateswarlu, Driver of MBE Goods train, said that after his train passed Kavaraipettai, he noticed double Yellow aspect on the Distant Signal of the Gate (No. 33 at Km. 44/28-30) and again double Yellow aspect on the Gate Signal (which is also the Distant Signal of Gummidipundi). Due to curved alignment beyond the Gate Signal, the aspect of the Home Signal could not be seen till the train reached the level crossing. When seen, the Signal was displaying Yellow aspect. Witness noticed that the Signal had also flickered once. The Yellow aspect disappeared and the signal remained blank for a moment and the Yellow aspect came back. Simultaneously he noticed the Suburban Local negotiating the cross-over between the Down and Up lines. He immediately applied emergency brakes and his Diesel Assistant had also done likewise. Prior to the application of brakes the train was controlled and its speed was brought down to 10 Km./h. In spite of his efforts he could not avoid a collision with the Suburban Local. The train was 'dead slow' when the collision had actually taken place.

5.1.2 Answering questions, witness gave the following further details:

- (1) The Brake power of his train was alright. He did not have the feeling of inadequate brake power on the run.
- (2) He attained a maximum speed of 50 Km./h. after leaving Tiruvottiyur.

5.2.1 Shri V. Jeevan Rao, Diesel Assistant of the Goods train, corroborated the details given by his Driver in the matter of signal aspects

noticed while approaching Gummidipundi and the manner in which the collision had taken place. According to him, the train was running at a speed of 15 Km./h. prior to the application of the emergency brakes.

5.2.2 Answering questions, witness gave the following further information :—

- (1) Flickering of signals was experienced on earlier occasions also. Witness gave an instance of flickering which he noticed at Pedapariya station a few days earlier.
- (2) The nature of flickering noticed at Gummidipundi was that it was changing from Yellow to Green and back to Yellow. It was not becoming blank anytime. There was no flickering on the route indicator which continued to display the indication for the first loop.
- (3) The brake power of the train was adequate and the Driver was able to control the train whenever required.
- (4) The Down Home Signal of Gummidipundi can normally be picked up from a distance of 4-5 telegraph posts.
- (5) From a speed of 15 Km./h. it should be possible to control and stop the train within two telegraph posts.

5.3.1 **Shri G. Appadurai**, Guard of the Goods train, stated that before the train had left Tondiarpet Marshalling Yard he satisfied himself that the particulars given in the Brake Power Certificate were correct. At the time of departing, the vacuum level in the Brake Van gauge was 38 cms. While approaching Gummidipundi he saw the Distant Signal of the Gate displaying 'double Yellow'. Due to curved alignment he could not see the other Signals at that stage. By the time his Van cleared the curve he noticed the Home Signal displaying 'Red' but by that time the front portion had already crossed that Signal.

5.3.2 Answering a question, witness gave the reason for the detention of 95 minutes for the train to depart from Tondiarpet Marshalling Yard even after the engine was attached at 11-20 hours as under :

"The train formation consisted of all kinds of miscellaneous vehicles not in very good condition. Ten of the vehicles were empties being sent to the parent line for POH and others were loads for various locations. Obtaining proper vacuum was a problem and the staff somehow managed to attend to the defect and could create required vacuum only at 12-55 hours."

5.3.3 Answering another question, witness said: "Normally our experience has been that at the starting station somehow we will get the required vacuum and brake power but on the run several defects would appear including turning of brake blocks, leaky hose pipes, etc."

5.4. **Shri Philip Marshal**, Motorman of the Suburban Local, said that he started the train at 14-20 hours from Road 4 after the Starter had been cleared to display Yellow aspect. While starting the train it was not possible to see the Up Last Stop Signal. His train negotiated the first cross-over at 15 Km./h. and was negotiating the second cross-over when he spotted the Down Goods train approaching Gummidipundi on the Down Main line. He presumed that the train would be stopping at the Home Signal. When the Motor Coach and the next coach of his train had crossed over to Up Main line, he was able to see the clear aspect of the Up Last Stop Signal. He had noticed at that time that the Goods train was also moving towards the station. Realising that a collision was likely to take place he accelerated his train but the impact took place while the sixth coach of his train was still infringing the Down Main line. The speed of the Goods train was 20 to 25 Km./h. He felt a jerk and fell forward. He applied brakes and also noticed that the volt metre in the coach had dropped to zero indicating that the power had been cut off. His train came to a stop and the Up Last Stop Signal which was earlier showing Green aspect was blank.

5.5 **Shri V. S. Gananathan**, Guard of the Suburban Local, said that his train was started from Road 4 at 14-20 hours. After seeing the Starter Signal displaying Caution aspect and after hearing the station bell, he gave two beats to Motorman to start and the train started. After 3-4 minutes he experienced a sudden jolt and rolled inside the Cabin not knowing what had happened. Soon he realised that there was a collision between his train and the Goods train hauled by an Electric locomotive and that his train had parted.

About 20 passengers occupied the coach next to his and that coach had been smashed in the collision. Five dead bodies were located in the coach and most of the injured were also from the same coach.

5.6.1 **Shri C. Radhakrishnan**, Assistant Station Master on duty at Gummidipundi deposed that for despatching the Suburban Local, he had obtained Line Clear at 14-15 hours and the train left from Platform Road No. 4 at 14-20 hours. Witness explained the manner in which he set the route and cleared the Up Starter and Up Advanced Starter for the train to depart from the station to Kavaraipettai. At 14-21 hours he noticed on the Panel that the train had just passed the Up Starter. As per the 'Out Report' received from Kavaraipettai for the Down Goods train, he was expecting the train to reach Gummidipundi at 14-25 hours. He was expecting that by that time the Up Suburban Local would have cleared the cross-overs and entered the Block section.

At 14-22 hours he noticed that tracks 1A and 1AT were down and the Home Signal was

at Danger. While he was thinking of contacting the Gateman to know the actual position of the Goods train, he himself came on the telephone and informed witness that the two trains had collided.

5.6.2 Answering questions, witness gave the following details :—

- (1) The Panel was working normally on that day and he was able to get the routes he wanted to set for the trains dealt by him.
- (2) During his nine months stay at Gummidipundi, he had not come across any problems with the working of the Panel instrument.
- (3) There was no power failure at the station on 3rd June anytime during his duty hours, prior to the occurrence.
- (4) Station signals were known to be flickering but there was no case of any signal going blank as long as there was power. When flickering takes place, the most restrictive aspect is displayed momentarily before the aspect goes back to original aspect.

5.7 **Shri K. Elumalai**, Pointsman, Gummidipundi, said that at the time of departure of Suburban Local he was on the platform. As directed by the Station Master he rang the station bell to announce its departure, after ensuring that the Starter Signal had been cleared for the train. The signal aspect was Yellow.

5.8.1 **Shri R. Sivarai**, Gateman of Level Crossing No. 33, said that some time in the afternoon he got a warning bell from the station, in response to which he closed the gate and pulled all the levers. After about five minutes he noticed one Electric train from station side approaching the level crossing. Simultaneously a Goods train was also passing the gate. At that time the Down Home Signal was at Danger. The speed of the Goods train was normal Main line speed. Witness was not in a position to define it in terms of so many kilometres per hour. Realising that the Goods train was wrongly entering the station, he exhibited his hand danger signal and also shouted to the engine crew not to proceed further, but the train did not stop. A little later, there was a collision between the two trains. He then informed the Station Master of this on the telephone.

5.8.2 Answering questions, witness said that when he closed the gate for the Suburban Local, he noticed two Yellow signals, one over the other, on the indicator provided in the gate lodge.

5.9 **Shri D. Sukumaran**, Switchman, Elavur, said that there was a power block between Gummidipundi and Elavur from 12-55 hrs. onwards on the 3rd June. It was cancelled at 14-15 hours. The Tower Wagon for which the section was blocked back had also cleared

at 14-15 hours. After that, there was no enquiry from Gummidipundi for granting Line Clear for any Down train.

5.10 **Shri R. Subba Rao**, Assistant Station Master, Kavaraipettai, said that the Down Goods train ran through his station at 14-18 hours at a speed of 50-60 Km./h. He was on the platform to exchange signals and everything was normal. He granted Line Clear for the Suburban Local ten minutes after the Up Goods train cleared. He did not, however, get any 'Out Report' for the train. He learnt later that the train met with an accident at Gummidipundi.

5.11 **Shri R. Baburajan**, Shunter, Loco Shed, Tondiarpet, in charge of booking AC Loco crew on 3-6-1982 produced relevant records and stated that when **Shri Venkateswarlu**, Driver and **Shri Jeevan Rao**, Diesel Assistant, reported for duty at 09-00 hours they were subjected to breathalyser test. At the time of the test he found them normal.

5.12 **Shri R. Pandurangan**, Train Examiner, Tondiarpet, said that the MBE Down 15 (which was later to work as MBE Down Goods on the 3rd) was offered for examination at 02.30 hours and examination was completed by 06-00 hours. For the purpose of examination he had a gang of eight men who worked from 03-00 hours to 06-00 hours and certified 64 vehicles equivalent to 67 units. During the examination 101 hose pipes, 26 brake blocks and 9 syphon pipes were fitted being deficient at the time of placement. There was an exhaustor for the purpose of checking brake power but the test could not be done as the formation was with 25 gaps.

5.13.1 **Shri C. Lakshminarayanan**, Sr. Train Examiner, Tondiarpet, said that during his duty hours from 07-00 hours to 13-00 hrs. on the 3rd, the formation of MBE Down Goods was handed over to him. Power was attached at 11-30 hours, vacuum was created at 12-00 hours and brake power certificate was issued at 12-50 hours.

5.13.2 Answering a question, witness said that the formation was subjected to an exhaustor test for brake power between 09-00 and 09-30 hours. Out of the 66 vehicles, eight were inoperative cylinders and 58 were effective. When he conducted the test there were no gaps.

5.14.1 **Shri R. Ranganathan**, Chief Yard Master, Tondiarpet, deposed after consulting his Hump Performance Register that between 09-00 and 10-15 hours on 3rd June, the shunting engine removed 32 vehicles from the load and attached 7. According to his record there was no evidence to show that there were gaps in the formation when shunting engine was required to attach 7 vehicles.

5.14.2 Answering another question, witness said that he had no record to confirm that between 09-00 hours and 10-15 hours the shunt-

ing loco had to wait for vacuum exhaustor test to be conducted. But he was told by his staff that the engine had waited there for some time for the purpose.

5.15.1 Shri K. Y. Srinivasan, Asst. Mechanical Engineer, Carriage & Wagon, Madras, who was associated with the joint test of brake power of the Goods train on the afternoon of the collision, said that a WDM-2 locomotive was used for testing brake power and that it could not create more than 30 cm of vacuum. This was partly due to the condition of the stock and partly due to the condition of the locomotive. The vacuum level at the other end of the formation was not recorded.

5.15.2 Answering further questions, witness stated that the subsequent test done on the 5th June indicated that 66.6% of the cylinders were effective. On that occasion the vacuum level was 46 cm on the engine.

5.16.1 Shri S. K. Iyer, Sr. Divisional Mechanical Engineer/C&W, Madras, answering questions, said he was not satisfied with the joint test of the brake power of the goods train conducted on the night of 3-6-1982, the reasons for which were (i) full train was not checked; (ii) full vacuum required for the test was not created and (iii) the position of all the vehicles could not have been checked in the allowed period of 15 minutes since only two officers were available. To rectify the position he undertook a second joint test on the 5th of June and this had shown a brake power of 66-2/3%.

5.16.2 Answering a question about the large number of hose pipes and brake blocks fitted to the formation as deposed by the Train Examiner, witness said that his depot was equipped with sufficient stock of these items but the incidence of thefts in the Marshalling Yard might have been responsible for the deficiencies.

5.16.3 Answering another question, witness said that intensive examination of a train requires 40 man hours as per yard-stick and such examination is only undertaken for trains going beyond 800 Kms. Although there were only eight men with the Train Examiner for examining the Goods train, he must have been satisfied during the three-hour time that the train had been examined properly. If the Train Examiner considered that he would need more time nothing prevented him from taking extra time.

5.17 Shri S. Devadoss, Section Controller, Madras Division, said that as per information received from Kavaraipettai, the Goods train had left the station at 14-18 hours. At 14-20 hours he got 'Out Report' for the Suburban Local from Gummidipundi Assistant Station Master. At 14-25 hours he received telephonic information about the accident. All concerned were immediately advised and Medical Relief Van Special ordered at 14-28 hours.

5.18.1 Shri T. R. Vijayaraghavan, Assistant Electrical Engineer, Operation, Broad Gauge, Madras, who was one of the Officers associated with the joint brake power test of the Goods train on 3-6-1982, gave particulars similar to those given by the Assistant Mechanical Engineer as far as the test conducted on 3rd June was concerned.

5.18.2 Answering a question as to how the locomotive was able to create 46 cms on the 5th June while on the 3rd the WDM-2 locomotive was not able to create not more than 30 cms., witness felt that the WAM-4 locomotive had a higher capacity than the WDM-2 locomotive although he was not very sure. Further, before the brake test was conducted on 5-6-1982, the formation was attended by the Train Examining staff for leakage, etc.

5.19 Shri R. Karthikeyan, Signal Inspector, Grade III, Gummidipundi, deposed that he conducted his monthly inspection of Gummidipundi installation on the 28th and 29th of April 1982 and nothing unusual had been noticed. On the date of accident neither he nor his Electrical Signal Maintainer was at Gummidipundi. He had gone to Perambur to collect stores from the Stores Depot of the Chief Signal Inspector and returned only after being informed of the accident. His Maintainer had to attend a failure at Kavaraipettai, information about which was received by him at 12-10 hours. He was at Kavaraipettai when he heard about the accident.

5.20.1 Shri S. K. Rajendrababu, Assistant Signal and Telecommunication Engineer/B, Madras Division, who reached the site of accident at 16-15 hours had recorded the Panel indications in the station house, as directed by his Superiors. From the indications recorded, witness understood that the Station Master had set the route for Up Suburban Local from Road 4 to Up Main Line to be despatched to Kavaraipettai station. The Gates were in closed position and the Assistant Station Master had granted Line Clear for the Goods train.

5.20.2 Answering a question, witness said that it was not possible as per the circuitry of the Installation for the Gate-man to get a Yellow signal on the Down gate-cum-Distant Signal and a similar Yellow on the Down Distant Signal. He was of the view that although the double Yellow might have been displayed on the Distant, the indication at the gate lodge would show only one Yellow if one of the bulbs got fused. On later checking, witness found that it was so.

5.20.3 Answering another question, witness said that it was impossible for the Driver to notice double Yellow at the Gate-cum-Distant Signal when the Home Signal was at Danger.

5.20.4 Answering another question, about the Driver's deposition about his having observed the Home Signal in Yellow aspect and its flickering condition, witness said that when an

Up movement had been authorised for a train to move from Road 4 to Up Main line, it would not have been possible for the Driver to see an Yellow aspect on the Up Home Signal. About the flickering, witness was of the view that although flickering does take place sometimes, it would not result in the aspect changing from more restrictive to less restrictive.

5.21.1 **Shri G. Amal Raj**, Sr. Divisional Signal and Telecommunication Engineer, Madras, under whose supervision the position of the relays of the signalling installation at Gummidipundi was recorded soon after the accident, stated that from the position of the relays he understood that the tracks which were showing 'Down' were occupied by the vehicles involved in the accident and other tracks were free. The conclusion from such a track occupancy was that the route was set for EMU Suburban Local train from Road 4 to Up Main line. From the position of the indication relays he understood that the points were set for the same route for the EMU train.

5.21.2 Answering a question, witness said that it was impossible to clear the Home Signal for a Down train when the route was set for departure of a train from Road 4 to Up Main line.

5.21.3 Answering another question about the deposition of the Driver that the Down Home Signal was displaying Yellow and was also flickering, witness felt that as the Home Signal is a controlled signal, the question of its flickering due to any extraneous reasons was remote.

5.22.1 **Dr. S. Balagaje**, Asst. Divisional Medical Officer, Southern Railway, Madras Egmore, who was the first Railway Doctor to reach the site at about 15-50 hours, stated that by that time all the injured had been shifted to the Taluk Headquarters Hospital and only five dead bodies were lying at the site. He visited the Primary Health Centre at Gummidipundi and later the Taluk Hospital at Ponneri. Seven Doctors in that Hospital were attending on the injured. The final tally of casualties as per witness was: Five found killed on the spot, three died on way to Hospital, and 26 (eight with grievous injuries and 18 with minor injuries) admitted to Hospital of whom one died later.

5.22.2 At Ponneri Hospital witness took the blood and urine of the Driver Shri Venkateswarlu and Assistant Driver Shri Jeevan Rao for alcohol test. The samples were sent to the State Forensic Laboratory and results were awaited.

5.22.3 Answering a question, witness said that although he had taken the samples three hours after the occurrence, he was of the view that it would give a useful result as alcohol in blood can be detected upto four to six hours. From his oral examination, he did not find the two persons under the influence of alcohol.

VI. OBSERVATIONS AND TESTS

6.1 I visited the accident spot on the evening of 3-6-1982, a few hours after the occurrence, and inspected the position of the cross-overs negotiated by the Suburban Local, the position of the Down Goods train and the Local train, the extent of damage caused, the indications on the Route Relay Interlocking Panel and the position of Relays. A joint record of the Panel indications and position of Relays was made by Railway officials in my presence.

6.2 On the afternoon of 5-6-1982 I travelled by a Goods train hauled by a WAM-4 locomotive leaving Kavaraipettai and observed the visibility of various signals while approaching Gummidipundi under visibility conditions similar to those on 3-6-1982. While the Distant Signal of the Gate and the Gate-cum-Distant Signal of Gummidipundi could be sighted from the moving train far in advance, the Home Signal could be sighted only from a distance of 725 metres due to curved alignment between the Gate-cum-Distant Signal and the Home Signal.

6.3 I inspected the damaged locomotive and the vehicles of the Goods train at Kavaraipettai and noted relevant details. I was distressed to see the Goods vehicles, some with no brake blocks, some with badly worn out or differentially worn out brake blocks and some more with brake blocks in reversed position, besides other deficiencies which gave the train a look similar to that of a neglected Engineering material train. 13 of the 66 vehicles were overdue POH, the painted return dates being as far away as July 1979. At my instance Railway officials undertook a detailed examination of the condition of the Goods vehicles and furnished a report.

6.4 I inspected level crossing No. 33 and observed its working for some time, including the signal indications displayed in the gate lodge while passing trains.

6.5 Deputy Commissioner of Railway Safety (S&T), Bombay inspected and tested in detail the signalling installation at Gummidipundi on the 5th and 6th of June 1982. Relevant extracts from his observations are appended to this Report (Annexure I).

VII. DISCUSSION

7.1 Time of Accident

As per records of the Traction Power Controller at Madras, power tripped in the region covered by the collision at 14-22 hours. This agrees with the observation made by the Assistant Station Master, Gummidipundi, on his Panel Instrument at 14-22 hours to the effect that track circuits 1T and 1AT on the Down Main line near the Home Signal were 'Down' indicating that a train had occupied them. The train involved was obviously the Goods train which had, seconds later, hit the Up Suburban Local negotiating the cross-over between the

Down and Up Main lines. I, accordingly, determine that the collision had occurred at 14-22 hrs.

7.2 Speed of the colliding trains :

7.2.1 The Up Suburban Local had just departed from Road 4 and was negotiating the cross-overs leading to the Up Main line. The Motorman stated that his train was running at a speed of 15 Km./h. but on seeing the approaching Goods train and in a bid to save the collision he had accelerated the train. I, accordingly, consider that its speed was around 20-25 Km./h. at the moment of collision.

7.2.2 As regards the speed of the Down Goods train, different versions have been given by different witnesses. According to the Driver of the train it was moving at 10 Km./h. before he applied the emergency brakes. The speed estimated by the Assistant Driver was 15 Km./h. When the train ran past level crossing No. 33, the Gateman felt that it was running at normal Main line speed. The Motorman of the Suburban Local estimated the speed of the train to be 20-25 Km./h. as its locomotive went past him in the opposite direction, a few seconds before the collision occurred.

7.2.3 From the nature of damage suffered by the coaches of the Suburban Local as a result of the collision and the distance to which its two rear coaches had been pushed by the locomotive of the Goods train, I consider that the speed might have been about 25 Km./h., taking into account the trailing load of about 2000 tonnes which the locomotive was hauling. I do not accept the statement of the Driver that at the time of impact his train was running 'dead slow'. Had it been so, there was no need for the parted coaches of the Suburban Local to be pushed by as much as 100 metres before the Goods train came to a stop.

7.3.1 Having visited the scene of the tragedy soon after the occurrence, I satisfied myself that the cross-overs leading from Road No. 4 to Down Main line and from Down Main line to Up Main line were set for the Suburban Local to be moved from Road No. 4 to Up Main line. At that stage I was not in a position to determine whether that movement was for despatching the train to the next station or for some other purpose but it was clear that the movement was an authorised one.

7.3.2 The Preliminary issues to be determined, therefore, were—

- (i) What the intention of the Assistant Station Master was in the matter of receiving the Down Goods train which had left Kavaraipettai at 14-18 hours on line clear and despatching the Up Suburban Local which was scheduled to depart from the station at 14-20 hours; and
- (ii) What route he had set and for which train.

7.3.3 The Down Block section between Gummidipundi and Elavur was occupied by the traction department official for some repair work on that afternoon and the line had been made available for traffic at 14-15 hours only. No Line Clear had been obtained by the Assistant Station Master of Gummidipundi for the Goods train to proceed to Elavur and, therefore, he could not have intended to push through the Down Goods train towards Elavur before despatching the Up train scheduled to leave at 14-20 hours. Further, the Goods train had run through Kavaraipettai station at 14-18 hrs. and was not expected to reach Gummidipundi before 14-25 hrs. which is five minutes beyond the scheduled departure of the Up train. There is no direct or circumstantial evidence to presume that the Assistant Station Master had intended to receive the Down Goods train in preference to the departure of the Up Suburban Local even at the cost of delaying the scheduled departure of the latter by five minutes or more. I, therefore, accept the deposition of the Assistant Station Master that he had despatched the Up Suburban Local first and intended to receive the Down Goods train later. The fact that he had taken Line Clear for the Up train from Kavaraipettai, the statements of the Motorman and the Guard that the train had in fact departed from Road No. 4 after the station bell had been rung, the statement of the Station Porter that he had rung the bell as per the Assistant Station Master's instructions corroborate the statement of the latter that the Up Suburban Local was sought to be despatched first and had in fact been despatched.

7.3.4 As regards the setting of the route, the Assistant Station Master has stated that he had set the route for the departure of the Up Suburban Local via the cross-overs and that he had seen indications on his Panel to that effect. The Motorman and his Guard have also testified to the effect that they had noticed the Yellow aspect of the relevant Starter Signal. The Motorman deposed that he had noticed the Green aspect of the Last Stop Signal when the driving coach (which was the foremost vehicle of the train) cleared the cross-overs and came on the Up Main line. From the indications on the Route Relay Interlocking Panel and position of connected relays, recorded soon after the accident, there was also confirmation that the route had been set for the Up Suburban Local to depart from Road No. 4 to Up Main line and that the train had in fact travelled on the route set. I, accordingly, determine that the Up Suburban Local had departed from Road 4 towards Kavaraipettai on correct signals.

7.3.5 The Gateman of level crossing No. 33 situated between Down Distant and Home Signals stated that after the gate had been closed and the relevant levers pulled, he saw two Yellow indications of the signals in his gate lodge. While he deposed before me at the sitting on 5-6-1982 that he saw the indications

vertically one over the other, he pointed out during my visit later that evening one Yellow on the Distant Signal and another Yellow on the Gate Signal which were side by side in his room. Such a combination—a single Yellow on the Distant and again a single Yellow on the Gate Signal—is not possible as per the principles of Multiple Aspect Colour Light Signalling. Similarly, the engine crew stated that they saw a double Yellow aspect on both these signals. This again is not possible as per the circuitry. Such conflicting signal aspects may, however, be possible under two conditions.

- (1) Any human interference with the circuitry; and
- (2) any malfunctioning of the relays.

7.3.6 Available evidence indicates that none of the Signal Maintenance Staff was in Gummidipundi on the afternoon of 3-6-1982 and, therefore, the possibility of any manipulation did not exist. There was also no need for any manipulation as could be seen from the circumstantial evidence. I, accordingly, come to the conclusion that there had been no human interference with the circuitry.

7.3.7 The Deputy Commissioner of Railway Safety (S & T) who had inspected and tested the installation in great detail did not notice any situation which could have led to display of aspects which the Driver (and his Assistant) claimed to have noticed. No malfunctioning of any kind was noticed in the installation and it responded correctly to all the tests it was subjected to. In the circumstances I consider that the depositions of the Driver and the Assistant Driver in the matter of signal aspects of Down Gate-cum-Distant and Down Home Signals were motivated and had in fact not occurred at the relevant time and come to the conclusion that the Gate-cum-Distant Signal had displayed Caution aspect (Single Yellow) to the approaching Down Goods train. The Gateman's observation of a single Yellow aspect on the signal indication in his gate lodge corroborates this view. (His other statement regarding his observation of a similar single Yellow aspect on the Gate-cum-Distant Signal having been probed into, it came to light that one of the bulbs on the indication got fused and, therefore, he was able to see a single Yellow aspect only, although the signal itself had actually displayed double Yellow aspect).

7.3.8 In regard to the aspect of the Down Home Signal, the Assistant Station Master stated that he observed the Red aspect on his Panel. The Gateman of the level crossing No. 33 has also stated that he noticed the Red aspect on that signal. In fact he claims to have shouted and also displayed Red hand signal to the engine crew of the Goods train running at 'normal Main line speed', having realised that the train was wrongly entering the station. The train Guard has also testified having spotted the Gateman displaying his Red hand signal towards the train crew. The signal

which is only 272 metres away from the Gate towards the station was within his range of visibility and I have no reason to disbelieve him, being an impartial witness.

7.3.9 The engine crew claim that they had seen the single Yellow (Caution) aspect on the Home Signal. Besides the statements of the Assistant Station Master and the Gateman to the contrary, the deductions made from the position on the Panel and the connected relays observed soon after the accident, as also the extensive tests conducted by the Deputy Commissioner of Railway Safety (S&T) on the installation, indicate that such an aspect was not possible to be obtained when the route was set for a movement from Road 4 to Up Main line via the Down Main line. In the circumstances, I do not accept the statement of the engine crew that they had observed a single Yellow (Caution) aspect on the Down Home Signal and consider it as motivated.

7.3.10 Further, there is contradiction in their statements about the flickering of the signal claimed to have been noticed by them. While the Driver said that it had changed from Yellow to no aspect (blank) and back to Yellow, the Assistant Driver said that it had changed from Yellow to Green and back to Yellow but it had at no time become blank. The absence of aspect claimed by the Driver was possible only if there had been a power failure. The power for the signalling equipment having been drawn from the Overhead Equipment, the question of its having failed would arise only if the OHE had failed even momentarily. There is no such evidence before me. The change of aspect (from Yellow to Green and back to Yellow) claimed by the Assistant Driver as having been observed was also not possible as flickering would not cause the aspect to change from a more restrictive aspect to a less restrictive aspect, although the reverse could be a possibility. Besides, the conflicting statements of the Assistant Driver and Driver on this important issue indicate that what they were claiming was not what they had actually seen at the relevant moment but an after thought with a view to defend their failure. I, accordingly, dismiss their claim and hold that the Down Home Signal displayed Red aspect only as the Goods train approached it.

7.4.1 The above conclusion would naturally mean that the Driver had failed to obey the signal aspects displayed to him while approaching Gummidipundi station and had driven past the Down Home Signal at Danger. The circumstances under which such a failure could have occurred is the next issue to be dealt with.

7.4.2 The Driver and the Assistant Driver reported for duty on the morning of 3-6-1982 after adequate rest and were in normal health at the time of 'Signing On'. They were also subjected to a breathalyser test at the time of 'Signing On' (9 A.M.) as per records maintained at the starting depot. Blood and urine sam-

ples of both the Driver and Assistant Driver were also collected by the Railway Doctor after the occurrence and got tested in the State Forensic Laboratory and the result was that there had been no trace of alcohol. An oral examination by the Railway Doctor also indicated that they were normal. In the circumstances, the possibility of the accident having taken place due to drunkenness or even due to the Driver having taken ill suddenly is ruled out.

7.4.3 The Driver has not complained of poor Brake power on the train. In fact he has categorically stated in reply to a question that he satisfied himself that brake power was normal on the train. A similar reply has been given by the Assistant Driver also. Although my investigations have indicated that the train examination had not been satisfactory at Tondiarpet Marshalling Yard and a post-accident test on the train vehicles has revealed rather poor brake power conditions (dealt in a subsequent paragraph), I cannot attribute the failure of the Driver to stop his train short of the Down Home Signal at 'ON' to this deficiency, although I consider that it had acted to his disadvantage when he applied the emergency brakes rather late on realising his mistake.

7.4.4 The accident occurred in broad day light and under satisfactory visibility conditions. The Driver has himself stated that he noticed the Attention aspect (Double Yellow) displayed by the Distant Signal of the Gate No. 33. This should have registered in his mind to indicate that the next signal (Gate-cum-Distant) could be displaying Caution aspect (Single Yellow) and the Home Signal, Danger aspect (Red) and that he would be required to stop short of that signal. Driver Shri Venkateswarlu has sufficient experience in Goods train driving (nine years) and I do not imagine that with the 2000 and odd tonne load behind him he would not have known how much braking distance was required to bring the train to a stop at the Home Signal.

7.4.5 The Distant Signal of the Gate is located at a distance of 2031 metres from the Home Signal of Gummidipundi station. As per RDSO's Report No. M-306, a Goods train similar to the one which was involved in the accident would require an Emergency Braking Distance of 1650 metres at a speed of 72 km./h. with an average vacuum level 390 mm and 85% of effective cylinders. As per evidence before me the average vacuum level on the train was 410 mm (46 on engine and 36 cm of the Brake Van after leaving the spot between Ponneri and Kavaraipettai where some trouble had been experienced in the vacuum gear and partly rectified as deposed by the Guard) and the percentage of effective cylinders was 55 (as per joint test result recorded on the evening of 3-6-1982). Under these conditions of brake power the calculated Emergency Braking Distance for the train would be 2425 metres. A subsequent test conducted on

5-6-1982 gave a figure of 66.7% of effective cylinders with an average vacuum of 420 mm and adopting these figures the Emergency Braking Distance works out to 1950 metres. If the speed is assumed to be 60 Km./h. (as deposed by the Guard), the EBD figures given above will get reduced to 2020 and 1625 metres respectively. In either case, the Driver could have stopped the train short of the Home Signal had he applied the emergency brakes at the moment he noticed the Attention aspect of the Gate-cum-Distant Signal. Due to over-confidence presumably he allowed the train to proceed further at that speed and applied emergency brakes only on actually noticing the Home Signal at Danger. This signal during a test under simulated conditions was found to be visible from a distance of 725 metres (due to curved alignment in its approach) and naturally the margin available was not adequate for him to stop the train short of the Home Signal. In fact the collision occurred 225 metres inside the Home Signal and the train moved by another 100 metres before it came to a stop after hitting the Suburban Local. Thus the total distance covered by the train after applying the emergency brakes was 1050 metres which is far short of the length required even for a train with good brake power and much worse for a train with poor brake power of the order of 55% (or even 66.7%) of effective brake cylinders.

7.4.5 Since there is no other factor which might have come in the way of the Driver, I conclude that it was the lack of alertness and a degree of over-confidence he had displayed at the crucial moment which had resulted in the train over-shooting the Home Signal at Danger and hitting the Suburban Local. Incidentally, the distance of 950 metres covered by the train before hitting the Suburban Local indicates that it still had a residuary speed good enough to drag the rear two coaches of the Suburban Local for about 100 metres after hitting them.

7.5 Poor Brake Power Conditions on the Goods Train :

7.5.1 The train originated at Tondiarpet Marshalling Yard near Madras Central and had hardly covered 40 Kms. before getting involved in the accident. Records maintained at the depot indicate that it was examined on the night of 2/3-6-1982 and as per brake power certificate issued at 12-50 hrs., five minutes before its departure, the percentage of effective cylinders on the train was 91.3 (63 out of 69 being effective). When checked on the night of 3-6-1982 after the accident the percentage dropped down to 55.1. Subsequently another check was conducted on 5-6-1982 for reasons brought out in Sr. Divisional Mechanical Engineer's evidence summarised in para 5.16 and the percentage of effective cylinders arrived at during that check was 66.7. While I have my own reservations about the results of the second check (the Assistant Electrical Engineer who

was associated with both the checks went on record (vide evidence summarised in para 5.18) that the formation was attended to by Train Examining Staff during the intervening period, even the figure arrived at during that check indicates a drop of 25% in brake power which is an unusual feature for a train which had run for hardly 1½ hours and covered 40 Kms. A probe into the type of train examination conducted at the originating depot has brought out the following interesting information :—

- (i) The Train Examiner who examined the train between 03-00 and 06-00 hours on 3-6-1982 stated that although Vacuum Exhauster was available for use, vacuum test could not be conducted on the formation as there were 25 gaps in between the wagons.
- (ii) The day duty Train Examiner who was to despatch the train stated that the Locomotive was attached at 11-30 hours, vacuum was created at 12-00 hrs. and certificate issued at 12-50 hours. The same Train Examiner stated in reply to a specific question about vacuum test using Vacuum Exhauster that the test was conducted between 09-00 and 09-30 hours and at that time the formation was complete from end to end.
- (iii) The Chief Yard Master stated that the Shunting engine was booked for shunting on the formation between 09-00 hrs. and 10-15 hours during which period seven vehicles were detached. There was no record of closing any gaps between wagons.
- (iv) The Guard of the train had this to say in reply to questions put to him.
 "The train formation consisted of all kinds of miscellaneous vehicles not in very good condition. Ten of the vehicles were empties being sent to the parent line for POH and others were loads for various locations. Obtaining vacuum was a problem and the staff somehow managed to attend to the defects and could create the required vacuum only at 12-55 hours."
 "Normally our experience has been that at the starting station somehow we will get the required vacuum and brake power but on the run several defects would appear including turning of brake blocks, leaking hose pipes, etc."

In his original statement the Guard referred to a vacuum drop at Km. 27/4 between Ponneri and Minjur due to which the train came to a stop. He noticed that a wagon which was earlier dummied by inserting a stone and grease applied to prevent leakage had been disturbed and it was again leaking. He attended to that and the Assistant Driver attended to vacuum defect on another wagon. A third wagon was also leaking but as it was standing on a bridge it could not be attended to and the train left

with that leakage, the vacuum level created in his Van after that stoppage being 36 cms.

7.5.2 The situation which has been adequately described by the concerned Railway Officials while deposing before me makes one feel sad.

7.5.3 The Train Examiner who examined the train mentioned in his evidence that 101 hose pipes, 26 brake blocks and 9 syphon pipes had to be fitted on to the formation as those were found deficient. This has been attributed by the Sr. Divisional Mechanical Engineer (C & W) to thefts in the Marshalling Yard. Despite this Herculean effort by the train examining staff to make it fit 'some-how', several wagons were without brake blocks, some had brake blocks in turned condition and some more had badly worn out or differentially worn out blocks when I inspected it on 5-6-82.

7.5.4 The Train Examiner gave attention to the formation equivalent to 24 man hours against 40 man hours stipulated for train examination on Southern Railway. Considering the large scale deficiencies required to be made good by him, his actual effort in train examination must have been much less.

7.5.5 With through Goods trains being subjected to such perfunctory train examination at originating stations and trains being permitted to run with such poor brake power, it is not surprising that accidents involving Goods trains have been on the increase on Indian Railways. This and many other similar cases which come to notice day in and day out indicate that examination of Goods trains is not receiving the attention it deserves and depot officials are prepared to accept slipshod work, "if only to push a train out".

7.5.6 If Goods trains were an independent lot running on independent tracks by themselves and if there be no influence of their state of maintenance on the safety of trains carrying passengers, the Commission of Railway Safety has little to feel concerned except to feel sad about it in the same manner as any discerning citizen would feel for the Indian Railways. Unfortunately, however, the causes of a good number of the serious accidents involving passenger carrying trains have their origin in Goods train performance, as both types of trains run on the same tracks or on parallel tracks. Even in respect of the present accident, had the Goods train not suffered any detention between Ponneri and Minjur due to dropping of vacuum (time loss on that account being 15 minutes) it would have reached Gummidipundi well in time before the departure of the Up Suburban Local and the accident would not have taken place at all. Again, had the brake power on the train been adequate, even after accounting for the wrong judgement of the Driver, the speed of the train could have been controlled much more effectively on application of emergency brakes and the collision could have perhaps been avoided or at the

worst the damage and consequently the casualties would have been much lighter.

7.5.7 The Sr. Divisional Mechanical Engineer (C&W) tried to justify the poor performance of the Train Examining staff of Tondiarpet by stating that the yardstick of 40 man hours was only for intensive examination, that intensive examination was to be undertaken only in case of trains going beyond 800 Kms. that trains bound for destinations shorter than 800 Kms. need only be given a safe-to-run examination and that if the Train Examiner found it necessary to take more time than three hours which he actually took, nothing prevented him from taking more time for the examination. He has also presumed that since the Train Examiner "completed the examination" within three hours and did not ask for more time, the train must have been examined "satisfactorily". This Reporter does not share the optimism of the Sr. Divisional Mechanical Engineer (C&W) in the quality of the performance of Train Examiners and does not hesitate to suggest that the situation warrants greater alertness on the part of higher Supervisory Officials. If such trains are subjected to surprise checks enroute (shortly after their departure from the depots where a full scale examination is known to have been undertaken) even at the cost of causing some detention on that account, it is likely to pay better dividends in the long run in the form of safety in train operation.

7.5.8 On the issue whether "intensive" examination was to be undertaken for only Goods trains which are required to go beyond 800 Kms. as stated by the Sr. Divisional Mechanical Engineer but not for trains booked to destinations less than 800 Kms. away from the originating station and, if so, what was the nature of examination which a train bound for Vijayawada (430 Kms.) was to be given, I consulted the Chief Rolling Stock Engineer who represented the Railway Administration at the inquiry but he was not able to show me any directives of Railway Board or of Southern Railway Administration authorising "safe to run" examination when trains are booked for destinations less than 800 Kms. Even the Chief Mechanical Engineer whom I consulted later could not clarify the matter. The Chief Rolling Stock Engineer of South Central Railway whom also I consulted in a different context stated that all trains originating at Vijayawada for Madras are given an intensive examination. When Up trains from Vijayawada to Madras are given an intensive examination, there is no justification to assume that Down trains from Madras do not require any such examination. Since there is confusion in this regard on Southern Railway, it appears desirable that Railway Board enunciate their policy in the matter of examination of trains booked for destinations shorter than 800 Kms. Their letter No. 80/M(W)/814/39, dated 4-6-1982* covers only trains bound for destinations longer than 800 Kms. and it will be necessary for Railways to

be clear as to the nature of train examination to be given for trains bound for destinations less than 800 Kms. also.

(Incidentally it is observed that their policy in regard to the examination of "special type of stock" enunciated in their above letter is itself considered by the Commission as being fraught with danger vide letter No. RS. 25-T(7)/79*, dated 2-3-1982 from the Chief Commissioner of Railway Safety.)

7.6 Wagons overdue P.O.H. :

7.6.1 On the formation of the Goods train in question, I noticed at least 13 wagons which were overdue POH, the 'Return' dates having expired as long ago as July 1979 in the worst case. While incidence of wagons overdue POH is a common sight on the Indian Railway System in the recent years, it is surprising that stock which are overdue POH by as-much-as three years should still be in service. Railway Board's wire No. 80/M(W)/814/39, dated 15-4-1982* authorising wagons to be kept in service for any length of time irrespective of Return date is still more surprising. Intervals for periodical overhaul of stock are prescribed for valid technical reasons after decades of experience in their utilisation and to dismiss that practice at one stroke and authorise the stock to be kept in service for an indefinite period without a further overhaul cannot but be termed as a short-sighted policy which does not keep in view the long-term technical implications of such indiscriminate usage or even of safety in operation of trains. The wire of 15-4-82 has no doubt used the qualifying expression "provided they are fit for service on normal train examination" but those who are conversant with the "normal train examination" of goods trains on the Railways as practised at present will have serious reservations in the matter. It appears, therefore, that the contents of the wire deserve reconsideration of the Railway Board.

7.6.2 An instance of the casual manner in which matters relating to train examination are viewed even by Officers came to notice during my investigation. An Assistant Mechanical Engineer and an Assistant Electrical Engineer were deputed to examine the Goods train formation for brake power in the evening of 3-6-1982. These Officers produced a report which did not contain the vacuum level on the rearmost vehicle of the formation checked and did not, therefore, provide the means to know the vacuum gradient which is so very vital for computing the brake power of the train. Even the report of the second check conducted on the same formation on 5-6-1982 at the instance of the Sr. Divisional Mechanical Engineer (C&W) did not contain the vacuum level on the rear-most vehicle although the Sr. Divisional Mechanical Engineer who was himself present during the check told me on being questioned that it was observed to be 38 cms.

[*Extracted at Annexure II.]

7.7 Inadequacies in the interlocking arrangements at Gummidipundi :

Some inadequacies in the interlocking arrangements at Gummidipundi—though not in any way responsible for the present accident, but all the same undesirable from a safety angle—have come to light during my inquiry.

7.7.1 The digital counters on the Route Relay Interlocking Panel do not at all serve the purpose for which they are intended. They operate on their own without the knowledge of the Station Master whenever the power supply is interrupted and restored and also under certain other conditions. Between 13-00 hours on 3-6-1982 (when the last transaction in regard to the counters was recorded by the Assistant Station Master on duty) and 18-00 hours when I inspected the Panel after the occurrence, the 60 sec. counter advanced by three numbers and the 120 sec. counter by one number without any provocation from the Assistant Station Master. He was not in a position to explain the circumstances under which the counters advanced during the intervening period. A detailed probe into the system disclosed that he was indeed helpless in the matter. Further, the time taken for cancellation of a route set was found to be 85 sec. instead of 120 sec., the system was designed for.

It is necessary that such deficiencies are rectified at this and other similarly placed stations on the Railway (some of which were pointed out during my earlier inspections) if the digital counters are to serve any useful purpose. Power failures should not be allowed to interfere with the digital counters meant for cancellation of routes and the relays must function as designed for and not release a route in less than the prescribed time limit.

7.7.2 The signal bulbs used for the colour light signals at Gummidipundi and at many other stations on Southern Railway are such that when the main filament of a bulb fuses, the next more restrictive aspect is cut in, with the result that there is a possibility of two or more aspects simultaneously being displayed on the signal. This is a common complaint of the Engine crews, and rightly so, since such a situation confuses the Driver and throws his concentration out of balance. The deficiency should be removed early.

7.7.3 Red lamp protection for a blank signal has not been provided at the station. For example if the Down Main line Home Signal is blank due to any reason the Down Gate Stop Signal which is in advance of it will not display Red aspect, as it should, if it was displaying at that moment a less restrictive aspect. To avoid confusion in the minds of Driving staff and to promote safety, this deficiency is required to be removed.

7.7.4 Flickering of signals is another universal problem complained against by Driving staff. Senior Signal Engineers assure me that this

phenomenon is inevitable in the present system and there is a safeguard in that it will never show a less restrictive aspect than what it ought to show. For example, if a signal is meant to display a single Yellow (Caution) aspect, it may, under conditions of flickering, display Red aspect momentarily before returning to Yellow, but not change from Yellow to Green and back to Yellow under any circumstances. While this is also what this Reporter has experienced on his foot plate inspections and considers that it has theoretically no unsafe element in it, it is all the same necessary to improve the technology such that flickering is eliminated altogether. The Research wing of RDSO of Indian Railways may be asked to go into this aspect with a view to improve the system and eliminate moments of avoidable confusion and stress to locomotive Drivers.

7.7.5 The Down Gate Stop Signal of level crossing No. 33 in the approach of Gummidipundi is located at a distance of 765 metres from the gate with its Distant Signal a further 1000 metres away from it. It was under a similar situation that a serious accident took place at a level crossing near New Delhi on Northern Railway in December 1977 and Railway Ministry had issued instructions, soon thereafter, that approach locking of Gate Signals should be provided such that it becomes impossible for the Gateman to open the gate for passing road traffic even by mistake soon after crossing of the gate signal by a train till it actually passes the gate. Although that directive was issued in the context of an accident in an Automatic Signalling territory, similar unsafe conditions may present themselves in territories worked under the Absolute Block System of train working and it is necessary that some safeguard is introduced to meet situations similar to the one at Level Crossing No. 33 near Gummidipundi station. As an immediate measure, relocation of the Gate Signal at the minimum distance of 180 metres from the Gate may considerably reduce the risk involved. If the present Gate-cum-Distant Signal in its present form cannot be shifted (due to the requirement that it should not be less than 1000 metres from the station Home Signal), an independent Gate Signal at a distance of 180 metres from the Gate should be provided for protecting it and a common Distant Signal at a suitable distance be provided to serve the Gate Signal as well as the Station Signal.

7.7.6 It was noticed during my inspection of the Gate on 5-6-1982 that the Station Master did not require any control from the Gateman to clear Down Reception Signals for a train. This can result in an unsafe situation if the Driver of an approaching train on viewing the cleared Down Home Signal from a distance momentarily overlooks the aspect of the Gate Signal and proceeds forward when the gate is open to road traffic. It is desirable that the circuitry is modified such that the Gate is closed and the Gate Signal is taken off before

the Station Master is able to clear the Down Home Signal.

7.7.7 Although Route Relay Interlocking has been in use at Gummidipundi for about five years and despite the directive contained in para 3.2 of Railway Board's letter No. 76/Safety/I/3/23, dated 16-4-1979*, Roads 4, 5 and 6 remain non-track-circuited. This is not a safe arrangement particularly in respect of Roads 4 and 5 which are frequently used for reception and departure of Suburban trains. Track-circuiting (or provision of axle counters in lieu of track-circuiting) should be provided early on the non-track-circuited lines at the station.

[*Extracted at Annexure II.]

7.7.8 The voltage stabilisers provided at the station are seen to be not capable of stabilising low voltages which are the order of the day in respect of supplies (High Tension or Low Tension) taken from the State Electricity Boards. This deficiency is prevalent not only at Gummidipundi but at several other stations on the Railway. The Railway Administration should devise means to improve this deficiency as it has a deleterious effect on train operation which in turn is likely to lead to unsafe conditions of working.

VIII. CONCLUSIONS

8.1 Having carefully considered the factual, material and circumstantial evidence at my disposal, I have arrived at the conclusion that the collision between the 'MBE Down Goods' and the 'Up Suburban Local' trains in Gummidipundi yard on 3-6-1982 was brought about due to the Goods train having been driven past the Down Home Signal at 'ON', while the cross-over connecting the Up and Down lines was occupied by the Up Suburban Local which had just departed from Road 4 of Gummidipundi station on clear signals for Madras Central.

8.2 Responsibility :

8.2.1 I hold Shri Ch. Venkateswarlu, Locomotive Driver working MBE Down Goods train, primarily responsible for driving past the Down Home Signal of Gummidipundi at 'ON' which resulted in the collision. He violated General Rule 76 which reads as under :—

"G.R. 76.—Driver to obey signals and to be vigilant and cautious.—

- (a) The Driver shall pay immediate attention to and obey every signal whether the cause of the signal being shown is known to him or not.
- (b) He shall not, however, trust entirely to signals, but always be vigilant and cautious."

8.2.2 I consider that Shri V. Jeevan Rao, Assistant Driver of the Goods train contributed to the accident by his failure to call out the correct aspects of the Down Reception Signals in the approach of Gummidipundi. He violated

S.R. 76(ii) of Southern Railway under G.R. 76 which reads as under :

"S.R. 76(ii).—The Driver, First Fireman, Diesel Assistants or Assistant Driver, as the case may be, while working a train shall identify each signal affecting the movement of the train as soon as it becomes visible, and shall call out the aspects of the signals to each other. This provision, however, shall, in no way, absolve the Driver of his responsibility in respect of observance of and compliance with the signals."

Since the crew of MBE Down Goods are under the control of South Central Railway Administration, the rule violated by the Assistant Driver as per South Central Railway Rule Book applicable to Vijayawada Division is S.R. 122(i), which reads as under :

"S.R. 122(i).—The Driver and the First Fireman or Diesel Assistant or Assistant Driver, as the case may be, shall identify each signal affecting the movement of the train as soon as it becomes visible, and shall call out the aspects of the signals to each other."

Shri Ch. Venkateswarlu, who is 49 years of age, joined Railway Service in 1955 as a Khalasi and rose to the post of Driver 'C' in April 1975. He was promoted as Driver Grade 'B' in May 1982 under Reservation Quota.

Shri V. Jeevan Rao, who is 46 years of age, joined Railway Service in 1966 and rose to the post of Traction Assistant in May 1982.

8.3 Relief Arrangements :

I am satisfied with the relief arrangements. Medical relief reached the injured almost immediately after the occurrence as the accident occurred at Gummidipundi itself and one of the local Doctors who has his clinic close-by rushed to the site as soon as he came to know about it. He was soon joined by other Doctors of Gummidipundi and the Government Doctors of the Taluk Hospital of Ponneri who took care of the injured and shifted them to the Hospital well before the first Railway Doctor reached the site.

IX. REMARKS AND RECOMMENDATIONS

9.1 The lay-out of Gummidipundi yard is peculiar in that the path of an outgoing Up Suburban Local cuts across the path of a Down train. While this situation may not strictly be termed as a running junction, the disabilities of the latter, when inadequately taken care of, are also present in the yard lay-out. It is, therefore, considered that the normal Block overlap of 180 metres for the Down Home Signal is not adequate as the unfortunate accident of 3-6-1982 has proved, and that a minimum overlap of 400 metres may be provided at this and

similarly placed stations. Further, signal to signal visibility may be provided in respect of the Down approach signals of Gummidipundi in view of its peculiar disposition.

9.2 Several short-comings in the signalling and inter-locking installation at Gummidipundi which came to notice in the course of my inquiry have been detailed in para 7.7. Southern Railway Administration may arrange to take suitable steps to remove the short-comings. Railway Ministry's attention is particularly invited to the observations made in para 7.7.2 and 7.7.4 for issue of suitable directives.

9.3 Indifferent train examination is a weak link in the operation of Goods services on the Indian Railways and its contribution to train derailments is substantial. Further, a good number of accidents involving passenger carrying trains have their origin in Goods train performance. While there may be several factors which contribute to this situation (like erosion of discipline, dilution of the cadre of Train Examiners, shortage and poor quality of critical stores, ineffective supervision, etc.), one single factor which stands out glaringly in accident inquiry proceedings is the non-involvement of any Supervisory staff in the matter of accountability for the omissions and commissions of Train Examiners. In the present set up it appears too much to depend on the performance of a Train Examiner for the safety of a train during its journey of several hundred kilometres. At present, there is no cross check on the quality of train examination conducted in a depot till it comes to grief due to an accident and that will be too late to be of any use. Such a check might help in punishing a person but will certainly not be useful as a management tool to know the quality of work being done in examining depots and the genuine problems, if any, faced by them in discharging their duties. It appears, therefore, desirable to ensure close surveillance by higher categories of Supervisors by conducting surprise checks of trains at a convenient point soon after their departure from the originating depot after examination. Such checks, when viewed seriously by higher officials of the Mechanical and the Safety Departments are bound to keep the train examining staff alert besides serving as a feed back information to the Railway Administration about the quality of the performance of Train Examiners. Even if such surprise checks result in some detention to the movement of traffic, they pay large dividends in the form of safe train operation in the long run. Ministry of Railways may consider suitably directing the Railway Administrations to initiate steps in that direction.

9.4 The directive contained in Railway Board's wire No. 80/M(W)/814/39, dated 15-4-1982 to the effect that "wagons" may be kept in service for any length of time irrespective of the Return date provided they are fit

for service on normal train examination has in it seeds of hazardous train operation and deserves a review. The expression "normal train examination" in to-day's context is the discretion of the Train Examiner on duty. It appears desirable that such sweeping powers are not delegated to Train Examiners. The officials invested with such powers should be required to keep a record of the basis on which they allow a vehicle to remain in service beyond the Return date and make them accountable for the consequences, if any, of their decisions. At present, the only interest a Train Examiner on duty in a yard has is to push the train out, somehow, by undertaking the minimum work necessary for the purpose and not to seriously worry about what happens later on. This does not appear to be in the interests of safe train operation. A procedure which helps in avoiding an accident is preferable to taking punitive action against the person concerned after an accident has occurred. It is, accordingly, suggested that Ministry of Railways may review their orders and issue such revised directives as may help in promoting safety. They may also seriously consider ways and means of doing away with the unusual procedure of keeping wagons in service "for any length of time irrespective of the Return date".

9.5 The deficiencies which the Train Examiner had to make up on the night of 2/3-6-1982 before certifying the Goods train fit for service including among other things, 101 hose pipes and 26 brake blocks. A visual look of the train on 5-6-1982 gave one the impression that it might require several more brake blocks to be replaced. This situation of train formations having large scale deficiencies was stated to be due to incidence of thefts in the area as per the information of the Sr. Divisional Mechanical Engineer while the Train Examiner concerned told me that it was the result of cannibalising the fittings due to short supply of spares. Whatever be the cause of such large scale deficiencies, it is an unusual feature which Southern Railway Administration may like to view seriously and take steps to get over the problem in the interest of safe train operation.

9.6 Non-compliance of Railway Board's instructions of 1977 and 1978* (No. 77/Safety/A&R/29/23 of 4-10-1977 and 28-6-1978) in respect of exchange of Private Numbers between the Gateman of level crossing and Assistant Station Master on duty was brought to Southern Railway Administration's notice in para 9.3 of my Report on "Collision between No. 20 Up 'Trivandrum Central—Madras Central Mail' and TNPM Special Goods train and the subsequent collision between No. 69 Down 'Madras Central-Erode Yercaud Express' and the derailed coaches of No. 20 Up Mail between Kettandapatti and Vaniyambadi stations on Madras-Jolarpettai B.G. Double line section

[*Extracted at Annexure II.]

of Southern Railway" on 11-2-1981 and Southern Railway Administration responded with the following remarks :

"Instructions.... have already been issued to the Divisions by this Railway in November 1977....."

"Correction Memo. No. 111, dated has also since been issued to S.R. 229...."

Despite this assurance, it was again seen that in respect of level crossing No. 33 within Gummidipundi station limits there was no exchange of Private Numbers between the Gate-man and the Assistant Station Master.

I have no doubt about the intention of the Railway Administration in the matter of honouring their commitments but such continuing instances of infractions of procedures prescribed long ago by the Safety Controlling Authority indicate that they are badly handicapped in the matter. The weak link appears to be ineffective overseeing procedures and absence of suitable machinery to improve on that. In fact, there appears to be a terrific gap in this respect on the Railways and one of the victims of such a situation is Safety. It is, therefore, the firm view of this Reporter that unless an awareness of accountability is aroused in all levels of Supervisory Officials, issue of any

number of circulars is not likely to achieve the desired results as observed in para 9.5 of the Report of Inquiry into "Collision of No. 17 Down 'Madras-Jammu Tawi Janata Express' train and No. 423 Down 'Bitragunta-Vijayawada Passenger' train at Km. 388/6-10 between Tsundur and Tenali stations on Gudur-Vijayawada B.G. Electrified Double line section of South Central Railway". The observations made in that para are before the Safety Controlling Authority and it is hoped that such steps as may be necessary to bring about the desired change will soon be taken by that Authority.

9.7 Locomotive Drivers and Guards based at Vijayawada and Bitragunta on South Central Railway work trains to and from Madras on a regular basis. The section between Gudur and Madras is under the Administrative control of Southern Railway but surprisingly the staff of MBE Down Goods did not have the Rule Books nor even the Working Time Tables of Southern Railway. Such a casual attitude in a matter so vital to train operation is hardly conducive to safety. Southern and South Central Railway Administrations may view this lapse seriously and take necessary steps to avoid its recurrence.

Bangalore, *Commissioner of Railway Safety,*
16-7-1982 *Southern Circle, Bangalore.*

**EXTRACT FROM THE OBSERVATIONS OF THE
DY. COMMISSIONER OF RAILWAY SAFETY
(S & T), BOMBAY, ON THE SIGNALLING
INSTALLATION AT GUMMIDIPUNDI**

1. The joint observations made by the Officers of the Railway and CRS in the Relay Room at 18.15 hours on 3-6-1982 were scrutinised. While relay positions indicate a route might have been set from Road No. 4 to Up Main for a train movement, there is no indication to suggest of any route having been set for a train movement from down main. The observations made at the location near the down main Home Signal at 19-45 hours on 3-6-'82 by the Officers of the Railways also do not give any indication of Down Main Home Signal No. 1 having been cleared earlier for a movement. The joint observations made at 18-15 hours on 3-6-'82 regarding the indications on the control panel gives an indication that a route must have been set for a train movement from Road No. 4 to Up Main. But there is no clue to indicate either a Route having been set from Down Main or to show that the Down Home Signal displayed any other aspect than Red at the time of accident. The above conclusions are confirmed by the observations made by the ASTE/Madras at L.C. No. 33 and at accident spot on 3-6-1982.

2. The possibility of setting simultaneously conflicting routes and clearing signals No. 21 and 1 was checked and found not feasible. The locking of cross-over points No. 50-A and 50-B, 51A and 51B in reverse position on after setting the route from Road No. 4 to Up Main was also checked and found O.K. Setting of route from Road No. 4 to Up Main after setting a route from Down Main Home Signal No. 1 to Down Main first, was also tried and found not possible. In this case also cross-over points 50A & 50B and 51A & 51B were held properly in normal position after the route was set from Signal No. 1 to Down Main. The individual operation of points 50A, 50B and 51A & 51B when they were locked by a route was not possible.

* * * * *

5. The possibility of a route set for train movement of getting released by the bobbing of track circuits/ track circuits was checked for a route set from Signal No. 1. It was found not possible because for route release, sequential operation of track circuits are required. Because of this, the route set does not get

released when power supply fluctuates or power supply is changed over or power supply is switched OFF and switched ON.

* * * * *

10. The cascading of signal aspects and correspondence of signal aspects were checked thoroughly by posting staff at the foot of Down Gate distant, down Gate stop signal and down home Signal No. 1 and clearing these signals to all possible combinations and by artificially creating condition of lamp fusing by removing the signal bulbs as required. The test indicated that the cascading and correspondence of signal aspects are in order.

11. The Veeder counters provided for recording the number of times the route is cancelled do not serve the purpose for which they have been provided because they operate on their own without the knowledge of the Station Master when the power supply is interrupted and restored and also under certain other conditions. Therefore, it is not possible to hold the Station Master responsible for counter numbers displayed on the panel. This situation is required to be rectified if the veeder counters are to serve any useful purpose.

12. The relays used in the out-door circuits near Signal No. 1, 1D and gate distant signal were checked to see as to whether only relays immunised to A.C. inductive effect, having been used as per extant instructions. It was found that all those relays were of the A.C. immunised 'Q' series relays.

* * * * *

16. During the period of observations on two days, no case of signals flickering due to bobbing of track circuits was observed. But it is possible to cause the Down Gate Stop Signal and Up Advance Starter Signal assume the most restrictive aspect by meddling with the slot levers at the level crossing gate.

17. The track relays of track circuits 1T, 50 AT, 18T and 22 AT were checked and it was observed that they are not over energised. These track circuits were also getting shunted with a 0.5 Ohms resistance placed across the track, which is in order.

* * * * *

22. The cables at the station were tested in December, 1981 and they are in good condition.

COPY OF RAILWAY BOARD'S LETTER NO. 80/M(W)/814/39, DATED 4TH JUNE 1982 ADDRESSED TO GENERAL MANAGERS, ALL INDIAN RAILWAYS.

Sub: Rationalisation of Carriage and Wagon examination BG Goods trains.

Ref: GM N. Rly's D.O. No. 802-M/237/5 MC II-Pt. VII of 13-5-1982.

End to end running of trains was permitted vide CRB's telegram No. 80TT-1/9/3/(CRB)-III, dated 20-11-1980. It was also stipulated in Board's letter of even No. dt. 8/9-4-1981 that for safe running of such trains, it is imperative that intensive examination to IRCA standard is given at all originating stations. The facilities required for proper intensive examination of trains were also spelt out in Board's letter of even number dated 15-10-81. Railways were also directed vide MM's D.O. letter dated 7-8-81 to the General Managers that trains originating from stations where full facilities of intensive examination are not available, should be stopped and given intensive examination and repairs at the next train examining stations where the required facilities including vacuum exhausters, are available.

End to end running of trains should be resorted to only with trains consisting of special type of stock like BOX, BCX and CRT wagons having improved features like roller bearings CBC, slack adjusters, empty load boxes etc. Trains consisting of partly or wholly of conventional stock not having these special features, after intensive examination at start or a subsequent enroute examination, may be run upto a maximum distance of 800 Kms., after which they should be examined and properly attended to for further safe running from the aspects of riding stability, integrity of fittings brake power etc. Tank wagon specials should also be subjected to train examination and repairs as done for trains of conventional stock. All these trains should be given a thorough intensive examination at the originating points/next immediate train examining point with the required input of materials and man power to ensure their safe running.

Receipt of this letter may please be acknowledged.

Sd/-

C. M. MALIK,
Director, Mech. Engr
Railway Board.

Copy to All Chief Mechanical Engineers for information and necessary action.

COPY OF LETTER NO. RS. 25-T(7)/79, dt. 2-3-82 FROM THE CHIEF COMMISSIONER OF RAILWAY SAFETY, LUCKNOW, ADDRESSED TO THE SECRETARY, MINISTRY OF RAILWAYS (RAILWAY BOARD), NEW DELHI.

Sub: End-to-end running of goods trains.

Ref: Your letter No. 80/M(N)/814/39, dt. 6-2-1982.

Sir,

The statement in the Railway Board's letter that special steps have been taken to ensure the safe run-

ning of goods trains (under the system of end-to-end running without any intermediate examination) appears to be untenable in the context of the results of examination of such goods trains brought to Railway Board's notice vide this office letters of even number dated 20/23-11-81, 3-12-81 and 17-2-82.

2. As regards the measures stated to have been taken to arrest the roller bearing failures, a Report recently received from the Commissioner of Railway Safety, Northern Circle, indicates that on the Allahabad Division alone there were six accidents between May and November 1981 which were attributed to seizure of roller bearings/breakage of journals due to hot axle (in one case due to overloading). It is further reported that on an average there is one case every day of seizure of roller bearings and an average of about 8-10 wagons are detached per day in the Up direction between Mughalsarai-Kanpur alone on trains coming from the Eastern Railway.

3. In the light of the above, the Commission is unable to agree that safe running of trains has in no way been jeopardised under the present system of end-to-end running of trains without intermediate examination. The Commission considers that with the existing infra-structural framework and inputs the system is fraught with danger and reiterates its earlier recommendation that in the prevalent conditions, safety examination of such goods trains at intermediate stations should continue as in the past.

4. The receipt of this letter may please be acknowledged.

Yours faithfully,

Sd/-

(P. M. N. MURTHY)

2-3-82

Chief Commissioner of Railway Safety.

Copy of Railway Board's Wire No. 80/M(W)/814/39, dt. 15-4-82.

"Refer this Office message of even number dated 3-3-82(.) It is clarified that the intention behind that instruction was that wagons booked for POH should not move piecemeal to the owning Railways and that they should be given POH repairs on the Railways where they are marked to the maximum extent possible irrespective of ownership(.) It is further clarified that marking of wagons for POH may be restricted to match capacity of the Shops on the Railways. Wagons fit for service on normal train examination, should be allowed to continue in service irrespective of the Return dates. If wagons overdue POH are also unloadable or otherwise unfit for further service are found in larger number and the Workshops cannot accept all, the wagons surplus to Workshop POH capacity are to be stabled at convenient points and Mechanical Directorate of Board approached for assistance in arranging POH in other Railway Workshops(.)

RANGARAJAN,
Railways.

Copy of letter No. 76/Safety-I/3/23, dated 16-4-1979 from the Addl. Director (Signals), Railway Board, New Delhi to the General Managers, All Indian Railways.

Sub: Panel interlocking.

1. In accordance with the present policy of the Railway Board, a system of centralised operation of points and signals from Station Master's Office (Panel Interlockings) is provided at stations at the time of replacement of the existing signalling equipment, at stations on new lines, at Stations where works which involve re-building of existing cabins as a result of remodelling etc., are undertaken, at new crossing stations/block stations and at wayside stations falling on MG routes being converted to BG.

2. The system of Panel Interlocking in vogue at present on most of the Railways does not cater, by and large, for the provision of Track Circuiting of the reception lines between Fouling Marks and the Track Circuiting of the portion between Fouling Marks and Block Section Limits.

3. The matter has been examined in detail in the Board's office and it has been decided that:—

3.1 All fresh proposals for the provision of centralised operation of points and signals should cater for the complete Track Circuiting of the station section either by provision of conventional track circuiting or by provision of Axle Counters.

3.2 As far as stations already commissioned without provision of facilities mentioned in Para 3.1 above are covered Railway should take up the provision of these facilities on top priority on out of turn basis so that all the stations are provided with the aids early. While programming such works priority interse should be given to those stations where there is heavy shunting or visibility of track is obstructed due to curvature etc.

3.3.1.1 At stations where the work has been sanctioned but the work has not yet been commissioned, the reception lines and the portion between Fouling Marks and the Block Section Limit must be Track Circuited.

3.3.1.2 In urgent cases where a Railway may have to commission a station without these facilities, either partly or wholly, Board's permission may be sought giving the detailed reasons for the Railway's inability to comply with this stipulation and indicating the time by which the stipulation will get complied.

3.3.2 To enable the Railways to commission in 1979-80 the works already sanctioned, along with the facilities mentioned in para 3.1 above, matching Track Circuiting works may be taken up by General Managers out of turn under their own powers. Where the cost of such facilities is beyond the powers of the General Manager for being taken up as out-of-turn works, the Railways may come up to the Railway Board for sanction of such Out-of-Turn Works. The number of such out-of-turn works should be strictly confined to the number of stations that will be positively commissioned during the financial year. For those stations at which the sanctioned work has to be executed in 1980-81, matching Track Circuiting Works, should be included in the Works Programme of 1980-81. The works would be charged to ACF(B).

4.1 Till such time these aids are provided at such stations vide Para 3.2 the station working rules of the stations already provided with Panel Interlocking without these facilities detailed in Para 3.1

may be so framed as to enable the Operating Staff to discharge faithfully and efficiently the duties in respect of observance of GRs 36, 37 and 38 and the relevant subsidiary rules, beside particularly with regard to ascertaining:

- (a) clearance of such lines, the view of which may be obstructed either due to a train standing in between or other structures;
- (b) setting and clearance of points while conducting shunting at the station; and
- (c) setting and locking of points in cases of failures of points and signals.

4.2 Specific instructions shall be provided in the Station Working Rules regarding the method of ensuring Complete Arrival of Trains, separately for run through trains and separately for stopping trains.

4.3 At such stations where Panel Interlocking has been provided without the facilities mentioned in Para 3.1 above, adequate transportation staff should be provided/retained, where warranted, temporarily, so that the specific provisions in the Station Working Rules vide para 4.1 and 4.2 above would be complied with till such time the facilities as proposed are provided.

Sd/-

K. SUBRAHMANYAN,
Addl. Director (Signals),
Railway Board.

Copy of letter No. 77/Safety (A&R)/29/23, dated 4-10-77 from Ministry of Railways (Railway Board), New Delhi.

Subject:—Exchange of Private Numbers between Station Masters and Gatemen.

Please refer to this Ministry's letter No. 75/WI/IX/29, dated 19-9-1976, wherein all railways were advised to take urgent steps to post literate Gatemen at all engineering level crossings provided with telephonic connections with the adjacent stations, for the purpose of introducing the system of exchange of private numbers. This Ministry further desire that the system of exchange of private numbers for all communications exchanged between the Station Master and the Gateman regarding closing and opening of level crossing gates in connection with all trains/shunting movements etc., should be introduced at all traffic level crossings also where telephones have been provided for the purpose.

Please acknowledge receipt.

Sd/-

V. K. THAPAR,
Jt. Director (Safety) II,
Railway Board.

Copy of letter No. 77/Safety (A&R)/29/23, dated 28-6-1978 from Ministry of Railways (Railway Board), New Delhi to General Managers of all Indian Railways.

Sub: Exchange of Private Numbers between the Station Masters and the Gatemen.

Please refer to this Ministry's letter of even number dated 4-10-77 on the subject noted above,

wherein all railways were advised that the system of exchange of Private Numbers for all communications exchanged between the Station Masters and the Gate-men regarding closing and opening of level crossing gates in connection with all train/shunting movements etc., should be introduced at all traffic level crossings also where the telephone communications have been provided for the purpose. On receipt of certain representations from the Railways, it has been decided that in case of all manned traffic level crossing gates provided with telephonic communication with the Station Master, no separate Private Number may be exchanged specifically for closing and opening of level crossing gates, in case the Gate Working Instructions, which are also included as an appendix to the Station Working Instructions, require the closure of the level crossing gate being ensured for all train and shunting movements, and such Gate Working Instructions are included as an integral part of the procedure laid down in the Station Working Instructions for reception and despatch of trains and for shunting movements, across the level crossing.

The following points raised in connection with the implementation of these instructions, are also clarified.

- (i) Should the Gateman give the Private Number only after closing the gates in confirmation of gates having been closed, or should his Private Number indicate merely that he has received the advice from the Station Master?

If the Private Number is given by the Gateman only after closing the level crossing gates, it may cause detention to road traffic and yet there will be no guarantee that the Gateman has actually closed the level crossing gates before giving the Private Number. As it is, the responsibility of the Gateman to ensure the closing of the gates, Private Number should be given by the Gateman immediately on receipt of the information from the Station Master. However, if the local conditions warrant, the Railways may stipulate that the Private Number may be given by the Gateman only after closing the level crossing gates. In any case, such stipulation or otherwise must be clearly stated in the Station and Gate Working Instructions.

- (ii) At what stage should the Station Master inform the Gateman?

After due consideration, it has been decided that it is a matter of detail which should be

incorporated in the Station and Gate Working Instructions, taking into account the prevailing local conditions.

- (iii) Whether Private Number should be given only by the Gateman as well as the Station Master?

After due consideration, it has been decided that it is necessary to establish the proof of the fact that the Station Master and the Gateman have duly communicated and received the information about the movement of trains and other shunt movements across the level crossing. It is, therefore, necessary that before such movements are authorised, the instructions are duly communicated, received, understood and acted upon. An exchange of Private Number would, therefore, be essential by way of assurance. In other words, the Station Master should give a Private Number in confirmation of the instructions/information communicated to the Gateman and the Gateman has to give a Private Number in confirmation of having received and understood the same. A proper record of such exchange of Private Numbers will have to be maintained both by the Station Master as well as the Gateman. The form in which such record should be maintained, can be determined by the Railways. Suitable instructions to this effect should be incorporated in the Station and Gate Working Instructions.

(This also disposes off the Central Railway's No. T. 361/P/35/I, dated 7-11-77 and D.O. letter No. T. 361/P/35/II, dated 28-2-78, Northern Railway's letter No. 403-T/86 Pt. VII(Safety), dated 28-2-78, North-Eastern Railway's letter No. T./174/O-A Pt. III, dated 3-3-78 and Western Railway's letter No. T. 202/5/10/5, dated 15/16-11-77.)

Please acknowledge receipt.

Sd/-

ASHOK BHATNAGAR,
Jt. Director (Safety)-I,
Railway Board.

VIEWS OF THE RAILWAY BOARD ON VARIOUS PARAS OF THE REPORT

Findings & Responsibility

The finding of Commissioners of Railway Safety with regard to the cause of accident and responsibility therefor given in paras 8.1 and 8.2 in prima facie acceptable.

Para 9.1: The case regarding increased overlap as suggested in CCRS's D.O. letter No. 25-T(43)/77, dated 31-3-82 has already been examined and the position has been clarified that the lay-out of such stations cannot be treated as "running junction". If this concept is agreed to, it will involve shifting of signals practically on a very large number of the stations on the Indian Railways. It will be also departure from the established age-old practice. In view of this, CCRS's suggestion cannot be implemented. However, action is being taken to hammer out a definition for "running junction" so as to remove any ambiguity or doubt, which may be arising in this regard.

Para 9.2: As brought out in G.M.'s comments on this para, the matter has been discussed in the Signal Standard Committee meetings and improvements in the specifications are being incorporated so as to eliminate the possibility of a signal displaying double aspect.

Para 9.3: It will be appreciated that, in the absence of specific factual data, it is obviously not possible to accept, not even to comment upon, a general remark regarding indifferent train examination.

The view that at present, there is no cross check on the quality of train examination conducted in depot does not appear to be correct. Sr. Supervisory staff available in the depot are required to check the work of train passing

TXRs and guide them. Inspectorial staff and officers are required to, and do, carry out surprise checks to ensure that the quality of examination done by train examining staff is to the required standards. Such checks, however, are for a variety of reasons, generally organised at train origination points and not by stopping a train out of course at an intermediate station after departure as has been suggested. Appropriate remedial measures are taken should any deficiency be noticed. The neutral control organisation flying squads are also being used for this purpose. The need for enforcing these long standing practices will be brought to the pointed attention of the Railways.

Para 9.4: The instructions referred to have been revised. Railways have been advised to mark wagons to POH workshops if they have been in services for one year after the return date, even if they are otherwise fit. They have also been advised that it is the intention to progressively cut back on this relaxation of one year till it finally eliminated.

Para 9.6: Instructions have already been issued to the Railways vide letter No. 82/Safety-1/12/1, dated 10-8-82 stipulating that supervision of the staff involved in operation of trains and maintenance of operational assets should be toned up with a view to ensure that safety provisions, as prescribed, are complied with the responsibility for respected violation of safety provisions, if any, noticed should be fixed at reasonable higher levels so that awareness is created at all levels.

Para 9.7: This has been accepted by this Ministry and instructions are being issued to the Railways.

Price : (Inland) Rs. 35.00 (Foreign) £ 4.08 or \$ 12 60 Cents.