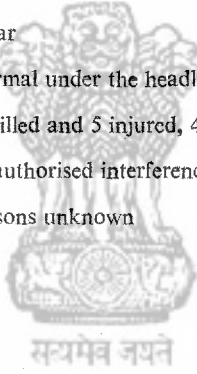


# CORRIGENDUM

<u>Page No.</u>	<u>Para No.</u>	<u>Line No.</u>	<u>For</u>	<u>Read</u>
1	2	4	dslocated	dislocated
2	3	3	Janta	Janata
2	3	6	guage	gauge
2	3(a)(2)	4	of rail	of a rail
2	3(b)	1	Janta	Janata
2	3(b)	1	halted	hauled
2	5	2	Janta	Janata
3	11(a)(2)	3	gardient	gradient
4	-	3	warner	Warner
4	15	7	with passengers	with the passengers
5	17	36	obtained	obtain
6	22	28	Behran	Behram
8	38	6	bolts:nuts	bolts/nuts
9	41(d)(iv)	4	mm	
	L2-L3			
10	-	2	-6"	4'-6"
10	41(d)(iv)	3	Scratch	(Scratch
	L5-L6			
10	41(d)(iv)	1	(fish	fish
	L10-L11			
11	41(d)(vii)	14	plate	plane
11	41(d)(vii)	37	dimention	dimension
11	41(d)(vii)	12	verify	verily
	'Running on end'			
11	41(d)(vii)	1	Add 'normal Rail' after 'holes'	
	'Running off end'			
12	42(a)	7	Add ';' after 'wheels'	
12	42 (a)	9	Delete '-' between 'set' & 'forth'	
12	42(a)	11	thicknes	thickness
13	42(d)	7	and	had
13	43(a)		clearances	clearances
			parameters	parameters
13	43(b)(i)	7	periphery the	periphery-the
13	43(b)(i)	30	flangs	flange
13	43(b)(i)	40	Rights	Right
13	43(b)(i)	45	sratches	scratches
13	43(b)(i)	46	flangs	flange

## SUMMARY

<i>Date</i>	...	22nd October, 1970
<i>Time</i>	...	03.12 Hours
<i>Railway</i>	...	Northern
<i>Gauge</i>	...	Metre
<i>Location</i>	...	Km. 69/11-6 between Khalilpur and Inchhapuri stations on the Rewari-Delhi Section.
<i>Nature of Accident</i>	...	Derailment
<i>Train involved</i>	...	232 Down Janata Express
<i>Consisting of</i>	...	15 bogie-coaches hauled by YP locomotive No. 2811
<i>Estimated speed at Derailment</i>	...	72-73 Km. p. h.
<i>System of Operation</i>	...	Absolute Block System
<i>Number of Tracks</i>	...	Single
<i>Gradient</i>	...	1 in 400 falling
<i>Alignment</i>	...	Straight
<i>Weather</i>	...	Clear
<i>Visibility</i>	...	Normal under the headlight
<i>Casualties</i>	...	2 Killed and 5 injured, 4 of them grievously
<i>Cause</i>	...	Unauthorised interference with track
<i>Responsibility</i>	...	Persons unknown



GOVERNMENT OF INDIA  
MINISTRY OF TOURISM AND CIVIL AVIATION  
(Commission of Railway Safety)

From: The Additional Commissioner of Railway Safety, 16A, Ashok Marg, LUCKNOW-1.

To : The Secretary to the Government of India, Ministry of Tourism and Civil Aviation, Sardar Patel Bhavan, NEW DELHI.

Through: The Commissioner of Railway Safety.

Sir,

In accordance with Rule 10 of Ministry of Railways' Notification No. 59-TTV/42/1 dated 11th April 1966, I have the honour to report the Results of my Inquiry into the Derailment of 232 Down Ahmedabad-Delhi Janata Express at Km. 69/11-6 between Khalilpur and Inchhapuri stations on the Rewari-Delhi metre gauge section of Northern Railway, at about 03-12 hours on 22nd October, 1970.

**2. Inspection and Inquiry :** (a) I reached the site of accident at about 11-00 hours on 23rd October, 1970. The track by then, had been restored for traffic. I was told that the dislocated constituents of the Permanent Way in the affected portion had been arranged on the berms alongside to the extent they could be identified, some rails lay at site (with ends fished and otherwise) undisturbed, and certain components had been retained in the restored track. In company with the Divisional Superintendent, Engineer-in-Chief (Track), Deputy Chief Mechanical Engineer (Loco), Assistant Inspector General of Police (Railways) and other Officers, I inspected:—

the track rails and components assembled on the berms on either side, and as lay at the site;

the restored track including some portion ~~in advance thereof~~, the intact track in rear of the affected spot (up to the leading abutment of Girder Bridge No. 93)—cross levels and gauge were checked; and

the capsized/derailed rolling stock.

Instructions were issued to paint-mark the relevant rails, sleepers, fish plates/bolts, etc., with appropriate notations for reference and identification. It was desired that a search may be made for missing fastenings and a complete inventory prepared. It was also desired that certain additional photographs including close-ups should be taken.

The site and the stock were again inspected as necessary on various occasions during the course of the Inquiry. The locomotive was examined over the pit in the Loco Shed at Rewari on 24-10-70, and riding trials were conducted the same day and the next. The entire stretch of track between the Up Home Signal of Khalilpur and the site of accident was checked on 27-10-70.

Based on the field survey, I desired preparation of scale drawings.

(b) A Press Notification was issued on the 22nd October inviting members of the Public having knowledge relating to the accident to give evidence at the Inquiry which I commenced at Rewari junction on the 24th October, or to communicate with me by Post.

(c) The District Magistrate and the Police Authorities were duly notified. The Officers present at the Inquiry were:

Shri Swaran Singh	:	Transportation Superintendent, Safety, New Delhi.
„ P. D. Jain	:	Divisional Superintendent, Bikaner.
„ B. M. S. Bisht	:	Divisional Safety Officer, Bikaner.
„ Man Mohan Singh	:	Assistant Inspector General of Police (Railways), Ambala.
„ Ram Swaroop	:	Sub-Divisional Officer, Govt. Railway Police, Hissar.
„ Iqbal Singh	:	Inspector of Police (GRP), Ambala.

The evidence of 60 witnesses was recorded and the relevant exhibits filed.

**Note :** In this Report:—

the terms 'right'/'left', 'leading'/'trailing' and 'front'/'rear', where used, are in reference to the direction of travel of the train; the terms 'in advance of', (ahead)/'in rear of' (behind) in relation to a location are used to define a position on the line beyond/before reaching the location, as seen from the approaching train; and

the abbreviations Km. and Kmph. denote respectively Kilometres with reference to telegraph posts alongside the alignment and Kilometres per hour. There are on the average 15 telegraph posts per kilometre in the vicinity of the accident site.

**3. The Accident :** (a) At about 03-12 hours on 22nd October 1970, the Delhi-bound 232 Down Janta Express became derailed on straight track at Km. 69/11-6 between Khalilpur and Inchhapuri stations on the Rewari-Delhi metre gauge section of the Northern Railway. The speed of the train at derailment, as revealed by the recording chart fitted on the Speed indicator-cum-recorder in the Locomotive, was of the order of 72-73 Kmph. The weather was then clear and the visibility normal under the headlight.

The accident occurred on a 1.8 metre high bank formation. The first point of discontinuity in the track from which the derailment was initiated—an exposed running-off end of rail on the left of the track axis was about 196 metres ahead of the Delhi end abutment of Bridge No. 93 (30X6.706 metre girders across River Sabi.

(b) 232 Down Janta Express halted by a steam locomotive of the YP class, comprised 15 bogie-coaches, 8 of which went off the rails.

The locomotive came to rest intact on the rails, with its leading end about 152 metres ahead of the first point of discontinuity in the track. The first 6 coaches derailed to the left and remained disposed in 'concertina' fashion. The draw bar between the 2nd and 3rd coaches gave way resulting in parting of the rake, the front and rear portions standing at 13.4 metres from each other. The 7th coach stood on the formation, saddled across the track. The 8th coach derailed to the right. While the 1st and 2nd coaches remained on the embankment inclined at 20° left of the vertical, the 3rd to 6th coaches precipitated down the bank. The 3rd coach capsized and the 4th, 5th and 6th coaches stood at various inclinations, with their wheels partly embedded in the ground. There was partial telescoping between the rear end of the 3rd/6th and the fore end of the 4th/7th coaches. The permanent way under the 4th to 7th coaches was substantially disturbed, several rails getting distorted and thrown out on either side. The intact rail panel under the 8th/9th coach was dis-aligned to the right and the left rail of the panel ahead lay disengaged, inside. The 9th to 15th coaches did not derail.

**4. Casualties:** As a result of this accident, 2 passengers were killed and 5 were injured, 4 of them grievously.

I visited two of the injured passengers hospitalised in the Railway Sub-divisional Hospital at Rewari and found that they were being taken good care of.

**5. Passenger occupation:** It was estimated that 232 Down Janta Express carried about 700 passengers against a seating capacity of 780.

## II. RELIEF MEASURES

**6. Intimation:** First information about the accident reached the Train Control Office at Rewari over the Portable Telephone from the

site at about 03-50 hours. All concerned were advised thereon and arrangements made to rush the Relief/Break Down trains to site. The Divisional Superintendent who happened to be at Rewari accompanied the Relief Train which reached the accident spot at about 05-20 hours.

**7. Medical Attention and Relief:** (a) The Train Guard who was in due possession of a "First Aid Box" rendered immediate aid to the injured at site. Regular medical assistance reached the injured as follows:—

- |   |                               |
|---|-------------------------------|
| (i) 3 Railway Doctors from Rewari with Medical Van.   | At site at about 05-20 hours. |
| (ii) Doctor from the Civil Hospital, Pataudi Road.  | At about 07-00 hours.         |
| (iii) Railway Divisional Medical Officer, Delhi, with a team of medical/para medical staff. | At about 08-45 hours.         |

The injured passengers were taken to Rewari in the Medical Van and admitted into the Railway Sub-divisional Hospital by 11-30 hours.

(b) The unaffected rear 6 coaches of the ill-fated train along with passengers were despatched from site to Rewari with the engine of the Relief Train. 1 BDG Passenger which was extended from Garhi Harsaru to the accident site reached there at about 08-10 hours. The stranded passengers were accommodated in this train which left for Delhi at 08-40 hours.

As a result of the accident, 20 Passenger and 10 Goods trains were cancelled, one Passenger train was terminated short of destination and 17 Passenger trains suffered detention ranging from 20 minutes to 14 hours 35 minutes.

**8. Restoration:** Restoration operations were commenced at about 10-45 hours on 22-10-1970 and were completed by about 22-00 hours the same day, the track having been cleared, linked and certified fit for traffic with a speed restriction of 'stop dead and proceed at 8 kmph'.

## III. THE TRAIN

**9. The composition of the train in marshalling order was as under:—**

- |                  |  |
|------------------|--|
| (i) Locomotive : | No. 2811 YP, manufactured in 1968 and put into service in January 1969. Equipped with headlight and VDO type Speed-indicator-cum-recorder in working order.  |
| (ii) Coaches :   | 1st No. 35015 VP : Anti-telescopic steel body : ICF bogies;<br>2nd No. 33489 TLR : Anti-telescopic steel body : ICF bogies;<br>3rd No. 32017 GT : Anti-telescopic steel body : ICF bogies;<br>4th No. 32024 GT : Anti-telescopic steel body : ICF bogies;<br>5th No. 30405 GTY : Steel body : IRS under frame;<br>6th No. 30520 GTY : Steel body : IRS under frame;<br>7th No. 30570 GTY : Steel body : IRS under frame;<br>8th No. 30551 GT : IRS under |

Frame 9th 30560 GTY : Steel body : IRS under frame 10th No. 31915 GTCW : Wooden body with exterior steel paneling: IRS under frame 11th No. 35538 GTCG : Anti-telescopic Steel body : ICF 12th No. 35523 GTCG : Anti-telescopic Steel body : ICF 13th No. 33485 TLR : Anti-telescopic Steel body : ICF 14th No. 35029 VP : Anti-telescopic Steel body ICF 15th No. 30531 GT : Steel body : IRS under frame.

(iii) The total length of the train over buffers was 308.15 metres and its gross weight including the locomotive was 551.7 tonnes. The train was fully vacuum-braked and its calculated brake power (excluding the locomotive) was 332.88 tonnes. All its vacuum cylinders were found operative after the accident.

10. Damage (a) 1st coach : Buffer head of coupling end, top arch rail, clappet valve with extension pipe and roof over the centre doorway broken. Coupling end head stock and draw bar bent.

2nd coach : Both side buffers broken and draw bar bent. Head stock end panels and coupling end side panel severely dented and damaged. 2 window glasses, 2 window venetians and 2 commode chutes broken.

3rd coach : Body at the hook end smashed. Coupling end panels, underframe and both buffers damaged. Draw bar bent and 2 foot-boards broken.

4th coach : Underframe and both side head stock with end panels severely damaged. 6 foot-boards and a commode chute broken.

5th coach : Coupling end head stock and panel completely damaged and hook end head stock, partly. Hook end buffer and draw bar broken.

6th coach : Coupling end head stock bent and end panel damaged. Hook end side roof and buffer impaired. 5 window glasses, 10 foot-boards and clappet valve with extension pipe broken.

7th coach : Both end buffers, end panel and roof at places damaged. Draw bar, 4 foot-boards, alarm signal extension pipe and one anchor bolt broken.

The 8th and 9th coaches sustained some minor damage, the latter during restoration operations.

(b) The Permanent Way over a length of about 60 metres was substantially destroyed. Steel sleepers in a further length of about 76 metres were hit and dented.

(c) The damage to railway assets has been estimated at Rs. 78,795 as under:—

	Rs.
Coaches including electrical components	66,795
Permanent Way	12,000
Total	78,795

#### IV. LOCAL FEATURES

11. **The Section and the Site:** (a) The accident occurred in the single line block section between Khalilpur and Inchhapuri stations in the Civil District of Gurgaon, Haryana. The alignment in this portion runs from south-west to north-east and lies on an embankment 1.20—1.80 metres high. The countryside is plain and cultivated. The Rewari-Pataudi State Highway runs alongside the alignment at a distance of about a kilometre on the north. There are villages on either side, the nearest on the right being Khetiaawas and Garh about  $\frac{1}{2}$  a kilometre away from the accident site. On the left, almost opposite the site at a distance of about 180 metres is a farm house. (Enquiries revealed that the house was untenanted and fodder had been stored therein). About 150 metres in rear of the accident spot flows the River Sabi.

The alignment at the accident site and on the approaches, is straight for quite a distance. The track at the site is on a falling gradient of 1 in 400, preceded/succeeded by a level stretch at either end.

(b) The kilometrage of stations referred to in the Report reckoned from Delhi Junction are as below:—

Delhi Sarai Rohilla ..	4.56
Inchhapuri ..	65.45
Site of Accident ..	69.6—11
Khalilpur ..	71.24
Rewari ..	82.48
Phulera ..	297.60
(Bikaner) ..	461.59
Ahmedabad ..	868.61

12. **The Permanent Way:** The Permanent Way consists of 60 lbs. flat footed rails, 39 feet long, laid on steel trough sleepers (with Mills' loose jaws and tapered 2-way steel keys about 50 per cent of which are of the non-removable type) to a density of N+3. The track is provided with broken stone ballast to an average depth of 7 to 8 below the sleepers. The formation is made up of local sandy loam.

13. **Headquarters, System of Working and Train speeds:** (a) Rewari to Delhi is a controlled section, the train control office being located at Rewari. The Divisional headquarters are at Bikaner. The permanent Way Inspector of the section is at Delhi Sarai Rohilla and the Assistant Engineer at Delhi.

(b) Trains on the Khalilpur-Inchhapuri block section are worked on the Absolute Block System with Kyosan's Single Line Tokenless Block Instruments.

The stations are equipped with 2 aspect Lower Quadrant Semaphore Signals with oil-lit lamps. An unworked warner below the Outer Signal on the same post has been provided at Khalilpur for trains in both directions.

(c) The maximum permissible speed of the section is 75 kmph and the booked speed of 232 Down Janata Express is 67 kmph. There were no permanent or temporary speed restrictions for Down trains between Khalilpur and Inchhapuri, or in the adjacent block sections.

(d) No security or other patrolling was in force on the section on the day of accident.

### V. EVIDENCE

14. Driver Madan Gopal of 232 Down Express, said that leaving Rewari station at 02-55 hours right time, he ran through Khalilpur at 03-10 hours. His journey was normal till he passed the girder bridge (Bridge No. 93) and thereafter, he heard a 'dhad' sound from the rear—as if a coupling had snapped. He closed the Regulator and found the vacuum drop to zero. His engine came to a stop intact on the rails at Km. 69/7. Looking back, he saw a lot of dust flying. There was moonlight and the sky was clear. His headlight was burning and he could see for a distance of 3 to 4 telegraph posts. He got down with his hand signal lamp and examined the locomotive. There was nothing wrong and there were no broken or hanging parts. The coupling between the loco and the coach in rear (parcel van) was in position but twisted. The coach had derailed to the left. He detailed his 1st Fireman to protect the train in front and his 2nd Fireman to get in touch with the Guard. About half an hour later 15-20 people who said they were passengers of his train, came to his engine and told him that some nuts/bolts were lying opened in the rear. By this time his 2nd Fireman had returned and he was asked to go with the hand signal lamp to the spot along with the passengers and keep watch. After about 1½ hours, he sent his 1st Fireman to relieve the 2nd Fireman. The latter, on return, told him that nuts and bolts lay on the left and there was a crowd around. A little later, the Divisional Superintendent came to his engine along with Loco Foreman/Rewari and took over the Engine Repair Book and Charts from the Speedograph.

Replying to questions he said :—He was keeping a good look-out and in so far as he could see under the headlight he did not notice anything unusual. He did not experience any jerk anywhere on the run, till he heard the 'dhad' sound and the vacuum started dropping. He then felt that there was a drag from the rear. His locomotive came to a stop in a distance of about 1 to 1½ telegraph posts from the spot where he heard the sound. The sound was loud and of the type one heard when wagons are coupled during shunting. Because he found

the vacuum dropping at the time he heard the sound, he concluded that a coupling had snapped. Asked if he felt that his engine had derailed and re-railed itself before it came to a stop, he replied in the negative.

15. First Fireman Babu Lal G. of the train, said that when he had returned to the engine after protecting the train in front, 10 to 12 persons came from the rear and told the Driver that some nuts/bolts opened out were lying behind. The Driver sent the 2nd Fireman with passengers requesting them to show him the place. The time then was 4 or 4.15 hours. When it became dawn (say about 05.20 hours), under the Driver's instructions to relieve the 2nd Fireman, he went to the spot which was near Km. 69/9. The 2nd Fireman was sitting on the ballast on the left and there was a G.R.P. Constable standing guard. There were also 8 to 10 passengers standing at a distance. The 2nd Fireman showed him one fishplate, 3 bolts and 3 nuts lying at a location where there was an exposed rail joint on the left. The rail connecting thereto was on the ballast resting on its side, with its rear end about a foot ahead of the exposed rail end. Nearby lay the fishplate more or less parallel to the track. The 3 bolts were outside the track on the ballast and the 3 nuts inside. After about 15 minutes of his being at this spot, the Break Down Train arrived. Some time later (at about 6 hours) Shri Phatak, HTXR came there from the side of the engine and told him that he could go.

16. Second Fireman Sheo Ram C. of the train, said that as directed by the Driver (to proceed to the place where bolts and nuts had been opened out), he proceeded to the rear of the train up to a place where he saw a lady passenger. He asked her as to where the bolts and nuts were. She replied that she did not know, but on hearing this question, a person in the rear sitting on his luggage on the left cess, pointed out to where they lay. This person who had a torch was having a bolt in his hand and told him (Fireman) that the threads were intact. He asked him to keep the bolt from where he had picked it up and he did so. At this place, he saw a rail on the left whose Delhi end was exposed. Just ahead, there was a loose rail lying slightly askew, with its rear end inside the track, about an arm's length from the exposed rail end. Under the rear end of this loose rail there was a fishplate lying across. There was a bent fishplate near the exposed rail end. Close by, lying on the ballast there were 3 bolts and 2 nuts, and a little away 1 nut. The loose rail lay on its side with its head away from the track axis. He remained at the spot and after about 15 minutes, saw the Medical Van approaching the site. Some medical staff arrived and the injured passenger who had pointed out the spot to him was attended to. A police constable came to the spot and stood at a little distance. There was no talk between them. By then it became dawn. The 1st Fireman arrived there and relieved him.

17. Guard Hari Mohan Jha of 232 Down Express, said that the journey was absolutely normal and his train ran through Khalilpur at 03-10 hours. After the train had passed the girder bridge beyond at about 03-12 hours, he experienced 3 successive jerks in a period of 5 seconds. With the 1st jerk, he noticed that there was a leakage in the train pipe as he heard the hissing sound of air escaping from his stand pipe. He tried to operate the vacuum brake, but the vacuum had already dropped to zero. At this stage, he felt the 2nd jerk and with the 3rd jerk his brake van came to a stop between Km. 69/10 and Km. 69/11. The 3 jerks were lateral. After arranging for protection of his train in the rear he went to the engine (he did not meet any of the Fireman on the way). The Driver told him that he had experienced a jerk, had closed the steam and the train had come to a halt. He did not see any passengers near the engine. Returning to the Breakvan, he arranged for 'first aid' to injured passengers and spoke to the Control. Later, at about 04-30 hours, he and a GRP constable who was on duty on the train went to the engine. The Driver told them that opposite Km. 69/9, there were 3 bolts and nuts opened out and that he had deputed the 2nd Fireman to stay at that spot. He then went to the rear and with the help of his torch saw some bolts and nuts and one fish-plate lying at Km. 69/9. He did not see the Fireman there or in the vicinity. There were also no passengers. Proceeding further, he met the Station Master, Khalilpur. As the latter wanted to obtain first hand information about the accident, they examined the track together. When they came to the spot where the bolts and nuts and fish-plate were lying, they found a person sitting there who said that he was Gangman, Sultan. He, however did not say as to who had deputed him to be at this spot. Station Master, Khalilpur then counted the bolts and nuts without picking them up. There were 3 bolts and 3 nuts. Later, the Breakdown Train arrived and he told the Divisional Operating Superintendent (who was the first Officer he met) about the opened out fittings at Km. 69/9.

18. Constable Pirthy Singh on escort duty on 232 Down Express, said that he did not see bolts/nuts or fish-plates lying at any place, nor did any one tell him any thing in this connection.

19. Diesel Chargeman, Kailash Chand Sethi of Phulera, who was a passenger on the train, said that after the accident he heard some passengers say that fish-plates had been opened out and that 3 bolts/nuts were lying there. He then examined the track and found that while the rails on the right side were intact, on the left Delhi end of a rail was exposed. A loose rail without fish-plates at either end lay on its side ahead, with its head away from the track axis. One fish-plate lay underneath the Rewari end of the loose rail and another near the Delhi end of the exposed rail. 2 bolts and 3

nuts were lying in the gap between the exposed rail and the loose rail. One bolt was lying near the Delhi end of the exposed rail on the left. 2 sleepers at the Rewari end of the loose rail were in position and the ballast did not appear to be disturbed. There were marks of wheel passing on the web and side of the head of the loose rail. The time when he made these observations was about 04-00 hours and there was dim moonlight. He visited the spot again later, after the sun had come up, along with Train Examiner, P. C. Gupta. A Police Constable was standing guard and Fireman, Babu Lal was also there.

20. Assistant Station Master, Suraj Bhan of Khalilpur, said that on 22-10-1970, he was woken up at about 03-50 hours and asked to go to the station office. There, he met Traveling Ticket Examiner, Darshan Singh who told him that 232 Down Express had met with an accident. After ascertaining particulars and speaking to Control, he left for the site on foot at about 04-10 hours, reaching there at about 04-45 hours. The Train Guard took him to a spot just opposite the last capsized coach (No. 30551) slightly ahead of the whistle Board. At this place there was no rail. The Delhi end joint of the rail in rear was exposed. The rail in front was lying inside the track almost parallel to the track axis, with its rear end about 2 feet ahead of the exposed rail end. Just in front, there were 3 bolts and 3 nuts lying on the ballast towards the inside at one location. There were 2 fish-plates—one lying inside the track slightly in rear of the Rewari end of the displaced rail to the right and the other just opposite the exposed end. A person was sitting there with a hand signal lamp, who said his name was Sultan, Gangman. To the extent he could examine the bolts/nuts with his torch, he found that their threads were intact. By about 05-30 hours, the relief Train had arrived and he saw the Divisional Superintendent coming to site along with the Station House Officer/GRP and the Assistant Permanent Way Inspector. He told them about the loose fittings he had seen and their location.

21. Gateman, Gheesa Ram of Level Crossing No. 48A (located at Km. 67/15) stated that he saw the headlight of Janata Express and was watching for it to pass his gate, but the train appeared stationary. He then saw 50-60 persons with luggage coming towards his gate from the Khalilpur side. They told him that the train had fallen at a distance of about 15 to 16 telegraph posts from the gate and the train Guard had told them that if they met a gateman enroute, the Gateman should be asked to get in touch with a Gangman, Keyman or Station Master who should be intimated of the accident. As he knew that Gangman Sultan was in his village Pahari a short distance away, he closed and locked the gates, went to the village and woke up Sultan. Together they came to the Level crossing and Sultan left towards Khalilpur taking a hand signal lamp with him.



22. Gangman, Sultan of Gang No. 12, stated that he was on rest on the 20th and 21st October and remained in his village Pahari  $\frac{1}{2}$  mile east of Level Crossing No. 48 'A'. At about 04 or 04-30 hours on 22-10-1970, Gatemen, Gheesa Ram woke him up and told him of the train accident he had come to know from passengers. He came to the Level Crossing and saw a number of persons with luggage who also told him of the accident that had taken place. He took a hand signal lamp and walked up to the accident spot. Reaching the last capsized coach, he saw there a person sitting with a lighted canister. He told him that he was a Fireman, that some nuts/bolts were lying there and as he wanted to go to the engine, he (Sultan) should stay at the spot. Accordingly he remained there. After about 10 to 15 minutes, a person came from the Khalilpur side with a torch accompanied by another with a hand signal lamp. The person said that he was Assistant Station Master, Khalilpur and on disclosing his identity, asked him to stay at the spot till his Officers arrived. Some time later, the Breakdown Train arrived and a number of Officers—Police and Railway—came there, as also his Assistant Permanent Way Inspector (APWI), Behran Singh. The Assistant Permanent Way Inspector told him to stay at the spot and went ahead. He remained at the spot up to 06 or 06-30 hours. The sun had just come up. The Assistant Permanent Way Inspector came there and on asking for further instructions told him that he should go to the gate to work as rest giver and that another man would be posted there. Throughout the period he was on watch at the spot no policeman came there. A person in Khaki uniform (may be a Mistry) came, saw the fittings and left. The rail joint at the place he stood was open. There were 2 fish-plates, one lying under the Rewari end of a rail which lay on its side. The other fish-plate was lying outside near the nuts. There were 3 bolts and 3 nuts on the ballast. These fittings were on the left while facing Delhi.

23. Shri Jagdish Lal, Station House Officer, Government Railway Police, Rewari, stated that on arrival at the site of accident by Relief Train at about 05-30 hours, he accompanied the Divisional Superintendent to the engine and later on his inspection of the track which was carried out with the help of a petromax lamp. There was moon light, but it was not very bright. While they were near coach No. 30570, Shri Phatak, Head Train Examiner, Rewari came there and told the Divisional Superintendent that some fish-plates and bolts/nuts were lying opened on the other side. He, immediately instructed Constable Suraj Prakash to go to that spot and stand guard. Then he and the Divisional Superintendent went over to the other side. Opposite Km. 69/9, he found that the left rail under coach No. 30560 was open at the Delhi end. The rail ahead was lying on its side parallel to the alignment with the head away from the track axis. The Rewari end of this rail was about a foot ahead of the

open end of the rail in rear. Below the Rewari end of the loose rail, there was a fish-plate—about half of it was visible. Alongside this fish plate, on the inside of the track there was a bolt. On the outside, there were a fish-plate, a bolt and a nut. Close by, there were 2 nuts and another bolt. These fish-plates, bolts and nuts appeared as if they were new. There was no accumulation of dust on them. One or two threads of the nuts appeared shining and the others appeared covered with something black—as if they had not been used. Constable Suraj Prakash was there. There was also a Fireman—Babu Lal and a Gangman—Sultan Singh, the former with a lamp. He felt that the fish-plates, bolts and nuts found at the spot had been planted there by someone, because if they had been opened out prior to the accident, the engine should have derailed first, as also the leading two coaches on the spot. The coaches would have derailed on one side and would not have capsized.

24. GRP Constable Suraj Prakash of Rewari, said that he accompanied the Station House Officer to the site of accident by Relief Train. When at the site, some persons came and told the Divisional Superintendent (within his hearing) that the line had been opened out in the rear. Thereon, the Station House Officer asked him to go to that spot and keep watch. He did accordingly. There he saw a Fireman sitting with a lighted 'Kuppi'. There was also another person who said that he was a Gangman. It was dark and there was no moonlight. There were many passengers at that place. After about 10 to 15 minutes, the Divisional Superintendent and the Station House Officer came and inspected the fish-plates, bolts/nuts and rails lying there. When it became daybreak, the Fireman who was there was relieved by another. A little later, Shri Phatak, Head Train Examiner/Rewari came there, told the Fireman that he could go and posted one of his staff. At the spot he stood guard, the Delhi end of a rail was exposed. The rail ahead was lying loose with its Rewari end about a foot or  $1\frac{1}{2}$  feet from the Delhi end of the exposed rail. One fish-plate lay under the Rewari end of the loose rail. It was bent. Another fish-plate lay outside on the ballast towards the left of the loose rail. 3 bolts and nuts were lying close to the fish-plates. At this spot there were no other fittings.

25. Shri P. D. Jain, Divisional Superintendent, Bikaner, said that on receiving intimation of the accident while at Rewari, he left for the site by Relief Train, reaching there at about 05-25 hours. After having ensured adequate relief measures, he proceeded towards the engine. On enquiry, the Driver told him that some jerks had been felt and the vacuum had started falling. He took over the speedograph and the engine repair book and instructed the Loco Foreman to seize the engine tool box. He then inspected the track and the wreckage around which a large number of passengers had collected. In the course of such



inspection, he noticed that a rail on the left was lying on its side with its head away from the track axis. 2 fish-plates were also lying—one outside the said rail and was bent, and the other under this rail at the Rewari end with more than half its length projecting towards the track. There were also 3 nuts and 3 bolts in the vicinity of the rail at the Rewari end. The bolts were intact and there were no signs of damage either to the bolts or to the nuts. This rail had a large number of rubbing marks on the running face as also on the web and marks on the flange. A thin metal piece was seen inside the track near this rail and it appeared that this had come off from its running face. The Rewari end of this rail was away from the adjoining rail. With the exception of 2 sleepers at this end which were lying detached and displaced towards the right, the others were damaged, displaced and dented. The Delhi end of this up-turned rail was also free and had no fish-plates. The rail ahead could not be seen at the site, nor the joint fastenings. After some time the Deputy Commissioner, Gurgaon, along with the Deputy Superintendent of Police and other Civil Police/Officials came to the accident site. He showed them the fish-plates, the undamaged nuts, bolts & the up-turned rail, and their condition.

26. Shri Raj Singh, Deputy Superintendent of Police, Gurgaon, who reached the site of accident at 07-30 hours, said that he found the engine on the rails opposite Telegraph Pole 69/7. Six bogies behind the engine had derailed to the left, while the next 2 bogies had derailed to the right. The 9th bogie was standing on the rails opposite Pole 69/9. The track between Poles 69/8 and 69/9 was up-rooted, a number of rails had been twisted and bent. Quite a few of the rails on the left had been dragged along with the bogies. He learnt at the spot that the railway authorities attributed this accident to sabotage and stated that the bolts of a fish-plate had been removed near Telegraph Pole No. 69/9. A constable was already guarding this place beside a Gangman. He inspected the spot. It was near the last bogie which was on the rails (No. 30560). The left rail under this bogie was open at the Delhi end. The rail ahead of it lay on its side parallel to the track with its head to the left. The Rewari end of this rail was about  $1\frac{1}{2}$  ft. ahead of the open end of the rear rail. One of the fish-plates was lying under the Rewari end of the loose rail while the other fish-plate lay nearby. 3 bolts and 3 nuts were also lying near this end of the rail. The bolts and nuts were clean and there was no dust on them.

27. Shri Mohan Lal, Loco Foreman, Rewari who reached the site of accident by Relief Train, said that when he examined the train engine he found the pistons of the vacuum chamber on the engine and tender in the pushed

up position—he concluded that the brakes had been applied. The combination handle (vacuum and ejector) was in the running position. The regulator was closed, the cylinder cocks were open and the reversing handle was in the fore-gear.

28. Shri S. L. Jain, Divisional Mechanical Engineer, Jaipur, who reached the site of accident at about 09-30 hours, stated that he examined the train engine and did not notice any defect which could have caused or contributed to the accident. He was also told by the Driver that the engine had ridden smoothly from Phulera and the headlight was in working order. He perused the details of engine repairs in the records received from the Phulera Loco Shed and in his opinion the engine was in a sound condition.

29. Shri Ajit Kishore, Divisional Mechanical Engineer, Bikaner, who reached the accident site at about 08-40 hours, said that during the course of examination he saw that just near the Rewari end of derailed coach No. 30551 was a rail lying on its side. A fish-plate bent slightly and 3 fish-bolts & nuts lay near the joint of this rail and the preceding rail. Another fish-plate was lying partly under this rail. There were distinct marks of something having ridden over the web of this rail for some distance. These marks which started from near the Rewari end disappeared before the Delhi end was reached. He also saw rubbing marks on the lower portion of the gauge face of the rail. When he examined the train locomotive in the Loco Shed on 23-10-1970, he found marks of abrasion on the tyre fastening rivets of the left side trailing and radial wheels of the engine and the rivets of all the left tender wheels. It appeared that these wheels had ridden over the web of the rail in a tilted condition. He found the train engine mechanically fit (for service) in all respects.

30. Shri S. P. Luthra, Deputy Chief Mechanical Engineer, New Delhi, said that he had examined the coaches involved in the accident. From this examination and the scrutiny of the detailed report of each coach submitted by the Divisional Mechanical Engineer, Bikaner, he found the coaches fully road-worthy. He had also examined the locomotive in the Rewari Loco Shed and the measurement data including wheel gauge, flange thickness, axle box clearances, etc. From this data and the observations made during the trial run of the locomotive, he found that the locomotive was in good fettle and in a road-worthy condition.

31. Shri Bishan Singh, Loco Inspector, Phulera, said that he had travelled on the foot-plate of engine No. 2811 YP (of 232 Down Express on 22-10-1970) hauling 14 Down on 16-10-1970 from Ajmer to Phulera and had 'inter-alia' made the following remarks in the Engine Repair Book :—

....(ii) "both side radials riding rough." The rear saddle of the laminated spring, especially of the right radial wheel was having less clearance with the result that he felt that the riding was rough. This defect was still in the locomotive. The riding of the locomotive during the trial run on 25-10-1970 when a speed of 85 Km. p.h. was attained was good but being a Loco Inspector he always noted down 'pin point defects' with a view to further improve the running.

32. Train Examiner S. B. Patvardhan of Ahmedabad (Metre Gauge), stated that he conducted a primary examination of the rake of 32 Down Janta Express (Train numbered as 232 Down on the Northern Railway) between 19.15 and 22.45 hours on 20-10-70 and issued a fit certificate after necessary maintenance.

33. Train Examiner G. P. Gupta of Phulera said that he carried out a 'safe to run' examination of 232 Down Express which arrived at his station at 21.29 hours on 21-10-70. No defects were noticed and no repairs were required. All the vacuum brake cylinders were operative.

34. Train Examiner Chandra Singh of Rewari, said that he conducted a 'visual/safe to run' examination of 232 Down Express which arrived at his station at 02.35 hours on 22-10-1970 and left at 02.55 hours. Except for a missing nut/bolt on vehicle No. 30551 which was made good, no deficiencies/defects were found in the rake.

35. Assistant Station Master Khushi Ram of Khalilpur, stated that 232 Down ran through his station at 03.10 hours on 22-10-70. He exchanged alright signals with the train crew and the train proceeded in the normal manner.

36. Driver Lala Ram of B 121 Up steam-hauled Goods Train, said that on 22-10-70, he ran through Inchhapuri at 02.00 hours and Khalilpur at 02.10 hours at a speed of 40-45 Km. p.h. He did not experience any lurch or any sign of bad riding in this section. He also did not see any person on the track or walking on the cess or alongside the railway formation between Inchhapuri and Khalilpur.

37. Driver Hardwari of B 108-A diesel-hauled Down Goods train, said that on 22-10-70, he ran through Khalilpur at 02.30 hours and Inchhapuri at 02.38 hours. His speed in this section was about 45 Km. p.h. He did not feel any sign of bad riding in this section. It was moon light and he did not see any people walking on the cess or alongside the formation between Khalilpur and Inchhapuri.

38. Gangman Ganpat of the sectional gang who worked as Keyman on 21-10-70, said that he carried out the usual daily inspection of his beat (Km. 69/3 to Km. 72/3) and found the track intact. He did not come across any loose bolts, nuts and some keys which were found loose were driven in.

39. Assistant Permanent Way Inspector Behram Singh of Rewari, said that the track from Km. 69/3 to 75/10 was through-packed in the 1st week of October. He had last trolled over the section a day prior to the accident and found everything normal. He had not checked the tools of the Permanent Way Gangs in his jurisdiction on the day of accident, but had done so the next day. He did not find any item missing.

40. Shri H. K. Sharma, Assistant Engineer, Delhi who reached the site of accident at about 08.10 hours on 22-10-70, stated that after making a survey of the accident site and arranging for preparation of necessary drawings, he carried out a test check along with the Assistant Mechanical Engineer of the track readings ahead and in rear of the site of accident recorded jointly by the supervisory staff. The section from Delhi to Rewari had been extensively inspected by him during the last 3 months with a view to effecting marked improvement for high speed operation, the last such inspection being on 17-10-70. He had also accompanied the Track Recording Car on its run over the section on 16-10-70 and it became amply clear that the track had improved since the last recording on 27-7-70. Nothing abnormal was noticed during this run between Khalilpur and Inchhapuri.

## VI. OBSERVATIONS AND TESTS

41. **The Track**—(a) As stated in para 2, the track had been restored for traffic by the time I reached the site of accident. I did not, therefore, have the benefit of personal examination of the site undisturbed. The dislocated/disaligned components of the track assembled on the berms on either side and those that lay at site were shown to me, along with photographs depicting some portions of the track and rolling stock as found after the accident. The position that emerged from the inspection of site and a study of photographs/drawings which were furnished, was as under:—

(b) (i) The first point of discontinuity in the track was at the exposed running-off end of a rail on the left, 314.17 metres ahead of the centre line of Bridge No. 93—30x6.706 metre girders. For facility of reference, this track rail which had been bent inward at the fore end and had been removed, is denoted as L1 and the intact rail in rear as L0, the notation "L" corresponding to the 'Left' and "R" to the 'Right'. The rails ahead are successively denoted as L2, L3, L4,....R2, R3, R4,.... and so on. The rail joints are referred to as L0-L1, L1-L2, R0-R1, R1-R2, etc.

(ii) Rail panel L1—R1 lay partly under the 9th coach (No 30560) which did not derail, but went off the rails during the process of clearance leaving some drag marks on the sleepers of this panel. The dismembered joint L1-L2 lay more or less opposite the rear end of the 8th coach (No. 30551)—the last derailed coach—which had come to rest askew on the forma-

tion to the right. Rail L2 was not in position and was found lying slightly inside the track more or less parallel to the alignment, with its rear end about a metre ahead of the fore end of L1, resting on its side with the head facing away from the track axis. Under this rail, about 18 cms. from the rear end lay a fish-plate. Another fish-plate, bent, was found on the ballast 20 cms. to the left of the track and about 60 cms. in rear of the Rewari end of L2. In between, at different locations, lay 3 fish-bolts and 3 nuts.

(iii) Joint L2-L3 was also dismembered. Rails L3, L4 and L5 duly connected with one another, were found detached, distorted and thrown out on the berm to the left, with the running-on end of L3 buried under the 5th coach (No. 30405). The fish-plates of joint L2-L3 were on rail L3 with the front bolt in position. The fish plates had been hit and ripped outward.

(iv) Rail L6 lay on the alignment twisted into a loop. The fish-plates of Joint L5-L6 were on its trailing end with both bolts in position. Joint L6-L7 held on, and so did the other rail joints ahead. It was understood that joint L6-L7 had to be dis-severed during restoration to separate the twisted rail L6 and link the track. One broken bolt, 3 bolts (2 of them bent) and 3 nuts of this joint were seen lying nearby.

(c) The rails on the right were dis-aligned and bent, but were continuous with only joint R3-R4 giving way. The fish-plates of this joint were found on rail R4 with the 2 bolts in position.

(d)(i) The permanent way commencing from rail panel L2 R2 upto L6 R6 (inclusive) had been substantially disturbed. The steel trough sleepers of this portion, to the extent they could be reclaimed and identified, had been serially numbered 11 to 72 (increasing in the direction of motion); 3 marked 54 X, 55 Y and 56 Z and 2 without numbers—all badly twisted and laid out for inspection.

(ii) It was explained that sleepers numbered 1 and 2 were the joint sleepers of L1-L2/R1-R2, which had since been replaced with wooden sleepers in accordance with extant policy. These and sleeper 3 carried no marks of damage. While sleeper 1 was seen intact at the fore end of rail L1 after the accident, sleepers 2 and 3 of rail panel L2 R2 were found dislocated and shifted to the right.

Sleepers 4 to 17 [sleepers 2 to 17 correspond to rail panel L2 R2] had been subjected to damage and all of them had one characteristic feature in common—the rail seat on the left had been borne upon and depressed, the extent of depression covering the entire rail seat and extending to beyond the outer jaw hole on all except sleeper 4. There were no marks of injury elsewhere on sleepers 4 and

5, but the others carried some dent/hit marks on the right (could be of a wheel flange) some distance away from the inner jaw hole towards the track axis.

The rail seat on the left on sleeper 18 (1st sleeper on panel L3 R3) was intact, while the right end had been distorted and folded up. Both ends of sleeper 19 had been damaged, and in sleeper 20, the right end had been hit and depressed at the rail seat. Sleepers 21 to 72 which were found under rails R4, R5 and R6 had been damaged to varying degrees, with dent/hit marks caused apparently by the wheels of some of the coaches which had derailed to the left.

(iii) Marks of derailment were in evidence on almost all sleepers of rail panels L7 R7 to L12 R12. While most of these marks could be attributed to the wheels which derailed leftward, the marks close to the inner jaw hole on the left inside (some keys and inner jaws on the left had been hit in panels 11 and 12 and there were marks of abrasion at places on the inner flange of the left rail in panel 12) had apparently been made by a wheel which had derailed inside the left rail. These marks terminated on the 2nd sleeper of panel L13 R13, corresponding to the location where the 1st coach (No. 35015 VP) had come to rest with the rear left wheel of the leading bogie standing thereat derailed to the right (i.e. inside the left rail), with the right wheel lifted up.

(iv) The condition of rail joints in the affected portion was as under;

L0-L1 & R0-R1: Intact.

L1-L2: **Dismembered.**—Observations in respect of fish plates and bolts and nuts found near this joint have been set-forth in sub-para (vii).

R1-R2: Fish plates in position with all bolts. Fish plates bent outward i.e. away from the track axis. No marks of derailed wheel(s) on the fastenings.

L2-L3: **Dismembered.**—Fish plates found on L3, held by the leading bolt. Fish plates ~~prised~~ out in the form of mm, with hit marks at top on the trailing ends—more prominent on the inner fish plates. Marks of hard abrasion on the top fishing plane of inner fish plate, with rubbing marks on the outside of the top lip at the forward end. 2 abrasion marks on the top inside of outer fish plate.

R2-R3: Fish plates and bolts in position. Fish plates slightly bent. Hit mark on the inside on all bolts except the leading (there was a

hit mark on the inner flange of R2 at a distance of about —6" from the forward end).

- L3-L4: Duly fished and bolted with both fish plates slightly bent. Top lip of inner fish plate hit and flattened in the rear.
- R3-R4: **Separated.**—Fish plates in bent condition found on R4 with both bolts. Top lip of outer fish plate hit and sheared over a length of about 10 cm. at the rear end; hit marks on nuts of both fish bolts.
- L4-L5: Duly fished and bolted. Joint bent to the left.
- R4-R5: Fish plates in position with 3 bolts—the rear one on R4 was missing. Top lip of outer fish plate hit and sheared at the rear end (with the swarf sticking on); hit marks on the nuts of both bolts on R5.
- L5-L6: **Separated.**—Fish plates found on L6, bent outward with both bolts intact. Scratch mark on the inner flange of L5 at the leading end).
- R5-R6: Fished and bolted. Top lip of outer fish plate hit and sheared at the rear end; hit mark on the nut of leading fish bolt.
- L6-L7: Fish plates and bolts in position. Fish plates bent outward (Joint dis-severed during restoration).
- R6-R7: Joint intact with fastenings. Hit mark on the nut of rear fish bolt.
- L7-L8: Hit mark on the leading bolt of L7 (on the inside).
- R7-R8: Top lip of outer fish plate hit and sheared at the rear end.
- L8-L9: Hit mark on rearmost bolt and scratch mark on inner fish plate at the rear end.
- R8-R9: Top lip of outer fish plate hit and sheared at the rear end.
- L9-L10: Top lip of inner fish plate hit and sheared off; hit mark on the leading bolt of L10.
- R9-R10: No prominent marks noticed.
- L10-L11: Top lip of inner (fish plate hit at the rear end.
- R10-R11: Top lip of outer fish plate hit and sheared at the rear end; hit mark on the nut of the rearmost fish bolt.
- L11-L12: Inner fish-plate hit at the rear end; the 2 leading and the rearmost bolts (inside) hit and dented.

R11-R12: Top lip of outer fish plate hit and sheared at the rear end; hit mark on the nut of the rearmost fish bolt.

L12-L13: The rearmost and the 2 leading bolts hit and dented (inside).

R12-R13: No prominent marks noticed.

It could be inferred from the above observations that :—

- (A) the separation at rail joints R3-R4 & L5-L6 was the outcome of the accident; and
- (B) One pair of wheels had derailed to the right at or after negotiating rail joints L2-L3/R2-R3 and had travelled up to the rail panel L13/R13. Correlating this with the marks of derailment noticed on the sleepers vide sub-para (iii) supra, there was little doubt that the wheels were those on the rear axle of the leading bogie of the 1st coach (No. 35015 VP).

(v) Six fish bolts (one with nut on) stated to have been recovered from the site of accident were shown to me. One of the bolts had snapped more or less in the middle, 2 were bent and had marks of injury on the threads and the others had slight hit marks in the threaded portion. While it was noted that according to the evidence adduced, the bolts listed as missing and not traceable were:—Joint L1-L2: 1; joint L2-L3: 3; joint R3-R4: 2; joint R4-R5: 1 and joint L5-L6: 2, it was not possible to assign these bolts to specific rail joints.

(vi) Eight m.s. loose jaws and 28 steel keys said to have been found in the disturbed portion under rail panel L2-R2 were shown. Of the jaws, one had a slight crack and vigorous hit marks on the top, as also on the lug—these had become blue; another had a mark of abrasion on the haunch; and the 3rd, a slight hit mark on the jaw. The keys, some of which were bent, had generally hit marks at one or both ends—it was difficult to decipher if these were of past or recent origin. In addition, 75 loose jaws and 142 keys reclaimed from the site were put up for inspection. None of the jaws carried any prominent signs of impairment. 49 of the keys had either abrasion/dent marks, or were bent—apparently as a result of the accident.

(vii) The 2 fish plates, the 3 bolts and the 3 nuts found in the vicinity of rail joint L1-L2 were closely examined.

**Bent fish-plate:** From the bearing marks of the nut on the web outside, the fish plate was identified as the outer one. Fish plate bent outward, i.e. away from the track axis, over part of its length. Dent marks on the outside on the top lip and bottom lug at about 16/17 cms

from the forward end. Both holes normal. No marks of injury on the inside. In all likelihood, this fish plate when lying detached was ridden over by a derailed wheel and bent.

Stamp marking on bottom lug: S(T) T O 61—60 R 56 HG IRS and on the web on the outside 8018, the figures 18 being faint.

**Fish plate: found under the trailing end of L2** From the bearing mark of bolt head on the web, the fish plate was identified as the inner one. Diagonal abrasion on the fishing plate commencing from about 8 cms; indentation on the fishing plane across at about 33cms; and dent mark on the outer edge of fishing plane at about 27 cms (dimensions reckoned from the rear end). Condition of holes normal.

Stamp marking on the bottom lug: 56 HG TI & SCO IRS (T) T 061—60 R and on the web at the edge of a bolt hole 018, the figures being faint.

It became clear that the above 2 fish plates formed the complement of a rail joint and by comparing their stamp markings with those of a pair taken out from a joint near the leading abutment of Bridge 93 (Km 69/11-12), [and later with several in the stretch Km. 68/0 to Km. 69/12] it was apparent that the fish plates belonged to the track in question.

**The 3 bolts and 3 nuts** : An examination of the stamp markings on the bolt heads (T 057) and check of their dimensions and condition revealed that the bolts/nuts were such as could have been in use in the track at the accident site. The bolts and nuts appeared quite intact, with no marks of injury on them. Marks of oiling done in the past were in evidence on the bolts. The threads on the bolts and nuts were fresh—they were neither rusted nor dust laden.

(c) The condition of rails L1, L2 and L3 was as follows:—

**(i) Rail: L1** Rail on the alignment with its running-on end duly fished with rail L0 and the running-off end exposed. Rail twisted in the vertical plane as well as laterally. Rail table at the running-on end slightly chipped—this appeared to be an old condition. At the running-off end, slight bearing marks were seen on the rail flange on the inside. Condition of rail head and bolt holes normal.

**(ii) Rail: L2** Found lying on its side, disengaged, inside the track ahead of rail L1, with its head facing away from the track axis.

**Running—on end:** Condition of bolt holes normal. Rail table depressed over a width of about 1 cm causing flow of metal with the formation of slight lip or burr. Hit marks at the edge of rail top on the left, as well as the right. Marks of metallic contact on the underside of the rail head on the gauge face, from about 17 mm to 22 mm, and again from 26 mm to 40 mm from the rear end. Deep scratch mark on the web (verify, the evidence of a wheel riding with its flange on the rail web) commencing from 75 cm and extending to 7.46 metres; and again, from 7.58 metres to 7.73 metres; 7.81 metres to 7.98 metres and 8.05 metres to 8.69 metres. Marks of hard rubbing on the vertical side of inner flange from 1.3 metres to 1.6 metres. Marks of hard and deep abrasion on the gauge face of the rail head from 2.11 metres to 9.4 metres and from 9.90 metres to the running-off end of the rail—the marks being less prominent in the latter portion; ridge formation on the gauge face between 8.30 and 9.3 metres—(all dimensions reckoned from the rear end of the rail).

As a result of the abrasion, metallic swarfs had come out of the rail head. There were no marks of wheel riding on the rail table. Rail section twisted outward, i.e. away from the track axis, over a major portion of its length from the rear.

**Running—off end:** Slight lip formation. Bolt holes flange on the outside hit and distorted. Web twisted inward.

**(iii) Rail: L3** Found on the left berm with its rear end under the 5th derailed coach (No. 30405 GTY), its running-off end duly fished with rail L4.

Running on end: [Fish plates of joint L2-L3 forced outward, with the leading bolt in position]. Rail table hit and depressed over a width of about 44 mm with flow of metal. Marks of bearing on the trailing hole—probably the bolt was in position and was severed during the course of derailment.

Marks of abrasion on the gauge face from 0.60 metres to 1.90 metres, 2.90 metres to 4.32 metres with swarf coming out at 2 places and from 4.6 metres to 4.82 metres. Rubbing marks on the inner flange at 2 places. Light scratch marks

on the web over a portion of the length. Rail section bent both in the vertical and horizontal planes.

(f) **Condition of permanent way**—(i) The permanent way in advance and in rear of the site of accident was examined and found adequately maintained. The fittings were generally sound and the average depth of stone ballast below sleepers was 7 to 8 inches. The formation appeared well consolidated and there was no sign of subsidence anywhere, although the borrow pits on either side were full of water.

(ii) The cross levels and gauge in rear of the intact rail LO upto the leading abutment of Bridge No. 93 were checked. Cross levels varied from exact to 3 mm and gauge from exact to 1/16" slack. The track parameters jointly recorded by the Supervisory Officials after the accident were scrutinised—maximum variation in cross levels was 3 mm, there being no appreciable twist and in gauge 1.5 mm slack to 1.5 mm tight.

(iii) The entire stretch of track from the Up Home Signal of Khalilpur upto LO RO was examined on foot and the cross levels/gauge recorded at stations about 3 metres apart. The variation in cross levels was generally 1 to 5 mm, figures of 6 to 8 mm being attained at isolated places. The twist did not generally exceed 2 mm/metre. The maximum variation in gauge was 5 mm slack to 3.5 mm tight. The bridge structure and the permanent way over it were in sound condition.

(iv) The Track Recording Car had been run on the Delhi—Rewari section on 16-10-1970. It was seen from the Chart (Down direction) that the track geometry in the stretch at Km69-70 was as follows:—

Unevenness	{ right rail—category C38 [Category C extent of irregularity upto 8 mm] left rail—category C41
Twist	: Category C 18 [category C upto 3 mm/metre] and
Gauge	: Category B [category B upto +6 mm].

**42. The Locomotive of 232 Down.**—(a) YP Loco No. 2811 which hauled 232 Down Express from Phulera and which was found intact on the rails after the accident was examined over the pit in the Loco Shed at Rewari. Except for certain significant marks on the left side trailing coupled, radial and tender wheels; and on the leading stay plates of the tender bogies, details of which have been set—forth in sub-para (d) hereof, the undergear was intact. The wheel gauge, flange thickness, buffer heights and the lateral clearances on the axle boxes of coupled wheels as recorded were checked and found within permissible limits.

(b) It was noted from records that the locomotive which was pressed into service anew in January 1969 had been given Schedule IV maintenance in March 1970, Schedule III in July 1970 and Schedule II on 13th October, 1970.

The entries in the Engine Repair Book were scrutinised. While it was noted that the repairs booked by Drivers had been generally attended to, there were entries on 3 occasions (7-10-70, 12-10-70 and 16-10-70) to the effect that the radial wheels were riding rough and that the springs should be changed. [The Driver who made the entries on 7-10-70 had also remarked that the engine was not fit to run at over 60 Km/h and was liable to derail. The locomotive had, however, done 12 trips at the maximum permissible speed since then (excluding the one on 21/22-10-70 hauling 232 Down) and nothing untoward had happened]. An examination of the springs, did not indicate anything seriously amiss, except that they appeared to have lost the original camber to some extent and the spring on the right was slightly canted.

Riding trials were conducted on this locomotive on 24th and 25th October between Rewari and Khalilpur when speeds upto 82/85 Km. p.h. were attained. The running of the locomotive was steady and there was no indication whatsoever as to warrant any apprehension about the road—worthiness of the locomotive.

[The Loco Inspector who had travelled on the foot plate of this locomotive on the 16th October 1970 and had commented on the rough riding of the radial wheels, when questioned, clarified that the remarks endorsed by him in the Engine Repair Book were aimed at getting the item attended to with a view to further improve the running of the locomotive—para 31. The Chief Mechanical Engineer, Northern Railway with whom this issue was discussed on 2nd November, 1970, was of the opinion that the loss of camber on the springs of the radial wheels was apparently not of significant import in so far as the stable riding of the locomotive was concerned].

(c) The recording chart in the VDO type Speed—recorder of the locomotive showed that the speed of 232 Down Express prior to derailment was of the order of 72-73 Km. p.h., i.e. within the maximum, permissible on the section.

(d) The tyre fastening rivets of the trailing coupled, the radial and all the tender wheels on the left, had marks of violent rubbing on the exposed rivet heads on the outside (at places the rivets after rubbing had turned blue), as under:—

Engine : Trailing : Out of 13 rivets, 8 had fresh coupled } marks of hard abrasion against wheel } some metallic object, [Centre line of rivets about  $1\frac{13}{16}$ " from the edge and diameter of rivet heads

$1\frac{17}{64}$ "

Radial wheel) : 2 out of 8 rivets had marks of violent grazing [centre a line of rivets about  $2\frac{1}{4}$ " from the edge and diameter of rivet heads  $1\frac{1}{64}$ "



Tender : All the 8 rivets of each of the four wheels had deep rubbing marks [centre line of rivets about  $2\frac{3}{8}''/2\frac{21}{32}''$  from the edge and diameter of rivet head  $1\frac{1}{64}''$ ]. In addition, the leading stay plates of both bogies and fresh nicking marks on their front edges on the right.

There were no such marks on other wheels. How certain wheels on the left of the locomotive came by these abrasion marks at a location higher than the normal riding level became a poser. After all, the locomotive was found to have come to rest after the accident without derailment. There was also no evidence of any extraneous obstruction (metallic or otherwise) alongside the track on the left with which the loco could have established contact on the run. The genesis, therefore, of these marks was to be looked for in the track itself and amongst its constituents. In this context, the condition of rail L2 acquired special significance. There were unmistakable signs of vigorous metallic contact/hard rubbing on the gauge face of the rail—head over a length of about 9.4 metres from the rear, with marks of wheel flange riding on the web. The rail section had also visibly twisted outward in this portion—[para 41(e)(ii)]. The steel sleepers under this rail (except the rear 2) had been severely depressed under the left rail seat to some distance outside the outer jaw holes, without being cut into as would have been the case had they been ridden over directly by a wheel flange—[para 41(d)(ii)]. In the circumstances, the solution that presented itself was, that the trailing coupled, the radial and the tender wheels of the locomotive had ridden over a portion of rail L2 commencing from the running—on end in a tilted condition, with the wheel flange in contact with the web and the wheel tyre in contact with the gauge face of the rail—head. A profile of the trailing coupled wheel showing the rivet heads was prepared and its travel over the twisted rail L2 was tried at site—the above solution appeared a distinct possibility. In all likelihood, the running—on end of rail L2 was free with the fore—end unfished but held in position by the fish plates undetached, when the locomotive came along. The leading 4 wheels rode over the rail in the normal manner and with the building up of lateral thrust on the loose end in the meantime, the rear portion of the rail flexed to the left under the trailing coupled wheel (the fore portion being weighted by the leading wheels), resulting in this and the wheels which followed to traverse the rail in the manner described above. The fore-end of rail L2 being still upright and in a state of semi-fixity on the alignment the rear left wheels of the locomotive came on to the rail table and rode past ahead without getting derailed. The depression (battering) noticed on the rail head of L2 at the running-on end also lent support to the conclusion that this rail end was loose and unsupported on the alignment when it was subjected to wheel loads.

**43. The Coaches of 232 Down.**—(a) The coaches of 232 Down involved in the accident were examined at site on the 23rd October and later, on the 28th October after the under-gear was cleaned of muck, etc. None of the coaches was overdue P.O.H. The axle boxes of coaches on I.R.S. bogies had been re-packed and oiled to schedule. The tyre profile, flange thickness, wheel gauge and axle box clearance were checked to the extent feasible. The clearances parameters were within limits and no abnormality was found as could have served as a primary or contributory factor in this accident.

(b) The following significant marks were noticed on the derailed coaches of the train:—

(i) 1st Coach [35015 VP]

Leading bogie :

Leading axle : Left wheel : Rubbing and cut marks on the rail side of wheel flange over a length of about 100 cm along the periphery the marks were deep and prominent in the last 45 cm where the metal had become blue. Marks of hard contact on the tread almost opposite the peripheral marks on the flange. Cut mark on the inside of wheel flange over a length of about 2.5 cm. Dent on tread at the edge.

Right Wheel : No apparent signs of the wheel having travelled over ballast and no marks of damage.

Trailing axle : Left wheel : A number of deep dents and cut marks all round on the tread and root of the flange on the rail side.

Right Wheel : 3 deep hit/dent marks on wheel flangs and 2 other small dents. No apparent signs of wheel having travelled over ballast.

Trailing bogie

Leading axle: Left Wheel : Scratch marks on the Wheel flange and tread. Marks of ballast on the tread as well as flange.

Rights Wheel : —do—

Abrasion mark on wheel flange over a length about of 15 cms.

Trailing axle : Left Wheel : Marks of ballast and scratches on the tread as well as flangs.

Right Wheel : —do—

4 cut marks on the wheel flange, 2 of which had turned blue. Flange had also blued at one spot,

(ii) 2nd Coach [33489 TLR]

Leading bogie :

Leading axle : Left wheel : Ballast marks on tread and flange.

Right wheel : —do—

Deep grazing marks on the rail side of wheel flange with cut marks on the edge. Hit marks on the underside of axle boxes which had turned blue.

Trailing axle : (Left wheel) : Ballast marks on tread and flange. Hit and dent marks on flange.

(Right wheel) : —do—

Hit marks on the underside of axle boxes and the rear safety bracket—the marks had turned blue.

Trailing bogie : Ballast marks on all wheels. Deep dent (which had become blue) on the flange of the right wheel of trailing axle.

(iii) The wheels of other derailed coaches which could be examined, did not reveal any significant marks, except of having travelled over stone ballast. The right wheels on the leading axles of both bogies of the 3rd coach had some dent marks on the tread.

(c) It could be concluded from the observations in sub-para (b) above that:—

(i) The leading axle of the 1st coach did not derail at or in the vicinity of the first point of discontinuity. The deep abrasion and cut marks on the left wheel of this axle were, in all probability, the consequence of the wheel having hit (and bent) the outstretched inner fish plate of rail joint L2-L3 (the outer fish plate having been ripped outward, possibly as a result of the thrust imposed by rail L2 during its distortion under the trailing wheels of the locomotive) and the running-on end of rail L3. It is likely that the hard hit sustained on its rear end, rendered rail L3 to lie somewhat prone at the rear portion leading to violent abrasion of this wheel against the gauge face of the rail, causing the damage detailed in para 41(e)(iii);

(ii) the rear axle of the leading bogie of the 1st coach was the first to derail, in all likelihood at or after passing rail joints L2-L3/R2-R3, the left wheel landing just inside the track and the right wheel just outside, and travelled in this disposition till it came to rest on the 2nd sleeper of rail panel L13 R13. After encountering the running-on end of rail L3, the bogie probably canted to the left, keeping the right wheel somewhat lifted up—this surmise is sustained by the view of this coach as seen after the accident and would account for the right wheel not riding on the sleepers/ballast and hitting only the fastenings at the rail joints on the right; and

(iii) the trailing bogie of the 1st coach and the 2 rear coaches derailed, apparently, in the vicinity of the point of discontinuity. [The parting between the 2nd and 3rd coaches as

a result of the drag which set in (the locomotive not having been braked), the bunching of the stock in rear and the crash which occurred, followed as an inevitable corollary].

## VII DISCUSSION

44. **Time of Accident**—According to the Driver and Guard of the train, 232 Down Express ran through Khalilpur, station at 03.10 hours. As per entries in the Train Signal Register of Khalilpur, this was also the time at which the 'train entering section signal' was sent to Inchhapuri. The distance from Khalilpur to the accident site is about 1.75 Km and the time required to cover this distance at a speed of 70 Km. p.h. works out to about 1½ minutes. On this basis, the time of accident may be assessed as 03.12 hours.

45. **Speed at Derailment**—From the speed-chart of the VDO Recorder fitted on the locomotive, the speed at derailment could be computed to be of the order of 72-73 Km. p.h.

46. **The Cause of the Accident**—(a) The evidence on record—paras 28 to 30 & 32 to 34—and the observations set forth in paras 42 & 43 establish that the locomotive and coaches of 232 Down were road worthy and did not have any material defects as could have caused or contributed to this accident.

(b) The speed of the train at derailment was not excessive being within the permissible limit of 75 Km. p.h.

(c) There was no indication of mis-manipulation of the locomotive, or of improper application of brakes, which could have led to an accident. [Vide paras 14 and 27, there was no brake operation by the Driver, the locomotive having come to a stop with the shutting off of steam and on actuation of brakes consequent to the destruction of vacuum in the train pipe as a result of parting of the rake].

(d) The track geometry and the condition of permanent way in rear of the site of accident were generally satisfactory—para 41(f)—and the variations in the track parameters noticed could not have caused an accident at the maximum speed authorised on the route. The track in this section had been last inspected : by the Assistant Engineer on 17-10-70 (para 39), and by the Assistant Permanent Way Inspector on 21-10-70 (para 40)—they found nothing abnormal. The Keyman of the section had duly carried out the daily inspection on 21-10-70 and found the track intact (para 38). The Drivers of the 2 Goods Trains which preceded 232 Down Express testified that they did not experience any bad riding on the section—paras 36 & 37. The last train to pass over the point of derailment before 232 Down Express arrived, was 'B 108-A Down' diesel-hauled Goods train at about 02.33 hours. The rake of this train was examined at Delhi Sarai Rohilla (34 out of

49 units) on the 22nd October morning. No deficiencies/marks of damage were noticed on the undergear/wheels—evidently, the track at the affected stretch was whole and sound when this train negotiated the same.

(e) According to the evidence on record, about half an hour after the mishap some passengers went to the engine and told the Driver that some bolts/nuts were lying opened out in the rear. Thereupon, the Driver deputed his 2nd Firemen to go to the spot and keep watch—para 14. A little later, a permanent way Gangman (of Gang No. 12) reached the spot and stayed there (at the request of the Fireman). The Gangman was apprised of the accident by the Gateman of Level Crossing No. 48 (about  $1\frac{1}{2}$  Kms. east of the accident site) while at his native village  $\frac{1}{2}$  Km. away from the said crossing—paras 21 and 22. The Station House Officer, Railway Police, Rewari who arrived at the site of accident by the Relief Train along with the Divisional Superintendent heard the Head Train Examiner, Rewari tell the Divisional Superintendent that some fish plates and bolts/nuts were lying opened on the left. The Station House Officer immediately detailed one of his constables to stand guard over these components—para 23. When the constable reached the spot where the loose components lay, he found the Fireman as well as the Gangman stationed there—para 24. The disengaged components were seen at about 04.00 hours by the Diesel Chargeman, Phulera who was a passenger on the train—para 19; by the Train Guard at about 04.30 hours—para 17; and by the Assistant Station Master, Khalilpur, a little after 04.45 hours—para 20. After the arrival of the Relief Train at site at about 05.20 hours, the fittings lying detached were witnessed by several Officials, amongst them the Station House Officer, Rewari Railway Police and the Divisional Superintendent—paras 23 and 25. They were also seen by the Deputy Superintendent of Police, Gurgaon, who reached the accident site at 07.30 hours and later in the day by several Civil, Police and Railway Officials.

The sum total of the evidence adduced in respect of the track as seen after the accident may be summarised as under :—

(i) The first point of discontinuity was at rail joint L1-L2, which was found dismembered. The derailment of the train was wholly initiated therefrom and there was no precedent derailment.

(ii) Rail L2 lay detached about a metre ahead, resting on its side a little inside the alignment, with its head facing away from the track axis.

(iii) Under the running—on end of rail L2 lay a fish plate. Another fish plate, bent, was found nearby, as also 3 fish bolts and 3 nuts.

(iv) The fish plates of joint L2-L3 were found on rail L3 held by one fish bolt.

(f)(i) The results of my examination of the disengaged fish-plates and bolts and nuts found in the vicinity of the rail joint L1-L2, have been set-forth in para 41(d)(vii).

(ii) The bolts and nuts were intact, without any marks of impairment as would have been evident had they been severed as a result of the accident. From the condition of the threads on the bolts and nuts, it was evident that they had been in use on the track in the recent past and as they were found in the close proximity of the exposed running—off end of rail L1, the natural inference was that, in all probability, they belonged to joint L1-L2 and had been unfastened prior to the arrival of 232 Down Express.

(iii) As the fish plates of all the dismembered rail joints except L1-L2 could be located at one or the other of the connecting rail ends, the 2 disengaged fish plates (which were identified as the 'inner' and 'outer' forming a pair) belonged without doubt to the rail joint L1-L2, close to which they were found after the accident. Of these, the outer fish plate was bent, but the inner was intact. If the fish plates had been in position on the joint duly bolted and had the joint been forced outward or inward in the course of the accident, both the fish plates would have been bent (as in joint L5-L6 or L6-L7) and not one only. The bolt holes in the two fish plates were normal and bore no marks of violence usually characteristic of a ruptured joint.

The outer fish plate had indentations on the top lip and the bottom lug. These indentations were not of the type which would have been caused by a derailed wheel riding over the fish plate in position at the rail joint—in that event, the top lip would normally have been hit and sheared (as in several rail joints ahead). [Further, the passage of a derailed wheel over a rail joint cannot cause the lateral bending of a fish plate]. Correlating the alignment of the dents on the top lip and bottom lug with the pattern of bend sustained by this fish plate, it became apparent that the denting and flexure were the result of the fish plate being hit by a derailed wheel when lying detached on the track.

The inner fish plate had a diagonal abrasion, indentation across and a dent at the edge—all on the top fishing plane. Obviously, these could not have resulted with the fish plate intact on the rail joint, as in that case the fishing plane would not be exposed.

In short, since there was no derailment precedent to the first point of discontinuity, and all the processes culminating in the crash came into play from or after this point, the logical deduction was that these fish plates had been removed and disparted in advance of 232 Down Express.

(g) In the light of the fore-going dissertation and the observations detailed in para 42(d)

previous, there could be no other conclusion but that rail joint L1-L2 had been unfished prior to the arrival of 232 Down, resulting in the running-on end of rail L1 to remain loose and unsupported when the train came along. The results of examination of the running-off end of rail L2 and of rail joint L2-L3 [Paras 41 (d)(iv), 41 (e)(ii) & (e)(iii)] would indicate that the fish bolts at the running-off end of L2 had also been unfastened, leading to this rail attaining a state of partial fixity at this end and getting eventually dislodged. The impairment and bending of the fish plates of joint L2-L3 in the particular manner would not have been possible unless they were dis-jointed and unconstrained over their rear half.

(h) It was noted that steel sleepers No. 2 and 3 (Joint sleeper and the next) of rail panel L2 R2 were shifted to the right and carried no marks of injury on them. These sleepers could have escaped the characteristic damage inflicted by rail L2 on the other sleepers, only if they had been dissociated from this rail and the rail did not bear on them when it was ridden over. It is possible that these sleepers were disengaged on their left by removing the fastenings and the running-on end of rail L2 was somewhat raised by placing the inner fish plate of joint L1-L2 after removal, underneath the rail. [The hit mark on the right side on the rail table at the running-on end of L1 could be the result of the rail end having been slightly raised]. The profile of the indentation across the fishing plane of the inner fish plate appeared to fit in with the edge of the outer flange of L2 at the running-on end and may have been the outcome of the rail flange on the outside bearing on the fish plate when the rail section flexed to the left under the rear wheels of the locomotive. It is likely that this fish plate was dragged along with the rail in the chain of events set up, resulting in its being found disposed under the rear end of L2. The diagonal abrasion and the dent on the fishing plane of this fish plate were probably sustained in this process. The sleepers No. 2 and 3 were dragged to the right, apparently by rail R2, with which there was no disengagement. This rail was found disaligned to the right after the accident.

(i) During the course of the Inquiry, a suggestion was made by one of the witnesses that the fish plates and bolts & nuts had been planted there by some one, "because if these had been opened out prior to the accident, the engine should have derailed first as also two leading coaches on that spot. Also the coaches would not have capsized and would have derailed on one side". In regard to the premises contained in the suggestion, it has to be mentioned that in an accident of this type, occurring for whatever reason, it is difficult to assert with any definiteness as to how exactly the locomotive and each of the coaches behaved, or to postulate with authority as to how they should have

behaved. The forces that are brought into play in a derailment are so diverse (and to some extent inestimable), that all that can be done is to evaluate the most likely sequence of events based broadly on the post-accident observations. The possible circumstances in which the locomotive surmounted the first point of discontinuity and negotiated rail L2 have been narrated in para 42(d). As regards coaches, the leading 3 coaches derailed in all probability in the region of discontinuity, with the rail L2 getting disaligned as a result of the disturbance built up by the passage of the locomotive and the leading axle of the 1st coach [para 43(c)]. Then followed the bunching up of coaches in rear and their interaction led to the general course of derailment/capsizing, with the derailed coaches coming to rest in 'concertina' fashion on either side of the track—a feature by no means unusual. I have not been able to find anything material in the pattern of the accident which would militate against the conclusion that rail L2 was deliberately dis-articulated prior to the arrival of the train and in view of the various unmistakable observations detailed in the Report, I have not considered it necessary to deal further with this suggested hypothesis.

(j) In a demonstration arranged in the afternoon of 28th October on the track at Km. 69/9-10, it was seen that 2 gangmen equipped with a keying hammer and a single ended spanner could take out the keys from all the sleepers under a full length track rail, unfasten the fish plates at the rear end of the rail and remove the 2 bolts at the fore-end, in a matter of only 2 minutes 30 seconds. On 22-10-70, there was an interval of about 39 minutes after the passage of No. B 108-A Down Goods train at about 02.33 hours, till the arrival of 232 Down Express—more than ample for the miscreants to unfish rail joint L1-L2, remove the fish bolts at the fore-end of rail L2 and disengage the rail from most, if not all the sleepers, by taking out the keys.

It is possible that the intention of the offenders was to dislocate the rail altogether and for some reason or the other, the operations involved could be carried out only in part.

(k) The crash occurred on straight track ahead of a 236 metre long girder bridge and the visibility under the engine head light was normal. The obstruction on the track was in the nature of an open rail joint with the running-on end of the connecting rail perhaps slightly raised and its running-off end unbolted. In terms of extant Rules, the Driver is to keep a good look out while the train is in motion. In this case even if the Driver had kept his eyes glued on the track, it would have been impossible for him to detect the discontinuity and stop the train in time.

## VIII—CONCLUSIONS

47. **Cause**—On full consideration of the factual, material and circumstantial evidence,

I have reached the conclusion that the Derailment of 232 Down Ahmedabad—Delhi Janata Express at Km. 69/11-6 between Khalilpur and Inchhapuri stations on the Northern Railway at about 03-12 hours on 22nd October, 1970, was the result of unauthorised interference with the track, by persons unknown.

A rail on the left of the track near Km. 69/9 (about 196 metres ahead of the leading abutment of Bridge No. 93) was disjointed by removing the fish plates at the running-on end and the fish bolts at the running-off end, the rail was disengaged from most, if not all the sleepers by removing the fastenings, and the running-on end, perhaps slightly raised.

48. **Responsibility.**—Detection of discontinuity in the track in time being an impossibility, no responsibility lay on the Driver in connection with this accident.

49. **Relief Measures**—Apropos Section II of the Report, the relief measures were satisfactory.

#### IX—REMARKS AND RECOMMENDATIONS

50. Adverting to para 41(a) of the Report—In Derailments where sabotage is suspected, it is highly desirable that the Additional Commissioner of Railway Safety having jurisdiction is enabled to have the 'opportunity to see things exactly in the setting in which they were immediately after the accident' and instructions to this effect exist. In the instant case, when information about the accident was conveyed to me, I was neither advised that tampering with track was suspected, nor was I consulted before the restoration operations were commenced. It is desired that the detailed instructions contained in Deputy Director, Traffic's D.O. letter No. 59 TTV/5/1 dated 28th October 1960 addressed to the Deputy Chief Operating Superintendent, Southern Railway, with copy to others, may be re-emphasized to all concerned.

51. (a). It was noted that the remarks endorsed by the Loco Inspector on 16-10-70 in the Engine Repair Book of Locomotive No. 2811 YP (based at Phulera, Western Railway) had not been seen by any one in the Shed. It is essential that booked repairs are promptly taken note of and attended to without delay.

(b) It was seen from the entries in the Engine Repair Book of 'work done' on 7-10-70 and 12-10-70, that the springs on the radial wheels of locomotive No. 2811 could not be changed, although it was the intention to do so, as new springs were not available. It appears necessary that such items are adequately stocked in Loco Sheds, to ensure a high standard of maintenance.

52. Un-worked Warners below the Outer Signals on the same post have been provided at Khalilpur for both directions. While this provision is in order for Up trains which have to negotiate a turn-out at the restricted speed of 16 Km. p.h. while changing over from single line to double line working, the circumstances leading to the provision of the same for the Down direction where no such contingency is involved, may be examined and necessary action taken.

Yours faithfully,  
(Sd.) (P. M. N. MURTHY),

Additional Commissioner of Railway Safety.

LUCKNOW,

Dated 21st January, 1971.

#### Railway Board have remarked as under on paras 50—52 of the report.

1. **Para. 50 of the Report:**—Extant instructions on the subject are being reiterated to the Railways.

2. **Para. 51(a) of the Report:**—In view of the position explained by the Western Railway and C. R. S.'s remarks thereon, no further action is required.

3. **Para. 51(b) of the Report:**—The position has been explained by the General Manager in this regard to C.R.S.

4. **Para. 52 of the Report:**—It is noted that C.R.S. has accepted the position made out by the Railway.