



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

RAILWAY ACCIDENT INVESTIGATION
REPORT

ON

Fire in Coach No. 1328 of 209 Up Rewari-Marwar Passenger train
between Borawar and Besroli stations on Phulera-Degana
Section, Jodhpur Division, Northern Railway

On

17-11-1981

SUMMARY

1. Date — 17-11-1981.
2. Time — 14.00 hrs.
3. Railway — Northern.
4. Gauge — Metre Gauge (1000 mm).
5. Location — Km 77/11-12 between Borawar and Besroli stations on Jodhpur Division.
6. Nature of accident — Fire
7. Train involved — 209 Up Rewari-Marwar Passenger train.
8. Speed — 50 kmph (approx).
9. System of operation — Absolute Block System.
10. Number of tracks — One
11. Gradient — 1 in 250 (falling).
12. Alignment — Straight.
13. Weather — Clear.
14. Visibility — Normal.
15. Casualties — Killed -3
Injured -12 (grievous 7)
(simple 5).
16. Cause — Ignition of some inflammable material carried unauthorisedly by someone travelling in the compartment.
17. Persons held responsible — Not known
18. Summary of recommendations — (i) Blanking off of alarm chain should be resorted to only as an extreme step after an actual review based on supporting data.
(ii) In case the alarm chain is blanked off, the railways should ensure issue of Caution order to Guards/ Drivers of passenger trains and recording the same on the brake power certificate.
(iii) Adequate time to be made available for primary/ secondary maintenance of rakes.
(iv) Provision of fire extinguishers in working order on all passenger trains to be ensured.
(v) Safety marshalling instructions for passenger trains to be strictly complied with.

(i)

(ii)

ABBREVIATIONS USED IN THIS REPORT

C.T.S.S.	: Chief Traffic Safety Superintendent.
C.M.E.	: Chief Mechanical Engineer.
D.R.M.	: Divisional Railway Manager.
S.M.	: Station Master.
A.S.M.	: Assistant Station Master.
C.T.X.R.	: Chief Train Examiner.
H.T.X.R.	: Head Train Examiner.
T.X.R.	: Train Examiner.
S.E.F.O.	: Senior Electrical Foreman.
S.H.O.	: Station House Officer.
G.R.P.	: Govt. Railway Police.
C.B.I.	: Central Bureau of Investigation.

GOVERNMENT OF INDIA

MINISTRY OF TOURISM & CIVIL AVIATION

(Commission of Rly Safety)

From

The Commissioner of Rly. Safety,
Northern Circle,
Charbagh Railway Station,
Lucknow-226001.

To

The Secretary to the Govt. of India,
Ministry of Tourism & Civil Aviation,
Sardar Patel Bhavan,
Parliament Street,
New Delhi.

Through : *The Chief Commissioner of Railway Safety, Lucknow.*

Sir,

In accordance with Rule 4 of the Statutory Investigation into Railway Accident Rules, 1973 (issued vide Ministry of Tourism & Civil Aviation Notification No. RS. 13-T(8)/71 dated 19-4-1973), I have the honour to submit herewith my report on the fire in a coach of 209 Up Rewari-Marwar passenger train between Borawar and Besroli stations on Phulera-Degana section of Jodhpur Division on Northern Railway at about 14.00 hrs. on 17-11-1981.

1.2. Inspection and Inquiry.

1.2.1. The site of accident as also the damaged coach and engine No. YP-2387 were inspected by me on 24-11-1981 at Besroli station in the company of Shri V. K. Sinha, Chief Traffic Safety Superintendent, Shri M. K. Kumar, Divisional Railway Manager, Jodhpur, Shri I. Gandhi, Dy. C.M.E. (Diesel), Jodhpur and other officers of the Northern Railway.

1.2.2. A Press Notification was issued inviting any member of the public having knowledge relating to the accident to give evidence at the inquiry or to communicate with me by post.

1.2.3. The Civil authorities were advised by the railway administration about the inquiry which was held by me at Jodhpur on 23rd and 25th to 27th November 1981.

1.2.4. The following officers were present at the inquiry :—

- (i) Shri V.K. Sinha, Chief Traffic Safety Superintendent, Northern Railway, New Delhi (from 24th to 26th November 1981).
- (ii) Shri M. K. Kumar, Divisional Railway Manager, Northern Railway, Jodhpur (all days)
- (iii) Shri I. Gandhi, Dy. Chief Mechanical Engineer (Diesel), Northern Railway, Jodhpur (all days).

Other Railway officers were available and called whenever necessary.

1.2.5. The evidence of 35 witnesses was recorded including 10 public witnesses. The S.H.O., GRP, Merta Road and S.H.O. (Civil), Gachhipura also gave evidence at the inquiry.

1.2.6. In this report :—

- (i) The expressions 'right/left', 'front/rear', and 'leading/trailing' wherever used are with reference to the direction of travel of 209 Up Rewari-Marwar Passenger train.
- (ii) The expression 209 Up wherever used stands for 209 Up Rewari-Marwar Passenger train which left Rewari for Marwar on the night of 16-11-1981 and was travelling between Phulera and Degana on 17-11-1981 when the accident occurred.

1.3. The Accident

1.3.1. At about 14.00 hrs. on 17-11-1981 while 209 Up, which had earlier left Borawar station at 13.43 hrs. after a scheduled halt, was on the run between Borawar and Besroli stations, fire broke out in coach no. GSY 1328 which was 7th from the engine. Efforts were made by the passengers to stop the train by pulling the alarm chain but in vain. When approaching Besroli station, the driver of the train observed the smoke from the coach on fire as also some passengers jumping out from the moving train. He immediately applied the brakes and the train came to a halt with the engine opposite km. 80/15-16.

1.3.2. Before the train came to a stop, about 13 passengers had already jumped out, the first being at km. 77/11-12. The other passengers from the affected coach got out after the train stopped. The weather was clear and sunny at the time of the accident.

1.4. **Casualties.**—As a result of the fire, three persons died (2 were burnt to death in the coach and one died the next day in hospital), seven passengers suffered grievous injuries and five received simple injuries.

1.5. **Passenger occupation.**—It was estimated that the train was running to full capacity (about 500 passengers) and from the evidence tendered before me, it appears that the coach which caught fire was fairly crowded at the time of the occurrence of the fire.

II. RELIEF MEASURES

2.1. **Intimation.**—The first information about the fire was conveyed to the Control office at Jodhpur at 14.05 hrs. by the Assistant Station Master, Besroli on the control phone. Further details were conveyed by the Guard of the train from the site on his portable control phone. The control office then advised all concerned.

2.2. Medical Attention

2.2.1. Some of those injured were given first aid by the Guard at site. The injured passengers including those who had jumped out, were then taken by a bus to Besroli station by the SHO/GRP, who was travelling by the same train. The injured were given first aid at Besroli station by a local village 'Vaidya' and a compounder. The unaffected portion of the train then left Besroli at 15.35 hrs. with all the injured passengers. At the next station, Gachhipura, the injured were attended to by the railway and civil doctors. The train then moved to Degana where all the injured were transferred to the Medical Van which came from Merta Road and reached there at 16.40 hrs. The Medical Van reached Jodhpur at 19.45 hrs.

2.2.2. Thirteen passengers (8 with grievous injuries and 5 with simple injuries) were admitted in the Railway Hospital at Jodhpur. Four of them were subsequently transferred to the Mahatma Gandhi Hospital, Jodhpur where one of them expired on 18-11-1981.

2.2.3. I visited the Railway Hospital and Mahatma Gandhi Hospital at Jodhpur on 23-11-1981 where four passengers (2 in each hospital) were still undergoing treatment. They were receiving due care and attention. The other injured passengers had already been discharged by them.

2.2.4. Ex-gratia payment was made by the railway to the next of kin of those who died as also to the 13 passengers who received injuries.

2.3. **Restoration.**—There was no interruption to traffic except some detention to 209 Up which was subsequently terminated at Jodhpur. A fresh rake was arranged to run 209 Up from Jodhpur to Marwar.

III. COMPOSITION OF TRAIN AND DAMAGE

3.1. 209 Up passenger train was hauled by a Steam Locomotive no. YP 2387 and had a load of 10 coaches when the fire occurred.

3.1.1. **Engine No. YP 2387** was commissioned in 1958. It had its last POH on 11-10-1980 after which it had run 48930 kilometres. It had its last trip inspection on 13-11-1981 at Merta Road. Schedule 'D' maintenance was, however, overdue since 23-10-1981. It was provided with vacuum brakes on the engine and the tender and had a speedometer in working order. The spark arrester of the locomotive had been modified as per RDSO Sketch no. L. 1757 (issued vide Northern Railway's letter No. 494/M/41 (MLI) Pt. VI dated 2-3-1973) during its POH to arrest sparks greater than 6.4 mm.

3.1.2. The composition of the train in marshalling order behind the locomotive was as under : —

Position behind engine	Coach no.	Type of coach	Year built	Return date
1.	1327 GS	IRS Steel Body	1961	7/72
2.	646 FS	-do-	1964	11/82
3.	1226 GSY	-do-	1958	4/83
4.	1593 CH	Wooden	1951	7/82
5.	2430 VP	IRS Steel Body	1958	4/82
6.	1554 SPPC	Wooden	1971	4/83
7.	1328 GSY	IRS Steel Body	1960	9/82
8.	1321 GS	-do-	1961	5/82
9.	1888 SLR	-do-	1961	2/83
10.	1485 GS	-do-	1969	1/83

Note.—None of the coaches were anti-telescopic.

3.1.3. The length and weight of the train excluding the engine, were 189 metres and 320 tonnes respectively. The train was equipped with vacuum brakes with all cylinders active. As per vacuum brake certificate issued from Phulera, the train had 46 cm vacuum in the engine and 40 cm vacuum in the brakevan.

3.2. Damage

3.2.1. The interior of 'B' and 'C' compartments of the coach were extensively damaged by the fire. The 'A' and 'D' compartments had only slight damage. The outer surface of the coach in the area of 'B' and 'C' compartments was also disfigured due to the fire.

3.2.2. The dynamo of the coach along with its belt was intact. The blocking rectifier was also intact. The battery boxes were completely burnt but the fuses of the dynamo as also the battery were intact. The electrical fittings and wiring in 'B' and 'C' compartments of the coach were completely burnt. The modified junction box, which was badly burnt, had dropped to the floor near the lavatory of the 'A' compartment. Some of the electrical fittings in the 'A' compartment were also damaged. In the 'D' compartments only one lavatory light fitting and its wiring had been damaged.

3.2.3. The total cost of damage to railway property was roughly assessed as Rs. 1.20 lacs. The damage occurred only in the coach which caught fire. No damage was caused to any other railway installations.

IV. LOCAL FEATURES

4.1. The fire in coach no. 1328 GSY of 209 Up started while the train was on the run between Borawar and Besroli stations. As the fire spread, the passengers tried to stop the train by pulling the alarm chain but it had no effect. Some of the passengers then jumped out of the running train before it came to a stop with its engine at km. 80/15-16 when the driver observed the smoke caused by the fire. The first passenger had jumped out at km. 77/11-12.

4.2. The railway alignment at the site of accident runs from east to west. The alignment is straight and has a falling gradient of 1 in 250. The height of bank varies from 1.0 to 1.5 meters.

4.3. The permanent way consists of 60 RBS rails, laid on steel trough sleepers with M+4 sleeper density and a ballast cushion of about 250 mm.

4.4. The kilometrages of the stations referred to in the report as reckoned from Phulera are as under:—

	Km.
Makrana Jn.	64.81
Borawar	70.97
Site of accident	77/11-12
Besroli	82.00
Gachhipura	93.86
Degana Jn.	108.75
Merta Road	152.97

4.5. The maximum permissible speed of trains in the section is 75 kmph. 209 Up is booked at a speed of 58 kmph between Makrana and Merta Road.

4.6. The section is a controlled section with the control office as also the Divisional Headquarters office being located at Jodhpur.

4.7. Borawar and Besroli stations are provided with signalling to standard-I and have ball type token instrument for granting line clear. The trains in the section are worked under the Absolute Block System.

V. SUMMARY OF EVIDENCE

5.1. **Shri Hanuman Singh, Guard of 209 Up** (Witness no. 1) worked the train from Phulera onwards. After leaving Phulera, the alarm chain was pulled near the down outer signal of Phulera. While approaching the Warning Board for the Up Outer signal of Besroli station, he noticed two passengers jumping out of the running train. He immediately applied the vacuum brakes and the train came to a stop. On coming out he saw one coach on fire. He took out his fire-extinguisher and tried to operate it but it did not work. He had only one fire extinguisher with him. Efforts were also made by the passenger, to put out the fire by throwing sand. He advised the Control about the fire on the portable control phone. The affected coach with the front portion of the train was detached and sent to Besroli to put out the fire near the water tank at the station. He protected the rear of the train and rendered first-aid to the injured passengers. The injured passengers were taken by the SHO/GRP to Besroli station by a bus where they were given first-aid by a local 'Vaidya' and a Compounder. As instructed by the Control, the train with the injured passengers then left Besroli. At Gachhipura, the injured were attended to by Civil and Railway Doctors and at Degana they were shifted to the Medical Van which had arrived there from Merta Road. The medical van with the injured passengers then left for Jodhpur.

Answering questions he stated that:—

5.1.1. The normal practice is to supply only one fire extinguisher. He had occasionally mentioned about it to the train examining staff and the Safety Inspector. The date of charging was not indicated on the fire extinguisher supplied to him.

5.1.2. No Caution Order was given to him regarding the alarm chain apparatus being blanked off on his train nor was he aware of the same. He did not observe any drop in vacuum prior to this applying the vacuum brake.

5.2. **Shri Khiyan, Driver of 209 Up** (witness no. 3) worked the train from Phulera onwards. The vacuum in his engine before leaving Phulera was 46 cm. for which he gave acknowledgement to the T.X.R. when his train was passing near the Down Outer Signal of Phulera, someone pulled the alarm chain and the train had stopped. While approaching the Warning board for the Up Outer Signal of Besroli station, he found the reception signals taken off for his train to be received on the main line. On looking back, he noticed smoke coming out from some coach and also observed some passengers jumping/leaning out of the coaches. He immediately applied the brakes and stopped the train. The portion of the train in rear of the coach on fire was detached and the remaining load was taken ahead to Besroli station where the coach on fire was detached near the ground water tank to put out the fire. He then took the engine back into the section to bring the remaining portion of the train. The train left Besroli at 15.35 hours and after a scheduled halt at Gachhipura, it reached Degana at 16.17 hrs. The injured passengers were shifted into the Medical van which arrived there from Merta Road. The Medical van with the injured passengers then left Degana at 18.10 hrs.

Answering questions he stated that :—

5.2.1. He had not been given any Caution Order regarding the alarm chain apparatus being blanked off nor he had any knowledge about it. There was not drop in vacuum prior to his observing the smoke from the coach on fire.

5.2.2. No sparks were coming out from his engine. His brakes were in good working order. The weather was clear with a light breeze when the incident occurred.

5.3. **S Shri Munna Lal and Thakur Ram, Fireman of 209 Up** (witness Nos. 4 & 5) generally corroborated what the Driver had stated.

5.4. **Shri Bhani Sahai, C.T.X.R. Rewari**, stated that the rake of 209 Up is based for primary maintenance at Rewari and for secondary maintenance at Bandikui and Marwar Jn. The primary maintenance for the affected train was carried out during the night shift (00.30 to 08.30 hrs.) on 16-11-81. After primary maintenance the rake worked as 161 Up/162 Down from Rewari to Bandikui and back. After arrival of 162 Down at 21-40 hours, the same rake left Rewari as 209 Up at 23.10 hours for Marwar Jn. Before leaving Rewari, it was given rolling in examination by the staff of the evening shift.

Answering questions, he stated that : -

5.4.1. As per orders, the alarm chain apparatus on 161 Up/162 Dn was to be blanked off upto 15-11-1981. Orders for further extending the period for blanking the alarm chain had not been received. For 209 Up/210 Down, the alarm chain was required to be operative.

5.4.2. For blanking the alarm chain, normally soft wood plug is used for plugging the train pipe. In case there is any gap, it is sealed by applying some stiff grease.

5.5. **Shri Ram Lal Dang, H.T.X.R. Rewari** (Witness No. 7) worked in the shift from 00.30 to 08.30 hours on 16-11-1981. The rake of the affected train was placed on the washing line at 04.30 hours against the scheduled placement time of 04.00 hours and was given primary maintenance upto 06.00 hours.

Answering questions he stated that :--

5.5.1. The normal time required for primary maintenance for a train with composition upto 12 coaches is 3 hours. (From the Placement Register, it was observed that the time available for primary maintenance during the period from 4-11-1981 to 16-11-1981 varied from 1-1½ hours except on one occasion when two hours were available. The rake composition also varied from 5 to 9 coaches).

5.5.2. When the rake is attended to on the pit-lines, the alarm chain apparatus is made operative. The blanking off, if required, is carried out by the T.X.R. train passing.

5.6. **Shri Dilbag Singh, T.X.R., Rewari** (Witness No. 8) was on train passing duty on 16-11-1981 in the evening shift (16.30 hrs. to 00.30 hrs.). After arrival of 162 Down from Bandikui at 21.40 hours on platform No. 2, he made the rolling in examination of the train before it left Rewari as 209 Up.

Answering questions, he stated that : -

5.6.1. When 162 Down arrived Rewari on 16-11-1981 he observed that the clappet valves were properly seated on the train pipe. Normally, if the alarm chain is blanked off, wooden plugs project out of the train pipe. Since he was aware that plugging of the alarm chain on 161 UP/162 Down was permitted only upto 15-11-1981, he presumed that it was operative. He did not therefore, take any action to pull out any plugs from the train pipe nor did he fix any plugs to blank off the alarm chain.

5.7. **Shri Repudaman, T.X.R., Phulera** (witness no. 10) examined the rake of 209 Up on arrival at Phulera at 07.05 hrs., on 17-11-1981. He stated that the fire-extinguisher for 209 Up is provided at the originating station viz. Rewari and the equipment coming with the train continues as such for the journey ahead.

5.8. **Shri H. N. Sharma, T.X. R., Bandikui** (witness no. 11) stated that according to the instructions received by him June, 1981, the alarm chain on 161 Up/162 Down was to be blanked off upto 15-11-1981. As orders for further extending the period had not been received no blanking off was done after 15-11-1981. The rake of the train involved in the accident was given secondary maintenance at Bandikui on 16-11-1981.

Answering questions, he stated that :--

5.8.1. The fire extinguisher which arrived from Rewari with 161 Up went back as such with 162 Down. The fire extinguisher which went with 162 Down on 16-11-1981 was duly charged. In case it is not charged i.e. if it is more than 3 months old, a telegram is issued to C.T.X.R., Rewari for charging it, or if a fire extinguisher is available with him in stock, he arranges to provide the same.

5.8.2. Two fire extinguishers are provided in each SLR. He had 6 fire extinguishers for the 3 trains which are required to be provided with fire extinguishers from Bandikui. In case there is any shortage, arrangements are made to take the same from the Fire Inspector.

5.9. **Shri M.L. Bajaj, S.E.F.O. (Train Lighting) Rewari** (witness no. 12) attended to the rake when it was on the washing line from 04.25 to 05.45 hours on 16-11-1981. The same evening after the rake arrived Rewari from Bandikui as 162 Down, and before it left for Marwar as 209 Up, it was attended to on platform no. 2. Before leaving, 2 holders were repaired and 3 cut out fuses were replaced in coach no. NR 1328 which had caught fire. During primary maintenance, checks are made regarding any loose or naked wires, earth fault or short-circuit, fuses of correct size etc. Before 209 Up left Rewari on 16-11-1981, the lights on the train were in working order and there was no electrical fault.

5.10. **Shri Chain Ram, Sr. Booking Clerk, Makrana** (witness no. 14) was on duty when some party travelling by 209 Up on 16-11-1981 had booked the generator weighing about 75 kg to be carried as luggage in the compartment. Before booking the generator for Gachhipura, he had checked up the fuel tank and found it empty. It was booked in the name of Shri Mohan Lal. He stated that there was no specific restriction on booking the generator as accompanied luggage.

5.11. **Smt. Gyarsi** (Public witness no. 19) boarded the train from Makrana to go to Besroli. The compartment in which she was travelling was full and some passengers were standing. A marriage party with lot of luggage also boarded the same compartment from Makrana. As far as she could recollect, the fire started from same bag placed on the floor of the compartment. She saw flames coming out from a can but she could not say whether the can was of plastic or some other material. She was sure that the fire did not originate from the body of the coach. There was also a loud explosive sound but she could not remember whether it was before or after the fire started. As there was no alarm chain in the compartment, one boy climbed to the roof of the coach to go to the Driver to stop the train. To escape the fire, she jumped out of the running train and become unconscious.

5.12. **Shri Budha Ram** (Public witness no. 20) had boarded the train from Makrana and was travelling in the compartment from where the fire started. A marriage party had also boarded the compartment from Makrana, but he could not say what materials they were carrying. The fire started from some can carried in a cloth bag which was placed on the floor of the compartment. The fire did not start from the roof or the sides of the compartment, nor did he hear any explosive sound. Some passengers made an attempt to throw out the bag from which the fire started with the help of a stick, but this further aggravated the fire. The lights and fans in the compartment were off at that time. To stop the train, the alarm chain was pulled but it gave way. He, therefore, jumped out the running train. He could not recollect if any one in the compartment was smoking.

5.13. **Shri Sohan Lal Parik** (Public witness no. 21) was travelling by 209 Up from Makrana to Gachhipura in the compartment where the fire started. Some time after leaving Borawar he heard a loud explosive sound which caused considerable commotion in the compartment. He first thought that some passenger had fallen out but when he looked out of the window, he saw the flames of the compartment of fire. He also heard explosive sound of the continuous bursting of crackers and the whole compartment was filled with gas. All passengers rushed towards the door and some of them jumped out of the running train. He also made his way to the door of the compartment. After about 7-8 minutes, the train came to a stop near the Outer signal of Besroli station. He then detrained and went to Besroli station where he received first aid.

Answering questions, he stated that:—

5.13.1. He was sitting in the 'B' compartment of the coach which had caught fire. A marriage party had also boarded the compartment from Makrana for Gachhipura. The party was carrying with them 2 portable generators, one of which was painted green and the other red. One generator was placed in the passage near the door and the other was placed between the middle row of seats. The party was also carrying a plastic can of about 20 litres capacity and another can of about 5 litre capacity. He had seen these cans being handed over to the party through the window of the compartment at Makrana.

5.13.2. The jerry-can lid was loose and had been fitted with a piece of cloth. He could not say as to what was being carried in the cans nor could he say if anyone was smoking. He only heard the loud report followed by flames of fire leaping from the location where the cans were placed in the compartment. The fire also led to loud explosions from a basket kept near the cans. The whole compartment was immediately filled with smoke. The partition wall between the 'B' and 'C' compartments also got burnt.

5.13.3. Some passengers pulled the alarm chain to stop the train but it did not have any effect. The chain also gave way. As far as he could recollect, some railway employee jumped over from his coach to the adjacent coach and tried to disconnect the hose pipe.

5.14. **Shri Shivji** (Public witness No. 22) was travelling by the train to go to Degana. At Makrana station, some party carrying tube lights and fittings, a generator set, some bags and other luggage boarded the same compartment. While the train was on the run between Borawar and Besroli stations, one bag of khaki colour caught fire which led to commotion in the compartment. Efforts were made to stop the train by pulling the alarm chain, but since the train did not stop, he as well as some of the other members of his party jumped out of the running train. Some of his other relatives had also jumped out. He jumped out of the window since the passage of the door was blocked and it was difficult to see the way due to the smoke. He was then put in the train and taken to Besroli and then to Degana where he received first aid. He was then taken to Jodhpur and admitted in the hospital.

Answering questions, he stated that:—

5.14.1 He could not say what was being carried in the bags. Because of the panic caused by the fire, he could not recollect if there was any explosive sound. As it was day time, the lights (as also the fans) were off.

5.14.2. The bag from which the fire started was handed over to some one in the compartment through the window at Makrana. The owner of the bag was also in the same compartment but he did not know what happened to him.

5.15. **Shri Manmohan** (Public witness No. 25) was travelling by the train from Makrana to Jodhpur. While running between Borawar and Besroli, his compartment was filled with smoke. On looking out from the door, he observed the adjoining compartment on fire and heard loud bursting reports. He pulled the alarm chain but it gave way. Some passengers from the compartment on fire jumped out from the running train. On seeing them, the Guard applied the brakes and also displayed a red flag, after which the train stopped.

5.16. **Shri Kaloo Singh** (Public witness No. 26) was travelling in the 'D' compartment of the affected coach from Makrana to Degana. Some time after leaving Borawar, he noticed smoke coming into his compartment. On looking out, he noticed the flames of the compartment on fire. He alerted the other passengers and pulled the alarm chain but it had no effect whereupon some passengers started jumping out of the running train. He managed to climb up to the roof of his coach and ran towards the engine along with some other passengers to get the train stopped. Due to the alarm raised by him and the other passengers, the attention of the driver was attracted and the train stopped. He got down and returned back towards the coach which had caught fire but by that time, it had been disconnected from the rear portion. A bus standing near a level crossing was brought and the injured were taken to Besroli station from where they were taken ahead by the same train.

5.17. **Shri I.A. Khan, Divisional Electrical Engineer, Jodhpur** (Witness No. 31) inspected the affected coach after reaching Besroli at about 21-05 hrs. on 17-11-1981. The coach had stencil marks on both sides indicating that it was modified for fire prevention during its POH in Jodhpur Workshop in March 1981. He indicated the various modifications made for this purpose. On examining the affected coach, he observed that the dynamo along with the belt as also the blocking rectifier were intact. The fuses of the dynamo and batteries were of correct size and were intact.

5.18. **Shri Ugam Singh, Workshop Electrical Engineer, Jodhpur** (Witness No. 33) stated that coach No. 1328 GSY had been sent out of Jodhpur Workshop after POH on 27-3-1981 after it had been inspected by the neutral TXR. During POH the entire wiring of the coach was stripped and new wiring was done. During the POH, all electrical equipment viz. dynamo, batteries, switch gear etc. are stripped and repaired/overhauled before being re-fitted.

5.19. **Shri Baboo Lal** (Public witness No. 35) was travelling by the train to Jodhpur. At Makrana, some passengers boarded his compartment with tube lights and a generator which they had placed in the passage between the two doors near the lavatory. Sometime after the train left Borawar, he heard some persons shouting for something to be thrown out. He saw one person holding a large bag which was on fire. He could not say what was being carried in the bag nor did he hear any explosive sound before or after the fire started. The passengers could not succeed in throwing out the burning bag. The lights and fans in the compartment were off. Efforts to stop the train by pulling the alarm chain did not succeed. In the scramble, he got pushed out of the train. He was taken to Besroli where he received first aid and later taken to Jodhpur where he was admitted in the Railway Hospital from where he was discharged on 19-11-1981.

VI. TESTS AND OBSERVATIONS

6.1. Coach No. 1328 GSY, which had caught fire, was inspected by me at Besroli station where it had been stabled after being detached. According to the evidence of passengers travelling by the train, the fire had started from the 'B' compartment of the coach. As a result of the fire, the fixtures in the 'B' & 'C' compartments of the coach were completely gutted. The fans, roof lights and lavatory fittings in these compartments were completely burnt. The electrical wiring, distribution fuse boards and switches had also been completely burnt. The modified junction box had also been badly burnt and had dropped to the floor near the lavatory of 'A' compartment.

6.1.1. The 'A' compartment was only partially affected mainly due to intense heat. The wooden fixtures in this compartment were not affected but the light and fan fittings as also the electric wiring, distribution fuse board and switches were badly burnt.

6.1.2. The 'D' compartment (trailing end of the coach) suffered only minor damage to the lavatory light and its wiring.

6.2. The electric wiring of the unaffected portion of the coach was in good condition. The dynamo along with its belt was intact. The blocking rectifier was also intact. All the four battery boxes had been completely burnt and damaged but the fuses of the dynamo as also the batteries were intact.

6.3. The coach had been modified for fire prevention during its POH in Jodhpur Workshop in March, 1981. The modifications carried out for fire prevention were provision of fuses in the negative circuit, relocation of fuses, use of cartridge fuses, insulation of the light and fan points from the body of the coach, relocation of fan resistance, use of fire resistance points over wooden base, fixing of wire with cleats, troughing of underframe wiring etc.

6.4. The ill-fated coach had arrived Jodhpur on 14-11-1981 by 209 Up when 12 cells were found defective and were replaced. The coach was attached to 210 Down on 15-11-1981 from Jodhpur when its dynamo, belt, batteries and lights were in satisfactory condition.

6.5. As a result of the fire, molten metal from some of the window frames had fallen over the ballast. A small tree near the location where the coach came to a stop after the train stopped showed signs of burning.

6.6. **Shri Sohan Lal Parik**, Public witness (No. 21) who had given evidence at the inquiry, indicated at site the location where the generator had been placed in the compartment as also the location from where the fire originated. Considerable damage had been caused to the floor, seats and the body of the coach near this location.

6.7. The burnt debris from the location from where the fire was alleged to have started was searched and some remnants of a cloth bag were recovered. Some sample of the burnt debris was sent for examination to the Central Forensic Science Laboratory, Central Bureau of Investigation, Government of India, New Delhi. A true copy of the report received from them vide their letter No. CFSL-81/C-4929 dated 15-2-1982 is placed at Annexure I. According to the report, the physical and chemical examination of the sample indicated the presence of some inflammable material, as also partly burnt cloth, metallic pieces, charcoal etc.

6.8. The fire extinguisher available with the Guard of 209 Up did not indicate the date on which it was charged. The name of the base station had also not been indicated. As stated in his evidence by the Guard, he was supplied only one fire extinguisher which also did not work when operated at the time of the fire.

VII. DISCUSSION

7.1. **Time of accident.**—The Guard and the Assistant Guard of 209 Up have stated that the train came to a stop between Borawar and Besroli station at 14.02 hours whereas according to the Driver, the train stopped at 14.00 hours. There is no other direct evidence regarding the time of the accident. The time of the accident as about 14.00 hours is accepted.

7.2. **Speed of the train.**—The booked speed of the train in the section is 58 kmph. The running time between Borawar and Besroli stations according to the working time table is 15 minutes. Since the train had a scheduled halt at Borawar and was also due to halt at Besroli station, and it had already taken about 17 minutes after its departure from Borawar before it came to a stop in the block section, the speed of the train may have been about 50 kmph at the time of the occurrence of the fire.

7.3 **Cause of the accident.**—The fire could have been as a result of the following causes:—

- (i) Electrical short-circuit;
- (ii) Some inflammable material carried unauthorisedly in the compartment.

7.3.1. **Possibility of Electrical short-circuit** :—All the public witnesses who were travelling in the affected compartment have stated that the fire started from some bag carried by someone in the compartment. The bag had been placed on the floor of the compartment. The public witnesses have stated that the lights and fans were off. None of the witnesses have stated that the fire started from the top corner of the coach where the electric wiring was located. The electric wiring in the unaffected portion of the coach was in good condition. The dynamo and battery fuses were also intact even though the batteries had been badly damaged by the fire. The possibility of the fire having been caused by electric short-circuit is, therefore, ruled out.

7.3.2. **Possibility of inflammable material carried unauthorisedly by someone in the compartment**:—All the public witnesses travelling in the 'B' compartment stated that the fire started from some cloth bag carried by someone. One witness (No. 35) has also stated that efforts were made to throw out the burning bag but it had not been possible to do so. According to the witnesses, some marriage party had boarded the compartment from Mkrana and they were carrying some tube lights, generator and other articles with them. One witness (No. 21) has also stated that the party was handed over two plastic cans through the window at Makrana. Witness Nos. 21, 25 and 19 have also stated that they heard loud explosive sounds like that of crackers after the bag caught fire.

7.3.2.1. The report received from the Central Forensic Science Laboratory, CBI, New Delhi placed at Annexure I indicates the presence of some inflammable material, burnt cloth, metallic pieces and charcoal etc. in the sample of the debris from the affected compartment. The presence of metallic pieces, charcoal etc. in the sample could be from fire-crackers which are used in marriage celebrations and these might have caused the explosive sounds heard by some witnesses. Since a generator was being carried by the party, it is quite likely that they may have also been carrying some petrol or kerosene oil in some plastic can although any remnants of the can could not be recovered. Possibly it got completely burnt in the fire.

7.3.2.2. There is, therefore, overwhelming evidence of the fire having started from some inflammable material carried in a cloth bag by some passenger travelling in the compartment which possibly got ignited by the sparks from a bidi or cigarette.

7.3.3. **Was the alarm chain apparatus operative ?**

7.3.3.1. The train examining staff of Rewari as also Bandikui have stated that since no further orders had been received from the Western Railway for blanking off the alarm chain apparatus on 161 Up/162 Down Rewari-Bandikui passenger beyond 15-11-1981, the same was operative when the rake worked as 161 Up/162 Down on 16-11-1981. When the affected coach was inspected by me, it was observed that the train pipe had been plugged with a wooden plug and stiff grease. The evidence of the public witnesses also confirms that the train did not stop when the alarm chain was pulled from the coach which was on fire. Apparently, the alarm chain apparatus on the affected coach continued to remain inoperative on the date of the occurrence of the fire.

VIII. CONCLUSIONS

8.1. **Cause of the accident**:—On careful consideration of the factual, material and circumstantial evidence, I have come to the conclusion that the fire in a coach of 209 Up Rewari-Marwar Passenger train between Borawar and Besroli stations on Jodhpur Division on 17-11-1981 was caused by the ignition of some inflammable material carried unauthorisedly in a bag by some passenger which possibly got ignited by sparks from a lighted bidi or cigarette.

8.2. **Responsibility**

8.2.1. It has not been possible to identify the person/persons responsible for unauthorisedly carrying the inflammable material which led to the outbreak of fire in the compartment.

8.2.2. The alarm chain apparatus on the affected coach of 209 Up/210 Down Rewari-Marwar passenger was not operative as indicated in para 7.3.3.1 above. It appears that this was not checked properly at the time of primary maintenance of the rake on 16-11-1981 for which Shri Ram Lal Dang, HTXR, Rewari in the concerned shift is blame-worthy.

8.3. **Relief arrangements**:—I am satisfied that the relief arrangements and medical attention given to the injured passengers were satisfactory.

IX. REMARKS AND RECOMMENDATIONS

9.1. According to Railway Board's Wireless message No. 81/TG/11/1004/15/Policy dated 16-11-1981 blanking off of alarm chain apparatus is to be resorted to only on sections where the incidence of unauthorised alarm chain pulling is heavy and other preventive measures fail to control the menace and for period considered absolutely necessary. The position is required to be reviewed periodically so as to restore the alarm chain as soon as the position improves. It is, however, observed that orders for blanking off the alarm chain are being issued by the Railway Board from time to time without a break which indicates that no review is being made to ascertain if the position has improved. The effect of any other preventive measures to control the menace cannot be ascertained if the alarm chain apparatus continues to remain blanked off continuously for a prolonged period. Blanking off of the alarm chain apparatus on any train/section should be resorted to only as an extreme step after an actual review based on supporting data as the practice is fraught with risk to the travelling public who are left without any means of communication in an emergency.

9.2. As per Railway Board's letter No. 77/TG/II/1004/9 dated 9-6-1977, a 'Caution Order' is required to be given to the Guards/Drivers working passenger trains where any coach/compartment is blanked off. Further, as per Railway Board's letter No. 73/Safety (A&R)/I/14 dated 1-7-1974, whenever the alarm chain apparatus is blanked off on a passenger train, the fact is also required to be recorded on the Brake Power Certificate. These instructions were issued on the recommendations of the Commission of Railway Safety following some accidents. It came to notice during the inquiry that this practice is not followed on the Western Railway. All Railways may be advised to comply with the aforesaid orders of the Railway Board.

9.3. The rake involved in the accident is based at Rewari for primary maintenance. It was observed from the records that normally only 1—1½ hours are available for primary maintenance against a requirement of 3 hours. Since inadequate time for primary/secondary maintenance is likely to affect the train examination and road-worthiness of the rolling stock, it should be ensured that the required time is made available for maintenance operations.

9.4. As per Railway Board's orders issued vide letter No. 77/M(C)/142/19 dated 23-5-1980, two fire extinguishers are required to be provided in each brake-van of all mail & express trains. According to para 5037 of the Operating Manual of Northern Railway, every Guard in-charge of a passenger train is required to carry two fire extinguishers in the brake-van and the same are required to be tested and recharged every 3 months or immediately after use as per para 5041 of the Operating Manual of Northern Railway. The Guard of the affected train had only one fire extinguisher which also did not work when the need arose. Since the same rake operates 161 Up/162 Down on the Western Railway and 209 Up/210 Down on the Northern Railway, there appears to be some diffusion of responsibility between the train examining staff of Rewari and Bandikui for the provision of fire extinguisher on the train. Clear instructions for the same should be laid down jointly by the two railways to ensure that the required number of fire extinguishers in working order are invariably available on passenger trains.

9.5. None of the coaches on the affected train were anti-telescopic. As per safety marshalling instructions issued by the Railway Board, at least one anti-telescopic or steel bodied coach is required to be marshalled in-side the SLRS at each end of every passenger train. The importance of safety marshalling on all passenger trains has been emphasised time and again by the Commission of Railway Safety. It is essential that the instructions for safety marshalling on passenger carrying trains should be strictly complied with.

Yours faithfully,

(Sd.)

(SURESH CHANDRA)

Commissioner of Rly, Safety,

Northern Circle.

NNEXURE I

True Copy of Test Report of Burnt Material

Office of the Director
Central Forensic Science Laboratory
Central Bureau of Investigation
East Block-VII, R.K. Puram
New Delhi-110022.

Report No.CFSL-82/C-4929
Dated 15-2-1982.

To

The Divisional Railway Manager,
Northern Railway,
Jodhpur.

Your letter No. MG-46AT/1/81 dated 2-12-1981 regarding one sealed parcel in connection with FIR No.—dated—under section—as stated by you, have been despatched on—per messenger and duly received in this office on 3-12-1981.

DESCRIPTION OF THE PARCEL & CONDITION OF SEAL

Received one sealed parcel with seal intact as per official specimen enclosed.
Parcel No. 1—One sealed gunny bag containing partly burnt cloth melted metallic pieces, Charcoal etc. marked Exbt-1.

RESULT OF ANALYSIS/EXAMINATION

Physico-chemical method of analysis shows that exhibit No. 1 contains inflammable material.

sd/-

(K.S. Chhabba)

Senior Scientific Officer (Chemistry)
Central Forensic Science Laboratory
C. B. I. Cum Asstt. Chemical Examiner
to the Govt. of India, New Delhi

Dated 15-2-1982

RAILWAY BOARD'S COMMENTS ON VARIOUS PARAS OF THE REPORT

Para 9.1: The alarm chain apparatus provided for use in an emergency such as assault, fire, sudden illness, etc., in actual practice is being misused considerably by anti-social elements, smugglers, ticketless travellers and miscreants who stop the trains at their convenience, resulting in unpunctual running of trains and causing inconvenience to genuine passengers. On badly victimised sections, where other preventive measures to control this menace fail, the Railways resort to blanking off of the alarm chain apparatus, except in ladies compartments and Postal vans. As explained by the Railway Administration, the position is reviewed periodically and facility is restored as soon as the position improves. As a sequel to the recent review made by the Northern Railway, some new trains were included in the list of blanking off while others were deleted.

As for CCRS's letter of 25-3-82, this does not appear to have been received. However, from the extracts enclosed under the note, it is noticed that the following two issues have been raised, viz.,

- (i) There is inadequate coordination between the Railways and the State Govts. in controlling the menace of alarm chain pulling.
- (ii) The position of implementation of the Commission's suggestion made in 1977 that the RDSO should examine if some suitable device could be provided whereby an indication becomes available to the driver in the case of occurrence of fire.

Regarding (i) above, it may be mentioned that instructions already exist on the Zonal Railways to maintain a close liaison with the State Govts. to combat the activities of anti-social elements. General Managers/Divisional Railway Managers have also instructions to hold meetings with the officials of the State Govts. periodically to evolve some effective strategy to eradicate this evil. Besides Chief Ministers of various States have been addressed from time to time by the Railway Minister soliciting their cooperation in the form of Police assistance to curb this activity effectively.

As for (ii) above, it may be mentioned that the matter has already been examined by the RDSO who have opined that it is not possible to have a device as recommended by the Commission. Necessary reply in this regard has already been sent to the Commission vide this Ministry O.M. No. 79/M(C)/105/1 dated 16-11-79. (copy enclosed)

Para 9.2: Instructions have been reiterated to the Railways, emphasising scrupulous adherence to Board's letters No. 77/TGII/1004/9 dated 9-6-77 and No.73/Safety(A&R)/1/14 dated 1-7-74. A copy of instructions issued is enclosed.

As for non-compliance of the instructions on the Western Railway, the matter has been taken up and that Railway advised to ensure compliance of Board's orders.

Para 9.3: The recommendation has been accepted by the Northern Railway, which is making revision in the rake links in consultation with the Western Railway. Pending this, the Railway has been asked to take action in the light of the comments of CCRS.

Para 9.4: As advised by the Northern Railway, there was a temporary shortage of fire extinguishers on Bikaner Division, as a result of which only one fire extinguisher was supplied. The shortage has since been offset and now two fire extinguishers have been provided on the passenger trains.

The Northern Railway has been asked to suitably discipline the TXR and the Guard who failed to supply and check that the fire extinguisher was in working order.

As for laying down the responsibility between the two railways with regard to supply of fire extinguishers in respect of trains operating on their systems, it may be mentioned that the matter was examined in the past also and it was felt that the contiguous railways should sort out their problems and make arrangements to ensure availability of fire extinguishers. A copy of instructions issued to the Railways in this connection vide letter No. 77/M(C)/142/19 dated 19-1-78, is enclosed.

Para 9.5: The Railway administration has taken action to ensure compliance of the Board's directive regarding safety marshalling of trains. As for the specific lapse in this case, action is being taken by the Railway against the staff for their failure.

PRI, 236

510-1983 (DSKIV)

Price: Inland Rs. 18.00 or Foreign £ 2.10 or \$ 6.48.

PRINTED BY THE MANAGER, GOVERNMENT OF INDIA PRESS, COMBATORE-641 019
AND PUBLISHED BY THE CONTROLLER OF PUBLICATIONS, NEW DELHI-110 001
1984