


**PRELIMINARY INVESTIGATION REPORT INTO
SHOSHOLOZA MEYL LEVEL CROSSING COLLISION AT
GENEVA STATION BETWEEN HENNEMAN AND
KROONSTAD**

OPERATOR	PRASA
PERMIT NUMBER	ASP0002NTS
INVESTIGATION SUBJECT	PRASA Rail level crossing collision at Kroonstad in the Free State
DATE OF OCCURRENCE	04 January 2018
REFERENCE NUMBER	RSR/20180104/002

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CONTENTS

1.	STATEMENT OF INTENT	3
2.	OBJECTIVE	3
3.	SCOPE OF THE INVESTIGATION	3
4.	BACKGROUND TO THE INVESTIGATION	3
5.	SITE INSPECTION	6
6.	PHOTOGRAPHIC EVIDENCE	8
7.	SUMMARY OF PRELIMINARY FINDINGS	13
8.	ISSUES TO BE FURTHER PURSUED	13
9.	CONCLUSIONS	14

1. STATEMENT OF INTENT

This investigation is conducted in accordance with Section 38 of the Railway Safety Regulator Act, Act 16 of 2002 (as amended) with the objective of determining the facts which contributed to the occurrence of Shosholoza Train No. 37012 colliding with the trailer of an articulated truck at a level crossing nearby Geneva station between Henneman and Kroonstad in the Free State Province.

2. OBJECTIVE

The objective of this preliminary investigation is to gather information and understand the facts relating to the occurrence.

3. SCOPE OF THE INVESTIGATION

The scope of the preliminary investigation entailed the following:

- (a) Visit to the occurrence site; and
- (b) Inspection of the occurrence site.

4. BACKGROUND TO THE INVESTIGATION

- 4.1. On 04 January 2018 at about 09h00, Shosholoza Train No. 37012 collided with a trailer of an articulated truck at the level crossing nearby Geneva station in the Free State Province. The point of impact was closest to Kilometre point 21 Mast Pole 14. The weather was clear and sunny.
- 4.2. The truck was hauling two trailers loaded with soya beans and the train collided with the last trailer of the truck.
- 4.3. Shosholoza train 37012 is an eighteen (18) coach long distance passenger train. The train was en-route from Port Elizabeth (PE) to Johannesburg. The train departed PE on the 3rd of January 2018 at about 15h00. When the train left Port Elizabeth, it was carrying 713

passengers, a train driver, a train assistant, fourteen (14) hospitality staff members, one technical staff member and six (6) South African Police Service (SAPS) members.

4.4. From PE to the occurrence scene, there were 13 stations in-between, some passengers alighted at some of these stations. The last stopping station was Henneman Station where the train arrived at 0833 and departed at 08:38 towards Kroonstad.

4.5. As per the train journal the train load was 720 tonnes with 72 axles and the train consist was as follow:

No.	Description	Number
1	Diesel Locomotive 34-3018 (Leased from Sheltam)	3018
2	Car Carrier	21-102
3		36-148
4	Power Car	20-503
5	Sitter	36-302
6	Sitter	36-227
7	Sitter	26-725
8	Sitter	36-010
9	Sitter	36-148
10	Sitter	36-274
11	Sitter	36-203
12	Dining and Kitchen Car	334/104
13	Sleeper	32-128
14	Sleeper	32-131
15	Sleeper	32-146
16	Sleeper	32-092

No.	Description	Number
17	Sleeper	32-004
18	Sleeper	32-091
19	Van	21014

Note: PRASA Rail entered into a lend lease with Sheltam Locomotives for the use of Diesel powered locomotives for Shosholoza Meyl.

- 4.6. At the time of the collision, the train was carrying 599 passengers and it is estimated to have been travelling at a speed of 78km/h.
- 4.7. The collision resulted in 19 fatalities to passengers, 260 injuries to passengers, crew and staff. The injured were taken to various hospitals in the Free State. The truck driver was also injured and taken to hospital.
- 4.8. Both the Train Assistant and the Train Driver sustained injuries.
- 4.9. Buses were organised by PRASA Rail to transport 416 passengers who were not injured.
- 4.10. The accident was reported to both PRASA Rail and Transnet Freight Rail by the Train Manager. PRASA rail escalated the occurrence to the RSR and inspectors were subsequently dispatched to the scene and information gathering continued until the 6th January 2018 focusing on the following
 - Obtaining aerial survey photos of the scene
 - Discussions with members of the South African Police Services (SAPS)
 - Discussions with PRASA Rail executives onsite
 - Site verification of all the road and rail signs
 - Surveillance of the level crossing and immediate surroundings impacting on the line of sight.
 - Assessment of the train journal

- Inspection of the wreckage in order to establish clues for the ignition of the fire which engulfed the coaches

5. SITE INSPECTION

- 5.1 An inspection of the site established that the crossing is on a gravel road and is protected by advanced warning signs and a stop sign. There are whistle boards on the railway line on both sides of the level crossing. RSR can therefore confirm that all the warning signs required for this level crossing are in place. The level of protection is considered by RSR to be in line with requirements.
- 5.2 As indicated in the pictures below, some shrubs are noticeable along the eastern approach to the level crossing (See P3, P5 and P7). However, it was established that the rail line is visible from the stop sign.
- 5.3 The truck driver had been travelling from Senwes Grainlink located approximately 638 meters away from the Geneva level crossing (See P2) after collecting soya beans from the silos to transport to Randfontein.
- 5.4 Employees at the silo confirmed that the truck driver arrived at the silos at around 17h00 on Wednesday, the 3rd of January 2017. He slept at the silos on Wednesday and departed on Thursday, the 4th of January 2017 when his truck ended up in a level crossing collision with the train at Geneva level crossing. It was the truck driver's first time to arrive at these silos.
- 5.5 The railway line in this section is a double electrified line with a section speed of 90km/h. The line is owned and maintained by Transnet Freight Rail (TFR) and PRASA is a train operator on the line.
- 5.6 Trains are controlled by means of a central traffic control (CTC) system in Kroonstad. As part of the data collection, it was confirmed that the Kroonstad CTC reported a power outage at the time of the level crossing collision. The substation supplying power to the railway line and the CTC were affected.

- 5.7 Upon collision, the last trailer of the truck was dragged along the railway line for about 139 meters. The truck was severely damaged (See P8) resulting in the train derailing.
- 5.8 The railway infrastructure was also seriously damaged including the track and catenary wires. The overhead wire snapped and fell on top of the coaches after the occurrence. Arcing were noticeable on the roofs of the burnt coaches.
- 5.9 Numbers of the affected rolling stock are as follows:
- a) 34-308 - Diesel Locomotive
 - b) 21-102
 - c) 36-148
 - d) 20-503
 - e) 36-302
 - f) 36-227
 - g) 26-725
 - h) 36-010
 - i) 36-274
 - j) 36-203
 - k) 104
- 5.10 Five of the aforementioned derailed coaches caught fire and burnt. Arcing marks were noticeable on the roof of some of the carriages. Numbers of the affected rolling stock are as follows:
- l) 21-102
 - m) 20-503
 - n) 36-337
 - o) 26-725
 - p) 36-010
- 5.11 During the site inspection it was confirmed that the fuel tanks of the locomotive and the power van did not rupture. And no excessive diesel spillage was noticeable.
- 5.12 The motor transport carrier contained three (3) vehicles of which one (1) vehicle was utterly destroyed. This vehicle was lying opposite the railway line following its removal during the

initial rescue operation. The remainder of the two vehicles were still in the motor transport carrier and severely damaged.

5.13 Clearing-up operations commenced on 5th January at 14h00. During the clearing-up process the Police allegedly found the remains of four (4) more bodies between wagon 21-102 (Car Transport Carrier) and wagon 20-503 (Power Van).



5.14 On 6th January PRASA Rail confirmed with the RSR that the clearing-up operation has been completed and that a single line working will be operational as from 6am on Sunday, 7th January 2018.

6. PHOTOGRAPHIC EVIDENCE



The photographs which were taken to show the damage to the assets and illustrate the contributing factors to the occurrence are provided in the Table below.

ID	Photograph	Comment
P1		<p>Arial Photo of the accident scene taken on 5 January at 1400</p>

ID	Photograph	Comment
P2		<p>Aerial photo of train standing across level crossing (LX02265), with Geneva station and the silos in the background.</p>
P3		<p>There are shrubs on the left hand side when approaching the level crossing from the silos. The train was approaching the level crossing from the left hand side.</p>

ID	Photograph	Comment
P4		The line of sight at the level crossing
P5		Trees along the level crossing approach

ID	Photograph	Comment
P7		<p>Visibility on the right hand side when standing at the stop sign is obstructed by shrubs and other vegetation</p>
P8		<p>The second trailer of the truck that was dragged along the railway line.</p>

ID	Photograph	Comment
P9		<p>Coaches that derailed, caught fire and burnt</p>
P10		<p>The overhead line on top of the coach that caught fire. The overhead line snapped and fell on top of the coaches after the occurrence.</p>

ID	Photograph	Comment
P11		Severely damaged coach

7. SUMMARY OF PRELIMINARY FINDINGS

- 7.1 The train struck the rear trailer of an articulated truck as it was clearing the level crossing.
- 7.2 The level crossing protection at the site is considered by RSR to be in line with the requirements.
- 7.3 At the time of the occurrence the train was travelling well below the section speed at 78km/h.
- 7.4 The driver of the truck tested negative for alcohol at the police station.
- 7.5 After the train derailed, 5 coaches caught fire and were severely burnt.
- 7.6 There was no noticeable signs of excessive diesel spillage
- 7.7 Arcing marks were noticed on the roofs of the carriages

8. ISSUES TO BE FURTHER PURSUED

- 8.1. Appropriateness of the line of sight for both the truck driver and the train driver.
- 8.2. The train compilation and the correctness of the train consist as per the train journal and the appropriateness of the train load for the route in question.
- 8.3. The cause of fire to the five coaches and the appropriateness of fire mitigation measures on board the train and awareness thereof.

9. CONCLUSIONS

- 9.1 The preliminary investigation was conducted by the RSR investigators who inspected the scene and obtained information about the factors which could have contributed to the cause of the accident.
- 9.2 An independent Board of Inquiry into the circumstances that led to this collision is being established in order to obtain detailed information.