**REPORT No PKBWK/03/2017**

**from investigation of a railway incident of C52 category that took place on 16 May 2017   
at 20:09 at station Podstolice, on station track 2, on km. 262,500,   
of railway line No 3: Warszawa Zachodnia - Kunowice**

an area covered by infrastructure manager PKP Polskie Linie Kolejowe S.A.,  
Zakład Linii Kolejowych in Poznań

The report has been approved by Resolution

of the **S**tate **C**ommission for **I**nvestigation of **R**ailway **A**ccidents

No 04/PKBWK/2017 of 20 December 2017.

## Brief description of the incident, location, time and effects.

Train No 773074 (departing from Poznań Franowo PFB, destination: Konin) of carrier PKP CARGO S.A., pulled by locomotive ET22-1154, when entering plain line No 2, having passed the entry semaphore “Z”, stopped at station track No 2 at station Podstolice, on which there already was train No 773095 (departing from Konin, destination Poznań Franowo PFA) of carrier PKP CARGO S.A., pulled by locomotive SM42-1266, which awaited departure in the opposite direction. Train No 773095 stood at station track No 2 as it was planned that it would be overtaken by PKP Intercity S.A. train No 17007. The entry semaphore “Z” of station Podstolice for train No 773074, despite the occupied station track No 2, displayed constant green light and for this train a permitting signal was displayed at exit semaphore “F”, which permitted the train to pass the station Podstolice without stopping. After stopping, the heads of these two trains were 67 m apart from each other. The engine driver of train No 773074 did not use the Radio-Stop system to stop the train.

## Direct cause and indirect causes of the incident, as discovered during the investigation.

Having analysed the facts connected with the incident of C52 category that happened on 16 May 2017 at 20:09 at station Podstolice, on track No 2, on km 262,500 of railway line 003 Warszawa Zachodnia - Kunowice, the State Commission for Investigation of Railway Accidents’s Team concluded that the reasons for the incident were as follows:

**Direct cause**:

Faulty operation of an element of the circuit responsible for track occupancy control, i.e. receiver MER-111401/1, that consisted in a failure to display that track No 2 was occupied by train No 773095.

**Underlying causes**:

1. The period of use of receiver MER-111401/1 was exceeded by two years, as according to the recommendation included in the analysis of the Railway Research Institute No 4430/10 of 28.09.2011 entitled *Definition of Admissible Levels and Parameters of Distortions for Railway Traffic Control Devices* (*Określenie dopuszczalnych poziomów i parametrów zakłóceń dla urządzeń sterowania ruchem kolejowym*) the receiver should have been used for not longer than 20 years.
2. The signalman of station Podstolice prepared the route and admitted train No 773074 to track No 2, occupied by train No 773095, despite an earlier entry in the Traffic Log that the latter train entered track No 2 and has not left it.

**Indirect causes**:

1. The Podstolice station signalman failed to comply with the provisions of the Podstolice Station Technical Regulations and with 39(2) of Instruction Ir-1 as he did not check whether station track No 2 was free from any obstacles to admission of train No 773074.
2. The signalman failed to properly follow the entry and halt of train No 773095 on the control panel. When following the entry of train No 773095 until it came to a halt on the control panel, the signalman was bound by the provisions of 44(1) of Instruction Ir-1 and the provisions of the Station Technical Regulations – plot No 31. When train No 773095 came to a halt, the occupancy of station track No 2 expired and the track was displayed as free on the control panel. Yet at that time, the signalman did not follow the entry and halt of the train on the control panel; if he did, he would be able to notice that the display of occupancy of station track No 2 was erroneous.
3. The signalman failed to identify the risk of an accident and failed to take actions aimed at preventing it; in particular, he did not stop train No 773074 – the entry in the Traffic Log unambiguously stated that train No 773095 occupied station track No 2.

**Systemic causes**:

1. PKP PLK S.A. failed to take adequate actions aimed at elimination or mitigation of the threats resulting from procedure SMS-PR02, i.e. despite the threats identified by the Railway Research Institute, presented in particular in the analysis by the Railway Research Institute No 4430/10 and in Technical and Traffic Documentation No DTR-94/SOT-2, the infrastructure manager failed to take actions aimed at withdrawal from use of receivers MER-111401/1 or the recommended change in the configuration of their fixture, which would result in elimination or mitigation of the threats.
2. Lack of adequate supervision of maintenance of railway traffic control devices at Podstolice station during technical and diagnostic maintenance, which resulted in a failure to take adequate actions by the infrastructure manager, which consisted in particular in:
   * + - 1. Failure to withdraw receivers MER111401/1 from use due to their age (over 20 years old) and unfavourable characteristics, which was described in the analysis by the Railway Research Institute No 4430/10 of 28.09.2011 entitled *Definition of Admissible Levels and Parameters of Distortions for Railway Traffic Control Devices* (*Określenie dopuszczalnych poziomów i parametrów zakłóceń dla urządzeń sterowania ruchem kolejowym*).
         2. Failure to withdraw receivers MER111401/1 from use due to their inadmissible fixture in the same case as emitters SOT-22, circuit receivers SOT-1 or SOT-21, which resulted from the provisions of the Technical and Traffic Documentation (DTR) No DTR-94/SOT-2 developed by the manufacturer of Adtranz Zwus devices, kept at the traffic control office of Podstolice station (page 37 – see the note).
         3. Technical and Traffic Documentation (DTR) No DTR-94/SOT-2 available   
            at Podstolice station has not been updated and did not include changes No “e”   
            of 04.09.2002 or No “f” of 23.04.2003.
         4. Ineffective inspections of traffic control devices by the manager of the Podstolice station, in particular in the case of devices having use restrictions.

Incident category: **C52**

### 

### **Recommendations of the State Commission for Investigation of Railway Accidents.**

The State Commission for Investigation of Railway Accidents’ Investigation Team recommends the implementation of the following actions:

1. The infrastructure managers will perform an inspection of cased SOT 2 devices for fixture of MER 111401/1 receivers and their manufacturing date.
2. If MER 111401/1 devices manufactured before 1998 are identified, infrastructure managers will immediately replace them with receivers recommended by the manufacturers, notified bodies, and having certificates or type approvals.
3. Until all MER 111401/1 devices are replaced with different receivers, infrastructure managers will exercise special supervision of the devices’ operation and will take actions aimed at mitigating the risk of potentially dangerous events and situations, such as track occupancy signal maintenance.
4. The Investigation Team recommends that PKP Polskie Linie Kolejowe S.A. should increase the number of inspections of railway traffic control devices, in particular as concerns the aspects connected with introduction of effective mechanisms for monitoring and verification of efficiency of execution of the recommendations formulated after inspections of the technical condition and correctness of operation of railway traffic control devices, as stipulated by the provisions of the Safety Management System in the case of devices with use restrictions.
5. Infrastructure managers will update technical and traffic documentation of the traffic control devices.
6. PKP Polskie Linie Kolejowe S.A., Zakład Linii Kolejowych in Poznań will specify the provisions of the Podstolice Station Technical Regulations as concerns the way in which trains are followed by the signalman.
7. PKP Cargo S.A. shall implement:
   1. The recommendation included in the Report of the State Commission for Investigation of Railway Accidents No PKBWK/1/2015 approved by Resolution   
      No 4/PKBWK/2015 of 27 July 2015 which reads as follows: “PKP Cargo S.A. will undertake actions to ensure compliance with the rule of using consumables for speedometers, including recording tapes, which are authorised by producers.”
   2. The Order of the President of the Office of Rail Transport No DBK-550/R-03/KB/12 of 30.05.2012 directed at railway carriers concerning the obligation to install recording devices – digital cameras or video recorders in newly built and already used railway vehicles, in line with recommendation of the State Commission for Investigation of Railway Accidents No PKBWK-076-305/RL/R/11 of 22.11.2011.
8. In the framework of the Safety Management System, infrastructure managers will develop a risk analysis programme for the systems of devices used according to the rules which did not stipulate an obligation to approve these devices by the President of the Office of Rail Transport (including devices MER-111401 and MER-111404), but an internal decision of the infrastructure manager and an opinion of the Railway Research Institute. In the case of a negative decision, they will take adequate actions.
9. In relation to the Safety Management System, PKP Cargo S.A. will supplement the threat register with the following elements:
   1. Irregularities in the operation of rail traffic control devices,
   2. Irregularities in the implementation of the recommendations of the State Commission for Investigation of Railway Accidents.