

Reporting Body

IT  
Ministero delle infrastrutture  
e dei trasporti

ID

IT-1288

Occurrence  
Summary

What	Location		
Date of occurrence	22-11-11	Location name	Open line between PM Feroletto and Marcellinara, line Lamezia Terme C.le - Catanzaro Lido
Local time	18:45	Latitude	38:54:52 North
Event type	Railway vehicle movement events Train derailment	Longitude	16:24:55 East

Description Bridge collapses immediately after the passage of the train and consequent derailment.

Direct Cause descrip Loss of the correct geometry of the track due to structural failure of the artwork and consequent destruction of the railway infrastructure.  
The bridge collapsed due to excessive erosion of the riverbed and destabilizing effect of the currents that have resulted in an undermining of the foundations of the pillars.

## Final Report

Nam	Desc	Type	Size	Last	Orga	Repo
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## Other Attachments

Nam	Desc	Type	Size	Last	Orga	Repo
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#### What

Title Train derailment, 2011-11-22, Open line between PM Feroletto and Marcellinara, line Lamezia Terme C.le - Catanzaro Lido (Italy)

Occurrence type	Railway vehicle movement events Train derailment	Occurrence Class	Accident
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Date of occurrence	22-11-11	Local time	18:45
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Events Railway vehicle movement events - Train derailment

#### Descriptions

Language	English	Translation provider	Information providers own translation
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Description Bridge collapses immediately after the passage of the train and consequent derailment.

Location name Open line between PM Feroletto and Marcellinara, line Lamezia Terme C.le - Catanzaro Lido

Railway System type	Railway	Country	Italy
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Location type	Line	Border Country	
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Line type	Single track	Line number	
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Allowed line speed	80 km/h	Km number	20+266
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Latitude	38:54:52 North	Longitude	16:24:55 East
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Location description Open line between PM Feroletto and Marcellinara, line Lamezia Terme C.le - Catanzaro Lido

Additional location in

Location type details	Bridges / Viaducts	Fixed installations	
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#### Occurrence details

##### Railway vehicles

Movement type	Regional passenger train	Train number	3793
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RU	Italy Trenitalia SpA	Wagons overturned	Yes
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Train speed at mom	79 km/h	Passengers onboard	Yes
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Vehicle description Single automotive diesel vehicle, type FS Aln 668

Other objects involved in the occurrence

Other objects

Parties involved

IM Involved	Italy - RFI SpA	RU Italy - Trenitalia SpA
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	Fatalities	Serious injuries	Minor injuries
Passengers	0	0	10
Staff	0	0	2
Level crossing users	0	0	0
Unauthorised persons	0	0	0
Others	0	0	0
Total	0	0	12

Material consequences

Material Damage	Infrastructure Rolling stock	Estimated total mate	150 000 - 2 000 000 €
Damage description	Bridge completely destroyed (see pictures) Damages to the vehicle to be defined (seized)		

Images

Name	Description	Type	Size	Last modified	Organization	Repository
CIMG1697.JPG		image/jpeg	2157176	12/11/2012 4:03:38 PM	Softeco	
CIMG1629.JPG		image/jpeg	3781267	12/11/2012 4:04:12 PM	Softeco	
IMGP5859.JPG		image/jpeg	2898408	12/11/2012 4:04:56 PM	Softeco	

Causation

Causes

Language	English	Translation provider	Information providers own translation
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Direct Cause description

Loss of the correct geometry of the track due to structural failure of the artwork and consequent destruction of the railway infrastructure.

The bridge collapsed due to excessive erosion of the riverbed and destabilizing effect of the currents that have resulted in an undermining of the foundations of the pillars.

Underlying and root causes description

1. An intervention performed on urgent basis in February 2011 was not resolutive of the problems found during the inspection to the viaduct carried out on 28.01.2011 by the geologist under the Engineering DTP of Reggio Calabria;
2. the visit of the bridge carried out on 07.02.2011 by the company in charge of the monitoring of bridges of the DTP of Reggio Calabria with the DOMUS system did not detect defects on Foundations and the reins. This visit also was returned to the system only on 15.12.2011, after the collapse of the structure;
3. despite the intervention of February 2011 was effectuated urgently and therefore it was not decisive in a definitive way, the bridge was no longer part of the singular points of the line indicated by the Disposition no. 60 of 2 September 2005 of RFI, to be subjected to extraordinary visit at the occurrence of extraordinary events;
4. the periodic inspection of 07.06.2011, while clearly indicating that the bridge should require intervention to restraint reins, has resulted in the "absence of defects" (code 0010), being instead a logic consequence of the visit the need to classify it as "accessory parts degraded" (code 0020);
5. it is possible that the evolution of the state of degradation upstream of the confluence of the torrent Canello the river Amato has been facilitated an intervention of extraction of inert material in the riverbed, not authorized. In this regard, there is no advice of the checks carried out to provide the periodic visits by the Instruction 44 C of RFI, relative to morphological examination and changes that occur over time by the river, the planimetric surveys and fund checks under the piers and their evolution over the time;
6. the missed removing of the debris from the riverbed and the failure to restore the defense works have facilitated hydraulic erosion and damage to the defense works of the railway bridge.

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#### Causation classification

##### Railway vehicle movement events - Train derailment

1 - Plain line track (Loss of the correct geometry of the track due to structural failure of the artwork and consequent destruction of the railway infrastructure. The bridge collapsed due to excessive erosion of the riverbed and destabilizing effect of the currents that have resulted in an undermining of the foundations of the pillars.)

- 1 - Maintenance of infrastructure
  - 1 - Management Commitment and safety culture
- 2 - Procedures
- 3 - Supervision
  - 1 - Monitoring
- 4 - Third party

#### Recommendations

##### Recommendation

##### Issuing information

##### Recommendation title

Recommendation ID	REC-000229	End implementer	IM
Status	Sent to addressee	Addressee	NSA
Issue date	21-11-12		

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#### Recommendation texts

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Language	English	Translation provider	Information providers own translation
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#### Recommendations text

It is recommended to the National Safety Authority (ANSF) to verify, as part of their audit procedures, that the Infrastructure Manager has provided, within its Safety Management System, punctual verification activities against their own local structures, so that the specific provisions of the current regulations governing the conduct of safety services and control of railway artifacts, are met in a fair and consistent way. Under these regulations the Infrastructure Manager also must give proper priority to the aspect of prevention, in order to intervene early with retraining activities, when the stability checks of artefacts denounce hazard. It is suggested that this task will be performed by the Infrastructure Manager through the use of qualified professionals.

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#### Implementation information

Implementation status	Implementation date
Unknown	

#### NSA Response

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#### NIB Comment

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#### Recommendation

##### Issuing information

##### Recommendation title

Recommendation ID	REC-000230	End implementer	IM
Status	Sent to addressee	Addressee	NSA
Issue date	21-11-12		

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#### Recommendation texts

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Language	English	Translation provider	Information providers own translation
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#### Recommendations text

It is recommended to the National Safety Authority (ANSF) that, in the work already undertaken with the Directive 1/dir/2010 and concerning the task entrusted to the Infrastructure Manager to conduct a thorough hydro geologic risk analysis (landslides, rockfalls, erosion, subsidence of the infrastructure, etc.) tho which various portions of the infrastructure are exposed in different parts of the Italian territory, and as the ANSF gave, in response to specific other previous Recommendation, specific infomation to this NIB with note 08824/12 of 15.11.2012, point E, invite the Infrastructure Manager to assess the feasibility in technical and economic terms, the implementation of a plan of installation of alarm sensors for natural hazards (position alarms reagents to soil deftrmations, type vibrations, etc.) on those points, from the aforementioned risk analysis, will prove worthy of specific and continuous monitoring.

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#### Implementation information

Implementation status	Implementation date
Unknown	

NSA Response

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NIB Comment

#### Causation links

Railway vehicle movement events - Train derailment

Subsystem - Infrastructure - Plain line track (Loss of the correct geometry of the track due to structural failure of the artwork and consequent destruction of the railway infrastructure. The bridge collapsed due to excessive erosion of the riverbed and destabilizing effect of the currents that have resulted in an undermining of the foundations of the pillars.)

Causal factors - Maintenance - Maintenance of infrastructure

Systemic factors - Management Commitment and safety culture

Causal factors - Procedures

Causal factors - Supervision

Systemic factors - Monitoring

Subsystem - Third party

#### Investigation details

Legal Basis	National rules imposed by implementing of the Safety Directive 2004/49/EC - in light of Article 19, §1 of SD
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Other reason descrip

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ID	IT-1288	Reporting Body	Ministero delle infrastrutture e dei trasporti
National investigatio		Investigator in charge	SDEMARCO
Occurrence creation	29-11-11 09:57:59		
Decision to investigate	22-11-11		
Declaration date	29-11-11		
Date of IM/RU notific			

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Report Type	Final report	Workflow Status	Validated
Report Version	2	Investigation Status	Closed

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Other Attachments	Name	Descriptio	Type	Size	Last	Organizati	Repositor
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ID

IT-1288

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Final Report

Name	Descriptio	Type	Size	Last	Organizati	Repositor
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