8D Report #204175

Project :	Australia - Sydney Metro NWRL Maintenance RS + SIG	**Awareness date :**	22/04/2021
Platform :	Rolling Stock Maintenance [RSM]	**Opening date :**	30/04/2021
Customer :	STATE GOVERNMENT OF NEW SOUTH WALES	**Update date :**	06/10/2021
Supplier :	FAIVELEY Brakes	**Closing date :**	//
		Step :	4/8

Title :	SMNW - Faiveley Reducing Valve Potentially causing Parking Brake Failure

D1	**Description**
	Created by GARDNER Prue on 2021-04-30
What, Where, How detected	Faiveley (France) issued a letter to Alstom (St Quen) indicating that there is an issue with their high flow reducing valve potentially no fulfilling its reversibility function properly on the following Projects: METROS HANOI, DUBAI, RIYADH, SYDNEY, GRAND PARIS EXPRESS This issue was discovered by Faiveley during their investigations into different configurations of the pneumatic systems.
Why is it a problem	The issue might occur when the pressure of the reducing valve is purged upstream, and the downstream pressure may remain at its initial value instead of being purged also. Therefore, the parking brake may keep its pressure during the purge of the main pipe, preventing the main application to occur. If this phenomenon happens on more than one car when the train is turned-off for a long time, the train parking brake could no longer apply automatically to substitute the emergency brake.
How Many	This issue has not occurred on our fleet at this stage however there is potential as advised by our supplier, Faiveley.
Objective to be reached	Determine the long term solution for our braking system
Impacted Product (PBS)	1. Trainset/Vehicles | 1.R.A. Bogie Brake | 1.R. Brake
FBS	

D2	Stakeholders		
Team leader	CHENG Sy-khieng	**Safety leader**	ROLAND Raoul
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Region Site Solving	France	**Region Projet**	Asia Pacific (APAC)
Reporting Unit in charge solving the issue	HQ ALSTOM Transport SA FR	**Reporting Unit in charge of integration**	HQ ALSTOM Transport S

D3	Problem characterization		
Provisional cost > 100K		**OTP reference**	
Kx classification	K1 Safety	**Current score**	2
Severity	Critical	**Frequency**	

D4	Containment
Start Date (D4-KPI)	SYD_APRIL 2021: Trainsets in the workshop will be chocked as per standard site procedures. Trainsets in the stabling yards (at SMTF and in the MTS network) will not be chocked - they will only be allowed to be turned off for 2 hours maximum at any time. If the trainsets are required to be turned off for a longer duration, then the parking brake needs to be manually applied. It will then be released automatically when the train wakes up. Communication to the DTC's regarding the containment action has occurred and will be communicated to the customer.
Target start Date	2021-04-29

Start Date (D4-KPI)	2021-04-29
End of deployment	2021-05-20
Progress / result / next steps for deployment	*Update by CHENG Sy-khieng on 2021-05-26T00:00:00* Status on 26/05/2021 : safety status had been done by alstom on project identified as critical. New Project REM (montreal metro) had been identified as safety risk by faiveley. Alstom safety status must be done Status on 05/05/21 : Faiveley shall identify and proposed containement per stopping mode (parking or voltage shutdown in revenue service etc....) in order to ensure all safety criteria will be covered. Faiveley higliights also that temeprature of environnement and pressure have a strong influence of functionnality of reducing valve During testing mode in MP14, faiveley catch SYD_APRIL 2021: Faiveley indicated to chock trainsets that are turned off. This is not practical for SMNW where trainsets are out in the yard and remotely shunted. Trainsets in the workshop will be chocked as per standard site procedures. Trainsets in the stabling yards (at SMTF and in the MTS network) will not be chocked - they will only be allowed to be turned off for 2 hours maximum at any time. The 2 hour duration has been tested on a sample of trainsets and there has been no measured leak from the service brake cylinder that would activate the parking brake. This test will continue and an additional test will be conducted over a 24 hour period to determine the size of leaks over an extended time.

List of actions

No	Actions (what?)	Resp. action (who?)	Due date (when?)	Date of completion
1200344	SYD_Communicate to the DTC's the containment action of 2 hours maximum sleep and manual park brake to be applied if longer time is required.	BELET Simon	2021-04-30	2021-05-17
1200345	SYD_Communicate the containment action to the Customer	HUBERT Nicolas	2021-04-30	2021-05-17
1200362	Determine and notify the affected Projects. Include as an impacted Project on this 8D.	CHENG Sy-khieng	2021-04-30	2021-05-20
1200365	SYD_Conduct a risk assessment for this issue in respect to the SMNW Project	BELET Simon	2021-05-14	2021-05-17
1200427	SYD_Develop an instruction specifically to manually isolate the parking brake	PATEL Sandip	2021-05-31	2021-06-09

D5	Root causes

Progress / result / next steps for deployment	*Update by GARDNER Prue on 2021-08-24* Status on 26/05/2021 : Faiveley is starting testing activity to identify potential rootcause with MP14 and Hanoi project (base on smart metro platform). End of testing and results are expecting for end of June 2021 APRIL 2020: AT St Ouen is communicating with FT France to investigate the fault and determine the root cause. JUNE 2021: Root cause has been identified by FT as the seal in the valve not being able to withstand the over pressure produced as a result of climatic conditions which allows output pressure to vent while input pressure is also venting. Increased temperatures affect the reversibility function of the valve by generating over pressure on the supply pressure which delays or prevents the reversibility of the pressure switch. AUGUST 2021: Root cause of non-detection will be discussed with FT and actions will be devised to capitalise on lessons learnt.
Root causes Occurence	
Root causes Non Detection	

List of actions to deploy the corrective solutions

No	Actions (what?)	Resp. action (who?)	Due date (when?)	Date of completion
1200361	Determine the root cause of the incorrect operation of the reducing valve	CHENG Sy-khieng	2021-06-30	2021-07-04
1214429	SYD_Conduct further extended (24hr) tests to determine the likelihood of leaks	BELET Simon	2021-06-30	2021-09-14
1238509	Discuss the root cause of non-detection with FT to devise actions for D7.	CHENG Sy-khieng	2021-09-30	0000-00-00

D6	Solution
What does the solution consist of?	JUNE 2021: No further progress AUGUST 2021: 2 solutions are available and FT will recommend which Project will receive which solution. This information should be provided mid-September. SEPTEMBER 2021: Solution 2 - additional o-ring, and replacement of lip seal with an o-ring - has been recommended for the Sydney Project and all other Projects where the valve is regarded as a part of the Safety system.
Mod reference	

Target start Date	2021-10-31
Start Date (D6-KPI)	
% done	0% on

List of actions to deploy corrective solutions

No	Actions (what?)	Resp. action (who?)	Due date (when?)	Date of completion
1234588	FT to conduct validation testing in the lab	CHENG Sy-khieng	2021-07-31	2021-07-31
1234589	Redesigned valve to be delivered by FT to affected Project	CHENG Sy-khieng	2021-09-30	0000-00-00
1234590	FT to provide a retrofit plan for valve replacement	CHENG Sy-khieng	2021-08-31	0000-00-00

D7	Rex
List of recommendations	*Update by on*
Plateform concerned by Rex	
Metiers concerned by Rex	
Impacted projects have been notified ?	

List of actions to engrave the lessons learn

No	Actions (what?)	Resp. action (who?)	Due date (when?)	Date of completion