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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 1 of 11 Revision: 03 Date: 24/02/2025

Prepared by: Remi Brugeille Checked by: Nicolas Houillon Approved by: David John Monney

Test Code	BTV30825				
System	«Discipline»				
Design Package	«Design Package»				
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]				
Station/Location	«ProjectAreaZone»				
Zone Zone	«Controll ino»				

Document Verification

Job Title Document Title Document Ref		Metro Tunnel Project - Tunnel and Stations PPP Package					
		FUNCTIONAL	FUNCTIONAL TEST REPORT – Train Dynamic Testing – T&C LEVEL 3 - TVS - PSD Train Misalignment TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325				
		TAS-CYP-SDI					
Revision	Date	Filename	TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325-Rev-03				
		Description	Issue for review				
02	13/12/2024		Prepared by	Checked by	Approved by		
		Name	Remi Brugeille	Nicolas Houillon	David-John Monney		
		Description	Issue for Use				
03	31/01/2025		Prepared by	Checked by	Approved by		
		Name	Remi Brugeille	Nicolas Houillon	David-John Monney		

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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325 Sheet: 2 of 11

Revision: 03 Date: 24/02/2025 Prepared by: Remi Brugeille Checked by: Nicolas Houillon Approved by: David John Monney







T&C LEVEL 3 - TVS - Train Fire at Station - with train mis-aligned to PSDs - AEN

Test Code	BTV30825
System	«Discipline»
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

ITEM	INSPECTION ACTIVITY	CYP Verification		Comments (If 'No', record defect or omission)
1.0	PRELIMINARY			
1.1	Confirm train configuration, Test scenario, test setup as per the T&C procedure.	Yes □	No □	< <text box="">></text>
2.0	TVS Increasing Test when PSDs opening by Automatic Function in case of Train Stop This section of the FTR can be performed even if the "reduced speed" has not been determined yet. This sect TVCS. "Reduced speed" value can be determined and implemented in the TVCS at a later stage without imp	ion validates the l	ogic between the F	
2.1	Confirm train configuration as per Appendix 2 / step 1.	Yes □	No □	< <text box="">></text>
2.2	Set route in AM as per Appendix 2 / step 4.	Yes □	No □	< <text box="">></text>
2.3	Trigger fire alarm from inside the train by using an aerosol while the train is on route to the next station, as per Appendix 2 / step 2.	Yes □	No □	< <text box="">></text>
2.4	On the TVCS, confirm fire detection from inside the train.	Yes □	No □	< <text box="">></text>
2.5	On the CMS, confirm fire detection from inside the train.	Yes □	No □	< <text box="">></text>
2.6	On the TVCS, confirm that "Prep mode" is active with the OTE running, only at the station ahead.	Yes □	No □	< <text box="">></text>
2.7	Platform crew to inhibit all PSDs before the Train arrives (in coordination with the PICOT).	Yes □	No □	< <text box="">></text>
2.8	Train to arrive in AM and berth as per Appendix 2 / step 3.	Yes □	No □	< <text box="">></text>
2.9	On the TVCS, confirm Train on fire at station mode Tunnel Ventilation Fan TFN exhaust are running at "Auto reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>
2.10	On the CMS, confirm Train on fire at station mode exhaust are running at "reduced speed".	Yes □	No □	< <text box="">></text>
2.11	Platform crew to disinhibit "N-1" PSDs (in coordination with PICOT).	Yes □	No □	< <text box="">></text>
2.12	On the TVCS, confirm Train on fire at station mode Tunnel Ventilation Fan TFN exhaust remain at "Auto - reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>
2.13	On the CMS, confirm Train on fire at station mode exhaust remain at "Auto - reduced speed".	Yes □	No □	< <text box="">></text>
2.14	Platform crew to disinhibit 1 more ("N" in total) PSD (in coordination with PICOT). Check that "N" PSDs are open.	Yes □	No □	< <text box="">></text>
2.15	On the TVCS, confirm Tunnel Vent Fans TFN exhaust ramp up to "Auto - full speed" as per Table 2 .	Yes □	No □	< <text box="">></text>
2.16	On the CMS, confirm Train on fire at station mode exhaust are running at "Auto - full speed".	Yes □	No □	< <text box="">></text>
2.17	Operator initiated reduce speed test On the CMS, the operator to press the button on the CMS CMS tester to initiate an operator response to change the Train on fire at station mode from "full speed" to "reduced speed".	Yes □	No □	< <text box="">></text>
2.18	On the TVCS, confirm Tunnel Ventilation Fan TFN exhaust speed decreases to "reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>
2.19	On the CMS, confirm Train on fire at station mode exhaust are running at "reduced speed".	Yes □	No □	< <text box="">></text>
2.20	Operator initiated full speed test On the CMS, the operator to press the button on the CMS CMS tester to initiate and operator response to increase Train on fire at station mode exhaust to "full speed".	Yes □	No □	< <text box="">></text>

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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 3 of 11 Revision: 03 Date: 24/02/2025

		train mis-aligned to PSDs - AEN	Approved by: David John Monney
Test Code	BTV30825		•
System	«Discipline»		
Design Package	«Design Package»		
Test Lot No	CYP-HCMT-AEN-L3-B1	V-1- PART5- [TVS PERFORMANCE-AEN]	
Station/Location	«ProjectAreaZone»		
Zone	«ControlLine»		
	<u> </u>		

ITEM	INSPECTION ACTIVITY	CYP Verification Comment (If 'No', record or omission					
2.21	On the TVCS, confirm Tunnel Ventilation Fan TFN ramp up to "full speed" as per Table 2 .	Yes □	No □	< <text box="">></text>			
2.22	On the CMS, confirm Train on fire at station mode are running at "full speed".	Yes □	No □	< <text box="">></text>			
2.23	Clear Train fire alarm from the driver's cab.	Yes □	No □	< <text box="">></text>			
2.24	On the CMS, manually set to "no fire / auto" mode.	Yes □	No □	< <text box="">></text>			
2.25	Reset TVS, TVCS to normal operation.	Yes □	No □	< <text box="">></text>			
2.26	Close all PSDs from BoH DCP and disinhibit all PSDs. Check that PSDs are back to normal operation.	Yes □	No □	< <text box="">></text>			
3.0	PSD, PED and EDD Opening Test in case of Train Stopping Position Misalignment at a This section of the FTR may be performed at a later stage, without impacting the results of other section		Mode Eastbou	nd			
3.1	Confirm that train is positioned at Eastbound platform mis-aligned to PSD doors with tester on board.	Yes □	No □	< <text box="">></text>			
3.2	Confirm that all the train windows are completely closed.	Yes □	No □	< <text box="">></text>			
3.3	Via the TVCS, start the OTE and OPE (Design flow rates).	Yes □	No □	< <text box="">></text>			
3.4	Via the TVCS, start the TVS exhaust at "reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>			
3.5	Confirm that OTE, OPE, TVS exhaust are activated & ECS shuts down.	Yes □	No □	< <text box="">></text>			
3.6	Measure door opening force on PED as per Appendix 1 . Report value on Table 1 . Close the PED before next step.	Yes □	No □	≤ 220 N			
3.7	Measure door opening force on EED number 34 or 35 as per Appendix 1 . Report value on Table 1 . Close the EED before next step.	Yes □	No □	≤ 220 N			
3.8	Measure door opening force on PSD as per Appendix 1 . Report value on Table 1 . Close the PSD before next step.	Yes □	No □	≤ 220 N			
3.9	Via the TVCS, increase or decrease the TVS speed by 5% steps. Wait 1 minute to allow the pressure stabilization in the Tunnel. Repeat steps from ITEM 3.6 to meet the door opening force criteria. Report selected speed and measured values on the Table 2.	Yes □	No □	≤ 220 N			
3.10	Measure door opening force on the driver train door as per Appendix 1 . Report value on Table 2 .	Yes □	No □	<< For information only – No requirement >>			
3.11	Return ventilation system back in normal operation.	Yes □	No □	< <text box="">></text>			
4.0	4.0 TVS Increasing Test when PSDs opening by Automatic Function in case of Train Stopping at station in Fire Mode Eastbound. This section of the FTR can be performed even if the "reduced speed" has not been determined yet. This section validates the logic between the PSDs, CMS, HCMT and TVCS. "Reduced speed" value can be determined and implemented in the TVCS at a later stage without impacting the results of this section.						
4.1	Confirm train configuration as per Appendix 3 / step 1.	Yes □	No □	< <text box="">></text>			
4.2	Set route in AM as per Appendix 3 / step 4.	Yes □	No □	< <text box="">></text>			
4.3	Trigger fire alarm from inside the train by using an aerosol while the train is on route to the next station, as per Appendix 3 / step 2 .	Yes □	No □	< <text box="">></text>			
4.4	On the TVCS, confirm fire detection from inside the train.	Yes □	No □	< <text box="">></text>			

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FUNCTIONAL TEST REPORT

Train Dynamic Testing –

T&C LEVEL 3 - TVS - Train Fire at Station - with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 4 of 11 Revision: 03 Date: 24/02/2025

		train mis-aligned to PSDs - AEN	Approved by: David John Monney
Test Code	BTV30825		
System	<mark>«Discipline»</mark>		
Design Package	«Design Package»		
Test Lot No	CYP-HCMT-AEN-	L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]	
Station/Location	«ProjectAreaZone	N	
Zone	«ControlLine»		

ITEM	INSPECTION ACTIVITY	CYP Verification		(If 'No', record defect or omission)		
4.5	On the CMS, confirm fire detection from inside the train.	Yes □	No □	< <text box="">></text>		
4.6	On the TVCS, confirm that "Prep mode" is active with the OTE running, only at the station ahead.	Yes □	No □	< <text box="">></text>		
4.7	Platform crew to inhibit all PSDs before the Train arrives (in coordination with the PICOT).	Yes □	No □	< <text box="">></text>		
4.8	Train to arrive in AM and berth as per Appendix 3 / step 3.	Yes □	No □	< <text box="">></text>		
4.9	On the TVCS, confirm Tunnel Vent Fans TFN exhaust are running at "Auto reduced speed" as per Table 2. After 40 seconds – PSD Data fault alarm is raised on TVCS	Yes □	No □	< <text box="">></text>		
4.10	On the CMS, confirm Tunnel Vent Fans TFN exhaust are running at "Auto reduced speed".	Yes □	No □	< <text box="">></text>		
4.11	Platform crew to disinhibit "N-1" PSDs (in coordination with PICOT).	Yes □	No □	< <text box="">></text>		
4.12	On the TVCS, confirm Tunnel Vent Fans TFN exhaust remain at "reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>		
4.13	On the CMS, confirm Tunnel Vent Fans TFN exhaust remain at "reduced speed".	Yes □	No □	< <text box="">></text>		
4.14	Platform crew to disinhibit 1 more ("N" in total) PSD (in coordination with PICOT). Check that "N" PSDs are open.	Yes □	No □	< <text box="">></text>		
4.15	On the TVCS, confirm Tunnel Vent Fans TFN exhaust ramp up to "Auto - full speed" as per Table 2 .	Yes □	No □	< <text box="">></text>		
4.16	On the CMS, confirm Tunnel Vent Fans TFN exhaust are running at "Auto - full speed".	Yes □	No □	< <text box="">></text>		
4.17	Operator initiated reduced speed test On the CMS, CMS tester to decrease the Train on fire at station mode exhaust from "full speed" to "reduced speed".	Yes □	No □	< <text box="">></text>		
4.18	On the TVCS, confirm Tunnel Vent Fans TFN exhaust speed decreases to "reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>		
4.19	On the CMS, confirm Tunnel Vent Fans TFN exhaust are running at "reduced speed".	Yes □	No □	< <text box="">></text>		
4.20	Operator initiated full speed test On the CMS, CMS tester to increase the Train on fire at station mode exhaust to "full speed".	Yes □	No □	< <text box="">></text>		
4.21	On the TVCS, confirm Tunnel Vent Fans TFN exhaust ramp up to "full speed" as per Table 2 .	Yes □	No □	< <text box="">></text>		
4.22	On the CMS, confirm Tunnel Vent Fans TFN exhaust are running at "full speed".	Yes □	No □	< <text box="">></text>		
4.23	Clear Train fire alarm from the driver's cab.	Yes □	No □	< <text box="">></text>		
4.24	On the CMS, manually set to "no fire / auto" mode.	Yes □	No □	< <text box="">></text>		
4.25	Reset TVS, TVCS to normal operation.	Yes □	No □	< <text box="">></text>		
4.26	Close all PSDs from BoH DCP and disinhibit all PSDs. Check that PSDs are back to normal operation.	Yes □	No □	< <text box="">></text>		
5.0						
5.01	Confirm all the Train doors & PSDs are closed and Train berthed at the station.	Yes □	No □	< <text box="">></text>		



FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS - Train Fire at Station - with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 5 of 11 Revision: 03 Date: 24/02/2025

Test Code	BTV30825
System	«Discipline»
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

ITEM	INSPECTION ACTIVITY	CYP Verification		Comments (If 'No', record defect or omission)
5.02	On the TVCS, simulate PSD Door Open signal for N doors.	Yes □	No □	< <text box="">></text>
5.03	Trigger fire alarm from inside the train by using an aerosol while the train.	Yes □	No □	< <text box="">></text>
5.04	On the TVCS, confirm PSD Data Fault alarm has occurred - confirm Tunnel Vent Fans TFN exhaust remain at "Auto reduced speed" as per Table 2 .	Yes □	No □	< <text box="">></text>
5.05	Clear Train fire alarm from the driver's cab.	Yes □	No □	< <text box="">></text>
5.06	On the CMS, manually set to "no fire / auto" mode.	Yes □	No □	< <text box="">></text>
5.07	Reset TVS, TVCS to normal operation.	Yes □	No □	< <text box="">></text>

6.0	TEST EQUIPMENT				
6.1	< <text box="">></text>	Yes □	No □	Certificate #	< <text box="">></text>
6.2	< <text box="">></text>	Yes □	No □	Certificate #	< <text box="">></text>
6.3	< <text box="">></text>	Yes □	No □	Certificate #	< <text box="">></text>
6.4	< <text box="">></text>	Yes □	No □	Certificate #	< <text box="">></text>
6.5	< <text box="">></text>	Yes □	No □	Certificate #	< <text box="">></text>



FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 6 of 11 Revision: 03 Date: 24/02/2025

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Test Code	BTV30825		
System	«Discipline»		
Design Package	«Design Package:	² 2	
Test Lot No	CYP-HCMT-AEN-	-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]	
Station/Location	«ProjectAreaZone	e <mark>»</mark>	
Zone	«ControlLine»		
	·	_	<u> </u>

7.0	COMPLETION			
7.1	Ensure Functional Test Report has been issued to Stakeholder for Independent Certification.	Yes □	No □	< <text box="">></text>

CYP Validation					
Measured/Tested By:	CYP D&C – < <insert name="">>: Nominated Authority Level 1 (min)</insert>	Signature:	«Digital Signature»	Date:	«Date of Signature»
Confirmed By:	CYP D&C – < <insert name="">>: Nominated Authority Level 2 (min)</insert>	Signature:	«Digital Signature»	Date:	«Date of Signature»
Reviewed By:	CYP D&C – < <insert name="">>:: Nominated Authority Level 3 (min)</insert>	Signature:	«Digital Signature»	Date:	«Date of Signature»

Independent Verifier/Witness			
Full Name	Company:	Signature	Date:
«Insert Name»	«Insert Company»	«Digital Signature»	«Date of Signature»
< <text box="">></text>	< <text box="">></text>	< <text box="">></text>	< <text box="">></text>
< <text box="">></text>	< <text box="">></text>	< <text box="">></text>	< <text box="">></text>

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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 7 of 11 Revision: 03 Date: 24/02/2025

Test Code	BTV30825
System	«Discipline»
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

Table 1: Pressure measurement for information - TVS Speed via TVCS

For information - Complete relevant rows only				
	Measured Value (N)			
TVS Speed	EED Widest: EED 34 or EED 35	PED	PSD	
50%				
55%				
60%				
65%				
70%				
75%				
80%				
85%				
90%				
95%				
100%				

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325 **FUNCTIONAL TEST REPORT** Sheet: 8 of 11 METROTUNNEL Design & Construction Revision: 03 Date: 24/02/2025 Train Dynamic Testing -Prepared by: Remi Brugeille T&C LEVEL 3 - TVS - Train Fire at Station - with Checked by: Nicolas Houillon train mis-aligned to PSDs - AEN Approved by: David John Monney Test Code BTV30825 System Design Package CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN] **Test Lot No** Station/Location Zone

Table 2: Pressure measurement validation – Determination of TVS "Reduced Speed"

For validation					
"Reduced speed" percentage value	Measured Value (N)		Pass criteria	Validation	
	EED Widest: EED 34 or EED 35		≤ 220 N *	Yes □ No □	
TVS "Reduced Speed": %	PED		≤ 220 N *	Yes □ No □	
	PSD		≤ 220 N *	Yes □ No □	
	Driver Door		For information only – No requirement		

^{*}Opening force to manually open end of platform doors and emergency egress doors into FoH Platform area: Max 220 N Measurement of air velocity through fire-rated doors into FOH Platform area. See TAS-D-XFS-1020-0242 Fire Engineering Report Table 3.20 for reference. This "reduced speed" can be determined independently of the FTR sections "2.X" and "4.X" which validate the logic between the PSDs, HCMT, CMS and TVCS.

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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS - Train Fire at Station - with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 9 of 11 Revision: 03 Date: 24/02/2025

Prepared by: Remi Brugeille Checked by: Nicolas Houillon Approved by: David John Monney

Test Code	BTV30825
System	«Discipline»
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5-[TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

Appendix 1: Force Gauge fixed on door (or similar)



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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

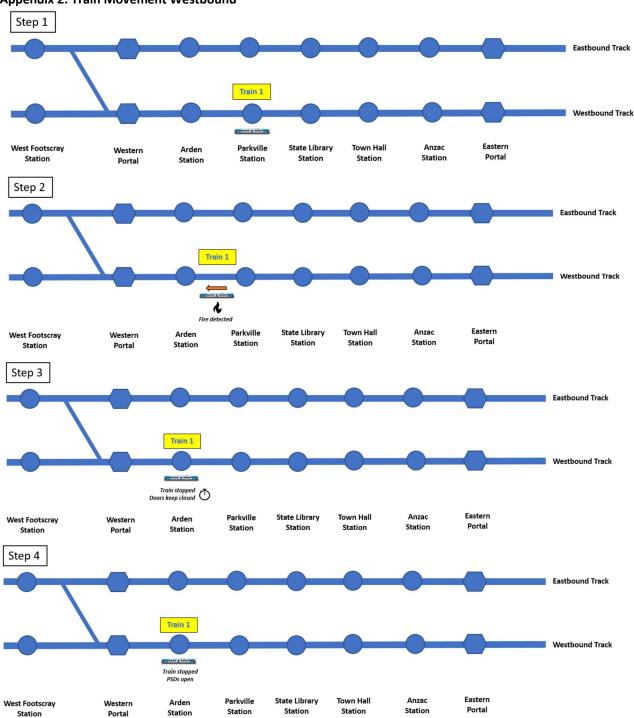
Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 10 of 11 Revision: 03 Date: 24/02/2025

Prepared by: Remi Brugeille Checked by: Nicolas Houillon Approved by: David John Monney

Test Code	BTV30825
System	(Discipline)
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

Appendix 2: Train Movement Westbound



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FUNCTIONAL TEST REPORT

Train Dynamic Testing -

T&C LEVEL 3 - TVS – Train Fire at Station – with train mis-aligned to PSDs - AEN

Doc: TAS-CYP-SDL-ZWD-CKT-XCR-NAP-X9325

Sheet: 11 of 11 Revision: 03 Date: 24/02/2025

Prepared by: Remi Brugeille Checked by: Nicolas Houillon Approved by: David John Monney

Test Code	BTV30825
System	«Discipline»
Design Package	«Design Package»
Test Lot No	CYP-HCMT-AEN-L3-BTV-1- PART5- [TVS PERFORMANCE-AEN]
Station/Location	«ProjectAreaZone»
Zone	«ControlLine»

Appendix 3: Train Movement Eastbound

