

Appendix
Results of the RAG Assessment
of the Maintenance Pitstop System (MPS)

#	Category	Maintenance Pitstop System (MPS)	Ratings					
			Missing (0)	Deficient (1)	Unacceptable (2)	Acceptable (3)	Satisfactory (4)	Excellent (5)
<p>The ability to respond is defined as knowing what to do, or being able to respond to regular and irregular changes, disturbances and opportunities by activating prepared actions or by adjusting current mode of functioning (Hollnagel 2011a)</p>								
1	Event list	For which trains has the MPS prepared responses? What are the (categories of) defects for which the MPS can be				X		
2	Background	How were these events selected (tradition, regulator requirements, design basis, experience, expertise, risk				X		
3	Relevance	When was the event list created? How often is it revised? On which basis is it revised? Who is responsible for		X				
4	Threshold	What is the trigger for a train to be called in for a pitstop and by who is it activated? Is there a trade-of between					X	
5	Response list	How was the specific type of response list decided? How is it ascertained that it is adequate? (Empirically, or based on		X				
6	Speed	In case an immediate repair is necessary, how long does it take from the moment a failure is observed to the moment the repair begins at the pitstop track. To what is this time spent (transport/waiting)?				X		

(continued)

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			Missing (0)	Deficient (1)	Unacceptable (2)	Acceptable (3)	Satisfactory (4)	Excellent (5)
7	Duration	In how many cases (percentage) are trains repaired within time? What is the minimum level to be achieved?					X	
8	Stop rule	How is determined when to end the MPS? Who is responsible?						X
9	Response capability	How many resources are allocated to ensure response readiness (people, equipment, materials)? How is the MPS always ready to respond? How many are exclusive for the					X	
10	Verification	How is the readiness to respond maintained? How and when is the readiness to respond verified?	X					

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<p><i>The ability to monitor is defined as knowing what to look for, or being able to monitor that which is or could seriously affect the system's performance in the near term—positively or negatively (Hollnagel 2011a)</i></p>								
1	Indicator list	What are indicators to measure how well the MPS performs? Are there any indicators used to measure defects in trains itself?			X			
2	Relevance	Have the indicators been revised since the introduction of the MPS and on which basis? Who is responsible for maintaining the data of the indicators?			X			
3	Indicator type	How many of the indicators are of the 'leading' type and how many are of the 'lagging'?	X					
4	Validity	Do indicators refer to an articulated process model or just to 'common sense'?				X		
5	Delay	For 'lagging' indicators, how long is the typical lag? Is it acceptable?	X					
6	Measurement type	What is the nature of the measurements? Qualitative or quantitative?				X		
7	Measurement frequency	How often are the measurements made? (Continuously, regularly, every now and then?)			X			

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8	Analysis/interpretation	What is the delay between measurement and analysis/interpretation? How many of the measurements are directly meaningful and how many require analysis of some kind?			X			
9	Stability	Are the measured effects transient or permanent?					X	
10	Organizational support	Are there fixed moments to inspect some of the indicators?				X		