



PRASA PROJECT



# SELF INSPECTION SHEET

**CONFIDENTIAL INFORMATION**

This document and the information contemplated therein have to be considered as Confidential Information pursuant to the provisions of Clause 25 of the MSA, and treated as such.

**APPLICATION REFERENCE**

MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY?	
			TC1	M4	M1	M2	M3	TC2			
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140		1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	<del>X</del>					1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	1	PRA.FT1140.05	YES
<input type="checkbox"/>											
<input type="checkbox"/>											
<input type="checkbox"/>											

REV	DATE	MODIFICATION CONTENT	RESPONSIBLE	NAME	DATE
7	2/11/2020	UPDATE OF AIR TIGHTNESS TEST TIME FROM 4 MIN TO 5 MIN. ADD PANTOGRAPH AIR TIGHTNESS.	APPROVER	GIVEN SILOWA	2/11/2020
			CHECKER	SIMON MOKOENA	2/11/2020
			COMPILER	COMFORT MALATJI	2/11/2020
8	9/13/2021	ADDING GAUGE MEASUREMENT CHECK ON THE SI.	APPROVER	MAKOFANE LUCY	9/13/2021
			CHECKER	RATAU EDISON	9/13/2021
			COMPILER	TSAKANI KHOSA	9/13/2021
9	5/31/2022	pressure valve (APV) Isolation	APPROVER	MAKHURUPETJI THABANG	5/31/2022
			CHECKER	HAZEL MGIBA	5/31/2022
			COMPILER	RATAU EDISON	5/31/2021

TUE	CAR	OPERATOR NAME	DATE	SELF INSPECTION NUMBER	PAGES
TS 026	TC1	Matimba	28/05/24	SI.FT1140.52	01/08



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:  
PRASA

SI.FT1140.52

Car:

NCR:

Work Station

FT1140



Safety Related

## I - Document and Instrument Control

### I.1 - Documents control

Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	Not OK	Signature/Date
PRA.FT1140.04	X										As 28/05/24
PRA.FT1140.05											
PRA.FT1140.05											

### I.2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all Instrument with calibration needed)

Instruments description	Serial number	Calibration or Verification Validation Date	OK	Not OK	Signature/Date
Measuring TAPE	GIBIA 0276	26/10/23-26/10/24	L		
Venier Caliper	GIRUR 0056	06/06/23-06/06/24	✓		
Torque wrench 35 NIM	D2511023	19/12/23-19/12/24	✓		
Torque wrench 150 NIM	D28622009	19/12/23-19/12/24	✓		
Torque wrench 320 NIM	A9656027	21/12/23-21/12/24	✓		28/05/24



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## II - Self Inspection - Items to Check

### II.1 - Items to Check

Item	Picture/Sketch	Description	Criteria/Record	OK	NO	NOTED	Signature/Date
01		Ensure that the average pressure valve (APV) is isolated by capping the two input pipes at the fittings installing the blanking fitting on the pipes highlighted		✓			<i>[Signature]</i> 28/05/24
02		Check underframe pipe system Air tightness Test performance according to WI PRA FT1130.15.	The test was performed and no leak was observed. Initial pressure (IP): 10 bar Final pressure (FP): 9,97 bar FP - IP = 0,13 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓			<i>[Signature]</i> 28/05/24
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓			<i>[Signature]</i> 28/05/24
04		Measurement inspection was done with car on condition AWD and the rail leveled. (The load cells system must be leveled and calibrated)	Calibration Validation Date 19/12/23	✓			<i>[Signature]</i> 28/05/24
05		In case of the equipments not installed, equivalent weight of the item should be added in the same place to simulate the equipment. (Any simulated weight, add on pending list)	EQUIPMENT DESCRIPTION DRIVER SEAT WEIGHT (kg) 60	✓			<i>[Signature]</i> 28/05/24
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓			<i>[Signature]</i> 28/05/24
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓			<i>[Signature]</i> 28/05/24
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓			<i>[Signature]</i> 24/05/24



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Item	Picture/Standard	Description	Criteria/Record	Pass	Fail	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
10		The difference of weight between the left and right wheels of each axis, must be $\leq 4\%$ .  (Verify on the T&C equipment if all arrows are in green).		<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$ .		<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
12		1 - Record shim thickness used on rod.  2 - All screws were torqued and have torque marker.	THICKNESS (mm) I II III IV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5/-10mm) (Using levelled rail)	TC CAB #1= <u>898</u> mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
15		FOR TC CARS Height of Eurobalse Antenna = 205mm(+/-10mm) (Using levelled rail)	TC CAB #1= <u>197</u> mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24
16		Check pantograph piping air tightness. Test performance according to WI PRA.FT1140.17.	The test was performed and no leak was observed. -Roof piping connection fittings -Room piping connection fittings(Roof arch and door trimming)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17/A
17		Pantograph does not come in contact with the higher height gauge when passing through.	No Contact with Pantograph and Gauge -GO Contact with Pantograph and Gauge - NO GO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17/A
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28/05/24



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## DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

DESCRIPTION	TOLERANCE	LEFT SIDE						RIGHT SIDE							
		6	5	4	3	2	1	1	2	3	4	5	6		
AIR SPRING HEIGHT (EMPTY)	N/A	A <sup>ii</sup>	/	/	/	/	/	/	/	/	/	/	/	A <sup>i</sup>	
AIR SPRING HEIGHT (FULL)	min 254 max 261	A <sup>ii</sup>	/	/	/	/	258 241	248 257	/	/	/	/	/	A <sup>i</sup>	
FLOOR COVERING HEIGHT	min 1096 max 1116	E <sup>ii</sup>	/	/	/	/	/	/	/	/	/	/	/	E <sup>i</sup>	
AIR SPRING PRESSURE	≤ 0.3 (Q <sub>i</sub> - Q)	C <sup>ii</sup>	/	/	/	/	282 272	278 281	/	/	/	/	/	C <sup>i</sup>	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D <sub>3</sub>	/	/	/	/	/	/	/	/	/	/	/	D <sub>1</sub>	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D <sub>4</sub>	/	/	/	/	/	/	/	/	/	/	/	D <sub>2</sub>	
PIVOT VERTICAL GAP	min 25 max 32	K <sup>ii</sup>	/	/	/	/	/	/	/	/	/	/	/	K <sup>i</sup>	
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (N <sub>i</sub> - A)	J <sup>ii</sup>	/	/	/	/	/	/	/	/	/	/	/	J <sup>i</sup>	
QTY OF TURNS OF LEVELLING ROD	N/A	X <sup>ii</sup>	/	/	/	/	13	12	/	/	/	/	/	X <sup>i</sup>	
SHIMS OF ANTI-ROLL BAR	N/A	Y <sup>ii</sup>	/	/	/	/	/	/	/	/	/	/	/	Y <sup>i</sup>	
DESCRIPTION	TOLERANCE		6	5	4	3	2	1		1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A <sup>iii</sup>	/	/	/	/	/	/	/	/	/	/	/	/	A <sup>iv</sup>
AIR SPRING HEIGHT (FULL)	min 254 max 261	A <sup>iii</sup>	/	/	/	/	258 240	255 258	/	/	/	/	/	/	A <sup>iv</sup>
FLOOR COVERING HEIGHT	min 1096 max 1116	E <sup>iii</sup>	/	/	/	/	/	/	/	/	/	/	/	/	E <sup>iv</sup>
AIR SPRING PRESSURE	≤ 0.3 (Q <sub>v</sub> - Q <sub>ii</sub> )	C <sup>iii</sup>	/	/	/	/	282 271	291 282	/	/	/	/	/	/	C <sup>iv</sup>
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D <sub>5</sub>	/	/	/	/	/	/	/	/	/	/	/	/	D <sub>7</sub>
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D <sub>6</sub>	/	/	/	/	/	/	/	/	/	/	/	/	D <sub>8</sub>
PIVOT VERTICAL GAP	min 25 max 32	K <sup>iii</sup>	/	/	/	/	/	/	/	/	/	/	/	/	K <sup>iv</sup>
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (N <sub>v</sub> - A <sub>ii</sub> )	J <sup>iii</sup>	/	/	/	/	/	/	/	/	/	/	/	/	J <sup>iv</sup>
QTY OF TURNS OF LEVELLING ROD	N/A	X <sup>iii</sup>	/	/	/	/	13	11	/	/	/	/	/	/	X <sup>iv</sup>
SHIMS OF ANTI-ROLL BAR	N/A	Y <sup>iii</sup>	/	/	/	/	/	/	/	/	/	/	/	/	Y <sup>iv</sup>

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW

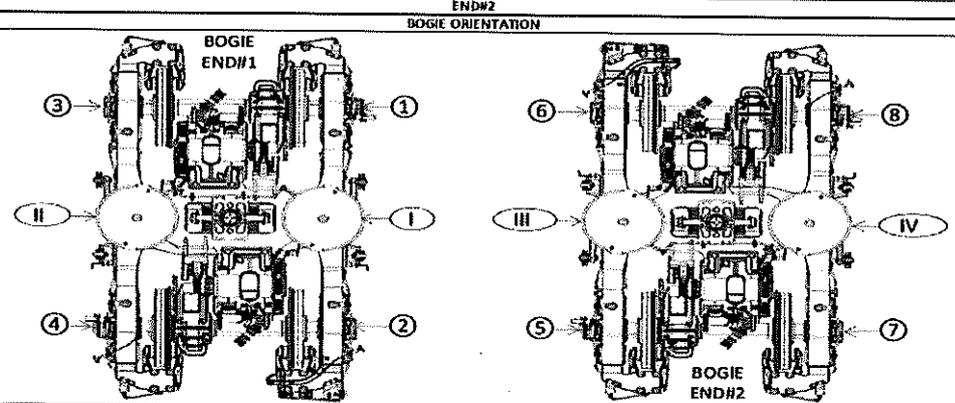
GOOD	LOWER	HIGHER
✓	↓	↑

WEIGHT COMPENSATION

EQUIPMENT	
WEIGHT	
EQUIPMENT	
WEIGHT	

SECONDARY MEASUREMENTS (ONLY TO CARS)

AUTOMATIC COUPLER HEIGHT	
ANTENNA HEIGHT	





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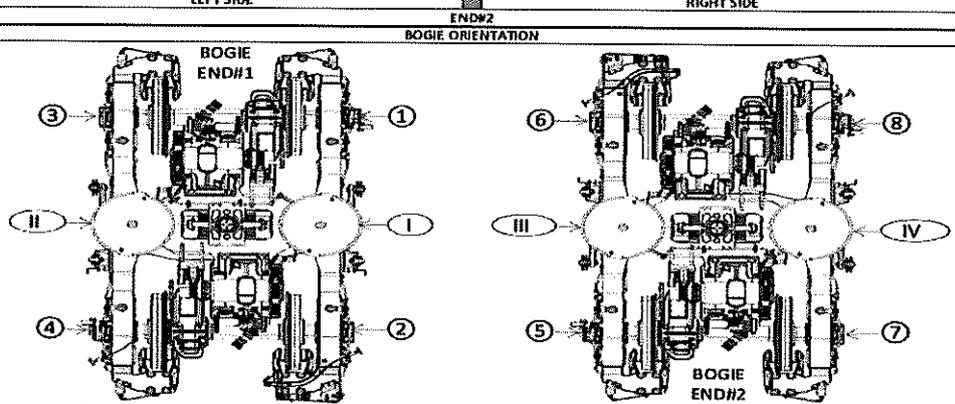
Proj:  
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SI.FT1140.52

## DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

DESCRIPTION	TOLERANCE	LEFT SIDE						RIGHT SIDE						
		6	5	4	3	2	1	1	2	3	4	5	6	
AIR SPRING HEIGHT (EMPTY)	N/A	A'ii	/	/	/	/	/	/	/	/	/	/	/	A'i
AIR SPRING HEIGHT (FULL)	mh 254 max 261	Aii	/	/	/	/	/	/	/	/	/	/	/	Ai
FLOOR COVERING HEIGHT	mh 1096 max 1116	Eii	/	/	/	/	/	/	/	/	/	/	/	Ei
AIR SPRING PRESSURE	≤ 0.3 (Ci - C)	Ci	/	/	/	/	/	/	/	/	/	/	/	Ci
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3	/	/	/	/	/	/	/	/	/	/	/	D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4	/	/	/	/	/	/	/	/	/	/	/	D2
PIVOT VERTICAL GAP	mh 25 max 32	Kii	/	/	/	/	/	/	/	/	/	/	/	Ki
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - A)	Jii	/	/	/	/	/	/	/	/	/	/	/	Ji
QTY OF TURNS OF LEVELLING ROD	N/A	Xii	/	/	/	/	/	/	/	/	/	/	/	Xi
SHIMS OF ANTI-ROLL BAR	N/A	Yii	/	/	/	/	/	/	/	/	/	/	/	Yi
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii	/	/	/	/	/	/	/	/	/	/	/	A'iv
AIR SPRING HEIGHT (FULL)	mh 254 max 261	Aiii	/	/	/	/	/	/	/	/	/	/	/	Aiv
FLOOR COVERING HEIGHT	mh 1096 max 1116	Eiii	/	/	/	/	/	/	/	/	/	/	/	Eiv
AIR SPRING PRESSURE	≤ 0.3 (Civ - Cii)	Cii	/	/	/	/	/	/	/	/	/	/	/	Civ
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5	/	/	/	/	/	/	/	/	/	/	/	D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6	/	/	/	/	/	/	/	/	/	/	/	D8
PIVOT VERTICAL GAP	mh 25 max 32	Kiii	/	/	/	/	/	/	/	/	/	/	/	Kiv
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Kiv - Kii)	Jiii	/	/	/	/	/	/	/	/	/	/	/	Jiv
QTY OF TURNS OF LEVELLING ROD	N/A	Xiii	/	/	/	/	/	/	/	/	/	/	/	Xiv
SHIMS OF ANTI-ROLL BAR	N/A	Yiii	/	/	/	/	/	/	/	/	/	/	/	Yiv

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑
WEIGHT COMPENSATION		
EQUIPMENT		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY TC CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





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Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM	THEORETICAL VALUES															
	TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		M5 CAR		TCL CAR			
	TBact	TBint	MB1	MB2	TBint	TBact										
Pivot lateral stop gaps difference [mm]	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height [mm]	3,76	2,82	2,87	2,83	3,02	2,91	3,07	2,85	2,88	2,87	2,88	2,87	2,88	2,87	2,88	3,76
Air spring pressure arc AWG [Bar]	3,76 (Ref.)	2,82 (Ref.)	2,87 (Ref.)	2,83 (Ref.)	3,02 (Ref.)	2,91 (Ref.)	3,07 (Ref.)	2,85 (Ref.)	2,88 (Ref.)	2,87 (Ref.)	2,88 (Ref.)	2,87 (Ref.)	2,88 (Ref.)	2,87 (Ref.)	2,88 (Ref.)	3,76 (Ref.)
Primary Suspension gaps [mm]	$C_1 - C_2$	0,3 Max.														
	$C_3 - C_4$	0,3 Max.														
	$D_1, D_2$	35 <sup>+0,3</sup> <sub>-0,3</sub>														
	$D_3, D_4$	35 <sup>+0,3</sup> <sub>-0,3</sub>														
Carbody floor height [mm]	1106 <sup>+0,3</sup> <sub>-0,3</sub>															
Bolster height [mm]	850 <sup>+0,3</sup> <sub>-0,3</sub>															
Coupling End height [mm]	$F_1$	895 (Ref.)	760 (Ref.)	895 (Ref.)	760 (Ref.)											
	$F_2$	760 (Ref.)														
Pivot Vertical gap [mm]	30 <sup>+0,3</sup> <sub>-0,3</sub>															



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Leveling report from Production (Final measurements after Levelling and Weighling fine)

References for secondary suspension empty

A'n Air spring height empty

References for secondary suspension full

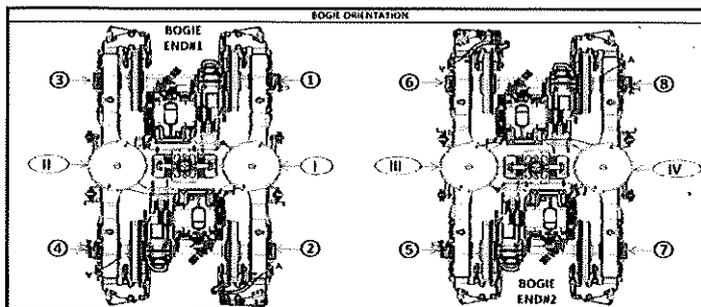
- An Air spring height
- Bn Difference between measurement A'n and An
- En Floor covering height
- Cn Air spring pressure
- Dn Primary suspension
- Kn Pivot Vertical gap
- Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 235	A'ii 235	A'iii 239	A'iv 242
An	254 to 261	Ai 257	Aii 258	Aiii 257	Aiv 258
Bn = An - A'n	N/A	Bi 22	Bii 23	Biii 18	Biv 16
En	1106 ±10 mm	Ei 1109	Eii 1110	Eiii 1111	Eiv 1112
Item	Reference [bar]	END#1		END#2	
Cn	Table 02 (*)	Ci 3,60	Cii 3,58	Ciii 2,91	Civ 2,81
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0,02		Ciii - Civ 0,10	
Gaugo serial number	N/A	G1B05873	G1B05873	G1B05873	G1B05873
Item	Reference [mm]	END#1		END#2	
Dn	Table 01 (*)	D1 43,06	D2 44,28	D3 43,71	D4 46,76
		D5 44,28	D6 43,41	D7 44,28	D8 44,83
Kn	25 to 45	Ki 29,99		Kii 34,88	
Jn	Difference ≤ 4	Ji 26,03	Jii 24,86	Jiii 26,43	Jiv 24,80

(\*) Reference, only include values, isn't approval criteria.

Table 01 D Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbox	TBin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	Mb1	Tbin	Tbox
D=	$35 \pm \frac{+12}{-5}$											

Table 02 C Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbox	TBin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	Mb1	Tbin	Tbox
C=	3.76	2.82	2.87	2.83	3.02	2.91	3.07	2.85	2.83	2.87	2.83	3.76



Weighting report from Test and Commissioning (Final measurements after Levelling and Weighling fine)



Gibela Rail Transport Consortium RF (Pty)  
 Ltd  
 2 Shosholozza Avenue  
 Dunnoitar X7  
 Eburhuleni, 1590, South Africa  
 Reception: +27 (0)10 600 0651



TRAIN SET 226	REF: GIB000001672_JO PRASA WEIGHT BALANCE EN PC09 WEIGHING REPORT
---------------	--

	Front bogie [Tons]	Rear bogie [Tons]	Longitudinal Imbalance [%]	Criteria/Longitudinal Imbalance ≤ 10%
TC1	18.48	15.55	8.61%	PASS
	Weight Measured vs Predicted	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
	34.03	34.42	1.14%	1.62%
				Criteria Min/Drifts/Max
				PASS

Mark	Company	Department	Signature	Date
11020 M08	Gibela	EOS	<i>[Signature]</i>	31/05/2019