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TOYOTA

Emma Pierce
Regulatory Officer
Natural Resources Wales
Chester Road
Buckley
Flintshire, CH7 3AJ

Ref: Environmental Permit EPR/BK6483IU

Date: 27/01/2020

Dear Emma,

Please find enclosed the returns for emissions monitoring and performance during 2019.

All final results are compliant, however the initial test for HF on emission point ST2 was above the ELV at 1.5 mg/m³ versus 1.0 mg/m³ limit. This was reported to NRW on 30th October 2019. Subsequent investigations and monitoring have been conducted, including ten further HF tests across different production scenarios. These HF results were all compliant with an average of 0.22 mg/m³. For reporting purposes both the initial results and the average of the follow-up results are shown. TMUK will submit a separate report in the near future on the HF emission investigation and process improvements, as required under the permit.

If you have any queries, please do not hesitate to contact me.

Yours sincerely,



Keith Martin
Principal Engineer
Facilities and Environment

Enc: Reporting forms Air1a – g, Sewer1, Waterusage1, Energyusage1, Performance1



Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1a / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST1	Particulate	5mg/m ³	1 hour (avg 3x 1hr)	0.31 mg/m ³	BS EN13284-1	26/09/19 10:04 – 13:16	0.42 mg/m ³
ST1	VOCs (as carbon)	50mg/m ³	1 hour	2.7 mg/m ³	BS EN 12619	26/09/19 13:30 – 14:27	1.64 mg/m ³
ST1	Formaldehyde	1mg/m ³	1 hour	0.4027 mg/m ³	BS CEN/TS 13649	26/09/19 14:30 – 15:30	0.01408 mg/m ³
ST1	Phenol	0.25mg/m ³	4 hour (required for low limit of detection)	<0.2288mg/m ³ ($<$ limit of detection)	BS CEN/TS4 13649	26/09/19 14:00 – 16:00	0.0799 mg/m ³
ST1	Ammonia	N/A	1 hour	<0.1 mg/m ³	BS EN 14791	26/09/2019 14:00 – 15:00	0.1 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed
(Authorised to sign as representative of Operator)

Date: 27/01/20.....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1b / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST2	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	0.01 mg/m ³	BS EN 13284-1	26/09/19 08:39 – 11:56	0.34 mg/m ³
ST2	Oxides of Nitrogen (as NO ₂)	100mg/m ³	Average over production shift	24.2 mg/m ³	BS EN 14792	26/09/19 06:00 – 13:59	1.18 mg/m ³
ST2	CO	150mg/m ³	Average over production shift	99.41 mg/m ³	BS EN 15058	26/09/19 06:00 – 13:59	4.32 mg/m ³
ST2	HCl	10mg/m ³	1 hour	1.1 mg/m ³	BS EN 1911	26/09/2019 14:00 – 15:00	0.13 mg/m ³
ST2	Fluorides	1mg/m ³	1 hour (1x test) 1 hour (10x tests)	1.5 mg/m ³ Avg 0.22 mg/m ³	BS ISO 15713 BS ISO 15713	26/09/2019 14:00 – 15:00 18 – 19/11/19 09:05 – 16:45	0.18 mg/m ³ 0.18 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed
(Authorised to sign as representative of Operator)

Date: 21/01/20

Permit Number: EPR/BK6483IU/V006 Operator: Toyota Manufacturing UK Ltd
 Facility: Deeside Engine Casting Form Number: Air1c / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times	Uncertainty [3]
ST4	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	0.02 mg/m ³	BS EN 13284-1	25/09/2019 09:12 – 12:20	0.37 mg/m ³
ST4	Oxides of Nitrogen (as NO ₂)	100mg/m ³	1 hour	5.31 mg/m ³	BS EN 14792	26/09/19 10:15 – 12:14	0.91 mg/m ³
ST4	CO	150mg/m ³	1 hour	23.76 mg/m ³	BS EN 15058	26/09/19 10:15 – 12:14	2.78 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed
 (Authorised to sign as representative of Operator)

Date 27/01/20

Permit Number: EPR/BK6483IUA/006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1d / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST9	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	0.03 mg/m ³	BS EN 13284-1	23/09/2019 10:45 – 13:56	0.45 mg/m ³
ST9	Oxides of Nitrogen (as NO ₂)	150mg/m ³	1 hour	5.52 mg/m ³	BS EN 14792	23/09/2019 11:00 – 12:59	0.91 mg/m ³
ST9	CO	150mg/m ³	1 hour	18.05 mg/m ³	BS EN 15058	23/09/2019 11:00 – 12:59	2.78 mg/m ³
ST9	Formaldehyde	7mg/m ³	1 hour	0.2879 mg/m ³	BS CEN/TS 13649	23/09/2019 12:00 – 13:00	0.01006 mg/m ³
ST9	Ammonia	10mg/m ³	1 hour	0.1 mg/m ³	BS ISO 14791	23/09/2019 13:00 – 14:00	0.02 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed
(Authorised to sign as representative of Operator)

Date: 27/01/20.....

Permit Number: EPR/BK6483IU/V006 Operator: Toyota Manufacturing UK Ltd
 Facility: Deeside Engine Casting Form Number: Air1e / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST10	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	1.36 mg/m ³	BS EN 13284-1	25/09/2019 06:17 – 09:25	0.39 mg/m ³
ST10	Oxides of Nitrogen (as NO ₂)	150mg/m ³	1 hour	1.05 mg/m ³	BS EN 14792	25/09/2019 06:00 – 07:59	0.89 mg/m ³
ST10	CO	150mg/m ³	1 hour	34.04 mg/m ³	BS EN 15058	25/09/2019 06:00 – 07:59	5.46 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed Date 27/09/20
 (Authorised to sign as representative of Operator)

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1f / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST11	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	0.68 mg/m ³	BS EN 13284-1	24/09/2019 07:05 – 10:06	1.07 mg/m ³
ST11	Oxides of Nitrogen (as NO ₂)	150mg/m ³	1 hour	92.76 mg/m ³	BS EN 14792	24/09/2019 08:05 – 10:04	3.10 mg/m ³
ST11	CO	150mg/m ³	1 hour	16.69 mg/m ³	BS EN 15058	24/09/2019 08:05 – 10:04	3.19 mg/m ³
ST11	Formaldehyde	7mg/m ³	1 hour	0.7997 mg/m ³	BS CEN/TS 13649	24/09/2019 12:00 – 13:00	0.02712 mg/m ³
ST11	Ammonia	10mg/m ³	1 hour	0.2 mg/m ³	BS ISO 14791	24/09/2019 11:00 – 12:00	0.03 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed
(Authorised to sign as representative of Operator)

Date 27/09/20

Permit Number: EPR/BK6483IU/V006 Operator: Toyota Manufacturing UK Ltd
 Facility: Deeside Engine Casting Form Number: Air1g / 280709

Reporting of emissions to air for the year 2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times	Uncertainty ^[3]
ST12	Particulate	5mg/m ³	1 hour (avg 3x 1 hr)	0.35 mg/m ³	BS EN 13284-1	23/09/2019 10:18 – 14:13	0.72 mg/m ³

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed Date 27/09/20
 (Authorised to sign as representative of Operator)

Permit Number: EPR/BK6483IU/V006 Operator: Toyota Manufacturing UK Ltd
 Facility: Deeside Engine Casting Form Number: Waterusage1 / 280709

Reporting of Water Usage for the year 2019

Water Source	Usage (m ³ /year)	Specific Usage (m ³ /unit output)
Mains water	7326 m ³ /annum	0.6549 m ³ /tonne of cast aluminium
Site borehole	N/A	
River abstraction	N/A	
TOTAL WATER USAGE	7326 m ³ /annum	0.6549 m ³ /tonne of cast aluminium

Operator's comments :

To standardise consumption, the specific usage units are measured in m³/metric tonne of cast aluminium. This makes consumption units independent of engine production mix.

Site collected rain water for use on site is not counted.

Signed 
 (authorised to sign as representative of Operator)

Date 27/01/20

Permit Number: EPR/BK6483IU/V003

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Performance1 / 280709

Reporting of other performance indicators for the year 2019

Parameter	Units	Result
Total raw material used	Tonnes	9,145.0 Tonnes
Dross removed from site	Tonnes	286.9 Tonnes
Bag filter dust	Tonnes	9.1 Tonnes
Furnace linings	Tonnes	6.5 Tonnes
Total swarf recycled	Tonnes	577.7 Tonnes
Total 3 rd party scrap recycled	Tonnes	476.8 Tonnes

Operator's comments : Raw material quantity used does not include swarf and third party scrap.

Signed
(Authorised to sign as representative of Operator)

Date: 27/01/20

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Energyusage1 / 280709

Reporting of Energy Usage for the year 2019

Energy Source	Energy Usage Quantity	Primary Energy (MWh)	Specific Usage (MWh/unit output)
Electricity *	7,248 MWh	18,846 MWh	1.6849 MWh/tonne of cast aluminium
Natural Gas	16,538 MWh	16,538 MWh	1.479 MWh/tonne of cast aluminium
TOTAL	23,786 MWh	35,384 MWh	3.163 MWh/tonne of cast aluminium

* Conversion factor for delivered electricity to primary energy = 2.6

Operator's comments :

To standardise consumption, the specific usage units are measured per metric tonne of cast aluminium. This makes consumption units independent of engine production mix.
Electricity is reported as Grid, on-site generated electricity from the solar PV installation is counted and treated as grid.

Signed
(Authorised to sign as representative of Operator)

Date 27/01/20.....

Permit Number: EPR/BK6483IU

Operator:

Toyota Motor manufacturing (UK) Limited

Facility: Deeside Engine Casting Plant

Form Number:

Sewer1 / 18/12/17

Reporting of emissions to sewer for the period from 01/01/2019 to 31/12/2019

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
S1	Suspended solids	200 mg/l	Composite of continuous sampling in a 24 hour period	86.0 mg/l	BS EN 872	06/09/19 composite	Uncertainty is reported for accredited analysis, conducted quarterly
	Chemical oxygen demand	1500 mg/l	Composite of continuous sampling in a 24 hour period	624.0 mg/l	BS 6068-2.34	11/04/19 composite	
	Hydrocarbon oils	150 mg/l	Composite of continuous sampling in a 24 hour period	53.0 mg/l	SCA blue book 77 ISBN0117517283	15/03/19 composite	
	Copper and its compounds expressed as Cu	1 mg/l	Composite of continuous sampling in a 24 hour period	0.21 mg/l	BS EN ISO 11885	18/10/19 composite	
	Zinc and its compounds expressed as Zn	2 mg/l	Composite of continuous sampling in a 24 hour period	0.24 mg/l	BS EN ISO 11885	20/12/19 composite	
	Lead and its compounds expressed as Pb	1 mg/l	Composite of continuous sampling in a 24 hour period	0.11 mg/l	BS EN ISO 11885	10/05/2019 composite	
	Nickel and its compounds expressed as Ni	1 mg/l	Composite of continuous sampling in a 24 hour period	0.1 mg/l	BS EN ISO 11885	All samples	

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with Natural Resources Wales is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.



Signed
(Authorised to sign as representative of Operator)

Date 27/01/19