

**RELEASES TO AIR
QUARTERLY RETURN
MONTHLY MEAN, MAXIMUM DAILY MEAN AND ANNUAL PERCENTILE CONCENTRATIONS
OPERATING MODE:**

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V002

Form: IED CON 2 (Gas Turbines)
Version/date: V.3.1 31 Dec 2015

Year: 2019	A1 / LCP 60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	-	-		-	-	-
February	-	-		-	-	-
March	-	-		-	-	-
April	68.	69.67		4.7	4.8	10.7
May	60.11	77.84		10.4	17.2	52.2
June	61.97	74.63		7.7	12.6	34.4
July	63.84	71.05		7.6	12.8	36.3
August	63.66	72.57		6.7	17.2	27.5
September	66.77	76.82		6.5	13.3	15.3
October	70.12	79.27		6.1	18.4	41.3
November	59.23	76.25		9.7	18.1	92.9
December	74.46	77.96		4.4	9.1	9.1
Monthly ELV / Daily ELV (f)	125.	125.		80.	80.	80.
Annual 95th Percentile (h)	76.75(214)			19.7(214)		
Annual Percentile ELV (g)	125.			80.		

NOTES:

- (a) All data based on validated hourly average concentrations, excluding start-up and shut-down and periods of malfunction or breakdown of abatement equipment, at 15% O₂, dry, 273.15K, 101.325 kPa
- (b) Annual percentiles are submitted with the final return (Quarter 4)
- (c) Extend report to cover the required number of LCP on each site and repeat report for each separately regulated Operating Mode as required, e.g., Combined Cycle, Open Cycle, Supplementary firing, Auxiliary firing
- (d) Averages determined at loads in the range 70% < Load ≤ 100% ISO base load and above
- (e) Averages determined at loads in the range MSUL* < Load = 100% ISO base load and above (* For a 3 parameter approach, from the point of Start-Up to the point of Shut-down)
- (f) Leave the Daily ELV blank if this is applied as a 95th percentile ELV within the Permit
- (g) For each pollutant, report the Annual 95th percentile ELV for hourly averages in the first column and, if applicable, the Annual 95th percentile ELV for daily means in the second column
- (h) For each pollutant, report the Annual 95th percentile of hourly averages in the first column and, if applicable, the Annual 95th percentile of daily means in the second column

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

30th January 2020

No confidence adjustment

**RELEASES TO AIR
QUARTERLY RETURN
MONTHLY MEAN, MAXIMUM DAILY MEAN AND ANNUAL PERCENTILE CONCENTRATIONS
OPERATING MODE:**

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V002

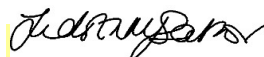
Form: IED CON 2 (Gas Turbines)
Version/date: V.3.1 31 Dec 2015

Year: 2019	A2 / LCP60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	211.88	224.43		11.6	27.9	
February	209.22	219.43		11.3	17.6	
March	206.89	222.76		13.3	23.8	
April	207.44	215.86		10.5	12.6	
May	201.8	231.13		8.5	11.2	
June	197.68	213.81		8	9	
July	199.79	211.98		8.5	9.8	
August	-	-		-	-	
September	-	-		-	-	
October	-	-		-	-	
November	-	-		-	-	
December	-	-		-	-	
Monthly ELV / Daily ELV (f)	250.	250.		100.	110.	
Annual 95th Percentile (h)	223.33(114)			25.1(114)		
Annual Percentile ELV (g)	250.			200.		

NOTES:

- (a) All data based on validated hourly average concentrations, excluding start-up and shut-down and periods of malfunction or breakdown of abatement equipment, at 15% O₂, dry, 273.15K, 101.325 kPa
- (b) Annual percentiles are submitted with the final return (Quarter 4)
- (c) Extend report to cover the required number of LCP on each site and repeat report for each separately regulated Operating Mode as required, e.g., Combined Cycle, Open Cycle, Supplementary firing, Auxiliary firing
- (d) Averages determined at loads in the range 70% < Load ≤ 100% ISO base load and above
- (e) Averages determined at loads in the range MSUL* < Load = 100% ISO base load and above (* For a 3 parameter approach, from the point of Start-Up to the point of Shut-down)
- (f) Leave the Daily ELV blank if this is applied as a 95th percentile ELV within the Permit
- (g) For each pollutant, report the Annual 95th percentile ELV for hourly averages in the first column and, if applicable, the Annual 95th percentile ELV for daily means in the second column
- (h) For each pollutant, report the Annual 95th percentile of hourly averages in the first column and, if applicable, the Annual 95th percentile of daily means in the second column

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Judith Sartor, Environmental Specialist

Date of return:

30th January 2020

No confidence adjustment

**RELEASES TO AIR
QUARTERLY RETURN
MONTHLY MEAN, MAXIMUM DAILY MEAN AND ANNUAL PERCENTILE CONCENTRATIONS
OPERATING MODE:**

Operator: **Dow Silicones UK Ltd**
Location: **Barry Cogeneration Plant**
Permit/Variation Number: **EPR/JP3632ZH/V002**

Form: IED CON 2 (Gas Turbines)
Version/date: **V.3.1 31 Dec 2015**

Year: 2019	A3 / LCP60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	75.73	80.86		0.6	4.1	4.1
February	74.79	78.71		0.3	4.1	9.4
March	74.67	80.75		0.3	3.7	3.7
April	75.31	78.58		0	0	1.3
May	49.15	69.96		5.6	20.1	23.1
June	54.32	73.61		2.6	11.3	35.5
July	69.1	77.34		0	0.3	6.9
August	38.62	51.46		4.8	19.7	24.5
September	64.04	76.46		0.5	4	12.7
October	71.16	78.39		0	0.1	2.3
November	76.69	85.24		1.3	7.7	23.8
December	82.33	89.36		0.1	0.7	1.5
Monthly ELV / Daily ELV (f)	125.	125.		80.	80.	80.
Annual 95th Percentile (h)	85.79(322)			8.7(322)		
Annual Percentile ELV (g)	125.			80.		

NOTES:

- (a) All data based on validated hourly average concentrations, excluding start-up and shut-down and periods of malfunction or breakdown of abatement equipment, at 15% O₂, dry, 273.15K, 101.325 kPa
- (b) Annual percentiles are submitted with the final return (Quarter 4)
- (c) Extend report to cover the required number of LCP on each site and repeat report for each separately regulated Operating Mode as required, e.g., Combined Cycle, Open Cycle, Supplementary firing, Auxiliary firing
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- (e) Averages determined at loads in the range MSUL* < Load = 100% ISO base load and above (* For a 3 parameter approach, from the point of Start-Up to the point of Shut-down)
- (f) Leave the Daily ELV blank if this is applied as a 95th percentile ELV within the Permit
- (g) For each pollutant, report the Annual 95th percentile ELV for hourly averages in the first column and, if applicable, the Annual 95th percentile ELV for daily means in the second column
- (h) For each pollutant, report the Annual 95th percentile of hourly averages in the first column and, if applicable, the Annual 95th percentile of daily means in the second column

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

30th January 2020

No confidence adjustment

CONTINUOUS MEASUREMENT SYSTEMS INVALIDATION LOG**QUARTERLY RETURN****Q4 2019****Year: 2019****Operator:****Dow Silicones UK Ltd****Form: IED CEM1****Monitor positioned on release point/LCP Number:****A1 / LCP 60****Version/Date: V 3.1 31 Dec 2016****Permit/Variation Number:****EPR/JP3632ZH/V002****Barry Cogeneration Plant**

Date	Period of invalidation (hours)	Invalidated days in year	Comments
No invalid data recorded			

NOTES:

(a) Compliance in Chapter III of the IED is on the basis of validated hourly averages, measured by continuous monitors (except where discontinuous exemption applies). And confidence intervals are incorporated to convert the measured hourly value into a validated measurement for the purpose of compliance assessment. However, any day in which more than 3 hourly average values are invalid (due to malfunction or maintenance of the continuous measurement system) shall be invalidated for the purpose of compliance assessment. If more than 10 days are invalid over a year the operator shall, within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and implement the approved proposals.

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return: 30th January 2020

CONTINUOUS MEASUREMENT SYSTEMS INVALIDATION LOG**QUARTERLY RETURN****Q4 2019****Year: 2019****Operator:****Dow Silicones UK Ltd****Form: IED CEM1****Monitor positioned on release point/LCP Number:****A2 / LCP 60****Version/Date: V 3.1 31 Dec 2016****Permit/Variation Number:****EPR/JP3632ZH/V002****Barry Cogeneration Plant**

Date	Period of invalidation (hours)	Invalidated days in year	Comments
No invalid data recorded			

NOTES:

(a) Compliance in Chapter III of the IED is on the basis of validated hourly averages, measured by continuous monitors (except where discontinuous exemption applies). And confidence intervals are incorporated to convert the measured hourly value into a validated measurement for the purpose of compliance assessment. However, any day in which more than 3 hourly average values are invalid (due to malfunction or maintenance of the continuous measurement system) shall be invalidated for the purpose of compliance assessment. If more than 10 days are invalid over a year the operator shall, within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and implement the approved proposals.

Signed on behalf of the Operator by: 

Judith Sartor, Environmental Specialist

Date of return: 30th January 2020

CONTINUOUS MEASUREMENT SYSTEMS INVALIDATION LOG**QUARTERLY RETURN****Q4 2019****Year: 2019****Operator:****Dow Silicones UK Ltd****Form: IED CEM1****Monitor positioned on release point/LCP Number:****A3 / LCP 60****Version/Date: V 3.1 31 Dec 2016****Permit/Variation Number:****EPR/JP3632ZH/V002****Barry Cogeneration Plant**

Date	Period of invalidation (hours)	Invalidated days in year	Comments
No invalid data recorded			

NOTES:

(a) Compliance in Chapter III of the IED is on the basis of validated hourly averages, measured by continuous monitors (except where discontinuous exemption applies). And confidence intervals are incorporated to convert the measured hourly value into a validated measurement for the purpose of compliance assessment. However, any day in which more than 3 hourly average values are invalid (due to malfunction or maintenance of the continuous measurement system) shall be invalidated for the purpose of compliance assessment. If more than 10 days are invalid over a year the operator shall, within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and implement the approved proposals.

Signed on behalf of the Operator by: 

Judith Sartor, Environmental Specialist

Date of return: 30th January 2020

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V002

Form: IED PM1
Version: V.11 Mar 2016

Year - 2019	LCP 60 (A1 & A3 HR-001A & B)				
Six months to -31/12/19					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time					
Date					
Measurement 1 (mg/m ³) ^(b)					
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.24			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)		100			100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)					

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
(b) Reference conditions for mg/m³ are 15% O₂ CCGT, 6% O₂ solid fuels, 3% O₂ for oil and gas, dry, 0°C, 101.325 kPa
(c) Alternative approach to discontinuous monitoring by agreement with the Competent Authority
(d) Use abbreviation: NF for agreed NO_x factor, FS for fuel sulphur content, CS for agreed CO factor, DF for agreed dust factor

Signed on behalf of the Operator by: Judith Sartor, Environmental Specialist



Date of return: 30th January 2020

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V002

Form: IED PM1
Version: V.11 Mar 2016

Year - 2019	LCP 60 (A2 FB-001)				
Six months to -31/12/19					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time					
Date					
Measurement 1 (mg/m ³) ^(b)					
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.72			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)		100			100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)					

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
(b) Reference conditions for mg/m³ are 15% O₂ CCGT, 6% O₂ solid fuels, 3% O₂ for oil and gas, dry, 0°C, 101.325 kPa
(c) Alternative approach to discontinuous monitoring by agreement with the Competent Authority
(d) Use abbreviation: NF for agreed NO_x factor, FS for fuel sulphur content, CS for agreed CO factor, DF for agreed dust factor

Signed on behalf of the Operator by: Judith Sartor, Environmental Specialist



Date of return: 30th January 2020

IED AR1

V.3.1 Dec 2015

IED Reporting - Energy Usage & Emissions for the year:

Q4 2019

Operator:

Dow Silicones UK Ltd

Site Location:

Barry Cogeneration Plant

Permit/Variation number:

EPR/JP3632ZH/V002

LCP:

60.

LCP Net Rated Thermal Input Capacity (MW):

Parameter	TOTAL	By Fuel							
		Coal	Lignite	Peat	Biomass	Other solid fuels	Liquid fuels	Natural gas	Other gases
Annual energy input (TJ)	2602.39						0.	2602.39	
Total Annual SO2 emission (tonnes)									
Total Annual NOx emission (tonnes)	80.98								
Total Annual Dust (PM) emission (tonnes)									

Signed on behalf of the Operator



Judith Sartor, Environmental Specialist

Date

30th January 2020

NOTES:

- (a) Annual energy input must be reported in TJ to 1 decimal places
- (b) Annual emissions to air must be reported to 2 decimal places and exclude start-up and shut-down
- (c) All forms must be saved in the format IED AR1—DEFRA IED LCP Number - Inventory Year i.e. IED AR1-XXX-2013
- (d) No PDF documents shall be accepted
- (e) Upload Forms held on GOV.UK will be accepted other variants of the forms will be automatically rejected which may impact their statutory obligations to report on time

**RELEASES TO AIR
ANNUAL RETURN
OPERATING HOURS**

Operator:

**Dow Silicones UK Ltd
Barry Cogeneration Plant
EPR/JP3632ZH/V002**

Form:

IED HR1

Location:

Version/date:

V.3.1 31 Dec 2015

Permit/Variation Number:

Year: 2019	A1 (hours)	Bypass (hours)	A2 (hours)	Bypass (hours)	A3 (hours)	Bypass (hours)	LCP4 (hours)	Bypass (hours)
Annual Operating Hours (a), (b)	4324.28	2210.53	2251.3		6423.8	4423.5		
Cumulative Operating Hours (c), (d)								
Derogated Annual Hours (e)								
Five year rolling average (f)								

NOTES:

(a) Annual operating hours for every LCP from 1-Jan in calendar year. (For gas turbines with a Bypass stack, include the Bypass stack operating hours during normal operation even though these are reported separately).

(b) For gas turbines with a Bypass stack, report Bypass operating hours from 1-Jan in calendar year, excluding Start-Up and Shut-down, in the adjacent column (labelled Bypass) which may be deleted if not applicable.

(c) Cumulative operating hours from 1-Jan-2016 for LCP subject to a Limited Lifetime Derogation or a 10,000h monitoring derogation. (For gas turbines with a Bypass stack, include the Bypass stack operating hours during normal operation even though these are reported separately).

(d) For gas turbines with a Bypass stack, report Bypass Cumulative operating hours from 1-Jan-2016 if subject to a separate 10,000h monitoring derogation, in the adjacent column (labelled Bypass).

(e) Annual operating hours in calendar year from entry date (in first year as applicable) or from 1-Jan in calendar year, for each 1,500h ELV derogated Unit/LCP only.

(f) Five year running average from entry date for each 1,500h derogated Unit/LCP only.

(g) General note: hours are reported as a decimal number to two decimal places.

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

30th January 2020