



25 April 2024

Joshua Copage,
IE Enforcement and Control
Environmental Protection Agency
Inniscarra
Co. Cork
P31 VX59
Ireland

Submitted via EDEN

RE: IE Licence P0266-03 Quarterly Report – Q1

Dear Mr Copage,

Please find attached the Quarterly Report on environmental performance for **01 Jan 2024 to 31 Mar 2024** (Q1)

IE licence P0266-03 Performance Summary	
Number of non-compliances in the Quarter	3
Number of incidents in the Quarter	3
Number of attributable complaints received in the Quarter	2

VOC Permit V0001-08 Performance Summary	
Number of non-compliances in the Quarter	0

GHG Permit IE-GHG013-10343 Performance Summary	
Number of non-compliances in the Quarter	0

In Q1, IOW had the following EPA site visits.

- There were 8 EPA Site visits in Q1, 2024

SV No.	Date	EDEN Status
SV29702	23 Jan 24	Status Complete
SV29703	23 Jan 24	Status Complete
SV29897	24 Jan 24	Status Complete
SV29898	25 Jan 24	Status Complete
SV29899	26 Jan 24	Status Complete
SV29900	30 Jan 24	Status Complete
SV29911	26 Mar 24	Visited (Awaiting Report)
SV30015	27 Feb 24	Status Complete

In Q1, 2024 the following air emission points were sampled as per Schedule B of the IE license:

- A1-1, A1-3, A2-4, A2-5, A2-6, A2-7, A2-8, A2-10, A2-12, A2-13 & A2-18.
- Emissions monitoring for Q1 was also completed at the site's road-loading facility's vapour recovery unit (VRU) as per Schedule B.1.4.b of P0266-03.

IRVING OIL WHITEGATE REFINERY LIMITED

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Directors: Ian Whitcomb (CA), Jeff Matthews (CA), Jennifer Beach (CA), Michael King and Brian Dillon.



Part 1 of this report contains the following:

- 1.1 Environmental Incidents
- 1.2 Non-Compliances
- 1.3 Environmental Complaints Register
- 1.4 Emissions to Atmosphere
 - 1.4.1 Sulphur Dioxide emissions
 - 1.4.2 Oxides of Nitrogen emissions
 - 1.4.3 Integrated Emissions Management
 - 1.4.4 Flare Operation
 - 1.4.5 Releases to Atmosphere from Potential Emission Points
- 1.5 Amine Sulphuric Acid Plant Operation
Note: SO2 emissions from ASA plant are included in the SO2 summary page

Part 2 of the report contains:

- 2.1 Emissions to Water:
 - 2.1.1 Refinery Effluent monitoring
 - 2.1.2 Surface Water monitoring

Approved By: 
Austin Broderick, HSE Manager,
Irving Oil Whitegate Refinery

Date: 25 April 2024

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Part 1

1.1 Environmental Incidents

There were 3 environmental incidents reported in Q1, 2024.

1.1.1 **INCI026839** *ELV Exceedance*
For details refer to NC029013 below.
EDEN Status: Open

1.1.2 **INCI027022** *Uncontrolled Release*
For details refer to NC028978 below.
EDEN Status: Open - CI

1.1.3 **INCI027382** *ELV Exceedance*
Incident Date (s): 25th Feb 2024
EDEN Status: Open

Details

As per Schedule B.2 of P0266-03, 24hr composite samples of WWTP emission point SW1 are taken daily at approximately 09:00am and are submitted to an offsite ISO 17025 accredited laboratory for analysis.

The Chemical Oxygen Demand (COD) result for the daily sample from 25th Feb 2024 was received on 11th Mar 2024. The result for that date showed elevated levels of COD of 368mg/L which is above the ELV for SW1 (ELV = 265mg/L). The elevated concentration resulted in a mass emission limit exceedance for COD, result of 961kg/day (ELV = 636kg/day). Analysis, from our accredited external laboratory, show compliant COD levels in the days immediately before and after the incident date.

Root Cause

An internal review of refinery operations and internal IOW lab data for 23rd to 28th Feb 2024 noted that there was no increase in Total Nitrogen (TN) observed for the same period. This eliminated a number of refinery waste streams to the WWTP as elevated COD would also result in a TN increase. As the Dissolved Air Flotation Unit (DAF) removes insoluble contaminants the investigation concluded that the contaminant was soluble in water. This narrowed the focus on soluble liquids used in the refinery which include glycol/ethanol/firefighting foam. The investigation therefore focused on how these soluble liquids could have entered the WWTP feed stream. In addition, the unusual nature of the contamination (elevated COD with no corresponding TN increase) suggested the contaminant didn't originate from typical refinery activities.

The Hydrodesulphurisation (HDS) plant was taken offline on 18th Feb 2024 for planned maintenance works. The process of bringing the unit back on-line commenced on 22nd Feb 2024. As part of normal refinery plant operation, cooling water maintains the mechanical reliability of rotating equipment by removing the heat generated through normal process operation. This cooling water contains glycol (anti-freeze) which is soluble in water, nitrogen free, and can cause elevated COD. As part of the HDS start-up, cooling water was drained periodically from the recirculating system to remove accumulated contaminants. This drains to the WWTP via the oily water sewer.

Significant rainfall was noted on 25th Feb 2024 which would have increased the rate at which the cooling water washed through the oily water sewer to the WWTP. The COD load from the cooling water received by the bioplant was beyond the capability of the bacteria to maintain compliance with the ELV limit. ISO 17025 accredited data for 24th Feb 24 and 26th Feb 24 confirmed the COD exceedance was confined to 25th Feb 24.

Preventative Actions

Preventative actions for this incident are included on the incident investigation report on EDEN

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1.2 Non-Compliances

There were 3 non-compliances (NC) received on IE licence P0266-03 in Q1, 2024. Details of the non-compliance are as follows:

1.2.1	NC029013	<i>ELV Exceedance</i>
	<i>NC Date (s):</i>	<i>18th Dec 2023</i>
	<i>Incident No.:</i>	<i>INCI026839 (Breach of ELV)</i>
	<i>Date NC issued by EPA:</i>	<i>19th Jan 2024</i>

NC EPA Description:

"On 18/12/2023, the emissions to water at SW1 exceeded the emission limit value (ELV of 25 mg/L) for Total Nitrogen at 37.0 mg/L established in the licence. This is non-compliant with Condition 5.1".

IOW Investigation Summary

On 18th Dec 2023 elevated nitrogen levels, above ELV for SW1, were reported by IOW laboratory. An internal review of refinery operations for 17th and 18th Dec 2023 was conducted. After eliminating refinery plant operation as the source of elevated nitrogen, the investigation focussed on IOW demineralisation plant effluent which had been discharged on 17th Dec 2023.

IOW demineralisation plant takes council mains water and removes excess minerals to make the water suitable to use in the site's boilers. The effluent from the demineralisation plant contains concentrated amounts of the minerals in the council mains supply. The volume of effluent discharged from this plant is comparatively low but historic testing has shown nitrogen levels of ~60mg/l present in this effluent.

Upon investigation, it was found that, inadvertently, the WWTP was not configured to allow sufficient mixing of the demineralisation effluent. The Area Manager reiterated to the team the requirement to ensure correct WWTP configuration prior to discharge of demineralised effluent. Subsequent internal laboratory results for nitrogen showed compliant levels from 19th Dec 2023 which confirmed the demineralised effluent as cause of elevated nitrogen levels on 18th Dec 2023. ISO 17025 accredited data for 17th Dec 2023 and 19th Dec 2023 confirmed the incident cause was restricted to a single day.

Root Cause

The WWTP was not configured correctly to allow for sufficient mixing of the demineralisation effluent to achieve compliant nitrogen levels at outfall.

Preventative Actions

Preventative actions for this incident are included on the incident investigation report on EDEN

1.2.2	NC028978	<i>Miscellaneous</i>
	<i>NC Date (s):</i>	<i>23rd Jan 2024</i>
	<i>Incident Date:</i>	<i>22nd Jan 2024</i>
	<i>Incident No.:</i>	<i>INCI027022 (Uncontrolled Release)</i>
	<i>Date NC issued by EPA:</i>	<i>07th Mar 2024</i>

NC028978 - EPA Description:

"(SV29702 Refers) The incident reported by the Licensee on 22/02/2024 (Ref No. INCI027022), and the evidence of gasoil product impacting upon Whitegate Bay, indicate that there was an emission of environmental significance from the facility. This is non-compliant with Condition 5.1 of the licence. You are reminded that failure to comply with any condition attached to a licence or revised licence is an offence"

Note: This incident is subject to an ongoing EPA Compliance Investigation (CI) (CI002132)

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CI002132 - EPA Description

"The EPA was notified by Irving Oil Ltd at 19:25 on Monday 22nd January 2024 of a spill of gas oil that occurred at their refinery at Whitegate, Co. Cork. The site operator also notified the Port of Cork, Irish Coast Guard, Cork County Council, the Health and Safety Authority & local businesses. The operator reported that an inspection at 09:00 on the morning of 22nd January discovered that gas oil had leaked from a small gauge pipe onto a marshy area below it and then into Cork Harbour. A spill response team was mobilised by the operator and the leak was contained by 13:00. The damaged equipment was repaired at 19:00 on Monday evening. The team also began attempts to recover oil from the marshy area and to minimise the extent of impact to the harbour, beaches and surrounding areas, including by means of containment booms. On the morning of Tuesday 23rd January, the operator reported that the spill response team is continuing to carry out cleanup operations and are assessing impacts to the shoreline, waterbody and local ecology as a result of the spill".

IOW Response

The Refinery Emergency Response Team (RERT), Incident Management Team (IMT), and the Crisis Management Team (CMT) formed the Company response organisation to ensure that a robust and effective response to this incident took place using the Incident Command Structure (ICS) as outlined in the Whitegate Refinery Oil and HNS Spill Contingency Plan.

In support of this response, IOW immediately engaged the services of recognised oil spill response experts, Oil Spill Response Limited (OSRL) and Ambipar in conjunction with environmental and ecological experts to contain and recover the released material while ensuring the safety and protection of potentially impacted flora and fauna. Based on all of the available evidence to date, the vast majority of the released product has been recovered and any remaining, unrecovered gasoil is located onsite at the refinery. As always, the safety of our people, our communities and the environment will be our first priority as we complete this remediation work. IOW continues to engage with the Agency on this matter through Compliance Investigation CI002132.

1.2.3	NC029040	<i>Nuisances</i>
	<i>NC Date (s):</i>	<i>30th Jan 2024</i>
	<i>Incident Date:</i>	<i>22nd Jan 2024</i>
	<i>Incident No.:</i>	<i>INCI027022 (Uncontrolled Release)</i>
	<i>Date NC issued by EPA:</i>	<i>25th Mar 2024</i>

NC EPA Description:

"(SV29900 Refers) During an odour assessment carried out by the Agency on 30/01/2024, odours resulting from a recent incident on site were detected at downwind locations beyond the site boundary at a level considered to cause nuisance. This is non-compliant with Condition 5.2. You are reminded that failure to comply with any condition attached to a licence or revised licence is an offence".

EPA Site Visit Comment

"An odour assessment was undertaken by the Agency on 30/01/2024, in accordance with EPA Air Guidance document AG5 (Odour Impact Assessment Guidance for EPA Licensed Sites) in response to an odour complaint. Persistent moderate to strong odours of hydrocarbons from the Irving Oil Whitegate Refineries installation was detected at 2 no. odour sensitive locations downwind of the installation boundary.

During the subsequent examination of the Whitegate Village shoreline, odours consistent with those detected downwind was noted; associated with the accumulations of gasoil residues along the shoreline in this area. This is non-compliant with licence Condition 5.2".

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1.3 Environmental Complaints Register

There were 2 environmental complaints registered in Q1, 2024.

1.3.1 COM018531 Odour

Date/Time of Occurrence: 22/01/24 at 19:00

For details refer to NC029040 above.

EDEN Status: Closed

1.3.2 COM018552 Pollution

Date/Time of Occurrence: 04/02/24 at 12:00

For details refer INCI027022 (Uncontrolled Release)

EDEN Status: Closed

1.4 Releases to Atmosphere

1.4.1 Sulphur Dioxide emissions

Refer to Appendix 1

1.4.2 Oxides of Nitrogen emissions

Refer to Appendix 2

1.4.3 Integrated Emissions Management

Refer to Appendix 3

1.4.4 Flare Operation

There was no significant event in Q1 2024 that lead to increased flaring.

Month	Tonnes Flared	% of Refinery Throughput
January	168	0.009%
February	374	0.022%
March	397	0.021%
Total Q1	939	0.017%

1.4.5 Releases to Atmosphere from Potential Emission Points

There was no event in Q1, 2024 that led to releases to Atmosphere from Potential Emission Points

1.5 Amine and Sulphuric Acid Unit Operation

IE license condition 6.16 requires a summary of ASA downtime and associated site SO₂ emissions to show compliance with condition 5.5.

SO₂ figures for the site and for the ASA (A2-18) are available on the SO₂ kg/hr table (Appendix 1).

NO_x measurements from the ASA (A2-18) are taken from the annual sampling and analysis of this flue gas.

Please see Appendices for emissions to air data tables.

2.1 Emissions to Water

Please refer to Part 2 for emissions to water data tables.

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Appendix 1. Sulphur Dioxide Emissions (Page 01 of 03)

Schedule B.1 Emissions to Air – SO₂ (mg/m³)

Q1 Concentration																	
Emission Point	Limit mg/m ³	01-Jan-24	08-Jan-24	15-Jan-24	22-Jan-24	29-Jan-24	05-Feb-24	12-Feb-24	19-Feb-24	26-Feb-24	04-Mar-24	11-Mar-24	18-Mar-24	25-Mar-24	Average	Max	Compliance
A1-1 SG4 SO2	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%
A1-2 SG5 SO2	35 (Nat Gas) 170 (Gasoil)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%
A1-2 SG5 (CHP) SO2	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%
A1-3 SG6 SO2	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%
A2-1 F401 SO2 RFG	35	29.5	28.6	27.6	26.3	26.7	31.1	27.7	19.6	28.0	28.2	27.6	25.4	24.6	27.0	31.1	100%
A2-2 F402 SO2 RFG	35	24.8	24.3	23.5	23.4	23.7	27.5	23.7	16.4	23.7	24.0	23.3	23.3	24.0	23.5	27.5	100%
A2-3 F501 SO2 RFG	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100%
A2-4 F204 SO2 RFG	35	19.4	18.9	18.8	18.7	18.9	22.6	18.5	11.9	18.3	18.7	18.2	18.8	19.3	18.5	22.6	100%
A2-5 F201X SO2 RFG	35	18.7	18.7	18.2	18.5	18.6	22.2	17.8	8.7	17.7	18.2	17.6	17.8	18.9	17.8	22.2	100%
A2-6 F202BX/CX SO2 RFG	35	19.4	19.0	18.8	18.8	18.9	22.6	18.6	13.4	18.4	18.8	18.3	18.9	19.4	18.7	22.6	100%
A2-7 F202AN SO2 RFG	35	18.8	18.8	18.2	18.5	18.6	22.3	17.9	8.8	17.7	18.3	17.6	17.9	18.9	17.9	22.3	100%
A2-8 F206/207 SO2 RFG	35	18.7	18.8	18.2	18.5	18.6	22.3	17.9	9.2	17.7	18.3	17.6	17.9	18.9	17.9	22.3	100%
A2-9 F203N SO2 RFG	35	17.2	18.6	13.4	7.2	7.3	8.6	7.1	7.0	12.9	18.4	17.9	18.5	13.7	12.9	18.6	100%
A2-10 F801/802 SO2 RFG	35	19.1	19.1	18.5	18.8	18.9	22.6	18.2	10.5	18.0	18.7	18.0	18.2	19.2	18.3	22.6	100%
A2-11 F901 SO2 RFG	35	18.9	18.9	18.3	18.6	18.8	13.0	18.1	8.0	17.9	18.5	17.8	18.1	19.1	17.2	19.1	100%
A2-18 ASA SO2	260	6.7	8.3	7.1	7.4	8.7	1.8	0.0	0.0	0.0	0.0	0.0	2.5	0.1	3.3	8.7	100%

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Appendix 1. Sulphur Dioxide Emissions (Page 02 of 03)

Condition 6.16 Emissions to Air - SO₂ (kg/hr)

Q1 Mass Emission																	
Emission Point	Limit (kg/hr)	01-Jan-24	08-Jan-24	15-Jan-24	22-Jan-24	29-Jan-24	05-Feb-24	12-Feb-24	19-Feb-24	26-Feb-24	04-Mar-24	11-Mar-24	18-Mar-24	25-Mar-24	Average	Max	Compliance
A1-1 SG4 SO2	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	N/A
A1-2 chp SO2	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
A1-2 chp (CHP) SO2	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
A1-3 SG6 SO2	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	N/A
A2-1 F401 SO2 RFG	N/A	1.21	1.29	1.28	1.23	1.23	1.31	1.16	0.82	1.17	1.19	1.19	1.11	1.10	1.18	1.31	N/A
A2-2 F402 SO2 RFG	N/A	0.62	0.67	0.66	0.66	0.66	0.69	0.59	0.44	0.60	0.62	0.61	0.64	0.68	0.63	0.69	N/A
A2-3 F501 SO2 RFG	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
A2-4 F204 SO2 RFG	N/A	0.10	0.10	0.10	0.10	0.09	0.11	0.08	0.04	0.07	0.07	0.07	0.07	0.08	0.08	0.11	N/A
A2-5 F201X SO2 RFG	N/A	0.24	0.24	0.24	0.24	0.24	0.28	0.22	0.12	0.23	0.24	0.23	0.23	0.25	0.23	0.28	N/A
A2-6 F202BX/CX SO2 RFG	N/A	0.17	0.17	0.17	0.19	0.19	0.21	0.15	0.10	0.14	0.14	0.17	0.18	0.18	0.16	0.21	N/A
A2-7 F202AN SO2 RFG	N/A	0.19	0.17	0.18	0.18	0.18	0.21	0.16	0.09	0.17	0.17	0.15	0.19	0.19	0.17	0.21	N/A
A2-8 F206/207 SO2 RFG	N/A	0.24	0.23	0.22	0.24	0.24	0.28	0.21	0.12	0.22	0.23	0.22	0.23	0.25	0.22	0.28	N/A
A2-9 F203N SO2 RFG	N/A	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	N/A
A2-10 F801/802 SO2 RFG	N/A	0.38	0.37	0.36	0.36	0.37	0.44	0.34	0.18	0.38	0.39	0.37	0.37	0.39	0.36	0.44	N/A
A2-11 F901 SO2 RFG	N/A	0.07	0.06	0.05	0.06	0.07	0.05	0.07	0.04	0.07	0.07	0.07	0.08	0.09	0.07	0.09	N/A
A2-18 ASA SO2	N/A	0.9	1.1	0.9	1.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.43	1.15	N/A
Site Total SO2 IE Licence - P0266-03 Emissions to Atmosphere - Condition 5.5, 6.16	150 kg/hr	4.10	4.41	4.20	4.23	4.41	3.82	2.99	1.95	3.04	3.13	3.11	3.42	3.23	3.54	4.41	100%

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Appendix 1. Sulphur Dioxide Emissions (Page 03 of 03)

Monthly Average SO₂ Emission; All Emission Points Combined

Monthly Average SO ₂ Emissions of all emission points combined				
Month	Limit	Average	TPM	Compliance
	kg/hr	kg/hr	ton/month	
Jan-2024	150	4.25	3.16	100%
Feb-2024	150	3.13	2.18	100%
Mar-2024	150	3.21	2.39	100%
		Q1 Total	7.73	

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Appendix 2. Oxides of Nitrogen emissions (Page 01 of 03)

Schedule B.1 Emissions to Air – NO₂ (mg/m³)

Q1 Concentration																	
Emission Point	Limit mg/m ³	01-Jan-24	08-Jan-24	15-Jan-24	22-Jan-24	29-Jan-24	05-Feb-24	12-Feb-24	19-Feb-24	26-Feb-24	04-Mar-24	11-Mar-24	18-Mar-24	25-Mar-24	Average	Max	Compliance
A1-1 SG4 NOx	450	281	282	283	284	283	282	284	283	285	284	285	284	284	283	285	100%
A1-2 SG5 NOx	450	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	100%
A1-2 SG5 (CHP) NOx	450	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	100%
A1-3 SG6 NOx	450	288	289	289	289	289	288	289	288	290	289	289	289	288	289	290	100%
A2-1 F401 NOx RFG	450	262	256	260	267	263	263	264	255	257	255	256	256	258	259	267	100%
A2-2 F402 NOx RFG	450	266	260	264	269	265	267	268	257	260	258	259	258	259	262	269	100%
A2-3 F501 NOx RFG	450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
A2-4 F204 NOx RFG	450	184	183	185	187	186	186	184	188	184	183	183	182	183	184	188	100%
A2-5 F201X NOx RFG	450	374	364	370	379	373	377	378	324	363	360	362	360	363	365	379	100%
A2-6 F202BX/CX NOx RFG	450	184	183	184	187	186	185	184	184	184	182	182	182	182	184	187	100%
A2-7 F202AN NOx RFG	450	269	262	267	272	269	270	272	249	262	260	261	260	262	264	272	100%
A2-8 F206/207 NOx RFG	450	196	191	194	198	196	196	198	195	191	190	191	190	191	194	198	100%
A2-9 F203N NOx RFG	450	180	176	186	200	199	199	198	194	187	176	176	175	185	187	200	100%
A2-10 F801/802 NOx RFG	450	272	264	269	275	271	272	274	261	264	262	263	262	264	267	275	100%
A2-11 F901 NOx RFG	450	196	191	194	198	196	202	198	198	191	190	190	189	190	194	202	100%

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Appendix 2. Oxides of Nitrogen emissions (Page 02 of 03)

Condition 5.7 Emissions to Air - NO₂ (kg/hr)

Q1 Mass Emission																	
Emission Point	Limit (kg/hr)	01-Jan-24	08-Jan-24	15-Jan-24	22-Jan-24	29-Jan-24	05-Feb-24	12-Feb-24	19-Feb-24	26-Feb-24	04-Mar-24	11-Mar-24	18-Mar-24	25-Mar-24	Average	Max	Compliance
A1-1 SG4 NOx	N/A	1.6	1.6	1.6	1.7	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.8	N/A
A1-2 SG5 NOx	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
A1-2 SG5 (CHP) NOx	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
A1-3 SG6 NOx	N/A	2.2	2.2	2.3	2.5	2.3	2.2	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.4	2.5	N/A
A2-1 F401 NOx RFG	N/A	10.7	11.6	12.0	12.5	12.1	11.1	11.1	10.8	10.7	10.8	11.1	11.1	11.6	11.3	12.5	N/A
A2-2 F402 NOx RFG	N/A	6.6	7.1	7.4	7.6	7.3	6.7	6.7	7.0	6.6	6.6	6.8	7.0	7.3	7.0	7.6	N/A
A2-3 F501 NOx RFG	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
A2-4 F204 NOx RFG	N/A	0.9	0.9	1.0	1.0	0.9	0.9	0.8	0.5	0.7	0.7	0.7	0.7	0.7	0.8	1.0	N/A
A2-5 F201X NOx RFG	N/A	4.8	4.8	5.0	4.9	4.8	4.7	4.6	3.9	4.7	4.7	4.8	4.6	4.8	4.7	5.0	N/A
A2-6 F202BX/CX NOx RFG	N/A	1.6	1.6	1.6	1.9	1.8	1.7	1.5	1.2	1.3	1.3	1.7	1.7	1.7	1.6	1.9	N/A
A2-7 F202AN NOx RFG	N/A	2.7	2.4	2.7	2.7	2.6	2.6	2.5	2.0	2.5	2.5	2.3	2.7	2.6	2.5	2.7	N/A
A2-8 F206/207 NOx RFG	N/A	2.5	2.3	2.4	2.5	2.5	2.5	2.3	2.1	2.4	2.4	2.4	2.4	2.5	2.4	2.5	N/A
A2-9 F203N NOx RFG	N/A	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	N/A
A2-10 F801/802 NOx RFG	N/A	5.4	5.1	5.2	5.3	5.3	5.3	5.1	4.1	5.5	5.5	5.4	5.3	5.4	5.2	5.5	N/A
A2-11 F901 NOx RFG	N/A	0.8	0.6	0.6	0.7	0.7	0.4	0.8	0.7	0.7	0.7	0.8	0.8	0.9	0.7	0.9	N/A
Emission Point	Limit (kg/hr)	01-Jan-24	08-Jan-24	15-Jan-24	22-Jan-24	29-Jan-24	05-Feb-24	12-Feb-24	19-Feb-24	26-Feb-24	04-Mar-24	11-Mar-24	18-Mar-24	25-Mar-24	Average	Max	Compliance
A2-12 C201A NOx kg/hr	N/A	5.6	5.4	5.2	4.9	4.8	4.8	4.8	3.4	5.0	5.0	5.3	5.3	5.0	5.0	5.6	N/A
A2-13 C201B NOx kg/hr	N/A	5.6	5.4	5.2	4.9	4.8	4.8	4.8	3.4	5.0	5.0	5.3	5.3	5.0	5.0	5.6	N/A
A2-14 C202 NOx kg/hr	N/A	1.2	2.7	1.5	0.0	0.0	0.0	0.0	0.0	0.3	2.1	2.6	2.6	1.7	1.1	2.7	N/A
Total Engine NOx	27kg/hr	12.4	13.4	11.9	9.7	9.7	9.7	9.5	6.9	10.3	12.2	13.2	13.1	11.7	11.1	13.4	100%

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Appendix 2. Oxides of Nitrogen emissions (Page 03 of 03)

Monthly Average NO₂ Emission; All Emission Points Combined

Monthly Average NO _x Concentration, all emission points combined				
Month	Limit	Average	TPM	Compliance
	kg/hr	kg/hr	ton/month	
Jan-2024	450	53.08	39.49	100%
Feb-2024	450	48.13	32.34	100%
Mar-2024	450	52.72	39.22	100%
		Q1 Total	111.05	

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Appendix 3. Integrated Emissions Management

Condition 4.1.4 & Schedule B.1.2 Integrated Emissions to Air – NO₂ (mg/m³)

2024			
Month	AEL (BAT 34)	Integrated Emission mg/m ³	Mass Emission (tonnes)
Jan-24	150	116.3	12.6
Feb-24	150	116.2	11.0
Mar-24	150	116.0	12.4

Approved By: 
Austin Broderick, HSE Manager,
Irving Oil Whitegate Refinery

Date: 25/04/2024

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