

Gert Sibande District Municipality

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ATMOSPHERIC EMISSION LICENCE AS CONTEMPLATED IN SECTION 43 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004, (ACT NO. 39 OF 2004) (NEMAQA) AS AMENDED

I, **Tsunke Daniel Hlanyane**, in my capacity as **License officer** (hereinafter referred to as "the Licensing Authority"), in terms of section 43 of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004, hereinafter referred to as the "Act"), and as provided for in section 36(1) of the Act, hereby grant an Atmospheric Emission Licence to **Sasol South Africa (Pty) Ltd: Secunda Chemicals Operations-Solvents Division** ("the Applicant)."

This Atmospheric Emission Licence is issued to **Sasol South Africa (Pty) Ltd: Secunda Chemicals Operations-Solvents Division** in terms of section 41(1) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("the Act"), in respect of Listed Activity **Category 2: Sub-category 2.1 Combustion Installations, Category 6: Organic Chemical Industry**. The Atmospheric Emission Licence has been issued on the basis of information provided in the company's application dated **21 February 2019** and information that became available during processing of the application.

The Atmospheric Emission Licence is valid upon signature for a period not exceeding five (05) years from the date of issue of the licence. The reason issuance of the licence is for renewal. The Atmospheric Emission Licence is issued subject to the conditions and requirements set out below which form part of the Atmospheric Emission Licence and which are binding on the holder of the Atmospheric Emission Licence ("the holder").

1 ATMOSPHERIC EMISSION LICENCE ADMINISTRATION

Name of the Licensing Authority	Gert Sibande District Municipality
Atmospheric Emission Licence Number	Govan Mbeki/Sasol South Africa Ltd Secunda ChemicalsOperationsSolventsDivision/0017/2019/F03
Atmospheric Emission Licence Issue Date	02 May 2019
Atmospheric Emission Licence Type	Renewal
Expiry date	02 May 2024


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2 ATMOSPHERIC EMISSION LICENCE HOLDER DETAILS

Enterprise Name	Sasol South Africa Ltd
Trading as	Secunda Chemicals Operations-Solvents
Enterprise Registration Number (Registration Numbers if Joint Venture)	1968/013914/06
Registered Address	Sasol Place 50 Katherine Street Sandton, Gauteng
Postal Address	Private Bag X1000 Secunda 2302
Telephone Number (General)	017 610 5015
Industry Sector	Organic Composite Solvents Manufacturing
Name of Emission Control Officer	Hannes Buys
Telephone Number	017 619 3512
Cell Phone Number	082 339 3906
Fax Number	Not Available
Email Address	Hannes.Buys@sasol.com
After Hours Contact Details	082 902 1989
Land Use Zoning as per Town Planning Scheme	Industrial Special

3. LOCATION AND EXTENT OF PLANT

3.1. Facility Address

Physical Address of the Premises	PDP Kruger Secunda 2302
Description of Site (Erf)	Highveld Ridge Mpumalanga
Coordinates of Approximate Centre of Operations	
Extent (km ²)	2450ha
Elevation Above Mean Sea Level (m)	1597m
Province	Mpumalanga
Metropolitan/District Municipality	Gert Sibande District Municipality
Local Municipality	Govan Mbeki Local Municipality
Designated Priority Area	Highveld Priority Area


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3.2. Description of surrounding land use (within 5 km radius)

The Sasol Secunda operations primary area (the plant), waste water treatment plants, outside ash facility, coal supply to the factory and secondary area used for farming and game



Figure 1: Google Earth Image of area surrounding the site (5km)

4. GENERAL CONDITIONS

4.1. Process and ownership changes

- (a) The holder of the Atmospheric Emission Licence must ensure that all unit processes and apparatus used for the purpose of undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing atmospheric emissions, are at all times properly maintained and operated.
- (b) No building, plant or site of works related to the listed activity or activities used by the licence holder shall be extended, altered or added to the listed activity without an environmental authorisation from the competent authority. The investigation, assessment and communication of potential impact of such an activity must follow the assessment procedure as prescribed in the Environmental Impact Assessment Regulations published in terms of Section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended.
- (c) Any changes in processes or production increases, by the licence holder, will require prior written approval by the licensing authority.
- (d) Any changes to the type and quantities of input materials and products, or to production equipment and treatment facilities will require prior written approval by the licensing authority.
- (e) The licence holder must, in writing, inform the licensing authority of any change of ownership of the enterprise. The licensing authority must be informed within thirty (30) working days after the change of ownership.
- (f) The licence holder must immediately on cessation or decommissioning of the listed activity inform, in writing the licensing authority.
- (g) The licence holder must notify the Licensing Authority in writing and submit the closure and rehabilitation plan three (3) months prior to the decommissioning of the facility.


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4.2. General duty of care

- (a) The holder of the Licence must, when undertaking the listed activity, adhere to the duty of care obligations as set out in section 28 of the NEMA.
- (b) The Licence holder must undertake the necessary measures to minimize or contain the atmospheric emissions. The measures are set out in section 28(3) of the NEMA as amended.
- (c) Failure to comply with the above condition is a breach of the duty of care, and the Licence holder will be subject to the sanctions set out in section 28 of the NEMA as amended including Part III Section 3 of the Gert Sibande District Municipal Air Quality by-laws.

4.3. Sampling and/or analysis requirements

- (a) Measurement, calculation and /or sampling and analysis shall be carried out in accordance with any nationally or internationally acceptable standard in line with (Annexure A) of NEMAQA as amended.
- (b) Methods other than those contained in Annexure A of NEMAQA as amended may be used with the written consent of the National Air Quality Officer.
- (c) In seeking the written consent referred to in paragraph (b), an applicant must provide the National Air Quality Officer with any information that supports the equivalence of the method other than that contained in Annexure A to a method contained in Annexure A.
- (d) The licence holder is responsible for quality assurance of methods and performance. Where the holder of the licence uses internal or external laboratories for sampling or analysis, only accredited laboratories by the national accreditation body shall be used. The certified copy of accreditation of the internal or external laboratory must be submitted to the licence authority annually including its external audits certification.
- (e) The licence holder must provide the licensing authority on request with raw data obtained during sampling and or analysis including proof of agreed methodology used to reach the final results submitted for compliance.

4.4. General requirements for licence holder

- (a) The licence holder is responsible for ensuring compliance with the conditions of this licence by any person acting on his, her or its behalf including but not limited to an employee, agent, sub-contractor or person rendering a service to the holder of the licence.
- (b) The licence does not relieve the licence holder to comply with any other statutory requirements that may be applicable to the carrying on of the listed activity.
- (c) A copy of the licence must be kept at the premises where the listed activity is undertaken. The original licence must be made available to the Environmental Management Inspector / Air Quality Officer or an authorised officer representing the licensing authority who requests to see it.
- (d) The licence holder must inform, in writing, the licensing authority of any change to its details but not limited to the name of the Emission Control Officer, postal address and/or telephonic details within five (05) working days after such change has been effected.
- (e) The Emission Control Officer or facility representative must attend the Highveld Priority Area Implementation Task Team or Air Quality Stakeholder Forum Meetings quarterly.
- (f) The licence holder must report and submit annual emission report on the National Atmospheric Emission Inventory System (NAEIS) for the preceding year in terms of GNR 283 in Government Gazette 38633 of 02 April 2015.
- (g) The licence holder must hold an environmental/health consultation forum meetings with affected and interested parties bi-annually to give feedback on the impact of the facility on related matters, and must provide written prove of such consultation to the licensing authority bi-annually.

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4.5. Statutory obligations

The licence holder must comply with the obligations as set out in Chapter 5 of NEMAQA (Act no. 39 of 2004) as amended, Chapter 10 and 11 of the National Health Act 61 of 2003, National Environmental Management Act 108 of 1998 as amended, National Water Act No.36 of 1998, and National Waste Management Act No. 59 of 2008 including Gert Sibande District by-laws.

5 NATURE OF PROCESS

5.1 Process Description

5.1.1 Chemical Work-Up (CWU)

5.1.1.1 Primary Separation: (East and West) (U2/36)

The purpose of the primary separation unit (Unit 2/36) is to recover the carbonyls and alcohols (NACs) from the Secunda Synfuels Operations (SSO) Synthol plant feed. This is done through a set of distillation columns. The NACs are further separated into streams of carbonyls and alcohols via distillation columns. The carbonyls are fed to the carbonyl recovery units, whilst the alcohols are fed to the alcohol recovery units. Reaction water from SSO Synthol plants enters 2/36TK-101 where oil is decanted into 2/36DM-104 and subsequently pumped back to SSO Synthol. To remove oil from the primary distillation columns, side streams from these columns are cooled and then collected in 2/36DM-109. The contents of 2/36DM-109 is returned to SSO Synthol via 2/36DM-104. Both these drums are controlled at atmospheric pressure via a vent and continuous nitrogen blanket. The pressure of the primary distillation columns is controlled by nitrogen injection and venting to atmosphere. Before being released to the atmosphere, the vent gas is first condensed and sent to knock-out drum 2/36DM-108. The vapours from 2/36DM-108 are then sent to the vent gas scrubber (2/36VL-108) before finally being released to the atmosphere.

5.1.1.2 Carbonyl Recovery: (East and West) (U2/37)

The production of the individual carbonyl recovery units (Unit 2/37). The carbonyl stream from the primary separation units (Unit 2/36) is fed to the carbonyl recovery units (Unit 2/37). The objective of this units are to separate the raw carbonyl stream into mixed aldehydes, methanol, methyl-ethyl-ketone and acetone via distillation.

5.1.1.3 Alcohol Recovery: (East and West) (Unit 2/38, Unit 38N, Unit 73, Unit 237N)

The production of the individual alcohol products is done detailed below:

- **Alcohol Recovery Plants 9A Unit 2/38)**

The alcohol stream from the primary separation units (Unit 2/36) is fed to the alcohol recovery unit (Unit 2/38). The objective of this unit is to

- Remove water from the alcohol stream (alcohol dehydration sections),
- Remove traces of carbonyls (hydrogenation section), and then finally
- Separate the dry alcohol mixtures into various alcohols (alcohol recovery section)

In the alcohol dehydration section, a carrier liquid is added to remove from the main alcohol feed stream from Unit 2/36, via an azeotropic distillation process. The carrier liquid is then recovered and recycled. The dry alcohol stream is then fed to the hydrogenation reactor where the unwanted carbonyls in the stream are converted to corresponding alcohols. This dry (water free), and carbonyl free mixed alcohol stream, is fed to the alcohol recovery section where various alcohols present within the dry alcohol stream are stripped and removed through a series of distillation columns.

- **Normal Propanol Plant: Chemicals Works-Up (Unit 38N)**

In the n-propanol plant, the Propylol product from the alcohol recovery units (Unit 2/38) is upgraded to 99.90% N-propanol in an extractive distillation process.



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- **High Purity Ethanol (HPE) Plant: Chemicals Work-Up West (Unit 73)**
At the High Purity Ethanol plant, 99.99% is recovered from Ethanol (high purity ethanol, HPE) is produced using a mixture of Ethylol 95 (95% Ethanol) from the alcohol recovery units (Unit 2/38) and Ethylol 93 from Ethyl Acetate unit by means of a combination of distillation and extractive distillation units.
- **Ethylol 99 Plant: Chemical Work-Up East (Unit 237N)**
At Unit 237N acetaldehyde is separated from a mixed aldehyde feed stream from Unit 2/37 via a distillation process. Acetaldehyde is then further hydrogenated to form Ethylol 99 (99% Ethanol).

5.1.1.4 Ethyl acetate (Unit 590)

At Unit 590, the Ethyl acetate is produced from Ethylol 95 received from Unit 2/38. Lights components, mainly ethers present in the feed are removed by distillation prior to converting ethanol to ethyl acetate. The ethanol is converted to ethyl acetate in a vapour phase dehydrogenation reactor. The crude product from the first reactor is hydrogenated in a polishing reactor to remove some impurities. The hydrogen is separated from the crude reactor product, compressed and exported back to SSO. The crude product from the reactor system is further separated into ethyl acetate and 93% ethanol (Ethylol 93) via distillation column. Ethyl Acetate is a final product, and Ethyl 93 is used at U73 to produce HPE. The vents from the pressure control systems on process equipment, as well as heavies from final ethyl acetate distillation column are sent to the Unit 590 process flare.

5.1.2 Co-monomers

5.1.2.1 Hexene

The Hexene plant processes two types of Secunda Synfuels Operations (SSO) Refinery feed streams (stabilised light oil and condensate streams) to produce 1-Hexene and 1 Pentene (Train 2). The plant consists of the following sections:

- SLO feed preparation
- Unit 1100 feed preparation
- Train 1
- Train 2
- Train 3

5.1.2.1.1 SLO Feed preparation (Unit 3100)

This section receives feed from the Sasol Synfuels refinery and processes it in an extractive distillation process. A Solvent is used to extract impurities from the feed stream to enable the product to be used further upstream.

5.1.2.1.2 Feed preparation (Unit 1100)

This section receives two feed streams from the Sasol Synfuels refinery and processes these in a distillation process.

5.1.2.1.3 Hexene Trains 1, 2 and 3 (Unit 300)

This section receives feed streams from the Hexene feed preparation units and produces 1-Hexene. Off gases are sent to Hexene flare for destruction. Train 2 is also able to produce 1-Pentene as and when required by the market.

5.1.2.2 Octene (Unit 310, 302 and 304)

The Octene plants process several feed streams to produce 1-Octene. The plants consist of the following sections:



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5.1.2.2.1 Octene Train 1 (Unit 301)

This section receives feed from the Sasol Synfuels refinery and processes it in a distillation process to produce 1-Octene. This plant includes a regenerator and scrubber system for recovery of Potassium Carbonate.

5.1.2.2.2 Octene Train 2 (Unit 302)

This section receives two feed streams from the Sasol Synfuels refinery and processes these in a distillation process to produce 1-Octene. Acids in this plant are removed through solvent extraction.

5.1.2.2.3 Octene train 3 (Unit 304)

The 1-Heptene feed streams from Octene Train 2 is routed to the plant where it is processed to remove acids. This stream are subsequently combined with acid free streams from Octene Train 1 and Hexene units to go through a series of reaction, distillation, adsorption units to produce Octanol and 1-Octene products. The unreacted and by-products are returned to the SSO Refinery for further processing.

The plant utilises Dowtherm hot oil as one of the heating mediums to achieve desired reaction temperatures. A hot oil heater (304HT1901) burns fuel gas from the complex and flash gas from the front end section of plant to generate heat required to maintain the temperature of the circulating hot oil supply. The off-gases from the heater are released to atmosphere. The plant is also equipped with a thermal oxidizer (304HT-1902) located adjacent to the hot oil heater. The oxidizer burns vacuum off-gases from the various sections of the plant. The thermal oxidizer and the hot oil heater share the same stack. The gas relief devices in the different sections of the plants are connected to the Octene Train 3 flare system. The plant has a dedicated tank farm with tanks that are equipped with a nitrogen pressure control system that periodically vent to atmosphere to maintain tanks' operating pressures.

5.1.2.3 Safol (Unit 303)

The Safol plant extracts olefins from the feed received from the factory. The olefin in the feed from factory is concentrated in a distillation process. The product from upstream section is treated using a solvent extraction process step to remove acids and oxygenates. The acid free olefins are reacted with pure gas from SSO to produce an intermediate aldehyde product. The aldehyde product is then hydrogenated into a Safol product, which is further purified to meet desired product specifications. The unreacted pure gas from the hydroformylation is returned to the SSO fuel gas header system and purge gases from hydrogenation section are routed into flare system for destruction. The gas relief devices in the different sections of the plants are connected to the flare system. The plant has a dedicated tank farm with tanks that are equipped with a nitrogen pressure control system that periodically vents to atmosphere to maintain tanks' operating pressures.

5.1.3 Solvents rail and road loading

Solvents owns and operates facilities for the loading of road and rail tankers with various chemical products produced by the Solvents business units.


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5.2 Listed activities

Listed Activity Number	Category of Listed Activity	Sub-category of the listed activity	Description of the Listed Activity	Application	Sasol Processes	Solvents
2.1	Petroleum Industry	Combustion installation	Combustion installation not used primarily for steam raising or electricity generation (furnaces and heaters)	All refinery furnaces, heaters and boilers with the design capacity equal to or greater than 50 MW heat input	Octene 1 Octene 3	
6	Organic Chemical Industry	N/A	The production, or use in production of organic chemicals not specified elsewhere including acetylene, acetic, maleic or phthalic anhydride or their acid, carbon disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber. The production of organometallic compounds, organic dyes and pigments, surface-active agents. The polymerisation or co-polymerisation of any unsaturated hydrocarbons, substituted hydrocarbon (including vinyl chloride). The manufacture, recovery or purification of acrylic acid or any ester of acrylic acid. The use of toluene di-isocyanate or other di-isocyanate of comparable volatility or recovery of pyridine.	All installations producing and or using more than 100 tons per annual of any of the listed compounds	Chemical Work-Up East and West Co-monomers	


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5.3 Unit process or processes

Unit process	Function of unit process	Batch continuous process or	Operating hours per day	No. days operation per year
Chemical Work-Up (CWU)				
Primary Separation Unit 2/36	Separation of Non-Acid chemicals from extraction water received from Synthol (2/20) and subsequent separation of the NACs into Alcohols and Carbonyls	Continuous	24	365
Carbonyl Recovery Unit 2/37	Separation of Raw Carbonyls into Acetone, Methyl-ethylketone, Aldehydes and Methanol	Continuous	24	365
Alcohol recovery Unit 2/38	Separation of Raw Alcohols into Ethylol 95, iso-propylol, Propylol, iso-butylol, Sabutol and Sabutol bottoms	Continuous	24	365
n-Propanol Unit 38N	Purification of Propylol to pure Propanol and producing Propanol B as a by-product	Continuous	24	365
High purity Ethanol Unit 73	Purification of Ethylol 95 to pure Ethanol and producing Ethanol Lights as a by-product	Continuous	24	365
Ethanol (99) Unit 237N	The manufacture of Ethanol from Acetaldehyde and purification of ethanol through reactive distillation	Continuous	24	365
Ethyl Acetate Unit 590	The production of Ethyl acetate and subsequent purification through distillation	Intermittent	24	365
Hexene				
Hexene Train 1, 2 & 3 Unit 300	Production of 1-Hexene and 1-Pentene (Hexene Train 2)	Continuous	24	365
Hexene flare Unit 300, Unit 301, Unit 302, Unit 303, Unit 304	Destruction of organic gases during emergency, start-up, shut down and upset conditions.	Continuous	24	365

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Unit process	Function of unit process	Batch continuous process or	Operating hours per day	No. days operation per year
Octene				
Octene Train 1 Unit 301	Production of 1-Octene	Continuous	24	365
Octene Train 1 Thermal Regenerator Unit 301	Recovery of Potassium Carbonate	Continuous	24	365
Octene Train 2 Unit 302	Production of 1-Octene	Continuous	24	365
Octene Train 3 Unit 304	Production of 1-Octene, n-Octanol from 1-Heptene via reaction and distillation steps	Semi-batch	24	365
Octene Train 3 flare Unit 300, Unit 301, Unit 302, Unit 303, Unit 304	Destruction of organic gases during emergency, start-up, shut down and upset conditions.	Batch	24	365
Safol				
Safol Unit 303	Production of detergent alcohol Safol™	Continuous	24	365
Solvents Loading				
Chemical Work-Up (CWU) East loading facilities	CWU East operates facilities for the loading of road tankers with various chemical products produced by CWU East.	Continuous	24	365
Chemical Work-Up (CWU) West loading facilities	CWU West operates facilities for the loading of road tankers with various chemical products produced by CWU West.	Continuous	24	365
Solvents road and rail loading	Solvents operates facilities for the loading of road and rail tankers with various chemical products produced by the Solvents business units	Continuous	24	365
Alcohol fuel loading facilities at Safol	Safol operates facilities for the loading of road tankers with alcohol fuel produced at Safol.	Continuous	24	365
n-Octanol loading facilities at Octene 3	Octene 3 operates facilities for the loading of road tankers with n-Octanol produced at Octene 3.	Continuous	24	365



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5.4 Graphical Process Information

5.4.1 Chemical Work Up (CWA) and Ethyl Acetate (EA)



Figure 3: Primary separation Unit 36

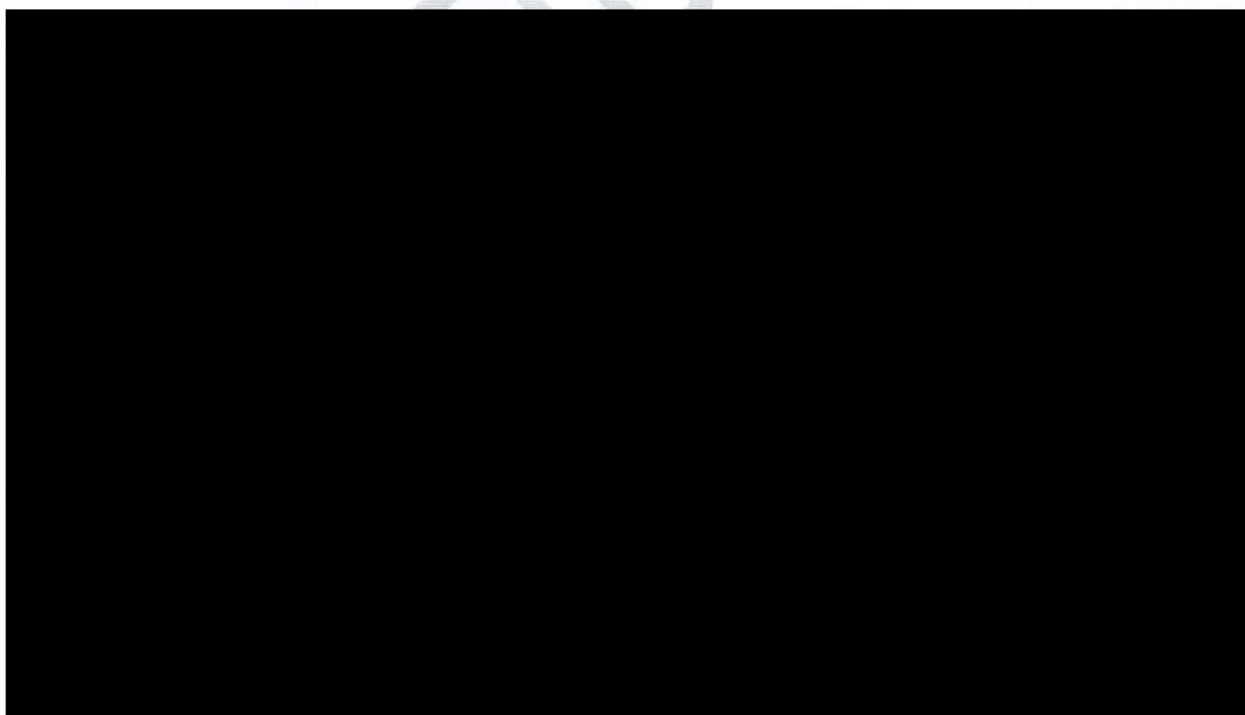


Figure 4: Primary separation Unit 236



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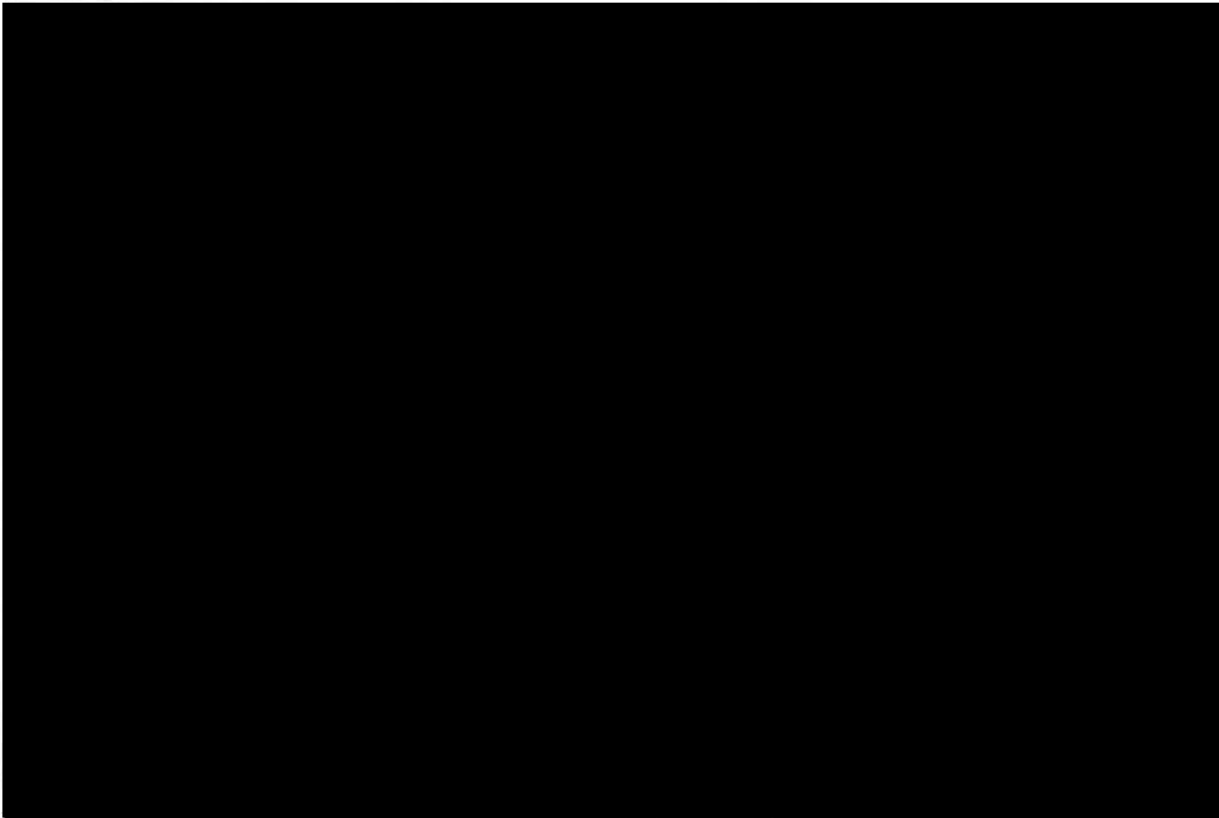


Figure 5: Carbonyl Recovery Unit 37

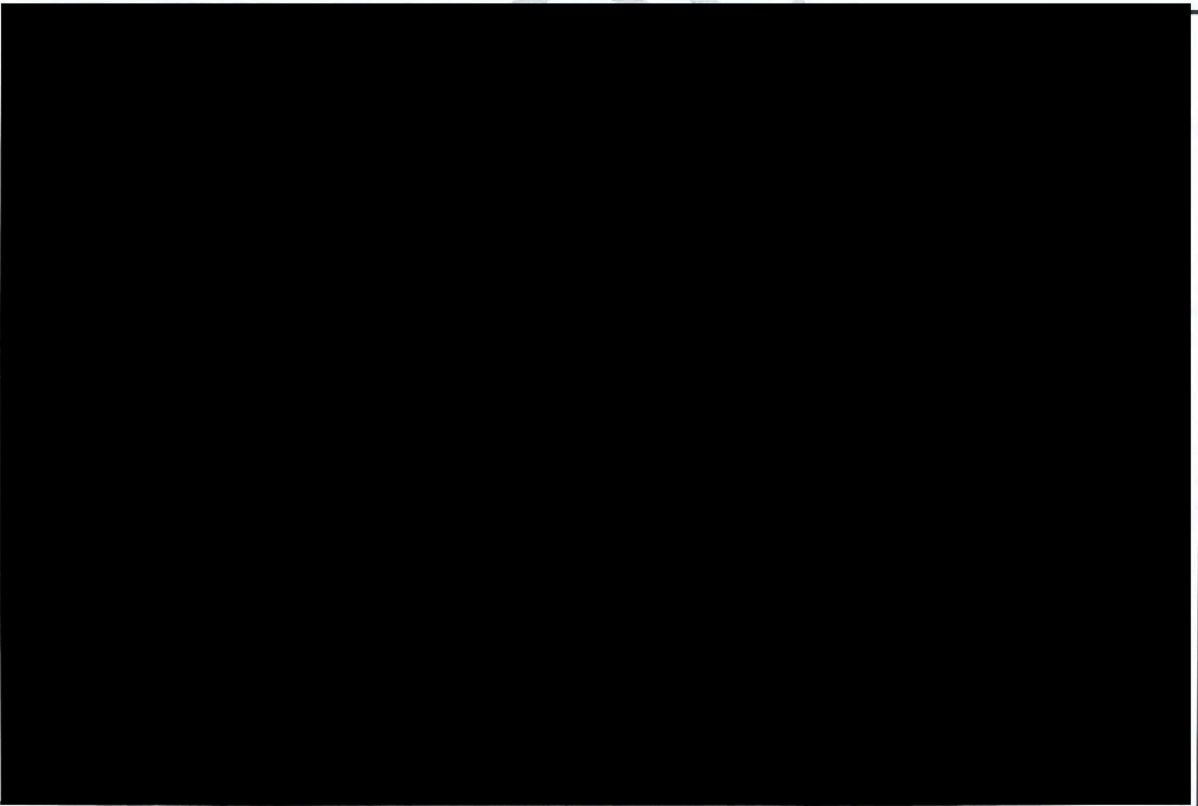


Figure 6: Carbonyl Recovery Unit 237


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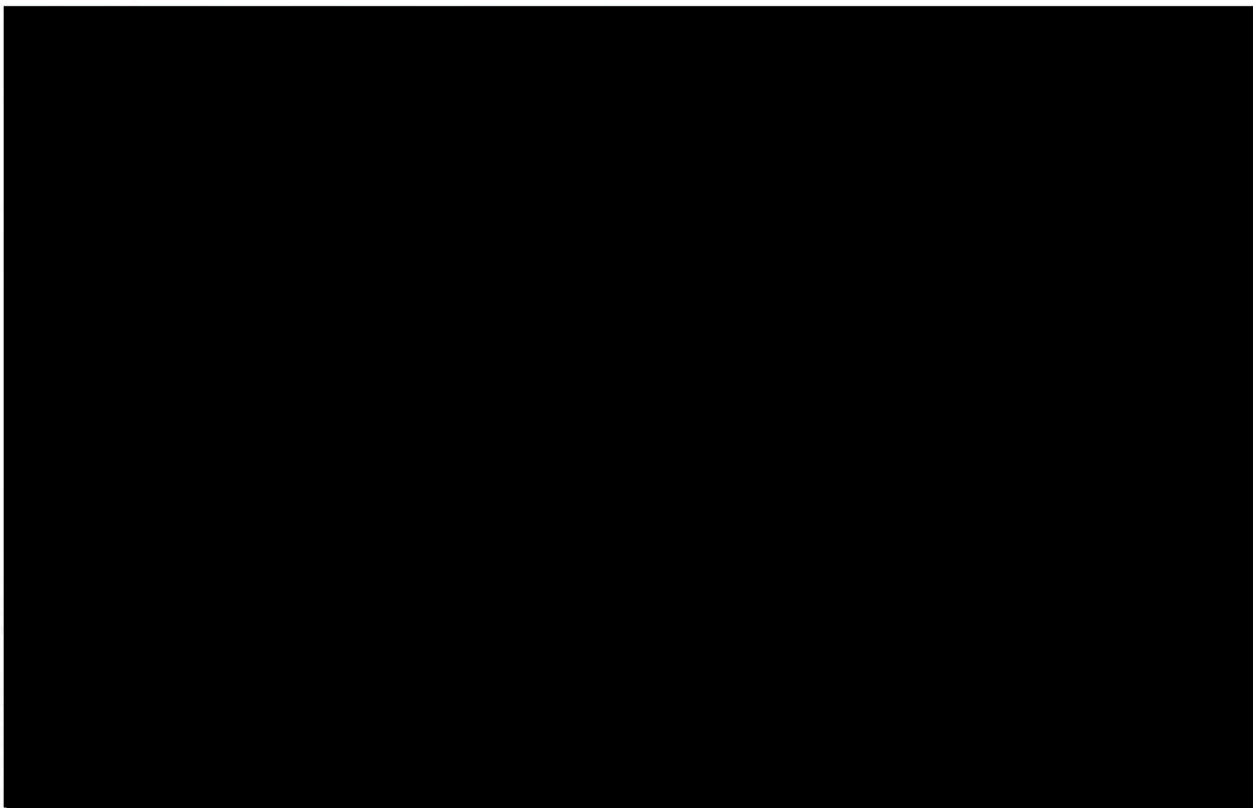


Figure 9: Alcohol Recovery Unit 238



Figure 10: NPA Unit 38N


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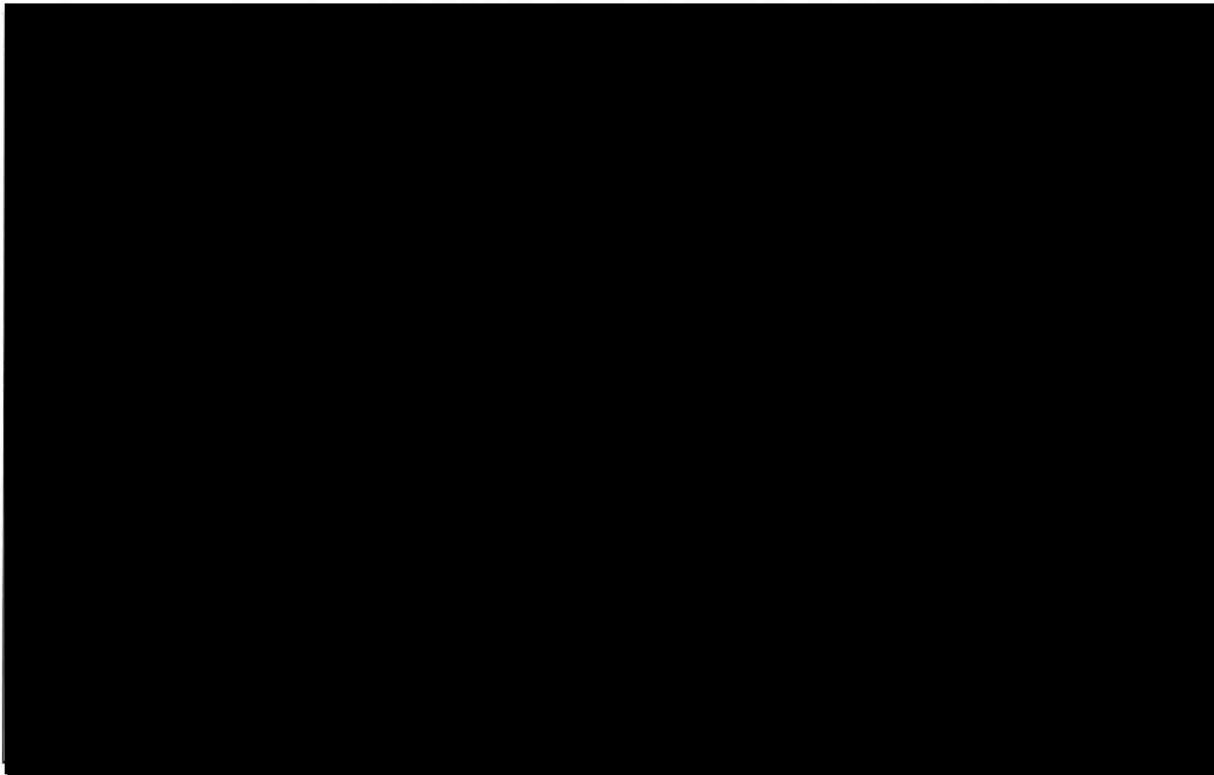


Figure 7: Acetaldehyde hydrogenation Unit 237N

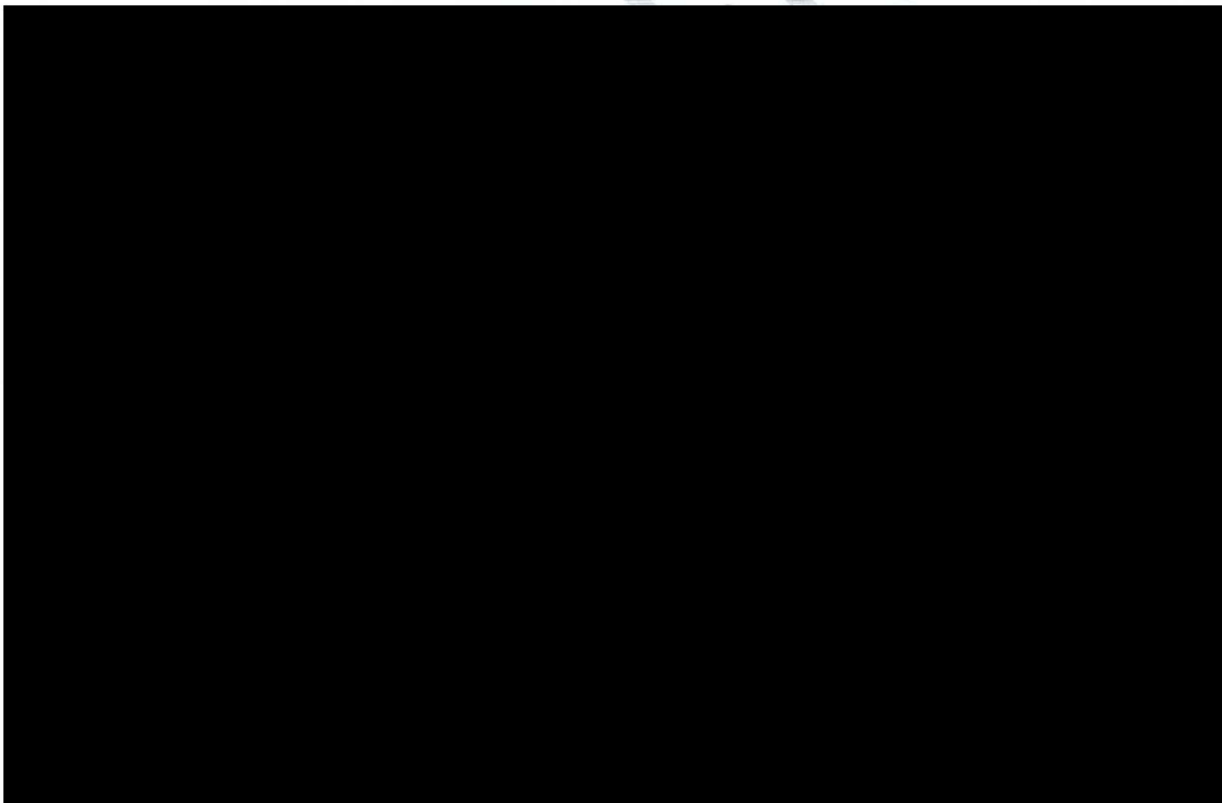


Figure 8: Alcohol Recovery Unit 38


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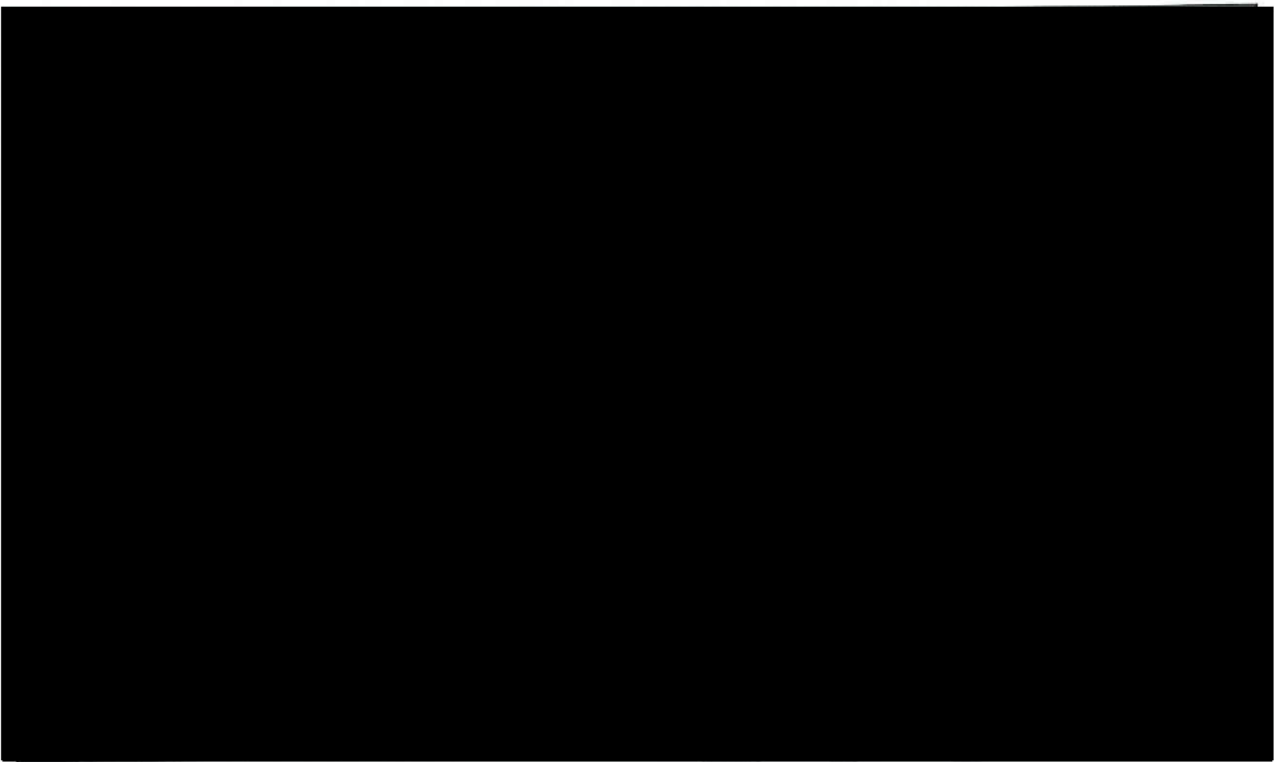


Figure 11: HPE Unit 73

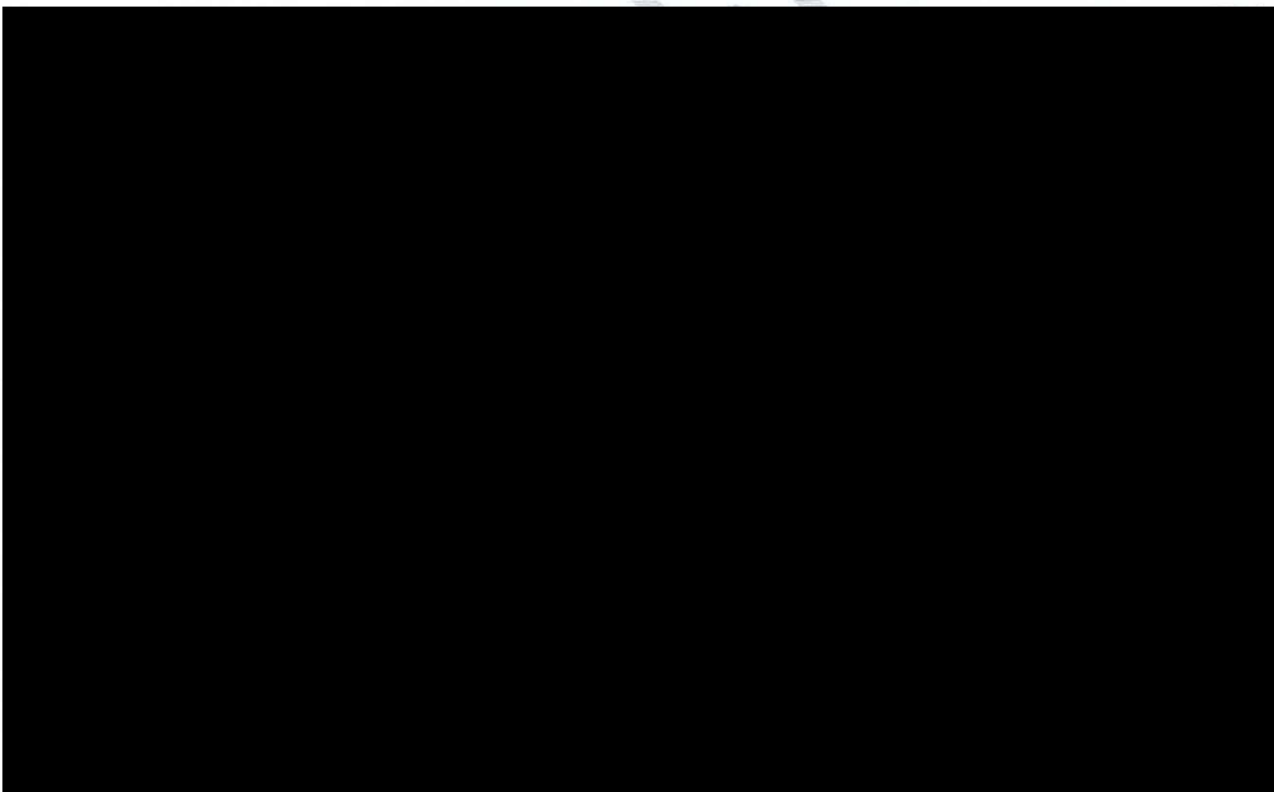
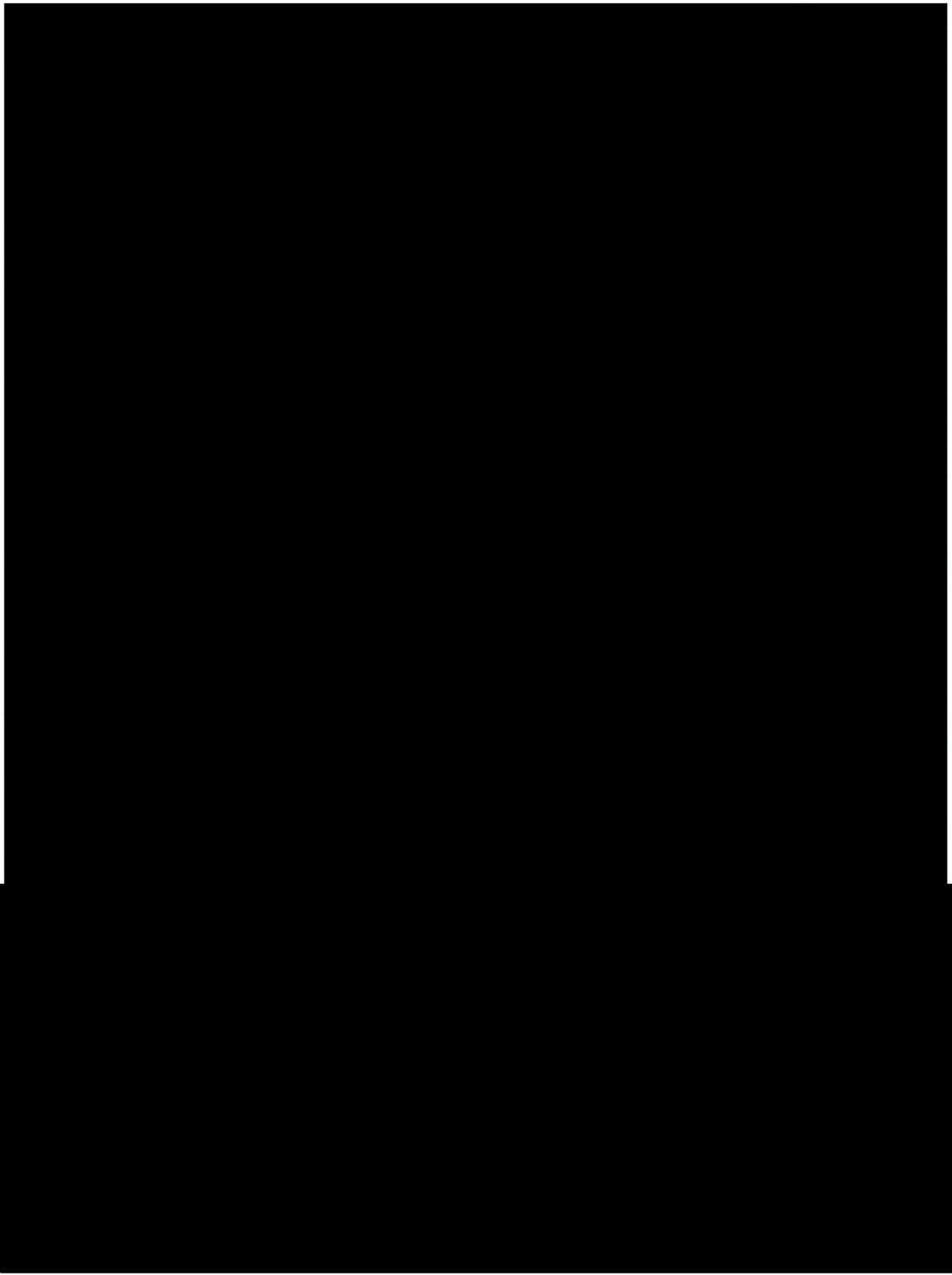
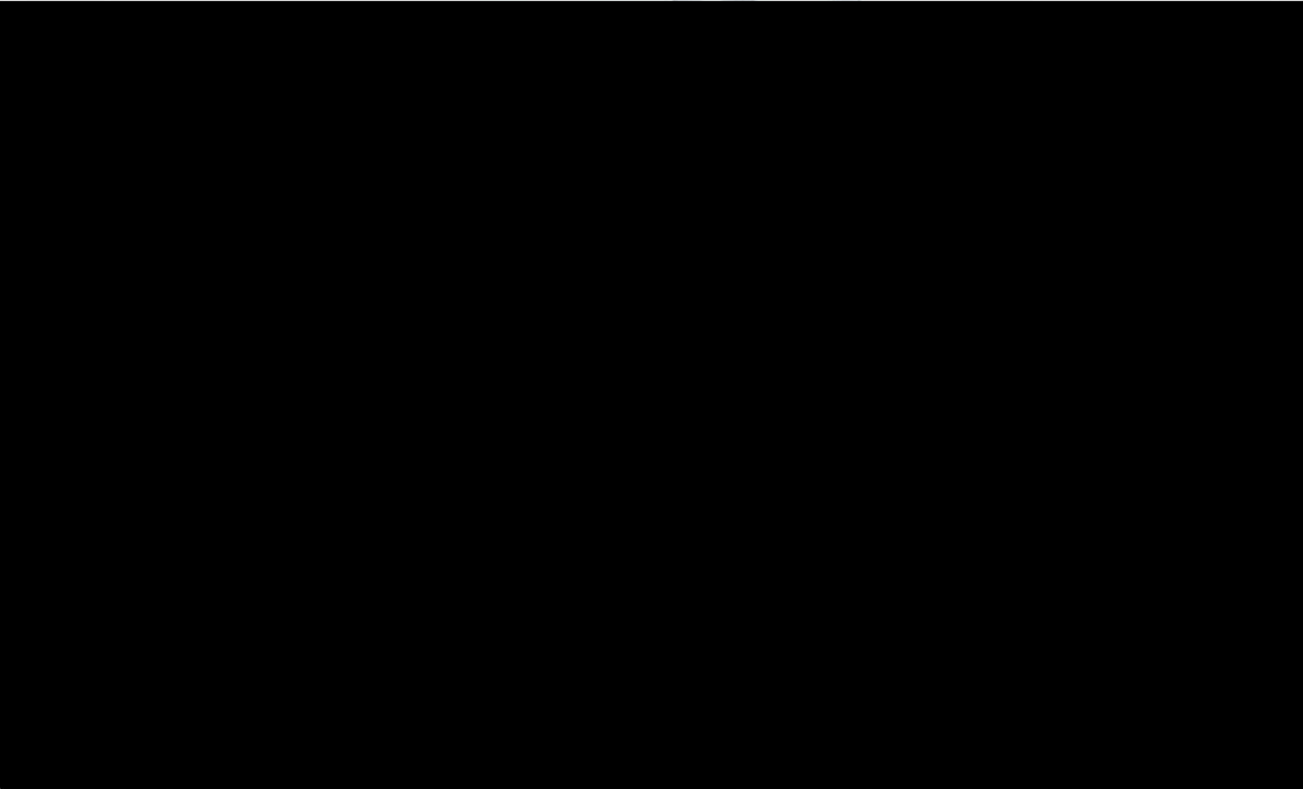



Figure 12: Ethyl Acetate Unit 590

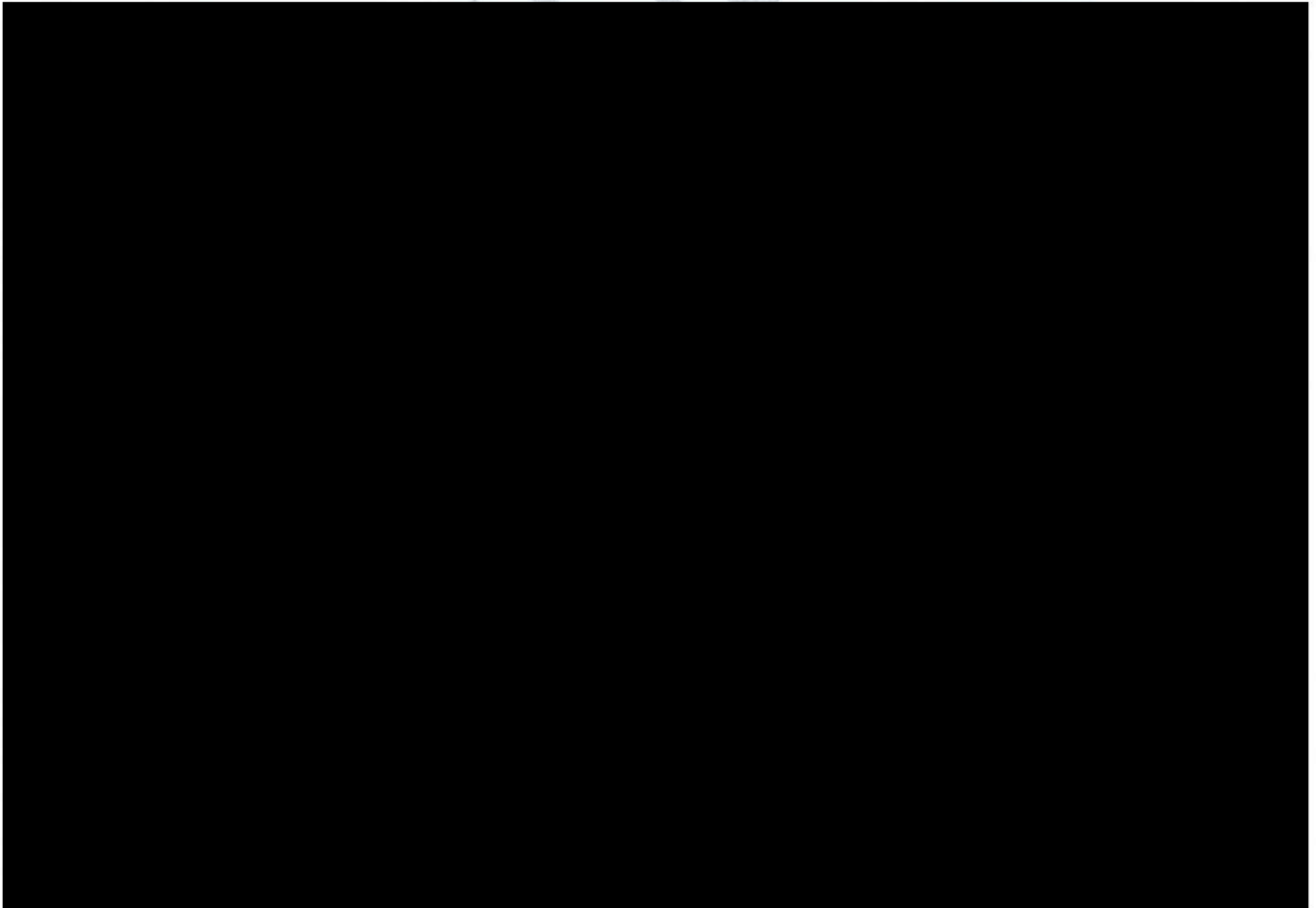
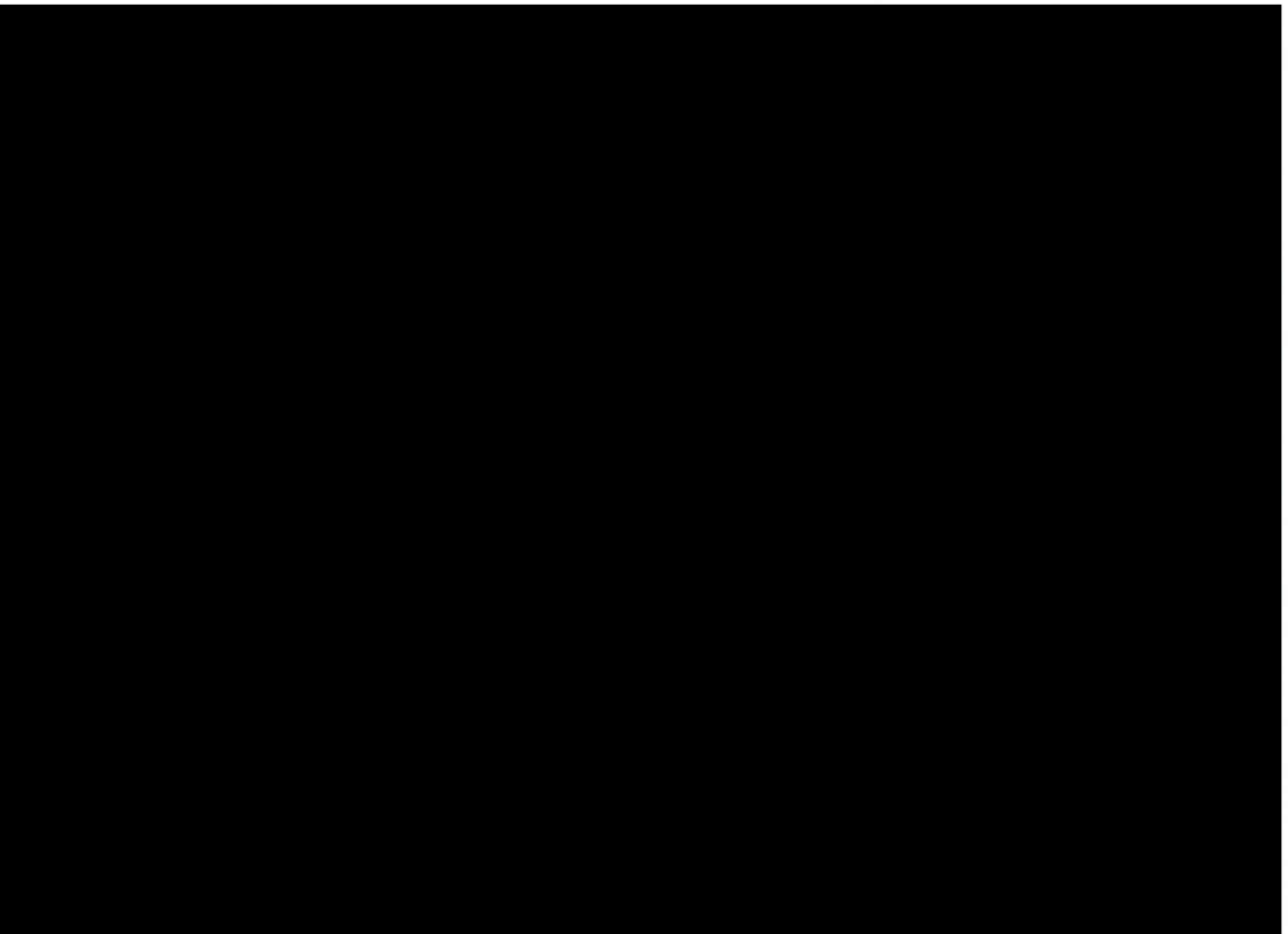

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5.4.2 Solvents rail and road loading

5.4.2.1 Chemical Work-Up (CWU) and Ethyl Acetate (EA)

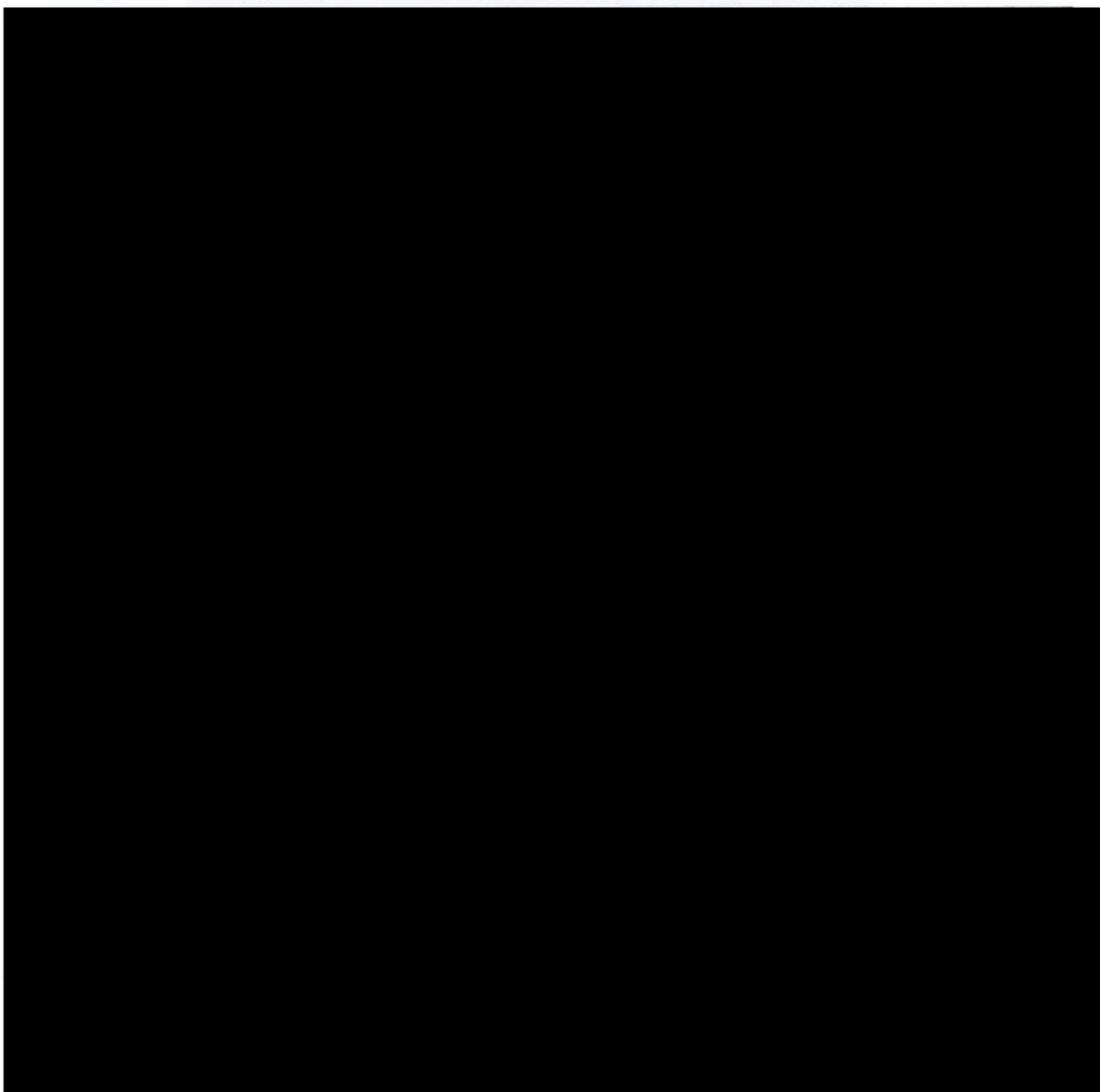


Figure 19: Chemical Work-Up (CWU) east loading facilities


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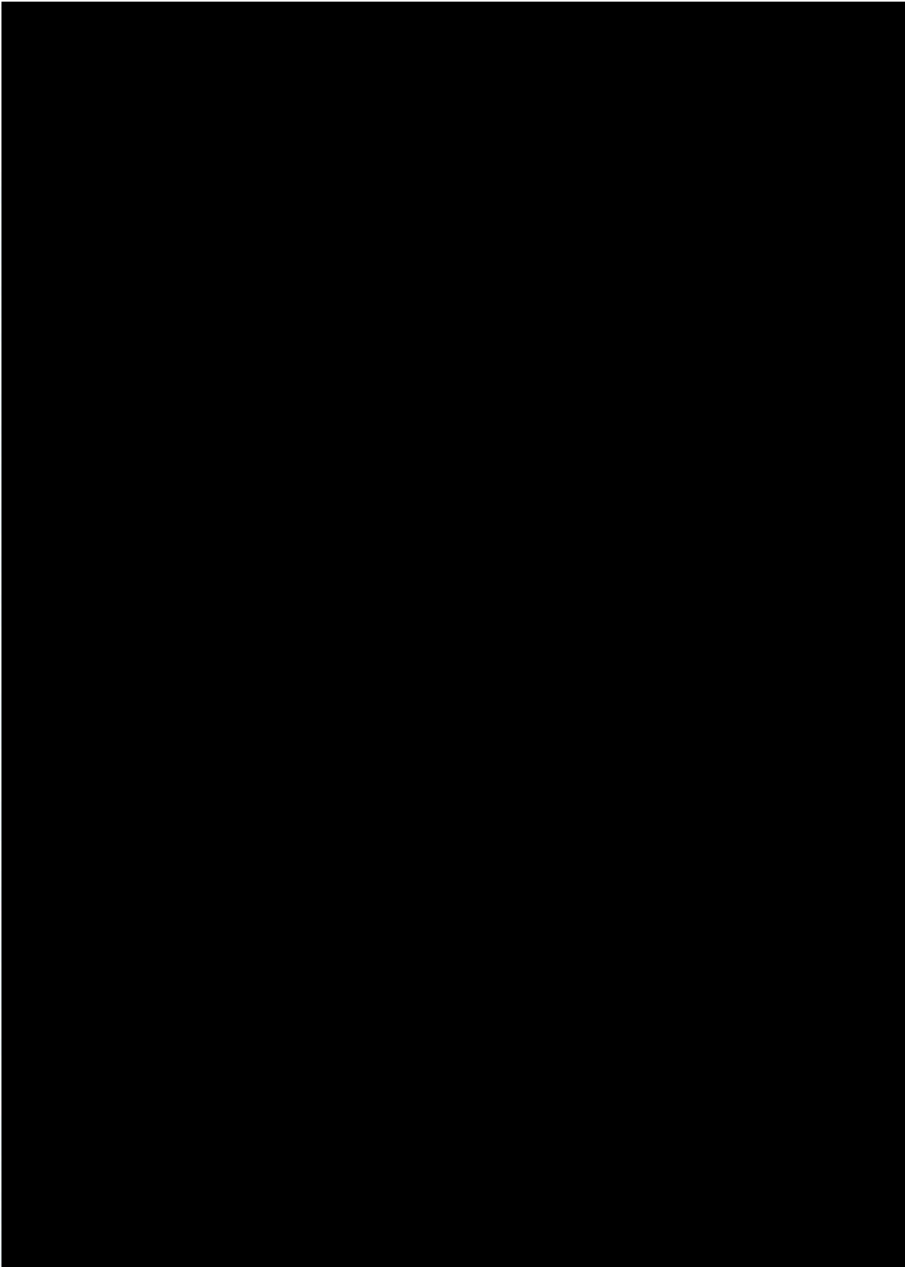
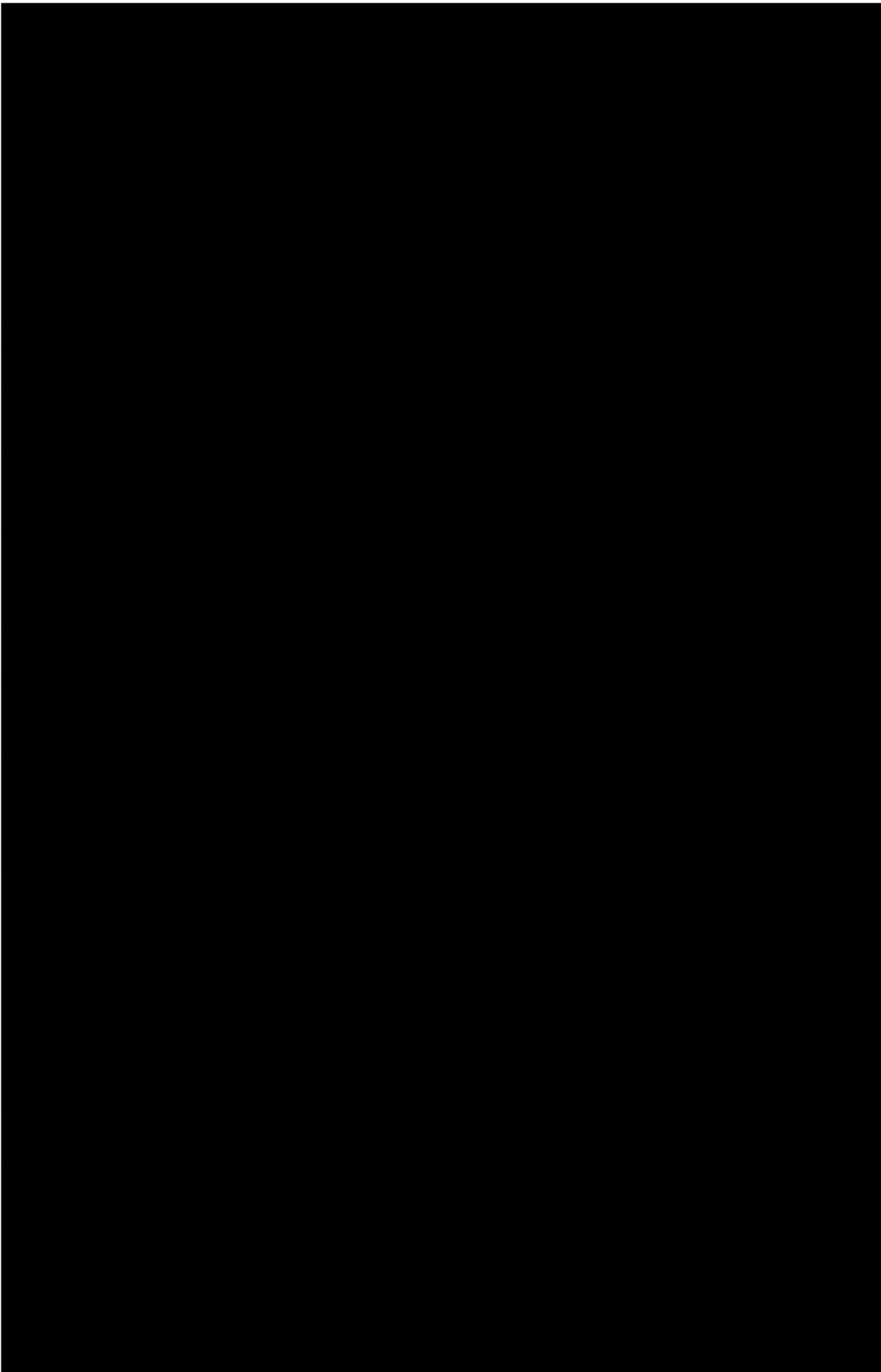


Figure 20: Chemical Work-Up (CWU) west loading facilities


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6 RAW MATERIAL AND PRODUCTS

6.1 Raw materials used

Raw material type	Maximum permitted consumption rate	Units (quantity/period)	Design rate consumption	Units (quantity/period)
Chemical Work-Up West				
Reaction water	[REDACTED]	Kilotons per annum	[REDACTED]	Kilotons per annum
Chemical Work-Up East				
Reaction water	[REDACTED]	Kilotons per annum	[REDACTED]	Kilotons per annum
Ethyl acetate unit 590				
Ethanol 95	[REDACTED]	Kilotons per annum	[REDACTED]	Kilotons per annum
Hexene				
Feed (C5-C7)	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
NMP	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Methanol	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Octene Train 1 and 2				
Feed	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Ethanol circulation	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
NMP circulation	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Potassium Carbonate	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Potassium Hydroxide (KOH)	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Thermal Regenerator unit 302				
Potassium salt	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Stripper off gases	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Atomising steam	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Octene 3				
Octene III Feed	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Syngas	[REDACTED]	Kilo cubic metres (normal) per annum	[REDACTED]	Kilo cubic metres (normal) per annum
Hydrogen	[REDACTED]	Kilo cubic metres (normal) per annum	[REDACTED]	Kilo cubic metres (normal) per annum
Safol Unit 303				
Safol Feed	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Acetonitrile top-up	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
HP Hydrogen	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum

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Pure Gad		Tons per annum		Tons per annum
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6.2 Production rates

Product name	Production capacity permitted	Units (quantity/period)	Design production rate	Units (quantity/period)
Chemical Work-Up West				
Propanol bottoms		Tons per annum		Tons per annum
n-Propanol		Tons per annum		Tons per annum
Acetone		Tons per annum		Tons per annum
High Purity Ethanol		Tons per annum		Tons per annum
Ethylol 95		Tons per annum		Tons per annum
Iso-propylol		Tons per annum		Tons per annum
Methyl Ethyl Ketone (MEK)		Tons per annum		Tons per annum
Methanol		Tons per annum		Tons per annum
Sabutol		Tons per annum		Tons per annum
Iso-butylol		Tons per annum		Tons per annum
Sabutol bottoms		Tons per annum		Tons per annum
Ethanol Loghts (pre-cut)		Tons per annum		Tons per annum
Chemical Work Up East				
Acetone		Tons per annum		Tons per annum
Methyl Ethyl Ketone (MEK)		Tons per annum		Tons per annum
Methanol		Tons per annum		Tons per annum
Ethylol 95		Tons per annum		Tons per annum
Ethylol 99		Tons per annum		Tons per annum
Ethyl Acetate Unit 590				
Ethyl Acetate		Tons per annum		Tons per annum
Ethanol Lights (pre-cut)		Tons per annum		Tons per annum
Hexene Train 1, 2 and 3 Unit 300				
1-Hexene		Tons per annum		Tons per annum
1-Pentene		Tons per annum		Tons per annum
Octene Train 1 Unit 301 and Octene Train 2 Unit 302				
1-Octene		Tons per annum		Tons per annum
Octene Train 3 Unit 304				
1-Octene		Tons per annum		Tons per annum

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n-Octanol		Tons per annum		Tons per annum
Safol Unit 303				
Safol™		Tons per annum		Tons per annum

6.3 By product

Product name	Production capacity permitted	Units (quantity/period)	Design production rate	Units (quantity/period)
Hexene Unit 300				
Gum Oil		Tons per annum		Tons per annum
Safol Unit 303				
Alcohol fuel		Tons per annum		Tons per annum

6.4 Material used in energy sources

Energy source	Maximum permitted consumption rate	Units (quantity/period)	Design consumption rate	Units (quantity/period)
Chemical Work Up West				
LP Steam		Kilotons per annum		Kilotons per annum
MP Steam		Kilotons per annum		Kilotons per annum
HP Steam		Kilotons per annum		Kilotons per annum
Electricity		Megawatt hour per annum		Megawatt hour per annum
Chemical Work Up East				
LP (4B) Steam		Kilotons per annum		Kilotons per annum
MP (8B) Steam		Kilotons per annum		Kilotons per annum
HP (43B) Steam		Kilotons per annum		Kilotons per annum
Electricity		Megawatt hour per annum		Megawatt hour per annum
Ethyl Acetate Unit 590				
HP Steam		Kilotons per annum		Kilotons per annum
Electricity		Megawatt hour per annum		Megawatt hour per annum
Fuel gas		Kilo cubic metres (normal) per annum		Kilo cubic metres (normal) per annum
Hexene Train 1, 2 and 3 Unit 300				
Steam		Kilotons per annum		Kilotons per annum
Fuel gas		Kilo cubic metres (normal) per annum		Kilo cubic metres (normal) per annum

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Electricity	[REDACTED]	Megawatt hour per annum	[REDACTED]	Megawatt hour per annum
Octene Train 1 Unit 301 and Octene Train 2 Unit 302				
Steam	[REDACTED]	Kilotons per annum	[REDACTED]	Kilotons per annum
Fuel gas	[REDACTED]	Kilo cubic metres (normal) per annum	[REDACTED]	Kilo cubic metres (normal) per annum
Electricity	[REDACTED]	Megawatt hour per annum	[REDACTED]	Megawatt hour per annum
Safol Unit 303				
Steam	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Electricity	[REDACTED]	Megawatt hour per annum	[REDACTED]	Megawatt hour per annum
Octene Train 3 Unit 304				
HP Steam	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Instrument Air	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Fuel gas	[REDACTED]	Tons per annum	[REDACTED]	Tons per annum
Electricity	[REDACTED]	Megawatt hour per annum	[REDACTED]	Megawatt hour per annum

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6.5 Sources of atmospheric emission

6.5.1 Point Source parameters

Unique ID	Source name	Latitude (decimal degrees)	Longitude (decimal degrees)	Height of Release Above Ground (m)	Height Above Nearby Building (m)	Diameter at Stack Tip / Vent Exit (m)	Actual Gas Exit Temperature (°C)	Actual Gas Volumetric Flow (m ³ /h)	Actual Gas Exit Velocity (m/s)	Emission hours	Type of emission
1	Octene 1 Thermal Regenerator			66	63	1.2	88.04	66 654	16.93	24	Intermittent
2	Octene 3 HT1901 / HT1902 Stack			58	52	2.138	516	322 053	25	24	Intermittent

6.5.2 Area source parameters

Unique ID	Source name	Latitude (decimal degrees)	Longitude (decimal degrees)	Height of Release Above Ground (m)	Length of Area (m)	Width of Area (m)	Emission Hours	Type of Emission
3	304-TK-6001			N/A	N/A	N/A	24	Intermittent
4	304-TK-6501A			N/A	N/A	N/A	24	Intermittent
5	304-TK-6501B			N/A	N/A	N/A	24	Intermittent
6	304-TK-6204			N/A	N/A	N/A	24	Intermittent

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7	304-TK-6201		N/A	N/A	N/A	24	Intermittent
8	304-TK-6203		N/A	N/A	N/A	24	Intermittent
9	304-TK-1201		N/A	N/A	N/A	24	Intermittent
10	303-TK-1201		N/A	N/A	N/A	24	Intermittent
11	303-TK-1202		N/A	N/A	N/A	24	Intermittent
12	303-TK-6203		N/A	N/A	N/A	24	Intermittent
13	303-TK-6401		N/A	N/A	N/A	24	Intermittent
14	303-TK-6206		N/A	N/A	N/A	24	Intermittent
15	303-TK-6207		N/A	N/A	N/A	24	Intermittent
16	303-TK-6302		N/A	N/A	N/A	24	Intermittent
17	303-TK-6301		N/A	N/A	N/A	24	Intermittent
18	303-TK-6201		N/A	N/A	N/A	24	Intermittent

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19	303-TK-6202		N/A	N/A	N/A	24	Intermittent
20	303-TK-6204		N/A	N/A	N/A	24	Intermittent
21	303-TK-6303		N/A	N/A	N/A	24	Intermittent
22	303-TK-6501A		N/A	N/A	N/A	24	Intermittent
23	303-TK-6501B		N/A	N/A	N/A	24	Intermittent
24	303-TK-6205		N/A	N/A	N/A	24	Intermittent
25	303-TK-6001		N/A	N/A	N/A	24	Intermittent
26	303-TK-6002		N/A	N/A	N/A	24	Intermittent
27	301TK6005		N/A	N/A	N/A	24	Intermittent
28	301TK6205		N/A	N/A	N/A	24	Intermittent
29	301TK6505A		N/A	N/A	N/A	24	Intermittent
30	301TK6505B		N/A	N/A	N/A	24	Intermittent

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31	301TK6006		N/A	N/A	N/A	24	Intermittent
32	301TK6206		N/A	N/A	N/A	24	Intermittent
33	301TK6403		N/A	N/A	N/A	24	Intermittent
34	301TK6506A		N/A	N/A	N/A	24	Intermittent
35	301TK6506B		N/A	N/A	N/A	24	Intermittent
36	302TK1002		N/A	N/A	N/A	24	Intermittent
37	302TK1003		N/A	N/A	N/A	24	Intermittent
38	300TK6401		N/A	N/A	N/A	24	Intermittent
39	300TK6402		N/A	N/A	N/A	24	Intermittent
40	300TK6601		N/A	N/A	N/A	24	Intermittent
41	300TK6602		N/A	N/A	N/A	24	Intermittent
42	300TK6501A		N/A	N/A	N/A	24	Intermittent

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43	300TK6501B		N/A	N/A	N/A	24	Intermittent
44	300TK6502A		N/A	N/A	N/A	24	Intermittent
45	300TK6502B		N/A	N/A	N/A	24	Intermittent
46	300TK6503A		N/A	N/A	N/A	24	Intermittent
47	300TK6503B		N/A	N/A	N/A	24	Intermittent
48	300TK6001		N/A	N/A	N/A	24	Intermittent
49	300TK6002		N/A	N/A	N/A	24	Intermittent
50	300TK6004		N/A	N/A	N/A	24	Intermittent
51	300TK6201		N/A	N/A	N/A	24	Intermittent
52	300TK6202		N/A	N/A	N/A	24	Intermittent
53	300TK6203		N/A	N/A	N/A	24	Intermittent
54	36 TK 101		N/A	N/A	N/A	24	Intermittent

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55	236 TK 101		N/A	N/A	N/A	24	Intermittent
56	036-TK-0103A		N/A	N/A	N/A	24	Intermittent
57	036-TK-0103B		N/A	N/A	N/A	24	Intermittent
58	038-TK-0201		N/A	N/A	N/A	24	Intermittent
59	038-TK-0202		N/A	N/A	N/A	24	Intermittent
60	071-TK-0301A		N/A	N/A	N/A	24	Intermittent
61	071-TK-0301B		N/A	N/A	N/A	24	Intermittent
62	071-TK-0302		N/A	N/A	N/A	24	Intermittent
63	071-TK-0303A		N/A	N/A	N/A	24	Intermittent
64	071-TK-0303B		N/A	N/A	N/A	24	Intermittent
65	071-TK-0304		N/A	N/A	N/A	24	Intermittent
67	071-TK-0305		N/A	N/A	N/A	24	Intermittent

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68	071-TK-0306			N/A	N/A	N/A	24	Intermittent
69	073-TK-0101			N/A	N/A	N/A	24	Intermittent
70	236-TK-0103A			N/A	N/A	N/A	24	Intermittent
71	236-TK-0103B			N/A	N/A	N/A	24	Intermittent
72	237-TK-0201			N/A	N/A	N/A	24	Intermittent
73	237-TK-0202			N/A	N/A	N/A	24	Intermittent
74	237-TK-0203			N/A	N/A	N/A	24	Intermittent
75	237-TK-0204			N/A	N/A	N/A	24	Intermittent
76	237-TK-0205A			N/A	N/A	N/A	24	Intermittent
77	237-TK-0205B			N/A	N/A	N/A	24	Intermittent
78	237-TK-0207			N/A	N/A	N/A	24	Intermittent
79	556TK9001			N/A	N/A	N/A	24	Intermittent

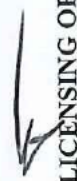
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80	556TK9002		N/A	N/A	N/A	24	Intermittent
81	556TK9003		N/A	N/A	N/A	24	Intermittent
82	556TK9004		N/A	N/A	N/A	24	Intermittent
83	556TK9005		N/A	N/A	N/A	24	Intermittent

7 APPLIANCES AND MEASURES TO PREVENT AIR POLLUTION

7.1 Appliances and control measures

Appliances		Abatement Equipment Control Technology									
Associated Source Code	Appliance / Process Equipment Number	Appliance / Process Equipment Description	Appliance Name and Model	Abatement Equipment Technology Name and Model	Abatement Equipment Technology Manufacture Date	Commission Date	Date of Significant Modification / Upgrade	Technology Type	Design Capacity	Minimum Control Efficiency (%)	Minimum Utilisation (%)
Octene Thermal Regenerator	302-VL-1065	302-VL-1065	Scrubber Wet	Steinmuler	1998	2000	None	Not available	Not available	Not available	Not available

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7.2 Point Source – maximum emission rates (under normal working conditions)

Point Source Code	Pollutant Name	Maximum Release Rate		Average Period	Duration of Emissions
		(mg/Nm ³) under normal conditions of 10% O ₂ , 273 Kelvin and 101,3 kPa	Compliance Timeframe		
Octene 3 HT1901/HT1902	Particulate matter (PM)	120	Immediately	Daily	Continuous
	SO ₂	1700	Immediately	Daily	Continuous
	NO _x	1700	Immediately	Daily	Continuous
Octene 1 Thermal Regenerator	Particulate matter (PM)	120	Immediately	Daily	Continuous
	SO ₂	1700	Immediately	Daily	Continuous
	NO _x	1700	Immediately	Daily	Continuous

The following special arrangements shall apply-

- i. No continuous flaring of hydrogen sulphide-rich gases shall be allowed
- ii. A bubble cap of all combustion installations and catalytic cracking units shall be at 1.2 Kg SO₂/ton of product for existing plants.
- iii. A bubble cap of all combustion installations and catalytic cracking units shall be at 1.2 Kg SO₂/ton of product for new plants.

For Category 6 the following special arrangements shall apply:

- A postponement of compliance with the minimum emission standards for existing plant was granted from 01 April 2015 to 31 March 2020 on condition that a detailed plan and schedule for retrofit of tanks is provided to Department of Environmental Affairs, Forestry and Fisheries and Gert Sibande District Municipality. Emissions are to be incorporated into the site fugitive emissions monitoring and management plan during this period.
- A postponement of compliance timeframe with the minimum emission standards for new plant was granted from 01 April 2020 to 31 March 2025 on condition that a detailed plan and schedule for retrofit of tanks is provided to Department of Environmental Affairs, Forestry and Fisheries and Gert Sibande District Municipality. Emissions are to be incorporated into the site fugitive emissions monitoring and management plan during this period.



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7.3 Point source – maximum emission rates (under start-up, maintenance and shut-down conditions)

Point Source Code	Pollutant Name	Maximum Release Rate		Averaging Period	Maximum Gas Volumetric Flow (m ³ /hr)	Maximum Gas Exit Velocity (m/s)	Emission Hours	Maximum Permitted Duration of Emissions
		(mg/Nm ³)	Date to be Achieved By					
All Point Source Code	All Point Source Pollutant	N/A	N/A	N/A	N/A	N/A	N/A	Within 48 hours after commissioning of plant or equipment

Should normal start-up, maintenance, upset and shut-down conditions exceed a period of 48 hours, Section 30 of the National Environmental Management, 1998 (Act No. 107 of 1998), shall apply unless otherwise specified by the Licensing Authority.

7.4 Point source – emission monitoring and reporting requirements

Point code	Source	Emission Sampling / Monitoring Method	Sampling Frequency	Sampling Duration	Parameters to be Measured	Parameters to be Reported	Reporting Frequency	Conditions under which Monitoring could be Stopped
Octene 3 HT1901/HT1902	In line with Annexure A of NEMAQA as amended	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	Only on written authorisation by the Licensing Authority
Octene 1 Thermal Regenerator	In line with Annexure A of NEMAQA as amended	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	In line with GNR No. 893 in Government Gazette No. 37054 of 22 November 2013	Only on written authorisation by the Licensing Authority



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7.5 Area source – management and mitigation measures

Area and/or Line Source Code	Area and/or Line Source Description	Description of Specific Measures	Timeframe for Achieving Required Efficiency	Method of Monitoring Measures Effectiveness	Contingency Measures
Storage Tanks	Storage tanks	A detail plan to manage incorporated into the site fugitive emissions monitoring and management plan during this period	Immediately	Quarterly reports to Licensing Authority on implementation of retrofit schedule and against the submitted site fugitive emissions monitoring and management plan	In line with Sasol approved site fugitive emissions monitoring and management plan including the schedule for the retrofit as provided to the Authorities


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7.6 Routine reporting and record-keeping

7.6.1 Complaints register

The licence holder must maintain a complaints register at its premises, and such register must be made available for inspections. The complaints register must include the following information on the complainant, namely, the name, physical address, telephone number, date and the time when the complaint was registered. The register should also provide space for noise, dust and offensive odours complaints.

Furthermore, the licence holder is to investigate and quarterly, report to the licensing authority in a summarised format on the total number of complaints logged. The complaints must be reported in the following format with each component indicated as may be necessary:

- (a) Source code / name;
- (b) Root cause analysis;
- (c) Calculation of impacts / emissions associated with incidents and dispersion modelling of pollutants, where applicable;
- (d) Measures implemented or to be implemented to prevent recurrence; and
- (e) Date by which measure will be implemented.

The licensing authority must also be provided with a copy of the complaints register. The record of a complaint must be kept for at least 5 (five) years after the complaint was made

7.6.2 Emergency Incidents

The licence holder must keep record of all plant failure or emergency incidents with environmental impacts including Section 30 and to submit to the licence authority quarterly a report detailing the following:

- (a) Type of plant summary description of the equipment;
- (b) Reasons for failure or cause;
- (c) Previous occurrence on the same plant and number of times similar incident occurred;
- (d) Mitigation instituted to prevent similar occurrence;
- (e) Any breach of internal standard operating procedure;
- (f) Number of times similar incident occurred

7.6.3 Annual reporting

The licence holder must complete and submit to the licensing authority an annual report after the facility annual financial year, the report must include information for the year under review (i.e. annual year end of the company). The report must be submitted to the licensing authority not later than sixty (60) days after the end of each reporting period. The annual report must include, amongst others the following:

- (a) NEM: AQA Section 21 pollutant emissions trend for listed activity;
- (b) External compliance audit report (s);
- (c) Major upgrades projects (i.e. abatement equipment or process equipment);
- (d) Greenhouse gas emissions annual report in line with the National Greenhouse Gas Emission Reporting Regulations GNR No. 275 Government Gazette No. 40762 of 03 April 2017;
- (e) Action taken to address complains received;
- (f) Compliance status to statutory obligation (4.5) including any other issued authorisations.


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The holder of the licence must keep a copy of the annual report for a period of at least 5 (five) years.

7.6.3. Investigation

Investigation	Purpose	Completion Date
Vapour pressure of chemicals at the rail and road loading facilities	Measure vapour pressure and TVOC levels of chemicals loaded at the rail and road loading facilities to establish baseline. Subsequent to emission baseline engage Licensing Authority on baseline findings to finalise emission and reporting requirements	30 October 2019

8 DISPOSAL OF WASTE AND EFFLUENT ARISING FROM ABATEMENT EQUIPMENT CONTROL TECHNOLOGY

Source Code / Name	Waste / Effluent Type	Hazardous Present	Components	Method of Disposal
N/A				

9. PENALTIES FOR NON-COMPLIANCE WITH LICENCE AND STATUTORY CONDITIONS AND OR REQUIREMENTS

Failure to comply with the any of the above condition and requirements in terms of Chapter 7 Section 51 including Chapter 8Section 53 - 55 of NEMAQA (Act no. 39 of 2004) is a breach of the Licence conditions, and the Licence holder will be subject to the sanctions set out in Chapter 7 Section 52 of NEMAQA (Act no. 39 of 2004), Chapter 10, Section 89 of the National Health Act 61 of 2003, Chapter 7 Section 28,32,33 and 34 of the National Environmental Management Act 108 of 1998, Chapter 16, section 151 of the National Water Act, and Chapter 7 section 68 of the National Waste Management Act, including any penalties contained in the By-laws.

10. APPEAL OF LICENCE

- 10.1 The Licence Holder must notify every registered interested and affected party, in writing and within ten (10) days, of receiving the District's decision.
- 10.2 The notification referred to in 10.1. must –
- 10.2.1 Inform the registered interested and affected parties of the appeal procedure provided for in Chapter 7 Part 3 Section 62 of Municipal Systems Act (Act 32 of 2000), as amended;
 - 10.2.2 Advise the interested and affected parties that a copy of the Atmospheric Emission Licence and reasons for the decision will be furnished on request;
 - 10.2.3 An appeal against the decision must be lodged in terms of Chapter 7 Part 3 Section 62 of Municipal Systems Act (Act 32 of 2000), from the date of issue of this Atmospheric Emission Licence, with:

Municipal Manager,

PO Box 1748,

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Ermelo

2350

Fax No. 017-811 1207;

And

10.3. Specify the date on which the Atmospheric Emission Licence was issued.

11. REVIEW OF ATMOSPHERIC EMISSION LICENCE

In terms of -chapter 5 (44) (45) (46) (47) NEMAQA (Act No. 39 of 2004), Atmospheric Emission Licence is valid for 5 years from date of first issue of the Atmospheric Emission Licence. The licence will be reviewed within five (05) years from date of issue, after which it will or will not be amended.

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