STATEMENT OF BASIS

For the issuance of Air Permit # 1103-AOP-R2 AFIN: 70-00059

1. PERMITTING AUTHORITY:

Division of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Lycus LTD.
181 Cooper Drive
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Kyle Crane

4. NAICS DESCRIPTION AND CODE:

NAICS Description: All Other Miscellaneous Chemical Product and Preparation Manufacturing
NAICS Code: 325998

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
2/15/2022	Minor Modification	Replacing 75 kW emergency generator at SN-04 with 96 kW emergency generator

6. REVIEWER'S NOTES:

Lycus Ltd. (Lycus), formerly Garrison Industries, Inc., operates a specialty chemical production facility at 181 Cooper Drive in El Dorado. An application was submitted to replace the 75 kW natural gas emergency generator at SN-04 with a new 96 kW natural gas emergency generator subject to NSPS Subpart JJJJ. Annual permitted emissions increase by 0.5 tons per year (tpy) of VOC, 27.2 tpy of CO, and 0.01 tpy of Total HAPs

with this modification. Annual permitted emissions decrease by 0.1 tpy of NO_X with this modification.
Emissions were estimated using EPA AP-42 emission factors and NSPS Subpart JJJJ certification standards.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility was last inspected on January 15, 2020 and was found to be in compliance. EPA ECHO shows "No Violation Identified" for Clean Air Act compliance.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
If yes, were GHG emission increases significant? N

b) Is the facility categorized as a major source for PSD? N
- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes for 8(b), explain why this permit modification is not PSD.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-01	1,2-Dichloroethane, Methyl Chloride, HCl, Xylene, Methanol	40 C.F.R. § 63 Subpart VVVVVV - *National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources*
SN-02 and SN-03	SO_2, PM, PM_{10}	40 C.F.R. § 60 Subpart Dc - *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*
SN-04 and SN-05	VOC, CO, NOx	40 C.F.R. § 60 Subpart JJJJ - *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? Y
(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Regulation 18 requirement.)

If yes, are applicable requirements included and specifically identified in the permit? Y
If not, explain why.

For any requested inapplicable regulation in the permit shield, explain the reason why it is not applicable in the table below.

Source	Inapplicable Regulation	Reason
Facility	40 C.F.R. § 60 Subpart Kb	The VOC tanks at the facility have a design capacity of less than 75 m^3 and/or store liquids with maximum true vapor pressures less than 3.5 kPa.
	40 C.F.R. § 60 Subpart VVa	The facility does not produce, as an intermediate or final product, any of the chemicals listed in § 60.489a.
	40 C.F.R. § 60 Subpart RRR	The facility does not produce, as an intermediate or final product, any of the chemicals listed in § 60.707.

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
SN-01	VOC	40 C.F.R. 64.2(b)(i) SN-01 is subject to 40 C.F.R. § 63 Subpart VVVVVV

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the DEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Division of Environmental Quality procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Division of Environmental Quality has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Arsenic	0.010	0.0011	8.63E-06	Yes
Barium	0.500	0.055	1.90E-04	Yes
Beryllium	0.00005	0.0000055	5.18E-07	Yes
Cadmium	0.010	0.0011	4.75E-05	Yes
Chromium	0.500	0.055	6.04E-05	Yes
Cobalt	0.020	0.0022	3.62E-06	Yes
Formaldehyde	0.368	0.04048	3.24E-03	Yes
Manganese	0.020	0.0022	1.64E-05	Yes
Mercury	0.100	0.011	1.12E-05	Yes

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
POM	0.200	0.022	3.80E-06	Yes
Selenium	0.200	0.022	1.04E-06	Yes
Vanadium	0.05	0.0055	9.92E-05	Yes

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Division of Environmental Quality to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
N/A.			

c) H_2S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H_2S Standards Y
If exempt, explain: This facility does not emit H_2S

15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01	Testing	3.80E-04 lb SO_2/lb product VOC 4.5E-03 lb 1,2-Dichloroethane/lb product 5.09E-03 lb Xylene/lb product 4.10E-04 lb CH_3Cl/lb product 6.20E-04 lb MeOH/lb product HAP/not VOC 2.70E-04 lb HCl/lb product AC 1.30E-04 lb NH_3/lb product	Condensers, Scrubbers	99.9% Overall	
02	AP-42 Chapter 1.4	7.6 lb PM/MMscf 7.6 lb PM_{10}/MMscf 0.6 lb SO_x/MMscf 5.5 lb VOC/MMscf 84 lb CO/MMscf 100 lb NO_x/MMscf 0.0005 lb Pb/MMscf	None	---	
03	AP-42 Chapter 1.4	7.6 lb PM/MMscf 7.6 lb PM_{10}/MMscf 0.6 lb SO_x/MMscf 5.5 lb VOC/MMscf 84 lb CO/MMscf 100 lb NO_x/MMscf 0.0005 lb Pb/MMscf	None	---	
04	AP-42 Chapter 3.2	9.98E-03 lb PM/MMBtu 7.71E-05 lb PM_{10}/MMBtu 5.88E-04 lb SO_x/MMBtu 7.21E-02 lb Total HAP/MMBtu	None	---	

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	NSPS Subpart JJJJ, Table 1	7.35 gVOC/HP-hr 387 g CO/HP-hr 2.65 g NO_x/HP-hr			
05	AP-42 Chapter 3.2	1.94E-02 lb PM/MMBtu 1.94E-02 lb PM_{10}/MMBtu 5.88E-04 lb SO_x/MMBtu 2.96E-02 lbVOC/MMBtu 3.72E+00 lb CO/MMBtu 2.27E+00 lb NO_x/MMBtu	None	---	

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
N/A				

17. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
N/A				

18. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01 (A, B, and C)	Pounds of product	3,500,000 per year	Monthly	No
	Time, date, temperature of carbon bed regeneration	Max of 4 days between regeneration of main beds Max of 7 days	As occurs	No

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		between regenerations of vent beds		
	Caustic pH (scrubber)	>10.0	4 hours	No
02 and 03	Natural Gas Usage	fuels fired	Monthly	No
04 and 05	Operating Hours, Emergency and Non-Emergency	500 hours/year	Monthly	Yes
	Natural Gas Usage	fuels fired	Monthly	No

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
02 and 03	5%	Departmental Guidance	Pipeline quality natural gas fuel only
04 and 05	20%	Departmental Guidance	Pipeline quality natural gas fuel only

20. DELETED CONDITIONS:

Former SC	Justification for removal
#32-#48	NESHAP ZZZZ conditions that no longer apply to SN-04 after it was replaced and is now subject to NSPS JJJJ

21. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Tank F— High Alkaline Waste Water Storage Tank (10,000 gallon)	A-13	-	-	0.397	-	-	0.003	0.003
Tank C—	A-13	-	-	0	-	-	0	0

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Process Water Tank (10,650 gallon)								
Tank 5—Heavy Brine Storage Tank (11,159 gallon)	A-13	-	-	0	-	-	0	0
Tank 6—Byproduct Storage Tank (11,159 gallon)	A-13	-	-	0.480	-	-	0.043	0.043
EDC Tank	A-13	-	-	0.171	-	-	0.171	0.171
Spent EDC Tank	A-13	-	-	0.118	-	-	0.118	0.118
Xylene Tank	A-13	-	-	0.011	-	-	0.011	0.011
Methanol Tank	A-13	-	-	0.252	-	-	0.252	0.252
Hammermill (routed to Product Recovery Scrubber)	A-13	0.06	-	-	-	-	-	-
Cooling Tower (600 gpm)	A-13	0.526	-	-	-	-	-	-
Total	A-13	0.586		1.429			0.295	0.598
Laboratory Vents	A-5	-	-	0.1	-	-	0.1	0.1
Tank 3—Caustic Storage Tank	A-4	-	-	-	-	-	-	-

22. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
1103-AOP-R1

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Lycus LTD.
Permit Number: 1103-AOP-R2
AFIN: 70-00059

$/ton factor	25.13	Annual Chargeable Emissions (tpy)	100
Permit Type	Minor Mod	Permit Fee $	500

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	0.4
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		1.8	1.8	0		
PM_{10}		1.8	1.8	0	0	1.8
$PM_{2.5}$		0	0	0		
SO_2		1.1	1.1	0	0	1.1
VOC		20	20.5	0.5	0.5	20.5
CO		16.5	43.7	27.2		
NO_X		19.4	19.3	-0.1	-0.1	19.3
Lead	☑	0.02	0.02	0	0	0.02

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
1,2-Dichloroethane	☐	7.88	7.88	0		
Xylene	☐	8.93	8.93	0		
Total HAPs	☐	19.45	19.46	0.01		
NH3	☑	0.23	0.23	0	0	0.23