STATEMENT OF BASIS

For the issuance of Draft Air Permit #2414-AGP-000 AFIN: Statewide

1. PERMITTING AUTHORITY:
Division of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Qualifying Title V Cotton Gins

3. PERMIT WRITER:

Elliott Marshall

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Cotton Ginning
NAICS Code: 115111

5. SUBMITTALS:

Date of Submittal	Type of Permitting Action (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
Not Applicable	Renewal	Revise SN-01, limiting the total heat input from all natural gas combustion sources designated as SN-01, at the facility, to 99.0 MMBtu/hr

6. REVIEWER'S NOTES:

This permit is a renewal of Air Permit #2414-AGP-000 for certain Title V Cotton Gins in Arkansas (referred to as either the "General Permit" or "GP"). In addition to the renewal, this permit is being issued to:

1. Add the potential SN-01 PM/PM_{10} emissions to "Emission Summary" totals; PM/PM_{10} emissions were erroneously omitted in the emission summary during the last renewal period.
2. Revise SN-01, limiting the total heat input from all miscellaneous natural gas combustion sources designated as SN-01, at the facility, to 99.0 MMBtu/hr;

previously only one 20 MMBtu/hr source was allowed as SN-01. Additional recordkeeping requirements were added (Specific Condition #19).

3. Revise all references of Regulation 18, 19 and 26 to Rule 18, 19 and 26.
4. Require electronic submittal of applications unless a waiver is obtained (General Provision 28).

Permitted emission rates are increasing by 3.3 tpy PM/PM_{10}, 0.2 tpy SO_2, 1.9 tpy VOC, 28.5 tpy CO, 34.0 tpy NO_X, 1.70E-04 tpy Lead and 0.6 tpy Total HAPs.

7. COMPLIANCE STATUS:

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

Not Applicable – This is a General Permit.

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)
01	SO_2, PM	Dc

10. 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
N/A		

Cyclones at gins are generally multipurpose, for conveyance and ventilation of process. Such cyclones are exempt from Compliance Assurance Monitoring.

11. EMISSION CHANGES AND FEE CALCULATION:

Plantwide Permitted Emissions (tons/yr)			
Pollutant	Previous Permit	This Permit	Change
PM	245.0	248.3	+3.3
PM_{10}	149.3	152.6	+3.3
$PM_{2.5}$	*	*	--
SO_2	0.1	0.3	+0.2
VOC	0.5	2.4	+1.9
CO	7.3	35.8	+28.5
NO_X	8.6	42.6	+34.0
Lead	4.30E-05	2.13E-04	+1.70E-04
Total HAPs	0.17	0.81	+0.6

*$PM_{2.5}$ is assumed to be equal to PM_{10}

12. 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. This permit is not applicable to new sources so there are no emissions increased that are required to be modeled.

b) Non-Criteria Pollutants:

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).

The lb/hr rates were updated to reflect 99.0 MMBtu/hr Nat. Gas source, SN-01.

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Arsenic	0.01	0.0011	1.94E-05	Y
Benzene	0.064	0.007	2.04E-04	Y

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Beryllium	5E-05	5.5E-06	1.16E-06	Y
Cadmium	0.01	0.0011	1.07E-04	Y
Chromium	0.0002	2.2E-05	1.36E-04	*
Cobalt	0.02	0.0022	8.15E-06	Y
Lead	0.05	0.0055	4.86E-05	Y
Manganese	0.1	0.011	3.69E-05	Y
Mercury	0.01	0.0011	2.52E-05	Y
POM	0.2	0.022	8.56E-06	Y
Selenium	0.2	0.022	2.33E-06	Y

*This TLV is based on Chromium VI however EPA documents lead us to assume that air emissions of chromium are predominantly of Chromium III which has a PAER of 3.3E-04

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: No H_2S Emissions.

13. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01	AP-42 Table 1.4.1	PM and PM_{10} 7.6 lb/MMscf CO 84 lb/MMscf NO_x 100 lb/MMscf Lead 0.0005 lb/MMscf SO_2 0.6 lb/MMscf VOC 5.5 lb/MMscf	None	-	Assume all boilers/combustion units are uncontrolled Emissions based on 99.0 MMBtu/hr nat gas combustion

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		HAPs and Air Contaminants Varied			
Type 1 Gin	2013 Proposed Updates for AP-42 Cotton Gin Emission Factors based on a national study of cotton gins by the USDA and OSU Table 13b, Table 14b, Table 15b and AP-42 Table 9.7-1	<u>PM (lb/bale)</u> Unloading: 0.2823 1st Stage Cotton Seed Cleaning: 0.2983 2nd Stage Cotton Seed Cleaning:0.1257 3rd Stage Cotton Seed Cleaning: 0.0567 Combined Lint Cleaning: 1.1 Combined Mote: 0.3094 Battery Condenser: 0.17 Cyclone Robber: 0.0335 Mote Cyclone Robber: 0.0954 Master Trash: 0.3599 Overflow (Distributor): 0.0848 Mote Cleaner: 0.2279 Mote Trash: 0.0419 <u>PM_{10} (lb/bale)</u> Unloading: 0.2268 1st Stage Cotton Seed Cleaning: 0.1868 2nd Stage Cotton Seed Cleaning:0.0829 3rd Stage Cotton Seed Cleaning: 0.0461 Combined Lint Cleaning: 0.55 Combined Mote: 0.2231 Battery Condenser: 0.085 Cyclone Robber: 0.0202	This type of gin is classified as a cotton gin with screened drums and cages controlling the lint cleaner and battery condenser exhausts. All other exhaust streams are controlled by high efficiency cyclones as defined in this permit. This type of gin also uses combined lint cleaners and mote systems rather than $1_{st}/2_{nd}$ stage lint cleaners and mote systems.		Study can be found in Final Permit Files.

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		Mote Cyclone Robber: 0.0522 Master Trash: 0.1241 Overflow (Distributor): 0.0481 Mote Cleaner: 0.1392 Mote Trash: 0.0236 Mote Trash: 0.0024			
Type 2 Gin	2013 Proposed Updates for AP-42 Cotton Gin Emission Factors based on a national study of cotton gins by the USDA and OSU Table 13b, Table 14b, Table 15b	All factors are the same as Type 1 Gin except the following: PM (lb/bale) Combined Lint Cleaners: 0.5066 Battery Condenser:0.0752 PM_{10} (lb/bale) Combined Lint Cleaners: 0.2804 Battery Condenser: 0.0388	This type of gin is classified as a gin with all exhaust streams controlled by high efficiency cyclones as defined in this permit. This type of gin also uses combined lint cleaners and mote systems.		"Test Design" 3 numbers used from study. Study can be found in Final Permit Files
Type 3 Gin	2013 Proposed Updates for AP-42 Cotton Gin Emission Factors based on a national study of cotton gins by the USDA and OSU	All factors are the same as Type 2 Gin except in lieu of the combined lint cleaners and the combined mote, there will be factors for 1st Stage and 2nd Stage Lint Cleaners and Mote Systems PM (lb/bale) 1st/2nd Stage Lint Cleaning: 1.1 1st Stage Mote: 0.0632 2nd Stage Mote:0.0269 PM_{10} (lb/bale) 1st/2nd Stage Lint Cleaning: 0.55	This type of gin is classified as a cotton gin with screened drums and cages controlling the lint cleaner and battery condenser exhausts. All other exhaust streams are controlled by high efficiency cyclones as defined in this permit. This type of gin uses 1st/2nd stage lint cleaners and mote systems.		"Test Design" 3 numbers used from study. Study can be found in Final Permit Files

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	Table 13b, Table 14b, Table 15b And AP-42 Table 9.7-1	1st Stage Mote: 0.0447 2nd Stage Mote:0.0219			
Type 4 Gin	2013 Proposed Updates for AP-42 Cotton Gin Emission Factors based on a national study of cotton gins by the USDA and OSU Table 13b, Table 14b, Table 15b	All factors are the same as Type 3 Gin except the following 1st Stage and 2nd Stage Lint Cleaner emission factors. PM (lb/bale) 1st Stage Lint Cleaning: 0.1726 2nd Stage Lint Cleaning:0.0632 PM10 (lb/bale) 1st Stage Lint Cleaning: 0.1231 2nd Stage Lint Cleaning:0.0425	This type of gin is classified as a gin with all exhaust streams controlled by high efficiency cyclones as defined in this permit. This type of gin uses 1st/2nd stage lint cleaners and mote systems.		"Test Design" 3 numbers used from study. Study can be found in Final Permit Files.

Calculations for PM and PM_{10}
Calculations for PM and PM_{10} **Type 1 Gin**
PM Total PM emission factor = (0.2823+0.2983+0.1257+0.0567+1.1+0.3094+0.17+0.0335+0.0954+0.3599+0.0848+0.2279+0.0419) = 3.1858 lb/bale Bales per year = 244.3 ton/yr x 2000 lb/ton ÷ 3.1858 lb/bale = 153,368 bales/yr PM_{10} Total PM_{10} emission factor = (0.2268+0.1868+0.0829+0.0461+0.55+0.2231+0.085+0.0202+0.0522+0.1241+0.0481+0.1392+0.0236) = 1.8081 lb/bale Tons per year = 153,368 bales/yr x 1.8081 lb/bale ÷ 2000 lb/ton = 138.7 tons/yr
Type 2 Gin
PM

Total PM emission factor = (0.2823+0.2983+0.1257+0.0567+0.5066+0.3094+0.0752+0.0335+0.0954+0.3599+0.0848+0.2279+0.0419) = 2.4976 lb/bale

Bales per year = 244.3 ton/yr x 2000 lb/ton ÷ 2.4976 lb/bale = 195,627 bales/yr

PM_{10}

Total PM_{10} emission factor = (0.2268+0.1868+0.0829+0.0461+0.2804+0.2231+0.0388+0.0202+0.0522+0.1241+0.0481+0.1392+0.0236) = 1.4923 lb/bale

Tons per year = 195,627 bales/yr x 1.4923 lb/bale ÷ 2000 lb/ton = 146.0 tons/yr

Type 3 Gin

PM

Total PM emission factor = (0.2823+0.2983+0.1257+0.0567+1.1+0.0632+0.0269+0.17+0.0335+0.0954+0.3599+0.0848+0.2279+0.0419) = 2.9665 lb/bale

Bales per year = 244.3 ton/yr x 2000 lb/ton ÷ 2.9665 lb/bale = 164,705 bales/yr

PM_{10}

Total PM_{10} emission factor = (0.2268+0.1868+0.0829+0.0461+0.55+0.0447+0.0219+0.085+0.0202+0.0522+0.1241+0.0481+0.1392+0.0236) = 1.6516 lb/bale

Tons per year = 164,705 bales/yr x 1.6516 lb/bale ÷ 2000 lb/ton = 136.1 tons/yr

Type 4 Gin

PM

Total PM emission factor = (0.2823+0.2983+0.1257+0.0567+0.1726+0.0632+0.0632+0.0269+0.0752+0.0335+0.0954+0.3599+0.0848+0.2279+0.0419) = 2.0075 lb/bale

Bales per year = 244.3 ton/yr x 2000 lb/ton ÷ 2.0075 lb/bale = 243,387 bales/yr

PM_{10}

Total PM_{10} emission factor = (0.2268+0.1868+0.0829+0.0461+0.1231+0.0425+0.0447+0.0219+0.0388+0.0202+0.0522+0.1241+0.0481+0.1392+0.0236) = 1.221 lb/bale

Tons per year = 243,387 bales/yr x 1.221 lb/bale ÷ 2000 lb/ton = 148.6 tons/yr

Customized Limit

The following are used in the customized limits calculation

Source Types	**PM Emission Factor (lb/bale)**	**PM_{10} Emission Factor (lb/bale)**
Unloading	0.2823	0.2268
1st Stage Cotton Cleaning	0.2983	0.1868
2nd Stage Cotton Cleaning	0.1257	0.0829
3rd Stage Cotton Cleaning	0.0567	0.0461
Overflow	0.0848	0.0481
Combined Lint Cleaner with Screened Drum/Cages	1.1	0.55
Combined Lint Cleaner with Cyclones	0.5066	0.2804
Battery Condenser with Screened Drums/Cages	0.17	0.085
Battery Condenser with Cyclones	0.0752	0.0388
Combined Mote	0.3094	0.2231

Cyclone Robber	0.0355	0.0202
Mote Trash	0.0419	0.0236
Master Trash	0.3599	0.1241
1st Stage Lint Cleaning with Screened Drums/Cages	0.55	0.275
1st Stage Lint Cleaning with Cyclones	0.1726	0.1231
2nd Stage Lint Cleaning with Screened Drums/Cages	0.55	0.275
2nd Stage Lint Cleaning with Cyclones	0.0632	0.0425
1st Stage Mote	0.0632	0.0447
2nd Stage Mote	0.0269	0.0219
Mote Robber	0.0954	0.0522
Mote Cleaner	0.2279	0.1392

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
N/A				

15. 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				

16. 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)
Facility Wide Type 1 Gin	Throughput	153,368	Monthly	Y
Facility Wide Type 2 Gin	Throughput	195,627	Monthly	Y
Facility Wide Type 3 Gin	Throughput	164,705	Monthly	Y
Facility Wide Type 4 Gin	Throughput	243,387	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
Facility Wide Specific Limit	Throughput	See NOI	Monthly	Y
Facility Wide	Opacity Observations	20%	Weekly	Y
SN-01	Fuel Throughput (based on use)	-	Daily	Y
	Fuel Throughput (based on use)	-	Monthly	Y
	Fuel Throughput (based on amount delivered to the property)	-	Daily	Y
	Records relating to NSPS Subpart Dc	See Specific Conditions #21 - 26	-	Y
	List of all nat. gas combustion sources and firing rates	Keep up-to-date	Immediately after change	Y

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
Facility wide	20%	19.503	Inspector Observation
SN-01	5%	18.501	Natural Gas as sole fuel

18. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

19. GROUP A INSIGNIFICANT ACTIVITIES:

The insignificant activities will be detailed in the Notice of Intent.

20. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
All Previously Issued 2414-AGP-000 Permits