SECTION D:

AIR PERMITTING SPECIFICATIONS

Exponential Engineering Company

BARR

PART 1 EXISTING AIR PERMIT (BACKGROUND INFORMATION)

1.01 GENERAL INFORMATION (FROM THE PERMIT FACT SHEET)

A. All six (6) existing engines at the facility are existing non-black start, dual-fuel or diesel-powered, non-emergency, CI-RICE.

B. All six (6) existing engines are equipped with catalytic oxidizers and have completed required performance tests to demonstrate compliance with MACT ZZZZ.

C. By limiting NO_X to 98 tons/year, this permit has indirectly limited the PTE for all other pollutants below Class I threshold. Therefore, the NO_X limitation is what allows the source to receive an operating permit as a Class II Synthetic Minor.

1.02 ALL SIX (6) EXISTING ENGINES ARE SUBJECT TO 40 CFR PART 63 SUBPART ZZZZ (MACT FOR STATIONARY RICE OR MACT ZZZZ)

A. The sources are listed as “limited use” under this regulation.

B. The permit allows the source flexibility to change compliance options.

C. A notification is required if the emission units are changed from limited to not limited use.

1.03 GENERATION LIMITS

A. Total generation < 6,456,901.5 kWh/12-months

B. Notification to NDEE if generation >4,842,676 kWh/12-month

1. This is 75% of the total generation limit in 1.03A.
2. The permit states that additional performance testing may be required to demonstrate compliance with the NOX Limit.

1.04 EMISSION LIMITS

A. NO_X < 98 tons/year (combined from all sources)

B. SO_2 = 2.5 lb/MMBtu (2-hour average)

C. CO = 23 ppmvd at 15% O_2 (or reduce CO by $\geq$70%)

D. Sulfur content of diesel fuel $\leq$15 ppm

1.05 INSIGNIFICANT ACTIVITIES

A. Two diesel fuel storage tanks (10,000-gallon capacity each)

B. Cooling tower (600 gallons/minute capacity)

PART 2 PERMITTING STRATEGY FOR NEW GENERATOR ENGINES

2.01 OVERVIEW AND DESIRED PERMIT CONDITIONS

A. Each bid shall include scope and budget to apply for and obtain an air permit amendment for the facility to make the desired changes which include:
   1. Remove six (6) existing engines from the operating permit.
   2. Add four (4) new engines to the operating permit.
   3. Maintain status as Class II Synthetic Minor Operating Permit (same as existing permit).
   4. Maintain status as limited use engines (same as existing permit).
   5. The facility will remain a minor source of hazardous air pollutants (HAP).

B. All work will be completed within the existing fence line on previously disturbed area, and that no new or additional water use is necessary to support the project.

2.02 MACT ZZZZ

A. Each bid shall assume the state will require a compliance test for CO per the specifications in 40 CFR Part 63 Subpart ZZZZ within 90 days of startup of the generators or as required by the state or federal regulators or the new facility air permit.
   1. Include the cost of the compliance test and engineering test in your bid. The engineering test will be used to confirm NO_X emission rates but will not be conducted for regulatory compliance.
   2. The tests shall be conducted by a third-party stack test company approved by the City of Kimball.

B. This standard will apply to all four (4) new engines.

C. The new engines must comply with all testing, monitoring, and reporting requirements.

D. The new engines can be operated as non-emergency, non-black start, “limited use” units by maintaining operating hours below 100 hours per year as done with existing generators.

E. If operating hours go over 100 hours per year for any individual generator, the only additional requirements are an increase in the stack testing frequency from every five years to every three years and an increase in reporting frequency from annual to semiannual; where the facility is at in the retest schedule may dictate the need for timely testing (e.g. if a test has not been done in three years, would need to test immediately if going over 100 hours).

F. Based on existing permit, notification will likely be required if a generator or generators go over limited use threshold

G. Notes regarding “limited use” at 100 hours/year/engine (a combined 400 hours/year) versus “not limited use” and compliance with the 98 tons/year permit limit:
   1. The engines could operate 940 hours/year/generator based on EPA AP-42 emission factors.
   2. The engines could operate 1,825 hours/year/generator based on the manufacturer’s emissions data (Caterpillar).

2.03 REQUIRED CHANGES TO AIR PERMIT, INCLUDING FUTURE OPERATING LIMITS

A. Remove all six (6) existing engines from the air permit – the City of Kimball will need to agree upon conditions related to the timed shutdown of existing units with NDEE; for example, whether or not the existing units can remain in service during testing/startup of the new units.

B. Add four (4) new engines to the air permit.

C. Maintain the 98 ton/year limit (all engines combined) to maintain status as Class II Synthetic Minor Operating Permit and minor source of HAP.

D. Reset the kWh limit (< 6,456,901.5 kWh/12-months) and the threshold for triggering a notification to NDEE for the new engines.

1. These limits have been estimated based on the maximum operating hours which comply with the 98 tons NOX/year permit limit (see item 2.03C) above) – the hours were converted to kWh by multiplying by the generating capacity of the units (2,000 kW). Resulting in the following:

Emission Factor Source	Equivalent kWh limit (all generators)	Notification Threshold (75% of kWh limit)
EPA AP-42	5,661,467	4,246,101
Caterpillar	10,965,035	8,223.776

2.04 DESIGN/OPERATING REQUIREMENTS FOR EACH OF THE NEW ENGINES

A. 23 ppm CO (with catalyst)[1]

B. Non-resettable kWh meter

C. Non-resettable hour meter

D. No changes to engine which would increase maximum hourly emissions of any regulated of any air pollutant.

E. Allowed fuel: Ultra-low sulfur diesel (ULSD)

F. Install a CPMS[2] (continuous parameter monitoring system) to monitor the catalyst inlet temperature per 40 CFR 63.6625(b)(1)-(6), including:

1. Prepare a site-specific monitoring plan.
2. Install each CPMS in accordance with the site-specific monitoring plan.
3. CPMS must operate continuously and collect data every 15 minutes.
4. For a CPMS measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius or 1 percent of the measurement range whichever is larger.
5. Conduct audits and evaluations in accordance with the site-specific monitoring plan.
6. Data must be reduced to 4-hour rolling averages.

G. The pressure drop across the catalyst will have to be measured once per month – the system needs to be designed to readily accommodate measurements.

H. Note: Subpart ZZZZ does not seem to address engines that are run infrequently such that they may not operate enough to collect data at the specified frequency (e.g. monthly). As noted above, a site-specific monitoring plan is required, and the proposed treatment of this issue can be described in the monitoring plan.

I. If the stationary engine and catalyst will not be operated according to the manufacturer's emission-related written instructions, a maintenance plan must be developed which provides to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

J. Install stack test ports and access on the stack and pollution control equipment inlet of each engine

1. Stack shall have a suitable stack test location per EPA requirements at 40 CFR Part 60 Appendix A Method 1 with permanent safe access for test team. Two sampling ports, offset by

[1] MACT ZZZZ and the facility air permit also allows compliance with a 70% reduction limitation, but Barr has assumed that the concentration limitation is the preferred compliance method

[2] Continuous emissions monitoring systems (CEMS) is also a compliance option, but Barr has assumed that CPMS is the preferred option due to installation and operating/maintenance cost

90°, consisting of 4-inch pipe nipples with caps will be sufficient. There shall be no obstruction or restriction where the pipe nipple is attached to the stack. The sampling location be at least eight stack or duct diameters downstream and two diameters upstream from any flow disturbance such as a bend, expansion, or contraction in the stack. Alternative locations shall be approved by the City of Kimball.

2. A second sampling location shall be located ahead of the oxidation catalyst. A single 4-inch test port suitable for accessing the centroid of the duct is sufficient if the location can be chosen to avoid pollutant stratification and/or cyclonic flow.

2.05 PERMITTING REQUIREMENTS

A. Calculate potential to emit (PTE) for criteria pollutants and HAP (including limited PTE at 98 tons NOx)

1. The emissions at the limit of 98 tons/year of NO_X will demonstrate the facility qualifies for a Class II Synthetic Minor Operating Permit (same as existing permit) and remains a minor source of HAP.

B. Prepare permit application and obtain permit.

C. Construction activities conducted prior to permit issuance shall align with the activities allowed by the Nebraska permitting program.

2.06 OTHER ENVIRONMENTAL REQUIREMENTS

A. The project must comply with applicable stormwater requirements (e.g., construction stormwater).

END OF SECTION