STACK EMISSIONS STUDY
FOR THE
DRAGON POWERGTM43M TURBINE MOBILE GENERATOR
POWERED BY
VERICOR GAS TURBINE ASE50B
PREPARED FOR
DRAGON PRODUCTS
AT THE
DRAGON PRODUCTS FACILITY
BEAUMONT, TEXAS
MARCH 4TH, 2025

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certify that this testing was conducted and this report was created in conformance with the requirements of ASTM D7036

Stack Emissions Study
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1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Stack Emissions Study for nitrogen oxides (NOx), carbon monoxide (CO), and oxygen (O_2) from the exhaust of the Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B for Dragon Products at the Dragon Products Facility in Beaumont, Texas. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on March 4th, 2025.

1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to document the levels of selected pollutants at 100% load. The information will be used to confirm compliance with the air quality permit requirements. The specific objective was to determine the emission concentration of NOx, CO, and O_2 from the exhaust of Dragon Products Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B.

1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- Dragon Products
- Vericor
- Air Hygiene

1.2.2 Plant Location
- Dragon Products Facility in Beaumont, Texas

1.2.3 Equipment Tested
- Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B

1.2.4 Emission Points
- Exhaust from the Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B
- For all gases, one sample point in the exhaust stack from the Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B at a single point located at the center.

1.2.5 Emission Parameters Measured
- NOx
- CO
- O_2

1.2.6 Dates of Emission Test

- March 4th, 2025

1.2.7 Federal and State Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01
- Texas NELAP Accreditation No. T104704523; Mobile Lab No. 1M104704523

1.3 KEY PERSONNEL

Dragon Products:	Gary Markham (gary.markham@modernusa.com)	409-504-9554
Air Hygiene:	Wade Plummer (wplummer@airhygiene.com)	918-307-8865

2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Dragon Products's Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B located at the Dragon Products Facility on March 4th, 2025 are summarized in the following table and relate only to the items tested.

TABLE 2.1
TURBINE GENERATOR ENGINE 50% LOAD DATA SUMMARY

Parameter	50% Load, Run - 1-1	50% Load, Run - 1-2	50% Load, Run - 1-3	Average
Date (mm/dd/yy)	01/23/25	01/23/25	01/23/25	01/23/25
Start Time (hh:mm:ss)	11:01:13	12:32:13	13:44:13	11:01:13
End Time (hh:mm:ss)	12:00:43	13:31:43	14:43:43	14:43:43
Run Duration (min / run)	60	60	60	60
Bar. Pressure (in. Hg)	30.43	30.43	30.35	30.40
Amb. Temp. (°F)	41	49	51	47
Rel. Humidity (%)	70	50	39	53
Spec. Humidity (lb water / lb air)	0.003708	0.003591	0.003023	0.003441
Load Designator	50%	50%	50%	50%
Power Output (MW)	2.0	2.0	2.0	1.96
NOx (ppmvd)	32.14	33.57	33.73	33.15
CO (ppmvd)	64.68	47.81	46.02	52.84
O_2 (%vd)	16.12	16.34	16.38	16.28

TABLE 2.2
TURBINE GENERATOR ENGINE 75% LOAD DATA SUMMARY

Parameter	75% Load, Run - 1-4	75% Load, Run - 1-5	75% Load, Run - 1-6	Average
Date (mm/dd/yy)	01/23/25	01/23/25	01/23/25	01/23/25
Start Time (hh:mm:ss)	14:54:13	16:03:13	17:15:13	14:54:13
End Time (hh:mm:ss)	15:53:43	17:02:43	18:14:43	18:14:43
Run Duration (min / run)	60	60	60	60
Bar. Pressure (in. Hg)	30.32	30.32	30.32	30.32
Amb. Temp. (°F)	52	52	49	51
Rel. Humidity (%)	35	35	48	39
Spec. Humidity (lb water / lb air)	0.002817	0.002817	0.003459	0.003031
Load Designator	75%	75%	75%	75%
Power Output (MW)	2.9	2.9	2.9	2.85
NOx (ppmvd)	48.61	48.81	46.64	48.02
CO (ppmvd)	18.02	17.77	19.28	18.36
O_2 (%vd)	15.56	15.53	15.60	15.56

TABLE 2.1

DRAGON POWERGTM43M TURBINE MOBILE GENERATOR POWERED BY VERICOR GAS TURBINE ASE50B 1 LOAD DATA SUMMARY

Parameter	100% Load, Run 1	100% Load, Run 2	100% Load, Run 3	Average
Start Time (hh:mm:ss)	8:43:06	10:08:06	11:25:06	--
End Time (hh:mm:ss)	9:42:36	11:07:36	12:24:36	--
Run Duration (min / run)	60	60	60	60
Bar. Pressure (in. Hg)	29.61	29.61	29.58	29.60
Amb. Temp. (°F)	68	68	68	68
Rel. Humidity (%)	88	87	95	90
Spec. Humidity (lb water / lb air)	0.013034	0.012883	0.014109	0.013342
NOx (ppmvd)	51.64	53.20	51.78	52.21
CO (ppmvd)	8.58	8.53	8.61	8.57
O_2 (%vd)	14.93	14.90	14.89	14.91

Power Output MW: 3.15 MW, all test runs.
Added by Dragon Products from recorded data, grm 08/04/25

3.0 SOURCE OPERATION

3.1 PROCESS DESCRIPTION

The unit tested was a Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B.

3.2 SAMPLING LOCATION

The stack is rectangular and measures 5.9 feet (ft) (71 inches) deep and 6.5 ft (78 inches) wide at the test ports which are approximately 25 ft above grade level with an exit elevation of approximately 28 ft above grade level. The test ports are located approximately 15 ft (180 inches) [2.4 dia] downstream and approximately 2.8 ft (34 inches) [0.5 dia] upstream from the nearest disturbances.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

The emission test on the Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B at the Dragon Products Facility was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on March 4th, 2025.

TABLE 4.1
SUMMARY OF SAMPLING METHODS

Pollutant or Parameter	Sampling Method	Analysis Method
Sample Point Location	EPA Method 1	Equal Area Method
Oxygen	EPA Method 3A	Paramagnetic Cell
Nitrogen Oxides	EPA Method 7E	Chemiluminescent Analyzer
Carbon Monoxide	EPA Method 10	Nondispersive Infrared Analyzer

4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 3A, 7E, and 10.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a stainless-steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory ia a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e., NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds.

Three test runs of approximately 60-minutes each were conducted on the Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B at the 100% load for NOx, CO, and O_2.

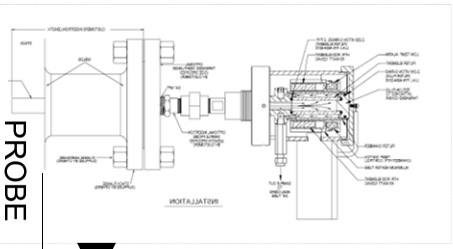
The stack gas analysis for O_2 concentrations was performed in accordance with procedures set forth in EPA Method 3A. The O_2 analyzer uses a paramagnetic cell detector.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A NO_2 in air manufacturer-certified gas cylinder was used to verify at least a 90 percent NO_2 conversion on the day of the test.

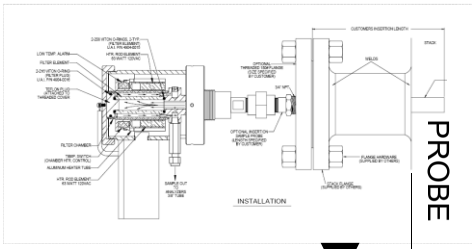
CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

TABLE 4.2
ANALYTICAL INSTRUMENTATION

Parameter	Manufacturer and Model	Range	Sensitivity	Detection Principle
NOx	THERMO 42 series	User may select up to 5,000 ppm	0.1 ppm	Thermal reduction of NO_2 to NO. Chemiluminescence of reaction of NO with O_3. Detection by PMT. Inherently linear for listed ranges.
CO	THERMO 48 series	User may select up to 10,000 ppm	0.1 ppm	Infrared absorption, gas filter correlation detector, microprocessor-based linearization.
O_2	SERVOMEX 1440	0-25%	0.1%	Paramagnetic cell, inherently linear.



LEGEND
- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output



PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

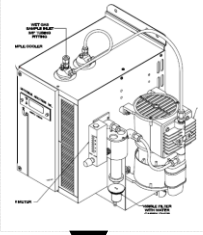
TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

DATA RECORDER

COMPUTER

GAS CONDITIONER

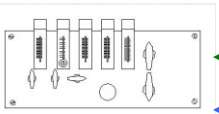


dual line heated sample umbilical

STACK EXHAUST

MOBILE SECONDARY ANALYZERS

MANIFOLD



GAS DILUTER

THC, VOC

HOT/WET ANALYZERS
COLD/DRY ANALYZERS

O_2, CO_2, NOx, CO, SO_2

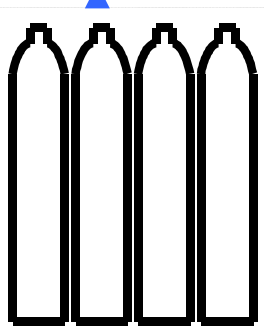
COLD/DRY ANALYZERS HOT/WET

THC, VOC

CONDITIONER

VENT

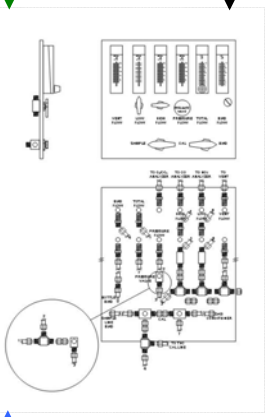
CALIBRATION/ BIAS GAS BOTTLES



VENT

O_2, CO_2, NOx, CO, SO_2

FIXED PRIMARY ANALYZERS



FLOW CONTROL MANIFOLD

FTIR

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

APPENDIX A

TEST RESULTS AND CALCULATIONS

Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

Given Data:

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

ASTM D 3588

Molecular Weight of NOx (lb/lb-mole) =	46.01
Molecular Weight of CO (lb/lb-mole) =	28.00
Molecular Weight of SO_2 (lb/lb-mole) =	64.00
Molecular Weight of THC (propane) (lb/lb-mole) =	44.00
Molecular Weight of VOC (methane) (lb/lb-mole) =	16.00
Molecular Weight of NH_3 (lb/lb-mole) =	17.03
Molecular Weight of HCHO (lb/lb-mole) =	30.03
Molecular Weight of CO_2 and N_2O (lb/lb-mole) =	44.01

40CFR60, App. A., RM 19, Table 19-1

Conversion Constant for NOx =	0.0000001194351
Conversion Constant for CO =	0.0000000726839
Conversion Constant for SO_2 =	0.0000001661345
Conversion Constant for THC =	0.0000001142175
Conversion Constant for VOC (methane) =	0.0000000415336
Conversion Constant for NH_3 =	0.0000000442074
Conversion Constant for HCHO =	0.0000000779534
Conversion Constant for CO_2 and N_2O =	0.0000001142434

NOTE: units are lb/ppm*ft^3

Formulas:

1. Corrected Raw Average (C_{Gas}), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$

2. Correction to % O_2, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$

3. Correction to % O_2 and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left(\frac{288}{T_a}\right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu (O_2 based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp\cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} \; or \; \frac{E_{lb/hr} \times 453.6}{hp}$$

EXAMPLE CALCULATIONS (INFORMATION)

Specific Humidity (RH_{sp})

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\,gr}\right]$$

RH_{sp}= $\frac{91.24\ gr}{lb}$ x $\frac{1\ lb}{7000\ gr}$ = 0.013034 $\frac{lb\ H_2O}{lb\ Air}$

EXAMPLE CALCULATIONS (CALIBRATION)

Analyzer Calibration Error

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = $\frac{48.22\ ppm - 47.80\ ppm}{115.90\ ppm}$ x 100 = 0.36 %

EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)

System Bias

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = $\frac{48.16\ ppm - 48.22\ ppm}{115.90\ ppm}$ x 100 = -0.05 %

Drift Assessment

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_i\right|$$ Eq. 7E-4

D = | -0.33 % - -0.05 % | = 0.28 %

Bias Adjusted Average

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

C_{Gas} = (51.82 ppm - 0.51 ppm) $\left(\frac{47.80\ ppm}{48.00\ ppm - 0.51\ ppm}\right)$ = 51.64 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

ACE = Analyzer calibration error, percent of calibration span.
B_{WS} = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
C_{Avg} = Average unadjusted gas concentration indicated by data recorder for the test run.
C_D = Pollutant concentration adjusted to dry conditions.
C_{Dir} = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
C_{Gas} = Average effluent gas concentration adjusted for bias.
C_M = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
C_{MA} = Actual concentration of the upscale calibration gas, ppmv.
C_O = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
C_S = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
C_{SS} = Concentration of NOx measured in the spiked sample.
C_{Spike} = Concentration of NOx in the undiluted spike gas.
C_{Calc} = Calculated concentration of NOx in the spike gas diluted in the sample.
C_V = Manufacturer certified concentration of a calibration gas (low, mid, or high).
C_W = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
E_p = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
Eff_{NO2} = NO_2 to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
Q_{Spike} = Flow rate of spike gas introduced in system calibration mode, L/min.
Q_{Total} = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
SB_i = Pre-run system bias, percent of calibration span.
SB_f = Post-run system bias, percent of calibration span.
SB / D_{Alt} = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
SCE_i = Pre-run system calibration error, percent of calibration span.
SCE_{final} = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:

P_r = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
P_o = observed combustor inlet absolute pressure at test, mm Hg
H_o = observed humidity of ambient air, g H_2O/g air
e = transcendental constant, 2.718
T_a = ambient temperature, K

Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:

bhp = brake horsepower
hp = horsepower
Q_{sys} = system flow (lpm)
Q_m = matrix spike flow (lpm)

RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
B_{wa} = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
E_a = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
E_{ao}, E_{ai} = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
E_{bi} = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
E_{bo} = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
E_{ci} = Pollutant rate in combined effluent, ng/J (lb/million Btu).
E_{co} = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
E_d = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million E
E_{di} = Average inlet SO_2 rate for each sampling period d, ng/J (lb/million Btu).
E_g = Pollutant rate from gas turbine, ng/J (lb/million Btu).
E_{ga} = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent O_2.
E_{jo},E_{ji} = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent O_2.
E_h = Hourly average pollutant, ng/J (lb/million Btu).
E_{hj} = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent O_2.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
F_d, F_w, F_c = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
ft^3 = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
GCV_p, GCV_r = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
H_b = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
H_g = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
H_r = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, 10^{-5} (kJ/J)/(%) [10^6 Btu/million Btu].
K_c = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
K_{cc} = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
K_{hd} = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
K_{hw} = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
K_n = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
K_o = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
K_s = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
K_{sulfur} = $2x10^4$ Btu/wt%-MMBtu
K_w = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
L_p,L_r = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
MW_{AIR} = molecular weight of air (28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
P_B = barometric pressure, in Hg
P_s = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
S_e = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
S_i = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
S_o = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
T_{amb} = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
X_{CO2}=CO_2 Correction factor, percent.
X_k = Fraction of total heat input from each type of fuel k.

APPENDIX B

EMISSION DATA RECORDS

Dragon Products

Plant Name or Location:	Dragon Products Facility
Date:	January 23, 2025
Project Number:	veri-24-beaumont.tx-eng#1
Manufacturer & Equipment:	Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B

		RUN						
	UNITS	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**
Start Time	hh:mm:ss	11:01:13	12:32:13	13:44:13	14:54:13	16:03:13	17:15:13	11:03:02
End Time	hh:mm:ss	12:00:43	13:31:43	14:43:43	15:53:43	17:02:43	18:14:43	12:02:32
Bar. Pressure	in. Hg	30.43	30.43	30.35	30.32	30.32	30.32	30.49
Amb. Temp.	°F	41	49	51	52	52	49	41
Rel. Humidity	%	70	50	39	35	35	48	61
Spec. Humidity	lb water / lb air	0.003708	0.003591	0.003023	0.002817	0.002817	0.003459	0.003223
Date	mm/dd/yy	01/23/25	01/23/25	01/23/25	01/23/25	01/23/25	01/23/25	01/24/25
Load Designator		50%	50%	50%	75%	75%	75%	100%
Power Output	MW	1.96	1.96	1.96	2.85	2.85	2.85	3.17

Created with Comp&RATA&Eng-AHI v20240531

Dragon Products

Plant Name or Location:	Dragon Products Facility
Date:	March 4, 2025
Project Number:	veri-24-beaumont.tx-eng#1
Manufacturer & Equipment:	Dragon PowerGTM43M Turbine Mobile Generator powered by Vericor Gas Turbine ASE50B
Test Load:	maximum achievable
Tester(s) / Test Unit(s):	MP/WP/WN/220

		RUN		
	UNITS	**1**	**2**	**3**
Start Time	hh:mm:ss	8:43:06	10:08:06	11:25:06
End Time	hh:mm:ss	9:42:36	11:07:36	12:24:36
Bar. Pressure	in. Hg	29.61	29.61	29.58
Amb. Temp.	°F	68	68	68
Rel. Humidity	%	88	87	95
Spec. Humidity	lb water / lb air	0.013034	0.012883	0.014109
Load Designator		100%	100%	100%

Local time is CST, datalogger was in EST

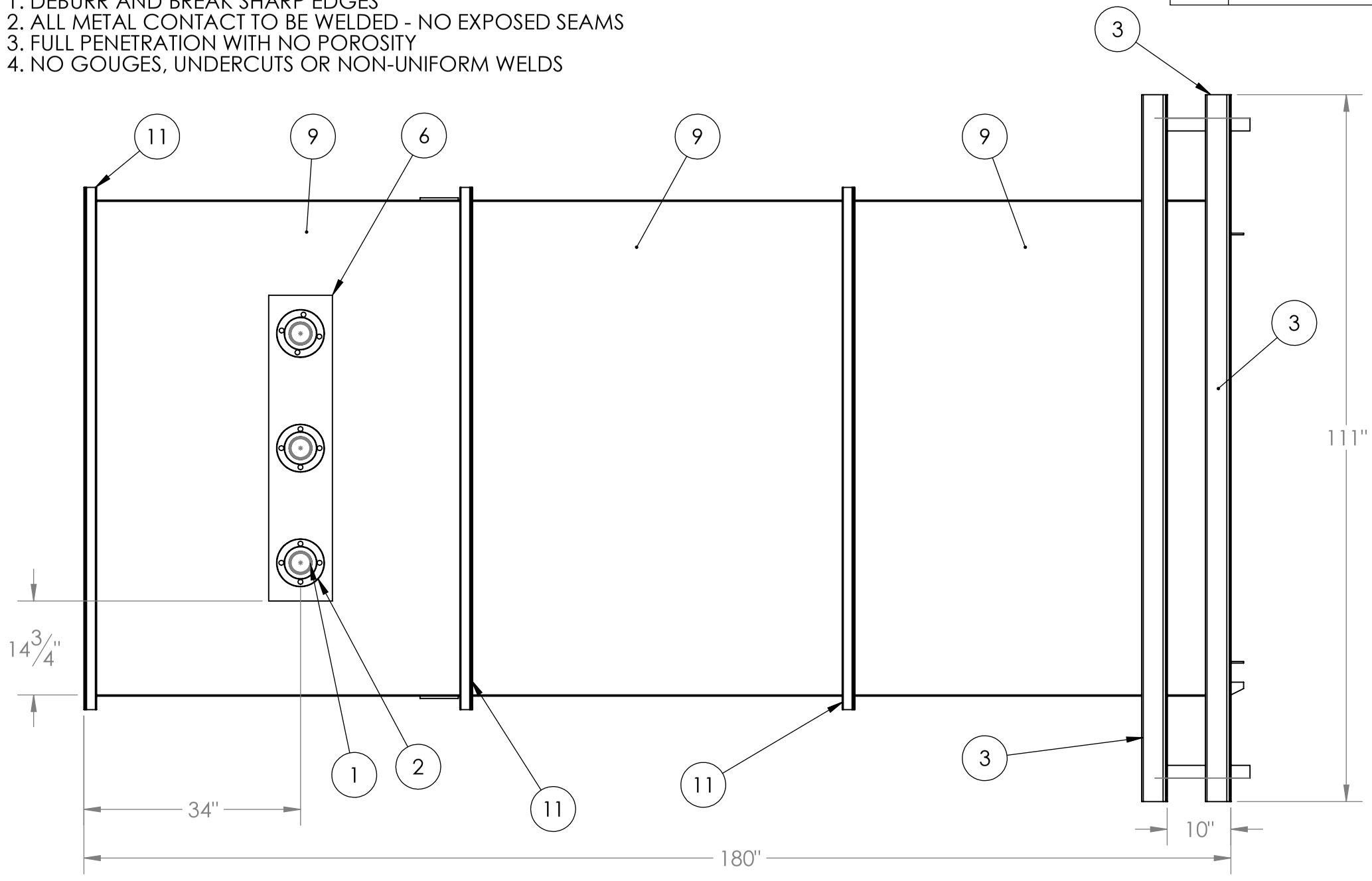
Created with Comp&RATA&Eng-AHI v20250206

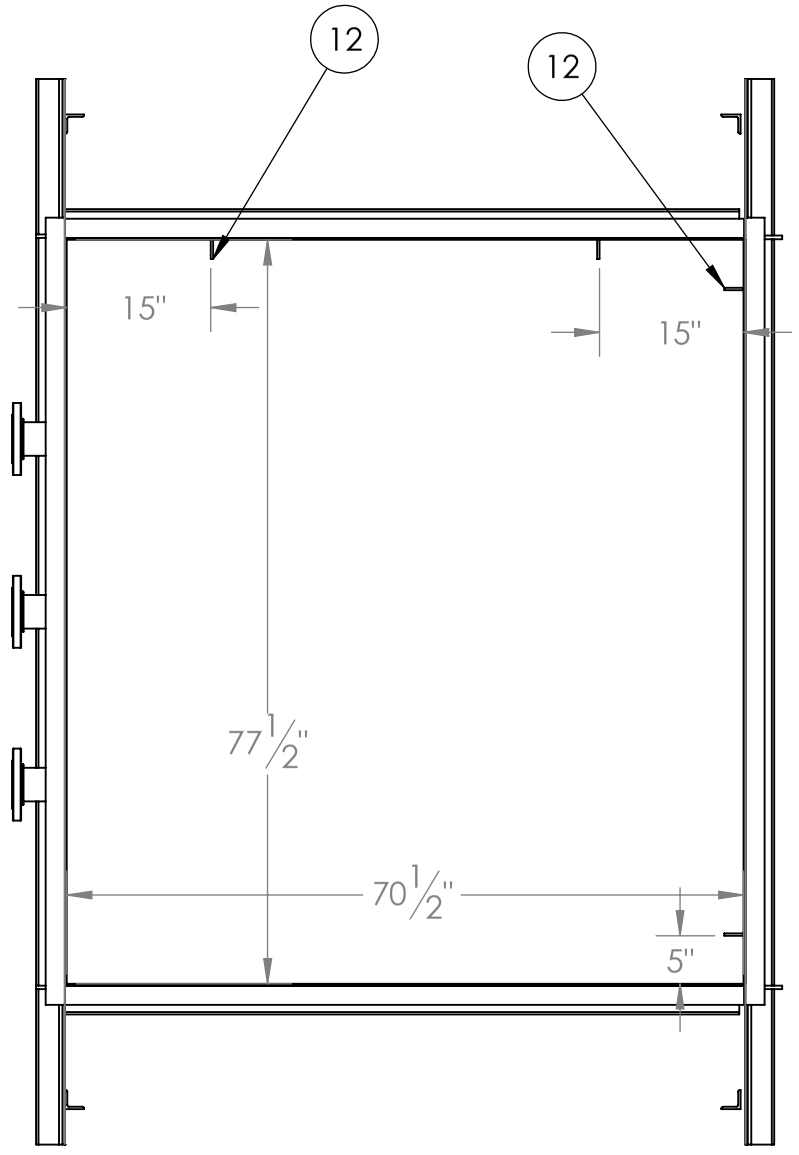
APPENDIX E

STACK INSTALLATION DIAGRAMS

WELD NOTES:
1. DEBURR AND BREAK SHARP EDGES
2. ALL METAL CONTACT TO BE WELDED - NO EXPOSED SEAMS
3. FULL PENETRATION WITH NO POROSITY
4. NO GOUGES, UNDERCUTS OR NON-UNIFORM WELDS

REVISIONS				
REV	DESCRIPTION	BY	DATE	ECO





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	pipe 3in x 4.75	PIPE, 3" SCH40 X 4-3/4" LG	3
2	68095K351	FLANGE 3" 150# RF/SO	3
3	angle L4x3 x111	ANGLE 4x3x1/4 x 111"	4
4	angle 3x3x70.75	ANGLE 3x3x1/4 x 70 3/4	4
5	angle 2x2x15	ANGLE 2x2x1/4 x 15"	4
6	doubler plate	PLATE 1/4" - 10"x48"	1
7	tie down brkt	PLATE 1/4"	4
8	plate .187x60x70.5	PLATE 3/16	6
9	plate .187 x60x77.5	PLATE 3/16	6
10	angle 2x2x70.75	ANGLE 2x2x1/4 x 70 3/4"	6
11	angle 2x2x82	ANGLE 2x2x1/4 x 82	6
12	INTERNAL GUIDE	PLATE 1/4"	4

DRAGON PRODUCTS, LLC.

WEIGHT:

DIMENSION TOLERANCE UNLESS OTHERWISE NOTED

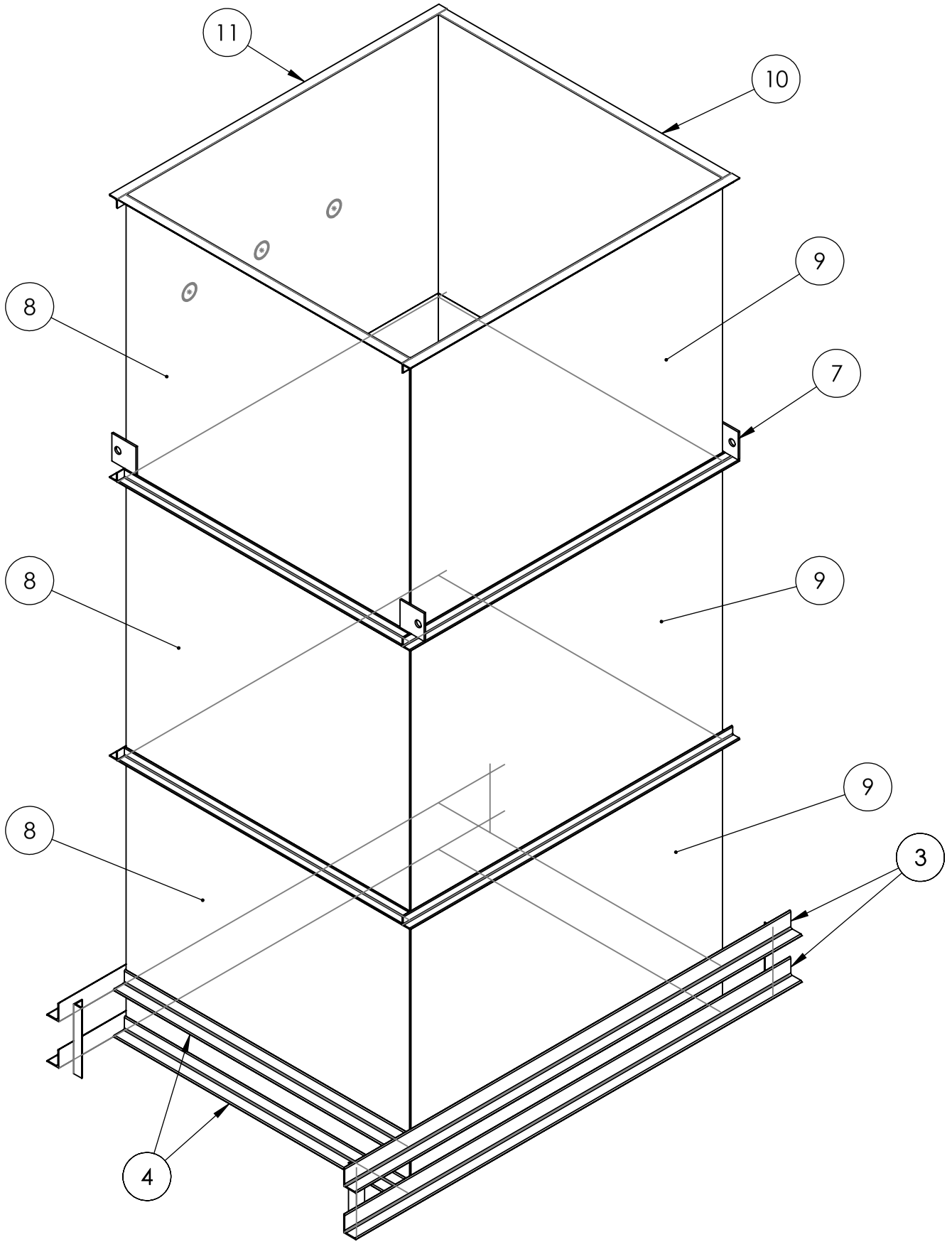
DECIMALS	.0 = ± .1 .00 = ± .01 .000 = ± .005	DRAWN BY	DATE
		CHECKED BY	DATE
FRACTIONAL	±1/32	MATERIAL	
ANGLES	±1°		

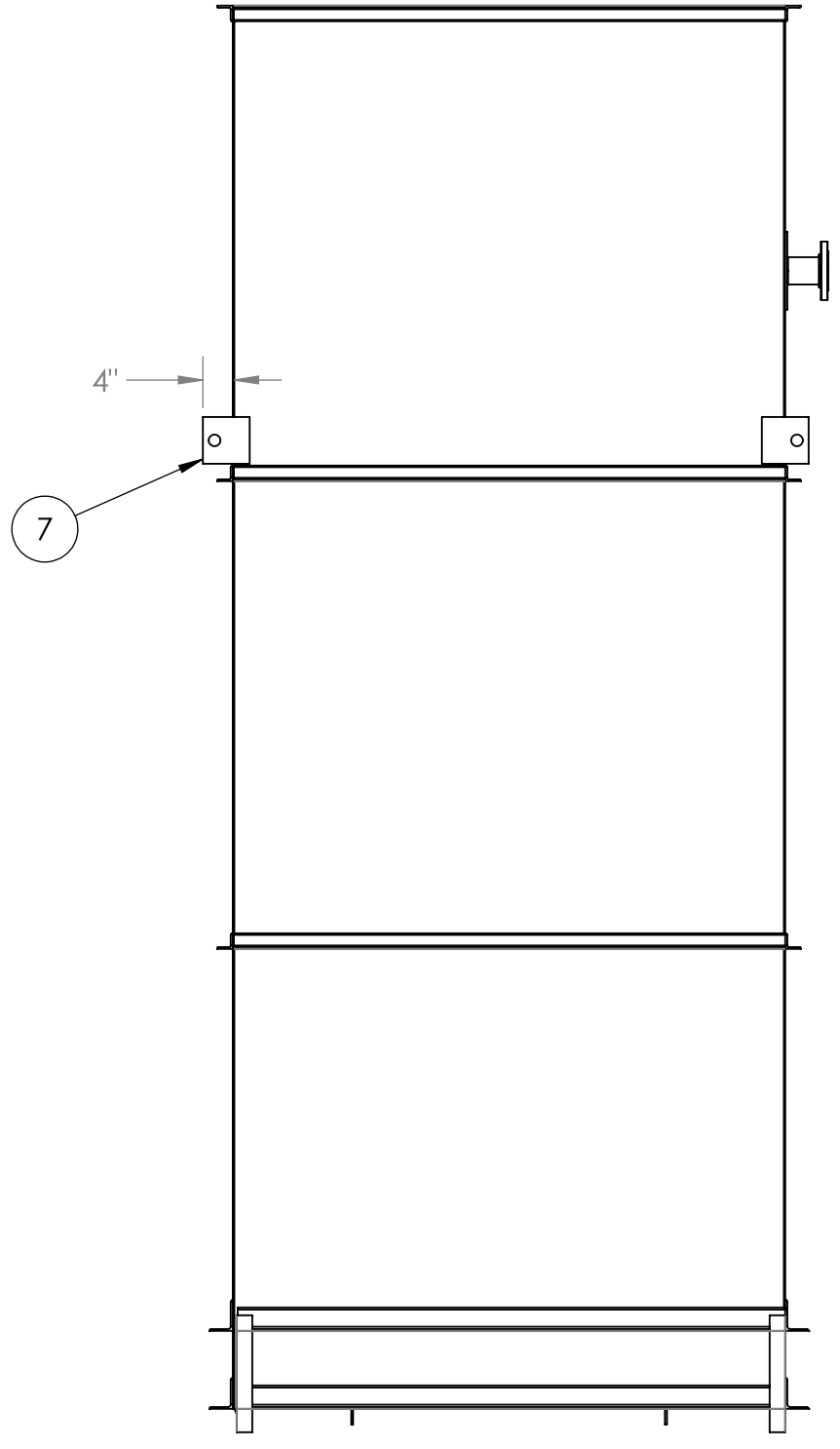
TITLE: EXHAUST TESTING EXTENSION

SCALE: 1:20 SIZE: B

exhaust test extension stack asm

SHEET 1 OF 3

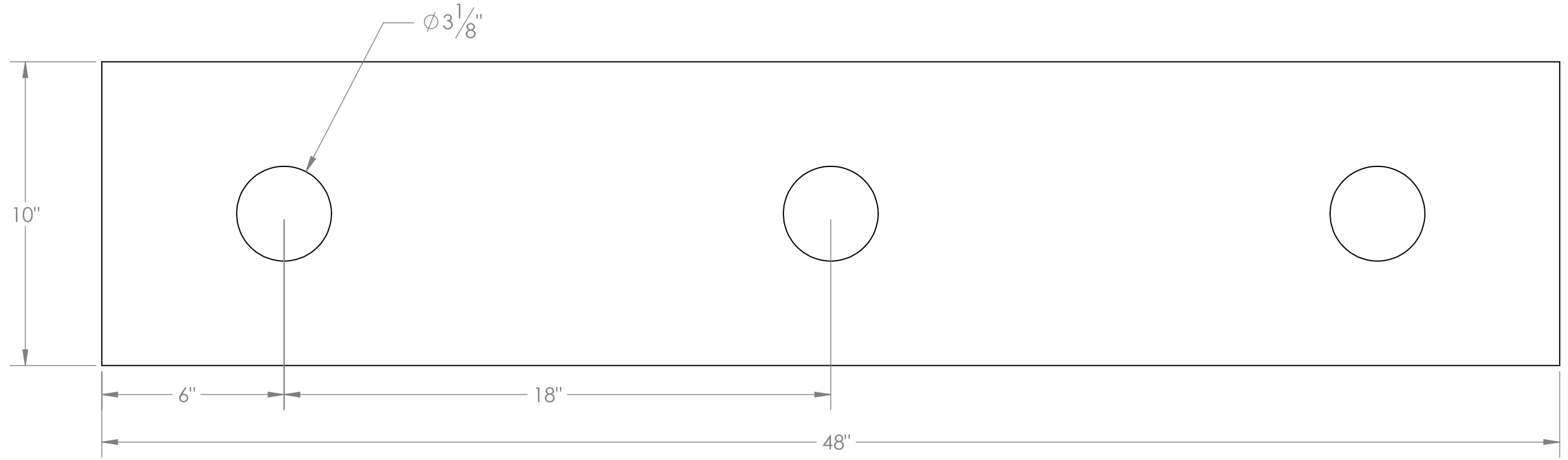




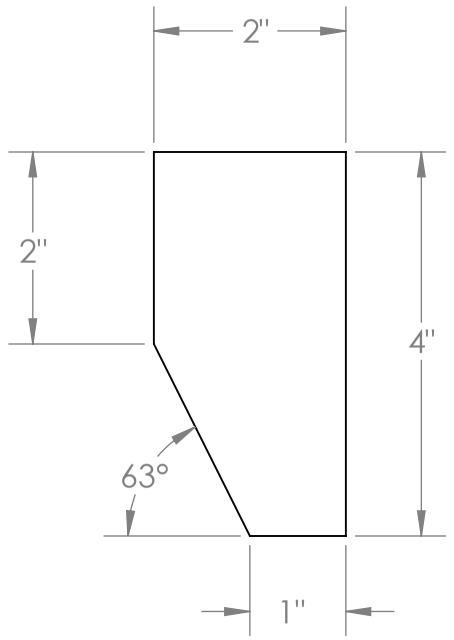
PART TYPE KEY: A-ASSEMBLY, B-PURCHASED, C-CUT, F-FORMED, J-WATERJET, M-MACHINED, P-PLASMA, S-SAW CUT, W-WELDMENT

DRAGON PRODUCTS, LLC.

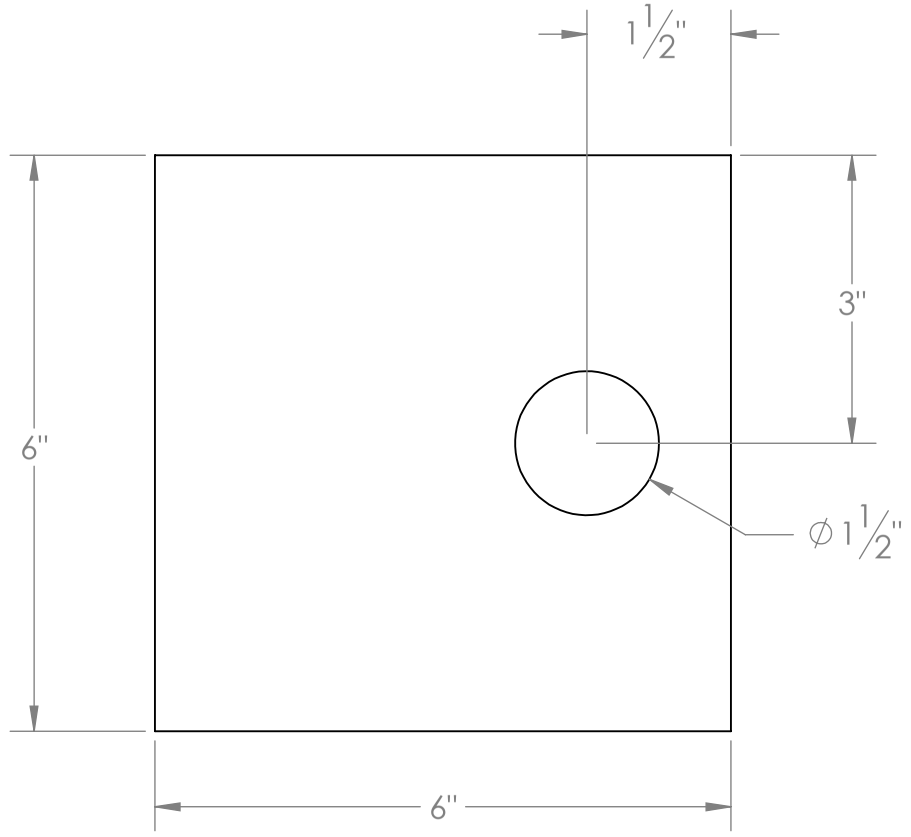
WEIGHT:		TITLE	EXHAUST TESTING EXTENSION		
DIMENSION TOLERANCE UNLESS OTHERWISE NOTED					
DECIMALS	.0 = ± .1 .00 = ± .01 .000 = ± .005	DRAWN BY	DATE	SCALE 1:24	SIZE B
		CHECKED BY	DATE		
FRACTIONAL	±1/32	MATERIAL	exhaust test extension stack asm		
ANGLES	±1°		SHEET 2 OF 3		



ITEM 6: PLATE 1/4"
(1) PCS REQUIRED



ITEM 12: PLATE 1/4"
(4) PCS REQUIRED



ITEM 7: PLATE 1/4"
(4) PCS REQUIRED

DRAGON PRODUCTS, LLC.

WEIGHT:		TITLE: EXHAUST TESTING EXTENSION			
DIMENSION TOLERANCE UNLESS OTHERWISE NOTED					
DECIMALS	.0 = ± .1 .00 = ± .01 .000 = ± .005	DRAWN BY	DATE	SCALE	SIZE
		CHECKED BY	DATE	1:1	B
FRACTIONAL	±1/32	MATERIAL	exhaust test extension stack asm		
ANGLES	±1°		SHEET 3 OF 3		

PART TYPE KEY: A-ASSEMBLY, B-PURCHASED, C-CUT, F-FORMED, J-WATERJET, M-MACHINED, P-PLASMA, S-SAW CUT, W-WELDMENT