REVIEWED
By Mike Buchanan at 9:30 am, Feb 26, 2025

Remediation Work Plan for the SVE system for Johnston Federal #4 received and was given pre-approval on 12/29/2021. Please upload all relevant permits; building permit, well installation permit, pollution recovery permit, and discharge permits into the incident file. Document and log all O&M activities and keep OCD apprised of schedule for O&M.

Remediation Work Plan

Johnston Federal #4
NMOCD Incident No: nAUTOfAB000305

November 22, 2023

Prepared for:

El Paso CGP Company, LLC
1001 Louisiana Street
Houston, Texas 77002

Prepared by:

Stantec Consulting Services, Inc.
11311 Aurora Avenue
Des Moines, Iowa 50322

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Abbreviations

AS	Air Sparge
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
cfm	cubic feet per minute
cy	cubic yards
EPCGP	El Paso CGP Company, LLC
GFCI	Ground Fault Circuit Interrupter
HDPE	High Density Polyethylene
Hp	Horsepower
kW	Kilowatt
LNAPL	Light Non-Aqueous Phase Liquids
MDPE	Mobile Dual-Phase Extraction
NMOCD	New Mexico Oil Conservation Division
NMOSE	New Mexico Office of the State Engineer
NMWQCC	New Mexico Water Quality Control Commission
NOI	Notice of Intent
O&M	Operations & Maintenance
PAH	Polycyclic Aromatic Hydrocarbons
PLC	Programmable Logic Controller
POD	Point of Division
PID	Photoionization Detector
PPMV	Parts per million vapor
SDR	Standard Dimension Ration
Site	Johnston Federal #4 Pit Site
SVE	Soil Vapor Extraction
Thermox	Thermal Oxidizer
TPH	Total Petroleum Hydrocarbons

1.0 INTRODUCTION

This Remediation Work Plan (Work Plan) has been prepared on behalf of El Paso CGP Company, LLC (EPCGP), for the Johnston Federal #4 pit site (Site) for the installation and operation of a soil vapor extraction (SVE) system at the Site.

The Site is currently regulated by the New Mexico Oil Conservation Division (NMOCD) and is located on Private/Fee land. Currently, the Site is the location of an active production pad operated by Hilcorp Energy (Hilcorp). The site location is shown on Figure 1, and the current site plan is shown on Figure 2.

2.0 SITE HISTORY AND CONCEPTUAL MODEL

2.1 SITE HISTORY

Environmental remediation activities at the Site are managed pursuant to the procedures set forth in the document entitled, "*Remediation Plan for Groundwater Encountered During Pit Closure Activities*" (Remediation Plan, El Paso Natural Gas Company / El Paso Field Services Company, 1995). This Remediation Plan was conditionally approved by the New Mexico Oil Conservation Division (NMOCD) in correspondence dated November 30, 1995; and the NMOCD approval conditions were adopted into EPCGP's program methods.

An initial site assessment was completed in August 1994, and an excavation of 60 cubic yards (cy) to a depth of approximately 12 feet below ground surface (bgs) was completed in September 1994. Monitoring wells were installed in 1995 (MW-1, MW-2, MW-3), 2006 (MW-4, TMW-5), 2013 (MW-6 through MW-12), 2014 (MW-13 through MW-20), 2020 (MW-21 through MW-23), and 2022 (MW-24 and MW-25). Remediation wells were installed in 2018 (TW-1, TW-2, and SVE-1), 2020 (AS-3 through AS-22 and SVE-2 through SVE-8), and 2022 (SVE-9 through SVE-12). Temporary monitoring well TMW-5 was plugged and abandoned in 2014.

Light non-aqueous-phase liquid (LNAPL) has been observed at the Site and is periodically recovered. Mobile dual-phase extraction (MDPE) events to enhance LNAPL recovery were conducted in 2016, 2017, and 2018 to help abate LNAPL. Quarterly manual LNAPL recovery began in the second quarter of 2020 and has continued through 2023. A solar-powered LNAPL skimmer system was installed at MW-21 in 2022 to enhance LNAPL recovery at this location. Currently, groundwater sampling is conducted from selected monitoring wells on a semi-annual basis.

Hilcorp is addressing a separate historical release of hydrocarbons west of the EPCGP release area (NMOCD Incident number nAUTOfAB000306). Based on assessment activities completed for the EPCGP release, the Hilcorp release and EPCGP release do not appear to be comingled.

2.2 SITE CONCEPTUAL MODEL

2.2.1 Release History

An unlined dehydrator pit was used at the Site during site production activities until 1994, and an unknown quantity of hydrocarbons was released (NMOCD Incident Number AUTOfAB000305).

2.2.2 Geology

Based on the previous site investigation activities, the site geology consists of silt and sand to depth of approximately 30 feet bgs, underlain by sandy and silty clay to a depth of approximately 50 feet bgs. Weathered sandstone bedrock is encountered at depths as shallow as 50 feet bgs.

2.2.3 Hydrogeology

Depth to groundwater across the Site averages approximately 48 feet bgs. Historically, the depth to groundwater has ranged from approximately 45 to 50 feet bgs. Groundwater flow across the Site is generally to the east-southeast.

2.2.4 Extent of Hydrocarbons in Soil and Groundwater

The extent of hydrocarbons in soil that exceed NMOCD Soil criteria have been adequately assessed at the Site, as most recently documented in the 2022 Annual Report for the Site. Based on the results of soil sampling, soil hydrocarbons in excess of applicable NMOCD Soil Criteria are present at depths of 36 to 48 feet bgs.

The extent of hydrocarbons in groundwater that exceed applicable New Mexico Water Quality Control Commission (NMWQCC) have been adequately assessed to the north, east, and west, as documented in recent Annual Reports for the site. The extent of hydrocarbons in groundwater have yet to be assessed south of monitoring well MW-24, which exceeds the NMWQCC standard for benzene. Further assessment of hydrocarbons in this area is planned following initiation of the corrective action proposed by this workplan, meant to address LNAPL and LNAPL source areas.

2.2.5 Light Non-Aqueous Phase Liquids

Historically, LNAPL has been observed in monitoring wells MW-1, MW-3, MW-6, MW-7, MW-8, MW-11, MW-21, and MW-22. In 2023, measurable LNAPL was present in monitoring wells MW-7, MW-8, MW-21, and MW-22.

2.2.6 Past Remedial Activities

Past remedial activities at the Site include the excavation and removal of approximately 60 cy in September 1995 as part of pit closure activities, MDPE events from monitoring wells MW-1, MW-3, MW-7, MW-8, and MW-11 in December 2016 through July 2018, and the operation of an LNAPL skimmer system on MW-21 installed in 2021. Manual LNAPL recovery events initiated in the second quarter of 2020 continue to be conducted at the Site on a quarterly basis.

3.0 PROPOSED REMEDIAL ACTION

The proposed remedial strategy consists of SVE to remediate hydrocarbons in soil and remove LNAPL. An SVE blower is to be used to provide a negative pressure (vacuum) to wells installed in the vadose zone, removing hydrocarbons in the vapor phase, and encouraging volatilization of remaining hydrocarbons in soil and smeared LNAPL. The hydrocarbon vapors are to be oxidized in a high temperature chamber, thermal oxidizer (thermox) unit, before emission to atmosphere.

Over time, vapor concentrations will decrease as the smear zone hydrocarbons and LNAPL are removed, making the SVE-thermox unit less efficient to operate. Once those conditions are met, the SVE-thermox will be removed from the Site and replaced with a different system to perform SVE and air sparging (AS). An addendum to this Work Plan will be prepared and submitted to outline the proposed change in equipment and initiation of AS activities to address hydrocarbons in groundwater.

Onsite work will be completed in compliance with the access agreement established with the property owner, and pursuant to the Site health and safety plan.

4.0 REMEDIAL SYSTEM DESIGN AND INSTALLATION

SVE feasibility testing was performed at the Site in 2018. The findings, reported in the 2018 annual groundwater report, indicated SVE should be effective as a remediation technology for hydrocarbon impacts at the Site. The SVE feasibility testing, in addition to data collected during the 2016-2018 MDPE events, also yielded data used in completing the system design. An effective design radius of 25 feet for SVE was determined from the testing, and was utilized when designing the system, as depicted on Figure 3.

4.1 PERMITTING

The need for the following permits has been evaluated prior to completing applicable remediation activities at the Site.

4.1.1 Building Permit

Based on discussions with the San Juan County Community Development Department, building permits are not required for the installation of oilfield-related equipment, including remediation systems.

4.1.2 Well Installation Permit

Prior to installation of the site remediation wells, well permits were obtained from the New Mexico Office of the State Engineer (NMOSE).

4.1.3 Pollution Recovery Permit

Based on discussions with the NMOSE, an amendment for pollution recovery to the existing well permit for Point of Division (POD) 18 (well SVE-1) will be obtained for any liquids recovered by the SVE system. The NMOSE permit amendment will be obtained prior to system start-up.

4.1.4 Discharge Permit

An evaluation of potential emissions from the proposed natural gas generator and SVE system and need for permitting through the New Mexico Environmental Department has been completed, and it was determined neither Title V air permitting, nor a New Mexico notice of intent (NOI) for the system, is required (Appendix A). Emissions testing of the natural gas generator will take place after startup to confirm no permit is required.

4.2 PREVIOUSLY COMPLETED REMEDIAL SYSTEM INSTALLATION ACTIVITIES

4.2.1 AS and SVE Well Installation

Two AS test wells (TW-1 and TW-2) and one SVE test well (SVE-1) were installed in June 2018 to facilitate remediation feasibility testing activities. Twenty AS wells (AS-3 through AS-22) and seven SVE wells (SVE-2 through SVE-8) were installed in April and May 2020 to facilitate future remediation of the subsurface. Based on subsequent monitoring well installation activities and resulting soil and groundwater sampling data, four additional SVE wells (SVE-9 through SVE-12) were installed in October 2022. The layout of the 12 SVE wells, 22 AS wells, and other features are shown on Figure 2. The AS and SVE well installation scopes of work were detailed in work plans previously submitted to the NMOCD. Details of the installation of the AS and SVE wells was documented in the 2018, 2020 and 2022 Annual Reports for the Site, previously submitted to the NMOCD.

4.2.2 AS/SVE Piping Installation and Earthwork

In June 2021, high density polyethylene (HDPE) piping was connected to each existing AS and SVE well and installed in shallow trenches between the AS and SVE wells and a gallery located in the southwest portion of the Site, as depicted on Figure 2. A gravel pad was installed adjacent to the piping gallery, to stage future remediation equipment and perimeter fencing and gates were installed. The piping installation scope of work was detailed in the May 5, 2021, AS and SVE Piping Installation Work Plan, and details of the installation of the piping and earthwork activities were documented in the 2021 Annual Report for the Site, both previously submitted to the NMOCD.

4.3 SVE PIPING INSTALLATION

The additional SVE wells installed in 2022 (SVE-9 through SVE-12) will be connected to previously installed HDPE laterals. This piping installation work will occur at the same time as the remedial equipment installation work described in following sections of this workplan.

4.3.1 Soil Trenching

Prior to beginning any earthwork activities, a New Mexico 811 "One Call" locate will be completed across the Site to mark public utility lines. No previously unknown or suspected utilities were identified around the Site during a private utility locate completed on April 18, 2021. The proposed trenching locations will also be measured-in and marked, and hydro-excavation or hand digging will be used to clear portions of the trench located within 5 feet of suspected or known underground obstructions to confirm the location and depths of the marked utilities. Stantec will coordinate and obtain verbal

approval from the operator's available on-site representative prior to mechanically excavating. Trenching depths or piping locations may be modified based on the utility locations, although trenching is not planned to exceed 3 feet in depth.

Based on previous soil sampling and assessment activities completed at the Site, shallow hydrocarbon-impacted soil is not expected to be encountered. Therefore, no soil sampling is proposed during the trenching activities. However, soil will be intermittently screened for the presence of hydrocarbons by Stantec field staff using a calibrated photoionization detector (PID). Trench spoils, unless suspected to have been impacted by hydrocarbons, will be used as backfill following HDPE installation. A clean borrow source will be identified in case additional fill material is needed to backfill trenches.

In the unlikely event suspected hydrocarbon-impacted soil is encountered (based on visual or olfactory observations, or PID readings from a field-screened sample exceeding 50 parts-per million vapor (ppmv)), those soils will be segregated from other excavated soils, placed on sheet plastic and covered, and transported off-site to the Envirotech landfarm, located south of Bloomfield, New Mexico, for disposal.

Given the known depth to groundwater across the Site, groundwater management will not be required given the shallow depth of excavation activities.

4.3.2 HDPE Installation Activities

Standard Dimension Ratio (SDR) 11 HDPE pipe will tee into each SVE well using steel fittings approximately three feet bgs. The HDPE conveyance piping will run in trenches between each SVE well location and the previously installed spare laterals. SVE laterals shall slope towards the well as much as practical. Slope shall be verified and documented with surveying transit or laser level. Heat fusion will be used between lengths of HDPE by performing butt-fusion or electrofusion with couplers along HDPE runs and to the connecting laterals. Each SVE lateral extension shall have dedicated insulated tracer wire extended so to run from the wellhead to the pipe gallery area. Once connected, SVE well completions will be modified such that the top-of-casing for each completion is 6 inches below grade and protected in a plastic valve box (wells near access roads will be completed in standard well vaults). The end of each piping stub-up for the newly-connected SVE wells shall be securely sealed and labeled with well identification information for future connection to a remediation system.

Each of the installed HDPE lines to the newly-connected SVE wells will pass a shut-in pressure test prior to backfilling. The shut-in test will consist of sealing each HDPE line under a known applied pressure for ten minutes to confirm they are not leaking. Results of these shut-in tests will be documented.

4.4 SVE REMEDIATION EQUIPMENT

A skid-mounted remediation system, owned by EPCGP and previously used at an out-of-state location, has been sourced for use at the Site. The system includes a 25 horsepower (hp) Roots positive displacement vacuum blower capable of 500 cubic feet per minute (cfm) at 12 inches of mercury vacuum, an 80-gallon air/water separator tank with a Goulds transfer pump, and an thermal oxidizer unit with Honeywell burner and controls. Equipment on the skid is controlled by an Automation Direct programmable logic controller (PLC). Information about the skid-mounted system is included as Appendix B.

The specifications of the equipment have been reviewed and are adequate based on the observed geology and feasibility testing results. Once operating, the oxidizer preheats the catalyst with SVE effluent vapors and achieves destruction efficiencies greater than 99%. This SVE-thermox skid will be replaced with a different AS/SVE remediation system when hydrocarbon concentrations in SVE emissions fall below practical operational thresholds.

An exterior double-walled storage tank will also be placed next to the system and connected to the separator tank to allow for any recovered liquids to be removed for off-site disposal. The tank will be equipped with a float and connected to the PLC to shut-off the system in the event of a high liquid level.

4.5 POWER SOURCE

Electrical power for the remediation system will be provided by a 100 Kilowatt (kW) natural gas generator, supplied with natural gas from the adjacent Hilcorp equipment pad.

4.5.1 Natural Gas Supply Line

A natural gas supply line will be constructed between the adjacent Hilcorp operations equipment area and the location of the natural gas generator. Hilcorp installed a meter run within the existing footprint of the Hilcorp equipment area in September 2023 for supply and control of natural gas flow. The natural gas supply line will connect to the meter and run underground to the generator pad within the fenced area. Trenching from the Hilcorp meter run to the generator pad area will be performed in the same manner as the trenching for HDPE piping installation discussed in Section 4.3.1. The layout of the natural gas supply line and the generator pad are shown on Figure 3.

The supply line will be constructed of 2-inch, Schedule 40, seamless, black carbon steel pipe and include a liquid-gas separator, a regulation train consisting of two Fisher pressure regulators, and a pressure relief valve. Design information for the natural gas supply line and generator are included in Appendix C.

4.5.2 Natural Gas Generator

The generator will be installed on a newly constructed pad located adjacent to the previously constructed SVE equipment gravel pad, leveled, inspected, and connected to the natural gas line. Any brush present around each pad will first be removed to prevent combustible materials being located nearby. A meter will also be installed ahead of the generator gas inlet. After installation, the generator will be tested by a manufacturer-approved service technician. After installation of the SVE-thermox skid, the major connections between electrical components will be made by an electrician licensed with the State of New Mexico. The system includes ground fault circuit interrupters (GFCI), where applicable.

Following installation of the SVE-thermox skid, an Arc Flash survey will also be completed prior to energizing the system.

4.6 SVE REMEDIATION EQUIPMENT INSTALLATION

The SVE-thermox skid will be delivered to the Site and placed by crane in the equipment pad location designated on Figure 2. The equipment skid will be leveled and secured to the ground to prevent shifting from equipment vibration.

The natural gas supply line constructed for the natural gas generator will include a tee connection for natural gas supply to the SVE-thermox skid. This supply line connection will be installed during generator install activities in 2023, but blinded or capped until the SVE-thermox skid is installed in 2024. When the SVE-thermox skid is installed, the natural gas supply will be connected to the thermal unit gas train as supply to the burner chamber and all connections checked for leaks.

The skid will be inspected for damaged or loose equipment, piping, or valves. The control panel will be inspected for damaged or loose wiring before connecting power from the generator.

4.7 PRE-STARTUP SAMPLING

Prior to start-up of the SVE-thermox system, Stantec will gauge and sample the 25 site monitoring wells, sampling each well that does not contain LNAPL to confirm baseline conditions prior to initiating remediation activities. The collected groundwater samples will be submitted for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8260. One trip blank and two field duplicate samples (one duplicate for every twenty primary samples) will also be collected. Assuming groundwater sampling of the site wells is completed before November 2024, the results of the November 2023 groundwater sampling event will be considered representative of baseline conditions, and additional monitoring well sampling immediately prior to system start-up may not be conducted.

4.8 EQUIPMENT STARTUP AND TEST-OUT

Once the system is assembled and visually inspected, each piece of equipment will be tested for proper operation. This will, at a minimum, include:

- Control panel
- SVE Blower
- Valves
- Sample ports
- Flowmeters
- Pressure indicators
- Water knockout tank
- Water transfer pump
- High water alarm
- High-high water alarm
- Burner assembly
- Gas regulation train

During equipment initial startup and testing the following will be checked as part of start-up and shakedown activities:

- System startup
- Meter readings
- System shutdown
- Telemetry connections and remote responses
- Alarm states, interpretation, troubleshooting, and resetting
- Vapor sampling from sample ports
- Knockout water transfer and removal

The soil vapor extraction vacuum will be increased in a step-wise manner to evaluate system response and performance. Following completion of the initial start-up activities, Summa canister samples will be collected prior to and after the thermox burner unit to confirm its performance and complete air emission calculations. The samples will be submitted for analysis of BTEX using Method TO-3, and Total Petroleum Hydrocarbons (TPH) using Method TO-15.

4.9 SITE RESTORATION

Equipment track compaction will be done on the portion of the gas line trench that falls within the Hilcorp Pad. Otherwise, compaction will not be performed during backfilling, to avoid damaging the SVE HPDE convenance piping, particularly bundles in shared trenching. Following trenching, pipe installation, and backfilling, site fencing and gates will be adjusted to encompass the newly connected SVE wells as shown on Figure 3.

5.0 OPERATION AND MAINTENANCE

Operation of the system may be varied to optimize hydrocarbon remediation and recovery. Initially, when vapor concentrations are high, the system will operate continuously. After concentrations begin to drop, whether observed by sampling or by increased use of natural gas to maintain the burner chamber temperature, the duty cycle of the equipment may be modified to target different areas and allow vapor concentrations in the subsurface to rise prior to removal. Eventually, vapor concentrations will diminish to a level where operation of the thermox is no longer energy efficient. At that point, the SVE-thermox skid will be removed from the Site and replaced with a different unit to continue remediation using SVE and AS. Installation and Operation and Maintenance (O&M) procedures for the second system will be covered under a future addendum to this Work Plan.

5.1 ON-SITE O&M

O&M of the system will be completed by qualified Stantec and O&M subcontractor individuals. On-site staff will be 40-hour HAZWOPER certified and have completed appropriate EPCGP safety training.

The following will be serviced according to manufacturer's specification:

- SVE Blower
- Natural gas generator
- Actuated valves
- Gas supply line instrumentation
- Thermal oxidizer

Other system components will be inspected regularly and serviced or replaced, as necessary.

O&M visits will occur monthly. O&M activities will be documented on O&M forms for O&M history documentation and summarization in annual reports. Site visits to address system alarm states may occur more frequently as applicable. These forms will document:

- Time and personnel on-site
- System condition (including any alarm states) and issues observed
- Actions taken to address issues
- Flow rates and air pressures/vacuums
- SVE system monitoring with a calibrated PID and 4-gas meter
- Any routine maintenance completed
- Any wastewater removed from the Site
- Any sample collection activities

- Any well gauging and monitoring information
- Change in site conditions
- Securing system prior to departure

5.2 SAMPLING

Groundwater and SVE system sampling will be competed to evaluate system operational performance and overall remediation progress at the Site.

5.2.1 Generator emissions sampling

Following startup of the thermox equipment, the emissions from the natural gas generator will be sampled to confirm the emissions levels are below the threshold for Title V permitting or NM state NOI. Sampling information is included in the Air Emissions Evaluation Memo in Appendix A.

5.2.2 SVE system sampling

On a calendar quarterly basis, an influent summa sample will be collected by Stantec prior to any dilution air and the thermox unit, and an effluent sample collected after the thermox unit. The summa samples are being collected to evaluate recovery and emission rates, and thermox performance. The summa samples will be submitted to Eurofins for analysis of BTEX using EPA Method TO-3, and TPH using EPA Method TO-15.

5.2.3 Groundwater Sampling

On a calendar quarter basis, Stantec will conduct site-wide groundwater monitoring well gauging and vacuum influence monitoring.

On a semi-annual basis, groundwater samples will be collected from selected monitoring wells (MW-1, MW-3, MW-6, MW-7, MW-8, MW-11, MW-15, MW-16, MW-21, MW-22, MW-24, and MW-25) The collected groundwater samples, in addition to one trip blank and one duplicate sample, will be submitted to Eurofins for analysis of BTEX constituents using EPA Method 8260.

Groundwater sampling from the 25 site monitoring wells will be conducted annually. The collected groundwater samples, in addition to one trip blank and two duplicate samples (one duplicate for every 20 primary samples), will be submitted to Eurofins for analysis of BTEX constituents using EPA Method 8260.

5.2.4 Post Remediation Sampling

Quarterly site-wide groundwater monitoring and sampling will be completed from the site monitoring wells for at least 4 calendar quarters following system shutdown to confirm

groundwater meets NMWQCC standards, pursuant to the *Remediation Plan for Groundwater Encountered During Pit Closure Activities*" (Remediation Plan, El Paso Natural Gas Company / El Paso Field Services Company, 1995). The collected groundwater samples, in addition to one trip blank and one or more duplicate samples, will be submitted to Eurofins for analysis of BTEX constituents using EPA Method 8260.

Monitoring wells that are located in areas where soil TPH concentrations exceed applicable NMOCD site criteria, or where LNAPL has historically been present, will also be sampled at least once for NMWQCC-regulated Polycyclic Aromatic Hydrocarbons (PAHs) (naphthalene and benzo(a)pyrene) using EPA Method 8270.

Given the depth of the hydrocarbon-impacted zone at the Site and the primary goal of achieving NMWQCC standards at the Site, post remediation soil sampling is not proposed.

5.3 REMOTE MONITORING

Besides on-site observations, system status monitoring will be achieved remotely with callouts from the PLC, located on the control panel. Responses to alarms that result in the system remaining shut down will be conducted within 48 hours of notification, when possible. Paged alarm messages may include:

- Phase fault
- A/W separator high alarm
- Low vacuum
- High vacuum
- Heat exchanger high temp
- Heat exchanger high pressure
- Infiltration gallery high level
- Oxidizer fault
- Generator shutdown

Response to alarms will be completed by Stantec's O&M subcontractor, or by qualified Stantec personnel. In addition, a network of cameras communicating via cellular signal will be installed around the Site to monitor operational status and site security independent of PLC-based communication with the system.

5.4 WASTE MANAGEMENT

Water generated from the moisture knockout tank will be containerized and transported to the Envirotech landfarm south of Bloomfield, New Mexico for disposal. New Mexico form C-138, pre-signed by EPCGP, will be provided to the waste hauler prior to wastewater removal and disposal.

Other O&M derived wastes (i.e., spent filters, gloves, buckets, etc.) will be containerized and removed from the Site by the O&M contractor for disposal as commercial wastes.

6.0 REPORTING

Periodic monitoring will be completed to document site activities and progress, and to comply with NMOSE permit requirements.

6.1 ANNUAL REPORTING

Documentation of system installation, start-up and shakedown; and O&M and monitoring activities will be included in the annual report for the Site. The documentation will include updated data tables and a site plan, the approximate duration of SVE system operation during the reporting period, estimated amount of hydrocarbons removed from the SVE system during the reporting period, groundwater and air emissions laboratory reports, system installation photo-documentation, waste disposal documentation, and NMOCD notification documentation. The report will also summarize, in aggregate, system downtime and any major issues encountered during installation or operation, or modifications to the activities proposed in the O&M work plan.

Each annual report will be submitted by April 1 for the preceding calendar year.

6.2 WATER METER REPORTING

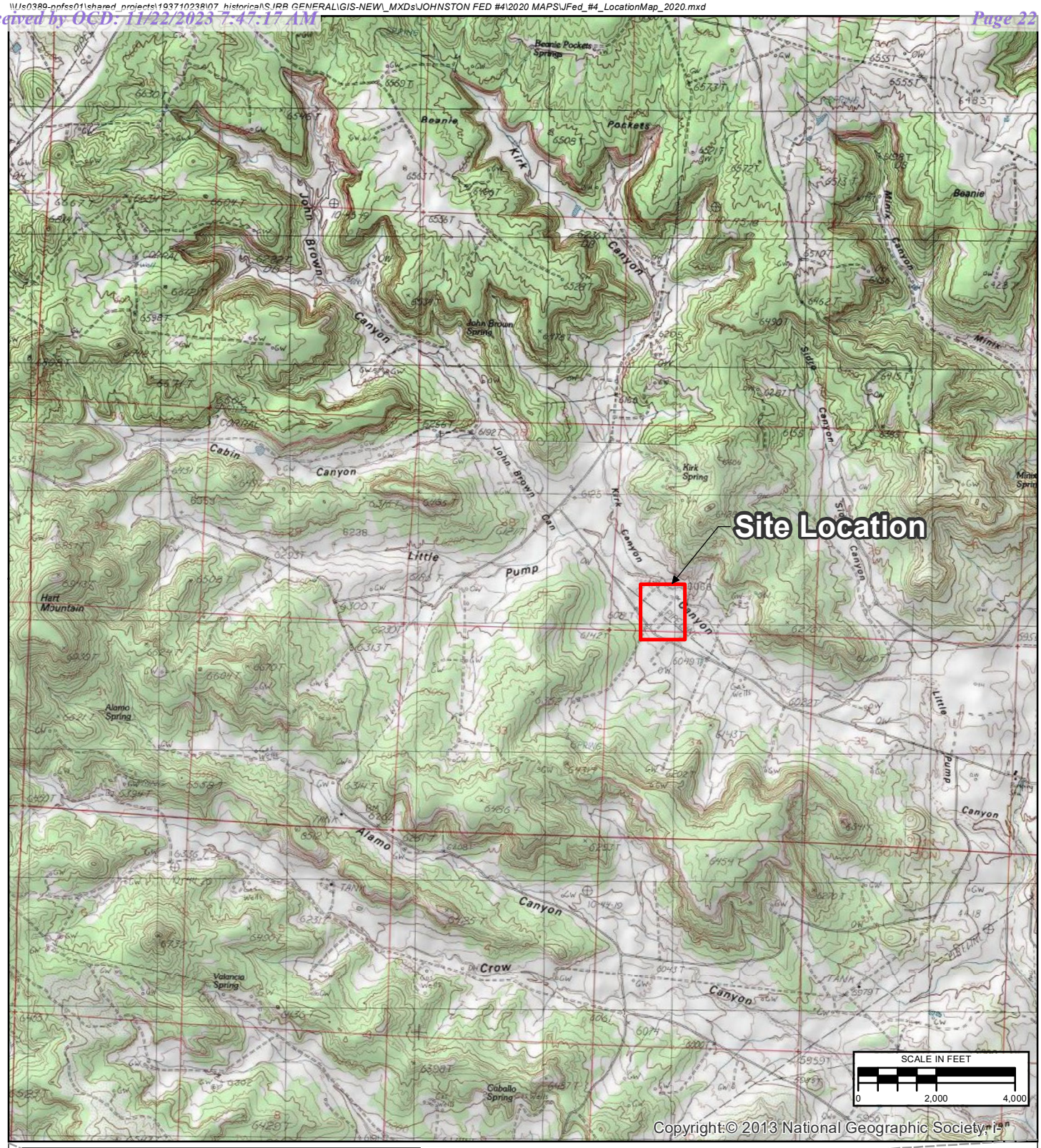
Pursuant to the NMOSE Pollution Recovery Amendment to be submitted for POD 21 (well SVE-1), quarterly water meter reports will be prepared for submittal to the NMOSE by the last day of the month following the 3-month reporting period. The water meter reports will be prepared and submitted while the system remains in operation.

7.0 INSTALLATION AND O&M SCHEDULE

Equipment installation is contingent on the timing of the availability of parts to complete the SVE-thermox skid upgrades and modifications and availability of contractors to complete the piping and system installation and start-up activities. It is expected that the generator installation will occur in late 2023 and equipment installation, system start-up and shakedown, and initiation of O&M will occur in early 2024. The system is expected to operate for at least one year before the system is replaced with a different AS/SVE remediation system, to be addressed in a separate addendum to this Work Plan.

EPCGP proposes to notify NMOCD at least 48 hours before the date of the major site activities (i.e., arrival of the SVE-thermox equipment and setup, system startup (if significantly delayed following system installation), and quarterly O&M and sampling events), and upon recommendation of system shutdown and closure monitoring, and post-remediation sampling events.

FIGURES



N

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	2/16/2021	SAH	SAH	SRV

TITLE
SITE LOCATION

Stantec

PROJECT
JOHNSTON FED #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

FIGURE
1

\\cd1001-c200\CTX-CIFSS\VDI\Redirect\shansen\Desktop\GIS-NEW_MXDs\JOHNSTON FED #4\2022 MAPS\JFed_#4_SITEMAP_2022-12.mxd

SMA BENCHMARK
ELEV 6070.54
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

BLM PROPERTY

SEXTON PROPERTY

AREA OF FORMER PIT
OR EXCAVATION

FORMER EPC PIT
EXCAVATED TO 10 FEET

HILCORP WATER

HILCORP GAS

ENTERPRISE

SOLAR PANEL

MW-4
MW-19
MW-23
AS-4
AS-3
MW-6
MW-18
AS-7
SVE-2
TW-1
AS-6
SVE-1
MW-1
SVE-4
MW-3
SVE-8
MW-7
AS-9
AS-13
SVE-3
MW-2
AS-17
AS-22
MW-9
AS-5
MW-20
SVE-7
MW-17
AS-8
AS-12
AS-16
SVE-6
AS-21
SVE-12
MW-8
AS-11
TW-2
MW-10
MW-16
MW-22
AS-20
SVE-11
SVE-5
MW-11
MW-25
AS-10
TMW-5
AS-15
AS-19
MW-15
MW-13
SVE-10
AS-14
AS-18
MW-21
MW-12
MW-14
SVE-9
MW-24

Conoco Phillips MW-1
Conoco Phillips MW-4
Conoco Phillips MW-3

SYSTEM EXPANSION
LATERAL TERMINATIONS

SOLAR LNAPL
SKIMMER (CONEX)

LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- GAS — GAS LINE
- W — WATER LINE
- X — FENCE
- UE — UNDERGROUND ELECTRIC
- PROPERTY BOUNDARY
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- AIR SPARGE WELL
- SOIL VAPOR EXTRACTION WELL
- SMA BENCHMARK
- FENCE
- GATE
- TRENCH (SHARED)
- TRENCH (UNSHARED)
- LATERALS
- 4-INCH UNDERGROUND CONDUIT
- EQUIPMENT PAD AREA

N

SCALE IN FEET
0 25 50

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	2023-03-19	SAH	SAH	SRV

TITLE:

SITE PLAN

PROJECT:

JOHNSTON FEDERAL #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.: **2**

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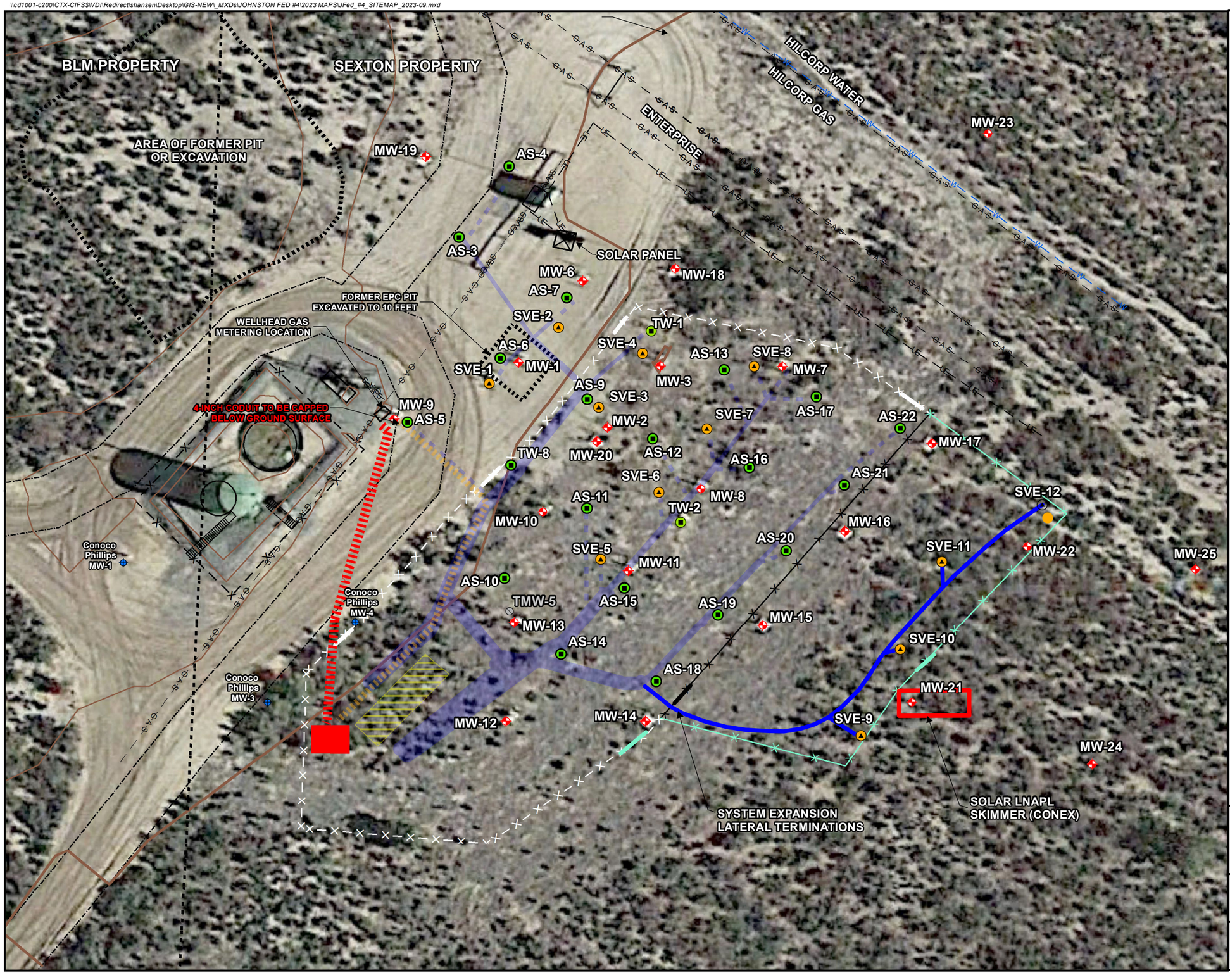


LEGEND:

- 6070 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- GAS — GAS LINE
- W — WATER LINE
- X — FENCE
- UE — UNDERGROUND ELECTRIC
- PROPERTY BOUNDARY
- ABANDONED MONITORING WELL
- CONOCO PHILLIPS MONITORING WELL
- MONITORING WELL
- AIR SPARGE WELL
- SOIL VAPOR EXTRACTION WELL
- SMA BENCHMARK
- FENCE/GATE

EXISTING SVE SYSTEM

- TRENCH (SHARED)
- TRENCH (UNSHARED)
- 4-INCH UNDERGROUND CONDUIT
- EQUIPMENT PAD AREA

PROPOSED SVE SYSTEM

- SVE LATERAL EXTENTIONS
- REMOVED FENCE/GATE
- ADDITIONAL FENCE/GATE
- GENERATOR LOCATION
- ALTERNATIVE GAS SEVICE LINE

N

SCALE IN FEET

0 25 50

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	2023-10-04	SAH	SAH	SRV

TITLE:

PROPOSED SVE SYSTEM LAYOUT

PROJECT:

JOHNSTON FEDERAL #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

Figure No.: 3

APPENDICES

APPENDIX A

Stantec

Technical Memorandum

To:	File	From:	Samantha Buss Des Moines
Project/File:	Johnston Federal #4 Pit Site	Date:	July 20, 2023

Reference: Air Emissions and Permitting Applicability for the SVE/AS Remediation System

In preparation for remedial activities at the Johnston Federal #4 Site (site), Stantec reviewed the potential air emissions and regulatory requirements.

According to the New Mexico code, NMAC 20.2.73.200A(1), the criteria for submitting a notice of intent to the State of New Mexico is exceeding a potential emission rate greater than 10 tons per year (tpy) of any regulated air contaminant or 1 tpy of lead. Regulated air pollutants include the six criteria pollutants [particulate matter (PM), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), lead (Pb)] and hazardous air pollutants (HAPs). Under the EPA Title V emissions permitting requirements, a permit is needed for sources with 25 tpy of total potential HAP emissions or 10 tpy of any single potential HAP emissions.

The soil vapor extraction (SVE) remediation system is shown in a process flow diagram included as Attachment A. This system includes a generator, which will be fueled by natural gas from a nearby oil field well that is owned by a separate entity than the remediation system. The generator will power the air sparge compressor and the SVE-Thermcat-04 (Thermcat) unit. The Thermcat unit is used as an SVE blower and thermal/catalytic oxidizer (oxidizer) for the control of the organic pollutant emissions. Potential air emissions include the products of natural gas combustion associated with the generator and the oxidizer. The oxidizer will combust the extracted soil vapors along with supplemental natural gas to maintain the designated temperature setpoints across the catalyst bed. The SVE system is designed with interlocks so that the system only operates when the catalytic oxidizer is operating; therefore, the control efficiency of the oxidizer is considered an inherent limitation and is included in the potential to emit (PTE) calculations for the system.

The PTE calculations for the site are provided as Attachment B. Assumptions for the calculations are stated within the notes section of the attachment and sources for emission factors and equipment ratings are included as Attachment C. Based on the PTE calculations, neither Title V permitting, nor a New Mexico notice of intent is required for this system.

Although air permitting is not necessary for this system, state and federal regulations may still apply and should be followed. Based on a brief review of the codes, the following emission standards should be adhered to. The complete text of these codes is included as Attachment D, for reference, with the applicable portions highlighted.

20.2.61.109 NMAC: Smoke and Visible Emissions

Applicable to: Generator and Thermcat Unit

Limits: ≤ 20% opacity

40 CFR Part 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Applicable to: Generator

Reference: Air Emissions and Permitting Applicability

Limits: NO_x – 1.0 g/HP-hr or 82 ppmvd at 15% O_2
CO – 2.0 g/HP-hr or 270 ppmvd at 15% O_2
VOC – 0.7 g/HP-hr or 60 ppmvd at 15% O_2

The emission factors used to calculate the generator emissions are based on these limits. This rule and these standards are enforceable by code, with or without an air permit; therefore, they may be used for emission calculations. However, to ensure the generator meets these standards ***the generator should either be certified by the manufacturer or stack tested*** *upon startup (as soon as possible, but no later than 180-days from startup)*. The following requirements are also applicable if the generator is not certified by the manufacturer. See Attachment D for more information.

Additional Requirements:

- Demonstrate compliance with the limits by conducting an initial performance test. [40 CFR 60.4243(b)(2)(i)]
- Submit a copy of each performance test within 60-days of completion. [40 CFR 60.4245(d)]
- Keep a maintenance plan and records of maintenance and operate the generator "*in a manner consistent with good air pollution control practice for minimizing emissions*". [40 CFR 60.4243(b)(2)(i)]

40 CFR Part 63 Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Applicable to: Generator

Limits: "*…meet the requirements of this part by meeting the requirements of …40 CFR part 60 subpart JJJJ…*" [40 CFR 63.6590(c)]

STANTEC CONSULTING SERVICES INC.

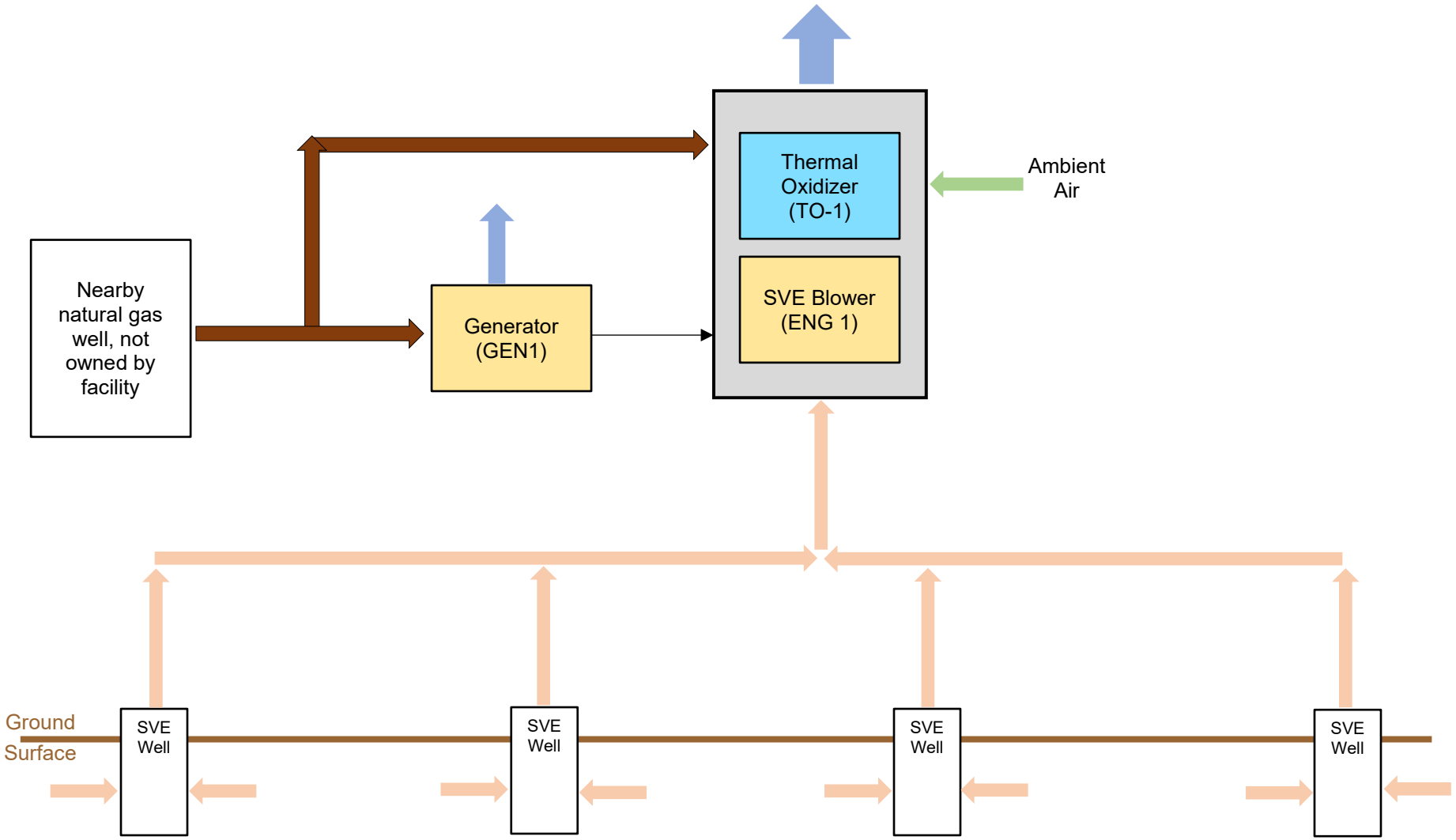
Samantha Buss
Environmental Scientist
Phone: (515) 251-1015
Mobile: (515) 306-1353
samantha.buss@stantec.com

Attachments: A – Process Flow Diagram
B – Emission Rate Calculations
C – Equipment Specification Sheets
D – Applicable State and Federal Codes

ATTACHMENTS

ATTACHMENT A

Attachment A – Process Flow Diagram
Johnston Federal #4



Legend:

Emission Unit

Emission Control Unit

Field Gas

Electric Power Supply

Soil Vapor (Process Fuel)

Emission Point

Ambient Air

Ground Surface

Notes:
Process fuel is soil vapor contaminated with weathered natural gas condensate.
SVE = Soil Vapor Extraction
AS = Air Sparge

ATTACHMENT B

Attachment B
Emission Rate Calculations
Johnston Federal #4

SVE -Thermcat-04 - Potential Emission Rates from Soil Vapor Extraction

	Flow Rate	Emission Factor	TO Efficiency	Emission Rates	
Pollutant	**(scfm)**	**(mg/m3)**	**(%)**	**(lbs/hr)**	**(tons/yr)**
Benzene	156	1,400	95%	0.04	0.18
Toluene	156	5,100	95%	0.15	0.65
Ethylbenzene	156	290	95%	0.01	0.04
Xylenes, Total	156	2,800	95%	0.08	0.36
Total HAP				*0.28*	*1.23*

SVE -Thermcat-04 - Potential Emission Rates from Pilot Burner

	Burner Rating	Emission Factor	Emission Factor	Emission Rates	
Pollutant	**(MMBtu/hr)**	**(lb/MMscf)**	**(lb/MMBtu)**	**(lb/hr)**	**(tons/yr)**
NOx	2.1	100	0.073	0.15	0.67
CO	2.1	84	0.061	0.13	0.56
SOx	2.1	0.6	4.35E-04	0.00	0.00
PM10	2.1	7.6	5.51E-03	0.01	0.05

Generator - Potential Emission Rates

	Engine Rating	Emission Factor	Emission Rates	
Pollutant	**HP**	**(g/HP-hr)**	**(lb/hr)**	**(tons/yr)**
NOx	167	1.0	0.37	1.61
CO	167	2.0	0.74	3.23
TOC	167	0.7	0.26	1.13

Site Total - Potential Emission Rates

	Emission Rates	
Pollutant	**(lb/hr)**	**(tons/yr)**
NOx	0.52	2.28
CO	0.86	3.79
SOx	0.00	0.00
PM10	0.01	0.05
TOC	0.26	1.13
HAPs - Total	*0.54*	*2.36*
Benzene	0.04	0.18
Toluene	0.15	0.65
Ethylbenzene	0.01	0.04
Xylenes	0.08	0.36

Assumptions:

1) The blower equipment for the system proposed to be used at this site was initially designed and used in a different location and is therefore over designed for the geology of this site. A pilot SVE test was conducted at SVE well SVE-1 on July 13th, 2018 in the most contaminated area of the site. The limiting well vapor flows during this test are used in the PER calculations and the laboratory analytical data of a vapor sample collected during that test is used to provide the emisison factors for the SVE blowers.

2) The SVE system design for the site includes 12 SVE wells operating at 10 scfm each. Operation is targeted for 12 hours per day for 365 days per year, at each well. Although actual anticipated emissions calculations would use this information, the PER calculations assume the maximum flow rate of 13 scfm (as determined during pilot testing at the site) and operation time of 8760 hours per year for each well.

3) The thermal oxidizer is conservatively assumed to reduce emissions by 95%.

4) Generator emissions are calculated using the applicable emission rates included in 40 CFR 60 Subpart JJJJ. The TOC is included in the total HAPs for the site but is not speciated into individual HAPs.

5) Thermal oxidizer burner gas emission factors are from AP-42 Table 1.4-1 and 1.4-2. VOCs are assumed to be negligible.

6) Standard values for calculations are as follows:

Equipment potential operational time =	8760	hr/yr
Generator fuel heat value =	1186	BTU/SCF
Generator rated fuel input =	1063	SCF/hr
Generator factory rated horse-power rating =	167	hp
Thermcat burner rating =	2.1	MMBTU/hr
Unit conversion factor =	0.0022	lb/gr

Attachment B
Emission Rate Calculations
Johnston Federal #4

Notes:

GRO = Gasoline range organics
HAP = Hazardous air pollutant
hp = Horsepower
hr/yr = hours per year
lbs/day = Pounds per day
lb/hp-hr = Pounds per horsepower-hour
lb/gr = Pounds per gram
lbs/hr = Pounds per hour
lb/MMBtu = Pounds per Million British Thermal Units
lb/yr = Pounds per year
mg/m^3 = Milligrams per cubic meter
MMBtu = Million British Thermal Units
PER = Potential emission rate
scfm = Standard cubic feet per minute
SVE = Soil vapor extraction
tons/yr = Tons per year
TO = Thermal Oxidizer
TOC = Total organic carbon
TPH = Total petroleum hydrocarbons
wt% = Percent by weight

ATTACHMENT C

Quality Products

Engineered to Last

GENERATOR SETS

C-SERIES & A-SERIES

ARROW™ ENGINE COMPANY

A Tradition of Excellence

Since 1955

GENSET-ML-B-FEB15

ARROW ENGINE COMPANY

GENERATOR SETS

ARROW NATURAL GAS GENERATORS

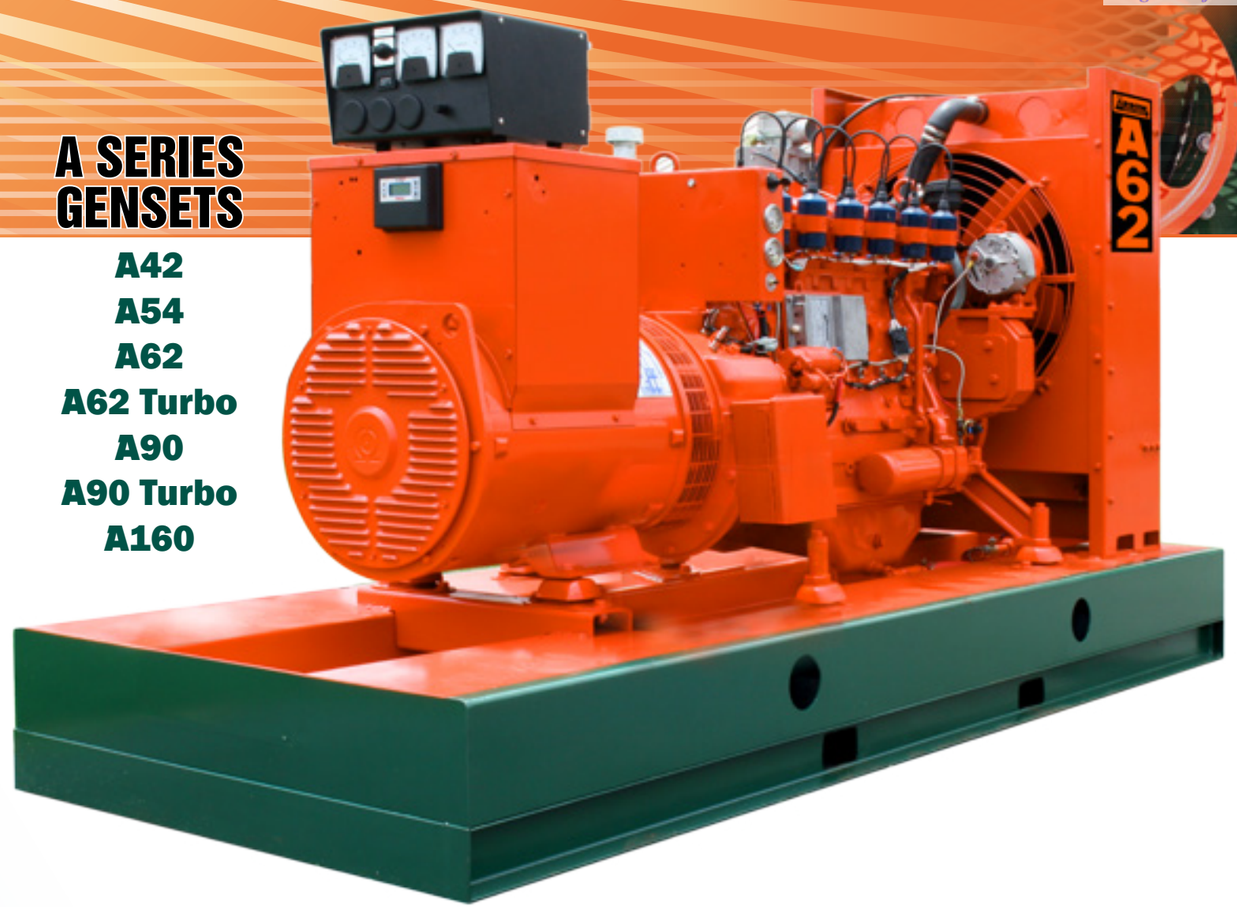
Arrow Engine Company is an industry leader in heavy-duty power generation equipment, and with increasing demand for ***cheaper and cleaner burning fuel*** more companies are turning to natural gas generators for their power generation needs. This type of fuel burns cleaner than standard diesel and is well suited for remote areas where a continuous supply of natural gas is readily available.

Our natural gas generator sets feature a ***wide assortment of factory options*** that enable you to customize your generator to match your requirements, including emissions equipment to assist you with ***environmental and regulatory compliance***. Arrow Generator Sets are designed to operate on a wide range of fuels, including natural gas, well-head gas, and pipeline gas, while providing maximum fuel efficiency along with low life-cycle costs.

Please call us for our full line of 5 to 150kW genset offerings.

A SERIES GENSETS

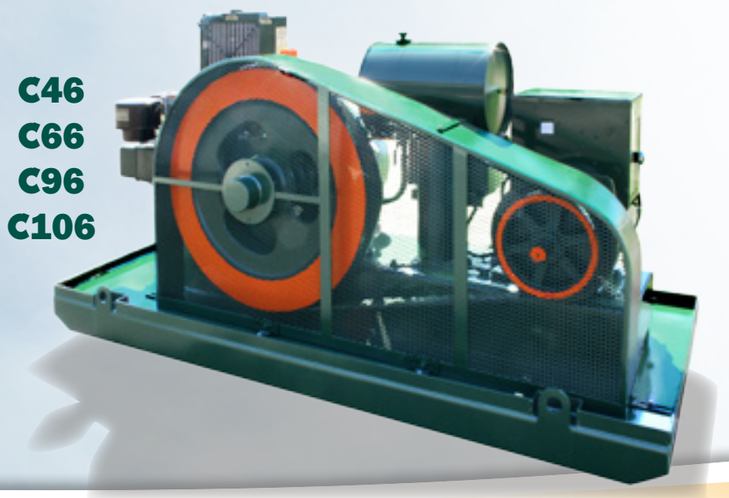
A42
A54
A62
A62 Turbo
A90
A90 Turbo
A160



C SERIES GENSETS

- Oil bath air cleaner
- Fuel flow lube oil filtration
- Pressure lubrication
- Electrical engine speed governor
- 12-volt electric ring-gear starter

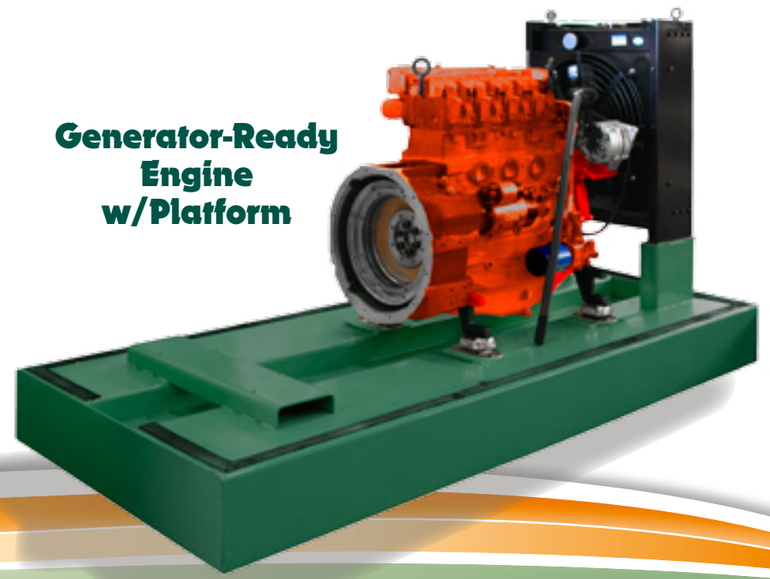
C46
C66
C96
C106



CUSTOM GENSETS

- Pre configured for your application
- Generator-ready
- Platform or enclosure options to meet your needs
- C Series or A Series engine models

Generator-Ready Engine w/Platform



ARROW ENGINES

Arrow Engine Company
2301 East Independence, Tulsa, Oklahoma 74110 • www.ArrowEngine.com

toll free (800) 331-3662 local (918) 583-5711
fax (918) 699-2202

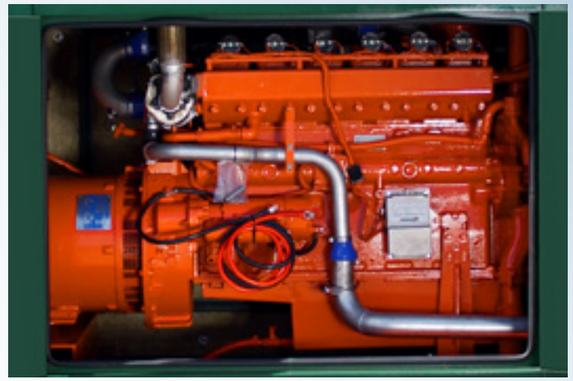
GENSET FEATURES & OPTIONS

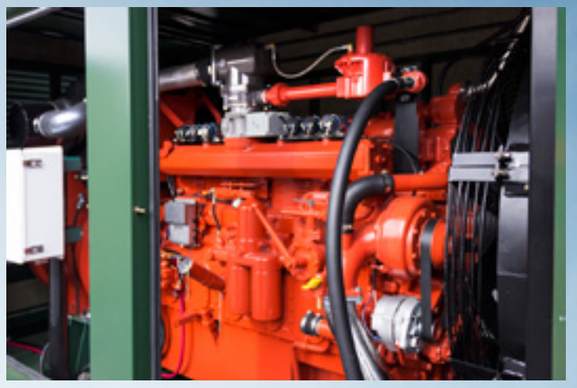
ENCLOSURE FEATURES

- Noise-attenuated insulation
- Heavy-duty 14-gauge construction
- Forklift ports in base for easy maneuverability
- Upper enclosure separates easily from the base for maintenance
- Oil & water drain ports
- Easy-open door access from any side
- HD aluminum easy-flow louvers for air circulation

FACTORY OPTIONS

- Single or three phase option
- Mariner generator option – severe conditions or off shore
- Excitation – SE350 standard, PMG optional with DVR2000
- Various circuit breaker options
- Paint
- Emissions Equipment – AFR & catalyst options
- Oil level regulator
- Water level regulator
- Control panel – standard or remote start capable
- Various fuel volume tanks & coalescer vessels
- 24V alternator & starter options
- Suction or pusher fan capable
- Critical grade silencers





DEDICATED APPLICATIONS

- Oil and gas industry
- Manufacturing
- Agriculture
- CNG fueling stations
- Municipalities
- Construction
- Commercial business
- Landfills
- Mining
- Power plants & gathering stations

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GENSET POWER RATINGS

C SERIES GENSET RATINGS

ENGINE MODEL	Cylinders	kW Ratings	Engine RPM	Alternator RPM	Fuel Required*
C46 AC	1	5	700	1800	2.2 MCF/D
C46 DC	1	5	700	1800	2.2 MCF/D
C66 AC	1	7.5	600	1800	3.0 MCF/D
C96 AC	1	13.5	600	1800	4.7 MCF/D
C106 AC	1	22	700	1800	8.2 MCF/D

*Fuel Rates are for 1000 BTU rated gas. BTU Rating x Engine Requirement x 0.001 = Fuel Rate.

A SERIES GENSET RATINGS

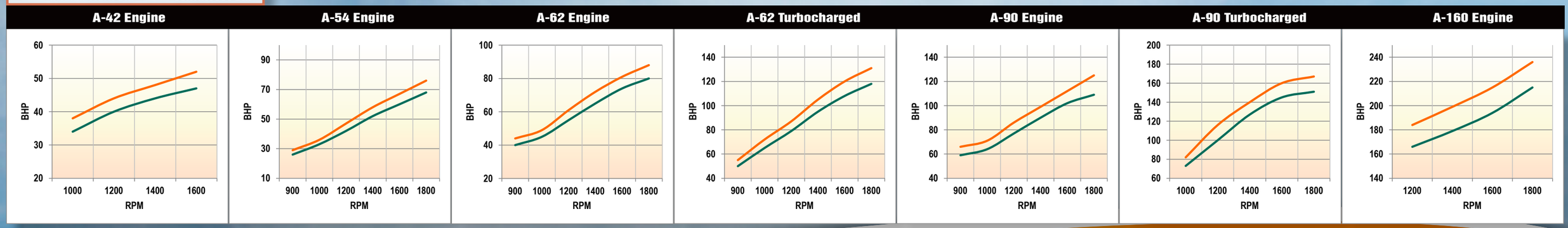
ENGINE MODEL	PRIME POWER		STANDBY POWER	
	1500 RPM kW Rating	1800 RPM kW Rating	1500 RPM kW Rating	1800 RPM kW Rating
A42	23	28	25	30
A54	36	43	39	48
A62	42	50	45	55
A62 TA	63	75	69	83
A90	68	75	61	83
A90 TA	95	100	105	109
A160	128	147	142	161

Gensets from 5kW to 160kW to meet your needs

PRIME MOVER OR ENGINE RATINGS

BHP (AT SPEEDS INDICATED)			900		1000		1200		1400		1600		1800	
INTERMITTENT /CONTINUOUS	COMPRESSION RATIO	PEAK INTERMITTENT TORQUE @ RPM (FT/LBS)	C	I	C	I	C	I	C	I	C	I	C	I
A42	9.0:1	165 @ 1200			28	30	34	38	40	44	44	48	47	52
A54	8.0:1	220 @ 1600	26	29	33	36	42	47	52	58	60	67	68	76
A62	9.0:1	279 @ 1400	40	44	45	49	55	61	65	72	74	81	80	88
A62 TA	9.0:1	392 @ 1400	50	55	65	72	79	87	95	105	108	120	118	131
A90	9.0:1	376 @ 12 00	60	66	64	71	77	86	90	99	102	112	109	125
A90 TA	9.0:1	527 @ 1600			73	82	100	116	127	140	145	160	151	167
A160	10.0:1	809 @ 1200					166	184	179	199	194	215	215	236

INTERMITTENT BHP — CONTINUOUS BHP



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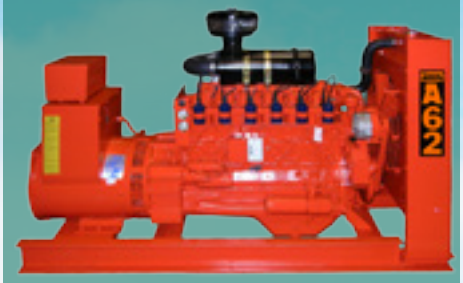
ARROW ENGINES

C-SERIES	C-46	C-66	C-96	C-101	C-106	C-255
A-SERIES	A-32	A-42	A-54	A-62 A-62 Turbo A-62 Genset	A-90 A-90 Turbo A-90 Genset	A-160 A-160 Turbo A-160 Genset
K-SERIES	K6					
L-SERIES	L-795					

ARROW GAS PRODUCTS

GAS PRODUCTS	Meter Runs Meter Skids	Volume Tanks Coalescers Structural Skids	2 & 3-Phase Separators Fuel Gas Cond. Skid	Heater Treater Indirect Heater H2S Scavenger Unit	Dehydration Unit Liquid Stabilizer
CHEMICAL PUMPS	10 Series (beam operated)	430 Series (electric)	12, 500, & 510 Series (pneumatic)	Solar Chemical Pumps	OEM & Aftermarket Spare Parts



ARROW COMPRESSION

COMPRESSION PRODUCTS	Compressor Frames VRC-2 VRS-2 VRS-4 (Coming Soon)	CNG Compressor Frames & Packages VRC-CNG	Vapor Recovery Units VRU-1 VRU-2	Gas Lift Packages Electric HP Gas Engine (VR, A-Series, Cat)	Custom Compression Packages

REPLACEMENT PARTS

CATERPILLAR®	G379	G398	G399	G3304	G3306
WAUKESHA®	F2895 F3521 F5108	L5790 L7042	P9390	145G/F817 140G/F554	F18 H24 WAK/1197
FAIRBANKS®	ZC-118	ZC-208	ZC-503	ZC-739	ZC-346
AJAX®	5× 6½	EA-22, 6½ × 8 CMA EA30, 7½ × 10 CMA EA-30, 7¼ × 8 CMA E-42, 8½ × 10 CMA		DP-60, 9½ × 10 CMA DP-115/230, 13½ × 16 DP-70/80/160, 11 × 14 CMA	

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local (918) 583-5711

ARROW ENGINE COMPANY

SVE-THERMCAT-04

500 SCFM and 12 in Hg
Thermal Catalytic Oxidizer Package

KRT Management, Inc. dba Northstar Environmental Remediation
26225 Enterprise Court, Lake Forest, CA 92630
(949) 580-2800 Phone
(949) 580-2802 Fax

SVE-Thermcat-04

NORTHSTAR ENVIRONMENTAL REMEDIATION
MODEL SVE-Thermcat-04 SPECIFICATIONS

MANUFACTURER	Northstar Environmental Remediation 500 SCFM capacity thermal/catalytic oxidizer package Supplemental fuel: Propane S/N SVE-Thermcat-04 480 Volt, 3 phase, 55 FLA Skid Mounted: 16.5 ft x 8 ft
PERFORMANCE	
RPM as Sheaved	2,419
Maximum Vacuum	12" Hg
Maximum Flow	500 SCFM
COMPONENTS	
Electric Motor	Baldor Reliance Cat. No. EM4103T Ser. No. C1212210571 25 HP, 3 Ph, 460 V, 30 A 1770 RPM Frame: 284T Service Factor: 1.15 Service Factor Amps: 34.5 Shaft Diameter: 1-7/8" Bushing: Martin Sprockets 5FA SK 1-7/8 Sheave: Martin Sprockets SK 10.25 5V
PD Blower	Roots Rotary Lobe Blower Mod. No. 59 U-RAI Ser. No. 1209958727 Shaft Diameter: 1-1/8" Bushing: Martin Sprockets 5FK SK 1-1/8 Sheave: Martin Sprockets SK 7.5 5V
Shaft Center Distance	23 inches
Belts (2)	5VX750
Particulates Filter	Solberg MFG, Inc. Mod. No. CT-234P-400C 520 SCFM Paper Element
Discharge Silencer	Stoddard Silencers Mod. No. PD33-4 Part No. 77A188 SO No. 130251

Moisture Knock-Out	36-inch diameter, approx 84 gallon pump-off volume
Pump Motor	US Motors Mod. No. P63FZY-4417 1 HP, 3 Ph, 480 V, 1.7 A 2,850 RPM SF Amps: 2.1
Pump Housing	Goulds Pumps, ITT Mod. No. GT103
Float Switches	(3) Flotect L6EPB-B-S-3-A 120 V, 5 A
Differential Pressure Transmitter	Dwyer Mod. No. ISDP-007 24 VDC, 4-20 mA output 0 - 10 iwc range
Pitot Assembly	Dwyer DS-300-4
Buck-Boost Transformer	Hammond Power Solutions Mod. No. H12M Part No. C1F002LES Ser. No. 491099 Primary Voltage: 240 x 480 2.0 KVA, 60 Hz, 1 Ph
Control Panel A/C Unit	Stratus Thermal Management Mod. No. TA10-060-16-12 Ser. No. 1241040024 1 Ph, 120 V, 7.83 A Refrigerant: 18 oz R422d
Communications Interface	Automation Direct ZipPort Mod. No. ZP-PDA-32-402 USB + Cat 5E ports, 115 V, 3A Outlet 3 Amp fuse
PLC Controller	Automation Direct Productivity 3000
PLC Interface	Automation Direct Touch-Screen Mod. No. EA7-T8C 13221B103
Variable Frequency Drive	Durapulse Mod. No. GS3-4025 Input: 480 V, 39 A Output: 460 V, 25 HP
Flame Controller	Eclipse Veri-Flame Mod. No. 5600 (Purge Model)

Vacuum Release Valve	Kunkle Valve 215V-H01-AQE; 12" Hg; 419 SCFM
Process & Dilution Air Actuator	Honeywell Modutrol IV Mod. No. M7285A1003 120 V, 20 VA
Process & Dilution Valves	Eclipse Mod. No. 16BV-A 4" NPT
Combustion Air Fan Motor	Baldor Reliance Cat. No. CM3545 1 HP, 3 Ph, 460 V, 1.8 A 3,450 RPM SF 1.25
Combustion Air Pressure Switch	Antunes Controls Mod. No. SMD8024204089
Combustion Air Modulator	Honeywell Modutrol IV Mod. No. M9484E1017 120 V, 20 VA
Inlet Regulator	Fisher Controls Type S202H Range: 10 PSI in; 1 - 5 PSI out
Low Pressure Switch	Dungs GML-A4-4-4 Setpoint: 5.5 in.H2O
High Pressure Switch	Dungs GMH-A4-4-6 Setpoint: 29 in.H2O
Pilot Light Regulator	Maxitrol R500S Range: Max 5 PSI in; 3 - 6 iwc out
Pilot Light Solenoid Valve	ASCO Cat. No. 8262G202 Rebuild Kit No. 304354 120 V, 10.1 W
Gas Line Solenoid Valve	ASCO Cat. No. 8215B80 Rebuild Kit No. 302353 120 V, 15.4 W
Fuel Blocking Valve	ASCO Hydramotor Cat. No. AH2D102S 120 V, 1.85 A
Process Fuel Regulator	Eclipse Combustion ES363

Ignitor Transformer	Allanson Cat. No. 1092 Type S Input: 120 V, 150 VA Output: 6,000 V, 20 mA
Burner Plate	Eclipse Ratiomatic Mod. No. RM200 V3.1 NASCENBNFBXH414DABAR
Flame Rod	
Spark Rod	
Thermocouples	(2) 18", Type K
LEL Sensor	GasTech LEL-1000

Northstar Environmental Remediation
SVE-Thermcat-04
500 SCFM
Parts List

ITEM	QTY	MANUFACTURER	PART NO.	SPECIFICATION	VENDOR
500 scfm and 12-inHg Blower Package		**Northstar**			
Roots URAI 59 PD Blower	1	Roots	59 URAI	500 cfm and 12-inHg	American Compressor
TEFC Motor	1	Baldor Reliance	EM4103T	25 HP, 3 Ph, 460 V, 30 A	American Compressor
Motor Sheave	1	Martin Sprockets	SK 10.25 5V	10.25 inch diameter	American Compressor
Motor Bushing	1	Martin Sprockets	5FA SK 1-7/8	1-7/8 inch diameter	American Compressor
Blower Sheave	1	Martin Sprockets	SK 7.5 5V	7.5 inch diameter	American Compressor
Blower Bushing	1	Martin Sprockets	5FK SK 1-1/8	1-1/8 inch diameter	American Compressor
Drive Belts	2	Goodyear	5VX750	5V depth, 75 inches long	American Compressor
Inlet Particulates Filter	1	Solberg MFG, Inc.	CT-234P-400C	520 SCFM w/ paper element	Solberg MFG, Inc.
Discharge Silencer	1	Stoddard Silencers	Model #PD33-4; Part #77A188	4-inch inlet/outlet	American Compressor
Vacuum Release Valve	1	Kunkle Valves	215V-H01-AQE	12 inch Hg setpoint; 419 SCFM capacity	George T. Hall
Moisture Separator		**Northstar**			
Self Priming Auto Discharge Pump	1	Goulds Pumps, ITT	Model # GT103	1 HP, 3 Ph, 480 V, 1.7 A	Yardley Pumps
Level Switch Assembly	3	Flotect	L6EPB-B-S-3-A	120 V, 5A	Dwyer Instruments, Inc.
Process and Dilution Air Modulator	1	Honeywell	Modutrol IV Model #M7285A1003	120 V, 20 VA	George T. Hall
Process and Dilution Air Valves	2	Eclipse	16BV-A	4 inch diameter	Northstar
Burner		**Northstar**			
Eclipse Ratio-Matic RM200	1	Eclipse	RM-200 V3.1	2.1 Million BTU/hr	Northstar
Combustion Air Motor	1	Baldor Reliance	CM3545	1 HP, 3 Ph, 460 V, 1.8 A, 3,450 RPM	Grainger
Combustion Air Modulator	1	Honeywell	Modutrol IV Model #M9484E1017	120 V, 20 VA	George T. Hall
Flame Controller	1	Eclipse	Veri-Flame Model #5600	Purge Model	Northstar
Combustion Air Pressure Switch	1	Antunes Controls	SMD8024204089	0.17 - 12 iwc	Northstar
Ignition Transformer	1	Allanson	Cat. #1092 Type S	120 V, 150 VA Input, 6,000 V, 20 mA Output	Northstar
Fuel Train		**Northstar**			
Inlet Regulator	1	Fisher Controls	Type S202H	10 PSI in / 1-5 PSI out	Fisher Controls
Low Gas Pressure Switch	1	Dungs Controls	GML-A4-4-4	Minimum setpoint: 3 iwc	Northstar
High Gas Pressure Switch	1	Dungs Controls	GMH-A4-4-6	Maximum setpoint: 30 iwc	Northstar
Pilot Light Regulator	1	Maxitrol	R500S	5 PSI in / 3-6 iwc out	Northstar
Pilot Light Solenoid Valve	1	ASCO	Cat #8262G202; Rebuild Kit #304354	120 V, 10.1 W	Northstar
Main Gas Solenoid Valve	1	ASCO	Cat #8215B80; Rebuild Kit #302353	120 V, 15.4 W	Northstar
Main Gas Blocking Valve	1	ASCO	Hydramotor Cat #AH2D102S	120 V, 1.85 A	Northstar
Process Fuel Regulator	1	Eclipse	ES363	Automatic Supplemental Fuel Regulation	Northstar
Monitoring Components		**Northstar**			
Differential Pressure Pitot Tube	1	Dwyer	DS-300-4	4 inch configuration	Dwyer Instruments
Differential Pressure Transmitter	1	Dwyer	ISDP-007	24 VDC, 4-20 mA output, 0-10 iwc range	Dwyer Instruments
LEL Sensor	1	GasTech	LEL-1000	0-100 % LEL	ThermoScientific
Thermocouples	2	ThermX	Type K	18 inch length	ThermX Southwest

Northstar Environmental Remediation
SVE-THERMCAT-04
500 SCFM Thermal Catalytic Oxidizer
Maintenance Interval Table

Maintenance Item	As Required	Daily	Weekly	Monthly	Quarterly	Annually
Roots Blower						
Blower Oil: Check				X		
Blower Oil: Change	Every 1500 hours					
Gear End Bearings: Lubricate			X			
25 HP Motor						
Lubrication: Interval	Every 7400 hours					
Moisture Separator						
Self Priming Auto Discharge Pump: Drain					X	
Float Switch Assemblies (3): Inspect and Clean					X	
Sight Glass: Inspect			X			
Knockout Tank: Drain/Cleanout						X
Demister Pad: Inspect	X					
Accessory Components						
LEL Sensor: Calibrate	X		X			
System Inlet Valve: Inspect and Lubricate	X					
Kunkle Vacuum Relief Valve: Inspect	X					
Inlet Air Filter: Replace	X					
Inlet Air Filter: Clean	X				X	
Motor Drive Belts: Inspect				X		
Motor Drive Belts: Replace	X					

ATTACHMENT D

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 2 AIR QUALITY (STATEWIDE)
PART 61 SMOKE AND VISIBLE EMISSIONS

20.2.61.1 ISSUING AGENCY: Environmental Improvement Board.
[11/30/95; 20.2.61.1 NMAC - Rn, 20 NMAC 2.61.100 10/31/02]

20.2.61.2 SCOPE: All geographic areas within the jurisdiction of the Environmental Improvement Board.
[11/30/95; 20.2.61.2 NMAC - Rn, 20 NMAC 2.61.101 10/31/02]

20.2.61.3 STATUTORY AUTHORITY: Environmental Improvement Act, NMSA 1978, section 74-1-8(A)(4) and (7), and Air Quality Control Act, NMSA 1978, sections 74-2-1 et seq., including specifically, section 74-2-5(A), (B), and (C).
[11/30/95; 20.2.61.3 NMAC - Rn, 20 NMAC 2.61.102 10/31/02]

20.2.61.4 DURATION: Permanent.
[11/30/95; 20.2.61.4 NMAC - Rn, 20 NMAC 2.61.103 10/31/02]

20.2.61.5 EFFECTIVE DATE: November 30, 1995.
[11/30/95; 20.2.61.5 NMAC - Rn, 20 NMAC 2.61.104 10/31/02]
[The latest effective date of any section in this Part is 10/31/02.]

20.2.61.6 OBJECTIVE: The objective of this Part is to establish controls on smoke and visible emissions from certain sources. This Part is not intended to preempt any more stringent controls on smoke and visible emissions provided in any other air quality control regulation or in any local ordinance or regulation.
[11/30/95; 20.2.61.6 NMAC - Rn, 20 NMAC 2.61.105 10/31/02]

20.2.61.7 DEFINITIONS: In addition to the terms defined in 20.2.2 NMAC (Definitions), as used in this Part:

A. **"Air curtain destructor"** means a combustion device or system designed to achieve controlled combustion of woodwaste and slash materials in an earthen trench or refractory-lined pit or bin through means of a fan-generated air curtain.

B. **"Opacity"** means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

C. **"Part"** means an air quality control regulation under Title 20, Chapter 2 of the New Mexico Administrative Code, unless otherwise noted; as adopted or amended by the Board.

D. **"Stationary combustion equipment"** means any stationary device or system used to oxidize solid, liquid, or gaseous materials, including fuels or wastes, and includes but is not limited to incinerators, wood-fired boilers, air curtain destructors, and stationary oil burning equipment.

E. **"Visible emissions"** means particulate or gaseous matter which can be detected by the human eye.

[11/30/95; 20.2.61.7 NMAC - Rn, 20 NMAC 2.61.107 10/31/02]

20.2.61.8 AMENDMENT AND SUPERSESSION OF PRIOR REGULATIONS: This Part amends and supersedes Air Quality Control Regulation ("AQCR") 401 -- Regulation to Control Smoke and Visible Emissions last filed July 15, 1986.

A. All references to AQCR 401 in any other rule shall be construed as a reference to this Part.

B. The amendment and supersession of AQCR 401 shall not affect any administrative or judicial enforcement action pending on the effective date of such amendment nor the validity of any permit issued pursuant to AQCR 401.

[11/30/95; 20.2.61.8 NMAC - Rn, 20 NMAC 2.61.106 10/31/02]

20.2.61.9 DOCUMENTS: Documents cited in this Part may be viewed at the New Mexico Environment Department, Air Quality Bureau, Runnels Building, 1190 Saint Francis Drive, Santa Fe, NM 87505 [2048 Galisteo St., Santa Fe, NM 87505].
[11/30/95; 20.2.61.9 NMAC - Rn, 20 NMAC 2.61.108 10/31/02]

20.2.61.10 to 20.2.61.108 [RESERVED]

20.2.61.109 STATIONARY COMBUSTION EQUIPMENT: The owner or operator of stationary combustion equipment shall not permit, cause, suffer or allow visible emissions from the stationary combustion equipment to equal or exceed an opacity of 20 percent; provided, however, stationary combustion equipment which is regulated by Parts 20.2.10 NMAC through 20.2.18 NMAC, 20.2.37 NMAC, and 20.2.42 NMAC, and any other Part of Chapter 2 which specifically limits particulate emissions is exempted from this Part.
[11/30/95; 20.2.61.109 NMAC - Rn, 20 NMAC 2.61.109 10/31/02]

20.2.61.110 DIESEL-POWERED VEHICLE:

A. No person shall permit, cause, suffer or allow the emission into the open air of any smoke having an opacity greater than thirty percent for any period greater than ten seconds from any diesel-powered vehicle operating below 8,000 feet (mean sea level).

B. No person shall permit, cause, suffer or allow the emission into the open air of any smoke having an opacity greater than forty percent for any period greater than ten seconds from any diesel-powered vehicle operating above 8,000 feet (mean sea level).
[11/30/95; 20.2.61.110 NMAC - Rn, 20 NMAC 2.61.110 10/31/02]

20.2.61.111 EXCLUSIONS: This Part does not apply to:

A. emissions from diesel-powered vehicles if the emissions are a direct result of a cold engine start-up;

B. off-highway, diesel-powered vehicles operating in non-urban areas; and

C. oil well drilling rigs and oil well servicing rigs.

D. for sources subject to the provisions of 20.2.70 NMAC (Operating Permits), emissions which result from insignificant activities as defined in 20.2.70 NMAC.
[11/30/95; 01/10/96; 20.2.61.111 NMAC - Rn, 20 NMAC 2.61.111 10/31/02]

20.2.61.112 DIESEL-POWERED LOCOMOTIVES:

A. No person shall permit, cause, suffer or allow the emissions into the open air of any smoke having an opacity greater than twenty percent for any period greater than ten seconds from any diesel-powered locomotive operating below 8,000 feet (mean sea level).

B. No person shall permit, cause, suffer or allow the emission into the open air of any smoke having an opacity greater than forty percent for any period greater than ten seconds from any diesel-powered locomotive:

(1) operating above 8,000 feet (mean sea level); or

(2) involved in switching and railroad yard use.

C. This Part does not apply to emissions for diesel-powered locomotives if the emissions are a direct result of a cold engine start-up.
11/30/95; 20.2.61.112 NMAC - Rn, 20 NMAC 2.61.112 10/31/02]

20.2.61.113 AIR CURTAIN DESTRUCTORS: An exemption to this Part may be granted by the Department for start-up and burn-down periods of operation of air curtain destructors, if the owner or operator has demonstrated to the satisfaction of the Department that such an exemption is necessary and takes all actions necessary to minimize emissions during such periods.
11/30/95; 20.2.61.113 NMAC - Rn, 20 NMAC 2.61.113 10/31/02]

20.2.61.114 OPACITY DETERMINATIONS: Opacity of emissions from equipment subject to 20.2.61.109 NMAC shall be determined consistent with the method set forth by the US EPA in 40 CFR, Part 60

Appendix A, Method 9, or any other method receiving prior approval from the Department. The minimum time period for taking opacity readings shall be ten minutes.
11/30/95; 20.2.61.114 NMAC - Rn, 20 NMAC 2.61.114 10/31/02]

HISTORY OF 20.2.61 NMAC:
Pre-NMAC History: The material in this part was derived from that previously filed with the commission of public records-state records center and archives:
HSSD 70-1, Ambient Air Quality Standards And Air Quality Control Regulations, 01/27/70;
EIB/AQCR 401, Air Quality Control Regulation 401 - Regulation To Control Smoke And Visible Emissions, 07/15/86.

History of Repealed Material: [RESERVED]

Other History:
EIB/AQCR 401, Air Quality Control Regulation 401 - Regulation To Control Smoke And Visible Emissions, filed 07/15/86 was **renumbered** into first version of the New Mexico Administrative Code as 20 NMAC 2.61, Smoke And Visible Emissions, filed 10/30/95.
20 NMAC 2.61, Smoke And Visible Emissions, filed 10/30/95 was **renumbered, reformatted and replaced** by 20.2.61 NMAC, Smoke And Visible Emissions, effective 10/31/02.

Title 40 - Protection of Environment
Chapter I - Environmental Protection Agency
Subchapter C - Air Programs
Part 60 - Standards of Performance for New Stationary Sources

Authority: 42 U.S.C. 7401 *et seq.* 42 U.S.C. 7401-7601.

Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.

Table 1 to Subpart JJJJ of Part 60 - NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards[a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC[d]	NO_X	CO	VOC[d]
Non-Emergency SI Natural Gas[b] and Non-Emergency SI Lean Burn LPG[b]	100≤HP<500	7/1/2008	2.0	4.0	1.0	160	540	86
		1/1/2011	1.0	2.0	0.7	82	270	60
Non-Emergency SI Lean Burn Natural Gas and LPG	500≤HP<1,350	1/1/2008	2.0	4.0	1.0	160	540	86
		7/1/2010	1.0	2.0	0.7	82	270	60
Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG (except lean burn 500≤HP<1,350)	HP≥500	7/1/2007	2.0	4.0	1.0	160	540	86
	HP≥500	7/1/2010	1.0	2.0	0.7	82	270	60
Landfill/Digester Gas (except lean burn 500≤HP<1,350)	HP<500	7/1/2008	3.0	5.0	1.0	220	610	80
		1/1/2011	2.0	5.0	1.0	150	610	80
	HP≥500	7/1/2007	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Landfill/Digester Gas Lean Burn	500≤HP<1,350	1/1/2008	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Emergency	25<HP<130	1/1/2009	[c] 10	387	N/A	N/A	N/A	N/A
	HP≥130		2.0	4.0	1.0	160	540	86

[a] Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.

[b] Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

[c] The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NO_X + HC.

[d] For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.

Table 1 to Subpart JJJJ of Part 60, Title 40

[76 FR 37975, June 28, 2011]

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 60 —Standards of Performance for New Stationary Sources
Subpart JJJJ —Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.
Authority: 42 U.S.C. 7401 *et seq.*
Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

Table 2 to Subpart JJJJ of Part 60—Requirements for Performance Tests

As stated in § 60.4244, you must comply with the following requirements for performance tests within 10 percent of 100 percent peak (or the highest achievable) load].

For each	Complying with the requirement to	You must	Using	According to the following requirements
1. Stationary SI internal combustion engine demonstrating compliance according to § 60.4244	a. Limit the concentration of NO_X in the stationary SI internal combustion engine exhaust	i. Select the sampling port location and the number/ location of traverse points at the exhaust of the stationary internal combustion engine;	(1) Method 1 or 1A of 40 CFR part 60, appendix A–1, if measuring flow rate	(a) Alternatively, for NO_X, O_2, and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line (`3-point long line'). If the duct is >12 inches in diameter*and* the sampling port location meets the two and half-diameter criterion of Section 11.1.1 of Method 1 of 40 CFR part 60, Appendix A, the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and select sampling points according to Section 8.1.2 of Method 7E of 40 CFR part 60, Appendix A.
		ii. Determine the O_2 concentration of the stationary internal combustion engine	(2) Method 3, 3A, or 3B[b] of 40 CFR part 60, appendix A–2 or ASTM Method D6522–00 (Reapproved	(b) Measurements to determine O_2 concentration must be made at the same time as the measurements for NO_X concentration.

For each	Complying with the requirement to	You must	Using	According to the following requirements
		exhaust at the sampling port location;	2005) [a d]	
		iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;	(3) Method 2 or 2C of 40 CFR part 60, appendix A–1 or Method 19 of 40 CFR part 60, appendix A–7	(c) Measurements to determine the exhaust flowrate must be made (1) at the same time as the measurement for NO_X concentration or, alternatively (2) according to the option in Section 11.1.2 of Method 1A of 40 CFR part 60, Appendix A–1, if applicable.
		iv. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and	(4) Method 4 of 40 CFR part 60, appendix A–3, Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method D6348–03 [d e]	(d) Measurements to determine moisture must be made at the same time as the measurement for NO_X concentration.
		v. Measure NO_X at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device	(5) Method 7E of 40 CFR part 60, appendix A–4, ASTM Method D6522–00 (Reapproved 2005),[a d] Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method D6348–03 [d e]	(e) Results of this test consist of the average of the three 1-hour or longer runs.
	b. Limit the concentration	i. Select the sampling	(1) Method 1 or 1A of 40 CFR	(a) Alternatively, for CO, O_2, and moisture measurement, ducts ≤6 inches in

For each	Complying with the requirement to	You must	Using	According to the following requirements
	of CO in the stationary SI internal combustion engine exhaust	port location and the number/ location of traverse points at the exhaust of the stationary internal combustion engine;	part 60, appendix A–1, if measuring flow rate	diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line (`3-point long line'). If the duct is >12 inches in diameter*and* the sampling port location meets the two and half-diameter criterion of Section 11.1.1 of Method 1 of 40 CFR part 60, Appendix A, the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and select sampling points according to Section 8.1.2 of Method 7E of 40 CFR part 60, Appendix A.
		ii. Determine the O_2 concentration of the stationary internal combustion engine exhaust at the sampling port location;	(2) Method 3, 3A, or 3B[b] of 40 CFR part 60, appendix A–2 or ASTM Method D6522–00 (Reapproved 2005) [a d]	(b) Measurements to determine O_2 concentration must be made at the same time as the measurements for CO concentration.
		iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;	(3) Method 2 or 2C of 40 CFR 60, appendix A–1 or Method 19 of 40 CFR part 60, appendix A–7	(c) Measurements to determine the exhaust flowrate must be made (1) at the same time as the measurement for CO concentration or, alternatively (2) according to the option in Section 11.1.2 of Method 1A of 40 CFR part 60, Appendix A–1, if applicable.
		iv. If necessary, measure moisture content of the stationary internal	(4) Method 4 of 40 CFR part 60, appendix A–3, Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method	(d) Measurements to determine moisture must be made at the same time as the measurement for CO concentration.

For each	Complying with the requirement to	You must	Using	According to the following requirements
		combustion engine exhaust at the sampling port location; and	D6348–03 [d e]	
		v. Measure CO at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device	(5) Method 10 of 40 CFR part 60, appendix A4, ASTM Method D6522–00 (Reapproved 2005),[a d e] Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method D6348–03 [d e]	(e) Results of this test consist of the average of the three 1-hour or longer runs.
	c. Limit the concentration of VOC in the stationary SI internal combustion engine exhaust	i. Select the sampling port location and the number/ location of traverse points at the exhaust of the stationary internal combustion engine;	(1) Method 1 or 1A of 40 CFR part 60, appendix A–1, if measuring flow rate	(a) Alternatively, for VOC, O_2, and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line (`3-point long line'). If the duct is >12 inches in diameter*and* the sampling port location meets the two and half-diameter criterion of Section 11.1.1 of Method 1 of 40 CFR part 60, Appendix A, the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and select sampling points according to Section 8.1.2 of Method 7E of 40 CFR part 60, Appendix A.
		ii. Determine the O_2 concentration of the	(2) Method 3, 3A, or 3B[b] of 40 CFR part 60, appendix A–2	(b) Measurements to determine O_2 concentration must be made at the same time as the measurements for VOC concentration.

For each	Complying with the requirement to	You must	Using	According to the following requirements
		stationary internal combustion engine exhaust at the sampling port location;	or ASTM Method D6522–00 (Reapproved 2005) [a] [d]	
		iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;	(3) Method 2 or 2C of 40 CFR 60, appendix A–1 or Method 19 of 40 CFR part 60, appendix A–7	(c) Measurements to determine the exhaust flowrate must be made (1) at the same time as the measurement for VOC concentration or, alternatively (2) according to the option in Section 11.1.2 of Method 1A of 40 CFR part 60, Appendix A–1, if applicable.
		iv. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and	(4) Method 4 of 40 CFR part 60, appendix A–3, Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method D6348–03 [d] [e]	(d) Measurements to determine moisture must be made at the same time as the measurement for VOC concentration.
		v. Measure VOC at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the	(5) Methods 25A and 18 of 40 CFR part 60, appendices A–6 and A–7, Method 25A with the use of a hydrocarbon cutter as described in 40 CFR 1065.265, Method 18 of 40 CFR part 60, appendix A–6,[c]	(e) Results of this test consist of the average of the three 1-hour or longer runs.

For each	Complying with the requirement to	You must	Using	According to the following requirements
		control device	[e] Method 320 of 40 CFR part 63, appendix A,[e] or ASTM Method D6348–03 [d e]	

[a] Also, you may petition the Administrator for approval to use alternative methods for portable analyzer.

[b] You may use ASME PTC 19.10–1981, Flue and Exhaust Gas Analyses, for measuring the O_2 content of the exhaust gas as an alternative to EPA Method 3B. AMSE PTC 19.10–1981 incorporated by reference, see 40 CFR 60.17

[c] You may use EPA Method 18 of 40 CFR part 60, appendix A–6, provided that you conduct an adequate pre-survey test prior to the emissions test, such as the one described in OTM 11 on EPA's website (*http://www.epa.gov/ttn/emc/prelim/otm11.pdf*).

[d] Incorporated by reference; see 40 CFR 60.17.

[e] You must meet the requirements in § 60.4245(d).

[85 FR 63408, Oct. 7, 2020]

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 60 —Standards of Performance for New Stationary Sources
Subpart JJJJ —Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
Emission Standards for Owners and Operators

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.
Authority: 42 U.S.C. 7401 *et seq.*
Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

§ 60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?

(a) Owners and operators of stationary SI ICE with a maximum engine power less than or equal to 19 KW (25 HP) manufactured on or after July 1, 2008, must comply with the emission standards in § 60.4231(a) for their stationary SI ICE.

(b) Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) manufactured on or after the applicable date in § 60.4230(a)(4) that use gasoline must comply with the emission standards in § 60.4231(b) for their stationary SI ICE.

(c) Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) manufactured on or after the applicable date in § 60.4230(a)(4) that are rich burn engines that use LPG must comply with the emission standards in § 60.4231(c) for their stationary SI ICE.

(d) Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) and less than 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards for field testing in 40 CFR 1048.101(c) for their non-emergency stationary SI ICE and with the emission standards in Table 1 to this subpart for their emergency stationary SI ICE. Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) and less than 75 KW (100 HP) manufactured prior to January 1, 2011, that were certified to the standards in Table 1 to this subpart applicable to engines with a maximum engine power greater than or equal to 100 HP and less than 500 HP, may optionally choose to meet those standards.

(e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.

(f) Owners and operators of any modified or reconstructed stationary SI ICE subject to this subpart must meet the requirements as specified in paragraphs (f)(1) through (5) of this section.

(1) Owners and operators of stationary SI ICE with a maximum engine power less than or equal to 19 KW (25 HP), that are modified or reconstructed after June 12, 2006, must comply with emission standards in § 60.4231(a) for their stationary SI ICE. Engines with a date of manufacture prior to July 1, 2008 must comply with the emission standards specified in § 60.4231(a) applicable to engines manufactured on July 1, 2008.

(2) Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are gasoline engines and are modified or reconstructed after June 12, 2006, must comply with the emission standards in § 60.4231(b) for their stationary SI ICE. Engines with a date of manufacture prior to July 1, 2008 (or January 1, 2009 for emergency engines) must comply with the emission standards specified in § 60.4231(b) applicable to engines manufactured on July 1, 2008 (or January 1, 2009 for emergency engines).

(3) Owners and operators of stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) that are rich burn engines that use LPG, that are modified or reconstructed after June 12, 2006, must comply with the same emission standards as those specified in § 60.4231(c). Engines with a date of manufacture prior to July 1, 2008 (or January 1, 2009 for emergency engines) must comply with the emission standards specified in § 60.4231(c) applicable to engines manufactured on July 1, 2008 (or January 1, 2009 for emergency engines).

(4) Owners and operators of stationary SI natural gas and lean burn LPG engines with a maximum engine power greater than 19 KW (25 HP), that are modified or reconstructed after June 12, 2006, must comply with the same emission standards as those specified in paragraph (d) or (e) of this section, except that such owners and operators of non-emergency engines and emergency engines greater than or equal to 130 HP must meet a nitrogen oxides (NO_X) emission standard of 3.0 grams per HP-hour (g/HP-hr), a CO emission standard of 4.0 g/HP-hr (5.0 g/HP-hr for non-emergency engines less than 100 HP), and a volatile organic compounds (VOC) emission standard of 1.0 g/HP-hr, or a NO_X emission standard of 250 ppmvd at 15 percent oxygen (O_2), a CO emission standard 540 ppmvd at 15 percent O_2 (675 ppmvd at 15 percent O_2 for non-emergency engines less than 100 HP), and a VOC emission standard of 86 ppmvd at 15 percent O_2, where the date of manufacture of the engine is:

(i) Prior to July 1, 2007, for non-emergency engines with a maximum engine power greater than or equal to 500 HP (except lean burn natural gas engines and LPG engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP);

(ii) Prior to July 1, 2008, for non-emergency engines with a maximum engine power less than 500 HP;

(iii) Prior to January 1, 2009, for emergency engines;

(iv) Prior to January 1, 2008, for non-emergency lean burn natural gas engines and LPG engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP.

(5) Owners and operators of stationary SI landfill/digester gas ICE engines with a maximum engine power greater than 19 KW (25 HP), that are modified or reconstructed after June 12, 2006, must comply with the same emission standards as those specified in paragraph (e) of this section for stationary landfill/digester gas engines. Engines with maximum engine power less than 500 HP and a date of manufacture prior to July 1, 2008 must comply with the emission standards specified in paragraph (e) of this section for stationary landfill/digester gas ICE with a maximum engine power less than 500 HP manufactured on July 1, 2008. Engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines greater than or equal to 500 HP and less than 1,350

HP) and a date of manufacture prior to July 1, 2007 must comply with the emission standards specified in paragraph (e) of this section for stationary landfill/digester gas ICE with a maximum engine power greater than or equal to 500 HP (except lean burn engines greater than or equal to 500 HP and less than 1,350 HP) manufactured on July 1, 2007. Lean burn engines greater than or equal to 500 HP and less than 1,350 HP with a date of manufacture prior to January 1, 2008 must comply with the emission standards specified in paragraph (e) of this section for stationary landfill/digester gas ICE that are lean burn engines greater than or equal to 500 HP and less than 1,350 HP and manufactured on January 1, 2008.

(g) Owners and operators of stationary SI wellhead gas ICE engines may petition the Administrator for approval on a case-by-case basis to meet emission standards no less stringent than the emission standards that apply to stationary emergency SI engines greater than 25 HP and less than 130 HP due to the presence of high sulfur levels in the fuel, as specified in Table 1 to this subpart. The request must, at a minimum, demonstrate that the fuel has high sulfur levels that prevent the use of aftertreatment controls and also that the owner has reasonably made all attempts possible to obtain an engine that will meet the standards without the use of aftertreatment controls. The petition must request the most stringent standards reasonably applicable to the engine using the fuel.

(h) Owners and operators of stationary SI ICE that are required to meet standards that reference 40 CFR 1048.101 must, if testing their engines in use, meet the standards in that section applicable to field testing, except as indicated in paragraph (e) of this section.

[73 FR 3591, Jan. 18, 2008, as amended at 76 FR 37973, June 28, 2011]

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 60 —Standards of Performance for New Stationary Sources
Subpart JJJJ —Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
Compliance Requirements for Owners and Operators

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.
Authority: 42 U.S.C. 7401 *et seq.*
Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

§ 60.4243 What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?

(a) If you are an owner or operator of a stationary SI internal combustion engine that is manufactured after July 1, 2008, and must comply with the emission standards specified in § 60.4233(a) through (c), you must comply by purchasing an engine certified to the emission standards in § 60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. In addition, you must meet one of the requirements specified in (a)(1) and (2) of this section.

(1) If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required if you are an owner or operator. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance.

(2) If you do not operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, your engine will be considered a non-certified engine, and you must demonstrate compliance according to (a)(2)(i) through (iii) of this section, as appropriate.

(i) If you are an owner or operator of a stationary SI internal combustion engine less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions, but no performance testing is required if you are an owner or operator.

(ii) If you are an owner or operator of a stationary SI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test within 1 year of engine startup to demonstrate compliance.

(iii) If you are an owner or operator of a stationary SI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.

(b) If you are an owner or operator of a stationary SI internal combustion engine and must comply with the emission standards specified in § 60.4233(d) or (e), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) and (2) of this section.

(1) Purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a) of this section.

(2) Purchasing a non-certified engine and demonstrating compliance with the emission standards specified in § 60.4233(d) or (e) and according to the requirements specified in § 60.4244, as applicable, and according to paragraphs (b)(2)(i) and (ii) of this section.

(i) If you are an owner or operator of a stationary SI internal combustion engine greater than 25 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance.

(ii) If you are an owner or operator of a stationary SI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.

(c) If you are an owner or operator of a stationary SI internal combustion engine that must comply with the emission standards specified in § 60.4233(f), you must demonstrate compliance according paragraph (b)(2)(i) or (ii) of this section, except that if you comply according to paragraph (b)(2)(i) of this section, you demonstrate that your non-certified engine complies with the emission standards specified in § 60.4233(f).

(d) If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (d)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (d)(1) through (3), is prohibited. If you do not operate the engine according to the requirements in paragraphs (d)(1) through (3), the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) You may operate your emergency stationary ICE for the purpose specified in paragraph (d)(2)(i) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (d)(3) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (d)(2).

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(ii)–(iii) [Reserved]

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (d)(2) of this section. Except as provided in paragraph (d)(3)(i) of this section, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

(ii) [Reserved]

(e) Owners and operators of stationary SI natural gas fired engines may operate their engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of § 60.4233.

(f) If you are an owner or operator of a stationary SI internal combustion engine that is less than or equal to 500 HP and you purchase a non-certified engine or you do not operate and maintain your certified stationary SI internal combustion engine and control device according to the manufacturer's written emission-related instructions, you are required to perform initial performance testing as indicated in this

section, but you are not required to conduct subsequent performance testing unless the stationary engine undergoes rebuild, major repair or maintenance. Engine rebuilding means to overhaul an engine or to otherwise perform extensive service on the engine (or on a portion of the engine or engine system). For the purpose of this paragraph (f), perform extensive service means to disassemble the engine (or portion of the engine or engine system), inspect and/or replace many of the parts, and reassemble the engine (or portion of the engine or engine system) in such a manner that significantly increases the service life of the resultant engine.

(g) It is expected that air-to-fuel ratio controllers will be used with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller must be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times.

(h) If you are an owner/operator of an stationary SI internal combustion engine with maximum engine power greater than or equal to 500 HP that is manufactured after July 1, 2007 and before July 1, 2008, and must comply with the emission standards specified in sections 60.4233(b) or (c), you must comply by one of the methods specified in paragraphs (h)(1) through (h)(4) of this section.

(1) Purchasing an engine certified according to 40 CFR part 1048. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(i) If you are an owner or operator of a modified or reconstructed stationary SI internal combustion engine and must comply with the emission standards specified in § 60.4233(f), you must demonstrate compliance according to one of the methods specified in paragraphs (i)(1) or (2) of this section.

(1) Purchasing, or otherwise owning or operating, an engine certified to the emission standards in § 60.4233(f), as applicable.

(2) Conducting a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in § 60.4244. The test must be conducted within 60 days after the engine commences operation after the modification or reconstruction.

[73 FR 3591, Jan. 18, 2008, as amended at 76 FR 37974, June 28, 2011; 78 FR 6697, Jan. 30, 2013; 86 FR 34362, June 29, 2021; 87 FR 48606, Aug. 10, 2022]

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 60 —Standards of Performance for New Stationary Sources
Subpart JJJJ —Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.
Authority: 42 U.S.C. 7401 *et seq.*
Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

TESTING REQUIREMENTS FOR OWNERS AND OPERATORS

§ 60.4244 What test methods and other procedures must I use if I am an owner or operator of a stationary SI internal combustion engine?

Owners and operators of stationary SI ICE who conduct performance tests must follow the procedures in paragraphs (a) through (f) of this section.

(a) Each performance test must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and according to the requirements in § 60.8 and under the specific conditions that are specified by Table 2 to this subpart.

(b) You may not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in § 60.8(c). If your stationary SI internal combustion engine is non-operational, you do not need to startup the engine solely to conduct a performance test; however, you must conduct the performance test immediately upon startup of the engine.

(c) You must conduct three separate test runs for each performance test required in this section, as specified in § 60.8(f). Each test run must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour.

(d) To determine compliance with the NO_X mass per unit output emission limitation, convert the concentration of NO_X in the engine exhaust using Equation 1 of this section:

$$ER = \frac{C_d \times 1.912 \times 10^{-3} \times Q \times T}{HP-hr} \quad \text{(Eq. 1)}$$

Where:

ER = Emission rate of NO_X in g/HP-hr.

C_d = Measured NO_X concentration in parts per million by volume (ppmv).

1.912×10^{-3} = Conversion constant for ppm NO_X to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, horsepower-hour (HP-hr).

(e) To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 of this section:

$$ER = \frac{C_d \times 1.164 \times 10^{-3} \times Q \times T}{HP-hr} \quad \text{(Eq. 2)}$$

Where:

ER = Emission rate of CO in g/HP-hr.

C_d = Measured CO concentration in ppmv.

1.164×10^{-3} = Conversion constant for ppm CO to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

(f) For purposes of this subpart, when calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 of this section:

$$ER = \frac{C_d \times 1.833 \times 10^{-3} \times Q \times T}{HP-hr} \quad \text{(Eq. 3)}$$

Where:

ER = Emission rate of VOC in g/HP-hr.

C_d = VOC concentration measured as propane in ppmv.

1.833×10^{-3} = Conversion constant for ppm VOC measured as propane, to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

(g) If the owner/operator chooses to measure VOC emissions using either Method 18 of 40 CFR part 60, appendix A, or Method 320 of 40 CFR part 63, appendix A, then it has the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 of this section. The corrected VOC concentration can then be placed on a propane basis using Equation 6 of this section.

$$RF_i = \frac{C_{Mi}}{C_{Ai}} \qquad \text{(Eq. 4)}$$

Where:

RF_i = Response factor of compound i when measured with EPA Method 25A.

C_{Mi} = Measured concentration of compound i in ppmv as carbon.

C_{Ai} = True concentration of compound i in ppmv as carbon.

$$C_{icorr} = RF_i \times C_{imeas} \qquad \text{(Eq. 5)}$$

Where:

C_{icorr} = Concentration of compound i corrected to the value that would have been measured by EPA Method 25A, ppmv as carbon.

C_{imeas} = Concentration of compound i measured by EPA Method 320, ppmv as carbon.

$$C_{Peq} = 0.6098 \times C_{icorr} \qquad \text{(Eq. 6)}$$

Where:

C_{Peq} = Concentration of compound i in mg of propane equivalent per DSCM.

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter C —Air Programs
Part 60 —Standards of Performance for New Stationary Sources
Subpart JJJJ —Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.
Authority: 42 U.S.C. 7401 *et seq.*
Source: 36 FR 24877, Dec. 23, 1971, unless otherwise noted.

Notification, Reports, and Records for Owners and Operators

§ 60.4245 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary SI internal combustion engine?

NOTIFICATION, REPORTS, AND RECORDS FOR OWNERS AND OPERATORS

§ 60.4245 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary SI internal combustion engine?

Owners or operators of stationary SI ICE must meet the following notification, reporting and recordkeeping requirements.

(a) Owners and operators of all stationary SI ICE must keep records of the information in paragraphs (a)(1) through (4) of this section.

(1) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(2) Maintenance conducted on the engine.

(3) If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 1048, 1054, and 1060, as applicable.

(4) If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to § 60.4243(a)(2), documentation that the engine meets the emission standards.

(b) For all stationary SI emergency ICE greater than or equal to 500 HP manufactured on or after July 1, 2010, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than 25 HP and less than 130 HP

manufactured on or after July 1, 2008, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.

(c) Owners and operators of stationary SI ICE greater than or equal to 500 HP that have not been certified by an engine manufacturer to meet the emission standards in § 60.4231 must submit an initial notification as required in § 60.7(a)(1). The notification must include the information in paragraphs (c)(1) through (5) of this section.

(1) Name and address of the owner or operator;

(2) The address of the affected source;

(3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(4) Emission control equipment; and

(5) Fuel used.

(d) Owners and operators of stationary SI ICE that are subject to performance testing must submit a copy of each performance test as conducted in § 60.4244 within 60 days after the test has been completed. Performance test reports using EPA Method 18, EPA Method 320, or ASTM D6348–03 (incorporated by reference—see 40 CFR 60.17) to measure VOC require reporting of all QA/QC data. For Method 18, report results from sections 8.4 and 11.1.1.4; for Method 320, report results from sections 8.6.2, 9.0, and 13.0; and for ASTM D6348–03 report results of all QA/QC procedures in Annexes 1–7.

(e) If you own or operate an emergency stationary SI ICE with a maximum engine power more than 100 HP that operates for the purpose specified in § 60.4243(d)(3)(i), you must submit an annual report according to the requirements in paragraphs (e)(1) through (3) of this section.

(1) The report must contain the following information:

(i) Company name and address where the engine is located.

(ii) Date of the report and beginning and ending dates of the reporting period.

(iii) Engine site rating and model year.

(iv) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.

(v)–(vi) [Reserved]

(vii) Hours spent for operation for the purposes specified in § 60.4243(d)(3)(i), including the date, start time, and end time for engine operation for the purposes specified in § 60.4243(d)(3)(i). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

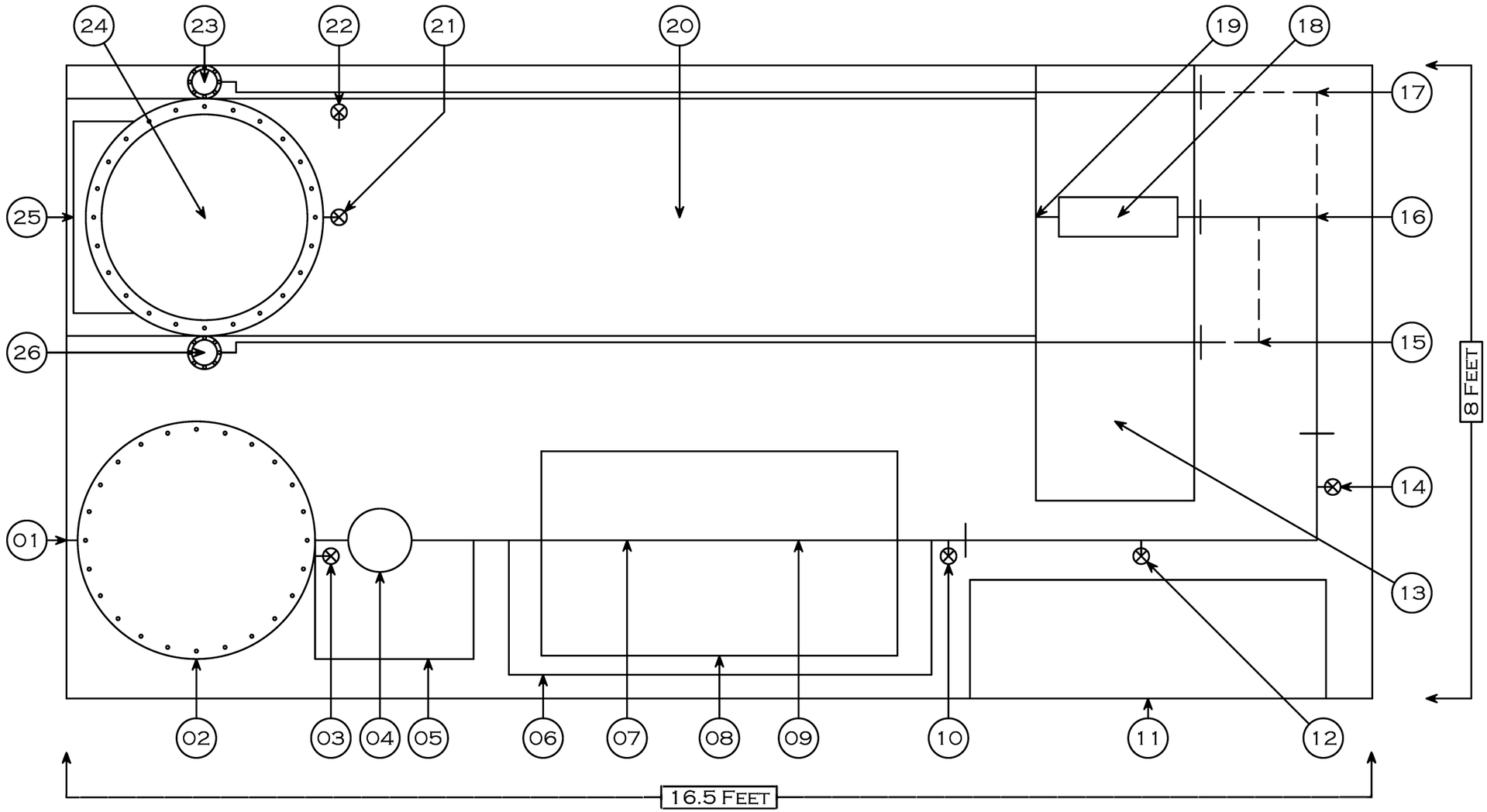
(2) The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year.

(3) The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (*www.epa.gov/cdx*). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in § 60.4.

[73 FR 3591, Jan. 18, 2008, as amended at 73 FR 59177, Oct. 8, 2008; 78 FR 6697, Jan. 30, 2013; 81 FR 59809, Aug. 30, 2016; 86 FR 34362, June 29, 2021; 87 FR 48606, Aug. 10, 2022]

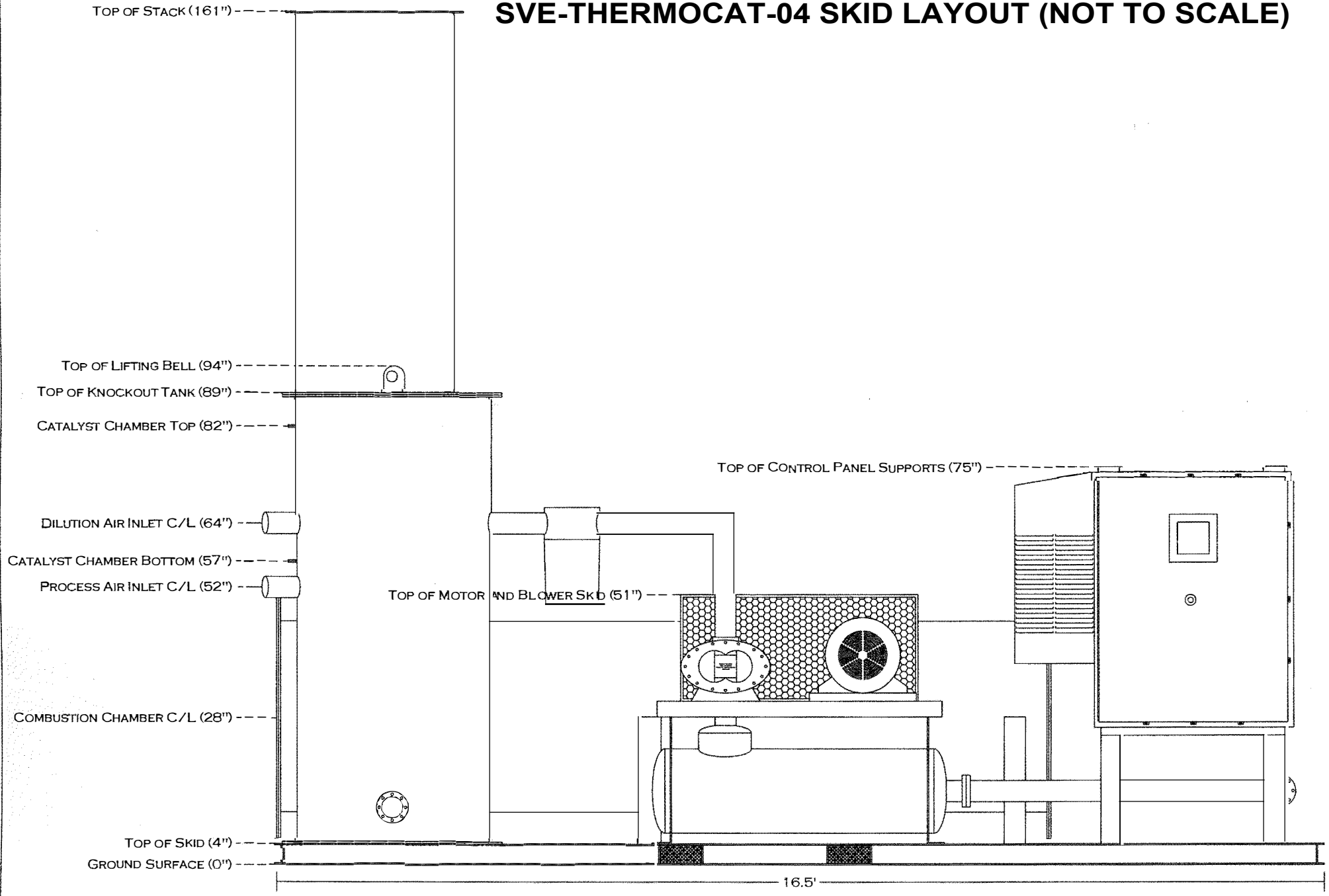
APPENDIX B

MODEL SVE-THERMOCAT-04 COMPONENT LAYOUT (NOT TO SCALE)



01 - Process and Dilution Air Inlet
02 - Moisture Knockout Tank
03 - Low/High/High-High Float Switches
04 - Particulates Filter
05 - KO Pump Center Line
06 - Recirculation Air Line
07 - Blower Center Line
08 - Blower and Motor Package
09 - Motor Center Line
10 - Temperature Gauge
11 - Control Panel
12 - Flow Sensor
13 - Fuel Train
14 - LEL Sensor
15 - Heat Exchanger Piping (Optional)
16 - Piping to Burner
17 - Heat Exchanger Piping (Optional)
18 - Flame Arrestor
19 - Burner Assembly
20 - Combustion Chamber
21 - Exit Temperature Thermocouple
22 - Process Temperature Thermocouple
23 - Heat Exchanger Inlet (Optional)
24 - Exhaust Stack
25 - Catalyst Cell Chamber
26 - Heat Exchanger Outlet (Optional)

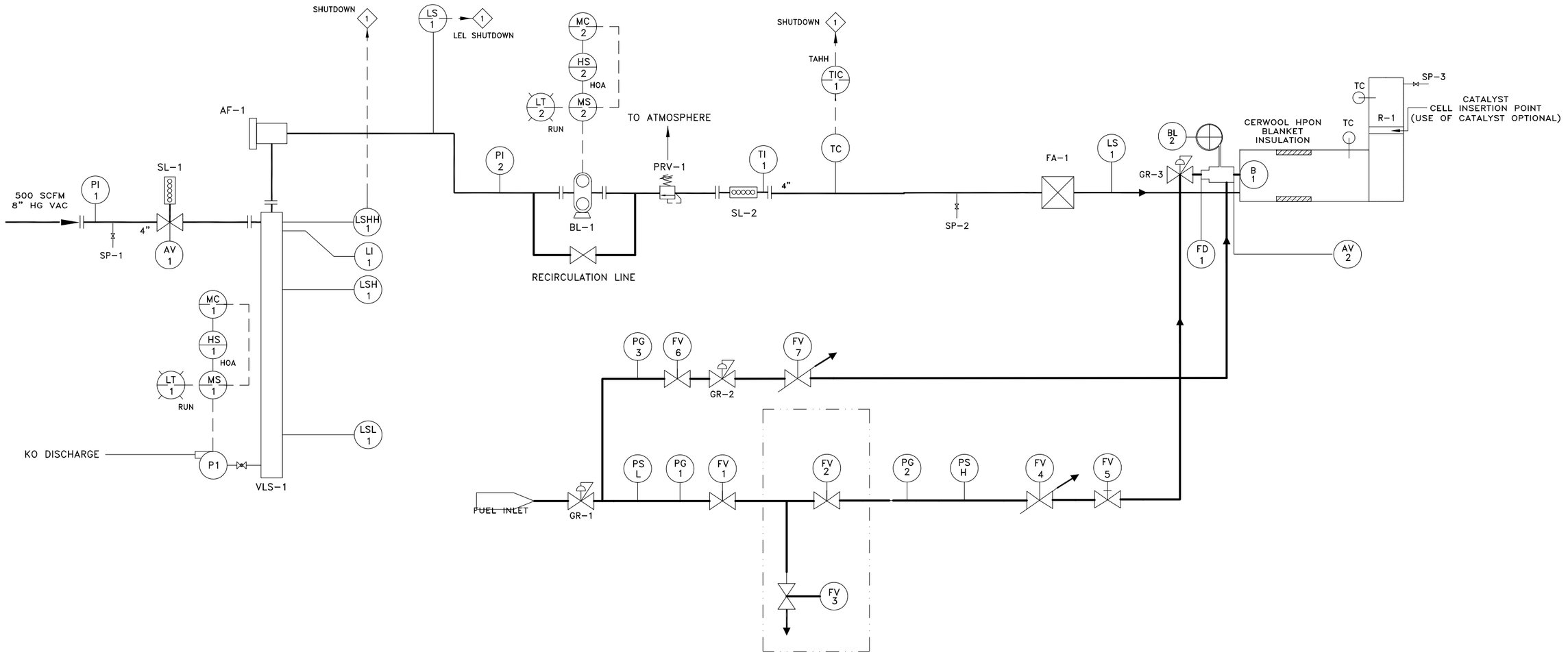
SVE-THERMOCAT-04 SKID LAYOUT (NOT TO SCALE)



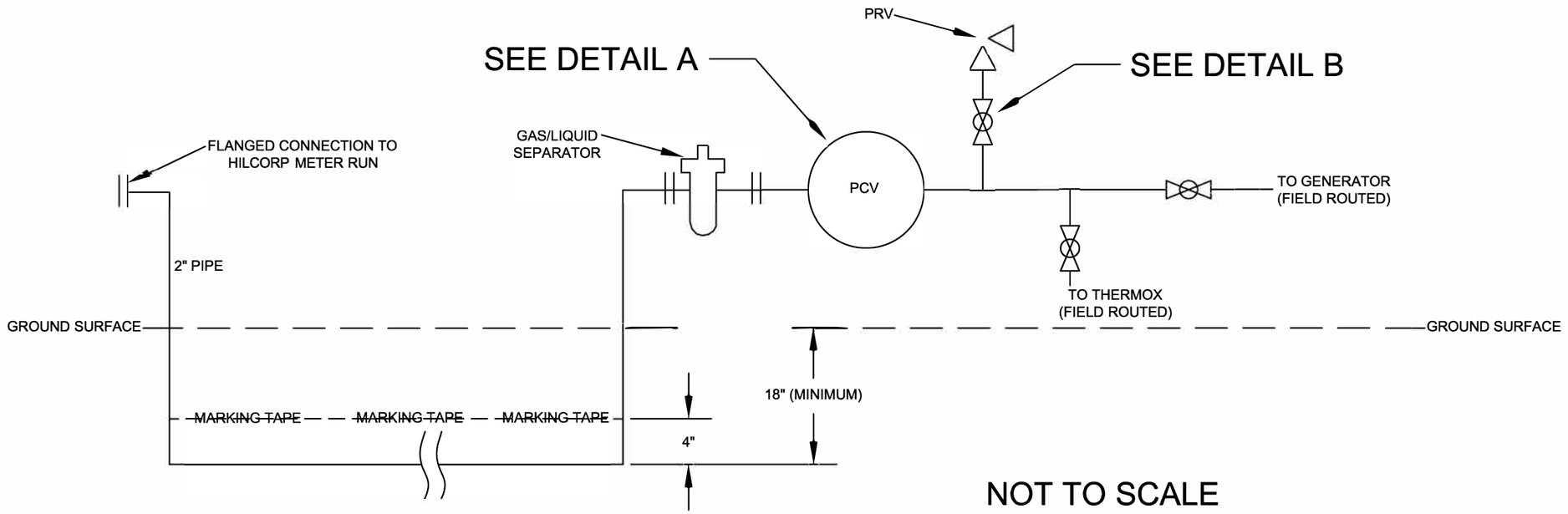
SVE THERMOCAT-04 PROCESS SCHEMATIC

LEGEND					
AF–1	AIR FILTER	GR–2	GAS REGULATOR	PG–2	PRESSURE GAGE 0–10 IN. WATER
AV–1	DILUTION AIR, ACTUATED VALVE	GR–3	GAS REGULATOR	PG–3	PRESSURE GAGE 0–10 IN. WATER
AV–2	COMBUSTION AIR, ACTUATED VALVE	HS–1	HOA HAND SWITCH	PI–1	VACUUM GAGE 0–30 IN. HG
B–1	ECLIPSE RM200 RATIOMATIC BURNER	HS–2	HOA HAND SWITCH	PI–2	VACUUM GAGE 0–30 IN. HG
BL–1	BLOWER (500 SCFM AT 8 IN. HG)	LI–1	SIGHT TUBE OR EQUIVALENT	PRV–1	PRESSURE RELIEF VALVE (SET AT 4 PSI)
BL–2	COMBUSTION AIR BLOWER	LS–1	LEL SENSOR GASTECH 0–100% LEL	PS–H	HIGH PRESSURE SWITCH
FA–1	FLAME ARRESTOR ENARDO MFG	LSH–1	HIGH LEVEL SWITCH	PS–L	LOW PRESSURE SWITCH
FD–1	FLAME DETECTION (UVS)	LSHH–1	HIGH/HIGH LEVEL SWITCH	R–1	COMBUSTION RETORT SEQUOIA DESIGN/MANUFACTURED 500 CFM
FIT–1	FLOW TRANSMITTER	LSL–1	LOW LEVEL SWITCH	SL–1	ACTUATED VALVE DILUTION AIR SILENCER / DAMPENER
FV–1	FUEL SHUTOFF VALVE	LT–1	GREEN PILOT LIGHT	SL–2	AIR SILENCER / DAMPENER
FV–2	FUEL BLOCK VALVE	LT–2	GREEN PILOT LIGHT	SP–1	1/4 IN. BRASS BALL VALVE
FV–3	FUEL BLEED VALVE	MC–1	MOTOR CONTROL UNIT	SP–2	1/4 IN. BRASS BALL VALVE
FV–4	AUTOMATIC FUEL SHUTOFF	MC–2	MOTOR CONTROL UNIT	SP–3	1/4 IN. BRASS BALL VALVE
FV–5	FUEL SHUTOFF	MS–1	MOTOR SWITCH	TC	THERMOCOUPLE
FV–6	PILOT SHUTOFF VALVE	MS–2	MOTOR SWITCH	TI–1	TEMPERATURE GAGE 0–250 F
FV–7	AUTOMATIC PILOT SAFETY SHUTOFF VALVE	P1	KO DISCHARGE PUMP	TIC–1	TEMP. INDICATOR AND CONTROLLER
GR–1	GAS REGULATOR	PG–1	PRESSURE GAGE 0–10 IN. WATER	VLS–1	VAPOR / LIQUID SEPARATOR

NOTES:
1) All Vacuum & Temperature gages to be constructed of stainless steel.
2) LI–1 is a sight tube or equivalent visual level indicator.
3) All pressure gage ranges are approximate.
4) Influent coupling shall be 4 in. Van Stone flange.



APPENDIX C



NOT TO SCALE

LEGEND

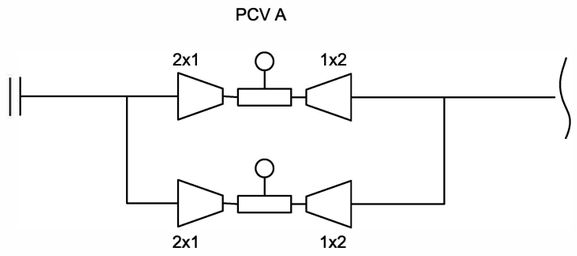
- BALL VALVE
- REDUCER
- FLANGES

NOTE:

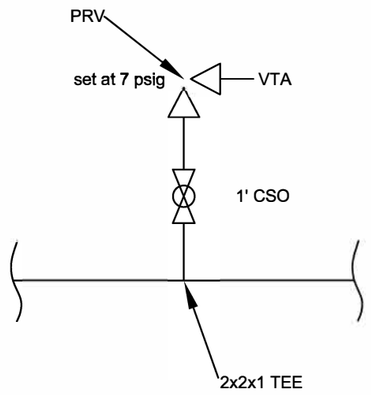
PCV = PROCESS CONTROI VALVE
PRV = PRESSURE RELIEF VALVE
VTA = VENT TO ATMOSPHERE

DETAIL A

(PLANVIEW/GA)



DETAIL B



REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	9/29/2023	SAH	SAH	SRV

TITLE:

GAS PIPING DETAIL

PROJECT:

JOHNSTON FEDERAL #4
SAN JUAN RIVER BASIN
SAN JUAN COUNTY, NEW MEXICO

Stantec

F\Appendix:

C

pw:\\stantec-sc-pw.bentley.com:stantec-sc-pw-23\Documents_MWH Iowa\Projects A-F\El Paso (El P_)\San Juan\Johnston Fed #4\Fig 5 TYPICAL PIPING DETAILS 11 by 17 (J Fed #4).dwg

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: El Paso Natural Gas Company, L.L.C 1001 Louisiana Street Houston, TX 77002	OGRID: 7046
	Action Number: 287843
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Remediation Work Plan for the SVE system for Johnston Federal #4 received and was given pre-approval on 12/29/2021. Please upload all relevant permits; building permit, well installation permit, pollution recovery permit, and discharge permits into the incident file. Document and log all O&M activities and keep OCD apprised of schedule for O&M.	2/26/2025