Division of Environment
Curtis State Office Building
1000 SW Jackson St., Suite 400
Topeka, KS 66612-1367

Kansas
Department of Health and Environment

Phone: 785-296-1535
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www.kdheks.gov

Lee A. Norman, M.D., Secretary

Laura Kelly, Governor

March 25, 2021

Source ID No. 1550133

Brad Misley
Vice President – Operations
Tenawa Resource Management, LLC
1201 Louisiana Street, Suite 3400
Houston, TX 77002

Re: Air Emission Source Construction Permit Modification

Dear Mr. Misley:

The Kansas Department of Health and Environment (KDHE) reviewed Tenawa Resource Management, LLC.s construction permit modification application to address the updated leak component count for the helium extraction trains, emissions resulting from facility-wide and compressor blowdowns, and in-kind replacement for one of two (2) authorized Solar Titan 250 natural gas fired turbines at their Haven Gas Plant located in Haven, Kansas. Enclosed is the Air Emission Source Construction Permit with the facilities proposed modifications.

Please review this permit modification carefully since it obligates Tenawa Resource Management, LLC to certain requirements.

Notify through the Kansas Environmental Information Management System (KEIMS) using the **BOA Notification – General form** within 30 days of completing the installation of the emission unit so that an evaluation can be conducted.

As provided for in K.S.A. 65-3008b(e), an owner or operator may request a hearing within 15 days after affirmation, modification, or reversal of a permit decision pursuant to subsection (b) of K.S.A. 65-3008a. In the Request for Hearing, the owner or operator shall specify the provision of this act or rule and regulation allegedly violated, the facts constituting the alleged violation, and secretary's intended action. Such request must be submitted to the Director, Office of Administrative Hearings, 1020 S. Kansas Avenue, Topeka, Kansas 66612-1327. Failure to submit a timely request shall result in a waiver of the right to hearing.

Include the above source ID number in all communications with the KDHE regarding this facility.

If you have any questions regarding this document, please contact me at (785) 296-0365.

Bureau of Air
Permitting Section
Curtis State Office Building, Suite 310
Topeka, KS 66612-1366

Phone 785-296-0365
Fax: 785-559-4256
adam.kice@ks.gov

Sincerely,

Adam Kice

Adam Kice
Engineering Associate
Air Permitting Section

AWK:jh
Enclosure
c: SCDO
CSP01646v1.1

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AIR EMISSIONS SOURCE CONSTRUCTION PERMIT

Source ID No.: 1550133

Effective Date: December 6, 2016 (modified September 6, 2018; modified March 25, 2021)

Source Name: Tenawa Resource Management LLC – Haven Gas Plant

SIC Code: 1321, Natural Gas Liquids

NAICS Code: 211112, Natural Gas Liquids Extraction from Oil and Gas

Source Location: 13114 South Kent Road
Section 6, Township 25 South, Range 4 West
Haven, Reno County, Kansas

Mailing Address: 1201 Louisiana Street, Suite 3400
Houston, TX 77002

Contact Person: Brad Misley
Vice President – Operations
Telephone: (713) 800-7620
bmisley@tenawa-rm.com

This permit is issued pursuant to K.S.A. 65-3008 as amended.

I. Description of Activity Subject to Air Pollution Control Regulations

Tenawa Resource Management LLC (Tenawa) owns and operates the Haven Gas Plant, a liquefiable hydrocarbons and helium extraction facility, near Haven in Reno County, Kansas. Haven Gas Plant's Source ID Number is 1550133. It is authorized under Air Emission Source Construction Permit No. C-14317, last modified and issued on September 6, 2018. This permit supersedes the previously issued construction permit.

The facility is currently operating under Air Emission Source Class II Operating Permit No. O-14316, last modified and issued on September 6, 2018. The Haven Gas Plant is designed to process 1.40 billion standard cubic feet per day (Bscfd) of natural gas. The plant has a high-pressure inlet stream of natural gas. The gas stream is treated for oily water through a 1.40 Bscfd Mol Sieve Desiccant Dehydration System and routed to the Cryogenic Expander Plant. The oily water is stored in a 100-barrel storage tank and periodically loaded into tank trucks and shipped offsite. A 1,000-gallon methanol tank has also been installed at the facility to treat any potential hydrate formation.

In January 2019, Tenawa began operation of a helium extraction facility that it received authorization from KDHE to construct on September 6, 2018. The helium extraction facility included several new heat exchangers and towers to cool and separate a purified helium stream. Electric driven pumps and compressors are used in the facility. A six (6) bay truck loading rack was also installed for the proposed helium extraction facility.

Tenawa submitted a construction permit modification application to address the following:

- The facility implemented a Leak Detection and Repair (LDAR) program for the helium extraction trains and conducted an initial equipment survey in June 2019. Tenawa requests to update the equipment leak component counts in the permit to reflect the actual as-built counts and add a conservatism factor to allow minor changes.

- Tenawa requests to include the emissions resulting from facility-wide and compressor blowdowns into the permit as part of planned maintenance, startup and shutdown (MSS) emissions. Tenawa proposes to have a maximum of 10 full-facility blowdowns, including the natural gas liquids (NGL) trains and the helium trains, and 50 unit blowdowns for each turbine compressor per year.

- Tenawa requests to authorize an in-kind replacement for one of the two (2) authorized Solar Titan 250 natural-gas fired turbines.

The potential emissions of volatile organic compounds (VOC), particulate matter (PM), particulate matter with less than or equal to 10 microns in aerodynamic diameter (PM_{10}), particulate matter with less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$), carbon monoxide (CO), oxides of nitrogen (NO_X), oxides of sulfur (SO_X), and hazardous air pollutants (HAPs) were evaluated as part of the review process. This project is subject to the provisions of K.A.R. 28-19-300 (Construction permits and approvals; applicability) because the emissions from the proposed project exceed the permit thresholds in K.A.R. 28-19-300(a).

II. Significant Applicable Air Regulations

The following air quality regulations were determined to be applicable to this source:

A. K.A.R. 28-19-650, Emissions opacity limits.

B. K.A.R. 28-19-720, New Source Performance Standards, which adopts by reference 40 CFR Part 60 Subpart A, General Provisions and 40 CFR Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution. This subpart also requires compliance with specific provisions of 40 CFR Part 60, Subpart VVa, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006.

C. K.A.R. 28-19-720, New Source Performance Standards, which adopts by reference 40 CFR Part 60 Subpart A, General Provisions and 40 CFR Part 60, Subpart OOOOa, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution. This subpart also requires compliance with specific provisions of 40 CFR Part 60, Subpart VVa, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006.

D. K.A.R. 28-19-720, New Source Performance Standards, which adopts by reference 40 CFR Part 60 Subpart A, General Provisions and 40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines.

III. Air Emission Unit Technical Specifications

The following equipment or equivalent associated with "Gas Plant" is approved:

A. Two (2) Solar Turbine, Inc. Model Titan 250-30000S natural gas fired combined cycle compressor turbines for plant natural gas compression, each rated at 29,299 hp (22,370 kW), designated as GT-01 and GT-02. GT-01 South (Replaced in 2017), SN-0023X, manufactured in 2017. GT-02: North, (Replaced in 2020) S/N: OHF20-X5857, manufactured in 2019 or 2020. The turbines are equipped with SoLoNO$_x$, a dry low NO$_x$ technology. **These turbines are subject to the requirements of K.A.R. 28-19-720, Adopting by Reference 40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines.**

B. Ten (10) full-facility blowdowns of both NGL and helium trains per year (BLDN-1, BLDN-3).

C. Fifty (50) unit blowdowns for each turbine compressor per year (BLDN-2).

D. One (1) 1.40 billion standard cubic feet per day (Bscfd) Mol Sieve Desiccant Dehydration System with five (5) towers.

E. One (1) 100 barrel (bbl) vertical fixed roof tank (TK-01) for storing a hydrocarbon liquid (slop oil – condensate and produced water). **This unit is subject to the requirements of 40 CFR Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.**

F. Truck Loadout operations for TK-01 with a transfer capacity of 8,400 gallons per hour (gph) designated as TRKLD. Truck Loadout equipment leaks are covered under facility fugitives, FUG-01.

G. One (1) 3,500 hp electric inlet compressor, equipped with dry gas seal technology, designated as C-1. **This unit is a dry seal centrifugal compressor and is not subject to the requirements of 40 CFR Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.**

H. Two (2) centrifugal compressors, 29,299 hp one (1) for each of the Titan 250-30000S (GT-01 and GT-02), designated as C-2a and C-2b, equipped with tandem dry gas seal technology.

I. One (1) 2,000 hp electric refrigeration compressor, designated as C-3. **This unit is a reciprocating compressor and is subject to the requirements of 40 CFR Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.**

J. One (1) 200 hp electric regenerative compressor, equipped with dry gas seal technology, designated as C-4.

K. One (1) 1,000 gallon, vertical fixed roof storage vessel for the storage of methanol, with a projected throughput of 6,480 gallons per year. The tank is designated as TK-02.

L. Methanol tank, TK-02 truck loading operations. The truck loading operations are designated as TRKLD-02.

M. Seven (7) Heat Exchangers E-1A/B, E-2A/B, E-3A/B, E-4.

N. Equipment components which include pump systems, pressure relief devices, sampling connection systems, open ended valves or flanges, valves, flanges, and other connectors as described in Table 1. Emissions from these units are accounted as fugitive emissions designated as FUG-01, facility fugitives. **These fugitive sources are subject to the requirements of 40 CFR Part 60, Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and**

Distribution for which Construction, Modification or Reconstruction Commenced after August 23, 2011, and on or before September 18, 2015.

Table 1 – Equipment Components

Equipment Name	Quantity in Gas/Vapor Service*	Quantity in Light Liquid Service*	Quantity in Heavy Liquid Service
Pumps Systems	0	7	0
Pressure Relief Devices	23	10	0
Sampling Connection Systems	0	0	0
Open Ended Valves or Flanges	0	0	0
Valves	187	78	0
Flanges	243	101	0
Other Connectors	242	101	0

*Equipment counts are "as built" numbers. Component count may change over time as addition or removal of components occurs.

The following or equivalent associated with "Helium Plant" is approved:

O. Two (2) 1,500 hp electric refrigeration compressors, designated as C-5/C-6, Two (2) 200 hp electric helium product compressors, designated as C-7/C-8, Two (2) 100 hp electric PSA recycle compressors, designated as C-9/C-10. **These units are reciprocating compressors subject to the requirements of 40 CFR Part 60, Subpart OOOOa, Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.**

P. Six (6) loading bays serviced by three (3) loading racks for loading helium product onto tube trailers.

Q. Eight (8) Heat Exchangers E-5A/B, E-6A/B, E-7A/B, E-8A/B.

R. Two (2) Packing Towers to make helium stream T-2A/B.

S. Two (2) Tray Towers to make helium stream T-3A/B.

T. Equipment components which include pump systems, compressors, pressure relief devices, sampling connection systems, open ended valves or flanges, valves, flanges, and other connectors as described in Table 1a. Emissions from these units are accounted as fugitive emissions designated as FUG-01a, facility fugitives. **These fugitive sources are subject to the requirements of 40 CFR Part 60, Subpart OOOOa, Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced after September 18, 2015.**

Table 1a – Equipment Components

Equipment Name	Quantity in Gas/Vapor Service*	Quantity in Light Liquid Service*	Quantity in Heavy Liquid Service
Pumps Systems	0	5	0
Compressors	8	0	0
Pressure Relief Devices	24	68	0
Sampling Connection Systems	0	0	0

Equipment Name	Quantity in Gas/Vapor Service*	Quantity in Light Liquid Service*	Quantity in Heavy Liquid Service
Open Ended Valves or Flanges	0	0	0
Valves	186	512	8
Flanges	224	464	6
Other Connectors	220	450	0

*Equipment counts were updated to show actual as-built counts shown in the application CSP01646v1.0.

IV. Emissions Estimates from Proposed Activity

The following table contains the Potential to Emit for pollutants expected to result from the facility:

Table 2 – Estimated Operating Emissions

Pollutant type	Potential-to-emit (PTE)[1] (tons per year)	Potential-to-emit (PTE) Post Restrictions (tons per year)
Oxides of Nitrogen (NO_x)	101.53[2]	99
Carbon Monoxide (CO)	132.10[3]	99
Sulfur Dioxide (SO_2)	5.61	5.61
Volatile Organic Compounds (VOC)	66.29	66.29
Particulate Matter (PM)	40.67	40.67
Particulate Matter less than 10 microns (PM_{10})	40.67	40.67
Particulate Matter less than 2.5 microns ($PM_{2.5}$)	40.67	40.67
Combined Hazardous Air Pollutants (HAPs)	1.71	1.71
Individual Hazardous Air Pollutants (HAPs)		
Acetaldehyde	0.06	0.06
Acrolein	0.02	0.02
Benzene	0.02	0.02
Ethylbenzene	0.06	0.06
Formaldehyde	1.18	1.18
Propylene Oxide	0.04	0.04
Toluene	0.22	0.22
Xylenes	0.10	0.10

[1] Potential-to-emit (PTE) means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

[2] PTE for NO_x using the Manufacturer's emission guarantee for each turbine of 11.31 lb./hr. plus Maintenance Startup and Shutdown events of 0.04 tpy is 99.12 tpy. However, during the initial performance testing of GT-01, NO_x emissions test results were 11.59 lb./hr, which if considered as potential worst case for both turbines, the source would have a NO_x PTE of 101.53 tpy.

[3] PTE for CO using the Manufacturer's emission guarantee for each turbine of 11.49 lb./hr. plus Maintenance Startup and Shutdown events of 3.59 tpy is 132.10 tpy. However, during the initial performance testing of GT-01 and GT-02, CO emissions test results were 0.71 lb./hr, and 0.95 lb.hr. which is significantly less than manufacturer's performance test date performed on similar units at optimum conditions, therefore PTE was calculated using the manufacturer's information.

V. Air Emission Limitations and Conditions

A. Limitations and Conditions for the Solar Titan 250 Combustion Turbines (GT-01 and GT-02)

1. The owner or operator shall comply with the applicable requirements of 40 CFR 60 Subpart KKKK (NSPS KKKK). **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in this permit, the requirements of the federal rule shall take precedence.

2. For each combustion turbine, emissions of NO_x shall not exceed 25 ppm at 15 % O_2, including startup, shut down and malfunction. [40 CFR 60.4320(a) - Table 1 to Subpart KKKK of Part 60—Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines]

3. The natural gas fired in the turbines shall not contain total potential sulfur emissions in excess of 0.060 lb SO_2/MMBtu heat input. [40 CFR 60.4330(a)(2)]

4. The owner or operator shall operate and maintain each combustion turbine and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction. [40 CFR 60.4333(a)]

5. Opacity of visible emissions from each combustion turbine is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

6. Initial compliance with emission limits of NO_x shall be demonstrated through a performance test at steady state, full load operation.

7. As required by 40 CFR 63.4340(a)-(b), for turbines not using water or steam injection to control NO_x emissions, the owner or operator shall monitor the NO_x emissions by one of the following methods:

   a. Perform annual performance tests in accordance with 40 CFR 60.4400 to demonstrate continuous compliance. If the NO_x emission result from the performance test is less than or equal to 75 percent of the NO_x emission limit for the turbines, the frequency of subsequent performance tests may be reduced to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_x emission limit for the turbine, you must resume annual performance tests; or

   b. Install, calibrate, maintain and operate a continuous emission monitoring[4] as described in sections 40 CFR 60.4335(b) and 60.4345.

8. In accordance with 40 CFR 60.4365, the combustion turbines will be exempt from the requirement to monitor total sulfur content under the provisions of 40 CFR Part 60 Subpart KKKK, by burning pipeline quality natural gas with fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content is 20 grains of sulfur or less per 100 standard cubic feet. [40 CFR 60.4365(a)]

9. The owner or operator shall maintain records which demonstrate compliance with 40 CFR Part 60, Subpart KKKK.

[4] At the time of permit issuance, the source had installed a NO_x Continuous Emission Monitoring System (CEMS) to demonstrate compliance with 40 CFR Part 60 Subpart KKKK and had conducted the initial performance testing. However, the source is considering switching to performance testing as demonstration of compliance. Should the source decide to switch compliance demonstrations, a performance test would be required to be performed prior to the switch from CEMs to performance testing to maintain the performance testing schedule required by NSPS KKKK.

10. The owner or operator shall maintain a current, valid purchase contract, tariff sheet or transportation contract for the pipeline quality natural gas with fuel quality characteristics specified to contain maximum total sulfur content of 20 grains of sulfur or less per 100 standard cubic feet. [40 CFR 60.4365(a)]

11. If the owner or operator selects to maintain CEMS for NOx emission monitoring, the records that include the occurrence and duration of any startup, shutdown, or malfunction; performance testing; evaluations; calibrations; checks; adjustments; maintenance; duration of any periods during which a CEMS is inoperative; and corresponding emission measurements shall be maintained. [40 CFR 60.7(f)]

12. The owner or operator shall submit written notification of the information required in 40 CFR 60.7(a), including the date of manufacture and serial numbers for the turbines.

13. The owner or operator shall submit excess emissions and CEMs monitor downtime, in accordance with 40 CFR 60.7(c). The owner or operator shall report excess emissions for all periods of unit operation, including startup, shutdown, and malfunction. [40 CFR 60.4375(a)]

14. For any performance tests conducted in accordance with 40 CFR 60.4340(a) or pursuant to the requirements of this permit, the owner or operator shall submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test. [40 CFR 60.4375(a)]

B. Limitations and Conditions for the Mol Sieve Desiccant Dehydration System, Methanol Tank (TK-02) and Methanol Tank Truck Loading Operations (TRKLD-02)

1. Opacity of visible emissions from the Mol Sieve Desiccant Dehydrator, the Methanol Tank (TK-02) and the Methanol Tank Truck Loading Operations (TRKLD-02) are limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

C. Limitations and Conditions for the Slop Oil Tank (TK-01)

1. This storage vessel is located in a natural gas processing segment as described in 40 CFR 60.5365(e) with preconstruction VOC potential emissions calculated to be less than 6 tons per year. The owner or operator shall determine the VOC emission rate for the storage tank using any generally accepted model or calculation methodology within 30 days after startup and minimize emissions to the extent practicable during the 30-day period using good engineering practices. If the storage tank emits more than 6 tpy VOC, the owner or operator shall reduce VOC emissions by 95% or greater within 60 days after startup, or by October 15, 2013, whichever is later. [40 CFR 60.5395(a)(1)]

2. Except as provided in K.A.R. 28-19-11, opacity of visible emissions from TK-01 is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

3. If the storage tank emits more than 6 tpy VOC, the owner or operator shall submit the appropriate notifications for revision of this construction permit.

4. The owner or operator shall comply with the applicable monitoring, recordkeeping, and reporting requirements of 40 CFR Part 60, Subpart OOOO, as applicable to this tank.

D. Limitations and Conditions for the Centrifugal Compressors (Electric inlet compressor, C-1; Titan turbine compressors, C-2a and C-2b; and Electric regenerative compressor, C-4)

1. Opacity of visible emissions from the compressors is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

2. These centrifugal units are equipped with dry seal systems. Therefore, pursuant to 40 CFR Part 60, Subpart OOOO, they are not affected facilities. After startup of these units, the owner or operator is prohibited from retrofitting these compressors with wet gas seals without obtaining the appropriate revisions to this permit.

E. Permit Conditions for the Reciprocating Compressors (Electric refrigeration compressor, C-3)

1. Opacity of visible emissions from compressors is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

2. The owner or operator shall comply with the applicable requirements of 40 CFR 60 Subpart OOOO (NSPS OOOO) for Reciprocating Compressors. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in this permit, the requirements of the federal rule shall take precedence.

3. For reciprocating compressors, the owner or operator shall comply with the applicable requirements of 40 CFR 60.5385.

4. The owner or operator shall replace the reciprocating compressor rod packing according to (a)(1)-(3) of 40 CFR 60.5385.

5. To demonstrate initial compliance the owner or operator shall comply with paragraphs (c)(1) through (4) of 40 CFR 60.5410.

6. The owner or operator shall demonstrate continuous compliance according to the applicable paragraphs (c)(1) through (4) of 40 CFR 60.5415.

7. For each reciprocating compressor, the owner or operator shall maintain the records in paragraphs (c)(3)(i) through (iii) of 40 CFR 60.5420.

8. The owner or operator shall submit annual reports containing the information specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420. The initial annual report is due 30 days after the end of the initial compliance period as determined according to 40 CFR 60.5410. Subsequent annual reports are due on the same date each year as the initial annual report. If there are more than one affected facility, you may submit one report for multiple affected facilities provided the report contains all of the information required as specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420.

9. All records required to be maintained shall be kept in a readily accessible location for no less than five years from the date of record. [40 CFR 60.5420(c)]

F. Limitations and Conditions for the Facility Fugitives (FUG-01)

1. The owner or operator shall comply with the applicable requirements of 40 CFR 60 Subpart OOOO (NSPS OOOO) for Equipment Leaks. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in this permit, the requirements of the federal rule shall take precedence.

2. As provided in 40 CFR 60.5400, all equipment components within a process unit shall comply with the following requirements:

Within 180 days of initial startup, and except as provided in 40 CFR 60.5401, the owner or operator shall demonstrate compliance with the requirements of 40 CFR 60.482–2a, and 40 CFR 60.482–4a through 60.482–11a. [40 CFR 60.5400(a)] These requirements as applicable are as follows:

- 60.482-2a - Standards: Pumps in light liquid service.
- 60.482-4a - Standards: Pressure relief devices in gas/vapor service.
- 60.482-5a - Standards: Sampling connection systems.
- 60.482-6a - Standards: Open-ended valves or lines.
- 60.482-7a - Standards: Valves in gas/vapor service and in light liquid service.
- 60.482-8a - Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors.
- 60.482-9a - Standards: Delay of repair.
- 60.482-10a - Standards: Closed vent systems and control devices.
- 60.482-11a - Standards: Connectors in gas/vapor service and in light liquid service

3. The owner or operator shall comply with the provisions of 40 CFR 60.485a, except as provided in paragraph 60.5400(f). Instead of 40 CFR 60.485a(d)(1) the owner or operator shall use the following provision:

   a. Each piece of equipment is presumed to be in VOC service or in wet gas service unless the owner or operator demonstrates that the piece of equipment is not in VOC service or in wet gas service. For a piece of equipment to be considered not in VOC service, it shall be determined that the VOC content can be reasonably expected never to exceed 10.0 percent by weight. For a piece of equipment to be considered in wet gas service, it shall be determined that it contains or contacts the field gas before the extraction step in the process. For purposes of determining the percent VOC content of the process fluid that is contained in or contacts a piece of equipment, procedures that conform to the methods described in ASTM E169– 93, E168–92, or E260–96 (incorporated by reference as specified in 40 CFR 60.17) shall be used.

4. The owner shall comply with the provisions of 40 CFR 60.486a and 60.487a except as provided in 40 CFR 60.5401, 60.5421, and 60.5422.

5. Except as provided by K.A.R. 28-19-11, opacity of visible emissions from FUG-01 is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

6. Initial compliance with the VOC requirements is demonstrated if the owner or operator is in compliance with the requirements of 40 CFR 60.5400. [40 CFR 60.5410(f)]

7. Continuous compliance with VOC requirements is demonstrated if the owner or operator is in compliance with the requirements of 40 CFR 60.5400. [40 CFR 60.5415(f)]

8. In addition to the recordkeeping requirements of 40 CFR 60.486a, the owner or operator shall maintain the records required by 40 CFR 60.5421(b). [40 CFR 60.5421(a)]

9. All records required to be maintained shall be kept in a readily accessible location for no less than five years from the date of record. [40 CFR 60.5420(c)]

10. In addition to the reporting requirements of 40 CFR 60.487a(a), (b), (c)(2)(i) through (iv), and 60.487a(c)(2)(vii) through (viii), the owner shall submit reports as required by 40 CFR 60.5422(b) and (c). [40 CFR 60.5422(a)]

11. All reports shall be submitted on a semiannual basis beginning 6 months after the initial startup date. [40 CFR 60.487a(a)]

12. The owner or operator shall submit annual reports containing the information specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420. The initial annual report is due 30 days after the end of the initial compliance period as determined according to 40 CFR 60.5410. Subsequent annual reports are due on the same date each year as the initial annual report. If there are more than one affected facility, you may submit one report for multiple affected facilities provided the report contains all of the information required as specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420.

G. Limitations and Conditions for the Reciprocating Compressors (Electric refrigeration compressor, C-5/C-6 Electric helium product compressor, C-7/C-8 and Electric PSA Recycle compressor, C-9/C-10)

1. Opacity of visible emissions from compressors is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

2. The owner or operator shall comply with the applicable requirements of 40 CFR 60 Subpart OOOOa (NSPS OOOOa) for Reciprocating Compressors. These requirements are summarized in this permit. If a conflict exists between the federal rule and what is summarized in this permit, the requirements of the federal rule shall take precedence.

3. For reciprocating compressors, the owner or operator shall comply with the applicable requirements of 40 CFR 60.5385a.

4. The owner or operator shall replace the reciprocating compressor rod packing according to (a)(1)-(3) of 40 CFR 60.5385a.

5. To demonstrate initial compliance the owner or operator shall comply with paragraphs (c)(1) through (4) of 40 CFR 60.5410a.

6. The owner or operator shall demonstrate continuous compliance according to the applicable paragraphs (c)(1) through (4) of 40 CFR 60.5415a.

7. For each reciprocating compressor, the owner or operator shall maintain the records in paragraphs (c)(3)(i) through (iii) of 40 CFR 60.5420a.

8. The owner or operator shall submit annual reports containing the information specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420a. The initial annual report is due 30 days after the end of the initial compliance period as determined according to 40 CFR 60.5410a. Subsequent annual reports are due on the same date each year as the initial annual report. If there are more than one affected facility, you may submit one report for multiple affected facilities provided the report contains all of the information required as specified in paragraphs (b)(1) through (6) of 40 CFR 60.5420a.

9. All records required to be maintained shall be kept in a readily accessible location for no less than five years from the date of record. [40 CFR 60.5420a(c)]

H. Limitations and Conditions for the Facility Fugitives (FUG-01a)

1. The owner or operator shall comply with the requirements in 40 CFR 60 Subpart OOOOa for the Haven Gas Plant – helium extraction facility and associated fugitive components, as applicable. [40 CFR 60.5365a(f)] If conflict exists between the federal rule and what is summarized in this permit, the requirements of the federal rule shall take precedence.

2. The owner or operator shall be in compliance with 40 CFR 60 Subpart OOOOa upon startup of the affected facility. [40 CFR 60.5370a(a)]

3. At all times, including periods of startup, shutdown, and malfunction, the owner and operator shall maintain and operate the affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 60.5370a(b)]

4. The owner or operator must comply with the requirements of 40 CFR 60.482-1a(a), (b), and (d), §60.482-2a, and §60.482-4a through §60.482-11a, except as provided in §60.5401a. [40 CFR 60.5400a(a)]

5. The owner or operator must comply with the provisions of 40 CFR 60.485a, except as provided in 40 CFR 60.5400a(f). [40 CFR 60.5400a(d)]

6. The owner or operator must comply with the provisions of 40 CFR 60.486a and §60.487a, except as provided in 40 CFR 60.5401a, §60.5421a, and §60.5422a. [40 CFR 60.5400a(e)]

7. The owner or operator must use the following provision instead of 40 CFR 60.485a(d)(1):

    a. Each piece of equipment is presumed to be in VOC service or in wet gas service unless an owner or operator demonstrates that the piece of equipment is not in VOC service or in wet gas service.

    b. For a piece of equipment to be considered not in VOC service, it must be determined that the VOC content can be reasonably expected never to exceed 10.0 percent by weight.

    c. For a piece of equipment to be considered in wet gas service, it must be determined that it contains or contacts the field gas before the extraction step in the process.

    d. For purposes of determining the percent VOC content of the process fluid that is contained in or contacts a piece of equipment, procedures that conform to the methods described in ASTM E169-93, E168-92, or E260-96 (incorporated by reference as specified in 40 CFR 60.17) must be used. [40 CFR 60.5400a(f)]

8. The owner or operator shall show initial compliance and continuous compliance with methane and VOC standards by demonstrating compliance with the requirements of 40 CFR 60.5400a. [40 CFR 60.5410a(f) and §60.5415a(f)]

9. The owner or operator shall submit the notification required in 40 CFR 60.7(a)(1), (3), and (4). [40 CFR 60.5420a(a)(1)]

10. The owner or operator shall submit the reports specified in 40 CFR 60.5420a(b)(1), (9), (10), (11), and (12), as applicable. [40 CFR 60.5420a(b)]

11. The owner or operator shall maintain the records specified in 40 CFR 60.7(f). These records shall be maintained either onsite or at the nearest local field office for at least 5 years. Any records required to be maintained by 40 CFR 60 Subpart OOOOa that are submitted electronically via the EPA's Central Data Exchange (CDX) may be maintained in electronic format. [40 CFR 60.5420a(c)]

12. The owner or operator shall comply with the recordkeeping requirements in 40 CFR 60.5421a(b) in addition to the requirements of 40 CFR 60.486a, as applicable. [40 CFR 60.5421a(a)]

13. The owner or operator shall comply with the requirements in 40 CFR 60.5422a(b) and (c), 40 CFR 60.487a(a), (b), (c)(2)(i) through (iv), and (c)(2)(vii) through (viii). The owner or operator shall submit semiannual reports to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI). [40 CFR 60.5422a(a)]

14. The owner or operator shall comply with the applicable General Provisions specified in Table 3 of 40 CFR Part 60 Subpart OOOOa. [40 CFR 60.5425a]

I. Limitations and Conditions Facility Wide NO_x Emissions

1. The facility wide NO_x emissions shall not exceed 99 tons. Using the following equation for each NO_x emitting process or activity (**excluding exempt activities**), the owner or operator shall sum the monthly total and each consecutive twelve (12) month total of NO_x as follows:

$$\sum_{i=1}^{n=12} E_{NOx} = \sum [(EF_A \times H_A) + (EF_B \times H_B) + (EF_C \times NG_C)] \times \left(\frac{1 ton}{2000 lbs} \right)$$

Where:

n = 12; the calculation shall be for 12-month rolling sum, rolled/summed monthly
i = number of months (e.g., i=1 for the 1st month; i=2 for the sum of 1st and 2nd months)
E_{NOx} = Emissions of NO_x from each NO_x producing process at the facility, expressed in tons of NO_x per number of months, i

EF_A = NO_x Emission Factor shall be determined from the most recent successful performance test of GT-01 required by NSPS KKKK in pound per hour (lb./hr.), or if using CEMs data, it shall be determined by the 30 day rolling averages recorded by the CEMs in pound per hour (lb./hr.)

EF_B = NO_x Emission Factor from the most recent successful performance test of GT-02 required by NSPS KKKK in pound per hour (lb./hr.), or if using CEMs data, it shall be determined by the 30 day rolling averages recorded by the CEMs in pound per hour (lb./hr.)
EF_C = NO_x Emission Factor from AP-42[5] in pounds/Million Standard Cubic Feet (lb./MMscf) for the Combined Million Cubic Feet of Natural Gas Fired for all other combustion sources (e.g. space heaters, water heaters, etc.), excluding GT-01 and GT-02.

H_A = Hours of operation of GT-01
H_B = Hours of operation of GT-02
NG_C = The total amount of natural gas fired in all other combustion processes in MMscf.

2. The owner or operator shall update the monthly NO_x sum and consecutive twelve (12) month total no later than 30 days following the end of each month. All records shall be retained for two (2) years from the date of record.

J. Limitations and Conditions Facility Wide CO Emissions

1. The owner or operator shall conduct annual CO sampling from the exhaust of each combustion turbine (GT-01 and GT-02) using Appendix A-4 to Part 60 -Test Method 10 to demonstrate compliance with the facility wide federally enforceable limit to maintain the source as a synthetic minor source for Title V purposes.

5 The owner or operator shall use the most recent edition of US EPA's Compilation of Air Pollutant Emission Factors, AP-42, for natural gas combustion.

2. The facility wide CO emissions shall not exceed 99 tons. Using the following equation for each CO emitting process or activity (**excluding exempt activities**), the owner or operator shall sum the monthly total and each consecutive twelve (12) month total of CO as follows:

$$\sum_{i=1}^{n=12} E_{CO} = \sum [(ER_A \times H_A) + (ER_B \times H_B) + (ER_C \times NG_C)] \times \left(\frac{1ton}{2000lbs} \right)$$

Where:

n = 12; the calculation shall be for 12-month rolling sum, rolled/summed monthly
i = number of months (e.g., i=1 for the 1st month; i=2 for the sum of 1st and 2nd months)
E_{NOx} = Emissions of CO from each CO producing process at the facility, expressed in tons of CO per number of months, i

ER_A = Emission Rate from the most recent annual Appendix A-4 to Part 60 -Test Method 10 monitoring of GT-01 in pound per hour (lb/hr)
ER_B = Emission Rate from the most recent annual Appendix A-4 to Part 60 -Test Method 10 monitoring of GT-02 in pound per hour (lb/hr)
ER_C = CO Emission Factor from AP-42[6] in pounds/Million Standard Cubic Feet (lb/MMscf) for the Combined Million Cubic Feet of Natural Gas Fired for all other combustion sources (e.g. space heaters, water heaters, etc), excluding GT-01 and GT-02.

H_A = Hours of operation of GT-01
H_B = Hours of operation of GT-02
NG_C = The total amount of natural gas fired in all other combustion processes in MMscf

3. The owner or operator shall maintain records of the CO emission results from each annual Appendix A-4 to Part 60 -Test Method 10 sampling.

4. The owner or operator shall update the monthly CO sum and consecutive twelve (12) month total no later than 30 days following the end of each month. All records shall be retained for two (2) years from the date of record.

VI. Performance Testing

A. In conducting the compliance performance tests required by this permit, the reference test methods and procedures outlined in K.A.R. 28-19-212, 40 CFR Part 60 Appendices and the methods required under the applicable Subpart of 40 CFR Part 60 shall be used to demonstrate compliance with the limitations and conditions set forth in this permit.

B. Within 60 days after achieving the maximum rate at which the combustion turbines and reciprocating engines will be operated, but not later than 180 days after initial startup of such units, the owner or operator of such facility shall conduct performance tests. A written report of the results of the performance tests shall be provided to the KDHE. [40 CFR 60.8] Performance tests shall be conducted as follows:

1. For each Titan 250 combustion turbine, performance testing to determine compliance with the NSPS NO_x emission limitation shall follow the performance testing requirements outlined in 40 CFR 60.4400.

6 The owner or operator shall use the most recent edition of US EPA's Compilation of Air Pollutant Emission Factors, AP-42, for natural gas combustion.

2. All performance tests on the turbines shall be performed when the ambient temperature is greater than 0° Fahrenheit (F) and at full operational load.

3. All continuous monitoring systems and monitoring devices installed, shall be operational prior to conducting compliance performance tests under 40 CFR 60.8. Verification of operational status, at a minimum, shall include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the devices as required by 40 CFR 60.13. [40 CFR 60.4355]

4. The owner or operator shall submit a performance test protocol to the KDHE no later than 30 days prior to the test to allow review of the test plan and to arrange for an observer to be present at the test.

C. The owner or operator shall conduct annual CO performance testing of each combustion turbine (GT-01 and GT-02) using Appendix A-4 to Part 60 -Test Method 10 – Determination of carbon monoxide emissions from stationary sources emissions using a continuous instrumental analyzer. Quality assurance and quality control requirements are included to assure that the tester, collect data of known quality. The tester must document adherence to these specific requirements for equipment, supplies, sample collection and analysis, calculations, and data analysis. This method does not completely describe all equipment, supplies, and sampling and analytical procedures will need but refers to other methods for some of the details. Therefore, to obtain reliable results, the tester should also have a thorough knowledge of these additional test methods which are found in Appendix A to 40 CFR Part 60:

1. Method 1—Sample and Velocity Traverses for Stationary Sources.

2. Method 4—Determination of Moisture Content in Stack Gases.

3. Method 7E—Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure).

VII. Notification

Notify through the Kansas Environmental Information Management System (KEIMS) using the **BOA Notification – General form** within 30 days of completing the installation of the emission units so that an evaluation can be conducted.[7]

VIII. General Provisions

A. This document shall become void if the construction or modification has not commenced within 18 months of the effective date, or if the construction or modification is interrupted for a period of 18 months or longer.

B. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes which results in potential-to-emit increases equal to or greater than the thresholds specified at K.A.R. 28-19-300.

C. Upon presentation of credentials and other documents as may be required by law, representatives of the KDHE (including authorized contractors of the KDHE) shall be allowed to:

1. enter upon the premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;

7 Air Program Field Staff, South Central District Office Wichita, Kansas (316) 337-6020

2. have access to and copy, at reasonable times, any records that must be kept under conditions of this document;

3. inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this document; and

4. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of the KDHE, any substances or parameters at any location.

D. The emission unit or stationary source which is the subject of this document shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act.

E. This document is subject to periodic review and amendment as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and Regulations.

F. This document does not relieve the permittee of the obligation to obtain any approvals, permits, licenses, or documents of sanction which may be required by other federal, state, or local agencies.

G. As applicable, EPA regulations codified in 40 CFR Part 60, 62, and 63 require affected sources to electronically submit performance test reports, notification reports, and periodic reports to EPA through the Compliance and Emissions Data Reporting Interface (CEDRI). CEDRI is accessed through the EPA's **Central Data Exchange (CDX)** (*https://cdx.epa.gov/*). If the reporting form is not available in CEDRI at the time that the report is due, the source must submit the report to the Administrator [address listed in 40 CFR 63.13]:

Kansas Compliance Officer
Air Branch
Enforcement and Compliance Assurance Division
U.S. EPA, Region 7
11201 Renner Blvd.
Lenexa, Kansas 66219

All reports, deviations, malfunctions, and other notifications required to be submitted by this permit shall be submitted through the Kansas Environmental Information Management System ("KEIMS") at:

http://www.kdheks.gov/bar/keims-BOA.html

Permit Writer

Adam Kice

Adam Kice
Engineering Associate
Air Permitting Section

AWK:jh
c: SCDO
CSP01646v1.1

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

BUREAU OF AIR

INITIAL INSPECTION/EVALUATION FORM

Source ID No.: 1550133 CSP01646v1.1
Source Name: Tenawa Resource Management LLC – Haven Gas Plant
Source Location: 13114 South Kent Road
Section 6, Township 25 South, Range 4 West
Haven, Reno County, Kansas

CSP01646v1.1 is a modification to C-14317 issued 9/6/2018. The modifications include like-kind turbine replacements, additional equipment at the helium extraction facility, see descriptions below; as-built updates to the equipment leak component counts (see updated Tables below); and the ability to include blowdown emissions to the Maintenance, Startup, and Shutdown emission calculations. This Form **summarizes** the changes included in the modification. Please refer to the complete Construction Permit for all changes.

I. Equipment Description

<table>
<tr><th></th><th></th><th colspan="2">Consistent with what is used?</th></tr>
<tr><td>A.</td><td>Two (2) Solar Turbine, Inc. Model Titan 250-30000S natural gas fired combined cycle compressor turbines for plant natural gas compression, each rated at 29,299 hp (22,370 kW), designated as GT-01 and GT-02.
GT-01 South (Replaced in 2017), SN-0023X, manufactured in 2017.
GT-02: North, (Replaced in 2020) S/N: OHF20-X5857, manufactured in 2019 or 2020.</td><td>YES</td><td>NO</td></tr>
<tr><td>M.</td><td>Seven (7) Heat Exchangers E-1A/B, E-2A/B, E-3A/B, E-4</td><td>YES</td><td>NO</td></tr>
<tr><td>N.</td><td>Equipment components which include pump systems, pressure relief devices, sampling connection systems, open ended valves or flanges, valves, flanges, and other connectors as described in Table 1. Emissions from these units are accounted as fugitive emissions designated as FUG-01, facility fugitives.
<table>
<tr><th>Equipment Name</th><th>Quantity in Gas/Vapor Service*</th><th>Quantity in Light Liquid Service*</th><th>Quantity in Heavy Liquid Service*</th></tr>
<tr><td>Pumps Systems</td><td>0</td><td>7</td><td>0</td></tr>
<tr><td>Pressure Relief Devices</td><td>23</td><td>10</td><td>0</td></tr>
<tr><td>Sampling Connection Systems</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Open Ended Valves or Flanges</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Valves</td><td>187</td><td>78</td><td>0</td></tr>
<tr><td>Flanges</td><td>243</td><td>101</td><td>0</td></tr>
<tr><td>Other Connectors</td><td>242</td><td>101</td><td>0</td></tr>
</table>
*Equipment counts are “as built” numbers. Component count may change over time as addition or removal of components occurs.</td><td>YES</td><td>NO</td></tr>
<tr><td>P.</td><td>Six (6) loading bays serviced by three (3) loading racks for loading helium product into tube trailers</td><td>YES</td><td>NO</td></tr>
</table>

<table>
<tr><td>Q.</td><td>Eight (8) Heat Exchangers E-5A/B, E-6A/B, E-7A/B, E-8A/B.</td><td>YES</td><td>NO</td></tr>
<tr><td colspan="4">The previous permit included six Heat Exchangers.</td></tr>
<tr><td>R.</td><td>Two (2) Packing Towers to make helium stream T-2A/B.</td><td>YES</td><td>NO</td></tr>
<tr><td>S.</td><td>Two (2) Tray Towers to make helium stream T-3A/B.</td><td>YES</td><td>NO</td></tr>
<tr><td colspan="4">The previous permit listed all Towers together.</td></tr>
<tr><td>T.</td><td>Equipment components which include pump systems, compressors, pressure relief devices, sampling connection systems, open ended valves or flanges, valves, flanges, and other connectors as described in Table 1a. Emissions from these units are accounted as fugitive emissions designated as FUG-01a, facility fugitives.
<table>
<tr><th>Equipment Name</th><th>Quantity in Gas/Vapor Service*</th><th>Quantity in Light Liquid Service*</th><th>Quantity in Heavy Liquid Service</th></tr>
<tr><td>Pumps Systems</td><td>0</td><td>5</td><td>0</td></tr>
<tr><td>Compressors</td><td>8</td><td>0</td><td>0</td></tr>
<tr><td>Pressure Relief Devices</td><td>24</td><td>68</td><td>0</td></tr>
<tr><td>Sampling Connection Systems</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Open Ended Valves or Flanges</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Valves</td><td>186</td><td>512</td><td>8</td></tr>
<tr><td>Flanges</td><td>224</td><td>464</td><td>6</td></tr>
<tr><td>Other Connectors</td><td>220</td><td>450</td><td>0</td></tr>
</table>
*Equipment counts were updated to show actual as-built counts shown in the application CSP01646v1.1.</td><td>YES</td><td>NO</td></tr>
</table>

II. Opacity

	A.	M.	N.	P.	Q.	R.	S.	T.
Allowable	20%	20%	20%	20%	20%	20%	20%	20%
Observed								
Is the observed opacity less than or equal to the allowable limit?						Yes	No	

IV. Comments (Please provide a brief summary for the item above if the response is "No.")

Inspector: _____

Date: _____

Facility Participants: _____