west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION/ FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3306
Plant ID No.:	095-00064
Applicant:	Icon Midstream Pipeline, LLC (Icon)
Facility Name:	Happy Dehydration Facility
Location:	Middlebourne, Tyler County
NAICS Code:	211111
Application Type:	Construction
Received Date:	April 12, 2016
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$3,500.00
Date Received:	April 7, 2016
Complete Date:	June 6, 2016
Due Date:	July 21, 2016
Applicant Ad Date:	April 6, 2016
Newspaper:	*Tyler Star News*
UTM's:	Easting: 521.400 km Northing: 4,368.900 km Zone: 17
Latitude/Longitude:	39.46942/ -80.75121
Description:	This permitting action is for the installation and operation of a natural gas liquids management facility, to be located at an existing well pad.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3306:

Icon Midstream plans to install its Happy Dehydration Facility contiguous with the Jay-Bee Oil & Gas HappyWell Pad in Tyler County. The Facility will receive and manage natural gas from the contiguous well pad, dehydrate the gas and inject into a gathering line owned and operated by others.

The dehydration unit will generate emissions from the still vent and re-boiler. There is no flash tank. Vapors from the still vent are comprised of water and various low molecular weight hydrocarbons. This vapor stream will be used as fuel for the reboiler. Excess still vent vapors will be routed to an enclosed combustor for destruction. Although needs are anticipated to be minimal, supplemental re-boiler fuel is available from the dehydrated gas stream prior to injection into the sales line.

Any water condensing in the still vent column will be routed to wastewater tanks at the contiguous Jay-Bee HappyWell Pad.

In summary, emission sources at this facility will include only the following:

- One 20 MMSCFD Dehydration Unit – 300 MBTU/Hr reboiler vent
- One 20 MMSCFD Dehydration Unit Still Vent – Controlled by a 10.0 MMBtu/hr Enclosed Combustor

SITE INSPECTION

A site inspection was conducted on May 17, 2016 by James Robertson of the Compliance and Enforcement Section. "The dehydration facility is located at the existing Happy Well Pad, owned by Jay-Bee Oil & Gas. The site is located in a remote area, with the nearest dwelling well over 300' from the facility.

It should be noted that the dehydration facility has been installed prior to issuance of the proposed permit, but was not in operation during the site visit.

It is my opinion that this site is suitable for a NSR Permit."

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the emissions from one (1) dehy controlled by a vapor combustor, reboiler and fugitive emissions. Each piece of equipment onsite are fitted with components such as flanges, valves, connectors, and seals to ensure a safe and efficient production process. These components are designed to have a small amount of gas vent to the atmosphere. The component counts were estimated using similar facilities. Emission factors from 40CFR98, Table W-1A and API were used.

The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	**Process Equipment**	**Calculation Methodology**
RBV-1	0.30 MMBTU/hr Reboiler	EPA AP-42 Emission Factors
RSV-1	20 MMSCFD Dehy Still Vent	GlyCalc 4.0
EC-1	10.0 MMBtu/hr Vapor Combustor	EPA AP-42 Emission Factors

Icon Midstream Pipeline, LLC – Happy Dehydration Facility (R13-3306) & Jay-Bee Oil & Gas Happy Wellpad

Emission Point ID#	Source	NO_x		CO		VOC		PM		SO_2		Formaldehyde		Total HAPs		CO2e
		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	ton/year
RBV-1	Reboiler	0.03	0.13	0.03	0.11	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	159
RSV-1	Dehy Still Vent & Vapor Comb.	0.08	0.37	0.46	2.02	0.67	2.91	0.00	0.07	0.00	0.00	0.00	0.00	0.14	0.60	689
Total Icon Point Source		**0.11**	**0.50**	**0.49**	**2.13**	**0.67**	**2.92**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.14**	**0.60**	**852**
Fugitive	Venting	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4
Total Icon Fugitive		**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4**
Total Icon Site Wide		**0.11**	**0.50**	**0.49**	**2.13**	**0.68**	**2.97**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.14**	**0.60**	**852**
Total Jay-Bee Happy Site Wide		**--**	**2.46**	**--**	**3.18**	**--**	**22.93**	**--**	**4.28**	**--**	**0.01**	**--**	**0.08**	**--**	**0.88**	**2428**
Total Aggregated Source		**--**	**2.96**	**--**	**5.30**	**--**	**25.91**	**--**	**4.36**	**--**	**0.01**	**--**	**0.08**	**--**	**1.48**	**3280**

REGULATORY APPLICABILITY

The following rules apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (reboiler (S01)) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Icon would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

45CSR6 prohibits open burning, establishes emission limitations for particulate matter, and establishes opacity requirements. Sources subject to 45CSR6 include completion combustion devices, enclosed combustion devices, and flares.

The facility-wide requirements of the general permit include the open burning limitations §§45-6-3.1 and 3.2.

All completion combustion devices, enclosed combustion devices, and flares are subject to the particulate matter weight emission standard set forth in §45-6-4.1; the opacity requirements in §§45-6-4-3 and 4-4; the visible emission standard in §45-6-4.5; the odor standard in §45-6-4.6; and the testing standard in §§45-6-7.1 and 7.2. Sections 5.0, 6.0 and 14.0 of the G70-A general permit include requirements for 45CSR6.

Enclosed combustion control devices and flares that are used to comply with emission standards of NSPS, Subpart OOOO are subject to design, operational, performance, recordkeeping and reporting requirements of the NSPS regulation that meet or exceed the requirements of 45CSR6.

Icon has one (1) combustor at the Happy Facility. The combustor has minimal particulate matter emissions. Therefore, the facility's combustor should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the combustor and the hours of operation. The facility will also monitor the flame of the combustor and record any malfunctions that may cause no flame to be present during operation.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (reboiler (S01)) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that Icon is defined as a "stationary source" under 45CSR13 Section 2.24.b, which states that an owner or operator discharges or has the potential to discharge more than six (6) pounds per hour and ten (10) tons per year, or has the potential to discharge more than 144 pounds per calendar day of any regulated air pollutant. Icon's volatile organic compounds (VOC) emissions exceed 45CSR13 permit thresholds. Icon has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (construction).

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source and not subject to 45CSR30. Icon is required to keep their Certificate to Operate current.

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities)

Subpart HH establishes national emission limitations and operating limitations for HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. The glycol dehydration unit at the Happy Facility is subject to the area source requirements for glycol dehydration units. However, because the facility is an area source of HAP emissions and the actual average benzene emissions from the glycol dehydration unit is below 0.90 megagram per year (1.0 tons/year) it is exempt from all requirements of Subpart HH except to maintain records of actual average flowrate of natural gas to demonstrate a continuous exemption status.

The following rules do not apply to the facility:

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Happy Facility is located in Tyler County which is an unclassified county for all criteria pollutants, therefore the Happy Facility is not applicable to 45CSR19.

As shown in the following table, Icon is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, the fugitive emissions are not included in the PTE.

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy)**	**Happy Dehy & Wellpad PTE (tpy)**	**45CSR14 or 45CSR19 Review Required?**
Carbon Monoxide	250	NA	5.30	No
Nitrogen Oxides	250	NA	2.96	No
Sulfur Dioxide	250	NA	0.01	No
Particulate Matter 2.5	250	NA	4.36	No
Ozone (VOC)	250	NA	25.91	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The following table lists common HAP's emitted from these types of facilities and each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	**Type**	**Known/Suspected Carcinogen**	**Classification**
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC	No	Inadequate Data
Toluene	VOC	No	Inadequate Data
Xylenes	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at *www.epa.gov/iris*.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as seen in the table listed in the Regulatory Discussion Section.

SOURCE AGGREGATION

Source aggregation determinations are typically made based on the following criteria:

- Whether the facilities are under common control,
- Whether the facilities belong to the same Major Group (i.e. the first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement;
- Whether the facilities are located on one or more contiguous or adjacent properties; and the distance between all pollutant emitting activities,
- Whether the facilities can operate independently

Only if all criteria are met does a permitting authority aggregate the facilities into a single source. Icon Midstream plans to install its Happy Dehydration Facility contiguous with the Jay-Bee Oil & Gas Happy Well Pad in Tyler County. The Happy Dehydration Facility will receive and manage natural gas from the Happy Well Pad, dehydrate the gas and inject into a gathering line owned and operated by others.

There is no gas routed to or received from any other Icon Midstream facility. Hence, no other Icon Midstream facilities in the area should be aggregated with this facility.

The Happy Well Pad while under the same general SIC Code, has completely separate ownership (Jay-Bee Oil & Gas) but share common workforces and Responsible Officials. The facilities do not share common payroll activities. The Happy Dehydration Facility supports operation of the Happy Well Pad and only exists as a support for gas coming from this well pad. Therefore, emissions from the Happy Dehydration Facility should be aggregated with Jay-Bee's Happy Well Pad to determine major source status.

MONITORING OF OPERATIONS

Icon will be required to perform the following monitoring and recordkeeping associated with this permit application:

- Monitor and record quantity of natural gas consumed for all combustion sources
- Monitor the amount of natural gas processed through the dehydration unit.
- Monitor the presence of the combustor pilot flame with a thermocouple or equivalent
- Monitor opacity from all fuel burning units
- Monitor and record the operating hours of the combustor
- Maintain records of testing conducted in accordance with the permit
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
- The records shall be maintained on site or in a readily available off-site location maintained by Icon for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Icon's Happy Dehydration Facility meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Tyler County location should be granted a construction permit under 45CSR13.

Roy F. Kees, P.E.
Engineer – NSR Permitting

6/6/16
Date