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Ms. Melanie Magee
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1445 Ross Avenue, Suite 1200
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RE: Supplemental Response to 20 December 2013 Completeness Determination Letter
Greenhouse Gas Prevention of Significant Deterioration Permit
Natgasoline LLC Gas-to-gasoline Project, Beaumont, Texas

Dear Ms. Magee:

On behalf of Natgasoline LLC (Natgasoline), please find the attached supplemental technical information in response to the EPA's Completeness Determination Letter dated 20 December 2013. The information provided herein is intended to supplement the related response letter dated 10 January 2014 provided to your attention by Mr. Blake Soyars of Weston Solutions, Inc. The supplemental information provided herein includes the response to one request item in the EPA's 20th December letter as discussed below. The attached process flow diagrams and process description include information requested in several of the request items in EPA's 20th December letter, as noted in the separate response letter from Mr. Soyars.

The following response regards the EPA request Item 2.H.ii, which is quoted as follows:

> *How many reactors are proposed for the HGT treater section? Please update the process flow to show the series of reactors and how the process streams are directed to and from the reactors and the heater. Also, please include recycle process streams. Please provide supplemental information that explains how the reactors are operated and the product fractions to be obtained from each reactor. Also, please update the process flow diagram to show how the process streams connect to the LPG and "light gasoline product streams" and are directed to the product storage tanks of each product line.*

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Natgasoline Response: The HGT treater section includes one reactor. Feed to the reactor is passed through the HGT Heater in order to achieve the design reactor feed temperature. The reactor contains hydrogenation catalyst that facilitates the conversion of higher molecular weight aromatic compounds in the reactor feed to more valuable, lower molecular weight compounds for blending with the light gasoline stream to make product gasoline. The attached process flow diagram Figure 2-2 and process description reflect the other requested information.

If you have any questions regarding this submittal, please contact me by mail at wolff.balthasar@gigas.ag or by cell phone at +491713714777.

Yours sincerely,

GIGAS GmbH

W Balthasar

Dr. Wolff Balthasar

Enclosure

Natgasoline LLC Response to 20 December 2013 EPA Determination Letter
Beaumont Gas to Gasoline Plant Project
Updated Process Description and Process Flow Diagrams

The proposed new GtG facility will be composed of two main process operations: the methanol unit and the MtG unit. The methanol unit will be designed to produce 5,500 tons per day of methanol from natural gas feedstock. The MtG unit will be designed to produce 22,000 barrels per day of gasoline from methanol feedstock. The GtG Plant will also be supported by utility operations and other ancillary equipment as described below. Process flow diagrams for the methanol unit and MtG unit are provided at the end of this section as **Figures 2-1** and **2-2**, respectively.

1. METHANOL UNIT PROCESS DESCRIPTION

The proposed new methanol unit will synthesize methanol using natural gas as feedstock. Natural gas will be delivered to the methanol unit by pipeline. Pipeline pressure is not adequate for the process and compressors will increase the natural gas pressure to appropriate processing pressures. The majority of the natural gas received by the facility will be used as chemical feedstock for the methanol process, and a portion of the natural gas will be burned as fuel. The chemical feedstock portion of the natural gas will first be treated to remove sulfur compounds. After sulfur removal, the feedstock gas will be processed through a saturator that will mix the feed gas with hot process water from the distillation section and process condensate from the waste heat recovery process. Next the saturated feed gas will be processed in the pre-reformer with steam to complete the process of pre-treating the feed for steam reforming. None of these pre-treatment processes will include any fuel combustion or result in GHG or other pollutant emissions except for potential fugitive equipment leaks.

The pretreated natural gas feedstock, steam, and recycled process gases will be fed to the reforming section of the methanol unit. The reforming section will convert the methane, steam, and other compounds into synthesis gas (or "syngas"). Syngas is a gaseous mixture that includes varying concentrations of hydrogen, carbon monoxide, and carbon dioxide. The reforming section will include one primary reformer and one secondary reformer. The primary reformer will include a gas-fired combustion source (EPN: B-01001) with heat recovery including heat exchange systems to recover combustion exhaust heat, to preheat the combustion air and to superheat steam for distribution across the entire plant. The secondary reformer will be an oxygen-driven Auto-thermal Reformer (ATR), which does not include any external fired combustion heating. The ATR will process a portion of the pre-reformed gas feedstock as well as reformed gas from the steam reformer.

A plant-wide fuel gas system will receive expansion gas, synthesis purge gas, and off-gas streams from various process operations in the methanol and MtG units. The mixed fuel gas will be distributed for fuel use in the reformer, auxiliary boiler, MtG process heaters, and gasoline loading vapor combustion unit.

The syngas from the reforming section will be compressed and then sent to the methanol synthesis section of the methanol unit, which will contain three reactors to convert the syngas into crude methanol. Effluent from the first two reactor vessels (which will be water-cooled and operated in parallel) will be fed the third reactor, which will be gas-cooled. The crude methanol liquid from the reaction section will include water, liquid impurities, and dissolved gases that will be removed in downstream distillation operations.

The crude methanol stream will be routed from the synthesis section to the distillation section, where the methanol will be fed through a series of three distillation columns in order to remove the impurities, such as water, listed above. The overhead gasses (i.e., distillation off-gasses) from the first distillation column will be routed to the fuel gas system, and the stabilized methanol bottoms from the first column will be fed to the second column. The bottoms from the second column will feed the third column for additional methanol purification. The hot process water from the bottom of the third column will be routed to the feedstock saturator in the pretreatment section. The effluent stream from this process will be the combined overheads from the second and third distillation columns, which will be sent to intermediate storage. Methanol from the intermediate storage tanks will be fed to the MtG Unit or to product loading via either the methanol railcar and truck loading facilities or off-site for third party storage and loading or via pipeline direct to customers.

Methanol will be stored onsite in three intermediate methanol storage tanks. The three methanol tanks will not emit any regulated GHG pollutants, but methanol vapor emissions will be reduced by routing the vapors through a water scrubber. A second water scrubber will be used to reduce methanol vapor emissions from onsite loading of methanol into railcars and trucks, although the methanol loading will also have no associated GHG emissions.

See **Section 2.4** for more detailed information regarding planned maintenance, startup, and shutdown (MSS) activities.

2. MTG UNIT PROCESS DESCRIPTION

The proposed new MtG unit will synthesize motor-grade gasoline using methanol as feedstock. The methanol feedstock will generally be the methanol product from the proposed new methanol unit. However, the MtG unit may also process methanol from other methanol manufacturers.

The methanol feedstock will be fed through a series of MtG reactors, which convert the methanol first in a single reactor into di-methyl-ether and then in five parallel reactors into a raw gasoline and liquefied petroleum gas (LPG) mixture. There will be six gas-fired process heaters associated with the MtG reaction unit: five reactor heaters associated with each MtG reactor (EPN: H-RXH1-5) that will supply heat to the reaction, and the regeneration heater (EPN: H-REGEN), which will periodically combust a carbonaceous (i.e., coke) deposit that will build up on the reactor catalyst during operation. The emissions from the catalyst regeneration vents (EPN: V-CATREGEN) will be routed to atmosphere only during catalyst regeneration events.

After the MtG reaction portion, the combined raw gasoline and LPG mixture will be sent to separation where it will be separated into three streams: 1) an LPG stream to be sent to LPG storage, 2) a "light" gasoline stream to be sent to gasoline blending with the product stream from the heavy gasoline treatment and storage, and 3) a "heavy" gasoline stream to be routed to the heavy gasoline treatment (HGT) for further processing.

The HGT unit will process the heavy gasoline fraction from the separation portion in order to convert undesired components by hydrogenation. The HGT feed stream will be heated using the HGT Treater Heater (EPN: H-HGT), and will then pass through a reactor to convert selected components into more valuable hydrocarbon components. The HGT reaction section will produce an LPG stream that will be routed to LPG storage (comprised of five pressure storage vessels with no air pollutant emissions) and a heavy gasoline stream that will be blended with the light gasoline stream from the separation portion and routed to product gasoline storage and loading. The heavy and light gasoline streams will be blended to make product gasoline before routing the blended product gasoline to storage in any of five gasoline product storage tanks, which will have no associated GHG emissions.

Gasoline product loading will take place at the gasoline railcar and truck loading facilities. The associated gasoline loading vapors will not include any GHG compounds. The gasoline vapors will be captured and routed to a Vapor Combustion Unit (VCU). The VCU will be fired with supplemental fuel gas as needed to reduce the gasoline vapor emissions, and the combustion will result in regulated GHG emissions from the VCU. LPG product will be loaded into pressurized vessels using pressurized transfer systems without any air pollutant emissions other than potential fugitive equipment leaks. Gasoline will also be transferred to customers via pipeline.

3. SUPPORTING OPERATIONS

The proposed new GtG Plant will be supported by various auxiliary operations. An auxiliary boiler (EPN: B-14001) will be used to provide steam to the plant process units. A cooling system will be utilized that includes both air cooling and a cooling water tower (EPN: T-06001). Additionally, a plant flare (EPN: S-10001) will control routine and continuous waste gas from methanol unit compressor seal systems. The same flare will receive intermittent MSS-related waste gasses as described in Section 2.4 below (MSS emissions from the flare are associated with EPN S-1001[MSS]). The flare will also continuously burn natural gas as pilot fuel and as supplemental fuel added to the flare header system. An on-site wastewater treatment plant will receive and treat wastewater from the MeOH and MtG units.

4. PLANNED MAINTENANCE, STARTUP, AND SHUTDOWN ACTIVITIES

Planned MSS activities will occur in order to ensure the operation of the GtG Plant. Such activities will include shutdown of the processes and subsequent start-up to return to normal operations. A common flare at the site will control intermittent emissions from planned MSS activities, including combustion of synthesis gas, expansion gas, synthesis purge gas, off-gasses during methanol plant startups, and other MSS gases from maintenance-related equipment clearing (MSS emissions from the flare are associated with EPN S-1001[MSS]).

4.1 Methanol Unit Startup

The startup of the methanol unit will include periods of flaring of several different gas stream types and compositions during the methanol plant startup process. During this time, different gases will be routed in sequence to the flare. Gases routed to flare during the methanol unit startup include the following:

- Natural gas will be blended with nitrogen, circulated through reformer equipment to raise the temperature, and then routed to flare until appropriate reformer operating temperatures are achieved.
- Synthesis gas from the reformer will be routed to flare until the downstream methanol synthesis process is stabilized.
- Reformer fuel gas streams including synthesis purge gas, expansion gas, and off-gasses from the methanol and MtG units will be routed to flare until stable conditions are established for normal fuel gas processing.

The entire startup is estimated to last approximately 22 hours. Additionally, one more stream will be routed to flare when the methanol reactor catalyst is reduced from its oxidized form to its metallic form, which is normally estimated to occur only once every three to four years. During the required catalyst activation period, a mixture of nitrogen and hydrogen will be circulated in the reactor system until the temperature is high enough to cause the release of carbon dioxide (CO_2) from the catalyst into the circulated gas. The volume percent of CO_2 in the circulated gas will be maintained at optimal levels for catalyst reduction, and the nitrogen/hydrogen/CO_2 mixture will be routed to flare along with other gasses for a period of approximately 72 hours until the reduction process has been completed.

4.2 Plant-Wide Turnarounds

A plant-wide turnaround, in which the entire GtG plant equipment volume is cleared to flare, is estimated to occur up to once per year. The equipment will be drained of any remaining liquids before being degassed to the plant flare (if required). Large equipment, including vessels and heat exchangers, will not be opened to atmosphere until an acceptable level of VOC concentration remains. MSS emissions from the flare are associated with EPN S-1001[MSS].

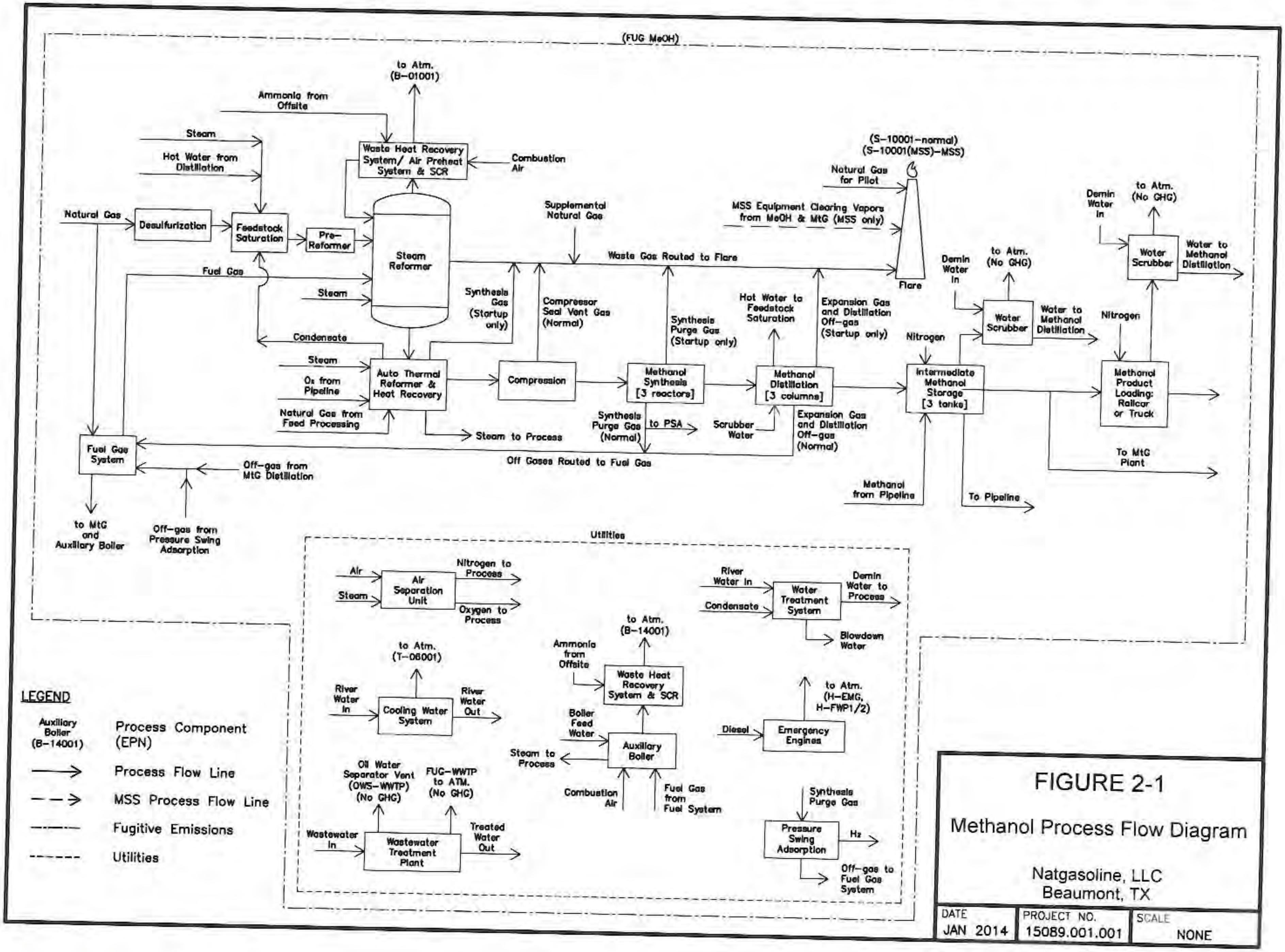

FIGURE 2-1

Methanol Process Flow Diagram

Natgasoline, LLC
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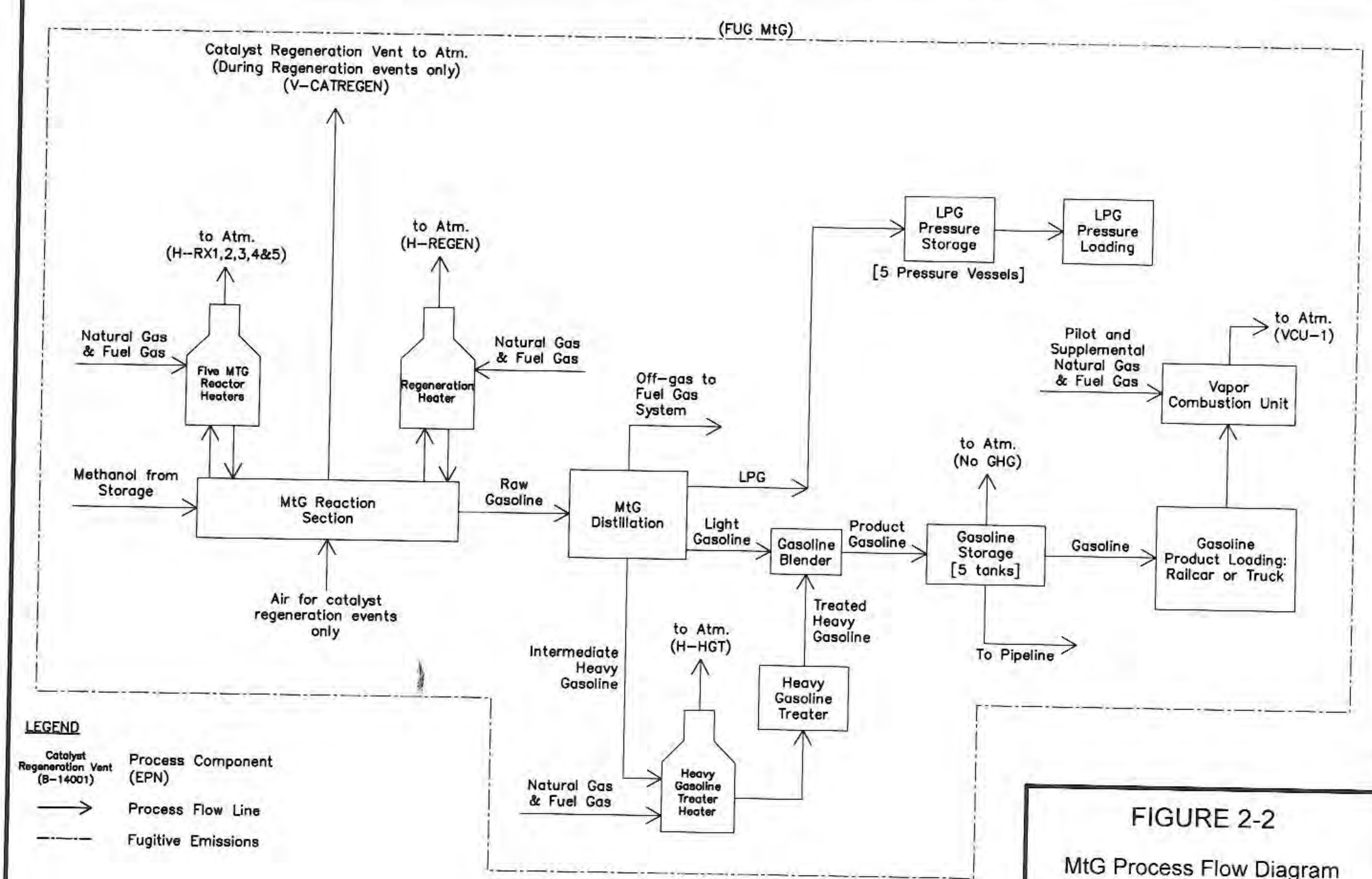

FIGURE 2-2

MtG Process Flow Diagram

Natgasoline, LLC
Beaumont, TX

DATE	PROJECT NO.	SCALE
JAN 2014	15089.001.001	NONE