APPENDIX E

Material Safety Data Sheets

Lyon County Generating Station Project
Combined Application
MPUC Docket Nos. E002/CN-25-145, G002/GS-25-154,
E002/TL-25-161 & G002/GP-25-163
May 2025

Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Natural Gas
CAS Number:	74-82-8
Synonyms/Other Means of Identification:	Methane Fuel Gas Marsh Gas Natural Gas, Dry Compressed Natural Gas
Intended Use:	Fuel
Manufacturer:	Northern Natural Gas Company 1111 South 103rd Street Omaha, Nebraska 68124
24 Hour Contact/Operations Communication Center	888-367-6671
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
SDS Information:	Phone: 402-398-7000

Section 2: Hazard(s) Identification

GHS Classification
Simple Asphyxiant

Flammable gases – Category 1	H220*
Gases under pressure – Compressed gas	H280

Label Elements

Signal word
DANGER

Hazard Statement
Extremely flammable gas. (H220)*
Contains gas under pressure. May explode if heated.
Gas may displace oxygen and cause rapid suffocation. (H280)*

Precautionary Statement(s):
Keep away from heat/sparks/open flames/hot surfaces. No smoking. (P210)*
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. (P377)*
Eliminate all ignition sources if safe to do so. (P381)*
Protect from sunlight. Store in a well-ventilated place. (P410+P403)*

Other Hazards
This product is hazardous according to OSHA 29 CFR §1910.1200. This product normally contains no hazardous components, other than ethane, as defined in OSHA 29 CFR §1910.1200 (i.e., greater than 1%). This product may contain small amounts of heavier hydrocarbons. This product and/or components present at concentrations greater than 0.1% are not carcinogenic according to OSHA, IARC, or NTP. Components of this product are normally within the ranges listed in Section 3: Composition/Information on Ingredients; however, depending on the geographical source, gas composition may vary.

** (Applicable GHS hazard code.)*

Section 3: Composition/Information on Ingredients

Component	CAS Number	Concentration (%)[1]	Exposure Limit
Methane	74-82-8	> 85	Simple asphyxiant (ACGIH)
Ethane	74-84-0	< 12	Simple asphyxiant (ACGIH)
Propane	74-98-6	< 2	1000 ppm PEL (OSHA) Simple asphyxiant ACGIH

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4: First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to gently warm the affected area. Do not use hot water. Do not rub affected area. Seek immediate medical attention.

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water for at least 15 minutes. If symptoms persist, seek medical attention. Direct contact with liquefied/pressurized gas or frost particles may produce severe and possible permanent eye damage from freeze burns. If frostbite or freezing occurs, immediately flush with plenty of lukewarm water. Do not use hot water. Do not rub eyes, seek medical attention.

Skin Contact: First aid is not normally required; however, solid and liquid forms of this material and pressurized gas can cause frostbite, blisters and redness. If frostbite occurs, immediately flush with plenty of lukewarm water to gently warm the affected area. Do not use hot water. Do not rub affected area. Seek immediate medical attention. It is good practice to wash any chemical from the skin.

Inhalation (Breathing): Exposure may produce rapid breathing, headache, dizziness, visual disturbances, muscular weakness, tremors, narcosis, unconsciousness, and death, depending on the concentration and duration of exposure. If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Take proper precautions to ensure your own safety before attempting rescue (e.g., wear appropriate respiratory protective equipment, use the buddy system). If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely. Solid and liquefied forms of this material and pressurized gas can cause freeze burns.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations. Gas can be toxic as a simple asphyxiant by displacing oxygen from the air. Lack of oxygen can be fatal. Compressed gases may create low temperatures when they expand rapidly. Leaks and uses that allow rapid expansion may cause a frostbite hazard.

Delayed: None known or anticipated (See Section 11 for information on effects from chronic exposure, if any.)

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Section 5: Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 1 **Flammability:** 4 **Instability:** 0
(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. This material forms flammable mixtures with air and can be ignited by heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices, such as cellphones, computers, calculators, and pagers that have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite,

flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Contents under pressure.

Extinguishing Media: Stop the flow of gas. Dry chemical, carbon dioxide or halon is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water can be used to cool the fire but may not extinguish the fire.

Fire Fighting Instructions: Evacuate area upwind of source. Stop the flow of gas. If gas source cannot be shut off immediately, equipment and surfaces exposed to the fire should be cooled with water to prevent overheating and explosions. For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and protecting personnel. Cool equipment exposed to fire with water, if it can be done safely.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide and other products of incomplete combustion. Oxides of nitrogen and sulfur also may be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to state and federal reporting requirements. Consult those regulations applicable to your facility or operation.

Personal Precautions: Extremely flammable
Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. Eliminate all potential sources of ignition. The use of explosion-proof electrical equipment is recommended. Handling equipment and tools must be grounded to prevent sparking. Evacuate all nonessential personnel to an area upwind. Equip responders with proper protection equipment (see Section 5) and advise of hazards. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate the area to prevent formation of flammable or oxygen-deficient atmospheres and allow the gas to evaporate. Stay away and upwind from the spill/release. Avoid direct contact with material. For large spillages, notify persons downwind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. If spill occurs on water, notify appropriate authorities. Waste natural gas in compressed-gas cylinders must be disposed of as a hazardous waste.

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Use good personal hygiene practices and wear appropriate personal protective equipment (see Section 8). Do not eat, drink or smoke when handling this product.

Contents under pressure. Gas can accumulate in confined spaces and limit oxygen available for breathing. Use only with adequate ventilation. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Handling equipment and tools must be grounded to prevent sparking. Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Electrostatic charge may accumulate and create a

hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, hydrogen sulfide (H2S) and flammability. Cold burns may occur during filling operations. Containers and delivery lines may become cold enough to present cold burn hazard.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g., carbon monoxide, oxides of sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Conditions for safe storage: Keep containers tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post No Smoking or Open Flame signs in the area. Keep away from any incompatible material (see Section 10). Protect containers against physical damage. Follow standard procedures for handling cylinders, tanks and loading/unloading. Refer to NFPA 58 and API 2510. Fixed storage containers must be grounded and bonded during transfer of product. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

Empty used-containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks or other sources of ignition. They may explode and cause injury or death. Avoid exposing any part of a compressed-gas cylinder to temperatures above 125°F (51.6°C). Gas cylinders should be stored outdoors or in well-ventilated storerooms at no lower than ground level and should be quickly removable in an emergency.

Naturally Occurring Radioactive Material (NORM): This product may contain NORM and customers should be aware of the potential for NORM within their processing system. The actual concentration of NORM in the product is dependent on the geographical source of the natural gas and storage time prior to its delivery. Process equipment (e.g., lines, filters, pumps and reaction units) may accumulate radioactive daughters and emit gamma radiation during operation. Equipment emitting gamma radiation may be presumed to be internally contaminated with alpha-emitting decay products that may be a hazard if inhaled or ingested. Consult applicable NORM regulations for worker protection guidelines and handling requirements before initiating maintenance operations that require opening contaminated equipment.

Section 8: Exposure Controls/Personal Protection

Component	ACGIH	OSHA	Other
Natural gas	1000 ppm TWA As Aliphatic Hydrocarbons C1-4	----	----

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: Both local exhaust and general room ventilation may be essential in work areas to prevent accumulation of explosive mixtures. If mechanical ventilation is used, electrical equipment must meet National Electrical Code requirements. If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required. Use explosion-proof equipment. Proper grounding procedures to avoid static electricity should be followed. Gas detectors should be used when flammable gases/vapors may be released. Emergency eyewash fountains and safety shower(s) should be available in the immediate vicinity of any potential exposure.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals. Use chemical-type goggles and face shields when handling liquefied gases. Safety glasses and/or face shields are recommended when handling high-pressure cylinders and piping systems or whenever gases are discharged.

Skin/Hand Protection: Wear suitable protective clothing. The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of protective gloves or other appropriate skin protection whenever working with chemicals. If there is potential for contact with high concentrations of compressed gas, use insulated, impervious plastic or neoprene-coated canvas gloves and protective gear (apron, face shield, etc.) to protect hands and other skin areas. Wear cryogenic gloves when working with liquefied natural gas.

Respiratory Protection: A NIOSH-approved, self-contained breathing apparatus (SCBA), or equivalent, operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5%), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use.

Work/Hygiene Practices: Emergency eyewash fountains and safety shower(s) for first aid treatment of potential freeze burns should be available in the vicinity of any significant exposure from compressed gas release. Personnel should not enter areas where the atmosphere is below 19.5% volume oxygen without special procedures/equipment.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Colorless
Physical Form:	Compressed Gas
Odor:	Odorless to slight hydrocarbon. Various Northern Natural Gas branch lines are odorized. Odorized gas has a rotten egg or garlic type odor.
Odor Threshold:	No data available
pH:	Not applicable
Gas Density (air=1):	0.6
Specific Gravity:	Not applicable - Gas
Initial Boiling Point/Range:	-259°F (-162°C)
Melting/Freezing Point:	No data available
Solubility in Water:	Very slightly soluble
Partition Coefficient (N-octanol/water) (Kow):	No data available
Percent Volatile:	100%
Flammability (solid, gas):	Extremely Flammable
Evaporation Rate:	Gas at normal ambient conditions
Flash Point:	-306°F (-187.8°C)
Test Method:	(estimate)
Lower Explosive Limits (vol % in air):	5.0%
Upper Explosive Limits (vol % in air):	15.0%
Auto-ignition Temperature:	1004°F (540°C)

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use

Conditions to Avoid: Avoid high heat, open flames and all possible sources of ignition. Explosive reaction can occur between natural gas and oxidizing agents. Spontaneous ignition with chlorine dioxide. Heat will increase pressure in the storage tank.

Materials to Avoid (Incompatible Materials): Avoid contact with acids, aluminum chloride, barium peroxide, chlorine, chlorine dioxide, halogens and oxidizing agents.

Hazardous Combustion or Decomposition Products: Combustion may produce carbon monoxide, carbon dioxide and other harmful substances.

Hazardous Polymerization: Not known to occur

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful	Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms	>20,000 ppm (gas)
Skin Absorption	Skin absorption is not anticipated		Not applicable
Ingestion (Swallowing)	Ingestion is not anticipated		Not applicable

Aspiration Hazard: Not applicable

Skin Corrosion/Irritation: Skin exposure is not anticipated. Solid and liquid forms of this material and pressurized gas can cause frostbite, blisters and redness of skin.

Serious Eye Damage/Irritation: Not expected to be irritating. Direct contact with liquefied/pressurized gas or frost particles may produce severe and possible permanent eye damage from freeze burns.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiates and can cause anesthetic effects at high concentrations. Symptoms of overexposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia (inadequate oxygen), rapid breathing, cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death.

Skin Sensitization: Skin contact is not anticipated.

Respiratory Sensitization: Not expected to be a respiratory sensitizer

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure

Carcinogenicity: Not expected to cause cancer
This substance is not listed as a carcinogen by IARC, NTP or OSHA.

Germ Cell Mutagenicity: Not expected to cause heritable genetic effects

Reproductive Toxicity: Not expected to cause reproductive toxicity

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

Section 12: Ecological Information

Ecotoxicity: Petroleum gases will readily evaporate from the surface; they would not be expected to have significant adverse effects in the aquatic environment.
Classification: No classified hazards

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process. Hydrogen sulfide, if present in refinery gas streams, will be rapidly oxidized in water and insoluble sulfides precipitated from water when metallic radicals are present.

Bioaccumulative Potential: This product is not expected to bioaccumulate.

Mobility in Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which they will be found. In air, these hydrocarbons undergo photo degradation by reaction with hydroxyl radicals with half-lives ranging from 3.2 days for n-butane to 7 days for propane.

Other Adverse Effects: None anticipated

Section 13: Disposal Considerations

This material is a gas and would not typically be managed as a waste.

Waste natural gas in compressed-gas cylinders must be disposed of as a hazardous waste.

Section 14: Transport Information

U.S. Department of Transportation (DOT)

Proper Shipping Name:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Non-Bulk Package Labeling:	Flammable gas
Bulk Package/Placard Marking:	Flammable gas/1971
Packaging - References:	49 CFR §173.306; §173.302; §173.302 ***(Exceptions; Non-bulk; Bulk)***
Hazardous Substance:	None
Emergency Response Guide:	115

International Maritime Dangerous Goods (IMDG)

Shipping Description:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas
Placards/Marking (Bulk):	Flammable gas/1971
Packaging - Non-Bulk:	P200
EMS:	F-D, S-U

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID:	UN1971
Proper Shipping Name:	Natural gas, compressed
Hazard Class/Division:	2.1
Subsidiary risk:	None
Packing Group:	None
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas, Cargo Aircraft Only
ERG Code:	10L

Section 15: Regulatory Information

Federal Clean Water Act: Any spill or release of liquid oils associated with this product into “navigable waters” (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802). Also, contact appropriate state and local regulatory agencies as required.

CERCLA Section 103: The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification to the National Response Center of a release of quantities of Hazardous Substances equal to or greater than the reportable quantities in 40 CFR 302.4. The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause that exempts natural gas, natural gas liquids and any indigenous components of such (e.g. benzene) from the CERCLA Section 103 reporting requirements.

CERCLA/SARA – Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 §CFR 372.

CERCLA/SARA – Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	No
Fire Hazard:	Yes
Pressure Hazard:	Yes
Reactive Hazard:	No

CERCLA/SARA – Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 §CFR 372.

EPCRA Section 304: The emergency Planning and Community Right-to-Know Act (EPCRA) requires emergency planning based on Threshold Planning Quantities and release reporting based on reportable quantities in 40 CFR §355. There are no known components present in this product that would require reporting under this statute.

EPA (CERCLA) Reportable Quantity (in pounds):
EPA's Petroleum Exclusion applies to this material – (CERCLA 101(14)).

International Hazard Classification

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

WHMIS Hazard Class:
A - Compressed Gas
B1 - Flammable Gases

National Chemical Inventories
All components either are listed on the US TSCA Inventory, or are not regulated under TSCA.
All components either are on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

Section 16: Other Information

Date of Issue:	04/02/2012
Status:	FINAL
Previous Issue Date:	11/19/2012
Revised Sections or Basis for Revision:	This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR §1910.1200.

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists
CASRN = Chemical Abstracts Service Registry Number
CEILING = Ceiling Limit (15 minutes)
CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act
EPA = Environmental Protection Agency
GHS = Globally Harmonized System
IARC = International Agency for Research on Cancer
INSHT = National Institute for Health and Safety at Work
IOPC = International Oil Pollution Compensation
LEL = Lower Explosive Limit
NE = Not Established
NFPA = National Fire Protection Association
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit (OSHA)
SARA = Superfund Amendments and Reauthorization Act
STEL = Short Term Exposure Limit (15 minutes)

TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average (8 hours)
UEL = Upper Explosive Limit
WHMIS = Worker Hazardous Materials Information System (Canada)

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