AIR POLLUTION CONTROL
PERMIT TO CONSTRUCT

Pursuant to Chapter 23.1-06 of the North Dakota Century Code, and the Air Pollution Control Rules of the State of North Dakota (Article 33.1-15 of the North Dakota Administrative Code), and in reliance on statements and representations heretofore made by the owner designated below, a Permit to Construct is hereby issued authorizing such owner to construct and initially operate the source unit(s) at the location designated below. This Permit to Construct is subject to all applicable rules and orders now or hereafter in effect of the North Dakota Department of Environmental Quality (Department) and to any conditions specified below:

I. General Information:
   A. Permit to Construct Number: ACP-18150 v1.0
   B. Source:
      1. Name: Marathon Dickinson Refinery
      2. Location: 3815 - 116th Avenue SW
         Dickinson, North Dakota
      3. Source Type: Renewable Diesel Plant
      4. Existing Equipment at Marathon Dickinson Refinery to be Modified:

<table>
<thead>
<tr>
<th>Emission Unit Description</th>
<th>Emission Unit (EU)</th>
<th>Emission Point (EP)</th>
<th>Air Pollution Control Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen plant heater rated at a maximum of 247.0 MMBtu/hr and fired on gaseous fuels</td>
<td>R-2051</td>
<td>19</td>
<td>Ultra-Low NO\textsubscript{x} Burner (ULNB)</td>
</tr>
<tr>
<td>Stripped sour water off-gas incinerator</td>
<td>H-1301</td>
<td>15</td>
<td>None \textsuperscript{A}</td>
</tr>
<tr>
<td>Refinery flare</td>
<td>PK-2402</td>
<td>11</td>
<td>N/A</td>
</tr>
<tr>
<td>Process equipment leaks in VOC service</td>
<td>FUG-3</td>
<td>FUG-3</td>
<td>Leak detection and repair practices</td>
</tr>
</tbody>
</table>

\textsuperscript{A} PK-2402 serves as back-up emissions control when H-1301 is unavailable
5. Equipment Transferred from Patterson Rail Terminal (PRT) to Marathon Dickinson Refinery:

<table>
<thead>
<tr>
<th>Emission Unit Description</th>
<th>Emission Unit (EU)</th>
<th>Emission Point (EP)</th>
<th>Air Pollution Control Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRT Renewable Naphtha Transloading</td>
<td>P-9100</td>
<td>26</td>
<td>Vapor Balance, Submerged Fill Pipe</td>
</tr>
<tr>
<td>PRT Rail Loading Rack - Renewable Diesel</td>
<td>P-9200</td>
<td>27</td>
<td>Submerged Fill Pipe</td>
</tr>
<tr>
<td>PRT Process equipment leaks in Renewable VOC service</td>
<td>FUG-5</td>
<td>FUG-5</td>
<td>None</td>
</tr>
<tr>
<td>PRT 90,000-barrel renewable diesel storage tank</td>
<td>TK-9101</td>
<td>17</td>
<td>Submerged Fill Pipe</td>
</tr>
<tr>
<td>PRT 90,000-barrel renewable diesel storage tank</td>
<td>TK-9102</td>
<td>17</td>
<td>Submerged Fill Pipe</td>
</tr>
</tbody>
</table>

C. Owner/Operator ( Permit Applicant):

1. Name: Tesoro Refining & Marketing Company LLC (Owned by Marathon Petroleum Company)
2. Address: 3815 - 116th Avenue SW Dickinson, North Dakota
3. Application Dates: December 21, 2021, and July 21, 2022

II. Conditions: This Permit to Construct modifies and incorporates the above-mentioned equipment at the Marathon Dickinson Refinery. The source is subject to all applicable rules, regulations, and orders now or hereafter in effect of the North Dakota Department of Environmental Quality and to the conditions specified below.

A. Emission Limits: Modified emission limits and incorporated equipment from the operation of the source unit(s) identified in Items I.B.4 and I.B.5, respectively, of this Permit to Construct (hereafter referred to as "permit") are as follows. Source units not listed are subject to the applicable emission limits specified in PTC18016 Amendment No. 2 and the North Dakota Air Pollution Control Rules.

<table>
<thead>
<tr>
<th>Emission Unit Description</th>
<th>EU</th>
<th>EP</th>
<th>Pollutant / Parameter</th>
<th>Emission Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen plant heater rated at a maximum of 247.0 MMBtu/hr and fired on gaseous fuels</td>
<td>R-2051</td>
<td>19</td>
<td>CO</td>
<td>Condition II.B.2</td>
</tr>
<tr>
<td>Stripped sour water off-gas incinerator</td>
<td>H-1301</td>
<td>15</td>
<td>Operation</td>
<td>Condition II.C</td>
</tr>
<tr>
<td>Process equipment leaks in VOC service</td>
<td>FUG-3</td>
<td>FUG-3</td>
<td>VOC</td>
<td>Condition II.D</td>
</tr>
<tr>
<td>Emission Unit Description</td>
<td>EU</td>
<td>EP</td>
<td>Pollutant / Parameter</td>
<td>Emission Limit</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>--------</td>
<td>----</td>
<td>-----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>PRT Renewable Naphtha Transloading</td>
<td>P-9100</td>
<td>26</td>
<td>VOC</td>
<td>Condition II.E</td>
</tr>
<tr>
<td>PRT Rail Loading Rack - Renewable Diesel</td>
<td>P-9200</td>
<td>27</td>
<td>VOC</td>
<td>Condition II.E</td>
</tr>
<tr>
<td>PRT Process equipment leaks in Renewable VOC service</td>
<td>FUG-5</td>
<td>FUG-5</td>
<td>VOC</td>
<td>Condition II.D</td>
</tr>
<tr>
<td>PRT 90,000-barrel renewable diesel storage tank</td>
<td>TK-9101</td>
<td>17</td>
<td>VOC</td>
<td>Condition II.F</td>
</tr>
<tr>
<td>PRT 90,000-barrel renewable diesel storage tank</td>
<td>TK-9102</td>
<td>17</td>
<td>VOC</td>
<td>Condition II.F</td>
</tr>
</tbody>
</table>

B. **Hydrogen plant heater (EU R-2051):** Changes to conditions applicable to EU R-2051 are incorporated into this permit. These conditions were established in PTC18016 Amendment No. 2 and are now revised to the following:

1. Heat input capacity: The maximum heat input capacity is amended from 220 MMBtu/hr to 247 MMBtu/hr.
2. Carbon monoxide (CO) emissions limit: The Permittee shall not discharge to the atmosphere any emissions of CO in excess of 0.020 lb/MMBtu higher heating value basis determined by compliance testing.

C. **Incinerator (EU H-1301):** The permittee shall operate EU H-1301 to combust the hydrogen sulfide (H₂S) contained in the sour water stripper (SWS) off-gas. At times when EU-1301 is unavailable, off-gas shall be routed to the refinery flare (PK-2402). This condition replaces PTC18016 Amendment No. 2 Condition II.M.

D. **Fugitive Emissions Monitoring Program:** The permittee submitted a written program of operating practices to identify and repair leaks in a timely manner. This program has been approved by the Department. The permittee shall comply with the fugitive emissions monitoring program included as an attachment to this permit. This fugitive emissions monitoring program replaces PTC18016 Amendment No. 2 Condition II.F.2.

E. **Truck and Rail Loading and Transloading (EU P-9100 and EU P-9200):** For light oil (i.e., crude oil, gasoline, naphtha) and heavy oil (i.e., diesel, atmospheric tower bottoms) loading and transloading activities, the permittee shall meet the following control requirements as applicable. If the previous load into the truck or railcar was in light oil service or cannot otherwise be determined to be in heavy oil service, then the requirements for light oil service shall be followed for that loading activity.

1. Truck Loading
a. Heavy oil service: operate with a submerged filling arm during loadout operation in accordance with NDAC 33.1-15-07-01.3.

b. Light oil service: operate with a submerged filling arm and vapor combustion unit (EU VCU-1) during loadout operation in accordance with NDAC 33.1-15-07-01.3.

2. Rail Loading and Transloading

a. Heavy oil service: operate with a submerged filling arm during loadout and transloading operations in accordance with NDAC 33.1-15-07-01.3.

b. Light oil service: operate with a submerged filling arm and vapor balance line to return the vapors to the truck or vessel during loadout and transloading operations in accordance with NDAC 33.1-15-07-01.3.

F. Storage Tanks: All stationary volatile organic compounds storage tanks shall be equipped with a submerged fill pipe in accordance with NDAC 33.1-15-07-01.3.

G. Best Management Practices: At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.


I. Permit Invalidation: This permit shall become invalid if construction is not commenced within eighteen months after issuance of such permit, if construction is discontinued for a period of eighteen months or more; or if construction is not completed within a reasonable time.

J. Annual Emission Inventory/Annual Production Reports: The owner/operator shall submit an annual emission inventory report and/or an annual production report upon Department request, on forms supplied or approved by the Department.
K. **Source Operations:** Operations at the installation shall be in accordance with statements, representations, procedures and supporting data contained in the initial application, and any supplemental information or application(s) submitted thereafter. Any operations not listed in this permit are subject to all applicable North Dakota Air Pollution Control Rules.

L. **Alterations, Modifications or Changes:** Any alteration, repairing, expansion, or change in the method of operation of the source which results in the emission of an additional type or greater amount of air contaminants or which results in an increase in the ambient concentration of any air contaminant, must be reviewed and approved by the Department prior to the start of such alteration, repairing, expansion or change in the method of operation.

M. **Air Pollution from Internal Combustion Engines:** The permittee shall comply with all applicable requirements of NDAC 33.1-15-08-01 – Internal Combustion Engine Emissions Restricted.

N. **Recordkeeping:** The owner/operator shall maintain any compliance monitoring records required by this permit or applicable requirements. The owner/operator shall retain records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report or application. Support information may include all calibration and maintenance records and all original strip-chart recordings/computer printouts for continuous monitoring instrumentation, and copies of all reports required by the permit.

O. **Nuisance or Danger:** This permit shall in no way authorize the maintenance of a nuisance or a danger to public health or safety.

P. **Malfunction Notification:** The owner/operator shall notify the Department of any malfunction which can be expected to last longer than twenty-four hours and can cause the emission of air contaminants in violation of applicable rules and regulations.

Q. **Operation of Air Pollution Control Equipment:** The owner/operator shall maintain and operate all air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.

R. **Transfer of Permit to Construct:** The holder of a permit to construct may not transfer such permit without prior approval from the Department.
S. **Right of Entry:** Any duly authorized officer, employee or agent of the North Dakota Department of Environmental Quality may enter and inspect any property, premise or place at which the source listed in Item I.B of this permit is located at any time for the purpose of ascertaining the state of compliance with the North Dakota Air Pollution Control Rules. The Department may conduct tests and take samples of air contaminants, fuel, processing material, and other materials which affect or may affect emissions of air contaminants from any source. The Department shall have the right to access and copy any records required by the Department’s rules and to inspect monitoring equipment located on the premises.

T. **Other Regulations:** The owner/operator of the source unit(s) described in Item I.B of this permit shall comply with all State and Federal environmental laws and rules. In addition, the owner/operator shall comply with all local burning, fire, zoning, and other applicable ordinances, codes, rules and regulations.

U. **Permit Issuance:** This permit is issued in reliance upon the accuracy and completeness of the information set forth in the application. Notwithstanding the tentative nature of this information, the conditions of this permit herein become, upon the effective date of this permit, enforceable by the Department pursuant to any remedies it now has, or may in the future have, under the North Dakota Air Pollution Control Law, NDCC Chapter 23.1-06.

V. **Odor Restrictions:** The owner/operator shall not discharge into the ambient air any objectionable odorous air contaminant which is in excess of the limits established in NDAC 33.1-15-16.

W. **Sampling and Testing:** The Department may require the owner/operator to conduct tests to determine the emission rate of air contaminants from the source. The Department may observe the testing and may specify testing methods to be used. A signed copy of the test results shall be furnished to the Department within 60 days of the test date. The basis for this condition is NDAC 33.1-15-01-12 which is hereby incorporated into this permit by reference. To facilitate preparing for and conducting such tests, and to facilitate reporting the test results to the Department, the owner/operator shall follow the procedures and formats in the Department’s Emission Testing Guideline.

FOR THE NORTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL QUALITY

Date________________________  By____________________________

James L. Semerad
Director
Division of Air Quality
A. Introduction

The fugitive volatile organic compounds (VOC) emissions monitoring program detailed in this Attachment shall be implemented on the fugitive process equipment in VOC service at the Marathon Dickinson Refinery, refinery site (EU FUG-3). This fugitive VOC emissions monitoring program is referred to as the leak detection and repair (LDAR) program. Fugitive process equipment at the Dickinson Rail Terminal (EU FUG-4) and the Patterson Rail Terminal (EU FUG-5) are not subject to this LDAR program, however, leaks will be identified during regular operator rounds via audible, visual, and olfactory (AVO) detection methods.

The protocols included in this LDAR program helps ensure potential emissions attributed to these processes are accurately accounted for.

For the purposes of this attachment, “leak” means a screening value at of above the leak definition presented in Table 1, issues identified through via AVO detection, and/or emissions imaged by an optical gas imaging device.

B. Work Practice Standards

1. Applicable Equipment

   Equipment subject to this protocol includes pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and instrumentation systems at the refinery site that contain or contact process fluid that is at least 10 percent VOC by weight.

2. Monitoring

   Equipment in gas/vapor or light liquid service\(^1\) shall be monitored by EPA Method 21 using the internal and leak definitions shown in Table 1.

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Leak Definition (ppm)</th>
<th>Monitoring Frequency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve</td>
<td>500</td>
<td>Quarterly</td>
<td>--</td>
</tr>
<tr>
<td>Connector</td>
<td>500</td>
<td>Annual (^{[1]})</td>
<td>--</td>
</tr>
</tbody>
</table>

\(^1\) Light liquid service is defined as equipment containing materials for which the vapor pressure of one or more organic component is greater than 0.3 kPa at 20°C (1.2 in. H\(_2\)O at 68°F), the total concentration of pure organic components has a vapor pressure greater than 0.3 kPa at 20°C (1.2 in. H\(_2\)O at 68°F) is greater than or equal to 20 percent by weight, and the fluid is liquid at operating conditions. Equipment is considered in gas/vapor service if the equipment contains process fluid in gaseous state at operating conditions.
<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Leak Definition (ppm)</th>
<th>Monitoring Frequency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Release Valve (PRV)</td>
<td>500</td>
<td>Annual [1]</td>
<td>No Detectible Emissions (NDE)</td>
</tr>
<tr>
<td>Compressor</td>
<td>500</td>
<td>Annual</td>
<td>NDE</td>
</tr>
<tr>
<td>Pump</td>
<td>2,000</td>
<td>Monthly</td>
<td>Pumps are AVO monitored weekly</td>
</tr>
</tbody>
</table>

[1] PRVs and compressors are required to be operated in NDE service, and a monitoring frequency is not prescribed. Annual verification of NDE status is required.

Equipment in heavy liquid service\(^2\) does not require Method 21 monitoring. If a leak is found, then repair requirements established in Section B.3 – Leak Repair, shall be employed.

Under certain circumstances, some equipment may be exempt from monitoring or subject to reduced monitoring according to the following provisions.

a. **Unsafe to Monitor**

Valves and connectors are considered unsafe to monitor (UTM) if monitoring personnel would be exposed to imminent danger while monitoring. A monitoring plan for all UTM components must be drafted to require monitoring of the valves as frequently as practicable during safe to monitor times, but not more frequently than the periodic monitoring schedule otherwise applicable.

b. **Difficult to Monitor**

Valves are considered difficult to monitor (DTM) if the act of monitoring would require monitoring personnel to be elevated more than 2 meters from a walking surface, and the total number of DTM valves within a process unit does not exceed 3%. DTM components must be monitored annually.

c. **Inaccessible**

Connectors are considered inaccessible if they are ceramic, ceramic lined, buried, fully obstructed, permanently insulated, greater than 25 feet off the ground, or located such that the monitoring personnel must be elevated greater than 2 meters above a walking surface to monitor. Inaccessible connectors are exempt from monitoring. If an inaccessible connector displays evidence of an audible, visual, or olfactory (AVO) leak, repair must be attempted within 5 days of leak detection with a successful repair within 15 days of leak detection.

3. **Leak Repair**

If an instrument reading exceeds the leak limits defined in Table 1, a first attempt must be

\(^2\) Heavy liquid service is defined as not in light liquid or gas/vapor service.
made within five days of leak discovery. A successful attempt at repair must be made within fifteen days of leak discovery. A successful leak repair is completed if EPA Method 21 readings record a value less than the leak definitions shown in Table 1. If repair cannot be completed within fifteen days of leak discovery, the component may be placed on delay of repair (DOR) if any of the following conditions are met:

- Repair is technically infeasible without a process unit shutdown and is repaired by the end of the subsequent process unit shutdown.
- Equipment is isolated from the process and does not remain in VOC service.
- Emissions from leaking equipment during the DOR would be less than those purged as a result of repair while equipment remains in service.
- Replacement equipment stores are regularly stocked but have been depleted of materials necessary to repair the equipment.

Leaks detected during monitoring will be documented in a leak log, and a weatherproof indicator listing unique leak ID, inspector ID, leak date, and leak time will be placed on the leaking component. A first attempt at repair will be performed within five days of detection with a successful repair and verification performed within fifteen days of detection. A successful repair must be verified by the same detection method that identified the leak.

If repair is infeasible without a process unit shutdown, the component may be placed on DOR within fifteen days of leak discovery according to Section B.3.a. DORs must be repaired during the next process unit shutdown if the shutdown renders the component feasible and safe to repair. Repair verification will be performed within fifteen days of start-up.

a. Delay of Repair

A determination that a component must be placed on DOR must be made within fifteen days of leak discovery with corresponding DOR documentation (see Section C – Recordkeeping) completed as well as authorization of the DOR by the Dickinson Refinery Facility Manager, Day Foreman, or Shift Supervisor. Equipment that is associated with a DOR must be repaired during the subsequent process unit shutdown, and verification of repair must be completed within fifteen days of the component returning to service. All DOR documentation must be maintained in a central location, such as the LDAR database. If the Dickinson Refinery Facility Manager, Day Foreman, or Shift Supervisor is available to authorize DOR within the appropriate timeframe, the Dickinson Refinery Facility Manager, Day Foreman, or Shift Supervisor may designate another person to authorize DORs.

4. Management of Change

When the facility issues a management of change (MOC) at the refinery site, the LDAR Coordinator must review the MOC documentation to determine if changes impact this
LDAR program. This may include equipment additions, reconfigurations, or removals. Changes to the facility impacting LDAR applicable components must be communicated to the LDAR contractor prior to introducing VOC to the impacted equipment with follow up communication of the date that VOC was introduced to the equipment so that it may be monitored within the appropriate timeframe.

C. Recordkeeping

Marathon Dickinson Refinery shall maintain the following records for a period of at least five years:

1) During each monitoring event, for each component:
   a. Component identification number;
   b. Inspection date;
   c. Inspection start time;
   d. Inspection end time;
   e. Background reading in ppm;
   f. Maximum reading in ppm;
   g. Inspector identification; and
   h. Instrument identification.

2) For each leak:
   a. Component identification number;
   b. First attempt date and time;
   c. Repair date and time;
   d. Successful repair maximum reading in ppm;
   e. Inspector identification;
   f. Instrument identification; and
   g. Repair method(s).

3) Delay of repair documentation, including:
   a. Reason for delay of repair;
   b. Date of expected successful repair;
   c. Date of process unit shutdowns occurring during delay of repair; and
   d. Date(s) of successful repair and confirmation of repair.

4) Non-standard monitoring documentation, including:
   a. DTM monitoring plan;
   b. UTM justification;
   c. UTM monitoring plan.

5) Up-to-date process and instrumentation diagrams (P&ID) defining process streams subject to this monitoring program.
D. Fugitive Emissions Calculations (Potential and Actual)

1. Potential to Emit

The potential to emit from refinery gas and light liquid equipment was calculated using EPA’s Protocol for Equipment Leak Emission Estimates, Table 2-10 (Petroleum Industry Leak Rate/Screening Value Correlations) and Table 2-12 (Default-Zero Values: Petroleum Industry). Emission rates were calculated using correlation equations at an annualized average leak rate of 10 ppm at 94%, default zero component emission factors applied at 5.5%, and correlation equations with a leak rate of 10,000 ppm calculated using the correlation equation at 0.5% applied to approximate equipment component counts.

2. Actual Emissions

Refinery actual emissions for gas and light liquid equipment shall be calculated using the results of EPA Method 21 monitoring and EPA’s Protocol for Equipment Leak Estimates Tables 2-10 (Petroleum Industry Leak Rate/Screening Value Correlations), Table 2-12 (Default-Zero Values: Petroleum Industry), and Table 2-14 (10,000 ppmv and 100,000 ppmv Screening Value Pegged Emission Rates for the Petroleum Industry, 10,000 ppm pegged emission rates). EPA Method 21 monitoring results shall be applied to the time period between the current monitoring event and prior monitoring event and calculated within the LDAR database.

Refinery actual emissions for heavy liquid equipment shall be calculated using <10,000 ppm emission factors in Table 2-6 (Refinery Screening Ranges Emission Factors) for most component types and using Table 2-2 (Refinery Average Emission Factors) for other component types where a heavy liquid factor is not available in Table 2-6 (i.e., drains).