Deepwater Port License Application for the

Texas Gulf Terminals Project

Volume II – Environmental Evaluation (Public)

Section 14:

Safety and Security

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ACRONYMS AND ABBREVIATIONS

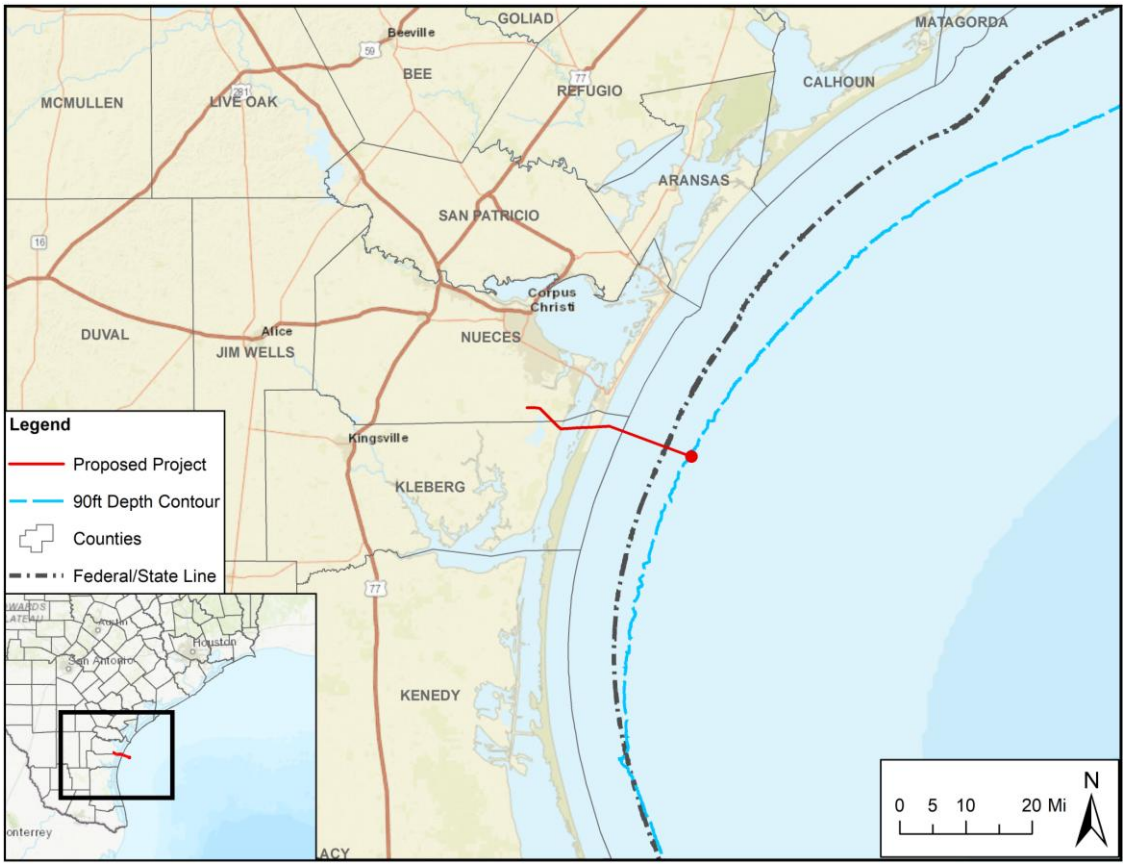
API	American Petroleum Institute
Applicant	Texas Gulf Terminals Inc.
ATBA	Areas to be Avoided
bbls	barrels
BOEM	Bureau of Ocean Energy Management
bph	barrels per hour
BSEE	Bureau of Safety & Environmental Enforcement
CALM	Catenary Anchor Leg Mooring
CFR	Code of Federal Regulations
COC	Certificate of Compliance
COI	Certificate of Insurance
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea, 1972
DWP	deepwater port
DWPA	Deepwater Port Act of 1974, as amended
DWPL	Deepwater Port License
e.g.	exempli gratia [Latin for 'for example']
FSP	Facility Security Plan
ft.	Feet
GOM	Gulf of Mexico
gpm	gallons per minute
HDD	Horizontal Directional Drilling
IACS	International Association of Classification Societies
ILO	International Labor Organization
IMO	International Maritime Organization
ISCC	International Ship Security Certificate
ISGOTT	International Safety Guide for Oil Tankers & Terminals
ISM Code	International Safety Management Code
ISPS	IMO International Ship and Port Facility Security Code
km	kilometer
m	meter
MARAD	Maritime Administration
MARPOL	The International Convention for the Prevention of Pollution from Ships,
MARSEC	U.S. Coast Guard Maritime Security Levels
MHT	mean high tide
MTMSA	Marine Terminal Management and Self-Assessment
MTOCT	Marine Terminal and Operator Competence Guide
NAA	No-anchoring Area
NOAA	National Oceanic and Atmospheric Administration
OCIMF	Oil Companies International Marine Forum
OCS	Outer Continental Shelf
OSHA	Occupational Health and Safety Administration
OSTF	onshore storage terminal facility

PHMSA	Pipeline and Hazardous Materials Safety Administration
PLEM	pipeline end manifold
ppm	parts per million
Project	Texas Gulf Terminals Project
SDS	Safety data sheet
SOLAS	IMO Convention on the Safety of Life at Seas
SPCC	Spill Prevention, Control, and Countermeasure Plan
SPM	single point mooring
TGTI	Texas Gulf Terminals Inc
U.S.	United States [of America]
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USCG	United States Coast Guard
USDOT	US Department of Transportation
USEPA	United States Environmental Protection Agency
VLCC	very large crude carrier
WCD	Worst Case Discharge

PROJECT OVERVIEW

Texas Gulf Terminals Inc. (TGTI; also referred to as Applicant) is proposing to construct and operate a deepwater port (DWP), associated pipeline infrastructure, booster station, and an onshore storage terminal facility (OSTF), collectively known as the Texas Gulf Terminals Project (Project), for the safe, efficient and cost-effective export of crude oil to support economic growth in the United States of America (U.S.). The Applicant is filing this Deepwater Port License (DWPL) application to obtain a license to construct, own, and operate the Project pursuant to the Deepwater Port Act of 1974, as amended (DWPA), and in accordance with the U.S. Coast Guard (USCG) and the Maritime Administration's (MARAD) implementing regulations.

The Applicant is proposing to construct and operate the Project to allow direct and full loading of very large crude carriers (VLCC) at the DWP, via a single point mooring (SPM) buoy system. The proposed Project consists of the construction of a DWP, onshore and inshore pipeline infrastructure, offshore pipelines, and an OSTF. The proposed DWP would be positioned outside territorial seas of the Outer Continental Shelf (OCS) Mustang Island Area TX3 (Gulf of Mexico [GOM]), within the Bureau of Ocean Energy Management (BOEM) block number 823. The proposed DWP is positioned at Latitude N27° 28' 42.60" and Longitude W97° 00' 48.43", approximately 12.7 nautical miles (nm) (14.62 statute miles [mi]) off the coast of North Padre Island in Kleberg County, Texas. Refer to the Vicinity Map depicting the location of the proposed Project.



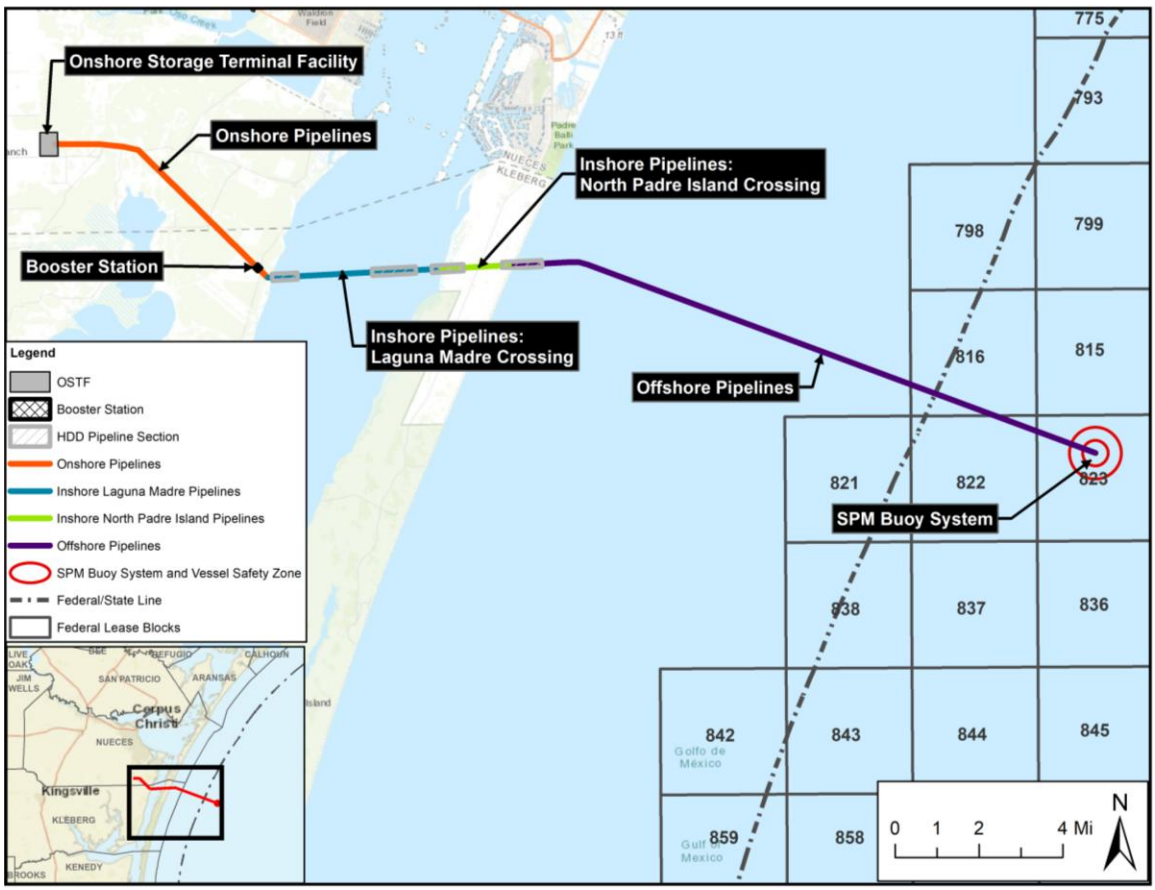
Vicinity Map

The proposed Project involves the design, engineering, and construction of a DWP, 26.81 miles of pipeline infrastructure, booster station, and an OSTF. For the purposes of this DWPL application, the proposed Project is described in three distinguishable segments by locality including "offshore", "inshore", and "onshore".

Onshore Project components includes an approximate 150-acre (ac) (60.7 hectares [ha]) OSTF, an 8.25 ac (3.3 ha) booster station, and approximately 6.36 mi of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF located in Nueces County, to the booster station located in Kleberg County, and continue to the landward side of the mean high tide (MHT) line of the Laguna Madre. The proposed OSTF will serve as the primary collection and storage terminal of crude oil to be directly pumped through the proposed pipeline infrastructure to the DWP. Outbound flow rates from the OSTF to the DWP are anticipated to be approximately 60,000 barrels per hour (bph).

Inshore components associated with the proposed Project are defined as those components located between the western Laguna Madre MHT line and the MHT line located at the interface of North Padre Island and the GOM; this includes approximately 5.74 mi of two (2) new 30-inch-diameter crude oil pipelines and an onshore block valve station located on North Padre Island. The onshore valve station will serve as the primary conjunction between the proposed onshore and offshore pipeline infrastructure.

Offshore components associated with the proposed Project include the DWP and offshore pipelines. Principle structures associated with the proposed DWP includes one SPM buoy system consisting of the SPM buoy, pipeline end manifold (PLEM), sub-marine hoses, mooring hawsers, and floating hoses to allow for the loading of crude oil to vessels moored at the proposed DWP. The proposed SPM buoy system will be of the Catenary Anchor Leg Mooring (CALM) type permanently moored with a symmetrically arranged six-leg anchor chain system extending to pile anchors fixed on the seafloor. Offshore pipeline infrastructure associated with the proposed Project consist of approximately 14.71 mi of two (2) new 30-inch-diameter pipelines extending from MHT line on North Padre Island to the SPM buoy system located at the proposed DWP. Refer to the Project Components Map below for a depiction of the location of the Project components discussed above.



Project Component Map

14.0 SAFETY AND SECURITY

The storage, transport and transfer of crude oil through pipeline and offshore oil tanker requires safety and security risks that must be addressed by the proposed Project. This section provides an overview the laws and regulations for safe and reliable operation of the proposed Project. Due to the location of the various Project components, safety is discussed in terms of onshore, inshore and offshore components. Onshore refers to areas located landward from the western shore of the Laguna Madre. Inshore refers to areas located landward from the mean high tide (MHT) line of North Padre Island. Offshore refers to areas located seaward into the Gulf of Mexico (GOM) from the MHT line of North Padre Island.

Unlike preceding section which discuss environmental consequences of construction, operation, or decommissioning phases of the Project, this section is limited to design, engineering, and operational components of the Project's infrastructure that, directly or indirectly, would have the potential to impact public safety. The purpose of this section is to address Safety and Security in accordance with National Environmental Policy Act (NEPA). Safety of personnel working at the OSTF or at the SPM buoy system via assistance vessels will be fully addressed in the approved Operations Manual prior to commencement of operations and is beyond the scope of this document.

14.1 Applicable Laws and Regulations

14.1.1.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires all federal agencies to consider the potential environmental consequences of their proposals, document the environmental analysis, and make this information available to the public for comment prior to making a permit decision on any major federal action. Issuing permits for construction of the Project would qualify as a major federal action and trigger the requirement for NEPA analysis. Under the DWPA, the USCG would initiate the NEPA process and have federal jurisdiction over the entire Project under NEPA. The USCG and Maritime Administration (MARAD) have determined that an environmental impact statement (EIS) will be prepared to support the NEPA process.

14.1.1.2 Safety and Security Regulations

The Deepwater port (DWP) is in the jurisdictional area of responsibility (AOR) of the United States Coast Guard (USCG) Sector Corpus Christi. Safety and Security of the DWP will be managed in accordance with all applicable International, US, and regional regulations. A Safety Management System will be developed and utilized, in accordance with OSHA regulations, and OCIMF guidelines to ensure that certification, training and maintenance records are all kept up-to-date.

The list below is the basis for the framework of regulations that govern safety and security. This list is not all inclusive.

<u>Collision</u>

- Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)
- 33 CFR Subchapter D International Navigation Rules (33 CFR §80-§82)
- 33 CFR Subchapter NN Deepwater Ports Subpart D Vessel Navigation (33 CFR §150.300-§150.385)
- 33 CFR Subchapter NN Deepwater Ports Subpart H Aids to Navigation (33 CFR §150.700-§150.720)
- 33 CFR Subchapter NN Deepwater Ports Subchapter J Safety Zones, No Anchoring Areas, and Areas to be Avoided (33 CFR §150.900-§150.940)

<u>Safety and Health</u>

- IMO Convention on the Safety of Life at Seas (SOLAS, 2011)

- IMO/ILO Guideline for Seafarer's Hours of Work and Rest
- All applicable PHMSA regulations
- 33 CFR Subchapter NN Deepwater Ports Subpart G Workplace Safety & Health
- OSHA regulations in 29 CFR 1910 Occupational Health and Safety Standards, as applicable
- OSHA regulations in 29 CFR 1917 Marine Terminals, as applicable

Public Safety

- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001–11050, et. seq.,
- Protection of Children from Environmental Health and Safety Risks, E.O. 13045, 62 FR 19885,
- Safe Drinking Water Act (SDWA),
- Community Environmental Response Facilitation Act (CERFA), 42 U.S.C. 9620, et. seq.,
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also commonly referred to as Superfund, Pub. L. 96–510, 26 U.S.C. 4611, et. seq., and
- Resource Conservation and Recovery Act of 1976 (RCRA), Pub. L. 94–580, 42 U.S.C. 6901, et. seq. Pub. L. 93–523, 42, U.S.C. 201, et. seq.

Maritime Security

- 33 CFR Subchapter H Maritime Security Part 105 Maritime Security: Facilities
- Marine Transportation Security Act
- IMO International Ship and Port Facility Security Code (ISPS)

All regulatory requirements for safety, security, and oil spill response plans will be developed and submitted for review and approval to the USCG and/or the Bureau of Safety & Environmental Enforcement (BSEE), prior to commencing operations at the DWP, as applicable.

In the next phase of the Project, a full design basis will be developed with all guidelines the Project intends to use in addition to regulatory requirements for safety and security. As a minimum, the Project intends to utilize several Oil Companies International Marine Forum (OCIMF) guidelines to develop a Project specific Safety Plan and Security Plan, as well as final Operations Manual for the DWP.

The Oil Companies International Marine Forum (OCIMF) is a voluntary association of oil companies with an interest in the shipment and terminal of crude oil, oil products, petrochemicals and gas. OCIMF mission is to be the foremost authority on the safe and environmentally responsible operation of oil tankers, terminals and offshore support vessels, promoting continuous improvement in standards of design and operation. They have published many guidelines, and the following list will be used in developing procedures for the Project, at a minimum:

- OCIMF International Safety Guide for Oil Tankers and Terminals, 5th Edition (ISGOTT)
- OCIMF Guidance for Oil Terminal Operators on the IMO ISPS Code (December 2003)
- OCIMF Martine Terminal and Operator Competence Guide (MTOCT)
- OCIMF Marine Terminal Management and Self-Assessment (MTMSA)

14.2 Crude Oil Properties and Hazards

14.2.1 Physical and Chemical Properties

Crude oil is the liquid form of petroleum which is a mixture of hydrocarbons and different compounds. Hydrocarbons account for up to 98 percent of the total composition of crude oils. The chemical composition of crude oil can vary significantly based on the producing area. Crude oil is refined and processed to remove impurities like sulfur and to develop products that are useful to the consumer and industry, such as gasoline and diesel fuel. Light crude oil, or condensate, is light or straw, green, yellow to

black, clear to opaque in color with a mild hydrocarbon or rotten egg odor. The average API gravity for the Project crude oil is 46.2 degrees.

Crude oils and refined petroleum products consist largely of hydrocarbons, which are chemicals composed solely of hydrogen and carbon in various molecular arrangements. Crude oils contain hundreds of different hydrocarbons and other organic and inorganic substances including atoms of sulfur, nitrogen, and oxygen, as well as metals such as iron, vanadium, nickel, and chromium. All crudes contain lighter fractions similar to gasoline, as well as heavier tar or wax constituents, and may vary in consistency from a light volatile fluid to a semi-solid. Crude oils and semi-refined products, such as diesel and bunkering oils, may also contain cancer-causing polycyclic aromatic hydrocarbons and other toxic substances.

The safety data sheet (SDS) further detailing the chemical properties of the crude oil to be transported by the proposed Project is provided within the Draft Operations Manual for the DWP. Section 9 of the SDS identifies the physical and chemical properties of light crude oil.

14.2.2 Threats from Oil Spills

The main threat from a major oil spill into the sea offshore is on marine life and on the coastal environment, if the spill were to make landfall. Threats and the overall impact of oil in water are dependent on the amount of oil spilled and the environmental conditions during the response efforts. Minor oil spills on vessels or on structures such as the floating SPM buoy produce a risk of ignition leading to a pool fire, but would not likely lead to impact on the marine environment; small volume spills have little to no effect on marine life or the coastal environment as the hydrocarbons are dispersed or broken down at a rate faster than clean-up action can occur.

A trajectory model was completed and discussed below for this Project, to evaluate the coastal impact (how much oil makes landfall), in the event of a worst-case discharge from all the offshore components. This model was used to create a tactical response plan that ensures the equipment and resources are available, if a large-scale spill would occur, although extremely unlikely. Mitigation measures in design of the system are also briefly discussed.

All oil in the water must be recorded and reported. Tankers, under IMO regulations are required to keep an oily water discharge record book and any oily water quantities accounted for that are discharged overboard. There are audit requirements for the book to hold operators accountable. Any oil greater than 15 ppm must remain onboard and cannot be discharged overboard. Any amount of oil over 15ppm in water or any oil that goes into the water must be reported to the appropriate authorities. All oil spills must be reported to the National Response Center (1-800-424-8802).

Both the DWP and the tankers will have Emergency Response Plans that follow specific steps in reporting and initiating the response to start responding to an oil spill. Tanker and DWP operators are required by law to have a contract with an Oil Spill Response Operator that owns and operates resources capable and ready to respond to a spill and mitigate the potential impacts.

All measures available will be taken to mitigate the likelihood of a spill into design and through competency and training of operations personnel.

14.3 Evaluation of Public Safety

For the purposes of this evaluation, the public is defined as anyone not associated with the Project. Environmental impacts, including impacts to the public, such as noise, air quality, water quality, and socioeconomics, are discussed in prior sections of the Environmental Evaluation. The following subsections discuss the potential for and mitigation of any negative impacts to the general safety of the public caused by the construction or operation of the Project.

14.3.1 Onshore and Inshore Project Components

Onshore components associated with the proposed Project are defined as those components landward side of the western Laguna Madre MHT line, located in Kleberg and Nueces Counties, Texas. Onshore Project components includes an approximate 150-acre OSTF, an 8.25-acre booster station, and approximately 6.36 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF to the booster station and continue to the landward side of the MHT line of the Laguna Madre.

Where the onshore storage facility will be installed on the mainland in Nueces County, Texas, the nearest potentially sensitive area (such as residential or public areas) is 0.9 mi (1.5 km) away. In addition, the unincorporated community of Chapman Ranch is located about 2.0 mi (3.3 km) west of the facility site. The facility site is on undeveloped, open land (see Volume II Section 11: Coastal Zone Uses, Recreation, and Aesthetics). No sensitive areas (such as residential or public areas) are within 2.0 mi (3.3 km) of the planned pump station in Kleberg County. Similarly, where onshore construction activities are planned on the mainland and Padre Island, the inshore pipelines will cross primarily undeveloped land. The inshore pipelines will be located greater than 2.0 mi (3.0 km) from the nearest residential development, which is in the City of Corpus Christi along Allamanda Drive. In addition, the inshore pipelines are located about 0.5 mi (1 km) north of the boundary of the Padre Island National Seashore (see Volume II Section 11: Coastal Zone Uses, Recreation, and Aesthetics).

Where recreational boaters or activity may intersect pipeline construction activities or operable units of the project, such as in public waters of the Laguna Madre, safety exclusion zones would be flagged and monitored during all construction activities to prevent recreational users from coming into proximity to potentially hazardous areas. The coast area, Laguna Madre crossing and shoreline, as described more thoroughly in Section 11, is an area of recreational boating and some beach activity.

During onshore construction, the construction corridor will be actively monitored for security and safety concerns. Additionally, access to the surrounding area will be limited to the private land owner or Project personnel. During operation, it is unlikely that the public will be exposed to any safety hazards as a result of the of the onshore components (OSTF and booster station). The OSTF would be located on private land with single entry/ exit point, security fence and manned security gate.

14.3.2 Deepwater Port Safety

The proposed DWP utilizes a SPM buoy system for mooring the tanker during loading of crude oil. The SPM buoy system would be positioned in water depths of approximately 93 feet and consist of a pipe line end manifold, under buoy flexible hoses, a catenary anchor leg mooring (CALM) system, floating crude oil loading hoses, and a hawser system to moor a vessel to the buoy.

Because the DWP is located offshore, it will have little impact to public safety during routine operations. Vessels, commercial or recreation, should not be near the SPM buoy system due to the proposed federally regulated safety zone around the SPM buoy. The proposed safety zone will be federally regulated by the USCG and will be added to the nautical charts. Additionally, the SPM buoy and floating offloading hoses are lighted to prevent collisions with other marine traffic offshore.

The DWP is unmanned and will therefore not have any normal discharges associated with hoteling/accommodation that an offshore platform may have. There is no power generation on board, only batteries to operate telecommunications equipment, thus there is no fuel, cooling water or emissions associated with the buoy that may impact recreational fishing or the public.

The mooring lines and anchors or piles will be below sea level and extend outward from the buoy position. An area to be avoided will be established. The mooring system will be within the safety zone and will have a negligible impact.

14.3.3 Tanker Safety

Tankers, as described more thoroughly in Section 11, are an integral part to the GOM economy and transportation system. There are several thousand port calls each year that utilize the safety fairways in the GOM while traveling to ports. The DWP for this Project is near (2.2 miles) a main navigational fairway that extends north and south and originates at south of the entrance to Aransas Pass. The tankers will not need to enter Aransas Pass and will remain outside the 12-nautical mile territorial seas boundary. Tankers will travel about 2 nautical miles from the safety fairway through a proposed safety fairway before arriving the DWP. The tankers will only operate offshore, and will therefore, have very little to no impact to the public safety nearshore and onshore during normal operations.

14.3.4 Oil Spill Modeling Studies

To quantify the impacts of a potential oil spill at the DWP and associated offshore components and the subsequent response requirements, oil spill trajectory modeling was completed. A tactical response plan was also completed to detail the equipment and the deployed locations that would be required to mitigate the impacts of a worst-case scenario oil spill on the coast near the DWP. The full reports for both the trajectory models and the tactical response plans were prepared by The Response Group, and are included below by reference.

It is important to understand that the trajectory modeling is done assuming no response team is deployed, meaning that no oil is being recovered or diverted in the model. In a real-life situation, teams would be mobilized immediately to start mitigation efforts. The discharge volume is also a calculated volume based on the entire content of the sub-marine pipeline, irrespective of the system features designed to reduce the released volume during a failure in the system, such as shut-off valve locations and settings, sea bed bathymetry, and pipeline depth and routing.

The pipeline system will be designed to close shut-off valves and shutdown pumps within 30 seconds of detection that pressure is lost. A full HAZOP of the system will be completed during detail design, to ensure that the consequence of different credible scenarios and actions is mitigated to the lowest practical spill volume.

In the case of an incident on the tanker, very specific disconnect scenarios and actions will be defined for those personnel operating offshore through a formal risk assessment. This would include weather and hawser load disconnect scenarios, fire, spill, and cargo tank alarms, as an example. The CALM buoy is fitted with a telemetry system that communicates hawser tensions in real time to the mooring masters on board the tanker and ashore. A formal procedure for the tanker to disconnect will be defined if hawser tension alarms are triggered. The procedure will be activated if the hawser tension exceeds limits within certain time durations, also to be defined. These procedures mitigate the risk of hawser failure and tanker drift off, which could cause a collision or damage or disconnect of the hose and a potential product release. A procedure for loss of hawser tension will also be defined.

As explained above, the intent of a trajectory model is to determine potential trajectory paths and identify potential environmental resources at risk in the event of an unintended release of crude oil from the buoy or pipeline. The Response Group was tasked with developing an oil spill Trajectory Model for the pre-licensing phase of the Project. A short description of this work is included here and the complete summary report is referenced below.

Two simulation releases (at two different rates) were modeled for each season. The two releases add up to the calculated volume for the worst-case discharge (WCD). The worst-case discharge was calculated based on a very unlikely event that the subsea pipeline suffers a full-bore rupture AND all the contents of the 14-mile-long pipeline is evacuated.

The discharge is based on two-time frames:

1) the product (240 bbl.) discharged based on the pressure difference between the operating pressure and the hydrostatic pressure at the pipeline depth and is assumed to be instantaneous.

2) the slow leakage of the cargo (63,600 bbl.) due to the difference in density of the lighter oil and the water and is very slow over 10 days.

The worst-case discharge calculation is referenced below, including references to the regulations. A HAZID/HAZOP will be completed once the design concept is finalized and detail design begins. At this time, the worst-case discharge is used to identify the high consequence and associated tactical response requirements. Comprehensive terminal Emergency Response, Safety, Security, and Fire Plans will be developed during the detail design phase of the proposed Project.

The Trajectory Modeling Report is referenced below. Each deterministic seasonal model run was analyzed to determine any potential environmental and/or socioeconomic impacts. The trajectory modeling shows what could be impacted. To determine potential impacts, an expansive data search was conducted to identify the sensitive areas in and around Corpus Christi. These areas are presented in the report. The report also has maps that illustrate the shoreline impacts relative to these areas.

The Tactical Response Plan provides specific mitigation measures to protect and limit the impacts to these areas when responding to a release. The Tactical Response Plan is reference and included as part of the DWPL application and shows what needs to be deployed to mitigate the impacts. The Tactical Response Plan has maps showing precisely the location and the type of equipment to deploy for use in planning a response effort.

14.3.5 Other Potential Public Safety Hazards

In addition to the items discussed above, the following governing laws and regulations were also considered for their applicability to the proposed Project and its potential impacts on public safety:

- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001–11050, et. seq.,
- Protection of Children from Environmental Health and Safety Risks, E.O. 13045, 62 FR 19885,
- Safe Drinking Water Act (SDWA),
- Community Environmental Response Facilitation Act (CERFA), 42 U.S.C. 9620, et. seq.,
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also commonly referred to as Superfund, Pub. L. 96–510, 26 U.S.C. 4611, et. seq., and
- Resource Conservation and Recovery Act of 1976 (RCRA), Pub. L. 94–580, 42 U.S.C. 6901, et. seq. Pub. L. 93–523, 42, U.S.C. 201, et. seq.

Technical surveys and resource evaluations have been conducted for the proposed Project as discussed in other sections of this Environmental Evaluation. There has not been any information gathered during the planning and environmental evaluation of the proposed Project that leads the applicant to believe there is a risk to public health or safety as a result of the Project construction, operation, or decommissioning according to the above list of laws and regulations (TCEQ 2018). Additionally, environmental samples will be collected and analyzed during future phases of this project to ensure continued compliance with all applicable public health and safety regulations and guidelines throughout the scope of the Project.

14.4 Occupational Safety

The Occupational Safety and Health Act (OSHA) of 1970 (29 U.S.C. 651-678) was enacted to ensure, to the extent possible, safe and healthful working conditions and to preserve our human resources. The Act encourages employers and employees to reduce occupational safety and health hazards in their places of employment and stimulates the institution of new programs and the perfection of existing programs for providing safe and healthful working conditions. OSHA is responsible for developing and enforcing workplace safety and health regulations.

In addition, the USCG has issued regulations governing DWPs under 33 CFR Parts 148-150. As specified in 33 CFR Part 150, the training required by personnel manning DWP is extensive. It includes training such as water survival, emergency medical procedures, hazardous materials procedures, spill response and clean up, as well as other operational procedures.

In the next phase of the Project, an overall DWP Safety Plan will be developed detailing the DWP policies, procedures and training requirements. The DWP will utilize a Health, Safety and Environmental Management System as described in the OCIMF Marine Terminal Management and Self-Assessment. The safety management system tracks and maintains safety metrics, as well as addresses requests for corrective action of deficiencies of equipment conditions or in the safety policies and practices. The safety management system will be auditable.

14.5 Marine Safety and Security

14.5.1 Marine Safety Standards

Internationally trading oil tankers follow the conventions set forth by the International Maritime Organization. Safety of Life at Sea (SOLAS) is the IMO convention that prescribes requirements for safety on tankers. While calling at US ports, internationally trading tankers that operate under a foreign (non-US) flag are required to have a USCG Certificate of Compliance. These are USCG requirements under 46 CFR §153.9 foreign flag vessel endorsement application and requires a US Certificate of Inspection and all IMO required certificates.

14.5.2 Deepwater Port Safety

DWP safety requirements are prescribed in the USCG 33 CFR Subchapter NN Subpart and International Safety Guide for Tankers and Terminals (ISGOTT). Operations at the DWP will adhere to all applicable laws, regulation, and standards. Operations of the DWP including all personal safety procedures and emergency response will be dictated in the final Operations Manual and Emergency Response Plan as well as other appropriate documents such as Facility Security Plan. The documents will be completed and submitted to the USCG for approval prior to operation of the proposed Project.

14.5.3 Port Security

After the events of September 11, 2001, attention was focused on the prevention of terrorist attacks involving vessels and port facilities. This resulted in vast changes in operational procedures and new port security regulations. These changes substantially impacted the operating procedures of the USCG and owners of vessels and port facilities. The IMO also added Chapter 11-2 to the Safety of Life at Sea Convention, which included a new International Ship and Port Security Code. The SPM buoy will be unmanned; therefore, personnel safety offshore during normal operations will be a concern on the tanker, during the inspection of the buoy and associated equipment and on support vessels. Port Security requirements are prescribed in 33 CFR Subchapter H Maritime Security Part 105 Maritime Security: Facilities and the IMO International Ship and Port Facility Security Code (ISPS).

In the next phase of the Project a DWP Facility Security Plan (FSP) will be developed detailing the specific policies and procedures for the DWP in accordance with all applicable regulations. Drill and exercises must test the proficiency of facility personnel in assigned security duties at all U.S. Coast Guard Maritime Security (MARSEC) Levels and the effective implementation of the FSP. Maritime security plans and procedures at the facility will be detailed in the FSP including requirements in 33 CFR part 106 and 33 CFR 150.15 (x). The DWP will complete a Security Assessment and Develop a Facility Security Plan (FSP), in accordance with the regulations. Under the regulations in Subpart H for facilities, the DWP operator must ensure the implementation of security measures for access control, newly hired employees, restricted areas, handling cargo, monitors and procedures for handling incidents.

MARSEC Levels advise the maritime community and the public of the level of risk to the maritime elements of the national transportation system. Ports, under direction of the local Captain of the Port, will

respond to changes in the MARSEC Level by implementing the measures specified in the FSP. Similarly, vessels and facilities shall implement the measures specified in their security plans for applicable MARSEC Levels. Regulations defining MARSEC Levels are in 33 CFR §101.200.

The USCG has a number of measures available to enforce security requirements and otherwise enhance security for vessels and port facilities in the United States. These measures include: conducting random and targeted patrols and vessel boardings; reviewing information contained in vessel arrival notifications; conducting escorts and targeted boardings of vessels identified as high risk; conducting background intelligence checks; establishing safety and security zones when needed; reviewing, approving, and exercising vessel and facility security plans; and other appropriate actions designed to improve maritime security. Regulations regarding the Declaration of Security that must be given by the tanker prior to arrival can be referenced in 33 CFR §105.245.

14.5.4 Safety Zones, Area to be Avoided and No-anchoring Area

Safety Zones, Areas to be Avoided (ATBAs) and No-anchoring Area (NAAs) are used to restrict or advise against entering an area that is hazardous to other marine traffic. For this Project, a safety zone is proposed around the SPM buoy, that is a circle with a radius of 1,614 ft. This circle will include the swing radius of the tanker while berthed, plus an additional 500 m. Vessels must request entrance into the zone to approach the buoy and begin berthing procedures. The Operations Manual details the requirements for the tanker for notifications when approaching the terminal. The safety zone will also restrict access to any marine traffic that is not authorized to enter. It is federally enforced by the USCG and will be monitored by the terminal operators and the mooring masters. The safety zone will be added to the NOAA chart, if accepted and approved. Navigation and navigation safety is further discussed in Section 13: Navigation and Navigation Safety.

A security zone can also be established by the USCG when there is reason to believe or expect that a threat exists or could reasonably develop with respect to a vessel or facility. The dimensions and conditions would be predicated based upon a threat assessment. A security zone is similar to a safety zone in that it is not an absolute exclusion zone. It differs, however, in that it requires a physical on-site enforcement presence. There is no reason at present to expect that a permanent security zone will be established at the proposed DWP.

14.5.5 Aids to Navigation

Aids to navigation are installed to make visible the offshore marine components by other marine traffic. The SPM buoy is not in a high traffic area and is outside the main safety fairway; therefore, additional aids to navigation are not proposed. The SPM buoy will be lighted and have a radar reflector installed for visibility by other vessels at night. The hoses will have winker lights installed on them to be seen at night. Navigation and navigation safety is further discussed in Section 13: Navigation and Navigation Safety.

14.5.6 Crude Oil Vessels

Crude oil tanker design integrity is ensured through the system of Classification. The International Association of Classification Societies sets the rules and guides for Classification. A valid classification society certificate will be a requirement for tankers contracted to load at the DWP.

The tankers are vetted through the terminal operator's vetting requirements: The applicant's Ship Vetting Policy requires at a minimum the following:

- Q88 not more than 30 days old
- USCG Certificate of Compliance (COC)
- Valid International Ship Security Certificate (ISSC)
- Valid Civil Liability Convention Certificate
- Valid member or associate member of the International Association of Classification Societies (IACS)

- Current International Group P&I club certificate
- Vessel no older than 20 years
- Vessels shall have at minimum one approved SIRE report within the last 6 months
- All vessels must be double hulled
- All vessels must have P&I insurance cover
- All vessels must have no groundings, pollution, causalities, or collisions within the last 12 months
- Vessel must be in compliance with ISM Code
- Vessel must not have been detained by Port State Control within the last 24 months
- Vessel must be owned by a member of the International Tanker Owners Pollution Federation Ltd
- Prior 3 cargoes screened prior to acceptance

The USCG Certificate of Compliance, as described above, also requires the tanker is in good standing with the vessel classifying society, has a valid Classification certificate, and USCG Certificate of Inspection Applicable provisions for a COI are provided in 46 CFR §31.05-1. Navigation and navigation safety is further discussed in Section 13: Navigation and Navigation Safety.

14.6 Offshore Component Safety

14.6.1 Offshore SPM Buoy Safety Standards

The SPM buoy and its mooring system will be designed and built under classification by an IACS approved Classification Society as well as a USCG approved certifying entity.

The SPM buoy will be unmanned. Boarding the SPM buoy will be done for maintenance and inspection purposes only with careful planning. A maintenance and inspection plan will also be reviewed by the Classification Society and the certifying entity that will prescribe inspection frequency and critical spare parts. Safety and health requirements for the DWP are covered in 33 CFR Subchapter NN Subpart G.

14.6.2 Offshore SPM Buoy Collision Data

Collision with the SPM are very rare. Anecdotal data was received from an SPM buoy manufacturer indicating the highest likelihood of a collision is from a tanker during very benign weather conditions, when the hawser is slack. Based on experience of the manufacturer and on inspection findings, this very low impact collision has resulted in minor damage to the buoy skirt and/or fenders. In extremely rare cases it is known that private vessels operating at night without the proper navigational equipment on board have collided with buoys and have experienced major damage, with little impact to the buoy. Measures are in place to minimize the risk of collision by vessel offshore. Navigation and navigation safety is further discussed in Section 13: Navigation and Navigation Safety.

14.6.3 Offshore SPM Buoy Third-Party Hazards

Third-party vessels that will enter the safety zone are restricted to the tanker and the support vessels. During normal loading operations the tanker and, most likely, 2 tugs will be in the safety zone. Operations procedures, including communication with the DWP and notification to authorities, will be detailed in the Marine Operations Manual. Regulations regarding notifications for Deepwater Ports are in 33 CFR Subchapter NN Subpart D Vessel Navigation.

In addition to well-planned and risk-assessed operations procedures and the 2 assist tugs, tanker collision risks associated with berthing operations are mitigated through employing two (2) highly-trained mooring masters on-board the tanker to assist the tanker master. The mooring masters are experienced tanker captains that are employed by the DWP that are intimately familiar with the DWP equipment, operations, personnel and local navigational area and regulations.

During special survey of the SPM equipment (every 2-5 years, after an incident, or as needed), special operations will take place where a dive or remote operated vehicle support vessel will be utilized to conduct under water survey/inspection of the buoy .There is a slight chance that third-party vessels could

collide with the SPM during these special operations; however, collision risks are mitigated through safety precautions and communications procedures such as the aids to navigation (obstruction lights, sound signals, radar reflector), establishing the safety zone, scheduled notifications to the DWP person in charge, and regulations governing safe navigation. Navigation and navigation safety is further discussed in Section 13: Navigation and Navigation Safety. The proposed DWP's remote location further serves to reduce third-party collision risks.

14.6.4 Offshore Pipeline Safety

Fabrication, installation, testing and commissioning procedures and details are described in Appendix X, Construction, Operation, and Decommissioning Procedures. All pipelines are to be designed, operated, and maintained in accordance with all current and applicable standards and regulations.

Additionally, design and operation strategies taken into consideration to decrease the safety risks associated with the offshore pipelines include burying pipelines a minimum of 5 ft below the seabed (rather than the required 3 ft) and utilizing Horizontal Directional Drilling (HDD) pipeline sections to reduce interference with navigation, other pipelines, or sensitive areas that could lead to increased safety hazards.

The proposed offshore pipeline route was selected during preliminary engineering, following extensive geophysical, geological, archeological, and hazard surveys. Such surveys and studies were conducted while designing the pipeline to ensure the offshore pipeline avoids all potential hazards and is designed to be as stable and safe as practicable.

An anchor or net snagging the pipeline risers or interconnection junctions could result in damage to the Project's infrastructure or the third-party vessel. The Safety Zone, ATBA, NAA, and Port Operations Manual vessel traffic monitoring and warning procedures would minimize the risk of such incidents. In addition, TGTI proposes to bury all offshore pipeline segments a minimum of 5 feet below the sea bottom to further minimize the risk of third party damage.

Damage from outside forces poses the greatest threat to pipeline safety. BSEE and USDOT Office of Pipeline Safety require subsea pipelines to be constructed and operated with specifications that minimize these outside forces. The onshore valve station would be located on North Padre Island approximately 2,300 feet from the MHT line located at the interface of North Padre Island and the GOM. The proposed onshore valve station would consist of shut off valves to allow for the isolation of offshore and onshore sections of the proposed pipeline infrastructure during emergencies such as pipeline break or leak, and routine maintenance and inspection operations. The onshore valve station would house two 30-inch-diameter full bore 300 series motor operated valves designed to close upon sudden rise or fall of pipeline pressure. In the situation of a pressure drop or increase within the pipelines, communications equipment would be utilized for the emergency shut down of pumps located at the booster station and OSTF.

14.7 Mitigation Measures for Safety and Security

The Project will comply with all applicable laws, regulations, and design standard to ensure the safe and secure construction and operation of the proposed DWP. Additionally, the following mitigation measures are proposed to be implemented to enhance the safety and security of the Project:

- TGTI will petition the USCG to establish Safety Zones, ATBA, and NAA, per the procedures outlined in 33 CFR 150, Subpart J, and the IMO guidelines;
- The Project will finalize and implement a DWP Operations Manual with specific requirements describing the manning and operation of the DWP, including operation of the SPM buoy, safety and navigation to and from the SPM buoy system by third parties, and safety and operation of the onshore project facilities;

- The Project will develop and implement an Emergency Response Plan, a Facility Safety & Security Plan, and any other safety or security documents and personnel guidelines deemed necessary by the project or the USCG;

14.8 Summary of Potential Impacts

Table 14-1 Summary of Potential Safety and Security Impacts

Project Phase	Impact	Duration	Significance	Mitigation
Construction	Risks to recreational boaters or public utilizing public waters	Temporary	Minor	Safety and exclusion zones will be marked and monitored for the duration of construction activities to ensure public users of the areas are not endangered, and that the project area remains secure. The Project will follow all applicable laws, regulations, and standards to ensure the safe and secure construction of all project components.
Operation	Security risk to the DWP	Long-term	Minor	The DWP will develop and follow a Facility Security Plan in accordance with applicable regulations to ensure the secure operation of the Project. Safety Zones will be established by the USCG to restrict access to the DWP area to only those vessels that are using the DWP.
Operations	Risk of public safety hazard from petroleum release or oil spill	Long-term	Minor	Operation of the DWP will adhere to all laws, regulations and standards. The Project will employ a Facility Security Plan and Emergency Response Plan to ensure immediate response to emergencies including oil spills. The trajectory model and Tactical Response Plan will provide specific measures to be taken in response to such scenarios.
Operations	Risk of collision to the SPM buoy, to subsea pipelines, or of vessels in the DWP area	Long-term	Minor	Aids to navigation, a safety zone, area to be avoided, and 5-ft burial depth of pipelines will reduce the risk of DWP component damage due to collisions by vessels. Tugs and a pilot vessel will assist mooring and navigation to the SPM buoy to mitigate the risk of the tanker collision to the buoy.

14.9 References

Texas Commission on Environmental Quality. Super Fund Sites Search. July 2018. https://www.tceq.texas.gov/remediation/superfund/sites/county

The Response Group LLC. 2018. *Texas Gulf Terminals Project: Trajectory Modeling*. Prepared for Lloyd Engineering and Texas Gulf Terminals Inc. April 2018.

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