3.9

MARINE TRANSPORTATION

3.9.1 Introduction

3.9.2 Environmental Setting

3.9.2.2 Navigational Hazards

The San Pedro Bay Ports areas are protected by three breakwaters: San Pedro Breakwater, Middle Breakwater, and Long Beach Breakwater. The openings between these breakwaters, known as Angel's Gate and Queens Gate, provide entry to the Port of Los Angeles and the Port of Long Beach, respectively. Pier 400 is located close to Angel's Gate and is the entry for most of the vessels entering the Port.

Port Pilots can easily identify fixed navigational hazards in the ports, including breakwaters protecting the outer harbor, anchorage areas, and various wharfs and land masses which comprise the harbor complex. These hazards are both easily visible by radar and are currently well-lighted. Four bridges cross the navigation channels of both ports. All have restricted vertical clearances, and two have restricted horizontal clearances as well. Also, overhead power lines with restricted vertical clearance cross the Cerritos Channel.

Vessels that are waiting to enter the harbor and moor at a berth can anchor at the anchorages outside and inside the breakwaters. Vessels do not require tug assistance to anchor outside the breakwater. The Port currently does not have any available anchorages inside the breakwater. For safety reasons, Vessel Traffic Service (VTS) will not assign an anchorage in the first row of sites closest to the breakwater to tankers or vessels exceeding 200 m (656 ft) in length.

Vessels are required by law to report failures of navigational equipment, propulsion, steering, or other vital systems to the USCG via the Captain of the Port (COTP) office or the COTP representative at VTS (see description below) as soon as possible. According to VTS, approximately 1 in 100 vessels calling at the Ports of Los Angeles or Long Beach experiences a mechanical failure during their inbound or outbound transit (Harbor Safety Committee, 2007).

Table 3.9-1 summarizes the numbers of commercial vessels that call at the Port annually; approximately 2,700 calls in 2004. The number of vessels passing through the breakwaters (entering and leaving) can be approximated by doubling the number of arrivals listed in the table. The Port of Long Beach experienced approximately 3,380 vessel calls in 2004. As shown in the table below, the number of vessel calls to the Port is fairly static in spite of the substantial increase in cargo volume. This is because larger cargo ships are replacing smaller ones and fewer ships are needed to transport a similar amount of cargo. While there have been substantial increases in the volume of cargo entering the San Pedro Bay Ports, the utilization of larger cargo vessels has resulted in the reduced number of cargo ship arrivals. For example, in 2001 1,584 container ships delivered 5,183,520 twenty-foot equivalent units (TEUs), while only ~~2,341~~1,423 container ship calls were required to deliver 7,484,625 TEUs in 2005 (note that these figures differ from those in Table 3.9-1 because the table includes all vessels, not just container ships).

Table 3.9-1. Vessel Calls at the Port of Los Angeles

Year	*Vessel Calls*
2007	2,773
2006	2,923
2005	2,341
2004	2,715
2003	2,660
2002	2,526
2001	2,899
2000	3,060
1999	2,630
1998	2,569
1997	2,786
Source: LAHD 2007; LAHD 2008.	

Although marine safety is thoroughly regulated and managed, various undesirable events can occur during marine navigation. These conditions include "vessel accidents," "near misses," and "close quarters." Brief descriptions of these events are given below. The most significant historical incidents in the San Pedro Bay Ports areas include a potentially disastrous collision between two loaded tankers in 1981, and close quarters such as a 1982 occurrence involving two passenger ships, a freighter, and a tanker.

Vessel Accidents. Marine vessel accidents include vessel "allisions" (between a moving vessel and a stationary object, including another vessel), collisions (between two moving vessels), and vessel groundings. Table 3.9-2 shows that the number of vessel allisions, collisions, and groundings (ACGs) in the San Pedro Bay Ports has remained fairly constant over the ~~seven~~ ten years between 1996 and ~~2003~~2005. Between 1992 and 1998 there were, on average, 4 ACG incidents per year in the San Pedro Bay Ports (U.S. Naval Academy 1999). While there is no reliable data on the level of recreational boating incidents in the ports over this time period, the level of commercial traffic transits has remained fairly constant (± 2 percent). During this time, there has also been a large amount of construction and channel deepening within the ports. Each of these accidents

was subject to USCG marine casualty investigation, and the subsequent actions taken were targeted at preventing future occurrences.

Ships (including tankers) are typically involved in about 11 percent of all marine incidents or only 7.7 percent of ACG incidents (U.S. Naval Academy 1999). (In addition to ACG incidents, "all incidents" also include events such as electrical power loss, flooding, personnel injury, pollution, and abandonment.) The largest number of accidents involved tug boats and barges. Table 3.9-3 lists accident rates reported by different studies.

Approximately 2 percent of all incidents involving tankers result in an oil spill (Etkin 2001). According to the USCG vessels accidents database, the San Pedro Bay Ports Harbor area has one of the lowest accident rates among all U.S. ports, with the ACGs frequency of 4.6×10^{-4} per transit (0.046 percent chance per transit), as compared to the average of 2.5×10^{-3} per transit (0.25 percent chance per transit) for all U.S. ports.

Table 3.9-2. Allisions, Collisions, and Groundings – San Pedro Bay Ports (1996-2005)

Year	*ACG Incidents*				*Total*
	ALLISIONS	COLLISIONS	GROUNDINGS	FIRES	
1996	2	4	1	0	7
1997	1	3	2	0	6
1998	1	2	3	0	6
1999	3	4	2	0	9
2000	3	2	1	0	6
2001	4	1	0	0	5
2002	6	5	0	0	11
2003	4	2	2	0	8
2004	2	4	6	0	12
2005	0	1	3	3	7

Sources: Harbor Safety Committee 2007; U.S. Naval Academy 1999.

Note: These commercial vessel accidents meet a reportable level defined in 46 CFR 4.05, but do not include commercial fishing vessel or recreational boating incidents.

Table 3.9-3. Vessel Accident Rates

Study/ Source	*Years, Range*	*Ships/Conditions Involved*	*Type of Accident*	*Probability per transit (percent)*
MIT	1981-95	All ships	All accidents	0.065–0.11
USCG	1992-98	All US ports, deep draft only	ACGs	0.20
USCG	1992-98	Ships only	At sea collisions	0.013
USCG	1992-98	Ships only	At sea groundings	0.010
USCG	1992-98	Ships only	At sea allisions	0.0082
FEMA	1980-1988	In harbors/bays	Collisions and groundings	0.10
FEMA	1980-1988	In harbors/bays	Collisions while moored	0.02
San Pedro Bay Ports	1997-2005	In San Pedro Bay Ports	Total All ACGs	0.046

Sources: MIT 1998; U.S. Naval Academy 1999; FEMA 1989; Harbor Safety Committee 2007.
Note: These commercial vessel accidents meet a reportable level defined in 46 CFR 4.05, but do not include commercial fishing vessel or recreational boating casualties.

Near Misses. The San Pedro Bay Ports Harbor Safety Committee defines "near miss" as:

> *A reportable 'Near Miss' is an incident in which a pilot, master or other person in charge of navigating a vessel, successfully takes action of a 'non-routine nature' to avoid a collision with another vessel, structure, or aid to navigation, or grounding of the vessel, or damage to the environment.*

The most practical and readily available near miss data can be obtained from VTS reports, which are available from the Los Angeles Harbor Department (LAHD). Near miss information is reported as a Close Quarters event as described below.

Close Quarters. To avoid commercial vessels passing too close together, the VTS documents, reports, and takes action on "close quarters" situations. VTS close quarters situations are described as vessels passing an object or another vessel closer than 0.25 nautical miles (nm) or 500 yards. These incidents usually occur within the traffic Precautionary Area. No reliable data are available for close quarter incidents outside the VTS area. Normal actions taken in response to close quarters situations include: initiating informal USCG investigation; sending Letters of Concern to owners and/or operators; having the involved vessel Master(s) visit VTS and review the incident; and USCG enforcement boardings. A six-year history of the number of close quarters situations is presented in Table 3.9-4. Given the relatively steady amount of commercial transits over the past five years, a decreasing trend in close quarters incidents is discernable (Harbor Safety Committee 2004).

Table 3.9-4. Number of VTS-recorded "Close Quarters" Incidents, 1998-2003

Year	*No. of Close Quarters*
1998	9
1999	5
2000	1
2001	2
2002	6
2003	4
2004	0
2005	0
Source: Harbor Safety Committee 2007.	

3.9.3 Applicable Regulations

3.9.4 Impacts and Mitigation Measures

3.9.4.3 Project Impacts and Mitigation

3.9.4.3.1 Proposed Project

3.9.4.3.1.2 Operational Impacts

Impact MT-1.2: Tankers transporting oil to the Project Marine Terminal could impact marine vessel safety within the Port of Los Angeles.

Pier 400 is a rock-dike-retained hydraulic landfill peninsula that has about 590 acres (239 hectares) of manmade land and more than 6 miles (9.7 km) of shoreline. Pier 400 was created as part of the Deep Draft Navigation Improvements Project (Deep Draft Project) in the Port, which was partially intended to optimize navigation channels within the Port. Pier 400 was specifically designed to safely accommodate a marine petroleum terminal and container terminals (USACE and LAHD 1992). The location and design parameters of the Marine Terminal allow for safe maneuvering and passage through the Main Channel of all ships that currently call at the Port. The subsequent deepening of the Main Channel and the turning basins further ensure that the larger ships (e.g., Very Large Crude Carriers [VLCCs]) can safely navigate within the Port (USACE 2000). The proposed Project would not require any dredging as Berth 408 already has sufficient water depth (-81 ft MLLW) to accommodate VLCC vessels (drafts of up to 75 ft (23 m)). The Port Pilots have further confirmed that: (1) tankers proposed to call at Pier 400 could safely navigate to the new Berth 408; and (2) moored tankers at this berth would not prevent safe maneuvering of other vessels into the Port (Morgan 2004).

The proposed Project would increase the total number of tankers calling at the Port by about 129 (in 2010) to 201 (in 2025 through 2040) vessels per year (approximately 12 to 21 per month). This represents an approximately 7.4 percent increase in 2025 through

2040 over the 2,715 vessels that currently call at the Port annually (2004 baseline). The proposed Project would also require local barge deliveries of marine gas oil (MGO) for refueling of tankers visiting Berth 408. Barge deliveries would range from six per year in 2010 to 12 per year in 2040. The Port Pilots have indicated that scheduling and safe navigation of these additional tankers through the Port would not introduce any new safety concerns (Morgan 2004).

In 2004, the number of vessel calls at the Port was lower than it was in ~~1991~~ 1990 – 2,715 in 2004 versus 3,322 vessels per year in 1990. Based on today's ship traffic levels, the addition of 11 to 17 vessel calls per month would result in fewer total vessel calls than the Port has already experienced and safely handled. Accordingly, the Project operations would not reduce the existing level of safety for vessels navigating in the areas affected by the Project. As noted in Appendix E, Pacific L.A. Marine Terminal LLC (PLAMT) would adhere to the International Safety Guide for Oil Tankers and Terminals (ISGOTT) and the Oil Companies International Marine Forum (OCIMF) Tanker Mooring Guidelines for tanker mooring and operations at the terminal. While the increased ship size may affect maneuverability, the risk of accident is largely based on the number of vessels present (U.S. Naval Academy 1999); accordingly, the larger size of the vessels would therefore not have significant impacts on safety within the Port.

The available statistical data on accidents that involve ships and tankers (see Table 3.9-3) suggest that Project tankers are likely to have one or more ACG incidents during the life of the Project. At peak capacity of 201 vessel calls per year, the probability of a Project-related ACG would be 6.27×10^{-2}/year, or once every 15.9 years for open ocean transit. Within Port waters at a peak capacity of 201 vessel calls per year, the probability of a Project-related ACG would be 9.25×10^{-2}/year, or once every 10.8 years. However, the potential for this to happen is minimized by the Project's location, which requires minimal transit time from the Angels Gate entry to Pier 400 and is away from the Main Channel where the highest level of ship traffic occurs. In addition, the Project would have an Oil Spill Contingency Plan that would identify and plan as necessary for contingency measures that would minimize damage to water quality and provide for restoration to pre-spill conditions in the event that an accident involving marine vessels does occur (see Section 3.12.4.3).

CEQA Impact Determination

For the above reasons, the vessel transportation impacts due to proposed Project operation would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Less than significant impacts are anticipated.

NEPA Impact Determination

Potential impacts under NEPA are approached slightly differently than under CEQA since it is assumed that additional vessel deliveries would occur to other San Pedro Bay

Port terminals regardless of proposed Project construction. Under this assumption, there would be a baseline of 267 additional vessels calling at the San Pedro Bay Ports in 2040 (compared to 2004 conditions), versus a Project-related maximum of 201 vessels. More crude oil vessel deliveries would occur under the NEPA Baseline since the existing terminals cannot accommodate the larger classes of vessels (no Suezmax or VLCCs), and thus require more crude oil deliveries than would occur under the proposed Project. Vessel transportation impacts due to proposed Project operation under NEPA would be considered less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Less than significant.

3.9.4.3.2 No Federal Action/No Project Alternative

3.9.4.3.2.2 Operational Impacts

Impact MT-1.2: Tankers transporting oil to the No Federal Action/No Project Alternative Marine Terminal could impact marine vessel safety within the Port.

In the No Federal Action/No Project Alternative, the total number of additional tankers calling at the San Pedro Bay Ports annually (for quantitative analysis purposes) would be about 229 in 2010 (versus 129 for the proposed Project), and 267 in 2025 (versus 201 for the proposed Project). This represents approximately an 9.8 percent increase over the current number of the 2,715 vessels that call at the Port annually even in the absence of the proposed Project due to increased demand for imported crude oil. The Port Pilots have indicated that scheduling and safe navigation of these additional tankers through the Port would not introduce any new vessel navigation concerns (Morgan 2004).

Impacts would be similar in type but slightly higher than those described for the proposed Project, as the number of vessels entering the San Pedro Bay Ports would be increased to a peak capacity of 267 rather than 201, resulting in an 9.8 percent increase in overall harbor vessel traffic even in the absence of the proposed Project due to increased demand for imported crude oil. The increase would result from a greater number of trips by the smaller Panamax tankers to other bulk liquid marine terminals in the San Pedro Bay Ports than during the baseline year. While there would be no vessel calls at Berth 408, an additional 267 vessel trips at other existing marine terminals would be required to carry the amount of crude oil that would bring the existing terminals to full future capacity. Additional vessel or barge calls may also occur due to demand for crude oil deliveries that exceeds the capacity of existing terminals. However, as noted in the introduction to Section 3.9.4.3.2, these additional potential calls were not analyzed quantitatively. The projected vessel calls analyzed quantitatively under this alternative would still be within previously observed and projected vessel traffic levels; thus, vessel safety impacts due to operation would be less than significant.

In 2004, the number of vessel calls at the Port was lower than it was in 1990 ~~1991 only~~ 2,715 in 2004 versus 3,322 vessels per year in 1990. Based on today's ship traffic levels, the addition of 10 to 20 vessel calls per month would result in fewer total vessel calls than the San Pedro Bay Ports have already experienced and safely handled in 1991. Accordingly, the No Project operations would not reduce the existing level of safety for vessels navigating in the areas affected by the Project.

The available statistical data on accidents that involve ships and tankers (see Table 3.9-3) lead to the conclusion that Project tankers are likely to have one or more ACG incident during the life of the Project. At peak capacity of 267 vessel calls per year, the probability of a No Federal Action/No Project Alternative-related ACG would be 8.33 x 10^{-2}/year, or once every 12 years for open ocean transit. Within Port waters at a peak capacity of 267 vessel calls per year, the probability of a Project-related ACG would be 1.23 x 10^{-1}/year, or once every 8.1 years.

CEQA Impact Determination

For the above reasons, the vessel transportation impacts due to No Federal Action/No Project Alternative operation would be considered less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Less than significant impacts are anticipated.

NEPA Impact Determination

Because the No Federal Action/No Project Alternative is identical to the NEPA Baseline in this project, under NEPA the No Federal Action/No Project Alternative would have no impact.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no residual impact.

3.9.4.3.3 Reduced Project Alternative

3.9.4.3.3.2 Operational Impacts

Impact MT-1.2: Tankers transporting oil to the Reduced Project Alternative Marine Terminal could impact marine vessel safety within the Port.

The Reduced Project Alternative would increase the total number of additional tankers calling at the San Pedro Bay Ports by about 129 (in 2010) to 372 (in 2040) vessels per

year (approximately 11 to 31 per month). (The 372 vessel calls includes 263 at the Port [132 at Berth 408 and 131 at LAHD Berths 238-240] and 109 at the Port of Long Beach [31 at Port of Long Beach Berths 76-78 and 78 at Port of Long Beach Berths 84-87].) The 263 vessel calls at the Port represents approximately a 9.7 percent increase over the 2,715 vessels that call at the Port annually. The Reduced Project Alternative would also require local barge deliveries of MGO for refueling of tankers visiting Berth 408. Barge deliveries would range from six per year in 2010 to eight per year in 2015 through 2040. The Port Pilots have indicated that scheduling and safe navigation of these additional vessels through the Port would not introduce any new concern (Morgan 2004).

Impacts would be similar in type but greater than those described for the proposed Project, as the number of vessels entering the harbor would be increased by a peak capacity of 372 (in the Reduced Project Alternative) rather than 201 (in the proposed Project). The increase results from a greater number of trips by the smaller Panamax and Aframax tankers to other bulk liquid marine terminals in the San Pedro Bay Ports. While the number of vessel calls at Berth 408 would be only 132, versus 201 for the proposed Project, an additional 240 vessel trips at other existing marine terminals would be required to meet projected crude oil demand. However, the total number of projected vessel calls under this alternative would still be within previously observed and planned vessel traffic levels and, therefore, vessel safety impacts due to operation of the Reduced Project Alternative would be less than significant.

In 2004, the number of vessel calls at the Port was lower than it was in 1990 ~~1991 at~~ 2,715 in 2004 versus 3,322 vessels per year in 1990. Based on today's ship traffic levels, the addition of 11 to 31 vessel calls per month would result in fewer total vessel calls than the San Pedro Bay Ports has already experienced and safely handled. Accordingly, the Reduced Project operations would not reduce the existing level of safety for vessels navigating in the areas affected by the Project. As noted in Appendix E, the operations of PLAMT at Berth 408 would adhere to the International Safety Guide for Oil Tankers and Terminals (ISGOTT) and the Oil Companies International Marine Forum (OCIMF) Tanker Mooring Guidelines for tanker mooring and operations at the terminal. While the increased ship size may affect maneuverability, the risk of accident is largely based on the number of vessels present; accordingly, the larger size of the vessels would therefore not have significant impacts on safety within the Port.

The available statistical data on accidents that involve ships and tankers (see Table 3.9-3) suggest that Project tankers are likely to have one or more ACG incidents during the life of the Project. At peak capacity of 372 vessel calls per year, the probability of a Project-related ACG would be 1.16×10^{-1}/year, or once every 8.6 years for open ocean transit. Within Port waters at a peak capacity of 372 vessel calls per year, the probability of a Project-related ACG would be 1.71×10^{-1}/year, or once every 5.8 years. However, the potential for this to happen is minimized by the location of Berth 408, which requires minimal transit time from the Angels Gate entry to Pier 400 and is away from the Main Channel where the highest level of ship traffic occurs. In addition, PLAMT would have an Oil Spill Contingency Plan that would identify and plan as necessary for contingency measures that would minimize damage to water quality and provide for restoration to pre-spill conditions in the event that an accident involving marine vessels does occur (see Section 3.12.4.3).

CEQA Impact Determination

For the above reasons, the vessel transportation impacts due to Reduced Project Alternative operation would be greater than for the proposed Project, but still less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Less than significant impacts are anticipated.

NEPA Impact Determination

For the above reasons, the vessel transportation impacts due to Reduced Project Alternative operation would be greater than for the proposed Project, but still less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Less than significant impacts are anticipated.

As significant impacts to vessel navigation safety are not anticipated during proposed Project or alternative construction and operations, no mitigation or mitigation monitoring is required. However, **MM 4E-8** from the 1992 Deep Draft FEIS/FEIR is still applicable to the proposed Project and alternatives.