Los Angeles-Long Beach Harbor Safety Committee

California Senate Bill 414

Assessment of Emergency Towing Capabilities in the Los Angeles-Long Beach Area of Responsibility

Final Report

February 1, 2017

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Part I. Introduction/Background

California Senate Bill 414 (SB 414) was signed into law by Governor Edmund G. Brown, Jr. and became effective January 1, 2016. The bill requires, *inter alia*, the Administrator of the Office of Spill Prevention and Response (OSPR) to task the Los Angeles-Long Beach Harbor Safety Committee (LA/LB HSC):

> *". . . to assess the presence and capability of tugs within their respective geographic area of responsibility to provide emergency towing of tank and non-tank vessels to arrest their drift or otherwise guide emergency transit."*

The assessment must take into consideration data from United States Coast Guard (USCG) Vessel Traffic Service, relevant incident and accident data, simulation models, and identification of transit areas where risks are higher. In addition, the assessment must consider the condition of tank and non-tank vessels calling on Los Angeles and Long Beach ports, including the USCG's Marine Inspection Program and Port State Control Program. See Appendix A for the complete text of SB 414.

At the November 4th, 2015 meeting of the LA/LB HSC Navigation Safety Subcommittee #1 (SC1), Michael Coyne from OSPR informed SC1 that SB 414 had passed into law and that the LA/LB HSC should begin its assessment. At its December 2, 2015 meeting, SC1 again reviewed the mandate of SB 414 and formalized a SB 414 Workgroup ("Workgroup"). See Appendix B for a roster of participants. The Workgroup identified the core issues raised by SB 414 as follows:

- Identify the geographic area of responsibility (AOR) for the assessment,
- Determine what it means to "arrest the drift or otherwise guide emergency transit,"
- Identify the present inventory of available response equipment,
- Determine tug asset response times within the AOR,
- Quantify the limitations of available equipment,
- Identify any transit areas with higher risk within the AOR,
- Gather relevant incident data, accident data, and weather data from the Marine Exchange Vessel Traffic Service Los Angeles-Long Beach (VTS),
- Analyze information from the USCG's Port State Control Program and Marine Inspection Program to assess the condition of the tank and non-tank vessels calling on the Ports of Los Angeles and Long Beach.

Acknowledging the wide-ranging expertise of the Workgroup participants, Chair John Strong formed three subgroups to initiate the assessment and maximize process efficiencies. The subgroups include: 1) Tug and Assist Vessels; 2) Vessel Operations; and 3) Data Collection and Government Affairs. On December 4, 2015, the three subgroups initiated their data collection tasks and agreed to report back to SC1 on a monthly basis.

On January 25, 2016, OSPR Administrator Thomas M. Cullen, Jr. sent a letter to LA/LB HSC Chair Strong providing further guidance and support for the assessment. Specifically, the letter clarified the scope of the assessment to vessels over 300 GRT, and offered financial assistance if needed to complete the tasking. The assessment is to be reported in the 2017 LA/LB Harbor Safety Plan. See Appendix C for the letter from the OSPR Administrator.

Part II. Scope of Study

The LA/LB HSC has been tasked with assessing the presence and capability of tugs to respond to a disabled vessel in an offshore environment. An analysis of the likelihood of a successful outcome is implicit in this tasking. Any such hypothetical analysis involves weighing many different factors such as: the type and size of the disabled vessel in need of assistance; the expected weather and sea conditions; the size of the response tug (horsepower/bollard pull); the tug's propulsion configuration; the type of emergency towing equipment available; the condition of the disabled vessel and the capability of its crew; the urgency of the situation in terms of vessel drift rate and distance from the grounding line;[1] and the likelihood that a disabled vessel might (or might not) have any opportunity to deploy its anchors prior to drifting ashore.

When assessing hypothetical failure scenarios absolute conclusions are not likely. Nonetheless, a qualitative analysis of the likelihood and potential consequence related to a hypothetical occurrence can be achieved. Toward that end, clearly defining the scope for this study will focus our analysis and facilitate more reliable conclusions.

[1] The "grounding line" is the point separating those waters where a ship will float from the waters where it will not. It is the point where a ship's hull comes into contact with the seabed.

Geographic Area of Responsibility

Defining the geographic limits of our study area is a critical threshold issue. For guidance, the workgroup looked to the Area of Responsibility's (AOR's) for both the VTS and the LA/LB HSC. The VTS AOR (offshore sector) is defined as follows:

> *VTS LA/LB is a vessel traffic monitoring and reporting system within the Los Angeles/Long Beach Harbor and approaches and extending to 25 nautical miles seaward of PT Fermin.*[2]

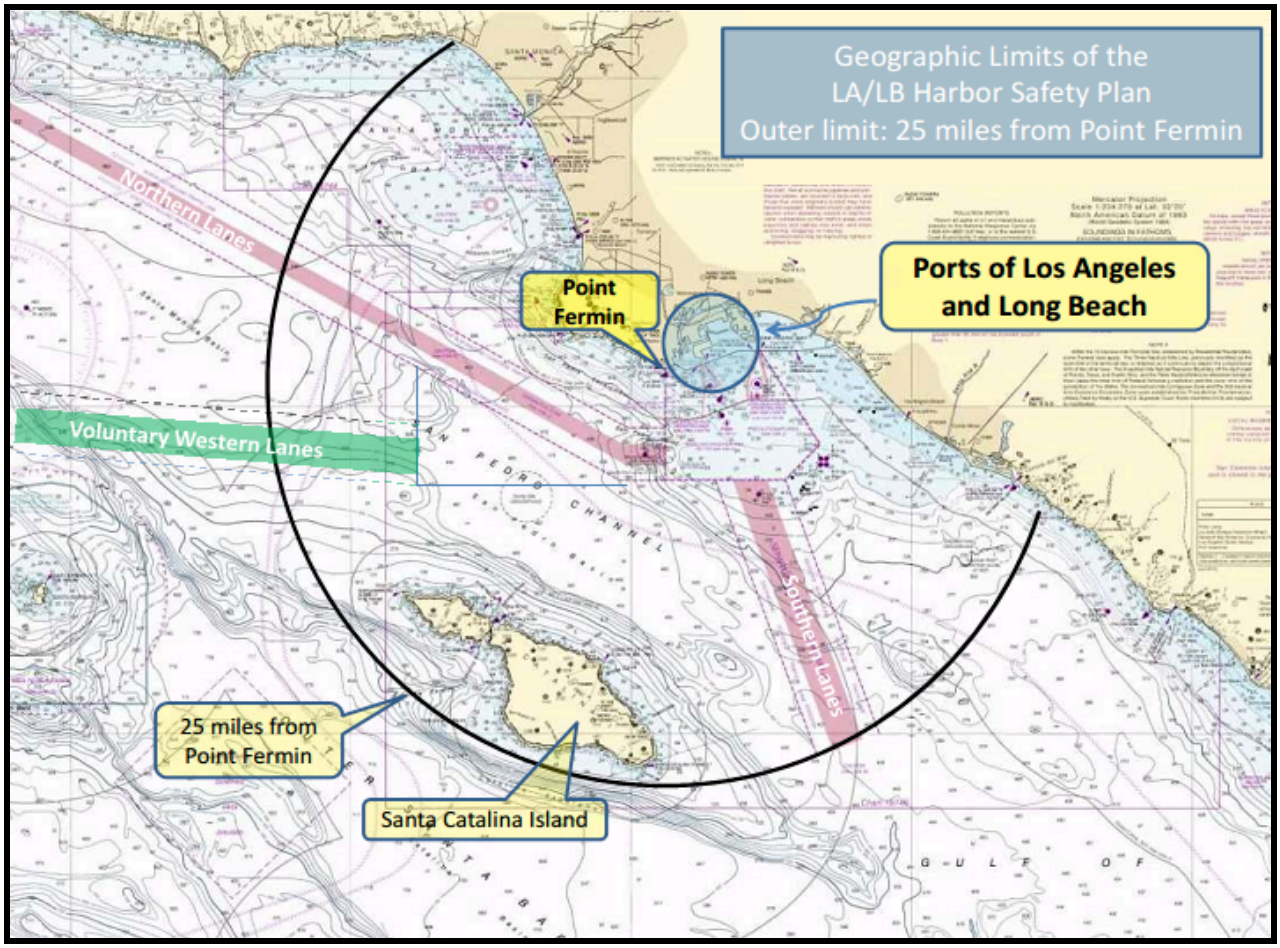
The LA/LB HSC AOR that lies outside the Los Angeles-Long Beach Federal Breakwater is similarly defined as follows:

> *Navigable waters outside the breakwaters encompassed by the arc of a circle having its center at Point Fermin Light, drawn from a position on the shore near Newport Beach clockwise to the shore near Santa Monica. This circle's radius is twenty-five (25) nautical miles.*[3]

The Workgroup acknowledge the importance of coordinating its assessment with the efforts of the other California Harbor Safety Committees, notably with the concurrent San Francisco Bay Region assessment and the yet-to-be-initiated assessments of San Diego, Port Hueneme, and Humboldt Bay. The LA/LB AOR should not extend so far as to interfere with the other ports' mandates. There is also a significant advantage associated with consistency of data gathering that will be realized by matching our study AOR to the above described AOR's already in place in the region.

For these reasons, the LA/LB HSC concludes that the Geographic AOR for this study should match as closely as possible the geographic limits of both the VTS offshore sector and the LA/LB Harbor Safety Plan AOR, namely a 25-mile arc extending seaward from Point Fermin. See graphic depiction on page 6, below.

[2] Los Angeles-Long Beach Vessel Traffic Service User Manual, 2015, p 1-1.
[3] Harbor Safety Plan for the Ports of Los Angeles and Long Beach, 2016, p I-1



Types of Vessels Studied

Following the guidance received from the OSPR Administrator, the Workgroup limited the scope of vessel types studied to vessels over 300 gross tons. The types of vessels that typically fall within this scope are as follows: Oil Tankers, Chemical Tankers, Container Ships, Passenger Ships, Vehicle Carriers, General Cargo/Multi-Purpose Ships, Bulk Carriers, Barges and Articulated Tug/Barge Units, Ro-Ro Cargo Ships, Refrigerated Cargo Carriers, and Heavy Lift Ships.

An ancillary issue dependent on "vessel type" is a determination of what it means to "*arrest their drift or otherwise guide emergency transit"* of a disabled vessel. For the purposes of this study, the Workgroup interprets the term *"arrest their drift or otherwise guide emergency transit"* as the ability to use tugs and/or ship's anchors to hold a disabled vessel in position, or slow its drift rate to afford more time for additional resources to arrive on scene, or alter its direction of drift to avoid grounding, or any combination of the above. This definition includes using response tugs to push/pull/nudge/guide a

vessel to influence its direction of drift sufficiently so that it avoids grounding, even though the disabled vessel may still be moving. This definition also includes using the disabled vessel's anchors, where possible, to arrest its drift and prevent grounding. The overarching objective of *"arresting their drift or otherwise guiding emergency transit"* is to prevent a vessel from drifting ashore. Additional resources may be needed to safely direct the vessel to a harbor of safe refuge[4] or safe anchorage, and that issue is outside the scope of this study.

Part III. Assessment Considerations/Data Collected/Analysis

The workgroup collected and analyzed a large amount of relevant data to prepare this report, to include: a current inventory of all available response assets and equipment within LA/LB ports; historic weather conditions in the AOR; incident data over the past seven years; past simulation models that identify specific transit areas where a disabled vessel might be unreachable in sufficient time to prevent grounding; transit areas that might not offer any suitable anchoring opportunity; and information relating to the USCG's Port State Control and Marine Inspection Programs.

Tug Inventory/Capability/Availability

The "Tug and Assist Vessel" subgroup provided a complete inventory of active ship assist tugs in the Ports of Los Angeles and Long Beach. The inventory contains information on the name, bollard pull, operational range, onboard equipment, arrest or tow capability, and availability of tugs in the area. Currently, twenty-two active ship assist tugs are located in the Ports of Los Angeles and Long Beach with a wide range of bollard pull capabilities (from 25 to 90 tons) and availabilities. It should be noted that such an inventory is a "snapshot in time," since home-port assignments for tugs can change. Nonetheless, this inventory does indicate a current summary distribution of ocean-going tugs in the Ports of LA/LB and the Workgroup believes that it is representative of the minimum overall assets that will continue to be available in the future.

[4] "Harbor of Safe Refuge" means a port, inlet, or other body of water normally sheltered from heavy seas by land and in which a vessel can navigate and safely moor. The suitability of a location as a harbor of safe refuge shall be determined by the cognizant Officer in Charge, Marine Inspection, and varies for each vessel, dependent on the vessel's size, maneuverability, and mooring gear. *See,* 46 CFR 175.400

Los Angeles-Long Beach Tug Boat Data

Tug	Bollard Pull (tons)	Range (days)	Weather Limits	Bow Winch	Tow Winch	Wire on Drum	Arrest	Tow	Availability
INDEPENDENCE	65	4	See Note 1	✓			✓		24/7/365
FREEDOM	50	4	See Note 1	✓			✓		24/7/365
DELTA LINDSEY	87	30	See Note 1	✓	✓	✓	✓	✓	
MASTER	51	14	See Note 1	✓			✓	✓	24/7/365
ADMIRAL	54	14	See Note 1	✓			✓	✓	24/7/365
LEADER	59	14	See Note 1	✓			✓	✓	24/7/365
GOLIAH	55	14	See Note 1	✓	✓	✓	✓	✓	24/7/365
ARTHUR FOSS	55	12	See Note 1	✓	✓		✓	✓	Generally Crewed 24/7
BRYNN FOSS	52	8	See Note 1	✓	✓		✓	✓	Generally Crewed 24/7
ALTA JUNE	64	2	See Note 1	✓			✓		Generally Crewed 24/7
CAROLYN DOROTHY	53	2	See Note 1	✓			✓		See Note 2
CAMPBELL FOSS	61	2	See Note 1	✓			✓		Generally Crewed 24/7
DREW FOSS	32	35	See Note 1		✓	✓	✓	✓	See Note 3
EDITH FOSS	25	12	See Note 1		✓	✓	✓	✓	See Note 3
PACIFIC QUEEN	25	12	See Note 1		✓	✓	✓	✓	See Note 3
PACIFIC STAR	82	6	See Note 1	✓			✓		In Harbor Temporarily
TIM QUIGG	50	10	See Note 1	✓			✓		1 hr. callout
JOHN QUIGG	50	10	See Note 1	✓			✓		1 hr. callout
ROBERT FRANCO	90	30	See Note 1	✓	✓	✓	✓	✓	1 hr. callout
LELA FRANCO	68	14	See Note 1	✓			✓		1 hr. callout
MICHELLE SLOAN	68	14	See Note 1	✓			✓		1 hr. callout
MILLENNIUM MAVERICK	55	35	See Note 1			✓	✓		1 hr. callout

Note 1: Generally, LA/LB tugs can operate in up to Beaufort Force Six conditions – 27 knot (31 m.p.h.) winds and 13-foot seas. Some tugs might be able to operate in sea conditions that exceed Beaufort Force Six, but with limitations.

Note 2: Crewed approximately 12 hours/day.

Note 3: Vessel callout requires from two to six hours of advance notice for routine operations, but it is anticipated that vessels could be crewed and available more quickly in an emergency.

The above Table shows the tugs that are currently available to assist drifting/disabled vessels. Six to ten tugs are crewed twenty-four hours a day, seven days a week and another ten can be crewed and dispatched on relatively short notice.

The Workgroup compared the current inventory to an older inventory contained in a 2002 Project Report[5] that compiled similar data. The comparison shows that the current tug inventory in the Los Angeles and Long Beach Harbors is more robust today - larger and more capable tugs are currently available.

[5] *West coast offshore vessel traffic risk management project* (Final Report, 2002), Pacific States/British Columbia Oil Spill Task Force and the U.S. Coast Guard, Pacific Area. Retrieved from, http://oilspilltaskforce.org/wp-content/uploads/2013/12/2002-Offshore-Vessels-Risk-Management-Project-Report.pdf.

The Workgroup found the 2002 Project Report instructive in generally evaluating the effectiveness and capability of our current tug inventory. According to that in-depth report, tugs with 40 tons of bollard pull or more meet the criteria as a rescue tug for the LA/LB area. In 2002, there were a total of 13 tugs which operated in the LA/LB Harbor, each having a bollard pull of 40 tons or greater. Today, that number has almost doubled with a total of 22 tugs, 19 of which have a bollard pull of 40 tons or greater. In 2002, only five tugs had a bollard pull of 60 tons or more (the top three having a bollard pull of 70 tons). Today, there are eight tugs with a bollard pull over 60 tons (the top three having bollard pulls of 82 tons, 87 tons, and 90 tons). In addition, all but one of the local tug companies has confirmed that they have offshore towing equipment packages available for their tugs. Thus, there is currently a robust and effective inventory of adequately equipped tugs available for the "arrest or influence" mission associated with the tasking of SB 414. Further, the present-day tug inventory is larger, more modern, more powerful, and better equipped to assist any size of vessel in distress than at any time in the past.

Based on current and expected future tug inventories in the Ports of Los Angeles-Long Beach, the LA/LB HSC believes that there is a high likelihood that tugs will be readily available and equipped to respond to a disabled vessel within the LA/LB AOR.

Historic Weather Data in the Geographic Area of Responsibility

Workgroup members representing the tug companies offered that severe weather conditions might limit a response tug's ability to operate in the offshore environment. More specifically, rough sea conditions might increase transit times and make it more difficult to connect a towline to a drifting vessel. Quantifying the likelihood and frequency of sea conditions that could limit response operations in the LA/LB AOR is critical to assessing the capability of rescue tugs operating in the offshore environment.

Using wind data and wave buoy data provided by the Marine Exchange of Southern California, the Workgroup analyzed weather conditions for the past 15 years. The data show the weather in the LA/LB AOR is generally mild and severe weather days are infrequent. Generally, winds exceed 30 knots ~7% of the time (24 days/year).[6] During April and from September through December, the wind exceeds 30

[6] Percent of wind observed over 30 knots as obtained from Santa Monica Basin NOAA Buoy #46025.

knots an average of 23% of the time. Buoy data show waves exceed 13 feet ~0.05% of the time (< 1 day/year).[7]

The tug company representatives agree, emergency towing in open ocean waters can typically be conducted in weather conditions up to and including Beaufort Force 6, i.e., wind 22-27 knots (25-31 m.p.h.), wave height 9.5-13 feet.[8]

Based upon information provided, the LA/LB HSC concludes that most local tug boats should be capable of operating effectively in the offshore environment without significant limitation so long as sea conditions do not exceed Beaufort Force 6. Typically, those limiting sea conditions occur on only about 24 days per year, or less than 7% of the time, in the LA/LB AOR. When operating in Beaufort Force 7 or greater, tug companies typically conduct an additional risk assessment to mitigate the hazards associated with severe sea conditions.

Marine Exchange Vessel Traffic Service Incident Data Collected

The "Data Collection and Government Affairs" subgroup assessed relevant vessel incidents that occurred between 2010 and 2016. Based on information reported to the Marine Exchange Vessel Traffic Service Los Angeles-Long Beach, over a 7-year period there were 63,792 vessel transits and only 7 vessels required an emergency tow.[9] It should be noted that all 7 of those incidents occurred in very mild weather and all of the ships were safely towed to a designated anchorage area or into port.

The Workgroup gathered data regarding incidents and ships needing tow from two sources: 1) Marine Exchange of Southern California, which operates the Vessel Traffic Service for the ports of Los Angeles and Long Beach, and 2) USCG District 11 in Alameda, CA. The table below summarizes the incidents during the period 2010-2016.

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[7] As obtained from the Scripps Institution of Oceanography waverider buoys located in Santa Monica Bay (Buoy No. 46221) and in San Pedro Channel (Buoy No. 46222). *See,* http://www.ndbc.noaa.gov.
[8] Bowditch, N., & United States. (2002). *The American practical navigator: An epitome of navigation*, 2002, p 540.
[9] Incidents over the past seven years where a vessel over 300 gross tons needed tug assistance due to a loss of propulsion, steering, or other similar casualty.

SUMMARY OF INCIDENTS, RELEVANT INCIDENTS, and SHIPS NEEDING TOWED
2010 - 2016

Based on incidents reported to MX VTS LA/LB and Coast Guard District 11, Alameda, CA
Prepared by Marine Exchange of Southern California

																		As Of 31-Dec-16	
Year		Total Incidents	Total Relevant Incidents (Note 1)	Propulsion	Steering	Electrical		Total Tanker Incidents	Propulsion	Steering	Electrical		Total Ships Needing Towed (Note 2)	Tankers (Note 2)	Container & Bulk Ships (Note 2)		Total Ship Count (Note 3)	Relevant Incident Rate (Note 4)
2010		35	21	19	1	1		7	6	1	0		2	0	2		8,956	0.23%
2011		30	21	18	2	1		6	5	1	0		0	0	0		9870	0.21%
2012		29	17	17	0	0		2	2	0	0		1	0	1		9162	0.19%
2013		25	21	19	2	0		3	2	1	0		0	0	0		8948	0.23%
2014		21	19	17	0	2		2	1	0	1		2	0	2		8844	0.21%
2015		31	19	15	2	2		4	4	0	0		1	0	1		8810	0.22%
2016		17	12	12	0	0		2	2	0	0		1	0	1		9202	0.13%
TOTAL		188	130	117	7	6		26	22	3	1		7	0	7		63,792	0.20%
													0.011%	% ships needing towed (Note 5)				

Note 1: A "Relevant Incident" is defined to be something related to propulsion, steering, or other similar casualty that did or could result in a drifting ship needing tug assistance. This strips out cases of fishing and pleasure boats, search and rescue cases, medical evacuations, rules of the road and VTS procedures violations, the tsunami, the pier fire, the oil spill, towing a dead whale, etc.

Note 2: All ships were easily towed to safe anchorage or port by tugs. Six container ships and 1 bulk ship needed towed. Zero tankers.

Note 3: The ships needing towed were both inbound arrivals and outbound departures. Therefore, the total ship count column is the sum of arrivals and departures.

Note 4: 0.2% relevant incident rate means that 1 ship in 500 has an incident.

Note 5: 0.011 percent ships needing towed means that 1 ship in 9,100 needed towed.

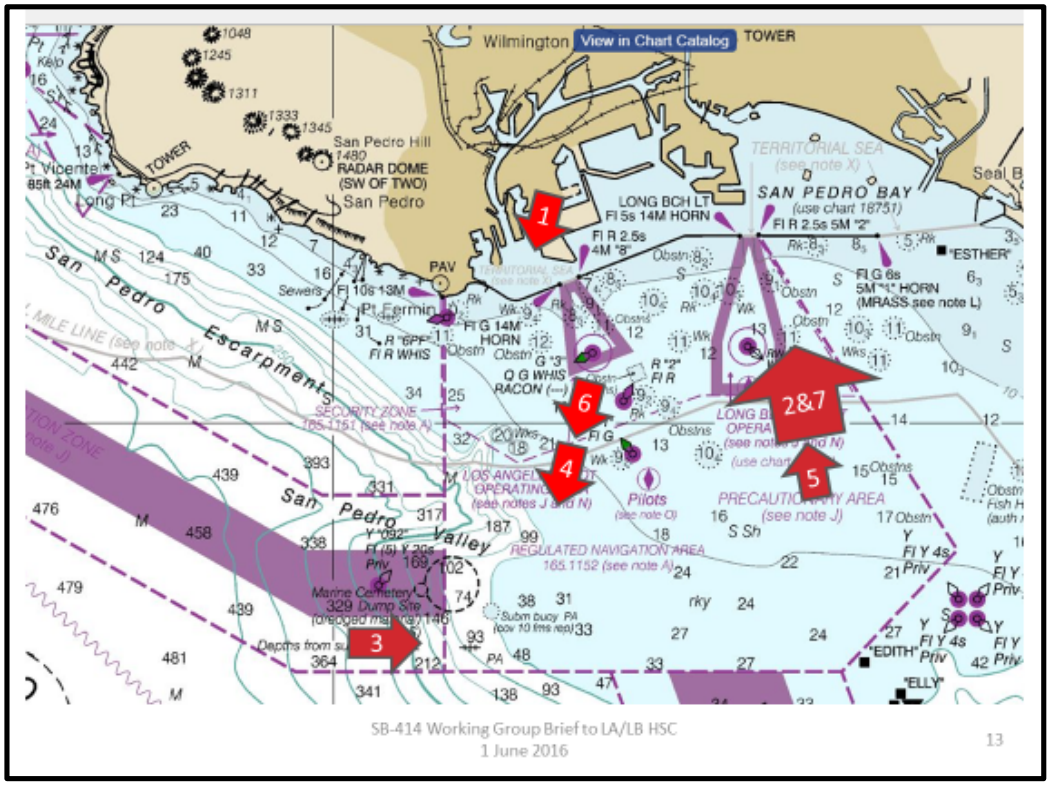
There were a total of 188 incidents during the 7-year period, but the definition of an incident is very broad. The Workgroup's review determined that many of the incidents involved matters not relevant to the SB 414 tasking related to arresting the drift of ships over 300 gross tons. The HSC determined that there were 130 incidents that were relevant to this study.

For the purposes of this study, a "relevant incident" is defined as an incident related to propulsion, steering, electrical, or other similar casualty that did or could result in a drifting ship needing tug assistance. This definition strips out cases of fishing and pleasure boats, search and rescue cases, medical evacuations, rules of the road and VTS procedures violations, and various specific incidents (for example, the tsunami, the pier fire, the oil spill, etc.). After this adjustment, the remaining "relevant Incidents" were grouped into three main failure categories: Propulsion; Steering; and Electrical. As

shown in the table above, there were 117 relevant propulsion; 7 relevant steering; and 6 relevant electrical incidents reported during the 7-year period of 2010-2016. It should be noted that the threshold for an incident is very low, and reported incidents include cases where there were *limitations* in the propulsion, steering, or electrical systems rather than a complete failure. Such limitations included things such as engines that operated but not at full power, engines that could propel the ship forward but not in reverse, or two-engine ships that lost one of the two engines, for example.

The data also show that over the 7-year reporting period, a total of 63,792 transits were made in the study area. Of these, only 7 vessels 300 GRT or larger required emergency tows. This represents 0.011% of the total ships that transited the AOR during the reporting period, which is a failure rate of 1 ship in every 9,100 ships. It should also be noted that all 7 of the vessels that required a tow were safely directed to anchor using 1 or 2 tugs.

The chartlet below details the locations of the 7 ships in the 7-year reporting period that lost propulsion and needed a tow. All the ships were very close to the LA/LB port complex and the losses of propulsion were due to issues associated with operation of the ships' engines as the ships departed or arrived at the ports. In three cases (#1, #4, and #6) the ships were departing the ports, and in four cases (#2, #3, #5 and #7) the ships were arriving in the ports. In each case, the ship was quickly taken in tow because assist tugs were nearby or already on scene due to the standard procedures and standards of care used by both ports for ships arriving and departing.



During all of the 188 incidents (130 relevant incidents), a refined process between the ship, VTS, USCG, and pilots was used, which ensured that all the proper steps were being taken to resolve the incident safely and properly, and all relevant parties were kept informed. See Appendix D for detail of the 7 ships that needed emergency tows.

The LA/LB HSC concludes that the incidence of vessel failures that necessitate a tow within the LA/LB AOR is extremely low and that historically all of those failures have occurred near the port entrances where readily available response assets are close at hand.

Transit Areas of Concern

The "Vessel Operations" subgroup identified transit areas within the AOR where the grounding risk associated with a drifting vessel could be higher. Building on the comprehensive models used in the 2002 Project Report, the subgroup made an assessment of those circumstances wherein a tug, dispatched from port in an emergency, might not be able to reach a disabled vessel before it grounded. The assessment factors included, the disabled vessel's distance from the grounding line when failure occurred, its drift rate and direction of drift, and the response tug's "run time" to reach the drifting vessel. Based upon this assessment, the subgroup identified "reachable" and "probably unreachable" zones. In addition, the subgroup identified areas within the AOR where a drifting vessel might have difficulty deploying its anchor(s) prior to drifting ashore.

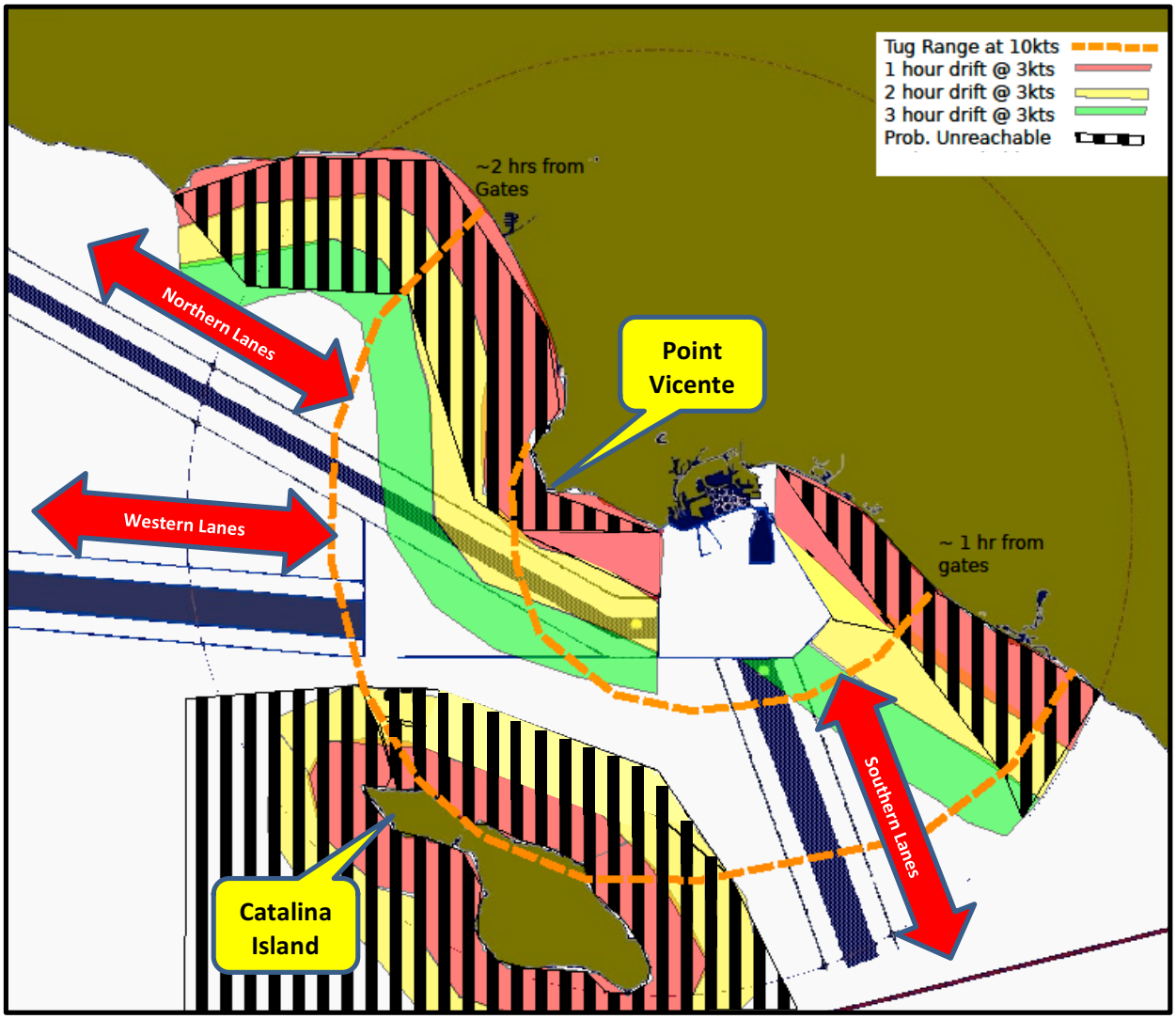
The graphic on page 13 shows the drift distances to shore cross-correlated with the range of response tug boats within a given time after departing the LA/LB port complex. According to the "Tug / Assist Vessel" subgroup, the majority of LA-LB tugs should be able to make at least 10 knots (11.5 m.p.h.) speed of advance while operating in the waters offshore of the Southern California ports. Response speeds could be slower based on weather and sea conditions at the time of response. Additionally, the Workgroup assumed that the worst case drift scenario for a disabled vessel would be 3 knots (3.4 m.p.h.), which this chart assumes.[10]

The normal transit areas for all vessels over 300 gross tons are the IMO Approved Traffic Lanes and the locally recommended Western Voluntary Traffic Lanes (collectively referred to as the TSS). Based on the graphic on page 13, it can be seen that vessels transiting through the TSS and within the AOR are always

[10] See, *West coast offshore vessel traffic risk management project* (Final Report, 2002), Appendix F.

in the "reachable" zone and within the range of tugs dispatched from the Los Angeles-Long Beach port entrances (the "Gates").[11] Accordingly, a vessel utilizing the TSS and subsequently becoming disabled poses little or no concern of grounding.

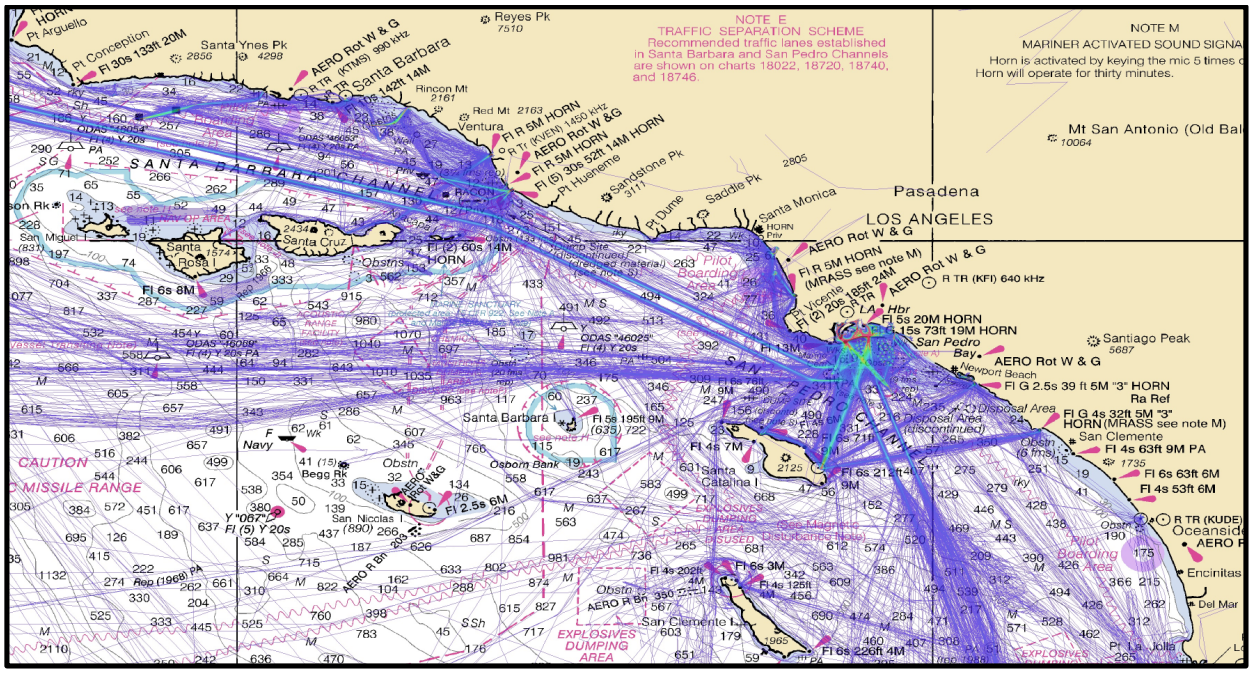
The below graphic (page 13) also depicts "probably unreachable" zones (cross-hatched) within the AOR. A "probably unreachable" zone is an area where a rescue tug's "run time" (anticipated response time) may be inadequate to prevent a disabled vessel from grounding. This report will discuss and address in detail "probably unreachable" zones as well as mitigating circumstances, mitigation measures and the use of a vessel's ground tackle (anchoring system) to prevent grounding.



Probably Unreachable Zones shown as cross-hatched areas

[11] Assumes sea conditions allow rescue tug(s) to travel at a speed of 10 knots.

As shown by the graphic of AIS data below, the majority of vessel traffic does indeed follow the TSS, and therefore poses little or no concern. Nonetheless, there are some vessel transit areas that pass through the “probably unreachable” zones. Notable are the transit areas around Point Fermin and Point Vicente lying inshore of the TSS, and the transit area on the offshore side of Santa Catalina Island. Vessels over 300 gross tons traveling between the LA/LB Port Complex and the offshore moorings in Santa Monica Bay depart the TSS and travel inshore in the area to the west of Point Vicente. Also, vessels on innocent passage through the LA-LB AOR (passing through without stopping) sometimes elect to travel on the southwest side of Catalina Island rather than through the TSS. Both of these transit areas could be unreachable by a response tug from the LA-LB port complex under certain circumstances.

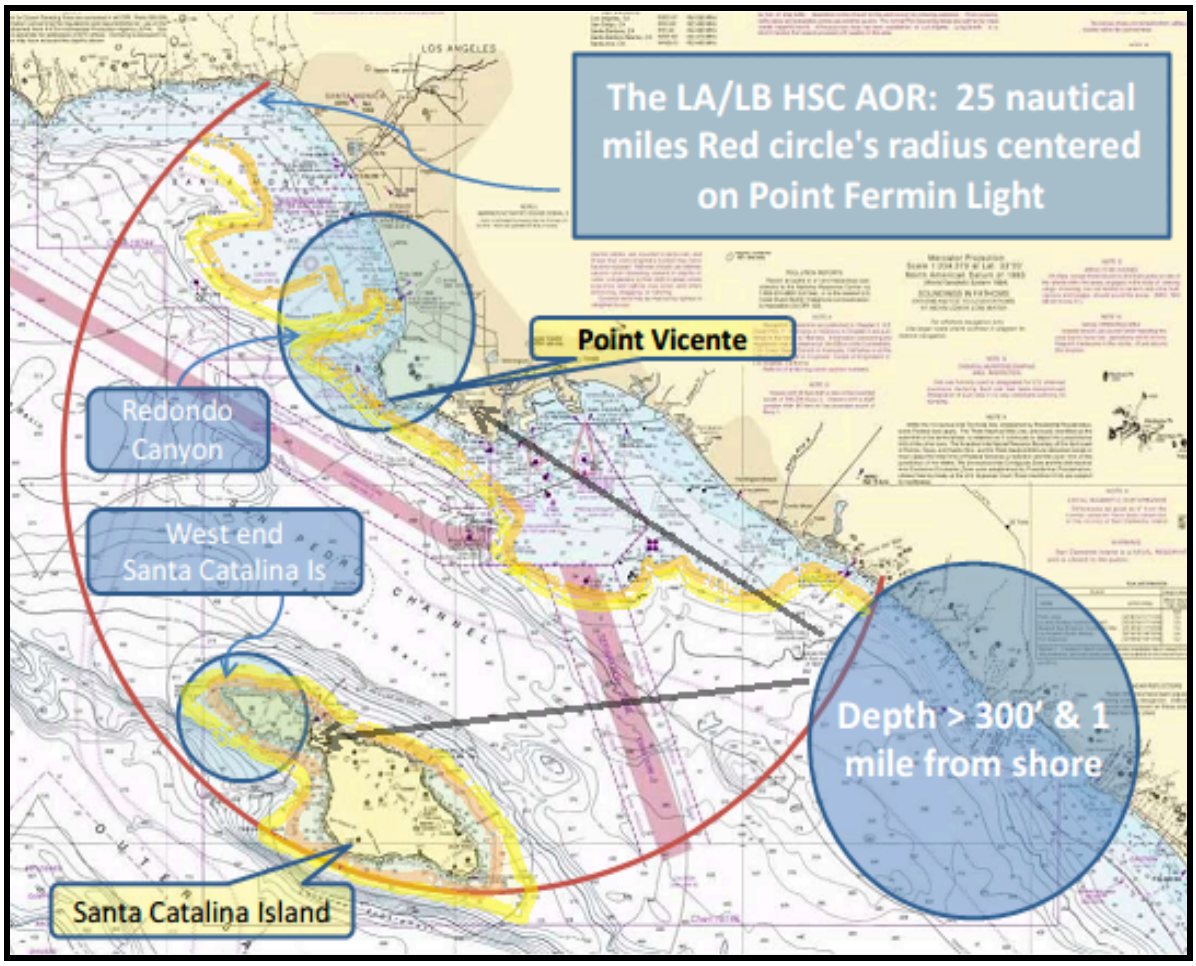


March 2015 Chartlet of vessel tracks. Source: Automatic Identification System (AIS) data provided by the U.S. Coast Guard.

Oftentimes a disabled and unreachable vessel drifting without tug assistance is able to arrest its drift simply by dropping its anchor(s). Thus, the risks associated with grounding can be eliminated when a drifting vessel has sufficient opportunity to deploy its anchors prior to grounding, with or without tug assistance. However, this methodology is only available once the vessel drifts into waters sufficiently shallow to allow anchoring, which is usually relatively near the shore. In areas where shallow water extends sufficiently far from shore, the risk of grounding is very low. Nonetheless, in areas where there is deep water in close proximity to shore, the risk of grounding is higher. Accepted industry practices

indicate that the recommended maximum depth for anchoring a drifting ship is approximately 50 fathoms (300 feet).[12]

The "Vessel Operations" subgroup identified two areas of concern within the AOR where water depths exceeding 50 fathoms are within 1 mile of the shore such that a drifting vessel might have difficulty deploying its anchors prior to grounding. As shown on the below graphic (blue circles), there is deep water in close proximity to shore just off Point Vicente and in a subsea canyon off Redondo Beach in Santa Monica Bay (northern blue circle). A similar situation is present around the West end of Catalina Island (southern blue circle). Each of these areas have water depths of 50 fathoms (300 feet) to within less than a mile of shore. This condition limits a drifting vessel's anchoring options.



The orange line depicts the 50-fathom curve (300 feet) and the yellow line depicts the 100-fathom curve (600 feet).

[12] Oil Companies International Marine Forum, & Witherby Seamanship International, *Anchoring systems and procedures,* 2010, p 58.

The workgroup next cross-correlated the data to determine transit areas where vessels would be "probably unreachable" and may have a low likelihood of emergency anchoring. Areas where both factors existed are considered to be "transit areas of concern."

As stated before, little or no concern exists for vessels transiting through the TSS. Those transit areas lie entirely within the "reachable" zone where response tugs are highly likely to reach a disabled vessel prior to it drifting ashore, even in severe weather conditions. The vast majority of vessels operating in the LA/LB AOR transit through these traffic lanes and pose little or no concern.

The Workgroup found that the transit areas off Point Vicente and Redondo Beach do not rise to the level of being classified as areas of concern because tug assistance from the El Segundo Refinery Offshore Marine Terminal is readily available. An assist tug is permanently stationed at the El Segundo offshore moorings, which are in close proximity to the areas off Point Vicente and Redondo Beach. Even though a disabled vessel might drift towards shore through an area of deep water, commonly available tug(s) in San Monica Bay could be dispatched to assist.

The Workgroup found that the area on the West End of Catalina Island, and particularly the waters to the southwest of the Island, is a transit area of concern. These waters lie in the previously identified "probably unreachable" zone and are sufficiently deep close inshore to make anchoring difficult. Given the right combination of circumstances, a vessel transiting close to the Island and becoming disabled during southwesterly weather could develop a high drift rate toward the Island and have no opportunity to deploy its anchors. All these factors could act in concert to cause a grounding risk before a response tug could arrive on scene. Although this scenario is relatively unlikely due to the low traffic volume on the offshore side of Catalina Island and the low likelihood of all the cited factors acting in concert, nevertheless, the right confluence of conditions could elevate the risk of grounding in this area.

The LA/LB HSC concludes that the TSS, through which the vast majority of vessel traffic into and out of the Ports of Los Angeles and Long Beach flows, is not an area of concern. It is highly likely that a response tug would be able to reach any vessel that becomes disabled while traveling through the IMO approved traffic lanes or the Western Voluntary Traffic Lanes. This is due to a sufficiency of drift distance combined with expected response tug transit times and/or ample opportunity to anchor a drifting vessel prior to reaching shore.

The LA/LB HSC concludes that the transit area southwest of Catalina Island is a transit area of concern. The Workgroup's concern would only attach to vessels transiting off the southwest side of Catalina Island and becoming disabled, then drifting to the northeast toward Catalina Island. It should be noted that vessels rarely travel this route and, even though the consequence of an event could be high, the likelihood of an occurrence is extremely low. Nevertheless, the LA/LB HSC has identified this as a transit area of concern and has recommended mitigation measures in the conclusion of this report.

Assessment of United States Coast Guard's Port State Control and Marine Inspection Programs

U.S. Coast Guard's Port State Control Program (Foreign Flag Vessels) – SB 414 requires the review of the USCG's Marine Inspection Program and Port State Control Program (PSC) regarding risks due to a vessel's hull or engineering material deficiencies, or inadequate crew training and professionalism. The Los Angeles-Long Beach Harbor Safety Committee and the Harbor Safety Committee of the San Francisco Bay Region employed an innovative and streamlined approach to assess the condition of the USCG's PSC program. The committees recognized a worldwide network of PSC regimes exist with the goal to eliminate substandard shipping. The USCG holds observer status within both the Memorandum of Understanding on Port State Control in the Asia-Pacific Region (Tokyo MoU) and Paris Memorandum of Understanding on Port State Control (Paris MoU). Similarly, the Tokyo MoU has granted observer status to the Paris MoU, and the Paris MOU has granted observer status to the Tokyo MoU. The Paris MoU, Tokyo MOU and the USCG each produced an annual PSC report, and these reports list the vessel Detention Rate due to unsatisfactory Safety Examination results. The USCG's annual reports also list the Detention Rate for California, known as District 11's Detention Rate.

The HSCs reviewed six years (2010 - 2015) of data published in annual reports from the Paris MoU's, Tokyo MoU and USCG. This assessment encompassed PSC data from forty-five countries on five continents, 651,134 PSC vessel boardings, 350,943 Safety Examinations and 12,991 Detentions.

Utilizing the Detention Rate derived from PSC data, the HSCs were able to quantify the quality of vessels calling on California ports by comparing the California Vessel Detention Rate weighted average against the combined PSC authorities' detention rate weighted average. Using the California Vessel Detention Rate in this way enables for the relative assessment as to the condition/quality of vessels calling on California ports.

The assessments results were definitive and conclusive. The California Vessel Detention Rate weighted average at 0.0064% is the lowest of all surveyed PSC organizations. It indicates vessels calling on California are 99.84% less likely to possess the characteristics that would warrant a PSC detention than other parts of the world.

The HSCs find the condition of foreign vessels calling on California ports and the condition of the USCG's Port State Control program to be adequate.

PSC Authority	No. of Safety Examinations	No. of Detentions	Detention Rate %	Weighting % Based on Detentions*	Detention Rate Weighted Average** (Detention Rate % x Weight)
(A)	(B)	(C)	(D)	(E)	(F)
			(C) / (B)		(D) X (E)
Tokyo MoU	178,148	8,145	4.5720%	62.70%	2.8665%
Paris MoU	115,399	4,022	3.4853%	30.96%	1.0790%
USCG less D 11	50,619	749	1.4794%	5.77%	0.0854%
D11 (CVDR)	6,777	75	1.1067%	0.58%	0.0064%
Totals	350,943	12,991	-	100%	4.0374%
PSC Detention Rate Weighted Average (W.A)					4.0374%
CVDR W.A.					0.0064%
CVDR W.A. Below PSC Detention Rate W.A.					4.0309%
Percent CVDR W.A. is below PSC Detention Rate W.A.					-99.84%***

Notes:
* Calculation is Number of Detentions by a PSC divided by the sum of all PSC Detentions (12,991)
** Calculation is Detention Rate % multiplied by the Weighting %
*** Calculation is 4.0374% less 0.0064% divided by 4.0374%

U.S. Coast Guard's Marine Inspection Program (U.S. Flag Vessels) – Published each year in the Paris MoU and Tokyo MoU Annual Reports, is an updated document entitled, "White, Grey and Black (WGB) List." The WGB List represents the full spectrum, from quality flag states to flag states with a poor performance that are considered high risk. It is based on the total number of inspections and detentions and is the results from PSC inspections.[13] The WGB List reflects the quality of a flag state's (marine) inspection program as well as the quality of vessels and vessel operators.

[13] "White, Grey and Black List." *Paris MoU*. Paris MoU, 2016. Web. 27 December 2016.

The White List contains a list of flag states found to be of higher quality and lower risk. Conversely, the Black List contains a list of flag states found to be substandard and of higher risk.[14] The Gray List is a list of flag states that may be simply described as average, average being considered less than ideal.

Independent third party audits, more commonly referred to as PSC inspections, over the last six consecutive years have reflected favorably upon the flag state of United States as well as the condition of the USCG's Marine Inspection Program. During the sample period (2010-2015), the flag state of United States attained White List, low risk status 83% of the time. Moreover, over the past four consecutive years (2012-2015), the flag state United States attained White List, low risk status 100% of the time.

Accordingly, the LA/LB HSC finds the condition of United States vessels 300 GRT and greater and the condition of the USCG's Marine Inspection Program to be adequate.

Part IV. Conclusions

There are many factors that could cause a vessel to lose propulsion and/or maneuverability. However, based on the data assembled in response to Senate Bill 414, the Ports of Los Angeles and Long Beach are well prepared for most foreseeable emergency scenarios that might require a response tug to provide emergency towing of a tank or non-tank vessel to arrest its drift or otherwise guide its emergency transit. The large availability of response tugs in the harbor and offshore moorings allows emergency services to be dispatched any time day or night. The mild and calm weather typically encountered in the Southern California Region rarely limits the operational effectiveness of response vessels. It is highly likely that a response tug will arrive on scene well before a disabled vessel traveling in the TSS could drift into danger. Only one transit area of concern (to the southwest of Catalina Island) has been identified and very few vessels travel that route. Historically, there have been very few vessel failures that necessitated a tow, and all of them occurred relatively close to the harbor entrances where response assets are always close at hand. The quality of the vessels and crews calling at the Ports of Los Angeles, Long Beach and other California ports is generally very high as indicated by reliable data from the annual reports of the USCG's Port State Control Program, the Tokyo MoU, and the Paris MoU.

[14] "White, Grey and Black List." *Paris MoU*. Paris MoU, 2016. Web. 27 December 2016.

Historically, whenever vessels have experienced failures in the LA-LB AOR, they have had sufficient sea room to drift until propulsion was restored or tug boats arrived on scene to take the vessel in tow. The worst case scenario identified by the LA/LB HSC would be for a vessel to experience a disabling failure in the transit area of concern lying southwest of the West End of Catalina Island during strong southwesterly weather. Although the risk is very low due to few vessel transits and the unlikely confluence of events necessary to drive a disabled vessel ashore, the LA/LB HSC nevertheless has considered the following measures to mitigate the low-level risk associated with such an unlikely event:

- Recommend that steps be taken to raise awareness of the grounding risks associated with vessels over 300 gross tons transiting through our AOR on the offshore side of Catalina Island during southwesterly weather.
- Recommend that vessels over 300 gross tons transiting through our AOR (on innocent passage) be encouraged to utilize the IMO approved traffic lanes located on the North side of Santa Catalina Island.

Findings: The Los Angeles-Long Beach Harbor Safety Committee finds that there is a very high degree of likelihood that the resources presently in place in the Los Angeles-Long Beach Area of Responsibility are, and will continue to be, sufficient to arrest the drift of a disabled vessel or otherwise influence its drift to prevent it from grounding.

Senate Bill No. 414

CHAPTER 609

An act to amend Sections 8670.12, 8670.13, 8670.28, and 8670.67.5 of, and to add Sections 8670.11, 8670.13.3, and 8670.55.1 to, the Government Code, relating to oil spill response.

[Approved by Governor October 08, 2015. Filed with Secretary of State October 08, 2015.]

LEGISLATIVE COUNSEL'S DIGEST

SB 414, Jackson. Oil spill response.

(1) The Lempert-Keene-Seastrand Oil Spill Prevention and Response Act generally requires the administrator for oil spill response, acting at the direction of the Governor, to implement activities relating to oil spill response, including emergency drills and preparedness, and oil spill containment and cleanup. The act authorizes the administrator to use volunteer workers in response, containment, restoration, wildlife rehabilitation, and cleanup efforts for oil spills in waters of the state. Existing law requires the administrator to evaluate the feasibility of using commercial fishermen and other mariners for oil spill containment and cleanup.

This bill would require the administrator, in cooperation with the United States Coast Guard, to establish a schedule of drills and exercises that are required under the federal Salvage and Marine Firefighting regulations. The bill would require the administrator, on or before January 1, 2017, to submit to the Legislature a report assessing the best achievable technology of equipment for oil spill prevention, preparedness, and response and to update regulations governing the adequacy of oil spill contingency plans before July 1, 2018. The bill would require the administrator to direct the Harbor Safety Committees for various regions to assess, among other things, the presence and capability of tugs within their respective regions of responsibility to provide emergency towing of tank and nontank vessels to arrest their drift or guide emergency transit.

(2) The act requires the administrator to study the use and effects of methods used to respond to oil spills and to periodically update the study to ensure the best achievable protection from the use of those methods.

This bill would require the administrator, in conducting the study and updates, to consult current peer-reviewed published scientific literature. The bill would require the administrator, by May 1, 2016, to request that the federal California Dispersant Plan be updated, as provided, and to provide support and assistance in that regard.

(3) The act requires the administrator to license oil spill cleanup agents for use in response to oil spills.

This bill would require the administrator, if dispersants are used in response to an oil spill, to submit to the Legislature a written notification of, and a written justification for, the use of dispersants and a report on the effectiveness of the dispersants used, as provided.

(4) Existing law establishes the Oil Spill Technical Advisory Committee and requires the committee to provide recommendations to, among other entities, the administrator on the implementation of the act.

This bill would require the committee to convene a taskforce to evaluate the feasibility of using vessels of opportunity for oil spill response. The bill would require the taskforce to provide recommendations to the administrator and the Legislature on whether vessels of opportunity should be included in oil spill response planning.

(5) The act makes a person who causes or permits a spill or inland spill strictly liable for specified penalties for the spill on a per-gallon-released basis. The act provides that the amount of penalty is reduced by the amount of released oil that is recovered and properly disposed of.

This bill would eliminate that reduction in the penalty by the amount of oil recovered and properly disposed of.

DIGEST KEY

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: no

BILL TEXT

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 8670.11 is added to the Government Code, to read:

8670.11. In addition to Section 8670.10, the administrator, in cooperation with the United States Coast Guard, shall establish a schedule of drills and exercises required pursuant to Section 155.4052 of Title 33 of the Code of Federal Regulations. The administrator shall make publicly available the established schedule.

SEC. 2. Section 8670.12 of the Government Code is amended to read:

8670.12. (a) The administrator shall conduct studies and evaluations necessary for improving oil spill response, containment, and cleanup and oil spill wildlife rehabilitation in waters of the state and oil transportation systems. The administrator may expend moneys from the Oil Spill Prevention and Administration Fund created pursuant to Section 8670.38, enter into consultation agreements, and acquire necessary equipment and services for the purpose of carrying out these studies and evaluations.

(b) The administrator shall, consulting current peer-reviewed published scientific literature, study the use and effects of dispersants, incineration, bioremediation, and any other methods used to respond to a spill and, by May 1, 2016, request that the federal California Dispersant Plan be updated pursuant to subdivision (d). The study shall periodically be updated by the administrator, consulting current peer-reviewed published scientific literature, to ensure the best achievable protection from the use of those methods. Based upon substantial evidence in the record, the administrator may determine in individual cases that best achievable protection is provided by establishing requirements that provide the greatest degree of protection achievable without imposing costs that significantly outweigh the incremental protection that would otherwise be provided. The studies shall do all of the following:

(1) Evaluate the effectiveness of dispersants and other chemical, bioremediation, and biological agents in oil spill response under varying environmental conditions.

(2) Evaluate potential adverse impacts on the environment and public health including, but not limited to, adverse toxic impacts on water quality, fisheries, and wildlife with consideration to bioaccumulation and synergistic impacts, and the potential for human exposure, including skin contact and consumption of contaminated seafood.

(3) Recommend appropriate uses and limitations on the use of dispersants and other chemical, bioremediation, and biological agents to ensure they are used only in situations where the administrator determines they are effective and safe.

(c) The studies shall be performed with consideration of current peer-reviewed published scientific literature and any studies performed by federal, state, and international entities. The administrator may enter into contracts for the studies.

(d) The administrator shall support the federal Regional Response Team, as described in Section 300.115 of Title 40 of the Code of Federal Regulations, in the development, and shall request regular updates, of plans and procedures for use of dispersants and other chemical agents in California. The administrator's assistance may include, but is not limited to, providing the federal Regional Response Team with current peer-reviewed published scientific literature, and risk and consequence analysis.

SEC. 3. Section 8670.13 of the Government Code is amended to read:

8670.13. (a) The administrator shall periodically evaluate the feasibility of requiring new technologies to aid prevention, response, containment, cleanup, and wildlife rehabilitation.

(b) (1) On or before January 1, 2017, the administrator shall submit a report to the Legislature, pursuant to Section 9795, assessing the best achievable technology of equipment for oil spill prevention, preparedness, and response.

(2) The report shall evaluate studies of estimated recovery system potential as a methodology for rating equipment in comparison to effective daily recovery capacity.

(3) Pursuant to Section 10231.5, this subdivision is inoperative on July 1, 2020.

(c) (1) Including, but not limited to, the report prepared pursuant to subdivision (b), the administrator shall update regulations governing the adequacy of oil spill contingency plans for best achievable technologies for oil spill prevention and response no later than July 1, 2018.

(2) The updated regulations shall enhance the capabilities for prevention, response, containment, cleanup, and wildlife rehabilitation.

(d) (1) The administrator shall direct the Harbor Safety Committees, established pursuant to Section 8670.23, to assess the presence and capability of tugs within their respective geographic areas of responsibility to provide emergency towing of tank vessels and nontank vessels to arrest their drift or otherwise guide emergency transit.

(2) The assessments for harbors in the San Francisco Bay area and in Los Angeles-Long Beach area shall be initiated by May 1, 2016. The assessments for the other harbors shall be initiated by January 1, 2020.

(3) The assessment shall consider, but not be limited to, data from available United States Coast Guard Vessel Traffic Systems, relevant incident and accident data, any relevant simulation models, and identification of any transit areas where risks are higher.

(4) The assessment shall consider the condition of tank and nontank vessels calling on harbors, including

the United States Coast Guard's marine inspection program and port state control program regarding risks due to a vessel's hull or engineering material deficiencies, or inadequate crew training and professionalism.

SEC. 4. Section 8670.13.3 is added to the Government Code, to read:

8670.13.3. If dispersants are used in response to an oil spill in state waters, the administrator shall provide written notification of their use to the Legislature within three days of the use. The administrator shall provide the Legislature with written justification of their use, including copies of key supporting documentation used by the federal on-scene coordinator and the federal Regional Response Team as soon as those material are released. Within two months of the use of dispersants in state waters, the administrator shall also provide a report to the Legislature on the effectiveness of the dispersants used, including, but not limited to, results of any available monitoring data to determine whether the dispersant use resulted in overall environmental benefit or harm. The written notification, justification, and report shall be submitted pursuant to Section 9795.

SEC. 5. Section 8670.28 of the Government Code is amended to read:

8670.28. (a) The administrator, taking into consideration the facility or vessel contingency plan requirements of the State Lands Commission, the Office of the State Fire Marshal, the California Coastal Commission, and other state and federal agencies, shall adopt and implement regulations governing the adequacy of oil spill contingency plans to be prepared and implemented under this article. All regulations shall be developed in consultation with the Oil Spill Technical Advisory Committee, and shall be consistent with the California oil spill contingency plan and not in conflict with the National Contingency Plan. The regulations shall provide for the best achievable protection of waters and natural resources of the state. The regulations shall permit the development, application, and use of an oil spill contingency plan for similar vessels, pipelines, terminals, and facilities within a single company or organization, and across companies and organizations. The regulations shall, at a minimum, ensure all of the following:

(1) All areas of state waters are at all times protected by prevention, response, containment, and cleanup equipment and operations.

(2) Standards set for response, containment, and cleanup equipment and operations are maintained and regularly improved to protect the resources of the state.

(3) All appropriate personnel employed by operators required to have a contingency plan receive training in oil spill response and cleanup equipment usage and operations.

(4) Each oil spill contingency plan provides for appropriate financial or contractual arrangements for all necessary equipment and services for the response, containment, and cleanup of a reasonable worst case oil spill scenario for each area the plan addresses.

(5) Each oil spill contingency plan demonstrates that all protection measures are being taken to reduce the possibility of an oil spill occurring as a result of the operation of the facility or vessel. The protection measures shall include, but not be limited to, response to disabled vessels and an identification of those measures taken to comply with requirements of Division 7.8 (commencing with Section 8750) of the

Public Resources Code.

(6) Each oil spill contingency plan identifies the types of equipment that can be used, the location of the equipment, and the time taken to deliver the equipment.

(7) Each facility, as determined by the administrator, conducts a hazard and operability study to identify the hazards associated with the operation of the facility, including the use of the facility by vessels, due to operating error, equipment failure, and external events. For the hazards identified in the hazard and operability studies, the facility shall conduct an offsite consequence analysis that, for the most likely hazards, assumes pessimistic water and air dispersion and other adverse environmental conditions.

(8) Each oil spill contingency plan contains a list of contacts to call in the event of a drill, threatened discharge of oil, or discharge of oil.

(9) Each oil spill contingency plan identifies the measures to be taken to protect the recreational and environmentally sensitive areas that would be threatened by a reasonable worst case oil spill scenario.

(10) Standards for determining a reasonable worst case oil spill. However, for a nontank vessel, the reasonable worst case is a spill of the total volume of the largest fuel tank on the nontank vessel.

(11) Each oil spill contingency plan specifies an agent for service of process. The agent shall be located in this state.

(b) The regulations and guidelines adopted pursuant to this section shall also include provisions to provide public review and comment on submitted oil spill contingency plans.

(c) The regulations adopted pursuant to this section shall specifically address the types of equipment that will be necessary, the maximum time that will be allowed for deployment, the maximum distance to cooperating response entities, the amounts of dispersant, and the maximum time required for application, should the use of dispersants be approved. Upon a determination by the administrator that booming is appropriate at the site and necessary to provide best achievable protection, the regulations shall require that vessels engaged in lightering operations be boomed prior to the commencement of operations.

(d) The administrator shall adopt regulations and guidelines for oil spill contingency plans with regard to mobile transfer units, small marine fueling facilities, and vessels carrying oil as secondary cargo that acknowledge the reduced risk of damage from oil spills from those units, facilities, and vessels while maintaining the best achievable protection for the public health and safety and the environment.

SEC. 6. Section 8670.55.1 is added to the Government Code, to read:

8670.55.1. (a) The committee shall convene a taskforce, including appropriate state and federal governmental representatives, nongovernmental organizations, oil spill response organizations, and commercial fishing and other potential vessels of opportunity, to evaluate and make recommendations regarding the feasibility of using vessels of opportunity for oil spill response in marine waters. The evaluation shall examine the following:

(1) Appropriate functions of vessels of opportunity during an oil spill.

(2) Appropriate management of a vessel's of opportunity spill response program.

(3) Vessels of opportunity equipment, training, and technology needs.

(4) Liability and insurance.

(5) Compensation.

(b) As part of the evaluation, the taskforce shall hold two public meetings, one in southern California and one in northern California, prior to making final recommendations.

(c) (1) On or before January 1, 2017, the committee shall provide to the administrator and to the Legislature final recommendations on whether vessels of opportunity should be included in oil spill response planning.

(2) The recommendations provided to the Legislature shall be provided pursuant to Section 9795.

(d) If appropriate, the administrator, by January 1, 2018, shall update regulations to provide for inclusion of vessels of opportunity in the oil spill prevention, response, and preparedness program.

SEC. 7. Section 8670.67.5 of the Government Code is amended to read:

8670.67.5. (a) Regardless of intent or negligence, any person who causes or permits a spill shall be strictly liable civilly in accordance with subdivision (b) or (c).

(b) A penalty may be administratively imposed by the administrator in accordance with Section 8670.68 in an amount not to exceed twenty dollars ($20) per gallon for a spill.

(c) Whenever the release of oil resulted from gross negligence or reckless conduct, the administrator shall, in accordance with Section 8670.68, impose a penalty in an amount not to exceed sixty dollars ($60) per gallon for a spill.

Name	Organization
Brad Westlund	AmNav Maritime Services
Jonathan Bishop	California Coastal Commission
Mike Coyne	California Office of Spill, Prevention, Response
Jon Victoria	California Office of Spill, Prevention, Response
Kenneth Graham	Chevron Shipping Company
Eric Cooper	Conoco Phillips Polar Tankers
Mark Homeyer	Crowley Marine Services
Ryan Stirewalt	Crowley Marine Services
Norman George	Crowley Maritime (retired)
Guy Beckwith	Foss Maritime Company
Bob Gregory	Foss Maritime Company
Andre Nault	Harley Marine Services
Eric Bland	Inland Boatman's Union of the Pacific
John Strong	Jacobsen Pilot Service
John Betz	Los Angeles Pilot Service
Kip Louttit	Marine Exchange of Southern California
Steve Chesser	Marine Exchange of Southern California
Duncan McFarlane	Shell Trading U.S.
Robert McCaughey	Tesoro Refining & Marketing Company
Mark Nielsen	Tesoro Refining & Marketing Company
LCDR Brandon Link	USCG, Sector LA/LB
Sean Marchant	Valero Marketing and Supply Company
Brian Vartan	Westoil Marine Services

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Office of Spill Prevention and Response
1700 K Street, Suite 250
Sacramento, California 95811
Telephone: (916) 445-9338
www.wildlife.ca.gov/ospr

EDMUND G. BROWN, JR., Governor
CHARLTON H. BONHAM, Director

January 25, 2016

Captain John Z. Strong
Chair
Los Angeles/Long Beach Harbor Safety Committee
c/o Marine Exchange of Southern California
Post Office Box 1949
San Pedro, California 90733

Dear Captain ~~Strong~~ John:

Senate Bill 414 was recently signed into law by Governor Edmund G. Brown, Jr. and became effective January 1, 2016. This bill requires me to exercise my authority pursuant to Government Code 8670.13(d) and 8670.23.1(g), and to task your Harbor Safety Committee with the following:

- Assess the presence and capability of tugs within your respective geographic areas of responsibility to provide emergency towing of vessels over 300 GRT to arrest their drift or otherwise guide emergency transit.
- The assessment for the San Pedro Bay area shall be initiated by May 1, 2016.
- The assessment shall consider, but not be limited to, data from available United States Coast Guard Vessel Traffic Systems, relevant incident and accident data, any relevant simulation models, and identification of any transit areas where risks are higher.
- The assessment shall consider the condition of tank and non-tank vessels calling on the harbor, including the United States Coast Guard's marine inspection program and port state control program regarding risks due to a vessel's hull or engineering material deficiencies, or inadequate crew training and professionalism.

My project officer for this assessment is Oil Spill Prevention Specialist Michael Coyne who may be contacted by e-mail at Mike.Coyne@wildlife.ca.gov or by phone at (916) 324-5659. Questions regarding the appropriateness of any assessment model or report format may be directed to Mr. Coyne or to my Prevention Branch Chief, Ted Mar, who may be contacted by e-mail at Ted.Mar@wildlife.ca.gov or by phone at (916) 323-6281.

Conserving California's Wildlife Since 1870

Captain John Z. Strong
January 25, 2016
Page Two

The assessment should be completed by June 2017 and reported in your 2017 Harbor Safety Plan. If additional funding is required to complete this tasking, the amount and justification should be submitted to the project officer.

As always, I appreciate the committee's efforts. I look forward to results of your findings.

Sincerely,

Thomas M. Cullen, Jr.
Administrator
Office of Spill Prevention and Response

Appendix D – Historic Casualty Data Collected (2000-2016)

DETAILS OF SHIPS NEEDING TOWED 2010 - 2016 Based on incidents reported to MX VTS LA/LB and Coast Guard District 11, Alameda, CA Prepared by Marine Exchange of Southern California												
											As Of	31-Dec-16
	Year	Incident Number	VESSEL TYPE		NATURE OF CASUALTY			COMMENT	Position	Pilot Aboard?	Weather	Disposition
	2010		Tankers	Other Vessels	Propulsion	Steering	Electrical			Yes/No		
1		1		Container Ship	1			Engine problem due to Lack of High Pressure Cooling Water.	Departing LA Berth 302	Yes	Wind NE at 8 kts, Clear	Towed to anchorage outside Los Angeles
2		25		Container Ship	1			Complete loss of power to both engines; later restored power to 1 engine prior to reaching anchorage	1NM South of Long Beach Buoy Inbound	Yes	Wind W at 6 kts, Clear	Towed to anchorage outside Long Beach
	2011	No Ships Needed Towed										
	2012											
3		19		Container Ship	1	0	0	Loss of astern propulsion while conducting tests; then lost all propulsion	Approaching "Whiskey" buoy from Northern Traffic Lane inbound	No, then yes	Winds SW at 3 kts, Clear	Towed to anchorage outside Long Beach
	2013	No Ships Needed Towed										
	2014											
4		18		Container Ship	1	0	0	Loss of propulsion due to loss of lube oil to #4 cylinder	4NM South of LA Light outbound	No, then yes	Winds Calm, Overcast, Seas at 1.2ft	Towed to anchorage outside Los Angeles
5		21		Container Ship	1	0	0	Vessel was enroute Long Beach when it stopped. VTS inquired why and vessel requested to anchor immediately due to loss of propulsion. Vessel anchored outside Long Beach and then towed to inside anchorage. The vessel had run out of fuel.	2.3 NM East of LB Sea Buoy inbound	No, then yes	Winds Calm, Clear	Towed to anchorage outside Long Beach and then inside Long Beach
	2015											
6		31		Container Ship	1	0	0	Loss of propulsion due to waste heat recovery system problem. Problem later determined to be computer that controls both lube oil pumps	3NM WSW of LA Buoy #1 outbound	No, then Yes	Winds W at 4-6kts, Clear	Towed to anchorage outside Los Angeles
	2016											
7		6		Bulk Ship	1	0	0	Vessel lost propulsion due to possible air start problem. Language barrier prevented further information.	1NM South of the Long Beach Buoy inbound	Yes	Winds Calm, Clear	Towed to anchorage outside Long Beach
		Total	Tankers	Container & Bulk Ships	Propulsion	Steering	Electrical					
	Total	7	0	7	7	0	0					
Further data is available on request.												

Overview

California Senate Bill 414 (SB 414) requires Harbor Safety Committees to assess the condition of vessels over 300 GRT calling on California (CA) ports. Additionally, assess the condition of the United States Coast Guard's (USCG) marine inspection program and port state control (PSC) program regarding risks due to hull or engineering material deficiencies, or inadequate crew training and professionalism.

Background

A Harbor Safety Committee is comprised of a diverse group of port stakeholders including both commercial and recreational waterway users, regulatory authorities, organized labor, and non-governmental environmental organizations. Though the Harbor Safety Committee is arguably the most comprehensive organization on a wide range of maritime related topics, many committee members believe assessing the condition of vessel's calling on California ports, and to assess the condition of the USCG's marine inspection and port state control programs, is beyond the level of the committee's expertise.

Few organizations possess the resources, and maritime expertise to properly conduct an assessment of federal programs as required by SB 414. In matters relating to the effectiveness of federal programs, the United States Governmental Accountability Office is often the organization called upon to objectively assess a federal agency. However, the Los Angeles-Long Beach and the Harbor Safety Committee of the San Francisco Bay Region (HSCs) employed an innovative and streamlined approach to systematically meet the SB 414 mandates by comparing PSC regimes' data.

Assessment – U.S.C.G.'s Port State Control Program and Foreign Flag Vessels

Currently, a worldwide network of regional co-operation PSC ministries exists with the objective to eliminate substandard shipping. There are a total of nine regional PSC agreements / Memorandum of Understandings (MoUs) to include: Abuja MoU, Black Sea MoU, Caribbean MoU, Indian Ocean MoU, Mediterranean MoU, Paris MoU, Riyadh MoU, Tokyo MoU, and Vina del Mar Agreement.[15]

The Memorandum of Understanding on Port State Control in the Asia-Pacific Region (Tokyo MoU) and Paris Memorandum of Understanding on Port State Control (Paris MoU) established and maintain effective and close co-operation both at the administrative and technical levels. Representatives of the two Secretariats attend the Port State Control Committee meetings of each MoU on a regular basis and the USCG holds observer status within both of these two organizations.[16]

For this assessment, the Tokyo MoU, Paris MoU and United States Coast Guard, will be referred to as PSC regimes and only data provided from these three organizations will be referenced. The close cooperative relationship between the USCG, the Tokyo MoU and the Paris MoU facilitates uniform and trackable data values.

[15] Tokyo MoU, "Annual Report on Port State Control in the Asia–Pacific Region 2015", 2016, p 9.
[16] Ibid.

PSC regimes including the USCG have established a vessel targeting matrix to rationally and systematically determine the probable risk posed by foreign flag ships. In developing their risk assessment methodology, the PSC regimes recognize there are key, trackable and quantifiable data points that are often a reflection of a vessel's operational condition and compliance with international safety and environmental protection standards.[17]

Three primary factors or data points a PSC's targeting matrix utilize include: Ship Management Company, Recognized Organizations (Classification Societies), and the Flag State of a ship. Secondary trackable and quantifiable data points include ship type, ship age as well as a PSC's previous experience/issues with a particular ship.[18] [19]

If a PSC's targeting matrix identifies a ship of potential higher risk, and a subsequent Safety Examination determined the ship is substandard, a detention of the ship may be ordered by the PSC. "Ships are detained when the condition of the ship or its crew does not correspond substantially with the applicable conventions. Such strong action is to ensure that the ship cannot sail until it can proceed to sea without presenting a danger to the ship or persons on board, or without presenting an unreasonable threat of harm to the marine environment."[20]

Amongst the list of PSC detainable deficiencies are hull and engineering material deficiencies, inadequate crew training, and professionalism. Vessel detentions thus provide for a key and universal trackable data point to meet the requirements of SB 414.

Methodology

The HSCs sought to determine the quality of vessels calling on California ports by identifying the rate that vessels were being detained by the USCG. Additionally, determine if the detention rate in California was higher or lower than the rate of all vessels being detained in other parts of the United States/word.

The HSCs reviewed six years of data published in the PSC regimes' annual reports from 2010 to 2015. This assessment will show the California Vessel Detention Rate (CVDR) as compared with the combined six year average Detention Rate as detailed the annual reports produced by each PSC authority to include:

- PSC data from forty-five countries on five continents
- 651,134 PSC vessel boardings
- 350,943 Safety Examinations
- 12,991 Detentions

The PSC Average Detention Rate is an average for all three surveyed PSC regimes. It is based upon total number of Safety Examinations and Detentions from each PSC authority, over a six year period.

If the CVDR is above the PSC Average Detention Rate, the CVDR is considered undesirable. A CVDR percent above (or leads) PSCs Detention Rate suggests the qualities of vessels inspected in California on

[17] "PSC Safety Targeting Matrix – Safety Policy." *United States Coast Guard* (*USCG).* USCG, 12 January 2016. Wed. 6 July 2016.
[18] Ibid.
[19] "Ship Risk Calculator – Ship Risk Profile." *Paris MoU*. Paris MoU, 2016. Web. 6 July 2016.
[20] Tokyo MoU, "Annual Report on Port State Control in the Asia–Pacific Region 2015", 2016, p 11.

average are substandard compared to vessels inspected in other parts of the United States/world and thus require more vessels to be detained.

Conversely, if the CVDR is below the PSC Average Detention Rate, the CVDR is considered desirable. A CVDR percent below PSCs Detention Rate suggests the quality of vessels inspected in California on average are of a higher standard than vessels inspected in other parts of the United States/world and thus require fewer vessels to be detained.

Findings

A review of the USCG's electronic notice of arrival data for the calendar year 2015 revealed that 1,888 individual foreign vessels intended to call on California ports in 2015.[21] Referencing the USCG's 2015 PSC Annual Report, the U.S. Coast Guard's District 11 conducted 1,083 Safety Examination in California. Accordingly, the District 11's vessel targeting matrix led to a PSC Safety Examination rate of 57.36% of all foreign flag vessels arriving in California.

The below table references Attachment 1 and shows six years of cumulative safety examination and detention data per PSC authority. The Detention Rate can be derived by dividing Detentions by Safety Examinations. "Detention rates are expressed as a percentage of the number of Safety Examinations, rather than the number of individual ships inspected to take account for the fact that some ships may be inspected more than once in a calendar year."[22]

[21] All ships arriving from a foreign port are required to give ninety-six (96) hours advanced notice of their arrival to the USCG.
[22] Paris MoU, "Paris MoU on Port State Control, Annual Report 2015", 2016, p 16.

Table 1: Six Year Cumulative Inspection and Detention Data per PSC Authority

PSC Authority	Vessel Boardings	Safety Examinations	Detentions	PSC Average Detention Rate
Tokyo MoU	97,637	178,148	8,145	4.5720%
Paris MoU	89,407	115,399	4,022	3.4853%
USCG less District 11	417,038	50,619	749	1.4794%
USCG District 11	47,052	6,777	75	1.1067%*

Note: * 1.1067% represents the California Vessel Detention Rate (CVDR)

Table 1 reveals that the California Vessel Detention Rate or CVDR is 1.1067%. The CVDR is equal to the USCG District 11 Detention Rate due to fact that all vessel Safety Examinations were conducted in or adjacent to California waters.

Additionally, Table 1 reveals that the CVDR is below the Detention Rate of the other PSCs. *A CVDR below the PSC Average Detention Rate is a desirable situation. It indicates the quality of vessels inspected in California on average are of a higher standard than vessels inspected in other parts of the United States/world.*

Table 2 compares the California Vessel Detention Rate weighted average against both the domestic and international PSC regimes' weighted average detention rates. Using the California Vessel Detention Rate in this way allows for comparing PSC regimes detention rate both domestically and internationally and enables for the relative assessment as to the condition/quality of vessels calling on California ports.

Table 2: Six Years Weighted Average Detention Rate Computation

PSC Authority	No. of Safety Examinations	No. of Detentions	Detention Rate %	Weighting % Based on Detentions*	Detention Rate Weighted Average** (Detention Rate % x Weight)
(A)	(B)	(C)	(D)	(E)	(F)
			(C) / (B)		(D) X (E)
Tokyo MoU	178,148	8,145	4.5720%	62.70%	2.8665%
Paris MoU	115,399	4,022	3.4853%	30.96%	1.0790%
USCG less D 11	50,619	749	1.4794%	5.77%	0.0854%
D11 (CVDR)	6,777	75	1.1067%	0.58%	0.0064%
Totals	350,943	12,991	-	100%	4.0374%
PSC Detention Rate Weighted Average (W.A)					4.0374%
CVDR W.A.					0.0064%
CVDR W.A. Below PSC Detention Rate W.A.					4.0309%
Percent CVDR W.A. is below PSC Detention Rate W.A.					-99.84%***

Notes:
* Calculation is Number of Detentions by a PSC divided by the sum of all PSC Detentions (12,991)
** Calculation is Detention Rate % multiplied by the Weighting %
*** Calculation is 4.0374% less 0.0064% divided by 4.0374%

Assessment - Marine Inspection Program and U.S. Flag Vessels

Much like the USCG's PSC program has been established to inspect and enforce safety and environmental standards on foreign ships calling on ports in the United States; the USCG's Marine Inspection Program (MIP) inspects and enforces safety and environmental standards on United States vessels. Though the standards of the PSC program and the MIP may vary in scope, each program functions to meet the same overarching need. That is, to determine that both foreign and domestic vessels comply with the all applicable laws, rules, and regulations relating to safe construction,

equipment, manning, and operation and that they are in a seaworthy condition for the services in which they are operate (33 CFR § 1.01-20).

Methodology

Essentially, Port State Control authorities that makeup the Paris and Tokyo MoUs act as third party auditors. A PSC inspection (or audit) is an attempt to verify that a vessel, its operator and flag state (the country in which a vessel is registered) meet applicable conventions, safety and environmental standards; thus provides for an independent, unbiased and creditable means to access United States vessels and speaks to the quality and effectiveness of the USCG's MIP.

Published each year in the Paris MoU and Tokyo MoU Annual Reports, is an updated document entitled, "White, Grey and Black (WGB) List". The WGB List represents the full spectrum, from quality flag states to flag states with a poor performance that are considered high risk. It is based on the total number of inspections and detentions and is the results from PSC inspections.[23] The WGB List reflects the quality of a flag state's (marine) inspection programs as well as the quality of vessels, and vessel operators.

The White List contains a list of flag states found to be of higher quality and lower risk. Conversely, the Black List contains a list of flag states found to be substandard. Black List flag states are deemed to be of high risk.[24] The Gray List is a list of flag states that may be simply described as average, average being considered less than ideal.

From 2010 to 2015 the flag state United States has appeared on the Tokyo MoU's White List for the past six consecutive years and on Paris MoU for the past four consecutive years. Note, in 2010 and 2011 the flag state United States appeared on Paris MoU's Gray List.

Expressed differently, from to 2010 to 2015, out of a possible twelve trials[25] (six trials in the Tokyo MoU and six trials in the Paris MoU), the flag state United States attained White List, low risk status ten out of twelve trials or 83% of the sample period. From 2012 to 2015 out of a possible eight trials (four trials in the Tokyo MoU and for trials in the Paris MoU) the flag state United States attained White List, low risk status eight out of eight trials or 100% of the sample period.

Conclusion

Many committee members expressed reservations as to the ability of a Harbor Safety Committee to properly conduct an assessment of a federal program such as required by California Senate Bill 414. Yet, The Los Angeles-Long Beach Harbor Safety Committee and the Harbor Safety Committee of the San Francisco Bay Region employed an innovative and streamlined approach to assess the condition of the United States Coast Guard's port state control program and marine inspection program.

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[23] "White, Grey and Black List." *Paris MoU*. Paris MoU, 2016. Web. 27 December 2016.
[24] Ibid.
[25] According to StatTrek.com, a binomial experiment is a statistical experiment. The experiment consists of set number of repeated trials. Each trial can result in just two possible outcomes, "success" and "failure". The trials are independent; meaning the outcome on one trial does not affect the outcome on other trials. In the case, "success" defined as a flag state listed on the White List and "failure" defined as flag state not listed on the White List.

The HSCs utilizing the Detention Rate derived from PSC regimes data was able to quantify the quality of vessels calling on California ports by comparing the California Vessel Detention Rate weighted average against the combined PSC regimes' detention rate weighted average. Using the California Vessel Detention Rate in this way enables for the relative assessment as to the condition/quality of vessels calling on California ports.

The assessments results were definitive and conclusive. Table 2 shows the California Vessel Detention Rate weighted average at 0.0064% is the lowest of all surveyed PSC organizations. Table 2 also indicates that vessels calling on California are 99.84% less likely to possess the characteristics that would warrant a PSC detention than other parts of the world.

Independent third party audits more commonly referred to as PSC inspections over the last six consecutive years have reflected favorably upon the flag state of United States as well as the condition of the U.S.C.G.'s Marine Inspection Program. During the sample period (2010-2015), the flag state of United States attained White List, low risk status 83% of the time. Moreover, over the past four consecutive years (2012-2015), the flag state United States attained White List, low risk status 100% of the time.

After conscientious and thorough review of the of data presented in this study, including PSC data from forty-five countries on five continents; 651,134 PSC vessel boardings; 350,943 Safety Examinations, 12,991 Detentions the HSCs find the following: The condition of United States vessels 300 GRT and greater, the condition of foreign vessels calling on California ports, the condition of the United States Coast Guard's Marine Inspection Program and Port State Control program to be adequate.

Tokyo MoU PSC Data				
Year	**Ship Boardings**	**Safety Examination**	**Detentions**	**Detention %**
2015	17,269	31,407	1,153	3.6712%
2014	16,761	30,405	1,203	3.9566%
2013	16,861	31,018	1,395	4.4974%
2012	16,439	30,929	1,421	4.5944%
2011	15,771	28,627	1,562	5.4564%
2010	14,536	25,762	1,411	5.4771%
Total	97,637	178,148	8,145	4.5720%

Paris MoU PSC Data				
Year	**Ship Boardings**	**Safety Examination**	**Detentions**	**Detention %**
2015	15,246	17,858	595	3.3318%
2014	15,377	18,430	612	3.3207%
2013	14,108	17,687	668	3.7768%
2012	14,646	18,308	669	3.6541%
2011	15,268	19,058	688	3.6100%
2010	14,762	24,058	790	3.2837%
Total	89,407	115,399	4,022	3.4853%

USCG (All Districts) PSC Data				
Year	**Ship Boardings**	**Safety Examination**	**Detentions**	**Detention %**
2015	73,752	9,265	202	2.1802%
2014	79,091	9,232	143	1.5490%
2013	83,535	9,394	121	1.2881%
2012	72,309	9,469	105	1.1089%
2011	79,031	10,129	97	0.9576%
2010	76,372	9,907	156	1.5746%
Total	464,090	57,396	824	1.4356%

USCG District 11 PSC Data				
Year	**Ship Boardings**	**Safety Examination**	**Detentions**	**Detention %**
2015	7,570	1,083	24	2.2161%
2014	8,113	1,020	12	1.1765%
2013	8,529	1,185	7	0.5907%
2012	7,491	1,163	14	1.2038%
2011	8,212	1,211	9	0.7432%
2010	7,137	1,115	9	.8072%
Total	47,052	6,777	75	1.1067%

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