Exh. MSS-01T
Witness Mitchell S. Stoller

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND PILOTS,** **Respondent.**	**Docket TP-**

TESTIMONY OF

CAPTAIN MITCHELL S. STOLLER

ON BEHALF OF PUGET SOUND PILOTS

JUNE 29, 2022

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I. IDENTIFICATION OF WITNESS

Q: Please state your name, business and business address.

A: Captain Mitchell S. Stoller. I am a retired Los Angeles Harbor Pilot. In retirement, I serve as a consultant in maritime safety and casualty matters. My business address is 21001 N. Tatum Blvd., Suite 1630, Phoenix, AZ 85050.

Q: Please describe your educational background and work history.

A: I received a bachelor of science degree in Nautical Science and graduated first in my class in 1975 from the California Maritime Academy. I graduated with a Third Mate's license and immediately went to work for Exxon, serving for two years on multiple Exxon oil tankers. I earned my Second Mate's license in 1977 and was promoted to Chief Mate in 1979. After earning an unlimited Masters license (any ocean, any size vessel), I was promoted by Exxon in 1984 to Captain. I sailed as Captain on multiple Exxon tankers over the next four years including the Exxon Galveston, Exxon New Orleans, Exxon San Francisco, Exxon North Slope, Exxon Philadelphia, Exxon Houston and Exxon Baton Rouge. In 1988, I became a Los Angeles Harbor Pilot, which was an organization of 15 pilots employed by the City of Los Angeles to pilot ships into and out of LA Harbor. I served in that capacity until suffering an injury in 1991. A copy of my CV is Exhibit MSS-02.

Q: Please summarize your experience in the field of maritime safety.

A: In 1992-93, I redrafted the Bridge Management, Master's Administration, Deck Operations, and Port Terminals Manuals for ARCO. In 1993, I drafted a Safety and Health

Manual based on the International Loss Control Institute model and the International Petrochemical Safety Rating System for West Coast Shipping Co., the shipping division of Unocal Corporation. In 1994, I was appointed by the Secretary of Transportation to a three-year term on the National Safety Advisory Council, which had the responsibility for advising the Coast Guard, the Secretary and Congress on matters relating to prevention of maritime accidents including pilotage. Over a period of eight years between 2004 and 2012, I served as a consultant to the Florida Board of Pilot Commissioners regarding pilot examinations and pilot training. In 2009, I was appointed by the Secretary of Homeland Security to a three-year term on the Towing Safety Advisory Committee, which is responsible for advising the Department on matters relating to shallow-draft inland and coastal waterway navigation and towing safety. I was reappointed to this Committee in 2012.

II. PURPOSE OF TESTIMONY.

Q: What is the purpose of your testimony?

A: I will provide testimony regarding the critical safety role of the maritime pilot in a compulsory pilotage system in the United States, the range of skill sets that successful applicants for pilot positions bring to their training and ultimately to their pilotage career, the very significant difference between serving as a ship's Captain and the unique work of a maritime pilot, the ongoing level of casualty risk involving vessels under pilotage as revealed in a recent comprehensive worldwide study, the increasing risks associated with piloting resulting from the continued increases in vessel size that are coupled with reduced maneuverability in close quarters and the fundamental importance of a diverse pilot corps to the casualty-prevention capability of a pilot group.

Q: Based on your **background and experience, are the highly experienced mariners who compete for pilotage positions in the 24 U.S. states with pilotage statutes comparable in terms of their maritime background and experience?**

A: Generally, that is true. To be successful in applying to become a trainee for a pilotage position, a mariner must meet the licensure requirements of the particular state or pilotage ground and have considerable ship handling experience. Where that particular experience is obtained is highly variable. Depending upon the pilotage ground, successful applicants will come from multiple segments of the maritime industry. These include the towboat industry, public ferry systems, Navy ship officers, large commercial vessels including oil tankers, bulk carriers, container ships, car ships, dredges, factory fish processors and others. Throughout the US, highly experienced and skilled mariners from any one of these different components of the US maritime transportation industry have been selected as pilot trainees, successfully completed that training and been issued a state pilot's license.

Q: How would you describe the difference between the skill sets obtained by a vessel Master serving on seagoing vessels compared to towboats?

A: Captains serving on seagoing vessels like the oil tankers on which I served as Captain during my career with Exxon are often referred to as blue-water mariners while the tug captain is often referred to as a brown-water mariner. In my opinion, the skill sets obtained in a blue-water compared to a brown-water career are quite different. The oceangoing Captain is navigating the vessel safely on the ocean or across a bar heavily influenced by the confluence of the sea, swell, wind and current. A tug Captain navigates a much smaller towboat and assists in the movement of large vessels that the tug may be assisting in a

docking or undocking maneuver. This requires detailed knowledge of the particular constraints in the defined channel of a river, including the river bottom and all of its particulars (rock, gravel, mud, areas prone to shoaling), its banks, landings, slow-down zones, lights, docks and tributaries. All of these landmarks and the dynamic changes to them throughout the year or in different weather conditions make up the body of knowledge that a tug captain deploys on a lengthy river transit.

When pilot trainees from both blue-water and brown-water careers are training to become pilots on a diverse pilotage ground like Puget Sound, each has to get up to speed on their particular areas of weakness. For the blue-water Captain, that will mean having to learn all of the details of the channels to be piloted and the types of towboat assist necessary depending upon ship size and propulsion capability, nature of the dock, wind and weather conditions. For the brown-water tug Captain, the focus will be on large vessel ship handling, which requires learning how these ships respond to engine and rudder commands in constricted waterways and at slow speeds. While both brown-water and blue-water masters are experts in vessel navigation in their own area of specialty, each skill set must be supplemented during the pilot training process to enable the trainee to successfully move into the very different role of a pilot who performs pilotage assignments across a wide array of different ship types on a regular basis.

Q: How would you describe the biggest difference between being a vessel Master compared to being a maritime pilot?

A: I believe one of the biggest differences is the massive change in mindset that is required when a mariner moves from years directing the navigation of a vessel that the

Master or Captain knows intimately because he or she serves on that vessel for extended periods of time and then shifts to becoming a pilot directing the navigation of a new ship that the pilot either has never seen before or will not see for months or years to come. When you are serving as a regular Captain on your own vessel, you are always focused on staying away from any point of contact with another vessel, rock or shoal area. The close quarters maneuvering required to pass another vessel to dock or undock a ship are generally a small part of the job. This is why the bulk of a mariner's watchstanding time on the bridge is focused on two things: staying on course and avoiding any possible collision.

When a mariner becomes a state-licensed maritime pilot, the shift is dramatic: the term "pilotage waters" has real meaning to a foreign flag ship's Captain because being in those waters means substantial risk associated with encountering other vessels in close quarters and the difficulty associated with moving massive cargo or cruise ships into and out of different terminal berths or docks. For the pilot, who does nothing but operate within "pilotage waters," the level of attention needed to successfully carry out the voyage plan, the navigational details of that plan and the docking or undocking is very high. And if the conditions are challenging due to weather, swell or current conditions or a combination of all these, the stress level associated with a pilotage assignment will be very high.

Q: How would you describe the nature of the risks involved with serving as a state-licensed pilots on a heavily trafficked pilotage ground?

A: I would describe the level of risk as persistent and growing.

Q: Is there evidence to support of that opinion?

A: Yes, there is a substantial and growing body of evidence on this point. One of the most significant reports addressing this topic is a 20-year study issued in 2020 by the International Group of P&I Clubs ("IGP&I") analyzing casualties involving vessels under pilotage that occurred over two decades during the years 1999-2018 with additional discussion regarding casualties that occurred in early 2019. Int'l Grp. Of P&I Clubs, *Report on P&I Claims Involving Vessels Under Pilotage 1999-2019* (2020). In the maritime industry, the term P&I Club refers to a protection and indemnity insurance company specializing in covering the risks of oceangoing vessels. Many P&I Clubs are part of Lloyd's of London.

The International Group of P&I Clubs is a consortium of 13 protection and indemnity clubs that account for approximately 90% of the world's fleet of ocean-going vessels. *About the International Group,* Int'l Grp. of P&I Clubs, https://www.igpandi.org/about. The report analyzes all incidents involving vessels under pilotage and serves as an update of a report that was issued in 2006, which examined five years of data between 1999 and 2004. The 2020 report, which is Exhibit MSS-03, found that there were 1,046 incidents that resulted in liabilities in excess of $1.82 billion during the 20 years between 1999 and 2019. As the report notes, this worked out to an average of 52 incidents annually or one incident per week with an average casualty loss of $1.74 million.

Q: Does the report identify the number of incidents per country during this 20-year time frame?

A: Yes. The report tabulates incidents by country and shows that 141 of the 1,046 incidents worldwide in 20 years occurred in the United States, which represents 13.5% of all incidents.

Q: Does the report break down the 1,046 incidents into various categories?

A: Yes. The report separates these casualties, all of which occurred with a pilot on the bridge directing navigation of the vessel, into four categories: (1) allision and FFO incidents; (2) collision incidents; (3) groundings; and (4) navigation incidents. It should be noted that an allision occurs when a ship contacts or collides with a fixed object. The reference to FFO incident utilizes a well-known maritime acronym where FFO means "fixed or floating object." According to the report, the allision and FFO incidents category accounts for 60% of the total number of incidents and 63% of the total casualty losses. In my opinion, this comprehensive statistical data over 20 years demonstrates that one of the riskiest tasks undertaken by a maritime pilot is successfully docking or undocking a vessel in close quarters.

With respect to the allision and FFO incident category, it is worth noting that the last serious incident in the Puget Sound Pilotage District involving pilot error occurred on December 15, 2019 when the M/V Levant, a liquefied petroleum gas carrier, was being shifted 0.7 miles from its anchorage to the Petrogas Ferndale Wharf in Ferndale, Washington and struck the wharf's south mooring dolphin. State of Wash. Bd. Of Pilotage Comm'rs. *Preliminary Investigation Report M/V LEVANT* (Mar. 19, 2020); Nat'l Transp. Safety Bd., *Marine Accident Brief, Liquid Petroleum Gas Carrier Levant with Mooring Dolphin* (Feb. 4, 2020. The mooring dolphin and catwalk connecting it to the wharf were destroyed. Damage

to the vessel was estimated at $1.5 million and damage to the mooring dolphin and adjoining catwalk was estimated at $6.75 million. The vessel's forward ballast tank was penetrated and flooded in the incident. Fortunately, there were no injuries to the vessel's crew or persons on the wharf. There was also no release of pollutants or the ship's liquefied cargo of propane and butane. Exhibits MSS-04 and MSS-05 are copies of the investigative report issued by the Washington Board of Pilot Commissioners and the marine accident report issued by the National Transportation Safety Board, respectively.

Q: Please describe the nature of the other three categories of incidents assembled in the IGP&I report, which include collision incidents, groundings and navigation incidents.

A: The collision incident category involves a casualty where one vessel makes contact with another vessel. This category accounted for 327 incidents over 20 years or 31.2% of total incidents. The average casualty cost was $1.47 million. Groundings involve a vessel running aground. The report documents 81 such incidents over 20 years or 7.7% of the total with an average casualty cost of $2.35 million. I would note that groundings are much more common than this figure shows, but in most cases the grounding does not result in damage to the ship (*i.e.,* grounding in sand or mud) and therefore would not have been reported to a P&I Club. However, whenever an oceangoing vessel runs aground in pilotage waters, it is considered a serious incident that must be reported both to the state pilotage authority and to the US Coast Guard. In most cases, once the vessel is freed from her grounded position, divers are deployed to inspect the hull underwater in order to verify that there is no damage. Typically, it is only after that verification that the ship is allowed to continue on her voyage.

The last category is navigation incidents, which involve an absence of contact by the vessel with another vessel or some fixed object and generally include claims arising from the wash or wake generated by a vessel under pilotage. In the report, this category involved eight incidents or well under 1% of the total. The average casualty cost was $342,654. It is worth mentioning that there was a significant casualty in April 2020 involving damage to a marina caused by a large wake generated by a container ship, M/V Mumbai, transiting the Columbia River to a berth in Portland. The wake caused over $1.4 million in damages to a Port of Kalama marina and 18 recreational boats in that marina. Following an investigation by the Oregon Board of Maritime Pilots ("OBMP"), the pilot's license was suspended for 90 days and he was required to undergo additional training. A copy of the OBMP minutes of its September 17, 2020 meeting taking this action and attaching a copy of the investigation report is Exhibit MSS-06.

Q: You have now described two serious incidents involving vessels under pilotage in Puget Sound in 2019 and on the Columbia River in 2020. Within the same timeframe of the last several years, were there any other serious maritime casualties involving a vessel under pilotage in the Pacific Northwest?

A: Yes. On January 28, 2019, there was a serious casualty in the Port of Vancouver, British Columbia involving the M/V Ever Summit. Transp. Safety Bd. Of Can., *Marine Transportation Safety Investigation Report M19P0020* (Jan. 28, 2019) https://www.tsb.gc.ca/eng/rapports-reports/marine/2019/m19p0020/m19p0020.pdf. In that incident, with two tugs assisting, the vessel struck the berth and a shore gantry crane, ultimately causing the crane boom to collapse on top of the ship's load of containers. The resulting damage to the ship, the port terminal and the

gantry crane was estimated to exceed $8 million. The Transportation Safety Board of Canada issued a full report, which is Exhibit MSS-07. The report found multiple causal factors contributed to this casualty, including inadvertent pilot error in communications with the assisting tugs, issues regarding the suitability of the berth infrastructure for large container vessels at that terminal and lack of appropriate risk management by terminal personnel. The Transportation Safety Board of Canada also emphasized a growing "safety concern" associated with the substantial growth of container vessel size on the safety of berthing or docking operations.

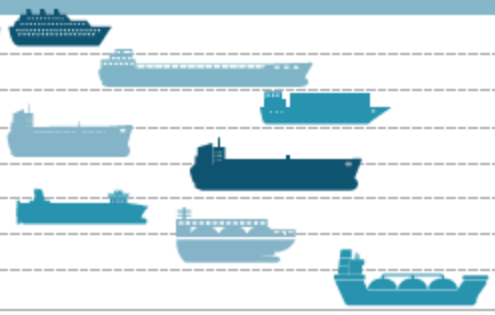
Q: Does the IGP&I report reach any conclusions regarding the causes of the incidents involving vessels under pilotage during the 20 years that was the subject of the study?

A: Yes. The report includes helpful commentary that is quoted in full below:

> It is difficult to draw any specific conclusions on the causes of these incidents because in the majority of the records there is no narrative of events or analysis of the root cause of each incident As a result, the conclusions and recommendations in this report are necessarily determined on a generic basis.
>
> Whilst the number and overall cost of the incidents covered by this report are significant, some context is necessary. When viewed with reference to the number of shipping movements in and out of port worldwide in only one year, the frequency of these incidents is extremely low. It has been difficult to obtain data on worldwide ship movements under pilotage, but information published by UNCTAD provides the following figures for ship arrivals in port in 2018.

WORLDWIDE SHIP ARRIVALS IN 2018 (SOURCE UNCTAD)

SHIP TYPE	NUMBER OF ARRIVALS
All ship arrivals	4,112,944
Passenger	2,227,407
Wet bulk	494,120
Container	454,016
Dry breakbulk	430,344
Dry bulk	259,551
RoRo	187,532
LPG	49,357
LNG	10,617



> It is likely that the passenger vessel arrivals will comprise a large number of ferries which are unlikely to need or use pilots. The other vessel types in the table are those which will be more likely to need the services of a pilot and hence fall within the ambit of the report.
>
> The number of arrivals in 2018 for those vessel types totals 1,885,537. If it is assumed that there may be 10% of those for which a pilotage exemption may exist, that reduces the figure to 1,696,983 – say 1,700,000 if each arrival has a consequential departure this would then mean that there could be something in the region of 3.4m [million] ship movements under pilotage per annum, the figure could be higher if movements under pilotage to anchorage prior to arrival were to be included.
>
> In 2018, there were 30 incidents covered by this report. That is an infinitesimally small percentage of the estimated total number of pilotage moves in that year. This therefore demonstrates that the vast majority of ship moves under pilotage proceed uneventfully, and this is a tribute to the professionalism, experience and skill of the world's maritime pilots. On occasion however, pilotage operations do not proceed as intended and the consequences can be severe as this report establishes.

2020 Rep. on P&I Claims, supra, at 33.

Q: Does the IGP&I report make any recommendations regarding the provision of pilotage throughout the world?

A: Yes. The report makes specific recommendations regarding pilotage, towage and mooring, bridge resource management and incident response. In 2016, the International Chamber of Shipping ("ICS") commissioned a survey on pilotage, towage and mooring

which covered 472 ports and 123 countries. The survey findings were based upon 879 responses, primarily from masters and officers of the watch. The surveys showed satisfaction rates of 84% regarding conduct of the pilot, 82% regarding conduct of the pilotage assignment, 72% regarding use of electronic navigational aids and 78% regarding towing and mooring. The report listed the following findings of note:

1. Communication difficulties between pilots and bridge teams is a commonly reported concern worldwide.

2. It is understandable that communications between the pilot, towage and mooring personnel are often conducted in a local language. However, this practice places a burden on the pilot (that may interfere with the pilot's primary role) to translate orders and actions during towage and mooring.

3. There may be the need for the development of an internationally standardized approach to the Master-Pilot Information Exchange (MPX) which emphasizes the visual presentation of the pilot's plan for the pilotage during the MPX and discourages reliance upon a purely verbal exchange of information.

Id.

Regarding bridge resource management ("BRM"), the report notes that

> [I]t is often apparent when reviewing the circumstances of incidents generating P&I liabilities that have arisen when vessels are under pilotage, that the BRM on the vessel has been sub-optimal. It is therefore well recognized that it is to the benefit of all in any passage under pilotage that the external pilot and the vessel's bridge team function as an effective and cohesive unit. This can be challenging to achieve.

Id. at 36.

The report goes on to note that an updated version of the ICS Bridge Procedures Guide will be published in 2022 to include a new section on BRM, with examples of best practices for bridge team management, a revamp of the MPX with assistance from the International Maritime Pilots Association and a revised and updated chapter on pilotage. Exhibit MSS-08 is a copy of the 2022 ICS Bridge Procedures Guide, which is a 193-page book. I have reviewed this new guide and believe it to be a significant improvement over its

predecessor document in terms of emphasizing the importance of consistent and clear bridge procedures and the clarity of the guidance in the document.

With respect to incident response, the IGP&I report makes a number of important recommendations that are quoted in full below:

> It is inevitable that there will continue to be incidents of loss or damage that arise with vessels under pilotage. However, one can only hope that the measures outlined in this report might serve to reduce the frequency and severity of these. However, when such incidents occur it will be beneficial for there to be more specific follow-up action than generally occurs now.
>
> Not all incidents will be the subject of a published flag state investigation report. Because these incidents, particularly Allision/FFO generally involve strict liability on the part of the vessel, the focus of the claims handler at the P&I Club involved will be upon mitigating the financial consequences of the casualty and not necessarily on determining what went wrong and what actions or recommendations might be made to reduce the risk of recurrence. More attention on this area is recommended.
>
> In those instances where no flag state investigation will be made, some structure needs to be established that will facilitate fact-finding, root cause analysis and risk mitigation measures for more costly incidents or those where more egregious conduct is evident. Perhaps a Memorandum of Understanding (MoU) approach under which there is a commitment to cooperate with the IG Clubs on the part of the more significant pilotage bodies, hopefully with the support of IMPA, in investigating the causes of more serious incidents for the purpose of identifying measures that will assist in preventing further loss. Such MoUs should provide for:
>
> - Joint incident investigations leading to establishing meaningful root causes,
> - A platform to co-operate in formulating lessons learnt without appointing blame, and
> - Tracing the implementation of mitigating measures in the long term.
>
> If that recommendation is accepted, further work will be necessary to draft the terms of a MoU and identify the principal entities who should be approached with this initiative. This work might usefully start with the pilotage bodies involved with the most serious container vessel/gantry crane incidents to which reference is made on page 11 of this report. It should also be noted that IMPA has been closely following the incidents involving large container ships and has

> made submission on this topic to the IMOs Sub-Committee on Implementation of IMO Instruments. These seek an expert review of relevant Marine Safety Investigation Reports on such incidents with a view to identifying measures that will improve operational safety and entrance safe berthing procedures. See submission III 6/4/4 dated 25 April 2019 – Annex III.
>
> Another area of initial focus could also be the Suez Canal Authority given the frequency of groundings in that waterway.

Id. at 41.

Q: It's interesting to note that the last reference in the IGP&I report's discussion of incident response is to the potential for groundings in the Suez Canal. Given the high-profile grounding of the M/V Ever Given in March 2021 in the Suez Canal, what comments do you have regarding pilotage risks associated with the growing number of ultra-large container vessels throughout the world?

A: In my opinion, the M/V Ever Given incident, where the vessel got stuck sideways and disrupted nearly $10 billion in trade daily for six days, exemplifies the growing risks of pilotage assignments that involve ultra-large vessels that are growing in number in multiple ship types including tankers, bulk carriers, cruise, car and container ships. The grounding of the M/V Ever Given occurred despite the requirement of the Suez Canal Authority that two pilots be aboard to direct the ship's navigation. To the average person, it is hard to conceive of the size of this new class of container ship loaded with 20,000 containers, double the average number for container ships of just 15 years ago. This translates into a container ship with 14 stories of containers and a length of 1300 feet, which is almost as long as the Empire State building is tall.

So far, the Egyptian government has not released any investigative report involving the M/V Ever Given grounding despite the fact that the incident occurred over 15 months

ago. However, based upon some excellent investigative reporting by two *New York Times* reporters with access to investigators familiar with the ship's voice data recorder, it appears that the ship should never have begun her 120-mile northbound transit through the canal. Within minutes of starting the transit, it was reported that winds began to gust to more than 49 miles per hour, causing the ship to swerve. After first swinging toward the port side bank, the trajectory of the vessel was corrected and she sped up to a speed of over 13 knots, which was well above the eight-knot speed limit for the canal. According to the reporting, at this point, the two pilots began to argue with one trying to reverse the other pilot's speed directive, which caused the Captain to intervene and order a reduction in speed. As it turns out, these maneuvers were too late. A number of experts believe that the ship's increased speed was pushing a growing wall of water between the canal walls and the ship. This resulted in a drop in water pressure under the hull and a phenomenon called "bank effect" was causing the stern to swing towards one bank while the bow was being pushed toward the other. Just 22 minutes after the pilots came aboard, the bow of the M/V Ever Given swung hard into the right bank, embedding the vessel so deeply into the canal bed that it would take six days, a dozen tugboats and multiple dredges to free her. It should be noted that the term "bank effect" actually includes two different phenomena involving the effect of a bank in a constricted channel or canal on vessel maneuvering. These are "bank cushion" where the combination of water conditions and the bank resist movement of the vessel toward the bank and "bank suction" where different water and bank conditions actually suck the vessel toward the bank.

Q: Why does this incident exemplify the growing risks associated with piloting such a large vessels?

A. As ship types continue to grow larger with more surface area exposed to wind and sea, these vessels are subject to ever increasing levels of "sail effect," which is a direct result of the vessel's sail area exposed to the elements. Unfortunately, as container ships and other large cargo vessels have grown in size, shipowners throughout the world have also been emphasizing reduced fuel usage, which has caused ship designers to shrink these ships' rudder size in order to obtain greater fuel efficiency on the open sea. Although the shipowner saves fuel costs through the use of these smaller rudders and computer-regulated engines, the combination of an enormous ship size and smaller rudders produces poor maneuverability in constricted waters at slow speeds.

In the aftermath of the M/V Ever Given incident, Don Marcus, president of the International Organization of Masters, Mates & Pilots, was asked by a reporter to comment on the combination of growing sail effect and reduced maneuverability in these mega-ships. Mr. Marcus is quoted as saying, "The biggest factor, in my mind, is the monstrous size of these vessels. The ships are not maneuverable, particularly at low speeds. They're difficult to handle in the best of conditions in narrow, confined waters. I agree completely with this statement." Vivian Yee & James Glanz, *How One of the World's Biggest Ships Jammed the Suez Canal,* N.Y. Times (Jul. 17, 2021) https://www.nytimes.com/2021/07/17/world/middleeast/suez-canal-stuck-ship-ever-given.html. A copy of the *New York Times* investigation into the M/V Ever Given incident that contains this quote is Exhibit MSS-09.

Q: Is the trend toward larger vessels requiring pilotage something that has been experienced by West Coast ports over the last several decades?

A: Absolutely. A 2020 pilotage study by the Port of Portland, which examined data over a 15-year period (2004-2018), found that the number of ships calling West Coast ports had declined by 19%, but the average gross tonnage per ship increased by 62%. Hub Consulting, *Columbia River Pilotage Study* (May 19, 2020). The study is Exhibit MSS-10. The study also found that average gross tonnage increased in every ship type, including vehicle, dry bulk, general cargo, liquid bulk and container ships. The challenge for today's maritime pilots is incredible because both regulators and the general public have zero tolerance for maritime accidents in a time when pilots must redefine their navigation plans for these mega-ships in order to compensate for the effects of sea state, current, weather and wind, one or more of which may exceed the predictions of the National Weather Service or NOAA on the day of that particular pilotage assignment.

Q: Are you aware of another grounding incident involving a large container ship owned by Evergreen Marine Corporation that occurred just one year following the M/V Ever Given incident of March 2021 in the Suez Canal?

A: Yes. On March 13, 2022, the M/V Ever Forward ran aground while under pilotage in Chesapeake Bay. It took a full month to extract the 1,095-foot ship from a mud bank off Pasadena, Maryland. In addition to offloading containers to lighten the vessel, crews needed dredges, tugs, deck and crane barges and pull barges to free the vessel.

Q: Is it just a coincidence that there were three Evergreen ultra-large container vessels involved in major incidents in just the last few years?

A: Two of the three of these Evergreen Ships (M/V EVER GIVEN and M/V EVER FORWARD) are ultra-large container vessels ("ULCV"). These ships are so huge and so lacking in maneuverability in close quarters that the margin for safety is incredibly small. I consider a pilotage assignment involving one of these ULCVs to be a nightmare assignment. The pilot has to be ready to anticipate so many different scenarios that extensive preparation is required and the stress level throughout the assignment is enormous.

Q: In preparing this testimony, have you found a list of tips for members of a ship's bridge team that helps show the complexity of both the data and conditions that a pilot encounters when he or she is boarding the vessel by pilot ladder for a pilotage assignment?

A: Yes. In February 2022, *The Nautical Institute* issued one of its publications entitled *The Navigator* that focused on pilotage. The Nautical Institute, *Focus on Pilots,* The Navigator, Feb. 2022, https://www.nautinst.org/uploads/assets/ac50bce4-1d3d-49bb-91f2640b1a77afd2/29-Focus-on-Pilots-Feb-2022mss.pdf. The purpose of this publication was to provide the bridge team with deeper insight into how to prepare to take on a pilot, be better prepared to assist the pilot and to provide information regarding the "technology toolkit" used by a pilot. I was particularly struck by the page that is Exhibit MSS-11, which contains 10 top tips to "help make sure everything goes smoothly as possible." Those top 10 tips are listed below:

1. **Compliant boarding arrangements.**
First impressions count! This is particularly so for embarkation arrangements, whether that is the pilot ladder, gangway, accommodation ladder or a helicopter deck. A competent person should be at a boarding platform and observing from the bridge wing for cutter transfers.

2. **Situational Awareness.**
Make sure that you know your passage plan. You should have read the sailing directions and any procedures that have been sent to you. Start listening to VTS or Port Control communications early so that you know what to expect.

3. **Pilot card.**
The pilot card should always be prepared with the correct information including drafts, any defects, and the gyro error.

4. **ECDIS.**
Ensure that all Electronic Navigation Charts (ENC) updates have been applied, and both your ECDIS and radar settings are adjusted for pilotage. Many port authorities will provide pilotage passage plans by email. If they don't, you can check the pilotage or port authority website.

5. **Know your own ship.**
You should know the type and power of your propulsion, thrusters and rudder type. If you will be using tugs, know the safe working load (SWL) for the tug bitts. A diagram of the bitt locations with SWL can be helpful. If there are deficiencies or limitations it's better to let the Pilot know straight away.

6. **Master Pilot Information Exchange (MPX).**
The MPX is the most important component of a safe pilotage. This is an opportunity to build a shared mental model of the planned pilotage. Ideally all of the bridge team should be able to hear the MPX, providing a safe lookout can be maintained.

7. **Teamwork.**
Ask questions, monitor the helm orders, use closed loop communication, and monitor the execution of the plan. At every stage, consider if something were to happen to the Master or Pilot, could you put the ship in a safe position? You might not understand all aspects of the operation, but a good Captain or Pilot will guide you if you ask relevant questions.

8. **Noise.**
Noise can affect your focus and contribute to mistakes with helm and engine orders. Acknowledge alarms in a timely manner, avoid raised voices and keep

radio volumes to a minimum safe level. Try to avoid distracting conversations on the bridge.

9. <u>Clean windows.</u>
Dirty windows are a distraction and unsafe. At night, with the backscatter of lights, they can hinder your ability to see clearly.

10. <u>Bridge wing.</u>
Remove or clearly identify anything that would become a trip hazard in the dark, both on the bridge and the bridge wing.

Id. at 11.

Q: When it comes to danger encountered by pilots in performing their work, is there a constant danger factor in the pilotage profession that is not a regular part of the job of a captain aboard a tug, ferry or seagoing ship?

A: Yes. The major change in job danger in the transition from the position of captain to pilot is the fact that your typical commute to the job is not walking onto a ship from the safety of a dock and stationary gangway, but boarding or debarking moving vessels via pilot ladder from a pilot boat that is also moving alongside the ship. In the United States, an average of one pilot every other year has been killed in a pilot ladder incident over the last 16 years and there are numerous injuries, some very serious, every year. PSP pilot Captain Sandy Bendixen thoroughly covers this danger factor for all maritime pilots in her testimony.

Q: How would you characterize the importance of diversity in a pilot group?

A: In my opinion, drawing pilots from a highly diverse set of maritime industry backgrounds is critically important to the incident-prevention capability of the pilot group. This is especially important on any pilotage ground where traffic levels are substantial, there is a sizable number of waterway miles and ports of call and significant variety in ship type. In

this situation, which the Puget Sound Pilotage District exemplifies, broad diversity of experience among the individual members of the pilot corps is the key to the organization having the collective knowledge and technique necessary to regularly meet or approach the expected annual performance goal of zero casualties.

Q: Can a pilotage district like that of Puget Sound afford to ignore the recruitment of applicants from any one of the maritime transportation industry pipelines that regularly produces highly qualified pilots?

A: In my opinion, absolutely not. Both the pilot group serving a challenging and varied pilotage ground and its state regulatory agency must be attentive to maintaining a highly diverse pilot corps in order to maximize safety, which is the primary objective of the compulsory pilotage system in every maritime state in the US.

Q: Based on your background and experience, is there any component of the US maritime transportation industry that regularly produces top-flight maritime pilots that represents a national pool of candidates with the qualifications and skill set to become a state-licensed pilot on virtually any compulsory pilotage ground in the United States?

A: Yes, the graduates of any one of the seven maritime academies in the US who pursue seagoing careers and achieve significant experience sailing on their Masters license are in a position to pick and choose between different pilot group opportunities.

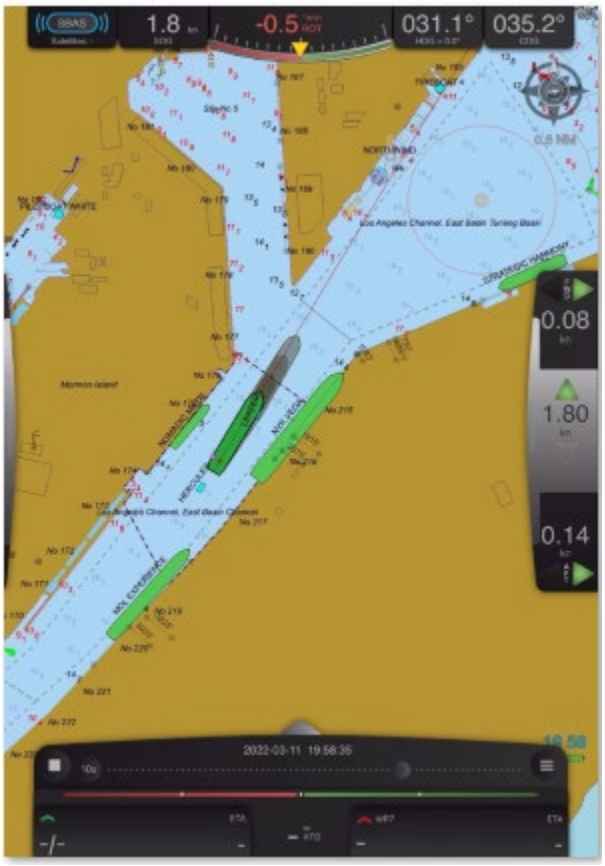
Q: Why do you believe it is important for a pilot group like the Puget Sound Pilots to have a nationally competitive package of compensation and benefits in order to attract candidates from what you describe as a national pool of seagoing officers serving on oceangoing vessels?

A: Potential pilots with this background are a unique component of the US merchant marine who develop a skill set that is very helpful to performing the job of a pilot and should be represented in the Puget Sound Pilots for the same reason that it is important for PSP to continue to attract pilot applicants from the towboat industry, the Washington ferry system and military experience like the Coast Guard or the Navy. In my opinion, a large and diverse pilotage ground like that of Puget Sound must attract the best of the best in every feeder pipeline that is generating top candidates. That necessitates being in a position to offer a nationally competitive package of income and benefits. In my view, there is no question that the US pilot groups in the best position to maintain years of accident-free performance are those that attract top performers from every marine sector providing significant vessel-handling experience in a broad array of conditions. In my opinion, it is the collective knowledge of the pilot group that is shared in the frequent meetings that are an important practice of all pilot groups and the focus of multiple minds within the group whenever a new and challenging pilotage assignment comes along. The same level of collective knowledge is critically important to the training of new pilots over the 18 months that a PSP trainee is either observing or piloting under the supervision of an experienced pilot. If the pilot group lacks a sufficient number of pilots from one of the important mariner pipelines moving into pilot trainee status, the quality of the group's training process will suffer as will the casualty-prevention capability of the pilot group.

Q: Throughout your testimony, you have described the complexity and difficulty of performing a pilotage assignment generally and you have given some specifics with respect to the handling of ultra-large container vessels. To illustrate visually the type of piloting work that you performed during your years as an LA Harbor pilot, have you obtained a number of schematic videos that show the process of docking or undocking a large ship in very close quarters in LA Harbor, which is the single largest receiver of container ship traffic in the United States?

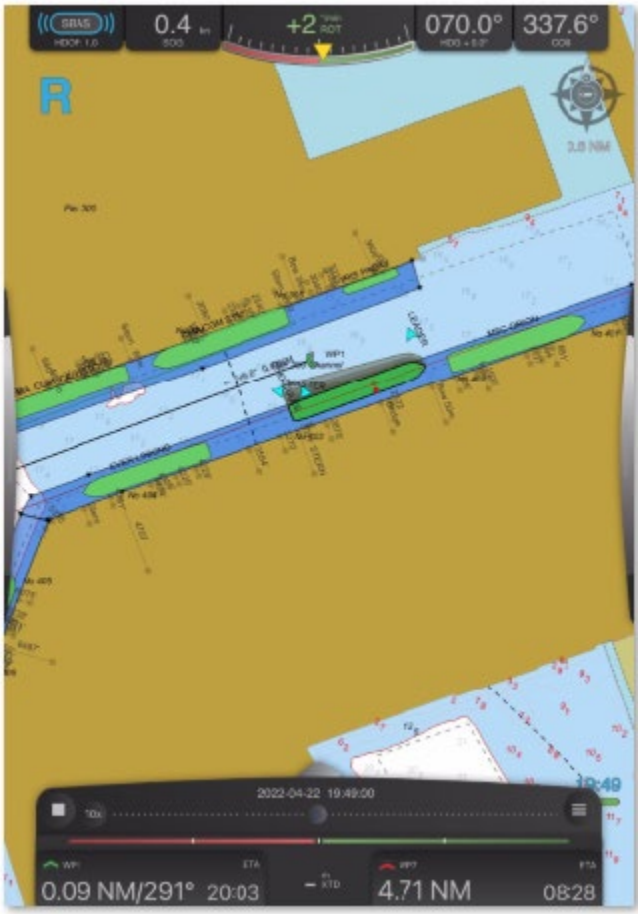
A: Yes. Exhibits MSS-12, MSS-13, MSS-14 and MSS-15 are schematic videos used recently at the West Coast Pilot Conference posted by the BC Coast Pilots in Victoria, British Columbia in late April, 2022. The attendees included representatives of all of the pilot groups on the West Coast and Hawaii and eight Puget Sound pilots. These videos were used by a current LA Harbor pilot to show of some of the techniques being used to safely maneuver ultra-large container carriers into the very constricted berths in that pilotage district. My testimony uses all four of the brief videos used at the pilot conference. I will describe each in this testimony with a screen shot from the beginning of the video. For the reader to watch what I briefly describe occurs in each exhibit, one must access the link set out on each exhibit, which then plays the video via the cloud.

In the first screen shot below, which is the beginning of Exhibit MSS-12, you can see the tanker North Sea (229m x 42m x 12.5m), turning the vessel under pilotage into Berth 189, moving past two large ships (MOL Experience and NYK Vega) moored beside the East Basin Channel of the Los Angeles Channel. Accessing the video will show how the pilot must utilize tug assist and precise close quarters maneuvering to bring the vessel safely to the dock. It is worth pointing out that the East Basin Channel has approximately 115 meters of usable channel taking into account the location of the crane booms and even less if a bunker barge is moored to the dock. This particular pilotage assignment is one where the pilot must typically warn the captain ahead of time and multiple times during the maneuver that he or she is not going to be comfortable, but it always looks this way.



In the second screen shot below, which is the beginning of Exhibit MSS-13, you can see M/V CMA CGM Marco Polo going into berth 304 (396m x 54m x 13.5m). In this location, the 300/400 turning basin is approximately 550 meters at its widest point. The pier 300 channel is 300 meters berth face to berth face. In making the maneuver seen on this video, the pilotage assignment is typically hindered by a flotilla of barges to the north with the outer edge of the barges extending beyond the edge of the channel. In this maneuver, the incoming vessel is driven in, turned in the basin and then backed stern first into the berth.

In the third screen shot below, which is the beginning of Exhibit MSS-14, you can see the M/V Maersk Esmeraldas out of LA 403 (366m x 48m x 12.5m), being maneuvered to the dock between two very large already docked vessels. The video shows how the pilot must utilize tugs and extremely precise maneuvering to safely accomplish this close quarters docking.



In the fourth screen shot below, which is the beginning of Exhibit MSS-15, you can see the M/V Aristomenis (350m x 46m x 13m) shifting from LA Berth 147 to Berth 139. The distance across from Berth 147 to the berth across the channel is only about 225 meters, berth face to berth face. The West turning basin is only approximately 360 meters, taking into account the cranes being boomed down. It is my understanding that the LA Harbor Pilots are currently using a simulator to explore how (and whether it is possible) to maneuver vessels up to 400 meters in length into this area of LA Harbor. This work is reflective of the ever growing size of what is now referred to as ultra-large container vessels.

Q: Have you had an opportunity to review the testimony of Captain Eric Klapperich?

A: Yes. Captain Klapperich's testimony does an excellent job of describing in detail the qualifications necessary to become a Puget Sound pilot, the 18-month training process, the continuing training required of PSP pilots that is universal throughout the State pilotage system in the US and the nature of the piloting challenges throughout the Puget Sound Pilotage District.

Q: Did you also review the testimony of PSP's president, Captain Ivan Carlson, and one of PSP's representatives on the Washington Board of Pilot Commissioners, Captain Sandy Bendixen?

A: Yes.

Q: Based upon your own transits as a mariner in the Puget Pilotage District, your experience as a pilot and maritime safety expert and your review of the testimony of Captains Carlson, Klapperich and Bendixen, what is your opinion regarding the comparability of the work of a PSP pilot on the Puget Sound Pilotage District to the work of State-licensed pilots serving other pilotage district throughout the United States?

A: In my opinion, pilotage work within the Puget Sound Pilotage District is highly comparable to that performed in other heavily trafficked harbors or waterways subject to compulsory state pilotage in the United States. I say this because the skill set necessary to become a PSP trainee is the same as that for a pilot applicant necessary to test high enough to be selected as a pilot trainee by the state licensing body in any one of the 24 maritime states

in the US. Once selected, as I have described earlier, trainee pilots must work hard to gain the local knowledge necessary to be an accident-free pilot in the particular pilotage district and to obtain the additional skills that the particular trainee's previous maritime work experience may have lacked due to the nature of that work experience. As examples, I refer back to my prior testimony noting that the towboat captain needs special focus on oceangoing vessel ship handling during the pilot trainee process while the blue-water ship captain coming from a seagoing career needs special focus on how tugs are used and configured to perform critically important ship assist work berthing a ship or transiting in close quarters.

Q: Do you have any particular observations about the nature of the piloting challenge facing PSP pilots in Puget Sound?

A: Yes. In doing all the homework necessary to present this testimony, I was struck by the size of the pilotage district and diversity of the ship types calling on ports and terminals within the Puget Sound Pilotage District. To the best of my knowledge, no pilotage district in the lower 48 states in the US has more square miles of pilotage district combined with such a wide diversity of a ship types. Puget Sound pilots must have the skills to perform the type of close quarters berthing of large container vessels, which is the lion's share of the challenging work for LA Harbor pilots, as shown in the video described by Captain Klapperich that is Exhibit ECK-09 showing the stern first maneuvering of a large container ship through the Port of Seattle's West Waterway. And with respect to the other two video examples used by Capt. Klapperich – transiting a bulk carrier up the Duwamish River and undocking an oil tanker at Cherry Point – I agree wholeheartedly that these are both very challenging pilotage assignments.

Q: From a safety perspective and especially in light of the Washington Legislature's declaration that the State pursues **a "best achievable protection" standard in pursuit of a "zero spills" policy, what are your thoughts regarding the importance of the UTC funding the pilotage system in Puget Sound at a level that attracts a diverse set of master mariners who are among the best of the best in their capacities as captains in the US maritime transportation industry?**

A: In my opinion, to achieve that standard, the tariff supporting the Puget Sound Pilotage District must generate sufficient funds to deliver compensation and benefits to PSP pilots that are competitive nationally with other major US pilot groups and covers the costs of the necessary infrastructure to deliver pilotage services including state-of-the-art dispatch, navigational, pilot station and pilot boat technology.

III. CONCLUSION.

Q: Does this conclude your testimony?

A: Yes.

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