UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

IN THE MATTER OF THE COMPLAINT OF GRAND FAMOUS SHIPPING LTD. AND BEIKUN SHIPPING TIANJIN CO., LTD. AS OWNER AND OWNER *PRO HAC VICE* OF THE M/V YOCHOW FOR EXONERATION FROM AND/OR LIMITATION OF LIABILITY	§	
Plaintiffs,	§	
	§	**CIVIL ACTION NO. 4:18-CV-4678**

- consolidated with -

OSG 243 LLC and OVERSEAS SHIPHOLDING GROUP, INC.	§	
Plaintiffs,	§	
VS.	§	**CIVIL ACTION NO. 4:18-CV-2046**
M/V YOCHOW, her engines, tackle, apparel, etc., *in rem*, GRAND FAMOUS SHIPPING LTD.; and CHINA NAVIGATION CO PTE LTD, *in personam*	§	
Defendants.		

FINDINGS OF FACT & CONCLUSIONS OF LAW

The Court submits the following Findings of Fact and Conclusions of Law pursuant to Rule 52(a)(1) of the Federal Rules of Civil Procedure.

I. BACKGROUND

At approximately 2:50 a.m. on June 13, 2018, the M/V YOCHOW ("the YOCHOW"), an inbound bulk cargo vessel traversing the Houston Ship Channel, allided with an ocean-going barge, the OSG 243, which was moored to TPC Group LLC's A Dock ("the A Dock"), causing

damage to both the barge and the dock. This is a consolidated damages and limitation action arising from that allision.

Limitation Petitioners are Grand Famous Shipping Ltd. ("Grand Famous") and Beikun Shipping Tianjin Co., Ltd. ("Beikun"). Grand Famous is the registered owner of the YOCHOW. Beikun is a ship management company. The YOCHOW's crew was supplied and managed by Beikun. A third entity, China Navigation Co. PTE Ltd. ("China Navigation") time chartered the YOCHOW at the time of the incident. The claims against China Navigation were dismissed on summary judgment, and China Navigation is no longer a party to this suit. *See Grand Famous Shipping Ltd. v. Port of Houston Auth.*, 574 F. Supp. 3d 438, 448 (S.D. Tex. 2021), *aff'd sub nom. Grand Famous Shipping Ltd. v. China Navigation Co. Pte., Ltd.*, 45 F.4th 799 (5th Cir. 2022).

Claimants are (1) OSG 243 LLC and Overseas Ship Management, Inc. (collectively "OSG"), (2) TPC Group LLC and certain interested underwriters (collectively "TPC"), and (3) the Port Authority of Houston ("POHA"). OSG owns and operates the tug and barge unit OSG INDEPENDENCE and OSG 243. TPC is the exclusive lessee and operator of two docks: the A Dock, a primary dock capable of servicing ocean-going vessels, and the B Dock, a smaller dock capable of servicing non-ocean-going barges. TPC Group operates a chemical plant nearby, which is connected to the two docks via a specialized system of pipes. POHA owns both docks, and leases them to TPC. Pursuant to their lease agreement, TPC is required to cover the cost of repairs to the docks.

This case proceeded to a bench trial which commenced on November 13, 2023, and concluded on November 28, 2023. Based on the trial testimony, admitted exhibits, the arguments from each party, the pleadings, other relevant documents in the record, and the applicable law,

the Court issues the following Findings of Fact and Conclusions of Law. All facts are found by a preponderance of the evidence. Any Finding of Fact that should be a Conclusion of Law shall be deemed such, and any Conclusion of Law that should be a Finding of Fact shall be deemed such.

II. FINDINGS OF FACT

A. The Allision

1. The YOCHOW sails under the flag of the Hong Kong Administrative Region of the People's Republic of China and is a registered ocean-going bulk carrier, IMO No. 9728394, delivered into service on April 28, 2015. LP Ex. 2.

2. The YOCHOW has the following principal physical characteristics: (1) 590.42 feet in length, (2) 98.43 feet in breadth, and (3) a deadweight of 21,538 international gross registered tons. *Id.*; LP Ex. 111.

3. At the time of the allision, the YOCHOW was equipped with, among other things, (1) two radars, (2) a voyage data recorder unit ("VDR") that continuously recorded bridge audio, radar, rudder movements, vessel course, engine orders, engine rpms, position, compass headings, speeds through the water, speeds over ground, and relative wind speeds, and (3) an Electronic Chart Display and Information System ("ECDIS") that provide a bird's eye view of the navigation. LP Exs. 1, 22; Li Dep. 16:19-17:8.

4. The VDR, ECDIS, and other navigational equipment on the YOCHOW were at all material times functioning and operating correctly. Yang Dep. 63:11-14, 116:14-117:17; TPC Ex. 18 at 6; TPC Ex. 40; LP Ex. 111.

5. The electronic data from these devices documents the movements of the ship, the orders given on the bridge, and the reactions to these orders, providing a real-time look at what

occurred on the YOCHOW's bridge during its inbound transit up the Houston Ship Channel on June 12 and 13, 2018. TPC Exs. 9, 34, 36.

6. The YOCHOW's master at the time of the incident was Captain Xiaofei Yang. The crew consisted of 18 people, including Captain Yang. LP Ex. 3. Qin Bo served as Chief Officer, Bo Li served as Second Officer, and Du Gaoyang served as Third Officer. *Id.* Wu Guangfu was the Bosun. *Id.* The YOCHOW's crew also included four able-bodied seamen ("ABs"), Nan Win, Gao Jingren, Zhou Dezheng, and Kaung Myat Thu. *Id.*

7. On June 11, 2018, the YOCHOW left the Port of Veracrus, Mexico and headed to the Houston City Docks to offload steel cargo. LP Ex. 24. In order to get to the Houston City Docks, ships must traverse the winding Houston Ship Channel. This is a particularly challenging port to navigate due to the narrowness of the channel, the number of turns, and the heavy traffic. Captain Yang had not previously transited the Houston Ship Channel. Yang Dep. 41:18-20.

8. On the evening of June 12, 2018, the YOCHOW arrived offshore Galveston, Texas. Each ship entering the Houston Ship Channel is required to have a compulsory pilot on board to help with navigating the vessel through the channel. *See* Tex. Transp. Code § 61.003. Pilots are required to ensure that each vessel has someone experienced with traversing a particular waterway to direct the vessel through its inbound and outbound transit.

9. At approximately 9:00 p.m. on the night of June 12, 2018, Captain William Ewing, a Houston pilot, boarded the YOCHOW. The YOCHOW then commenced the inbound passage towards the Houston City Docks at the head of the Houston Ship Channel. Ewing Dep. 20:16-24.

10. At 11:45 p.m. on the night of June 12, 2018, Second Officer Bo Li assumed the role of officer on watch and AB Nan Win assumed helmsman duties. Li Dep. 9:20-23; Win Dep. 48:6-8; TPC Ex. 7 (the YOCHOW's watch keeping schedule).

11. As helmsman, Win was responsible for executing Pilot Ewing's steering instructions while they traversed the channel.

12. As the officer on watch, Li was responsible for the safe navigation of the ship. LP Ex. 105 (Captain Yang's standing orders); Li Dep. 39:23-40:9.

13. Pursuant to Captain Yang's standing orders, the officer on watch has full command of the bridge. LPs Ex. 105. To take command of the bridge from the officer on watch, Captain Yang must verbally inform the officer on watch he is taking command. *Id.* The master's mere presence on the bridge does not mean he has taken command of the bridge. *Id.*

14. It does not appear that Captain Yang took over command of the bridge at any relevant point leading up to the allision. TPC Ex. 9 (VDR transcript).

15. Bosun Guangfu and another AB were on the bow of the YOCHOW serving as lookouts from around 9:30 p.m. on June 12, 2018 until the time of the allision in the morning hours of June 13, 2018. Guangfu Dep. 7:2-13, 17:15-19, 20:10-18.

16. Captain Yang remained on duty from 8:00 a.m. on June 12, 2018 throughout the inbound transit to the Houston City Docks.[1] LP Ex. 110.

17. During the transit through the Houston Ship Channel, Captain Yang was on the bridge except when he intermittently took breaks. Yang Dep. 49:13-17; 53:16-54:20; Ewing Dep. 32:12-33:7; Li Dep. 36:25-37:2. These breaks tended to last 15 to 25 minutes. Li Dep.

[1] There is some confusion over how to read the YOCHOW's work/rest records. For example, if an individual checks the box under 9:00 a.m., it is unclear whether that means that they worked from 8:00-9:00 a.m. or 9:00-10:00 a.m. Throughout, the Court applies the former reading. That is, if an individual checks the 9:00 a.m. box, this is read to mean that they worked from 8:00-9:00 a.m. This interpretation makes the work/rest records consistent with the crew's scheduled watchkeeping hours.

39:20-22. When he intended to take a break from being on the bridge, he notified Pilot Ewing and advised the officer on watch. Yang Dep. 53:18-54:6; Li Dep. 37:24-38:13. Captain Yang carried a radio with him when he was not on the bridge in the event that he was needed by Pilot Ewing or Second Officer Li. Yang Dep. 53:18-54:2.

18. At approximately 1:15 a.m. on June 13, 2018, the YOCHOW was navigating a port turn near the Lynchburg Landing area in the Houston Ship Channel. TPC Ex. 9 at 3; Ewing Dep. 40:11-19. Pilot Ewing gave a verbal command of "port 20," indicating that Win needed to steer the vessel 20 degrees towards port. TPC Ex. 9 at 3. Win verbally acknowledged the helm order from Pilot Ewing by repeating the "port 20" command. *Id.* However, Win actually placed the helm at 20 degrees starboard (i.e., he turned right when he should have turned left). *Id*. Win confirmed that the rudder turn was complete by again repeating "port 20."[2] *Id.*

19. About thirteen seconds after Win acknowledged the port 20 order and three seconds after he completed the faulty turn, Pilot Ewing realized what had happened and issued a corrective order. *Id.*; Ewing Dep. 119:15-25. Second Officer Li realized the mistake at the same time Pilot Ewing did. Li Dep. 45:23-46:7. Pilot Ewing reminded Li to watch the helmsman and check his execution of commands. TPC Ex. 9 at 4; Ewing Dep. 42:20-43:6.

20. Despite Win's mistake, Pilot Ewing did not find it necessary to have another helmsman relieve Win. Trial Tr. vol. 3 a.m., 31:10-17 (Ewing). Pilot Ewing testified that he's only asked to have a helmsman replaced when that helmsman makes a series of errors or there is some other serious issue with that helmsman. *Id.*

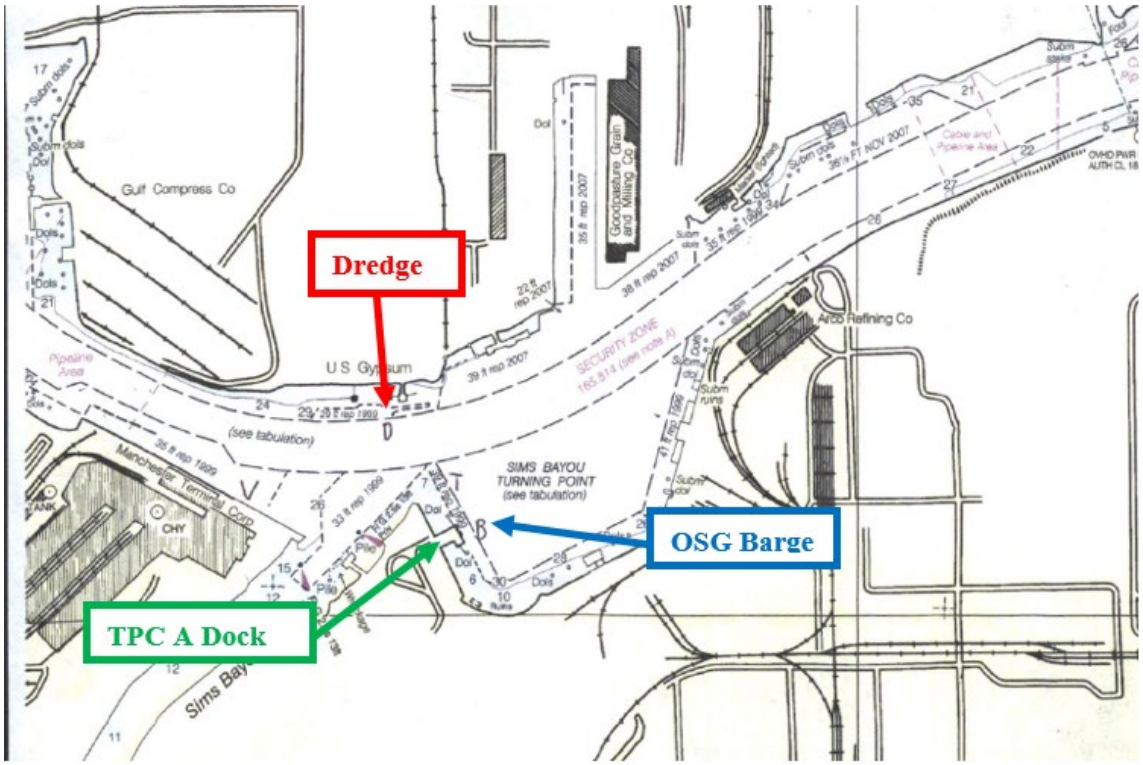
[2] There is a roughly 10-15 second delay between when the helmsman begins to execute an order and when he confirms that the order is complete (i.e., when the rudder has actually changed position). This is due to the fact that it takes time for the vessel's steering gears to shift the rudder after the wheel is turned. *See generally* Ewing Dep. 122:2-5.

21. Pilot Skip Strong, a pilotage expert who testified for Limitation Petitioners, also stated that it would be unusual to relieve a helmsman based on one mistake. Trial Tr. vol. 3 a.m. 61:2-62:15 (Strong).

22. According to both Pilot Ewing and Pilot Strong, these types of steering errors happen from time to time. *See* Trial Tr. vol. 3 a.m., 32:10-12 (Ewing) ("It's somewhat frequent [helmsmen] go the wrong way. Not every day, but not unheard of."); *id.* at 35:12-18 (Ewing) ("Sometimes you go a whole week, [a helm error] doesn't happen. Sometimes it happens two days in a row."); Trial Tr. vol. 3 a.m. 58:16-60:6 (Strong) (testifying that steering mistakes are not uncommon, especially in narrow and winding bodies like the Houston Ship Channel that require many turns to traverse).

23. The YOCHOW continued its way towards the Houston City Docks. At around 2:47 a.m., the YOCHOW was navigating on a southwesterly course passing the Lyondell Terminal. Along this part of the channel was the A dock, located in the Lyondell Turning Basin on the port side of the YOCHOW. There was also a dredge working up ahead on the opposite side of the channel from A Dock. Ewing Dep. 52:20-56:20.

24. Below is a navigational chart for this section of the Houston Ship Channel.



25. As a result, the YOCHOW had to execute a series of turns to avoid both the dredge and the A Dock.

26. At 2:47:08 a.m., Pilot Ewing gave a port 20 command. TPC Ex. 9 at 23. Helmsman Win repeated, "port 20," to confirm that he heard the order. *Id.* About seven seconds later at 2:47:15 he stated, "port 20, sir," to confirm the order had been completed. *Id.*

27. At 2:47:36, Pilot Ewing ordered, "hard to starboard." *Id.* Helmsman Win immediately repeated the hard to starboard order and confirmed the hard to starboard order was complete at 2:47:43. *Id.* However, Win had mistakenly placed the helm at hard to port rather than hard to starboard. *Id.*; Ewing Dep. 58:4-59:20. This mistake proved to be more problematic than the first.

28. Second Officer Li and Pilot Ewing caught the mistake. Li Dep. 47:20-24, 52:7-13, 53:1-10. Pilot Ewing immediately noticed that the rudder angle indicator and the behavior of the vessel suggested they were turning the wrong way. Ewing Dep. 59:18-60:1.

29. At 2:47:45, two seconds after Win mistakenly completed the hard starboard order, Pilot Ewing issued a corrective order of "midship." TPC Ex. 9 at 23; Li Dep. 52:7-13.

30. This was followed by "starboard" and "hard to starboard" orders at 2:47:49 and 2:47:58. TPC Ex. 9 at 23; Li Dep. 52:7-13. Win executed Pilot Ewing's orders. TPC Ex. 9 at 23.

31. However, the YOCHOW was unable to course correct. Despite the rudder being turned to hard starboard, the vessel was still falling port. Ewing Dep. 122:16-19.

32. By around 2:48:21, the YOCHOW was about one ship length from the OSG barge and the attached tug, and Ewing issued a "stop engines, and let anchor go" order to attempt to stop the vessel. TPC Ex. 9 at 23; Ewing Dep. 122:20-23.

33. However, due to the YOCHOW's size and speed, it could not stop in time. At about 2:50 a.m., the bow of the YOCHOW struck the OSG barge, pushing it forward along TPC's A Dock by about 80 feet. The OSG barge and the A Dock were damaged as a result.

34. Aside from this allision, the YOCHOW has no record of prior allisions or collisions. Tang Dep. 202:2-204:4; Trial Tr. vol. 4 a.m. 81:3-12 (Karentz); Trial Tr. vol. 4 p.m. 116:11-14 (Karentz).

35. At all material times, the YOCHOW maintained and was in possession of all valid and current certificates necessary for international commercial shipping operations, including but not limited to the following: (1) Certificate of Classification, (2) Safety Management Certificate, (3) Minimum Safe Manning Certificate, (4) International Oil Pollution Prevention Certificate, (5) International Load Line Certificate, (6) Document of Compliance, and (7) International Ship Security Certificate. LP Exs. 4-10.

B. Relevant Regulatory Framework

36. Several interrelated international regulatory frameworks are relevant to this case.

37. The first is the International Safety Management ("ISM") Code. The ISM Code was adopted by the International Maritime Organization ("IMO"), which is a specialized agency of the United Nations. Both China and the United States are member states of the IMO.

38. The ISM Code was made mandatory in 1998 as part of an amendment to the International Convention for the Safety of Life at Sea ("SOLAS"). Both the United States and China are signatories to SOLAS.

39. Under the ISM Code, every shipping company must have a Safety Management System ("SMS"). A company's SMS details important policies, practices, and procedures that are to be followed to ensure the safety of ships at sea. The purpose of requiring shipping companies to have an SMS is to ensure compliance with international safety rules and regulations.

40. In 2001, the Maritime Safety Committee of the IMO published a circular titled "Guidance on Fatigue Mitigation and Management" ("the 1014 Circular"). The 1014 Circular provides non-binding guidance on fatigue management.

41. Also relevant is the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers ("STCW"). Both the United States and China are signatories to and have ratified the STCW Convention.

42. In 1995, member states of the IMO adopted the STCW Code, which includes mandatory provisions that reference the STCW Convention.

43. The STCW Code contains, in pertinent part, requirements limiting the hours of work for crew members of a vessel and mandating certain conditions for hours of rest. These work/rest requirements are discussed in detail below.

44. The United States has incorporated the relevant provisions of the STCW Convention and Code into the Code of Federal Regulations. *See generally* 46 C.F.R. §§ 15.1101-15.1113.

45. Compliance with the Code of Federal Regulations is required for foreign flagged vessels operating in U.S. waters. Trial Tr. vol. 4 p.m., 22:4-20 (Karentz).

C. Nan Win's Work/Rest Hours and Fatigue

46. At the time of the allision, Win was properly licensed, credentialed, and trained to serve as a helmsman. LP Exs. 45-65; Trial Tr. vol. 3 p.m., 100:15-25 (Karentz). Prior to the allision, no captain or other member of the crew had ever lodged a complaint regarding Win's competency or performance. Tang Dep. 114:7-17, 202:4-14; Geng Dep. 167:17-168:5.

47. The parties dispute what Win's working hours were leading up to the allision and whether they violated regulations on work/rest hours.

48. Win was scheduled for two daily watch shifts, the first from midnight to 4:00 a.m. and the second from noon to 4:00 p.m. LP Ex. 133.

49. Win's work/rest record indicates that he worked only his assigned watch hours on June 12, 2018. LP Ex. 110 at 7649. It also indicates that on the morning of June 13, 2018, Win worked additional hours from 4:00 a.m. to 10:00 a.m. after the allision. *Id.*

50. Win's deposition testimony is contrary to his work/rest records. In his deposition testimony, he stated that he only worked his assigned watch hours when the vessel was entering or exiting the port. Win Dep. 9:4-7. In contrast, when the vessel was at sea, he stated that he worked from 8:00 a.m. to 5:00 p.m. with a break from 11:30 a.m. to 1:30 p.m. *Id.* 8:11-17.

51. Win asserted that on June 12, 2018, he worked his regular at sea shift chipping the ship's deck from 8:00 a.m. to 5:00 or 5:30 p.m., presumably with his regular 11:30 a.m. to 1:30

p.m. break in between. Win Dep. 8:11-17, 45:3-4. Win testified that after he finished working on June 12, 2018, he had dinner and went to bed around 9:00 or 9:30 p.m. *Id.* 47:14-48:8. Since the vessel was entering port, he had to work his regular watch shift, and he then woke up around 11:30 p.m. to get ready for his midnight to 4:00 a.m. shift at the helm. *Id.*

52. This account conflicts with the work/rest hours that Win recorded, which indicate that he was performing only his two four-hour watch shifts in the days leading up to the allision. LP Ex. 110 at 7649. If Win's testimony is correct, he did not work his regular watch hours while at sea, and instead worked the shift described above doing tasks like chipping the deck.

53. There is reason to doubt the veracity of the YOCHOW's work/rest records. Bosun Guangfu's work/rest records were also inconsistent with his deposition testimony, although there does not appear to have been any substantive undercounting of Bosun Guangfu's work hours.

54. Bosun Guangfu's work/rest hours state that on June 12, 2018, he worked from 8:00 a.m. through 12:00 p.m. and from 8:00 p.m. through midnight. LP Ex. 110 at 7648.

55. Yet, Guangfu stated during his deposition that he worked from 8:00 a.m. through 10:30 or 11:00 a.m. Guangfu Dep. 19:5-7. He then had lunch and rested until 3:30 p.m. *Id.* at 19:7-8. He states that, at some point after 3:30 p.m., he did unspecified "preparation work." *Id.* at 18:19-21. It is unclear what this entailed and how long it lasted. He also states that he left the bow at 5:30 p.m., indicating that he was possibly standing watch from some point after 3:30 p.m. until 5:30 p.m. *Id.* at 18:1-2. At some point between 5:30 p.m. and 9:30 p.m., he got the ladder ready so that Pilot Ewing could board. *Id.* at 18:7-10, 19:14-19. It is unclear exactly when this occurred, how long this task took, or whether this was the "preparation work" he referred to previously. At 9:30 p.m., he began his watch, which he maintained until the allision. *Id.* at 7:2-13, 17:15-19, 20:10-18.

56. In sum, Bosun Guangfu's deposition testimony indicates he worked either two and a half or three hours in the morning, roughly two hours in the afternoon, and three and a half hours on watch at night, totaling between eight and eight and a half hours. While his work/rest records likewise indicated he worked eight hours that day, the distribution of work hours was inconsistent.

57. This inconsistency resembles that found in Win's recorded work/rest hours.[3]

58. Others have also noted minor inconsistencies in the YOCHOW's work/rest records. During a Port State Control inspection in November 2018, it was found that the crew had not accurately entered time spent on firefighting equipment training into their work/rest records. TPC Ex. 10. No other timekeeping deficiencies were found, although the report states that "[t]his inspection was not a full survey and deficiencies listed may not be exhaustive." *Id.*

59. Win's testimony also conflicts with the YOCHOW's daily work reports, which state what work was done on the vessel each day. Although Win stated he was chipping the deck on June 12, 2018, the daily work reports do not reflect that there was any chipping work being performed that day. LP Ex. 66 at 1461.

60. However, these records also do not include any reference to chipping being performed on any other day in June, indicating that perhaps mention of this type of chipping was habitually omitted from the daily work reports. *Id.* The Court finds this explanation more plausible than the alternative, which is that Win inexplicably fabricated out of whole cloth the idea that he was chipping the deck.

[3] There is also some concern about Beikun's auditing practices regarding work/rest records. Zhou Geng was the Designated Person Ashore for the YOCHOW and was in charge of auditing the YOCHOW's SMS and compliance with the ISM Code. Geng testified that he performed these audits and that they included audits of work/rest records. Geng Dep. 174:5-180:4. He also testified that he kept written records of these audits. *Id*. However, no records of those audits have come to light. *Id.*

61. Under the STCW Code, replicated in 46 C.F.R. § 15.1111, Win was required to have a minimum of 10 hours rest in any 24-hour period. Further, the hours of rest must be divided into "no more than two periods in any 24-hour period, one of which must be at least 6 hours in length, and the interval between consecutive periods of rest must not exceed 14 hours." 46 C.F.R. § 15.1111(b).

62. The relevant provision defines "rest" as "a period of time during which the person concerned is off duty, is not performing work (which includes administrative tasks such as chart correction or preparation of port-entry documents), and is allowed to sleep without interruption." 46 C.F.R. § 10.107.

63. Both versions of Win's June 12, 2018 work schedule meet these requirements.

64. If his work/rest records are to be believed, Win worked his two four-hour watch shifts from 12:00 a.m. to 4:00 a.m. and 12:00 p.m. to 4:00 p.m. In this scenario, he had 16 hours of rest split into two eight-hour periods. This clearly satisfies the 10-hour rest mandate and the provision governing how rest periods must be distributed.

65. If Win's deposition testimony is to be believed, he worked from 8:00 a.m. to 11:30 a.m. and 1:30 p.m. to 5:00 p.m. or 5:30 p.m. If this is the case, he had between 16.5 and 17 hours of rest. That is, he was off work from 12:00 to 8:00 a.m. (eight hours), from 11:30 a.m. to 1:30 p.m. (two hours), and then from 5 or 5:30 p.m. to midnight (six and a half or seven hours).

66. Because the required rest hours may be divided into no more than two periods, the Court will disregard Win's two-hour midday break. Even so, he had between 14.5-15 hours of rest, one period of which was at least six hours long, and the interval between the two periods did not exceed 14 hours.

67. At times Claimants have urged the Court to find that on June 12, 2018, Win worked both his watchkeeping shifts and his regular shift chipping the deck. The evidence does not support such an inference.

68. First, Win cannot have worked both his chipping shift and his watchkeeping shift, as that would require him to have been two places at once from 1:30 p.m. to 4:00 p.m.

69. Moreover, Win testified that he only worked his watchkeeping shift when they were exiting and entering port, which the YOCHOW was not doing from 12:00 a.m. to 4:00 a.m. or 12:00 p.m. to 4:00 p.m. on June 12, 2018. Win Dep. 9:4-11.

70. Finally, when asked about his work on June 12, 2018, Win stated that he started at 8 a.m., indicating that he did not work a watchkeeping shift earlier that morning. *Id.* at 45:4.

71. However, even if the Court were to accept the extremely dubious proposition that Win worked his first watch, his shift chipping the deck, and the 1.5 hours of his second watch shift that do not conflict with his chipping shift, his rest time would *still* have been between 10.5 and 11 hours, meeting the STCW requirements.

72. Thus, the Court finds that even the most conservative estimate of Win's work/rest hours complies with the STCW Code and 46 C.F.R. § 15.1111.

73. Having found that Win received the mandatory number of rest hours, the Court now turns to other evidence bearing on the issue of fatigue.

74. On this topic the Court heard from Dr. Claudia Acemyan, an expert in human factors psychology, which includes the study of fatigue. She testified that indicators of fatigue include things like delayed response times or a slow cadence of discussion. Trial Tr. vol. 2, 93:17-3 (Acemyan).

75. After reviewing the various materials including the VDR recording from the night of the allision, Dr. Acemyan found that Win displayed no symptoms of fatigue. Trial Tr. vol. 2, 97:7-25, 117:7-14 (Acemyan).

76. Dr. Acemyan also testified more generally to the fact that people who are not tired often make mistakes due to the limitations of human cognitive abilities. Trial Tr. vol. 2, 96:11-20 (Acemyan). The Court finds her testimony on these matters to be credible.

D. Captain Yang's Work/Rest Hours

77. Captain Yang was the master of the YOCHOW at the time of the allision. He was properly qualified by his credentials, experience, training, and licenses to serve in this role. LP Ex. 45; Tang Dep. 44:25-50:13, 51:5-54:10, 102:10-104:20, 126:16-145:14, 165:9-172:14, 175:14-189:10; Trial Tr. vol. 3 p.m., 100:15-25 (Karentz). Prior to the allision, Captain Yang had no involvement in any allision or collision or any record of relevant misconduct. Tang Dep. 114:7-10, 144:13-145:14.

78. Captain Yang's work/rest hours are likewise the subject of scrutiny in this case. They indicate that he was on duty from 9:00 a.m. on June 12, 2018, through the time of the allision at 2:50 a.m. on June 13, 2018. TPC Ex. 2. In total, he was on duty for approximately 18 consecutive hours prior to the allision.

79. Under the STCW Code, replicated at 46 C.F.R. § 15.1111, Captain Yang cannot work in excess of 14 consecutive hours unless there is an emergency, a drill, or "overriding operational conditions" are present.

80. "Overriding operational conditions" are "circumstances in which essential shipboard work cannot be delayed due to safety or environmental reasons or could not have reasonably been anticipated at the commencement of the voyage." 46 C.F.R. § 10.107.

81. Captain Yang's work hours clearly exceed the permitted 14 hours allowed. There were no overriding operational conditions present prior to the allision that justified suspending the 14-hour limit.

82. However, the Court finds that Captain Yang's potential fatigue did not cause the allision.

83. When the allision occurred, Captain Yang was not on the bridge. He had handed over command of the bridge to the officer on watch, Second Officer Li. Even if Captain Yang was fatigued, his direct actions could not have caused the allision due to his absence from the bridge.

84. Nor would Captain Yang's presence on the bridge have prevented the incident. As explained by Captain Strong and Pilot Ewing, it would have been extraordinarily unusual to switch out a helmsman after a single steering mistake. Trial Tr. vol. 3 a.m. 61:2-62:15 (Strong); Trial Tr. vol. 3 a.m., 31:10-17 (Ewing). There is nothing to support the inference that Captain Yang would have or should have taken this unusual step after Win's first error.

85. Further, as Captain Christopher Karentz testified, no action from Captain Yang could have stopped the allision from occurring. Trial Tr. vol. 4 p.m., 38:4-8 (Karentz). As it was, Pilot Ewing's response to the error was quite swift, and he issued corrective orders mere seconds after the incorrect turn was made. *See* TPC Ex. 9 at 23.

86. However, due to the narrowness of the channel, by the time the turn was made, it was too late to prevent the allision.

87. Moreover, Captain Yang stated that he would not have done anything differently from Pilot Ewing in terms of issuing corrective orders after the faulty turn. Yang Dep. 90:15-23.

88. Thus, there is no juncture at which Captain Yang's presence on the bridge would have materially altered the course of events leading up to the allision.

E. Crew Training

89. In the weeks leading up to the allision, the YOCHOW crewmembers were trained on topics such as U.S. waterway regulations and navigational safety, LP Ex. 65-71, proper communication with pilots, LP Ex. 65-72, how to safely navigate narrow channels, like the Houston Ship Channel, LP Ex. 65-81, SMS provisions on berthing and unberthing, LP Ex. 65-81, and navigation and bridge teamwork, LP Ex. 65-74.

90. On June 12, 2018, they were cautioned during the daily deck gang meeting to steer carefully in the Houston Ship Channel because the waterway is narrow. LP Ex. 66 at 1461.

91. As part of their regular training, crew members were reminded that they must comply with applicable work/rest hour requirements. Tang Dep. 217:4-12.

92. They were not given any additional training on fatigue management topics such as how to recognize symptoms of fatigue or how many hours of interrupted sleep they should get each night. *Id.* at 221:1-223:25.

F. Job Rotation Policy

93. One method of reducing fatigue in crewmembers aboard a ship is to have them rotate jobs with some frequency. Trial Tr. vol. 1 a.m., 73:2-5 (Fazioli). For example, one might have an AB rotate through being a helmsman, being a lookout, and being on break every hour. *Id.* at 73:9-24. This type of rotation gives ABs different tasks to work on throughout their duty shift and helps prevent fatigue related to the monotony of repeatedly doing a single task.

94. The YOCHOW did not have a job rotation policy requiring ABs to rotate through different tasks. Instead, it had a shift schedule in which ABs did a single assigned duty like being

at the helm for four hours, after which they were on break for eight hours. Three ABs would rotate through the role in four-hour intervals, meaning each AB was at the helm for two four-hour shifts in a 24-hour period.

95. There was also a 1.5-hour rotation policy for lookouts. LP Ex. 71-1, at 3. However, the work-rest records suggest that in practice lookouts did not actually rotate every 1.5 hours. LP Ex. 110.

96. The Court heard from competing experts as to what the industry customs are related to job rotation.

97. First, TPC presented Captain Marc Fazioli, who opined on the value of job rotation for fatigue management. Captain Fazioli was an officer in the U.S. Coast Guard and later sailed on behalf of various commercial entities. Trial Tr. vol. 1 a.m., 11:18-12:25 (Fazioli). In doing so, he often traversed the Houston Ship Chanel. *Id.* at 13:18-14:2. He also worked as a pilot in the port of Kwajalein in the Marshall Islands for three years. Trial Tr. vol. 1 a.m., 18:21-19:3 (Fazioli). Currently he works as an auditor for insurance companies and ships, and is tasked with assessing the safety of different ships' practices, including whether their work/rest records and fatigue management plans meet certain standards. Trial Tr. vol. 1 a.m. 21:16-25 (Fazioli).

98. Captain Fazioli opined that industry standards advise job rotation as a method of fatigue management. *Id.* at 75:2-8. Fazioli spoke in favor of the approach discussed above where three ABs man different positions—for example, one at the helm, one on lookout, and one on break—that they rotate through. *Id.* at 73:11-24.

99. Captain Fazioli stated that his policy was to have ABs rotate every hour or hour and a half, and that he would not have placed someone at the helm for three hours straight. *Id.* at 76:5-7, 77:14-20.

100. Captain Fazioli also discussed the guidance in the 1014 Circular on fatigue management. It states, "Changing the order of activities, where personnel are assigned tasks that include variety in the nature of tasks, can be beneficial in breaking up job monotony. Mixing tasks requiring high physical or mental work with low-demand tasks can be beneficial." TPC Ex. 14 at 27.

101. Notably, while the 1014 Circular recommends job rotation as a way to prevent fatigue, it does not proscribe any specific method, nor does it endorse the one-hour rotation system preferred by Captain Fazioli.

102. The Court also heard from Limitation Petitioners' expert, Captain Prentice Strong. Captain Strong initially sailed on oil tankers from 1985 to 1996. Trial Tr. vol. 3 a.m., 45:24-46:9. He subsequently worked as a pilot in Maine, where he navigated ports similar to the Houston Ship Channel. *Id.* at 48:10-49:18. Over his career, he's completed over 3,000 transits through such ports, including about 40 through the Houston Ship Channel. *Id.* at 47:2-7; 50:13-17.

103. Captain Strong testified that in his experience, most ships employ a watch schedule where ABs complete four-hour shifts with eight hours off in between. Trial Tr. vol. 3 a.m., 69:8-12 (Strong). In his experience, some ships will do six hours on and six hours off or twelve hours on and twelve hours off, but he found that four hours on and eight hours off was the most common configuration. *Id.* at 69:13-19.

104. In contrast to Captain Fazioli, Captain Strong stated that he has never seen a cargo ship, tanker, or bulk ship change out the helmsman every hour and that 90% of the ships he's on have a helmsman rotation of four hours on and eight hours off. *Id.* at 69:20-70:1.

105. Based on the evidence presented, the Court finds that the four-hour rotation employed on the YOCHOW was consistent with industry standards. While more frequent

rotations or rotations between different types of tasks might provide additional fatigue-related benefits, the YOCHOW's policy was adequate.[4]

G. YOCHOW's Safety Management System

106. As previously discussed, ships are required to have a written Safety Management System ("SMS") that sets out procedures on a variety of topics.

107. An SMS supplied by Beikun was in place aboard the YOCHOW at the time of the incident. LP Exs. 15 § 3.1.2 (stating that Beikun was responsible for supplying the SMS), 68-76 (Beikun's multi-volume SMS). Beikun's SMS addresses an extensive range of topics related to running a ship, from compliance with environmental regulations to maintenance of ship equipment. LP Exs. 68-76.

108. A Document of Compliance issued by the China Classification Society—the agency responsible for ensuring compliance for the YOCHOW's flagship state—certifies that the SMS was in compliance with the ISM Code's requirements at the time of the incident. LP Ex. 5; *see also* Trial Tr. vol. 3 p.m., 102:3-6, 103:4-106:16 (Karentz) (testifying to the adequacy of the SMS).

109. Further, the China Classification Society also issued a Safety Management Certificate, which again certified that the SMS employed on the YOCHOW had been audited and was in compliance with the ISM Code. LP Ex. 9.

110. The China Classification Society also performed annual audits to ensure that the YOCHOW's crew was complying with the SMS and that the SMS continued to meet the standards in the ISM Code. LP Exs. 83-85.

[4] As a corollary to the job rotation argument, TPC also contend that the YOCHOW was inadequately manned to perform more frequent job rotations. Trial Tr. vol. 2, 46:25-47:7 (Bridges). Because the Court finds that the YOCHOW's approach to job rotation was satisfactory, it does not reach this argument.

111. Audits from 2016-2018 generally found that the YOCHOW's crew was adequately following the SMS, except for one or two minor deficiencies each year. For example, in 2018 the audit noted that the crew had not asked for a non-asbestos declaration when accepting supplies, which the SMS requires. LP Ex. 83. The other issues identified are of a similar level of severity. Each year, it was noted that "corrective actions against all non-conformities identified during last audit were verified to be implemented effectively." LP Exs. 83-85.

112. The audits did not find inadequate compliance with work/rest requirements, or any issues related to fatigue management.

113. TPC argued at trial that the YOCHOW's SMS does not contain an adequate policy on fatigue management. The SMS itself does not address work/rest hours or fatigue management. Instead, it incorporates by reference Beikun's Declaration of Maritime Labour Compliance, Part II ("DMLC II"). LP Ex. 68-2 at 11 (SMS); LP Ex. 76 (DMLC II).

114. The DMLC II contains five pages addressing work/rest hours and fatigue. LP Ex. 76 at 26-31. That section addresses requirements for rest hours, procedures for recording work/rest hours, requirements for meal breaks, and other work/rest rules. LP Ex. 76 at 26-31.

115. TPC contends that the SMS should have contained a more robust discussion of fatigue and should have referenced the 1014 Circular and its guidance on fatigue. Trial Tr. vol. 1 a.m. 47:22-24 (Fazioli); *see also* TPC Ex. 14 (1014 Circular).

116. The 1014 Circular does not set out specific binding requirements; rather, it is meant as "practical guidance to assist interested parties to better understand and manage the issue of 'fatigue.'" TPC Ex. 14 at 3. While the 1014 Circular states, "maximum benefit will be derived

from integration of this material into[] [s]afety management systems," doing so is not mandated by any law or regulation. *Id.* at 4.

117. In support of its argument, TPC presented evidence on China Navigation's SMS, which, unlike Beikun's, specifically included a section on fatigue management that incorporates principles from the 1014 Circular. Trial Tr. vol. 1 a.m., 69:1-70:1 (Fazioli); TCP Ex. 11 (China Navigation's fatigue management policy). China Navigation's policy addresses issues like symptoms of fatigue and measures to prevent fatigue such as job rotation and maintaining an open communication environment. TCP Ex. 11.

118. The discussion of fatigue in China Navigation's SMS is surely more comprehensive than Beikun's. However, the Court finds that Beikun's SMS was not materially deficient. While Beikun's SMS did not incorporate the guidance from the 1014 Circular as fully as China Navigation's SMS, there is nothing in the record to suggest that Beikun's SMS violated any binding regulation, nor does the Court find that it fell below industry standard. *See* Trial Tr. vol. 4 a.m., 80:18-81:4 (Karentz).

H. Communication on the YOCHOW

119. The YOCHOW's SMS states that the official working language on the vessel was Mandarin Chinese, while English was the auxiliary language. TPC Ex. 76, at 19-20.

120. Win, whose native language was Burmese, did not speak Mandarin. Win Dep. 7:4-8:2. Win did speak maritime English. *Id.* He testified that he communicated primarily through English. *Id.*

121. Although Claimants urge the Court to find that these language differences contributed to the allision, there is no evidence to support this theory. Win testified that he was able to communicate in maritime English. *Id.*

122. Win also stated that while there were sometimes minor miscommunications among the crew, there were no communication issues related to helm orders.[5] *Id.* at 29:11-25.

123. Pilot Ewing confirmed this assessment, testifying that Win and the helmsmen who he worked with on the YOCHOW were capable of comprehending and following Pilot Ewing's helm orders. Trial Tr. vol. 3 a.m., 29:18-22, 32:22-25 (Ewing). While Win was not a fluent English speaker, executing helm orders does not require fluency; rather it requires knowing basic commands such as "port," "starboard," "5," "10," "20," "hard," and "steady the course." *Id.* at 30:19-31:2.

124. Moreover, Pilot Ewing testified that helm steering errors occur regardless of the nationality of the crew. *Id.* at 32:7-12, 35:12-22.

125. TPC's expert, Captain Fazioli, likewise agreed that Win had a sufficient grasp of English to perform his job. Trial Tr. vol. 1 a.m., 121:21-22 (Fazioli). While Fazioli opined that it would have been preferable to have all crewmembers completely fluent in and at all times speaking in a single language to promote "situational awareness," *id.* at 120:15-122:20, there is insufficient evidence in the record to suggest that a lack of situational awareness contributed to the allision.

126. Win's ability to understand commands in maritime English is further evidenced by the VDR transcript, which shows that Win successfully executed commands like "port" and "starboard" over a hundred times the night of the incident, and likely many more times during his five years of experience as a helmsman. TPC Ex. 9; Win Dep. 12:22-24. As Captain Strong noted, Win carried out these orders with reasonable competency. Trial Tr. vol. 3 a.m., 75:12-77:3, 79:5-25 (Strong).

[5] Helm orders primarily comprise a handful of routine phrases, which explains why one might be able to understand and obey helm orders in English despite not being fully fluent in English. *See* Trial Tr. vol. 3 a.m., 75:12-21 (Strong).

127. In light of this evidence, it stretches credulity to assert that Win did not know the difference between "port" and "starboard," or that the different languages spoken by the international crew on the YOCHOW caused the allision. The Court concludes that the allision cannot be attributed to any hypothetical miscommunication among the crew.

I. Value of the YOCHOW and Pending Freight

128. The only evidence in the trial record of the value of the YOCHOW at the time of the allision is the valuation performed by Tom Evans, an employee and director at Vessels Value Ltd. ("Vessels Value"). LP Ex. 101 (valuation of the YOCHOW); LP Ex. 103 (biography of Tom Evans).

129. Vessels Value has provided the valuation of more than 60,000 vessels. Evans Dep. 9:10-17. Evans has been conducting valuations for Vessels Value since 2009, and he was involved in the development of Vessels Value's valuation models and methodology. LP Ex. 103.

130. Evans estimated the value of the YOCHOW at the time of the allision to be $18,440,000. Evans Dep. 13:4-7.

131. Evans used a model for valuing commercial shipping vessels based on comparable sales over the last three years. *Id.* 13:17-20. The model takes into account the vessel's age, size, type, past earnings, and special features. *Id.* 13:21-14:7. This valuation method appears to be an industry standard method of assessing market value. *Id.* 14:14-20.

132. At the time of the allision, the value of the YOCHOW's pending freight was $543,949.99.

J. OSG's Damages

133. The impact of the YOCHOW punctured the port side of the OSG 243 barge. The OSG 243 required temporary repairs to make a safe voyage to a drydock. Once there, it received permanent repairs. OSG Ex. 82 at 6-8.

134. The OSG 243 was under charter with PMI Trading Limited at the time of the allision. The barge would have remained under charter for the duration of its repair period, sixty-four days and eight hours, at a rate of $20,000 per day, except for an eleven day off-hire period for scheduled maintenance. OSG Exs. 60, 61.

135. The parties have stipulated that, as a result of the allision, OSG suffered $3,600,000 in damages: $2,533,340 for physical damages and related costs and $1,066,660 for loss of charter hire. ECF No. 340. OSG asserts no other injuries. *Id.*

K. Pre-Allision Condition of TPC's A Dock

136. The A Dock was originally constructed in 1968.

137. The A Dock's original construction comprised a concrete deck loading platform supported by four rows of two vertical 30" diameter tubular steel pipes filled with concrete, and four battered 24" diameter piles at the dock's corners. LP Ex. 114 at 4. In the 1980s, the tubular steel pipe piles were superseded by about 30 H-piles, although the pipe piles are still in their original place. *Id.* The H-piles provide structural support for the main dock structure and approachway.

138. In 2012, Lanier & Associates ("Lanier") was retained to perform a condition survey of the A Dock. LP Ex. 114. In September 2017, Lanier conducted a second survey of the A Dock's condition after Hurricane Harvey. LP Ex. 115.

139. These reports employed a multi-tier condition classification system, of which the following two classifications are relevant:

> **Serious** – Advanced deterioration, overstressing or breakage may have significantly affected the load bearing capacity of primary structural components. Local failures are possible and loading restrictions may be necessary. Repairs may need to be carried out on a priority basis with urgency.
> **Critical** – Very advanced deterioration; overstressing or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur and load restrictions should be implemented as necessary. Repairs may need to be carried out on a very high priority basis with strong urgency.

LP Exs. 114 at 9, 115.

140. In the 2012 report, Lanier noted that the following items were in "critical" condition: the below deck access stairs, the lower access platform, and a few barge dolphins. LP Ex. 114 at 2.

141. Lanier also identified that the A Dock's steel pipe supports and H-piles were in "serious" condition due to corrosion. LP Ex. 114 at 10. It found that there was "very severe corrosion in the splash zone area with several corroded completely through to the interior concrete which is now exposed." *Id.* at 11. There was also minor to moderate corrosion above the splash zone. *Id.* It summarized, "Due to the advanced stage of deterioration of the dock support piles, Lanier would recommend that repairs to shore up the structural support of the dock be implemented as soon as possible." *Id.* at 1-2.

142. Joe Jacquat, TPC's retained expert and a civil and structural engineer at Lanier, opined that the support piles' condition was categorized as serious as opposed to critical because Lanier did not believe there should be any reduction to the A Dock's operations as a result of the condition of the support piles. Trial Tr. vol. 6 p.m., 39:5-19 (Jacquat). He testified that Lanier found that the support piles were still adequate for supporting the deck of the A Dock. *Id.*

143. Despite identifying a handful of critical and serious issues, Lanier put no restrictions on the use of the A Dock following its 2012 inspection. LP Ex. 114; Trial Tr. vol. 6 p.m., 39:16-19, 68:14-18 (Jacquat).

144. The 2012 report classified the recommended repairs as either Priority 1, 2, or 3. Priority 1 repairs were those necessary for "urgent personnel safety and environmental related items that should be addressed immediately." LP Ex. 114 at 18. Priority 2 repairs were "items related to continued safe operational use of the marine facilities that should be addressed immediately or as soon as possible (within the next 6 months) where noted." *Id.* Priority 3 repairs were "items related to the cosmetic appearance and prevention of further deterioration of the marine facilities that should be addressed as part of an ongoing maintenance program." *Id.*

145. Priority 1 repairs included: (1) replacing the two mooring dolphins and fender systems; (2) repairing or replacing the below deck access stairways and the access platform below the dock face; and (3) providing a larger containment area underneath the loading arm area. LP Ex. 114 at 18.

146. TPC completed all the Priority 1 repairs listed in the 2012 report. Trial Tr. vol. 6 p.m., 37:10-39:4 (Jacquat).

147. Repair of the corroded support H-piles were categorized as a Priority 2 issue. LP Ex. 114 at 18-19. Because TPC was focused on making the Priority 1 repairs, it did not complete these repairs. LP Ex. 115.

148. Lanier surveyed the A Dock in 2017 following Hurricane Harvey. The 2017 report again found that the H-piles had corrosion. LP Ex. 115. However, it did not upgrade their condition to critical or impose any operational restrictions based on their condition. Trial Tr. vol. 6 p.m., 39:21-40:22 (Jacquat).

149. Lanier found that the A Dock was operationally safe following both the 2012 and 2017 due diligence inspections. Trial Tr. vol. 6 p.m., 40:3-41:16 (Jacquat). It was Lanier's expectation that the dock would continue to be used in the same manner with no operational or other restrictions had it not been struck by the YOCHOW. *Id.*

150. In the months between the 2017 report and the allision, TPC did not repair or replace the H-piles.

L. Remaining Useful Life of TPC's A Dock

151. Bearing in mind the condition of the A Dock at the time of the allision, the Court now turns to the question of what its remaining useful life was in June 2018.

152. The A Dock was built around 1968 and had a fifty-year expected useful life when it was built. LP Ex. 124; Trial Tr. vol. 6 p.m., 58:3-11 (Jacquat). The allision occurred in 2018, exactly 50 years after the dock's construction. Insofar as the A Dock was still operational at the time of the allision, the Court finds that it would have lived past its original expected useful life.

153. The Court heard from two engineering experts on the remaining useful life of A Dock at the time of the allision. The Court also heard from an expert in appraisals.

154. TPC's expert, Joseph Jacquat, has 40 years of experience as a civil engineer and is currently the senior vice president of Lanier, the company that prepared the 2012 and 2017 reports. Trial Tr. vol 6 a.m., 73:11-74:4 (Jacquat). Lanier's primary work is on docks and wharves in the Houston Ship Channel and several other similar waterways. *Id.* at 74:18-75:6.

155. Jacquat opined that A Dock had 25 years of remaining useful life at the time of the allision, assuming regular repairs and maintenance. TPC Ex. 215 at 19; Trail Tr. vol. 6 p.m., 42:18-43:23 (Jacquat).

156. According to Jacquat, "The useful life of a marine structure on the Houston Ship Channel can vary significantly and is heavily influenced by the following four conditions: (a) how robust the structure is compared to its typical use, (b) how often it is used, (c) how well it is maintained, and (d) the environmental conditions (water and air)." TPC Ex. 215 at 19. Jacquat testified that he considered these factors in determining the remaining useful life of A Dock prior to the allision. Trial Tr. vol. 6 p.m., 43:7-23 (Jacquat).

157. The Court also heard from Limitation Petitioners' expert, Patrick Darjon, a Maritime Civil Engineer with Aqualis Braemar LOC Group.

158. Darjon opined that at the time of the allision, the dock was at the end of its useful life. Trial Tr. vol. 7 p.m., 44:6-18, 77:10-78:1 (Darjon); LP Ex. 188 at 20 (Darjon's expert report).

159. Darjon's assessment was based on the fact that the dock was built in 1968 and had an expected life of 50 years. Trial Tr. vol. 7 p.m., 44:6-18 (Darjon). Additionally, he observed that the H-piles supporting the A Dock were deteriorating, as noted in the 2012 Lanier report. LP Ex. 188 at 7.

160. Darjon testified that he had not considered factors such as the effect of regular repairs and maintenance on the longevity of the A Dock. Trial Tr. vol. 7 p.m., 64:22-65:4 (Darjon).

161. The Court finds that Darjon's estimate of 0 years of remaining useful life for the A Dock is not credible.

162. To accept that the A Dock had no remaining useful life at the time of the allision would require finding that the A Dock was on the precipice of ruination and would have fallen into disrepair on June 13, 2018, or shortly thereafter even without the allision. Yet, nothing in the

record indicates that the A Dock's demise was imminent. To the contrary, on the day of the allision, the A Dock was operating as usual.

163. While the 2012 and 2017 Lanier reports expressed some concern about the H-piles, they did not find that their condition was critical or impose any operational restrictions on the A Dock based on their condition. Trial Tr. vol. 6 p.m., 39:21-40:22 (Jacquat). Nor is there evidence of the impending failure of any other mission-critical part of the A Dock structure.

164. Darjon's estimate appears to have been heavily dependent on his interpretation of the conclusions in the Lanier reports. LP Ex. 188 at 7-8, 15-16; Trial Tr. vol. 7 p.m. 39:2-13, 44:20-7 (Darjon). The Court finds that Jacquat's interpretation of those reports is more persuasive insofar as he is an engineer and corporate officer of Lanier, the company that prepared them.

165. Finally, the Court heard from Limitation Petitioners' other expert, Clinton Bogart. Bogart was retained to provide a market valuation of the A Dock. Bogart's background is in real estate, and he specializes in appraising special use industrial buildings. Trial Tr. vol. 8, 8:2-9:21 (Bogart).

166. In assessing the market value of the A Dock, Bogart created separate estimates based on different remaining useful life figures ranging from 0 to 5 years. LP Ex. 189.

167. These values were chosen based on Bogart's interviews with Darjon, observation of the A Dock, review of the Lanier reports, and examination of the A Dock's repair history. LP Ex. 189 at 19; Trial Tr. vol. 8, 25:3-8 (Bogart). He did not review Jacquat's engineering report or speak to Jacquat. Trial Tr. vol. 8, 50:12-20, 58:10-20 (Bogart).

168. The Court finds Bogart's estimate of the remaining useful life of the A Dock is not credible.

169. First, Bogart's expertise is in real estate and appraisals, not civil engineering. As a result, he performed no independent engineering analysis of the A Dock structure or its capabilities, relying on other's engineering reports. Trial Tr. vol. 8, 50:12-20, 58:10-20 (Bogart).

170. Specifically, Bogart's opinions on the A Dock's remaining useful life seem to be largely reliant on Darjon's remaining useful life estimate, which the Court has discounted.[6] Ex. 189 at 19; Trial Tr. vol. 8, 50:12-20, 58:10-20 (Bogart).

171. Moreover, to the extent Bogart relied on his review of the Lanier reports, the Court again finds that Jacquat, a Lanier engineer, is better equipped to opine on the effect that the deficiencies noted in those reports had on the remaining useful life of the A Dock.

172. Ultimately, the Court finds Jacquat's testimony on the remaining useful life of the A Dock to be credible.

173. Jacquat and Lanier have a long history with the TPC facility as Lanier was the primary engineering firm that evaluated and assisted with the A Dock prior to the allision. Trial Tr. vol. 6 a.m., 78:23-80:1 (Jacquat). In fact, Lanier was on site on at least seven occasions for different reasons prior to the allision. *Id.* at 78:2-79:6. In addition, Jacquat and Lanier have been performing engineering services with respect to the A Dock post-allision. *See* TPC Ex. 215.

174. Given Jacquat's engineering credentials and extensive experience with the A Dock, the Court finds his remaining useful life estimate of 25 years to be credible.

M. Damage to the A Dock

175. The following is a non-exhaustive list of ways in which the A Dock was damaged as a result of the allision.

[6] Notably, however, Bogart did not fully agree with Darjon's estimate of 0 years because during Bogart's inspection, which took place after the temporary repairs, the dock was being used and had contributory value. *Id.* at 29:7-30:1.

176. The two 60 feet long by 12 feet wide concrete approachway panels of the A Dock were damaged when the platform was displaced about four feet toward the shoreline (westward) during the allision. The shore side of the approachway fell into the water, landing on pipework and cable trays. The shore side end support was damaged, as evidenced by cracked concrete and heaved soil. LP Ex. 188; TPC Exs. 215, 256, 257.

177. The dock side of the approachway was displaced and had crushed ends and damaged handrails. *Id.*

178. Pipework on the pipe rack was slightly displaced with possible bends in pipework. *Id.*

179. The northern breasting dolphin had crumpled on each of the four tubular steel piles. All four 42" diameter 0.75" wall thickness pipe piles in the jacketed steel structure were damaged in the allision. Scarring was observed to the rubber fender unit. *Id.*

180. One of the three marine loading arms was attached to the vessel in berth at the time of the allision and sustained damage. *Id.*

181. A skid on the loading platform was displaced and deformed. *Id.*

182. All three fender panels on the main dock were displaced southward, and the rubber fender elements on each fender panel were misaligned. Restraint chains at each of the three fender panels were damaged. The south fender frame also had deformation to its steel members. *Id.*

183. The northern row of H-pile pairs (those that are embedded in the concrete deck) had spalling (cracks and chipping) around their connections to the concrete deck. *Id.*

184. The remaining three rows of H-pile pairs (bolted to the underside of the concrete deck) had deformed bolts and cracked and chipped grout at the connection to the deck. *Id.*

185. The dock side pile bent for the approachway was inclined toward the shore, and the cap beam was cracked and had concrete chipping. *Id.*

186. The allision caused a permanent deflection at the platform of about two feet westward. The grout shimming at all of the vertical pile support bents under the platform has been compromised with spalling around the tops of piles embedded in the concrete deck. The permanent deflection of the platform, the loss of vertical supports, and weakening of connections at the top of piles all served to compromise the capacity of the foundation. *Id.*

N. Repairs to the A Dock

187. In order to limit the interruption to its business operations, TPC made certain repairs to the A Dock that allowed it to be functional in the short term.

188. TPC repaired or replaced the following items: the north barge monopile; the north ship breasting dolphin; the platform fender panels; the dock platform itself; the dock approachway; various mechanical items; various electrical items; and the barge breasting dolphins. TPC Ex. 215 at 7.

189. TPC paid $4,534,403 for the repairs. Trial Tr. vol. 6 a.m., 76:6-15 (Jacquat); Trial Tr. vol. 6 p.m., 17:3-25 (Jacquat).

190. At trial, Jacquat testified that he could not be certain that the damage to the north barge monopile, which had been repaired, was solely caused by the allision. Trial Tr. vol. 6 p.m., 17:11-25 (Jacquat). As a result, TPC concedes that the $150,000 paid to repair the north barge monopile may not be recoverable, bringing the total for repairs down to $4,384,403.

191. Limitation Petitioners disagree with several repair line items including: (1) the installation of two south monopiles; (2) the removal of cleats from the loading platform; (3) the

servicing of all marine loading arm seals and bearings; and (4) the extent of the engineering services provided. LP Ex. 188 at 18; Trial Tr. vol. 7 p.m., 46:2-48:5 (Darjon).

192. Darjon opined that the reasonable cost for the total repairs should be between $4,185,000 and $4,384,403. Trial Tr. vol. 7 p.m., 46:2-48:5 (Darjon); LP Ex. 188 at 17-18.

193. At trial, Jacquat testified to the necessity of these specific repairs. Trial Tr. vol. 6 p.m., 18:1-22:1 (Jacquat). Moreover, Darjon testified that he had no gripe with Jacquat's explanation that the south monopiles were necessary to allow barges to berth without putting load onto the platform structure. Trial Tr. vol. 7 p.m., 46:9-18 (Darjon).

194. The Court finds Jacquat's explanation of the necessity of installing the two south monopiles, the removal of cleats from the loading platform, the servicing of all marine loading arms, and the engineering costs to be credible.

195. As a result of these repairs, TPC has been able to use the A Dock over the last five years as of the time of trial.

196. However, as explained by Jacquat, the repairs could not return the A Dock to its pre-allision condition.

197. Marine structures require both vertical and lateral load support. Trial Tr. vol. 6 a.m., 87:8-88:10 (Jacquat). At the time of the allision, the A Dock had two support systems: (1) the eight original 30-inch round pipe supports that were part of the 1970s original construction and (2) about 30 additional 14-inch square H-piles that were driven in the early 1980s as part of repairs from a prior allision and which were placed on either side of the original round pipe supports. Trial Tr. vol. 6 a.m., 85:10-86:22 (Jacquat).

198. The H-piles provided necessary vertical and lateral support to the dock. *Id.*

199. While the repairs were able to give the A Dock the necessary lateral support, repairs could not be made to provide the requisite vertical load support.

200. As previously described, the force of the allision pushed the A Dock back approximately 3 to 4 feet. The dock sprang back, and the ultimate displacement was roughly 2 feet. Trial Tr. vol. 6 a.m., 91:5-8 (Jacquat).

201. This displacement is concerning because it means that the dock was no longer directly over its vertical support piles. *Id.* at 94:12-16. This puts the dock at risk of toppling itself over. *Id.*

202. Placement of vertical support piles is relatively precise. *Id.* at 104:5-17. They are meant to be plumb, and the horizontal placement of the top of a vertical support should not be more than an inch or two off from the bottom of the support. *Id.*

203. As a result, displacement of more than six inches is cause for concern about the structural integrity of a dock. *Id.*

204. Due to this displacement, entirely new support piles would have to be installed under the A Dock in order for it to have the same vertical support it had prior to the allision. Trial Tr. vol. 6 p.m., 22:24-23:10 (Jacquat).

205. However, between the original pipe supports and the additional H-piles installed in the 1980s, there was not sufficient space under the A Dock to place new foundation piles. *Id.*

206. Thus, the repairs have not given the dock the same vertical load support it had pre-allision, nor would such repairs be possible.[7] *Id.*

[7] Darjon testified that he thought more piles could fit under the dock. However, he stated, "I don't know what the solution would be. I wasn't tasked with designing anything." Trial Tr. vol. 7 p.m., 74:14-25. Insofar as Darjon was not tasked with engineering a solution to provide vertical support for the damaged A Dock, the Court finds his opinion on this issue less persuasive than Jacquat's. Moreover, to the extent that Darjon testified that the repairs were sufficient to restore the A Dock to its pre-allision condition, the Court finds this testimony unpersuasive as it was based on an estimated remaining useful life of 0 years.

207. In order to give the A Dock enough structural support to operate in the short term, five 24-inch pile pairs were put around the back of the dock to stop it from toppling itself over. *Id.* at 23:15-45:4.

208. As noted above, this and the other temporary repairs were made quickly to minimize interruption to TPC's business. Due to those time constraints and the understanding that these were only temporary repairs, these five pile pairs do not have the adequate long-term coating needed to protect them from corrosion. *Id.*

209. Lanier initially predicted that the temporary repairs would allow the A Dock to operate for 20 to 30 months. *Id.* at 24:5-25:3. At the time of trial, roughly 5 years after the repairs, the A Dock was still operational.

210. In the interim, the five support piles have been inspected and found to still be performing properly. *Id.* However, because it is atypical for a structure to be installed in an environment like the Houston Ship Channel without coating, the lifespan of these supports is unpredictable. *Id.*

211. As a result, the Court finds that the repairs made following the allision were unable to return the A Dock to its pre-allision condition. Additionally, it finds that such repairs would not be possible given the lack of space under the dock for new vertical supports.

O. Permanent Repair Options

212. TPC considered the following permanent repair options: (1) rebuild the A Dock in its present location; (2) rebuild the A Dock in its present location but install a temporary "C Dock" to handle the A Dock's usual traffic to minimize interruption to TPC's business; and (3) rebuild the A Dock in a new location south of the existing structure to permit the temporarily-repaired A Dock to function in the interim. Trial Tr. vol. 5 a.m., 80:2-84:1 (Bradley).

213. The first option, rebuilding the A Dock in its current location, was eliminated because it would have required the dock to be offline for an estimated 9 months, causing TPC to incur substantial business interruption costs. *Id.* at 80:14-22.

214. The second option was rejected because the theoretical C Dock would have had only barge capability, not ship capability, due to the limited shoreline available. Further, it would not have been able to fully replace the barge capability of A Dock. As a result, this option would likewise lead to substantial lost profits. *Id.* at 84:2-86:10.

215. The third option was chosen because the business interruption loss during the building of the new A Dock was estimated to be $0. Moreover, the estimated cost of building a new A Dock was only slightly higher than the estimated cost of building a temporary C Dock. *Id.* at 80:14-86:10; Trial Tr. vol. 6 p.m., 113:17-114:5 (McLain).

P. New A Dock Costs

216. The cost of constructing the replacement A Dock is $25,406,154. Trial Tr. vol. 6 a.m., 76:16-77:17 (Jacquat); TPC Ex. 215. Construction of the new A Dock is underway, but has not yet been completed.

217. Through discussions and negotiations with the Houston Pilots, the Port of Houston Authority and the adjacent landowner, Lyondell, it was determined that TPC would have to perform dredging operations to increase the basin in the new A Dock location. Trial Tr. vol. 6 p.m., 27:4-28:13 (Jacquat); TPC Ex. 215 at 24. The cost to perform this dredging was $3,100,938. TPC Ex. 301.

218. To build the new A Dock, TPC was required to install a bulkhead and shoreline protection in the new location since that area abuts a cliff on the south side of the property in an area that neither TPC nor POHA owns. Additionally, the new bulkhead was needed to minimize

the impact of the new dredge cut on the neighbor, Lyondell, and to give a ship proper draft to visit the new dock. Trial Tr. vol. 6 p.m., 27:11-29:15 (Jacquat). The amount of those costs was $6,797,752. TPC Ex. 302; Trial Tr. vol. 6 p.m., 28:15-29:15 (Jacquat).

219. The actual construction of A Dock is only partially completed at this time. The construction costs that have already been incurred or are subject to existing purchase orders include: construction of the dock structure ($8,363,563), TPC Exs. 303, 215; engineering services ($2,096,153), TPC Ex. 215 at 24; Coast Guard passing vessel study ($39,800), TPC Exs. 309, 215; permitting ($55,900), TPC Exs. 308, 215; firewater deluge system ($200,000), TPC Ex. 215 at 24; hose handling cranes ($101,140), TPC Exs. 306, 215; marine loading arms ($324,792), TPC Exs. 307, 215; and marine vapor control skid ($570,000), TPC Exs. 305, 215.

220. TPC also expects to incur the following costs, the estimates for which are provided by Lanier: firewater system building ($505,452), vender support associated with marine vapor control skid ($80,000), piping, pumps, and valves ($1,280,252), sump pump ($11,000), demolition of the original A Dock structure ($900,000), electrical and instrumentation ($779,412), and marine contractor installation assistance and piping interface assistance ($200,000). TPC Ex. 215 at 24; Trial Tr. vol. 6 p.m., 31:8-19 (Jacquat). The Court finds these estimates to be credible.

221. The following table summarizes the gross costs associated with replacing the A Dock:

Line Item / Description	**Gross Cost**
Bulkhead & Shoreline Protection	$6,797,752
A-Dock Without Firewater Structural Platform and Shoreline Valve Containment Foundation	$7,130,998

Firewater Structural Platform	$977,386
Shoreline Valve Containment Foundation	$255,179
Dredge	$3,100,938
Electrical & Instrumentation	$779,412
Engineering Services - Final Engineering	$2,096,153
Engineering - Passing Vessel Study	$39,800
Permitting Services	$55,900
Firewater System Building	$505,452
Firewater Deluge System	$200,000
Hose Handling Crane	$101,140
Marine Loading Arms	$324,792
Marine Vapor Control Skid	$570,000
Marine Vapor Control Skid - Vendor Support	$80,000
Piping, Pumps & Valves	$1,280,252
Sump Pump	$11,000
Demolition of Original A-Dock Structure	$900,000
Marine Contractor Installation Assistance - Piping Interface Assistance	$200,000
TOTAL	**$25,406,154**

222. These costs are necessary to build a replacement in kind A Dock. Trial Tr. vol 6 p.m., 45:21-47:16, 59:20-61:2 (Jacquat).

223. The new A Dock has the same physical dimensions of the old dock, the same mechanical properties, and the same operational capabilities. Trial Tr. vol. 6 p.m., 44:4-45:17 (Jacquat).

224. However, unlike the original A Dock, the new A Dock will have a firewater structural platform and shoreline valve containment foundation. *Id.* at 31:20-33:13.

225. These features are required in order for the new A Dock to comply with applicable regulations. While the original A Dock had a firewater service that had been grandfathered in, the new A Dock must comply with regulations on volume and duration of firewater flow. Trial Tr. vol. 6 p.m., 31:20-33:13 (Jacquat).

226. The new A Dock has an expected useful life of 75 years with proper maintenance. TPC Ex. 215 at 20; Trial Tr. vol. 6 p.m., 48:9-23 (Jacquat); LP Ex. 188 at 13 (Darjon's report).

Q. Business Interruption

227. During the weeks after the allision when the original A Dock was offline and undergoing temporary repairs, TPC alleges it incurred certain business interruption damages.

228. TPC operates a chemical manufacturing facility that is located approximately 1.8 miles south of the dock complex. Trial Tr. vol. 5 a.m., 27:9-18 (Bradley). The facility is connected to the docks by multiple pipelines. *Id.*

229. TPC's Houston facility receives chemical feedstocks from suppliers and processes them into different specialty chemicals which it in turn sells to customers. The facility has three business units: Crude C4, Fuels, and Isobutylene Derivatives, of which the first two are relevant to this case. *Id.* at 28:22-31:16.

230. The Crude C4 unit aggregates byproducts from many petrochemical refiners and produces three products: butadiene, which is primarily used to make car tires; butene-1 ("B1"), which is a feedstock for making polyethylene; and isobutylene, which is used to make MTBE, a gasoline additive. *Id.* at 30:21-31:6.

231. The Fuels unit uses methanol and isobutane as feedstocks. TPC reacts isobutane with a catalyst in a dehydrogenation unit—a device that removes hydrogen from isobutane to produce isobutylene—which is then further reacted to make MTBE. *Id.* at 31:14-32:10.

232. In 2018, approximately 49% of all feedstock entering TPC's Houston facility was transported via marine and came through one of TPC's two docks. *Id.* at 42:2-43:7. The rest came through pipelines or railways. *Id.*

233. Some feedstocks and products are primarily or exclusively transported via marine.

234. MTBE, a gasoline additive that is not sold in the United States due to federal regulation, was sold exclusively for export abroad via ship or barge. *Id.* at 32:9-14, 33:10-19, 43:16-23. The methanol feedstock used to make MTBE was likewise transported exclusively via ship or barge. *Id.* at 33:16-19, 43:16-23.

235. C4, B1, and raffinate also were transported primarily, although not exclusively, via marine. *Id.* at 44:2-16, 43:8-23.

236. Without the A Dock available to receive feedstock shipments and dispatch chemical output, TPC claims it suffered business interruption damages from June 13, 2018, to July 31, 2018. Trial Tr. vol. 5 p.m., 139:8-140:15 (Van Meter).

237. These damages are sorted into five categories, with TPC claiming costs in the following amounts: MTBE lost profits ($3,682,733), B1 lost profits ($2,420,549), MTBE logistical expenses ($961,141), B1 logistical expenses ($172,355), and C4 logistical expenses ($62,993).

238. TPC's damages calculations are supported by TPC's expert, Scott Van Meter.[8] Van Meter is a CPA with over 20 years of experience testifying as an expert in matters such as this. Trial Tr. vol. 5 p.m., 132:9-11, 133:3-5.

239. TPC also presented testimony from two employee witnesses: Patrick Bradley and Brian Ruggiano.

1. MTBE Lost Profits

240. Without the A Dock in service, TPC had to reduce its production rate of MTBE. This was caused by the following factors: (1) MTBE is shipped only via marine; (2) a major feedstock from MTBE arrives only via marine, and (3) there was limited tank storage for MTBE. Trial Tr. vol. 5 a.m., 77:15-78:8 (Bradley).

241. Bradley testified that due to demand for MTBE, "A lost pound [of production] is a lost sale." *Id.* at 78:8.

242. Van Meter calculated the lost production of MTBE by comparing forecasted production to actual production during the damages period. Trial Tr. vol. 5 p.m., 138:4-7; 140:11-15 (Van Meter).

243. TPC's forecasted MTBE production in June 2018 was 83,561,000 pounds. In July 2018, it was 80,154,000 pounds. Actual production of MTBE during June 2018 was 72,622,000 pounds. During July 2018, it was 47,113,000 pounds. Trial Tr. vol. 5 p.m., 144:21-145:16 (Van Meter); TPC Ex. 107 at 6; TPC Ex. 212.

244. The difference between forecasted and actual MTBE production for those two months is 43,980,000 pounds.

[8] Limitation Petitioners previously moved to exclude Van Meter's testimony. ECF No. 270. The Court denied the Motion, finding that Limitation Petitioners' arguments went towards Van Meter's credibility, not admissibility. Minute Entry 11/09/2022.

245. Van Meter testified that he found the forecasts provided by TPC to be credible indicators of what production would have been but for the allision because both before and after the damages period, TPC's actual production met or exceeded its forecasts. Trial Tr. vol. 5 p.m., 140:22-142:21, 145:5-16 (Van Meter).

246. Van Meter then computed the average profit margin per pound of MTBE to be $0.0837. TPC Ex. 106 at 41. This was calculated by analyzing the trailing twelve-month average margin TPC made on MTBE sales. Trial Tr. vol. 5 p.m., 146:10-149:7 (Van Meter); TPC Ex. 106 at 41; TPC Ex. 195.

247. Finding that every pound of lost production resulted in a lost sale, Van Meter multiplied the lost production by the per-pound profit to determine the MTBE lost profits, yielding a total of $3,682,733.[9] TPC Ex. 107 at 6.

248. There were no saved costs. The facility continued to operate, just at a lower volume. They did not lay off any personnel, dispose of any equipment, or otherwise reduce their fixed costs. Trial Tr. vol. 6 a.m., 20:24-21:8 (Van Meter).

249. Additionally, because Van Meter used the profit margin in reaching this conclusion, the per unit reduced costs are already factored into his analysis. *Id.* at 21:9-16.

250. The Court finds this methodology produced a reliable representation of the lost profits TPC incurred related to MTBE production.

2. B1 Lost Profits

251. There are three components of TPC's alleged lost profits related to its B1 sales: (1) 44 cancelled customer orders in June 2018 due to the lack of feedstock to make product, (2)

[9] The Court's calculation of this total is $3,681,126. It is unclear how Van Meter reached a total about $1,000 more than this.

lost margin resulting from blending B1 with raffinate to mitigate damages, and (3) the lost profits from a deal with Integra to purchase a cargo of distressed B1.

252. **Sub-Issue 1 (44 Canceled Contracts):** Because TPC was unable to get the feedstock to continue B1 production, it cancelled 44 B1 orders in June 2018. Trial Tr. vol. 5 a.m., 78:9-18 (Bradley); Trial Tr. vol. 5 p.m., 97:9-21, 98:17-18 (Ruggiano).

253. The only issue with fulfilling these orders was TPC's ability to get feedstock. Because these sales were to be delivered via railcar, the status of the A Dock could not have affected their delivery.

254. Each of the cancelled deliveries was one "railcar" load of 155,000-156,000 pounds. Trial Tr. vol. 5 p.m., 110:23-112:10 (Ruggiano).

255. Using 156,000 pounds per shipment, lost sales of B1 from these alleged contracts totaled 6,864,000 pounds. TPC Ex. 106 at 45

256. Van Meter calculated TPC's historical per-unit margin on B1 by looking at the profit margins per pound of B1 from June 2017 to May 2019, which yielded an average profit margin per pound of $0.1827. Trial Tr. vol. 6 a.m., 7:11-8:6 (Van Meter); TPC Ex. 106 at 46; TPC Ex. 195.

257. Multiplying the pounds of lost sales by the margin per pound yields lost profits from B1 of $1,252,000. Trial Tr. vol. 6 a.m., 8:7-13 (Van Meter); TPC Ex. 106 at 45.

258. However, insufficient evidence has been provided to prove that these agreements existed, the volume of product that was to be produced under these agreements, or that they were canceled due to the allision.

259. Ruggiano testified that the terms of these 44 sales were set out in long-term customer contracts. Trial Tr. vol. 5 p.m., 110:20-116:20 (Ruggiano). Yet, none of those contracts were submitted to substantiate TPC's claims.

260. Ruggiano also testified that the cancelation of the orders would have been set out in writing. *Id.* Yet, no such writings were produced.

261. The only documentation provided to prove the existence of these agreements is an excel spreadsheet listing TPC's June sales. TPC Ex. 198 at 3-4. Its probative value is somewhat undermined by the fact that it was made by TPC management and was not independently verified.

262. Moreover, the spreadsheet only partially supports TPC's claim. Of the sales listed, only 21 are marked as "canceled." *Id.* The remaining either say "from May. Waiting on confirmation" or are blank. *Id.*

263. Although Van Meter included these damages in his report, he based his conclusions entirely from conversations with TPC management and on his review of the spreadsheet. Trial Tr. vol. 6 a.m., 49:18-50:19 (Van Meter); Trial Tr. vol. 7 a.m., 49:5-50:20 (Rosenfarb); TPC Ex. 106 at 45 (citing the source for the lost contract sales as "TPC0023718"; TPC Ex. 106 at 38 (detailing the documents reviewed and listing "TPC0023718" as "JUNE B1 Cancelled Orders .xlsx"). Van Meter did no independent verification of the underlying sales. Trial Tr. vol. 6 a.m., 49:18-50:19 (Van Meter).

264. The Court finds that TPC has not proven the existence of these damages.

265. **Sub-Issue 2 (Raffinate)**: Due to its chemical makeup, B1 can be blended into a lower-value product called raffinate that acts as a feedstock for other gasoline additives.

Following the allision, TPC alleges it blended some of its B1 into raffinate. Trial Tr. vol. 5 a.m., 78:9-79:18 (Bradley); Trial Tr. vol. 5 p.m., 98:22-24 (Ruggiano).

266. Van Meter concluded that TPC lost $674,632 from selling the less expensive raffinate. Trial Tr. vol. 6 a.m., 9:14-11:5 (Van Meter); TPC Ex. 106 at 45.

267. To reach this total, he subtracted the average historical per pound profit margin of raffinate from the average historical per pound profit margin of B1 and multiplied that amount by the 5,061,000 pounds of B1 that were allegedly blended into raffinate. Trial Tr. vol. 6 a.m., 9:14-11:5 (Van Meter); TPC Ex. 106 at 45.

268. However, TPC again faces an evidentiary issue in proving the specific volume of B1 that was blended into raffinate. TPC has provided no documentation to support its claim that it blended 5,061,000 pounds of B1 into raffinate or any description of how it arrived at that number.

269. Likewise, the only source for this figure identified in Van Meter's report is "representations made by TPC Management." TPC Ex. 106 at 45.

270. Additionally, TPC's witnesses were unable to explain why specifically B1 was converted to raffinate. When asked about the reason for blending the raffinate, Ruggiano stated that it could have been because they could not ship the orders without the A Dock and didn't have the capacity to store the B1, but that he did not actually know why they converted the B1 into raffinate in this instance. Trial Tr. vol. 5 p.m., 99:3-10 (Ruggiano).

271. Further confusing the matter, in context of the 44 canceled contracts, TPC's witnesses asserted that the reason the contracts were canceled was because TPC could not get enough feedstock to make B1 to fulfill the order. Trial Tr. vol. 5 p.m., 98:17-18 (Ruggiano); Trial Tr. vol. 6 a.m., 49:8-17 (Van Meter). Yet, TPC now argues that it had millions of pounds of

excess B1 that it could not ship or store, requiring it to be blended into raffinate. No evidence was introduced to explain this apparent contradiction.

272. Accordingly, the Court finds that there is insufficient evidence establishing the existence and amount of B1 lost profits and their connection with the allision.

273. **Sub Issue 3 (Integra Spot Deal)**: In June 2018, demand for B1 was high and supply was low due to the lasting effects of Hurricane Harvey. Trial Tr. vol. 5 p.m., 94:3-11, 128:10-13 (Ruggiano).

274. Taking advantage of these conditions, TPC began to bring in "spot deals" for B1, meaning that when a seller had excess B1 that it needed to offload quickly, TPC would purchase it and resell it at a profit. *Id.* at 94:3-17.

275. TPC was able to profit from this exchange because there are not many facilities in the region with the same assets—such as tankage, docks, railcar loading capability, and pipelines to particular customers—needed to facilitate the logistics of selling excess B1. *Id.*

276. A couple of days before the allision, Integra, a regional B1 importer, had distressed B1 cargo that it needed to offload. *Id.* at 99:11-100:21. Integra reached out to TPC, who agreed to purchase the B1 with the intent to resell it. *Id.*

277. All material terms including the pricing, shipping, and delivery details, had been orally agreed to prior to the allision. *Id.* TPC planned to buy 3 kilotons, or about 6,176,000 pounds, of B1 at $0.55 per pound. *Id.* at 101:14-102:16.

278. Due to the allision and the resulting uncertainty of dock availability, TPC did not move forward with purchasing the B1 from Integra. *Id* at 99:11-101:13, 107:12-17.

279. TPC did not have any specific buyers of the B1 lined up. However, given market conditions, it contends it would have been able to sell it for at least $0.63 per pound, yielding a profit margin of at least $0.08 per pound. *Id.* at 103:23-105:5, 107:18-22.

280. This estimate was based on the B1 market price and the time and the per unit cost of two spot deals from later in 2018 in which TPC sold B1 at $0.695 and $0.765 per pound. *Id.* at 103:23-105:20; TPC Ex. 199.

281. TPC therefore estimates that it incurred lost profits in the amount of $493,834 due to its inability to consummate the Integra spot deal.

282. The Court finds that there is sufficient evidence that TPC incurred damages in the amount of $493,834 related to the lost Integra spot deal and that these damages were caused by the allision.

3. MTBE Logistical Expenses

283. TPC also seeks to recover costs related to its inability to process MTBE shipments at its A Dock.

284. Without the A Dock in service, TPC did not have the same ability to load and unload ships. TPC therefore had to secure additional barges that were able to operate at the B Dock. Its tugs had to make additional runs to pull the extra barges to the B Dock, which required more tug fuel.

285. TPC also hired lighters, which are small transshipment vessels, to move product from the dock to waiting ships. Bradley testified that in the normal course of business, TPC generally does not engage in lightering. Trial Tr. vol. 5 a.m. 68:5-8, 73:6-15 (Bradley).

286. Further, whenever a chemical product was loaded onto a vessel, TPC was required to take a sample of the material to ensure that it met the required specifications. Because

ships could not dock directly at the A Dock, and instead had their cargo transported in small loads through the B Dock via barges and lighters, TPC had to conduct additional sampling of its product. *Id.* at 67:13-23.

287. In sum, TPC argues it incurred costs related to MTBE sales in the total amount $961,140. *Id.* at 73:16-74:21 (Bradley); TPC Exs. 107 at 7; 106; 184.

288. This total includes: $796,378 for barge leases, $84,642 for lightering, $39,215 for tug fuel, and $40,905 for sampling. Trial Tr. vol. 5 a.m. 73:16-74:21 (Bradley); TPC Exs. 107 at 7; 106; 184.

289. TPC has provided invoices documenting these costs. TPC Exs. 121, 127, 130, 133, 136, 139, 142, 145, 154, 157, 160, 163, 166, 169, 172, 175, 178, 207-211.

290. The Court finds that TPC has adequately proven the amount of the costs incurred.

291. Additionally, TPC has proven that these costs would not have been incurred absent the allision.

292. But for the allision, TPC would have been able to process MTBE shipments through the A Dock. Because the A Dock was offline for repairs, TPC was only able to process them through B Dock, which is not big enough for full size ships to dock. As a result, it had to hire additional barges and lighters and pay for extra tug fuel to take additional trips.

293. Moreover, Bradley testified that TPC does not employ lighters in its ordinary course of business. Trial Tr. vol. 5 a.m. 68:5-8, 73:6-15 (Bradley).

294. While TPC does at times use barges, Bradley testified that those barges are retained under long-term leases, while the invoices for the barges here show that they were employed on a short-term basis. *Id.* at 73:6-15.

295. Bradley confirmed during his testimony that barge and tug fuel expenses included here were only for the additional barges employed as a result of the allision. *Id.* at 72:12-73:24.

296. Finally, all parties agree that TPC incurred the sampling costs as a result of the allision. Trial Tr. vol. 7 a.m., 56:21-23.

297. Accordingly, the Court finds that TPC has provided sufficient evidence proving the amount of these costs and the fact that they arose from the allision.

4. B1 Logistical Expenses

298. TPC also contends that it incurred logistical expenses related to its B1 production due to the allision. Those alleged expenses fall into two categories: demurrage of the Navigator Ceto in the amount of $90,825, and terminalling fees in the amount of $81,530 paid to process materials that TPC could not accept due to the A Dock's unavailability.

299. The Navigator Ceto was scheduled to unload at the A Dock on July 20, 2018, but it was unable to berth until July 24, 2018, due to A Dock undergoing temporary repairs. The Navigator Ceto therefore was delayed 4.325 days, which it charged to TPC as demurrage in the amount of $90,825.

300. TPC paid the demurrage fee. Trial Tr. vol. 5 p.m., 95:5-97:8 (Ruggiano); TPC Ex. 148 (Navigator Ceto Laytime Statement documenting the demurrage fee). But for the allision, TPC would not have incurred this expense.

301. The Navigator Ceto Laytime Statement, which is the primary documentation of this demurrage fee, presents some minor confusion insofar as its terminal is listed as "ITC Dock #8." *See* TPC Ex. 148. However, insofar as the Laytime Statement proves the existence and amount of the demurrage fees and Brian Ruggiano, who handles the finances of TPC's B1 operation, testified that the Navigator Ceto was supposed to dock at TPC's A Dock and that TPC

did in fact pay the $90,825 demurrage fee, the Court finds there is sufficient evidence to prove that the Navigator Ceto was supposed to dock at the A Dock rather than ITC Dock #8.

302. With respect to the terminalling fees, TPC alleges that a vessel called the Taugus carrying B1 was scheduled to dock at TPC's A Dock shortly after the allision. Trial Tr. vol. 5 p.m., 92:2-93:25 (Ruggiano).

303. This was part of a "terminalling deal," in which TPC agreed to facilitate the logistics of transferring a shipment of B1 from a third-party supplier to a customer because TPC had a pipeline to that customer's facility. *Id.* at 94:1-95:4.

304. Because it was not possible to unload the cargo at TPC's A Dock following the allision, TPC diverted it to another facility that was acceptable to the customer. *Id.* TPC allegedly paid the Taugus $32,000 to divert and paid the other facility that processed the 3,302,225 pounds of B1 $0.015 per pound to handle the material for a total terminalling fee of $49,533. Trial Tr. vol. 5 p.m., 92:2-93:25 (Ruggiano); TPC Ex. 199.

305. Thus, TPC contends that it incurred $81,530 in additional costs on the Taugus deal due to the allision. Trial Tr. vol. 5 p.m., 92:2-93:25 (Ruggiano); TPC Ex. 199.

306. However, TPC has provided no documentary proof to substantiate (1) the existence of this terminalling deal, (2) the amount paid to Taugas to divert, (3) the volume of B1 diverted to the nameless other facility, and (4) the amount paid to the other facility.

307. In support of these costs, TPC submitted an excel spreadsheet prepared by Ruggiano listing these fees. TPC Ex. 199; Trial Tr. vol. 5 p.m., 92:24-93:1 (Ruggiano) (stating that he prepared the spreadsheet). However, no evidence of the underlying agreements has been proffered.

308. These costs also appear in Van Meter's report. However, the only source he cites for the existence of these fees is "[u]nderstanding gained through discussions with Patrick Bradley, TPC Management." TPC Ex. 106 at 48.

309. In sum, the Court finds that TPC has not proven the existence or amount of these costs.

5. C4 Logistical Expenses

310. TPC next asserts that it incurred costs related to its C4 production in the form of $62,993 in throughput charges from Targa Resources ("Targa").

311. Targa runs a third-party terminal and dock that is connected to TPC's Houston facility via a pipeline that is generally used for transferring C4 feedstock. Targa and TPC have a standing agreement for Targa to act as a terminal for some amount of C4 feedstock.

312. Targa has its own dock. Due to the unavailability of the A Dock, TPC entered an agreement with Targa for all of Targa's excess vessel unloading capacity. Afterwards, Targa would send the unloaded crude C4 to TPC via pipeline. Trial Tr. vol. 5 a.m., 70:5-71:7 (Bradley).

313. As evidenced by Targa's invoices, Targa charged TPC a flat-rate throughput charge of $0.01876 per gallon. TPC Exs. 124, 151.

314. To determine the additional throughput at Targa, Van Meter first analyzed the average historical monthly volumes processed. Van Meter calculated that approximately 1,592,029 gallons of C4 were processed through Targa on an average month. TPC Ex. 106 at 51.

315. During the months of June and July 2018, Targa processed 2,398,746 gallons and 4,143,174 gallons of crude C4 respectively. *Id.*; TPC Exs. 124, 151.

316. Subtracting those monthly volumes from the average monthly volume yields a total of 3,357,862 gallons in excess C4 throughput for June and July 2018.

317. At $0.01876 per gallon, the excess Targa throughput costs that TPC suffered as a result of the allision totals $62,993. Trial Tr. vol. 6 a.m., 13:7-23 (Van Meter); TPC Exs. 106 at 50-51, 124, 151, 184, 202, 204, 205.

318. The Court finds that Van Meter's methodology is reliable and that this is an accurate estimate of the additional costs TPC incurred related to C4 production because of the allision.

6. Additional Insurance Premium

319. Finally, TPC asserts that it incurred damages in the form of a one-time additional insurance premium related to the allision.

320. At the time of the allision, TPC was insured by a market of insurance carriers who provided coverage for both property damage and business interruption losses. TPC Ex. 240; Trial Tr. vol. 6 p.m., 112:18-113:4 (McLain).

321. The physical damage sustained by TPC as a result of the allision was a covered loss pursuant to TPC's property insurance policy. TPC Ex. 240; Trial Tr. vol. 6 p.m., 112:18-113:4 (McLain).

322. Anthony Grygiel, TPC's Vice President and Treasurer, testified to the facts surrounding TPC's insurance negotiations with its various underwriters.

323. When the allision occurred, TPC was in the process of negotiating renewal of its $850 million property insurance policy, which was set to expire on June 30, 2018. Trial Tr. vol. 3 a.m., 6:24-8:25 (Grygiel). Because TPC is insured by roughly 20 distinct underwriters, the

process of renewing its insurance is extensive and requires meeting with each individual underwriter to negotiate terms. *Id.*

324. As a condition of renewal, the underwriters attached an endorsement to TPC's renewal policy that required TPC to pay an additional premium due to the YOCHOW allision. TPC Ex. 119.; Trial Tr. vol. 3 a.m., 9:4-10:12 (Grygiel).

325. The amount of this additional premium was contingent upon how much the underwriters paid to TPC to reimburse its losses from the incident. TPC Ex. 119; Trial Tr. vol. 3 a.m., 9:4-10:12 (Grygiel).

326. The total maximum amount that could be due under the endorsement is $1,495,000. TPC Exs. 109-120; Trial Tr. vol. 3 a.m., 11:13-13:14 (Grygiel).

327. At the time of trial, the underwriters had approved payments of $20 million, which made the maximum additional premium due. Trial Tr. vol. 3 a.m., 14:16-15:1 (Grygiel).

328. However, the endorsement also provides, "When the loss is subrogated, the loss additional premium is to be re-adjusted accordingly. Should the final net loss to insurers be nil following full subrogation, the loss Additional Premium is to be fully repaid by TPC Group." TPC Ex. 19 at 1.

329. At the time of trial, this post-subrogation recalculation had not yet occurred. Therefore, it is unclear what the final premium imposed will be. TPC had not yet paid any of the additional premium. Trial Tr. vol. 3 a.m., 14:7-10 (Grygiel).

330. Thus, the Court finds that TPC has not proven the amount of these damages with reasonable certainty.

R. POHA's Damages

331. POHA, the owner of the A Dock, did not call any witnesses, submit any evidence, or assert any damages beyond those suffered by TPC.

III. CONCLUSIONS OF LAW

1. This case arises under the Court's admiralty and maritime jurisdiction within the meaning of Rule 9(h) of the Federal Rules of Civil Procedure. The Court also has jurisdiction pursuant to 28 U.S.C. § 1333 and the Limitation of Liability Act, 46 U.S.C. §§ 30501, *et seq.*

2. Venue is proper in the Southern District of Texas, as a substantial part of the events or omissions giving rise to this action occurred in this district.

A. Limitation of Liability

3. The Limitation of Liability Act, 46 U.S.C. §§ 30501, *et seq*., allows a shipowner to limit its liability to the value of the vessel at the conclusion of the voyage plus any pending freight if certain conditions are met.

4. Grand Famous and Beikun are "owners" within the meaning of the statute. 46 U.S.C. § 30501.

5. "The determination of whether a shipowner is entitled to limitation employs a two-step process." *Farrell Lines Inc. v. Jones*, 530 F.2d 7, 10 (5th Cir. 1976). First, the parties seeking to break limitation must establish what acts of negligence or conditions of unseaworthiness caused the accident. *Id.* Second, the parties seeking limitation must show that they did not have knowledge or privity of those same acts of negligence or conditions of unseaworthiness. *Id.*

B. Acts of Negligence

6. To prove negligence under the general maritime law, a plaintiff must show: (1) there was a duty owed by the defendant to the plaintiff; (2) the duty was breached; (3) the

plaintiff sustained injury; and (4) there is a causal connection between the defendant's conduct and the plaintiff's injury. *SCF Waxler Marine, L.L.C. v. Aris T M/V*, 24 F.4th 458, 470 (5th Cir. 2022); *Canal Barge Co. v. Torco Oil Co.*, 220 F.3d 370, 376 (5th Cir. 2000).

7. "The applicable standards of care in a collision case stem from the traditional concepts of prudent seamanship and reasonable care, statutory and regulatory rules, and recognized customs and uses." *Stolt Achievement, Ltd. v. Dredge B.E. LIND HOLM*, 447 F.3d 360, 364 (5th Cir. 2006); *S.C. Loveland, Inc. v. E. W. Towing, Inc.*, 608 F.2d 160, 165-67 (5th Cir. 1979).

8. Merely establishing that Limitation Petitioners failed to use reasonable care under the existing circumstances is insufficient to establish liability. *Canal Barge Co.*, 220 F.3d at 376. Claimants must also prove that their purported damages were proximately caused by Limitation Petitioners' breach of the standard of care. *Id.* "To give rise to liability, a culpable act or omission must have been 'a substantial and material factor in causing the [incident].'" *American River Trans Co. v. KAVO KALIAKRA SS*, 148 F.3d 446, 450 (5th Cir. 1998) (quoting *Inter-Cities Nav. Corp. v. United States*, 608 F.2d 1079, 1081 (5th Cir. 1979)).

1. Nan Win's Fatigue

9. It is undisputed that the allision was caused by Win mistakenly steering the YOCHOW hard port instead of hard starboard.[10]

[10] Claimants argue that the Court should apply *The Oregon*'s evidentiary presumption that a moving vessel is presumptively at fault for an allision when it allides with a stationary object. *See The Oregon*, 158 U.S. 186, 197 (1895). However, the Fifth Circuit has been clear that *The Oregon*'s presumption is "designed to fill a factual vacuum," and "[o]nce evidence is presented" it "become[s] superfluous because the parties have introduced evidence to dispel the mysteries that gave rise to the presumption[]." *Combo Mar., Inc. v. U.S. United Bulk Terminal, LLC*, 615 F.3d 599, 605 (5th Cir. 2010) (quoting *In re Mid–South Towing Co.*, 418 F.3d 526, 531 (5th Cir. 2005)). With or without the presumption, the outcome is the same, as there is no real dispute that either of the stationary objects–OSG's barge or TPC's A Dock–caused the allision.

10. Although Claimants argue that Win made this error because he was fatigued, they have not shown that Win was fatigued when he made the steering error.

11. There is no testimony from Win that he was tired or fatigued. There is similarly no credible testimony that Win displayed any signs of fatigue. To the contrary, the Court found persuasive Dr. Acemyan's testimony that Win did display any symptoms of fatigue.

12. Nor can the Court infer that Win was fatigued from the fact of the steering errors alone. This case is dissimilar to those relied on by Claimants where sailors fell asleep on the job and fatigue was evident from the nature of the negligence at issue. *See, e.g.*, *In re Cheramie Marine, L.L.C.*, No. CV 21-2371, 2023 WL 4295710, at *7 (E.D. La. June 30, 2023); *Washington State Dep't of Transp. v. Sea Coast Towing Inc.*, 148 F. App'x 612, 614 (9th Cir. 2005). As testified to by multiple experts in this case, steering errors like Win's happen with some frequency, and can occur regardless of whether one is fatigued.

13. Claimants also point to the fact that Win testified that on June 12, 2018 he slept only for about two of the six or seven rest hours between his daytime shift and his midnight shift at the helm. However, Win also testified that, while at sea, he did not work his regular watch shift, meaning that he would have had between 5:30 p.m. on June 11th and 8:00 a.m. on June 12th to get a full night of sleep.

14. Moreover, as discussed above, Win's work/rest hours were in compliance with the relevant regulations.

15. In sum, the Court finds there to be insufficient evidence that Win was fatigued.

16. Even if the Court were to find that Win was fatigued when he began his shift at the helm, Claimants have not proven that Win's fatigue was the *cause* of his steering error. *See*

Farrell Lines, 530 F.2d at 10 (defining the relevant inquiry as "what acts of negligence or conditions of unseaworthiness *caused* the accident" (emphasis added)).

17. As testified to by several witnesses, these types of steering errors are not uncommon in the ordinary course of sailing and are not necessarily a result of fatigue. Thus, the Court cannot infer from the mere existence of this accident that Win's hypothetical fatigue was the cause of his mistake.

2. Captain Yang's Fatigue and Absence from the Bridge

18. Captain Yang had been on duty for a continuous 18 hours immediately before the allision. This is plainly a violation of the work/rest requirements codified in 46 C.F.R. § 15.1111.

19. Captain Yang did not have the requisite 10 hours of rest in that 24-hour period. *See* 46 C.F.R. § 15.1111(a).

20. Additionally, the interval between Captain Yang's periods of rest was more than the threshold 14 hours. *See id.* at § 15.1111(b).

21. There is no evidence in the record of any overriding operational condition that would permit Captain Yang to work these excessive hours. *See id.* at § 15.1111(c); 46 C.F.R. § 10.107 (defining "overriding operational conditions").

22. Accordingly, the Court finds that Captain Yang's work/rest hours were in violation of 46 C.F.R. § 15.1111.

23. Because there is a regulatory violation, *The Pennsylvania* rule on causation applies here.[11] *The Pennsylvania* rule is a "burden-shifting presumption for causation when a

[11] Limitation Petitioners contend that this presumption is superfluous for the same reasons as *The Oregon* rule. That is, they argue that once evidence is presented, the presumption becomes meaningless. However, Limitation Petitioners fail to cite any authority finding that *The Pennsylvania* rule is inapplicable once evidence is presented. Moreover, such a finding would be unwise. Unlike *The Oregon* presumption, which addresses breach, *The Pennsylvania* rule "constitutes an evidentiary rule reversing the burden of proof" on the issue of causation. *Candies Towing Co. v. M/V B & C Eserman*, 673 F.2d 91, 93 (5th Cir.

vessel 'at the time of a collision is in actual violation of a statutory rule intended to prevent collisions.'" *Mike Hooks Dredging Co. v. Marquette Transp. Gulf-Inland, L.L.C.*, 716 F.3d 886, 891 (5th Cir. 2013) (quoting *The Pennsylvania*, 86 U.S. (19 Wall.) 125, 136 (1873)).

24. "C.F.R. regulations are treated as statutory violations for purposes of the *Pennsylvania* Rule where those regulations apply." *Archer Daniels Midland, Co. v. M/T AMERICAN LIBERTY*, 545 F. Supp. 3d 390, 404-05 (E.D. La. 2021).

25. Under *The Pennsylvania* rule, when a vessel involved in an accident is shown to have breached a statute or regulation, the vessel carries the burden of showing that the breach "could not have been" a proximate cause of the accident and damages sustained. *The Pennsylvania*, 86 U.S. (19 Wall.) at 125.

26. However, *The Pennsylvania* "did not intend to establish a hard and fast rule that every vessel guilty of a statutory fault has the burden of establishing that its fault could not by any stretch of the imagination have had any causal relation to the collision, no matter how speculative, improbable, or remote." *Compania De Maderas De Caibarien, S. A. v. The Queenston Heights*, 220 F.2d 120, 123 (5th Cir. 1955). "As this Circuit's progeny of *The Pennsylvania* reveals, fault which produces liability must be a contributory and proximate cause of the collision, and not merely fault in the abstract." *Bd. of Comm'rs of Port of New Orleans v. M/V Farmsum*, 574 F.2d 289, 297 (5th Cir. 1978).

27. As discussed above, the evidence in the record dispels the notion that Captain Yang's fatigue caused the allision. Captain Yang was not present on the bridge during the allision, and Second Officer Li had properly assumed control of the bridge as the officer on watch.

1982). It would be contradictory to find that such an evidentiary rule is nullified simply because *any* evidence on the matter is proffered.

28. Claimants contend that Captain Yang's absence from the bridge was caused by his excessive work hours and fatigue. Even assuming this were the case, which is far from certain, the evidence indicates that Captain Yang's presence on the bridge would not have prevented the allision.

29. Pilot Ewing and Captain Strong testified that steering errors like Win's are not uncommon, and it would be highly unusual to switch out a helmsman after one such error.

30. Further, Win's second mistake, which caused the allision, was caught and corrected within seconds due to the diligent monitoring of Pilot Ewing and Second Officer Li. There is nothing to suggest that Captain Yang would have caught the mistake earlier or that doing so would have prevented the allision.

31. As Captain Karentz stated, "if the captain had been on the bridge at the moment that the helmsman went the wrong way, it would have still been too late. You could have had ten pairs of eyes up there and the same mistake would have occurred." Trial Tr. vol. 4 a.m., 38:4-8 (Karentz).

32. Finally, Captain Yang testified that after the faulty turn, Pilot Ewing issued the proper corrective orders, and he would not have issued different orders.

33. Because Captain Yang's presence on the bridge would not have prevented the allision, the Court cannot find that the allision was caused by his absence or by any factor, such as his possible fatigue, that led to his absence. *See Inter-Cities Nav.*, 608 F.2d at 1081 ("[F]ault that produces liability must be a contributory and proximate cause of the incident, and not merely fault in the abstract.").

3. Other Possible Acts of Negligence

34. Claimants have failed to establish any negligent act that was the proximate cause of the allision aside from Win's steering error.

35. Much is made of the fact that Win is able to speak only Burmese and maritime English, while much of the crew speaks English or Mandarin. However, there is nothing in the record to suggest that Win's faulty turn was the result of a language or communication issue. To the contrary, the evidence shows that Win understood maritime English, and correctly executed orders to turn port or starboard numerous times on the night of the allision.

36. Moreover, because the Court has rejected Claimant's theory that Win or Captain Yang's fatigue caused the allision, the Court also finds that the quality of Limitation Petitioners' (1) trainings on fatigue, (2) SMS guidance on fatigue, (3) job rotation policy, and (4) auditing of work/rest records did not cause the allision.[12]

37. In sum, the only relevant act of negligence that proximately caused the allision was Helmsman Win's steering error.

4. Unseaworthiness

38. To establish unseaworthiness, Claimants must show that the vessel was not reasonably fit for its intended use, or not reasonably fit to perform or do the work at hand. *Farrell Line*s, 530 F.2d at 10 n.2. Typically, a vessel is unseaworthy if it is not adequately prepared to successfully navigate foreseeable hazards or challenges it may face. *Walker v. Harris*, 335 F.2d 185, 191 (5th Cir. 1964)

39. "The most frequently found unseaworthy condition is some mechanical or structural defect or deficiency in the vessel." *In re Louisiana*, 455 F. Supp. 272, 281 (E.D. La. 1978).

[12] Because these factors did not cause the allision, the Court need not reach the issue of whether they constitute negligence.

40. Additionally, an inexperienced or incompetent crew can, but does not necessarily, create an unseaworthy condition. *Orient Mid-E. Lines, Inc. v. Shipment of Rice on Bd. S.S. Orient Transporter*, 496 F.2d 1032, 1040 (5th Cir. 1974). However, courts are generally reluctant to find that a negligent crew is itself an unseaworthy condition. *In re Louisiana*, 455 F. Supp. at 281.

41. Claimants have identified no condition of unseaworthiness that caused the allision. There were no mechanical defects that are asserted to have caused the allision. The crew was competent, as they had proper certification, training, experience, and prior safety records.

42. While Limitation Petitioners' training program may not have provided training on fatigue management that was as robust as it could have been, the Court finds that their training in general was not so deficient as to constitute a condition of unseaworthiness. Moreover, because it has not been proven that fatigue caused the allision, the training that the crew received related to fatigue is a moot issue. *See Union Oil Co. v. M/V Point Dover*, 756 F.2d 1223, 1229 (5th Cir. 1985) ("Although the vessel must be manned with a competant [sic] crew, a deficiency in manning that has no causal connection to the damages in issue is not significant.").

C. Privity or Knowledge

43. To limit their liability, Limitation Petitioners have the burden to prove that the acts or omissions that caused the incident were not within their privity or knowledge. 46 U.S.C. § 30523(b); *Pennzoil Producing v. Offshore Express, Inc.*, 943 F.2d 1465, 1474 (5th Cir. 1991); *Coryell v. Phipps*, 317 U.S. 406, 411 (1943).

44. Having found that the only relevant proximate cause of the allision was Helmsman Win's steering mistake, the Court must determine whether Limitation Petitioners had privity or knowledge of this cause of the allision.[13]

45. "Privity" means personal participation in the negligent conduct or in bringing about the unseaworthy condition. *In re Omega Protein, Inc.*, 548 F.3d 361, 371 (5th Cir. 2008).

46. "Knowledge, when the shipowner is a corporation, is judged not only by what the corporation's managing officers actually knew, but also by what they should have known with respect to conditions or actions likely to cause the loss." *Pennzoil*, 943 F.2d at 1473-74; *Cupit v. McClanahan Contractors, Inc*., 1 F.3d 346, 348 (5th Cir. 1993) (finding that privity or knowledge exists where the ship owner could have and should have obtained the necessary information by reasonable investigation).

47. In sum, a shipowner has privity or knowledge, and is therefore liable, when it knew or should have known about the inadequate procedures, personnel, or equipment that caused the loss. *Farrell Lines*, 530 F.2d at 10; *Pennzoil*, 943 F.2d at 1473-74; *China Union Lines, Ltd. v. A. O. Andersen & Co.*, 364 F.2d 769, 787 (5th Cir. 1966).

48. "'[T]he "privity or knowledge' standard does not require a vessel owner to take every possible precaution; it only obliges the owner to select a competent master and remedy deficiencies which he can discover through reasonable diligence." *Omega Protein*, 548 F.3d at 374.

49. Generally, "errors in navigation or other negligence by master or crew are not attributable to [the vessel owner] on respondeat superior for limitation purposes," so long as the

[13] As no action or omission of Captain Yang's caused the allision, the Court need not address whether Limitation Petitioners had privity or knowledge of his work/rest hour violation. *See SCF Waxler Marine, L.L.C.*, 24 F.4th at 472 ("The owner's knowledge of acts of negligence or conditions of unseaworthiness that did not cause the accident does not prevent the owner from limiting liability.").

master or crew were competent and the owner exercised reasonable care in selecting them. *Tittle v. Aldacosta*, 544 F.2d 752, 756 (5th Cir. 1977); *In re Kristie Leigh Enterprises, Inc.*, 72 F.3d 479, 481 (5th Cir. 1996); *Maya Special Mar. Enter. v. Crochet*, No. 4:13-CV-1871, 2016 WL 4190153, at *14 (S.D. Tex. Aug. 9, 2016) (Ellison, J.).

50. The failure of a helmsman to properly execute a helm order is a navigational error. *See Farrell*, 530 F.2d at 10.

51. The Court finds that Win's mistaken execution of Pilot Ewing's helm order was a navigational error for which Limitation Petitioners had no privity or knowledge. *Cf. id.* at 9-10 (finding a helmsman's incorrect turn of the rudder 20 degrees right instead of left was a navigational error).

52. Limitation Petitioners have shown that they exercised reasonable care in selecting Win and that he was competent. Captain Yang, helmsman Win, and other crew members of the YOCHOW all had the necessary licenses, training, experience, and other credentials to perform their duties. In fact, Win and the rest of the crew were trained on topics related to safely entering the Houston Ship Channel in the month before the allision occurred.

53. Further, there is no evidence that Win had a history of making navigational errors about which Limitation Petitioners knew or should have known. Accordingly, Limitation Petitioners have carried their burden of proving a lack of privity or knowledge of the negligence causing the allision.

54. As noted above, the Court finds that there is insufficient evidence that Win was fatigued or that the allision was caused by Win's alleged fatigue. However, even if there had been sufficient evidence that Win was fatigued and that fatigue contributed to the allision, the

Court would still be unable to find that Limitation Petitioners had privity in or knowledge of the cause of that fatigue.

55. Claimants put forth a variety of theories for why Limitation Petitioners should have known about the Win's purported fatigue.

56. First, they contend that Limitation Petitioners failed to adequately audit work/rest records to ensure that crew members were accurately listing their hours. To be sure, there is some evidence of shoddy record keeping aboard the YOCHOW: (1) like Win, Bosun Guangfu's work/rest records are similarly inconsistent with his deposition testimony, (2) Beikun was cited in late 2018 for failing to have crewmembers include hours spent on a drill in their work/rest records, and (3) when asked to provide documentary evidence that it actually audits work/rest records, Beikun was unable to do so.

57. However, as discussed in detail previously, according to both Win's testimony and his work/rest hour records, Win had between 16 and 17 hours of rest on June 12, 2018, which is well within the statutory work/rest requirements. While his work/rest records do not reflect the exact hours he claims he worked, they did not undercount the number of hours he worked on June 12, 2018.

58. Accordingly, even if Beikun had had more accurate recordkeeping practices, they would not have caught any regulatory violation, as there was no violation to catch.

59. Thus, more fulsome auditing would not have changed the facts leading to this allision, and cannot be a basis for finding knowledge or privity. *See SCF Waxler*, 24 F.4th at 472 ("The owner's knowledge of acts of negligence or conditions of unseaworthiness that did not cause the accident does not prevent the owner from limiting liability."); *see also Sea Coast Towing*, 2006 WL 8454863, at *4 (finding that because there was no statutory work rest

violation, "the Court need not determine whether [the vessel owner] had privity of actual or constructive knowledge. There can be no knowledge of an event that did not occur.").

60. Claimant's argument that the YOCHOW should have employed more frequent job rotations also fails. As noted above, helmsmen were placed on a four-hour rotation schedule, which is well within the industry standard. While requiring more frequent rotations or rotations through different types of duties may provide additional protection against fatigue, "the 'privity or knowledge' standard does not require a vessel owner to take every possible precaution." *Omega Protein*, 548 F.3d at 374.

61. Finally, the arguments regarding the YOCHOW's trainings and SMS fail for the same reason. The Court has found that both meet industry standards, even if their treatment of fatigue management is not as robust as that of some competitors.

62. For the foregoing reasons, Limitation Petitioners are entitled to limit their liability under 46 U.S.C. § 30523.

D. Limitation Fund

63. When an owner is entitled to limit liability, the limitation fund equals the value of the vessel plus pending freight. 46 U.S.C. § 30523(a).

64. At the time of the allision, the value of the YOCHOW was $18,440,000.00 and the value of the pending freight was $543,949.99. The limitation fund is the sum of these two amounts, which is $18,983,949.99.

E. General Damages Principles

65. In admiralty law, as in most other fields, damages are designed to make the injured party whole. *Pizani v. M/V Cotton Blossom*, 669 F.2d 1084, 1088 (5th Cir. 1982). To that end, "[w]here property is destroyed by wrongful act, the owner is entitled to its money

equivalent, and thereby to be put in as good position pecuniarily as if his property had not been destroyed." *Standard Oil Co. of New Jersey v. S. Pac. Co.*, 268 U.S. 146, 155 (1925).

66. "In cases of maritime collision, the maximum recoverable damages are those established by the doctrine of *restitutio in integrum*." *Transcon. Gas Pipe Line Corp. v. Societe D'Exploitation du Solitaire SA*, 299 F. App'x 347, 350 (5th Cir. 2008) (internal citations omitted). The doctrine of *restitutio in integrum* "measures damages as the 'cost of necessary repairs and the loss of earnings while they are being made.'" *Id.* (quoting *Delta Marine Drilling Co. v. M/V Baroid Ranger*, 454 F.2d 128, 129 (5th Cir. 1972)).

67. The party seeking damages bears the burden of proof on the fact, as well as the amount, of damages. *Pizani*, 669 F.2d at 1088; *Delta S.S. Lines, Inc. v. Avondale Shipyards, Inc.*, 747 F.2d 995, 1009 (5th Cir. 1984).

68. While damages do not have to be proven with an exact degree of specificity, the claimant must establish with reasonable certainty that its claimed damages were actually or may be reasonably inferred to have been incurred because of the incident. *Mitsui O.S.K. Lines, K.K. v. Horton & Horton, Inc.*, 480 F.2d 1104, 1106 (5th Cir. 1973).

69. Damages here are also governed by the "new for the old rule," which "provides that a party suffering injury is entitled to recover only that which is necessary to restore his damaged property to the same condition as existed immediately prior to the delict." *City of New Orleans v. Am. Com. Lines, Inc.*, 662 F.2d 1121, 1124 (5th Cir. 1981). "This rule is designed to avoid giving the injured person a windfall by furnishing something entirely new 'for that which was old and depreciated and would in the normal course of things have to be replaced in any event.'" *Id.* (quoting *State Highway Comm'n v. Tug Go-Getter*, 468 F.2d 1270, 1273 (9th Cir. 1972)).

70. Despite the foregoing, a court sitting in admiralty is ultimately a court of equity: "Its hands are not tied up by the rigid and technical rules of the common law, but it administers justice upon the large and liberal principles of courts which exercise a general equity jurisdiction." *Pizani*, 669 F.2d at 1089 (quoting *The David Pratt*, 7 Fed. Cas. 22, 24 (D. Me. 1839).

71. Thus, the Court has the authority to make equitable decisions, considering all of the facts and circumstances of the case at hand. *See Standard Oil*, 268 U.S. at 156 ("The ascertainment of value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts.").

F. Nature of the Repairs

72. Following the allision, TPC completed repairs on the A Dock so that it would be serviceable while the new A Dock was being constructed.

73. Limitation Petitioners contend that these repairs adequately restored the A Dock to its prior condition and thus TPC's recovery should be limited to the cost of these repairs.

74. To compensate the injured party, repair costs must restore the damaged structure to its pre-casualty condition. *Gaines Towing & Transp. Inc. v. Atlantia Tanker Corp.*, 191 F.3d 633, 636 (5th Cir. 1999). Thus, the Court must assess whether the repairs restored the A Dock to its pre-allision state.

75. The Court finds that *Bunge Corp. v. Am. Com. Barge Line Co.*, 630 F.2d 1236 (7th Cir. 1980) provides persuasive guidance on this matter. There the court was similarly confronted with the question of whether a plaintiff's recovery should be limited to the amount of its purportedly temporary repairs. It found that this question turned on "whether the repairs were

temporary or permanent." *Id.* at 1241. To be permanent, the repairs must be "sufficient to restore the . . . structure to its prior condition." *Id.*

76. As explained above, repairs restoring the A Dock to its pre-allision condition could not be completed because of the inability to install a new vertical support system under the dock. While the repairs have made the A Dock serviceable in the meantime, they do not provide sufficient long-term vertical support to the dock, and are not sufficient to return it to its pre-allision condition.

77. Thus, the Court finds that these repairs constitute temporary repairs, and that permanent repairs are not possible.

78. Additionally, the fact that TPC has conducted temporary repairs does not preclude it from recovering the replacement value of the dock. *See Bunge Corp.*, 630 F.2d at 1241 ("[W]hen damaged property is not restored to a condition equivalent to that it enjoyed prior to the collision, the owner's entitlement to the replacement value of the property is in no way limited by the fact that the owner has made provisional repairs to the damaged structure pending its replacement.").

G. Total Loss, Constructive Total Loss, and Partial Loss

79. While *restitutio in integrum* generally governs damages awards, in certain circumstances different principles are required to avoid economic waste. If property is "damaged beyond physical repair," it is considered a "total loss" or "actual total loss." *Pillsbury Co. v. Midland Enterprises, Inc.*, 715 F. Supp. 738, 763 (E.D. La. 1989), *aff'd in part and rev'd in part on other grounds*, 904 F.2d 317 (5th Cir. 1990); *Moench v. Marquette Transportation Co. Gulf-Inland, L.L.C.*, 838 F.3d 586, 592 (5th Cir. 2016) (stating that total loss occurs when repair is not physically feasible).

80. Similarly, property damaged in an allision is considered a "constructive total loss" when the repair cost exceeds the precasualty market value of the property. *Ryan Walsh Stevedoring Co. v. James Marine Services, Inc.*, 792 F.2d 489, 491 (5th Cir. 1986); *Gaines Towing*, 191 F.3d at 635.

81. In cases of total loss, constructive or actual, the measure of damages is the market value of the structure prior to the incident. *See Gaines Towing*, 191 F.3d at 635; *Albany Ins. Co. v. Bengal Marine, Inc.*, 857 F.2d 250, 253 (5th Cir. 1988).

82. "The generally established rule is that in a case of total loss the measure of damages does not include loss of use or other consequential damages." *Albany Ins.*, 857 F.2d at 253; *see also Gaines Towing*, 191 F.3d at 635 ("Damages for loss of use may not be awarded when the vessel is a constructive total loss.").

83. If the damaged property is neither a total loss nor a constructive total loss, it is a partial loss. *See Gaines Towing*, 191 F.3d at 635. In that case, "the owner is entitled to recover the reasonable cost of repairs necessary to restore [the damaged structure] to its precasualty condition." *Id.*

84. The damages rules governing vessels apply in equal force to shoreside structures. *See* 2 Schoenbaum, Admiralty & Maritime Law § 14:7 (6th ed. 2018) ("Physical damage to shore structures and to fixed objects such as pipelines are compensable under similar principles [as physical damage to vessels].").

85. The doctrines of total loss and constructive total loss, while generally discussed in the context of damaged vessels, apply to shoreside structures as well. *See, e.g.*, *Orange Beach Water, Sewer, and Fire Protection Auth. v. M/V ALVA*, 680 F.2d 1374, 1383 (11th Cir. 1982) ("Where a structure is totally lost in an allision, the measure of damages is the market value at

the time of destruction, less salvage value."); *Basin Exploration, Inc. v. Tidewater, Inc.*, 353 F. Supp. 2d 662, 671 (E.D. La. 2004) *aff'd*, 139 F. App'x 605 (5th Cir. 2005) (finding that a well and its accompanying platform were constructive total losses after being struck by vessel because "repairing the damages would have met or exceeded the cost of drilling a new well"); *Crounse Corp. v. Vulcan Materials, Co.*, 956 F. Supp. 1377, 1383 (W.D. Tenn. 1996) (denying summary judgment when fact issues existed regarding whether transmission tower struck by vessel was "an actual or constructive total loss"); *Pillsbury*, 715 F. Supp. at 763-65 (discussing constructive loss doctrine in the context of a damaged mooring cell structure); *Norfolk & Portsmouth Belt Line R. Co. v. M/V MARLIN*, No. CIV. A. 2:08CV134, 2009 WL 3363983, at *9 (E.D. Va. Oct. 9, 2009) (applying constructive total loss doctrine to a heavily deteriorated fixed tendering system).

86. The Court now must decide which of the three classifications—total loss, constructive total loss, or partial loss—best fits TPC's loss. Having found that the repairs did not return the dock to its pre-allision value and that permanent repairs were not physically possible due to the lack of space for additional vertical supports under the dock, the Court concludes that the A Dock was a total loss.

87. To be sure, this is an unusual fit. The archetypal total loss cases tend to concern sunken vessels, decimated structures, and the like. That is, they tend to involve a greater degree of destruction than is seen here, where the A Dock is still standing, and in fact was still in use at the time of trial. *See, e.g.*, *The Umbria*, 166 U.S. 404 (1897) (finding actual loss where a ship's stern was cut completely off); *Albany Ins.*, 857 F.2d at 251 (finding actual loss where a barge sunk); *In re Cox*, No. 4:21-CV-172-SDJ, 2024 WL 1198469, at *1 (E.D. Tex. Mar. 20, 2024) (finding actual loss where a boat and condominium caught on fire).

88. While not the typical example of a total loss, the A Dock nonetheless meets the technical criteria for total loss insofar as it is unable to be repaired to its pre-allision condition.

89. Moreover, neither of the other categories of loss or their corresponding method of calculating damages can apply in this instance.

90. In order for the dock to be a constructive total loss, its repair costs must exceed its pre-allision value. Because the A Dock cannot be fully repaired, this analysis cannot be completed, and the A Dock by definition cannot be a constructive total loss.

91. Finding that it is merely a partial loss is similarly fruitless. It has long been held that in instances of partial loss, the measure of damages is the cost of necessary repairs. *See Gaines Towing*, 191 F.3d at 635; *Tug June S v. Bordagain Shipping Co.*, 418 F.2d 306, 307 (5th Cir. 1969); *City of Miami v. W. Shipping & Trading Co.*, 232 F.2d 847, 851 (5th Cir. 1956). The necessary corollary to this rule is that a structure must in fact be repairable to constitute a partial loss. Thus, the Court cannot find that the A Dock was a partial loss.

92. In conclusion, the Court deems the A Dock a total loss.

H. Measure of the A Dock's Market Value

93. "[W]here a vessel is a total loss the measure of damages is the market value at the time of the loss." *King Fisher Marine Serv., Inc. v. NP Sunbonnet*, 724 F.2d 1181, 1185 (5th Cir. 1984). Generally, the fair market value is based on evidence of recent sales of comparable structures or vessels. *Carl Sawyer, Inc. v. Poor*, 180 F.2d 962, 963 (5th Cir. 1950).

94. Uncertainty arises when a structure is in some way unique or holds novel value for its possessor. "Where the owner had used the property for a special use or where there otherwise may be no true market, replacement costs may be the most accurate basis for determining damages." *Pillsbury*, 715 F. Supp. at 764; *see also King Fisher*, 724 F.2d at 1185

(finding market value of the damaged barge in the barge market was not an accurate measurement of damages given the owner's particular use of it as a dry dock, making it valuable for uses other than as a barge); *Moench*, 838 F.3d at 592 (finding that in such cases "there is no precise rule or formula for valuation").

95. Although there is a market for docks, which are often bought and sold, the cost to buy a similar dock does not accurately capture the value of the dock to TPC. That is, the A Dock was uniquely valuable to TPC because there is a pipeline system connecting its chemical facility to its specific docks.

96. Thus, this is not a situation in which TPC could simply purchase another equivalent dock, as no other dock has pipeline infrastructure connecting it to TPC's chemical manufacturing facility. Because TPC used the A Dock for a special purpose, the general market value of the dock does not capture the degree of TPC's loss.

97. Moreover, in light of the Court's finding that the A Dock had a remaining useful life of 25 years, there is no evidence in the record accurately delineating the A Dock's pre-allision market value.

98. While Clinton Bogart testified as to his opinion on the market value of the dock, that valuation was based on an estimated five year remaining useful life. LP Ex. 189. Therefore, even if the A Dock did not possess a unique value to TPC, Bogart's market value estimate would still not be applicable.

99. Because there is no applicable market valuation in the record, the Court must look to other evidence to establish the A Dock's pre-allision value. *See Carl Sawyer*, 180 F.2d at 963 ("[I]n cases where no market value has been established by recent and comparable sales other evidence is admissible touching value such as the opinion of marine surveyors, engineers, the

cost of reproduction, less depreciation, the condition of repair which the vessel was in, the uses to which it can be put, the amount of insurance that the underwriters have issued, and the like."); *King Fisher*, 724 F.2d at 1185 (5th Cir. 1984) ("Where there are insufficient sales to establish a market other evidence such as replacement cost, depreciation, expert opinion and the amount of insurance can also be considered to determine the value of the lost vessel.").

100. Because there are two independent reasons why the general market value assessment is inapplicable here, the Court will follow the approach employed in *Pillsbury* and assess the A Dock's value, and TPC's resulting damages, based on the cost of replacement minus depreciation. 715 F. Supp. at 764.

I. Replacement Costs

101. Using replacement cost less depreciation and betterment is the proper measure of damages in this instance. *See Pillsbury*, 715 F. Supp. at 764-65; *Freeport Sulphur Co. v. S/S Hermosa*, 526 F.2d 300, 304-06 (5th Cir. 1976); *Bunge Corp.*, 630 F.2d at 1242.

102. The subtraction of depreciation and betterment from TPC's award is done in accordance with the new for old rule, which limits TPC "to recover only that which is necessary to restore [its] damaged property to the same condition as existed immediately prior to the delict." *City of New Orleans*, 662 F.2d at 1124. Stated differently, when the replacement adds new value or extends the useful life of the structure, the Court must subtract this added value from the damages awarded.

103. As the Court has already found, TPC's replacement A Dock will cost $25,406,154 to construct. However, there are disputes over whether several line items are compensable or subject to depreciation.

104. First, OSG argues that TPC cannot recover the costs associated with fabricating the new A Dock's firewater structural platform and shoreline valve containment foundation because they are improvements on the original A Dock.

105. TPC contends that these costs are recoverable because it was required to comply with relevant regulations in fabricating the new A Dock. Meanwhile, the old A Dock was exempt from these requirements because it predated the regulations.

106. Although there is a dearth of binding authority on this issue, the Court finds *Ergon-St. James, Inc. v. PRIVOCEAN M/V*, No. CV 15-1121, 2018 WL 3830090 (E.D. La. Aug. 13, 2018) to be persuasive. There, the court permitted recovery of such costs, because the "replaced structures had to be rebuilt to current code standards." *Id.* at *8. In doing so, it found that the reduction for depreciation was "sufficient to encompass any betterment." *Id.*

107. This approach is consistent with the general rule that "[w]here property is destroyed by wrongful act, the owner is entitled to its money equivalent, and thereby to be put in as good position pecuniarily as if his property had not been destroyed." *Standard Oil*, 268 U.S. at 155. Prior to the allision, TPC had a dock that was not in violation of any regulatory requirements. It is therefore entitled to recover costs associated with constructing a dock that complies with applicable regulations.[14] However, such costs will be subject to the same depreciation as TPC's general construction costs.

[14] OSG relies on *U.S. Fire Ins. Co. v. TUG STARCRESCENT*, No. CIV. A. 90-63-N, 1993 WL 625530, at *2 (E.D. Va. Mar. 5, 1993), *aff'd*, 14 F.3d 598 (4th Cir. 1994) for the proposition that line items that are necessary to bring a structure into compliance with regulations are non-compensable. However, *TUG STARCRESCENT* is notably distinct from the present case. There, it was found that the pre-collision value of the barge should take into account the fact that, had it not been destroyed, the barge would have imminently had to undergo certain repairs to comply with certification requirements. *Id.* Thus, the court subtracted the cost of those repairs from the barge's pre-allision value. *Id.* Stated differently, that was a case where the pre-allision barge was not in compliance with relevant regulations whereas a replacement barge would be. To prevent the barge owner from unjustly recovering more than was deserved, the court discounted damages by the amount that would have been spent bringing the barge into compliance with

108. Next, TPC asserts that certain replacement costs should not be subject to depreciation because they constitute component parts of the new A Dock that do not extend its useful life. In doing so, TPC cites to *Brunet v. United Gas Pipeline Co.*, 15 F.3d 500, 505 (5th Cir. 1994). *Brunet* was a case involving the replacement of component parts of a shoreside structure, where the court held that no depreciation should apply because the component parts did not extend the remaining useful life of the structure as a whole. *Id.*

109. In contrast, this is a case where the entire structure is being replaced, not merely a handful of component parts. TPC cites no case, nor is the Court aware of any, holding that in instances of replacement of an entire structure or vessel, only the most central parts of that replacement are subject to depreciation. The Court declines to adopt such a rule.

110. TPC also seeks to have costs incidental to the construction, such as engineering costs, be compensated in full with no reduction for depreciation. However, "[d]epreciation under the new-for-old rule applies to the entire cost of replacement, including surveying and other incidental costs associated with replacement." *Oceaneering Int'l, Inc. v. Cross Logistics, Inc.*, No. CIV. A. H-11-3447, 2014 WL 2462810, at *26 (S.D. Tex. June 2, 2014); *Pillsbury*, 715 F. Supp. at 768 (finding that incidental engineering and surveying costs associated with replacement were recoverable but subject to the same depreciation as construction costs). Therefore, TPC's incidental costs are similarly subject to depreciation.

111. Following this approach, the Court finds that costs related to bulkhead and shoreline protection, dredging, engineering services, electrical work, the hose handling crane, marine loading arms, marine vapor control skid, piping, pumps, valves, and the sump pump are all replacement costs that are subject to depreciation.

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regulations. In contrast, here the original A Dock was in compliance with the applicable regulations because it had been grandfathered in. *TUG STARCRESCENT* makes no statement about whether betterments that are necessary to comply with regulations under such circumstances are compensable.

112. Finally, the Court finds that TPC may recover the full cost of demolishing the old A Dock. This expense will not be subject to depreciation. *See, e.g.*, *Kansas City S. Ry. Co. v. Barge HBC 8106*, 642 F. Supp. 609, 613 (W.D. La. 1986) ("[T]he total cost . . . reasonably incurred by plaintiff in removing the bridge structure is properly recoverable.").

113. In calculating the amount of depreciation, the Court must compare the remaining useful life of the new A Dock and the original A Dock.

114. The new A Dock has an expected life of 75 years once it is completed. At the time of the allision, the original A Dock had a remaining useful life of 25 years. Thus, the replacement costs shall be reduced by two thirds.

115. The following chart summarizes the Court's findings on the amount of TPC's replacement cost damages.

Line Item / Description	**Gross Cost**	**Depreciation**	**Recoverable Damages**
Bulkhead & Shoreline Protection	$6,797,752	$4,531,834.67	$2,265,917.33
A-Dock Without Firewater Structural Platform and Shoreline Valve Containment Foundation	$7,130,998	$4,753,998.67	$2,376,999.33
Firewater Structural Platform	$977,386	$651,590.67	$325,795.33
Shoreline Valve Containment Foundation	$255,179	$170,119.33	$85,059.67
Dredge	$3,100,938	$2,067,292	$1,033,646
Electrical & Instrumentation	$779,412	$519,608	$259,804
Engineering Services - Final Engineering	$2,096,153	$1,397,435.33	$698,717.67

Engineering - Passing Vessel Study	$39,800	$26,533.33	$13,266.67
Permitting Services	$55,900	$37,266.67	$18,633.33
Firewater System Building	$505,452	$336,968	$168,484
Firewater Deluge System	$200,000	$133,333.33	$66,666.67
Hose Handling Crane	$101,140	$67,426.67	$33,713.33
Marine Loading Arms	$324,792	$216,528	$108,264
Marine Vapor Control Skid	$570,000	$380,000	$190,000
Marine Vapor Control Skid - Vendor Support	$80,000	$53,333.33	$26,666.67
Piping, Pumps & Valves	$1,280,252	$853,501.33	$426,750.67
Sump Pump	$11,000	$7,333.33	$3,666.67
Demolition of Original A-Dock Structure	$900,000	$0	$900,000
Marine Contractor Installation Assistance - Piping Interface Assistance	$200,000	$133,333.33	$66,666.67
TOTALS	**$25,406,154**	**$16,337,436**	**$9,068,718**

116. In total, the Court finds that TPC is entitled to reasonable replacement damages in the amount of $9,068,718.

J. Business Interruption and Other Consequential Damages

117. When a structure or vessel is a total loss, the damaged party is precluded from recovering loss of use or other consequential damages. *Albany Ins.*, 857 F.2d at 253; *King Fisher*, 724 F.2d at 1187.

118. Stated differently, "where a vessel has been declared a total loss, 'the market value of the vessel is the ceiling of recovery.'" *Galapagos Corporacion Turistica Galatours, S.A. v. Panama Canal Comm'n.*, 190 F. Supp. 2d 900, 908 (E.D. La. 2002) (quoting *Gaines Towing*, 191 F.3d at 635; *see also The Umbria*, 166 U.S. 404, 421 (1897) ("[I]n cases of total loss by collision damages are limited to the value of the vessel.").

119. Because the A Dock was a total loss, TPC cannot as a matter of law recover its asserted business interruption damages.

120. The Court finds that TPC cannot recover damages related to (1) MTBE lost profits, (2) B1 lost profits, (3) MTBE logistics, (4) B1 logistics, and (5) C4 logistics. Moreover, even if these damages were recoverable, TPC has failed to prove the existence or amount of many of these damages with the requisite specificity, as described in detail in the Findings of Fact. *See Natco, Inc. v. Williams Bros. Eng'g Co*., 489 F.2d 639, 640 (5th Cir. 1974) ("[P]roof of loss of profits must rise above the level of mere surmise and conjecture and the contemplated profit must be proved to be reasonably certain.").

121. Similarly, the additional premium charged by TPC's insurers constitutes non-recoverable consequential damages. And, even if this rule did not bar recovery, TPC has failed to prove (1) that it will actually incur an additional premium and (2) the amount of that premium, as subrogation is ongoing.

K. Temporary Repair Damages

122. In addition to replacement costs, TPC seeks to recover the costs of the temporary repairs. However, permitting the recovery of both costs would amount to an impermissible double recovery. *See Bunge Corp.*, 630 F.2d at 1241 (finding that recovery for both temporary repair costs and replacement costs was impermissible).

123. To be sure, TPC asserts a rationale for recouping the temporary repair expenses not raised in *Bunge Corp.* Specifically, it argues that the business interruption damages it would have incurred had it not obtained the temporary repairs would have far eclipsed the cost of the repairs.

124. It is well established that the injured party has a duty to mitigate damages under the doctrine of avoidable consequences. *Pennzoil*, 943 F.2d at 1474. When a party incurs costs in order to mitigate damages, those mitigation expenses may be recoverable. *See, e.g.*, *Corpus Christi Oil & Gas Co. v. Zapata Gulf Marine Corp.*, 71 F.3d 198, 202 (5th Cir. 1995).

125. However, because the A Dock is a total loss, TPC's consequential damages are unrecoverable. *See King Fisher*, 724 F.2d at 1187. If TPC were able to recover consequential damages, TPC's mitigation rationale might provide a tenable theory for recovering repair costs. However, that is not the case here.

126. Because TPC is not entitled to consequential damages, its temporary repairs did not mitigate any damages that would be recoverable, and TPC cannot recover the expenses associated with making those repairs.

L. OSG's Damages

127. The Court finds that OSG is entitled to damages in the amount of $3,600,000 per the parties' stipulation.

M. POHA's Damages

128. POHA presented no evidence at trial and has not asserted that it has suffered damages independent of TPC's damages. Nor has POHA asserted that it ought to receive compensatory damages related to the A Dock instead of TPC.

129. Accordingly, the Court finds that POHA is entitled to $0 in damages.

N. Pre-Judgment and Post-Judgment Interest

130. Limitation Petitioners did not brief the issue of interest, stating instead, "Limitation Petitioners will brief the issue of recoverable interest upon direction of the Court." ECF No. 366 at 46.

131. The Court now directs any party that wishes to be heard to submit briefing on the issue of recoverable interest withing seven days of the entry of this Order.

IV. CONCLUSION

132. The Court finds that Limitation Petitioners are entitled to limit their liability to $18,983,949.99, the value of the YOCHOW and its pending freight.

133. OSG is entitled to damages in the amount of $3,600,000 plus any pre-judgment and post-judgment interest the Court awards following the supplemental briefing period.

134. TPC is entitled to damages in the amount of $9,068,718 plus any pre-judgment and post-judgment interest the Court awards following the supplemental briefing period.

135. POHA is entitled to damages in the amount of $0.

136. The parties shall submit any briefing on the question of recoverable interest within **seven days** of the entry of this order.

IT IS SO ORDERED.

Signed at Houston, Texas on August 1, 2024.

Keith P. Ellison
United States District Judge