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From: CAPT Michael A. McCartney, U.S. Navy Party Representative
To: National Transportation Safety Board

Subj: U.S. NAVY SUBMISSION ON THE UPDATED DRAFT NATIONAL TRANSPORTATION SAFETY BOARD MARINE ACCIDENT FACTUAL REPORT INTO THE COLLISION OF M/T ALNIC MC AND USS JOHN S MCCAIN (DDG-56)

Ref: (a) U.S. Navy Party Submission on NTSB Investigation DCA17PM024 of 25 Jun 18
(b) National Transportation Safety Board, Draft Marine Accident Report 18/02, Collision between U.S. Navy Destroyer John S McCain and Tanker Alnic MC of 29 Aug 18
(c) Navy Collision Memorandum for Distribution of 23 Oct 17
(d) Comprehensive Review of Surface Fleet Incidents of 26 Oct 17
(e) Singapore Transport Safety Investigation Bureau Report of 8 Mar 18
(f) U.S.C.G. Preliminary Investigation Report of 9 Apr 18
(g) Stealth Maritime GMS Manual M4, Navigation Procedures of July 2015
(h) Liberian Maritime Authority Report of Investigation of 31 May 18

1. In light of substantial modifications made since June, we appreciate the opportunity to supplement reference (a).[1] These comments are based on our review of reference (b), your draft Marine Accident Report (MAR), received 29 August 2018. They are respectfully submitted to assist the National Transportation Safety Board (NTSB) with its mandate to conduct objective, precise accident investigations to improve maritime safety, to promote safety recommendations for commercial and public vessels, and to assist the victims of transportation accidents and their families.

2. The Navy fully acknowledges our shortcomings which contributed to this tragic collision and has been transparent about those failures with the public. Reference (c) is Navy's public assessment of U.S. Navy actions preceding the collision between MCCAIN and ALNIC MC. Reference (d) is the Navy's top-down comprehensive review of this incident and other recent incidents. Reference (d) made recommendations for internal changes based on lessons learned from the collision. We appreciate your updated report noting our significant progress since the collision to ensure this type of tragedy never occurs again. Specifically, these improvements now include:

a. Modified employment schedules of vessels based in Japan to ensure adequate time for maintenance, training, and crew certification;
b. Readiness assessments of all forward-deployed vessels in Japan;

[1] The Coast Guard conducted its investigation on behalf of the National Transportation Safety Board under the Independent Safety Board Act of 1974, pursuant to the authority contained in 49 U.S.C. § 1131(c), and in accordance with 49 C.F.R. § 850.25 and 46 C.F.R. Part 4, promulgated under the authority of 46 U.S.C. Chapter 63.

c. Manning policies to ensure Japan-based ships, which operate at a higher tempo in congested waters, are appropriately manned with qualified officers and enlisted personnel;
d. Restructured surface warfare officer (SWO) career paths to ensure sufficient time at sea and time to improve maritime skills training;
e. A standardized program to assess seamanship and navigation skills over the course of a surface warfare officer's career;
f. Improved seamanship and individual skills requirements and training for surface warfare officer candidates, surface warfare officers, quartermasters, and operations specialists;
g. Implemented near-miss reporting and critique/lessons learned policy;
h. Consolidated responsibility and authority for bridge system modernizations;
i. Direction to U.S. Navy vessels to broadcast AIS information in high-density traffic areas;
j. Implementation of watch schedules that account for circadian rhythms;
k. Changes to the way steering control and propulsion control systems are used on board US Navy vessels.

The Navy's internal review is ongoing, and continuous improvements will be made based on internal assessment as well as recommendations from NTSB.

3. The U.S. Navy provides this party submission without the benefit of reading NTSB's analysis or conclusions. This final factual review does, however, include a draft of the report's abstract and executive summary, and in both sections NTSB provides a thorough and accurate list of U.S. Navy safety deficiencies. Only one deficiency ("the lack of VHF radio communications between vessels") appears to apply to both vessels. NTSB identified no deficiencies aboard ALNIC MC significant enough to warrant inclusion in the abstract or the executive summary of the report. They contain no recommendations to improve merchant fleet operations. The U.S. Navy bears substantial responsibility for this collision, but it is also true that quick and effective action by ALNIC MC could have avoided or mitigated this mishap. ALNIC MC's lack of any effective action to avoid or mitigate the risk of collision until 15 seconds prior to impact materially contributed to the severity of the collision and loss of life. The following paragraphs include a list of facts followed by analysis and conclusions which highlight the real responsibilities which ALNIC MC failed to uphold.

4. The following facts are derived from evidence collected by the United States Coast Guard (USCG) but are not included in reference (b).

a. That § 2.3.7 of reference (g), Stealth Maritime GMS Manual M4, Navigation Procedures of July 2015, mandates that the duties of the lookout and helmsperson be kept separate; a helmsperson shall not be considered to be the lookout while steering;

b. The ALNIC MC's Master's Standing Orders for Bridge Watch At Sea require that ALNIC MC be in manual steering with a dedicated helmsperson whenever navigating traffic separation schemes (TSS);

c. That ALNIC MC did not switch to manual steering when it entered the Singapore TSS at 05:18;

d. That ALNIC MC did not switch to manual steering until after the collision;

e. That ALNIC MC's navigation procedures required it to be in Watch Condition 3 while in the Singapore Strait;

f. That ALNIC MC required an additional dedicated anti-collision officer to be stationed when in Watch Condition 3;

g. That an anti-collision officer was not stationed on ALNIC MC at any time prior to the accident;

h. That when the Master allowed the lookout to leave the bridge without relief at 05:20, ALNIC MC no longer met the Watch Condition 2 requirements;

i. That MCCAIN illuminated its red-over-red mast Not Under Command lights immediately upon loss of steering and no later than 05:21:55.

j. That ALNIC MC's bridge became uncertain of MCCAIN's maneuvering intensions no later than 5:21:26, when a member of the crew can be heard in Tagalog observing that MCCAIN was "suddenly crossing" the TSS;

k. That when track resolution on the S-Band radar became intermittent in the channel, ALNIC MC's bridge team did not utilize its X-band radar to determine MCCAIN's movements;

l. That ALNIC MC's crew did not use danger signals to alert MCCAIN of its uncertainty about MCCAIN's intentions prior to the collision;

m. That members of the ALNIC MC's bridge were standing by the helm to receive the Master's orders to slow the ship or change course;

n. That the Master of ALNIC MC gave no order and took no action to avoid collision until 05:23:44—14 seconds before the collision at 05:23:58.[2]

Incorporating these findings into the factual section of its report will enable a more accurate assessment of how ALNIC MC's actions, bridge resource management practices, and manning levels contributed to the collision.

[2] Expressed in absolute terms (at time 05:23:44 only), as it is in the current draft, obfuscates the material significance of the finding—that action occurred only seconds before the collision.

5. *ALNIC MC's watch organization and equipment configuration at the time of the collision were less than the minimum required by company policy. This was a combination of deliberate decisions made well in advance and immediate decisions made minutes before the collision.*

a. Reference (g) is ALNIC MC's Safety Management System (SMS) manual promulgated by its operator, Stealth Maritime Corporation. The manual delineates personnel, watch station, and equipment lineup requirements for various sea conditions.

b. Poor Deliberate Decision: The Planned Watch Condition. The draft MAR provides a description of ALNIC MC's Watch Condition 3 manpower requirements consistent with the SMS manual:

> set during times of low visibility and heavy vessel traffic, when the vessel was in restricted waters, when entering or leaving port, or in certain designated geographic areas of the world, including the Singapore Strait. Manning under Watch Condition 3 was increased from Watch Condition 2 by adding one additional bridge officer. One bridge officer was responsible for collision avoidance and the other handled communications and navigation duties. The master or chief officer and the ratings performed the same functions as in Watch Condition 2.

When the Master came to the bridge and took the conn at 0405, the vessel was in Watch Condition 2, with a watchteam comprised of the Master, Chief Officer, and two ratings, an Able Seafarer-Deck (AB) and an Ordinary Seaman (OS). At 05:18, the watchteam brought the ALNIC MC into the Singapore TSS. In accordance with the SMS manual, the master should have shifted to Watch Condition 3 prior to 05:18 in order to be set by the time ALNIC MC entered the Singapore Strait TSS.[3] An upgrade to Watch Condition 3 would have included an anti-collision officer. A review of ALNIC MC's chart indicated when the watch would shift from Watch Condition 1 to Watch Condition 2; however there were no markings to indicate when Watch Condition 3 would be set. Considering ALNIC MC's paper chart markings and interviews with its bridge team, it is reasonable to infer that the Master never intended to set Watch Condition 3 while in the Singapore Strait.

c. Poor Immediate Decision: Watchstander excused from watch without relief. At 05:20, the OS reported that the MCCAIN was on ALNIC MC's starboard quarter, and he then requested to lay below because he was ill.[4] Section 3.13.1(5) of reference (g) also makes clear that lookouts should be relieved or rotated on station as necessary, and "in areas of higher traffic densities such as…traffic separation schemes, Masters should not hesitate to enhance routine manning to meet

[3] *See reference (e), section of 1.8.1. Singapore authorities found "[t]he collision occurred in the westbound lane of the Singapore Strait TSS."*

[4] The TSIB found that "At about 0520H, the OS, who was assigned as the lookout, did not feel well and obtained the Chief Officer's permission to go down to his cabin to relieve himself."

the demands of the situation. *Standing down the lookout is not an option"* (emphasis added). Therefore, contrary to standing orders, he was released without relief, leaving only the Chief Officer and an AB to support the Master on the bridge. By SMS requirements, ALNIC MC should have been in Watch Condition 3 and was now less than Watch Condition 2, with the Master functioning as both conning officer and lookout.

d. Poor Immediate Decision: ALNIC MC steering mode was not correct at the time of the collision. ALNIC MC entered the Singapore TSS at 05:18 and remained in autopilot through the collision. The draft MAR does not discuss the requirements of reference (g)'s "Master's Standing Orders for Bridge Watch – At Sea," in its essential finding. Pertinent to this sequence of events, the Officer of the Watch (OOW) was required "to station a person to steer the vessel and to put the steering into manual control in good time to allow any potential hazardous situation to be dealt with in a safe manner." This is because "when a vessel is under automatic steering it is very dangerous if the OOW is without assistance and has to break lookout continuity in order to take emergency action." It is this exact circumstance which precipitated the collision between ALNIC MC and MCCAIN, and, in turn, is why the Standing Orders also require that when the vessel is sailing in traffic separation schemes (TSS) "steering must always be manual." The OOW also "must be ready to use the engines and call a lookout to the Bridge if necessary." In reference (h), the Liberian Maritime Authority made a factual finding that ALNIC MC was not taken out of autopilot until after the collision:

> [MCCAIN and ALNIC MC] collided and almost all way was taken off the ALNIC MC as she went from 9 knots to almost 1 to 0 knot. The master of ALNIC MC ordered Stop Engine on the Engine Order Telegraph (EOT). The master actually put it from Full Ahead to Half Ahead at first for few seconds, and then to Stop Engine. *Steering was shifted from autopilot to hand steering*, and AB #1 took the helm (emphasis added).[5]

e. Immediate Decision Impact. With the OS lookout excused without relief, ALNIC MC had only three persons on its bridge in the minutes leading up to the collision: the Master, the Chief Officer, and the AB behind the steering console. ALNIC MC was not in compliance with its SMS. Section 2.3.7 of reference (g) makes clear that helm and lookout duties could not be combined: "The lookout must be able to give full attention to the keeping of a proper lookout

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[5] In reference (f), USCG found that it took ALNIC MC's Main Engine approximately 15 seconds to slow to 00.0 RPM once ordered. A timeline produced for reference (f) included the following factual findings about ALNIC MC's throttle control after the collision:

5:24:24: ALNIC MC's EOT indicates M/E remains at EOT position +8, which is ordered at 73.4 RPM; actual speed is 72.9 RPM.
5:24:32: ALNIC MC's EOT indicates M/E ordered to EOT position +7 at 67.0 RPM; actual speed is 66.9 RPM.
5:24:40: ALNIC MC's EOT indicates M/E ordered to EOT position +5 at 00.0 RPM; actual speed is 24.4 RPM.
5:24:47: ALNIC MC's EOT indicates M/E remains at EOT position +5, which is ordered at 00.0 RPM; actual speed is 9.7 RPM.
5:24:55: ALNIC MC's EOT indicates M/E remains at EOT position +5, which is ordered at 00.0 RPM; actual speed is 00.0 RPM.

and no other duties shall be undertaken or assigned which could interfere with that task. The duties of the lookout and helmsperson are separate and the helmsperson shall not be considered to be the lookout while steering." Conversely, "[h]elmsmen shall have no other duties when assigned to the helm." The AB on watch performed neither function effectively, because the ship remained in autopilot through the collision, and because he remained inside the bridge behind the steering console, where he could not effectively keep a lookout. An ineffective watch is often more challenging than an absence because it adds uncertainty in watchteam performance and additional stress to an already overloaded OOW (the Master).

f. The Singapore Transport Safety Investigation Bureau (TSIB)concluded that ALNIC MC's poor bridge resource management contributed to the collision:

> [ALNIC MC] was not being navigated in accordance with the Company's SMS. The Bridge team initially comprised four persons, as required by the SMS for a Bridge Watch Level II. However, the SMS required that for a transit through the Singapore Strait, the Bridge was to be manned by an additional person, i.e. a total of five persons. After the OS went down to his cabin, the active Bridge team then comprised three persons. The Second Officer was performing paperwork in the chart room and was not involved in the navigation or providing assistance to the Bridge team. It is not clear why the company's internal audits and the Master's navigational audits prior to the collision did not reveal a non-compliance with the SMS on Bridge watch levels, especially since the Master claimed this particular transit was no different from his past transits.

The Master's statement that this transit was no different than past transits implies that he viewed Watch Condition 2 as normal in the Singapore Strait even though it was not compliant with the SMS manual. When operating with 80% of the required watchteam is routinely successful it can become the new "normal." The associated risk when operating with 80% can be forgotten. When a second watchstander is absent, it can appear as a 25% loss (1 of 4 watchstanders) rather than the actual 40% loss (2 of 5 watchstanders).

g. The SMS manual and the Standing Orders are provided to create consistency and manage risk across an organization. The combination of the Master's poor deliberate and immediate decisions, highlighted above, created a situation where risk increased incrementally. At the time of the collision, ALNIC MC's bridge watchteam was manned to 60% of the requirement; able to execute a normal open-ocean transit but less capable of handling unexpected situations. The Master was personally serving as OOW, anti-collision officer, lookout, and, 15 seconds prior to the collision, the helm. The Master personally reduced ALNIC MC's speed. The Master's practices were not compliant with his management company's navigation policies and in doing so he accepted unnecessary risk and violated many of the tenets of effective bridge resource management.

6. ALNIC MC Should Have Known that MCCAIN was Not Under Command two minutes before the collision. The draft MAR states that "at about 0522…the [Commanding Officer of MCCAIN] directed watchstanders to illuminate the not under command [NUC] lighting." In fact, by 5:22, the order had already been confirmed executed. The following sequence of events is established by evidence developed by USCG:

- 5:21:00: helm reports loss of steering;
- The CO, in his chair on the starboard side of the bridge, immediately directs his bridge team to slow down, to illuminate the red-over-red mast head lights, and to announce the loss of steering casualty ship wide;
- The Assistant Navigator's immediate response to the loss of steering was to go to the bridge wing and verify that the Not Under Command lights were illuminated on MCCAIN's mast;
- The CONN orders the Helm to shift steering control to the offline steering units;
- The BMOW calls away a loss of steering casualty on the 1MC and orders After Steering manned;
- 5:21:13: video evidence of the steering units being shifted as ordered by the CONN;
- 5:21:55: video evidence of aft steering being manned.

Thus, prior to 5:21:55, and two minutes prior to the collision at 5:23:58, ships in the vicinity had a clear visual cue that MCCAIN was Not Under Command, obligating them to take steps to avoid collision. The TSIB analysis concluded that the Master must have seen the NUC lights. [6]

7. At 60% manning, the ALNIC MC watchteam quickly became overwhelmed as the situation degraded. The Master was unable to identify problems and subsequent solutions fast enough to avoid a collision, and the supporting bridge watchteam failed to provide adequate "active" backup.

a. Additional analysis will show that ALNIC MC's bridge team was overwhelmed. The MAR details mistakes made by MCCAIN's watchteam during a transfer of throttle control that led to a perceived loss of steering control on MCCAIN's bridge. MCCAIN's watchteam became overwhelmed. To understand why this happened, the MAR provides a detailed analysis of what transpired on board MCCAIN. In contrast, the MAR report only describes ALNIC MC's actions as follows:

> When the loss of steering was announced on board the John S McCain, the tanker Alnic MC was transiting in the westbound lane of the Singapore Strait TSS, about three tenths of a mile off the destroyer's port side. The tanker was making a speed of about 9.6 knots. The master of the Alnic MC, who had the conn of the ship, noted the John S

[6] The TSIB evaluated these same facts and concluded that the Master must have seen the NUC lights: "As the Master had seen JSM's NUC lights before the collision, his assumption of JSM being NUC and still having maneuvering capabilities was inappropriate."

> McCain as it began its turn to port, and initially assumed that the Navy ship would pass between his vessel and another vessel ahead of the Alnic MC. As the destroyer continued to turn into the path of his ship, he became increasingly concerned. At 05:23:44, he moved the Alnic MC's engine order telegraph from full ahead to half ahead in order to slow his vessel. (He told investigators that he thought he put the engine order telegraph at engine stop, but, after reviewing engine data, he learned that he had ordered half ahead.)

b. ALNIC MC's bridge watchteam knew or should have known two minutes prior to the collision that a ship close aboard was suddenly Not Under Command and must be avoided. ALNIC MC's action to avoid a collision consisted of a single maneuvering action taken 15 seconds before impact at 05:23:58. ALNIC's failure to take action to avoid or to mitigate the effects of a collision deserve explanation that will enable analysis of all root causes. For example, the following analysis uses the facts above taken from various sources.

(1) A dedicated Anti-Collision Officer was not stationed when ALNIC MC entered the TSS at 5:18, therefore the Master assumed the role and responsibility of anti-collision officer in addition to his OOW duties. At 5:22:43, two minutes before the collision, ALNIC MC's Electronic Chart Display Information System (ECDIS) alarm indicated a TT (01) "Danger Contact," thus alerting the watchteam of a potential problem. ALNIC MC has both an S-band and X-band radar with separate displays, but when the Master had difficulty identifying and acquiring MCCAIN as a target in his S-band radar, he did not use or ask his Chief Officer to use the X-band radar to resolve radar contacts. Despite the initial "Danger Contact" alarm, intermittent S-band contact likely delayed recognition that MCCAIN was unexpectedly changing course. A dedicated anti-collision officer's focus solely on radar and contact avoidance would reasonably have allowed him acknowledge the alarm, observe MCCAIN's course change, and call attention to a potential collision to the Master.[7]

(2) A dedicated lookout was not present on ALNIC MC's bridge at time of the collision. At 05:20, the OS reported that the MCCAIN was on ALNIC MC's starboard quarter and he then requested to lay below because he was ill.[8] He was released without relief and the Master did not discuss with the Chief Officer and AB who or how the lookout responsibilities would be covered within their watchteam. In his interview with USCG and TSIB, the Master described what happened next:

> I went out to the [starboard] bridge wing, [MCCAIN] was just like starboard quarter with me. She overtook already the ship behind me. And just within a few seconds she was almost on my beam with a parallel...course.... And of course with the very fast

[7] Per § 2.3.5 of reference (f), the anti-collision officer was required to have no responsibilities other than to operate the vessel's Radar and automatic radar plotting aid (ARPA) to plot course, speed, and closest point of approach of all targets, and to report these to the conning officer.

[8] The TSIB found that "At about 0520H, the OS, who was assigned as the lookout, did not feel well and obtained the Chief Officer's permission to go down to his cabin to relieve himself."

> speed. So I presumed it was clear and she will overtook me as well. So I went inside the bridge and checked again on the radar.

The Master assumed primary lookout responsibilities in addition to his other duties. When the lookout went below, ALNIC MC's bridge team lost the persistent observation and immediate recognition of visual changes a lookout provides. Before going below, the lookout knew where MCCAIN was and had he stayed on the bridge another 5 minutes, it is reasonable to believe he would have observed MCCAIN maneuver, change aspect, and, most clearly, change lighting configuration and reported all these changes to the Master.

c. By 05:21, the Master recognized MCCAIN's maneuvers were not normal.[9] The USCG reviewed ALNIC MC's bridge voice recordings as captured on its voyage data recorder (VDR). The bridge crew was heard to say "Suddenly Crossing" in Tagalog at 5:21:26. That MCCAIN's action was a "sudden crossing" implies an unexpected action by MCCAIN which should have led the Master to assess MCCAIN's intentions as unclear and begin to action to resolve this ambiguity. The Master described his actions in the two minutes leading up to the collision:

> So in my thoughts and everything that was around 5:22, something like that, that she is a Naval ship, she get good maneuverability, she is making fast speed so am thinking okay she can overtake in between us. But my feeling that she was overtaking us and she can clear with us I could see the lights that she's turning to port some more. And we just moved by from the radar went to in between the telegraph and the steering console. I could not do nothing anymore. It was really too close that standing on my two feet like shaking the whole thing, you know. I could not really feel, uh, what to do anymore. It's, I could see already it's sides and it's too close. Immediately they hit us. I could anything to do but by the time I see that she was on my side I immediately tried to reduce for reduction speed, but without my, how you call this, I am panic and all this. All I was thinking was I pull it up to stop, but when I reviewed the VDR together with my lawyers they said it's not stop, I put it on half. [10]

The Master became overwhelmed. Watch Condition 3 is set up to assign key responsibilities to single individuals in order to provide dedicated focus on hazard indicators and allow the OOW to step back in a supervisory role; receive inputs, assimilate data and identify risk points early enough to take necessary action to keep the ship safe. These dedicated watchstanders create decision space for the OOW and a crisis occurs without them in place, the OOW can be quickly overloaded. Aboard ALNIC MC at 0522, the Master didn't have critical decision space because

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[9] In his interview with USCG, the Master stated: "So that was around 5:21 something when I went out to the door. And just when I came back inside just to check the radar again and standing just beside the console on the telegraph, I mean, on the steering so I presumed that she will be overtaking and suddenly when I look again on the radar I could see that she already turning to port quite rapidly. When she turned to port I immediately informed the guys, I told them hey guys this guy could be passing us in between, but that was in Tagalog this guy is passing in between."

[10] The statements are taken from the transcripts of the Master's interview with USCG investigation team.

he was simultaneously gathering the inputs as both lookout and anti-collision officer, trying to assimilate the data and then act, which he did when he *personally* reduced the throttles to Half Ahead 15 seconds before the collision.

d. Bridge Resource Management practices aboard ALNIC MC were not adequate or effective. The ALNIC MC Chief Officer became concerned about MCCAIN's intentions yet he did not forcefully express his concerns and he did not make a maneuvering recommendation to the Master. The Chief Officer told investigators:

> when I saw the vessel intend to cross on our bow I say to Captain, 'Sir, the one, the warship, they plan to, they plan to pass in between our vessel. They crossed our bow.' And then I go to the telegraph, I waiting Master order. But the Master no give any order. And then I go, I got on my side awaiting the telegraph, but I don't know what they are doing. And then I go to the right side of the AB.

In light of this, the TSIB's safety investigator asked the Chief Officer: "So what was your intent of going to the steering console when you saw the ship come closer towards your ship? What was in your mind? Why did you go to the steering console?" The Chief Officer replied:

> "Because I was waiting the order of Master. If he wanted to alter course to starboard or port. That's why I stand at the side of the AB."[11]

The Chief Officer anticipated the Master would give maneuvering commands, and he so moved to a position to immediately take action however, he never voiced a maneuvering recommendation and the order never came. Earlier in the TSIB interview, an investigator asked: "If I'm the master and I freeze, I don't do anything, is it your job to take action to avoid a collision?" The Chief Officer responded: "Yes." The Chief Officer understood his responsibility to back up the Master and he was concerned enough about the situation to move to a location in order to react quickly to an order from the Master. However, he offered no recommendation. As the second in command of the ship and a member of the bridge watchteam, he had an obligation to voice his concern. That he didn't do so is a clear indication bridge resource management was ineffective aboard ALNIC MC.

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[11] The exchange is captured in the transcript of the interviews with USCG:
TSIB: Where was the AB located at that time?
[Chief Officer]: The AB in the front of the console, and then I am the right side of the AB.
TSIB: So what was your intent of going to the steering console when you saw the ship come closer towards your ship? What was in your mind? Why did you go to the steering console? What was your-
[Chief Officer]: Because I was waiting the order of Master. If he wanted to alter course to starboard or port. That's why I stand at the right side of the AB.
TSIB: But AB was already there?
[Chief Officer]: Yeah, AB was already there.

e. Just prior to the collision, ALNIC MC was on course and speed and following a safe track; however, the bridge manning and steering configuration imposed a significant ship safety risk should an unexpected severe internal or external casualty occur. The Master served as OOW, anti-collision officer, lookout and eventually helm. The Chief Officer identified a potential dangerous situation and prepared to react to an order from the Master but voiced no maneuvering recommendations. The single point of failure aboard ALNIC MC was the Master. This was not a question of competence but capacity. As the stress increased, he became over-taxed gathering information. He did not have the decision time to effectively assimilate and assess the information quickly enough to take effective action and his watchteam was unwilling to speak up. Similar to several errors which occurred aboard MCCAIN, deliberate decisions made on board ALNIC MC well prior to MCCAIN's loss of steering casualty at 05:21 culminated in ALNIC MC's failure to take appropriate action to avoid collision.

8. Factual findings on the above essential details will enable analysis of whether ALNIC MC had enough time to take effective action to avoid the collision or mitigate its consequences. COLREGS Rules 2, 6, 7, 8, 17 and 34 provide direction on actions ALNIC MC should have taken but did not. Analysis of ALNIC MC's rate of stoppage must also be included. Using speed as an example, simulations could enable analysis on the exact change required to avoid collision. For example, using very conservative nautical three-minute rule math (one knot for three minutes is 100 yards) indicates that a minor speed change would have prevented the collision. A ½ knot of speed reduction over the minute preceding the collision (an average of ¼ knot less for the last minute) would have reduced ALNIC MC distance traveled over ground by 25 feet, therefore shifting the impact point aft of MCCAIN's last below the waterline berthing compartment (Berthing 5) and potentially avoiding some and perhaps all fatalities. Minor course changes are harder to model and assess changes to the impact; however, empirically even a modest course change by ALNIC MC to the left would reduce the impact angle and could have reduced the resulting collision damage. The example above is meant to show that a very modest change would have a mitigating affect while a larger maneuvering action reasonably would have prevented the collision.

9. As explained in reference (a), the U.S. Navy acknowledges that the catalyst of the collision was MCCAIN's loss of maneuvering control including numerous factors, which, if corrected, would have prevented the collision. Without essential factual findings on ALNIC MC's reduced situational awareness, however, its compliance (or lack of compliance) with its own safety procedures, and the actions its crew took (or failed to take) to avoid collision, a probable cause assessment would be incomplete, and would not convey all lessons learned from this collision.

10. We appreciate your continued collaboration on ensuring appropriate safeguards for Personally Identifiable Information (PII), Private Health Information (PHI), National Defense Information (NDI), and International Traffic in Arms Regulations (ITAR) controls for the export and import of defense-related articles and services. Safeguarding this statutorily-protected information will be NTSB's responsibility for as long as NTSB retains this information. Navy stands ready to advise your security managers on records safeguards and destruction methods.

We also appreciate NTSB's balance between your investigative authorities, public safety end-states, and awareness of the national security risk of aggregating unclassified technical details about our warships.

11. Thank you again for the opportunity to comment on reference (b) in support of NTSB and Navy's shared objectives to ensure this type of tragedy never happens again.

[redacted]

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