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Homeland Security

United States
Coast Guard



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5830

MAY 17 2019

MEMORANDUM

FINAL ACTION OF MAJOR INCIDENT INVESTIGATION REPORT INTO THE CIRCUMSTANCES SURROUNDING THE FATALITY OF A MEMBER ASSIGNED TO CGC HICKORY IN HOMER, ALASKA, ON 31 JAN 2019

The report of the Major Incident Investigation Board President, conducted under the provisions of the Major Incident Investigation Manual, COMDTINST M5830.4 (series) and CG PACAREA memo 5830 of 01 FEB 2019, that investigated the circumstances surrounding the fatality of a Coast Guard member attached to CGC HICKORY on 31 JAN 2019, complies with applicable regulatory guidance. Accordingly, this report is approved.


A handwritten signature in blue ink, appearing to read "L. L. Fagan".


L. L. Fagan, VADM
CG PACAREA (PAC-00)



5830
19 Apr 2019

MEMORANDUM

From: T. J. Rasmussen, CAPT 
MII Board President

To: CG PACAREA (PAC-00)  5/17/2019

Subj: MAJOR INCIDENT INVESTIGATION (MII) BOARD REPORT ON THE
CIRCUMSTANCES SURROUNDING THE FATALITY OF A USCGC HICKORY
(WLB-212) CREWMEMBER IN HOMER, AK ON 31 JAN 2019

Ref: (a) Your memo 5830 of 01 Feb 2019 (Convening Order)
(b) Major Incident Investigations Manual, COMDTINST M5830.4 (series)
(c) Administrative Investigations Manual, COMDTINST M5830.1 (series)
(d) Safety and Environmental Health Manual, COMDTINST M5100.47 (series)
(e) Workplace Safety & Health Council's Study Report on Crane Incident Analysis

1. Action of the Convening Authority: On 1 February 2019, VADM L. L. Fagan convened the Major Incident Investigation Board via reference (a) in accordance with reference (b).

2. Executive Summary: On the afternoon of 31 January 2019, at the U.S. Coast Guard Cutter (CGC) HICKORY (WLB-212) buoy yard in Homer, Alaska, numerous crewmembers were conducting a variety of yard clean up, maintenance and repair, and organization tasks prior to a planned underway period. A two person team was operating the Shuttlelift crane car, hereinafter referred to as the Mishap Crane (MC), to move four distinct loads of Aids to Navigation (ATON) equipment from the top of Container Express (CONEX) boxes to a location on the ground where they were subsequently moved via forklift to alternate locations. The team was comprised of a rigger and crane operator, hereinafter referred to as the Mishap Rigger and Mishap Operator respectively. Neither of these members were qualified to perform these duties. During movement of the fourth load, hereinafter referred to as mishap load (ML), the MC tipped over at approximately 1350 (local) with the boom fatally striking the unit's Chief Warrant Officer 2 Boatswain (BOSN2) who was engaged in conversation with another crewmember within the crane-operating envelope. The MC incurred significant damage to its boom in the mishap, but a total loss determination has not been made. No other injuries or property damage were reported or discovered during the investigation.

The MII Board President found by clear and convincing evidence that the Mishap Operator's judgement and decision making errors in attempting to execute a lift exceeding the operating capabilities of the equipment were the direct cause of the mishap. However, his operation of the MC on the day of the mishap was the last link in an error chain of consistent and long-standing leadership deficiencies and complacency with shore side heavy lift operations. The MII Board President found by a preponderance of evidence that the following factors substantially contributed to the mishap:

- 1) Unit leadership (both senior enlisted and officers) permitted, either by direct tasking or through failure to take corrective action, the use of the MC by non-qualified operators to carry out assigned duties. This environment fostered complacency among the junior ranks who trusted their leadership to hold members accountable when appropriate based on the example they set in underway operations.
- 2) A significant difference in unit leadership's perceived risk of cutter operations versus shore side operations. Unit leadership is fully invested and dutifully executes ATON mission training and qualification programs with sufficient rigor, but does not place similar emphasis on shore based operations which consist of lifting and transporting objects (buoys, sinkers, equipment) of similar or increased risk to that of cutter operations. The shore side risk is different from that aboard the cutter through the use of non-standard equipment for which an equally robust training and qualification program along with prudent risk assessment is requisite for safe operations.
- 3) Leadership complacency and a lack of oversight and monitoring with respect to shore side heavy lift operations. This included failures to (1) properly and fully investigate a prior mishap involving the MC, (2) conduct risk assessments for shore side operations to include planning and oversight, (3) monitor and enforce Personal Protective Equipment (PPE) requirements, (4) properly administer the Special Purpose Motorized Equipment (SPME) program specifically regarding personnel training, qualification, and tracking, and complacency with the use and tasking of non-qualified operators to perform tasks with SPME equipment.

3. Preliminary Statement:

- a. **Authority.** This investigation was convened per reference (a) and in accordance with reference (b) by VADM L. L. Fagan, Commander, U.S. Coast Guard Pacific Area.
- b. **Purpose.** This investigation was convened to inquire into the facts surrounding the Coast Guard mishap involving the fatality of a CGC HICKORY crewmember in Homer, Alaska on 31 January 2019, to prepare a publicly releasable report, and to gather and preserve all available evidence for use in litigation, claims, disciplinary actions, administrative proceedings, and for other purposes.
- c. **Board Composition:**
 - 1) Board President: CAPT T. J. Rasmussen
 - 2) Legal Advisor: CDR J. W. Burby
 - 3) Subject Matter Expert: BOSN4 C. A. Boss
 - 4) Recorder: LT K. C. Foor
- d. **Conduct of the MII.** The Board was appointed on 1 February 2019 and arrived at the primary site of the investigation in Homer, Alaska on 5 February 2019. While in Homer, the

MII assessed and documented the mishap site, collected documentary evidence, and interviewed witnesses from CGC HICKORY. All witnesses were cooperative. Interviews were conducted in a private setting to ensure members could testify comfortably and truthfully. Rights advisements were provided to three witnesses none of whom invoked a right against self-incrimination. The MII conducted an assessment of the mishap site prior to having the opportunity to interview witnesses in order to facilitate the timely removal of the MC. While this did not significantly affect the overall findings in this report, the MII did not have the benefit of a baseline understanding of the events, which made it challenging to identify and precisely capture all relevant measurements. The Board returned to their respective permanent units on 14 February 2019 and continued to analyze evidence and prepare this report. No significant delays were encountered during the course of the investigation. The MII could not have performed these duties without the outstanding support of U.S. Coast Guard Marine Safety Detachment (MSD) Homer.

- e. **Interaction with Other Investigations.** The Board interacted with the U.S. Coast Guard Mishap Analysis Board (MAB) during the course of this investigation. The MII conducted all necessary coordination with the MAB in accordance with references (b) and (d). The National Transportation Safety Board (NTSB) did not convene an investigation for this mishap. Additionally, the Board interacted with the U.S. Coast Guard Investigative Service (CGIS) who were conducting a separate criminal investigation into suspected drug use.

4. Table of Contents:

Section	Page #
Executive Summary	1
Preliminary Statement	2
Authority	2
Purpose	2
Board Composition	2
Conduct of the MII	3
Interaction with Other Entities	3
Findings of Fact	4
Accident Summary	4
Background	4
Incident Factors	4
Medium	4
Machine	4
Mission	6
Man	12
Management	12
Statement of Opinion	14
Cause of Mishap	14
Substantially Contributing Factors	14
Other Considerations	17
Attestation	18

5. Findings of Fact:

- a. Accident Summary: On 31 January 2019 at 1350 (local), the MC, while moving a pallet of ATON equipment, overturned fatally striking BOSN2. The ML was the fourth moved during that afternoon's operations.
- b. Background: CGC HICKORY had been moored at homeport since prior to Christmas. The cutter planned to get underway the following Wednesday, 6 February 2019 enroute Base Ketchikan. A fast cruise was planned for Friday, 1 February 2019. Various members of the crew were conducting final cutter loading, buoy yard cleanups, and Cutter Support Team (CST) building organization in advance of the fast cruise and underway period.
- c. Incident Factors: The findings of fact are broken into five incident analysis categories based on reference (e). While these categories differ slightly from ones suggested in the sample investigative report in reference (b), I believe this is an especially effective framework for presenting all relevant findings. The five incident categories or five "M's" are:
 - Medium: Ambient and operational environment
 - Machine: Hardware and software
 - Mission: Central purpose or functions
 - Man: Human elements and human factors
 - Management: Procedure, policies and regulations

Incident Factor – Medium

- 1) At noon on the day of the mishap, the weather was recorded as:
 - Air Temperature: 34 degrees Fahrenheit
 - Winds: 7 knots out of the North East
 - Visibility: 8 nautical miles with broken clouds with 80% coverage. (Exhibits 24, 47)
- 2) At the time of the mishap (1350 local), the sun was almost due south (186 degree Azimuth) with an inclination of 13 degrees. (Exhibit 83)
- 3) The ground was soft where the MC was operating at the time of the mishap due to rain the day prior and snowmelt. (Exhibits 3, 5, 6, 11, 12, 13, 14)

Incident Factor – Machine

- 4) The Mishap Crane (MC) is a Shuttlelift 5560B, which is owned and maintained by CGC HICKORY. (Exhibit 58)



Mishap Crane after Righting with Outriggers Extended and Down

- 5) The wire rope on the MC was renewed after a 17 September 2017 mishap involving the MC. The Engineer Officer (EO) believes that a weight test was conducted, but he did not witness the test and no records of a weight test could be produced. (Exhibits 3, 4, 47)
- 6) A lift of the Cutterboat-Large (CBL) was completed after the wire rope installation. In the absence of a documented weight test, this effectively served as a 3,820 lb test according to the estimated weight provided in COMDTINST M16114.45 – Cutterboat – Large Operator’s Handbook. (Exhibit 11)
- 7) MC had no known/open casualties at the time of the mishap. (Exhibits 3, 6, 11, 12, 13)
- 8) MC outriggers were fully functional the day prior to and following the mishap. (Exhibits 12, 48)
- 9) MC was fully functional following the mishap with the exception of boom retraction due to deformation and, “visible structural damage on the third section of the four-section boom. The boom nose (i.e. boom tip) and anti-two block device appeared to have visible damage as it was the primary impact point when the crane overturned.” (Exhibits 47, 48, 54, 55, 66)
- 10) The dynamometer installed in the MC was not calibrated and had not recorded any data since 22 December 2018. The user can calibrate the MC-installed dynamometer in the field. (Exhibits 34, 84)
- 11) The unit did not maintain a MC preventative maintenance program or MC maintenance log. Per Exhibit 86, “local Motor Vehicle Fleet Managers (MFMs) must follow OEM recommendations and set the local maintenance schedules. (Exhibits 3, 86)
- 12) The MC has clear safety indications in the cab: “No side loading.” (Exhibit 60)

- 13) On the day before the mishap, the MC was operated in the afternoon by an EM2, hereinafter referred to as Operator #2, to relocate items in the metal/recycling pile. Outriggers were used for this operation. No Risk Management (RM) or General Assessment of Risk (GAR) was conducted prior to the operation. (Exhibits 5, 12)

Incident Factor - Mission

- 14) On the day of the mishap, 31 January 2019, CGC HICKORY was moored at homeport in Homer, Alaska. (Exhibits 24, 25)
- 15) On 31 January 2019, numerous concurrent activities were ongoing in the buoy yard area to include CONEX box clean out, scrap/recycling pile clean up, CST building stowage, and cutting up a shore tie cable. (Exhibits 3, 5, 6)
- 16) Senior personnel, including the Engineer Officer (EO), BOSN2, and several members of the Chief's Mess, were present for significant portions of these activities. (Exhibits 3, 5, 6, 9, 10, 11, 13)
- 17) BOSN2 was in the buoy yard working with BMC, EO, and other personnel to clean up the buoy yard, identify items for transport to Ketchikan, and support CST stowage. BOSN2 was not directly involved in the crane operations other than, earlier in the day, having directed the removal of the items atop the CONEX box. (Exhibits 3, 5, 7, 8, 13, 14)
- 18) Some members of the crew perceived moderate pressure to complete the buoy yard clean up and CST building stowage prior to the upcoming underway period. A fast cruise was scheduled for 1 February 2019. (Exhibits 2, 3, 5, 6, 9, 11, 12, 13, 25)
- 19) There were no efforts made to conduct on scene RM, GAR or otherwise coordinate these activities by any of the involved personnel. (Exhibits 3, 5)
- 20) Mishap Operator received tasking from his Boatswain's Mate First Class (BM1) to remove items from on top of the CONEX boxes. (Exhibits 9, 13)
- 21) The personnel for the evolution consisted of the Mishap Operator and the Mishap Rigger. There was no safety supervisor for the MC operations. (Exhibits 13, 14)
- 22) The Mishap Operator recalled being either directed or recommended to use the MC but could not identify the source. (Exhibits 9, 13)

- 23) The Mishap Operator and the Mishap Rigger wore hardhats for the evolution and communicated both verbally and via hand signals. (Exhibits 13, 14)
- 24) No other personnel in the buoy yard were wearing hard hats. (Exhibits 3, 5, 6, 11, 12, 13, 14)
- 25) The Mishap Operator acquired the MC from the CST building. As he was leaving the CST building, a MK2, hereinafter referred to as Operator #3 approached and told the Mishap Operator that he needed the MC to remove items from the top of the CONEX box. The Mishap Operator stated "I got it," and proceeded down the pier towards CGC HICKORY to obtain the flying forks. (Exhibits 11, 13)
- 26) After picking up the flying forks, the Mishap Operator drove back down the pier and positioned the MC in front of the second CONEX box to conduct the lifts. The center of the crane was 14 feet from the face of the CONEX boxes. (Exhibits 3, 13, 14, 42)
- 27) Neither the Mishap Operator nor the Mishap Rigger conducted a risk assessment prior to operating the MC or conducting the lifts. (Exhibits 13, 14)
- 28) Neither the Mishap Operator nor the Mishap Rigger made any estimation of the load weights. (Exhibits 13, 14)
- 29) The positioning of the MC afforded the operator good visibility of the CONEX boxes but severely restricted visibility of the buoy yard. (Exhibits 13, 75, 76, 77, 78, 78, 79, 80)

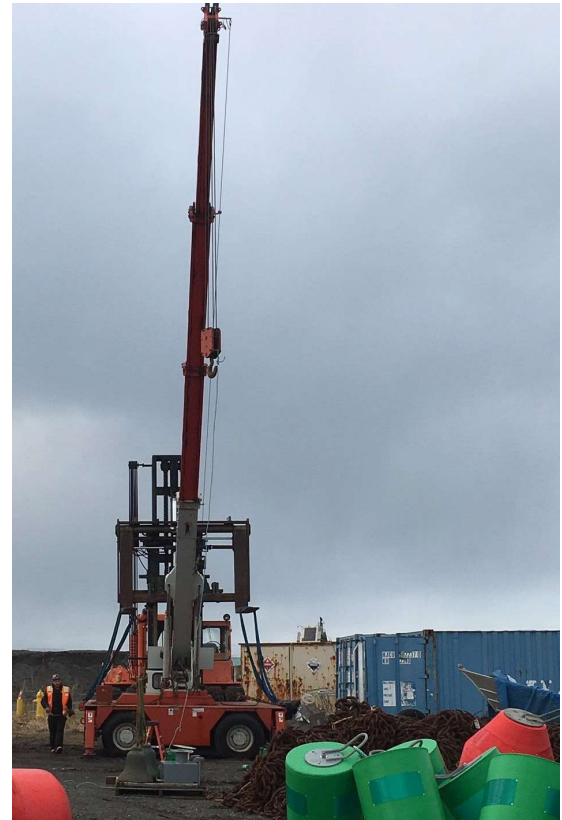


Panoramic View from MC Operators Seat

- 30) The Mishap Operator conducted a limited operational test by slewing the boom in both directions, extending the boom and booming up and down. (Exhibit 13)
- 31) The Mishap Operator did not extend or press down the outriggers on the MC prior to conducting the lifts. OSHA guidance in this area is not very prescriptive stating only

“that cranes must be assembled on ground that is firm, drained and graded sufficiently, in conjunction with supporting materials, such as blocking, cribbing, pads, or mats, to provide adequate support and levelness.” It is apparent from a review of the MC Load Rating and Range Diagram that the use of outriggers yields a significant difference in the lifting capacity for a give boom extension, radius and boom angle. (Exhibits 13, 35, 56, 57)

- 32) The Mishap Operator did not remember how far he extended the MC boom or the boom angle. (Exhibit 13)
- 33) The Mishap Rigger used an A frame ladder to climb on top of the CONEX boxes in order to seat the flying forks under each load. After seated, he climbed down and behind the MC in order to unseat the flying forks after each load was landed. (Exhibits 13, 14)
- 34) Four lifts were conducted by the Mishap Operator and the Mishap Rigger. The first two lifts were 1933 tower support leg kits which consist of 7 foot sections of 2 ½ inch Schedule 80 steel pipe and 10 foot sections of 3 inch schedule 40 pipe. The third lift was a pallet of miscellaneous ATON hardware (bolts, nuts, all thread). The ML was a pallet with two 225 lb bells with bell stands and two battery boxes. (Exhibits 9, 13, 14)
- 35) No tag lines were used on any of the loads. (Exhibit 14)
- 36) The first two loads (1933 leg kits) were located on the closest edge of either the first or second CONEX box. (Exhibits 18, 19, 20, 21, 22)



View of Buoy Yard and CONEX Boxes Looking West

- 37) The 1933 leg kits weigh about 800 lbs and the pallet of ATON hardware is estimated to weigh less than 750 lbs. (Exhibit 46)
- 38) The estimated weight of the ML is approximately 1,483 lbs. (Exhibits 43, 67, 68, 69, 70, 74, 81)



Mishap Load Profile and Elevation Views

- 39) The ML was not balanced on the pallet. The two bells with bell stands on one side of the pallet were more than double the weight of the battery boxes on the opposite side of the pallet. (Exhibits 43, 53)
- 40) The third and mishap loads were located further back on the first CONEX box. Based on this information, the distance from the center of the MC to the ML was between 24 and 30 feet. (Exhibits 18, 19, 20, 21, 22)
- 41) The Mishap Operator stated that he lowered the boom to reach the third and mishap loads, but did not extend the boom further. He did not recall the new boom angle. (Exhibit 13)
- 42) Prior to working the last two loads, neither the Mishap Operator nor the Mishap Rigger had observed BOSN2 in the buoy yard. (Exhibits 13, 14)
- 43) All loads were lifted approximately 1-2 feet off the top of the CONEX boxes and slewed to starboard. Once the loads cleared the boat trailers, the Mishap Operator lowered the loads to “about chest level” (4-5 feet off the deck) and then continued to slew to starboard to a location approximately 120-135 degrees to starboard referenced from the front of the MC. At this location, the load was lowered to the ground and the

Mishap Rigger would unseat the flying forks. The lowered load was retrieved by a forklift. This pattern was repeated for all four loads. The load movement for these lifts started generally in front of the MC and proceeded starboard to a side load condition where the MC has reduced loading capacity based on the use of outriggers, boom angle and boom extension. (Exhibits 13, 14)

- 44) As the Mishap Operator was lowering the ML to the ground, he observed a “pointing motion” from BOSN2. He perceived this motion as directing him to place the ML in a different location much further to the east near the piles of buoy chain (90 degrees to starboard referenced from the front of the MC). EO reported BOSN2 making a hand motion during this timeframe but did not know if it was intended as a signal to the Mishap Operator. (Exhibits 3, 13)
- 45) The Mishap Operator responded to the perceived direction from BOSN2 with a thumbs up. After which, he lifted the ML back up to about 4-5 feet from the ground and then slewed to port. (Exhibit 13)
- 46) The Mishap Operator stated that he could not land the ML where BOSN2 indicated as that location was beyond the capability of the crane so he decided to land it just in front of the boat trailers and then have the forklift move it. (Exhibit 13)
- 47) The Mishap Operator stated that he did not boom down during this portion of the lift. (Exhibit 13)
- 48) At about this time in the evolution, the Mishap Rigger reported observing the wire rope go slack and then taut immediately prior to the crane overturning. He stated that he was not sure if the Mishap Operator was letting the boom down or paying out wire rope, just that the load was being lowered. (Exhibit 14)
- 49) During the slewing motion, the Mishap Operator felt the crane shudder and jumped out of the cab when the driver (port) side wheels were a few inches off the ground. (Exhibits 13, 51, 52)



Overtured Mishap Crane

- 50) The Mishap Rigger reported that the ML landed 7-8 feet further from the CST building (to the north) and 3-4 feet further to the east than the other loads. (Exhibit 14)
- 51) The boom's impact with the ground caused permanent deformation of the boom at the beginning of the third extension. (Exhibits 54, 66, 72, 73)
- 52) The boom tip dug into the ground approximately 6 inches. (Exhibits 55, 64, 65)
- 53) The minimal ground impact marks indicate that the pallet was at a relatively low height with little lateral movement. (Exhibits 61, 62)
- 54) The boom struck BOSN2 on the head as the crane overturned with his body coming to rest on his left side between the collapsed boom and the pile of buoy chain. (Exhibits 3, 5, 7, 10)
- 55) The boom's impact also bent the mounting flange on a battery box on the pallet load. (Exhibit 59)
- 56) The pallet was damaged by the impact. (Exhibits 61, 62, 63)
- 57) The radius of instability for the ML was 31.5 feet based on interpolation of the Load Rating and Diagram. (Exhibits 35, 41, 44, 45)
- 58) The MC hook was located 32.5 feet from the center of the crane after the mishap. (Exhibit 42)

- 59) The center of the ML was located 40.5 feet from the center of the crane after the mishap. (Exhibits 40, 41, 42)

Incident Factor – Man

- 60) Operator #3 is the only crewmember onboard CGC HICKORY with an OF-346 for MC qualification. (Exhibits 30, 37)
- 61) Operator #2 was not a qualified MC operator; however, several individuals in the crew believed him to be qualified. (Exhibits 3, 5, 9, 12)
- 62) Operator #2 volunteered in May 2017 to qualify as a MC operator but never received a Personnel Qualification Standard (PQS) package and only received training informally from Operator #3. Operator #2 operated the crane about a dozen times which included unsupervised operations. (Exhibit 12)
- 63) The Mishap Operator was not a qualified MC operator and had not received training on the MC. (Exhibits 13, 38)
- 64) Both Operator #2 and Operator #3 have observed the Mishap Operator conduct operations with the MC. (Exhibits 11, 12)
- 65) Operator #2 supervised the Mishap Operator operating the MC a few times. (Exhibit 12)
- 66) The Mishap Operator had primarily used the MC for brow operations and estimated that he had used the equipment 10-20 times. (Exhibit 13)
- 67) The Mishap Operator never received training nor did he know how to use the load and range diagram for the MC. (Exhibit 13)
- 68) About 3-4 months prior to the mishap, the Mishap Operator believed himself to be qualified on the MC due to his comfort with its operation. (Exhibit 13)
- 69) The Mishap Rigger was not a qualified rigger and the Mishap Operator was aware of his lack of qualifications. (Exhibits 13, 14)
- 70) The Mishap Rigger did not know that the Mishap Operator was not a qualified MC operator. (Exhibit 14)
- 71) On the day of the mishap, the EO observed the Mishap Operator riding on the side of the forklift while training another crewmember. The EO counseled the Mishap Operator against the unsafe practice. The EO later observed the Mishap Operator again riding on the forklift, provided additional counseling, and informed BOSN2 of the behavior. The EO did not note any indicators of impairment during either counseling session but was not looking for signs at the time. (Exhibit 88)

- 72) A post-mishap toxicological examination of the Mishap Operator's blood and urine detected Tetrahydrocannabinol (THC) metabolites in his urine. The samples were collected the day after the mishap on 1 February 2019. Additionally, a hair analysis drug test was conducted on samples taken on 28 February 2019. The results, according to the lab that conducted the analysis, suggest that the Mishap Operator regularly used marijuana in the months leading up to the mishap based on the levels of metabolites detected in his hair segments. The segment lengths tested represent an average hair growth rate of one month. The analysis did not indicate actual or estimated metabolite levels on a daily or weekly basis. (Exhibits 32, 33, 39, 87)

Incident Factor – Management

- 73) CGC HICKORY reported a 17 September 2017 mishap involving the MC. (Exhibit 29)
- Operator #2 was the MC operator during the September 2017 mishap, he was not a qualified MC operator and he operated the MC without qualified supervision. (Exhibits 4, 12)
 - MC Operator qualifications were not reviewed as part of the mishap analysis/investigation. (Exhibits 2, 3, 4, 12)
 - The corrective actions identified in the mishap report were briefed to Command Duty Officers, MC operators, and the crew, but were never documented (i.e. operators guide, pre-op checklist, etc.). (Exhibits 2, 3, 4)
 - Current Commanding Officer (CO) stated that he was not aware of the 2017 mishap involving the MC. (Exhibit 1)
 - Former CO did not have direct involvement in the mishap investigation and did not ensure recommendations/corrective actions were implemented. (Exhibit 15)
- 74) After reporting aboard last summer, MKC (Aux) assumed responsibility for the SPME program and started a review of the status of qualifications after observing personnel using a new forklift without OF-346s in their records. (Exhibit 6)
- 75) On 13 December 2018, MKC (Aux) sent an email to all CPOs listing the only personnel for whom his records reflected were qualified to use various SPME. He further asked for verification of completed PQS and offered to send PQS to those identified as needing to get qualified. (Exhibits 4, 5, 6, 30)
- 76) The EMC promised MKC (Aux) he would have his members look for their qualification letters and reported there was a plan to set aside a week to train and complete PQS. MKC (Main Prop) acknowledged receipt of the email and that there were gaps they were working to resolve. (Exhibits 5, 8)

- 77) Risk assessments are not conducted by CGC HICKORY personnel for shore side operations. (Exhibits 2, 3, 5, 11, 12, 13)
- 78) Crew had been trained on GAR 2.0 procedures. (Exhibit 2)
- 79) CGC HICKORY had a SMART visit on 16 January 2018. No hazardous conditions relevant to this mishap were documented. (Exhibit 36)
- 80) The SPME Program is established and documented in the CGC HICKORY Cutter Organization Manual (COM) in Section 4.T. (Exhibit 23)
- 81) CGC HICKORY has All-Terrain Vehicles (ATVs), but ATVs are not addressed in the COM. ATVs are SPME per CGTTP 4-01.3. (Exhibit 23)
- 82) Per CGC HICKORY COM SPME Policy, a certified instructor is only required for the forklift. (Exhibit 23)
- 83) SPME WQS/PQS qualifiers are not designated in the HICKORY COM. (Exhibit 23)
- 84) Per unit SPME policy, “all users shall follow pre-operational checklists, safety procedures, and operating parameters, conduct safety briefs/GAR model, and exercise necessary precautions taking into account weather, experience, and equipment condition.” (Exhibit 23)
- 85) For MC operations, the cutter SPME policy states that the qualification requirement is the locally generated JQR/PQS and that the operator has an OF-346, “properly updated/annotated for this equipment.” (Exhibit 23)
- 86) CGC HICKORY has promulgated a MC Operator PQS and pre-operation checklist. The pre-operation checklist is maintained on the cutter shared drive and was in effect when the current EO reported aboard. (Exhibits 26, 31)
- 87) MC operators (qualified and unqualified; past and present) had no knowledge of the pre-operation checklist prior to the mishap. (Exhibits 11, 12, 13, 16, 17)
- 88) SPME assignments are not detailed in Command Qualification Expectation memos nor are SPME qualifications tracked in the ship’s qualification tracker. (Exhibits 27, 28)
- 89) Unqualified use of the MC is a violation of the CGC HICKORY COM. (Exhibit 23)

6. Statement of Opinion:

- a) Cause of the Mishap: I find by clear and convincing evidence that the cause of the mishap were judgement and decision making errors by the Mishap Operator in attempting to lift a load in a manner that exceeded the operating parameters of the equipment. As the Mishap Operator slewed the ML back to port following a perceived hand signal from BOSN2, I believe he also boomed down in an effort to set

the load at a location further away from where he had set the previous loads. The operating radius utilized by the Mishap Operator for the ML prior to booming down was approximately 30 feet. As the boom lowered, the MC tipped over as the increased operating radius exceeded the stability limit for the ML and induced an overturning moment. The load capacity for the same radius, even in the case of side loading, would have been approximately four times greater than the estimated weight of the mishap load if outriggers had been properly deployed. (Findings of Fact c.12, c.17, c.46, c.47, c.48, c.50; Exhibits 35, 50)

- b) Substantially Contributing Factors: I find by a preponderance of evidence that each of the following factors substantially contributed to the mishap:
- 1) While the Mishap Operator was at the controls at the time of the mishap, the consistent and long-standing leadership deficiencies and complacency with shore side heavy lift SPME operations played a significant role in the mishap. (Findings of Fact c.63, c.64, c.65, c.66, c.73, c.77, c.83, c.86, c.87, c.88)
 - 2) The error chain associated with this mishap is extensive and indicates how far-reaching the leadership deficiencies and complacency had become at the unit. A visual representation of what I view as the major components in the error chain is provided as Exhibit 49. This error chain is like a set of dominos all converging at this mishap. In my opinion, it was not a question of if a mishap would occur but when. The personnel involved in the error chain span from the CO (former and current) down to non-rates. In several cases, crewmembers were in positions where appropriate action may have precluded this mishap. (Findings of Fact c.25, c.75, c.76)
 - 3) Unit leadership (both senior enlisted and officers) permitted, either by direct tasking or through failure to take corrective action, the use of the MC by non-qualified operators to carry out assigned duties. This environment fostered complacency among the junior ranks who trusted their leadership to hold members accountable when appropriate based on the example they set in underway operations. In the case of the Mishap Operator, I believe this environment contributed to his perceived “self-qualification.” (Findings of Fact c.61, c.65, c.66, c.68, c.73, c.74)
 - 4) A significant delta exists in unit leadership in the perceived risks of cutter operations and shore side operations. Unit leadership is fully invested and dutifully executes ATON mission training and qualification programs with sufficient rigor, but does not place similar emphasis on shore based operations which include lifting and transporting objects (buoys, sinkers, ATON equipment) of similar or increased risk to that of cutter operations. The shore side risk is different from that aboard the cutter through the use of non-standard equipment for which an equally robust training and qualification program along with prudent

risk assessment is requisite for safe operations. (Findings of Fact c.18, c.19, c.24, c.27, c.28, c.61, c.62, c.64, c.65, c.66, c.67, c.68, c.73, c.77, c.84, c.88, c.89; Exhibit 49)

- 5) Leadership complacency and lack of oversight and monitoring with respect to shore side operations. This significant blind spot regarding the risk associated with shore side heavy lift operations (Findings of Fact c.76, c.77, c.82, c.83, c.86, c.87; Exhibit 49) is exemplified by:
 - On the day of the mishap, unit leadership failed to effectively communicate and assess individual and combined risks of the numerous concurrent operations occurring within and adjacent to the buoy yard. (Findings of Fact c.19, c.27, c.76, c.77)
 - The investigation of the 2017 MC mishap, which failed to conduct a comprehensive examination of all factors involved, specifically a review of MC qualifications and the qualification process. A proper mishap investigation and follow on corrective actions would have been a critical step in arresting the error chain and shore side safety complacency that directly contributed to this mishap. (Finding of Fact c.72; Exhibits 15, 49)
 - The fact that unit leadership and numerous crewmembers, including Operator #2 and Operator #3, knew the Mishap Operator was not a qualified MC operator and took no action when observing him operate the MC with and without supervision on multiple occasions. (Findings of Fact c.61, c.63, c.64, c.65, c.67)
 - The failure to conduct risk assessments for shore side operations to include planning and oversight. (Findings of Fact c.77, c.78, Exhibits 1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15).
 - The failure to monitor and enforce PPE requirements during shore side operations. (Finding of Fact c.24)
- 6) From a strictly administrative perspective, the SPME program is adequately established under unit policy. However, I discovered grave deficiencies in the execution of the SPME program in terms of risk management, training, and qualifications processes for approximately 12-18 months leading up to the mishap (Findings of Fact c.60, c.61, c.72, c.79, c.80, c.81, c.82, c.83, c.84, c.85, c.86, c.87, c.88; Exhibits 12, 13, 16, 17, 23, 49) including the following:
 - The failure to issue required PQS

- Operators not being aware of the existence of a pre-operational checklist until after the mishap. A copy of the checklist is not located on the MC and can only be found on the ship's shared drive
 - No effective tracking system for SPME qualifications or break-in progress. SPME qualifications were not tracked with all other cutter qualifications
 - Poorly executed/non-existent training program for SPME
 - Only rudimentary knowledge of how to properly operate the MC and how to use the Load Rating and Range Diagram by the sole qualified operator
 - Tasking of non-qualified personnel to operate SPME
 - Failure to require documentation of completed PQS for all SPME
- 7) The Mishap Operator believed himself to be a qualified MC operator due to never having seen the requisite PQS and being permitted, either by direct tasking or through failure to take corrective action, to operate the MC by senior personnel whom he trusted. (Findings of Fact c.65, c.67)
- 8) Operator #3 had a distinct opportunity to break the error chain on 31 January 2019 when he could have taken over crane operations from a non-qualified operator. Unit complacency with SPME and shore side safety set Operator #3 up to fail as a shipmate. (Finding of Fact c.25)
- c) Other Considerations:
- 1) The unit was deficient in having a defined preventative maintenance system to include routine inspections and maintenance logs for the MC. However, I did not find that lack of maintenance was a contributing factor in the mishap. Further, the crane had safely lifted a load over twice the weight of the mishap load validating the MC structures and systems were capable of the ML. (Findings of Fact c.6, c.7, c.8, c.11, c.13)
 - 2) PPE use for shore side operations was not consistently implemented or monitored. However, I do not believe the proper use of PPE would have prevented or changed the outcome of the mishap. (Finding of Fact c.24)
 - 3) Crewmembers have a clear understanding of the planning, safety, and risk assessment process associated with mooring/unmooring evolutions and buoy deck operations. The training and qualification process for underway operations is well structured, executed, and monitored. (Exhibits 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14)

- 4) MKC (Main Prop) was starting to take actions that would likely correct qualification issues as he assumed oversight of the SPME program. The Chief's Mess took neither sufficient nor timely actions resulting in further instances of personnel utilizing SPME without proper training or qualification. No concerted effort was made to prevent or deter personnel from improperly utilizing SPME after attention was brought to the fact that there were unqualified personnel utilizing various equipment. (Findings of Fact c.60, c.61, c.62, c.63, c.68, c.74, c.75)
- 5) The Mishap Operator's regular use of marijuana in the months leading up to the incident is concerning for two reasons: First, the complexity of crane operations and, second, my opinion that his judgement and decision making were the cause of the mishap. However, I was unable to find sufficient evidence in the course of my investigation to reach a determination, by a preponderance of the evidence, that immediate or residual effects of marijuana use were adversely affecting the Mishap Operator at the time of the incident and substantially contributed to the mishap. (Findings of Fact c.71, c.72)
- 6) I did not discover adequate evidence to support a conclusion that BOSN2 provided a hand signal to the Mishap Operator or was otherwise involved in the MC operations beyond identifying items to be moved earlier in the day. It is my belief that the hand motion observed by the Mishap Operator was related to the conversation that BOSN2 was having with the EO. While I did not find that any intentional action on the part of BOSN2 substantially contributed to the tipping over of the MC, risk assessment and increased awareness of the crane-operating envelope by personnel within the buoy yard may have avoided the tragic outcome of this mishap. (Findings of Fact c.17, c.44)
- 7) Weather conditions were not a contributing factor to the mishap. (Findings of Fact c.1, c.2, c.3)

7. **Attestation:** The Findings of Fact and Statement of Opinion are my own and do not constitute an official determination by the U.S. Coast Guard concerning this mishap.



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Enclosures: (1) Convening Order
(2) Acronyms and Terms List

Exhibits: (1) Witness Summary - CO
(2) Witness Summary - XO

- (3) Witness Summary - EO (Part 1)
- (4) Witness Summary - EO (Part 2)
- (5) Witness Summary - EMC
- (6) Witness Summary – MKC (Main Prop)
- (7) Witness Summary - BMC
- (8) Witness Summary - MKC (Aux)
- (9) Witness Summary - BM1
- (10) Witness Summary - Mishap Corpsman
- (11) Witness Summary - MK2 (Operator #3)
- (12) Witness Summary - EM2 (Operator #2)
- (13) Witness Summary – Mishap Operator
- (14) Witness Summary – Mishap Rigger
- (15) Witness Summary - Former CO
- (16) Witness Summary - BMC (Former Crewmember)
- (17) Witness Summary - EM2 (Former Crewmember)
- (18) Scene Sketch - BMC
- (19) Scene Sketch - EO
- (20) Scene Sketch - Mishap Rigger
- (21) Scene Sketch - Mishap Operator
- (22) Scene Sketch - MK2
- (23) Cutter Organization Manual, HICKORY INST 5400.1F (Excerpt)
- (24) Ship's Log for 31JAN19
- (25) Ship's Plan of the Week for 26JAN19 - 01FEB19
- (26) Ship's Shuttlelift Pre-Op Checklist
- (27) Ship's Qualification Tracker
- (28) Command Qualifications Expectation Memo (Sample)
- (29) MISHAP Report of 17SEP17
- (30) OF-346 Email of 13DEC18
- (31) Ship's Shuttlelift Operator PQS
- (32) Toxicology Report, Mishap Operator
- (33) Toxicology Report (Litigation Package), Mishap Operator
- (34) Ship's Crane Dyno Data File
- (35) Shuttlelift Load Charts
- (36) SMART Visit Report of 24JAN18
- (37) OF-346, Operator #3
- (38) OF-346, Mishap Operator
- (39) Blood & Urine Sample Collection Date
- (40) MII Document - Scene Assessment
- (41) MII Document - Overturned Crane Measurements
- (42) MII Document - Upright Crane Measurements
- (43) MII Document - Mishap Load, Estimated Weight
- (44) MII Document - Load Curve Analysis
- (45) MII Document - Load Chart
- (46) MII Document - 1933 Leg Kit, Weight
- (47) MII Document - MAB MAR, Part A

- (48) MII Document – SME Crane Observations
- (49) MII Document - Error Chain Diagram
- (50) MII Document - Mishap Scene, Plan View
- (51) Photo - Scene Facing North
- (52) Photo - Scene Facing North 2
- (53) Photo - Pallet Load
- (54) Photo - Boom Deformation
- (55) Photo - Boom Tip
- (56) Photo - Scene Facing West
- (57) Photo - Scene Facing East
- (58) Photo - Crane Car
- (59) Photo - Bent Mounting Flange
- (60) Photo - Warning Placards
- (61) Photo - Pallet South Edge
- (62) Photo - Pallet North Edge
- (63) Photo - Pallet Load 2
- (64) Photo - Boom Tip 2
- (65) Photo - Boom Tip 3
- (66) Photo - Boom Deformation 2
- (67) Photo - Flying Forks Bottom Section
- (68) Photo - Flying Forks Top Section
- (69) Photo - Pallet Load 3
- (70) Photo - Battery Box on Scale
- (71) Photo - Boom Tip 4
- (72) Photo - Boom Deformation 3
- (73) Photo - Boom Deformation 4
- (74) Photo - Sling Label
- (75) Photo - Operator View
- (76) Photo - Operator View 2
- (77) Photo - Operator View Panoramic
- (78) Photo - Operator View Back
- (79) Photo- Operator View Middle
- (80) Photo - Operator View Forward
- (81) Photo - Operator View Astern
- (82) Photo - Main Block
- (83) Photo - Sun Angle
- (84) Trimble Dynamometer Operators Manual
- (85) Rights Advisement Forms
- (86) Government Vehicle Management Tactics, Techniques and Procedures
(CGTTP 4-01.3)
- (87) Hair Analysis Drug Test Results, Mishap Operator
- (88) Recorded Interview Summary – EO



5830

FEB 01 2019

MEMORANDUM


From: L. L. Fagan, VADM
PACAREA (PAC-00)

To: T. J. Rasmussen, CAPT

Subj: MAJOR INCIDENT INVESTIGATION (MII) INTO THE CIRCUMSTANCES
SURROUNDING THE FATALITY OF A CGC HICKORY CREWMEMBER
LOADING BUOYS IN HOMER, AK ON 31 JAN 2019.

Ref: (a) Major Incident Investigation Manual, COMDTINST M5830.4 (series)
(b) Administrative Investigations Manual, COMDTINST M5830.1 (series)

1. You are designated as the Board President of a Major Incident Investigation (MII) board. You shall conduct your investigation pursuant to the guidance in references (a) and (b) into the circumstances surrounding the subject fatality. You are not authorized to conduct a hearing nor are you required to take testimony under oath. The other members of the MII board are:

CDR Jon Burby, D13(dl), Legal Advisor
BOSN4 Christopher Boss, CGC ANTHONY PETIT, Subject Matter Expert
LT Karlin Foor, MSST Seattle, Recorder

2. You and the other detailed members will be relieved of all other duties once you begin your investigation until your investigative report is submitted. You may consider releasing any member when their responsibilities are complete except the Legal Advisor.

3. No criminal investigation by CGIS or civil authorities has been initiated. In the event that one was to commence, your investigation shall not interfere with any ongoing criminal investigation.

4. Your report shall include an Executive Summary, Preliminary Statement, Table of Contents, Findings of Fact, and a Statement of Opinion. Your Legal Advisor is required to review all evidence, documents, transcripts, and statements prior to inclusion in your report. Your legal advisor should attend all witness interviews and conduct rights advisement to witnesses, as appropriate. All witnesses, documents, records, and other evidence within the control of the Coast Guard will be made available to you.

5. The Findings of Fact shall be presented in a narrative style. Each Finding of Fact must be supported by documentary evidence, which will become an exhibit in the report. A Finding of Fact is information based on credible evidence, not an inference the board draws from that evidence.

6. As the Board President, you will provide your opinion as to what caused or substantially contributed to the death in question. Your Statement of Opinion contained in your report must be supported by clear and convincing evidence.

7. Rely on your Legal Advisor to assist you in evaluating evidence to reach Findings of Fact and your opinion.
8. In accordance with Chapter 1.F.4 of reference (b), as part of your investigation you shall form an opinion as to whether the member's injury was incurred in the line of duty (LOD).
9. There will be no recommendations in the MII report. If you have recommendations, you may forward them to me by separate correspondence.
10. You will submit the MII report to me within 60 days of the date of this memo. If you are unable to meet this timeline, you must provide the reasoning and I may approve a 30 day extension. Before submitting the MII report, you shall submit the draft report to my Staff Judge Advocate (SJA), Captain Steve Adler, through your Legal Advisor, who will provide it to internal Coast Guard stakeholders for comment. The stakeholders will have three (3) working days to provide comments. My SJA will provide you any comments received. You may consider the comments as you deem appropriate, however, you are under no obligation to incorporate the comments into the report.
11. All witness interviews will be recorded and all witnesses will be sworn before answering questions. You should provide written summaries of each witness' testimony and ask each witness to review and sign the summary. Written witness statements should only be requested or accepted in unusual circumstances and you are to contact my SJA before doing so.
12. You shall comply with the Privacy Act of 1974 (See, Articles 1-H and 10-H and Exhibit 4-C of Reference (b)). You shall also comply with Article 31 of the UCMJ, with regard to anyone who you may suspect has committed a violation of the UCMJ. See Chapter 6.F. of Reference (a) and use the rights advisement form provided as Enclosure (3) of Reference (a). Consult with your assigned Legal Advisor if you suspect UCMJ violations have occurred.
13. Pursuant to ref (b), you are authorized to receive and appropriately use the medical records or other protected health information of any Coast Guard military personnel, as necessary, to achieve the purposes of this investigation. This authorization is pursuant to 45 C.F.R. § 164.512(k)(1), as implemented by Coast Guard Notice USCG-2003-15026 (See 68 Fed. Reg. 81, 22408 (April 28, 2003)).
14. The MII report may be publically releasable, subject to any Freedom of Information Act and Privacy Act exemptions. As such, you must write the report in a manner that will make it understandable to members of the general public and you should aim to exclude the items listed in Chapter 8.B of reference (a).
15. Travel and billeting will be funded by PACAREA. Such support will be provided by LCDR Dawn Black, PAC-11, (510) 437-5680.
16. My point of contact for any questions is my SJA, CAPT Steve Adler, who may be reached at (510) 437-5396.

#

Copy: COMDT (CG-LGL)
D17
PACAREA (PAC-094)
CGC HICKORY

Acronyms and Terms Explanation

CONEX	Container Express	Box used for shipping
ATON	Aids to Navigation	Signs used to direct vessels at sea
MC	Mishap Crane	The crane involved in the mishap under investigation
BDS	Buoy Deck Supervisor	A supervisor of underway buoy deck operations
BM1	Boatswain's Mate First Class	Rate/Rank
CG	Coast Guard	Military branch of service
CGC	Coast Guard Cutter	Commissioned vessel greater than 65 feet in length
CGIS	Coast Guard Investigative Service	The CG's investigative division
COMDTINST	Commandant Instruction	Directive containing information with reference value or requiring action
PACAREA	Pacific Area	Convening Authority
NTSB	National Transportation Safety Board	Governing body of national transportation issues
CDR	Commander	Rate/Rank
MAB	Mishap Analysis Board	Board convened to review safety aspects of CG mishaps
MAR	Mishap Analysis Report	Report that convened board completes
MII	Major Incident Investigation	Investigation convened to inquire into facts and circumstances of CG mishaps
MKC	Machinery Technician Chief	Rate/Rank
MSD	Marine Safety Detachment	Detached CG Marine Safety Unit
MK2	Machinery Technician Second Class	Rate/Rank
VADM	Vice Admiral	Rate/Rank
LT	Lieutenant	Rate/Rank
BOSN2	Chief Warrant Officer 2 Boatswain's Mate	Rate/Rank
BOSN4	Chief Warrant Officer 4 Boatswain's Mate	Rate/Rank
SA	Seaman Apprentice	Rate/Rank
PPE	Personal Protective Equipment	Hardhats, Steel Toe Boots, Life Jackets, Warm Weather Clothing
COM	Cutter Organization Manual	The manual encompassing all of CGC Hickory's CO guidance and instruction
SPME	Special Purpose Motorized Equipment	Any equipment requiring special training/skills to operate
CST	Cutter Support Team	Unit that supports a CGC
CBL	Cutter Boat Large	A boat deployed from a CGC
RM	Risk Management	Overarching principles surrounding methods of evaluating and calculating risk of evolutions
GAR	General Assessment of Risk	Method of calculating risk of an evolution
EO	Engineering Officer	Senior engineer onboard a CGC
CO	Commanding Officer	Senior officer of any CG unit
Aux	Auxiliary	Department onboard a CGC

CPO	Chief Petty Officer	Rate/Rank
ATV	All-Terrain Vehicle	A type of SPME
MP	Main Propulsion	Department onboard a CGC
THC	Tetrahydrocannabinol	Active component of marijuana
Fwd	Forward	Towards the bow of a vessel
Tag line		Line used to steady a load being swung in or out