



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**CHANGING COURSE: A CASE ANALYSIS ON THE
ORGANIZATIONAL EFFECTIVENESS OF THE
SURFACE NAVY**

by

Christopher T. Chavez, Matthew K. Mitchelmore, and Blake A.
Rothermel

September 2021

Thesis Advisor:
Second Reader:

Edward H. Powley IV
Kathryn J. Aten

Approved for public release. Distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE September 2021	3. REPORT TYPE AND DATES COVERED Master's thesis		
4. TITLE AND SUBTITLE CHANGING COURSE: A CASE ANALYSIS ON THE ORGANIZATIONAL EFFECTIVENESS OF THE SURFACE NAVY			5. FUNDING NUMBERS	
6. AUTHOR(S) Christopher T. Chavez, Matthew K. Mitchelmore, and Blake A. Rothermel				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) As the Surface Navy continues to advance, Surface Warfare Officers must understand organizational behavior and improve culture onboard ships to better develop teams and avoid mishaps. By examining and understanding organizational behavior, businesses have adapted their strategies to better their employees' performance. Using Nadler and Tushman's Congruence Model, this qualitative case study examines the USS <i>Fitzgerald</i> and USS <i>John S. McCain</i> 2017 ship collisions to answer the question: What interdependencies between the tasks, individuals, and organizational processes onboard ships are affecting performance? Organizations are open systems comprised of interrelated elements, including inputs, transformation process, outputs, and feedback. Our analysis found poor congruence in the transformation processes in both collision cases, specifically, the elements of task, individual, and informal processes. We argue that the lack of congruence led to reduced performance in both organizations. In addressing reduced performance, our study recommends the theory of total motivation by Doshi and McGregor to drive cultural change at both the individual and organizational levels to improve overall performance.				
14. SUBJECT TERMS surface warfare officer, congruence model, collision, organizational behavior, United States Navy, culture, case study, interdependency, strategy, training, teams, motivation, performance, watch standing			15. NUMBER OF PAGES 85	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

**CHANGING COURSE: A CASE ANALYSIS ON THE ORGANIZATIONAL
EFFECTIVENESS OF THE SURFACE NAVY**

Christopher T. Chavez
Lieutenant, United States Navy
BS, University of Nevada, 2012

Matthew K. Mitchelmore
Lieutenant, United States Navy
BS, Old Dominion University, 2013

Blake A. Rothermel
Lieutenant, United States Navy
BM, Valdosta State University, 2013

Submitted in partial fulfillment of the
requirements for the degree of

PROFESSIONAL MASTER OF BUSINESS ADMINISTRATION

from the

**NAVAL POSTGRADUATE SCHOOL
September 2021**

Approved by: Edward H. Powley IV
Advisor

Kathryn J. Aten
Second Reader

Nicholas Dew
Academic Associate, Graduate School of Defense Management

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

As the Surface Navy continues to advance, Surface Warfare Officers must understand organizational behavior and improve culture onboard ships to better develop teams and avoid mishaps. By examining and understanding organizational behavior, businesses have adapted their strategies to better their employees' performance. Using Nadler and Tushman's Congruence Model, this qualitative case study examines the USS *Fitzgerald* and USS *John S. McCain* 2017 ship collisions to answer the question: What interdependencies between the tasks, individuals, and organizational processes onboard ships are affecting performance? Organizations are open systems comprised of interrelated elements, including inputs, transformation process, outputs, and feedback. Our analysis found poor congruence in the transformation processes in both collision cases, specifically, the elements of task, individual, and informal processes. We argue that the lack of congruence led to reduced performance in both organizations. In addressing reduced performance, our study recommends the theory of total motivation by Doshi and McGregor to drive cultural change at both the individual and organizational levels to improve overall performance.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	PURPOSE.....	1
B.	PROBLEM STATEMENT	2
C.	PRIMARY RESEARCH QUESTION.....	2
D.	SECONDARY RESEARCH QUESTION.....	2
E.	SCOPE	2
F.	ORGANIZATION OF STUDY	3
II.	BACKGROUND	5
A.	HISTORICAL INPUTS	5
1.	Force Reduction and Adaptation	5
2.	Optimized Fleet Response Plan	8
3.	Individual Training.....	9
B.	USS <i>FITZGERALD</i> COLLISION	10
1.	Background	10
2.	Results	11
C.	USS <i>JOHN S MCCAIN</i> COLLISION	12
1.	Background	12
2.	Results	13
3.	Conclusion	14
III.	LITERATURE REVIEW AND METHODOLOGY.....	15
A.	OFFICIAL REPORTS	15
1.	USS <i>Fitzgerald</i> and USS <i>John S McCain</i> Collision Reports.....	15
2.	Comprehensive Review of Recent Surface Force Incidents.....	16
3.	Readiness Reform Oversight Committee: One Year Later	16
4.	National Transportation Safety Board <i>John S McCain</i> Accident Report	16
5.	National Transportation Safety Board <i>Fitzgerald</i> Accident Report.....	17
6.	Government Accountability Office Navy Readiness Report ...	18
7.	Congressional Report on The Fighting Culture of The Navy’s Surface Fleet.....	19
B.	CASE STUDY	20
C.	CONGRUENCE MODEL.....	20
1.	Open Systems Theory	21
2.	The Elements of the Congruence Model.....	22

3.	Congruence Model Basic Problem Analysis.....	28
4.	How Does the Model Work?	29
IV.	ANALYSIS	31
A.	USS <i>FITZGERALD</i>	31
1.	Symptoms.....	31
2.	Organizational Components	32
3.	Congruence.....	35
B.	USS <i>JOHN S MCCAIN</i>	38
1.	Symptoms.....	38
2.	Organizational Components	39
3.	Congruence.....	42
V.	CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH.....	45
A.	LIMITATIONS.....	45
B.	CONCLUSIONS	45
C.	IMPLICATIONS	46
D.	RECOMMENDATIONS.....	47
1.	Increase Direct Motives.....	47
2.	Decrease Indirect Motives.....	48
3.	Process Improvement	50
E.	SUGGESTIONS FOR FUTURE RESEARCH.....	51
APPENDIX A.	UNDERWAY WATCH STANDING	53
A.	SHIPBOARD CONDITIONS OF READINESS.....	53
B.	UNDERWAY BRIDGE WATCH ORGANIZATION AND RESPONSIBILITIES.....	55
1.	Officer of the Deck (OOD)	55
2.	Junior Officer the Deck (JOOD)	56
3.	Conning Officer (CONN)	56
4.	Helmsman	56
5.	Lee Helmsman	56
6.	Lookouts.....	57
APPENDIX B.	U.S. NAVY ORGANIZATIONAL STRUCTURE	59
A.	ADMINISTRATIVE CHAIN OF COMMAND	59
B.	OPERATIONAL CHAIN OF COMMAND.....	60
LIST OF REFERENCES.....		63
INITIAL DISTRIBUTION LIST		67

LIST OF FIGURES

Figure 1.	U.S. Navy Active Ship Force Levels 1980–2010. Adapted from Naval History and Heritage Command (2017).....	6
Figure 2.	U.S. Navy Personnel Strength 1980–2010. Adapted from Naval History and Heritage Command (2020).....	6
Figure 3.	Certain Types of Chinese Naval Ships and U.S. Battle Force Ships Since 2005. Adapted from O’Rourke (2021, p. 8).....	7
Figure 4.	Illustration of Approximate Collision Location. Source: CNO (2017b). ..	11
Figure 5.	Illustration of Approximate Collision. Source: CNO (2017b).....	13
Figure 6.	U.S. Navy Funded vs. Filled Positions. Source: GAO (2021, p. 27).....	19
Figure 7.	Congruence Model. Source: Nadler and Tushman (1980, p. 47).	22
Figure 8.	Bridge Organization on Arleigh Burke Class Destroyer. Adapted from CNO (2017b).	57
Figure 9.	Administrative Chain of Command as of 2017. Adapted from DOD (n.d.).....	60
Figure 10.	Operational Chain of Command as of 2017. Adapted from DOD (n.d.)...	61

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1.	Summary of Key Organizational Inputs. Source: Nadler and Tushman (1980, p. 40).....	23
Table 2.	Summary of Transformation Process. Source: Nadler and Tushman (1980, p. 41).....	26
Table 3.	USS <i>Fitzgerald</i> Congruence Analysis	36
Table 4.	USS <i>John S McCain</i> Congruence Analysis	43

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

AAW	anti-air warfare
ACX	Asia Container Express
ASTM	American Society for Testing and Materials
ASW	anti-submarine warfare
ATG	Afloat Training Group
BMD	ballistic missile defense
BMOW	boatswain's mate of the watch
CCDR	combatant commander
CCS	Central Control Station
CNO	Chief of Naval Operations
CNSF	Commander, Naval Surface Forces
CNSP	Commander, Naval Surface Forces, U.S. Pacific Fleet
CO	commanding officer
CONN	conning officer
CSMP	current ships maintenance plan
DC	damage control
DDG	guided-missile destroyer
DESRON	destroyer squadron
DON	Department of the Navy
FDNF	forward-deployed naval force
FDNF-J	forward-deployed naval force Japan
GAO	Government Accountability Office
IBNS	integrated bridge and navigation system
JCS	Joint Chiefs of Staff
JO	junior officer
JOOD	junior officer of the deck
MOBOARD	maneuvering board
MV	motor vessel
NSFS	naval surface fire support
NTSB	National Transportation Safety Board

ONI	Office of Naval Intelligence
OOD	officer of the deck
OPNAVINST	Office of the Chief of Naval Operations Instruction
PACFLT	Pacific Fleet
PACOM	Pacific Command
POTUS	President of the United States
QMOW	quartermaster of the watch
RoR	U.S. Coast Guard Navigation Rules of the Road
RROC	Readiness Reform Oversight Committee
S&A	sea & anchor detail
SCC	ships control console
SECDEF	Secretary of Defense
SECNAV	Secretary of the Navy
SOP	standard operating procedure
SORM	standard organization and regulations manual
SUW	surface warfare
SWO	surface warfare officer
SWOS	Surface Warfare Officers School
TAO	tactical action officer
ToMo	total motivation
TSS	traffic separation scheme
TYCOM	type commander
U.S.S.R	Union of Soviet Socialist Republic
USFF	U.S. Fleet Forces Command
USN	U.S. Navy
USS	United States ship
VHF	very high frequency
XO	executive officer

ACKNOWLEDGMENTS

This thesis would not have been possible without the guidance and support of our thesis advisor, Dr. Edward H. Powley, associate professor at the Graduate School of Defense Management (GSDM) at the Naval Postgraduate School. Thank you for helping us transfer our thoughts and our ideas on the Surface Navy into this study of organizational performance. We would like to thank Jef Connor for developing the case study and meeting with us to discuss ideas related to the two case studies. Thank you to our second reader, Dr. Kathryn Aten, for insight and expertise in helping this thesis come to fruition

The ideas and thought experiments that led us to this study would not have been possible without advice from Dr. Nick Dew and Dr. Mie Augier. Thank you both for encouraging us to think critically about issues and providing us with tools and frameworks to look at organizations through a different lens.

Finally, we would like to thank SMWDC for giving us the opportunity to attend NPS to better ourselves and the Surface Navy.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

The improvements in technology on U.S. Navy ships over the decades, particularly in propulsion, navigation, and combat systems, have been met with more training, more qualifications, and a smarter, more able force of officers and Sailors. However, good seamanship and navigation practice still requires each surface ship to make paramount the requisites of good judgment, leadership, and teamwork, and to a very high degree, superior planning and execution of the fundamentals. (U.S. Fleet Forces Command, 2017, p. 5)

A. PURPOSE

The U.S. Navy (USN) surface fleet is dynamic and complex. Interdependencies, specifically within individual relationships and culture, are often overlooked and can lead to mishaps that result in structural damage or loss of life (Connor, 2020d). Although previous research shows the application of organizational behavior models to civilian organizations, a lack of similar attention in military research leaves room for ambiguity. Research focused on civilian businesses shows that it is essential to understand the interdependencies between individuals, work, and their organizations to improve performance (Nadler & Tushman, 1980). This study draws on Nadler and Tushman's framework to better understand how these interdependencies impact the U.S. Navy surface fleet.

The case study, *Tragedies in the Pacific*, summarized the USS *Fitzgerald* and USS *John S McCain* collisions (Connor, 2020a, 2020c). *Tragedies in the Pacific* provided an opportunity to examine Navy ships using an organizational behavior model to identify problems that contributed to the collisions. Our qualitative case study applied an organizational behavior model to the surface fleet to investigate how complexities of organizational behavior influenced the collisions. The previously mentioned case study allowed us to develop a better understanding of organizations we were unable to study physically (Yin, 2009). The congruence model has been an effective tool in improving the organizational effectiveness of civilian businesses (Nadler & Tushman, 1980). Analyzing

the cases using the congruence model allowed us to investigate whether poor understanding of interdependencies were root causes of the collisions.

B. PROBLEM STATEMENT

The Surface Navy generally struggles to implement organizational effectiveness models and open systems theory for problem analysis. For example, the findings and recommendations of the *Comprehensive Review of Recent Surface Force Incidents* (U.S. Fleet Forces Command, 2017) fail to address informal organizational arrangements as defined by Nadler and Tushman (1980). In addition, lessons learned training does not facilitate the critical analysis and knowledge transfer needed to understand why mishaps happen. Our case study analysis has provided an effective way for the Navy to analyze mishaps using the congruence model.

C. PRIMARY RESEARCH QUESTION

The primary research question of our MBA project is what interdependencies between the tasks, individuals, and organizational processes onboard ships are affecting performance? To answer this question, we conducted a qualitative case study analysis using the congruence model. This analysis identified the tasks, individuals, formal organization processes, and informal organization processes and their potential contribution in the USS *Fitzgerald* and USS *John S McCain* collisions during the summer of 2017.

D. SECONDARY RESEARCH QUESTION

Our secondary research question is, if interdependencies are resulting in negative effects, what is needed to implement sustained change to the culture of the Surface Navy? For this question, we applied the theory of total motivation (ToMo) by Doshi and McGregor (2015a). Doshi and McGregor, and other professionals believe increased motivation can promote the increased performance of individuals and their organizations.

E. SCOPE

It is essential to highlight some critical points from our MBA project. First, it is a case study analysis of the two collisions in the Pacific, USS *Fitzgerald* and USS *John S*

McCain. Second, this study focused on the interdependencies between personal relationships and individual competency within two U.S. Navy surface vessel mishaps. Third, to make this study as general as possible, we reviewed the cases using the congruence model (Nadler & Tushman, 1980). Additionally, we presented a summary of literature on the congruence model that shows an effective way to analyze the USS *Fitzgerald* and USS *John S McCain* collisions. Fourth, the inputs from the case we used in the congruence model apply throughout the surface fleet. Finally, this study focused on the organization of a surface ship, specifically a guided-missile destroyer (DDG), not the mission or operations.

F. ORGANIZATION OF STUDY

Chapter II provides a background of the current state of Surface Navy underway policy and a summary of the USS *Fitzgerald* and USS MCCAIN collisions. Chapter III contains a review of official U.S. Navy reports, information on case study analysis, and an explanation of the congruence model. Chapter IV contains an analysis of the USS *Fitzgerald* and USS *John S McCain* collisions using the congruence model. Finally, Chapter V provides our conclusions, recommendations, and suggestions for future research.

THIS PAGE INTENTIONALLY LEFT BLANK

II. BACKGROUND

Problems within the U.S. Navy surface fleet did not appear overnight. “The risks that were taken in the Western Pacific accumulated over time” (Office of the Chief of Naval Operations [CNO], 2017b, p. 9). The end of the Cold War dawned a new direction for the naval service (Department of the Navy [DON], 1992). The DON (1992) concluded, “with the demise of the Soviet Union, the free nations of the world claim preeminent control of the seas. ...Our national maritime policies can afford to de-emphasize efforts in some naval warfare areas” (p. 1). Reduction in forces was the first of many waves that have negatively contributed to the U.S. Naval Surface Forces and the Surface Warfare Officer (SWO) community.

A. HISTORICAL INPUTS

The U.S. naval strategy post-Cold War failed to consider any near-peer competition. The Union of Soviet Socialist Republic (U.S.S.R.) dissolved its navy, selling “several major combatants, weapon systems, and sensors” to China (Office of Naval Intelligence [ONI], 2015, p. 14). During the George H. W. Bush administration, “‘affordability’ became a key factor” (Connor, 2020b, p. 3) because the United States was unmatched in military strength. The strategy designed attempted “to achieve the often-unattainable goal of realizing ‘efficiencies’ (reduce cost) without diminishing ‘effectiveness’ (mission completion)” (p. 4).

1. Force Reduction and Adaptation

As illustrated in Figures 1 and 2, the U.S. Navy reduced its active ship force levels from 594 units in 1987 to just 275 in 2010. “While there was a significant decrease in the total number of battle force ships, the number underway – performing mission at sea – remained the same, about 100. In other words, with 570 ships less than 20% needed to be materially ready, now it would require almost 40%” (Connor, 2020b, p. 3).

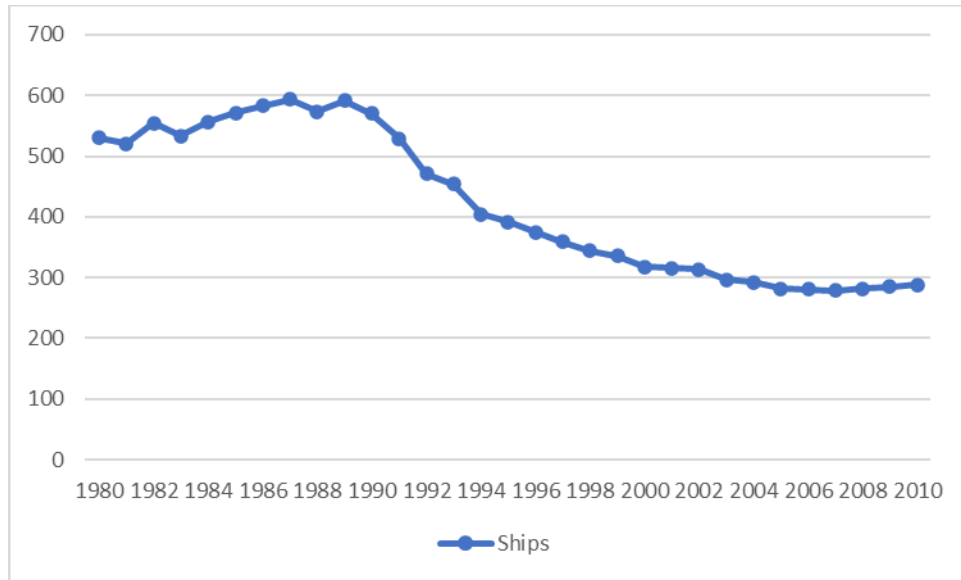


Figure 1. U.S. Navy Active Ship Force Levels 1980–2010. Adapted from Naval History and Heritage Command (2017).

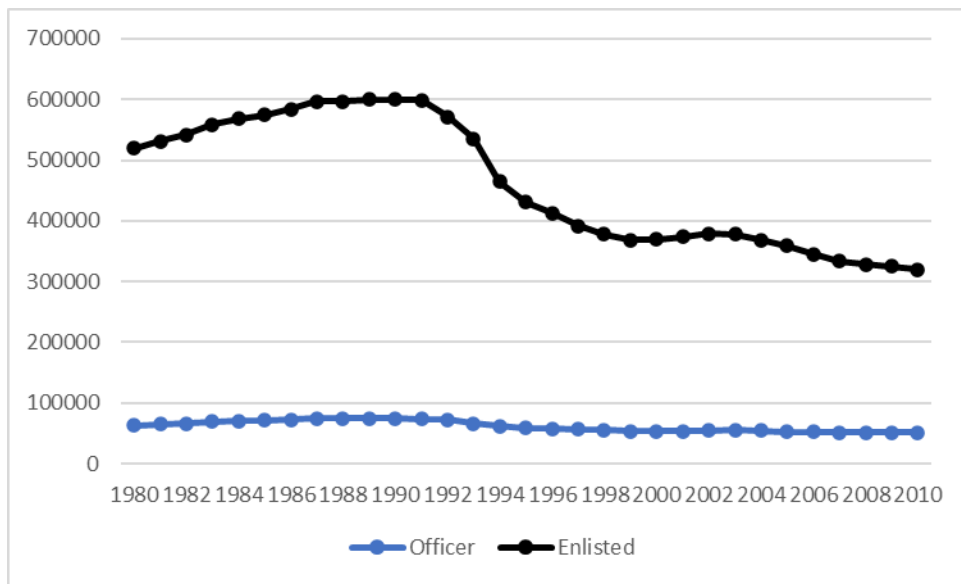


Figure 2. U.S. Navy Personnel Strength 1980–2010. Adapted from Naval History and Heritage Command (2020).

Furthermore, the U.S. Navy reduced its workforce to just 324,400 Sailors from 605,802 Sailors at its height in 1989 (Naval Heritage and History Command, 2020). The Navy planned to move maintenance work in port and expand the standard workweek from 67 to 70 productive hours. This “translate [s] into about 13 ‘sailor equivalents’ and therefore, fewer sailors [are] needed” (Connor, 2020b, p. 4) or a 20% reduction in crew size onboard destroyers. However, in port maintenance time frames were shortened from 15 weeks to 9 weeks, further restricting Sailors from completing work in port.

The requirement for forward-deployed naval forces (FDF) in the Western Pacific today has not existed since WWII. According to the Office of Naval Intelligence, China launched more naval ships than any other country in 2013 and 2014 (ONI, 2015, p. 15). “China’s naval modernization effort... [began in] the early to mid-1990s” (O’Rourke, 2021, p. 2), just as the U.S. redirected its naval strategy. Over the last 3 decades, U.S. naval strategy did not concern China or any other near-peer competitor. Instead, it reduced our forces, focused on efficiencies, and allowed China to usurp U.S. naval strength, as illustrated in Figure 3.

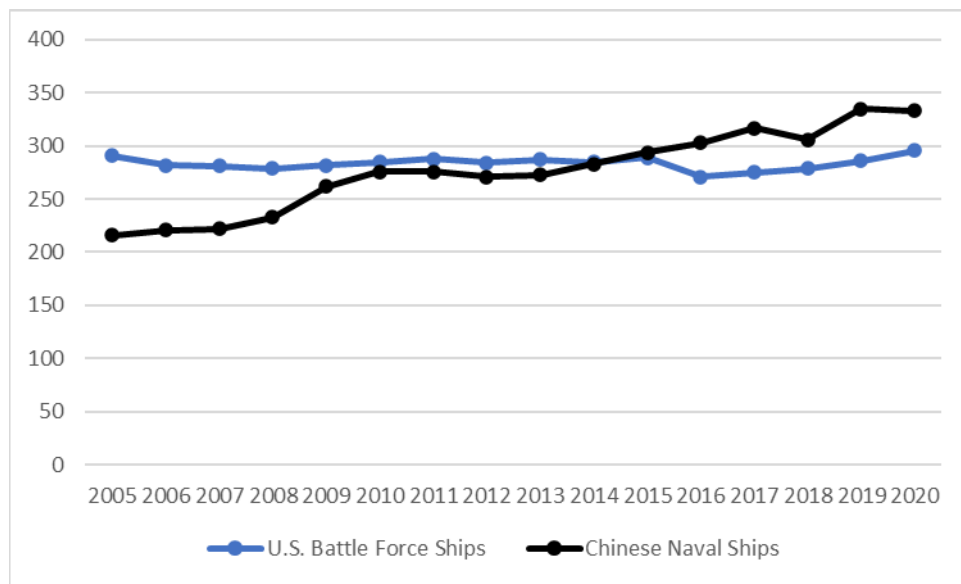


Figure 3. Certain Types of Chinese Naval Ships and U.S. Battle Force Ships Since 2005. Adapted from O’Rourke (2021, p. 8).

2. Optimized Fleet Response Plan

“The 21st-century security environment has created a high demand for Navy forces, from individual units to strike groups, requiring a more agile and flexible force to respond to combatant commander (CCDR) requests” (Chief of Naval Operations [CNO], 2014, p. 1). As a result of increased demands, the U.S. Navy as a maritime force is often called upon first to act in crises to support the overall mission of the Navy. To accomplish such dynamic tasks, surface forces must maintain operational readiness, manning, training, and maintenance of their ships. DDGs, the focus vessel of our analysis, support multiple warfare areas that include Anti-Air Warfare (AAW), Strike Warfare, Anti-Submarine Warfare (ASW), Surface Warfare (SUW), Ballistic Missile Defense (BMD), and Naval Surface Fire Support (NSFS).

To meet the requirements needed to support warfare and operational readiness, ships must certify in all events outlined in the basic phase of training. The basic phase as described in the *Optimized Fleet Response Plan* (OPNAVINST 3000.15A) states that training “focuses on development of unit core capabilities and skills through the completion of basic-level inspections, certifications, assessments and visits, and training requirements as well as achieving required levels of personnel, equipment, supply, and ordnance readiness” (CNO, 2014, p. 4). The basic phase follows the maintenance phase where “major shipyard or depot-level repairs, upgrades, force reconstitution, and platform modernization occur” (CNO, 2014, p. 4).

During the basic phase, ships work to complete major milestones for eventual certification for deployment, which places a significant burden on crews to balance competing requirements, often with minimally qualified personnel. Between the basic, integrated, and advanced phases, ships and their crews endlessly work to accomplish certifications and inspections both in port and underway. “The demand for ready and certified ships to support operations required in the Western Pacific ultimately exceeded the quantity that could be generated from surface forces based in Yokosuka” (CNO, 2017b, p. 9).

As a result of external and internal pressures to the organizational and individual levels, ships and their crews experience many problems that arise from personnel to ship equipment that compound the stress experienced ship-wide. These pressures and stresses multiply during underway operations, where safe navigation is paramount. Therefore, we analyze potentially overlooked external variables that may have contributed to the collisions of USS *Fitzgerald* and USS *John S McCain* in 2017.

3. Individual Training

Tradition is the life and blood of the U.S. Navy. One of those traditions is singular accountability that stems from “Charge of Command- a contract between commanding officers and the Chief of Naval Operations” (Junge, 2019, para. 1). As a result, commanding officers are accountable for all actions under their command, good and bad. Furthermore, equipment and personnel discrepancies go unreported to maintain the illusion that ships are mission capable, not to disparage the CO’s image.

It takes a tremendous amount of experience to command a destroyer, but no one person can micromanage the plethora of programs and personnel under their charge. Likewise, it takes a trained and motivated crew to receive delegated duties from their chain of command. Unfortunately, Junior Officers (JO) around the turn of the 21st century did not receive the training needed to drive, fight, and maintain ships before reporting aboard their first vessel. In 2001 the six-month “[Surface Warfare Officer School] (SWOS) Division Officer Course was canceled, pushing the burden [of training] to ship commanding officers (Balisle, 2010, p. 5). Instead of hosting an in-person course, SWOS gave a box of training CDs to newly commissioned officers.

The lack of adequate SWO training coupled with different competing priorities led to poor performance. The focus for division officers tends to be on non-combat-related endeavors and administrative burdens. “The non-combat curricula consume Navy resources, clog inboxes, create administrative quagmires, and monopolize precious training time” (Schmidle & Montgomery, 2021, p. 4). These administrative burdens cause frustration and lower motivation for Junior Officers because they believe their focus should be on ship driving and warfighting. There need to be clearly defined roles and purposes for

the Navy's SWOs. The lack of training and competing administrative requirements will dilute the quality of our officers and create an environment prone to disaster.

“To understand a tragic event, investigators frequently do the equivalent of looking through binoculars backward” (Connor, 2020b, p. 1). Next, we summarize the events leading to the USS *Fitzgerald* and USS *John S McCain* collisions. An explanation of the U.S. Navy's underway bridge organization and responsibilities is in Appendix A.

B. USS *FITZGERALD* COLLISION

1. Background

On June 17, 2017, at approximately 0130, the USS *Fitzgerald* collided with the container ship *ACX Crystal* (Office of the Chief of Naval Operations [CNO], 2017b). The USS *Fitzgerald* got underway to a busy day of “training evolutions and equipment loading operations” (CNO, 2017b, p. 6). After the conclusion of the USS *Fitzgerald*'s training evolutions, she “proceeded southwest on a transit to sea from the Sagami Wan operating area at approximately 2300” (CNO, 2017b, p. 6).

As USS *Fitzgerald* continued to sail southwest, “shipping traffic increased and remained moderately dense thereafter until the collision” (CNO, 2017b, p. 6). Around 0100, USS *Fitzgerald* approached the Mikomoto Shima Traffic Separation Scheme (TSS) (CNO, 2017b). Three vessels ahead of the USS *Fitzgerald*'s starboard bow placed USS *Fitzgerald* in a crossing situation as defined in the governing document for safe navigation at sea, the U.S. Coast Guard Navigation Rules of the Road (RoR) (CNO, 2017b). Therefore, all three vessels ahead of USS *Fitzgerald* presented a risk of collision and required preventative actions by the Officer of the Deck (OOD). Figure 4 illustrates the USS *Fitzgerald* and the three vessels near the TSS at the time of the collision.

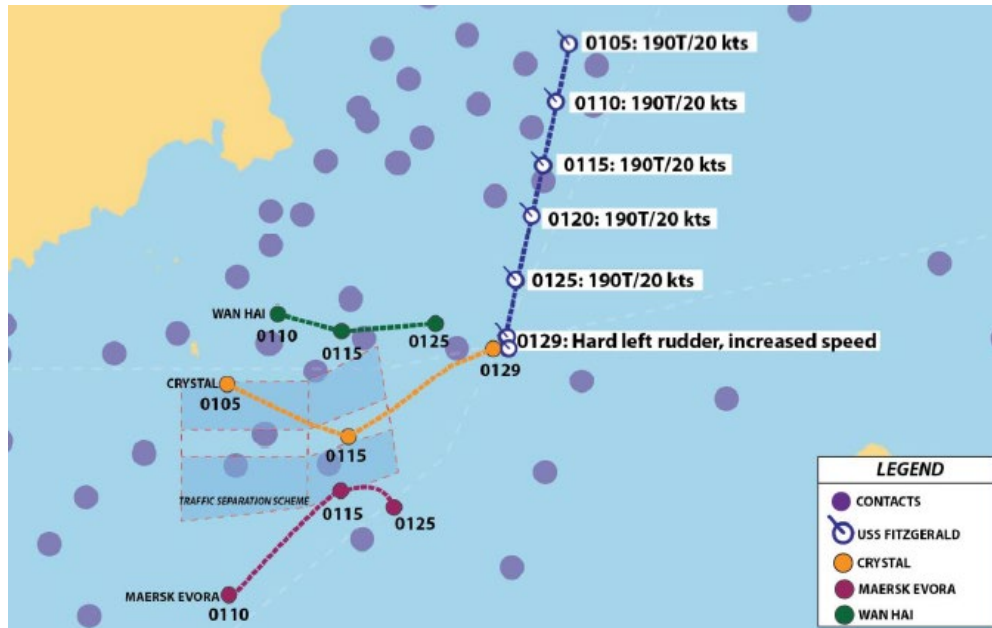


Figure 4. Illustration of Approximate Collision Location. Source: CNO (2017b).

2. Results

ACX Crystal's port bow struck "the starboard side just forward of the middle part of" *USS Fitzgerald* (CNO, 2017b, p. 8). The collision of *ACX Crystal*'s bow resulted in structural damage to the CO's cabin (CNO, 2017b). Another result of the collision of *ACX Crystal*'s bow tore the *USS Fitzgerald*'s starboard side, creating a 13ft by 17ft hole that allowed seawater to enter that deck (CNO, 2017b). The reports stated at impact, the *USS Fitzgerald* listed 14 degrees to port and then settled into a 7-degree starboard list as seawater flooded into spaces where *ACX Crystal*'s bow punctured (CNO, 2017b). According to the CNO's report on the collision, the following spaces suffered structural damage as a result:

Commanding Officer's Cabin, Stateroom, and Bathroom; Officer Stateroom; Berthing 2 Starboard Access Trunk; Auxiliary Compartment 1; Repair Locker Number 2 passageway; Combat Information Center passageway; multiple Radar and Radar Array rooms; multiple fan rooms; Combat Systems Maintenance Central airlock and ladder-well; Electronic Workshop Number 1; and the Starboard Break. (CNO, 2017b, p. 10)

The Navy's report determined that multiple failures occurred that contributed to the collision. Those failures included:

- Failure to plan for safety.
- Failure to adhere to sound navigation practice.
- Failure to execute basic watch standing practices.
- Failure to properly use available navigation tools.
- Failure to respond deliberately and effectively when in extremis. (CNO, 2017b, p. 5)

C. USS *JOHN S MCCAIN* COLLISION

1. Background

In the late summer of 2017, USS *John S McCain* collided with Motor Vessel (MV) *Alnic MC* inside the Straits of Singapore (CNO, 2017b). The Singapore Strait is one of the most traveled and high-density shipping straits in the world. Thousands of ships transit those straits daily, making safe navigation stressful and challenging (Liang & Wong, 2017, para. 1). On August 21, 2017, the day of the USS *John S McCain* collision, the circumstances were no different; high shipping and a stressful environment led to another collision roughly two months following USS *Fitzgerald*.

USS *John S McCain* departed its homeport for a 6-month deployment on May 26, 2017 and scheduled a port visit to Changi Naval Base, Singapore, that required transit through the Singapore Strait (CNO, 2017b). As a precaution to maintain safe navigation in the straits, USS *John S McCain* had scheduled their special sea and anchor detail at 0600, but they entered the Singapore Strait at 0520, and therefore their detail was not set (CNO, 2017b). Starting at 0519, a series of events including the helmsman unable to maintain course, loss of steering, transfer of steering control to alternate stations, and confusion led to the collision with the *Alnic MC* (CNO, 2017b). Figure 5 illustrates the approximate collision location between USS *John S McCain* and MV *Alnic MC*.

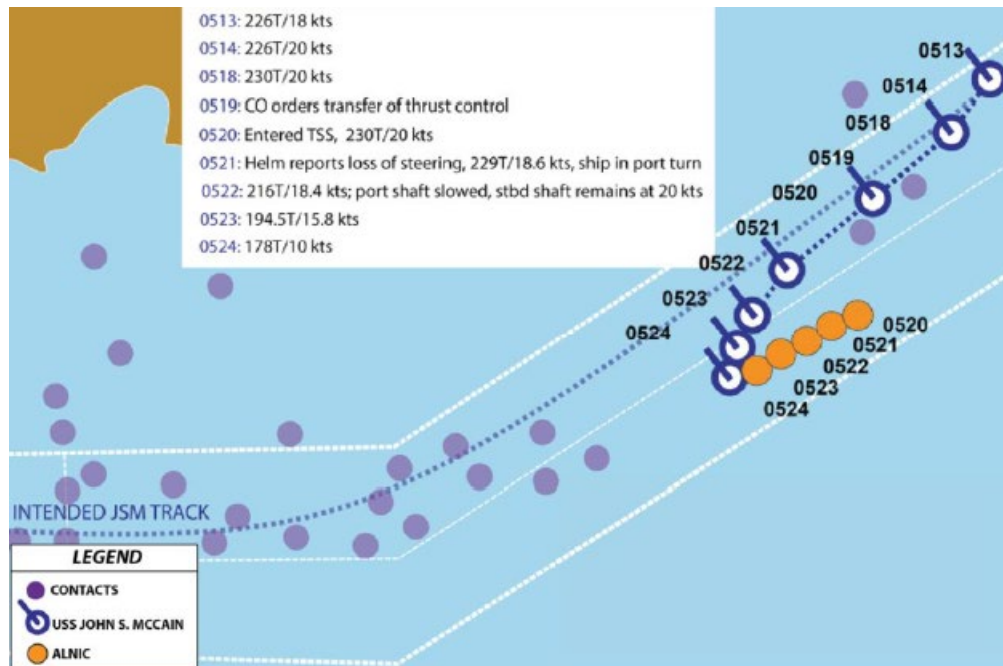


Figure 5. Illustration of Approximate Collision. Source: CNO (2017b).

2. Results

“At approximately 0524 *John S McCain* crossed in front of *Alnic MC*’s bow and collided” (CNO, 2017b, p. 47). As a result of the collision, the *Alnic MC*’s bow created a 28-foot hole on the port side of the USS *John S McCain* (CNO, 2017b). In addition, the impact caused seawater to flood instantaneously into the ship. The Navy’s summary of findings listed the following causes of the collision:

- Loss of situational awareness in response to mistakes in the operation of the *John S McCain*’s steering and propulsion system, while in the presence of a high density of maritime traffic.
- Failure to follow the International Nautical Rules of the Road, a system of rules to govern the maneuvering of vessels when risk of collision is present.
- Watchstanders operating the *John S McCain*’s steering and propulsion systems had insufficient proficiency and knowledge of the systems. (CNO, 2017b, p. 44)

Between the two collisions, only a few months apart, the Navy lost 17 Sailors. Many people began to wonder how this could happen. As a result, the Surface Warfare Community began to reflect on the underlying issues that were pervasive in the community.

3. Conclusion

The U.S. Navy Surface Fleet has gone through continuous eras of change. Past priorities resulted in budget cuts that had repercussions across multiple elements that affected training, manpower, maintenance, and operational demands. USS *Fitzgerald* and USS *John S McCain* were not the first collisions at sea in the U.S. Navy's history. The Department of the Navy (DON) has historically implemented changes, or efficiencies, to fix identified issues. However, the systems or organizations (surface ships) continue to regress to a suboptimal state where performance is lower than expectations.

To help us better understand the timeline of events and aid our analysis, our next chapter discusses several official reports on the USS *Fitzgerald* and USS *John S McCain* collisions. These official reports provide additional insight from various organizations that analyzed the mishaps to identify how, why, and what could be done to prevent these types of collisions from happening again. We also introduce literature on Nadler and Tushman's (1980) Congruence Model to analyze interdependencies and how these affect the performance of complex organizations.

III. LITERATURE REVIEW AND METHODOLOGY

Groups of individuals are complicated, and their relationships with one another are even more complicated (Nadler & Tushman, 1980). The Navy is exceptionally dynamic and full of different kinds of relationships. Commands are connected, people are connected, and even non-Navy organizations are connected. The chain of command specific to these collisions is detailed in Appendix B.

Individuals develop models to help them interpret situations and events over time through experiences. “The models that individuals use influence the kind of data they collect and the kind they ignore; models guide people’s approach to analyzing or interpreting the data they have; finally, models help people choose their course of action” (Nadler & Tushman, 1980, p. 36).

Surface Warfare Officers (SWO) draw on their implicit models to make conclusions. However, these implicit models “vary in quality, validity, and sophistication” (Nadler & Tushman, 1980, p. 36). Researchers draw on several models, each with its advantages and disadvantages, primarily focused on a particular aspect of the organizational body to diagnose and understand organizational behavior. We focused on the congruence model because it allows us to analyze the collisions, see through the complexity, remove our bias, and add legitimacy to our recommendations.

A. OFFICIAL REPORTS

Although not wholly inclusive, the following reports represent the most current official documents referring to the collisions of the USS *Fitzgerald* and USS *John S McCain*. We present the reports in chronological order. We use these reports as a constant variable to compare our insights to in our final chapter.

1. USS *Fitzgerald* and USS *John S McCain* Collision Reports

The Department of the Navy (DON) published the first official report regarding the collisions on November 1st, 2017, just 2 months after the USS *John S McCain* collision. The collision reports, completed by the Office of the Chief of Naval Operations (CNO),

contain a synopsis of the events on the USS *Fitzgerald* and USS *John S McCain* before the collision, the impact of the collision, and recovery operations. Furthermore, the report lists several findings to including gaps in training, seamanship, leadership, and fatigue (CNO, 2017b). The report also includes several pictures and diagrams of the damage.

2. Comprehensive Review of Recent Surface Force Incidents

The Comprehensive Review of Recent Surface Force Incidents, released by U.S. Fleet Forces Command (USFF) on November 2nd, 2017, describes the collisions in much more detail (U.S. Fleet Forces Command [USFF], 2017). The review collectively analyzes the USS *Lake Champlain* collision and USS *Antietam* grounding in addition to the USS *Fitzgerald* and USS *John S McCain* collisions (p. 29–34). The Review Team identified many of the same findings as the DON and included areas to improve, such as fundamentals, teamwork, operational safety, assessment, and culture (p. 40). However, this report goes a step further to include recommendations for the findings, many of which the Surface Navy has acted on (p.107).

3. Readiness Reform Oversight Committee: One Year Later

One year later, the Readiness Reform Oversight Committee (RROC), co-led by the under-secretary of the Navy and vice chief of naval operations, released one year later a report on February 25th, 2019. The RROC’s mandate was to “make our Navy a safer and more combat-effective force that places the safety, readiness, and training of our people first” (Vice Chief of Naval Operations [VCNO], 2019, p. 1). The 1-year later report highlights the progress made by Commander, Naval Surface Forces (CNSF). The report lists a three-tiered approach: 1. Safe operations, 2. Fleet effectiveness, and 3. A stronger culture of operational excellence. According to the report, 91 recommendations of the 103 were complete as of its release (VCNO, 2019).

4. National Transportation Safety Board *John S McCain* Accident Report

On March 1, 2019, the National Transportation Safety Board (NTSB) published an accident report on the collision between the USS *John S McCain* and tanker *Alnic MC*.

“The National Transportation Safety Board is an independent federal agency dedicated to promoting aviation, railroad, highway, marine, and pipeline safety” (National Transportation Safety Board [NTSB], 2019, para. 5). This report discusses the events before the collision, decisions that led to the collision, details of the collision, and provides recommendations to the U.S. Navy on safe navigation. According to the NTSB, they determined that the probable cause of the collision between the two vessels was a “lack of effective operational oversight of the destroyer by the U.S. Navy, which resulted in insufficient training and inadequate bridge operating procedures” (NTSB, 2019, p. 39). The recommendations include the following:

- Issue permanent guidance directing destroyers equipped with the Integrated Bridge and Navigation System to operate in computer-assisted steering modes, except during an emergency.
- Issue guidance to your ships’ crews emphasizing the importance of the appropriate use of the very high frequency radio for safe navigation.
- Ensure that the modernization of complex systems, such as steering and control systems within the Integrated Bridge and Navigation Systems, incorporates the design principles set forth in ASTM International Standards F1166, *Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities*.
- Revise written instructions for bridge watch standers on destroyers equipped with the Integrated Bridge and Navigation System to include operating procedures for shifting steering and thrust control between all bridge stations.
- Revise Integrated Bridge and Navigation System (IBNS) technical manuals to include a description of and procedures for ganging and unganging throttles, and to ensure that revised technical manuals are distributed to IBNS-equipped ships.
- Revise the training standards for helmsman, lee helmsman, and boatswain’s mate of the watch for destroyers equipped with the Integrated Bridge and Navigation System to require demonstrated proficiency in all system functions, including the transfer of steering and thrust control between all bridge control stations.
- Institute *Seafarers’ Training, Certification and Watchkeeping Code* rest standards for all crewmembers aboard your vessels. (NTSB, 2019, p. 40)

5. National Transportation Safety Board *Fitzgerald* Accident Report

The NTSB published a similar report on March 2, 2020, as published on the USS *John S McCain* in 2019. The purpose of this investigation is to understand the maritime

reasons for why the USS *Fitzgerald* collided with the *ACX Crystal* on June 17, 2017. As noted in the report, the NTSB concluded that the probable cause of the collision between the USS *Fitzgerald* and *ACX Crystal* was the USS *Fitzgerald*'s "bridge team's failure to take early and substantial action to avoid collision as the give-way vessel in a crossing situation" (NTSB, 2020, p. vi). Again, the NTSB cited the failure of the U.S. Navy's ability to provide sufficient operational oversight, including "areas of operations scheduling, crew training, and fatigue mitigation" (NTSB, 2020, p. 32). As a result, the NTSB recommended the following to the U.S. Navy:

- Review and revise fleetwide training and qualification requirements for officers of the deck related to the collision regulations.
- Review and revise bridge resource management training in your approved course curriculum to promote a cohesive team environment and improve communication within and between bridge and combat information center teams.
- Instruct your vessels to broadcast automatic identification system information while operating in the vicinity of commercial vessel traffic at all times unless such broadcast compromises tactical operations or strategic interest. (NTSB, 2020, p. ix)

6. Government Accountability Office Navy Readiness Report

The U.S. Government Accountability Office (GAO) released a Navy Readiness Report in May 2021 that assessed the effects of the 2017 fatigue policy (Commander, Naval Surface Force, U.S. Pacific Fleet, Commander, Naval Surface Force Atlantic, 2020). The Navy designed the policy to manage crew fatigue onboard ships after the GAO determined that crew fatigue contributed to the fatal ship collisions. The GAO report determined that the Navy has inconsistently implemented the policy, and only around 14% of officers are getting adequate sleep (U.S. Government Accountability Office [GAO], 2021). Additionally, the Navy was undermanned on ships and routinely assigned fewer crewmembers than required to accomplish the workload. This report also found that the Navy failed to consider the time required for training Sailors, which exacerbated overwork and fatigue (GAO, 2021). Figure 6 represents the difference between the number of funded positions and the number of filled positions.

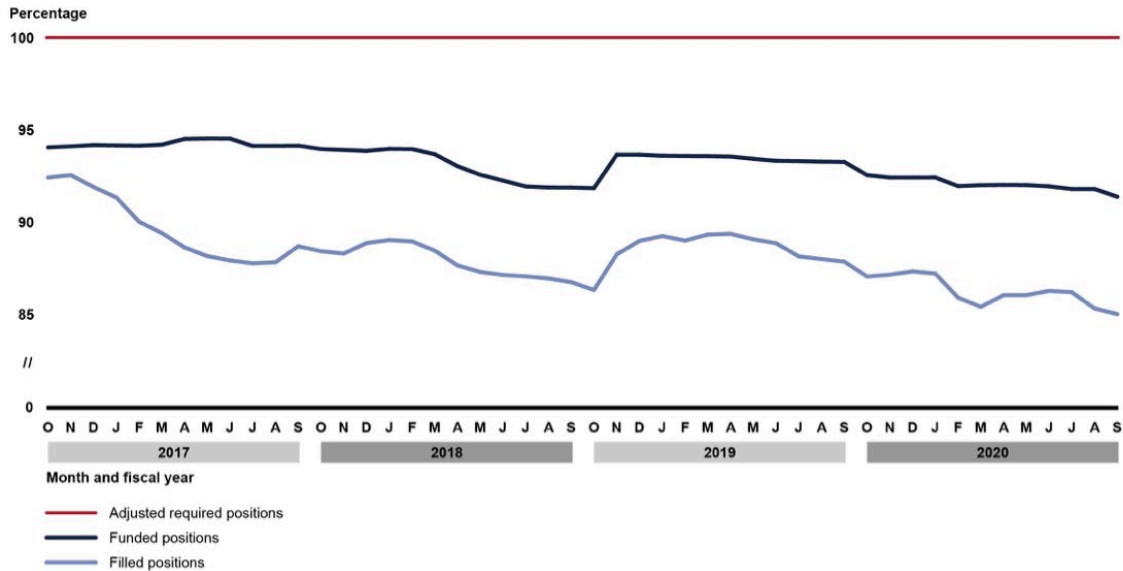


Figure 6. U.S. Navy Funded vs. Filled Positions. Source: GAO (2021, p. 27).

7. Congressional Report on The Fighting Culture of The Navy’s Surface Fleet

Senator Tom Cotton and Congressmen Mike Gallagher, Jim Banks, and Dan Crenshaw commissioned a report investigating the surface fleet’s culture (Schmidle & Montgomery, 2021). It includes long-form interviews of active duty and retired officers and enlisted personnel. These interviews provided insight into the Navy’s culture and clarified whether findings of these interviews were related to the series of “operational failures in the Navy’s Surface Warfare community” (p. 2). As a result, the interviews did not provide explicit answers to problems onboard ships; however, there was a broad consensus that cultural issues affected the morale and readiness of the surface force. Those identified included:

- An insufficient focus on warfighting skills.
- The perception of a zero-defect mentality.
- A culture of micromanagement.
- Over responsiveness to modern media culture.
- Lack of resources.
- Inconsistent surface warfare training programs.
- Under emphasis on surface ship maintenance. (Schmidle & Montgomery, 2021, p. 4)

94% of those interviewed answered that cultural issues originated from problems in leadership (Schmidle & Montgomery, 2021).

B. CASE STUDY

The method of this MBA project is a qualitative analysis of the USS *Fitzgerald* and USS *John S McCain* collisions. Jeffrey C. Connor's case study, *Tragedies in the Pacific*, consolidated the Navy's after-action and post-assessment reports of the collisions (Connor, 2020). Connor is an avid case study author whose works include "the July 2008 hostage rescue in Colombia, an analysis of NASA's organizational issues related to the Columbia Shuttle disaster, [and] a case study on the death of a five-year-old at Boston's Children's Hospital" (Connor, 2021). Qualitative research "is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem," using "open-ended questions, emerging approaches, text or image data" (Creswell, 2014, p. 4).

Case analysis is an appropriate method of research when asking "how" and "why" questions, when the researchers have little to no control over the events that took place, and "the focus is on a contemporary phenomenon within a real-life context" (Yin, 2009). According to Robert Stake (2005), a "case study is not a methodological choice but a choice of what is to be studied" (p. 443). A case analysis analyzes a single phenomenon studied holistically by one or more methods (Thomas et al., 2020). Thus, we chose this case study because it describes one of the worst U.S. Navy accidents in the last decade and allows us to focus on the interdependencies between the individual, team, and organizational levels.

C. CONGRUENCE MODEL

Society's work gets done through organizations, and management's function is to get organizations to perform that work. Getting organizations to operate effectively is difficult, however. Understanding one individual's behavior is challenging in and of itself; understanding a group that's made up of different individuals and comprehending the many relationships among those individuals is even more complex. (Nadler & Tushman, 1980, p. 35)

The above quote suggests that there is a great deal of complexity when studying effective organizations. However, there are means available to leaders and managers to help them “navigate the complex organizational terrain when they undertake this type of task” (Goh, 2011, p. 9). The model we use as a framework is the Congruence Model by Nadler and Tushman (1980). We use this model to diagnose the interacting elements onboard USS *Fitzgerald* and USS *John S McCain*. Next, we will introduce the model and describe its application to our analysis.

1. Open Systems Theory

The foundation of the congruence model is Open Systems Theory. This section examines this theory to provide an understanding of the model. There are three categories of interrelated elements that make up an organization: inputs, transformation processes, and outputs. These elements are evaluated and changed using feedback (see Figure 7). An open system organization is “dependent on the external environment to survive and is, therefore, open to influences and transactions with the outside world as long as they exist” (Goh, 2011, p.10). Figure 4 shows that an organization receives inputs and develops them in the transformation process before outputs form.

Because of this open system concept, the interactions between an organization and its inputs come from feedback. This analysis uses two open system theory characteristics to analyze the case studies. The first is interdependence. The interrelated elements of an organization react to one another as changes occur. These “repercussions” affect all connected elements, and typically there is more than one factor that affects an organization (Nadler & Tushman, 1980, p. 38).

The second characteristic is the utilization of feedback. In Hanna’s (1988) book, *Designing Organizations for High Performance*, he states that feedback helps an organization know whether it is on the right track. He puts feedback into two types for organizational studies, negative and positive. Negative feedback refers to “deviation-correction feedback,” and it provides information about the organization to identify if it is “on course with the purpose and goals” (Hanna, 1988, p. 14). In contrast, positive feedback is “deviation-amplifying feedback” because it “measures whether or not the purpose and

goals are aligned with environmental needs” (Hanna, 1988, p. 15). Therefore, it is necessary to understand the two types of feedback as they can both equally affect the survival of an organization (Goh, 2011).

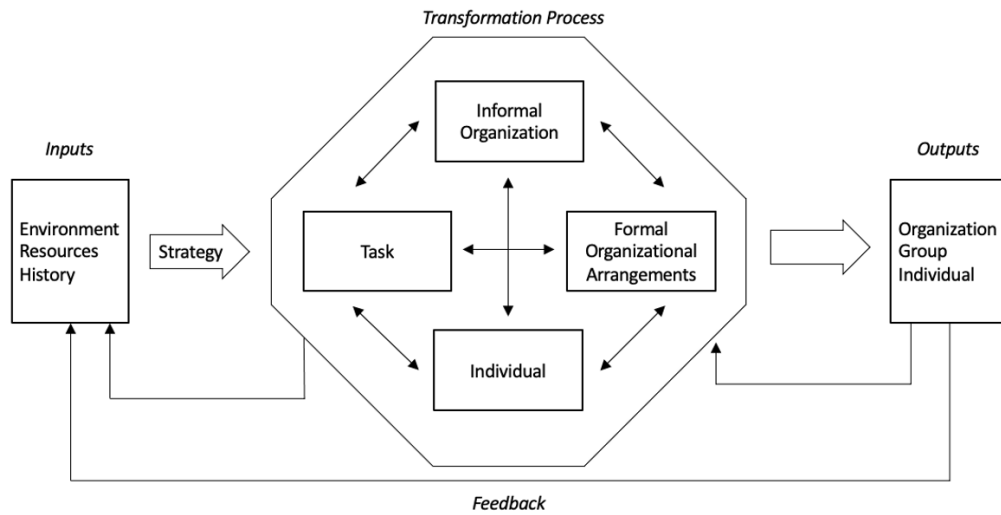


Figure 7. Congruence Model. Source: Nadler and Tushman (1980, p. 47).

2. The Elements of the Congruence Model

There are three elements of the congruence model: inputs, transformational process, and outputs.

a. Inputs

Table 1 provides a summary of the *Key Organizational Inputs*. There are four input factors of an organization that form the foundation of the congruence model: Environment, Resources, History, and Strategy (Nadler & Tushman, 1980).

Table 1. Summary of Key Organizational Inputs. Source: Nadler and Tushman (1980, p. 40).

Input	Environment	Resources	History	Strategy
Definition	All factors, including institutions, groups, individuals, events, and so on, that are outside the organization being analyzed, but that have a potential impact on that organization.	Various assets to which the organization has access, including human resources, technology, capital, information, and so on, as well as less tangible resources.	The patterns of past behavior, activity, and effectiveness of the organization that may affect current organizational functioning.	The stream of decisions about how organizational resources will be configured to meet the demands, constraints, and opportunities within the context of the organization's history.
Critical Features for Analysis	1. What demands does the environment make on the organization? 2. How does the environment put constraints on organizational action?	1. What is the relative quality of the different resources to which the organization has access? 2. To what extent are resources fixed rather than flexible in their configuration(s)?	1. What have been the major stages or phases of the organization's development? 2. What is the current impact of such historical factors as strategic decisions, acts of key leaders, crises, and core values and norms?	1. How has the organization defined its core mission, including the markets it serves and the products/services it provides to these markets? 2. On what basis does it compete? 3. What supporting strategies has the organization employed to achieve the core mission? 4. What specific objectives have been set for organizational output?

The environment refers to various elements outside of the organization and their potential impact. In his book *Organization Theory and Design*, Daft uses two categories to describe the environment: the task and general environments. The task environment contains elements that “have a direct impact on the organization’s ability to achieve its goals” (Daft, 2021, p. 148), while general environments have an indirect impact on an organization. This analysis examines the direct impact of the task environment and how the different elements influenced the collisions of USS *Fitzgerald* and USS *John S McCain*. It is essential to examine the environmental inputs to an organization as they are what makes an organization function. As a body draws oxygen from the outside environment to survive, so to must an organization draw materials, money, equipment, and people from the environment to sustain itself (Hanna, 1988).

The second input discussed is resources. The resources available onboard ships come from the Sailors, training, and policies but can also be technology and funding. Examining the resources available to the USS *Fitzgerald* and USS *John S McCain* is vital to understand their organizational inputs. Typically, ships have limited resources due to a high operational tempo and are often required to get underway with limited personnel and degraded equipment. When building a strategy around one’s finite resources, make decisions to “configure the organizations resources in response to the demands, threats, opportunities, and constraints of the environment” (Oliver Wyman, 2003, p. 7).

The third input used in this model is history. Nadler and Tushman (1980) refer to history as the “major stages or phases of an organization’s development over a period of time” (p. 41). The case’s history derives from trends in the Surface Navy as well as requirements of FDNF in the Pacific. It is crucial to understand how these past behavior patterns affect organizations (Oliver Wyman, 2003). History, especially recent history, can dramatically impact an organization’s strategy, as evident in the USS *John S McCain* case.

The final input is the strategy or how the work is to be performed by the organization. We consider strategy the most critical input because it “determines the work to be performed by the organization and it defines the desired organization outputs” (Nadler & Tushman, 1980, p. 43). For the cases, the strategy refers to matching their resources,

history, and environment to achieve their mission or purpose, which was safe operation at sea.

b. Transformation Process

Table 2 provides a summary of the transformational process. Transformation processes are the “fundamental means for transforming energy and information from inputs into outputs” (Nadler & Tushman, 1980, p. 43). We provide further information on each element.

The components of the transformation processes include tasks, individuals, formal organization, and informal organization (Nadler & Tushman, 1980). McCaskey mentions that an organization’s tasks are simply the work they must accomplish to produce a service. To accomplish the objective, tasks involve interaction and interdependencies with the other units of the transformation process (McCaskey, 1996). The tasks for the USS *Fitzgerald* and USS *John S McCain* often involved technology that either enabled or hindered task completion.

The second component is individuals, which refers to the Sailors stationed onboard the two ships who performed the tasks. The elements that affected the individual’s abilities are their skills, attitudes, expectations, and training. Understanding how individuals used their various training and skills is a crucial element in the transformation process. Individuals will perform a task relative to their needs. We analyzed the overlap between “what is important to the individual (needs and interests) and to the system (core tasks)” (Hanna, 1988, p. 13).

The third component is formal organization. Formal organization describes the formal procedures or processes on a ship that guide individuals in performing their tasks. McCaskey acknowledged that formal organizations also include control aspects such as rewards or promotion that will impact the individual (McCaskey, 1996). Ships tend to have strict and standardized procedures that require obedience. Therefore, it is vital to ensure these procedures fit well with the other transformation processes onboard USS *Fitzgerald* and USS *John S McCain*.

Table 2. Summary of Transformation Process. Source: Nadler and Tushman (1980, p. 41).

Component	Task	Individual	Formal Organizational Arrangements	Informal Organization
Definition	The basic and inherent work to be done by the organization and its parts.	The characteristics of individuals in the organization.	The various structures, processes, methods, and so on that are formally created to get individuals to perform tasks.	The emerging arrangements, including structures, processes, relationships, and so forth.
Critical Features for Analysis	1. The types of skill and knowledge demands the work poses. 2. The types of rewards the work can provide. 3. The degree of uncertainty associated with the work, including such factors as interdependence, routineness, and so on. 4. The constraints on performance demands inherent in the work (given a strategy).	1. Knowledge and skills individuals have. 2. Individual needs and preferences. 3. Perceptions and expectancies. 4. Background factors.	1. Organization design, including grouping of functions, structure of subunits, and coordination and control mechanisms. 2. Job design. 3. Work environment. 4. Human resource management systems.	1. Leader behavior. 2. Intragroup relations. 3. Intergroup relations. 4. Informal working arrangements. 5. Communication and influence patterns.

The last component of the transformation process is the informal organization which we referred to as culture. These are unwritten guidelines that complement formal organization and make up the “values, beliefs, and accepted behavioral norms of the individuals” (Oliver Wyman, 2003, p. 9). Culture can have a significant and long-term impact on the congruence of an organization. Therefore, we need to analyze the culture onboard the USS *Fitzgerald* and USS MCCAIN as “the work, the people, and the formal structures might be right, but the prevailing culture will keep getting in the way” (Oliver Wyman, 2003, p. 10).

This analysis uses culture to describe the informal organization onboard the ships that can positively or negatively impact the task accomplishment. According to Schein (1985), “culture is both a dynamic phenomenon that surrounds us at all times, being constantly enacted and created by our interactions with others and shaped by leadership behavior, and a set of structures, routines, rules, and norms that guide and constrain behavior” (p. 1). He also states that “once a set of shared assumptions has come to be taken for granted, it determines much of the group’s behavior, and the rules and norms are taught to newcomers in a socialization process that is itself a reflection of culture” (Schein, 1985, p. 22). Quinn et al. (1988) referred to culture as the fundamental ingredient in organizational character, which impacts “the way people are chosen, developed, nurtured, interrelated, and rewarded in the organization” (Goh, 2011, p. 16). This project used the term *culture* synonymously with the term *informal organization*.

c. Outputs

Outputs are the effects that the strategy and the transformation processes have on the individual, group, and organization. These lenses enabled our analysis of the “congruence, or fit” (Nadler & Tushman, 1980, p. 45) between a particular set of components within the congruence model. Outputs typically involved the “performance of groups and individuals, which ultimately can also affect the overall organization’s effectiveness” (Goh, 2011, p. 17).

This project examined the three inputs environment, resources, and history and analyzed how these factors aligned with the strategy used onboard the USS *Fitzgerald* and

USS *John S McCain*. We also assessed the congruence of the transformation processes identified on the two ships (Nadler & Tushman, 1980). An organization should not only focus on outputs as a final product but also the various inputs and transformation processes. As stated by Oliver Wyman (2003), “the degree to which the strategy work, people, formal organization and culture are tightly aligned will determine the organization’s ability to compete and succeed” (p. 9).

3. Congruence Model Basic Problem Analysis

Nadler and Tushman developed an eight-step basic problem analysis that we used to analyze *Tragedies in the Pacific*:

1. Identify symptoms: List data indicating possible existence of problems.
2. Specify inputs: Identify the system.
3. Identify outputs: Identify data that define the nature of outputs at various levels. This includes desired outputs from strategy, and actual outputs being obtained.
4. Identify problems: Identify areas where there are significant and meaningful differences between desired and actual outputs. Search for specific costs, actual and opportunity, associated with each problem.
5. Describe components of the organization: Describe basic nature of each of the four components with emphasis on their critical features.
6. Assess congruence (fits): Conduct analysis to determine relative congruence among components.
7. Generate and identify causes: Analyze to associate fit with specific problems.
8. Identify action steps: Indicate the possible actions to deal with problem causes. (Nadler & Tushman, 1980, p. 48)

The nature of our case allowed us to simplify this eight-step process into four parts. Steps one through four are analyzed first, followed by an analysis of the organizational components in the transformation process. Finally, we analyzed the congruence and ranked each congruence pair or “fit” from high to low (Nadler & Tushman, 1980, p. 46). A high rank equates to a perfect fit between the two processes, whereas a low rank equates to a poor fit. Our final assessment, conclusion, and inferences are detailed in Chapter V.

4. How Does the Model Work?

Brimley referred to strategy as “the art of connecting aspirations with prudent plans and finite resources” (Brimley, 2008, p. 28). In other words, it is aligning the ends, ways, and means (Gaddis, 1982). We used this model because we are concerned with the congruence of the various elements of the transformation process, including inputs, and how well they fit onboard USS *Fitzgerald* and USS *John S McCain*. The greater the congruence of these elements, the more effective an organization is (Oliver Wyman, 2003).

This project described the critical steps of the congruence model used in our analysis so readers can better understand how the outputs are generated. This model identified the inputs, transformation processes, and outputs from the two case studies before the collisions and assessed the congruence between the tasks, individual, formal organization, and informal organization.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. ANALYSIS

As described in Chapter III, our analysis follows the congruence model basic problem analysis steps. We begin with the USS *Fitzgerald* and finish with the USS *John S McCain*. This analysis is not completely inclusive of all events that may have occurred prior to each collision.

A. USS *FITZGERALD*

1. Symptoms

Before the collision, USS *Fitzgerald* was underway in unrestricted visibility and calm seas. The reported surface contact picture was moderate to heavy, but not unusual for Japanese coastal seas. Notionally, the OOD shall maintain the safety of navigation which requires situational awareness of the contact picture. In addition, it was night, and the ship had its red lights on to darken the ship. A heavy surface contact picture compounded by night operations added difficulty to navigation and may have added stress to the OOD and her bridge team. Furthermore, after a long day of training, many watch standers were experiencing moderate to heavy fatigue.

The CO supported his ship's operations with his standing orders and supplemental night orders. The CO ordered the OOD to report any contact within 10,000 yards of his ship. Ten thousand yards provides enough time for the OOD to explain the situation to the CO and maneuver if another ship should sail too close. The CO crafted his watch bill methodically to balance his watch teams with senior and junior watch standers. Equipment, and more specifically navigational radar systems, were in various statuses: partially operable, inoperable, or simply not "tuned" by the watch stander to operate effectively.

The CO previously served as the XO for 18 months before taking command. We assume he was aware of many of the radar system degradations throughout his ship. The equipment issues may result from compressed maintenance availabilities or lack of follow-through in the Current Ships Maintenance Plan (CSMP). Though not explicitly stated in the case, the USS *Fitzgerald*'s tasking was to finish mobility certifications. Through our experience, we believe they were under pressure to meet the minimum requirements, or

redlines, for operational tasking. The struggle to meet redlines can burden a ship and cause undue stress to the ship's leadership.

The morning of the collision, the crew of the USS *Fitzgerald* mustered at 0600 to support early underway operations. After successfully getting underway, the USS *Fitzgerald* completed several ship-wide events that included anchoring, ammo movement, helicopter operations, and night small boat personnel transfer. Through our experience, USS *Fitzgerald*'s busy and compressed schedule resulted from external pressures placed on the CO to finish certification events hastily. The operational chain of command was concerned with obtaining a fully certified ship to complete its missions. In contrast, the administrative chain of command primarily focused on completing those certifications (see Appendix B).

The USS *Fitzgerald* made a conscious effort to maximize operations at sea. Their schedule was most likely a result of external pressure on the ship's CO. The CO accepted minimum material and training requirements; however, he attempted to mitigate risk through a sensible watch bill and clear contact avoidance guidance to the OOD. Therefore, we assess the overall strategy of the USS *Fitzgerald* is their ability to conduct safe underway operations.

Overall, the outcome of USS *Fitzgerald*'s underway operation was not successful. As an organization, the ship did not complete her night transit to the assigned operating area. Teams on the bridge and in the Combat Information Center (CIC) ignored the contact picture and did not support safe underway operations. Individually, the CO placed mission completion above training and material readiness. The newly embarked Tactical Action Officer (TAO) failed to manage CIC and forcefully back up the bridge. The OOD did not have situational awareness, misused equipment, and neglected to contact the CO before the collision. Finally, the helmsmen lacked training and attention and forfeited the opportunity for evasive maneuver.

2. Organizational Components

As described in Table 2, the four transformation processes are tasks, individuals, formal organization, and informal organization. The tasks the USS *Fitzgerald* watch

standers had during the time leading up to the collision were, like most U.S. Navy vessels operating underway, safe navigation of the ship. Safe navigation is accomplished first and foremost by the watch stander's ability to identify shipping contacts. Additionally, all Sailors standing watch at the time of the collision were responsible for maintaining situational awareness while the ship was in transit.

The primary duty of a bridge watch team was to track and monitor surface traffic in their vicinity, as described in the CO's standing orders. Surface contact identification can be made visually by the watch standers and via radar or by utilizing a maneuvering board (MOBOARD). The case mentions that the Junior Officer of the Deck (JOOD) monitored and trained the Sailor standing lookout, which inhibited a primary resource for situational awareness. It further stated that the OOD attempted to use the radar to monitor contacts, but it was not tuned appropriately to display the vessels correctly. Additionally, there was no communication between the bridge and CIC, which can also track and monitor contacts separately using different pieces of equipment. These tasks were all critical for the USS *Fitzgerald* to accomplish its primary objective of safe navigation.

The individual component of the transformation process refers to the types of people assigned to the organization, including their competency, skills, and personal characteristics. For example, the case mentioned that the OOD is "nervous but self-assured" (Connor, 2020a, p. 3) about the transit, although her only experience was a single daytime transit. Furthermore, it stated that she only slept for about an hour during the past 22 hours. The Conning Officer (CONN) had also recently qualified and stood the watch as a newly qualified watch stander. Furthermore, it is stated in the case that the helmsman froze when given a rudder order. She had been on the helm for the "first time in her life, for 25 minutes" (Connor, 2020a, p. 6). These examples from the case indicated that there was not a high level of competency among the primary watch standers on the bridge.

A second individual component identified from the case is ego. The OOD was quoted as saying her peers thought of her as "too aggressive and needed to tone herself down" (Connor, 2020a, p. 5). The CO referred to her as a "phenomenal officer" (Connor, 2020a, p. 5). These statements indicated that she was abrasive towards her peers and caused her to develop a false sense of confidence. As the OOD received reports and

recommendations during the time leading up to the collisions, she was repeatedly quoted as not being “concerned” and discrediting information that was given to her (Connor, 2020a). The case also mentions that there was no conversation between the OOD and CIC. Lack of communication could further support the notion that the OOD believed support from the watch standers was not needed, both on the bridge and in CIC.

Formal organization refers to the policies or procedures that standardize what the organization wants with what it does. For example, the case mentioned the CO standing orders, which are a set of signed orders that outline the duties and responsibilities of various watch standers. In this case, the CO required the OOD to call “for any ship within 10,000 yards” (Connor, 2020a, p. 4). The bridge team calculated the vessels on their RADAR scope to cross within 1,500 yards of the USS *Fitzgerald*, yet they never called the CO.

Another policy in place is the watch bill. This document signed by the CO distinguishes who will comprise a watch team and when they will stand watch. The CO took careful consideration when writing the watch bill to ensure the watch teams had an acceptable level of experience and competence.

The U.S. Coast Guard Rules of the Road provide specific, international guidelines for ships to follow to ensure safe navigation at sea. These rules establish which vessels have the right of way in different situations. In this case, the Rules of the Road indicate that the three vessels were in a crossing situation and that the USS *Fitzgerald* was the give-way vessel; therefore, they should have altered course or speed and passed astern of the *ACX Crystal*.

There are formal processes onboard ships that were not mentioned in the case but could have affected the congruence of the different elements. The first is Standard Operating Procedures (SOP) which are required to show how to operate a piece of equipment, especially one that is degraded or not operating correctly. We inferred that the radar mentioned in the case should have had a set of SOPs associated with it to show how to tune and operate that piece of equipment properly. The other process not mentioned is the CO’s night orders. These orders give supplementary instructions for the watch team to

follow while the CO is asleep. They can include topics to study while on watch, transit location and speed, and various changes to equipment status based on maintenance.

We used the informal organization to describe the culture of an organization. In the USS *Fitzgerald* case, their culture was to do more with less and get the job done. After getting the ship underway, the CO planned to conduct “as much training as possible while also meeting their highly sensitive mission requirements” (Connor, 2020a, p. 4). A packed schedule with little downtime represented a mission-first mentality onboard USS *Fitzgerald*. The case also mentioned that the OOD only slept for only an hour over 22 hours. Perseverance and insistence are indicative of the SWO culture. Sleep was something only aviators needed.

Most FDNF ships have a very high operational tempo and spend most days out of the year at sea, limiting their time for training and creating a culture where being at sea to complete the mission comes first. The case indicates the USS *Fitzgerald*’s need to be at sea rather than a qualified ship of competent Sailors. A senior officer told the CO they got certified in “the 5 [mission areas] I care about” (Connor, 2020a, p. 3). As mentioned in our background, administrative and operational commands apply immense pressure to get ships to meet the minimum requirements for operational capability.

3. Congruence

This subsection analyzed the congruence for each pair of transformation processes (tasks, individuals, formal organization, and informal organization) as described in the previous section. We rated the fit on a scale of low, medium, and high. USS *Fitzgerald*’s overall fit is low and received only one medium rating between task and formal organization (Table 3).

Table 3. USS *Fitzgerald* Congruence Analysis

Component Pair	Fit	Analysis
Tasks and Individual	Low	▪ The individuals did not have the skills necessary to complete the tasks described. ▪ There was not an adequate amount of individual experience on watch to safely navigate the ship. ▪ CIC did not provide any backup to the bridge even though the TAO's task is to operate radar equipment in CIC and support the bridge with navigation. ▪ Competency also impacted the bridge watch standers operating the radar. ▪ Individual ego also affected the tasks of situational awareness and tracking contacts. ▪ The case mentioned that the OOD did not act on the inputs she received from her bridge team.
Tasks and Formal Organization	Medium	▪ The formal organizations were adequate to meet the demands of the work. ▪ The CO's standing orders and the RoR both supported the ship's safe navigation. ▪ The watch bill provided adequate personnel for these tasks. ▪ An SOP or technical manual would have supported proper equipment operation if it had been in place.

Component Pair	Fit	Analysis
Tasks and Informal Organization	Low	▪ The culture, or informal organization, did not facilitate work performance. ▪ The SWO culture, which did not encourage adequate sleep, directly affected the performance of the task of maintaining situational awareness. ▪ The culture onboard supported compressed timelines and a mission-first mentality. ▪ This culture hindered task performance due to a heavy pressure to accomplish a goal despite potential dangers.
Individual and Formal Organization	Low	▪ The watch bill did not assign the best watch standers to accomplish the task at hand safely. ▪ The individuals failed to adhere to the CO's standing orders which required calling the CO for a surface contact within 10,000 yards. ▪ The watch team did not understand the operating procedures of the ship's RADAR, nor did they follow the guidelines outlined in the RoR.
Individual and Informal Organization	Low	▪ The culture onboard did not set the individuals up for success. ▪ The mission first culture created an environment where the Sailors would push for mission success over taking care of their own needs. ▪ Culture led to less sleep, as shown in the case, and less effective training.
Formal Organization and Informal Organization	Low	▪ The informal organization that was present was not consistent with the formal organization. ▪ One example of the case was the certifications that took place before the collision. ▪ Rather than be certified in all areas, as stated in the formal instructions, their superiors pressured the ship to certify in the "5 that mattered" (Connor, 2020a, p. 3).

B. USS *JOHN S MCCAIN*

1. Symptoms

The USS *John S McCain*'s operations, just before the collision, took place in the early morning with unrestricted visibility. The ship's CO guided his ship into the busy Singapore Strait for a scheduled port visit, and the watch stood in a Condition III configuration. Chow reliefs began to relieve watch stations as the ship prepared to set the S&A detail scheduled for 0600. The helmsman was relieved as the USS *John S McCain* entered the TSS. While the CO observed his ship entering the TSS, he decided to man the lee helmsman station to split the duties of steering and propulsion. However, the relieved helmsman was the Sailor reassigned to the lee helmsman station.

Unlike the USS *Fitzgerald*, the USS *John S McCain* did not use the watch bill as a mitigating resource for inexperienced watch standers. There existed many cross-decked Sailors from the USS *ANTIETAM*, a cruiser with a vastly different equipment configuration. The navigational system, IBNS, was the primary equipment resource associated with this case study and was foreign to many watch standers onboard, including the CO and XO. Furthermore, the crew did not adequately maintain the navigational equipment, which required regular reboots.

USS *John S McCain* received the new navigation system in 2016. However, the senior enlisted boatswain mate received only an hour of training. In addition, technical documentation never received updates to align with the new system. USS *John S McCain*, an FDNF ship, operated at sea more often than other ships from San Diego or Norfolk, the Navy's two largest homeports, respectively. USS *John S McCain*'s operational demands resulted in crew fatigue, a shortened training cycle, and minimum maintenance periods.

As a result of the USS *Fitzgerald* collision roughly a month prior, the CO denied a request from the XO and Navigator to set the Sea and Anchor Detail early and instead chose to provide additional crew rest before a lengthy transit to port. The CO likely chose crew rest over additional watch standers at the time due to immediate reports that focused on crew fatigue as the main result of the USS *Fitzgerald* collision. Unfortunately, the watch standers on the bridge at the time were a mixture of USS *John S McCain* Sailors and cross-

decked Sailors from the USS *Antietam*. The strategy for USS *John S McCain*, like the USS *Fitzgerald*, focused on the ship's safe navigation during at-sea operations.

The USS *John S McCain*, as an organization, was unable to navigate the Singapore Strait and pull into port safely. The bridge did not correctly configure or operate the Ships Control Console (SCC) at the team level. The CIC and Central Control Station (CCS) teams lacked situational awareness and did not support the bridge. The Navigator and XO failed to persuade the CO to set the Sea and Anchor Detail appropriately. The OOD was a bystander lacking mention throughout the case study. Furthermore, the CO attempted to micromanage the bridge team to mitigate the absence of extra watch standers instead of maintaining broad situational awareness.

2. Organizational Components

As described in Table 2, the four transitional processes are task, individual, formal organization, and informal organization. The USS *John S McCain*'s overall objective was to enter port for a mid-deployment maintenance availability safely. The ship had to navigate through high-traffic sea lanes, track all surface contacts, and maintain necessary equipment online to accomplish this objective.

When discussing the individuals, one of the four transitional processes, it is vital to understand how perceptions, expectations, and level of knowledge influence their relationship within their organization (Naldoza, 2012). The case study on USS *John S McCain* highlights several key individuals, their decisions, and their actions. The individuals that had critical roles during our analysis are the CO and multiple watch standers.

The case mentions that the CO "was never confident in the computerized helm and navigation system" (p. 3), and he was not wrong for his lack of trust in the system. USS *John S McCain* was the first ship in 7th Fleet to receive the IBNS. From the start, USS *John S McCain* experienced "frequent system crashes and numerous false alarms" (Connor, 2020c, p. 3). These issues were reported across the fleet since IBNS's integration in 2011 (Connor, 2020c). Since the CO was never confident in the system, his preferred mode of operation for the IBNS system was to place it in backup manual mode. The CO

did not realize this, but when the system is placed in backup manual mode, the system bypasses many electronically-controlled system features (Connor, 2020c). The CO, who is ultimately responsible for his ship's safe operation and navigation, let his perception and expectation of a flawed system contribute to the events on August 21, 2017.

The second individual component identified from the case is level of knowledge. Each of the key personnel responsible for the safe navigation of USS *John S McCain* lacked fundamental knowledge of the IBNS and procedures involved in shifting control of steering and propulsion to secondary stations. No watch stander, including the CO, understood what the emergency override to manual—"the big-red button"—did. It was assumed that pressing that button would release control to a secondary station, which is not the case. When the "big-red button" is pressed, it allows the station pressing the button to override control from the station in command without approval. This failure to understand how the system operated led to over 4 minutes of confusion between the bridge and aft-steering. The steering and propulsion controls were transferred multiple times between the stations (Connor, 2020c).

The third individual component identified during our analysis is the lack of communication between other controlling stations. CIC and CCS never responded or provided information to the CO or members of the watch team. Together the bridge, CIC, and CCS represented the three controlling stations responsible for the overall mission or strategy of the USS *John S McCain*, which was safe navigation and operations. Mentioned in the case was the USS *John S McCain*'s failure to notify surrounding ships of their perceived loss of steering. A VHF radio call to notify surrounding ships of their loss of steering could have been executed from CIC while the bridge fought to regain control. The confusion or lack of action could be attributed to the perception that the bridge has positive control, and if assistance had been required from CIC or CCS, the bridge would call and request assistance.

Formal organization, as previously discussed, refers to the procedures or policies in place that help an organization accomplish its goals. In the case of USS *John S McCain*, the procedures in place in the event of a loss of steering impacted their task, which was

safely entering port. These procedures were out of date, and the new IBNS did not support the old loss of steering procedures.

The RoR also contributed to this case as part of their formal organization. Due to the suspected loss of steering, the ship should have notified all ships in the vicinity and, in accordance with the RoR, displayed the appropriate signals to represent their vessel's status as not under command. Unfortunately, these guidelines were not followed during the events leading up to the collision. Lack of adherence to these rules could be considered a major contributing factor to the collision.

The last element of formal organization is the watch bill, specifically the requirements the watch bills must follow when a ship is entering port or operating in a modified navigation detail. The case states that the required watch standers were given extra time to rest and not report to watch, violating policies. The ship's watch bill, along with navigational requirements, require certain watches in place, and the USS *John S McCain* did not adhere to these policies before the collision.

The final component is informal organization. The USS *John S McCain*'s informal process of watch relief is present in the watch stations of helm and lee helm. Prior to any watch relief on the bridge, permission must be gained through the CO, who can delegate to the OOD or the CONN in the case of helmsman watch relief. A formal turnover process is in place to apply a legal changeover in responsibility. Additionally, it prevents unqualified or less experienced personnel from standing watch in a high-risk environment.

The case mentions that there was very little specialized training for the IBNS system. The case describes many faults and alarms restored only by a reboot of the system. The lack of training combined with outdated instructions created confusion amongst the watch team. The CO informally placed the IBNS system in backup manual mode because he lacked confidence and system knowledge. The lack of SOP regarding IBNS operation and informal procedure affected the ability of the watch standers to respond to the casualty assertively and effectively.

Although not directly expressed in the case, we suspect the teams in CIC did not use required communications for navigating in a TSS. The piloting officer is required to

confer directly with the OOD regarding shipping contacts and navigational decisions. The teams in CCS and aft-steering also lacked situational awareness and did not act to regain positive steering and throttle control. As described in Table 2, the four transformation processes are task, individual, formal organization, and informal organization. The USS *John S McCain*'s overall objective was to enter port for a mid-deployment maintenance availability safely. The ship had to navigate through high-traffic sea lanes, track all surface contacts, and maintain necessary equipment online to accomplish this objective.

3. Congruence

This subsection analyzed the congruence for each pair of transformation processes (tasks, individuals, formal organization, and informal organization) as described in the previous section. We rated the fit on a scale of low, medium, and high. USS *John S McCain*'s overall fit is low and received only one medium rating between task and formal organization (Table 4).

Table 4. USS *John S McCain* Congruence Analysis

Component Pair	Fit	Analysis
Tasks and Individual	Low	▪ The individuals did not have the necessary knowledge to complete the tasks described. ▪ There was not an adequate amount of individual experience on watch to safely navigate the ship. ▪ The task for personnel in CIC and CSS was to support the bridge with navigation. However, the case does not mention that CIC or CCS provided any backup. ▪ Competency also impacted the bridge watch stander's task of transferring steering and propulsion control to secondary controlling stations. ▪ Individual perceptions of a flawed IBNS affected the task of safe navigation.
Tasks and Formal Organization	Medium	▪ The formal organization did support the task at hand of entering port. ▪ There were policies in place that required manned watches while a ship is entering port and these policies met the demand of the task. ▪ The Rules of the Road also support the task of a ship operating with a suspected loss of steering. The <i>John S McCain</i> had procedures to follow to respond to this casualty. ▪ There was a lack of operating procedures for the IBNS, which did not support the safe operation of the ship.
Tasks and Informal Organization	Low	▪ The culture onboard was very risk-averse due to the recent collision of the USS <i>Fitzgerald</i>. ▪ The culture did not facilitate work performance because the CO did not require the appropriate watches for entering port. The CO felt that having a rested crew was more important because of the events on the USS <i>Fitzgerald</i>. Therefore, the CO did not have a fully manned bridge to support the task of entering port.

Component Pair	Fit	Analysis
Individual and Formal Organization	Low	▪ The CO was reluctant to set the S&A Detail early due to the recent USS <i>Fitzgerald</i> collision and reports that identified crew fatigue as a significant contributor to that collision. ▪ The individuals failed to understand the operation of the IBNS, in conjunction with a mixture of inexperienced watch standers and out-of-date technical manuals onboard. As a result, it led to confusion and multiple transfers of steering and propulsion control.
Individual and Informal Organization	Low	▪ The helm and lee helm were not aware of formal guidance used to configure steering. ▪ The CO, assisted by the XO, attempted to supervise the bridge so that the crew could receive additional rest. ▪ The CO informally changed the watch bill during a high-risk evolution to ease responsibilities across multiple watch standers ▪ The piloting officer did not formally communicate with the bridge, which should increase situation awareness
Formal Organization and Informal Organization	Low	▪ The goals of the informal organization are not congruent with the formal organization. ▪ The operation and maintenance of IBNS are not according to technical guidance. ▪ The additional watch standers failed to meet the intent of the specialized formal sea and anchor watch bill.

V. CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This project analyzed the collisions of USS *Fitzgerald* and USS *John S McCain* using the case study approach and problem analysis associated with Nadler and Tushman's Congruence Model. This evaluation sought to understand the hidden issues that contributed to the collisions and enable a way forward to minimize future failures. The purpose of this concluding chapter is to highlight the key points identified in our problem analysis using the congruence model as they relate to issues recognized in each of the collisions. We then propose recommendations to instill sustained improvement to Surface Warfare Officer performance. Finally, we present suggestions for future research.

A. LIMITATIONS

Our case study is not all-inclusive of every interdependency that may have impacted the 2017 collisions. This analysis focused on the ships' organizational level and did not wholly account for the pressures outside of the commands. Our analysis may not be as applicable to other mishaps because FDNF-J is a niche community of ships in the surface fleet. The case study is limited to the reports and interviews published and available. We made no additional inquiries into the collisions during this study.

B. CONCLUSIONS

According to the theory of congruence, the elements that interact within an organization determine the organization's overall performance (Nadler & Tushman, 1980). If the elements of the organization do not fit, the result is lower performance, and the opposite is true if the elements fit well together. Interdependency issues between the tasks, individuals, and informal organizational processes onboard ships affect performance, most notably among individuals. The cases analyzed in this project show conflicting elements that degraded the performance of both organizations (USS *Fitzgerald* and USS *John S McCain*).

We identified some interdependency concerns between the USS *Fitzgerald*'s transitional processes during the events leading up to the collision. First, there was a low

fit between the individual and task elements. This was due to poor individual skills, experience, and interpersonal skills required for a watch team to navigate a ship safely. Second, the culture onboard did not fit well with either the individuals or the tasks. A mission-first mentality with little emphasis on sleep and Sailor well-being created a hazardous environment. Our analysis determined that deficiencies in the transitional processes led to poor performance onboard and helped contribute to the collision.

After analyzing the USS *John S McCain* collision, we determined a low fit in the transitional processes, specifically in the individual and task elements. This was mainly due to a low level of individual knowledge and experience, especially equipment operation. In addition, we identified a risk-averse culture onboard, which helped create a poor fit between all the transitional processes. Ultimately, the low level of individual skill and experience did not fit well with the task, culture, or formal organization. Thus, individual skill was a major contributing factor in the collision.

C. IMPLICATIONS

Since many interdependency issues exist within the Surface Navy, what can the U.S. Navy do to ensure safe operations at sea? Leaders cannot focus on a single aspect, such as formal organizational processes, that they believe to be the cause for degraded performance. Warships are complex organizations consisting of a fixed structure, deep-rooted culture, competing resources, and individuals. Each of these system inputs is subjected to external factors noted in Chapter III (environment, resources, and history) that interact with the elements to raise or lower an organization's performance. If suboptimal performance is experienced, as in the case of the two collisions, which was the focus of this project, then the elements that interacted in those organizations represented a poor "fit." To combat the numerous issues identified in the official USS *Fitzgerald* and USS *John S McCain* reports, the Navy must address all transitional processes involved, not just one, to transform the system to improve the surface fleet's overall performance.

Research now suggests that direct and indirect motivation dramatically affects overall performance. Doshi and McGregor (2015a) highlight six key motives that may improve performance and congruence within the Surface Warfare community. "Direct

motives typically increase performance, [whereas] indirect motives typically decrease it” (p. 13). Furthermore, “the more directly connected the motive is to the activity itself, the better performance becomes” (p. 13). A common fallacy in managing an organization is assuming motivation is something to give to others rather than something intrinsic. Hanna (1988) states that “the question is not so much how to motivate someone, but how to create the conditions so that the person’s energy and interests are tapped by the work to be done” (p. 29). We examined the six motivational elements, applied them to the Surface Navy, and incorporated results from our analysis in Chapter IV.

D. RECOMMENDATIONS

1. Increase Direct Motives

The first and strongest direct motive is play. Perceived freedom could help increase the play element of motivation and improve individual performance. “Play occurs when you are engaging in an activity simply because you enjoy doing it” (Hanna, 1988, p. 7). The Navy needs to understand that people, like open systems, are self-regulating and optimally function when they have clear goals, feedback, and reasonable autonomy (p. 29). It is important to ensure that these four elements are present for all Sailors onboard a ship.

Dutton (2003) also discussed the idea of play in building high-quality connections among individuals and organizations. Her theory of high-quality connections is related to the idea that “joy creates the desire to play, to be creative, and to think outside the box” (Dutton, 2003, p. 12). Instead, external pressures placed on senior naval leadership inhibit play and enable micromanagement policies. There are many documented adverse effects of micromanagement on individuals including “low employee morale, high turnover, reduction of productivity and generalized job dissatisfaction” (Schmidle & Montgomery, 2021, p. 18). Instead, our leadership should focus its efforts to “help the group understand where [they] have the freedom to experiment and explore through creativity and problem solving” (Hanna, 1988, p. 15).

The following direct motive is purpose or completing work because of the impact it has. Doshi and McGregor (2015a) state that purpose takes place “when you do an activity because you value the outcome of the activity” (p. 8). As mentioned above, individuals

perform better when they have clear goals, and there is a commitment by the organization to help attain these goals. Aligning the individual's goals with the organization's goals is one way to improve purpose; however, this is often not the case onboard ships. Because of this, the pursuit of the organizational goals will often cause dissatisfaction with the individual's goals (Hanna, 1988). In addition, the Navy tends to value the results of an endeavor rather than the purpose, which is another common organizational mistake. We often spend too much time "measuring the results versus the purpose, but too seldom questioning whether the purpose itself is still appropriate" (Hanna, 1988, p. 29).

The last direct motive is potential or working towards a new desired position. "When a company describes a job as a good 'stepping-stone,' they're attempting to instill the potential motive" (Doshi & McGregor, 2015a, p. 9). This motivation occurs naturally in the military as the structure creates opportunities for advancement. Many people join the Navy, or the military in general, for the benefits of post-service education and job opportunities. Senior officers must communicate future opportunities to their junior officers in such a way that instills the potential motive.

2. Decrease Indirect Motives

Next, we recommend reducing the impact of the subsequent three indirect motives that typically decrease one's motivation. The first is emotional pressure, which involves an individual's guilt or shame that compels them to perform a task (Doshi & McGregor, 2015a). From our experience, the SWO community places too much emotional pressure on Officers to perform at a high level. Doshi and McGregor (2015) mentioned that "when your motive to work is emotional pressure, your performance tends to suffer" (p. 10). As mentioned in the USS *Fitzgerald*'s case study, the OOD did not call the CO for help which could have been due to a fear of reprisal stemming from fitness reports that exaggerated her abilities and inflated her confidence.

Typically, there is a fear of receiving negative marks on a fitness report or being reprimanded by the CO. This fear that your organization has a "general unwillingness to rehabilitate one-off mistakes, [a] disinclination to weigh errors against the totality of a naval career, and [a] practice of discipline-by-paperwork [is] broadly understood to be a

drain on the Navy's retention efforts" (Schmidle & Montgomery, 2021, p. 4). This emotional pressure coupled with a culture that never says no despite the training or resources can lead to a poor-performing organization.

Economic pressure, the second indirect motive, is the pressure that involves winning an award or avoiding punishment. In the Surface Navy, we often tie emotional and economic pressure together. "If money is the sole reason you're participating in an activity, it will typically diminish performance" (Doshi & McGregor, 2015a, p. 11). A common organizational misconception in the Navy is "failing to distinguish between accountability and responsibility" (Hanna, 1988, p. 30). Economic pressure can amplify an individual to avoid punishment when leaders place accountability rashly or incorrectly.

A leader is indeed accountable for what goes on under their purview; however, they should not be held responsible for the actions of others. Hanna (1988) stated that "being held responsible for one's work simply means that the individual shares the fruits of success and is expected to correct any errors that are made. It is precisely this sense of responsibility that meshes individual purposes with the organization's purpose and establishes the condition where self-regulation can be harnessed" (p. 30). By correctly empowering and placing responsibility with those responsible, we can minimize the impact avoiding punishment has on an individual's economic pressure.

The final and potentially most damaging indirect motive is inertia. Doshi and McGregor characterize inertia as "when the motive is so far removed from the work and your identity that you can't identify why you're working" (Doshi & McGregor, 2015b, para. 13). Undermanned ships leave Sailors to juggle different positions and accomplish tasks that they are not typically assigned. According to Aucoin (2018), "the fastest way to kill motivation is to meet a returning FDNF sailor at the pier in Yokosuka or Sasebo and tell this sailor that he or she must go right back out on another deployment on a different ship due to a manning shortfall" (para. 10). The pressure of inertia causes an individual to disassociate with the task and lose motivation in the organization. Overcoming these effects "requires a redefinition of purpose and goals and clear feedback" (Hanna, 1988, p. 30). Therefore, the Navy needs to redefine the purpose of the Surface Warfare Officer to help individuals identify with the task they are assigned. To help reduce the pressures of inertia,

leaders should focus on explaining the purpose of a task and why it is essential (Sinek, 2009).

3. Process Improvement

After discussing direct and indirect motivation, we can see how motivation impacts the performance of an organization from the individual to the organization itself. Direct and indirect motivation, which we have touched on lightly, is not the only factor that impacts an organization's performance. Doshi and McGregor (2015b) stated that "it's clear that culture is the operating system of an organization" (para. 26). The Navy and senior leadership can foster and build a high-performing culture by teaching our force to lead in highly motivating ways based on the principles of total motivation (ToMo) (Doshi & McGregor, 2015b, para. 26).

We recommend that the concept of ToMo be taught at each career development school including Basic Division Officer Course (BDOC), Advanced Division Officer Course (ADOC), Department Head school, and the XO/CO pipeline. This concept will provide valuable information that can improve the culture onboard ships and build high-performing teams.

Additionally, case study analysis should be expanded. For example, instead of simply examining the case's facts or outputs, we should use an organizational performance model. Using a model would help Officers develop an understanding of the transitional processes that make up an organization and how they contributed to the situation. This way, Sailors can learn different frameworks and apply them to various organizations to help improve performance.

Our last recommendation is to establish a new "Readiness Immediate Superior in Command" (R-ISIC) during their maintenance and basic phases (Balisle, 2010, p. 40). While building purpose, an R-ISIC would undo some of the emotional pressures and inertia ships incur while certifying and meeting their operational commanders' goals (i.e., DESRON). Once a ship is fully mission capable, they would shift back under operational squadron control. Not only would this benefit the ship, but also DESRON who is both currently an administrative and operational commander.

Although most of the business world uses the models and concepts we have discussed, their application to the Navy or Department of Defense will provide beneficial impacts. “A great culture is not easy to build – it’s why high performing cultures are such a powerful competitive advantage” (Doshi & McGregor, 2015b, para. 31). In addition, inertia will always impact an organization’s ability to institute widespread change. Therefore, we intend to promote the value of case study analysis, the congruence model, and how to build a high-performing culture by leading in highly motivating ways.

E. SUGGESTIONS FOR FUTURE RESEARCH

Our analysis focused on the inputs, outputs, and transformation processes from Nadler and Tushman’s (1980) Congruence Model to assess the underlying interdependencies that contributed to the collision in the Pacific. It is worth noting that our research centered around the Navy organization and not the decisions or constraints outside this organization. Increased operational tasking, decreased resources, and inadequate training was determined to be common trends in both collisions.

Further research could focus on the civil-military relationship and utilize Graham Allison’s Rational Actor Model to understand the decisions made at the bureaucratic level and their impact on the Navy. These potential decisions may cause second and third-order effects that may contribute to the degraded performance of the Navy organization and are worth investigation and analysis.

Second, further research could be conducted on foreign navy mishaps using the same model we used to assess the USS *Fitzgerald* and USS *John S McCain* collisions. The analysis could be compared to the data presented here to determine if the same elements analyzed in foreign navies match or differ from the collisions of the USS *Fitzgerald* and USS *John S McCain*. It would be interesting to see if the elements are congruent or incongruent and how they interact in another system.

Third, using organizational behavior models on U.S. Naval history, and its culture, research could correlate other past collisions at sea and the decisions that contributed to those failures. This could reveal whether trends (operational tempo, inconsistent training, or others) have continued and further understand why some of these issues exist today.

Finally, many official government reports and studies following the collisions in 2017 reported on lack of training and a refocus on ship navigation. A study focused on the future projection of recent reforms and their potential effects would provide the Navy with relevant data to understand if the changes to training led to the desired impact.

The mission onboard a ship is complex and ever-changing. Sailors must be able to use different skills and experiences they acquire to navigate this complex environment. By understanding the elements that make up an organization, beyond just inputs and outputs, we can be better poised for success. We must ensure that individuals are correctly trained and fit well with the culture, formal organization, and task. If leaders give attention to improving these four elements and their fit, an organization can increase its performance.

APPENDIX A. UNDERWAY WATCH STANDING

The U.S. Navy’s mission is to protect the United States at sea; “alongside our allies and partners, we defend freedom, preserve economic prosperity, and keep the seas open and free” (Department of the Navy [DON], 2021, para. 1). Underway watch standing has been a timeless tradition since the establishment of the U.S. Navy in 1775. A “watch” is “any period of time during which a Sailor is assigned specific, detailed responsibilities on a recurring basis” (Office of the Chief of Naval Operations [CNO], 2017a, p. 4-1). Watches are set both in port and underway; for our project, we will be focusing on underway watch organization, specifically bridge watch. The Standard Organization and Regulations Manual (SORM) describes the general watch standing principles that each watch stander will perform:

- Receive sufficient training to perform the duties of the watch station prior to assignment.
- Be fully attentive to the duties and responsibilities of the assigned watch station.
- Frequently review all of the emergency procedures of their watch station in order to be ready to execute emergency procedures without delay.
- Not leave their watch station unless properly relieved or so ordered by the Officer in Charge of the watch station.
- Know whom to report to in the watch organization and all watch standers who shall report to them.
- Not be assigned or assume any other duties which may distract them from their watch function.
- Shall report all violations of the unit’s regulations, directives, and other breaches of good order and discipline; shall try to the utmost to suppress such violations; shall report any known or probable violation of safety precautions or safety regulations; shall try to the utmost to suppress such violations and other malpractice which may endanger the safety or security of a naval unit and its personnel. (CNO, 2017a, p. 4-3 4-4)

A. SHIPBOARD CONDITIONS OF READINESS

Shipboard conditions of readiness define underway watch requirements expected to meet the ship’s current or expected mission. There are four levels associated with shipboard conditions of readiness. Those conditions range from Condition IV, Condition III, and Condition I. Condition II, on the other hand, represents a modified Condition I,

established to fit a specific mission. For example, a ship sets Condition II Damage Control (DC) to combat firefighting or dewatering efforts should such an event occur and not require implementing Condition I (General Quarters). Further details on the remaining levels of condition are listed below as outlined in the SORM:

Condition IV (Peacetime Readiness). Condition IV watches require an adequate number of qualified personnel for the safe and efficient operation of the ship and permits the best economy of personnel assignment to watches. Requirements for Condition IV are:

- No weapon batteries are manned.
- The engineering plant is ready for speeds as ordered.
- Material condition Yoke is modified for access during daylight.
- Complete surface lookout coverage is provided. Air lookouts are on duty when flight operations are in progress in the vicinity.
- CIC is manned sufficiently. Exterior/interior communications are manned sufficiently to cover the circuits in use.
- Aircraft are in the condition of readiness required by the flight schedule. Specific watches and their responsibilities are found in the Ship's Manning Document or the Combat Systems Doctrine for individual ship types.

Condition III (Wartime/Heightened/Tension Readiness). Condition III watches require sufficient number of personnel to man a limited number of weapons systems for prolonged periods. Condition III must provide the capability to conduct or repel an urgent attack while the ship is called to General Quarters. The non-weapon related requirements of Condition IV also apply to Condition III. Actual watches manned during Condition III vary depending on the ship's combat systems configuration. Specific watches and their responsibilities are found in the Ship's Manning Document and/or the Combat Systems Doctrine for individual ship types.

Condition I (General Quarters). Condition I requires the manning of all weapons systems, sensors, damage control, and engineering stations. Material condition Zebra is set throughout the ship and the engineering systems are configured for maximum flexibility and survivability. With all hands at General Quarter's stations, the ship is prepared to fight at its maximum capability. As with Condition III, the individual stations manned during Condition I are ship specific. Specific watches and their responsibilities are found in the Ship's Manning Document and/or the Combat Systems Doctrine for individual ship types. (CNO, 2017a, p. 4-13 4-14)

B. UNDERWAY BRIDGE WATCH ORGANIZATION AND RESPONSIBILITIES

Bridge watch standing organization consists of the Officer of the Deck (OOD), Junior Officer of the Deck (JOOD), Conning Officer (CONN), Boatswain's Mate of the Watch (BMOW), Quartermaster of the Watch (QMOW), Helmsman, lee helmsman, and lookouts. While there are many positions on a standard bridge watch team, we further discuss the function, duties, and responsibilities of the OOD, JOOD, CONN and briefly describe the positions of the helmsman, lee helmsman, and lookouts.

1. Officer of the Deck (OOD)

The OOD underway is overall responsible for the safe navigation and operation of the ship in all prevailing circumstances. The SORM describes the primary function of the OOD as follows:

The OOD underway is designated by the commanding officer to be in charge of the ship including its safe and proper operation. (CNO, 2017a, p. 4-16)

The OOD has several duties and responsibilities while operating underway, but we focus on the ones that pertain to ship navigation. The following is a brief description of the duties and responsibilities of the OOD in accordance with the SORM; however, this is not all-inclusive:

- Be aware of the tactical situation and geographic factors which may affect safe navigation and take action to avoid the danger of grounding or collision following tactical doctrine, the U.S. Coast Guard Navigation Rules of the Road, and the orders of the commanding officer or other proper authority.
- Issue necessary orders to the helm and main engine control to avoid danger, to take or keep an assigned station, and to change course and speed following orders of proper authority.
- Be aware of the status of the engineering plant and keep the EOOW advised of power requirements and the operational situation so they may operate the engineering plant effectively.
- Supervise and conduct on-the-job training (OJT) for the junior officer of the watch (JOOW), the JOOD, and enlisted personnel of the bridge watch. (CNO, 2017a, p. 4-17 4-18)

2. Junior Officer the Deck (JOOD)

The JOOD serves as the principal assistant to the OOD in the navigation and safe operation of the ship. The following is a description of the JOOD duties and responsibilities as outlined in the SORM:

- Assist the OOD in their duties as the OOD may direct.
- Become familiar with the duties of the OOD.
- Perform other duties as the OOD may direct. (CNO, 2017a, p. 4-20)

3. Conning Officer (CONN)

While underway, a new junior Surface Warfare Officer (SWO) stands the CONN, traditionally the first watch station. The CONN serves as another set of eyes for the safe navigation of the ship. Additionally, the CONN directs the helmsman on courses to steer and, if assigned, orders the lee helmsman to ring up speed changes on the engine order telegraph on the bridge (CNO, 2017a).

4. Helmsman

The following is a brief description of the role of the helmsman from the SORM:

A qualified helmsman, as recorded in the service record, steers courses ordered by the conning officer. They alternate with other members of the deck watch as directed by the BMOW and approved by the conning officer. (CNO, 2017a, p. 4-34 4-35)

5. Lee Helmsman

The lee helmsman, under normal steaming operations, is not manned. However, special evolutions require dividing the labor between steering and speed changes to remove the burden from one watch station. Below is a description of the lee helmsman from the SORM:

The lee helmsman stands watch at the engine order telegraph on the bridge and rings up the conning officer's orders to the engines ensuring that all bells are correctly answered. They must be a qualified helmsman. They alternate with other members of the deck watch as directed by the BMOW and approved by the conning officer. (CNO, 2017a, p. 4-35)

6. Lookouts

The SORM describes the lookout's role as follows:

A proper lookout will be maintained at all times. This lookout watch mans assigned lookout stations and perform duties in accordance with ship's lookout directions. The posting and training of lookouts conform to the U.S. Coast Guard Navigation Rules of the Road and the protective measures assessment protocol. When prevailing conditions and circumstances permit, forward lookout responsibilities may be assigned to other qualified bridge watch standers. (CNO, 2017a, p. 4-32 4-33)

Figure 8 is a visual representation of a standard underway watch organization on an Arleigh Burke Class Destroyer. Green circles represent required watch stations, while gray circles represent additional watch stations as required.

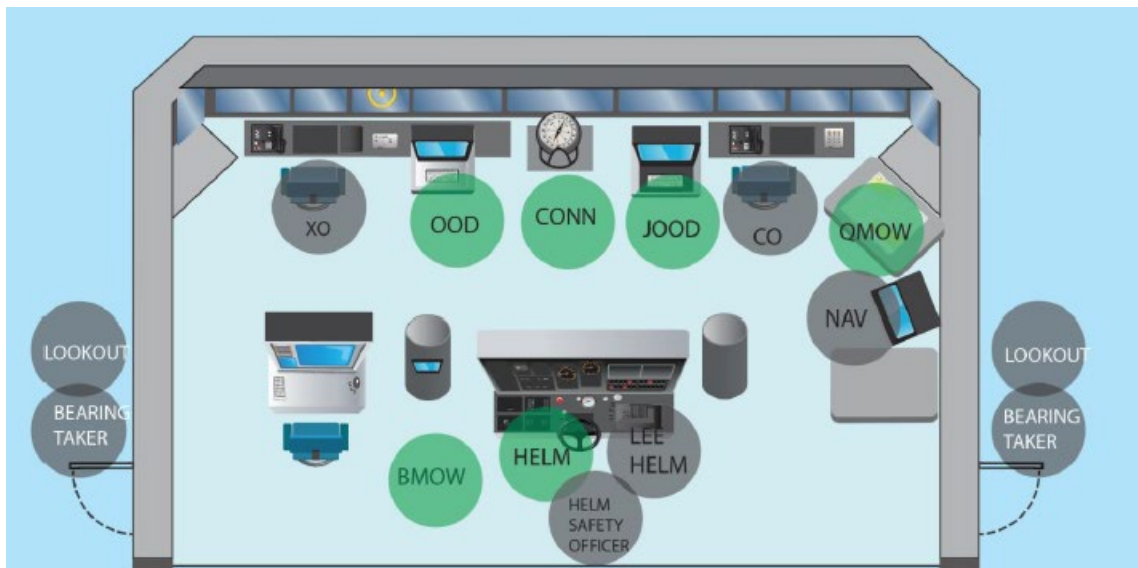


Figure 8. Bridge Organization on Arleigh Burke Class Destroyer. Adapted from CNO (2017b).

THIS PAGE INTENTIONALLY LEFT BLANK

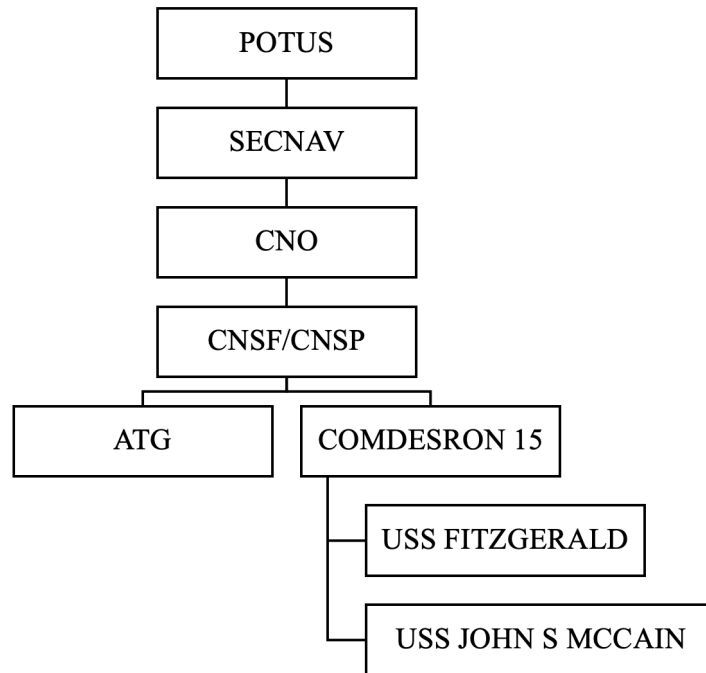
APPENDIX B. U.S. NAVY ORGANIZATIONAL STRUCTURE

The U.S. Navy operates separate administrative and operational command functions throughout its organizational structure. The administrative chain of command is responsible for manning, training, and equipping naval forces. The operational chain of command uses these naval forces to carry out assigned tasks (U.S. Department of Defense [DOD], n.d.). Therefore, an explanation of where the USS *Fitzgerald* and USS *John S McCain* operated within the Naval Surface Forces is needed to depict the setting of the collisions accurately.

A. ADMINISTRATIVE CHAIN OF COMMAND

The administrative chain of command for the USS *Fitzgerald* and USS *John S McCain*, see Figure 9, begins at the secretary of the Navy, who leads the Department of the Navy and reports to the secretary of defense and president of the United States (POTUS). The Navy's most senior officer is the chief of naval operations (CNO), who reports to the secretary of the Navy, and acts as the naval advisor to the POTUS as a member of the Joint Chiefs of Staff (JCS) (DOD, n.d.).

The Commander, Naval Surface Forces (CNSF) reports to the CNO and is dual-hatted as the Commander, Naval Surface Forces, U.S. Pacific Fleet (CNSP), the type commander (TYCOM) for Forward Deployed Naval Forces-Japan (FDNF-J). Afloat Training Group, Pacific, is CNSP's training command for ships in the training phase of operations (DOD, n.d.). Commander, Destroyer Squadron 15 (COMDESRON 15) is one of many destroy squadrons that report administratively to CNSP. USS *Fitzgerald* and USS *John S McCain* reported to COMDESRON 15 before the collisions.

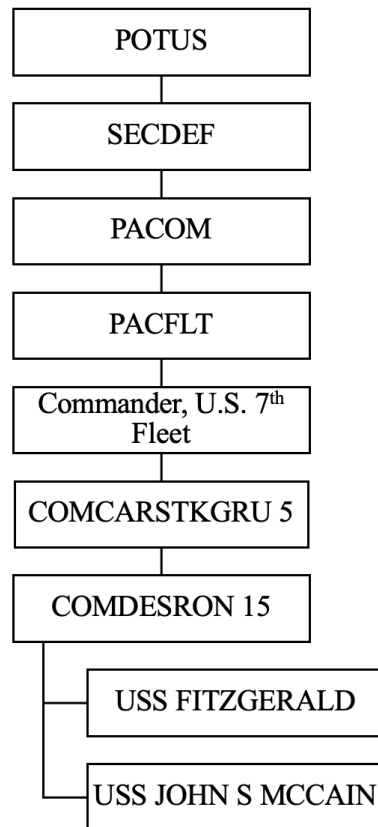


As of October 2017, Naval Surface Group Western Pacific (NAVSURFGRUWESTPAC) serves as CNSP's executive agent to oversee FDNF-J ships through basic phase completion (Commander, Naval Surface Forces U.S. Pacific Fleet Public Affairs, 2018).

Figure 9. Administrative Chain of Command as of 2017. Adapted from DOD (n.d.)

B. OPERATIONAL CHAIN OF COMMAND

The operational chain of command for the USS *Fitzgerald* and USS *John S McCain*, see Figure 10, again begins at the president of the United States (POTUS). However, as a joint function, operational control of military forces falls upon the secretary of defense (SECDEF). The Geographic Combatant Commanders report to the SECDEF, specifically Pacific Command (PACOM) in our case. The Navy Component Commander for PACOM is Pacific Fleet (PACFLT), who operationally tasks ships in the 7th Fleet via Commander, 7th Fleet (COMSEVENTHFLT), Commander, Carrier Strike Group 5 (COMCARSTKGRU 5), and COMDESRON 15 in different scenarios (DOD, n.d.).



As of May 30, 2018, PACOM is now INDO-PACOM (U.S. Pacific Command, 2018)

Figure 10. Operational Chain of Command as of 2017. Adapted from DOD (n.d.)

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

- Aucoin, J. (2018, April). It's not just the forward deployed. *U.S. Naval Institute Proceedings*. <https://www.usni.org/magazines/proceedings/2018/april/its-not-just-forward-deployed>
- Balisle, P. M. (2010). *Fleet review panel of surface readiness*. [http://www.sailorbob.com/files/foia/FRP%20of%20Surface%20Force%20Readiness%20\(Balisle%20Report\).pdf](http://www.sailorbob.com/files/foia/FRP%20of%20Surface%20Force%20Readiness%20(Balisle%20Report).pdf)
- Brimley, S. (2008). Crafting strategy in an age of transition. *Parameters*, 38(4), 27–42. <https://press.armywarcollege.edu/parameters/vol38/iss4/2>
- Commander, Naval Surface Force, U.S. Pacific Fleet, Commander, Naval Surface Force Atlantic. (2020, December 11). *Comprehensive Crew Endurance Management Policy* (COMNAVSURFPACINST/COMNAVSURFLANTINST 3120.2A). Department of the Navy. <https://cpf.portal.navy.mil/sites/cnsp/Pages/Directives.aspx>
- Connor, J. C. (2020a). *Tragedies in the Pacific – Fitzgerald* [Unpublished manuscript].
- Connor, J. C. (2020b). *Tragedies in the Pacific – History and context* [Unpublished manuscript].
- Connor, J. C. (2020c). *Tragedies in the Pacific – McCain* [Unpublished manuscript].
- Connor, J. C. (2020d). *Tragedies in the Pacific – Epilogue* [Unpublished manuscript].
- Connor, J. C. (2021). *About*. LinkedIn. <https://www.linkedin.com/in/jeffrey-connor-8bab306>
- Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE.
- Daft, R. (2021). *Organization theory and design* (13th ed.). Cengage Learning.
- Naldoza, N. (2012). *Congruence model: A roadmap for understanding organizational performance*. https://www.academia.edu/26617289/Delta_Mercer_Congruence_Model
- Department of the Navy. (1992). *...From the sea: Preparing the naval service for the 21st century*. <https://www.hsdl.org/?view&did=484786>
- Department of the Navy. (2021, July 23). *Mission statement*. <https://www.navy.mil/About/Mission/>

- Doshi, N., & McGregor, L. (2015a) Primed to perform: How to build the highest performing cultures through the science of total motivation [Kindle version]. https://www.amazon.com/Primed-Perform-Performing-Cultures-Motivation-ebook/dp/B00S590OQI/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=&sr=
- Doshi, N., & McGregor, L. (2015b, November 25). How company culture shapes employee motivation. *Harvard Business Review*. <https://hbr.org/2015/11/how-company-culture-shapes-employee-motivation>
- Dutton, J. E. (2003). *Energize your workplace: How to create and sustain high-quality connections at work*. <https://www.wiley.com/en-us/Energize+Your+Workplace%3A+How+to+Create+and+Sustain+High+Quality+Connections+at+Work-p-9780787971991>
- Gaddis, J. L. (1982). *Strategies of containment: A critical appraisal of American national security policy during the Cold War*. Oxford University Press.
- Goh, P. (2011). *How should SOF be organized?* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. <http://hdl.handle.net/10945/5693>
- Hanna, D. (1988). *Designing organizations for high performance*. Addison-Wesley Publishing Company.
- Junge, M. (2019, March 19). *Accountability in the U.S. Navy: "So that others may learn."* The Bridge. <https://thestrategybridge.org/the-bridge/2019/3/19/accountability-in-the-us-navy-so-that-others-may-learn>
- Liang, A., & Wong, M. (2017, August 22). Busy waters around Singapore carry a host of hazards. *Navy Times*. <https://www.navytimes.com/news/your-navy/2017/08/22/busy-waters-around-singapore-carry-a-host-of-hazards/>
- McCaskey, M. B. (1996). *Framework for analyzing work groups* (Case 9-480-009). Harvard Business School.
- Nadler, D. A., & Tushman, M. L. (1980). A model for diagnosing organizational behavior. *Organizational Dynamics*, 9(2), 35-51. [https://doi.org/10.1016/0090-2616\(80\)90039-X](https://doi.org/10.1016/0090-2616(80)90039-X)
- Nadler, D. A., & Tushman, M. L. (1997). *Competing by design: The power of organizational architecture*. Oxford University Press.
- Nadler, D. A., Tushman, M. L., & Hatvany, N. G. (1980). *Managing organizations: Readings and cases*. Little, Brown and Company.

- National Transportation Safety Board. (2019). *Collision between U.S. Navy destroyer John S McCain and tanker Alnic MC, Singapore Strait, 5 miles northeast of Horsburgh lighthouse August 21, 2017*. <https://www.nts.gov/investigations/AccidentReports/Reports/MAR1901.pdf>
- National Transportation Safety Board. (2020). *Collision between U.S. Navy destroyer Fitzgerald and Philippine-flag containing ship ACX Crystal, Sagami Nada Bay off Izu peninsula, Honshu Island, Japan July 17, 2017*. <https://www.nts.gov/investigations/AccidentReports/Reports/MAR2002.pdf>
- Naval History and Heritage Command. (2017, November 17). *U.S. ship force levels: 1886–present*. <https://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html#2000>
- Naval History and Heritage Command. (2020, July 27). *U.S. Navy personnel strength, 1775 to present*. <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/u/usn-personnel-strength.html>
- O’Rourke, R. (2021). *China naval modernization: Implications for U.S. Navy capabilities—Background and issues for Congress* (CRS Report No. RL33153). Congressional Research Service. <https://crsreports.congress.gov/product/pdf/RL/RL33153>
- Office of the Chief of Naval Operations. (2014, November 10). *Optimized fleet response plan* (OPNAVINST 3000.15A). Department of the Navy. <https://www.secnave.navy.mil/doni/Directives/03000%20Naval%20Operations%20and%20Readiness/03-00%20General%20Operations%20and%20Readiness%20Support/3000.15A.pdf>
- Office of the Chief of Naval Operations. (2017a, May 15). *Standard organization and regulations of the U.S. Navy* (OPNAVINST 3120.32D CH-1). Department of the Navy. <https://www.secnave.navy.mil/doni/Directives/03000%20Naval%20Operations%20and%20Readiness/03-100%20Naval%20Operations%20Support/3120.32D%20W%20CH-1.pdf>
- Office of the Chief of Naval Operations. (2017b, October 23). *Report on the collision between USS Fitzgerald (DDG 62) and Motor Vessel ACX Crystal, and report on the collision between USS John S McCain (DDG 56) and Motor Vessel Alnic MC* [Memorandum]. Department of the Navy. <https://www.secnave.navy.mil/foia/readingroom/HotTopics/CNO%20USS%20Fitzgerald%20and%20USS%20John%20S%20McCain%20Response/CNO%20USS%20Fitzgerald%20and%20USS%20John%20S%20McCain%20Response.pdf>
- Office of Naval Intelligence. (2015). *The PLA Navy: New capabilities and missions for the 21st century*. <https://www.oni.navy.mil/News/Naval-Capabilities/China/>

- Oliver Wyman. (2003) *The congruence model: A roadmap for understanding organizational performance*. Delta Organization & Leadership. http://www.oliverwyman.com/ow/pdf_files/Congruence_Model_INS.pdf
- Quinn, J. B., Mintzberg, H., & James, R. M. (1988). *The strategy process: Concepts, contexts and cases*. Prentice Hall.
- Schein, E. H. (1985). *Organizational culture and leadership: A dynamic view*. Jossey-Bass Publishers.
- Schmidle, R. E., & Montgomery, M. (2021). *A report on the fighting culture of the United States Navy surface fleet*. Congressional Publications.
- Sinek, S. (2009). *Start with why: How great leaders inspire everyone to take action*. Penguin.
- Stake, R. E. (2005). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 443–466). SAGE.
- Thomas, G., Atkinson, P., Delamont, S., Cernat, A., Sakshaug, J. W., & Williams, R. A. (2020). *Case study*. SAGE.
- U.S. Department of Defense. (n.d.). *Navy. Military Units*. Retrieved August 15, 2021, from <https://www.defense.gov/Experience/Military-Units/Navy/#1054.171875>
- U.S. Fleet Forces Command. (2017). *Comprehensive review of recent surface force incidents*. Department of the Navy. http://s3.amazonaws.com/CHINFO/Comprehensive+Review_Final.pdf
- U.S. Government Accountability Office. (2021). *Navy readiness: Additional efforts are needed to manage fatigue, reduce crewing shortfalls, and implement training* (GAO-21-366). Government Accountability Office.
- Vice Chief of Naval Operations. (2019). *Readiness reform oversight committee: One year later*. Department of the Navy. <https://media.defense.gov/2020/May/18/2002302049/-1/-1/1/RROC1YR.PDF>
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Sage Publications.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California