



Calhoun: The NPS Institutional Archive
DSpace Repository

Faculty and Researchers

Faculty and Researchers' Publications

2022

Navy Force Structure Review Strategic Risk Workshop and Technology Review

Kline, Jeff; Stames, Paul; Wirtz, James J.; Russell, James A.;
Huntley, Wade Lee.; Otte, Douglas E.; Barreto, Jane F.

Monterey, California: Naval Postgraduate School

<https://hdl.handle.net/10945/71960>

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

Downloaded from NPS Archive: Calhoun



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

<http://www.nps.edu/library>

NPS NRP Executive Summary

Navy Force Structure Review Strategic Risk Workshop and Technology Review

Period of Performance: 02/22/2020 – 09/24/2020

Report Date: 09/24/2020 | Project Number: NPS-22-N363-A

Naval Postgraduate School, Operations Research (OR)



NAVAL RESEARCH PROGRAM

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

NAVY FORCE STRUCTURE REVIEW STRATEGIC RISK WORKSHOP AND TECHNOLOGY REVIEW

EXECUTIVE SUMMARY

Principal Investigator (PI): CAPT Jeffrey E. Kline, USN (Ret.), Operations Research (OR)

Additional Researcher(s): Dr. Paul Stames, Center for Executive Education; CAPT Doug Otte, USN (Ret.), OR; Dr. Emil Kartalov, Physics; CDR Chad Bollmann, USN, Electrical and Computer Engineering; COL Randy Pugh, USMC, Naval Warfare Studies Institute; Dr. Anthony Pollman, Systems Engineering (SE); VADM Phil Sawyer, USN (Ret.), USW Chair; Dr. Wade Huntley, National Security Affairs (NSA); Ms. Lyla Englehorn, Naval Warfare Studies Institute; CDR Nick Ulmer, USN, OR; Dr. James Wirtz, NSA; VADM David Lewis, USN (Ret.), Naval Warfare Studies Institute; LTC Mark Stevens, USA (Ret.), SE; CAPT Sean Hays, USN, NSA

Student Participation: LT Frank Smeeks, USN, SE; LCDR Chris Fackrell, USN, SE; LT Spencer Kitten, USN, Undersea Warfare (OR); LCDR Thomas Chamberas, USN, Undersea Warfare (Physics); LT Keegan Delanoy, USN, Undersea Warfare (Physics); LT Jacob Dwyer, USN, Undersea Warfare; CDR Chris Landis, USN, Computer Science; LT Nicholas Coker, USN, SE; LT Joshua Schultz, USN, SE; LT William Sunda, USN, SE; LT Alyson Groff, USN, SE; CDR Nathan Walker, USN, SE; LT Josh Hudson, USN, NSA; LT Luke Goorsky, USN, NSA

Prepared for:

Topic Sponsor Lead Organization: N8 - Integration of Capabilities & Resources

Topic Sponsor Organization(s): OPNAV N81

Topic Sponsor Name(s): Lead for OPNAV wide Navy Force Structure Review, CDR Stephen D. Steacy, USN

Topic Sponsor Contact Information: Stephen.d.steacy.mil@us.navy.mil; 571-256-9568

NPS NRP Executive Summary

Navy Force Structure Review Strategic Risk Workshop and Technology Review

Period of Performance: 02/22/2020 – 09/24/2020

Report Date: 09/24/2020 | Project Number: NPS-22-N363-A

Naval Postgraduate School, Operations Research (OR)

Project Summary

The Office of the Chief of Naval Operations (OPNAV) Lead for the 2022-2023 Navy Force Structure Review requested an interdisciplinary Naval Postgraduate School (NPS) team conduct an independent strategic risk and technical risk of the current programmed force structure and three alternatives. Three week-long efforts by thirty NPS faculty and officer scholars from various disciplines produced classified assessments and delivered them to the Navy Force Structure Review study team in narrated briefing style. This report describes the process these two risk assessments used, without providing the classified alternative force designs or results. Each assessment followed a three-phase modified Delphi process. In the first phase, participants individually reviewed alternative force design material provided by the sponsor. The second phase consisted of bringing the participants together to exchange observations. Finally, each participant individually provided assessments without further consultation. In the case of the strategic risk assessment, the second phase included a futures generation workshop to assess alternative fleets. This process is recommended for future use in providing future fleet design strategic risk assessments.

Keywords: *strategic risk assessments, technical risk*

Background

In January of 2022 the Navy's lead for the OPNAV-wide Navy Force Review Study (NFRS) requested NPS conduct an independent strategic risk assessment and a technical risk assessment of the current programmed Navy force structure and three alternative force designs generated by the OPNAV NFRS team. The objective was to provide additional independent valuations of each fleet alternative to assist in down-selecting to one alternative for further study. A total of thirty NPS faculty and officer-scholars participated in either one or both assessments. Results were provided to the OPNAV NFRS team in two classified narrated briefings with written notes. Since these briefings are classified, pre-decisional, time-sensitive, and will be included in the OPNAV NFRS report, they are not reproduced in this report. Instead, the process used to conduct a force design strategic risk and technical assessment is recorded here for possible future applications.

Findings and Conclusions

The OPNAV NFRS team provided NPS with alternative force design descriptions for the strategic risk assessment effort. Faculty and students were recruited from diverse academic and operational backgrounds, provided the material provided by OPNAV, then came together for two one-day workshops on 11 March 2022 and on 18 March 2022 in NPS Center for Executive Education spaces to conduct the classified qualitative strategic risk assessment.

The process for this assessment used a modified scenario planning method where participants first generated a variety of possible geo-political futures with their associated likely conflicts (first workshop), then assessed each alternative fleet design in that future (second workshop). Each fleet was assessed in each future using the following metrics:

- Robustness—the relevance or ability of the fleet to support the United States national strategy across various futures and various national strategies;
- Resilience—a subset of robustness, the fleet's ability to sustain damage in a particular future yet continue to operate to achieve national objectives;
- Reactivity—the ability for a fleet to quickly capitalize on new technology advancements and react to surprise from a potential adversary;



NPS NRP Executive Summary

Navy Force Structure Review Strategic Risk Workshop and Technology Review

Period of Performance: 02/22/2020 – 09/24/2020

Report Date: 09/24/2020 | Project Number: NPS-22-N363-A

Naval Postgraduate School, Operations Research (OR)

- Recovery—the fleet’s timeliness to be repaired, rebuilt, and reconstituted during and after a conflict period.

Synthesized results of the workshops were provided to OPNAV in a classified narrated briefing format and used by a Flag level panel to assist in down-selecting to one alternative force structure for further study by the OPNAV staff.

The follow-on technical risk assessment was conducted in three phases. Select engineering and technical faculty and students were recruited to review the technical information provided on an alternative fleet design selected by the flag level panel. Participants were encouraged to make their own classified notes, observations and assessments before a group dialog. The second phase brought the participants together to hear orientation briefings on the force design alternative and to review the technical and engineering dependencies on which that force design depended. Dialog was inspired through group facilitation to exchange ideas on vulnerabilities and possible mitigation strategies. The final phase involved each participant providing a written technical assessment of the alternative force design. This process mirrored a Delphi method of bringing subject matter experts together after their initial individual rankings on a particular topic to exchange ideas, then have them re-assess their original observations individually. Individual notes, facilitation notes, and participant assessments were collected, synthesized, and provided to the OPNAV NFRS team in a classified narrated briefing.

Using alternative futures and their likely conflicts to assess a fleet design using the metrics of robustness, resilience, reactivity, and recovery is a unique application of scenario planning. This process may be used in the future to assess various fleet designs as proposed by follow-on fleet studies.

Recommendations for Further Research

The Naval Postgraduate School has a tradition of providing technical “red teaming” or providing technical risk to the engineering or employment of emerging technologies and systems. This capability is available for future system commands and fleet design developers to leverage.

Acronyms

NFRS	Navy Force Review Study
NPS	Naval Postgraduate School
OPNAV	Office of the Chief of Naval Operations.

