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Simplifying the Risk Equation: Acceptable Level of Risk in Maritime Planning and Execution

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The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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14. ABSTRACT

Simplifying the Risk Equation: Acceptable Level of Risk in Maritime Planning and Execution

The JFMCC can best convey usable risk level information to operational and tactical level planners and maritime mission commanders through operations directives that include an Acceptable Level of Risk (ALR) Guidance Template. This Guidance Template covers all risk levels and incorporates operational implications, tactical implications, readily accessible historical examples, and expected loss rate for each risk level. The Acceptable Level of Risk methodology enhances current publications as they do not effectively address risk communication between operational and tactical commanders and planners. The introduction of an ALR Guidance Template provides a risk-to-force communication framework that allows operational planners and commanders to communicate with subordinates effectively.

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INTRODUCTION

Before the Battle of Midway, Admiral Nimitz passed the following operational risk guidance to Admiral Spruance and Admiral Fletcher, "you will be governed by the principle of calculated risk."[1] He went on to communicate this as not allowing "attack by superior enemy forces without good prospect of inflicting, as a result of such exposure, greater damage on the enemy."[2] This guidance poses several questions for Admiral Spruance and Admiral Fletcher. What level of risk is genuinely acceptable, and what level of blue attrition are commanders to accept at this level of risk? Furthermore, if the friendly forces realize this level of losses, what impact does this have on the fleet or task force's ability to continue the Pacific campaign? Admiral Nimitz's guidance is still more precise than the risk-to-force communication example found in modern Navy publications. The current *Navy Planning* reads, **"**CJTF BLUE SWORD ACCEPTS RISK TO FORCE FOR SELECTED SLOCS APPROACHING THE JOA,"[3] leaving planners and commanders at all levels with a multitude of questions. A commander and high-level planning team's capacity to accurately communicate acceptable risk levels to subordinate commanders and planners removes a level of ambiguity from directives that can mean the difference between campaign success and failure.

While risk communication was an essential concept in Admiral Nimitz's World War II Pacific Theater, it is even more pivotal in the modern fight. While not of infinite capacity, the U.S. World War II industrial complex could quickly turn out new warships, and training organizations could efficiently prepare battle-ready sailors to absorb losses. With today's

[1] Wayne Hughes and Robert Girrier, *Fleet Tactics and Naval Operations, Third Edition* (Annapolis: Naval Institute Press, 2018), 238.
[2] Hughes and Girrier, *Fleet Tactics,* 238.
[3] U.S. Navy, Office of the Chief of Naval Operations, *Navy Planning*, Navy Warfare Publication (NWP) 5-01, December 2013, L-2-15.

diminishing shipyards and constrained budgets, naval assets and personnel are more challenging to replace. For example, it takes four years from laying the keel to commissioning an Arleigh Burke-class destroyer,[4] while a Ford-class aircraft carrier requires eight years.[5] The loss of the asset in opening salvos of combat operations may not be replaceable during the conflict's duration, not to mention the potential loss of more than 300 experienced sailors on the destroyer,[6] or worse, over 4000 sailors aboard the aircraft carrier.[7] This level of possible loss of force warrants a risk communication construct that is readily understandable by all levels of commanders, planners, and mission commanders.

The JFMCC can best convey usable risk level information to operational and tactical level planners and maritime mission commanders through operations directives that include an Acceptable Level of Risk (ALR) Guidance Template. This ALR Guidance Template should cover all risk levels and incorporate operational implications, tactical implications, readily accessible historical examples, and expected loss rate for each risk level. Current joint and Navy publications cover risk identification and mitigation, but do not effectively address risk communication between operational and tactical commanders and planners. The introduction of an ALR Guidance Template will provide a risk-to-force communication framework that allows operational planners and commanders to communicate with subordinates effectively. This template will furnish relevant historical references that point to cases where planners and commanders faced similar risk levels in actual conflict. Finally, a notional modern operational

[4] Jane's Information Group, "Arleigh Burke (Flight III) class," *Jane's Fighting Ships,* 23 September 2020, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/jfs_c272-jfs_, 1-2.
[5] Jane's Information Group, "Gerald R Ford (CVN 78) class," *Jane's Fighting Ships,* 14 January 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/jfs_6040-jfs_, 1-2.
[6] Jane's, "Arleigh Burke," 1-2.
[7] Jane's, "Gerald R Ford," 1-2.

maritime case study will apply the ALR Guidance Template for use as an example in Navy planning and TTP publications.

This template focuses on naval surface warfare only, and all discussion will be at the unclassified level. Undersea warfare includes similar risk-to-force communication requirements, but the unique nature and classification level of undersea warfare TTPs warrants a separate template and discussion. The United States Air Force's *Integrated Planning and Employment* publication outlines aviation risk-to-force communication well and is readily applicable to U.S. Naval Aviation. Loss rates are estimates based on historical data. An operations research analysis to synthesize data from historical engagements, surface warfare exercises, and high fidelity war games would be beneficial for the ALR Guidance Template but is outside the scope and classification level of this discussion.

RISK TYPES AND RISK COMMUNICATION

The Chairman of the Joint Chiefs of Staff Manual *Joint Risk Analysis* defines military risk as "the estimated probability and consequence of…the inability to achieve current or future military objectives… while providing and sustaining sufficient military resources."[8] The manual divides military risk into two categories, risk-to-mission and risk-to-force. Risk-to-mission is the inability to achieve objectives, while the failure to maintain sufficient resources is risk-to-force.[9] The Joint Chiefs of Staff (JCS) characterize the level of both categories of risk as a relationship between the probability that an event will occur and the consequences of that event's occurrence on mission accomplishment or military capability.[10] The higher the probability or more dire the

[8] U.S. Office of the Chairman of Joint Chiefs of Staff, *Joint Risk Analysis,* Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3105.01, 14 October 2016, C-8.
[9] U.S. Office of the Chairman, *Joint Risk Analysis,* C-8.
[10] U.S. Office of the Chairman, *Joint Risk Analysis,* C-10.

consequence, the higher the characterization of the risk.[11] During the planning and execution phases of an operation, planners and commanders continually identify, analyze, and manage risk-to-mission and risk-to-force by weighing the potential costs of the risk against the benefits of achieving the military objective.[12]

Risk-to-force and risk-to-mission are interrelated and require analysis and mitigation, or acceptance at all command levels. *Navy Planning* states that risk-to-mission should be an operational level team's focus, while the tactical level should focus on risk-to-force.[13] Conversely, *Joint Operations* notes that risk management, including risk management intended to preserve lives and resources, is "relevant at all levels, across the range of military operations, and through all phases of an operation."[14] *Navy Planning* differs because it fails to comprehend the relationship between risk-to-mission and risk-to-force. Missing this relationship means *Navy Planning* does not identify the detrimental impact failure to analyze risk-to-force has on a major operation or campaign. In a tactical sense, as the acceptable amount of risk-to-mission is decreased (the plan requires that force must accomplish the objectives), the risk-to-force increases as the force may have to utilize tactics with a higher loss probability.[15] Likewise, if the acceptable amount of risk-to-force is decreased (the plan directs higher emphasis placed on capability preservation), the risk-to-mission increases as force preservation tactics may preclude objective accomplishment.[16]

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[11] U.S. Office of the Chairman, *Joint Risk Analysis,* C-10.
[12] U.S. Navy, *Navy Planning*, F-1.
[13] U.S. Navy, *Navy Planning*, F-1.
[14] U.S. Office of the Chairman of Joint Chiefs of Staff, *Joint Operations*, Joint Publication (JP) 3-0*,* 17 January 2017, Change 1 22 October 2018, III-16 – III-17.
[15] U.S. Air Force, Office of the Secretary of the Air Force, *Integrated Planning and Employment (IPE)*, Air Force Tactics, Techniques, and Procedures (AFTTP) 3-3.IPE, 3 April 2020, 1-20.
[16] U.S. Air Force, *Integrated Planning and Employment*, 1-20.

When one views this relationship through an operational lens, it is evident that if operational planners focus only on risk-to-mission, it may lead to a resource shortage and an operational factor mismatch during a major operation or campaign. Suppose tactical commanders receive guidance from the operational commander that the acceptable risk-to-mission is low and they must accomplish the objectives. In that case, each tactical engagement could result in high friendly attrition rates, leaving the operational level commander with a level of capability that is too low to continue the campaign, leading to mission failure at the operational level. This mission failure was the very thing that the operation commander set out to avoid through the risk-to-mission guidance. Yet, the mission failed anyway due to the omission of risk-to-force analysis, mitigation, and communication.

Risk communication among commanders is fundamental to successfully transferring risk assessment and mitigation from an operation's planning stage to its execution stage. The JCS defines risk communications as "the exchange of risk perspectives across processes and among leadership."[17] *Joint Planning* goes further, saying that risk discussion is a "must" for commanders and leaders and that "identifying risk as 'high' [for example,] does not support decision making."[18] Risk communication must happen throughout the planning and execution process amongst all commanders and planners to ensure a common understanding.[19] This communication must identify the risk and risk level while providing actionable guidance that is usable by all parties.[20] Risk communication should also support continued risk discussion from subordinates to find the proper risk-benefit balance for the mission at hand.[21] *Navy Planning*

[17] U.S. Office of the Chairman, *Joint Risk Analysis,* B-1.
[18] U.S. Office of the Chairman of Joint Chiefs of Staff, *Joint Planning*, Joint Publication (JP) 5-0*,* 16 June 2017, I-12.
[19] U.S. Office of the Chairman, *Joint Risk Analysis,* B-6.
[20] U.S. Office of the Chairman, *Joint Planning,* I-12 – I-13.
[21] U.S. Office of the Chairman, *Joint Planning,* I-12 – I-13.

covers how a planning staff should display their risk analysis and mitigation work to a commander, but it does not provide a framework of how that commander should discuss risk with higher-level and subordinate commands. It also does not offer the planning staff a usable framework for communicating their work or the commander's risk guidance to subordinate commands for execution.

Navy Warfare Publication writers can alleviate the *Navy Planning* shortcomings concerning risk-to-force analysis and communication by adopting the Acceptable Level of Risk (ALR) methodology. The ALR refers to the maximum level of risk-to-force that a Joint Force Component Commander (in this case, the Joint Force Maritime Component Commander, or JFMCC) is willing to accept during an operation.[22] Commanders base this guidance on the risk-to-force definitions discussed earlier, with the maximum level of risk determined by the highest allowable amount of capability loss over the operation or campaign duration.[23] This maximum level of risk-to-force can vary between phases and stages of a campaign or within individual tactical actions.[24] If force composition or tactics allow, it is favorable to operate at a risk and attrition level lower than the directed maximum, and the ALR construct allows this. If, however, the JFMCC's maximum ALR is required to accomplish objectives, the tactical commander has already received appropriate guidance from the operational commander through the ALR determination and can make execution decisions quickly and efficiently. Naval Warfare Publications can facilitate this shared understanding of acceptable risk between commanders by publishing a baseline Acceptable Level of Risk Guidance Template that gives commanders and planners at all levels a common starting point for planning and discussion.

[22] U.S. Air Force, *Integrated Planning and Employment*, 1-20.
[23] U.S. Air Force, *Integrated Planning and Employment*, 1-23.
[24] U.S. Air Force, *Integrated Planning and Employment*, 1-23.

ACCEPTABLE LEVEL OF RISK GUIDANCE TEMPLATE

An Acceptable Level of Risk Guidance Template gives commanders a shared understanding of risk levels from which to give and receive guidance by making connections between risk levels, loss rates, operational implications, and tactical implications. When included in a warfare publication, the ALR Guidance Template's intent is to provide generic but readily applicable guidance about planning, communicating, and executing at various levels of risk across multiple levels of command.[25] This template offers a starting point for planning and discussion but is robust enough to stand-alone when a situation warrants that risk guidance be issued or interpreted quickly. In particularly complex risk environments, planning teams may tailor this template and include it with formal guidance to encompass tactical or operational implications specific to their campaign or area of operations, ensuring appropriately articulated risk-to-force communication reaches subordinates. An example generic ALR Guidance Template is available in Table 1 specific to naval surface warfare and contains all the elements discussed above.

The ALR Guidance Template in Table 1 aligns the risk discussion in *Joint Risk Analysis* with the concept of ALR and U.S. Navy surface warfare doctrine and tactics. The template breaks out risk-to-force levels as low, moderate, significant, and high to align with the JCS manual's risk characterization discussion.[26] It also adds the risk level of extreme to encompass rare situations where the accomplishment of objectives is critical enough to warrant force annihilation if success is probable. The template applies these risk levels to a force of surface combatants consisting of one guided-missile cruiser (CG) and three guided-missile destroyers (DDG). This force can be considered part of a Carrier Strike Group, an Expeditionary Strike

[25] U.S. Air Force, *Integrated Planning and Employment*, 1-23.
[26] U.S. Office of the Chairman, *Joint Risk Analysis,* B-4 – B-5.

ALR	Expected Loss Rate	Operational Implications (*Historical Example*)	Tactical Implications
Low	Normal Peacetime Attrition	Sustained operations of indefinite duration. Prioritizes capability preservation over mission success. (*U.S. Freedom of Navigation Ops, Show of Force Ops, Global War on Terrorism*)[27]	Avoid engagements that may result in loss of capability. High confidence of threat order of battle. *Employment Implications:* 1. Operate outside threat weapons engagement zones (WEZ), ***or*** inside those zones, if the threat is confirmed neutralized or destroyed
Moderate	One surface combatant rendered combat ineffective per 30 days	Force is combat ineffective in approximately 60 days, allowing for a sustained naval campaign of defined duration. (*Japanese in R.J. War)*[28]	Accept only advantageous engagements. High confidence of threat order of battle. *Employment Implications:* 1. Destroy, neutralize or suppress threats before entering WEZ ***or*** use low-risk tactics with highly effective defensive systems.
Significant	One surface combatant rendered combat ineffective per 48 hours	Force is combat ineffective in approximately 96 hours. Reinforcements should be underway and 96 or fewer hours away when operation starts (*U.S. at Battle of Philippine Sea, WWII)*[29]	Accept potentially neutral engagements. Medium confidence of threat order of battle. *Employment Implications:* 1. Enter WEZ with valid counter TTP or highly effective defensive systems ***and*** threats are disrupted.
High	One surface combatant rendered combat ineffective per 12 hours	Force is combat ineffective in approximately 24 hours. Reinforcements should be in place or underway and 24 or fewer hours away when operation starts (*U.S. at Battle of Midway, WWII*)[30]	Accept disadvantageous engagements. Medium confidence of threat order of battle. *Employment Implications:* 1. Enter WEZ with valid counter TTP or highly effective defensive systems ***or*** threats are disrupted
Extreme	Two surface combatants rendered combat ineffective during first salvo	Force is combat ineffective after first salvo. Complete loss of unit combat capabilities is acceptable (*U.S. at Battle off Samar, Leyte, WWII*)[31]	Enter any threat environment. Accept any engagement that has a probability of success.

Table 1. Naval Surface Warfare Acceptable Level of Risk Guidance Template[32]

[27] Geoffrey Till, *Seapower: A Guide for the Twenty-First Century, Second Edition* (London: Routledge, 2009), 266-269.
[28] David Evans and Mark Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy, 1887-1941* (Annapolis: Naval Institute Press, 1997), 97-99.
[29] William Y'Blood, *Red Sun Setting: The Battle of the Philippine Sea* (Annapolis: Naval Institute Press, 1981), 71.
[30] Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Washington, D.C.: Potomac Books, 2005), 409.
[31] C. Vann Woodward, *The Battle for Leyte Gulf: The Incredible Story of World War II's Largest Naval Battle* (Nashville: The Battery Press, 1989), 164.
[32] Adapted from AFTTP 3-1.IPE Table 1.3 and modified to fit the maritime surface warfare environment.

Group, or can operate independently as a Surface Action Group.[33] The *Naval Surface Warfare Manual* highlights that various numbers and types of platforms (some of which are not traditional surface combatants) may carry out surface warfare tasks, but to simplify ALR Guidance Template generation, the CG-DDG force will be the only assets considered. [34]

The expected loss rate is a generic estimate that outlines average combat capability losses by friendly forces across the entire operation or campaign. Each ship within a modern naval force provides unique and necessary capabilities to the force as a whole, and rendering just one ship in the force combat ineffective can degrade the force's ability to accomplish objectives.[35] Based on this, and the baseline force composition, the definition of an ineffective combat force for the ALR Guidance Template will be two ships within the force rendered combat ineffective. Commanders may find that actual capability attrition in individual tactical actions exceeds the expected loss rate.[36] Still, when averaged over an entire campaign, the overall loss rate should be reasonably close to the published expected rate for the campaign ALR. This campaign average expected loss rate ties directly to the template's operational implication guidance to assist in operational level planning and execution.

The template's operational implications include the length of time a force can expect to sustain operations based on expected loss rates. This helps commanders determine if a force can cover the entirety of a planned campaign and help posture reinforcements adequately. For example, at the lower levels of risk (low and moderate), the length of sustainable combat operations at expected attrition levels means that reinforcements can be weeks to months away.

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[33] U.S. Navy, Office of the Chief of Naval Operations, *Navy Surface Warfare Manual*, Navy Warfare Publication (NWP) 3-20, January 2007, 1-9 – 1-11.
[34] U.S. Navy, *Navy Surface Warfare Manual*, 1-9.
[35] U.S. Navy and U.S. Marine Corps, *Littoral Operations in a Contested Environment,* Unclassified Edition, 2017, 8.
[36] U.S. Air Force, *Integrated Planning and Employment*, 1-23.

However, higher levels of risk (significant, high, and extreme) require reinforcements within days to hours if combat operations continue. This guidance helps the commander outline the reserve force requirements when determining ALR and aids the planning team by providing insights into this reserve force's required readiness level and positioning. Historical maritime examples reinforce the operational implications by delivering a case that meets each relative level of risk-to-force at the outset of operations. Levels of attrition at the end of the historical battles may not match the expected loss rates outlined in the template, but the friendly and enemy force structure and capabilities at the onset of each action support the planned level of risk-to-force that would be required to achieve military objectives in each situation.

The ALR Guidance Template also provides the tactical commander and planner with generic direction on implementing the operational commander's directed ALR. The expected loss rate for each risk level offers both tactical and operational planners a guide. Additionally, the template provides the tactical planner with guidance on information requirements, threat mitigation, TTPs, and defensive systems. The suggested confidence level in the enemy Order of Battle (OOB) drives the information requirement and determines the amount of Intelligence, Surveillance, and Reconnaissance (ISR) required for an operation. Lower ALR (low and moderate) necessitates high confidence in the enemy OOB. Therefore, lower risk levels drive more ISR requirements, while higher acceptable risk levels (significant and high) allow a force to continue operating with less ISR.

Similarly, lower risk-to-force levels require more thorough threat mitigation, while higher acceptable levels of risk allow known threat envelope entry with fewer prerequisites. At the low and moderate ALRs, entering a threat Weapons Engagement Zone (WEZ) requires destruction or neutralization of the threat through kinetic actions or non-kinetic effects. At the higher levels of

risk, disruption of the threat (for example, forcing surface to air missile system targeting autonomous by degrading its connection to the integrated air defense network) is sufficient mitigation to allow WEZ entry. The template combines destruction, neutralization, or disruption of enemy threats with effective defensive systems and counter-tactics to provide tactical planners, commanders, and mission commanders a guide for task organization, risk, and force discussions with operational commanders and abort or proceed decisions during execution.[37]

ALR GUIDANCE TEMPLATE APPLICATION

A notional team of planners and commanders will apply the ALR Guidance Template to the fictitious "OPERATION BLUE SWORD" from Annex L-2 of *Navy Planning* to demonstrate its tactical and operational uses and value.[38] The current risk statement in the *Navy Planning* OPORD for Phase I reads, **"**CJTF BLUE SWORD ACCEPTS RISK TO FORCE FOR SELECTED SLOCS APPROACHING THE JOA,"[39] but with the addition of ALR reads, "CJTF BLUE SWORD SETS THE ACCEPTABLE LEVEL OF RISK AT MODERATE FOR SELECTED SLOCS APPROACHING THE JOA." This change, given a working understanding of ALR methodology, communicates that CJTF BLUE SWORD has accepted the risk-to-force for the SLOCs during Phase I and lets commanders and planners know what level of risk the commander has accepted. Tactical and operational planners and commanders can glean a great deal of information from the addition of ALR to the risk statement.

At the operational level, a moderate ALR informs planners of the anticipated duration of expected combat effectiveness of ships transiting the SLOCs and the number and readiness level of reinforcements required to continue operations in the SLOCs. The moderate ALR means that

[37] U.S. Air Force, *Integrated Planning and Employment*, 1-23.
[38] U.S. Navy, *Navy Planning*, L-2-7.
[39] U.S. Navy, *Navy Planning*, L-2-15.

units operating in the SLOCs during OPERATION BLUE SWORD could be combat ineffective due to attrition in 60 days. If planners expect the operation to exceed 60 days, they should identify reinforcements and have them underway and on station before 60 days of operations elapse. However, suppose the threat conditions, available forces, or capabilities of the forces were to change in a way that was detrimental to JTF BLUE SWORD. In that case, the ALR may change, which would also change the operational considerations previously mentioned. If CJTF BLUE SWORD were unwilling to accept increased risk-to-mission and could not provide the forces or capabilities required to mitigate the increased threat, the commander would instead have to increase the ALR. For the operational planner, this means they have to increase the number of reserve forces and move up those forces' on-station timeline to sustain combat operations for the same length of time.

For the tactical commander and planner, the moderate ALR drives several tactical requirements. They must employ adequate ISR capabilities to gain and maintain high confidence of the enemy OOB. The tactical commander and planning team translate this OOB into threat mitigation. With a moderate ALR, there are two options for the forces operating within the threat WEZ, neutralize or destroy the threat, or use a low-risk tactic with highly effective defensive systems. The option to destroy or defend allows flexibility in the tactical actions but may impact the amount of time that a force can maintain a risk level. For instance, suppose surface combatants rely on tactics and defensive systems to mitigate the threat (and ultimately the risk-to-force) but expend all of their defensive countermeasures or firepower before the end of hostilities. In that case, they can no longer maintain a moderate level of risk-to-force until reloaded if the threat cannot be destroyed or neutralized.

If the JFMCC's directed ALR cannot be maintained, the ALR Guidance Template provides the operational and tactical commander with a quick decision-making tool and discussion starter. If the force numbers or capabilities available to a tactical commander do not support the actions required to mitigate risk to the acceptable level, the tactical commander can request forces or capabilities from the operational commander. Situations may exist where the operational commander cannot provide the additional assets or the capabilities do not exist to mitigate the threat. In that case, the operational commander can increase the risk-to-mission by limiting operations and increasing standoff or increasing the ALR to allow tactics that increase risk-to-force and decrease risk-to-mission. The ALR Guidance Template acts as a commonly understood starting point for the commander to commander-level risk discussions. These discussions can fuel creative thinking to generate the appropriate balance between risk-to-force, risk-to-mission, and maintaining a proper amount of combat capability to continue a campaign.

One such creative solution is the use of different acceptable levels of risk for different asset classes.[40] In the JTF BLUE SWORD example, if the Aircraft Carrier (CVN) is essential to completing tasks later in the campaign, but surface combatants are not (or a sizeable reserve of surface combatants exists), the operational commander may agree to set the ALR for the CVN at moderate but allow an ALR of significant for the surface combatants. This split ALR allows the surface combatants to use higher risk, but potentially more effective, tactics to operate forward and possibly destroy or neutralize the threat so that the CVN can move forward later while maintaining an ALR of moderate. In addition to varying the ALR by asset class, the commander may also adjust it by phase or stage of an operation or campaign.[41] A phase that consists of shaping or deception operations may have a lower ALR than a subsequent phase that includes

[40] U.S. Air Force, *Integrated Planning and Employment*, 1-23.
[41] U.S. Air Force, *Integrated Planning and Employment*, 1-23.

seizing the initiative. This ensures that forces in the former phase survive intact to execute the latter. Overall, the most successful use of ALR methodology and the ALR Guidance Template stems from the planner or commander's overall understanding of the concept and creativity in applying it.

ALR AND THE ART OF COMMAND

Some may argue that the Acceptable Level of Risk methodology is too restrictive and hampers a commander's intuition, creativity, and aggressiveness. *Navy Planning* states that plans need to ensure the commander is allowed "to take necessary and prudent risks without arbitrary restrictions" and that risk can be mitigated by commanders "intuitively, by their past experiences, judgment, or otherwise."[42] Similarly, the *Navy Surface Warfare Manual* says that a commander "alone decides if controls are sufficient and acceptable and whether to accept the resulting residual risk."[43] Some tactical commanders could see the ALR Guidance Template as impinging on their freedom to apply intuition and experience and to decide which risks to accept and avoid. However, while the ALR Guidance Template suggests tactical employment boundaries to stay within the operational commander's accepted risk level, it is meant to guide communication, creativity, and intuition, and not to serve as a procedure that tactical commanders must follow.

Tactical commanders will always require intuition, creativity, and judgment to respond to military risks.[44] Real-world risks do not always fit neatly into the individual risk level rows on the ALR Guidance Template table.[45] The experienced commander knows that the boundaries of

[42] U.S. Navy, *Navy Planning*, F-1.
[43] U.S. Navy, *Navy Surface Warfare Manual*, 4-15.
[44] U.S. Air Force, *Integrated Planning and Employment*, 1-21.
[45] U.S. Air Force, *Integrated Planning and Employment*, 1-21.

risk levels are not well defined.[46] In these situations, the ALR Guidance Template can be helpful to the commander if used appropriately. Instead of viewing it as a restriction on tactical action, the commander can review the implications and loss rates for one or more risk-to-force levels to spark thought and discussion about which employment considerations fit best in the particular situation the force is facing. These employment considerations may result in creative split ALR situations like those highlighted in the ALR Guidance Template Application section or in a hybrid level of risk-to-force acceptance (low to moderate, for example) that commanders and planners uniquely tailor to their current tactical problem.

While command judgment and intuition are essential tenets for decision-making, informed decisions also usually require discussion with other parties. The ALR Guidance Template provides a framework to discuss the nuances of this judgment and intuition with others. *Joint Planning* notes that risk "discussion must be in discrete, concrete terms that enable and support decision-making."[47] The ALR Guidance Template provides the framework to transition personal thoughts stemming from judgment and intuition to "concrete terms" that facilitate productive discussions about risk among planners and commanders. These discussions can help to evaluate the proper balance of risk-to-mission and risk-to-force to allow mission accomplishment at the current tactical level and the current and future operational level. Ultimately, the risk decision still lies with the commander, but rather than hindering the commander by providing restrictions, the appropriately executed ALR methodology informs and improves the commander's decision-making process.

[46] U.S. Air Force, *Integrated Planning and Employment*, 1-21.
[47] U.S. Office of the Chairman, *Joint Planning,* I-12.

CONCLUSION

Given the lives at stake, high cost, and time required to produce major naval surface combatants, risk-to-force and risk communication are under explained in U.S. Naval Warfare Publications and Naval Tactics, Techniques, and Procedures manuals. A discussion of the Acceptable Level of Risk methodology, both broadly in publications like *Navy Planning*, and more platform-specific in publications like the *Navy Surface Warfare Manual* and NTTPs, will deepen understanding and stimulate discussion about risk across naval warfare communities. It would also be beneficial to expand risk discussion in *Navy Planning* to include the relationship between risk-to-mission and risk-to-force and its impact on campaign completion. Current *Navy Planning* guidance can lead planners to believe that risk-to-force does not matter at the operational level. However, in reality, proper force preservation planning can mean the difference between campaign success and failure. Armed with a practical understanding of the risk relationships and the ALR methodology, Navy planners can build realistically executable and sustainable campaign plans and set commanders up for success when communicating their intent concerning risk.

The ALR methodology is readily adaptable to the surface warfare domain, and the community could implement it quickly to improve planning, discussion, and execution. The ALR Guidance Template in Table 1 is conceptually ready to be applied to planning, wargaming, and naval exercises. As the ALR Guidance Template enters service, users can offer changes and refinements as the understanding of and experience with the methodology increases. Like other guidance and tactics, the nuances of the ALR Guidance Template can evolve as required to keep up with new friendly and threat technology, tactics, and employment experience. When commanders and planners discover new "creative applications" of the template, as discussed in

the ALR Guidance Template Application section, publication rewrites can include these applications to increase the utility of the model fleetwide. Adopting the ALR methodology will allow the JFMCC a sustainable, repeatable, and readily understandable method for communicating risk intent to commanders and planners to improve operational and tactical planning and execution, allowing the U.S. Navy to maintain and grow its competitive edge.

RECOMMENDATIONS

The application of the ALR methodology to the maritime warfighting domain could benefit from additional research, modeling, and refinement in a few key areas not covered in this paper. First, further work could make a slightly more platform-agnostic version of the ALR Guidance Template for broader spectrum publications like *Navy Planning*. A more platform-specific version may be helpful to tactical planners in documents like the *Navy Surface Warfare Manual* and NTTPs. Second, a professional operations research analysis of data from past maritime domain engagements, naval exercises, and wargames could improve the fidelity of the expected loss rate and further refine the operational and tactical implications, making the model even more valuable for planning and execution. Finally, if the Navy adopts this methodology, the way the service presents the idea to commanders and planners on first contact matters significantly in the overall buy-in the methodology receives. The rollout of the ALR methodology must include an appropriate amount of training to ensure relevant topics are entirely covered and experts can answer questions satisfactorily. Ideally, teams would accomplish this training in person through temporary duty trips or during exercises to maximize dialogue. The amount of emphasis on training will directly impact the reception by commanders and planners, which will determine the ultimate success of the ALR methodology in improving maritime planning, execution, and risk communication.

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