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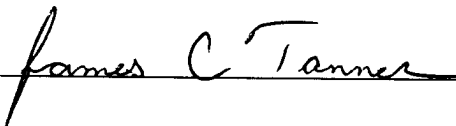
**OPERATIONAL RISK MANAGEMENT AT THE  
OPERATIONAL LEVEL OF WAR**

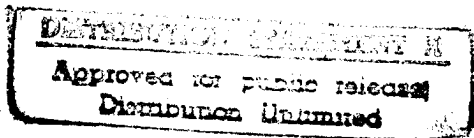
by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations Department.

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.

Signature: 



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## ABSTRACT

Risk is fundamental to the nature of all military action. The success of the operational commander relies upon the proper balance of risk required to triumph in battle with the minimum level of risk necessary to accomplish the assigned mission. One method of effectively maintaining this balance is through deliberate risk assessment and management during all planning levels.

Operational Risk Management (ORM) is a systematic risk assessment and management process recently implemented by the U. S. Navy . This paper will apply ORM fundamentals and principles to two operational case studies to assess applicability at the operational level of war. The ORM process consists of five steps: risk identification, risk assessment, risk acceptability, control implementation and supervision and is based on four principles: accept risk when benefits outweigh the costs, accept no unnecessary risk, anticipate and manage risk by planning and make risk decisions at the right level.

This paper concludes, from a risk analysis of the Battles of Anzio and Leyte, that the five step ORM process provides a specific methodology for operational commanders to anticipate, evaluate and ultimately reduce risk to that level commensurate with accomplishing the mission. The analysis of Anzio and Leyte also illustrated the repercussions of not correctly applying all five steps of ORM in the planning and execution process.

## I. INTRODUCTION

King Richard III was preparing for the contest which would determine who would rule England. The morning of the battle, King Richard sent his groom to make sure his favorite horse was ready for battle. The groom instructed the blacksmith to shoe the horse quickly for the King wished to ride at the head of his troops. The blacksmith, exhausted and out of supplies from shoeing the Kings entire army over the last few days, pleaded for an opportunity to rest and resupply. The groom, knowing the King's enemies were advancing impatiently ordered the blacksmith to make do with what supplies he had remaining. So the blacksmith bent to his task but after he had fastened three shoes, he found he did not have enough nails for the fourth horseshoe. With the battle ready to begin the groom implored the blacksmith to make do with what he had on hand. The blacksmith put the shoe on but it was not as secure as the other three and was uncertain if it would hold. The armies clashed, and Richard was in the thick of the battle. He rode up and down the field, cheering his men and fighting his foes. Far away, at the other side of the field, he saw some of his men falling back. If others saw them, they too might retreat. So Richard spurred his horse and galloped toward the broken line, calling on his soldiers to turn and fight. He was barely halfway across the field when one of the horse's shoes flew off. The horse stumbled and fell, and Richard was thrown to the ground. Richard looked around him and saw that his soldiers were turning and running and the enemy's troops were closing. His army had fallen to pieces, his troops were busy trying to save themselves and in a moment the battle was over.<sup>1</sup>

Risk is fundamental to the nature of all military action. The success of the operational commander relies upon the proper balance of risk required in the bold and decisive action

necessary to triumph in battle with the minimum level of risk necessary to accomplish the assigned mission.<sup>2</sup> One method of effectively maintaining this balance is through deliberate risk assessment and management during the planning and execution phases of all military operations. Risk assessment and management involve identifying sources and types of risk, evaluating the level of acceptable risk and attempting to mitigate the risk.<sup>3</sup> Operational Risk Management (ORM) is a five step risk assessment and management process recently implemented by the U.S. Navy. Although ORM was initially developed and implemented to reduce risks inherent in Naval Aviation these fundamentals are being examined for formal integration into Joint Planning Doctrine. This paper will apply ORM fundamentals and principles to two operational case studies to assess applicability at the operational level of war. The demise of King Richard III at the Battle of Bosworth Field in 1485 is a clear example of how quickly and easily the balance of risk required to win versus minimum risk required can fail if a systematic evaluation of operational risk is not conducted. Although the risk of the horseshoe not holding was identified and assessed, the acceptability of the risk was not addressed and effective measures of control were not implemented to lessen the risk.

## **II. THE NATURE OF RISK**

A life without adventure is likely to be unsatisfying, but a life in which adventure is allowed to take whatever form it will, is likely to be short. -- Bertrand Russell

The Oxford English Dictionary defines risk as “the exposure to the chance of injury or loss.” From this definition, there are three components of the risk that must be taken into account -- a loss of some severity or magnitude, a chance or a probability of loss and some degree of exposure. A secondary definition, “to venture upon,” implies that risk has a

component of action. A decision maker takes risks to bring about a more preferred outcome and greater potential gain requires greater risk.<sup>4</sup>

Having defined what risk is, it is important to examine what does not constitute a risk. A gamble is not a risk. Field Marshal Erwin Rommel defined risk as a chance you take; if it fails, you can recover. A gamble is a chance taken; if it fails, recovery is impossible.<sup>5</sup> In other words, a gamble is a risk without the systematic consideration of the potential consequences of taking the risk or the benefit of employing a sound decision making process.<sup>6</sup> On the other end of the risk spectrum is a "sure thing". An operational commander faced with a sure loss or a sure gain is not taking a risk. The risk decision has already been made and the operational commander cannot influence the outcome. Decisions which have risk fall between the extremes of a sure thing and a gamble.<sup>7</sup>

There are three crucial determinants in all risk decisions: time, control and information. If there was unlimited time to choose an alternative, an operational commander could wait until the risk event was resolved then choose the best no risk course of action after the fact.<sup>8</sup> If an operational commander has complete control over a situation, he could easily determine the best course of action and there would be no risk. Events however, are uncontrollable for a variety of reasons. Nature, enemy actions, and lack of suitable resources are all elements Clausewitz called friction..."the only concept that more or less corresponds to the factors that distinguish real war from war on paper."<sup>9</sup> The quality of risk decisions should improve as the amount of information increases. If the operational commander had complete information about a specific event, he could pick the best alternative based on this knowledge and again

there would be no risk. Lack of information stems from the reliability and quantity of intelligence data, poor command and control and the “fog of war”.<sup>10</sup>

### **III. RISK AND THE OPERATIONAL COMMANDER**

The wise general must consider both favorable and unfavorable factors and “He ponders the dangers inherent in the advantages and the advantages inherent in the danger.” -- Sun Tzu

Willingness to accept some degree of risk is an element of the moral courage and boldness required to command; making decisions in the face of uncertainty and accepting full responsibility for the outcome. Since risk is related to gain, a successful commander must take necessary, calculated risks but at the same time should understand when and where they are taking risks so they do not become tentative in the execution of the operational plan. It is human nature to try to minimize risk by choosing a less ambitious course, but the operational commander must keep in mind that bold action often offers the best chance of success. Although the commander seeks to avoid unnecessary risks, the accomplishment of the mission is the most important consideration.<sup>11</sup>

Because all decisions in battle must be made in the face of uncertainty and because every situation is unique, there is no perfect solution to any battlefield problem. Therefore, the operational commander should not agonize over one. He should arrive at a reasonable decision quickly and execute it swiftly and aggressively. War is characterized by what Clausewitz called friction or “the force that makes the apparently easy so difficult.”<sup>12</sup> Uncertainty is one of the most serious sources of friction because it causes plans to not necessarily work out as expected or planned. Uncertainty involves the estimation and acceptance of risk. Risk is inherent in war and is involved in every mission.<sup>13</sup> The process of risk management is a logical methodology for minimizing risk, but the greatest value of this process is that it helps the operational commander

arrive at a decision then allows him to boldly execute that decision with confidence. As the battlefield has become increasingly more demanding and complex, the overall level of risk inherent in that mission has risen. This increase in risk puts greater demands on operational commanders as risk managers. They must minimize the risks inherent in an operation and reconcile these risks with essential mission needs. Risk assessment and management is a common sense approach to accomplishing the mission with the least possible risk by identifying areas that present the highest risk and then taking action to eliminate, reduce or control that risk.<sup>14</sup>

#### **IV. OPERATIONAL RISK MANAGEMENT**

If risk is the exposure to the chance of loss then operational risk is an expression of possible loss with the potential to affect the success of the mission.<sup>15</sup> The Navy's Operational Risk Management (ORM) process is an effective risk management tool for reducing the inherent risk in conducting military operations without infringing upon the prerogative of the operational commander. ORM provides a means to help define risk and control it where possible, thereby assisting the operational commander in selecting the best course of action and seizing those opportunities which lead to victory.<sup>16</sup> ORM can be conducted on one of three levels: time critical, deliberate, and in-depth. ORM incorporates the following four principles: accept risk when benefits outweigh the costs, accept no unnecessary risk, anticipate and manage risk by planning, and make risk decisions at the right level. The ORM process consists of five steps: risk identification, risk assessment, risk acceptability, control implementation, and supervision.<sup>17</sup>

1. **Risk Identification.** At the operational level, military risk is any factor which has the potential to prevent plan implementation or objective attainment. Risk originates from enemy

strengths, our weaknesses and friction. Any factor which decreases our strength, or augments the enemy's strength, increases risk.<sup>18</sup> The operational commander and his staff must try to determine what losses are possible, the sources of uncertainty (probability), and the extent of exposure to the potential loss.

2. Risk Assessment. For each source and/or type of risk identified, the associated degree of risk in terms of probability and severity must be determined.<sup>19</sup> The assessment of risk is a subjective process and is result of experience, intelligence and hard careful thought and should not be made as an “off the cuff” assessment.<sup>20</sup> Although the determination of the degree of risk is subjective, based on the operational commander's experience and intuition, the relative degree of perceived risk can be obtained using the Risk Assessment Codes (RAC) in Figure 1. For example a loss severity of “catastrophic” which has the probability of “may occur” would have a RAC of “Serious”.

Loss Probability ↓ Severity →	Likely To Occur Immediately Or Frequently	Probably Will Occur Or Is Expected To Occur Several Times	May Occur Or Can Be Reasonably Expected To	Unlikely To Occur
Catastrophic	Critical	Critical	Serious	Moderate
Severe	Critical	Serious	Moderate	Minor
Minor	Serious	Moderate	Minor	Negligible
Negligible	Moderate	Minor	Negligible	Negligible

Figure 1: Risk Assessment Codes<sup>21</sup>

Once the operational commander has determined the relative degree, each risk can be prioritized which will help in completing the risk acceptability step.

3. Risk Acceptability. During this step the operational commander and his staff select control options for the most serious risks first. The operational commander must weigh the risk against the benefits and select those options which will reduce the risk to a minimum consistent with mission accomplishment.<sup>22</sup> These risk levels and control options will directly

influence strategy and operations, and alternative ways of looking at each of the identified risks should be explored. Quantifiable risk assessments of this type can also be effectively used to communicate levels of risk both up and down the chain of command. Most military units, if left without any guidance on risk acceptability, might unknowingly subject themselves to more and more risk to accomplish an assigned mission until the unit is eventually compromised. The unit may have accomplished the mission but the loss may have been a higher price than the operational commander was willing to pay. The more clearly the operational commander can specify risk acceptance criteria the better the chance his units will act in accordance with his intent.<sup>23</sup> It is also imperative that the operational commander know the level of acceptable risk which is consistent with the senior commander's concept for winning the battle.<sup>24</sup> Defining acceptable risk is extremely complex and the final assessment is subjective, reflecting operational art rather than military science.

4. Control Implementation. Once the control options for each risk have been identified the operational commander needs to ensure the controls are properly implemented. At the operational level there are two categories of risk control, tangible and intangible. The tangible method masses greater resources or forces, or improves the existing forces' quality through better training, equipment, doctrine or procedures. The intangible method limits risk by the quality of planning. This includes conformity with accepted standards such as the principles of war and the elements of operational design. The careful planning of branches and sequels is an intangible control method which often can reduce risk. In general, the tangible method is more effective, but not always possible. The goal of this step is to implement risk reduction controls which positively influence the determinants of risk; control, information, and time.<sup>25</sup>

5. Supervision. Follow-up evaluations of the controls and the effect of the controls on the risk must be continually monitored to ensure they remain in place and have the intended effect. This step sounds simple but ensuring control measures are implemented, communicated and understood is critical to the ORM process. Additionally, over time conditions will change and the control measures will need to be reviewed and adjusted to accommodate unforeseen issues. During this step the operational commander should review the four ORM principles to ensure he is staying on track. Accept risk when benefits outweigh the cost. Our naval tradition is built upon principles of seizing the initiative and taking decisive action. The goal of ORM is not to eliminate risk, but to manage the risk so that the mission can be accomplished with the minimum amount of loss. Accept no unnecessary risk. Take risks which are necessary to accomplish the mission. “[The operational commander] should clearly understand that the acceptance of risk does not equate to the imprudent willingness to gamble.”<sup>26</sup> Anticipate and manage risk by planning. Risks are more easily controlled when they are identified early in the planning process. Make risk decisions at the right level. Risk management decisions are made by the leader directly responsible for the operation. His experience, judgment, intuition, and situational awareness are the critical elements in making effective risk management decisions. Supervision also includes an after-action report for incorporation into lessons learned.<sup>27</sup>

The operational commander selects which level ORM is conducted based upon mission, situation, time available, proficiency level of personnel, and asset availability. Time-critical ORM is a quick assessment based on current events and conducted during time sensitive situations and emergencies. Time critical ORM is normally used during the execution phase

of a battle or major operation. Risk decisions made at this level should be based on a thorough understanding of ORM fundamentals, good judgment and experience. Deliberate ORM is used in the planning phase of an operation or in the evaluation of new procedures or tactics. It uses experience and brainstorming to identify risks and develop/implement controls, and is therefore most effective when done in a group. Examples of deliberate applications include Operations Plans (OPLANs) and Concept Plans (CONPLANs). In-depth ORM is similar to the deliberate process but utilizes a more thorough risk assessment involving research of available data, use of diagrams, analysis tools, formal testing or long term tracking of the risks associated with the operation. It is used to more thoroughly study risks in a complex operation or system, or one in which the hazards are not well understood. In-depth ORM would normally be conducted for long-term planning of complex operations.<sup>28</sup>

Risk management begins by clearly defining mission requirements and then establishing acceptable risk factors. While it would be preferable to perform a deliberate or in-depth risk management process for all evolutions, the time and resources to do so will not always be available. One method of ensuring sufficient proficiency in applying ORM at all levels is to practice the fundamentals during training so ORM becomes an automatic or intuitive part of our decision making methodology. Then, when time critical risk decisions are required, operational leaders should be able to incorporate ORM in timely decisions which promote decisive results.

## **V. OPERATION SHINGLE: THE BATTLE OF ANZIO**

On 22 January 1944, the Allied forces of VI Corps conducted an amphibious landing at Anzio. The landing, code named SHINGLE, was an attempt to assist Fifth U.S. Army,

commanded by Lieutenant General Clark, in breaking the German stronghold along the Gustav Line 70 miles to the southeast. Prime Minister Churchill and Allied planners felt an amphibious landing at Anzio would cut-off the German Army's main line of communications forcing them to give up their heavily entrenched defensive line, relieving the costly northern advance of the Fifth Army and re-energizing the stalled Italian Campaign<sup>a 29</sup>.

The Anzio force of VI Corps, commanded by Major General Lucas, conducted a successful amphibious landing which was met by little resistance from the German Army. However, before real results were achieved, the Anzio force had to be tripled to more than six divisions, suffered over 30,000 casualties, and was fought for more than four months under adverse conditions<sup>30</sup>. The events and decisions leading up to the failure at Anzio illustrate why risk management should be conducted throughout the planning and execution phases. In the course of preparing for a major operation such as the amphibious assault at Anzio, there are hundreds of decisions which all have some degree of risk associated with them and Anzio is no exception. However, for the purposes of this paper, only the risks associated with the failure of adhering to the principle of mass will be examined.

The risk associated with continuing a purely frontal assault with a lack of decisive mass at the Gustav Line was identified, deemed too high, and other plans to take Italy were investigated. The plan chosen was to send VI Corps, formed from the Fifth Army, as an amphibious force around the German's right flank. The availability of landing craft and sealift capability limited the size of the amphibious force to one reinforced division and an execution date of no later than 20 December 1943. Planners assessed the risk and determined

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<sup>a</sup> The aim of the Italian campaign was to engage and attack as much of the German Army as possible in order to prevent bringing the full strength of the German Army against allied fronts in France and Russia.

that one division limit could provide the required mass to take and establish the beachhead if Fifth Army was able to progress far enough north to immediately support the VI Corps landing. The risk of limited logistics and sealift capability of delivering the force and supplies for the initial Anzio plan was also correctly identified, assessed, and dealt with when Churchill rallied support for the required landing craft. By 10 December it became apparent to General Alexander, Fifteenth Army Group Commander and Clark's boss, that the Fifth Army had not advanced far enough north to affect a satisfactory link-up. Since sufficient landing craft could not be extended in theater due to Operation OVERLORD, Alexander determined the risks were now too high and scrapped the original Anzio plan.<sup>31</sup>

However, since the risk of Fifth Army's indecisive mass against the strongly fortified Gustav Line remained, Clark recommended conducting Operation SHINGLE with a larger amphibious support element which would preclude the need for immediate Fifth Army support. Once the Anzio beachhead was established the landing force would make a stand until the Fifth Army was in a position to provide support. This plan would require three divisions and a larger logistic footprint but the Allied planners felt the Anzio landing would draw German troops from the Gustav Line and would facilitate Fifth Army's breakthrough. The availability of sufficient landing craft was still a concern for Clark and Alexander. They were willing to accept risks to achieve the objective, but to lessen the risk, they needed the additional vessels. Again the risk was identified, assessed and accepted once Churchill convinced Allied Commanders to keep additional landing craft in theater.<sup>32</sup>

When Churchill began to rally support for Operation SHINGLE regardless of the risk of insufficient logistics and forces, it became clear to Clark and Alexander that the plan was to

be implemented regardless of the risk involved. “[Churchill] brushed aside the objections of the experts...who warned of the grave risks involved in the Anzio operation as contemplated.”<sup>33</sup> It was at this point that the five step ORM management process began to crumble. Churchill, in order to restore British prestige with his allies, agreed to enough landing craft to support a two division amphibious landing vice the three divisions Clark felt were required to support and defend a stand alone beachhead at Anzio.<sup>b 34</sup>

Allied forces were reorganized to give Lucas one American and one British Division to form VI Corps. Alexander envisioned the plan starting with an intensified assault by Fifth Army on the Gustav Line drawing the German reserves from Rome which would facilitate the VI Corps’ Anzio landing. Once at Anzio, VI Corps would drive to the Alban Hills and cut the German lines of communications. With the lines cut, Alexander expected the Germans to withdraw forces from the Gustav Line which would facilitate Fifth Army’s breakthrough. Once through the Gustav Line, Fifth Army would join with VI Corps and march to Rome. However, Clark envisioned the operation differently since he now felt VI Corps did not have sufficient mass to accomplish Alexander’s stated mission. Clark believed the landing at Anzio would draw the Germans off the Gustav Line in order to counterattack at Anzio. Clark, without Alexander’s knowledge, assessed the risk and changed the primary mission of the VI Corps from taking the Alban hills and cutting the lines of communications to seizing and securing the beachhead and advancing on the Alban Hills. It is also clear from Lucas’ lack of initiative in advancing on to Rome immediately following the amphibious landing that he too was uncomfortable with the risk associated with a lack of decisive mass.<sup>35</sup>

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<sup>b</sup> The emergence of the US and Soviet Union as the strongest participants during the Tehran Conference had discouraged Churchill. Churchill felt that the only way to regain parity was a great triumph of British arms at Anzio.

In the final analysis, the failure to provide proper force requirements (tangible risk controls), adhering to the principles of war/operational design (intangible risk controls), and the lack of supervision were factors in the failure of Operation SHINGLE meeting its objective.

## **VI. KING II: THE BATTLE OF LEYTE**

It had been two and a half years since General MacArthur had pledged to return to the Philippines when he waded ashore at Leyte Gulf on 20 October 1944. In May of 1942 control of the Philippine Islands shifted to Japanese forces when U.S. Army troops surrendered on Luzon. The Operation to re-capture the island was the focal point of the Pacific and Southwest Pacific theater's reclamation of the Pacific. Additionally, Leyte was to serve as a base of operations for staging strikes against the Japanese mainland, Formosa, and China.<sup>36</sup>

The battle for Leyte, conducted from 17 to 26 October 1944, was marked by ferocious fighting ashore by U.S. Army and Marine ground forces and intense surface, air, and submarine action at sea. Like Anzio, planning and execution of the Battle for Leyte consisted of many decisions which all had some degree of risk. However, for the purposes of this paper, only the risks associated with the failure of adhering to the principle of unity of command will be examined.

During World War II, the Pacific Theater was a divided command area; the Southwest Pacific was under the command of MacArthur and the North and Central Pacific theaters were commanded by Admiral Nimitz. Since Leyte was located in the Southwest theater the overall command of the operation belong to MacArthur with Nimitz's forces in a supporting role but under the command of Nimitz. This arrangement did not provide for unity of command.

It is not known whether MacArthur prioritized or attempted to quantify the severity of the risks associated with the divided operational command structure. However, MacArthur felt...“Of all the faulty decisions of war, perhaps the most unexplainable one was the failure to unify the command in the Pacific.”<sup>37</sup> “[General MacArthur] was aware that Leyte represented a bold gamble, with grave risk of failure. He knew the odds and accepted them, firmly believing that he could overcome whatever difficulties might arise. General MacArthur had gambled before and won, but the odds on Leyte were very close, and only a commander with supreme self-confidence could afford to ignore them.”<sup>38</sup>

The risk of the uncertain accessibility of heavy carrier support was made worse by the a decision which would severely limit the ability to provide land based air support. Planning for the Leyte operation had originally called for the earlier invasion of Mindanao where the seizure of Leyte could easily be supported by airpower<sup>c</sup>. However, an earlier sweep of the area encountered little Japanese resistance convincing the Americans that Leyte was wide open for easy seizure. The landings on Mindanao were dropped and air support for Leyte was to be handled by Nimitz’s heavy Carriers until airstrips on Leyte were available. Since MacArthur did not control Third Fleet, only swift establishment of airfields on Leyte could provide air support if Third Fleet departed. However, conditions on Leyte were not conducive to airfield construction due to the monsoon season and the spongy, soft terrain.<sup>39</sup>

The Sixth Army landed on the western shore of Leyte on 20 October against light resistance. During the next few days the Sixth Army continued inland while the units of the combined fleet met heavy resistance from the Japanese Fleet. As Japan’s Center Force fleet was moving east

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<sup>c</sup> MacArthur successful advance through the Southwest Pacific had been contingent on moving land based airpower in successive moves to cover each assault by his ground forces.

through the central Philippines to pass through the Surigao Strait and rush the beachhead at Leyte the Center Force was converging on Leyte from the south through the San Bernadino Strait. To complete the plan, Japan's Northern Fleet was charged with drawing Halsey's Third Fleet away from its covering position. The Japanese maneuver, complicated and poorly coordinated initially appeared to fail. The Center Force turned back after meeting heavy resistance from the U.S. Third Fleet and the Japanese Southern Fleet was all but wiped out by Seventh Fleet.<sup>40</sup>

With these victories Halsey, without prior coordination or communication with MacArthur, dashed to the north to eliminate the Japanese Northern Fleet's Heavy Carriers. In doing so he left the San Bernadino Strait unguarded. As Halsey headed north, the Japanese Center force turned once more and began a drive through the unguarded San Bernadino Strait towards the Leyte beachhead. In a remarkable display of courage, seamanship and luck a small group of Seventh Fleet Escort Carriers managed to hold off the powerful Japanese Center Fleet and avoided a possible disaster to the exposed landing force, the Sixth Army.<sup>41</sup>

The risk of insufficient land based air support had been identified and MacArthur suspected the severity and probability that this risk could play in the Battle of Leyte yet few controls were implemented to mitigate the effects of these risks. The success of MacArthur's swing through the southwestern Pacific was due in large part to land based air power in support of each assault. Once the risk of the unavailability of land based air power was assessed, coupled with the uncertain availability of carrier based air, should have prompted MacArthur and his staff to re-evaluate the risk acceptability and establish risk controls which would have ensured proper air cover during the battle. This process, if carried out in its entirety, should have forced another look at the risk of not having a unified command.

## VII. CONCLUSIONS

Friction, uncertainty and chance are inescapable elements of war. These elements are interrelated and require the successful operational commander to assess and accept risk. The best operational commander is not the one who is most familiar with the idea of risk assessment and management, but the one who takes it most to heart and overcomes it whenever possible.<sup>42</sup>

The five step Operational Risk Management process provides an additional tool for operational commanders to use in reducing operational risks. It is not a complete change in the way we approach the risk management problem, but rather provides a specific methodology for operational commanders to anticipate, evaluate, and ultimately reduce risk to that level commensurate with accomplishing the mission. The risk analysis of several important decisions made during the Battles of Anzio and Leyte show the applicability of ORM at the operational level of war and illustrated the repercussions of not correctly applying all five steps of ORM in the planning and execution process. Although, operational commanders and their staffs are usually able to correctly identify and assess the risks inherent in a military operation, the analysis of Leyte and Anzio showed an inability to properly implement and supervise risk controls. As operational commanders and their staffs are trained in the process, ORM will become intuitive, being applied automatically as a means to aid in quickly developing an effective course of action to accomplish the mission. How well operational commanders assess risk and implement risk management can mean the difference between operational success and failure.

## NOTES

- <sup>1</sup> William J. Bennett, *The Book of Virtues* (New York: Simon and Schuster, 1993), 198-200.
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- <sup>4</sup> Kenneth R. MacCrimmon and Donald A. Wehrung, *Taking Risks: The Management of Uncertainty* (New York: Free Press, 1986), 9-10.
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- <sup>6</sup> Clyde A. Hennies and Paul A. Dierberger, "Risk Management: A Key Battlefield Edge," *Military Review*, May 1992, 34.
- <sup>7</sup> James K. Greer, *The Shortest Way Home: Risk and the Airland Battle* (Fort Leavenworth KS: School of Advanced Military Studies, 1989), 13-14.
- <sup>8</sup> MacCrimmon, 14-15.
- <sup>9</sup> Carl Von Clausewitz, *On War*, Edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 119.
- <sup>10</sup> Ralph E. Strauch, *Risk Assessment as a Subjective Process* (CA: The Rand Corporation, 1980), 3.
- <sup>11</sup> Joint Chiefs of Staff, *Joint Doctrine Capstone and Keystone Primer* (Washington, DC: GPO, 1995), 3.
- <sup>12</sup> Clausewitz, 121.
- <sup>13</sup> U.S. Marine Corps Fleet Marine Field Manual (FMFM) 1, *Warfighting* (Washington DC, 1989), 7.
- <sup>14</sup> Sandy Krigel, "ORM Can Work for You," *The Mobility Forum*, November 1996, 17.
- <sup>15</sup> Nicholas Rescher, *Risk: A Philosophical Introduction to the Theory of Risk Evaluation and Management* (Lanham, MD: University Press of America, 1983), 6.
- <sup>16</sup> Department of the Army, Field Manual (FM) 1-100, *Principles for Army Aviation Combat Operations* (Washington, DC: GPO, 1993), 1-3.
- <sup>17</sup> Department of the Navy, Chief of Naval Operations, OPNAV Instruction 3500.39, *Operational Risk Management* (Naval Safety Center: Norfolk, VA, 03 April 1997), 8-9.
- <sup>18</sup> Metz, 78.
- <sup>19</sup> OPNAVINST 3500.39, *Operational Risk Management*, 8.
- <sup>20</sup> Strauch, *Risk Assessment as a Subjective Process*, 24.
- <sup>21</sup> OPNAVINST 3500.39, *Operational Risk Management*, 12-13.
- <sup>22</sup> *Ibid.*, 8-9.
- <sup>23</sup> Kevin J. Dougherty, "Scouts: Engagement and Risk Assessment Criteria," *Infantry*, May-June 1992, 44-45.

- <sup>24</sup> Igor D. Gerhardt, "The Commander's Decision," *Military Review*, August 1980, 16.
- <sup>25</sup> Joint Chiefs of Staff, Joint Pub 3-0, *Doctrine for Joint Operations*, III-20.
- <sup>26</sup> U.S. Marine Corps Fleet Marine Field Manual (FMFM) 1, *Warfighting*, 7.
- <sup>27</sup> Tom Poole, "ORM: A Three Letter Acronym for World Class Performance!" *The Combat Edge*, December 1995, 6.
- <sup>28</sup> OPNAVINST 3500.39, *Operational Risk Management*, 9-10.
- <sup>29</sup> P. Coakley, "Reflections on Anzio," *Military Review*, October 1953, 96.
- <sup>30</sup> G. R. D. Fitzpatrick, "Anzio and Its Lessons," *Military Review*, July 1951, 97.
- <sup>31</sup> Coakley, 100.
- <sup>32</sup> Martin Blumenson, *Anzio: The Gamble That Failed* (New York: J. B. Lippincott, 1963), 51-52.
- <sup>33</sup> Martin Blumenson, "The Controversial Landing at Anzio," *Marine Corps Gazette*, March 1995, 71.
- <sup>34</sup> Wynford Vaughan-Thomas, *Anzio* (New York: Holt Rhinehart and Winston, 1961), 20.
- <sup>35</sup> Blumenson, *Anzio: The Gamble That Failed*, 55.
- <sup>36</sup> M. Hamlin Cannon, *Leyte, The Return to the Philippines* (Washington: Office of Military History, 1954), 15.
- <sup>37</sup> Douglas MacArthur, *Reminiscences* (New York: McGraw Hill Book Company, 1964), 172.
- <sup>38</sup> Stanley L. Falk, "Leyte: Big Risks and High Stakes." *Army*, September 1994, 58.
- <sup>39</sup> Ibid.
- <sup>40</sup> Ibid., 60.
- <sup>41</sup> Ibid.
- <sup>42</sup> Clausewitz, 120.

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