The Mining of Wonsan Harbor, North Korea in 1950: Lessons for Today's Navy.

CSC 1999

Subject Area – History

EXECUTIVE SUMMARY

Title: The Mining of Wonsan Harbor, North Korea in 1950: Lessons for Today's Navy.

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Thesis: Although the future of the U. S. Navy's newly implemented "Mine Warfare Campaign Plan" is promising, the Navy could not conduct a Wonsan type operation any better today than it did in 1950.

Discussion: The amphibious operation at Wonsan Harbor North Korea was a mine warfare disaster for the U. S. Navy. For five days it delayed General MacArthur's ordered assault on Wonsan to cut off the enemy retreat north and to open a second supply line to relieve the over-stressed port of Inchon. Additionally, it resulted in four minesweeper's sunk and numerous personnel casualties.

The Navy has directly and indirectly taken many of the lessons from Wonsan and incorporated them into its new "Mine Warfare Campaign Plan" for the 21st Century. Upon comparison with the Commander in Chief Pacific Fleet's now declassified 1950 evaluation of Wonsan and the "Mine Warfare Campaign Plan," today's Navy is still lacking in three important areas of mine warfare: logistics, officer experience, and quantity of forces.

Like Wonsan, the Navy would quickly use up available spare parts in a large amphibious operation. Similarly, the Navy officer corps is not sufficiently schooled in mine warfare, which led to many of the staff planning problems at Wonsan. Finally, the quantity of mine forces today is not sufficient to conduct a Wonsan type operation.

Conclusion: The Navy's plan to overcome the mine warfare challenges of a large amphibious assault, like Wonsan, are on the right track; however, it will take until the year 2010 to fully implement. In the meantime, it does not have the ability to conduct an amphibious assault in the face of mines, and will have to remain focused on achieving the ultimate readiness goal by 2010.

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, 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. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE **1999**	2. REPORT TYPE	3. DATES COVERED **00-00-1999 to 00-00-1999**

4. TITLE AND SUBTITLE **The Mining of Wonsan Harbor, North Korea in 1950: Lessons for Today's Navy.**	5a. CONTRACT NUMBER 5b. GRANT NUMBER 5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER 5e. TASK NUMBER 5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Marine Corps War College,Marines Corps University,Marines Corps Combat Development Command,Quantico,VA,22134-5067**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S) 11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**58**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

Preface

> *An American cruiser was operating in shallow water along the enemy coast to protect other ships in the task force from possible air attack. Due to a floating mine that crippled another ship in the task force, the Commanding Officer was alert to the destructive threat. He judiciously posted an armed mine watch at the bow of the ship. He also reduced the ship s speed to "bare steerage-way" and ordered the closure of all watertight hatches below main deck to prevent flooding. These precautions enhanced the ship's meager defenses against mines while allowing the bridge team extra time to maneuver in case of a mine sighting*
>
> *A short time later, the ship received an intelligence report that prompted her to proceed to a defensive position between an enemy coastal threat and other ships in the task force. She was entering waters believed to be free of mines. While transiting to her new position, the Captain used the ship's central address system to remind the crew of the mine threat. At that precise moment, a tremendous explosion rocked the cruiser. The mine, which exploded beneath the keel, caused severe damage to the ship and injured several members of the crew.*[1]

This incident sounds eerily familiar to sailors of many past conflicts, including the Korean War. However, it is actually a more recent account of the *USS Princeton's* (CG – 59), the most technologically advanced ship of its time, detonation of a bottom influence mine during the 1991 Gulf War. A similar incident crippled the *USS Brush* (DD-713) on 26 September 1950 during the Korean War just prior to the amphibious landing at Wonsan. The *Brush* was enforcing a UN blockade of North Korea and searching for enemy coastal targets when she struck a mine. Like the *Princeton,* her Commanding Officer was warned of the danger of floating mines to the task force. Just days earlier, a

[1] Scott C. Truver, "Lessons From the Princeton Incident," *International Defense Review Journal* 24, no. 7 (1991): 740-741.

cruiser had sighted and destroyed two drifting mines. The *Brush* took the same time honored precautions to defend against mines as the *Princeton* would more than 40 years later. Likewise, she suffered a similar fate when she struck a moored mine transiting along the Korean coast toward her next mission. She was severely damaged and lost several crewmembers.[2] This incident enabled North Korea, a small nation with an extensive coastline, to force the U.S. Navy outside of the 100-fathom depth curve, well beyond the range to give needed naval gun fire support to land forces.[3]

On a broader scale, Wonsan Harbor, North Korea in 1950 demonstrated the risk of mines to an amphibious force conducting a landing. Just after Inchon, General Douglas MacArthur, Commander in Chief Far East, ordered an assault on Wonsan to cut off the enemy retreat north and to open a second supply line to relieve the over-stressed port of Inchon. Because of mines, the landing was delayed for five days at the cost of four minesweepers sunk and numerous personnel casualties.[4] The lessons of Wonsan were recognized at the time by Vice Admiral C. Turner Joy, Commander Naval Forces, Far East with these words:

> The main lesson of the Wonsan operation is that no subsidiary branch of the naval service, such as mine warfare, should ever be neglected or relegated to a minor role in the future. Wonsan also taught us that we could be denied freedom of movement to an enemy objective through the intelligent use of mines by an alert foe. [5]

These lessons were inculcated by the Navy after the Korean War, but were later ignored until mines again took their toll during the Gulf War.

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[2] James Edwin Alexander, *Inchon to Wonsan: From the Deck of a Destroyer in the Korean War* (Annapolis, Md.: Naval Institute Press, 1996), 58.

[3] Commander in Chief U.S. Pacific Fleet. "Korean War U.S. Pacific Fleet Operations, Mine Warfare: Interim Evaluation Report No. I.E.," Period 25 June to 15 November 1950, 1079. (Washington, Naval Historical Center, File: CINCPACFLT 1950). "Hereafter referred to as CINPACFLT MIW"

[4] CINCPACFLT MIW. 1141.

As a result of its failures during the Gulf War and its over-reliance on NATO allies, like Great Britain, for MCM, the Navy has again committed itself to mine countermeasures (MCM). More recently, it has developed the "Mine Warfare Campaign Plan" for the 21st century. This ambitious endeavor will improve MCM and incorporate it into every aspect of the U.S. Fleet in the next century. While the "Campaign Plan" is similar to a strengthening and shifting wind filling the sails of a ship "in irons",[6] the U.S. Navy is well advised to remember that its MCM history is full of fresh starts that "ran aground" because of budget constraints and higher priorities. This fact was highlighted after Wonsan when, like today, the Navy embarked on an ambitious mine warfare program. However, the lessons of Wonsan only sustained the Navy's MCM rebuilding program until the late 1950's when tightening Navy budgets made it necessary to cancel MCM ship construction funds.[7] In the future, the Navy must find a way to sustain its MCM programs or risk another mine warfare disaster in the next century.

The sources for this study are varied in nature. Most of the factual information concerning Wonsan was taken from original Korean War naval documents retained at the Naval Historical Center. The present and future mine warfare information came from various interviews with naval officers experienced in MCM. Specifically, Navy CDR's Shaun Gillilland and Joel Griner, both experienced MCM commanding officers working in MCM on the Navy Staff and Naval Sea Systems Command, respectively, were of tremendous assistance in providing information.

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[5] Malcolm W. Cagle and Frank A. Manson, *The Sea War in Korea* (Annapolis, MD: Naval Institute Press, 1957), 151

[6] A sailing vessel is said to be "in irons" when it does not have sufficient inertia and stops; meanwhile, its bow is pointing into the wind rendering its sails useless.

[7] Dr. Tamara M. Melia, *Damn the Torpedoes: A Short History of U. S. Naval Mine Countermeasure, 1777-1991* (Washington, D.C.: Naval Historical Center, 1991), 86

The "Campaign Plan" has indirectly incorporated many of the lessons of Wonsan. This example is included because it is the last large-scale amphibious landing attempted in mined waters since World War II. Failure to include it, a worst case scenario, would be an oversight. Furthermore, by comparing these lessons to the Navy's plans for the next century, this study will attempt to evaluate the likely success or failure of the Navy's new strategy. Likewise, this assessment will instruct future generations of naval officers to sustain the impetus toward fundamental change and improvement in MCM, while simultaneously, counseling them to remain one step ahead of potential enemies that will employ mines in new and innovative ways. The setbacks of Wonsan Harbor gave the Navy many valuable lessons of the past which are relevant today; likewise, this study will attempt to validate some of those lessons for its new strategy in the next century and uncover other lessons previously ignored.

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Chapter 1

MINES: A DEFENDER'S FORCE ENHANCER

Mines effectively enhance a coastal country's defensive position, thus denying temporary or permanent local naval superiority against a much stronger navy. Furthermore, past examples highlight some of the more archaic defensive measures still in use against mines by the most technologically advanced and powerful Navy in the world. The following diagram ("Figure 1. Ship Casualties by Weapon Type") demonstrates the recent effectiveness of mines against the United States Navy in comparison with other weapons. Today, the successes of the Gulf War and the minimum casualties resulting from that conflict have strengthened the defensive power of the mine. Its power is enhanced because Americans, lulled by Gulf War successes and bombarded with graphic information by the media, will not tolerate large numbers of casualties in a conflict not related to national survival. Potential adversaries of the U.S. understand this weakness in American policy as well as the destructive potential and relative low cost of the mine. Therefore, understanding the various types of mines, their uses, and future applications are critical to the study of MCM history and its relationship to future MCM strategies.

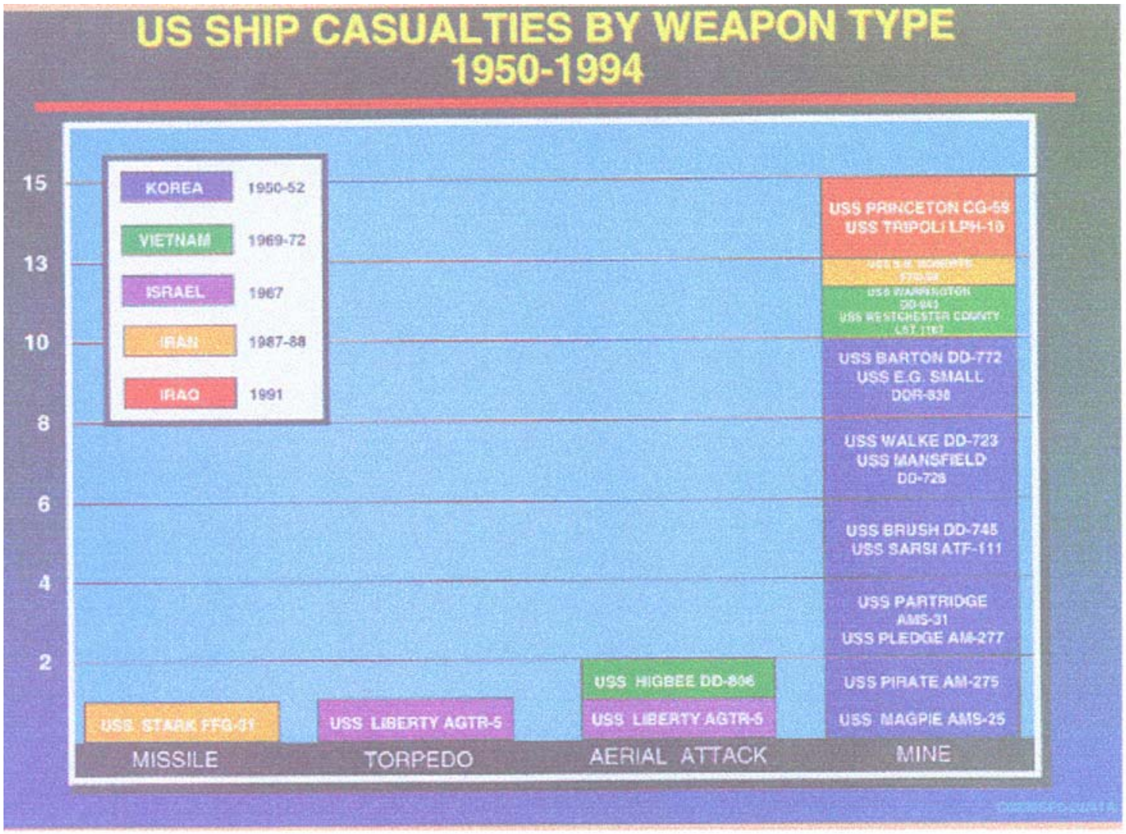

Figure 1. Ship Casualties by Weapon Type[1]

Mine Types

Mines are categorized into three basic types: contact, influence, and combination. **<u>Contact mines</u>,** like the ones that damaged the *Brush* (DD-713) in Korea and the *Tripoli* (LPH-l0) in the Arabian Gulf, are detonated when a ship physically contacts the firing mechanism. (See Appendix A for descriptions and illustrations of different mine types.) They are typically anchored (moored) to the bottom of a water column in depths between 100 and 1000 meters and are very inexpensive. **<u>Influence mines</u>,** like the one that damaged the *Princeton* (CG-59) in the Gulf War, are much more complex and detonate when a ship influences and triggers a sensor in the mine. Magnetic, pressure, seismic, or acoustic sensors trigger these weapons. They typically rest on the bottom and are generally ineffective in depths greater than 100 fathoms because they rely on shock waves to damage ships. Lastly, **combination mines** combine any of the previously listed influence as well as contact firing mechanisms. They include complex innovations such as stealth, countermeasure resistance, and propulsion to defeat MCM.

Combination mines are what make MCM extremely difficult and are the curse of future MCM. These mines are difficult to counter because of their sophistication. Interestingly, maritime mines including combination mines are specifically excluded from the recent treaty to ban land mines.[2] The newer combination mines are increasingly cheaper and include microcomputers with improved logic capabilities and reduced power consumption. Also, they are increasingly more sensitive and include greater target discrimination capabilities as well as explosive power. Lastly, counter MCM devices such as burial systems that elude sonar detection, and blast resistant and non-metallic casings that are survivable and resist identification all combine to work against MCM.[3] These are just a few of the examples of recent innovations to enhance the defensive power of the mine.

The mine of the future will combine all of the previously described capabilities in addition to new innovations. Imagine, for a moment, the technologies of the future that place artificial intelligence into a mine. Through a decision process, these mines will distinguish between a merchant ship, a combatant warship, or an MCM vessel.

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[1] ONI and NSWC Dahlgren Division, Coastal Systems Station, Panama City, Fl, *Surface Warfare Magazine,* May/Jun 1998, 6

[2] CDR Shaun Gillilland, MCM Operations at Office of Expeditionary Warfare, interview by author, 21 December 1998. (Pentagon) "Hereafter referred to as Gillilland."

[3] LtGen J. B. Rhodes, USMC and RADM G. S. Holder, USN, "Concept for Future Naval Mine Countermeasures in Littoral Power Projection," *United States Marine Corps Warfighting Concepts for the 21st Century* (1 May 1998): X-7.

Theoretically, the "intelligent" mine will, depending on its mission, allow several MCM assets to pass through its kill radius and wait to detonate when it encounters a higher value target of its choice. Likewise, it will also detect the presence of an MCM asset and destroy it if the mine thinks it is threatened with neutralization. Although more than a decade away, the manufacture of these "intelligent" mines will occur, and so is the greater problem of their proliferation.[4] According to the Navy, over 30 countries are currently engaged in mine development, and 20 countries are known mine exporters.[5] The ever-changing problem of MCM is that once a countermeasure is developed to defeat a mine, an arms supplier develops a new and even more sophisticated mine to defeat the countermeasure. Thus, the continuous cycle, as constant vigilance in MCM is required to stay ahead of the mine threat.

MCM Methods

Today, MCM is divided operationally into a "triad" of assets: **Surface Mine Countermeasures** (SMCM), **Airborne Mine Countermeasures** (AMCM), **and MCM Explosive Ordnance Disposal** detachments (EOB). (See Appendix B for descriptions and illustrations of MCM methods.) Currently, the U. S. Navy is comprised of 26 minesweepers (SMCM), two squadrons of helicopters (AMCM), and 15 EOD detachments. In 1950, the primary asset of MCM was SMCM, due to the predominant mine threat being the contact mine. Since that time, the increasing sophistication of influence mines along with the increased use of AMCM and EOD have elevated these

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4 Gillilland

5 LtGen Rhodes and RADM Holder, "Concept for Future MCM" *USMC Warfighting,* X-5.

two MCM assets to equality with the SMCM. Each member of the triad utilizes its strengths to support the other asset's weakness against different types of mines.

The moored contact mine has traditionally been swept by mechanical sweeping gear deployed from ships that physically cut the anchor wires of a contact mine. Once the wire is cut, the mine floats to the surface where it is located and detonated. Preceding the Gulf War, small caliber weapons fired from a ship sank many of these swept mines. Unfortunately, if small arms fire does not detonate the floating mine by striking the trigger mechanism, the mine sinks just below the surface. The result is an invisible drifting contact mine, which is much harder to destroy. Therefore, since the Gulf War, EOD instead of small arms fire has been primarily used to neutralize swept contact mines. Of course, the traditional contact mine, which debuted in the early 20 century, now has new innovations with anti swimmer devices.

Since Vietnam, helicopters have also been used to sweep contact mines. These helicopters tow sleds that sweep mines in a similar manner to ships. The obvious advantage of using a helicopter for this purpose is safety and speed. If contact mines were the only threat facing the Navy, AMCM would be the primary MCM weapon. However, EOD must still accompany AMCM assets that sweep contact mines just as they assist SMCM assets for the same purpose.

Influence and combination mines are much more difficult to neutralize than contact mines; likewise, they require the mutual support of the "triad". SMCM is slow and methodical in its search for combination mines. The newest sonar, the SQQ-32, can search and locate a mine over a half-mile away depending on the environmental conditions, size, and composition of the mine. The characteristics of the mine and the environmental conditions must be emphasized because they determine how well a mine can be detected. In poor conditions or in a search for mines with reduced signatures, a mine may be detected at only 100 yards or may go completely unnoticed. When conditions are not optimal, MCM can be a very dangerous business. To neutralize mines the SMCM vessel must utilize its own organic Mine Neutralization Vehicle (MNV), or vector an EOD unit to the mine. While SMCM is the most reliable MCM asset for combination mines, its slow pace of operation can hinder future amphibious assaults through resultant delay. Only larger numbers of these assets can increase the tempo of SMCM operations.

AMCM assets have also been able to assist in locating influence mines. The AQS -14 sonar system is currently towed on a sled to locate bottom influence mines. This sonar system can search an area much quicker than its SMCM counterpart, but it must rely on an EOD or SMCM asset to neutralize the mine. Additionally, the AQS-14 system reports a high number of false contacts.[6] This is being corrected with additional coverage from a new system call Magic Lantern. Magic Lantern utilizes a blue green laser to locate mines by analyzing their underwater reflection. Although it has assisted AMCM assets with locating combination mines, like SMCM sonars its reliability is greatly affected by environmental conditions.[7] The biggest drawback to AMCM's efforts against combination mines is its inability to neutralize them organically.

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[6] Gillilland.

[7] Richard J. Sterk, "Airborne Countermeasures" *Naval Forces Journal 17, no.* 4, (1996): 29

Mines and the Amphibious Landing

Not surprisingly, the *Brush* and *Princeton* incidents made the Navy more cautious immediately after these events; as a result, partial control of the seas was lost to the enemy. Realizing that the threat from mines against an individual ship in today's world can cause operational and strategic problems, the enormously dangerous implications that mines can pose to an amphibious landing are obvious. Mines slowed the landing of Tenth Corps at Wonsan for five critical days; furthermore, they prevented the use of the port for critical logistics support, and forced naval gunfire support ships outside effective gunfire support range.[8] After Wonsan, Admiral Forrest P. Sherman said, "When you can't go where you want to, when you want to, you haven't got command of the sea. And command of the sea is a rock-bottom foundation of all our war plans…"[9] In 1950, Admiral Sherman summed up the U. S. Navy's dilemma for the next century.

Contact and influence mines are extremely dangerous to an amphibious landing. Without sufficient mine clearance, they can exact an enormous toll on men and equipment at a low cost; likewise, the time needed to clear the menacing mines can delay or prevent a landing altogether. In his autobiography, General Schwartzkopf discussed the impact of mine damage to *Princeton* and *Tripoli* on the amphibious landing in the Gulf War: ".... The losses alerted the allied coalition to the severity of the mine threat and were a factor in the cancellation of the allies' planned amphibious assault into

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[8] CINCPACFLT MIW, 1090

[9] Cagle and Manson. *Sea War in Korea,* 42

Kuwait."[10] The other significant factor in the cancellation of the Gulf War landing was the time needed to clear the mines and the shore defenses that enhanced them.[11]

Even more dangerous to amphibious landings today are mines in the Very Shallow Water (VSW) and Surf Zone (SZ) regions. Conventional MCM triad assets cannot currently clear these regions. The VSW region is defined as the 40 to 10-foot depth and the SZ continues from the 10-foot depth to the beach. The Director of Expeditionary Warfare, MajGen Edward Hanlon, USMC, said of the VSW region:

> ...the very shallow water region is a critical point for our offensive forces and can easily, quickly, and cheaply be exploited by the enemy. The magnitude of the current deficiency in reconnaissance and neutralization in these regions and the impact on amphibious assault operations were demonstrated during Operation Desert Storm.[12]

This region is easily exploitable by an enemy with access to arms suppliers. Currently the U. S. Navy's only weapons against the VSW/SZ threat are special EOD teams and the Navy Marine Mammal System (MMS). MMS is an innovative EOD use of trained porpoises to locate and neutralize mines by using the porpoise's own sonar to locate and then neutralize them with an explosive charge.[13] However, these assets cannot be used on a large scale and have various limitations including the potential political outcry of some humanitarian groups. These groups make it extremely difficult for the Navy to use porpoises to the extent it would like. The political pressure exerted on the Navy if a single porpoise is injured or dies in an exercise is almost too much to bear.

Finally, and related to the VSW/SZ region, the defense against an amphibious landing must be considered. Mines multiply the defensive strength of a nation with an

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[10] Schwarzkopf, General H. Norman, *The Autobiography: It Doesn't Take a Hero* (New York, 1992) 446.
[11] CDR Joel Griner, USN, *The Paradigm of Naval Mine Countermeasures: A Study in Stagnation,* MMS Thesis (Quantico, Va: Marine Corps Command and Staff College, 14 April 1997), 13.
[12] LtGen Rhodes and RADM Holder, "Concept for Future MCM" *USMC Warfighting, X-5*

exposed coastline by multitudes. They are inexpensive, hard to find and neutralize, and are dangerous. Not only are mines inherently dangerous alone, but they are also devastatingly effective when defended in depth. A well-placed minefield with counter MCM and anti-ship mines protected by artillery or missile batteries is a formidable defense.[14] The defense in depth of the beachhead was successfully used by the Turks against the British in the Gallipoli Campaign of 1915; likewise, the North Koreans used this tactic against UN forces at Wonsan.[15] The common denominator in both of these mining campaigns was the Russians, assisting the Turks and North Koreans, who have always had a propensity for mine warfare. Their tactics use mines to protect the beachhead from amphibious assault while shore batteries and counter MCM mines protect the minefields from being swept by MCM assets. Thus, because of increased mine technology without adequate counter MCM, the defense in depth of a minefield is more hazardous today than in the past.

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[13] Gillilland.

[14] For more information on coastal defense in the United States, the reader is referred to various sites and displays at Fort Moultrie, SC; Fort Washington, Maryland; and Fort Bliss, Texas.

[15] Cagle and Manson. *Sea War in Korea*, 145

Chapter 2

WONSAN: A CASE STUDY

The MCM operation in support of the amphibious landing at Wonsan Harbor, North Korea in September 1950 was one of the most significant U. S. Naval setbacks of the 20^{th} century. It provides a great lesson in the use of mines by a nation with an extensive coastline and a small navy to deny naval supremacy and to delay an amphibious landing. As Admiral Joy said,

> "In retrospect," it must be said that the landing was to pay dividends for the Navy. Had it not been undertaken we might never have become fully alerted to the menace of mine warfare nor profited from the lessons we learned about minesweeping.[1]

Unfortunately, many of the lessons of Wonsan would have to be relearned in the Gulf War. In fact, many of the areas addressed by the Navy's new "Campaign Plan" were addressed immediately after Wonsan. The Commander in Chief Pacific Fleet addressed the need to counter the MCM weaknesses at Wonsan in many now declassified reports in 1950. Specifically, compared with the Commander in Chief Pacific Fleet's November 1950 evaluation of Wonsan, the MCM weaknesses that were evident in 1950, and must still be corrected in the Navy's newest MCM strategy, are listed below:

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[1] Cagle and Manson. *Sea War in Korea*, 120

- Must have adequate protective supporting forces.
- Must be more covert and expeditious.
- Must have adequate logistical support.
- Must have adequate intelligence
- Must have an officer corps experienced in mine warfare.
- Must have a large quantity of specialized MCM forces and equipment.[2]

Mine Warfare Leading to Wonsan

In order to understand the lessons of Wonsan, a review of the events leading up to it is necessary. A chronology of events is listed in Appendix C for easy reference. During World War II, the U.S. Navy's Pacific minesweeping fleet varied between 525 and 550 ships.[3] In fact, the amphibious assault against Okinawa was preceded by more than 100 minesweepers, while 300 preceded Normandy.[4] The MCM expertise gained during World War II amphibious landings proved that large numbers of SMCM vessels were necessary to quickly and efficiently remove the mine threat.

In 1947, the CNO, Fleet Admiral Chester Nimitz, dealt minewarfare a severe blow. He reduced the mine forces in order to meet further budgetary limitations imposed on the Fleet by the 1948 budget.[5] Of course, the reduction of the mine force prior to the Korean War was not entirely Admiral Nimitz's fault. Post war disarmament, reduced budgets, and changing missions imposed by Congress forced the Navy to choose between the not so glamorous MCM fleet and many of its capitol ships and programs.

Considering the MCM assets of World War II, it is shocking to consider the degraded state of MCM forces at the dawn of the Korean War. When it began, the U.S.

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[2] Commander in Chief U.S. Pacific Fleet. "Korean War U.S. Pacific Fleet Operations, Mine Countermeasures: Interim Evaluation Report No. V.9.," Period 25 June to 15 November 1950, 1659. (Washington, Naval Historical Center, File: CINCPACFLT 1950). "Hereafter referred to as CINPACFLT MCM"
[3] Cagle and Manson. *Sea War in Korea*, 125.
[4] Cagle and Manson. *Sea War in Korea*, 134
[5] CINPACFLT MIW, 1091

minesweeping force in Far Eastern waters consisted of only four 180-foot, steel-hull, fleet minesweepers (three of them in a caretaker status), and six wooden auxiliary minesweepers.[6] All ten vessels were located in Japanese waters. Not until August 1950 were several minesweepers re-activated; moreover, no other MCM ship assets were further mobilized from the Pacific Fleet reserves until the fourth increment of mobilization after mines were discovered at Wonsan. These steps were taken far to late to influence MCM forces during the Wonsan landing.[7]

MCM experience prior to the Korean War was another important factor missing on fleet staffs and ships. Ninety-nine percent of the U.S. Navy's mine personnel during the Pacific war were reservists. Between 1945 and 1950, this reservoir of trained officers and men had dwindled to the vanishing point largely due to budgetary cuts and a lack of emphasis on mine warfare. Ship paravanes[8] and degaussing systems,[9] which in World War II protected individual ships from contact and magnetic mines, respectively, were not in active use. The general service attitude at the time was criticized in the Commander in Chief Pacific Fleet's interim evaluation report of November 1950: "Mine warfare has long been a low priority training subject for general consumption in the U.S. Navy.... The sweeping of mines by most naval officers is remembered only as a tactical problem which any line officer should be able to do,"[10] an attitude that persists to this day.[11]Although many mine warfare officers remained in the reserves, the experience and continuity of the active duty fleet staffs in 1950 with respect to mine warfare was

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[6] Cagle and Manson. *Sea War in Korea*, 125
[7] CINCPACFLT MIW, 1095
[8] Paravane- A device attached to the bow of a ship to divert contact mines away from the hull.
[9] Degaussing System- Magnetic coils attached to a ship to cancel its magnetic field.
[10] C1NPACFLT MIW, 1092
[11] Gillilland

severely degraded. This shortfall directly impacted the planning for Wonsan because it was so early in the conflict. The excellent minesweeping forces of World War II had literally dissolved.[12]

Prelude to Wonsan

The military situation at the beginning of the Korean War is well known, but a brief summary of events leading to the landing at Wonsan is appropriate. From the period 25 June through 15 September 1950, United Nations ground forces under General MacArthur were forced south from the 38th parallel to the Pusan Perimeter. To reverse the siege by the North Koreans on the Perimeter, MacArthur decided to cut off the enemy's lines of communications with an amphibious landing at Inchon on 15 September. (See "Figure 2. North to the Parallel") This risky but brilliantly successful attack relieved the pressure on the Pusan Perimeter, recaptured Seoul, established UN forces and bases outside of the Perimeter, and put the North Koreans in a headlong retreat north to the 38th parallel.

[12] Cagle and Manson. *Sea War in Korea, 125*

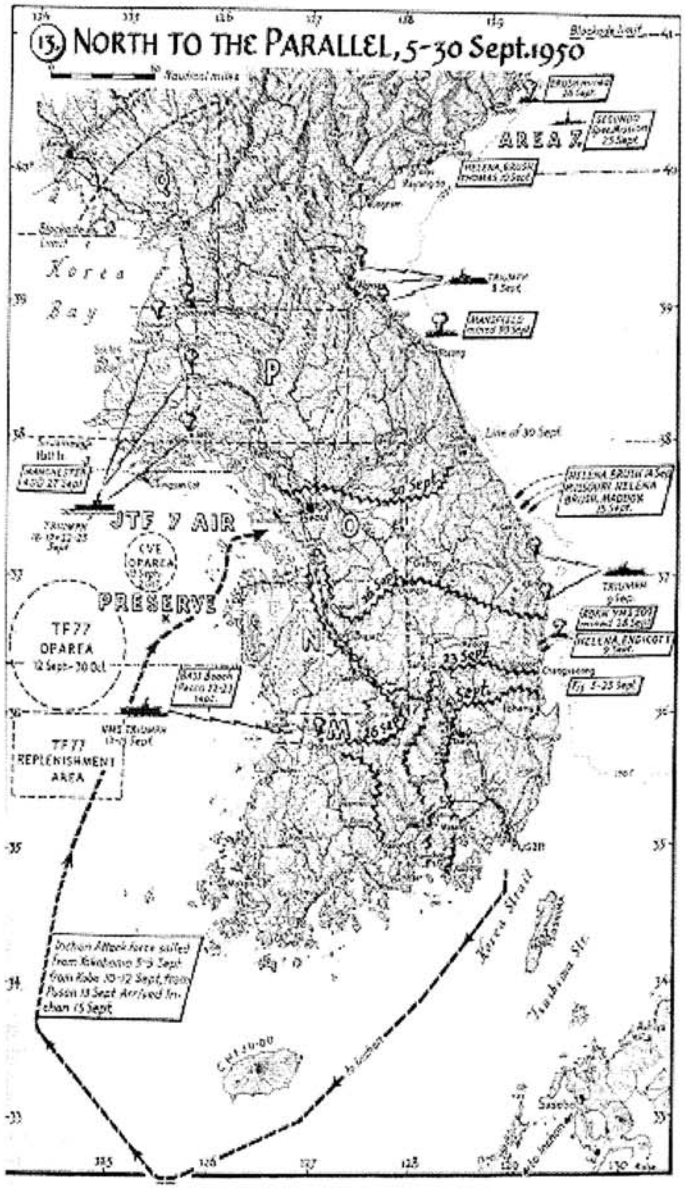

Figure 2. North to the Parallel[13]

[13] James A. Field, Jr., *History of United States Naval Operations: Korea* (Washington: U. S. Government Printing Office, 1962), 189

By the end of September, the Republic of Korea I Corps was lined up on the East Coast along the 38th Parallel awaiting orders to press the attack toward the ports of Wonsan and Hungnam.[14] Mean while, General MacArthur made plans to cross the 38th Parallel. On 27 September, he recommended that the Eighth Army cross the 38th Parallel in mid-October and conduct the main effort along the Kaesong-Sariwon-Pyongyang axis. Concurrently, the Tenth Corps would conduct an amphibious landing at Wonsan while the Republic of Korea's (ROK) I Corps pushed north along the coast.[15] (See "Figure 3. The Advance into North Korea") General MacArthur explained the choice of Wonsan in this manner:

> The Eight Army's lines of supply were already taxed to their maximum capacity to sustain the day-to-day minimum requirements of its troops in the line. Furthermore, the dispatch of Tenth Corps by sea was intended as a flanking movement against enemy remnants still trying to escape from the south to the north, and as an envelopment to bring pressure upon Pyongyang should the attack upon tat enemy capital result in a long drawn-out siege.[16]

Therefore, with the plan visualized by the Commander on 27 September, it was now the Navy's task to carry out the landing on 20 October.

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[14] Cagle and Manson. *Sea War in Korea,* 107
[15] Cagle and Manson. *Sea War in Korea,* 112.
[16] Cagle and Manson. *Sea War in Korea,* 114

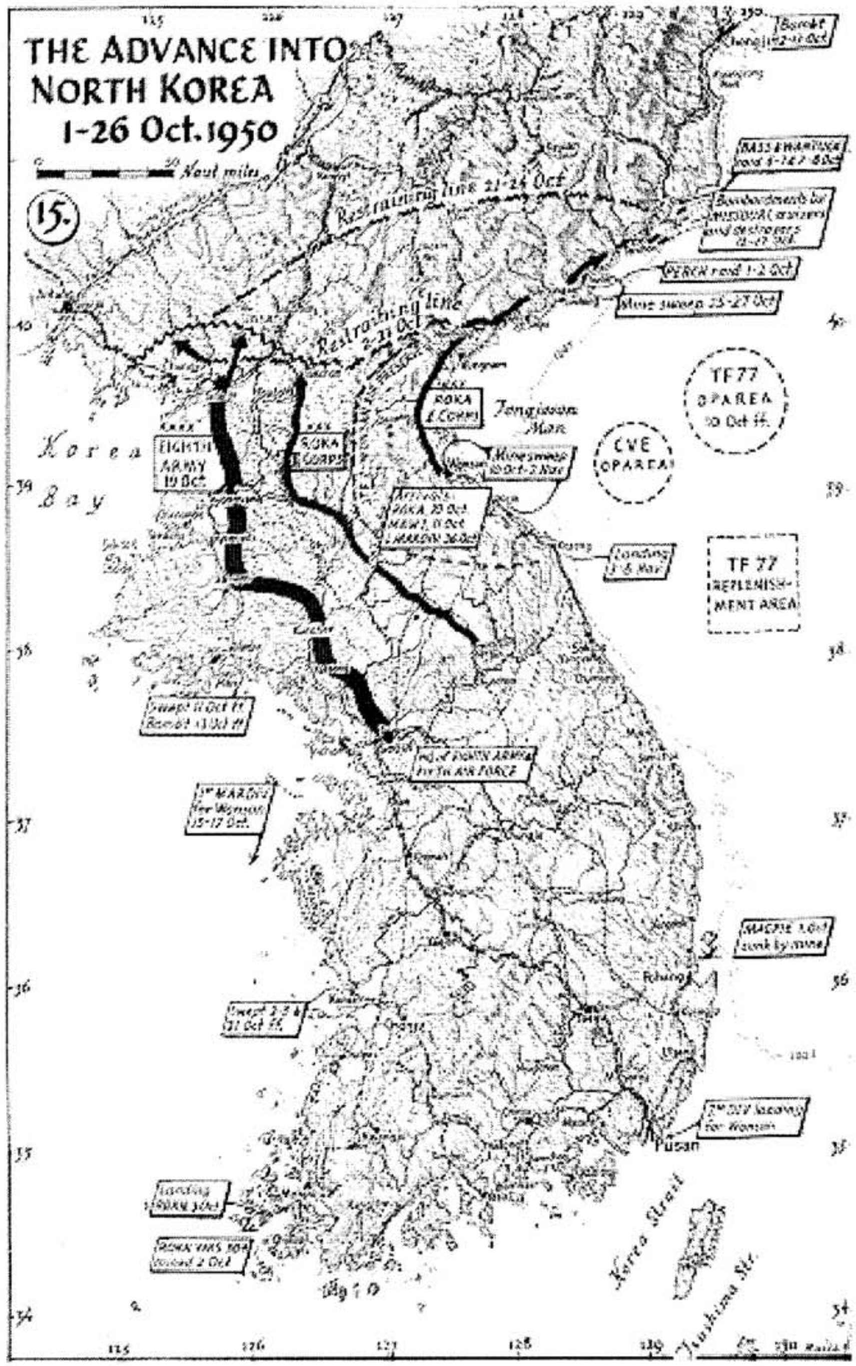

Figure 3. The Advance into North Korea[17]

[17] Field, *U.S. Naval Operations: Korea*, 228

Mine Clearance at Wonsan

At first, the Navy began planning as it did prior to the Inchon landing. After all, the operation at Wonsan was almost identical to Inchon. Vice Admiral A. D. Struble, Commander Joint Task Force Seven, completed the initial plan on 5 October and the final one on 10 October. The port of Wonsan looked like a strategic gold mine for the military planners. It had an intact and sizable port facility with rail and road connections to Seoul and Pyongyang, and, as an added bonus, it possessed an excellent airfield.[18]

Some difficulties were anticipated, but mines were a concern of Admiral Struble's from the beginning of the planning process. He had commanded several amphibious landings during the capture of the Philippine Islands in late 1944 and early 1945 including the following: Ormoc Bay, Mindoro, Zambales-Grande and Negros Island. Furthermore, he had been Commander Mine Forces Pacific just prior to the Japanese surrender.[19] Mines were found before the Inchon Landing, but the tidal range was so great that they were easily located and neutralized. Struble was also well aware that three ships had been mined along the East Coast at the end of September: *Brush* (DD-713), *YMS 509,* and *Mansfield* (DD-728). While he knew Wonsan was probably mined to prevent naval gunfire support, he did not foresee the magnitude of the mine problem he would confront.

Initially, his plan called for a five-day sweeping operation in preparation for the landing. However, on 6 October he revised the plan to a 10-day sweep. Accordingly, on 7 October he ordered Captain Richard T. Spofford, USN, Commander Mine Squadron

[18] Field, *US. Naval Operations. Korea*, 224
[19] LCDR Arnold S. Lott, USN, *Most Dangerous Sea: A History of Mine Warfare, and an Account of U. S. Navy Mine Warfare Operations in World War II and Korea* (Annapolis, Md: U. S. Naval Institute, 1959), 141, 149, 157

Three on board USS *Collett* (DD-730), to depart Sasebo, Japan enroute to Wonsan with six minesweepers and to begin minesweeping operations in command of Task Group 95.6 on 10 October.[20]

Captain Spofford had 10 U. S. minesweepers in Sasebo. He arrived at Wonsan at dawn on 10 October with six minesweepers of his task group. By the end of the day, the four remaining U. S. minesweepers from Sasebo had arrived off of Wonsan.[21] He immediately ordered a sweep formation consisting of six minesweepers to begin MCM operations. The first day's objective was to sweep mines from the 100 to the 30 fathom curve using mechanical sweeping gear designed to cut the moorings of contact mines. On 9 October, a helicopter had spotted two mine lines.[22] The planned channel for the operation was estimated north of these positions and on the southern leg of the channel proceeding south of Yo-do Island. (See "Figure 4. The Clearance of Wonsan") Twenty-eight miles of mineable water stood between the 100-fathom curve and the landing beaches, and twenty-two mine moorings were cut on the first day. Many close calls were avoided because of the alertness of sonarmen and mine watches. Thus, the first day's objectives were successful in sweeping a six-mile channel that was 1.5 miles wide.[23]

Up until now, it was assumed that the Task Force was dealing with minefields designed to trap naval gunfire support ships. Now, helicopter reconnaissance delivered disturbing news about the minefield ahead. The report stated that "mines too numerous

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[20] Field, *U.S. Naval Operations: Korea*, 232

[21] Commander TG 95.6 message to Commander 7th Fleet, subject: "War Diary," 1-30 October 1950, 4. (Washington, Naval Historical Center, File: CINCPACFLT 1950). "Hereafter referred to as CTG 95.6 War Diary"

[22] A mine line is a linear pattern of mines resting on the ocean floor. These patterns usually occur in a line because they are dropped from a boat or barge in rows.

[23] Commander Task Group Nine-Five point Six letter to Chief of Naval Operations and others, FC7-3/10-rh A16-5 Serial: 0120, subject: "Minesweeping Report for CTG 95.6 Wonsan Assault Sweep," 10 March

to count" were in position ahead of the southern channel currently swept; additionally, the report indicated the mine lines ended at the northern channel.[24] Therefore, with a deadline of 20 October looming, Captain Spofford decided to shift his effort to the northern channel on 11 October in hopes that it would be more easily and quickly cleared. The day was completed with 18 mines swept, a large number for what was anticipated but just a portion of the 224 mines eventually swept, and a harbor penetration by the sweeps to within five miles of Ung-do.[25]

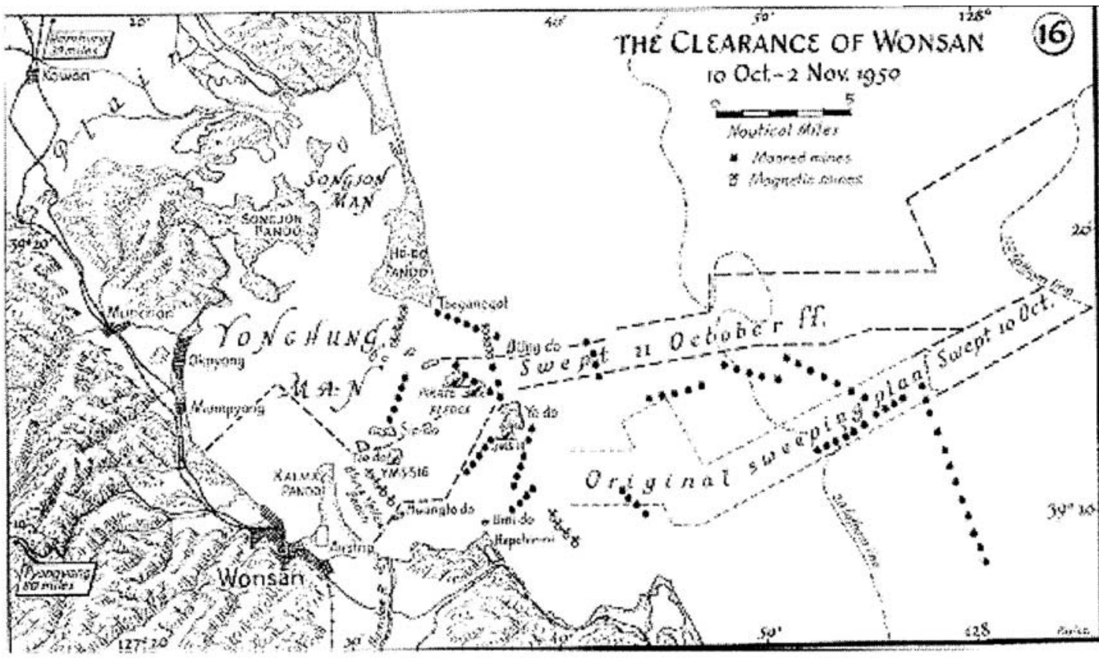

Figure 4. The Clearance of Wonsan

With just eight days before the landing and a daunting task in front of him, Captain Spofford decided to go all out on 12 October. He planned and executed an aerial countermining bomb campaign with 1000 pound bombs in the choke point between Ung-do and Yo-do. Additionally, he ordered a bombardment of the nearby islands to prevent

1951, 1. (Washington, Naval Historical Center, File: CINCPACFLT 1950). "Hereafter referred to as Wonsan Sweep"
[24] Cagle and Manson. *Sea War in Korea,* 135
[25] CTG 95.6 Wonsan Sweep, 2.

Enemy resistance and a helicopter and Underwater Demolition Team (UDT) to search unswept waters in front of the minesweepers. The countermining was later determined to have been unsuccessful. Afterwards, the *USS Pirate* (AM-275), *USS Pledge* (AM-277) and *USS Incredible* (AM-249) began sweeping in formation at 1000 local time with *Pledge* and *Incredible* to port and astern of *Pirate*, which lead the formation. Two other minesweepers fell in astern of the formation to mark the channel and neutralize swept mines. USS *Endicott* (DMS-35) provided fire support for the sweeps to suppress shore batteries.

At noon, as the sweep formation passed between Ung-do and Yo-do their sweep wires cut 16 mines. Minutes later, a helicopter report reached the Task Group Element Commander, on *Pirate*, that three mine lines were located in the immediate area of the formation. Obviously, one line was already penetrated, but at 1208 local *Pirate* observed numerous sonar contacts dead ahead. She changed course to avoid one mine when another was sighted by the forward lookout. At 1209 *Pirate* struck a mine and began sinking.[26]

Immediately after the mining of *Pirate*, *Pledge* cut her sweep gear, turned to port, and stopped to render assistance to survivors. At 1210, previously unknown shore batteries on Sin-do Island began shelling *Pirate. Pledge* and *Endicott* returned counter-battery fire with some affect; however, other enemy batteries returned fire and now began to bracket *Pledge*. In the meantime, *Pirate* sank at 1213, just four minutes after striking the mine, with 49 casualties: six sailors missing and 43 injured. With the impact of

[26] Commander Task Group 95.6 letter to Chief of Naval Operations and others, FC6-3 A9-8 Serial: 024, subject: "Minesweeping Operations Wonsan, Korea, Oct 10-12 resume'," 27 Nov 1950, 9. (Washington, Naval Historical Center, File: CINCPACFLT 1950). "Hereafter referred to as CTG 95.6 Resume"

incoming rounds imminent, the Commanding Officer *of Pledge* decided to reverse course and escape to seaward. He turned to port into what he believed was swept water.[27] One third of the way through the turn, at 1215, a mine detonated under *Pledge's* keel. She sank in 45 minutes, with 47 casualties: five missing, two confirmed dead, and 40 injured. After survivors were retrieved and all shore batteries silenced by carrier aircraft and surface fire, all ships retired to their anchorage. [28]

Recovering from the horrendous day, 13 October was spent in reconnaissance, planning, and replenishing. Captain Spofford knew that with the loss of two of his minesweepers he would be hard pressed to clear a swept channel to the beach by 20 October. With a little help from Admiral Struble, who arrived for a meeting on 16 October, Captain Spofford implemented a "full court press" utilizing divers, helicopters, fisherman, and a destroyer's sonar to assist in clearance. From 14 through 17 October, considerable progress was made, and the sweepers finally reached the outer harbor. Additionally, eight Japanese mine sweepers joined the task group.[29] One Japanese minesweeper, *MS-14*, was sunk while sweeping contact mines on 17 October just south of Yo-do. Finally, the task group, with help from the Japanese, began efforts to influence sweep magnetic mines with negative results.[30]

Up until now, Captain Spofford had no indication, other than the magnetic mines found at Inchon, that any influence mines were planted in Wonsan Harbor. Likewise, on 18 October, the task group was very close to accomplishing its mission and was sweeping

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[27] CTG 95.6 Resume, 2.
[28] CTG 95.6 War Diary, 6.
[29] Admiral Struble requested and obtained permission to utilize 20 Japanese minesweepers in Korean waters. He also extended the period during which Japanese ex-naval officers could be retained because of a purge order. These ships were to be generally used to clear friendly ports below the 38th parallel. The fact they were approved for use at Wonsan demonstrates the lack of minesweepers, and especially influence minesweepers available.

into the inner harbor. However, all doubts about the presence of influence mines were erased when the ROK (YMS-5 16) detonated a bottom, resting on the sea floor, influence mine under her keel and disintegrated. (See "Figure 5: Destruction of a MineSweeper"). Several minutes later "the whole ocean started to erupt amidst the sweepers" from detonations caused by USS *Redhead's* (AMS-34) magnetic influence sweep.[31] Two days before the landing deadline the Task Group was close to starting over because of the threat of influence mines. The landing would have to be delayed.

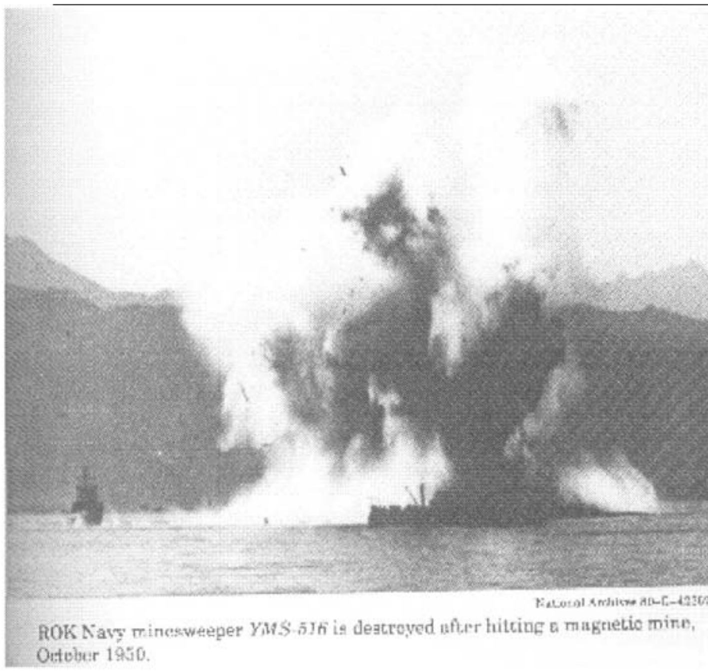

Figure 5. Destruction of a MineSweeper[32]

At that point, the uncertainty of the exact type of influence mines in the harbor made the task group very anxious. Pressure mines would have created a bleaker dilemma because there was not, nor is their today, a way to sweep them. However, on 19 October a reconnaissance party led by a task group element commander, LCDR D'Arcy V.

[30] CTG 95.6 War Diary, 8.
[31] Cagle and Manson. *Sea War in Korea,* 143.
[32] Field, *U.S. Naval Operations: Korea,* 234.

Shouldice, searched for evidence of mine sensor types on the beach. After evading enemy snipers there, he found coils used to make magnetic mines in an abandoned warehouse in Wonsan. The sailors now knew that their new threat was magnetic mines. Intelligence later confirmed that the Russians had assisted the North Koreans in the assembly and seeding of 3000 magnetic mines beginning approximately 1 August l950.[33] The integrated influence, and contact mine pattern along with the covering shore batteries was a Russian trademark to defend a minefield against MCM. The fewer and more sophisticated magnetic mines were placed close to the harbor to inflict maximum damage on the minesweeps, which were lured into a false sense of security by previous encounters wit contact mines. It took approximately three weeks to lay these fields from makeshift wooden barges.[34]

After six more days of tedious but productive sweeping, a swept channel was cleared for amphibious forces to land at Wonsan on 25 October. The entire operation swept 224 out of 3,000 enemy mines, at the cost of four ships, over 200 casualties, and a delay of five days to the amphibious landing. After Wonsan, Admiral Sherman, the CNO summarized the dilemma:

> Let's admit it, they caught us with our pants down. Those damn mines cost us eight days' delay in getting the troops ashore and more than two hundred casualties. That's bad enough. But I can all-too easy think of circumstances when eight days' delay offshore could mean losing a war.[35]

Wonsan Lessons Learned

All of the lessons from Wonsan are too numerous to recount here, and many are obsolete today because of technological advances. However, the main conceptual lessons

[33] Cagle and Manson. *Sea War in Korea,* 145
[34] CINCPACFLT MIW: Nov 1950, 1089.

of Wonsan, as reported by Captain Spofford and Admiral Struble just after the landing, are still valid at the end of the 20th century. Although many advances have been made in equipment and technology since the 1950's, the dynamic process of men and MCM against new enemy mine technologies and counter MCM is never ending. The main lessons of MCM concerning Wonsan that must be corrected in the Navy's newest MCM strategy are listed below:

- Must have adequate protective supporting forces.
- Must be more covert and expeditious.
- Must have adequate logistical support.
- Must have adequate intelligence
- Must have an officer corps experienced in mine warfare.
- Must have a large quantity of specialized MCM forces and equipment.[36]

The protection of MCM forces has been a consideration for modern navies since British minesweepers took a heavy toll from shore batteries at Gallipoli in 1915. The North Korean shore battery fire directed on *Pirate* and *Pledge* from Sin-do Island created havoc. It caused the *Pledge* to strike a mine in the ship's understandable haste to get out of firing range. However, the incident must be considered an intelligence failure more than a force protection failing, because adequate forces were available to silence the guns by sea and air... if they had been found.

These shore batteries should have been located and destroyed prior to the commencement of MCM operations. This is especially true in view of allied air supremacy over Wonsan. After the enemy batteries opened fire, a mine hunting patrol plane flew over many of the islands to "call in" fires on the enemy bunkers which could be clearly seen.[37] If the bunkers and trenches could be seen, then why didn't the bombing

[35] Cagle and Manson. *Sea War in Korea,* 142
[36] CINCPACFLT MCM: Nov 1950, 1657
[37] Cagle and Manson. *Sea War in Korea,* 140

ordered by Captain Spofford earlier find them? One reason for this oversight may be that the ROK I Corps arrived in Wonsan on 10 October, the same day the Mine Task Force arrived. This could have caused complacency among the planners and given the impression that the enemy was clear of town and retreating. Had the North Koreans been in Wonsan in force during clearance operations, the Task Force would have had a more difficult problem.

Wonsan showed the Navy what it already knew about mine warfare but had forgotten since World War II. MCM is slow, deliberate, and forewarns the enemy of an attack. There is no way around the fact that if 3,000 mixed (contact and influence) mines are placed in a landing area it will take weeks to clear. During that time, the enemy will be forewarned. Thus, the reason it took 300 minesweepers to clear the Normandy invasion area. There, they did it quickly and provided as little warning to the enemy as possible.

Logistics was also an enormous problem at Wonsan because of the low war stocks of minesweeping gear prior to the conflict. Before 25 June 1950, under the Naval Establishment Plan, MCM stocks were maintained only to the degree necessary to maintain ships locally. This plan was only intended to outfit ships during peacetime.[38] Critical shortages occurred at Wonsan as parts were used quickly during combat sweeping operations. The replacement parts were not in stock and had to be procured from the United States. Thus, a significant time lag existed for a critical and time sensitive operation.

Intelligence was unquestionably one of the key failures of the Navy MCM effort at Wonsan. The covering fire from shore batteries was not located prior to MCM clearance, but far worse was the lack of forewarning in the type, quantity, and quality of the minefields laid. The problem was vast, but stems from the fact that U.S. Naval Intelligence personnel were not initially available to operate ashore and work with other agencies in Korea. The only intelligence available for Wonsan came from Army channels that were not concerned with the naval mine threat.[39] The result was inadequate and unsatisfactory evaluation of the threat. The North Koreans, with Soviet advisors, took three weeks to lay 3000 mines from barges. With adequate cueing, this should have been discovered by intelligence, which would have saved many lives and days of sweeping.

In the five years prior to the Korean War, mine warfare was not in the forefront of Navy thinking. However, its complexity requires constant evaluation and training. Admiral Struble's after action report for Wonsan stated that one of the most serious obstacles to the conduct of the minesweeping operation was "...lack of a sufficient number of experienced operational staff personnel."[40] This resulted in a severe lack of understanding in the logistical and operational planning requirements of a large MCM operation.

The number one deficiency of the whole operation was the inadequate number of minesweepers and specialized equipment for Wonsan. The Navy allowed the number of MCM ships to decline far below the level necessary to efficiently clear an amphibious landing area. Additionally, basic protective measures for the ships like paravanes were

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[38] CINCPACFLT MIW: Nov 1950, 1107.
[39] CINCPACFLT MIW: Nov, 1950, 1106
[40] CINCPACFLT MIW: Nov, 1950, 1080

not available. In fact, after the war the Commander in Chief Pacific Fleet wrote that there were never sufficient minesweepers available.[41]

The lessons of Wonsan taught that neglecting an area of naval warfighting cost the United States Navy temporary local control of the seas in the amphibious objective area. This, in turn, cost the Navy a great deal in lives and materiel lost, but on a broader scale delayed a key operational objective for five critical days. This delay in different circumstances could mean losing a war.

[41] CINCPACFLT MCM: Nov, 1950, 1657

Chapter 3

THE U. S. NAVY AND MINE WARFARE IN THE MILLENNIUM

Today's MCM rebuilding program owes its rebirth to the mine warfare lessons of the Gulf War and the resulting concepts of ... *Forward From the Sea* and *Operational Maneuver from the Sea (OMFTS).* The *Princeton* and *Tripoli*, both damaged by mines, were the only naval casualties during Desert Storm. Likewise, the Navy realized the affect mines played in the decision to cancel the amphibious landing in the Gulf. Furthermore, the collapse of the Soviet Union highlighted the Navy's over-reliance on NATO for MCM. Therefore, the setbacks in the Gulf combined with the requirement to project power into the littorals, without NATO, resulted in the acceleration and upgrade of all MCM forces. More recently, the "Mine Warfare Campaign Plan" was implemented to improve MCM readiness and to ensure the upgrade and introduction of MCM into all branches of the fleet by 2016. This strategy incorporates many past lessons learned, including a great deal from Wonsan, into a robust and energetic program to increase the fleet's MCM readiness exponentially. The pillars of the Campaign Plan include the following:

- Improve the readiness of current MCM forces.
- Counter the VSW/SZ threat to support Operational Maneuver from the Sea.
- Introduce organic MCM systems into the fleet.
- Implement an MCM "Fleet Engagement Strategy" to educate the fleet.[1]

Improvements in MCM Readiness to Counter the Threat

The first part of this plan increases readiness of current fleet MCM forces to counter the current and future mine threat. The improvements include efforts to ensure MCM forces are able to arrive in significant time to affect an outcome. Therefore, two SMCM ships are now permanently homeported in the Arabian Gulf and Japan. These areas are two parts of the world where potential crises are likely. AMCM and EOD assets have also been prepared to speed response to a crisis. AMCM squadrons maintain a detachment on 72 hour alert to deploy to any crisis, and EOD detachments are deployed to every CINC's AOR.

The future upgrades to the force that will improve MCM capabilities by 2010 include enhanced weapons systems for SMCM and AMCM. Table 1 displays past, present and future surface and aviation assets. The SMCM system improvement is the Integrated Combat Weapons System (ICWS). This program will upgrade and integrate existing SMCM sonar, navigation and Mine Neutralization Vehicle (MNV) systems.[2] The Closed Loop Degaussing System will also be installed on all SMCM vessels to ensure that their magnetic signature is constantly zeroed without the need to conduct a range test.

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[1] Chief of Naval Operations, "Draft Mine Warfare Plan to support the FY 2000 Navy Mine Warfare Certification to Congress", February, 1999 (Washington, DC: 1999), 15. (Located in Pentagon: N-85) "Hereafter referred to as CNO."

[2] CNO 21.

Table 1. Past, Present, and Future SMCM and AMCM Assets.[3][4]

Platforms	1950[5]	Present[6]	2010[7]
Surface MCM Platforms	• 20-DMS • 63 - AM • 112-AMS	• 1 -MCS • 14 - MCM-l • 12 - MHC-51 • 16 – Mk 5 Breaching System Kits	• 1—MCS or its replacement. • 14- MCM-1 • 12 -MHC-5l • 13 -DDG'S with (RMS) and SSN's with LRMS. 3 packages in each BG. • 321 - (SABRE) • 69— (DET)
Aviation MCM Platforms	• 0 - Helicopters	• 20 - MH 53's	• 22 - CH 60's with 3 packages in each BG.

One of the most exciting improvements in the mine force will join the AMCM community by the year 2006. The improvement is two fold. First of all, the AN/AQS-20 and 20X sonar will be installed on all AMCM assets. This sonar is a significant upgrade to the current capability. It includes a vastly improved detection and classification system far superior to today's model. Also, the 20X variant adds an identification and neutralization capability. This capability is the Airborne Mine Neutralization System (AMNS). It utilizes a remotely operated torpedo to detonate and neutralize unburied bottom mines.[8] This is the first time AMCM assets have had a designed neutralization capability, which will significantly increase MCM efficiency.

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[3] *Jane's Fighting Ships*, 1958-1959 ed., (New York: McGraw Hill, 1959), under "U. S. Minesweepers."
[4]Naval Sea Systems Command, RDA brief, *Surface Mine Warfare Systems*, 14 Oct 1998, slides 14, 22, 25. (Washington, NAVSEASYSCOM: PEO Mine Warfare.) "Hereafter referred to as Systems."
[5] DMS's were destroyers converted into minesweepers. AMS's were wooden hulled. AM's were steel hulled and only able to sweep contact mines. Helicopters from aircraft carriers were beginning to be used for mine reconnaissance at this time.
[6] MCM-1 minesweepers can conduct mechanical sweeping and mine hunting. MHC-51 can only minehunt.
[7] MCM's and MHC's combat systems will be upgraded with the Integrated Combat Weapons System (ICWS). ICWS is simply an upgrade of existing sonar and positioning systems.
[8]CNO, 28

Another significant development in AMCM will be the Airborne Laser Mine Detection System which will incorporate an electro-optical mine location system that detects shallow water moored mines. Additionally, it combines a Rapid Airborne Mine Clearance System (RAMICS) that fires a special 30mm super-cavitating projectile to neutralize shallow underwater mines.

Supporting Operational Maneuver from the Sea

Supporting OMFTS is a top priority for the Navy and Marine Corps team and one of the most complex. At this time, there are no conventional MCM assets to neutralize the Surf Zone (SZ) of the littorals and only limited capability using Marine Mammals and Special Warfare in the Very Shallow Water Region (VSW). Many experiments have been attempted and are still being developed, including the same type of heavy bombing tried during Wonsan with some notable improvements and variations.

The future development of a system to breach both zones is being researched. The Assault Breaching System (ABS) is scheduled to be in the fleet by 2006. This two-part system utilizes LCACs, air cushioned transports, to deliver a rocket propelled net of explosives into the SZ. Once delivered, the explosives are detonated simultaneously to neutralize a 50-yard wide lane for landing craft from depths of 10 feet to the beach. The individual parts of ABS that the Navy is currently testing are the Shallow Water Assault Breaching (SABRE) system and the Distributed Explosive Technology (DET).[9] SABRE will neutralize SZ mines and obstacles from the 10 to 3 feet zone, and DET will neutralize the SZ from 3 feet to the beach. Both will have a standoff distance of 200 feet, and will neutralize the SZ gap that currently has little to no MCM capability.

Fleet Organic MCM

One of the first organic MCM defenses since the paravane and degaussing will be incorporated into every carrier battle group by 2006. These promising organic systems include the Remote Mine Hunting System (RMS), the CH-60 helicopter with the AN-AQS2OX (which will replace the MH-53E), and the Long-term Mine Reconnaissance System (LMRS). Every one of these systems signifies a major shift in navy thinking because it places mine warfare in the mainstream of the fleet and not as a subsidiary.

The RMS is a remote semi-submerged vehicle that will be carried by Arleigh Burke class destroyers in every battle group.[10] It is vectored to an area where it will perform a precursor mapping of the vertical plane of water, near shore, looking for mines. For the first time, a battle group will have the capability to organically determine if mines are in its area of interest.

Adding to the RMS's capability in the battle group is the previously discussed AN/SQS-20X sonar that will be added to the CH-60 helicopter. Furthermore, the CH-60 will replace the MH 53E. This is a revolutionary development because these helicopters, unlike the CH-53E, will be organic to battle groups. In addition to its duties of vertical replenishment and search and rescue, the CH-60 will conduct organic AMCM. The addition of the CH-60, the 20X sonar, and its accompanying neutralization system will bring the fleet an incredible MCM capability. Thus, it will further OMFTS while upgrading the fleet's organic MCM warfighting capability.

Lastly, the Longterm Mine Reconnaissance System (LMRS) is similar to RMS but is completely submersible and will be launched and recovered by submarines. Therefore,

[9] CNO, 25

the LMRS will be clandestine and can search for mines without being detected.[11] In this case, the battle group will locate a landing site on an enemy shore, using LMRS, thus, identifying an area with a reduced mine threat and enabling the task force to exploit OMFTS.

Each of these organic systems will be outfitted in a carrier battlegroup (CVBG). The nominal organic MCM package of each CVBG are listed as follows: three CH-60 AMCM system packages,[12] three Arleigh Burke destroyer SMCM RMS units, and one Los Angeles submarine LRMS unit.[13] These organic systems, resident in each battle group, will give the battle group commander heretofore unprecedented MCM capability. Additionally, it will multiply the capabilities of the traditional triad once they arrive on scene.

Fleet Engagement Strategy

The Mine Warfare Fleet Engagement Strategy is an attempt to train the fleet on the concept of MCM and the Campaign Plan. It will take an internal Navy wide effort to implement this new plan; likewise, the Fleet Engagement Strategy is also a public affairs effort to get the word out.[14] Its primary function is to avoid the poor MCM knowledge and perception that most naval officers demonstrated during Wonsan and the Gulf War. Furthermore, the amount of organic MCM equipment that will arrive in the fleet in the next ten years is extensive, and will take a well-informed officer corps to put it to good use.

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[10] CNO, 29
[11] CNO, 29
[12] The organic AMCM system packages will include sensor and weapon systems for bottom, moored, and floating mines in addition to an influence minesweeping system.
[13] CNO, 27

The Mine Warfare Campaign Plan is a good first step toward bridging the Navy's past difficulties with mine warfare. However, the effort must be sustained and cannot be derailed by budget problems or apathy if the Navy is to learn from its past.

[14] CNO, 34

Chapter 4

The Future — Lessons Learned or Ignored

The Navy learned some harsh lessons from Wonsan. Shortly afterward, the Chief of Naval Operations, Admiral Sherman said, ".... We've been plenty submarine-conscious and air-conscious. Now we're going to start getting mine-conscious-beginning last week."[1] This statement was the impetus to a huge MCM rebuilding and conversion program in the 1950's that resulted in 333 MCM vessels on paper by the end of the decade. 180 of the new ships included 93 that were in active service, and 87 that were new construction. The remaining 153 were in the active reserve.[2] However, the excitement for the Mine Warfare Community was short-lived. The late 1950's saw the last new MCM vessels built, and by the mid-1970's MCM was in complete decline. Not until the MCM setbacks of Desert Storm coupled with the collapse of the Soviet Union, which highlighted the Navy's MCM dependence on NATO, did the Navy reenergize its MCM force.

Today, the Navy has a new opportunity to learn from the past. The Mine Warfare Campaign Plan is a bold and energetic one to revitalize the MCM forces of the Fleet. However, if it is not adopted in earnest the Navy will find itself, once again, stymied by mines. History shows that budget priorities combined with apathy concerning mine

[1]Cagle and Manson. *Sea War in Korea,* 142
[2] Melia, *Damn the Torpedoes*, 85

warfare results in cuts to mine forces. Accordingly, this plan will not be completed until the year 2016, which is a long time for problems or de-emphasis to occur. Conversely, when compared to the lessons of Wonsan, the Mine Warfare Campaign Plan tackles many of the significant problems the Navy had in 1950. In fact, it is a superb plan. However, it is still lacking in the areas of logistics, officer experience, and quantity of forces.

Logistically, Navy MCM is in the same situation that it found itself before the Korean War. In 1950, Navy minesweepers came under the Naval Establishment Plan that only stocked the peacetime contingencies of MCM ships. Today, because of the budget, the Navy's MCM force is under "Just in Time Sparing". This plan relies on the manufacturer to make a part quickly instead of procuring spares; however, it has not been able to deliver the parts as quickly as advertised.[3] In fact, the GAO reported tat "as of July 1995, none of the MCM ships was rated fully mission capable of performing its mine countermeasures mission.... The Mine Warfare Commander acknowledged that reliability shortfalls and inadequate supply support have had negative affect on crew training.[4] The common thread between these two supply problems is the peacetime budget. Now, like the late 1940's, war stocks and spare parts are often sacrificed for other budget priorities and programs. This is true in all areas of the Navy, but MCM has traditionally been low in priority. If a Wonsan scenario were repeated, the MCM force would again be low on spare parts.

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[3] Gillilland

[4] United States General Accounting Office, National Security and International Affairs Division, "Navy Mine Warfare: Budget Realignment can Help Improve Countermine Capabilities," Washington, DC, 13 March 1996 (Washington DC: GPO, 1996), GAO/NSIAD-96-104, 44. (Located in Quantico, VA: MCU Library, V856.5.U6)

Today's Navy addresses the problem of lack of MCM experience throughout the force with the Fleet Engagement Strategy. This is the first time since the 1950's that the Navy has promoted MCM to co-equal status with the other warfighting arms. Although the U. S. Navy does not possess an officer corps branch that specializes in mine warfare like Great Britain, the organic systems of the future should expose many more officers to MCM. If successful, MCM will be in the forefront of everything the Navy does in the future. However, there is a risk that MCM history will continue to repeat itself and build up only to become stagnant and complacent when times are less threatening.

Philosophically, installing the Fleet Engagement Strategy and organic MCM into the fleet is a good policy. However, the Navy should guard against complacency. After World War II, the four DMS minesweepers in the Pacific had dual missions of MCM along with the traditional role of a destroyer as an escort and in Anti-Submarine Warfare (ASW). The result during peacetime was that the ships trained as destroyers and not as MCM vessels. Therefore, many ships were lacking in MCM experience at the time of the Korean War, which made them of little value as minesweepers in Korea.[5] With the increasing missions of today's ships, the platforms with organic MCM will have to train on their equipment or risk the same degradation in training as the DMS of 1950. The temptation for the commanding officer of a destroyer with organic MCM systems will be toward training his gunnery, ASW, and missile systems and not the mine warfare systems. Similarly, today's complex combat systems, including minewarfare, are extremely expensive. This may result in a commanding officer with an austere budget choosing to fix combat systems other than MCM in order to fulfill his current mission. If

[5] CINCPACFLT, MIW, 1093

history is a guide, the organic MCM on the destroyers of the future will, without special emphasis, atrophy from lack of training and spare parts.

Lastly, today the amount of forces available to conduct an amphibious assault is not up to the task of a Wonsan type operation. The Navy is trying to use OMFTS as an avenue to avoid the type of scenario that would require huge MCM assets to clear a landing area. However, a direct amphibious assault may not always be possible to avoid because of geographic and strategic limitations. If not, the complex mines of the present and future will require enormous MCM assets to clear. Although the triad and the MCM upgrades planned give the Navy a much better capability, MCM will remain a slow process. The SMCM force today is approximately the same size it was in 1950. Its capabilities have increased because of the triad but so have the mines. Additionally, most of the improvements for MCM, including OMFTS, will not be available until 2010. If we are required to conduct an amphibious landing prior to 2010 our whole concept of improvement will not be implemented. Therefore, a Wonsan type operation could not be conducted with any more precision or speed today than it was in 1950. Whether the Navy will be able to improve MCM with the new Campaign Plan depends on its commitment to that plan in the long run.

Appendix A

Mine Types

(Alphabetical)

Acoustic: A mine with an acoustic sensor that detects the unique sound frequencies of a ship and detonates.

Bottom: A mine with negative buoyancy that remains on the seabed.

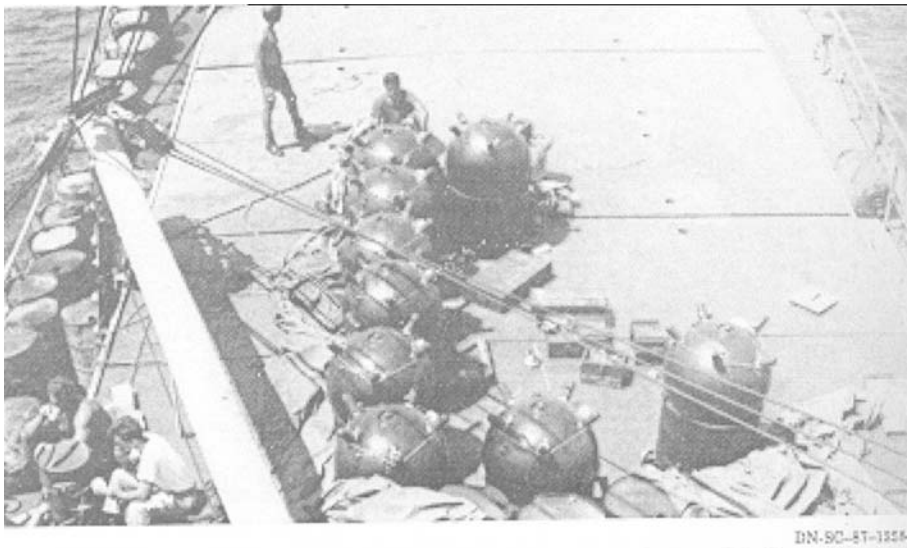
Combination: Any mine type with a combination of influence detectors such as two or more of the following: magnetic, acoustic, seismic, or pressure. These mines can be set to detonate when two or more sensors detect a ship, thus making the mine harder to sweep. (See "Figure 6: Modern Combination Mine")

The countermeasure-resistant Swedish ROCKAN mine *(ONI)*

Figure 6. Modern Combination Mine'

[1] Jeane Avery, "The Naval Mine Threat to U. S. Surface Forces," *Surface Warfare Magazine* volume 23, no.3 (May/June 1998): 7. Picture from ONI.

Contact: A mine detonated by physical contact with the firing mechanism. (See "Figure 7: Contact Mines")



Contact mines on board the captured Iranian minelaying ship *Iran Ajr*.

Figure 7: Contact Mines[2]

Influence: A mine actuated by the detection of a physical property emanating from the ship. These properties include magnetic, seismic, pressure, and acoustic.

Magnetic: A mine that detonates when it detects a ship's magnetic field in its vicinity. It can be set to various sensitivities to make it harder to sweep.

Moored: A positively buoyant contact or influence mine that is held below the surface with a chain attached to an anchor.

Pressure: A mine that detonates when it detects the pressure field of a ship moving through the water.

Rising Vertical Mine: A moored or bottom influence mine that rises to the surface by buoyancy or rocket assistance when it detects a ship.

Seismic: A moored or bottom influence mine that detects the vibrations of a ship passing through the water.

Surf Zone: Ten-foot water depth to the high water mark. (See Figure 8. Surf Zone Threat)

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[2] Melia, *Damn the Torpedoes*, 126. Dep. of the Navy Photo

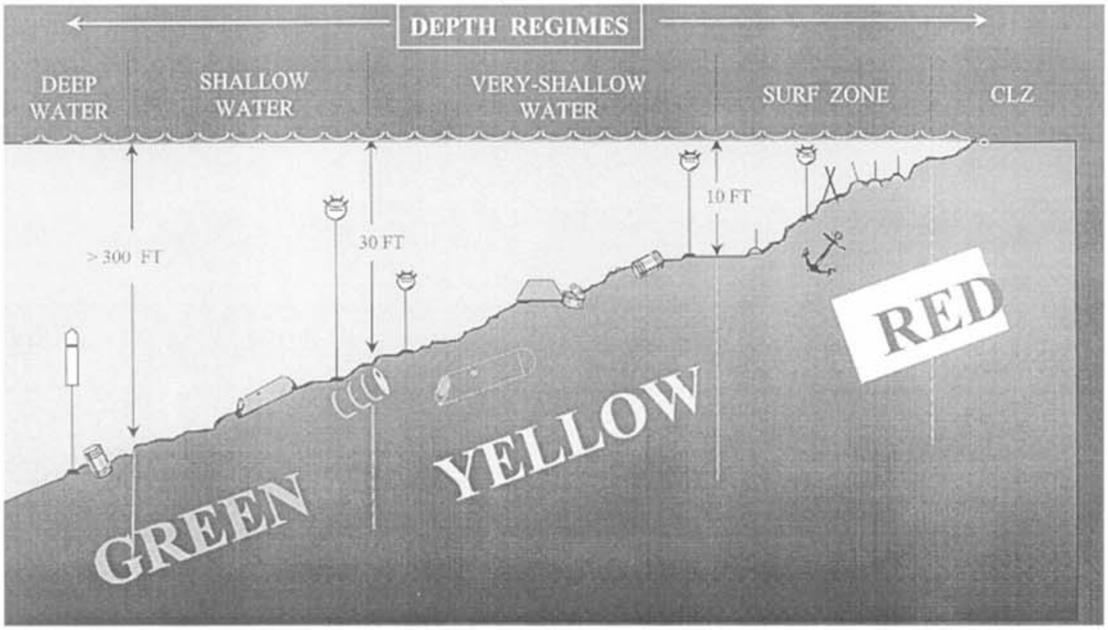


Figure 8. Surf Zone Threat[3]

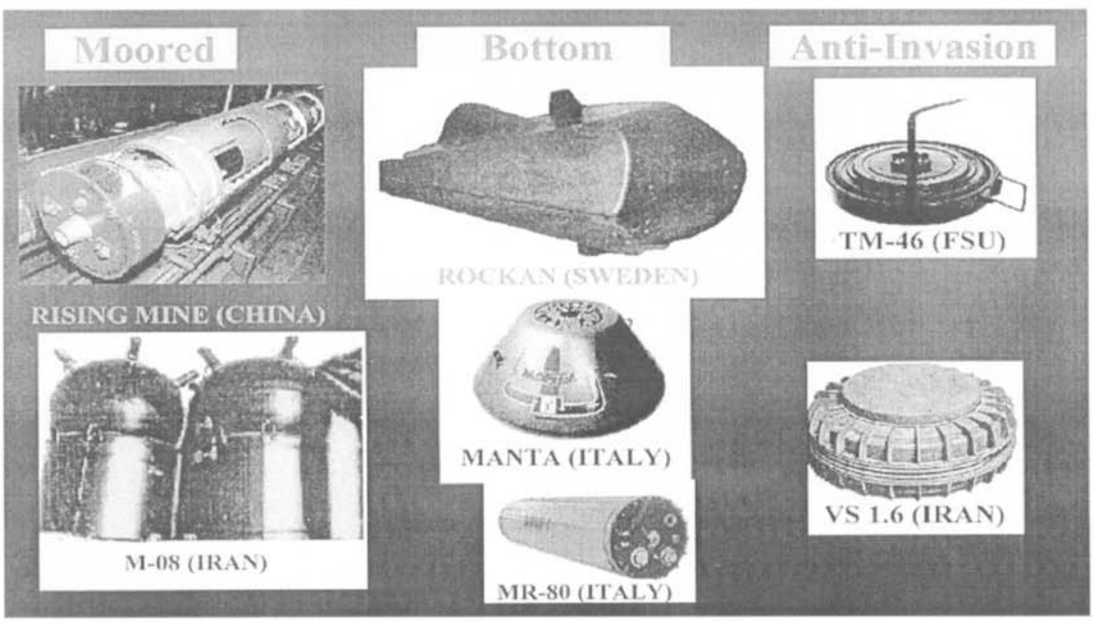


Figure 9. Various Types of Mines.[4]

[3] Director, Expeditionary Warfare Division (N85), Office of the CNO Briefing, *Today's MCM*, Jan 99, slide 12.
[4] N85, *Today's MCM,* slide 13.

Appendix B

MCM Methods[5]

Assault Breaching — Using LCAC's as a vehicle to propel nets with charges into the surf zone, thus neutralizing the SZ mines and obstacles.

Influence Minesweeping — Creating false signatures by a towed device from AMCM or SMCM. Designed to produce the magnetic, acoustic, pressure, or other influence needed to explode mines safely.

Mechanical Minesweeping — Using minesweepers or helicopters to tow wires or sleds, respectively, to mechanically cut mooring cables of mines.

Minehunting — Searching for mines with the sonar of an SMCM or AMCM asset.

Mine Neutralization — Destroying or rendering mines inert through explosives, gunfire, or deactivation.

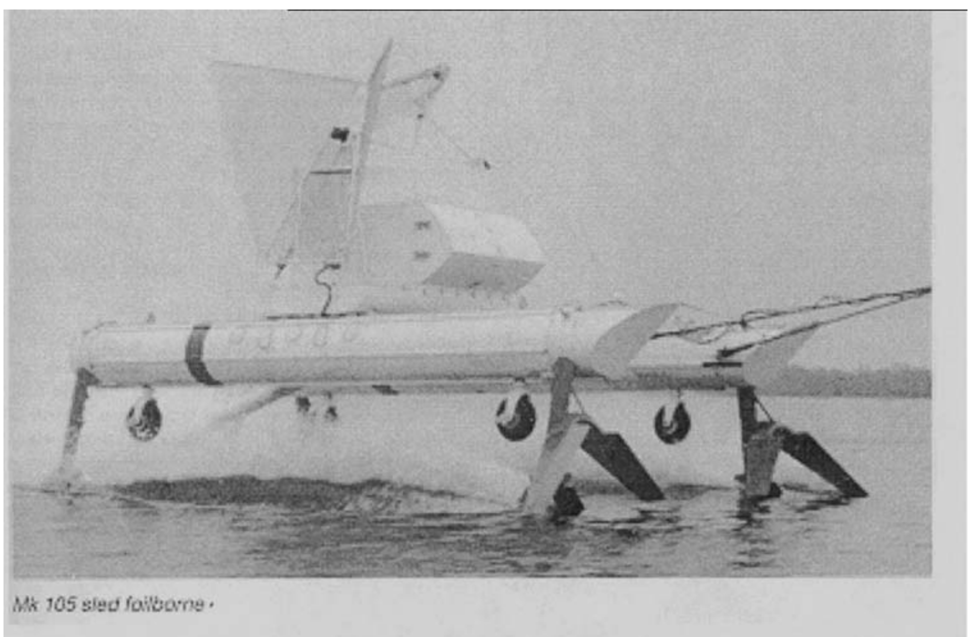
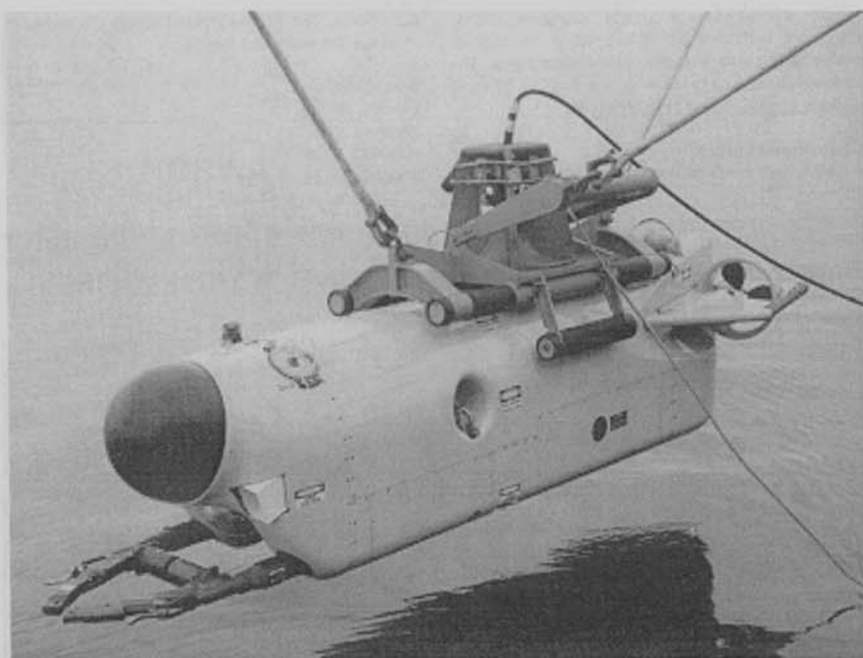


Figure 10. AMCM Sled[6]

[5] Melia, *Damn the Torpedoes*, 6.

A developmental version of the SQQ-32, the next generation of advanced minehunting sonar, was operationally tested by *Avenger* during Desert Storm with exceptionally good results.

Figure 11. SMCM SQQ 32 Sonar[7]



MNS vehicle showing handling arrangement 1994

Figure 12: SMCM Mine Neutralization Vehicle (MNV)[8]

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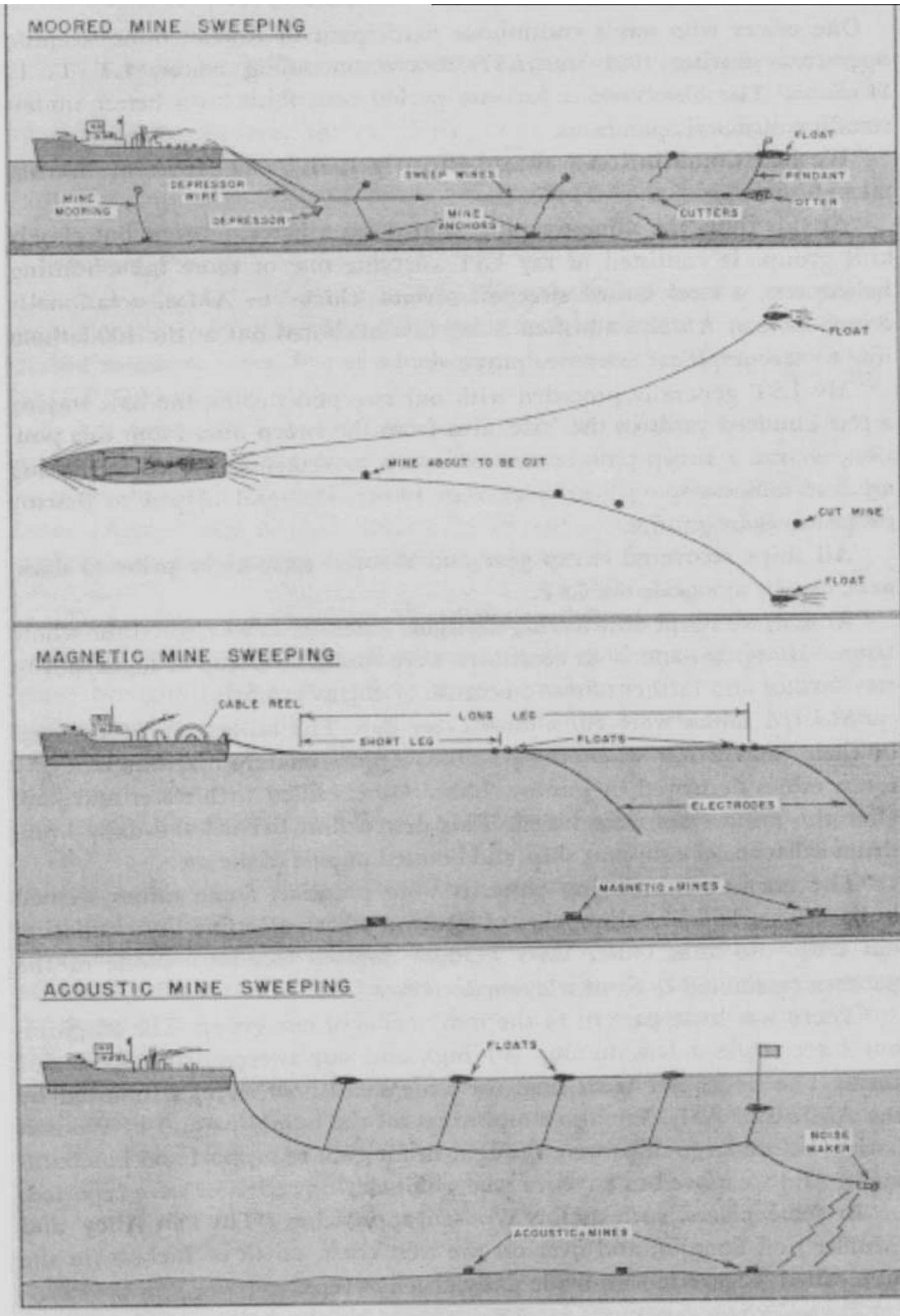
[6] *Jane's Underwater Systems*, Ninth ed., (New York: McGraw Hill, 1998), under "U. S. Minesweeping Systems."

[7] Melia, *Damn the Torpedoes*, 130.



TECHNIQUES OF MINESWEEPING

[8] *Jane's Fighting Ships*, 1958-1959 ed., (New York: McGraw Hill, 1959), under "U. S. Minesweepers

Figure 13: Surface Mechanical and Influence Sweeping[9]

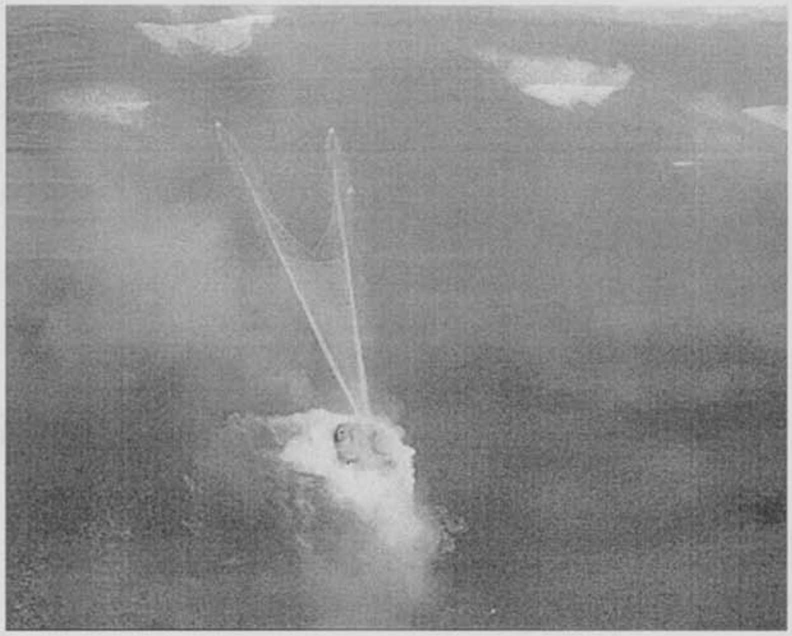


Figure 14. Aerial View of SABRE.[10]

, **Figure 15. Side View of SABRE.**

[9] Cagle and Manson. *Sea War in Korea*, 196.
[10] N85, *Today's MCM,* slide 25-26.

Appendix C

Wonsan Chronology

Date in 1950	**Event**
15 September	Inchon landing.
26 September	*Brush* hit by mine.
27 September	General MacArthur orders Wonsan assault for 20 Oct.
30 September	*Mansfield* hit by mine.
6 October	Admiral Struble (COMNAVFE) orders Captain Spofford (CTG 95.6) to depart Sasebo, Japan enroute to Wonsan.
10 October	CTG 95.6 arrives off Wonsan. First day's sweep commences with ten minesweepers in southern channel. 22 contact mines swept. Helicopter spots numerous mine lines ahead in southern channel. ROK's enter Wonsan by land.
11 October	CTG 95.6 changes main effort to northern channel. 18 mines swept.
12 October	Aerial countermining bombing. (Unsuccessful) UDT search. *Pirate* and *Pledge* mined and sunk. (Contact mines.)
13 October	Reconnaissance and replenishment.
14 – 17 October	Sweep to outer harbor. 17 Oct Japanese MS-14 sunk. (contact mine.)
18 October	ROK YMS-516 mined and sunk in inner harbor. (Magnetic mine)
19 October	Reconnaissance on shore for mine sensor intelligence. Magnetic sensor coils discovered.
20 October	Scheduled day for landing. (Landing delayed.)
25 October	Channel cleared. Unopposed amphibious landing conducted.

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Annotated Bibliography

The scources used in this paper were varied. The primary scources were mostly obtained from actual historical documents of the Korean War period. The Commander in Chief Pacific Fleet's *Interim Evaluation Reports* regarding Mine Warfare as well as the *War Diaries* of the MCM Squadron at Wonsan were extremely helpful. These documents provided timely and accurate information regarding the "on scene" events experienced by the commanders. Additionally, the interviews with CDR's Gillilland and Griner were also extremely helpful in obtaining up to date information regarding present and future MCM plans. These officers assisted the author in obtaining valuable documents such as the CNO's *Draft Mine Warfare Plan* and NavSea's *Surface Mine Warfare System* documents, which are current MCM blueprints for the future.

The most helpful books utilized were Manson and Cagle's, *The Sea War in Korea* as well as Melia's, *Damn the Torpedoes.* These books were very helpful in providing accurate and meticulous information regarding Wonsan as well as the history of mine warfare. Both were extremely well written and very detailed.

Finally, various journals and periodicals were used to obtain specific information regarding different platforms and time periods. Additionally, Jane's *Fighting Ships* provided a wealth of information regarding specific types and quantities of ships and equipment regarding different time periods.