

Stopping a North Korean Invasion

Why South Korea can be defended despite US Troops being occupied by Deployments in Iraq

1 Introduction

Nearly ten years ago, Michael O'Hanlon assessed a hypothetical North Korean (Democratic People's Republic of Korea) invasion of South Korea (Republic of Korea) to forcibly reunify the peninsula under the North Korean government. O'Hanlon concluded that the outcome would probably be the successful defense of South Korea, basing his analysis on the state of DPRK, ROK, and United States military assets in the region.¹ His analysis determined that victory was likely on the side of the ROK and the US even in the event of a surprise attack, bad weather that temporarily nullified some of the advantages provided by superior US/ROK air-power, and the use of chemical weapons by the DPRK.

Much has changed over the last ten years, however, and a similar North Korean invasion today would be fought under drastically different circumstances. Besides the fact that the militaries of all three countries have improved in training and technology,² the United States is currently involved in ongoing war in Iraq. The war is currently a counter-insurgency operation that still involves over 150,000 troops, four years after the official end of combat operations.³ When troops in Iraq, troops in Afghanistan, and troops in the US⁴ are all taken into account, the US would not be able to deploy nearly as many forces as O'Hanlon had assumed in his analysis. This analysis seeks to address the military developments over the past ten years and to analyze the outcome of a DPRK invasion of South Korea today.

¹O'Hanlon, Michael, "Stopping a North Korean Invasion: Why Defending South Korea is Easier Than the Pentagon Thinks" *International Security* **22**(4), (Cambridge: MIT Press, Spring 1998): 135-170.

²Training improvement is based on reports from [globalsecurity.org](http://www.globalsecurity.org) assessments of each country's military. Technology improvements is based on [globalsecurity.org](http://www.globalsecurity.org)'s listing of military hardware versus the military hardware presented in O'Hanlon's report.

³"Iraq - US Forces Order of Battle" *GlobalSecurity.org* <http://www.globalsecurity.org/military/ops/iraq-orbat.htm>, (09 April 2007)

⁴Troops in the US are assisting homeland security as part of Operation Noble Eagle

The result of such an analysis has implications for the necessity of the heavy US Division stationed in Korea to support ROK forces in the event of an invasion.

2 Strategic Assumptions

Because of the number of variables involved, many assumptions need to be made before any analysis can yield reasonable results. These assumptions include the avenues for attack in the Korean Peninsula, a time-frame in which the DPRK must achieve victory, the forces that are likely to be involved, and the weapon systems that the DPRK will employ in its assault. In the following sections, the initial conditions for a DPRK invasion are specified with a conservative bias towards favoring North Korea. The bias is intended to account for some inaccuracies in intelligence about the military state of North Korea, erring on the side of caution.⁵

2.1 Geography and Routes of Invasion

The geography of the Korean peninsula remains largely unchanged since O'Hanlon's analysis. The peninsula, and consequently a likely front during invasion, is approximately 155 miles wide. The total length is about 620 miles. The terrain comprises hills and flat regions, which are mostly marsh and rice fields.⁶ Similarly, a large majority of both North and South Korea's militaries are concentrated within 50 miles of the 2-mile wide demilitarized zone (DMZ). Seoul, Capital of South Korea, is approximately 25 miles south of the DMZ and Pyongyang, Capital of North Korea, is approximately 75 miles north of the DMZ.

In terms of vectors for attack, the same corridors outlined in O'Hanlon's article still apply. The three main attack corridors are summarized in Figure 1. The avenues are mostly flat lands and preexisting road systems. Added to these possibilities are tunnel systems, amphibious invasion, and airborne assault. All three of the alternate attack routes are

⁵This is especially helpful because a surprise attack by the DPRK may be a significant advantage.

⁶O'Hanlon 139.

difficult because of concentrated artillery fire at tunnel endings, ROK naval assets, and ROK fighters, respectively.

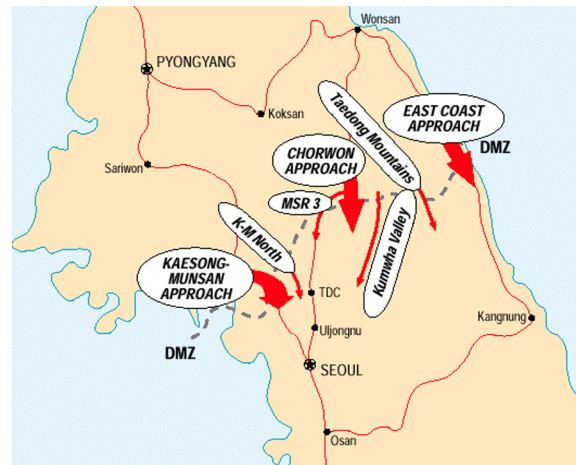


Figure 1: Possible vectors of attack outlined in O’Hanlon’s article. The size of the arrow is proportional to the mobility offered by the route. Image courtesy of Globalsecurity.org, <http://www.globalsecurity.org/military/world/dprk/images/map-avenue.gif>

2.2 North Korea

North Korea has been steadily building up their military. The Asian Defence Journal quoted DPRK Finance Minister Mun Il Bong stating that North Korea’s primary goals were to “train troops ‘as an invincible army and thus consolidate the country’s defenses as an impregnable fortress’” and “boosting military power and also putting ‘all the people under arms and turning the whole country into a fortress.’”⁷ These goals are clearly reflected in military spending by North Korea. Annually, out of a total equivalent GDP of approximately 40 billion USD, the DPRK spends an estimated one quarter, the largest percentage expenditure of any nation, on the military.⁸ This emphasis on military spending is accompanied by better training for North Korean soldiers, perhaps to the point where the troops no longer

⁷“North Korea.” *Asian Defence Yearbook 2002-2003 Asian Defence Journal* (2003):44

⁸“Korea, North” *CIA World Factbook* <https://www.cia.gov/cia/publications/factbook/geos/kn.html> (17 April 2007) and “North Korea (04/07)” *US Department of State* <http://www.state.gov/r/pa/ei/bgn/2792.htm> (April 2007)

follow inferior Soviet-era doctrines as suggested by O’Hanlon.⁹ Additionally, developments over the past few years show that North Korea has spent significant amounts of capital on the development of test missiles, including Taepodong-1 and the longer-range Taepodong-2 variants.

The goal of the North Korean invasion is to take over the peninsula. Motivations for invasion may include the wealth of South Korea and nationalist pride. Whatever the reason, to accomplish their mission, North Korea must subjugate the South Korean military before the South Korean government can be eliminated and replaced. The time-frame for a DPRK victory is limited to two weeks in order to minimize the role of air-power from additional US aircraft carrier battle groups. This limitation on time-frame also prevents significant sea-lifted ground forces from supporting the South Korean military.

2.2.1 Weapons of Mass Destruction

The dense concentration of military hardware and troops within 50 miles of the DMZ makes the use of weapons of mass destruction especially effective. Given recent US behavior towards regimes it thinks may use weapons of mass destruction, it is likely that such use would be met with severe consequences. As such, O’Hanlon’s assumptions on weapons of mass destruction are likely to hold. Tactical nuclear weapons would be out of the question because the US would almost certainly respond in kind. Biological weapons, also subject to US nuclear retaliation, could easily affect North Korea troops accidentally. Because of these two factors, their use would be avoided. These weapons also severely damage civilian populations and infrastructure, something North Korea would want to avoid if they were even remotely economically motivated. Destroying key South Korean industries that would provide the DPRK with wealth after the invasion makes little sense, especially when these industries do not necessarily contribute to defense against the North Korean invasion. Finally, chemical weapons could find use on the front lines, though their effectiveness may be diminished

⁹The improved training is documented in “Korean People’s Army.” *Globalsecurity.org* <http://www.globalsecurity.org/military/world/dprk/army.htm> (27 April 2005)

by chemical warfare protection suits issues to ROK and US forces.¹⁰ The possibility of retaliation is left open for chemical weapons as well.¹¹

2.2.2 Military Assets

The North Korean military, which comprises more than 1.2 million personnel¹², presents a formidable force, according to the 2003 US commander of forces deployed to South Korea, Army General Leon LaPorte.¹³ LaPorte cited a 120,000-strong special operations force, a large submarine force, and a large artillery force. The ground equipment possessed by the million-man army include 3500 tanks (500 Type-59, 800 Type-62, 1600 Type-54, 250 Type-34, and 550 PT-76), 2500 infantry fighting vehicles, 10400 pieces of artillery (4400 self-propelled, 3500 towed, 2500 rocket-based), and 11000 anti-aircraft artillery.¹⁴ Much of the long range artillery are placed in hardened bunkers north of the DMZ, in range of South Korea and Seoul.

The air forces of North Korea have 110,000 personnel who man 413 fighters (107 MiG-17, 100 MiG-19, 120 MiG-120, 46 MiG-23, 40 MiG-29), 117 attack aircraft (24 Mi-24, 18 Su-7, 40 Q-5, 35 Su-25), 80 H-5 bombers, 318 transport planes, 330 training aircraft, and 294 helicopters of varying configurations.¹⁵

Finally, DPRK naval forces include 26 submarines (22 Romeo, 4 Whiskey), 62 mini submarines (22 Sang-O, 40 Yugo), 3 Frigates, 43 missile boats, and 103 patrol boats.¹⁶

¹⁰See later. The ROK developed significant measures against biological and chemical attack after the events of September 11th, 2001

¹¹The Quadrennial Defense Review Report 2006 (pg 45-47), classes chemical weapons in WMDs and states that "The United States will use peaceful and cooperative means whenever possible, but will employ force when necessary."

¹²Approximately 6 million total troops

¹³Rhem, Kathleen T. "North Korean Military 'Very Credible Conventional Force'" *American Forces Press Service* US Department of Defense Website. <http://www.defenselink.mil/news/newsarticle.aspx?id=27769> (18 November 2003)

¹⁴"Equipment Holdings - Korean People's Army" *Globalsecurity.org* <http://www.globalsecurity.org/military/world/dprk/kpa-equipment.htm> (April 2003)

¹⁵"World Military Aircraft Inventory." *Aviation Week and Space Technology* (15 January 2007). Accessed at <http://web.ebscohost.com/ehost/detail?vid=5&hid=2&sid=195717ea-5e8e-4903-b537-1f4bdf2a2fe\%40sessionmgr3>

¹⁶"Navy - North Korea." *Globalsecurity.org* <http://www.globalsecurity.org/military/world/dprk/ship.htm>

While surface craft pose little threat to US naval assets at sea,¹⁷ this brown-water navy's diesel-electric submarines will force US forces planning to reinforce South Korean ground forces via sea-lift to spend time on anti-submarine warfare. Additionally, they increase the difficulty of a potential amphibious counter-invasion.

2.3 South Korea

South Korea, while lacking the advantage of initiative in a DPRK invasion, does have the advantage of prepared defensive positions. The armed forces have been restructured since 1998 for the purposes of improved command and control. Better biological and chemical weapon detection and protection were developed following the events of September 11th.¹⁸ These changes came about partly because the government of South Korea has pushed to modernize its military, improve command and control, and become self-sufficient from the US garrison in Korea.¹⁹ South Korea spends significantly more capital on their military than North Korea. The GDP of South Korea is 1.18 trillion USD,²⁰ of which 21.06 billion was spent on the military in 2005.²¹ This large annual budget works towards attaining the goal of becoming a self-reliant nation.

Publicized improvements of the ROK military have included a Patriot Missile system, improved artillery to counter the previously superior range of DPRK artillery, PGMs, mid-air refueling capability, continuing improvement of the K1A1 main battle tank, domestic manufacture of F-16s, and the purchase of advanced F-15s.²² Improvements that are underway but not yet deployed include destroyers that use the AEGIS combat system, a force of attack

¹⁷Loud diesel-electric submarines will probably be destroyed by US Navy ASW systems on the carrier battle fleet when attempting to approach the *Kitty Hawk*.

¹⁸"Republic of Korea." *Asian Defence Yearbook 2001-2002*. *Asian Defence Journal* (2002): 89

¹⁹"Republic of Korea." *Asian Defence Yearbook 1998-1999*. *Asian Defence Journal* (1999): 136-142

²⁰"Korea, South" *CIA World Factbook* <https://www.cia.gov/cia/publications/factbook/geos/ks.html> (17 April 2007)

²¹"Defense Budget - South Korea" *Globalsecurity.org* <http://www.globalsecurity.org/military/world/rok/budget.htm>

²²The aforementioned journals plus "South Korea." *Asian Defence Yearbook 2005*. *Asian Defence Journal* (2005)

helicopters,²³, and a domestic AWACS platform. The helicopters and the AWACS platform are expected to become available by 2008. The first three AEGIS destroyers coming into service in 2008, 2010, and 2012.²⁴ Finally, a portion of the defense budget has been spent towards raising a DPRK-styled OPFOR brigade, which uses Soviet hardware to study and develop tactics against the DPRK.²⁵

2.3.1 Military Assets

The armed forces of the Republic of Korea number 686,000 troops.²⁶ While this number is about half of the armed forces in North Korea, the ROK spends significantly more to develop and deploy modern weapon systems.²⁷ ROK ground forces include 2330 tanks (1000 Type 88/K1A1, 400 M-47, 850 M-48A5, and 80 T-80U), 2560 infantry fighting vehicles(40 BMP-3, 1700 KIFV, 420 M-113, 200 Fiat 6614/KM-900/-901, 140 M-577, 20 BTR-80), approximately 4800 pieces of artillery (3500 towed, 1100 self-propelled, and 185 rocket-launched), 700 anti-aircraft artillery, and 1100 surface-to-air missiles.²⁸

Air assets include 475 fighters (19 F-15K, 26 F-16, 136 KF-16,²⁹ 182 F-5, 112 F-4), 23 A-37B counter-insurgency aircraft, 12 helicopters (6 CH-47, 3 AS-332, 3 VH-60), 7 Hawker 800XP electronic warfare aircraft, and 148 training aircraft of various types.³⁰ The updated aircraft inventory of both North and South Korea from January 2007 shows that the South Koreans have achieved both numerical and technological superiority with 475 fighter aircraft compared to 413 fighter aircraft. Their 156 F-16s and 19 F-15s³¹ are only technologically

²³Under consideration are the Boeing AH-64D Apache Longbow, the Bell AH-1Z and Kamov Ka-50. From the 2001-2002 yearbook.

²⁴“South Korea.” Asian Defence Yearbook 2002-2003. *Asian Defence Journal* (2003):51-52

²⁵Asian Defence Yearbook 2005.

²⁶Approximately 5.2 million total troops. “Republic of Korea Military Guide.” *Globalsecurity.org* <http://www.globalsecurity.org/military/world/rok/index.html> (06 November 2005)

²⁷As stated in improvements in the previous section.

²⁸“ROK Army Equipment - South Korea” *Globalsecurity.org* <http://www.globalsecurity.org/military/world/rok/army-equipment.htm> (21 July 2006)

²⁹KF-16s are Korean-manufactured F-16s.

³⁰“World Military Aircraft Inventory.” *Aviation Week and Space Technology* (15 January 2007). Accessed at <http://web.ebscohost.com/ehost/detail?vid=5&hid=2&sid=195717ea-5e8e-4903-b537-1f4bdf2a22fe\%40sessionmgr3>

³¹These modern aircraft numbers have more than doubled since O’Hanlon’s analysis

matched by the DPRK's 40 MiG-29s. The roughly comparable F-4 and F-5s outnumber the DPRK's older MiG-21 and MiG-23 fighters.

The ROK's navy has expanded significantly since 1998; the number of submarines has doubled and older destroyers have been replaced or refitted. The current total is 18 submarines (10 KSS-1, 8 SX-756), 6 destroyers (2 KDX-II, 3 KDX-I, 1 Chungbuk), 9 Ulsan-class frigates, 28 corvettes of varying classes, and 120 small patrol and support craft.³² This navy most likely outclasses that of the DPRK in a prepared confrontation, but in a likely surprise assault, the disparity between the navies is less apparent.

While there still exist unknowns (for example, how many aircraft North Korean special forces or fighters could destroy), superficial technological and numerical advantages favor the South Korean air force, even before US air assets in the region are taken into account.³³ The air power scenario is even more favorable when taking into account electronic warfare aircraft and the presence of AWACS aircraft. It should be noted that the North Korean attack aircraft inventory is over four times the number of South Korean attack aircraft. This advantage is not useful, however, if the North Koreans are unable to achieve air superiority—attack aircraft are easy prey for modern fighters. The 2005 ROK push to become self-sufficient seems to have worked as far as air power is concerned.³⁴

2.4 United States

The current deployment of 150,000 troops to Iraq is a large portion of the regular army, which totals 488,579 active duty troops, 333,117 National Guardsmen, and 189,005 reservists,³⁵ especially when taking into account the additional troops that are currently at home on their deployment rotations—these troops are not available for deployment elsewhere because they

³²“South Korea Navy.” *Globalsecurity.org* <http://www.globalsecurity.org/military/world/rok/ship.htm>

³³This is assuming North Korean pilots are just as well trained as South Korean pilots, a conservative assumption based on a comparable number of training aircraft.

³⁴As stated in the 2005 Asian Defence Yearbook.

³⁵“Army Profile: FY05” *US Army Website* <http://www.armyg1.army.mil/hr/demographics/FY05\%20Army\%20Profile.pdf>

are required to maintain the troop level in Iraq and because they are currently recovering from a deployment.³⁶ These recovering troops are currently stretched thin, even with a two-to-one deployed-to-recovering ratio.³⁷ Accounting for the roughly 22,000 troops deployed to Afghanistan, with an approximation twice that number required to actually maintain that troop level,³⁸ this leaves approximately 100,000 active-duty and national guard troops for reinforcing South Korea, launching a counter-invasion, or attempting to liberate a occupied South Korea. Should the government decide to use all of the reserves, this would add another 80,000 troops. 180,000 troops would be the most the US could deploy, while still maintaining approximately a one-to-one deployed-to-recovering rotation ratio and keeping 150,000 troops for counter-insurgency in Iraq. The quality of the fighting force that the US could deploy here is highly dependent on the amount of time the invasion defense lasts, with quality diminishing considerably if it continues for more than one tour-of-duty.³⁹

2.4.1 Forward-deployed US Forces

If the DPRK conducts all military operations within the first week, US involvement is limited to ground and air forces already stationed in South Korea, air support from fixed-wing aircraft in Japan, support from the forward-deployed *Kitty Hawk* carrier battle group, and on long-range bombers from around the world.⁴⁰

Already in place to defend against a North Korean invasion are approximately 20,000 troops.⁴¹ Little about the force composition of this force, but best estimates seem to indicate

³⁶Thompson, Mark. "Broken Down: What the war in Iraq has done to America's Army—and how to fix it." *Time* (16 April 2007): 28-35.

³⁷Also from the *Time* article.

³⁸This approximation was used in the aforementioned *Time* article.

³⁹This takes into account deterioration of troops and equipment, as documented in the *Time* article. Troops currently in Iraq are experiencing deterioration at an alarming rate with a two-to-one ratio, so a simultaneous Iraq and Korea deployment at strengths of 150,000 and 180,000 respectively would likely be unsustainable for more than one deployment length.

⁴⁰The support from these aircraft would be limited if North Korea attacks during bad weather, as expected, though bad weather is unlikely to last more than a few days.

⁴¹This number accounts for both Army and Marine troops. In addition, roughly 9000 USAF personnel are in South Korea to support the air force in Korea. Caryl, Christina. "America's Unsinkable Fleet." *Newsweek* Syndicated from <http://www.msnbc.msn.com/id/17202830/site/newsweek/page/1> Apparently, there is very little publically available information about the composition of US forces in South Korea. This is

that it is composed of the 2nd Infantry Division of the Eight Army as well as the 6th Cavalry and the 35th Air Defense Brigade. From these components, the estimated equipment makeup includes 72 AH-64 Apache Longbow helicopters, 64 Patriot PAC-3 Patriot missile batteries, 143 M1A1 Abrams (MBTs), 99 Bradley Fighter Vehicles (IFVs), 48 M109A6 Paladin self-propelled howitzers, and 36 M270 Multiple Launch Rocket Systems.⁴²

Supporting the ground troops are approximately 100 mixed aircraft of the Korea-based 7th Air Force, the 8th and 51st Fighter Wings. The 8th Fighter Wing is based in Kunsan Air Base, 150 miles south of Seoul and the 51st Fighter Wing is based out of Osan Air Base, 20 miles south of Seoul. Along with many support aircraft, each air wing has one squadron each of F-16s and A-10s.⁴³ Given a squadron size of roughly 24 fighter aircraft, this makes the total US non-support/electronic warfare aircraft in Korea 48 F-16s and 48 A-10s.⁴⁴ Additional air support comes from Carrier Air Wing Five on board the *USS Kitty Hawk*. This air wing comprises four squadrons of F/A-18s (2 F/A-18E/F Super Hornet and 2 F/A-18C Hornet squadrons), supported by EA-6B Prowler (Electronic Warfare), E-2C Hawkeye (AWACS), SH-60F Seahawk helicopters, and C-2As cargo aircraft.⁴⁵ This creates a carrier air wing of approximately 48 fighters.⁴⁶ Other air assets include the 300 mixed aircraft of the 5th Air Force from Japan. This air force, less than 800 miles away, consists of the 18th Air Wing, the 35th Fighter Wing, and the 374th Airlift Wing.⁴⁷ Besides airlift capabilities, support aircraft, and electronic warfare aircraft, these three air wings would

supported by the lack of articles and sites that list a partial compositions. This number is consistent with the number presented by “North Korea - US Forces Order of Battle” *GlobalSecurity.org* <http://www.globalsecurity.org/military/ops/korea-orbat.htm>, (01 January 2005)

⁴²“US Forces Korea Order of Battle.” *Globalsecurity.org* <http://www.globalsecurity.org/military/ops/korea-orbat-usfk.htm> (01 January 2005)

⁴³This information is from the Air Base Websites - <http://www.kunsan.af.mil/> and <http://www.osan.af.mil/>.

⁴⁴“Squadron” *Globalsecurity.org* <http://www.globalsecurity.org/military/agency/usaf/squadron.htm>

⁴⁵“Carrier Airwing Composition.” *The Tailhook Association* <http://www.tailhook.net/CVWList1205.pdf> (2005)

⁴⁶USN Strike Squadrons have 12 fighters per squadron. This is taken from the histories section of a typical carrier strike fighter squadron, specifically VFA-2 <http://www.lemoore.navy.mil/vfa-2/>

⁴⁷<http://www.pacaf.af.mil/> The three wings operate out of Kadena, Misama, and Yokota AFBs in Japan, respectively.

contribute 2 F-16 fighter squadrons and 2 F-15 fighter squadrons, a total of 96 fighters.⁴⁸ Other than USAF assets in Japan, there is the 1st Marine Aircraft Wing, part of the III Marine Expeditionary Force, which has a squadron of F/A-18s, 3 squadrons of CH-53 Sea Stallion helicopters, 2 squadrons of CH-46E Helicopters, and a refueling squadron of KC-130s. Even without mid-air refueling, all of the aircraft from Japan can be ferried to the air bases in South Korea to fight against a North Korean invasion. It should be noted that these air assets allow the US to air-lift the approximately 16,000 ground troops of 3rd Marine Division component of III MEF stationed in Japan within the first week.⁴⁹

Naval assets available in Korea within a week basically consist of the 7th fleet, comprising the *Kitty Hawk*, 2 guided-missile cruises, 6 guided-missile destroyers, a guided-missile frigate, support and amphibious assault ships, as well as 2 to 19 Los Angeles-Class attack submarines.⁵⁰

2.4.2 US Reinforcements Time-frame

Besides the air forces listed above, the US Pacific Air Force has assets from the Eleventh Air Force in Hawaii, 4500 miles away from Korea, and in Alaska, about 4000 miles away. With mid-air refueling, the fighters from these two locations could land in Korea within a day, quickly enough to make a difference, even in the time-frame of the DPRK's week-long invasion.⁵¹ Taking these air reinforcement times into account, the US could easily have several groups and squadrons of support aircraft from the 36th Wing Hawaii, 2 A-10 squadrons and 1 F-16 squadron from the 354th Fighter Wing from Eielson AFB in Alaska,⁵² the 3rd wing from Elmendorf comprising 3 F-15 squadrons and numerous transport and

⁴⁸<http://www.kadena.af.mil/units/>,<http://www.misawa.af.mil/>,<http://www.yokota.af.mil/>

⁴⁹Ground troops in Japan taken from Caryl, Christina. "America's Unsinkable Fleet." *Newsweek* Syndicated from <http://www.msnbc.msn.com/id/17202830/site/newsweek/page/1> The one week approximation depends on achieving air superiority and is based on 24-hour operations for the entire 374th Airlift Wing. This is helped by the close proximity of the troops and Japan and South Korea.

⁵⁰7th Fleet Website. <http://www.c7f.navy.mil/Pages/shippage.htm>

⁵¹The day long deployment takes into account the tankers stationed at each air base as well as the approximate 2000-mile one-way range of fighter aircraft.

⁵²Eielson AFB Website. This wing would have additional mobility from the KC-135 168th Air Refueling Wing at Eielson and includes many other support groups and squadrons. <http://www.eielson.af.mil/>

electronic warfare aircraft.⁵³ This would make approximately 72 F-15, 24 F-16, and 48 A-10 aircraft available within several days of the start of the conflict. Additional aircraft and ships from the *Ronald Reagan* could arrive by the end of the first week.⁵⁴ Given another week, both the *Eisenhower* and *Stennis* carrier battle groups could arrive from their current posts off the Somali Coast and the Gulf of Oman, respectively.⁵⁵ The reinforcement time-frame allows for doubling of US air power within a week of the invasion and making air power four times its initial strength by the third week of the invasion.

There are far fewer available US ground troops to reinforce the ROK and the Heavy US Division in South Korea because of deployments in Iraq. The 16,000 ground forces in Japan, however, are almost immediately available for airlift by the 374th airlift wing and sea-lift by components of the 7th Fleet. Of these 16,000 troops, 2,200 form the 31st Marine Expeditionary Unit, which is mainly a special forces unit. The rest is the 3rd Marine Division, a mechanized infantry division. Reinforcements from the continental US would use established sea-lift capacities of the current navy sea-lift fleet. Using this fleet, the roughly 100,000 (180,000 with reserves) troops could be sent to Korea at the rate of approximately 6 divisions per month, with the first six coming after the third week of the first month.⁵⁶

2.5 Force Comparison

To perform an accurate analysis of a current-day conflict, a calculation of the number of armored division equivalents (ADEs) should be made. For reference, the US heavy division will be considered 1 heavy ADE and the components of both ROK and DPRK armies will be normalized to this. For this analysis, an infantry fighting vehicle will be considered .5 of a main battle tank. Using this measure and an inventory of available forces (See Figure 2 for a summary of forces), the heavy ADEs can be calculated. Ground forces on the peninsula

⁵³“3rd Wing.” *Globalsecurity.org* <http://www.globalsecurity.org/military/agency/usaf/3wg.htm>

⁵⁴Steaming at approximately 25 knots from the South China Sea.

⁵⁵“Where are the carriers?” *Globalsecurity.org* <http://www.globalsecurity.org/military/ops/where.htm>

⁵⁶Using the airlift/sea-lift table and all 6 large sea-lift ships. This is assuming deployment from the continental US.

at the start of the invasion would comprise 21.1 heavy ADEs for North Korea, 17.6 heavy ADEs for South Korea, and 1 heavy ADE for the US Division in Korea. These numbers do not count the numerous light infantry divisions that make up much of the DPRK army. It is important to note the significant numerical advantage possessed by North Korean artillery. This artillery could potentially be used to suppress prepared allied defenses in a DPRK invasion, especially any prepared defenses that are stationary.

DPRK	Quantity	Effective	ROK	Quantity	Effective	US	Quantity
Armor	3700	2797.5	Armor	2330	2145	Armor	143
Type-59	500	0.9	K1A1	1000	1	M1A1	143
Type-62	800	0.9	M-47	400	0.75		
Type-54	1600	0.9	M-48A5	850	0.9		
Type-34	250	0.75	T-80U	80	1		
PT-76	550	0.9					
IFV	2560	2560	IFV	2520	2520	IFV	99
			BMP-3	40		M3A2, M2A2	99
			KIFV	1700			
			M-113	420			
			KM-900	200			
			M-577	140			
			BTR-80	20			
Artillery	10400		Artillery	4800		Artillery	74
Towed	4400		Towed	3500			
Self Propelled	3500		Self Propelled	1100		M109A6	38
Rocket	2500		Rocket	185		M270	36
AA	11000		AA	1800		AA	64
			AAA	700		PAC-3	64
			SAM	1100			

Figure 2: Ground forces immediately in the theatre during a DPRK invasion. Note that generation-old tanks are discounted at .9 and two generation-old tanks are discounted at .75 the effectiveness of a modern tank. While this is probably exaggeration the capabilities of these tanks, especially in the expected presence of allied JSTARS aircraft, it overestimates in favor of the North Koreans.

When comparing air forces, the relative production era of the aircraft is used. Older US and Soviet aircraft of the same generation are assumed to be of similar capability. This analysis does not take into account training differences, but with increased training for DPRK pilots since 1998, this estimation of air power is accurate as a first-order approximation. The estimated equivalent air power of each country's air assets can be found in Figure 3. From

these numbers, a conflict where both sides had time to prepare would end in the establishment of allied air superiority.

DPRK	Aircraft	Effective	ROK	Aircraft	Effective	US	Aircraft	Effective
Fighters	413	303.7	Fighters	475	401.5	Fighters	156(252)	156(252)
MiG-17	107	0.6	F-15K	19	1	F-16 (Korea)	48	1
MiG-19	100	0.75	F-16	26	1	F-16 (Japan)	24	1
MiG-21	120	0.75	KF-16	136	1	F-15 (Japan)	24	1
MiG-23	46	0.75	F-4	112	0.75	F/A-18 (K.H.)	48	1
MiG-29	40	1	F-5	182	0.75	F-16 (Alaska)	24	1
						F-15 (Alaska)	72	1
						F/A-18 (III MEF)	12	1

Figure 3: Air superiority fighters in a DPRK invasion. The numbers in parentheses are for US fighters based out of Alaska, which require at least one midair refueling to traverse the 4000 miles to Korea. The other aircraft are available almost immediately. For aircraft equivalency, the MiG-29s and MiG-23s are assumed to be equivalent to modern fighters, where older US and Soviet fighters are considered equal to .75 of a modern fighter. This is probably an exaggeration of their capabilities, but errors on the side of caution for defense against a North Korean attack.

Finally, the attack aircraft inventories (Figure 4) favor the DPRK, though this changes after the arrival of reinforcement US A-10s from Japan and Alaska. As these aircraft are mainly used for close-air-support roles that involve flying close to the ground at slow speeds, they are extremely vulnerable to AAA, SAMs, and fighter aircraft. Not included in this figure are the 5 squadrons of marine helicopters from Japan that would likely be used in a close-air-support role. This extra firepower, employed in a defensive role and sufficiently protected by air superiority fighters, provides a mobile supplement to allied armor. This mobility may be crucial at breakthrough points.

The navies of both the ROK and the DPRK are evenly matched, with a technological advantage given to the ROK. A summary list of available naval assets can be seen in Figure 5, though this list does not include the many US support craft based out of Japan or part of the 7th Fleet. US Naval forces in this theatre are more than a match for the DPRK navy on blue water, but this advantage tends to disappear in littoral operations.

DPRK		ROK		US	
Attack Aircraft	117	Attack Aircraft	23	Attack Aircraft	144
Mi-24	24	A-37B	23	A-10 (Korea)	48
Su-7	18			A-10 (Japan)	48
Q-5	40			A-10 (Alaska)	48
Su-25	35				

Figure 4: Attack aircraft from the onset of a DPRK invasion. While the North Koreans have a numerical advantage, the effect of this is not realized if air superiority is not attained.

DPRK		ROK		US	
				Cruisers	2
				Aircraft Carriers	1
Submarines	26	Submarines	18	Submarines	2+
		Destroyers	6	Destroyers	6
Frigates	3	Frigates	9	Frigates	1
Missile Boats	43	Corvettes	28		
PT	103	PT/Support	120		
Mini-Sub	62				

Figure 5: Naval assets in the Korean theatre. The ROK and DPRK submarines are diesel-electric, while the submarines of the US 7th Fleet are nuclear Los Angeles-class attack submarines. The 2+ indicates the submarines in the 7th Fleet based in Guam and up to 17 more from Pearl Harbor.

3 Invasion Scenarios

As O’Hanlon mentioned, the air-power advantage in favor of the ROK/US may be diminished by an invasion executed in bad weather. For this reason, the DPRK will likely choose a period of forecasted bad weather to launch an invasion. Even in bad weather, with the advent of GPS-guided bombs, a precision-guided munition that was not mentioned in O’Hanlon’s analysis, allied aircraft will still be able to deliver bombs close to their targets in bad weather. Given that an invasion would likely involve rather concentrated forces in the areas of advance (Figure 1), air support may still be effective in bad weather.

Following O’Hanlon’s formula directly, the drastically improved ROK forces and relatively less improved DPRK forces would result in an allied victory and a repulsed invasion. The result does not change if the DPRK uses a combination of air assault and tunnels. Because of prepared defenses and particularly concentrated units near the probable approach routes,

North Korea cannot succeed with a direct armored assault with only a 21 to 19 heavy ADE ratio.⁵⁷ The DPRK's only chance for success involves nullifying the effectiveness of some ROK and US armor, taking out ROK/US air power in South Korea before an assault to make way for DPRK close-air-support, or disabling ROK/US command and control. These scenarios would basically constitute "decapitating strikes."⁵⁸

These decapitating strikes can only succeed if the military plays to their strengths. Specifically, the large force of littoral submarines, the 120,000 special forces troops, the superior numbers, the superior artillery, and the stockpile of weapons of mass destruction would contribute most to a DPRK invasion. As most forces are already near the DMZ and DPRK divisions will not have to travel far to start an assault, a nearly unplanned armored assault could come after the initial strike with little preparation. The lack of planning among the common armor divisions is almost necessary to maintain operational security.

3.1 DPRK Invasion Conventional Scenario

A likely conventional scenario would be the deployment of special forces units deep into South Korea to sabotage and destroy air assets. The deployment would likely involve amphibious landings using the DPRK's many submarines. Immediately preceding these attacks, artillery strikes on brigade and division headquarters would attempt to eliminate essential parts of the ROK and US command structures. Assuming O'Hanlon's numbers for artillery refire, each tube could fire several times before being potentially silenced by allied retaliation.⁵⁹ The estimate of several thousand rounds would land on divisional and brigade headquarters instead of Seoul. This scenario requires excellent intelligence about the exact location of command centers in Southern Korea and precision fire control for long-range artillery. As air bases in South Korea are undoubtedly defended, a substantial number of

⁵⁷The concentration of units near probable approach routes is mentioned in O'Hanlon and has not changed.

⁵⁸These scenarios are not really accounted for in O'Hanlon, other than to say that chemical weapons would be unlikely to affect the outcome of a war. The following scenarios describe a coordinated attack where chemical weapons could be used advantageously by commandos and fired from artillery.

⁵⁹O'Hanlon 148.

special forces units must be deployed to neutralize the aircraft and the defenders. This increases the risk of alerting allied forces, as it is more difficult for greater numbers of troops to go undetected in enemy territory.

3.2 DPRK Invasion Chemical Weapons Scenario

A scenario that involves the use of chemical weapons would parallel the conventional scenario. The submarine-deployed special forces units would now attempt to deploy chemical weapons against air bases and military headquarters in South Korea. This would be immediately followed by artillery-launched chemical weapons against command headquarters near the DMZ. This scenario would still require intelligence on the locations of headquarters, but would require less accurate fire control because of the effective radius of chemical weapons. Similarly, as fewer special forces units are required to deploy chemical weapons versus storming air bases, the risk of detection in South Korea is decreased. The disadvantage of this scenario is the increased risk of US nuclear retaliation in the form of ICBMs against DPRK military assets.

Both the conventional and chemical scenarios would be followed by a conventional armored assault.⁶⁰ By fixing each allied heavy ADE with a DPRK heavy ADE and backing their breakthrough divisions with close-air-support, the DPRK can achieve two breakthrough points with force-space ratios of approximately 3-to-1.⁶¹ To allow close-air-support aircraft to make a difference, DPRK fighter aircraft⁶² must destroy the remaining ROK and US aircraft to allow attack aircraft providing close-air-support free reign. The ability of ROK and US armour to repel this assault without air power depends largely on the amount of command and control infrastructure destroyed in the initial assault, and the ability of lower-level commanders to organize a defense without orders from the upper echelons.

⁶⁰Reminiscent by the Warsaw Pact invasions of NATO as proposed by Posen, Meirsheimer, and others.

⁶¹3 extra heavy ADEs, plus support from light infantry and close-air-support from attack aircraft.

⁶²These fighters should have a numerical advantage after the destruction of air bases from the initial assault.

3.3 Probable Outcome

As either DPRK invasion plan is highly dependent on a large number of events being favorable for the DPRK, the probable outcome is that the DPRK can only accomplish part of its initial assault before beginning an armored invasion. Without knowing the absolute competence of North Korean special forces units, it is impossible to estimate the success of their missions. By assuming at least partial success in their initial mission, meaningful conclusions can be drawn. A highly successful mission would accomplish perhaps half of its original goals. In the conventional attack, if half of ROK and US aircraft based in Korea were destroyed, the air balance would be 303.7 (effective) DPRK fighters versus 200 ROK fighters and 75 US fighters. This rough equality of air power would likely prevent the DPRK from establishing air-superiority and thus prevent the close-air-support aircraft from adding enough power to achieve the needed force-space ratios at two different breakthrough points. Additionally, the lack of air superiority allows allied attack aircraft to reinforce breakthrough regions with greater effective firepower. This outcome is a long, drawn-out fight that would allow the US division from Japan and an additional 96 fighters from Alaska enough time to reinforce the defenses in South Korea.⁶³ The *Reagan* carrier battle group will arrive within the first week to further deteriorate any North Korean advantage gained by the commando strikes. With increased air support, allied ground forces could simply draw out the fight long enough⁶⁴ for significant US ground troops to arrive via sea-lift. The eventual outcome of this prolonged invasion would be a North Korean defeat through attrition as additional US military assets arrive.

In the case of a chemical attack, perhaps 75 percent of all allied air-power can be nullified, as well as 75 percent of all command headquarter personel. The combination of such a crippling blow being dealt and the use of weapons of mass destruction on US and allied military forces would likely provoke immediate retaliation against DPRK military targets from US

⁶³The fight only needs to be drawn out a few days for these assets to come into the theatre.

⁶⁴i.e. Past the third week.

ICBMs from the continental US or tactical nuclear warheads launched from SSBNs in the Pacific. The nuclear strikes would likely be against invasion routes leading to breakthrough sectors and DPRK air fields. Once the metaphorical WMD gloves are off, the DPRK stands little chance of succeeding in a conventional war backed by chemical weapons against US conventional forces backed by tactical nuclear weapons.

3.4 Worst-Case Outcome

In a worst-case scenario, the DPRK's deployment of chemical weapons causes the 75 percent destruction of allied air-power and command headquarters, but the US does not respond with nuclear retaliation. The new air balance of 303.7 (effective) DPRK fighters versus 140 US and ROK fighters combined with confusion caused by destruction of part of the command structure would allow DPRK armor divisions to use their conventional forces to break through two points on the allied line.⁶⁵ After the initial breakthrough, ROK and US forces may be forced to retreat or be destroyed by flanking North Korean armor.

Assuming the armored units of the ROK and US put up some resistance in their retreat, North Korean units would only be able to advance approximately 2 miles per day.⁶⁶ Even if they could advance extremely quickly, at 5 miles per day or twice the expected rate, it would take 5 days to capture Seoul and much longer to pacify the entirety of South Korea. In the meantime, US air assets could arrive from around the globe to re-establish US air superiority.⁶⁷ At the end of the third week, an additional 6 divisions would arrive to reinforce ROK and US troops on the defensive. These fresh troops would help prolong the war, which would likely end with the inevitable failure of the invasion to crush the ROK and US military in South Korea.⁶⁸ The casualties in this worst case scenario would be extremely high because

⁶⁵These breakthroughs would be helped by delayed reaction from allied armor and remaining allied attack aircraft.

⁶⁶O'Hanlon uses the figure of 4-5km per day to describe an advance against a determined defense.

⁶⁷The arrival of additional carrier battle groups from the Middle East and reinforcements from Alaska would be the first step. These reinforcements would be in the gulf within the second week.

⁶⁸The thought here is that an additional 180,000 US troops, or 10 heavy ADEs, will likely repulse the invasion, though not quite as favorably or with as few casualties as a large force of 400,000 troops.

of the length of the engagement and the deployment of chemical weapons.

4 Conclusions

Much has changed in the ten years since O'Hanlon's analysis of a second Korean War. The potency of the ROK military has grown annually and will continue to grow with the development of new weapons systems and the modernization of existing forces. The ROK Air Force has grown dramatically and now outnumbers and outclasses the DPRK's aging fighters. South Korean armor, with the replacement of K1s and aging M-48s with K1A1 MBTs, is well on its way towards matching and surpassing the numerically greater but older force of DPRK armor. A lot of this headway can be accounted for by a robust economy and approximately three times the military spending of the DPRK. With the eventual addition of systems such as AWACS and attack helicopters to the ROK's arsenal, the firepower contribution by the forward-deployed US division in Korea will further diminish. The consequence of these changes is clear: a successful invasion of South Korea by North Korea is highly unlikely. An attempted invasion, however, may result in significant casualties if proper deterrence and intelligence are unable to prevent the use of chemical weapons or a surprise attack by commandos deep inside South Korea's borders.

4.1 The Necessity of US Forward-Deployed Forces

Inevitably, the necessity of the ever-diminishing power contribution from US forces in Korea will come into question. Cultural differences and history provide friction between garrisoned US troops and South Korean civilians. Some of the recent problems have included accidental deaths and civilian complaints about military personnel frequenting red-light districts in South Korea⁶⁹ Even with the potential problems caused by its presence, the garrison provides an active and important deterrence against a possible North Korean use of weapons of mass

⁶⁹Baker, Anni P. "The Social Effects of the Bases: South Korea." *American Soldiers Overseas* (Westport, CT: Praeger Publishers, 2004):162-165

destruction. A WMD attack on American soldiers seems more likely to prompt a nuclear response from the US than a WMD attack on allied soldiers. It follows that American soldiers in a region will provide more of a deterrence against the use of WMDs than the absence of such soldiers. It would be beneficial for the security of South Korea for US soldiers to remain in the country, if only to deter an attack.

While the necessity of forward-deployed air and naval assets is seldom questioned, establishing the usefulness of such a force is helpful, particularly when attempting to justify the cost of maintaining that force. From this analysis of a DPRK invasion, the air and naval forces were extremely important, especially in the face of a decapitating attack against air power already in South Korea. Even in the quick time-frame of this invasion, reinforcements from Japan and from the 7th Fleet could reach Korea to replace destroyed fighters within a day. This demonstrates the effectiveness of forward-deployed forces in responding to crises, especially in regions of potential conflict.

4.2 Intelligence

Both scenarios proposed for a DPRK invasion of South Korea could only achieve devastating decapitating strikes through successful North Korean intelligence and the failure of US and ROK intelligence to detect the planning of a massive operation as well as the landing of special operations troops by submarine. To address these potential deficiencies in the defense of South Korea, the ROK must ensure that proper intelligence measures are in place to track submarine movements as well as operations by North Korean special forces. Coastal control and improved tracking of North Korean chemical weapons should also be ensured.

4.3 Consequences of Deployments to Iraq

This paper was intended to determine the probable outcome of a North Korean invasion in today's world. While increases in South Korean technology and military power has kept the outcome of an attempted invasion the same, decreases in US force availability would

restrict the size of reinforcements to less than half of what O'Hanlon had predicted in 1998.⁷⁰ These reinforcing troops would also be on a difficult rotation schedule, even worse than the effectiveness-depleting rotation schedule currently used in Iraq. This shows that continued long-term force deployments in Iraq are not sustainable at today's troop levels if the US is to be prepared for a second regional war.

⁷⁰Even when all army reserves are included.