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AN ANALYSIS OF THE OPERATIONAL ART IN THE KOREAN AIR WAR (1950-1953) – LESSONS RE-LEARNED AND FORGOTTEN

By

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ABSTRACT

An Analysis of the Operational Art in the Korean Air War (1950-1953) –

Lessons Re-Learned and Forgotten

By Colonel T.F.J. Leversedge

The Korean War (1950-1953) was a multi-national, joint and combined war fought within significant political constraints to achieve limited goals. While the Korean conflict is significant from many perspectives, it is particularly important in the case of air power. The air campaign involved coalition partners on both sides, along with strategies and operational issues which are relevant to today's air operations. Both sides rapidly introduced new technology and jet aircraft featured predominately in the air war. The United Nations also employed air power directly in an attempt to "pressure" the Communists to the negotiating table. The air campaign's influencing factors including leadership, command and control, personnel, logistics, basing, technology and combat support issues are equally germane today.

While the Korean War commenced only five years after the Second World War, it is revealing to understand the difficulties that ensued during the Korean air campaigns. The need for air superiority, and its contribution to victory five years previously, had not been forgotten. But a recognition of the importance and critical need for joint operations which further necessitated detailed coordination between service branches and allies, and which had been "paid for in blood" during various campaigns in World War II, had subsequently evaporated in the interwar years. Politics, inter-service rivalries and the spectre of "atomic war" had served to dissipate previous priorities and lessons learned.

Fifty years later, a fresh analysis of the operational art in the Korean Air War reveals useful lessons relevant to today's understanding of the operational art.

INTRODUCTION

The Korean War (1950-1953) was a multi-national, joint and combined war fought within significant political constraints to achieve limited goals. Within the context of the period, however, many in the United States, in particular, originally perceived the Korean War to be an anomalous local conflict in the nuclear age.[1] Fifty years later, previous conclusions are being overturned by more up-to-date analyses. Consequently, there are conflicting perspectives on the lessons to be drawn from this air campaign. For example, in the preface for a book using a series of Korean Air War articles drawn together from the United States Air Force *Air University Quarterly Review*, in 1957, Colonel James T. Stewart asserts, "Without question, the decisive force in the Korean War was air-power."[2] Conversely, by 1998 author Robert Jackson asserts "Allied air power, apart from blunting the communist offensives, never played a decisive part at any time of the conflict;…".[3]

While the Korean conflict is significant from many perspectives, it is therefore particularly important in the case of air power. The air campaign involved coalition partners on both sides, along with strategies and operational issues which are relevant to today's air operations. Both sides rapidly introduced new technology and jet aircraft featured predominately in the air war. The United Nations also employed air power directly in an attempt to "pressure" the Communists to the negotiating table. The air campaign's influencing factors including leadership, command and control, personnel, logistics, basing, technology and combat support issues are equally germane today.

While the Korean War commenced only five years after the Second World War, it is revealing to understand the difficulties that ensued during the Korean air campaigns. The need for air superiority and its contribution to victory five years previously, had not been forgotten. But a recognition of the importance and critical need for joint operations which further necessitated detailed coordination between service branches and allies, and which had been "paid for in blood" during various campaigns in World

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[1] Banks, Major R.L. " A Multidimensional Study of Tactical Air Power between the Vietnam and Korean Wars – Part One – Prejudicial Counsel" *The Royal Air Force Air Power Review*, Volume Six, Number One, (Spring 2003): p 119.
[2] Stewart, Colonel James T. *Airpower – The Decisive Force in Korea*, Princeton, NJ, D. Van Nostrand Company Inc. 1957: p iii.
[3] Jackson, Robert. *Air War Korea 1950-1953*, Osceola, WI, Motorbooks International, 1998: p 148.

War II, had subsequently evaporated in the interwar years. Politics, inter-service rivalries and the spectre of "atomic war" had served to dissipate previous priorities and lessons learned.

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BACKGROUND

> Korea, annexed by Japan following the Russo-Japanese War of 1904-5, had been promised its freedom by the WWII Allies at the Cairo Conference in December 1943. This decision had been reaffirmed in the Potsdam Proclamation of 26 July 1945. The surrender of Japan following the dropping of the atomic bombs in August 1945 resulted in a rapid re-occupation by the Allies of the territories occupied by the Japanese. A hurried Allied agreement established the 38th degree of latitude as an arbitrary dividing line across Korea. North of this line the USSR accepted the surrender of Japanese forces, while those south of the line surrendered to the American troops. Following the surrender, the Russians took the 38th Parallel to be a political boundary and along it they effectively lowered what Winston Churchill call the "Iron Curtain". [4]

North Korean forces subsequently invaded South Korea by crossing the 38th parallel on 25 June 1950. (See Appendices A and B.) This invasion caught United States (US) and Allied forces stationed in the region totally unprepared. The conflict would range up and down the Korean peninsula for the next three years ending in a stalemate and armistice that persists to this date. For purposes of analysis, the overall campaign can be divided roughly into five phases. The first phase corresponds with the North Korean invasion through to mid-September 1950. In this period, the North Korean forces swept past poorly prepared South Korean forces and hastily deployed US reinforcements. A United Nations (UN) coalition was formed and a rapid build-up began. Famed US General Douglas MacArthur was appointed as the commander of all UN forces. North Korean forces were ultimately successful in bottling up all UN units within a perimeter surrounding the southern port of Pusan. By this point, North Korean forces were heavily extended and vulnerable to counterattack. The second phase of the war commenced on 15 September 1950, with General MacArthur's masterful breakout of the Pusan perimeter combined with a daring amphibious landing at Inchon. North Korean forces subsequently collapsed and UN forces headed for the Yalu River on North Korea's northernmost boundary. By this point, however, it was the UN forces' turn to be overextended. In late November 1950, the tide of war would turn again as the third

[4] Cull, Brian & Newton, Dennis. *With the Yanks in Korea - Volume 1*, London, UK, Grub Street – The Basement Publishing, 2000: p 1.

phase of the conflict was signalled by a massive Chinese intervention and the commitment of 300,000 of its troops. Overwhelmed and battered, UN forces would withdraw in the face of this new onslaught. Chinese forces would ultimately re-capture the South Korean capital of Seoul but, in the face of harsh weather, lengthy supply lines and growing UN resistance by mid-January 1951, the Chinese advance would be halted 40 miles south of Seoul. The fourth phase of the war was then signalled by a massive UN counter-offensive that would re-establish a more or less permanent battlefront by June 1951, once more along the 38th parallel north of Seoul. The war would then settle into its fifth phase, consisting of a bloody stalemate that would last for another two years. Armistice talks would persist throughout this latter phase eventually culminating in a formal armistice, which was signed on 27 July 1953.[5]

Air power was to feature prominently in each of these five phases. The Soviet Air Force had trained and equipped the fledgling North Korean Air Force (NKAF). Similarly, they provided the Chinese People's Liberation Army Air Force (PLAAF) with state-of the-art equipment, advisors and training. Ultimately, Soviet Air Force pilots and ground forces were increasingly covertly committed to the conflict. The United States mobilized significant elements of its newly formed Air Force and committed air elements from the United States Navy and Marines to the war. The United States also trained and equipped the Republic of (South) Korea Air Force. Other UN air elements were drawn from the Royal Air Force (RAF), Royal Navy (RN), British Army, Royal Australian Air Force (RAAF), Royal Canadian Air Force, South African Air Force, Royal Hellenic Air Force and Royal Thai Air Force.

SCOPE

While the overall air campaign is deserving of additional study, there are some constraints that limit the scope of this paper. From a North Korean, Chinese and Soviet (Russian) perspective, there are still too few substantive analyses available. The bulk of available references and analyses focus on the United States' efforts and for this reason, this paper concentrates on the American air war and in particular upon the efforts of the United States Air Force (USAF). Additionally, due to time constraints, the focus of this paper concentrates on the last two phases of air war in particular.

[5] Crane, Conrad C. *American Airpower Strategy in Korea 1950-1953*, Lawrence, Kansas, University Press of Kansas, 2000: p 1.

STRATEGIC CONTEXT

It is important to first understand the strategic context of the period. In a post-World War II world, many nations were interested in a "peace dividend" and huge numbers of forces had been demobilized and defence spending was slashed. The USAF had only just stood up as a separate service on 18 September 1947. A bitter inter-service battle had ensued between the fledgling Air Force and the Navy over air roles, missions and the hardware needed to carry them out.[6] Former World War II Soviet and Chinese Communist allies, by still maintaining massive numbers of conventional forces, were now perceived as the principal threat to the Western world. On 26 June 1948, the USAF had responded to the Soviet induced Berlin crisis with a massive airlift. Soviet and American aircraft subsequently clashed in the skies over a divided Germany. The US was a nuclear power and nuclear weapons were now firmly embedded as part of a national strategy. Alarmingly, in 1949 the Soviets had also demonstrated their possession of nuclear weapons with successful tests. The hard reality for the US in 1950 however was that they possessed "only a small number of nuclear weapons and an equally small number of aircraft modified to carry them".[7] Massive B-36 bombers and specifically modified B-29 *Superfortresses* constituted the atomic striking force of Strategic Air Command (SAC) (non-nuclear capable B-29's were now classed as "medium" bombers). Most US officials believed that Korea was simply a distraction and that a Soviet invasion of Europe was imminent. The USAF was consequently very careful to limit its commitment of resources to the Korean theatre. Concerned about a possible escalation to global war, President Truman restricted the use of air power to the Korean peninsula and prohibited attacks into China. During the conflict, NATO forces remained on high alert for possible Soviet aggression in Europe.[8]

Soviet and Chinese strategic intentions in regard to the conflict are more difficult to assess given the lack of access to suitable resources. Author Michael McCarthy suggests that the Soviet strategy was

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[6] Winnfield, James A. & Johnson, Dana J. *Joint Air Operations – Pursuit of Unity in Command and Control, 1942-1991*, Annapolis, MD, Naval Institute Press, 1993: p 39.
[7] Meilinger, Colonel Phillip S. *Airmen and Air Theory – A Review of the Sources*. Maxwell Air Force Base, Alabama, Air University Press, 2001: p 131.

three-fold: to preserve Korea as a buffer-state along its border, to even out the force ratios by balancing out American involvement and to tie down significant numbers of US forces that would consequently not be available for the defence of Europe.[9] It is also clear that Soviet and Chinese actions were directly intertwined and for the North Koreans, it was principally a total war for reunification.

COMMAND & CONTROL ARRANGEMENTS

In Korea, command and control of all UN air forces was problematic from the start. General McArthur was appointed the Commander-in-Chief United Nations Command (CINC UNC). In a US context, he was also the CINC of Far East Command (FECOM) reporting to the US Joint Chiefs of Staff. Since it was a unified command, staff representation from each of the services and nations involved should have provided a balanced decision-making capability. From his previous WWII Pacific theatre experiences, McArthur respected what air power could achieve. He also understood the need for a strong air component commander. But he was also used to tightly controlling the campaign and surrounded himself with ultra-loyal staff. While both the Air Force and Navy established component commands, designated the Far East Air Force (FEAF) and Naval Forces Far East (NAVFE) respectively, MacArthur retained the role as Commander of Army Forces. The result was a Joint Headquarters heavily weighted with Army personnel performing double duty as joint theatre and army component staff.[10] (See Appendix C.)

Lieutenant General (Lt Gen) G.E. Stratemeyer had been appointed as the commander of FEAF prior to the outbreak of the war. While, the RAAF quickly subordinated the command of its fighter squadron to his control, the initial phases of the air campaign were marked by continuing confusion and antagonism between the various US air elements over control of air assets. In addition, with his request for commitment of additional B-29 groups from SAC, Lt Gen Stratemeyer had to be wary of the influence

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[8] Banks, Major R.L. " A Multidimensional Study of Tactical Air Power between the Vietnam and Korean Wars – Part One – Prejudicial Counsel" *The Royal Air Force Air Power Review*, Volume Six, Number One, (Spring 2003): p 115.

[9] McCarthy, Michael, J. "Uncertain Enemies: Soviet Pilots in the Korean War" *Air Power History*, Volume 44, Number 1, (Spring 1997): p 35.

[10] Momyer, General William M. *Air Power in Three Wars (WWII, Korea, Vietnam)*, Washington, DC, U.S. Government Printing Office, 1978: p 53.

of SAC's commander, Lt Gen Curtiss LeMay. SAC forces were initially provided under temporary duty conditions and assigned to the theatre commanders' "provisional" operational control. Throughout the remainder of the conflict, FEAF Bomber Command continued to be led by SAC officers who regularly consulted with General LeMay on air operations. LeMay also installed a liaison officer to work directly for the commander FEAF.[11]

The rapid developments in the first two phases of the air campaign compounded the command and control issues. The deployment of aircraft carriers from the US Seventh Fleet's Task Force 77 along with a similar Royal Navy Task Force 91 deployment including the carrier HMS *Triumph* quickly resulted in targeting complications. Poor coordination and duplication of targeting efforts were rapidly apparent. Similarly, the deployment of Marine air units skilled in close air support but committed exclusively to support of Marine ground units in the midst of chaotic conditions was problematic.

Communications were particularly difficult. FECOM initially directed that all ground forces were not to contact FEAF for air support but were instead to direct all requests to FECOM in Tokyo; this entailed ponderous communications links between HQs. As a result, during the early phases of the war, it sometimes took more than four hours to approve and direct air support.[12] There were also serious technical problems as Navy/Marine aircraft had different radios from their Air Force counterparts. Navy personnel did not understand Air Force terminology and vice versa. Fratricide problems were also immediately apparent. On 28 July 1950, a FEAF B-29 bomber mistakenly shot down a *Seafire* from HMS *Triumph*.

The joint command and control problem was worsened by the fact the FECOM targeting group was initially designating targets based upon obsolete maps and without representation of all the air elements present. It was subsequently revealed that at least 20 percent of the targets designated by the

[11] Jamison, Theodore R. "General Curtiss LeMay, The Strategic Air Command, and the Korean War, 1950-1953" *American Aviation Historical Society Journal*, Volume 41 Number 3 (Fall 1996): p 193.
[12] Kropf, Major R.F. "The US Air Force in Korea: Problems that Hindered the Effectiveness of Air Power" *Air Power Journal*, Volume IV, Number 1, (Spring 1990): p 33.

group simply did not exist or were poor choices for air attack[13] and that the assignment of forces to targets was equally poor given the broad range of performance capabilities of the aircraft types involved.

These and other problems, culminated in LGen Stratemeyer asking for operational control (OPCON) of all the units engaged in the air war. However, the Naval task forces were initially seriously concerned with the threat of Soviet and Chinese naval forces to its units. Naval commanders viewed the request for OPCON over naval air assets as granting de facto OPCON over the movement of the carrier task forces, which was unacceptable to naval commanders. The end result was a confusing compromise with the Navy granting "coordination control" to FEAF; a term which none of the staffs involved precisely understood.[14]

In their analysis of command and control efforts within the air campaign, authors Winnefeld and Johnson correctly conclude that unity of command was never truly achieved. Differences "were never completely resolved; they were only muted by combat necessity or by the modicum of trust built over three years of shared experience." [15]

CAMPAIGN / PHASE OBJECTIVES

Phase I

Prior to the start of the war, there had been no joint planning for US or Allied air operations in the Pacific region. The FEAF was principally concerned with the possible defence of Japan and the Philippines. Additionally, there were neither joint nor single service plans for the defence of Korea.[16] Despite the lack of adequate plans, however, air power was brought to bear with speed and flexibility. Transport aircraft assisted with evacuation measures and offensive patrols and combat missions were rapidly executed. With the onset of war, both the CINC FECOM and his air component commander recognized the necessity of air supremacy. Air strikes quickly destroyed much of the NKAF re-establishing UN air supremacy. As the Allied forces withdrew behind the Pusan perimeter, UN air units

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[13] ibid
[14] McNamara, Lieutenant Colonel Stephen J. *Air Power's Gordian Knot – Centralized versus Organic Control*. Maxwell Air Force Base, Alabama, Air University Press, 1994 – p 81.
[15] Winnfield, James A. & Johnson, Dana J. *Joint Air Operations – Pursuit of Unity in Command and Control, 1942-1991*, Annapolis, MD, Naval Institute Press, 1993 – p 51.
[16] ibid

conducted air interdiction, close support and resupply missions providing critical time for stabilization and reinforcement. One of the most crucial factors affecting air operations at this stage was the lack of suitable airfields. The speed of the North Korean advance necessitated the majority of operations to be flown from Japan or elsewhere with ensuing complications.

Phase II

With air supremacy assured, the ability of Air Forces to support Operation *Chromite* with its amphibious landing at Inchon was straightforward. FEAF planned a three-phase interdiction campaign in support of the operation primarily oriented towards disrupting road and rail bridges. However, the success and rapidity of the Allied breakout resulted in these interdiction plans being significantly amended throughout.

Phases III & IV

When the Chinese crossed into North Korea on 1 November 1950, MacArthur immediately changed the priorities for the FEAF. He ordered a maximum effort for close air support of retreating Allied forces and also subsequently requested authority from the JCS to destroy the bridges used by the Chinese to cross the Yalu river. This latter request was initially denied and as Allied air forces struggled to blunt the Chinese army offensive, FEAF was directed to provide close support of ground units "to exclusion of all else".[17] Unfortunately for the Allied Air Forces, the Chinese intervention brought a further ominous turn of events with the introduction of PLAAF and covert Soviet Air Force units. The deployment of state-of-the-art MIG-15 jet fighters along with ground-based anti-aircraft units eliminated UN air supremacy and threatened local air superiority on the battlefront. FEAF was authorized the use of incendiary weapons in order to destroy cities and towns that could shelter Chinese troops moving in from Manchuria. In addition, when the Chinese began refurbishing airfields in North Korea, FEAF B-29 bombers struck hard at the airfields and maintained continuous attacks until the Chinese abandoned the effort.[18] This success did not come without cost however and B-29 losses to MIG-15 fighters continued

[17] Momyer, General William M. *Air Power in Three Wars (WWII, Korea, Vietnam)*, Washington, DC, U.S. Government Printing Office, 1978: p 169.
[18] Futrell, Robert F. "Tactical Employment of Strategic Air Power in Korea" *Air Power Journal*, Volume II, Number 4, (Winter 1988): p 39.

to mount. Similarly, close air support and interdiction missions were now much more dangerous due to both enemy fighters and much improved anti-aircraft defences. Eventually, clashes between MacArthur and the US President over the ultimate strategy to be used to combat the Chinese intervention would lead to MacArthur's removal as the CINC FE. Lt Gen Mathew Ridgeway was appointed as MacArthur's replacement, and, under his command, UN forces went on the offensive in late winter 1950 and early spring of 1951. The Allies recaptured Seoul and the front stabilized along the original 38th parallel line. In the summer of 1951, armistice talks began for the first time.

Phase V

As armistice talks dragged on, the battlefront became reminiscent of a segment of the First World War Western Front. Both sides developed elaborate trenches, bunkers, barbwire and minefield systems to protect their lines. The UN's superiority in tactical aviation and artillery firepower offset the pure numerical advantage of Communist forces. The principal objective for UN ground forces now became the prevention of any further territorial gains by Communist forces while minimizing UN casualties during the negotiation process. Consequently, air power became the principal means of applying both political and military pressure. This new phase of the war also brought a new FEAF commander as Lt Gen O.P. Weyland took over command of all UN air elements.

The initial attempt to compel the Communists to accept a cease-fire agreement using air power was an interdiction campaign, which commenced in August 1951. Code-named Operation *Strangle*, this intensive effort by the Fifth Air Force, Naval Task Forces, the 1st Marine Aircraft Wing and by elements of FEAF Bomber Command was aimed at severing North Korean road and rail lines supplying the front. It lasted through the remainder of that year. The FEAF subsequently concluded that the effort was successful in significantly reducing but not preventing the Communist supply effort. Then, a re-focused interdiction effort, known as Operation *Saturate*, aimed at disrupting a key road and rail junctions on the main east-west supply route, began in early 1952 and lasted for another six weeks.

In April 1952, General M.W. Clarke assumed command as CINC FE. Not long after, he advised the JCS that the underlying reason for a failure to achieve an armistice was the UN's inability to exert

"..sufficient military pressure to impose the requirements for an armistice on the enemy." [19] The FEAF subsequently developed further operational plans to apply pressure. The principal intent was to undermine the North Korean regime by inflicting economic damage with attacks against key infrastructure. The revised plans recommended that all assets other than those required to maintain air superiority "be employed toward accomplishing the maximum amount of selected destruction, thus making the Korean conflict as costly as possible to the enemy..."[20] In an early example of "effects-based" targeting, the targets were prioritized "based on effects to the enemy, vulnerability to available weapons, and probable cost of attacking them.[21]

The first focus of this new air campaign was the North Korean hydroelectric generation capability including one of the largest installations in the world at the Suiho dam on the Yalu River. The ensuing strikes were models of "joint" air operations. For example, during the last week of June 1952, the attack on the Suiho Dam commenced with 35 Navy F-9F *Panther* jets suppressing defences, followed by 35 Navy *Skyraiders* attacking with 5,000 pound bomb loads, all launched from the Seventh Fleet's Task Force 77. Ten minutes later, 124 F-84s *Thunderstreak* fighter-bomber aircraft from Fifth Air Force hit the target, while the entire operation was protected by 84 F-86 *Sabres*.[22] "Within four days, 546 Navy and 730 Fifth Air Force fighter-bomber sorties destroyed 90 percent of the North Korean electric power potential."[23]

When the bombing of hydroelectric installations failed to break the deadlock in armistice negotiations, Gen Clarke approved Operation *Pressure Pump* in the summer of 1952. This operation entailed the largest raids of the entire war against the North Korean capital of Pyongyang. On 11 July 1952, the UN launched over 1,200 sorties against the capital. A similar raid of over 1,400 sorties followed on 29 August 1952. These large operations were supplemented in the coming months by additional strikes against various power, mining, oil, manufacturing and transportation centres throughout

[19] ibid: p 40.
[20] Crane, Conrad C. "The Air Campaign over Korea – Pressuring the Enemy" *Joint Forces Quarterly*, (Spring / Summer 2001): p 79.
[21] ibid
[22] ibid
[23] ibid p 80

North Korea. By early 1953, FEAF considered small cities and towns the only remaining vulnerabilities in the Communist infrastructure and logistic systems.

At the same time, a new US President, ex-General Dwight Eisenhower brought with him a renewed effort to conclude hostilities quickly. The possible employment of atomic weapons was seriously considered but eventually discarded for fear of escalation. While the President and his advisors were considering the various strategic options, conventional air war operations continued. General Clarke's staff, in looking for new ways to pressure the enemy, targeted North Korea's irrigation dams. Twenty of these dams, situated near important supply routes, provided approximately 75 percent of the water necessary for North Korea's rice production. In addition to destroying the rice crop, the secondary effects would inundate roads, railways, airfields and supply dumps. The intent was to destroy the enemy ability to live off the land and aggravate existing Chinese rice shortages and logistic problems. Fifth Air Force fighter-bombers hit the Toksan and Chasan dams in mid-May 1953, followed by FEAF Bomber Command night strikes against the Kuwonga dam. These successful strikes were subsequently followed by two further strikes approved by the JCS. Fighter-bombers struck at the Namsi and Taechon dams with the intent to flood nearby jet-capable airfields. Additional strikes were under consideration as active hostilities were formally brought to an end on 27 July 1953 by successful armistice negotiations.

CAMPAIGN ANALYSIS

The Korean Air War and the sub-campaigns therein provide both good and poor examples of the operational art. "Effective air operations come from understanding one's doctrine, knowing one's limitations, and most of all thoroughly planning the campaign from end to end."[24]

Air Superiority

The Allied Air Forces understood the need for air superiority / air supremacy and it consequently became a priority mission at the outbreak of hostilities. The NKAF was equipped with World War II vintage Soviet equipment and it also possessed relatively inexperienced aircrews. In Phase I and II of the air campaign, the UN struck hard at the NKAF and its airfields (these airfields were in fact continuously

[24] Kirkland, Lieutenant Colonel M.A. "Planning Air Operations: Lessons from Operation Strangle in the Korean War" *Air Power Journal*, Volume VI, Number 2, (Summer 1992): p 37.

attacked throughout the entire course of the war). The Allies were able to bring experienced aircrews with technologically superior equipment to battle and successes were immediately apparent.

In Phase III, IV and V, however, the injection of Chinese and Soviet Air Forces into the campaign significantly changed the complexity of the problem. Political direction prevented striking at Chinese and Soviet air bases within the sanctuary of China's borders. The UN then resorted to fighter sweeps and fighter screens to achieve localized air superiority on combat missions. It is also clear that the Soviet and Chinese Air Forces understood the need for air superiority; however, similar political constraints prevented them from seeking anything except localized air superiority. The ensuing territory over which these air superiority battles raged throughout the remainder of the war was dubbed "Mig Alley".

One central theme has dominated post-war analyses of the air superiority campaign. Robert F. Futrell who provided the most authoritative account of USAF operations in the Korean War maintains that the USAF F-86 *Sabre* pilots achieved a ten-to-one margin of victory over Soviet / Chinese MIG-15 jet fighters.[25] The technical superiority of the F-86 *Sabre* and the experience of Allied pilots who flew them is consequently the principal rationale given for UN dominance in air superiority.

However, more recent analyses of the Korean Air War have had much better access to both Russian and Chinese archives. This new information suggests that long accepted victory claims of UN pilots were significantly over-stated. Many aircraft claimed as "destroyed" were instead simply damaged and were returned to service. These discrepancies are not unique to UN claims as Russian / Chinese figures claim far more aircraft destroyed than the US or its Allies admit to losing. Similarly, the technological advantage asserted by the US for its F-86 *Sabres* versus MIG-15s has not been historically proven. Each aircraft type had strengths and weaknesses and, in the hands of an experienced pilot, the MIG-15 could be a deadly adversary. It is still acknowledged, however, by all sources that overall UN fighter pilots were consistently superior to their enemies in training and experience. Depending on the sources and the specific interpretation of available data, MIG 15: F-86 Sabre kill ratios ranging from a high of 3.5 : 1 to as low as 2 : 1 are more realistic figures.

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[25] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 696

Counter-Surface Campaigns

The Close Air Support (CAS) and Air Interdiction (AI) sub-campaigns prosecuted throughout the entire Korean War by the UN have been the subject of considerable study and analysis. The ensuing controversies over the command and control and specific methodologies employed therein would last for decades and some elements persist to this day.

During the opening phase of the war, all available tactical air elements from US, RAAF and RN services, along with FEAF B-29 bombers, were employed in a desperate effort to blunt the North Korean attack, to preserve the Pusan perimeter and to establish conditions for a counterattack. Unfortunately, these early efforts, and those that followed in the Phase II counterattack, revealed significant clashes of doctrine, training, procedures and equipment between each of the services and also between allies. Both the USN and Marines had a specific view of the CAS role. Their procedures, tactics and equipment primarily stemmed from World War II experiences. The Navy and Marines both still provided CAS using WWII-vintage F4U *Corsair* attack aircraft guided by ground-based Forward Air Control parties. By contrast, the USAF was structured primarily to conduct an independent air campaign. Its doctrine of the period called for attacking enemy war-making potential, lines of communication and strategic military targets. It viewed interdiction (i.e. destroying the enemy before the battle front is reached) as the sounder approach to offensive tactical air support. This focus did not fit well with the early circumstances on the ground in Korea. The crews of theatre-based jet fighter aircraft and B-29 bombers had neither trained for nor were well suited for the CAS role. The RAAF however quickly committed to good effect its only available fighter squadron in theatre who also were flying WWII-vintage F-51 *Mustang* aircraft. The USAF consequently scrambled to re-activate and form similar F-51 squadrons that could deploy close to the front lines. Fortunately, except for British units, the remainder of the UN elements were flying US-made equipment such as F-51 *Mustangs*, etc. which eased the challenges of inter-coalition operations and support.

CAS problems were compounded by the need for integration of USAF/Allied and Navy/Marine efforts on the battlefront. In the initial stages of the war, with ill-defined battle lines, the combinations of large numbers of aircraft arriving on station, limited numbers of forward air controllers and usable radio

control frequencies coupled with endurance limitations for both carrier-based aircraft and USAF aircraft operating from bases in Japan and elsewhere saturated air control capabilities around the target areas. [26] These control and communications problems led initially to the compartmentalization of each of the air elements, with the Navy, Marines, and USAF each receiving different areas of responsibility. As might be expected, Naval and Marine air units were designated exclusively to provide air support for X Corps during the Inchon landing. However, their responsibilities included "neutralizing all airfields within 150 miles of Inchon – clearly beyond the limits of the amphibious objective area."[27] Subsequent objections by Commander FEAF resulted in General MacArthur "confirming FEAF's coordination and control authority when Navy and Marine air units were not performing naval missions.[28] The Commander FEAF would have to argue long and hard for operational control of air units. Gradually, the Commander NAVFE would acquiesce to overall "coordination control". Task Force 77 was also assigned an area of responsibility off the east coast of North Korea but the Navy remained "autonomous in deciding which and how many of its assets to commit to a given mission or task in support of the other two component commands of CINC FE."[29] Only by 1952, did efforts to resolve these and other problems culminate in the establishment of a fully joint Operations Centre staffed by representatives of all air elements.

CAS remained a critical capability for the UN throughout the entire war. The UN relied on artillery and air firepower to offset the numerical superiority of Communist ground forces. In the fluid opening stages of the war, the loss of equipment and UN artillery pieces in particular meant that air power was crucial to the fire support efforts. Notwithstanding the importance, however, of CAS to the UN efforts, the FEAF expended far more effort on its interdiction campaigns.

In terms of the air interdiction campaigns, the Korean peninsula geography should have favoured this methodology of attack. Approximately 400 nautical miles long and varying in width between 100 to 300 nautical miles, the Korean peninsula's terrain is extremely rugged and mountainous. At the outbreak

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[26] Winnfield, James A. & Johnson, Dana J. *Joint Air Operations – Pursuit of Unity in Command and Control, 1942-1991*, Annapolis, MD, Naval Institute Press, 1993: p 59.
[27] Ibid: p 47.
[28] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 151-152.
[29] Winnfield, James A. & Johnson, Dana J. *Joint Air Operations – Pursuit of Unity in Command and Control, 1942-1991*, Annapolis, MD, Naval Institute Press, 1993: p 43.

of war, along with a few principal roads, the transportation network consisted primarily of railroads previously constructed by the Japanese. Initial interdiction efforts aimed at slowing enemy advances in the opening phase of the war were highly successful at disrupting North Korean forces and supplies. Faced with the onslaught of UN air power, the North Koreans attempted to reduce losses by slowing the rate of advance requiring their troops to travel exclusively by night and seek concealment during daylight. Supplies vital to the continuation of the enemy offensive were reduced to a trickle by an aggressive interdiction effort. Weakened by steady attacks from the air and from subsistence living, North Korean forces were then ripe for a counterattack.

As the ground war settled into a stalemate with the commitment of Chinese forces, FEAF continued with significant interdiction efforts such as Op *Strangle* and others. Various post-war analyses have revealed the ineffectiveness of these latter operations despite an overwhelming effort. The original attempt to analyse the enemy's logistical support was based upon centre of gravity considerations. The analysis logically revealed that railways were crucial to the North Korean war effort. Consequently, attacks against rail lines, bridges and rolling stock, along with road targets, were pursued with vigour. While these attacks did indeed disrupt the flow of supplies to the front, campaign planners had unfortunately overlooked other key factors. "Little consideration was given to the notion that interdiction is most effective when combined with a ground campaign which causes the enemy to exhaust his supplies at a rate that cannot be sustained."[30] The static nature of the ground campaign in this latter phase of the war had correspondingly reduced logistics needed by troops. The difficulty in ensuring prolonged rail / road traffic disruption in the face of a determined enemy was similarly not understood. Effectively cutting rail lines with conventional munitions of the period was extremely difficult. During Op *Saturate*, only "one-fourth of the total sorties flown obtained rail cuts."[31] Moreover, the North Korean and Chinese reaction to the interdiction efforts was to concentrate robust anti-aircraft defences to protect key areas along with instituting significant deception efforts. Camouflage and other innovative techniques were

[30] Kirkland, Lieutenant Colonel M.A. "Planning Air Operations: Lessons from Operation Strangle in the Korean War" *Air Power Journal*, Volume VI, Number 2, (Summer 1992): p 40.
[31] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 442.

used to protect rolling stock and to provide the impression that key bridges and rail sections were out of commission when in fact they were serviceable. They cannibalised existing double track to ensure that single lines remained open and resorted, in some cases, to shuttling cargos back and forth between rail cuts and offloading between trains. This latter technique was indicative of the Chinese and North Korean approach of using large volumes of human labour to overcome tactical problems. They proved adept at rapidly repairing significant damage to all kinds of infrastructure with the simplest of materials and tools complemented by massive amounts of unskilled labour. These factors coupled to make the interdiction campaigns expensive to the UN in terms of the overall results achieved versus the loss of aircraft and personnel.[32] A US Army Command report concluded:

> Notwithstanding the heavy damage inflicted by UN airpower, the overall interdiction campaign in Korea had only partial success. The destruction did not succeed in significantly restricting the flow of the enemy's supplies to the frontlines, or in achieving interdiction of the battlefield. The attrition cause the enemy to triple and retriple his efforts to supply the frontlines; it laid a costly burden upon his supply organization; it cause him widespread damage and loss. Yet no vital or decisive effect could be observed at the fighting front. Throughout the campaign, the enemy seemed to have ample strength to launch an attack if he wished. His frequent and heavy artillery barrages were evidence that he did not suffer from a shortage of ammunition. Captured prisoners said they had plenty of food, clothing, medical supplies and ammunition for small arms. [33]

Strategic "Air Pressure" Campaign

The effectiveness of the strategic bombing campaign (which often is referred to as the "air pressure" campaign) must also be questioned in hindsight. UN air elements struck very hard at strategic targets throughout North Korea. Eighteen of twenty-two North Korean cities were virtually destroyed along with many other towns and villages. UN attacks to hydroelectric, industrial and other infrastructure targets were massive in scope and scale. As with the interdiction campaigns, however, the North Koreans and Chinese displayed remarkable resilience. For example, the attack on the Toksan dam washed out 27 miles of river valley and flooded the streets of Pyongyang. The Communists put 4,000 workers on repairs at the dam along with installing additional antiaircraft defences. In just thirteen days, a temporary

[32] Kirkland, Lieutenant Colonel M.A. "Planning Air Operations: Lessons from Operation Strangle in the Korean War" *Air Power Journal*, Volume VI, Number 2, (Summer 1992): p 40.
[33] Mossman B.C. "The Effectiveness of Air Interdiction During the Korean War" *History Manucripts Collection*, Histories Division, Department of the Army, March 1966: p 11

dam had replaced the damaged structure and all rail repairs had been completed.[34] Finding additional targets to strike effectively became increasingly more difficult as the air pressure operations continued. Ultimately, instead of pressure from any air campaign, the breakthrough at the armistice negotiations may have had more to do with political factors such as President Eisenhower's implied threat to use atomic weapons or with the death of Stalin in the Soviet Union.

INFLUENCING FACTORS

When completing an analysis of the Korean air war operational campaigns, there are a number of additional factors that must be kept in mind. The Korean War was a "limited" war fought within a coalition context on both sides.

Political Constraints

The ineffectiveness of portions of the UN air campaigns can be traced directly to the inability of UN forces to strike at forces and supplies beyond the North Korean border. Similarly, during the air superiority campaign, Chinese air bases in Manchuria could not "legally" be attacked although it must be said that UN fighter sweeps often aggressively pursed targets into Chinese airspace and that some internal Soviet and Chinese ground targets were attacked "in error". Targets in China and the Soviet Union were officially off-limits to avoid any escalation of the limited nature of the Korean conflict. It must also be remembered, however, that similar constraints benefited the UN side. Chinese aircraft did not attack front-line positions of the UN. To protect their covert status, Soviet pilots were prohibited from venturing into enemy territory or over water in order to avoid the possibility of their capture. Neither side attacked each other's ocean-going shipping. Consequently, on the Communist side, a stream of vital logistics flowed without opposition from the Soviet Union through China. Similarly, United Nations Command benefited from the delivery of a million tons of military supplies transhipped each month across the

[34] Crane, Conrad C. "The Air Campaign over Korea – Pressuring the Enemy" *Joint Forces Quarterly*, (Spring / Summer 2001): p 84.

Pacific by air and sea lift for delivery to massive warehouses (principally in Japan) again all without air or naval opposition.[35] A similar political setting would emerge in the subsequent conflict in Vietnam.

Leadership Influences

The Korean War is interesting for its distinct phases and the various leaders who participated in each phase. CINC FECOM changed three times in the course of the conflict from Generals MacArthur to Ridgeway to Clarke. Similarly, when the first Commander FEAF, Lt Gen Stratemeyer, suffered a heart attack shortly after the dismissal of Gen MacArthur, Lt Gen O.P. Weyland eventually assumed command of the air forces. Each of these generals brought with them significant and varied (World War II) personal experiences with air power. Their subsequent approach to its use and the strategies involved were remarkably different. Additionally, their interaction with other component commanders and the ensuing staffs is perhaps worthy of further study in its own right.

Personnel Factors

Both sides took the opportunity in the Korean War to rotate large numbers of personnel into the theatre. "The US Defence Department favoured a policy of rotating personnel through the Korean theatre."[36] For example, a six-month tour was the norm in FEAF Bomber Command. As the war progressed however and shortages of either experienced or specialist personnel grew, extensions to tours became routine. "During the war FEAF's personnel strength more than tripled as it grew from 33,625 officers and airmen assigned on 30 June 1950 to 112,188 officers and airmen assigned on 31 July 1953."[37] By comparison, when the armistice was signed, the Soviet Union alone had rotated twelve fighter air divisions (29 fighter regiments) through Korea. "From early 1952 until the end of the war in 1953, the [Soviet] corps numbered about 26,000 personnel, and a total of about 72,000 Soviet military personnel, including some 5,000 pilots, served in the Korean conflict."[38] These rotations caused significant and

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[35] Thompson, Wayne & Nalty, Bernard C. *Within Limits – The U.S. Air Force and the Korean War*. Air Force History and Museums Program, Washington, U.S. Government Printing Office, 1996: p 58.
[36] Unknown Authors. *Steadfast and Courageous: FEAF Bomber Command and the Air War in Korea 1950-1953*. Air Force History and Museums Program, Washington, U.S. Government Printing Office, 2000: p 29.
[37] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 689.
[38] McCarthy, Michael, J. "Uncertain Enemies: Soviet Pilots in the Korean War" *Air Power History*, Volume 44, Number 1, (Spring 1997): p 37.

noticeable variations in operational capabilities on both sides as inexperienced and sometimes poorly trained crews suffered at the hands of more experienced counterparts.

In the case of PLAAF, the fledging nature of this air force largely dictated its subsequent employment. The decision to create the PLAAF had only been taken in July 1949.[39] China immediately turned to the Soviet Union to both train and equip its forces. Remarkably, by June 1950, the PLAAF was able to establish its first combined brigade consisting of two fighter squadrons, one bomber regiment and one attack regiment with a total of 155 aircraft. This brigade's aircraft included 38 state-of-the-art MIG-15 jets. It was recognized, however, that considerable operational training still had to be conducted to ensure the air force was ready for combat operations. Original Chinese estimates suggested that the PLAAF would not be ready "to enter the war with some 300 planes until February 1951."[40] The Soviet Union's considerable covert commitment of its own air elements to combat operations while the PLAAF continued to train was therefore a crucial factor in the Chinese decision to intervene in Korea in late 1950.

Logistics and Basing Lessons

Logistics are pivotal to all operational campaigns and the Korean Air War was no different. The greatest obstacle for both sides to effective air operations during the first years of the war was the lack of adequate, secure air bases in Korea. Kimpo airfield near Seoul had been the only modern airfield in Korea at the start of the war. Unfortunately, the North Koreans quickly overran it and, in response, the FEAF heavily damaged its infrastructure. Similarly, most of the port facilities and ground transportation infrastructure that did exist was damaged or destroyed during the first seven months of the war as fighting raged up and down the peninsula. For the UN, these problems led to an increasing reliance on the use of airlift and in the employment of helicopters to achieve tasks. The three items required in the greatest bulk quantities by FEAF consisted of aviation fuel, munitions and Pierced Steel Planking (PSP). Fuels and lubricants represented over 60 percent of the tonnage for all material shipped to Korea. Eventually a fuel pipeline between Inchon and Seoul was constructed. The requirement for an ability to operate from austere airfields was driven home. The rapid construction of new airfields in Korea along with the

[39] Zhang, Xiaoming. *Red Wings over the Yalu – China, the Soviet Union and the Air War in Korea*. College Station, Texas, Texas A&M University Press, 2002: p 33.

expansion of those in Japan necessitated the use of PSP, which initially was in short supply. As the war dragged on, various airfields in Korea were extended and resurfaced with concrete to facilitate jet operations.[41]

Influences of Technology

The full impact of technology on the outcome of the Korean War is unclear. It was a "hybrid" war that often pitted old technology against new; jet aircraft against piston engine aircraft. Jet aircraft were found to have clear strengths but equally possessed significant operational limitations. Consequently, obsolete aircraft such as the F-51 *Mustang* were pressed into combat roles with limitations and vulnerabilities of their own. Personnel factors such as training and experience weighed heavily on the effectiveness of the technology employed. Fortunately, the commonality of equipment on both sides facilitated operational training and employment. What is also clear is that the conflict provided a test bed for the introduction of a wide variety of new weapons platforms, new techniques (such as operational air-to-air refuelling) and new procedures into the air war and many lessons were absorbed. The need to conduct both all-weather operations and effective night operations was recognized as crucial to the way ahead. Deficiencies in many areas spurred technical developments that would unfold in ensuing decades.

Combat Support Operations

The Korean Air War also stimulated significant combat support developments especially in the areas of reconnaissance, airlift, casualty evacuation and combat search and rescue operations. Despite the fact that at the end of World War II the importance of aerial reconnaissance had been recognized, in years leading up to Korea, the US had economized significantly in specialist areas. By spring 1949, the USAF had inactivated all of its tactical reconnaissance organizations except for two squadrons in the US and one in the Far East. [42] Consequently when the war commenced, the USAF and USN both found their intelligence assessments severely hampered by the lack of suitable reconnaissance capabilities.

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[40] Ibid p 66
[41] Suit, William, W. "USAF Logistics in the Korean War" *Air Power History*, Volume 49, (Spring 2002): 46-59.
[42] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 545.

Airlift matured in the Korean War and was pivotal not only to the logistics effort but also to the operational employment of ground forces. In the opening stages of the war in particular, the flexibility provided by airlift proved pivotal to the war effort both in defensive and offensive operations. During Operation *Chromite*, Combat Cargo Command supported airborne operations as well as airlifting and airdropping supplies for all the advancing UN forces. Rapid and swift casualty evacuation was another success story in Korea. A small but highly effective system of casualty evacuation from the front lines to as far as the US continent was created using helicopters and aircraft from all services. Similarly, the Korean War saw the development of a formalized combat search and rescue capability involving specifically stationed and equipped helicopters, flying boats and long-range patrol aircraft. Notably, Air Rescue crews rescued a total of approximately 1,000 personnel from behind enemy lines during the course of the conflict.[43]

CONCLUSIONS AND LESSONS FOR TODAY

For the Air Forces involved, Korea reinforced many of the lessons that had been learned in World War II but that, in some cases, had already been forgotten or ignored. The high priority of achieving air superiority and the necessity for proper coordination of all air components were well understood from previous campaigns. Unfortunately, the need for effective joint operations was a painful lesson that had to be relearned despite previously successful historical examples in the Pacific theatre and elsewhere during World War II.

In a subsequent analysis of joint air operations in Korea, Rand Corporation analysts concluded that Korea was another painful lesson on the clash of doctrine with combat realities, on the downstream cost of inter-service conflict, on the expense in blood of 'savings' extracted from peacetime budgets, and on the failure of peacetime and wartime command alike to deal adequately with the requirements for truly effective joint operations. The report highlighted major lessons including: the need for a Joint Operations Centre to broker requirements and resources in an air campaign; the usefulness of joint training, planning and doctrine formulation in peacetime; the importance of flexibility in hardware, tactics and command and control particularly in communications; the continuing utility of obsolete hardware when facing an

[43] ibid: p 583.

enemy with less than modern forces; and the significance of personal involvement by senior commanders in resolving or narrowing the gaps between inter-service issues.[44]

Sadly, many of these same coordination, communication, leadership and other inter-service rivalry problems would re-surface in subsequent conflicts such as Vietnam and, indeed, many persist to the current day.

The debates after Korea have ranged between those who saw air power as decisive in the war's outcome to those who have derided air power's influence as marginal. The use of air power in the Korean campaign must however be understood within the political constraints of the effort. Air power functioned in a particularly effective manner within joint and combined arms scenarios. It was effective and sometimes critical, in many aspects of UN operations. By comparison, with Communist air forces committed almost exclusively to air defence operations, North Korea and China lost a staggering 1.5 million men and huge volumes of material in ground operations during war. [45]

The limited nature of the Korean War effectively prohibited the best use of strategic air power but it is also clear from the analysis of the air campaigns, even within the limitations of the day, that air power could have been far more effectively applied, especially in the early phases of the war. Better command and control, planning, targeting and selective application of air power could have shaped the battlefront in a considerably different manner and timescale than was achieved. Similarly, the coalition nature of UN operations validated the need for interoperability and inter-service training. In a parallel fashion, the NKAF and PLAAF were built upon Soviet doctrine, training and equipment, which facilitated their interaction.

The importance of logistics and combat support operations to the air campaign planning were reaffirmed. The crucial significance of properly equipped airfields coupled with the need for an ability to operate from austere locations is a lesson familiar to today's planners. Similarly, the importance of personnel training and the vital importance of specialist personnel (i.e. reconnaissance, intelligence, air

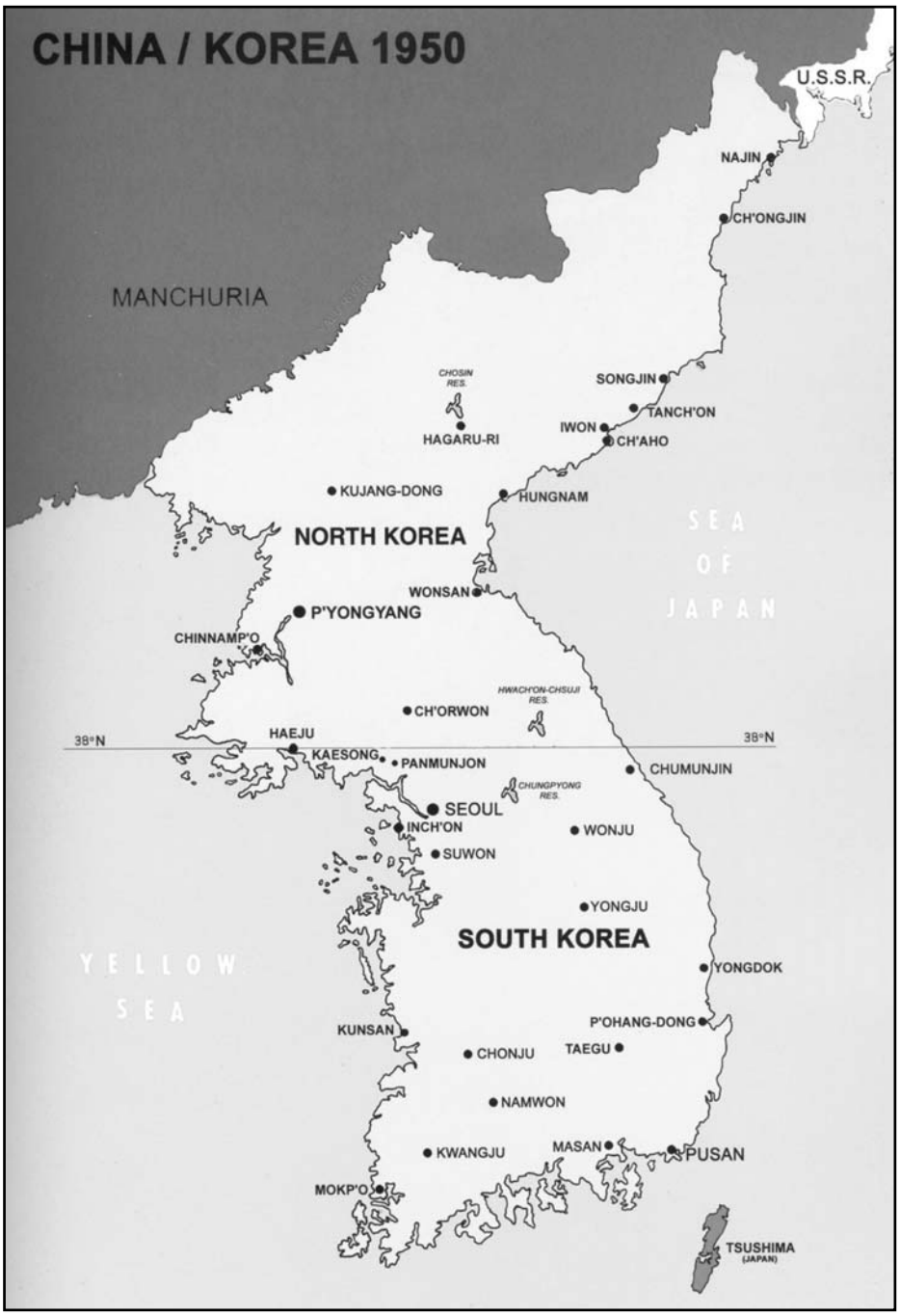
[44] Winnfield, James A. & Johnson, Dana J. *Joint Air Operations – Pursuit of Unity in Command and Control, 1942-1991*, Annapolis, MD, Naval Institute Press, 1993: p 60-61.
[45] Hallion, Richard P. *The Naval Air War in Korea*, Baltimore, MD, The Nautical & Aviation Publishing Company of America, 1986: p 206.

movements combat search and rescue, etc) in specific aspects of air operations should also be readily apparent.

The resilience of populations and armed forces while under attack is another lesson, which must be carefully considered and understood. Faced with an aggressive and comprehensive counter-surface air campaign to destroy transportation infrastructure, the North Koreans and Chinese reacted with a highly effective strategy of deception, defences, rapid repair and alternative methodologies to keep logistics flowing and the war effort continuing. A punishing "air pressure" campaign that flattened large segments of Korea along with key infrastructure was met with the same innovation and resilience and the war effort continued. In the current era of "net-centric" warfare and "effects-based" operations, today's planners would do well to consider the indecisiveness of the Korean air campaigns in this regard, along with the key requirements for accurate measures of both force application and their effectiveness in any ensuing intelligence assessments.

Perhaps more than any other lesson, the Korean Air War reinforces the conclusion that a decisive campaign cannot be won by air, land or sea power alone. While the flexibility, speed and destructive potential of air power cannot be ignored, it must be properly controlled, coordinated and sequenced in a fully "joint" effort in order to shape both battlefields and the desired end state(s). A joint approach is far more effective than any single service strategy.

APPENDIX A - MAPS



Department of National Defence, Directorate of History and Heritage,
Canada and the Korean War – Art Global Publishing Montreal, 2002: p 49.

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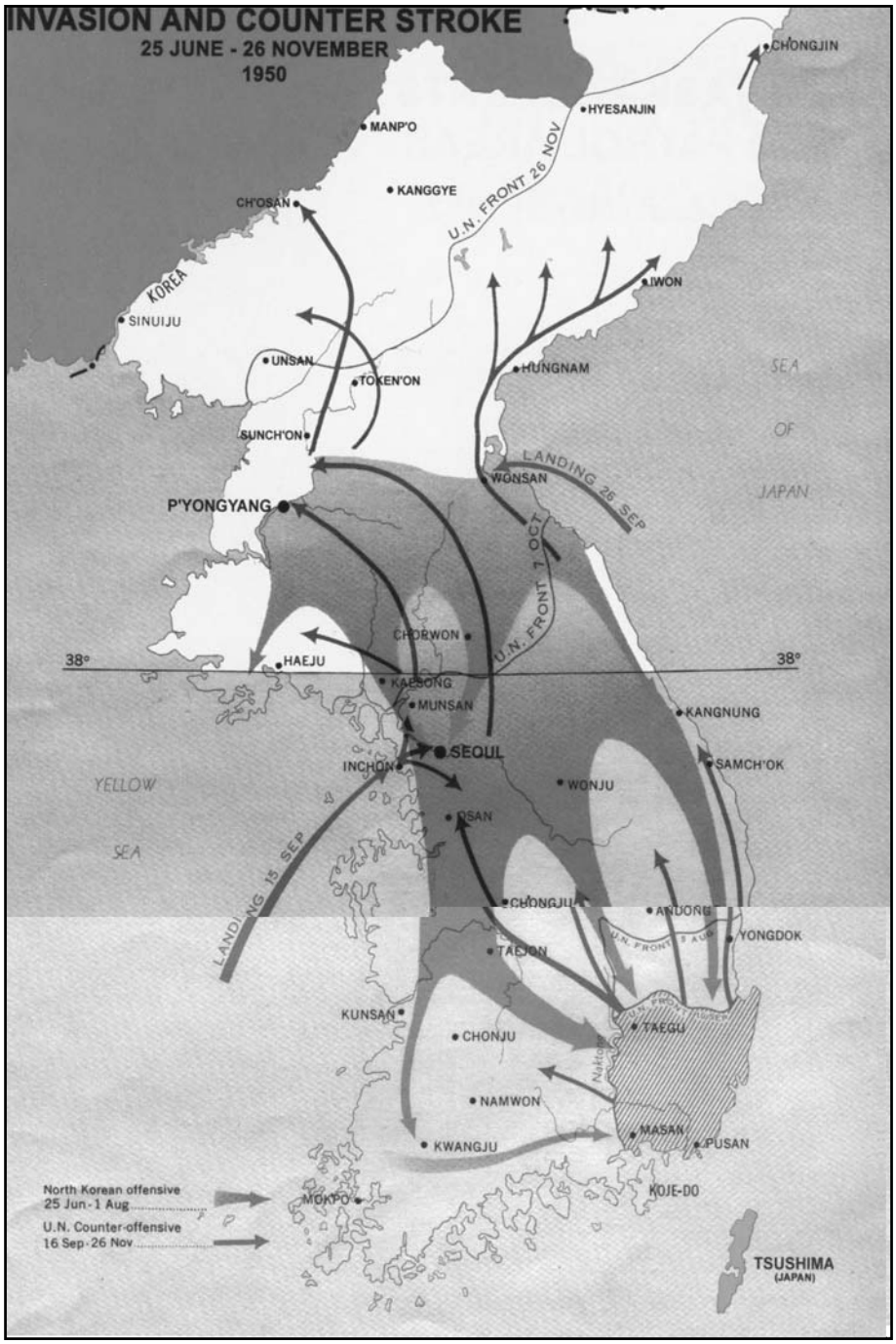

Department of National Defence, Directorate of History and Heritage,
Canada and the Korean War – Art Global Publishing Montreal, 2002: p 52.

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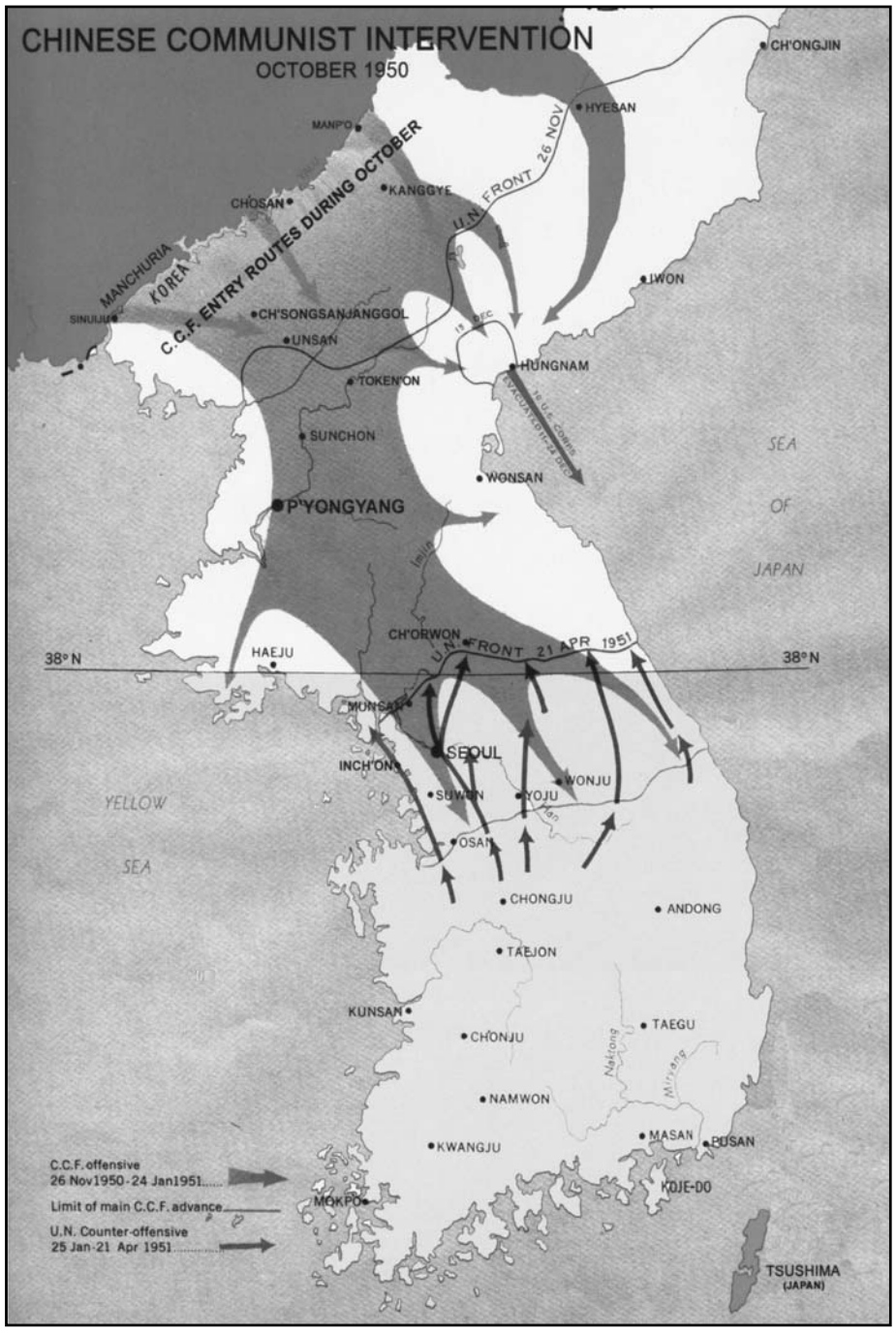

Department of National Defence, Directorate of History and Heritage,
Canada and the Korean War – Art Global Publishing Montreal, 2002: p 53.

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APPENDIX B - 1950 INITIAL AIR ORDER OF BATTLE

North Korean Air Force (NKAF) [46]: 135 combat aircraft including:
- 70 Yakolev Yak-7, Yak-9, Yak-9, Lavochkin La-7 & La-11 fighters
- 65 Ilyushin IL-2 & IL-10 attack aircraft
- \+ 22 Yakolev Yak-18 trainers
- 8 Polikarpov PO-2 biplane trainers

Republic of (South) Korea Air Force (ROKAF): 22 liaison / training aircraft:
- 10 North American AT-6 *Texan* trainers
- 8 Piper L-4 liaison aircraft
- 4 Stinson L-5 liaison aircraft

United States Far East Air Force (FEAF): 476 combat aircraft including:
- 365 Lockheed F-80C *Shooting Star* (jet) fighters
- 25 Lockheed RF-80A *Shooting Star* reconnaissance fighters
- 32 North American F-82 *Twin Mustang* night-fighters
- 26 Douglas B/A-26 *Invader* light bombers
- 22 Boeing B-29 *Superfortress* medium bombers
- 6 Boeing RB-29 *Superfortress* reconnaissance aircraft
- \+ 696 miscellaneous trainer, transport, rescue, liaison aircraft types

Royal Australian Air Force (RAAF): 26 combat aircraft:
- North American F-51D *Mustang* fighters

In addition, the following forces were also in the immediate vicinity of Korea:

Chinese People's Liberation Army Air Force (PLAAF) [47]: 141 combat aircraft including:
- 38 Mikoyan Mig-15 (jet) fighters
- 39 Lavochkin La-11 fighters
- 39 Tupolev TU-2 light bombers
- 25 Ilyushin IL-10 attack aircraft
- \+ 14 trainers

United States Navy [48]: Carrier (CVA) USS *Valley Forge* equipped with:
- Grumman F9F *Panther* (jet) fighters
- Vought F4U *Corsair* fighter-bombers
- Douglas AD *Skyraider* attack aircraft

Royal Navy: Carrier HMS *Triumph* equipped with:
- *Seafire* fighters
- *Firefly* attack aircraft

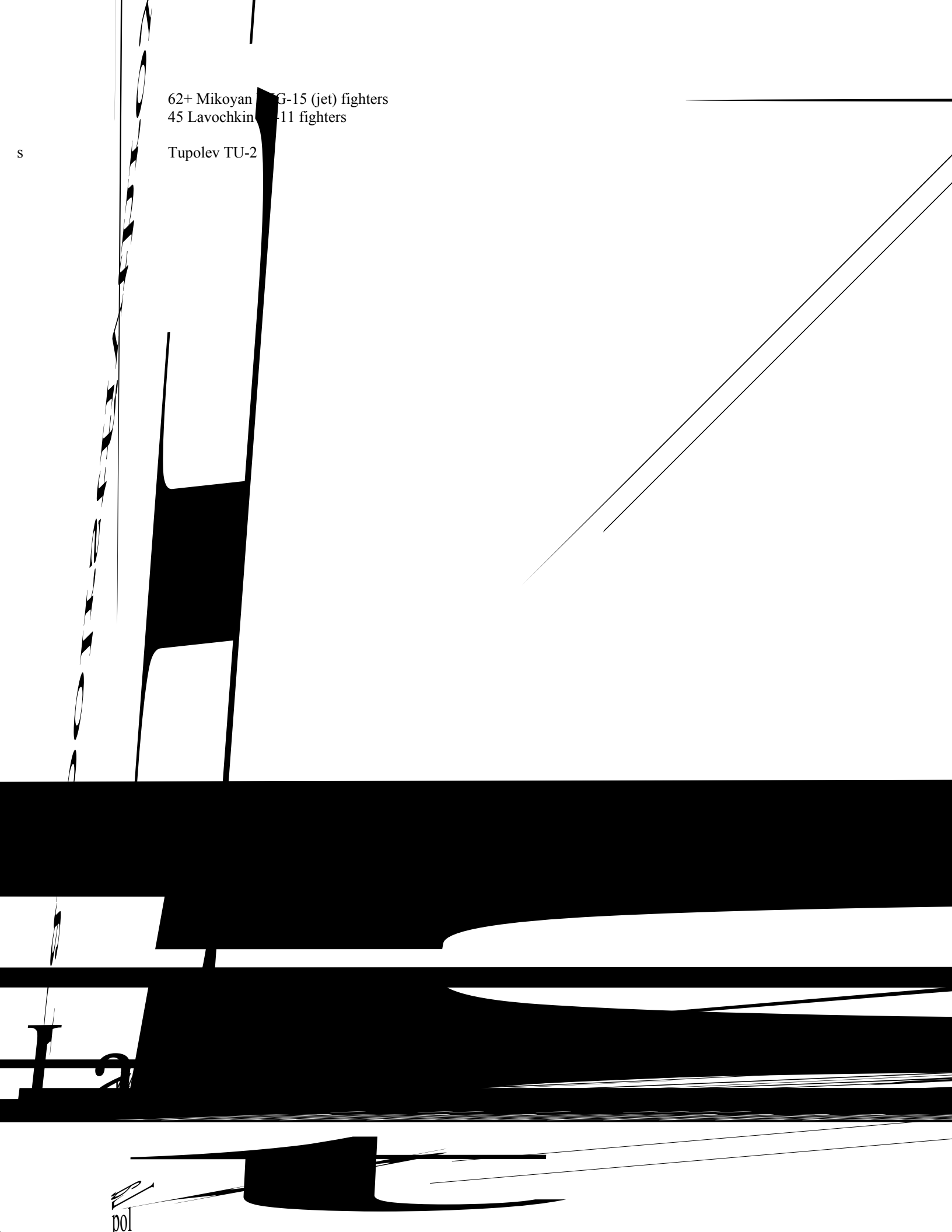
(continued next page)

Soviet Air Force [49]: various deployed units with combat aircraft in China including:

[46] Cull, Brian & Newton, Dennis. *With the Yanks in Korea - Volume 1*, London, UK, Grub Street – The Basement Publishing, 2000.
[47] Zhang, Xiaoming. *Red Wings over the Yalu – China, the Soviet Union and the Air War in Korea*. College Station, Texas, Texas A&M University Press, 2002.
[48] Hallion, Richard P. *The Naval Air War in Korea*, Baltimore, MD, The Nautical & Aviation Publishing Company of America, 1986.

62+ Mikoyan G-15 (jet) fighters
45 Lavochkin -11 fighters

s Tupolev TU-2



APPENDIX C - 1950 UNITED NATIONS COMMAND (KOREAN) STRUCTURE

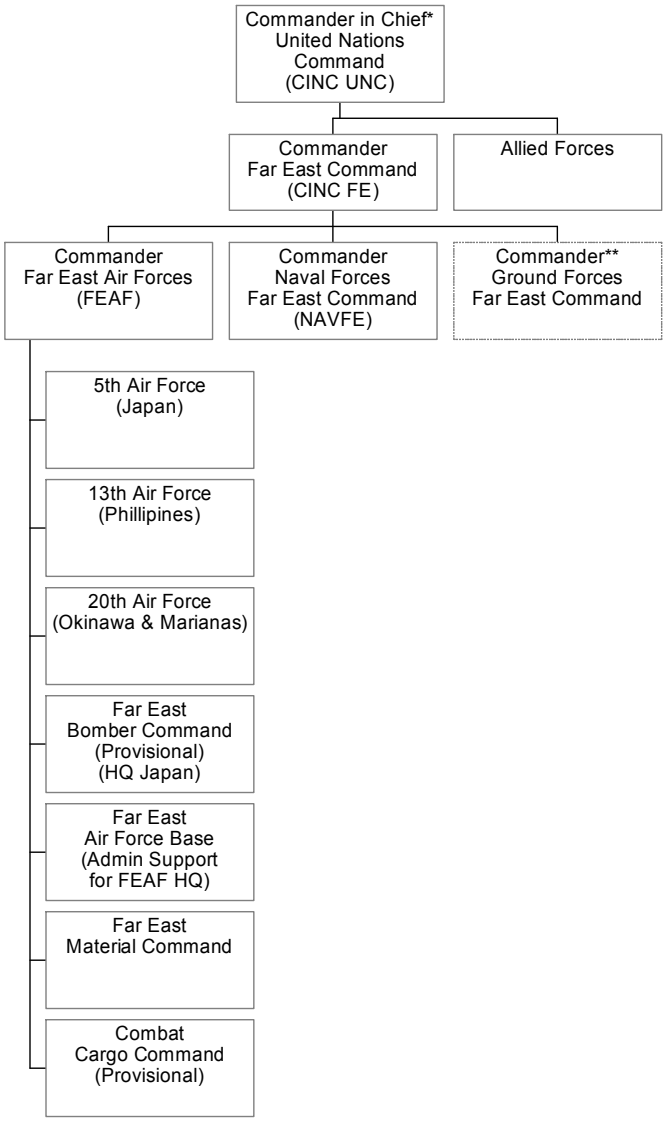


Figure C1 - Korean War UNC Command Structure (Late 1950)

Notes:

* General MacArthur was "dual-hatted" as CINC UNC and CINC FECOM. In addition, he was remained the Supreme Commander Allied Powers in Japan (SCAP). CINC UNC did not report directly to the United Nations but to the President of the United States through the US Joint Chiefs of Staff.[53]

** General MacArther did not initially activate a Ground Forces HQ but instead used Far East Command Staff as the Army Component Command. A new CINC UNC, General Clarke, eventually activated this component HQ in 1952.

C-1/1

[53] Futrell, Robert F. *The United States Air Force in Korea 1950 – 1953*, Revised Edition, Washington, D.C., U.S. Government Printing Office, 1988: p 39.

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