

MICROCOPY RESOLUTION TEST CHART  
NBS 1963-A



# AIR WAR COLLEGE

8

## RESEARCH REPORT

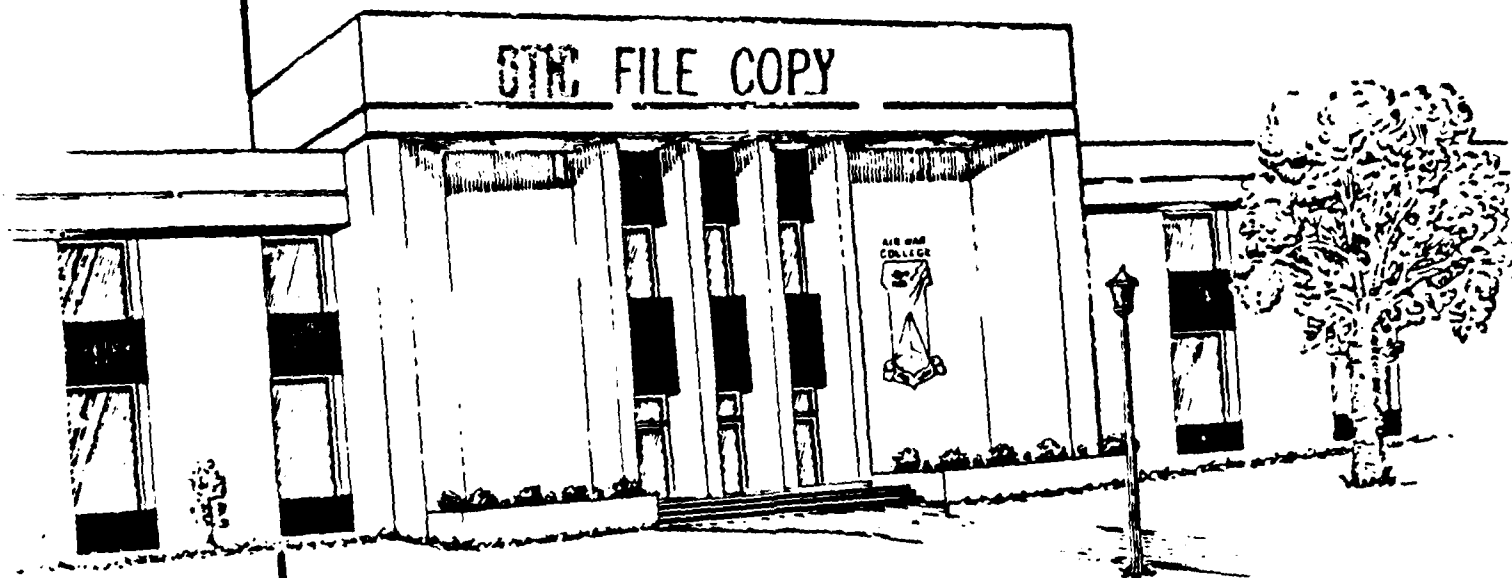
No. AU-AWC-86-209

AD-A177 788

MIG OPERATIONS IN KOREA

By COLONEL ROGER C. TAYLOR

DTIC  
SELECTE  
MAR 13 1987  
S D



AIR UNIVERSITY  
UNITED STATES AIR FORCE  
MAXWELL AIR FORCE BASE, ALABAMA

APPROVED FOR PUBLICATION  
[Faint stamp]

AIR WAR COLLEGE  
AIR UNIVERSITY

MIG OPERATIONS IN KOREA

by

Roger C. Taylor  
Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY  
IN  
FULFILLMENT OF THE RESEARCH  
REQUIREMENT

Research Advisor: Lt Col Harry Johnson

MAXWELL AIR FORCE BASE, ALABAMA

March, 1986

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

## TABLE OF CONTENTS

CHAPTER	PAGE
DISCLAIMER-ABSTAINER. . . . .	i
ABSTRACT . . . . .	ii
BIOGRAPHICAL SKETCH. . . . .	iii
I INTRODUCTION. . . . .	1
II THE NORTH KOREAN AIR FORCE FROM 25 JUNE - 1 NOVEMBER 1950. . . . .	2
III THE AIRCRAFT: THE F-86 AND THE MIG-15. . . . .	6
The MIG-15 Enters the War. . . . .	6
A Captured MIG-15. . . . .	7
The F-86 Enters the Fight. . . . .	8
A Fighter Pilot's Comparison. . . . .	9
IV THE COMMUNIST AIR ORDER OF BATTLE. . . . .	13
V COMMUNIST TRAINING, TACTICS AND RESULTS. . . . .	16
The Build Up. . . . .	16
Mass Training Over Korea. . . . .	19
Determined Attacks. . . . .	23
Pilot Orientation and Indoctrination. . . . .	26
VI AMERICAN TRAINING TACTICS AND RESULTS. . . . .	30
Training. . . . .	30
Tactics. . . . .	31
Fighting a "Honcno". . . . .	33
Fighting a "Trainee". . . . .	34
The Experience Factor. . . . .	36
VII CONCLUSION. . . . .	38

DISCLAIMER-ABSTAINER

This research report represents the views of the author and does not necessarily reflect the official opinion of the Air War College or the Department of the Air Force.

This document is the property of the United States Government and is not to be reproduced in whole or in part without permission of the commandant, Air War College, Maxwell Air Force Base, Alabama.

AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: MIG Operations in Korea

AUTHOR: Roger C. Taylor, Colonel, USAF

Remarks on some historical aspects of MIG operations during the Korean War. A comparative description of the two adversarial aircraft, the MIG-15 and the F-86. Also, an examination of pilot training and tactics employed on both sides. Although outnumbered and constrained by the Yalu sanctuary the USAF pilot enjoyed a 10:1 kill ratio. Previous air to air combat experience, an excellent, gun sight and rapid firing machine guns plus aggressive tactics made the difference.

### BIOGRAPHICAL SKETCH

Colonel Roger C. Taylor (MA Pepperdine University) flew 100 missions over North Vietnam in 1967. He has flying instructor experience in the T-38 F-4D,E and F-16 aircraft. He has been a flight lead, flight commander and operations officer in tactical fighter squadrons. He commanded a tactical operational test and evaluation squadron and tested air-to-air ordnance. He holds the Distinguished Flying Cross with 1 OLC and eleven Air Medals.



## CHAPTER I

### INTRODUCTION

Although outnumbered and constrained by the Yalu sanctuary USAF pilots were able to attain a 10:1 kill ratio against MIG-15s and maintain air superiority over the country of North Korea. Why and how this happened is the theme of this paper.

First an account of the North Korean Air Forces' brief operation in the war is in order.

Then we will see how the aerial aspects of the Korean War changed dramatically with the introduction of the MIG-15 on 1 November 1950. A comparative analysis of the MIG-15 aircraft and the F-86 will follow.

Next, the phases of the war will be examined highlighting tactics and training by the Chinese Communist, followed by a discussion of USAF tactics and training as well as the all important element of experience.

Finally, testimony by USAF MIG killers will reveal how effective our tactics were against the varying degrees of MIG fighter pilot skills.

## CHAPTER II

### THE NORTH KOREAN AIR FORCE: 25 JUNE-1 NOVEMBER 1950

On Sunday 25 June 1950 at 0400, taking advantage of bad weather the North Koreans launched a sudden and all out attack against the Republic of South Korea. By 0900 the South Korean town of Kaesong had fallen and this victory coupled with landings South of Kangung made it clear this was no mere raid. The Reds were bent on armed subjugation of the Republic of Korea. (1:7)

Just before noon the weather began to clear over Seoul, and the North Korean Air Force entered combat. At 1315 hours two dirty silver colored Yak fighters buzzed Seoul and Kimpo airfields and winged off northward without attacking. But at 1700 hours the Yaks returned. Two of them strafed Kimpo, hitting the control tower, a gasoline dump, and an American C-54 which was grounded with a damaged wing. Four other Yaks strafed the Seoul airfield and damaged seven out of ten trainer aircraft of the Republic of Korea Air Force (ROKAF). At approximately 1900 hours six other North Korean fighters again strafed Kimpo. (1:9)

The North Korean Air Force was formed under Russian tutelage and was equipped with Soviet built aircraft. With headquarters at Pyongyang, the North Korean Air Force (NKAFF)

comprised an air division which was sub-divided into a fighter regiment, a ground-attack regiment and a training regiment. On the day the war began the North Koreans apparently possessed 62 IL-10 aircraft, 70 Yak-3 and Yak-7B fighter, 22 YAU-18 transports and 8 PO-2 trainer aircraft. Most of the 132 combat planes were based at two airfields near Pyongyang and at the airfield at Yonpo. Many of the North Korean pilots were young volunteers with limited flying experience, but they were cocky, aggressive and eager to fight. (1:17)

The poor, meager ROKAF was never a factor but we will note their hapless existence. In April 1950 the ROKAF mustered 187 officers and 1,672 enlisted men and 39 of its 57 pilots were counted as trained. The ROKAFs' 16 planes (8L-4s, 5L-5s and 3 T-6s) were at Kimpo and Seoul airfields. (1:18)

The United States Air Force (USAF) was another matter entirely for the NKAF.

At noon, 27 June, five Yak fighters swept over Seoul at 10,000 feet headed for Kimpo. Waiting for the Reds were five F-82 fighters of the 68th and 339th squadrons and in a few minutes three Yaks were destroyed. The first Communist aircraft had been destroyed in Korea. (1:20)

Early on the afternoon of the same day the Communist airmen made another attempt on Kimpo Field. This time the

North Koreans sent out eight IL-10 fighters. These improved versions of the dread Stormovik plane of WWII proved a feeble match for the four F-80c jet fighters which the 35th fighter-bomber Group had posted on air alert over Seoul. Very quickly with a minimum of maneuver, the 35th squadron pilots blasted down four of the Red planes, and the other Red pilots ran. These were the first aerial victories for USAF jet fighter aircraft. They clearly demonstrated that even these oldest jets (F-80cs) were superior to one of the best conventional aircraft of WWII. When the Red pilots who survived this air battle got back to their home airfield they evidently passed the word that the Fifth Air Force was shooting to kill. No more aggressor planes appeared in the Seoul area on 27 June. (1:23)

During the first two days of the Korean hostilities the United States obviously hoped that the Republic of Korea would be able to win its own battles without armed assistance from the outside. This was not to be.

On 29 June the USAF was ordered by General MacArthur to commence air attacks against enemy airfields north of the 38th parallel. (1:27)

B-29s and B-26s would carry the bombing missions north against the airfields while F-82s and F-80s would conduct the air-to-air campaign.

The bombing and air campaign was so effective that by 10 August the North Koreans had lost 110 aircraft and had only a few left that were operational. (1:95)

By 20 August General Partridge, Fifth Air Force Commander, said "that full and regular coverage of the enemy's airfields by his reconnaissance crews revealed very few planes and no activities." (1:96)

"As it happened" stated General Stratemeyer, Far Eastern Air Force Commander, in retrospect, "the air battle was short and sweet. Air supremacy over Korea was quickly established. By 20 July the first task of tactical air employment--establishment of air superiority had been accomplished without difficulty." (1:96)

"I need not dwell on the fact," said General Stratemeyer. "That had the enemy possessed a modern Air Force the whole picture in Korea--from the viewpoint of land, sea, and air forces would have been vastly different." (1:96)

The air situation was to become vastly different on 1 November 1950.

### CHAPTER III

#### THE AIRCRAFT: THE F-86 AND THE MIG-15

##### The MIG-15 Enters the War

As United Nations ground forces moved forward to occupy all of North Korea, the Chinese Communist indicated that they intended to intervene in the battle zone.

General Stratemeyer had predicted that Chinese Communist intervention in North Korea first might be manifest in the air. (1:205). He was right!

At 1345 on 1 November 1950 six swept-wing jet aircraft crossed the Yalu and opened fire on a Mosquito and a flight of Mustangs. The American pilots were lucky enough to evade and escape and the Mosquito pilot returned to Pyongyang to report a good look at one of the new jets. The plane was a Russian-built MIG-15. (1:205)

The Soviet fighters performance rendered obsolete every American plane in the Far East. The Russian fighter hopelessly outclassed the Mustang, whose pilots had no hope for survival when attacked by a MIG except to keep turning inside, to hit the deck and to head for home as fast as possible. In level flight the MIG was fully 100 miles per hour faster than the F-80c and it could climb away from the old Shooting Star as if anchored in the sky. (1:230)

The MIGs swept back wings were products of design data captured from the Germans and the original model MIG was powered by a Russian copy of the British Rolls-Royce Nene engine. Low wing loading and a 5000 pound thrust engine resulted in a plane with spectacular maneuverability and a level speed of about 660 miles per hour. (1:230)

Weighing 12,500 pounds, the MIG-15 measures 33x33 feet. Two 23mm automatic aircraft guns are mounted on the lower left side of the nose, with one 37mm automatic cannon on the lower right side. Guns were aimed by a optical gun sight. (2:21)

#### A Captured MIG-15

In September 1953 a North Korean defector landed his MIG-15 at Kimpo. In subsequent flight test of the MIG at Kadena by USAF evaluators determined these desirable features of the Red plane; ability to operate at altitudes above 50,000 ft, high rate of climb; rapid horizontal acceleration from relatively slow speeds; a short turning radius which was complicated by poor accelerated stall characteristics; and short take-off and landing-field requirements. The undesirable features of the MIG were: loss of aircraft control at high mach number; inadequate defrosting of its canopy and windshield which obscured pilot vision; poor lateral-directional stability at high altitudes; a low rate of roll; and poor aircraft control at

high indicated airspeeds, cannon fired at a slower rate than the .50 cal on the F-86. The general conclusion of the USAF flight test of the MIG-15 was that "The undesirable features of the aircraft heavily outweigh its good points." Although the F-86 is heavier than the MIG--and will not go as high as nor accelerate as fast as the MIG--it is definitely a far superior airplane (1:651)

#### The F-86 Enters the Fight

Through some good fortune the Chinese Communist made no determined bid to establish air superiority over North Western Korea during the period in which the Fifth Air Force possessed no fighter which could battle on equal terms with the MIGs and back in the United States the USAF was making every effort to get more modern jet fighters to Korea.

On 8 November General Vandenberg offered to deploy an F-84E Thunderjet and an F-86A Sabre wing to Korea provided General Partridge could prepare airfields for them in the combat area. The deployment of two complete wings of new-model fighters to the Far East was accomplished in record time of thirty-seven days. (1:233)

On 15 December the 4th Wing flew orientation flights over North Korea which marked its entry into combat (1:233)



To the 4th TFW General Partridge assigned a purely air superiority mission: to fly combat air patrol over North Western Korea and to meet, turn back, and if possible, destroy MIGs.

Presented with the mission was the North American F-86.

The F-86 was also a swept-back wing single seat fighter with these dimensions/capabilities: powered by a general electric jet engine with static thrust of 5200 lbs; speed 650 mph; service ceiling 42,000 plus, tactical radius 535 miles. The aircraft had a pressurized cabin and an ejection seat. Armament consisted of six .50 calibre machine guns. One very important feature was the gyroscopic/electronic ranging gun sight. (1:234)

#### A Fighter Pilot's Comparison

The superior speed, climb, and altitude performance of the MIG-15 was the inevitable result of mating an excellent jet engine with an extremely light airframe. The centrifugal flow engine in the MIG was developed from a British design purchased by the Russians, but they had increased its thrust well beyond the 4,500 pounds thrust of the original engines they bought. The weight of the MIG-15 airframe was kept down by meticulous attention to eliminating unnecessary weight and by striving hard for solutions to high speed aircraft design problems that were

both light and relatively simple to manufacture. The MIG-15 had to be rugged to fly at transonic speeds. Sabre pilots reported pouring their entire ammunition load into a MIG with no apparent results.

Nor did the MIG-15 sacrifice any essential pilot safety equipment. It had pilot armor, ejection seat, and a ribbon type high speed bail-out chute developed by the Germans. A highly polished skin increased its aerodynamic cleanness--a practice that added speed at high Mach numbers. The MIG-15 also had a range comparable to the F-86. Both the MIG and Sabre used droppable wing tanks to extend their range.

Sabre and MIG pilots were fighting fuel consumption as well as their opponents. MIGs often tried to exhaust the Sabre's fuel by attacking in well-spaced waves. One of the really hair-raising sights in Korea was to watch an F-86 pilot coming in, out of fuel, at the end of a long whistling glide from as far as fifty miles out. He had just one chance to make a perfect dead-stick landing and usually did.

But it was the Sabre and not the lack of fuel capacity that keep the MIGs in MIG Alley. The MIGs had range enough to reach far south of MIG Alley, even from Manchurian bases, but they could not use these capabilities effectively while the Sabres barred their ways. Because they were fighting close to their Manchurian bases, the

MIG-15s operated with a lighter fuel load to gain increased performance, but many were spotted carrying wing tanks even in MIG Alley.

Critical weakness of the MIG-15 models lay in their armament. Much of the advantages accruing from their superior flying performance was dissipated by the lack of a gun and gunsight that are effective at the high speeds of jet fighter combat. A disturbing factor was that the MIG's projectiles, while crude, were susceptible to vast improvement while our .50s had gone about as far as they could go. And the sight deficiency was likely to be remedied as Red technicians dug into the problem. Many a Sabre pilot standing a round of drinks in SWIG Alley will frankly admit that he wouldn't had the privilege except for the poor aim and slow-firing cannon of the MIG pilot who was on his tail back there in the Alley.

It was apparent that the MIG-15 was designed primarily as a high altitude interceptor to knock down high altitude bombers. Its phenomenal rate of climb, excellent performance from 30,000 to 50,000 feet, and heavy armament all point in that direction and indicate that the Communists were extremely worried about the capabilities of long range atomic bombers. The 37 millimeter cannon mounted in the belly and the two 23 millimeter wing cannon could tear up a bomber with devastating effect, as many a Superfortress

crewman could testify. They could also knock out an F-86 with one good hit but they fired too slowly and too inaccurately to be really effective against jet fighters.

Some of the Sabre pilots felt that some of the "safety" equipment that makes USAF fighters excellent cross-country aircraft imposes too heavy a weight penalty in combat. They felt that the greatest safety factor in combat is a superior performing aircraft and they would rather take their chances without some of the duplicated auxiliary systems to get lighter and better performing combat aircraft. Sabre pilots were pretty well split on the 20 mm cannon versus the .50 caliber machine gun but all agreed that any jet fighter armament must have an extremely rapid rate of fire. (3:1)

## CHAPTER IV

### The Communist Air Order of Battle

It is important to look briefly at Russian involvement and the Communist air order of battle just prior to the first air engagements.

Probably in production as early as December 1947 the MIGs were reportedly pouring off Russian assembly lines at a rate of 200 per month by the end of 1950. (1:230)

The arrangements whereby Communist China was receiving Russian aircraft were not known in late 1950, but American intelligence later secured documents purporting to tell the story. As early as 14 February 1950 a Sino-Soviet aviation agreement had visualized the "reconstruction" of the Chinese Communist Air Force. According to this agreement, Russia apparently undertook to sell China 3,000 training and combat aircraft to provide China with advisory and technical assistance, and to deliver as many as one-fourth of the promised first line aircraft by December 1950. The Chinese Communist Air Force was to become "one integral part of the Russian Air Force." According to Far Eastern Air Force (FEAF) estimates of the Chinese air order of battle, the Soviet Union made good its promised deliveries, for in December 1950 the Chinese were believed to possess 650 combat aircraft including 250 conventional

and jet fighters, 175 ground attack planes, 150 conventional twin-engine bombers and 75 transports. In addition to the Red Chinese planes, some 400 to 500 Soviet Air Force planes at bases around Darien were readily available for use in Korea. Reconnaissance photos in late November showed that the Chinese Reds were developing Antung Airfield at a rapid pace: previously the field had two gravel runways, but now the Reds had constructed a 6,000-foot concrete runway and a hard surfaced perimeter taxiway. In December early-warning radar in the Antung area began to track FEAF bombers at a range of nearly 150 miles. With surprising rapidity, the Chinese were building air defenses which lapped down over Northwestern Korea. The MIG-15 interceptor, an all weather airfield at Antung, and a radar warning net added up to an operational capability that spelled trouble for the United Nations.

As an Air Force, the Chinese Communist Air Force was very young, and its pilots were not yet skilled enough to use their aircraft to its greatest advantage. For the most part the MIG pilots hugged the Yalu and preferred to make their attacks from high and to the rear of American planes. Seldom if every, did a MIG flight make more than two passes before streaking away to break off combat at the border. Most MIG pilots, moreover, were inept gunners: They consistently fired while beyond effective range, failed to

take proper lead, and lost certain kills when he ceased fire while in effective striking distance. (1:231)

## CHAPTER V

### COMMUNIST TRAINING TACTICS AND RESULTS BY PHASE

#### Phase 1: The Build-Up

During the first ten months of history's first chapter on jet-against-jet aerial war (November 1950 to August 1951) MIG sightings were confined largely to the Yalu River section. Red jets were seldom seen and even less frequently engaged more than a few miles south of their Manchurian sanctuary. As USAF pilots approached the Yalu patrol area, they often observed dust clouds raised by MIGs taking off from Antung Airfield just across the river. After climbing rapidly to altitude, in most cases a height greater than that of USAF aircraft the enemy jets swooped across the border. Generally in flights of four, breaking into elements of two for the attack. The first element would intentionally over shoot the friendlies and serve as decoys. When USAF pilots closed for the "kill," they often found themselves to be targets for the second MIG elements closing rapidly from five to seven o'clock. One pass seemed to satisfy the Reds after which they immediately raced back to their Manchurian bases. The hit-and-run passes characterized initial Communist tactics in air-to-air combat between jet aircraft and were continued against the



F-86 Saberjets which appeared over Korea in mid-December 1950 in the role of fighter-interceptors relieving F-80s, F-51s, and other UN fighters of that function.

By April 1951 increasing numbers of MIGs were spreading southward, being encountered frequently over the Sonchon-Taechon area and were occasionally engaged as far south as Sinanju. Employing a somewhat more refined version of the tactics first displayed over Korea, MIG pilots used the sun to hide their initial pass and continued to rely upon the exceptional climbing ability of their aircraft to evade back into the sun after a swooping attack.

Increased Red pilot aggressiveness was evidenced by engagements with USAF B-29s--even above a complete undercast, through which they dived after making their pass. On the morning of 12 April 1951 the enemy launched his most determined and largest count-air effort to that date. Then 100 to 105 jet fighters opposed 26 B-29s, escorted by 46 F-86s and 54 F-84s in the vicinity of Sinanju. These MIG pilots appeared to be more experienced and more determined as they pressed attacks against the Superforts through their own flak. Friendly pilots claimed 14 MIGs destroyed, 10 probably destroyed and 20 damaged. Two B-29s were destroyed.

May and June of 1951 saw enemy jets venturing as far south as Pyongyang. On 8 July a MIG-15 strike against

escorted B-29s in the immediate Pyongyang area represented the most determined southerly penetration during daylight hours. While the Chinese Communist Air Force (CCAF) had been credited with the capability of extending its air defense operations to include this area, it had not previously done so except at night.

During this period increased pilot proficiency and a new Red air tactic was discernible. The new maneuver was promptly and appropriately labeled the "yo-yo." Twenty or more MIGs would orbit at an altitude exceeding that of the UN formation and, from that group, some of the Reds would swoop down upon Sabre flights, then climb back upstairs, while others repeated the routine. MIG pilots frequently continued to "yo-yo" after the Sabres descended in spirals to altitudes where the enemy lost the advantage of his superior performance at high altitudes.

In spite of sporadic indications of improvement, overall enemy pilot proficiency seemed to be greatly inferior to the MIG performance characteristics and capabilities. While he had been spurred on to greater efforts with the December 1950 appearance of Sabrejets, the enemy had found his pilot-aircraft combination to be a poor match for that of the USAF pilots flying F-86s. He was far less reluctant to oppose F-80, F-84, and B-29 aircraft over which he had a decided advantage.

Night activity on the part of the MIG-15 was extremely limited and ineffective. Six MIGs did jump four F-51s returning from a dusk raid at 1945 hours on 24 June 1951, but this first engagement by enemy jets at so late an hour can hardly be considered night activity because of the visibility that prevailed. Other reports of enemy jet sorties at night have been predicated upon observations of a glow moving at speeds characteristic of jets.

#### Phase II: Mass Training Over North Korea

For approximately eight months--September 1951 through April 1952, a significantly different type of aerial war developed in Korean skies. During this period, enemy air activity was characterized by mass training over North Korea with attendant pilot inefficiency and poor gunnery during combat. MIG operations were generally concentrated over the great triangle occurred formed by Sinuij, Chinnampo, and Sonsan. Fighters were frequently observed and engaged in the Pyongyang area. The climax to limited enemy activity south of the triangle occurred when a flight of four aircraft, believed to be MIG-15s was observed south of Seoul on 3 December. Mass sorties were mounted by the Communist over the eight month period. As many as 366 MIGs were observed over North Korea on a single day, and 180 were

seen at one time. December 1951, with its total of 3997 observed MIG sorties, remains the record month of two year's of MIG activity.

The Communist had seized the opportunity to train hundreds of pilots in the new problems of transonic jet fighting. Because there were fewer Saabes, fewer American pilots were getting this vital training. Again the Russians were building up numerical superiority, although the qualitative average of their pilots was much lower than that of our veterans. (4:1)

"The cycle of their training program is obvious to us," says Col. Ben Preston, who commands the 4th Fighter Group. "They bring in a bunch of new boys and for several days they stay up high--about 5,000 feet above whenever we are flying--and stooge around, flying back and forth over MIG Alley. Many days you can count up to twenty flights of from twelve to twenty MIGs each, waving and flashing around in the sunlight like a school of minnows. They get a good look at the 86s and their instructors try to teach them how to fly formation. When the new boys appear, their formations are ragged. MIGs are strung out all over the sky.

"After a while they catch on and begin to hold their formations together. Then we know they will feel like fighting soon. One day the instructors will begin to 'bounce' us--coming down in a firing pass and pulling up in a chandelle, knowing we can't catch them in a climb at that altitude. The main formation of MIGs sits up above and watches the 'heroes' at work. Pretty soon the whole formation begins to come down in small groups, bouncing off us and climbing away like a bunch of yo-yos on a string. Then we know it won't be long before they are ready for graduation exercises.

"When the new MIG pilots are ready to graduate they come out in force, positioned all over the sky to catch the 86s no matter which way we turn. When we show up the MIGs come barreling down and we have some rough fights. We usually get some MIGs but we get shot up too.

"We usually catch some MIGs alone during these

melees--guys who couldn't hang on to their wingmen or formations when the 'bouncing' began. The stray wingmen are usually easy meat, but sometimes the lone wolf is an instructor who has lost his pupil in the melee. Then you really get a fight. Some of these instructors are mighty fine pilots--as good as I've ever seen. They will fight you all the way from 40,000 feet down to the deck and match you every trick in the book until you are both low on fuel and are glad to break off and go home.

"The MIG pilots who survive these tussels are apparently given a diploma and shipped out somewhere. Pretty soon a new bunch appears strung all over the sky and the cycle starts all over again." (3:2)

The second phase of operations saw the introduction of MIG pincer and envelopment tactics. Often a force of 60 to 80 MIGs would cross from Manchuria over the Suiho reservoir on the Yalu and head Southeast. As this force continued down the center of Korea, small units were dropped off to attempt engagements with UN aircraft flying counter-air patrols just north of the Chong Chon. Scouting flights were usually dispatched to the Wonsan area at high altitude for flank patrol. At the same time a similar MIG force would proceed from Manchuria down the west coast of Korea, also dropping off intruding units and sending out scouting flights to the Chinnampo and Cho-do Island area. Coming over the Yalu at around 35,000 feet, these forces would converge over Pyongyang and drop to between 15,000 and 22,000 feet before sweeping northward over the main supply routes in search on UN--fighter bombers and southward-bound F-86s. An additional force of MIGs usually would come straight down the jaws of the pincers as far south as

Sinanjy in time to provide cover for other Communist fighter-interceptors withdrawing to their bases across the Yalu.

One occasion when these tactics were successful was when an estimated 140 MIGs encountered UN medium bombers during daylight hours of 23 October 1951. The 28 F-84s escorting the bombers were unable to cope with such numbers and three of the B-29s were destroyed.

That this eight months was chiefly intended to give training and familiarization to enemy pilots is indicated by the masses of jets that flew high over North Korea with no intent to engage, while their more experienced brothers demonstrated combat tactics through occasional engagements--usually when they enjoyed a decided numerical advantage. Perhaps the Reds believed something could be gained by having their new pilots observe the application of classroom theory. Even while flying at relatively high altitudes and by displaying an overwhelming force in order to impress UN pilots. Sabrejets renewed their attempts to join contact with a generally reluctant enemy, but it became increasingly difficult to bring him to grips. By no means did engagements keep pace with the enemy sortie rate. For all indications the Reds were pursuing a training program that was not necessarily aimed at turning out fully experienced pilots but was intended to furnish pilots in

sufficient quantity to man the ever-increasing numbers of aircraft supplied by the USSR.

MIGs carrying auxilliary wing tanks of the pylon or F-86 type were sighted and on a few occasions, the fighters appeared under coats of camouflage. In spite of a reluctance to engage, the enemy's losses continued to exceed by far those of the UN, thus proving his selection of this new "training ground" to be tactically and economically unsound. Activity during April 1952 wrought more destruction upon enemy fighters than has been claimed for any preceding month. Of the MIGs engaged 44 were destroyed, 6 probably destroyed, and 51 damaged. Shortly afterward the Communist altered their operational concept and withdrew their fledglings for training in the inviolate skies over Manchuria.

#### Phase III: Determined Attacks

After the period of mass aerial training, there followed a three month (May 10-July 1952) of greatly reduced enemy sortie totals. The highest for a single month being 620 MIG sightings in May, with only 298 in June and 404 in July. Communist air operations were concentrated over North West Korea and the Yalu River and were characterized by a relatively low daytime sortie rate and an increase in night activity. This precluded effective utilization of the MIG-15. MIG pilots flew infrequent sorties into areas as far

south as Pyongyang, but usually when USAF F-86s were elsewhere. Engagements no longer appeared to be for training but displayed the aggressiveness of more proficient Red pilots. The enemy was obviously committing his better-trained fliers to combat. Despite indications of greater proficiency; however, the Communist pilot-plane combination remained greatly inferior to its UN counterpart.

The reduced number of MIG daytime sorties and the accompanying increase in Communist proficiency and aggressiveness, taken in conjunction with a stepped-up night sortie effort by piston-engined aircraft, indicated more than a change in the enemy defensive operational concept. The increase in efficiency and the economy of curtailed daylight operations were probably designed for the purpose of achieving maximum combat readiness of personnel and jet aircraft.

A new tactic was introduced by MIG pilots in July when "end-runs" were made around F-86s, the latter being either decoyed away or engaged in other tactics in order to set up attacks on friendly fighter-bomber and reconnaissance aircraft. Ground radar (GCI) was apparently used for vectoring the MIGs thru cloud cover near roving friendlies, since some of their attacks were initiated directly from an overcast. The employment of such equipment on certain



occasions and the device of "end-runs" on others, were significant factors in the changed picture of enemy aggressiveness.

The frequent interception of UN weather and other aircraft in the coastal area of the Sea of Japan and the Yellow Sea indicated a high state of alert. Some day and limited night intercepts were made by MIG-15s which evidently had been vectored into the area of the friendly aircraft. Of interest is the fact that on 23 June 1952, no MIG opposition was encountered against the UN strike on the Sulto hydro-electric plant, despite the total of 250 jet aircraft observed on Antung and Tatungkou airfields immediately prior to the UN attack. No airborne MIGs were observed until after the fighter bombers had left the area. At approximately the time the UN attack was broken off, visual reconnaissance reported that the jet count on the two airfields had fallen to 90. Although the bombing was taking place less than 60 miles away and lasted some thirty minutes, the 160 MIGs that had taken off made no effort of interference, but completely disappeared. One possible explanation is that these aircraft were withdrawn to rear areas from which they might operate in defense of the Antung complex should those facilities be attacked. Another possibility is that the presence of more than 100 escorting Sabrejets made the enemy reluctant to engage.

#### Phase IV: Pilot Orientation and Indoctrination

That the Communists again changed their operational concept in August 1952 as evidenced by several factors bearing on MIG activity. This shift marks a fourth phase of overall MIG operation--a phase primarily devoted to orientation and indoctrination of Red pilots in aerial combat over North Korea.

The Red lull in sorties ended during the first week of August when the average number of observed MIGs skyrocketed to 673 during six days of action--the highest figure for a week since that ending 4 April 1952. Engagements and US claims paced the rise in sorties. Friendly fighters claimed 37 of these MIGs destroyed or damaged--losses far in excess of those inflicted upon U.N. aircraft. Then for several days there was an almost complete cessation, and at no time throughout the remainder of August did the number of MIGs observed on a single day total more than 97.

Enemy night activity during June and July 1952 was the most intensive observed up to that time and employed a limited number of jet aircraft. On 30 June a MIG-15 was identified among the 12 jets which attacked four B-29s bombing the Kwaksan rail bridge. As a result of this engagement the first night loss of B-29 aircraft to enemy air action was recorded, when two of the medium bombers were

destroyed. Brilliant moonlight seemed to contribute significantly to the enemy's success, since on the night of 30 July 1952, the overall ineffectiveness of Communist night interception was highlighted by the failure of the enemy's largest observed intercept attempt to damage a single medium bomber during a 60-plane B-29 attack on the light-metals plant in Northwest Korea. Although the Reds used jet aircraft and many techniques for countering the B-29s, none of the jets was positively identified as a MIG-15.

September proved to be the most lucrative month of MIG destruction in the Korean War, despite the fact that seven days of the month produced no enemy fighter activity. All claim records were shattered when 64 MIGs were confirmed as destroyed, 8 probably destroyed, and 61 damaged.

It is possible that the enemy heartened by a drop in the ratio of his losses to those of the UN between 15 April and 31 July, initiated in August a moderate effort to defeat the F-86s by attrition. He was doubtless well aware that if the Sabrejets could be eliminated, a potent barrier to his achieving air superiority would be removed. But if such an idea existed, the concept was obviously revised. While MIG sortie totals fluctuated radically over the weeks from the beginning of August to the end of October, they remained substantially high throughout the over-all period. The resultant heavy losses apparently made the enemy realize

that his training had not progressed sufficiently to cause significant attrition of the Sabrejets. Consequently, Red pilots returned to the objective of acquiring more experience and proficiency but displayed a greater reluctance to tangle with the superior friendlies.

The late fall and winter of 1952 brought to the scene Communist pilots displaying a wide variation in their pattern of aggressiveness and numerous MIGs with coats of camouflage. At times, early in the period, all previously developed tactics were used by the MIG pilots to position themselves for combat "end runs," "yo-yos" and "decoys." More numerous, however were, the Reds who sought every means of escape--cloud cover, violent maneuvers, and protection in the area of north of the Yalu. MIG pilots frequently appeared to panic at the approach of F-86s and broke into already familiar evasive tactics. Noteworthy were MIG Sabrejet engagements at extremely low altitudes. Some battles took place at under 100 ft, apparently in an attempt by the Reds to get below the Sabrejets who were screening the fighter-bombers. This maneuver generally proved futile when the F-86s dived down to attack.

Accounts of the over-all engagements indicate that a majority of the MIG pilots were inexperienced, lending credence to the probability that new pilots had been committed to the Korean air war and they were being sent out

for combat indoctrination. Failure in their attempt to close on their targets in combat pointed to the lack of pilot experience and proficiency. Increased use of camouflage for escaping detection and their runs for the Yalu served as protective measures for new and inexperienced who were undergoing a more practical phase of training than could be afforded through theory move.

Two years of jet warfare over North Korea failed to produce a MIG aircraft-pilot combination of high standard. While in general the characteristics of the MIG itself were considered to be on par with those of the F-86, the Red pilots rarely demonstrated the ability to exploit fully the aircraft's capabilities. However in certain engagements enemy pilots displayed a proficiency in a variety of tactics and demonstrated the ability to maneuver with the best of the UN pilots. (4:2)

## CHAPTER VI

### AMERICAN TRAINING, TACTICS AND RESULTS

Flying-training operation in Fifth Air Force recognized that each pilot's need for training varied. Obviously a fighter-bomber pilot with WWII experience and a couple thousand hours of flying time does not need the same training as a new graduated pilot with a total of 350 hours flying time. So flying training was geared to pilot proficiency. It was left to the unit commander to determine when each pilot was sufficiently proficient to be termed combat ready.

In each unit a combat-experienced pilot of at least flight-leader caliber was placed in charge of a provisional training flight. To him and his staff of instructors, all of whom were combat pilots, fell the responsibility for rounding all newly arrived pilots into shape for combat. Even when trained and assigned to squadrons and flights, new pilots were not considered full-fledged combat pilots. Their first two or three missions were carefully scheduled to be short and less dangerous ones. The term "dollar rides" or "cherry rides" denoted these missions, which were in effect training flights under actual conditions. (5:1)

Recognizing the tactical advantages allowed to the MIG pilots by the combat situation over MIG Alley and the relative performance characteristics of the MIG and Sabre, the Fifth Air Force's Sabre wings developed tactics which enabled them to perform their air-superiority mission. Perceiving their inability to provide maximum protection to friendly aircraft by flying escort, the Sabres emphasized fighter-interceptor "screens" or "sweeps" in conjunction with small escort forces which accompanied the friendly aircraft. Since MIG airfields were concentrated in a small geographical area in Manchuria, the Sabre sweeps and screens represented an optimum employment of interceptor aircraft. In Korea--the fighter screen--consisting of high speed, cruising, fluid-four flights, in mutually supporting formations--gave the Sabre pilots the greatest chance for scoring aerial victories. (1:651)

#### Tactical Formation

The following is a description of the formations used by 4th TFW fighter pilots.

"The first element (two aircraft) flew ahead and below, about a thousand feet below, and the wingman, who was two or three hundred feet back and to one side, watched the rear. He seldom fired unless he was told to do so or found himself left alone by some unusual circumstance. The number-two man in the flight (the flight leader's wingman) was generally the least experienced of the four; number three, the element leader, the next most experienced. Flying from South Korea northward, our flights spread out at the bomb line

(the front) and later went into what we called the fluid-four formation. This was further above and behind than the old finger-four. In turns in jets, we had to make all of them gently, and we had to descend to keep our speed.

"Fuel was always a consideration in Korea--we were often flying 200 miles north to meet the enemy. "Bingo" was the call sign that meant one was going home at maximum altitude, where fuel consumption is less, and in some cases pilots would climb up and flame-out and restart to save fuel. Sometimes there were two or three in the flame-out pattern.

"I sought great height over the Yalu, where they couldn't catch or surprise me. The MIG-15s at this stage of the war could outclimb us. We could dive away from them but they left us climbing. We had about the same speed straight and level but they could out-turn us, so there wasn't as much of what you'd call the traditional turning as there might have been had we been able to out-turn them. We would stall trying to stay with them in a turn." (6:1)

Major Winton "Bones" Marshall talked about tactics

...one of the best tactics we had was good old American fight. Regardless of how many 86s we had, we would pile into any number of Communist MIGs which usually resulted in confusion in their ranks and many times they turned around and went back across the river again even though they had us badly outnumbered." (1:7)

In the air superiority battles over North Western Korea the personal equation ranked high in the ten-to-one victory which the Sabres scored. Knowledge of air warfare allowed the Sabre leaders to adopt tactics which enabled them to take advantage of the peculiarities of the Korean situation. Lack of knowledge of air warfare prevented the Reds from making the most of their capabilities. What was true of air leadership was also true of the caliber of the



men who flew the MIGs. As a group, the Communist pilots ranged in skill from the very few "honcho" pilots down to a predominant mass of "recruit" pilots. (1:652)

#### Fighting a Honcho

The story of such a chase to the Yalu is told by Major Frederick C. Blesse of Richmond, Virginia, who destroyed ten aircraft in combat over Korea:

"Leading a flight of two F-86s, I spotted several MIG-15s. They split up when we pressed our attack, and we finally singled out one and got him. We made a wide circle and started home, but another singled MIG bounced us. The next four or five minutes we looped, rolled and finally got a snap at him from about thirty-five degrees angle off at 1,500 feet distance.

"He began to smoke, and pulled up vertically, ruddering into a spin. He spun, with my wingman and me following around the outside, from 15,000 feet down to 4,000 feet, where he began firing his cannon to reduce his nose weight. I was ready for him, when at 1,800 feet he neatly recovered in a direct heading for the Yalu River.

"I moved in, taking the regular high side approach shot. Pieces of his fuselage and tail flew off, followed by his canopy. Fire began to trail the MIG, but he still wouldn't bail and kept driving for the Yalu. I dropped back to the six o'clock position and gave him another burst. Out of cockpit he came, so close I had to turn hard left to avoid him." (8:8)

The following is another account of fighting a highly proficient MIG pilot related by a USAF fighter pilot.

"We were on a fighter sweep over North Korea in the vicinity of Siuho Reservoir on 18 December 1952. My wingman and I were cruising around 30,000 feet when two MIGs appeared at two o'clock level about five miles away. We closed in on them, and they split, one going high, the other low. They were camouflaged with brown and green spots. It looked best to jump the MIG that had gone low, since the other one had turned away and

seemed to care nothing for his buddy's fate.

"My wingman was in a better position for a bounce, so I told him to take the MIG. Little did we know that we had tangled with a honcho. We closed in, my wingman getting to within five hundred feet of the MIG, but he was unable to pull any lead on his target. The MIG was constantly pulling a high-G load, and my wingman's bullet fell uselessly behind the enemy machine.

"I told him to quit firing until he had lead, but he had target fixation and soon fired off all his ammunition. All this time I was flying his wing and keeping his tail clear. Finally he screamed. 'Yellow three, you better take him. I'm out of ammo!' I slid down on the MIG's tail while my wingman slid high.

"I tried pulling lead on this MIG, squeezed off a couple of bursts, but I also underled him. I concentrated now on getting the necessary lead before firing again. The enemy pilot continued his evasive maneuvers, and could that guy fly? First rolling under and split-essing, we ended up 'on the mach' about a hundred feet off the deck. He wound around hills and mountains reversing and trying to shake me. With no success at this, he started a chandelle, trying to out zoom me, but I cut him off in the turn and stuck with him.

"Finally he relaxed a little and I caught him with a short burst in the tail section. He continued to turn, but I hit him with another good burst in the engine and wing root. He blew his canopy and I thought he would bail out, but I waited and waited, fighting to stay above and behind him. He had a dead engine and was decelerating, so this was difficult to do." (8:93)

#### Fighting a Trainee

The following is an account of killing a trainee.

"Then we saw a lone MIG heading north below us--at 10,000 feet."

"We were flying west and I positioned the flight by a quick ninety-degree turn to come down from behind him. We went after him as fast as we could but by the time we were on his course, coming from behind, he was a good six miles ahead of us. I had the throttle wide open with a maximum Mach of .91. He was probably doing about .85 and we closed in on him slowly. By the time I had dived down almost to his level, behind, he was only two miles ahead, but still out of range. I kept on descending until I was about five hundred feet below--in his blind spot. I wanted to overtake him before

arriving at minimum fuel for return but the stern chase seemed like an hour. It was probably only minutes. Finally I was in good position, some 1,000 feet behind.

He was on a steady course, and his MIG was painted red at the nose and had a red rudder. Otherwise, it was a dirty aluminum grey. I had two Sabres on the left and one on the right and we had closed our formation a bit. It was time to pull up the nose and line him up in my sight from below. When the sight was squarely on his mid-section I fired a short burst of armor-piercing and incendiary from the six fifties. I could see strikes all over the lower section of the fuselage. I kept firing for a couple of seconds and was now directly astern, about 600 feet back. I centered the sight on his tailpipe next and gave him another burst. I saw strikes again, around the engine as well as the wings. Now he went into a slight dive and smoke began to streak back from the tailpipe.

I passed over him and broke off to the right and he started down and I kept him in view. He was losing altitude but, much to my amazement, was still under control. I decided to make another pass from above right; my three Sabres were now strung out behind me. There was grey smoke from the MIG; he had decelerated. In a matter of seconds I closed for another pass, coming in from astern. I got very close and gave him a good, long burst. This time pieces of his aircraft began to fly off." (8:96)

FEAF intelligence officers always insisted that the Sabre pilots did not need to know the nationality of the men they fought, but Sabre pilots believed that most of the "honcho" pilots were Russians and the "recruits" were Chinese and North Koreans. When the Communist "trainee" pilot could be brought under attack they were apt to display utter confusion. Some forgot to drop their external tanks, others fired their guns wildly, and many ejected from their aircraft without particular provocation. In the last months of the war--when the "honchos" had apparently gone home--many MIG pilots refused to break into an attacking

Saore. A North Korean defector, later explained that the Red airmen knew that a break in any direction would expose their cockpit to fire and that they could escape with their lives if they absorbed a Sabre's fire in the engine and armor plate behind them. During the course of the Korean hostilities Communist airmen undoubtedly learned much about air war and air combat, but they never developed a first-rate pilot-plane combination capable of taking command of the air over North Korea. (1:653)

#### The Experience Factor

Unlike the Communist whose pilots were seldom able to exploit the outstanding characteristics of their planes, the experience of the Fifth Air Forces' Sabre pilots was generally high even by USAF standards and very high when projected against the probably proficiency of average fighter pilots who would be available in any large-scale war. Many Sabre pilots were "old men" by usual youthful standards for fighter pilots, but jet combat in Korea demonstrated that a pilot's physical age was much less important than his experience and sound judgement. A FEAF statistical study made in March 1953 demonstrated that air victories were usually scored by more experienced pilots. At this time some 68 percent of pilots who had destroyed MIGs were over twenty-eight years old, while 67 per cent of the pilots who had scored no kills were less than

twenty-five years old. Pilots with MIG kills had flown an average of 118 missions in World War II, while pilots with no kills had flown an average of four missions in World War II. Out of the total of 810 enemy planes claimed destroyed by Sabres, moreover, the 38 Sabre pilots who became jet air aces destroyed 305.5 planes. Whether or not a pilot was flying as element leader and the conditions under which he sighted MIGs affected his chances for scoring victories. But the more experienced pilots apparently had the best chance for shooting down the enemy. Whether he was a wingman or an element leader, the successful fighter pilot in Korea had an aggressive desire to succeed, had the visual acuity which permitted him to see the enemy first, was capable of precision team flying within known characteristics of his aircraft, and could shoot accurately in the few split seconds of jet air combat. These were the same old characteristics of successful fighter pilots in earlier wars, but jet air combat made them all the more important. (1:653)

## CONCLUSION

The mission of the F-86 units in Korea was to gain and maintain control of the air. The American Sabrejet was the only United Nations operational aircraft capable of sustained combat against the Russian-built jet fighters encountered in Korea. The F-86 was definitely a slower aircraft and was outclimbed by the enemy. But it was a rugged aircraft, very maneuverable, and had the type of fast firing armament necessary for fighter versus fighter combat. The radar ranging sight in the F-86 was one reason for the killing effectiveness of the aircraft. In large measure it compensated greatly for the lack of pilot gunnery or experience.

Finally, we must not forget the pilot. For the Chinese Communist pilots the leap from the rudimentary to the jet age was too much--too fast and a satisfactory pilot-aircraft combination was never achieved. For the USAF he was the greatest single factor in the achievement of a very high kill-to-loss ratio. He demonstrated the benefit of superior training. The combination of the older pilot, combat experienced in World War II with the twenty-two year old youngster was complementary. It took great team work and faith in one another. Against numerical odds they had to be very aggressive. They lived, slept, and flew thinking about attacking--attacking and attacking again.

LIST OF REFERENCES

1. Futrell, Robert Frank. The United States Air Force in Korea. 1950-1953, New York, Van Rees Press, 1961.
2. Goodlin, Chalmers H. "The MIG-15" Aviation Age," February 1951.
3. Hotz, Robert. Can We Win in MIG Alley? Air Force Magazine, February 1952, pp 23-27.
4. Albright, Lt Joseph C. "Two Years of MIG Activity," Air University Review, Vol V, No. 4 Winter, 1952-53, pp 83-89.
5. Taylor, Lt Col L. G., Jr. "Flying Training in Fifth Air Force," Air University Review, Winter 1953, p 111.
6. Sims, Edward H. Fighter Tactics and Strategy, 1914-1970, Harder & Row, 1972.
7. "Jet Aces Talk Shop in Convention Forum," Air Force Magazine, November 1952.
8. Toliver, Raymond and Constable, Trevor J. Fighter Aces of the USA, Aero Publishers, Inc.

END

4-~~2~~-87

DTIC