



PHANTOMS

2008 Update

Spring 2008

Optional rules, scenarios, and play aids for Phantoms

2008 Update

Special points of interest:

- Trial rules for attacking naval targets.
- Operation Musketeer: 1956 Suez Campaign.
- Hypothetical Soviet invasion of Germany in the 50's.
- Operation Vantage campaign.
- New aircraft data cards plus 5 and 10 impulse game cards.

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Phantoms Continues On...

I had almost given up on attempting to portray modern air combat with miniatures years ago. My last attempt was trying to convert *The Speed of Heat* for miniatures play, but there were several obstacles, namely that while it is a great game it is not suited for group play. Not only that, but the complexity level left the casual air gamer sitting around while the rest of us figured out the various charts, sorted out rules for weird situations, and the interest level dropped of significantly.

Then I blundered into the Yahoo group for Phantoms. I quickly printed off the rules, some of the data cards, ordered in some aircraft, and went to work. Although making the mat, cutting the tubes, and getting everything ready took some work, our first test of the system proved to be very popular.

While not as realistic as GDW's *Air Superiority* or the aforementioned *The Speed of Heat*, Phantoms gave a good game, looked good visually, was suitable for group play, and even gamers who had little interest in the period had a good time. We've run games where there were more than 12 aircraft zooming around and had no problems finishing a

game on time.

When the Intruders supplement came out we ventured into ground attack and Iron hand missions, adding A-4s, A-



F-8 Crusaders escorting a CH-53 on a CSAR mission over North Vietnam.

7s, F-105s, SAMs, and AAA batteries to our collections. While this can be a complex subject, the Phantoms and Intruders system does a good job of portraying this era without getting bogged down into too much detail and rules.

Our group is still talking about doing Arab-Israeli periods and after seeing some of the scenarios in this supplement I'm now thinking about ordering in some early jets as well. As with many gamers our ideas surpass our ability to finish projects in a timely manner!

So, what's next

for Phantoms? My dream is that someday we could eventually see a published version of the rules and introduce a wider audience to this great system.

The odds of that probably aren't very good, but it would be nice, followed up by the Intruders module and some scenario/campaign books.

I have plans for doing an Arab-Israeli War and Falklands War supplement someday down the road and I am more than willing to work with anyone to get these things done.

My best guess is that Phantoms will continue to be what it has always been, namely a labor of love for a small audience. The rules have come pretty far in the last five or so years and hopefully they will continue to grow with more scenarios, campaigns, data cards, and support from manufacturers. Enjoy the update!

Matt



F-4 Phantoms from the Sundowners moving in for the kill on a Mig-21.

Attacks Against Naval Targets in Phantoms/Intruders

At some point every air combat gamer will want to try an attack on naval targets. This could be a scenario where an air group has to stop a convoy, take out an enemy ship on patrol, or perhaps even providing CAP over a stranded/damaged vessel and protect it against enemy aircraft trying to finish the job.

The rules below and the ship chart to the left for a Russian Kashin class destroyer are designed to present some ideas on how to try these types of scenarios. I have deliberately chosen



this kind of vessel as it possesses few of the ultra-modern defenses and where a two aircraft vs. one ship type of scenario would be challenging. Once you move up to Aegis equipped vessels and you need to use 50+ aircraft to get through the missile defenses you have gone beyond the scope of this game.

So what is presented here is a basic combat vessel suitable for the 60s, 70s, and early 80s

that can be used as the basis for designing other ships and to test out this kind of scenario. If the reaction is positive maybe more ship charts could be created for other countries along with civilian vessels. The Kashins have very basic air defenses consisting of a variety of radars, early SAMs, and 76mm guns. This class served with several navies during the Cold War era and is a good generic modern fighting vessel.

Try this system out and we'll see if it merits more in depth rules, charts, and more specific scenarios in the future.

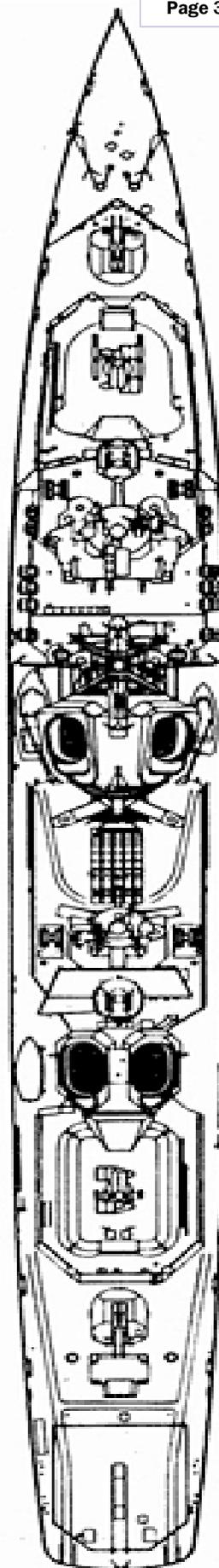
Rules

- **Ship Movement:** Ships move on the last impulse of every third turn and may turn one hex side. Against modern jets the movement of ships is largely irrelevant except to unmask weapons.
- **Hits by ARMs:** Any ARM that hits a ship automatically does one critical hit to the Radars/Sensors, two hits of normal damage, and an additional fire check.
- **Damage:** The Intruders air to ground system was designed for ground targets and used a modified system found in Mustangs. To attack ships, use the **final attack total** as the number of hits against the ship. Mark off the hits starting at the top row of the ship chart and move right. For each orange box crossed off the player must check for fires. For each yellow box checked off the player must check for critical hits and roll on the table below the damage boxes. Also, when the end of a row of damage boxes is reached, the player must roll for an additional critical hit.
- **Fire Checks:** Roll 1D10

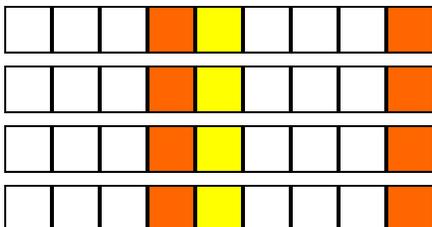
1-3	Minor Fire	1D6 additional hits each even numbered turn if not contained.
4-6	No Effect	Smoke, hot fragments, and burning circuits, but no additional damage.
7-9	Major Fire	1D10 additional hits each even numbered turn if not contained.
10	Explosion	A Major Fire breaks out and an additional 1D6 points are added immediately.
- **Fires:** The player with the ship (s) can check to contain a fire at the end of each turn by rolling 1D10. On a roll of 1-5 the fire is contained, 6-9 the fire is still raging, and on a 10 the fire increases by one level. Although the fires get a chance to be contained each turn, fire damage only occurs at the end of each even numbered turn (Ship crews are well trained to fight fires).
- **Attack Example:** An A-4 drops four Mk. 82 500 lb. bombs on a Kashin destroyer. The Mk. 82's AS against hard targets is 3 and dropping 3-4 bombs equates to an Attack Value of 6 (3x 2). The A-4 player rolls an On Target result, meaning that the Attack Value of 6 is the final attack total and it is not modified. This translates into six hits on the destroyer. The fourth hit is a fire check and a 3 is rolled, resulting in a minor fire. The fifth hit is a critical hit with an 8 being rolled, meaning a weapons hit, then a 1 being rolled, taking out the forward SA-N-1 launcher. A D10 is rolled with a 6 being the result, so there is no ammunition explosion, but on the fire check roll for hitting a weapon another 3 is rolled which starts a second minor fire.



Kashin (Project 61M) Destroyer



Damage



Roll for additional critical hit

Roll for additional critical hit

Roll for additional critical hit

Ship sinks



Critical Hits Roll 1D10

1 Bridge/CIC: If both boxes are hit the ship is out of control for 1D6 turns. Loss of Fire Control for weapons for 1D6 turns.

2-3 Flooding: If both boxes are hit the ship suffers severe flooding and loses 2 hit boxes at end of every odd numbered turn. Roll 1D10 after applying hits and on a 1-3 the flooding stops and one box is marked as un-hit, 4-8 the flooding continues, and on a 9-10 the flooding increases to three hits each odd numbered turn.

4 Radar/Sensors: If both boxes are hit the ship's sensors have been crippled and a +2 is added to all AAA and SAM attacks.

5 Engines: If both boxes are hit the ship goes dead in the water.

6-7 Misc. Damage:

8-10 Weapons: Roll 1D10 to see which weapon system is hit. Roll an additional D10 to see if there is an ammunition explosion and on a 10 result the ship takes an additional 1D10 hits. There is also an additional fire check for each weapon that is hit.

- 1 SA-N-1 forward launcher
- 2 SA-N-1 aft launcher
- 3 76mm forward turret
- 4 76mm aft turret
- 5 533mm torpedo tubes
- 6 RBU-6000 #1 ASW
- 7 RBU-6000 #2 ASW
- 8 RBU-1000 #1 ASW
- 9 RBU-1000 #2 ASW
- 10 Roll again

Weapons:
76mm-Use S-60 57mm stats from Intruders.

SAM radar = 5

The SAM radar gets two attempts per impulse to lock on to an enemy aircraft and can hold up to two locks at the same time. There is a -4 modifier for detecting aircraft at altitude 0.

Use SA-2 stats for the SA-N-1 but it only causes 1 critical hit.

N.A.T.O. 1952-1956: The Age of the Vampire

The arrival of the jet engine not only revolutionized the aircraft themselves, but the very people expected to fly and maintain them. My late father was part of that transition process and he maintained there was a distinct difference between the 'propeller' and the 'jet' people. He reckoned the propeller people could fix almost anything, and during his time on Guadalcanal during 1942-44, they certainly did. By comparison the jet people were seen as nothing but 'parts fitters'.



And to a large degree they were, given the many highly specialized components jets contained. But the pilots loved the early jets, as unreliable and dangerous as they were.

Tests between a Spitfire XIV and Vampire carried out by the RAE at Boscomb Down in 1945-6, demonstrated the marked difference

in performance between the two. The Vampire easily exceeded the Spitfire in all tests; especially in climb rate and maneuverability. So marked was the contrast that the RAF immediately began the conversion process to jets. By 1952, the Vampire and Meteor were well established in RAF squadrons while the F86 had all but replaced earlier US jets in the NATO inventory.

In November 1950, the Soviets took the west by surprise with the sudden arrival of the MiG15 in Korea, flown by experienced Russian veterans. The same engine that powered the Venom and Sabre powered the MiG thus the performance differences were marginal, except in altitude and armament, where the MiG enjoyed a margin in both. The North Koreans had barely reached the industrial age when they became embroiled in a jet age war that necessitated large amounts of assistance from their Soviet and Chinese allies. The Korean air war ended in the north's defeat due to the inexperience of their aircrews and a lack of technical ability.

Both the Russians and the Allies welcomed the opportunity to combat test a completely new technology, their experiences driving the technology race to greater heights, and in so doing, created gunnery radar, the flying tail plane, reliable

engines and ultimately the IR missile. But the greatest prize seems to have been a design that would safely cross the sound barrier. It wasn't until the mid 1950's that combat aircraft were able to achieve this. The technical problems facing jet aircraft designers and manufacturers were indeed formidable, least of all reorienting the US and NATO aircraft manufacturing system to the production of jet engines and airframes. Sir Frank Whittle's writings on the subject are a fascinating insight into the difficulties experienced by designers and inventors in those years.

The single biggest problem facing combat aircraft performing combat maneuvers at high speed was structural failure. Thus many combat aircraft of the 1950's were limited in speed and maneuver. It wasn't until the late 1950's after sufficient knowledge of super sonic flight had been acquired that aircraft combat restrictions were removed. By 1955, we had entered the age of the US Century Fighter - the F100, F101, the notorious F104 'widow maker' and the ubiquitous 'thud' the F105. The Soviets had also crossed the sound barrier with their superb MiG19. From that point on, aviators measured their world in "Mach numbers".

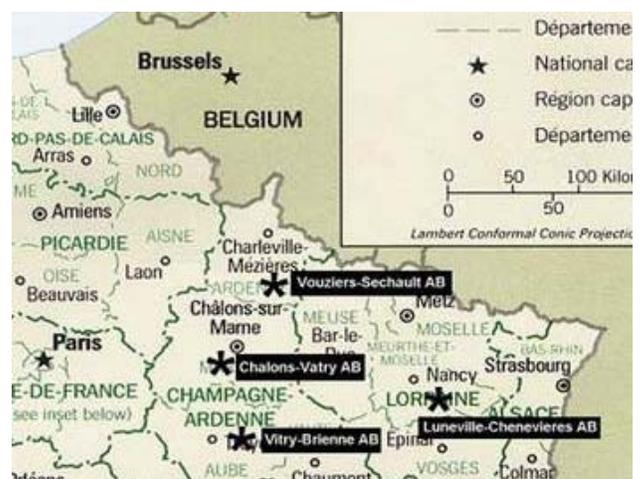
N.A.T.O. and the Warsaw Pact Threat

NATO came into existence in 1947 after a series of political crisis in Greece and Norway threatened to destabilize the northern and southern flanks of Europe. The NATO response was a barrier defense predicated on the belief that if the European forces could make the attrition rate unacceptably high for a Soviet invasion, then no invasion was likely. But in order to make that defense credible it required a high level of readiness, technical superiority and a broad based coalition of forces.

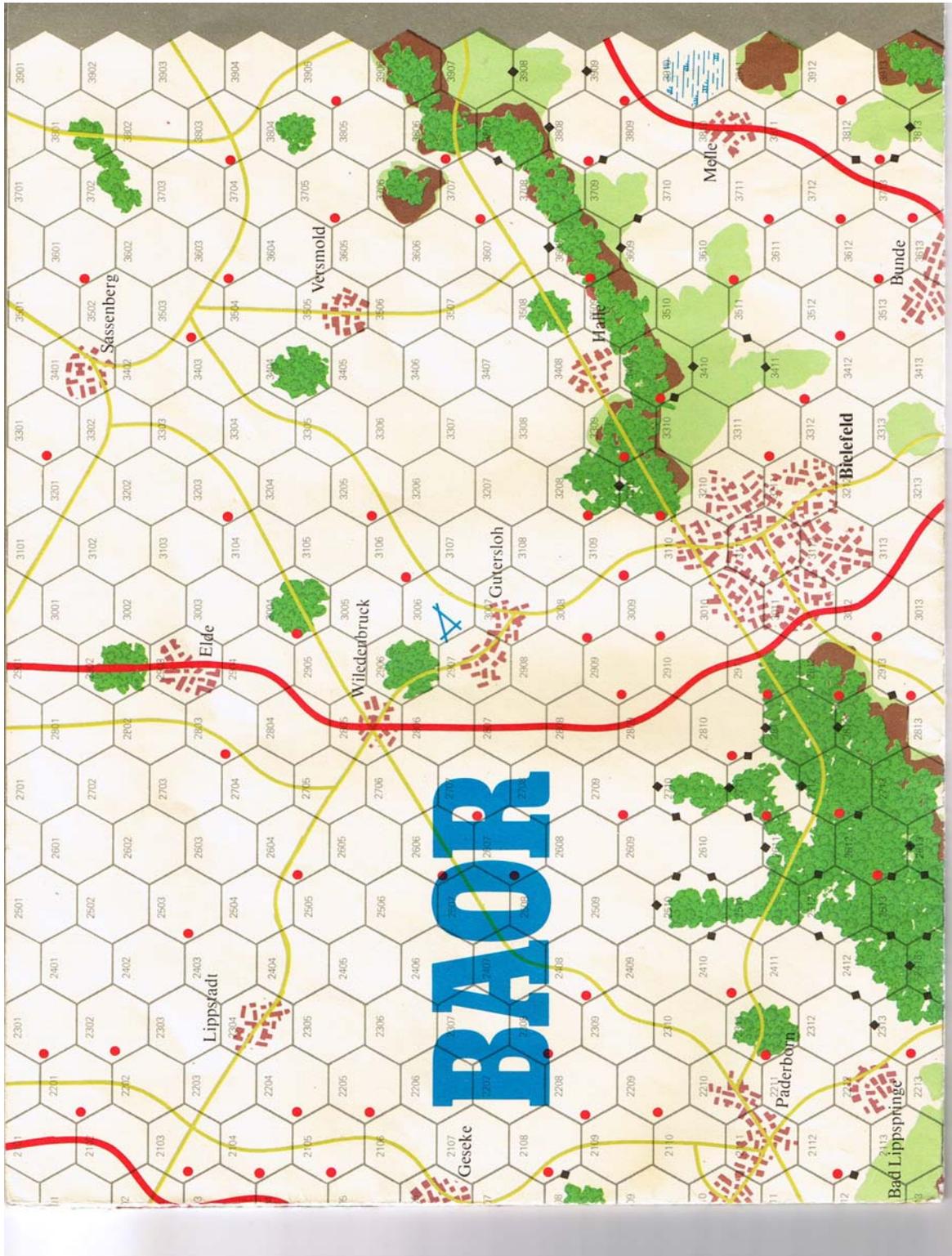
To this end the RAF and USAF placed a significant number of air units in France, Germany and Italy in a forward defense posture, heavily backed up by other air units in Britain. Canadian and US based bomber and fighter

units formed a trans-Atlantic reinforcement pool if required.

The NATO campaign I have designed is a 'what if' series of scenarios based on probable events. The most likely of these is constructed around the RAF Tactical Airforce stationed at Gutersloh west of the Weser River and the USAF Tactical Fighter Wings stationed further south-west in eastern France at Etain-Rouvres, 12 miles west of Verdun on the Rhine River.



N.A.T.O. 1952-1956: The Age of the Vampire Campaign Map



This is a section of the map from the SPI game BAOR, which was part of SPI's Central Front series. It shows the area surrounding Gutersloh and is ideal for laying out a Phantoms hex mat for the scenarios.

N.A.T.O. 1952-1956: The Age of the Vampire Scenario 1

First Contact

The campaign begins in the summer of 1952 with sudden Soviet attacks across the whole of Western Europe at sunrise. Russian MiG 15's, escorting IL28 'Beagle', cross the Inner German Border at high altitude, in an attempt to deliver a decisive attack against the main RAF bases west of the Weser. The Russian attack is first detected 150 miles east of Hanover at an altitude of 40,000 feet.

The first combat takes place at 30,000 feet between intercepting Vampires and MiG15's assigned to sweep a clear path in front of the bombers. The IL28's are estimated to cross the Weser River 22 minutes after the Vampires intercept the MiG's. The morning standing patrol is alerted by GCI radar from Gutersloh that a large group of aircraft is approaching from the east at 30,000 feet, speed 300 knots. They have been ordered to intercept and identify this approaching force.

Forces

RAF

Four Vampire FB1's form the Morning Standing Patrol. The Vampire pilots are all experienced.

Soviet Frontal Aviation

A sweeping force of six MiG15's tasked with reaching Gutersloh airbase and engaging any enemy aircraft that might attempt to intercept the incoming raid. The Russian pilots are a mixture of experienced and veteran pilots. Two pilots are combat veterans from the Korean war, the remainder experienced.

Weather

The Soviet player(s) roll 1D10. This represents the visibility range in hexes. If a '1' is rolled, assume the target is covered by cloud and ground fog that is expected to clear soon after sunrise. Re-roll the dice immediately and this number becomes the maximum visibility range in the next game turn. Cloud and fog will only affect visibility at altitude level 1. Dice rolls between 2-4 indicate rain and banks of cumulus cloud. Dice rolls of 5 and above are normal clear skies.

Victory Conditions

The RAF player must shoot down or drive off all of the Soviet Migs.



N.A.T.O. 1952-1956: The Age of the Vampire Scenario 2

The second scenario of the campaign deals with the NATO defence of the Weser River as Russian forces from the 3rd Shock Army, attempt to break through the Fulda Gap and into the North German Plain. Gutersloh Airbase stands only 20 miles from the Weser River and is in immanent danger of being overrun. The Russian air raids of the early morning have damaged the base, but not destroyed it. The BAOR is now engaged in a desperate struggle to prevent the Soviet's crossing the Weser at Minden and Bad Oeynhausen and is calling for air strikes to contain Soviet penetrations south of Minden near Buckelburg. The RAF has allocated Canberra and Vampire strikes against these areas with effect immediately. The Vampires and Venoms will fly from Gutersloh while the Canberras will fly from Laarbruken and Wildenrath. Canberra PR3 reconnaissance flights will come from Wildenrath.

Day 2: Monday – 01.00 hours

Day 2 begins at dawn with a Canberra PR3 flight over the Soviet river crossings in the Mindin area. BAOR units report a penetration of several miles and are doing their best to hold Minden against the Soviet 106th Guards Tank Division attack that has been proceeding all night. Soviet units are suspected to be in hexes 3213 and 3313 east of Bielefeld.

Players should game this mission to establish the position of Soviet forces prior to launching an air attack. Once the Canberra has found and identified the target a strike can be launched. Not before! Daylight reconnaissance missions must be escorted if the Canberra is expected to survive. The RAF Players must decide what level of escort they wish to give the Canberra, but this must be tempered by the fact that whatever aircraft are allocated to protect the Canberra cannot be allocated for ground attack until the afternoon of day 2. The D10 roll to locate the Soviet units is 6-10 inclusive. The Canberra PR aircraft may attempt any number of passes to locate the enemy, but is only allowed ONE location attempt per pass.

The Soviet airforce of this time could not respond immediately to requests for assistance from ground units. The Soviet system relied on carefully pre-planned strike and interdiction missions that could either be carried out or cancelled. Variations were almost impossible. Frontal Aviation has two separate missions. Ground attack and local air defence. The IL28 'Beagle' formed the

N.A.T.O. 1952-1956: The Age of the Vampire Scenario 2 (cont.)

medium bomber force while the MiG15bis formed the fighter component. With overwhelming numbers of bombers and fighters facing the defenders, holding the line will be difficult.

NATO airforces have perfected the dispersal of air units since the end of the war and have gained considerable expertise in this tactic. At the beginning of the Soviet attack, ground crews have been dispersed to a number of locations along the autobahns running north and west from Gutersloh. The Vampires have been instructed to return to the dispersal locations after completing a mission. Gutersloh has become deserted over the hours following the first raid. The main RAF dispersal sites are in the forests near Elde, Halle and Wiledenbruch. Pre-positioned stores have been available for some time.



Gutersloh Air Base

Special Rules

Visibility in the air will follow the standard location rules as laid out in section 13.0 BUT the maximum number of hexes at which an aircraft may be visually located is determined by 1 D10 dice roll at the beginning of the game. Both sides may roll a dice each and an average of the two rolls (rounded up) determines the maximum visibility location range.

Soviet AA

The Soviet ground forces had adopted the 'flak corridor' as a means of protecting advancing columns. 14.5mm and 23mm AAA weapons formed the basis of these systems. Use the AAA weapon values listed in the 'Vietnam Air War' supplement. Each hex will contain 2- ZPU4 - 14.5mm and 1-ZU23 - 23mm AA system.

Radar Countermeasures

The Soviets relied on very heavy jamming of all military radar frequencies as a countermeasure. The Canberra B1 and B2 series carried an improved H2S Mk 9 bombing radar system (Green Satin) that was highly accurate. However, it was not immune to jamming. When attacking Soviet ground units, Canberra will have 'advanced bombsights' but will not gain the +1 attributed to it. Aircraft without advanced bombsights (Vampires) will suffer no penalty, being tasked with low level ground attack missions. Portable battlefield AAA radar was in its infancy at this time and as such would not have been a serious factor in AAA weapon effectiveness calculations.

Monday – 06.00 hours

The **NATO** strike force consists of 2 Canberra bombers and four Vampires. Their air cover consists of three Vampires. The strike must attack the Soviet forces west of Minden. By 06.00 hours, the Soviet forces are some 24 kilometres from Gutersloh.

The **Soviet** fighter force consists of four MiG15bis with a further four available as replacements should the original aircraft be lost. They will arrive on a single D10 roll of 8,9 or 10. Soviet MiG's may be placed anywhere within 20 hexes of the 106th Guards Tank Division.

Victory Conditions

The RAF wins if they penetrate to the objective identified by the PR Canberra. The RAF will ignore losses in an attempt to attack the Soviet army bridgeheads located at map reference hexes 3213 and 3313 east of Bielefeld.

Operation Vantage: Background

At the beginning of 1961, the Iraqi dictator Abdullah al-Qasim, unilaterally announced that Kuwait was to be considered Iraqi territory and it was his intention to 'liberate' the inhabitants of Kuwait. Iraq has always considered Kuwait to be their 19th Province, after it was severed from Iraq in the post World War One territorial settlements following the defeat of Turkey. Prior to the bloody coup that had brought Qasim to power during July 1958, Iraq had been ruled by the al Sabah family since the end of the War and enjoyed the confidence of successive British Governments.

Accordingly, the Royal Iraqi Air Force received a high level of RAF support and training. That all changed with the coup, as pilots and commanders

were either imprisoned, killed or fled Iraq. By the beginning of 1961, the UK Joint Intelligence Committee assessed the Iraqi Air Force capability as 'moderate' in its primary support of the army and "indifferent in air defense due the lack of experienced pilots and trained radar operators." However, it was agreed that given the short distance between the Iraq border and Kuwait oil fields, any incursion would be difficult to halt before they reached the oil fields.

In 1961, the UK Government had given the Kuwait government assurances of military support in the event of an attack on their territory. In response to the threats from Iraq, the UK deployed a significant number of naval, ground and air forces into the region. The first units deployed to Kuwait were four Canberra PR3 of No.88 Squadron, tasked with photoreconnaissance of the southern areas of Iraq, near Al Basrah. The Canberras were specifically tasked with finding an armored regiment of some 70 tanks. Historically they failed to do so due mainly to climactic conditions. The principle concern of both the UK and Kuwait governments was the rising tide of pan Arab nationalism, fostered by So-



viet political intrigue, that could result in internal civil disturbances in Kuwait leading to Iraqi intervention. Historically this failed to materialize, but our campaign is predicated on the assumption that it did.

The Iraqi Airforce

- No.1 Squadron – 19 Venom FB Mk1 based at Habbaniyah
- No.2 Squadron – Mi4 at Rashid
- No.3 Squadron – An12B based at Rashid
- No.4 Squadron – Fury FB Mk11 based at Kirkuk
- No.5 Squadron – 14 MiG17F based at Rashid
- No.6 Squadron – 15 Hunter F Mk 6 based at Habbaniyah
- No.7 Squadron – 14 MiG17F based at Kirkuk
- No.8 Squadron – 12 IL28 based at Rashid
- No.9 Squadron – MiG19 in the process of formation

British Forces

- RAF (Sharyah in Kuwait)
- No.88 Squadron – 4 Canberra PR7 (?) photo -reconnaissance
- No 208 Squadron – 12 Hunter FGA Mk9

Royal Navy

HMS Victorious

- No. 892 Squadron – 12 Sea Vixen Mk1
- No.849 Squadron – 12 Fairy Gannet AEW



Canberra PR7

These Canberra PR7 were a major strategic asset and the loss of any of them would be considered a serious set back for RAF reconnaissance capabilities.



Sea Vixen Mk. 2

Although US commentators considered the Sea Vixen to be inferior to the F4 Phantom, it was in many respects superior. It was significantly more maneuverable and with a cannon-pack fitted, more useful. It was the match of any Soviet fighter when introduced in 1955



Fairy Gannet AEW 3

These were extremely valuable fleet assets, only 4 being assigned to each carrier. The cost of replacing their loss would have been prohibitive in the period they were operated. The AEW3 version was specifically tasked with preventing Soviet low-level jet fighter-bomber attacks reaching the carriers undetected.

Operation Vantage Scenario 1: Recon

The PR Canberras are tasked with finding the Iraqi armored regiment allegedly deployed in Al Basra. This is a daylight mission of a short duration therefore the primary target is set up in the centre of the gaming table. Because the mission will be conducted at high altitude (45-50,000 feet), the only aircraft in the Iraqi inventory capable of interception is the MiG17F. Two MiG's are allocated to intercept the Canberra. The MiG17's begin 15 hexes from the Canberra facing directly towards it. Once they come within 10 hexes they may begin to make visual location checks for the Canberra, in accordance with rule 13.0. The Iraqi air defense possesses British and Russian GCI radar, types unknown, but lacks experience in its operation. Kuwait has no radar available until British forces arrive after the Canberra deployment. The Soviet SA2 was not available to Iraq so there is no missile threat to the reconnaissance flight. The Canberra will locate the target on a roll of 7-10 (D20). The Soviet operated GCI will locate the Canberra with a roll of 6-10 (D20).

The Iraqi Force

Two Mig-17F

The UK Force

One Canberra



Operation Vantage Scenario 2: Interdiction

The Iraqi Army, emboldened by civil unrest in Kuwait City, decide to invade Kuwait. The UK forces have just hours to act before Iraqi forces penetrate deep into Kuwait. The Iraqi forces appear to be in Brigade strength with two infantry battalions supported by one armored regiment. Flying direct air support for the ground invasion are the Venoms and Hunters with the MiGs providing fighter cover. The Vixens from HMS Victorious and the RAF Hunters from Sharyah, immediately fly interdiction and strike missions to halt the Iraqi advance, while the Army prepares to reinforce Kuwaiti border units.

The Iraqi Force

Three Venom FB1, three Hunter FB 9 and three MiG17F as escorts.

The UK Force

Two Sea Vixens from Victorious and two Hunters from Sharjah.

In addition:

One RN Gannet AEW3 aircraft providing long-range radar tracking for the Sea Vixens. The aim of the RAF and RN aircraft is to intercept the Iraqi aircraft before they cross into Kuwaiti territory. The Iraqi aircraft are assumed to approach at low altitude (level 1) and will only be detected 20 hexes from the Gannet. The Gannet will detect the Iraqi aircraft using the radar detection rules in 13.00 (Spotting).

Scenario Victory conditions

The Iraqi leadership was extremely unstable and as a result, may not have responded to an immediate military loss, by withdrawing. Historically, the Soviets began the immediate supply of MiG19 and MiG21 aircraft, along with the customary 'advisors', soon after the crisis had ended. The Iraqi air defenses were significantly upgraded with Soviet radar and AAA.

This changed the balance of military power in the region to such an extent the US government supplied the Royal Iranian Air Force with F14 and F4 almost immediately. It is therefore possible that there would have been a continuation of the conflict if the Iraqi forces had sufficient time to reorganize and retrain for the deployment of their MiG19's and new Soviet equipment. The Iraqi player wins if they reach the oil fields. This is achieved unless all Iraqi aircraft are destroyed.

The UK player wins if they shoot down all Iraqi aircraft.

Operation Vantage Continuation Ideas

The Iraqi Airforce begins to introduce the MiG19 with considerable Soviet assistance. Experienced Soviet pilots are assigned to fly only over Iraqi airspace, tasked with defending airfields against Canberra and Sea Vixen attack. Iraqi pilots fly MiG17 air cover for the Vampires, Venoms and Hunters. Soviet Radar technicians and 'Fan Song' radar give the Iraqi Air Force a GCI capability giving the Iraqi player +3 to their spotting roll in accordance with section 13.00 (spotting).

Notes

The Arabian Gulf and Peninsula are extremely hot at the time of year these operations commenced. 45-50 c is not uncommon during the day. The UK Forces had extensive experience operating in these areas and were well prepared. Troops were regularly rotated out of front line positions for rest and recuperation. The Navy, being at sea and constantly on the move, were not so badly affected. Both sides would have suffered serviceability problems due to the heat. The Iraqi forces more so due to the lack of technical personnel after the 1958 coup. Players can introduce this 'un-serviceability' factor into the scenario as an optional rule. I would suggest the Iraqi Air Force should have a 50% serviceability rate (after the initial attack) and the RAF and RN forces 75%.

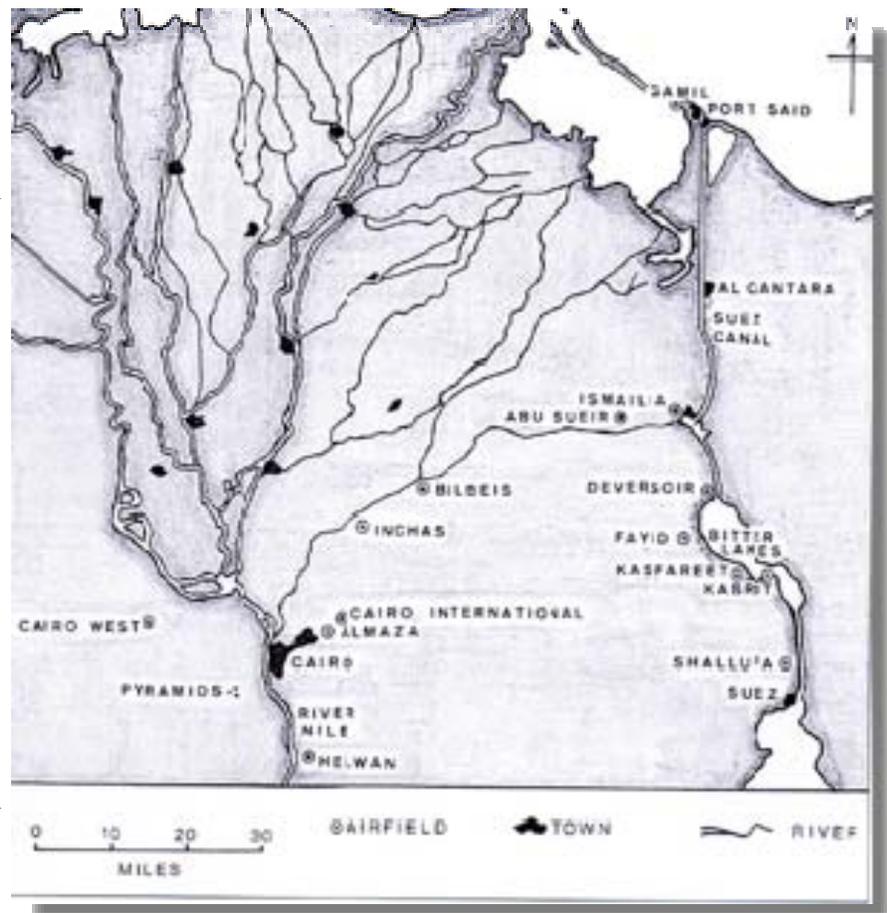
The Suez Crisis: Operation Musketeer

October 1956

On 26th July 1956, President Nasser of Egypt, nationalised the Suez Canal in response to funding being withdrawn for the completion of the Aswan Dam on the Upper Nile. The US and Britain both feared Nasser's pan Arab rhetoric, threatening a war against Israel in order to reverse the political and military defeat of 1948. The Egyptians had rebuilt their armed forces during the intervening years and by the outbreak of war in 1956, could be considered a major regional power. Much to the consternation of the US and Britain, the Egyptian air force had opted for the Soviet supplied MiG15 to replace aging Vampires and Meteors. These were superior in all respects to most of the RAF and RN aircraft available during the crisis. In response to the crisis, Egypt had request a supply of MiG17F, which they were in the process of receiving as war broke out. On paper at least, the EAF was well equipped and trained to resist the Anglo-French invasion.

The campaign covers the RAF actions against the EAF, for several reasons. There are no 1:300 scale models of the Sea Venom or Sea Hawk available. However, if at a later date, these aircraft become available, an updated campaign can be issued.

In order to avoid confusion, the RN was



Two maps showing the area of operations for the RAF during Operation Musketeer around the Cairo area, including the location of major airbases on Cyprus which played a vital role during the campaign.

allocated targets in and around Cairo while the RAF concentrated on the Canal Zone. Given the RAF were based on Cyprus, 250 miles (35-40 minutes flying time) to the north-west, while the RN aircraft carriers were only 60 miles off the coast, this made good operational sense.

The principle bases used by the RAF and AdA, were Akrotiri and Nicosia on Cyprus. Akrotiri had recently been completed and lacked many of the basic crew facilities a more established base could offer. The RAF crews were camped in tents and whatever other shelter could be hastily provided. The C.O of 249 Squadron – Squadron Leader 'Jock' Maitland had this to say about the airfield arrangements. 'Two squadrons of French RF84F' arrived on the 31st October; highly efficient, tents and all. They put us to shame and if they had controlled the operation we would have occupied the Canal Zone before world opinion turned against us'.

R.A.F. Order of Battle

Cyprus was literally bursting at the seams with aircraft. There were 115 aircraft at Akrotiri, 127 at Nicosia and 46 at Timbou. Canberra squadrons operated from Nicosia and shared Luqa on Malta with the Valiants.

Cyprus Akrotiri

6 Squadron - Venom FB4	16 aircraft
8 Squadron - Venom FB4	16 aircraft
249 Squadron - Venom FB4	15 aircraft
1 Squadron - Hunter F.Mk.5	12 aircraft – retained for local air defence
13 Squadron - Canberra PR Mk7	7 aircraft with additional aircraft from 58 Squadron
39 Squadron - Meteor NF Mk13	8 aircraft - retained for local defence

Nicosia

10 Squadron – Canberra B Mk2	9 aircraft
15 Squadron – Canberra B Mk2	8 aircraft
18 Squadron – Canberra B Mk2	8 aircraft – target markers for Valiant ‘V’ Bombers
27 Squadron – Canberra B Mk2	8 aircraft
44 Squadron – Canberra B Mk2	8 aircraft
61 Squadron – Canberra B Mk2	10 or 11 aircraft
139 Squadron – Canberra B Mk6	12 aircraft- target markers



While this model has been carefully painted with invasion stripes, the reality was somewhat different. In typical British fashion yellow paint was almost non-existent so had to be cobbled together from local army supplies of sand and white. Most stripes were hand painted without any masking!

The RAF still retained a large number of pilots that had flown in WW2, many of them squadron commanders. The Territorial Squadrons also contained aircrew that had served in WW2. Historically, it was the most battle experienced air force in British history, a feat that was never to be repeated. All British crews should be considered ‘experienced’.



Akrotiri airbase at the height of air operations.

Technical Challenges in Operation Musketeer

Since 1956, the British government has said little about the capabilities of the aircraft that took part in the Suez operations. The Canberra bombers were considered by the US to be too small for the job of strategic bombing, carrying only a small weapon load in comparison to the B52, which was just becoming available. However, Their bombing accuracy was exceptional for the period and their ability to perform well at very high or very low altitude made them a remarkable aircraft. The four days of operations in which they were involved were severely restricted by the American government attempting to evacuate citizens through airports that were under attack. Some commentators have suggested that Valiant bombing was inaccurate to the point of being ineffective, but this claim cannot be sustained. The Canberra and Valiant operations were clearly designed to make enemy runways unusable. This they most certainly did. The Venoms were tasked with destroying hangars, repair facilities and aircraft; a task they achieved with great skill and accuracy.

What makes this campaign so technically interesting is the fact there were no air-to-surface missiles. The Egyptian defenders were relying on WW2 AA weapons to fend off attacks by the latest jet aircraft then in existence. It was an unequal match, even though the defenders did manage to destroy and damage a number of attacking aircraft.

The Canberra B Mk2 was equipped with 'Blue Silk' (officially a 'Doppler Navigation Radar') a precision radar bombsight principally designed for delivering a nuclear weapon. Probably 'Green Parrot'. Another device known to have been fitted to 'V' Bombers, PR Canberras and possibly other marks as well, was a radar warning receiver (RWR) known as 'Orange Putter'. No details of this system have been made public. But given the fact that such RWR systems had been fitted into wartime Lancaster and Halifax bombers, there is little reason to assume the Canberra was not similarly fitted.



Note the Sea Venom with the squadron insignia under the cockpit (left foreground).

Note the lack of gun ports under the nose. This appears to be an early Sea Venom EAW21, rushed into service for 'Operation Musketeer'.

HMS Ark Royal received these aircraft in early 1956.

The Venom FB4 was also fitted with a DME (Distance Measuring Equipment) that was used to locate the 'landing gates' of operational military airfields. This was in effect a radar receiver that located a homing signal and gave the pilot an early form of 'instrument landing system'.

Lt Cdr Maurice Birrell DSC, OC 891 Squadron RN, had this to say about the AI Mk.21 (US AN/APA-69) radar unit fitted to the Sea Venom FAW 21, in 1954

'The airborne performance of the AI Mk21 radar was most satisfactory, particularly during exercises 'Febex' and 'Cascade', when bomber-sized targets were regularly picked up at ranges well into double figures. As always the ASV mapping capabilities of the radar were outstanding, the aircraft invariably picking up the carrier well before the carrier had picked up the Venoms'.

The earlier US AI Mk18 radar had an effective range of 20 miles against airborne targets.

No official comment has been made about the electronic warfare assets available to the RAF or RN during the campaign. The RN flew modified Sea Venom FAW 21 aircraft with considerable EW capability from 1956 onwards. The Suez Crisis would have provided an excellent opportunity to test the Sea Venom EW21 under battlefield conditions and

even though not specifically listed as being aboard the carriers, could well have been among the FAW 21 aircraft without being identified. Externally, such aircraft were indistinguishable from the standard aircraft. The EW21 carried the US built ALT-9 airborne jamming transmitter. Only a small number of these aircraft were available due to the difficulty in converting the aircraft to a role it was never intended for and prolonged crew training.

Egyptian Order of Battle

The total number of aircraft available to the Egyptians was:

90 Vampires, 30 Meteors, 120 MiG15/17F, 39 IL28 'Beagle', plus a number of training aircraft

Abu Sueir	35 MiG15
Kibrit	31 MiG15
Inchas	20 MiG15
Almaza	25 MiG15, 4 Meteor, 21 Vampires, 10 IL28
Fayid	9 Meteor, 12 Vampires
Cairo West	9 Vampires, 16 IL28
Luxor	22 IL28
Kasfareet	1 Meteor, 2 Vampires

The EAF had a serviceability rate of about 60% at this time, which by Middle Eastern standards was comparatively high. On the day of the attacks, 69 MiG15 were serviceable. EAF pilots appear to have been well trained and highly motivated. Their contact with IAF fighters over the Sinai proved they were more than a match for the Israeli's. 50% of EAF crews should be considered 'experienced' with the balance being 'average'. This reflects the short time available to the EAF for conversion to MiG's rather than their flying experience.

The airfield defences contained a number of 40mm Bofors guns. To this the Egyptian's added a significant amount of small arms fire that proved quite effective.

The Attack

Phase 1

RAF to target former RAF bases in the Canal Zone, specifically Abu Sueir, Deversoir, Fayid, Kabrit, Kasfareet and Sallufa.

Phase 2

Attacks against armour, mechanised vehicles and all forms of army support.

Phase 3

Close support for parachute drops and seaborne landing in the Port Said area.

31 October

- 7 Nicosia based Canberra attacked Almaza at 21.30 hours.
- Canberra and Valiant attacks on Cairo West at night.
- Canberra and Valiant attacks on Cairo International at night

1st November

- 8 Venom FB4 from 6 Sqn based at Akrotiri attack Fayid and Abu Sueir at 06.04 hours. Hangars and parked aircraft destroyed or damaged.
- Venom FB4 from 249 Sqn based at Akrotiri attack Kabroit (MiG15 base) and Kasafareet, then Abu Sueir.
- Two attacks. First in the early morning and later in the afternoon.
- All attackers observed the "One pass then away policy" to reduce the risk of flak damage.

2nd November

- 6 Sqn launched three ground attacks against Shallufa, Kabrit and Abu Sueir. 1-MiG15 and buildings damaged.
- 8 Sqn (8 Venom FB4) launched dawn attack against Abu Sueir, Fayid and Kabrit.
- 249 Sqn attacked same targets.
- A second sortie by the same squadrons launched against Deversoir, Geneifa and Fayid in the afternoon.
- RAF launches a major effort against Huckstep Camp near Alamaza. Heavy flak and small arms fire encountered.

3rd November

- Continued attacks against vehicles and facilities in and around the Port Said area and Huckstep Camp.

4th November

- RAF attacks in and around Port Said and Gamil airfield. Specific attention paid to radar and coastal defences (coastal artillery and AA) in preparation for Commando landings later that day.

The entire day spent on suppression duties and close air support for the troops coming ashore.

Game Objectives & Victory Conditions

The game objective is fairly obvious. The Anglo-French forces must gain control of the Canal Zone before the United States and Russia pressure both sides into a cease-fire. The Game lasts for four campaign days, with each day containing a maximum of two strike missions for each squadron. The Anglo-French air forces open the campaign with a night attack by Canberra and Valiant bombers against the airfields of Abu Sueir, Deversoir, Fayid, Kabrit, Kasfareet and Sallufa. Players can use the actual number of aircraft historically allocated to each raid.

After the initial night attacks, the RAF Venom, Canberra and French RF84F squadrons continue with daylight attacks. The attack phases listed in the introduction should be adhered to as far as possible.

The Egyptian Forces

The EAF must split itself between the Israeli attack in the Sinai and the Anglo-French invasion. The Egyptians understood the Anglo-French operation was aimed at occupying only the Canal Zone. The Israeli operation was aimed at sweeping Egypt from the Sinai Peninsula. This necessitated the deployment of most EAF resources in the defence of the Sinai. Accordingly, the maximum number of aircraft available for the Canal Zone will be 50% of serviceable aircraft. On the first day of the attacks 32 MiG15 will be available for air defence of the Canal Zone. There is no record of the number of Vampires available, which would be few, given the lack of spares caused by British reluctance to supply them. I will assume 30 Vampires to be serviceable at the beginning of the attack. The Meteor NF seem to have been unserviceable.

The EAF had 39 operational IL28 bombers available for an attack on Cyprus. I assume they were all serviceable at the beginning of the attack.

Weather

Weather remained fine and clear until 4th November when severe storms developed over Cyprus.

Victory conditions

The Anglo-French Forces win if they destroy the entire EAF or force it's withdrawal. Once the aircraft strength falls to below 50% (of the beginning total), the EAF must be withdrawn from combat.

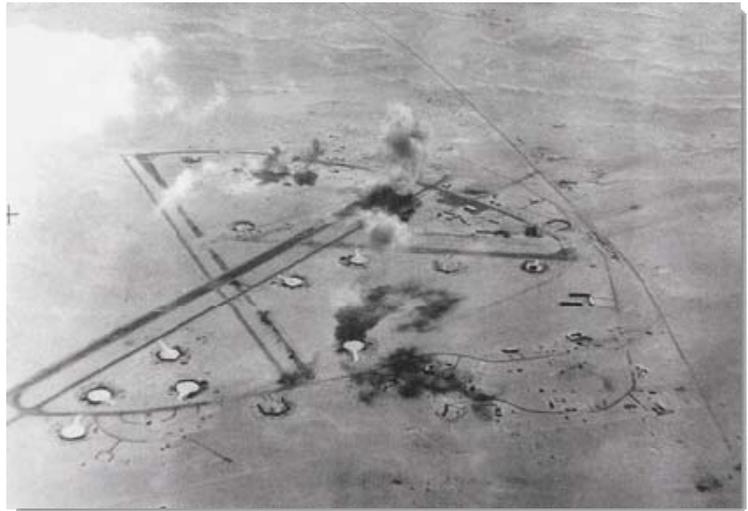
The EAF wins if it reduces the RAF to 50% of its initial squadron strength. Each squadron is individually assessed for loss. If the EAF airfields are still operational by day three of the campaign, the RAF may not divert aircraft to phase three (the direct support of the Port Said landing zones) and the invasion must be cancelled.

Radar etc...

There is reason to suspect the RN provided Sea Venom EAW21 support for both the RAF and RN strikes against the Egyptian airfields. This in part explains the lack of Egyptian response to the first air raids. All RAF raids will have RADAR ONLY counter measure factor of 1.



EAF Mig-17



Inchas airfield under attack.

The Israeli operation was aimed at sweeping Egypt from the Sinai Peninsula. This necessitated the deployment of most EAF resources in the defence of the Sinai. Accordingly, the maximum number of aircraft available for the Canal Zone will be 50% of serviceable aircraft. On the first day of the attacks 32 MiG15 will be available for air defence of the Canal Zone. There is no record of the number of Vampires available, which would be few, given the lack of spares caused by British reluctance to supply them. I will assume 30 Vampires to be serviceable at the beginning of the attack. The Meteor NF seem to have been unserviceable.

The EAF had 39 operational IL28 bombers available for an attack on Cyprus. I assume they were all serviceable at the beginning of the attack.

Good luck...

An interesting report...

Nigel Budd, flying a 6 Sqn Venom encountered a MiG15 over Gamil with Russian red star markings. He gave chase, firing a long burst of 20mm cannon fire at it, but the range was too great to score a hit. Fortunately for international relations, the MiG quickly retired inland and no further sighting of Russian aircraft were reported.

Coral Sea Mig Killers

Scenario #1

Background: On November 19th, 1967, two F-4Bs from the U.S.S. Coral Sea were flying MIGCAP escorting A-4s from U.S.S. Intrepid down the Red River Valley. Red Crown (the name given to early warning radar from off-shore) had warned of Migs in the area and two Mig-17s were noticed at a 3 o'clock position which started the engagement. The Mig-17s were the bait for four Mig-21s lurking behind the Phantoms.

Forces:

USN: Two F-4Bs with (4) AIM-7 and (4) AIM-9

NVAF: Two Mig-17s

Four Mig-21s

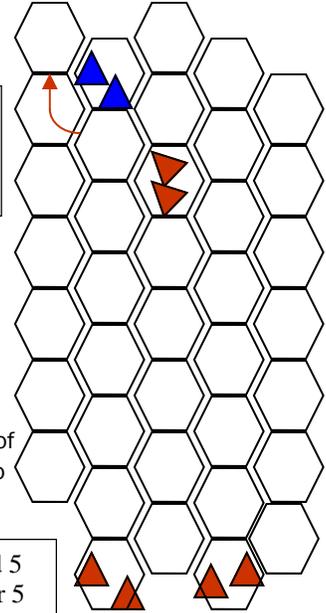
F-4s: Speed 4
Alt 4

Mig-17s: Max speed Alt4
The Migs have a turn marker out and must proceed to the marker (they over shot or took a bad angle).

Scenario Notes: Some of the Mig-21s may have been carrying AA-2 Atolls. Roll 1D4 and the result is the number of Mig-21s that are carrying two missiles each. *This scenario is very tough for the USN players and would be good for a learning scenario with an experienced player (s) taking the F-4s and newer players flying the Migs.*

Historical Outcome: The Mig-17s came in on a firing pass, but apparently took the wrong angle and passed through the F-4s. LCDR. Doug Clower in the lead F-4B moved to attack the Mig-17s and was able to get into a firing position. Clower's F-4 launched a Sidewinder which according to Lt. Ted Stier, the RIO of the second Phantom hit one of the Mig-17s and downed it. This was followed by a frantic call to Clower to break left when his F-4 was apparently hit by a missile from the Mig-21s. The second Phantom took hits from a Mig cannon and it too went down. Clower's RIO, Walt Estes and Stier's pilot, Jack Teague, were both killed. Clower and Stier ended up as POWs, spending over 5 years in captivity.

Mig-21s: Speed 5
Alt 4 or 5



Victory Conditions: The F-4s must down at least one Mig and then escape off the lower board edge. If one F-4 is knocked down it is a tactical defeat and losing both F-4s is a major defeat.

Coral Sea Mig Killers

Scenario #2

Background: On March 6th, 1972 two F-4Bs were flying MIGCAP for an A-5 recon mission when Red Crown called out a bandit. The F-4s picked up the Mig-17 coming up to them and rolled into the attack, starting a series of scissors maneuvers against a determined adversary.

Forces:

USN: Two F-4Bs with(4) AIM-9 each

NVAF: One Mig-17

Six Mig-21s (see scenario notes)

F-4s: Speed 5
Alt 4

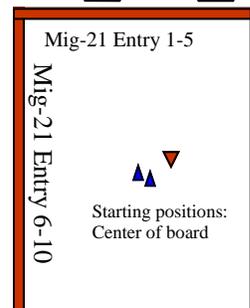
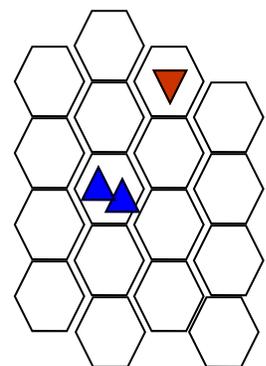
Mig-17: Speed 4
Alt 3

Scenario Notes: The F-4s only had one operating search radar and it was unable to be used for the Sparrows, so both F-4s have Sidewinders only. The Mig-17 pilot should be rated something just short of an ace as he demonstrated a high degree of skill during the encounter. Each turn roll 1D10 and if the result is a 9 or 10 a pair of Mig-21s enter from the board edges as in the diagram to the right. *This is a good two player scenario where an experienced player can fly the Mig-17 and additional players can be added if more Migs arrive.*

Historical Outcome: The F-4 crewed by Lt. Stillingier and Lt. Olin began their attack while the F-4 crewed by Lt. Weigand and Freckleton moved to a high cover position. After several maneuvers the first F-4 fired a Sidewinder, but the Mig-17 pilot skillfully evaded it and then turned to pursue Stillingier and Olin as they tried to extend away from the Mig. Weigand and Freckleton swooped in from their cover position and got on the Mig's six o'clock position and downed it with a Sidewinder. Red Crown called out multiple bandits approaching, so both F-4s accelerated out of the combat zone and back to the Coral Sea. Whether or not this was an attempt to repeat the conditions in the first scenario will never be known, but if so the ambushing Mig-21s arrived too late to help the bait.

Victory Conditions: The F-4s must knock down the Mig-17 then escape off the lower board edge for a victory. Losing an F-4 is a defeat.

Mig-21s: Speed 5
Alt 4 or 5



US Airforce F105D 'Thud'

Configured for Vietnam Era – 1965-72 both for Iron Hand and Deep Strike roles

F105 D

Pilot Rating

Large aircraft. 2 Crew in F105-F Wild Weasel / Iron Hand config.

Speed

Max Load 5
Max Level 8
Max Dive 9

Altitude

6

Damage

7
AB
5

Ammo

5
Attack value
6

Action	Speed change
Normal Engine	-2 to +4
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2
Afterburner	+3

Countermeasures and defence values

Defence v gun = 5
Defence v missile = 0 + pilot + C/M
Radar rating = 3
Countermeasures rating
1965-69 Radar = 1 IR = 0
After 1969 Radar = 3 IR = 1

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4		-1*
Turn	1	2	3	4	4	5	5		-1*
Hard Turn	-	3	3	4	4	5	5		-2
Loop	-	4	4	4	5	5	6		-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+

Missiles – Radar/IR

2 - AIM 9B HN:
6 hit value

Wild Weasel / Iron Hand load outs
2 - AGM-45 'Shrike' anti-radiation missiles: Range 12. Launch roll 8
(p.13 of Intruder rules)

6 - CBU-59 Cluster Bomb units

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Pilot rating F105D # 2

Pilot rating F105D # 3

Pilot rating F105D # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	3	3	4	4	5	5	6	6	8	M61 20mm cannon

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US Airforce F105D 'Thud'

Configured for Vietnam Era – 1965-72 both for Iron Hand and Deep Strike roles

F105 D

Pilot Rating

Large aircraft. 2 Crew in F105-F Wild Weasel / Iron Hand config.

Speed

Max Load 5
Max Level 8
Max Dive 9

Altitude

6

Damage

7
AB
5

Ammo

5
Attack value
6

Action	Speed change
Normal Engine	-2 to +4
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2
Afterburner	+3

Countermeasures and defence values

Defence v gun = 5
Defence v missile = 0 + pilot + C/M
Radar rating = 3
Countermeasures rating
1965-69 Radar = 1 IR = 0
After 1969 Radar = 3 IR = 1

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4		-1*
Turn	1	2	3	4	4	5	5		-1*
Hard Turn	-	3	3	4	4	5	5		-2
Loop	-	4	4	4	5	5	6		-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+

Missiles – Radar/IR

2 - AIM 9B HN:
6 hit value

Wild Weasel / Iron Hand load outs
2 - AGM-45 'Shrike' anti-radiation missiles: Range 12. Launch roll 8
(p.13 of Intruder rules)

6 - CBU-59 Cluster Bomb units

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Damage

7
AB
5

Ammo

5
Attack value
6

AIM 9B HN

Mk 82

Pilot rating F105D # 2

Pilot rating F105D # 3

Pilot rating F105D # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	3	3	4	4	5	5	6	6	8	M61 20mm cannon

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A4 Skyhawk E/F
Configured for Vietnam era 1965-72

A4 Skyhawk E/F

Pilot Rating

Speed

Max Load 4

Max Level 5

Max Dive 6

Altitude

5

Damage

4

Ammo

4

Attack value 5

Action **Speed change**

Normal Engine -2 to +3

Damaged Engine -3 to +2

Climb 1 Level -3

Dive 1 Level +2

Countermeasures and defence values

Defence v gun = 4

Defence v missile = 0 + pilot + C/M

Radar rating = 0

Countermeasures rating

1960-69 Radar = 1 IR = 1

1970-72 Radar = 2 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2					
Turn	1	2	2	3					
Hard Turn	2	3	3	3					-2
Loop	4	4	4	5					-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops.

Missiles – Radar/IR

2 – AIM 9B HN:

6 hit value

Missiles were fitted only in the last years of the Vietnam War

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Pilot rating A4 #2

Pilot rating A4 #3

Pilot rating A4 #4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GSh 23mm cannon

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A4 Skyhawk E/F
Configured for Vietnam era 1965-72

A4 Skyhawk E/F

Pilot Rating

Speed

Max Load 4

Max Level 5

Max Dive 6

Altitude

5

Damage

4

Ammo

4

Attack value 5

Action **Speed change**

Normal Engine -2 to +3

Damaged Engine -3 to +2

Climb 1 Level -3

Dive 1 Level +2

Countermeasures and defence values

Defence v gun = 4

Defence v missile = 0 + pilot + C/M

Radar rating = 0

Countermeasures rating

1960-69 Radar = 1 IR = 1

1970-72 Radar = 2 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2					
Turn	1	2	2	3					
Hard Turn	2	3	3	3					-2
Loop	4	4	4	5					-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops.

Missiles – Radar/IR

2 – AIM 9B HN:

6 hit value

Missiles were fitted only in the last years of the Vietnam War

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Damage 4

Ammo 4

Attack value 5

AIM-9B HN

Pilot rating A4 #2

Pilot rating A4 #3

Pilot rating A4 #4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GSh 23mm cannon

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US Air Force F86/A Configured for the Korean War

F86/A Sabre Pilot Rating

All round vision canopy, small aircraft

Speed Max Load 3 Max Level 4 Max Dive 5	Altitude 5	Damage 4	Ammo 7 Attack value 6	Action Normal Engine -2 to +3 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2	Speed change
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll		1	2						
Turn		1	2	2					
Hard or Split 'S' Turn		1	2	3					-2
Loop		4	4	5					-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops.

Damage 4	Ammo 7 Attack value 6	Damage 4	Ammo 7 Attack value 6	Damage 4	Ammo 7 Attack value 6
Pilot rating	F86 # 2	Pilot rating	F86 # 3	Pilot rating	F86# 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	5	5	6	Six .50 cal machineguns

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US Air Force F86/A Configured for the Korean War

F86/A Sabre Pilot Rating

All round vision canopy, small aircraft

Speed Max Load 3 Max Level 4 Max Dive 5	Altitude 5	Damage 4	Ammo 7 Attack value 6	Action Normal Engine -2 to +3 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2	Speed change
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll		1	2						
Turn		1	2	2					
Hard or Split 'S' Turn		1	2	3					-2
Loop		4	4	5					-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops.

Damage 4	Ammo 7 Attack value 6	Damage 4	Ammo 7 Attack value 6	Damage 4	Ammo 7 Attack value 6
Pilot rating	F86 # 2	Pilot rating	F86 # 3	Pilot rating	F86# 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	5	5	6	Six .50 cal machineguns

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Standard MiG 15 bis configured for Korean War

MiG 15 bis

Pilot Rating

All round vision canopy, small aircraft

Speed
Max Load 5
Max Level 8
Max Dive 9

Altitude
6

Damage
6

Ammo
4
Attack value
2

Action	Speed change
Normal Engine	-2 to +4
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	1	1	2	2	3	4		0
Turn	1	1	2	2	2	3	3		-1*
Hard or Split 'S' Turn	-	2	2	2	3	4	4		-2
Loop	-	4	4	4	5	5	6		-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Damage
6

Ammo
4
Attack value
2

Damage
6

Ammo
4
Attack value
2

Damage
6

Ammo
4
Attack value
2

Pilot rating MIG # 2

Pilot rating MIG # 3

Pilot rating MIG # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	5	6	6	7	7	8	2 - 23mm cannon, 1 - 37mm cannon

Standard MiG 15 bis configured for Korean War

MiG 15 bis

Pilot Rating

All round vision canopy, small aircraft

Speed
Max Load 5
Max Level 8
Max Dive 9

Altitude
6

Damage
6

Ammo
4
Attack value
2

Action	Speed change
Normal Engine	-2 to +4
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	1	1	2	2	3	4		0
Turn	1	1	2	2	2	3	3		-1*
Hard or Split 'S' Turn	-	2	2	2	3	4	4		-2
Loop	-	4	4	4	5	5	6		-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Damage
6

Ammo
4
Attack value
2

Damage
6

Ammo
4
Attack value
2

Damage
6

Ammo
4
Attack value
2

Pilot rating MIG # 2

Pilot rating MIG # 3

Pilot rating MIG # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	5	6	6	7	7	8	2 - 23mm cannon, 1 - 37mm cannon

MiG 17 Fresco F
As operated by the NVPA 1965-72

MiG17F ★ Pilot Rating

All round vision canopy. Small aircraft.

Speed Max Load 3 Max Level 5 Max Dive 6	Altitude 5	Damage 4 AB 4	Ammo 4 Attack value 6	Action	Speed change	Countermeasures and defence values
				Normal Engine -2 to +3 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2 Afterburner +3		Defence v gun = 4 Defence v missile = 0 + pilot + C/M Radar rating = nil Countermeasures rating = nil

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2					-1*
Turn	1	2	2	3					-1*
Hard Turn	-	2	3	3					-2
Loop	-	4	4	5					-3
When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+									

Missiles – Radar/IR	
2 - AA 1 'Alkali HA:	<input type="text"/>
5 hit value	<input type="text"/>
NOTE: Missile version seems only to have been used by Soviet airforce	

Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN	Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN	Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN
Pilot rating	MiG17 # 2		Pilot rating	MiG17 # 3		Pilot rating	MiG17 # 4	

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	3 - 23mm cannon

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MiG 17 Fresco F
As operated by the NVPA 1965-72

MiG17F ★ Pilot Rating

All round vision canopy. Small aircraft.

Speed Max Load 3 Max Level 5 Max Dive 6	Altitude 5	Damage 4 AB 4	Ammo 4 Attack value 6	Action	Speed change	Countermeasures and defence values
				Normal Engine -2 to +3 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2 Afterburner +3		Defence v gun = 4 Defence v missile = 0 + pilot + C/M Radar rating = nil Countermeasures rating = nil

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2					-1*
Turn	1	2	2	3					-1*
Hard Turn	-	2	3	3					-2
Loop	-	4	4	5					-3
When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+									

Missiles – Radar/IR	
2 - AA 1 'Alkali HA:	<input type="text"/>
5 hit value	<input type="text"/>
NOTE: Missile version seems only to have been used by Soviet airforce	

Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN	Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN	Damage 4 AB 4	Ammo 4 Attack value 6	AA-1 HN
Pilot rating	MiG17 # 2		Pilot rating	MiG17 # 3		Pilot rating	MiG17 # 4	

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	3 - 23mm cannon

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MiG 21C
Configured for Vietnam era 1965-72

MiG 21 C

Pilot Rating

Small aircraft

Speed

6

Damage
 5
 AB
 5

Ammo
 5
 Attack value
 6

Action	Speed change
Normal Engine	-2 to +3
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2
Afterburner	+3

Countermeasures and defence values									
Defence v gun = 4									
Defence v missile = 0 + pilot + C/M									
Radar rating = 2									
Countermeasures rating									
1960-69 Radar = 1					IR = 1				
1970-72 Radar = 2					IR = 2				

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	3	3	4	4	-1*
Turn	1	2	2	3	3	4	4	5	-1*
Hard Turn	-	2	3	3	4	4	5	5	-2
Loop	-	4	4	5	5	5	6	6	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+

Missiles – Radar/IR									
2 - AA 2a/b 'Atoll' HN <input type="text"/>									
5 hit value									

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Pilot rating **MiG21 #2**

Pilot rating **MiG21 #3**

Pilot rating **MiG21 #4**

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GSh 23mm cannon

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MiG 21C
Configured for Vietnam era 1965-72

MiG 21 C

Pilot Rating

Small aircraft

Speed

6

Damage
 5
 AB
 5

Ammo
 5
 Attack value
 6

Action	Speed change
Normal Engine	-2 to +3
Damaged Engine	-3 to +2
Climb 1 Level	-3
Dive 1 Level	+2
Afterburner	+3

Countermeasures and defence values									
Defence v gun = 4									
Defence v missile = 0 + pilot + C/M									
Radar rating = 2									
Countermeasures rating									
1960-69 Radar = 1					IR = 1				
1970-72 Radar = 2					IR = 2				

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	3	3	4	4	-1*
Turn	1	2	2	3	3	4	4	5	-1*
Hard Turn	-	2	3	3	4	4	5	5	-2
Loop	-	4	4	5	5	5	6	6	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+

Missiles – Radar/IR									
2 - AA 2a/b 'Atoll' HN <input type="text"/>									
5 hit value									

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Damage 5	Ammo 5	AA-2 HN
AB	Attack value 6	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

Pilot rating **MiG21 #2**

Pilot rating **MiG21 #3**

Pilot rating **MiG21 #4**

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GSh 23mm cannon

David Child-Dennis Sept 2007 davidchild@ubernet.co.nz

Standard US Fighter configured for the Vietnam Era

Phantom F4 B/C Pilot Rating 2-Crew.Large aircraft.

Speed

Max Load 5

Max Level 8

Max Dive 9

Altitude

6

Damage

7

AB

5

Action

Normal Engine -2 to +3

Damaged Engine -3 to +1

Climb 1 Level -3

Dive 1 Level +2

Afterburner +3

Speed change

Countermeasures and defence values

Defence v gun = 5

Defence v missile = 0 + pilot + C/M

Radar rating = 6

Countermeasures rating

1960-68 Radar = 1 IR = 0

1969-79 Radar = 3 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4	-	-1*
Turn	1	2	3	3	4	4	4	-	-1*
Hard Turn	-	3	3	4	4	4	5	-	-2
Loop	-	4	4	4	5	5	6	-	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Missiles – Radar/IR

4- AIM 9B HN:

6 hit value

4- AIM 7E

7 hit value

Min range 3: Max Range 8

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Pilot rating F4 B/C #2

Pilot rating F4 B/C #3

Pilot rating F4 B/C #4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	-

David Child-Dennis Sept 2007

Standard US Fighter configured for the Vietnam Era

Phantom F4 B/C Pilot Rating 2-Crew.Large aircraft.

Speed

Max Load 5

Max Level 8

Max Dive 9

Altitude

6

Damage

7

AB

5

Action

Normal Engine -2 to +3

Damaged Engine -3 to +1

Climb 1 Level -3

Dive 1 Level +2

Afterburner +3

Speed change

Countermeasures and defence values

Defence v gun = 5

Defence v missile = 0 + pilot + C/M

Radar rating = 6

Countermeasures rating

1960-68 Radar = 1 IR = 0

1969-79 Radar = 3 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4	-	-1*
Turn	1	2	3	3	4	4	4	-	-1*
Hard Turn	-	3	3	4	4	4	5	-	-2
Loop	-	4	4	4	5	5	6	-	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Missiles – Radar/IR

4- AIM 9B HN:

6 hit value

4- AIM 7E

7 hit value

Min range 3: Max Range 8

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Damage

7

AB

5

AIM 9B HN

AIM 7E RA

Pilot rating F4 B/C #2

Pilot rating F4 B/C #3

Pilot rating F4 B/C #4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	-

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Standard US Fighter configured for the Vietnam Era

Phantom F4 D/E/J

Pilot Rating 2-Crew Large aircraft.

Speed

Max Load 5

Max Level 8

Max Dive 9

Altitude

6

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

Action

Normal Engine -2 to +4

Damaged Engine -3 to +2

Climb 1 Level -3

Dive 1 Level +2

Afterburner +3

Speed change

-2 to +4

-3 to +2

-3

+2

+3

Countermeasures and defence values

Defence v gun = 5

Defence v missile = 0 + pilot + C/M

Radar rating = 6

Countermeasures rating

1960-68 Radar = 1 IR = 0

1969-79 Radar = 3 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4	-	-1*
Turn	1	2	3	3	4	4	4	-	-1*
Hard Turn	-	3	3	4	4	4	5	-	-2
Loop	-	4	4	4	5	5	6	-	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Missiles – Radar/IR

4- AIM 9D/J HW:

6/7 hit value

4- AIM 7E

7 hit value

Min range 4: Max Range 32

Damage

7

AB

6

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Pilot rating F4 D/E/J # 2

Pilot rating F4 D/E/J # 3

Pilot rating F4 D/E/J # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	3	3	4	4	5	5	6	6	8	M61 20mm cannon

David Child-Dennis Sept 2007

Standard US Fighter configured for the Vietnam Era

Phantom F4 D/E/J

Pilot Rating 2-Crew Large aircraft.

Speed

Max Load 5

Max Level 8

Max Dive 9

Altitude

6

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

Action

Normal Engine -2 to +4

Damaged Engine -3 to +2

Climb 1 Level -3

Dive 1 Level +2

Afterburner +3

Speed change

-2 to +4

-3 to +2

-3

+2

+3

Countermeasures and defence values

Defence v gun = 5

Defence v missile = 0 + pilot + C/M

Radar rating = 6

Countermeasures rating

1960-68 Radar = 1 IR = 0

1969-79 Radar = 3 IR = 2

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	2	3	4	-	-1*
Turn	1	2	3	3	4	4	4	-	-1*
Hard Turn	-	3	3	4	4	4	5	-	-2
Loop	-	4	4	4	5	5	6	-	-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 9

Missiles – Radar/IR

4- AIM 9D/J HW:

6/7 hit value

4- AIM 7E

7 hit value

Min range 4: Max Range 32

Damage

7

AB

6

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Damage

7

AB

5

Ammo

5

Attack Value D/J = 5

E = 8

AIM 9D/J

AIM 7E RA

Pilot rating F4 D/E/J # 2

Pilot rating F4 D/E/J # 3

Pilot rating F4 D/E/J # 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	3	3	4	4	5	5	6	6	8	M61 20mm cannon

David Child-Dennis Sept 2007

Su 30 Pilot Rating All round vision canopy. Large aircraft. Can fire at up to 2 aircraft with radar missiles per impulse

Speed Max Load 5 Max Level 9 Max Dive 10	Altitude 6	Damage 7 AB 5	Ammo 5 Attack value 7	Action Normal Engine -2 to +4 Damaged Engine -3 to +2 Climb 1 Level -4 Dive 1 Level +2 Afterburner +4	Speed change	Countermeasures and defence values Defence v gun = 5 Defence v missile = 0 + pilot + C/M Radar rating = 6 Countermeasures rating = Radar/IR = 4
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2							Missiles – Radar/IR		
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	3	3	4	4	-1*
Turn	1	2	2	3	3	4	4	5	-1*
Hard Turn	-	2	3	3	4	4	5	5	-2
Loop	-	4	4	5	5	5	6	6	-3
When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+									

Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	
AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>	
Pilot rating Su 30 # 2		Pilot rating Su30 #3		Pilot rating Su30 #4					

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GS301 30mm cannon

David Child-Dennis Sept 2007

Su 30 Pilot Rating All round vision canopy. Large aircraft. Can fire at up to 2 aircraft with radar missiles per impulse

Speed Max Load 5 Max Level 9 Max Dive 10	Altitude 6	Damage 7 AB 5	Ammo 5 Attack value 7	Action Normal Engine -2 to +4 Damaged Engine -3 to +2 Climb 1 Level -4 Dive 1 Level +2 Afterburner +4	Speed change	Countermeasures and defence values Defence v gun = 5 Defence v missile = 0 + pilot + C/M Radar rating = 6 Countermeasures rating = Radar/IR = 4
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2							Missiles – Radar/IR		
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Side slip	1	1	2	2	3	3	4	4	-1*
Turn	1	2	2	3	3	4	4	5	-1*
Hard Turn	-	2	3	3	4	4	5	5	-2
Loop	-	4	4	5	5	5	6	6	-3
When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8+									

Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	Damage 7 AB 5	Ammo 5 Attack value 7	AA11. HA <input type="text"/>	
AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>		AA10a RA <input type="text"/>	
Pilot rating Su 30 # 2		Pilot rating Su30 #3		Pilot rating Su30 #4					

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	3	4	4	4	6	8	GS301 30mm cannon

David Child-Dennis Sept 2007

DH Sea Vixen Mk1

D.H. Sea Vixen Mk1

All round vision canopy, large aircraft, 2-crew

Speed	Altitude	Damage	Ammo	Action	Speed change
Max Load 5 Max Level 6 Max Dive 6	5	6	4 [][][][] Attack value	Normal Engine -2 to +4 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2	

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2	2	2	2	3			0
Turn	1	2	4	5	6				-1*
Hard or Split 'S' Turn	-	3							-2
Loop	-	2							-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Pilot rating Sea Vixen 2

Pilot rating Sea Vixen 3

Pilot rating Sea Vixen 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	

Radar Rating = 1
Defence v Gun = 4
C/M Radar = 1 IR = 1

Carried four Fire Streak IR Air-to-Air missiles
Aspect HN
Hit# = 5

Carried two rocket pods
With 14-50mm rockets per pod. Use the LAU-68 stats from the Intruders supplement.
This allows four attacks.
Calculate the effect of a ground attack using Page 5 'Intruders' supplement.

David Child-Dennis Sept 2007

DH Sea Vixen Mk1

D.H. Sea Vixen Mk1

All round vision canopy, large aircraft, 2-crew

Speed	Altitude	Damage	Ammo	Action	Speed change
Max Load 5 Max Level 6 Max Dive 6	5	6	4 [][][][] Attack value	Normal Engine -2 to +4 Damaged Engine -3 to +2 Climb 1 Level -3 Dive 1 Level +2	

Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2	2	2	2	3			0
Turn	1	2	4	5	6				-1*
Hard or Split 'S' Turn	-	3							-2
Loop	-	2							-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Damage
6
[][][][][][]
Attack value

Ammo
4
[][][][]
Attack value

Pilot rating Sea Vixen 2

Pilot rating Sea Vixen 3

Pilot rating Sea Vixen 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	

Radar Rating = 1
Defence v Gun = 4
C/M Radar = 1 IR = 1

Carried four Fire Streak IR Air-to-Air missiles
Aspect HN
Hit# = 5

Carried two rocket pods
With 14-50mm rockets per pod. Use the LAU-68 stats from the Intruders supplement.
This allows four attacks.
Calculate the effect of a ground attack using Page 5 'Intruders' supplement.

David Child-Dennis Sept 2007



D.H Vampire

D.H Vampire Pilot Rating

All round vision canopy, small aircraft

Speed Max Load 5 Max Level 6 Max Dive 7	Altitude 5	Damage 4	Ammo 4 Attack value 4	Action Normal Engine Damaged Engine Climb 1 Level Dive 1 Level	Speed change -2 to +4 -3 to +2 -3 +2
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2	2	2	6				0
Turn	1	2	4	5	6				-1*
Hard or Split 'S' Turn	-	3	<i>(risk of structural failure above speed 4)</i>						-2
Loop	-	2	<i>(risk of structural failure above speed 4)</i>						-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8

Damage 4	Ammo 4 Attack value 4	Damage 4	Ammo 4 Attack value 4	Damage 4	Ammo 4 Attack value 4
Pilot rating Vampire 2	Pilot rating Vampire 3	Pilot rating Vampire 4			

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	4	5	5	6	6	8	Four 20mm cannon

David Child-Dennis Sept 2007



D.H Vampire

D.H Vampire Pilot Rating

All round vision canopy, small aircraft

Speed Max Load 5 Max Level 6 Max Dive 7	Altitude 5	Damage 4	Ammo 4 Attack value 4	Action Normal Engine Damaged Engine Climb 1 Level Dive 1 Level	Speed change -2 to +4 -3 to +2 -3 +2
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2

Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2	2	2	6				0
Turn	1	2	4	5	6				-1*
Hard or Split 'S' Turn	-	3	<i>(risk of structural failure above speed 4)</i>						-2
Loop	-	2	<i>(risk of structural failure above speed 4)</i>						-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8

Damage 4	Ammo 4 Attack value 4	Damage 4	Ammo 4 Attack value 4	Damage 4	Ammo 4 Attack value 4
Pilot rating Vampire 2	Pilot rating Vampire 3	Pilot rating Vampire 4			

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	2	2	3	3	4	5	5	6	6	8	Four 20mm cannon

David Child-Dennis Sept 2007

Canberra B(1) and B(1)8

Canberra B(1) Pilot Rating Large aircraft, 2-crew

Speed Max Load 4 Max Level 5 Max Dive 6	Altitude 5	Damage 6	Attack	Action Speed change Normal Engine -2 to +3 Damaged Engine -3 to +1 Climb 1 Level -2 Dive 1 Level +2	Countermeasures Radar and IR = 1 Advanced bombsight. From 1955 Canberra's carried 'Green Satin' Doppler navigation radar for precision bombing and nuclear strikes. An RWR unit was fitted to some units, including PR7-6 aircraft known as 'Orange Putter'
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Manoeuvre Chart – ADD altitude level number to manoeuvre cost above altitude level 2									
Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2							0
Turn	1	2							-1*
Hard or Split 'S' Turn	-	2							-2
Loop	-	2							-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops.

Damage 6	Ammo	Damage 6	Ammo	Damage 6	Ammo
Pilot rating	Canberra 2	Pilot rating	Canberra 3	Pilot rating	Canberra 4

Die Difference information	1	2	3	4	5	6	7	8	9	10+	Gun Combat
Damage	-	-	-	-	-	-	-	-	-	-	-

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Die Difference information	1	2	3	4	5	6	7	8	9	10+	Gun Combat
Damage	-	-	-	-	-	-	-	-	-	-	-

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D.H. Sea Vixen Mk1

[Empty box]

All round vision canopy, large aircraft, 2 crew

Speed Max Load 5 Max Level 6 Max Dive 6	Altitude 5	Damage 6 [Progress bar]	Ammo 4 [Progress bar] Attack value 4	<table border="1"> <tr> <th>Action</th> <th>Speed change</th> </tr> <tr> <td>Normal Engine</td> <td>-2 to +4</td> </tr> <tr> <td>Damaged Engine</td> <td>-3 to +2</td> </tr> <tr> <td>Climb 1 Level</td> <td>-3</td> </tr> <tr> <td>Dive 1 Level</td> <td>+2</td> </tr> </table>	Action	Speed change	Normal Engine	-2 to +4	Damaged Engine	-3 to +2	Climb 1 Level	-3	Dive 1 Level	+2
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Manoeuvre/ Speed	1-2	3-4	5	6	7	8	9	10	Speed Loss
Roll	1	2	2	2	2				0
Turn	1	2	4	5	6				-1*
Hard or Split 'S' Turn	-	3							-2
Loop	-	2							-3

When loaded: +1 to all manoeuvre numbers. No hard turns or loops. (*) Only at speed 8

Damage 6 [Progress bar]	Ammo 4 [Progress bar] Attack value 4	Damage 6 [Progress bar]	Ammo 4 [Progress bar] Attack value 4	Damage 6 [Progress bar]	Ammo 4 [Progress bar] Attack value 4
Pilot rating	Venom 2	Pilot rating	Venom 3	Pilot rating	Venom 4

Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	

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D.H. Sea Vixen Mk1

[Empty box]

All round vision canopy, large aircraft, 2 crew

Speed Max Load 5 Max Level 6 Max Dive 6	Altitude 5	Damage 6 [Progress bar]	Ammo 4 [Progress bar] Attack value 4	<table border="1"> <tr> <th>Action</th> <th>Speed change</th> </tr> <tr> <td>Normal Engine</td> <td>-2 to +4</td> </tr> <tr> <td>Damaged Engine</td> <td>-3 to +2</td> </tr> <tr> <td>Climb 1 Level</td> <td>-3</td> </tr> <tr> <td>Dive 1 Level</td> <td>+2</td> </tr> </table>	Action	Speed change	Normal Engine	-2 to +4	Damaged Engine	-3 to +2	Climb 1 Level	-3	Dive 1 Level	+2
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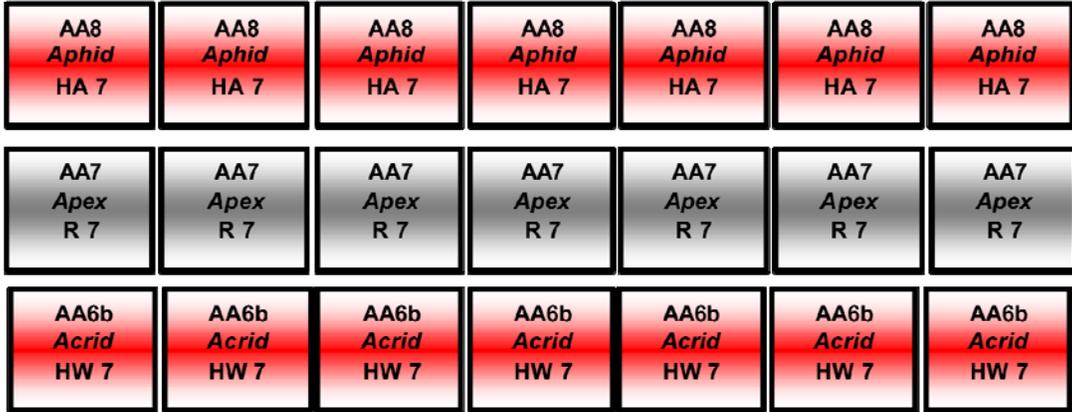
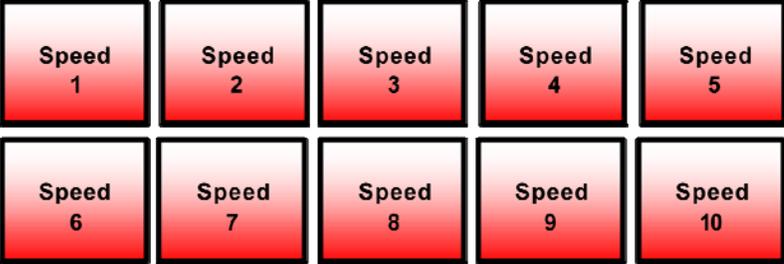
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Pilot rating	Venom 2	Pilot rating	Venom 3	Pilot rating	Venom 4

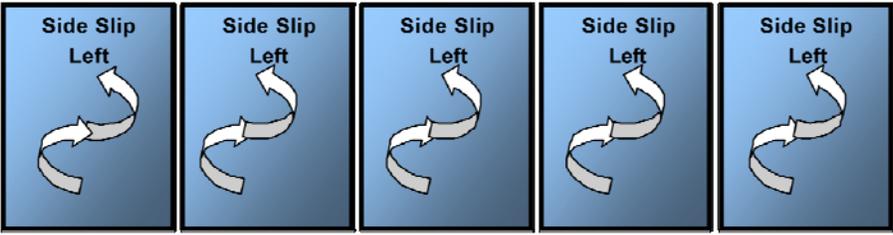
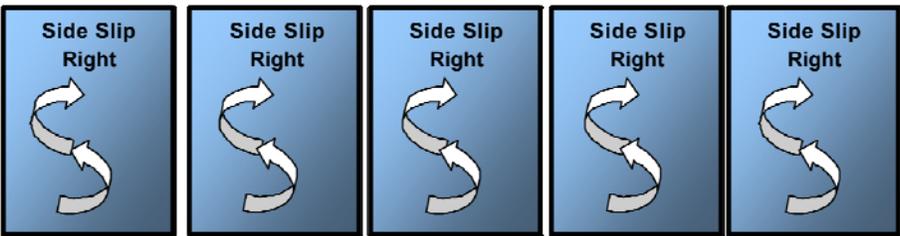
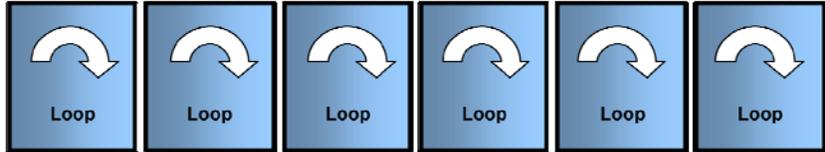
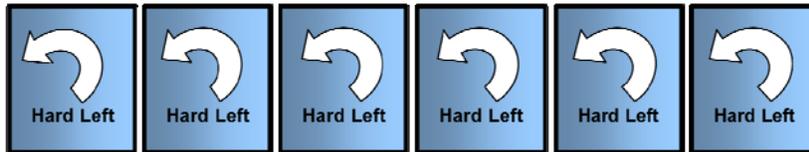
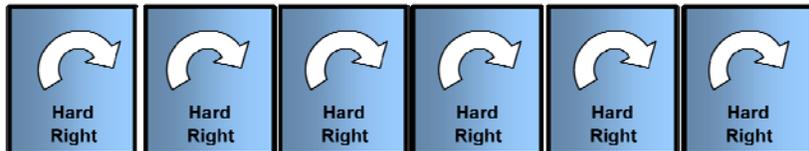
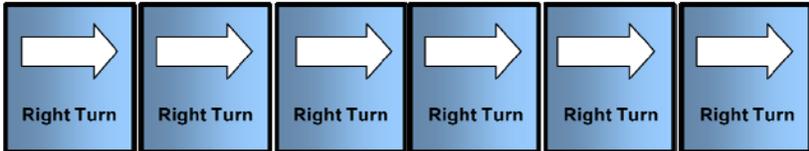
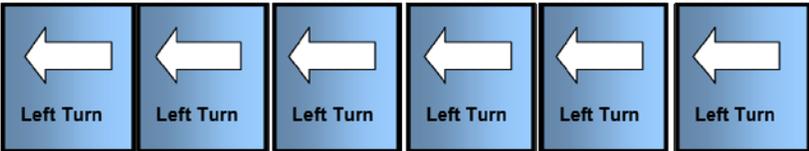
Die Difference	1	2	3	4	5	6	7	8	9	10+	Gun Combat information
Damage	-	-	-	-	-	-	-	-	-	-	

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Game Markers



Game Markers



5 Impulse Movement Cards

3	4	5	6	7	8
9	10	Move First			
1	Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers				
8	9	10	Move Second		

2	4	5	6	7	8
9	10	Move First			
2	Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers				
7	8	9	10	Move Second	

1	3	5	6	7	8
9	10	Move First			
3	Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers				
9	10	Move Second			

2	4	5	6	7	8
9	10	Move First			
4	Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers				
6	7	8	9	10	Move Second

3	4	5	6	7	8
9	10	Move First			
5	Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers				
10	Move Second				

5 and 10 Impulse Movement Cards

These are two decks of cards that can be used to regulate movement during Phantoms games rather than the impulse sheet that was provided in the rules.

10 Impulse Movement Cards

<p>4 5 6 7 8 9 10 Airspeed</p>	<p>3 7 9 10 Airspeed</p>
<p>1</p>	<p>2</p>
<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>	<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>
<p>2 6 8 9 10 Airspeed</p>	<p>4 5 7 8 9 10 Airspeed</p>
<p>3</p>	<p>4</p>
<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>	<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>
<p>1 3 5 6 7 8 10 Airspeed</p>	<p>8 9 10 Airspeed</p>
<p>5</p>	<p>6</p>
<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>	<p>Impulse sequence 1.Movement 2.Break off 3.Radar Lock or Break 4.Spotting 5.Missile or Gun attack 7.Damage Check 8.Place Manoeuvre markers</p>
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<p>7</p>	<p>8</p>
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The Yahoo Air-Pirates group is very active in discussing air combat, history, and promoting the Mustangs and Phantoms miniatures rules. There are scenarios, optional rules, markers, and aircraft data cards available in the Files section.



The Wasatch Front Historical gaming Society meets every other Friday night in SLC, Utah. Besides helping with the Phantoms project we also publish a full color, free wargames journal called Warning Order. Visit our site at: www.wfhgs.com

This supplement would not have come about if were not the dogged perseverance of David Child-Dennis, who after joining the Phantoms community had a ton of great ideas and just had to share them! After several long email discussions we decided to put out the supplement that you see before you now. As you can tell, David loves the early jets, so this is why there are so many 50s and 60s scenarios! David wrote most of the material, provided the markers, and re-worked the data cards for many of the jets while I re-formatted everything that he sent me and worked on the naval system that was presented here.

We still have a lot of ideas for the future of the system, including doing an India-Pakistan campaign with data cards, possible supplements for the Arab-Israeli, Iran-Iraq, France-Libya (Chad), and Falklands. If you have any ideas, suggestions, or material that can be used please send it along. Since this is a free game it will only get better if everyone contributes. Thanks also must go out to Dave Schueler who converted the Mustangs system to the jet era and is responsible for the creation of the Phantoms rules.

If you have any questions about the system you can post them on the Yahoo group or contact me directly at: mirsik1@juno.com

1/300 & 1/600 Aircraft Models and Accessories

This is just a brief listing of what we've seen currently on the market that can be used for Phantoms gaming. If anyone knows of others send us an email and we'll list them in a future supplement.

1/300

- Scotia-A good selection of jets that can be used for many periods. Well sculpted and good value for the money.
- Heroics & Ros/Navwar-A huge selection of jets that are still sold by The Last Square. The quality varies greatly from model to model.
- CinC-Similar to GHQ in that there is a small selection of models, but highly detailed.
- Raiden Miniatures-A company that primarily sells WW2 aircraft, but a few jets are beginning to appear.
- GHQ-A small selection of well detailed

jets that are more like tiny models!



F-4E Phantom from the GHQ Models site. Truly an impressive work of art at this scale.

1/600

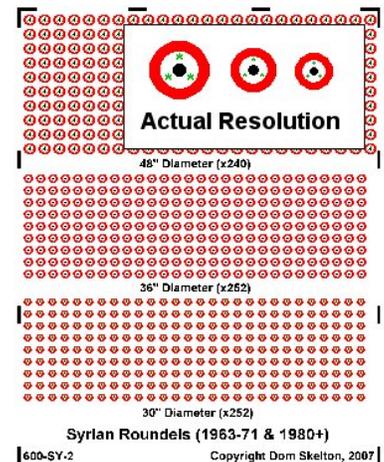
- Tumbling Dice-Wide range of 1/600 jets that are great for smaller hex mats. Despite their small size the aircraft are well done and are great for large scenarios.

Decals

- I-94 Enterprises-A good range of markings for WW2 and Modern period

1/300th scale aircraft.

- Dom's Decals-Wide range of 1/300 and 1/600 decals that cover almost every country.



1/300th Syrian decals from Dom's Decals.