## SECTION 1 - FIGHTER TACTICS.

### TACTICS OF JAPANESE "TONY" TYPE FIGHTER.

The 80th Fighter Squadron has twice encountered "Tony" type Fighters in combat, both times in the vicinity of BOGADJIM. The first time was on 21 July,1943 and the second time on 23 July,1943.

2. From these experiences with this type fighter not much information has been brought to light. However, pilots have reported speeds up to 400 m.p.h. indicated air speed in this type fighter.

3. One pilot reported having followed one of this type fighter from eighteen thousand feet to six or seven thousand feet. A shallow dive was maintained all the way with the P38 indicating 400 m.p.h. and during this time the P38 was unable to gain on the enemy. At this time another P38, indicating close to 500 m.p.h., dived from above and succeeded in shooting the enemy plane down after a long accurate burst. Another indication of speed of this type fighter may be derived from combat on 21 July,1943 when a P38 found the enemy fighter behind him. The P38 went into a shallow dive and was unable to lose the enemy when indicating 400 m.p.h. at low altitudes. This "Tony" was finally chased away by another P38 who dived from above firing a burst at long range.

4. In combat in this squadron there has been no indication as to the manoeuverability of the enemy fighter. However, the "Tony" has, on one or two occasions, shown no inclination to go into a steep dive when that action would seem to be advantageous to him. In each case where P38s have been on the tail of a "Tony" the only action taken by the enemy has consisted of maintaining a gradual dive with speed building up to 400 m.p.h.

5. There are further indications that the "Tony" is not as apt to catch fire as are the "Zeke" and "Oscar". Although they have been shot down in flames in several cases, a long accurate burst was necessary to accomplish this destruction and they did not show a tendency to explode which has been characteristic of the Japanese fighter aeroplanes.

### TACTICAL TRIALS BETWEEN JAPANESE S.S.F. TYPE "O" MARK 11 (HAP) AND SPITFIRE V.C.

Comparative performance trials were not carried out at the time and these figures will be supplied at a later date.

2. Both aircraft were flown at normal combat weight minus belly tanks.

3. Brief Particulars of Hap.

(a) Take-off run - 900' using 2600 r.p.m. and 30" M.P.
(b) Approach speed, wheels and flaps fully down - 75 knots.
(c) Stalling speed, landing condition - 55 knots.
(d) Rated altitude - 16,000'.
(e) Combat ceiling - 32,500'.

(f) Maximum speed at rated altitude 335 m.p.h. 2600 r.p.m. -.40" M.P. - H.B.

(g) Armament - 2 x 7.7 synchronised machine guns - 600 rounds per gun (identical with Vickers Mk.V). British .303 ammunition may be used.
- 2 x 20 mm. cannons - 100 rounds per gun (identical to Oerlikon).

(h) Figures shown in B, C and F are approximate as air speed indicator had not been calibrated.

4. Flying Characteristics of Hap.

(a) No tendency to swing in take-off or landing. However, a tail wheel locking device was incorporated since the brakes were inoperative.

(b) Short take-off and landing runs.

(c) Good visibility.

(d) Stick loadings normally not light and increasing with speed. This is more evident with right stick.

(e) Movement of elevator trim extremely stiff.

(f) Rudder loading normal, but tiring in climb due to absence of rudder trim.

(g) Very stable stalling characteristics. No tendency to spin even in high speed stalls.

(h) Extremely manoeuvrable at low speeds, rolling off the top of loops can be executed at 180 knots.

(i) Boost gauge calibrated in centimetres.

(j) Seating position cramped, rudders positioned to suit short legged pilots only.

Spitfire Pilot - Flight Lieutenant WAWN.
Hap Pilot - Squadron Leader JACKSON.

Test No. 1 - Commencing at 17,000 ft.

1. Spitfire and Hap to approach Head ON and manoeuvre, without loss of altitude, until one aircraft gets on the other's tail.

Result.

Both aircraft passed at about 50 yards. Spitfire executed steep climbing turn. Hap steep turned and was on Spitfire's tail within 2½ turns.

2. Hap on Spitfire's Tail. Spitfire to complete 4 steep turns to left. Reform position and carry out 4 steep turns to right.

Result.

Hap was able to turn easily inside Spitfire. However, jinking was necessary to watch the Spitfire and check on deflection allowance. Hap did not steep turn as easily to right as to left.

3. Spitfire on Hap's Tail. Steep turns to left and right as in previous test.

Result.

Hap commenced steep turning at 220 m.p.h. I.A.S. Spitfire was unable to turn with Hap, either in left or right hand turns, for more than ¾ turn by which time Spitfire was close on stall.

4. (a) Hap on Spitfire's Tail. Spitfire to perform loop.

(b) Spitfire on Hap's Tail. Hap to perform loop.

Result.

(a) Spitfire commenced looping at 300 m.p.h. I.A.S. with speed of 140 m.p.h. I.A.S. on top. Hap had no trouble in following Spitfire.

(b) Hap commenced loop at 220 knots I.A.S. and completed two loops in succession. Spitfire endeavoured to follow Hap and stalled at top of first loop and fell out. Hap finished on Spitfire's tail.

5. Hap on Spitfire's Tail.

Spitfire to shake Hap off.

Result.

Spitfire commenced evasive action by executing diving aileron rolls to right. Hap had difficulty in following this manoeuvre and was unable to get into firing position. Spitfire then did a high speed vertical climbing turn which Hap was just able to follow. Hap was able to comfortably follow all other manoeuvres which were not carried out above 250 m.p.h.

Conclusions.

1. Hap considerably more manoeuvrable than the Spitfire at low speeds.

2. Hap stalling speeds considerably lower than Spitfire.

3. Hap able to turn and loop in much smaller radius.

4. Hap able to carry out any defensive manoeuvre at a much slower speed than the Spitfire, e.g. roll off the top of loop - Hap 205 m.p.h. Spitfire 250 m.p.h.

5. Hap experienced considerable difficulty in following Spitfire in High G - High speed manoeuvres, especially to right.

6. At medium and low levels Hap easily able to evade Spitfire and turn the tables.

Recommendations.

1. Do not attempt to dogfight the Hap especially at low speeds.

2. If you have a height advantage, use the excess speed obtained in your diving attack to climb vertically thus regaining your height advantage.

3. High speed - High G tactics will considerably alter the disparity in manoeuvrability.

4. Keep your speed high - don't stagger through the sky.

Test No. 2 Commencing at 27,000 ft.

The results obtained in Test No. 1 were confirmed and the following additional conclusions were reached.

1. Spitfire had an approximate speed advantage of 25 m.p.h. at 26,000 feet.

2. Spitfire had slight advantage in rate of climb at 26,000 feet.

3. Spitfire initially gained speed slightly faster in vertical dive.

4. The Spitfire's advantages in 2 and 3 were not sufficient to evade the Hap's fire.

5. At altitudes over 20,000 feet with a height advantage of approximately 3 - 4,000 feet the Spitfire can dive and attack the Hap with impunity. The breakaway should be made in a vertical climb, thus maintaining height advantage.

Tests Nos. 3 & 4 Commencing at 17,000 feet and 27,000 feet respectively.

1. No appreciable differences were noted at 17,000 feet and 27,000 feet.

2. A special Spitfire was used for these trials.

3. All manoeuvres were carried out at high speed and high "G".

Results.

Hap Commenced Tests on Spitfire's Tail.

1. In high speed tight loop Spitfire was able to loop in smaller radius. Hap pilot blacked out endeavouring to follow.

2. Spitfire carried out 3 loops in succession at high speed and finished in firing position behind Hap.

3. Spitfire carried out roll off top of loop; Hap was unable to follow in same radius and lost considerable distance.

4. Spitfire executed a series of high speed tight, diving turns to right; Hap pilot unable to follow, and was on verge of greying out.

5. Spitfire executed a ½ roll to right from 45° dive at 280 m.p.h. I.A.S. and 330 m.p.h. I.A.S. and pulled out abruptly into vertical climb. Hap pilot unable to follow this manoeuvre either at 280 or 330 m.p.h. and finished up in both instances approximately 1000 feet below Spitfire and some distance behind.

Conclusions.

1. Spitfire was able to evade and out-manoeuvre Hap by combining high speed and High "G".

2. Spitfire required a minimum speed of 250 m.p.h. to maintain manoeuvrability advantage.

3. Hap was able to evade and outmanoeuvre Spitfire by manoeuvring at low speeds.

4. Stresses placed upon both aircraft during tests were not measured; however, the Hap pilot considers his tolerance in reference to blacking out to be above the average.

## BEAUFIGHTERS V FLOATPLANES.

Eight Beaufighters attacked 4 Rufes and 2 Petes airborne in TADERFANE area on the 18th August.

Score - 4 Floatplanes destroyed and one Floatplane damaged without loss to the Beaufighters.

Extracts from Combat Reports; -

"I saw a Rufe and a Pete each at 12 o'clock and 300 feet high and attacked the Pete firing from 300 yards head on attack closing right up. The Pete crashed into the water and was destroyed. I then attacked a Rufe 700 feet high over the BAY firing from 500 yards 12 o'clock. It went over on it's back and broke away. Then I circled around the BAY to attack a Pete and a Rufe left but could not close in on them. There were no other Floatplanes on the beach or in the creek and I returned to base."

"I came in formation with my Flight Leader and saw a Pete and a Rufe airborne and a Rufe taking-off from Floatplane beach. I pulled up to 1,000 feet in a left hand turn and attacked a Rufe over Floatplane Beach firing from 500 yards 6 o'clock to 100 yards 9 o'clock. Shells burst on wing roots and with large clouds of black smoke trailing it crashed into the coconuts; position 54/96 and burnt. My observer fired with the rear gun at 300 yards on a Rufe on my tail here, then his gun jammed and I dived away. I then attacked a Rufe attacking COO 51 - a quick 600 yards burst from head on in semi stalled position Rufe dived on my tail and being short of fuel I set course for base."

"I approached from west over CREEK BEND, zero height. From over the bend I could see a Pete airborne at 700 feet above Floatplane beach. I pulled up to 200 feet and saw five Floatplanes of which one Rufe was just airborne from the beach and none at all left on it nor in the creek. I continued climbing to 2,000 feet to attack last airborne Rufe from 75 yards 4 o'clock closing to almost point blank, cannon shells bursting along fuselage. I went on and my observer saw it going down with some smoke trailing from the engine until it was obscured from view by the tail plane. Neither of us saw it again and my observer saw fast increasing smoke from position 59/60 in the mangroves about where it would have crashed had he been able to continuously watch it - there had been no smoke in sight before. I then climbed to 3,000 feet doing evasive action owing to A/A from the beach and circled over BAY. Then dived S.W. to attack a Rufe at 2,000 feet firing from 100 yards at 7 - 8 o'clock closing to 50 yards but no observed results. In following around in a tight turn, about three feet of my starboard wing tip folded up vertically so I broke off and returned direct to base."

"I came down the MAIKOOR alone (the other two Beaufighters had broken off to attack small vessels in the SERWATOE RIVER) and was last in to target. Then saw a Rufe at 1,500 feet and made a climbing head on attack. The Rufe fired from 400 yards but did not press attack, and broke off from 400 yards exposing belly. It passed underneath and was seen by my observer in a steep dive into the mangroves position 55/65 from where heavy smoke came up. I then climbed up to 3,000 feet and made a head on attack on a Rufe which broke off at 500 yards - I fired a quick burst and missed."

COMMENT - Watch out S/E Fighter Boys or you will be out of a job.

SPITFIRE V FLOATFLAMES (PETE'S)

First indications of the presence of unidentified aircraft in the area were received at the Filter Room located at MILLINGIMBI at 2344/Z on August 10th in a position 71 miles distant on a bearing of 16°. Further plots indicated they were flying on a southerly course and at 2359/Z were in a position 38 miles distant on a bearing of 22°.

Similar plots had been previously received as frequently as four times in one week. On these occasions it was evident that a routine reconnaissance of the area was being carried out as one of two courses appear to have been consistently followed. Anticipating that the aircraft now plotted would again fly on one of their regular courses, two aircraft consisting of a detachment from No. 452 Squadron, which had arrived at MILLINGIMBI the previous day, were given a course which it was thought would converge with that of the enemy's, and ordered off at 2349/Z. This assumption was fortuitously correct and ten minutes later (2359/Z) our aircraft sighted two floatplanes in a position 34 miles distant from MILLINGIMBI on a bearing of 22° from that base.
Reports -

" I was Red 1. Flying at 6,500 feet sighted 2 Petes 2 miles ahead and 1,500 feet above. I turned left behind them and into sun climbing until about 1,000 feet above. I then made a rear quarter attack on the leading aircraft telling Red 2 to go in on the rear enemy aircraft. As I went in on the first aircraft he turned left and I gave him a 2 sec. burst from 250 to 200 yards, but the second aircraft squirted tracer behind me so I broke down to port. Then pulled up above the first Pete again and made a dead stern attack from slightly below; at the same time Red 2 delivered at rear attack from the port quarter. Red 2 was about 20 yards in front and to the left of me and as he came in, I gave a 1 sec. burst from 100 closing to 50 yards and saw strikes on the Pete's starboard wing root. Flames appeared and debris from the enemy aircraft, including oil, came back over my windscreen and hood. After that I could see nothing through my Perspex, so pushed back hood and saw the aircraft fall out of control and dive into the sea in flames. The second Pete was then flying north into clouds at 6,000 feet approximately; we followed."

" I was Red 2. Upon sighting enemy aircraft, I was about 4,000 feet below to their stern quarter. I climbed behind Red 1 until we were both about 100 feet above up sun of the enemy. Red 1 instructed me to get into position to attack the rear or port Pete. I dived to attack from just out of sun, but not at full speed as this seemed unnecessary. The enemy turned sharply to the port waggling its wings and dived. I was unable to lower my nose to get sufficient deflection. I pulled up, noticed an enemy aircraft pass under me from starboard to port. I turned left and dived, attacking from behind and above with a 1 sec. burst. The Pete disintegrated, the remnants falling into the sea in flames. I thought I saw a parachute but could not be sure as I then attacked the second enemy Floatplane from stern quarter from 20 degrees to dead astern. I was then at about 6,000 feet and gave a 2 sec. burst closing from 200 to 100 yards. The float of the enemy was burning fiercely and the aircraft fell away apparently out of control, but it then pulled out of the dive into a stall turn. I took another quick burst but did not observe strikes. The float was now demolished and the under fuselage was smoking. The enemy aircraft then flattened out straight and level about 500 yards in front of me. I next attacked from dead astern closing to nearly 30 yards and firing a 3 to 4 sec. burst, observing strikes on the tail unit and rear fuselage, I also saw pieces fall away from the central upper main plane. My ammunition was expended but as I had received no return fire on my last attack, I took cine camera pictures about 300 plus yards range. The enemy aircraft fired from the engine cowling and rear cockpit.

COMMENT - A good interception especially so as R/T contact with base was lost 5 minutes prior to enemy sighting.

SPITFIRES V RECCOS, AUGUST 17TH.

1. "On being airborne I was told to proceed to BATCHELOR at 30,000 feet. I climbed in a southerly direction to the east of BATCHELOR and, when at 22,000 feet, I was given a vector to FENTON, and instructed to climb to 32,000 feet. The position of the enemy aeroplane was given as 15 miles to the north west of me, and following me. I reached FENTON and orbited at a height of 31,000 feet for about five minutes, and then sighted the enemy aeroplane (Dinah) approaching from the north west about 500 feet below me, and at 10 o'clock to me. I jettisoned my belly tank, and commenced an attack from the beam, swinging into almost line astern. He took no evasive action, although I consider he should have seen me. He commenced to turn slowly to port, and I opened fire at 30,000 feet from 250 yards, in a very fine rear quarter attack. I fired a 2 second burst, and observed strikes and pieces of aeroplane fly off: I had not closed much distance between the enemy aeroplane and myself. As I followed him, I observed a fire start in the fuselage: he continued to turn to port and then began to dive. I fired two more short bursts, but the Dinah was obviously out of control, and commenced to dive vertically. He did not appear to be burning fiercely by the time he hit the ground, but when he hit he exploded. I then returned to base.

While both flying straight and level, I had the impression that I had a small reserve of power to enable me to overtake at a greater speed, or hold him had he accelerated any.

The Dinah first burnt at a position on the fuselage just in front of the rear glass-house."

COMMENT - A nicely executed interception.

2. "On being airborne I was instructed by operations to change to frequency Ops 2 and call Mobile Fighter Sector, who were speaking to Red Section and giving contactive zero, so I kept climbing south and, at 2,000 feet was instructed to proceed to BATCHELOR at 30,000 feet. Mobile Fighter Sector inquired my height when I was at 15,000 feet, and instructed me to scramble for height over BATCHELOR. When at 24,000 feet I was told there was nothing in my vicinity, so I levelled off, as my engine had been reading 120 degrees for some time. It was while I was circling over BATCHELOR that I saw the Dinah at 9 o'clock, flying westwards and 4,000 feet above me. I reported this to Mobile Fighter Sector, and also to my No. 2, and headed off after the enemy, having dropped my belly tank. The aeroplane at the start of the chase got well away from me, and I dived slightly to build up my speed and keep him in sight. When indicating 230 m.p.h. at 24,000 feet, I was holding the enemy aeroplane and may have been gaining slightly. I then started to climb, at only about 200 feet per minute, because he was still well ahead, but when nearing the coast he must have thought he was clear of any interception, as I suddenly overtook him easily and, when at about 150 yards, astern and slightly underneath, I gave him a four second burst, and both of his motors started to smoke. I then gave him another four second burst, and he blew up in flames in front of me and covered my aircraft in oil. I broke violently up to starboard to escape any pieces of aeroplane, and then followed him down in a spiral dive. When at about 5,000 feet the enemy aircraft disintegrated completely in the air after another explosion, and I saw a parachute silhouetted against the ground. I went down to investigate this, flew around it slowly, but there was nothing in it, though there appeared to be a canopy hanging from it. I reported the position of the parachute and aeroplane to Mobile Fighter Sector, and returned to base."

3. "On being airborne with Flying Officer ..... ... I was instructed by Control to orbit POINT GAMBIER at 30,000 feet. Acting on those instructions for roughly twenty minutes, Flying Officer ..... sighted the enemy aeroplane (Lily). I pulled round sharply to port, and flew roughly parallel to him, and closing slightly on the enemy aeroplane. My speed was roughly 220 m.p.h. indicated, and I experienced so little difficulty in keeping up that I did not bother to jettison my belly tank. When in a position roughly abreast of the enemy aeroplane, I throttled back to judge his speed, which I estimate at approximately 190 I.A.S., I opened fire from the enemy's 9 o'clock position from about 200 yards, giving two bursts of 3/4 seconds each, cannon and machine gun, following through on the ring-sight from beam, rear-quarter to the astern position. I observed strikes on the port motor, from which a puff of black smoke issued, and all along the fuselage and glass house. I then closed in from astern below him to a distance of about ten yards, in another three second burst. I pulled up to the starboard side of the enemy aircraft and saw that it was riddled from the effect of my fire. Both glasshouses were shattered and panels were flapping from the fuselage. I then broke away and saw Flt/Sgt..... carry out his attack after which the enemy aircraft exploded and disintregated.

I saw return fire from the Lily during my first attack and consider that the rear gunner or gunners were killed from the result of this attack as there was no return fire during my second attack. No evasive action was taken by the enemy aircraft."

4. "I took off with my No. 2 and climbed to 30,000 feet over POINT BLAZE as instructed by the Controller. Was moved to POINT PATTERSON at 30,000 feet and subsequently to a point between DARWIN and GUNN POINT at 32,000 feet. During this time I was given information concerning the enemy aircraft and its whereabouts. Just before I sighted it the Controller informed me that the enemy aircraft was just entering the gun area at DARWIN on a course west. The guns opened fire and, looking a couple of miles ahead of the bursts, I immediately saw the enemy aircraft (Dinah) at a distance of approximately 12 miles on my port beam heading towards POINT CHARLES. He was flying at about 26,000 feet straight and level and flying very fast, (estimated at 300 m.p.h. plus T.A.S.). Losing height towards him I overtook the enemy aircraft about 20 miles from the coast and attacked from below, slightly on the port side from astern. On overtaking the enemy aircraft I weaved above it with my No. 2 to drop off excess speed and then carried out the initial attack.

I consider that we had been observed but no evasive action was taken as the enemy aircraft continued on its course. I opened fire with all guns, my starboard cannon stopping almost immediately. Fire was opened at 200 yards, closing in to within 50 yards. Slight deflection from my position was allowed, 15° below and 15° to port, closing to a Nil deflection dead astern. Strikes were observed on the port side of the enemy aircraft fuselage, the starboard engine and tail unit. The starboard engine and fuselage immediately caught fire and some pieces of flying debris hit my own aeroplane. I pulled away to the port side and watched my No. 2 carry out his attack from astern and break down to starboard. Pulling back in behind the enemy aircraft the same attack as previously was carried out, opening fire from 100 yards range and the port engine was set on fire, pieces of fuselage etc., were seen flying from the enemy aircraft. He still continued to fly on his course but there were signs of difficulty in maintaining control. I flew behind it for several miles; it was now burning at three points and trailing white smoke. Height at this juncture was 24,000 feet. Pulling behind the enemy aircraft, I opened fire again from about 200 yards in a rear quarter attack. This attack was made for practice purposes as I was certain that it was only a matter of time before the enemy aircraft would be completely burnt. From the attack I observed strikes on the starboard wing and fuselage from the wing root back. A fourth attack was made with mg. only and I observed tracer entering the port side of the fuselage, following which the enemy aircraft staggered badly and lost 3000 feet of height and recovered. I pulled out and flew in a position 400 yards

to starboard to watch final results. Shortly afterwards the enemy aircraft again began losing height, first gradually and then steeply until I was obliged to dive at 360 m.p.h. I.A.S. in order to retain my position abreast of the enemy aircraft. During my descent I was losing height at the rate of 7000 feet per minute. The enemy aircraft appeared to make an attempt to level out momentarily and hit the water at a point 20 miles due west of CAPE FOURCROY. I photographed the splash with my camera gun and flew at zero feet around the debris observing three bodies in the water, two of which had partially opened parachutes attached. In the water I observed what appeared to be a partially inflated dinghy. I attempted to photograph this. One body was that of a large man in a black flying suit and helmet; he was lying spreadeagled on top of the water, face upward and I gained the impression that he was still alive. Climbing to 8,000 feet I called the Control and then went on to Channel "D" calling for a fix on the position and for some arrangements to pick up the bodies. I was advised that a satisfactory fix had been obtained and as I was getting short of fuel, returned to base on a course of 115°. Landed at base after being airborne 2 hours 10 minutes."

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Distribution:
R.A.A.F. COMMAND - 2
452 Squadron - 3
457 Squadron - 3
54 Squad[illegible] - 3
2 O.T.U. - 2
D.T. - 1
D.T.S. - 1
D.G.M.S. - 1
D.C.A.S. - 1
W/Cdr. Carr - 1
(HAP)

Encl. 11A.

MOST SECRET

REPORT ON TRIALS CONDUCTED AT EAGLE FARM ON 14th, 17th and 18th AUGUST, 1943 BETWEEN SPITFIRE 5C AND MARK 2 ZERO.

Tests were carried out at normal combat weights, and were flown by the same pilots throughout the trials. Spitfire Pilot, Flight Lieutenant Wann, Hap Pilot, Squadron Leader Jackson.

2. The first test was carried out by normally fitted Spitfire commencing at a height of 17,000 feet, and the following conclusions were reached:-

(1) Hap considerably more manoeuvrable than the Spitfire at low speeds.

(11) Hap able to turn and loop in smaller radius than Spit.

(111) Hap able to carry out any aerobatic manoeuvre at a much slower speed than the Spit (EG Loop Hap 200 m.p.h. Spit 250 m.p.h.)

(1V) Spitfire unable to evade Hap, although at a speed of 330 m.p.h., it was much more difficult for Hap to follow Spit in diving aileron rolls.

(V1) Both pilots consider the Spit is outclassed by Hap at all heights up to 20,000 feet.

(V11) Accurate comparative speed and climbing tests were not carried out, but it is considered that the Spit does not normally possess any outstanding qualifications which permit it to gain an advantage over the Hap in equal circumstances.

3. Tests, numbers 2 and 3 were carried out at 17,000 and 27,000 respectively, during which the Spitfire Pilot wore the Cotton Suit. The tests were handicapped due to the fact that neither of the aircraft were fitted with accelerometers and the Spitfire stall warning device and max G warning device were inoperative. Because of this the Spitfire was not subjected to excessive "G" at any time throughout the test.

4. The Spitfire Pilot never experienced any blacking out conditions, while the Hap Pilot greyed or blacked out on occassions. The Pilot of Hap considers that his tolerance is above average, as he registered 7 G's on an accelerometer fitted to a Spitfire at Laverton a few days later.

A06/43

As a result of the trials conducted, the following conclusions were reached:-

(1) In all manoeuvres where high speed and high G were combined the Spit was able to out-manoeuvre the Hap if the Spit Pilot was wearing the Suit.

(11) To obtain maximum advantage from the use of the Suit is is necessary to maintain a minimum speed of 250 m.p.h.

(111) If the Spitfire has a height advantage over the Hap of approximately 4000 feet, it is able to attack the Hap and regain its height advantage by using its excess speed to climb vertically.

(1V) The best manoeuvres for evasive tactics are:-

(a) High speed diving turn maintaining approximately 7G.

(b) Half-rolling from 45 degs. dive at 330 m.p.h. with vertical climb to follow. It was found that the Hap finished up about 1000 feet below after this manoeuvre. This is considered a very good evasive action near the ground. It should be possible, if heights and speeds are correctly worked out, to crash an enemy aircraft attempting to follow round without the Cotton Suit.

(c) High speed loops and rolls off the top at high G. After 3 loops started at 330 m.p.h., Hap on Spit's tail (25 yds.) Spitfire was 150 yards behind Hap, and was able to get a shot at it.

(V) Spitfire had an approximate speed advantage of 30 m.p.h. at 26,000.

(V1) Spitfire initially gained speed slightly faster than Hap in a vertical dive.

(V11) Spitfire on Hap's tail. Hap did high speed evasive action. Spitfire was easily able to follow and also to allow deflection. When speed of Hap dropped to below 200 m.p.h. it promptly gained on Spitfire in turns.

C.A. Wann

Flight Lieutenant, T.O.R.(F)

A06/43

SECRET

COPY

From : Headquarters, No. 1 Fighter Wing.

To : Headquarters, North Western Area.

DATE : 26th May, 1943.

REF : 7/7/Air.

SPITFIRE VERSUS ZEKE - TACTICS.

Reference North Western Area Signal A.994 dated 25th May, 1943.

2. The tactics which Spitfire pilots in this Area have been instructed to employ against Jap fighters encountered are set out briefly below. They have been decided upon after a close study of the somewhat meagre experience of combats, and the characteristics of the types obtained from intelligence sources. Tactics naturally are not hard and fast but are subject to review from time to time in the light of additional experience.

3. Points favouring the Spitfire are :-

(a) Maximum level speed at all heights.
(b) Manoeuvrability at high speeds, and
(c) Diving speed.

Zekes on the other hand are more manoeuvrable at low speeds. Characteristics giving no appreciable advantage to either type over the other are :-

(a) Service ceiling, and
(b) Rate of climb.

Although the rate of climb is approximately the same the Spitfire appears to climb and zoom at a slightly shallower angle and higher speed than the Zeke, thus opening the range by covering a greater plan distance.

4. Factors primarily affecting "dogfighting" are :-

(a) Speed of the aircraft engaged.
(b) Stalling characteristics.

Where speeds are in excess 250 m.p.h. the "g" which a pilot can impose without "blacking out" is the limiting factor so that no advantage can be expected on either side. At speeds below 250 m.p.h. however, due to the higher wing loading of the Spitfire, a "high speed stall" will occur if the pilot attempts to turn with a Zeke at progressively lower speeds and smaller radii of the turning circle. The conclusion drawn is that in a sustained "dogfight", irrespective of the speed at which it is commenced, the advantage must pass ultimately to the Zeke.

5. Tactics in these circumstances are :-

(a) Endeavour to take station at least 1000 to 2000 feet above and up sun of fighter(s) to be attacked.
(b) Attacks may be carried out from any angle from head on to dead astern, but where a no or small deflection shot is possible it should be taken.
(c) Break should be a zoom away to one side to retain height advantage, up sun if possible, care being taken not to over-run the aircraft being attacked.

/Page 2 .....

(d) Each deliberate attack should be separate and undertaken only with the advantage of height.

(e) DO NOT ATTEMPT TO REMAIN AND DOGFIGHT.

(f) When being attacked or attack is imminent and complementary attack is not possible, pilot should open range by quickest possible method. i.e. diving, turning under and away from attack, etc.

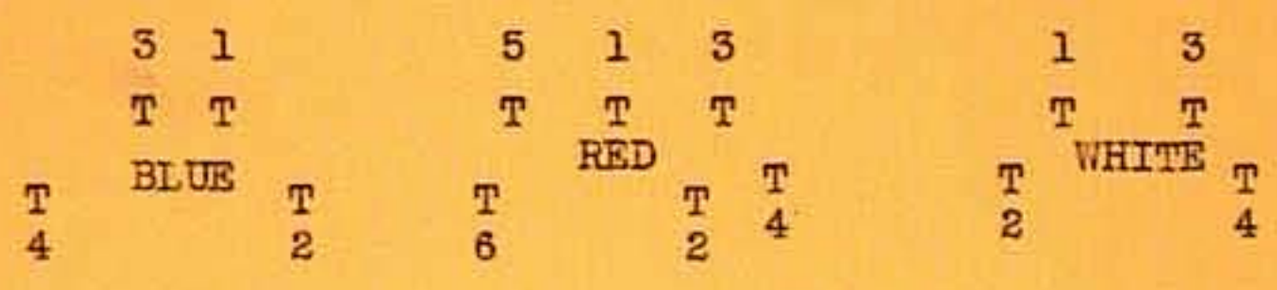
(g) When hard pressed "everything into one corner" i.e. violent break preferably under the attacking aircraft and into a vertical dive. Follow this by an aileron turn as speed builds up. Until speed builds up take violent evasive action as necessary, i.e. rudder and or elevator to throw attacking pilots aim off the aircraft.

(h) Favourite "break" by Zekes when attacked from the rear, is a steep zoom combined with turn away to one side.
Another frequently used is the full loop with the object of reversing the relative positions of attacker and attacked. Spitfire break at sub para (c) above is designed to counter either of these manoeuvres.

(i) Zeke pilots air discipline when acting as bomber escort is good. Defensive action only sufficient to protect bombers is taken normally and they reform immediately attack ceases. Zekes do not willingly "dogfight" and will not follow up an advantage if it takes them away either from the bombers or from their track home.

(j) Short range engagements are likely to favour the Spitfire, due to its sturdier construction and armour. Hence it is advisable to "get in" and "get out."

6. Basic element of tactical formation is the "loose pair." Two or three pairs comprise each "section and two or more sections make up the Squadron. Battle formation is usually as shown below:-




When not in the vicinity of the enemy squadron may climb either in battle formation, sections in line astern as below:-


Major changes of direction are by "cross-over" turns by sections, or individual aircraft turn about in the same direction after squadron is line abreast, i.e. "port" or "starboard."

7. Movement of the Wing can be effected in the same manner. In meeting raids the object is to rendezvous the Wing and make contact with full numbers. The wing leader allots specific tasks to squadrons immediately after giving "tally ho."

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Positioning of the squadron to carry out its task is at the discretion of the squadron leader.

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