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'Going downhill': the consequences of the Stabilisation Scheme on Fighter Command during the Battle of Britain and into 1941

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ABSTRACT
By September 1940 the quality of pilots supplied to Fighter Command had become unacceptably low. Reducing earlier stages of training was meant to be replaced by increased Operational Training Unit instruction, but this merely provided conversion to operational type. To preserve the first-line fighter force Fighter Command adopted a 'Stabilisation Scheme', relegating a third of squadrons to a training role. Pilot demand remained high and the Stabilisation Scheme was retained until pilot numbers in first-line squadrons were finally satisfactory in June 1941, and the need for training squadrons disappeared, despite increases in flying accidents during 1941.

Introduction

On 7 September 1940 a meeting took place at RAF Bentley Priory, the headquarters of Fighter Command.[1] By September the quality of pilots provided to Fighter Command from Operational Training Units (OTUs) had fallen to an unacceptable level and drastic measures had become necessary to preserve the first-line fighter force. This meeting is represented to a reasonable degree within the historiography, although

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[1]The UK National Archives (hereinafter TNA): AIR 16/330, Air Ministry: Fighter Command; Registered Files, Reinforcement of No. 11 Group, Minutes of a Conference held at Headquarters, Fighter Command, on Saturday 7 September 1940.

the level of detail varies. All accounts agree on the reclassification of the squadrons within Fighter Command.[2] Several convey the difficulty that the other participants had in persuading Air Vice-Marshal (AVM) Sholto Douglas, the Deputy Chief of the Air Staff that the pilot crisis was real and immediate action was essential.[3] Predictably, the defensive and selective Douglas memoir does not mention either the meeting or classification of squadrons at all, although the Douglas despatch does acknowledge the decline in operational pilot quality and squadron classes.[4] The historiography also reflects the understated insistence of Air Chief Marshal (ACM) Sir Hugh Dowding in the meeting minutes that his command had to prepare 'to go downhill'.[5]

In order to understand how this situation developed, it is necessary to go back to before the Second World War began, to give context to both the long and short-term developments of the Royal Air Force (RAF). This article shows how the processes of continuity and change within British pre-war air power policy and practice during the expansion of the RAF led to training resources being compromised due to shortages of aircraft and crews. Despite attempts to rectify deficiencies, the enormous demand for pilots following the fall of France required drastic measures to increase pilot production. These amendments increased the proportion of training carried out at the operational conversion stage, at the expense of earlier stages of training. As the quality of pilots supplied to Fighter Command deteriorated, a 'Stabilisation Scheme' was implemented to manage resources which enabled daylight operations to continue. While demand for casualty replacement fell after the end of the Battle of Britain, squadrons continued to be inundated with trainees from OTUs so that they became congested with non-operational pilots. After the Stabilisation Scheme was formally rescinded in December 1940, the pilot supply crisis was considered to be over. Despite the formation of additional OTUs to improve pilot supply, several factors combined to aggravate the pilot shortage. This meant that pilots joining squadrons during the first half of 1941 still required further training before they could be

[2]Stephen Bungay, *The Most Dangerous Enemy,* (London: Aurum, 2000), p. 297; Richard Hough and Denis Richards, *The Battle of Britain – The Jubilee History,* (London: Hodder and Stoughton, 1989), p. 251; Francis K. Mason, *Battle Over Britain*, (London: McWhirter Twins,1969), p. 355; Derek Wood and Derek Dempster, *The Narrow Margin*, (London: Arrow, 1969), p. 220.

[3]Peter Flint, *Dowding and Headquarters Fighter Command,* (Shrewsbury: Airlife, 1996), pp. 111-112; James Holland, *The Battle of Britain,* (London: Bantam, 2010), pp. 529-531; John Ray, *The Battle of Britain: New Perspectives*, (London: Arms and Armour, 1994), pp. 90-91.

[4]Sholto Douglas, *Years of Command,* (London: Collins, 1966) and Sholto Douglas, 'Air Operations by Fighter Command from 25 November 1940 to 31 December 1941', *The London Gazette*, 16 September 1948, Number 38404, p. 5021.

[5] TNA, AIR 16/330, Minutes of a Conference on 7 September 1940, p. 1.

considered as operational, effectively reintroducing the Stabilisation Scheme. As the year progressed the accident rate remained high, prompting an increase in the length of courses to reverse the deterioration in the standard of training. The implications of, and reasons for this scheme, have been largely ignored or misunderstood in the historiography of the Battle of Britain.

The Pre-War Expansion of the RAF

Despite being seen as an era of 'appeasement', the expansion of the RAF had begun in 1934, but Scheme 'A' which was to give the Metropolitan (UK based) Air Force twenty-eight fighter squadrons by April 1939 had made little progress by the spring of 1935.[6] In order to achieve air parity with Germany, a ministerial committee reported that this scheme should be expanded to contain thirty-five fighter squadrons, and accelerated to give a completion date of April 1937. After the Cabinet approved the committee's report in June, the Air Ministry were then committed to fulfilling the requirements of Expansion Scheme 'C'.[7] John Ferris has described British air defence as 'planned for a bad case but not the worst case', against an enemy flying across the North Sea rather than being based on the other side of the English Channel.[8] By 7 November 1938 fifty squadrons of fighters had been sanctioned under the full 'ideal' scheme.[9] Between 1936 and 1938, however, the British aircraft industry fell eighteen months behind those of Germany and the United States in monoplane development so that the RAF received no modern aircraft during this period, which impacted British air expansion.[10] Fighter Command remained at a nominal strength of thirty squadrons until the autumn of 1938. At this point a further eight squadrons were to be formed under the intermediate stage of the 'ideal' scheme by April 1940. Expansion Scheme 'M' then replaced this to require forty-four squadrons by April 1939, before starting to form ten more in the year beginning April 1940. This was intended to allow the Command to spend the intervening year discarding obsolete types for the monoplane fighters expected to be available by that date.[11] By September 1939 only twenty-two of the thirty-nine Fighter Command squadrons had received their monoplane fighters

[6]T. C. G. James, *The Growth of Fighter Command,* (London: Frank Cass, 2002), p. 18. Expansion Scheme 'A' also allowed for forty-seven bomber squadrons as well as those for fighters. Further reference to Expansion Schemes in this paper exclude bomber figures for the sake of clarity.

[7]James, *Growth of Fighter Command*, p. 20.

[8]John Ferris, 'Achieving Air Ascendancy: Challenge and Response in British Strategic Air Defence, 1915-40', in *Air Power History: Turning Points from Kitty Hawk to Kosovo*, eds. Sebastian Cox and Peter Gray, (London: Frank Cass, 2002), pp. 21-50, p. 42.

[9]James, *Growth of Fighter Command*, p. 37.

[10]Ferris, 'Achieving Air Ascendancy', p. 43; Sebastian Ritchie, *Industry and Air Power: The Expansion of British Aircraft Production, 1935-1941,* (Abingdon: Routledge, 1997), p. 258.

[11]James, *Growth of Fighter Command*, p. 41.

and the formation of another eighteen fighter squadrons equipped with inadequate machines further exacerbated the shortage of suitable aircraft.[12]

The Impact of Expansion on Pilot Supply

Expansion of the Royal Air Force was obviously not limited to aircraft: without pilots to fly them the schemes would be pointless. In 1938 it was calculated that there would be a deficiency of 720 regular pilots by April 1940 that could not be corrected until September 1940. To address this problem, eight new Flying Training Schools (FTSs) were required, but since the personnel to man these would have to be drawn from squadrons in the first-line, concern was expressed at the impact on operational efficiency, so the number of extra FTSs was cut down to four.[13] The difficulty of simultaneously expanding Fighter Command while remaining an effective fighting force can be demonstrated by the position in September 1938. Only five of the twenty-nine squadrons were using modern equipment, the Hurricane, although three more would soon receive this type.[14] The problems of equipment pale into insignificance compared to the reserve pilot position. Only 200 out of the total pilot reserve of 2,500 were fit to join service units immediately. While the others were brought up to the required standard of training, the replacement of casualties in operational commands would be impossible.[15] Inter-war planning had paid careful attention to wastage and training, but as this planning was for a 'bad case', it assumed that home defence fighter squadrons would be outnumbered by two or perhaps three to one, from across the North Sea. The fall of France and the Low Countries meant that in the summer of 1940 Fighter Command faced four times its strength, described by Ferris as being 'next door'.[16] The shortage of modern aircraft meant that only a minority of pilots were trained to fly them because such types had only just become available.[17] The conversion of the large number of fighter squadrons still operating obsolete aircraft at the beginning of the war did not allow an increase in the reserve of suitably trained pilots.

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[12]Denis Richards, *Royal Air Force 1939-1945*, Vol. I, (London: HMSO, 1953), p. 65.

[13]TNA, AIR 41/4, Air Ministry: Air Historical Branch Narratives, Flying Training 1934-1942 (1945), pp. 142-143.

[14]The Hurricane had entered service in December 1937 and would not be in widespread service until December 1938. The Spitfire entered service in August 1938, but was not yet operational, and widespread service would not be achieved until September 1939. The third of the initial 'monoplane generation' fighters, the Defiant, would not be in service until well after war was declared: Francis K. Mason, *The British Fighter Since 1912,* (London: Putnam, 1992), pp. 254, pp. 258-259 & pp. 268-269.

[15] James, *Growth of Fighter Command*, pp. 42-45.

[16] Ferris, 'Achieving Air Ascendancy', p. 43.

[17] Ferris, 'Achieving Air Ascendancy', p. 43.

The Introduction of Operational Training

By May 1938, however, the Chief of the Air Staff, ACM Sir Cyril Newall, had recognised the need for training units to bridge the gap between FTS and operational squadrons. This was to be achieved using 'lighter types' of modern aircraft with similar characteristics to those in use at the squadrons.[18] In November 1938 the role of these new units was expanded beyond training to be used as pilot pools for the replacement of casualties in both Bomber and Fighter Commands. Priority was given to Fighter Command for the first two of the new units, now known as 'Group Pools', to serve No. 11 and No. 12 Groups exclusively.[19] It was acknowledged that trained replacements were 'an urgent necessity' for Fighter Command as it would be obliged to respond to enemy attacks, and was unable to limit casualties by reducing operations in the same way that Bomber Command could.[20] There would, however, be a delay before either Group Pool began training pilots. The first 'extra-ordinary measures' to strengthen Fighter Command were taken in the autumn of 1938 for a possible conflict in the April of 1939. As the 'critical period' was predicted to be the first three or four weeks of war, only a small reserve of fighters could be retained to ensure that line squadrons were at full strength.[21] The Air Officer Commanding of Fighter Command, ACM Dowding, concentrated on increasing first-line strength at all costs in 'working up' to 'full operational pitch'. Shortage of time and lack of modern aircraft meant that Fighter Command was the only Command to oppose plans forming special training units for operational training.[22] No. 11 Group Pool therefore only began operating in March 1939.[23] The Air Ministry pointed out that the absence of Fighter Group Pools would lead to a shortage of casualty replacements when the intensity of fighting increased, and that operational training aircraft could be used to reinforce the first-line in an emergency. Fighter Command therefore 'reluctantly agreed' to the formation of the No. 12 Group Pool in September 1939. Both Pools together were, however, only capable of producing half of the planned output of 1,100 pilots per year.[24] It is not difficult to argue that Dowding faced an impossible choice; either he continued to increase the number of first-line squadrons to meet the requirements of Scheme 'M' at the expense of operational training, or he slowed down the rate of expansion to provide aircraft for training, which would cease as soon as those aircraft were used to

[18]TNA, AIR 41/4, Flying Training, p. 162. It was found that the only aircraft with 'similar characteristics' were those in use by the operational squadrons.
[19]James, *Growth of Fighter Command*, pp. 50-51.
[20]TNA, AIR 41/4, Flying Training, p. 230.
[21]James, *Growth of Fighter Command*, p. 50.
[22]TNA, AIR 41/71, Air Ministry: Air Historical Branch Narratives, Flying Training, Vol. II, Organisation, Part III, Operational Training (1952), p. 817.
[23]James, *Growth of Fighter Command,* p. 51.
[24]TNA, AIR 41/71, Operational Training. p. 819.

reinforce the first-line. Either course of action could be seen as the wrong decision and was guaranteed to lead to criticism.

The 'Phoney War' and the Aftermath of the Campaign in Western Europe

During the 'Phoney War' the Group Pools struggled to meet the requirements of the fighter squadrons in France. This led the Air Ministry to overrule Fighter Command's objections about the diversion of resources to the operational training organisation at the end of April 1940.[25] The true rate of combat wastage during the Battle of France has been demonstrated by Peter Dye; nearly 1,000 aircraft were lost in a month, close to the losses predicted for maximum-effort operations.[26] Altogether 396 Hurricanes and 67 Spitfires were lost outright during the French campaign, with nearly 280 fighter pilots killed, missing or taken prisoner, while another sixty were wounded.[27] Following the fall of France, the enormous demand for pilots prompted sweeping changes within Training Command to increase output. Initially this was attempted by posting pilots from Service Flying Training Schools (SFTSs) a week before the end of the course. During May fifty-two fighter pilots were obtained by this method, but clearly much greater numbers would be required in the future months.[28] By 20 June 1940 there were fifty-eight squadrons in Fighter Command, compared to forty-seven on 10 May. These numbers were, however, deceptive, as twelve of the squadrons were unfit for operations. In addition, thirty-seven of the remaining squadrons had no more than thirteen aircraft on strength compared to the required sixteen initial equipment establishment. Only nine squadrons within Fighter Command were therefore at full strength. It was to be 'well into July' (with the Battle of Britain officially starting on 10 July) before all Fighter Command squadrons were fit for operations, but already a pilot deficiency of nearly twenty percent of establishment was apparent.[29] The fighter OTU course had been reduced from four to two weeks in the last week of May, and while this increased the number of pilots produced, the training became little more than a conversion to operational type. With insufficient OTU capacity available it was necessary for operational squadrons to take significant numbers of pilots straight from SFTS for conversion and training.[30] A series of amendments to training (the First to Third Revises) were then used to further reduce the course length of pilot training,

[25]TNA, AIR 41/4, Flying Training, pp. 246-247.
[26]Peter Dye, Logistics Doctrine and the Impact of War: The Royal Air Force's Experience in the Second World War', in *Air Power History*, eds. Cox and Gray, pp. 207-223, p. 219.
[27] James, *Growth of Fighter Command*, p. 98.
[28] TNA,TNA, AIR 41/4, Flying Training, p. 309.
[29] James, *Growth of Fighter Command*, pp. 98-99. The start date of the Battle is as defined in Basil Collier, *The Defence of the United Kingdom*, (London: HMSO, 1957), pp. v-vi.
[30] TNA,TNA, AIR 41/4, Flying Training, pp. 497-498.

consequently introducing a fundamental deficiency into the training system which would continue throughout 1941.

The Training 'Revises'

For the First Revise, in June 1940, the Elementary Flying Training School (EFTS) course was reduced by a week to seven weeks, with a fifteen percent increase in pupil numbers and the SFTS course (for fighter pilots only) cut by four weeks to twelve, with twin-engine OTUs to operate a fourteen-week course. To accommodate the larger flow of pupils it was intended to increase the number of aircraft at each School to provide 100 hours of training, but this was not possible so the SFTS course was reduced to eighty hours per pupil.[31] The Second Revise in August 1940 shortened all SFTS courses to twelve weeks and cut an extra week off the EFTS course down to fifty hours. Since the numbers of training aircraft could not be increased the intention was to transfer a proportion of the instruction displaced from twin-engine SFTS courses to a lengthened OTU course. At the same time, it was also intended that the reduction of the fighter OTU course which had been implemented in May 1940 would be reversed back to four weeks and all pilots passed through an OTU before going to a fighter squadron. By 13 August it was realised that this increase would have to be postponed, so the fighter OTUs continued to provide nothing more than a conversion course.[32] From June 1940, therefore, it had been necessary for all new pilots joining Fighter Command to receive further training in their squadrons, which was still possible during the *Kanalkampf* (Channel Attack) phase of the Battle of Britain. When operations escalated after the *Adlerangriff* (Eagle Attack) phase began this training became difficult, and was then abandoned once 'The Battle of the Airfields' began in late August.[33] The First and Second Revises between them increased the pilot output from the SFTSs by thirty percent, but the Battle of Britain demonstrated that the largest possible output was imperative. The only options to further boost output were to increase the effort from instructors while also providing the SFTS with more aircraft, or make a further cut in the duration of the course.

On 20 August the Third Revise implemented both of these options to increase pilot output. The EFTS course was cut further to five weeks and thirty-five hours flying, while all SFTS courses were reduced to ten weeks comprising seventy-two hours of flying, with no night training. At the same time all SFTSs were to train an additional

[31]Before the reduction in hours, the length of RAF pilot training had already only been eighty percent of the equivalent *Luftwaffe* system, Williamson Murray, *The Luftwaffe 1933-45, Strategy for Defeat* (London: Brassey's, 1983), p. 314.

[32]TNA, AIR 20/2759, Air Ministry: Papers Accumulated by the Air Historical Branch, Vice-Chief of Air Staff; Miscellaneous Papers: Deputy Chief of Air Staff, Replacement of Pilots in Fighter Squadrons, 13 August 1940, p. 2.

[33]Phases of the Battle of Britain follow those from Collier, *Defence of the UK*, pp. v-vi.

twenty-five percent of pupils, with no increase in aircraft or instructors. Air Marshal (AM) Lawrence Pattinson, the Commander-in-Chief (C-in-C) of Flying Training Command, questioned whether pilots would be competent enough to handle operational aircraft at OTUs after only 120 hours of combined flying at EFTS and SFTS. He said,

> I consider that pupils with a total of 120 flying hours and with only ten weeks training in the SFTS will not be fit to fly operational types. In my opinion, a reduction to ten weeks would have the effect of increasing flying accident rate and reducing the flying ability of the pilots that were finally passed out of the OTUs.

However, 'a body of opinion' considered the transfer of training to the OTU stage would make no material difference to the final standard, and that Flying Training Command's attitude appeared conservative and reactionary. What mattered was that the theoretical pilot output was now double what it had been in May, which equalled the estimated demands of the first line, giving the prospect of a balanced flow into the OTUs.[34] Although these changes were too late to influence pilot supply during the Battle of Britain, the effects of the Third Revise would be felt by Fighter Command for many months afterwards.

The 'Stabilisation Scheme'

By September 1940 it was clear that the number and quality of pilots within Fighter Command had fallen drastically during the August battles. The demand for pilots meant that OTU course length ceased to have any meaning. Pilots were passed onto squadrons as soon as they were considered capable and the training was completely *ad hoc*. John Terraine argued that 'the RAF's disorderly pre-war expansion' had stretched training resources to the limit, although he does not document the consequences of the struggling training system.[35] As August ended the forty-nine and a half operational Spitfire and Hurricane squadrons were short of 352 pilots based on a twenty six pilot squadron establishment, or a shortage of 154 pilots from a twenty two pilot establishment. No manipulation of the numbers could disguise the fact that 107 pilots within these figures were non-operational, as shown in Table 1.[36]

[34]TNA, AIR 41/4, Flying Training, pp. 313-315.
[35]John Terraine, *The Right of the Line*, (London: Hodder and Stoughton, 1985), p. 193.
[36]TNA, AIR 20/2062, Directorate of Operations (HOME); Fighter Command: Miscellaneous Papers, Memorandum on the Pilot Position in British Fighter Squadrons, 2 September 1940, Table A.

Position in Squadrons on Selected Dates		1 August 1940		15 August 1940		31 August 1940	
		H'cane	Sp'fire	H'cane	Sp'fire	H'cane	Sp'fire
Operational Pilots		530	363	512	334	498	330
Non-operational Pilots		125	39	63	41	54	53
Total Pilots (Aircraft)		655	402	575	375	552	383
Total Pilots (Command)		1057		950		935	
Total Non-operational		164		104		107	
26 Pilots	Establish-ment	793	494	793	494	793	494
	Shortage	138	92	218	119	241	111
	Total Shortage	230		337		352	
22 Pilots	Establish-ment	671	418	671	418	671	418
	Shortage	16	16	96	43	119	35
	Total Shortage	32		139		154	

Table 1: Pilot position in Fighter Command, August 1940[37]

The general quality of pilots being provided to Fighter Command from OTUs had fallen to an unacceptable level. Before May 1940 pilots had received twenty eight weeks training before joining a fighter squadron, but after the First Revise this was reduced to twenty one, as shown in Figure 1.

[37]Adapted from TNA, AIR 20/2062, Memorandum on the Pilot Position in British Fighter Squadrons, Table A

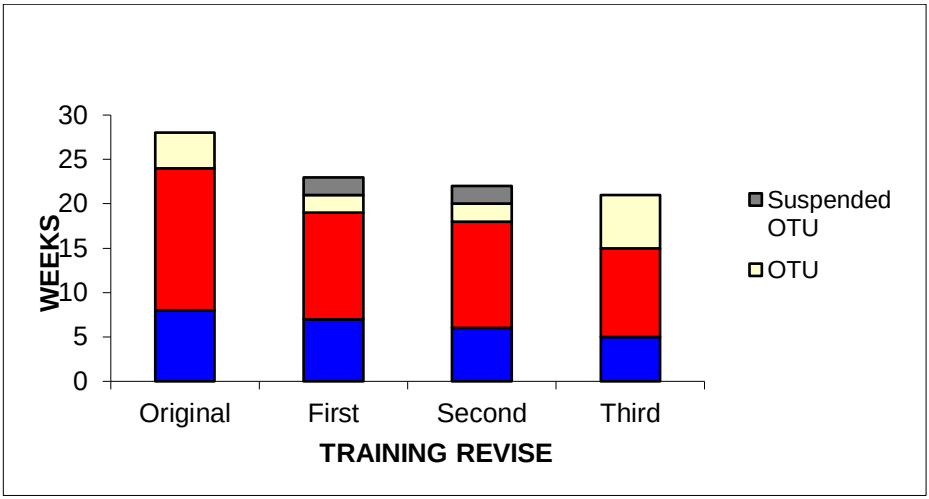

Figure 1: Changes to pilot training in 1940

There had already been a noticeable decline in quality amongst replacement pilots from training schools since the fall of France, and in July 1940 out of 107 pilots killed eighteen had been died in flying accidents.[38] A system of Sector Training Flights had previously been used in 11 Group to bring OTU pilots up to operational standards, but the heavy fighting in August made this impossible.[39]

Class	Group	Minimum Pilot Requirements	
		Operational	Non-operational
A	11	Constantly maintained at 16 pilots	N/A
A	10 and 12	16 pilots	As convenient
B	10, 12 and 13	16 pilots	Up to 6 pilots
C	10, 12 and 13	3 pilots (8 for Nos. 3, 232 and 245 Squadrons)	Up to establishment
All Blenheim and Defiant squadrons to be maintained to Class B standard			

Table 2: Squadron Classifications under the Stabilisation Scheme[40]

[38]Bungay, *The Most Dangerous Enemy,* p. 194.
[39]TNA, AIR 16/330, Minutes of a Conference on 7 September 1940, p. 8.
[40]Adapted from TNA, AIR 16/330, Policy for Maintenance of Fighter Squadrons in Pilots, 8 September 1940, p. 1

Following the meeting at Bentley Priory ACM Dowding was forced to use extreme measures to preserve the first-line fighter force and employ a 'Stabilisation Scheme' which categorised his squadrons in such a way that a third of them (C squadrons) were relegated to a training role.[41] Although the normal establishment for fighter squadrons was twenty-six pilots, the scheme prescribed the minimum requirements for each class of squadron as shown in Table 2.[42] Dowding realised that his command was 'going downhill', and that the reduction in unit establishment to consider anything above fifteen pilots as being acceptable would greatly increase the strain on his squadrons.[43] Nevertheless he knew that if Fighter Command could hold on and maintain the front line for a few more weeks, the deteriorating weather conditions would prevent an invasion attempt for the rest of the year.[44] His first-line strength of twenty nine A squadrons (South East England) would be maintained by pilots trained in the nineteen C squadrons shown in Table 3.

Class	Group	Hurricane	Spitfire	Total
A	10	2	2	4
	11	14	7	21
	12	2	2	4
	Total	18	11	29
B	10	1	-	1
	12	-	1	1
	13	2½	1	3½
	Total	3½	2	5½
C	10	2	1	3
	12	4	3	7
	13	7	2	9
	Total	13	6	19

Table 3: Distribution of Squadrons[45]

[41]Richards, *Royal Air Force*, Vol. I, p. 192.
[42]TNA, AIR 41/18, Air Defence of Great Britain (subsequently ADGB), Vol. IV - The Beginning of the Fighter Offensive 1940–1941 (1947), Part 1, Paragraph 59.
[43]TNA, AIR 16/330, Minutes of a Conference on 7 September 1940, p. 6.
[44]Vincent Orange, *Dowding of Fighter Command*, (London: Grub Street, 2008), p. 196.
[45]Adapted from TNA, AIR 16/330, Policy for Maintenance of Fighter Squadrons in Pilots, 8 September 1940, p. 2

Although the major daylight battles were over before this scheme took effect, heavy fighting still continued until the end of October 1940.[46] While the quality and experience of pilots joining Fighter Command from the OTUs was debatable, Peter Dye has demonstrated that the overall strength of Fighter Command continued to increase throughout the Battle of Britain.[47] Although the training of pilots from OTUs was continued primarily in the C squadrons, an analysis by Tony Mansell showed that nearly half of the pilots posted into 11 Group after the Stabilisation Scheme took effect had previously served there, which mitigated the decline in quality, which the standard works on the campaign fail to acknowledge.[48] The deterioration in the overall strength of Fighter Command was, however, clear to those within its headquarters. At the end of July, the Command had fielded sixty two squadrons and 1,046 operational pilots and whilst the number of squadrons had increased to sixty-six and half by the end of October 1940, the number of operational pilots was only 1,042.[49] The controlled decline of Fighter Command envisaged by Dowding meant that he could still field twenty-six A squadrons with two B squadrons in reserve at the beginning of November.[50] Within the historiography, Francis Mason described Dowding's decision to 'milk and dismember' his squadrons as completely vindicated, despite Collier insistence that scheme was 'unwelcome'.[51]

Demand for casualty replacements in A and B squadrons fell after the end of the Battle of Britain, but C squadrons continued to be inundated with pilots from OTUs. At the end of October Fighter Command consisted of 1,506 pilots, but 464 of these were considered as 'non-operational'.[52] The intensity of fighting during the Battle of Britain had demonstrated that sixty two front-line squadrons required a supply of 108 operationally trained pilots per week.[53] The pilot output from OTUs during this period has been estimated at 260 per month, which demonstrates that very few of those

[46]Michael J. F. Bowyer, *The Battle of Britain – 50 Years On*, (Wellingborough: Patrick Stephens, 1990), p. 207.
[47]Peter Dye, 'Logistics and the Battle of Britain', *Air Power Review*, 2000; 3 (4), pp. 14-53, p. 29.
[48]Tony Mansell, 'Dowding and his Manpower. The Case of Hurricane and Spitfire Pilots of the RAF and its Reserves in 11 Group', *Royal Air Force Historical Society Journal*, 22 (2000), pp. 126-131, p. 128.
[49]TNA, AIR 16/374, Fighter Reinforcement of the Middle East, Notes on Pilot Position, Fighter Command, as at 31 October 1940, 2 November 1940, p. 1.
[50]Douglas, 'Air Operations by Fighter Command', *The London Gazette*, Number 38404, p. 5021.
[51]Mason, *Battle Over Britain*, p. 426 and Collier, *Defence of the UK*, p. 250.
[52] TNA, AIR 41/18, ADGB, Vol. IV, Part 1, Paragraph 59.
[53]TNA, AIR 41/4, Flying Training, p. 502.

trainees had achieved operational status after reaching a squadron.[54] By November 1940 the C squadrons had become so congested that they held 230 operational and 320 non-operational pilots, an average of twelve operational and seventeen non-operational pilots per squadron.[55] Although Bungay insists that Fighter Command was 40% 'stronger' by November 1940, this calculation is based on total pilot numbers, and not the large number of non-operational pilots.[56] This overcrowding appeared to be addressed by increasing the length of the OTU course to four weeks and transferring some pilots to the Middle East, so that the Stabilisation Scheme could be abandoned in December 1940.[57] Mason provides a table that shows Fighter Command fielding nearly 1,500 aircraft at the end of December 1940, but does not provide the context of how many trained pilots were available, which the analysis above demonstrates problems with continuing supply.[58] Douglas had never really approved of the system, and one of his first acts as the new head of Fighter Command was to rescind it. 'This was a successful expedient but it was bad in principle', commented Sir Archibald Sinclair, the Secretary of State for Air in a letter to Winston Churchill, 'and you will be glad to hear that the new C-in-C, Fighter Command has decided to abandon it forthwith'.[59] The C squadrons were then able to train the pilots they already had and work towards operational status. The three existing fighter OTUs could not provide enough pilots from four week courses, and as Third Revise pilots would require an extra two weeks of training an expansion of the OTU organisation was essential.[60] Additional OTUs were therefore approved to ensure that pilot supply never fell to critical levels again, including the establishment of the first night fighter OTU in December 1940.[61] This optimistic outlook failed to take into account the consequences of the changes to training implemented during 1940.

The Decline in Pilot Supply During 1940-1941

By January 1941 it was clear there had been no improvement in pilot supply to Fighter Command. In many respects the situation had actually deteriorated. Although the Third Revise was supposed to have produced 1,800 pilots from SFTSs in November

[54]Dye, 'Logistics and the Battle of Britain', p. 29.
[55]TNA, AIR 41/4, Flying Training, pp. 501-502.
[56]Bungay, *The Most Dangerous Enemy,* p. 368.
[57]TNA AIR 41/71, Operational Training. p. 825.
[58]Mason, *Battle Over Britain*, p. 481.
[59]TNA, PREM 3/24/2, Prime Minister's Office: Operational Correspondence and Papers, AIR, Pilots, Training Schools, Employment of Pilots, Secretary of State for Air to Prime Minister, 29 November 1940.
[60]TNA, AIR 41/4, Flying Training, pp. 502-503.
[61]TNA, AIR 41/17, ADGB, Vol. III - Night Air Defence, June 1940 - December 1941 (1949), p. 90.

and December 1940, the reality was completely different.[62] Archibald was politically astute enough to have qualified this estimate with a caution of 'No provision is made for loss of output due to enemy interference or to exceptionally bad weather conditions'.[63] The pilot shortage was aggravated by the combination of several factors which exacerbated the crisis.

Towards the end of December 1940 SFTS units were finding the completion of Third Revise courses difficult. Each SFTS had to produce 7,200 flying hours per month from 108 aircraft. Shortage of spares and winter weather combined to extend courses by several weeks and reduce pilot output, so it would not be until June 1941 that a Third Revise SFTS course was completed within the scheduled ten weeks. By December 1940 lack of spare parts had rendered twenty one percent of SFTS Miles Master aircraft unserviceable. Around the same percentage of advanced trainers would be immobilised by shortage of spares until July 1941 when the situation began to improve.[64] The future supply of advanced trainers was also causing concern. Although the Air Ministry had asked for forty percent of all aircraft produced to be trainers, in January 1941 Sinclair was complaining that this had been reduced to twenty percent and was continuing to decrease. He warned that this was delaying the expansion of the training organisation.[65] As well as the direct effect of bad weather in reducing the hours available for flying, the intensive operation of SFTS grass airfields had caused many to become unserviceable.[66]

Operations at the established OTUs were also disrupted over the winter of 1940-1941. As well as bad weather affecting flying, accommodation was a problem at 57 OTU (Hawarden), where tents had been used during the previous summer.[67] The situation for the new OTUs planned the previous autumn was even worse and none were yet operational. One OTU was held up by construction and accommodation difficulties, while a suitable station could not be found for a second. With the increase in fighter OTU course length, back to four weeks in November and then to six weeks in December, the three established OTUs produced few pilots during the winter of 1940-1941.[68] The combined output of all three fighter OTUs in the first quarter of 1941 was only 471 pilots, giving an average of 157 pilots per unit. Considering it had been previously calculated that 108 pilots per week were required for sixty two

[62]TNA, CAB 66/13/27, Paper No. WP (40) 447, Royal Air Force Training, Memorandum by the Secretary of State for Air, 15 November 1940, Appendix C.
[63]TNA, CAB 66/13/27, Appendix C.
[64]TNA, AIR 41/4, Flying Training, p. 319.
[65]TNA, PREM 3/24/2, Secretary of State for Air to Prime Minister, 5 January 1941.
[66]TNA, AIR 41/4, Flying Training, p. 320.
[67]TNA, AIR 41/71, Operational Training. p. 828.
[68]TNA, AIR 41/4, Flying Training, p. 504.

frontline squadrons, the average production from each OTU was fewer than forty pilots per week.[69] It would take until April 1941 before all seven day-fighter OTUs were operating, with an obvious lag before pilots were produced, as shown in Table 4 and Figure 2.[70]

Month	No. of OTUS	Intake	% of Total Intake	Output	% of Total Output
January	3	169	3.7	188	5.1
February	4	154	3.3	137	3.7
March	7	312	6.8	146	3.9
April	7	286	6.2	213	5.7
May	7	335	7.3	229	6.2
June	7	468	10.2	411	11.1
July	8	549	11.9	387	10.4
August	8	540	11.7	400	10.8
September	8	503	10.9	475	12.8
October	8	539	11.7	459	12.4
November	8	382	8.3	340	9.2
December	8	370	8.0	326	8.8
Jan - Jun	6	1724	37.4	1324	35.7
July - Dec	8	2883	62.6	2387	64.3
Totals		4607		3711	

Table 4: Intake and output of pupils from fighter OTUs during 1941[71]

[69]TNA, AIR 16/1144, Record and History of Operational Training Units under Nos. 81 and 9 Groups and No. 12 Group: 1 July-31 December 1941, Vol. II, Input and Output of Pupils in 1941, pp. 488-493.
[70]TNA, AIR 41/71, Operational Training. p. 828.
[71]Adapted from TNA, AIR 16/874 and AIR 16/1144

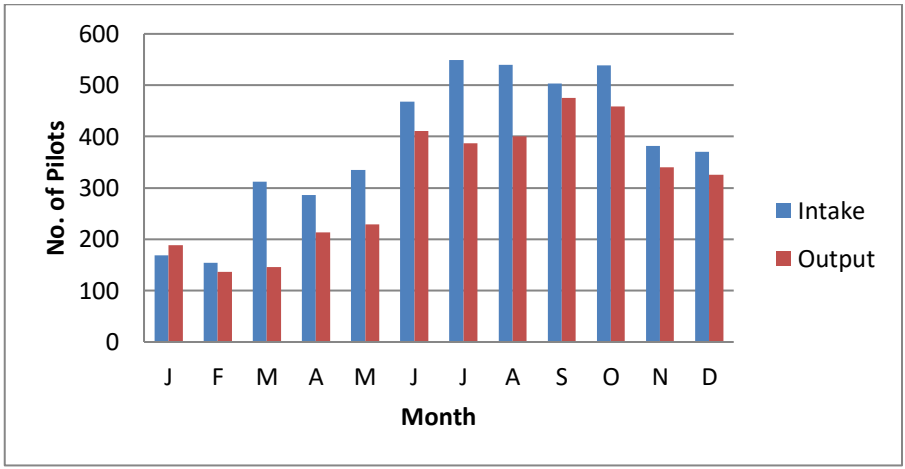

Figure 2: Intake & Output from Fighter OTUS in 1941.

Fighter Command was still forming new squadrons to meet the renewed daylight attacks expected when the Battle of Britain recommenced in spring 1941. AVM Douglas had estimated that eighty squadrons, each with twenty three pilots would be required to meet this threat.[72] By the end of January 1941, however, 300 of the 1,461 pilots in Fighter Command were considered 'not fit for operations'.[73] Douglas had already given up 119 pilots to be trained as instructors by the end of January 1941 and was expected to provide another 100 for the new OTUs forming by the end of March.[74] Although the pilot establishment in fighter squadrons had been set at twenty three at the end of 1940, by this stage the establishment of pilots in fighter squadrons had fallen to about twenty one (compared to an overall average of 22.6 in October 1940), where it remained for the next three months. The decrease in experience continued between November 1940 and the end of March 1941 as Fighter Command lost 219 pilots killed and missing, with another 382 posted out of the Command, many to become instructors.[75] Offensive operations across the Channel between January and June 1941 also cost the Command another ninety three pilots lost, with 74 and 611 Squadrons each losing nine Spitfires on such operations during this period.[76] These

[72]TNA, AIR 41/18, ADGB, Vol. IV, Part 1, Paragraph 62.
[73]TNA, AIR 41/4, Flying Training, p. 505.
[74]TNA, AIR 16/491, Training at Operational Training Units, CFS Trained Flying Instructors for OTUs, 18 February 1941, p. 1.
[75]TNA, AIR 41/18, ADGB, Vol. IV, Part 1, Paragraph 60.
[76]John Foreman, *The Fighter Command War Diaries Vol 2: September 1940 to December 1941*(Walton-on-Thames: Air Research, 1998), pp. 130-227.

included the experienced Battle of Britain pilot Squadron Leader John Mungo-Park of 74 Squadron, who was killed on 27 June 1941.[77]

The Reintroduction of the Stabilisation Scheme

The pilots coming from the OTUs were still inadequately trained, as despite the six week OTU course most pilots joining fighter squadrons during the winter of 1940-1941 had only managed to fly between ten and twenty hours in operational aircraft.[78] Lack of experienced pilots was evident as early as October 1940, when the transfer of 64 squadron to 11 Group was cancelled because only one out of four section leaders had 'experience of actual fighting', and seven of the remaining nineteen pilots were not sufficiently trained 'to be considered operational'.[79] At the beginning of February Douglas, who had been promoted to Air Marshal in November 1940, was clearly concerned, acknowledging that pilots needed to have completed 'about 50 hours flying' in an operational type aircraft before they could be considered 'operational'. The majority of recent pilots from OTUs had flown fewer than twenty hours due to bad weather restricting flying time, together with grass runways becoming unusable after heavy rain. Despite previously abandoning the Stabilisation Scheme on a point of 'principle', Douglas admitted that fighter squadrons were once again undertaking 'considerable training', with a further thirty or forty hours flying required before pilots could be classed as operational. With an eye towards the additional squadrons being formed, Douglas argued that 'the only alternative would be to extend the OTU course in excess of 6 weeks which would result in the flow of available pilots into the Command being reduced'.[80]

The Air Historical Branch narrative on operational training had no doubts about this 'virtual reintroduction of the Stabilisation Scheme'.[81] Neither did the Director of Operational Training, who cautioned Douglas on 20 February 1941 that under no circumstances should trainees be withdrawn from fighter OTUs until they had completed twenty hours on operational type. Whilst accepting that bad weather and unserviceable airfields had limited flying time, it was considered that courses should be lengthened to ensure all pilots received the minimum amount of instruction.[82]

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[77]Kenneth G. Wynn, *Men of the Battle of Britain* (Croydon: CCB Associates', 1999), p. 366.

[78]TNA, AIR 41/4, Flying Training, p. 505.

[79]TNA, AIR 16/330, Reinforcement of No. 11 Group, Operational State of No. 64 Squadron, 15 October 1940.

[80]TNA, AIR 16/491, Air Marshal Douglas to Under-Secretary of State for Air, 7 February 1941, pp. 1-2.

[81]TNA, AIR 41/71, Operational Training. p. 828.

[82]TNA, AIR 16/491, Director of Operational Training to Air Marshal Douglas, 20 February 1941, pp. 1-2.

Training facilities had decreased as units were moved to other parts of the Empire and were weakened further as airfields were handed over to operational squadrons.[83] By 8 February 1941 there were 270 non-operational pilots in Fighter Command, and there were concerns that while rushing pilots through OTUs might raise the establishment strength in squadrons on paper, it would actually lower efficiency by reducing the general standard of training. As the SFTS output was extremely small during this period due to poor weather conditions, the Director was clearly concerned that pilots with even fewer hours on operational aircraft would end up in fighter squadrons.[84]

Douglas responded by insisting that 'squadrons situated in the less active Groups are perfectly capable of accepting a larger number of non-operational pilots than they have at present', which was a perfect description of what had previously been considered a C squadron. He then argued that sticking to a rigid minimum of twenty hours would prevent Fighter Command accepting the full number of pilots available and mean that there would be unused training potential in quiet sectors. Incredibly, he went on to insist that 'passing out pilots from OTUs to squadrons with less than 20 hours will not depress the general standard of training in comparison with the past, because it has been very seldom that a figure of 20 hours per pilot has actually been obtained on passing out from OTUs'.[85] Arguing that the strength of Fighter Command would be reduced if it did not accept partially trained, non-operational pilots that did not increase fighting efficiency appears a singular view of reality at best. By insisting that pilots with fewer than twenty hours would not depress the general standard of training, Douglas ignored the increased importance of operational training in the Third Revise to the completion of overall training.[86] This argument looks even thinner after considering that pilots training at OTUs at the beginning of 1941 under the Third Revise had received seven weeks less training than their predecessors during the Battle of Britain before being introduced to operational aircraft (see Figure 1), something that would come back to concern Douglas.

By March Douglas was still sending pilots to squadrons with fewer than twenty hours flying at OTU, insisting that his squadrons were under strength, and was forming five new squadrons for which additional pilots were required. He was anticipating heavy casualties 'when the spring battle starts' and was 'naturally anxious to have all my

[83]TNA, AIR 10/5551, Air Ministry, Air Publications, Second World War 1939-1945: RAF Flying Training, Vol. I, Policy and Planning, p. 99.
[84]TNA, AIR 16/491, Director of Operational Training to Air Marshal Douglas, 20 February 1941, pp. 1-2.
[85]TNA, AIR 16/491, Air Marshal Douglas to Under-Secretary of State for Air, 24 February 1941.
[86]TNA, AIR 41/4, Flying Training, p. 313.

squadrons up to strength and the OTUs full of pupils when this situation arises'. He went on to agree that it was a bad practice to send pupils straight from SFTS to fighter squadrons, and 'I hope that we shall never go back to that state of affairs'. He then insisted that this 'would not have happened last autumn if my predecessor had not set his face for years against forming fighter OTUs'.[87] As none of the reasons given by Douglas could be achieved by padding out his squadrons with partially trained pilots, the motivation behind this policy is difficult to understand. The attack on Dowding perhaps reinforces Douglas's limited understanding of the logistics of pilot supply, which had been highlighted during the 7 September 1940 meeting at Bentley Priory. It should be noted that Douglas had continually interfered with the operations of Fighter Command while he was Deputy Chief of the Air Staff during the Battle of Britain, which points to a wider clash of personalities between the two commanders.[88] The choices available to Dowding from 1938-1940 were limited, and the resources of Fighter Command were barely adequate at the start of the Battle of Britain. What is clear is that in April 1941 Fighter Command had sixty five squadrons with far fewer than twenty three pilots each, six of which were about to be sent to the Middle East.[89] The expected attack would therefore have been met with six more day-fighter squadrons than at the beginning of August 1940, but with only sixty more pilots. It was expected that the average strength of the fifty nine squadrons would be around twenty pilots. It should also be noted that the general level of experience throughout the squadrons was lower than in 1940.[90]

Flying Accidents in Fighter Command During 1941

At the end of April 1941 Douglas was becoming anxious about the number of flying accidents in Fighter Command. Writing to his Group commanders, he highlighted the eighty nine fatal accidents in the previous three months, which corresponded with Douglas beginning to supply squadrons with pilots from OTUs having less than a rigid minimum of twenty hours on operational type. Some pilots had been killed in collisions, which Douglas accepted as a risk during training. Other pilots had flown into high ground in bad weather, with Douglas attributing those accidents to inexperienced pilots needing more instruction and advice on bad weather flying techniques. He finished by urging his Group commanders to pay attention to a high standard of flying discipline and supervision of flying training.[91] As these skills should

[87]TNA, AIR 16/491, Air Marshal Douglas to Air Marshal Garrod, 9 March 1941.
[88]TNA, AIR 20/2062, Fighter Command: Miscellaneous Papers, Air Marshal Douglas to Air Chief Marshal Dowding, 27 August 1940.
[89]TNA, AIR 16/374, Air Marshal Douglas to Headquarters, all Fighter Groups, 12 April 1941.
[90]TNA, AIR 41/18, ADGB, Vol. IV, Part 1, Paragraph 62.
[91]TNA, AIR 16/663, Fighter Operational Records, September 1939-February 1942, Flying Accidents during the First Quarter of 1941, 25 April 1941, pp. 1-2.

have been learnt in the fighter OTUs rather than on operational squadrons, unnecessary deaths could have been prevented if Douglas had not removed pilots from OTUs before they had reached a satisfactory standard of training. Table 5 and Figure 3 summarise fighter pilot casualties in 1941, from both combat and flying accidents:

Month	Combat		Flying Accidents	
	Killed	Injured	Killed	Injured
January	6	5	13	6
February	34	12	30	15
March	19	3	31	21
April	21	13	47	15
May	17	8	47	43
June	52	13	37	11
July	94	18	61	4
August	106	14	54	16
September	66	8	65	7
October	52	6	62	12
November	47	4	60	13
December	27	2	66	15

Table 5: Fighter Pilot Casualties During 1941[92]

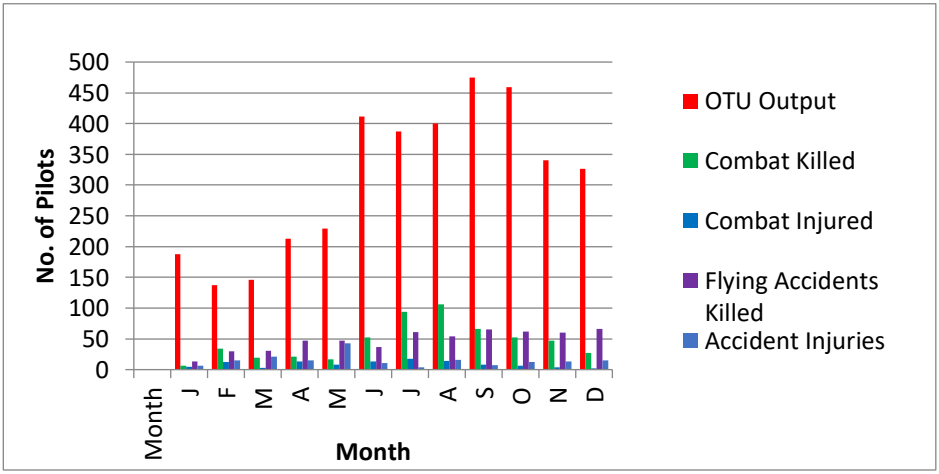

Figure 3: Pilot Casualties 1941.

[92]Adapted from TNA, AIR 16/663, Summary of Fighter Pilot Casualties: January to December 1941

Although casualties continued to rise throughout 1941, these were from a much larger intake of pilots from OTUs. If total flying accidents for the first and second halves of 1941 are calculated as a percentage of the OTU output, an identical figure of fifteen percent is obtained. Statistics, however, do not tell the whole story as casualty figures for the second half of 1941 categorise operational losses not due to enemy action as flying accidents, which adds uncertainty to the analysis. The underlying accident rate therefore suggests a fundamental deficiency with training in general at this time.

The End of the Pilot Supply Crisis

Douglas had estimated in December 1940 that eighty day-fighter squadrons would be required to counter a renewed daylight air offensive against the UK. By transferring six squadrons to the Middle East in May 1941, the Air Ministry felt that the risk in keeping Fighter Command short of establishment was justified. They reasoned that if the *Luftwaffe* concentrated forces in the west again, experienced pilots could be put through the training organisation to reinforce the defence.[93] The opportunity for Germany to take advantage of the training crisis in Fighter Command was coming to an end, although Hitler's attention was already directed towards the east.[94] The seven day-fighter OTUs doubled their output in May to over 400 pilots, with an average flying time of forty three hours per pilot. The number of pilots produced and the standard of training was at last considered satisfactory, and the need for training squadrons finally disappeared.[95] By June Douglas was able to supply sixty four pilots for Middle East squadrons, while having an 'appreciable surplus of pilots available to form an additional twelve fighter squadrons'.[96] As shown in Table 6 and Figure 4, squadrons would continue to be formed throughout 1941 and some, especially Hurricane squadrons, were steadily posted overseas. The number of pilots within fighter squadrons rose significantly in the last quarter of the year, with concern being expressed that the delays in expanding Fighter Command meant that insufficient aircraft were available to keep the surplus of pilots generated in flying practice.[97]

[93]TNA, AIR 41/18, ADGB, Vol. IV, Part 1, Paragraphs 63-65.
[94]Horst Boog 'The German Air Force' in *Germany and the Second World War*, Vol. IV, *The Attack on the Soviet Union*, eds. Horst Boog, Jürgen Förster, Joachim Hoffman, Ernst Klink, Rolf-Dieter Müller and Gerd R. Ueberschär, (Oxford: Oxford University, 1991), pp. 326-376, p. 326.
[95]TNA, AIR 41/4, Flying Training, p. 506.
[96]TNA, AIR 16/374, Air Marshal Douglas to Under-Secretary of State for Air, 7 June 1941, p. 1.
[97]TNA, AIR 16/491, Minutes of a Meeting held at the Air Ministry on 29 September 1941, 31 September 1941, p. 1.

DATE	AIR-CRAFT	TOTAL NO. OF SQNS FORMED OR FORMING		I.E. PER SQN	TOTAL I.E.	A/C SERVICE-ABLE (+/- I.E.)	PILOTS ON EFFECTIVE STRENGTH	PILOTS FULLY OPERATIONAL (% OPERATIONAL)	
07.02.41	H'icane	38	60	16	608	625 (+17)	895	722 (81%)	83%
	Spitfire	22		16	352	329 (-23)	429	378 (88%)	
07.03.41	H'icane	39	63	16	624	665 (+41)	903	761 (84%)	86%
	Spitfire	24		16	384	371 (-13)	459	407 (89%)	
04.04.41	H'icane	37	60½ (2½)	16	592	637 (+45)	884	748 (85%)	84%
	Spitfire	26		16	416	410 (-6)	497	410 (82%)	
02.05.41	H'icane	36	64	16	560	587 (+27)	787	663 (84%)	84%
	Spitfire	28		16	448	440 (-8)	600	509 (85%)	
30.05.41	H'icane	30	63	16	480	512 (+32)	678	594 (88%)	86%
	Spitfire	33		16	528	542 (+14)	666	571 (86%)	
04.07.41	H'icane	28	70	16	448	506 (+58)	698	N/A*	
	Spitfire	42		16	672	566 (-106)	743	605 (81%)	
08.08.41	H'icane	30	73	16	480	544 (+64)	643	542 (84%)	78%
	Spitfire	43		16	588	675 (+87)	962	713 (74%)	
05.09.41	H'icane	30	74	16	400	538 (+138)	741	539 (73%)	78%
	Spitfire	44		16	704	690 (-14)	999	821 (82%)	
03.10.41	H'icane	28	72	16	448	476 (+28)	704	551 (78%)	78%
	Spitfire	44		16	704	746 (+42)	1130	877 (78%)	
07.11.41	H'icane	13	67	16	208	237 (+29)	460	317 (69%)	75%
	Spitfire	54		16	864	833 (-31)	1420	1102 (78%)	
02.01.42	H'icane	12	65 (5)	16	192	195 (+3)	332	234 (70%)	75%
	Spitfire	58		16	928	890 (-38)	1582	1200 (76%)	

Table 6: Single engine fighter strength: 07 Feb 1941 TO 02 Jan 1942[98]

*No figure available for fully operational Hurricane pilots on 04.07.41

[98]Adapted from TNA, PREM 3/29/4, Prime Minister's Office: Operational Correspondence and Papers, AIR, Strength of Fighters and Bombers (I), Other Daily, Weekly and Monthly Returns, Weekly State of the Metropolitan Air Force (Part 1), 07.02.41-02.01.42.

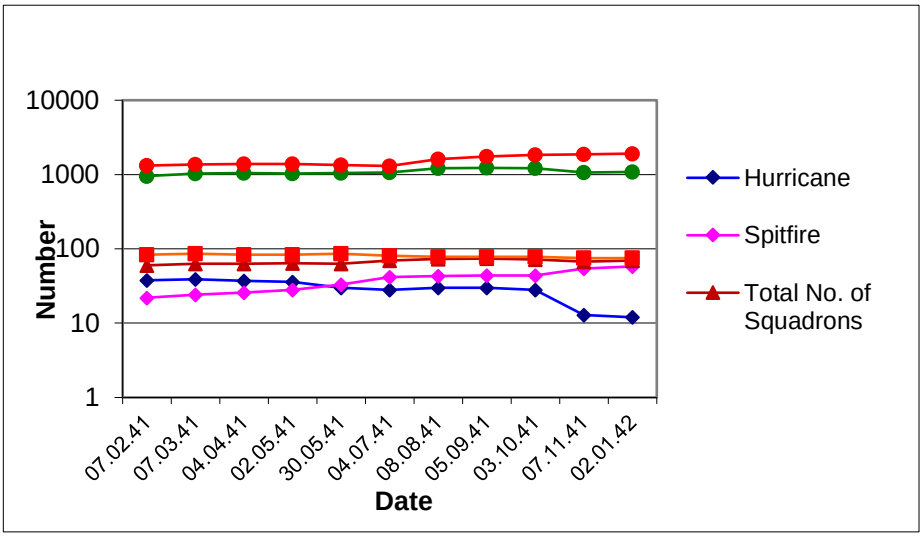

Figure 4: Single Engine Fighter Strength.

Conclusions

The introduction of the Stabilisation Scheme in September 1940 allowed Fighter Command to manage a rapidly dwindling number of trained pilots and maintain effective operations against daylight attacks, a situation that has been either trivialised or completely ignored in the historiography. The approach of autumn meant that such a scheme, described by Dowding as 'a thoroughly vicious principle', was only intended as a short-term measure.[99] As winter began and the threat of invasion passed, the Stabilisation Scheme was abandoned, despite the large number of ineffective pilots still in Fighter Command in December 1940,. Changes to training courses and the expansion of the OTU network was meant to ensure that pilot supply would never again become critical. The output from OTUs remained low during the winter of 1940-41, due to bad weather, unserviceable airfields and a shortage of training aircraft.

The number of ineffective pilots in Fighter Command continued to increase, prompting the reintroduction of the Stabilisation Scheme. The shortage of effective pilots prevented the formation of planned additional squadrons, delaying the expansion of

[99]TNA, AIR 2/5246, Air Ministry: Registered Files, Enemy Air Offensive against Great Britain: Attacks on England from 11 September-31 October 1940: No. 11 Group Report, Air Chief Marshal Dowding to Under-Secretary of State for Air, 15 November 1940, p. 1.

Fighter Command. The Fighter Command order of battle in April 1941 therefore contained fifteen fewer day-fighter squadrons than Douglas had considered necessary in December 1940. In this respect the legacy of the Stabilisation Scheme was that it slowed down the rate that Fighter Command expanded, which fortunately never had to be put to the test by a second Battle of Britain. With a renewed invasion attempt seen as no longer realistic, six fighter squadrons were sent to the Middle East in May 1941. By June the output of the day-fighter OTUs was at last satisfactory, and the second Stabilisation Scheme ended. The numbers of trained pilots continued to rise to the point where concern was raised that insufficient resources were available to maintain flying practice.

The long-term consequences of the Stabilisation Scheme were eloquently summarised by the author of the AHB narrative on operational training:

> The situation in Fighter Command in 1940, when over one-third of the squadrons were relegated to what was, in effect, a training organisation, is a further instance of the struggle between immediate operational requirements and the long-term needs of training. Had it been possible to establish an adequate OTU organisation, so that pilots from SFTSs did not have to go straight from Harts to Spitfires (an instance is recorded of a pilot arriving at a squadron having flown only a Tiger Moth) accident rates – to say nothing of operational losses – would have been lower, and there would have been a considerable reduction in operational aircraft requirements.[100]

Although this analysis was intended as a comment on the situation in 1940, the same conclusions also apply to the continuation of the Stabilisation Scheme into 1941 where the accident rate illustrated its continuing validity. Analysis of aircraft written off during 1941 demonstrated that these doubled from EFTS to SFTS phases and then doubled again at OTUs and operational squadrons.[101]

Unit	Write Off Rate
EFTS	2.5
SFTS	5
OTU	10
Operational Squadrons	10

Table 7: Aircraft written off per 10,000 Hours; January-September 1941[102]

[100]TNA, AIR 41/71, Operational Training. p. 828.
[101]TNA, AIR 41/4, Flying Training, p. 355.
[102]From TNA, AIR 41/4

The skill of pilots was not increasing as fast as the advance to more complex aircraft so that the shorter training courses and reduced amount of flying practice during earlier training made the prospect of accidents in combat situations more probable. This trend can be further confirmed by a comparison of total accident rate with fatalities during 1941.

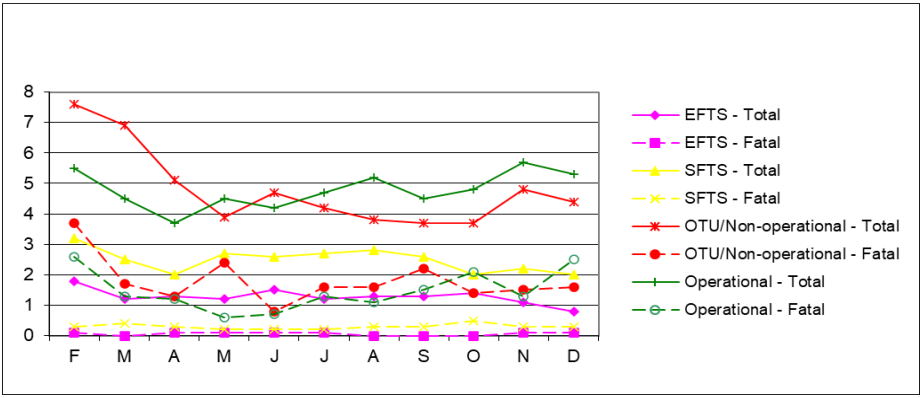

Figure 5: Accidents per 1000 hours flown in 1941

Month	EFTS		SFTS		OTU/Non-operational		Operational	
	Total	Fatal	Total	Fatal	Total	Fatal	Total	Fatal
February	1.8	0.1	3.2	0.3	7.6	3.7	5.5	2.6
March	1.2	0.0	2.5	0.4	6.9	1.7	4.5	1.3
April	1.3	0.1	2.0	0.3	5.1	1.3	3.7	1.2
May	1.2	0.1	2.7	0.2	3.9	2.4	4.5	0.6
June	1.5	0.1	2.6	0.2	4.7	0.8	4.2	0.7
July	1.2	0.1	2.7	0.2	4.2	1.6	4.7	1.3
August	1.3	0.0	2.8	0.3	3.8	1.6	5.2	1.1
September	1.3	0.0	2.6	0.3	3.7	2.2	4.5	1.5
October	1.4	0.0	2.0	0.5	3.7	1.4	4.8	2.1
November	1.1	0.1	2.2	0.3	4.8	1.5	5.7	1.3
December	0.8	0.1	2.0	0.3	4.4	1.6	5.3	2.5
Average	1.3	0.1	2.2	0.3	4.8	1.8	4.8	1.5

Table 8: Accidents per 1,000 hours flown in 1941[103]

[103]Adapted from Air Historical Branch (RAF), RAF Northolt, London, UK: SD (Secret Document) 96, Monthly Analysis of RAF Aircraft Accidents Metropolitan Air Force, March 1940 - June 1943, 1941(7) to 1941(12))

As the non-operational accident rate remained high throughout 1941, this also suggests that a proportion of the 400 pilots lost on offensive sweeps over France in the second half of 1941 might have been due to inadequate training under the Third Revise, although other operational, technical and tactical considerations predominated.[104] The other legacy of the Stabilisation Scheme was that the attention paid to operational type training disguised the deterioration in the standard of the previous stages of training. By the end of 1941 the opinion of AM Pattinson, which had been rejected as 'conservative and reactionary' a year earlier, was completely justified and course lengths were doubled under the 'New Deal' proposals for training. Unfortunately this came too late for the pilots killed on offensive fighter operations in 1941.[105]

[104]TNA, AIR 41/18, ADGB, Vol. IV, Part 5, Paragraph 121.

[105]TNA, AIR 41/4, Flying Training, p. 356. This coincided with a rapid increase in availability of trained air crew from overseas, due to the success of the Empire Air Training Scheme, C. J. Jefford, *Observers and Navigators* (London: Grub Street, 2014), p. 211.