The Order of Battle and Actual Strength of all Soviet Air Combat Units in a Deployed (D) State on 22nd June 1941

Of all the forces in the Soviet FILARM model the Soviet VVS has proved to be the most difficult in terms of ascertaining the Order of Battle (OOB), the actual strengths in June 1941, and the actual strengths in the period from June to December 1941. Accurate information is available on the OOB of individual aviation divisions and the total number and type of aircraft in the various military districts on 22nd June 1941. However at the aviation regiment (*Aviatsionnyy Polk)* level and below, information on OOBs and actual strengths various tremendously. In some cases accurate information on the unit designation and aircraft details is available, but in other cases the information is almost non-existent.

Attempting to create a complete picture of the deployment and composition of the VVS on 22nd June 1941 is like putting together a giant jigsaw puzzle with many pieces missing. Nevertheless cross referencing information from multiple sources, and reconciling this information with information on actual known strengths in aviation divisions and in each military district-front, we are able to build a fairly accurate picture of the state of the VVS across the whole of the USSR on 22nd June 1941. Although the 'VVS jigsaw' is incomplete in many details, we still have enough information to see the complete picture.

In the following sections we will examine the deployment and composition of the VVS forces in each military district and front in the USSR on 22nd June 1941. This information is presented in a single table format for each military district-front. In order to ascertain information on a specific aviation unit the reader should read aircraft type and numbers from left to right in the order presented. For example, '4 ShAP - 62xR-Z, Il-2, Su-2 - 6, 8, 42' means Aviation Regiment 4 ShAP was authorised 62 aircraft but it actually had 6 R-Zs, 8 Il-2s and 42 Su-2s on strength.

Aircraft Serviceability and Numbers of Operational Aircraft

It should be stressed that the figures in the following sections for serviceable aircraft should be treated with caution. It is not unreasonable to interpret 'serviceable' as 'operational', that is to say by simply arming and fuelling these aircraft they were ready to fly combat missions. However, similarly to the discussion on operational tanks in the Red Army, the term 'serviceable' for aircraft is very subjective. It could mean anything from 'immediately ready for aerial combat' to 'can get off the ground after some extensive maintenance'. Notably for tanks there were no fewer than four categories of serviceability defined while this level of detail is not available for the VVS's combat aircraft in June 1941.

Whenever viewing Soviet military reports regarding a unit's operational status from 1940 to June 1941, the reader must always bear in mind the overall political situation in the Red Army and Air Force at this time. Simply put, a potentially lethal threat (Stalin and his cronies) overhung any Soviet officer considered to be defeatist or in any way showing unwelcome initiative. A realistic assessment of serviceable or operational aircraft could be and often was seen as defeatist, while at the same time showing initiative to fix the problem was potentially interpreted as an attempt to gain power, i.e. a potential threat to the regime. One only has to read of the devastating effects of Stalin's purges on the Soviet armed forces to realise this is not an overstatement.

From the VVS status reports for June 1941 (sections below), we see that military districts claimed that an average of 80-95% of their combat aircraft were serviceable and hence could be considered operational. However there is little doubt that these reports were based on overly optimistic VVS commander assessments in the period prior to June 1941. For a start the figures are actually higher than most Luftwaffe units! The latter were generally equipped with much newer aircraft and had just achieved a peak of readiness in preparation for Operation Barbarossa. In addition most Luftwaffe air units were well supported by experienced and well trained ground

support personnel who kept as many aircraft operational as possible, a resource lacking in most VVS units at this time. On top of this many VVS units were equipped with aircraft going back to the 1920-30s: it is unlikely these units could get more than a handful of aircraft in the air at any time. From general accounts of the numbers of VVS aircraft that were involved in air to air combat, it certainly appears that the serviceable numbers quoted by the VVS in June 1941 were very optimistic to the point of being exaggerated and misleading. This is also evidenced by the very large number of 'captured' aircraft on captured airfields across the western USSR in 1941. These aircraft were not destroyed in airfield attacks but were abandoned or destroyed by VVS ground personnel because the aircraft could not fly out.

The importance of aircraft serviceability cannot be overstated in any air force: it is an even more critical issue than serviceability of tanks and guns for ground forces. The reason is to do with the fact that an aircraft on the ground is militarily useless, and it can be grounded by the smallest missing or broken component. Tanks and ground equipment often functioned without being close to 100% operational. For example, tanks often went into action with missing wheels, faulty engines, missing armaments, missing or damaged gun sights (using open sights), missing armour, fewer than a full crew, etc. In addition damaged or unserviceable ground equipment was usually designed so that it could be recovered and towed or carried rearwards for repair and maintenance.

Almost all these factors do not apply to WWII aircraft. Aircraft could be, and usually were, grounded as soon as any engine fault appeared. This could be caused by the smallest engine component and it was almost impossible to improvise most spare parts for an aero-engine. Even faulty undercarriage or damaged fuselage could ground the most modern of aircraft: unlike tanks, the aerodynamic shape of the aircraft is essential to it being able to function at all. In addition to all this, grounded aircraft were not easily recovered if the enemy moved to occupy the airfield. Even single engine fighters were relatively large and unwieldy and had to be broken down for overland transport (with at least the wings removed). WWII air forces simply did not have these capabilities: in the vast majority of cases, grounded aircraft were destroyed or abandoned by the retreating army and air force ground units. Testimony to this fact is the very large number of 'captured' Allied aircraft on captured airfields in France in 1940 and in the USSR in 1941. Almost as many suffered this fate as were destroyed in air to air combat or were destroyed by air attack on airfields.

Finally it should be carefully noted that the Relative Overall Combat Proficiency (ROCP) of a particular air force has to take into account the aircraft serviceability factors discussed above. The proportion of truly serviceable or operational aircraft has an immense affect on the actual combat power of any air force. In addition, the ability of an air force to maintain its air combat units at a high level of operational readiness during prolonged combat operations must also be factored into any air force ROCP calculations. This is similar to the Supply Distribution Efficiency (SDE) considerations applicable to the ROCP of ground forces and it is treated in a similar fashion. A seemingly large and powerful air combat unit, with all its aircraft operational on the first day of a campaign, is still a relatively weak unit if most of its aircraft become unserviceable after only a few missions. The ROCP of an air force or an individual air combat unit is not simply determined by the average training and experience of the aircrews.

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VVS-Leningrad Military District (Northern Front from 24th June 1941)

The VVS forces in the Leningrad Military District covered an area south of Soltsy and Lake Ilmen, as far west of Leningrad as Narva and Pskov, and as far north as the USSR's coastline on the Barents Sea. Its territory included most of the Gulf of Finland and the Kola Peninsula. As such, VVS-Leningrad Military District forces were not subject to the initial onslaught by the Luftwaffe on VVS airfields. The VVS-Leningrad Military District included a large number of VVF VMF (Naval) units defending the Kola Peninsula and the Gulf of Finland. The Baltic islands of Osel and Dago did

not come under VVS-Leningrad Military District control but were under the control of the Baltic Special Military District. However a handful of VVS-KBF (Baltic Fleet) aircraft were deployed on the island of Osel.

The distribution of available and serviceable VVS-KA aircraft in the Leningrad Military District, and the units they were assigned to on 22nd June 1941, are shown in table Len MD Air. Most of the VVS-KA air assets were concentrated around Leningrad. These included 2 SAD (south of Leningrad), 5 SAD, 41 BAD, and all three of the military district's fighter aviation divisions. This force constituted 1 052 combat aircraft or 79% of the total VVS-KA aircraft in the military district. 3 IAD PVO and 54 IAD PVO were part of the 7 IAK (*Istrebitel'nyy Aviatsionnyy Korpus* or fighter aviation corps) PVO responsible for the air defence of Leningrad. In total the three fighter aviation divisions around Leningrad included 157 of the latest and most modern VVS fighters, namely MiG-3s, LaGG-3s and Yak-1s. Obviously Leningrad was considered a strategic target by the Soviets.

Further north, the 7th Army had only 72 SBAP/55 SAD for support while and 14th Army had the larger 1 SAD in support. This total force consisted of 109 fighters and 88 bombers, with 147 of them in 1 SAD defending the Kola Peninsula.[1] Notably, 153 IAP/5 SAD was also in a position to support the south flank of the 7th Army around Sortavala on the north shore of Lake Ladoga.

Table Len MD Air shows there were 1 336 VVS-KA combat aircraft (1 216 serviceable) in the Leningrad Military District on 22nd June 1941.[2] Of these 902 were fighters and 394 were twin or four engine bombers (TB-3s had four engines). In general this total is very consistent with other up to date published sources.[3]

The VVS-VMF forces in the Leningrad Military District included the VVS-SF (*Severnyy Flot* or Northern Fleet) and the VVS-KBF (*Krasnoznamyonnyy Baltiyskiy Flot* or Red Banner Baltic Fleet). The distribution of available and serviceable VVS-VMF aircraft in the Leningrad Military District, and the units they were assigned to on 22nd June 1941, are shown in table N & Bal Fleet Air.[4]

The VVS-SF covered the approaches to the Soviet Northern Fleet (based in Arkhangelsk and Murmansk) and the Kola Peninsula. This relatively small force was very marine focused with the Beriev MBR-2 flying boat being the most common aircraft. However 72 SAP was deployed less than 100km from the border at Vayenga and was able to provide fighter support for 14th Army. On 22nd June 1941, 1 SAD VVS-KA and VVS-SF were together able to provide 263 combat aircraft to

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[1] C. Bergstrom, A. Mikhailov, Black Cross Red Star, The Air War Over the Eastern Front: Volume 1, Pacifica Military History, Pacifica, California, 2000, p. 166.

[2] C. Crofoot , The Order Of Battle Of the Soviet Armed Forces: The Sleeping Bear, Volume 1: 22nd June 1941, Part One, The Nafziger Collection Inc, West Chester, OH, 2001, pp. 62-63. This document is quoted as "an extraction of the official Soviet order of battle for the entire armed forces of the USSR during the great patriotic war". The primary sources used are *Boevoi Sostav Sovetskii Armii* for the army, and *Boevaya Letopis* and *Korabli i Suda* for the navy.

[3] For example, D. M. Glantz, Barbarossa, Tempus Publishing Ltd, Stroud, UK, 2001, notes 2, p. 217, note 28. Glantz gives the Leningrad Military District's air strength on 22nd June 1941 as 1 342 aircraft (1 222 operational): identical if the 6 training aircraft in the district are included. His reference is: *Boevoi i chislennyi sostav vooruzhennykh sil SSSR v period Velikoi Otechestvennoi voiny (1941-1945 gg.): Statisticheskii sbornik No.1 (22 iiunia 1941 g), 16-17*. [The combat and numerical composition of the USSR's armed forces in the Great Patriotic War (1941-1945); Statistical collection No 1 (22 June 1941) (Moscow: Institute of Military History, 1994), 16-17]. Also, D.M. Glantz, Stumbling Colossus, University Press of Kansas, Lawrence, Kansas, 1998, p. 204, table 7.3, quotes the Leningrad Military District as having: 308 bomber, 74 assault, 857 fighter and 31 reconnaissance aircraft (1 270 total aircraft) on 22nd June 1941. His reference is: *Nachal'nyi period Velikoi Otechestvennoi voiny* 62, 64 [The initial period of the Great Patriotic War, 62, 64], (Moscow: Voroshilov Academy of the General Staff, 1989). These figures do not appear to include training or transport aircraft and what constitutes 'bombers' and 'fighter bombers' as opposed to 'assault' aircraft is unclear.

[4] C. Bergstrom, A. Mikhailov, Black Cross Red Star, The Air War Over the Eastern Front: Volume 1, Pacifica Military History, Pacifica, California, 2000, pp. 166, 269 and 270.

defend the Kola Peninsula and the approaches to Murmansk. This force included 158 single engine fighters.

The VVS-KBF covered the approaches to Leningrad, the primary base for Baltic Red Banner Fleet. In addition its aircraft were responsible for controlling naval movements in the Gulf of Finland. Although VVS-KBF had a large number of flying boats, it was much stronger offensively than VVS-SF. Included in VVS-KBFs inventory was 368 fighters (including 37 new MiGs) and 188 first line bombers. The latter included some DB-3T torpedo bombers which represented a serious threat to any enemy naval forces. Although responsibility for the defence of the Baltic islands of Osel and Dago came under the Baltic Special Military District, the 12 OIAE/VVS-KBF (Independent Fighter Aviation Squadron) was based on Osel. Altogether VVS-KBF fielded 707 combat aircraft on 22nd June 1941; a serious force in its own right.[5] Inevitably the bulk of VVS-KBF's aircraft were sucked into supporting the defence of Leningrad and ended up fighting alongside VVS-KA and PVO forces in the Leningrad Front.

In total VVS-Leningrad Military District contained the very large number of 2 159 combat aircraft on 22nd June 1941. This force included 1 319 fighters (including 223 modern MiG-3s, LaGG-3s and Yak-1s) and 593 twin engine bombers. This made the VVS-Leningrad Military District one of the strongest VVS forces in the USSR, and in purely numerical terms the strongest in the western USSR: it had 100 more combat aircraft than even the Kiev Special Military District.

On 22nd June 1941 the immediate threat to the VVS forces in the Leningrad Military District came from part of *Luftflotte* 5 in Norway with only 121 combat and transport aircraft initially committed to Operation Barbarossa (under *Luftwaffenkommando* Kirkenes) and the Finnish Air Force (*Ilmavoimat*). The latter was an effective force, but the whole Finnish Air force only contained 374 combat and transport aircraft of which 226 (including 160 single engine fighters and only 22 twin engine bombers) were deployed to the Soviet-Finnish front by 25th June 1941.[6] This meant the VVS-Leningrad Military District outnumbered their immediate opponents by over six to one in combat aircraft in late June 1941. Obviously such a small Axis force with so few bombers could not provide much in the way of ground support to the Finnish or German armies in the Karelia, and it had no chance of winning air superiority in direct combat or via airfield interdiction attacks.

Fortunately for the Axis air forces in Finland the bulk of the Leningrad Military District's (called Northern Front from 24th June) air assets remained around Leningrad, or were rapidly moved further south and became embroiled with Luftwaffe units involved in the German advance against the Leningrad and Northwestern Fronts. For example, 2 SAD had transferred south from Staraya Russa to the Velikaya sector and was carrying out raids against Army Group North at Daugavpils as early as 1st July 1941.[7] After 10th July 1941 all these aircraft came under the control of the VVS-Northwestern Zone Command.

Not being exposed to the initial Luftwaffe attacks or the border air battles in June 1941 meant that the VVS-KA Northern Front survived into July 1941 in relatively good condition. From 22nd June to 22nd July VVS KA-Northern Front (excluding all VVS VMF and DBA forces) lost 372 aircraft, or around 28% of the combat aircraft deployed in the Leningrad Military District on 22nd June 1941.[8] By 10th July 1941 the VVS-Northern Front was still able to contribute 700-800 combat aircraft to the VVS-Northwestern Zone Command. Together with the VVS-KBF (Red Banner Baltic Fleet) and 102 aircraft left from the VVS-Northwestern Front (see below), the VVS-

[5] Ibid, p. 270.
[6] Refer to the Finnish and German FILARM models for a detailed breakdown of all Finnish Air Force and Luftwaffe figures used in Part IV 8.
[7] C. Bergstrom, A. Mikhailov, Black Cross Red Star, The Air War Over the Eastern Front: Volume 1, Pacifica Military History, Pacifica, California, 2000, p. 75.
[8] Ibid, p. 81.

Northwestern Zone was able to initially muster around 1 300 combat aircraft.[9] Therefore even after the disasters in June 1941, the VVS-Northwestern Zone had a 2-3 to one numerical superiority in serviceable combat aircraft over its main opponent in mid July 1941; specifically *Luftflotte* 1.[10]

[9] Ibid, p. 79.

[10] *Luftflotte* 1 started the war with 778 aircraft of all types (including transport aircraft). Of these only 203 were fighters of all types and 271 were twin engine bombers. By mid July 1941 the number of serviceable fighters and bombers had fallen to approximately 350. Note however VVS-Northwestern Zone still had to defend against the Finnish Air Forces (*Ilmavoimat)* and elements of *Luftflotte* 5 in the North, both of which were inflicting serious losses on VVS-Northwestern Zone. By the end of 1941 the Finnish Air Force claimed to have shot down 360 Soviet aircraft. Refer to the Finnish and German FILARM models for details. K. Keskinen, K. Stenman, Finnish Air Force 1939-1945, Squadron/Signal Publications, Carrollton, Texas, 1998, p. 19.