European Aviation Safety Agency

EASA

SPECIFIC AIRWORTHINESS SPECIFICATION

for

SUKHOI SU-31

This Specific Airworthiness Specification is issued in accordance with Regulation (EC) 216/2008 Article 20(1)(b). This document is generic and it should be read in association with any Airworthiness Approval Note for the approval of Flight Conditions for any aircraft issued with an EASA Permit to Fly prior to 31 October 2008, which is specific to a particular serial number. In the event of conflict, please contact EASA: general.aviation@easa.europa.eu.

The Sukhoi Su-31 is a single seat variant of the Su-29 2-seat aircraft (see EASA.SAS.A.093). In all respects it is identical, save for the deletion of the front cockpit.

The Russian Type Certificate holder is:

Advanced Aircraft Construction Technologies
Lugneckaya Quay 2/4
Moscow 119270
Russian Federation

Fax: +7 495 242 7474
Email: aact@online.ru

The Su-31 has obtained Type Certification by the Hungarian Civil Aviation Authority.
SECTIO1: Aircraft Design Definitions

1.1 Aircraft designed and built to conform to Russian Type Certificate code AR-23 and this was accepted for the issue for a Hungarian Type Certificate by the Hungarian CAA.

1.1.1 Technical Characteristics and Operating Limitations

Engine
One Vedeneyev (OKBM) M14P of 360 HP or M14PF of 400HP. 9 cylinder radial piston engine, which is geared and supercharged.

Fuel
To Russian standard B91/115 GOST 1012-72.
Octane rating minimum 91.

Engine Limits
M14P
At maximum speed (99%; 2892 rpm) 5 minutes
At 101% (2950 rpm) up to 1 minute
Maximum continuous revolutions 82% (2395 rpm)

M14PF
Maximum revolutions 103% (3010 rpm) for one minute

Oil Temperature
Oil temperature minimum 40° centigrade
Maximum prolonged 75° centigrade
Maximum permissible for 15 minutes 85° centigrade

Cylinder Temperature
Cylinder temperature minimum 120° centigrade
Maximum prolonged operation 220° centigrade
Maximum permissible up to 15 minutes 240° centigrade

Propeller
The following propellers are approved:
V-530TA-D35 2-blade propeller manufactured by Speriot of Stupino, Russia.
MTV-3-250 or 260 -27 or -29 3-blade propeller manufactured by MT Propeller of Straubing, Germany.
MTV-9-250 or 260 -27 or -29 3-blade propeller manufactured by MT Propellers of Straubing, Germany.
Diameter of V-530 propeller is 240cm, and of MTV-3 and MTV-9 propellers of either 250 or 260cm.

Airspeed Limits
Vne 450 km/h
Vmo 380 km/h
Vma 360 km/h
Vso 106 km/h

C.G. Range
24% to 31.5% MAC

Maximum Weight
Certificated empty weight 670 kgs.
Maximum all-up weight 1100 kgs

Aerobatic Limitations
Aerobatic manoeuvres are permitted.
Intentional spinning is permitted
Load factor limitations: +12g / -10g
Number of Seats

**One**

Maximum Baggage

Weight limit in rear baggage compartment 15kgs. However this significantly affects Centre of Gravity and the AFM must be consulted before flights, particularly aerobatic, with any baggage.

Fuel Capacity

- Fuselage tank 74 litres
- Two wing tanks of 105 litres each
- Fuselage collector tank 3 litres

(In the case of the wing tanks and main fuselage tank, useable fuel can be up to two litres less than the above).

Oil Capacity

- 16 litres total for ferry version; 10 litres for aerobatic version

Oil Cooler

It is permitted to change the standard oil cooler, part number 2281B, for the larger oil cooler, part number 2281B-OM, for use in hot conditions.

Control Surface Movements

- **Wing flaps**: N/A
- **Aileron**: +/- 28°
- **Elevator**: +/- 25°
- **Rudder**: +/- 32°
- **Elevator trim tap**: +/- 20°

Tyre pressures

- Main wheels – 3.5 / 4 kgf / cm²
- Tail wheel – 3.0 kgf / cm² (many Su-31 are fitted with solid tail wheel)

Stall Warning

N/A

Equipment

- One “Briz” radio. (A variety of normal avionics installations have also been installed).
- Smoke system (comprising of 2 x 15litre tanks, one in each wing root, with a bleed from the aircraft compressed air system controlled by solenoids to pump smoke oil into the exhaust pipe).

Flight Manual

Approved Sukhoi Su-31 flight manual.

1.2 Pertinent Data

Centre of Gravity

The Su-31 AFM gives the method for detailed calculations of Centre of Gravity according to pilot weight; fuel; oil; smoke oil; baggage.

1.3 Lifetime

Su-31 is cleared for an initial ‘Lifetime’ before major inspection of 1250 hours or 12 years, whichever comes first.

Lifetime can be extended by the execution of the Sukhoi Lifetime Extension Programme, identified as AST Lifetime Doc. A, Version II.
Subject to successful completion of the Lifetime Extension Programme above, the aircraft will be cleared for a further 6 years or 600 hours, whichever comes first.

This Lifetime Extension Procedure is performed repetitively.

There are certain other 'lifed' items, importantly: engine/propeller/air-bottle/flexible hoses. These are referred to in the appropriate Maintenance Manuals, and also the AAN for the Su-31 issued by EASA.

1.4 Life-Limited Parts

The list of lifed items applicable to the Su-29 aircraft are as follows, and must be incorporated in the maintenance schedule for the aircraft.

<table>
<thead>
<tr>
<th>Description</th>
<th>Life Limit</th>
<th>Hours/years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine M14P/PF</td>
<td>500 hrs from new or o/h</td>
<td></td>
</tr>
<tr>
<td>Engine M14R/M9F</td>
<td>300 hrs from new or o/h</td>
<td></td>
</tr>
<tr>
<td>Propeller V530TA-D35</td>
<td>500 hours / 6 years</td>
<td></td>
</tr>
<tr>
<td>Propeller MTV-9-B-C/CL250-27 / 29</td>
<td>1000 hours / 6 years</td>
<td></td>
</tr>
<tr>
<td>Air Bottle</td>
<td>-/5 or by appropriate inspection</td>
<td></td>
</tr>
<tr>
<td>Flexible Pipes</td>
<td>-/10</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 2: Airworthiness Directives (Service Bulletins)**

<table>
<thead>
<tr>
<th></th>
<th>SUKHOI</th>
<th>31</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Directive 31-18-9/94 dated 23.06.94</td>
<td>Main fuel tank replacement after 100 hours</td>
<td>31.001-BD</td>
</tr>
<tr>
<td>23</td>
<td>Directive Su-31-303 -514-96KB</td>
<td>Fuselage frame reinforcement at the wing attachment points and at the elevator bell crank attachment point.</td>
<td>31.002-BD</td>
</tr>
<tr>
<td>24</td>
<td>Directive dated 18.04.96</td>
<td>The installation of loops along the rudder cable linkage in order to limit cables play</td>
<td>31.003-BD</td>
</tr>
<tr>
<td>25</td>
<td>Directive SU-31 -01-96 dated 23.05.96</td>
<td>Wing replacement</td>
<td>31.004-BA</td>
</tr>
<tr>
<td>26</td>
<td>Directive SU-31 -03-96 dated 21.06.96</td>
<td>Wing spar visual inspection</td>
<td>GK-283/31.005BD</td>
</tr>
</tbody>
</table>
NOTE

No Service Bulletins (Airworthiness Directives) have been issued subsequent to 1996.

Designer and organisation responsible for the Type: Advanced Aircraft Construction Technologies, will provide details of any further Service Bulletins, contacts on Page 1.

SECTION 3: Occurrence Reporting

The Specific Airworthiness Specification may be used as a basis for the issue of a Restricted Certificate of Airworthiness in accordance with 21A.173(b)(2) under the following conditions:

a) The holder of a Restricted Certificate of Airworthiness based on this Specific Airworthiness Specification shall report to the State of Registry all information related to occurrences associated with the operation of the aircraft which affects or could affect the safety of operation.

b) Such reports shall be despatched within 72 hours of the time when the occurrence was identified unless exceptional circumstances prevent this.

c) The State of Registry shall forward the information received under (a) to the Agency when it relates to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the continuing airworthiness of the aircraft.

SECTION 4: Other Limitations

4.1 Eligibility
The SAS should not be seen as a mechanism for avoiding type certification in accordance with Part 21.

This SAS has been used as a transition mechanism for aircraft that had not been certificated in accordance with Part 21 but which were already on the registers of EU member states on accession to the EU (Commission Regulation (EU) No 748/2012, Article 5).

Whilst it includes these aircraft in the EU system, it is not intended to be used to allow the import of additional aircraft of the same type which should be certificated in accordance with Part-21. The applicability of this SAS is limited to individual aircraft by serial number. The only Su-31 aircraft eligible for a Restricted Certificate of Airworthiness (RCoA) in accordance with article 21.A.173(b)2 are those with serial numbers listed in this section:

40546, 40579, 01-01, 01-03, 02-05, 04-01, 04-02, 05-05, 06-04

4.2 This aircraft is limited to non-commercial operations.
4.3 Aircraft should be flown by day in visual meteorological conditions only.

1 AMC 20-8 contains guidance describing the occurrences which are to be reported
4.4 Maximum permitted altitude 10,000 feet.
4.5 Flight shall be limited to the following:
   a) Aerobatic competition flights
   b) Training for aerobatic competition flights
   c) Positioning flights
   d) Aerobatic displays
   e) Aerobatic instruction
4.6 All limitations in the applicable flight manual must be complied with.

SECTION 5: Change Record

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue 1</td>
<td>31 October 2008</td>
<td></td>
</tr>
<tr>
<td>Issue 2</td>
<td>21 June 2011</td>
<td>To record approval of alternative oil cooler</td>
</tr>
<tr>
<td>Issue 3</td>
<td>1 March 2013</td>
<td>Eligible serial numbers added in section 4</td>
</tr>
</tbody>
</table>