AIRWORTHINESS APPROVAL NOTE NO.	27341
APPLICANT:	North Weald Flying Services Ltd.
AIRCRAFT TYPE:	YAK C11
REGISTRATION:	G-YCII
CONSTRUCTORS NO:	2511108
CERTIFICATION CATEGORY:	PERMIT TO FLY

APPROVAL FOR THE ISSUE OF A PERMIT TO FLY

1.0 INTRODUCTION

The Yak C11 is a Czechoslovakian built, Russian designed Yak 11, a tandem two-seat intermediate advanced trainer.

The aircraft was built in 1945 and delivered to the Egyptian Airforce.

The aircraft was sold to France and subject to a rebuild in 1990 at La Ferté Alais and used regularly since by various owners registered as F-AZPA and held a French "Permit" for that period.

AAN 11536 originally approved a similar aircraft (G-AYAK) in the special category and is also similar to G-KYAK, approval by AAN 24930.

2.0 BASIS OF APPROVAL

The approval of this aircraft is based upon the known operating record of this aircraft and other examples that have been operated on the UK register.

3.0 DESCRIPTION

The Yak C11 is a low-wing aircraft trainer with a modified Clark YA section, small ailerons, split flaps and retractable landing gear.

Dimensions: Span 9.40M
Length 8.50M
Height 3.28M

3.1 Engine

The engine fitted is an ASH-21 seven cylinder air cooled, supercharged radial using direct fuel injection delivery 750 hp at 2300 rpm for take-off at sea level.

Serial No. 215027 has 206 recorded hours run. Engine cooling is manually controlled via side gills which when open are visible from the cockpit. Oil cooling is via a shutter, manually controlled beneath the centre section. Oil capacity is 8.5 Imp. Gals.

3.2 Propeller

The propeller fitted is a VISH-11-V20 two bladed metal variable pitch.
Serial No. 1502 has accumulated 206 hours in France and has been overhauled by CFS Aeroproducts in May 2000.

3.3 Undercarriage

The retractable main landing gear is pneumatically operated with an emergency release and blow-down system. The tail landing gear is fixed.

3.4 Fuel System

A 40-gallon metal fuel tank is carried in each wing feeding to a collector tank, which feeds the engine. Total capacity is 84 Imp Gals. An electric primer pump/booster pump is fitted.

3.5 Pneumatic System

An engine driven air compressor charges an air bottle at 50 kg/cm3 for:

1. Undercarriage operation
2. Flap operation
3. Brakes
4. Engine starting
5. Front cowl gills

An emergency air bottle is provided for emergency lowering of the landing gear and brake operation.

3.6 Electrical System

A 24v DC electrical system is installed with an engine driven generator and an 18AH lead acid battery.

3.7 Accommodation

The crew is accommodated in a long "glass-house" enclosure above the fuselage and a full harness is supplied both seats. Seats are equipped to accept seat-type parachutes. Primary flight controls are conventional and manually operated.

4.0 TECHNICAL INVSTIGATION

No technical investigation was possible as a definitive design standard is not available. Therefore, the approval of this aircraft for the issue of a Permit to Fly is also based upon the service record of the aircraft and a detailed inspection of its conditions and airworthiness. In addition, reference made to survey report dated 23 July 2000 by David E Starkey Acro Aeronautical Services Ltd.

The aircraft is as it was when it left service except for the following:

1. Addition of an electric fuel booster pump at rebuild 3/90.
2. The aircraft was rewired and pipelines renewed at rebuild 3/90.
3. Installation of a GILL G243 24 volt battery
4. CAA Airworthiness Notice 88 is compiled by the addition of a low voltage warning light (Mod ref NWFS/MINORMOD/009,CAA REF 9/223/AV1501).
5. CAA MPD 1998-016 rev 1 is applicable and has been complied with.

4.1 Boost Pump

NWFS Modification NWFS/MINOR MOD/025 addresses the installation of a Dukes 4404-00-7NV fuel pump to replace the standard hand pump. This was installed during the rebuild in France. It is protected by a 15A circuit breaker and is installed under the floor in the same bay as the fuel collector tank. An indicator lamp in the cockpit illuminates when the boost pump is on.

4.2 Battery Installation

NWFS Modification NWFS/MINOR MOD/026 addresses the replacement of the original 12A-10 battery with a Gill G-243 24V 10AH unit. Weight and location of the new battery are identical to the original.

4.3 Electrical Rewiring

An independent inspection of the rewired electrical system was carried out by Mr R W Staples who has endorsed the quality and materials of the installation in letter dated 19 June 2000. The grounding of the main distribution box has been improved.

4.4 Pneumatic Pipelines

The applicant has confirmed that the new pneumatic pipeline components and installations conform to good engineering practise, following original routings.

4.5 Other Modifications and Fatigue

Although the aircraft was not subject to its major renovation in UK, the applicant has inspected the aircraft and has not declared any other modifications apart from those described above. No fatigue lives are defined and lifed components are as defined in CAA/LAMS/A/1999/1.

5.0 RADIO

The following equipment is installed:

NAV/COM	KING KX155
TRANSPONDER	KING KT76A
ADF	KING KR87
MARKER/AUDIO	KING KMA24A
MARKER	KING KR21
GPS	GARMIN GPS100

6.0 WEIGHT AND BALANCE

Maximum Take-off weight	2480 kg
C of G Limits	9.87 – 15.41" Aft of Datum

C of G Datum is the wing leading edge at a point 95.25 inches outboard of the fuselage centreline.

A new weight and balance schedule has been compiled from FLS weighing report ATS-110-6134 dated 14 July 2000.

7.0 FLIGHT TESTING

A test flight is required to be carried out in accordance with Flight Test Schedule No 233. This test flight may be performed by the owner's nominated pilot, who must be acceptable to the CAA. The results of this assessment must be sent to CAA Flight Department. A separate CAA assessment is not required.

A Flight Test Report AFTS No. 2, dated 15 July 2000 has been submitted by North Weald Flying Services Ltd.

This has been reviewed and accepted by CAA.

8.0 FLIGHT MANUAL

The applicant has submitted Pilots Notes (Ref Yak 11 G-YCII Pilot's Notes and Flight Reference Cards) which are acceptable. All speeds are presented in units to match those of the ASI and recommended threshold speed is 95 kts (1.3 V_{SO} in accordance with BCAR Blue Paper K781).

9.0 LIMITATIONS

In the absence of more complete manufacturers test data, a safety factor of 0.9 (in accordance with BCAR K7.2) has been applied to the maximum demonstrated flight speed to arrive at V_{NE} = 323 knots. The following limitations are to be employed:

* 1. Aerobatics are permitted in accordance with the Pilots Notes (with the exception of flick manoeuvres).

Minimum Speeds:	Entry to Loop	220 knots
	Entry to barrel roll	200 knots

* 2. Intentional Spinning is permitted up to 2 turns.

* 3. Airframe:

To be flown from the front cockpit only.

Maximum/Minimum load factor + 4.25 g/-0g

No negative g manoeuvres or spins beyond 2 turns

Maximum Speeds:	Never Exceed	323 knots
	For lowering undercarriage	145 knots
	For lowering flaps	124 knots
	For opening canopy	160 knots

Do not open canopy in flight if other canopy is open

*4. Engine: Rating	Rpm	Boost	CHT	Duration
Maximum boost	2300	960 mm Hg	250°C	5 minutes
Maximum continuous	2300	850 mm Hg		
Maximum oil temperature	85 °C			
CHT			250 °C	15 minutes

Engine is not to be hand turned when it is warm.

5. Weight and Balance:

Maximum Take-off Weight Authorised	2480 kg
Centre of gravity (gear extended)	9.87 to 15.41 inches AoD

CG datum is the leading edge of the wing at a point 92.25 inches outboard from the fuselage centre line.

*6. Day VMC only

*7. No Smoking

*Items marked with an asterisk shall be indicated in each cockpit by appropriate placards or instrument markings, as appropriate.

10.0 MAINTENANCE

The aircraft has undergone an Annual Inspection in accordance with CAA/LAMS/A/1999/1 and NWFS/Yak11/Issue 1. All life limited inspections have been checked for compliance and found satisfactory. The applicant has sufficient technical information and manuals for the continued maintenance of the aircraft.

11.0 APPROVAL

This aircraft is approved for the issue of a Permit to Fly, provided that it conforms to the contents of this AAN, is operated in accordance with the Flight Manual, and is maintained in accordance with a maintenance schedule approved by the CAA.

R J Hardy
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For the Civil Aviation Authority

Date 4 August 2000