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50X1-HUM

CHARACTERISTICS AND PERFORMANCE HANDBOOK

U.S.S.R. AIRCRAFT

U.S.S.R. AIRCRAFT

Assistant Chief of Staff/Intelligence—
and
Office of Naval Intelligence—USN

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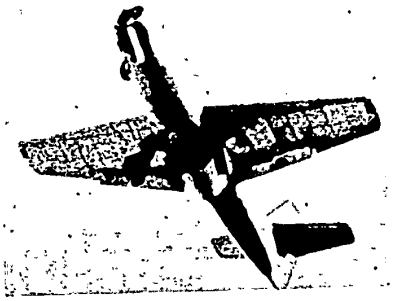
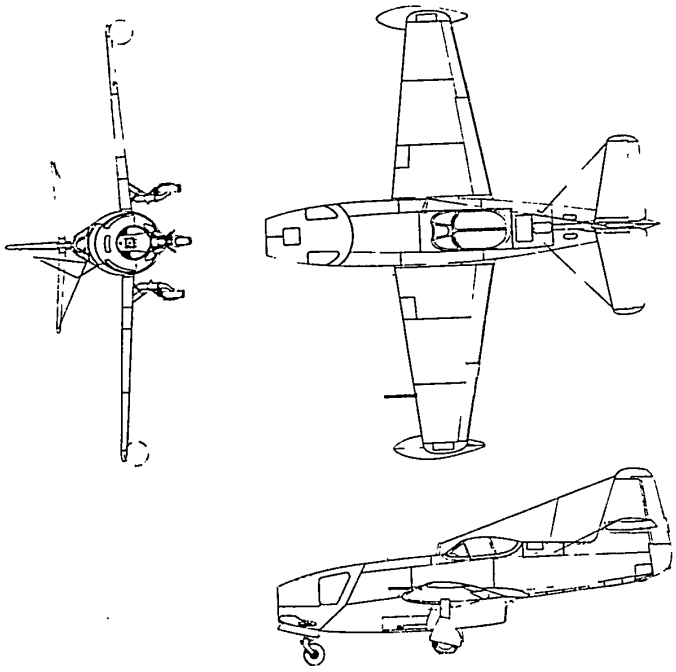
September
1955





REMARKS: The YAK-23 (FLORA) is a single seat low-wing light-weight fighter. It is the latest version of a series of jet fighters designed by YAKOVLEV. Other known aircraft in the series which began with the YAK-15 are the YAK-17 and UYAK-17.

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SUMMARY

1955	First observed in the July 1948 airshow aircraft is now believed obsolete in Soviet Air Force.

DIMENSIONS

Wing	
Span	28.5 ft
Area	147 sq ft
L.E. Taper	11.5 deg
T.E. Taper	7 deg
Overall Length	26.8 ft
Maximum Diameter	4.7 ft
Overall Height	11.3 ft

WEIGHTS

Loading	Lb
Empty	4400
Take-off	6600 (w/o external tanks)
	7359 (w/external tanks)

FUEL

	Weight, lb	Gal
Internal	1615	241
External		104

POWER PLANT

No. & Model	(1) RD 500
Type	Centrifugal
Length	93 in
Diameter	43 in
Weight (dry)	1414 lbs

ENGINE RATINGS

SL Static	Lb	RPM
Max	3,470	14,700
Nor	1,763	12,500

BOMBS/FREIGHT

NONE

GENERAL INFORMATION

General information only is quoted hereon. For more detailed information on characteristics and performance see AMIC Technical Report TR-AC-28, entitled (Uncl) Soviet YAK-23 Aircraft.

Retractable tricycle landing gear. Pneumatic system. A mechanical push-pull system without booster unit is the means of actuating ailerons. Flaps are pneumatically actuated.

Fuselage is of semi-monocoque construction and has two detachable sections.

Fuel tanks are located in the fuselage.

Equipped with ejection seat.

Combination "demand" and "free-flow" type oxygen system.

ELECTRONICS

RSI-6K Command Transmitter
RSI-6M-1 Command Receiver
RPKO-10M Radio Compass Receiver
Sch-3M IFF

GUNS

2 x 23-mm NR (90 rounds per gun)

ROCKETS

NONE

AIRCRAFT PERFORMANCE

CONDITIONS			MISSION 1[2]	MISSION 2[3]		
TAKE-OFF WEIGHT	(lb)		6,600	7,297		
Fuel at 6.7 lb/gal	(lb)		1,615	2,312		
Payload (ammunition)	(lb)		165	165		
Wing loading	(psf)		45	49.7		
Stall speed (power off, clean)	(km)		86	86		
Take-off ground run at SL	(ft)	(1)	1,345	1,720		
Take-off to clear 50 ft	(ft)	(1)	2,290	2,700		
Rate of climb at SL	(fpm)	(1)	9,420	7,900		
Time - SL to 35,000 ft	(min)	(1)	6.3	8.7		
Time - SL to 40,000 ft	(min)	(1)	8.3	11.8		
Service ceiling (100 fpm)	(ft)	(1)	52,000	50,000		
COMBAT RANGE	(NM)		487	720		
COMBAT RADIUS	(NM)		115	250		
Average speed	(km)		360	360		
Initial cruising altitude	(ft)		35,600	35,600		
Final cruising altitude	(ft)		35,600	35,600		
Total mission time	(hr)		0.95	1.58		
COMBAT WEIGHT	(lb)		5,892	6,847		
Combat altitude	(ft)*		35,500	35,500		
Combat speed	(km)	(1)	460	460		
Combat climb	(fpm)	(1)	4,000	2,700		
Combat ceiling (500 fpm)	(ft)	(1)	50,600	48,500		
Service ceiling (100 fpm)	(ft)	(1)	53,900	51,000		
Max rate of climb at SL	(fpm)	(1)	10,600	9,000		
Max speed at SL	(km)	(1)	504	504		
Basic speed at 35,000 ft	(km)		360	360		

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NOTES
* Limited by no pressurization provisions and presently installed oxygen equipment
1. Military power
2. MIL-C-5011 Basic Mission
3. MIL-C-5011 with 2 - 52 gal external fuel tanks

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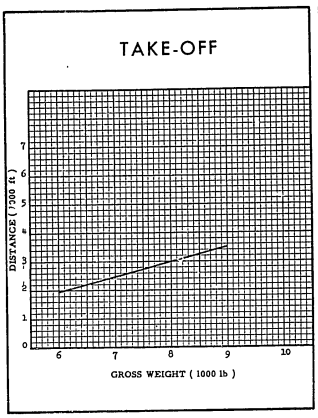
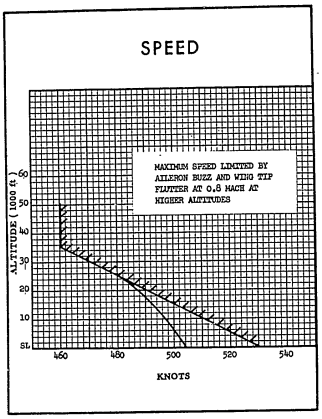
TAKE-OFF



SPEED



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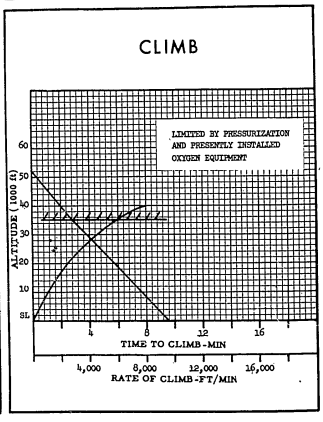
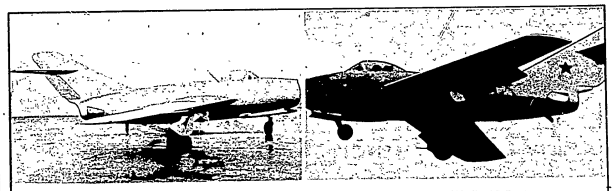
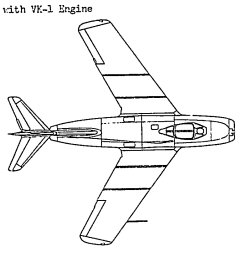
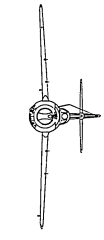


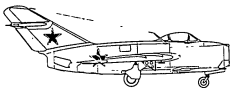


FAGOT with VK-1 Engine

FAGOT with HD-45 Engine







REMARKS: The MIG-15 (FAGOT) is a single seat swept-wing turbojet day interceptor. There are two models; the early MIG-15, and the MIG-15 Bis, which is an improved version. Recent examination of both models has confirmed previous estimates that both models are identical in size, and there are no significant external differences. Difference between models is in engine power and electronic equipment. The early model has a direct copy of the British Rolls-Royce Nene rated at 5,000 lbs thrust at SL. Max speed of this version is 564 knots and rate of climb is 8300 ft/min at SL. Aircraft are also produced in Czechoslovakia.

SUMMARY

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DIMENSIONS

Wing	
Span	33.2 ft
Area	218 sq ft
Cathedral	2.0 deg
Sweepback (leading edge)	36 deg
Overall length	33.4 ft
Fuselage diameter	4.75 ft

WEIGHTS

Loading	lb
Empty	8,350
Take-off	11,000
Combat	9,745
Landing (Approx)	8,915

FUEL*

	Weight, lb	Gal
Internal	2,492	372

(2 x 66 gal or 2 x 79 gal external tanks may be carried)

* Soviet T-1 (similar to JP-1)

POWER PLANT

No & Model	(1) VK-1
Type	Centrifugal, 1 stage double sided, 9 cans
Length	93.0 inches
Diameter	50.0 inches
Weight (dry)	1950 lbs
Exhaust nozzle diameter	10.67 inches
Exhaust nozzle area	358 sq in

ENGINE RATINGS

SL Static	lb	RPM	SFC
*Take-off	5950	11,500	1.10 lbs/lb/hr
**Military	5290	11,200	1.06
Normal	4760	10,870	1.05

* 5 min rating
** 60 min rating

BOMBS/FREIGHT

Can carry up to 550 lb bomb from a shackle under each wing in lieu of drop tanks

GENERAL INFORMATION

General information only is quoted hereon. For more detailed information on characteristics and performance, see ATIC TR-AC-48, entitled (Uncl) MIG-15 Bis Flight Test, dated 11 July 1955.

The fuselage has an air intake in the nose and jet exhaust in the tail. Wings have a pronounced sweep-back ending in square tips. Horizontal and vertical tail surfaces also have a pronounced sweep-back. Horizontal stabilizer is set high on the vertical fin. A prominent feature is the four ridges (fences) on the upper surface of the wing extending from leading edge to trailing edge.

Retractable tricycle landing gear. Main gear retracts inward into the wing near the root.

All systems hydraulically operated except wheel brakes and emergency system for flaps and undercarriage which are pneumatic.

Electric trim tabs on aileron and elevator.

Pressurized and heated cockpit.

Canopy opens from left side of aircraft.

Air brakes are located on either side of rear fuselage. Spring loaded, push button on left of control grip enables easy use during engagement or formation flying.

Defrosting is accomplished by warm air pressurization distributory tube. Under certain humidity conditions and during descent with throttle back, mist forms on canopy from front to rear and will not clear until engine has been operated a short time at max power.

Flight tests revealed the following:

Poor rearward vision.

Aircraft encounters uncontrollable nose-up trim change at Mach Number .92.

Aircraft encounters "Dutch Roll" at approximately .84 Mach Number.

ELECTRONICS

ARK-5 Radio Compass (150-1300 kcs)
RV-2 FM Radio Altimeter (0-1200 meters)
MRP-48P Marker Beacon Receiver (75 mc)
SRO-1YF Transponder (157-187 mc)
* RSI-6K Radio Transmitter
* RSI-6M-1 Radio Receiver (3750-5000 kc)
RSI-U-3M VHF Transmitter-receiver (100-150 Mc)

* This equipment is not carried in all models.

GUNS

1 x 37 mm N type gun
2 x 23 mm NR type guns
Mounted beneath air intake in front fuselage

ROCKETS

None

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AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission Area Intercept	Ground Support Mission(2)		
TAKE-OFF WEIGHT	(lbs)		11,000	12,100		
Fuel at 6.7 #/gal	(lbs)		2,492	2,492		
Payload (Ammo)	(lbs)		258	1,100		
Wing Loading	(psf)		50	55		
Stall Speed (Power off, clean)	(kn)		116	122		
Take-off ground run at SL	(ft)	(1)	1,600	- - -		
Take-off to clear 50 ft	(ft)	(1)	2,600	- - -		
Rate of climb at SL	(fpm)	(1)	9,600	8,500		
Time - SL to 40,000 ft	(min)	(1)	7.6	- - -		
Time - SL to 45,000 ft	(min)	(1)	10.00	- - -		
Service ceiling	(ft)	(1)	50,400	49,500		
COMBAT RANGE	(NM)		434	435		
COMBAT RADIUS	(NM)		195	65		
Average speed	(kts)		470	535		
Initial cruising altitude	(ft)		49,450	25,000		
Final cruising altitude	(ft)		52,050	25,000		
Total mission time	(hr)		.93	- - -		
COMBAT WEIGHT	(lbs)		9,745	10,100		
Combat altitude	(ft)		50,000	SL		
Combat speed	(kts)	(1)	504	574		
Combat climb	(fpm)	(1)	1,200	10,500		
Combat ceiling	(ft)	(1)	51,000	50,500		
Service ceiling	(ft)	(1)	52,500	52,000		
Maximum R/C at SL	(fpm)	(1)	12,250	10,500		
Maximum speed at SL	(kn)	(1)	583	574		
Basic speed at 50,000 ft	(kn)	(1)	504	495		
Landing Weight (Approximately)	(lbs)		8,915	9,000		

NOTES (1) Max Power
(2) Not to Mil-C-5011A

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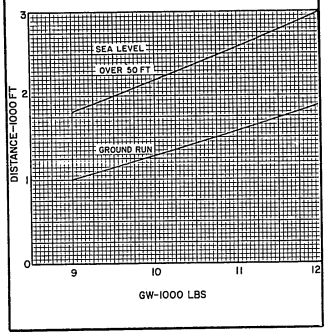
TAKE - OFF



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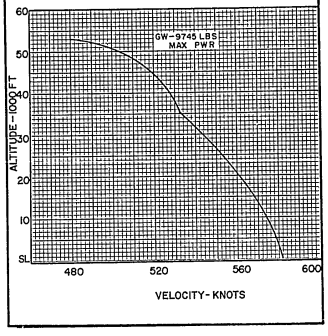
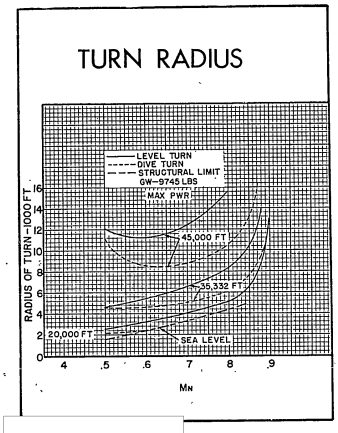


TURN RADIUS



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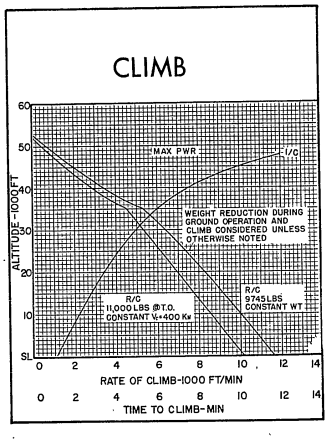

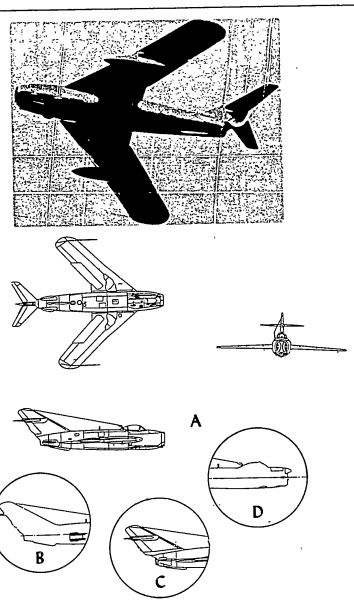

REMARKS: The MIG-17 (FRESCO) is a single seat swept-wing, turbojet day interceptor. In appearance this aircraft is similar to the MIG-15 (FAGOT) and may be considered a further development of that aircraft. There are four versions of this aircraft.

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SUMMARY

1955 First observed at an air show in Moscow on 23 August 1953. Aircraft is in operational use in the Soviet Air Force. Small numbers are now being introduced in the satellite Air Forces.

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DIMENSIONS

Wing	
Span	32 ft
Area	259 sq ft
Aspect ratio	4.4
Cathedral (approx)	2 deg
Sweepback	
Inboard leading edge	49 deg
Outboard leading edge	45 deg
Overall length	36 ft
Fuselage Diameter	4.75 ft

WEIGHTS

Loading	Lb
Empty	8,545
Take-off	12,500
Combat	11,050
Landing (approx)	10,050
AMPR	6,000

FUEL

	Weight, lb	Gal
Internal	2940	440
External		210*

* 2 x 105 gal drop tanks under wings pylon mounted.

POWER PLANT

No. & Model	(1)VK-1A
Type	Centrifugal
Length	93 in.
	* 188 in.
Diameter	50 in.
Weight (dry)	2010 lb.
	* 2360 lb
Exhaust Nozzle	358 sq in
	* 450

* With afterburner

ENGINE RATINGS

SL Static	lb	RPM
* Max	8400	11,500
Military	7000	11,500
Normal	5600	10,870

* With afterburner

BOMBS/FREIGHT

Bombs can probably be carried in multipurpose pylon.

GENERAL INFORMATION

General information only is quoted hereon. For more detailed information on characteristics and performance see AFIO Study No. 102-AO-55/5-34, entitled (Uncl) Analysis of FRESCO.

Aeronautical equipment in FRESCO "A", "B", "C", and "D", versions is basically identical as that in FAGOT.

Improved instruments (flight and engine), safety equipment (ejection seat, "G" suit provisions, etc.,) will be found in FRESCO.

Identification features common to all FRESCO versions are:

a. There is a break in the wing leading edge at approximately semi-span position, three small fences are located on each wing.

b. Two pitot static heads are on each wing tip.

c. Rear fuselage has smooth fairing to tail and there is a ventral fin on underside of fuselage which may also serve as tail bump.

d. There is a protrusion on top of canopy.

Identification features not common to all versions are:

FRESCO "A" - Dive brakes aft. (See Figure 1)

FRESCO "B" - Dive brakes aft of wing trailing edge. (See Figure 2)

FRESCO "C" - Dive brakes aft and tailpipe protruding from fairing. (See Figure 3)

FRESCO "D" - Same as "C" model with the addition of a Radome on upper surface of the air intake similar to U. S. F-86D. Also there appears to be a radome in the air intake island.

NOTE: Dive brakes are larger than those on the FAGOT.

ELECTRONICS

ARK-5	Radio Compass (150-1300KCS)
RV-2	FM Radio Altimeter (0-1200 meters)
MRP-48P	Marker Beacon Receiver (75 MC)
SRO-IFF	Transponder (157-187 MC)
RSI-6K	Radio Transmitter
RSI-6M-1	Radio Receiver (3750-5000 KC)
RSI-U-3M	VHF Transmitter-Receiver (100-150 MC)

Range only radar.

FRESCO "D" (only)

Search and Track Al/Fire Control Radar

GUNS

1 x 37 mm N Type gun
2 x 23 mm HR Type guns

ROCKETS

NONE

AIRCRAFT PERFORMANCE

CONDITIONS			Area Intercept	Area Intercept(2)	Optimum Mission (2)	
TAKE-OFF WEIGHT	(lb)		12,500	14,085	14,085	
Fuel at 6.7 lb/gal	(lb)		2,940	4,345	4,345	
Payload (Ammunition)	(lb)		270	270	270	
Wing loading	(psf)		50	56	56	
Stall speed (power off, clean)	(knots)		115	120	120	
Take-off ground run at SL	(ft)	(1)	1,460	1,860	1,860	
Take-off to clear 50 ft	(ft)	(1)	2,640	3,140	3,140	
Rate of Climb at SL	(fpm)	(1)	12,200	9,900	9,900	
Time - SL to 40,000 ft	(min)	(1)	6.3	7.6	7.6	
Time - SL to 50,000 ft	(min)	(1)	9.4	14.1	14.1	
Service ceiling (100 fpm)	(ft)	(1)	53,900	50,800	50,800	
COMBAT RANGE	(NM)		625	1,180	1,400	
COMBAT RADIUS	(NM)		280	565	610	
Average speed	(knots)		510	510	510	
Initial cruising altitude	(ft)		49,300	46,700	46,700	
Final cruising altitude	(ft)		52,600	52,300	53,700	
Total mission time	(hr)		1.20	2.32	2.48	
COMBAT WEIGHT	(lb)		11,145	11,780	11,670	
Combat altitude	(ft)		50,000	50,000	50,000	
Combat speed	(knots)	(1)	540	540	540	
Combat climb	(fpm)	(1)	1,800	1,600	1,700	
Combat ceiling (500 fpm)	(ft)	(1)	54,800	53,700	53,900	
Service ceiling (100 fpm)	(ft)	(1)	56,300	54,800	55,400	
Max rate of climb at SL	(fpm)	(1)	13,900	13,050	13,200	
Max speed at SL	(knots)	(1)	620	620	620	
Basic speed at 50,000 ft	(knots)	(1)	540	540	540	
LANDING WEIGHT (Approximate)	(lb)		10,000	10,100	9,860	
Stall speed (clean)			105	105	105	

NOTES
1. Military Power
2. With external fuel

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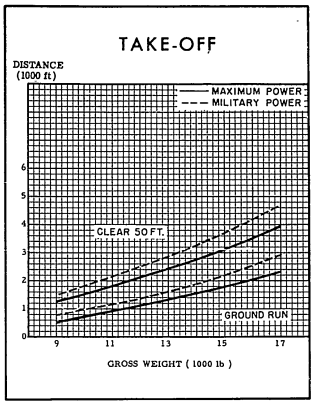
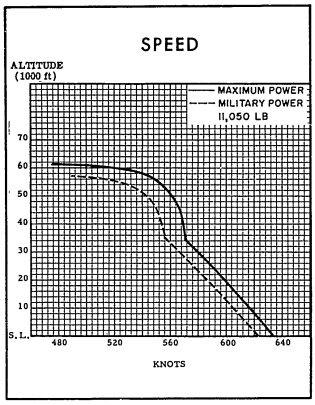
AIRCRAFT PERFORMANCE

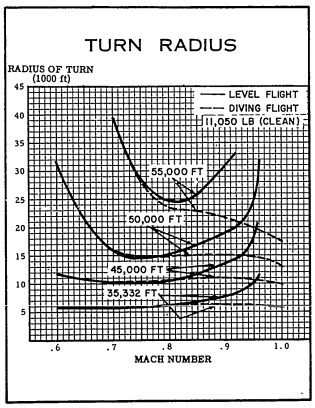
CONDITIONS			Area Intercept	Area Intercept	Ground Attack (2)	Area Intercept Opt Mission (3)
TAKE-OFF WEIGHT	(lb)		12,500	14,085	14,395	14,085
Fuel at 6.7 lb/gal	(lb)		2,940	4,345	3,645	4,345
Payload Ammunition	(lb)		270	270	1,370	270
Wing loading	(psf)		50	56	57.0	56
Stall speed (power off, clean)	(knots)		115	120	125	120
Take-off ground run at SL	(ft)	(1)	1,800	1,600		1,600
Take-off to clear 50 ft	(ft)	(1)	2,300	2,800		2,800
Rate of Climb at SL	(fpm)	(1)	24,400	18,300	17,900	18,300
Time - SL to 40,000 ft	(min)	(1)	3.7	4.5		4.5
Time - SL to 50,000 ft	(min)	(1)	5.8	7.2		7.2
Service ceiling (100 fpm)	(ft)	(1)	57,500	54,700	54,200	54,700
COMBAT RANGE	(NM)		520	1,005		1,240
COMBAT RADIUS	(NM)		190	445	185	500
Average speed	(knots)		510	510	510	510
Initial cruising altitude	(ft)		49,800	47,100	46,600	47,100
Final cruising altitude	(ft)		52,600	52,500	53,300	53,700
Total mission time	(hr)		.85	1.91		2.13
COMBAT WEIGHT	(lb)		11,050	11,700	12,820	11,560
Combat altitude	(ft)		50,000	50,000	S.L.	50,000
Combat speed	(knots)	(1)	560	560	630	560
Combat climb	(fpm)	(1)	3,800	3,300	20,300	3,400
Combat ceiling (500 fpm)	(ft)	(1)	58,900	57,800	55,600	57,900
Service ceiling (100 fpm)	(ft)	(1)	59,900	58,800	56,600	58,900
Max rate of climb at SL	(fpm)	(1)	28,200	26,500	20,300	26,800
Max speed at SL	(knots)	(1)	635	635	635	635
Basic speed at 50,000 ft	(knots)	(1)	560	560	555	560
LANDING WEIGHT (Approximate)	(lb)		10,000	10,100	9,740	9,860
Stall speed (clean)	(kts)		105	105	105	105

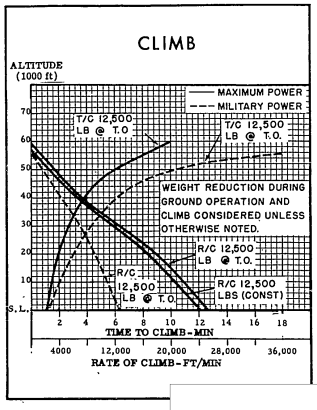
Fresco "D" altitude capability will be decreased approximately 300 feet due to the 200 pound increase in take-off weight.

NOTES
1. Max power.
2. No distance credit for 2 min NRP @ SL, 1 min Max Power @ SL, 2 MP @ SL, 1 min Max Power @ SL, 15 min loiter @ SL.
3. Same as Area Intercept except that reserve is fuel required for 10 minutes loiter at SL.









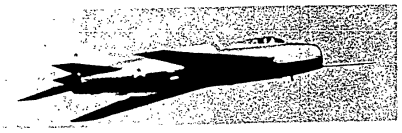
50X1-HUM

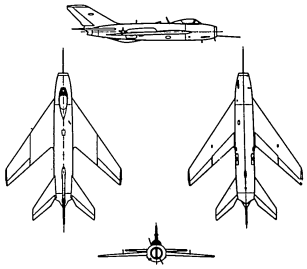
50X1-HUM

Declassified in Part - Sanitized Copy Approved for Release 2013/08/01 : CIA-RDP81-01043R002000100005-9

October
1957

FARMER





REMARKS: FARMER is a single place twin-engine high performance day interceptor.

SUMMARY

1955 — First observed during rehearsal for May Day 1955 Air Show. It is in operational units.

50X1-HUM

DIMENSIONS

Wing	
Span	32 ft
Area	305 sq ft
Sweepback leading edge	56 deg
Overall length	42 ft (48.45 w/boom)
Maximum depth (fus)	4.75 ft
width	5.4 ft
Tail	
Span	17 ft
Sweep	56 deg
VT Height above fuselage centerline	7.5 ft

WEIGHTS

Loading	lb
Empty	12,340
Take-off	17,300
Combat	15,400
Landing (aprx)	13,970

FUEL

	Weight, lb	Gallons
Internal	4000	600
External	2800	420

POWER PLANT

No. & Model	(2)
Type	Axial-flow turbojet
Length	160 inches
Diameter	37.5 inches
Weight (dry)	1830 lbs with A/B

ENGINE RATINGS

	lb	SFC/#/hr/#
SL Static		
Max	6700	1.85
Mil	5000	0.935

BOMBS/FREIGHT

Probably capable of carrying one 500 Kg (1100 lb) bomb on each wing.

GENERAL INFORMATION

Single place day fighter.
Tricycle landing gear.
Bubble canopy.
Range only radar of the US AN/APG-30 type to provide range input to gyro lead computing gunsight.
FARMER has been observed carrying 2 x 210 US gal drop tanks.
Soviet designation of FARMER is MIG-19.

ELECTRONICS

Radar
  Range only
  IFF - SRO (157-187 Mc)
Navigation
  Radio compass - ARK-5
  Radio altimeter, low - RV-2
  Marker beacon receiver - MRP-48P
Communications
  VHF command radio, 4-channel - RSIU-3M

GUNS

Forward firing guns 2 x 23 with cyclic rate of 800-900 rds/min and one improved N-37 with cyclic rate of 475-525 rds/min. Ammunition storage for 6 sec fire.

ROCKETS

Capable of carrying one large caliber multiple missile warhead rocket or up to 40 small caliber rockets in a honeycomb type pod, under each wing.

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS			Area Intercept Basic Mission (4)	Area Intercept Basic Mission	Area Intercept Opt. Mission (4)	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		20,500	17,300	20,500	17,300
Fuel at 6.7 lb/gal	(lb)		6,800	4,000	6,800	4,000
Payload (Ammo)	(lb)		270	270	270	270
Wing loading	(psf)		67	57	67	57
Stall speed (power off, clean)	(kts)		135	130	135	130
Take-off ground run at SL	(ft)	(1)	1,700	1,200	1,700	1,200
Take-off to clear 50 ft	(ft)	(1)	3,000	2,200	3,000	2,200
Rate of climb at SL	(fpm)	(1)	10,000(6)	39,500	10,000(6)	39,500
Time - SL to 40,000 ft	(min)	(1) (2) (3)	7.9(6)	2.6	7.9(6)	2.6
Time - SL to 50,000 ft	(min)	(1) (2) (3)	---	3.9	---	3.9
Service ceiling (100 fpm)	(ft)	(1) (2)	53,800	59,400	53,800	59,400
COMBAT RANGE	(NM)		1,285	--	1,475	695
COMBAT RADIUS	(NM)		565	180	655	245
Average speed	(kts)		535	540	535	540
Initial cruising altitude	(ft)		43,900	51,200	43,900	51,200
Final cruising altitude	(ft)		49,900	53,700	54,300	54,300
Total mission time	(hr)		2.22	.82	2.56	.94
COMBAT WEIGHT	(lb)	(5)	16,600(17,000)	15,400	16,300(16,700)	15,200
Combat altitude	(ft)		50,000	50,000	50,000	50,000
Combat speed	(kts)	(1) (5)	630(565)	640	630(560)	645
Combat climb	(fpm)	(1)	4,800	5,600	4,900	5,700
Combat ceiling (500 fpm)	(ft)	(1) (5)	59,300(56,300)	60,900	59,700(56,700)	61,100
Service ceiling (100 fpm)	(ft)	(1)	60,500	61,900	60,800	62,200
Max rate of climb at SL	(fpm)	(1)	41,200	44,700	42,000	45,200
Max speed at SL	(kts)	(1)	680	680	680	680
Max speed at optimum altitude	(kts/ft)	(1)	710/35,000	710/35,000	710/35,000	710/35,000
Max mach number at optimum altitude	(m/ft)	(1)	1.24/35,000	1.24/35,000	1.24/35,000	1.24/35,000

NOTES
(1) Maximum power.
(2) Allows for weight reduction during ground operation and climb.
(3) Includes 0.8 min for take-off and acceleration to climb speed without tanks or 0.9 m
(4) With 2 x 210 U. S. gal tanks.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) Military power.

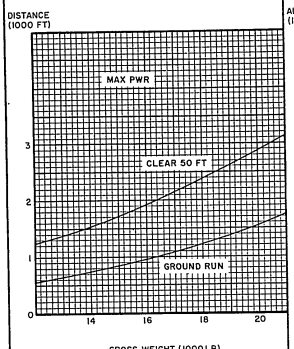
50X1-HUM

SECRET

FARMER

OCTOBER 1957

TAKE-OFF



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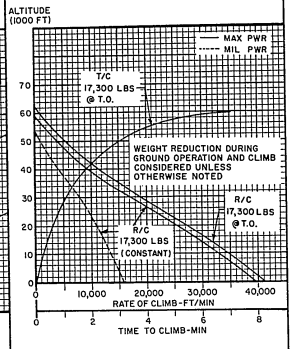

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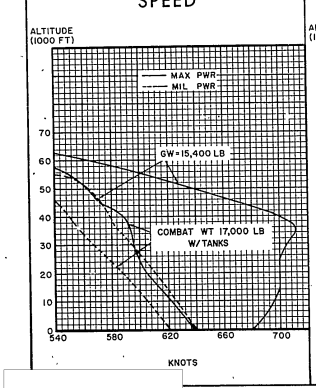
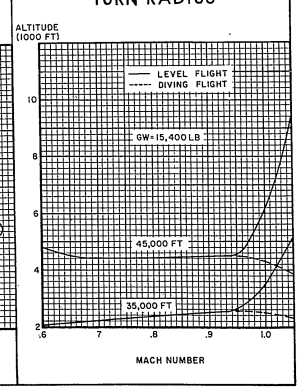


TURN RADIUS



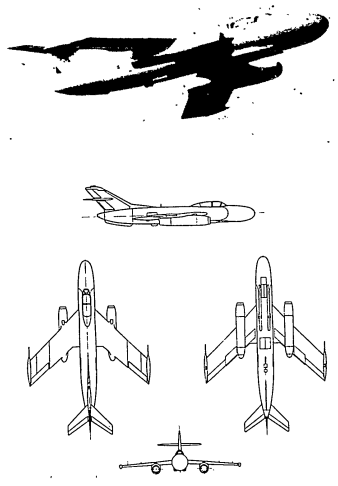
50X1-HUM

SECRET

SECRET

October 1957

FLASHLIGHT A



REMARKS: FLASHLIGHT is a two place twin jet swept wing all weather fighter.

SUMMARY

1955 First observed during rehearsals for May Day 1955 airshow. It is in operational units.

50X1-HUM

SECRET

DIMENSIONS

Wing	
Span	36 ft
Area	300 sq ft
Sweepback IBLE*	47 deg
Overall length	50.7 ft
Max diameter (fus)	4.75 ft
Nacelle diameter	3 x 2.63 ft
Nacelle length	15 ft
Tail	
Span	13 ft
Sweep	45 deg
Height from fuselage center line	9.6 ft

*Inboard leading edge

WEIGHTS

	lb
Loading	
Empty	13,640
Take-off	20,200
Combat	17,900
Landing,(aprx)	16,000
AMPR	10,000

FUEL

	Weight, lb	Gallons
Internal	5100	760
External	900	132

POWER PLANT

No. & Model	(2)
Type	Axial-flow turbojet
Length	110 inches
Diameter	27.5 inches
Weight (dry)	1480 lbs

ENGINE RATINGS

	lb	SFC/#/hr/#
SL Static		
Max	5100	.92

BOMBS/FREIGHT

None

GENERAL INFORMATION

Two place all-weather fighter.
Landing gear is tandem type with the main gear carrying approximately 90% of the weight.
All-weather armament system incorporating AI search and fire control radar and computing equipment to provide a capability for lead pursuit attacks under day, night, and all-weather condition. Such a system should give a long range search, track and operational capability equivalent to the USAF E-1 Armament System.
FLASHLIGHT A has been observed carrying a ventral tank.
Soviet designation of FLASHLIGHT A is YAK-25.

ELECTRONICS

Radar
AI
IFF - SRO (157 - 187 Mc)
Navigation
Radio compass - ARK-5
Radio Altimeter, low - RV-2
Marker beacon receiver - MRP-48P
Communications
VHF Command radio - 4 channel - RSIU-3M

GUNS

2 x 37 N or improved N guns with a cyclic rate of 400-525 rds/min and sufficient ammunition for 6 sec of fire.

ROCKETS

Rockets can be carried externally.

50X1-HUM

SECRET

FLASHLIGHT A

OCTOBER 1957

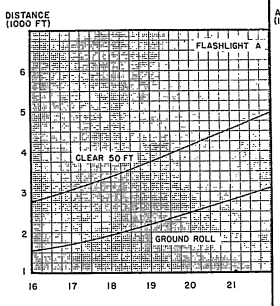
AIRCRAFT PERFORMANCE

CONDITIONS		Area (4) Intercept Basic Mission	Area Intercept Basic Mission	Area (4) Intercept Opt. Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)	21,200	20,200	21,200	20,200
Fuel at 6.7 lb/gal	(lb)	6,000	5,100	6,000	5,100
Payload (Ammo)	(lb)	300	300	300	300
Stall speed (power off, clean)	(kts)	155	150	155	150
Take-off ground run at SL	(ft) (1)	2,900	2500	2,900	2500
Take-off to clear 50 ft	(ft) (1)	4,600	4200	4,600	4200
Rate of climb at SL	(fpm) (1)	9,800	10,800	9,800	10,800
Time: SL to 40,000 ft	(min) (1)(2)(3)	8.4	7.8	8.4	7.8
Time: SL to 45,000 ft	(min) (1)(2)(3)	11.8	11.5	11.8	11.5
Service ceiling (100 fpm)	(ft) (1)(2)	46,800	48,100	46,600	48,100
Wing loading	(psf)	71	68	71	68
COMBAT RANGE	(NM)	950	805	1,100	945
COMBAT RADIUS	(NM)	455	380	530	450
Average speed	(kts)	500	500	500	500
Initial cruising altitude	(ft)	45,300	46,300	45,300	46,300
Final cruising altitude	(ft)	49,200	49,600	49,800	50,200
Total mission time	(hr) (3)	1.92	1.66	2.22	1.93
COMBAT WEIGHT	(lb)	18,400	17,900	18,100	17,600
Combat altitude	(ft)	48,300	49,000	48,700	49,300
Combat speed	(kts) (1)	510	515	510	515
Combat climb	(fpm) (1)	500	500	500	500
Combat ceiling (500 fpm)	(ft) (1)	48,300	49,000	48,700	49,300
Service ceiling (100 fpm)	(ft) (1)	49,800	50,500	50,200	50,800
Maximum R/C at SL	(fpm) (1)	11,300	12,200	11,600	12,400
Maximum speed at SL	(kts) (1)	605	610	605	610
Basic speed at 35,000 ft	(kts) (1)	540	540	540	540
Max Mach number at opt. altitude	(mn/ft)(1)	.94/35,000		.94/35,000	

NOTES
(1) Maximum power.
(2) Allows for weight reduction during ground operation and climb.
(3) Includes 1.4 minutes for take-off and acceleration to climb speed.
(4) 132 U. S. gal ventral tanks.

50X1-HUM

TAKE-OFF



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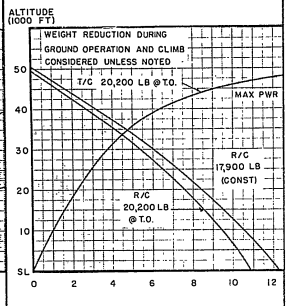

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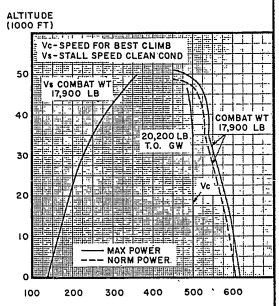
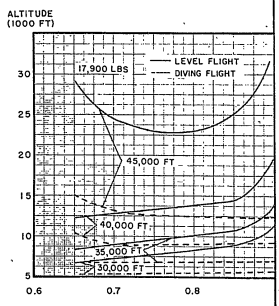
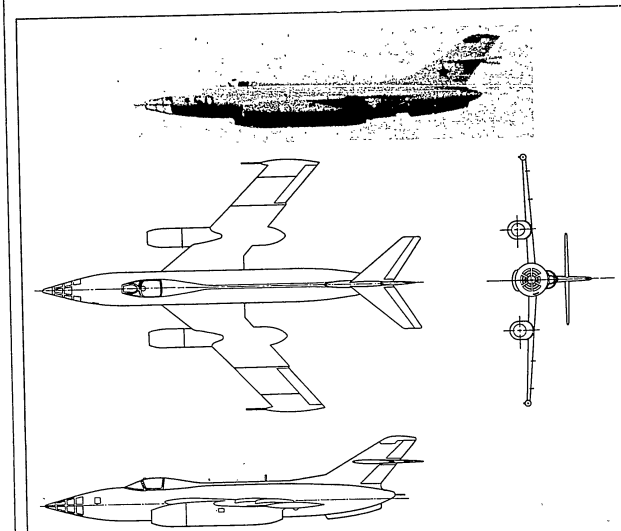


TURN RADIUS



50X1-HUM



REMARKS: FLASHLIGHT B is a plexiglass nose variant of the FLASHLIGHT C. The exact purpose of the aircraft is not known although configuration appears suitable for attack or reconnaissance role.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display.

50X1-HUM

DIMENSIONS

Wing	
Span	36 ft
Area	305 sq ft
Sweepback IBLE*	57.5 deg
Sweepback OBLE**	44 deg
Overall length	54.75 ft
Max diameter (fus)	4.75 ft
Tail	
Span	13 ft
Sweep	51 deg
Height from fuselage center line	9.6 ft

*Inboard leading edge
**Outboard leading edge

WEIGHTS

Loading (Attack)	lb
Empty	14,600
Take-off	23,400
Combat	19,100
Landing, aprx	17,300
AMPR	10,500
Loading (Reconnaissance)	lb
Empty	14,400
Take-off	21,000
Combat	18,400
Landing	17,100
AMPR	10,300

FUEL

	Weight, lb	gal
Internal	5100	761

POWER PLANT

No & Model	(2)
Type	Axial flow turbojet
Length	160 inches
Diameter	87.5 inches
Weight (dry)	1830 lbs

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	6700	1.85
Mil	5000	.935

BOMBS/FREIGHT

*Bombs can be carried on estimated 4 external (2/wing) suspension points. Size limited only by allowable weight for aircraft performance.

*Attack Only

GENERAL INFORMATION

Two place attack/reconnaissance fighter.
Landing gear is tandem type with outrigger gear.
On FLASHLIGHT B a plexiglass nose has been added replacing the solid nose on FLASHLIGHT C.
The bombing navigation radar of the MUSHROOM type has been added.
Bombs or stores may be carried internally.
Special aircraft may be fitted with electronic countermeasure equipment.

ELECTRONICS

Radar
- Bombing navigation MUSHROOM type
- IFF SRO type

Navigation
- Radio altimeter, low - RV-2
- Radio compass ARK-5
- Marker beacon receiver MRP-48P
- *Short range SHORERALK
- Long range navigation system (MOON)
- Distance measuring equipment SD-1

Communication
- VHF RSIU-3A (4 channel)
- Intercom SPU

*Special mission aircraft only.

GUNS

None

ROCKETS

Alternate load in lieu of bombs:
76 x 55 mm FFAR in 4 external pods (2 in each wing)
OR
4 x 325 mm SCATTERHEADS

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS		Ground Attack Opt. Mission
TAKE-OFF WEIGHT	(lb)	23,400
Fuel at 6.7 lb/gal	(lb)	5,100
Payload (Bombs)	(lb)	2,200
Wing loading	(psf)	76
Stall speed (power off, clean)	(kts)	158
Take-off ground run at SL	(ft) (1)	2,500
Take-off to clear 50 ft	(ft) (1)	4,300
Rate of climb at SL	(fpm)(1)	20,900
Time - SL to 40,000 ft	(min)((2)(3)(4)	10.1
Time - SL to 45,000 ft	(min) (2)(3)(4)	17.1
Service ceiling (100 fpm)	(ft) (1)	50,800
COMBAT RANGE	(NM)	---
COMBAT RADIUS	(NM)	160
Average speed	(kts)	505
Initial cruising altitude	(ft)	42,300
Final cruising altitude	(ft)	47,300
Total mission time	(hr)	.7
COMBAT WEIGHT	(lb)	19,100
Combat altitude	(ft)	SL
Combat speed	(kts)(1)	635
Combat climb	(fpm)(1)	26,000
Combat ceiling (500 fpm)	(ft) (1)	53,900
Service ceiling (100 fpm)	(ft) (1)	54,800
Max rate of climb at SL	(fpm)(1)	26,000
Max speed at SL	(kts)(1)	635
Max speed at opt. altitude	(kts/ft)(1)	635/SL
Max mach number at opt. altitude	(Mn/ft) (1)	1.0/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Allows for weight reduction during ground operation and climb.
(4) Includes 1.0 min. for take-off and acceleration to climb speed.

50X1-HUM

AIRCRAFT PERFORMANCE

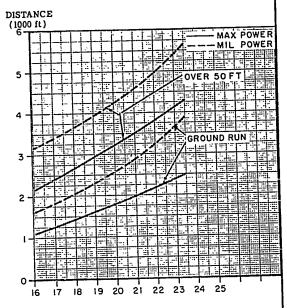
CONDITIONS			Reconnaissance Basic Mission		Reconnaissance Opt. Mission
TAKE-OFF GROSS WEIGHT	(lb)		21,000		21,000
Fuel at 6.7 lb/gal	(lb)		5,100		5,100
Payload (Ammo)	(lb)		300		500
Wing loading	(lb/sqft)		68		68
Stall speed (power off, clean)	(kts)		150		150
Take-off ground run at SL	(ft) (2)		2,900		2,900
Take-off to clear 50 ft	(ft) (2)		4,600		4,600
Rate of Climb at SL	(fpm)(1)		23,400		23,400
Time: SL to 40,000 ft	(min) (2) (4)(5)		8.6		8.6
Time: SL to 45,000 ft	(min) (2) (4)(5)		13.8		13.8
Service ceiling (100 fpm)	(ft) (1)		52,900		52,900
COMBAT RANGE	(NM)		595		735
COMBAT RADIUS	(NM)		300		360
Average speed	(kts)		505		505
Initial cruising altitude	(ft)		44,500		44,500
Reconnaissance speed run	(kts) (3)		515		515
Reconnaissance altitude	(ft)		45,000		45,300
Final cruising altitude	(ft)		47,300		47,900
Total Mission time	(hr)		1.22		1.49
COMBAT WEIGHT	(lb)		18,400		18,100
Combat altitude	(ft)		45,000		45,300
Combat speed	(kts)(1)		565		565
Combat climb	(fpm)(1)		4,800		4,800
Combat ceiling (500 fpm)	(ft) (1)		54,700		55,000
Service ceiling (100 fpm)	(ft) (1)		55,600		55,900
Max rate of climb at SL	(fpm)(1)		27,100		27,500
Max speed at opt. altitude	(kts/ft)(1)		635/SL		635/SL
Max mach number at opt. altitude	(Mn/ft) (1)		1.0/35,000		1.0/35,000

50X1-HUM

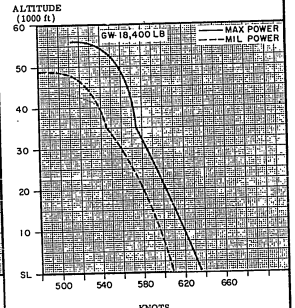
NOTES
(1) Maximum power.
(2) Military power.
(3) Normal power.
(4) Allows for weight reduction during ground operation and climb.
(5) Includes 1.0 min. for take-off and acceleration to climb speed.

RECONNAISSANCE VERSION

TAKE-OFF



SPEED



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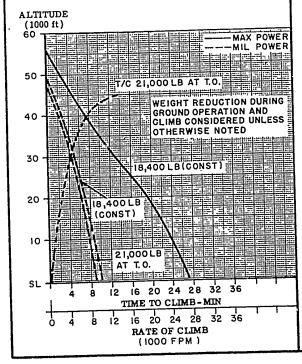
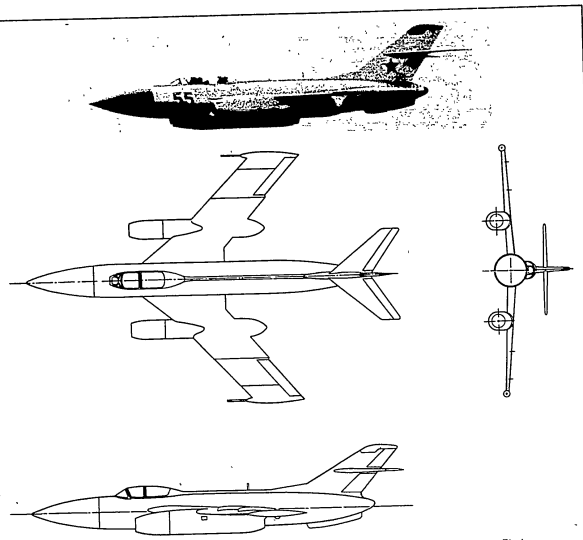


50X1-HUM

FLASHLIGHT C

January
1957



REMARKS: FLASHLIGHT C is a two-place twin-jet swept-wing all-weather fighter. It is a further development of FLASHLIGHT A.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display.

50X1-HUM

DIMENSIONS

Wing	
Span	36 ft
Area	305 sq ft
Sweepback IBLE*	57.5 deg
Sweepback OBLE**	44 deg
Overall length	54.75 ft
Max diameter (fus)	4.75 ft
Tail	
Span	13 ft
Sweep	51 deg
Height from fuselage center line	9.6 ft

*Inboard leading edge
**Outboard leading edge

WEIGHTS

Loading	lb
Empty	14,400
Take-off	21,000
Combat	18,600
Landing, aprx	16,800
AMPR	10,300

FUEL

	Weight, lb	gal
Internal	5100	761

POWER PLANT

No & Model	(2)
Type	Axial Flow turbojet
Length	160 inches
Diameter	27.5 inches
Weight (dry)	1830 lbs

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	6700	1.85
Mil	5000	.935

BOMBS/FREIGHT

No bomb load anticipated in view of interceptor role.

GENERAL INFORMATION

Two place all-weather fighter.
Landing gear is tandem type with outrigger gear.
On FLASHLIGHT C the nose has been modified to an ogive shape, replacing blunt nose on FLASHLIGHT A, and afterburners have been added to the engine to give improved performance.

ELECTRONICS

Radar
AI FD-6 w/computer
IFF SRO type
Radar warning receiver
Navigation
Radio compass - ARK-5
Radio altimeter, low - RV-2
Marker beacon receiver - MRP-48F
Communications
VHF RSIU-3M (4 channels)
Intercom SMU type

GUNS

2 x 37 mm N or improved N guns
50 rds/gun. 6 seconds of fire.

50X1-HUM

ROCKETS

76 x 55 mm FFAR in 4 external pods
(2 in each wing)
OR
4 x 325 mm SCATTERHEADS
OR
Type AAM-1 missiles

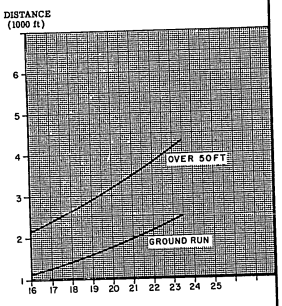
AIRCRAFT PERFORMANCE

CONDITIONS		Area Intercept Basic Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)	21,000	21,000
Fuel at 6.7 lb/gal	(lb)	5,100	5,100
Payload (Ammo)	(lb)	300	300
Wing loading	(psf)	68	68
Stall speed (power off, clean)	(kts)	150	150
Take-off ground run at SL	(ft)	2,900	2,900
Take-off to clear 50 ft	(ft)	4,600	4,600
Rate of climb at SL	(fpm) (1)	23,400	23,400
Time - SL to 40,000 ft	(min) (2)(3)(4)	8.6	8.6
Time - SL to 45,000 ft	(min) (2)(3)(4)	13.8	13.8
Service ceiling (100 fpm)	(ft) (1)	52,900	52,900
COMBAT RANGE	(NM)	595	735
COMBAT RADIUS	(NM)	235	295
Average speed	(kts)	505	505
Initial cruising altitude	(ft)	44,500	44,500
Final cruising altitude	(ft)	47,300	47,900
Total mission time	(hr)	---	---
COMBAT WEIGHT	(lb)	18,600	18,400
Combat altitude	(ft)	50,000	50,000
Combat speed	(kts) (1)	560	560
Combat climb	(fpm) (1)	2,400	2,500
Combat ceiling (500 fpm)	(ft) (1)	54,400	54,700
Service ceiling (100 fpm)	(ft) (1)	55,300	55,600
Max rate of climb at SL	(fpm) (1)	26,700	27,100
Max speed at SL	(kts) (1)	635	635
Max speed at opt. altitude	(kts/ft)(1)	635/SL	635/SL
Max mach number at opt. altitude	(Mn/ft)(1)	1.0/35,000	1.0/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Allows for weight reduction during ground operation and climb.
(4) Includes 1.0 min. for take-off and acceleration to climb speed.

50X1-HUM

TAKE-OFF



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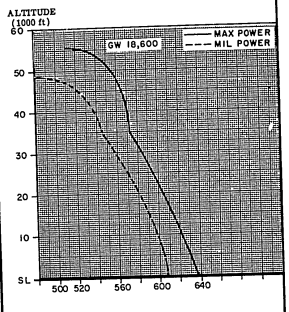

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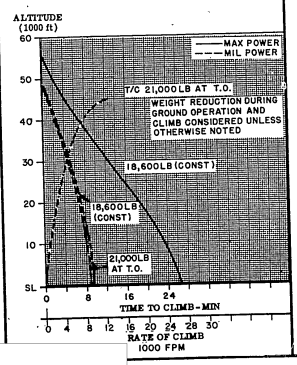
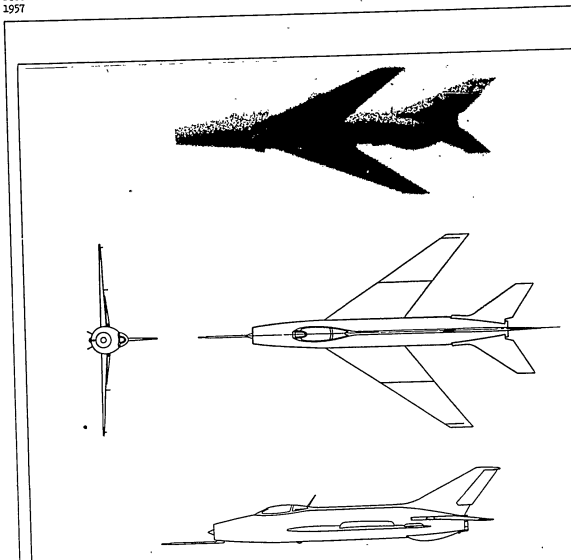


50X1-HUM



REMARKS: FACEPLATE is a single place super-sonic swept-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display.

50X1-HUM

DIMENSIONS

Wing	
Span	28 ft
Area	230 sq ft
Sweepback leading edge	56 deg
Overall length (w/boom)	50.1 ft
(w/o boom)	42.1 ft
Max depth (fus)	4.4 ft
width	4 ft
Tail	
Span	13 ft
Sweep	56 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,500
Take-off	13,700
Combat	12,400
Landing, aprx	11,000
AMPH	6,100

FUEL

	Weight, lb	gal
Internal	3200	477
External	2800	420

POWER PLANT

No & Model	(1)
Type	Axial flow turbojet
Length	173 inches
Diameter	38 inches
Weight (dry)	2950 lb
Exhaust nozzle Diameter	
Open	25.6 inches
Closed	21.6 inches

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:
2 x 2-10 KT 400 lb SPECIAL
OR
2 x 550 lb CLUSTER
OR
2 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Tricycle landing gear.
Fixed compression cone in center of intake.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If IR is not provided, aircraft will probably have at least automatic range only radar.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal tanks.

ELECTRONICS

Radar
Range only radar
IR
IFF SRO type
Navigation
Radio altimeter, low-RV-2
Radio compass - ARK-5
Marker beacon receiver MRP-48P
Communications
VHF RSIU-3M (4 channel)

GUNS

3 x 23 or 30 mm revolver type
120 rds/gun. 6 seconds of fire.

50X1-HUM

ROCKETS

2 x 325 mm SCATTERHEAD
OR
2 x 210 mm HE
OR
16 or 38 x 55 mm FFAR
OR
Type AAM-1 missiles

AIRCRAFT PERFORMANCE

CONDITIONS			Area (4) Intercept Basic Mission	Area Intercept Basic Mission	Area (4) Intercept Opt. Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		16,900	13,700	16,900	13,700
Fuel at 6.7 lb/gal	(lb)		6,000	3,200	6,000	3,200
Payload (Ammo)	(lb)		410	410	410	410
Wing loading	(psf)		74	60	74	60
Stall speed (power off, clean)	(kts)		150	135	150	135
Take-off ground run at SL	(ft)	(1)	2,100	1,300	2,100	1,300
Take-off to clear 50 ft	(ft)	(1)	4,400	3,000	4,400	3,000
Rate of climb at SL	(fpm)	(2)	14,500	23,400	14,500	23,400
Time - SL to 40,000 ft	(min)	(2)(3)	6.3	3.8	6.3	3.8
Time - SL to 50,000 ft	(min)	(2)(3)	---	6.3	---	6.3
Service ceiling (100 fpm)	(ft)	(2)	53,300(1)	52,700	53,300(1)	52,700
COMBAT RANGE	(NM)		1,200	---	1,395	595
COMBAT RADIUS	(NM)		510	140	610	215
Average speed	(kts)		525	535	530	535
Initial cruising altitude	(ft)		43,800	51,800	43,800	51,800
Final cruising altitude	(ft)		54,000	54,200	54,700	54,700
Total mission time	(hr)		2.0	.63	2.4	.92
COMBAT WEIGHT	(lb)	(5)	13,500(13,900)	12,400	13,200(13,600)	12,200
Combat altitude	(ft)		50,000	50,000	50,000	50,000
Combat speed	(kts)	(1) (5)	700(565)	720	705(565)	725
Combat climb	(fpm)	(1)	5,400	6,400	5,600	6,600
Combat ceiling (500 fpm)	(ft)	(1) (5)	59,100(56,600)	61,000	59,600(57,100)	61,300
Service ceiling (100 fpm)	(ft)	(1)	60,000	61,800	60,500	62,100
Max rate of climb at SL	(fpm)	(1)	47,400	51,000	48,200	51,800
Max speed at SL	(kts)	(1)	700	700	700	700
Max speed at opt. altitude	(kts/ft)	(1)	885/35,000	890/35,000	885/35,000	895/35,000
Max mach number at opt. altitude	(Mn/ft)	(1)	1.54/35,000	1.55/35,000	1.54/35,000	1.56/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Includes 0.8 min to take-off and accelerate to climb speed without tanks, or 0.9 min with tanks.
(4) 2 x 210 US external tanks.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.

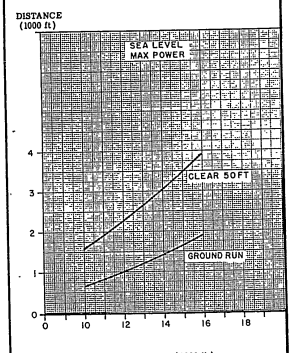
50X1-HUM

SECRET

FACEPLATE

December 1957

TAKE-OFF



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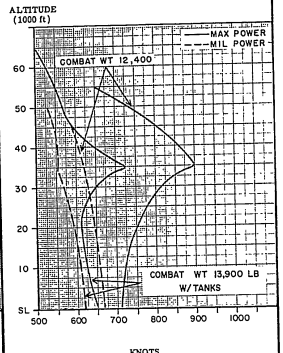

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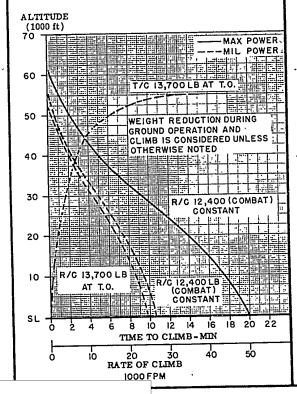


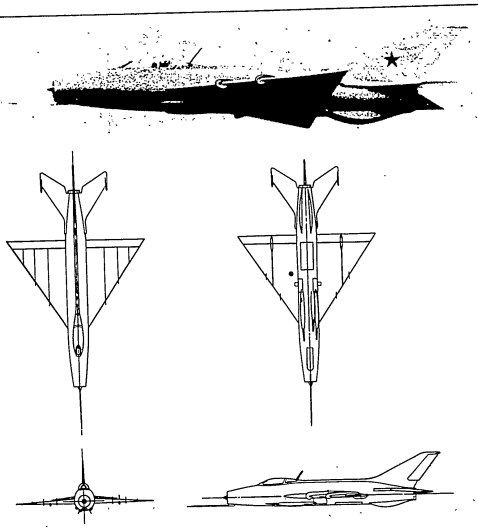
50X1-HUM

SECRET

SECRET

January 1957

FISHBED A



REMARKS: FISHBED A is a single place super-sonic delta-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed to be a prototype.

50X1-HUM

SECRET

DIMENSIONS

Wing	
Span	27 ft
Area	265 sq ft
Sweepback leading edge	55.5 deg
Overall length (w/boom)	50.1 ft
(w/o boom)	42.1 ft
Max depth (fus)	4.4 ft
width	4 ft
Tail	
Span	13 ft
Sweep	56 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,300
Take-off	13,500
Combat	12,200
Landing, aprx	10,900
AMFR	6,000

FUEL

	Weight, lb	gal
Internal	3200	477

POWER PLANT

No and Model	(1)
Type	Axial flow turbojet
Length	175 inches
Diameter	38 inches
Weight (dry)	2950 lb
Exhaust Nozzle Diameter	
Open	25.6 inches
Closed	21.6 inches

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:
2 x 2-10 KT 400 lb SPECIAL
OR
2 x 550 lb CLUSTER
OR
2 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Tricycle landing gear.
Delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone in center of intake.
Aircraft may be equipped with a lead pursuit fire control system utilising IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar

ELECTRONICS

Radar
Range only radar
IR
IFF SRO type
Navigation
Radio altimeter, low-RV-2
Radio compass - ARK-5
Marker beacon receiver MRP-48P
Communications
VHF RSIU-3M (4 channel)

GUNS

3 x 23 or 30 mm revolver type
120 rds/gun. 6 seconds of fire.

50X1-HUM

ROCKETS

2 x 325 mm SCATTERHEAD
OR
2 x 210 mm HE
OR
16 or 38 x 55 mm FFAR
OR
Type AAM-1 missiles

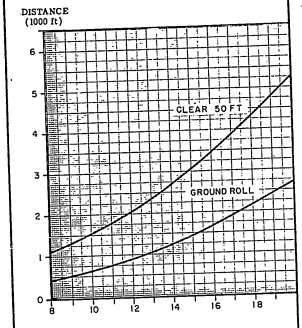
AIRCRAFT PERFORMANCE

CONDITIONS			Area Intercept Basic Mission		Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		13,500		13,500
Fuel at 6.7 lb/gal	(lb)		3,200		3,200
Payload (Ammo)	(lb)		410		410
Wing loading	(psf)		51		51
Stall speed (power off, clean)	(kts)		130		130
Take-off ground run at SL	(ft)	(1)	1,200		1,200
Take-off to clear 50 ft	(ft)	(1)	2,500		2,500
Rate of climb at SL	(fpm)	(2)	20,900		20,900
Time - SL to 40,000 ft	(min)	(2) (3)	4.1		4.1
Time - SL to 50,000 ft	(min)	(2) (3)	7.9		7.9
Service ceiling (100 fpm)	(ft)	(1)	58,500		58,500
COMBAT RANGE	(NM)		---		580
COMBAT RADIUS	(NM)		130		195
Average speed	(kts)		535		535
Initial cruising altitude	(ft)		49,900		49,900
Final cruising altitude	(ft)		52,600		53,100
Total mission time	(hr)		0.58		0.83
COMBAT WEIGHT	(lb)		12,200		12,000
Combat altitude	(ft)		50,000		50,000
Combat speed	(kts)	(1)	665		670
Combat climb	(fpm)	(1)	5,700		6,000
Combat ceiling (500 fpm)	(ft)	(1)	59,800		60,100
Service ceiling (100 fpm)	(ft)	(1)	60,400		60,700
Max rate of climb at SL	(fpm)	(1)	45,800		46,600
Max speed at SL	(kts)	(1)	680		680
Max speed at opt. altitude	(kts/ft)	(1)	835/35,000		835/35,000
Max mach number at opt altitude	(Mn/ft)	(1)	1.4 /35,000		1.45/35,000

NOTES (1) Maximum power.
(2) Military power.
(3) Includes .8 min. for take-off and acceleration to climb speed.

50X1-HUM

TAKE-OFF



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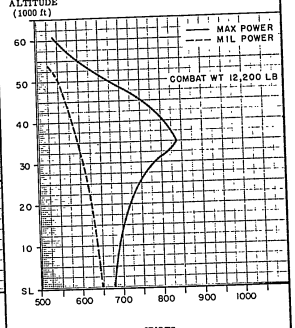

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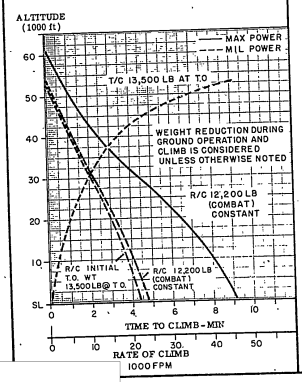
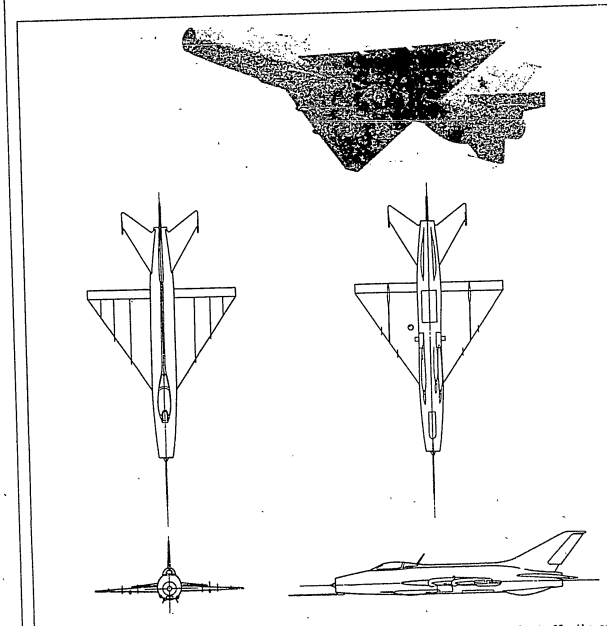


50X1-HUM



REMARKS: FISHBED B is a single-place super-sonic delta-wing day interceptor basically the same as FISHBED A with only slight modification.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed to be a prototype.

50X1-HUM

DIMENSIONS

Wing	
Span	25 ft
Area	260 sq ft
Sweepback leading edge	55.5 deg
Overall length (w/boom)	50.1 ft
(w/o boom)	42.1 ft
Max depth (fus)	4.4 ft
width	4 ft
Tail	
Span	13 ft
Sweep	59 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,300
Take-off	13,500
Combat	12,200
Landing, aprx	10,900
AMPR	6,000

FUEL

	Weight, lb	gal
Internal	3200	477

POWER PLANT

No and Model	(1)
Type	Axial flow turbojet
Length	175 inches
Diameter	38 inches
Weight (dry)	2950 lb
Exhaust Nozzle Diameter	
Open	25.6 inches
Closed	21.6 inches

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:

2 x 2-10 KT 400 lb SPECIAL
OR
2 x 550 lb CLUSTER
OR
2 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Tricycle landing gear.
Delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone in center of intake.
Fishbed B configuration is the same as FISHNET A with the exception of clipped wing tips and a modified fairing at the horizontal tail-fuselage juncture.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar.

ELECTRONICS

Radar
Range only radar
IR
IFF SRO type
Navigation
Radio altimeter, low-RV-2
Radio compass - ANK-5
Marker beacon receiver MRP-48P
Communications
VHF RSIU-3M (4 channel)

GUNS

3 x 23 or 30 mm revolver type
120 rds/gun. 6 seconds of fire.

ROCKETS

2 x 325 mm SCATTERHEAD
OR
2 x 210 mm HE
OR
16 or 32 x 55 mm FFAR
OR
Type AAM-1 missiles

50X1-HUM

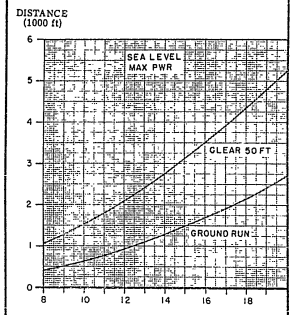
AIRCRAFT PERFORMANCE

CONDITIONS		Area Intercept Basic Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)	13,500	13,500
Fuel at 6.7 lb/gal	(lb)	3,200	3,200
Payload (Ammo)	(lb)	410	410
Wing loading	(psf)	52	52
Stall speed (power off, clean)	(kts)	130	130
Take-off ground run at SL	(ft) (1)	1,200	1,200
Take-off to clear 50 ft	(ft) (1)	2,600	2,600
Rate of climb at SL	(fpm) (2)	20,900	20,900
Time - SL to 40,000 ft	(min) (2)(3)	4.1	4.1
Time - SL to 50,000 ft	(min) (2)(3)	7.8	7.8
Service ceiling (100 fpm)	(ft) (1)	58,000	58,000
COMBAT RANGE	(NM)	---	540
COMBAT RADIUS	(NM)	125	185
Average speed	(kts)	540	540
Initial cruising altitude	(ft)	48,700	48,700
Final cruising altitude	(ft)	51,400	51,900
Total mission time	(hr)	.57	.79
COMBAT WEIGHT	(lb)	12,200	12,000
Combat altitude	(ft)	50,000	50,000
Combat speed	(kts) (1)	680	685
Combat climb	(fpm) (1)	5,300	5,500
Combat ceiling (500 fpm)	(ft) (1)	59,300	59,600
Service ceiling (100 fpm)	(ft) (1)	59,900	60,200
Max rate of climb at SL	(fpm) (1)	48,300	49,200
Max speed at SL	(kts) (1)	680	680
Max speed at opt. altitude	(kts/ft)(1)	840/35,000	845/35,000
Max mach number at opt. altitude	(M=/ft)(1)	1.46/35,000	1.46/35,000

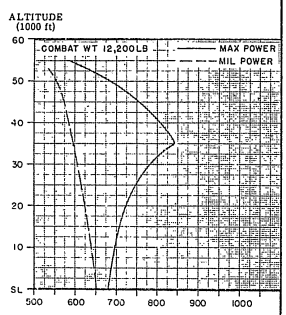
NOTES (1) Maximum power.
(2) Military power.
(3) Includes .8 min. for take-off and acceleration to climb speed.

50X1-HUM

TAKE-OFF



SPEED



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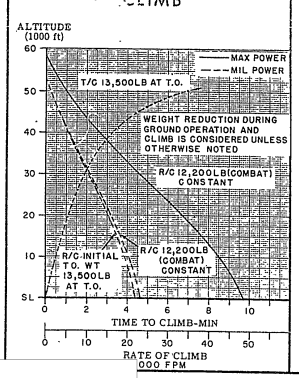
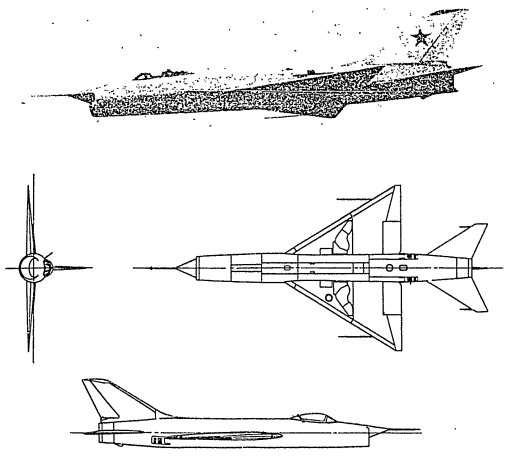


50X1-HUM



REMARKS: FISHPOT is a single-place supersonic delta-wing limited all-weather interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed to be an experimental prototype. Aircraft may be developed for future operation.

50X1-HUM

DIMENSIONS

Wing	
Span	24 ft
Area	250 sq ft
Sweepback leading edge	58.5 deg
Overall length (w/boom)	50.25 ft
(w/o boom)	42.65 ft
Diameter	4.16 ft
Tail	
Span	12.75 ft
Sweep	58 deg
Height from fuselage center line	7.7 ft

WEIGHTS

Loading	lb
Empty	9,900
Take-off	14,900
Combat	13,600
Landing, aprx	12,000
AMPR	6,100

FUEL

	Weight, lb	gal
Internal	3700	552

POWER PLANT

No & Model	(1)
Type	Axial flow turbojet
Length	188 inches
Diameter	42.25 inches
Weight (dry)	3500 lbs
Exhaust Nozzle Diameter	
Open	28.1 inches
Closed	23.6 inches

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	15,200	1.90
Mil	11,200	0.95

BOMBS/FREIGHT

GENERAL INFORMATION

Single place limited all weather interceptor.
Tricycle landing gear.
Slightly clipped delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone above air intake may house AI gear capable of short range search track.

ELECTRONICS

Radar
Search track AI
IFF SRO type
Navigation
Radio compass ARK-5
Radio altimeter, Low-RV-2
Marker beacon receiver MRP-48P
Communications
VHF RSIU-3M (8-12 channel)

GUNS

No armament apparent on aircraft sighted. Developed aircraft may have
1 x 37/30 mm Gatling 120 rds
(1-2 sec)

50X1-HUM

ROCKETS

38 x 55 mm FFAR in 2 external pods
(1 under each wing)
OR 2 x 220 mm Discreet frag.
OR 2 x 220 mm with 10" 2-10 kt nuclear heads
OR Type AAM 1, 2 missiles

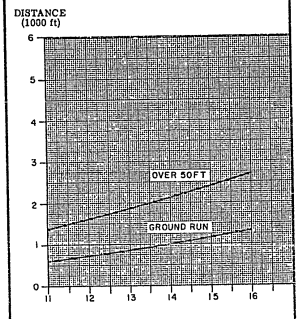
AIRCRAFT PERFORMANCE

CONDITIONS			Area Intercept Basic Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		14,900	14,900
Fuel at 6.7 lb/gal	(lb)		3,700	3,700
Payload (Armo)	(lb)		410	410
Wing Loading	(psf)		60	60
Stall speed (power off, clean)	(kts)		140	140
Take-off ground run at SL	(ft)		1,200	1,200
Take-off to clear 50 ft	(ft)		2,400	2,400
Rate of climb at SL	(fpm)	(2)	27,400	27,400
Time - SL to 40,000 ft	(min)	(2)(3)(4)	3.4	3.4
Time - SL to 50,000 ft	(min)	(2)(3)(4)	6.7	6.7
Service ceiling (100 fpm)	(ft)	(2)	50,700	50,700
COMBAT RANGE	(NM)		420	555
COMBAT RADIUS	(NM)		65	130
Average speed	(kts)		540	540
Initial cruising altitude	(ft)		50,700	50,700
Final cruising altitude	(ft)		53,100	53,800
Total mission time	(hr)	(3)	.34	.58
COMBAT WEIGHT	(lb)		13,600	13,400
Combat altitude	(ft)		50,000	50,000
Combat speed	(kts)	(1)	980	980
Combat climb	(fpm)	(1)	6,300	6,500
Combat ceiling (500 fpm)	(ft)	(1)	59,000	59,300
Service ceiling (100 fpm)	(ft)	(2)	58,500	58,900
Max rate of climb at SL	(fpm)	(1)	57,200	58,000
Max speed at SL	(kts)	(1)	800	800
Max speed at opt. altitude	(kts/ft)		1090/35,000	1090/35,000
Max mach number at opt. altitude	(Mo/ft)		1.90/35,000	1.90/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) .7 minutes to accelerate to V climb included.
(4) Allows for weight reduction during ground operation and climb.

50X1-HUM

TAKE-OFF



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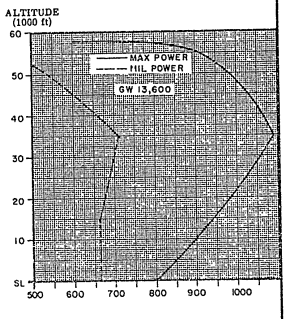

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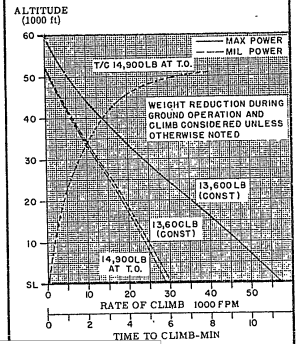
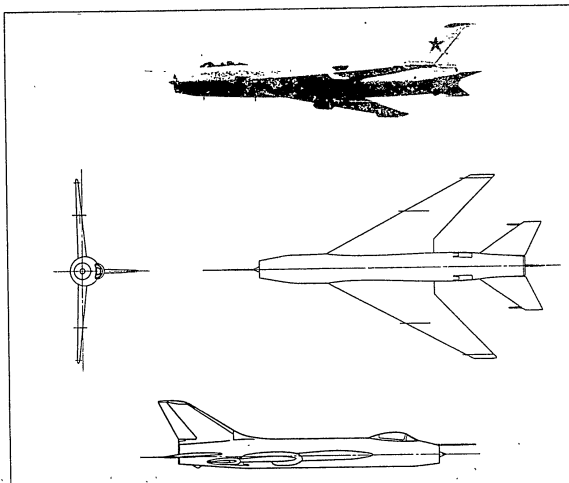


50X1-HUM

December 1957

FITTER



REMARKS: FITTER is a single-place supersonic swept-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed this aircraft will be in operation in the near future.

50X1-HUM

AF-WP-O-11 APR 56 100

DIMENSIONS

Wing	
Span	26.5 ft
Area	250 sq ft
Sweepback leading edge	62 deg
Overall length (w/boom)	46.3 ft
(w/o boom)	41 ft
Diameter	4.16 ft
Tail	
Span	12.75 ft
Sweep	55 deg
Height from fuselage center line	7.7 ft

WEIGHTS

Loading	lb
Empty	10,300
Take-off	15,300
Combat	14,000
Landing, aprx	12,300
AMGR	6,800

FUEL

	Weight, lb	gal
Internal	3700	552
External	2800	420

POWER PLANT

No & Model	(1)
Type	Axial flow turbojet
Length	188 inches
Diameter	42.25 inches
Weight (dry)	3500 lbs
Exhaust Nozzle Diameter	
Open	28.1 inches
Closed	23.6 inches

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	15,200	1.90
Mil	11,200	0.95

BOMBS/FREIGHT

2 x 2-10 KT 400 lb SPECIAL
OR
2 x 250 lb CLUSTER
OR
2 x 250 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Tricycle landing gear.
Intake provided with translating compression cone.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided, aircraft will probably have at least automatic range only radar.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal external tanks.

ELECTRONICS

Radar
Range only radar
IR
IFF SRO type
Navigation
Radio altimeter, low-RV-2
Radio compass ARK-5
Marker beacon receiver MRP-48P
Communications
VHF RSIU-3M (4 channel)

GUNS

No armament apparent on aircraft sighted. Developed aircraft may have 3 x 30 or 37 mm revolver type, 100 rds/gun. 5 seconds of fire.

50X1-HUM

ROCKETS

2 x 385 mm SCATTERHEAD
OR
2 x 210 mm HE
OR
16 or 38 x 55 mm FFAR
OR
2 x 220 mm Discreet frag
OR
Type AAM-1 missiles

AIRCRAFT PERFORMANCE

CONDITIONS			Area (6) Intercept Basic Mission	Area Intercept Basic Mission	Area (6) Intercept Opt. Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		18,500	15,300	18,500	15,300
Fuel at 6.7 lb/gal	(lb)		6,500	3,700	6,500	3,700
Payload (Ammo)	(lb)		410	410	410	410
Wing loading	(psf)		74	61	74	61
Stall speed (power off, clean)	(kts)		150	135	150	135
Take-off ground run at SL	(ft)	(1)	1,700	1,100	1,700	1,100
Take-off to clear 50 ft	(ft)	(1)	3,200	2,300	3,200	2,300
Rate of climb at SL	(fpm)	(2)	15,100	27,100	15,100	27,100
Time - SL to 40,000 ft	(min)	(2)(3)(4)	5.6	3.5	5.6	3.5
Time - SL to 50,000 ft	(min)	(2)(3)(4)	---	6.4	---	6.4
Service ceiling (100 fpm)	(ft)	(2)	46,100	52,000	46,100	52,000
COMBAT RANGE	(NM)		1,065	455	1,245	590
COMBAT RADIUS	(NM)		390	75	480	140
Average speed	(kts)		525	535	530	535
Initial cruising altitude	(ft)		45,400	51,700	45,400	51,700
Final cruising altitude	(ft)		53,900	54,100	54,700	54,700
Total mission time	(hr)	(3)	1.6	.37	1.9	.60
COMBAT WEIGHT	(lb)	(5)	15,200(15,600)	14,000	14,900(15,200)	13,800
Combat altitude	(ft)		50,000	50,000	50,000	50,000
Combat speed	(kts)	(1) (5)	1,000(880)	1,035	1,000(895)	1,035
Combat climb	(fpm)	(1)	5,400	6,400	5,600	6,600
Combat ceiling (500 fpm)	(ft)	(1) (5)	58,300(58,800)	60,000	58,800(56,800)	60,400
Service ceiling (100 fpm)	(ft)	(2)	52,200	53,900	52,700	54,200
Max rate of climb at SL	(fpm)	(1)	54,200	59,000	55,400	60,200
Max speed at SL	(kts)	(1)	800	800	800	800
Max speed at opt altitude	(kts/ft)	(1)	1,180/35,000	1185/35,000	1,180/35,000	1185/35,000
Max mach number at opt. altitude	(Mn/ft)	(1)	2.05/35,000	2.06/35,000	2.05/35,000	2.06/35,000

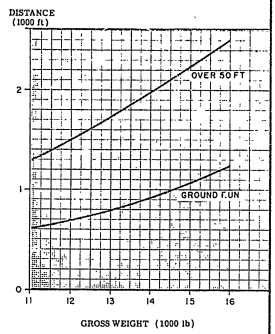
NOTES
(1) Maximum power.
(2) Military power.
(3) .7 minute to accelerate to V climb included.
(4) Allows for weight reduction during Ground Operation and Climb.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) 2 x 210 US gal external tanks.

50X1-HUM

F1.1.2B

December 1957

TAKE-OFF



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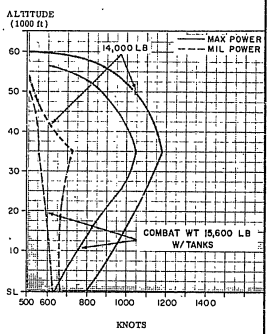

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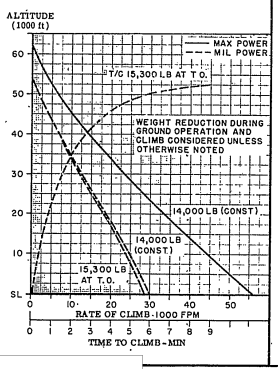
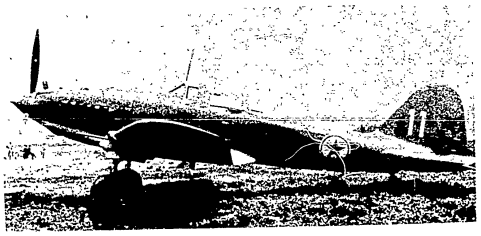


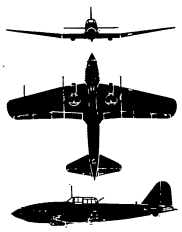
50X1-HUM

July 1953

U. S. S. R.

II-10





II-10

DESCRIPTION

Low-wing monoplane. The center section of the wing, which is probably integral with fuselage main section, has a slightly swept-back leading edge. The trailing edge sweeps forward from root fillets. The fuselage is reported to be shorter, slimmer and lighter than that of the Il-2. In general, characteristics are probably very similar.

50X1-HUM

BOMBERS

Il-10 | July 1953

Il-10

Mfr. Designer: Ilyushin Crew 2
Type Attack Bomber (Ground Attack)

PERFORMANCE

Maximum Speeds: 262 knots @ S.L.; 273 knots @ 5500 ft alt.; 222 knots @ 20000 ft alt.
Cruising Speeds: Normal Power knots @ ft alt.: Economical knots @ ft alt.
Climb: 5.0 mins. to 10000 ft alt.; Rate of Climb: 1950 ft/min. at SL ft alt.
Service Ceilings: ft with normal weight; 23500 ft with 13090 lbs weight
Take-Off distance over 50 ft obstacle Concrete 2400 Turf 2500 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 193, Maximum ; External: Normal , Maximum

RANGES

360 nautical miles	nautical miles	nautical miles
@ 167 knots, 5000 ft alt.	@ knots, ft alt.	@ knots, ft alt.
with 193 US gals. of fuel	with US gals. of fuel	with US gals. of fuel
and 880 lbs. bombs	and lbs.	and lbs.

Combat Radius: 170 Nautical Miles

POWER PLANT

No. Engines 1 — Take-Off 1975 hp. @ SL ft alt. 2500 rpm 61 in. Hg.
Type Engines Reciprocating — Normal 1730 hp. @ 6500 ft alt. 2350 rpm 52.5 in. Hg.
Military hp. @ ft alt. rpm in. Hg.
War Emergency hp. @ ft alt. rpm in. Hg.

Description AM-42, 12-cylinder, upright "V", liquid-cooled

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.24 ins	Dry Wt.	2260	No. Speeds	1	Mfr.	AVL-5L-24
Stroke	7.5-7.75 ins	Red. Gear	.611	No. Stages	1	No. Blades	3
Displ.	2850 cu. ins	Eng. Width	34.4 in	Ratios	11:1	Dia.	11 ft. 10 ins
Comp. Ratio	5.5 : 1	Eng. Length	90 in	Impeller Dia	10.5 ins	Pitch Control	Hydraulic

Type 95/115,95/130 Gasoline

ARMAMENT

Guns:
2x23 mm in wing VYA
2x7.62 mm in wing SHKAS
1x12.7 mm in power turret in rear end of cockpit. BERKUTA
Rockets: 2x132 mm under wing
Gunsight PBP-1a reflector type

BOMB/FREIGHT LOAD

Normal Load 880 lbs
Maximum Load 1320 lbs
Stowage:
6x220 lb bombs or
8x110 lb bombs
Bombsight Unknown

COMBAT PROTECTION

Armor Bullet proof windshield.
Fuselage from rear of cockpit forward is sheathed in 6.5 mm armor.
Armor behind gunner.
Fuel Tanks Protected

SPECIFICATIONS

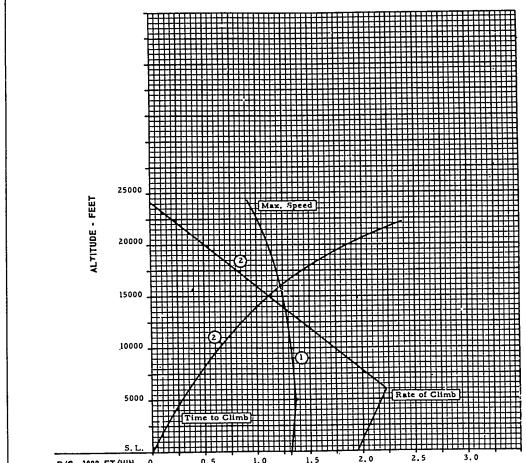
Materials All metal construction
Span: 44 ft, in; Length: 36 ft, 8 in; Height: ft, in; Gross Wing Area 323 sq. ft
Weights: Airframe 5100 lbs; Normal Gross 14040 lbs; Maximum Gross 14980 lbs

ADDITIONAL DATA

The Il-10 is a development of the Il-2 with more powerful engines. It became operational in 1944 and is replacing the Il-2 "Stormovik". It is currently in production and is in use in large numbers in the Soviet Air Force as a ground attack aircraft. It has the same armor covering as the Il-2, 6.5 mm plating over the engine and cockpit and behind the gunner's seat. The bomb installation is believed to consist of two internal bomb-bays in the wing roots and external racks under the fuselage. LCE-6 radio equipment is fitted.
Performance data shown are used on latest available USAF flight test data (May 1952).

50X1-HUM

July 1953 | USSR | Il-10



Performance

DESCRIPTION

(1) Take-off Power (2500 RPM)
Gross Weight 13020 lb

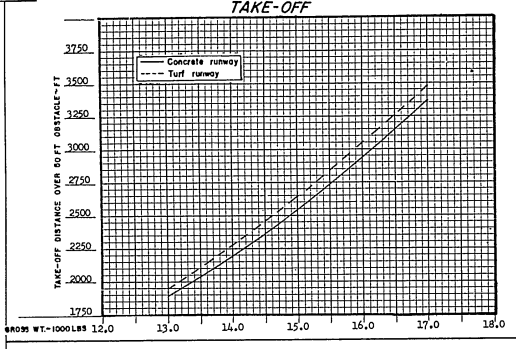
(2) Normal Rated Power (2350 RPM)
Gross Weight 13090 lb

Performance curves based on USAF flight test. Take-off Power limitation precludes its use for climb.

50X1-HUM

Il-10 | U.S.S.R. | July 1953

TAKE-OFF

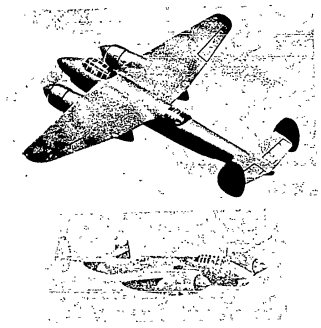


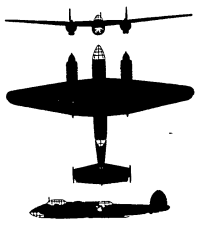
PERFORMANCE

DESCRIPTION

50X1-HUM

March 1952 | U. S. S. R. | Tu-2





Tu-2

DESCRIPTION

It is a twin-engine, shoulder-wing monoplane. Engines are underslung in long slender nacelles. The air scoop is prominent on top of the engines. A large diameter propeller spinner is fitted. The fuselage has deep oval shape and appears quite slender with sharply pointed nose. Lower half of the nose is plexiglass-covered. There is pronounced dihedral in horizontal tail and oval-shaped twin-rudders are fitted. A gunner's position is on top of fuselage behind wing, also ventral gun position with several observation windows is provided.

50X1-HUM

Tu-2 | March 1952

Tu-2

Mfr. Designer: Tupolav Crew 3 or 4
Type Light Bomber

PERFORMANCE

Maximum Speeds: 250 knots @ S.L.; 278 knots @ 15500 ft alt.; 250 knots @ 25000 ft alt.
Cruising Speeds: Normal Power 250 knots @ 15000 ft alt.; Economical 180 knots @ 20000 ft alt.
Climb: 6.2 mins. to 10000 ft alt.; Rate of Climb: 1730 ft/min. at SL ft alt.
Service Ceilings: 29000 ft with normal weight: ft with lbs weight
Take-Off distance over 50 ft obstacle ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 715, Maximum 875; External: Normal , Maximum

COMBAT RANGES

850 nautical miles @ 178 knots, 10000 ft alt. with 715 US gals. of fuel and 3300 lbs. bombs	1040 nautical miles @ 178 knots, 10000 ft alt. with 875 US gals. of fuel and 2200 lbs. bombs	125 nautical miles @ 178 knots, 10000 ft alt. with 125 US gals. of fuel and 7000 lbs. bombs
Combat Radius: 400 Nautical Miles	Combat Radius: 500 Nautical Miles	Combat Radius: 50 Nautical Miles

POWER PLANT

No. Engines 2 Type Engines Reciprocating

Take-Off	1825	hp. @ SL	ft alt.	2500	rpm	48 in. Hg.
Normal	1350	hp. @ 16750	ft alt.	2400	rpm	in. Hg.
Military	1625	hp. @ 5400	ft alt.	2400	rpm	40.1 in. Hg.
War Emergency		hp. @	ft alt.		rpm	in. Hg.

Description ASH-82 FNV, 14 cylinder, air-cooled radial

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.1 ins	Dry Wt.	1980	No. Speeds	2	Mfr. AV-5	Type Gasoline 59/115.95/130.
Stroke	6.1 ins	Red. Gear	1.45:1	No. Stages	1	No. Blades 3	
Displ.	2555 cu. ins	Eng. Width	49.5 in.	Ratios	7.14 & 10:1	Dia. 13 ft. 0 ins	
Comp. Ratio	7 :1	Eng. Length	79 in.	Impeller Dia.	ins	Pitch Control Constant speed nonfeathering	

ARMAMENT

Guns: 2x20mm/150rpg. Fixed, wing roots
1x12.7mm/150rpg. Flex. rear cockpit.
1x12.7mm/250rpg. Flex. Upper.
1x12.7mm/350rpg. Flex. Lower.

Gunsight Pilot: PBP-1a, Upper: PBP-1, Lower: OP-2L

BOMB/FREIGHT LOAD

Normal Load 3300 lbs
Maximum Load 7000 lbs
Stowage: Internal, 9 x 220 lb. bombs, or 3 x 1100 lb. bombs, or 15 x 220 lb. bombs
Stowage: External, 2 torpedoes or 2 x 2200 lb. bombs
Bombsight OPB-1D

COMBAT PROTECTION

Armor: 9mm. armor behind pilot. Pilot and gunners protected.
Fuel Tanks Self sealing.

SPECIFICATIONS

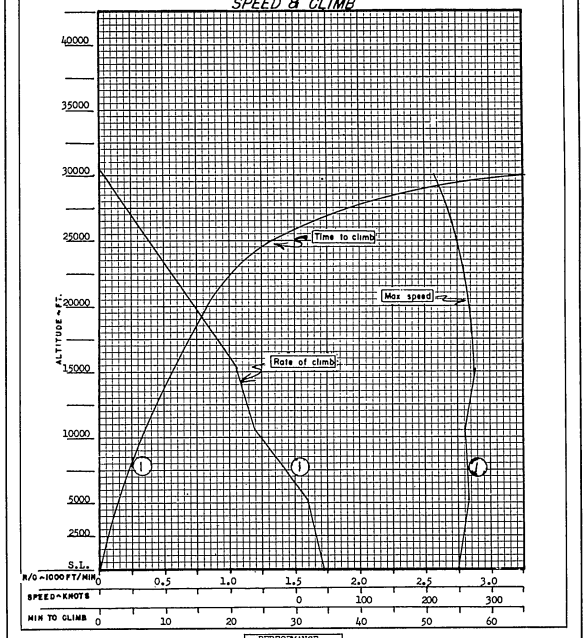
Materials All metal construction
Span: 62 ft, in; Length: 45 ft, 7 in; Height: 15 ft, 10 in; Gross Wing Area 530 sq. ft
Weights: Airframe 8600 lbs; Normal Gross 24460 lbs; Maximum Gross lbs

ADDITIONAL DATA

One of the U.S.S.R.'s latest operational bombers. First placed in operational use in 1944 and is still their main first line light bomber. The ASH-82 FNV engine is improved model of the U.S. Wright R-2600 engine built under license. I.F.F., high frequency transmitter-receiver, interphone amplifier, and an RPKO-10M radio compass are installed.

50X1-HUM

March 1952 | U.S.S.R. | Tu-2



PERFORMANCE

DESCRIPTION

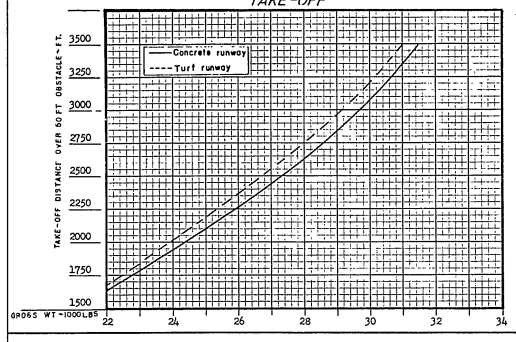
(1) MILITARY POWER, NORMAL GROSS WT. 24255 LBS.

50X1-HUM

CONFIDENTIAL

Tu-2 | U.S.S.R. | March 1952

TAKE-OFF



PERFORMANCE

DESCRIPTION

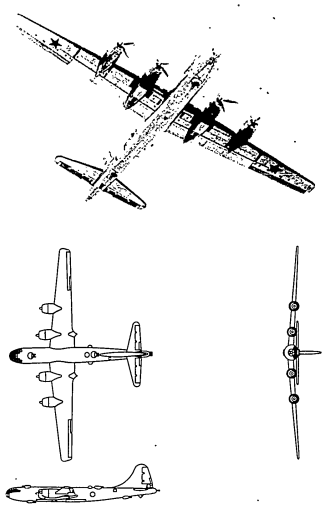
50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

January 1958

BULL



REMARKS: BULL is a mid-wing four-engined monoplane. Engine nacelles extend well forward of the leading edge of the wing. The inboard nacelles extend beyond the trailing edge of the wing. Wings taper to square tips. Fuselage is circular with the nose extending well forward of the engines. Single tail with prominent fin. Tricycle landing gear with dual wheels is fully retractable.

SUMMARY

BULL is a copy of the U.S. B-29A acquired by the Soviets in World War II. The USSR credits the aircraft to the designer TUPOLEV. The Soviet designation is TU-4. BULL has been operational in the USSR since 1948, but has been largely replaced by more modern jet aircraft.

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

TU-4

March 1952

Tu-4

Mfr. Designer: Tupolev Crew 11
Type Bomber

PERFORMANCE

Maximum Speeds: 262 knots @ S.L.; 350 knots @ 30000 ft alt.; 332 knots @ 25000 ft alt.
Cruising Speeds: Normal Power 302 knots @ 25000 ft alt.; Economical 198 knots @ 10000 ft alt.
Climb: 32.0 mins. to 35000 ft alt.; Rate of Climb: 1620 ft/min. at SL ft alt.
Service Ceilings: 39550 ft with normal weight; ft with lbs weight
Take-Off distance over 50 ft obstacle 7825 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 7748, Maximum ; External: Normal , Maximum

RANGES

3100 nautical miles	2140 nautical miles	1660 nautical miles
@ 175 knots, 10000 ft alt.	@ 179 knots, 10000 ft alt.	@ 167 knots, 10000 ft alt.
with 7748 US gals. of fuel	with 6060 US gals. of fuel	with 4415 US gals. of fuel
and 10000 lbs Bombs	and 20000 lbs Bombs	and 10000 lbs Bombs
Combat Radius: 1700	Combat Radius: 1230	Combat Radius: 880

POWER PLANT

No. Engines 4 Type Engines Reciprocating

Take-Off	2200 hp.	@ SL ft alt.	2800 rpm	in. Hg.
Normal	2000 hp.	@ 25000 ft alt.	2400 rpm	in. Hg.
Military	2200 hp.	@ 25000 ft alt.	2600 rpm	in. Hg.
War Emergency	hp.	@ ft alt.	rpm	in. Hg.

Description ASH 90, 18 cylinder, air-cooled radial
(Believed to be a copy of the U.S. Wright R-3350)

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.125 ins	Dry Wt.	2668	No. Speeds	Turbo	Hfr.	Type Gasoline
Stroke	6.3 ins	Gnd. Gear	2.86:1	No. Stages		No. Blades	4 100-130 grade
Displ.	cu. ins	Eng. Width	56 in.	Ratios	6.4:1	Dia.	16 ft. 6 ins
Comp. Ratio	6.85:1	Eng. Length	76 in.	Impeller Dia.	13 ins	Pitch Control	Hydromatic

ARMAMENT

Guns 2x12.7 upper turrets
2x12.7mm lower forward turret
2x12.7mm lower rear turret
3x12.7mm tail turret
However, 2x23mm installations have been seen in turrets.

Gunsight May be copy of U.S. central fire control system

BOMB/FREIGHT LOAD

Normal Load 10000 lbs
Maximum Load 20000 lbs

Bomb loads probably similar to U.S. B-29

Bombsight Possibly German Lotfe 7 type

COMBAT PROTECTION

Armor Unknown

Fuel Tanks Unknown

SPECIFICATIONS

Materials All metal construction
Span 141 ft, 3 in; Length: 99 ft, 0 in; Height: 27 ft, 10 in; Gross Wing Area 1736 sq. ft
Weights: Airframe 68000 lbs; Normal Gross 140,000 lbs; Maximum Gross 140,000 lbs

ADDITIONAL DATA

This medium bomber is a copy of the US B-29A aircraft acquired by the Soviets in WW II. The main differences are the substitution of Soviet guns for the US guns, and the possibility of internal changes which are not apparent from photographs. The USSR credits the aircraft to the designer Tupolev, and it is their standard medium bomber today. While the removal of the defensive armament except for the tail turret and the addition of the fuel would increase the combat range to 3960 NM and the radius to 2150 NM in the stripped version. the above figures are based on US performance for the B-29A.

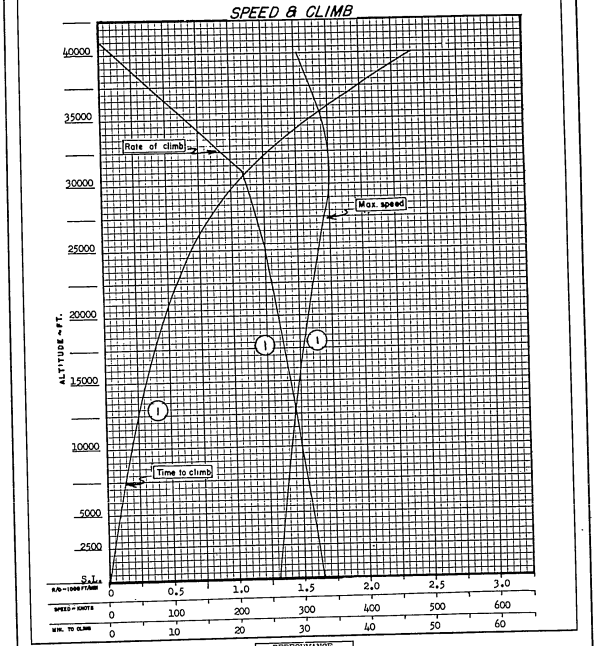
50X1-HUM

CONFIDENTIAL

March 1952

U.S.S.R.

TU-4



PERFORMANCE

DESCRIPTION

(1) MILITARY POWER, COMBAT GROSS WT. 101470 LBS.

50X1-HUM

CONFIDENTIAL

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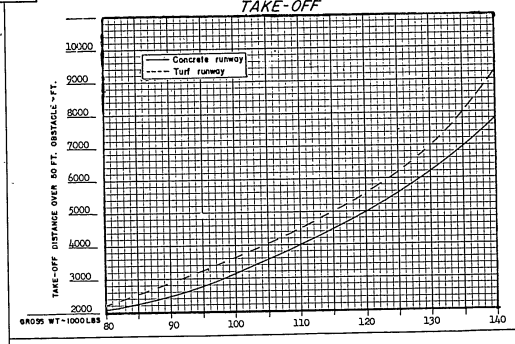
Tu-4 | U.S.S.R. | March 1952

TAKE-OFF



PERFORMANCE

DESCRIPTION

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

Jan 1954 | U.S.S.R. | Type-31

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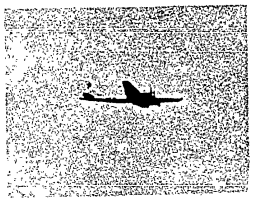
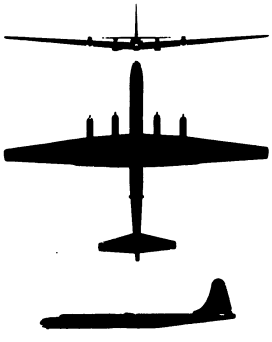




Type-31

DESCRIPTION

This heavy bomber was first seen at the July 1951 air show at the Tushino Airfield in Moscow.

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

Type-31 | Jan 1954

Type-31

Mfr. Designer Tupolev Crew
Type Heavy Bomber

PERFORMANCE

Maximum Speeds: knots @ S.L.; knots @ ft alt.; knots @ ft alt.
Cruising Speeds: Normal Power knots @ ft alt.; Economical knots @ ft alt.
Climb: mins. to ft alt.; Rate of Climb: ft/min. at lbs weight
Service Ceilings: ft with normal weight; ft with lbs weight
Take-Off distance over 50 ft obstacle: ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 9975, Maximum; External: Normal, Maximum

RANGES

nautical miles	3700 nautical miles	nautical miles
@ knots, ft alt.	@ 185 knots, 25000 ft alt.	@ knots, ft alt.
with US gals. of fuel	with 9975 US gals. of fuel	with US gals. of fuel
and lbs	and 0 lbs Bombs	and lbs

Radius: 1850 NM

POWER PLANT

No. Engines 4 — Type Engines Reciprocating

Take-Off	2700 hp.	@ SL ft alt.	rpm	in. Hg.
Normal	2500 hp.	@ 25,000 ft alt.	rpm	in. Hg.
Military	hp.	@ ft alt.	rpm	in. Hg.
War Emergency	hp.	@ ft alt.	rpm	in. Hg.

Description: Assumed improved version Soviet ASH-90

SPECIFICATIONS	SUPERCHARGER	PROPELLER	FUEL
Bore ins Dry Wt.	No. Speeds	Mfr.	Type Gasoline
Stroke ins Red. Gear	No. Stages	No. Blades 4	100/130 grade
Displ. cu. ins Eng. Width	Ratios	Dia. 17 ft, ins	
Comp. Ratio Eng. Length	Impeller Dia ins	Pitch Control	

ARMAMENT

Guns
Gunsight

BOMB/FREIGHT LOAD

Normal Load lbs
Maximum Load lbs
Bombsight

COMBAT PROTECTION

Armor
Fuel Tanks

SPECIFICATIONS

Materials
Span: 180 ft, in; Length: 130 ft, in; Height: ft, in; Gross Wing Area 2870 sq. ft
Weights: Airframe lbs; Normal Gross 160,000 lbs; Maximum Gross lbs

ADDITIONAL DATA

The exact engines installed are unknown; however, the 1951 Type-31 characteristics and performance are estimated for improved Soviet ASH-90 engines assumed to be available immediately prior to July 1951. On the basis of the estimated power plants installed, the aircraft appears to be a prototype, pending installation of more powerful engines.

For reasonable operational performance, it is estimated that engines of approximately 5000 SHP, BHP or equivalent thrust will be required. To give an indication of the aircraft's capabilities with adequate power, performance is shown below for an assumed installation of 4 x Jumo 022 turbo prop engines.

Take-off Weight -- 210,000 lb.
Bomb Load -- 10,000 lb.
Max Speed (at 35,000 ft.) -- 325 kts.
Rate of climb -- 2,000 fpm at S.L.
Combat Ceiling -- 35,000 ft.
Range/Radius -- 4,800 2,500 nautical miles

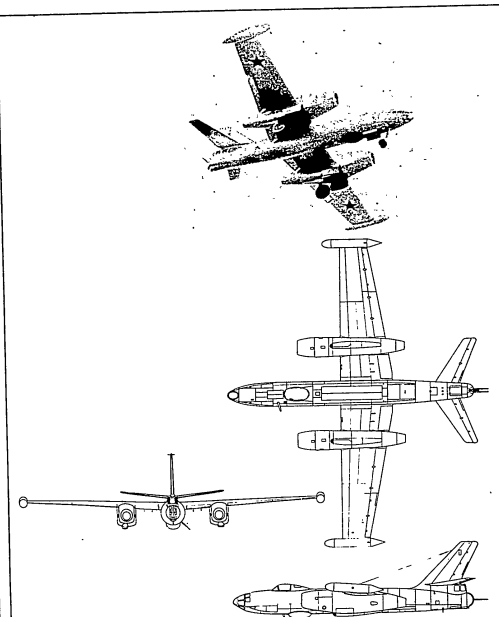
CONFIDENTIAL
CHARACTERISTICS OF FOREIGN AIRCRAFT

50X1-HUM

CONFIDENTIAL

June 1956

BEAGLE (IL-28)



REMARKS: The IL-28 (BEAGLE) is a twin-jet light bomber designed by ILYUSHIN. It has a straight wing mounted shoulder high and swept back tail surfaces.

SUMMARY

1955 First appeared in operational numbers in the May Day 1950 Airshow in Moscow. Air- 50X1-HUM operational use in the Soviet and Satellite Air Forces.

CONFIDENTIAL

DIMENSIONS

Wing	
Span	70.5 ft
Area	670 sq ft
Aspect ratio	7.4
Overall length	59 ft
Height (gear down)	20.5 ft
Max diameter fuselage	5.7 ft

WEIGHTS

Loading	Lb
Empty	23,600
Take-off	
Normal	44,400
Max	47,600
AMPR	16,800

FUEL

	lb	Gallon
Internal	14,600	2200
External	3000	440

POWER PLANT

No. & Model	(2) VK-1/VK-1A
Type	Centrifugal
Length	93 in.
Diameter	50 in.
Weight (dry)	1900 lbs (VK-1)
	2000 lbs
Exhaust Nozzle	(Fixed)
	360 sq. in.

Note: Later versions of Il-28 use VK-1A engines.

ENGINE RATINGS

SL Static	lb	SFC.#/hr/#
	(VK-1)	
Take-off	6000	1.10
Nominal	5300	1.06
Normal	4800	1.05
	(VK-1A)	
Take-off	7000	1.07
Nominal	6200	1.04
Normal	5600	1.02

BOMBS/FREIGHT

A bomb bay 14.0 ft long, 3.2 ft wide, 3.1 ft high at side wall and 3.4 ft high at the centerline permits the following bomb loads:

	lb	Type
Normal	4400	General purpose (in combination)

For example:

2 FAB 1000	2200 lb ea	4400 lb	total
4 FAB 500	1100 lb ea	4400 lb	total
8 FAB 250	550 lb ea	4400 lb	total
1 FAB 3000	6600 lb ea	6600 lb	total
1 FAB 1500	3300 lb ea	3300 lb	total
27 FAB 100	200 lb ea	5940 lb	total

Max 6600 lb with WW II types or improved ballistic changes. (Max load increase to 8800 lb highly probable.)

GENERAL INFORMATION

General information only is quoted hereon. For more detailed information on characteristics and performance, see AFIC Study No. 102-AC-51/27-34, entitled (Uncl) Analysis of Twin Jet Airplanes.

Engines are cantilever mounted forward of the wing leading edge.

Retractable tricycle landing gear. Main gear folds into engine nacelles.

Wings are tapered on trailing edge and straight on leading edge. Tips are square. Slotted type flaps extend from the fuselage to the nacelle and from the nacelle outboard approximately ten feet to the aileron.

It has a glassed-in nose for visual bombing.

A single bomb bay is located in the central part of the fuselage.

Defensive armament consists of two fixed guns, installed side by side and parallel to each other, under the flight deck, and a tail turret installation similar to the US B-29 type. It is estimated that a range only fire control system is installed.

A radome, housing blind bombing and navigation radar is located on the underside of the fuselage.

The aircraft has been observed carrying wing tip tanks.

ELECTRONICS

Radar
Blind bombing and navigation similar to US AN/APQ-13, nicknamed "Mushroom"
IFF - SRO
Navigation
Radio compass - ARK-5
Radio altimeter, low - RV-2
Radio altimeter, high - similar to US SCR-718
Distance measuring equipment - Unknown type
Marker beacon - MRP-48P
Communication
VHF command radio - 4 channel-RSIU-3K
MF/HF liaison radio - ARC-13 and US-9

GUNS

Estimate 2 x 23 mm guns in tail turret and 2 x 23 mm fixed forward firing gun in nose of fuselage

Gun type	Cal	Cycle Rate	Muzzle Vel
NR-23	23-mm	700	2300

ROCKETS

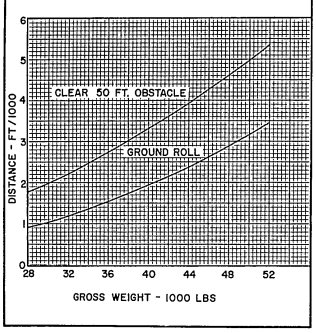
None

AIRCRAFT PERFORMANCE

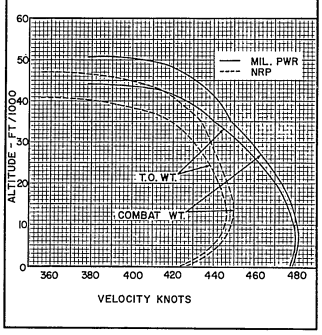
CONDITIONS			I BASIC WO/TT (5)	II BASIC WO/TT (5)	III BASIC W/TT (5)	IV OPTIMUM WO/TT (5)	V OPTIMUM W/TT (5)
TAKE-OFF WEIGHT	(lb)		44,400	46,600	47,600	46,600	47,600
Fuel at 6.7 lb/gal	(lb)		14,600	14,600	17,600	14,600	17,600
Payload (bombs)	(lb)		4,400	6,600	4,400	6,600	4,400
Wing loading	(lb/ft^2)		66	69	71	69	71
Stall speed (power off)	(kn)		115	120	120	120	120
Take-off ground run at SL	(ft)	(1)	2,400	2,700	2,800	2,700	2,800
Take-off to clear 50 ft	(ft)	(1)	4,000	4,400	4,600	4,400	4,600
Rate of climb at SL	(fpm)	(1)	4,900	4,600	4,400	4,600	4,400
Time - SL to 20,000 ft	(min)	(1)	5.0	6.0	6.0	6.0	6.0
Time - SL to 30,000 ft	(min)	(1)	9.0	10.0	10.0	10.0	10.0
Service ceiling (100 fpm)	(ft)	(1)	43,600	42,500	41,900	42,500	41,900
COMBAT RANGE	(NM)		990	930	1,200	1,100	1,400
COMBAT RADIUS	(NM)		510	495	615	605	745
Average cruise speed	(kn)		400	400	395	390	390
Initial cruising altitude	(ft)		39,300	38,300	37,300	40,400	39,000
Target speed	(kn)	(2)	410	410	405	395	395
Target altitude	(ft)		41,000	39,800	39,900	42,500	42,200
Total mission time	(hr)		2.50	2.50	3.00	3.00	4.00
COMBAT WEIGHT	(lb)		32,200	32,100	33,800	31,100	32,800
Combat altitude	(ft)		41,000	39,800	39,900	42,500	42,200
Combat speed	(kn)	(1)	440	445	440	440	435
Combat ceiling (500 fpm)	(ft)	(1)	47,300	47,300	46,200	48,000	46,900
Service ceiling (100 fpm)	(ft)	(1)	50,000	50,200	48,900	50,800	49,500
Max rate of climb at SL	(fpm)	(1)	6,900	6,950	6,450	7,200	6,700
Max speed at 7,500 ft	(kn)	(1)	480	480	475	480	475
Max speed at 35,000 ft	(kn)	(1)	450	450	450	450	450
Max speed at optimum altitude	(kn/ft)	(1)	480/7000	480/7000	480/9000	480/7000	480/9000
LANDING WEIGHT	(lb)		28,000	28,000	28,400	26,500	26,800

NOTES
VK-1A engine rated at 7000 lb SLST
(1) Max power. (2) Normal rated power.
(3) Missions I, II, and III are in accordance with Mil-C5011A specs.
(4) Missions IV and V are flown at the ceiling for best NM/lb or limited to 100 fpm ceiling potential rate of climb at Normal Power. Reserves permit 1/2 hour loiter at Sea Level with 1 engine operating.
(5) WO/TT = without tip tanks. W/TT = with tip tanks.

TAKE - OFF

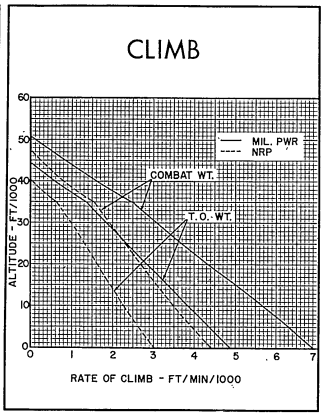


SPEED



VK-1A ENGINE RATED AT
6000 LB SLST.

CLIMB



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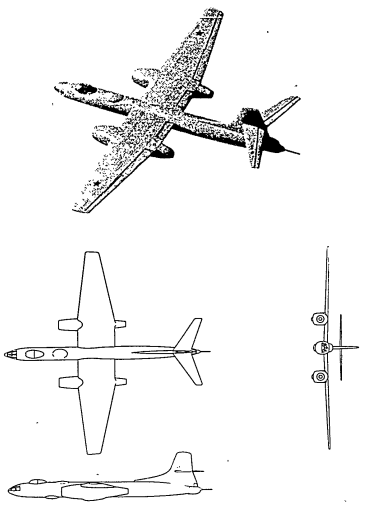


REMARKS: BOSUN is a twin-jet Naval bomber designed by TUPOLEV. The Soviet designation of BOSUN is TU-14.

SUMMARY

This aircraft was first seen in the July 1951 airshow at Tushino airfield in Moscow. It has been in service use since 1951 and is now being replaced by the Il-28.

50X1-HUM

CONFIDENTIAL

Type 35 | March 1952

Type 35

Mfr. Designer: Tupolev Crew 3
Type Light Bomber (probably Navy)

PERFORMANCE

Maximum Speeds: 467 knots @ S.L.; 473 knots @ 15000 ft alt.; 432 knots @ 40000 ft alt.
Cruising Speeds: Normal Power ____ knots @ ____ ft alt.; Economical ____ knots @ ____ ft alt.
Climb: 4.5 mins. to 15000 ft alt.; Rate of climb: 3800 ft/min. at SL ft alt.
Service Ceilings: 43000 ft with normal weight: ____ ft with ____ lbs weight
Take-off distance over 50 ft obstacle 3970 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 2417, Maximum ____; External: Normal ____, Maximum ____
Combat Ceiling 39,500

RANGES

1510 nautical miles @ 398 knots, 37500/41100 ft alt. with 2417 US gals. of fuel and 4400 lbs bombs	2125 nautical miles @ 398 knots 32500/42000 ft alt. with 3025 US gals. of fuel and 0 lbs bombs	____ nautical miles @ ____ knots, ____ ft alt. with ____ US gals. of fuel and ____ lbs
Combat Radius: 765	Combat Radius: 1040	

POWER PLANT

No. 2 | Type Jet

Take-Off	6000 lbs thrust, @ ____	ft alt.	100%	rpm ____	knots ____
Normal	4800 lbs thrust, @ ____	ft alt.	94%	rpm ____	knots ____
Military	6000 lbs thrust, @ ____	ft alt.	100%	rpm ____	knots ____
War Emerg.	____ lbs thrust, @ ____	ft alt.	____	rpm ____	knots ____

Description VK-1 Turbo-jet

SPECIFICATIONS

Overall Dimensions: Length approx. 100-105 ins, Dia. approx. 50 ins
Net Dry Weight 2000 lbs
Compressor Centrifugal type
Compression Ratio 4.41
Type of Fuel Kerosene

Air Mass Flow 110-115 approx. ____ lbs/sec
Combustion Chambers 9
Turbine Stages 1
Specific Fuel Consumption 1.14 approx. (T.O., Sea Level, Static)

ARMAMENT

Guns 2x23mm Tail turret
possibly 2x23mm in nose section
Gunsight ____

BOMB/FREIGHT LOAD

Normal Load 4400 lbs
Maximum Load 6600 lbs
Bombsight ____

COMBAT PROTECTION

Armor ____
Fuel Tanks ____

SPECIFICATIONS

Materials ____
Span: 78 ft, ____ in; Length: 64 ft, 6 in; Height: ____ ft, ____ in; Gross Wing Area 768 sq. ft
Weights: Airframe ____ lbs; Normal Gross 46000 lbs; Maximum Gross ____ lbs

ADDITIONAL DATA

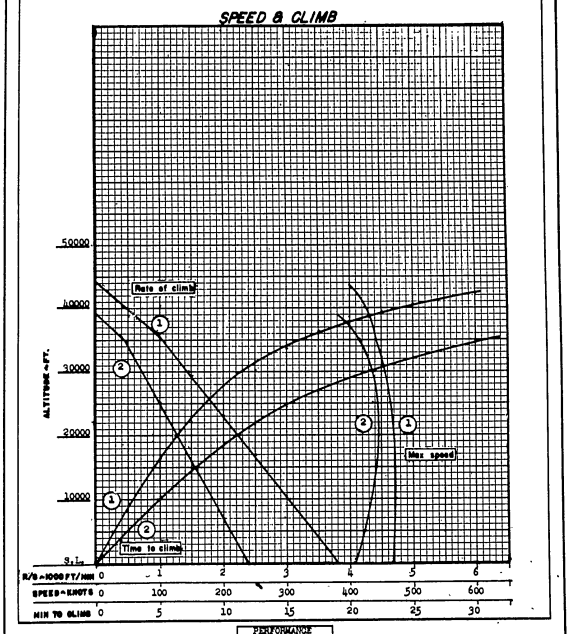
The Type 35 is believed to be the operational model of the Type 12. The type 35 was first seen at the July 51 Moscow Air Show in numbers.

50X1-HUM

CONFIDENTIAL

March 1952 | U.S.S.R. | Type-35

SPEED & CLIMB



PERFORMANCE

DESCRIPTION

(1) MILITARY POWER, GROSS WEIGHT 46,000 lbs.

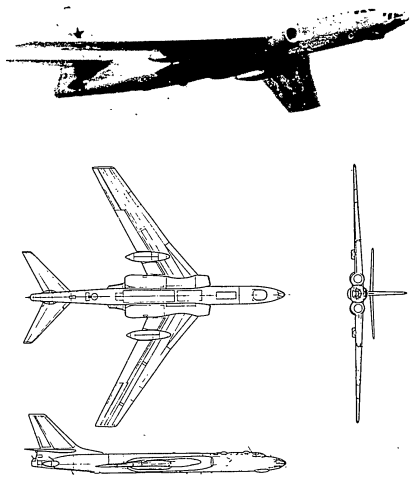
(2) NORMAL POWER, GROSS WEIGHT 46,000 lbs.

50X1-HUM

CONFIDENTIAL

December
1957

BADGER



REMARKS: BADGER is a swept-wing, medium twin-jet bomber similar in configuration to the BISON and is of TUPOLEV design. The Soviet designation is TU-16.

SUMMARY

This aircraft was first observed at KAZAN in 1953 and has been observed in numbers since 1955.

50X1-HUM

DIMENSIONS

Wing	
Span	114 ft
Area	2000 sq ft
Aspect ratio	6.72
Cathedral	2.0 deg
Sweepback	
Inboard leading edge	42.0 deg
Outboard leading edge	37.0 deg
Overall length	121.4 ft
Height, gear up	26.8 ft
Fuselage depth	8.5 ft
Fuselage width	8.0 ft

WEIGHTS

Loading	lb
Empty	76,400
Takeoff	160,000
ANPR	92,500

FUEL

Internal	Weight, lb	Gal
	68,500	10,200

For 10,000 lb design bomb load.

POWER PLANT

No. & Model	(2) Mikulin AM-3AN
Type	Axial-flow
Length	18 ft
Diameter	53 in
Weight (dry)	5500 lb
Exhaust Nozzle	6.25 sq ft

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Takeoff	19,800	0.92
Normal Power	17,000	.89

BOMBS/FREIGHT

A bomb bay 23.5 feet long, 5.25 feet wide, and 4.3 feet high permits the following bomb loads:

	lb	Type
Normal	1700 to 20,000	Special Purp.
	or	
	20,000	General Purp. (in combination)

For example:

1 FAB 5000	11,000 lb ea	11,000 total
5 FAB 1000	2,200 lb ea	11,000 total
18 FAB 500	1,100 lb ea	19,800 total
36 FAB 250	550 lb ea	19,800 total

Max 20,000 lb WWII or improved ballistic shapes

GENERAL INFORMATION

Retractable tricycle landing gear with main gear housed in special nacelles.

Wings are cranked at mid-span position. Two stall fences on each wing located at half semi-span and at two-thirds semi-span.

The forward portion of the crew compartment consists of a flat windshield similar to the US DC-6 installation.

A single bomb bay is located in the fuselage extending equally forward and aft of the wing trailing edge.

Defensive armament consists of three turrets located in upper forward, lower forward and tail positions and a fixed forward firing nose gun.

Fire control for upper forward turret is provided from a top blister located forward of the turret and behind the pilot; the lower turret is selectively controlled from side blisters located directly aft of pilot and mid-way up side of fuselage. Optical tail turret control is provided from inhabited gunner's station similar to US B-29 type with apparent fire control radar radome of 18 inch diameter over compartment with probable capability of search/track.

A large radome, suitable for blind bombing and navigation is located on the underside of the fuselage below the canopy.

BADGER is equipped for aerial refueling using a unique system incorporating a hose connection between the wing tips of two BADGER aircraft.

ELECTRONICS

RADAR
- IFF SRO Type
- Tail Warning
- Tail Def. Search/Track
- Range Only
- Bomb Nav. W/Computer

NAVIGATION
- D.R. Navigator
- Radio Compass
- Marker Beacon
- Radio Altimeter
- ILS, DME, Rend. Beacon
- Long Range Nav Rcvr
- Sun Compass

COMMUNICATIONS
- HF, VHF
- Intercom

GUNS

2 x 23 to 30 mm modified NR or high performance type with cyclic rate from 800 to 1000 rpm guns in each turret
1 fixed NR 23 mm forward firing gun -- right side of nose section.

50X1-HUM

ROCKETS

None

AIRCRAFT PERFORMANCE

CONDITIONS			Mission I[4]	Mission II[4]	Mission III[5]	Mission IV[5]
TAKE-OFF WEIGHT	(lb)		160,000	160,000	160,000	160,000
Fuel at 6.7 lb/gal	(lb)		68,500	75,500	68,500	75,500
Payload (bombs)	(lb)		10,000	3,300	10,000	3,300
Wing loading	(lb/sqft)		80	80	80	80
Stall speed (power off)	(kn)		110	110	110	110
Take-off ground run at SL	(ft)	(1)	4,600	4,600	4,600	4,600
Take-off to clear 50 ft	(ft)	(1)	7,000	7,000	7,000	7,000
Rate of climb at SL	(fpm)	(1)	4,150	4,150	4,150	4,150
Time: SL to 35,600 ft	(min)	(1)	18.0	18.0	18.0	18.0
Service ceiling (100 fpm)	(ft)	(1)	40,400	40,400	40,400	40,400
COMBAT RANGE	(NM)		2,800	3,300	3,100	3,600
COMBAT RADIUS	(NM)		1,500	1,700	1,600	1,800
Average cruise speed	(kn)		465	465	465	465
Initial cruising altitude	(ft)		35,600	35,600	35,600	35,600
Target speed	(kn)	(2)	475	475	475	475
Target altitude	(ft)		40,300	41,000	40,800	41,400
Final cruising altitude	(ft)		47,100	47,000	48,000	48,000
Total mission time	(hr)		6.5	7.5	7.0	8.0
COMBAT WEIGHT	(lb)		112,000	116,000	110,000	113,000
Combat altitude	(ft)		40,300	41,000	40,800	41,000
Combat speed	(kn)	(1)	490	490	490	490
Combat rate of climb	(fpm)	(1)	800	800	800	800
Combat ceiling (500 fpm)	(ft)	(1)	45,000	44,000	45,400	44,500
Service ceiling (100 fpm)	(ft)	(1)	48,300	47,600	48,800	48,100
Max rate of climb at SL	(fpm)	(1)	6,050	5,850	6,200	6,000
Max speed at opt altitude	(kn/ft)	(1)	550/13,200	550/13,200	550/13,200	550/13,200
Basic speed at 35,000 ft	(kn)	(1)	505	505	505	505
TERMINAL TARGET ALTITUDE	(ft)	(1) (3)	50,000	51,500	50,000	51,500

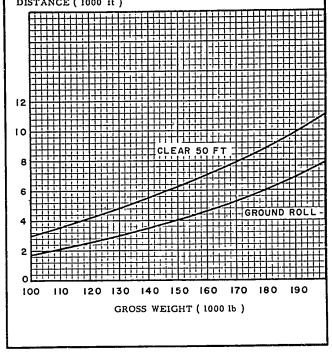
NOTES
(1) Maximum Power, AM-3AN engine rated at 19,800 lb SLST.
(2) Normal Power.
(3) Service Ceiling at maximum power - with one hour fuel reserve for two engines operating, [illegible] bomb load.
(4) Missions I and II are in accordance with Mil-C-5011A Specification.
(5) Missions III and IV are flown at the ceiling for best NR/lb or limited to 100 ft/min ceiling potential rate of climb at normal power. Reserves permit one-half hour loiter at SL, two-engine operation.

50X1-HUM

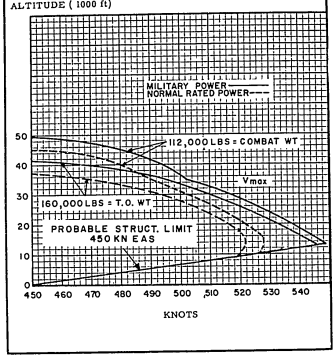
BADGER

December 1957

TAKE-OFF



SPEED



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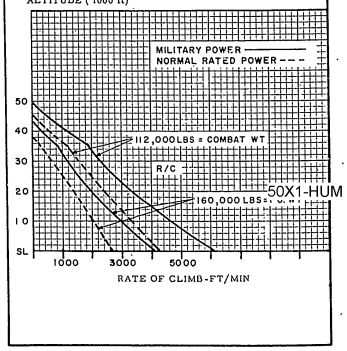
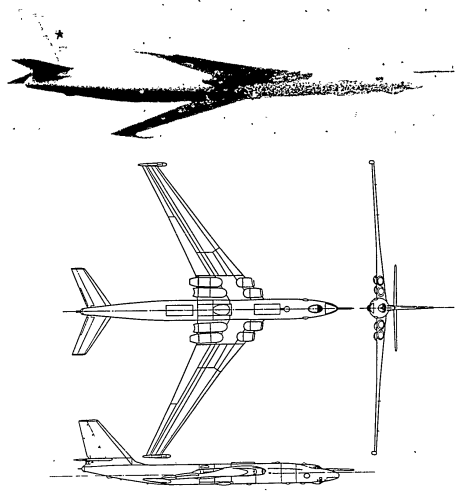


50X1-HUM

December 1957

BISON



REMARKS: BISON is a swept-wing, four-engine, heavy jet bomber considered to have been designed by MIASISCHEV. Two versions of this aircraft are in operation. The long nose version is presently in production.

SUMMARY

This aircraft has been observed in numbers since 1955.

50X1-HUM

BISON

December 1957

DIMENSIONS

Wing	
Span	170 ft
Area	3550 sq ft
Aspect ratio	8.1
Cathedral	3 deg
Sweepback	
Inboard leading edge	41 deg
Outboard leading edge	36.5 deg
Overall length (short nose)	155 ft
(long nose)	157 ft
Height, gear up	39 ft
Max diameter fuselage	11.5 ft

WEIGHTS

Loading	lb
Empty	150,000
Takeoff	395,000
AUW	103,000

FUEL

Weight	lb	gal
	227,000	33,900

For 10,000 lb design bomb load.

POWER PLANT

No. & Model	(4) Mikulin AM-3AM
Type	Axial flow
Length	18 ft
Diameter	53 in
Weight (dry)	5500 lb
Exhaust Nozzle	6.25 sq ft

ENGINE RATINGS

SL Static thrust	lbs	SFC/#/hr/#
Takeoff	19,800	.92
Normal Power	17,000	.89

BOMBS/FREIGHT

A bomb bay 20 feet long, 6.7 feet wide and 6.3 feet high permits the following bomb loads:

	lb	Type
Normal	1700 to 30,000	Special Purp.
	or	
	20,000	General Purp. (in combination)

For example:

9 FAB 1000	2,200 lb ea	19,800 total
24 FAB 500	1,100 lb ea	26,400 total
48 FAB 250	550 lb ea	29,700 total

Max 30,000 WWII type or improved ballistic shapes

GENERAL INFORMATION

Retractable tandem gear installation; streamlined protuberance on each wing tip estimated to house outrigger gear.

Wings are cranked at mid-span position; a stall fence is located at about the two-thirds semi-span position.

The forward portion of the crew compartment consists of a windshield similar to the Vickers "Valiant" installation.

A single bomb bay is located in the fuselage extending to the mid-point of the wing root from the trailing edge of the wing.

Defensive armament consists of three turrets located in upper forward, lower forward and tail positions. Fire control for upper forward turret is provided from a top blister located forward of the turret and behind the pilot; the lower turret is selectively controlled from side blisters located directly aft of pilot and mid-way up side of the fuselage. Optical tail turret control is provided from inhabited gunner's station similar to US B-29 type with apparent fire control radar radome of 18-inch diameter over compartment with probable capability of search/track.

A large radome, suitable for blind bombing and navigation is located on the underside of the fuselage below the canopy.

Two current configurations exist. One has a short greenhouse bombardiers' nose section and the other has a longer flush-mounted radar nose section. Both types have detachable air-to-air refueling probes. The bomber aircraft has an alternate mission as an aerial tanker through the use of a bomb bay conversion aerial refueling package.

ELECTRONICS

RADAR
- IFF SRO Type
- Tail Warning
- Tail Def. Search/Track
- Range Only
- Bomb Nav. w/Computer

NAVIGATION
- D. R. Navigator
- Radio Compass
- Marker Beacon
- Radio Altimeter
- ILS, LF/F, Rcnd. Beacon
- Long Range Nav. Rcvr
- Gun Compass

COMMUNICATIONS
- HF, VHF
- Intercom

GUNS

2 x 23 to 30 mm modified NR or high performance type with cyclic rate from 000 to 1000 rpm guns in each turret.

50X1-HUM

ROCKETS

None.

December 1957

BISON

AIRCRAFT PERFORMANCE

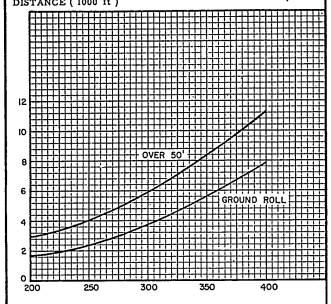
CONDITIONS			Mission I[1]	Mission II[4]	Mission III[5]	Mission IV[5]
TAKE-OFF WEIGHT	(lb)		395,000	395,000	395,000	395,000
Fuel at 6.7 lb/gal	(lb)		227,000	234,000	227,000	234,000
Payload (bombs)	(lb)		10,000	3,300	10,000	3,300
Wing loading	(lb/sq ft)		111	111	111	111
Stall speed (power off)	(kn)		155	155	155	155
Take-Off ground run at SL	(ft)	(1)	7,700	7,700	7,700	7,700
Take-Off to clear 50 ft	(ft)	(1)	11,000	11,000	11,000	11,000
Rate of climb at SL	(fpm)	(1)	3,400	3,400	3,400	3,400
Time: SL to 20,000 ft	(min)	(1)	8.0	8.0	8.0	8.0
Service ceiling (100 fpm)	(ft)	(1)	37,200	37,200	37,200	37,200
Time: SL to 30,000 ft	(min)	(1)	15.0	15.0	15.0	15.0
COMBAT RANGE	(NM)		5,000	5,200	5,500	5,800
COMBAT RADIUS	(NM)		2,550	2,600	2,800	2,950
Average cruise speed	(kn)		450	450	450	450
Initial cruising altitude	(ft)		31,700	31,700	31,700	31,700
Target speed	(kn)	(2)	460	460	460	460
Target altitude	(ft)		40,000	40,300	40,900	41,300
Final cruising altitude	(ft)		49,200	49,200	51,400	51,400
Total mission time	(hr)		11.5	11.5	12.5	13.0
COMBAT WEIGHT	(lb)		253,000	256,000	242,000	246,000
Combat altitude	(ft)		40,000	40,300	40,900	41,300
Combat speed	(kn)	(1)	480	480	480	480
Combat rate of climb	(fpm)	(1)	900	800	900	800
Combat ceiling (500 fpm)	(ft)	(1)	43,000	42,800	44,000	43,700
Service ceiling (100 fpm)	(ft)	(1)	46,600	46,300	47,700	47,300
Max rate of climb at SL	(fpm)	(1)	5,650	5,600	5,950	5,850
Max speed at optimum altitude	(kn)	(1)	530/18,000	530/18,000	530/18,000	530/18,000
Basic speed at 35,000 ft	(kn)	(1)	495	495	495	495
TERMINAL TARGET ALTITUDE	(ft)	(1) (3)	54,200	54,800	54,200	54,800

NOTES
(1) Maximum Power, AM-3AM engines rated at 19,800 lb SLST.
(2) Normal Power.
(3) Service ceiling - with one hour fuel reserve for two engines operating, plus b50X1-HUM
(4) Missions I and II are in accordance with MIL-C-5011A Specification.
(5) Missions III and IV are flown at the ceiling for best RR/lb or limited to 100 ft/min ceiling potential rate of climb at normal power. Reserves permit one-half hour loiter at SL, two-engine operation.

BISON

December 1957

TAKE-OFF



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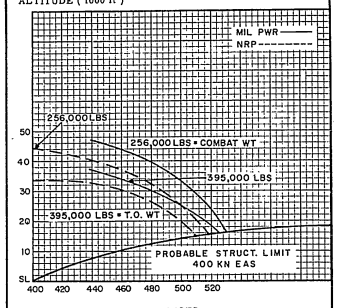

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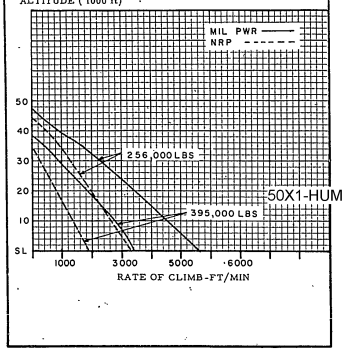
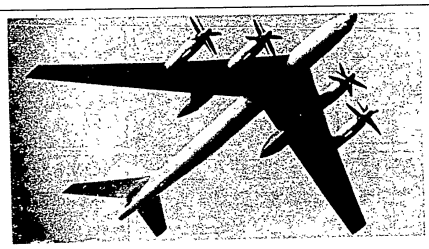
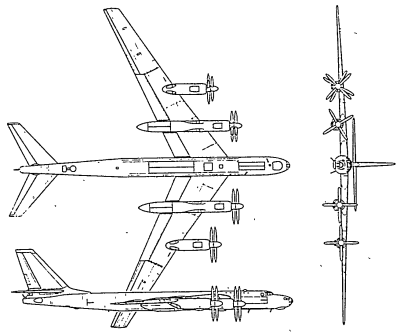


50X1-HUM

December 1957

BEAR





REMARKS: BEAR is a swept-wing, four-engine turboprop heavy bomber considered to have been designed by TUPOLEV. (Probable designation is TU-95.)

SUMMARY

Small numbers of these aircraft have been observed in fly-by practice for the May Day Day Air Shows since April 1955.

50X1-HUM

DIMENSIONS

Wing	
Span	165 ft
Area	2960 sq ft
Aspect ratio	8.7
Cathedral	2 deg
Sweepback	
Inboard leading edge	40 deg
Outboard leading edge	36 deg
Overall length	150 ft
Fuselage diameter	9.5 ft
Height, gear up	33 ft

WEIGHTS

Loading	lb
Empty	128,700
Take-off	300,000
AMPR	84,000

FUEL

Weight, lb	Gal
150,000*	22,400

*For 10,000 lb design bomb load

POWER PLANT

No. & Model	(4) NK-12
Type	Turboprop
Length	(23.76 ft)
	285 in. including spinner and tailpipe
Diameter	49 in
Weight (dry)	2800 lbs
Propeller	
Type	Contra-rotating
No. blades	8
Diameter	18.4 ft
Weight (assy)	1700 lbs

ENGINE RATINGS

Sea level static Std. NACA Day
100% RAM efficiency

	Take-off Power
ESHP	12,100
SFC	.492 lb/hr/ESHP
RPM	8250
	Normal Power
ESHP	10,900
SFC	.50 lb/hr/ESHP
RPM	8000

BOMBS/FREIGHT

A bomb bay 24 ft long, 6 ft wide and 5.3 ft high permits the following loads:

	lb	Type
Normal	1700 to 22,000 or 20,000	Special purpose General purpose (in combination)

For example:

1 FAB	5000	11,000 lb ea 11,000 total
20 FAB	500	1,100 lb ea 22,000 total
42 FAB	250	550 lb ea 23,100 total
Max	30,000 lb WW II types or improved ballistic shapes.	

GENERAL INFORMATION

Engines are cantilever-mounted forward of the wing leading edge.

Retractable tricycle landing gear, with main gear housed in special nacelles directly behind the inboard engines.

Wings are cranked near the outboard engine position. Two stall fences on each wing at three-fifths and at four-fifths the semi-span.

The forward portion of the crew compartment consists of a flat windshield similar to the US DC-6 installation.

A single bomb bay is centrally located in fuselage.

Defensive armament consists of two definite turrets identified and one suggested turret; namely a tail turret, a lower aft turret, and a suggested lower forward turret.

Fire control for fuselage turrets is expected to be remote optical sighting stations resembling USAF B-29 equipment. A confirmed lower aft turret is controlled by two blister stations located under the horizontal stabilizers, resembling the Badger. An earlier estimate of a top upper forward turret and single blister sighting station has been modified by a more recent sighting of a Bear with a suggested lower forward turret and side sighting station similar to the Bison lower forward system. On the recent sighting there is no upper forward turret position. Estimate that alternative defensive armament configurations are currently being evaluated.

A large radome, suitable for blind-bombing and navigation, is located on the underside of the fuselage directly behind the optical bombsight window in the nose section.

ELECTRONICS

Radar
- IFF
- Tail warning and fire control
- Blind bombing and navigation

Navigation
- Radio compass
- Radio altimeter - high and low
- Marker beacon receiver
- Long range pulse navigation receiver
- VHF localizer receiver, DME

Communications
- VHF command radio - 4 channels
- MF - HF liaison radio
- LF receiver
- Intercom

GUNS

Estimate 2 x 23-to-30 mm guns per turret. Identity cannot be confirmed. Photos and supporting information suggest one of the following types:

Gun type	Cal	Cyclic Rate	M
Modified NR-23	23 mm	800	2000
Shch-3	23 mm	700	2300
Revolver type	23/30 mm	1000	3000/2400

ROCKETS

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS			I[3] Basic Mission	II[3] Basic Mission	III[3] Optimum Mission	IV[4] Optimum Mission
TAKE-OFF WEIGHT	(lb)		300,000	300,000	300,000	300,000
Fuel at 6.7 lb/gal	(lb)		150,000	157,000	150,000	157,000
Payload (Bombs)	(lb)		10,000	3,000	10,000	3,000
Wing loading	(psf)		101	101	101	101
Stall speed (power off)	(kn)		150	150	150	150
Take-off ground run at SL	(ft)	(1)	6,000	6,000	6,000	6,000
Take-off to clear 50 ft	(ft)	(1)	9,000	9,000	9,000	9,000
Rate of climb at SL	(fpm)	(1)	2,700	2,700	2,700	2,700
Time to cruise altitude	(min)		25	25	32	32
Service ceiling (100 fpm)	(ft)	(1)	34,600	34,600	34,600	34,600
COMBAT RANGE	(NM)		7,300	7,800	8,100	8,700
COMBAT RADIUS	(NM)		3,800	3,950	4,200	4,400
Average cruising speed	(kn)		450	420	405	405
Initial cruising altitude	(ft)		33,000	33,000	35,300	35,300
Target speed	(kn)		435	435	410	410
Target altitude	(ft)		39,000	40,100	41,900	42,300
Final cruising altitude	(ft)		47,500	47,400	50,300	50,300
Total mission time	(hr)		19	20	21	22
COMBAT WEIGHT	(lb)		208,000	211,000	200,000	204,000
Combat altitude	(ft)		40,000	40,300	42,100	42,500
Combat speed	(kn)	(1)	460	455	450	440
Combat rate of climb	(fpm)	(1)	550	500	400	300
Combat ceiling (500 fpm)	(ft)	(1)	40,600	40,200	41,200	40,900
Service ceiling (100 fpm)	(ft)	(1)	43,900	43,500	44,500	44,100
Max rate of climb at SL	(fpm)	(1)	4,350	4,300	4,550	4,450
Max speed at optimum altitude	(kn/ft)	(1)	495/21,400	495/21,300	495/21,600	495/21,500
Basic speed at 35,332 ft	(kn)	(1)	470	470	475	475
TERMINAL TARGET ALTITUDE	(ft)	(5)	50,000	51,000	50,000	51,000
	(ft)	(6)	48,900			

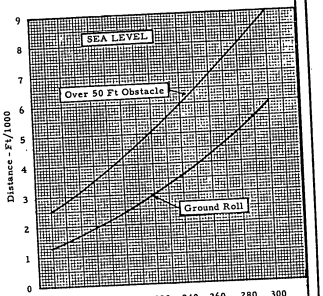
NOTES
(1) Take-off power. (2) Normal power.
(3) Missions I and II are in accordance with Mil-C-5011A specification.
(4) Missions III and IV are flown at the ceiling for best NM/lb or limited to 100 ft/Min ceiling potential rate of climb at normal power. Reserves permit one-half hour loiter at S.L., two-engine operation.
(5) Service ceiling at Max. Pwr. with one hour reserves plus bomb load. No range figure is associated with this altitude.
(6) This altitude is for a bomb load of 20,000 lbs.

50X1-HUM

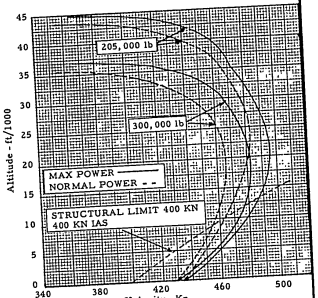
BEAR

December 1957

TAKE-OFF



SPEED



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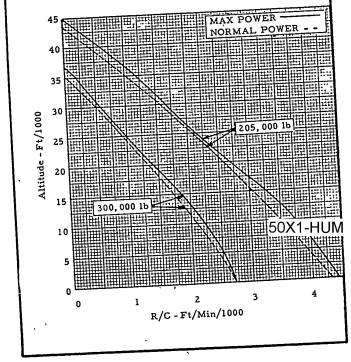
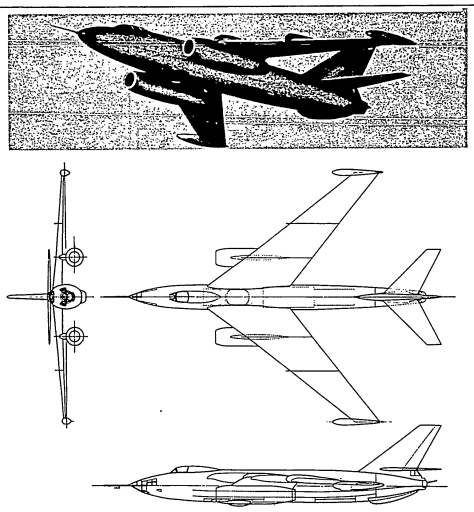


50X1-HUM

November 1956

BLOWLAMP



REMARKS: BLOWLAMP is a twin-jet, swept-wing light bomber claimed by the Soviets to be capable of supersonic performance.* Believed to be the replacement for BEAGLE (IL-28) aircraft, it is classed as a high performance weapon of considerable versatility and growth potential.

*See General Information

SUMMARY

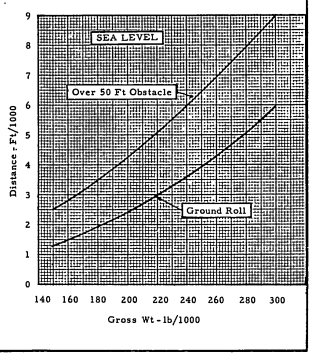
1956 First observed during rehearsals for the Aviation Day Air Show.

50X1-HUM

BEAR

December 1957

TAKE-OFF



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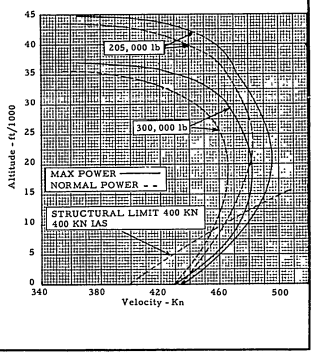

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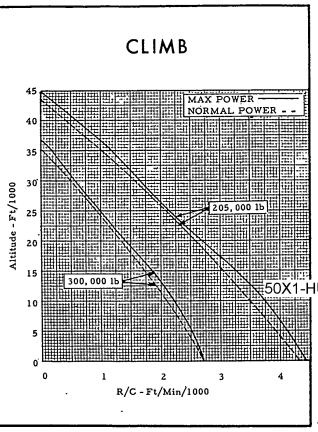
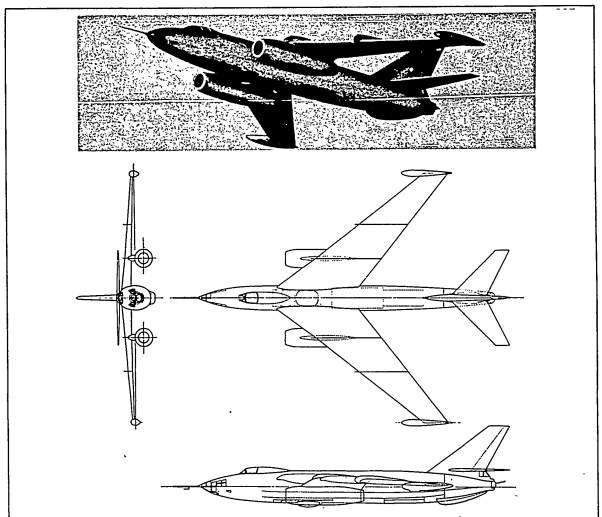


50X1-HUM

November 1956

BLOWLAMP



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*See General Information

SUMMARY

1956 First observed during rehearsals for the Aviation Day Air Show.

50X1-HUM

SECRET

BLOWLAMP

November 1956

DIMENSIONS

Wing	
Span	54.9 ft
Area	685 sq ft
Aspect Ratio	4.4
Cathedral	3.5 deg
Sweepback	
Inboard leading edge	55 deg
Outboard leading edge	38.5 deg
Overall length	71 ft
Height gear up	18 ft
Fuselage depth	7.1 ft
Fuselage width	5.3 ft

WEIGHTS

	lbs
Loading	
Empty	29,920
Take-off	
Design	56,100
Normal	59,400
Overload	60,500
AMPR	21,500

FUEL

	Weight lb	Gal
Internal	20,000	3,000

POWER PLANT

No. & Model	(2)
Type	Axial-flow turbojet
Length	140 inches
Diameter	40.25 inches
Weight (dry)	2,900 lb
Exhaust Nozzle	
Diameter	23 inches

ENGINE RATINGS

	lb	SFC/#/hr/#
SL Static	11,600	.92
Max		

BOMBS/FREIGHT

A bomb bay 11.5 feet long, 4.5 feet wide, and 4.5 feet high permits the following bomb loads.

	lb	Type
Design	1500	Special Purpose
Normal	6600	General Purpos.
Maximum	7700	General Purpose (In combination)

For example:

12	250 Kg ea	6600 lb total
2	1500 Kg ea	6600 lb total
1	3000 Kg ea	6600 lb total
(In combination)		
6	250 Kg ea	
plus		
4	500 Kg ea	7700 lb total

GENERAL INFORMATION

It should be noted that the above dimensions and engine data are the ones on which the performance figures are based. However, these dimensions and engine data are approximations only, and are subject to change upon receipt of confirmed information. When such information is available and reflects changes of sufficient magnitude, the performance will be revised accordingly.

Engines are installed in pylon-mounted nacelles.

The wings are cranked at the engine pylon position. Two stall fences on each wing are located at the cranked position and at the aileron-flap junction.

Retractable tandem main landing gear with outrigger gear housed in wing tip pods.

A small single bomb bay is centrally located in the fuselage.

Defensive armament consists of two fixed forward firing nose guns and an optical tail turret which contains two guns. Fire control of the turret is provided from the inhabited gunner's station similar to the EAGLE. Radar and possibly IR equipment is installed to provide detection and ranging information for the defensive fire control function.

A radome suitable for blind bombing and navigation is located between the bomb bay and the forward gear door.

The presence of an instrumentation boom in the nose suggests the aircraft observed is in prototype status.

The design does not reveal aerodynamic characteristics commensurate with supersonic performance capability claimed by the Soviets. However, it does suggest fairly high subsonic speed performance. It is estimated that in a dive from an altitude of at least 40,000 ft, BLOWLAMP can flash through the 35,000 ft altitude at speeds slightly in excess of Mach 1.3 but cannot stabilize at this speed in level flight.

ELECTRONICS

IFF, SRO (Identification Friend or Foe)
Bombing-Navigation Radar, MUSHROOM
Tail Defense Radar, Range-Only Type
Radar Warning Receiver
ILS Localizer Receiver (KRP-F)
Low Level Radio Altimeter (RV-2)
Distance Measuring Equipment (SD-1)
Marker Beacon Receiver (MRP-48P)
Low Frequency Navigation Receiver (MOON)
Short Range Precision Navigation Receiver (SHOREWALK)
VHF Command Trans/Rec RSIU-3M (100 to 150 Mc)
HF Liaison Transmitter, Version of US AN/ARC-13 (2 to 12 Mc)
HF Liaison Rec. US-9 (2 to 12 Mc).
Intercom Amplifier SPU-2

GUNS

4 x 23 mm with cyclic rate up to 1200 rds/min
2-revolver type fixed in nose forward firing
2-SHCMA or revolver type in tail turret

ROCKETS

50X1-HUM

SECRET

SECRET

November 1956

BLOWLAMP

AIRCRAFT PERFORMANCE

CONDITIONS		I[3] Basic Mission	II[3] Basic Mission	III[4] Opt. Mission	IV[4] Opt. Mission
TAKE-OFF WEIGHT	(lb)	56,100	59,400	56,100	59,400
Fuel at 6.7 lb/gal	(lb)	20,000	20,000	20,000	20,000
Payload (bombs)	(lb)	3,300	6,600	3,300	6,600
Wing loading	(lb/sqft)	81	86	81	86
Stall speed (power off)	(kts)	155	160	155	160
Take-off ground run at SL	(ft)	3,600	4,100	3,600	4,100
Take-off to clear 50 ft	(ft)	5,600	6,300	5,600	6,300
Rate of climb at SL	(fpm)	9,500	8,900	9,500	8,900
Time: SL to 35,000 ft	(min)	5.8	6.2	5.8	6.2
Service ceiling (100 fpm)	(ft)	44,400	43,100	44,400	43,100
COMBAT RANGE	(NM)	1,550	1,450	1,700	1,580
COMBAT RADIUS	(NM)	800	775	870	845
Average cruise speed	(kts)	490	490	490	490
Initial cruising altitude	(ft)	38,800	37,200	38,800	37,200
Target speed	(kts) (2)	500	500	500	500
Target altitude	(ft)	45,600	44,400	45,900	44,600
Final cruising altitude	(ft)	46,300	46,300	46,900	46,900
Total mission time	(hr)	3.3	3.2	3.6	3.4
COMBAT WEIGHT	(lb)	42,400	42,200	41,800	41,600
Combat altitude	(ft) (1)	45,600	44,400	45,900	44,600
Combat speed	(kts)(1)	535	535	535	535
Combat rate of climb	(fpm)(1)	1,600	2,000	1,600	2,000
Combat ceiling (500 fpm)	(ft) (1)	48,900	49,000	49,000	49,000
Service ceiling (100 fpm)	(ft) (1)	50,000	50,100	50,400	50,500
Max rate of climb at SL	(fpm)(1)	12,400	12,500	12,600	12,700
Max speed at optimum altitude	(kts)(1)	615/SL	615/SL	615/SL	615/SL
Basic speed at 35,000 ft	(kts)(1)	545	545	545	545

NOTES
(1) Military power.
(2) Normal power.
(3) These missions are in accordance with Mil-C-5011A.
(4) Missions III and IV are flown at the ceiling for best NM/lb or limited to 100 ft/min ceiling potential rate of climb at normal power. Reserves permit one-half hour loiter at SL, two-engine operation.

SECRET

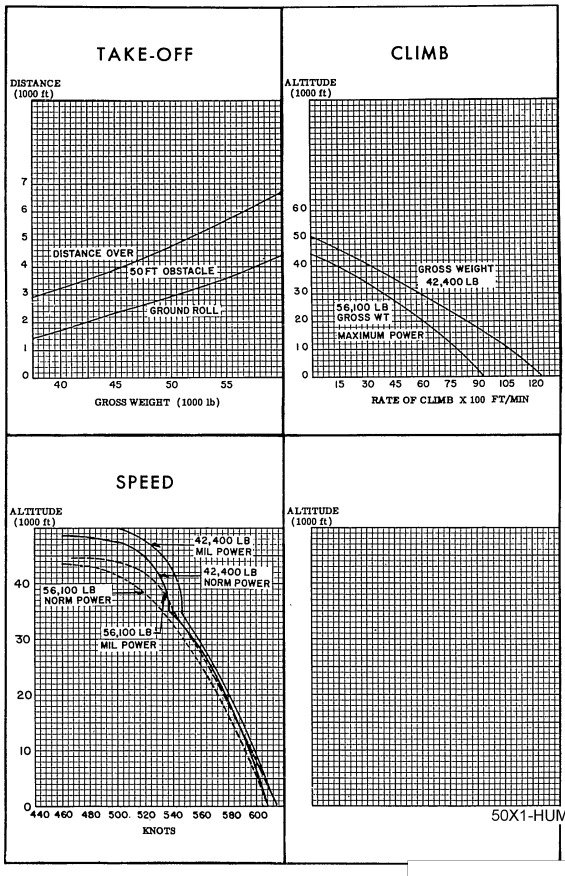
50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS			Low-Level Mission(3)		Overload Mission(3)
TAKE-OFF WEIGHT	(lb)		56,100		60,500
Fuel at 6.7 lb/gal	(lb)		20,000		20,000
Payload (bombs)	(lb)		3,300		7,700
Wing loading	(lb/sqft)		81		88
Stall speed (power off)	(kts)		155		160
Take-off ground run at SL	(ft)		3,960		4,400
Take-off to clear 50 ft	(ft)		5,650		6,900
Rate of climb at SL	(fpm)		9,500		8,500
Time: SL to 35,000 ft	(min)		5.8		6.4
Service ceiling (100 fpm)	(ft)		44,400		42,800
COMBAT RANGE	(NM)		1,550		1,420
COMBAT RADIUS	(NM)		620		765
Average cruise speed	(kts)		490		490
Initial cruising altitude	(ft)		38,800		36,800
Target speed	(kts)	(2)	610		500
Target altitude	(ft)		SL		43,900
Final cruising altitude	(ft)		46,300		46,300
Total mission time	(hr)		3.2		2.6
COMBAT WEIGHT	(lb)		44,300		42,150
Combat altitude	(ft)	(1)	SL		43,900
Combat speed	(kts)	(1)	615		535
Combat rate of climb	(fpm)	(1)	11,900		2,250
Combat ceiling (500 fpm)	(ft)	(1)	48,200		49,000
Service ceiling (100 fpm)	(ft)	(1)	49,400		50,100
Max rate of climb at SL	(fpm)	(1)	11,800		12,500
Max speed at optimum altitude	(kts)	(1)	615/SL		615/SL
Basic speed at 35,000 ft	(kts)	(1)	545		545

NOTES (1) Military Power.
(2) Normal Power.
(3) These missions are in accordance with Mil-C-5011A.

50X1-HUM

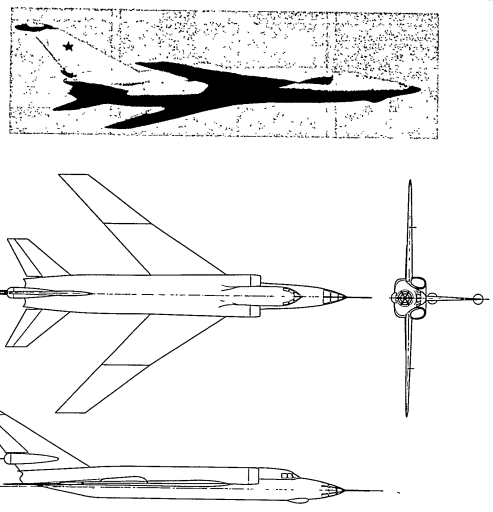


50X1-HUM

SECRET

January
1958

BACKFIN



REMARKS: BACKFIN is a supersonic, swept-wing twin-jet light bomber.

SUMMARY

1957 First observed in the eighth rehearsal of Tushino airshow.

50X1-HUM

SECRET

BACKFIN

January 1958

DIMENSIONS

Wing		
Span	62	ft
Area	950	sq ft
Aspect ratio	4.05	
Sweep back		
Inboard leading edge	57.5	deg
Outboard leading edge	54	deg
Over-all length	104	ft
Height, gear up	23.6	ft
Fuselage		
Depth	8.4	ft
Length	87	ft
Width	10	ft

WEIGHTS

Loading	lb
Empty	43,000
Take-off	86,000
Useful load	43,000
AMPR	28,000

FUEL

	Weight, lb	Gal
Internal	35,000	5,400

POWER PLANT

No. & Model	(2)
Type	Axial flow turbojet with afterburner
Length	269 in.
Diameter	43 in.
Weight (dry)	5000 lb

ENGINE RATINGS

	lb	SFC
SL Static		
Max	21,000	1.92
Mil	15,900	.92

BOMBS/FREIGHT

Bomb bay	
Length	15 ft
Width	5 ft
Depth	4.5 ft
Maximum bomb load	15,000 lb

GENERAL INFORMATION

Wings are highly swept, cranked, in the low-mid position.

Engine inlets are mounted high on and apart from fuselage sides, well ahead of wing leading edge. The two engines are probably located in the vicinity of, and above the wing root section.

The fuselage is deep in the mid section, flattened on the underside similar to the B-58 and tapers sharply upward to the twin exhaust section. A large crew compartment is set atop the fuselage similar to the B-58.

The swept-back empennage assembly consists of a low horizontal tail mounted below the exhaust section, and a large high-aspect-ratio vertical tail.

The configuration suggests that a tandem type landing gear is used.

Fire control for the rear defensive armament is probably by remote radar operation from the flight deck.

The large size of the efflux indicates the installation of high-thrust engines with afterburners.

The general appearance of the aircraft is consistent with a supersonic speed capability.

ELECTRONICS

Radar
- MUSHROOM (Bombing-navigation radar)
- IFF
- ECM
- Tail defense

Navigation
- SHOREWALK (Short range navigation sys)
- MOON (Long range navigation sys)
- Radio compass
- ILS
- Localizer and glide path receiver
- Marker beacon equipment
- IMG
- Radio altimeter

Communications
- VHF transmitter-receiver (4 or 8 chan)
- HF transmitter-receiver
- Intercom

GUNS

2 x 23 mm with cyclic rate of 1000 rds/min and 500 rds each in tail turret.

50X1-HUM

SECRET

January 1958

BACKFIN

AIRCRAFT PERFORMANCE

CONDITIONS		SUBSONIC MISSION	SUBSONIC MISSION (opt)	Mach- 1.06 ZONE MISSION	Mach- 1.06 ZONE MISSION (opt)
TAKE-OFF WEIGHT	(lb)	86,000	86,000	86,000	86,000
Fuel at 6.7 lb/gal	(lb)	35,000	35,000	35,000	35,000
Payload (Bombs)	(lb) (7)	6,600	6,600	6,600	6,600
Wing loading	(lb/sq ft)	88	88	88	88
Stall speed, clean (power off)	(kn)	160	160	160	160
Take-off ground run at SL	(ft)	3,000	3,000	3,000	3,000
Take-off distance to clear 50 ft	(ft)	5,600	5,600	5,600	5,600
Rate of climb at SL	(fpm) (2)	6,600	6,600	6,600	6,600
Time: SL to 20,000 ft	(min) (2)	3.3	3.3	3.3	3.3
Service ceiling (100 fpm)	(ft) (2)	42,600	42,600	42,600	42,600
Time: SL to 30,000 ft	(min) (2)	5.7	5.7	5.7	5.7
COMBAT RANGE	(NM)	1,900	2,100	1,500 (5)	1,600 (5)
COMBAT RADIUS	(NM)	1,000	1,100	800 (6)	900 (6)
Average cruise speed	(kn)	520	520	520	520
Initial cruise altitude	(ft)	39,600	39,600	39,600	39,600
Target speed	(kn)	530 (3)	530 (3)	610 (1)	610 (1)
Target altitude	(ft)	43,000	43,300	42,500	43,000
Final cruise altitude	(ft)	50,200	51,000	50,200	51,000
Total mission time	(hr)	3.9	4.2	3.5	3.8
COMBAT WEIGHT	(lb)	59,500	58,300	58,700	57,600
Combat altitude	(ft)	43,000	43,300	42,500	43,000
Combat speed	(kn)	555 (2)	555 (2)	610 (1)	610 (1)
Combat rate of climb	(fpm) (2)	2,000	2,100	2,200	2,200
Combat ceiling (500 fpm)	(ft) (2)	48,700	49,100	49,000	49,400
Service ceiling (100 fpm)	(ft) (2)	50,400	50,800	50,700	51,000
Max rate of climb at SL	(fpm) (2)	10,600	10,900	10,800	11,000
Max speed at opt altitude	(kn/ft) (1)	705/35,000	705/35,000	705/35,000	705/35,000
TERMINAL TARGET ALTITUDE	(ft) (2)(4)	52,800	52,800	60,000	60,000

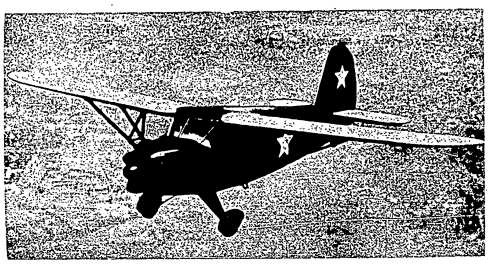
NOTES
(1) Maximum power (2) Military power (3) Normal rated power
(4) Service ceiling: Half hour fuel reserves plus bomb load
(5) Includes 100 NM dash at Mach 1.06
(6) Includes 50 NM dash at Mach 1.06
(7) Same performance with either 3,300 or 6,600 lb bomb load. No additional fuel carried with 3,300 lb bomb load as aircraft is fuel volume limited.

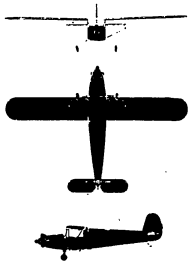
50X1-HUM

SECRET

Declassified in Part - Sanitized Copy Approved for Release 2013/08/01 : CIA-RDP81-01043R002000100005-9

July 1953	U.S.S.R.	Yak-12





Yak-12

DESCRIPTION

It is a strut-braced high-wing monoplane with strut-braced tail assembly and fixed main wheels and tail wheel. Streamline fairings fitted on main wheels.

50X1-HUM

Yak-12 | July 1953

Yak-12

Mfr. Designer: Yakovlev | Crew 1
Type Liaison, Communication, Transport

PERFORMANCE

Maximum Speeds: 110 knots @ S.L.: ____ knots @ ____ ft alt.; ____ knots @ ____ ft alt.
Cruising Speeds: Normal Power ____ knots @ ____ ft alt.: Economical 75 knots @ SL ft alt.
Climb: 1.2 mins. to 1000 ft alt.: Rate of Climb: 640 ft/min. at SL ft alt.
Service Ceilings: ____ ft with normal weight; ____ ft with ____ lbs weight
Take-Off distance over 50 ft obstacle 350 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 40, Maximum ____; External: Normal ____, Maximum ____

RANGES

420 nautical miles	230 nautical miles	____ nautical miles
@ 75 knots, 5000 ft alt.	@ 75 knots, 5000 ft alt.	@ ____ knots, ____ ft alt.
with 40 US gals. of fuel	with 25 US gals. of fuel	with ____ US gals. of fuel
and 3 lbs. passengers	and 4 lbs. passengers	and ____ lbs ____
Combat Radius: 225 naut. mi.	Combat Radius: 120 naut. mi.	

POWER PLANT

No. Engines 1 | Take-Off 145 hp. @ SL ft alt. 1740 rpm ____ in. Hg.
Type Engines Reciprocating | Normal ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
Military 135 hp. @ SL ft alt. 1740 rpm ____ in. Hg.
War Emergency ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.

Description M-11F, 5 cylinder, direct drive, air-cooled radial.

SPECIFICATIONS	SUPERCHARGER	PROPELLER	FUEL
Bore 4.9 ins	Dry Wt. 352	No. Speeds None	Mfr. ____	Type Gasoline
Stroke 5.5 ins	Red. Gear ____	No. Stages ____	No. Blades 2	70 Octane
Displ. 525 cu. ins	Eng. Width 42.2 in.	Ratios ____	Dia. ____ ft, ____ ins	
Comp. Ratio 5 : 1	Eng. Length 37.4 in.	Impeller Dia. ____ ins	Pitch Control ____	

ARMAMENT

Guns None

Gunsight ____

BOMB/FREIGHT LOAD

Normal Load 200 lbs
Maximum Load 600 lbs
Freight load or 3 or 4 passengers

Bombsight ____

COMBAT PROTECTION

Armor None

Fuel Tanks ____

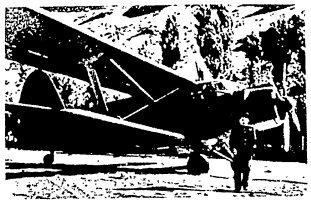
SPECIFICATIONS

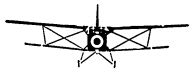
Materials Mixed wood and metal construction.
Span: 32 ft, 6 in; Length: 27 ft, 8 in; Height: ____ ft, ____ in; Gross Wing Area 237 sq. ft
Weights: Airframe 950 lbs; Normal Gross 2650 lbs; Maximum Gross ____ lbs

ADDITIONAL DATA

Brought into use after World War II as a civil transport and limited use as a military aircraft. It is not known how many of these have been produced but it is believed to be in rather extensive use.

50X1-HUM





An-2

DESCRIPTION

This aircraft is a biplane. It has fixed main gear and tail wheel. It is a cabin type, single engine aircraft equipped with a four bladed scimitar pattern propeller. This aircraft will probably be used as a replacement for the Po-2 on local runs and feeder lines.

50X1-HUM

An-2

Mfr. Designer: Antonov Crew 3
Type Light Transport

PERFORMANCE

Maximum Speeds: 132 knots @ S.L.; 138 knots @ 5000 ft alt.; ____ knots @ ____ ft alt.
Cruising Speeds: Normal Power ____ knots @ ____ ft alt.; Economical 96 knots @ 5000 ft alt.
Climb: 16 mins. to 10000 ft alt.; Rate of Climb: 770 ft/min. at SL ft alt.
Service Ceilings: 15000 ft with normal weight: 13000 ft with 13000 lbs weight
Take-Off distance over 50 ft obstacle 1470 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 370, Maximum ____; External: Normal ____, Maximum ____

RANGES

853 nautical miles	____ nautical miles	____ nautical miles
@ 96 knots, 5000 ft alt.	@ ____ knots, ____ ft alt.	@ ____ knots, ____ ft alt.
with 370 US gals. of fuel	with ____ US gals. of fuel	with ____ US gals. of fuel
and 4200 lbs. cargo	and ____ lbs.	and ____ lbs.

Combat Radius: 440 Nautical Miles

POWER PLANT

No. Engines 1 — Take-Off 985 hp. @ SL ft alt. 2200 rpm ____ in. Hg.
Type Engines Reciprocating — Normal 839 hp. @ 5000 ft alt. 2100 rpm ____ in. Hg.
Military ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
War Emergency ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.

Description ASh-62-IR, 9-cylinder, air-cooled radial engine

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.125 ins	Dry Wt.	1246 (Inst.)	No. Speeds	1	Mfr.	Type 95/115
Stroke	6.870 ins	Red.Gear	11:16	No. Stages	1	No.Blades	4
Displ.	1822 cu.ins	Eng.Width	55	Ratios	7:1	Dia.	ft, ins
Comp.Ratio	6.5:1	Eng.Length	44.75	Impeller		Dia	10.9 ins
						Pitch Control	Probably automatic

ARMAMENT

Guns: None

Gunsight: None

BOMB/FREIGHT LOAD

Normal Load 4200 lbs
Maximum Load 5000 lbs

14 passengers

Bombsight: None

COMBAT PROTECTION

Armor: None

Fuel Tanks: None

SPECIFICATIONS

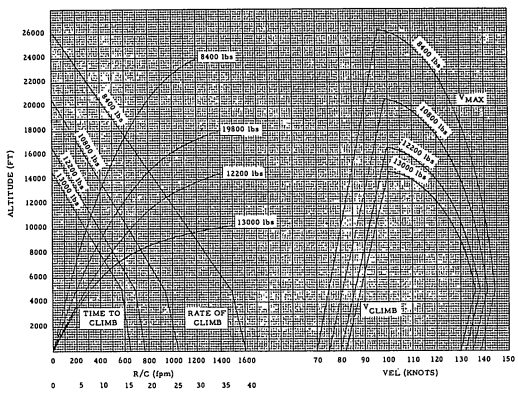
Materials: Mixed construction
Span: 18 ft, 8 in; Length: 37 ft, 2 in; Height: ____ ft, ____ in; Gross Wing Area 550 sq.ft
Weights: Airframe ____ lbs; Normal Gross 12200 lbs; Maximum Gross 13000 lbs

ADDITIONAL DATA

This aircraft was first observed in July 1948 in the Aviation Day air show at Tushino. It subsequently reappeared in July 1951 in the Aviation Day air show. Since that time the An-2 has been observed in Poland and is believed stationed at Warsaw.

The An-2 is reported to have a cargo loading door large enough to accommodate litter cases. The design of the aircraft appears to lend itself to service, as a light transport, ambulance aircraft, observation/reconnaissance plane, or trainer. It is likely to be used in a feeder-line role and as a bush-type transport in underdeveloped areas.

50X1-HUM



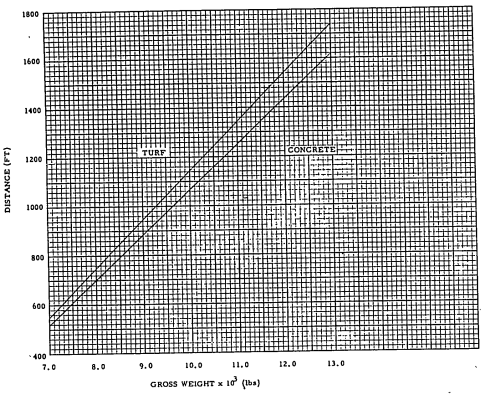
PERFORMANCE

DESCRIPTION

Normal rated power, normal gross weight.

50X1-HUM

An-2 | U.S.S.R. | CONFIDENTIAL | July 1953



PERFORMANCE

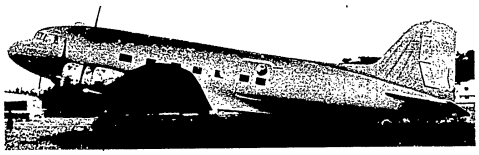
DESCRIPTION

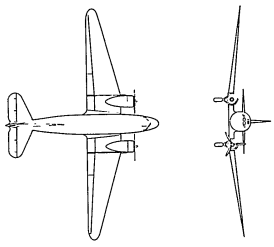
50X1-HUM

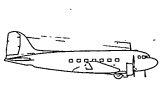
CONFIDENTIAL

CONFIDENTIAL

January 1958 | CAB







REMARKS: Soviet designation of this aircraft is Li-2.

SUMMARY

CAB is a twin-engined, low-wing monoplane built under license in the USSR. It is no longer in production but is still in extensive use both as a civil and military transport.

50X1-HUM

CONFIDENTIAL

DIMENSIONS

Wing	
Span	94.5 ft
Area	985 sq ft
Fuselage length	64.4 ft
Height (Horizontal attitude)	23.3 ft
Cargo cabin	
Length	30.9 ft
Width (max)	7.68 ft
Height (max)	6.5 ft
Usable volume	1310 cu ft

WEIGHTS

	lb
Take-off	
Normal	25,300
Max allowable	26,400
Empty	15,350

FUEL

	Gal
Type 95/115	
4930 lb	822

POWER PLANT

No. & Model	2 x Ash-62IR
Type	9 cylinder, single row, air-cooled radial
Propellers	2-AV-7N-161; three-bladed, 11.8 ft dia

ENGINE RATINGS

Take-off	985 BHP at 2200 RPM, 41 in. Hg
Normal	830 BHP at 2100 RPM, 35 in. Hg at 4,900 ft

BOMBS/FREIGHT

Cargo	
Normal	3,300 lb
Maximum	6,600 lb
(Limited by floor strength)	

GENERAL INFORMATION

CAB is the Soviet model of the U.S. DC-3 built under license. The Soviet aircraft designer LISITSIN is given credit for this design in the USSR. The major difference from the U.S. DC-3 is the engine.

Alternate variants of CAB will carry up to 19 passengers or 25 paratroops.

ELECTRONICS

Radio compass
IFF
VHF command set (4 channel)
HF liaison set
Interphone
Localizer
Glide path
Marker beacon receiver

CREW

Pilot
Co-Pilot
Navigator
Radio operator

50X1-HUM

AIRCRAFT PERFORMANCE

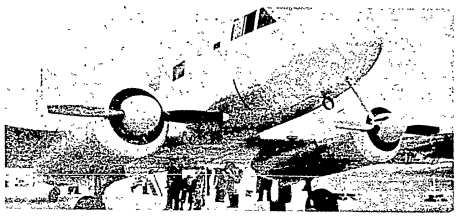
CONDITIONS		ECONOMICAL CRUISE SL	ECONOMICAL CRUISE 10,000 ft	ECONOMICAL CRUISE 15,000 ft	MAXIMUM CARGO	LONG RANGE
TAKE-OFF WEIGHT	(lb)	25,300	25,300	25,300	25,300	25,300
Fuel weight	(lb)	4,900	4,900	4,900	1,600	4,900
Payload (cargo)	(lb)	3,300	3,300	3,300	6,600	3,300
Wing loading	(lb/sq ft)	25.7	25.7	25.7	25.7	25.7
Stall speed	(km)	60	60	60	60	60
Take-off run - SL	(ft) (1)	1,350	1,350	1,350	1,350	1,350
Take-off distance - 50 ft obst	(ft) (1)	3,000	3,000	3,000	3,000	3,000
Rate of climb - SL	(ft/min)(2)	700	700	700	700	700
Time: SL to 5,000 ft	(min) (2)	NA	7	7	NA	7
Time: SL to 10,000 ft	(min) (2)	NA	NA	17	NA	17
Service ceiling	(ft) (2)	16,600	16,600	16,600	16,600	16,600
COMBAT RANGE	(NM)	1,080	1,140	1,175	345	1,215
Average speed	(kn)	120	130	130	120	130
Cruise altitude (constant)	(ft)	SL	5,000	10,000	SL	13,000
Mission time	(hr)	9.0	8.8	9.2	2.9	9.4
COMBAT RADIUS	(NM)	510	525	535	135	530
Average speed	(kn)	120	130	130	120	130
Cruise altitude	(ft)	SL	5,000	10,000	SL	13,000
Mission time	(hr)	8.5	8.1	8.3	2.3	8.2
FIRST LANDING WEIGHT	(lb)	23,100	23,200	23,300	24,500	23,500

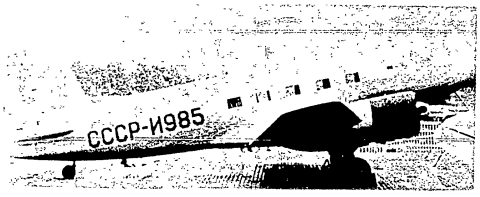
NOTES (1) Maximum power
(2) Normal power

50X1-HUM

CONFIDENTIAL

July 1953 | U. S. S. R. | Yak-16





Yak-16

DESCRIPTION

Low-wing, twin-engine monoplane with single fin and rudder, and retractable landing gear.

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

Yak-16 | July 1953

Yak-16

Mfr. Designer: Yakovlev Crew 3
Type Light Transport

PERFORMANCE

Maximum Speeds: 200 knots @ S.L.; 208 knots @ 6000 ft alt.; 170 knots @ 15000 ft alt.
Cruising Speeds: Normal Power, 187 knots @ 10500 ft alt.; Economical 150 knots @ 10500 ft alt.
Climb: 10 mins. to 10000 ft alt.; Rate of Climb: 1210 ft/min. at SL ft alt.
Service Ceilings: ft with normal weight; 16000 ft with 14300 lbs weight
Take-Off distance over 50 ft obstacle 1550 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 275, Maximum ; External: Normal , Maximum

RANGES

575 nautical miles	nautical miles	nautical miles
@ 150 knots, 10000 ft alt.	@ knots, ft alt.	@ knots, ft alt.
with 275 US gals. of fuel	with US gals. of fuel	with US gals. of fuel
and 3000 lbs. freight	and lbs	and lbs

Combat Radius: 260 Nautical Miles

POWER PLANT

No. Engines 2 — Take-Off 690 hp. @ SL ft alt. 2500 rpm in. Hg.
Normal 592 hp. @ 6600 ft alt. 2400 rpm in. Hg.
Type Engines Reciprocating — Military hp. @ ft alt. rpm in. Hg.
War Emergency hp. @ ft alt. rpm in. Hg.

Description ASh-21, 7-cylinder, air-cooled radial engine

SPECIFICATIONS	SUPERCHARGER	PROPELLER	FUEL
Bore 6.12 ins — Dry Wt. 1077	No. Speeds 1	Mfr. Visch 111-V-120	Type 89 Octane
Stroke 5.12 ins — Red. Gear 11:16	No. Stages 1	No. Blades 2 solid dural	
Displ. 1260 cu. ins — Eng. Width 49.5	Ratios 7:1	Dia. 9 ft, 7 ins	
Comp. Ratio 6.6:1 — Eng. Length 55	Impeller Dia. 9.05 ins	Pitch Control R-T# gov, constant speed	

ARMAMENT

Guns None

Gunsight None

BOMB/FREIGHT LOAD

Normal Load 2500 lbs
Maximum Load 3000 lbs
Alternate maximum load:
10 passengers and
440 lbs freight or
3000 lbs freight or
13 troops

Bombsight None

COMBAT PROTECTION

Armor None

Fuel Tanks None

SPECIFICATIONS

Materials All metal construction
Span: 59 ft, in; Length: 46 ft, in; Height: 12 ft, in; Gross Wing Area 600 sq. ft
Weights: Airframe lbs; Normal Gross lbs; Maximum Gross 14300 lbs

ADDITIONAL DATA

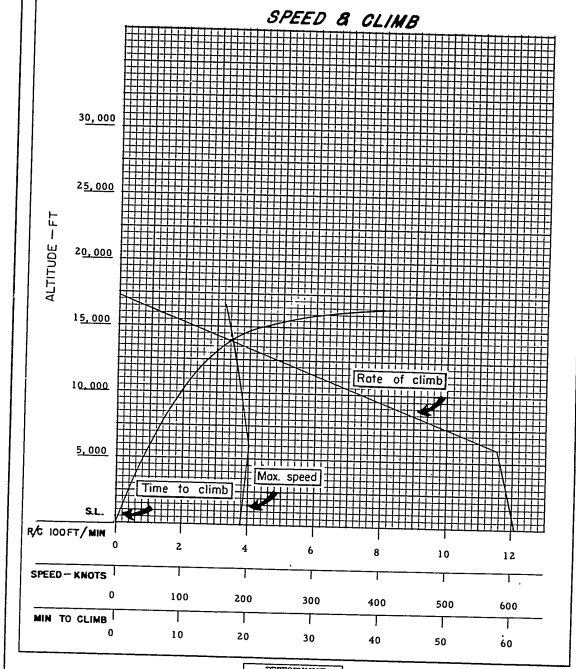
This is one of the latest Soviet transports designed for feeder-line duties. It appeared in 1948. This aircraft is an intermediate type between the Yak-6 and Li-2 or Il-12. It will probably be used mainly as a civil type. It is equipped with a radio compass and a transmitter/receiver.

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

March 1952 | U.S.S.R. | YAK-16



PERFORMANCE

DESCRIPTION

Normal rated power, maximum gross weight.

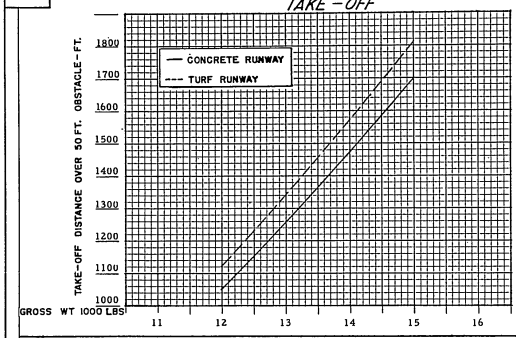
50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

YAK-16 | U.S.S.R. | March 1952

TAKE-OFF



PERFORMANCE

DESCRIPTION

CONFIDENTIAL

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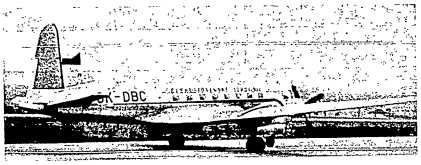
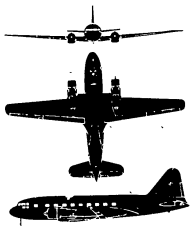
CONFIDENTIAL

July 1953 | U. S. S. R. | Yl-12





Yl-12

DESCRIPTION

This is a twin-engine, low-wing, monoplane transport. It has a single tail and retractable tricycle landing gear. The main wheels are dual, retracting into the engine nacelles and the nose wheel is single, retracting aft. The wing has upward dihedral; the center section is of rectangular shape, while the outer sections are trapezoidal with rounded tips. Split landing flaps entire span of the center section.

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

Il-12 | July 1953

Il-12

Mfr. Designer: Ilyushin Crew 5
Type Light Transport

PERFORMANCE

Maximum Speeds: 225 knots @ S.L.; 238 knots @ 15000 ft alt.; ____ knots @ ____ ft alt.
Cruising Speeds: Normal Power 220 knots @ 10000 ft alt.; Economical 162 knots 10000 ft alt.
Climb: 11.7 mins. to 15000 ft alt.; Rate of Climb: 1400 ft/min. at SL ft alt.
Service Ceilings: 25500 ft with normal weight: 25500 ft with 35500 lbs weight
Take-Off distance over 50 ft obstacle 1890 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal ____, Maximum 1080 ; External: Normal ____, Maximum ____

RANGES

1335 nautical miles	____ nautical miles	____ nautical miles
@ 162 knots, 10000 ft alt.	@ ____ knots, ____ ft alt.	@ ____ knots, ____ ft alt.
with 1080 US gals. of fuel	with ____ US gals. of fuel	with ____ US gals. of fuel
and 7500 lbs cargo	and ____ lbs ____	and ____ lbs ____

Combat Radius: 665 Nautical Miles

POWER PLANT

No. Engines 2 — Type Engines Reciprocating

Take-Off	1825 hp.	@ SL ft alt.	2500 rpm	48 in. Hg.
Normal	1610 hp.	@ 5100 ft alt.	2400 rpm	39 in. Hg.
Military	____ hp.	@ ____ ft alt.	____ rpm	____ in. Hg.
War Emergency	____ hp.	@ ____ ft alt.	____ rpm	____ in. Hg.

Description ASh-82 FN-212, 14-cylinder, air-cooled radial engine

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.1 ins	Dry Wt.	1980	No. Speeds	2	Mfr.	Type 95/115,95/130
Stroke	6.1 ins	Red. Gear	.5625	No. Stages	1	No. Blades 4	Grades
Displ.	2514 cu.ins	Eng. Width	49.5 in	Ratios	7.14:1, 10:1	Dia. 14 ft. 7 ins	
Comp. Ratio	7 :1	Eng. Length	79 in	Impeller Dia	11.4ins	Pitch Control	Constant speed, full feathering

ARMAMENT

Guns: None

Gunsight: None

BOMB/FREIGHT LOAD

Normal Load ____ lbs
Maximum Load 7500 lbs

Passenger capacity reduced to 18

Bombsight: None

COMBAT PROTECTION

Armor: None

Fuel Tanks: None

SPECIFICATIONS

Materials: All metal construction
Span: 104 ft, 0 in; Length: 69 ft, 10 in; Height: 20 ft, 6 in; Gross Wing Area 1160 sq.ft
Weights: Airframe ____ lbs; Normal Gross Unknown lbs; Maximum Gross 35500 lbs

ADDITIONAL DATA

The Il-12 was first displayed in 1946 as a passenger transport, becoming operational in 1947. It has since been observed in increasing numbers both in Russia and the satellite countries, and is being built apparently to replace the widely-used Li-2. De-icing of the wings is accomplished by means of hot-air ducting through the leading edges, utilizing heat exchangers operating from the engine exhaust gases. The exhaust stacks are ducted to the nacelle-leading edge junction on the outboard sides of the nacelles. Tail surfaces are also thermally de-iced by auxiliary heating.

In 1950, all civil Il-12 transports were structurally modified due to wing failures. Subsequently the maximum gross weight was reduced from 38000 lbs to 35500 lbs, and passenger capacity limited to 18. It is not known whether the military version was affected similarly; however, such is probable.

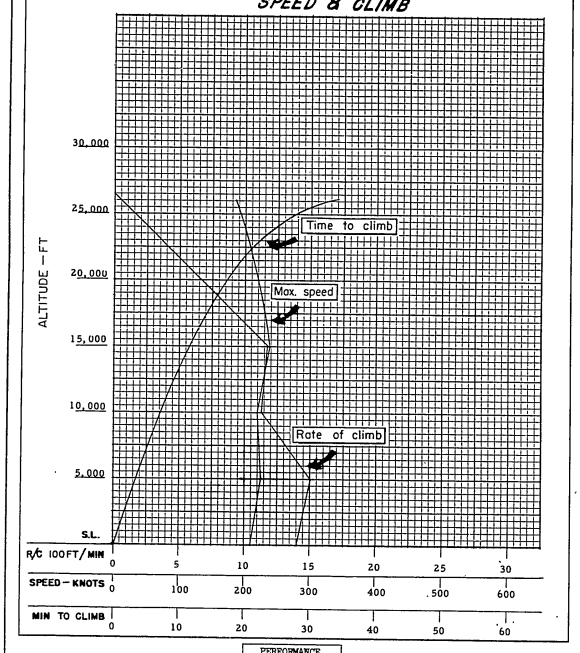
50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

March 1952 | U.S.S.R. | Il-12

SPEED & CLIMB



PERFORMANCE

DESCRIPTION

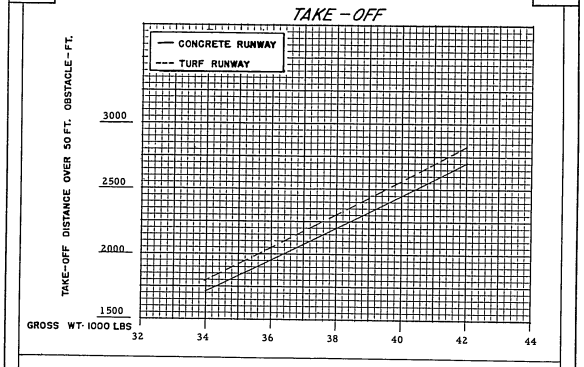
Normal rated power, maximum gross weight.

NOTE: Above 5000 ft, maximum power is NNP.

50X1-HUM

CONFIDENTIAL

IL-12 | U.S.S.R. | March 1952

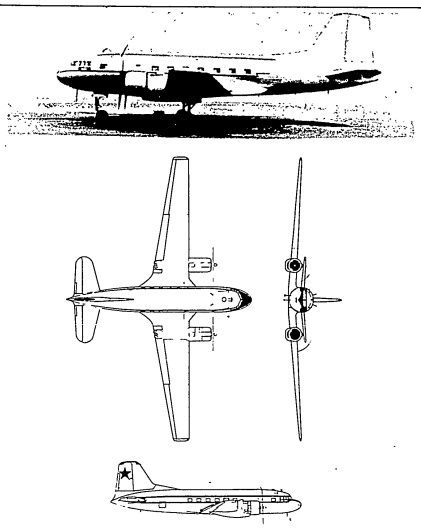


PERFORMANCE

DESCRIPTION

50X1-HUM

October 1957 — CRATE



REMARKS: CRATE is a twin, reciprocating-engine, low-wing, monoplane transport developed from COACH. It is a product of the Ilyushin design bureau and is designated Il-14.

SUMMARY

Oct 1953	First reported sighting of "blunt-tailed modification" of COACH.
1954	CRATE introduced into service on Soviet airline Aeroflot.
1956	CRATE production initiated in East Germany as Il-14P and in Czechoslovakia as Avia-14.
1956	Il-14M, with improved systems and increased seating capacity, introduced in last half.

50X1-HUM

DIMENSIONS

Wing	
Span	104 ft
Area	1075 sq ft
Root thickness (%)	18
Tip thickness (%)	12
Fuselage	
Length	69.9 ft
Max diameter	9.2 ft
Height, tail above ground	25.6 ft
Horizontal tail span	30.4 ft
Cargo cabin	
Length	33.0 ft
Max height	6.36 ft
Useable volume	1500 cu ft
Floor area	290 sq ft

WEIGHTS

Loading	Passenger	Cargo
Take-off	36,300	36,300
Empty	26,600	24,600
Payload	2,600	4,600

FUEL

	Fuel	Oil
Capacity (US gal)	925	75
Weight (lb)	5500	550
Grade	95/130 Octane	

Note: Capacity of fuel identical in Il-14 and Il-14M. All fuel in wing tanks.

POWER PLANT

Nr. & Model	2 x ASh-82T
Designer	Ivchenko
Type	Reciprocating, aircooled radial
Cylinders	14 - double row
Displacement	2215 cu in.
Compression ratio	6.9:1
Length	79.53 in.
Diameter	51.38 in.
Weight (dry)	2244 lb
Fuel Metering	Direct injection
Supercharger	Single stage/ single speed
Propeller	AV-50
Diameter	12.5 ft
Weight	450 lb
Reduction gear ratio	31:54

ENGINE RATINGS

	BHP	RPM	MP
Take-off	1875	2600	49 in Hg
Normal rated	1610	2400	40 in Hg
SFC	.626 - .690		

PASS/FREIGHT

Passengers	18
Cargo (lb)	4600

GENERAL INFORMATION

CRATE was developed to correct structural and performance deficiencies in COACH. Outwardly the differences in appearance are minor, and are confined mainly to the wings, engines and nacelles, landing gear and vertical tail surfaces.

The fuselage of the Il-14M is 3.28 feet longer than the Il-14 because of the addition of a section ahead of the wing. This section increases the cargo cabin length to 36.3 feet, the useable volume to 1650 cubic feet and the floor area to 310 square feet. Also several equipment systems, for example, hydraulic and fire extinguishing systems, have been improved. As a result of the changes the take-off weight, empty weight and payload have all been increased. For the Il-14M passenger version these weights are 38,000; 27,500; and 3,400 pounds respectively, and they are 38,500, 25,250 and 5,650 pounds for the cargo variant. The number of passenger seats has been raised from 18 to 24. The Il-14 and Il-14M power plants are identical. Il-14M is the first significant modification of the Il-14 design.

Performance data included in these sheets has been based on information in a Soviet publication for the Il-14. Range and radius performance of the Il-14M do not differ significantly from the Il-14; however, take-off run and distance will be slightly increased and rate of climb and service ceiling will be slightly decreased. Exact values are presently not available.

Although CRATE is the leading transport on Aeroflot, the Soviet airline, and is also used by the Soviet Air Force to transport both passengers and cargo, its flight characteristics are reportedly only fair. The aircraft is very uneconomical by U.S. standards and falls into a class of U.S. aircraft which fly farther, faster, and with a greater payload.

ELECTRONICS

RADAR
IFF
NAVIGATION
- Radio Compass (2)
- Radio Altimeter with low altitude warning system
- Localizer Receiver
- Glide Path Receiver
- Distance Measuring Equipment

COMMUNICATION
- VHF Command Set (2)
- Liaison Transmitter (2)
- Liaison Receiver (2)
- Intercom

CREW

- Pilot
- Co-Pilot
- Navigator
- Radio Operator
- Cabin Attendant (passenger variant)

50X1-HUM

AIRCRAFT PERFORMANCE

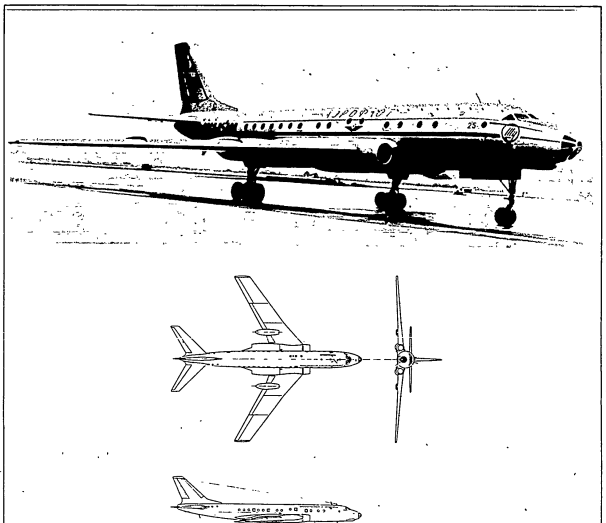
CONDITIONS		ECONOMICAL CRUISE @ 5,000 ft	ECONOMICAL CRUISE @ 10,000 ft	ECONOMICAL CRUISE @ 15,000 ft	MAXIMUM CARGO	LONG RANGE
TAKE-OFF WEIGHT	(lb)	36,300	36,300	36,300	36,300	36,300
Fuel weight	(lb)	5,500	5,500	5,500	1,600	5,500
Payload (Cargo)	(lb)	4,600	4,600	4,600	8,500	4,600
Wing loading	(lb/sq ft)	33.8	33.8	33.8	33.8	33.8
Stall speed	(kn)	60	60	60	60	60
Take-off ground run at SL	(ft) (1)	1,550	1,550	1,550	1,550	1,550
Take-off to clear 50 ft	(ft) (1)	2,700	2,700	2,700	2,700	2,700
Rate of climb at SL	(ft/min) (2)	1,050	1,050	1,050	1,050	1,050
Time: SL to 5,000 ft	(min) (2)	5	5	5	NA	5
Time: SL to 10,000 ft	(min) (2)	NA	10	10	NA	10
Service ceiling	(ft) (2)	24,000	24,000	24,000	24,000	24,000
COMBAT RANGE	(NM)	1,275	1,400	1,335	320	1,560
Average speed	(kn)	165	165	165	165	140
Cruise altitude (const)	(ft)	5,000	10,000	15,000	SL	10,000
Mission time	(hr)	7.8	8.7	8.4	1.9	11.3
COMBAT RADIUS	(NM)	600	640	600	135	710
Average speed	(kn)	165	165	165	165	140
Cruise altitude (const)	(ft)	5,000	10,000	15,000	SL	10,000
Mission time	(hr)	7.1	8.2	7.6	1.6	10.5
FIRST LANDING WEIGHT	(lb)	33,800	33,800	33,800	35,500	33,800

NOTES (1) Maximum Power
(2) Normal Power
Performance obtained from Il-14 handbook. Il-14M range-radius not significantly different, take-off run and distance increased, rate of climb decreased. Values presently not available for Il-14M.

50X1-HUM

November
1957

CAMEL



REMARKS: CAMEL/Tu-104 is a swept-wing monoplane powered by two large axial flow turbojet engines. It is similar in appearance to BADGER/Tu-16. Both designs are attributed to A. N. Tupolev. CAMEL is in service in two variants: 50 passenger first class and 70 passenger tourist.

SUMMARY

Jul 1955	CAMEL first observed on Soviet Aviation Day at Moscow/Tushino.
Mar 1956	CAMEL arrives at London Airport, London, England.
Apr 1956	Three CAMELS land at London Airport.
Sep 1956	CAMEL in service on Aeroflot, USSR civil airline.
Sep 1957	CAMEL makes two round trips from Moscow to U.S.

50X1-HUM

DIMENSIONS

Wing	
Span	114 ft
Area	1990 sq ft
Inboard Sweep (LE)	41 deg
Outboard Sweep (LE)	36 deg
Fuselage	
Length	124 ft
Diameter (max)	11.5 ft
Height	
Tail above ground	37.5 ft
Cabin	
Length	85 ft
Height (max)	8 ft
Width (max)	11 ft
Useable volume	5900 cu ft

WEIGHTS

Loading	50-Passenger	Cargo
Take-off	152,500	152,500
Empty	73,200	67,700
Payload	17,500	23,200

FUEL

Weight 59,000 lb

Two tanks in each wing
Two tanks in fuselage (One in center section of wing, one near tail)

POWER PLANT

Nr. & Model	2 - AM 3
Designer	A. Mikulin
Type	Axial flow
Compressor	8-stage
Turbine	2-stage
Pressure ratio	6:1
Diameter	53 in.
Weight (dry)	5500 lb
Gas turbine starter	

ENGINE RATINGS

SL STATIC	LB	RPM
Mil	19,000	4700
SFC/.9#/#thrust/hr		
Normal	17,500	4350
Cruise	11,000	4000

PASS./FREIGHT

VARIANT

1st class	50 passengers
Cargo	23,200 lb

GENERAL INFORMATION

CAMEL/Tu-104 is a low, swept-wing, twin-engined, high performance aircraft. Developed from BADGER/Tu-16 medium bomber, CAMEL was designed primarily as a civil passenger airliner. First-class configuration has one six-seat compartment, two eight-seat compartments, and a 28-seat main passenger cabin. Also provided are a galley, men's and women's lounges and lavatories.

It is estimated that empty weight of cargo variant would be reduced 5500 pounds by removal of interior furnishings.

The 70-passenger tourist variant, the Tu-104A, was introduced in July 1957 and is now on service on Aeroflot. Passenger seats are arranged in two cabins, one with four rows of four abreast and the other with one row of four abreast and ten rows of five abreast. Preliminary analysis indicates that the weights have been increased as follows:

	70-passenger	Cargo
Take-off	157,000	157,000
Empty	73,200	67,700
Payload	22,000	27,500

It is estimated that the fuel capacity of the Tu-104A is no greater than the Tu-104, however, the fuel tankage has been rearranged. The Tu-104A has three tanks in each wing, but the tail tank has been eliminated. The exact arrangement of the fuselage, wing-center-section tank is unknown.

In addition to the equipment listed to the right, the following items of non-radiating navigation equipment are installed in CAMEL

Automatic Dead Reckoning Navigation Indicator
Automatic Astro Compass
High Precision Remote Indicating Directional Gyro

ELECTRONICS

RADAR
Search and Navigation (X-band)
IFF
NAVIGATION
Radio Compass (2)
DME (distance measuring equipment)
Radio Altimeter (low altitude)
Localizer Receiver
Glide Path Receiver
Navigation Receiver/Indicator
LORAN (low frequency)
COMMUNICATION
VHF Command Radio (2) (4-channel ea)
Liaison Transmitter (5) Receiver (2)
Intercom

CREW

Pilot
Co-Pilot
Navigator
Radio Operator
Flight Mechanic
Cabin Attendant (occasionally two)

50X1-HUM

AIRCRAFT PERFORMANCE

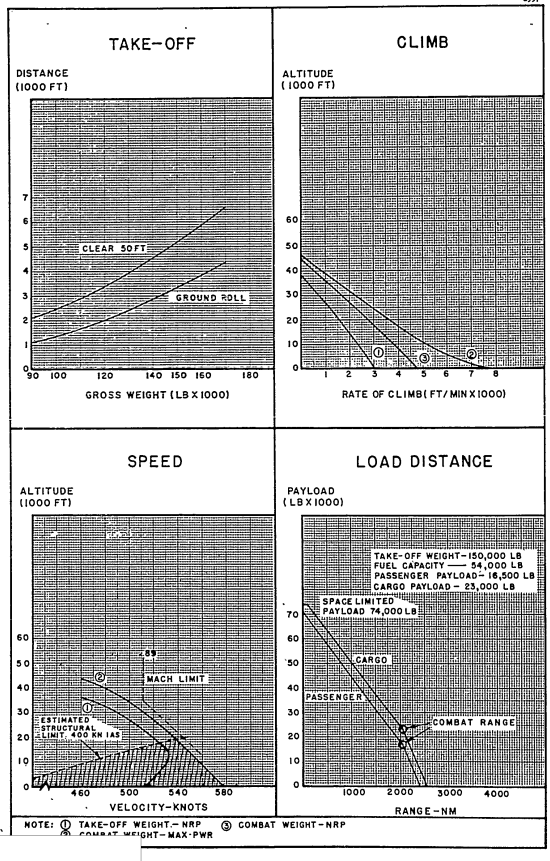
CONDITIONS		Basic Mission (3)	Constant Altitude Mission (4)
TAKE-OFF WEIGHT	(lb)	150,000	150,000
Fuel at 6.7 lb/gal	(lb)	54,000	54,000
Payload	(lb)	16,500	16,500
Wing loading	(lb/sq ft)	75	75
Stall speed (power off)	(kts)	120	120
Take-off ground run at SL	(ft)	3,300	3,300
Take-off to clear 50 ft	(ft)	5,200	5,200
Rate of climb at SL	(fpm) (1)	5,350	5,350
Time: SL to 20,000 ft	(min)	(1) 5.7	(2) 9.3
Service ceiling (100 fpm)	(ft) (2)	37,000	37,000
Time: SL to 30,000 ft	(min)	(1) 11.8	(2) 16.9
COMBAT RANGE	(NM)	2,050	1,400
Average speed	(kts)	460	430
Initial cruising altitude	(ft)	37,700	32,800
Final cruising altitude	(ft)	43,300	32,800
Total mission time	(hr)	4.50	3.40
COMBAT RADIUS	(NM)	900	---
Average speed	(kts)	460	---
Initial cruising altitude	(ft)	37,700	---
Final cruising altitude	(ft)	46,300	---
Total mission time	(hr)	3.95	---
FIRST LANDING WEIGHT	(lb)	123,500	---
COMBAT WEIGHT	(lb)	104,000	---
Combat altitude	(ft) (2)	43,200	---
Combat speed	(kts) (1)	465	---
Combat climb	(fpm) (1)	375	---
Combat ceiling (500 fpm)	(ft) (1)	42,200	---
Service ceiling (100 fpm)	(ft) (2)	43,600	---
Take-off ground run at SL	(ft) (1)	1,500	---
Take-off to clear 50 ft	(ft) (1)	2,700	---
Rate of climb at SL	(fpm) (1)	7,950	---
Max speed at SL	(kts) (1)	580	---
Basic speed at 25,000 ft	(kts) (1)	525	---
LANDING WEIGHT	(lb)	86,500	---

NOTES
(1) Maximum power
(2) Normal power
(3) In accordance with Mil-C-5011A specification
(4) Constant-Altitude Cruise Mission normally flown by Soviets

50X1-HUM

CAMEL

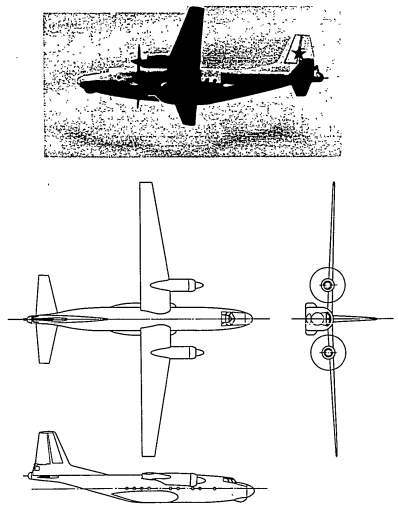
April 1957



50X1-HUM

September 1957

CAMP



REMARKS:

CAMP is a high-wing, twin-turboprop, assault-type transport that is very similar in appearance to the USAF C-123. Oleg K. Antonov is credited with the design. He reportedly stated that "my design bureau designation for this type is AN-8 although the military designation will be AN-4 when this type enters production for the Air Force." Neither of these designations, however, have been confirmed.

SUMMARY

CAMP was first observed when it was flown for the Soviet Aviation Day celebration at Tushino in June 1956. CAMP has been seen on several other occasions at the civil airfield in Kiev from August 1956 through May 1957, but only one CAMP airplane has been seen at these times and it has always been parked in approximately the same location. It is probable that CAMP was built in Kiev because Antonov's Design Bureau is located in that city and a CAMP fuselage has been observed outside a Kiev factory. Moscow press statements that CAMP was not satisfactory appear to have referred to a consideration of passenger operation by the Soviet civil airline (Aeroflot) and do not necessarily reflect on its acceptance for freight or military purposes.

50X1-HUM

DIMENSIONS

Wing

Span	-	125 ft.
Area	-	1310 sq. ft.
Aspect Ratio	-	11.9

Fuselage

Length	-	103 ft.
Maximum Width	-	10.5 ft.
Maximum Depth	-	12.5 ft.
Usable Cabin	-	2900 cu. ft.

WEIGHTS

Empty	41,000
Crew (5)	1,000
Fuel	16,000
Payload	17,000
Normal Gross	75,000 lb

FUEL

Normal capacity is estimated at 16,000 lb, which is equivalent to 2376 U S gallons or 9000 liters. It is assumed that additional fuel up to a total 17,000 lb can be carried in lieu of payload if temporary auxiliary tankage is installed.

POWER PLANT

Engine Type	Turboprop
No. of Engines	2
Model	Unknown
Propeller:	
Diameter	16 ft
No. Blades	4

Type: Single-Rotation, Hydromatic, and Featherable.

ENGINE RATINGS

MILITARY POWER

Altitude	Speed	SHP	Net Thrust	Prop Eff
S L	Static	3630	1000 lb	74.7

NORMAL RATED POWER

Altitude	Speed	SHP	Net Thrust	Prop Eff
S L	150kn	3280	520 lb	83.7
S L	300kn	3640	220	83.7
S L	350kn	3800	130	79.6
10,000 ft	350kn	3250	150	79.6
20,000 ft	350kn	2570	155	73.1

BOMBS/FREIGHT

NORMAL PAYLOAD - 17,000 lb

(May include large, wheeled items that can be loaded through the ramp-loading door at the rear of the usable cabin)

NORMAL TROOP CAPACITY - 60

(Limited by space considerations)

GENERAL INFORMATION

Subsequent to the accomplishment of the above estimates, it was reported that Antonov had stated that the airplane was "powered by two 5100 hp. engines." If this figure referred to SHP instead of ESHP it could indicate the A-Model-2 engine (normally 5640 ESHP) which was developed from the German JUMO-022. It is possible that the prototype CAMP was powered by two A-Model-2 engines; photo-interpretation of the nacelle sizes indicated that sufficient space was available. It is not known that 4000 ESHP engines were available at the time of the 1956 Tushino airshow. However, the preponderance of information indicates that: The performance with 4000 ESHP engines is adequate for the estimated mission and reports indicated that at least two different Soviet designs of 4000 ESHP turboprop engines are available, which strengthens the estimate that 4000 ESHP engines will be installed if and when CAMP is placed into production and service.

Large, blister-like fairings on either side of the lower fuselage undoubtedly house the main landing gear. It is probable that a multiple-wheeled arrangement of low-pressure tires is utilized to permit operation into relatively unprepared fields. The nose gear, probably dual-wheeled, retracts into the fuselage behind the chin-radome.

An assault-type mission, for the supply or re-supply of men and materiel in close support of combat areas, is indicated by the general appearance and especially: The landing gear, high wing, tail turret, and ramp door. An analysis of the propeller shown in available photography was made with consideration of the critical take-off requirements of an assault-type mission. This analysis indicated that the propeller would develop optimum efficiencies at about 250 knots speed and 10,000 ft altitude when utilized with an engine of about 3500 installed shaft horsepower. Distances shown on the take-off curves are for concrete-runway operation because of standard comparative purposes; sod field operation increases the ground run by 5-10 percent, depending on the soil condition.

Due to the maximum altitudes attainable by the aircraft, the crew compartment is probably pressurized in addition to being equipped with oxygen-breathing equipment. However, it is estimated that the fuselage cabin is not pressurized, although oxygen-breathing equipment may be installed to enable troops to maintain physical condition for post-landing activity.

ELECTRONICS

Range-Only Tail Radar	
IFF	SRO
Radar Warning Rcvr	APS-54
Navig Radar	MUSHROOM
Radio Compasses (2)	ARK-5
ILS System	MATERIK
Mark. Beacon Rcvr	MRP-48P
Distance Meas. Equip	SD-1
Radio Altimeter	RV-2
Long Range Navig. Syst.	MOON
VHF Command Set	RSIU-3M
Liais. Commun. Transmtr	RSB-70
Liais. Commun. Receiver	RS-9
Interphone	SPU-10

GUNS

2x23 m.m. (Tail Turret)

Optical computing sight with radar ranging and manual tracking.

ROCKETS

None

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS		15,000 Ft	20,000 Ft	BASIC MISSION	FERRY MISSION
TAKE-OFF WEIGHT	(lb)	75,000	75,000	75,000	75,000
Fuel at 6.7 lb/gal	(lb)	16,000	16,000	16,000	33,000
Payload (Cargo)	(lb)	17,000	17,000	17,000	None
Wing Loading	(lb/sq ft)	57.	57.	57.	57.
Stall Speed (Power Off)	(kn)	94	94	94	94
Take-Off Ground Run at S L	(1) (ft)	1,950	1,950	1,950	1,950
Take-Off to Clear 50 Ft	(1) (ft)	2,700	2,700	2,700	2,700
Rate of Climb at S L	(2) (fpm)	1,760	1,760	1,760	1,760
Time: S L to 20,000 Ft	(2) (min)	17	17	17	17
Service Ceiling (100 fpm)	(2) (ft)	30,800	30,800	30,800	30,800
COMBAT RANGE	(NM)	1,130	1,235	1,445	3,870
Average Speed	(kn)	230	240	230	230
Initial Cruising Altitude	(ft)	15,000	20,000	32,000	32,000
Final Cruising Altitude	(ft)	15,000	20,000	36,200	43,400
Total Mission Time	(hr)	5.0	5.2	6.5	17.5
COMBAT RADIUS	(NM)	560	610	735	
Average Speed	(kn)	225	230	230	
Initial Cruising Altitude	(ft)	15,000	20,000	32,000	
Final Cruising Altitude	(ft)	15,000	20,000	42,900	
Total Mission Time	(hr)	5.1	5.4	6.8	
FIRST LANDING WEIGHT	(lb)	67,600	67,500	67,000	
COMBAT WEIGHT	(lb)	50,600	50,500	50,000	
Combat Altitude	(ft)	15,000	20,000	40,800	
Combat Speed	(2) (kn)	280	280	230	
Combat Climb	(2) (fpm)	1,900	1,600	100	
Combat Ceiling (500 fpm)	(2) (ft)	36,200	36,400	36,600	
Service Ceiling (100 fpm)	(2) (ft)	40,400	40,500	40,800	
Take-Off Ground Run at S L	(1) (ft)	1,830	1,920	1,810	
Take-Off to Clear 50 Ft	(1) (ft)	1,900	1,900	1,880	
Rate of Climb at S L	(2) (fpm)	2,930	2,940	2,980	
Maximum Speed at 17,000 Ft	(2) (kn)	280	280	280	
Basic Speed at 25,000 Ft	(2) (kn)	280	280	280	
LANDING WEIGHT	(lb)	44,100	44,100	44,100	44,900

NOTES

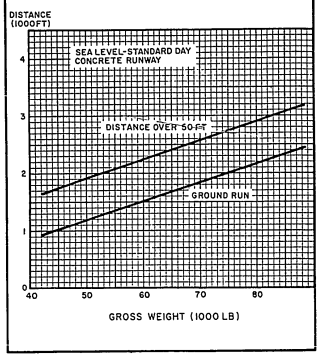
(1) Military Power
(2) Normal Rated Power

50X1-HUM

CAMP

September 1957

TAKE-OFF



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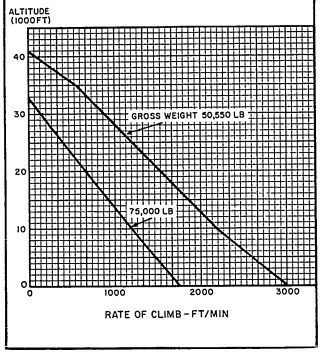
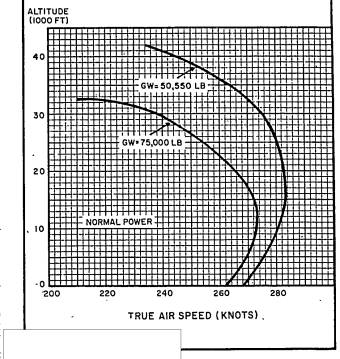
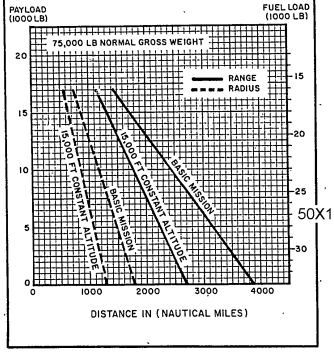


SPEED



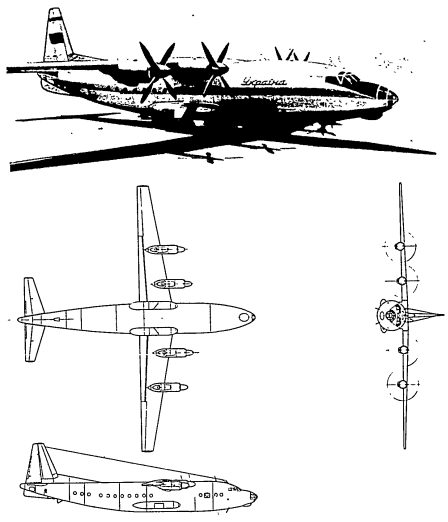
PAYLOAD-RANGE



50X1-HUM

October 1957

CAT



REMARKS: CAT is a high-wing, monoplane transport powered by four turboprop engines which drive four-bladed propellers. It is a product of the Antonov design bureau. Its designation is unknown, but it is called "Ukraina" by the Soviets.

SUMMARY

Sep 1956	O. K. Antonov states that his design bureau is building a transport powered by four turboprop engines.
Mar 1957	Photographs and some performance data about CAT released in Soviet press.
Apr 1957	First sighting of CAT.
Jul 1957	First public display of CAT at Moscow/Vnukovo Airfield.

50X1-HUM

DIMENSIONS

Wing	
Span	120 ft
Area	1285 sq ft
Fuselage	
Length	110 ft
Diameter (max)	13.5 ft
Height (Vert. tail above aircraft center line)	25.0 ft
Horizontal tail span	38.0 ft
Cabin	
Length	67.0 ft
Height (max)	8.5 ft
Width (max)	12.5 ft
Useable volume	5500 cu ft
Floor area	650 sq ft

WEIGHTS

	Passenger	Cargo
Take-off	110,000	110,000
Empty	60,400	56,400
Payload	26,200	30,200

FUEL

Weight	20,500 lb

POWER PLANT

Nr. & Model	4 x NK-4
Designer	N. D. Kuznetsov
Type	Axial flow turboprop
Weight	2200 lb
Propeller diameter	14.65 ft

ENGINE RATINGS

	ESHP	SHP	LB THRUST	ESFC	ALT
Take-off	4000	3560	960	.589	SL
Normal	3440	3065	935	.624	SL

PASS./FREIGHT

Variant	
1st class	84 passengers
Tourist	126 passengers
Cargo	30,200 lb

GENERAL INFORMATION

CAT is a high-wing, four turboprop transport designed by the group directed by O. K. Antonov. It appears to be typical of Antonov designed aircraft. The sturdy structure and rugged landing gear, and the large amount of power installed, allow operation from remote, relatively unprepared airfields. Ostensibly CAT has been designed as a civil passenger transport; however, the large cabin volume and internal dimensions indicate that it could easily be used to transport cargo.

The Soviets claim that CAT will be produced in two variants; first-class and tourist. The former is to seat 84 passengers and the latter 126. The first-class variant was displayed in July 1957 at Moscow/Vnukovo Airfield but the tourist variant has not been seen.

ELECTRONICS

RADAR
- MUSHROOM (X-band)
- IFF

COMMUNICATIONS
- VHF Command Radio (2) (4 channel)
- HF Liaison Radio (2)
- Intercom

NAVIGATION
- MOON Navigation Receiver
- IFME
- Radio Compass (2)
- Localizer
- Glide Path
- Marker Beacon
- Radio Altimeter (low level)

CREW

- Pilot
- Co-Pilot
- Navigator
- Radio Operator
- Cabin Attendant (Civil Variant)

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AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission	15,000	25,000	FERRY
TAKE-OFF WEIGHT	(lb)		110,000	110,000	110,000	82,300
Payload	(lb)		27,700	27,700	27,700	------
Fuel at 6.7 lb/gal	(lb)		20,500	20,500	20,500	20,500
Wing loading	(lb/sq ft)		85	85	85	64
Stall speed (power off)	(kn)		115	115	115	100
Take-off ground run at SL	(ft)	(1)	2,300	2,300	2,300	1,200
Take-off to clear 50 ft	(ft)	(1)	3,700	3,700	3,700	2,450
Rate of climb at sea level	(fpm)	(1)	2,750	2,750	2,750	3,950
Time: SL to 20,000 ft	(min)	(2)	12	12	12	8
Service ceiling (100 fpm)	(ft)	(2)	33,400	33,400	33,400	39,900
Time: SL to 30,000 ft	(min)	(2)	26	26	26	14
COMBAT RANGE	(NM)		1,250	900	1,200	1,800
Average speed	(kn)		335	300	300	335
Initial cruising altitude	(ft)		31,800	15,000	25,000	38,800
Final cruising altitude	(ft)		35,300	15,000	25,000	43,000
Total mission time	(hr)		4	3	4	5.5
COMBAT RADIUS	(NM)		665	450	570	
Average speed	(kn)		335	290	285	
Initial cruising altitude	(ft)		31,800	15,000	25,000	
Final cruising altitude	(ft)		43,000	15,000	25,000	
Total mission time	(hr)		4.5	3	4	
FIRST LANDING WEIGHT	(lb)		99,700	100,700	100,200	
COMBAT WEIGHT	(lb)		72,000	73,000	72,500	
Combat altitude	(ft)		40,700	15,000	25,000	
Combat speed	(kn)	(1)	375	390	390	
Combat climb	(fpm)	(1)	525	3,100	2,200	
Combat ceiling (500 fpm)	(ft)	(1)	41,100	40,600	40,900	
Service ceiling (100 fpm)	(ft)	(2)	42,600	42,400	42,500	
Take-off ground run	(ft)	(1)	900	900	900	
Take-off distance	(ft)	(1)	1,800	1,800	1,800	
Rate of climb at SL	(fpm)	(1)	4,650	4,550	4,600	
Max speed at opt alt	(kn/ft)	(1)	400/28,000	400/28,000	400/28,000	
Basic speed at 25,000 ft	(kn)	(1)	400	400	400	
LANDING WEIGHT	(lb)		64,900	64,900	64,900	64,900

NOTES (1) Military power
(2) Normal power

50X1-HUM

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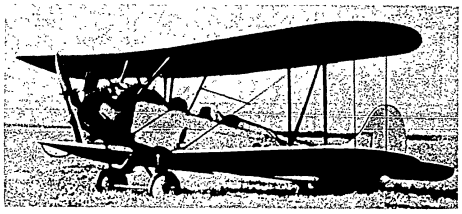

REMARKS:

The POLIKARPOV PO-2 is one of the oldest aircraft still in use by the USSR. Its original designation was U-2 and was redesignated PO-2 in 1944. Although it is primarily a trainer, it is sometimes employed as a light bomber for night intruder missions. There are pest control, glider tug, photo-mapping, and ambulance versions of this aircraft. The PO-2 may be equipped with skis or floats. A version of this aircraft has been reported with an in-line engine (probably M-5).

SUMMARY

1953

The PO-2 under the designation U-2 was first publically exhibited at the Berlin Air Show in October 1928. It has been produced in Poland (under designation CSS-13) and also in Yugoslavia. As late as 1950 it was still in production in the USSR. This aircraft was used in Korea for night heckler missions.

DIMENSIONS

Span	37 ft 5 in
Length	27 ft 2 in
Height	13 ft 0 in
Wing Area	370 sq ft

WEIGHTS

Take-off Gross Weight	2660 lbs

FUEL

Location	Gallons
Internal*	40
Grade	70 octane

* Mounted in front of forward cockpit, gravity feed system. Not protected.

POWER PLANT

Engine	M-11D
Type	Reciprocating 5-cylinder, air-cooled, radial
Diameter	42.3 in
Dry Weight (with accessories)	429 lbs

ENGINE RATINGS

	BHP/RPM
T.O. Power	123/1760
MRP	115/1700
Cruise	101/1640
(All powers at SL)	

BOMBS/FREIGHT

Bomb Load	4 x 55 lb bombs loaded externally
Max Load	220 lbs

GENERAL INFORMATION

a. Fixed conventional landing gear with airfoil spreader bar, shock cord struts adjustable tension by turnbuckle. Controllable tail skid. No brakes installed.
b. Two blade VD-451 E fixed pitch wooden propeller 7 ft 10 in, in diameter.
c. Open cockpit, two place in tandem with dual controls. Blind flying hood on rear cockpit. No armor protection.
d. Equipped for night flying.
e. All wood construction - fabric covered.
f. Wings are of unequal span and parallel chord; tips are rounded. Main bracing is by interplane struts with wire cross bracing.

ELECTRONICS

None

GUNS

2 x 7.62 mm synchronized
2 x 7.62 mm flexible in rear cockpit

Guns may be omitted.

ROCKETS

None

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS			BASIC MISSION			
TAKE-OFF WEIGHT		(lb)	2660			
Fuel at 6.0 lb/gal (grade 70)		(lb)	240			
Payload (crew)		(lb)	400			
Wing loading		(lb/sq ft)	7.2			
Stall speed (power off)		(kn)	40			
Take-off ground run at SL	(1)	(ft)	950			
Take-off to clear 50 ft	(1)	(ft)	1150			
Rate of climb at SL	(2)	(fpm)	630			
Time: SL to 5000 ft	(2)	(min)	11.5			
Time: SL to 10000 ft	(2)	(min)	33.5			
Service ceiling (100 fpm)	(2)	(ft)	12300			
COMBAT RANGE	(3)	(NM)	357			
Average cruising speed		(kn)	66			
Cruising altitude		(ft)	5000			
Total mission time		(hrs)	5.4			
COMBAT RADIUS	(3)	(NM)	168			
Average cruising speed		(kn)	66			
Cruising altitude		(ft)	5000			
Total mission time		(hrs)	5.1			
FIRST LANDING WEIGHT	(4)	(lb)	2550			
Ground roll at SL		(ft)	352			
Total from 50 ft		(ft)	1290			
COMBAT WEIGHT	(4)	(lb)	2550			
Combat altitude		(ft)	5000			
Combat speed	(1)	(kn)	84			
Combat climb	(1)	(fpm)	445			
Combat ceiling (500 fpm)	(1)	(ft)	3600			
Service ceiling (100 fpm)	(2)	(ft)	12750			
Take-off ground run at SL	(1)	(ft)	1025			
Take-off to clear 50 ft	(1)	(ft)	1260			
Max rate of climb at SL	(1)	(fpm)	675			
Max speed at SL	(1)	(kn)	86			
Basic speed at 5000 ft	(1)	(kn)	84			
SECOND LANDING WEIGHT	(4)	(lb)	2444			
Ground roll at SL		(ft)	330			
Total from 50 ft		(ft)	1245			

NOTES
(1) T.O. Power (Max RPM - 1760)
(2) Normal Power (Normal RPM - 1700)
(3) Range and Radius Mission as per MIL-C-5011A
(4) For Radius Mission

50X1-HUM

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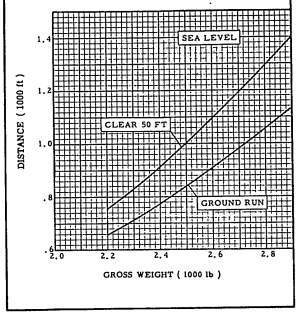
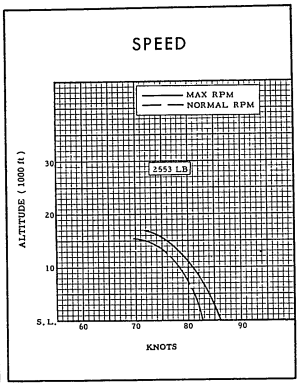
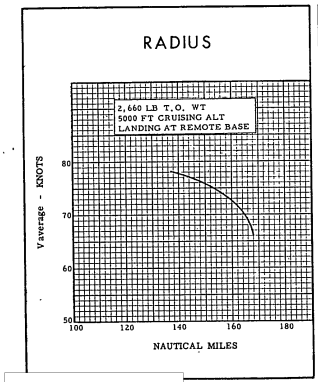
TAKE-OFF



SPEED



RADIUS



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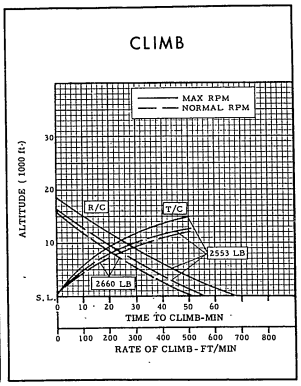
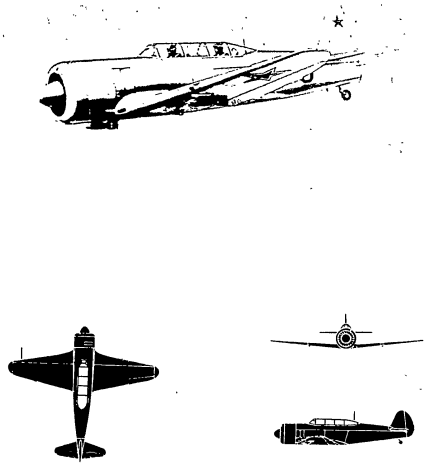


50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

July 1953	U. S. S. R.	Yak-11



Yak-11

DESCRIPTION

The Yak-11 is a low-wing monoplane. The fuselage is rather short with a very prominent greenhouse covering the two cockpits. A single tail and tailwheel type landing gear is fitted. The main wheels retract into the wings while the tail wheel is fixed.

50X1-HUM

CONFIDENTIAL

Yak-11 | July 1953

Yak-11

Mfr. Designer: Yakovlev Crew 2
Type Trainer

PERFORMANCE

Maximum Speeds: 238 knots @ S.L.; 261 knots @ 7880 ft alt.; 245 knots @ 16400 ft alt.
Cruising Speeds: Normal Power ____ knots @ ____ ft alt.; Economical 160 knots @ 5000 ft alt.
Climb: 5 mins. to 10000 ft alt.; Rate of Climb: 2000 ft/min. at SL ft alt.
Service Ceilings: 22000 ft with normal weight; ____ ft with ____ lbs weight
Take-Off distance over 50 ft obstacle ____ ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 50, Maximum 96; External: Normal ____, Maximum ____

RANGES

248 nautical miles	450 nautical miles	____ nautical miles
@ 160 knots, 5000 ft alt.	@ 155 knots, 5000 ft alt.	@ ____ knots, ____ ft alt.
with 50 US gals. of fuel	with 96 US gals. of fuel	with ____ US gals. of fuel
and no lbs. bombs	and no lbs. bombs	and ____ lbs

Combat Radius: 110 Nautical Miles Combat Radius: 200 Nautical Miles

POWER PLANT

No. Engines 1 | Take-Off 690 hp. @ SL ft alt. 2300 rpm ____ in. Hg.
Type Engines Reciprocating | Normal ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
Military 650 hp. @ 5575 ft alt. 2800 rpm 33 in. Hg.
War Emergency ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.

Description ASh-21, 7-cylinder, air-cooled radial

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.1 ins	Dry Wt.		No. Speeds	1	Mfr.	VISCH-111-B-20
Stroke	6.1 ins	Red. Gear		No. Stages	1	No. Blades	2
Displ.	cu. ins	Eng. Width	49.5 in	Ratios	7:1	Dia.	ft, ins
Comp. Ratio		Eng. Length	54 in	Impeller Dia.	ins	Pitch Control	

Type Gasoline, 87 octane

ARMAMENT

Guns: 1x12.7 mm/100 rpg, synchronized, BERRZINA
Gunsight: PBP VA Reflector type

BOMB/FREIGHT LOAD

Normal Load: None lbs
Maximum Load: 220 lbs
Stowage: Under wing.
2x110 lb bombs
Bombsight: None

COMBAT PROTECTION

Armor: None
Fuel Tanks: None

SPECIFICATIONS

Materials: Mixed wood and metal construction
Span: 30 ft, 10 in; Length: 27 ft, 11 in; Height: 10 ft, 6 in; Gross Wing Area 176 sq. ft
Weights: Airframe 1530 lbs; Normal Gross 4795 lbs; Maximum Gross 5313 lbs

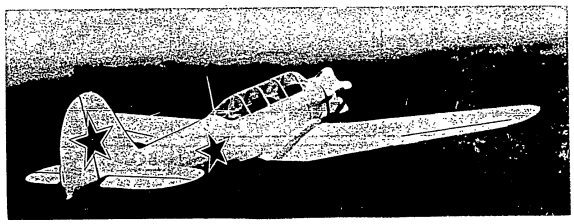
ADDITIONAL DATA

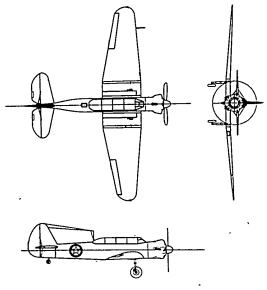
The Yak-11 aircraft is about the same size as the U.S. AT-6, and is somewhat similar in appearance with the long greenhouse. It is a relatively new trainer and believed to have been placed in use in 1947. It was thought at one time that the Yak-11 was a fighter type aircraft instead of a trainer.

50X1-HUM

July 1956

MAX (Yak-18)





REMARKS: The Yak-18 is one of the latest Soviet piston engine trainers. It is an improved version of the Ut-2. A tricycle version, designated Yak-18U, and revealed during 1956, is reportedly slightly heavier.

SUMMARY

1947 First observed and presumed to be in service.
1951 Aircraft widely used, such as by the Soviet Aero Clubs in competitive sports events and airshows.
1954 Established FAI records (2200-3850 lb weight class): Closed-course distance of 1245 NM, Altitude of 20,705 ft.
1956 Formations of from 24 to 94 perform at Aviation Day Airshows since 1949.

50X1-HUM

MAX (Yak-18)

July 1956

DIMENSIONS

Wing	
Span	34 ft 9 in
Area	183 sq ft
Dihedral	7°
Length	26 ft 4 in
Height	10 ft 4 in
Height (3 point attitude)	6 ft 11 in
Landing gear tread	6 ft 10 in

WEIGHTS

Take off gross weight	2400 lb

FUEL

Location	
Internal*	44 gal
Grade	70 Octane
Oil	4 gal

*Two (2) tanks in wing center section; capacity, 22 gal each

POWER PLANT

Engine	M-11-FR-1
Bore	5.9 in
Stroke	6.1 in
Type	Reciprocating, 5-cylinder, air-cooled, radial
Diameter	42.5 in
Length	37.2 in
Dry Weight (with accessories)	429 lb

ENGINE RATINGS

	BHP/RPM
Take-off	158/1900
Normal rated power	140/1760
Cruise (75% NRP)	105/1600
(All ratings at SL)	

BOMBS/FREIGHT

2 x 110 lb

One 110 lb bomb on each of two external racks mounted on underside of wing center section.

GENERAL INFORMATION

a. Conventional landing gear with retractable main wheels. Main struts project into airstream when retracted. Full swiveling tail wheel is fixed.
b. Two blade V-510-D-81 propeller, 6 ft 6 1/2 in diameter.
c. Basic structure metal throughout, wing, empennage and aft section of fuselage fabric covered, remainder covered with metal.
d. Two seats in tandem. Sections of plexiglass canopy slide back for access to cockpits.
e. Equipped for night flying. 24v battery.
f. Landing gear and flaps are pneumatically operated.
g. A version with tricycle landing gear has been observed.
h. Variations in aircraft performance between the calculated and the flight test on following page results from different propellers being utilized.

ELECTRONICS

Transmitter	RSI-6K
Receiver	RSI-6M-1
Radio Compass	PCM-6K-NO

GUNS

None

ROCKETS

None

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July 1956

MAX (Yak-18)

AIRCRAFT PERFORMANCE

CONDITIONS			Calculated Basic Mission	USAF Flight Test		
TAKE-OFF WEIGHT	(lbs)		2500	2500		
Fuel (43.5 gal)	(lbs)		252	252		
Payload (crew)	(lbs)		390	390		
Wing Loading	(psf)		13.8	13.8		
Stall Speed	(kts)	(2)	46	47		
T/O Ground Run	(ft)	(2)	1130	690		
T/O to clear 50 ft	(ft)	(2)	1400	1330		
Rate of Climb at S.L.	(fpm)	(2)	700	800		
Time to Climb - SL to 5000 ft	(min)	(2)	9	9		
Time to Climb - SL to 10000 ft	(min)	(2)	25	24		
Service Ceiling	(ft)	(2)	11500	12000		
COMBAT RANGE	(nm)	(5)	420	--		
Average Cruising Speed	(kts)		97	--		
Cruise Altitude	(ft)		5000	--		
Total Mission Time	(hrs)		4.5	--		
COMBAT RADIUS	(nm)	(5)	196	--		
Average Cruising Speed	(kts)		97	--		
Cruise Altitude	(ft)		5000	--		
Total Mission Time	(hrs)		4.2	--		
FIRST LANDING WEIGHT	(lbs)	(4)	2400	--		
Ground Roll	(ft)		650	--		
Total From 50 ft	(ft)		1200	--		
COMBAT WEIGHT	(lbs)	(4)	2400	2400		
Combat Altitude	(ft)		5000	5000		
Combat Speed	(kts)		116	126		
Combat Rate-of-Climb	(fpm)		450	610		
Combat Ceiling (500 fpm)	(ft)		4000	7500		
Service Ceiling (100 fpm)	(ft)		13000	13500		
T/O Ground Run	(ft)		1040	590		
T/O to Clear 50 ft	(ft)		1300	1200		
Maximum Speed at S.L.	(kts)	(3)	118	127		
Basic Speed at 5000 ft	(kts)		115	122		
SECOND LANDING WEIGHT	(lbs)	(4)	2320	--		
Ground Roll	(ft)		610	--		
Total From 50 ft	(ft)		1150	--		

NOTES
(1) Max Attainable Power - 1950 rpm at S.L. and 1760 at 11,000 ft - Flight Test Aircraft
(2) Clean Configuration
(3) Normal Power - 1760 rpm
(4) For Radius Mission
(5) Range and Radius per MilC 5011A

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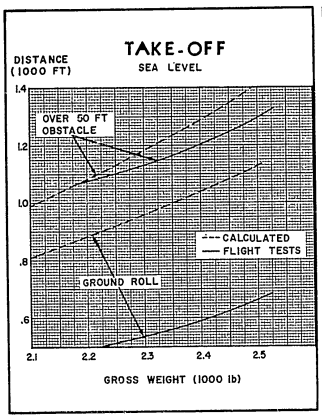
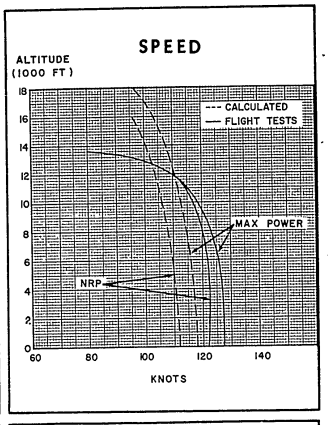
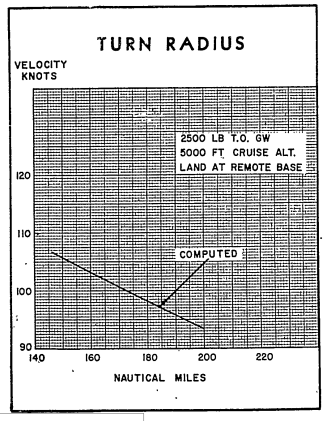
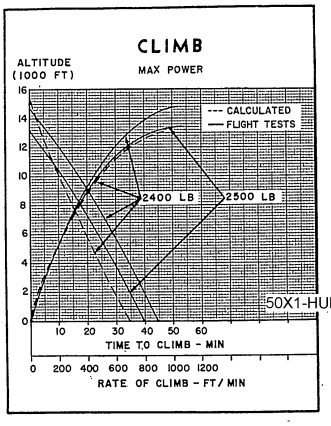
MAX (Yak-18)

July 1956









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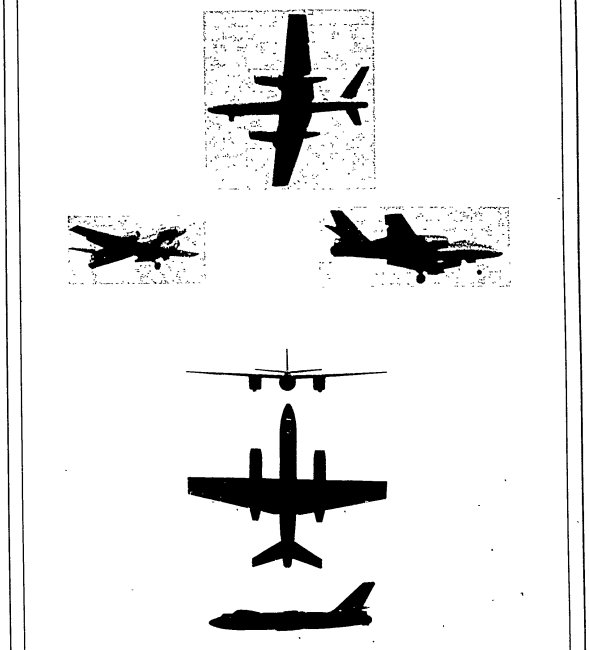
July 1953

U.S.S.R.

CONFIDENTIAL

UIL-28



UIL-28

DESCRIPTION

This aircraft is a trainer version of the Il-28. The main differences being the solid nose section and the twin cockpit.

50X1-HUM

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UI1-28

Mfr. Designer: Ilyushin Crew 3 or 4
Type Trainer version of Il-28 (twin cockpit)

PERFORMANCE

Maximum Speeds: 450 knots @ S.L.; 460 knots @ 20000 ft alt.; 445 knots @ 30000 ft alt.
Cruising Speeds: Normal Power 415 knots @ 35000 ft alt.; Economical 385 knots @ 39-44000 ft alt.
Climb: 19.8 mins. to 40000 ft alt.; Rate of climb: 4480 ft/min. at SL ft alt.
Service Ceilings: 43800 ft with normal weight; 48000 ft with 31150 (combat wt) lbs weight
Take-Off distance over 50 ft obstacle Concrete 3110 Turf 3280 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 2180, Maximum ; External: Normal 440, Maximum

RANGES

1395 nautical miles	1605 nautical miles	nautical miles
@ 385 knots, 39-44000 ft alt.	@ 385 knots, 37-44000 ft alt.	@ knots, ft alt.
with 2180 US gals. of fuel	with 2020 US gals. of fuel	with US gals. of fuel
and no lbs bombs	and no lbs bombs	and lbs

Combat Radius: 650 Nautical Miles Combat Radius: 770 Nautical Miles

POWER PLANT

No.								
2	Take-off	6000	lbs thrust, @	SL	ft alt.	100%	rpm 0	knots
	Normal	4800	lbs thrust, @	SL	ft alt.	94%	rpm 0	knots
Type Jet	Military	6000	lbs thrust, @	SL	ft alt.	100%	rpm 0	knots
	War Emerg.		lbs thrust, @		ft alt.		rpm	knots

Description Soviet VK-1, centrifugal type turbojet engine

SPECIFICATIONS

Overall Dimensions: Length / ins, Dia. 50(appr) ins (approx 100-105 in)
Net Dry Weight 2000 (approx)
Compressor Centrifugal type
Compression Ratio 4.4:1 (approx)
Type of Fuel Kerosene
Air Mass Flow 110-115 (approx) lbs/sec
Combustion Chambers 9
Turbine Stages 1
Specific Fuel Consumption 1.14 (approx) (T.O., Sea Level, Static)

ARMAMENT

Guns Unknown
Gunsight Unknown

BOMB/FREIGHT LOAD

Normal Load None lbs
Maximum Load lbs
Bombsight Unknown

COMBAT PROTECTION

Armor Unknown
Fuel Tanks Unknown

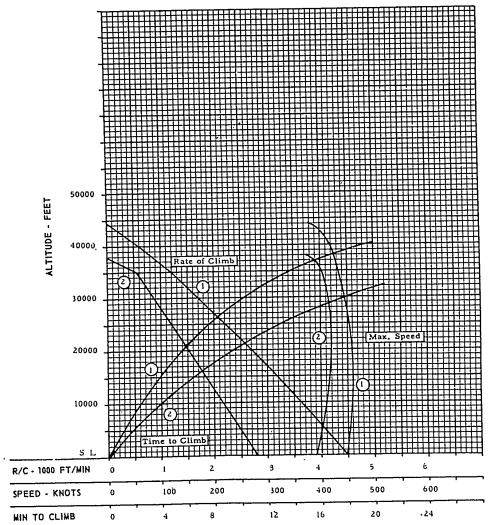
SPECIFICATIONS

Material All metal construction
Span: 70 ft, 6 in; Length: 59 ft, 0 in; Height: ft, in; Gross Wing Area 672 sq.ft
Weights: Airframe lbs; Normal Gross 38210 lbs; Maximum Gross lbs

ADDITIONAL DATA

The UI1-28 first appeared during the early part of 1951, when a few were observed in the Soviet Zone of Germany at the same fields from which Il-28's operated. Since a fairly reliable source reports the existence of a trainer version of the Il-28, and no armament can positively be identified on the UI1-28, it is being considered as a trainer type. However, the possibility must be considered that this aircraft could exist in an all weather version.

50X1-HUM



PERFORMANCE

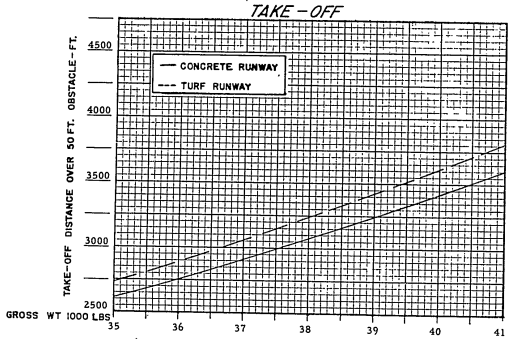
DESCRIPTION

(1) Military power, normal gross weight 38,210 lbs

(2) Normal power, normal gross weight 38,210 lbs

50X1-HUM

TAKE – OFF



PERFORMANCE

DESCRIPTION

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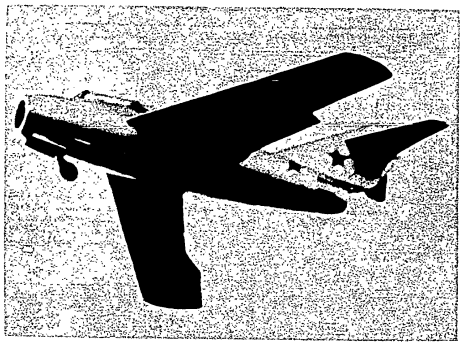


UMIG-15

DESCRIPTION

The UMIG-15 is the trainer version of the MIG-15. It is the MIG-15 with a twin-cockpit arrangement.

50X1-HUM

UMIG-15

Mfr. Designer: Mikoyan-Gurevich Crew 2
Type Trainer

PERFORMANCE

Maximum Speeds: 566 knots @ S.L.; 543 knots @ 25000 ft alt.; 515 knots @ 40000 ft alt.
Cruising Speeds: Normal Power 493 knots @ 40000 ft alt.; Economical ____ knots @ ____ ft alt.
Climb: 8.7 mins. to 40000 ft alt.; Rate of climb: 8400 ft/min. at SL ft alt.
Service Ceilings: 48500 ft with normal weight; 45000 (NRP) ft with 10650 lbs weight
Take-Off distance over 50 ft obstacle Concrete 2680 Turf 2810 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 233, Maximum ____; External: Normal ____, Maximum ____

RANGES

320 nautical miles	645 nautical miles	____ nautical miles
@ 437 knots, 45000 ft alt.	@ 438 knots, 45000 ft alt.	@ ____ knots, ____ ft alt.
with 233 US gals. of fuel	with 373 US gals. of fuel	with ____ US gals. of fuel
and 0 lbs bombs	and 0 lbs bombs	and ____ lbs

Combat Radius: See note below. Combat Radius: 210 Nautical Miles

POWER PLANT

No. 1	Take-Off	5000 lbs thrust, @ SL ft alt.	12500	rpm 0	knots
	Normal	4000 lbs thrust, @ SL ft alt.	11800	rpm 0	knots
Type Turbojet	Military	4500 lbs thrust, @ SL ft alt.	12200	rpm 0	knots
	War Emerg.	None lbs thrust, @ ____ ft alt.	____	rpm ____	knots

Description Centrifugal-flow, Soviet copy of British Nene II. (Data shown is for British Nene)
(Soviet designation for copy of Nene II is RD-45.)

SPECIFICATIONS

Overall Dimensions: Length 96.8 ins, Dia. 49.5 ins
Net Dry Weight 1950 (approx)
Compressor Centrifugal
Compression Ratio 4.4:1
Type of Fuel Kerosene

Air Mass Flow 93.4 lbs/sec
Combustion Chambers 9 cans
Turbine Stages 1
Specific Fuel Consumption 1.09 lbs/lb/hr (T.O., Sea Level, Static)

ARMAMENT

Guns
1 x 37 mm/40 rpg
2 x 23 mm/80 rpg

Gunsight

BOMB/FREIGHT LOAD

Normal Load ____ lbs
Maximum Load ____ lbs
Bombs can be carried: probably loaded as follows:
Two (2) FAB 250 bombs (each at 550 lbs) or their equivalent.

Bombsight

COMBAT PROTECTION

Armor None

Fuel Tanks None

SPECIFICATIONS

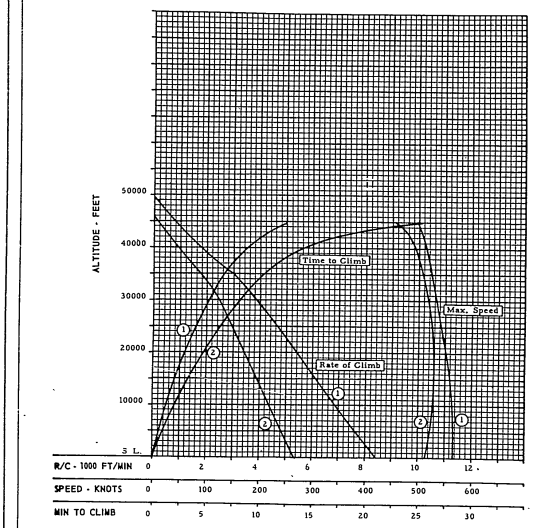
Materials All metal construction
Span: 33 ft, 0 in; Length: 33 ft, 7 in; Height: 10 ft, 10 in; Gross Wing Area 218 sq.ft
Weights: Airframe ____ lbs; Normal Gross 10650 lbs; Maximum Gross ____ lbs

50X1-HUM

ADDITIONAL DATA

The first reliable sightings of the UMIG-15 were made in early 1951 in the Soviet Zone of Germany. This aircraft has also been observed in Austria and Poland, and is a trainer version of the MIG-15.

Note: The corresponding combat radius mission is calculated in accordance with USAF Specification MIL-C-5011 and cannot be accomplished due to low fuel capacity of the aircraft (97 gals less than for MIG-15 interceptor.)



PERFORMANCE

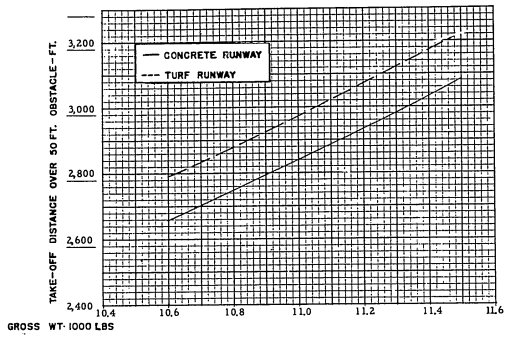
DESCRIPTION

(1) Military power, normal gross weight 10,650 lbs

(2) Normal power, normal gross weight 10,650 lbs

50X1-HUM

TAKE – OFF



PERFORMANCE

DESCRIPTION

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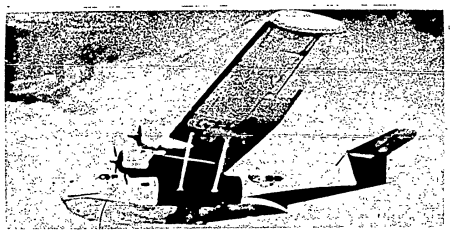
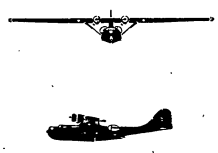




GST

DESCRIPTION

It is a twin-engine, parasol-wing flying boat. Wing center section is parallel in chord and supported above hull on a streamlined superstructure, and braced to hull by parallel struts. Outer wing panels have slight taper to square tips. Lateral stabiliz- floats retract outward to form end caps at wing tips. Hull is of two-step type with semi- circular top. Stabilizer is carried high on the single fin.

50X1-HUM

GST | July 1953

GST

Mfr. Designer: Unknown Crew 5 to 7
Type Reconnaissance and Light Bomber

PERFORMANCE

Maximum Speeds: 146 knots @ S.L.; 152 knots @ 5000 ft alt.; 130 knots @ 20000 ft alt.
Cruising Speeds: Normal Power 152 knots @ 5000 ft alt.; Economical 100 knots @ 1500 ft alt.
Climb: 14 mins. to 10000 ft alt.; Rate of Climb: 730 ft/min. at SL ft alt.
Service Ceilings: 18500 ft with normal weight; ft with lbs weight
Take-Off distance over 50 ft obstacle 1500 ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 1475, Maximum ; External: Normal , Maximum

RANGES

1800 nautical miles	1980 nautical miles	nautical miles
@ 90 knots, 10000 ft alt.	@ 96 knots, 10000 ft alt.	@ knots, ft alt.
with 1475 US gals. of fuel	with 1475 US gals. of fuel	with US gals. of fuel
and 2200 lbs. bombs	and 0 lbs. bombs	and lbs.

Combat Radius: 725 Nautical Miles Combat Radius: 790 Nautical Miles

POWER PLANT

No. Engines 2 Type Engines: Reciprocating

Take-Off	986	hp. @	SL	ft alt.	2200	rpm 41.4 in. Hg.
Normal	809	hp. @	SL	ft alt.	2100	rpm in. Hg.
Military		hp. @		ft alt.		rpm in. Hg.
War Emergency		hp. @		ft alt.		rpm in. Hg.

Description ASh-62, 9-cylinder, air-cooled radial

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.12 ins	Dry Wt.	1246	No. Speeds	1	Mfr.	Type Gasoline
Stroke	6.86 ins	Red. Gear	.6875:1	No. Stages	1	No. Blades	3 90-92 octane
Displ.	1820 cu. ins	Eng. Width	54.1 in	Ratios	7.0:1	Dia.	12 ft, 1 ins
Comp. Ratio	6.4 :1	Eng. Length	48.0	Impeller Dia.	11 ins	Pitch Control	Constant speed

ARMAMENT

Guns
2x7.62 mm, flexible in nose
1x7.62 mm, flexible
twin guns in side blisters
heavier guns may be fitted

Gunsight Unknown

BOMB/FREIGHT LOAD

Normal Load 2200 lbs
Maximum Load 4000 lbs
Stowage:
8x440 lb bombs, or
2x2000 lb torpedoes

Bombsight Unknown

COMBAT PROTECTION

Armor
Armor behind pilot

Fuel Tanks Protected

SPECIFICATIONS

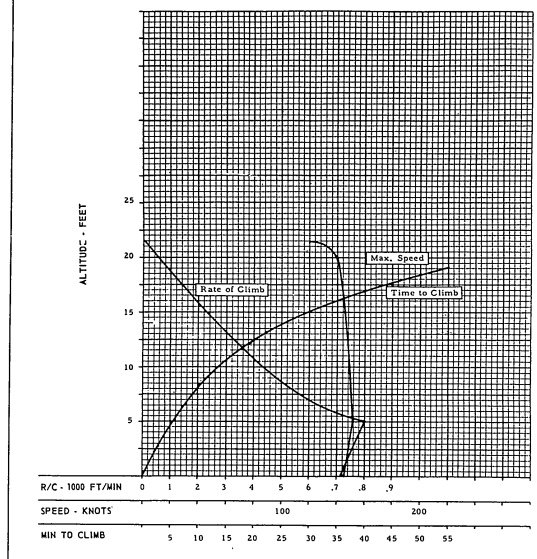
Materials Metal construction, stressed skin
Span 104 ft, 0 in; Length: 63 ft, 10 in; Height: 18 ft, 6 in; Gross Wing Area 1400 sq. ft
Weights: Airframe 8750 lbs; Normal Gross 25000 lbs; Maximum Gross 34200 lbs

ADDITIONAL DATA

The GST is the U.S. PBY-5, "Catalina" built under license in the U.S.S.R.
This aircraft is still in operational use with the Soviet Navy. In addition to the aircraft built under license, U.S.-built PBY's were sold to the U.S.S.R. during lend lease. The meaning of the designation GST is unknown.

50X1-HUM

July 1953 | U.S.S.R. | GST



PERFORMANCE

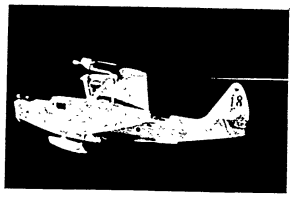
DESCRIPTION

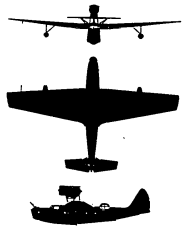
NORMAL POWER, NORMAL GROSS WT. 25000 LBS.

50X1-HUM

CONFIDENTIAL

March 1952 | U.S.S.R. | Type 33





Type 33

DESCRIPTION

The type 33 was seen in the 1951 Moscow Air Show. There are no photographs available on this aircraft, but it is believed to be very similar to the MBR-2 amphibian. The above photograph and silhouette is that of the MBR-2

50X1-HUM

CONFIDENTIAL

TYPE 33

Mfr. Designer: Berlev Crew 3
Type Amphibian

PERFORMANCE

Maximum Speeds: 127 knots @ S.L.; 120 knots @ 10,000 ft alt.; knots @ ft alt.
Cruising Speeds: Normal Power 124 knots @ 5000 ft alt.; Economical 98 knots @ 5000 ft alt.
Climb: 6 mins. to 5000 ft alt.; Rate of Climb: 860 ft/min. at Sea Level ft alt.
Service Ceilings: 20,000 ft with normal weight: ft with lbs weight
Take-off distance over 50 ft obstacle ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 265, Maximum ; External: Normal , Maximum

RANGES

Bombing Mission	Patrol Mission *	
565 nautical miles	570 nautical miles	nautical miles
@ 98 knots, 5000 ft alt.	@ 94 knots, 1500 ft alt.	@ knots, ft alt.
with 265 US gals. of fuel	with 265 US gals. of fuel	with US gals. of fuel
and 2000 lbs bombs	and 2000 lbs bombs	and lbs
RADIUS: 310 NM	RADIUS: 230 NM	

POWER PLANT

No. Engines 1 Type Engines Reciprocating

Take-off	962	hp. @ SL	ft alt.	2200	rpm	42 in. Hg.
Normal	826	hp. @ 4940	ft alt.	2100	rpm	35 in. Hg.
Military		hp. @	ft alt.		rpm	in. Hg.
War Emergency		hp. @	ft alt.		rpm	in. Hg.

Description ASH-62 IR, 9-cylinder, air-cooled radial engine

SPECIFICATIONS		SUPERCHARGER		PROPELLER		FUEL	
Bore	6.125 ins	Dry Wt.	1246	No. Speeds	1	Hfr.	AU-7N-161	Type	Gasoline
Stroke	6.870 ins	Red. Gear	11:16	No. Stages	1	No. Blades	3		90-92 Octane
Displ.	1822 cu. ins	Eng. Width	55	Ratios	7:1	Dia.	8 ft. 9.6 ins		
Comp. Ratio	6.6 : 1	Eng. Length	44.75	Impeller Dia	10.9 ins	Pitch Control	Double-acting, Feather 90°		

ARMAMENT

Guns Unknown

Gunsight Unknown

BOMB/FREIGHT LOAD

Normal Load lbs
Maximum Load 2000 lbs
Bombs carried under wings

Bombsight Unknown

COMBAT PROTECTION

Armor Unknown

Fuel Tanks Unknown

SPECIFICATIONS

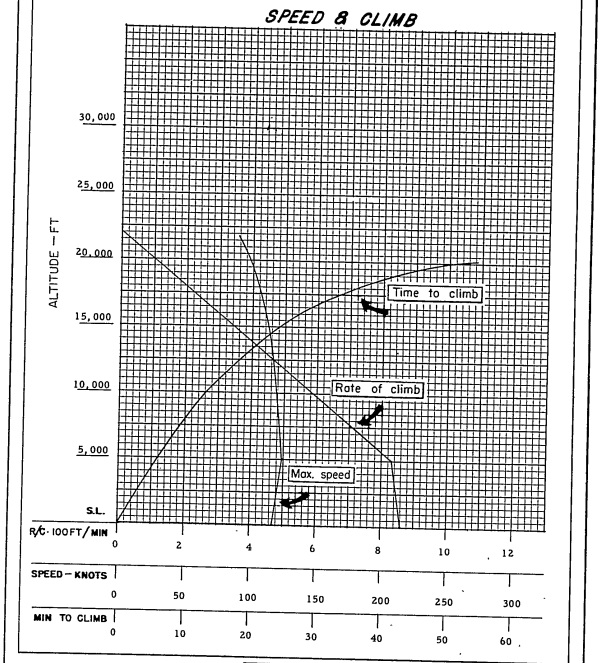
Material Probably mixed wood and metal construction
Span: 64 ft, 0 in; Length: 44 ft, 0 in; Height: ft, in; Gross Wing Area 640 sq. ft
Weights: Airframe lbs; Normal Gross 10,000 lbs; Maximum Gross 12,000 lbs

ADDITIONAL DATA

First observed in July 1951 Aviation Day Airshow at Tushino. The aircraft reportedly is an improved model of the MBR flying boat. Principal modifications are: (1) the change to amphibian design with the main gear retracting into the sides and the nose wheel retracting into the bottom of the hull, (2) installation of radial instead of in-line engine, (3) use of tractor instead of pusher propeller, (4) longer hull, having sharper nose and a somewhat shorter length aft of the step. The wing-tip floats are mounted on two parallel struts without bracing. No armament appears to be present.

* In patrol mission, radius is 40% range.

50X1-HUM



PERFORMANCE

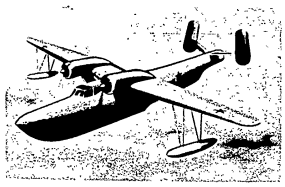
DESCRIPTION

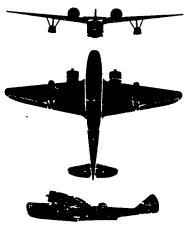
Normal rated power, normal gross weight.

50X1-HUM

CONFIDENTIAL

July 1953 | U.S.S.R. | Type 34





Type 34

DESCRIPTION

The type 34 was seen in the 1951 Moscow Air Show. There are no photographs available on this aircraft, but it is believed to be very similar to the MDR-6 flying boat. The above photograph and silhouette is that of the MDR-6

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

Type 34 | July 1953

Type 34

Mfr. Designer: Beriev | Crew 6
Type Flying Boat

PERFORMANCE

Maximum Speeds: 165 knots @ S.L.; 163 knots @ 5000 ft alt.; 156 knots @ 10,000 ft alt.
Cruising Speeds: Normal Power 152 knots @ 1500 ft alt.; Economical 105 knots @ 1500 ft alt.
Climb: 6.8 mins. to 5000 ft alt.; Rate of Climb: 710 ft/min. at SL ft alt.
Service Ceilings: 19,700 ft with normal weight; ft with lbs weight
Take-Off distance over 50 ft obstacle ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal 2000, Maximum 2600; External: Normal, Maximum

RANGES

Patrol Mission *	Patrol Mission *	Bombing Mission
1450 nautical miles	1755 nautical miles	1525 nautical miles
@ 105 knots, 1500 ft alt.	@ 105 knots, 1500 ft alt.	@ 107 knots, 5000 ft alt.
with 2000 US gals. of fuel	with 2600 US gals. of fuel	with 2000 US gals. of fuel
and 3000 lbs. bombs	and 4400 lbs. bombs	and 3000 lbs. bombs
Radius: 580 NM	Radius: 700 NM	Radius: 835 NM

POWER PLANT

No. Engines 2 | Take-Off 1825 hp. @ SL ft alt. 2500 rpm 48 in. Hg.
Type Engines Reciprocating | Normal 1610 hp. @ 5100 ft alt. 2400 rpm 39 in. Hg.
Military hp. @ ft alt. rpm in. Hg.
War Emergency hp. @ ft alt. rpm in. Hg.

Description ASH-82 FN, 14-cylinder, air-cooled, radial engine

SPECIFICATIONS	SUPERCHARGER	PROPELLER	FUEL
Bore 6.1 ins	Dry Wt. 1980	No. Speeds 2	Mfr. VISH 105	Type 95/115, 95/130
Stroke 6.1 ins	Red. Gear .5625	No. Stages 1	No. Blades 4	Grades
Displ. 2514 cu. ins	Eng. Width 49.5	Ratios 7.14 & 10:1	Dia. 14 ft, 7 ins	
Comp. Ratio 7 : 1	Eng. Length 79	Impeller Dia. 11.4 ins	Pitch Control Constant speed, full feathering	

ARMAMENT

Guns Unknown

Gunsight Unknown

BOMB/FREIGHT LOAD

Normal Load 3000 lbs
Maximum Load 4400 lbs

Bombsight Unknown

COMBAT PROTECTION

Armor Unknown

Fuel Tanks Unknown

SPECIFICATIONS

Materials All metal construction
Span 110 ft, in; Length: 78 ft, in; Height: ft, in; Gross Wing Area 1350 sq. ft
Weights: Airframe lbs; Normal Gross 45,000 lbs; Maximum Gross 50,000 lbs

ADDITIONAL DATA

First observed in July 1951 Aviation Day Airshow at Tushino. The aircraft appears similar in configuration to the Martin "Mariner" patrol plane, lacking, however, the radar tower atop the hull forward of the wing. Guns are reported to be mounted in the bow and tail turrets. Wing-tip floats are mounted on two parallel struts without bracing struts. A small water rudder is provided.

* In patrol mission, radius is 40% range.

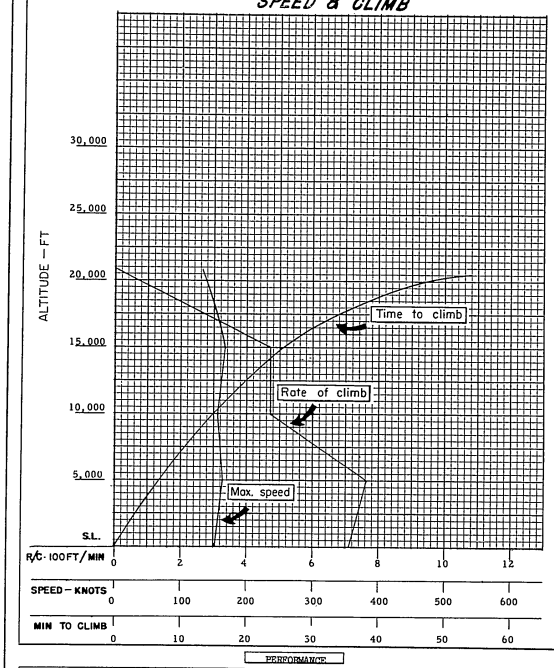
50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

March 1952 | U.S.S.R. | TYPE 34

SPEED & CLIMB



PERFORMANCE

DESCRIPTION

Normal rated power, normal gross weight.

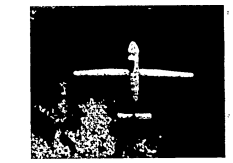
NOTE: Above 5000 ft, maximum power is NRP.

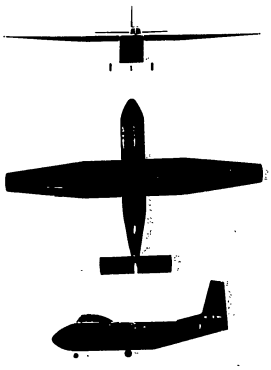
50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

March 1952 | U. S. S. R. | Type 24





Type 24

DESCRIPTION

This glider has a high wing, the center section of which is rectangular, and the outboard panels are tapered to squared off tips. It is fitted with tricycle landing gear. The rear fuselage is swept up to a high angular fin and rudder. A comparatively narrow bubble canopy is fitted on the upper fuselage forward of the leading edge of the wing. The horizontal tail is level with the top of the aft fuselage and is rectangular in planform.

CONFIDENTIAL

50X1-HUM

Type 24 | March 1952

TYPE 24

Mfr. Designer: Yakovlev | Crew 2
Type Cargo glider

PERFORMANCE

Maximum Speeds: 150 * knots @ S.L.: ____ knots @ ____ ft alt.; ____ knots @ ____ ft alt.
Cruising Speeds: Normal Power ____ knots @ ____ ft alt.; Economical ____ knots @ ____ ft alt.
Climb: ____ mins. to ____ ft alt.; Rate of Climb: ____ ft/min. at ____ ft alt.
Service Ceilings: ____ ft with normal weight: ____ ft with ____ lbs weight
Take-Off distance over 50 ft obstacle ____ ft into zero wind at Sea Level
Fuel: (US gals.) Internal: Normal ____, Maximum ____; External: Normal ____, Maximum ____
* Towing speed: 150 knots maximum Stalling speed: 50 knots

RANGES

Not applicable ____ nautical miles	____ nautical miles	____ nautical miles
@ ____ knots, ____ ft alt.	@ ____ knots, ____ ft alt.	@ ____ knots, ____ ft alt.
with ____ US gals. of fuel	with ____ US gals. of fuel	with ____ US gals. of fuel
and ____ lbs	and ____ lbs	and ____ lbs

POWER PLANT

No. Engines None Take-Off ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
Normal ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
Type Engines ____ Military ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.
War Emergency ____ hp. @ ____ ft alt. ____ rpm ____ in. Hg.

Description ____

SPECIFICATIONS	SUPERCHARGER	PROPELLER	FUEL
Bore ____ ins	No. Speeds ____	Mfr. ____	Type ____
Stroke ____ ins	No. Stages ____	No. Blades ____	
Displ. ____ cu. ins	Ratios ____	Dia. ____ ft, ____ ins	
Comp. Ratio ____ : ____	Impeller Dia ____ ins	Pitch Control ____	

ARMAMENT

Guns None

Gunsight Not applicable

BOMB/FREIGHT LOAD

Normal Load 6600 lbs
Maximum Load 8000 lbs

Bombsight Not applicable

COMBAT PROTECTION

Armor None

Fuel Tanks Not applicable

SPECIFICATIONS

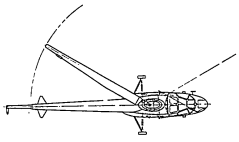
Material: Unknown
Span: 85 ft, 9 in; Length: 58 ft, 3 in; Height: ____ ft, ____ in; Gross Wing Area 890 sq.ft
Weights: Airframe 5900 lbs; Normal Gross 12,900 lbs; Maximum Gross 14,300 lbs

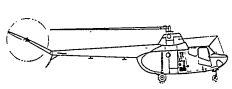
ADDITIONAL DATA

Displayed in Aviation Day Airshow in 1948. Numbers have been observed in the Soviet Zone of Germany during 1951; towed by Il-12 aircraft.

50X1-HUM

February 1958 | HARE/Mi-1





REMARKS: HARE/Mi-1, designed by Dr. Mikhail Leontovich Mil, is a liaison-type helicopter that is similar to the Bristol 171 (UK) and the Sikorsky S-51 (US). An apparently identical version is manufactured in Poland, under Soviet license, as the SM-1. Open sources claim that a slightly larger four-bladed version is designated Mi-3, but this has not been verified.

SUMMARY

HARE was first observed at the Tushino airshow on 8 July 1951 when nine of them appeared in a formation. The following year on 27 July 1952, eleven of them were similarly shown. HARE has since been reported in various quantities at numerous locations, including some of the European Satellite countries. Soviet publications have said that it has been utilized as a spotter for Arctic ice-breaker vessels.

50X1-HUM

DIMENSIONS

Length (excluding rotors)	39.7 ft
Main rotor	
Diameter	46.9 ft
No. blades	3
Disc area	1728 sq ft
Tail rotor	
Diameter	8.2 ft
No. blades	3
Wheel track	10.8 ft
Wheel base	10.4 ft

WEIGHTS

Empty	3935 lb
Pilot	175 lb
Fuel	385 lb
Payload	355 lb
Oil	55 lb
Anti-icing fluid	55 lb
Normal gross	4960 lb
Maximum take-off (vertical with 500 fpm rate of climb)	5400 lb

FUEL

Internal fuel capacity in rear of fuselage body is 63.4 U.S. gals, (240 liters).

Auxiliary fuel tanks of 39.6 U.S. gals, (150 liters), can be attached to each side of fuselage.

Oil tank capacity is 7.4 U.S. gal, (28 liters).

Anti-icing fluid tank capacity is 7.9 U.S. gal, (30 liters).

POWER PLANT

No. & Model	1 X AI-26V
Type	Air-cooled, radial
No. cylinders	7
Displacement	1260 cu in.
Weight (dry)	980 lb
Compression ratio	6.4
Supercharger - single-stage, single-speed	

ENGINE RATINGS

	BHP	RPM	ALT.
Take-off (5 min)	567	2200	SL
Normal (60 min)	484	2050	SL
Normal (60 min)	454	2050	7200 ft
75% normal	317	1960	SL
50% normal	212	1860	SL

Gear reduction ratio to main rotor - 8.85
(At normal engine speed of 2050 rpm, main rotor turns at 232 rpm and blade tip speed is 570 ft/sec.)

BOMBS/FREIGHT

Payload	
Normal	355 lb
Maximum take-off	795 lb

GENERAL INFORMATION

The HARE/Mi-1, which was formerly identified as the Type 32, was the first modern type helicopter developed by the Soviets. Due to the quantity displayed on the first public showing, it was apparent that the Soviets had more than a passing interest in the helicopter.

A Soviet Brochure confirmed that HARE "is equipped with an anti-icing system, preventing the blades of the main and tail rotors as well as the window of the pilot cabin from icing." The tank for "anti-freeze" liquid is located in the upper fuselage just behind the rotor pylon. The fluid is distributed to the main rotor blades by means of a "slinger-ring" (mounted around the rotor shaft and just below the rotor hub) and to the leading edge of blades by three hoses to each blade root. A staggered row of small holes in the blade leading edges permits the fluid to be spread over the blades.

Other equipment carried are: complete flight instruments, code and warning lights, taxiing and landing lights, and ultra-violet instrument lighting for night flying.

The engine is installed behind the cabin but ahead of the main rotor shaft and the internal fuel tank. The engine shaft is horizontal, requiring the power to be re-directed through approximately ninety degrees to the practically vertical rotor shaft. Compressed air bottles and a "pneumatic system panel" provide compressed air for starting the engine.

The pilot's seat is centrally located behind the windshield and instrument panel. A bench seat for passengers, arranged transversely behind the pilot's seat, provides seating for 3 passengers but only accommodates 2 passengers when seat type parachutes are worn, due to bucket recesses in the seat. Soviet publications say a trainer version has a dual-control seat located to the right and behind the pilot. According to the Brochure, the following equipment can be attached to the outside of the cabin (apparently on each side): (1) a 150 liter (39.6 U.S. gal) fuel tank, (2) an agricultural hopper for 400 kg (880 lb) of chemicals, (3) mail containers that increase the freight capacity to 1.5 cu m. (16.1 cu ft) and (4) ambulance panniers that can be heated and attended from the cabin.

ELECTRONICS

Homing direction finder
Radio altimeter
HF transmitter
HF receiver

It is estimated that HF equipment will be replaced by VHF equipment for communications with units having VHF ground equipment.

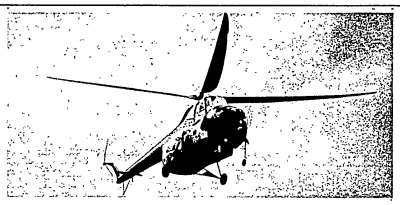
GUNS

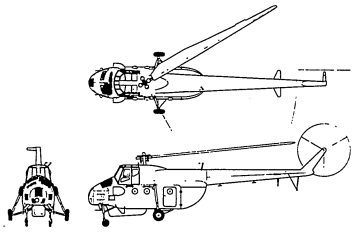
None

50X1-HUM

ROCKETS

None





HOUND / MI-4 HELICOPTER

REMARKS: The Mi-4 HOUND, designed by Dr. Mikhail Leontovich Mil, is a 1.5 ton payload transport/cargo helicopter which outwardly resembles the USAF H-19* but is obviously a native design because of its appreciably larger size and some marked improvements.

* Other designations: U.S. Navy HO4S and HRS, Sikorsky S-55, and UK Westland Whirlwind

SUMMARY

Eighteen HOUNDS performed a landing and unloading at the Tushino airshow on 23 Aug 53, the first time they were shown publicly. From this quantity, it was presumed that they were in series production and were being introduced into operational units. On 20 Jun 54, and 3 Jul 55, HOUND was again demonstrated at Tushino airshows, on these occasions in a quantity of thirty-six. During 1954, five HOUNDS were reported near Berlin, and Soviets announced that two were utilized at Arctic research stations located on floe-ice. In 1956, the Soviets revealed that they were also using two HOUNDS in the Antarctic with their IGY expedition, that a crop-sprayer version was designated Mi-4S, and that an eleven-passenger version was designated Mi-4P. On 24 Jun 56, HOUND again was demonstrated at the Tushino airshow in a quantity of thirty-six.

50X1-HUM

DIMENSIONS

Length (excluding rotors)	54.5 ft
Fuselage Section	7.3x10 ft
Main Rotor, diameter	70 ft
no. blades	4
blade area	243 sq ft
disc area	3848 sq ft
Tail Rotor, diameter	12 ft
no. blades	3

WEIGHTS

Empty	10,000 lb
Crew	
(Pilot and Co-Pilot)	400 lb
Take-off (normal)	15,500 lb
First landing	14,570 lb
Combat	11,370 lb
Last landing	10,590 lb
Max Take-off*	21,700 lb

*Max overload at which max rate-of-climb (SL) is still 500 fpm, at normal Rated Power, assuming no structural limitations.

FUEL

Internal capacity, 317 US gals.

(equivalent to 1200 liters, 1900 lbs, estimated to be located beneath the fuselage flooring similar to UBAF H-19, Sikorsky S-55).

POWER PLANT

No. & Model	1xAsh-82FN
Type	air-cooled, radial
No. cylinders	14 (twin-rows)
Displacement	2514 cu in
Supercharger	
centrif. 1 stage,	2 speed
Length	78.0 in
Diameter	49.5 in
Weight (dry)	1980 lb

ENGINE RATINGS

	BHP	RPM	Alt.
Take-off	1825	2500	SL
Normal	1510	2400	SL
Normal			
1st speed	1610	2400	5100 ft
Normal			
2nd speed	1410	2400	14900 ft
Max Ec Cruise	590	1800	SL

BOMBS/FREIGHT

Payload, normal	3200 lb
Payload, max overload	9400 lb
Troops, normal	16

Note: Max load discharged at 1953 Tushino show estimated as 3200 lbs, at 1954 and 1955 shows estimated as 3700 lbs.

GENERAL INFORMATION

The HOUND/Mi-4, which was formerly identified as the Type 36, appeared only two years after the public demonstration (Tushino, 1951) of the 5-place HARE (formerly Type 32) liaison helicopter. HARE and HOUND, both designed by M.L.Mil, demonstrated a notable Soviet capability for the design of modern helicopters. By appearing in quantity, they revealed that the Soviets had established a military requirement for helicopters, not only in the liaison but also in the cargo/transport category.

HOUND has demonstrated its ability to carry a variety of equipment pieces (sidecar motorcycles, GAZ-67 jeep, 76 mm field gun, and the 8-place GAZ-69 light truck), unloading them through clam-shell doors at the rear of the fuselage by means of a portable ramp carried internally.

The "bathtub" appendage below the fuselage was originally believed to be a fuel tank because of an estimate that the fuselage was too small for fuel to be located beneath the flooring. Subsequent receipt of better information, substantially increased the size estimates of HOUND and clearer photographs indicated that the appendage was not a fuel tank. Several possible explanations for the appendage (stowage space, litter carrier, hoist housing, etc.) are not supported by intelligence reports.

There is no obvious indication of any special equipment, except for the unknown function of the "bathtub" appendage. A photograph of one of the HOUNDS at the Arctic research stations reveals a flexible hose at the main rotor hub which suggests the possibility of a liquid, blade de-icing system, but this possibility is not substantiated by other intelligence.

Radio Moscow announced on 12 May 1956, that a single engine helicopter had flown to an altitude of 6017.5 meters (19,737 ft) with a two ton (4400 lb) load. A later announcement stated that 37 minutes were required to climb to this altitude, and that another flight had carried a one-ton (2200 lb) load to 6048 meters (19,837 ft). The Soviets claim that these altitude achievements have been submitted to the FAI (Federation Aeronautique Internationale) for verification as World Records, in addition to a speed achievement of 187.254 kmh (101.2 knots) over a 500 km (270 NM) closed course.

ELECTRONICS

RV-2 FM Radio Altimeter (420-460MC)
SRO IFF Transponder (157-187MC)
VHF Communications (100-150MC)
SPU-2M his Intercom Amplifier
Note: ARK-5 Automatic Radio Compass receiver (150-1300KC) and MRP-48P Marker Beacon receiver (75MC) may be installed to constitute, in conjunction with the Radio Altimeter, a blind approach system. A possibility exists that an HF transmitter-receiver is installed, at least in the two HOUNDS at the Arctic research stations even though severe atmospheric disturbances exist in the Arctic throughout the HF frequency band (3-30MC).

GUNS

None, except possible use of small arms by helicopter occupants, fired through ports in the center of the circular fuselage windows.

ROCKETS

NONE

50X1-HUM

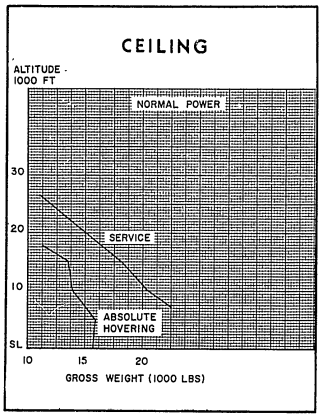
AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission	Alternate[2]	Overload	Max Weight[3]
TAKE-OFF WEIGHT	(lb)		15,500	15,500	18,500	21,700
Fuel	(lb)		1,900	1,400	1,900	1,900
Payload (outbound)	(lb)		3,200	3,700	6,200	9,400
Payload (inbound)	(lb)		NONE	NONE	NONE	NONE
Take-off power loading	(lb/hhp)		8.5	8.5	10.2	11.9
Disc loading	(lb/sq ft)		4.03	4.03	4.81	5.64
Vertical rate of climb at SL	(fpm)	(1)	1,060	1,060	NONE	NONE
Max rate of climb at SL	(fpm)	(1)	1,935	1,935	1,390	880
Speed for max rate of climb at SL	(kn)	(1)	56	56	62	66
Time: SL to 5,000 ft	(min)	(1)	2.88	2.88	4.16	7.11
Service ceiling (100 fpm)	(ft)	(1)	19,000	19,000	13,400	8,200
Absolute hovering ceiling	(ft)	(1)	5,850	5,850	Below SL	Below SL
COMBAT RANGE	(nm)		240	170	210	155
Average cruising speed	(kn)		104	104	98	82
Cruising altitude	(ft)		5,000	5,000	5,000	5,000
Total mission time	(hr)		2.3	1.7	2.2	2.0
COMBAT RADIUS	(nm)		120	85	110	90
Average cruising speed	(kn)		100	101	102	97
Cruising altitude	(ft)		5,000	5,000	5,000	5,000
Total mission time	(hr)		2.5	1.7	2.2	1.9
FIRST LANDING WEIGHT	(lb)		14,570	14,820	17,510	20,610
COMBAT WEIGHT	(lb)		11,370	11,120	11,310	11,210
Combat altitude	(ft)		5,000	5,000	5,000	5,000
Combat speed	(kn)	(1)	140	142	140	141
Combat climb	(fpm)	(1)	2,620	2,710	2,640	2,680
Max rate of climb at SL	(fpm)	(1)	3,070	3,170	3,100	3,130
Speed for Max rate of climb at SL	(kn)	(1)	48	48	48	48
Max speed at optimum altitude	(kn)	(1)	143/SL	143/SL	143/SL	143/SL
Basic speed at 5,000 ft	(kn)	(1)	140	142	140	141
LANDING WEIGHT	(lb)		10,590	10,540	10,590	10,590

NOTES
1. Maximum power.
2. Increased payload, with comparable reduction in fuel load.
3. Maximum overload at which maximum rate of climb at SL is still 500 fpm with normal rated power, assuming no structural limitations.

50X1-HUM

CEILING



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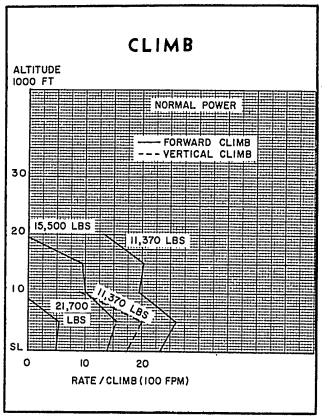
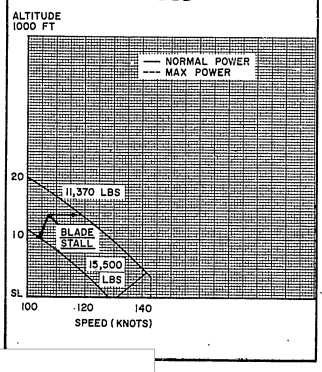
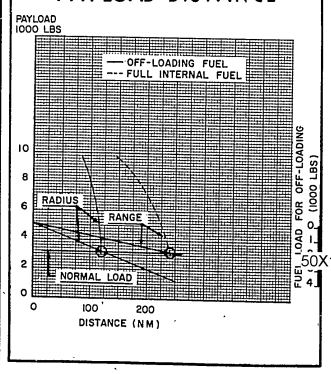


SPEED



PAYLOAD-DISTANCE



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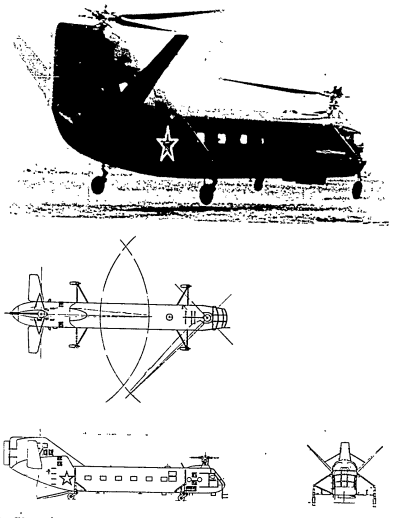


REMARKS: The HORSE (Yak-24) is a medium transport helicopter in the 3-ton payload category. It has a tandem rotor configuration that was developed by A. S. YAKOVLEV'S design bureau by utilizing two of the engine/rotor combinations that were incorporated in the HOUND (Mi-4).

SUMMARY

Four HORSE helicopters have been observed on a number of occasions: At the Tushino airshow on 3 July 1955 and five rehearsals during the month prior, and at the Tushino airshow on 24 June 1956. Six HORSEs were reportedly rehearsing for the 1957 Tushino airshow, but the show was cancelled because of weather. After some had been seen in East Germany (July and August, 1956) and on outlying airfields in the USSR it was estimated that they were being introduced into operational service. Lack of significant numbers being reported subsequently, though, indicates that production may be limited and performance may not be entirely satisfactory.

50X1-HUM

DIMENSIONS

Rotor diameter	70.0 ft
Blades (per rotor)	4
Disc area (per rotor)	3848 sq ft
Fuselage length (excluding tab)	70.3 ft
Fuselage section	8 X 8 ft
Usable cabin length	36.0 ft
Usable cabin volume	1700 cu ft
Wheel diameter	24 in.

WEIGHTS

Empty*	23,300 lb
Normal crew (4)	800 lb
Normal fuel	2,500 lb
Payload	8,800 lb
Normal take-off	35,400 lb
Light take-off (4,400 lb payload)	31,000 lb
Maximum overload take-off (500 fpm, SL, NRP)	38,600 lb

*Assumed to include sundry items not listed above, such as oil.

FUEL

Soviets claim that "long ranges" up to 800 km (432 nm) have been accomplished. This indicates an internal fuel capacity of about 5500 lb. (917 U.S. gal, 2.5 metric tons, 3500 liters).

It is assumed that for ferry purposes, temporary tankage may be installed in the fuselage to bring the total fuel capacity up to 14,500 lbs for a take-off weight of 38,600 lbs.

POWER PLANT

No. & Model	2 x ASh-82V

(Data concerning this model is unknown. It was specified in FAI World Record announcements. Since the "V" indicates a "Vertolet," helicopter, installation, it is assumed to have the same characteristics as the ASh-82FN engines.)

Type	Air-cooled, radial
No. cylinders	14 (twin row)
Displacement	2514 cu in.
Supercharger	centrifugal, 1 stage, 2 speed
Length	78.0 in.
Diameter	49.5 in.
Weight (dry)	1980 lb

ENGINE RATINGS

	BHP	RPM	ALT.
Take-off	1825	2500	SL
Normal	1510	2400	SL
Normal 1st speed	1610	2400	5,100 ft
Normal 2nd speed	1410	2400	14,900 ft
Maximum economical cruise	590	1800	SL

(Normal rotor speed was observed at 180 rpm, which indicates that the gear box ratio is 2400/180 or 13.3.)

BOMBS/FREIGHT

Design (normal) payload	8,800 lb
Normal troop capacity	40
Maximum payload	12,000 lb
Load demonstrated at Tushino	
ZPU-2 (14.5 mm AA gun)	1,000 lb
GAZ-69 truck	3,355 lb
Gun crew and driver (5)	1,000 lb
Total	5,355 lb

GENERAL INFORMATION

Soviet announcements have stated that this helicopter was designed by A. S. Yakovlev, who had previously designed fighters, transports, trainers, and a cargo glider, and that its designation is Yak-24.

The rotors appear to be identical to those designed for HOUND/Mi-4, having four blades each, except that the front rotor turns in the opposite direction (counterclockwise) when viewed from above. One engine is installed in the fuselage ahead of the cabin, but behind the crew compartments, and the other is behind the cabin in the vertical "pylon" which supports the rear rotor.

The usable cabin length extends between the two main bulkheads that support the four-wheeled landing gear. This cabin length is fabric-covered, apparently steel tube frame framework, while the front and rear sections are metal-skinned. Behind the fuselage is a vertical trim surface, probably a "rudder trim" to compensate for the increasing yaw effect caused by increasing forward speed on the counter-rotating rotors. This trim surface, and the V-tail stabilizers are also fabric covered. The V-tail is trimmable to compensate for pitch forces at the nose-down attitudes of forward flight.

At the rear of the usable cabin, a large door on the underside of the fuselage is hinged to the rear landing gear bulkhead and swings downward to form a loading ramp. Ramp operation is reportedly operable by the pilot.

The radio compartment is between the pilot's compartment and the front engine.

The FAI (Federation Aeronautique Internationale) confirmed that this helicopter had established two World Records in December 1955. These were:

(1) Altitude (16,670 ft) attained with a 2,000 kg (4,410 lb) payload.
(2) Altitude (9520 ft) attained with a 4000 kg (8820 lb) payload.

Both of these records have since been surpassed. The first record was broken by the Soviet HOUND (Mi-4) which attained 19,740 ft with the same payload in 1956. The second record was broken by a USMC Sikorsky (S-56) which carried 5,000 kg (11,050 lb) to "more than 12,000 ft" in late 1956.

ELECTRONICS

Radio altimeter
IFF
VHF communications
Radio compass
Marker beacon receiver
Intercom

GUNS

None

ROCKETS

None

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS			Light Load	Normal Load	Maximum Take-off	Ferry
TAKE-OFF WEIGHT	(lb)		31,000	35,400	38,600 (2)	38,600
Fuel	(lb)		2,500	2,500	5,500	14,500
Payload (outbound)	(lb)		4,400	8,800	9,000	None
Payload (inbound)	(lb)		None	None	None	None
Take-off power loading	(lb/bhp)		8.6	9.8	10.7	10.7
Disc loading	(lb/sq ft)		4.0	4.6	5.0	5.0
Vertical rate of climb at SL	(fpm)	(1)	1,300	460	Minus 170	Minus 170
Maximum rate of climb at SL	(fpm)	(1)	1,650	1,210	940	940
Speed for maximum rate of climb at SL	(km)	(1)	75	78	80	80
Time: SL to 5,000 ft	(min)	(1)	3.4	4.9	6.7	6.7
Service ceiling (100 fpm)	(ft)		17,500	13,500	9,000	9,000
Absolute hovering ceiling	(ft)		7,100	2,800	Below SL	Below SL
COMBAT RANGE	(NM)		155	135	305	920
Average cruising speed	(km)		124	116	112	119
Cruising altitude	(ft)		5,000	5,000	5,000	5,000
Total mission time	(hr)		1.3	1.3	2.9	7.9
COMBAT RADIUS	(NM)		75	65	160	
Average cruising speed	(km)		123	121	120	
Cruising altitude	(ft)		5,000	5,000	5,000	
Total mission time	(hr)		1.3	1.3	2.9	
FIRST LANDING WEIGHT	(lb)		29,820	34,165	35,775	25,550
COMBAT WEIGHT	(lb)		25,420	25,365	26,775	
Combat altitude	(ft)		5,000	5,000	5,000	
Combat speed	(km)		149	149	145	
Combat climb	(fpm)		1,910	1,930	1,740	
Maximum rate of climb at SL	(fpm)	(1)	2,345	2,360	2,160	
Speed for maximum rate of climb at SL	(km)	(1)	63	63	64	
Maximum speed (2,000 ft altitude)	(km)		156	156	154	
Basic speed at 5,000 ft	(km)		149	149	145	
LANDING WEIGHT	(lb)		24,350	24,350	24,650	25,550

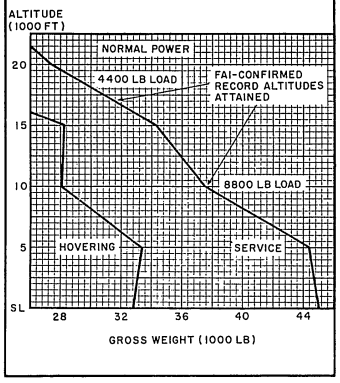
NOTES (1) Maximum power.
(2) Maximum overload at which maximum rate of climb at SL is still 500 fpm with normal rated power, provided the structure has no lower limitations.

50X1-HUM

HORSE/Yak-24

February 1958

CEILING



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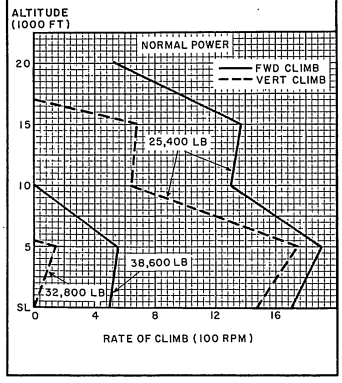
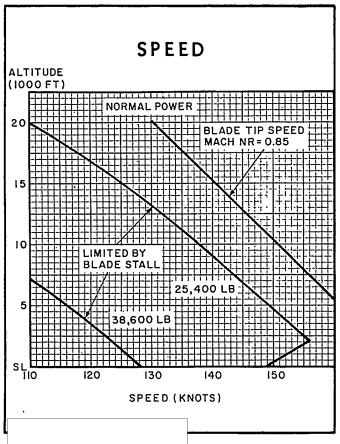
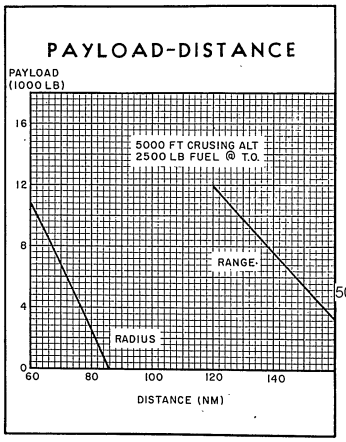


SPEED



PAYLOAD-DISTANCE



50X1-HUM

September 1955

ALBANIA

ALBANIA

Albania has no aircraft industry.

The Albanian Air Force is equipped with the following aircraft:

FIGHTERS

Piston type (believed to be YAK-3 USSR)

50X1-HUM

BULGARIA

Bulgaria has a small aircraft industry that is capable of producing parts for Soviet fighter type aircraft and possible entire air-frame production.

The Bulgarian Air Force is equipped with the following aircraft:

FIGHTERS

FAGOT (USSR)
FLORA (USSR)
FRANK (USSR)

BOMBERS

BAT (USSR)
BUCK (USSR)

ATTACK

BEAST (USSR)

TRANSPORTS

CAB (USSR)
JU-52 (GERMAN)

COMMUNIST CHINA

The Chinese Communists have no aircraft industry capable of producing combat aircraft for their own Air Force.

The Chinese Communist Air Force is equipped with the following aircraft:

FIGHTERS

FAGOT (USSR)
FANG (USSR)
FARGO (USSR)
FIN (USSR)
FRITZ (USSR)

BOMBERS

BAT (USSR)
BEAGLE (USSR)
BULL (USSR

ATTACK

BEAST (USSR)

TRANSPORTS

CAB (USSR)
COACH (USSR)
C-46 (US)
C-47 (US)

TRAINERS

MULE (USSR)

50X1-HUM

CZECHOSLOVAKIA

Czechoslovakia is capable of supplying its own Air Force with fighter and attack aircraft of Soviet design and liaison type aircraft of native design. The industry is presently producing the FAGOT and BEAST type aircraft, and is apparently supplying Poland and Hungary with some combat aircraft.

The Czechoslovakian Air Force is equipped with the following aircraft, some of which were imported from the Soviet Union.

FIGHTERS

FAGOT (USSR)
FLORA (USSR)
FRESCO (USSR)
ME-109 (GERMAN)

ATTACK

BEAGLE (USSR)
BEAST (USSR)

TRANSPORTS

AERO-45 (CZECH)
C-47 (US)
COACH (USSR)
CRATE (USSR)
JU-52 (GERMAN)
SIEBEL (GERMAN)

TRAINERS

ARADO (GERMAN)
MASCOT (USSR)
MIDGET (USSR)

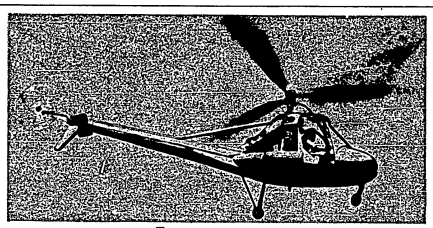
RECONNAISSANCE

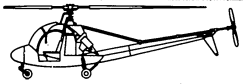
FIESLER STORCH (GERMAN)

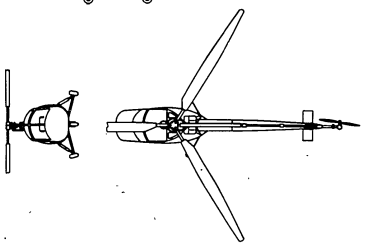
50X1-HUM

May
1956

HC-2







REMARKS: The HC-2 is a production prototype helicopter. Designed for agricultural, reconnaissance, medical and transport services, it is reportedly scheduled for production. This helicopter is a practical (enclosed) version of the open-framework experimental XE-II built in 1949-1950. These developments are derived from the experience gained in building the German Focke-Achgelis FA-223 twin helicopter, the first of which was completed in 1947.

SUMMARY

50X1-HUM

DIMENSIONS

Length (excluding rotors)	24 ft
Main Rotor	
Diameter	29 ft
No. Blades	3
Tail Rotor	
Diameter	
No. Blades	2

WEIGHTS

Take-off	1200 lb

FUEL

Tanks are located under center of gravity.
Capacity 10 to 18 gal.

POWER PLANT

No. and Model	(1) Praga "P"
Type	Reciprocating, 4 cyl air-cooled horizontally opposed
Length	35.19 in
Width	31.89 in
Height	21.5 in
Weight (dry)	148 lb

ENGINE RATINGS

	Hp	RPM
Take-off	75	2650
Normal	56	2400

BOMBS/FREIGHT

Payload	350 lb

GENERAL INFORMATION

Crew Number: 2 side-by-side

Equipment
a. Fixed, tricycle-type landing gear
b. Rotor is equipped with free-wheeling device which engages automatically in event of reduction in speed or failure of engine.
c. Rotor blades are built of wood and covered with plywood and fiberglass cloth.
d. All metal construction
e. Entry door on each side of semi-spherical plexiglass cabin
f. Cabin is separated from engine by a fire wall. Engine is exposed.

Performance (Reported Data)

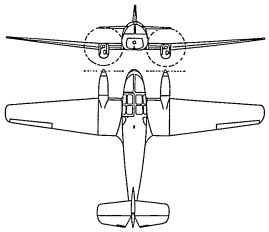
Max Speed	:	70 kn at S.L.
Cruising Speed	:	60 kn
Service Ceiling	:	10,000 ft
Vertical Rate of Climb:		200 fpm
Max Rate of Climb	:	690 fpm
Range	:	100 nm

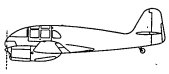
ELECTRONICS

GUNS

ROCKETS

50X1-HUM





REMARKS: The AERO-45 is a twin engined low wing monoplane liaison type light transport in operational service with the Czech Air Force. It is in production for the world market.

SUMMARY

50X1-HUM

DIMENSIONS

Wing	
Span	40 ft
Area	184 sq ft
Fuselage	
Length	25 ft
Height	8 ft

WEIGHTS

Empty	1816 lb
Take-off	3300 lb

FUEL

Internal	
4X tanks in wings	82 gal

POWER PLANT

No. & Model	(2) Walter Minor 4-111
Type	Reciprocating 4 cyl, in-line, aircooled
Length	40.63 in
Width	15.7 in
Height	24.9 in
Weight (dry)	199 lb

ENGINE RATINGS

	Hp	RPM
Take-off	105	2500
Normal	80	2300

BOMBS/FREIGHT

Payload	780 lb

GENERAL INFORMATION

Crew Number: 1 or 2 (Pilot, co-pilot)
Passengers: 3 or 4 when minus co-pilot
Equipment:
a. Retractable conventional type landing gear electrically operated. Mechanical wheel brakes.
b. Two blade metal propellers, 5.74 ft in diameter, variable pitch, adjustable on ground.
c. All metal construction.
d. Access to cabin is through door on left side of fuselage.
e. Cabin sound-proofed, ventilated and heated.
f. 24-volt electric system. Electric starter.
g. Dual controls (optional).

Performance (Company Data)

Type of mission : Transport
Fuel : 82 gallons
Max. Speed : 148 km at S.L.
Rate of Climb : 755 fpm at S.L.
Service Ceiling : 16,400 ft
Estimated Range : 810 km at 130 kn
Estimated Radius: 400 nm
Take-off over 50 ft obstacle 1950 ft; landing 1350 ft

ELECTRONICS

Radio
Flight and blind flying instruments

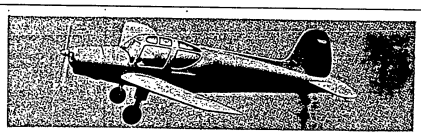
GUNS

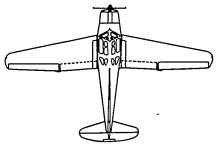
None

ROCKETS

None

50X1-HUM





REMARKS: The ZLIN-22 "JUNAK" is a low wing monoplane trainer in service with the Czech Air Force. It is no longer in production.

SUMMARY

50X1-HUM

ZLIN-22 (JUMAK).

May 1956

DIMENSIONS

Wing
- Span 25 ft
- Area 158 sq ft

Fuselage
- Length 24 ft
- Height 7 ft

WEIGHTS

Empty	804 lb
Take-off	1300 lb

FUEL

Internal
2X tanks in fuselage and wing center section 19 gal

For additional range a third tank may be added in right wing. 17 gal

POWER PLANT

No. and Model Type	(1) Praga "D" Reciprocating 4 cyl, air cooled, Horizontally opposed
Length	35.19 in
Width	31.89 in
Height	21.5 in
Weight (dry)	148 lb

ENGINE RATINGS

	Hp	RPM
Take-off	75	2650
Normal	56	2400

BOMBS/FREIGHT

None

GENERAL INFORMATION

Crew Number: 2; Instructor and Student, side-by-side

Equipment:
- a. Fixed conventional type landing gear with steerable tail wheel. Wheels may be replaced by skis. Mechanical Brakes.
- b. Two-blade fixed-pitch wooden propeller
- c. Sliding canopy permits entry on both sides of fuselage
- d. Dual controls. Starboard column is removable.
- e. Heated cabin
- f. Hand starter
- g. All wood construction, plywood skin

Performance (Company Data)

Type of Mission:	Trainer
Fuel :	19 gallons
Max Speed :	97 kn at S.L.
Rate of Climb :	590 fpm at S.L.
Service Ceiling:	14,700 ft
Estimated Range:	348 nm at 87 kn cruising speed
" Radius:	174 nm

Take-off over 50 ft obstacle 390 ft; landing 330 ft

ELECTRONICS

Conventional navigation aids
Blind flying instruments

GUNS

None

ROCKETS

None

50X1-HUM

September 1955

EAST GERMANY

EAST GERMANY

East Germany has no aircraft industry capable of producing combat aircraft at the present time.

The East German Air Force is equipped with the following aircraft:

TRAINERS

MAX (USSR)
MOOSE (USSR)

Soviet units stationed in East Germany are equipped with the following aircraft:

FIGHTERS

FAGOT
FRESCO

BOMBERS

BAT
BEAGLE

ATTACK

BEAST

TRANSPORTS

CAB
CREEK

TRAINERS

MASCOT
MIDGET
MOOSE
MULE

ROTARY WING

HOUND

50X1-HUM

HUNGARY

Hungary has a small aircraft industry that is capable of producing parts for Soviet fighter type aircraft and possible entire air frame production.

The Hungarian Air Force is equipped with the following Soviet aircraft:

FIGHTERS

FAGOT
FRANK

BOMBERS

BAT
BEAGLE

ATTACK

BEAST

TRANSPORTS

CAB

TRAINERS

MAX
MINK
MOOSE

Soviet units stationed in Hungary are equipped with the following aircraft:

FIGHTERS

FAGOT

BOMBERS

BEAGLE

TRAINERS

MOOSE
MULE

September
1955

NORTH KOREA

North Korea's Air Force is equipped with the following aircraft:

FIGHTERS

FAGOT (USSR)

BOMBERS

BEAGLE (USSR)
BAT (USSR)

ATTACK

BEAST (USSR)

50X1-HUM

POLAND

Poland has an aircraft industry capable of producing Soviet design fighter aircraft and native design non-combat aircraft.

The Polish Air Force is equipped with the following aircraft:

FIGHTERS

FAGOT (USSR)
FLORA (USSR)
FRANK (USSR)

BOMBERS

BEAGLE (USSR)
BUCK (USSR)

ATTACK

BEAST (USSR)

TRANSPORTS

CAB (USSR)
COACH (USSR)
COLT (USSR)
SIEBEL (GERMAN)

TRAINERS

JUNAK-1 (POLISH)
MAGNET (USSR)
MAX (USSR)
MIDGET (USSR)
MINK (USSR)
MOOSE (USSR)
MULE (USSR)

Soviet units stationed in Poland are equipped with the following aircraft:

FIGHTERS

FAGOT
FRANK

BOMBERS

BEAGLE

ATTACK

BEAST

TRANSPORTS

CAB

TRAINERS

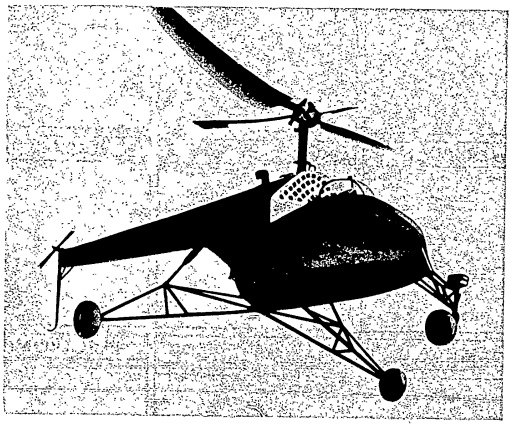
MOOSE

50X1-HUM

CONFIDENTIAL

May 1956

GIL



REMARKS: The GIL is an experimental helicopter which was completed in 1949 by the Glowny Aviation Institute in Warsaw. It was first flown in 1951 at Glowny, a research and testing establishment similar to the Soviet Tsagi. Sometimes it is also referred to as the Zurakowski, the designer's name.

SUMMARY

50X1-HUM

CONFIDENTIAL

CONFIDENTIAL

GIL

May 1956

DIMENSIONS

Length (excluding rotor)	32 ft
Main Rotor	
Diameter	29 ft
No. Blades	2
Disc Area	627 sq ft
Tail Rotor	
Diameter	6 ft
No. Blades	2

WEIGHTS

Take-off	1276 lb
Empty	836 lb

FUEL

Tank located next to pilot (possibly about 20 gal)

POWER PLANT

No. and Model	(1) Walter Minor 4-111
Type	Reciprocating 4 cyl, Inline aircooled
Length	40.63 in
Width	19.7 in
Height	24.9 in
Weight (dry)	199 lb

ENGINE RATINGS

	Hp	RPM
Take-off	105	2500
Normal	80	2300

BOMBS/FREIGHT

GENERAL INFORMATION

Crew Number: 2 side-by-side

Equipment

a. Fixed tricycle type landing gear
b. Free-wheel mechanism in transmission
c. Rotor blades are wood with steel inserts and plywood covering
d. Forward section of fuselage containing cockpit and engine is of welded steel tube structure. Rear section is of a plywood monocoque.
e. Open cockpit with built-up frontal section and windshield

Performance (Reported Data)

Max Speed	75 kn at S.L.
Cruising Speed	65 kn
Max Vertical rate/climb	500 fpm
Hovering ceiling	3280 ft
Max Forward rate/climb	690 fpm
Service ceiling	9480 ft
Range	100 nm

ELECTRONICS

GUNS

ROCKETS

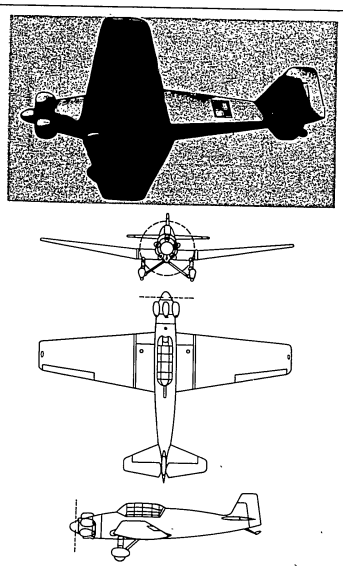
50X1-HUM

CONFIDENTIAL

UNCLASSIFIED

May 1956

LWD JUNAK



REMARKS: The LWD JUNAK is a two seat low wing monoplane trainer designed by the WARSZTATY DOSWIADEZAINE (LWD) Experimental Aeronautical Institute at Lodz. It was first flown during February 1948 and placed in production. A later version was equipped with a more powerful M-11 F Engine rated at 160 hp.

SUMMARY

50X1-HUM

UNCLASSIFIED

LWD JUNAK

May 1956

DIMENSIONS

Wing	
Span	33 ft
Area	188 sq ft
Fuselage	
Length	25 ft
Height	7 ft

WEIGHTS

Empty	1315 lb
Take-off	2030 lb

FUEL

Internal
Tanks in wing center section.
Capacity unknown.

POWER PLANT

No. and Model	(1) M-11D
Type	Reciprocating 5 cyl, aircooled radial
Length	38.7 in
Diameter	42.3 in
Weight (dry)	429 lb

ENGINE RATINGS

	Hp	RPM
Take-off	123	1760
Normal	115	1700

BOMBS/FREIGHT

GENERAL INFORMATION

Crew Number: 2 in Tandem

Equipment
a. Fixed conventional type landing gear with tail-skid
b. Two-blade fixed-pitch wooden propeller
c. Mixed construction. Steel tube, wood and fabric
d. Dual controls
e. Hinged canopy in two parts is jettisonable

Performance (Company Data)

Type of mission: Trainer
Max Speed : 125 kn at S.L.
Cruising Speed : 100 kn
Rate of Climb : 690 fpm
Service Ceiling: 13,780 ft

ELECTRONICS

Equipped for blind and night flying

GUNS

None

ROCKETS

None

50X1-HUM

September 1955

RUMANIA

RUMANIA

Rumania has no aircraft industry capable of producing combat aircraft for their own Air Force.

The Rumanian Air Force is equipped with the following aircraft:

FIGHTERS

FAGOT (USSR)
FLORA (USSR)

BOMBERS

BAT (USSR)
HE-111 (GERMAN)

ATTACK

BEAST (USSR)

TRANSPORTS

AERO-45 (CZECH)
JU-52 (GERMAN)

TRAINERS

HE-114 (GERMAN)
MULE (USSR)

RECONNAISSANCE

Fiesler Storch (GERMAN)
IAR - 39 (RUMANIA)

Soviet units stationed in Rumania are equipped with the following aircraft:

FIGHTERS

FAGOT

50X1-HUM

CONFIDENTIAL

AIR TECHNICAL INTELLIGENCE CENTER
UNITED STATES AIR FORCE

15 May 1958
50X1-HUM

SUBJECT: (U) Revisions to Characteristics and Performance Handbook - U.S.S.R. Aircraft

TO: All Holders of this Handbook

1. The following revision action should be taken immediately.

   Delete the Table of Contents dated January 1958 and the CAT performance page dated October 1957. Destroy these pages by authorized means.

2. The following new and revised pages are forwarded for insertion:

   Table of Contents (2 pages, March 1958 (C))
   CAT performance and curves (2 pages, March 1958 (C))
   COOKER (4 pages, March 1958 (C))
   COOT (4 pages, March 1958 (C))

50X1-HUM

FOR THE COMMANDER

50X1-HUM

CONFIDENTIAL

50X1-HUM

TABLE OF CONTENTS

50X1-HUM

TABLE OF CONTENTS (Cont)

50X1-HUM

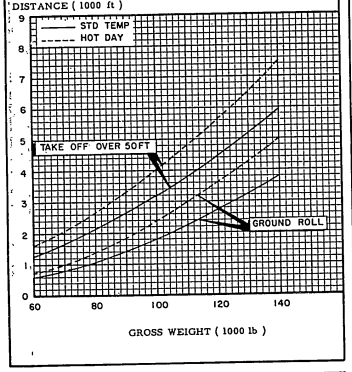
AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission	15,000	25,000	FERRY
TAKE-OFF WEIGHT	(lb)		110,000	110,000	110,000	82,300
Payload	(lb)		27,700	27,700	27,700	------
Fuel at 6.7 lb/gal	(lb)		20,500	20,500	20,500	20,500
Wing loading	(lb/sq ft)		85	85	85	64
Stall speed (power off)	(kn)		115	115	115	100
Take-off ground run at SL	(ft)	(1)	2,300	2,300	2,300	1,200
Take-off to clear 50 ft	(ft)	(1)	3,700	3,700	3,700	2,450
Rate of climb at sea level	(fpm)	(1)	2,750	2,750	2,750	3,950
Time: SL to 20,000 ft	(min)	(2)	12	12	12	8
Service ceiling (100 fpm)	(ft)	(2)	33,400	33,400	33,400	39,900
Time: SL to 30,000 ft	(min)	(2)	26	26	26	14
COMBAT RANGE	(NM)		1,250	900	1,200	1,800
Average speed	(kn)		335	300	300	335
Initial cruising altitude	(ft)		31,800	15,000	25,000	38,800
Final cruising altitude	(ft)		35,300	15,000	25,000	43,000
Total mission time	(hr)		4	3	4	5.5
COMBAT RADIUS	(NM)		665	450	570	
Average speed	(kn)		335	290	285	
Initial cruising altitude	(ft)		31,800	15,000	25,000	
Final cruising altitude	(ft)		43,000	15,000	25,000	
Total mission time	(hr)		4.5	3	4	
FIRST LANDING WEIGHT	(lb)		99,700	100,700	100,200	
COMBAT WEIGHT	(lb)		72,000	73,000	72,500	
Combat altitude	(ft)		40,700	15,000	25,000	
Combat speed	(kn)	(1)	375	390	390	
Combat climb	(fpm)	(1)	525	3,100	2,200	
Combat ceiling (500 fpm)	(ft)	(1)	41,100	40,600	40,900	
Service ceiling (100 fpm)	(ft)	(2)	42,600	42,400	42,500	
Take-off ground run	(ft)	(1)	900	900	900	
Take-off distance	(ft)	(1)	1,800	1,800	1,800	
Rate of climb at SL	(fpm)	(1)	4,650	4,550	4,600	
Max speed at opt alt	(kn/ft)	(1)	400/28,000	400/28,000	400/28,000	
Basic speed at 25,000 ft	(kn)	(1)	400	400	400	
LANDING WEIGHT	(lb)		64,900	64,900	64,900	64,900

NOTES (1) Military power
(2) Normal power

50X1-HUM

TAKE-OFF



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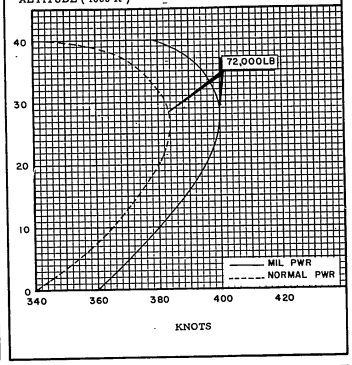

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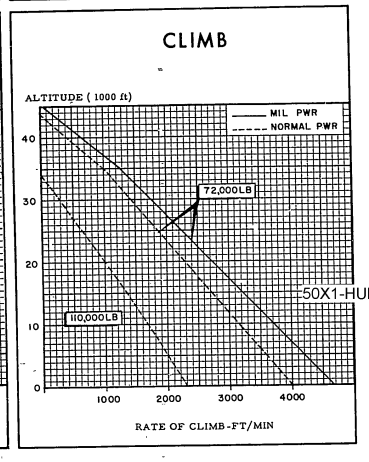

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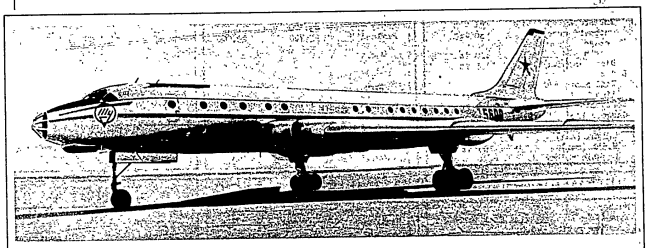
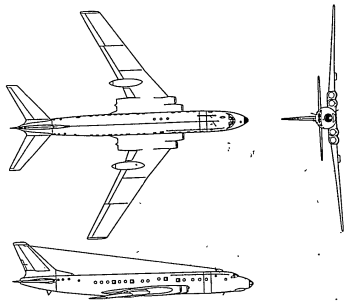




REMARKS: COOKER is a swept low-wing monoplane transport powered by four axial-flow turbojet engines. It appears to be a basic CAMEL air frame fitted with four engines instead of two, and with a section added to the fuselage ahead of the wing. It is a product of the Tupolev design bureau and is designated Tu-110 by the Soviets.

SUMMARY

1956-1957	Numerous reports of a Tupolev designed four-jet transport.
Jul 1957	Introduction and first public showing of COOKER at Moscow/Vnukovo Airfield.

50X1-HUM

DIMENSIONS

Wing	
Span	122 ft
Area	2130 sq ft
Inboard sweep (LE)	41 deg
Outboard sweep (LE)	36 deg
Fuselage	
Length	128 ft
Diameter (max)	11.5 ft
Height	
Tail above A/C centerline	24.5 ft
Horizontal tail span	45 ft
Cargo cabin	
Length	89 ft
Height (max)	8 ft
Width (max)	11 ft
Useable volume	6200 cu ft

WEIGHTS

Loading	Passenger(lb)	Cargo(lb)
Take-off	175,200	175,200
Empty	83,300	77,100
Payload	23,700	29,900

FUEL

Weight	65,500 lb

POWER PLANT

Number	4
Type	Axial flow turbojet
Pressure ratio	8.0:1
Diameter	43 in.
Weight	4,200 lb
Designer	A. M. Lyulka

ENGINE RATINGS

SL STATIC THRUST	LB	RPM	SFC
Maximum	12,000	5,880	.86

FREIGHT

VARIANT

1st class	78 passengers
Tourist	100 passengers
Cargo	29,000 lb

GENERAL INFORMATION

COOKER is a four-jet engine version of the Tu-104 design. This aircraft is also credited to designer Tupolev. The fuselage is four feet longer and the wing span is eight feet wider than the Tu-104. Four smaller engines replace the larger engines of the Tu-104. The Soviet designation of COOKER is Tu-110. The wings, empennage and landing gear of COOKER are identical with CAMEL. The fuselage is also identical with the exception that a four-foot section has been added ahead of the wing. COOKER has a hot air deicing system. Cabin pressurization and air conditioning are provided. The apparent principal mission of COOKER is the transportation of personnel.

It is probable that the following additional navigation equipment is installed in COOKER:

Automatic dead-reckoning navigation indicator
Automatic astro-compass
High precision remote indicating directional gyro

ELECTRONICS

NAVIGATION EQUIPMENT
- Radio Compass
- Complete I.L.A.S.
  - Localizer
  - Glide Path
  - Marker Beacon
  - DME
- Radio Altimeter
- Navigation Radar
- Hyperbolic Navigation System

COMMUNICATIONS EQUIPMENT
- VHF Command Set
- HF Liaison Set
- Intercom

IDENTIFICATION
- IFF

CREW

- Pilot
- Co-Pilot
- Navigator
- Radio Operator
- Flight Mechanic
- Cabin Attendant (two)

50X1-HUM

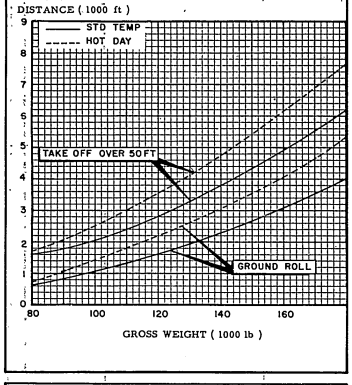
AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission			
TAKE-OFF WEIGHT	(lb)		172,200			
Fuel at 6.7 lb/gal	(lb)		65,500			
Payload (cargo)	(lb)		25,300			
Wing loading	(lb/sq ft)		80.00			
Stall speed (power off)	(kts)		122			
Take-off ground run at SL	(ft)		3,700			
Take-off to clear 50 ft	(ft)		5,700			
Rate of climb at SL	(fpm)	(1)	4,900			
Time: SL to 41,800 ft	(min)	(1)	20			
Service ceiling (100 fpm)	(ft)	(2)	43,000			
COMBAT RANGE	(NM)		2,900			
Average speed	(kts)		460			
Initial cruising altitude	(ft)		41,800			
Final cruising altitude	(ft)		48,500			
Total mission time	(hr)		6.6			
COMBAT RADIUS	(NM)		1,400			
Average speed	(kts)		460			
Initial cruising altitude	(ft)		41,800			
Final cruising altitude	(ft)		53,600			
Total mission time	(hr)		6.0			
FIRST LANDING WEIGHT	(lb)		142,000			
COMBAT WEIGHT	(lb)		116,700			
Combat altitude	(ft)	(2)	48,600			
Combat speed	(kts)	(1)	445			
Combat climb	(fpm)	(1)	500			
Combat ceiling (500 fpm)	(ft)	(1)	48,000			
Service ceiling (100 fpm)	(ft)	(2)	50,200			
Take-off ground run at SL	(ft)		1,500			
Take-off to clear 50 ft	(ft)		2,700			
Rate of climb at SL	(fpm)	(1)	7,400			
Max sperd at 20,000 ft	(kts)	(1)	540			
Basic speed at 25,000 ft	(kts)	(1)	535			
LANDING WEIGHT	(lb)		92,600			

NOTES (1) Military power
(2) Normal rated power

50X1-HUM

TAKE-OFF



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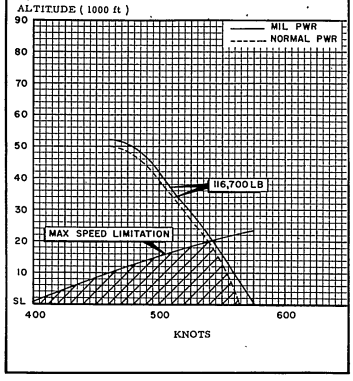

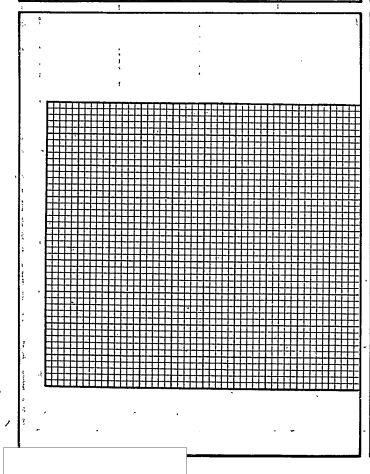

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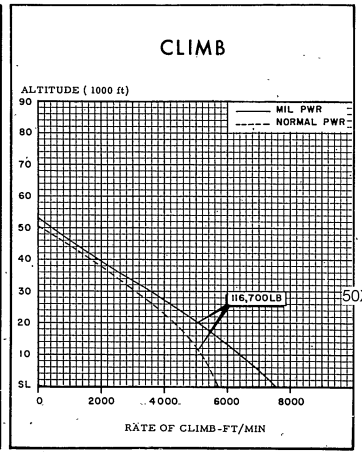

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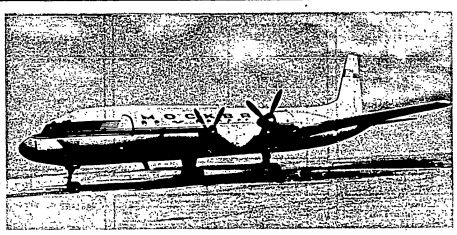
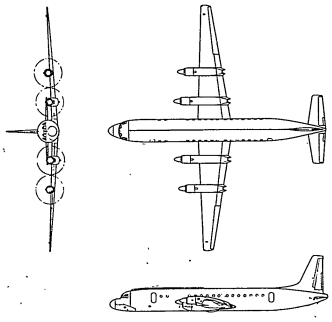




REMARKS: COOT is a low-wing monoplane transport powered by four turboprop engines which drive four-bladed propellers. It is a product of the Ilyushin design bureau, is designated Il-18, and is called "Moskva" by the Soviets.

SUMMARY

1956	Numerous reports about a four-turboprop transport by Ilyushin.
Jul 1957	Introduction and first public showing of COOT at Moscow/Vnukovo Airfield.

50X1-HUM

DIMENSIONS

Wing	
Span	124 ft
Area	1730 sq ft
Fuselage	
Length	116 ft
Diameter (max)	11.5 ft
Height	
Vertical tail above aircraft center line	22.25 ft
Horizontal tail span	35 ft
Cabin	
Length	80.0 ft
Height (max)	6.6 ft
Width (max)	10.5 ft
Useable volume	4,500 cu ft

WEIGHTS

	Passenger(lb)	Cargo(lb)
Take-off	128,000	128,000
Empty	62,800	58,300
Payload	23,000	27,400

FUEL

Weight	39,600 lb

POWER PLANT

Nr. and model	4 X NK-4
Designer	N. D. Kuznetsov
Type	Axial flow turboprop
Weight	2,200 lb
Propeller diameter	14.65 ft

ENGINE RATINGS

	ESHP	SHP	LB THRUST	ESFC	ALT
Take-off	4000	3560	960	.589	SL
Normal	3440	3065	935	.624	SL

FREIGHT

VARIANT

1st class	75 passengers
Tourist	100 passengers
Cargo	27,400 lb

GENERAL INFORMATION

COOT is an Ilyushin design which allegedly is in competition with Antonov's CAT. The apparent principal mission of COOT is the transportation of personnel and cargo. It has been reported that COOT is a modernization of the old CLAM/11-18, the transport with four reciprocating engines that was seen in 1947.

The Soviets claim that COOT has excellent rough field operating characteristics; this is attributed to the wide main gear tread, multiple wheels, and low landing and take-off speeds.

In general, COOT is similar to the U.S. DC 6 and 7 series aircraft. Information obtained from a recent Soviet publication indicates that COOT compares favorably with the latest Western civil turboprop transport designs.

The all-weather capability of COOT is supported by an all electric deicing system. The wings, empennage, windshield, propeller and propeller spinner are protected by electrothermal deicing pads mounted on the leading edges of these surfaces.

The pressurization system is apparently conventional. It is claimed that sea level pressure is maintained in the cabin up to an altitude of 16,400 feet and at 32,800 feet, the cabin pressure is 7,870 feet. An air-conditioning system is installed to maintain a comfortable cabin temperature. This system uses a turbo-cooler which receives compressed air from the engines.

The publication states that COOT's control surfaces are not powered but are mass balanced, with aerodynamic compensators installed on the ailerons. The nose gear is steerable and is controlled by a star knob in the cockpit.

It is probable that the following additional navigation equipment is installed in COOT:

Automatic dead-reckoning navigation indicator
Automatic astro-compass
High precision remote indicating directional gyro

ELECTRONICS

NAVIGATION EQUIPMENT
- Radio Compass
- Complete I.L.A.S.
  - Localizer
  - Glide Path
  - Marker Beacon
  - DME
- Radio Altimeter
- Navigation Radar
- Hyperbolic Navigation System

COMMUNICATIONS EQUIPMENT
- VHF Command Set
- HF Liaison Set
- Intercom

IDENTIFICATION
- IFF

CREW

- Pilot
- Co-Pilot
- Navigator
- Radio Operator
- Cabin Attendant

50X1-HUM

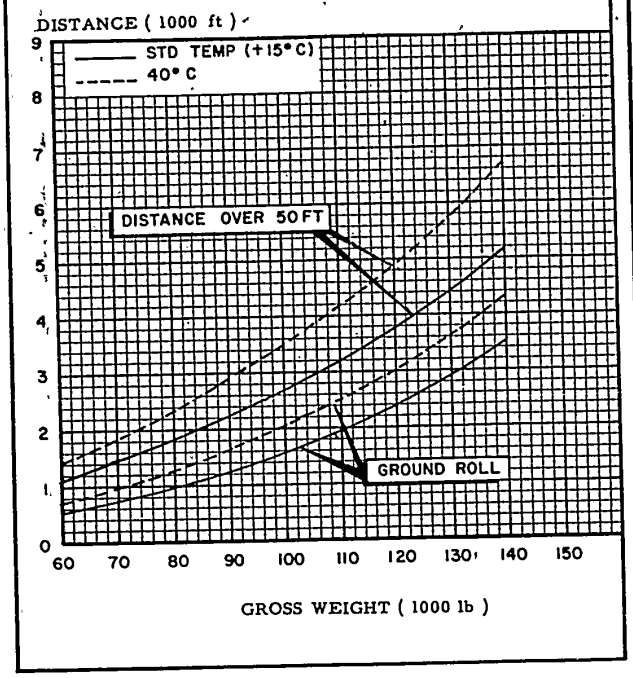
AIRCRAFT PERFORMANCE

CONDITIONS			Basic Mission	15,000 ft	25,000 ft	Ferry
TAKE-OFF WEIGHT	(lb)		128,000	128,000	128,000	103,800
Fuel at 6.7 lb/gal	(lb)		39,600	39,600	39,600	39,600
Payload	(lb)		24,400	24,400	24,400	----
Wing loading	(lb/sq ft)		88	88	88	71
Stall speed (power off)	(kts)		115	115	115	105
Take-off ground run at SL	(ft)	(1)	2,900	2,900	2,900	1,700
Take-off to clear 50 ft	(ft)	(1)	4,400	4,400	4,400	2,900
Rate of climb at SL	(fpm)	(1)	2,350	2,350	2,350	3,050
Time: SL to cruise altitude	(min)		32	10	23	32
Service ceiling (100 fpm)	(ft)	(2)	30,200	30,200	30,200	35,800
COMBAT RANGE	(NM)		2,800	2,000	2,500	3,700
Average speed	(kts)		340	300	315	345
Initial cruising altitude	(ft)		28,400	15,000	25,000	34,700
Final cruising altitude	(ft)		36,400	15,000	25,000	42,800
Total mission time	(hr)		8.5	6.5	8	11
COMBAT RADIUS	(NM)		1,500	900	1,250	
Average speed	(kts)		340	290	310	
Initial cruising altitude	(ft)		28,400	15,000	25,000	
Final cruising altitude	(ft)		42,800	15,000	25,000	
Total mission time	(hr)		9	7	8.5	
FIRST LANDING WEIGHT	(lb)		107,000	110,000	108,000	
COMBAT WEIGHT	(lb)		82,200	85,100	83,800	
Combat altitude	(ft)		39,000	15,000	25,000	
Combat speed	(kts)		370	395	410	
Combat climb	(fpm)		530	2,600	1,800	
Combat ceiling (500 fpm)	(ft)	(1)	39,200	38,400	38,900	
Service ceiling (100 fpm)	(ft)	(2)	40,900	40,200	40,700	
Take-off ground run at SL	(ft)	(1)	1,000	1,100	1,100	
Take-off to clear 50 ft	(ft)	(1)	1,900	2,000	2,000	
Rate of climb at SL	(fpm)	(1)	4,050	3,900	4,000	
Max speed at 27,000 ft	(kts)	(1)	410	410	410	
Basic speed at 25,000 ft	(kts)	(1)	390	390	390	
LANDING WEIGHT	(lb)		68,200	68,200	68,200	68,200

NOTES (1) Military power
(2) Normal power

50X1-HUM

TAKE-OFF



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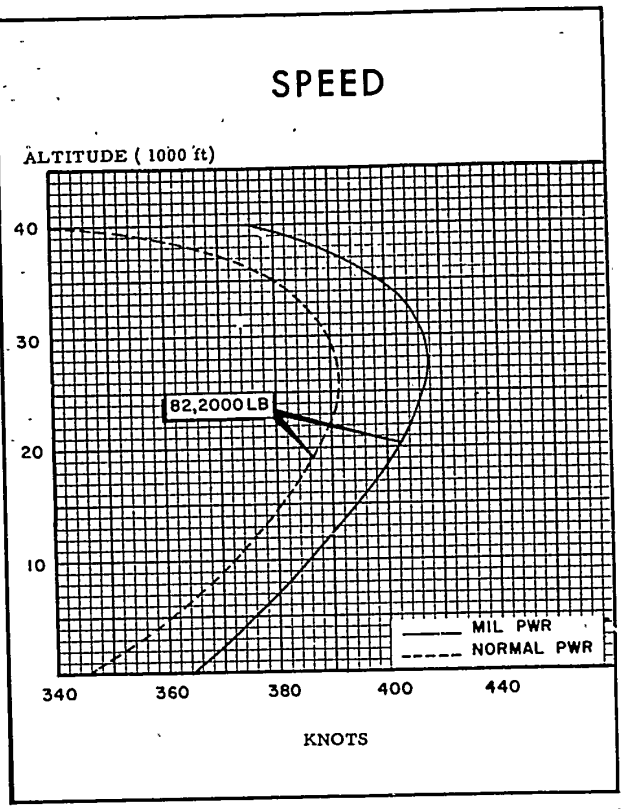

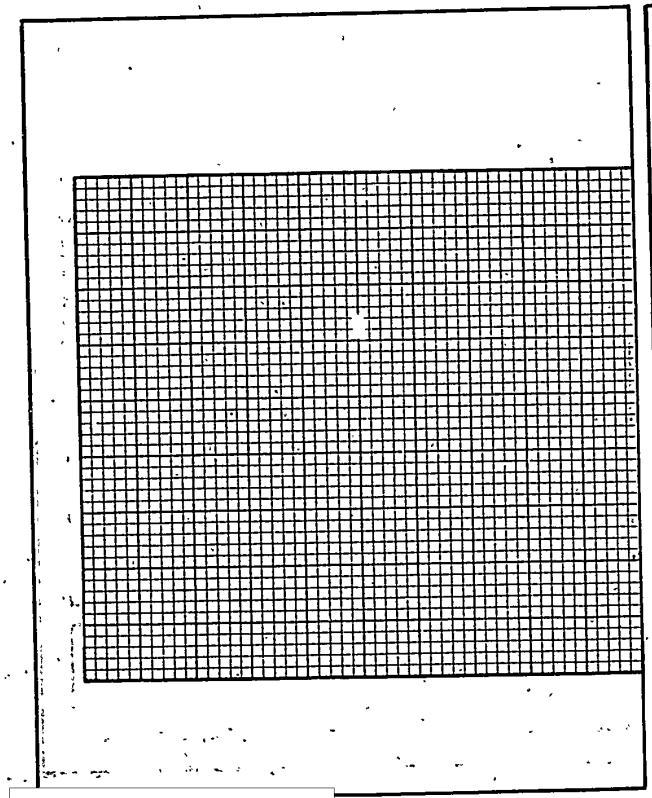

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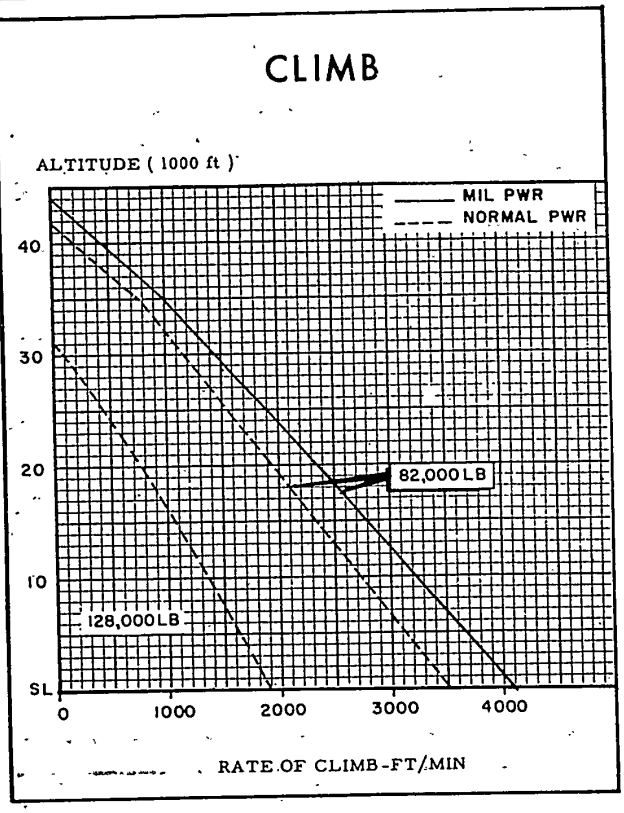

50X1-HUM

50X1-HUM

SECRET

AIR TECHNICAL INTELLIGENCE CENTER
UNITED STATES AIR FORCE

12 September 1958
50X1-HUM

SUBJECT: (U) Revisions to Characteristics and Performance Handbook - U.S.S.R. Aircraft (72)

TO: All Holders of this Handbook

1. Delete the following pages from the "Characteristics and Performance Handbook - USSR Aircraft" and destroy in accordance with AFR 205-1.

Table of Contents
FARMER - Aircraft performance and graph pages dated Oct 57
FLASHLIGHT A - Aircraft performance and graph pages dated Oct 57
BADGER - Illustration and characteristics pages dated Dec 57
BLOWLAMP - Illustration, characteristics, aircraft performance and graph pages dated Nov 56
BACKFIN - Aircraft performance and graph pages dated Jan 58
CZECHOSLOVAKIA - Summary dated Jul 56

2. The following new pages of changes and/or additions are forwarded for insertion in the Handbook.

Table of Contents
FARMER - Aircraft performance and graph pages dated April 1958
FLASHLIGHT A - Aircraft performance and graph pages dated April 1958
BADGER - Illustration and characteristics pages dated April 1958
BLOWLAMP - Illustration, characteristics, aircraft performance and graph pages dated April 1958
BACKFIN - Aircraft performance and graph pages dated April 1958
CZECHOSLOVAKIA - Summary dated April 1958

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FOR THE COMMANDER:

1 Incl
Revisions to Characteristics and Performance Handbook - U.S.S.R. Aircraft
(15 pp)

SECRET

50X1-HUM

TABLE OF CONTENTS

50X1-HUM

TABLE OF CONTENTS (Cont)

50X1-HUM

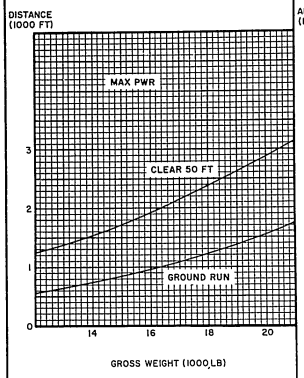
AIRCRAFT PERFORMANCE

CONDITIONS			Area Intercept Basic Mission (4)	Area Intercept Basic Mission	Area Intercept Opt. Mission (4)	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)		20,500	17,300	20,500	17,300
Fuel at 6.7 lb/gal	(lb)		6,800	4,000	6,800	4,000
Payload (Ammo)	(lb)		270	270	270	270
Wing loading	(psf)		67	57	67	57
Stall speed (power off, clean)	(kts)		135	130	135	130
Take-off ground run at SL	(ft)	(1)	1,700	1,200	1,700	1,200
Take-off to clear 50 ft	(ft)	(1)	3,000	2,200	3,000	2,200
Rate of climb at SL	(fpm)	(1)	10,000(6)	39,500	10,000(6)	39,500
Time - SL to 40,000 ft	(min)	(1) (2) (3)	7.9(6)	2.6	7.9(6)	2.6
Time - SL to 50,000 ft	(min)	(1) (2) (3)	---	3.9	---	3.9
Service ceiling (100 fpm)	(ft)	(1) (2)	53,800	59,400	53,800	59,400
COMBAT RANGE	(NM)		1,285	--	1,475	695
COMBAT RADIUS	(NM)		565	180	655	245
Average speed	(kts)		535	540	535	540
Initial cruising altitude	(ft)		43,900	51,200	43,900	51,200
Final cruising altitude	(ft)		49,900	53,700	54,300	54,300
Total mission time	(hr)		2.22	.82	2.56	.94
COMBAT WEIGHT	(lb)	(5)	16,600(17,000)	15,400	16,300(16,700)	15,200
Combat altitude	(ft)		50,000	50,000	50,000	50,000
Combat speed	(kts)	(1) (5)	630(565)	640	630(560)	645
Combat climb	(fpm)	(1)	4,800	5,600	4,900	5,700
Combat ceiling (500 fpm)	(ft)	(1) (5)	59,300(56,300)	60,900	59,700(56,700)	61,100
Service ceiling (100 fpm)	(ft)	(1)	60,500	61,900	60,800	62,200
Max rate of climb at SL	(fpm)	(1)	41,200	44,700	42,000	45,200
Max speed at SL	(kts)	(1)	680	680	680	680
Max speed at optimum altitude	(kts/ft)	(1)	710/35,000	710/35,000	710/35,000	710/35,000
Max mach number at optimum altitude	(mn/ft)	(1)	1.24/35,000	1.24/35,000	1.24/35,000	1.24/35,000

NOTES
(1) Maximum power.
(2) Allows for weight reduction during ground operation and climb.
(3) Includes 0.8 min for take-off and acceleration to climb speed without tanks or 0.9 min with tanks.
(4) With 2 x 210 U. S. gal tanks.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) Military power.

50X1-HUM

TAKE-OFF



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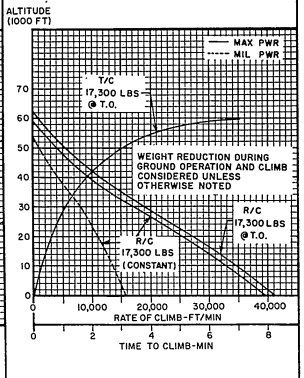

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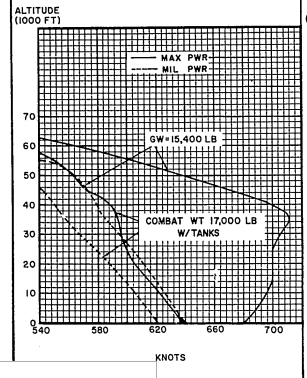
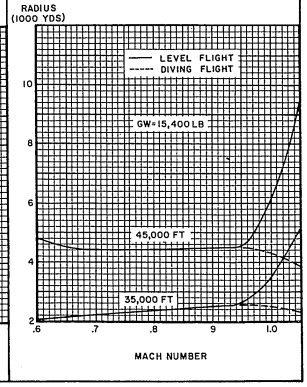


TURN RADIUS



50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS		Area Intercept (4) Basic Mission	Area Intercept Basic Mission	Area Intercept (4) Opt. Mission	Area Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)	21,200	20,200	21,200	20,200
Fuel at 6.7 lb/gal	(lb)	6,000	5,100	6,000	5,100
Payload (Ammo)	(lb)	300	300	300	300
Stall speed (power off, clean)	(kts)	155	150	155	150
Take-off ground run at SL	(ft) (1)	2,900	2500	2,900	2500
Take-off to clear 50 ft	(ft) (1)	4,600	4200	4,600	4200
Rate of climb at SL	(fpm) (1)	9,800	10,800	9,800	10,800
Time: SL to 40,000 ft	(min) (1) (2) (3)	8.4	7.8	8.4	7.8
Time: SL to 45,000 ft	(min) (1) (2) (3)	11.8	11.5	11.8	11.5
Service ceiling (100 fpm)	(ft) (1) (2)	46,800	48,100	46,800	48,100
Wing loading	(psf)	71	68	71	68
COMBAT RANGE	(NM)	950	805	1,100	945
COMBAT RADIUS	(NM)	455	380	530	450
Average speed	(kts)	500	500	500	500
Initial cruising altitude	(ft)	45,300	46,300	45,300	46,300
Final cruising altitude	(ft)	49,200	49,600	49,800	50,200
Total mission time	(hr) (3)	1.92	1.66	2.22	1.93
COMBAT WEIGHT	(lb)	18,400	17,900	18,100	17,600
Combat altitude	(ft)	48,300	49,000	48,700	49,300
Combat speed	(kts) (1)	510	515	510	515
Combat climb	(fpm) (1)	500	500	500	500
Combat ceiling (500 fpm)	(ft) (1)	48,300	49,000	48,700	49,300
Service ceiling (100 fpm)	(ft) (1)	49,800	50,500	50,200	50,800
Maximum R/C at SL	(fpm) (1)	11,300	12,200	11,600	12,400
Maximum speed at SL	(kts) (1)	605	610	605	610
Basic speed at 35,000 ft	(kts) (1)	540	540	540	540
Max Mach number at opt. altitude	(mn/ft)(1)	.94/35,000		.94/35,000	

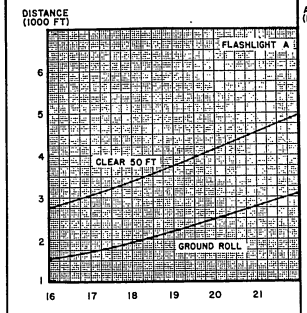
NOTES
(1) Maximum power.
(2) Allows for weight reduction during ground operation and climb.
(3) Includes 1.4 minutes for take-off and acceleration to climb speed.
(4) 132 U. S. gal ventral tanks.

50X1-HUM

FLASHLIGHT A

APRIL 1958

TAKE-OFF



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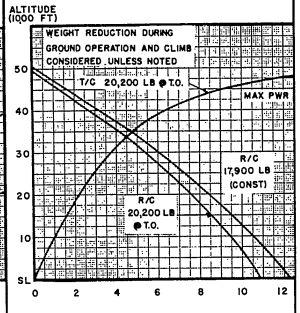
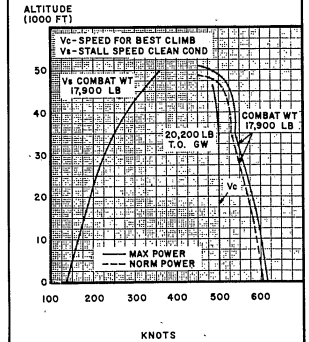
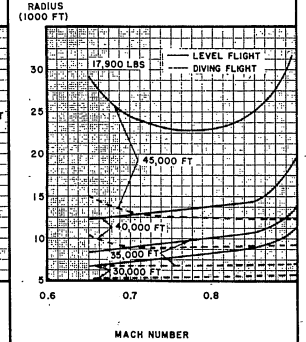


SPEED



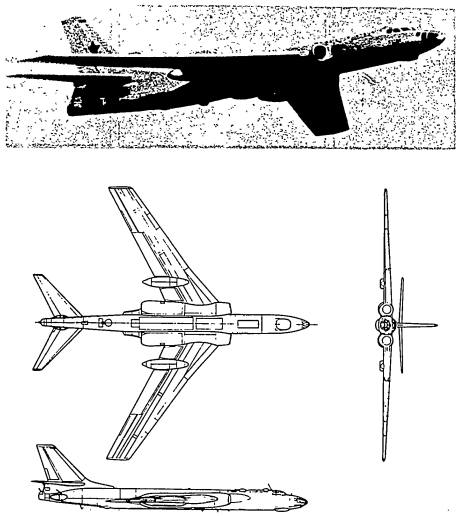
TURN RADIUS



50X1-HUM

April 1958

BADGER



REMARKS: BADGER is a swept-wing, medium twin-jet bomber similar in configuration to the BISON and is of TUPOLEV design. The Soviet designation is TU-16.

SUMMARY

This aircraft was first observed at KAZAN in 1953 and has been observed in numbers since 1955.

50X1-HUM

DIMENSIONS

Wing	
Span	114 ft
Area	2000 sq ft
Aspect ratio	6.72
Cathedral	2.0 deg
Sweepback	
Inboard leading edge	42.0 deg
Outboard leading edge	37.0 deg
Overall length	121.4 ft
Height, gear up	26.8 ft
Fuselage depth	8.5 ft
Fuselage width	8.0 ft

WEIGHTS

Loading	lb
Empty	76,400
Takeoff	160,000
AMPR	92,500

FUEL

Internal	Weight, lb	Gal
	68,500	10,200

For 10,000 lb design bomb load.

POWER PLANT

No. & Model	(2) Mikulin AM-3AM
Type	Axial-flow
Length	18 ft
Diameter	53 in
Weight (dry)	5500 lb
Exhaust Nozzle	6.25 sq ft

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Takeoff	19,800	0.92
Normal Power	17,000	.89

BOMBS/FREIGHT

A bomb bay 23.5 feet long, 5.25 feet wide, and 4.3 feet high permits the following bomb loads:

	lb	Type
Normal	1700 to 20,000	Special Purp.
	or	
	20,000	General Purp. (in combination)

For example:

1 FAB	5000	11,000 lb ea	11,000 total
5 FAB	1000	2,200 lb ea	11,000 total
12 FAB	500	1,100 lb ea	13,200 total
36 FAB	250	550 lb ea	19,800 total

Max 20,000 lb WWII or improved ballistic shapes

GENERAL INFORMATION

Retractable tricycle landing gear with main gear housed in special nacelles.

Wings are cranked at mid-span position. Two stall fences on each wing located at half semi-span and at two-thirds semi-span.

The forward portion of the crew compartment consists of a flat windshield similar to the US DC-6 installation.

A single bomb bay is located in the fuselage extending equally forward and aft of the wing trailing edge.

Defensive armament consists of three turrets located in upper forward, lower aft and tail positions and a fixed forward firing nose gun.

Fire control for upper forward turret is provided from a top blister located forward of the turret and behind the pilot; the lower turret is selectively controlled from side blisters located on the fuselage directly below the horizontal tail surfaces. Optical tail turret control is provided from inhabited gunner's station similar to US B-29 type with apparent fire control radar radome of 18 inch diameter over compartment with probable capability of search/track.

A large radome, suitable for blind bombing and navigation is located on the underside of the fuselage below the canopy.

BADGER is equipped for aerial refueling using a unique system incorporating a hose connection between the wing tips of two BADGER aircraft.

ELECTRONICS

RADAR
- IFF SRO Type
- Tail Warning
- Tail Def. Search/Track
- Range Only
- Bomb Nav. W/Computer

NAVIGATION
- D.R. Navigator
- Radio Compass
- Marker Beacon
- Radio Altimeter
- ILS, BME, Rend. Beacon
- Long Range Nav Rcvr
- Sun Compass

COMMUNICATIONS
- HF, VHF
- Intercom

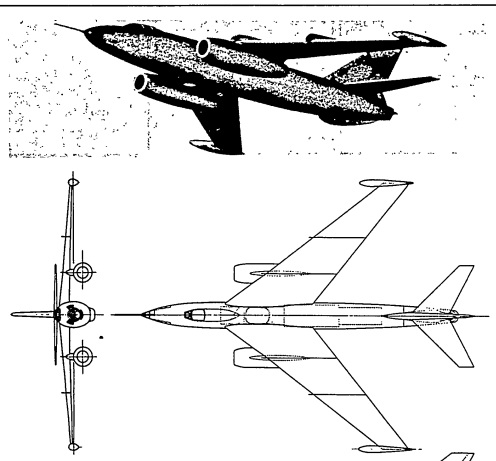
GUNS

2 x 23 to 30 mm modified NR or high performance type with cyclic rate from 800 to 1000 rpm guns in each turret and 1 fixed NR 23 mm forward firing gun in right side of nose section.

50X1-HUM

ROCKETS

None



REMARKS: BLOWLAMP is a twin-jet, swept-wing light bomber claimed by the Soviets to be capable of supersonic performance.* Believed to be the replacement for BEAGLE (IL-28) aircraft, it is classed as a high performance weapon of considerable versatility and growth potential.

*See General Information, Page 2.

SUMMARY

1956 First observed during rehearsals for the Aviation Day Air Show.

50X1-HUM

DIMENSIONS

Wing	
Span	67 ft
Area	1020 sq ft
Aspect ratio	4.4
Cathedral	3.5 deg
Sweepback	
Inboard leading edge	55 deg
Outboard leading edge	52.5 deg
Over-all length	86.5 ft
Height gear up	18 ft
Fuselage depth	8.6 ft
Fuselage width	5.3 ft

WEIGHTS

	lb
Empty	40,200
Take-off	78,600
AMTH	26,000

FUEL

	Weight, lb	Gal
Internal	30,000	4,500

POWER PLANT

No. & Model	(2)
Type	Axial-flow turbojet
Length	140 inches
Diameter	43 inches
Weight (dry)	4,400 lb

ENGINE RATINGS

	lb	SFC
SL Static		
Maximum	16,100	.92

BOMBS/FREIGHT

Bomb bay dimensions

Length	14.0 ft
Width	5.5 ft
Height	5.5 ft

Total bomb load 8,000 lb either conventional or special stores

GENERAL INFORMATION

It should be noted that the above dimensions and engine data are the ones on which the performance figures are based. However, these dimensions and engine data are approximations only, and are subject to change upon receipt of confirmed information. When such information is available and reflects changes of sufficient magnitude, the performance will be revised accordingly.

Engines are installed in pylon-mounted nacelles.

The wings are cranked at the engine pylon position. Two stall fences on each wing are located at the cranked position and at the aileron-flap junction.

Retractable tandem main landing gear with outrigger gear housed in wing tip pods.

A small single bomb bay is centrally located in the fuselage.

Defensive armament consists of two fixed forward firing nose guns and an optical tail turret which contains two guns. Fire control of the turret is provided from the inhabited gunner's station similar to the BEAGLE. Radar and possibly IR equipment is installed to provide detection and ranging information for the defensive fire control function.

A radome suitable for blind bombing and navigation is located between the bomb bay and forward gear door.

The presence of an instrumentation boom in the nose suggests the aircraft observed is in prototype status.

The design does not reveal aerodynamic characteristics commensurate with supersonic performance capability claimed by the Soviets. However, it does suggest fairly high subsonic speed performance. It is estimated that in a dive from an altitude of at least 40,000 ft, BLOWLAMP can flash through the 35,000 ft altitude at speeds slightly in excess of Mach 1.3 but cannot stabilize at this speed in level flight.

ELECTRONICS

IFF, SRO
MUSHROOM (Bombing-navigation radar)
Tail defense radar (range only)
Radar warning receiver
ILS localizer receiver (KRF-2)
Low level radio altimeter (RV-2)
DME (SD-1)
Marker beacon receiver (MRP-48P)
MOON (Low frequency navigation reciver)
SHORAVALK (Short range precision navigation receiver)
VHF Command trans/rec.(RSIU-3M)
HF Liaison trans/rec.
Intercom amplifier (SPU-2)

GUNS

4 x 23 mm with cyclic rate of 1000 rds/min
2 revolver type fixed in nose forward firing
2 NR23A or revolver type in tail turret

ROCKETS

50X1-HUM

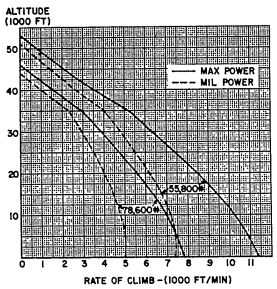
AIRCRAFT PERFORMANCE

CONDITIONS		Basic Mission	Optimum Mission		
TAKE-OFF WEIGHT	(lb)	78,600	78,600		
Fuel at 6.7 lb/gal	(lb)	30,000	30,000		
Payload (bombs)	(lb)	6,600	6,600		
Wing loading	(lb/sq ft)	76.3	76.3		
Stall speed (power off)	(kn)	150	150		
Take-off ground run at SL	(ft)	3,300	3,300		
Take-off to clear 50 ft	(ft)	5,400	5,400		
Rate of climb at SL	(fpm) (1)	7,850	7,850		
Time: SL to 20,000 ft	(min) (1)	2.9	2.9		
Service ceiling (100 fpm)	(ft) (1)	44,600	44,600		
Time: SL to 30,000 ft	(min) (1)	4.9	4.9		
COMBAT RANGE	(NM)	1,700	1,850		
COMBAT RADIUS	(NM)	890	970		
Average cruise speed	(kn)	485	485		
Initial cruising altitude	(ft)	39,900	39,900		
Target speed	(kn) (2)	520	520		
Target altitude	(ft)	43,000	43,400		
Final cruising altitude	(ft) (2)	49,300	49,900		
Total mission time	(hr)	3.7	4.0		
COMBAT WEIGHT	(lb)	55,800	54,900		
Combat altitude	(ft)	43,000	43,400		
Combat speed	(kn) (1)	535	535		
Combat rate of climb	(fpm) (1)	2,600	2,600		
Combat ceiling (500 fpm)	(ft) (1)	51,200	51,500		
Service ceiling (100 fpm)	(ft) (1)	52,600	53,000		
Max rate of climb at SL	(fpm) (1)	11,400	11,600		
Max speed at optimum altitude	(kn) (1)	610/SL	610/SL		
Basic speed at 35,000 ft	(kn) (1)	540	540		
TERMINAL TARGET ALTITUDE	(ft) (1) (3)	52,700	52,700		

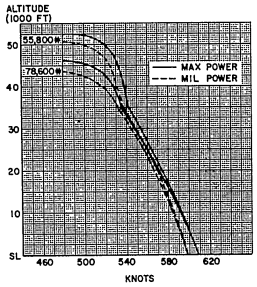
NOTES
(1) Maximum power.
(2) Normal rated power.
(3) Service ceiling - with one hour fuel reserve for two engines operating, plus bomb load.

50X1-HUM

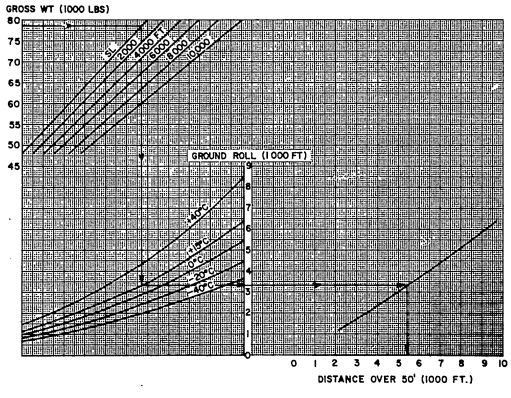
CLIMB



SPEED



TAKE-OFF



50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS		SUBSONIC MISSION	SUBSONIC MISSION (opt)	Mach- 1.06 ZONE MISSION	Mach- 1.06 ZONE MISSION (opt)
TAKE-OFF WEIGHT	(lb)	86,000	86,000	86,000	86,000
Fuel at 6.7 lb/gal	(lb)	35,000	35,000	35,000	35,000
Payload (Bombs)	(lb) (7)	6,600	6,600	6,600	6,600
Wing loading	(lb/sq ft)	88	88	88	88
Stall speed, clean (power off)	(kn)	160	160	160	160
Take-off ground run at SL	(ft)	3,200	3,200	3,200	3,200
Take-off distance to clear 50 ft	(ft)	5,600	5,600	5,600	5,600
Rate of climb at SL	(fpm) (2)	6,600	6,600	6,600	6,600
Time: SL to 20,000 ft	(min) (2)	3.3	3.3	3.3	3.3
Service ceiling (100 fpm)	(ft) (2)	42,600	42,600	42,600	42,600
Time: SL to 30,000 ft	(min) (2)	5.7	5.7	5.7	5.7
COMBAT RANGE	(NM)	1,900	2,100	1,500 (5)	1,600 (5)
COMBAT RADIUS	(NM)	1,000	1,100	800 (6)	900 (6)
Average cruise speed	(kn)	520	520	520	520
Initial cruise altitude	(ft)	39,600	39,600	39,600	39,600
Target speed	(kn)	530 (3)	530 (3)	610 (1)	610 (1)
Target altitude	(ft)	43,000	43,300	42,500	43,000
Final cruise altitude	(ft)	50,200	51,000	50,200	51,000
Total mission time	(hr)	3.9	4.2	3.5	3.8
COMBAT WEIGHT	(lb)	59,500	58,300	58,700	57,600
Combat altitude	(ft)	43,000	43,300	42,500	43,000
Combat speed	(kn)	555 (2)	555 (2)	610 (1)	610 (1)
Combat rate of climb	(fpm) (2)	2,000	2,100	2,200	2,200
Combat ceiling (500 fpm)	(ft) (2)	48,700	49,100	49,000	49,400
Service ceiling (100 fpm)	(ft) (2)	50,400	50,800	50,700	51,000
Max rate of climb at SL	(fpm) (2)	10,600	10,900	10,800	11,000
Max speed at opt altitude	(kn/ft) (1)	705/35,000	705/35,000	705/35,000	705/35,000
TERMINAL TARGET ALTITUDE	(ft) (2)(4)	52,800	52,800	60,000	60,000

NOTES
(1) Maximum power (2) Military power (3) Normal rated power
(4) Service ceiling: Half hour fuel reserves plus bomb load
(5) Includes 100 NM dash at Mach 1.06
(6) Includes 50 NM dash at Mach 1.06
(7) Same performance with either 3,300 or 6,600 lb bomb load. No additional fuel carried with 3,300 lb bomb load as aircraft is fuel volume limited.

50X1-HUM

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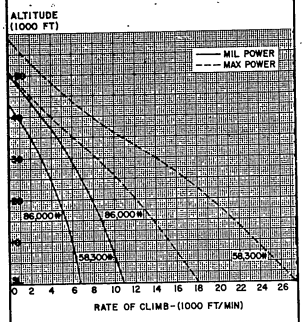

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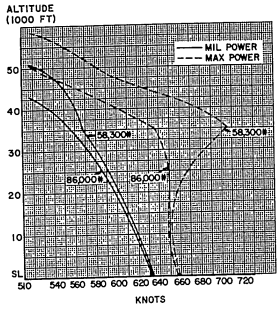
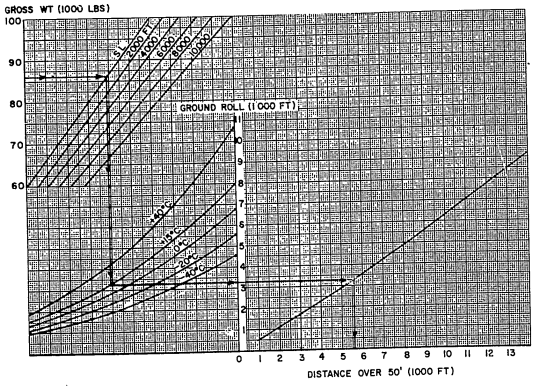


TAKE-OFF



50X1-HUM

CZECHOSLOVAKIA

Czechoslovakia is capable of supplying its own Air Force with fighter and transport aircraft of Soviet design and liaison type aircraft of native design. The industry is presently producing FAGOT, MIDGET, and CRATE aircraft with FARMER scheduled for production in the near future. Native designs being produced are: Aero 45, L-60 Brigadyr, Meta Sokol, Moravan L-200, Zlin and the HC-2 helicopter.

The Czechoslovakian Air Force is equipped with the following aircraft.

FIGHTERS

FAGOT
FARMER
FLORA
FRESCO

BOMBER

BEAGLE

TRANSPORT

AERO 45
COACH
CRATE
LI-2
SIEBEL

TRAINERS

MASCOT
MIDGET
ZLIN

RECONNAISSANCE

L-60 BRIGADYR
HC-2 Helicopter

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SECRET

AIR TECHNICAL INTELLIGENCE CENTER
UNITED STATES AIR FORCE

31 December 1958

76

SUBJECT: (U) Revisions to Characteristics and Performance Handbook - USSR Aircraft

TO: All Holders of this Handbook

1. The following revision action should be taken immediately.

a. Delete the pages listed below and destroy them by authorized means.

Table of Contents - dated Apr 1958
FACEPLATE - dated Dec 1957
FISHBED "A" - dated Jan 1957
FISHBED "B" - dated Jan 1957
FISHPOT - dated Jan 1957
FITTER - dated Dec 1957
CREEK - dated Jul 1953
COLT - dated Jul 1953

2. The following new and revised pages are forwarded for insertion.

Table of Contents - 2 pages dated Oct 1958
FACEPLATE - 5 pages dated Jul 1958
FISHBED "A" - 5 pages dated Jul 1958
FISHBED "B" - 5 pages dated Jul 1958
FISHPOT - 5 pages dated Jul 1958
FITTER - 5 pages dated Jul 1958
CREEK - 2 pages dated Jul 1958
COLT - 2 pages dated Sept 1958
CLEAT - 2 pages dated Oct 1958
CLOD - 2 pages dated Aug 1958
TU-114D - 2 pages dated Oct 1958
HOOK - 2 pages dated Oct 1958

SECRET

SECRET

3. When the classified inclosure is withdrawn or not attached, the classification of this correspondence is Unclassified in accordance with paragraph 37h, AFR 205-1.

FOR THE COMMANDER:

Mary C. Markevich

MARY C. MARKEVICH
1st Lt. USAF
Asst Administrative Officer

1 Incl
Revisions to Characteristics and Performance Handbook - USSR Aircraft
(39 pp)

SECRET

CONFIDENTIAL

TABLE OF CONTENTS

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Declassified in Part - Sanitized Copy Approved for Release 2013/08/01 : CIA-RDP81-01043R002000100005-9

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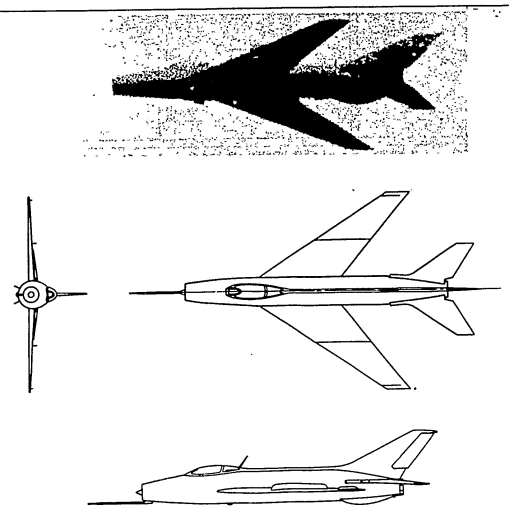
July 1958

FACEPLATE



REMARKS: FACEPLATE is a single place super-sonic swept-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display.

50X1-HUM

SECRET

FACEPLATE

July 1958

DIMENSIONS

Wing	
Span	28 ft
Area	230 sq ft
Sweepback leading edge	56 deg
Overall length (w/boom)	50.0 ft
(w/o boom)	42.0 ft
Max depth (fus)	4.4 ft
width	4.0 ft
Tail	
Span	13.0 ft
Sweep	56 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,500
Take-off	13,700
Combat	12,400
Landing (approx)	11,000
AMPR	6,100

FUEL

	Weight, lb	gal
Internal	3200	477
External	2800	420

POWER PLANT

No. & Model	(1)
Type	Axial flow turbojet
Length	175 in.
Diameter	38 in.
Weight (dry)	2950 lb
Exhaust nozzle diameter	
Open	25.6 in.
Closed	21.6 in.

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:

4 x 400 lb SPECIAL PURPOSE
or
4 x 550 lb CLUSTER
or
4 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Swept wing configuration with swept horizontal and vertical tail.
Fixed compression cone in center of intake.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal tanks.

ELECTRONICS

RADAR
Range only radar
IFF-SRO type
IR
Tail warning receiver
NAVIGATION
Radio altimeter, RV-10
Radio compass, ARK-5
Marker beacon receiver, MRP-48P
VHF homer
IMS
GPI
COMMUNICATIONS
VHF RSIU-3M (4 channel) or RSIU-4M (8-12 channel)
Data link

GUNS

3 x 23 mm revolver type with a cyclic rate of 1200 rds/min/gun. Ammunition for 4 sec fire.

ROCKETS

4 launchers, 8 ea x 55 mm rockets or any one of the following configurations:
4 launchers, 19 ea 55 mm AAR
4 racks, 1 ea 220 mm AAR
4 racks, 1 ea 325 mm AAR
4 racks, 1 ea 210 mm Air-to-Ground rockets.

50X1-HUM

SECRET

SECRET

FACEPLATE

July 1958

AIRCRAFT PERFORMANCE

CONDITIONS				Area Intercept Basic Mission	Area Intercept Opt. Mission	Area (4) Intercept Basic Mission	Area (4) Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)			13,700	13,700	16,900	16,900
Fuel at 6.7 lb/gal	(lb)			3,200	3,200	6,000	6,000
Payload (Ammo)	(lb)			215	215	215	215
Wing loading	(psf)			60	60	74	74
Stall speed (power off, clean)	(kts)			135	135	150	150
Take-off ground run at SL	(ft)	(1)		1,200	1,200	1,800	1,800
Take-off to clear 50 ft	(ft)	(1)		2,500	2,500	3,500	3,500
Rate of climb at SL	(fpm)	(2)		23,400	23,400	14,500	14,500
Time - SL to 40,000 ft	(min)	(2)(3)		3.8	3.8	6.3	6.3
Time - SL to 50,000 ft	(min)	(2)(3)		6.3	6.3	---	---
Service ceiling (100 fpm)	(ft)	(2)		52,700	52,700	53,300 (1)	53,300 (1)
COMBAT RANGE	(NM)			---	595	1,200	1,395
COMBAT RADIUS	(NM)			140	215	510	610
Average speed	(kts)			535	535	525	530
Initial cruising altitude	(ft)			51,800	51,800	43,800	43,800
Final cruising altitude	(ft)			54,200	54,700	54,000	54,700
Total mission time	(hr)			.63	.92	2.05	2.4
COMBAT WEIGHT	(lb)		(5)	12,400	12,200	13,500(13,900)	13,200(13,600)
Combat altitude	(ft)			50,000	50,000	50,000	50,000
Combat speed	(kts)	(1)	(5)	720	725	700(565)	705(565)
Combat climb	(fpm)	(1)		6,400	6,600	5,400	5,600
Combat ceiling (500 fpm)	(ft)	(1)	(5)	61,000	61,300	59,100(56,600)	59,600(57,100)
Service ceiling (100 fpm)	(ft)	(1)		61,800	62,100	60,000	60,500
Max rate of climb at SL	(fpm)	(1)		51,000	51,800	47,400	48,200
Max speed at SL	(kts)	(1)		700	700	700	700
Max speed at opt. altitude	(kts/ft)	(1)		890/35,000	895/35,000	885/35,000	885/35,000
Max mach number at opt. altitude	(M#/ft)	(1)		1.55/35,000	1.56/35,000	1.54/35,000	1.54/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Includes 0.8 min to take-off and accelerate to climb speed without tanks or 0.9 min with tanks.
(4) 2 x 210 US gal external tanks.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.

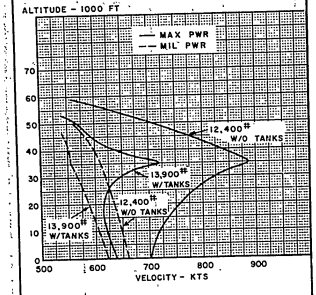
SECRET

50X1-HUM

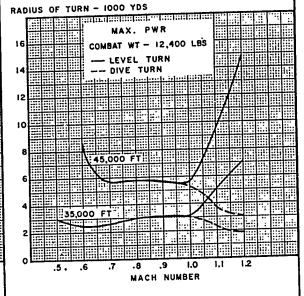
FACEPLATE

July 1958

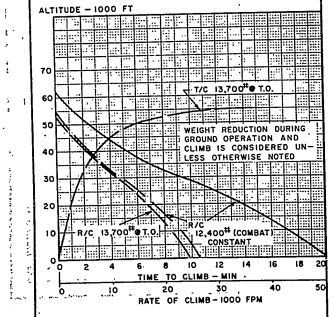
SPEED



TURN RADIUS



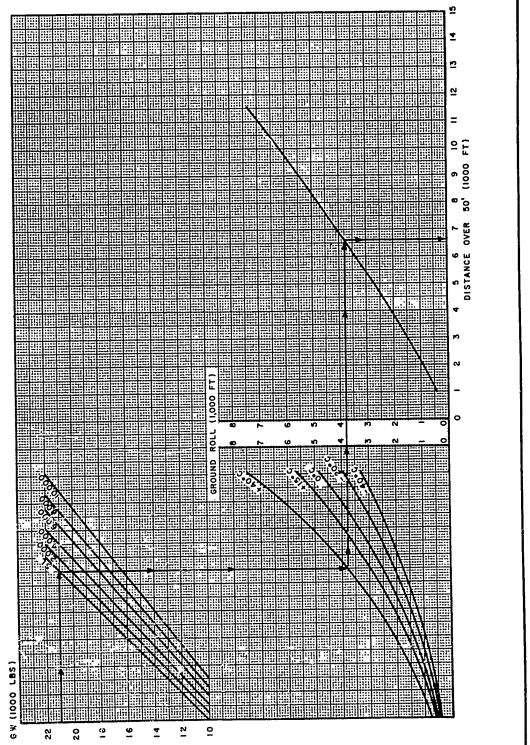
CLIMB



50X1-HUM

July 1958

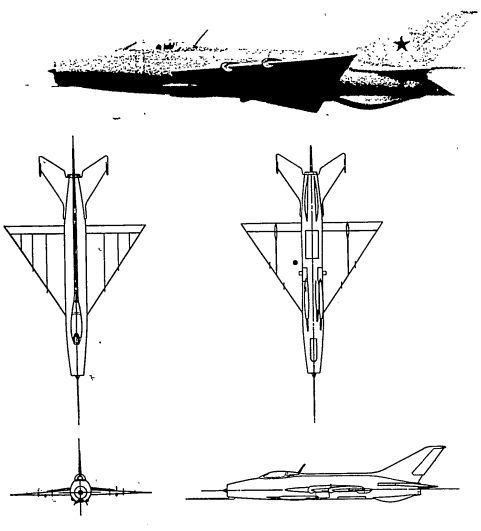
FACEPLATE



50X1-HUM

July
1958

FISHBED A



REMARKS: FISHBED A is a single place super-sonic delta-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushimo Air Display. It is believed to be a prototype.

50X1-HUM

DIMENSIONS

Wing	
Span	27 ft
Area	265 sq ft
Sweepback leading edge	55 deg
Overall length (w/boom)	50.0 ft
(w/o boom)	42.0 ft
Max depth (fus)	4.4 ft
Width	4 ft
Tail	
Span	13 ft
Sweep	56 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,300
Take-off	13,500
Combat	12,200
Landing (approx)	10,900
AMPR	6,000

FUEL

	Weight, lb	gal
Internal	3200	471
External	2800	420

POWER PLANT

No. & Model	(1)
Type	Axial flow turbojet
Length	175 in.
Diameter	38 in.
Weight (dry)	2950 lb
Exhaust nozzle diameter	
Open	25.6 in.
Closed	21.6 in.

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:

4 x 400 lb SPECIAL STORES
or
4 x 550 lb CLUSTER
or
4 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone in center of intake.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal tanks.

ELECTRONICS

RADAR
Range only radar
IFF-SRO type
IR
Tail warning receiver
NAVIGATION
Radio altimeter, RV-10
Radio compass, ARK-5
Marker beacon receiver, MRP-48P
VHF homer
DME
GPI
COMMUNICATIONS
VHF RSIU-3M (4 channel) or RSIU-4M (8-12 channel)
Data link

GUNS

3 x 23 mm revolver type with a cyclic rate of 1200 rds/min/gun. Ammunition for 4 sec fire.

ROCKETS

4 launchers, 8 ea x 55 mm rockets or any one of the following configurations:
4 launchers, 19 ea 55 mm AAR
4 racks, 1 ea 220 mm AAR
4 racks, 1 ea 325 mm AAR
4 racks, 1 ea 210 mm Air-to-Ground rockets.

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS				Area (4) Intercept Basic Mission	Area Intercept Opt. Mission	Area (4) Intercept Basic Mission	Area (4) Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)			13,500	13,500	16,700	16,700
Fuel at 6.7 lb/gal	(lb)			3,200	3,200	6,000	6,000
Payload (Ammo)	(lb)			215	215	215	215
Wing loading	(psf)			51	51	63	63
Stall speed (power off, clean)	(kts)			130	130	145	145
Take-off ground run at SL	(ft)	(1)		1,000	1,000	1,600	1,600
Take-off to clear 50 ft	(ft)	(1)		2,000	2,000	3,000	3,000
Rate of climb at SL	(fpm)	(2)		20,900	20,900	12,300	12,300
Time - SL to 40,000 ft	(min)	(2)(3)		4.1	4.1	7.2	7.2
Time - SL to 50,000 ft	(min)	(2)(3)		7.9	7.9	---	---
Service ceiling (100 fpm)	(ft)	(1)		58,500	58,500	52,400	52,400
COMBAT RANGE	(NM)			---	580	(6) 1,095	(6) 1,280
COMBAT RADIUS	(NM)			130	200	470	565
Average speed	(kts)			535	535	525	525
Initial cruising altitude	(ft)			49,900	49,900	41,800	41,800
Final cruising altitude	(ft)			52,600	53,100	52,200	53,200
Total mission time	(hr)			0.58	0.83	1.9	2.3
COMBAT WEIGHT	(lb)		(5)	12,200	12,200	13,300(13,700)	13,000(13,400)
Combat altitude	(ft)			50,000	50,000	50,000	50,000
Combat speed	(kts)	(1)	(5)	665	670	650(550)	655(545)
Combat climb	(fpm)	(1)		5,700	6,000	5,000	5,250
Combat ceiling (500 fpm)	(ft)	(1)	(5)	59,800	60,100	58,000(54,800)	58,500(55,200)
Service ceiling (100 fpm)	(ft)	(1)		60,400	60,700	58,600	59,100
Max rate of climb at SL	(fpm)	(1)		45,750	46,600	41,300	42,300
Max speed at SL	(kts)	(1)		680	680	680	680
Max speed at opt. altitude	(kts/ft)	(1)		835/35,000	835/35,000	825/35,000	830/35,000
Max mach number at opt. altitude	(Mn/ft)	(1)		1.45/35,000	1.45/35,000	1.43/35,000	1.44/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Includes 0.8 min for take-off and acceleration to climb speed without tanks or 0.9 min with tanks.
(4) 2 x 210 US gal external tanks.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) Range for cruising to reserve fuel requirements and holding ammunition.

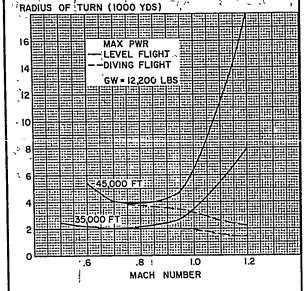
50X1-HUM

SECRET

FISHBED A

July 1958

TURN RADIUS



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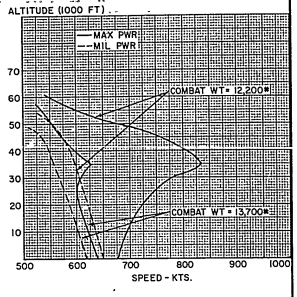

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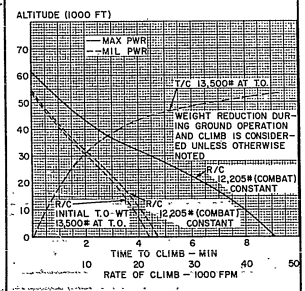


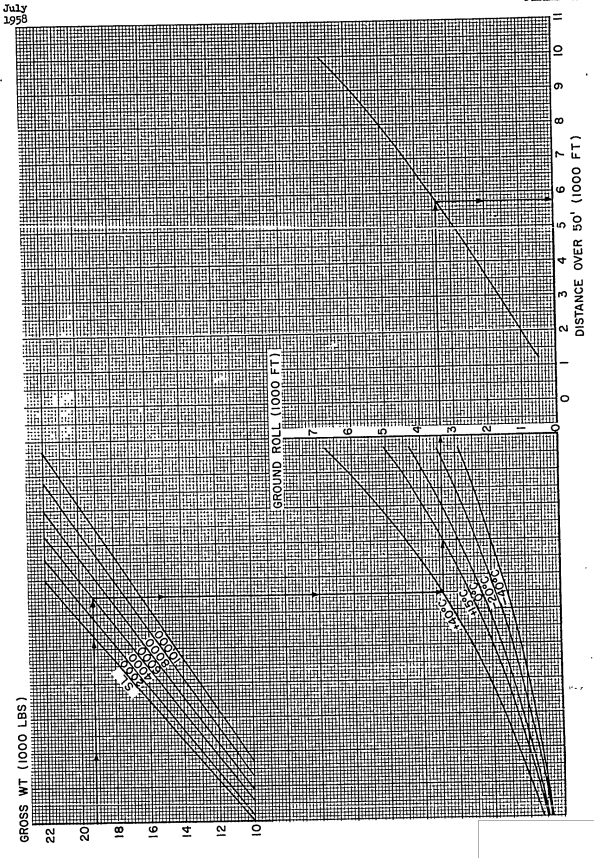
50X1-HUM

SECRET

SECRET

FISHBED A

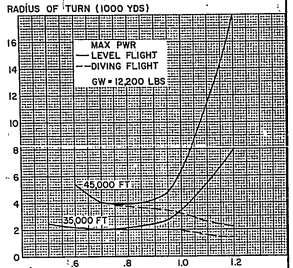
July 1958



SECRET

50X1-HUM

TURN RADIUS



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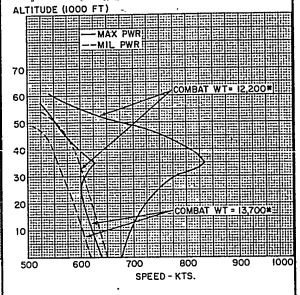

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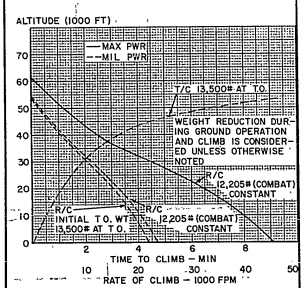

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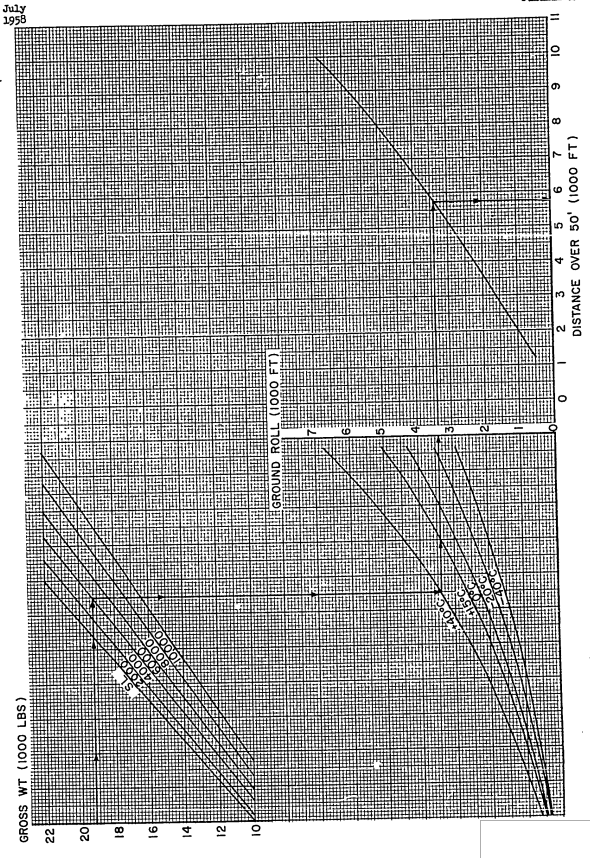
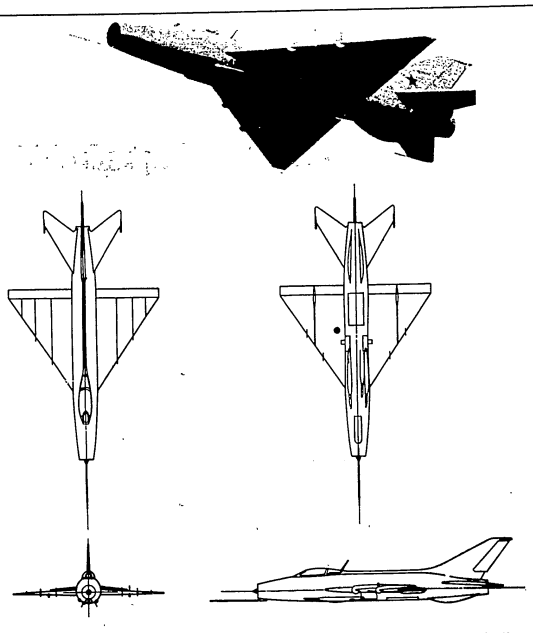


50X1-HUM

July
1958



REMARKS: FISHBED B is a single-place super-sonic delta-wing day interceptor basically the same as FISHBED A with only slight modification.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed to be a prototype.

50X1-HUM

DIMENSIONS

Wing	
Span	25 ft
Area	260 sq ft
Sweepback leading edge	55.0 deg
Overall length (w/boom)	50.0 ft
(w/o boom)	42.0 ft
Max depth (fus)	4.4 ft
width	4 ft
Tail	
Span	13 ft
Sweep	59 deg
Height from fuselage center line	7.9 ft

WEIGHTS

Loading	lb
Empty	9,330
Take-off	13,500
Combat	12,200
Landing (approx)	10,900
AWPR	6,000

FUEL

	Weight, lb	gal
Internal	3200	477
External	2800	420

POWER PLANT

No. & Model	(1)
Type	Axial flow turbojet
Length	175 in.
Diameter	38 in.
Weight (dry)	2950 lb
Exhaust nozzle diameter	
Open	25.6 in.
Closed	21.6 in.

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	12,600	1.85
Mil	9,400	0.95

BOMBS/FREIGHT

Capable of carrying at least the following:

4 x 400 lb SPECIAL STORES
or
4 x 550 lb CLUSTER
or
4 x 550 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone in center of intake.

FISHBED B configuration is the same as FISHBED A with the exception of clipped wing tips and a modified fairing at the horizontal tail-fuselage juncture.

Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar.

Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal tanks.

ELECTRONICS

RADAR
Range only radar
IFF-SIF type
IR
Tail warning receiver
NAVIGATION
Radio altimeter, RV-10
Radio compass, ARK-9
Marker beacon receiver, MRP-48P
VHF homer
IMN
GPI
COMMUNICATIONS
VHF RSIU-3A (4 channel) or RSIU-4A (8-12 channel)
Data link

GUNS

3 x 23 mm revolver type with a cyclic rate of 1200 rds/min/gun. Ammunition for 4 sec fire.

ROCKETS

4 launchers, 8 ea x 55 mm rockets or any one of the following configurations:
4 launchers, 19 ea, 55 mm AAR
4 racks, 1 ea, 250 mm AAR
4 racks, 1 ea, 325 mm AAR
4 racks, 1 ea, 210 mm Air-to-Ground rockets.

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS				Area Intercept Basic Mission	Area Intercept Opt. Mission	Area (5) Intercept Basic Mission	Area (5) Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)			13,500	13,500	16,700	16,700
Fuel at 6.7 lb/gal	(lb)			3,200	3,200	6,000	6,000
Payload (Ammo)	(lb)			215	215	215	215
Wing loading	(psf)			52	52	64	64
Stall speed (power off, clean)	(kts)			130	130	145	145
Take-off ground run at SL	(ft)	(1)		1,000	1,000	1,600	1,600
Take-off to clear 50 ft	(ft)	(1)		2,000	2,000	3,000	3,000
Rate of climb at SL	(fpm)	(2)		20,900	20,900	12,250	12,300
Time - SL to 40,000 ft	(min)	(2)(3)		4.1	4.1	7.5	7.5
Time - SL to 50,000 ft	(min)	(2)(3)		7.8	7.8	---	---
Service ceiling (100 fpm)	(ft)	(1)		57,600	57,600	51,000	51,000
COMBAT RANGE	(NM)			---	540	(6) 1,045	(6) 1,220
COMBAT RADIUS	(NM)			125	185	450	540
Average speed	(kts)			540	540	525	530
Initial cruising altitude	(ft)			48,700	48,700	40,800	40,800
Final cruising altitude	(ft)			51,400	51,900	50,900	51,800
Total mission time	(hr)			.57	.79	1.9	2.1
COMBAT WEIGHT	(lb)		(4)	12,200	12,000	13,300(13,700)	13,000(13,400)
Combat altitude	(ft)			50,000	50,000	50,000	50,000
Combat speed	(kts)	(1)	(4)	680	690	655(545)	660(545)
Combat climb	(fpm)	(1)		5,250	5,500	2,700	3,000
Combat ceiling (500 fpm)	(ft)	(1)	(4)	59,300	59,600	57,400(54,200)	57,900(54,700)
Service ceiling (100 fpm)	(ft)	(1)		59,900	60,200	58,000	58,500
Max rate of climb at SL	(fpm)	(1)		48,300	49,200	43,750	44,750
Max speed at SL	(kts)	(1)		680	680	675	675
Max speed at opt. altitude	(kts/ft)	(1)		840/35,000	845/35,000	830/35,000	835/35,000
Max mach number at opt. altitude	(Mn/ft)	(1)		1.46/35,000	1.47/35,000	1.44/35,000	1.45/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) Includes 0.8 min for take-off and acceleration to climb speed without tanks or 0.9 min with tanks.
(4) Numbers in parenthesis are for aircraft with empty tanks aboard.
(5) 2 x 210 US gal external tanks.
(6) Range for cruising to reserve fuel requirements and holding ammunition.

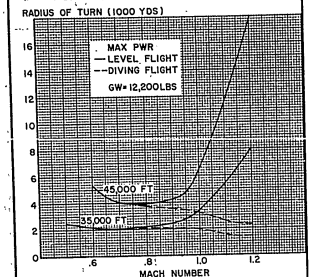
50X1-HUM

SECRET

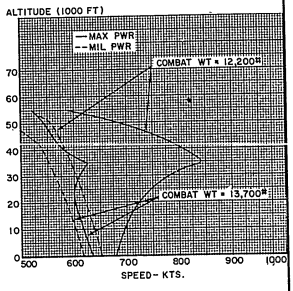
FISHBED B

July 1958

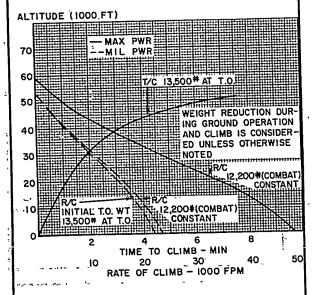
TURN RADIUS



SPEED



CLIMB



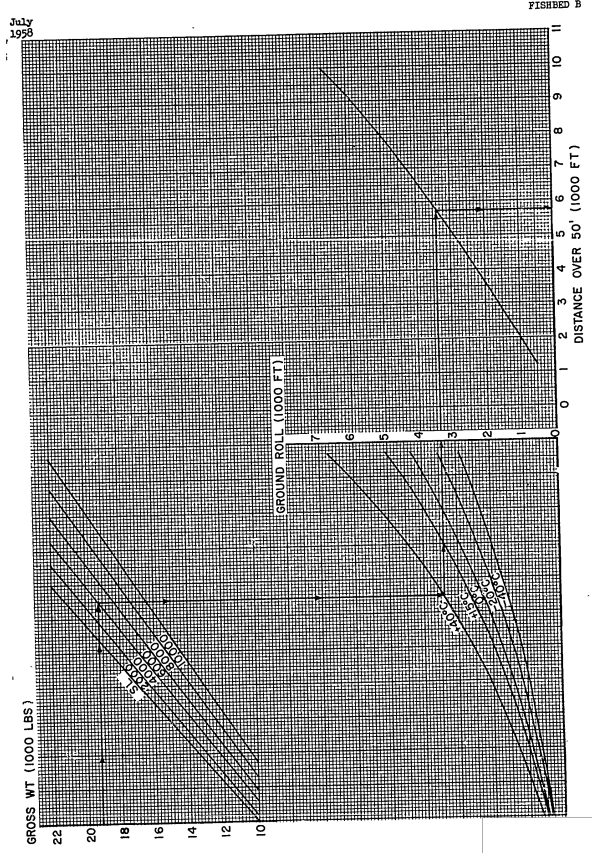
50X1-HUM

SECRET

SECRET

FISHBED B

July 1958

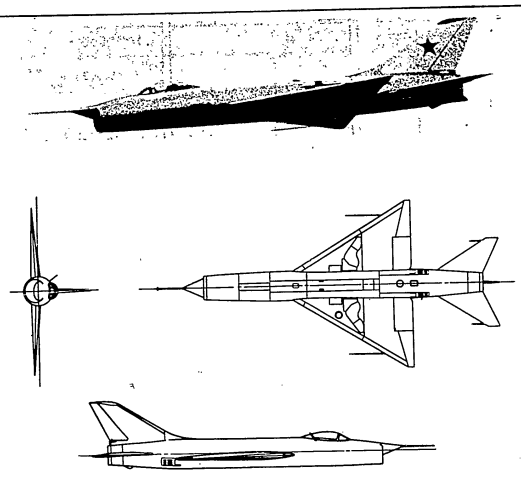


SECRET

50X1-HUM

July
1958

FISHPOT



REMARKS: FISHPOT is a single-place supersonic delta-wing limited all-weather interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed to be an experimental prototype. Aircraft may be developed for future operation.

50X1-HUM

DIMENSIONS

Wing	
Span	24 ft
Area	250 sq ft
Sweepback leading edge	58.0 deg
Overall length (w/boom)	50.0 ft
(w/o boom)	43.0 ft
Diameter	4.2 ft
Tail	
Span	12.8 ft
Sweep	58 deg
Height from fuselage center line	7.7 ft

WEIGHTS

Loading	lb
Empty	9,900
Take-off	14,900
Combat	13,600
Landing (approx)	12,000
AMFR	6,100

FUEL

	Weight, lb	gal
Internal	3700	552
External	2800	420

POWER PLANT

No. & Model	(1)
Type	Axial flow turbojet
Length	188 in.
Diameter	42.25 in.
Weight (dry)	3500 lbs
Exhaust nozzle diameter	
Open	28.1 in.
Closed	23.6 in.

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	15,200	1.90
Mil	11,200	0.95

BOMBS/FREIGHT

4 x 250 lb bombs.

GENERAL INFORMATION

Single place limited all weather interceptor.
Tricycle landing gear.
Slightly clipped delta wing configuration with swept horizontal and vertical tail.
Fixed compression cone above air intake may house AI gear capable of short range search track.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal external tanks.

ELECTRONICS

RADAR
AI radar (search range 10 NM/ track range 8 NM)
IFF-SRO type
IR
Tail warning receiver
NAVIGATION
Radio altimeter, RV-10
Radio compass, ARK-5
Marker beacon receiver, MRP-40P
VHF homer
IME
GPI
COMMUNICATIONS
VHF RSIU-3A (4 channel) or RSIU-4A (8-12 channel)

GUNS

2 x 30 mm revolver type with a cyclic rate of 1250 rds/min/gun. Ammunition for 6 sec fire.

ROCKETS

4 launchers, 19 ea 55 mm AAR or any one of the following configurations:
4 racks, 1 ea 220 mm AAR
4 racks, 2 ea 220 mm AAR (nuclear)

AIRCRAFT PERFORMANCE

CONDITIONS				Area Intercept Basic Mission	Area Intercept Opt. Mission	Area (6) Intercept Basic Mission	Area (6) Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)			14,900	14,900	18,100	18,100
Fuel at 6.7 lb/gal	(lb)			3,700	3,700	6,500	6,500
Payload (Ammo)	(lb)			295	295	295	295
Wing loading	(psf)			60	60	72	72
Stall speed (power off, clean)	(kts)			140	140	155	155
Take-off ground run at SL	(ft)	(1)		1,200	1,200	1,800	1,800
Take-off to clear 50 ft	(ft)	(1)		2,400	2,400	3,400	3,400
Rate of climb at SL.	(fpm)	(2)		27,400	27,400	15,300	15,300
Time - SL to 40,000 ft	(min)	(2)(3)(4)		3.4	3.4	5.7	5.7
Time - SL to 50,000 ft	(min)	(2)(3)(4)		6.7	6.7	9.1	9.1
Service ceiling (100 fpm)	(ft)	(2)		50,700	50,700	44,600	44,600
COMBAT RANGE	(NM)			420	555	985	1,160
COMBAT RADIUS	(NM)			65	130	350	440
Average speed	(kts)			540	540	530	530
Initial cruising altitude	(ft)			50,700	50,700	43,900	43,900
Final cruising altitude	(ft)			53,100	53,800	52,900	53,800
Total mission time	(hr)		(3)	.34	.58	1.5	1.8
COMBAT WEIGHT	(lb)		(5)	13,600	13,400	14,800(15,200)	14,500(14,900)
Combat altitude	(ft)			50,000	50,000	50,000	50,000
Combat speed	(kts)	(1)	(5)	980	980	960	965
Combat climb	(fpm)	(1)		6,300	6,500	5,000	5,250
Combat ceiling (500 fpm)	(ft)	(1)	(5)	59,000	59,300	57,200(55,200)	57,700(55,600)
Service ceiling (100 fpm)	(ft)	(2)		52,500	52,900	50,800	51,300
Max rate of climb at SL	(fpm)	(1)		57,200	58,000	53,000	54,000
Max speed at SL	(kts)	(1)		800	800	800	800
Max speed at opt. altitude	(kts/ft)	(1)		1,090/35,000	1,090/35,000	1,090/35,000	1,090/35,000
Max mach number at opt. altitude	(M/ft)	(1)		1.90/35,000	1.90/35,000	1.9/35,000	1.9/35,000

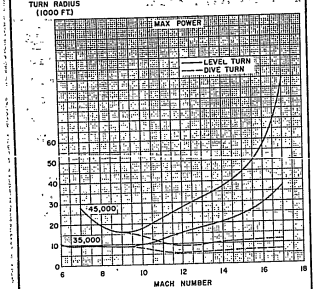
NOTES
(1) Maximum power.
(2) Military power.
(3) .7 minute to accelerate to V climb included.
(4) Allows for weight reduction during ground operation and climb.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) With 2 x 210 US gal tanks.

SECRET

FISHPOT

July 1958

TURN RADIUS



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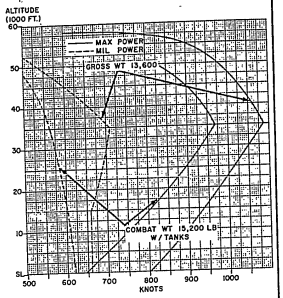

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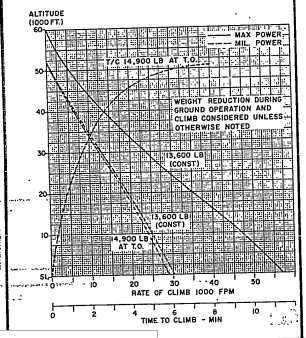


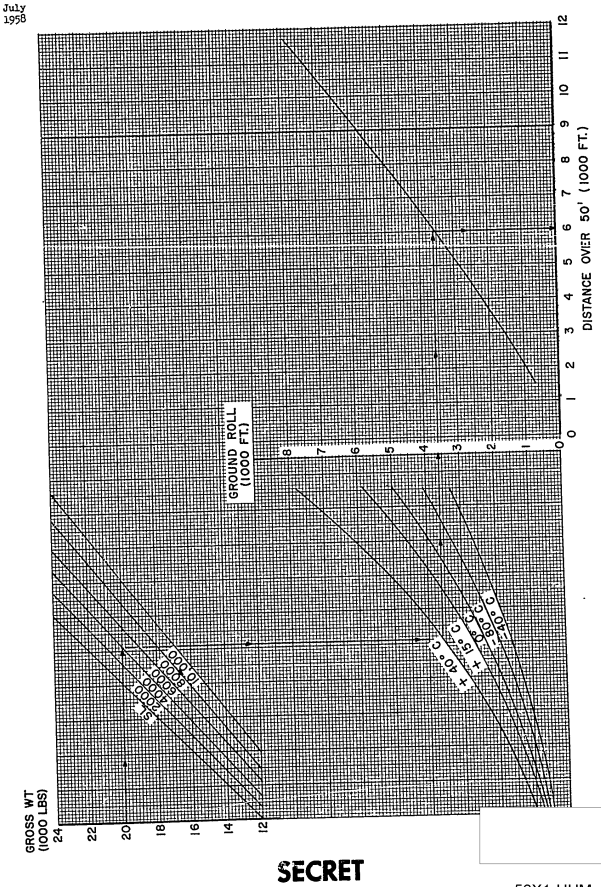
50X1-HUM

SECRET

SECRET

July 1958

FISHPOT

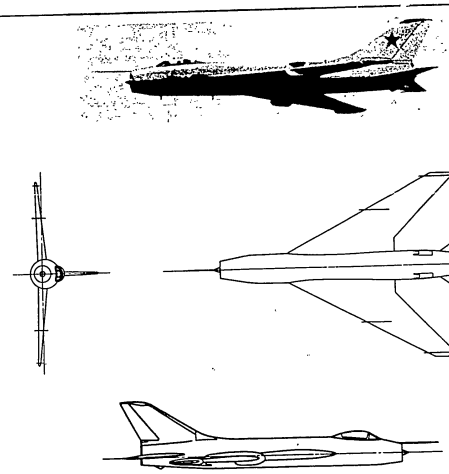


SECRET

50X1-HUM

July
1958

FITTER



REMARKS: FITTER is a single-place supersonic swept-wing day interceptor.

SUMMARY

1956 First observed during the June 1956 Tushino Air Display. It is believed this aircraft will be in operation in the near future.

50X1-HUM

DIMENSIONS

Wing	
Span	26.5 ft
Area	250 sq ft
Sweepback leading edge	63 deg
Overall length (w/boom)	45 ft
(w/o boom)	41 ft
Diameter	4.2 ft
Tail	
Span	12.8 ft
Sweep	55 deg
Height from fuselage center line	7.7 ft

WEIGHTS

Loading	lb
Empty	10,300
Take-off	15,300
Combat	14,000
Landing (approx)	12,300
AMPR	6,800

FUEL

	Weight, lb	gal
Internal	3700	552
External	2800	420

POWER PLANT

No. & Model	(1)
Type	Axial flow turbojet
Length	188 in.
Diameter	42.25 in.
Weight (dry)	3500 lbs
Exhaust nozzle diameter	
Open	28.1 in.
Closed	23.6 in.

ENGINE RATINGS

SL Static	lb	SFC/#/hr/#
Max	15,200	1.90
Mil	11,200	0.95

BOMBS/FREIGHT

4 x 400 lb SPECIAL PURPOSE
or
4 x 250 lb CLUSTER
or
4 x 250 lb GENERAL PURPOSE

GENERAL INFORMATION

Single place day interceptor.
Tricycle landing gear.
Intake provided with translating compression cone.
Aircraft may be equipped with a lead pursuit fire control system utilizing IR and automatic range only radar. If it is not provided aircraft will probably have at least automatic range only radar.
Although this aircraft has not been observed carrying external fuel it is considered capable of carrying 2 x 210 US gal tanks.

ELECTRONICS

RADAR
Range only
IR
IFF-SRO type
Tail warning receiver
NAVIGATION
Radio altimeter RV-10
Radio compass ARK-5
Marker beacon receiver MRP-48P
VHF homer
IMGE
GPI
COMMUNICATIONS
VHF RSIU-3A (4 channel) or
RSIU-4A (8-12 channel)
Data link

GUNS

2 x 30 mm revolver type with a cyclic rate of 1250 rds/min/gun. Ammunition for 6 sec fire.

ROCKETS

4 launchers, 19 ea 55 mm AAR or any one of the following configurations:
4 launchers, 8 ea 55 mm AAR
4 racks, 1 ea 220 mm AAR
4 racks, 1 ea 325 mm AAR
4 racks, 1 ea 210 mm Air-to-Ground.

50X1-HUM

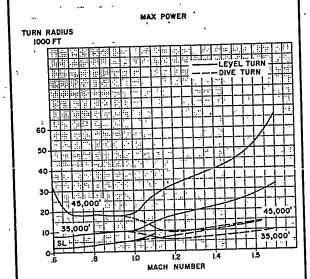
AIRCRAFT PERFORMANCE

CONDITIONS				Area Intercept Basic Mission	Area Intercept Opt. Mission	Area (6) Intercept Basic Mission	Area (6) Intercept Opt. Mission
TAKE-OFF WEIGHT	(lb)			15,300	15,300	18,500	18,500
Fuel at 6.7 lb/gal	(lb)			3,700	3,700	6,500	6,500
Payload (Ammo)	(lb)			295	295	295	295
Wing loading	(psf)			61	61	74	74
Stall speed (power off, clean)	(kts)			135	135	150	150
Take-off ground run at SL	(ft)	(1)		1,200	1,200	1,900	1,900
Take-off to clear 50 ft	(ft)	(1)		2,400	2,400	3,500	3,500
Rate of climb at SL	(fpm)		(2)	27,100	27,100	15,050	15,050
Time - SL to 40,000 ft	(min)		(2)(3)(4)	3.5	3.5	5.6	5.6
Time - SL to 50,000 ft	(min)		(2)(3)(4)	6.4	6.4	8.3	8.3
Service ceiling (100 fpm)	(ft)		(2)	52,000	52,000	46,100	46,100
COMBAT RANGE	(NM)			455	590	1,065	1,245
COMBAT RADIUS	(NM)			75	140	390	480
Average speed	(kts)			535	535	525	530
Initial cruising altitude	(ft)			51,700	51,700	45,400	45,400
Final cruising altitude	(ft)			54,100	54,700	53,900	54,700
Total mission time	(hr)		(3)	.37	.60	1.6	1.9
COMBAT WEIGHT	(lb)		(5)	14,000	13,800	15,200(15,600)	14,900(15,200)
Combat altitude	(ft)			50,000	50,000	50,000	50,000
Combat speed	(kts)	(1)	(5)	1,035	1,035	1,000(800)	1,000(895)
Combat climb	(fpm)	(1)		6,400	6,600	5,400	5,600
Combat ceiling (500 fpm)	(ft)	(1)	(5)	60,000	60,400	58,300(56,300)	58,800(56,900)
Combat ceiling (100 fpm)	(ft)		(2)	53,900	54,200	52,200	52,700
Max rate of climb at SL	(fpm)	(1)		59,000	60,200	54,200	55,400
Max speed at SL	(kts)	(1)		800	800	800	800
Max speed at opt. altitude	(kts/ft)	(1)		1,185/35,000	1,185/35,000	1,180/35,000	1,180/35,000
Max mach number at opt. altitude	(Mn/ft)	(1)		2.06/35,000	2.06/35,000	2.05/35,000	2.05/35,000

NOTES
(1) Maximum power.
(2) Military power.
(3) .7 minute to accelerate to V climb included.
(4) Allows for weight reduction during ground operation and climb.
(5) Numbers in parenthesis are for aircraft with empty tanks aboard.
(6) With 2 x 210 US gal external tanks.

50X1-HUM

TURN RADIUS



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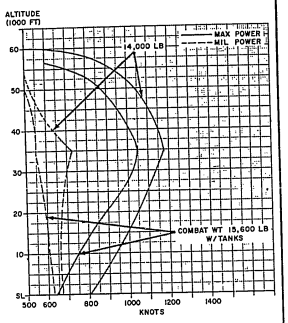

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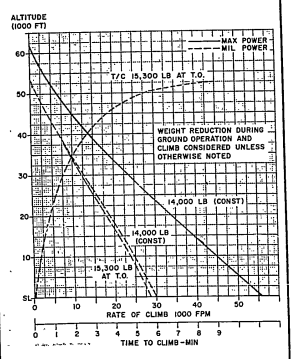

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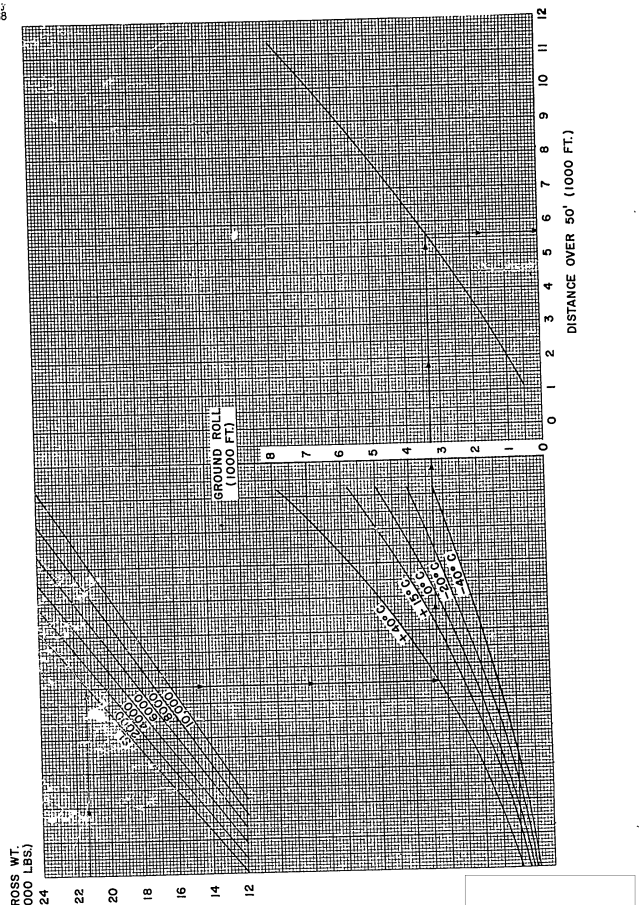
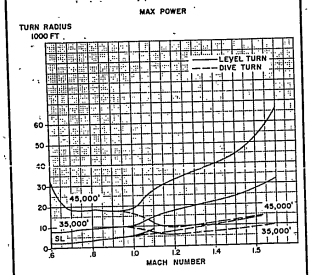


50X1-HUM

FITTER

July 1958

TURN RADIUS



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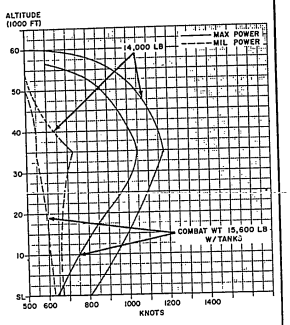

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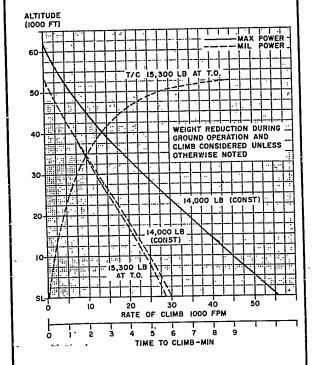
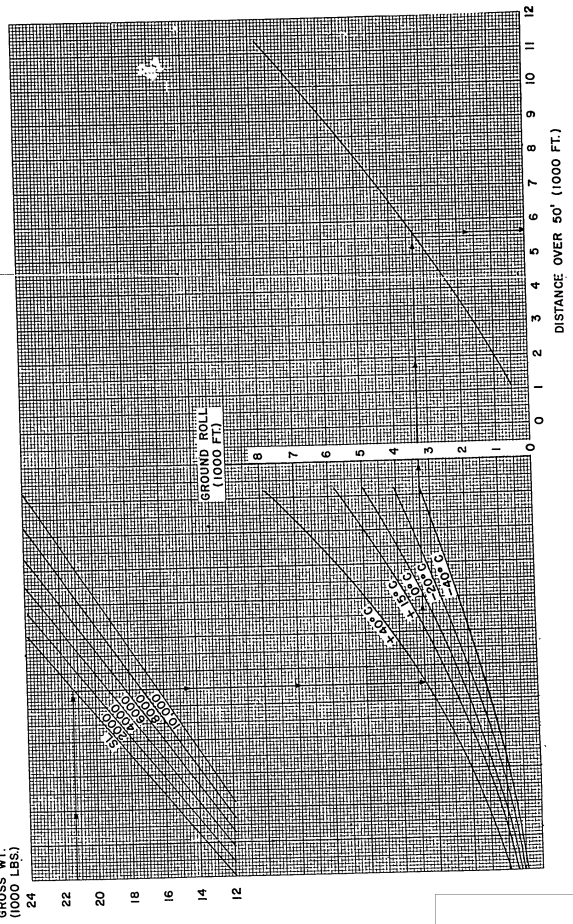


50X1-HUM

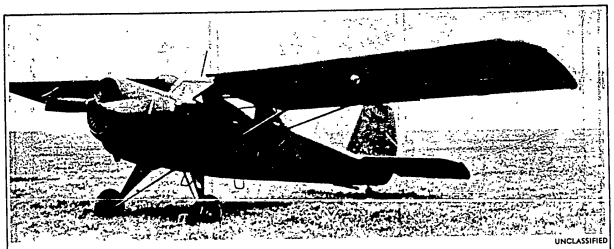
July 1958

FITTER



50X1-HUM

October
1958



UNCLASSIFIED

REMARKS: CREEK/Yak-12 is a light, single engined, high wing monoplane that is in extensive use in Soviet controlled areas.

SUMMARY

1945 Yak-12 prototype first flight.
1947 Yak-12 in production.
1949 Yak-12R first flight.
1954 Yak-12M first flight.
1957 Yak-12A first flight.

50X1-HUM

DIMENSIONS

Wing
- Span 41.5 ft
- Area 256 sq ft
- Length 30 ft
- Height 7.6 ft
- Landing gear tread 7.2 ft

WEIGHTS

Take-off	3200 lb
Empty	2000 lb
Useful load	900 lb

FUEL

Total capacity - 47 US gal in two wing tanks.

POWER PLANT

No. & Model	(1) AI-14R
Type	Air-cooled radial
No. cylinders	9

ENGINE RATINGS

Take-off rating	260 HP

BOMBS/FREIGHT

Useful load	990 lb

GENERAL INFORMATION

Soviet released information is quoted herein.

CREEK/Yak-12 is a high wing monoplane in extensive use in the USSR for a variety of purposes.

Four models of CREEK have been produced:

- Yak-12 - The basic model with M-11 engine. Aircraft of mixed metal and wood construction. Few were produced.
- Yak-12R - Same as the basic model with AI-14R engine of 260 HP.
- Yak-12M - Modification of Yak-12R with longer fuselage and dorsal fin. All metal construction.
- Yak-12A - Slight change in wing planform, wing struts changed and wing area reduced. Cruise speed, weights and loads slightly increased. Currently in production.

Data given is for Yak-12M.

Maximum speed	98 knots
Landing speed	39 knots
Range (with full fuel load)	410 NM
Take-off run	330 ft
Landing run	460 ft

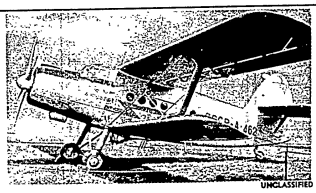
ELECTRONICS

Radio compass
Two-way radio

GUNS

ROCKETS

50X1-HUM



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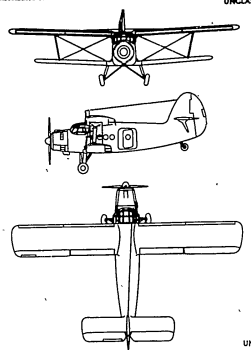


UNCLASSIFIED

REMARKS: COLT is a single engine, cabin type biplane. It is equipped with a four bladed scimitar pattern propeller, and fixed landing gear.

SUMMARY

1948 First observed in July 1948. It is extensively used throughout the USSR for the transportation of mail, passengers and cargo, and for a variety of other purposes.

50X1-HUM

COLT/An-2

September 1958

DIMENSIONS

Wing	
Span (upper)	59.5 ft
(lower)	46.5 ft
Area	769 sq ft
Fuselage	
Length	42 ft
Height	13.6 ft
Cargo cabin	
Length	13.5 ft
Height	5.9 ft
Width	5.3 ft
Cargo door dimensions	4.9 ft W x 4.7 ft H
Cabin volume	400 cu ft

WEIGHTS

Take-off	11,550 lb
Empty	7,280 lb

FUEL

	lb	gal
Type 95/115	1100	180
Oil	110	14

POWER PLANT

No. & Model	(1) Ash-62 IR
Type	Air-cooled radial
No. cylinders	9
Diameter	55 in.
Length	44.75 in.
Weight (dry)	1240 lb

ENGINE RATINGS

Take-off	905 BHP at 2200 RPM, 41 in. hg.
Normal	830 BHP at 2100 RPM, 35 in. hg.

PASS./FREIGHT

Passengers	7-8
Cargo (alt)	2700 lb
Ambulance	6 litters

GENERAL INFORMATION

Soviet released information only is quoted herein.

COLT/An-2 is a single engined, all metal, multi-purpose biplane designed by O. K. Antonov. It is widely used in the USSR for:

- Agricultural purposes
- Transportation of cargo, mail and passengers
- Aerial photography
- Aerial ambulance
- Aero-magnetic exploration
- Meteorological and other purposes.

COLT/An-2 is capable of operating from unequipped runways of limited dimensions.

It can be equipped with ski's or floats without degrading its take-off and landing characteristics. Automatic slats over the entire span of the upper wing permits sharp maneuvers and flights at low air speeds.

Performance is given as follows:

Range with 2700 lb payload	485 KM
Range with 1650 lb payload	945 KM
Maximum speed	150 kts
Cruising speed	110 kts
Service ceiling	16,400 ft

One model of COLT set an FAI altitude record of 36,900 ft on 9 June 1954 for aircraft in the 6600-9900 lb class. The airplane was equipped with a turbo-supercharger.

ELECTRONICS

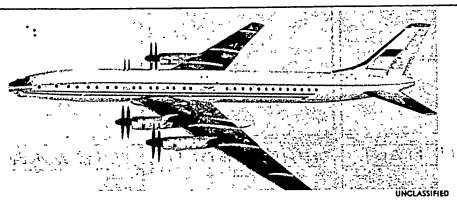
GUNS

ROCKETS

50X1-HUM

October 1958

CLEAT/Tu-114 (Prototype)



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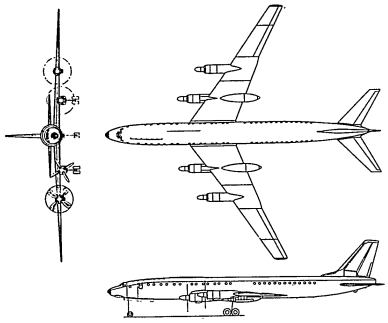


CONFIDENTIAL

REMARKS: CLEAT/Tu-114 is a low, swept-wing, four-engined, high performance aircraft developed from the long range heavy bomber BEAR. CLEAT is considered to have been designed primarily to give the USSR a long range aircraft for international civil air trade.

SUMMARY

May 1956	Soviets state that a 170 passenger turboprop is being designed by the Tupolev group. It was stated that the aircraft is designated Tu-114 and will fly Moscow/New York nonstop.
Dec 1957	First public display of CLEAT at Moscow/Vnukovo airfield.

50X1-HUM

CLEAT/Tu-114 (Prototype)

October 1958

DIMENSIONS

Wing	
Span	170 ft
Area	3335 sq ft
Aspect ratio	8.7
Sweepback, leading edge	
Inboard	37.5 deg
Outboard	34.5 deg
Fuselage	
Diameter	14 ft
Overall length	150 ft
Height	
Tail above aircraft center line	31 ft

WEIGHTS

Normal take-off	375,000 lb
Empty weight	192,000 lb
Normal payload (passenger variant)	83,000 lb

FUEL

	lb	gal
Weight	140,000	20,900

POWER PLANT

No. & Model	(4) NK-12M
Type	Turboprop
Designer	N. D. Kuznetsov
Diameter	49 in.
Length	232 in.
Weight	5300 lb
Propeller	
Type	Contra-rotating
No. blades	8
Diameter	18.4 ft
Weight (assy)	1700 lb
Electric de-icing	

ENGINE RATINGS

Sea level static conditions

ESHP	12,500
SFC	.485 lb/ESHP/hr

BOMBS/FREIGHT

Variant	Passengers
First class	120 long range version 170 intermediate range
Tourist class	220 short range
Cargo	95,000 lb

GENERAL INFORMATION

CLEAT/Tu-114 is a swept-wing monoplane powered by four turboprop engines, each driving two 4-bladed contra-rotating propellers. It is another Tupolev bomber to transport development, having been derived from the BEAR bomber. The two deck fuselage has all passenger facilities on the upper deck, the lower level containing the kitchen, plus baggage and cargo space.

The apparent principal mission of CLEAT is the transportation of personnel over long distances. It supposedly will be placed in civil passenger service in three variants: Tourist class variant with a passenger capacity of 220; first class variant with a capacity 170 and a long range variant having a capacity of 120 passengers.

The information on this page is classified CONFIDENTIAL with the exception of the Power Plant data which is classified SECRET.

ELECTRONICS

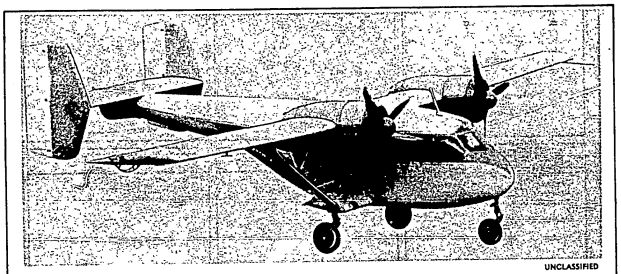
GUNS

ROCKETS

50X1-HUM

August 1958

CLOD/An-14



UNCLASSIFIED

REMARKS: CLOD/AN-14 is a twin engined, high wing light transport aircraft designed by the noted Soviet designer O. K. Antonov.

SUMMARY

16 March 1958 First flight.

50X1-HUM

DIMENSIONS

Wing
- Span 64.9 ft
- Area 470 sq ft
- Length 36 ft

WEIGHTS

Normal take-off	6600 lb
Maximum take-off	7050 lb

FUEL

Not available

POWER PLANT

No. & Model	2 x AI-14
Designer	A. G. Ivchenko
Type	Air-cooled radial
No. cylinders	9

ENGINE RATINGS

Take-off rating	260 HP

FREIGHT

6 passengers plus 330 lbs
or
1320 lbs of cargo

GENERAL INFORMATION

The data on this page is based on information from open source publications.

No formal project for estimating further data on this aircraft is programmed by ACS/Intelligence.

CLOD/AN-14 apparently is designed to meet requirements for a small transport that can operate as a STOL aircraft in vast areas of the USSR which are devoid of developed airfields.

A maximum speed of 125 kts and a minimum speed of slightly over 20 kts is claimed. Average cruise speed is probably in the order of 100 kts. A minimum runway requirement of 240 ft is also claimed.

Simplicity of operation and maintenance were said to have been the basis of this design, the aircraft being "specifically designed to enable any chauffeur or mechanic to fly it, its foolproof construction minimizing mishaps and accidents due to negligence or ignorance of flying rules."

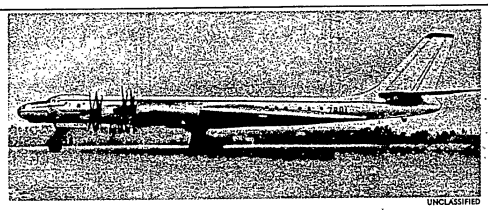
ELECTRONICS

Radio compass
Radio altimeter

GUNS

ROCKETS

50X1-HUM



UNCLASSIFIED

REMARKS: Tu-114D is a modification of BEAR to provide a long range transport for a limited number of passengers.

SUMMARY

30 May 1958 Soviet press mentions Tu-114D, a long range transport.

9 Jul 1958 Soviets release photo and details of a long range flight of Tu-114D.

50X1-HUM

DIMENSIONS

Estimated to be the same as BEAR.

WEIGHTS

Not available

FUEL

Not available

POWER PLANT

No. & Model	(4) NK-12M
Type	Turboprop
Designer	N. D. Kuznetsov
Diameter	49 in.
Length	232 in.
Weight	5300 lb
Propeller	
Type	Contra-rotating
No. blades	8
Diameter	18.4 ft
Weight (assy)	1700 lb
Electric de-icing	

ENGINE RATINGS

Sea level static conditions

ESHP	12,500
SFC	.485 lb/ESHP/hp

BOMBS/FREIGHT

36 to 48 passengers.

GENERAL INFORMATION

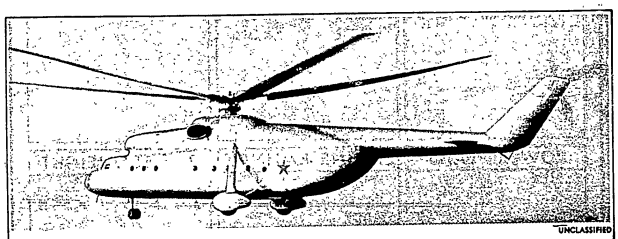
Tu-114D is considered a modification of BEAR bomber, whereas CLEAT/Tu-114 is considered a development of BEAR with a two level fuselage. The first mention in the Soviet press of the Tu-114D was on 30 May 1958. On 9 July 1958 the long distance flight of 18,600 KM with three landings was publicized. This flight covered an elapsed time of 77 hours, of which 48-1/2 hours was flying time. The probable passenger capacity is rather small for an aircraft of this size; the window arrangement indicates that 36 to 48 seats are available. Unfortunately, no data about the aircraft weight, fuel capacity or fuel consumption were given to assist in the evaluation; however, the range accomplishments support the estimated range of CLEAT and of BEAR.

ELECTRONICS

GUNS

ROCKETS

50X1-HUM



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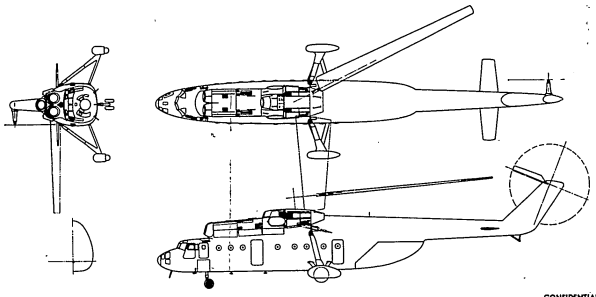


CONFIDENTIAL

REMARKS: HOOK/Mi-6, designed by Dr. Mikhail Leontovich Mil, is a heavy transport helicopter. Although having a single main rotor (with five blades) similar to the USAF H-37 (Sikorsky), HOOK has no counterpart in Western helicopters since it is roughly twice as big as the largest Western helicopters.

SUMMARY

30 Oct 1957	A Moscow radio broadcast announced the Mi-6 helicopter claiming that it had established two new world records by carrying a payload of 26,464 lbs (12,004 kg) of sand to an altitude of 7,980 ft (2,432 m). Subsequently, Soviet press and newsreels have released numerous articles and pictures that unquestionably confirmed the relative size and character of HOOK.
20 Jul 1958	Two HOOK/Mi-6 helicopters were flown at the Tushino air show. The second HOOK sported a shoulder-high stub wing on each side. (See phantom lines on three-view drawing above.)

50X1-HUM

DIMENSIONS

Main Rotor	
Diameter	113-120 ft
No. blades	5
Total blade area	800 sq ft
Disc area	10,000 sq ft
Rotor speed (norm/max)	112/125 rpm
Tip speed (norm/max)	660/780 fps
Tail Rotor, diameter	23 ft
No. blades	4
Stub Wing	
Span	60 ft
Net area (excl. fus.)	400 sq ft
Aspect ratio	7
Incidence	15 deg
Fus. Length (excl. rotors);	115 ft
Cargo Interior	
Length	40 ft
Max width	11 ft
Max height	10 ft
Usable volume	3300 cu ft

WEIGHTS

Empty	40,000 lb
Crew (5)	1,000 lb
Fuel	9,000 lb
Payload	20,000 lb
Normal take-off	70,000 lb
Max overload take-off	88,000 lb

FUEL

Estimated fuel capacity is 1320 US gal (9000 lb or 5000 liters) which is estimated to be located under the fuselage floor close to the center of gravity.

POWER PLANT

No. & Model	(2) x TV-2VM
Type	Axial-flow, free turbine, (Geared to rotor shafting)
Designer	Pavel A. Solov'yev
Estimated weight	2400 lb

ENGINE RATINGS

Rating	SLST Power (SHP)
Military	4700
Normal	4050
75 % normal	3020

BOMBS/FREIGHT

Troops (normal)	70
Troops (max)	120
Payload (normal)	20,000 lb
Payload (max)	38,000 lb

GENERAL INFORMATION

The HOOK/Mi-6 appears to have been designed to satisfy a requirement similar to that for which the CAMP assault transport was originated. Both have: approximately the same normal take-off weight, two turboprop type engines in the same power category, about the same payload/troop capacity, an expansive cabin approximately forty (40) ft in length, and loading ramp doors at the rear of the fuselage. These characteristics are well suited for transporting lengthy items such as missiles, and/or wheeled equipment for relatively short distances in close support, supply, and re-supply areas.

Although massive in comparison with previous helicopters, HOOK also appears to have been designed with low drag considerations in mind. It has fairings on the main wheels, a retractable nose-wheel landing gear, a streamlined tail-rotor support and a clean overall appearance. This would normally indicate a desire for a relatively high speed, but the maximum speed of a helicopter is usually determined by rotor vibration limitations instead of by drag. The forward speed at which the rotor vibration limit is reached may be increased by a reduction in blade loading with a resultant lower angle of attack required of both the advancing and retreating blades. Therefore, the addition of a fixed wing on the second HOOK also bears out a desire for speed since the lift provided by the wing (at forward speeds) relieves the lift required of the rotor, reduces the blade loading, and consequently permits a higher maximum speed to be attained. Although neither the low-drag characteristics nor the fixed wing may significantly increase the helicopters maximum speed, they probably will affect the fuel consumption favorably and allow more economical operation and range to be achieved.

ELECTRONICS

VHF
Radio altimeter

GUNS

ROCKETS

50X1-HUM

SECRET

AIR TECHNICAL INTELLIGENCE CENTER
UNITED STATES AIR FORCE

REPLY TO ATTN OF:

12 November 1959
50X1-HUM

SUBJECT: (U) Revisions to Characteristics and Performance Handbook - USSR Aircraft

TO: All Holders of this Handbook

1. The following revision action should be taken immediately:

a. Delete and destroy by authorized means:

Table of Contents, dated December 1958
BEAR, dated December 1957
MADGE, dated December 1958

2. The following new and revised pages are forwarded for insertion:

Table of Contents, dated August 1959
BEAR, 4 pages, dated August 1959
MADGE, 4 pages, dated July 1959

Note the following areas where changes and/or additions were made:

BEAR

a. All information on the characteristics page is new and/or revised with the exception of the dimensions block.

b. Performance page

c. Graph page

MADGE

a. With the exception of dimensions block on the characteristics page, all other information is new on this page.

b. Performance and graph pages are new.

50X1-HUM

SECRET

50X1-HUM

50X1-HUM

TABLE OF CONTENTS

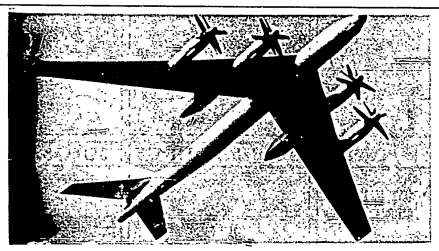
50X1-HUM

TABLE OF CONTENTS (Cont)

50X1-HUM

August 1959

BEAR



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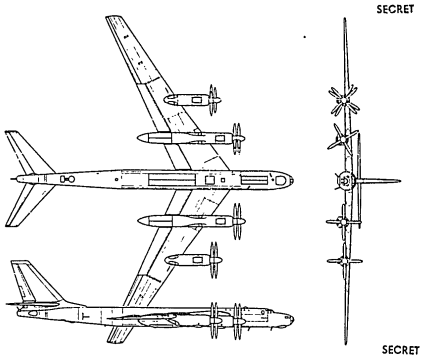


SECRET

REMARKS: BEAR is a swept-wing, four-engine turboprop heavy bomber considered to have been designed by TUPOLEV. (Probable designation is TU-95.)

SUMMARY

Small numbers of these aircraft have been observed in fly-by practice for the May Day and Aviation Day Air Shows since April 1955.

50X1-HUM

DIMENSIONS

Wing	
Span	165 ft
Area	2960 sq ft
Aspect ratio	8.7
Cathedral	2 deg
Sweepback	
Inboard leading edge	40 deg
Outboard leading edge	36 deg
Overall length	150 ft
Fuselage diameter	9.5 ft
Height, gear up	33 ft

WEIGHTS

Loading	lb
Empty	135,100
Take-off	345,000
AMPR	84,000

FUEL

Location	Weight, lb
Internal	195,000 (1)
or	
Internal	202,000 (2)

(1) For 10,000-lb bomb load
(2) For 3,300-lb bomb load

POWER PLANT

No. & Model	(4) Kuznetsov NK-12M
Type	Turboprop
Diameter	49.2 in.
Length	232 in.
Weight (dry)	5300 lb
Propeller	
Type	Contra-rotating
No. blades	8
Diameter	18.4 ft
Weight (assy)	2500 lb

ENGINE RATINGS

Power Setting	ESHP (SL)	SFC (lb/hr/ESHP)
Take-off	12,500	0.53
Normal rated	12,300	0.53

BOMBS/FREIGHT

A bomb bay 24 ft long, 6 ft wide and 5.3 ft high permits the following loads:

Loading	Weight, lb	Type
Maximum	23,100	WW II*
Special purpose	up to 20,000	Nuclear

For example:
1 FAB 5000, 11,000 lb ea 11,000 lb total
20 FAB 500, 1,100 lb ea 22,000 lb total
42 FAB 250, 550 lb ea 23,100 lb total

*Possible to vary number and weight of bombs compatible to bomb bay size by change in external bomb bay configuration for improved ballistic shapes.

GENERAL INFORMATION

Engines are cantilever mounted forward of the wing leading edge.

Retractable tricycle landing gear, with main gear housed in nacelles directly behind the inboard engines.

Wings are cranked near the outboard engine position. Two wing fences located at three-fifths and four-fifths of the wing semi-span.

A single bomb bay is centrally located in the fuselage.

Defensive armament consists of a tail turret and a lower aft turret. Fire control for lower aft turret estimated to be search/track radar in addition to optical sighting with gyro lead computing sight. Sighting blisters located under horizontal tail also house radar antenna. Optical tail turret fire control is provided from a manned gunners' station, a fire-control radar radome over the compartment provides all-weather 6 NM/3 NM search/track capability.

A radome, suitable for radar bombing and navigation, is located on the underside of the fuselage below the canopy.

Some of the BEARs in service are estimated to be equipped for employing air-to-surface missiles.

ELECTRONICS

Radar
- IFF, SRO type
- Tail warning
- Tail defense, search/track
- Range w-by
- Bombing/navigation with computer

Navigation
- Dead-reckoning computer
- Radio compass, radio altimeter
- Marker-beacon receiver
- ILS, DME
- Automatic astrocompass
- Moon long-range receiver

Communications
- HF, VHF, Intercom

ECM
- Chaff
- Noise jammer (HF thru X-band)

GUNS

Estimate 2 x 23-mm linear action guns per turret.

Cyclic rate	Muzzle Velocity
1000 RPM	2500 fps

AIR-TO-SURFACE MISSILES

Estimate 8000 lbs, 50 NM ASM carried by BISON as alternate design payload.

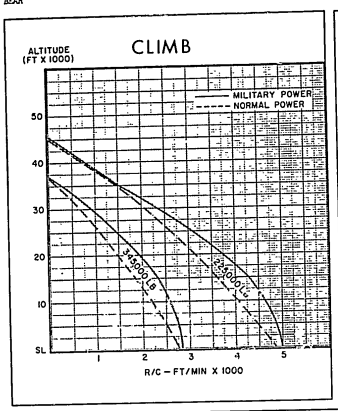
50X1-HUM

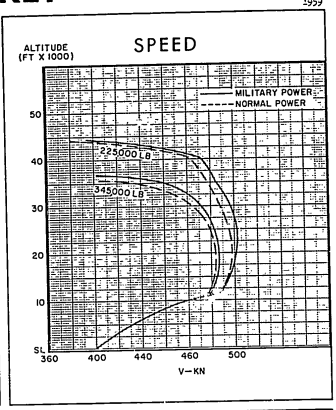
AIRCRAFT PERFORMANCE

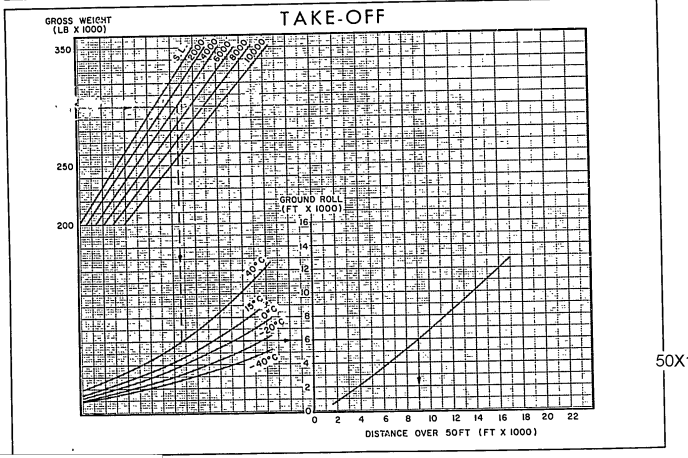
CONDITIONS			Basic Mission	Basic Mission	Optimum Mission	Optimum Mission
TAKE-OFF WEIGHT	(lb)		345,000	345,000	345,000	345,000
Fuel at 6.7 lb/gal	(lb)		202,000	195,000	202,000	195,000
Payload (bombs)	(lb)		3,300	10,000	3,300	10,000
Wing loading	(lb/sq ft)		116	116	116	116
Stall speed (power off)	(kts)		160	160	160	160
Take-off ground run at SL	(ft)	(1)	5,050	5,050	5,050	5,050
Take-off to clear 50 ft	(ft)	(1)	7,900	7,900	7,900	7,900
Rate of climb at SL	(fpm)	(1)	2,850	2,850	2,850	2,850
Time: SL to 20,000 ft	(min)	(1)	8.4	8.4	8.4	8.4
Time: SL to 30,000 ft	(min)	(1)	18.2	18.2	18.2	18.2
Service ceiling (100 fpm)	(ft)	(1)	36,100	36,100	36,100	36,100
COMBAT RANGE	(NM)		9,150	8,700	10,000	9,500
COMBAT RADIUS	(NM)		4,650	4,450	5,050	4,850
Average cruise speed	(kts)		435	435	420	420
Initial cruising altitude	(ft)		34,400	34,400	36,100	36,100
Target speed	(kts)	(2)	445	450	420	425
Target altitude	(ft)		41,600	41,300	43,500	43,200
Final cruising altitude	(ft)		48,300	48,400	50,500	50,500
Total mission time	(hr)		21.5	20.6	24.1	23.3
COMBAT WEIGHT	(lb)		228,000	225,000	221,000	218,000
Combat altitude	(ft)		41,600	41,300	43,500	43,200
Combat speed	(kts)	(1)	450	460	435	440
Combat rate of climb	(fpm)	(1)	440	540	250	330
Combat ceiling (500 fpm)	(ft)	(1)	41,200	41,400	41,800	42,000
Service ceiling (100 fpm)	(ft)	(1)	44,100	44,300	44,600	44,800
Max rate of climb at SL	(fpm)	(1)	4,900	5,000	5,100	5,300
Max speed at optimum altitude	(kts/ft)	(1)	500/25,000	500/25,000	500/25,000	500/25,000
Basic speed at 35,000 ft	(kts)	(1)	480	480	480	480
TERMINAL TARGET ALTITUDE	(ft)	(3) (1)	50,300	49,700	50,300	49,700

NOTES
(1) Maximum power.
(2) Normal rated power.
(3) Service ceiling (bomb plus fuel reserve for one hour maximum sea level endurance on two engines).

50X1-HUM







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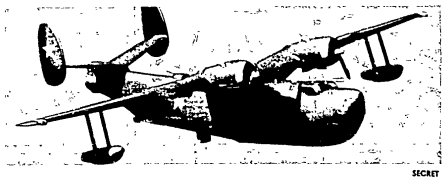

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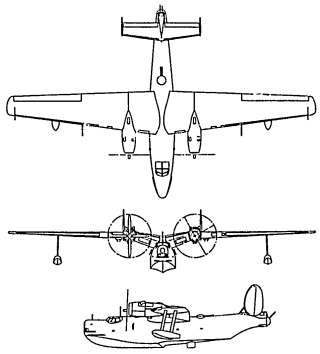


SECRET

REMARKS: MADGE/Be-6, designed by G. M. Beriev, is a twin-engine flying boat for long-range patrol and offensive operation against surface and under-water targets. It strongly resembles the Martin PBM-5 "MARINER" even to the gulled-wing and the dihedraled stabilizer, except that the twin fins are vertical instead of being perpendicular to the stabilizer. (CONFIDENTIAL)

SUMMARY

Late 1948	-	Design reportedly accepted for series production. (SECRET)
1949	-	Prototype tested. (UNCLASSIFIED)
Mid-1951	-	First sighting near MOSCOW. (SECRET)
8 July 1951	-	Openly displayed, Soviet Aviation Day air show at Tushino airfield, near MOSCOW. (UNCLASSIFIED)
1951	-	Jet prototype reportedly designated Be-8, powered by Klimov VK-1 engines, and flown although it was said production orders were not placed until early 1957. (UNCLASSIFIED)
April 1958	-	Turbojet Be-8 announced by the Soviets. (UNCLASSIFIED)

50X1-HUM

DIMENSIONS

Wing	
Span	119 ft
Root chord	17 ft
Tip chord	7 ft
Area	1430 sq ft
Aspect ratio	10
Gull dihedral	20 deg
Sweepback leading edge	7 deg
Overall length	72.5 ft
Fuselage depth	18 ft
Fuselage width	9.6 ft
Tail dihedral	10 deg

(SECRET)

WEIGHTS

	lb
Empty	33,550
Crew (8)	1,760
Internal fuel	19,000
Auxiliary fuel	4,700
Ammunition	800
Misc. equipment	2,190
Normal gross	62,000
Maximum take-off (smooth water)	66,000

(SECRET)

FUEL

Normal internal	19,000 lb 3,170 U.S. gal 12,000 liter
Auxiliary (droppable)	4,700 lb 780 U.S. gal 3,000 liter 106 cu ft
Total	23,700 lb 3,950 U.S. gal 15,000 liter

(CONFIDENTIAL)

POWER PLANT

No. & Model	(2) X Ash-73
Type	Air-cooled radial
No. cylinders	18, double row
Supercharger (centrifugal, 1 stage)	2 speed
Weight (dry)	2250 lb
Compression ratio	7.0
Propeller	
Type	Tractor
No. of blades	4
Diameter	16.7 ft
Assembly weight	900 lb
Gear ratio	.37

(CONFIDENTIAL)

ENGINE RATINGS

	BHP	RPM	ALT(ft)
Take-off	1975	2700	SL
Normal	1650	2600	SL
Normal (1st speed)	1760	2600	4,000
Normal (2nd speed)	1550	2600	15,000
Maximum economical cruise	670	2000	SL

(CONFIDENTIAL)

BOMBS/FREIGHT

Two internal bomb bays, one in aft portion of each engine nacelle, providing 7x3x4 ft space. Four external underwing bomb racks, two just outboard of each nacelle. Maximum droppable stores capability of 8800 lbs may be comprised of various combinations of: MIAB mines, M-12 mines, sonobuoys, depth charges, FAB-100 GP bombs, BRAB-220 AP bombs, SAB-34 flares, SA-B-15 flares, and SAB-25 flares. In addition to the above items, but within the 8000 lb max capacity, the external racks are capable of carrying AMD-1 mines, AMD-2 mines, AMG-1 miner, Type 45-36 AV torpedoes and RAT-52 torpedoes. Roweight estimated to be Norden-type optical, installed in fuselage nose station. Auxiliary fuel tanks can probably be carried at either the external or internal stations in lieu of armament. (SECRET)

GENERAL INFORMATION

MADGE/Be-6 had been previously designated by the intelligence community as the Type 34. It is the latest flying boat known to be operational in the Soviet Navy.

There is no visible evidence of a periscopic sextant that the Soviets use for celestial navigation. The small protuberance on the topside of the fuselage just forward of the wing leading edge is more compatible by size and shape with a tracking head for their automatic astrocompass. Celestial observation could be accomplished through either the gun sighting blister or the flush windows in the top of the crew compartment (just aft of the co-pilot station). However, due to the window arrangement in the nose, it is estimated that the navigator/bombardier station is located there and that celestial observation from the other locations would be inconvenient.

Crew is considered to be basically five men: pilot, co-pilot, navigator, radio operator, and mechanic. In combat action the navigator would act as bombardier and nose gunner, radio operator could handle the dorsal turret, and the mechanic could double as tail gunner. For normal long-range flights, though, it has been reported that an eight-man crew is carried so that the men can rest in shifts.

Just inboard of each wing tip is a vertically-flattened protuberance extending forward of the wing leading edge about a foot and a half. They appear to be aerodynamic in purpose, possibly as an aid for controlling wing-tip airflow, but may be used in a secondary purpose such as dual instrumentation heads or VHF homing antennae.

A water-rudder is located ventrally just forward of the stabilizer's leading edge.

A secondary IFF antenna serves as an insurance factor in case of water damage to the primary IFF antenna, and/or to assure interrogation capability while the aircraft is water-borne. The Soviets have been known to install dual antennae for switch-over capability of other systems, such as the hand-rail and long-wire antennae for HF liaison radio on transport aircraft.

No unusual antennae or radomes, such as utilized for electronics reconnaissance, are evident but it is entirely possible that MADGE could be outfitted for such a role.

The design is accredited to a specialist in seaplanes, G. M. Beriev. His previous designs are: (1) KOR-1, a light single engine, single float recon biplane designed prior to World War II; (2) MDR-2, a long-range twin-engine scout accepted in 1937; (3) KOR-2, a power improvement of KOR-1 in 1940; (4) MOTE/Be-2, formerly MDR-2, a short-range recon monoplane with a single pusher propeller, introduced about 1940; (5) MUG/Be-4, formerly MDR-6, a long-range recon twin-engined monoplane about one-third the weight of MADGE, introduced about 1943; and (6) MOLE, previously designated Type 33, a tractor-prop version of MOTE was shown at the 1951 Tushino show. (CONFIDENTIAL)

*Remote optical fire-control station at sighting blister similar to BADGER upper forward station. Single nose gun turret (20 sec fire). Optical fire control pro- ...t in fuselage nose station. Fixed sight in cockpit for ...f nose gun and rockets. (SECRET)

ELECTRONICS

Indicated by photography/verbal reports: VHF communications mast antenna on topside of fuselage nose.
Compass sense antenna wire extending from mast above and behind pilot compartment to another topside mast near wing trailing edge.
IFF antenna extending downward from center of hull, with secondary IFF antenna just ahead of windshield).
LF/MF/HF communications trailing wire antenna extends about 25-30 ft and originates at small hump on underside of fuselage tail just forward of tail gunners compartment.
Magnetic detector or surface search radar antenna housed in retractable radome on underside of afterbody. (CONFIDENTIAL)

GUNS

(Five) 23 mm cannon (NR type), cyclic rate 800 rpm, muzzle velocity 2250 fps as follows: Twin-gun tail turret (30-40 sec fire) appears identical to that on BEAGLE. Remote-optical fire-control sighting station adjacent to turret. No range-only radar indicated, although installation not a difficult space or weight problem. Twin-gun dorsal turret (30 sec fire) appears similar to upper forward deck turrets on BISON and BADGER. *Continued under General Information.

ROCKETS

Air-to-ground rockets cannot be used at 4 underwing bomb racks due to interference on firing with propellers. Rockets believed to be needed for ASW mission; RBR-132 and RBS-82 AP air/ground rockets could be installed outboard of propeller sweep to satisfy this requirement. (SECRET)

50X1-HUM

AIRCRAFT PERFORMANCE

CONDITIONS		Rescue Mission	Patrol Mission	Reconnaissance Mission	Target Mission
TAKE-OFF WEIGHT	(lb)	54,200	62,000	66,000	66,000
Fuel at 6.0 lb/gal	(lb)	19,000	23,700	23,700	19,000
Payload (outbound)	(lb)	0	0	0	8,800
Payload (inbound)	(lb)	7,750	0	0	0
Wing loading	(lb/sq ft)	38	44	47	47
Stall speed (power off)	(kts)	79	85	87	87
Rate of climb at SL (max power)	(fpm)	1,300	1,000	900	900
Time: SL to 10,000 ft	(min)	10.5	14.6	17.7	17.7
Time: SL to 20,000 ft	(min)	30.4	33.4	48.0	48.0
Service ceiling (100 fpm)	(ft)	22,500	19,200	17,600	17,600
COMBAT RANGE	(NM)	---	3,200	2,950	2,100
COMBAT RADIUS	(NM)	1,250	1,600	1,450	1,150
Average cruise speed	(kts)	130	130	130	130
Cruising altitude	(ft)	5,000	5,000	5,000	5,000
Total mission time	(hr)	19.2	24.5	22.5	17.9
FIRST LANDING WEIGHT	(lb)	45,200	---	---	---
COMBAT WEIGHT	(lb)	45,200	49,200	53,000	54,600
Combat altitude	(ft)	5,000	5,000	5,000	1,500
Combat speed	(kts)	195	190	190	195
Combat climb	(fpm)	1,350	1,150	1,000	950
Combat ceiling (500 fpm)	(ft)	21,600	19,500	17,600	16,800
Service ceiling (100 fpm)	(ft)	26,300	24,600	23,000	22,300
Rate of climb at SL (max power)	(fpm)	1,750	1,550	1,350	1,300
Maximum speed (1,000 ft)	(kts)	195	195	195	195
LANDING WEIGHT	(lb)	44,200	38,900	43,700	38,700

NOTES

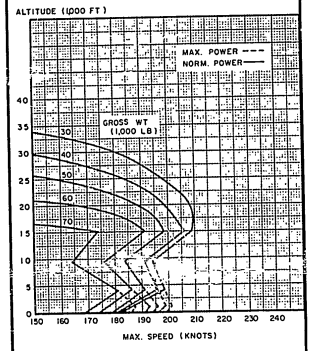
Missions shown above were chosen to bracket MADGE's capability, as:
Rescue - Take-off at light weight with crew of five (5), full internal fuel, and rescue equipment equivalent to ammunition weight. Weight off-loaded from normal gross weight considered as maximum return payload, space permitting.
Patrol - Take-off at normal gross weight, no payload but with auxiliary fuel. Profile similar to mine-layer mission except no descent to sea level and no drop.
Reconnaissance - Take-off at maximum gross weight, no payload but with auxiliary fuel and approximately 7000 lbs of reconnaissance equipment. No evasion and escape.
Target - Take-off at maximum gross weight with drop armament and full internal fuel. Profile same as mine-layer mission except cruise at 1500 feet. (CONFIDENTIAL)

50X1-HUM

MADGE/B-.6

July 1959

SPEED



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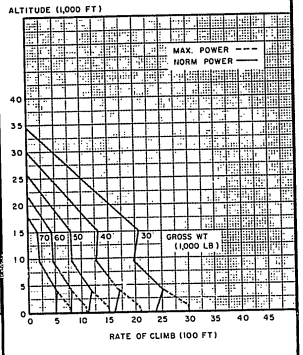

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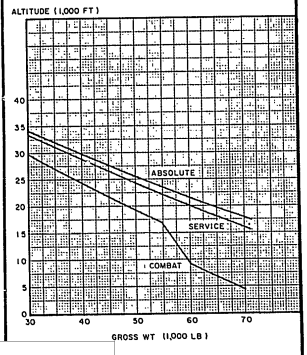
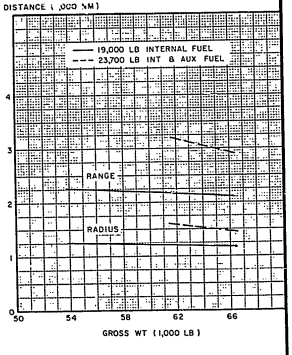


RANGE



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