

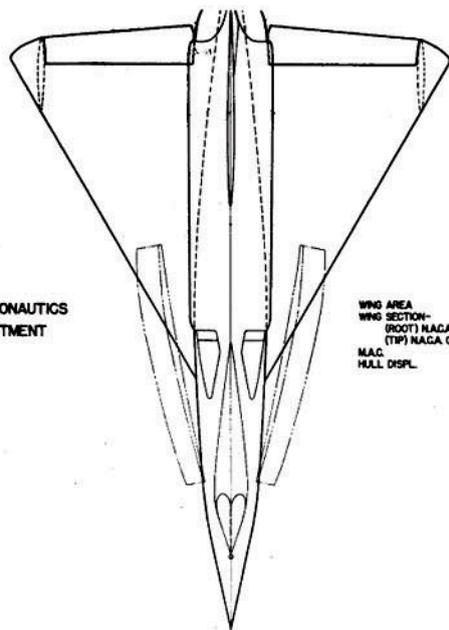
# STANDARD AIRCRAFT CHARACTERISTICS

Y2-2

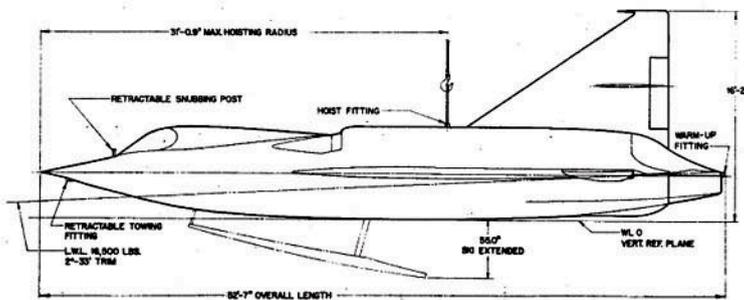
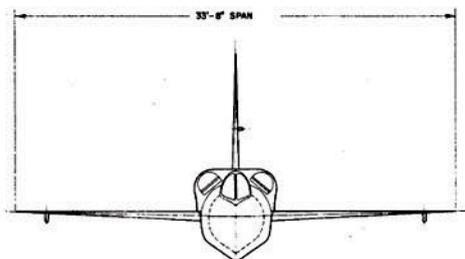
CONVAIR  
XF2Y

# EXPERIMENTAL

BUREAU OF AERONAUTICS  
NAVY DEPARTMENT



WING AREA 563 SQ. FT.  
WING SECTION-  
(ROOT) NACA 000289-65 (MOD)  
(TIP) NACA 0004-65 (MOD)  
M.A.C. 27'-4 1/2"  
MAX. DISPL. 70,700 LBS.



DESCRIPTIVE ARRANGEMENT

**MISSION AND DESCRIPTION**

The Y2-2 is a supersonic water-based inhabited research airplane for hydrodynamic research and development.

Lateral stability on the water is provided by watertight wings at low speeds, and by the skis at high speeds. Operation is possible in waves up to 5 feet high.

Flotation is supplied by the hull, at rest and at low speeds. As the airplane accelerates in the take-off run, the hull, except for the stern, is lifted clear of the water by the hydro-skis. In the latter part of the run, hydrodynamic lift is provided by the hydro-skis and the stern of the hull. This arrangement brings the delta wing to the proper attitude for take-off. In flight the hydro-skis are fully retracted.

No flaps are provided. Control is by elevons and rudder, with dual power boost. A water rudder is provided for maneuvering at low speeds on the water. It is used in flight as a speed brake and is linked to the ailerons to automatically coordinate banked turns.

Cockpit Mock-Up -- November 1950

**DIMENSIONS**

WING AREA.....563 sq. ft.  
SPAN.....33' - 8"  
LENGTH.....52' - 7"  
HEIGHT.....16' - 2"  
TREAD AT SKI T.E....11' - 10"  
M.A.C.....21' - 5"

**WEIGHTS**

Loadings	Lbs.	L.F.
EMPTY.....	12,652.....	
RESEARCH.....	16,527.....	6.0
MAX.T.O.....	16,527.....	6.0
MAX.LAND.....	16,527.....	

All weights are estimated.

**FUEL AND OIL**

Gal.	No. Tanks	Location
500	1	Fuselage

FUEL GRADE.....JP-3  
FUEL SPEC...MIL-F-5624  
(See NOTES)

**OIL**

CAPACITY (Gals.).....6.5  
GRADE.....1010  
SPEC.....MIL-O-5081

**ELECTRONICS**

UHF TRANSCIVER.....AN/ARC-27  
VISUAL OMNI-RANGE  
RECEIVER.....AN/ARN-19

**POWER PLANT**

NO. & MODEL.....(2) XJ46-WE-2  
MFR.....Westinghouse  
TYPE....12 Stage Axial Compr.  
2 Stage Turbine  
ENG. LENGTH.....191.7"  
ENG. DIAMETER.....29"

**RATINGS**

Lbs. @ Rpm @ Alt.

MIL.  
A. B. 6,100 10,100 S.S.L.  
MIL. 4,080 10,100 S.S.L.  
NORMAL 3,670 10,100 S.S.L.  
SPEC. NO. WAGT-X24C10-2G

**INSTRUMENTATION**

Alternate instrumentations are available to measure:

- Flight and water handling characteristics.
- Water loads and pressure determination.
- Flight pressure distribution determination.
- Structural temperature survey.

For these measurements, 454 pounds of instrumentation are carried, including thrust-meter; accelerometers; flow-meter; wing, fin, hull and ski pressure pick-ups; control position indicators, etc.



PERFORMANCE SUMMARY

LOADING CONDITION		(1) RESEARCH Military Power		
TAKE-OFF WEIGHT	lbs.	16,527		
Fuel	lbs.	3,000		
Bombs	lbs.	--		
Wing/Power Loading (A)	lbs/sq.ft; lbs/bhp.	29.6/-		
Stall Speed--Power off	kn.	112.8		
Stall Speed--Power off - No Fuel	kn.	102.0		
Stall Speed--Power on	kn.	108.5		
Maximum Speed/Alt (B)	kn/ft.	604/8,000		
Take-off Distance, deck -- calm	ft.	--		
Take-off Time	secs.	16		
Take-off Distance, Airport	ft.	--		
Rate of climb -- sea level (B)	ft/min.	8,900		
Service Ceiling (B)	ft.	50,200		
Time-to-climb 20,000 ft. (B)	min.	2.7		
Time-to-climb 40,000 ft. (B)	min.	7.7		
Combat Range/V av 45,000 ft. n.mi/kn.		446/450		
Combat Radius/V av	ft. n.mi/kn.	--		
Total Endurance	min.	28.2 (See problem under NOTES)		
LOADING CONDITION		(2) RESEARCH	(3) RESEARCH	
GROSS WEIGHT	lbs.	15,327	15,327	
Engine power		Mil. + A.B.	Military	
Fuel	lbs.	1,800	1,800	
Bombs/Tanks		--	--	
Max. speed at sea level	kn.	683	597	
Max. speed/Alt	kn/ft.	863/35,000	604/8,000	
Combat speed/Alt	kn/ft.	--	--	
Rate of climb SL	ft/min.	32,700	9,890	
Ceiling for 500 fpm R/C	ft.	54,800	49,250	
Time-to-climb/Alt.	min/ft.	1.7/35,000	5.6/35,000	

NOTES

- (A) BHP at Maximum Critical Altitude
- (B) Normal BHP
- (C) Military Power plus Afterburner

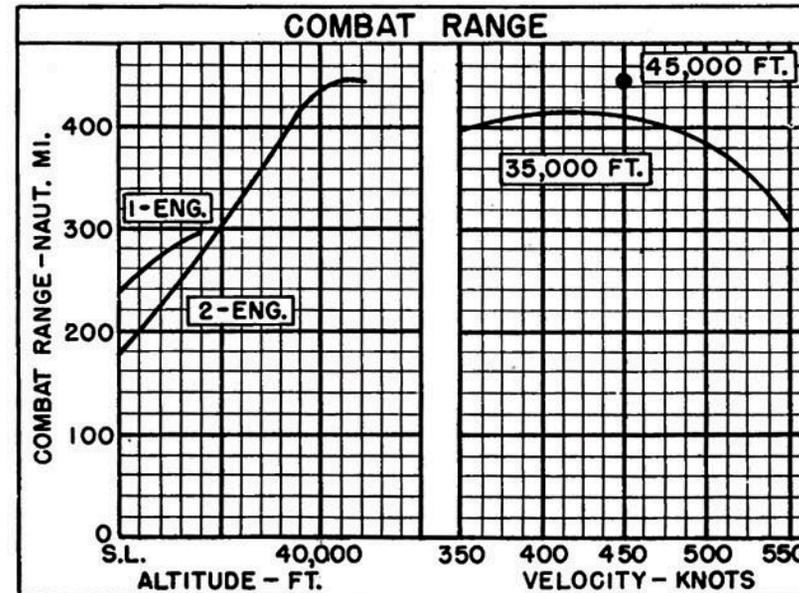
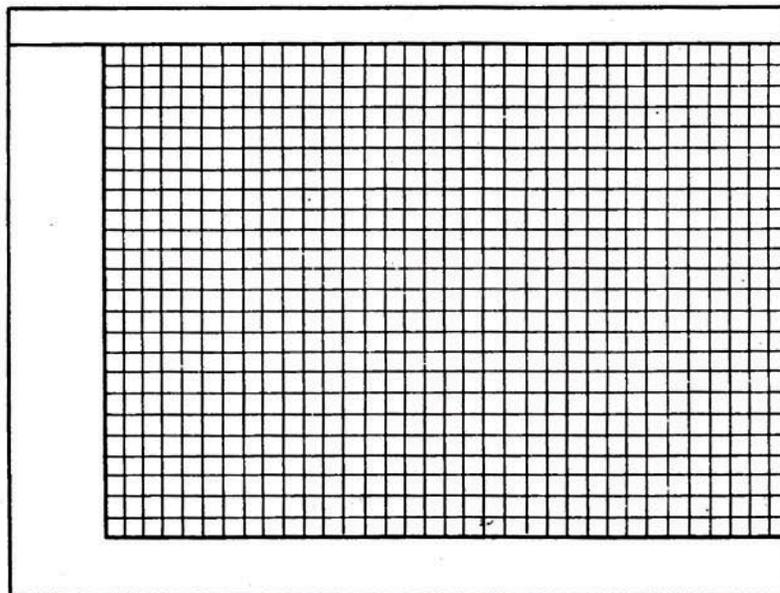
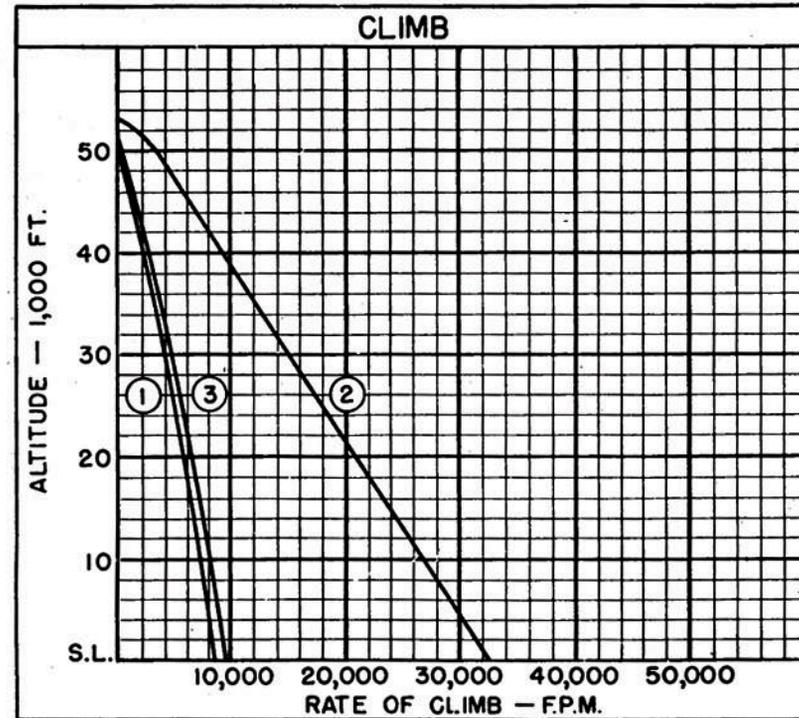
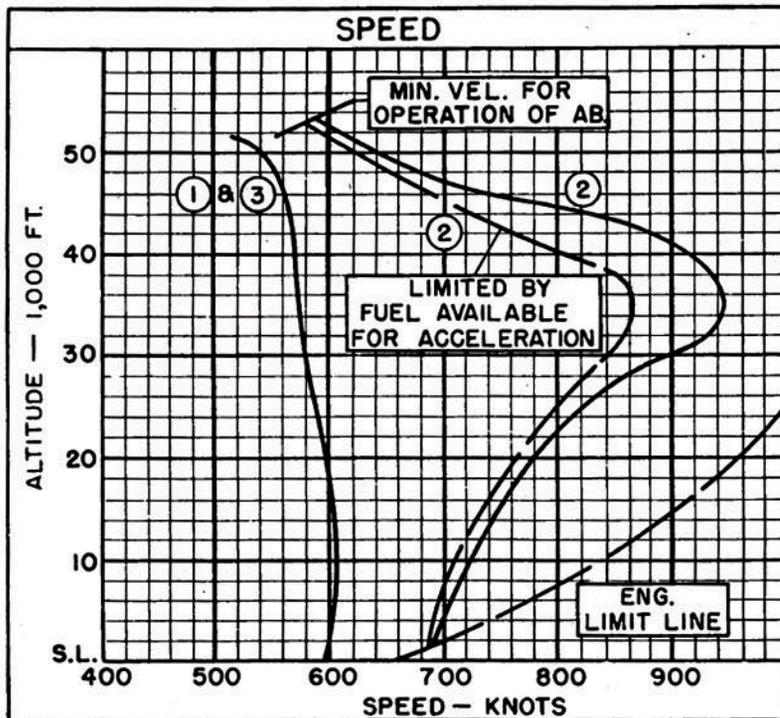
DECLASSIFIED

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 The X46-WE-2 is designed for JP-3 fuel. This chart is calculated on the assumption that gasoline may be used with no performance change at equal weights of fuel.  
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Performance is based on calculations. Range and endurance are based on engine manufacturer's specification fuel consumption data increased by 5%.  
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Maximum speeds are limited by fuel available for acceleration. Speeds are shown for actual fuel.  
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Standard Aircraft Characteristics NAVAER 13350 (REV. 1-49)



Standard Aircraft Characteristics NAVAER 1335E (REV. 1-49)

○ LOADING CONDITION COLUMN NUMBER

# NOTES

## ENDURANCE PROBLEM

<u>WARM-UP</u> 1/2 min. at mili- tary power	<u>TAKE-OFF</u> 1/4 min. at military power + afterburner	<u>ACCELERATE TO            SPEED FOR BEST            CLIMB AT SEA            LEVEL</u> -- Mili- tary power + afterburner	<u>CLIMB TO            35,000 FT.</u> at speed for best climb. Military power + afterburner	<u>ACCELERATE TO            AND CRUISE</u> at max. velocity at 35,000 ft. Military power + afterburner	<u>DESCEND</u> to sea level min. idle fuel consumption	<u>RESERVE</u> 5 min. at military power
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TOTAL ENDURANCE IS THE SUMMATION OF ALL OF THE ABOVE ITEMS