STANDARD AIRCRAFT CHARACTERISTICS

XZSG-4

GOODYEAR

1 APRIL 1954
BUREAU OF AERONAUTICS
NAVY DEPARTMENT

ENVELOPE VOLUME: 527,000 CUBIC FT
FINENESS RATIO: 4.24
BALLONET VOLUME: 128,000 CUBIC FT
NUMBER OF BALLONETS: 2
EMPENNAGE (TOTAL): 1996 SQ FT
PROPELLER: CURTISS ELECTRIC 3 BLADES
BLADE DESIGN NUMBER: 634-3C2-6

* TIRE INFLATION AND EXTENSION OF OLEO STRUT ADDS 1.85 FT

3.37' PROPELLER GROUND CLEARANCE
10' TIRE AND OLEO DEFLATED

SCALE

U.S. NAVY

DESCRIPTION ARRANGEMENT

XZ SG - 4

CONFIDENTIAL

1 APRIL 1954
POWER PLANT

NO. & MODEL... (2) R-13NO-AN146
MFR. Pratt & Whitney
SUPERCH. Impeller
GEAR BOX RATIO... 0.687
PROP. MFR. Curtiss
PROP. DESIGN NO. ON-32-32
NO. BLADES... 3
PROP. DIA. 11 ft. 6 in.

RATINGS

RPM @ RPM @ ALT
T.O. 600 - 2250 0-3500 ft
NORMAL 550 - 2200 0-5000 ft
SPECF. NO. AN-1051 Rev. (1) App. (b)

MISSION AND DESCRIPTION

The basic mission of the model XZSG-4 airship is anti-submarine warfare patrol in collaboration with other ASW air and surface craft.

A conventional empennage configuration is incorporated in the airship's design. The rudders and elevators are controlled by a conventional wheel and control column system. The two engines are mounted in the outriggers and provisions have been made for servicing in flight. Equipment installed for in-flight refueling from surface vessels allows for extended patrols of a week's duration or longer.

Electronic installations include sonar, radar MAD gear and sonobuoy for detecting and tracking enemy submarines. Armament installations include hedgehogs, torpedoes and depth bombs for destroying enemy submarines.

DEVELOPMENT

Mock up - September 1951
First Flight - November 1953

DIMENSIONS

GAS VOLUME... 527,000 cu ft
BALLOONETS (2) 121,800 cu ft
LENGTH... 266" - 5"
DIAMETER... 81" - 9"
WIDTH... 69" - 4"
MAX DIA... 62" - 1"
PROP GROUND CLEARANCE... 3" - 4"

* Tire and also strut fully deflated.

WEIGHTS

LOADING LBS.
Empty... 28,885 0
Static Lift... 31,594 0
Static & Maximum Dynamic Lift... 35,194 0
* 97 percent inflated at 0.065 lb. per cu. ft.

FUEL AND OIL

GAL NO. TANKS LOCATION
655 2 CAR-fixed
100 1 CAR-trip
300 2 OUTSIDE
185 1 BOMB BAY

FUEL GRADE... 91/96
FUEL SPEC. MIL-F-5572

OIL

46 2 CAR-fixed

OIL GRADE... 11.20
OIL SPEC. MIL-F-6082A

ORDNANCE

NO. TYP
16 Hedgehogs TK41-0
2 Torpedoes MK41-0
4 Depth Charges
## PERFORMANCE SUMMARY

<table>
<thead>
<tr>
<th>LOADING CONDITION</th>
<th>(1) SONAR PATROL</th>
<th>(2) SONAR PATROL</th>
<th>(3) FERRY</th>
<th>(4) ALTITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE-OFF WEIGHT</td>
<td>31.00 lbs.</td>
<td>35.00 lbs.</td>
<td>35.00 lbs.</td>
<td>33.400 lbs.</td>
</tr>
<tr>
<td>Oil</td>
<td>200</td>
<td>400</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>Fuel</td>
<td>2.700 lbs.</td>
<td>5.700 lbs.</td>
<td>7.400</td>
<td>5.200</td>
</tr>
<tr>
<td>Useful Load</td>
<td>6.900 lbs.</td>
<td>10.400 lbs.</td>
<td>10.400</td>
<td>8.600</td>
</tr>
<tr>
<td>Static Heaviness</td>
<td>0</td>
<td>3.500 lbs.</td>
<td>3.500</td>
<td>3.500</td>
</tr>
<tr>
<td>Max. Speed/Alt.</td>
<td>67/566 ft./m</td>
<td>66/566 ft./m</td>
<td>66/566 ft.</td>
<td>66/3000 ft.</td>
</tr>
<tr>
<td>Pressure Height</td>
<td>1,000 ft.</td>
<td>1,000 ft.</td>
<td>1,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Time to Pressure Height</td>
<td>1.4 min.</td>
<td>1.4 min.</td>
<td>1.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Take-Off Run, Calm</td>
<td>375 ft.</td>
<td>1,840 ft.</td>
<td>1,840</td>
<td>1,840</td>
</tr>
<tr>
<td>Patrol Range/Yr</td>
<td>875/480 n.m.</td>
<td>1,530/480 n.m.</td>
<td>2,390/480</td>
<td>1,700/480</td>
</tr>
<tr>
<td>Patrol Radius/Yr</td>
<td>350/480 n.m.</td>
<td>480/480 n.m.</td>
<td>595/480</td>
<td>680/480</td>
</tr>
<tr>
<td>Endurance/Yr</td>
<td>22/480 hr.</td>
<td>38/480 hr.</td>
<td>60/480</td>
<td>43/480</td>
</tr>
</tbody>
</table>

Performance is based on calculations.

Maximum speed restricted to 67 knots at S.L. This coincides with an engine power of 450 Bhp/engine at 2100 RPM.

Pressure height is defined as the maximum altitude to which the airship can rise in the standard atmosphere in any given loading condition without releasing helium.

Performance is based on inflation with helium lifting 462 lb/cu ft at sea level. Gas fullness at sea level is 97.1% for 1,000 ft pressure height, and 91.5% for 3,000 ft.

Take-off run is based on sod runway, and includes distance required to clear a 50 ft. obstacle.

Range, radius, and endurance are based on engine specification fuel consumption for single engine operation increased by five percent.

Radius is 40% of range.

Range in heavy or light flight includes allowance for variation of heaviness or lightness during flight.

The ferry loading condition is for maximum take-off heaviness with full crew and provisions, but without armament, sonar, or monobuoys.

The altitude loading condition is for maximum take-off heaviness with full crew, armament, and monobuoys, but without sonar.
NOTES

All figures for lift of the airship are based upon inflation with helium lifting .062 lb./cu. ft. at sea level in the standard N.A.C.A. atmosphere.

The static lift in flight is independent of altitude and temperature so long as helium is not valved and there is no superheat (i.e., the air and gas are at equal temperatures).

The gross and useful lifts of the fully inflated airship diminish with altitude in the standard atmosphere at the rate of approximately 3 percent of the gross lift per 1,000 ft.

In the absence of superheat the lift of the fully inflated airship at a given altitude varies inversely as the air temperature at the rate of approximately 1 percent of the gross lift per 50°F.

In all conditions of inflation, so long as gas is not valved, the lift varies directly with the superheat at approximately 1 percent per 50°F. The lift of the fully inflated airship is not, however, increased by rising gas temperature unless the altitude is reduced as necessary to avoid loss of gas by valving.

RANGE, RADIUS, OR ENDURANCE

WARM-UP, TAKE-OFF, AND CLimb: 10 minutes fuel allowance at normal rated power at S.L.

CRUISE: At constant altitude for best range or maximum endurance.

RESERVE: 10% of initial fuel load.