

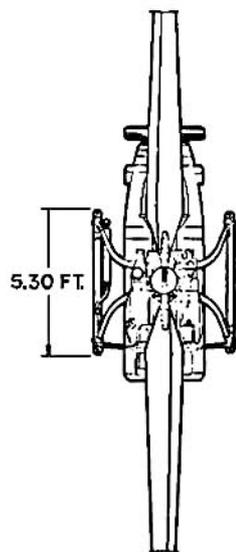
STANDARD AIRCRAFT CHARACTERISTICS

YQH-50E

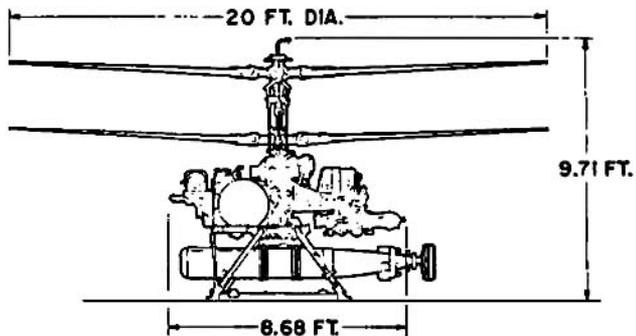
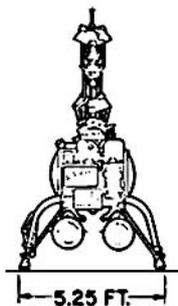
GYRODYNE COMPANY OF AMERICA, INC.
ST. JAMES, LONG ISLAND, NEW YORK

SERVICE TEST

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT



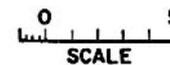
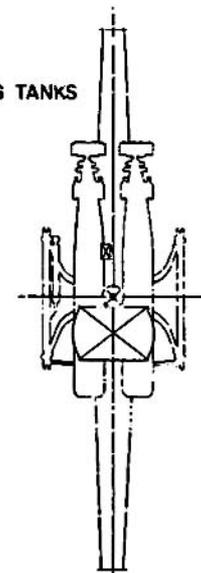
ROTOR DATA
 DISC AREA - 314.2 SQ. FT.
 BLADE AREA 32.5 SQ. FT.
 BLADE SECTION NASA 0017 TO 0012
 ROTOR GEAR RATIO - 9.836 TO 1



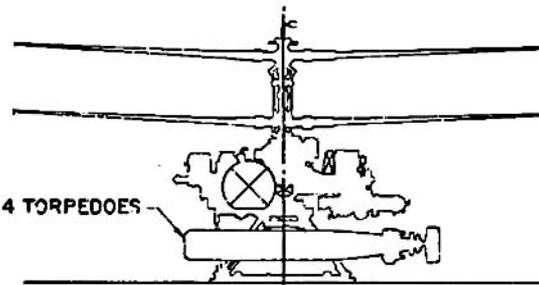
DESCRIPTIVE ARRANGEMENT

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT

 **NON SELF-SEALING TANKS**



52.0 GALS. (FULL FUEL CAPACITY)
 36.3 GALS. (OPERATIONAL FUEL CAPACITY)
 1.5 GALS. (OIL)
 1.6 GALS. (OIL)



2-MK44 TORPEDOES

ARMAMENT AND TANKAGE

POWER PLANT	MISSION AND DESCRIPTION	WEIGHTS												
<p>ENGINE Allison Model 250-C19A</p> <p>MFR. Allison Division, General Motors Corp.</p> <p>TYPE Turboshaft</p> <p style="text-align: center;">RATINGS</p> <table border="0"> <thead> <tr> <th></th> <th><u>BHP</u></th> <th><u>RPM</u></th> <th><u>ALT</u></th> </tr> </thead> <tbody> <tr> <td>MILITARY</td> <td>317</td> <td>6000</td> <td>SSL</td> </tr> <tr> <td>NORMAL</td> <td>270</td> <td>6000</td> <td>SSL</td> </tr> </tbody> </table> <p>Model Spec. No. C731-C, Appen. F Dated: 1 Nov. 1968</p>		<u>BHP</u>	<u>RPM</u>	<u>ALT</u>	MILITARY	317	6000	SSL	NORMAL	270	6000	SSL	<p>The Model YQH-50E Vehicle is a remotely controlled rotary-wing ASW weapon carrier designed to deliver alternate weapon loads of 866 lb, 529 lb or 700 lb.</p> <p>The vehicle incorporates two (2) two-bladed counter-rotating coaxial rotors of the semi-rigid (see-saw) type. The blades are constructed of laminated fiberglass cloth tapered in planform and thickness with 12° negative twist. The vehicle is completely controllable through the rotors. Rotor controls are operated by the automatic stabilization and remote control equipment.</p> <p>Control in pitch and roll is obtained through conventional cyclic pitch control. Control in yaw is achieved by means of rotor blade tip air (drag) brakes, which provide positive directional control in all flight regimes.</p> <p>The Model YQH-50E Vehicle is similar to the Model QH-50D Vehicle except that the power plant is the 317 hp T63-A-5A (250-C19A) gas turbine engine manufactured by the Allison Division of General Motors Corp. The engine is located aft of the rotor mast and the avionic equipment is mounted fwd of the rotor mast.</p> <p style="text-align: center;">DEVELOPMENT</p> <p>The first flight of the Model YQH-50E Vehicle occurred in September 1969.</p>	<p style="text-align: center;"><u>LOADINGS</u> <u>LB.</u></p> <p>EMPTY 993.3</p> <p>NORMAL GROSS WEIGHT (2 MK44) 2184.3</p> <p>OVERLOAD GROSS WEIGHT (2 MK44) 2288.3</p>
	<u>BHP</u>	<u>RPM</u>	<u>ALT</u>											
MILITARY	317	6000	SSL											
NORMAL	270	6000	SSL											
ELECTRONICS		FUEL AND OIL												
<p style="text-align: center;">One (1) Each</p> <p>AN/ARW-78 Radio Receiving Set</p> <p>AN/ASW-20 Automatic Flight Control Set</p>		<table border="0"> <thead> <tr> <th><u>NO. OF TANKS</u></th> <th><u>CAP. (GAL.)</u></th> <th><u>LOCATION</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>36.3 (operational)</td> <td>Fwd of Transmission</td> </tr> <tr> <td></td> <td>52.0 (full)</td> <td></td> </tr> </tbody> </table> <p>Specification MIL-J-5624F(2), Grade JP-4</p> <p style="text-align: center;">OIL</p> <p>CAPACITY 3.1 gal.</p> <p>SPEC MIL-L-23699</p>	<u>NO. OF TANKS</u>	<u>CAP. (GAL.)</u>	<u>LOCATION</u>	1	36.3 (operational)	Fwd of Transmission		52.0 (full)				
<u>NO. OF TANKS</u>	<u>CAP. (GAL.)</u>	<u>LOCATION</u>												
1	36.3 (operational)	Fwd of Transmission												
	52.0 (full)													
	DIMENSIONS	ORDNANCE												
	<table border="0"> <tbody> <tr> <td>DISC AREA</td> <td>314.2 sq. ft.</td> </tr> <tr> <td>BLADE AREA</td> <td>32.5 sq. ft.</td> </tr> <tr> <td>ROTOR DIAMETER</td> <td>20 ft. 0 in.</td> </tr> <tr> <td>LENGTH</td> <td>20 ft. 0 in.</td> </tr> <tr> <td>HEIGHT</td> <td>9 ft. 8.5 in.</td> </tr> <tr> <td>TREAD</td> <td>5 ft. 0 in.</td> </tr> </tbody> </table>	DISC AREA	314.2 sq. ft.	BLADE AREA	32.5 sq. ft.	ROTOR DIAMETER	20 ft. 0 in.	LENGTH	20 ft. 0 in.	HEIGHT	9 ft. 8.5 in.	TREAD	5 ft. 0 in.	<p><u>Weapons:</u> <u>Qty</u></p> <p>MK 44 Torpedo 2</p> <p style="text-align: center;">or</p> <p>MK 46 Torpedo 1</p> <p style="text-align: center;">or</p> <p>700 lb 1</p>
DISC AREA	314.2 sq. ft.													
BLADE AREA	32.5 sq. ft.													
ROTOR DIAMETER	20 ft. 0 in.													
LENGTH	20 ft. 0 in.													
HEIGHT	9 ft. 8.5 in.													
TREAD	5 ft. 0 in.													

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) ASW ATTACK Two (2) MK44 TORPEDOES	(2) ASW ATTACK One (1) MK46 TORPEDO	(3) ASW ATTACK One (1) 700 LB WEAPON	(4) ASW ATTACK Two (2) MK44 TORPEDOES	(5) ASW ATTACK Two (2) MK44 TORPEDOES	(6) ASW ATTACK One (1) MK46 TORPEDO	(7) ASW ATTACK One (1) 700 LB WEAPON
TAKE-OFF WEIGHT lb.	2184.3	1841.6	2006.3	2184.3	2288.3	1945.6	2110.3
Fuel (Usable) (A) lb.	244.0	244.0	244.0	244.0	348.0	348.0	348.0
Payload lb.	866.5	529.5	700.0	866.5	866.5	529.5	700.0
Disc loading lb./sq.ft.	6.95	5.86	6.39	6.95	7.29	6.23	6.71
Vertical rate of climb at S. L. (B) fpm.	1545	2480	2640	1545	1255	2200	1750
Absolute hovering ceiling (B) ft.	7850	13200	10650	7850	6250	11600	9000
Max. rate of climb at S. L. (B) fpm.	2085	2800	2420	2085	1900	2550	2210
Vert. rate of climb at S.L. -90° (B) fpm.	550	1640	1130	550	200	1320	790
Speed at S. L. (C) kn.	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Max. speed/altitude (C) kn./ft.	80.0/S.L.	80.0/S.L.	80.0/S.L.	80.0/S.L.	80.0/S.L.	80.0/S.L.	80.0/S.L.
Combat range (D) n.mi.	110.0	116.0	113.0	110.0	155.5	163.5	160.5
Average cruising speed kn.	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Cruising altitude ft.	S. L.	S. L.	S. L.	S. L.	S. L.	S. L.	S. L.
Combat radius (D)(E) n.mi.	40.1	43.9	42.1	-	-	-	-
Average cruising speed kn.	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Combat radius (F)	-	-	-	50.0	73.8	76.7	75.4

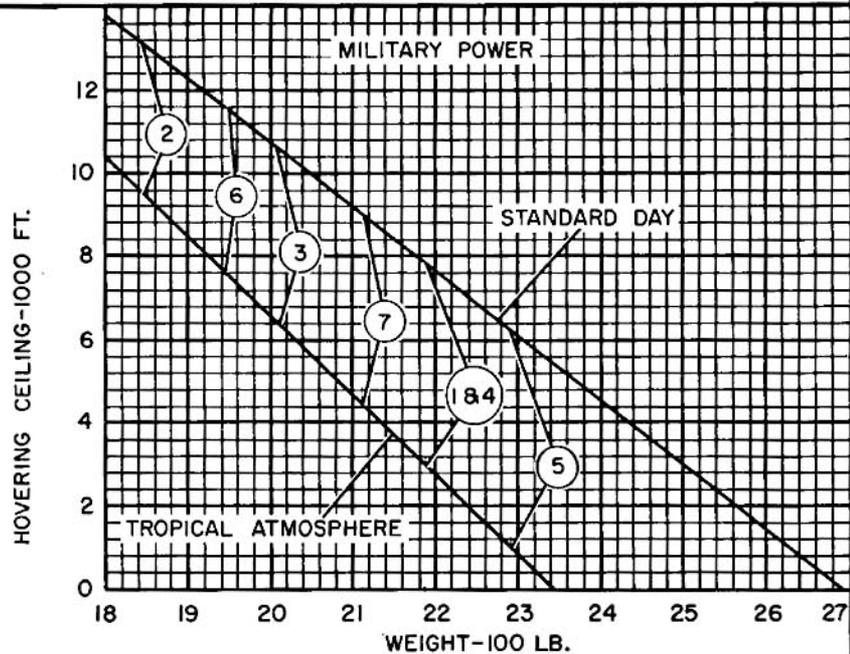
NOTES

- (A) Prototype YQH-50E will incorporate QH-50D 52-gal. fuel tank. However, in the highest payload configuration, with two (2) MK44 torpedoes, acceptable vertical performance can only be obtained when a maximum of 70% of this capacity is utilized, as shown in Loading Conditions (1) and (4).
- (B) Military Power, adjusted for estimated installation losses.
- (C) V_{max} is restricted to 80 knots.
- (D) Calculation of Combat Range and Combat Radius is based on engine specification fuel flow data increased by 5%.
- (E) Based on Detail Specification (SD-539-3-3) Combat Radius Mission.
- (F) Based on Optional Combat Radius Mission.

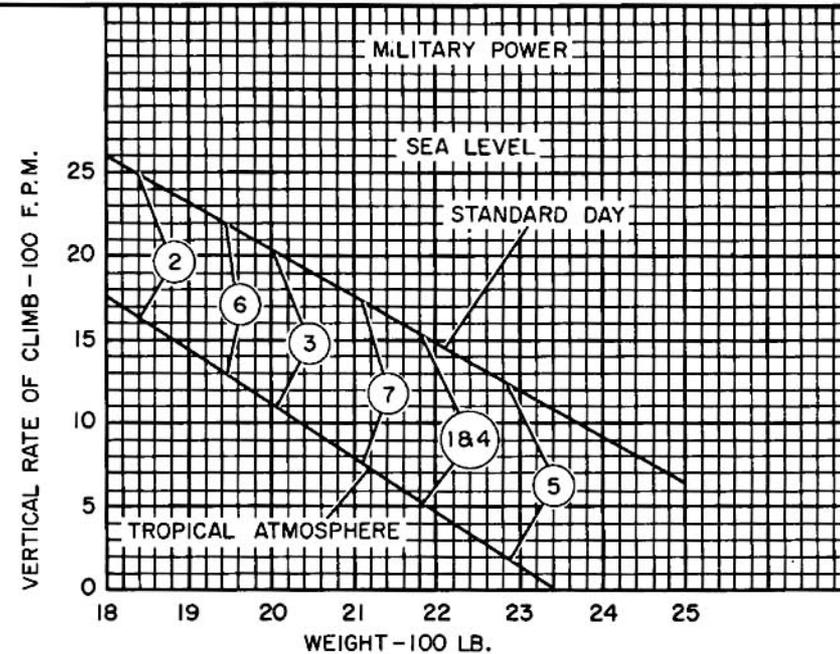
PERFORMANCE is determined from calculations based on power required test data obtained during Contractor's Flight Demonstration Program for the Model QH-50D with fiberglass rotor blades at NATC, Patuxent River, Md.

All performance is out of ground effect.

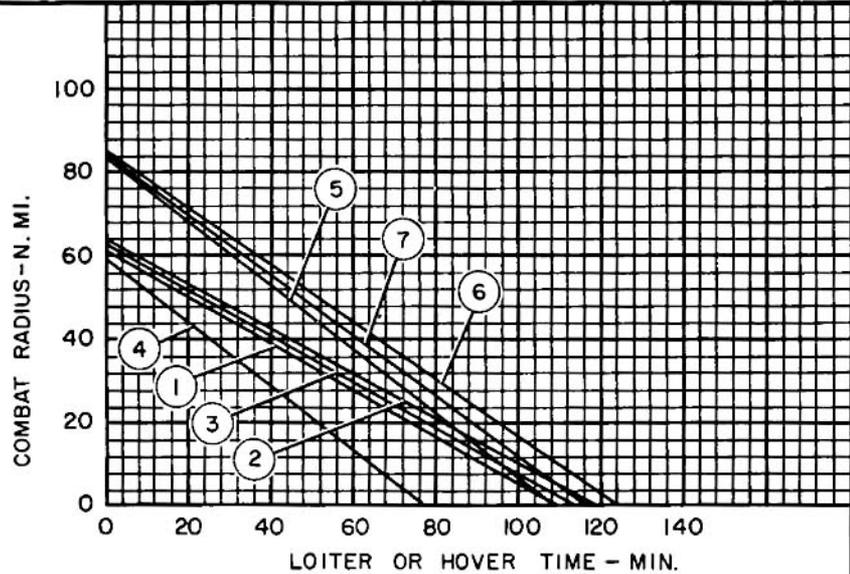
HOVERING CEILING



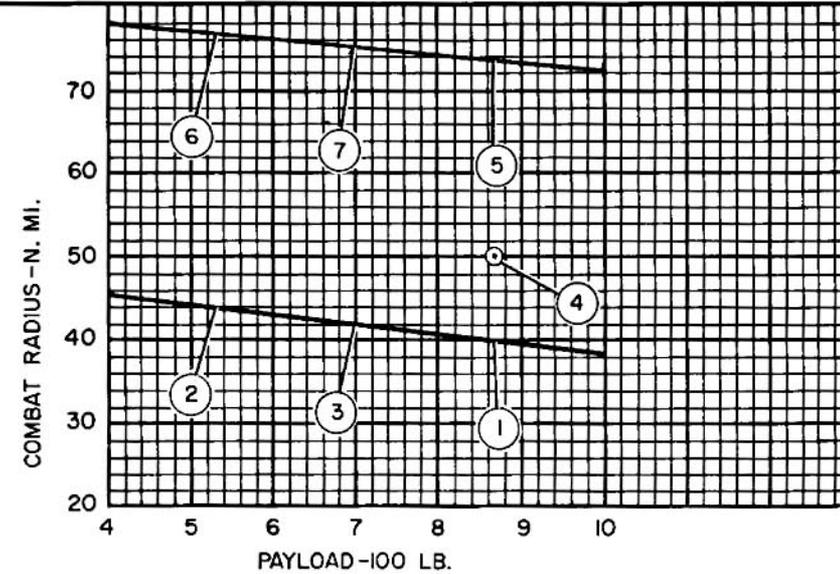
VERTICAL CLIMB



MISSION CAPABILITY



COMBAT RADIUS

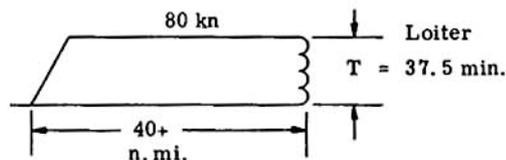


○ LOADING CONDITION COLUMN NUMBER

NOTES

DETAIL SPECIFICATION (SD 539-3-3)COMBAT RADIUS MISSION

- (a) Warm-up and take-off allowance, 0.5 minute at Normal Rated Power.
- (b) Cruise out at 80 knots at Sea Level.
- (c) Loiter over target at speed for maximum endurance for $T = 1.5 - \frac{2 \times 35}{V_{\max}}$
- (d) Cruise back at 80 knots at Sea Level retaining weapons.
- (e) Land.

MISSION

(As defined above.)

OPTIONALCOMBAT RADIUS MISSION

WARM-UP AND TAKE-OFF: 1/2 minute at Normal Rated Power.

CRUISE OUT: At V_{\max} at sea level.

HOVER: 12 minutes out of ground effect at sea level at objective.

DROP WEAPON: No fuel used, no distance gained.

CRUISE BACK: At V_{\max} at sea level.

RESERVE: 10 per cent of initial fuel load.

COMBAT RANGE MISSION

WARM-UP AND TAKE-OFF: 1/2 minute at Normal Rated Power.

CRUISE: At sea level at average cruising speed (speed for maximum range.)

RESERVE: 10 per cent of initial fuel load.



LOADING CONDITION COLUMN NUMBER