



STANDARD AIRCRAFT CHARACTERISTICS

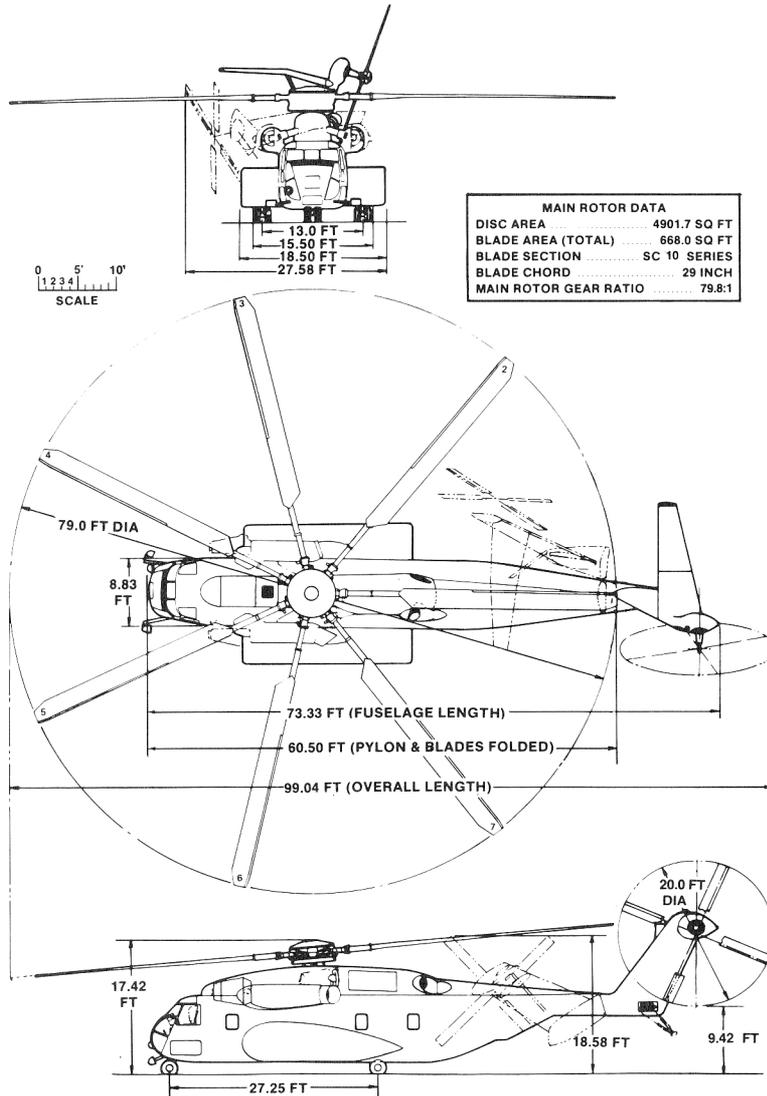
MH-53E PROTOTYPE SIKORSKY AIRCRAFT

NOTE:

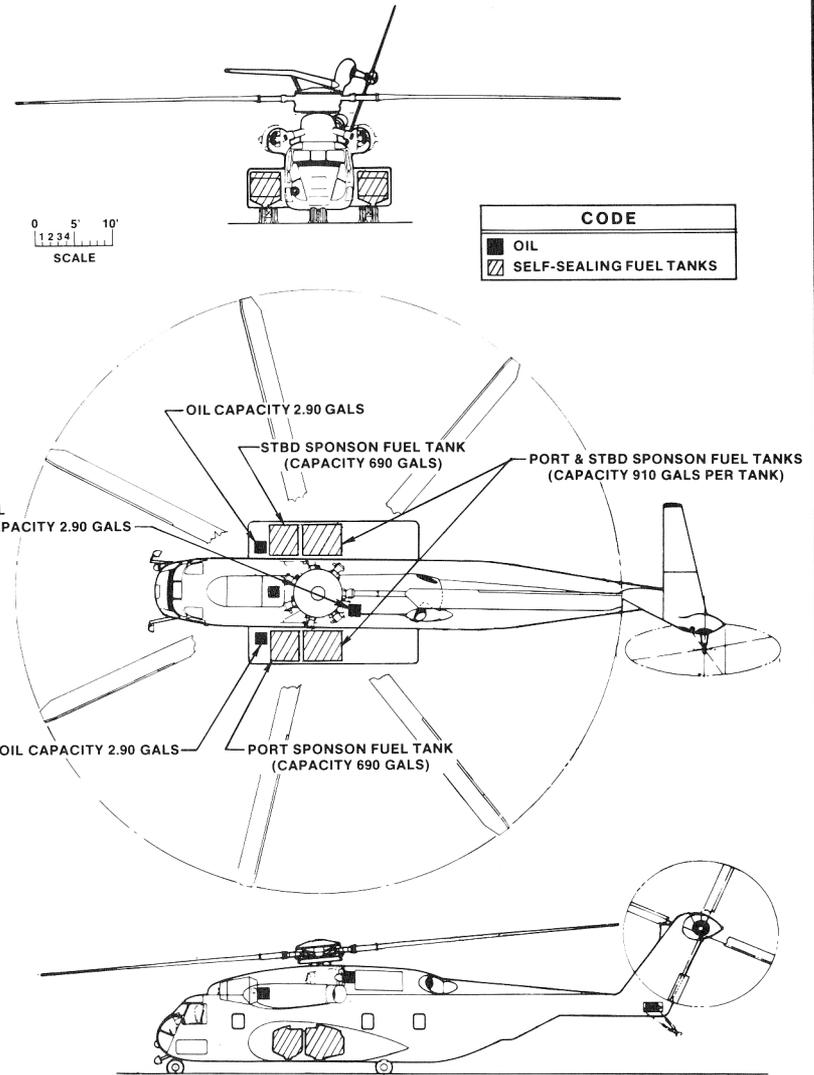
ALL INQUIRIES CONCERNING DATA
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TO NAVAIR, CODE 53012

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT

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DESCRIPTIVE ARRANGEMENT



ARMAMENT AND TANKAGE

POWER PLANT	MISSION AND DESCRIPTION	WEIGHTS																																																													
<p>No. and Model: (3) T64-GE-416 Manufacturer: General Electric Engine Spec. No.: E1190A (Apr. 1, 1973) Type: Axial Length: 78.8 Inches Diameter: 23.8 Inches Gear Ratio (Eng/Rotor): 79.8 to 1 See note on Performance Summary page for transmission ratings.</p> <p style="text-align: center;">RATINGS</p> <table border="1"> <thead> <tr> <th>S.L. STATIC</th> <th>SHP</th> <th>RPM</th> <th>MIN.</th> </tr> </thead> <tbody> <tr> <td>Maximum</td> <td>4380</td> <td>14280</td> <td>10</td> </tr> <tr> <td>Intermediate</td> <td>4145</td> <td>14280</td> <td>30</td> </tr> <tr> <td>Max. Contin.</td> <td>3696</td> <td>14280</td> <td>Contin.</td> </tr> </tbody> </table>	S.L. STATIC	SHP	RPM	MIN.	Maximum	4380	14280	10	Intermediate	4145	14280	30	Max. Contin.	3696	14280	Contin.	<p>The principal mission of the MH-53E is to conduct mine countermeasures independently or in conjunction with surface forces. As secondary missions, the aircraft can be equipped to perform high speed transport of passengers or internal/external cargo from ship-to-ship or ship-to-shore.</p> <p>The MH-53E is derived from the CH-53E transport helicopter currently in service. Features which distinguish the MH-53E are larger sponsons to accommodate increased fuel capacity, fixed towing gear, and external aft facing mirrors. The helicopter is equipped for main rotor blade and tail pylon folding, a hydraulically operated rear loading ramp door for wheeled vehicles and pallet loads, emergency water alighting capability, and rotor blade BIM^(R) to reduce blade maintenance and assure mission reliability. The three T64-GE-416 engines are equipped with Engine Air Particle Separators (EAPS). Air to air refueling probe is incorporated to provide the means of replenishing fuel supply for extended range.</p>	<table border="1"> <thead> <tr> <th>LOADING</th> <th>POUNDS</th> <th>L.F.</th> </tr> </thead> <tbody> <tr> <td>Empty</td> <td>36,147 (E)</td> <td></td> </tr> <tr> <td>Basic</td> <td>36,193</td> <td></td> </tr> <tr> <td>Design</td> <td>46,500</td> <td>3.0</td> </tr> <tr> <td>Combat (Basic Mission)</td> <td>53,331</td> <td>2.61</td> </tr> <tr> <td>Design Alt. (Internal Load)</td> <td>69,750</td> <td>2.20</td> </tr> <tr> <td>Design Alt. (External Load)</td> <td>73,500</td> <td>2.09</td> </tr> </tbody> </table> <p>(E) - Estimated</p>	LOADING	POUNDS	L.F.	Empty	36,147 (E)		Basic	36,193		Design	46,500	3.0	Combat (Basic Mission)	53,331	2.61	Design Alt. (Internal Load)	69,750	2.20	Design Alt. (External Load)	73,500	2.09																								
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PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		①	②	③	④	⑤
		CLEAN	BASIC	EXTERNAL CARGO	TROOP TRANSPORT	FERRY RANGE
TAKE-OFF WEIGHT	lb.	58703	62035	73500	69750	68792
Fuel internal/external (JP-5)	lb./lb.	21760/0	21760/0	5840/0	20132/0	29485/0
Payload (out/back)	lb.	0/0	0/0	30445/0	12375/0	0/0
Disc loading	lb./sq. ft.	11.98	12.65	14.99	14.23	14.03
Vertical rate of climb at S.L.	(a/b) fpm.	720/2220	0/1700	0/0	0/150	0/350
Absolute hovering ceiling (OGE)	(c) ft.	7900	6400	-	800	2000
Max. rate of climb at S.L.	(b) fpm.	2450	2715	1630	2140	2180
Service ceiling (100 fpm)	(d) ft.	15,900	14,400	7650	11,000	11,450
Speed at S.L.	(a,e,f) kn.	151	149	119	144.0	145
Max speed/altitude	(a,e,f) kn./ft.	151.5/2000	150/2000	119/0	144.0/0	145/0
O.E.I. Service ceiling	(g) ft.	10,550	9000	1600	5650	6050
Min. speed (O.E.I.) at S.L.	(g) kn.	21	30	50	44	43
Max. speed (O.E.I.) at S.L.	(g) kn.	138	136	100	126	128
Combat radius	n. mi.	378.6	12.5	50	267.3	---
Mission time	hrs.	5.7	4.73	0.96	3.53	---
Average cruising speed	kn.	134	N.A.	128	153	---
Cruising altitude	ft.	10,000	0	0	0	---
Range	n. mi.	763	-	92.9	577.8	951
Average cruising speed	kn.	134	-	120	136	134
Cruising altitude	ft.	10,000	-	0	0	10,000
Maximum endurance	(h) hrs.	7.5	-	0.99	6.09	9.07
Endurance speed	kn.	84	-	77	75	87
Endurance altitude	ft.	10,000	-	0	0	10,000

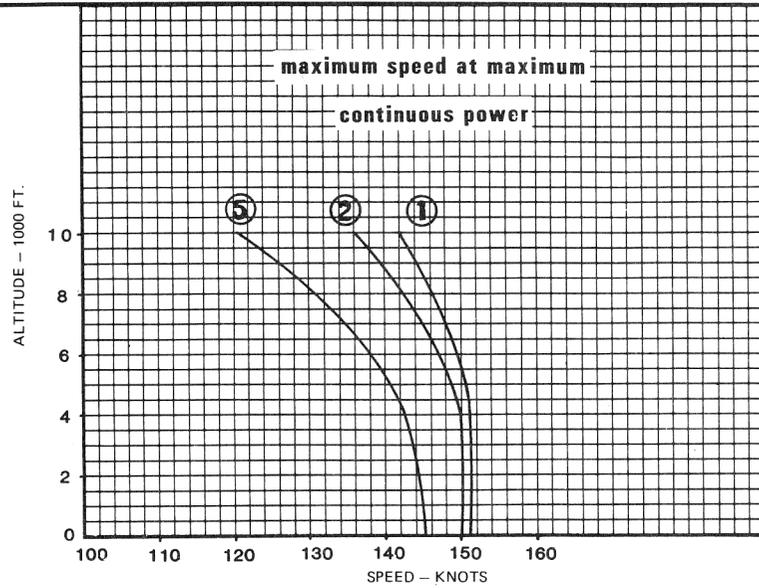
NOTES

- NOTES:
- (a) Maximum continuous transmission rating.
 - (b) Take-off transmission rating.
 - (c) Maximum power, three engines operating.
 - (d) Maximum continuous power, three engines operating.
 - (e) Aircraft red line airspeed is 170 knots I.A.S..
 - (f) Airspeed dependent on external load stability.
 - (g) Intermediate power, one engine inoperative, at takeoff gross weight.
 - (h) Time does not include climb to endurance altitude.

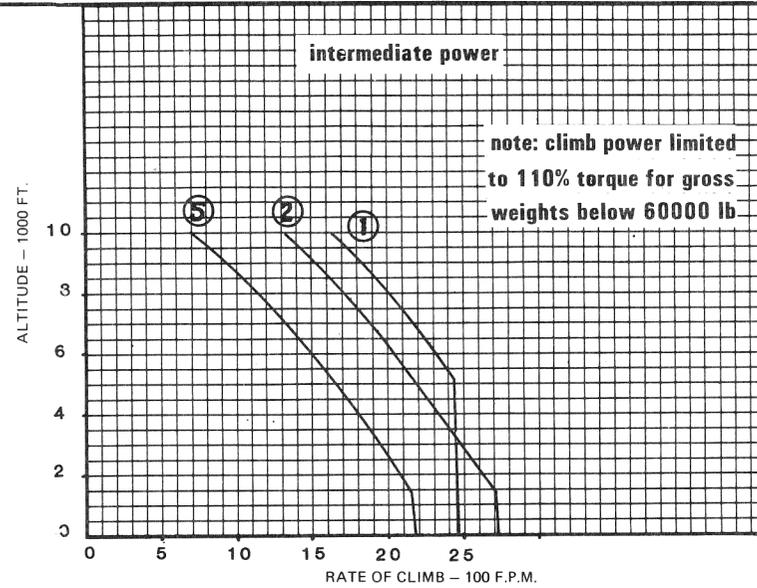
PERFORMANCE BASIS:

- (1) Estimated.
- (2) ICAO standard conditions, no wind.
- (3) Range and radius based on General Electric specification fuel consumption data using fuel grade JP-5.
- (4) Fuel consumption data are increased 5% above specification values.
- (5) Transmission ratings are 9600 HP maximum continuous and 11570 HP takeoff.

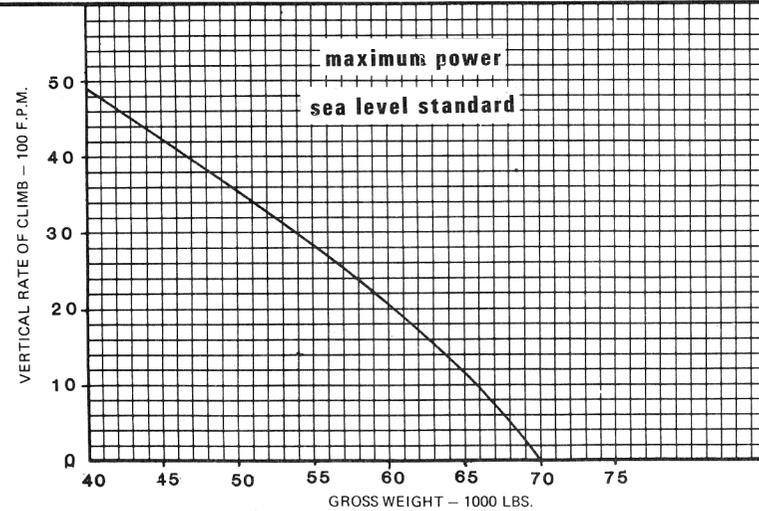
SPEED



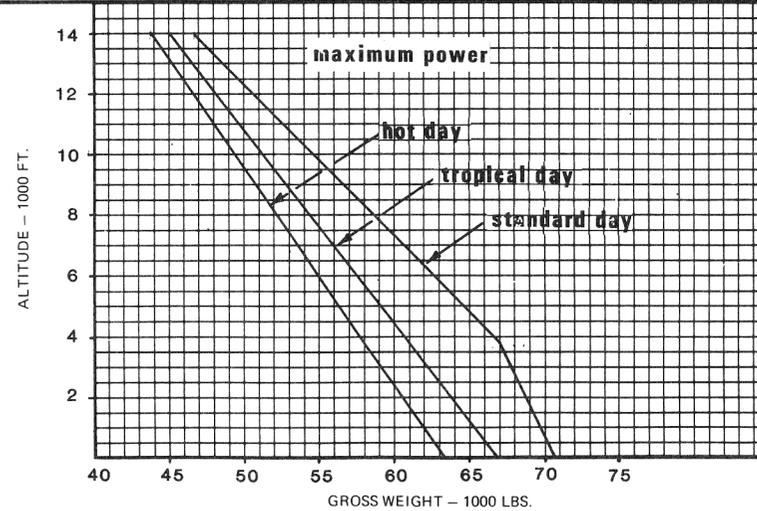
CLIMB



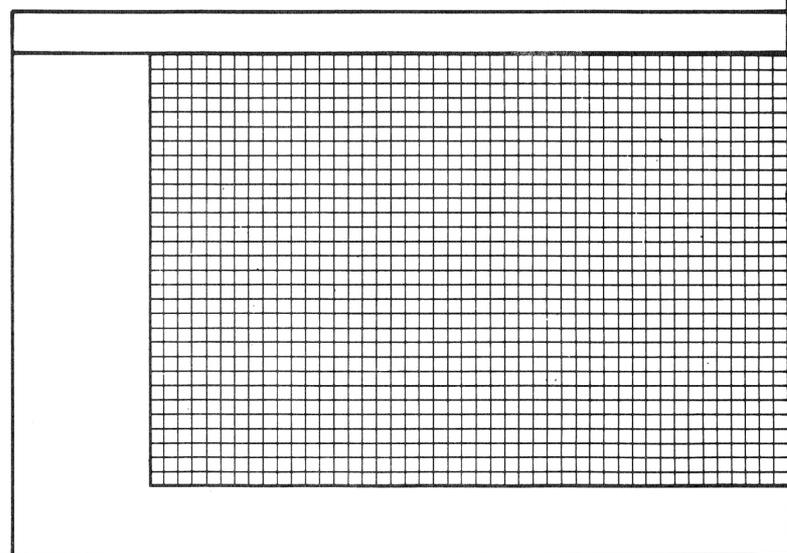
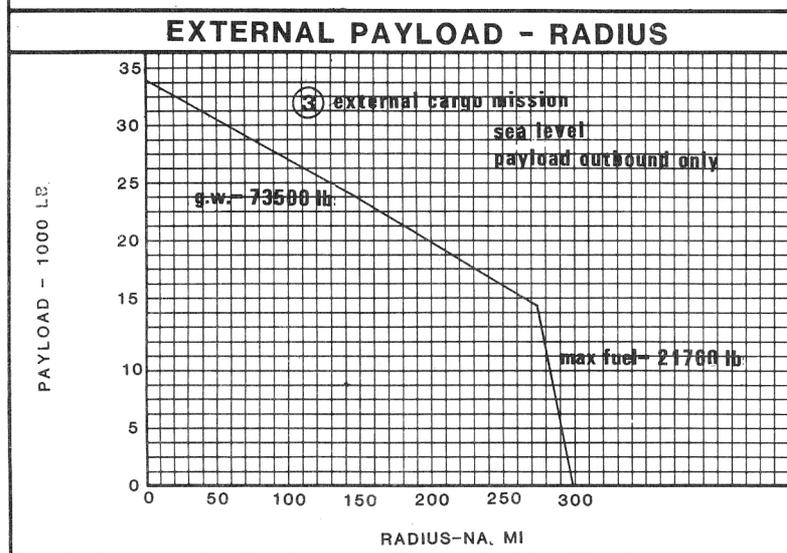
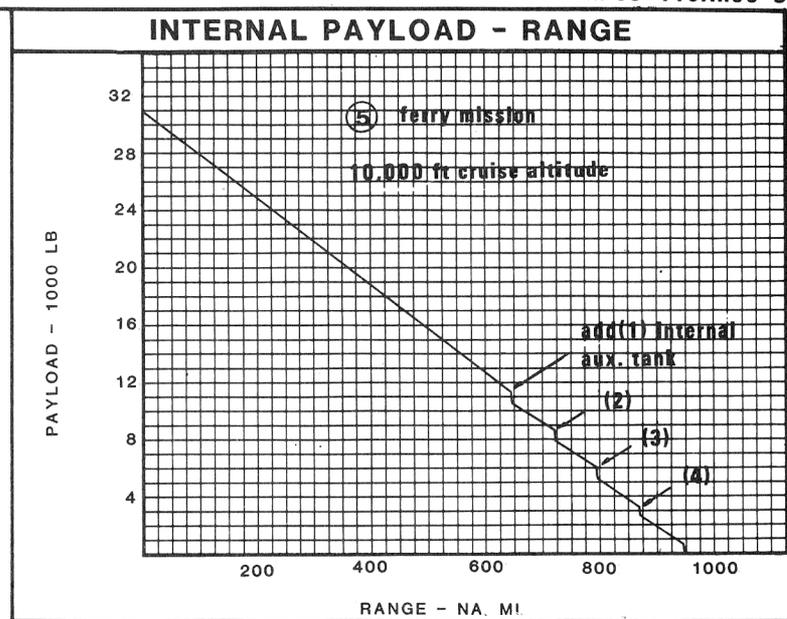
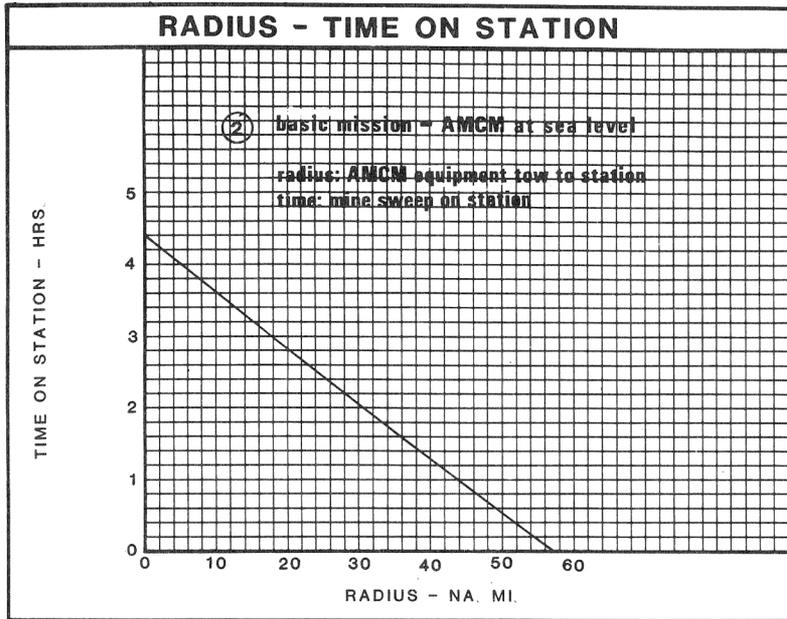
VERTICAL RATE OF CLIMB



HOVER CEILING



○ LOADING CONDITION COLUMN NUMBER



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NOTES

CLEAN MISSION

Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max Contin. Power. Climb: On course at BROG, Intermediate Power, to altitude for best range, not to exceed 10,000 ft. Cruise Out: At speed for best range, at altitude for best range, not to exceed 10,000 ft. Hover: 5 min at Hover Ceiling, not to exceed 10,000 ft out of ground effect. Cruise Back: At speed for best range, at altitude for best range, not to exceed 10,000 ft. Descend: To sea level (no fuel used, no distance gained). Reserve: 10% of initial fuel or fuel for 20 min. at speed for best range at sea level, whichever is greater.

BASIC MISSION

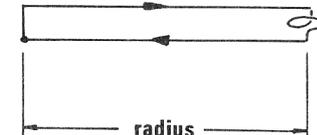
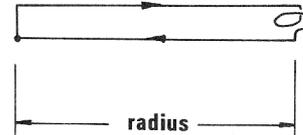
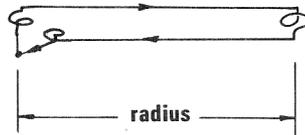
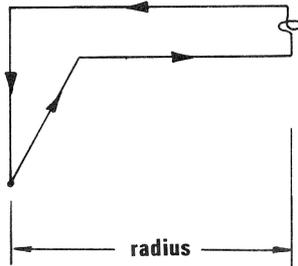
Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max Contin. Power. Hover: 5 min out of ground effect at S.L., AMCM gear hook-up. Tow AMCM Equipment: 12.5 nautical miles to station at V_1 (without exceeding Max. Contin. Power). Minesweep on Station: At V_1 Tow AMCM Equipment: 12.5 nautical miles back to base at V_1 (without exceeding Max. Contin. Power). Hover: 5 min. out of ground effect at S.L., AMCM gear disengage. Approach and Land: 10 min. at speed for best range, sea level. Reserve: Fuel for 20 min. at speed for best range, sea level.

EXTERNAL CARGO

Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max Contin. Power. Cruise Out: At 120 knots at S.L., 50 nautical miles with external payload ($P_e = 70 \text{ ft}^2$). Hover: 5 min. out of ground effect at S.L. with payload. Hover at 30 ft wheel height. Release Payload. Hover: 5 min out of ground effect at S.L. Cruise Back: At speed for best range at S.L., 50 nautical miles without payload. Reserve: 10% of initial fuel, or, fuel for 20 min. at speed for best range at S.L., whichever is greater.

TROOP TRANSPORT

Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max Contin. Power. Cruise Out: At maximum contin. power at sea level. Land and Unload Troops: 2 min. at static S.L., Max Contin. Power. Offload troops weight. Cruise Back: At maximum contin. power at sea level. Reserve: 10% of initial fuel, or, fuel for 20 min at speed for best range at S.L., whichever is greater.



LOADING CONDITION COLUMN NUMBER

NOTES

FERRY RANGE

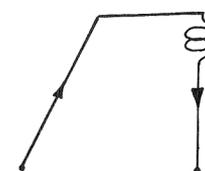
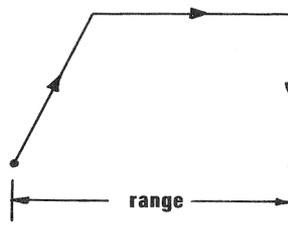
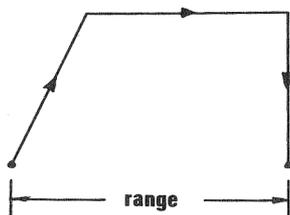
Engine start, taxi, take-off and accelerate, 5 min. at static S.L., Max. Contin. Power.
 Climb: On course at BROG, Intermediate Power, to altitude for best range, not to exceed 10,000 ft.
 Cruise: At speed for best range, at altitude for best range, not to exceed 10,000 ft.
 Descend: To sea level (no fuel used, no distance gained).
 Reserve: 10% of initial fuel or fuel for 30 min at speed for best range at sea level whichever is greater.

RANGE

Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max. Contin. Power.
 Climb: On course at BROG, Intermediate Power, to specified cruising altitude.
 Cruise Out: At speed for best range at specified altitude.
 Descend: To sea level (no fuel used, no distance gained).
 Reserve: 10% of initial fuel or fuel for 20 min at speed for best range at sea level, whichever is greater.

ENDURANCE

Engine start, taxi, take-off and accelerate, 5 min at static S.L., Max. Contin. Power.
 Climb: On course at BROG, Intermediate Power, to specified loiter altitude.
 Loiter: At best loiter speed at specified altitude.
 Descend: To sea level (no fuel used, no distance gained).
 Reserve: 10% of initial fuel or fuel for 20 min at speed for best range at sea level, whichever is greater.



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