

NAVAIR 00-110AF8-3

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Standard Aircraft Characteristics

NAVY MODEL F-8C AIRCRAFT

(F8U-2)

(TITLE UNCLASSIFIED)

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1 MAY 1955 IN PART AND ALL ADDENDA THERETO

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PUBLISHED BY DIRECTION OF THE
COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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1 JULY 1967

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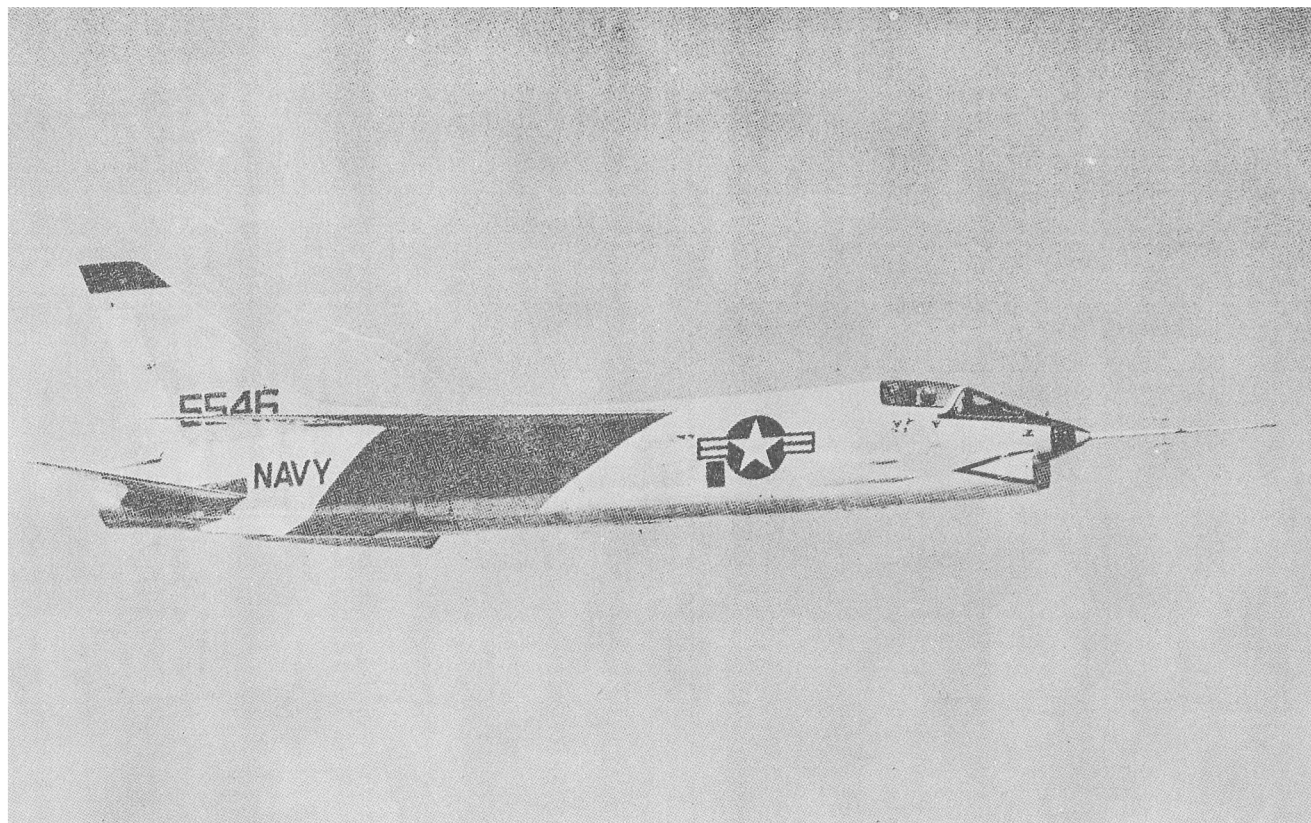
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SERVICE



STANDARD AIRCRAFT CHARACTERISTICS

F-8C CRUSADER

CHANCE VUGHT

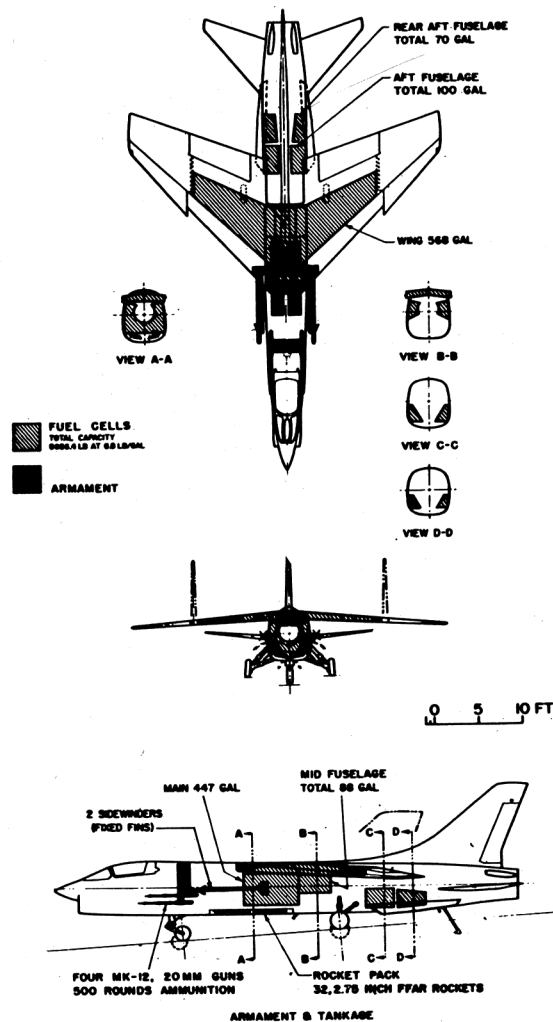
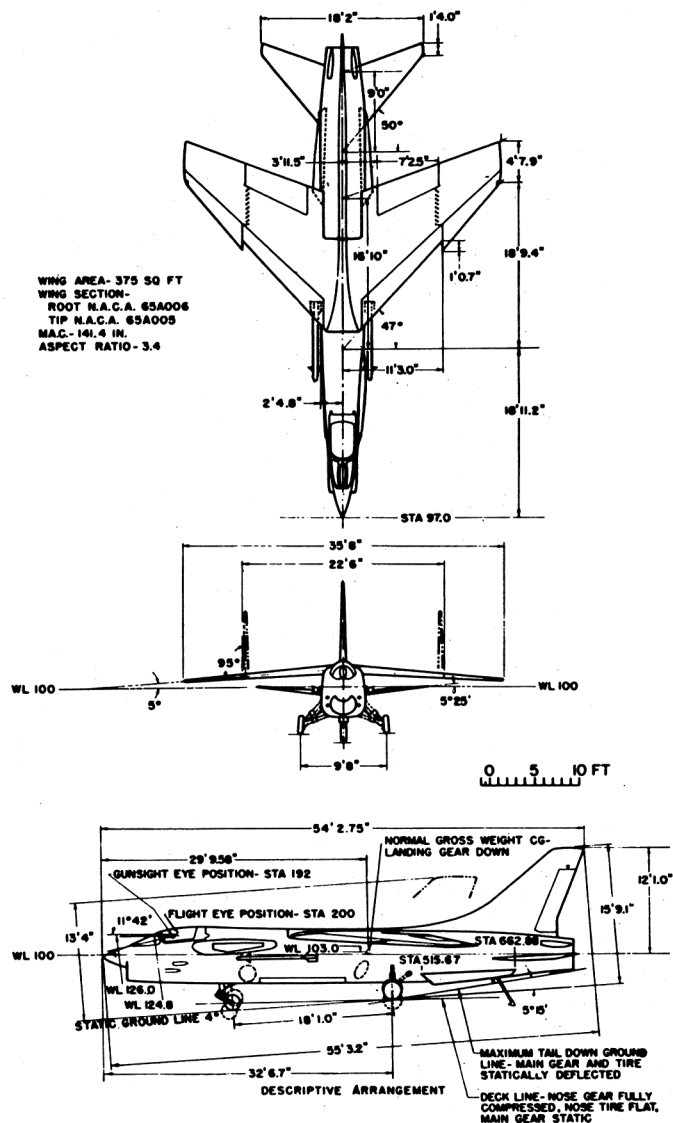
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SERVICE

POWER PLANT

NO. & MODEL J57-P-16
 MFR Pratt and Whitney
 TYPE Axial Flow
 LENGTH 270"
 DIAMETER 40.44"
 AUGMENTATION Afterburner

RATINGS

	<u>LBS</u>	@	<u>RPM</u>	@	<u>ALT</u>
MIL. + AB	16,900		6400		S.S.L.
MIL.	10,700		6350		S.S.L.
NORM.	9,150		6050		S.S.L.

Eng. Spec. No. P&W N-1714E

MISSION AND DESCRIPTION

The F8U-2 day fighter is designed to maintain air superiority in daylight fair weather during the period of task force strikes when the enemy will mount large numbers of aircraft.

The F8U-2 is an improved version of the F8U-1 airplane. The modifications which differentiate the two airplanes are: (1) an improved engine (J57-P-16) for increased performance capabilities, (2) low aspect ratio ventrals for additional stability in the extended flight boundary region, (3) external cooling air scoops for added cooling of the afterburner section as well as for increased afterburner thrust due to better air-flow characteristics, and (4) APS-67 radar and EX-16 Fire Control System for improved tracking and armament capabilities. In all other respects, the F8U-2 is the same as a typical fleet operational F8U-1.

WEIGHTS

<u>LOADINGS</u>	<u>LBS</u>	<u>L.F.</u>
EMPTY	16,483
BASIC	17,673
DESIGN	23,192	6.4
COMBAT	24,475
MAX. T.O. (Field) ..	27,938
(Cat.) ..	27,938
MAX. LAND. (Field) .	23,500
(Arrest) ..	22,000

All weights are estimated.

FUEL AND OIL

<u>GAIS</u>	<u>NO. TANKS</u>	<u>LOCATION</u>
535	3	Main Fuselage
170	4	Aft Fuselage
568	1	Wing

FUEL GRADE JP-5
 FUEL SPEC (applicable) MIL-F-5624

OIL

CAPACITY (gals.) 4
 SPEC (applicable) MIL-L-7808

ORDNANCE

<u>NO.</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
4	20 MM aircraft guns, MK-12	Fuselage Front Section
500	Rounds of 20 MM ammunition	
32	2.75 inch FFAR Rockets carried internally in rocket pack or	Fuselage Centerline
2	Sidewinder air-to-air missiles carried externally on pylons	Each side of fuselage

DEVELOPMENT

First Flight August 1958
 Service Use (Estimated) February 1959

DIMENSIONS

WING
 AREA 375 sq. ft.
 SPAN 35' - 8"
 MAC 141"
 SWEEPBACK 1/4 Chord 42°
 LENGTH 54' - 3"
 HEIGHT 15' - 9"
 TREAD 9' - 8"

ELECTRONICS

INTEGRATED ELECTRONIC CENTRAL
 AN/ASQ-17B
 (contains functions of AN/ARC-27A,
 AN/APX-6B and AN/ARA-25)
 CODER GROUP AN/APA-89
 RADIO SET (TACAN) AN/ARN-21
 CYRO STABILIZED MAGNETICALLY SLAVED
 COMPASS MA-1
 ARMAMENT CONTROL SYSTEM AN/AWG-3
 (includes AN/APS-67, Radar Set and
 EX-16, Aircraft Fire Control System)

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PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		(1) BASIC FIGHTER GUNS AND 32 - 2.75" FFAR ROCKETS		(4) BASIC FIGHTER GUNS + 2 EXTERNAL SIDEWINDERS	
TAKE-OFF WEIGHT	lb.	27,938		27,810	
Fuel (JP-5)	lb.	8,657		8,657	
Fayload	lb.	934		683	
Wing loading	lb./sq.ft.	74.5		74.2	
Stall speed - power-off	kn.	137.5		137.3	
Take-off run at S.L. - calm (A)	ft.	5,720		5,660	
Take-off run at S.L. 25 kn. wind (A)	ft.	4,130		4,080	
Take-off to clear 50 ft. - calm (A)	ft.	7,560		7,480	
Max. speed/altitude (A)	kn./ft.	583/5,100		570/15,000	
Rate of climb at S.L. (A)	fpm.	5,200		4,090	
Time: S.L. to 20,000 ft. (A)	min.	4.2		4.5	
Time: S.L. to 30,000 ft. (A)	min.	6.8		8.2	
Service ceiling (100 fpm) (A)	ft.	41,700		40,800	
Combat range	n.mi.	1,295		1,195	
Average cruising speed	kn.	495		495	
Cruising altitude(s)	ft.	41,600		41,800	
Combat radius/ MISSION TIME	n.mi./hrs.	320/1.65		300/1.56	
Average cruising speed	kn.	495		495	
CAP Loiter @ 40,000 ft./Mission Time (B) hrs/hr.		.68/1.63		.59/1.54	
IFR RADIUS/MISSION TIME	n.mi./hr.	765/3.49 (C)		730/3.38	
COMBAT LOADING CONDITION		(2) ROCKET RETAINED	(3) ROCKETS RETAINED	(5) SIDEWINDERS RETAINED	(6) SIDEWINDERS RETAINED
COMBAT WEIGHT	lb.	24,475	24,475	24,347	24,347
Engine power		Maximum	Military	Maximum	Military
Fuel	lb.	5,184	5,184	5,184	5,184
Combat speed/combat altitude	kn./ft.	960/35,000	548/35,000	922/35,000	539/35,000
Rate of climb/combat altitude	fpm/ft.	12600/35,000	2,590/35,000	12,000/35,000	2,200/35,000
Combat ceiling (500 fpm)	ft.	52,500	43,000	52,000	42,000
Rate of climb at S.L.	fpm.	25,400	6,000	21,700	4,790
Max. speed at S.L.	kn.	653	585	640	560
Max. speed/altitude	kn./ft.	960/35,000	586/5,000	922/35,000	572/15,000
LANDING WEIGHT	lb.	19,560		19,683	
Fuel	lb.	1,213		1,213	
Stall speed - power-off/with appr. power	kn/kn.	113.7/110.4		114.1/110.7	
Distance - ground roll/over 50' obstacle	ft./ft.	5,700/5,450		4,750/5,500	

NOTES

- (A) Military Power
 (B) Combat Air Patrol - 150 n.mi. Radius
 (C) INFLIGHT REFUELING - Outbound only. Transfer 4400 lbs at 520 n.mi. out. Radius is reduced 16 n.mi. and refuel allowance is increased 5 minutes for each additional aircraft up to a total of 4 aircraft.

PERFORMANCE BASIS: Flight test of the F8U-1 plus wind tunnel drag for the sidewinders and calculations.

RANGE and RADIUS: Range and radius are based on engine specification fuel consumption increased 5%.

SPOTTING: A total of 81 aircraft can be accommodated in a landing spot on the flight and hangar decks of a CVA-19 class angled deck carrier (flight 43; hangar 38 airplanes)

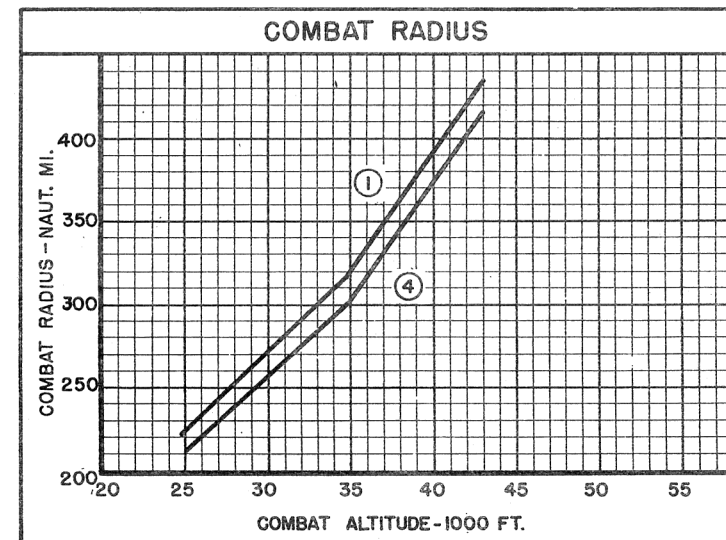
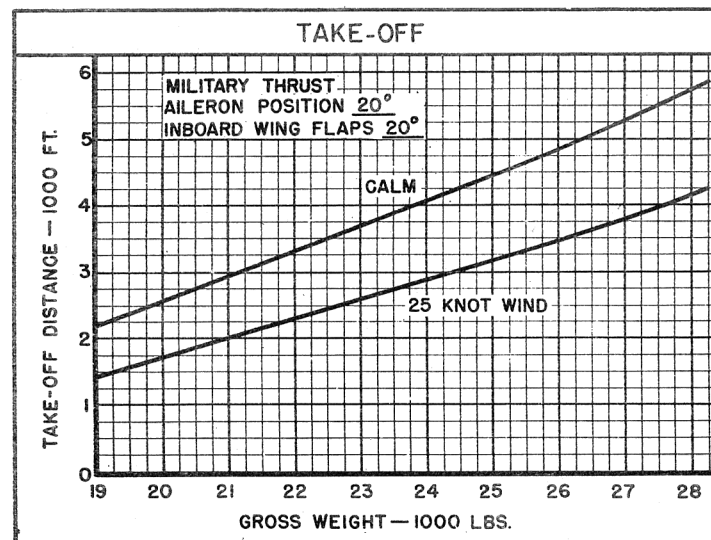
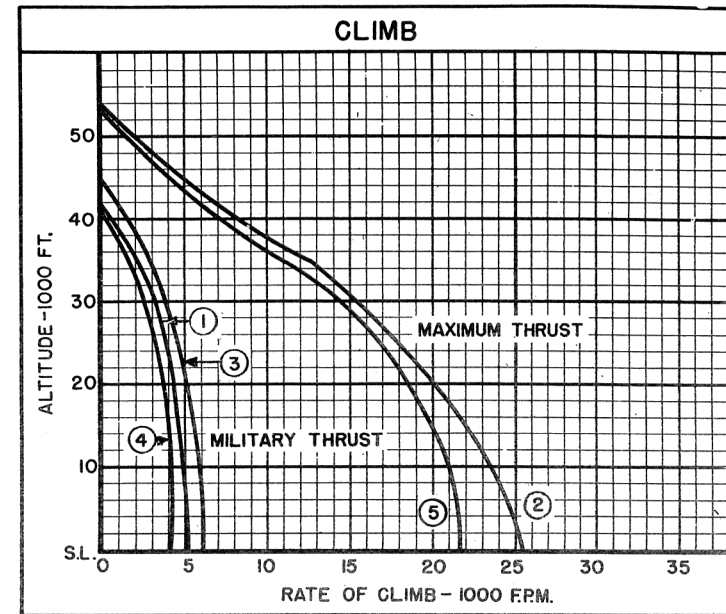
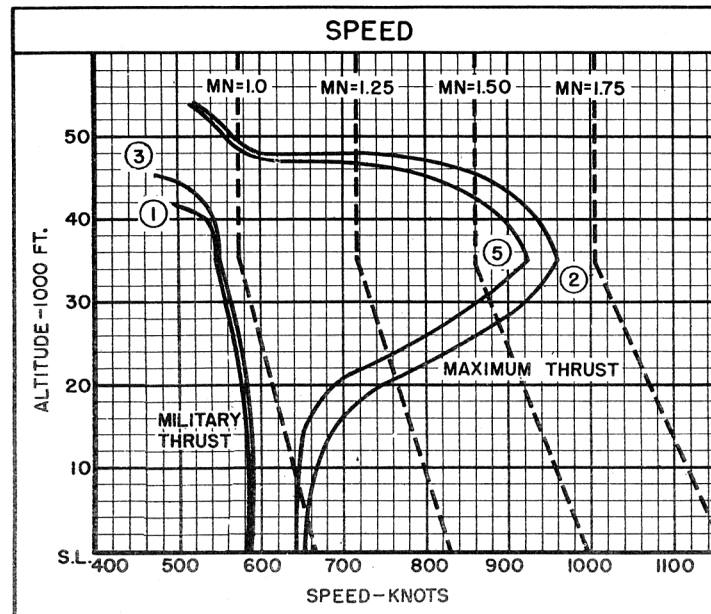
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○ LOADING CONDITION COLUMN NUMBER

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NOTES

GENERAL PURPOSE AND ESCORT FIGHTER

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE-OUT: At altitudes and speeds for maximum range.
 COMBAT FUEL ALLOWANCE: At 35,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between V_{max} with maximum thrust and V_{max} with military thrust plus 15 minutes at V_{max} with military thrust.
 CRUISE-BACK: At altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

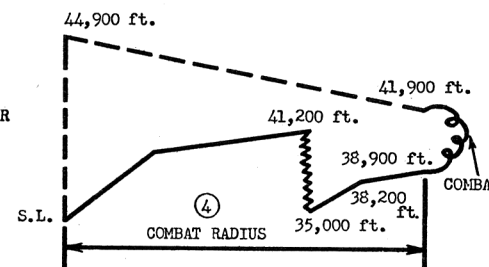
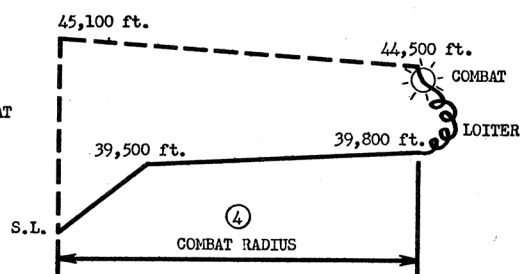
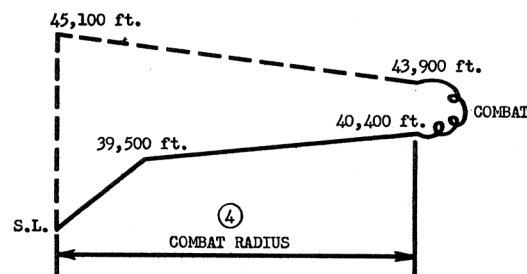
COMBAT AIR PATROL

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE: To a point 150 nautical miles from base at altitudes and speed for maximum range.
 LOITER: On station at speed for maximum endurance at approximate final cruise-out altitude.
 COMBAT FUEL ALLOWANCE: At 35,000 ft. for 5 minutes at maximum thrust at a velocity mid-way between V_{max} with maximum thrust and V_{max} with military thrust plus 15 minutes at V_{max} with military thrust.
 CRUISE-BACK: 150 nautical miles to base at altitudes and speeds for maximum range.
 RESERVE: 20 minutes at speed for maximum endurance at sea level plus 5 per cent of initial fuel load.

GENERAL PURPOSE FIGHTER WITH IN-FLIGHT REFUELING (A3D-2 TANKER)

WARM-UP, TAKE-OFF, ACCELERATE: 5 minutes with normal thrust at sea level.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE-OUT: At altitudes and speeds for maximum range.
 DESCEND to 35,000 ft. REFUELING ALTITUDE: No fuel used, no distance gained.
 ALLOWANCE FOR RENDEZVOUS, HOOK-UP, AND FLIGHT CONTINGENCIES: 15 minutes at maximum endurance airspeeds. (Assume no fuel used, no distance gained during transfer of fuel.)
 REFUEL POINT: Limited to return of aircraft to base with normal reserve if contact for refueling is not made.
 CLIMB: On course to cruise altitude with military rated thrust.
 CRUISE: Continue cruise-out at altitudes and speeds for maximum range.

The remainder of the problem is the same as the General Purpose Fighter Problem of loading condition column number (4).



If JP-4 fuel is used, these decrements in performance are applicable:

- | | | | | |
|--|-----------|-------------|------------|-----------|
| ① General Purpose Fighter; guns and rockets | -382 lbs. | -82 n. mi. | -41 n. mi. | -.17 hrs. |
| ① In-flight Refueling; guns and rockets | -582 lbs. | -128 n. mi. | -64 n. mi. | -.26 hrs. |
| ④ General Purpose Fighter; guns and 2 external sidewinders | -382 lbs. | -79 n. mi. | -39 n. mi. | -.16 hrs. |
| ④ In-flight Refueling; guns and 2 external sidewinders | -582 lbs. | -120 n. mi. | -60 n. mi. | -.24 hrs. |

△ WEIGHT

△ RANGE

△ RADIUS

△ MISSION TIME

○ LOADING CONDITION COLUMN NUMBER

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