

NAVAIR 00-110AF8-5

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Standard Aircraft Characteristics

NAVY MODEL

F-8E (F8U-2NE)

AIRCRAFT

(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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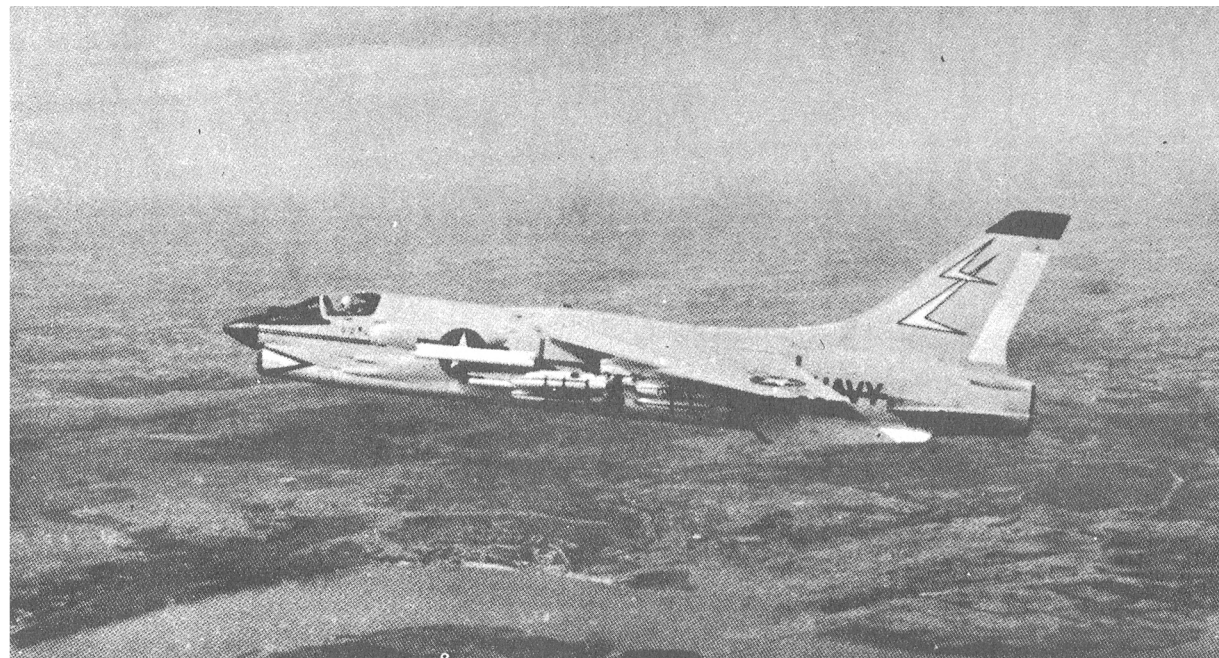
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STANDARD AIRCRAFT CHARACTERISTICS

F8-E "CRUSADER"

CHANCE VUGHT

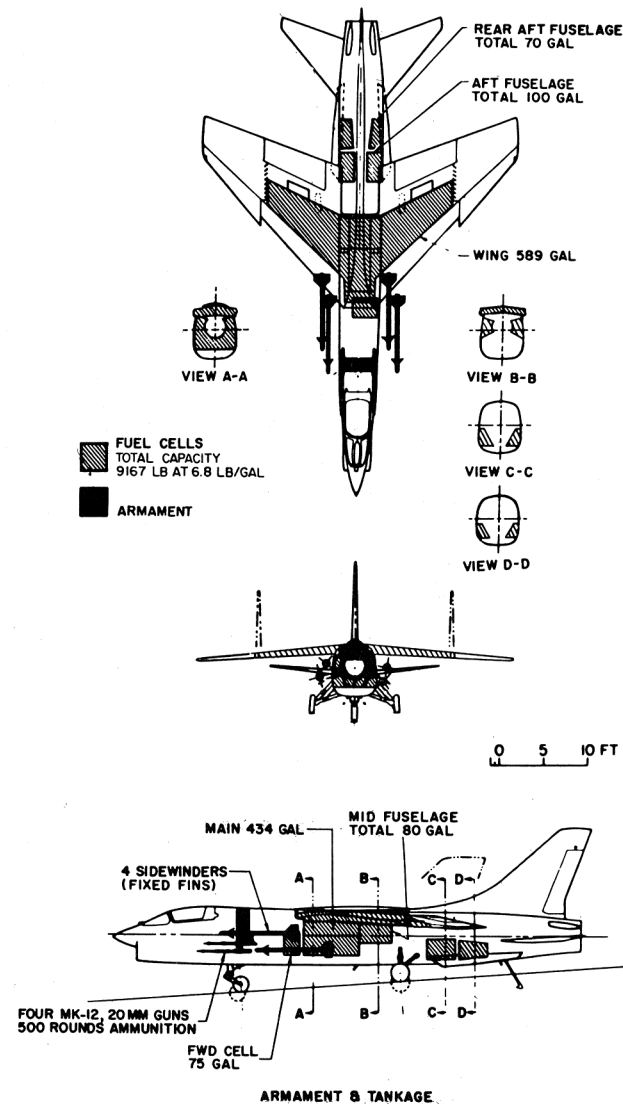
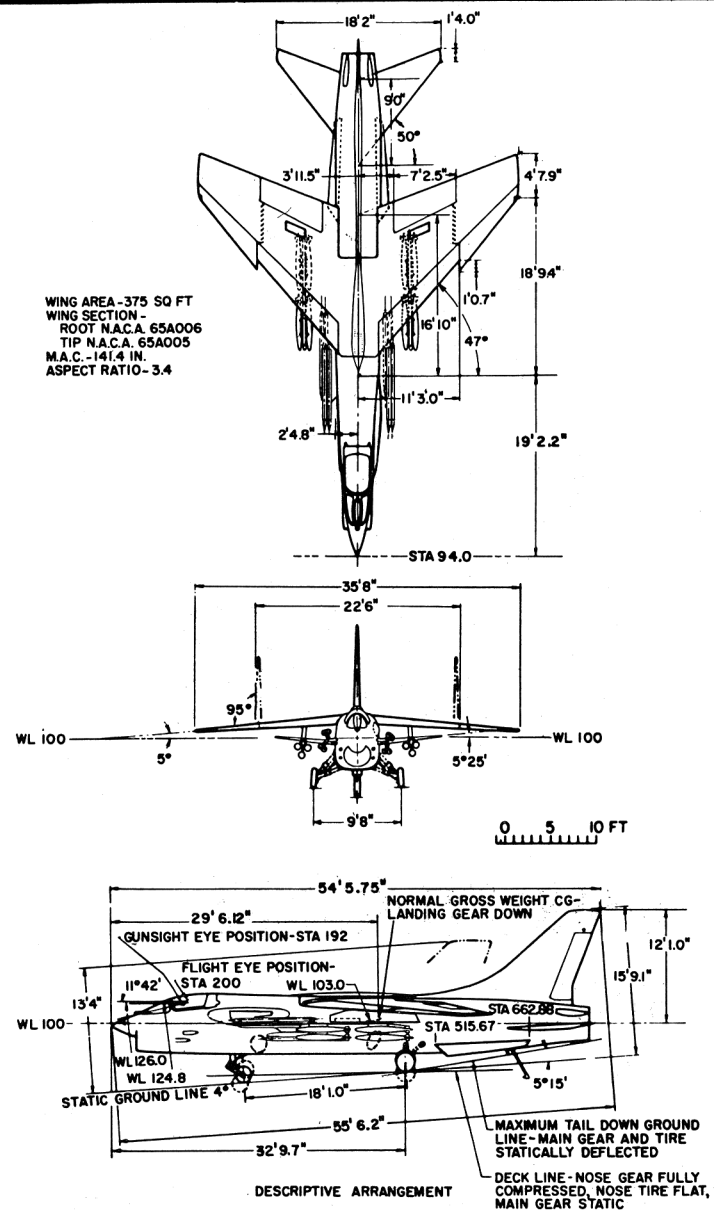
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SERVICE



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SERVICE

POWER PLANT

Engine J57-P-20
 Augmentation Afterburning
 Manufacturer Pratt and Whitney
 Length 269.52 inches
 Diameter 40.44 inches
 Specification ... N-1754 (20 March 1959)
 Compressor Axial Flow

RATINGS

Specification Thrust Ratings (sea level static)
 maximum * 18,000 lbs
 military 10,700 lbs
 normal 9,150 lbs

* with afterburning

ORDNANCE

NO.	DESCRIPTION	LOCATION
4	20-MM Aircraft Guns, MK-12	Fuselage Front Section
500	20-MM Ammunition Rounds	
2 or 4	Sidewinder Air-To-Air Missiles Carried Externally on Pylons	Each Side of Fuselage
4 or 8	Zuni Air-To-Ground Missiles Carried Externally on Pylons	Each Side of Fuselage
2	Bullpup "A" or "B" Air-To-Ground Missiles Carried Externally on Pylons	Wing Pylons
12	MK-81 Bombs Carried Externally on Pylons	Wing Pylons
8	MK-82 Bombs Carried Externally on Pylons	Wing Pylons
2	MK-83 Bombs Carried Externally on Pylons	Wing Pylons
2	MK-84 Bombs Carried Externally on Pylons	Wing Pylons

MISSION AND DESCRIPTION

The F-8E (FSU-2NE) is a single-seat, carrier-based jet fighter designed to maintain air superiority during task force strikes and as an attack fighter capable of delivering a large number of stores of various types and sizes. The airplane is a development of the F-8D (FSU-2N) with increased armament capabilities and improved ability to detect and destroy targets at night and under all weather conditions. The primary improvements distinguishing the F-8E are: (1) APQ-94 radar for improved detection and attack capability and (2) provisions for mounting stores of various types and sizes on wing pylons. The basic F-8E is the same as the F-8D externally except for the larger nose cone required to accommodate the improved radar, the Bullpup equipment fairing on the wing top centerline in the dorsal area, and the AAS-15 IR head located on the top centerline of the fuselage immediately forward of the wind screen.

DIMENSIONS

Wing
 Area 375 sq. ft.
 Span 35' 8"
 M.A.C. 141.0"
 Sweepback 1/4 chord 42.0°
 Length 54' 3.75"
 Height 15' 9.1"
 Thread 9' 8"

WEIGHTS

LOADING	LB	LF
Empty	17,836	
Basic	18,423	
Design	26,000	6.4
Combat (Guns INCLUDED)		
4 S/W	26,098	
2MK-84 Bombs	29,191	
8 Zuni + 2 MK-84 Bombs	30,742	
8 Zuni + 2 Bullpup "B"	30,389	
8 Zuni + 12 MK-81 Bombs	30,232	
MAX T.O., Field	34,100	
MAX Land, Field	26,000	

FUEL AND OIL

GALS	NO. TANKS	LOCATION
514	3	Fuselage, bladder main system
245	5	Fuselage, bladder, transfer system
589	1	Wing integral, transfer system
Fuel capacity (total usable)		1348 Gallons
Fuel specification		MIL-F-5624C
Fuel Grade		JP-5

OIL

Oil capacity (total) (usable)	8.5 Gallons 3.0 Gallons
Oil specification	MIL-L-7808C

ELECTRONICS

INTEGRATED ELECTRONIC CENTRAL
A/NAS Q/17B
 (contains functions of AN/ARC-27A, AN/APX-6B and AN/ARA-25)
 CODER GROUP AN/APA-98
 RADIO SET (TACAN) AN/ARN-52
 RADAR ALTIMETER AN/APN-22
 GYRO STABILIZED MAGNETICALLY SLAVED COMPASS MA-1
 ARMAMENT CONTROL SYSTEM AN/AWG-4
 (includes AN/APQ-94, Radar Set and EX-16, Aircraft Fire Control System)
 AUTOPILOT CV/AES-6
 I. R. SYSTEM AN/AAS-15
 BULLPUP TRANSMITTER AN/ARW-77
 FUSE CONTROL AN/AWW-1

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PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) CAP FIGHTER GUNS + 4 S.W.	(3) CLOSE AIR SUP- PORT GUNS + 2,000 LB BOMBS	(5) CLOSE AIR SUP- PORT GUNS + 8 ZUNI+2-2000#BOMBS	(7) CLOSE AIR SUP- PORT GUNS + 8 ZUNI + 2 BULLPUP #B	(9) CLOSE AIR SUP- PORT GUNS + 8 ZUNI+12-250#BOMBS
TAKE-OFF WEIGHT LB.	29,765	32,858	34,409	34,056	33,899
FUEL INTERNAL/EXTERNAL () LB./LB.	9,167	9,167	9,167	9,167	9,167
PAYLOAD (A) LB.	983	4,103	4,959	4,577	4,139
WING LOADING (B) LB./SQ.LB.	79.3	87.6	91.8	90.8	90.4
STALL SPEED - POWER-OFF KN.	144.9	152.2	158.4	157.6	157.3
TAKE-OFF RUN AT S.L. - CALM (C) FT.	7,200	4,090	4,920	4,870	4,820
TAKE-OFF RUN AT S.L. ²⁵ KN. WIND (C) FT.	5,300	3,040	3,720	3,670	3,620
TAKE-OFF TO CLEAR 50 FT. - CALM (C) FT.	9,090	5,020	5,890	5,830	5,770
MAX. SPEED/ALTITUDE (D) KN./FT.	584/10,000	577/5,000	546/15,000	525/12,000	473/10,000
RATE OF CLIMB AT S.L. (D) FPM.	5,590	5,200	4,070	3,750	3,340
TIME: S.L. TO 20000 FT. (D) MIN.	4.5	5.1	6.8	8.0	9.1
TIME: S.L. TO 30000 FT. (D)(E) MIN.	7.9	9.7	14.6	24.9	25.9
SERVICE CEILING (100 FPM.) (D) FT.	40,000	35,250	31,000	28,150	27,650
COMBAT RANGE N.MI.	1,238	914	748	650	584
AVERAGE CRUISING SPEED KN.	495	490	480	457	416
CRUISING ALTITUDE(S) - AVERAGE FT.	38,600	34,450	30,350	27,900	25,800
COMBAT RADIUS/MISSION TIME (F) N.MI./HR.	150/1.71	350/1.97	275/1.69	246/1.59	221/1.55
AVERAGE CRUISING SPEED KN.	496	494	485	475	441
IFR RADIUS/MISSION TIME (F)	150/4.39	722/3.48	579/2.99	525/2.82	469/2.72
FUEL TRANSFERRED/DIST. FROM BASE	7037/150	4799/451	4753/366	4712/315	4667/287
COMBAT LOADING CONDITION	(2) ARMAMENT RETAINED	(4) ARMAMENT RETAINED	(6) ARMAMENT RETAINED	(8) ARMAMENT RETAINED	(10) ARMAMENT RETAINED
COMBAT WEIGHT LB.	26,098	29,191	30,742	30,389	30,232
ENGINE POWER	Combat	Combat	Combat	Combat	Combat
FUEL LB.	5,500	5,500	5,500	5,500	5,500
COMBAT SPEED/COMBAT ALTITUDE KN./FT.	984/35,000	642/S.L.	632/S.L.	629/S.L.	615/S.L.
RATE OF CLIMB/COMBAT ALTITUDE FPM./FT.	11,900/35,000	22,600/S.L.	17,000/S.L.	13,600/S.L.	9,600/S.L.
COMBAT CEILING (500 FPM.) FT.	52,350	49,100	47,500	46,150	44,800
RATE OF CLIMB AT S.L. FPM.	27,200	22,600	17,000	13,600	9,600
MAX. SPEED AT S.L. KN.	651	642	632	629	615
MAX. SPEED/ALTITUDE KN./FT.	984/35,000	737/35,000	632/S.L.	629/S.L.	615/S.L.
LANDING WEIGHT LB.	21,998	21,091	26,642	26,289	26,132
FUEL LB.	1,400	1,400	1,400	1,400	1,400
STALL SPEED - POWER-OFF/APPR. POWER KN./KN.	124.9/120.3	132.2/127.5	139.3/133.7	138.3/132.6	137.8/132.2
DIST. - GRD ROLL/OVER 50 FT. OBS. FT./FT.	6590/7340	7620/8390	8340/9090	8110/8890	8020/8800
NOTES: (A) PAYLOAD INCLUDES 500 ROUNDS OF AMMUNITION (B) BASED ON 375 SQ. FT. WING AREA (C) COMBAT THRUST USED WHEN TAKE-OFF WEIGHT IS GREATER THAN 30,000 LBS OR MILITARY TAKE-OFF DISTANCE IS GREATER THAN 10,000 FT. (D) MILITARY THRUST (E) IF SERVICE CEILING IS LESS THAN 30,000 FT., TIME IS TO SERVICE CEILING (F) FOR CLOSE AIR SUPPORT, MISSION TIME INCLUDES 30 MINUTE ON STATION.					

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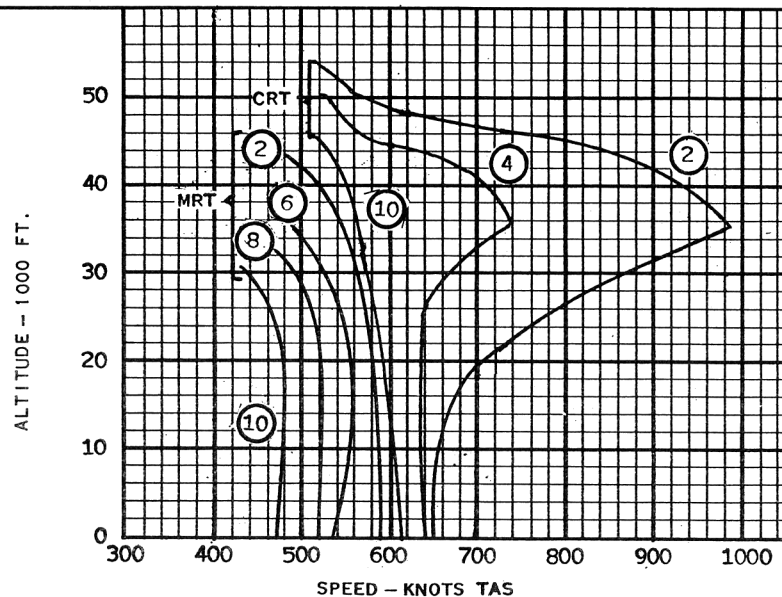
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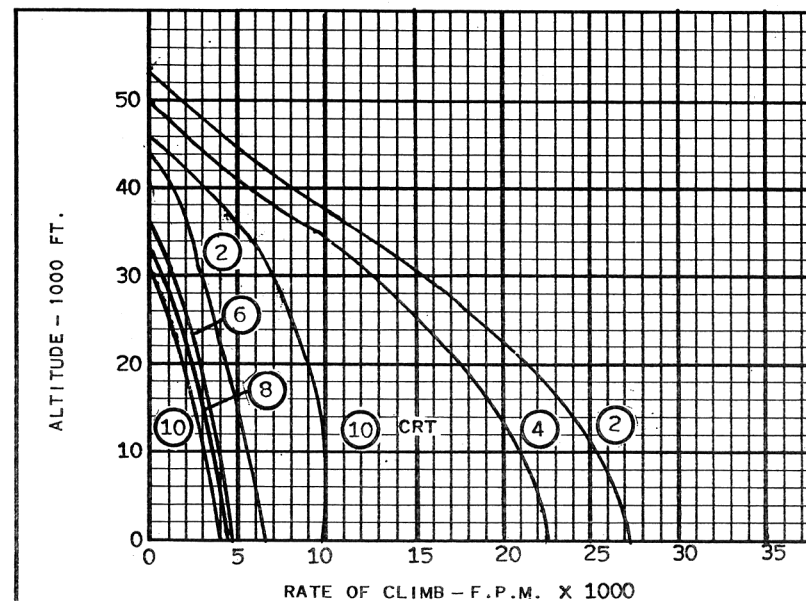
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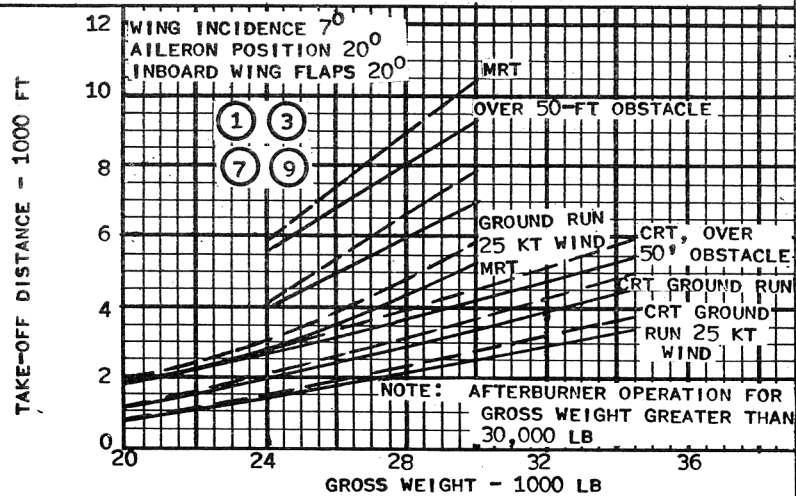
SPEED



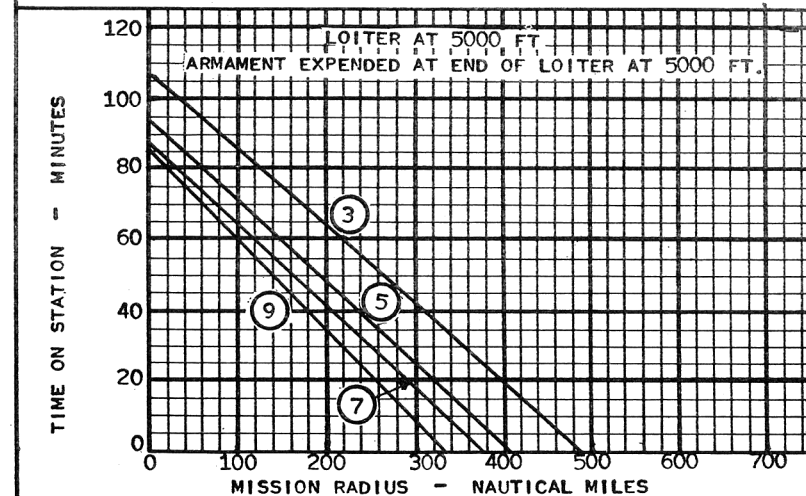
CLIMB



TAKE-OFF



CLOSE AIR SUPPORT RADIUS



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CONFIGURATION: Guns and 4 Sidewinders

NOTES

CONFIGURATION: 4 Guns, 2 Bullpup
"B" and 8 Zuni Rockets

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 speeds 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 min at maximum thrust at a velocity mid-way between V_{max} with maximum thrust and V_{max} with military thrust plus 15 min 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.

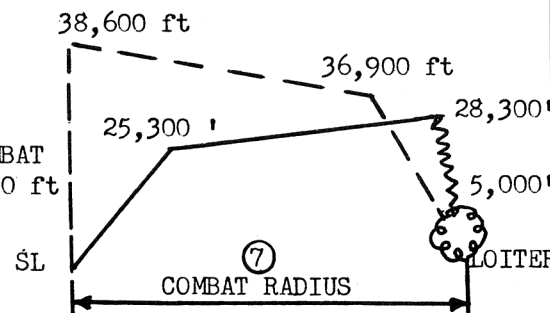
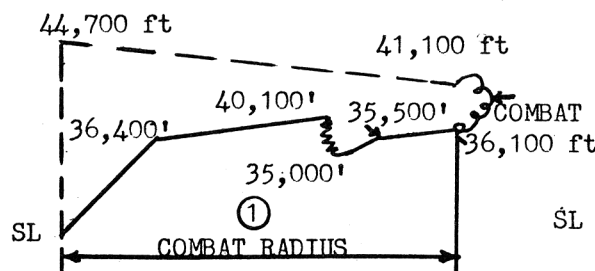
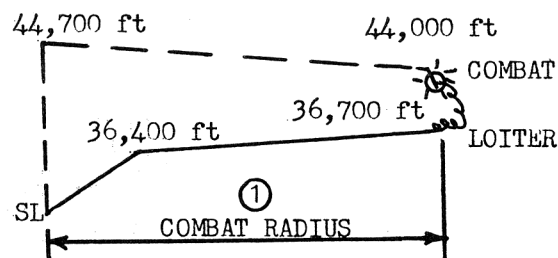
GENERAL PURPOSE FIGHTER WITH INFLIGHT REFUELING (A3D-2 TANKER)

WARM-UP, TAKE-OFF, ACCELERATE: 5 min 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 min at max endurance airspeeds. (Assume no fuel used, no distance gained during transfer of fuel)
REFUEL POINT: Limited to return of aircraft to base normal reserve if contact for refueling is not made.
CLIMB: On course to cruise altitude with military rated thrust.
CRUISE: Continue cruise-out at altitude and speeds for maximum range.

The remainder of the problem is the same as the Combat Air Patrol Problem of loading condition column number ①

CLOSE AIR SUPPORT

WARM-UP, TAKE-OFF, ACCELERATE: 5 min with normal thrust and 1 min with maximum thrust at sea level
CLIMB: On course to cruise altitude with military-rated thrust.
CRUISE-OUT: At altitudes and speeds for maximum range.
LOITER: On station at speeds for maximum endurance at 5,000 feet altitude.
CLIMB: On course to cruise altitude with military-rated 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 initial fuel load.



○ LOADING CONDITION COLUMN NUMBER

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