MAC RPT 3873

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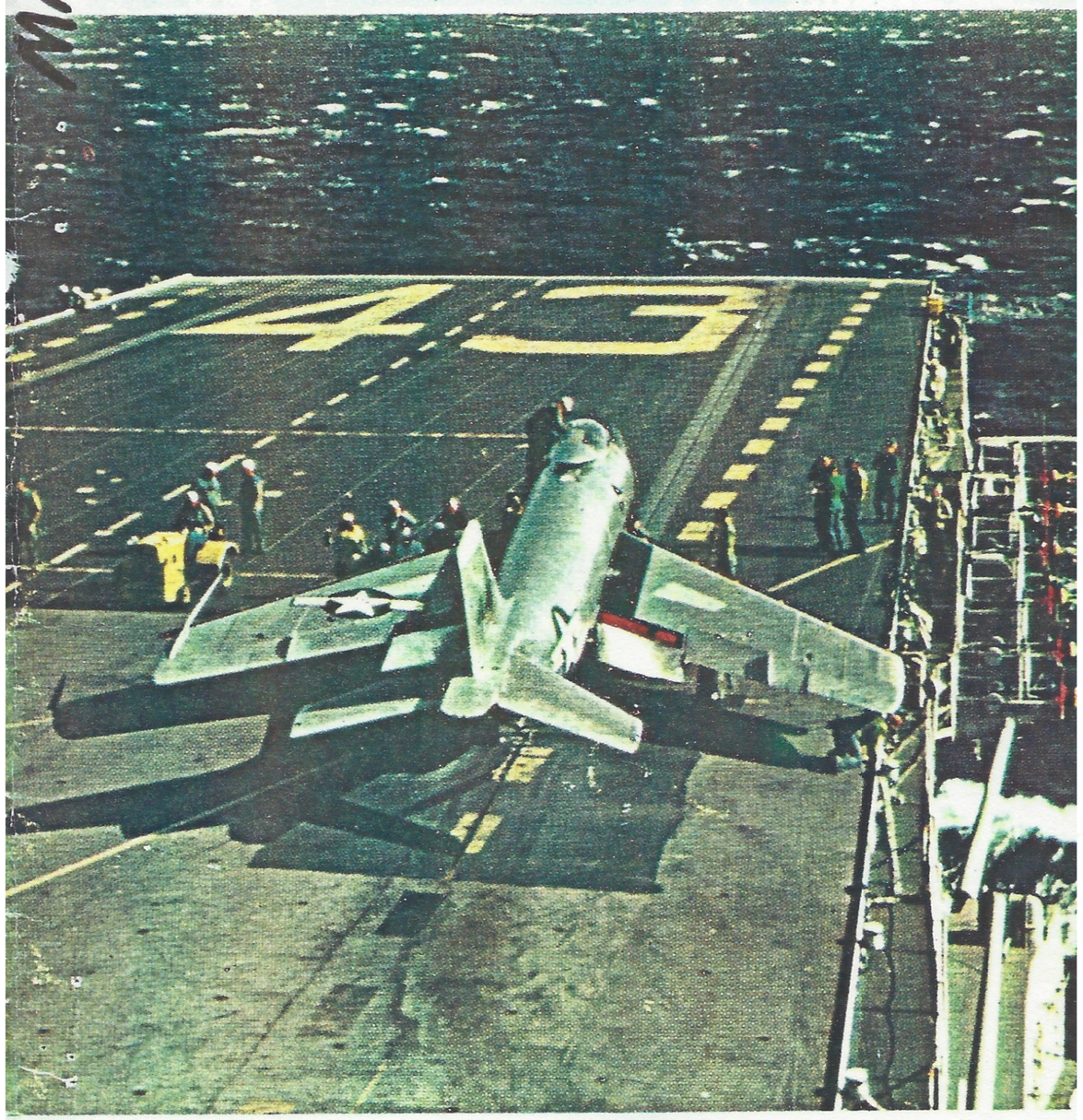
F3H DEMON



RESTRICTED DATA

~~ATOMIC ENERGY ACT~~ 1946

McDONNELL *Aircraft Corporation*

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NOTICE

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Classification cancelled or changed to Unclassified, by authority of E.O. 11652-2 dated April 25 Jan 72

REPORT NO. 3873

15 JANUARY 1955

GROUP - 4

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS

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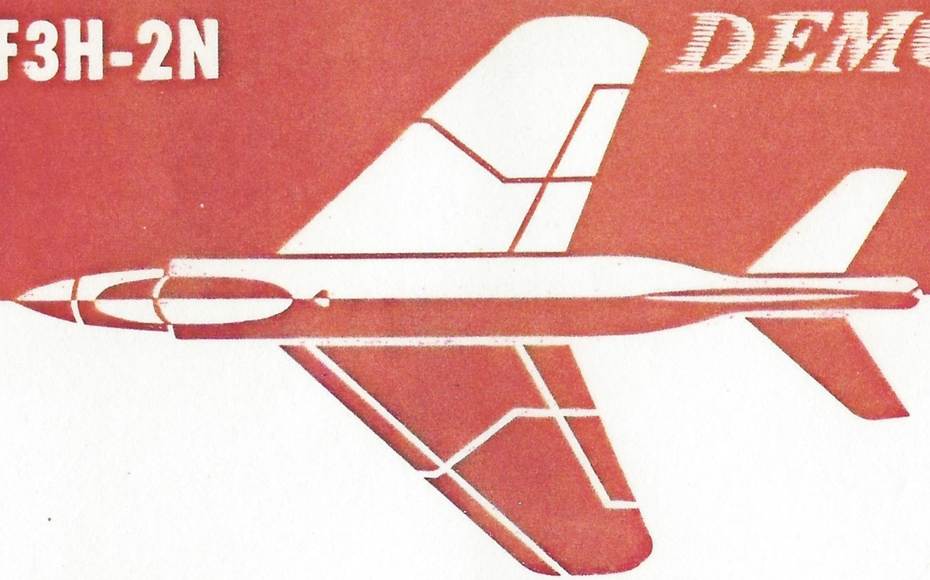
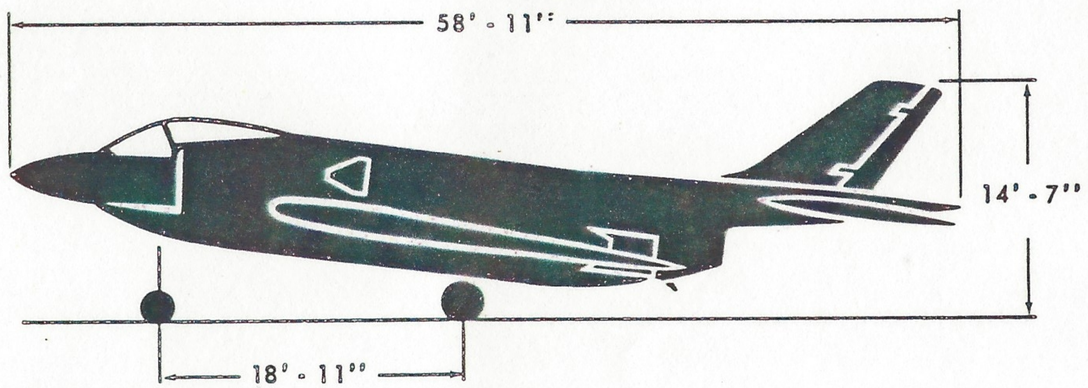
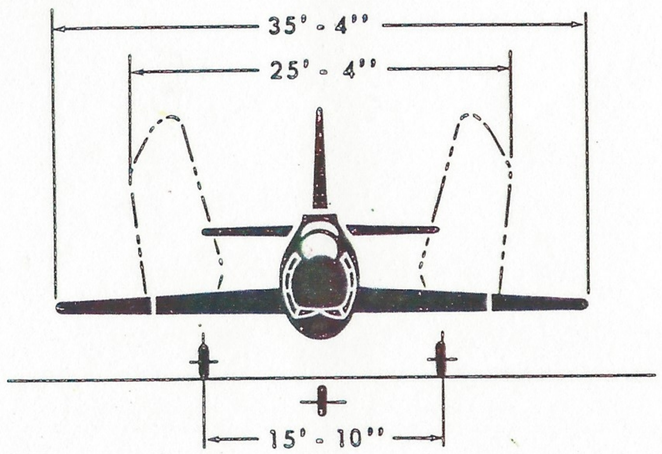
F3H-2N DEMON







Wing:

Area	519 sq. ft.
Sweep	43 deg.
Thickness	6.6% (ave.)

Power Plant:

One J71-A-2
Static Thrust ..... 10,200 lbs. (Mil.)
14,500 lbs. (with A/B)

Fuel:

1506 gals. internal plus structural provisions for 564 gallons external

Armament:

Four 20mm MK 12 guns, 760 rds. plus external rockets and bombs.

FEATURES

The McDonnell F3H-2N DEMON, now in production for the U. S. Navy and Marine Corps, is a versatile carrier-based fighter, capable of delivering atomic weapons at extended ranges. The first DEMONS, designated the F3H-1N, are powered by the Westinghouse J40-WE-22 engine, which produces approximately 25% less thrust than the Allison J71-A-2 engine. Airplane numbers 61 and up, designated the F3H-2N or -2M, will be powered by the J71-A-2 engine, producing the equivalent thrust for which the airplane was designed.

SPECIAL FEATURES OF THE DEMON ARE:

- AN/APG-51A RADAR for all-weather capabilities.
- LABS gear for special weapons delivery.
- In-Flight Refueling for extended ranges.
- Capability for carrying Buddy Refueling Tank.
- Multiple store capabilities for attack missions.
- Sparrow missiles for intercept missions with the F3H-2M.
- Excellent visibility and low-speed characteristics for carrier operations.
- Useful as gun platform all through the transonic region.

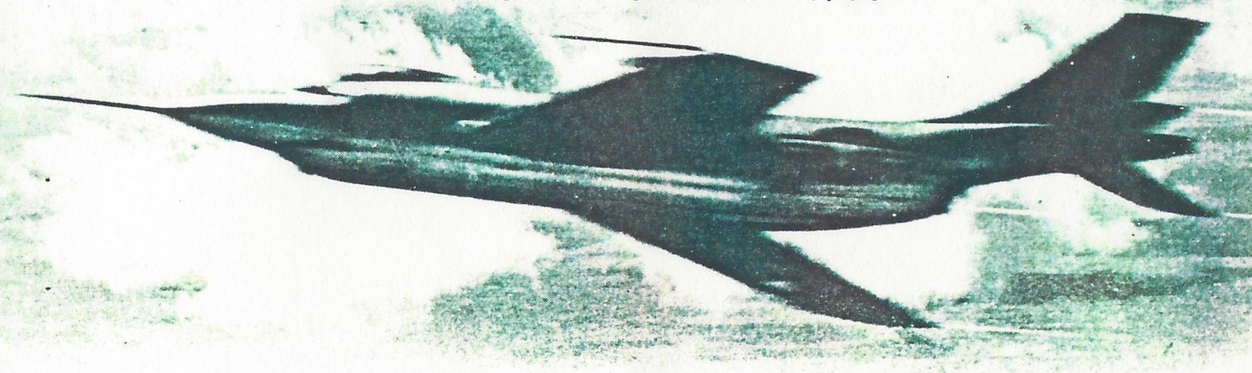
ESTIMATED PERFORMANCE

ENGINE—ALLISON J71-A-2

ENGINE RATINGS—MILITARY	LBS.	10,200
AFTERBURNER	LBS.	14,500
TAKE-OFF GROSS WEIGHT, INTERNAL FUEL	LBS.	31,760
COMBAT GROSS WEIGHT	LBS.	27,847
LANDING GROSS WEIGHT (1500 LBS. FUEL)	LBS.	23,471
AMPR WEIGHT	LBS.	13,672
TOTAL FUEL (JP-4)	GALS.	2,070
INTERNAL FUEL	GALS.	1,506
EXTERNAL FUEL	GALS.	564
MAX. SPEED AT SEA LEVEL (MAX. POWER)	KTS / M	628 / .95
35,000 FT.	KTS / M	562 / .98
45,000 FT.	KTS / M	542 / .94
MAX. SPEED AT 35,000 FT. (MILITARY POWER)	KTS / M	526 / .91
RATE OF CLIMB AT SEA LEVEL (MAX. POWER)	FPM	15,300
35,000 FT.	FPM	5,250
COMBAT CEILING—MILITARY POWER	FT.	38,900
MAX. POWER	FT.	48,900
LANDING APPROACH SPEED, .7 C_{Lmax}	KTS.	112
MAXIMUM WEIGHT WHICH CAN BE CATAPULTED (C11 CATAPULT, 10 KNOT WIND, LAUNCHING SPEED = V_{S_L} + 10 KNOTS)	LBS.	39,200

FLIGHT FACTS

HIGHLIGHTS FROM OVER 872 FLIGHTS THROUGH 10 JANUARY 1955



Lowest Speed Tested (landing configuration)	79 kts (IAS)
Highest Speed Tested	
Level Flight (35,000 ft.)	M = .99
Dive (with 6 HVAR Rockets)	M = 1.15
Dive, XF3H-1	M = 1.31
Minimum Landing Speeds	
Approach	112-115 kts
Touchdown	100 kts
Best Time to Climb	
Brake Release to 40,000 ft.	5.6 min.
Maximum Altitude Recorded	50,340 ft.
Wave-Off Characteristics	
Engine Accel. from Idle to Military Power	4 seconds
Significant Load Factors Demonstrated	
At 545 knots	7.7 g
At 40,000 ft.	2.8 g
At M = 1.1 (XF3H-1)	4.5 g

Transition to Supersonic Flight

— No Roughness — No Buffet — No Trim Changes

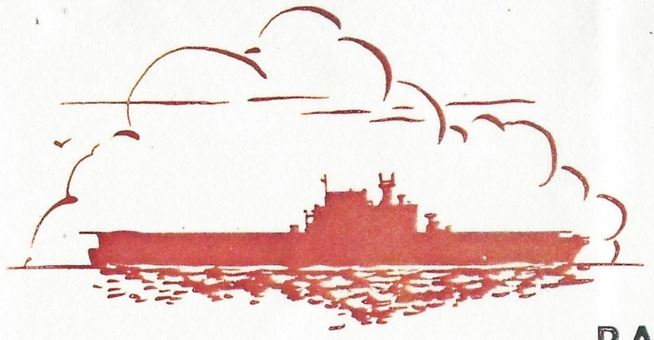
Part I and II Flight Demonstrations

Rockets – Six 5-inch HVAR's Carried to 612 kts (EAS)
– Six Aero 6A Packages (2.75-in. Rockets) Fired Out at 5000 ft. and 450 kts

MK 12 Guns—Fire-Outs Made Satisfactorily from 20,000 to 30,000 ft.
– Long Bursts Up to 9 sec. (140 rds / gun) Fired in Flight on All Four Guns
– No Adverse Effect on Engine Operation Due to Gun Gases During Firing

External Stores—Flights Made Carrying Varied Combinations up to and including 2—1000 lb. plus 4—500 lb. bombs

Spin Characteristics—Recoveries from 1 to 3½ Turn Spins Effected in ½ to 1½ Turns



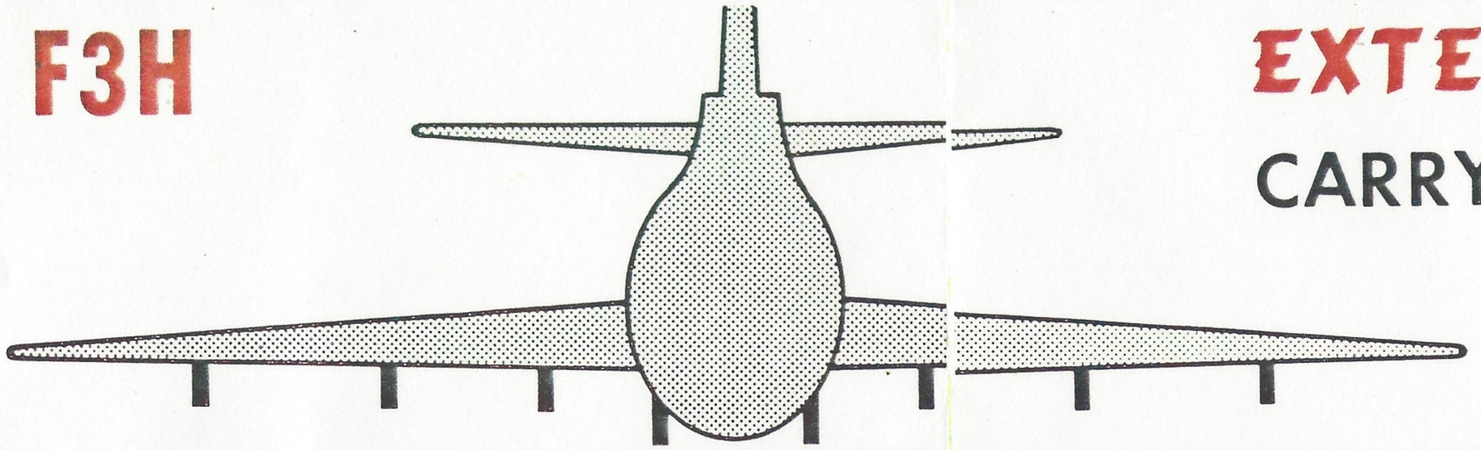
"BUDDY" CONCEPT OF IN-FLIGHT REFUELING WITH PROPOSED EXTERNAL FUEL TANK

F3H-2N RANGE

RADIUS AND DECK CYCLE TIME SUMMARY

MISSION	RADIUS naut. miles	DECK CYCLE TIME hours	WIND REQ'D knots		EXTERNAL TANKS
			C-11 CAT.	H-8 CAT.	
FIGHTER (MIL-C-5011A SPEC.)	377	1.9	minus 16	18	
FIGHTER (MIL-C-5011A SPEC.)	540	2.7	0	31	TWO-282 GAL.
COMBAT AIR PATROL (WITH 20 MINUTES COMBAT)		3.1	0	31	TWO-282 GAL.
COMBAT AIR PATROL (WITH 20 MINUTES COMBAT) 490 GAL. "BUDDY"		5.7	0	31	TWO-282 GAL.
MK-7 STRIKE (15,000 FT. DELIVERY)	560	2.4	minus 1	30	ONE-282 GAL.
"SUPERSONIC SEVEN" STRIKE (15,000 FT. DELIVERY)	566	2.8	minus 3	29	250 GAL. IN STORE
"SUPERSONIC SEVEN" STRIKE (WITH 100 NA.MI. SEA LEVEL APPROACH AND DELIVERY)	419	1.8	minus 3	29	250 GAL. IN STORE
"SUPERSONIC SEVEN" STRIKE 490 GAL. "BUDDY"	827	3.5	minus 2	29	250 GAL. IN STORE

F3H



EXTERNAL STORES
CARRYING CAPABILITY

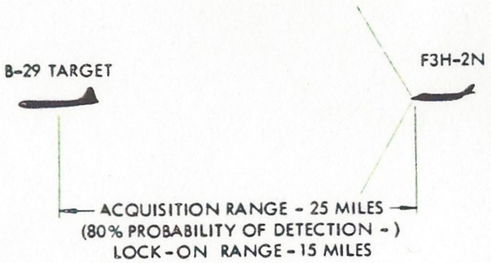
STORES	STA. 1	STA. 2	STA. 3	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	TYPE RACK
100 LB G.P.	●	●	●	●	●	●	●	●	AERO 14B1 OR 15A
220 LB G.P.	●	●	●	●	●	●	●	●	"
250 LB G.P.	●	●	●	●	●	●	●	●	"
500 LB G.P.	●	●	●	●	●	●	●	●	"
250 LB. L.D.	●	●	●	●	●	●	●	●	"
500 LB L. D.	●		●	●	●	●		●	"
1000 LB L.D.				●	●				MK 51 WITH AERO 1A ADAPTERS OR AERO 62B
2000 LB L.D.				●	●				"
MK 7					●				14" & 30" EJECTOR OR AERO 62B
MK 8					●				DOUGLAS 14" & 30" EJECTOR
MK 11					●				"
MK 12					●				"
"SUPERSONIC 7"					●				MAC
14B SPRAY TANK				●	●				MK 51 WITH AERO 1A ADAPTERS OR AERO 62B
5.0" HVAR	●	●	●	●	●	●	●	●	AERO 14B1 OR 15A
7-2.75" FFAR PKG.	●	●	●	●	●	●	●	●	"
19-2.75" FFAR PKG.	●		●	●	●	●		●	"
4-5.0" ROCKETS				●	●				"
SPARROW	●		●			●		●	DOUGLAS UNIVERSAL LAUNCHER
DAC STARTER				●					· DOUGLAS 14" & 30" EJECTOR
FUEL TANKS				●	●				MK 51 WITH AERO 1A ADAPTERS OF AERO 62B
"BUDDY" TANK				●					MAC

WEAPONS SYSTEM CAPABILITIES

F3H-2N

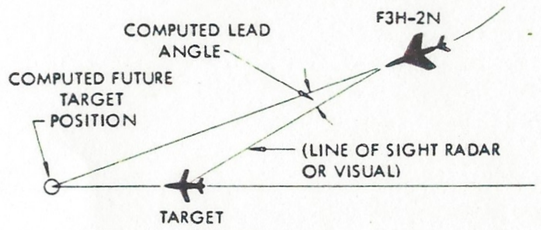
AIR-TO-AIR RADAR SEARCH

(AN/APG-51A RADAR)

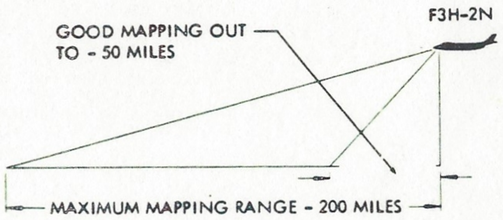


AIR-TO-AIR PURSUIT GUNNERY AND ROCKETRY

(ACS AERO 19 CONSISTING OF AN/APG-51A RADAR PLUS AFCS MK 16)

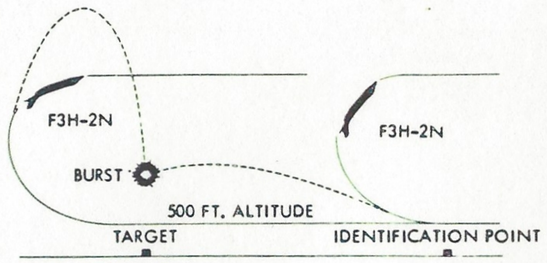


AIR-TO-AIR GROUND MAPPING BY RADAR



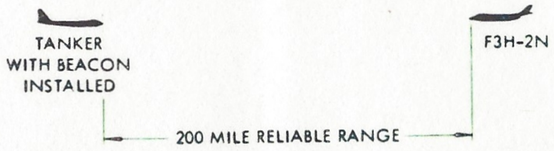
"LABS" LOW ALTITUDE BOMBING SYSTEM

(MINNEAPOLIS - HONEYWELL "LABS" SYSTEM)



TANKER RENDEZVOUS LOCATION, IDENTIFICATION AND BLIND APPROACH

(AN/APG-51A RADAR IN "BEACON" MODE)



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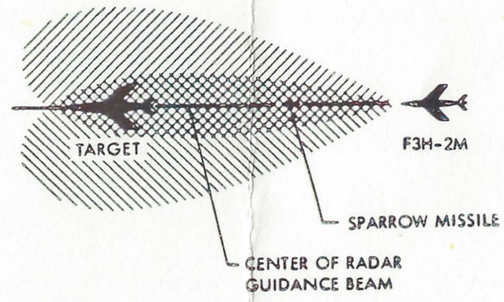
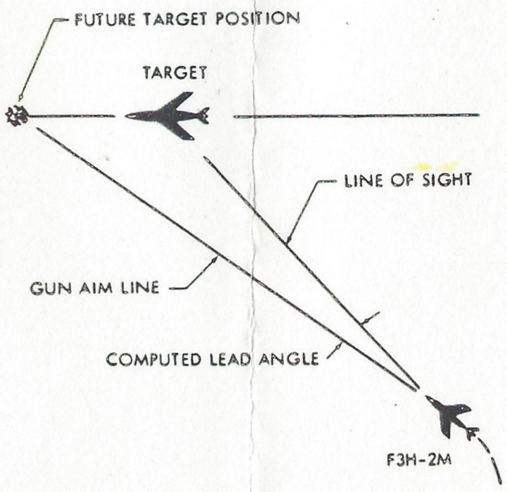
F3H-2M

WITH SPERRY APQ-51 RADAR PLUS AFCS MK 16

LAUNCHING AND GUIDANCE OF SPARROW MISSILE UNDER VISUAL CONDITIONS



VISUAL LEAD PURSUIT GUNNERY



RUGGEDNESS

LANDING GEAR

Designed to take **20.8** ft/sec sinking speed before failing. The nose gear designed to take loads resulting from free flight arresting at high angles.

MAIN SPAR

The spar and carry through structure is unitized. The upper spar caps are designed to take loads of **848,000** lbs.

TAIL SKID

Designed to take a tail down landing at high angle at maximum design sinking speed.

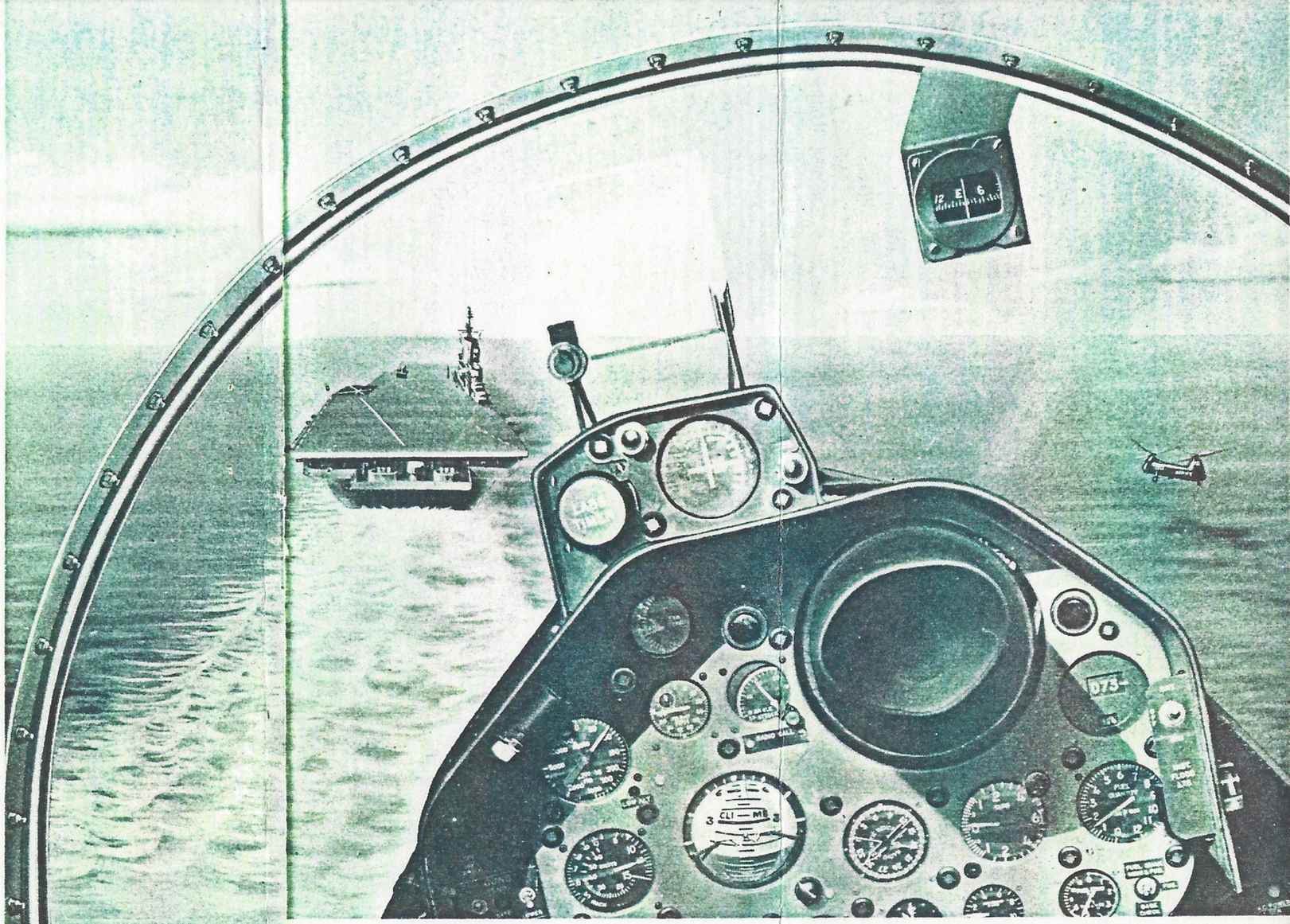
CATAPULT HOOK

The single fixed hook is designed to catapult the airplane with full internal fuel and ammo *plus* **4** tons with **10** knots of wind using the C-11 catapult.

WING STRENGTH

Designed for **7½** G at combat weight, the wing will take **8.6** G before evidence of yielding and **11¼** G before failure.

The wing skin is designed for maximum rigidity and efficiency. The outer wing panels are roll tapered with center section skin gage in some areas as thick as **.25** inches.



VISIBILITY

Excellent visibility is provided for carrier approach and landings with **18¼°** line of sight over the nose from the horizontal.

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