PTR 04/5 W

Final

Report

on

EVALUATION OF MAXIMUM PRACTICABLE COMBAT POWER RATING FOR THE MODEL F4U-1 AIRPLANE

Project No. TED No. PTR 0415

Date AUG 2 1945

FLIGHT TEST

U.S. Naval Air Test Center

Patuxent River, Md.

(2)

CONFIDENTIAL
NA83/PTR 0415
VF4U-1
WWB/vfd(FT)

Serial: C-477

U. S. NAVAL AIR TEST CENTER

PATUXENT RIVER, MARYLAND

AUG 2- 1945

To: Chief of the Bureau of Aeronautics

Subj: TED No. PTR 0415 - Model F4U-1 Airplane - Evaluation of Maximum Practicable Combat Power Rating - Final Report on - Forwarding of.

Ref: BuAer restr. ltrs. Aer-E-41-CCS (37707) dated 22 Feb 1944.

1. Subject tests have been completed and report thereon is forwarded herewith in compliance with reference (a).

By direction of the Commander, Naval Air Test Center:

C. E. GIESE
Director of Flight Test

Copy:
SecNav, Coordinator of Research and Development
CNO, Board of Inspection and Survey
CNO, (Op-16-V, Air Intelligence Group)
BuAer, Military Requirements Division
BuAer, Engrg. Div., Experiments and Developments Branch
BuAer, Engrg. Div., Power Plant Design Branch
BuAer, Engrg. Div., VF Design Branch
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NA83/PTR 0415
VF4U-1
WWB/vfd(FT)

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- -

Copy: (Cont'd)
ComFairWestCoast
ComFairWestCoast, OiC Tactical Development Unit
Chief of Naval Air Operational Training
~~Comdg. Gen., 9th Marine Air Wing, MCAS, Cherry Point, N. C.~~
Faculty Aviation Officer, Postgraduate School, U. S. Naval Academy
BAGR, CD
BAGR, CD (For appropriate AAF laboratory)
BAR, Stratford, Conn.
BAR, East Hartford, Conn.
President, AAF Board, Orlando, Fla.
Comdg. Gen., AAF Proving Ground Command, Elgin Field, Fla.
HQ AAF AC/AS M&S Material Division, Development Engrg. Sec., Washington 25, D. C.
AAF ATSC Liaison Office, Room 2242, Munitions Bldg., Washington, D. C. Attn: Lt. Col. James H. Sams (2)
U. S. Naval Attache for Air, London, Via CNO (ONI)
BAC, via CNO (ONI)
Senior Air Force Representative, BAC, in BuAer, via CNO (ONI)
RAF Delegation, Dir. of Training (S.D.), Washington, D. C., via CNO (ONI)

Encl: (HW)
1. Report of subject tests.

CONFIDENTIAL

FLIGHT TEST DIVISION
U. S. NAVAL AIR TEST CENTER
PATUXENT RIVER, MD.

FINAL FLIGHT REPORT

of

EVALUATION OF MAXIMUM PRACTICABLE COMBAT POWER RATING FOR THE MODEL F4U-1 AIRPLANE

on

MODEL F4U-1 AIRPLANES NO'S 55937, 50030
(TED No. PTR 0415)

held

1 Feb 1944 to 10 June 1945

by

FLIGHT TEST

at

U. S. NAVAL AIR STATION
PATUXENT RIVER,MD.

for

POWER PLANT DESIGN BRANCH
BUREAU OF AERONAUTICS

NUMBER OF PAGES 29

NUMBER OF PHOTOGRAPHS 12

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E. M. OWEN
Lt. Comdr., USN

APPROVED:

C. E. GIESE
Capt., USN

TABLE OF CONTENTS

REFERENCES

(a) BuAer restr. ltr. Aer-E-41-CCS(37707) dated 22 Feb 1944.

(b) NAS, Patuxent River, Md., conf. ltr. NA83/VF4U-1 PTR 2105 (FT) (44078) dated 28 April 1944.

(c) NAS, Patuxent River, Md. restr. ltr. NA83/VF4U-1 PTR 0415 (FT) (564) dated 2 June 1944.

(d) NAS, Patuxent River, Md. conf. ltr. NA83/VF4U-1 PTR 0415 (FT) (44127) dated 27 June 1944.

(e) NAS, Patuxent River, Md., rest. ltr. NA83(1146)/VF4U-1 PTR 0415 dated 13 Nov 1944.

(f) BuAer 12 TWX 2139 Oct 1944.

(g) NAS, Patuxent River, Md., conf. spd. ltr NA83/S13-45/ VF4U-1 PTR 0415 dated 15 Jan 1945.

(h) BuAer TWX Ø31725 Mar 1945.

(i) NAS, Patuxent River, Md., conf. spd. ltr NA83/VF4U-1 PTR 0415 Serial C-446 12 June 1945.

(j) NAS, Patuxent River, Md., rest. ltr NA83/VF6F-3, VF4U-1 PTR 0414, PTR 0415 (FT) (634) dated 27 June 1944.

(k) Reports of trouble PTR 0415, Items 1 through 21 dated from 4 Feb 1944 through 6 Oct 1944.

Aer-E-41-CCS

NAVY DEPARTMENT
BUREAU OF AERONAUTICS
WASHINGTON 25, D.C.

C O P Y

RESTRICTED
37707

22 FEB 1944

From: Chief, BuAer.
To : C.O., NAS, Patuxent River, Md.
Attn: Director of Tests.

Subj: Project No. PTR 0415 - Model F4U-1 Airplane; Evaluation of Maximum Practicable War Emergency Rating for.

Ref : (a) PTR 2123 - Accelerated Service Test of F4U-1 Airplane with water injection.

1. The subject project is hereby established to determine by a series of flight endurance tests at progressively higher powers the maximum practicable power available for combat emergency use in the F4U-1 airplane.

2. Airplane bu.no. 55937 has been allocated for use on this project. An additional airplane will be allocated at a later date. These airplanes shall not be used for any other purpose than the tests stipulated herein prior to completion of this project. Two additional new R-2800-8W engines are also being provided.

3. The following alternate flight schedules shall be followed:

Schedule A

(a) Take-off 2700 RPM/54.0".
(b) Climb at neutral military power then low blower WEP to critical altitude for this rating. It is desired that the climb require 5 minutes at WEP at lowest practicable airspeed, and external drag of wing flaps or landing gear may be used to obtain most adverse cooling conditions and to hold down rate of climb.
(c) Descent and level flight at lowest altitude consistent with safety in the event of complete engine failure. This period to consist of 30 minutes at neutral maximum cruise (2150 RPM/34.0" auto-lean).
(d) Low blower WEP for 5 minutes at altitude attained in (c).
(e) Low blower military power for 15 minutes at altitude attained in (c).

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Subj: Project No. PTR 0415 - Model F4U-1 Airplane; Evaluation of Maximum Practicable War Emergency Rating for.

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(f) Level flight and landing approach for 30 minutes at Maximum Cruise Power in (c).

Schedule B

(a) Take-off 2700 RPM/54.0".
(b) Climb at neutral and low blower military then high blower WEP to critical altitude for this rating. It is desired that the climb be conducted in the manner described in Schedule A(b) in order to utilize full 5 minutes at WEP in high blower.
(c) Thirty minutes maximum cruise level flight at (b) altitude in low blower (2100 RPM/34.0" auto-lean).
(d) High-blower WEP for 5 minutes at (b) altitude.
(e) High-blower military power for 15 minutes at (b) altitude.
(f) Level flight and landing approach for 30 minutes at maximum cruise (low and neutral).

4. Schedules A and B shall be alternated, and the endurance test at each regulator setting shall consist of 30 flights totalling 45 hours. Check power plant visually after each 1.5 hour flight. After every three flights remove spark plugs from master rod cylinders and also from two hottest running cylinders, if other than master rod cylinders, to check visually the condition of the piston head and cylinder walls. Test shall be terminated immediately upon evidence of piston burning or cylinder wall scoring. Strainers shall also be checked at this time. Upon completion of 45 hours endurance the engine shall be removed and completely disassembled for inspection. Engines shall be forwarded to the AEL, NAMC, Phila., Pa., for final disassembly and inspection.

5. Prior to each endurance test at a given regulator setting, sufficient calibration flights shall be conducted to insure proper regulator adjustment, and to determine low and high blower critical altitudes for maximum rate of climb and Vmax level. Torquemeter nose shall be installed for calibration flights, while standard nose shall be re-installed for endurance test.

The torquemeter is overloaded structurally and booster pump capacity is marginal at the emergency powers being tested. Consequently, measured torque may be expected to be approximate at the higher powers. Accurate measurement of airspeed and rate of climb at the higher ratings must be depended upon, therefore, to permit an evaluation of the advantages of the higher ratings. Airplanes shall be instrumentated sufficiently to permit evaluation of airplane and power plant performance as accurately as possible and to detect evidence of engine malfunctioning. Operating time at high powers during calibration flight period shall be held to a minimum practicable. New engines shall be given ground and flight run-in totalling at least 10 hours prior to initiation of endurance test. All tests shall be conducted with F6F-3 propeller installed.

6. Endurance tests shall be conducted in the following sequence:

(a) Subject first airplane to endurance test with regulator setting already established by reference (a) (31.5" ± .2" Hg. carburetor inlet pressure with water on).

(b) Subject second airplane to endurance test with 32.8" ± .2" Hg. regulator setting provided (a) test is satisfactory. Calibration flights of second airplane may proceed while (a) test is in progress. Install new engine in first airplane while (b) endurance is in progress.

(c) Subject first airplane to endurance test with 33.9" ± .2" Hg. regulator setting provided (b) test is satisfactory. Install new engine in second airplane while (c) endurance test is in progress.

(d) Subject second airplane to endurance test with 35.0" ± .2" Hg. regulator setting provided (c) test is satisfactory.

(e) Further increases may be warranted, depending upon the results of the foregoing tests.

7. Increased WEP above the initial nominal setting of 31.5" will require increasing water flow rates which can be

Subj: Project No. PTR 0415 - Model F4U-1 Airplane; Evaluation of Maximum Practicable War Emergency Rating for.

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37707

obtained by installation of larger water metering jets and increase in fuel and water pressure setting. A Pratt & Whitney representative will be made available to install the necessary water jets and to make necessary adjustments in fuel and water pressure and in the auxiliary supercharger regulators. The following nominal engine limits are established for operation at WEP:

Cylinder-head	:	270°C.
barrel	:	177°C.
Oil Inlet	:	105°C.
Carburetor Air	:	60° C.
Minimum oil pressure	:	55psi.

Maintenance of adequate oil pressure at altitude is of prime importance, and test run shall be terminated if the above specified minimum value cannot be maintained. All testing shall be conducted with an anti-detonant mixture of 60% alcohol - 40% water. WEP speed rating at all powers is 2700 RPM. However, during high blower critical altitude runs, it will be desirable to evaluate relative propeller efficiency by checking level flight performance at 2600 and 2500 RPM, also.

8. In the event that the airplane as delivered does not have sufficient water tank capacity to permit full 10 minutes WEP operation as specified in para. 3, an auxiliary water tank to provide the necessary capacity shall be installed in the test airplane.

9. The subject project is hereby assigned class A priority. It is requested that the bureau (Power Plant Design Branch) be informed immediately in the event of any failure, and that a letter report be submitted upon completion of each endurance test. Project PTR 2123 is hereby cancelled and superseded by this project.

/s/ S. B. SPANGLER
Captain, U.S.N.
By direction Chief of Bureau

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2 530

INTRODUCTION

Reference (a) established Project TED No. PTR 0415 to determine by a series of flight endurance tests at progressively higher powers, the maximum practicable power available for combat emergency use in the Model F4U-1 airplane and to evaluate the gain in performance realized from the higher powers. Reference (a) outlined the manner and sequence in which the endurance and performance tests would be conducted. Model F4U-1 airplane No. 55937 was allocated for use on this project.

Performance characteristics at the normal combat power setting (31.5" Hg. carburetor Impact pressure setting) had previously been accomplished on the Model F4U-1 airplane No. 17930 under PTR 2105 and reported on by reference (b). The endurance phase at a regulator setting of 31.5" Hg. was accomplished on Model F4U-1 airplane No. 55937, and a report submitted reference (c).

Performance characteristics were obtained and a report submitted (reference (d)) on Model F4U-1 airplane No. 50030 using a regulator setting at 32.8" Hg. The endurance phase at the 32.8" Hg. setting was obtained on the same airplane and a report submitted reference (e). Performance trials were begun at the 33.9" setting on the Model F4U-1 airplane No. 55937. An engine failure occurred on the first combat power flight. The engine was removed and sent to AEL, NAMC, and the airplane made available for transfer. The performance testing at the 33.9" Hg. pressure setting was delayed pending the completion of the endurance phase at 32.8" Hg. on the Model F4U-1 airplane No. 50030. At the same time it was decided at a conference of BuAer and Flight Test representatives that the endurance phases at 33.9" Hg. and 35" Hg. would not be attempted due to difficulties encountered at the lower settings.

Reference (f) requested that remaining tests on the subject project consist of the following and be done in the order listed: (1) Comparative rate of climb in high blower at 2550 and 2700 RPM, combat power 31.5" Hg. setting with the standard #25 drill size water jet. (2) Brief evaluation of the Pratt & Whitney recommended blower shift procedure as outlined in PWA-01-45A and requested by reference (g).

(3) Combat power performance tests at 33.9" Hg. carburetor impact pressure. The results of (1) and (2) above were reported by reference (g) and are summarized in this report.

Reference (h) requested the flight testing of four (4) different Eclipse auxiliary stage supercharge controls type 381, Style B under this project. The results of these tests were reported in reference (i).

The performance characteristics at the 33.9" Hg. setting with a #18 water jet were completed prior to engine failure except for high blower V max at 2700, 2600 and 2500 RPM. The data available was correlated with that obtained at the 32.8" Hg. setting using a #25 water jet and is presented in enclosure (2).

PURPOSE OF TEST

The purpose of these tests was to determine by a series of flight endurance tests at progressively higher power, the maximum practicable power available for combat emergency use in the Model F4U-1 airplane and to determine the performance benefit derived from the higher powers.

METHOD OF TEST

The airplanes were equipped with the usual instruments plus certain special instrumentation required to more accurately determine engine operating conditions. This included fuel flowmeters and water flowmeters, carburetor impact pressure gage, gate valve indicator, water pressure gage, fuel nozzle pressure gage, cylinder head temperature gages for all cylinders and a torquemeter.

The tests were conducted with the airplane loaded as a normal overload fighter. A summary of the loading for No. 50030 was as follows:

Gross Weight - lbs.....	12162
Fuel - gal.....	237
"Water" - Right wing tank - gals	46
Oil - gals.....	20
.50 caliber guns.....	6
Ammunition - rounds.....	1383

Photographs forming enclosure (1) show model F4U-1 airplane Nos. 55937 and 50030 as flown during the tests. A brief description

of the configuration of the airplanes is as follows:

(a) A propeller of 13'1" diameter, blade design No. 6501A-0 was installed.

(b) Several special instrument leads were carried externally from the firewall back to the cockpit. These were faired together to the fuselage by means of a metal former, making a half round projection of approximately 1" diameter.

(c) The MHF, VHF, and IFF radio antennas were installed, except that the VHF mast was not installed on airplane No. 55937.

(d) Wing walkways were installed. Gun blast and ejection openings were taped over.

(e) An outside air temperature measuring element was mounted on the lower surface of the starboard wing.

Performance data were obtained and reduced to standard conditions in accordance with standard Flight Test Methods.

In the endurance phases of the tests, two definite alternate flight schedules were followed until a total of five (5) hours of combat power time at the desired regulator setting had been obtained or until an engine failure occurred. The two schedules were alternated so as to have approximately the same high power time in each blower.

The original schedule was as given in reference (a). The flight schedule used in the later tests is given in reference (j).

RESULTS OF TESTS:

1. Summary of combat power performance of Model F4U-1 airplane No. 50030 (overload fighter - gross wt. - 12162 lbs.)

A. Maximum Speed

(1) At normal combat power RPM (2700) with No. 25 drill size water jet.

Carburetor Impact Pressure Setting - Ins. Hg.	31.5	32.8	33.9
Airplane - critical altitude - ft:			
High Blower	19850	18800	17900
Low Blower	14300	13200	12200

Max. Speed at airplane crit. alt. - MPH:			
High Blower	421	422	422.5
Low Blower	405.5	406	406.5
Brake Horsepower available:			
High Blower	1950	2030	2100
Low Blower	2095	2175	2250
Manifold Pressure - Ins. Hg:			
High Blower	59.8	61.8	63.4
Low Blower	60.2	62.2	63.9

(2) Effect of varying RPM during High Blower runs. The following data were originally reported in reference (d).

Altitude	18,360	18,360	18,360	23,480	23,480	23,500
RPM	2700	2600	2500	2700	2600	2500
Manifold Press.	60.9	60.5	59.3	51.1	49.9	48.9
Carb. Impact Press.	32.7	33.2	33.3	26.2	26.6	26.8
Carb. Air Temp. °C	50.1	46.0	40.0	35.5	31.5	28.5
BHP	1985	2005	1994	1632	1642	1650
TAS	419	421	420.5	412	413	417
BMEP (Cal.) lbs/sq. - in.	207.5	218	225.5	171	179	187
Fuel flow-recorded lbs/hr (AR)	1510	1485	1440	1280	1210	1150
Specific fuel consumption	.762	.74	.723	.784	.737	.698
Water flow (includes vent drainage)	------	------	------	625	610	585

B. Climb.

(1) At normal combat power RPM (2700) with No. 18 drill size water jet.

Carb. Impact Press. "Hg	31.5	32.8	33.9
Airplane Climb crit. alt. ft:			
High Blower	16500	15,400	14,400
Low Blower	10700	9,800	9,000
Max. Rate of Climb - FPM:			
High Blower	2940	3080	3220
Low Blower	3400	3570	3700

2. SUMMARY - Engine Operating Time

Phase	Airplane No.	Setting	Combat Power Time	Military Power Time	Rated Power	Cruise Power	Eng. No.	Comment
End.	55937	31.5	1.1	7.2 hrs.	--	16.3	P-12771	Failure
End.	55937	31.5	4.2	9.2	--	31.0	P-16219	Failure
Perf.	55937	33.9	0.5	--	--	--	P-16250	Failure
Perf.	50030	32.8	4.1	2 hrs.	--	--	P-15440	Failure
End.	50030	32.8	5.03	8.9	4.4	18.7	P-19146	Failure
Perf.	50030	33.9	5.6	--	--	--	P-17693	Failure

All engines were sent to AEL Philadelphia for examination.

DISCUSSION:

1. The performance data obtained during these tests are given in enclosure (2). The data is arranged so as to present the performance at three carburetor impact pressure settings namely; 31.5" Hg., 32.8" Hg., and 33.9" Hg.

2. The original directive set-up two schedules wherein combat power climbs were made for 5 minutes below critical with wheels and flaps down so as to operate under the most adverse conditions possible. There were many instances during this first set of runs when the carburetor air temperature exceeded 60°C and the hottest cylinder head exceeded 270°C in attempting to climb in either blower for five minutes at climbing speeds of 190-200 MPH. The new schedule is given in reference (j).

3. In attempting to accomplish the climbs listed in the revised schedule, it was still necessary to increase the climbing speed to 190-200 MPH with cowl flaps opened 1/2 to keep the cylinder head temperatures within limits.

4. The outstanding limitation on high power operation appeared to be in high blower military power between altitudes of 18,000 - 20,000 ft. In this condition, it is virtually impossible except at outside air temperatures below 10°C above standard to keep the carburetor air temperature below the maximum of 43°C.

5. In schedule A at the conclusion of the combat power climb, at 18,000, it was found to be impossible to continue in high blower military power either to climb further or to proceed in level flight since the CAT would be approximately 50°C and would not, at this power, fall below the limit of 43°C for several minutes of operation. Therefore, it was necessary to reduce power

until the carburetor temperature fell to a value below the military power limit. No difficulty in this connection was encountered in schedule B since a shift was made to low blower at the conclusion of the combat power high blower climb and the carburetor air temperature would fall to a safe value.

6. The endurance programs were accomplished with a great deal of difficulty. Climbs had to be made in excess of 190 MPH to prevent cylinder head temperatures from becoming excessive. Many runs in military power high blower had to be discontinued before the required 15 minutes were completed due to excessive cylinder head temperatures. The critical temperatures which occurred during these tests in the Model F4U-1 airplane seriously limit the maximum power which can be utilized. It should be noted that none of the engines used in this project successfully completed a 30 flight endurance program involving five (5) hours of combat power time and ten (10) hours of military power time.

7. Some difficulty has been encountered with the C34S spark plugs installed during these tests. The life of these spark plugs seems to be materially reduced by extensive use of combat power. Several spark plug failures occurred (reference (k)). In the later tests the spark plugs were changed after approximately one (1) hour of combat power and no spark plug failures occurred.

8. The shifting procedure as outlined in PWA 01-45A has been tested with this airplane in accordance with reference (f). Results of tests were reported in reference (g) and indicate acceptability of new shift procedure for emergency use at military and combat powers. The only deficiency observed in shifting is the effect of a temporary loss in power during the period between the clutch disengagement when the manifold pressure drops sharply and the increase in manifold pressure as the accelerating mechanism becomes operative.

9. Comparative rates of climb in high blower combat power at 31.5" Hg. carburetor impact pressure at 2700 and 2500 RPM with a No 25 water jet were completed as requested in reference (f) and the results are shown in enclosure (2). All climbs were obtained at approximately best climb speed for the Model F4U-1 airplane, 135 knots V_i. Operation at the lower RPM results in a drop in rate of climb of approximately 100 feet per minute below the critical, decreasing to 40 ft/min at 30,000 ft.

10. During these combat power climbs at 2700 RPM the hottest cylinder head temperature (No. 2 cylinder) reached 275°C observed at approximately 20,000 ft. (outside air temperature 5°C below standard). It is apparent that these climbs could not have been made at this climbing speed had the outside air temperature been warmer than standard without having the cylinder head temperatures at 2700 RPM exeed the limit.

11. The effect of RPM on the carburetor air temperature is shown also in enclosure (2). It is to be noted that all climbs were made with intercooler doors closed. The effect on the carburetor air temperature by the opening of the intercooler doors at these powers is small and in general a drop in excess of 5°C is seldom realized.

CONCLUSIONS:

1. The increase in maximum speed obtained when operating at the 33.9" Hg. setting stead of the 31.5" Hg. setting was only 1.5 MPH.

2. However, it is to be noted that at any altitude below the critical for the 33.9" Hg. setting (high blower) a gain of approximately 11 MPH in speed was obtained when going from the 31.5" to the 33.9" Hg. setting.

3. The rate of climb is appreciably increased by the use of higher combat power ratings. The rate of climb at the low blower critical altitudes has been increased from 3400 FPM at 10700 ft. with the 31.5" Hg. setting to 3700 FPM at 9000 ft. with the 33.9" Hg. setting. The difference in rate of climb at 5000 ft. between the two settings was 280 FPM.

4. There was a slight difference in the maximum speeds observed in high blower at full throttle due to reducing the RPM from 2700 to 2500. The reduction in RPM resulted in an increase of approximately 1 MPH per 100 RPM change; a decrease in fuel and water flows of approximately 8%; and a general reduction in carburetor air temperatures. No appreciable effect upon the propeller efficiencies was noted within the range of altitudes tested.

5. A reduction in the rate of climb from 2990 FPM at 16,700 to 2890 FPM at 16,800' occurred when reducing the RPM from 2700 to 2500 RPM at the 31.5" Hg setting using a No. 25 water jet. A drop in the carburetor air temperature of 7 °C occurred as a result of the reduction in RPM.

6. The shifting procedure for the Model R2800-8, 10 engine as outlined in PWA-01-45A is considered acceptable for emergency use at military and combat powers.

7. A combat power rating in excess of 60" manifold pressure is considered to be impractical for general use when atmospheric temperatures are in excess of NACA standard.

RECOMMENDATIONS: It is recommended that:

1. Some means be provided to indicate when the carburetor air temperature exceeds 55°C.

2. The causes of the failures of the C34S spark plugs be investigated.

Encl: (HW)
1. Six (6) Photographs PTR's 8730, 8729, 8051, 7917, 7918, 8066.
2. Six (6) Charts Photo PTR's 27093, 27094, 8076, 27095, 17688, 17750.

TED No. PTR 0415 - F4U-1
No's 55937 & 50030
3/4 Right Front View

Photo PTR 8730
6-14-44

CONFIDENTIAL
OFFICIAL NAVY PHOTOGRAPH
NOT TO BE USED FOR PUBLICATION

PHOTO. RTR 27093

MODEL F4U-1 AIRPLANE NO. 50030

PERFORMANCE CHARACTERISTICS AT COMBAT POWER

OVERLOAD FIGHTER 12182 LBS.

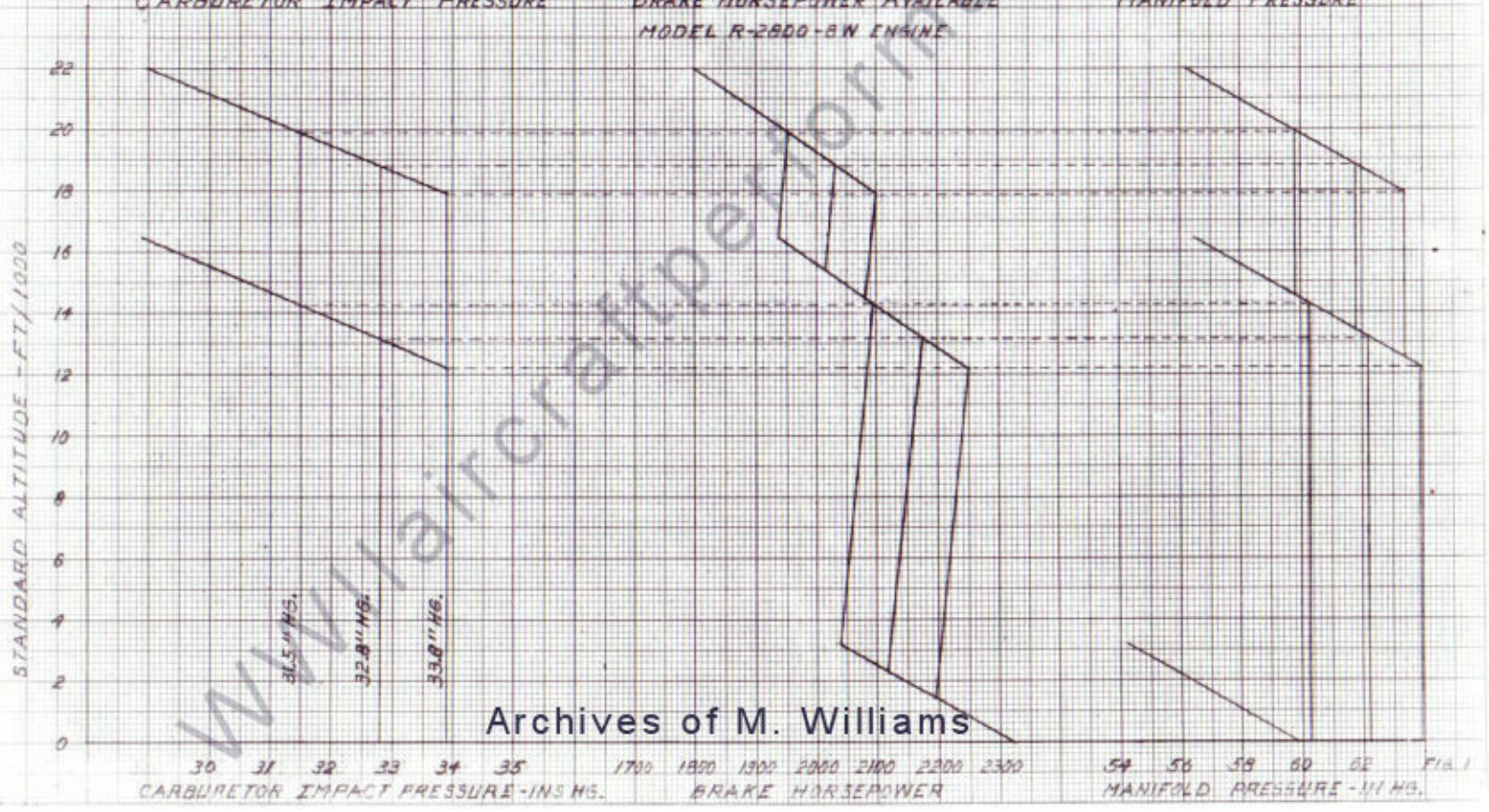


FIG. 1

PHOTO PTR 27044

MODEL F4U-1 AIRPLANE NO. 50030

PERFORMANCE CHARACTERISTICS AT COMBAT POWER

OVERLOAD FIGHTER 12,162 LBS.

CARBURETOR IMPACT PRESSURE SETTINGS:

——— 31.5" HG.

– – – – – 32.8" HG.

——— 33.9" HG.

MAXIMUM SPEED

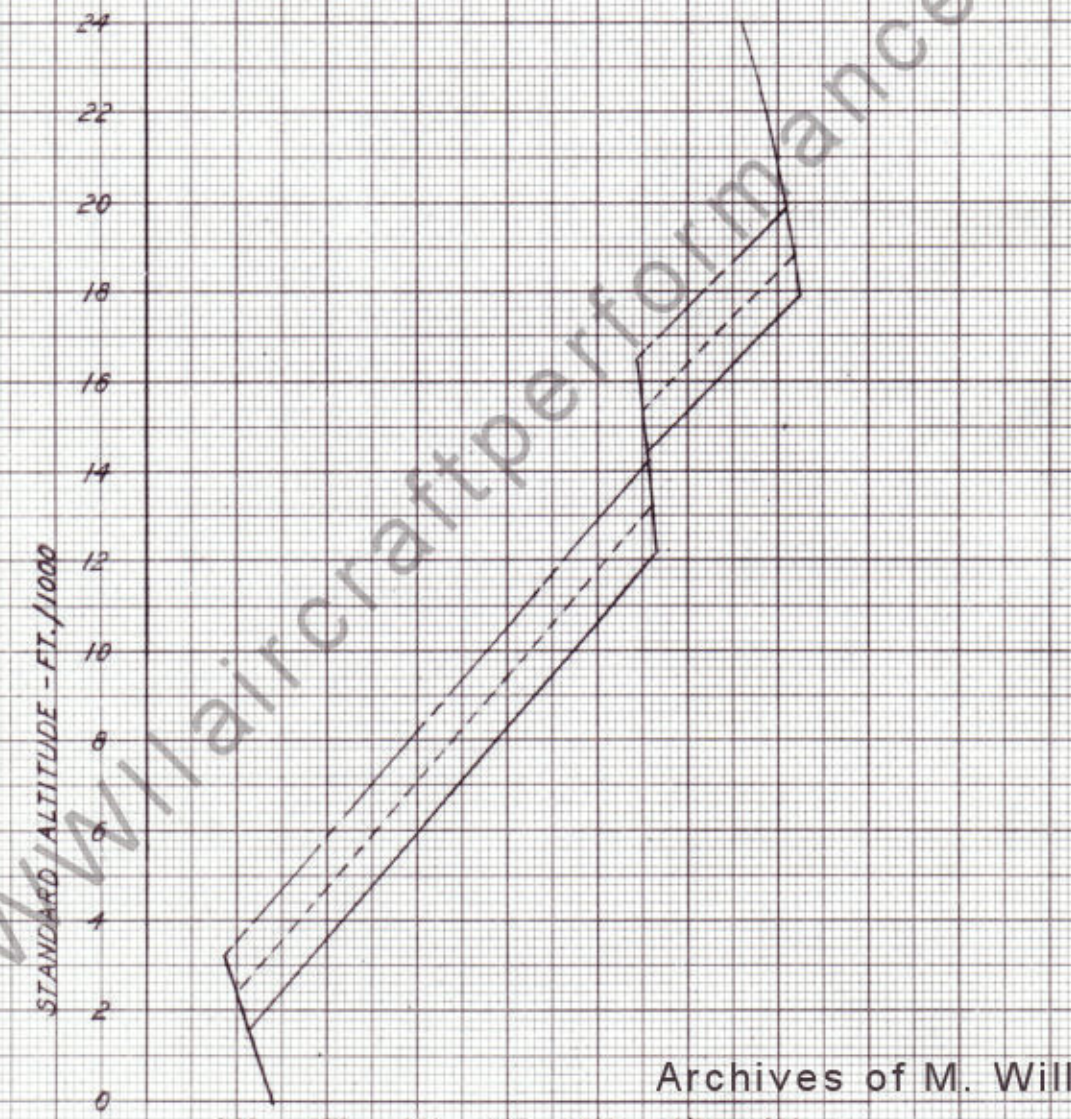


FIG. 2

MODEL F4U-1 AIRPLANE NO. 50030
PERFORMANCE CHARACTERISTICS
AT COMBAT POWER
OVERLOAD FIGHTER GROSS WEIGHT 12,162 LBS

PHOTO PTR NO. 8076

INDICATED BRAKE HORSEPOWER REQUIRED VS MAXIMUM TRUE INDICATED AIRSPEED

AIRSPEED INDICATOR CALIBRATION

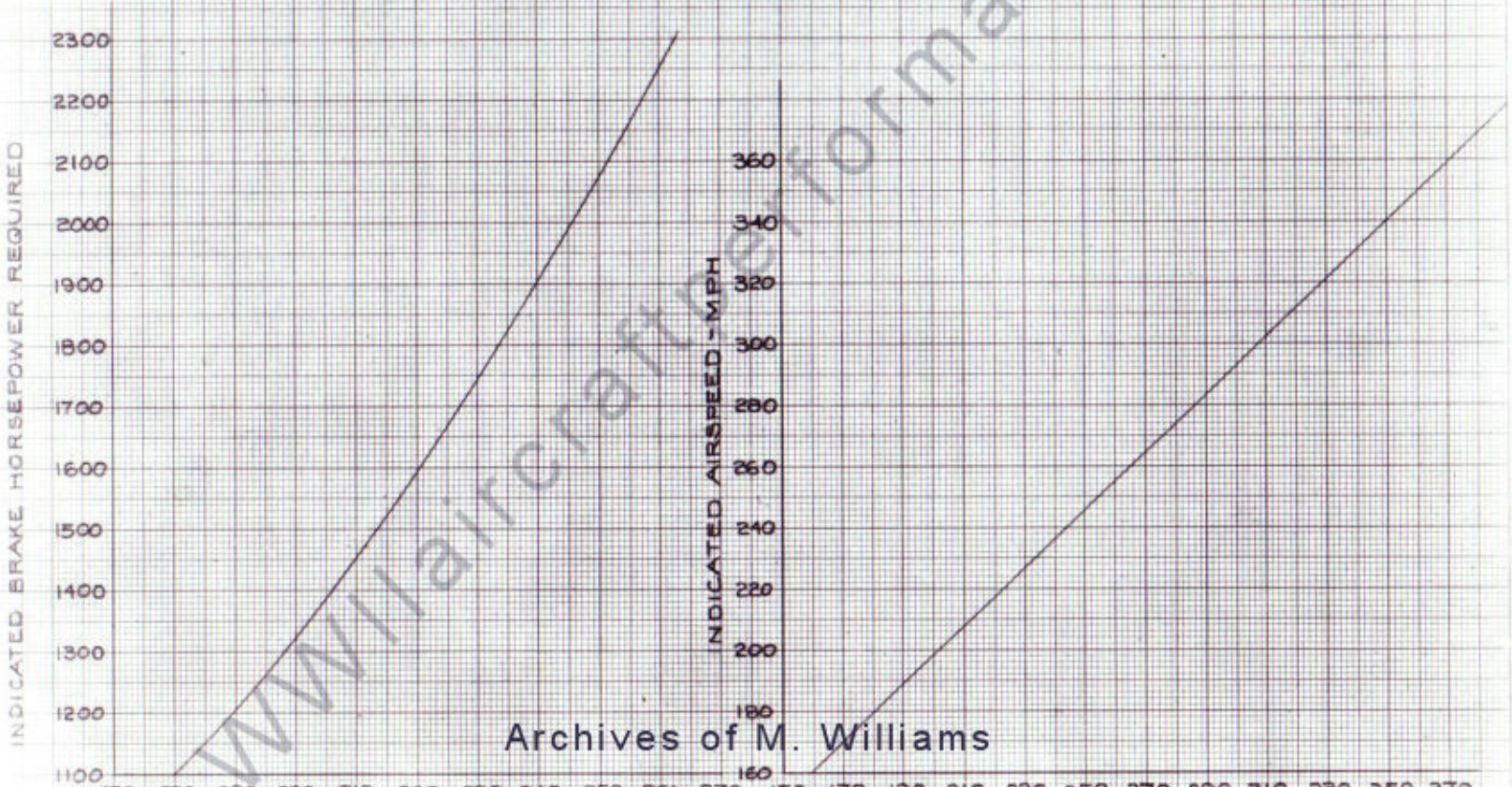


FIG. 3

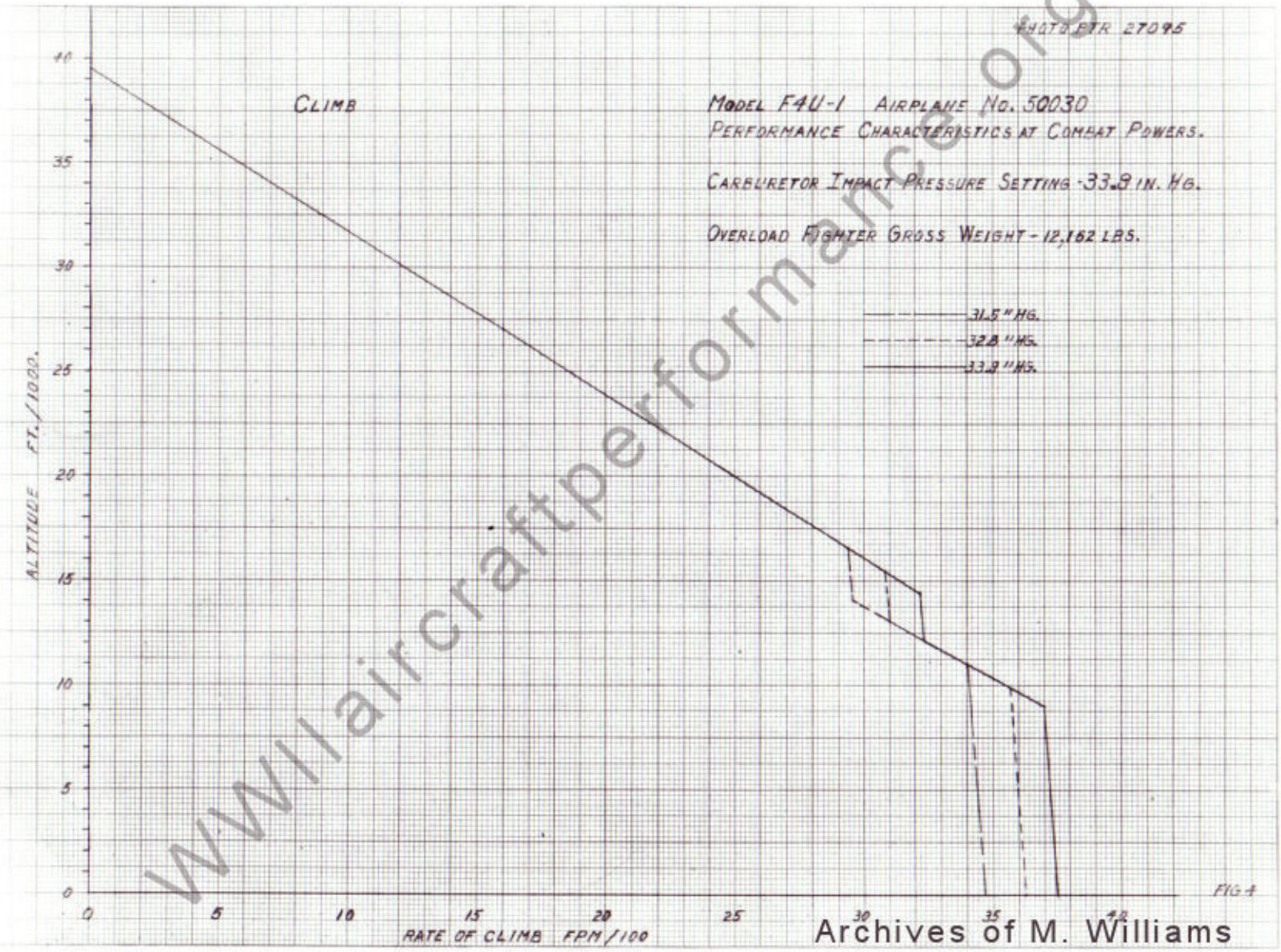
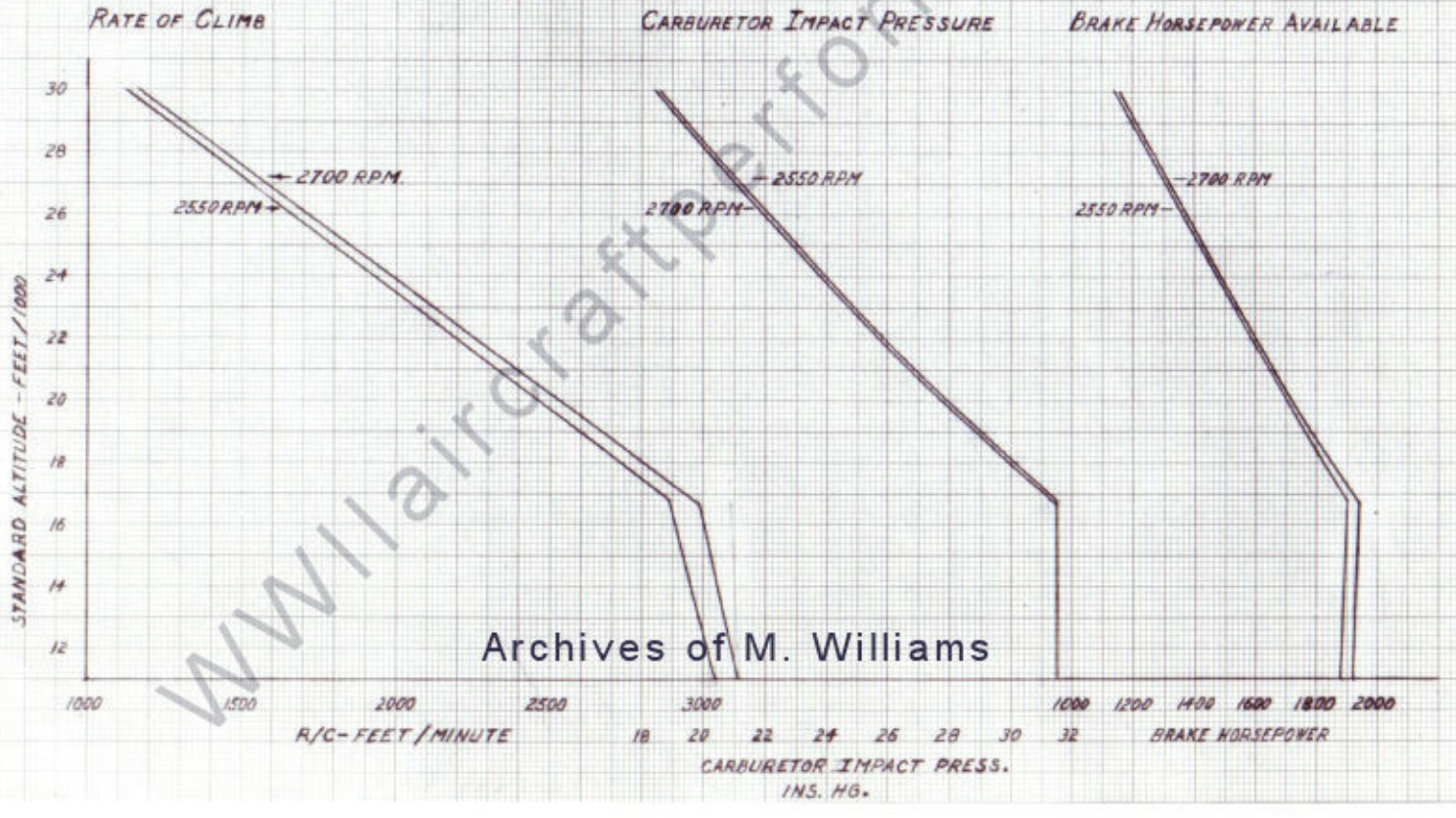


PHOTO PTR 17888

MODEL F4U-1 AIRPLANE NO. 50030

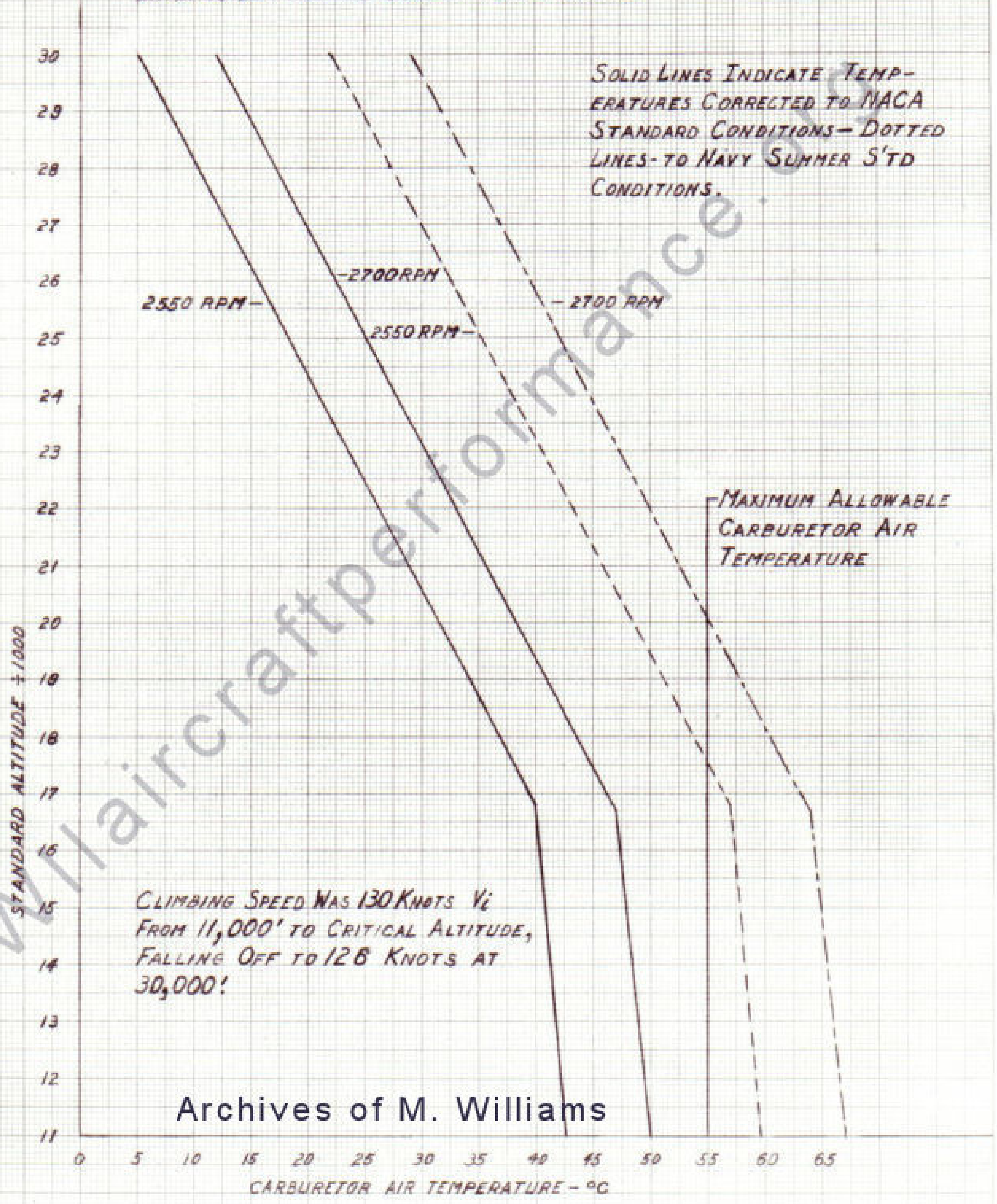
EFFECT OF RPM ON CLIMB CHARACTERISTICS - HIGH BLOWER COMBAT POWER - 31.5 INS. HG. CARBURETOR IMPACT PRESSURE

OVERLOAD FIGHTER GROSS WEIGHT 12214#



MODEL F4U-1 AIRPLANE NO. 50030
EFFECT OF ENGINE RPM ON CARBURETOR AIR TEMPERATURE DURING HIGH BLOWER COMBAT POWER CLIMBS—31.5" HG. CARB. IMPACT PRESS.

INTERCOOLER AND OIL COOLER FLAPS CLOSED



WMG 1-1-45