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RESEARCH ON A TWO-DIMENSIONAL INLET FOR A SUPERSONIC V/STOL PROPULSION SYSTEM

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BY J.L. MARK, M.A. McGARRY AND P.V. REAGAN

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RESEARCH ON A TWO-DIMENSIONAL INLET FOR A SUPERSONIC V/STOL PROPULSION SYSTEM

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FOREWORD

This report was prepared by the McDonnell Aircraft Company (MCAIR), a division of the McDonnell Douglas Corporation, St. Louis, Missouri, for the NASA Lewis Research Center (LeRC), Cleveland Ohio. The study was performed under NASA LeRC Contract, NAS3-22158, "Research on A Two-Dimensional Inlet for A Supersonic V/STOL Propulsion System". This study was conducted between September 1979 and June 1984, with Mr. R. R. Burley and Mr. Al Johns as project managers.

The study reported herein was conducted by the Engineering Technology Division of MCAIR. In addition to the authors listed on the cover, several others have made significant contributions to the study. Messrs. J. D. Flood, R. L. Honse, and F. W. Livingston performed the detailed mechanical design of the inlet model. Messrs. E. D. Spong and J. H. Kamman provided insight and guidance during the aerodynamic design of the model. A special acknowledgement is due Mr. P. E. Hiley for his review and suggestions regarding this report.

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NOMENCLATURE

SYMBOL	DESCRIPTION
Ac, Acap	Capture area
A_i	Inlet area (cm^2)
A_{th}	Throat area (cm^2)
$A_{th_{AUX}}$	Auxiliary inlet throat area (Cm^2)
$A_{th_{MAIN}}$	Main inlet throat area (Cm^2)
CR	Contraction ratio
K_{a_2}	P&WA distortion descriptor
L/D	Ratio of diffuser length to engine face diameter
M	Mach number
M_{MAX}	Maximum design Mach number
M_o	Freestream Mach number
M_1	Mach number downstream of normal shock
M_2	Engine face Mach number
P_S	Static pressure
P_T	Total pressure
P_{T2}	Engine face total pressure
P_{T2}/P_{TO}	Engine face total pressure recovery
$(P_{T2})_{AVE}$	Average engine face total pressure
$(P_{T2})_{MAX}$	Maximum engine face total pressure
$(P_{T2})_{MIN}$	Minimum engine face total pressure
RMS	Root mean square
$U_{eng\ face}$	Engine face velocity
Uo	Freestream velocity
$V_{SLAT_{MAX}}/V_{MAIN_{MAX}}$	Ratio of peak slat velocity to the peak velocity on the main element

NOMENCLATURE (Concluded)

SYMBOL	DESCRIPTION
V/V-Ref	Ratio of local velocity to reference velocity. Vref = freestream for wind on and engine face velocity for static operation
V_∞	Freestream velocity
W	Mass flow
Y/h_c	Shock displacement ratio
α	Angle of attack
β	Sideslip angle
δ_1	First ramp turning angle
δ_2	Second ramp turning angle

SUMMARY

A two-dimensional inlet for a supersonic V/STOL propulsion system was designed and fabricated by MCAIR under NASA Lewis Research Center (LeRC) contract and was subsequently tested in their Low Speed Wind tunnel.

The model was configured for an in-depth study of high angle-of-attack performance improvement concepts and incorporated extensive instrumentation. Model scale (43% based on the GE F404 engine) was selected to insure compatibility with an existing NASA LeRC 12 inch diameter tip driven fan and/or the vacuum mass flow system. The large size also provided ample room for the extensive flow field diagnostic instrumentation. The model was delivered with the following features: a 40° and a 70° droop lip, a 40° droop lip translated forward 2, 4, and 6 inches, a forward auxiliary section with an auxiliary inlet on each of the four sides, varying in thickness from 4.90 to 1.16 inches, an internal auxiliary inlet door for the left side of the auxiliary inlet section, and a variable second compression ramp and subsonic diffuser ramp.

The auxiliary inlets and the droop lip were designed to improve low speed performance by controlling the separation over the sharp, 2-D supersonic lip. Auxiliary inlets decrease the mass flow over the lip, thus reducing the peak velocity. The droop lip aligns the lip with the incoming flow, which reduces local velocities as the flow accelerates around the lip.

Under separate activity, NASA LeRC also fabricated cut-back cowl sideplates, auxiliary inlet cover plates, sideplates for the auxiliary inlet door, internal corner fillets, and an axisymmetric thick lip inlet section for the model.

The model was tested in the NASA LeRC 9x15 ft low speed wind tunnel. Tests were conducted over a range of inlet mass flow at 0 to 120 knots freestream velocity and 0-110 degrees angle of attack. Test configurations were selected to provide a parametric investigation of the performance increments associated with several flow improvement concepts. These concepts included

- o droop lip angle
- o auxiliary inlets
- o auxiliary inlet design variables
- o auxiliary inlet contraction ratio
- o auxiliary inlet cavities
- o drooped lip translation
- o vertical ramp inlet configuration

The performance of these configurations was compared to the performance of two baseline inlet configurations. The first is a conventional supersonic 2-D inlet with a fixed sharp lip and the second is an axisymmetric thick lip inlet. The former provides performance data on a conventional supersonic inlet while the latter provides a performance benchmark for low speeds because of its high contraction ratio (1.47) and resulting elimination of lip losses.

The performance data show the 70° droop to be the most effective flow improvement concept, having performance that approaches the thick lip baseline performance. Even at 110° angle of attack the 70° droop lip maintains attached flow over the cowl lip. The auxiliary inlets and the 40° droop lip had slightly lower performance and exhibited more sensitivity to angle of attack.

Auxiliary inlet performance was found to be a strong function of contraction ratio. Their performance sensitivity to angle-of-attack was improved using internal doors to direct the entering flow. Forward translation of the drooped cowl lip, i.e., a lip slat, decreased performance from the untranslated/drooped level. This was a direct result of flow separation over the slat "knee" which was exposed to the flow as the lip is translated forward. Knee separation increased as translation distance was increased.

The performance of the 2-D inlet, tested with the ramps vertical, i.e., rotated 90 degrees, was found to be very sensitive to angle of attack. Performance levels can be significantly increased by removing the sideplates and blunting the leading edge of the windward cowl. Additional performance gains were obtained by opening auxiliary inlets.

1. INTRODUCTION

The unique inlet system performance requirements associated with supersonic V/STOL aircraft place extreme demands on the inlet designer. The inlet must not only perform well at supersonic speeds but also must exhibit high performance at static and subsonic/high angle of attack flight conditions. High performance at low speeds usually dictates high contraction ratios or thick lips, which are unacceptable at supersonic speeds due to large drag penalties.

The present effort makes maximum use of flow improvement techniques, proven for high subsonic maneuvering flight (References 1 and 2) and adapts these to the critical static and low speed/high angle-of-attack flight regime of the supersonic V/STOL aircraft. Variable geometry concepts were designed and incorporated into a large scale model (43 percent based on the GE F404 engine) of a 2-D supersonic V/STOL inlet system. Subsequent low speed testing at NASA Lewis identified those concepts showing the most promise. These concepts thus provide a means to meet the unique inlet performance requirements of supersonic V/STOL aircraft, maintaining high performance levels at both subsonic and supersonic speeds.

This report contains an analysis section and a major appendix. The former contains a description of the aerodynamic design, model characteristics, data analysis, discussion, and conclusions concerning the most promising inlet design approaches. The appendix contains the reduced wind tunnel data plots and pressure distributions.

2. AERODYNAMIC DESIGN OF THE INLET SYSTEM

The viability of supersonic V/STOL aircraft is strongly dependent on the propulsion system in general and in particular the inlet system. Inlet system requirements associated with supersonic V/STOL aircraft are shown in Figure 1. High inlet performance is required over the complete flight envelope, but the most demanding inlet system performance requirements are associated with static and low speed operation. At vertical lift off or descent, high inlet system recovery is required to maximize payload capability. In addition, during the transition flight phase between wing-borne and thrust supported operation, the angle-of-attack experienced by the inlet system may be very large as shown in Figures 2 and 3. Both horizontal attitude takeoff and landing (HATOL) and vertical attitude takeoff and landing (VATOL) configurations may experience angles-of-attack/yaw of 90 degrees during selected portions of their flight envelope.

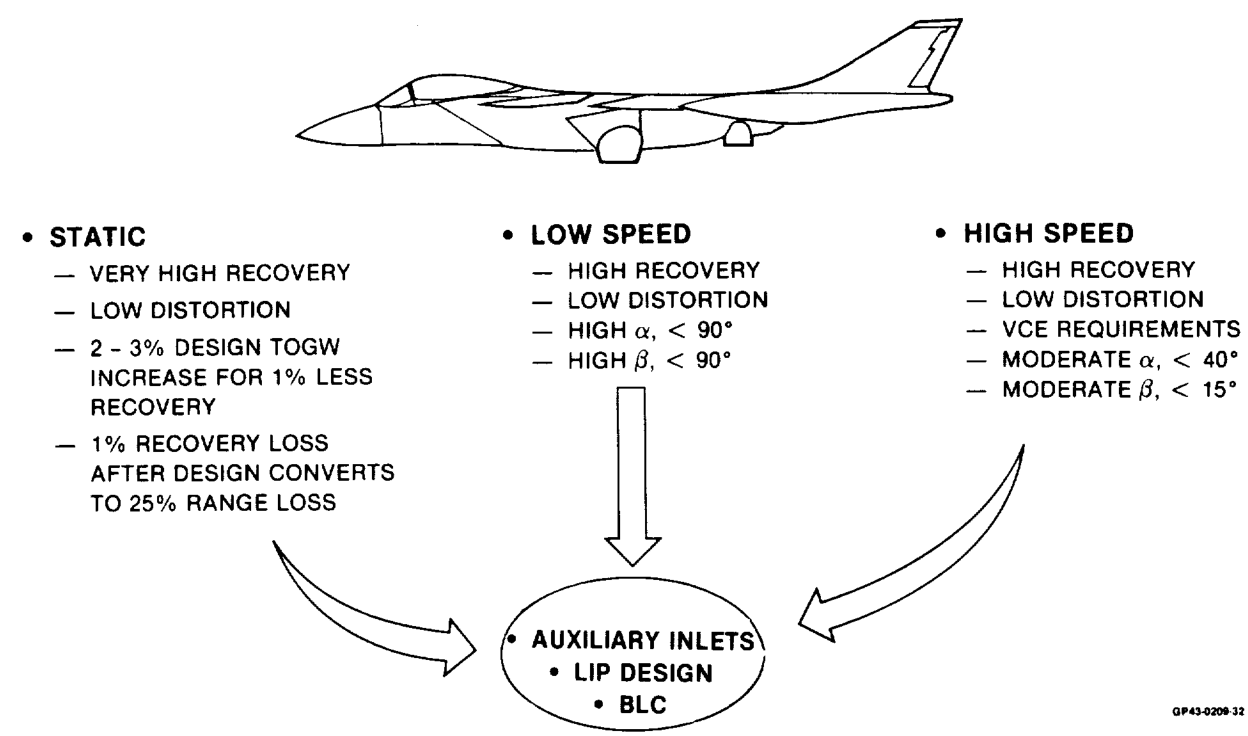

Figure 1. Unique Supersonic V/STOL Inlet System Requirements

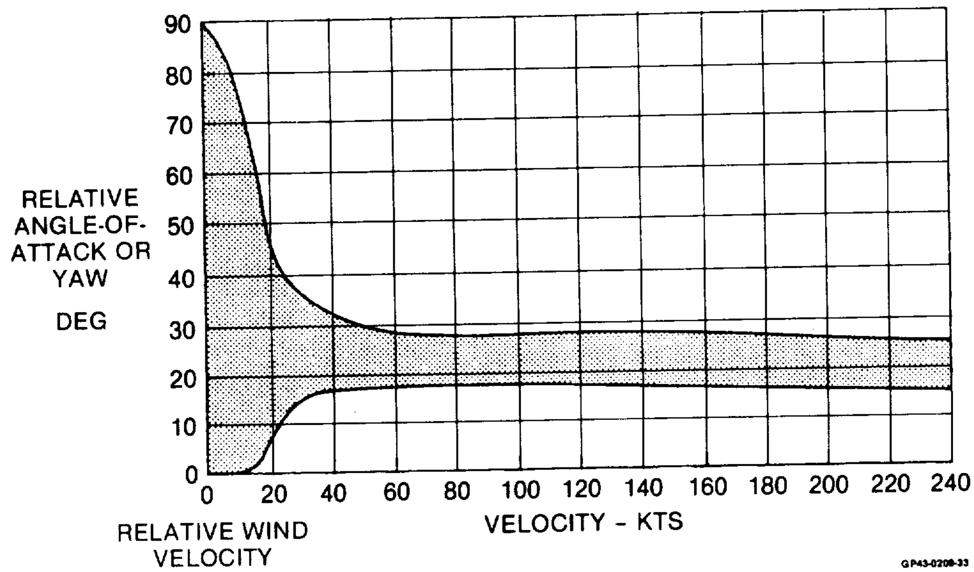

Figure 2. Relative Inlet Angle-of-Attack/Yaw During VTOL Flight
HOTAL Configuration

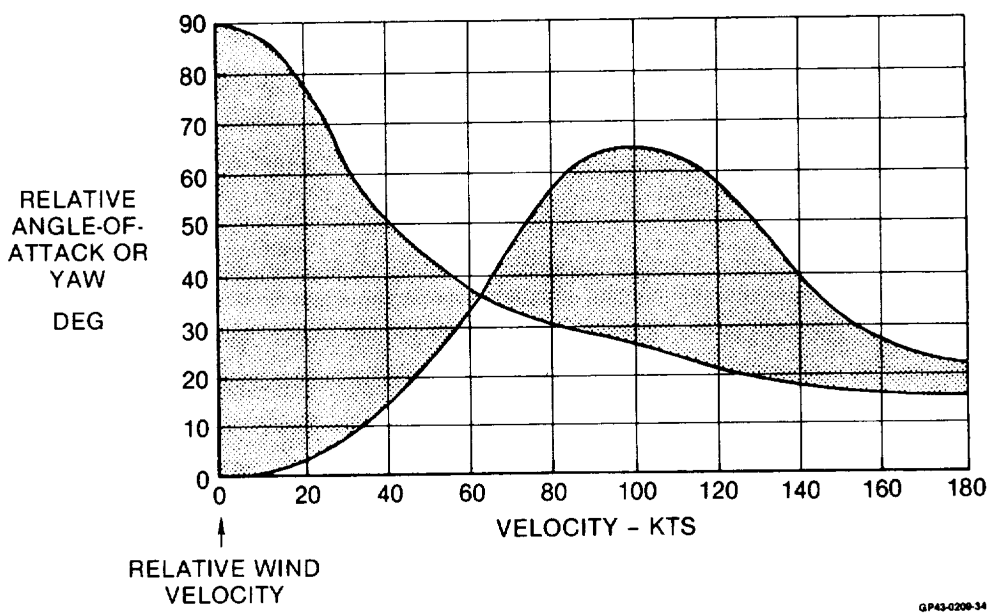

Figure 3. Relative Inlet Angle-of-Attack/Yaw During VTOL Flight
VATOL Configuration

It is apparent from the unique operating conditions placed on the inlet system that there is a critical need for flow improvement devices in the inlet system. These devices are designed to attack the basic inlet flow problem at these flight conditions which is cowl lip separation, Figure 4. Candidate flow improvement devices include auxiliary inlets, variable geometry cowl lip (e.g., a lip slat or flap) and other active/passive boundary layer control techniques.

- **AIRCRAFT CATEGORIES**
  - — STOL
  - — V/STOL
  - — HIGHLY MANEUVERABLE AIRCRAFT
- **PROBLEM - LOWER COWL LIP SEPERATION**
- **SOLUTION - UNLOAD COWL LIP**

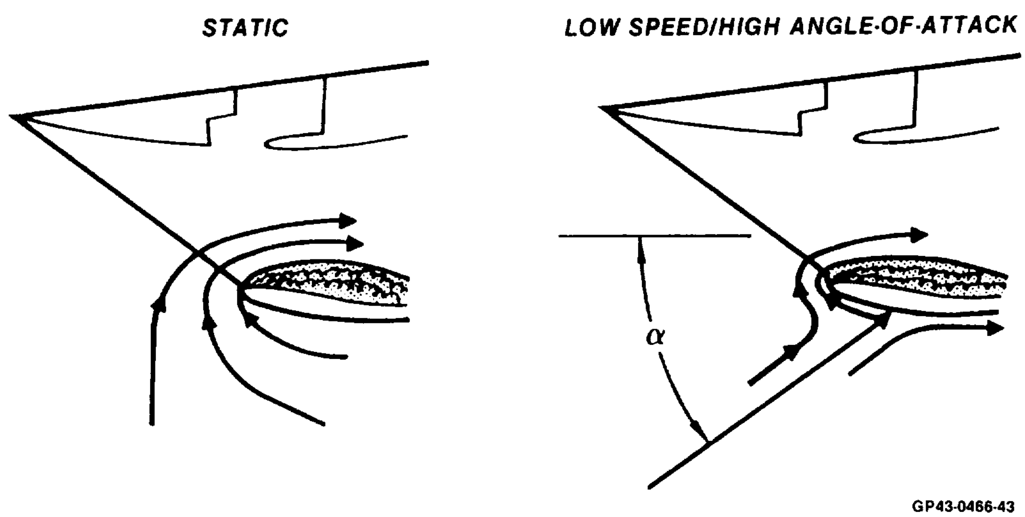

Figure 4. Inlet Design for Aircraft Having Increased Static and Low Speed/High Angle-of-Attack Performance Requirements

These flow improvement techniques along with the other inlet system model requirements, Reference 3, are summarized in Figure 5. Satisfying these requirements in a single supersonic inlet system model is a formidable task and required the aerodynamic design to be based on a broad representation of advanced supersonic V/STOL configuration/integration features. Therefore, the aerodynamic design activity was based on the following steps:

- Survey Inlet System Features of Advanced Supersonic V/STOL Fighters
- Select Compression System Design Features
- Determine Diffuser Design Features
- Size the Selected Inlet System
- Aerodynamically Design the Flow Improvement Concepts

  - Droop Lip
  - Lip Slat
  - Auxiliary Inlets

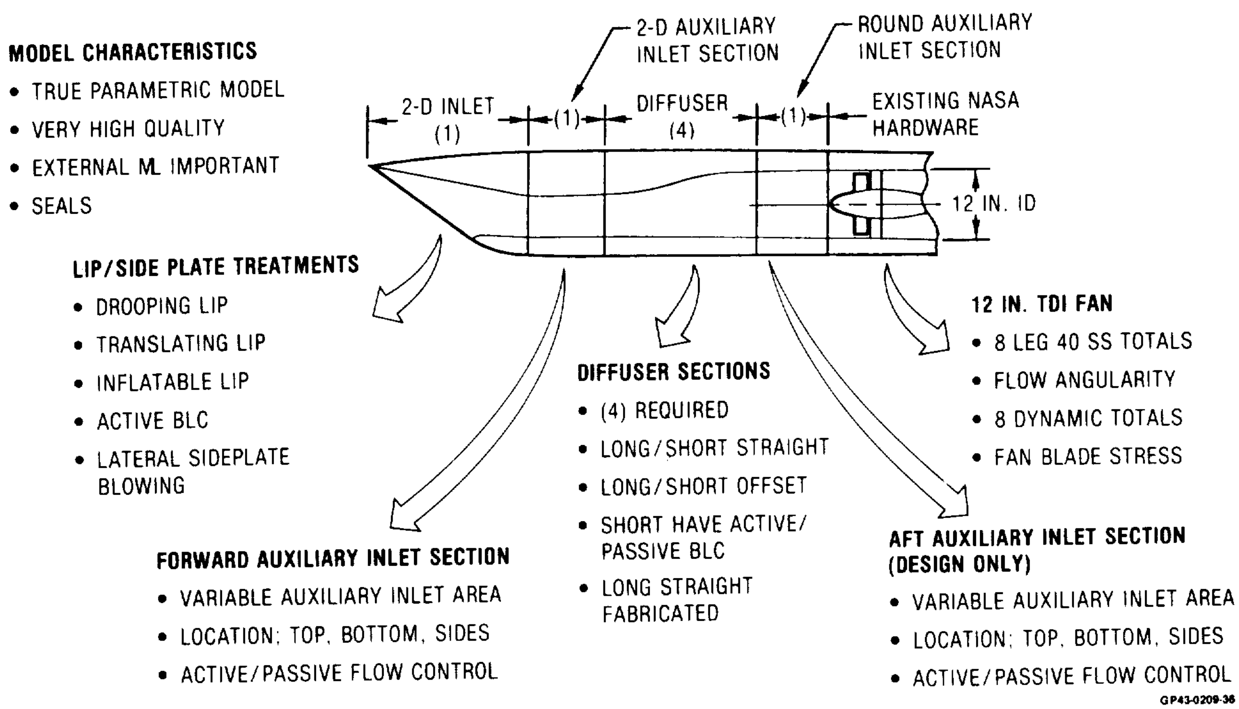

Figure 5. Supersonic V/STOL Inlet System Model Requirements

2.1 <u>SURVEY OF INLET SYSTEM FEATURES OF FIGHTERS</u>- A review of advanced supersonic V/STOL configurations was conducted to determine the characteristic inlet system features. The configurations reviewed are shown in Figures 6 through 15 and discussed in References 4 through 6. The inlet system features identified in this survey are summarized in Figure 16. In general, the inlet systems were designed for a Mach 1.6 dash requirement, with a maximum Mach number capability of Mach 1.8 or greater. The majority of the inlet systems were of the two-dimensional, overhead ramp type.

- — NORTHROP HATOL (RALS)
- — NORTHROP VATOL (RALS)
- — VOUGHT VATOL (RALS)
- — GENERAL DYNAMICS EJECTOR-DIFFUSER HATOL
- — GENERAL DYNAMICS HATOL (RALS)
- — GRUMMAN HATOL (RALS)
- — NAVY CONCEPTUAL DESIGN HATOL (LIFT ENGINES)
- — MCAIR CONCEPTUAL DESIGN HATOL (PCB)
- — MCAIR MERGED MISSION HATOL DESIGN (PCB)

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Figure 6. Review of Existing Supersonic V/STOL Configurations

COMPARATIVE MODEL ARRANGEMENT

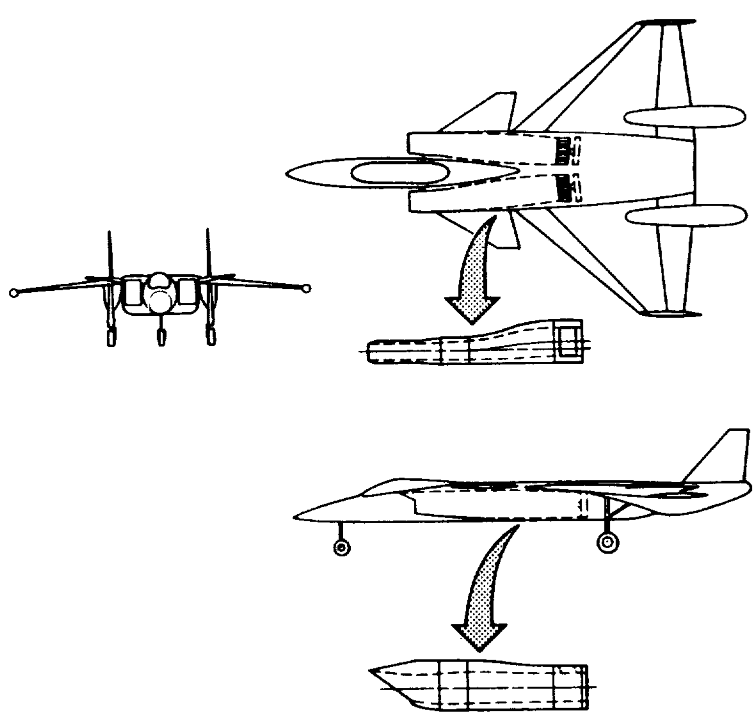

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Figure 7. Northrop HATOL Concept

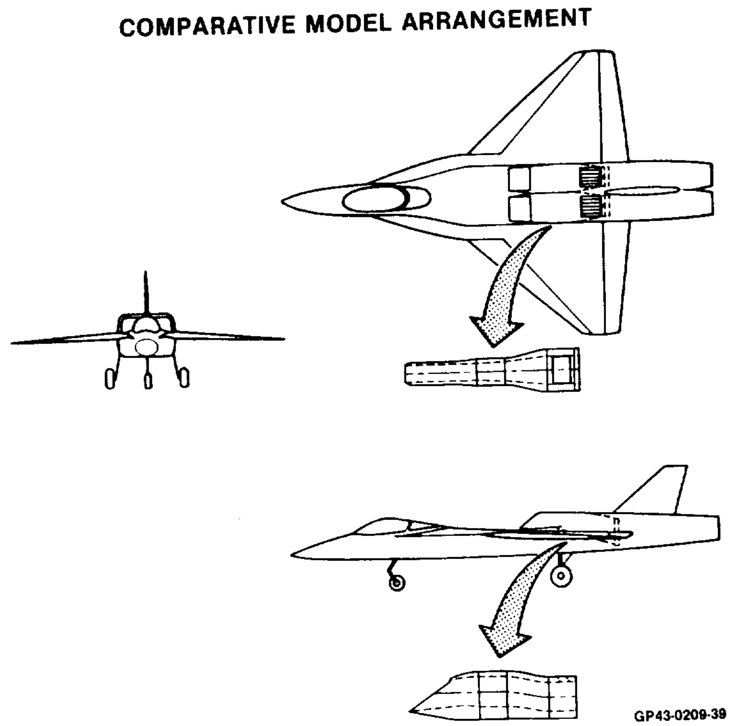

Figure 8. Northrop VATOL Concept

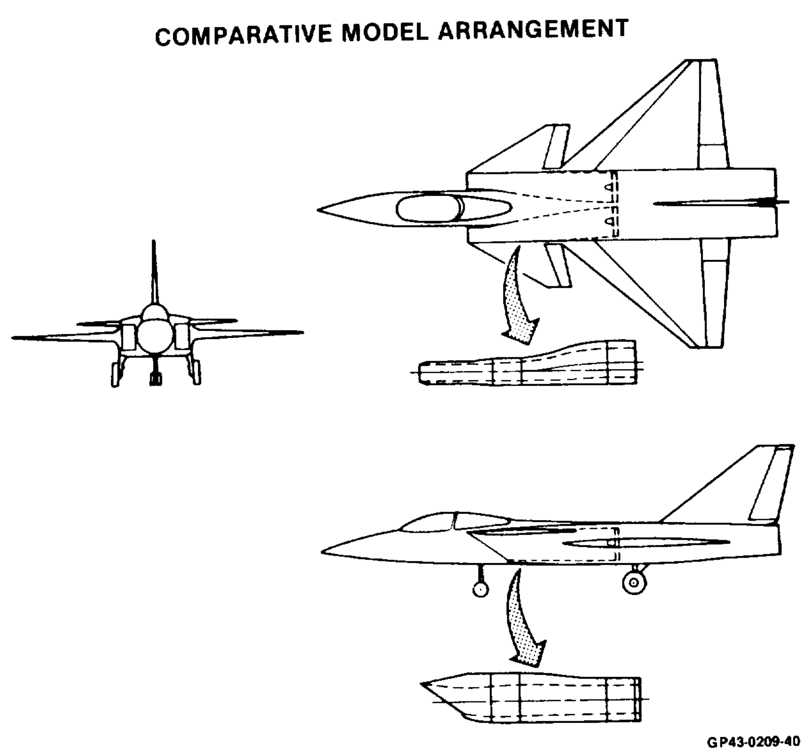

Figure 9. Vought VATOL Concept

COMPARATIVE MODEL ARRANGEMENT

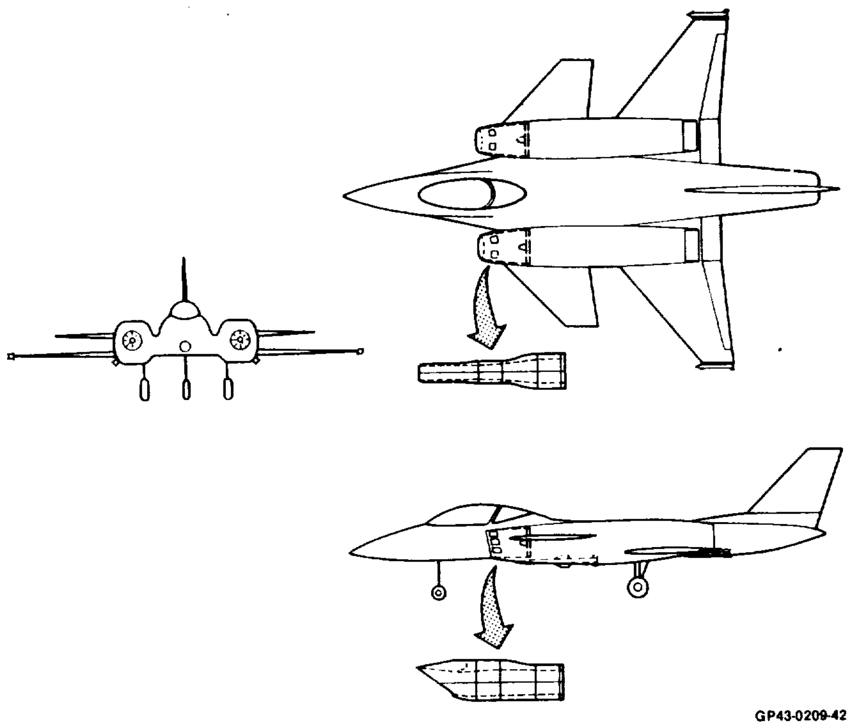

Figure 10. General Dynamics HATOL RALS Concept

COMPARATIVE MODEL ARRANGEMENT

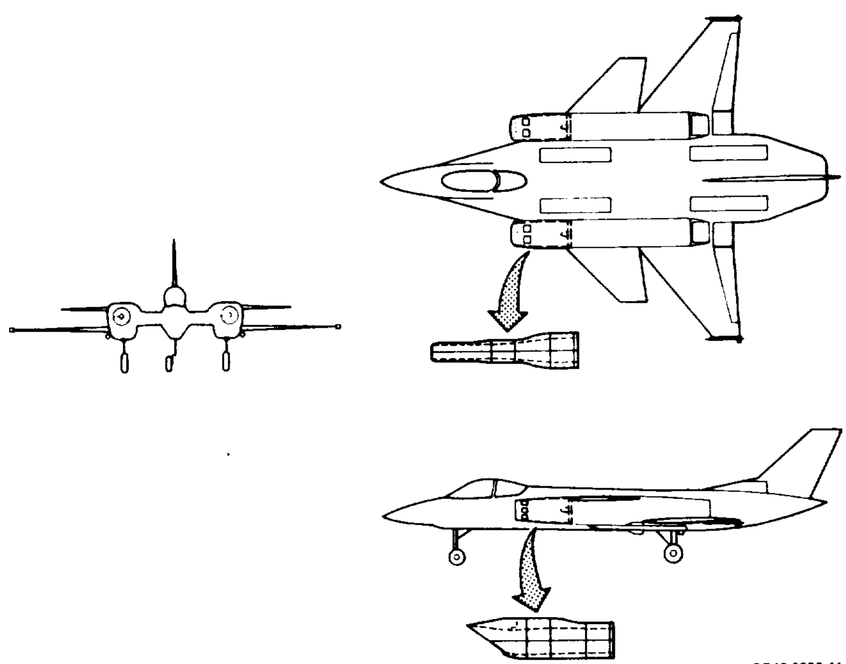

Figure 11. General Dynamics HATOL Ejector-Diffuser Concept

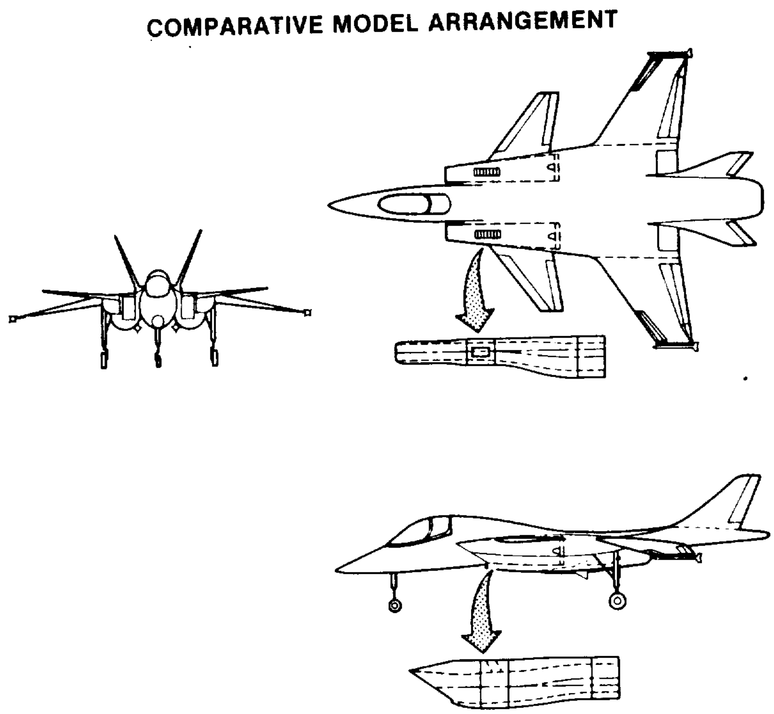

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Figure 12. Grumman HATOL Concept

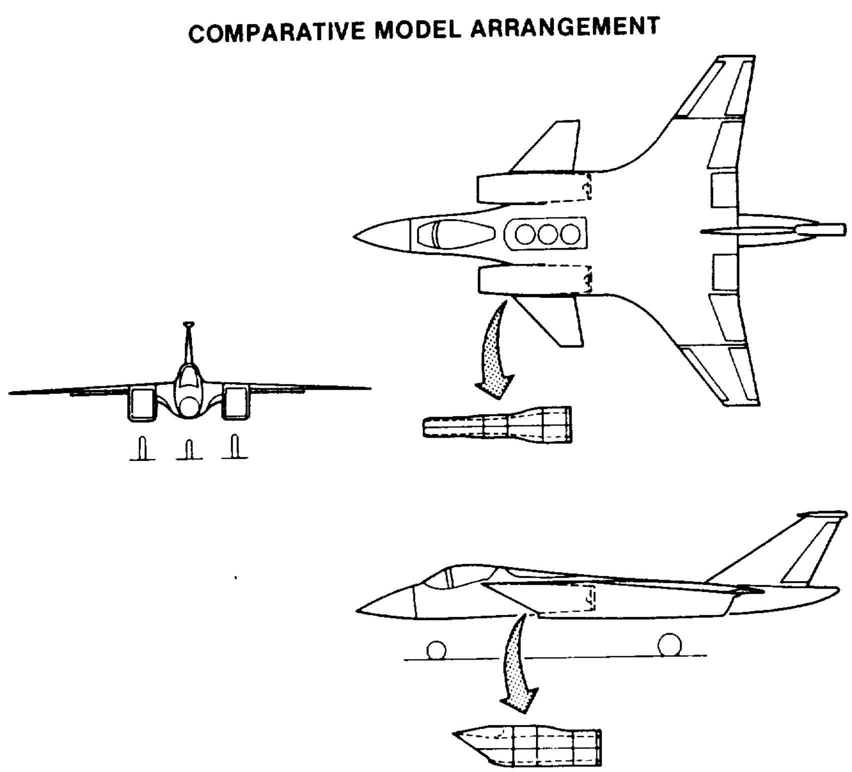

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Figure 13. Navy Supersonic V/STOL Concept

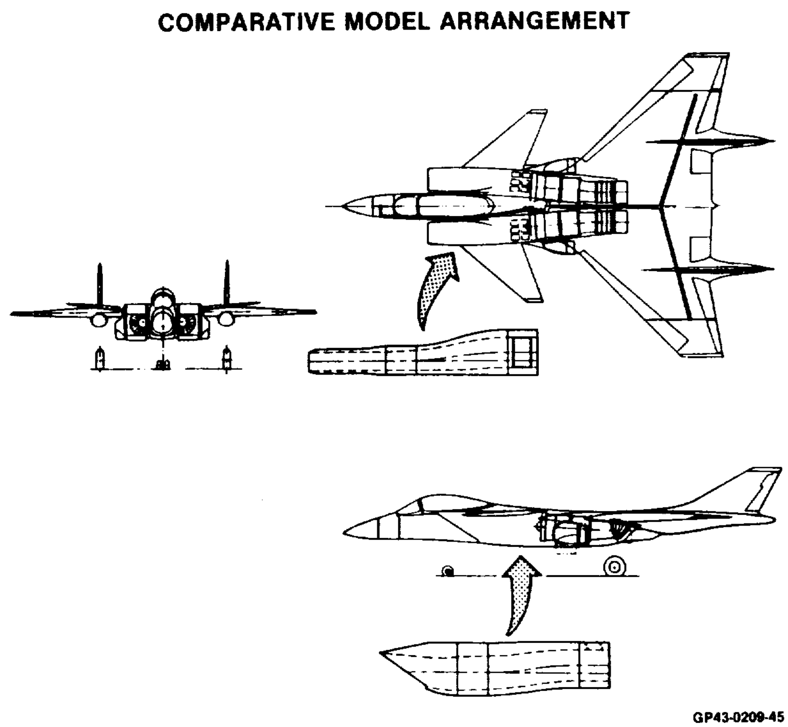

Figure 14. McDonnell V/STOL Conceptual Design

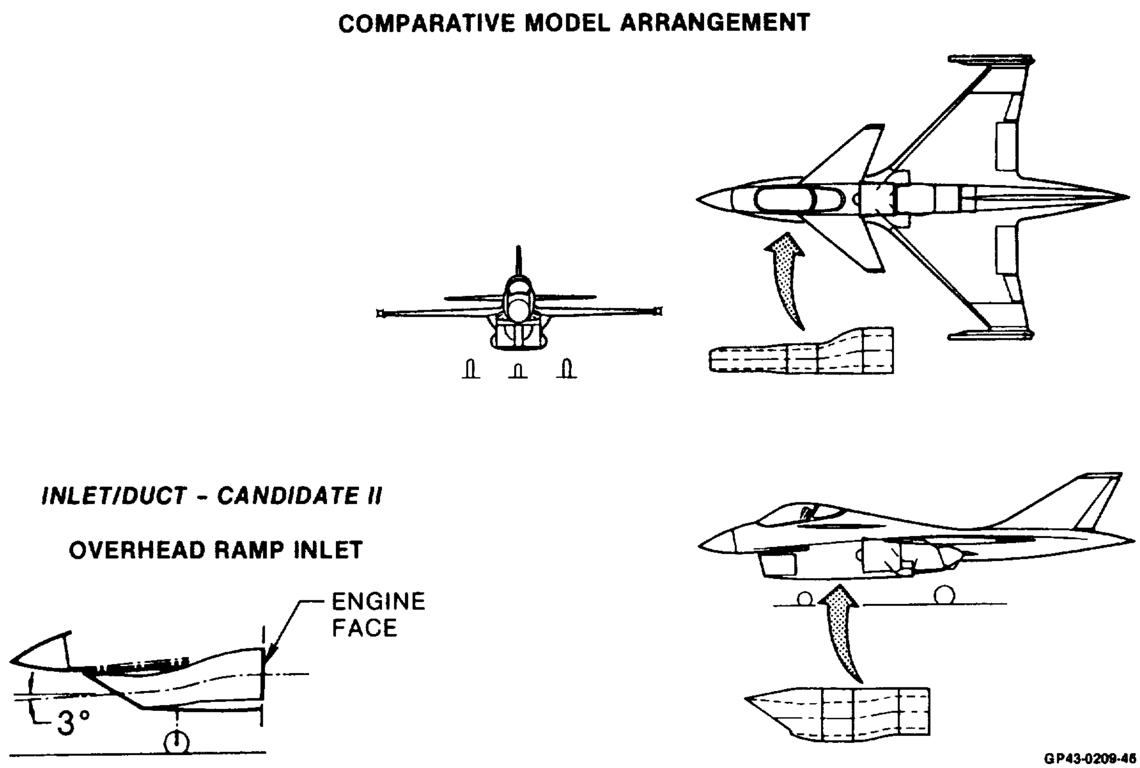

Figure 15. MCAIR Supersonic Merged Mission Fighter Attack Conceptual Design

CONFIGURATION	INLET TYPE	AR CAP	AR THROAT	δ_1 (DEG)	δ_2 (DEG)	M DASH	M DESIGN	A_{AUX}/A_{CAP}	A_{CAP} (IN.^{2})
1. NORTHROP HATOL, RALS, SIDE MOUNTED	2-D OVERHEAD SINGLE RAMP FIXED GEOMETRY	1.125	—	7	—	1.6	1.8	0.743	871
2. NORTHROP VATOL, RALS, TOP MOUNTED	2-D, LOWER SINGLE RAMP FIXED GEOMETRY	0.600	0.500	7	—	1.6	2.0	0.940	715
3. G.D. EJECTOR/ DIFFUSER HATOL	AXISYMMETRIC NORMAL SHOCK	—	—	—	—	1.6	1.6	0.540	700
4. G.D. RALS HATOL MID STRAKE	AXISYMMETRIC NORMAL SHOCK	—	—	—	—	1.6	1.6	0.540	700
5. VOUGHT VATOL RALS SIDE MOUNTED	2-D OVERHEAD DOUBLE RAMP FIXED GEOMETRY	1.500	1.124	8	3	1.6	2.5+	DROOPING LIP MENTIONED NO AUX INLETS SHOWN	555
6. GRUMMAN HATOL	2-D OVERHEAD DOUBLE RAMP FIXED GEOMETRY	1.670	0.730	7	7	1.6	2.0	1.000	821
7. NAVY HATOL CONCEPT	2-D OVERHEAD SINGLE RAMP FIXED GEOMETRY			—		1.6	—	—	—
8. MCAIR HATOL CONCEPTUAL DESIGN	2-D OVERHEAD DOUBLE RAMP VARIABLE GEOMETRY			8	15	1.8	2.2	—	—
9. MCAIR HATOL MERGED MISSION CONCEPT	2-D OVERHEAD DOUBLE RAMP VARIABLE GEOMETRY			8	15	1.8	2.2	—	—

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Figure 16. Summary of Resulting Inlet Designs

Diffuser characteristics from these advanced supersonic V/STOL configurations are summarized in Figure 17. The diffusers represent a wide range of length and offset to diameter ratios. Lengths vary from approximately 1.75 to 5.2 diameters while offsets range from zero to 0.63 diameters.

2.2 SELECTED INLET CHARACTERISTICS - There are four major inlet design variables that must be selected in the design of a supersonic inlet system, maximum Mach number, inlet type, boundary layer bleed, and cowl lip shape. The majority of the surveyed supersonic inlet systems had a maximum Mach number capability of 1.8 or greater. This in conjunction with results of MCAIR in-house studies and contracted programs conducted for the U.S. Navy (References 5 and 6) indicated that a maximum Mach number of 2.2 would result in an inlet system having a broad applicability to current and future advanced V/STOL configurations.

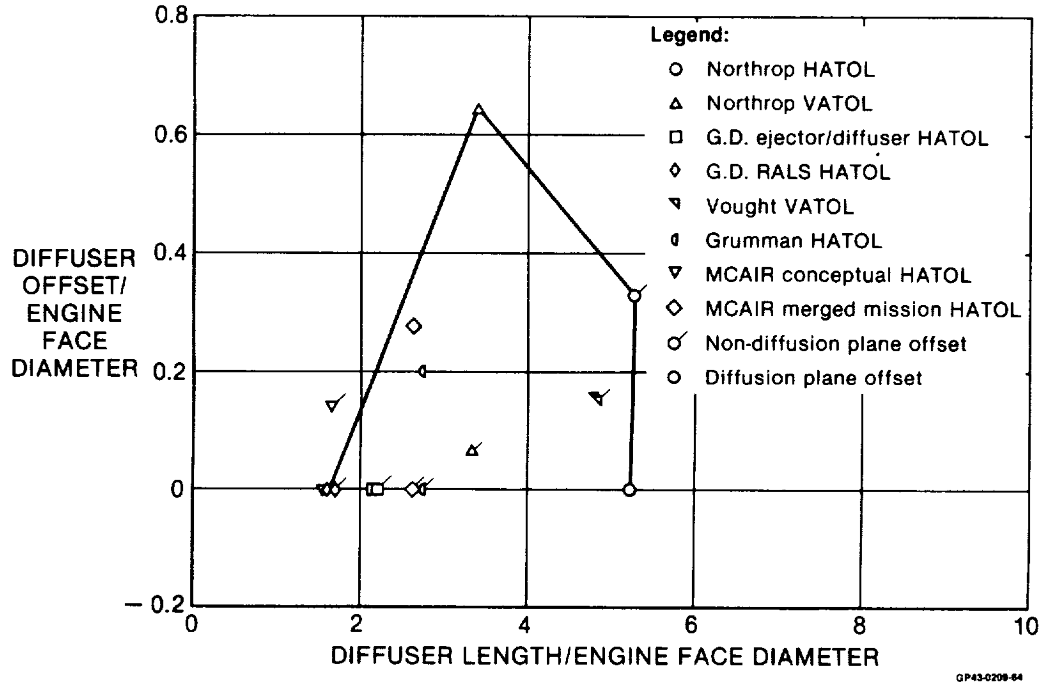


Figure 17. Summary of Diffuser Characteristics

Inlet type is a strong function of maximum Mach number as shown in Figure 18 which lists the different external compression inlet types and their general maximum Mach number capability. The listed M_{max} is based on recovery and indicates the approximate Mach number at which the recovery improvement of a more sophisticated inlet would more than offset the increased complexity and weight. Thus, a two-dimensional overhead ramp inlet having two compression ramps was selected as the building block of the supersonic V/STOL inlet system, Figure 19. The first ramp is fixed at 8° and the second ramp compression is variable from 0° to 15° as shown in Figure 20. The ramp schedules were selected to achieve near maximum recovery from Mach 1.4 to Mach 2.2 with the nominal "shocks on lip" condition occurring at Mach 2.2.

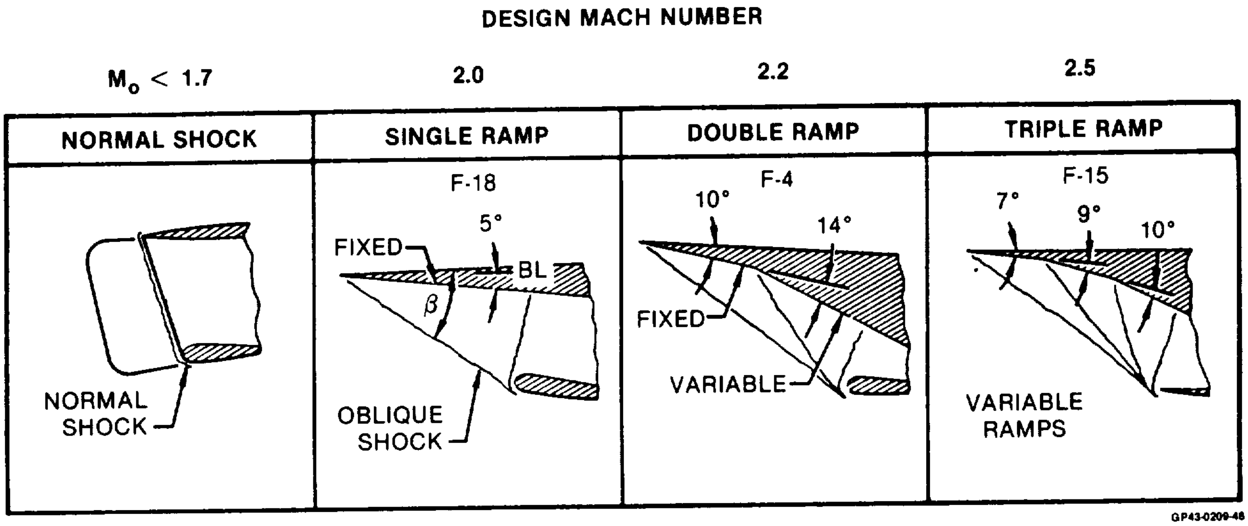


Figure 18. Inlet Type vs Design Mach Number

- **2-D OVERHEAD RAMP INLET**
  - δ_1 = FIXED AT 8° $\quad M_{DASH} = 1.8$
  - δ_2 = VARIABLE 0 TO 15° $\quad M_{MAX} = 2.2$

2-D, OVERHEAD RAMP VARIABLE A_{th} $M_{DESIGN} = 2.2$

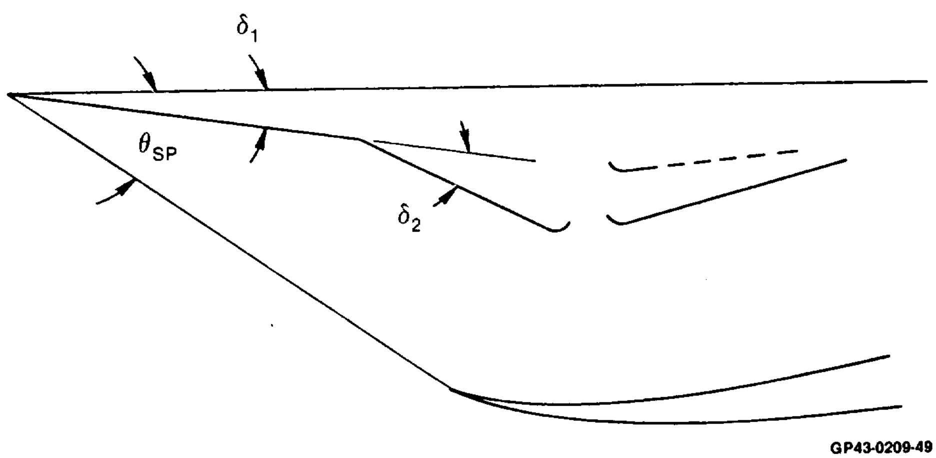


Figure 19. Selected Inlet Design

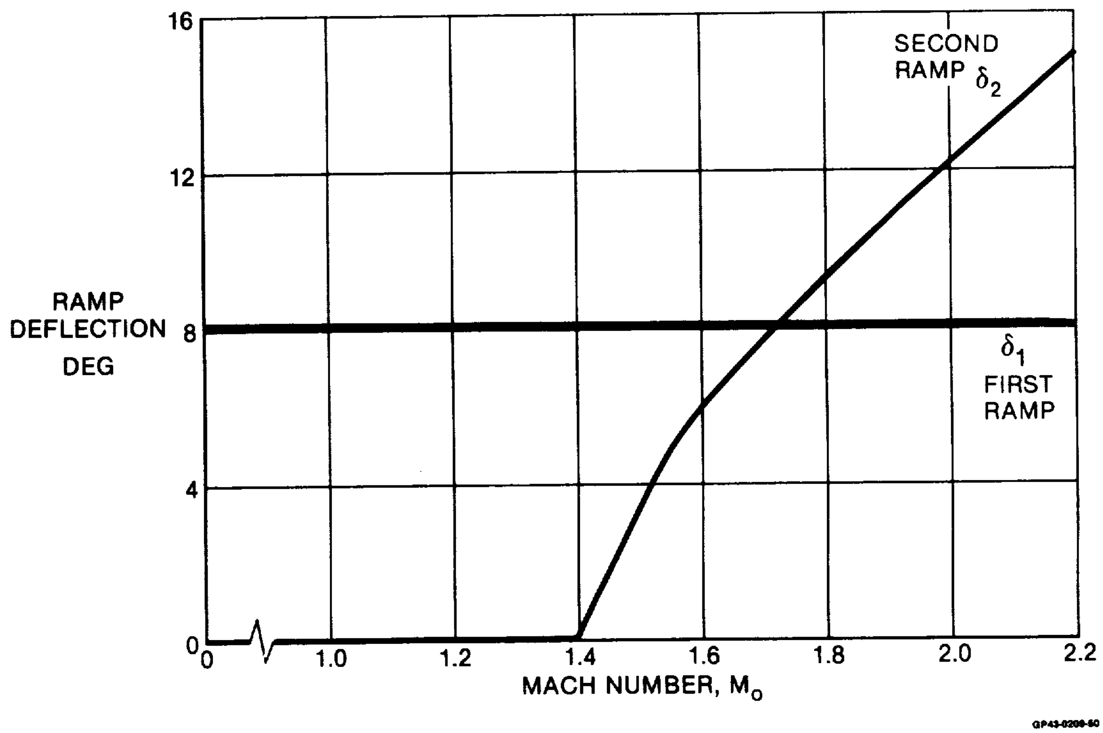


Figure 20. Inlet Ramp Schedules vs Mach Number

Consistent with the near maximum recovery scheduling of the ramp system, the inlet has boundary layer bleed incorporated into the second ramp surface, the throat slot, and the sideplates. This will minimize any adverse effects of normal shock/boundary layer interactions and insure that normal shock movement with inlet mass flow ratio will not degrade the inlet flow field. The total bleed incorporated into the inlet system is compared against advanced inlet design bleed schedules in Figure 21. These bleed schedules are based on our extensive background in inlet design for the F-4, F-15, and F-18 aircraft. Also shown is the bleed schedule for the F-18 inlet system.

The cowl lip incorporated into the inlet is based on the F-15 inlet cowl lip. This particular lip shape has demonstrated outstanding transonic maneuvering capabilities in conjunction with low supersonic drag characteristics.

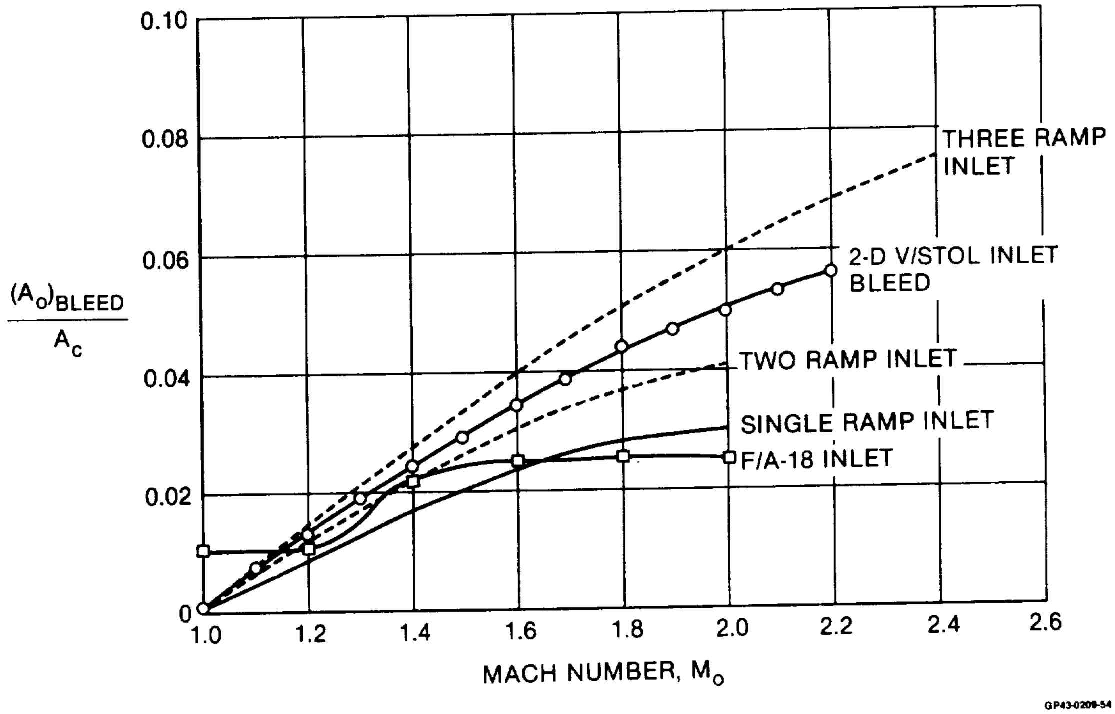


Figure 21. Advanced Design Inlet Bleed Flow Schedules

2.3 DIFFUSER DESIGN FEATURES - The diffuser that was incorporated into the inlet system had a length of 4.94 diameters with no offset. Area distributions for both the maximum Mach number and low speed inlet configurations are shown in Figure 22. The diffuser selection was based on two important considerations. First a major goal of the program was to evaluate and generate a data base for inlet systems and flow improvement concepts that satisfied the demanding static and subsonic high angle-of-attack requirements associated with V/STOL aircraft. Therefore, any performance problems associated with the diffuser because of length or offset would only serve to detract from the goal. The selected diffuser does, however, fall into the regime of those designs associated with advanced supersonic V/STOL aircraft. Secondly, the impact of diffuser length and/or offset would best be studied under an add-on or extension to the present effort. Its impact on a preferred flow improvement concept could then be properly assessed.

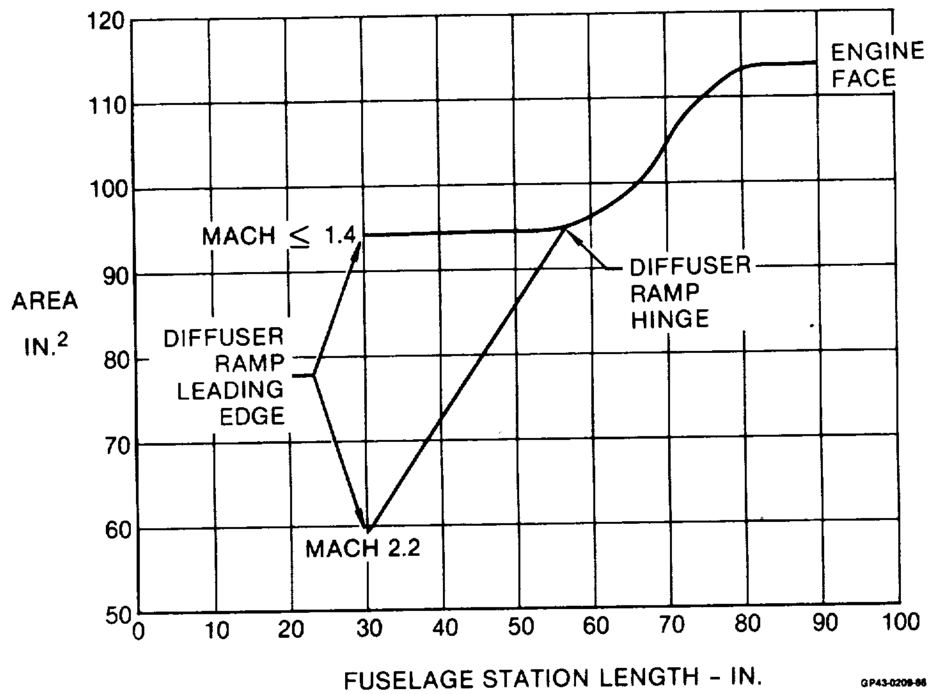


Figure 22. Diffuser Area Distributions

An extensive analysis of the selected diffuser design was performed using the MCAIR Diffuser Analysis Procedure (DAP), Reference 7. This procedure is a coupled viscous/inviscid analysis which simultaneously solves both the potential core flow and boundary layer flow equations in a streamwise marching procedure. Solutions include diffuser total pessure recovery, static pressure distributions, and both separation location and extent. Predicted diffuser performance for the Mach 2.2 area distribution is shown in Figure 23 as a function of throat Mach number. Diffuser recoveries of 0.985 are predicted for 95 percent critical inlet operation. Predicted diffuser performance for both the high and low speed area distributions is summarized in Figure 24. The diffuser is separation free over the complete inlet Mach number and mass flow operating envelope.

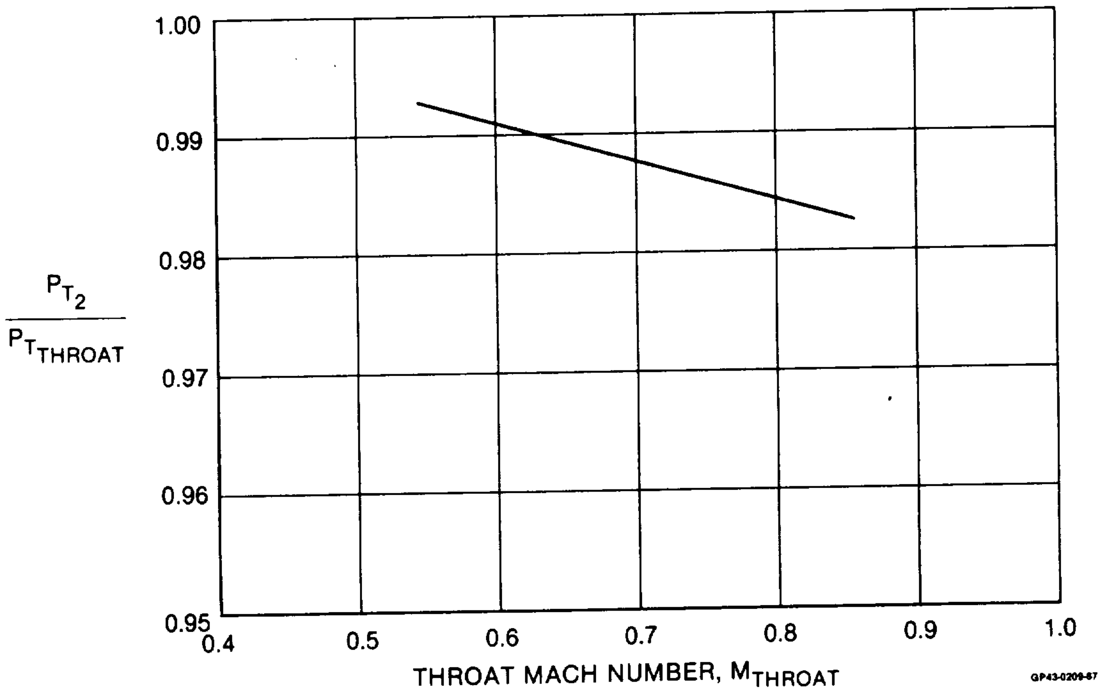


Figure 23. Diffuser Pressure Recovery
Supersonic Configuration L/D = 4.98 Area Ratio = 1.915

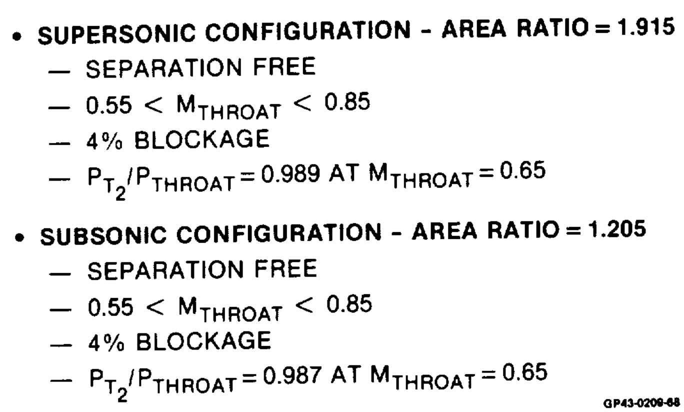


Figure 24. Diffuser Analysis Results - Selected Diffuser

2.4 INLET SIZING - Inlet sizing was performed using established sizing procedures and airflow allowances that were developed as a result of the F-4, F-15, and F-18 inlet system development efforts. The airflow schedules used in sizing, Figure 25, are representative of both a scaled GE F404 engine and a P&WA F100 engine. These engines represent current high technology design and power many of our first line fighter aircraft.

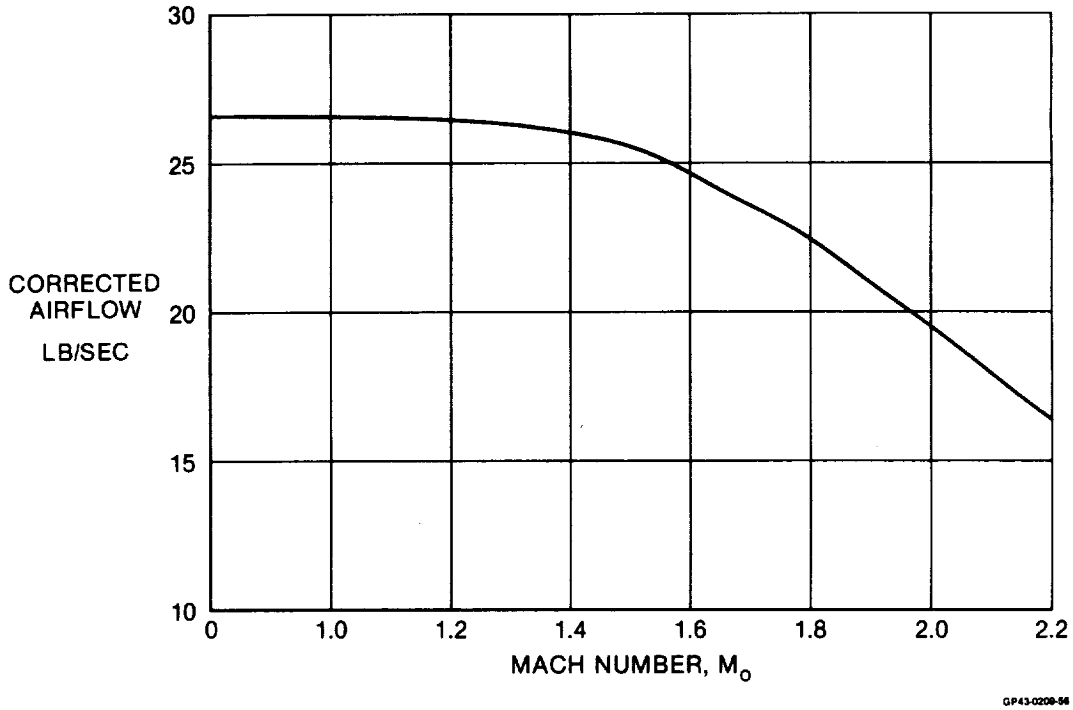


Figure 25. Engine Corrected Airflow Scaled GE F404/J7A12

Inlet sizing for the GE engine is summarized in Figure 26. The inlet sized at Mach 1.6 with a required capture area of 823.2 cm^2 (127.6 in^2). Capture area requirements for the individual airflows are provided to illustrate the buildup of the total required capture area.

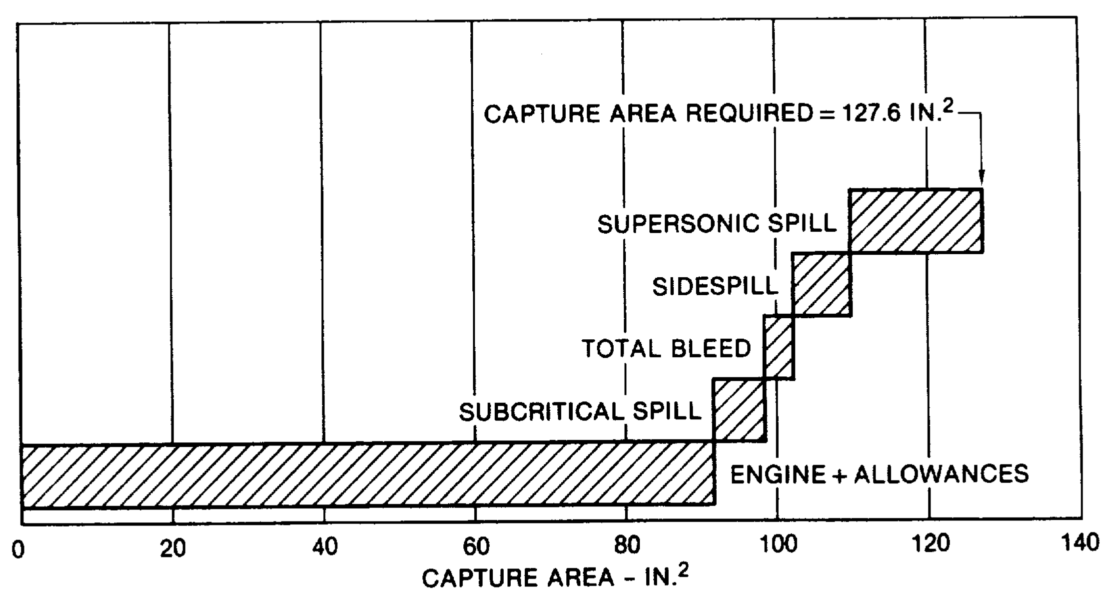
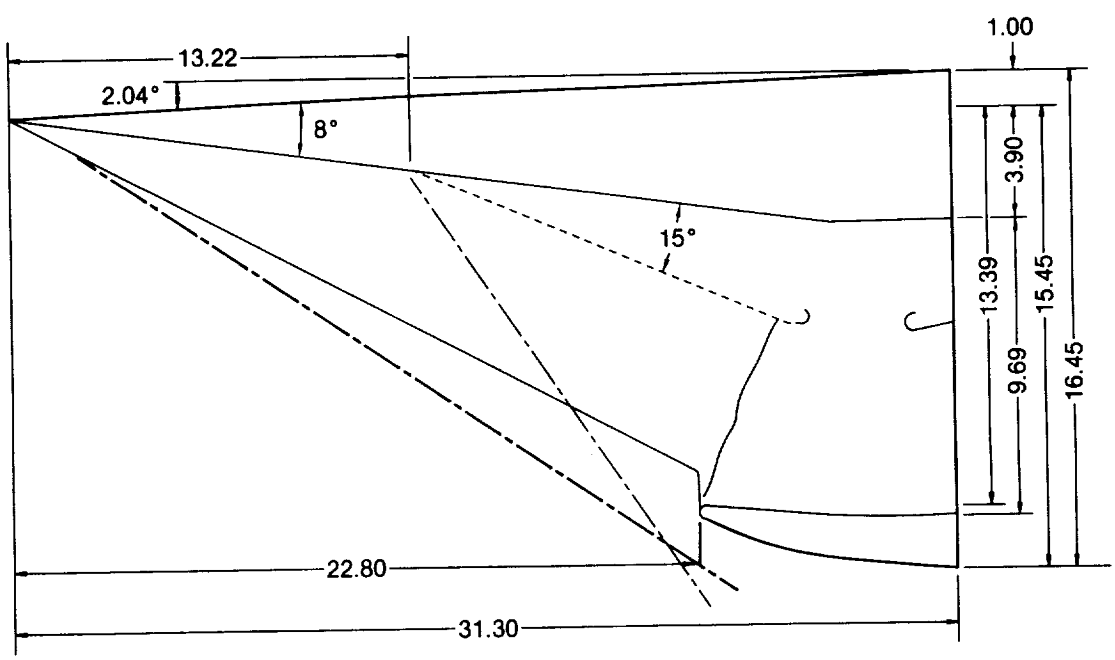


Figure 26. Supersonic Inlet Sizing
$M_0 = 1.6$

The inlet was also sized for the P&WA F100 engine to ensure that the resulting inlet performance data could be applied to engines representative of either manufacturer. The resulting model scale was approximately 35 percent, which was based on the required capture area at Mach 2.2.

Inlet geometric characteristics have been selected to insure that the two oblique and terminal nominal shock waves intersect slightly ahead and below the cowl lip highlight at Mach 2.2. The intersection point, shown in Figure 27, was selected to ensure sufficient inlet stable range, defined in Figure 28, at the maximum operating Mach number. Predicted stable range for the 2-D V/STOL supersonic inlet is shown in Figure 29. Using a correlation of normal shock strength versus shock displacement ratio from three ramp inlet test data, the current two ramp inlet has a predicted stable range of approximately 25 percent. This is more than sufficient to permit buzz free inlet operation at Mach 2.2 over a wide airflow variation.



SHOCK PATTERN SHOWN FOR $M_0 = 2.2$

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Figure 27. Inlet Section Characteristics

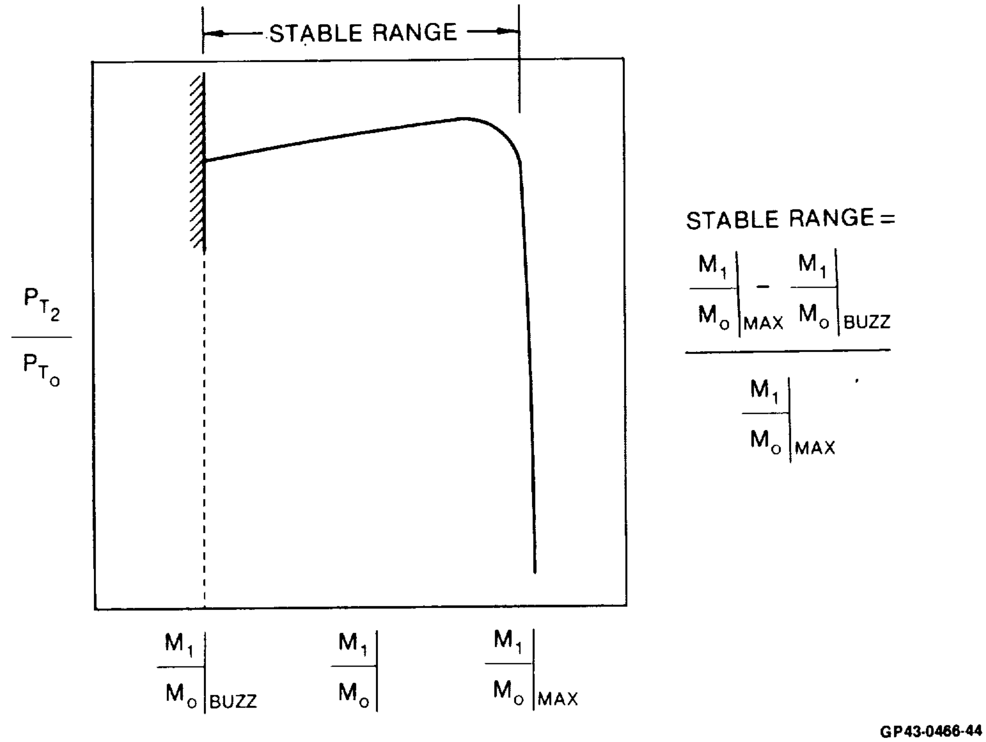

Figure 28. Inlet Stable Range Definition

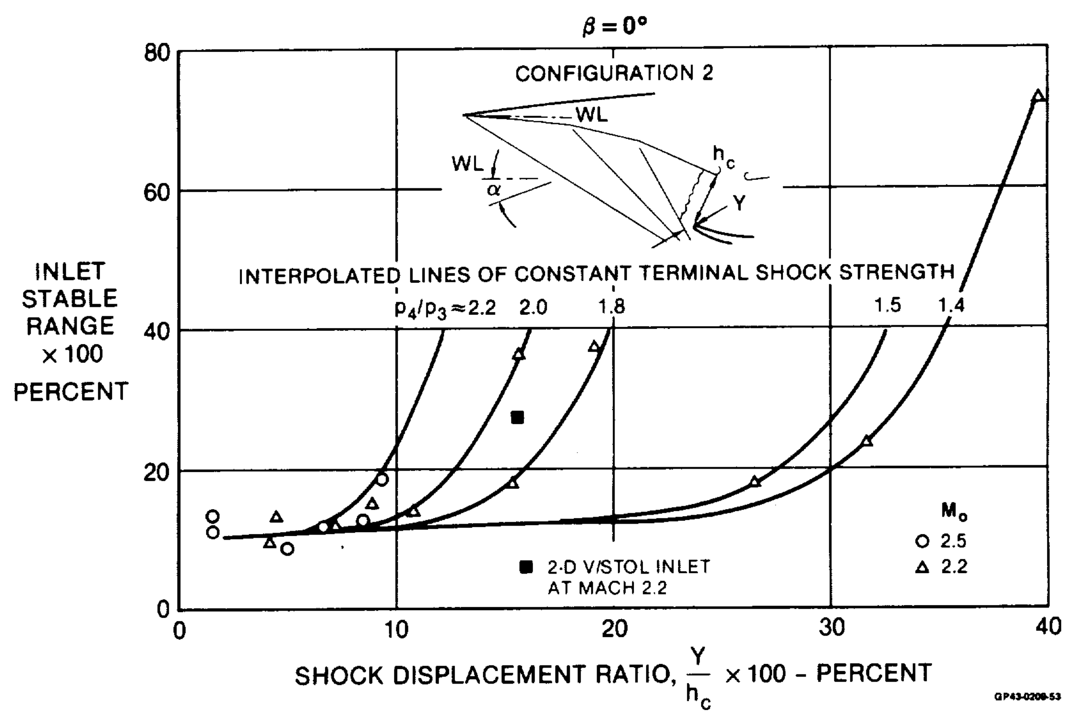

Figure 29. Effects of Terminal Shock Strength and Oblique Shock System Position on Inlet Stable Range

Predicted performance for the 2-D supersonic V/STOL inlet model at zero degrees angle-of-attack is shown in Figure 30. Performance levels are typical of an advanced high performance supersonic inlet system. The lip losses in the Mach 0 to Mach 0.6 regime are typical of those associated with the selected F-15 type of lip contour. There is a dramatic fall off in recovery at static and low speed operation. Thus, to achieve the required 95 to 98 percent recovery levels, flow improvement concepts must be incorporated into the inlet to minimize the lip losses.

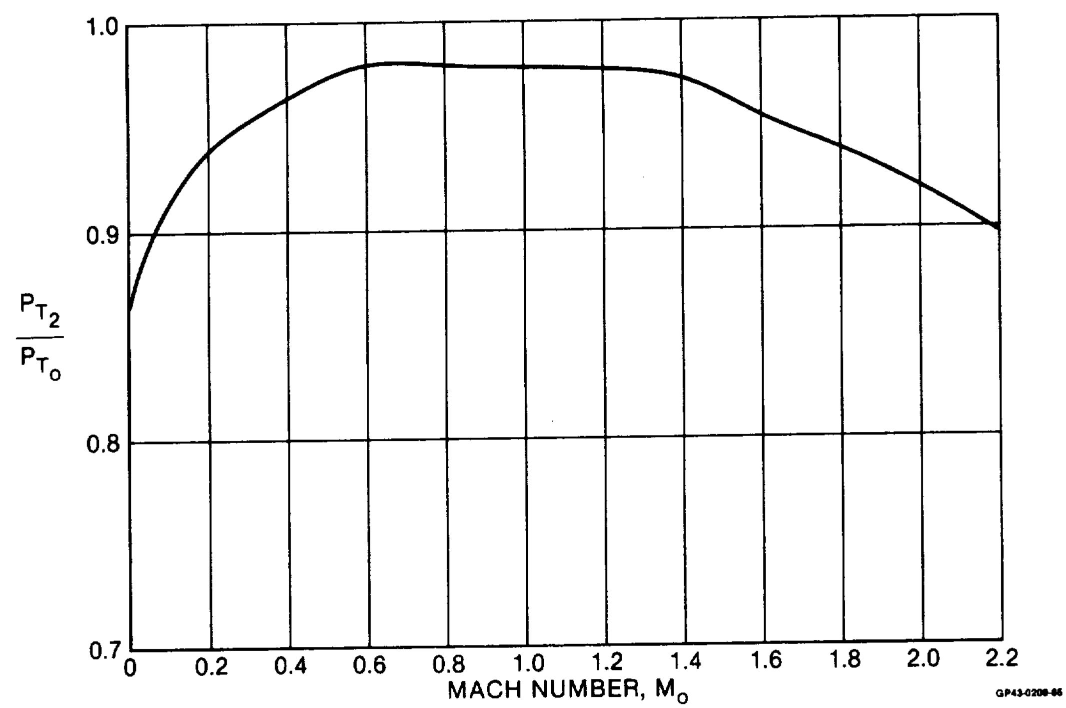

Figure 30. Recovery Estimate for 2-D Supersonic V/STOL Inlet System
$\alpha = 0°$ GE F404/J7A12 Altitude = 36,089 Ft

2.5 <u>AERODYNAMIC DESIGN OF FLOW IMPROVEMENT CONCEPTS</u> - Three flow improvement concepts were aerodynamically designed for incorporating into the 2-D supersonic V/STOL inlet system model. These included: 1) a drooped cowl lip or lip flap, 2) a drooped/translated cowl lip or lip slat, and 3) auxiliary inlets. All three concepts are intended to alleviate the losses associated with flow separation around a sharp supersonic inlet lip at static and low speed/high angle of attack operation. The lip flap and slat align the lip more closely with the approaching flow, thus reducing the peak velocity on the lip and the associated separation losses. In addition, the lip slat results in a high energy potential core flow to reduce separation on the knee segment of the lip. Statically, they provide a closer approximation to a bellmouth shape for the lower cowl lip.

Auxiliary inlets improve static and low speed/high angle of attack performance by reducing the amount of airflow around the main inlet lip. This results in reduced lip velocities and corresponding separation losses.

2.5.1 Drooped Cowl Lip - The aerodynamic design of the drooped cowl lip was based on a balance between reduced lip losses due to reduced peak velocities on the lip and minimizing lip knee separation. The knee is the circular arc segment of the inlet that is exposed to the flow as the lip is drooped. The design utilized available data, References 2 and 3, in conjunction with predictions from a 2-D potential flow design/analysis procedure, Reference 8. This MCAIR developed potential flow analysis models the inlet using surface panels with either source or sink singularities located at the panel centroids. Engine face velocity is specified using sinks located at the engine face.

Design conditions for the flow improvement concepts were selected by NASA and MCAIR and are summarized below. These corresponded to a flight condition of:

- o Maximum Engine Airflow (26.77 lb/sec) (model scale)
- o 80 Knots Freestream Velocity
- o 40° Angle-Of-Attack
- o 0° Sideslip

The potential flow analysis was based on a set of design conditions corresponding to those given above. In potential flow methods, the freestream velocity is usually assumed to be unity. Therefore to properly simulate the engine airflow the engine face velocity was set equal to 3.37. These conditions are summarized below:

o Freestream Velocity = Unity
o Engine Face Velocity = 3.37
o Angle-of-Attack = 40°
o Angle-of-Sideslip = 0°

Predicted potential flow pressure distributions for a 40° and 70° drooped lip are shown in Figures 31 and 32 for static inlet operation. Both droop angles were very effective in reducing the peak lip velocity, with the 70° droop lip resulting in a factor of 2 reduction compared to the zero degree droop. A qualitative performance guideline was developed by correlating the maximum velocity on the F-15 cowl lip at Mach 0.6 with lnlet performance data. It was found that a maximum lip velocity ratio (V/Veng--Face) of 6 corresponded to approximately a 1.5 percent loss in recovery attributed to lip separation. This represented a reasonable design goal, particularly at the high angles-of-attack selected for the design condition and has been utilized to select the lip droop angles.

Using the potential flow procedure, the maxium lip velocity ratios were calculated as a function of angle of attack and lip droop angle, Figure 33. The velocity ratio of approximately 6.2 was used to select the droop angles for the lip. Analysis of the predicted velocity ratios indicates that a 40 degree drooped lip would be satisfactory for the 40 degree angle of attack design point. In addition, a 70 degree droop lip was selected to provide maximum performance gains at the higher angles-of-attack, e.g., up to 90°. The 70° drooped lip also closely approximates a bellmouth shape for the lower cowl lip region and thus should provide significant recovery improvements at static operation.

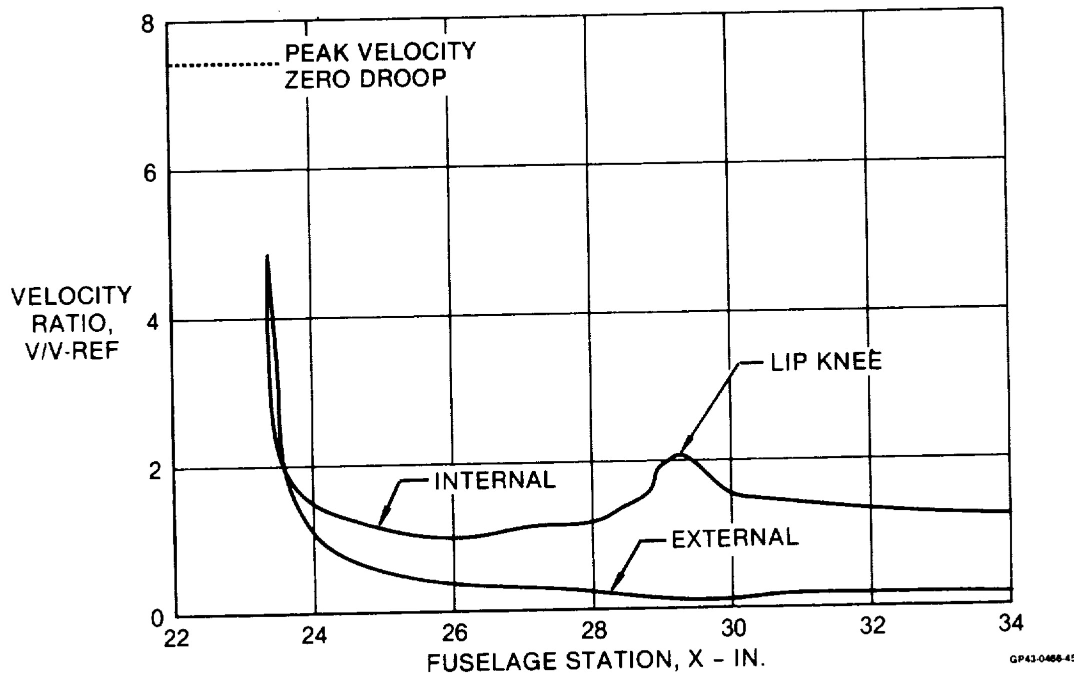

Figure 31. Predicted Lip Pressure Distribution
40° Drooped Lip - Static

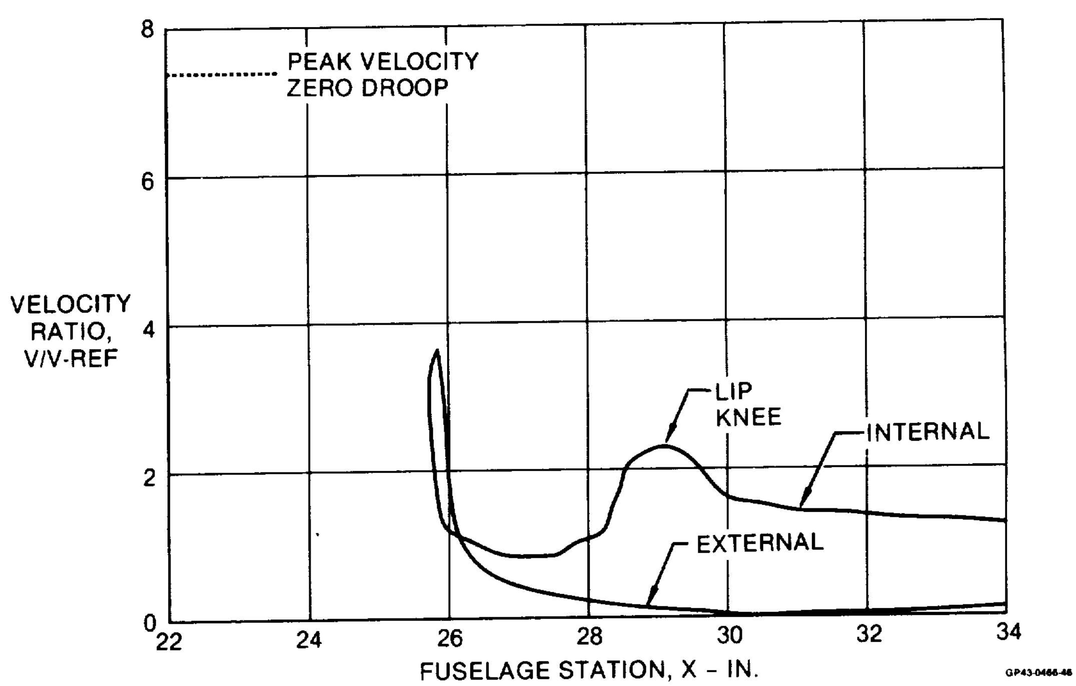

Figure 32. Predicted Lip Pressure Distribution
70° Drooped Lip - Static

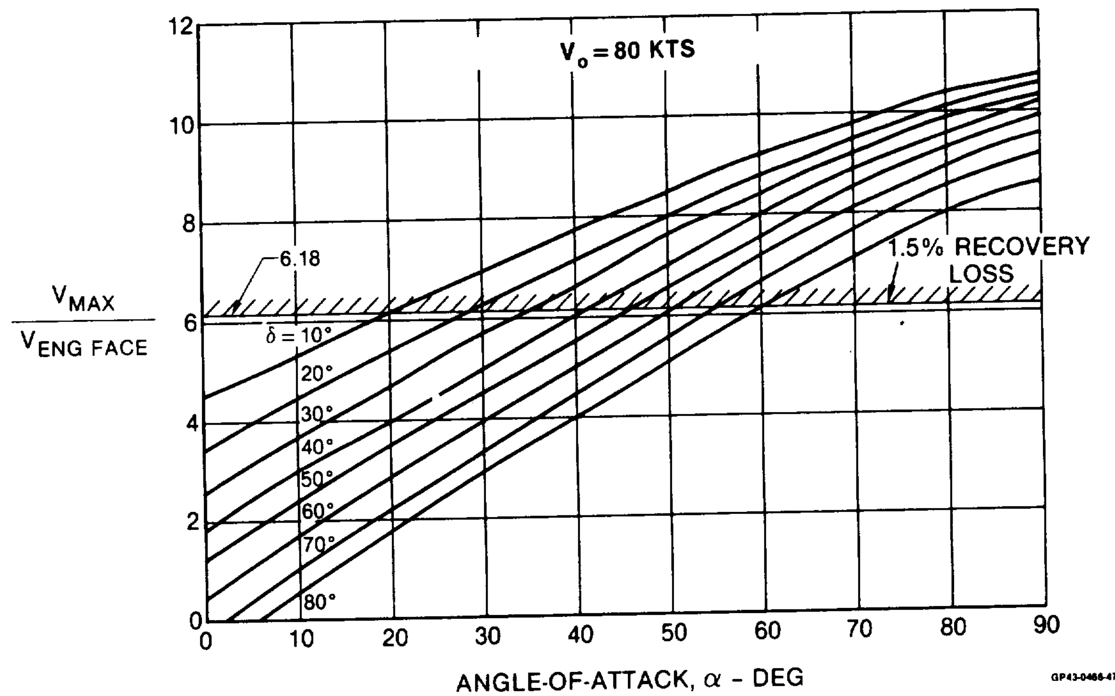

Figure 33. Maximum Lip Velocity vs Droop Angle

The 40° and 70° droop angles represented the proper balance between maximum lip velocity reduction and the potential for flow separation occurring at the lip "knee". Lip knee separation will start to degrade the overall performance benefits associated with the drooped lip if the droop angles are too large.

2.5.2 Drooping/Translating Cowl Lip - Additional performance improvements were thought possible with a drooped translating lower cowl lip, i.e., a lip slat. The slat gap, i.e., spacing between the translated lip and the main inlet, was determined using the previously defined 2-D potential flow analysis procedure. A similar study for an axisymmetric inlet, Reference 9, found that the optimum slat position, i.e., translation distance, corresponded to equal slot gap peak velocities on both the slat and the main inlet section. Thus, this same technique was utilized here to optimize the gap for a lip slat having 40 degrees of deflection. The slat gap was varied until the computed maximum peak velocities were equal, Figure 34. This corresponded to a gap of approximately 4 inches, which is large for a wing leading edge slat but very close to the results obtained in the Reference 9 study. The slat and main inlet section pressure distributions for the optimum translated lip position are shown in Figure 35.

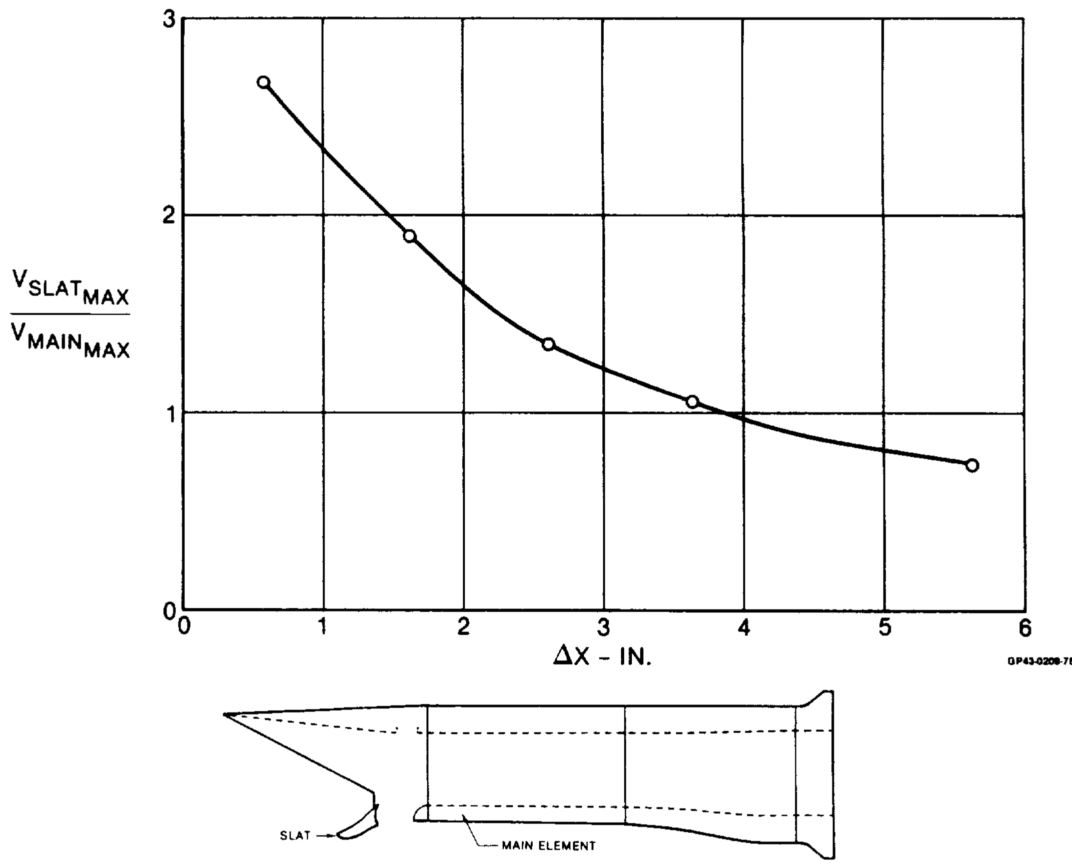

Figure 34. Slat Optimization
$\delta = 40°$ $\alpha = 40°$
$U_o = 80$ Kts

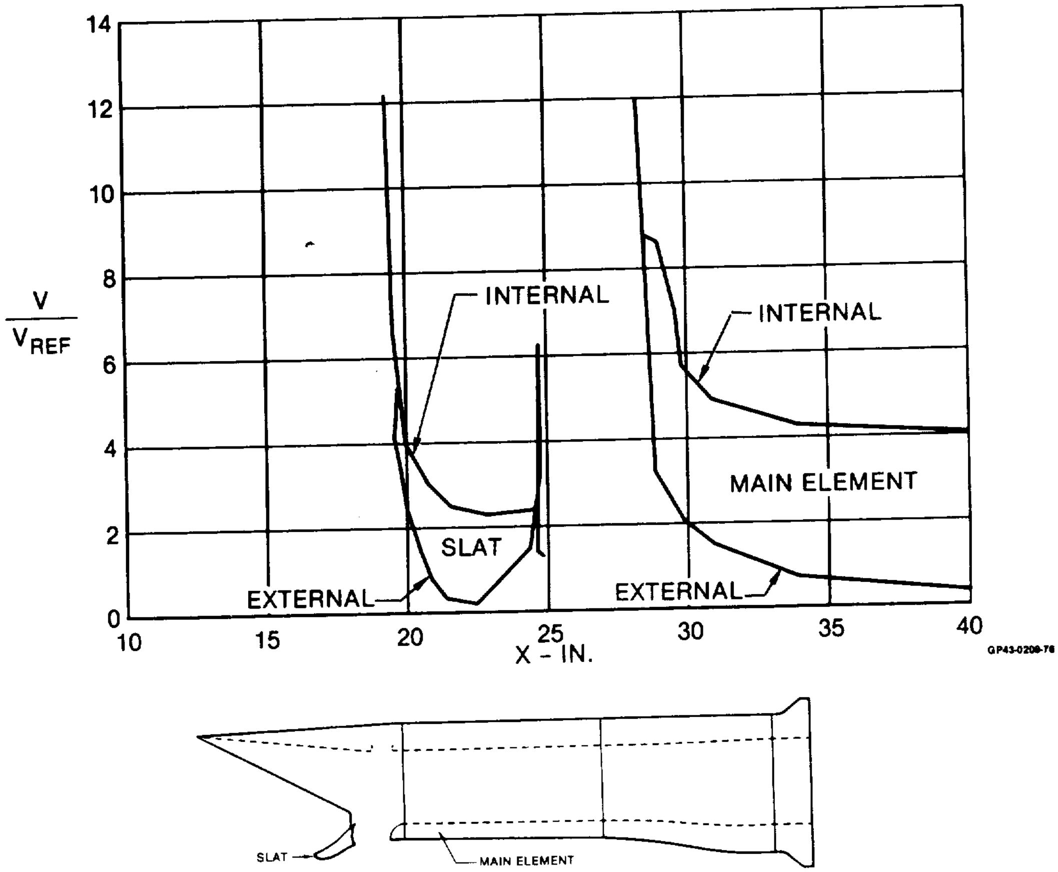

Figure 35. Optimum Slat Velocity Distribution
$\alpha = 40°$ $\delta = 40°$ $U_{Eng\ Face} = 3.37$

2.5.3 Auxiliary Inlet Aerodynamic Design - The aerodynamic design of the auxiliary inlets focused on defining the amount of auxiliary inlet area required and the flow passage geometry. Selection of auxiliary inlet area was based on empirical data from MCAIR and U.S. Navy funded programs. Static axisymmetric inlet performance data for varying auxiliary inlet areas, Figure 36, were obtained from a MCAIR funded inlet development program. These data indicated that auxiliary inlets containing a total of approximately 100 percent of the main inlet throat area were required to achieve the 95 percent or greater static recovery used in advanced V/STOL VTOL performance estimates. This is substantiated by the data obtained in a Navy funded inlet development program, Reference 10, as shown in Figure 37. These data also indicate that auxiliary inlets having approximately 100 percent of the main inlet area were required to achieve the 95 percent static inlet recovery. Therefore, each of the four auxiliary inlets incorporated into the model was sized to have 35 percent of the main inlet throat area. All four auxiliary inlets open would then provide 140 percent of the main inlet throat area and the capability for parametric area variations to determine the minimum required value.

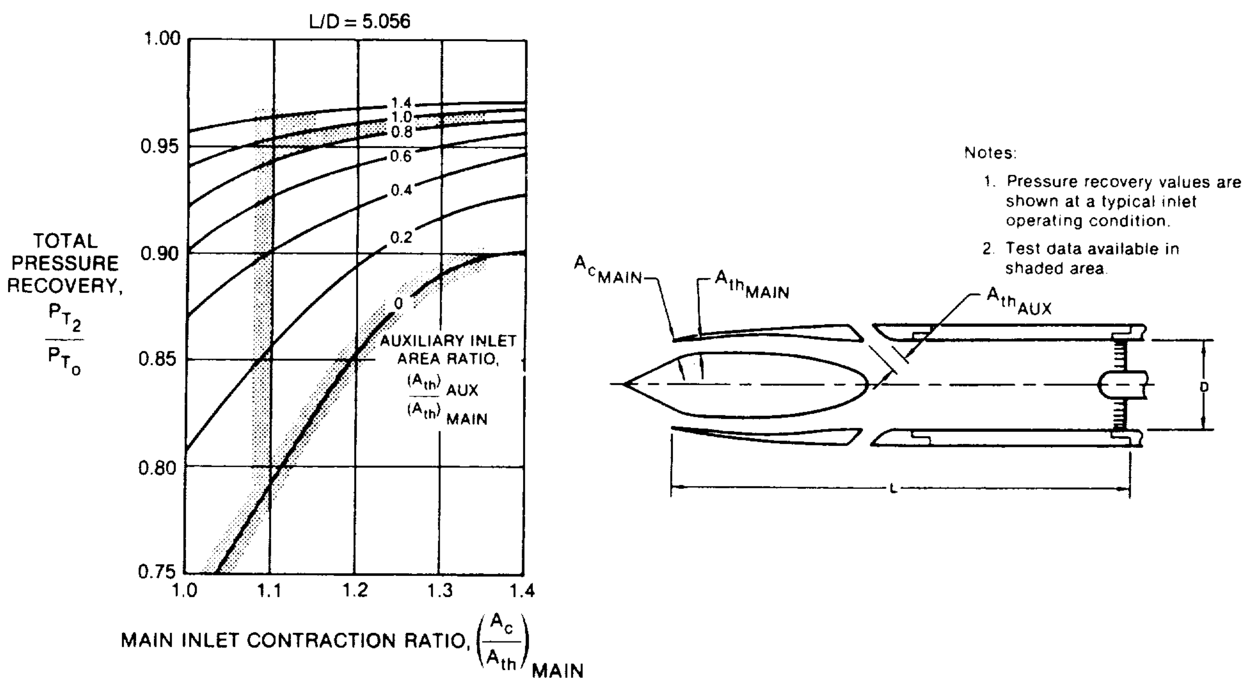

Figure 36. MCAIR Data Base for Auxiliary Inlet Design

Auxiliary inlets having two different internal flowpaths were designed using the 2-D potential flow analysis procedure. The first, called the baseline or port design, utilizes simple entrance and aft-ramps to form the flow passage, Figure 38. This design maximizes the internal flow area for a given cutout in the inlet. The second, called a door design, utilizes the same aft ramp and incorporates a more streamline flow path to minimize the losses through the auxiliary inlet, Figure 39. This design, however, results in a 60% reduction in auxiliary inlet flow area for the same inlet cutout.

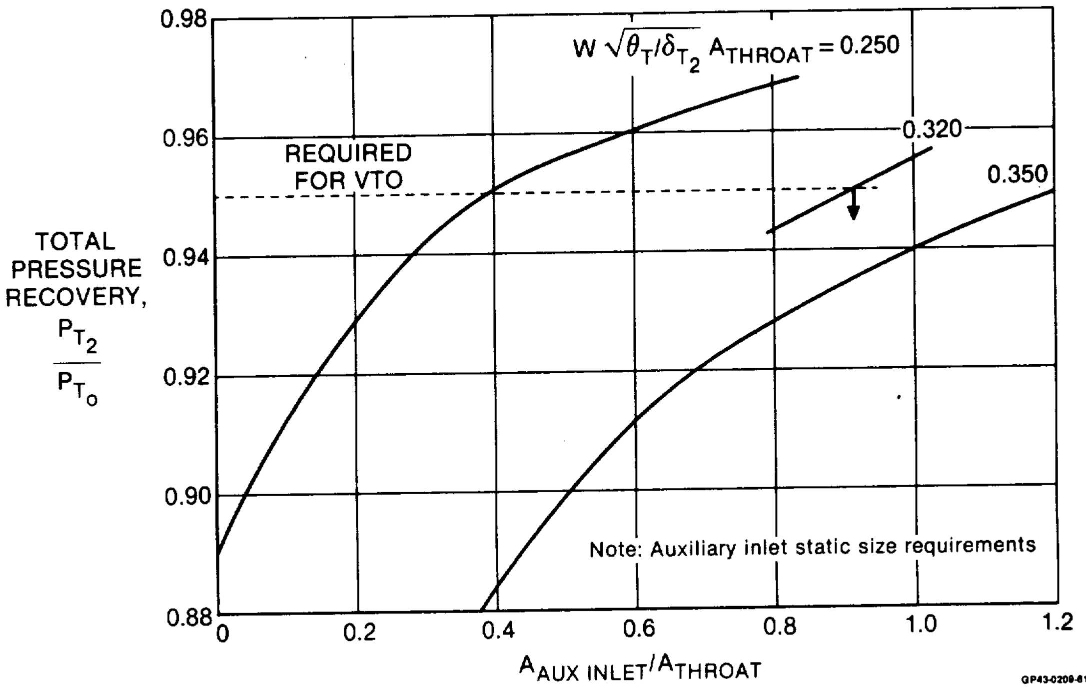

Figure 37. Grumman Data Base for Auxiliary Inlet Design

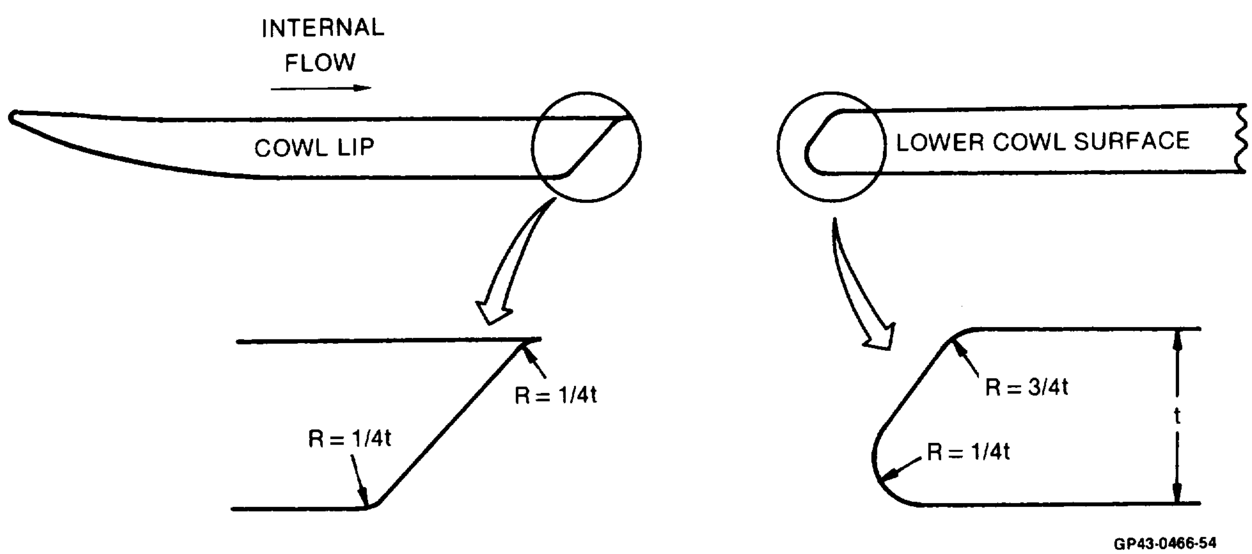

Figure 38. Baseline ("Port") Design Auxiliary Inlet

Predicted velocity distributions for each design, shown in Figures 40 through 45, indicate that both statically and at the design condition, the port design results in a lower peak cowl lip velocity than the door design, which should result in a larger decrease in the lip losses. However, the port design does result in higher peak velocities on the aft-ramp compared to the door design. This may result in flow separation over the aft ramp and a loss in overall auxilliary inlet performance. Therefore based on the performance improvement potential of each, both designs were selected for incorporation into the 2-D supersonic V/STOL inlet model.

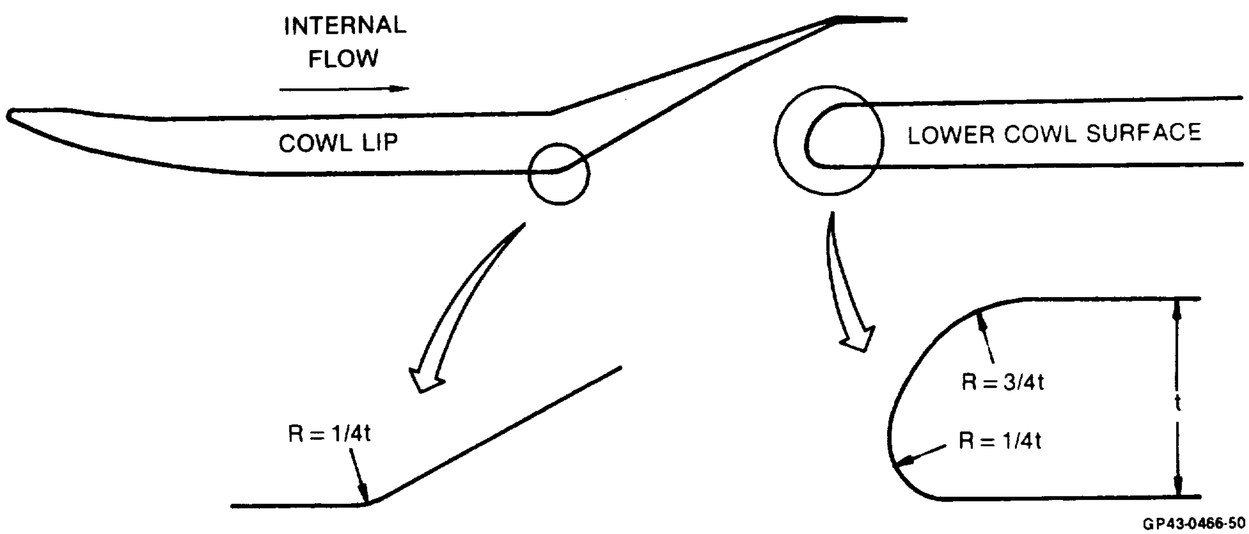

Figure 39. Door Design Auxiliary Inlet

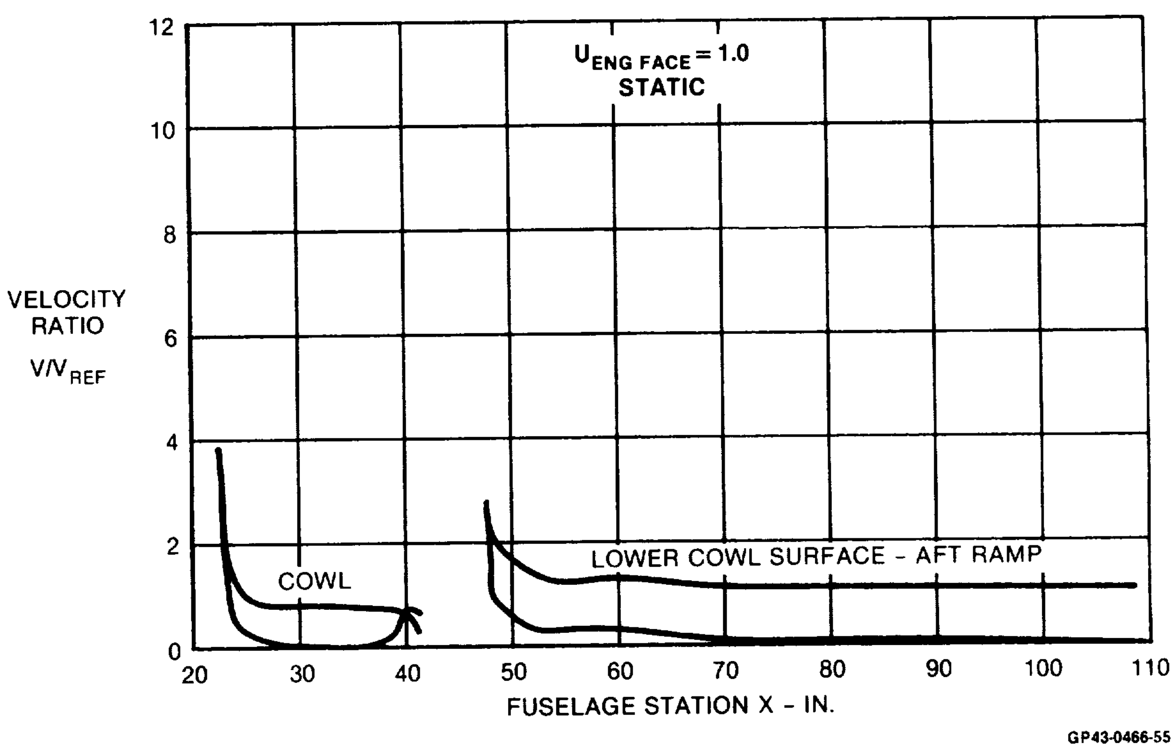

Figure 40. Predicted Lower Cowl Velocity Distribution
Baseline Auxiliary Inlet Static

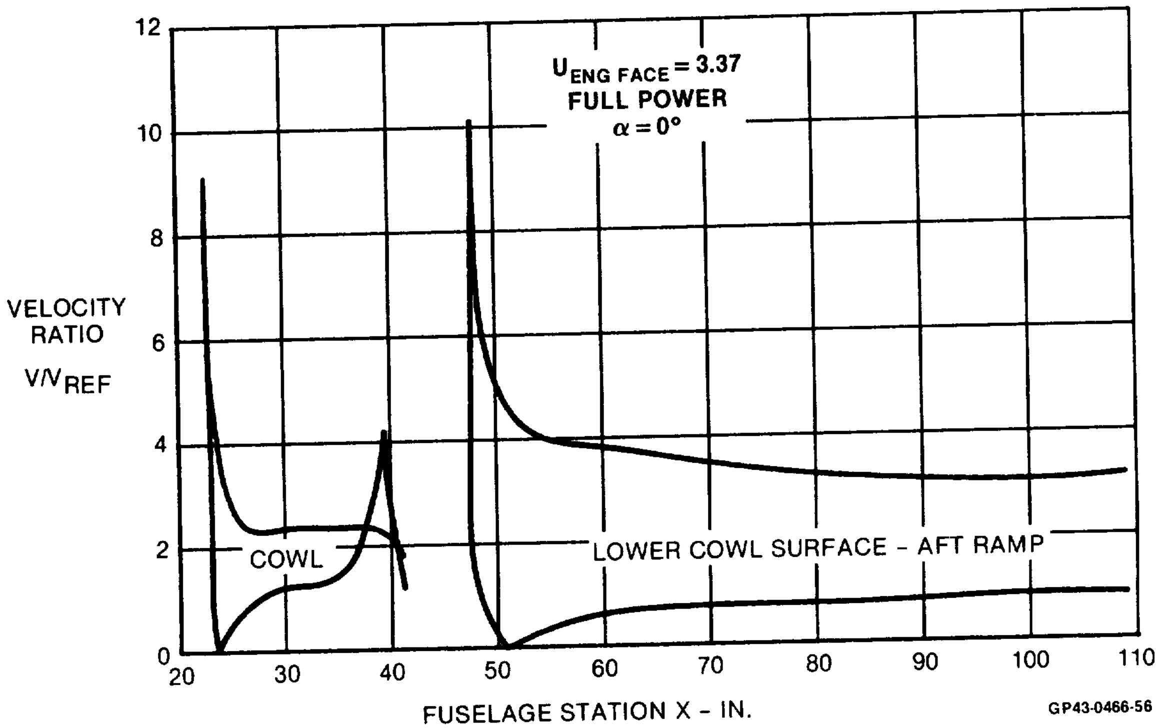

Figure 41. Predicted Lower Cowl Velocity Distribution
Baseline Auxiliary Inlet 80 Kts $\alpha = 0°$

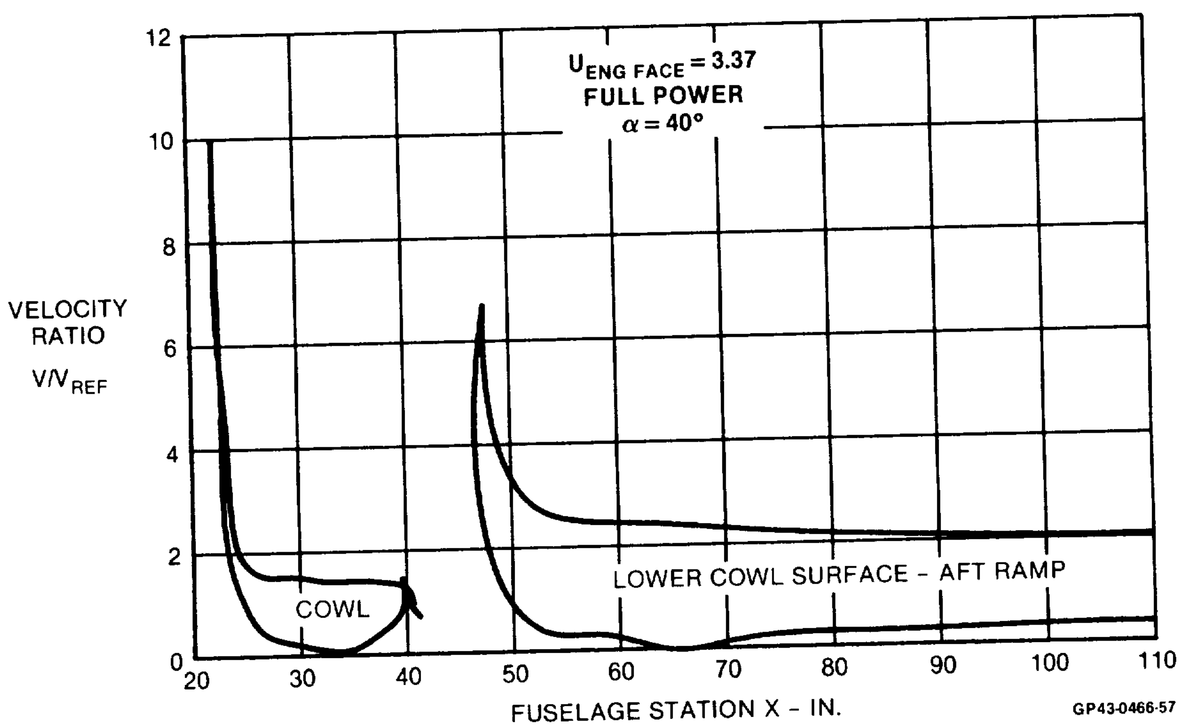

Figure 42. Predicted Lower Cowl Velocity Distribution
Baseline Auxiliary Inlet 80 Kts $\alpha = 40°$

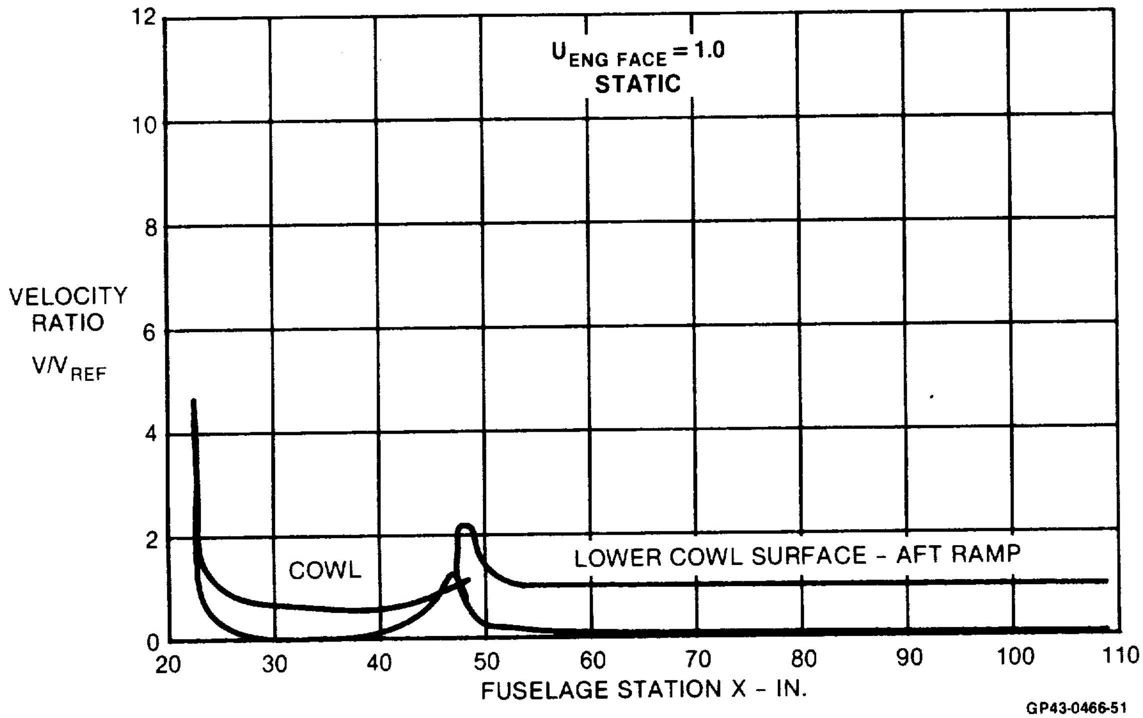

Figure 43. Predicted Lower Cowl Velocity Distribution
Door Auxiliary Inlet
Static

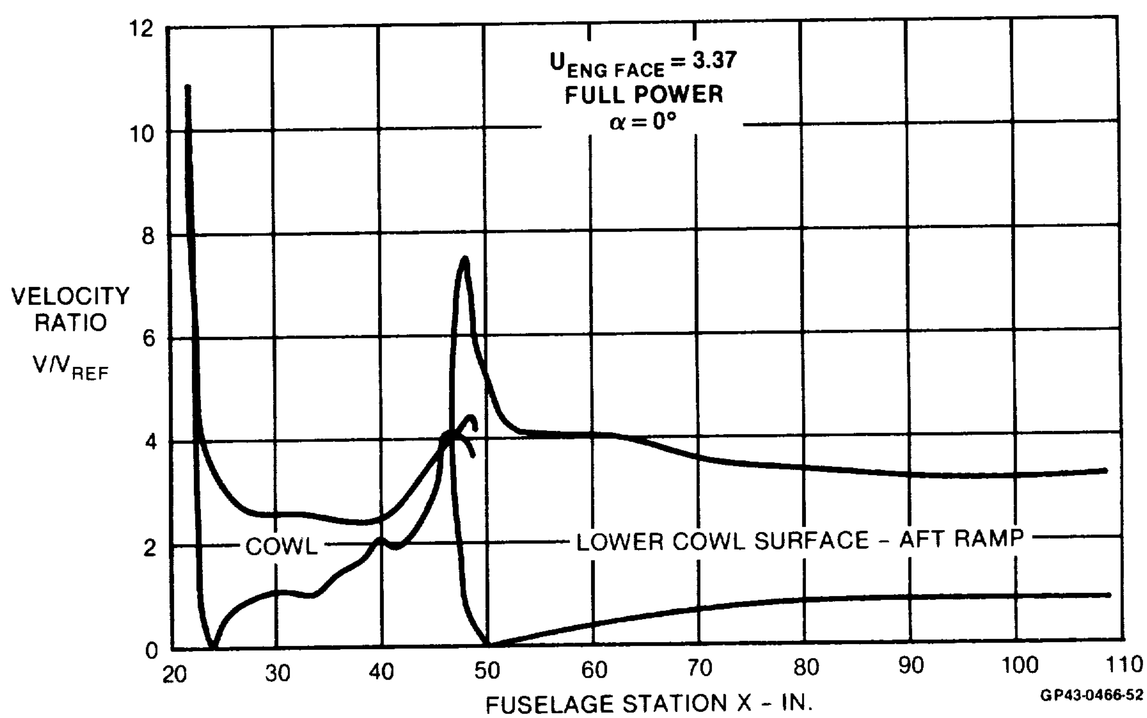

Figure 44. Predicted Lower Cowl Velocity Distribution
Door Auxiliary Inlet 80 Kts $\alpha = 0$

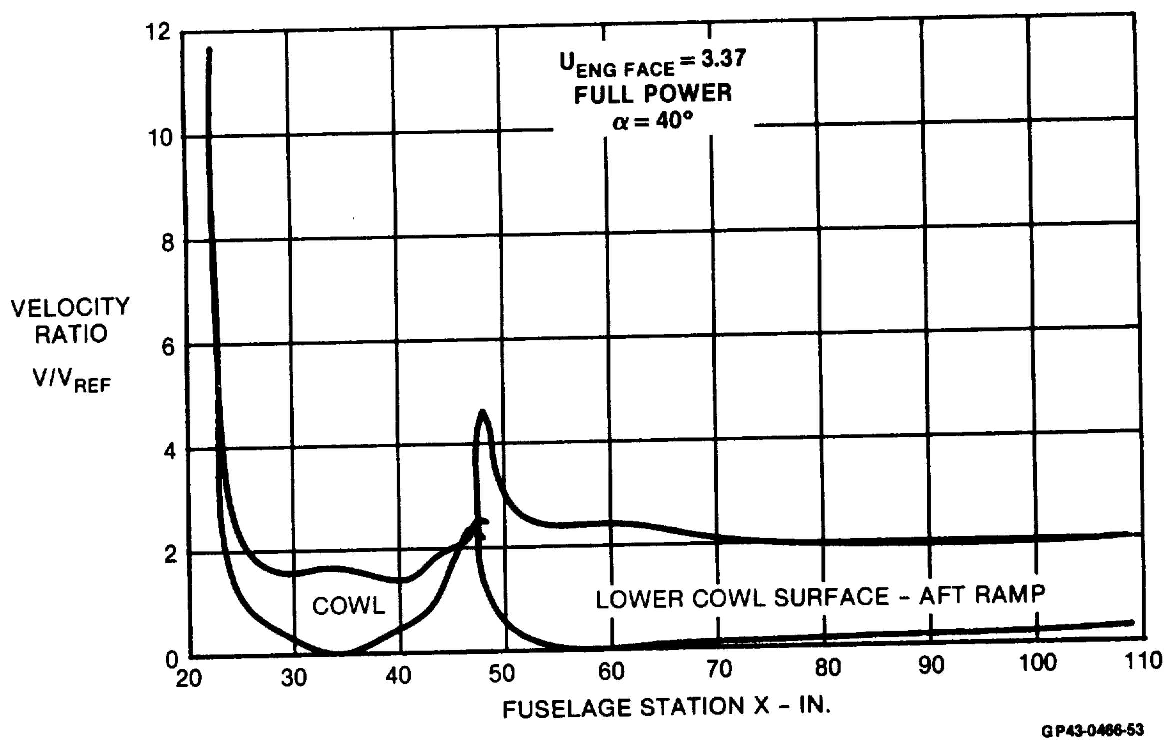

Figure 45. Predicted Lower Cowl Velocity Distribution
Door Auxiliary Inlet 80 Kts $\alpha = 40°$

3. WIND TUNNEL MODEL

The wind tunnel model is a two-dimensional, two ramp inlet of capture aspect ratio 0.724 (H/W) and capture area of 836.77 cm^2 (129.7 in^2). The first ramp is fixed at 8° of compression and the second compression ramp is variable, as is the subsonic diffuser ramp. The subsonic contraction ratio, A_i/A_{th}, is 1.041.

The inlet model is 43 percent scale based on the GE F404 engine (35 percent scale based on P&WA F100 engine). It incorporates a variable geometry cowl lip and four auxiliary inlets for static and low speed/high angle of attack performance improvement. Instrumentation is extensive and provides the necessary data to aid in developing prediction methodologies for low speed inlet performance.

The inlet model, shown in Figure 46, is constructed in 4 sections, the inlet section, forward auxiliary inlet section, diffuser section, and an interface flange to mount the model in the 9x15 ft tunnel.

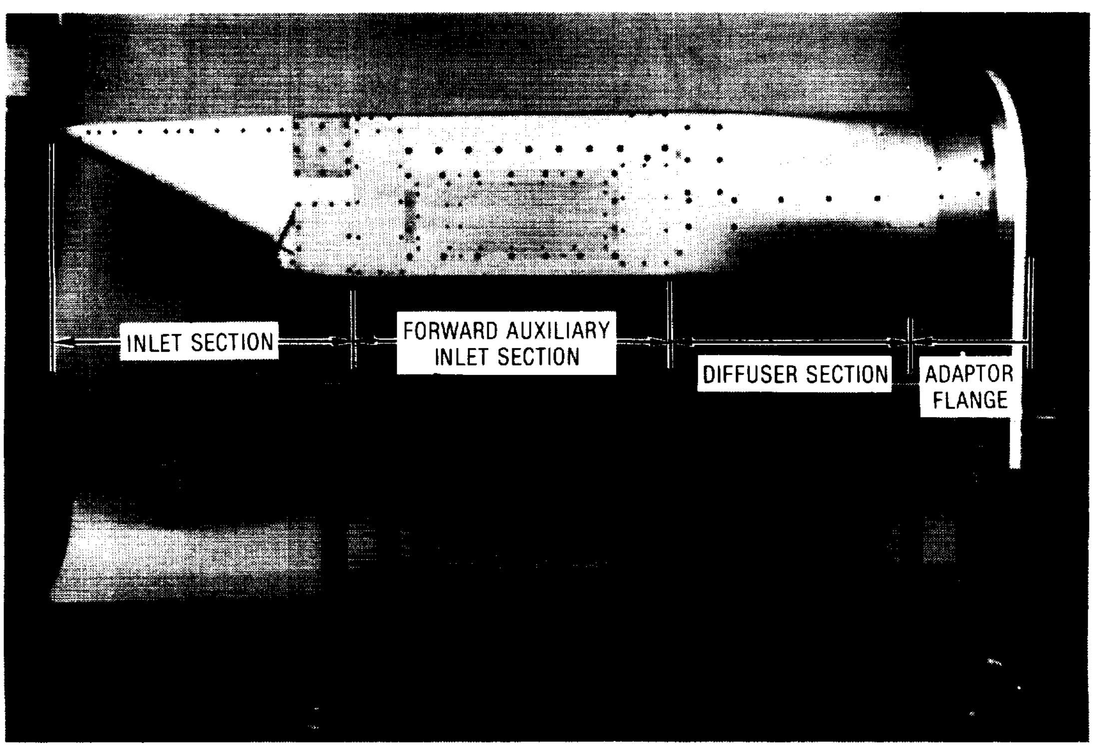

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Figure 46. Wind Tunnel Model

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3.1 INLET SECTION - The model was provided with three inlet sections, the baseline 2-D inlet supplied by MCAIR, a thick lip inlet section supplied by NASA, and a vertical ramp inlet section (similar to an F-4 integration) also supplied by NASA. The three inlet sections are interchangeable.

3.1.1 Basic 2-D Inlet Section - The 2-D inlet section is 79.50 cm (31.3 in) long and houses the two compression ramps and the variable geometry cowl lip hardware necessary to both droop and translate the lip forward. The cowl lip incorporated into the inlet is scaled from the F-15 inlet system. Inlet sideplates are of different thickness, the righthand sideplate is scaled from the F-15, while the lefthand sideplate is sized to provide sufficient room for the model instrumentation. Sideplate leading edges are sharp and similar in contour to the F-15 inlet sideplates.

Variable geometry cowl lip hardware consists of a cowl lip which is fastened to various brackets which are part of the sideplates. These lip brackets are designed to provide droop angles of 0°, 40°, and 70°, and also to droop the lip 40° with forward translations of 5.08, 10.16, and 15.24 cm (2, 4, and 6 in). The drooped cowl lip rotates about a circular arc element, termed the knee. Drooped lip positions are shown in Figure 47. The drooped translated cowl lip exposes the complete knee to the flow, as it opens a slot between cowl lip and knee, Figure 48.

3.1.2 Thick Lip Inlet Section - The thick lip inlet section is 119.38 cm (47.0 in) long, with an axisymmetric entrance of 34.51 cm (13.59 in) diameter with a lip contour taken from the Citation inlet (NASA drawing NASA CF854668). The thick lip inlet approches a bellmouth inlet design, lip contraction ratio = 1.47 = A_i/A_{th}, thus eliminating lip separation in order to provide an upper inlet performance limit. The internal contour transitions from a circular cross section to the rectangular shape of the baseline 2-D inlet section as shown in Figure 49. The thick lip inlet section does not provide for the use of variable geometry hardware.

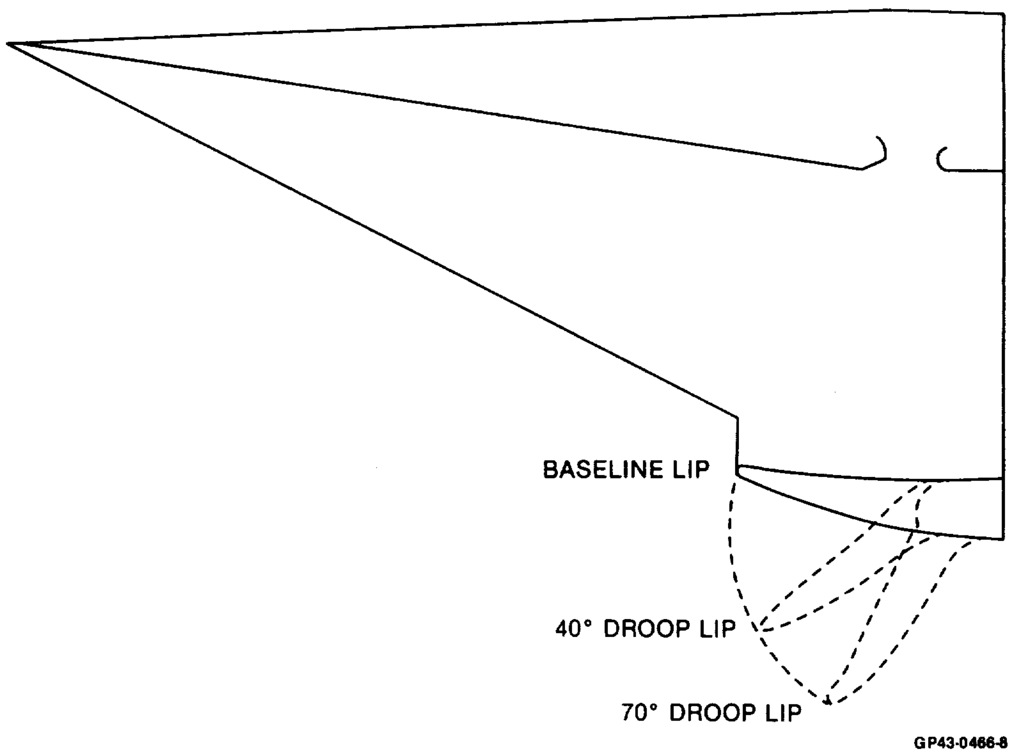


Figure 47. Drooped Cowl Lip Positions

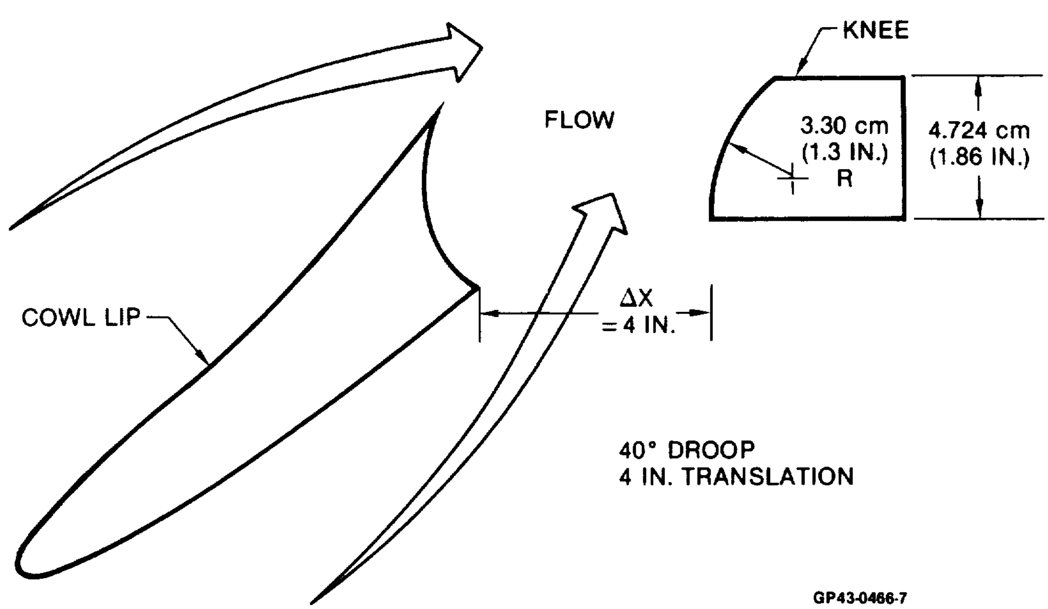


Figure 48. Drooped and Translated Cowl Lip - Schematic of Aerodynamic Surfaces

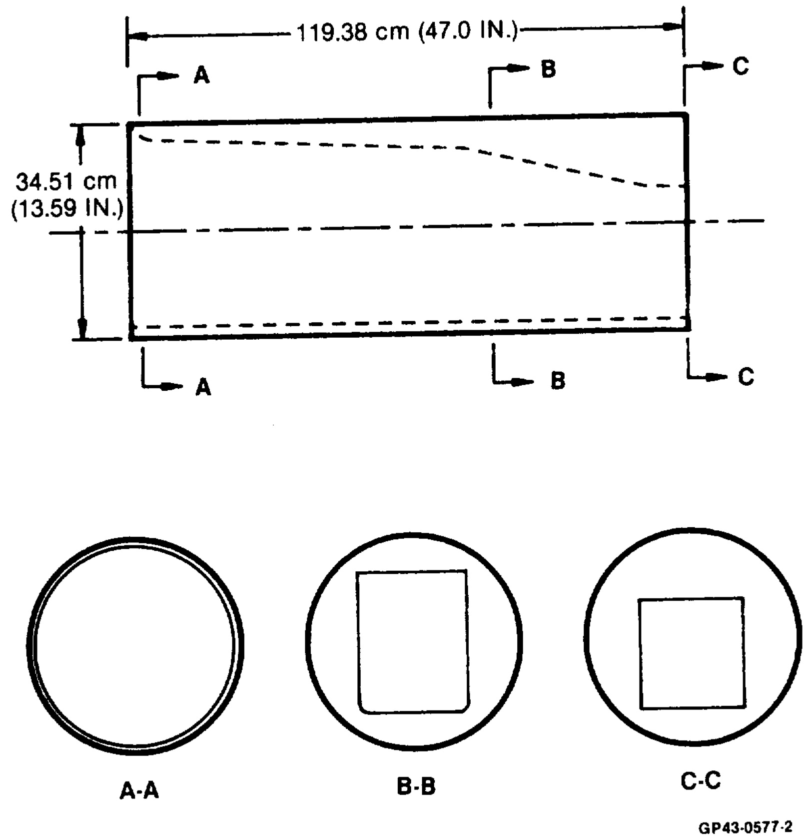


Figure 49. Thick Lip Inlet Section

3.1.3 Vertical Ramp Inlet Section - This section consists of the same hardware as the baseline 2-D inlet, but has two additional sideplates, supplied by NASA-Lewis, which are cut back to the cowl lip highlight. The vertical ramp inlet is tested by rotating the inlet 90°, thus, placing the compression ramps in a vertical position such as in the F-4 inlet integration. This test mode exposes the inlet sideplates to the freestream airflow at angle of attack. To improve the performance of this configuration, cutback sideplates, Figure 50, were fabricated by NASA. The cutback sideplates incorporate a full radius leading edge, to minimize the flow separation at angle of attack.

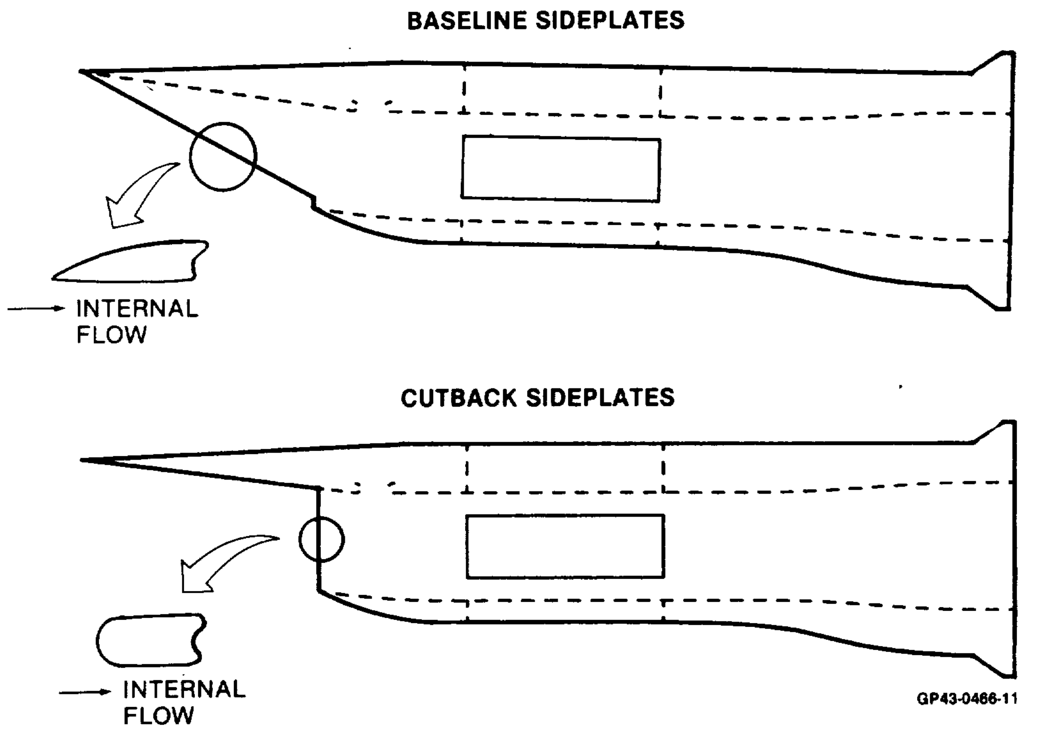
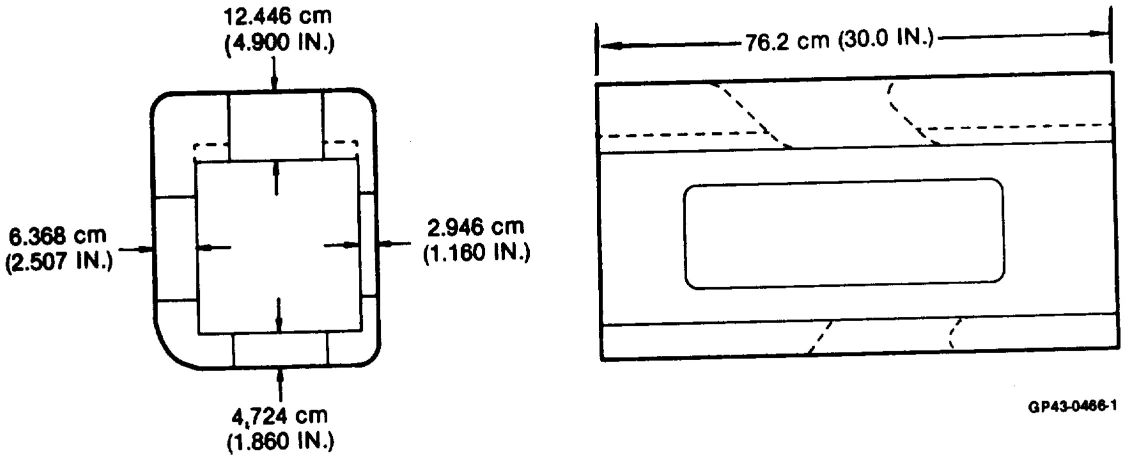


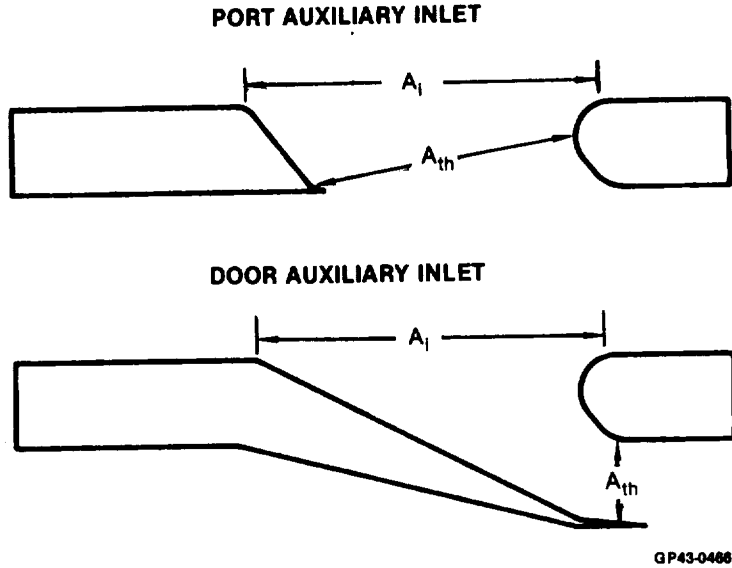
Figure 50. Vertical Ramp Inlet
Planview of Baseline Sideplate vs Retracted Sideplates

3.2 FORWARD AUXILIARY INLET SECTION - The forward auxiliary inlet section is 76.2 cm (30 in) long and houses the four auxiliary inlets and the variable subsonic diffuser ramp. The section is assembled in four parts and has sharp internal corners, as shown in Figure 51. With the subsonic diffuser ramp full up, the internal duct is a square of 24.62 cm (9.69 in) on a side, and is of constant area through this section. Each of the 4 pieces, top, bottom, left, and right sides are of different thicknesses. These different wall thickness values result in auxiliary inlets with different contraction ratios. The respective (viewed from the front) auxiliary inlet contraction ratios are:

- top - 1.893
- right - 1.237
- bottom - 1.362
- left - 1.478



a) FORWARD AUXILIARY INLET SECTION



b) AUXILIARY INLET DESIGNS

LOCATION	A_I	A_{th}	CR
PORT DESIGN			
TOP	404.2 cm^2 (62.65 $IN.^2$)	213.5 cm^2 (33.1 $IN.^2$)	1.893
LEFT SIDE	315.7 cm^2 (48.93 $IN.^2$)	213.5 cm^2 (33.1 $IN.^2$)	1.478
BOTTOM	290.9 cm^2 (45.09 $IN.^2$)	213.5 cm^2 (33.1 $IN.^2$)	1.362
RIGHT SIDE	264.1 cm^2 (40.94 $IN.^2$)	213.5 cm^2 (33.1 $IN.^2$)	1.237
DOOR DESIGN			
LEFT SIDE	315.7 cm^2 (48.93 $IN.^2$)	78.7 cm^2 (12.20 $IN.^2$)	4.012

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c) AUXILIARY INLET CONTRACTION RATIOS

Figure 51. Forward Auxiliary Inlet Section

Auxiliary inlets are located on the top, bottom, left, and right sides of the auxiliary inlet section. Two different auxiliary inlet designs are incorporated into the section, the port and the door design, Figure 51. When the auxiliary inlets are closed off, inner and outer cover plates are installed to maintain both internal and external moldline. Both of the auxiliary inlet designs are assembled as a unit and then inserted into the forward auxiliary inlet section. A port design auxiliary inlet is shown in Figure 52.

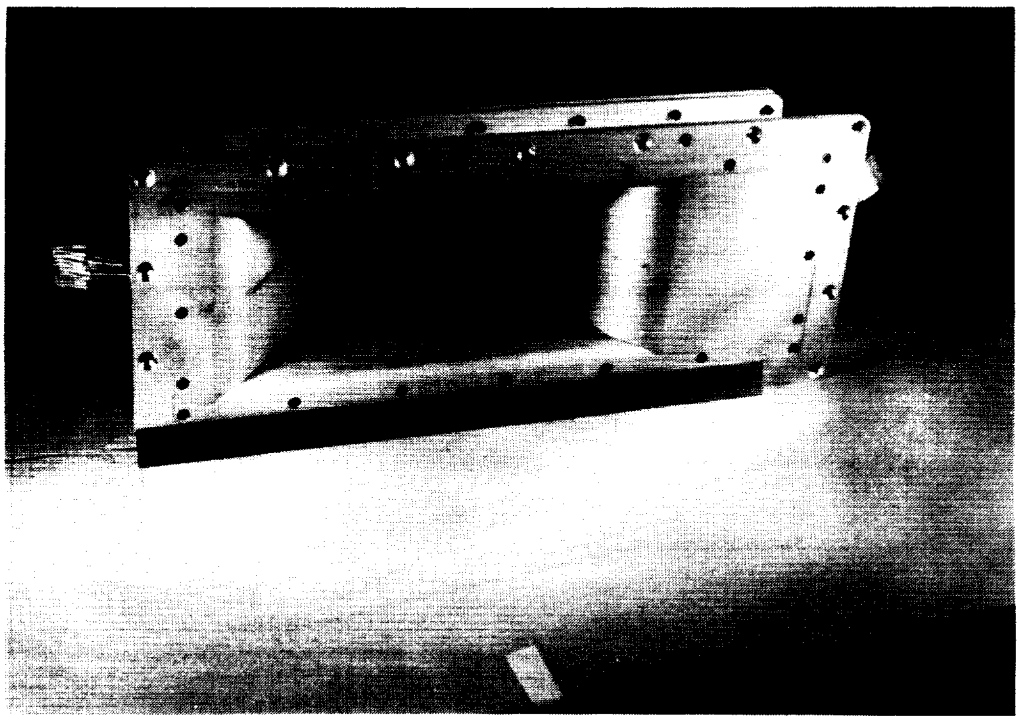

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Figure 52. Typical Auxiliary Inlet Assembly
Top Auxiliary Inlet, Port Design

The port design represents a simple auxiliary inlet concept. Details are shown in Figure 53 for the left auxiliary inlet. Each port is designed to have a throat area of 35% of the main inlet low speed throat area. Therefore, using all four auxiliary inlets would provide 140% of the main inlet low speed throat area. The radii on the flow surface of both the forward and aft ramps are held at a constant ratio to the auxiliary inlet thickness for all four port auxiliary inlet designs. Coverplates to

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close off the entrance area into the port design auxiliary inlets were fabricated by NASA Lewis. This provides a model of a simple sliding door used to close off the auxiliary inlets when not needed, leaving a cavity exposed to the internal flow, Figure 54.

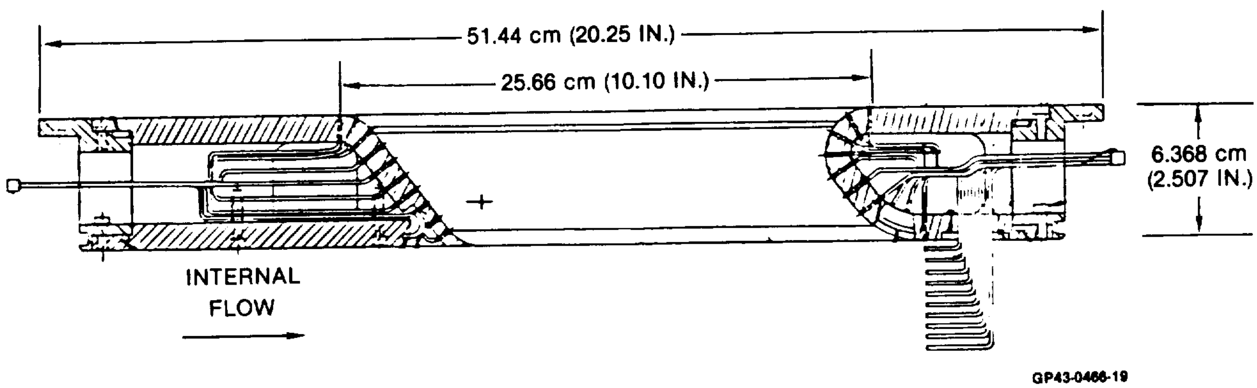


Figure 53. Port Design Auxiliary Inlet
General Layout

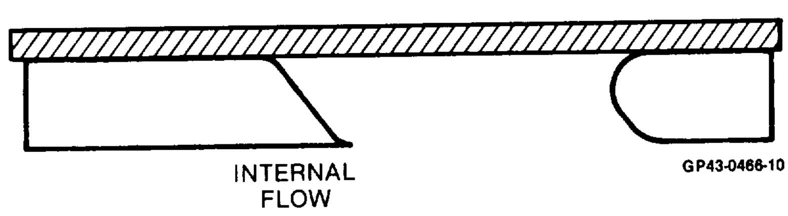


Figure 54. Cover Plate Installation on Port Design Auxiliary Inlet

The door design auxiliary inlet represents a concept in which a cover or door would swing into the inlet duct to provide a more refined flow passage for the auxiliary inlet. This design was required to have the same highlight area as the port design to insure fitting in the common auxiliary inlet cutout in the forward auxiliary inlet section. This constraint limited the flow area to only 13% of the main inlet low speed throat area. Details of this design are shown in Figure 55. The door design uses the same aft ramp as the port design auxiliary inlet. This auxiliary inlet design was fabricated for the left side only.

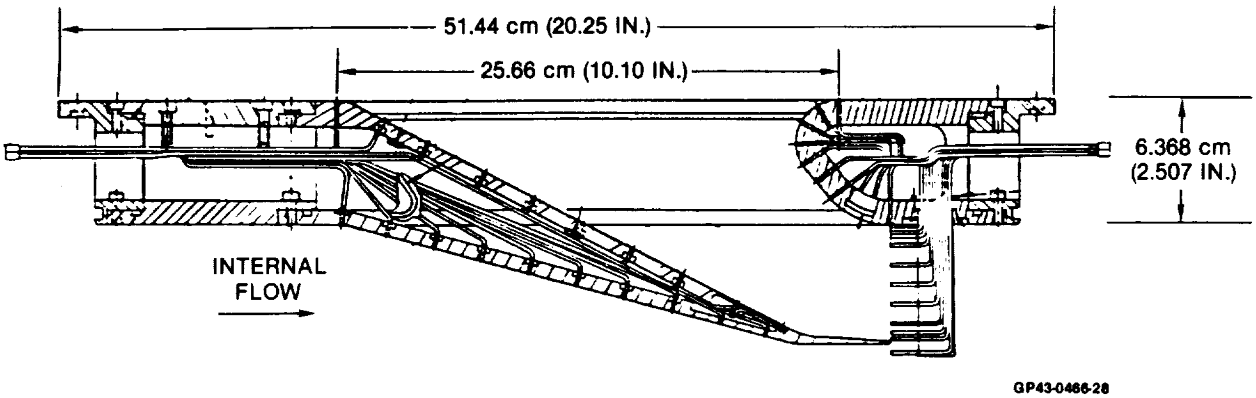


Figure 55. Door Design Auxiliary Inlet
General Layout

Sideplates for the door design auxiliary inlets were fabricated by NASA Lewis. These sideplates served to contain the flow along the sides of the internal flowpath, thus preventing flow from spilling around the door into the internal duct. The auxiliary inlet sideplates are shown schematically in Figure 56.

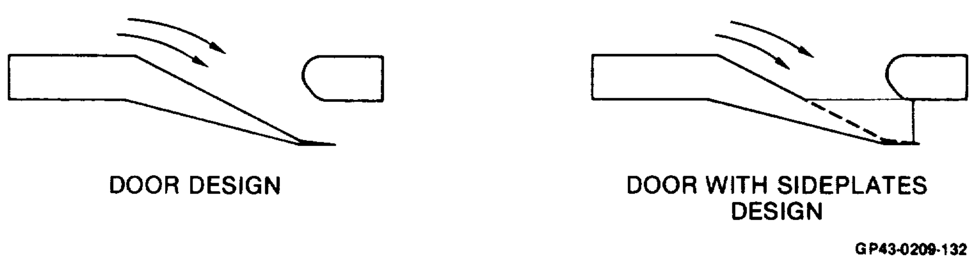


Figure 56. Auxiliary Inlet Door Designs

The subsonic diffuser ramp is fully up in the low speed test mode which corresponds to zero degree second ramp deflection. In order to use the top auxiliary inlet, a plate in the diffuser ramp is removed to open the auxiliary inlet airflow passage. When testing supersonically the plate would be installed in the diffuser ramp, and an alternate top auxiliary inlet housing would be installed. The auxiliary housing contains a jack screw to support the center of the ramp for the loads encountered during supersonic testing, Figure 57.

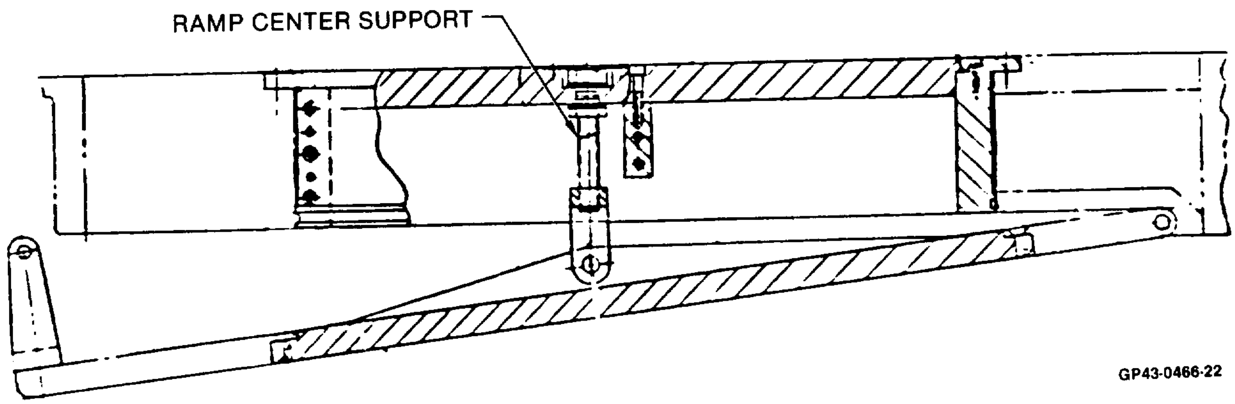
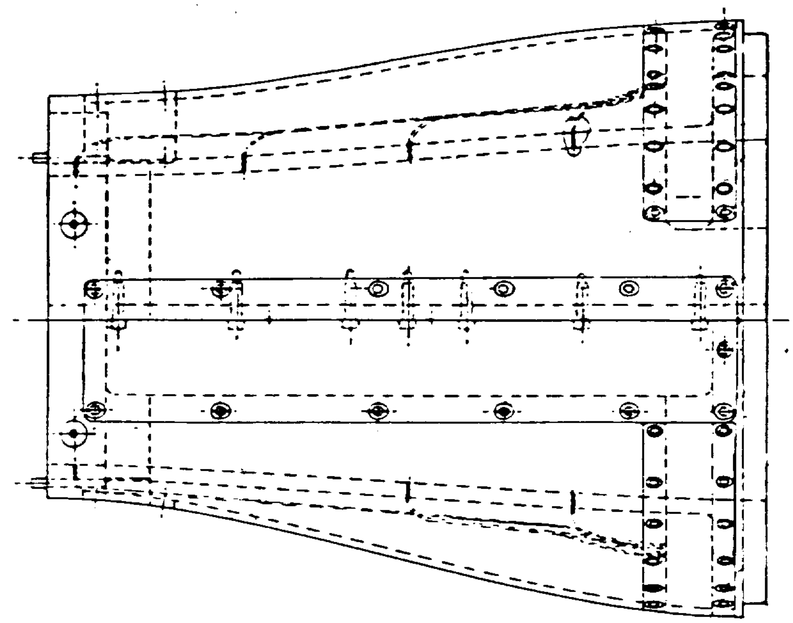


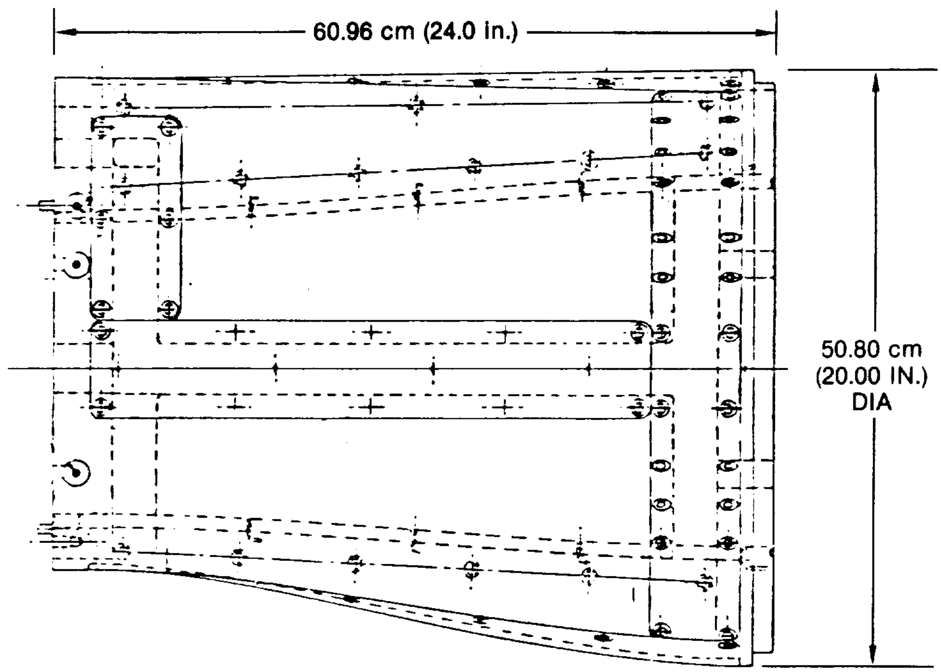
Figure 57. Diffuser Ramp Center Support for Supersonic Operation

3.3 DIFFUSER SECTION - The diffuser section is 60.96 cm (24 in) long and provides the transition from a 24.61 cm (9.69 in) square cross section to a 30.48 cm (12 in) diameter circular cross section at the diffuser exit, Figure 58. The diffuser section has an area ratio of 1.205 and zero offset. This section provides all of the diffusion in the low speed test mode. In supersonic testing, additional diffusion would be provided in the forward auxiliary section due to the subsonic diffuser ramp being deflected. The supersonic diffuser area ratio is 1.915.

3.4 INTERFACE FLANGE - The interface flange section, shown in Figure 59, is 12.57 cm (4.95 in) long and provides an interface to connect the inlet model to the 9 x 15 ft Low Speed Wind Tunnel support system. In addition, the model instrumentation lines are redistributed around the flange.



TOP VIEW



LEFT SIDE VIEW

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Figure 58. Diffuser Section
Left Side and Top View Showing Instrumentation Channel Covers
(Part 1 of 2)

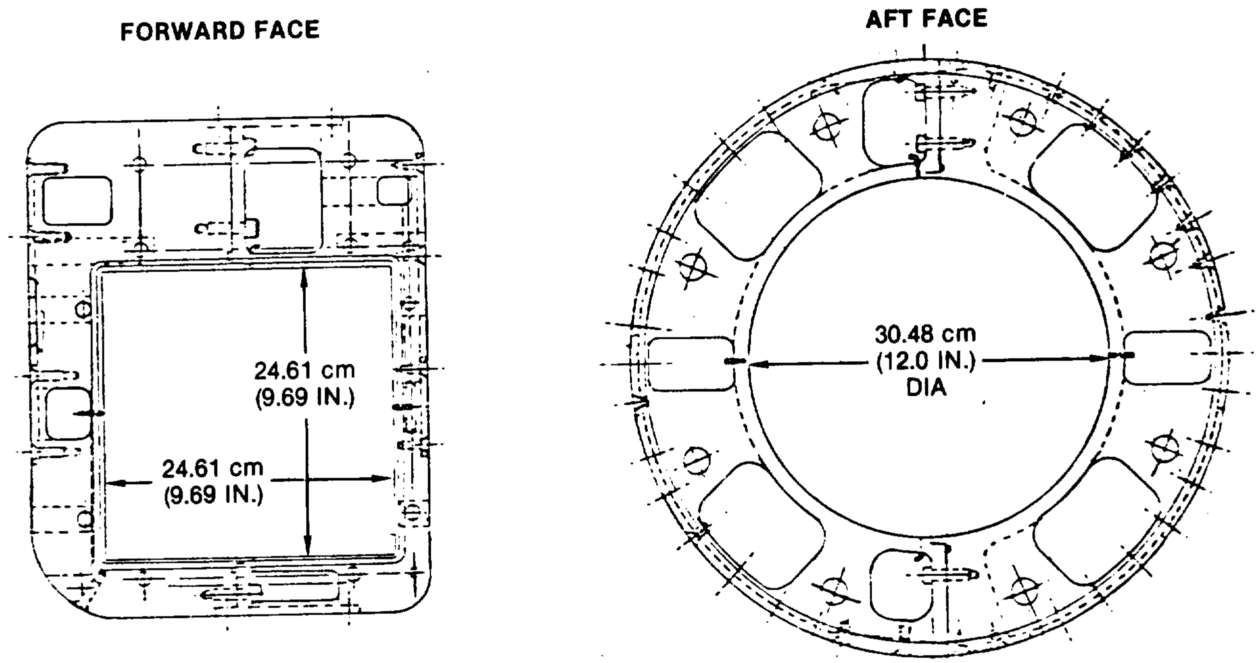

Figure 58. (Continued) Diffuser Section
Forward and Aft Faces
(Part 2 of 2)

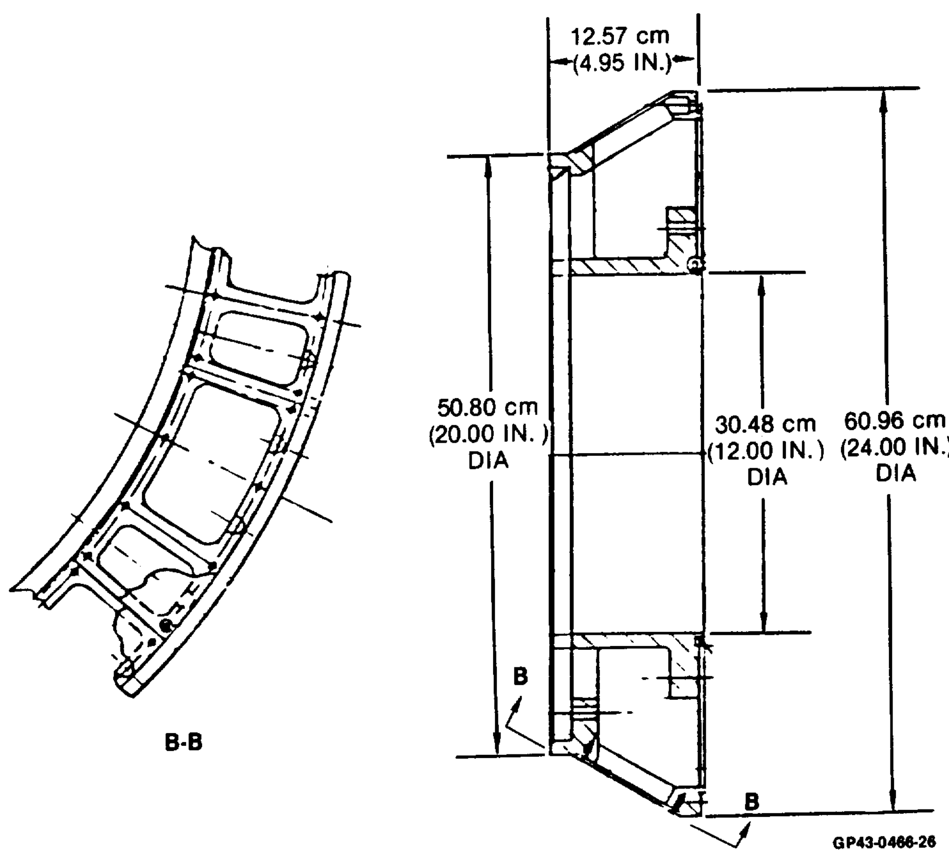

Figure 59. Interface Flange Section
Cross-Section View

4. MODEL INSTRUMENTATION

The model is highly instrumented with static taps and total pressure probes to provide an internal flow data base sufficient for development of inlet performance prediction techniques. A total of 155 static and 70 total pressure measurements are provided. Model instrumentation is contained completely between the inside and outside moldlines.

Instrumentation lines are provided with quick disconnects at each model section interface to facilitate model assembly/ disassembly. All of the parametric hardware has its own integral instrumentation and is connected to the model through quick disconnects. A typical example of the instrumentation routing is shown in Figure 60 for the interface between the 2-D inlet section and the forward auxiliary inlet section. Access to the instrumentation is provided by an extensive array of removable coverplates.

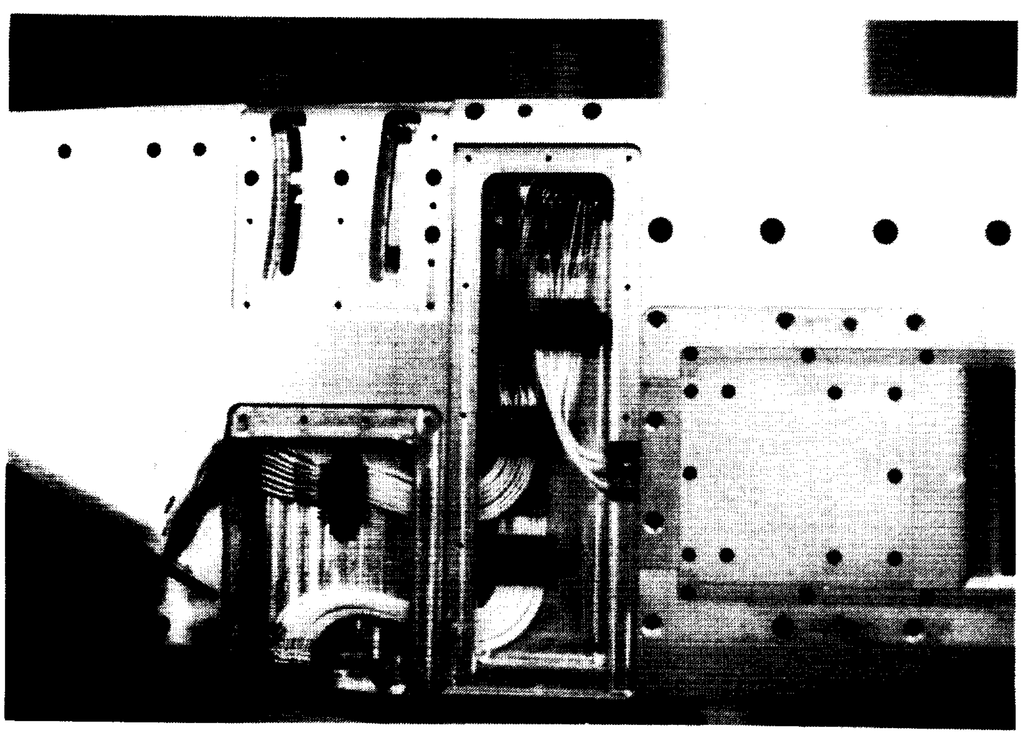

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Figure 60. Details of Instrumentation Routing

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Instrumentation locations are defined with reference to the model coordinate system shown in Figure 61. Coordinates of the instrumentation locations are provided in the following paragraphs for each model section.

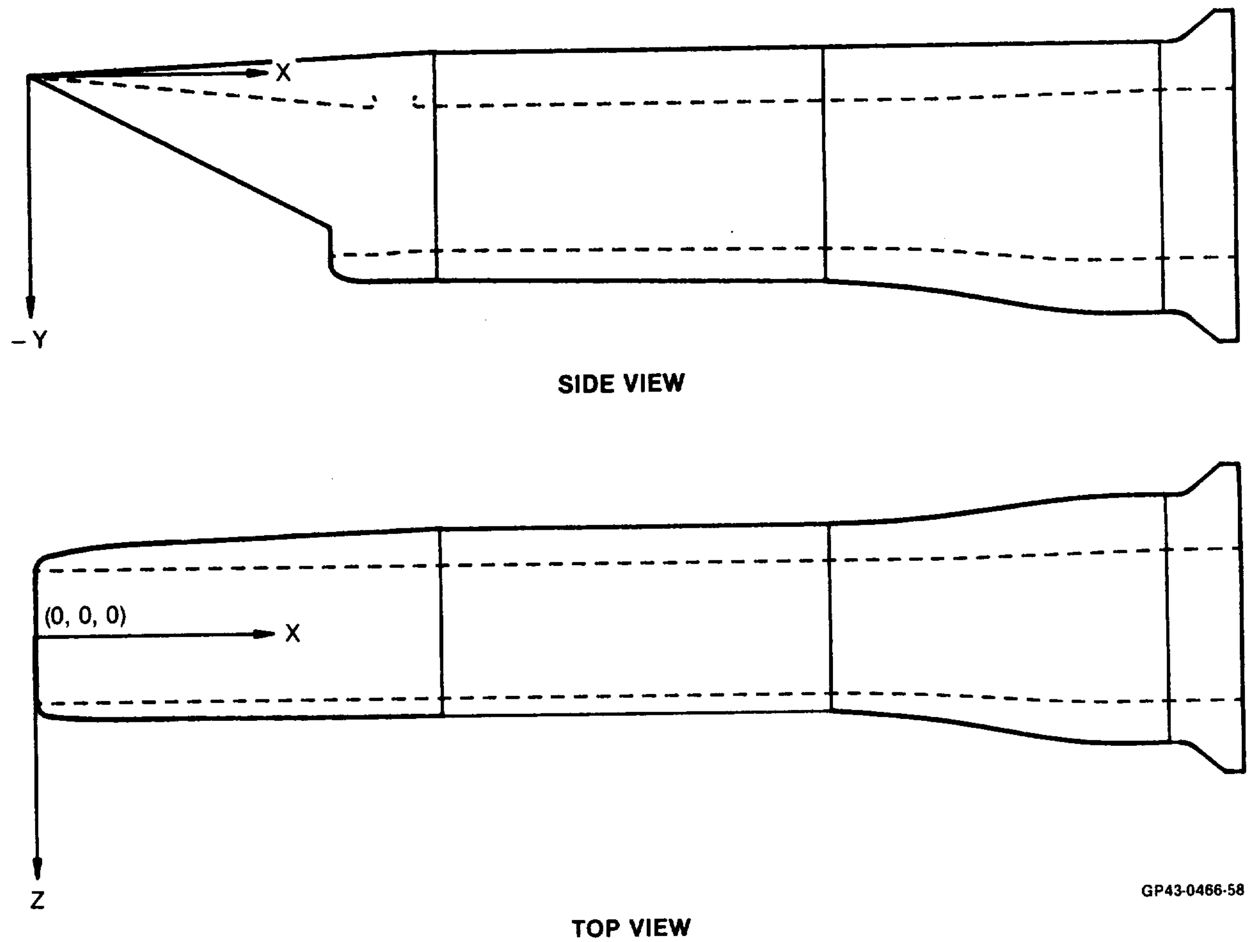
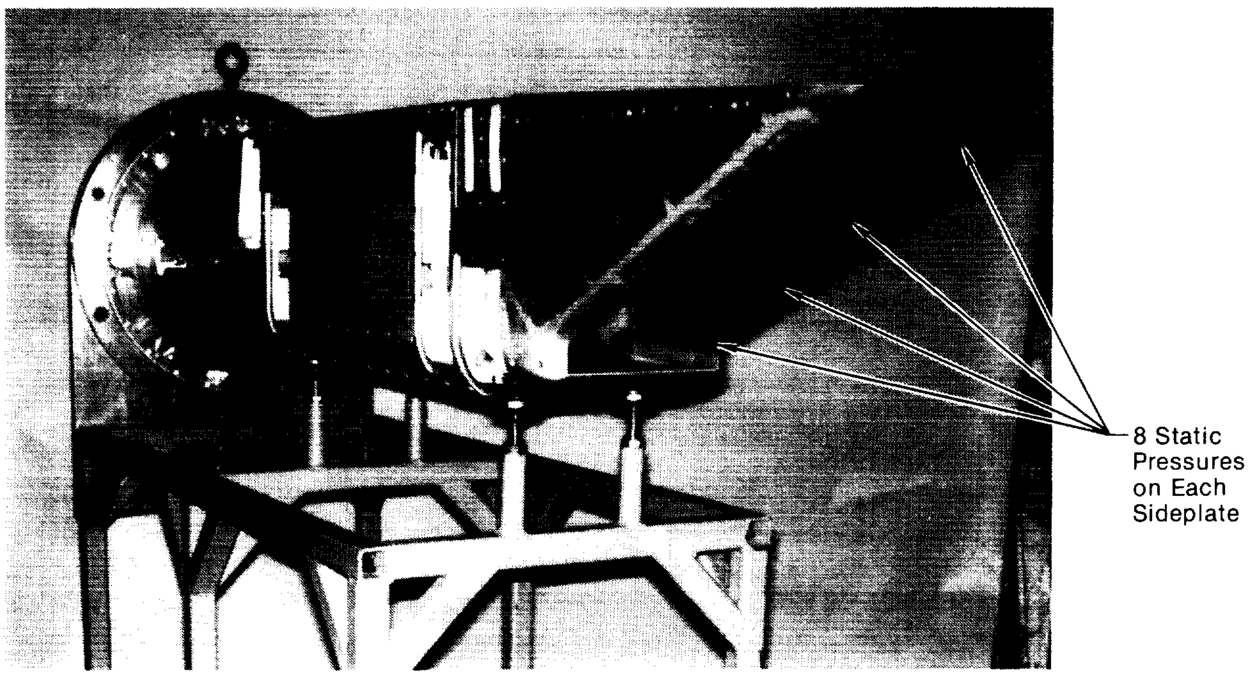


Figure 61. Definition of Model Coordinate System

4.1 <u>INLET SECTION</u> - Each of the three different inlet sections, i.e., basic, thick lip, and vertical ramp, contain both static and total pressure instrumentation as described below.

4.1.1 <u>Basic 2-D Inlet Section</u> - The sideplates, cowl lip, and the cowl lip slat knee of the basic 2-D inlet section are instrumented. A total of 20 total pressures and 44 static pressures are contained in this section.

Each inlet sideplate has 8 static pressure taps on the inside surface, Figure 62. The inlet sideplate static pressures are located in 4 pairs, each on a waterline with the forward tap approximately 1 inch behind the sideplate leading edge. The aft tap is approximately 2 inches behind the forward tap.



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SIDEPLATE STATIC PRESSURE COORDINATES		
X	Y	Z
2.80	−1.00	4.845
4.70	−1.00	
9.95	−4.64	
11.90	−4.64	
16.95	−8.28	
19.20	−8.28	
23.35	−12.12	4.845
25.30	−12.12	−4.845
2.80	−1.00	
4.70	−1.00	
9.95	−4.64	
11.90	−4.64	
16.95	−8.28	
19.20	−8.28	
23.35	−12.12	
25.30	−12.12	−4.845

Note: All values are in inches

Figure 62. Cowl Sideplate Instrumentation

The cowl lip has two removable 10 probe total pressure corner rakes and 20 static pressure taps, and the knee has 8 static pressures. Tap/probe locations are given in Figure 63 for the baseline lip position. Static pressures are located on the centerline; 10 on the top surface and 10 on the bottom surface. The 10 probe total pressure corner rakes were not used during the test. Instrumentation lines are routed to the side of the cowl lip, where they are picked up by a connector in the cowl lip sideplate, Figure 64. This connector is an integral part of the cowl lip sideplate and provides routing for lip instrumentation to the main inlet section, even when the lip is drooped or translated forward.

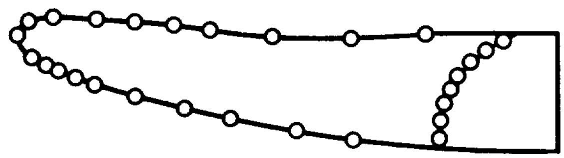
The knee instrumentation consists of 8 static pressures located on the centerline. When the cowl lip is translated forward, the knee is exposed to flow through the slot gap as shown schematically in Figure 65.

4.1.2 Thick Lip Inlet Section - The thick lip inlet instrumentation consists of 12 static pressures located circumferentially at the inlet entrance, external static pressures, and internal static pressures. Both external and internal static pressures are located along the centerline of the inlet bottom surface (i.e., 180° position). Instrumentation definition is given in Figure 66.

4.1.3 Vertical Ramp Inlet Section - The vertical ramp inlet instrumentation is identical to that on the 2-D Baseline Inlet Section. However, when the cutback sideplates are installed the cowl lip and inlet sideplate instrumentation is not used due to a lack of sufficient room to route the instrumentation through the section.

- 2 REMOVABLE 10-PROBE
  TOTAL PRESSURE CORNER RAKES

- 20 CENTERLINE STATIC PRESSURES
  ON COWL LIP
- 8 CENTERLINE STATIC PRESSURES
  ON KNEE



COWL LIP STATIC PRESSURE COORDINATES		
X	Y	Z
	INTERNAL SURFACE	
22.80	−13.39	0
23.05	−13.29	
23.45	−13.23	
24.00	−13.34	
24.54	−13.39	
24.98	−13.49	
25.72	−13.54	
26.62	−13.59	
27.55	−13.64	↓
28.42	−13.64	0
	EXTERNAL SURFACE	
23.05	−13.64	0
23.35	−13.99	
23.66	−13.91	
24.11	−14.10	
24.52	−14.25	
24.96	−14.40	
25.56	−14.57	
26.22	−14.73	
26.86	−14.86	↓
27.50	−14.97	0

TOTAL PRESSURE CORNER RAKE COORDINATES		
X	Y	Z
	INTERNAL SURFACE	
23.45	−12.723	−3.932
	−12.678	−3.887
	−12.634	−3.843
	−12.589	−3.798
	−12.545	−3.754
	−12.500	−3.709
	−12.456	−3.665
	−12.411	−3.620
↓	−12.367	−3.576
23.45	−12.322	−3.531
	EXTERNAL SURFACE	
23.45	−12.723	3.932
	−12.678	3.887
	−12.634	3.843
	−12.589	3.798
	−12.545	3.754
	−12.500	3.709
	−12.456	3.665
	−12.411	3.620
↓	−12.367	3.576
23.45	−12.322	3.531

KNEE STATIC PRESSURE COORDINATES		
X	Y	Z
28.43	−15.12	0
28.40	−14.93	
28.43	−14.61	
28.53	−14.39	
28.66	−14.11	
28.88	−13.99	
29.08	−13.79	↓
29.38	−13.69	0

Note: All values are in inches

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Figure 63. Cowl Lip Instrumentation
Baseline Lip

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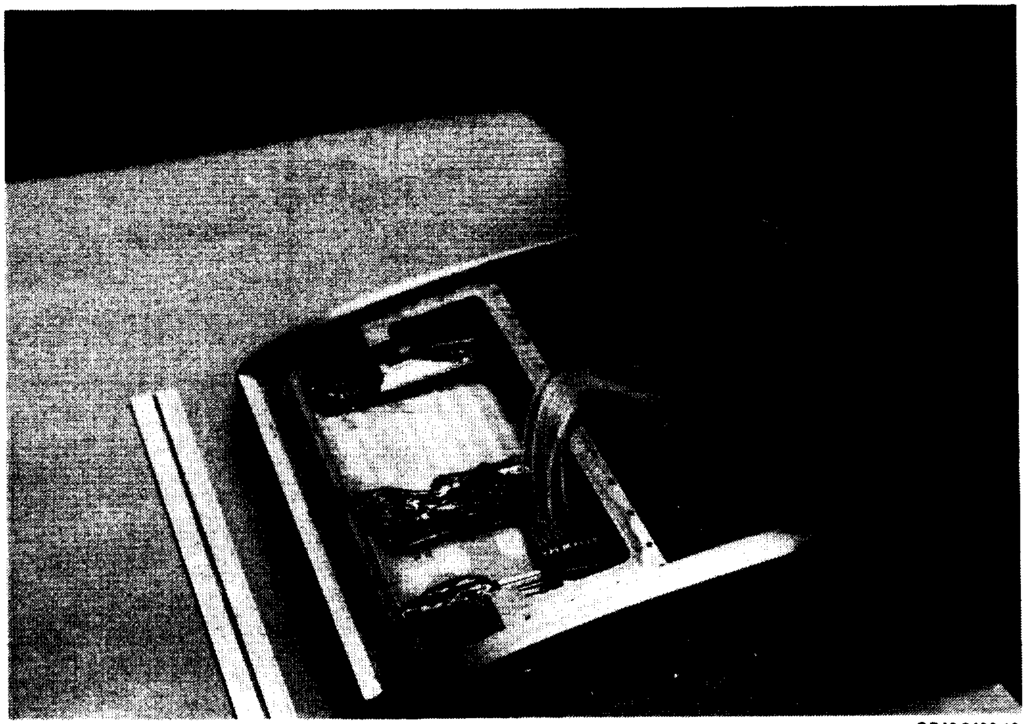

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Figure 64. Cowl Lip Instrumentation Routing
Baseline Lip Configuration Shown - Bottom Cover Removed to Show Internal Instrumentation Lines

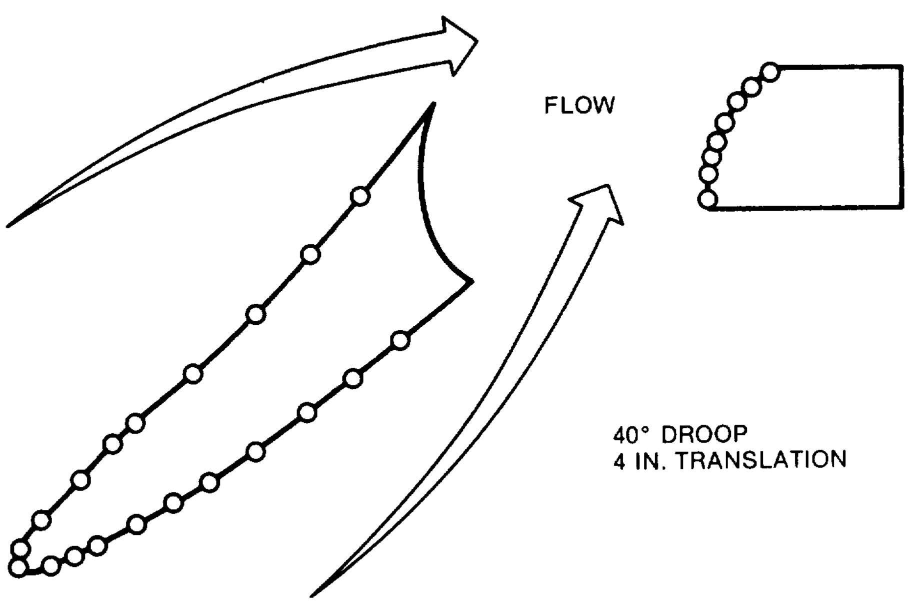

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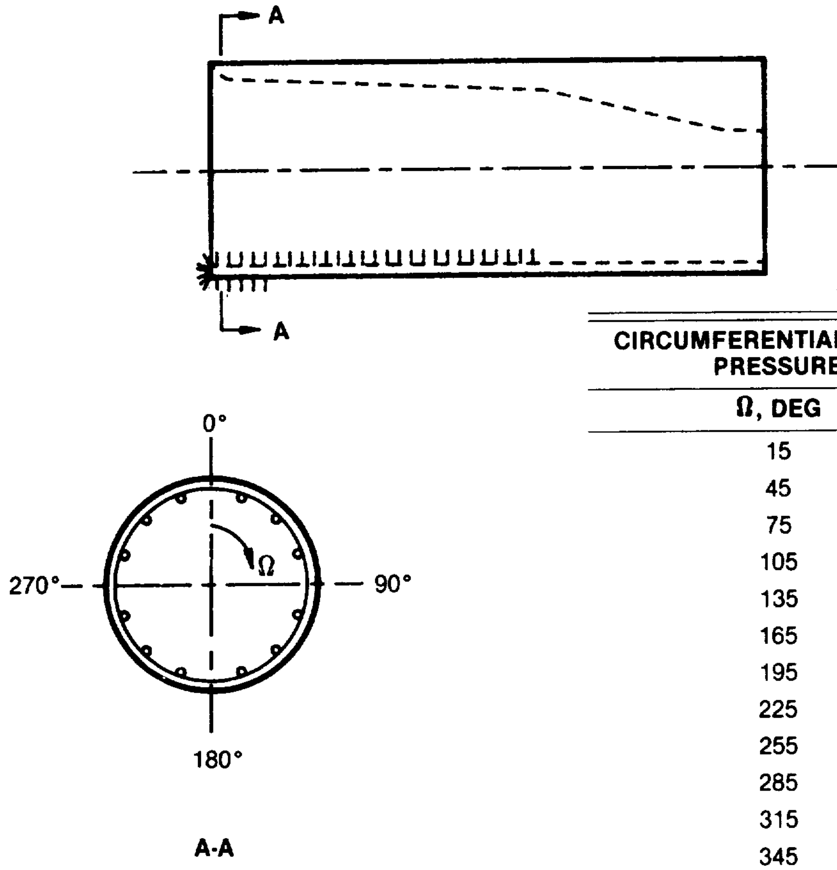
Figure 65. Cowl Lip Instrumentation
Drooped and Translated Lip



CIRCUMFERENTIAL STATIC PRESSURE
Ω, DEG
15
45
75
105
135
165
195
225
255
285
315
345

CENTERLINE STATIC PRESSURES				
EXTERNAL	INTERNAL			
FS, IN.	FS, IN.	FS, IN.	FS, IN.	FS, IN.
0.000	0.106	7.099	17.164	27.123
0.106	0.424	8.158	18.117	
0.424	0.848	9.112	19.177	
0.848	1.377	10.171	20.131	
1.377	1.801	11.125	21.190	
1.801	2.331	12.184	22.144	
2.331	3.073	13.138	23.203	
2.861	4.132	14.091	24.157	
3.390	5.086	15.151	25.110	
3.814	6.145	16.104	26.170	

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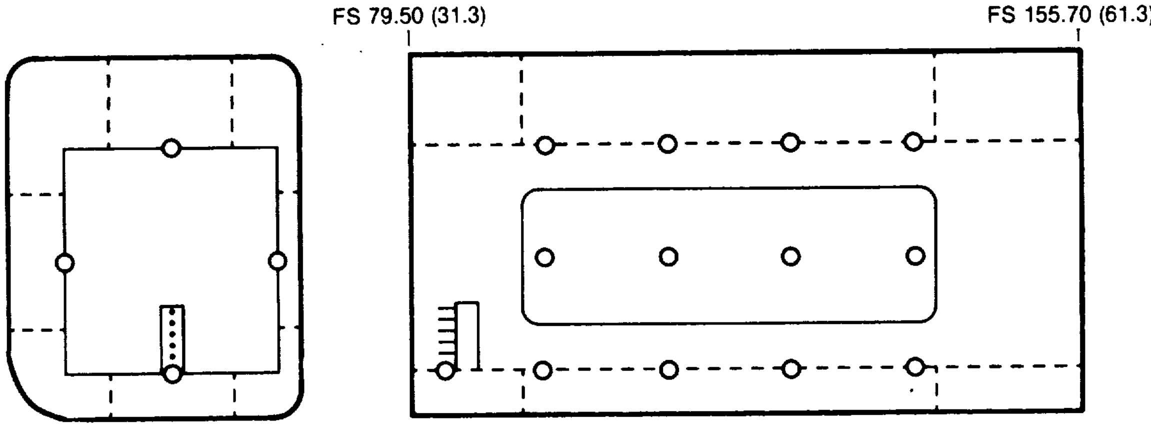
Figure 66. Thick Lip Inlet Instrumentation

4.2 FORWARD AUXILIARY INLET SECTION - Forward auxiliary inlet section instrumentation consists of a removable 10 probe total pressure rake located 25.27 cm (9.95 in) behind the lip highlight of the basic 2-D inlet, and the static and total pressures associated with each auxiliary inlet. The instrumentation is schematically shown in Figure 67 and is discussed below for each of the three possible auxiliary inlet configurations, closed, port design, and the door design.

For the closed auxiliary inlets, the instrumentation consists of 4 static pressures on the centerline of each inside cover plate. These provide a measurement of the internal pressures on each of the 4 forward auxiliary inlet section walls, Figure 67.

The port and door design auxiliary inlet instrumentation is shown schematically in Figure 68. The aft ramp has 10 static pressures on the centerline and a removable 10 probe total pressure rake. The total pressure rake is located to measure the pressure profile of the auxiliary inlet airflow as it enters the main inlet duct flow. The forward ramp of the port design auxiliary inlet has 10 static pressures along the centerline, Figure 68. The door design has 20 static pressures on the door, 10 each on the centerline of the internal and external surfaces. Instrumentation locations are provided in Figure 68.

4.3 DIFFUSER SECTION - The diffuser instrumentation consists of 20 static pressures. These static pressure taps are positioned 5 each on the top, right, bottom, and left sides of the diffuser along the model centerline, Figure 69.



- TEN PROBE TOTAL PRESSURE RAKE ON BOTTOM SURFACE WITH 1 STATIC PRESSURE TAP
- FOUR STATIC PRESSURE TAPS ON CENTERLINE OF EACH AUXILIARY INLET COVERPLATE

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INSTRUMENTATION COORDINATES

STATIC PRESSURES

	X	Y	Z
TOP	38.20	−3.89	0
	43.61		
	49.03		
	54.44	−3.89	0
LEFT	38.20	−8.745	−4.845
	43.61		
	49.03		
	54.44	−8.745	−4.845
BOTTOM	32.75	−13.556	0
	38.20		
	43.61		
	49.03		
	54.44	−13.556	0
RIGHT	38.20	−8.745	4.845
	43.61		
	49.03		
	54.44	−8.745	4.845

TOTAL PRESSURES

X	Y	Z
32.75	−13.465	0
	−13.345	
	−13.162	
	−12.979	
	−12.676	
	−12.278	
	−11.880	
	−11.482	
	−11.084	
32.75	−10.686	0

Note: All values are in inches

Figure 67. Forward Auxiliary Inlet Section Instrumentation
Auxiliary Inlets Closed

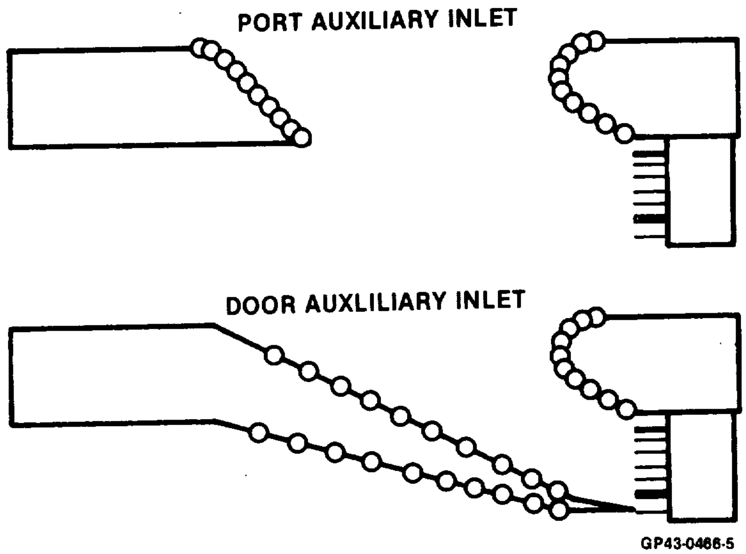

Figure 68. Auxiliary Inlet Instrumentation
(Part 1 of 5)

4.4 <u>ENGINE FACE RAKE</u> - The engine face rake used in the low speed testing was provided by NASA-LeRC. It is an eight leg design and has a total of 144 total pressure probes, 16 static pressures, and 8 dynamic total pressures. A total of 72 total pressure probes are utilized to measure flow direction. The general arrangement of the rake and the location of the static and dynamic total pressures are shown in Figure 70. A typical rake leg and location of the total pressure probes and the flow swirl probes are shown in Figure 71. Flow swirl probes are positioned to measure circumferential flow angularities at 2 radial stations on each rake leg, and radial flow angularities at one station along each leg.

4.5 <u>INSTRUMENTATION SUMMARY</u> - The inlet model is extensively instrumented from the ramp leading edge back to the engine face The instrumentation shown in a sheer view, Figure 72, represents the top auxiliary inlet port design and the bottom auxiliary inlet closed. The planview, Figure 73, represents the instrumentation associated with both port and door auxiliary inlets.

(a) TOP AUXILIARY INLET

Location		STATIC PRESSURES X	Y	Z
FORWARD RAMP		38.12	1.00	0
		38.77	0.82	
		39.20	0.53	
		39.55	0.09	
		39.90	−0.39	
		40.24	−0.83	
		40.62	−1.31	
		40.99	−1.80	
		41.32	−2.27	
		41.68	−2.71	0
DOOR	EXTERNAL	38.10	1.00	0
		39.57	0.40	
		40.96	−0.38	
		42.30	−1.15	
		43.65	−1.95	
		45.01	−2.71	
		46.36	−3.48	
		47.70	−4.25	
		49.05	−5.02	
		50.40	−5.81	0
	INTERNAL	38.46	−3.95	0
		39.75	−4.19	
		41.03	−4.42	
		42.32	−4.68	
		43.64	−4.92	
		44.90	−5.17	
		46.22	−5.42	
		47.56	−5.68	
		48.87	−5.90	
		50.18	−6.15	0
AFT RAMP		51.06	1.00	0
		50.24	0.77	
		49.65	0.10	
		49.45	−0.75	
		49.77	−1.57	
		50.29	−2.27	
		50.85	−2.92	
		51.53	−3.46	
		52.37	−3.78	
		53.25	−3.89	0

TOTAL PRESSURES X	Y	Z
53.25	−3.981	0
	−4.103	
	−4.286	
	−4.683	
	−5.080	
	−5.477	
	−5.874	
	−6.057	
	−6.179	
53.25	−6.403	0

Note: All values are in inches

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Figure 68. (Continued) Auxiliary Inlet Instrumentation
(Part 2 of 5)

(b) LEFT SIDE AUXILIARY INLET

STATIC PRESSURES

		X	Y	Z
FORWARD RAMP		42.01	−8.745	−7.35
		42.35		−7.27
		42.62		−7.06
		42.87		−6.78
		43.07		−6.49
		43.27		−6.12
		43.48		−5.97
		43.70		−5.66
		43.90		−5.37
		44.10	−8.745	−5.17
DOOR	EXTERNAL	44.88	−8.745	−7.35
		42.79		−7.02
		43.77		−6.47
		44.79		−5.95
		45.78		−5.45
		46.78		−4.90
		47.89		−4.33
		48.88		−3.80
		50.00		−3.23
		50.87	−8.745	−2.78
	INTERNAL	42.00	−8.745	−4.843
		42.95		−4.633
		43.80		−4.353
		44.87		−4.113
		45.78		−3.853
		46.80		−3.539
		47.73		−3.333
		48.70		−3.063
		49.64		−2.823
		50.58	−8.745	−2.537
AFT RAMP		52.05	−8.745	−7.35
		51.6		−7.24
		51.29		−6.93
		51.18		−6.46
		51.29		−6.07
		51.65		−5.73
		51.84		−5.35
		52.17		−5.07
		52.57		−4.91
		53.05	−8.745	−4.83

TOTAL PRESSURES

X	Y	Z
53.05	−8.745	−4.742
		−4.620
		−4.437
		−4.040
		−3.643
		−3.246
		−2.849
		−2.666
		−5.544
53.05	−8.745	−2.320

Note: All values are in inches

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Figure 68. (Continued) Auxiliary Inlet Instrumentation
(Part 3 of 5)

(c) BOTTOM AUXILIARY INLET

		STATIC PRESSURES		
		X	Y	Z
FORWARD RAMP		43.03	−15.466	0
		43.31	−15.366	
		43.52	−15.196	
		43.69	−14.996	
		43.84	−14.776	
		44.01	−14.596	
		44.15	−14.436	
		44.32	−14.236	
		44.46	−14.036	
		44.62	−13.836	0
DOOR	EXTERNAL	43.07	−15.446	0
		44.02	−15.056	
		44.94	−14.625	
		45.82	−14.186	
		46.76	−13.726	
		47.67	−13.276	
		48.59	−12.826	
		49.48	−12.416	
		50.38	−11.946	
		51.29	−11.526	0
	INTERNAL	43.18	−13.566	0
		44.07	−13.306	
		44.93	−13.046	
		45.73	−12.806	
		46.58	−12.566	
		47.43	−12.316	
		48.29	−12.056	
		49.15	−11.816	
		50.03	−11.576	
		50.89	−11.316	0
AFT RAMP		52.32	−15.446	0
		51.91	−15.286	
		51.73	−15.016	
		51.71	−14.666	
		51.84	−14.426	
		52.04	−14.196	
		52.20	−13.956	
		52.45	−13.776	
		52.73	−13.616	
		53.09	−13.556	0

TOTAL PRESSURES		
X	Y	Z
53.25	−13.465	0
	−13.343	
	−13.160	
	−12.763	
	−12.366	
	−11.969	
	−11.572	
	−11.389	
	−11.267	
53.25	−11.043	0

Note: All values are in inches

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Figure 68. (Continued) Auxiliary Inlet Instrumentation
(Part 4 of 5)

(d) RIGHT SIDE AUXILIARY INLET

	STATIC PRESSURES		
	X	Y	Z
FORWARD RAMP	44.088	−8.745	6.003
	44.338	↓	5.953
	44.488		5.803
	44.538		5.703
	44.638		5.603
	44.738		5.473
	44.788		5.383
	44.888		5.283
	44.948		5.183
	45.038	−8.745	5.053
DOOR, EXTERNAL	44.538	−8.745	5.903
	45.258	↓	5.583
	45.978		5.223
	46.738		4.836
	47.418		4.503
	48.168		4.173
	48.938		3.823
	49.668		3.463
	50.408		3.103
	51.178	−8.745	2.703
DOOR, INTERNAL	44.488	−8.745	4.773
	45.218	↓	4.523
	45.958		4.293
	46.658		4.043
	47.408		3.783
	48.158		3.543
	48.928		3.293
	49.658		3.043
	50.408		2.813
	51.168	−8.745	2.543
AFT RAMP	52.630	−8.745	6.003
	52.420	↓	5.923
	52.270		5.753
	52.250		5.553
	52.350		5.353
	52.470		5.223
	52.580		5.073
	52.720		4.933
	52.900		4.853
	53.140	−8.745	4.833

TOTAL PRESSURES		
X	Y	Z
53.14	−8.745	4.742
↓	↓	4.620
		4.437
		4.040
		3.643
		3.246
		2.849
		2.666
		2.544
53.14	−8.745	2.320

Note: All values are in inches

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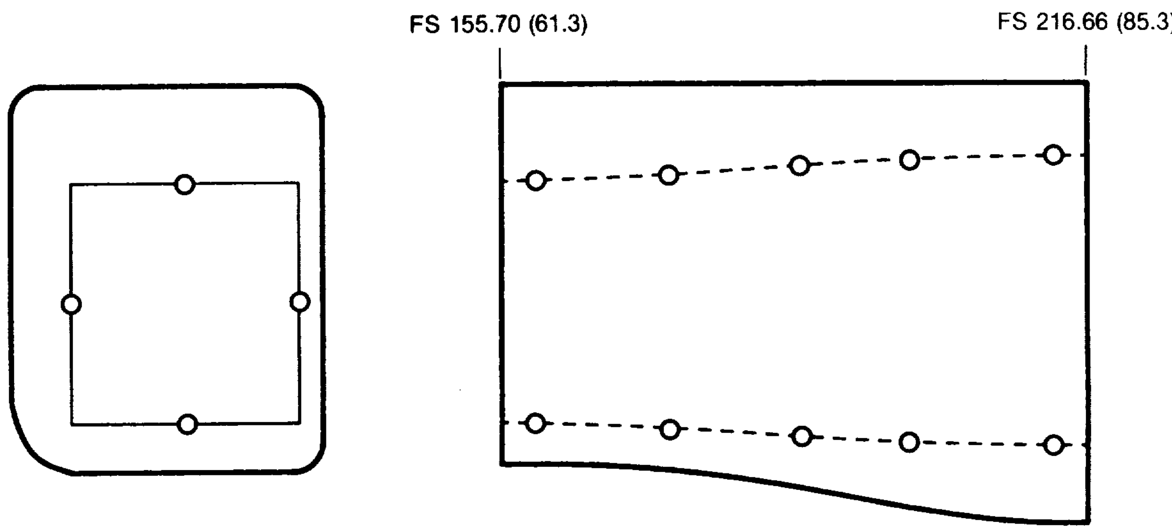
Figure 68. (Concluded) Auxiliary Inlet Instrumentation
(Part 5 of 5)



	STATIC PRESSURE COORDINATES		
	X	Y	Z
TOP	62.90	−3.891	0
	68.10	−3.725	
	73.30	−3.475	
	78.30	−3.186	
	83.70	−2.836	0
LEFT	62.90	−8.745	−4.854
	68.10		−5.020
	73.30		−5.270
	78.30		−5.559
	83.70	−8.745	−5.909
BOTTOM	62.90	−13.599	0
	68.10	−13.765	
	73.30	−14.015	
	78.30	−14.304	
	83.70	−14.654	0
RIGHT	62.90	−8.745	4.854
	68.10		5.020
	73.30		5.270
	78.30		5.559
	83.70	−8.745	5.909

Note: All values are in inches

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Figure 69. Diffuser Section Instrumentation

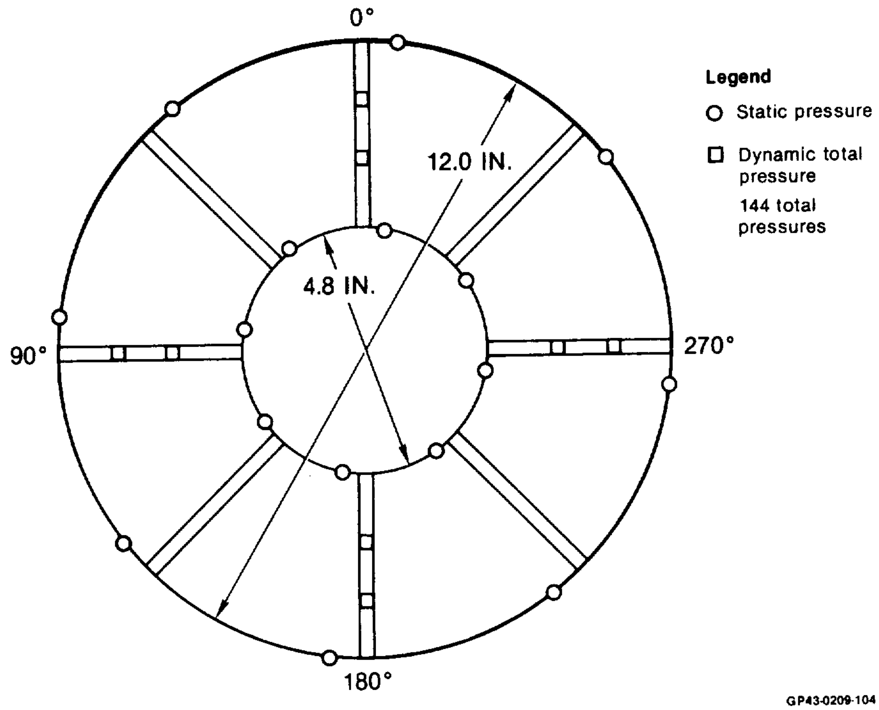

Figure 70. Engine Face Rake Arrangement

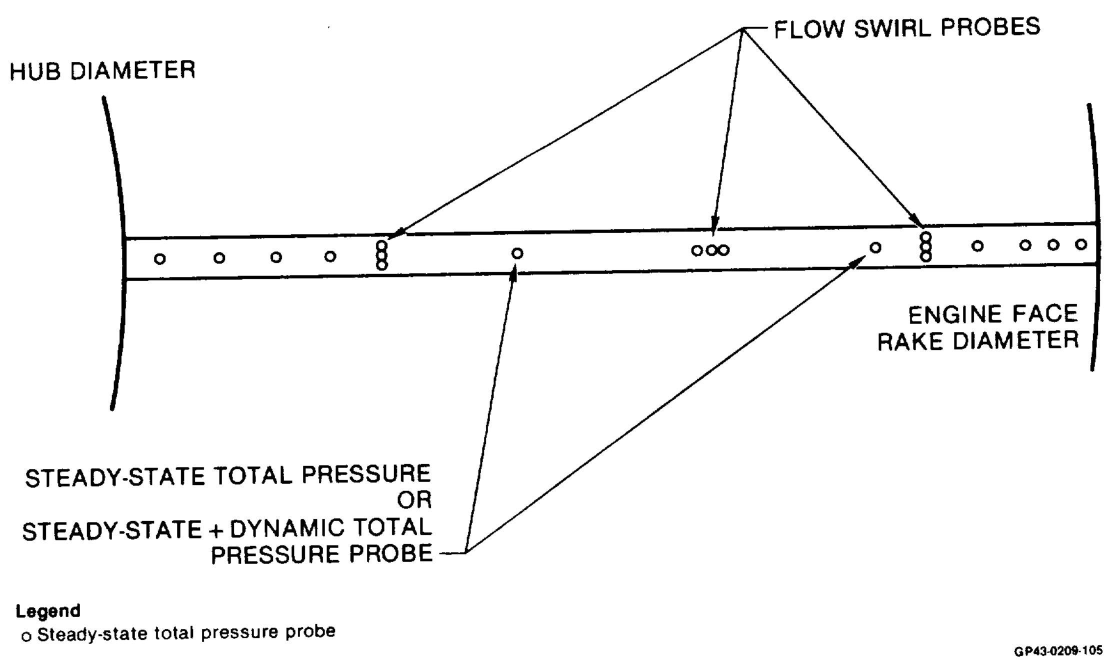

Figure 71. Typical Rake Leg
Engine Face Rake Assembly

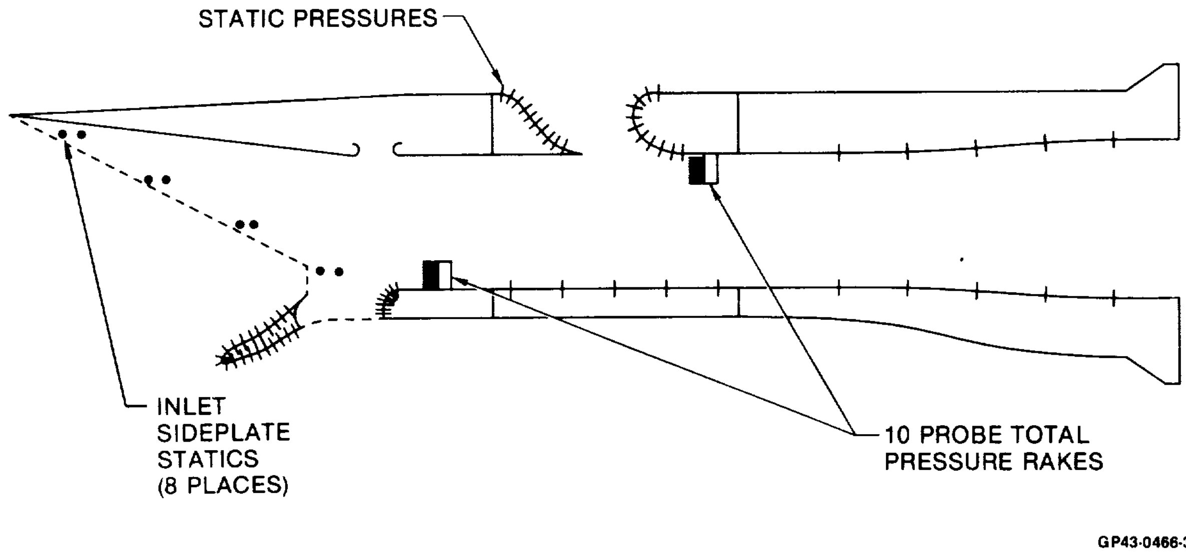

Figure 72. Sheer View of Model Instrumentation

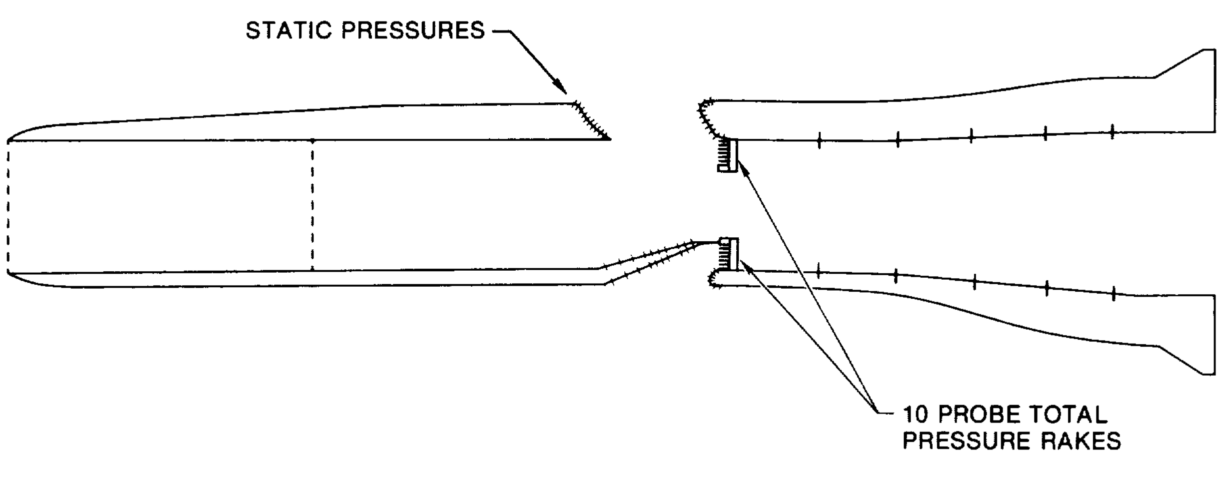

Figure 73. Plan View of Model Instrumentation

5. FACILITY

The low speed testing was conducted in the NASA-Lewis 9x15 ft Low Speed Wind Tunnel, Reference 11. The 9x15 ft wind tunnel is located in the return leg of the 8x6 ft Supersonic Wind Tunnel, Figure 74, and is capable of speeds from 26 knots to 152 knots.

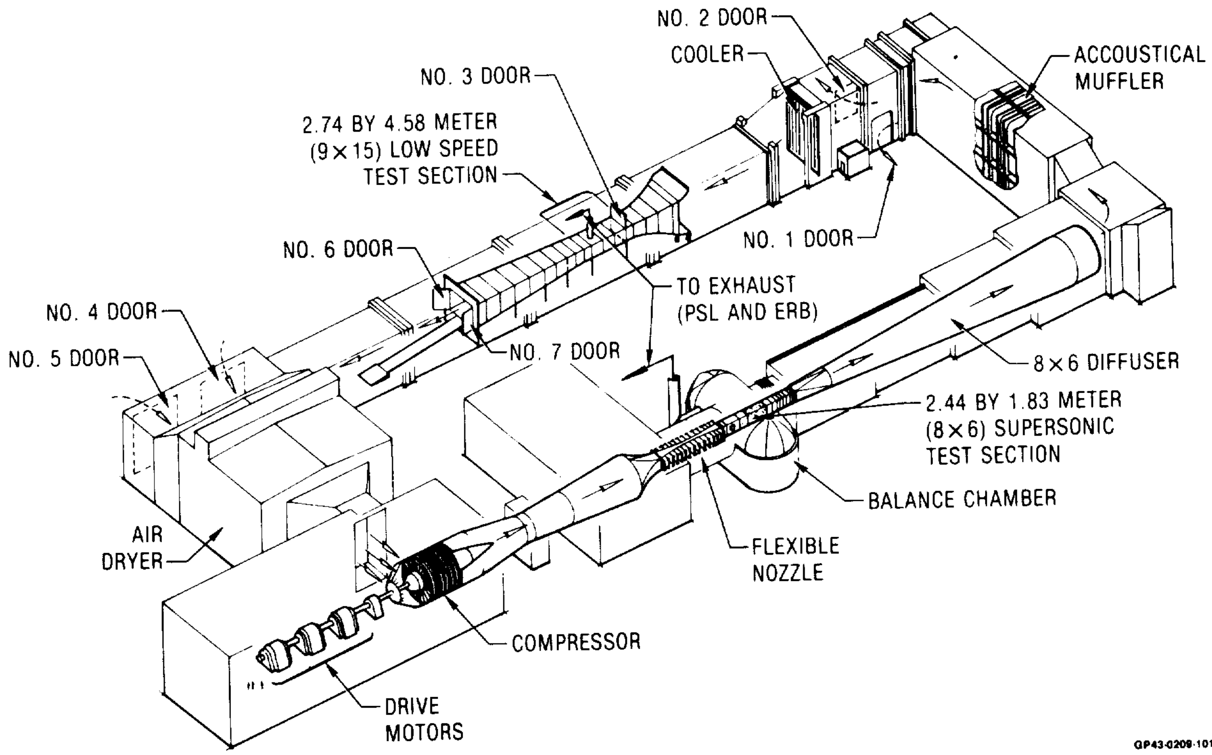

Figure 74. NASA Lewis Research Center 8 × 6 Ft and 9 × 15 Ft Wind Tunnels

The wind tunnel components are a flow control section, a cooler/flow straightener, a settling section, an inlet section, the test section, a diffuser section, and an exit. A schematic is shown in Figure 75. The flow control is provided by a pair of doors located on each side of the tunnel. Opening these doors will vary the test section velocity. The cooler/flow straightener is a finned-tube water heat exchanger and is used to control the entrance temperature to the compressor, and provides a uniform temperature level in the low speed test section. The settling chamber is 650 cooler tube diameters long and serves to damp out most of the turbulence generated through the cooler.

The inlet section has a contraction ratio of 8:1 and provides constant axial acceleration of the tunnel airstream. Test station walls are diverged slightly to account for boundary layer buildup. Tunnel side walls of the test section are slotted to reduce interference to a minimum value and have a porosity of 11 percent. Four plexiglass windows in the walls and one in the ceiling provide illumination of the model and a direct view of the model.

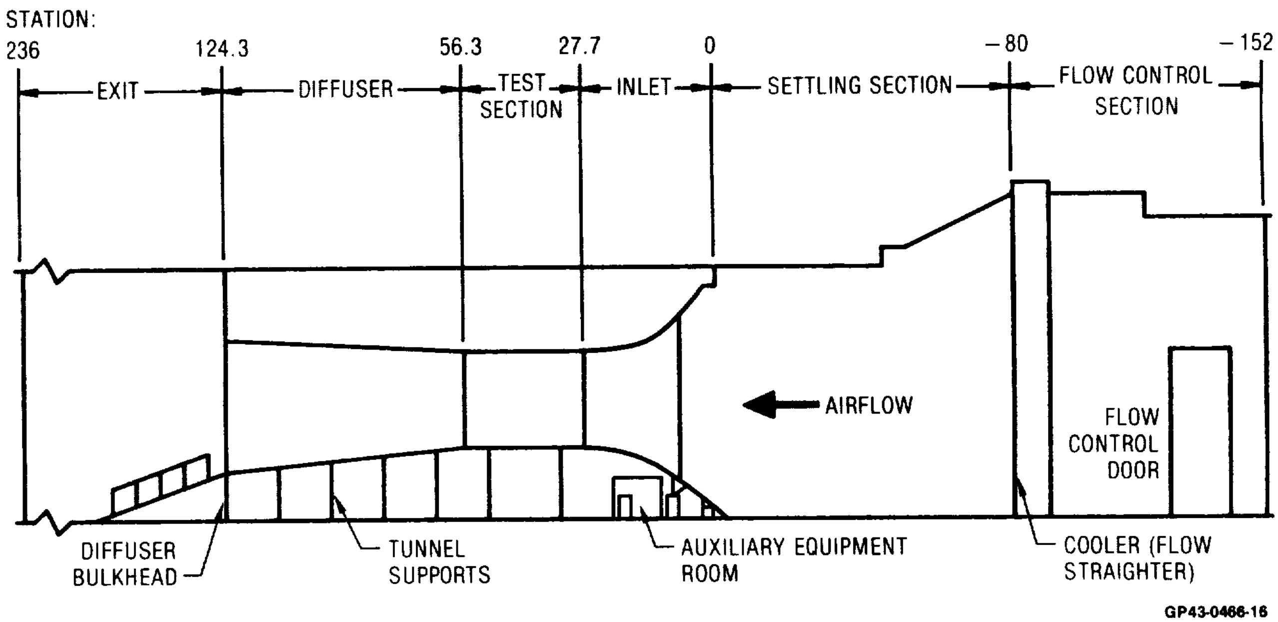

Figure 75. Schematic Elevation View of 2.72 × 4.58 Meter (9 × 15 Ft) V/STOL Facility
Drawing Not to Scale

5.1 <u>MODEL SUPPORT</u> - The wind tunnel model installation hardware provides the means to hold the model in the wind tunnel, a suction system to vary inlet airflow, and the ability to rotate the model for angle of attack variations. This tunnel support system consists of a 60.96 cm (24.0 in) diameter housing to which the model is attached, a 25.4 cm (10.0 in) diameter pipe which is attached to a turntable under the tunnel floor, and a 40.64 cm

(16.0 in) diameter suction pipe which extends through the tunnel ceiling, Figure 76. The housing provides the attachment point for the model, and routing for all instrumentation lines. The engine face rake is supported in the housing assembly. The 25.4 cm (10.0 in) diameter pipe provides support for the model assembly and is attached to the turntable which rotates the model. The 40.64 cm (16.0 in) pipe provides suction to the model for varying inlet airflow.

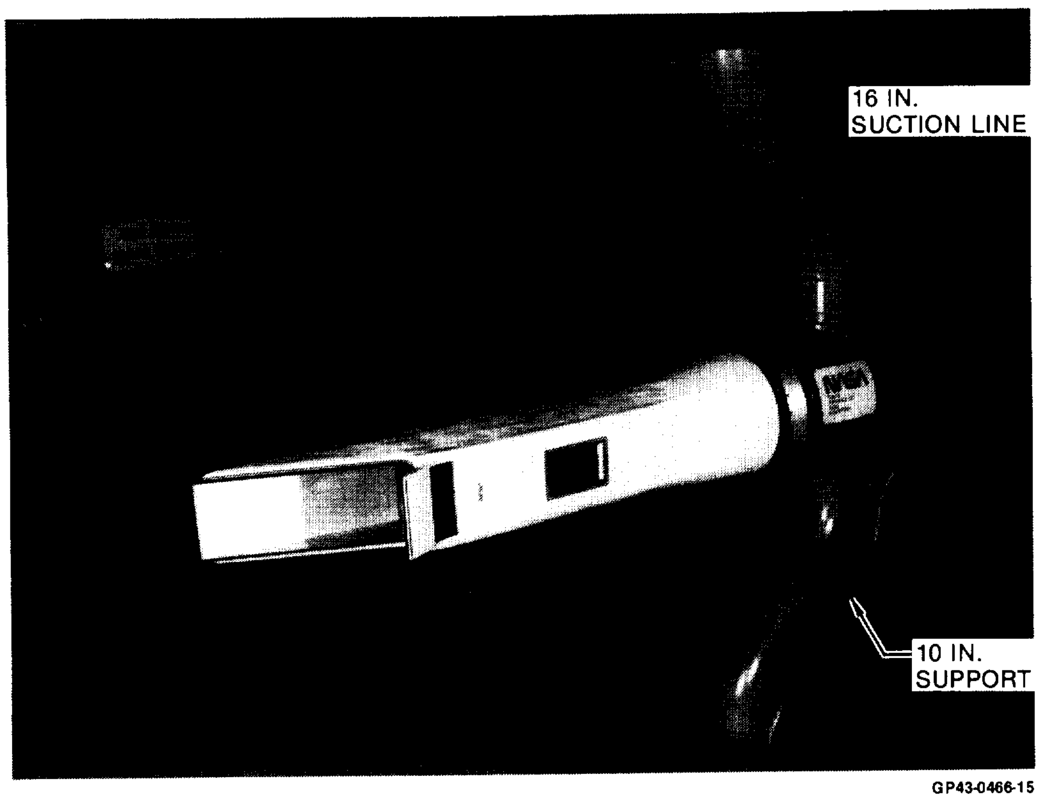

Figure 76. Model Support in 9 x 15 Ft Tunnel

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6. WIND TUNNEL TEST RESULTS

A total of 26 different configurations were tested in the NASA LeRC 9 x 15 foot low speed wind tunnel. These configurations were based on parametric variations of the flow improvement features incorporated into the 2-D supersonic V/STOL inlet system model described in Sections 2.0 and 3.0, e.g., variable geometry cowl lip and auxiliary inlets. Parametrics were conducted using three basic inlet model arrangements, thick lip, sharp lip, and vertical ramp.

A summary of each model arrangement and the performance of the 26 configurations are discussed in the following sections. These sections deal with flow inprovement techniques incorporated into each of the three basic inlet model arrangements. Performance data includes recovery, average turbulence, distortion, and flow diagnostic data. A complete set of data for all tested configurations can be found in Appendix A of this report. All performance data were developed for the P&WA F100 engine airflow as it provides a direct comparison with a wide range of inlet systems associated with current production aircraft and propulsion research projects.

6.1 MODEL ARRANGEMENTS - The wind tunnel model was tested in three major arrangements; the thick lip inlet, sharp lip inlet, and the vertical ramp inlet.

The thick lip inlet arrangement was tested to provide an upper benchmark for inlet low speed performance, Figure 77. The thick lip inlet had the corner fillets installed and was tested with each port design auxiliary inlet open individually. The door auxiliary inlet design was tested with and without the sideplates attached. This data provided the performance and a calibration of each auxiliary inlet.

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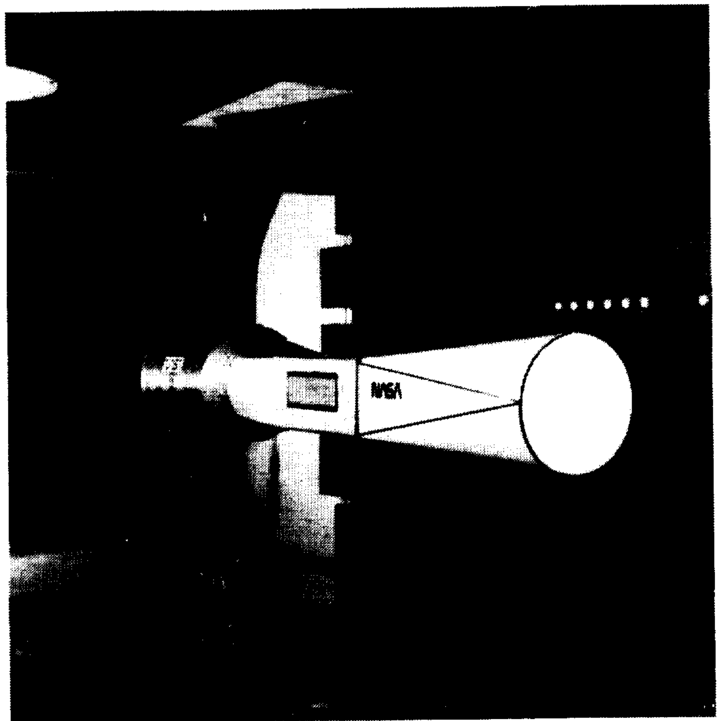

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Figure 77. Thick Lip Inlet Section Installed on Model

The sharp lip inlet was tested to provide an evaluation of the basic inlet performance at low speed, and the effect of the flow improvement devices, Figure 76. This configuration was tested with: all auxiliary inlets closed, with and without the corner fillets installed, all 4 port design auxiliary inlets open, all 4 cavities open, the ramp side cavity only open, the port and door design auxiliary inlets on the left side open, the cowl lip drooped 40° and 70° with and without all 4 port design auxiliary inlets open, and the cowl lip drooped 40° and translated forward 5.08, 10.16, and 15.24 cm (2, 4 and 6 in) with all auxiliary inlets closed.

The vertical ramp inlet arrangement was tested with the full (standard) and retracted sideplates. Each sideplate configuration was tested with the 4 auxiliary inlets closed, and with only the ramp side auxiliary inlet closed, the 3 others have the port design auxiliary inlet installed and open. The vertical ramp configuration, when tested with the baseline sideplates, also provided a pure sideslip test condition for the sharp lip 2-D baseline.

A summary of the model test configurations and test conditions is shown in Figure 78. All the model configurations were tested using the suction source to provide flow through the inlet. The inlet airflow was varied over the engine face Mach number range of 0.25 to 0.67, which corresponds to a range of 126 to 261 lbs/sec corrected airflow based on F-100 inlet scale.

Test results for each of the three model arrangements are discussed in the following sections, beginning with the thick lip inlet arrangement.

6.2 <u>THICK LIP INLET ARRANGEMENT</u> - The thick lip inlet arrangement was tested to establish a performance benchmark and calibrate the auxiliary inlets. This configuration has an axisymmetric, high contraction ratio inlet section installed in place of the 2-D inlet section. Configuration parametrics that were tested included the port design auxiliary inlet, each open individually, and the left auxiliary inlet open with both a door design and a door with sideplates. Calibration of thick lip inlet and each port auxiliary inlet was established by measuring the flow through the main inlet section and measuring the flow through the venturi downstream of the suction system.

The basic thick lip inlet arrangement with its contraction ratio of 1.47 exhibits very high performance at static conditions. Static performance data are shown in Figure 79. Recovery at the inlet/engine match point (fan face Mach No = 0.53) is 0.981, with a corresponding turbulence value of 0.0008. Such high recovery levels indicate that the lip losses have been minimized, as the diffuser friction losses alone are nearly 0.015. Thus, the high contraction ratio associated with this configuration results in performance levels that are fairly insensitive to mass flow ratio variations.

CONFIGURATION DESCRIPTION	V_∞ (KTS)	α (DEG)	β (DEG)
THICK LIP INLET			
THICK LIP BASELINE	0 40 80 120	0 0, 20, 45, 70, 90, 95, 100, 105, 110 0, 20, 45, 70, 75, 80, 85, 90, 110 0, 20, 45, 50, 55, 60, 65, 70, 90, 110	0
THICK LIP INLET, TOP AUXILIARY INLET OPEN	0, 40, 80, 120	0, 20, 45, 70, 90, 110	↓
THICK LIP INLET, RIGHT AUXILIARY INLET OPEN	↓	↓	↓
THICK LIP INLET, BOTTOM AUXILIARY INLET OPEN	↓	↓	↓
THICK LIP INLET, LEFT AUXILIARY INLET OPEN – PORT	↓	↓	↓
THICK LIP INLET, LEFT AUXILIARY INLET OPEN – DOOR	↓	↓	↓
THICK LIP INLET, LEFT AUXILIARY INLET OPEN – DOOR WITH SIDEPLATES	↓	↓	↓
SHARP LIP INLET			
SHARP LIP BASELINE	0, 40, 80, 120	0, 20, 45, 70, 90, 110	0
SHARP LIP INLET, RAMP CAVITY OPEN	↓	↓	↓
SHARP LIP INLET, ALL CAVITIES OPEN	↓	↓	↓
SHARP LIP INLET, CORNER FILLETS NOT INSTALLED	↓	↓	↓
SHARP LIP INLET, LEFT AUXILIARY INLET OPEN – PORT	↓	↓	↓
SHARP LIP INLET, LEFT AUXILIARY INLET OPEN – PORT	↓	↓	↓
SHARP LIP INLET, ALL AUXILIARY INLETS OPEN	↓	↓	↓
40° DROOP LIP, ALL AUXILIARY INLETS OPEN	↓	↓	↓
70° DROOP LIP, ALL AUXILIARY INLETS OPEN	↓	↓	↓
70° DROOP LIP	↓	↓	↓
40° DROOP LIP	↓	↓	↓
40° DROOP LIP, 2 INCH TRANSLATION	↓	↓	↓
40° DROOP LIP, 4 INCH TRANSLATION	↓	↓	↓
40° DROOP LIP, 6 INCH TRANSLATION	↓	↓	↓
VERTICAL RAMP INLET			
VERTICAL RAMP INLET, 90° COUNTERCLOCKWISE ROTATION	0, 40, 80, 120	0, 20, 45, 70, 90, 110	0
VERTICAL RAMP INLET, 90° COUNTERCLOCKWISE ROTATION, RETRACTED SIDEPLATES	↓	↓	↓
VERTICAL RAMP INLET, 90° CLOCKWISE ROTATION	↓	↓	↓
VERTICAL RAMP INLET, 90° COUNTERCLOCKWISE ROTATION, LEFT, RIGHT, AND COWL LIP AUXILIARY INLETS OPEN	↓	↓	↓
VERTICAL RAMP INLET, 90° COUNTERCLOCKWISE ROTATION, RETRACTED SIDEPLATES, LEFT, RIGHT, AND COWL LIP AUXILIARY INLETS OPEN	↓	↓	↓

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Figure 78. Test Matrix Summary

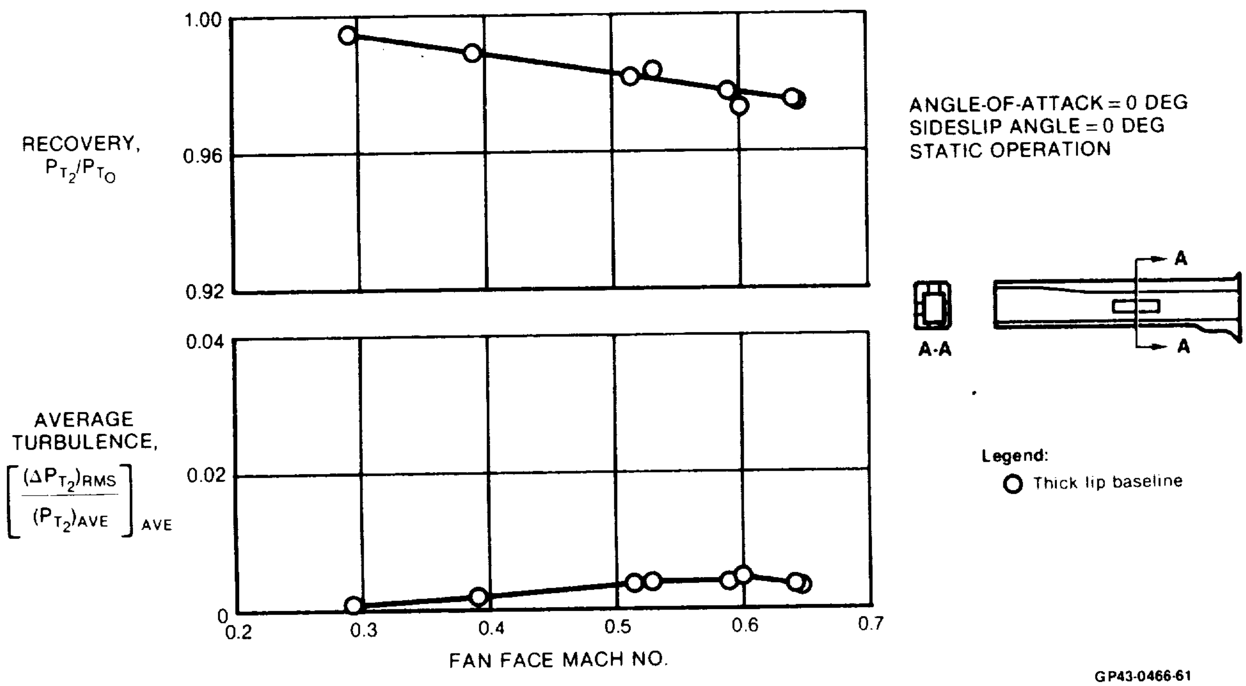

Figure 79. Effect of Fan Face Mach Number on Performance
Static Conditions

Freestream velocity has a very small effect on performance. The recovery is fairly flat over the velocity range tested, 0 to 120 knots, increasing from 0.981 at static conditions to 0.985 at 120 knots as shown in Figure 80 for zero degrees angle of attack. Turbulence and distortion also exhibit a flat trend with increasing velocity. These data trends also indicate that any lip losses, which are normally reduced with increasing freestream velocity, are very small for this configuration.

The high quality of the lip flow is further substantiated by looking at angle-of-attack effects on performance. At a freestream velocity of 40 knots, Figure 81, the inlet recovery and the RMS turbulence are essentially constant at 0.984 and 0.006 over the angle-of-attack envelope from 0° to 110°. At 80 knots, Figure 82, the recovery shows a slight dip at about 70° angle of attack with a corresponding increase in turbulence. This indicates a small lip loss probably associated with a separation of the lip flow. This is substantiated by the total pressure profile immediately downstream of the lip, Figure 83. The profile is well formed and typical of a thin turbulent boundary layer. Thus, even at 90° angle of attack, lip separation is small. At 120 knots, Figure 84, the onset of the lip separation begins at approximately 55 degrees angle-of-attack. This progression of separation to lower angle-of-attack is to be expected. As the freestream velocity is increased, angle-of-attack effects, if present, tend to become the dominating factor in inlet system performance.

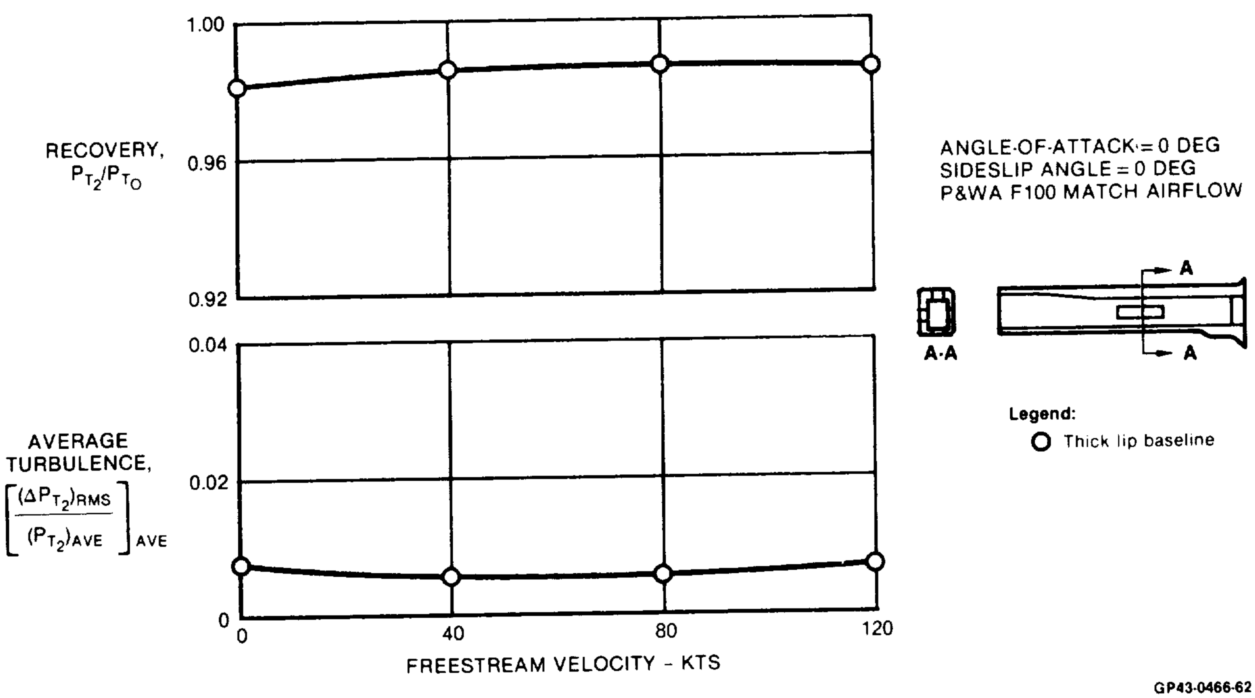

Figure 80. Effect of Freestream Velocity on Performance
Angle-of-Attack = 0°

6.2.1 Auxiliary Inlet Flow Characteristics - The thick lip inlet configuration, established as a performance benchmark, was used to determine the auxiliary inlet flow characteristics, e.g., recovery, and mass flow capability. Flow characteristics were established for each of the port designs and the door design with and without sideplates.

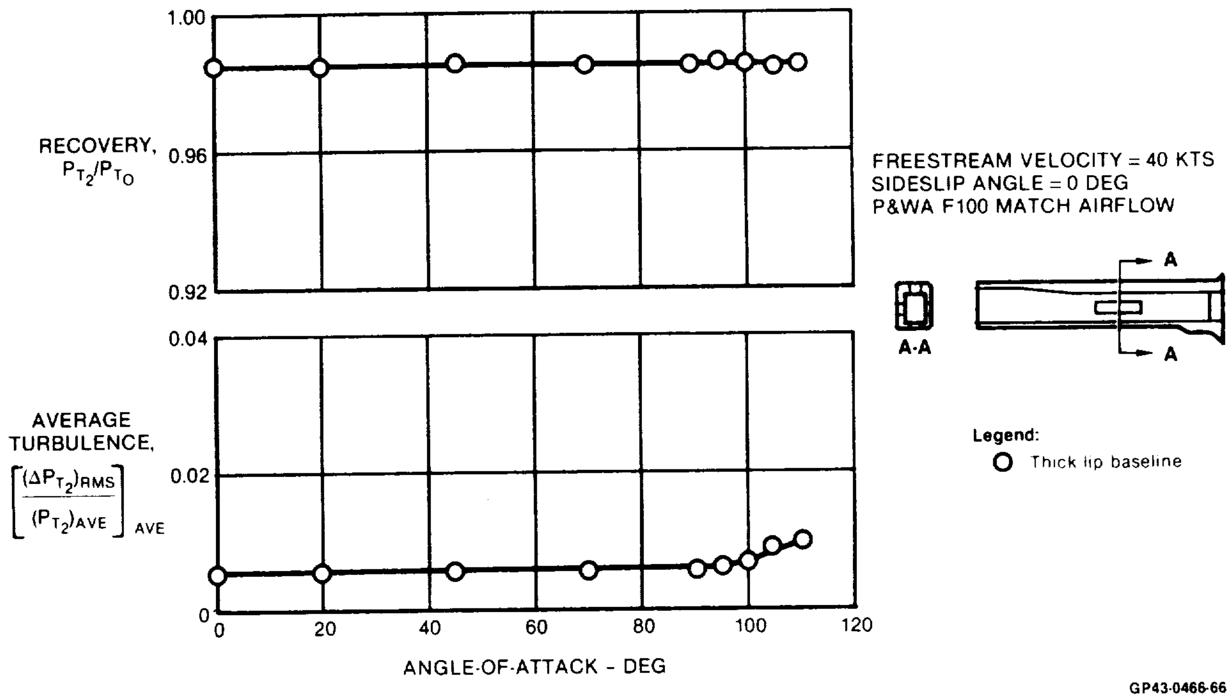

Figure 81. Effect of Angle-of-Attack on Performance
40 Kts

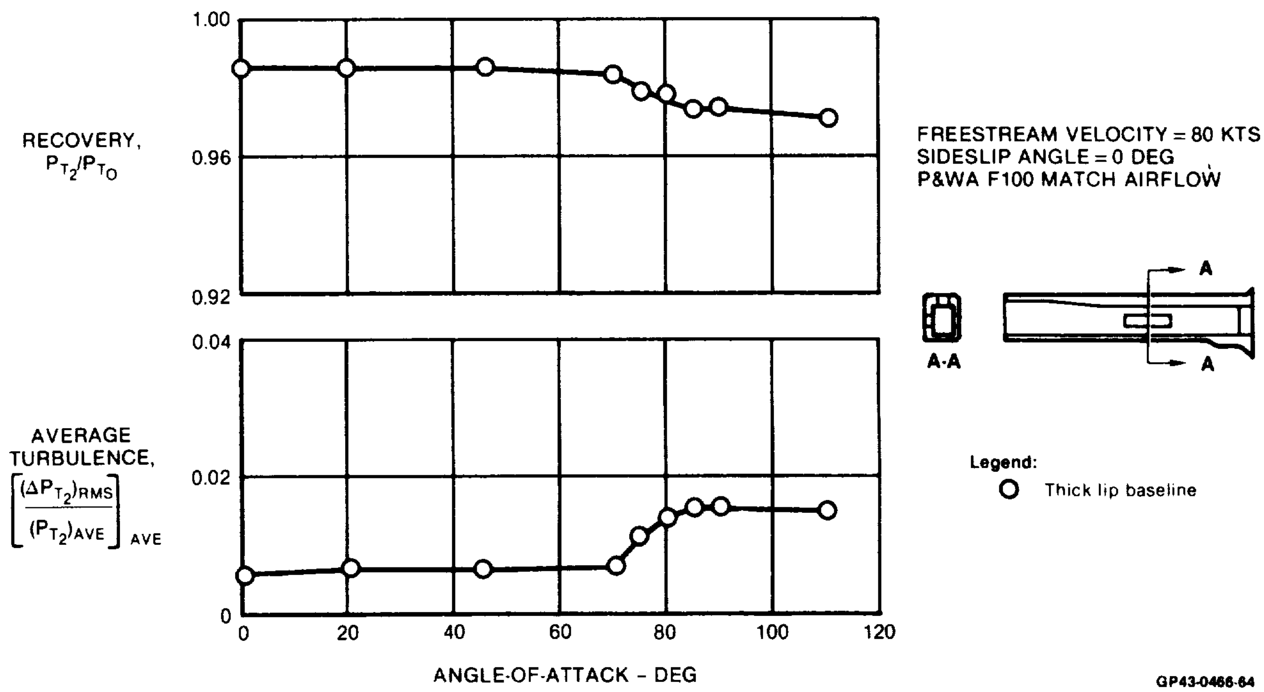

Figure 82. Effect of Angle-of-Attack on Performance
80 Kts

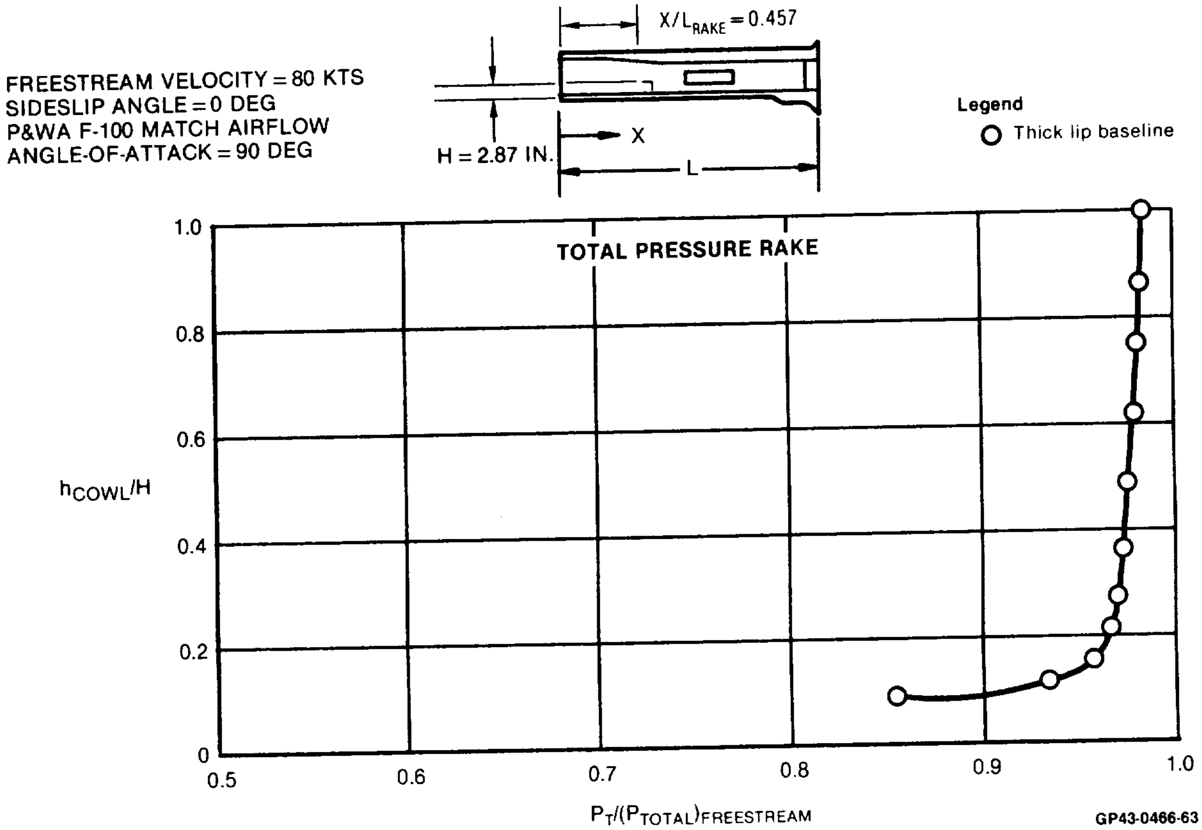

Figure 83. Flow Over Cowl Lip - Thick Lip Inlet Performance
Angle-of-Attack = 90°

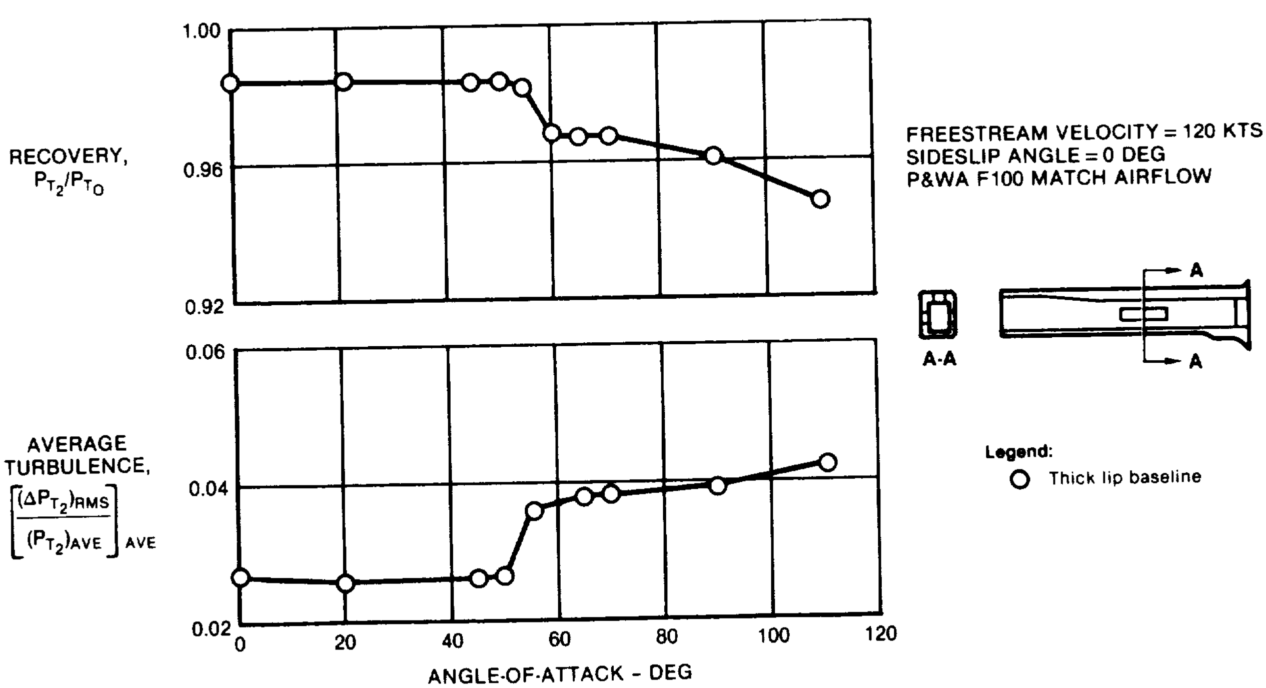

Figure 84. Effect of Angle-of-Attack on Performance
120 Kts

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The thick lip inlet arrangement was utilized to calibrate each of the auxiliary inlets. Calibration data, obtained for each auxiliary inlet open individually, shown in Figure 85, indicates that the ratio of auxiliary inlet airflow to main inlet airflow is approximately equal to the corresponding throat area ratios. Each port design auxiliary inlet has a throat area that is 35 percent of the main inlet throat area. The door and the door with sideplates have throat areas that are 17.7 percent and 13 percent of the main throat area, respectively.

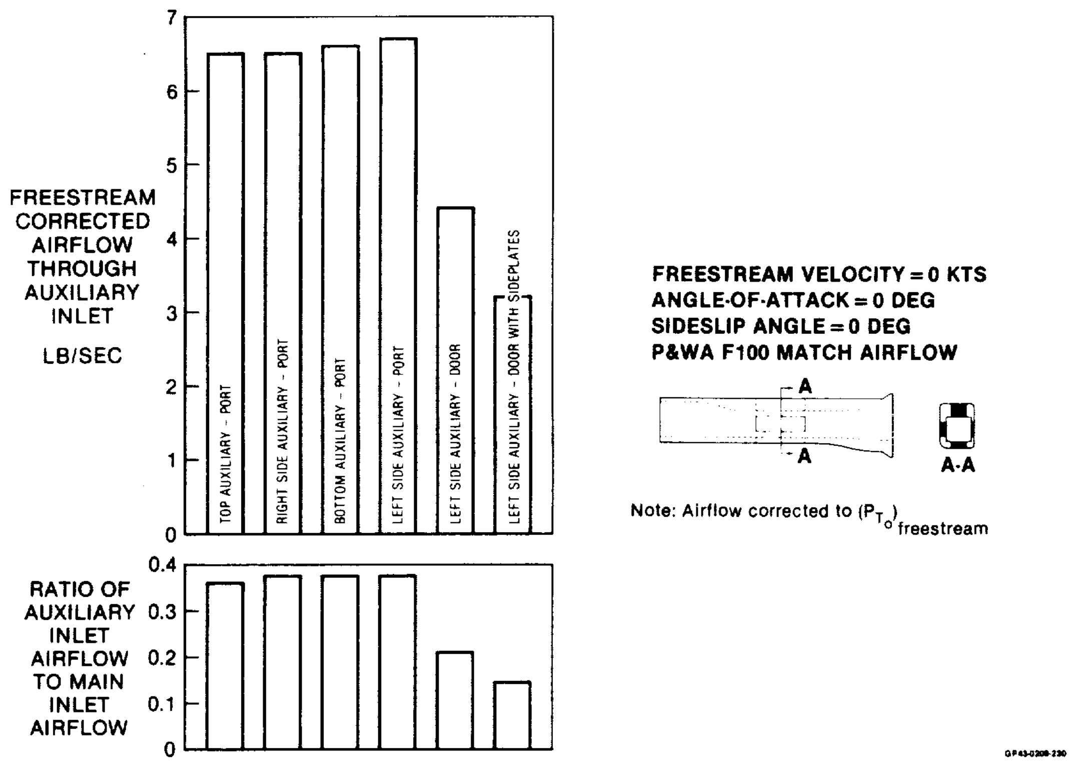


Figure 85. Auxiliary Inlet Airflow Characteristics

The thick lip inlet due to its high contraction ratio and minimum lip losses has high recovery air entering the main inlet section. Opening the auxiliary inlets therefore does not improve the air quality, rather each introduces air which has a recovery loss associated with the individual auxiliary inlet.

6.2.1.1 Flow Characteristics of Port Design Auxiliary Inlets - Performance of port design auxiliary inlets is directly related to auxiliary inlet contraction ratio as shown in Figures 86 and 87. The lip pressures show virtually identical changes in main inlet lip flow characteristics as each inlet was opened, i.e., a small decrease in both the lip velocity and the boundary layer thickness. A typical lip velocity distribution and boundary layer profile are shown in Figure 88 for the top auxiliary inlet open. However, this decrease in lip flow does not improve performance since there are no significant lip losses associated with the thick lip inlet arrangement.

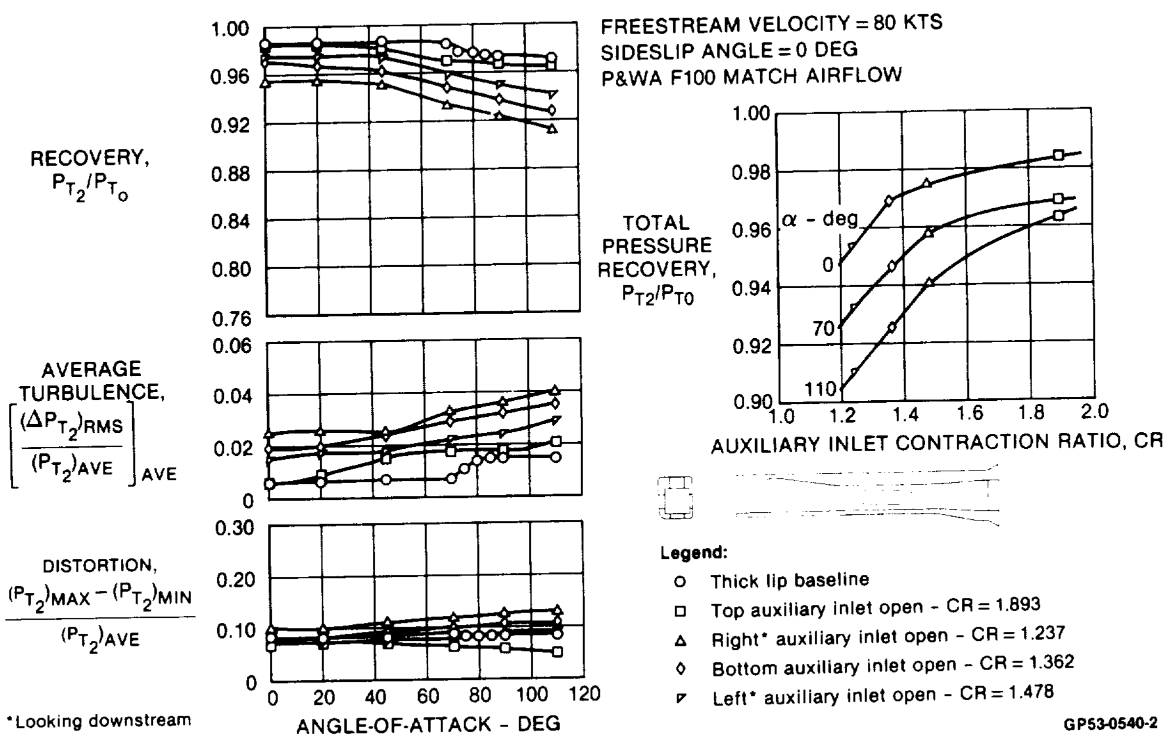


Figure 86. Effect of Auxiliary Inlet Contraction Ratio

The auxiliary inlet internal flow pressure distributions demonstrate the effects of contraction ratio on internal performance. Starting with the highest contraction ratio, the top auxiliary inlet CR = 1.893, the auxiliary inlet flow is separated from the upstream ramp as indicated by the flat pressure distribution, Figure 89. However, the aft-ramp has attached flow at both

0° and 90° inlet angle-of-attack. Auxiliary inlet flow exit total pressure profiles indicate a well behaved, typical boundary layer profile shape at both angles-of-attack.

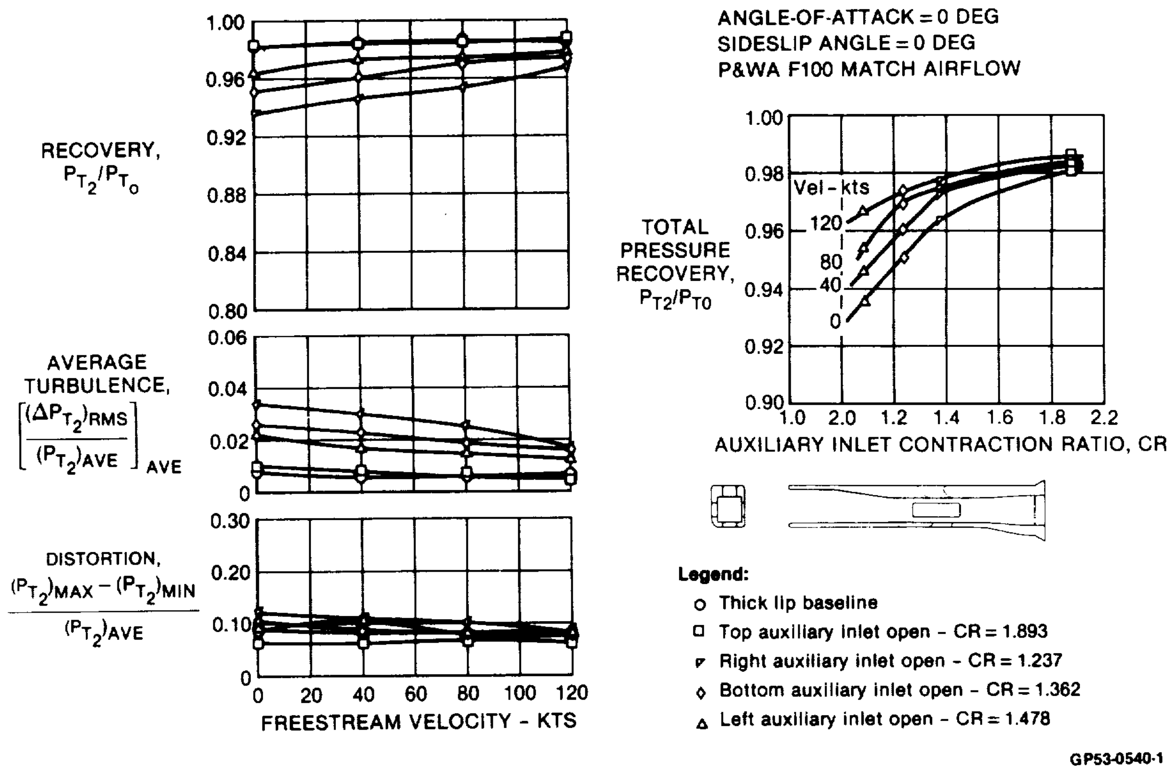


Figure 87. Effect of Auxiliary Inlet Contraction Ratio

As the contraction ratio is decreased, the forward ramp separation increases, and at the lowest contraction ration, right auxiliary inlet (CR = 1.237), the aft-ramp is also fully separated, Figure 90 through 92. Total pressure profiles at the auxiliary flow exit dramatically illustrate the worsening separation with decreasing contraction ratio. The CR = 1.237 auxiliary inlet has massive separation at both 0° and 90° angle-of-attack.

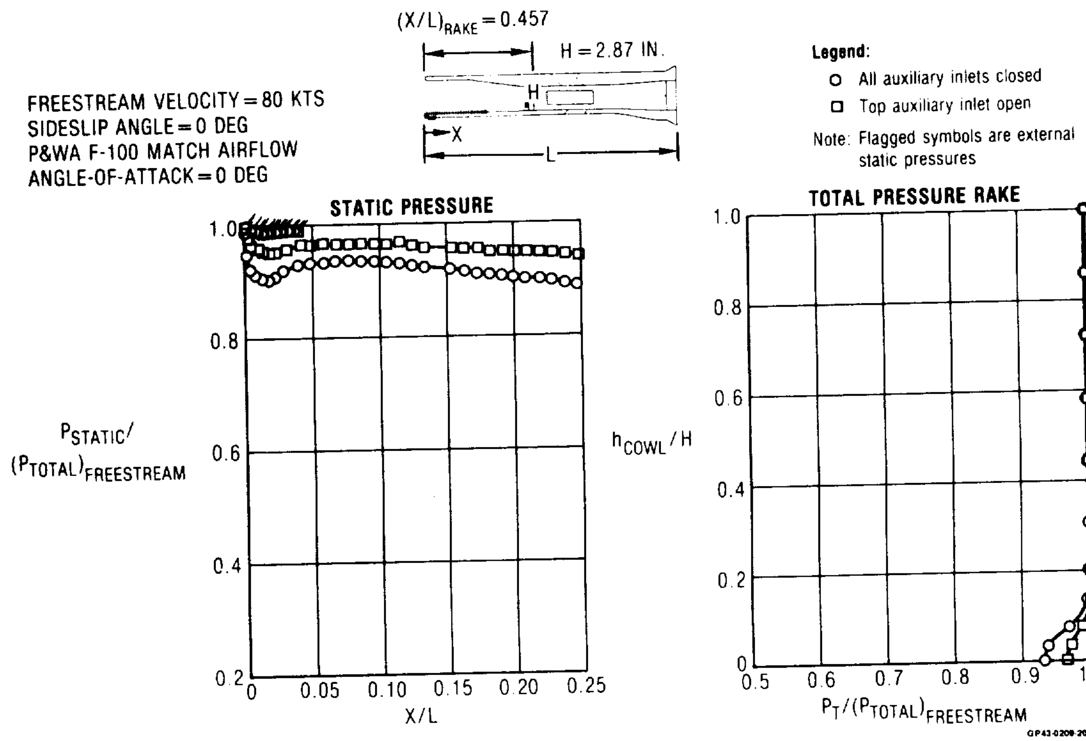


Figure 88. Flow Over Cowl Lip - Thick Lip Inlet Performance
Top Auxiliary Inlet Open (CR = 1.893)

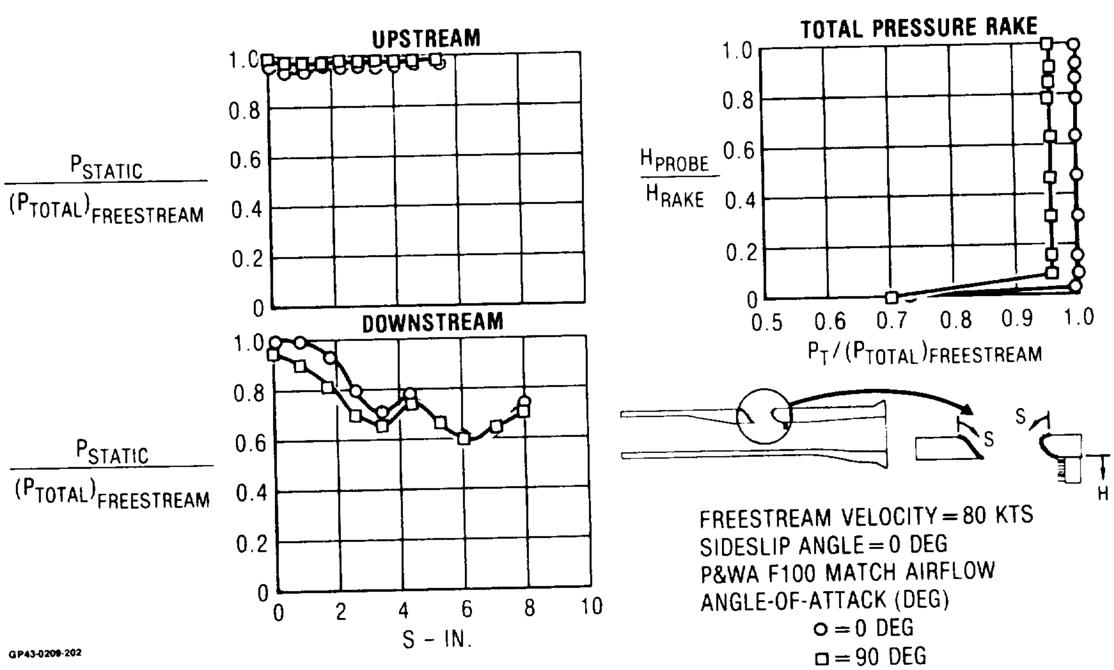


Figure 89. Thick Lip Inlet
Top Auxiliary Inlet Open (CR = 1.893)

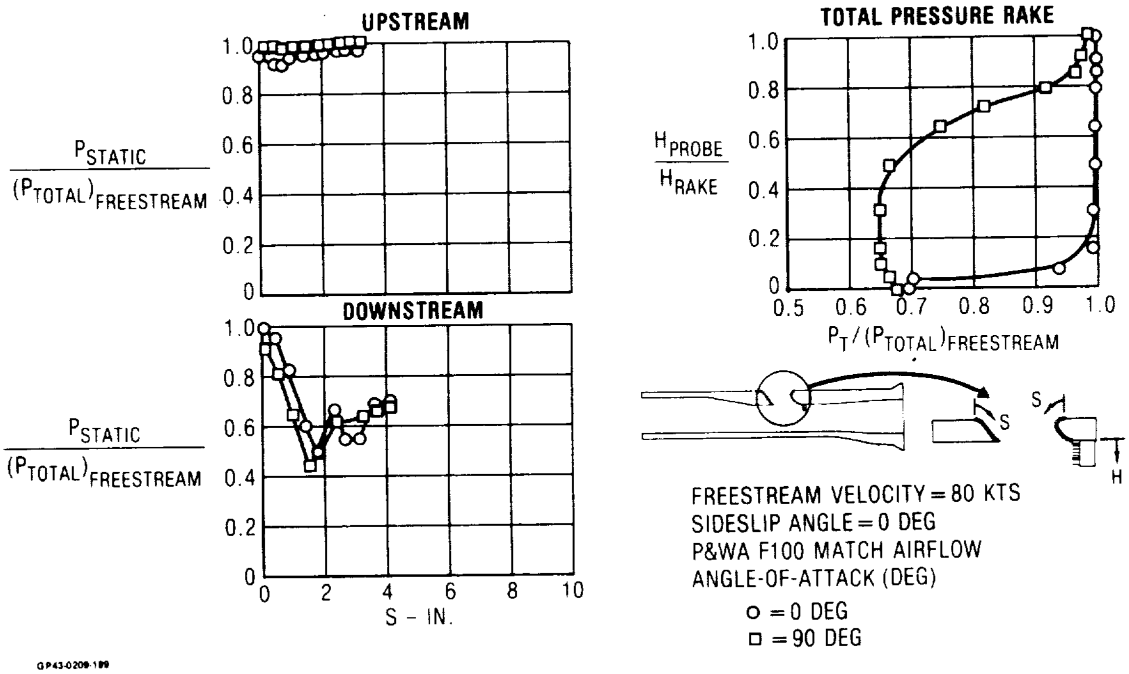


Figure 90. Thick Lip Inlet
Left Auxiliary Inlet Open (CR = 1.478)

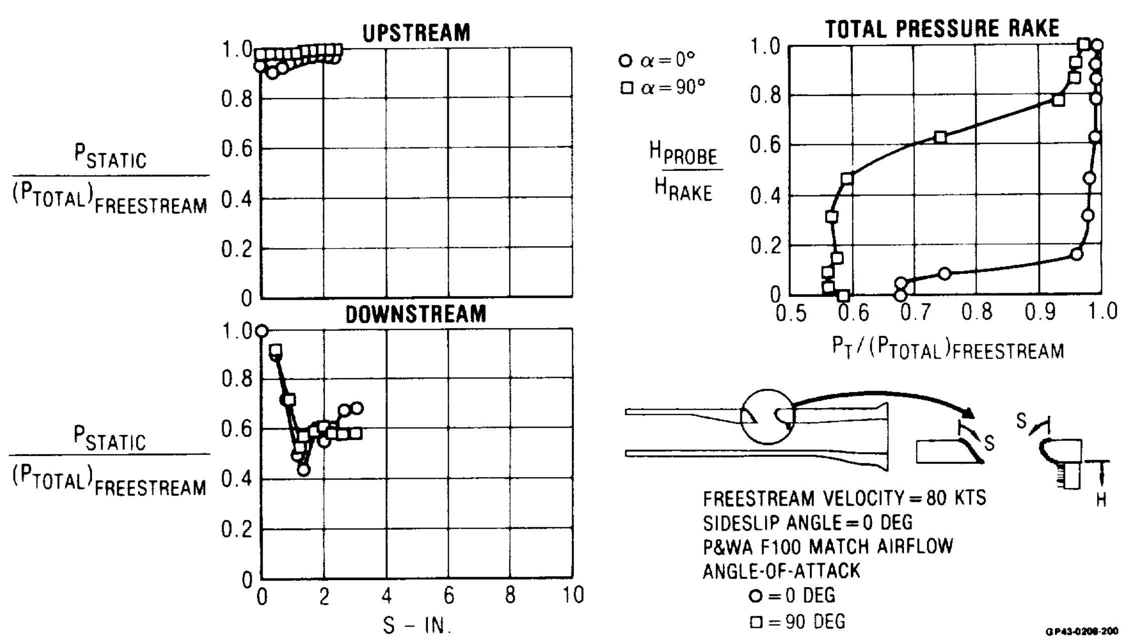


Figure 91. Thick Lip Inlet
Bottom Auxiliary Inlet Open (CR = 1.362)

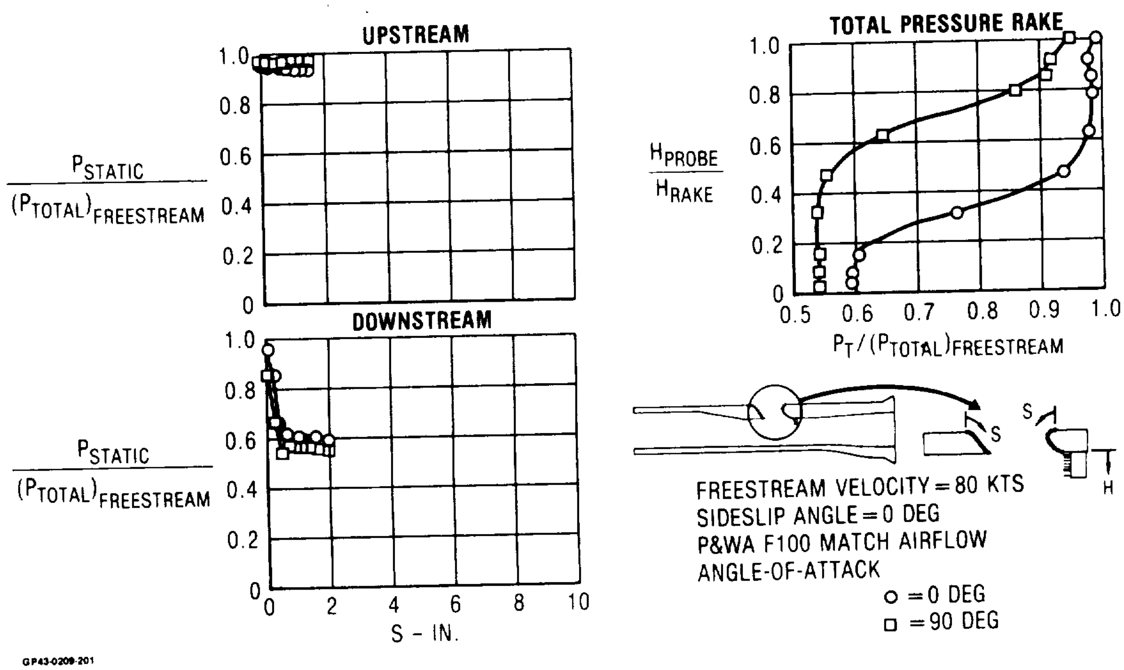


Figure 92. Thick Lip Inlet
Right Auxiliary Inlet Open (CR = 1.237)

Similar trends with auxiliary inlet contraction ration are observed in the engine face total pressure contours shown in Figures 93 through 96. For the top auxiliary open, CR = 1.893, the engine face contour indicates a slight improvement in recovery in the region of the auxiliary inlet. However, the entire engine face contour is reordered such that the overall recovery is essentially unchanged. As the lower contraction ratio auxiliary inlets are opened, the engine face contours are generaly degraded to reflect the lower overall recovery. The smallest contraction ratio auxiliary inlet (CR = 1.237) results in a local region of much lower recovery and a loss in overall recovery of approximately 3%..

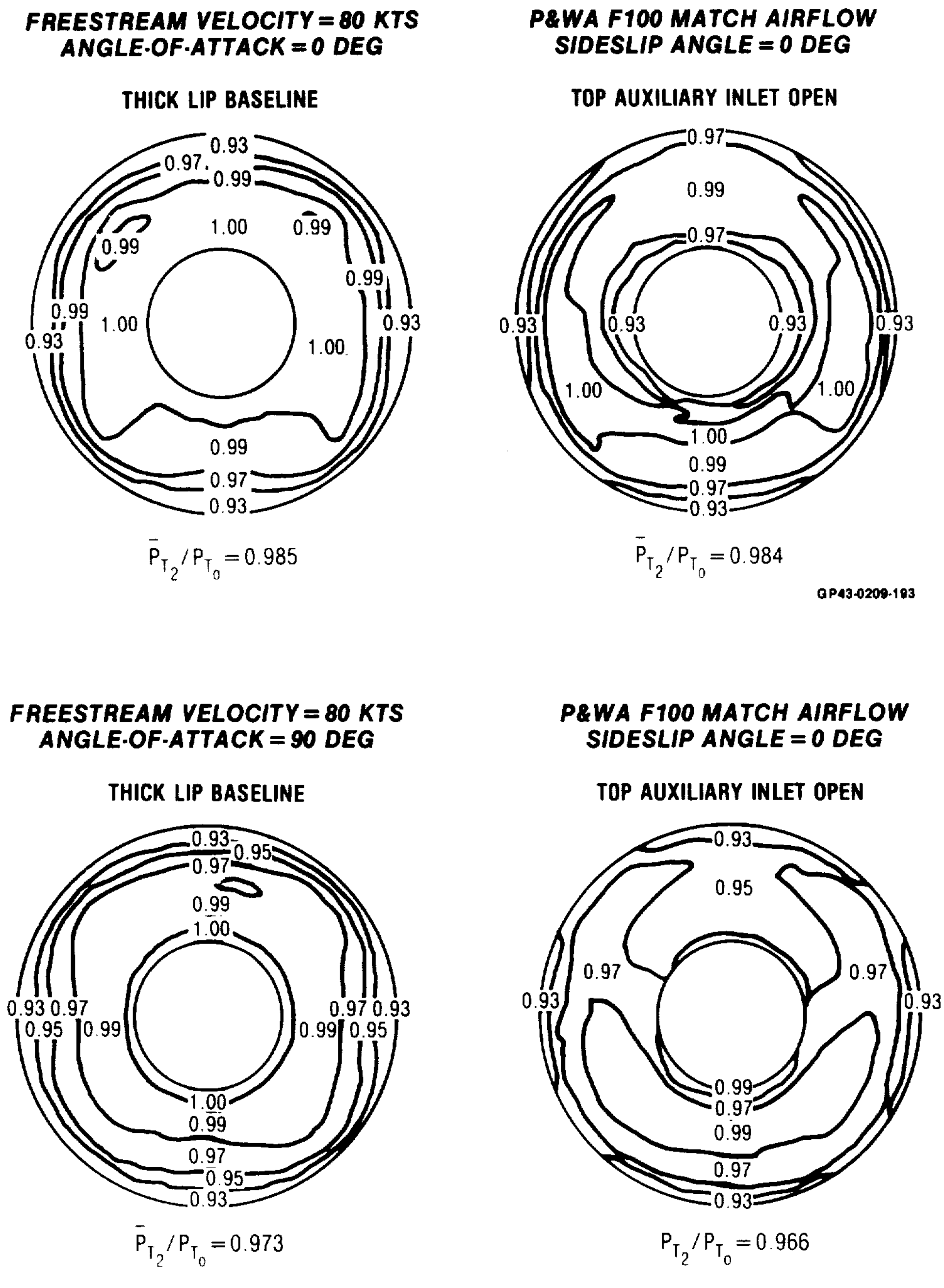


Figure 93. Thick Lip Inlet Performance
Engine Face Pressure Distribution - Effect of Auxiliary Inlets

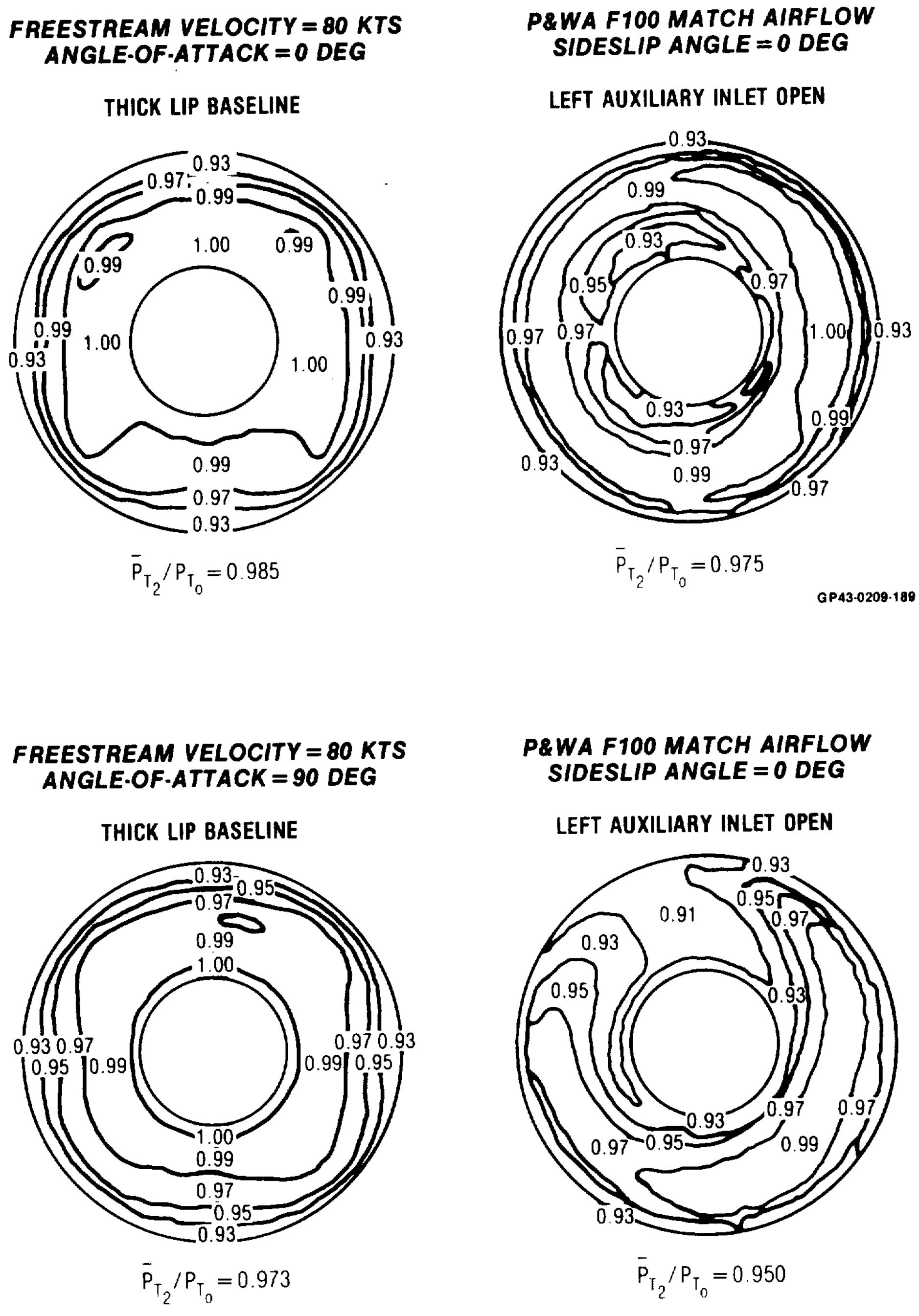


**Figure 94. Thick Lip Inlet Performance
Engine Face Pressure Distribution - Effect of Auxiliary Inlets**

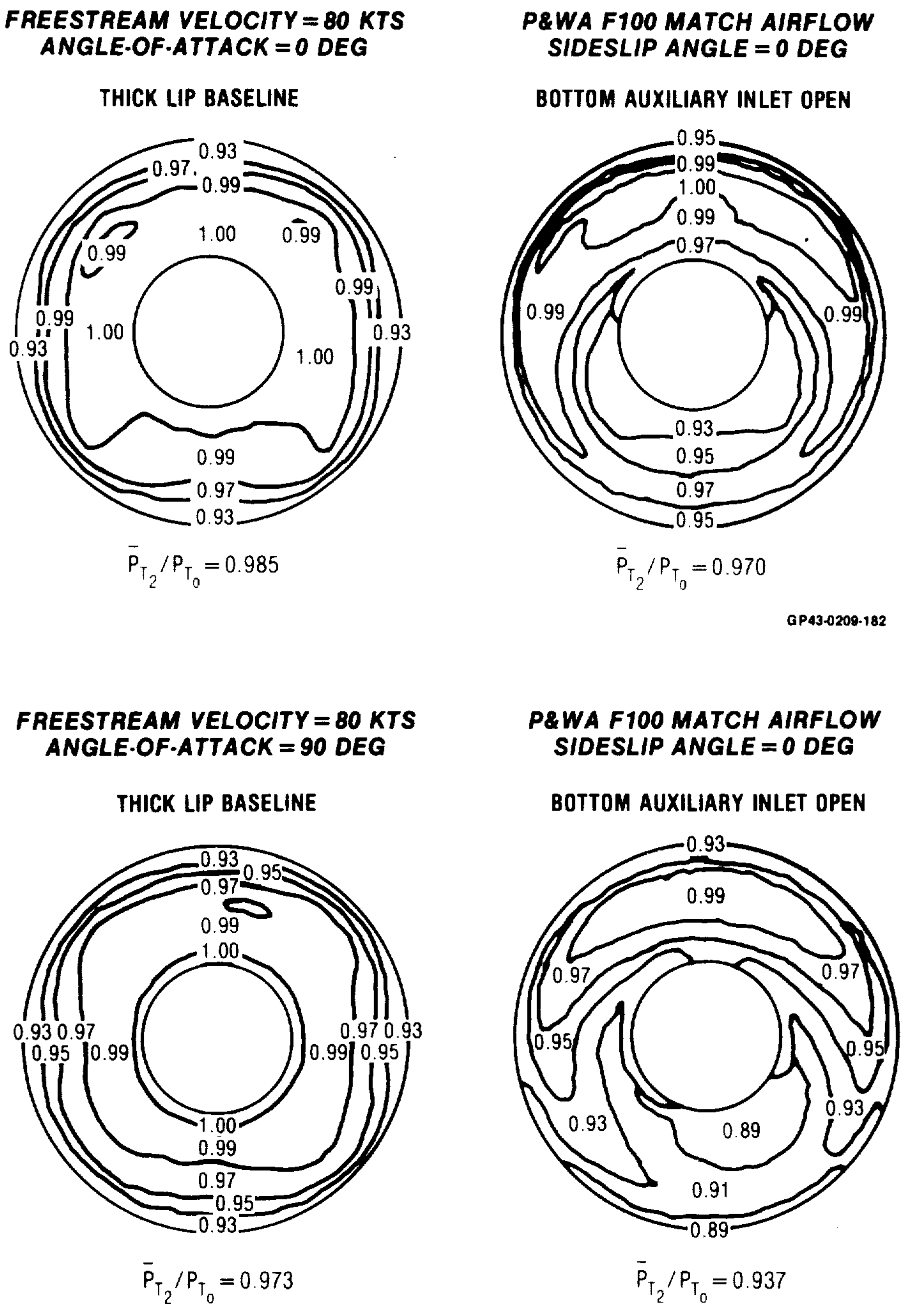


Figure 95. Thick Lip Inlet Performance
Engine Face Pressure Distribution - Effect of Auxiliary Inlets

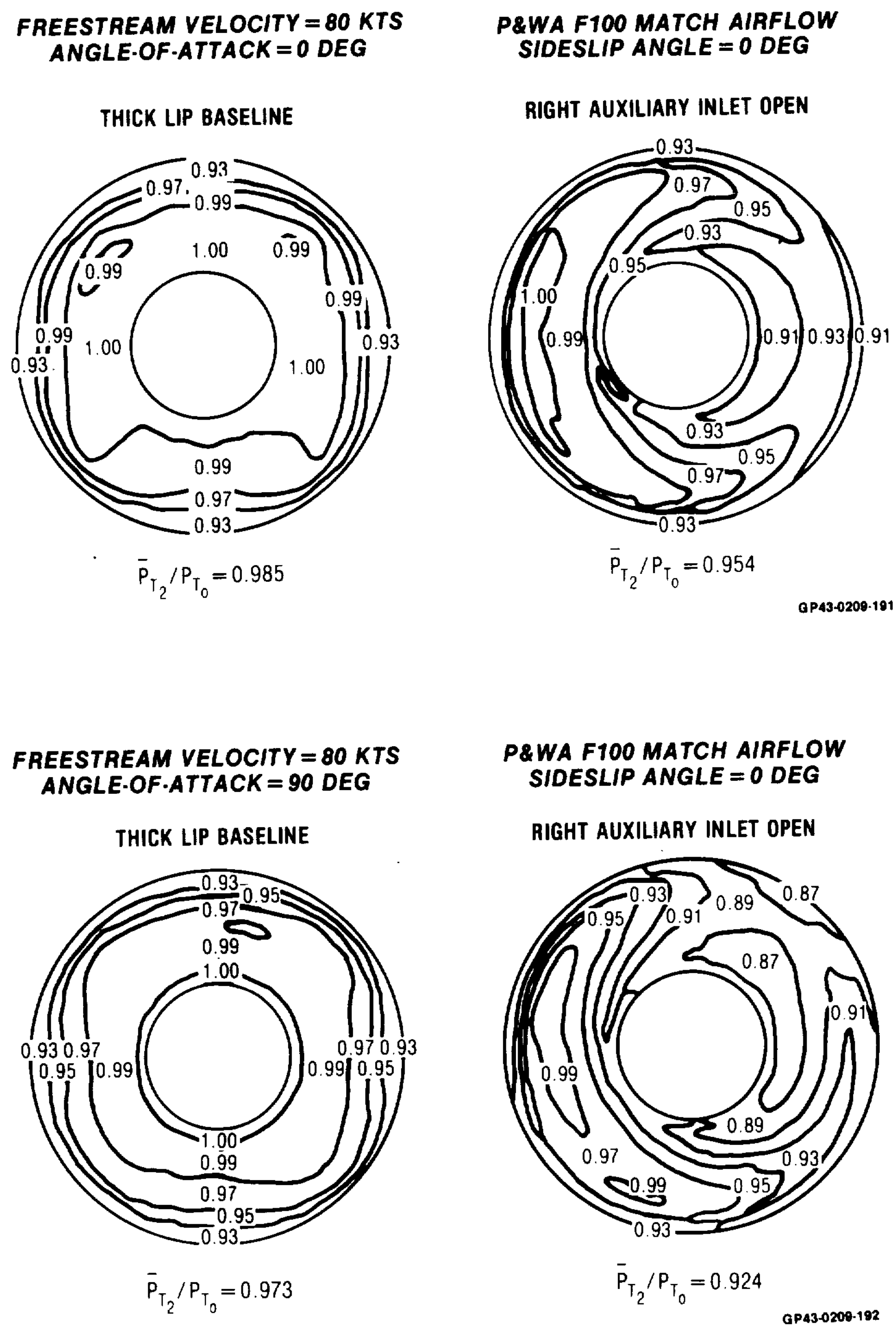


Figure 96. Thick Lip Inlet Performance
Engine Face Pressure Distribution - Effect of Auxiliary Inlets

6.2.1.2 Flow Characteristics of Door Design Auxiliary Inlets - The door auxiliary inlet has a higher contraction ratio (4.012) and is designed to direct the flow downstream more effectively than the port auxiliary inlet. The internal flowpath provides a continuous area contraction from the auxiliary inlet highlight to the throat, which is located at the trailing edge of the door. This constant flow acceleration reduces the local separation and its subsequent low recovery. In addition, the door sideplates prevent separation around the door edges and increase the overall recovery by reducing the three-dimensional nature of the auxiliary inlet flow.

The door auxiliary inlet has improved performance, compared to the port design, over the complete angle of attack range as shown in Figure 97. Not only is the recovery increased, the distortion and turbulence level at the engine face are significantly reduced. At the higher angles of attack, 90° to 100°, the door auxiliary inlet results in a 2% recovery improvement compared to the port design.

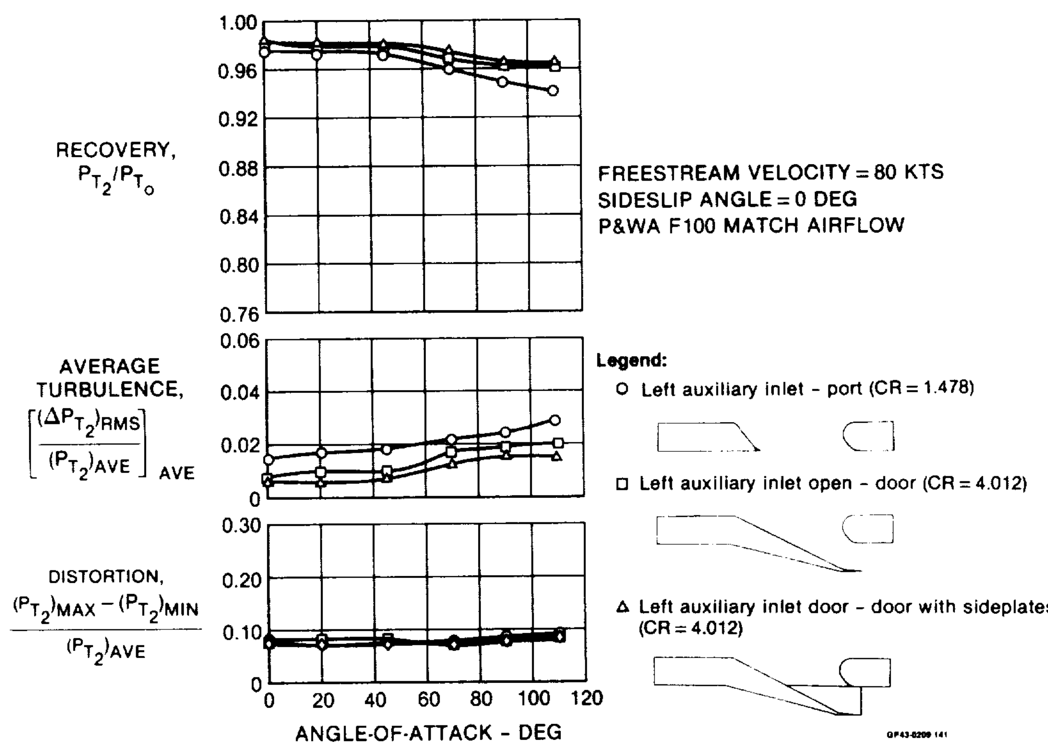


Figure 97. Effect of Auxiliary Inlet Design - Thick Lip Inlet

As anticipated, the main inlet lip instrumentation shows a small increase in lip velocity with the door designs due to their reduced mass flow compared to the port designs. However, the increased peak lip velocity does not result in any significant lip separation losses. Auxiliary inlet instrumentation indicate that the doors reduce auxiliary inlet flow separation as inlet angle of attack increases, Figures 98 and 99. The associated engine face contours show these same trends, Figure 100.

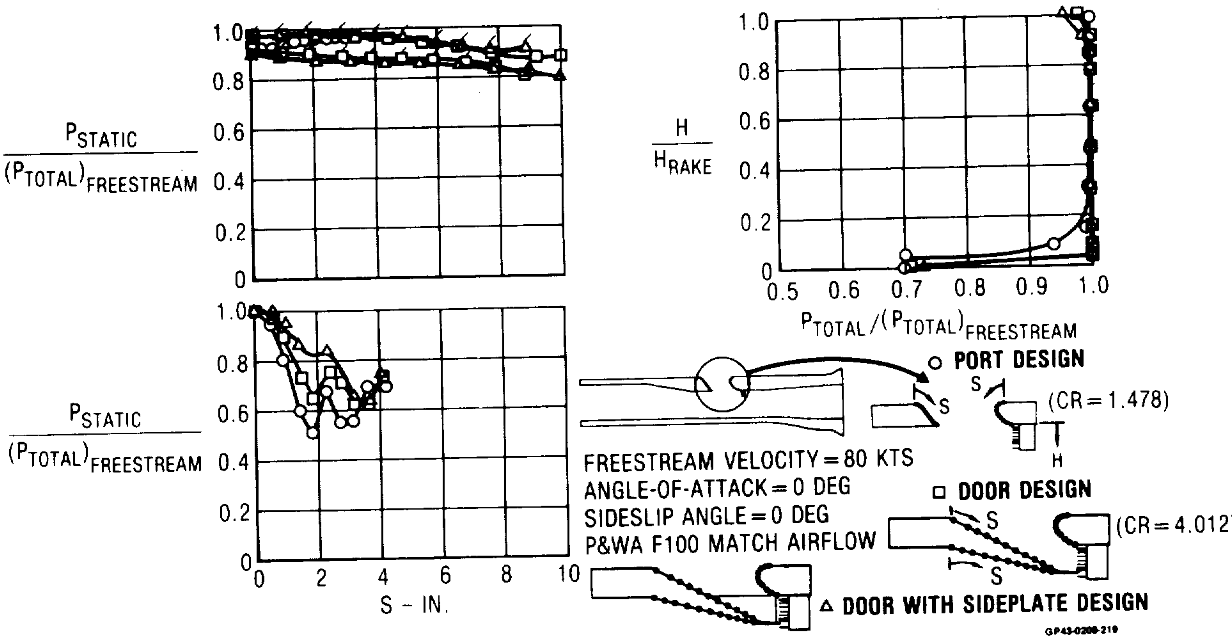


Figure 98. Thick Lip Inlet Performance
Effect of Auxiliary Inlet Design

Auxiliary inlet testing with the thick lip baseline has shown that auxiliary inlet flow characteristics are a strong function of contraction ratio. The higher the contraction ratio, the higher the recovery associated with the auxiliary inlet flow.

Inlet system performance improvements associated with auxiliary inlets can be achieved either through a high flow simple design, i.e., the port, or through a lower flow, refined aerodynamic design, i.e., the door. The final choice should be based on a balance between inlet performance improvements and the complexity and weight associated with each auxiliary inlet design.

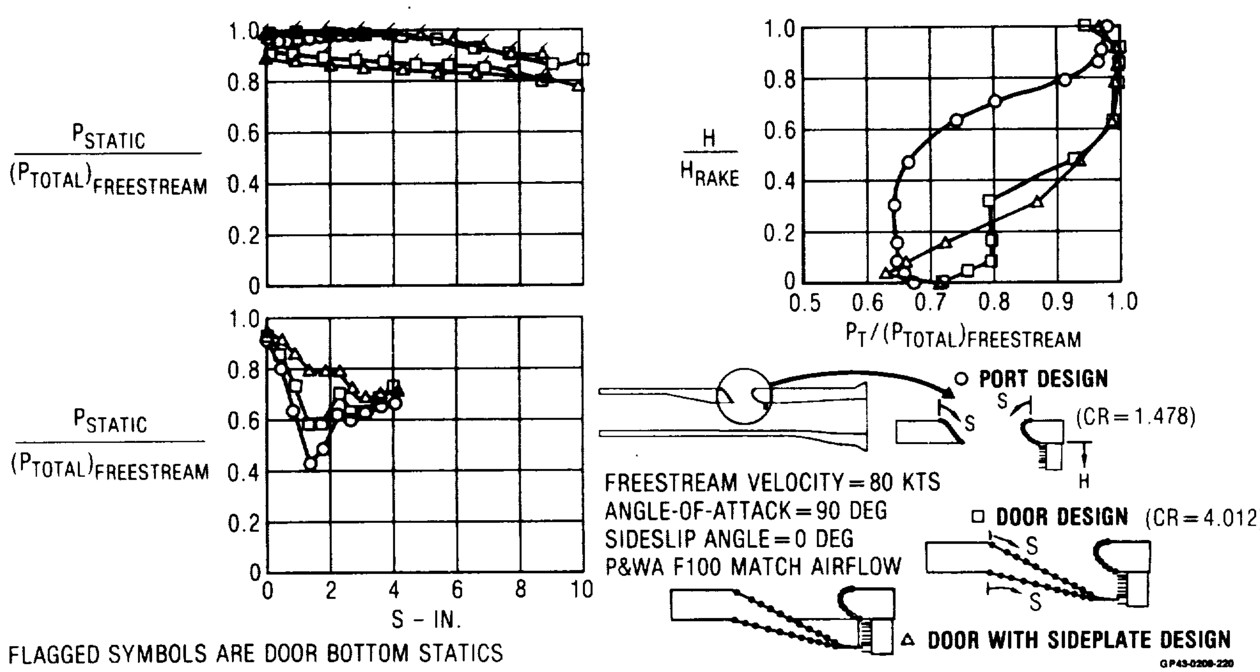


Figure 99. Thick Lip Inlet Performance
Effect of Auxiliary Inlet Design

6.3 <u>SHARP-LIP INLET CONFIGURATION</u> - Low speed performance data for an advanced, Mach 2.2 inlet system were obtained using this configuration. This inlet configuration has a contraction ratio of 1.041 at low speed and incorporates a drooping cowl lip, a drooping/ translating cowl lip, and auxiliary inlets to improve its low speed performance. In addition, the configuration was provided with removeable corner fillets. The internal corners on the lower cowl lip portion of the inlet normally contain a generous radius. These removeable fillets provide the opportunity to quantify the benefits of these corner radii. Performance data obtained for this basic configuration serve as a reference for evaluating the effectiveness of the flow improvement concepts incorporated into the model.

The extensive model instrumentation provides the data to clearly understand the magnitude and severity of the lip separation associated with this configuration.

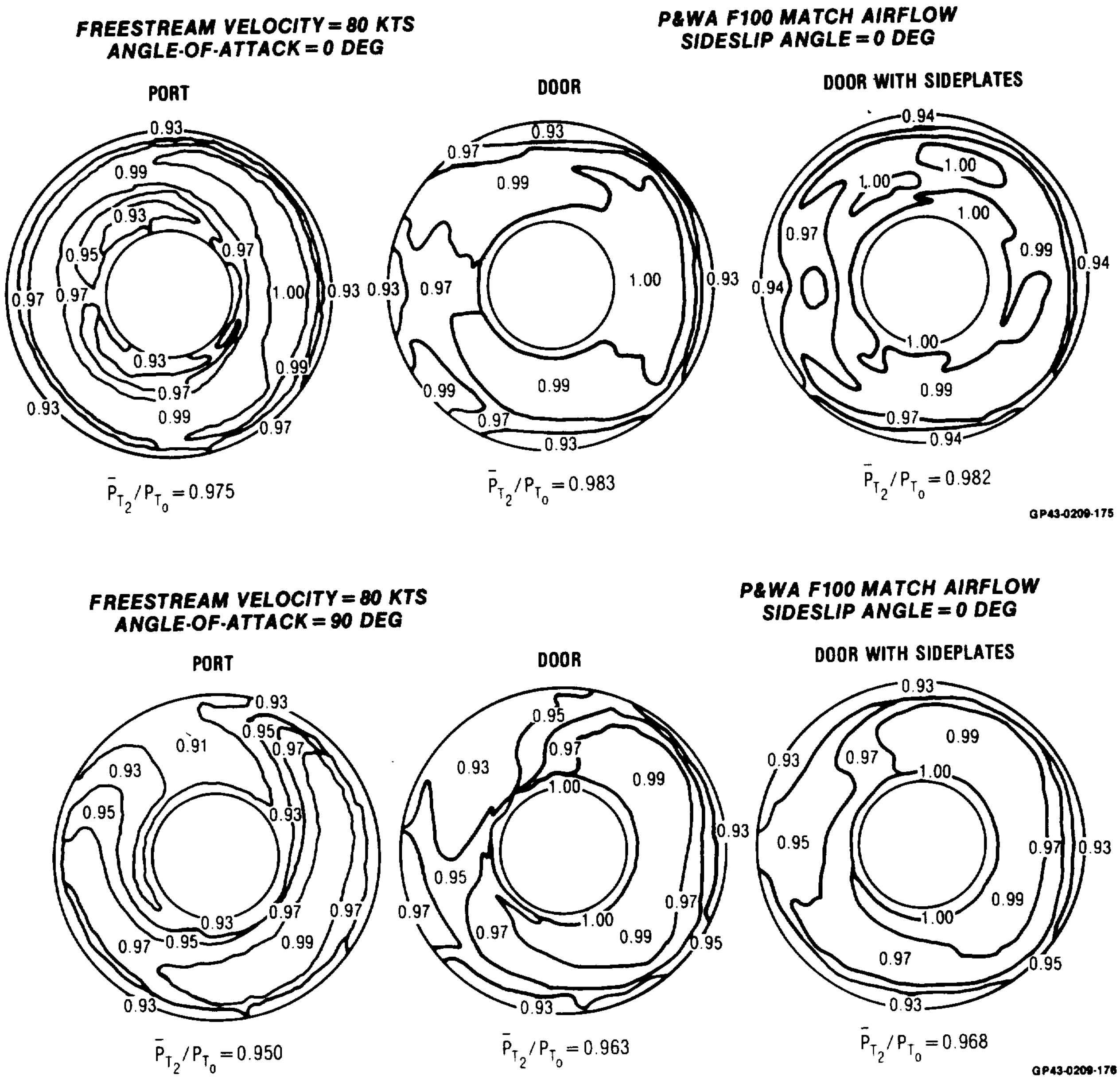


Figure 100. Effect of Auxiliary Inlet Design on Engine Face Pressure Distribution
Thick Lip Inlet - Left Auxiliary Inlet Open

6.3.1 Basic Sharp-Lip Inlet Performance - The effect of corner radii on inlet performance were established early in the test program so that the basic performance data would be representative of the best sharp lip configuration. Removing the corner fillets had little or no effect on inlet performance levels. This was true across the speed and mass flow ranges that were tested. A typical performance comparison at a freestream velocity of 80 knots is shown in Figure 101. Recovery, turbulence, and distortion levels are essentially the same with or without fillets over the angle-of-attack envelope from 0° to 110°. Thus all subsequent sharp lip inlet performance data were obtained with the corner fillets in place.

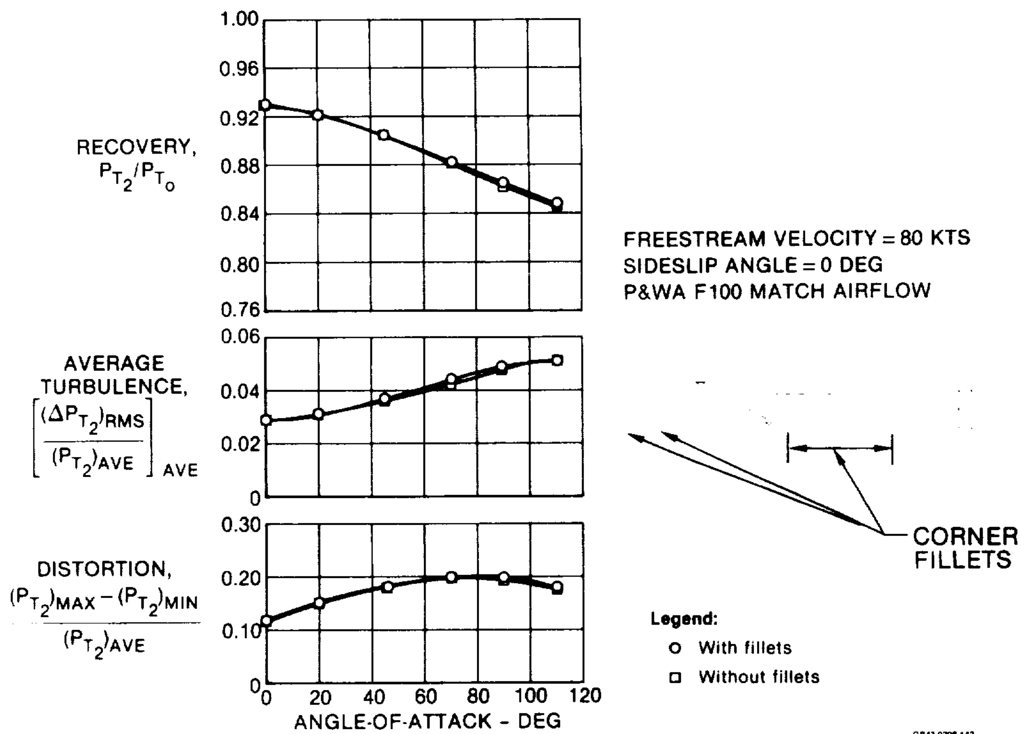


Figure 101. Effect of Corner Fillets on Inlet Performance

Basic sharp-lip performance data were obtained as a function of inlet mass flow ratio, freestream velocity, and angle of attack. As the engine face mass flow ratio or Mach number is increased, the recovery falls off and engine face turbulence and distortion increase, with the highest rate of change occuring at static conditions, Figure 102. Similar trends are observed at 80 and 120 knots for zero degrees angle-of-attack. Lip total pressure profiles, Figure 103, show the increase in both extent and severity of the lip separation as mass flow ratio is increased. The extent and impact of the lip separation is clearly seen in the associated engine face contours, Figure 104.

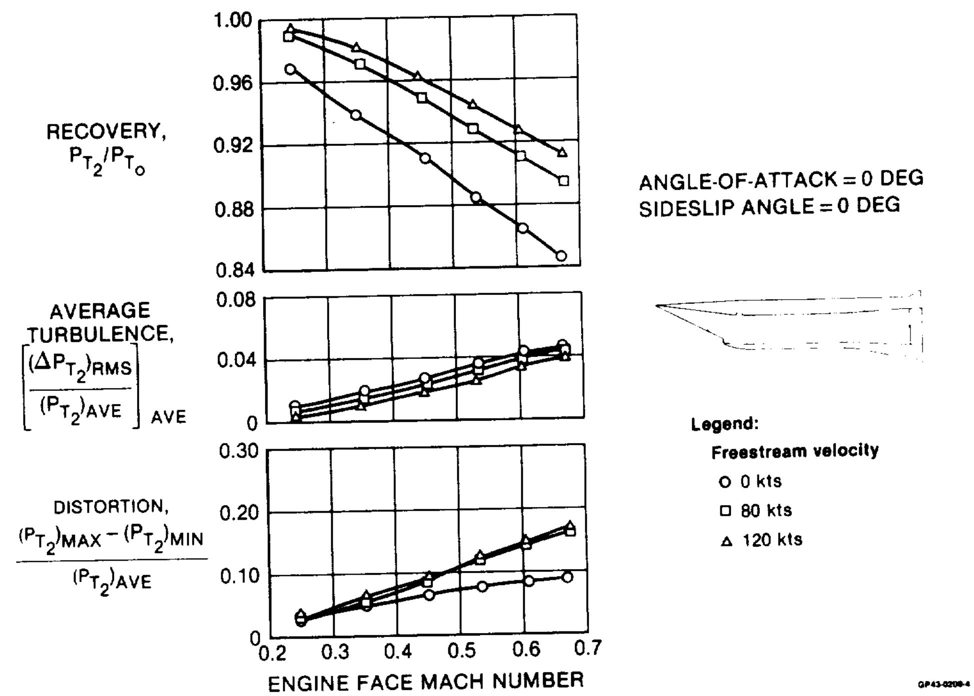


Figure 102. Effect of Mass Flow on Sharp Lip Baseline Performance

The impact of freestream velocity and angle of attack are interrelated. At lower angles of attack, 45° or less, increasing the freestream velocity increases the overall performance of the inlet system as a direct result of the decreased lip separation, Figures 105 through 107. Above 45°, increasing the freestream velocity, decreases the inlet system performance due to increased lip separation, as shown in Figures 108 through 112. Thus the inlet performance varies between mass flow domination and angle-of-attack domination depending on the angle of attack.

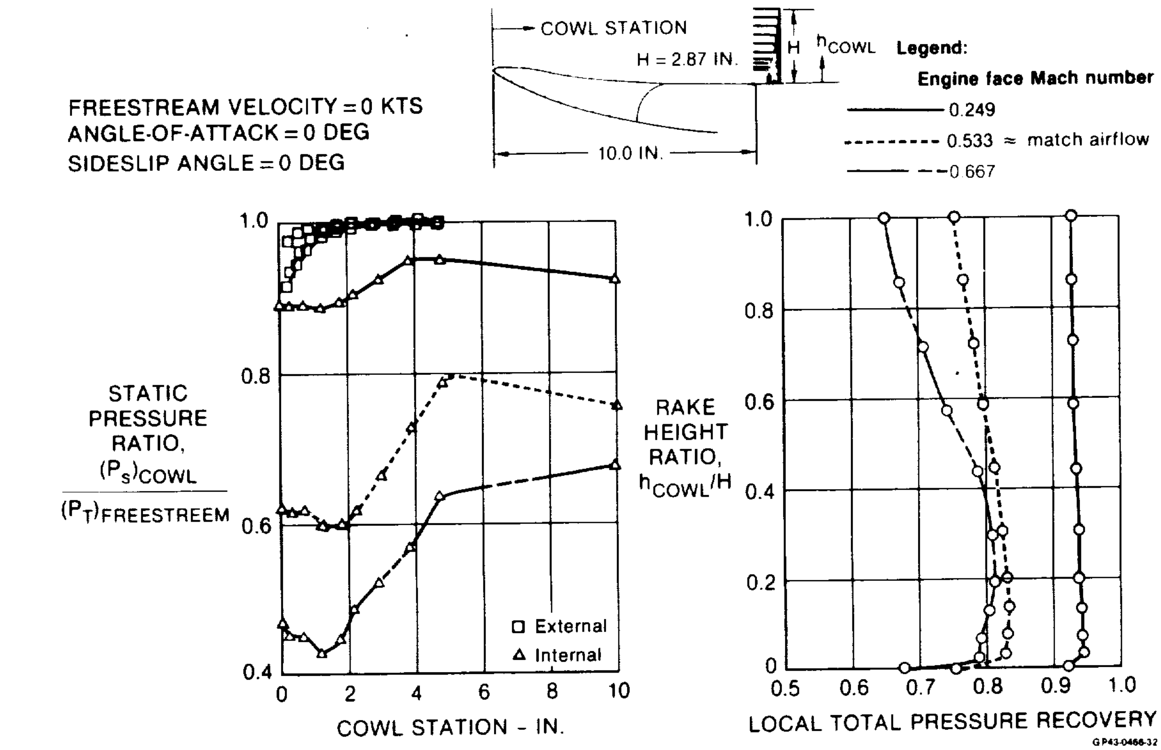


Figure 103. Flow Over Cowl Lip
Sharp Lip Baseline - Mass Flow Effect

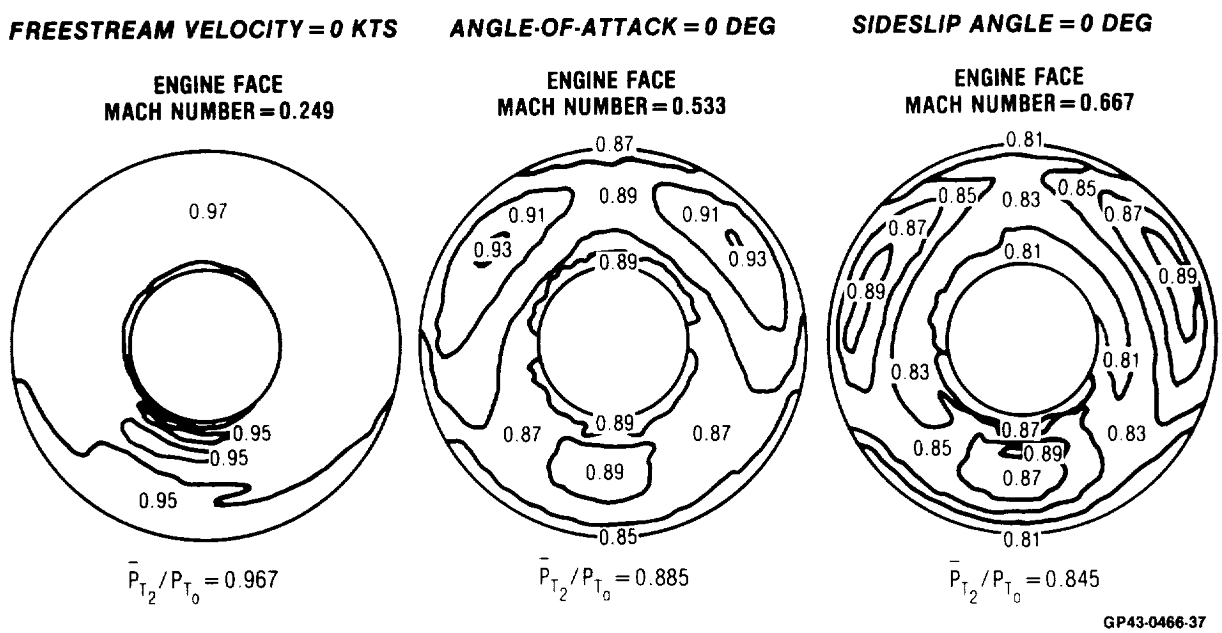


Figure 104. Sharp Lip Inlet Baseline Performance
Engine Face Pressure Distribution
Effect of Engine Face Mach Number

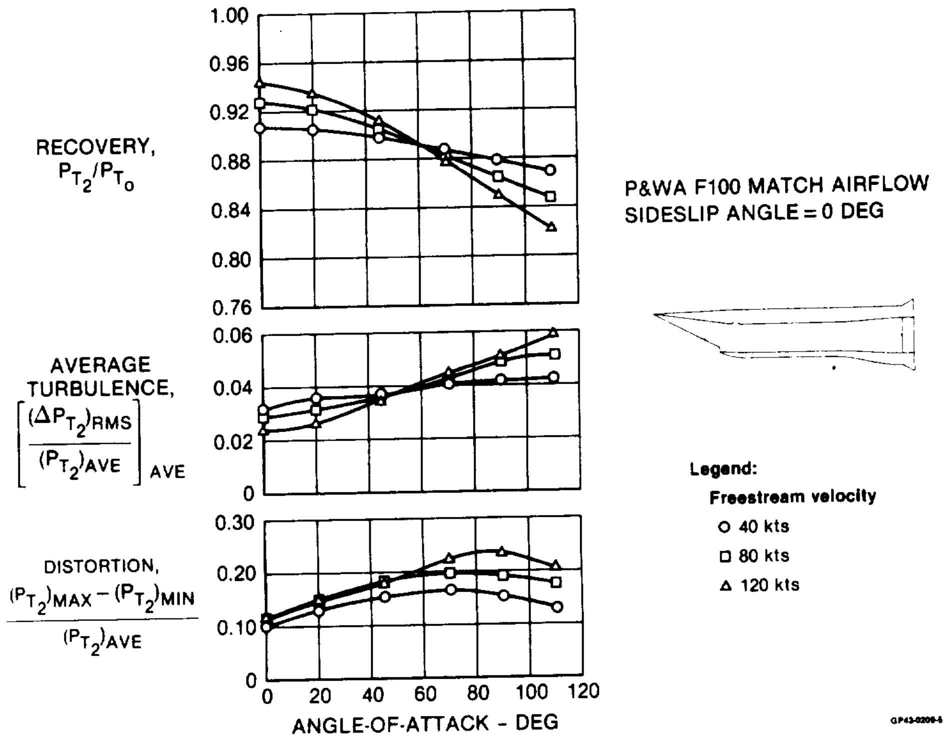


Figure 105. Effect of Angle-of-Attack on Sharp Lip Baseline Performance

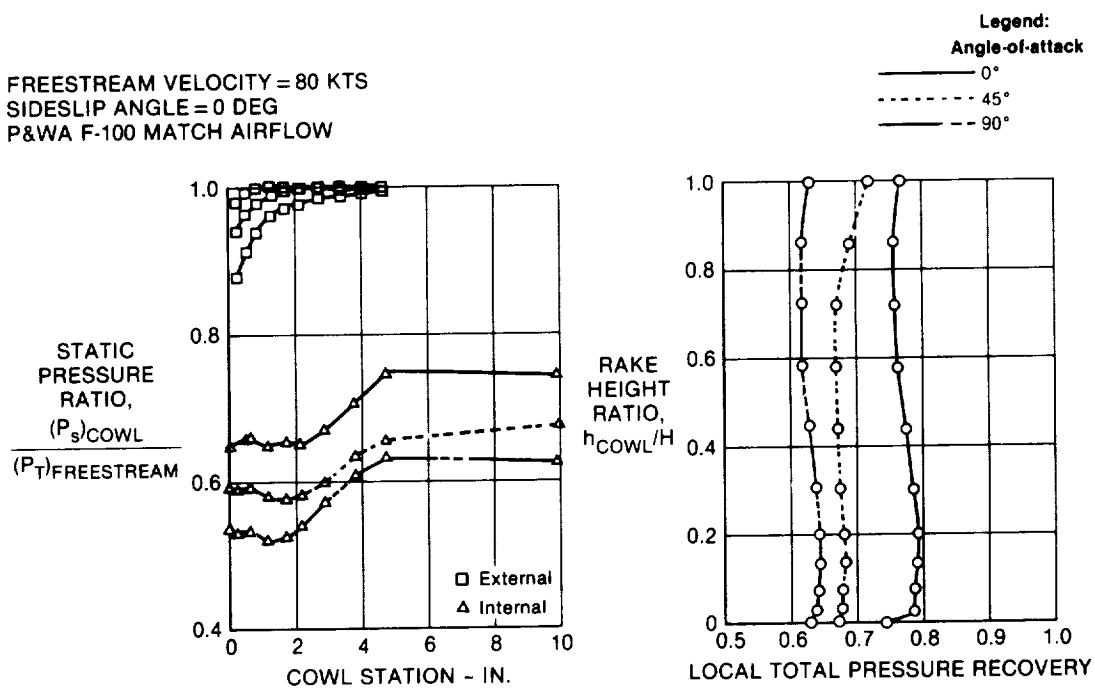


Figure 106. Flow Over Cowl Lip
Sharp Lip Baseline - Angle-of-Attack Effect

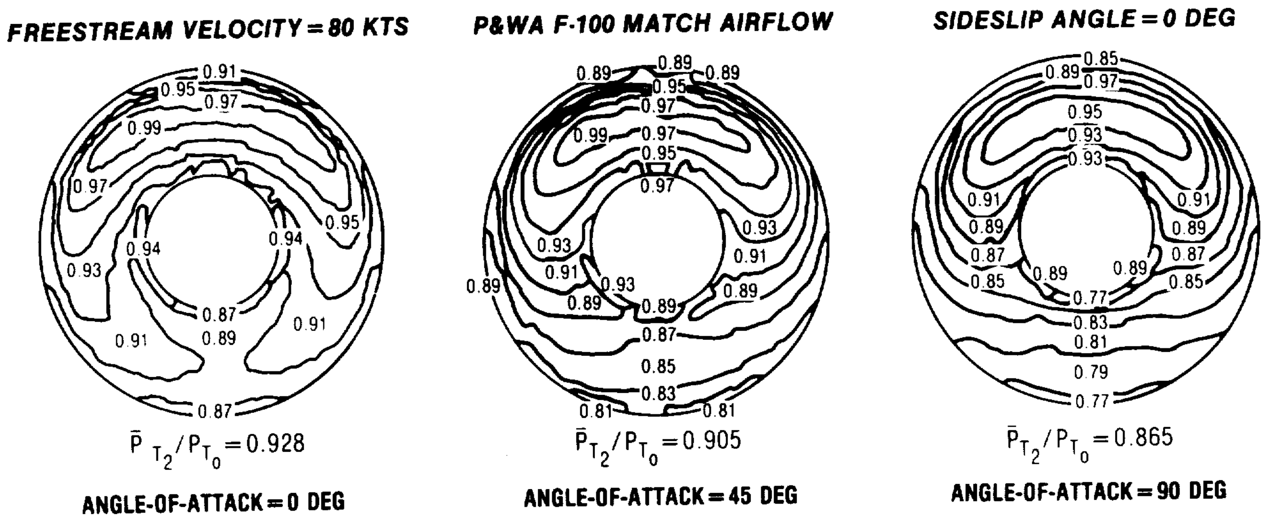


Figure 107. Sharp Lip Inlet Baseline Performance Engine Face Pressure Distribution Effect of Angle-of-Attack

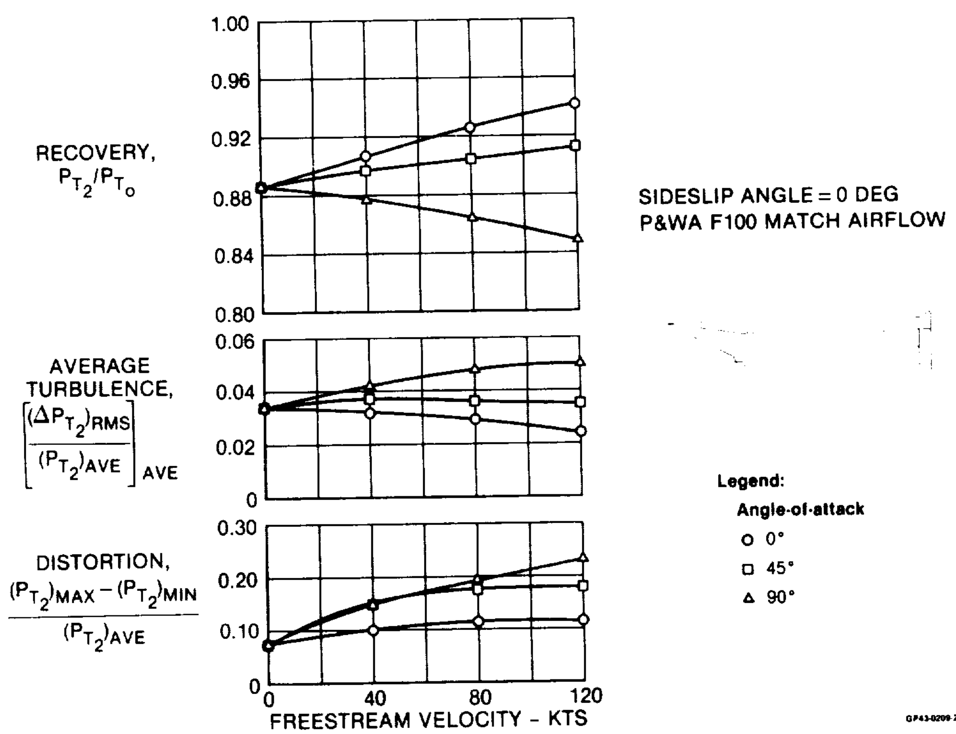


Figure 108. Effect of Freestream Velocity on Sharp Lip Baseline Performance

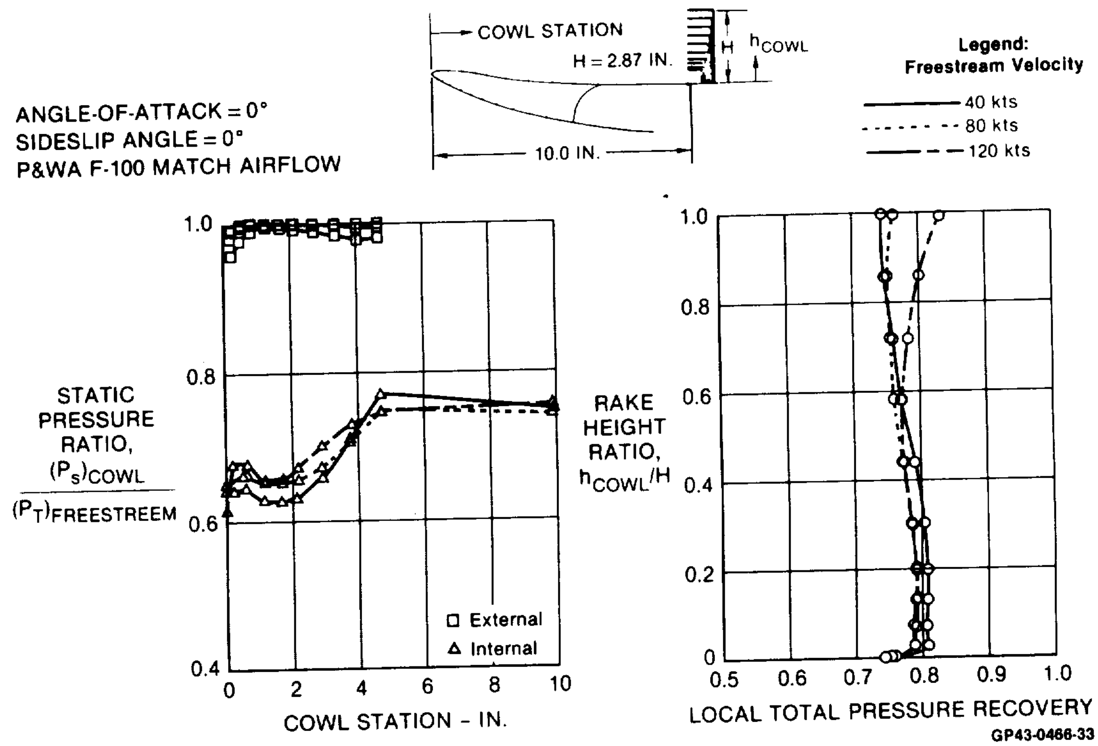


Figure 109. Flow Over Cowl Lip
Sharp Lip Baseline - Effect of Freestream Velocity

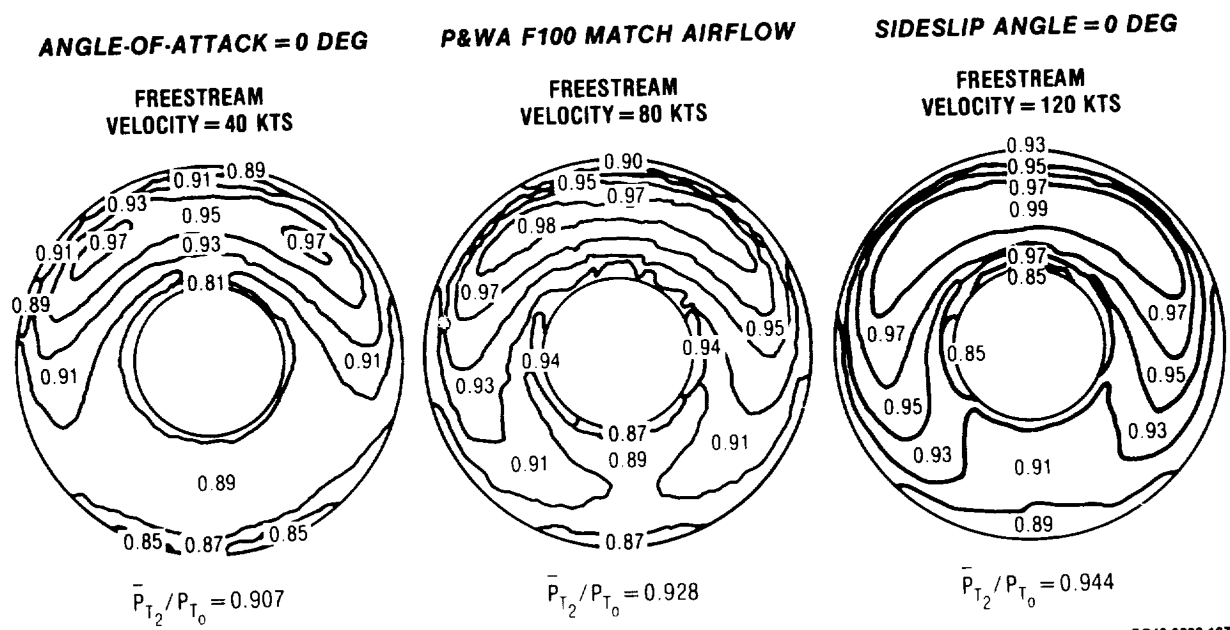


Figure 110. Sharp Lip Inlet Baseline Performance
Engine Face Pressure Distribution
Effect of Freestream Velocity

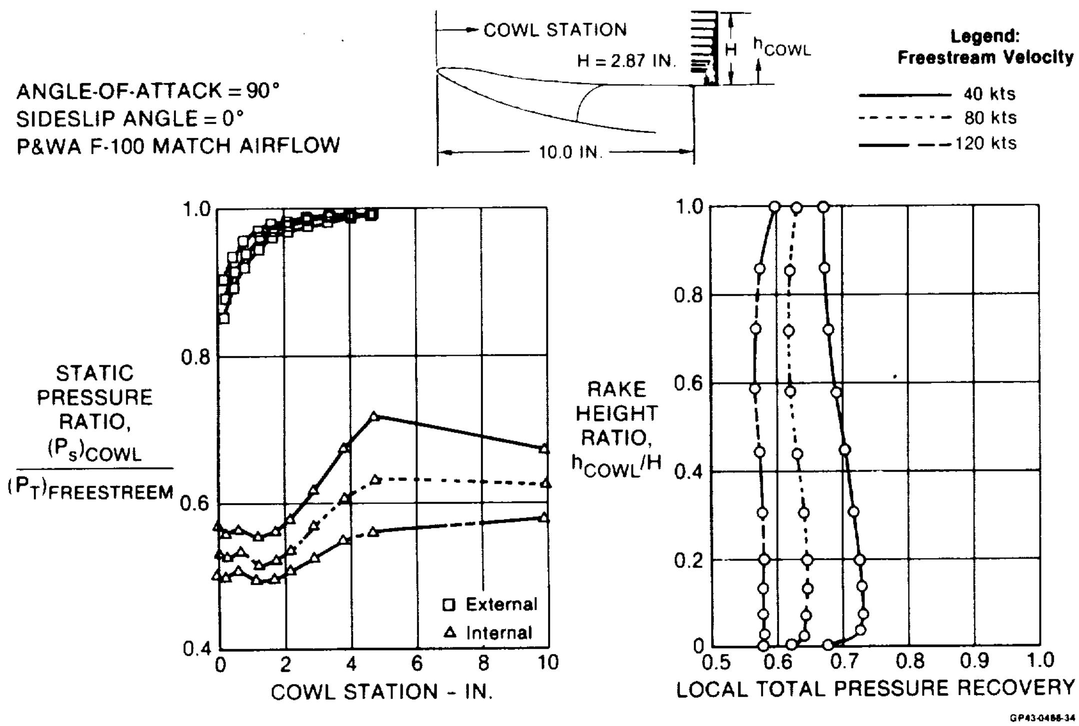


Figure 111. Flow Over Cowl Lip
Sharp Lip Baseline - Effect of Freestream Velocity

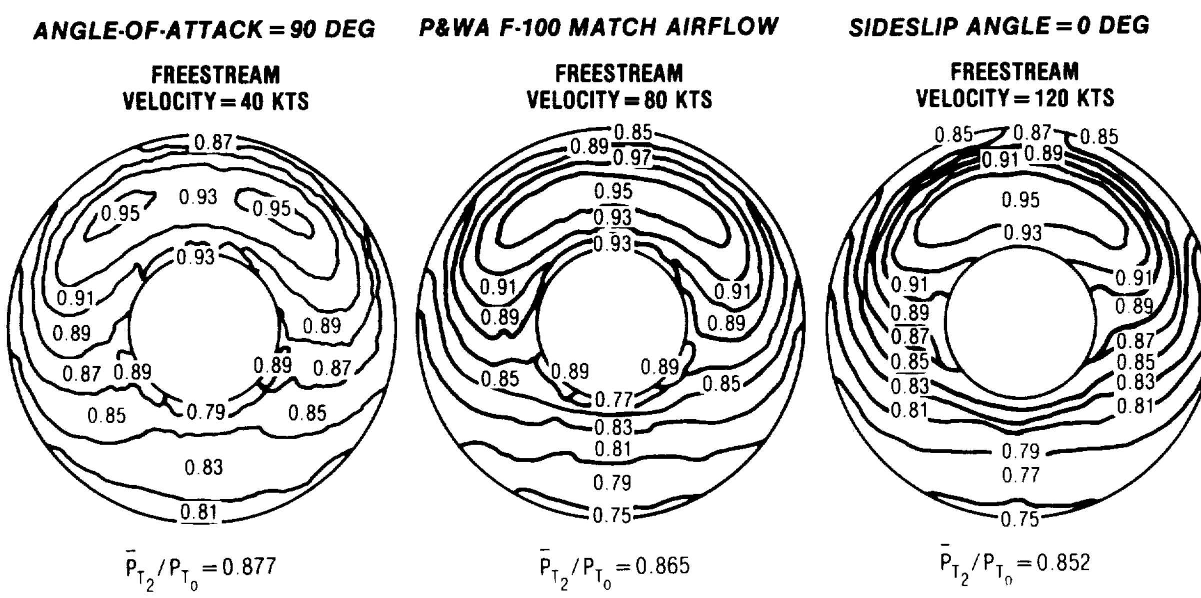


Figure 112. Sharp Lip Inlet Baseline Performance
Engine Face Pressure Distribution
Effect of Freestream Velocity

6.3.2 Droop Lip Performance - The droop lip concept is designed to minimize the separation on the cowl lip by aligning the cowl lip with the approach flow. A secondary performance improvement should also be obtained as a result of the increased contraction ratio associated with drooping the lip. This program involved the testing of two droop angles, 40 and 70 degrees, to determine the effectiveness of this concept.

The performance of the inlet was dramatically improved using the droop lip concept. The inlet recovery at 80 knots freestream velocity is improved by 2 to 9 percent over the entire mass flow range, Figure 113. Cowl lip pressure data indicate that statically, at match airflow, the 70° drooped lip has attached flow, and even at the highest mass flow there is no significant separation occuring, Figure 114. The engine face contours show the low energy separated region associated with lip separation has been completely controlled with the 70° drooped lip, Figure 115.

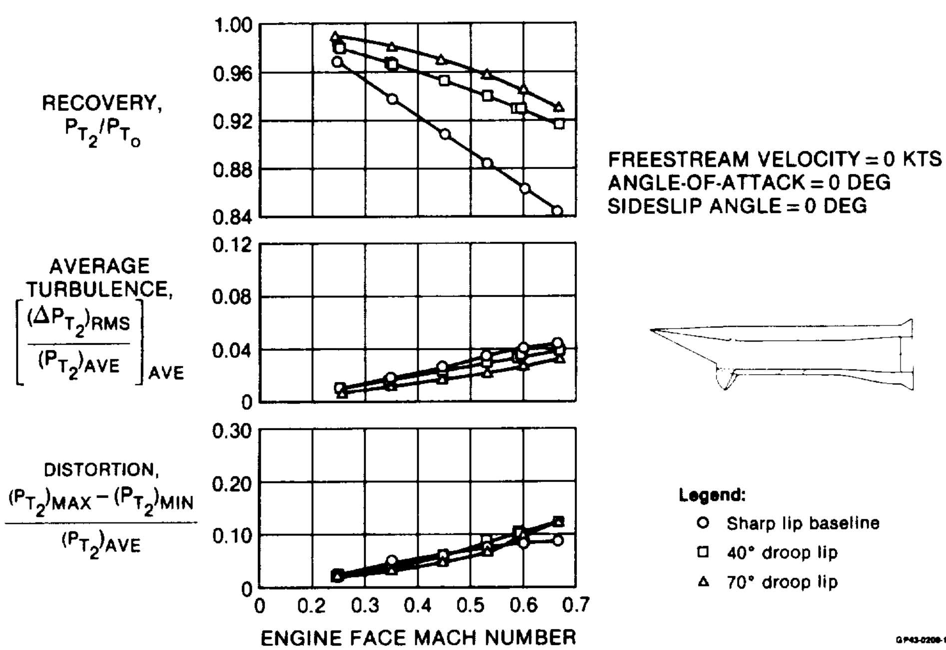


Figure 113. Drooped Lip Performance vs Inlet Mass Flow

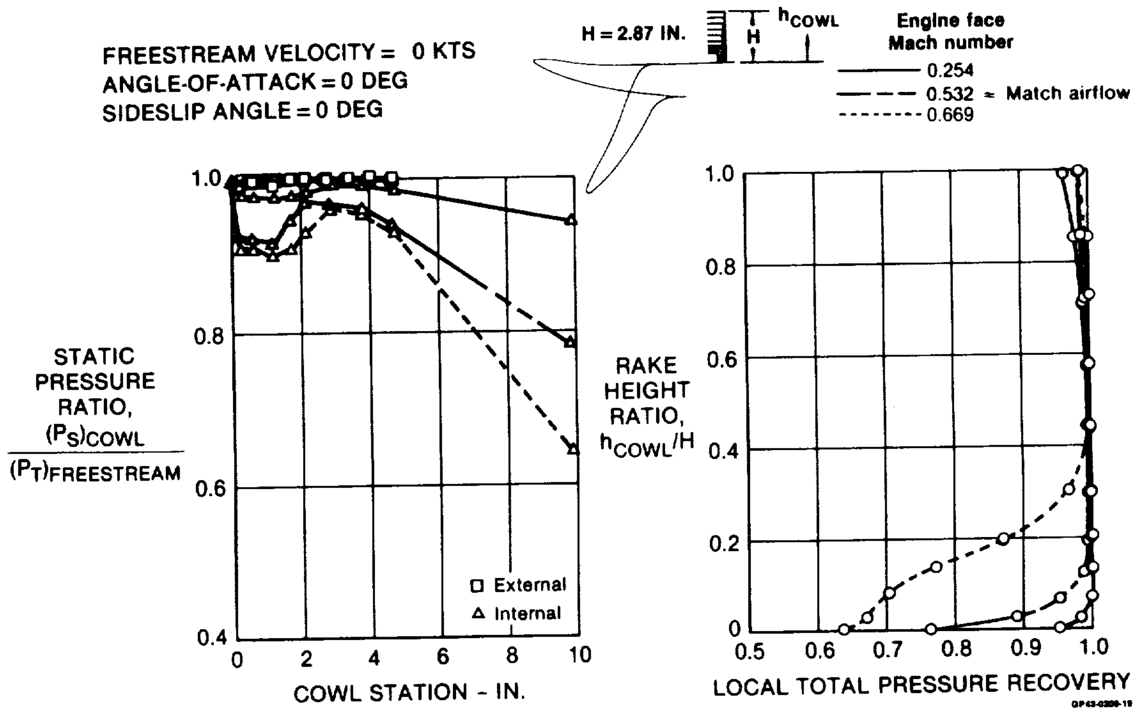


Figure 114. Flow Over Cowl Lip
70° Droop Lip - Effect of Mass Flow

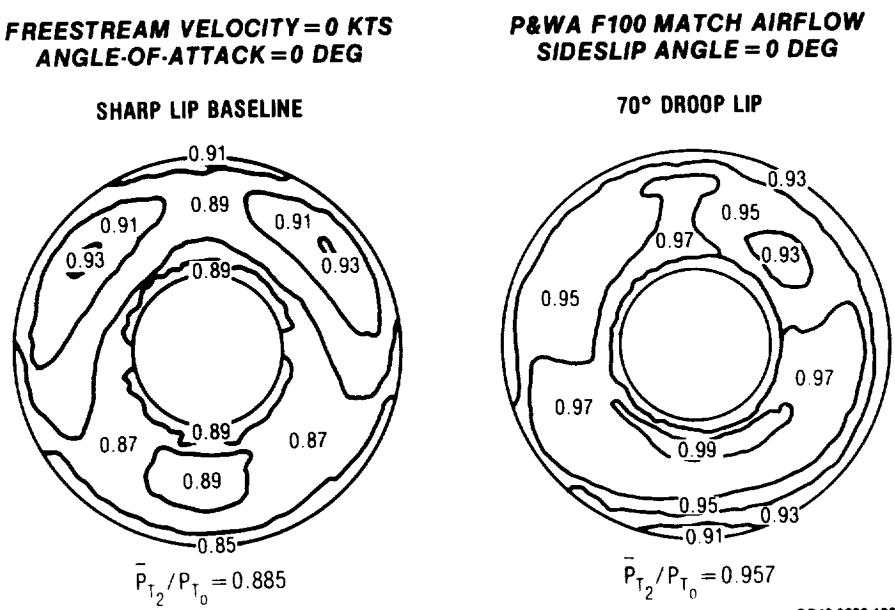


Figure 115. Effect of Drooped Lip on Engine Face Pressure Distribution

The droop lip also provides a major performance improvement at forward speed. The 70 degree lip improves the recovery by 5% at low angles of attack and up to 10% at higher angles of attack at 80 knots, Figure 116. Again the cowl lip pressure data indicate the flow over the 70° lip remains attached over the entire angle of attack range, Figure 117. The 40° droop begins to separate by 90° angle of attack, Figure 118. Comparison of the engine face contours shows that the droop lip configurations have eliminated the low performance pocket associated with lip separation, Figures 119 through 121.

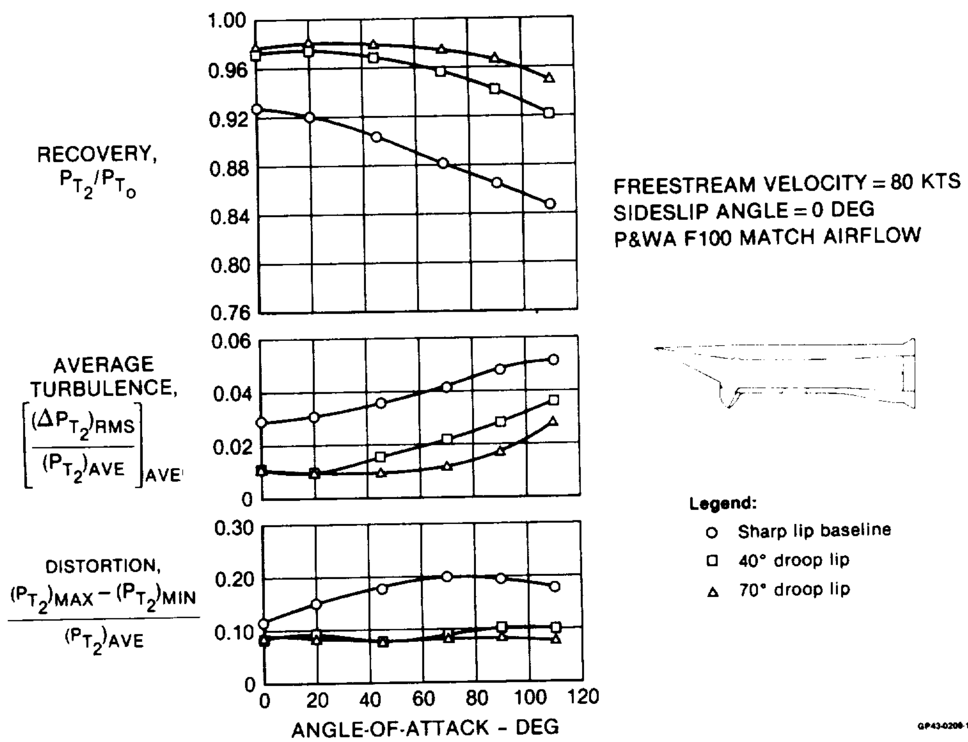


Figure 116. Drooped Lip Performance vs Inlet Angle-of-Attack

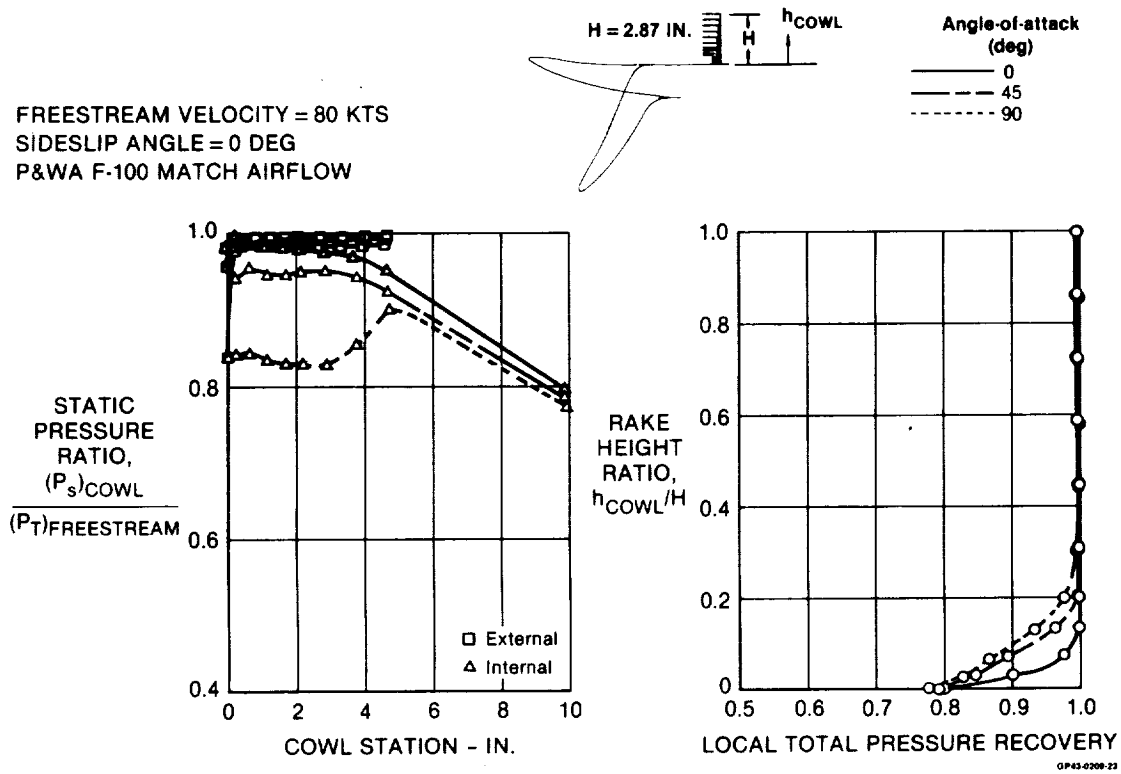


Figure 117. Flow Over Cowl Lip
70° Droop Lip - Effect of Angle-of-Atack

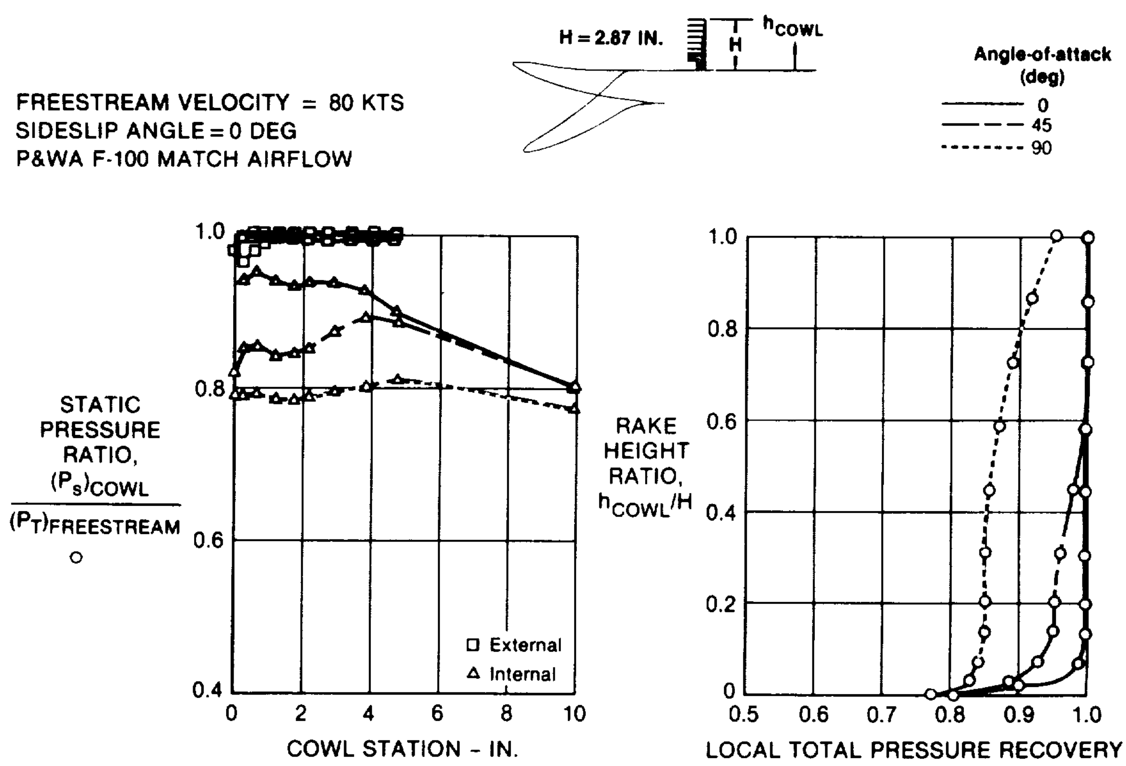


Figure 118. Flow Over Cowl Lip
40° Droop Lip - Effect of Angle-of-Attack

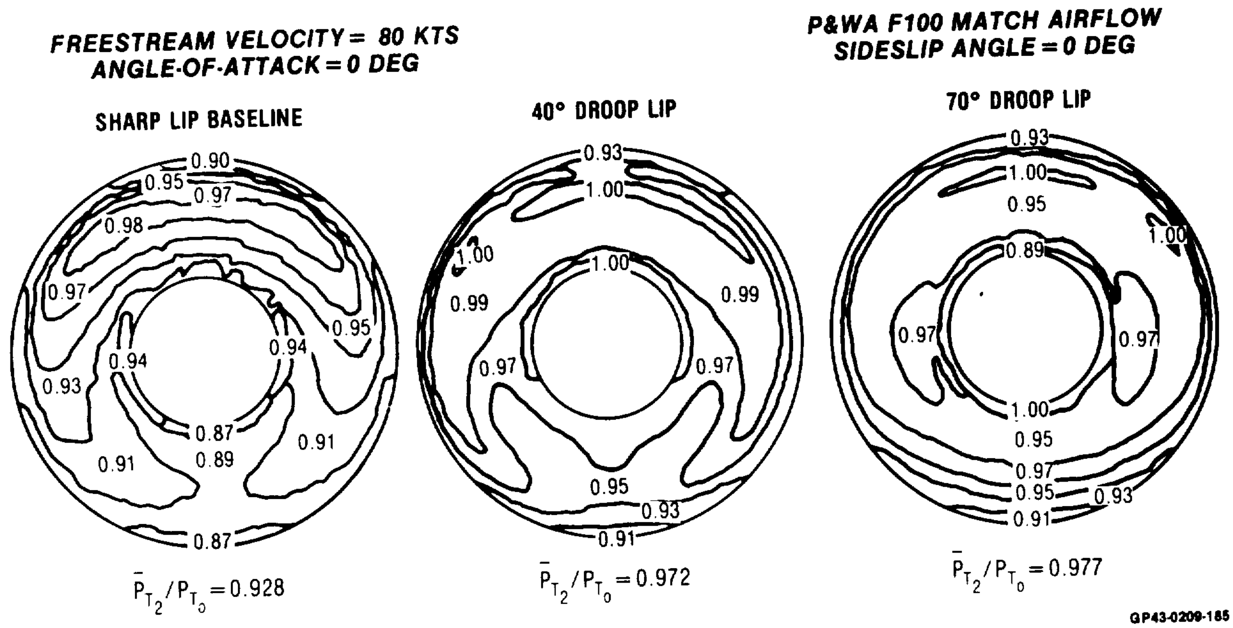


Figure 119. Effect of Drooped Lip on Engine Face Pressure Distribution

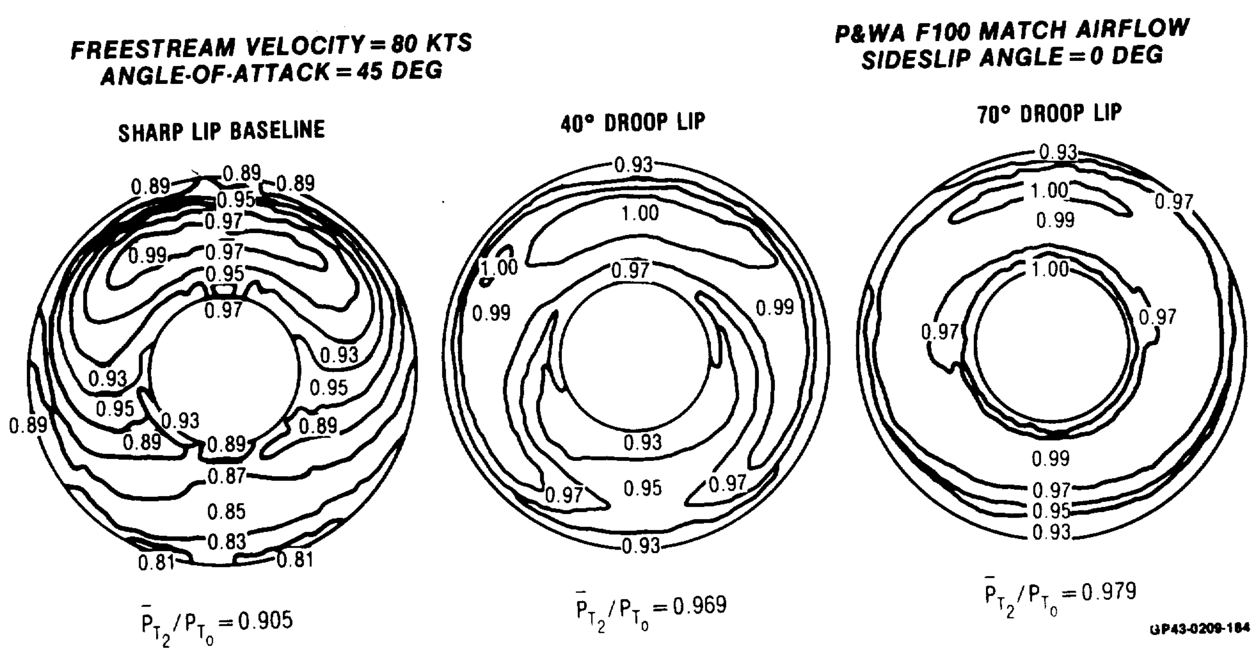


Figure 120. Effect of Drooped Lip on Engine Face Pressure Distribution

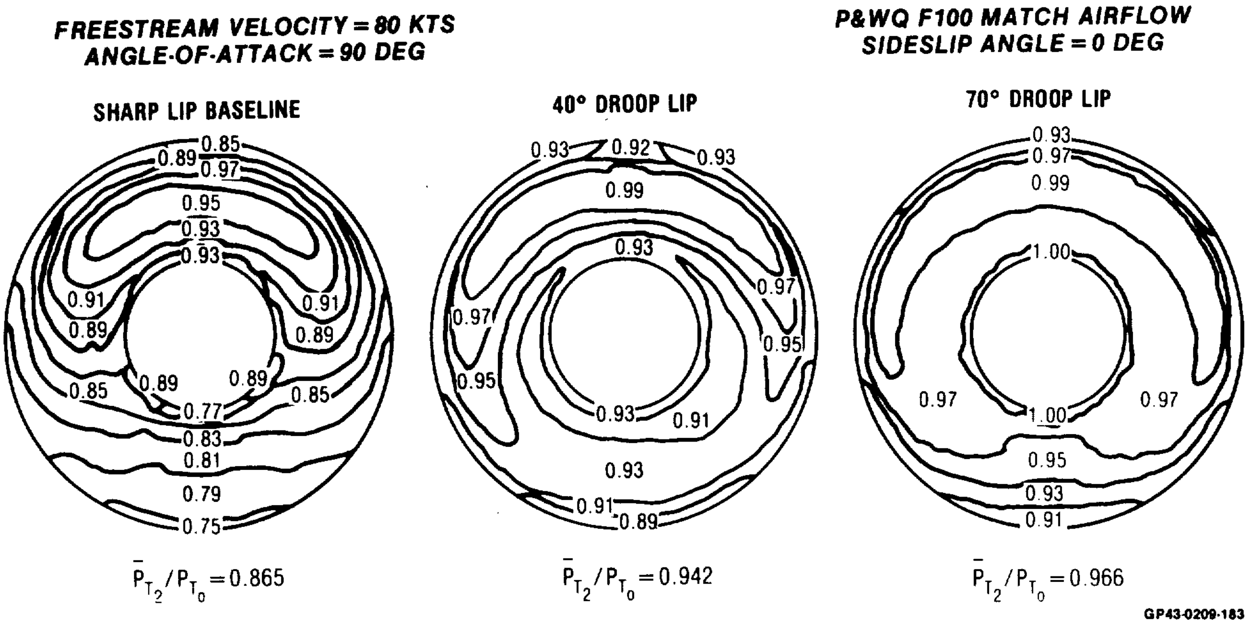


Figure 121. Effect of Drooped Lip on Engine Face Pressure Distribution

6.3.3 Drooped/Translating Cowl Lip - The 40 degree drooped lip could also be tested in a translated position much like a lip slat. Lower cowl lip forward translation distances of 5.08, 10.16, and 15.24 cm (2, 4, and 6 inches) were provided, Figure 122. Analysis of the test data indicates that, in general, none of the translated positions were as good as the basic 40 degree drooped lip, Figure 123. Recovery of the translated lips is below that of the basic 40° drooped lip over the complete angle of attack range. Total pressure profiles immediately downstream of the lip indicate an increase in separation as the lip is translated forward, Figure 124, even at zero degrees angle of attack. At 90 degrees angle-of-attack, Figure 125, the trends are very similar. As the lip is translated forward, the maximum velocity on the lip decreases thus reducing the separation on the lip. But, this performance increase is more than offset by the performance loss associated with separation around the knee which is exposed as the lip moves forward. This is particularly true at the higher angles of attack where the knee pressures are essentially flat, Figure 126, indicating total separation around the knee. Engine face contours, Figure 127, indicate the same trends.

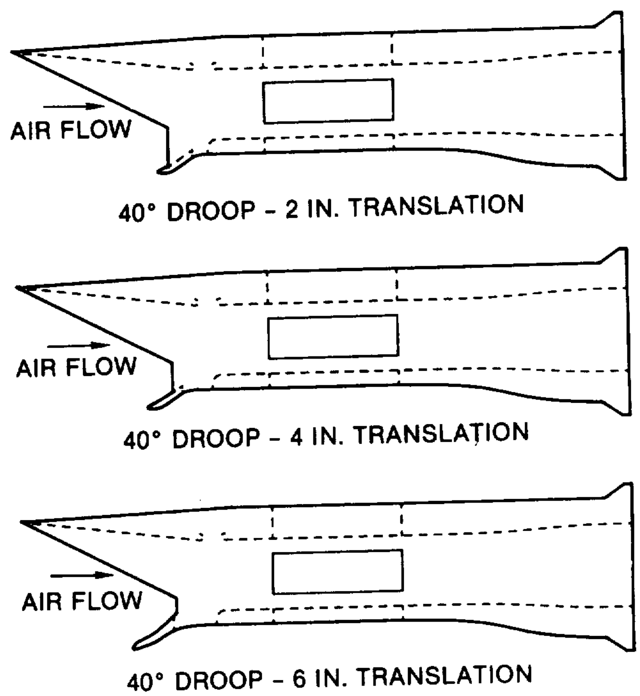


Figure 122. Drooped - Translated Lip Schematic

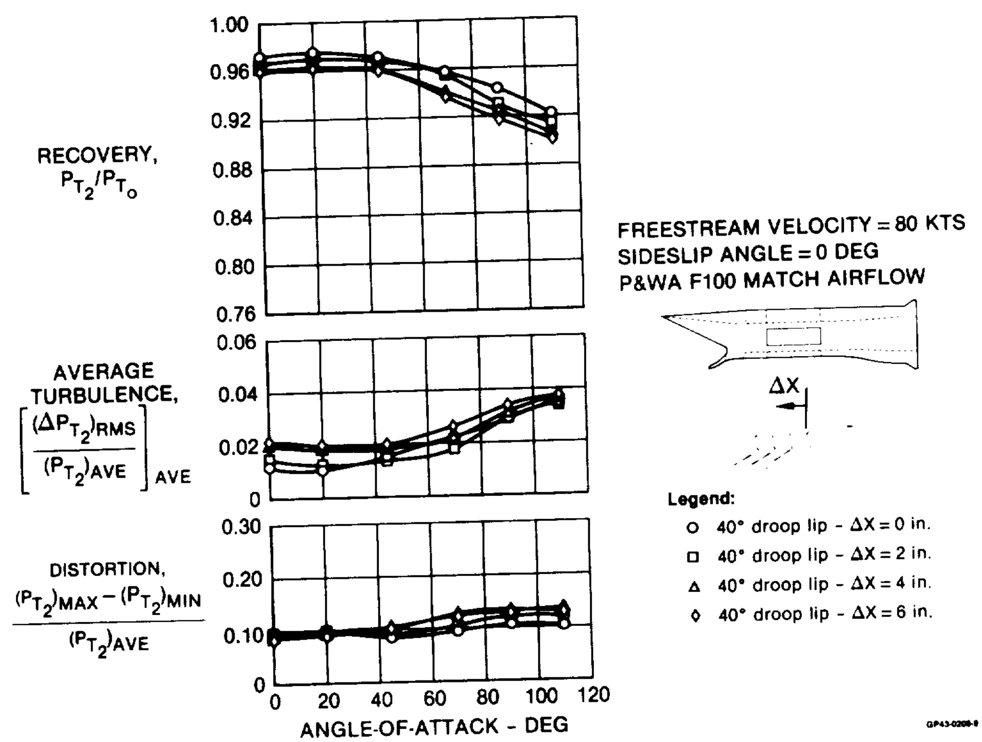


Figure 123. Translated Drooped Lip

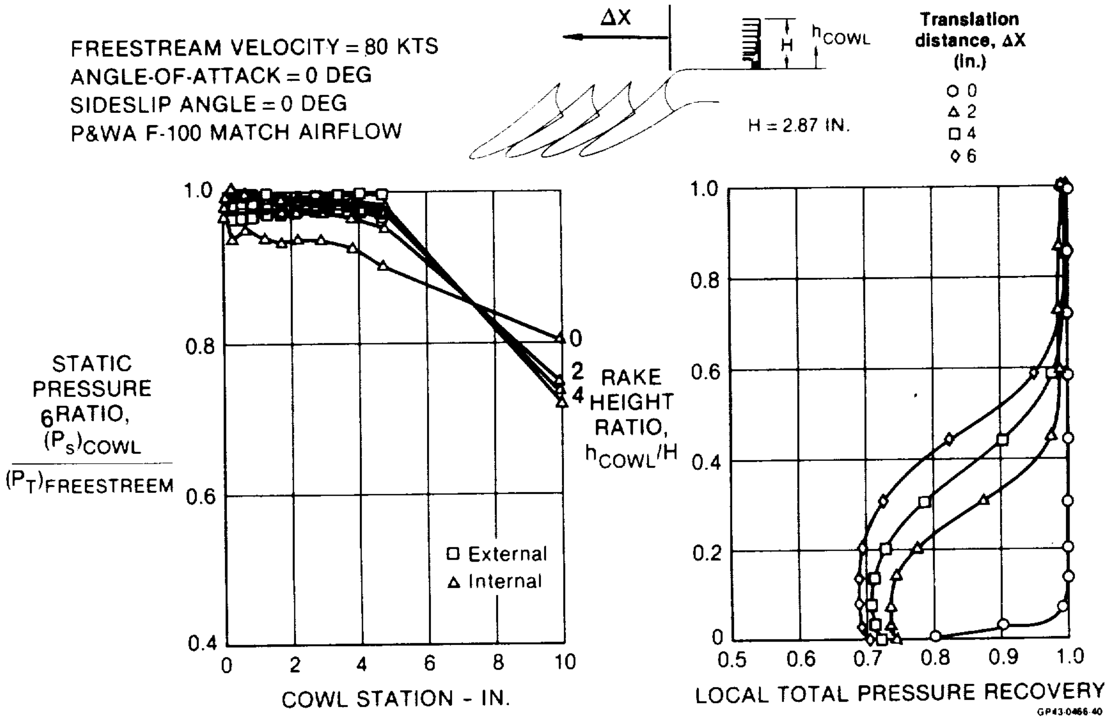


Figure 124. Flow Over Cowl Lip
Drooped-Translated Lip - Effect of Translation

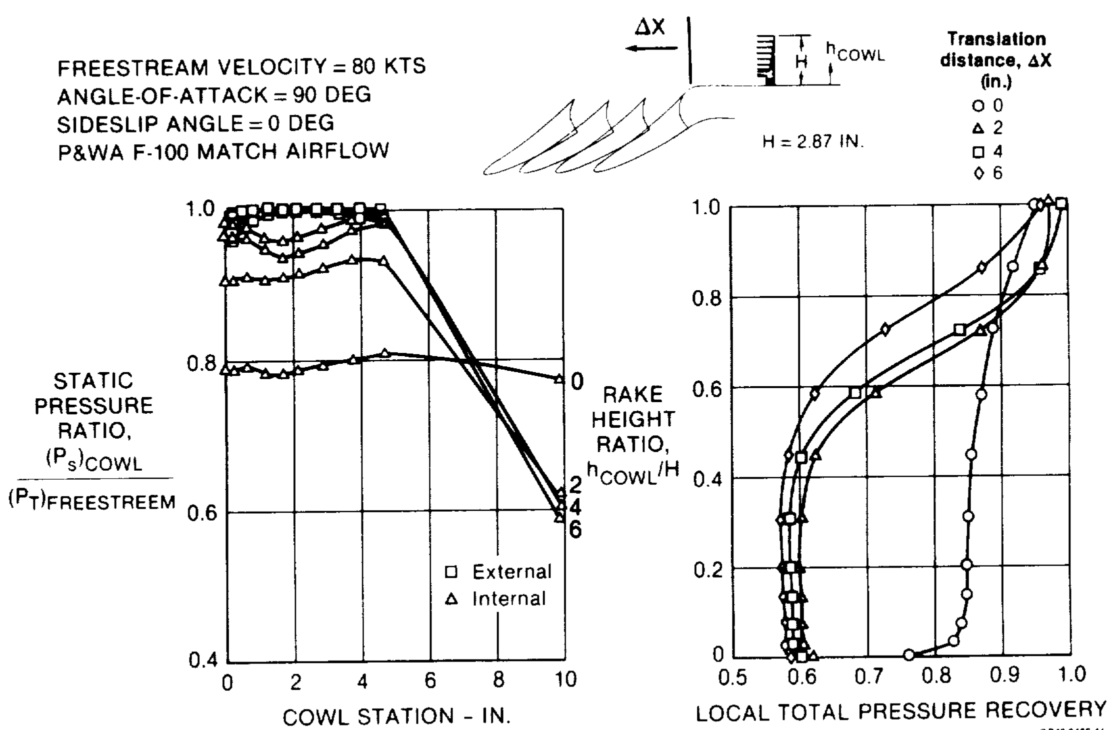


Figure 125. Flow Over Cowl Lip
Drooped-Translated Lip - Effect of Translation

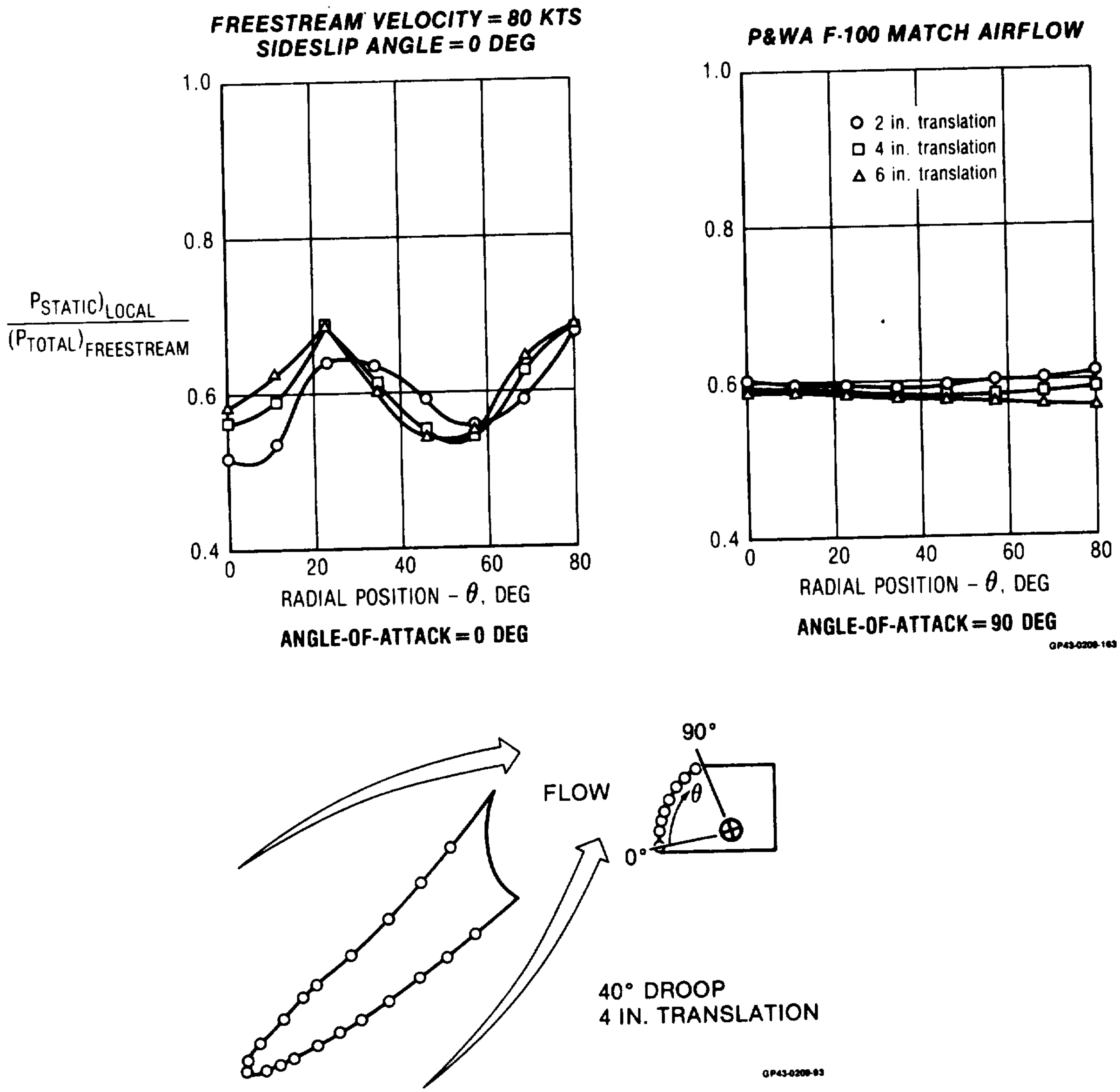


Figure 126. Drooped - Translated Lip Performance Knee Static Pressure Ratios

Angle-of-attack effects for the 4 inch translated lip are shown in Figure 128 and 129. Separation around the knee becomes extensive as the angle-of-attack is increased. The well defined separated profile shape indicates the knee rather than the lip is separting. If the lip were separating extensively, the profiles would be less well defined due to the increased mixing distance between the lip and the total pressure rake.

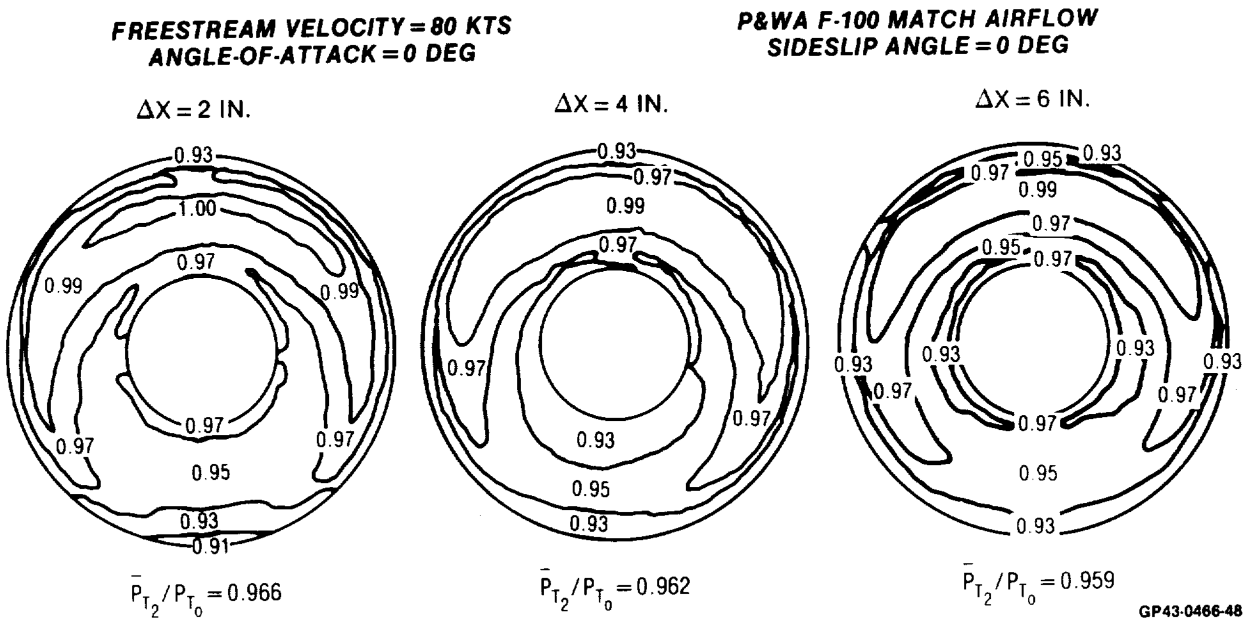


Figure 127. 40 Deg Drooped - Translated Lip
Engine Face Pressure Distribution
Effect of Translation Distance

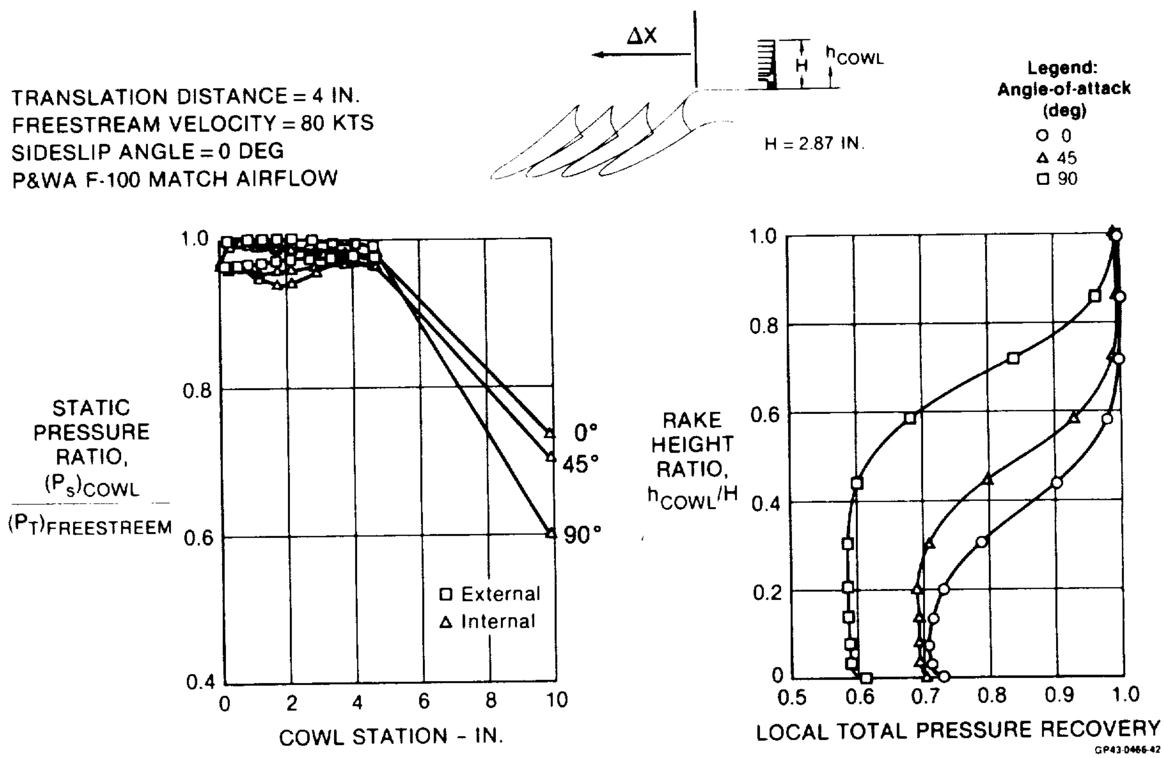


Figure 128. Flow Over Cowl Lip
Drooped-Translated Lip - Effect of Angle-of-Attack

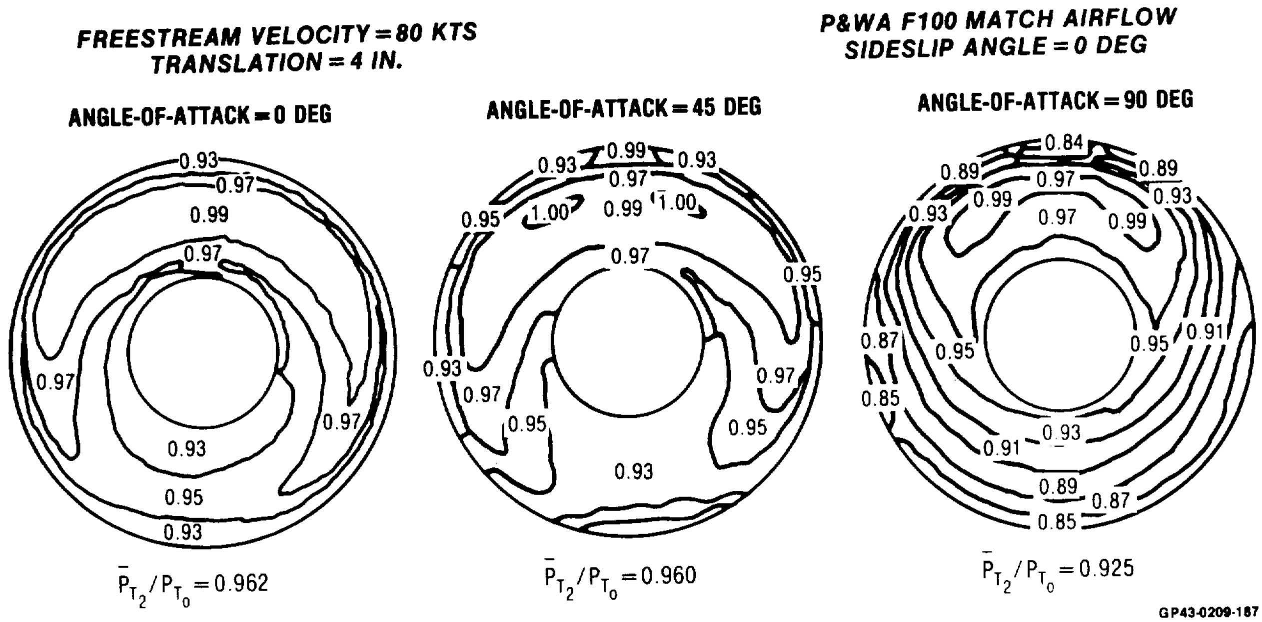


Figure 129. 40 Deg Drooped - Translated Lip
Engine Face Pressure Distribution
Effect of Angle-of-Attack

Analysis of the data indicates that due to the effectiveness of the droop lip, any translation will introduce flow degradation. The lip translation designed to alleviate loss associated with cowl lip separation would probably be effective on a cowl lip in a conventional position. However with the droop lip the translation introduces possible knee separation into an attached flow condition.

6.3.4 Auxiliary Inlet Performance - The auxiliary inlets are designed to alleviate lip separation by decreasing the required airflow over the cowl lip. To measure the effectiveness of this concept, the model was tested with all auxiliary inlets closed, all auxiliary inlets open, and the left auxiliary open with both a port and a door design. The effect of auxiliary inlet cavities was also tested. These concepts are discussed in the following paragraphs.

The auxiliary inlets improve the inlet system performance over the entire mass flow range and at all speeds. At the highest mass flows, a 7 percent recovery increase is achieved, as well as a decrease in both average turbulence and distortion, Figure 130. Cowl lip pressure data show little sensitivity to mass flow, indicating that flow over the main inlet lip is sufficiently decreased when the auxiliary inlets are opened to lessen the severity of the lip separation. The auxiliary inlet pressure distributions, Figures 131 through 134, indicate that at static conditions the higher the contraction ratio the better the auxiliary inlet performs. The right auxiliary inlet, which has the lowest contraction ratio, is the only one showing signs of flow separation at these conditions. This is indicated by the flat pressure distribution on the aft auxiliary inlet ramp. The normal double peak in velocity, characteristic of the other three auxiliary inlets is gone. Extensive separation is also shown in the total pressure profiles at the right auxiliary inlet exit.

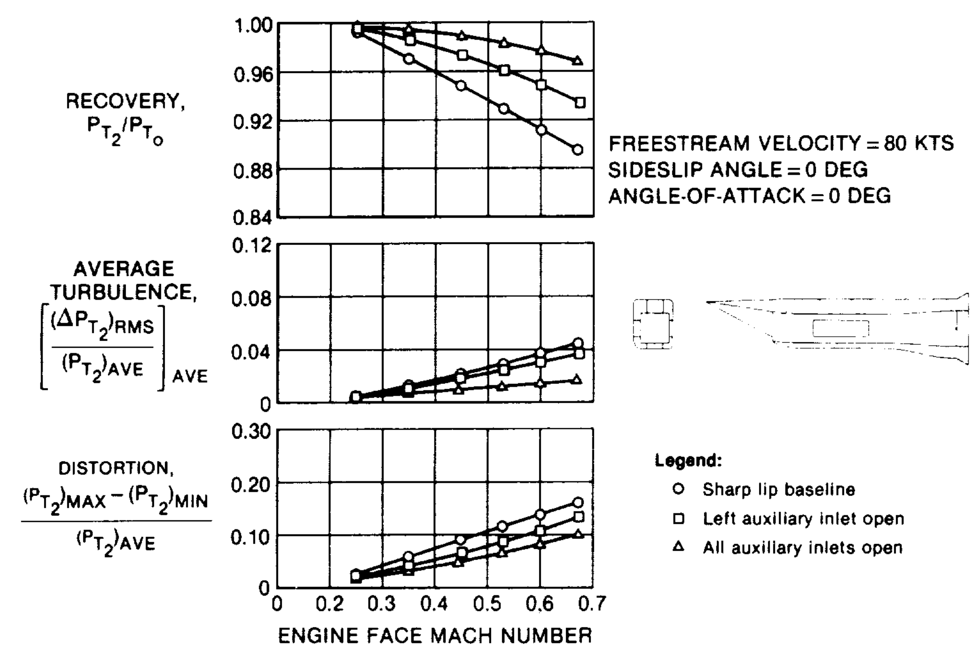


Figure 130. Effect of Auxiliary Inlets on Inlet Performance

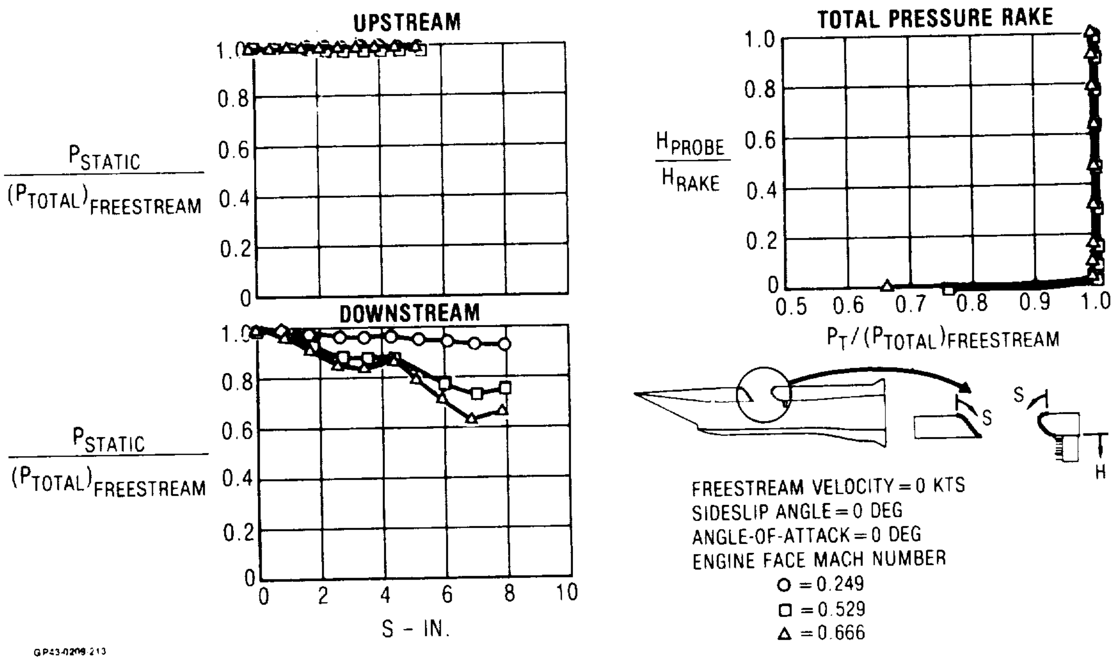


Figure 131. Top Auxiliary Inlet Flow Characteristics
All Auxiliary Inlets Open (CR = 1.893)

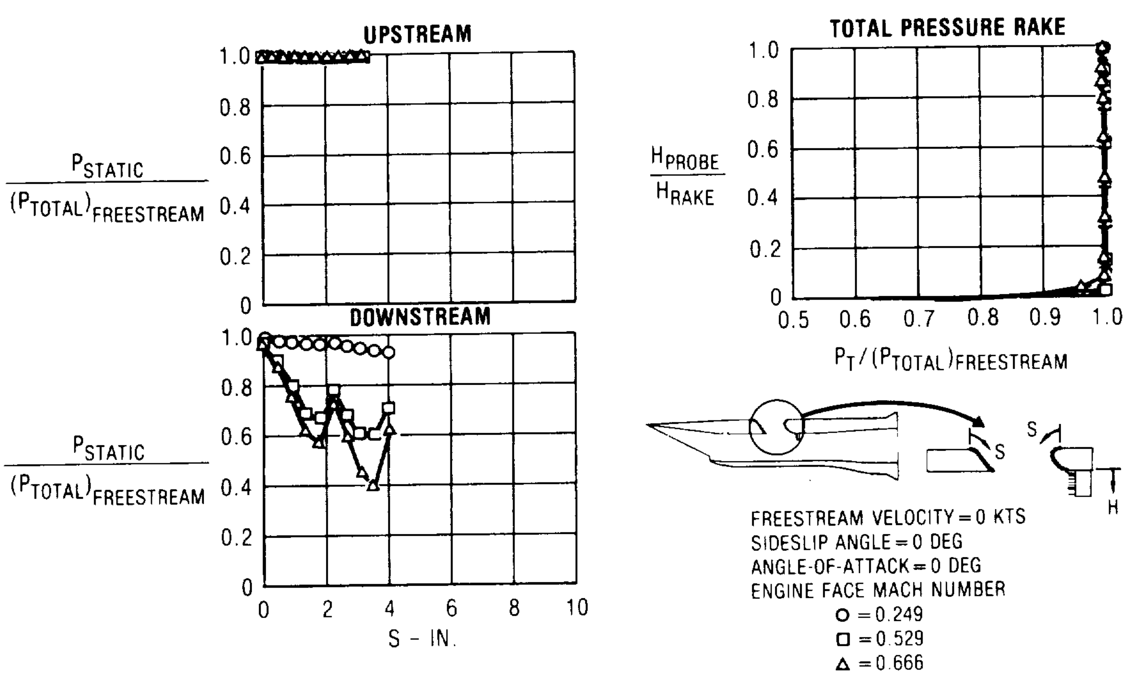


Figure 132. Left Auxiliary Inlet Flow Characteristics
All Auxiliary Inlets Open (CR = 1.478)

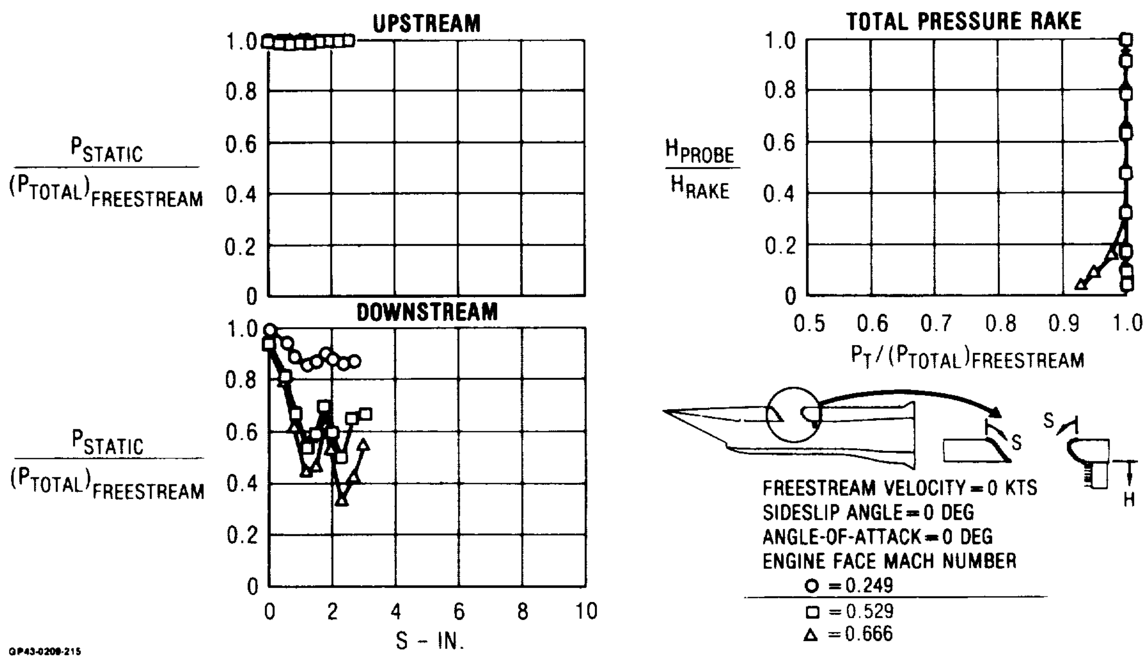


Figure 133. Bottom Auxiliary Inlet Flow Characteristics
All Auxiliary Inlets Open (CR = 1.362)

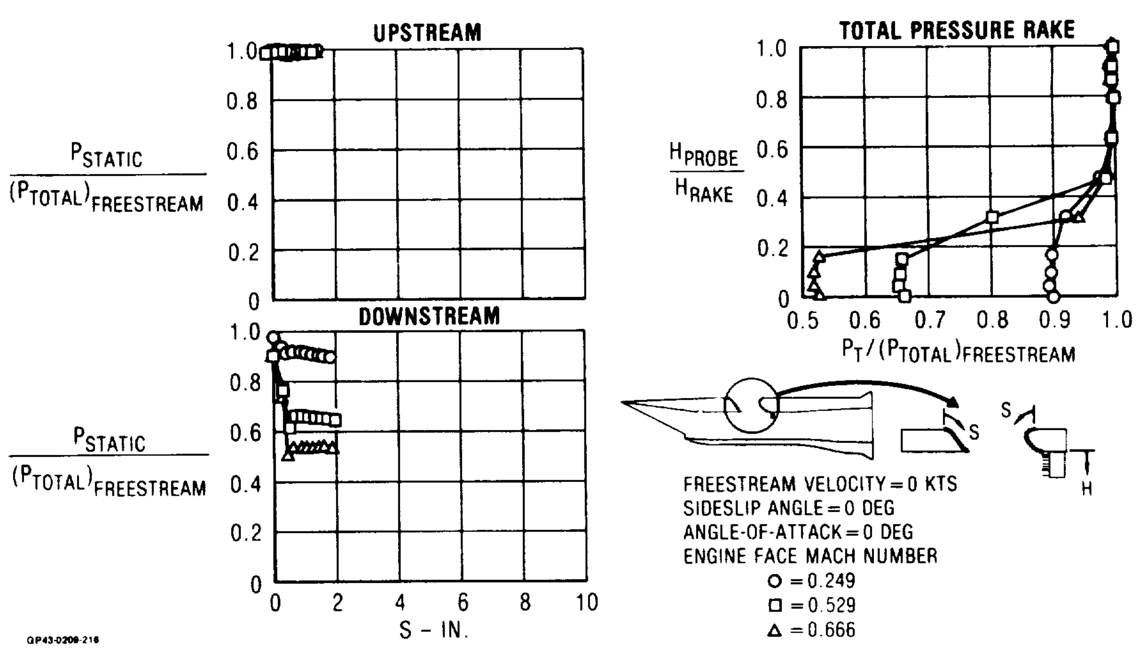


Figure 134. Right Auxiliary Inlet Flow Characteristics
All Auxiliary Inlets Open (CR = 1.237)

Comparison of the engine face contours for the baseline and for the auxiliary inlet configurations indicates that the performance has become a function of the loss associated with the individual auxiliary inlets rather than the loss associated with cowl lip separation. The corresponding engine face contours do not have the low recovery region in the lip area, rather a trend of steadily decreasing performance from the top and moving in a counter-clockwise direction is evident, Figure 135. This performance trend follows the decreasing contraction ratio of the auxiliary inlets.

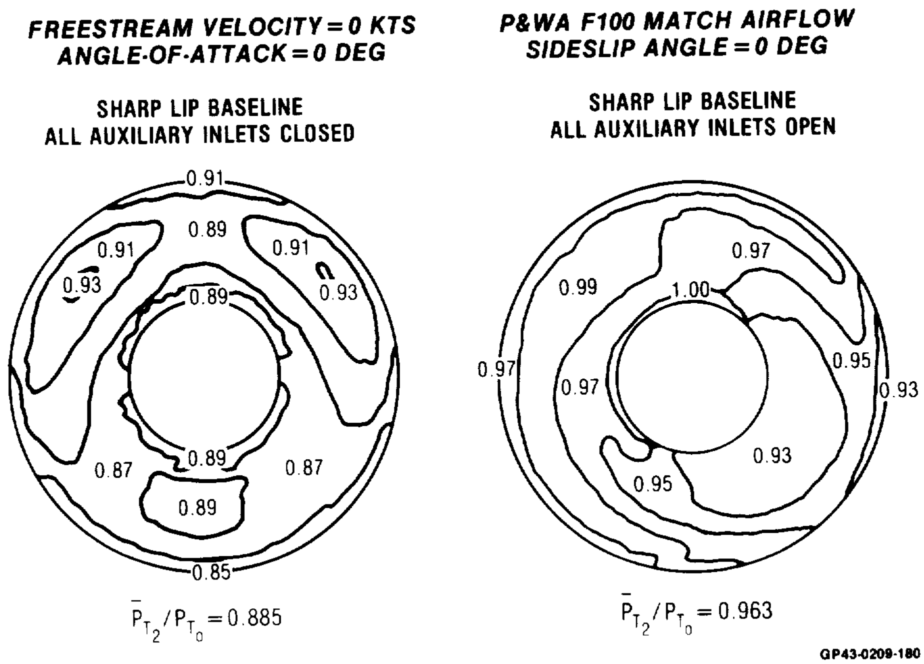


Figure 135. Effect of Auxiliary Inlets on Engine Face Pressure Distribution

The inlet system angle of attack performance is more sensitive to auxiliary inlet performance than to the lip performance. With the auxiliary inlets open, turbulence is lower, distortion is lower, and recovery improves by 5 to 7 percent over the entire angle of attack range tested, Figure 136. The cowl lip pressure distribution shows little sensitivity even at 90° angle of attack due to reduced mass flow entering through the main inlet, Figure 137.

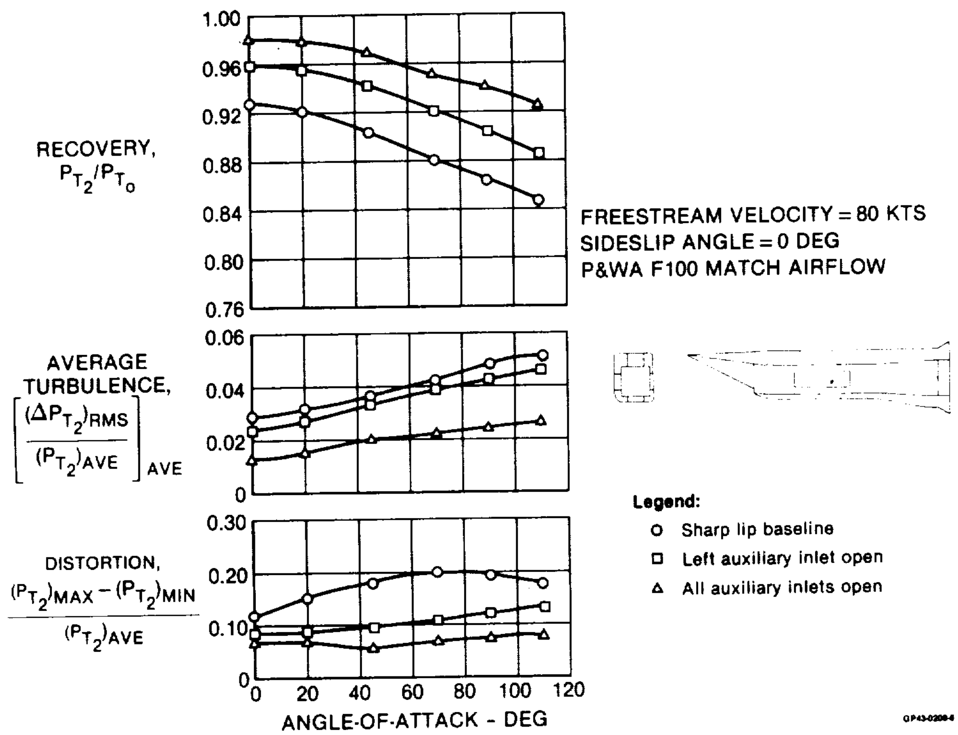


Figure 136. Effect of Auxiliary Inlets on Inlet Performance

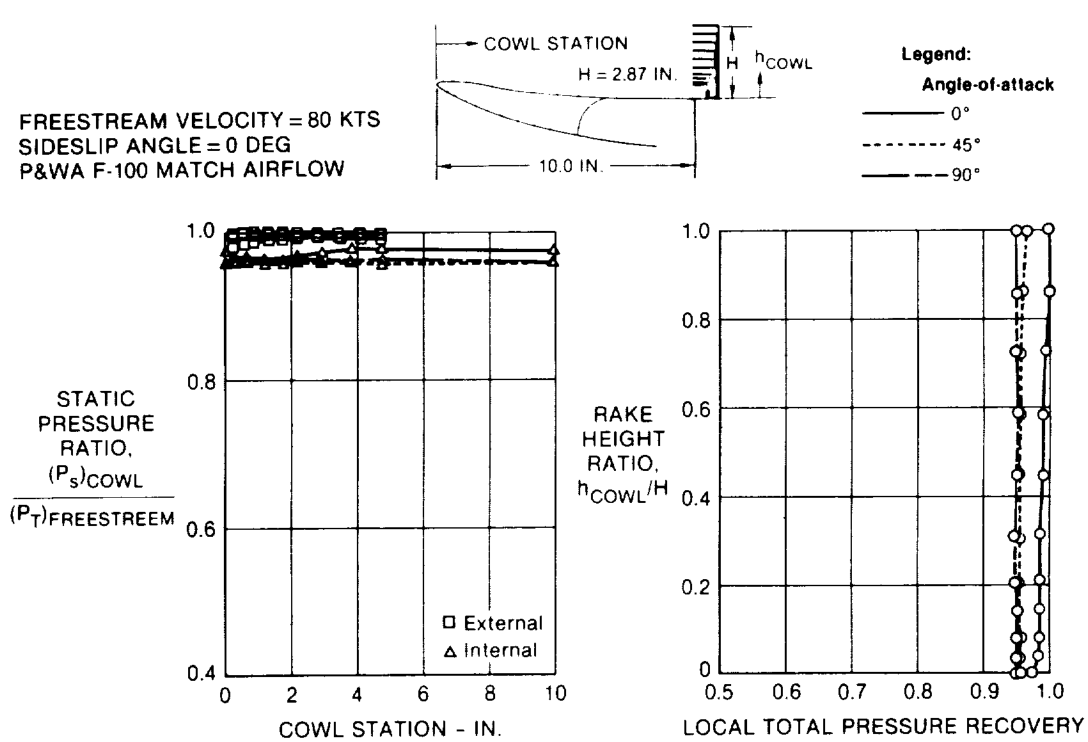


Figure 137. Flow Over Cowl Lip
All Auxiliary Inlets Open - Effect of Angle-of-Attack

Inlet performance data was also obtained with the external surface of the auxiliary inlet sealed and the internal cavity exposed to the flow. Opening the cavities disturbs the flow by setting up recirculation in the area of the cavities. The distortion and turbulence are only slightly affected. The recovery drops by approximately 1 percent over the angle of attack range with all the cavities open, Figure 138. Since the auxiliary inlet will be flowing during the critical high recovery portion of the flight envelope, it may be possible to close the auxiliary inlets off at other flight conditions using a simple sliding or blow in door. The resulting 1 percent recovery loss may be tolerable especially in light of the weight savings associated with the simple closure.

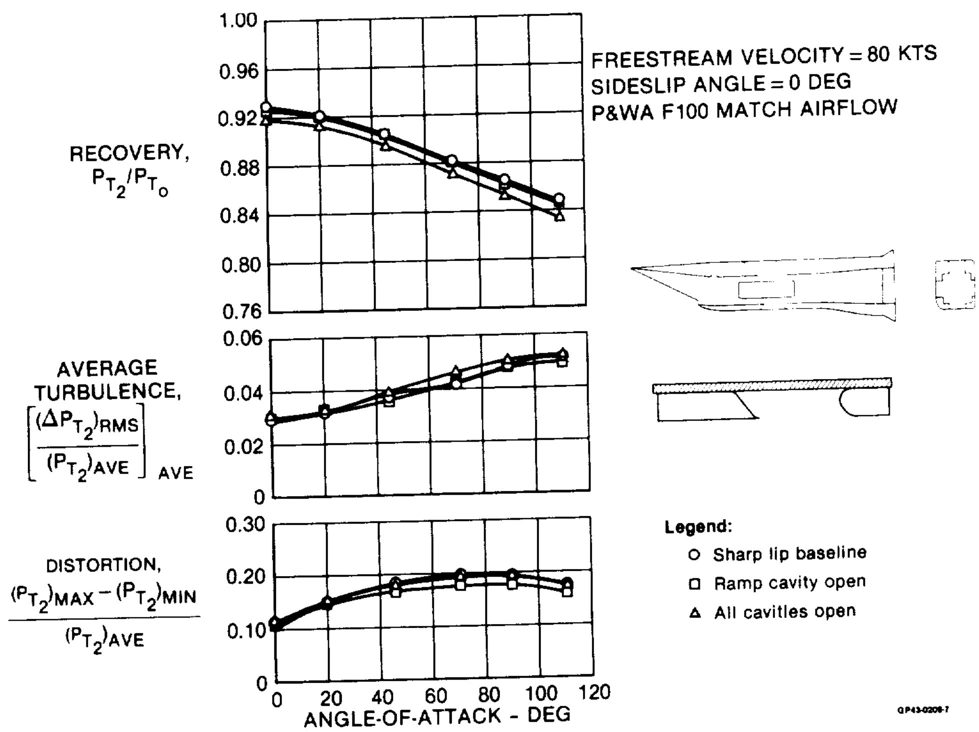


Figure 138. Effect of Auxiliary Inlet Cavities on Inlet Performance

The relative performance differences between the port and the door design auxiliary inlets are similar to those seen on the thick lip inlet. However, the door design did not significantly improve the recovery for the sharp lip baseline as it did for the thick lip, Figure 139. While the recovery was not increased, a slight decrease in turbulence was achieved using the door design.

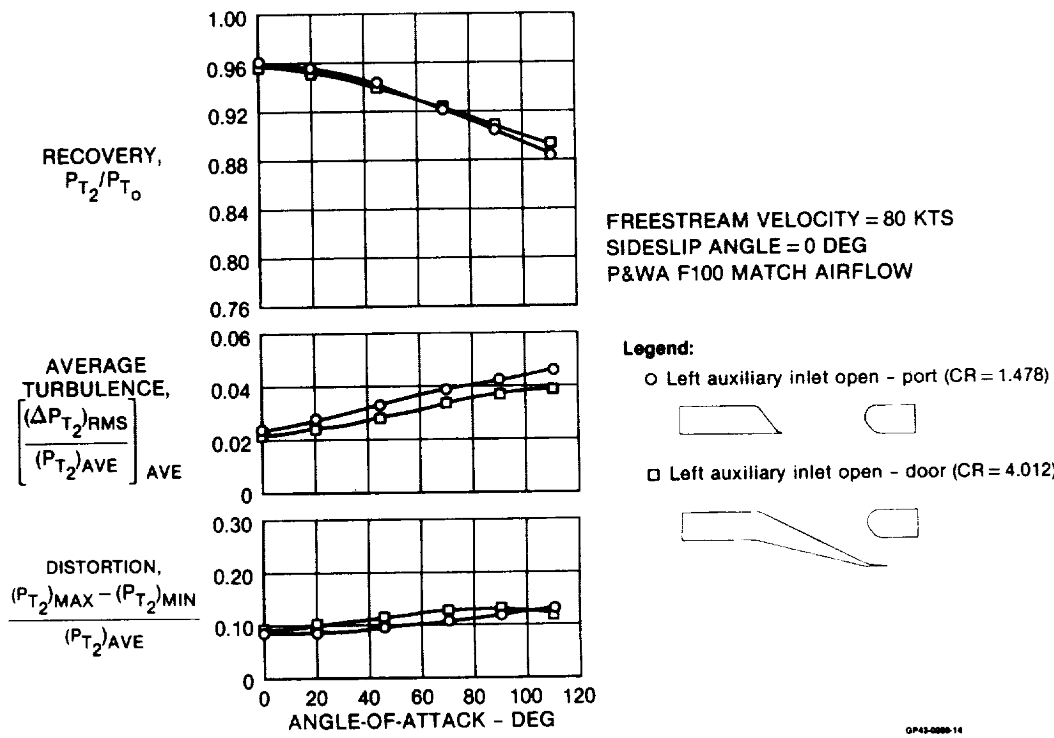


Figure 139. Effect of Auxiliary Inlet Design
Port vs Door

Auxiliary inlets were effective in improving the baseline inlet performance as a result of the reduction in the losses associated with flow over the cowl lip. By bringing in part of the engine required airflow through the auxiliary inlets, the flow around the main inlet lip and its associated separation losses were greatly reduced. The net result was a significant increase in inlet system performance at static and low speed/high angle-of-attack operations.

The door design auxiliary inlet did not increase the recovery over the port design auxiliary inlet. However, since the sharp lip inlet performance is sensitive to both auxiliary inlet airflow and auxiliary inlet contraction ratio, an assessment of the actual performance benefits must weigh the fact that the door design has approximately a 2.7 times higher contraction ratio than the port, but the door has a lower airflow capability ((A_{TH}) port = 0.35 (A_{TH}) main, (A_{TH}) door = 0.13 (A_{TH}) main).

6.4 VERTICAL RAMP INLET CONFIGURATION - The inlet was tested rotated 90 degrees to simulate a vertical ramp propulsion system integration, such as that on an F-4. This configuration was tested with full and retracted sideplates, with all auxiliary inlets closed, and with three auxiliary inlets open. Inlet rotation was done both clockwise and counterclockwise to test the effect of sideplate thickness. In addition, testing of the vertical ramp inlet provides yaw data for the horizontal ramp configurations.

The sideplates on a supersonic inlet are normally designed with a sharp leading edge to minimize drag. Thus, with the inlet oriented in the vertical ramp position, the sideplate is acting as a sharp lip. Because of this, the performance of this inlet configuration was expected to be low. To improve the low speed/ high anlge-of-attack performance, the sideplate could be retracted to expose a more blunt lip shape at the inlet highlight. This was simulated in the present model by removing the windward sideplate and replacing it with a more blunt circular lip shape. The lip diameter was equal to the local sideplate thickness at the inlet highlight.

Both the retracted sideplates and the auxiliary inlets improved the performance of the vertical ramp inlet. The retracted sideplates improved recovery by 4 to 6 percent and favorably impacted both turbulence and distortion as shown in Figure 140. The auxiliary inlets improved the recovery 5 to 7 percent. The two effects combined, retracted sideplates with three auxiliary inlets opened had the most beneficial effect. The engine face contours indicate that retracting the sideplates reduces the loading on the cowl lip, Figure 141. With the auxiliary inlets open the effect of the sideplates is much less significant, since the auxiliary inlets have already unloaded the lip, Figure 142. The sideplate thickness had no effect on the inlet performance as shown in Figure 143.

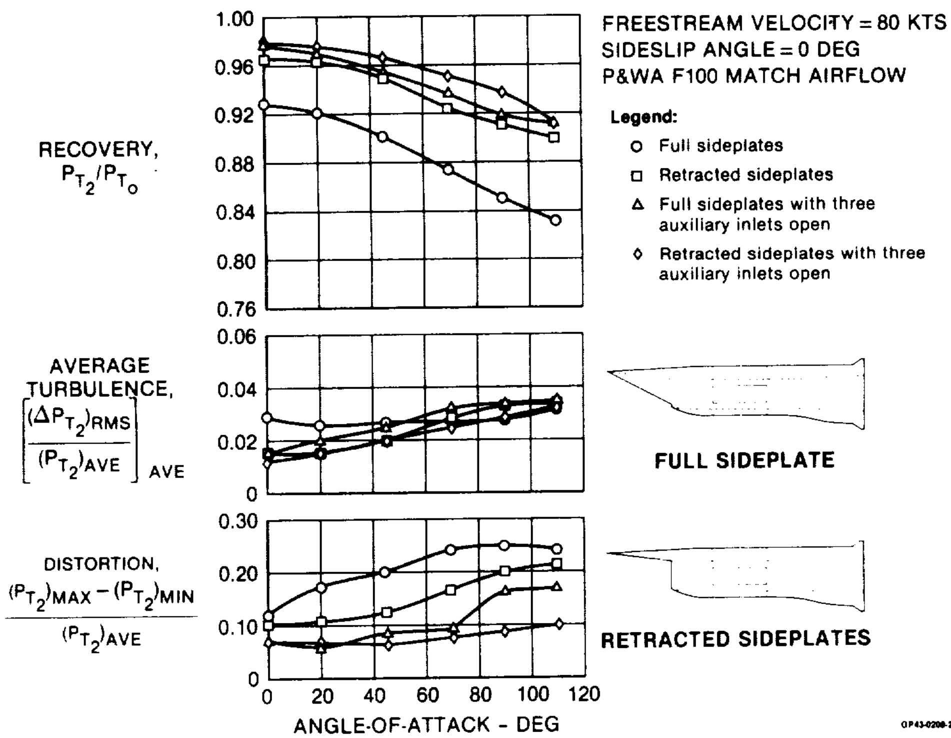


Figure 140. Effect of Retracted Sideplates and Auxiliary Inlets on Vertical Ramp Inlet Performance

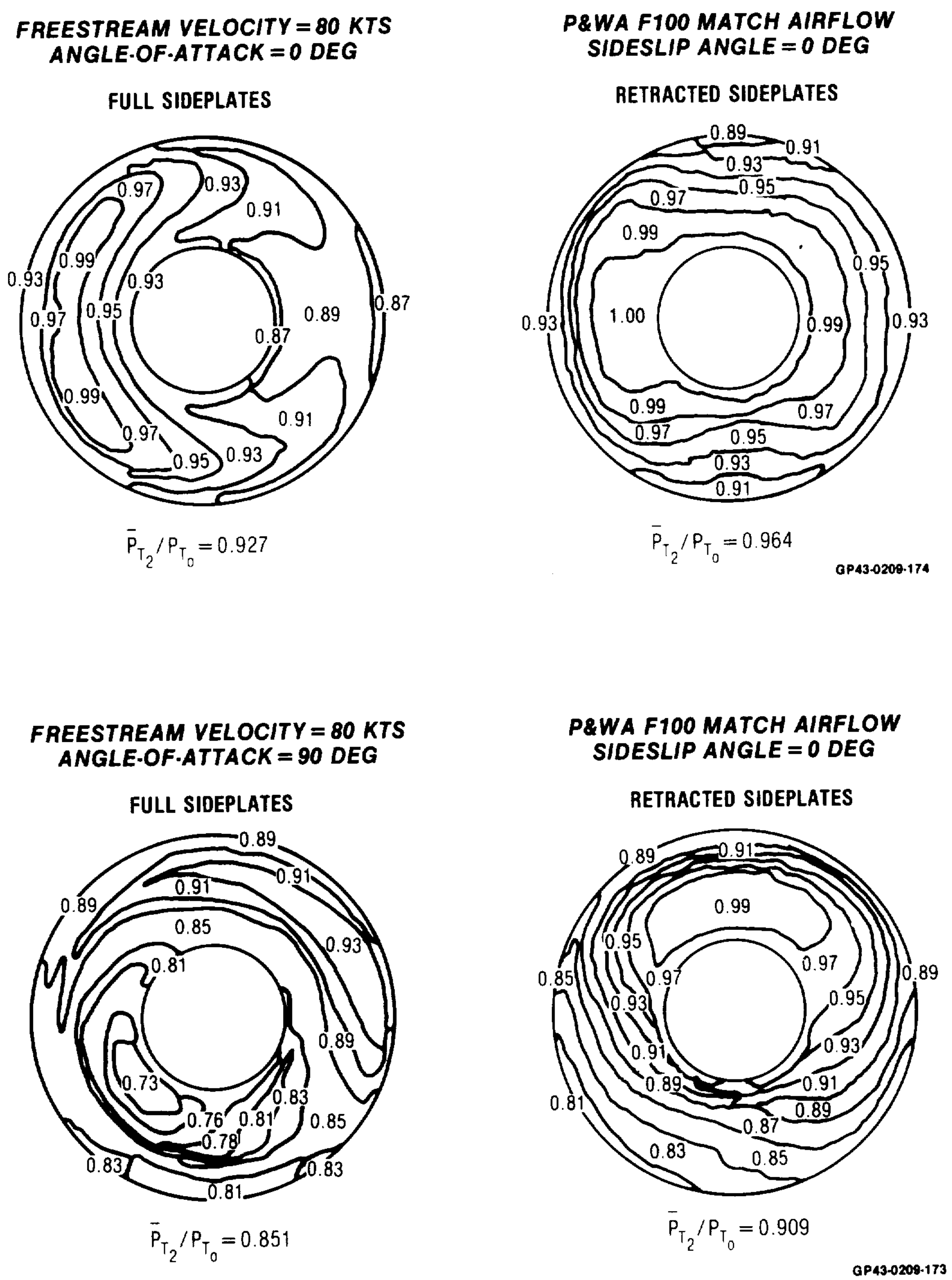
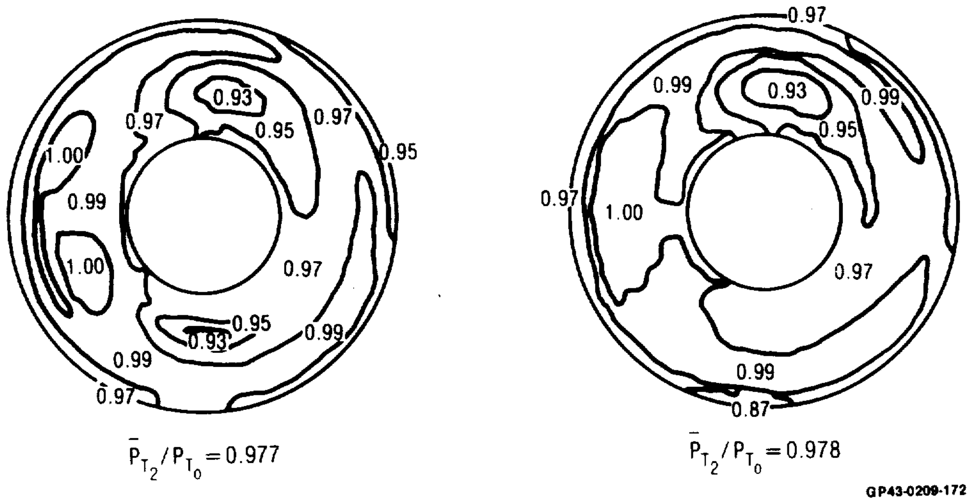


Figure 141. Effect of Retracted Sideplates on Vertical Ramp Inlet Performance

FREESTREAM VELOCITY = 80 KTS
ANGLE-OF-ATTACK = 0 DEG

P&WA F100 MATCH AIRFLOW
SIDESLIP ANGLE = 0 DEG

FULL SIDEPLATES | **RETRACTED SIDEPLATES**



FREESTREAM VELOCITY = 80 KTS
ANGLE-OF-ATTACK = 90 DEG

P&WA F100 MATCH AIRFLOW
SIDESLIP ANGLE = 0 DEG

FULL SIDEPLATES | **RETRACTED SIDEPLATES**

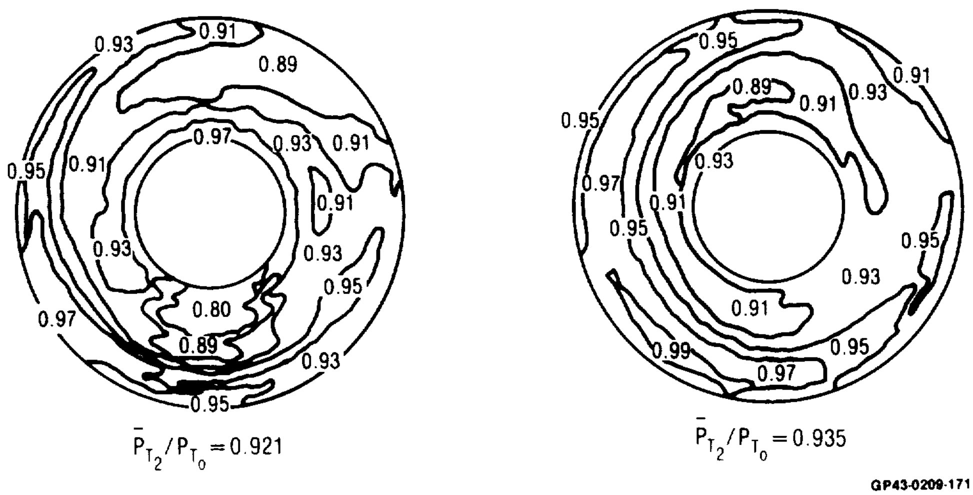


Figure 142. Effect of Retracted Sideplates and Auxiliary Inlets on Vertical Ramp Inlet Performance
Engine Face Pressure Distribution
Left, Right, and Cowl Auxiliary Inlets Open

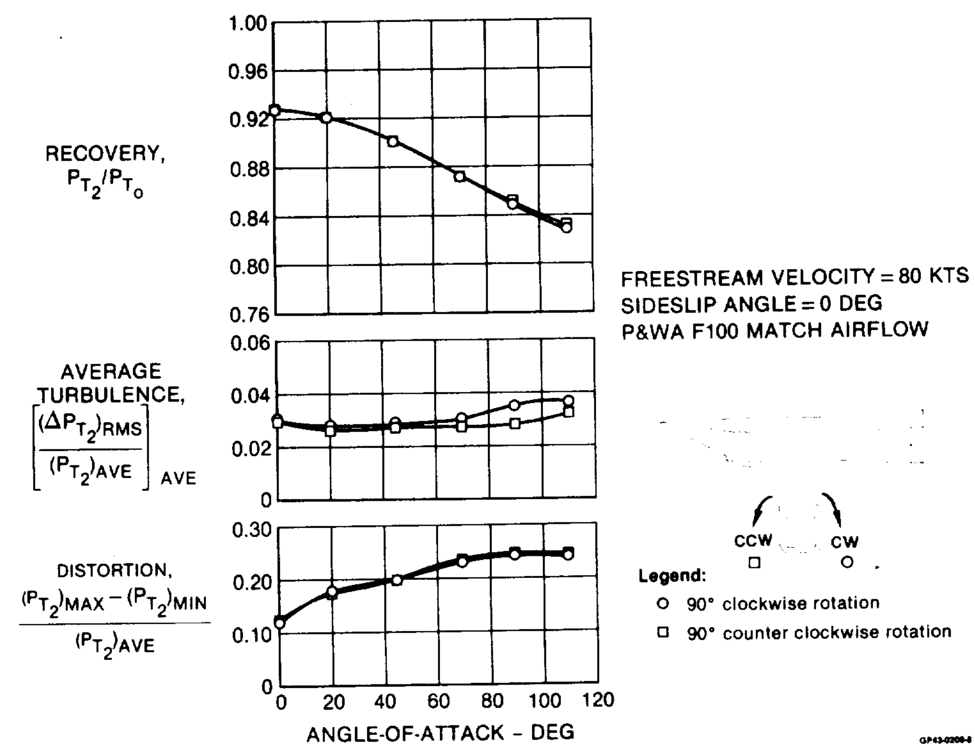


Figure 143. Effect of Sideplate Thickness on Vertical Ramp Inlet Performance

7. PERFORMANCE COMPARISON

The performance of the three major inlet configurations, thick-lip, sharp-lip, and vertical ramp, are compared along with the various flow improvement concepts incorporated into each configuration. These flow improvement concepts include, drooped lip, drooped/translated lip, and auxiliary inlets. Comparisons include recovery, average engine face turbulence, and the simplified distortion parameter $(P_{T2}max - P_{T2}min)/P_{T2}ave$. A final comparison is made for all the configurations based on static and dynamic values of the P&WA distortion description k_{a_2}.

7.1 THICK LIP INLET - The thick lip baseline established a performance standard by defining the inlet performance without the significant losses associated with the 2-D sharp lip. It was utilized to define the performance characteristics of the auxiliary inlets. This configuration did exhibit some separation which caused a drop in performance at approximately 65° angle of attack and 80 knots freestream velocity. This separation characteristic disappears upon opening the auxiliary inlets.

Auxiliary inlet calibration data indicate that contraction ratio is the major factor in ranking their performance. Both static and wind-on performance show this trend, Figures 144 and 145. When opened individually, the corrected airflow ratio for each auxiliary inlet is approximately equal to the ratio of auxiliary inlet throat area to main inlet throat area.

The door and the door with sideplates were slightly more effective than the ports due to their higher contraction ratio (approximately 4 versus 1.2 to 1.9) and flow directing capabilities. The door improved recovery by approximately 1 percent over the entire angle of attack range, Figure 146.

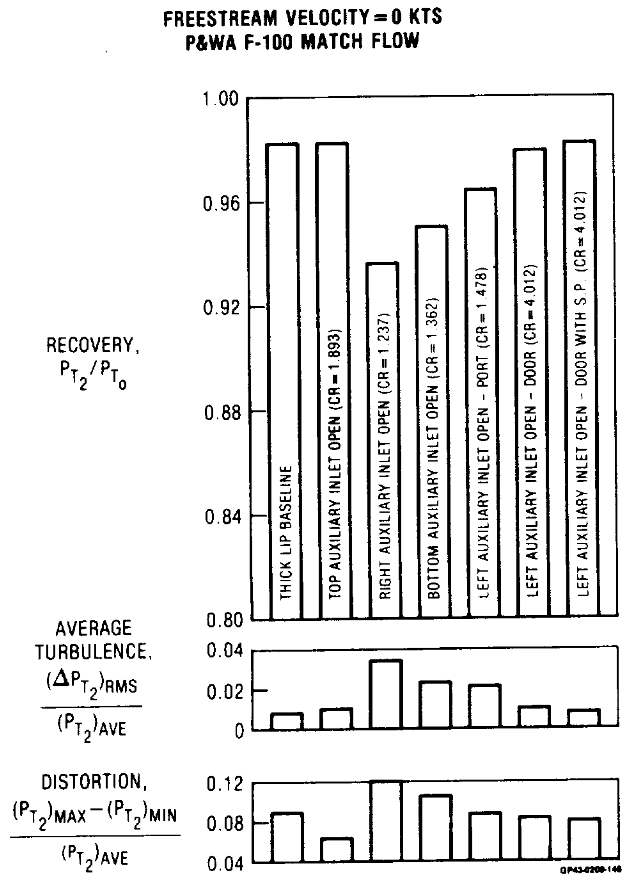


Figure 144. Thick Lip Inlet Static Performance

7.2 SHARP LIP CONFIGURATION - The sharp lip configuration has significant lip flow separation at all static and low speed/high angle-of-attack flight conditions. Comparing the performance to the thick lip inlet, the recovery loss is 5 to 12 percent over the angle of attack and velocity ranges tested, Figures 147 and 148. A significant increase in turbulence and distortion are also associated with this performance degradation.

The single most effective flow improvement device over the entire angle-of-attack and Mach number range tested is the 70° droop lip. Performance of this configuration, both statically and wind-on approaches the performance of the thick lip baseline, Figures 147 and 148. This performance level is maintained even at the highest angle of attack and at all speeds.

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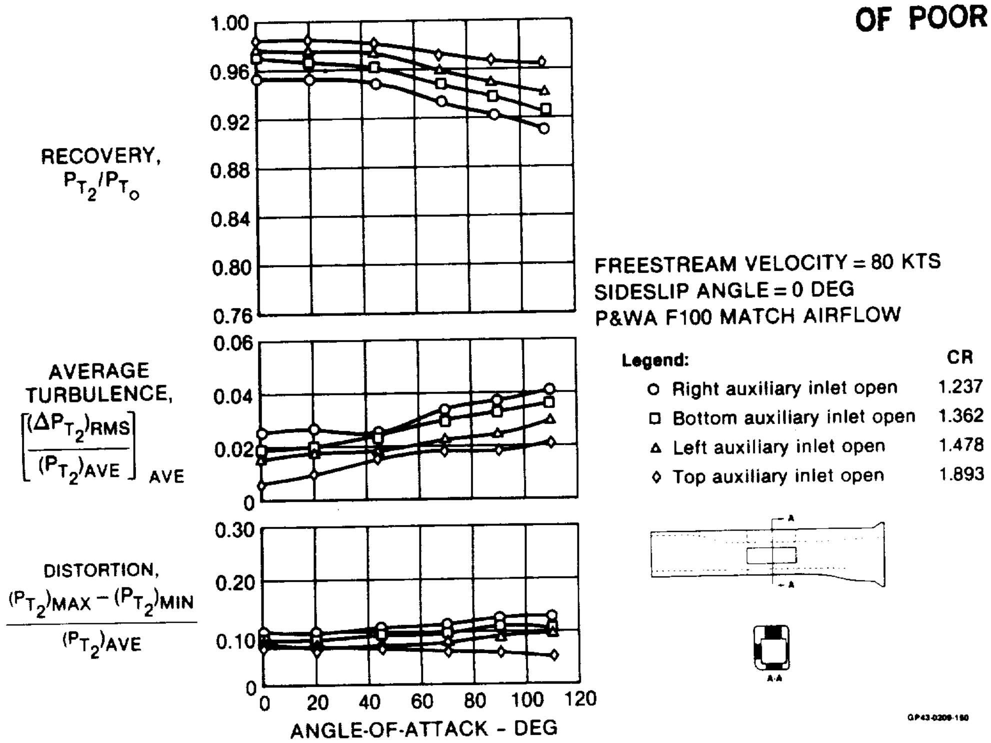

Figure 145. Performance of Individual Auxiliary Inlets

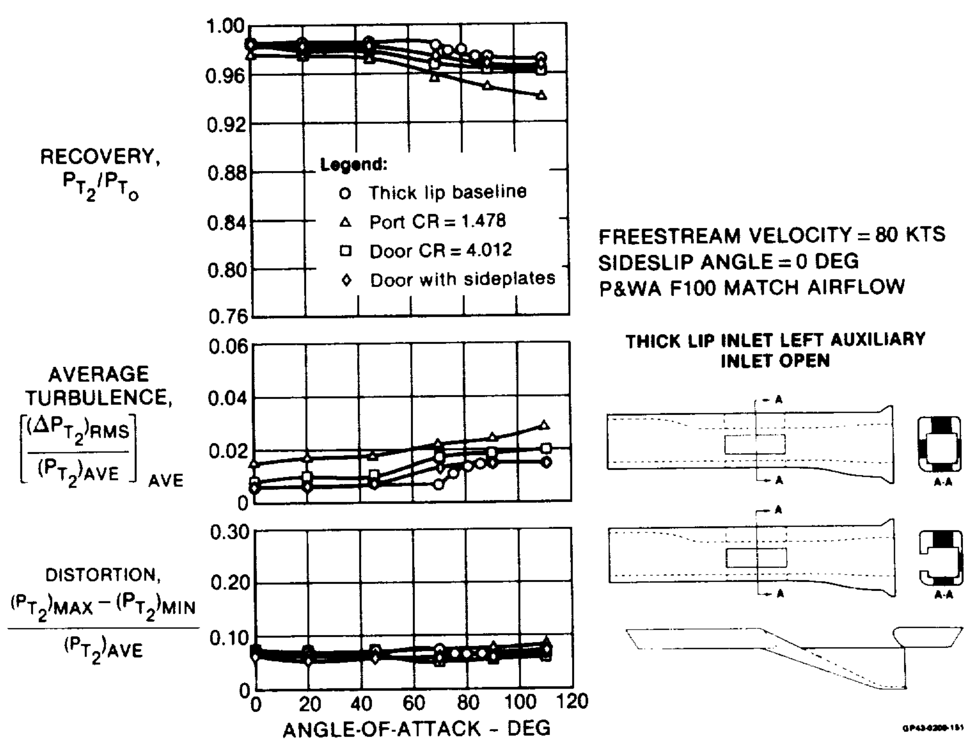

Figure 146. Effect of Auxiliary Inlet Design

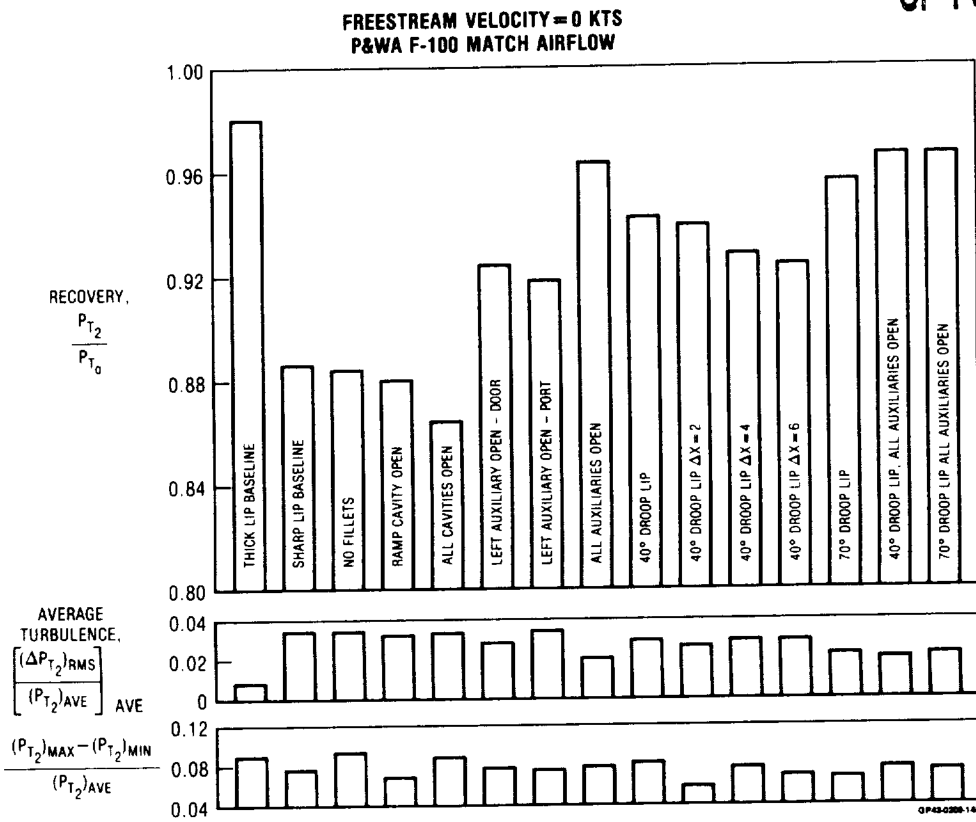

Figure 147. Sharp Lip Inlet Static Performance

The auxiliary inlets and the 40° droop lip were also effective. The 40° droop lip exhibited separation and a resultant performance drop at the higher angles of attack. The auxiliary inlets improve the performance almost as much as the 40° droop lip at lower angles of attack, but the performance falls off more quickly as angle of attack is increased.

Incorporating both auxiliary inlets and droop lips on the same configuration did not result in an additive perforamcne increment. Although performance was significantly increased over the baseline, the droop lip alone performed better than the combination, Figure 149. The recovery of the droop lip configuration is high enough that opening the auxiliary inlets actually results in reduced performance. This is a direct result of the inherent flow characteristics of the individual auxiliary inlets.

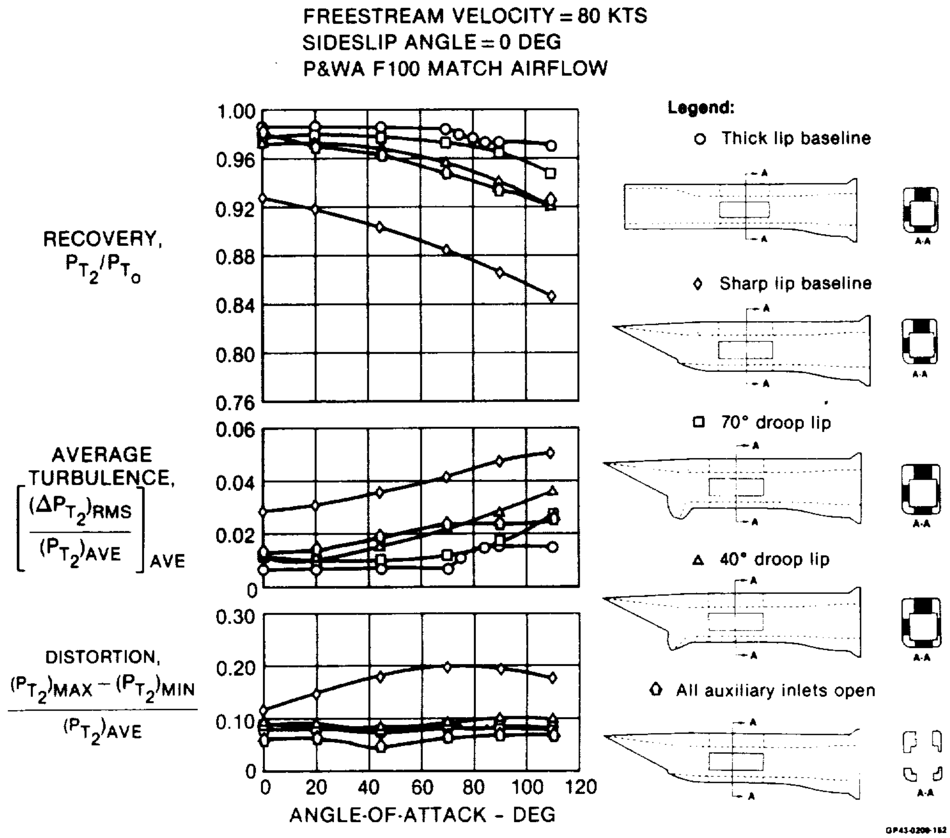

Figure 148. Performance of Flow Improvement Devices

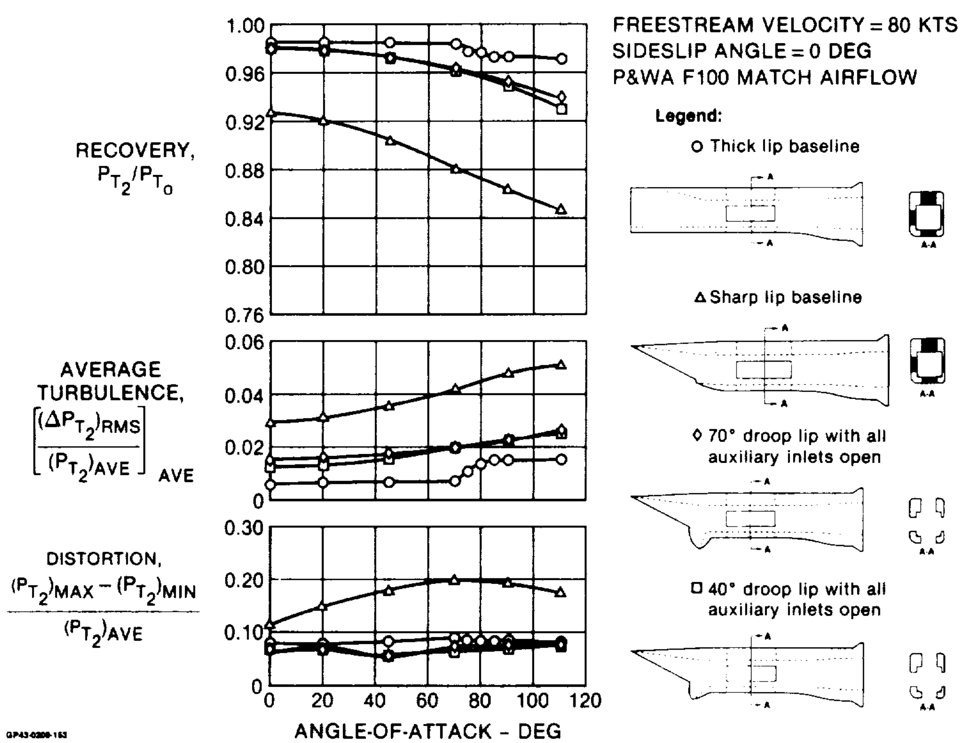

Figure 149. Performance of Drooped Lips With All Auxiliary Inlets Open

The drooped/translated lip showed a similar performance trend, i.e., the performance of the basic drooped lip configuration was degraded, Figure 150, as the lip was translated forward. This was a directed result of the flow separating over the main inlet knee which was exposed as the lip was translated forward. Again the performance of the droop lip is sufficiently high that any losses associated with a companion flow improvement concept result in lower total performance.

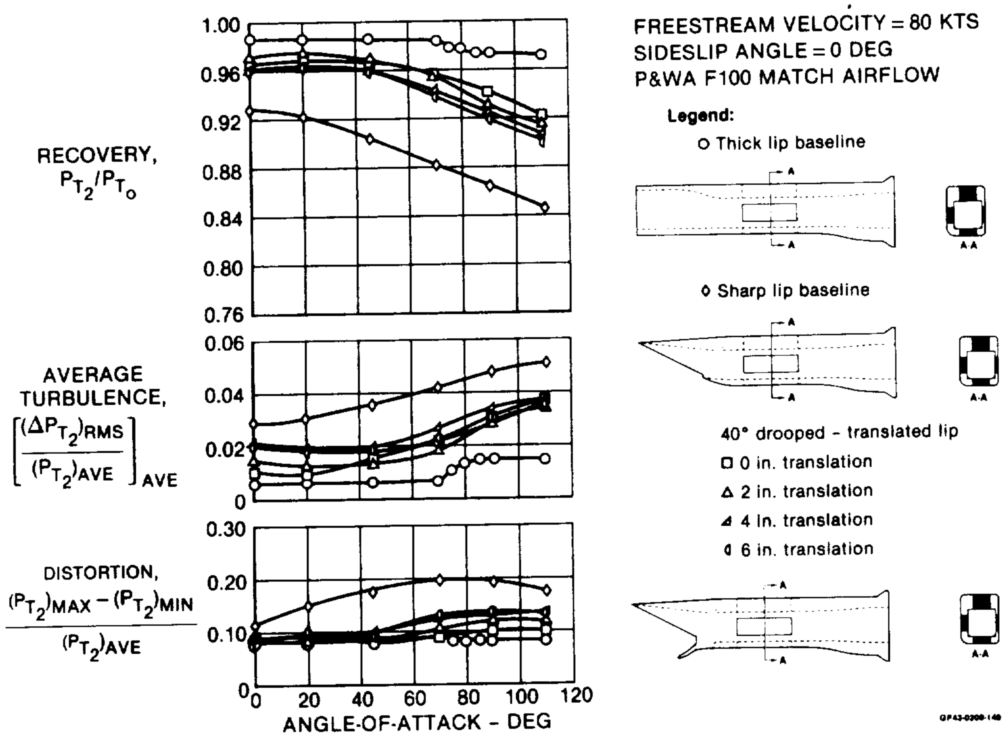

Figure 150. Performance of Translated Lip

7.3 <u>VERTICAL RAMP INLET</u> - The performance of the vertical ramp inlet was identical to the sharp lip configuration at static conditions indicating good data repeatability as there is no physical difference between the two configurations at this flight condition. The performance of the vertical ramp inlet was below the baseline performance at forward speed/angle-of-attack conditions. However, it was improved by both retracted sideplates and auxiliary inlets. Combining the two methods improved the performance over either method used alone, Figures 151 and 152. Sideplate thickness had no effect on the vertical ramp inlet performance.

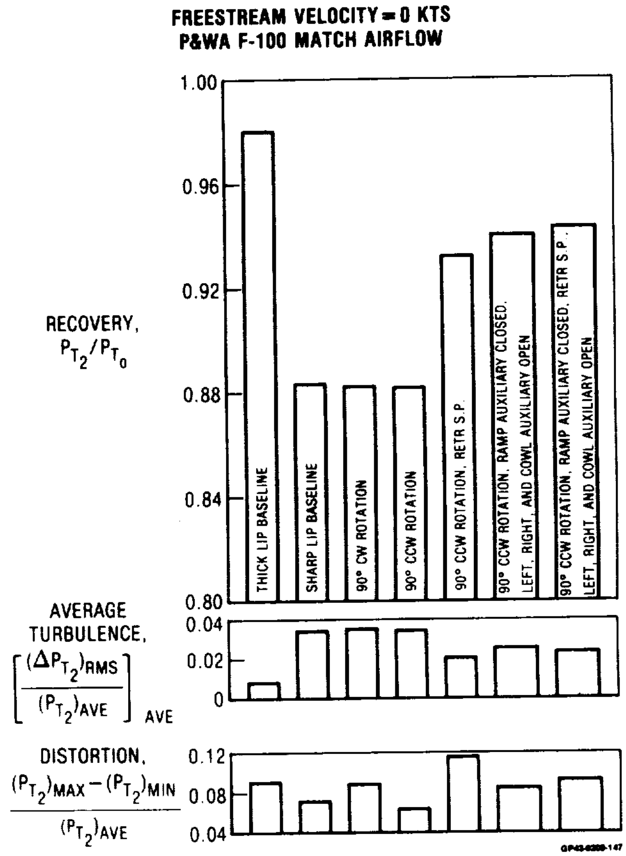

Figure 151. Vertical Ramp Inlet Static Performance

Additional improvements in the vertical ramp configuration may be attainable. A refined windward lip shape could significantly improve angle of attack performance. Further increases in angle of attack performance could also be obtained by leaving the top sideplate in place to provide angle of attack shielding much like a leading edge extension.

7.4 <u>DISTORTION COMPARISON</u> - The inlet configurations are compared based on the Pratt and Whitney steady state and dynamic distortion parameter K_{a2}. The calculations were performed at MCAIR using test data and MCAIR statistical peak dynamic distortion prediction procedures. The NASA LeRC engine face rake contained 144 steady state total pressure probes and 8 dynamic pressure probes. The pressure data were interpolated to get radial values corresponding to an equal area weighted 48 probe rake. Adjacent steady state probes were interpolated along each leg. The seven working dynamic probes were linearly interpolated along the 4 legs on which they are located. The values at each radius were then interpolated to obtain values for the other four legs. Thus, the computed dynamic distortion values are a function of the interpolated dynamic pressures and are assumed to be qualitatively correct, but should not be compared rigorously to other test data because of the significant interpolation, both radial and circumferential, applied to the original data.

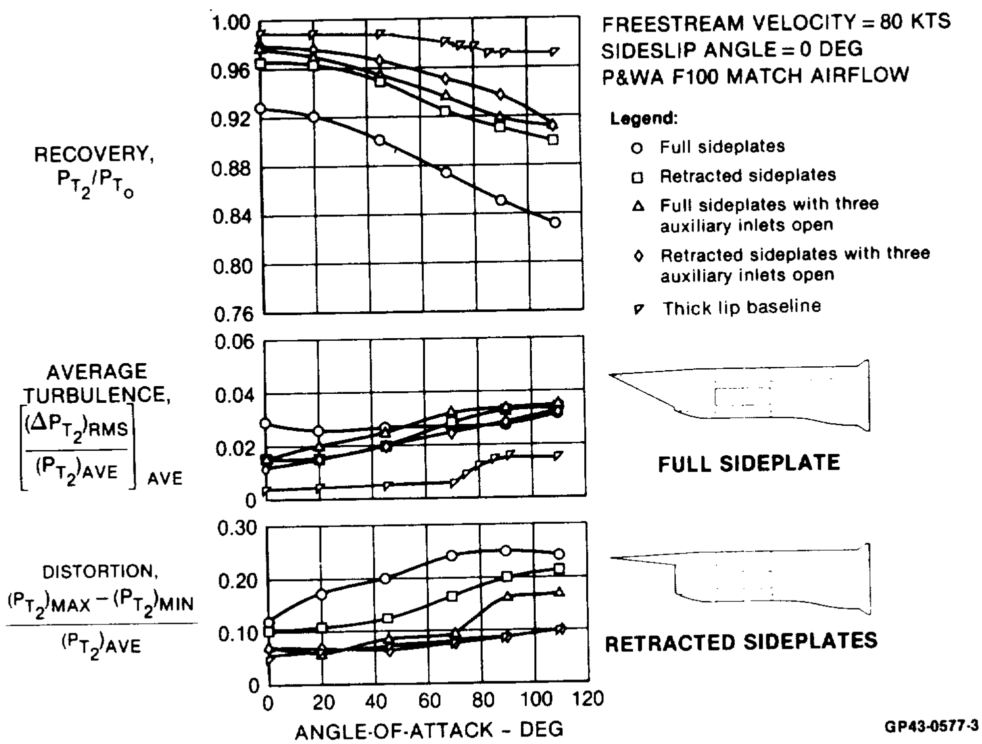

Figure 152. Effect of Retracted Sideplates and Auxiliary Inlets on Vertical Ramp Inlet Performance

The trend in the distortion values follow the previously established recovery characteristics, Figures 153 and 154. The 2-D sharp lip baseline along with the vertical ramp baseline are over the distortion limit at 70 degrees angle of attack and 80 knots. The 70° droop lip exhibits the lowest distortion levels of all the flow improvement concepts tested. The distortion is slightly above the thick lip baseline configuration. The right auxiliary inlet, i.e., the lowest contraction ratio, raises the thick lip distortion level above the limit for bóth the static and wind on test conditions. The vertical ramp inlet with full sideplates has the highest distortion of all the tested configurations. It is well beyond the distortion limit at 80 knots and 70° angle of attack.

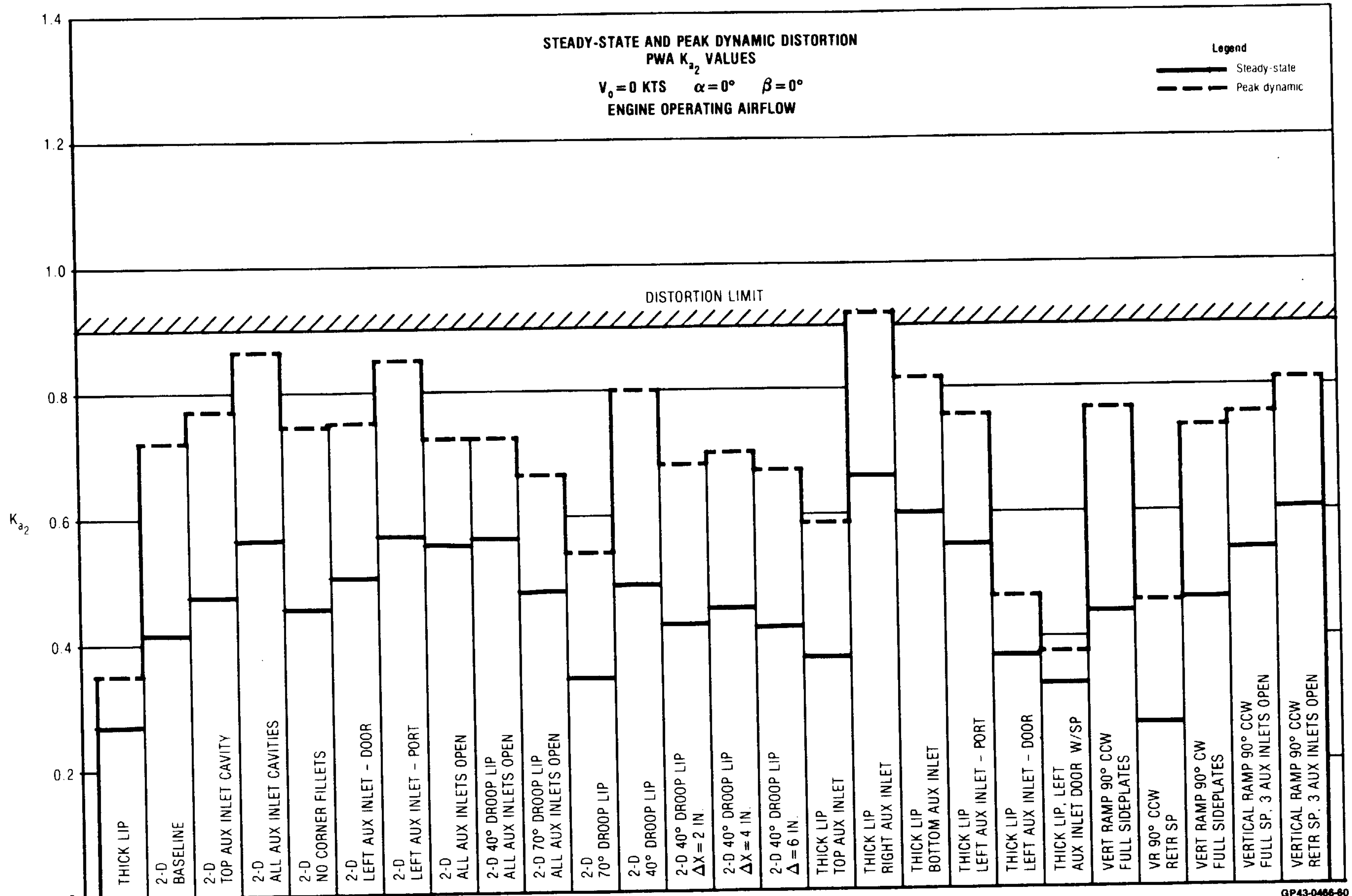

Figure 153. Predicted Prat & Whitney Distortion Values for Static Operation

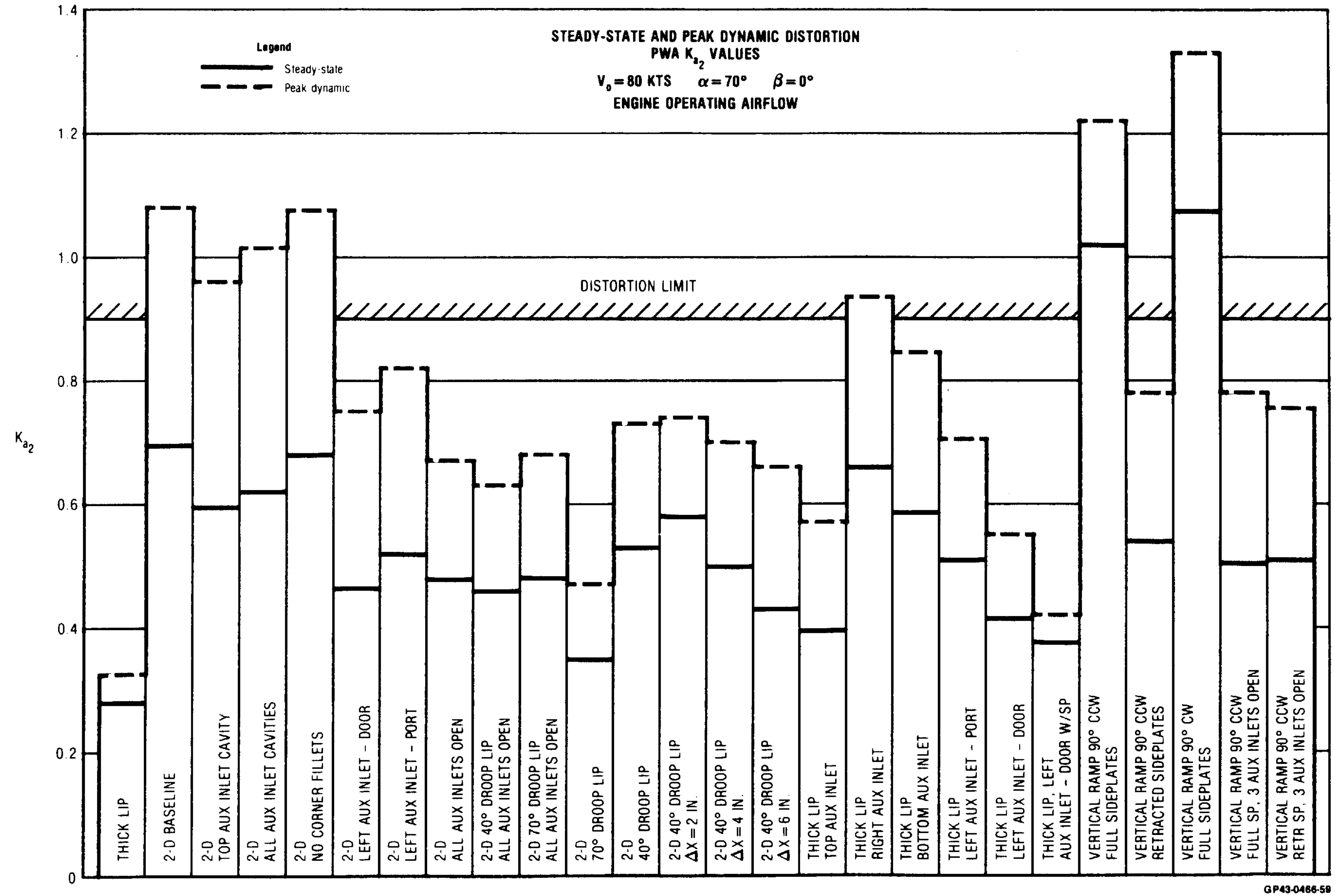

Figure 154. Predicted Pratt and Whitney Distortion Values for Operation at 80 Kts and 70° Angle-of-Attack

8. CONCLUSIONS

Three major inlet configurations, thick lip, sharp lip, and vertical ramp, and several flow improvement concepts were tested from 0 to 120 knots and 0° to 110° angle of attack. Flow improvement concepts included a drooped lip, drooped/translated lip, auxiliary inlets, and retracted sideplates for the vertical ramp configuration. The extensive model instrumentation provided the data necessary for a thorough investigation of the flowfield characteristics of both the inlet configurations and the flow improvement concepts. The major conclusions drawn from the test data are summarized below.

DROOP LIPS

The droop lip was the single most effective flow improvement device over the entire angle-of-attack and Mach number range tested. It increased performance to a level approaching the thick lip inlet over the entire test matrix. The distortion levels were decreased to a value well below the engine distortion limit.

Translating the 40° droop lip decreased performance by introducing separation over the main inlet element or "knee". However, distortion was decreased as the translation distance was increased.

The drooping cowl lip provides a supersonic inlet configuration that satisfies the unique low speed supersonic V/STOL performance requirements and still provides high inlet system performance at supersonic speeds.

Using auxiliary inlets in combination with a droop lip is impractical. The 70° droop lip performance decreased and distortion increased. The 40° droop lip showed some improvement but not enough to justify the weight and complexity of incorporating both systems on one inlet design.

AUXILIARY INLETS

Auxiliary inlets improve low speed and static performance. Statically, the auxiliary inlets can match the performance of the droop lip. However, at wind-on and angle-of-attack conditions auxiliary inlet performance drops off relative to the droop lip.

Performance of auxiliary inlets is a strong function of inlet contraction ratio.

Using internal doors and sideplates to direct auxiliary inlet airflow improves performance and decreases the distortion compared to a more simple port design.

VERTICAL RAMP INLET

Vertical ramp inlet performance was substantially improved using retracted sideplates and auxiliary inlets. Both concepts reduced the distortion level below the limit value.

Design refinements aimed at improving the vertical ramp inlet system performance include an extended upper sideplate for angle of attack shielding, an elliptical lip shape, and incorporation of a droop lip on the windward side of the inlet at the highlight.

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NASA CR-174945

RESEARCH ON A TWO-DIMENSIONAL INLET FOR A SUPERSONIC V/STOL PROPULSION SYSTEM

APPENDIX A

BY J.L. MARK, M.A. McGARRY AND P.V. REAGAN

MCDONNELL AIRCRAFT COMPANY
MCDONNELL DOUGLAS CORPORATION

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NASA LEWIS RESEARCH CENTER
CONTRACT NAS3-22158

NASA CR-174945

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APPENDIX A
BASIC DATA PLOTS

This appendix contains the basic performance data for the 26 different inlet configurations that were tested. The data include recovery, turbulence, and distortion as a function of inlet mass flow ratio. In addition, summary performance data as a function of angle of attack and freestream velocity are also presented for selected configurations. Details of the inlet flow-field are illustrated by the cowl lip static and total pressure distributions.

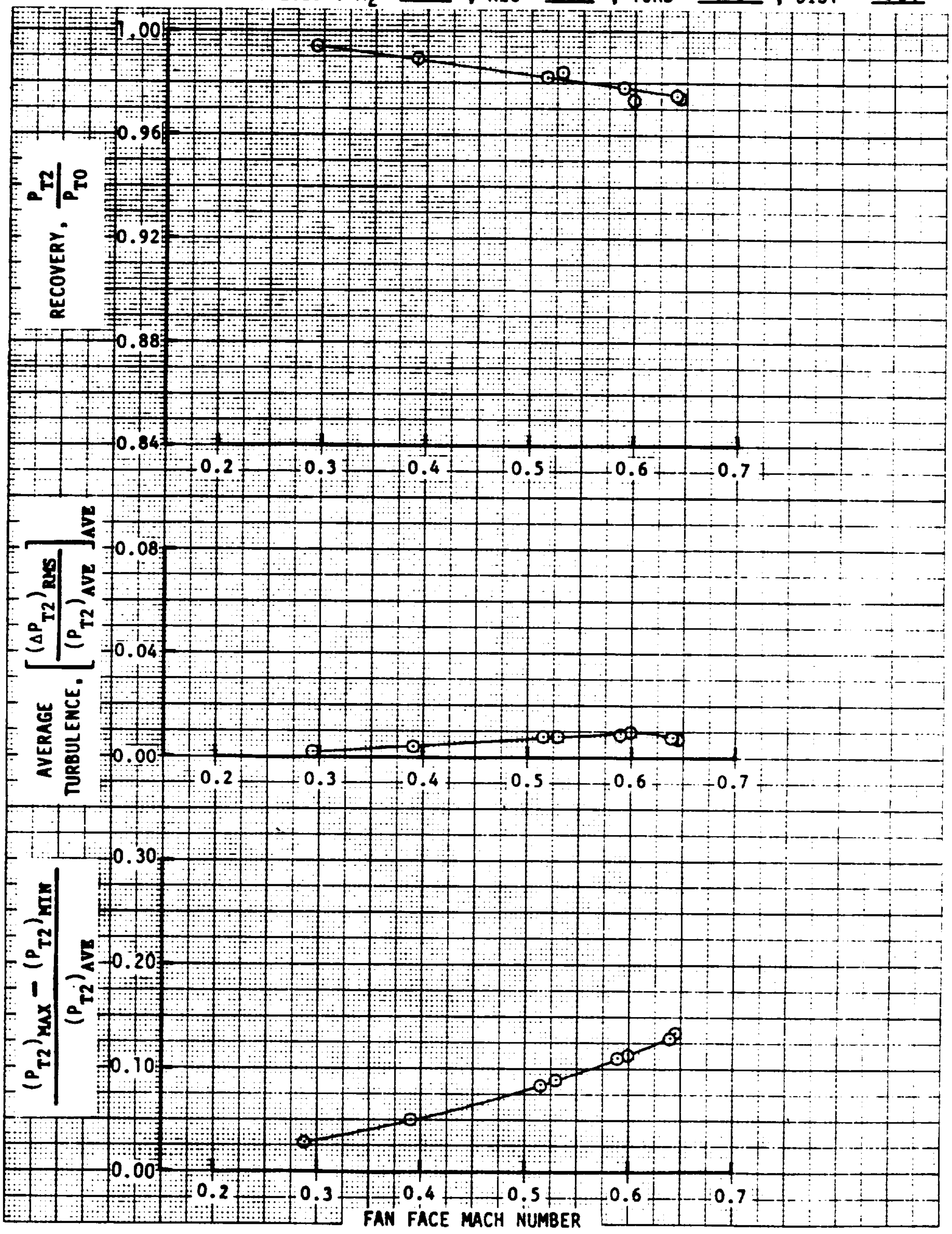
For the static performance data presented in the appendix, the angle of attack is specified as 20°. This reflects the true position of the model support during the static testing. However, for static conditions, an angle of attack callout has no physical meeting.

The performance data are organized as a function of inlet configuration as indicated in Table I.

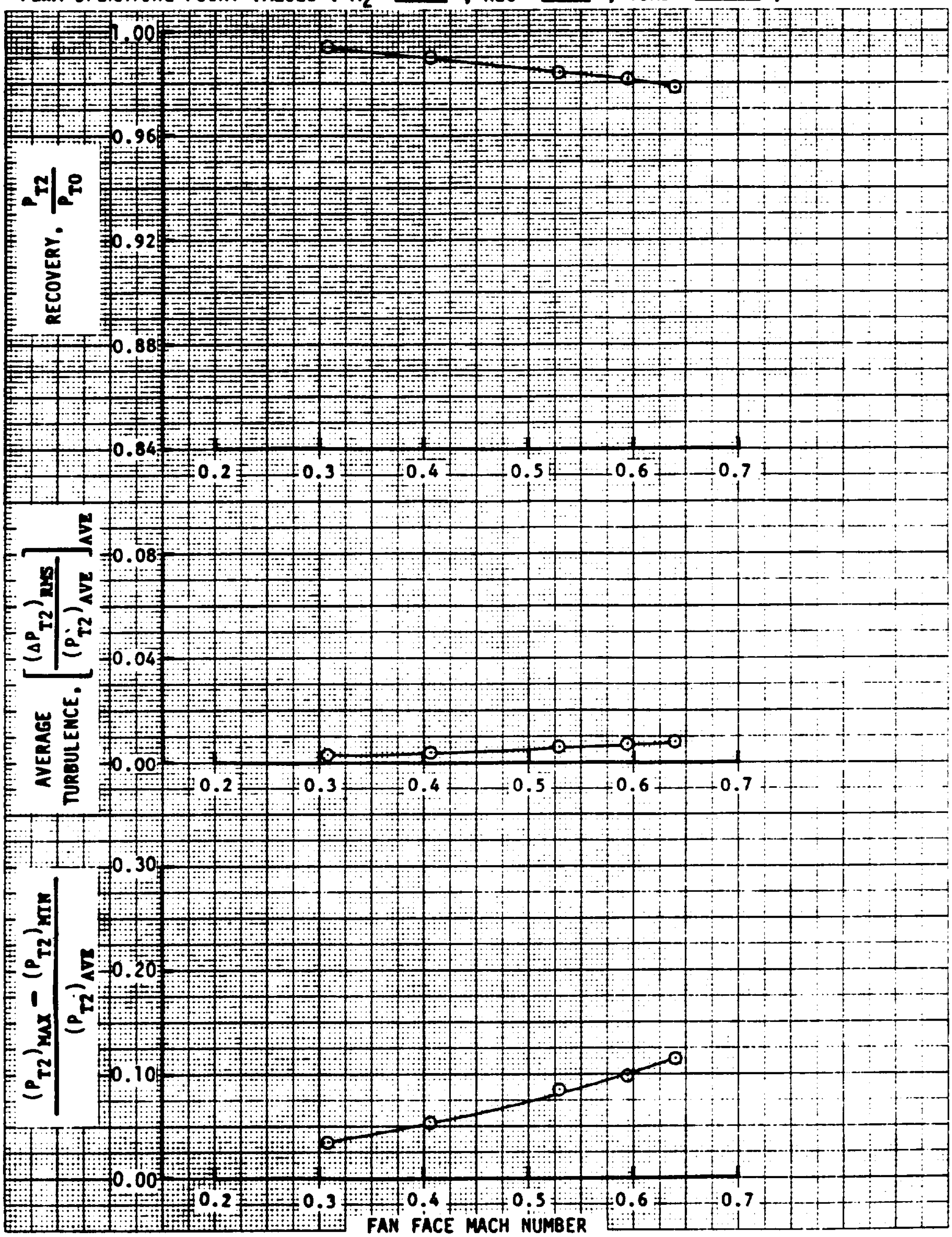
TABLE 1. LIST OF INLET CONFIGURATIONS

TABLE 1. LIST OF INLET CONFIGURATIONS (Continued)

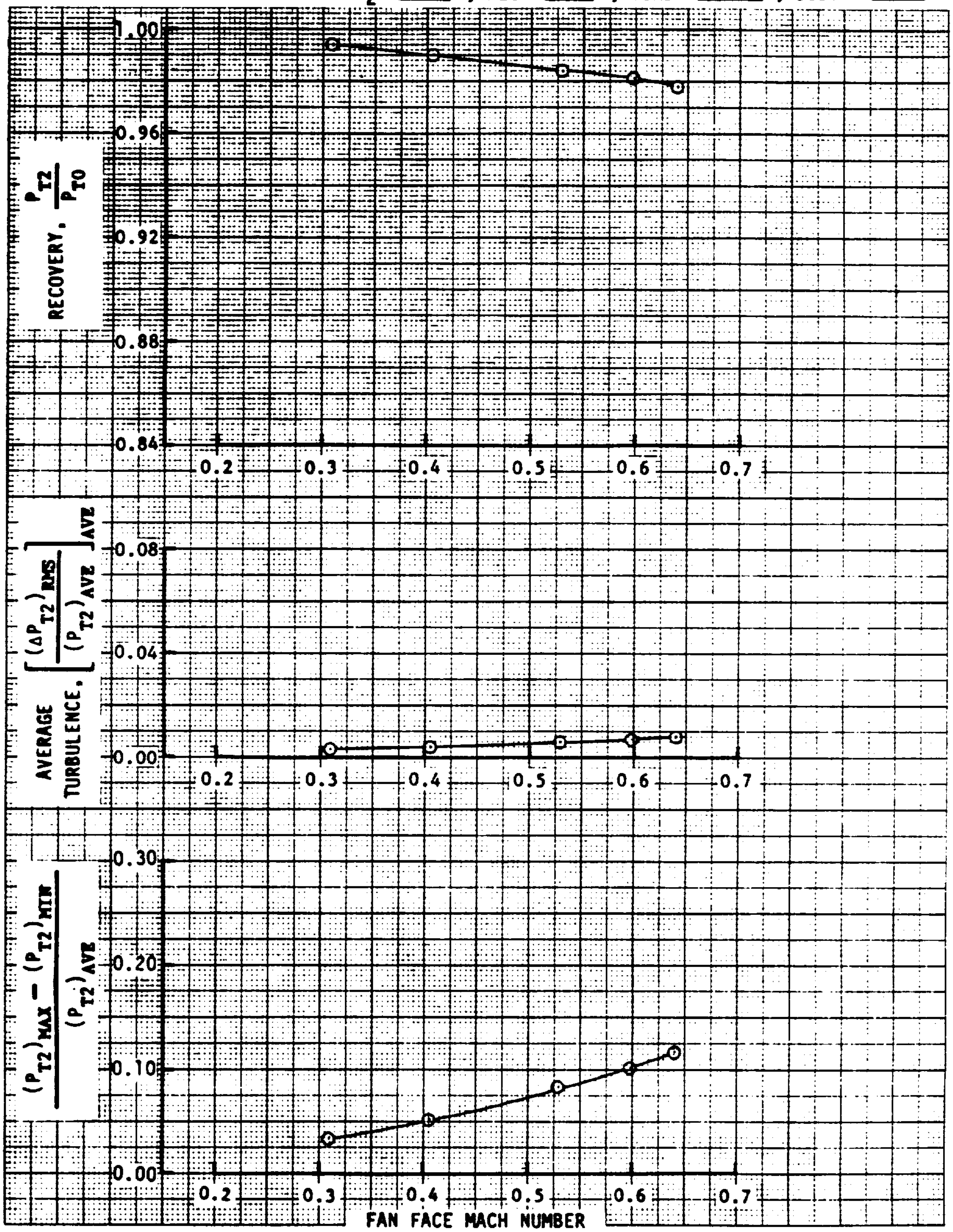
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2369-2376
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .008 ; DIST= .089



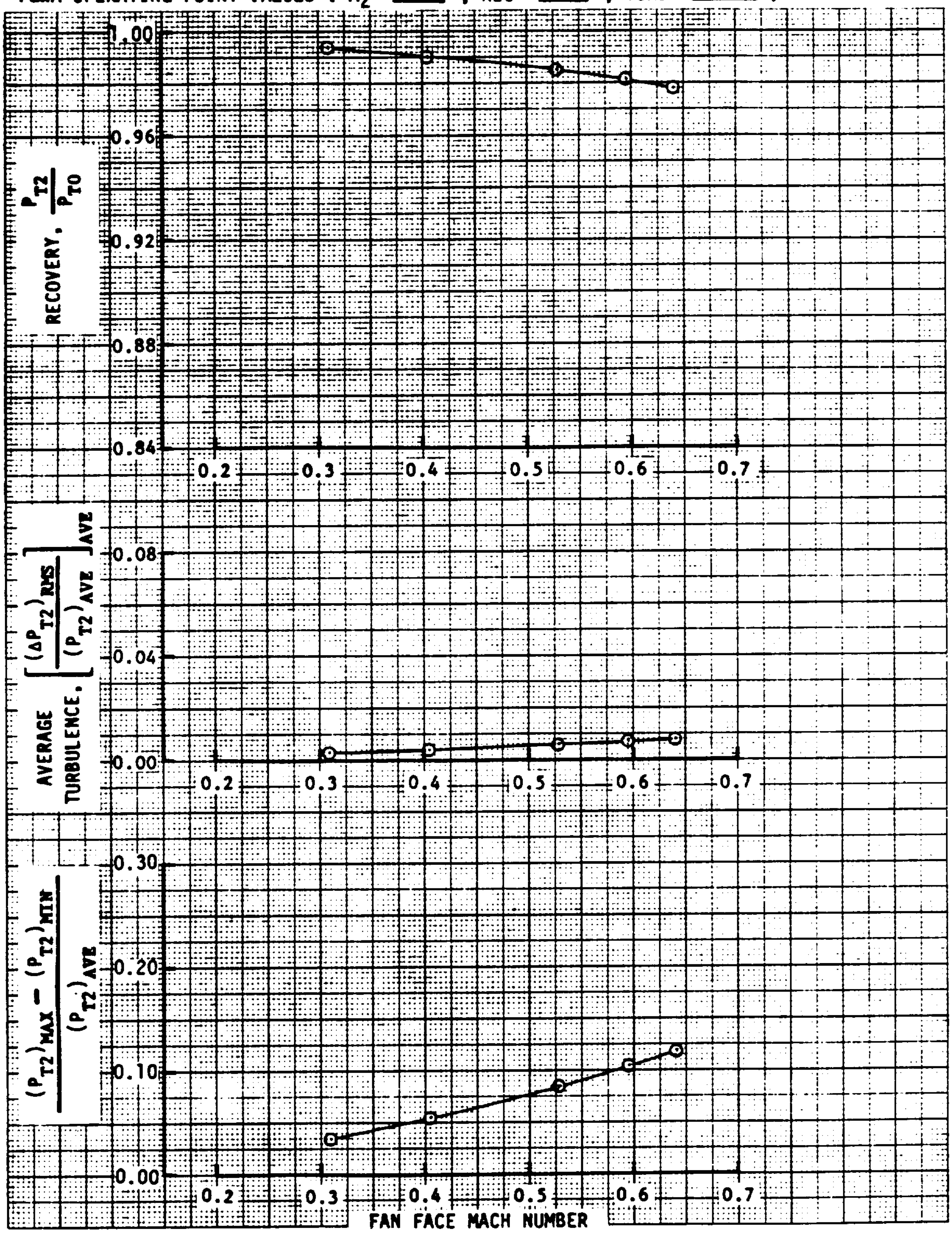
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2377-2381
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .006 ; DIST= .082



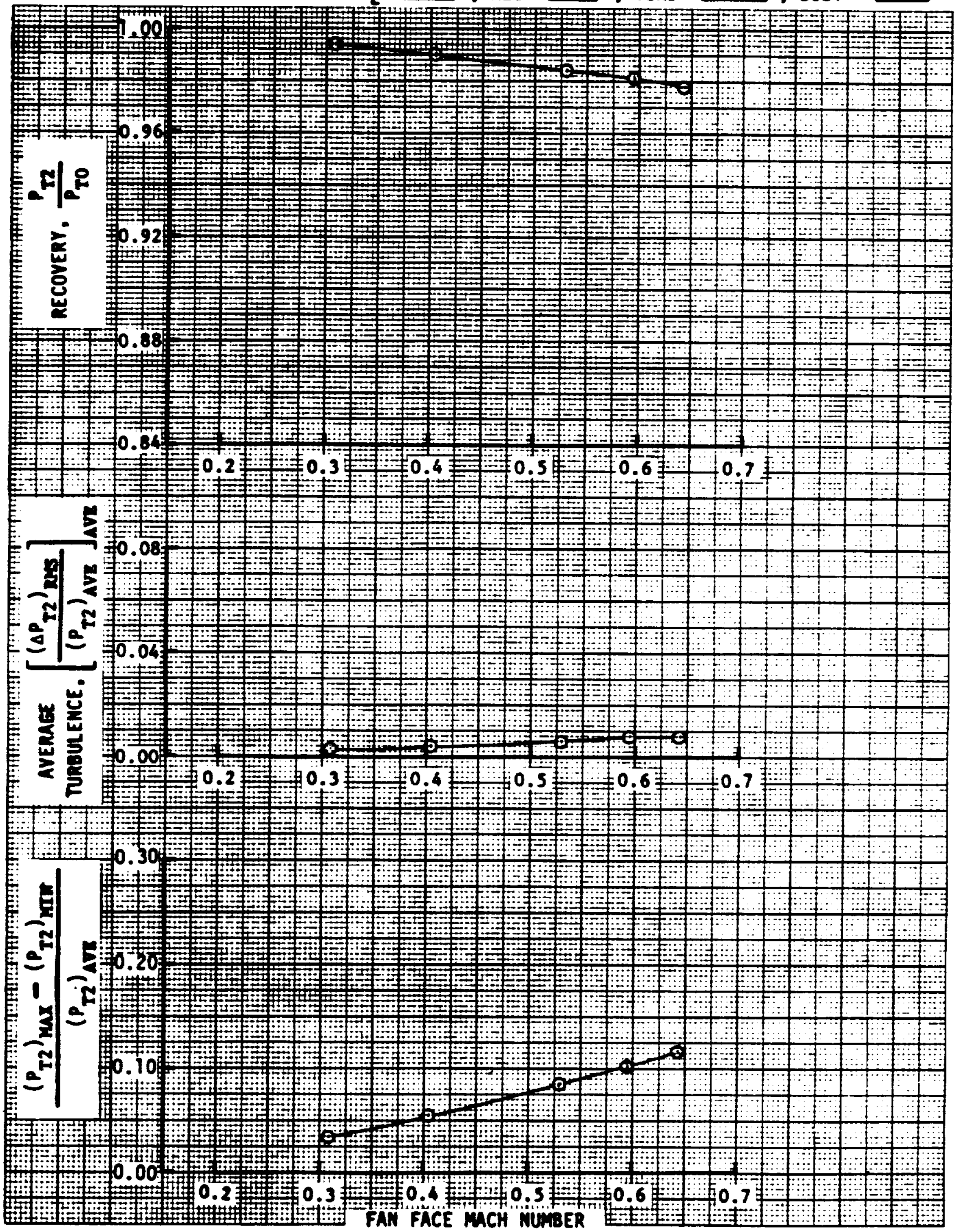
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2382-2387
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .006 ; DIST= .083



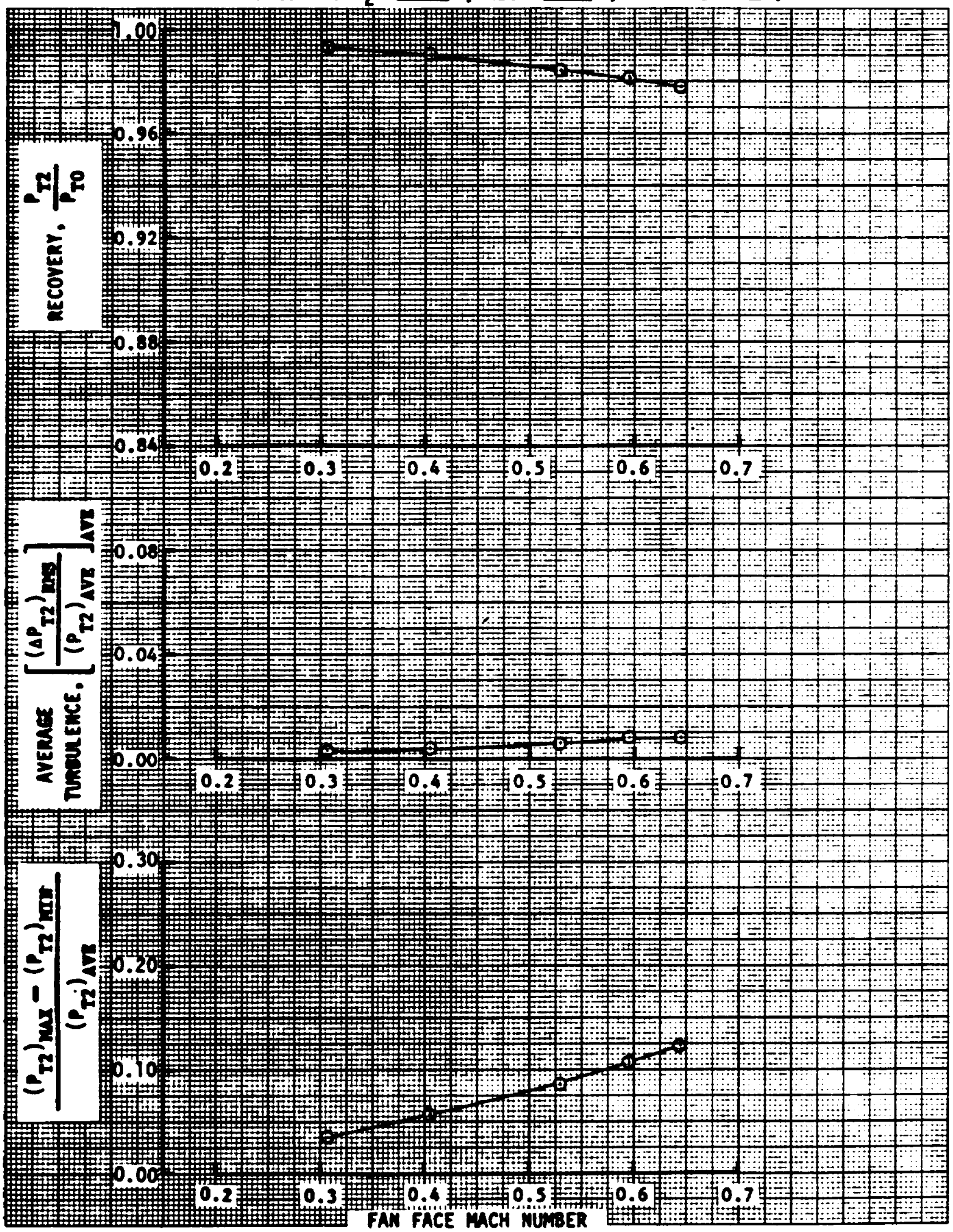
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2388-2392
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .985 ; TURB= .006 ; DIST= .085



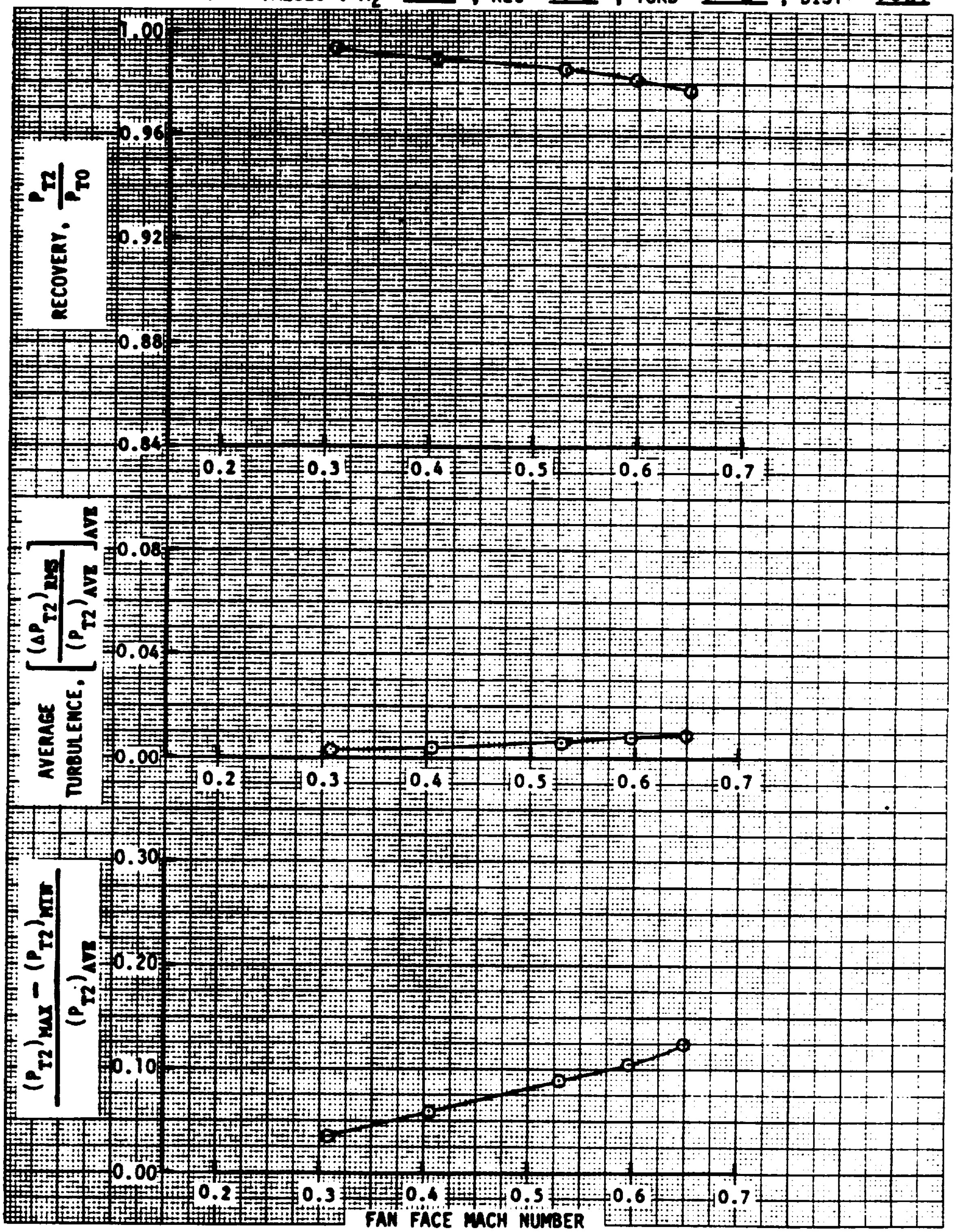
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2393-2397
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .006 ; DIST= .085



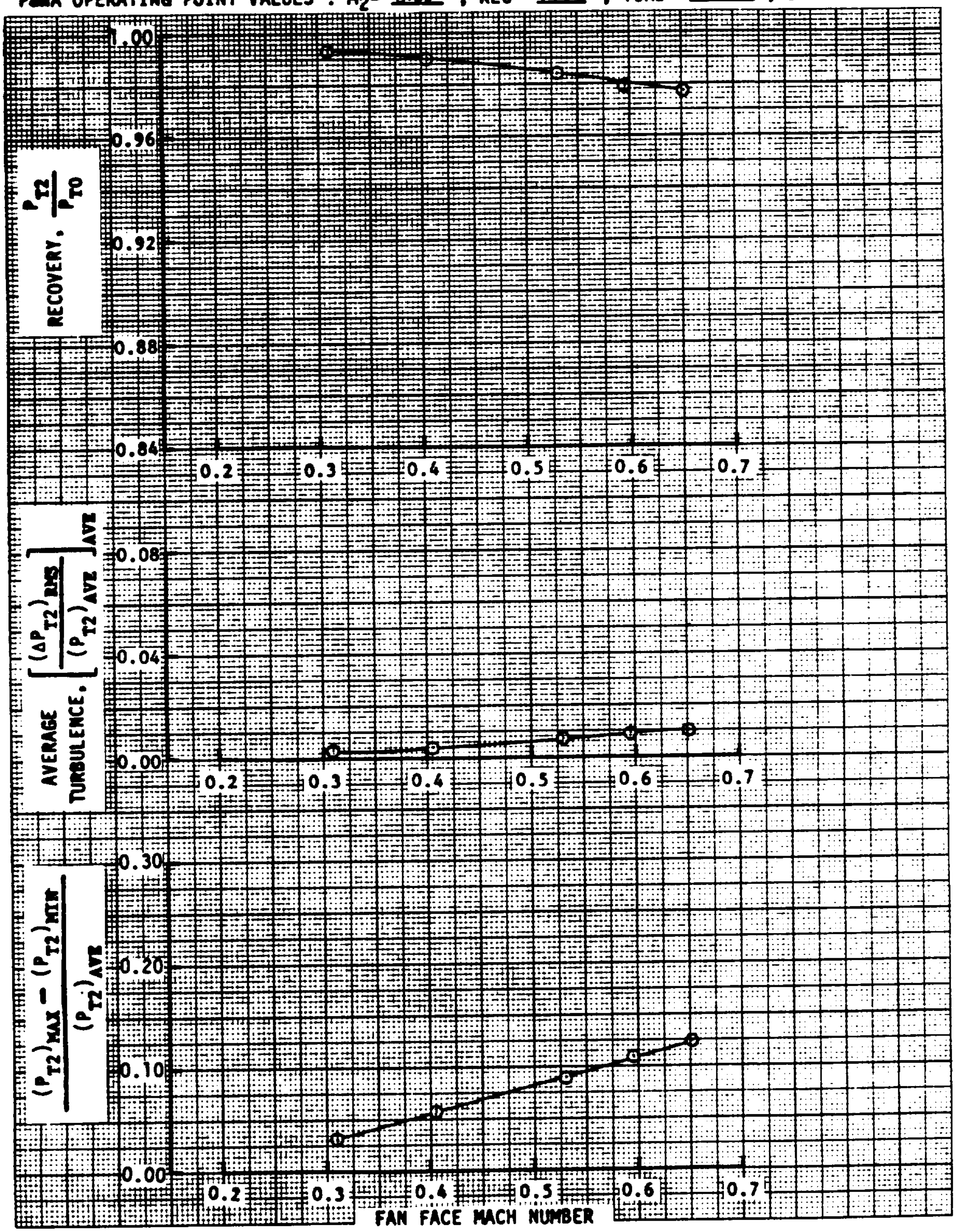
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2398-2402
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .006 ; DIST= .087



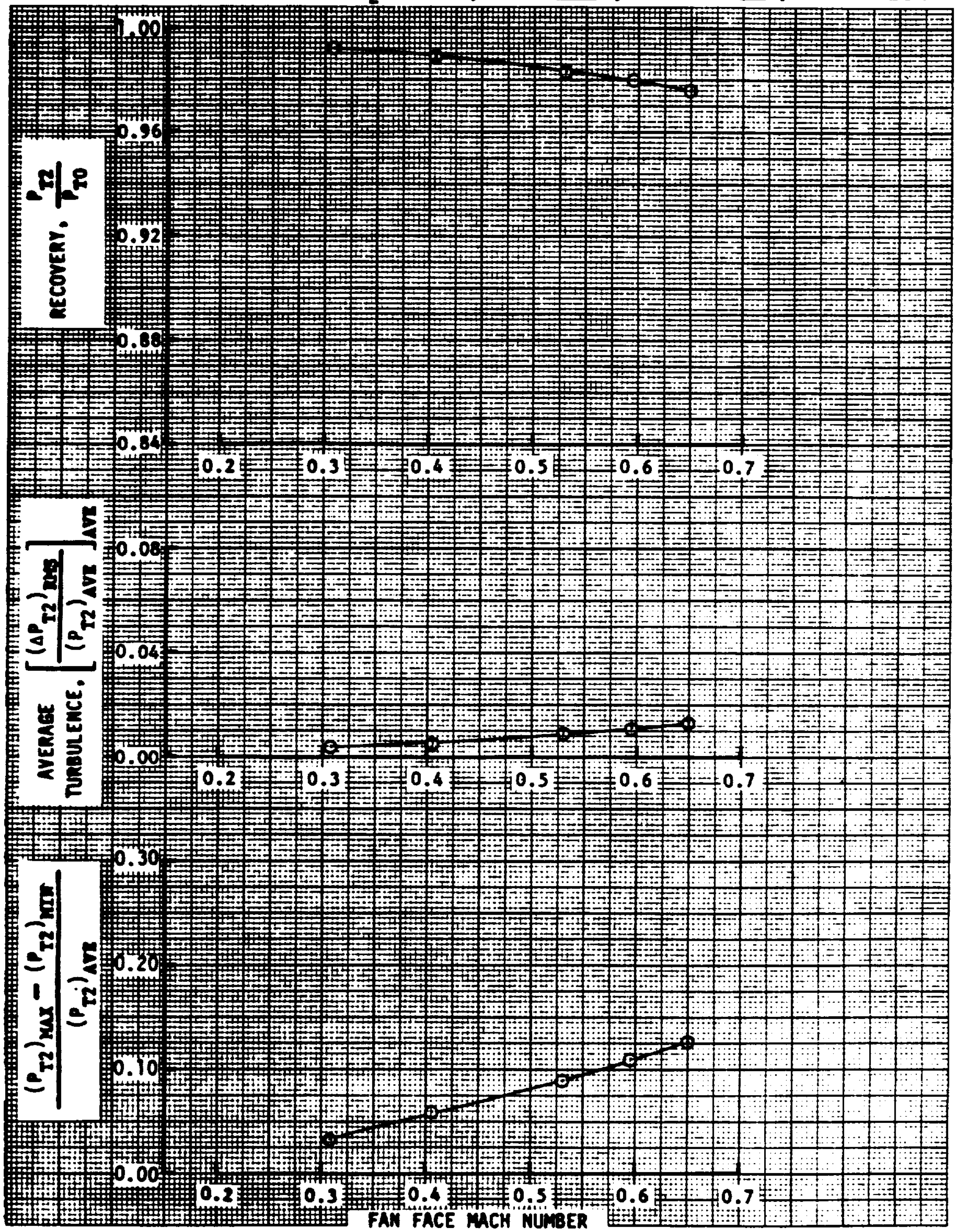
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2403-2407
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 95 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .985 ; TURB= .006 ; DIST= .089



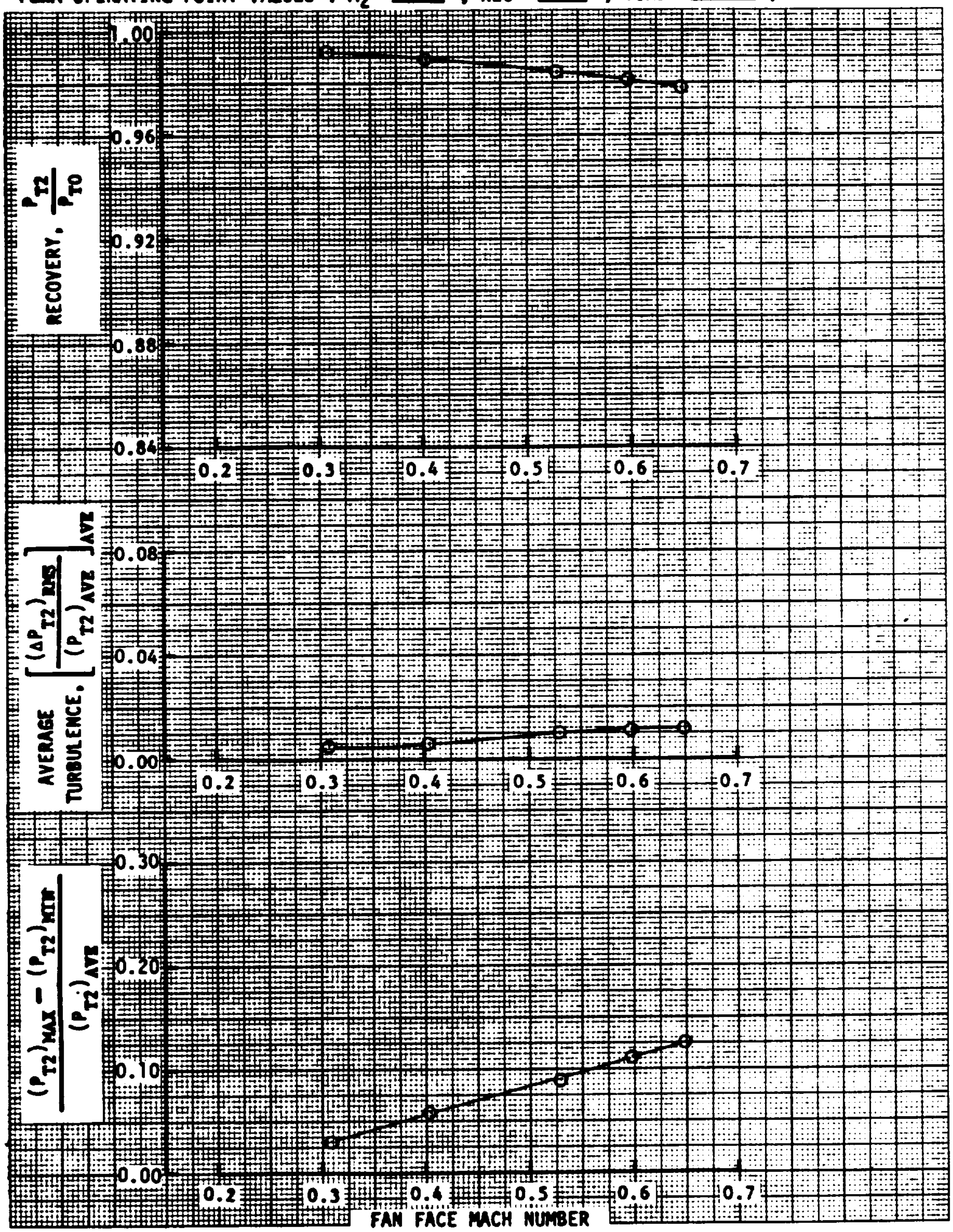
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2408-2412
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 100 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .007 ; DIST= .090



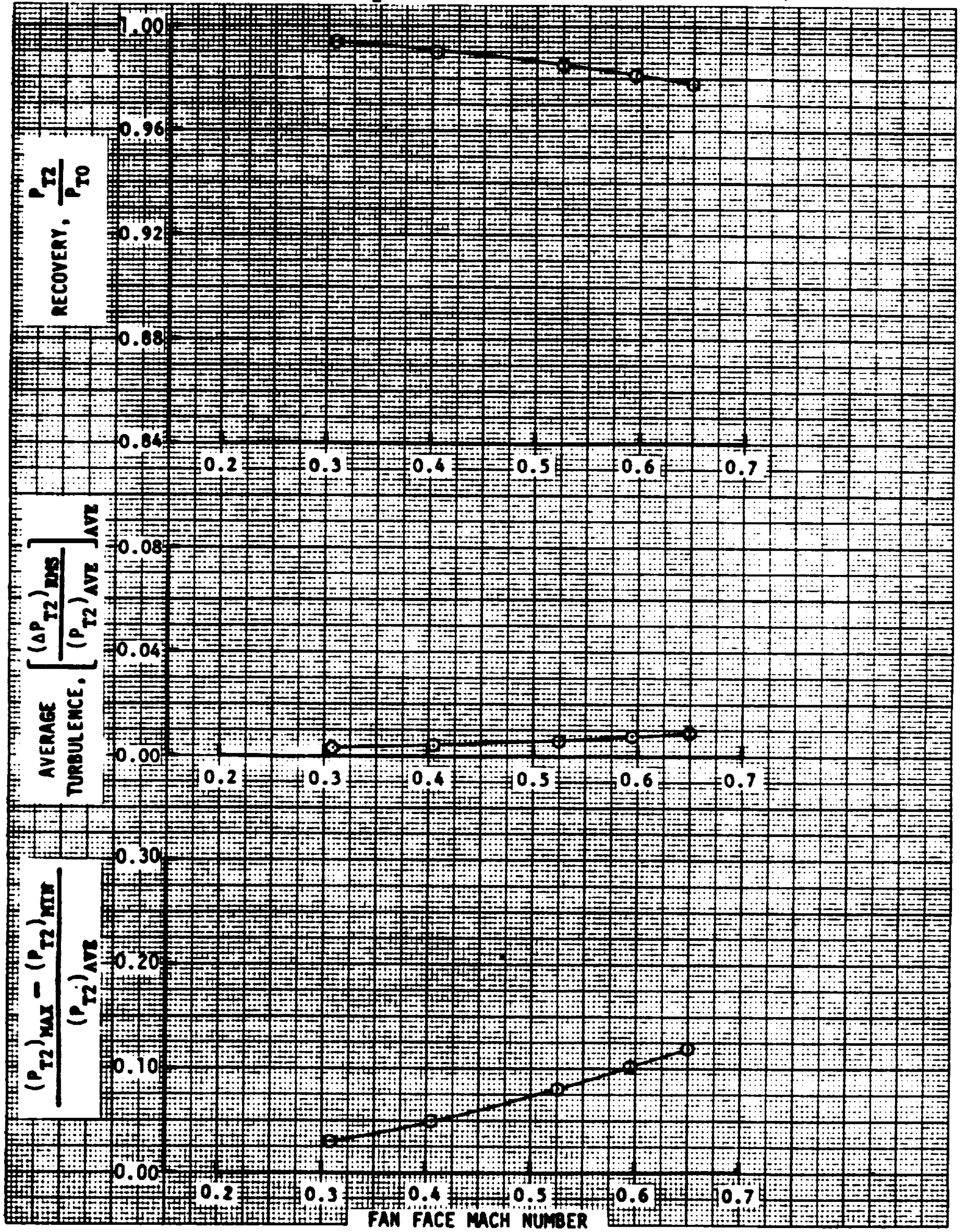
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2413-2417
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 105 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .009 ; DIST= .089



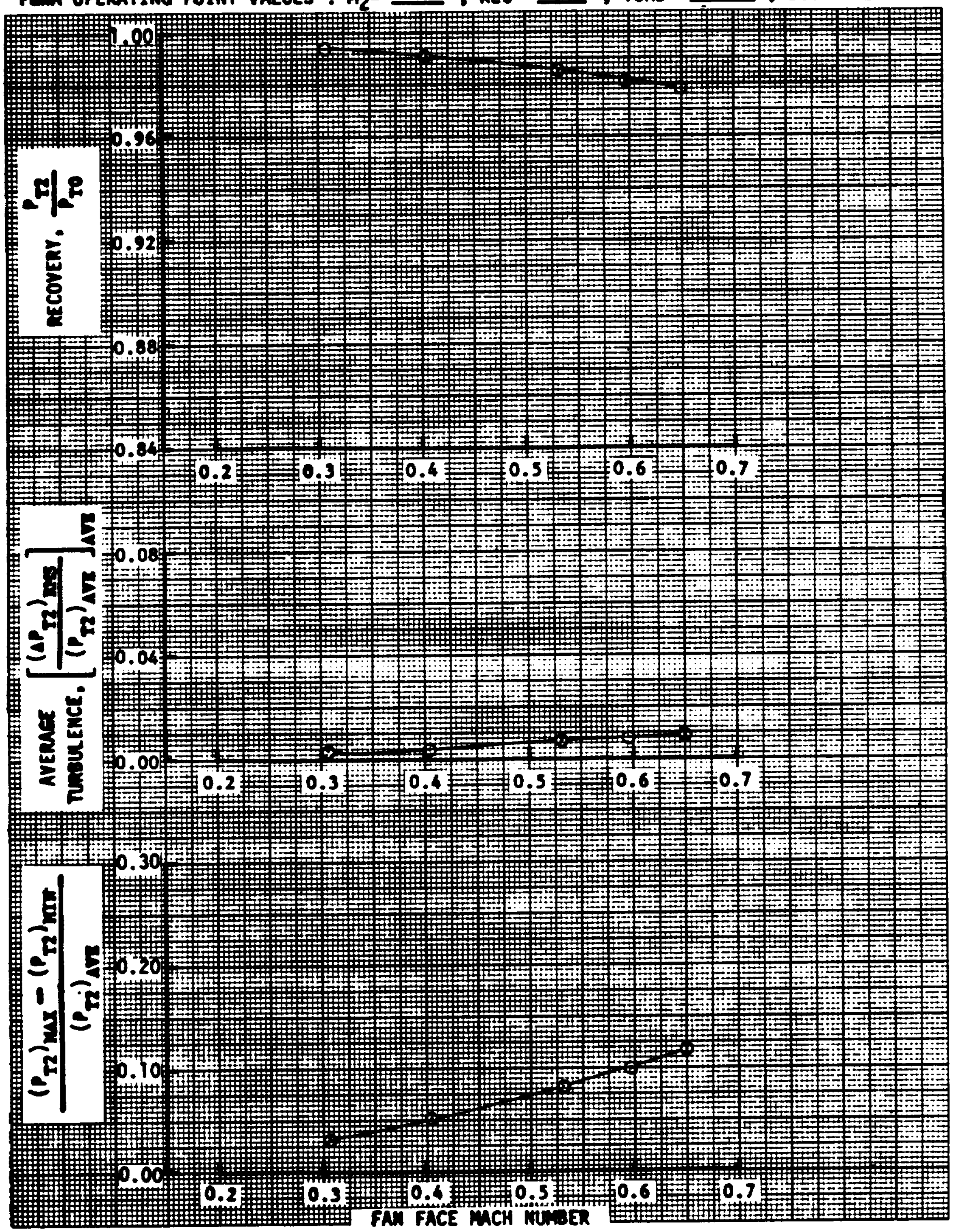
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2418-2422
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .010 ; DIST= .091



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2423-2427
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .985 ; TURB= .006 ; DIST= .082



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2428-2432
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .985 ; TURB= .007 ; DIST= .082



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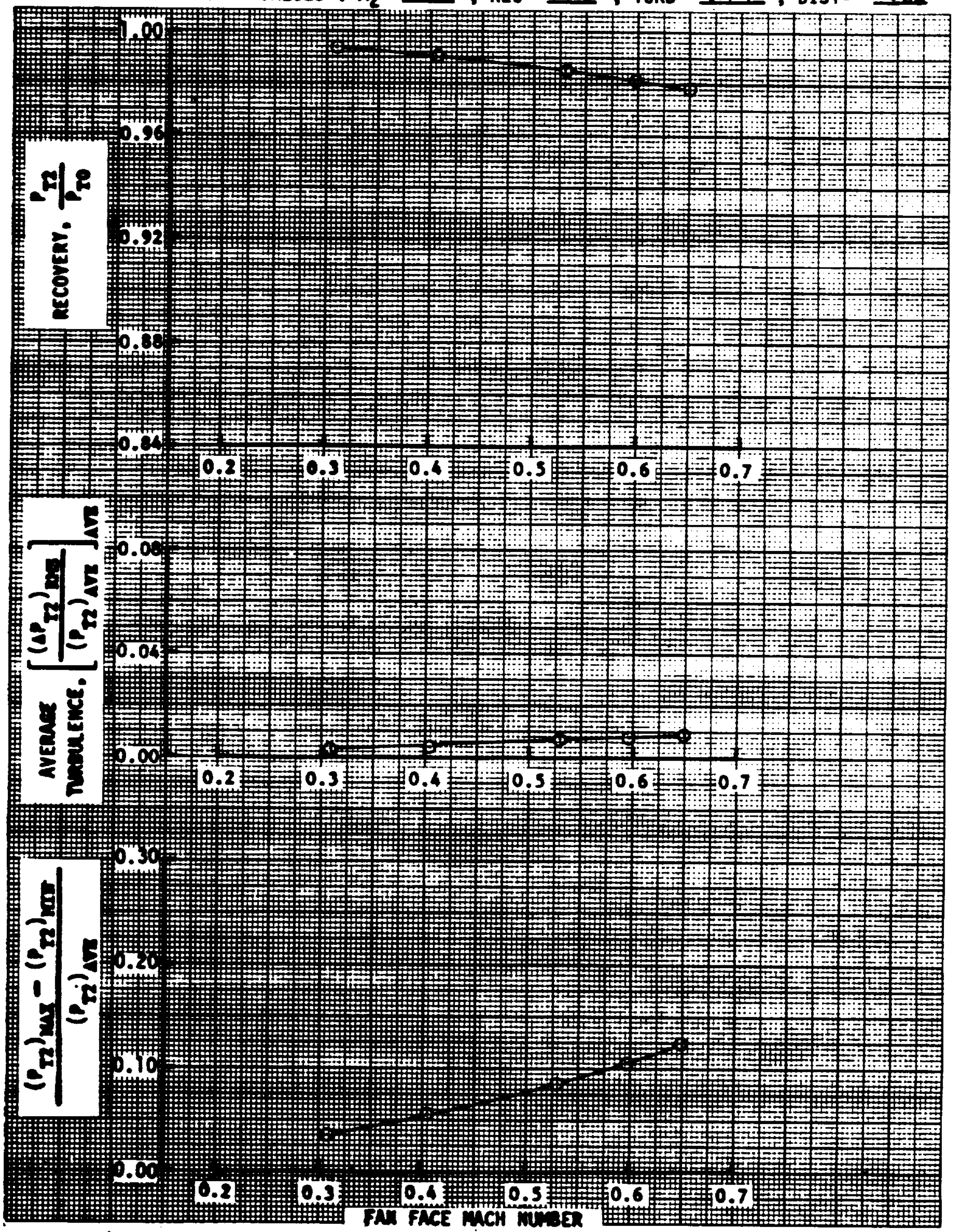
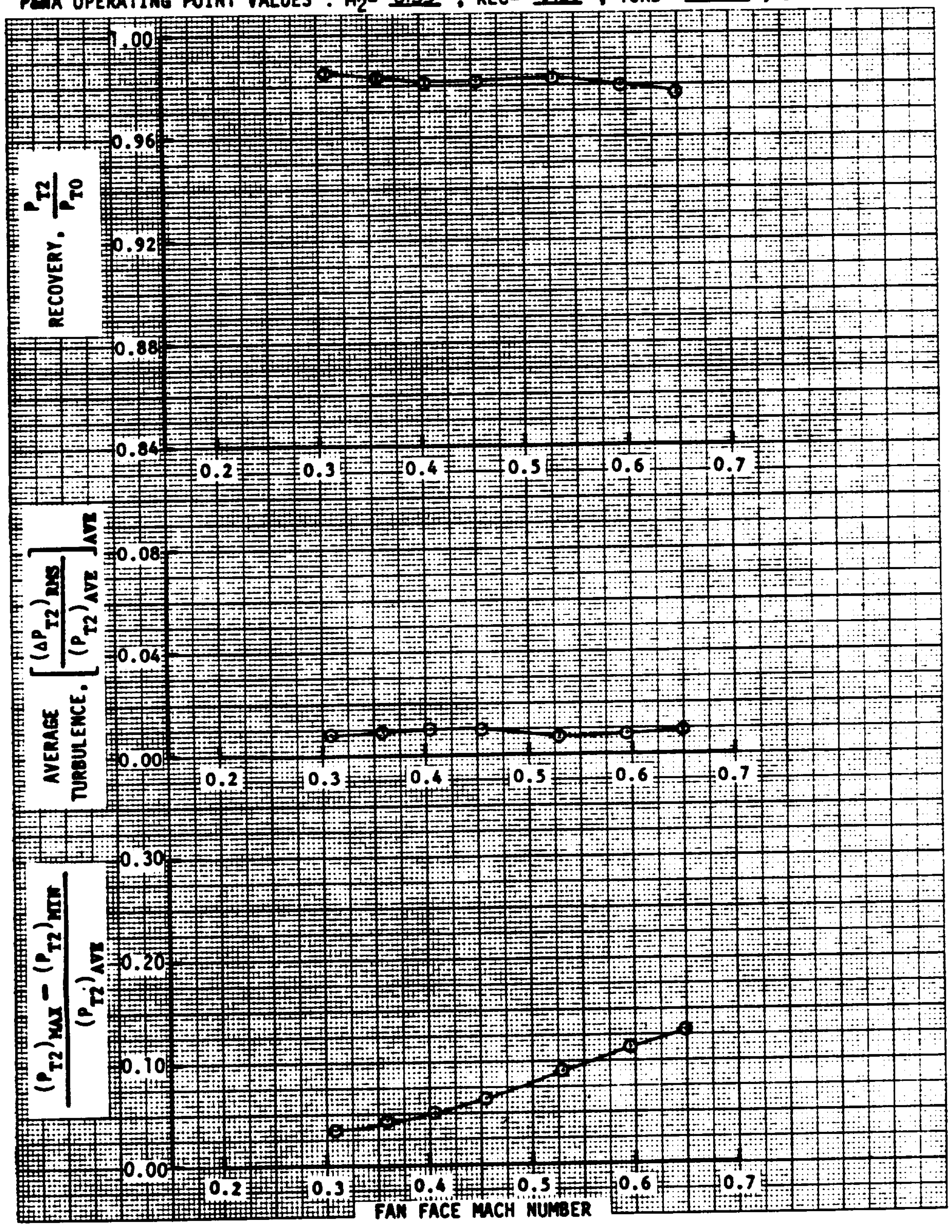
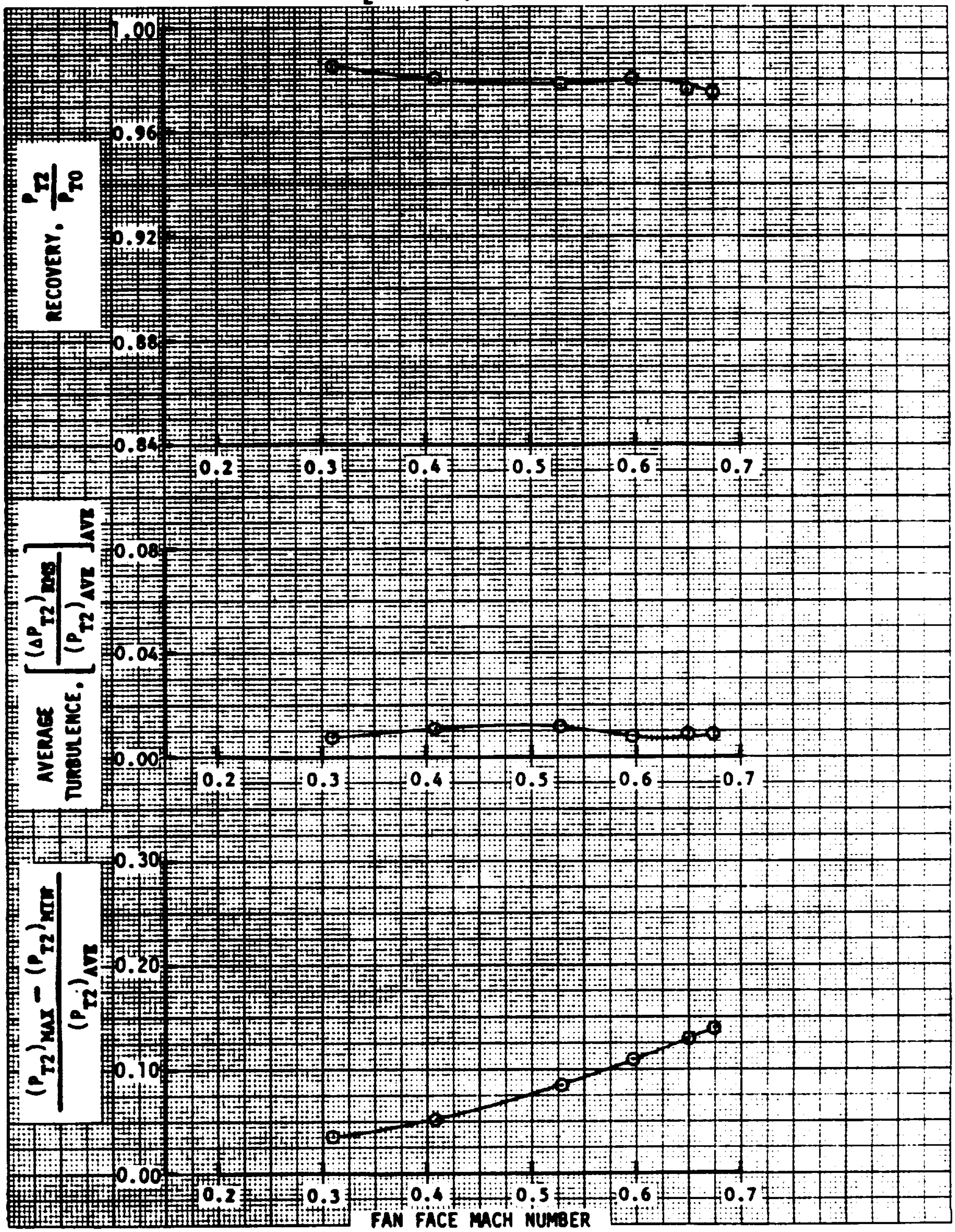
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2433-2437
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .985 ; TURB= .007 ; DIST= .086



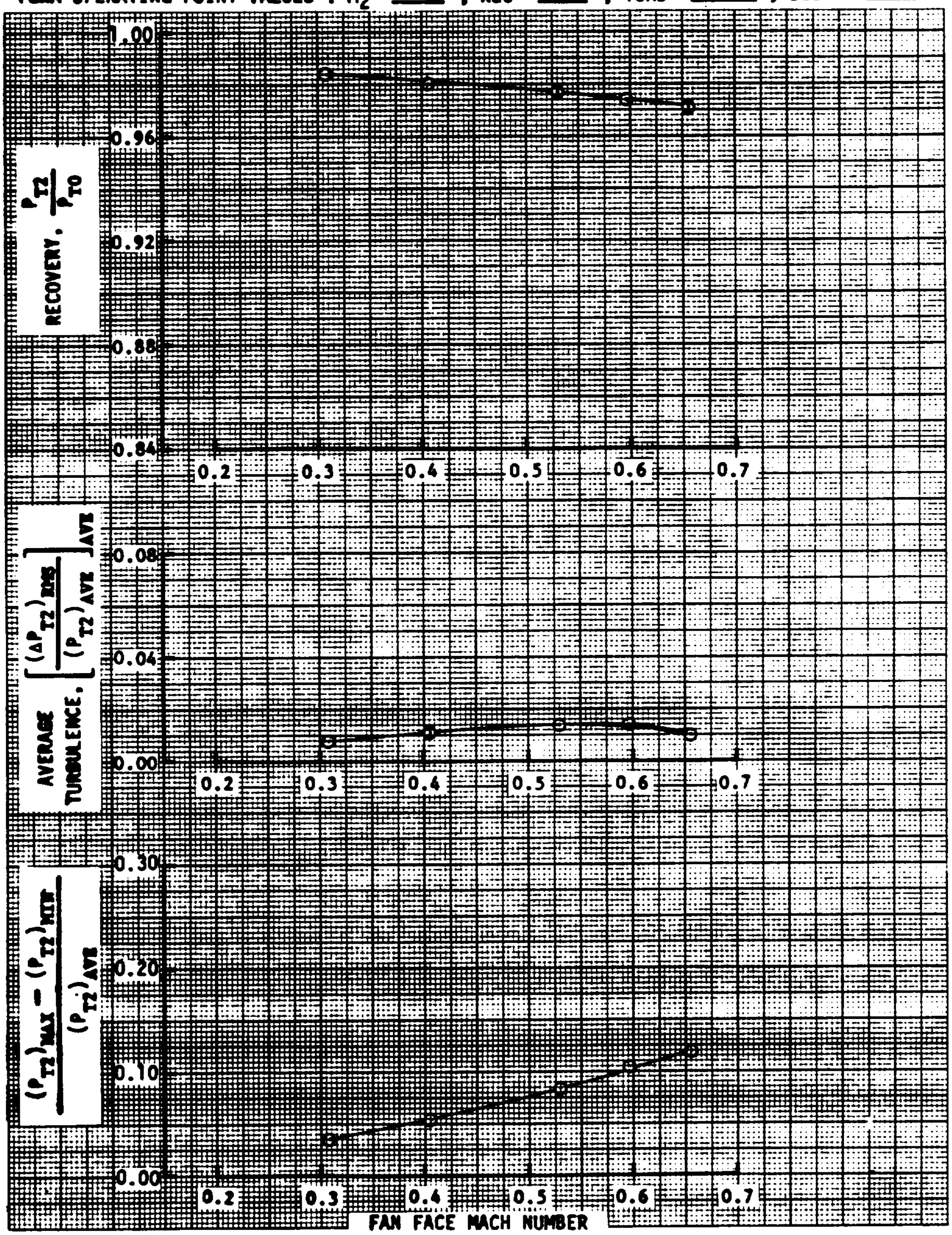
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2438-2444
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .007 ; DIST= .091



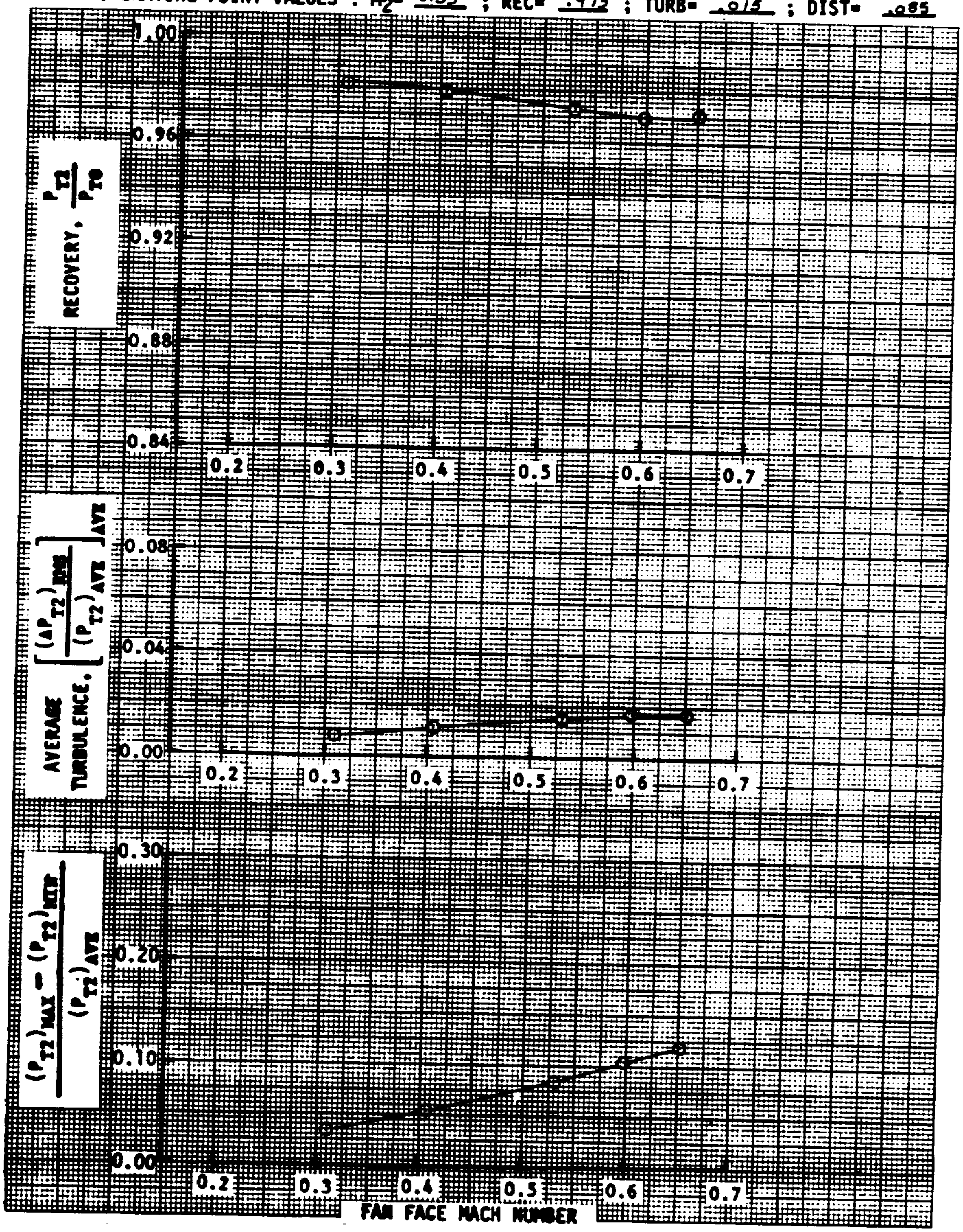
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2445-2450
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 75 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .011 ; DIST= .086



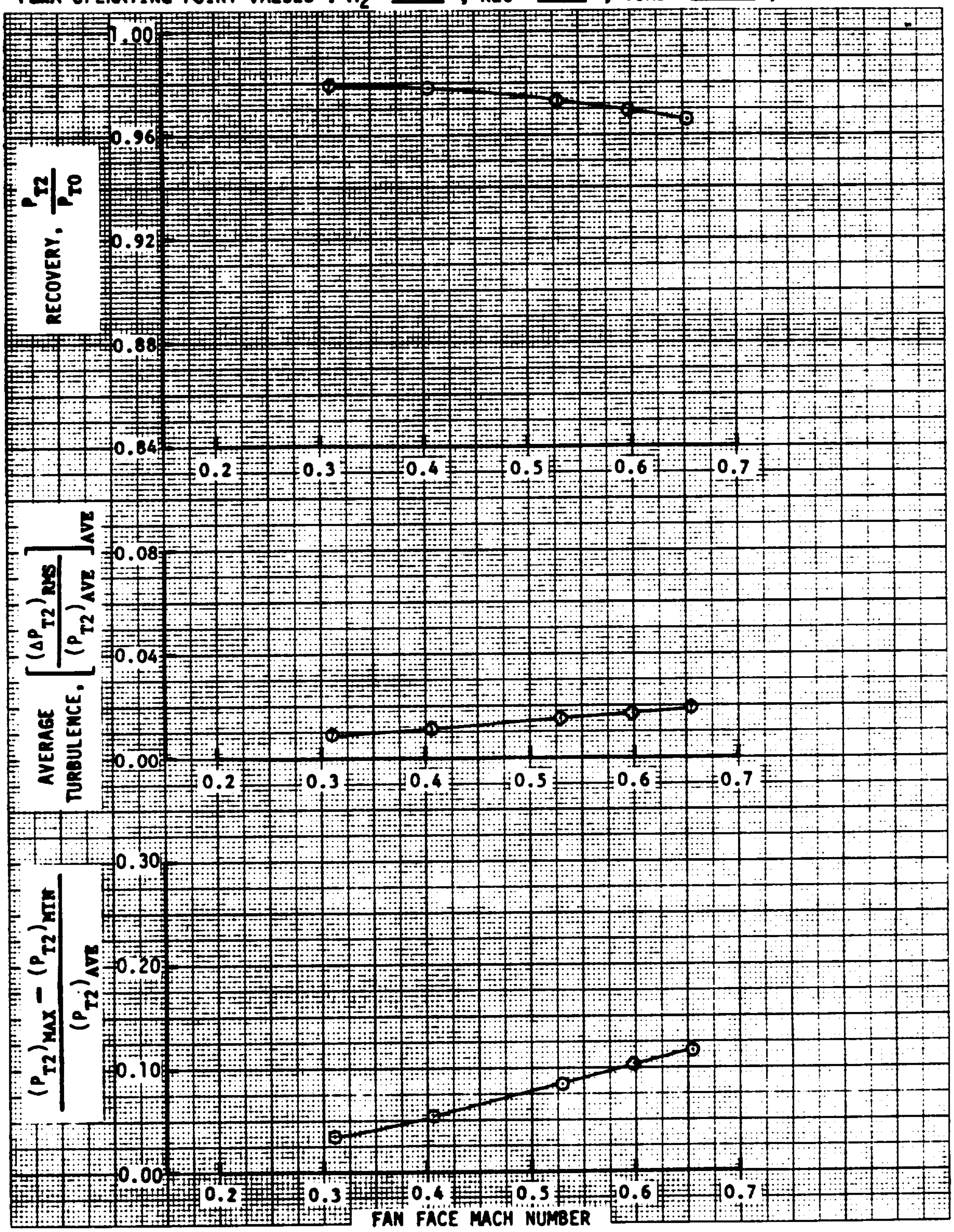
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2451-2455
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 80 deg. ; SIDESLIP ANGLE = 0 deg.
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .014 ; DIST= .084



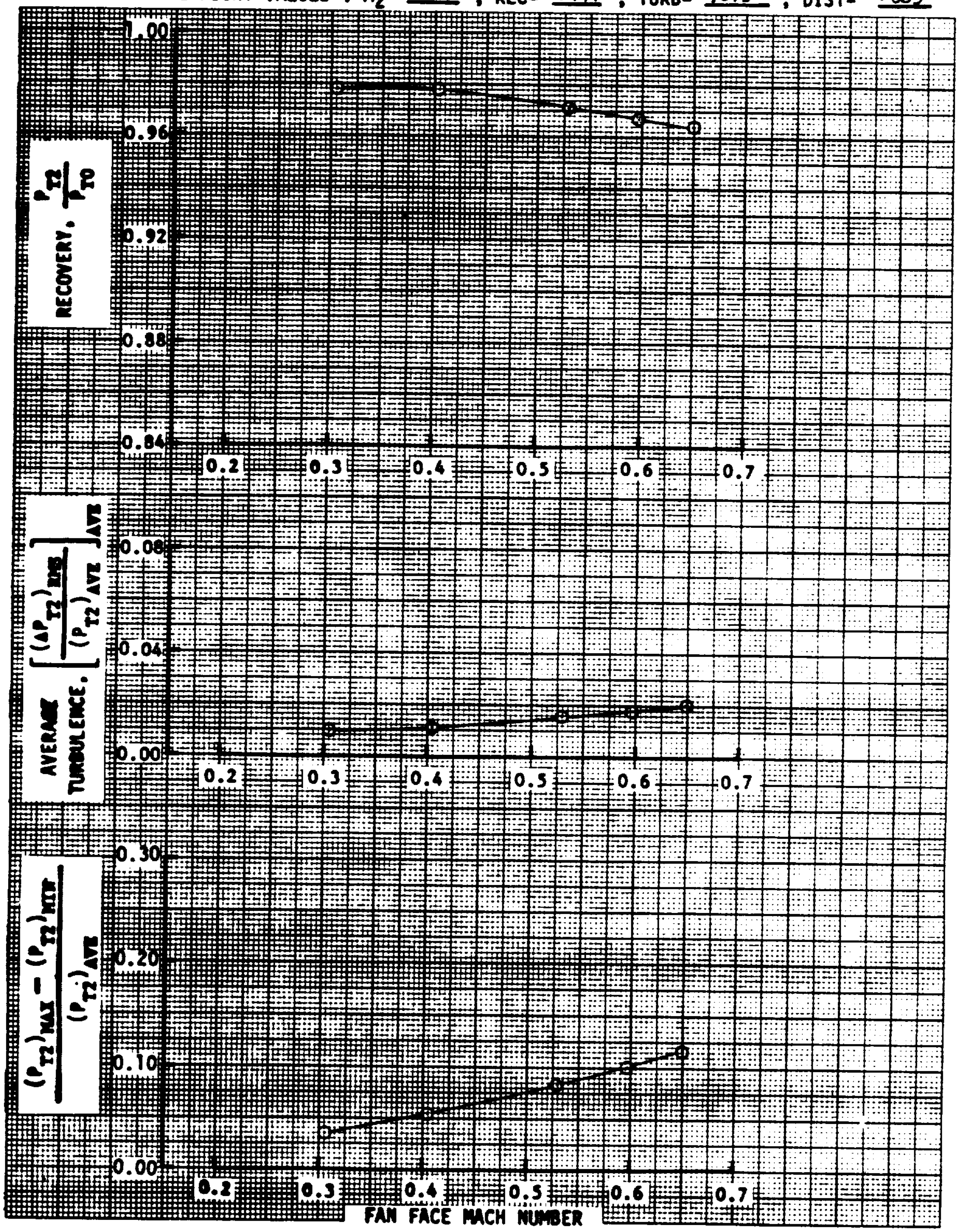
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2456-2460
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 85 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .015 ; DIST= .085



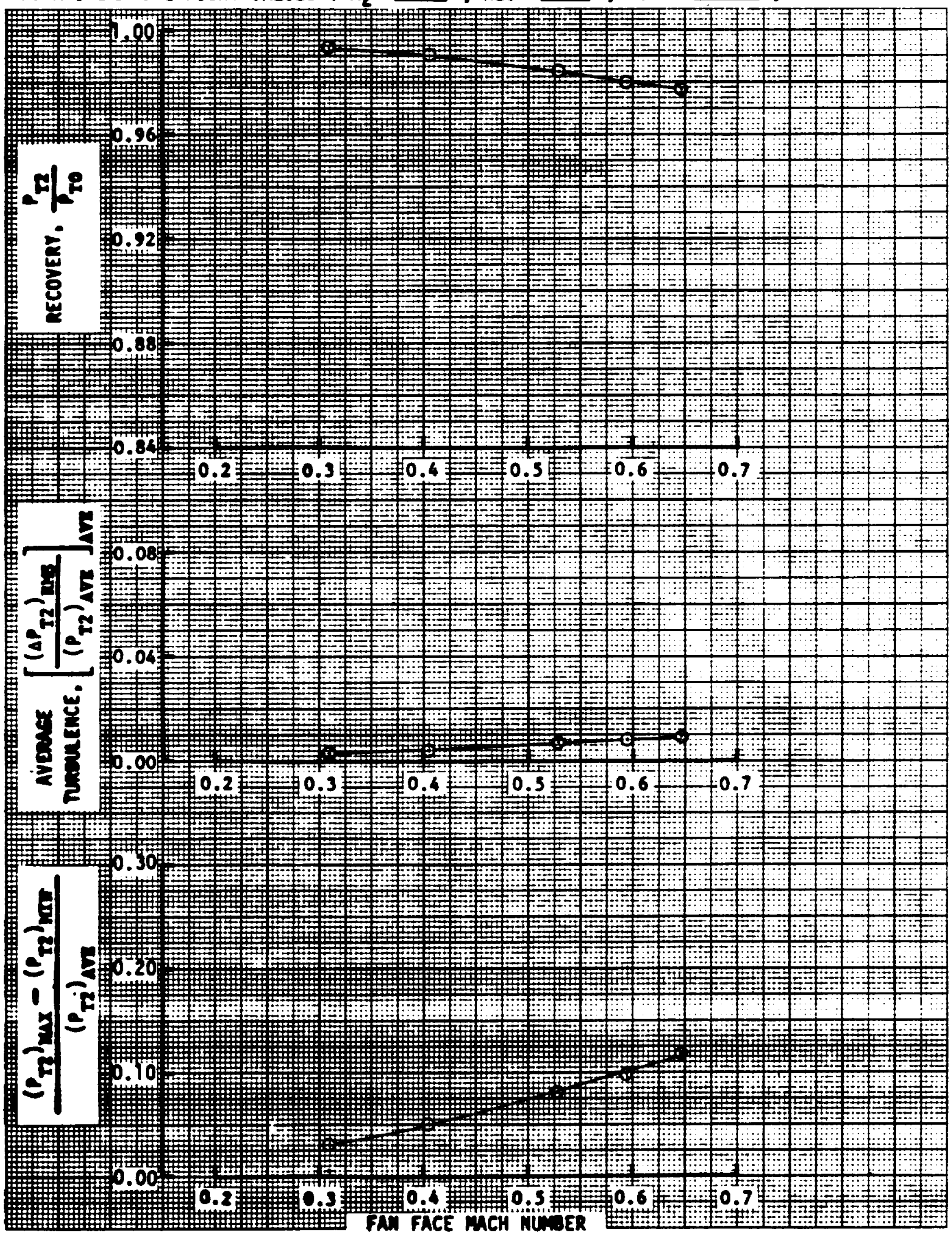
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2461-2465
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.183 ; REC= .973 ; TURB= .015 ; DIST= .085



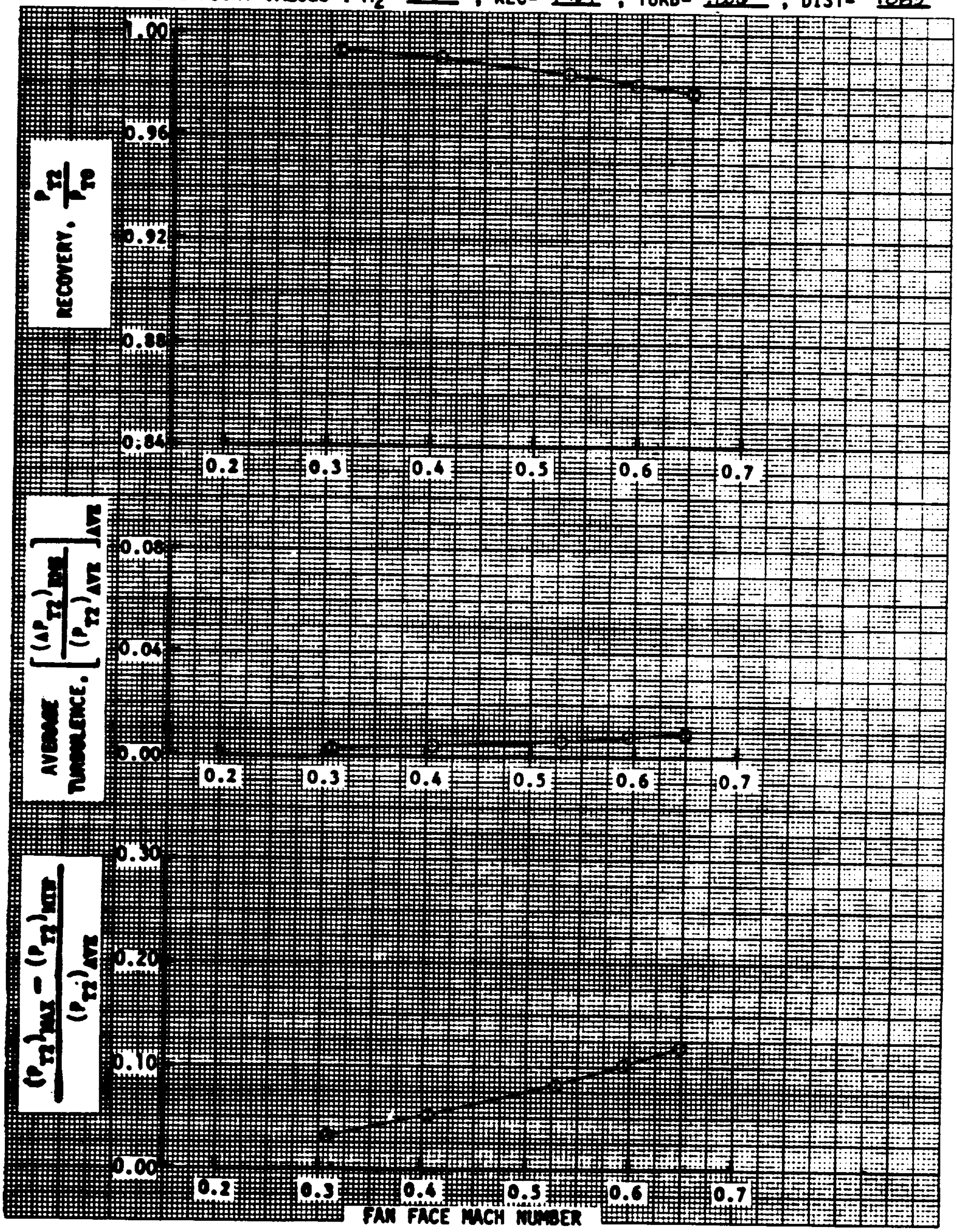
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2466-2470
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .015 ; DIST= .083



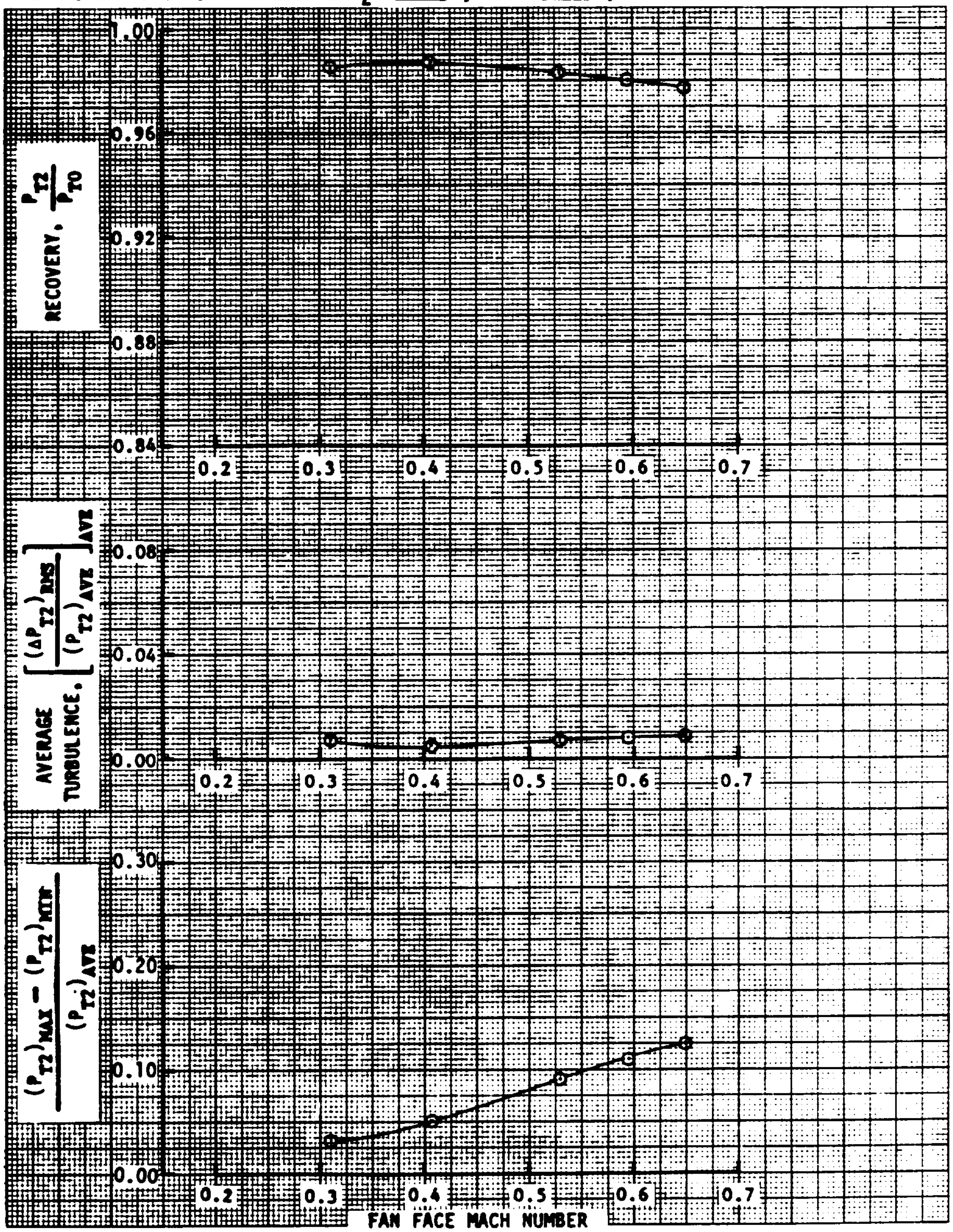
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2471-2475
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .007 ; DIST= .083



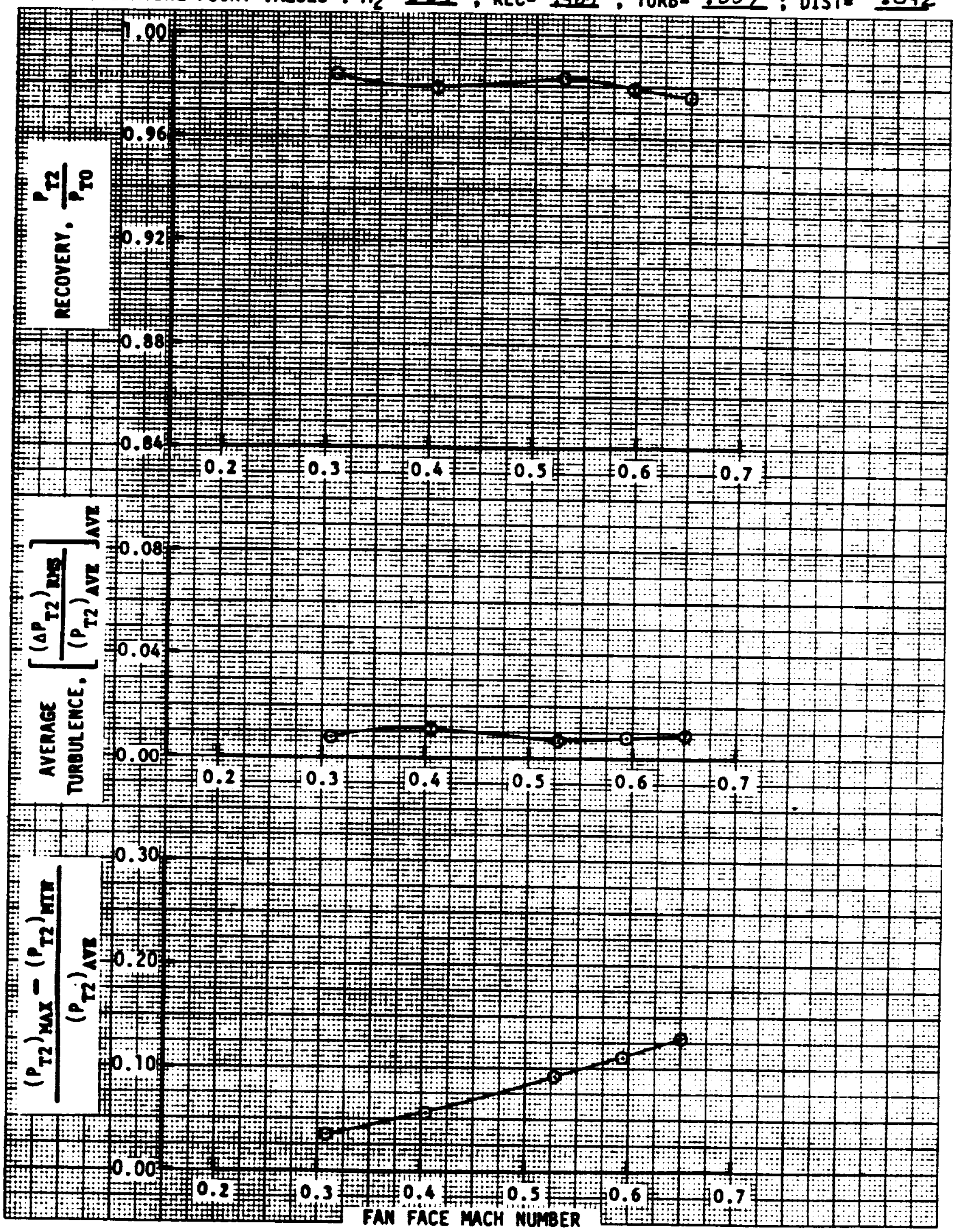
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2476-2480
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .004 ; DIST= .083



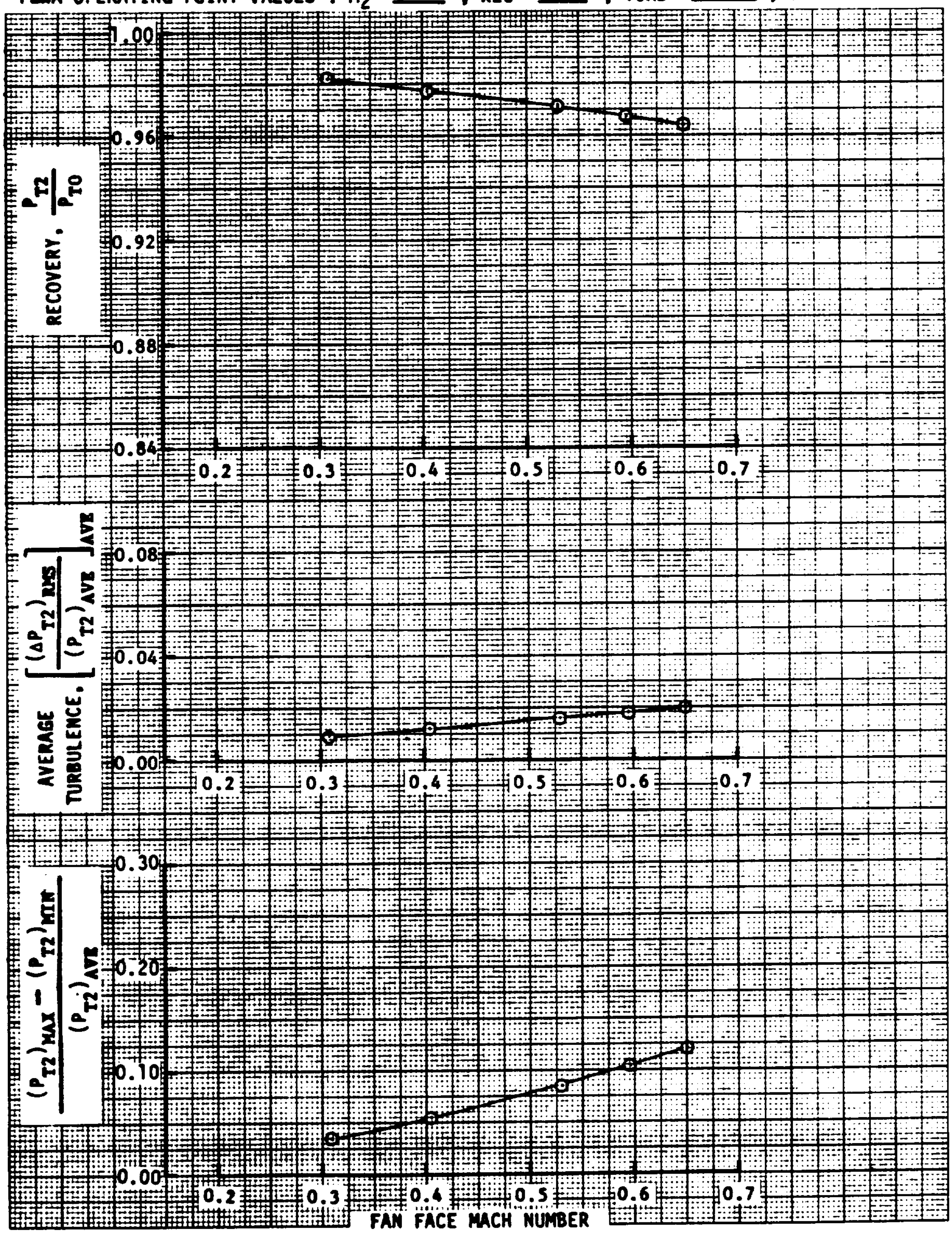
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2481-2486
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .007 ; DIST= .091



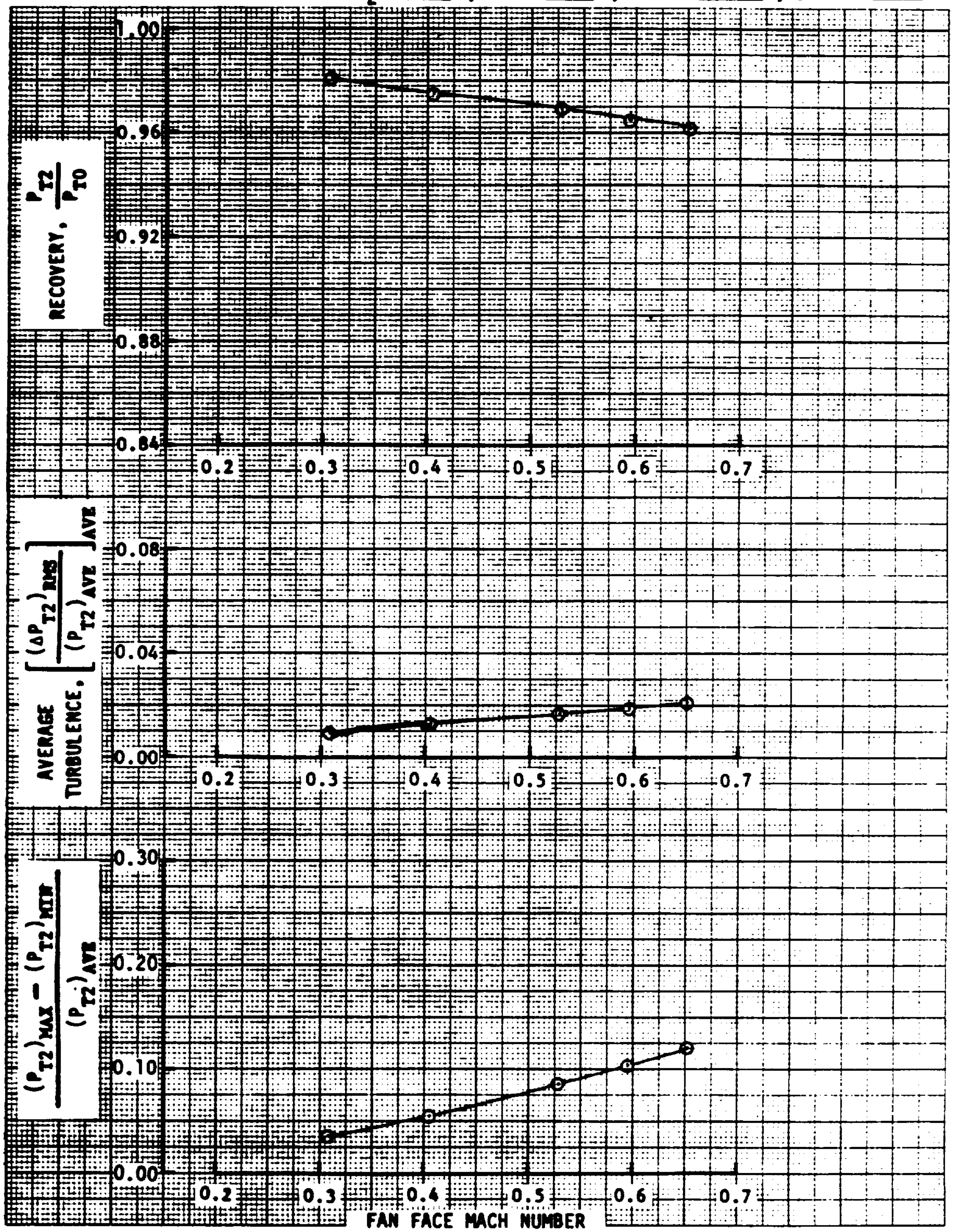
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2487-2491
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 50 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .007 ; DIST= .092



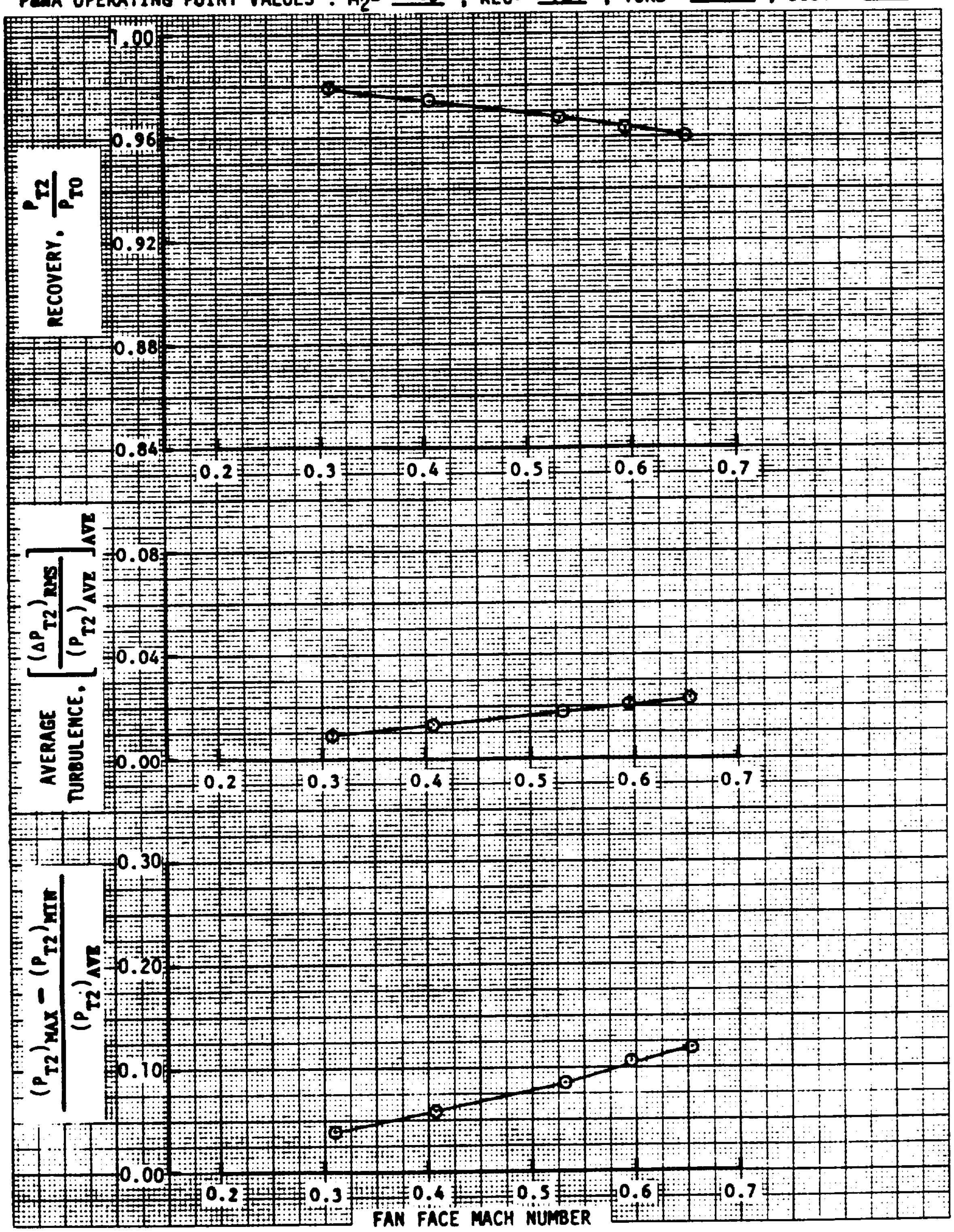
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2492-2496
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 55 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .016 ; DIST= .086



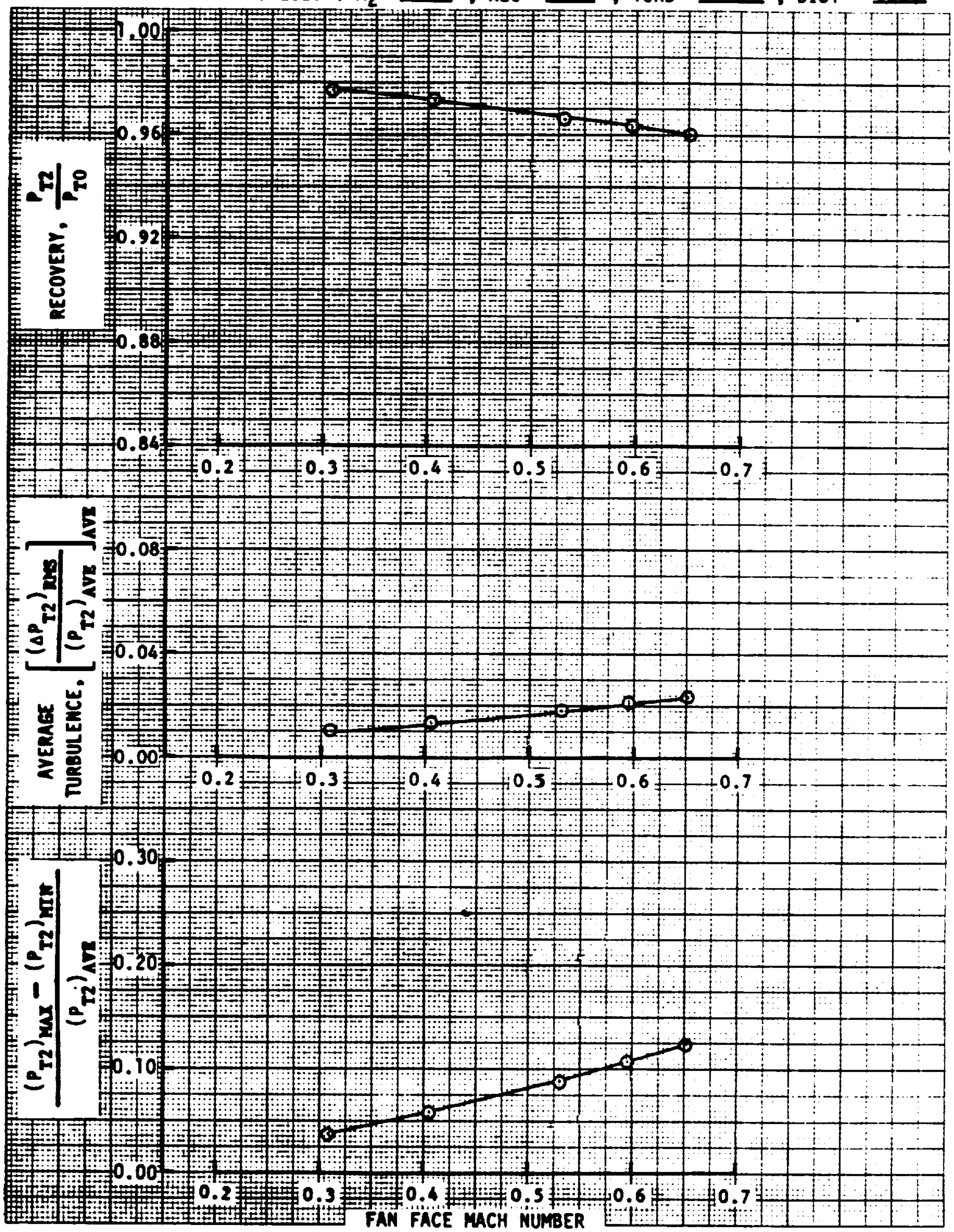
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2497-2501
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 60 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .017 ; DIST= .086



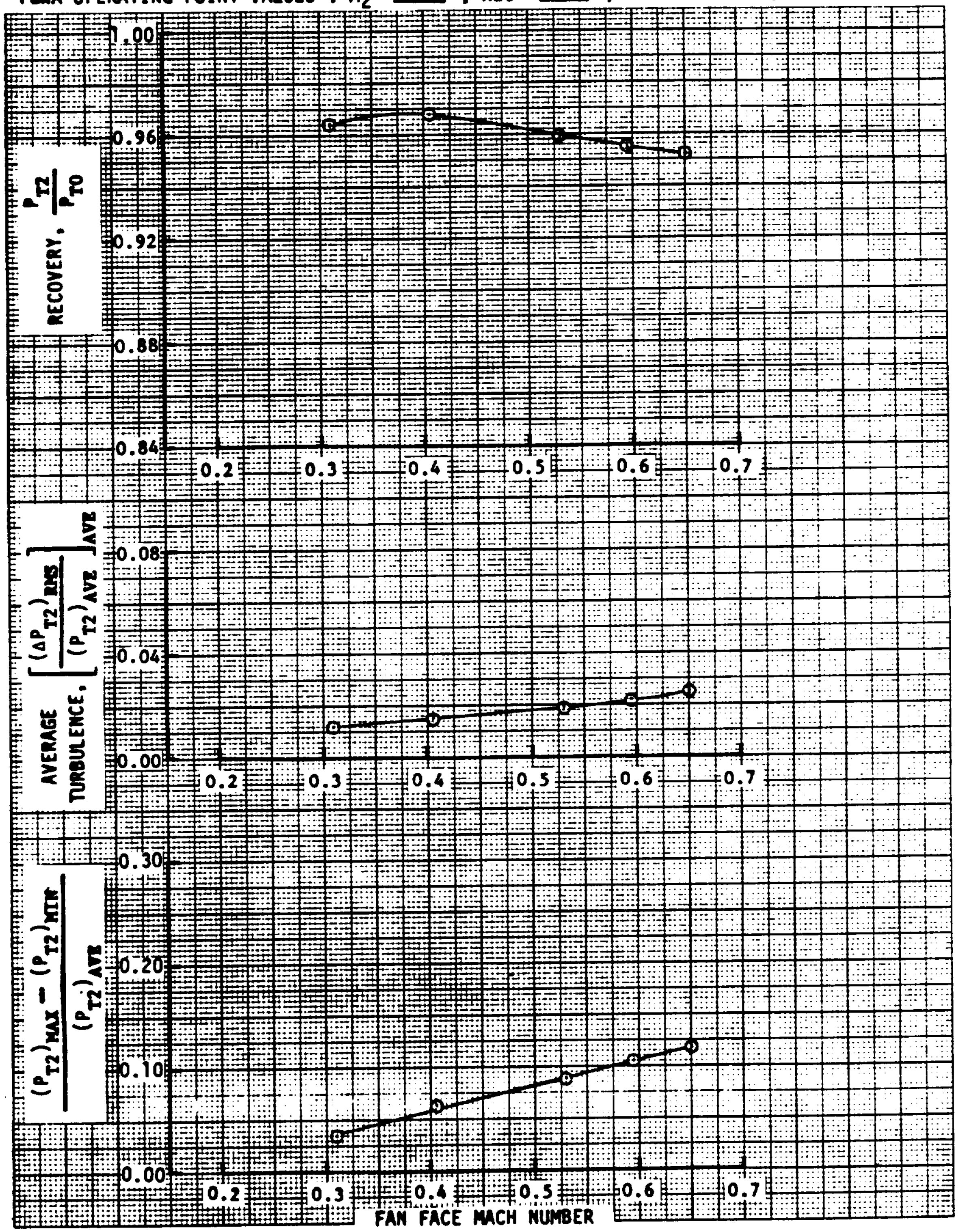
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2502-2506
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 65 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .018 ; DIST= .085



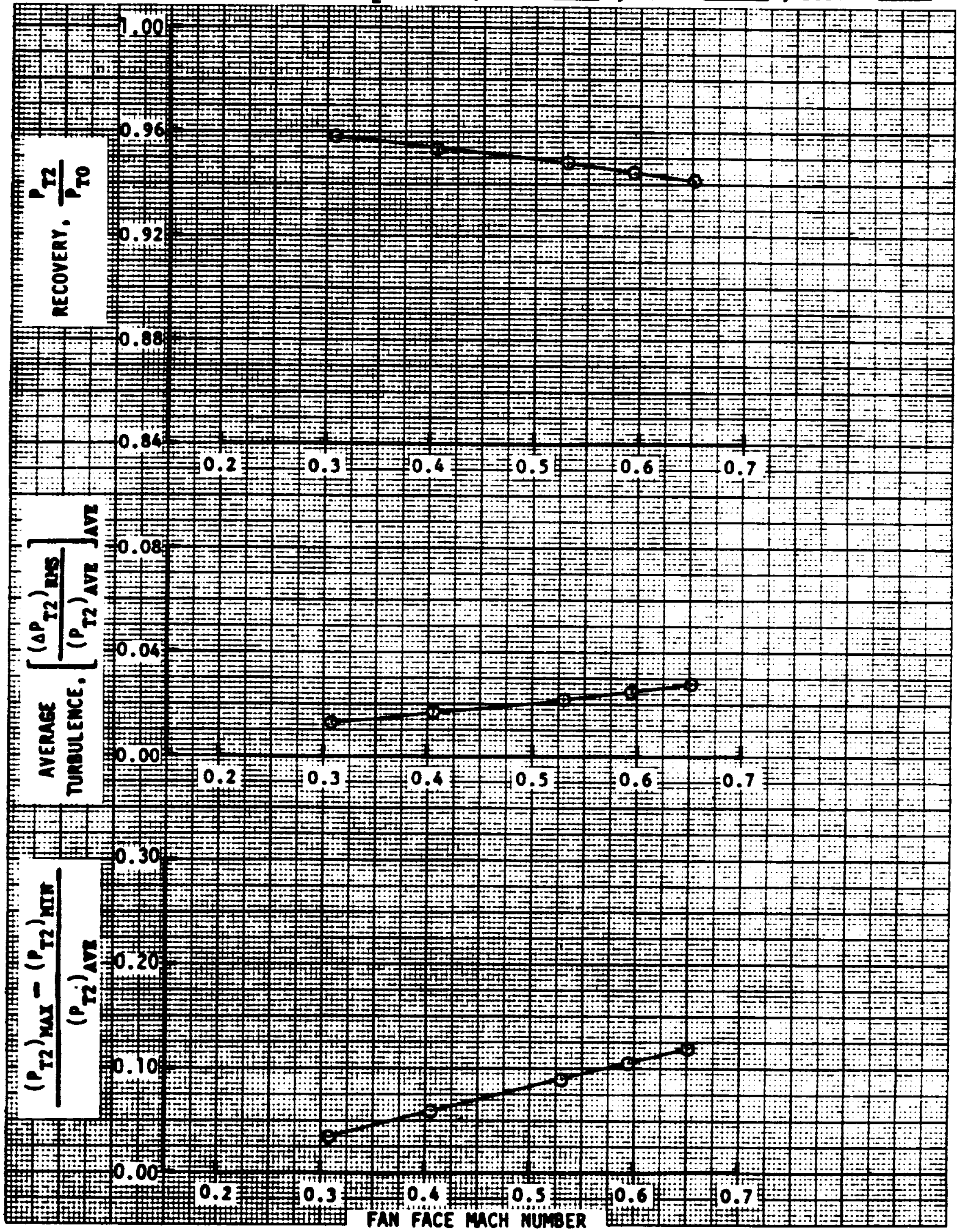
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2507-2511
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PAWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .018 ; DIST= .089



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2512-2516
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .960 ; TURB= .019 ; DIST= .089



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 2 ; READING NUMBERS 2517-2521
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .948 ; TURB= .022 ; DIST= .090



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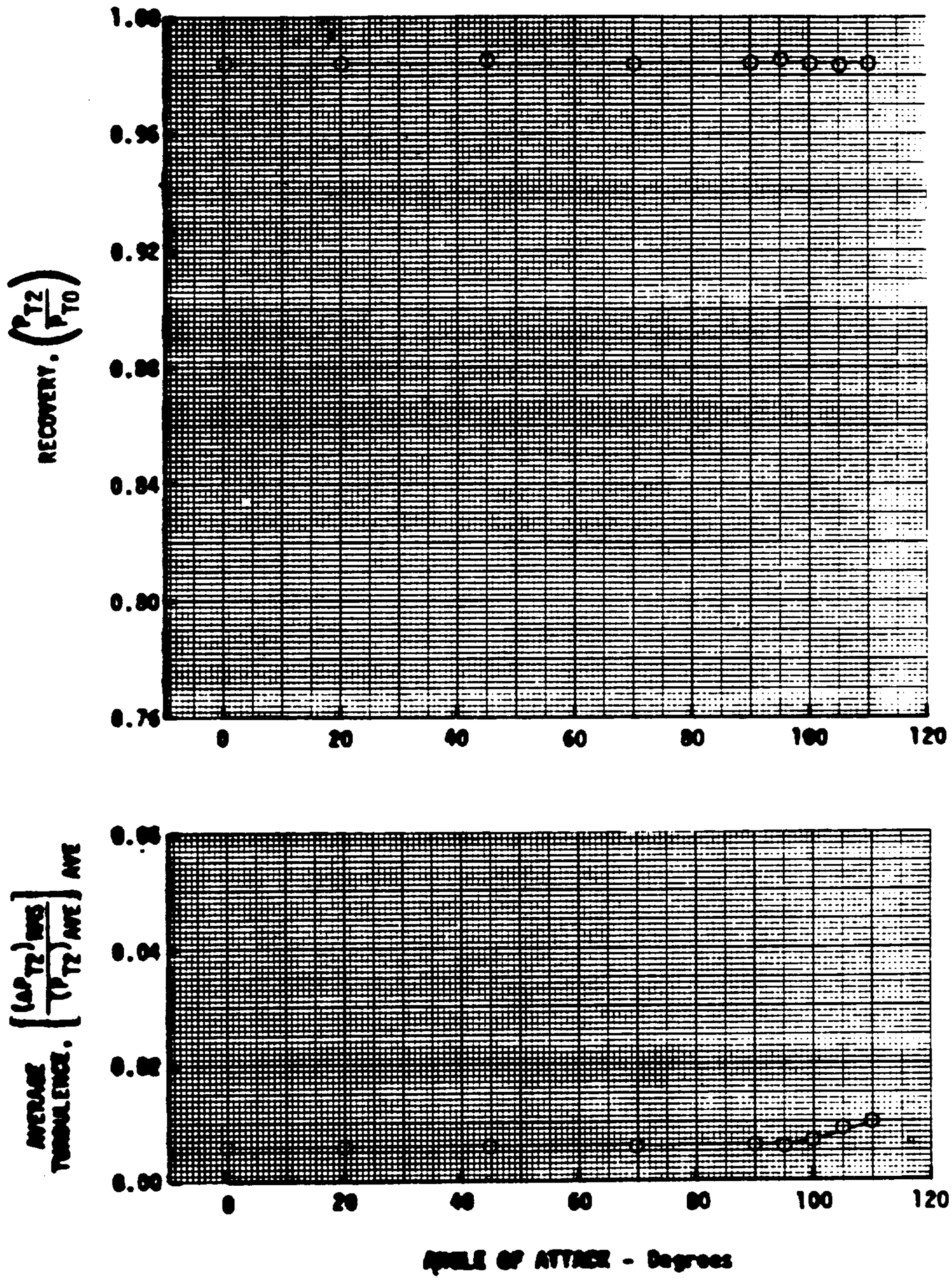
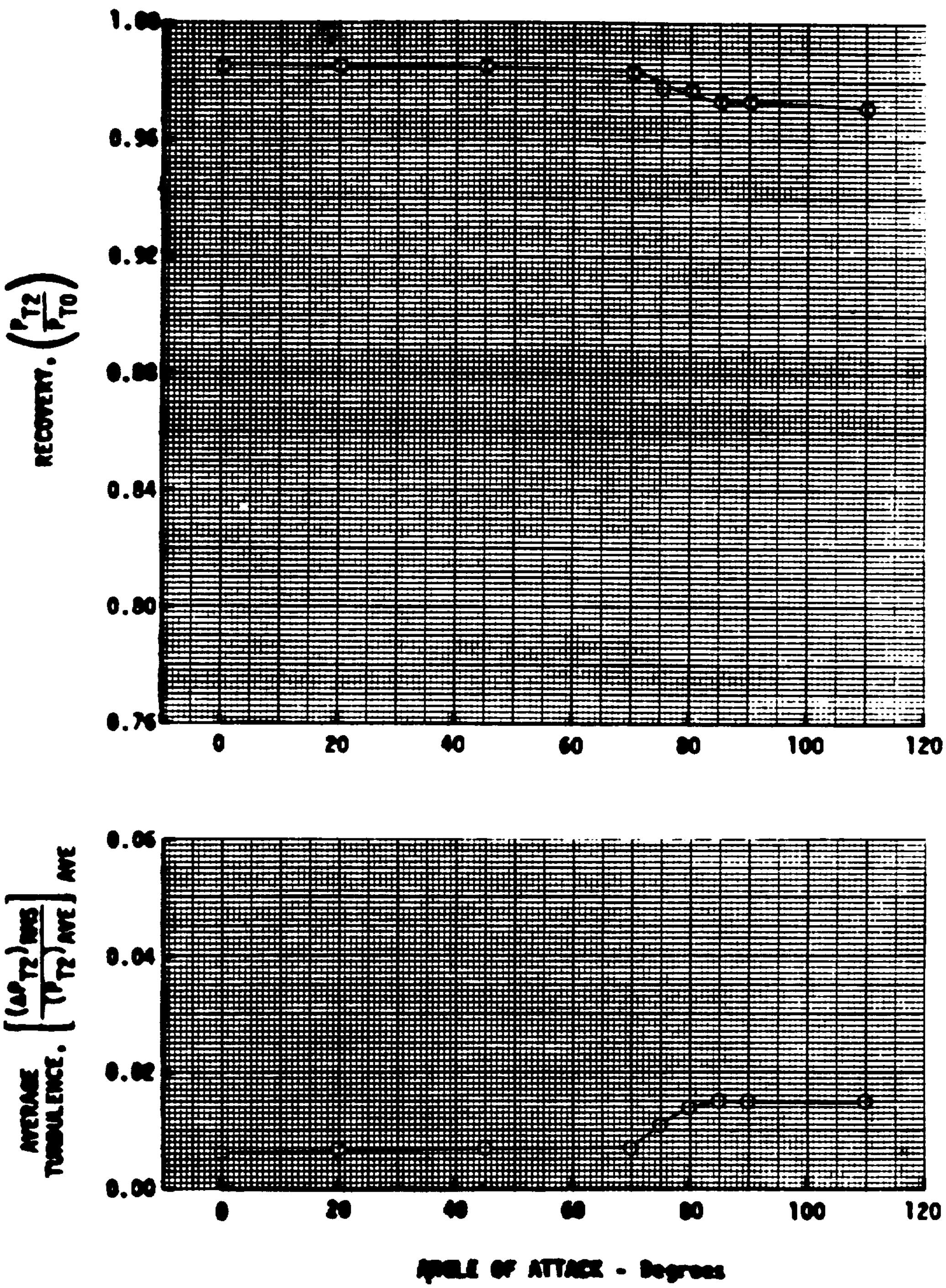
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 2; DESCRIPTION Thick Lip Baseline

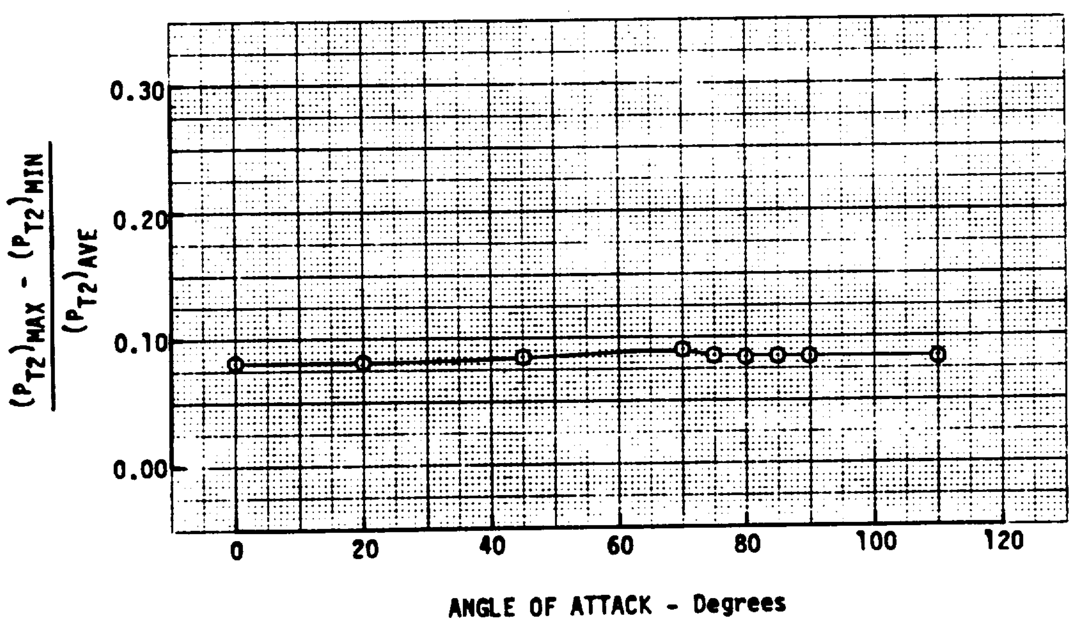


RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
[illegible] F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 2 ; DESCRIPTION Thick Lip Baseline



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 2 ; DESCRIPTION Thick Lip Base line



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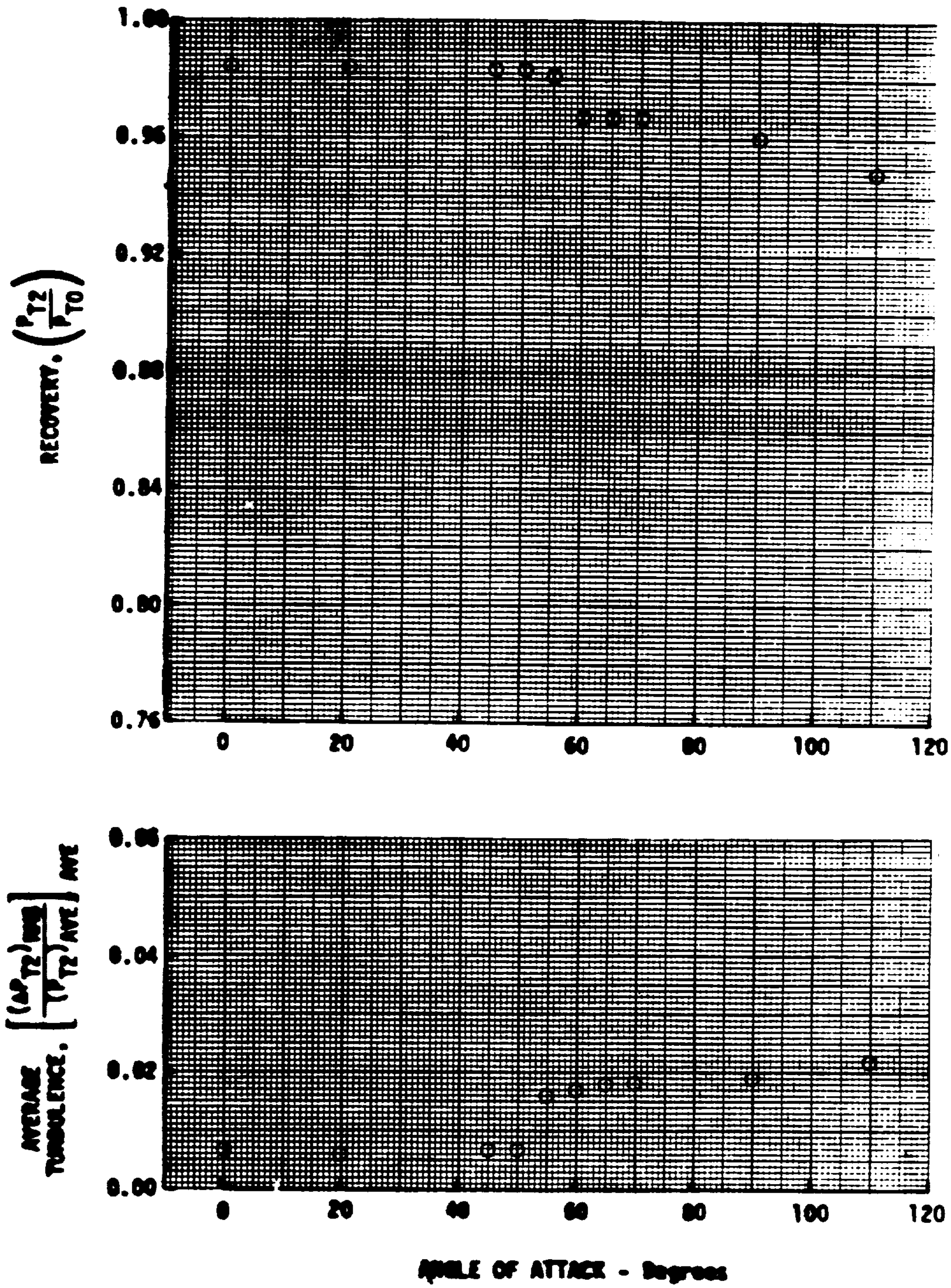
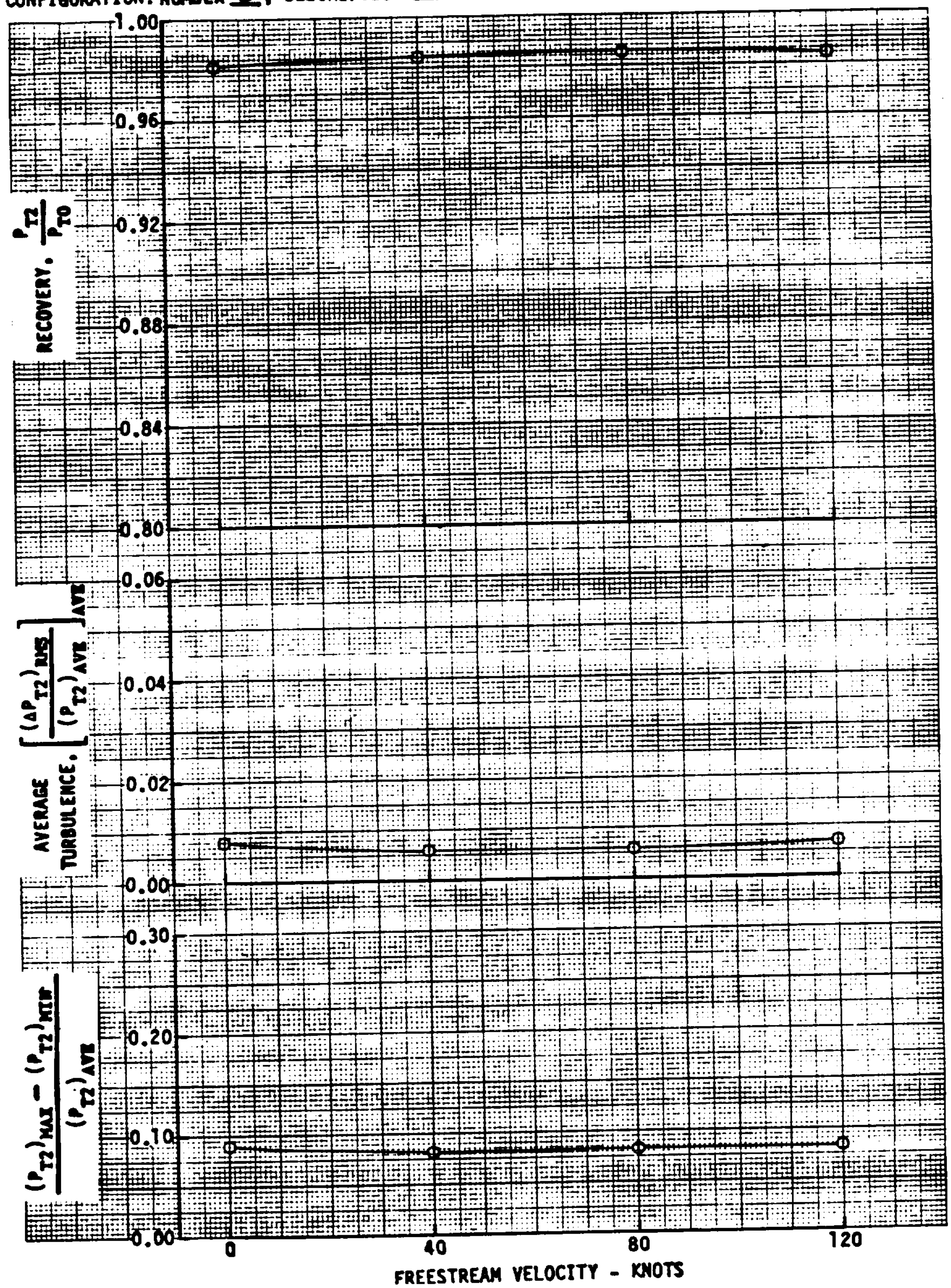
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 2 ; DESCRIPTION Thick Lip Baseline



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = o DEGREES
SIDESLIP ANGLE = o DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 2 ; DESCRIPTION Thick Lip Baseline



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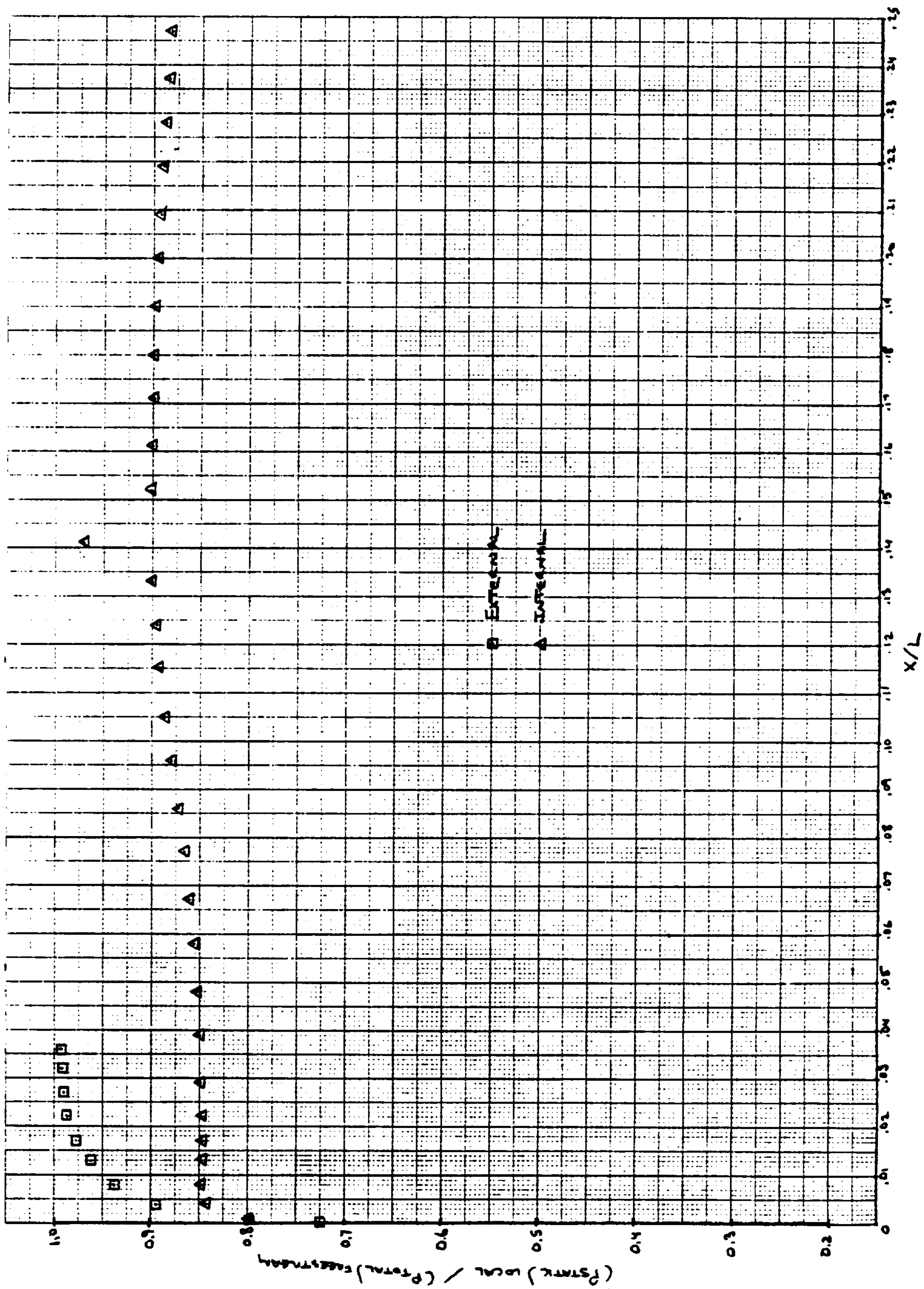
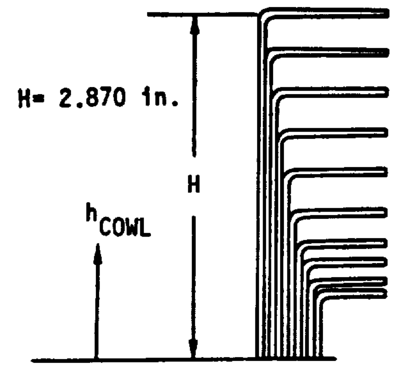
Configuration 2 V_o = 80 Knots α = 90° EFMN = 0.529
Thick Lip Baseline Inlet

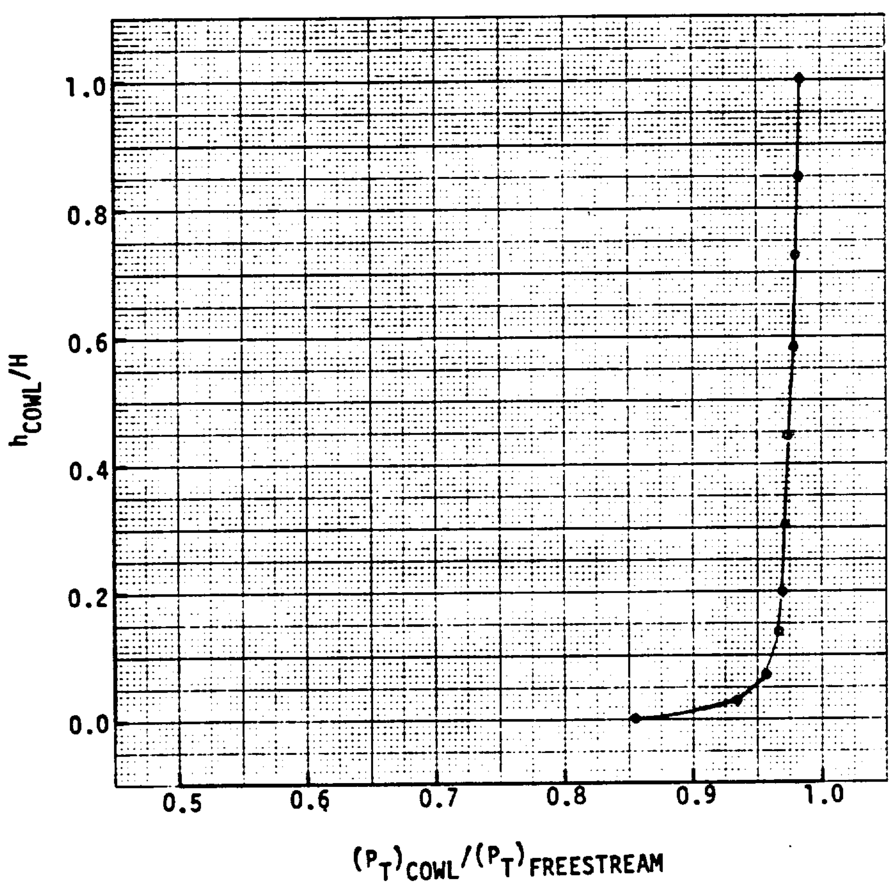


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

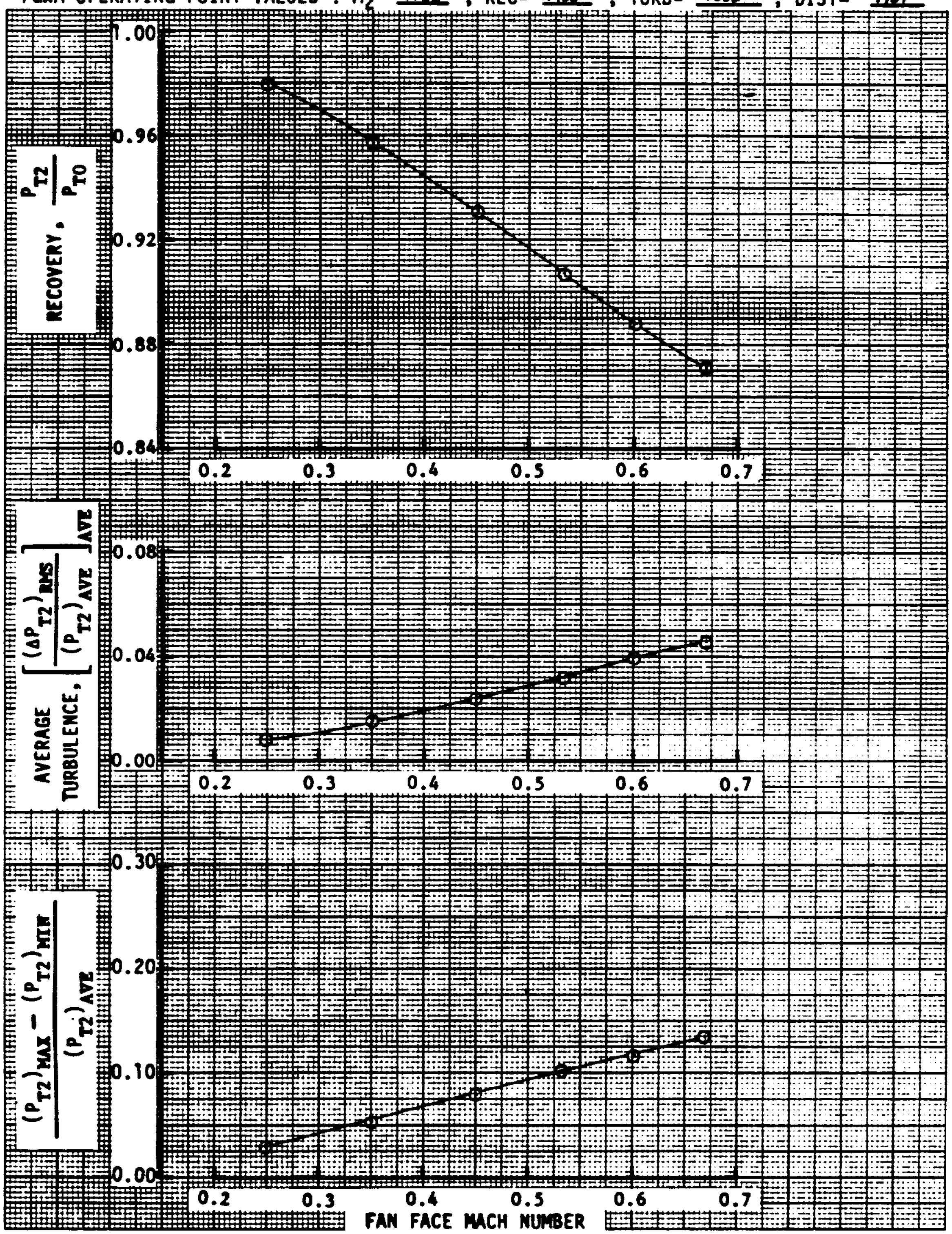
CONFIGURATION: NUMBER 2 ; DESCRIPTION Thick Lip Baseline Inlet

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 70 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529





RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2126-2131
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .032 ; DIST= .101



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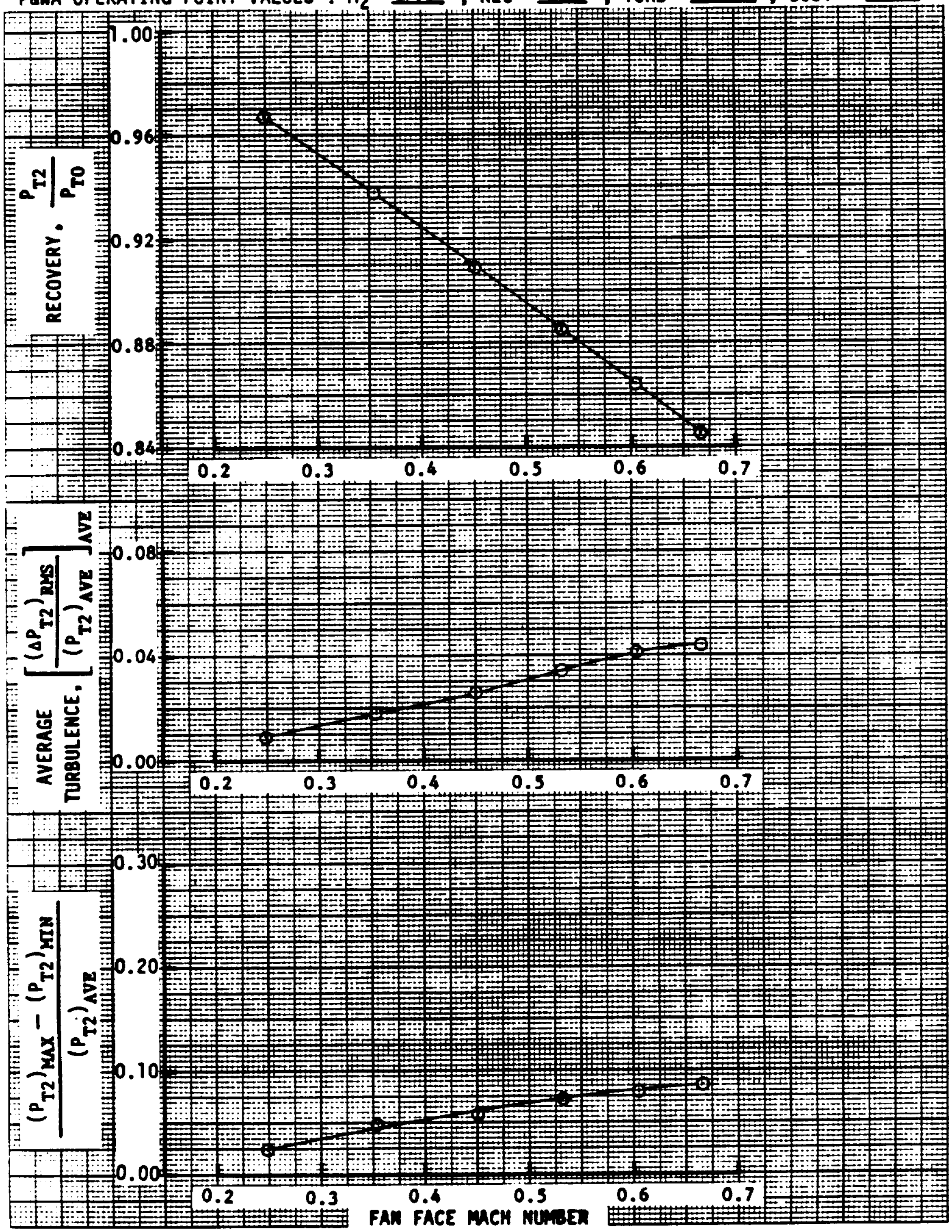
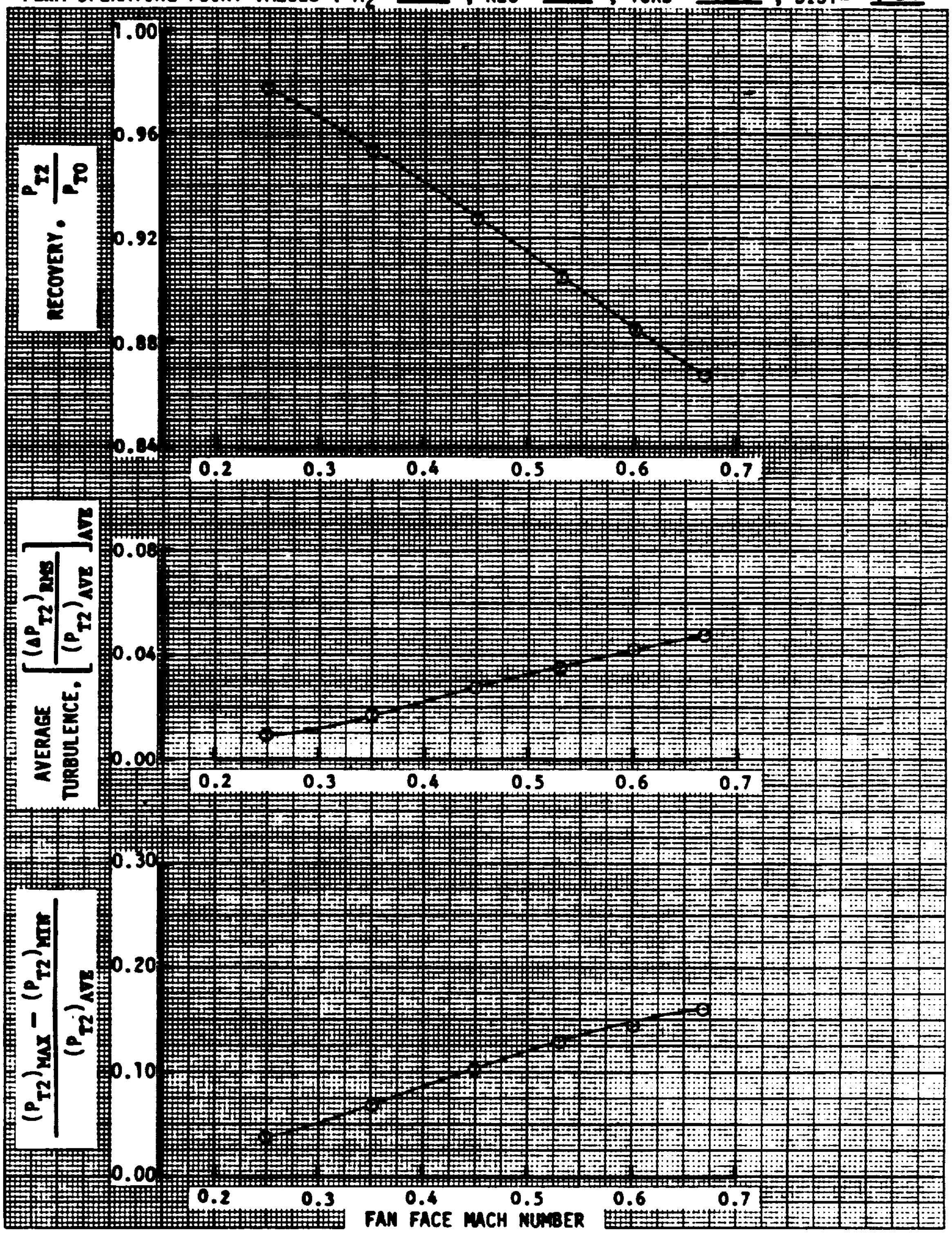
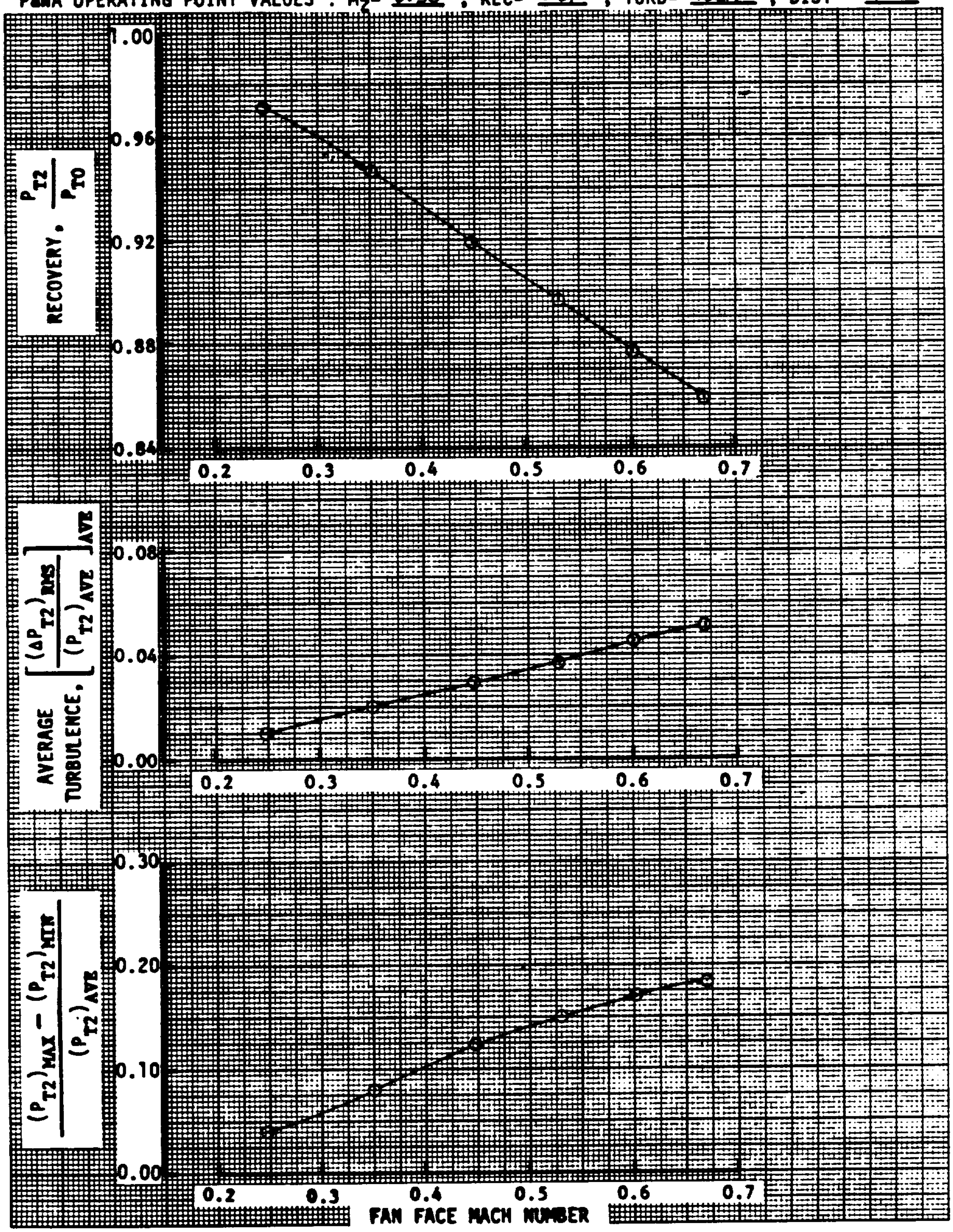
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2118-2124
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .886 ; TURB= .034 ; DIST= .0725



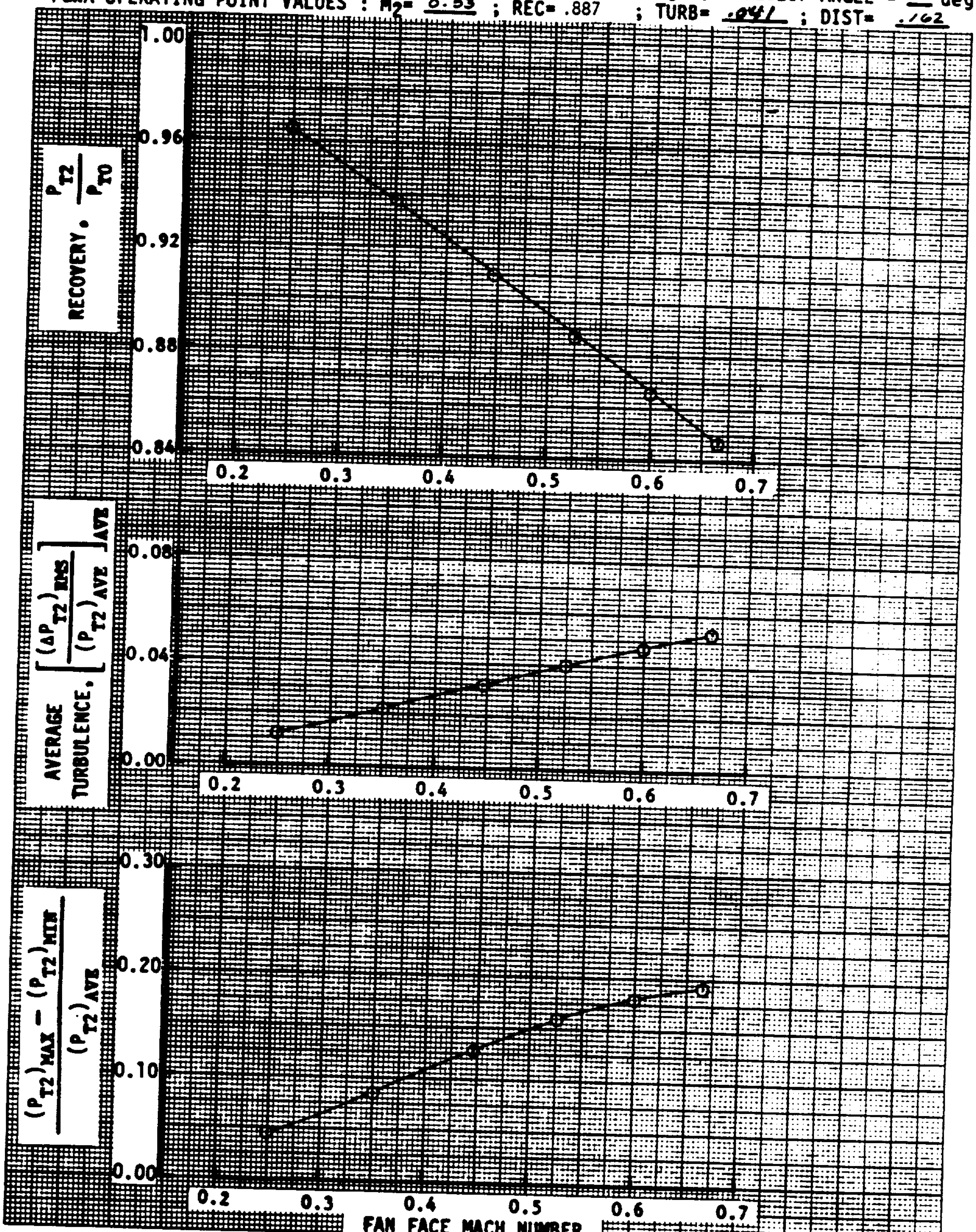
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2132-2137
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .905 ; TURB= [illegible] ; DIST= .130



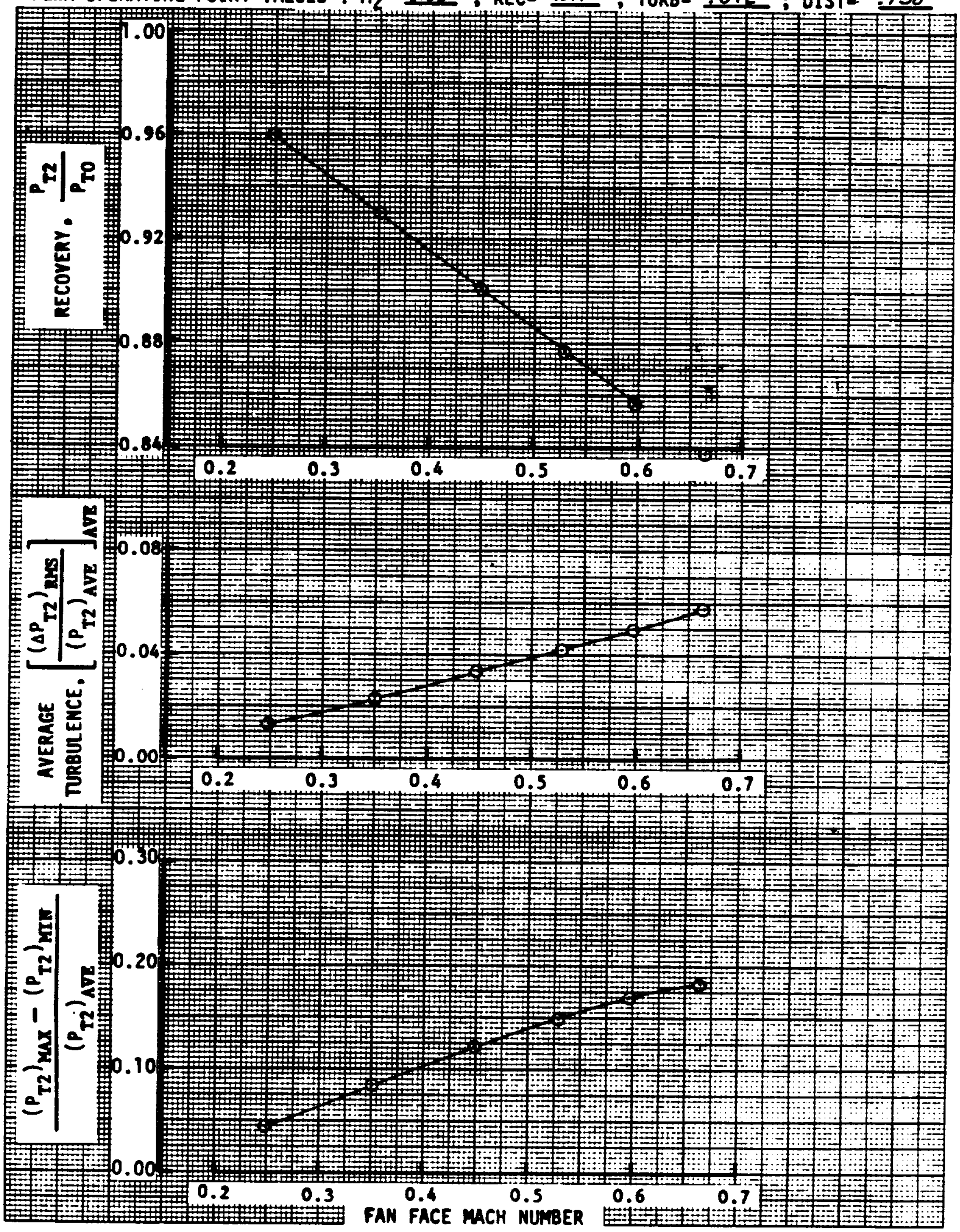
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2138-2144
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= 0.897 ; TURB= .037 ; DIST= 0.151



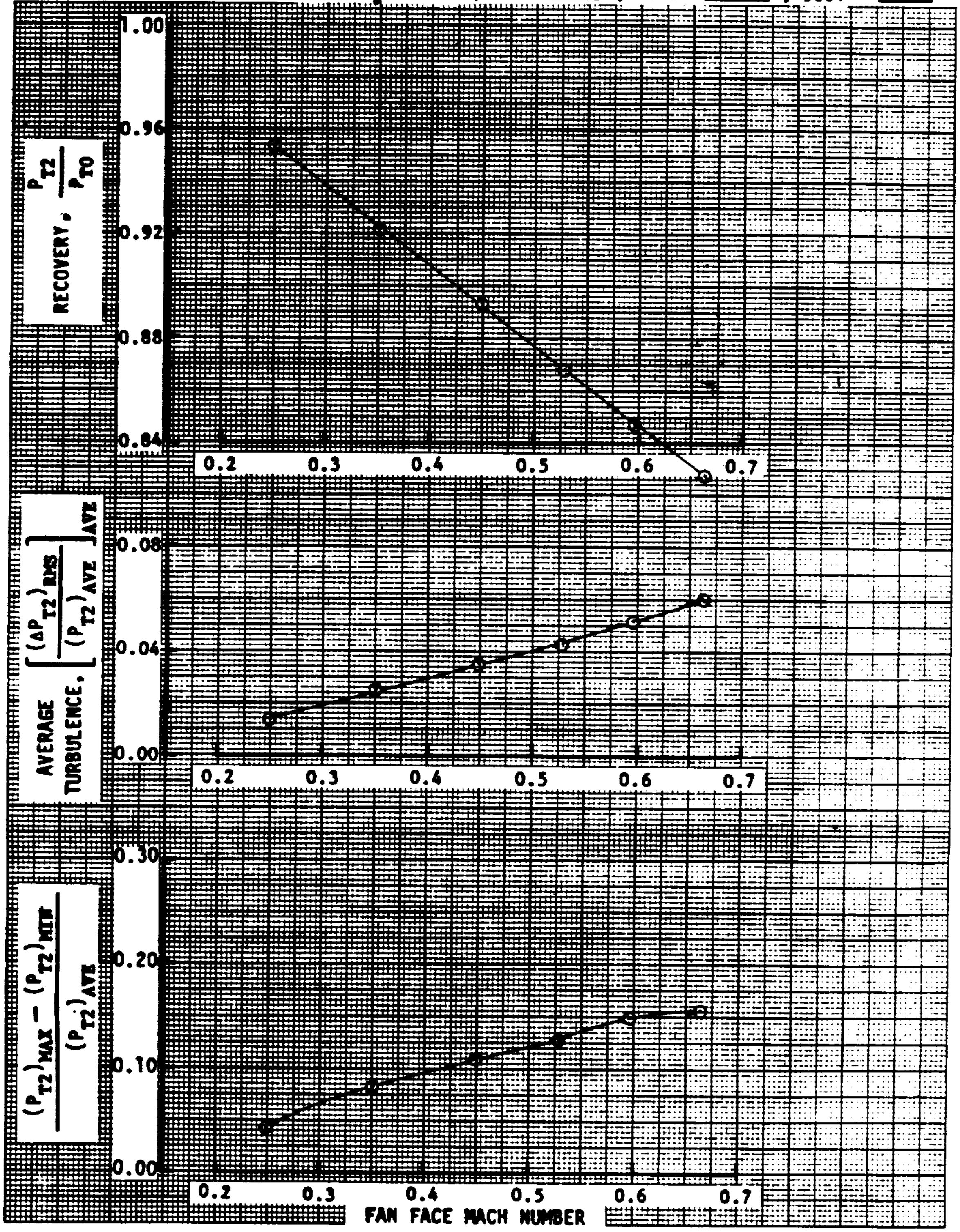
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2145-2150
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .887 ; TURB= .041 ; DIST= .162



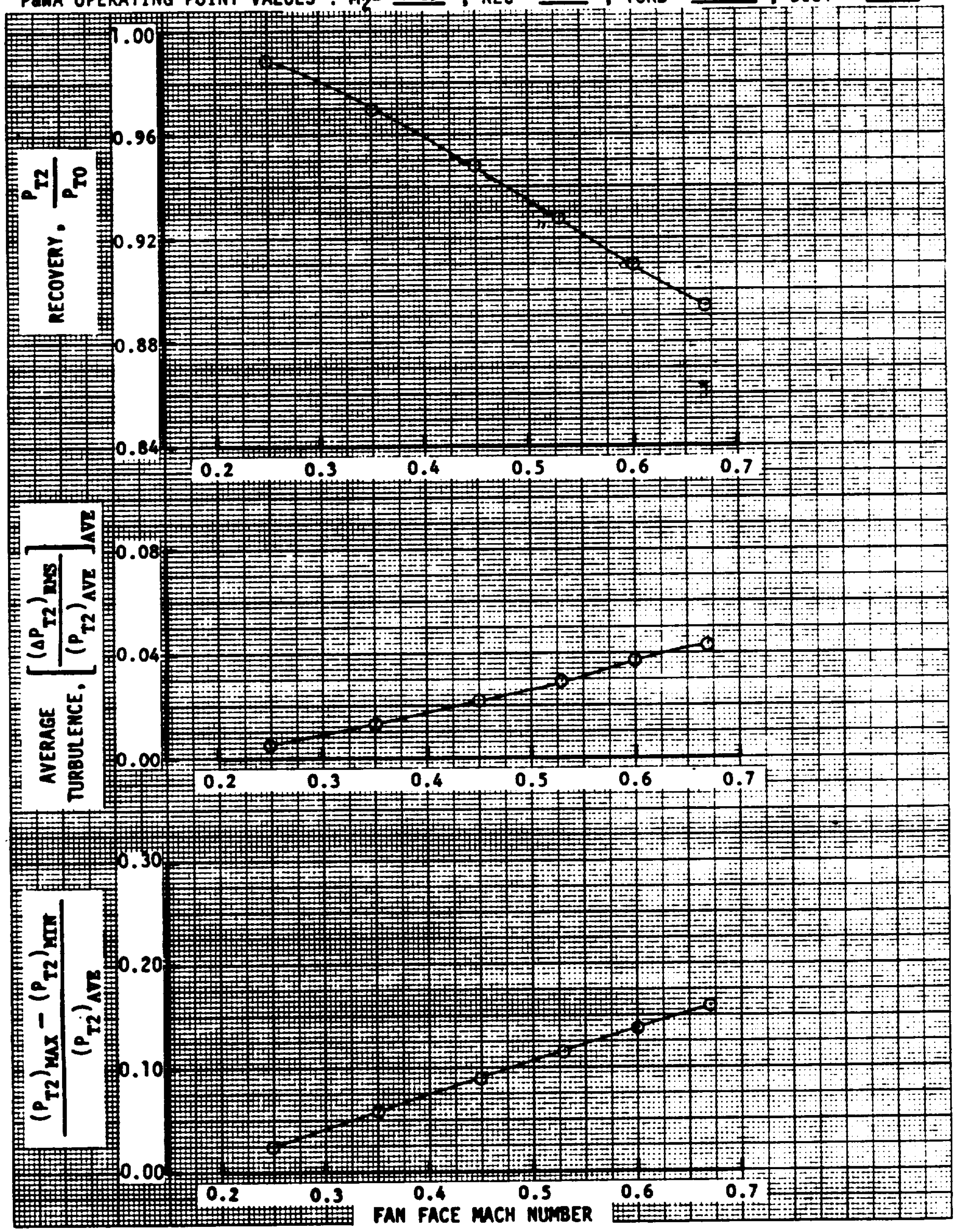
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2151-2156
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .877 ; TURB= .042 ; DIST= .150



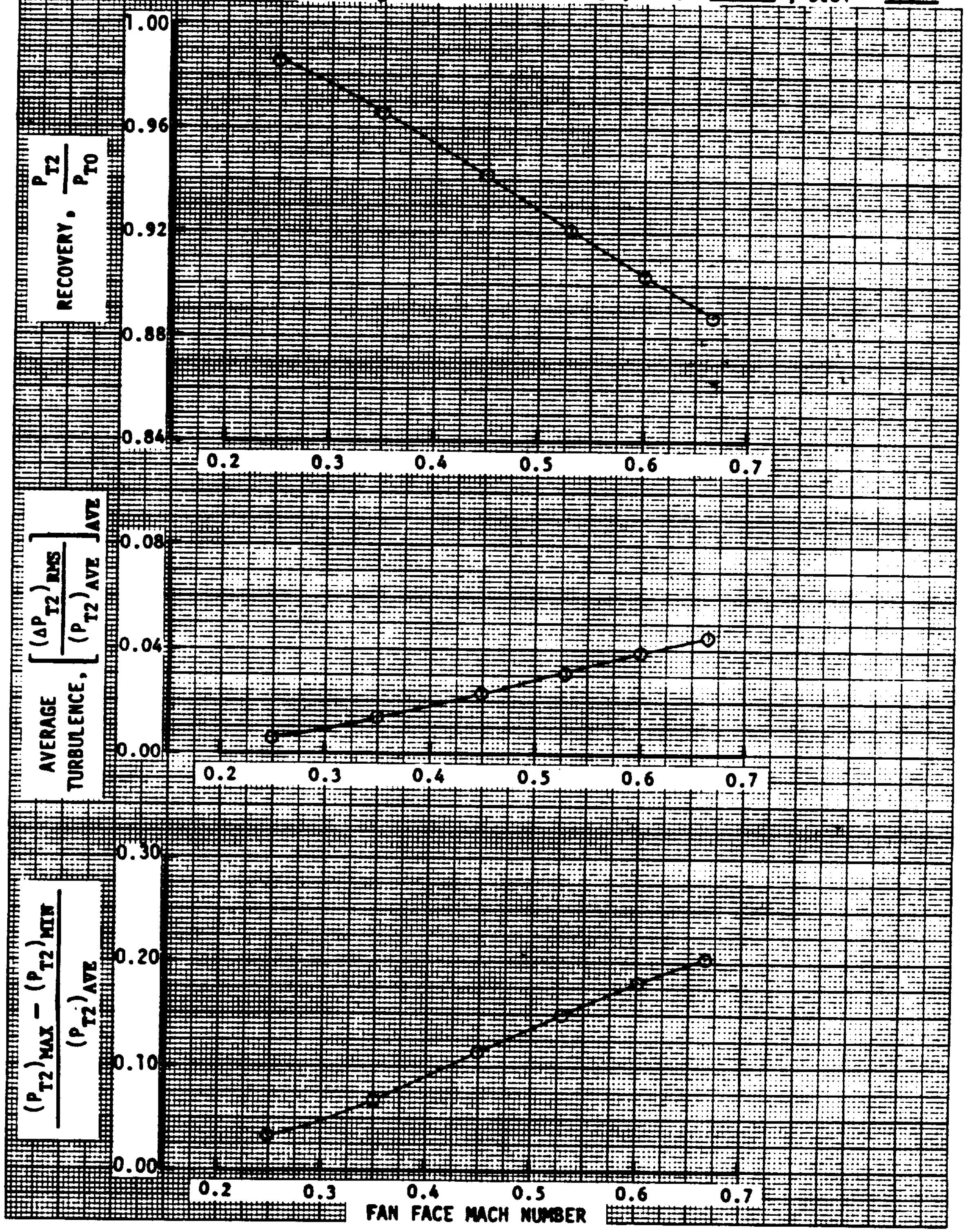
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2157-2162
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .868 ; TURB= .043 ; DIST= .130



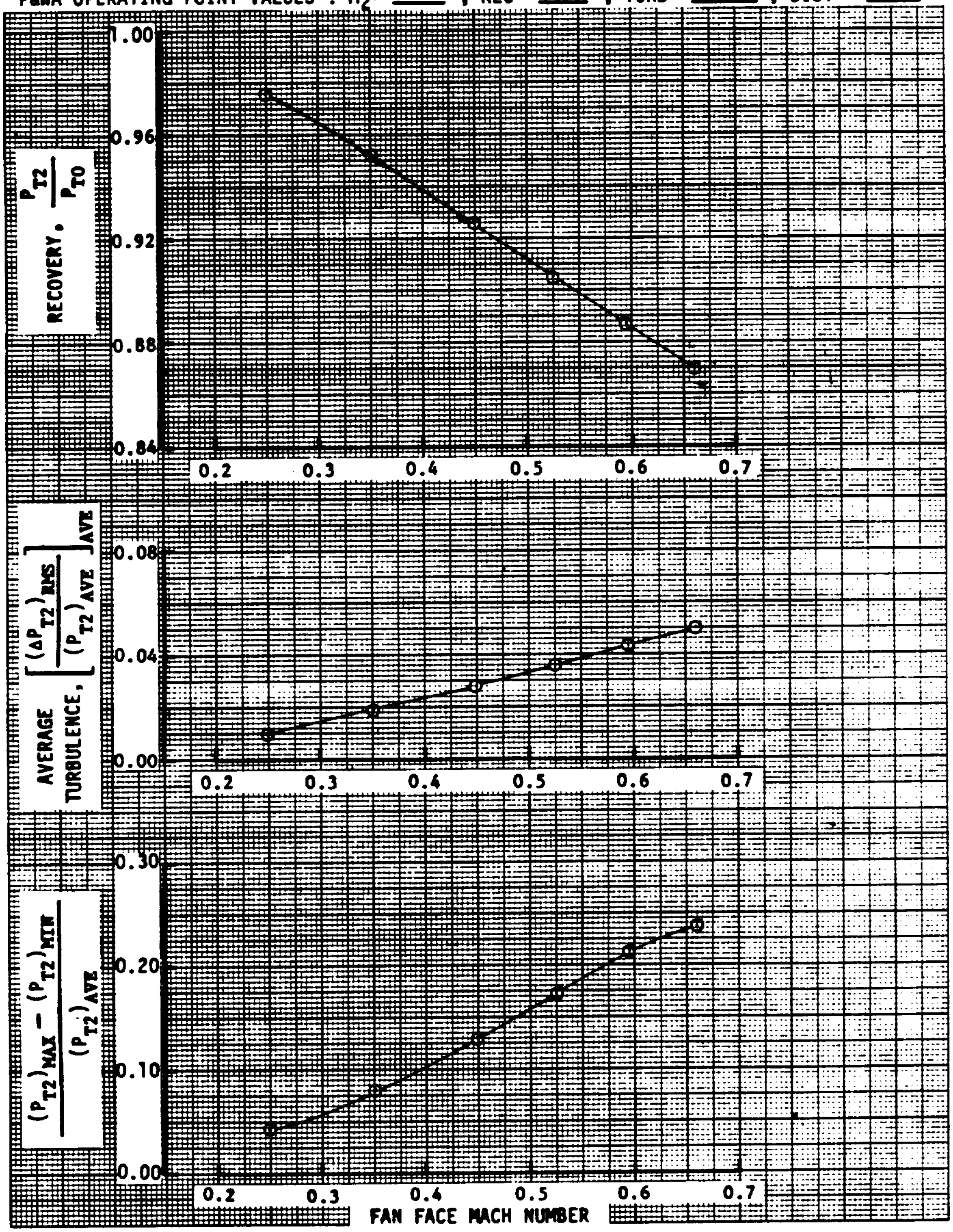
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2163-2168
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .928 ; TURB= .029 ; DIST= .116



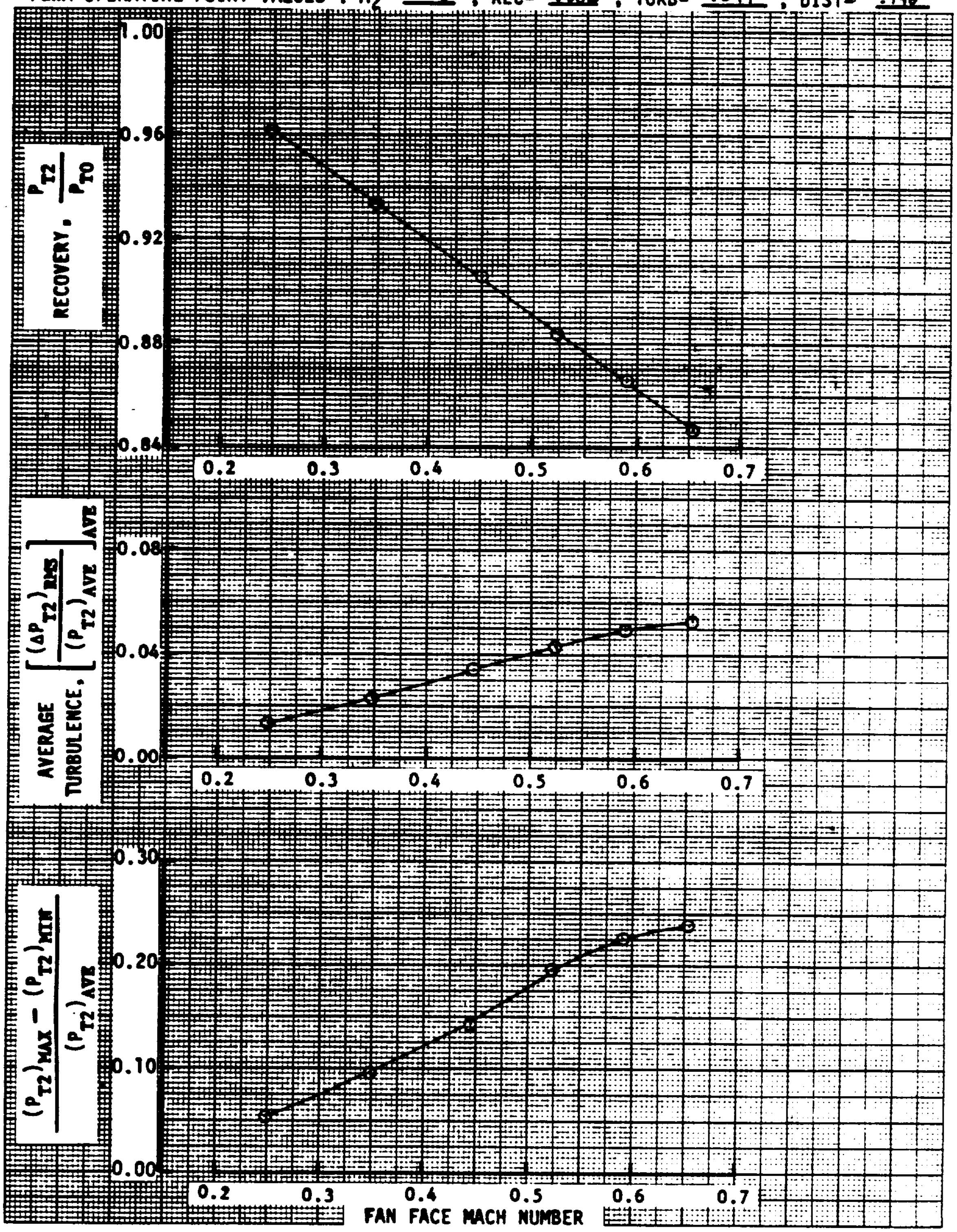
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2169-2174
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .921 ; TURB= .031 ; DIST= .150



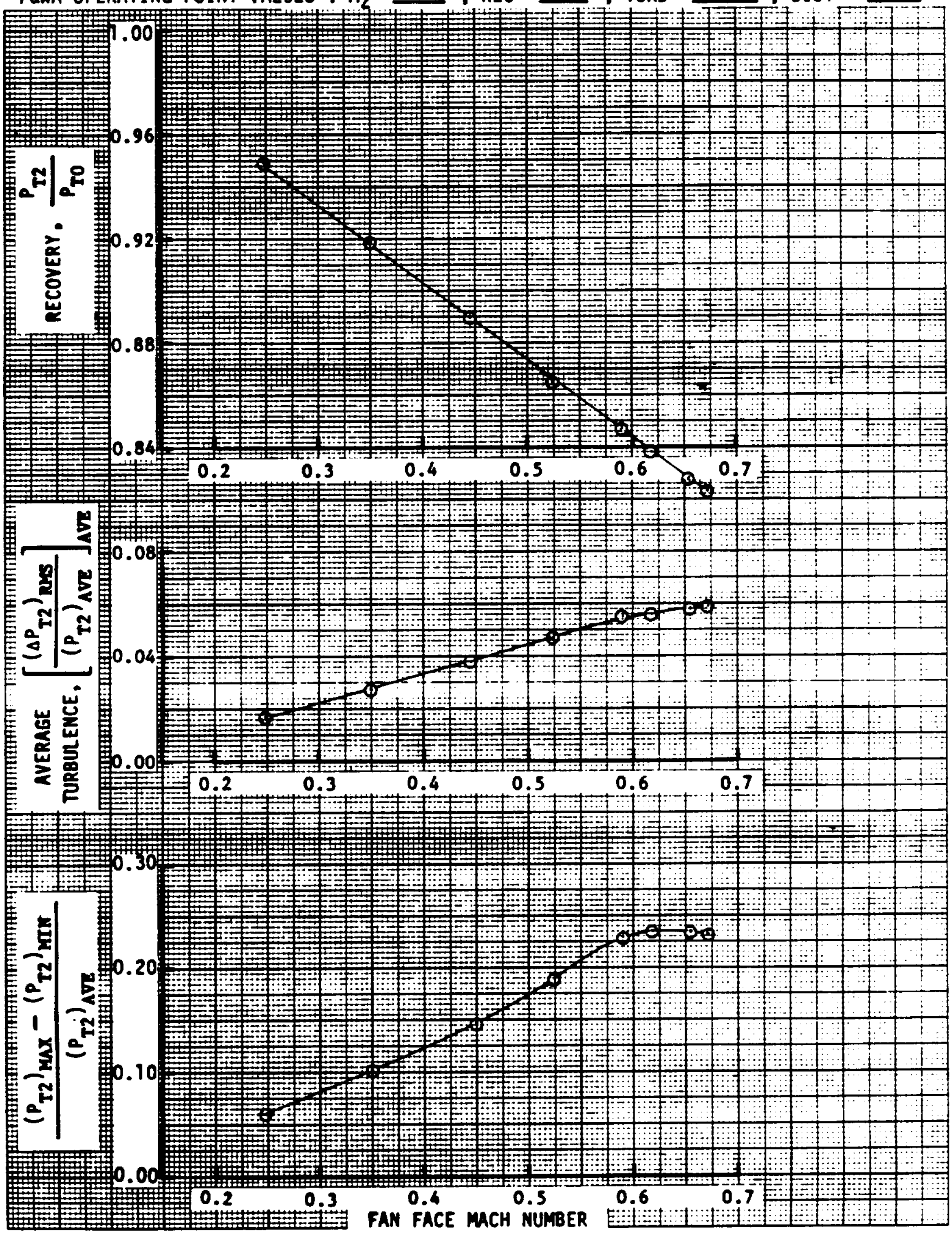
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2175-2180
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .904 ; TURB= .036 ; DIST= .177



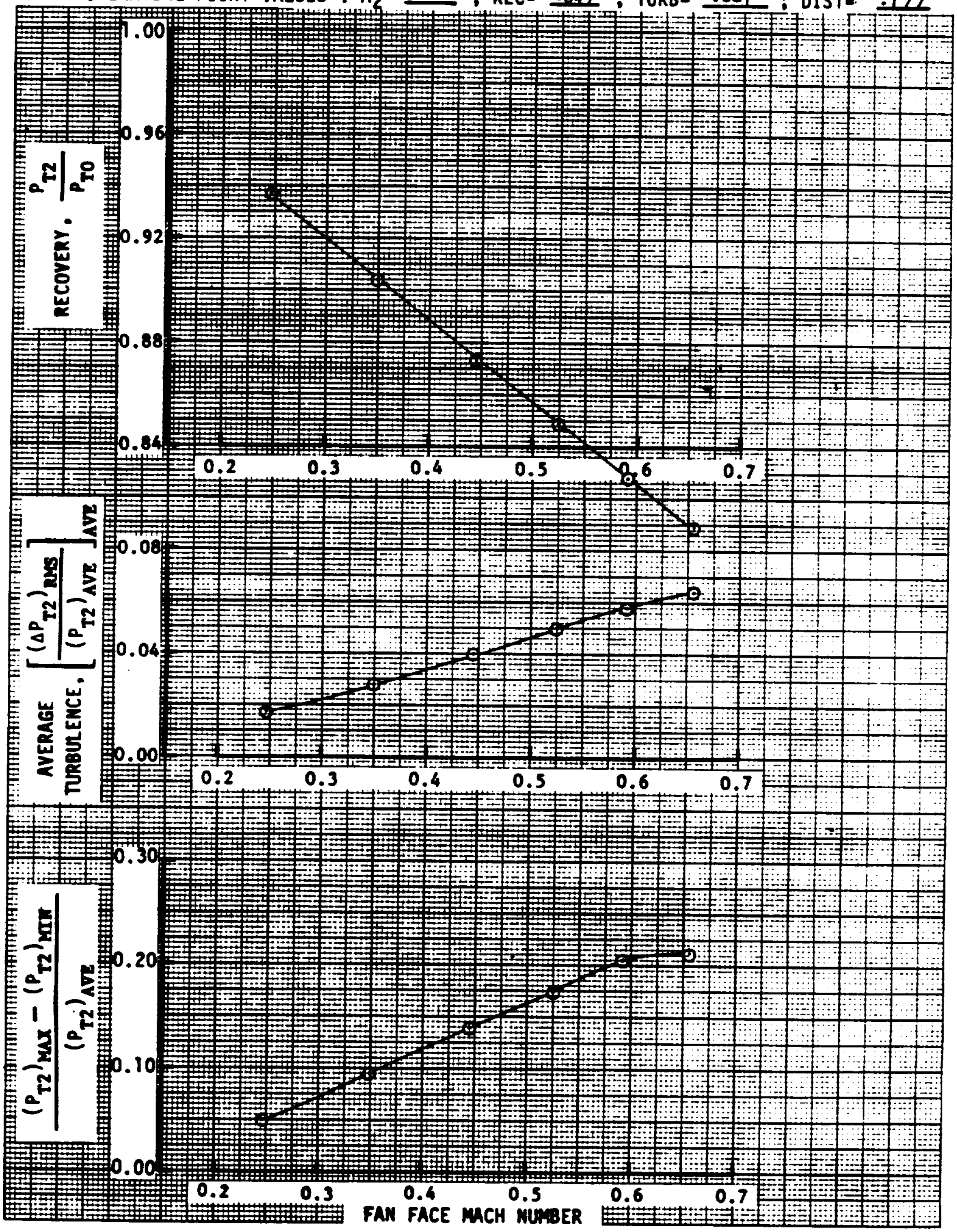
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2181-2186
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.63 ; REC= .882 ; TURB= .044 ; DIST= .198



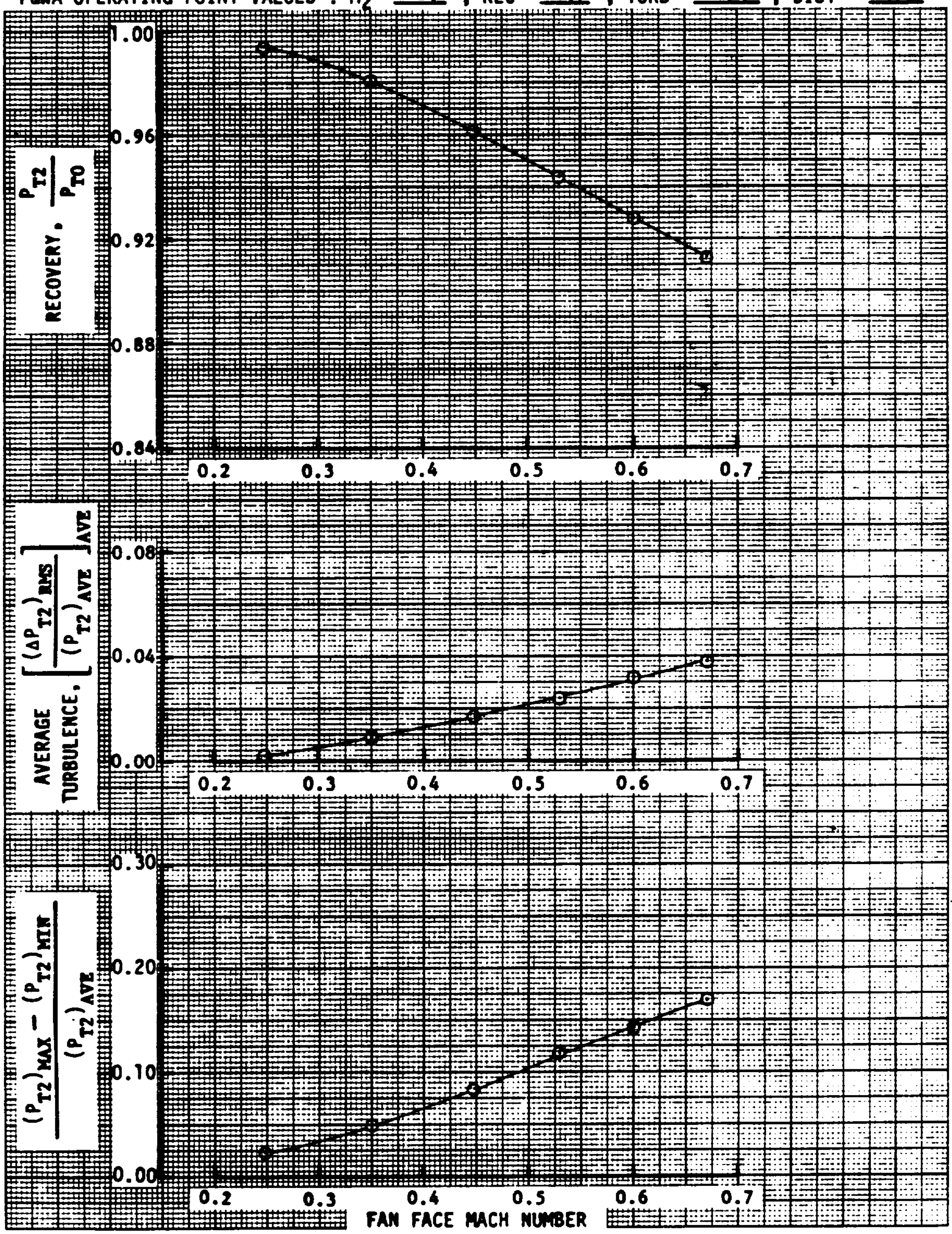
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2187-2194
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .865 ; TURB= .048 ; DIST= .194



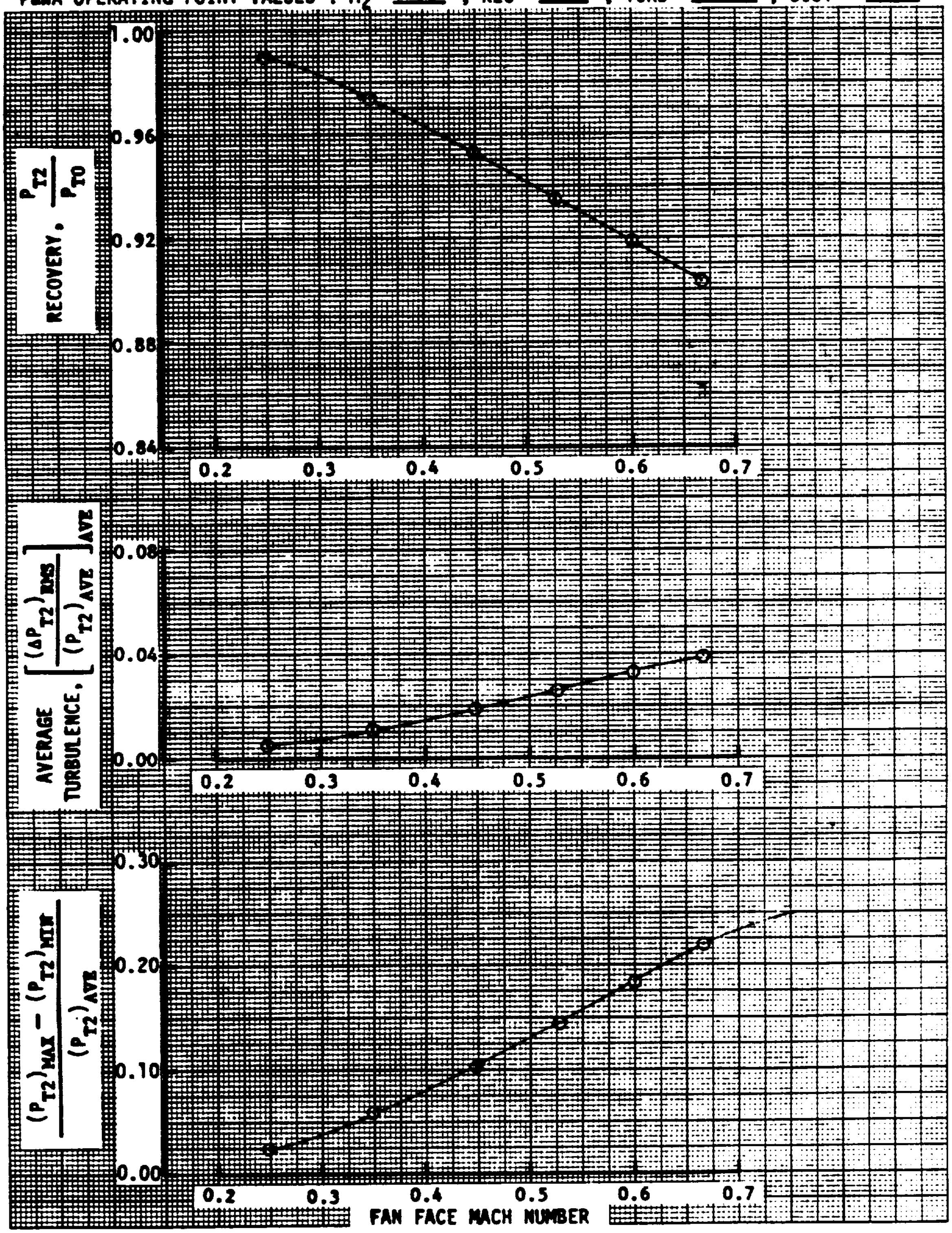
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2196-2201
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .847 ; TURB= .051 ; DIST= .177



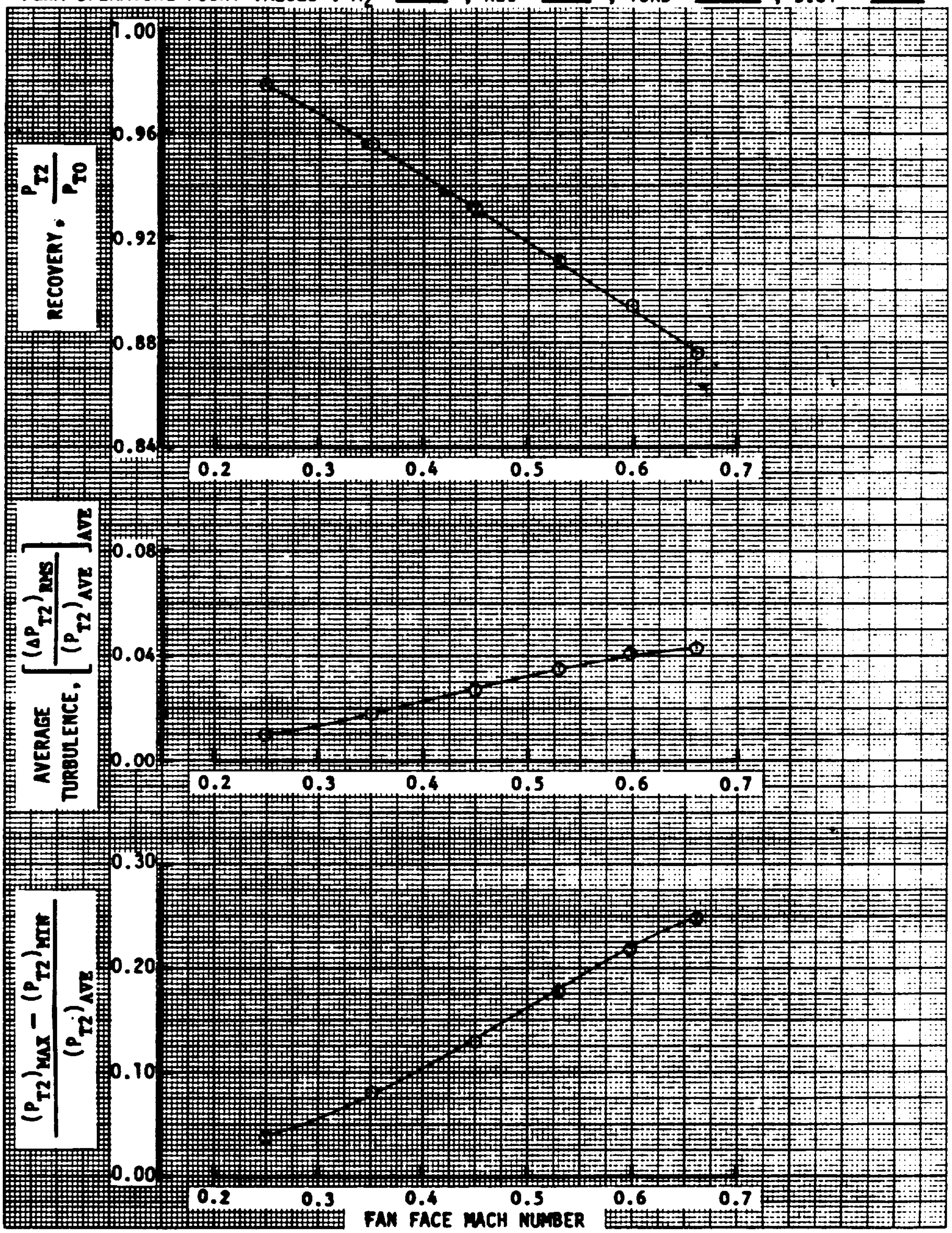
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2202-2207
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .944 ; TURB= .024 ; DIST= .116



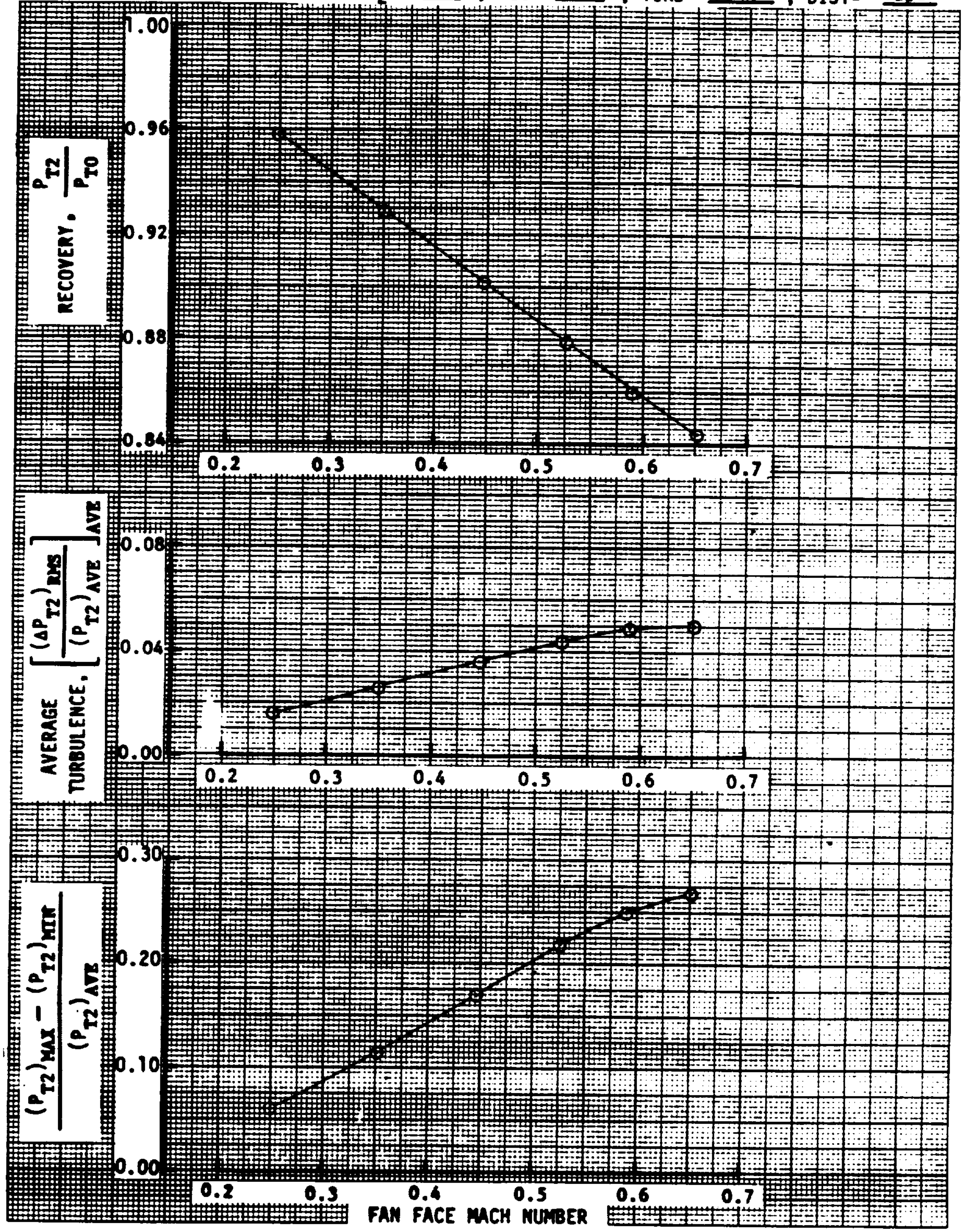
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2208-2214
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .026 ; DIST= .147



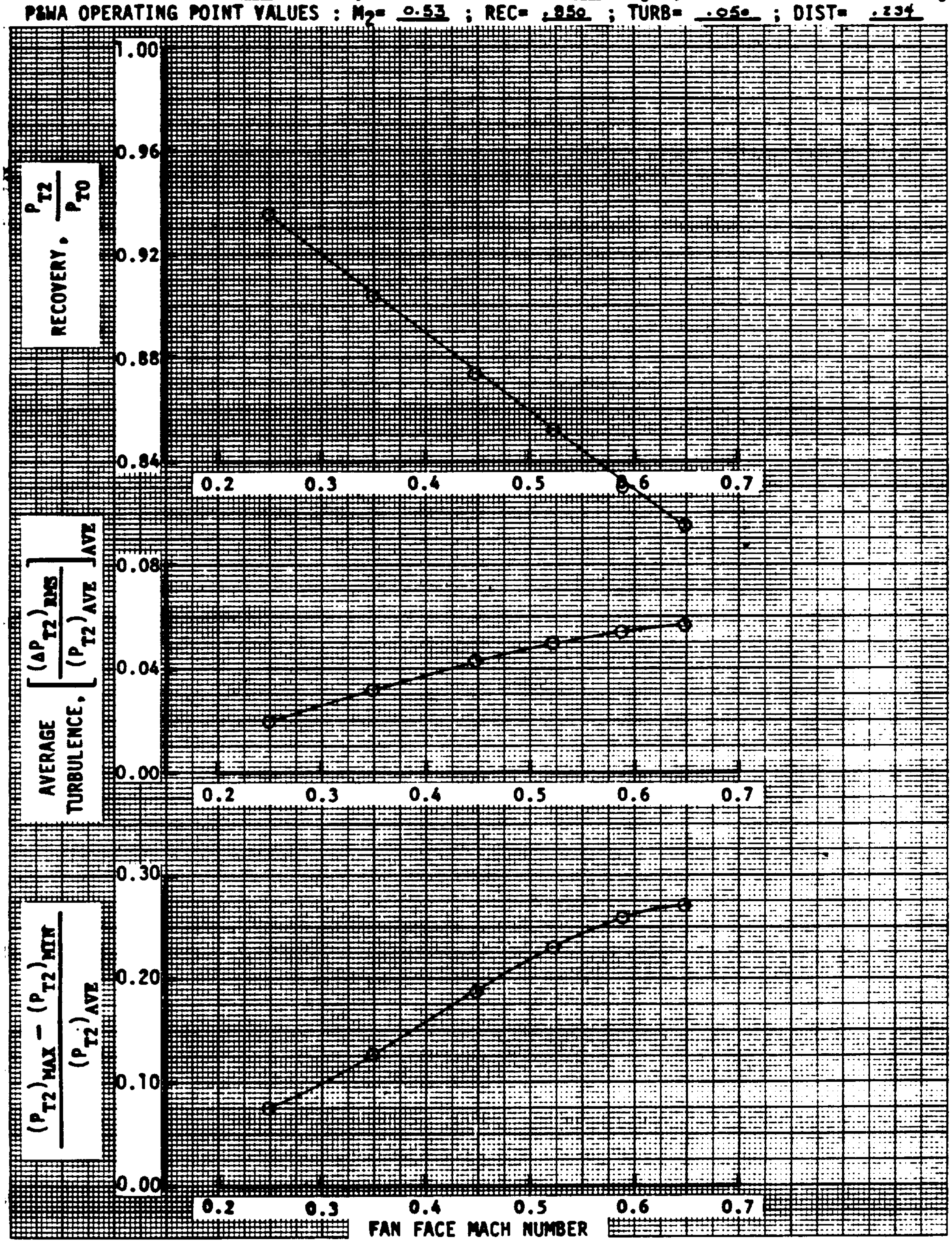
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2217-2222
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .911 ; TURB= .035 ; DIST= .179



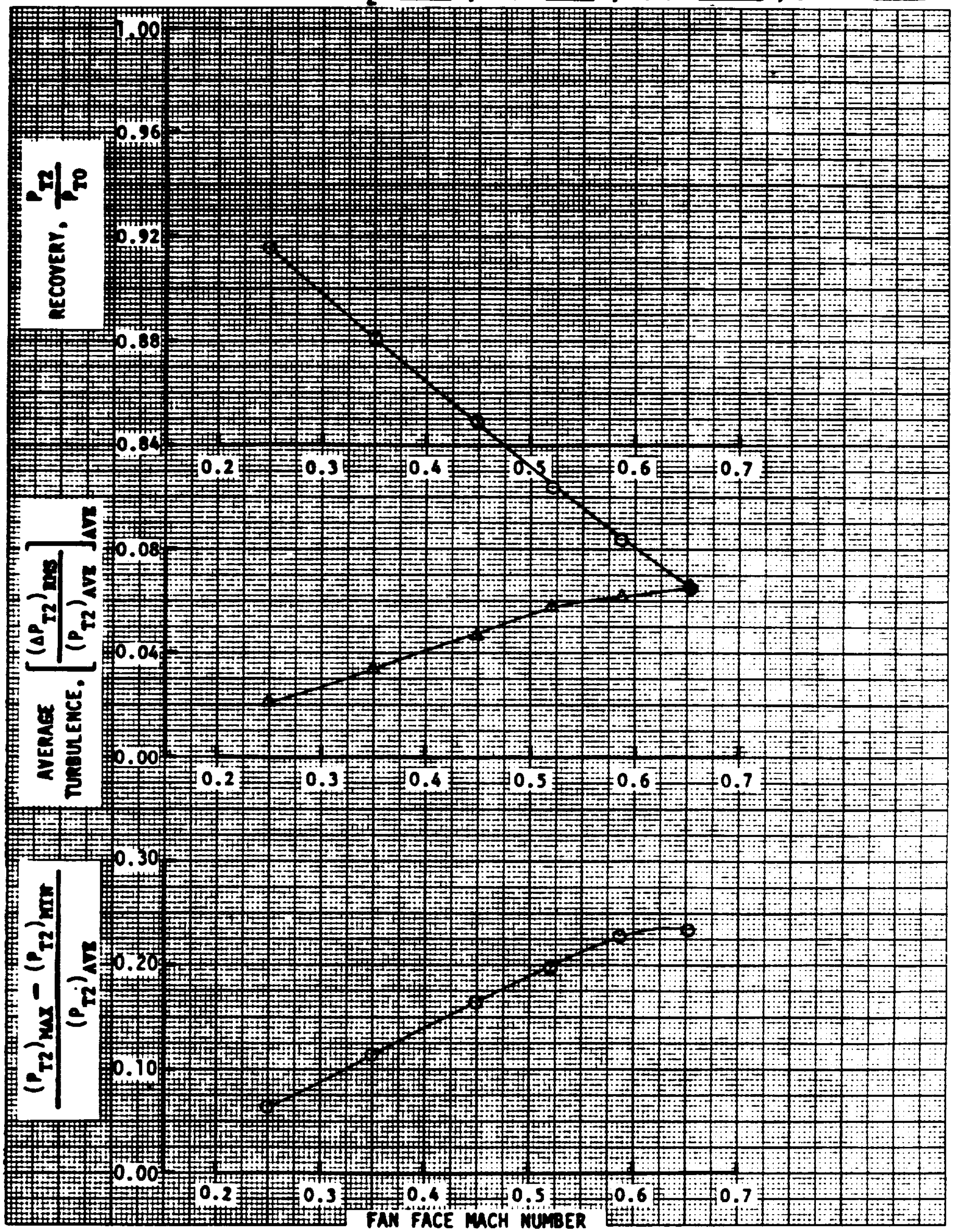
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2241-2246
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .878 ; TURB= .044 ; DIST= .222



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2229-2234
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .850 ; TURB= .050 ; DIST= .234



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3a ; READING NUMBERS 2235-2240
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .822 ; TURB= .058 ; DIST= .204



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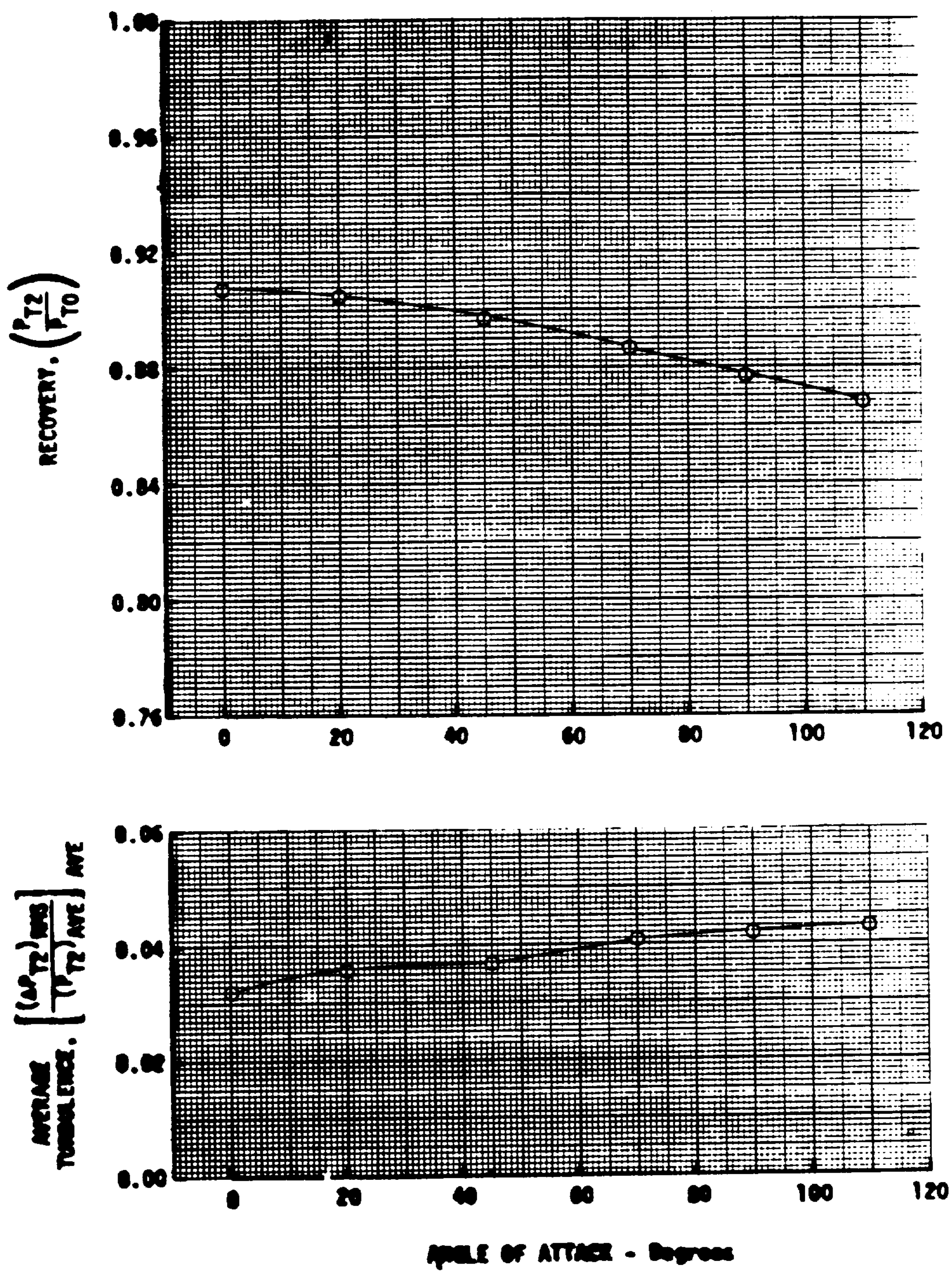
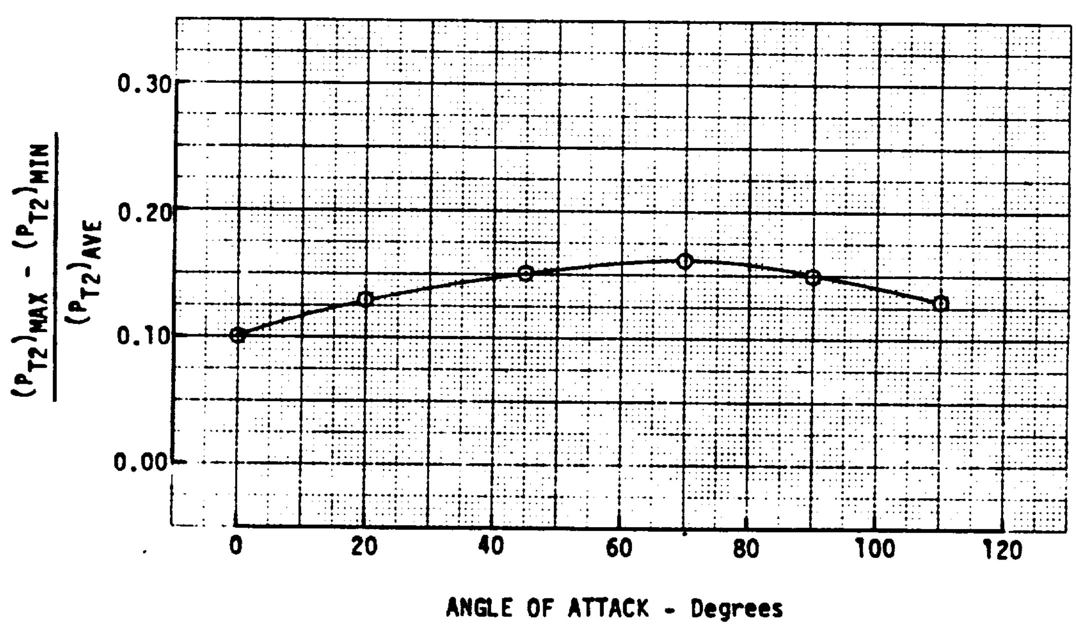
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3a **; DESCRIPTION** Baseline Inlet



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3a ; DESCRIPTION SHARP LIP BASELINE



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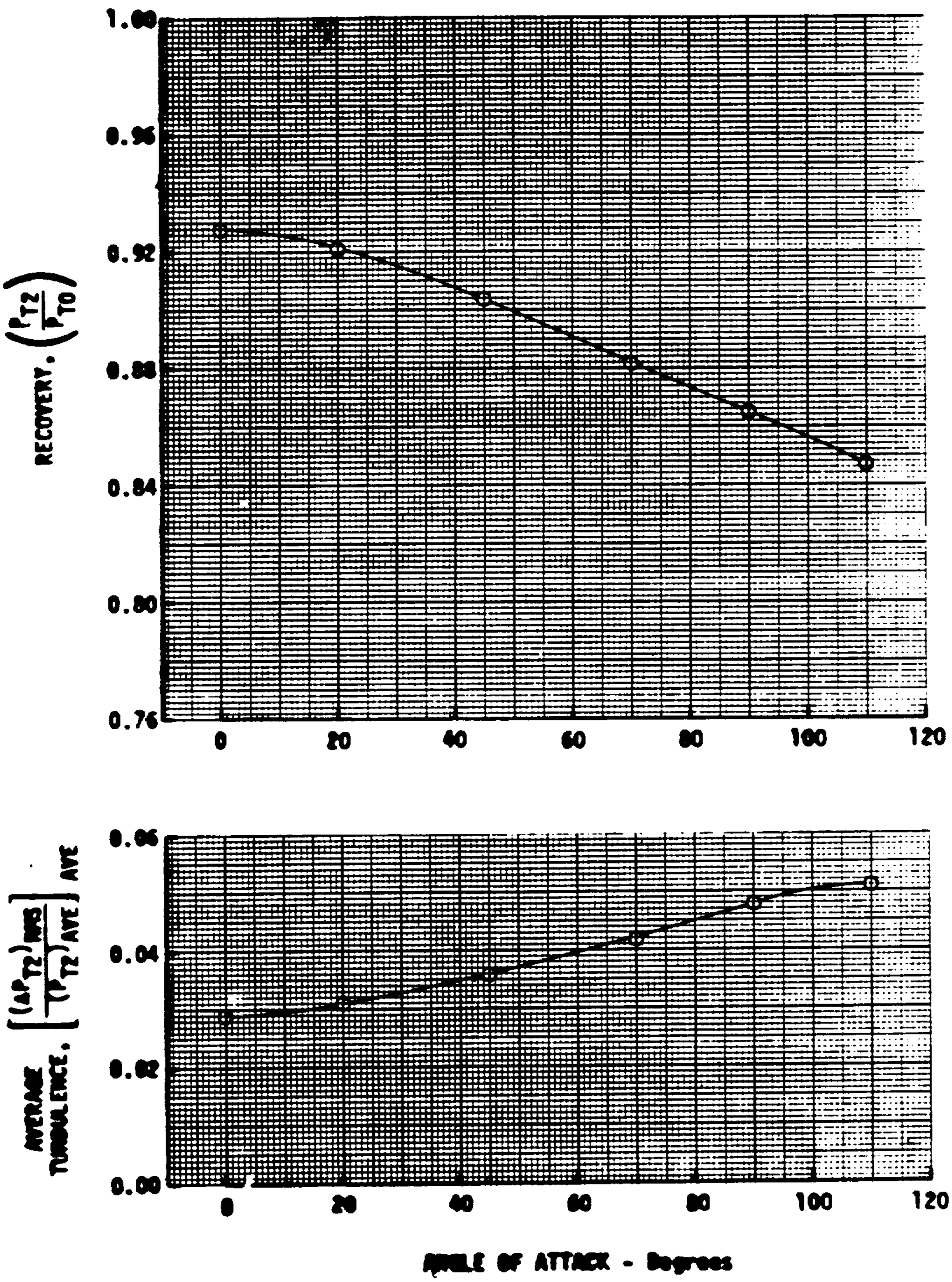
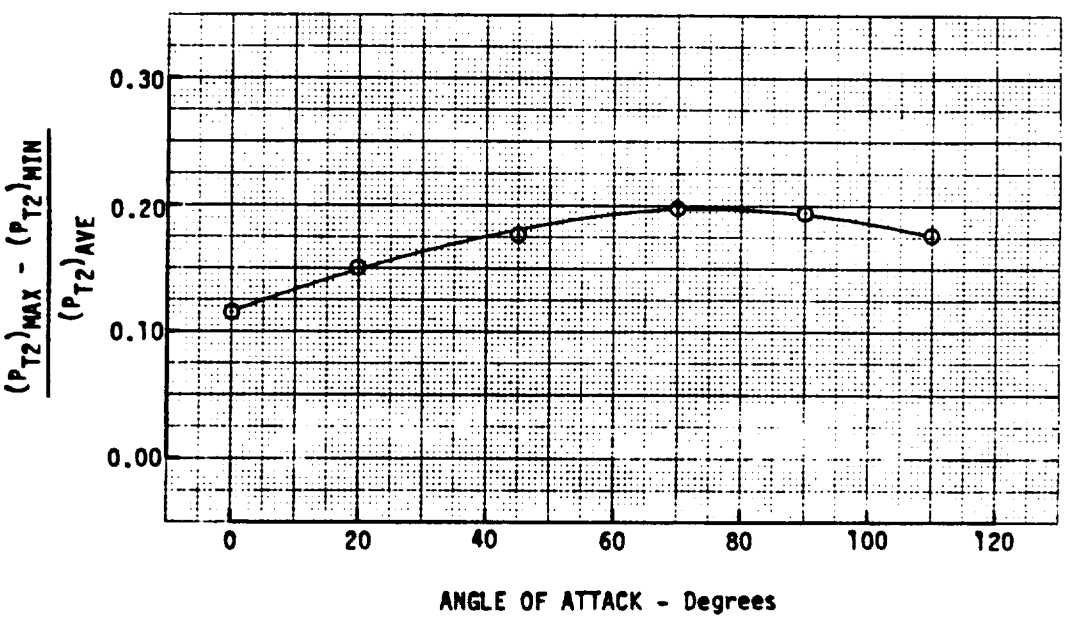
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 60 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3a; **DESCRIPTION** Sharp Lip Baseline Inlet



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3a ; DESCRIPTION Sharp Lip Baseline Inlet



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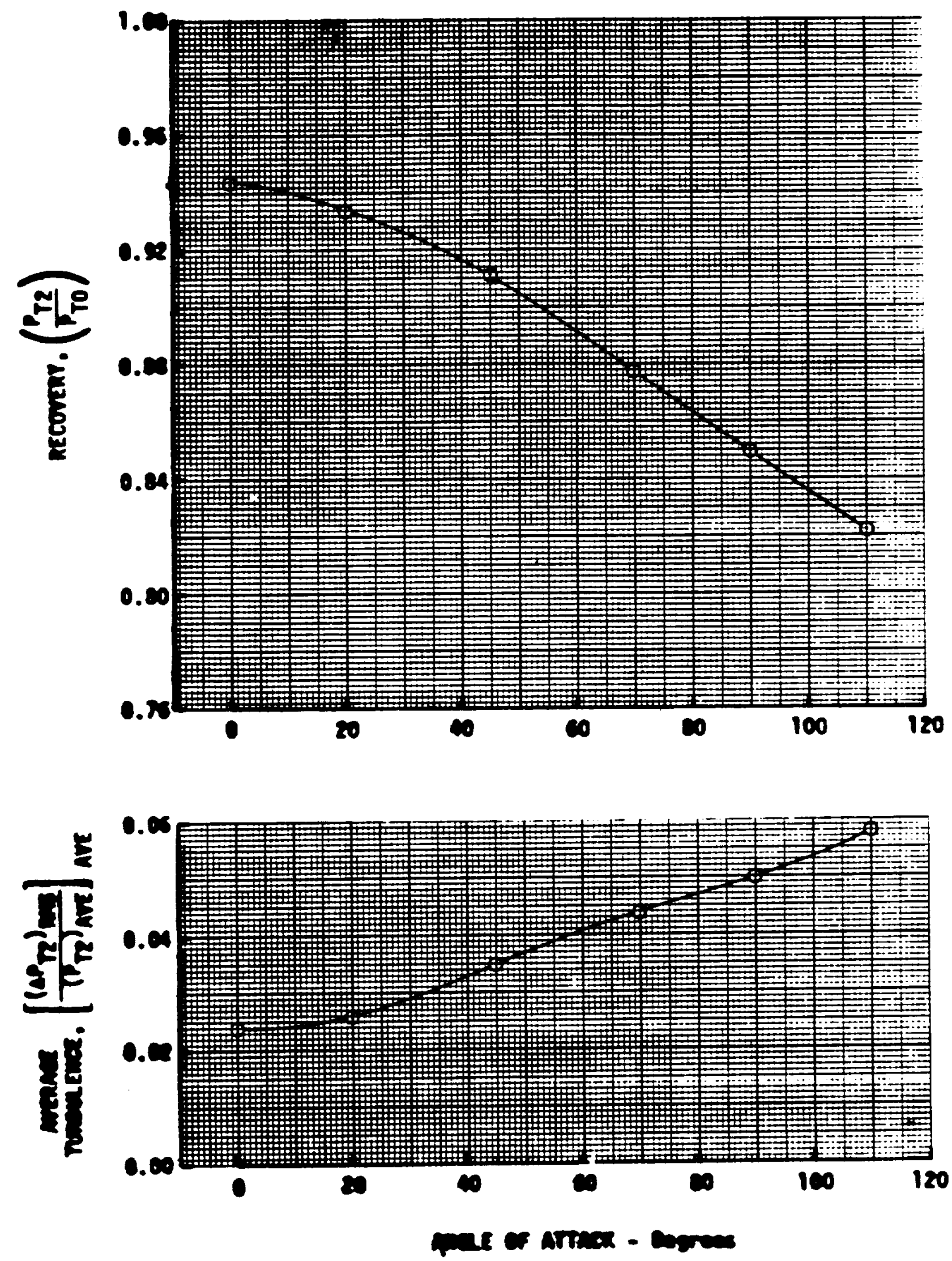
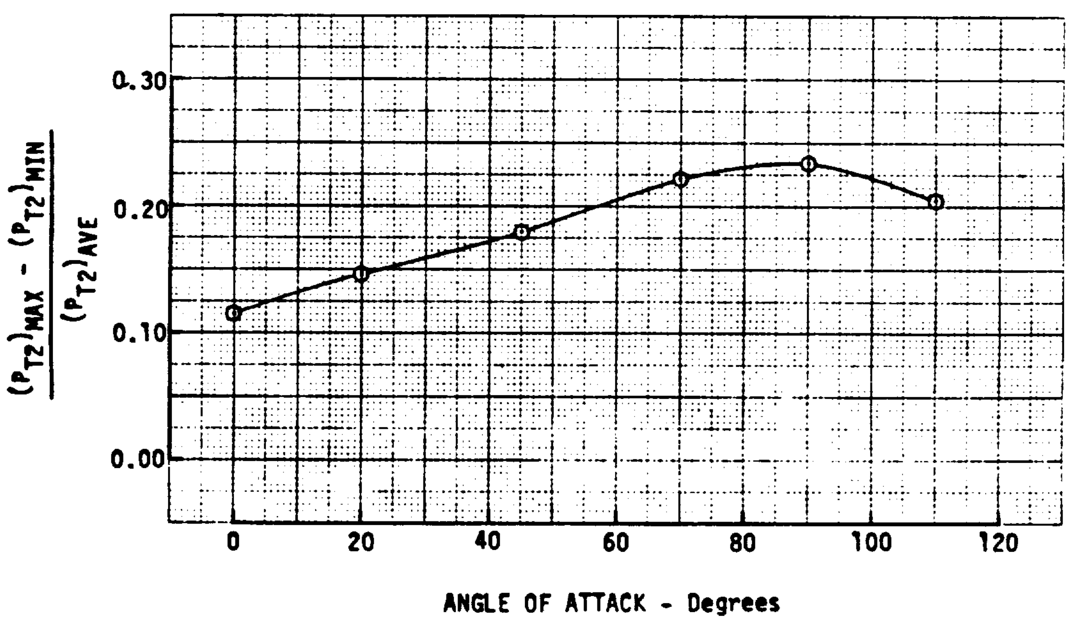
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3a **; DESCRIPTION** Sharp Lip Baseline Inlet



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3a ; DESCRIPTION SHARP LIP BASELINE



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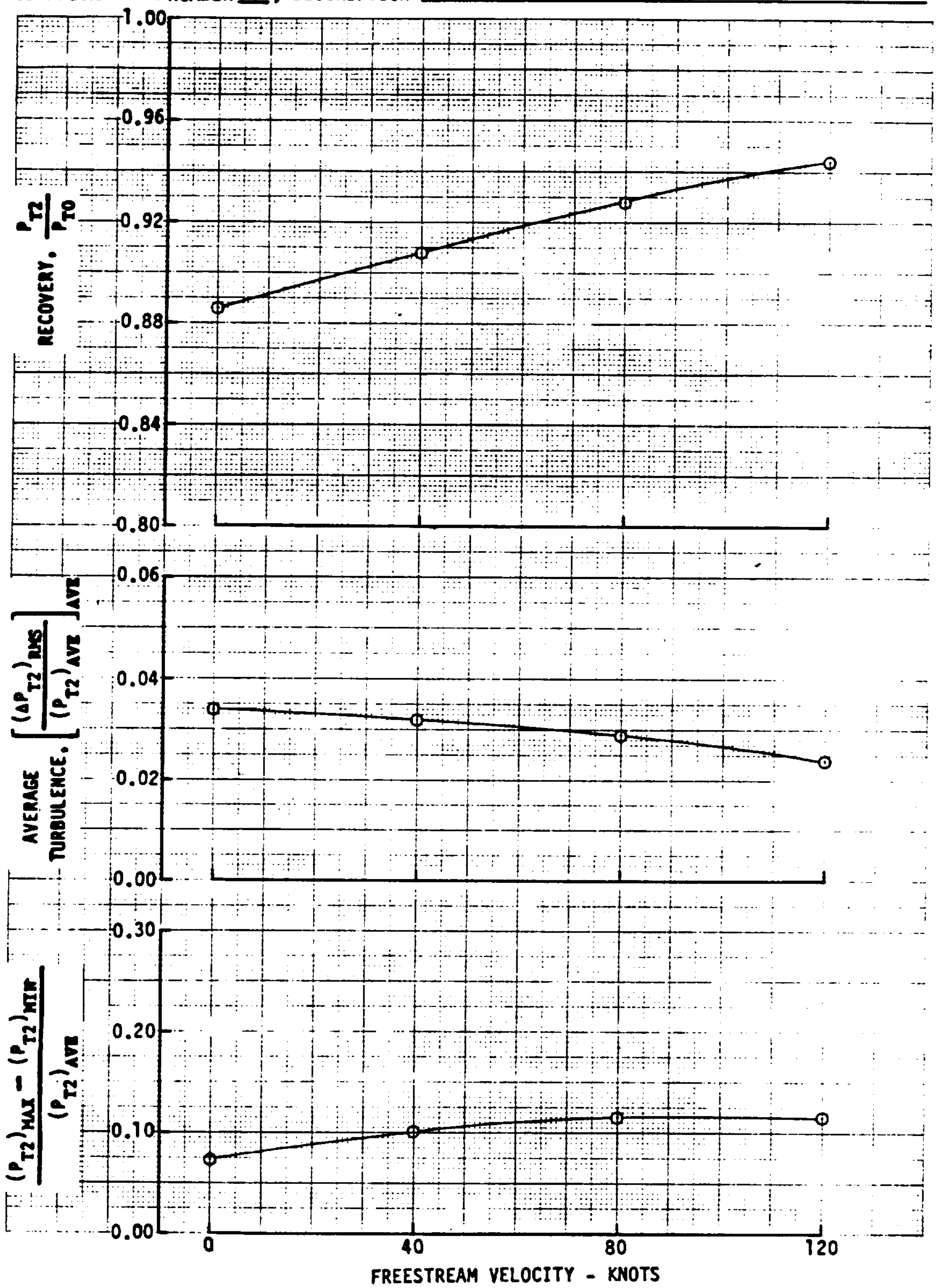
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 3a; DESCRIPTION SHARP LIP BASELINE



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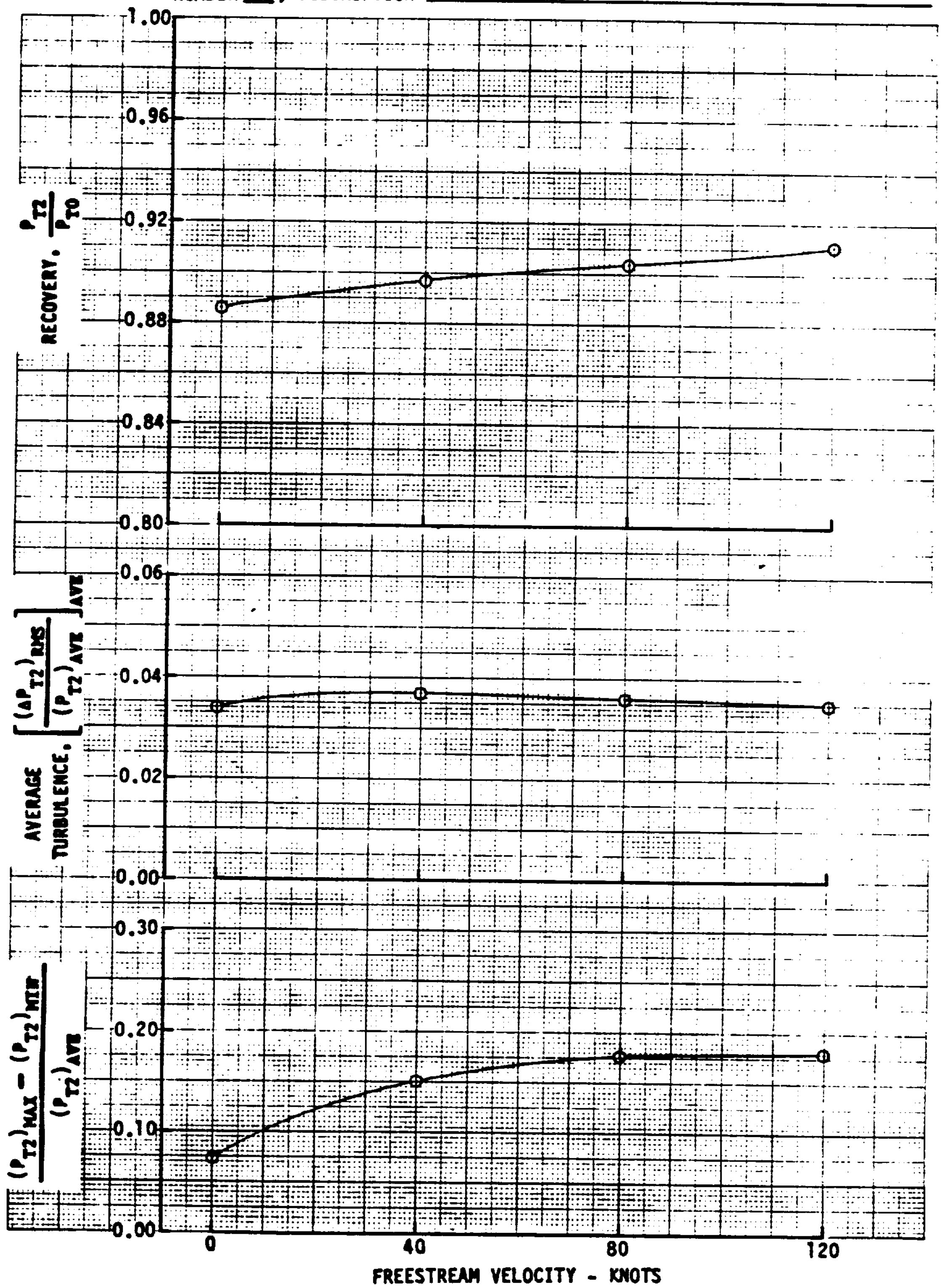
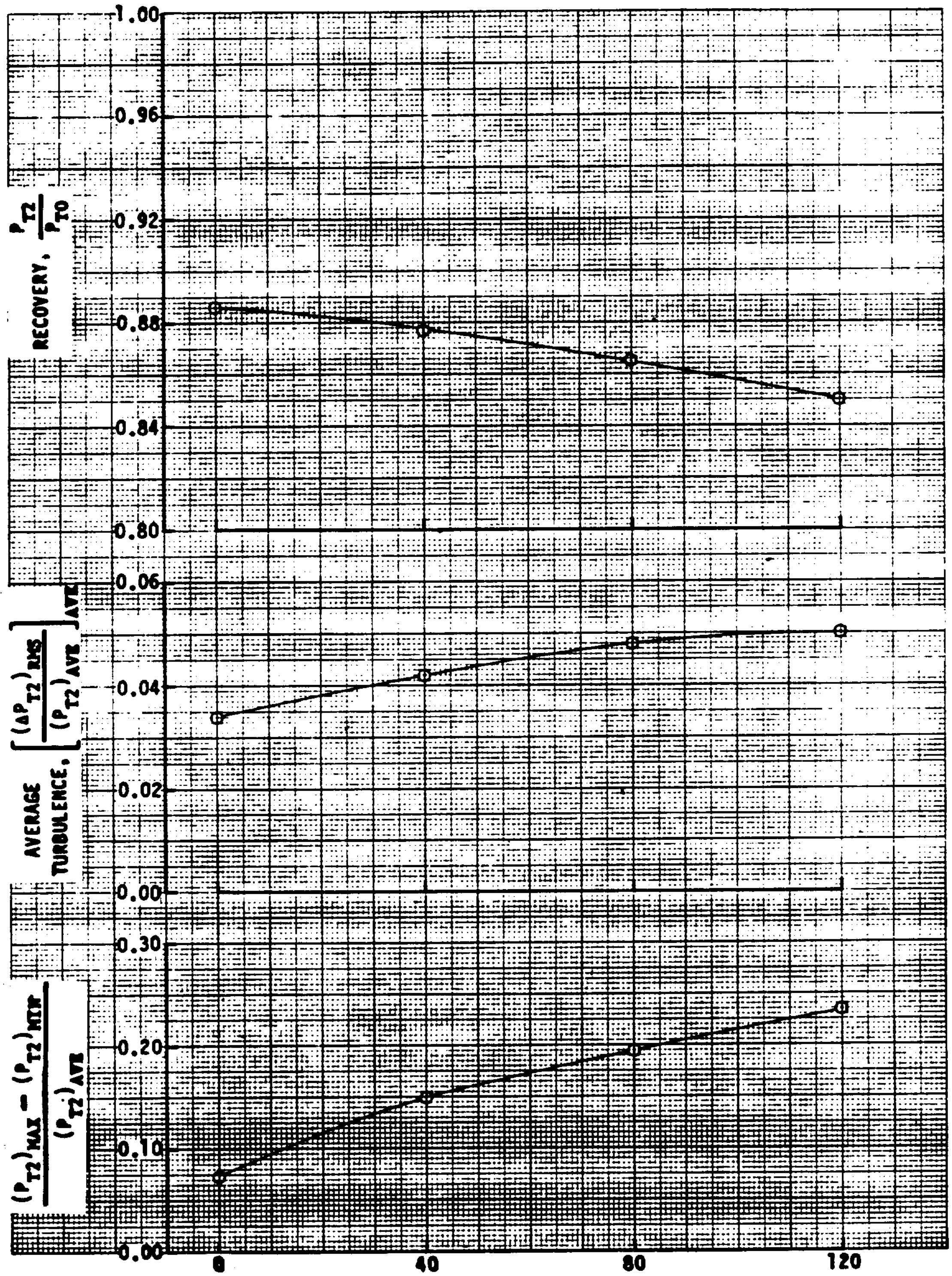
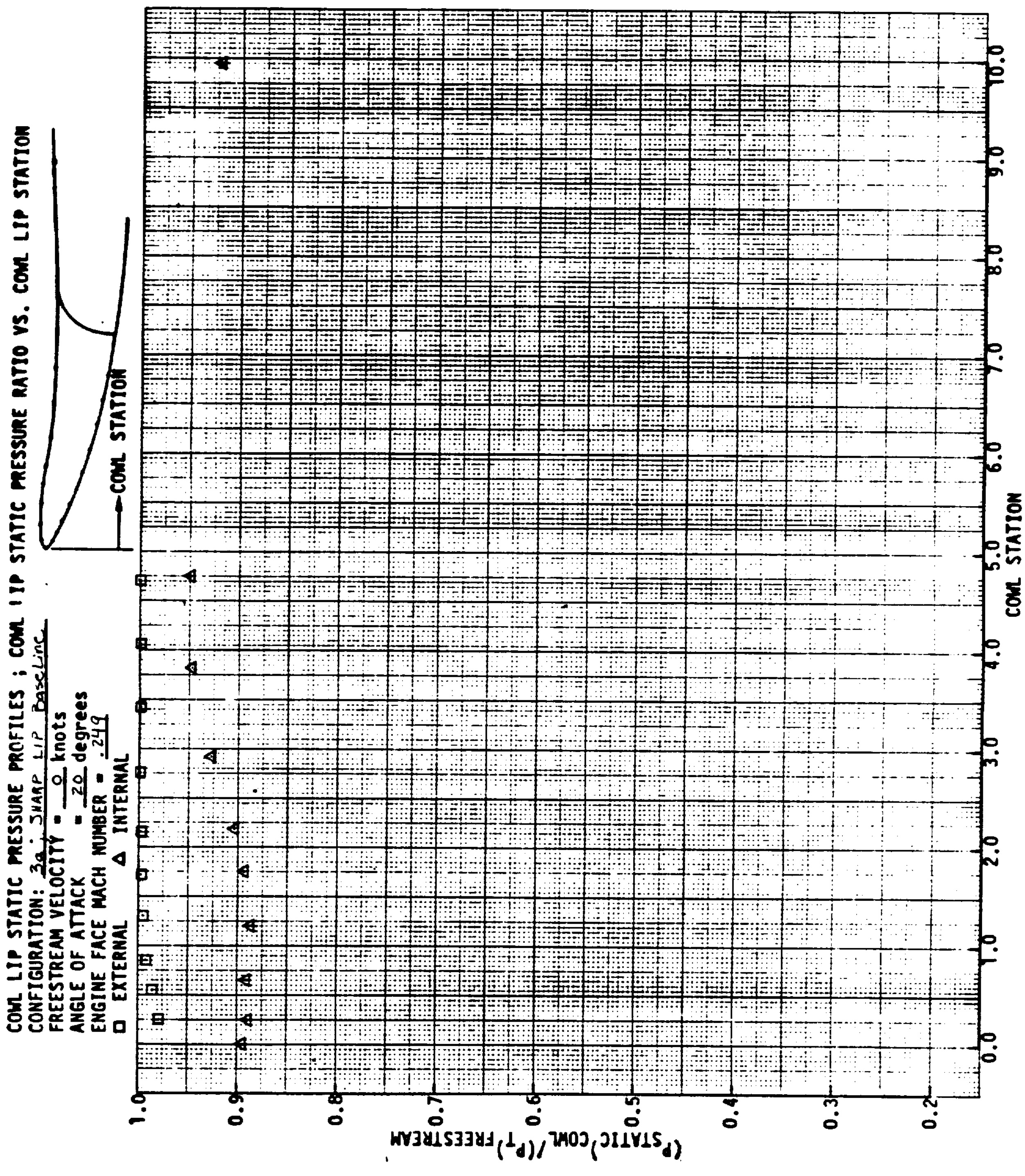
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 45 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 3a ; DESCRIPTION SHARP LIP BASELINE

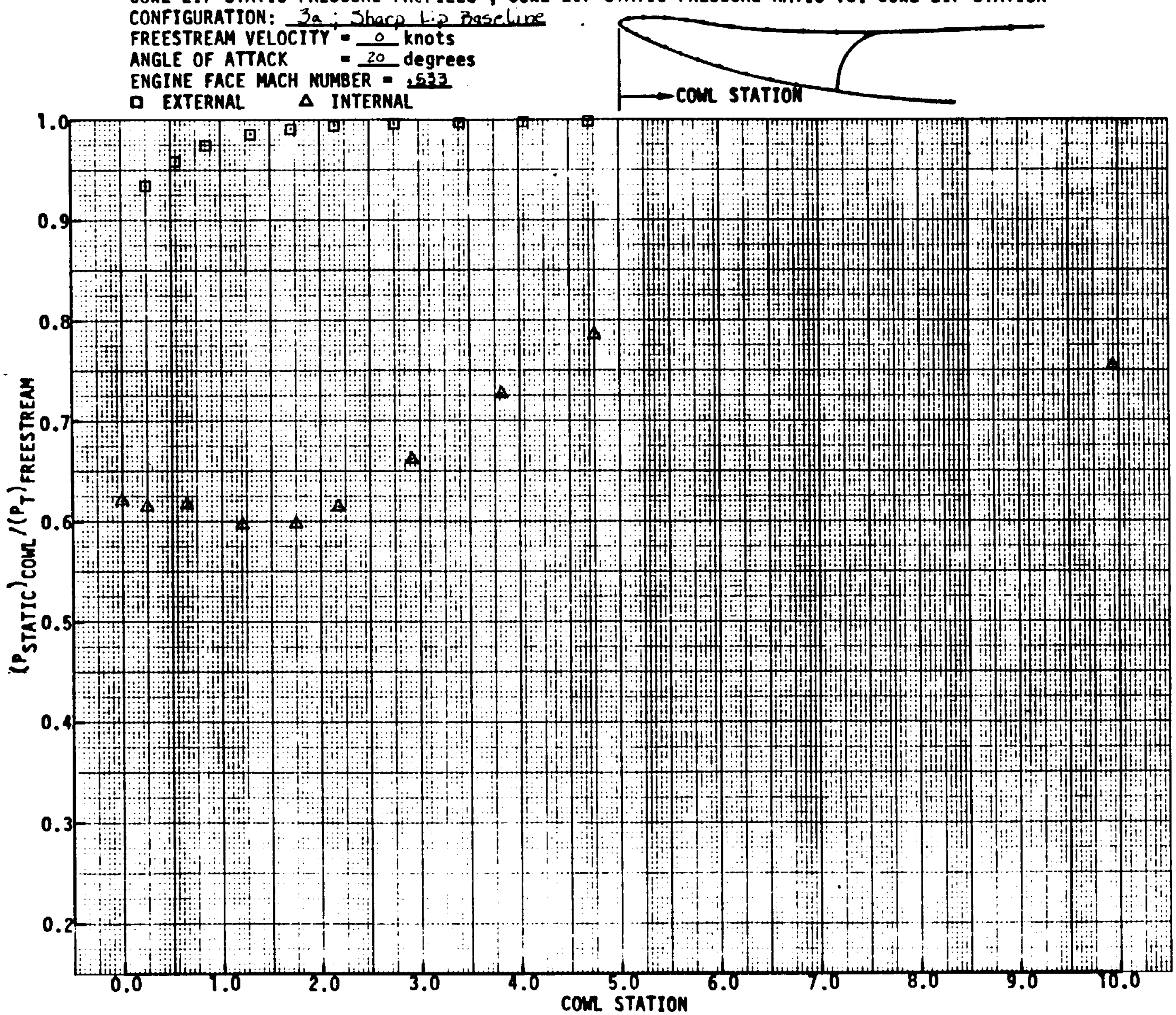


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 90 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 3a; DESCRIPTION SHARP LIP BASELINE

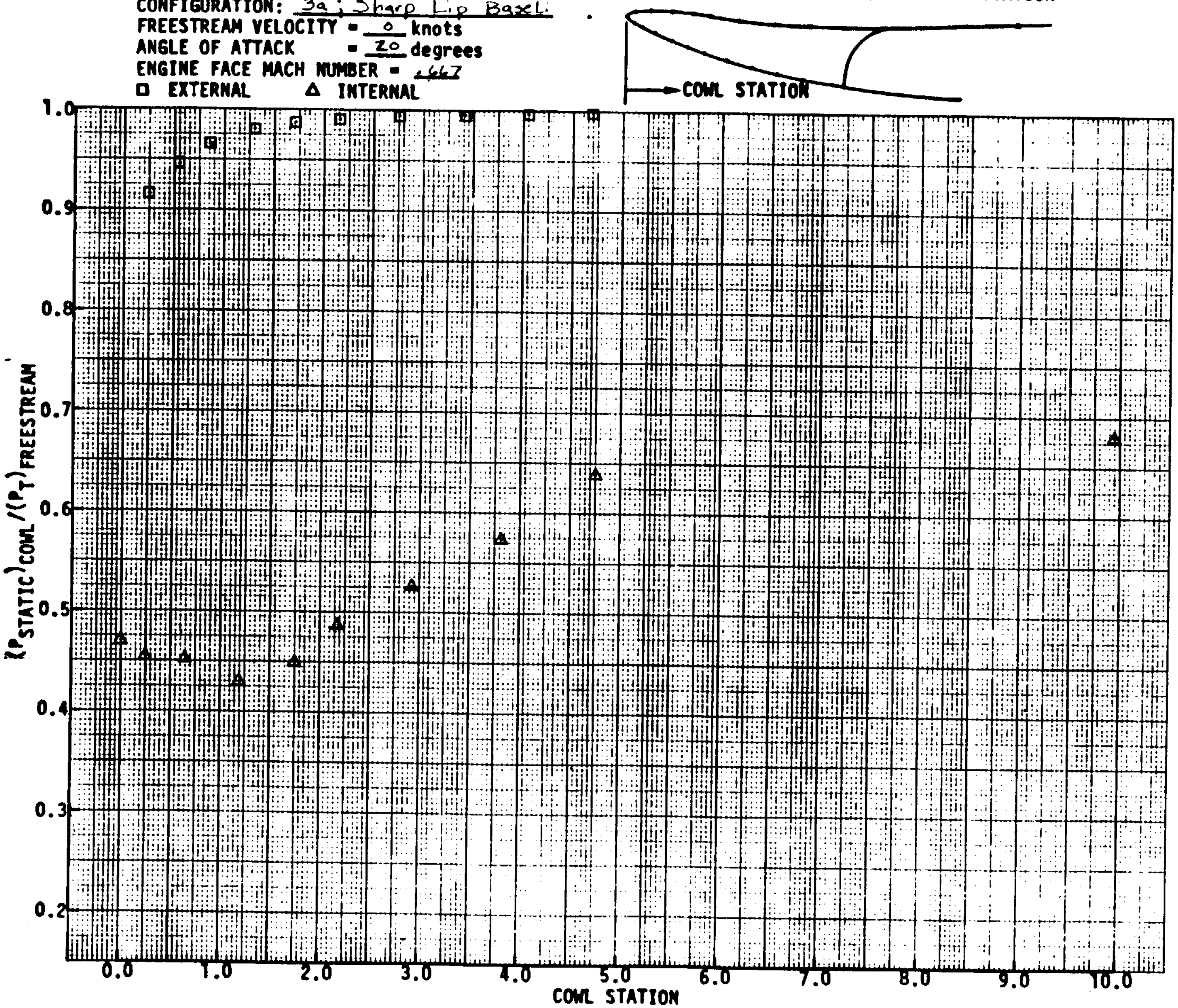



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 3a ; SHARP LIP Baseline
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .249
□ EXTERNAL
△ INTERNAL
COWL STATION
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$

COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 3a ; Sharp Lip Baseline
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .533
□ EXTERNAL △ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 3a ; Sharp Lip Basel.
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .667
□ EXTERNAL △ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LI TATIC PRESSURE RATIO VS. COWL LIP STATION

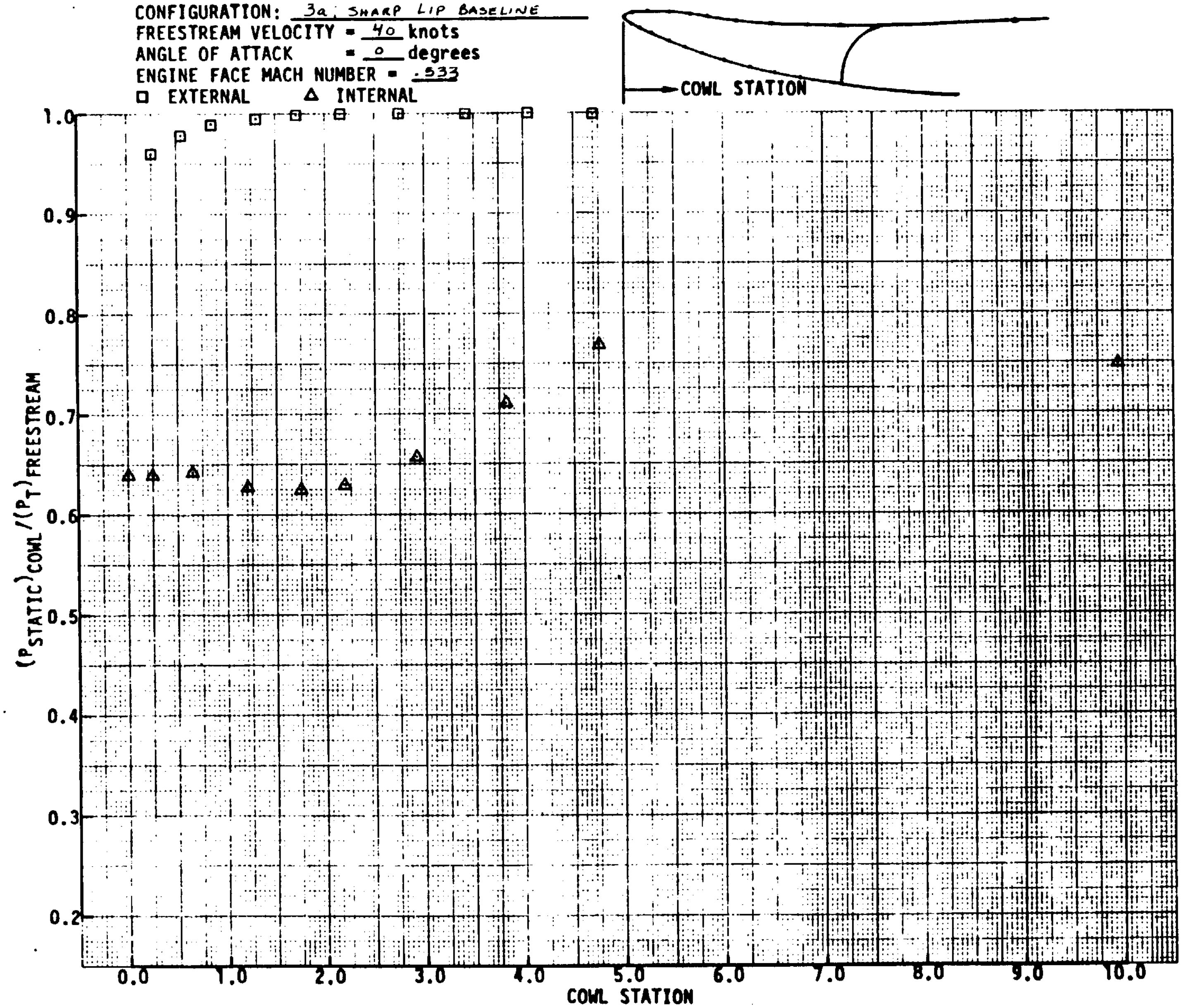
CONFIGURATION: 3a, SHARP LIP BASELINE

FREESTREAM VELOCITY = 40 knots

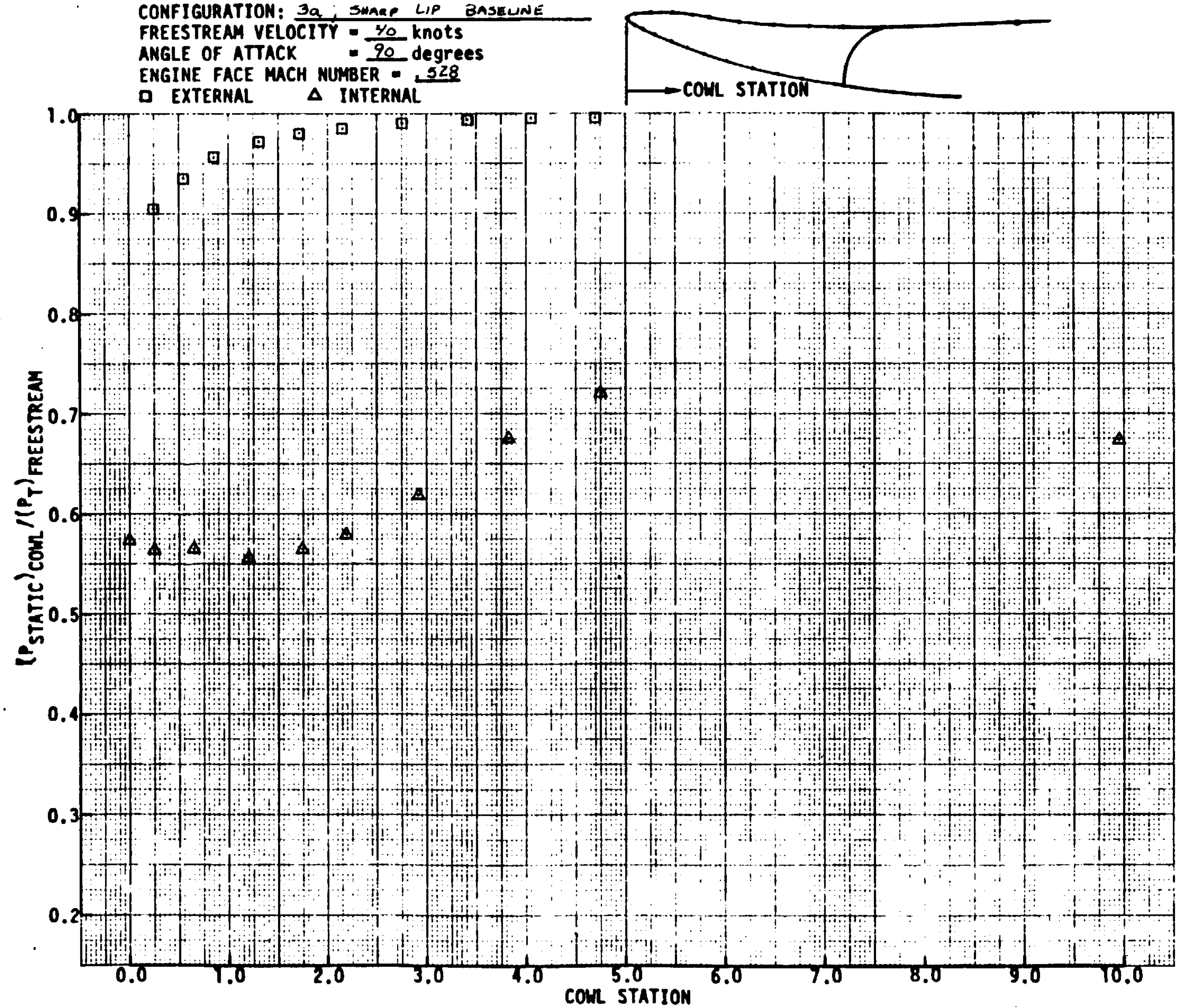
ANGLE OF ATTACK = 0 degrees

ENGINE FACE MACH NUMBER = .533

□ EXTERNAL △ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LI TATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 3a ; SHARP LIP BASELINE
FREESTREAM VELOCITY = 40 knots
ANGLE OF ATTACK = 90 degrees
ENGINE FACE MACH NUMBER = .528
□ EXTERNAL △ INTERNAL



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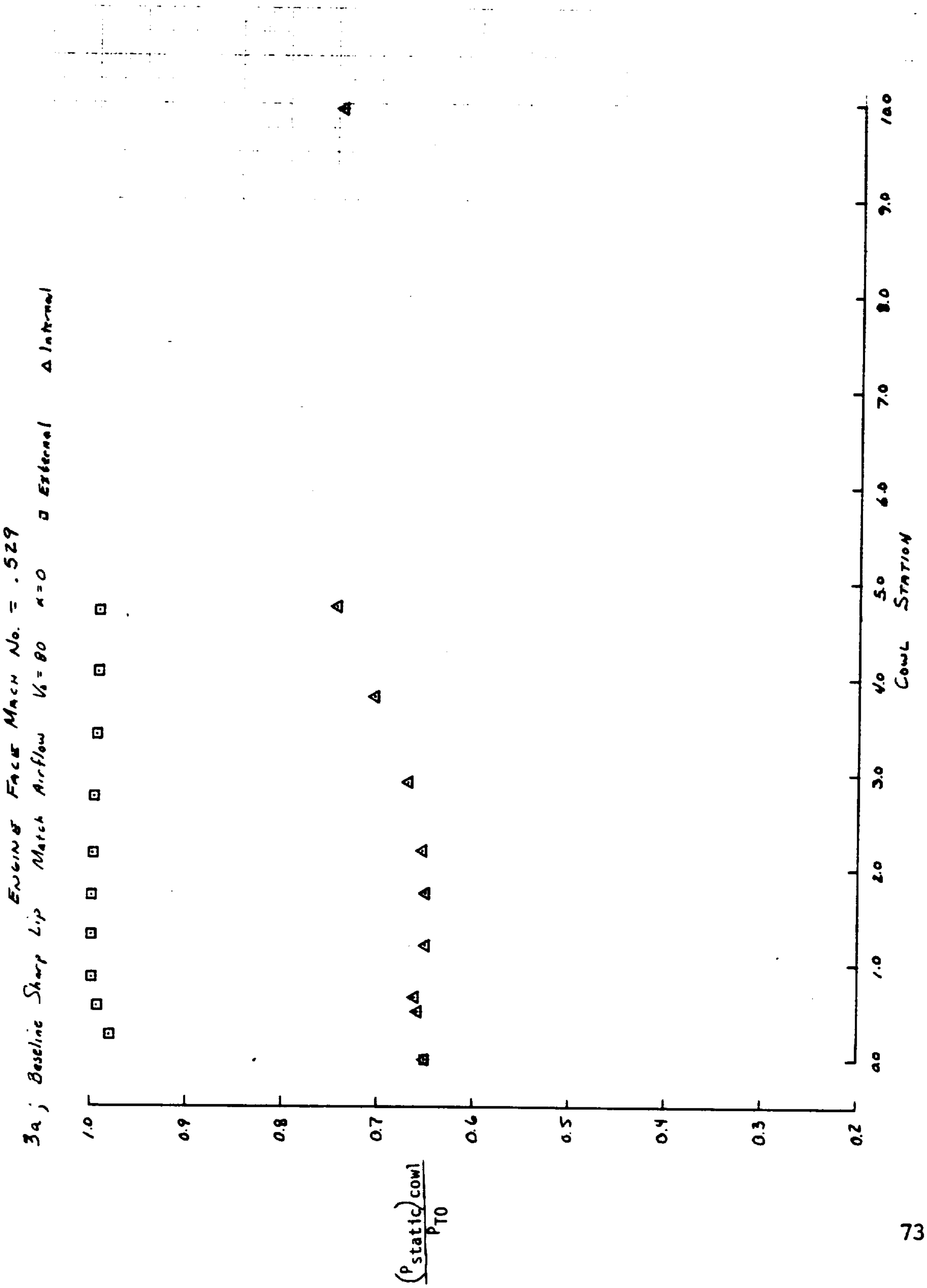

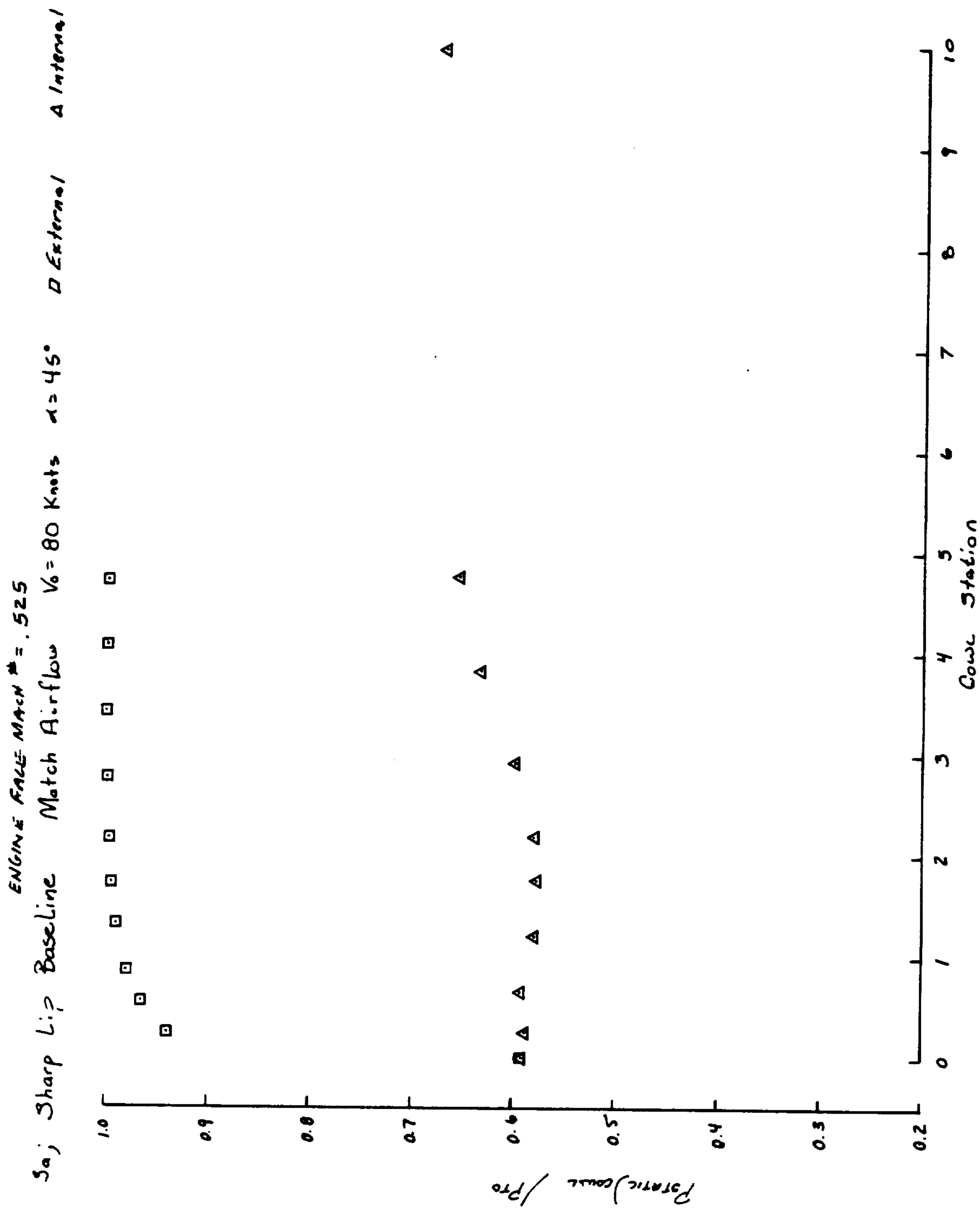

5aj Sharp Lip Baseline
ENGINE FACE MACH # = .525
Match Airflow
V₀ = 80 Knots
α = 45°
□ External
△ Internal
Cowl Station
Pstatic)cowl / Pt0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0
1
2
3
4
5
6
7
8
9
10

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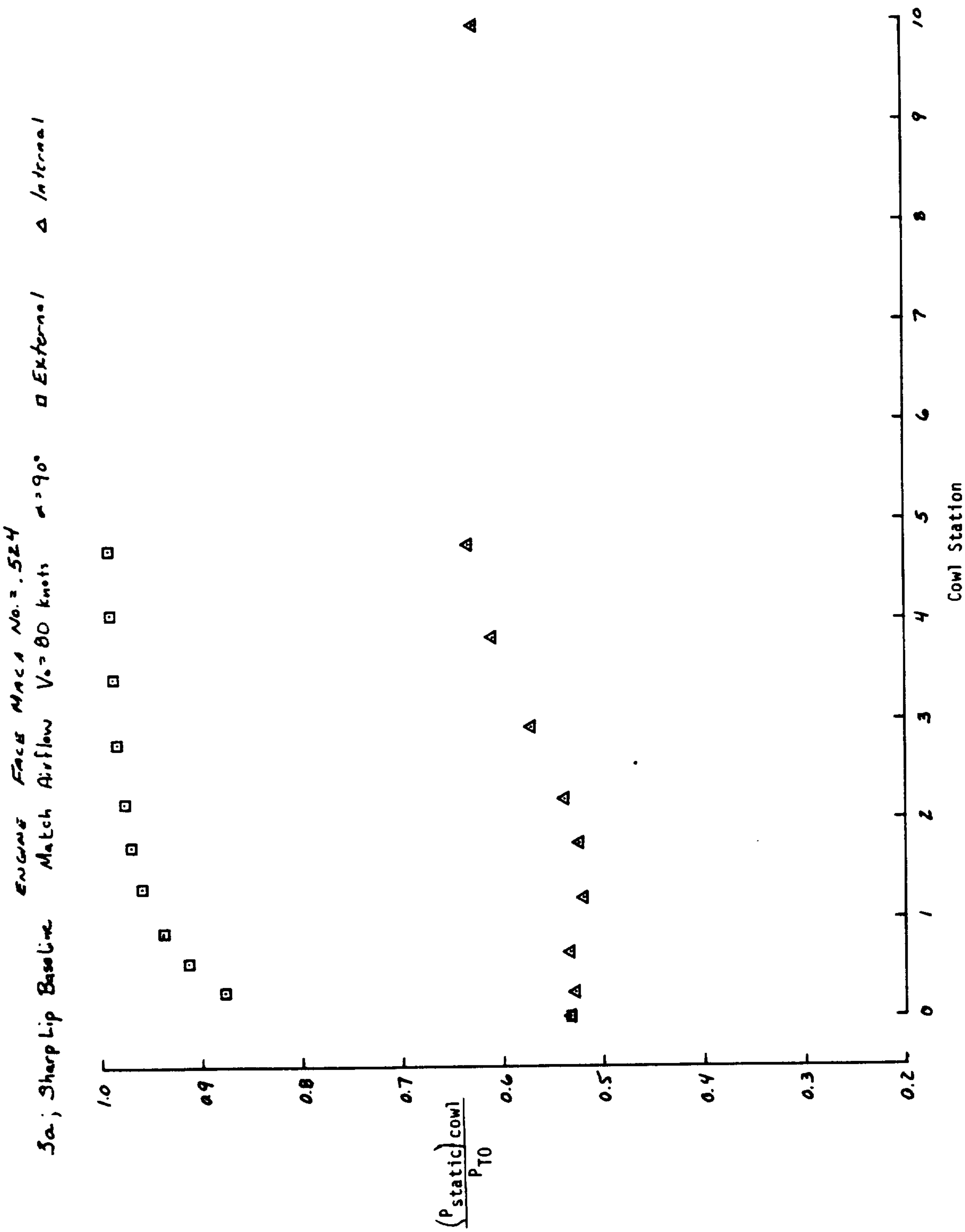
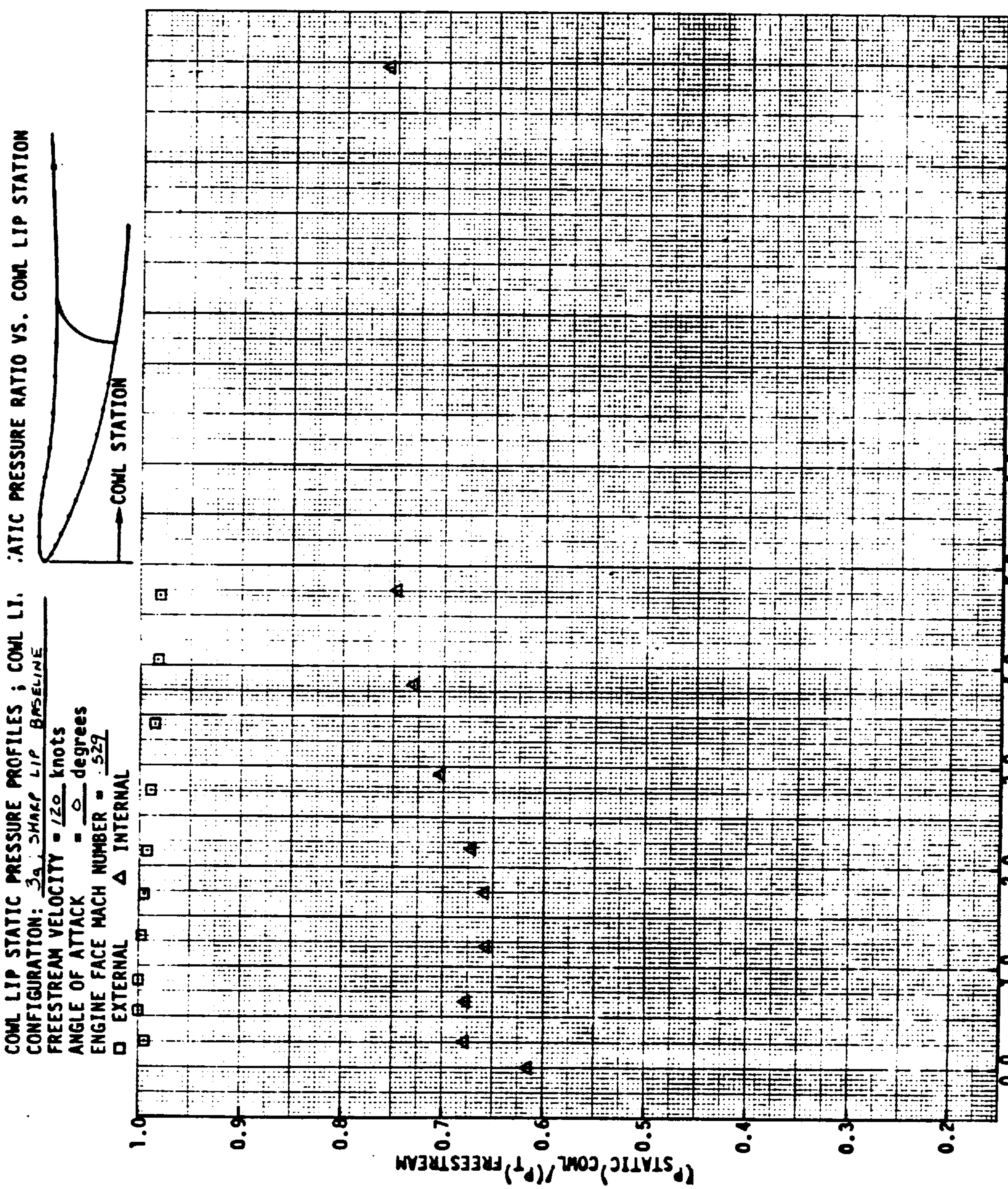



COWL LIP STATIC PRESSURE PROFILES ; COWL LI. :ATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 3a, SHARP LIP BASELINE
FREESTREAM VELOCITY = 120 knots
ANGLE OF ATTACK = 0 degrees
ENGINE FACE MACH NUMBER = .529
□ EXTERNAL △ INTERNAL
COWL STATION
COWL STATION
(P STATIC)COWL/(PT)FREESTREAM
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0

COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

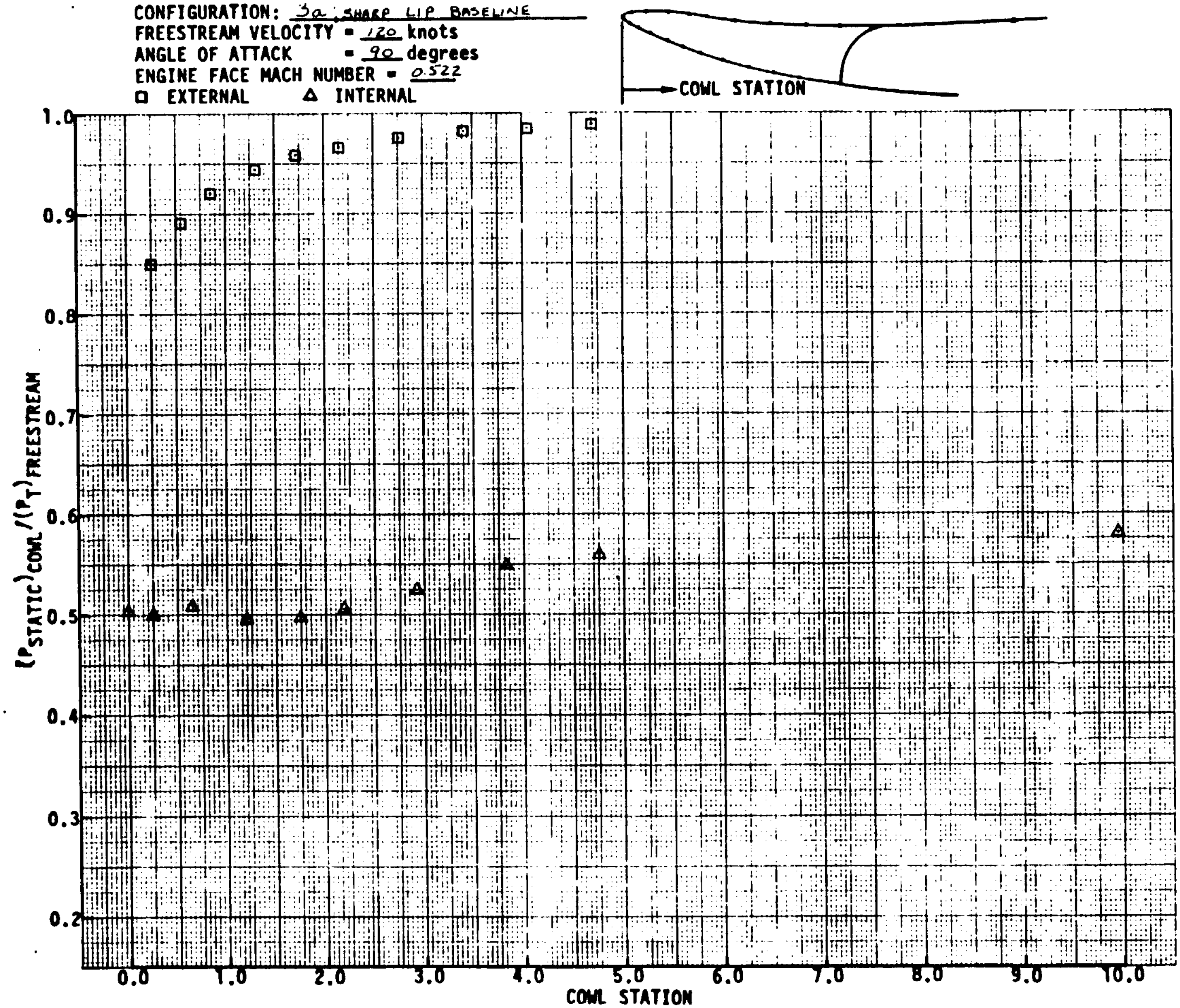
CONFIGURATION: 3a SHARP LIP BASELINE

FREESTREAM VELOCITY = 120 knots

ANGLE OF ATTACK = 90 degrees

ENGINE FACE MACH NUMBER = 0.522

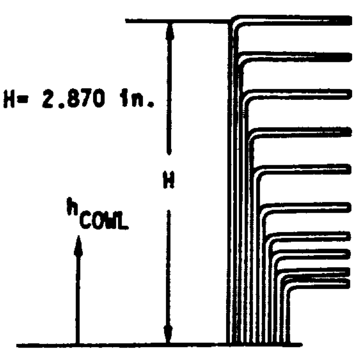
□ EXTERNAL △ INTERNAL

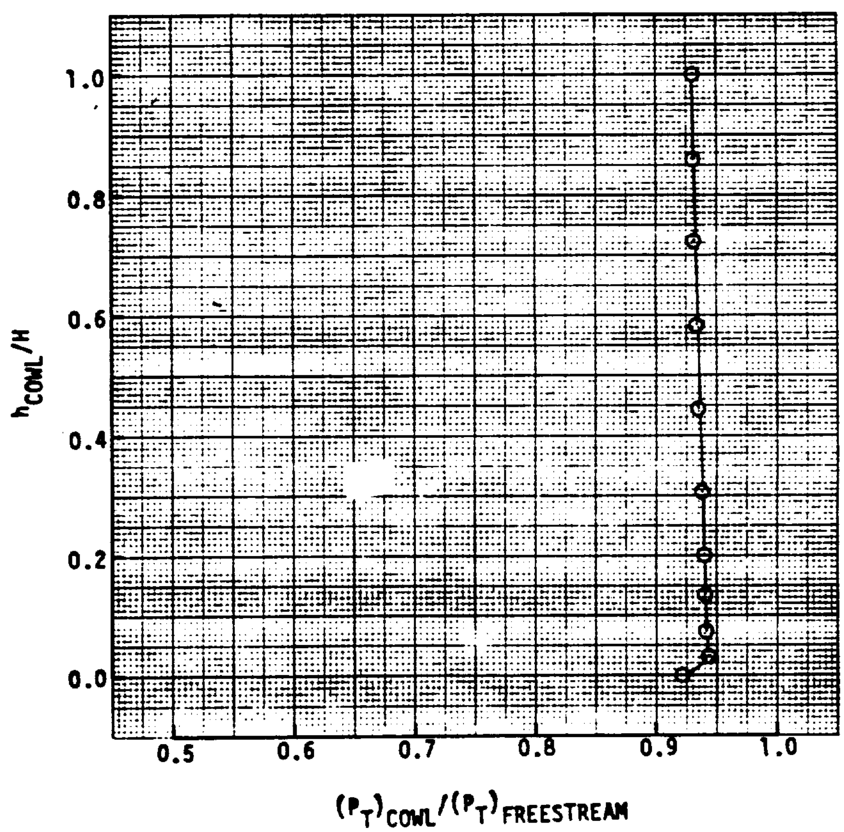


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .249

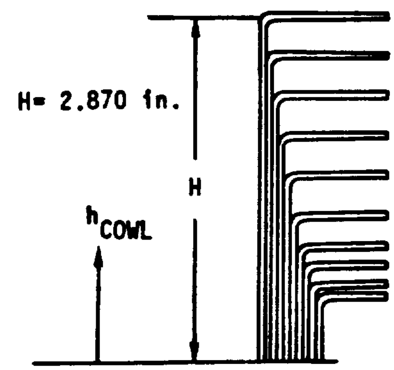


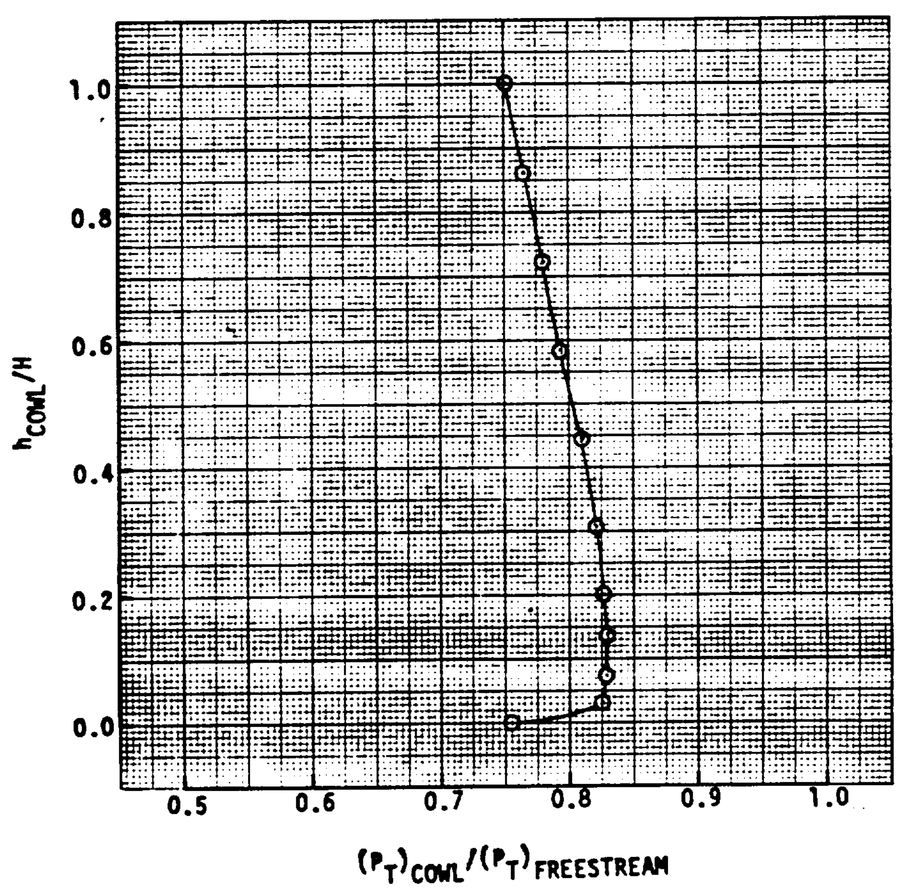


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

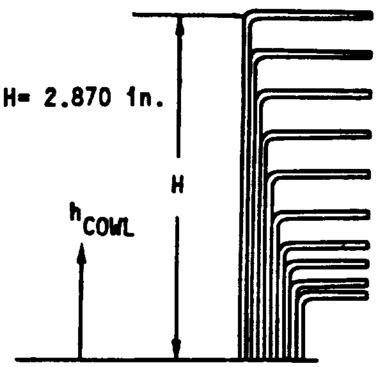


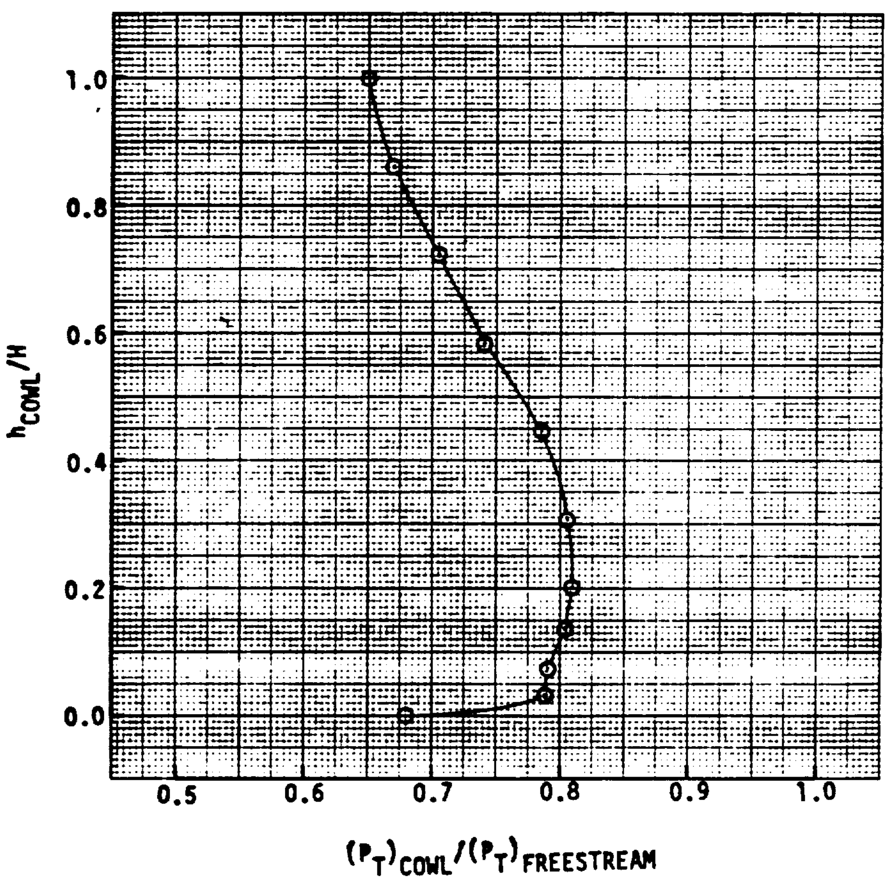


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a ; DESCRIPTION SHARP LIP BASELINE

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .667

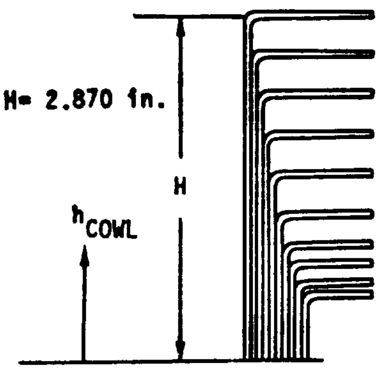


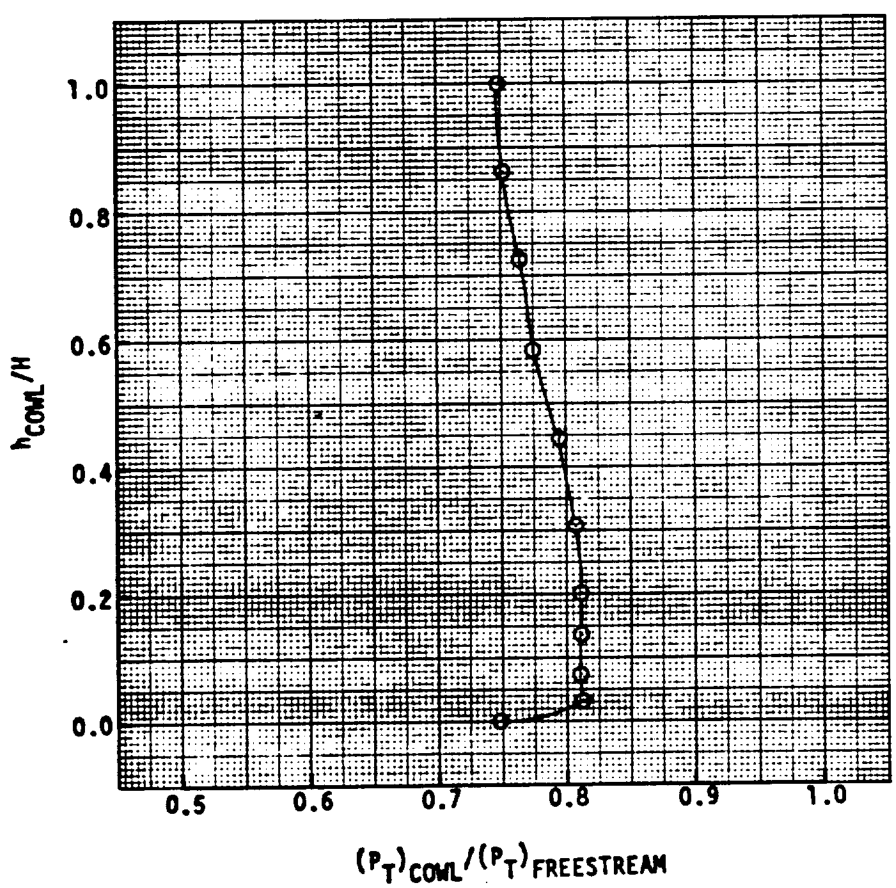


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a ; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 40 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

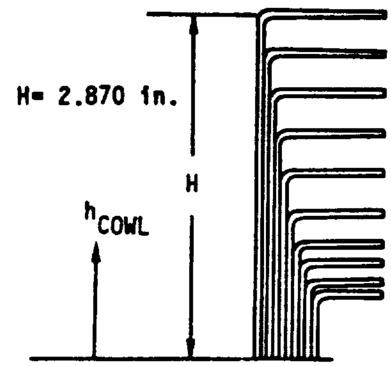


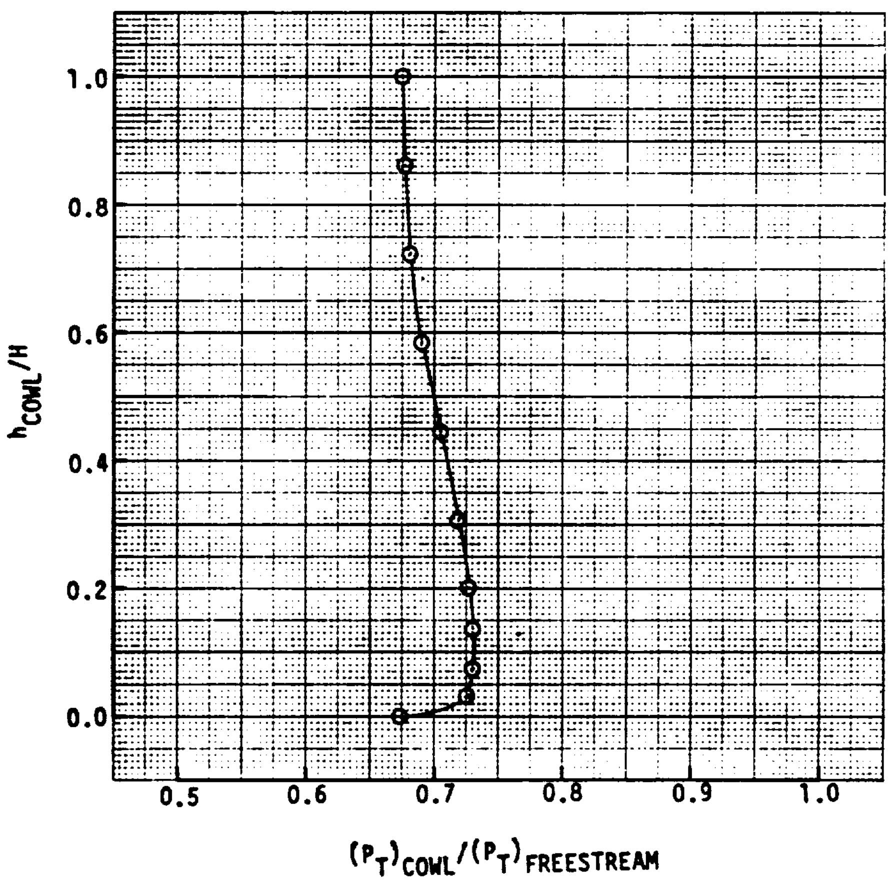


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 40 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .528

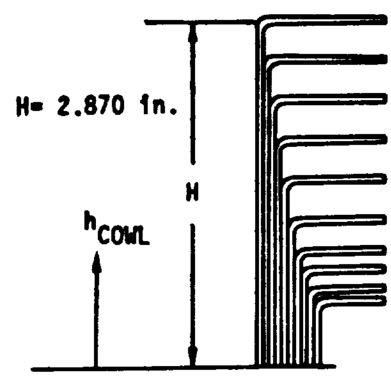


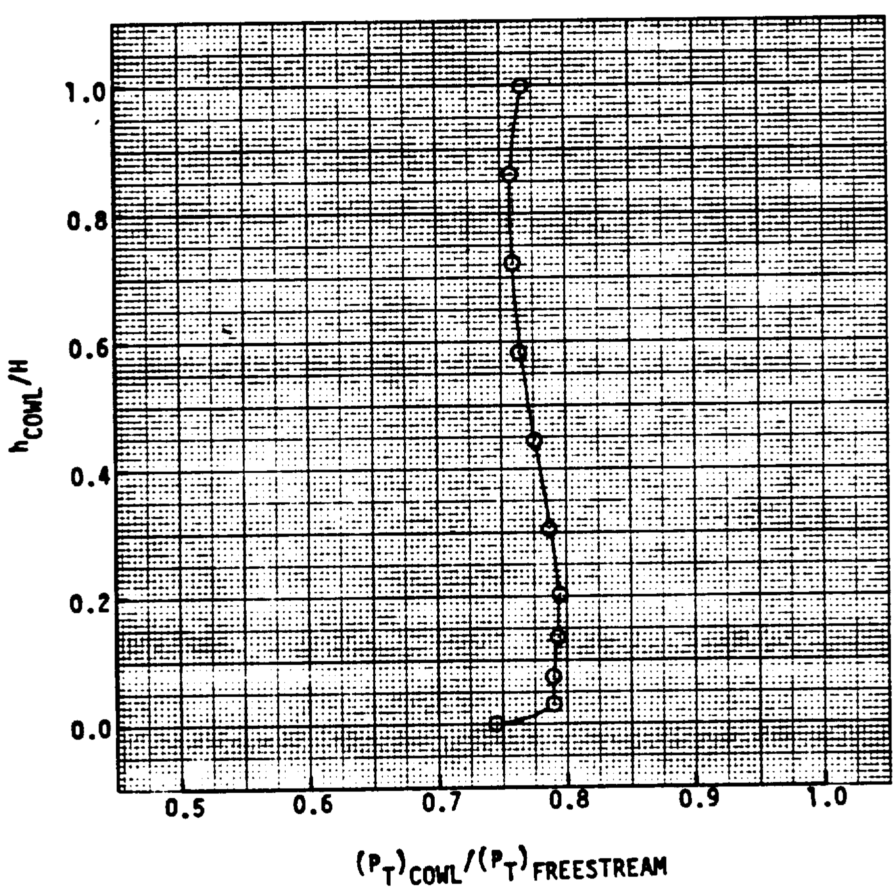


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION SHARP LIP BASELINE

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

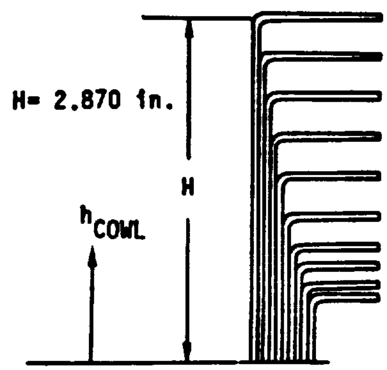


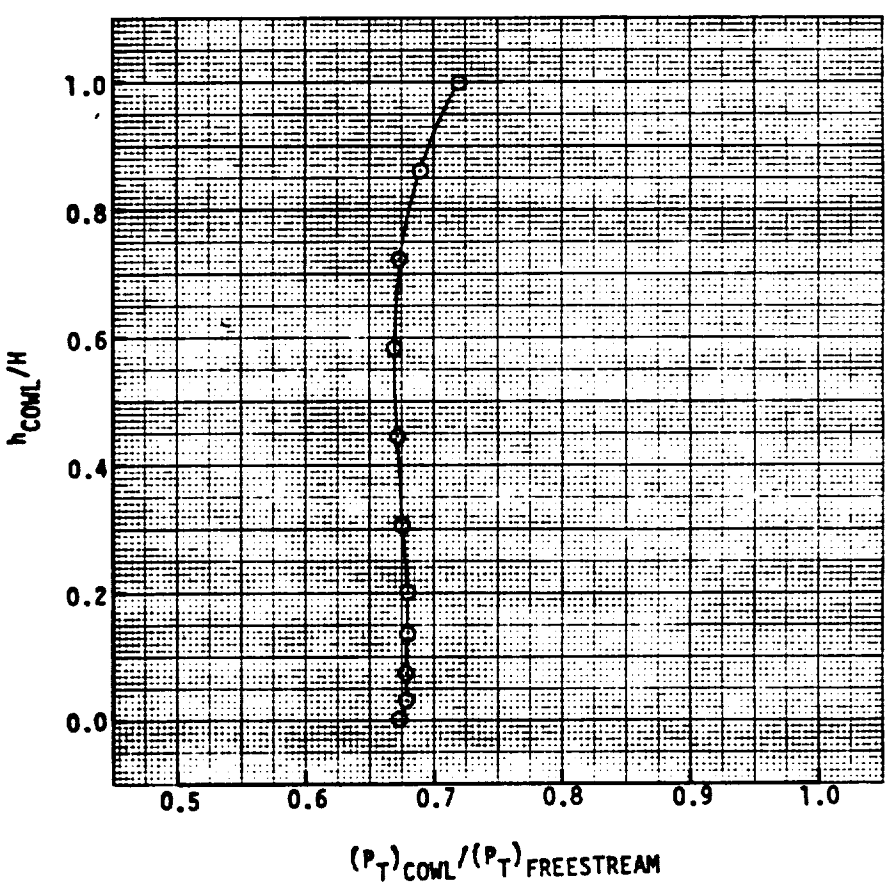


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION SHARP LIP BASELINE

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .525



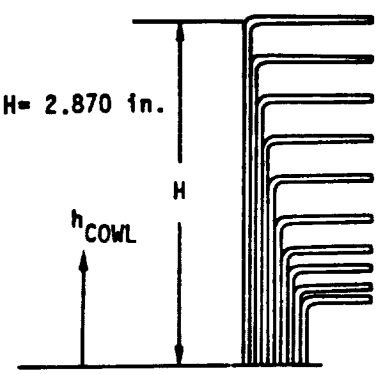


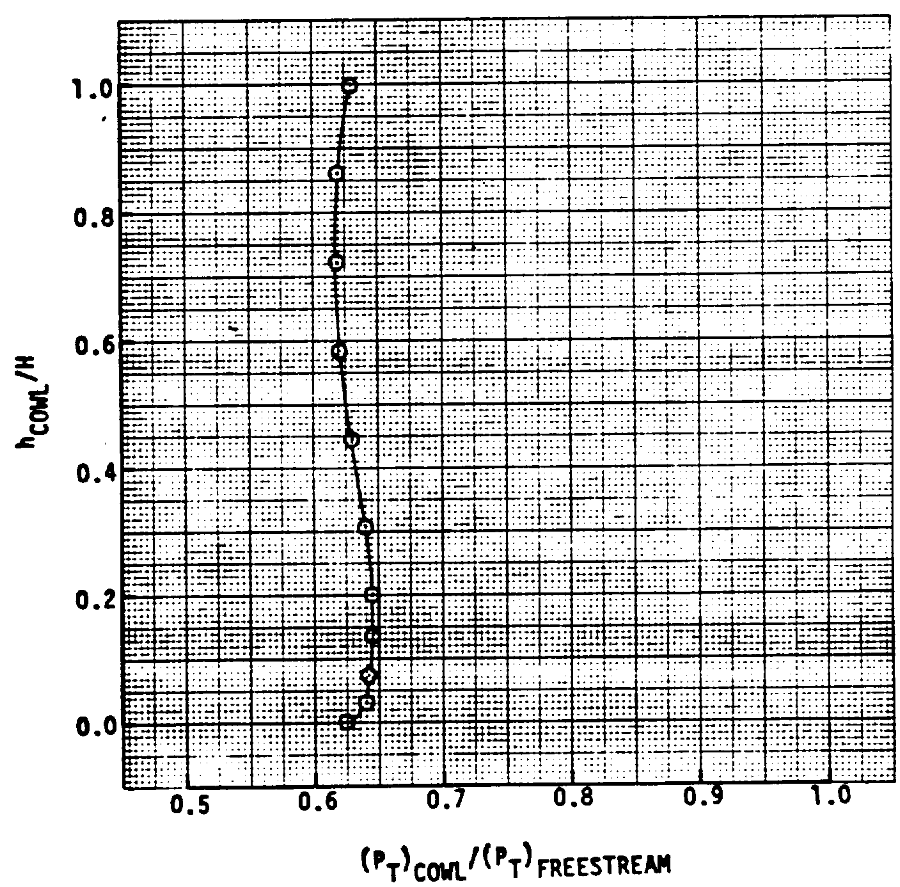
COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE

TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .524

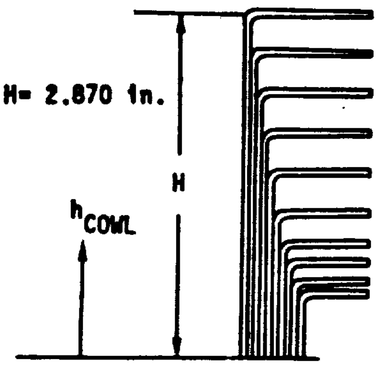


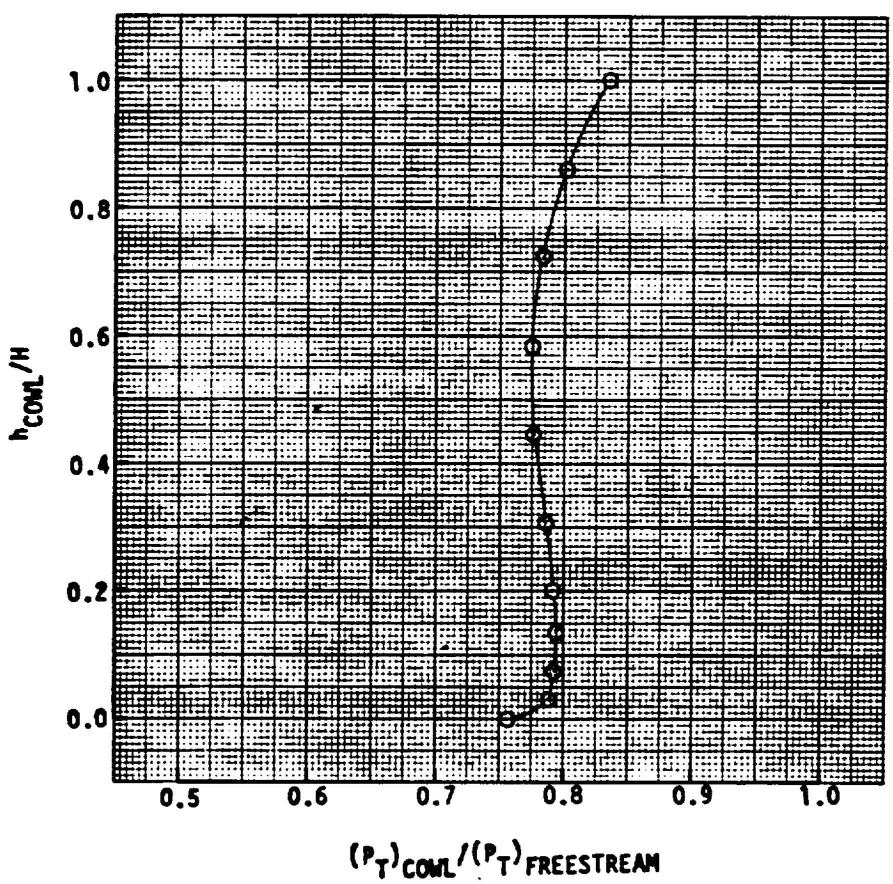


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 3a ; DESCRIPTION SHARP LIP BASELINE

FREESTREAM VELOCITY = 120 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

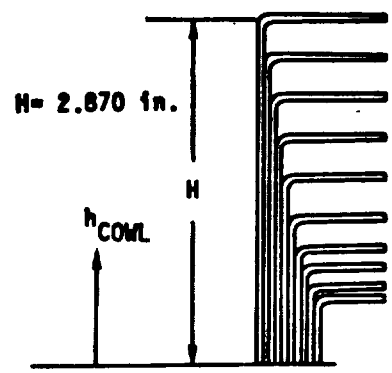


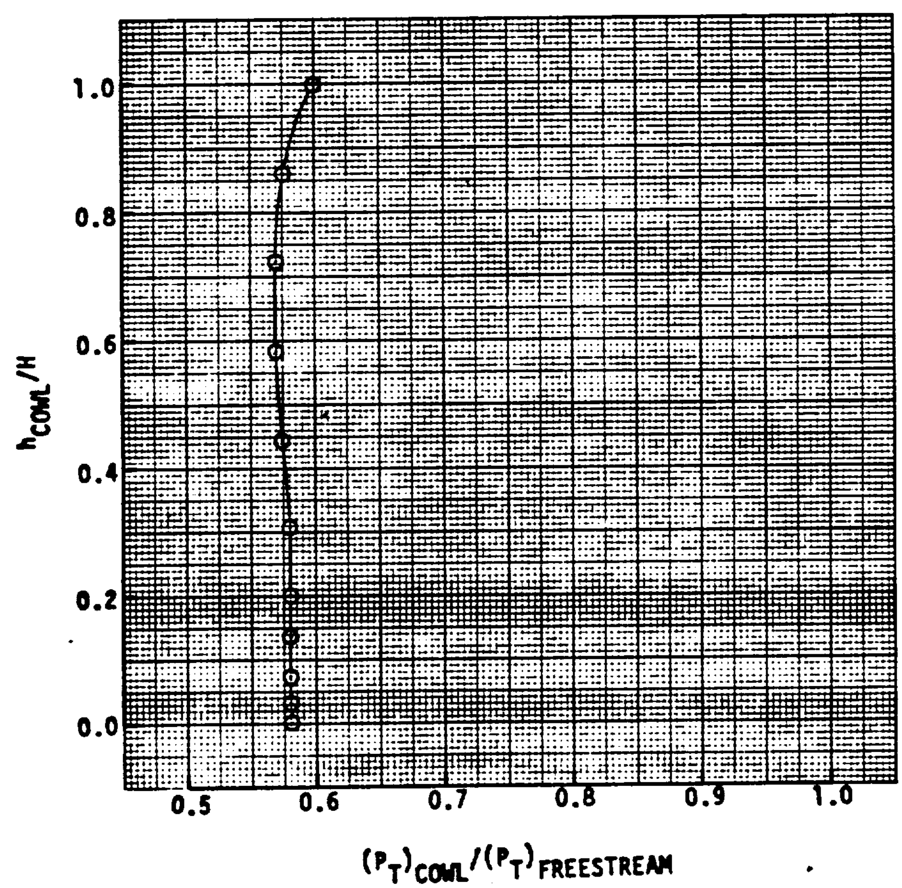


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

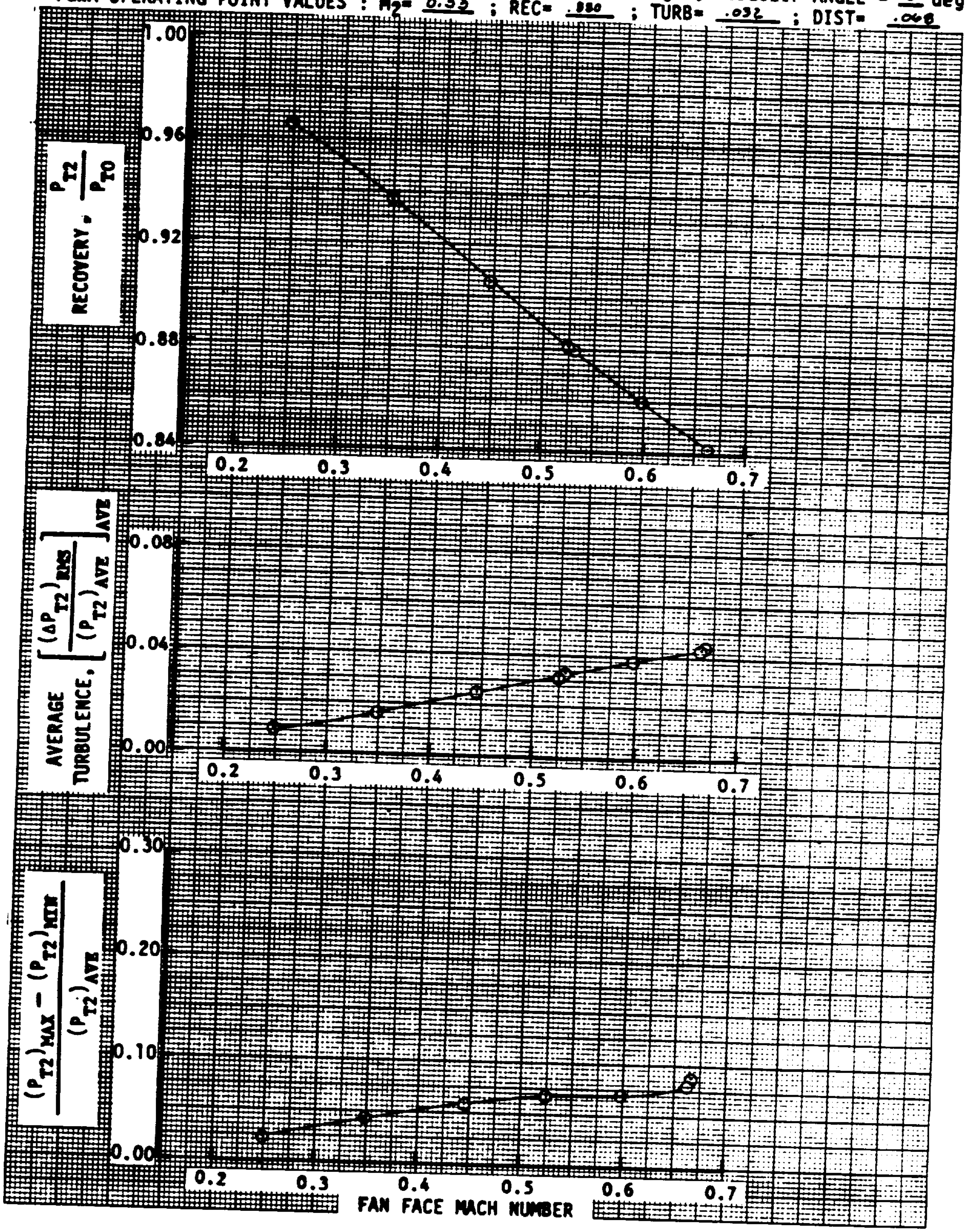
CONFIGURATION: NUMBER 3a; DESCRIPTION Sharp Lip Baseline

FREESTREAM VELOCITY = 120 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .522





RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2247-2254
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .880 ; TURB= .032 ; DIST= .068

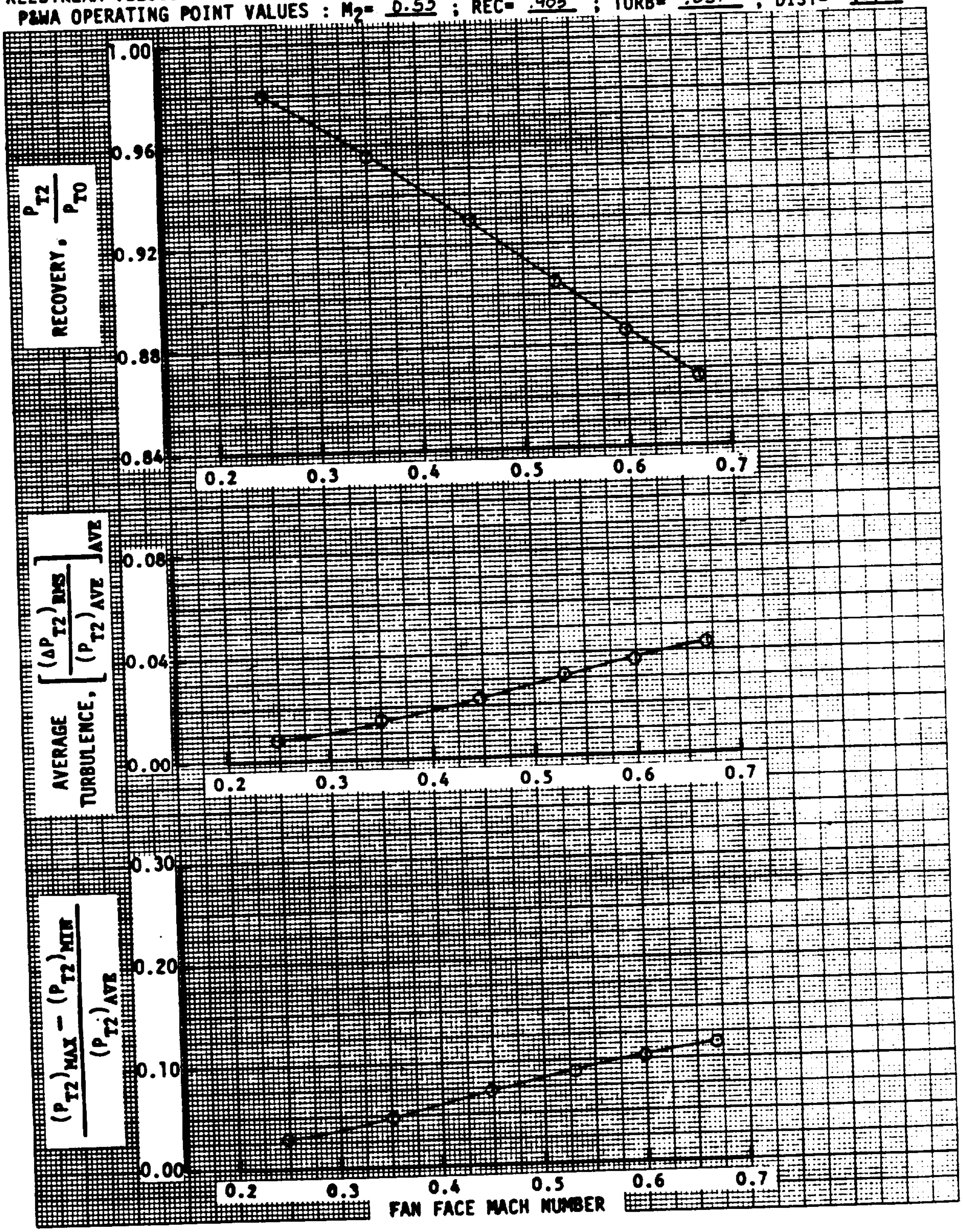


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

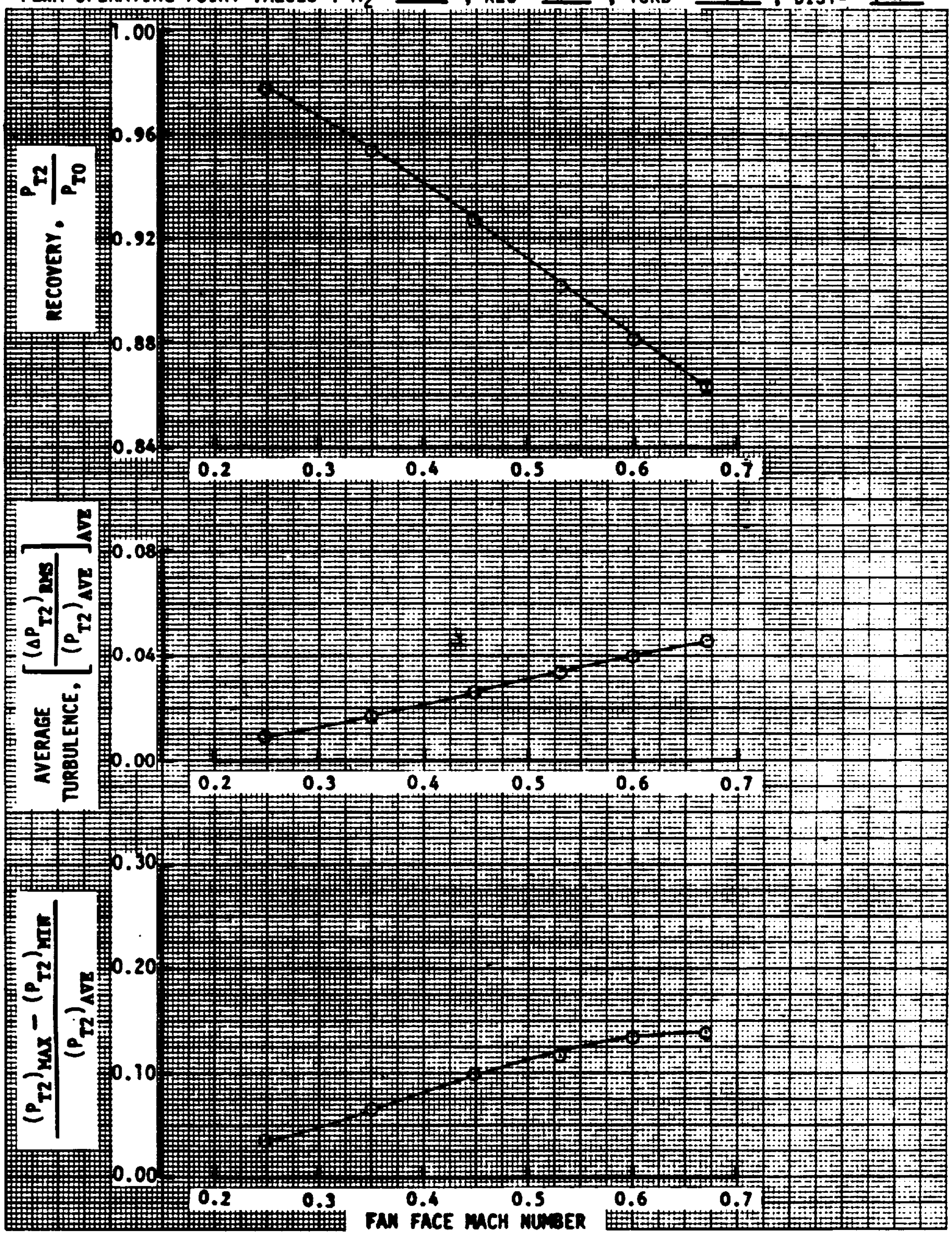
CONFIGURATION 3b ; READING NUMBERS 2255-2260

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

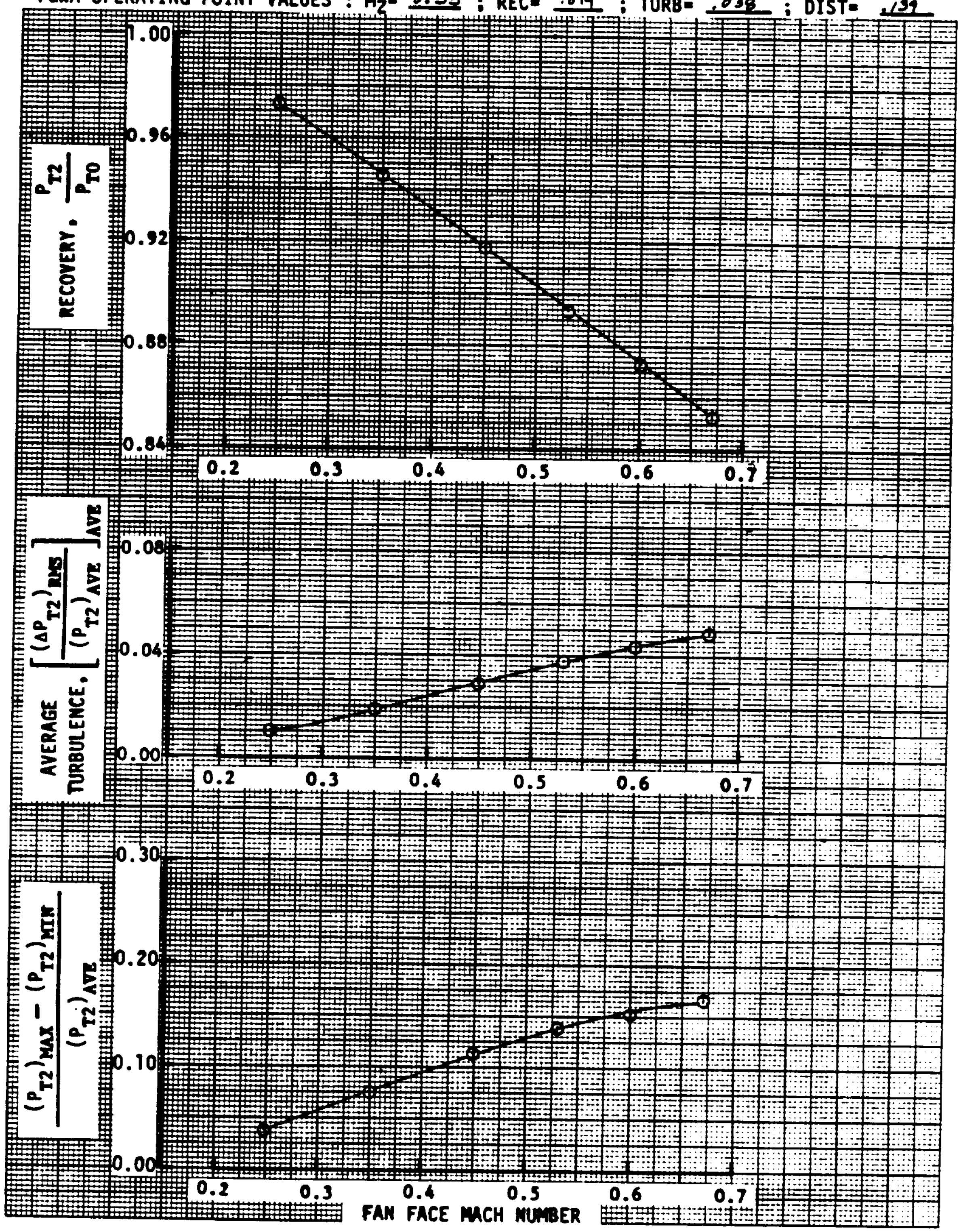
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .905 ; TURB= .031 ; DIST= .090



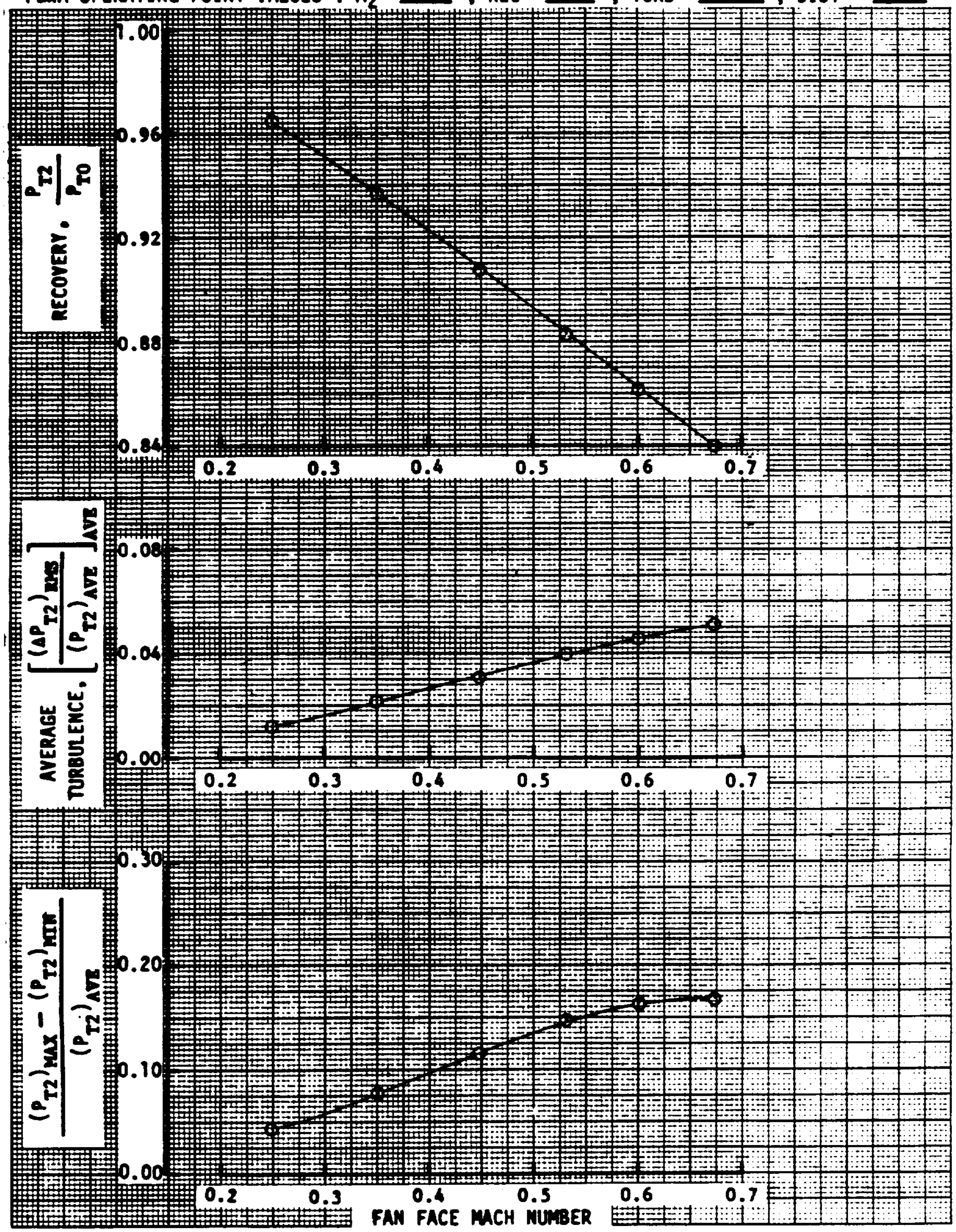
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2261-2266
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .902 ; TURB= .034 ; DIST= .120



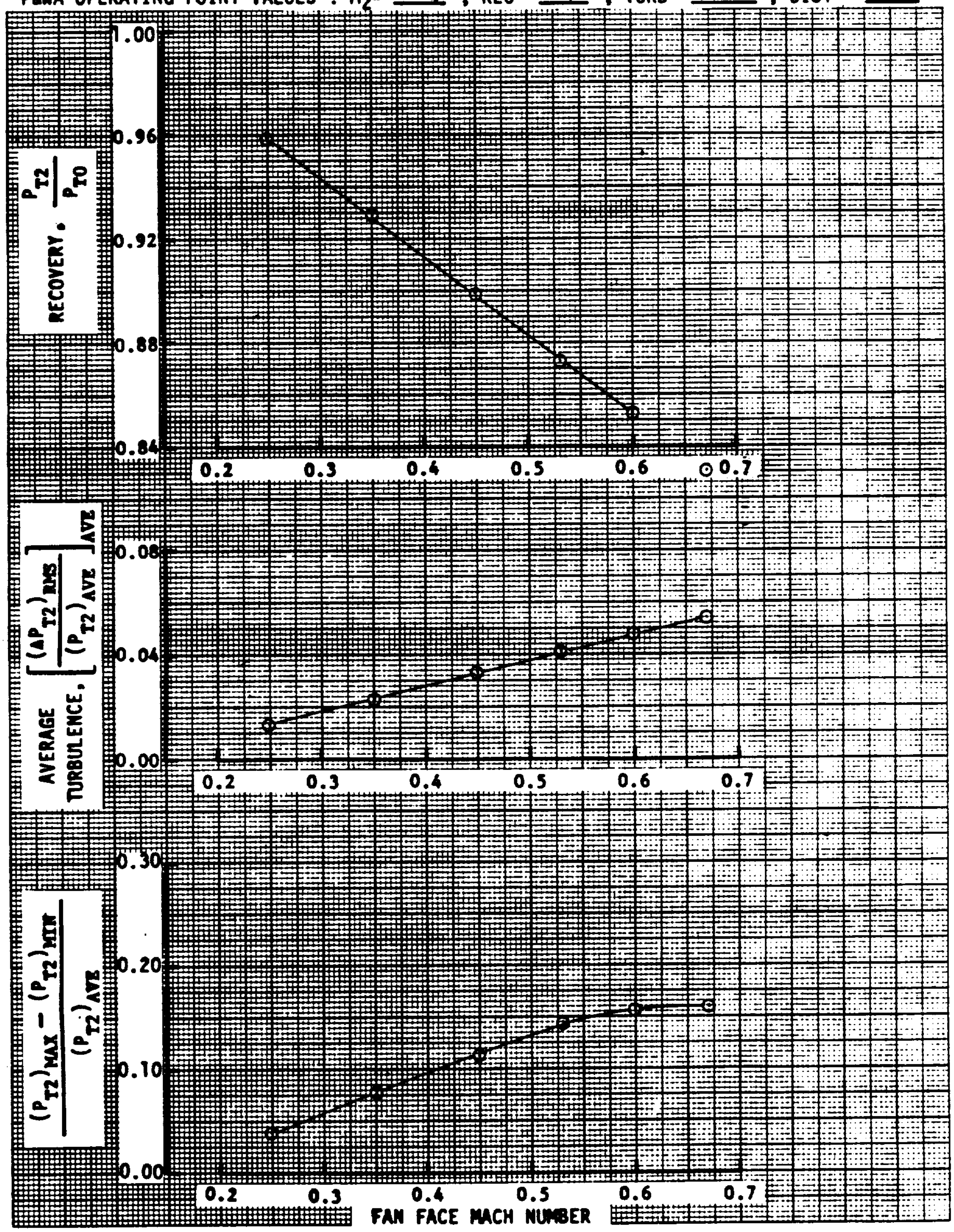
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2267-2272
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .894 ; TURB= .038 ; DIST= .139



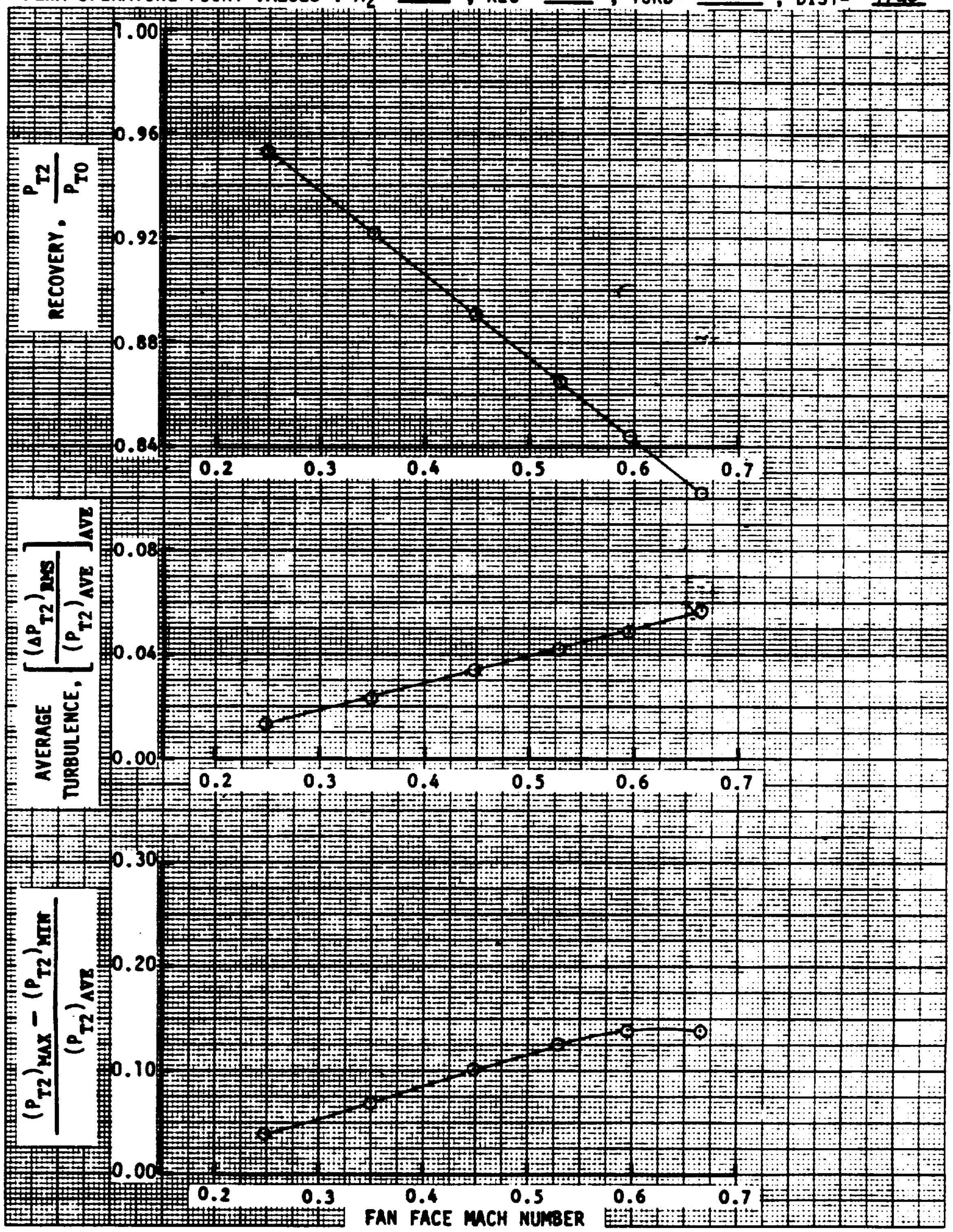
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2273-2279
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .884 ; TURB= .040 ; DIST= .144



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2280 - 2285
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .873 ; TURB= .041 ; DIST= .143



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2286-2291
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .844 ; TURB= .043 ; DIST= .136

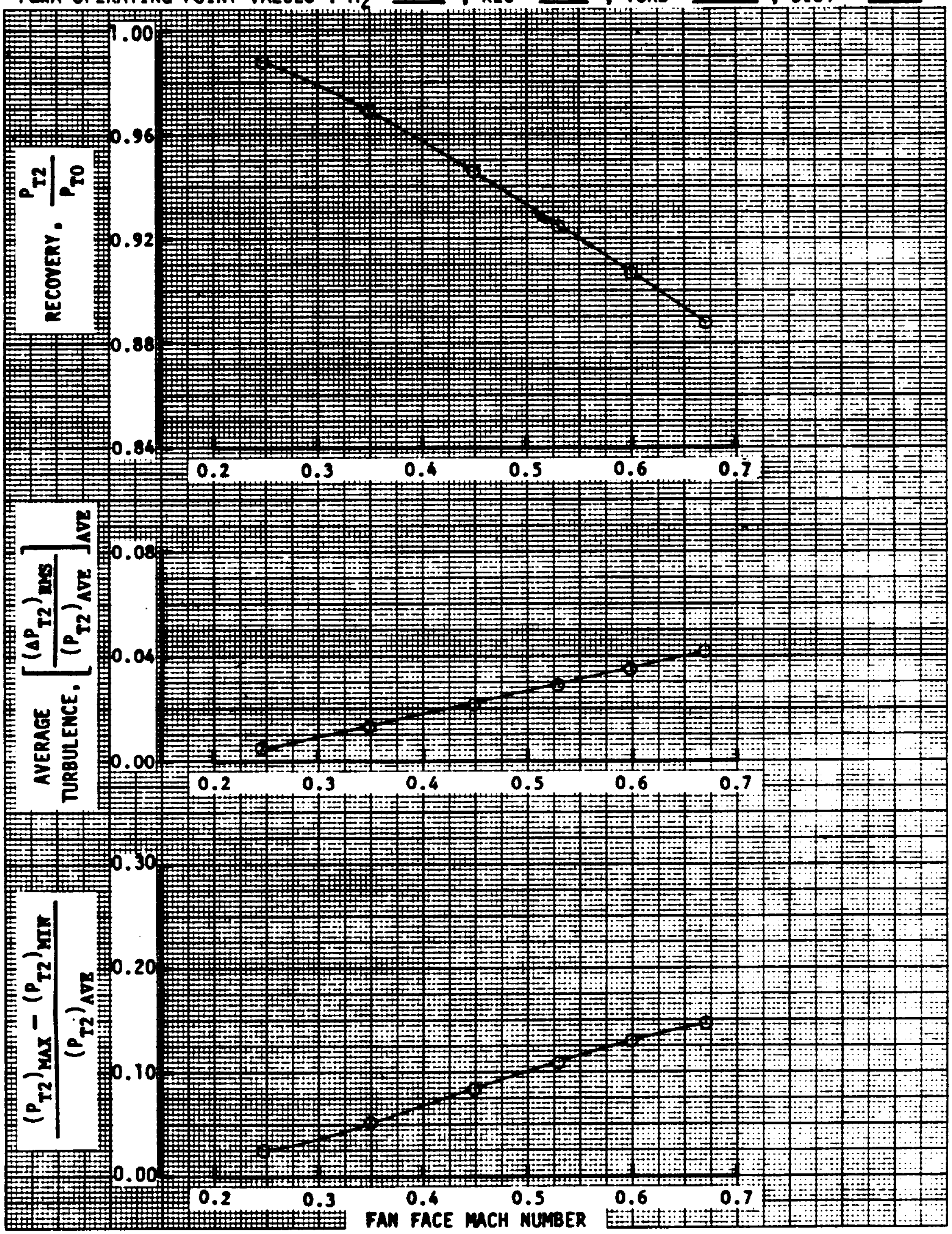


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

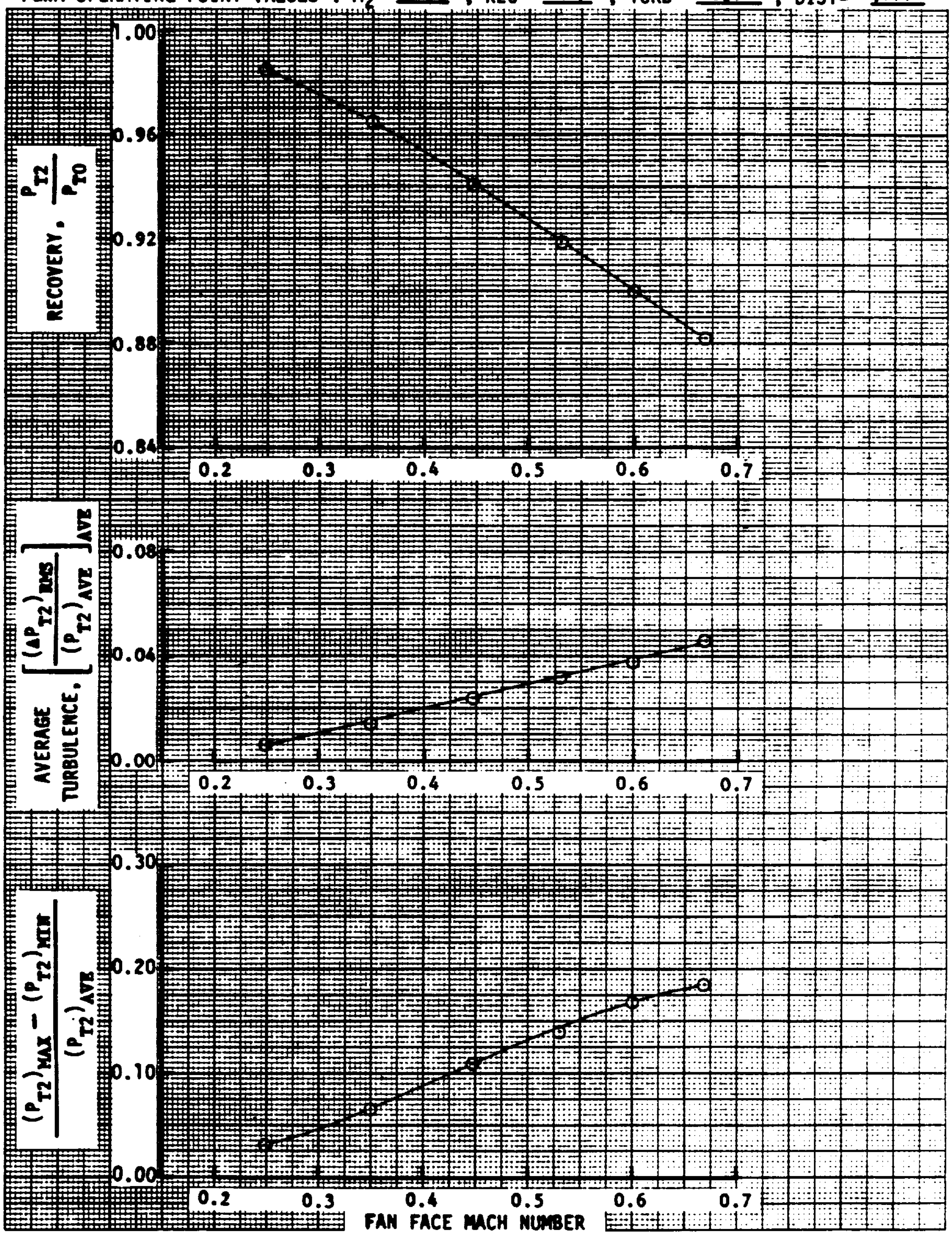
CONFIGURATION 3b ; READING NUMBERS 2292-2297

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

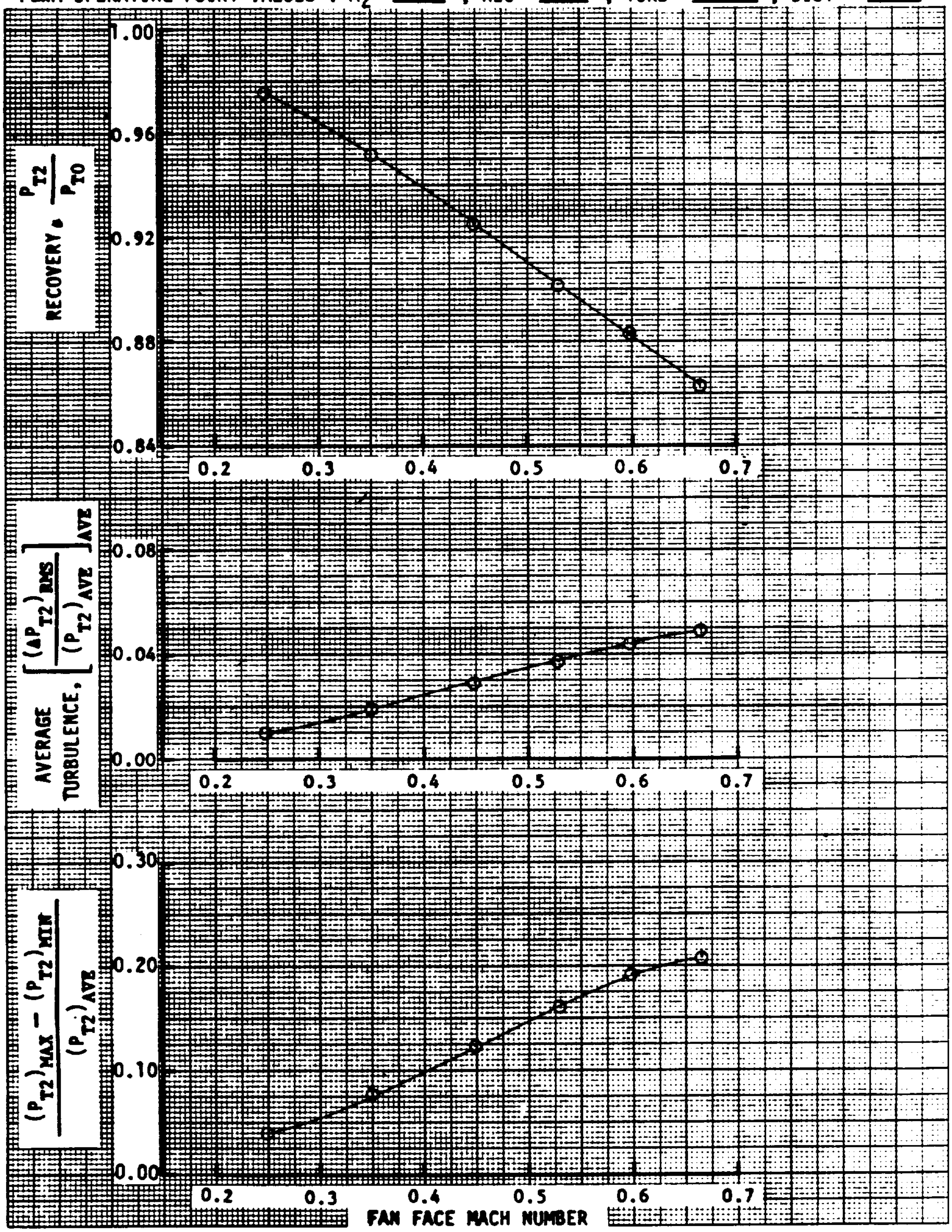
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .029 ; DIST= .109



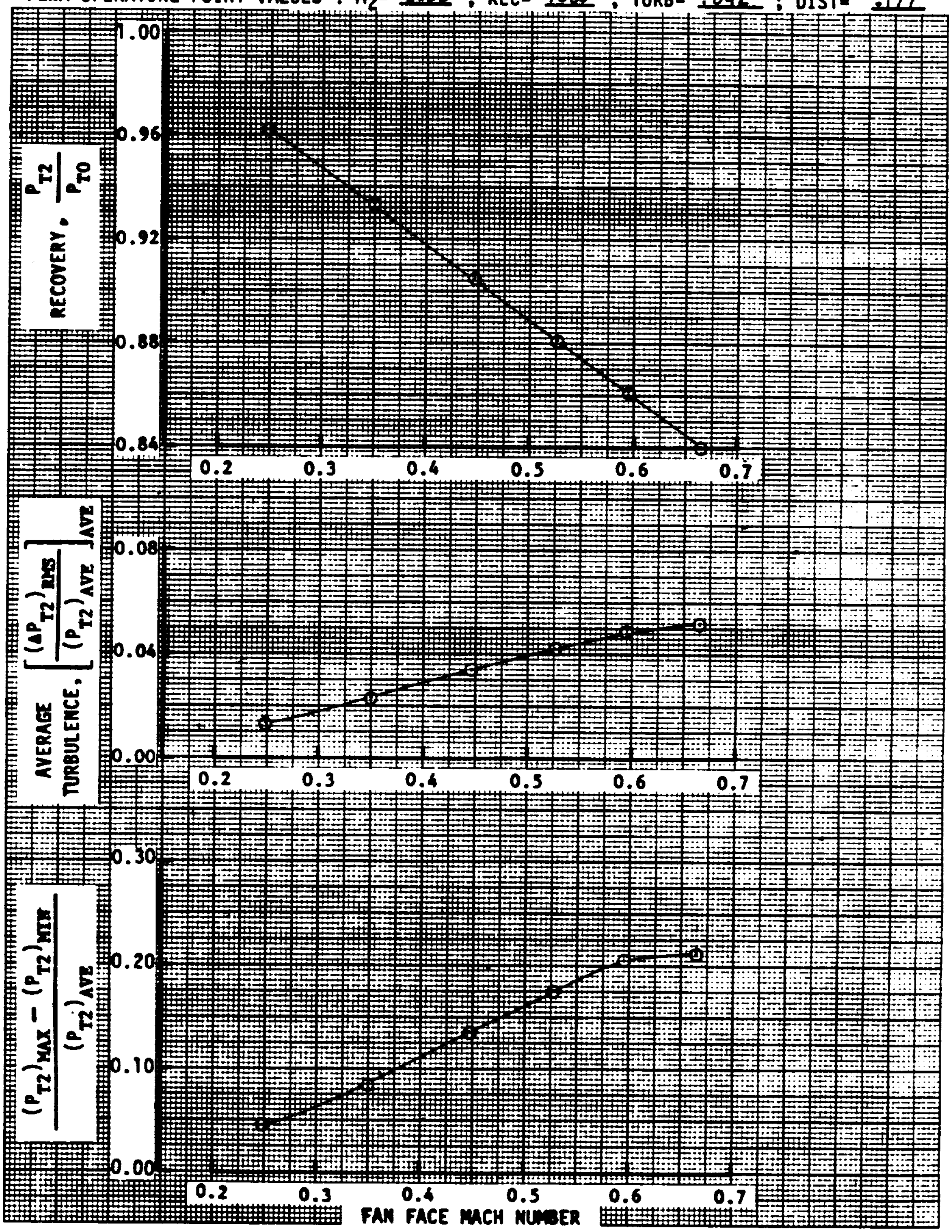
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2298-2303
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .919 ; TURB= .032 ; DIST= .144



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2304-2309
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .902 ; TURB= .038 ; DIST= .162



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2310-2316
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .880 ; TURB= .042 ; DIST= .177

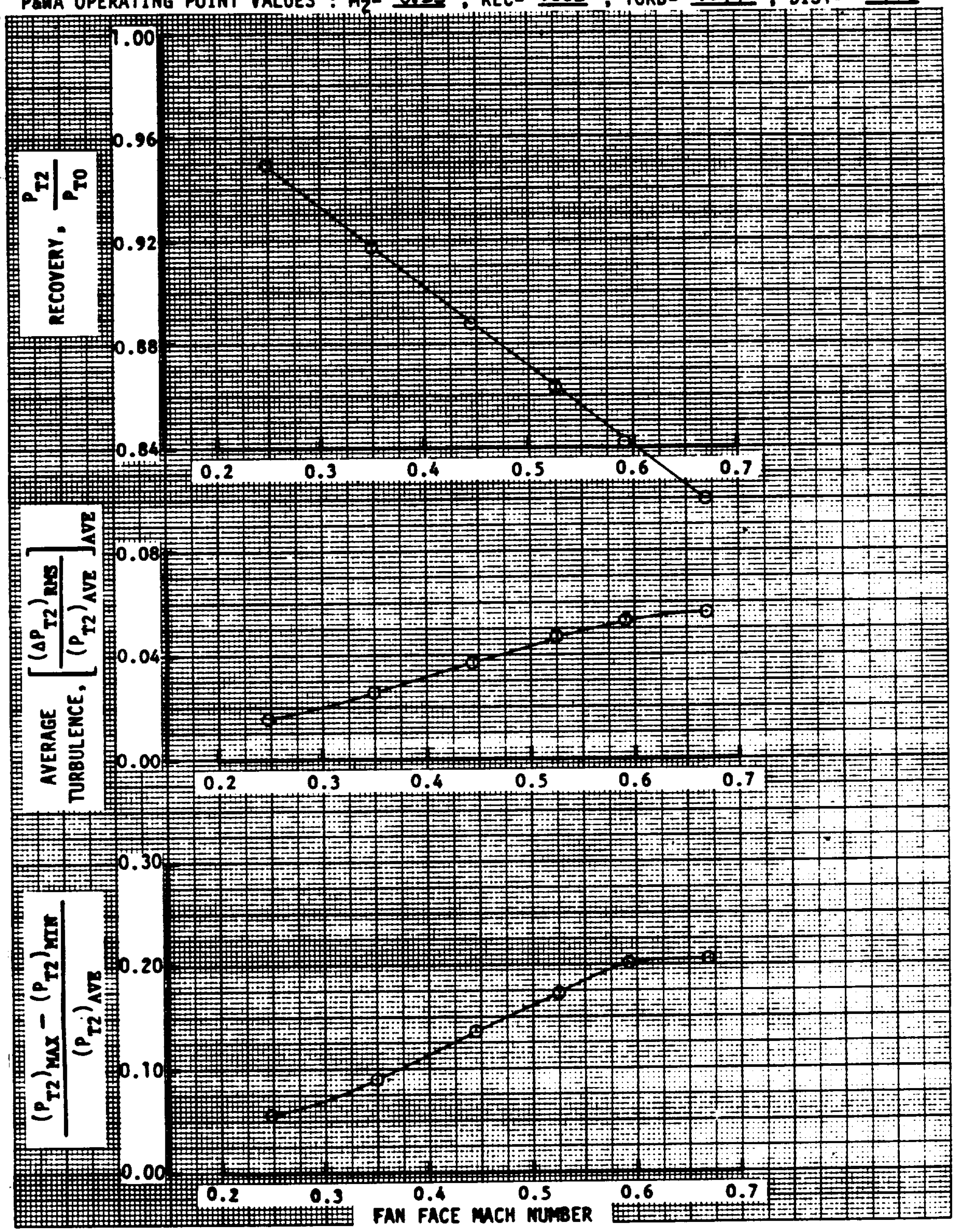


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

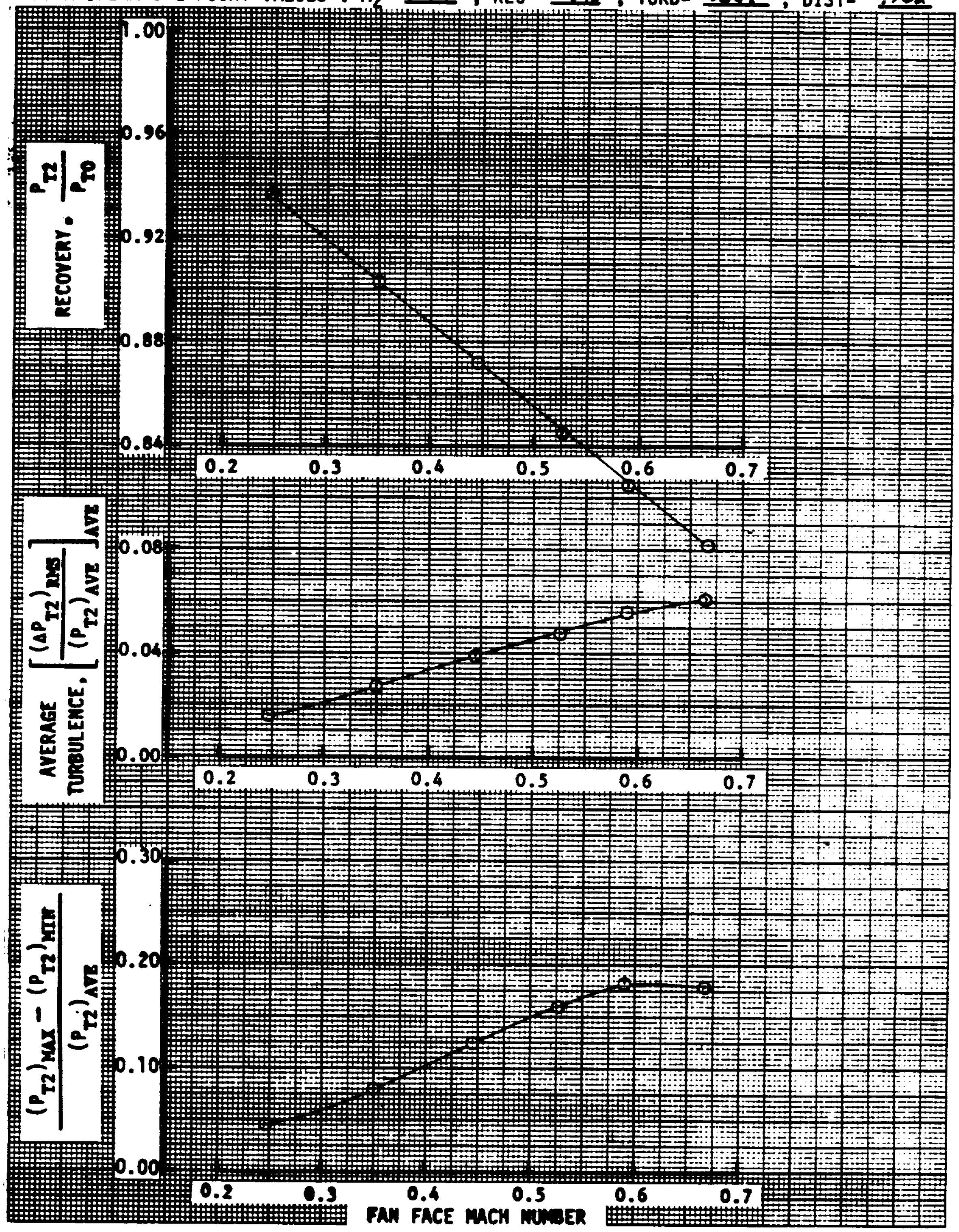
CONFIGURATION 3b ; READING NUMBERS 2317- 2322

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.

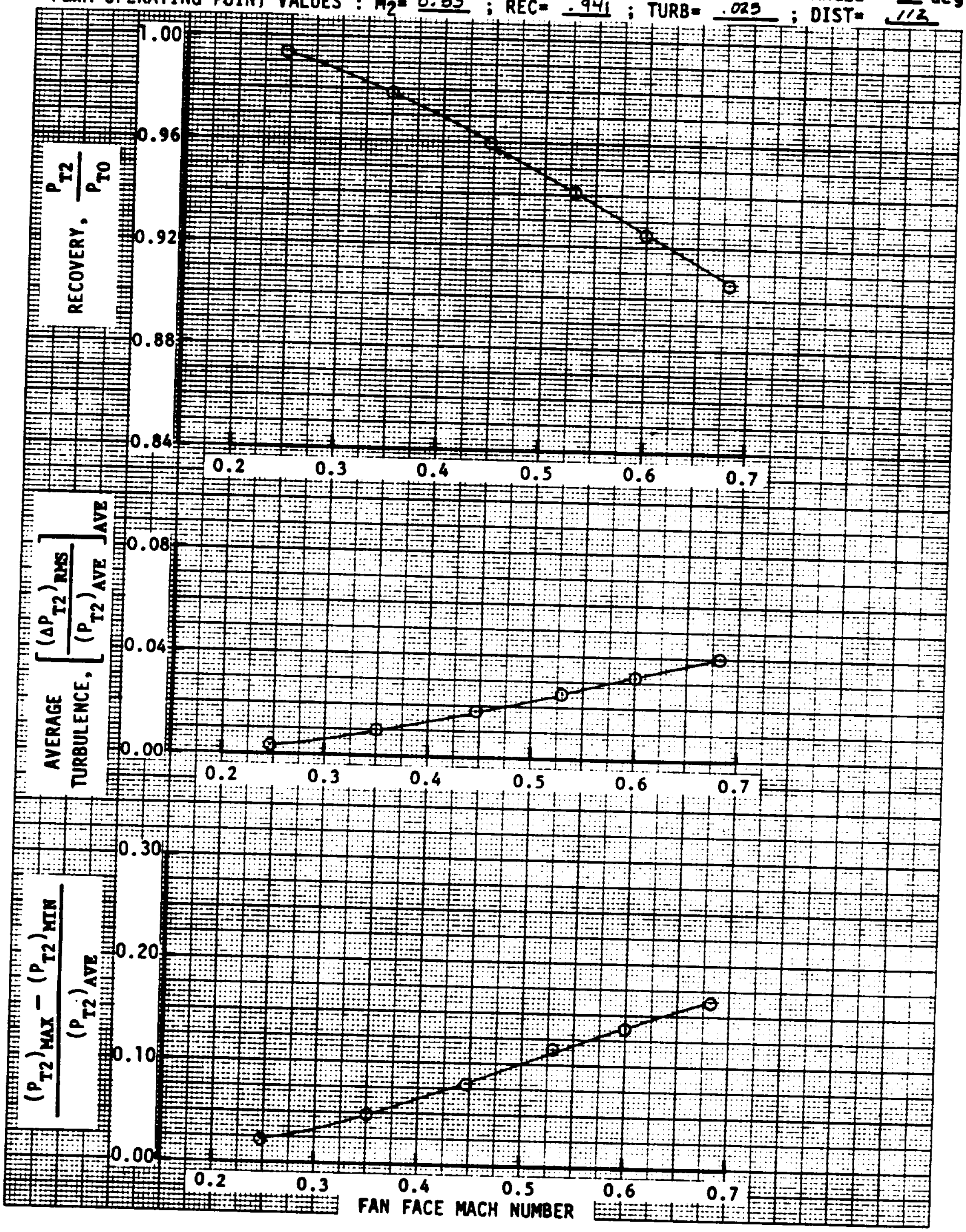
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .862 ; TURB= .047 ; DIST= .176



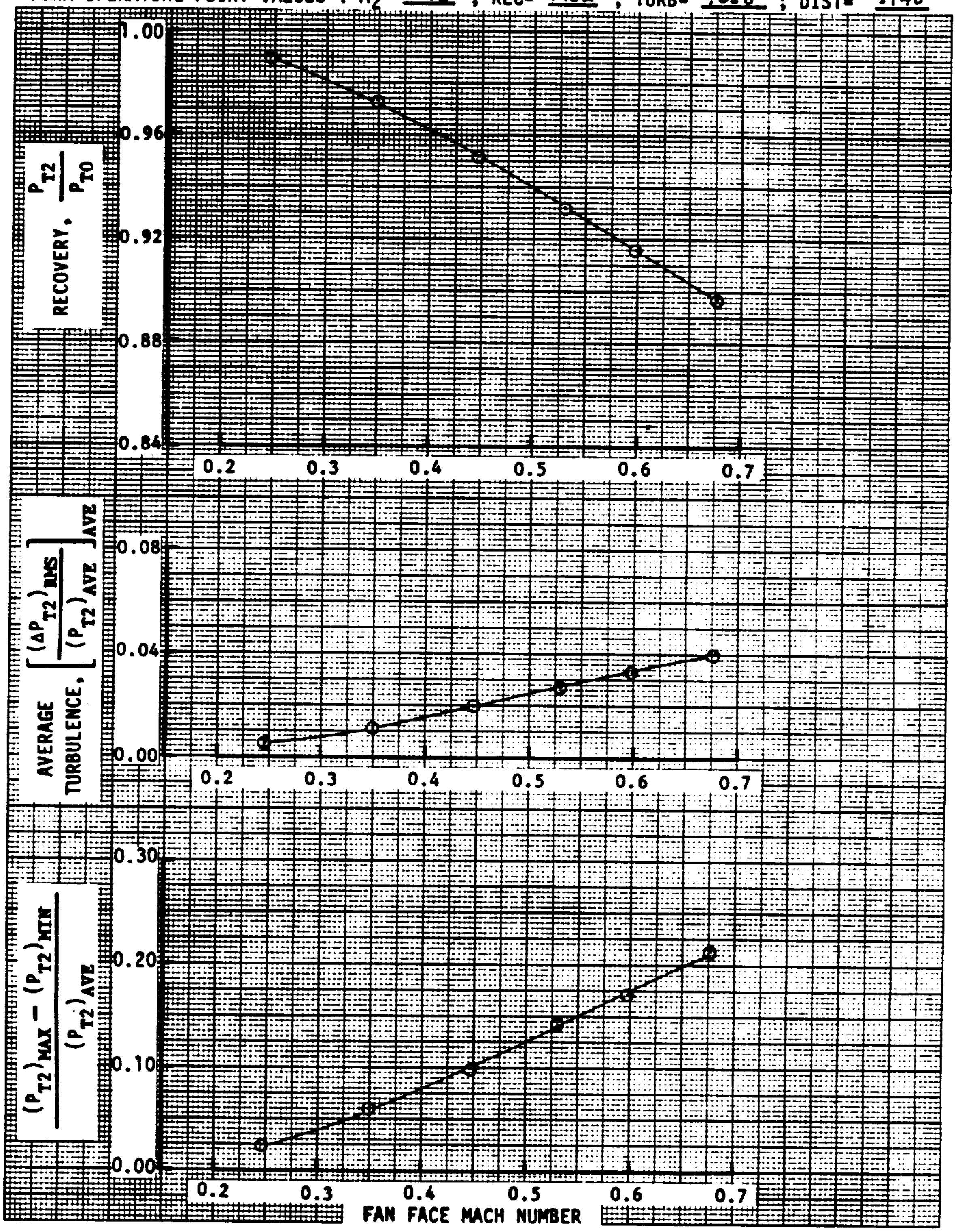
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2323-2328
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .845 ; TURB= .049 ; DIST= .162



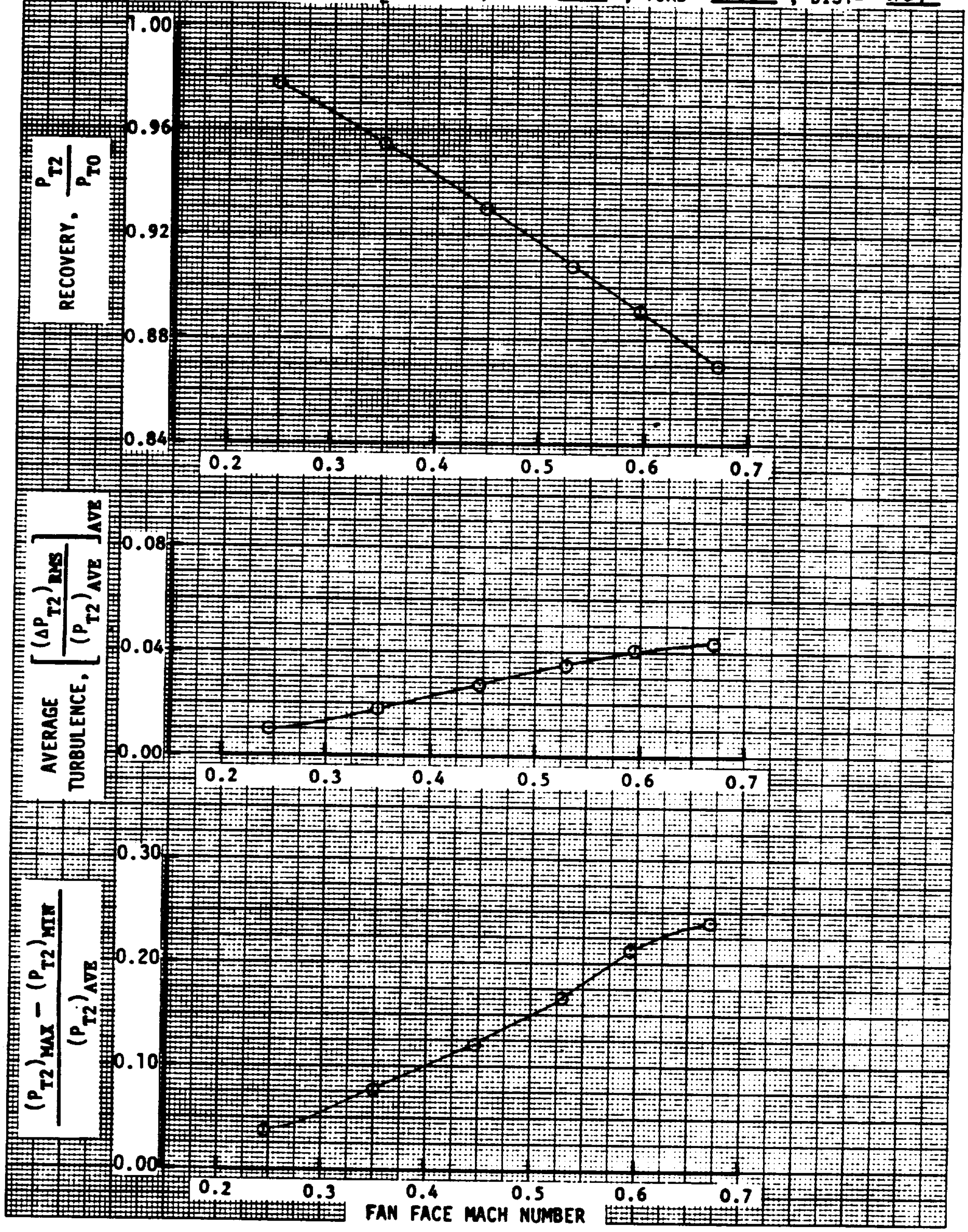
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2329-2334
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.83 ; REC= .941 ; TURB= .025 ; DIST= .112



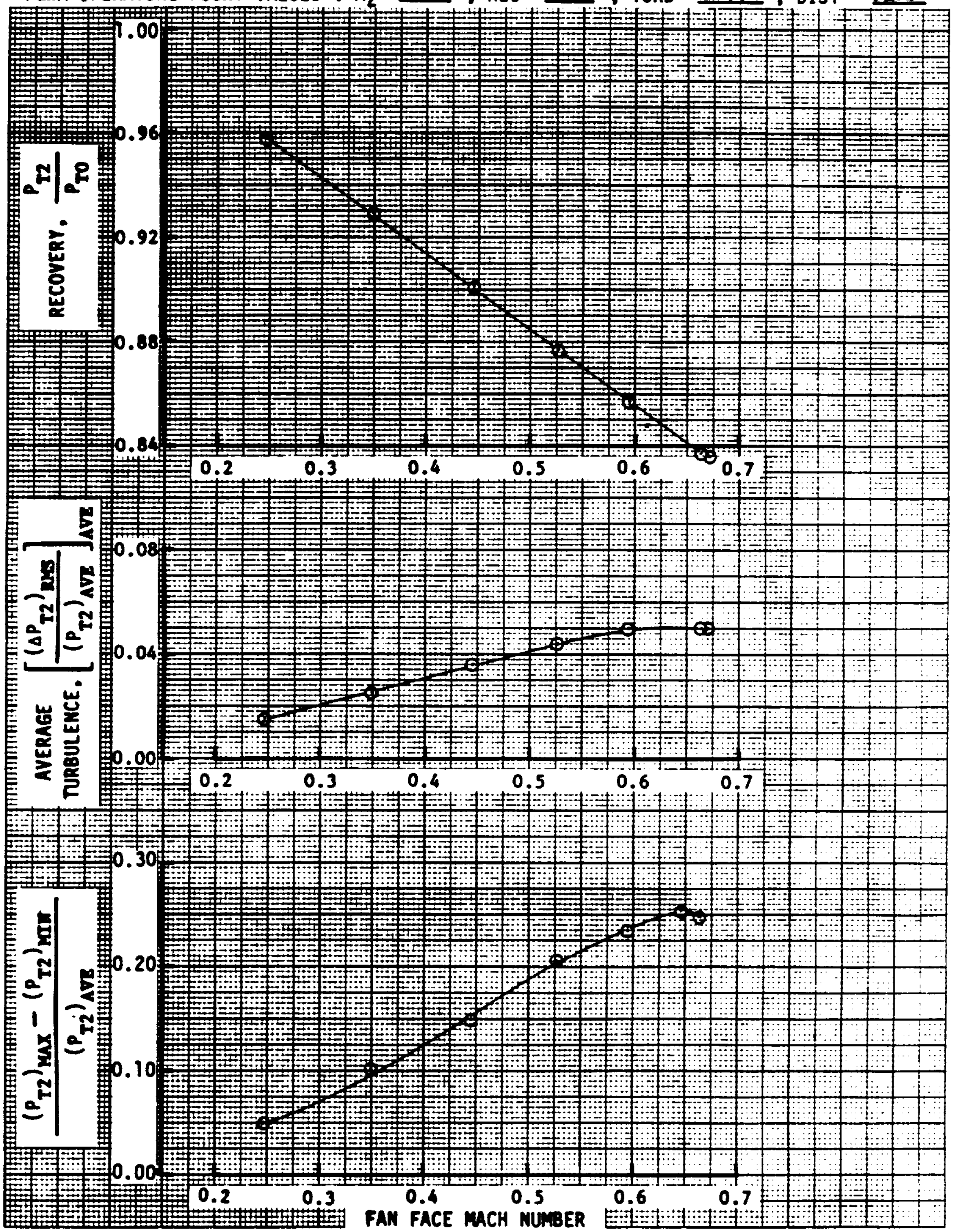
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2335-2340
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .932 ; TURB= .028 ; DIST= .140



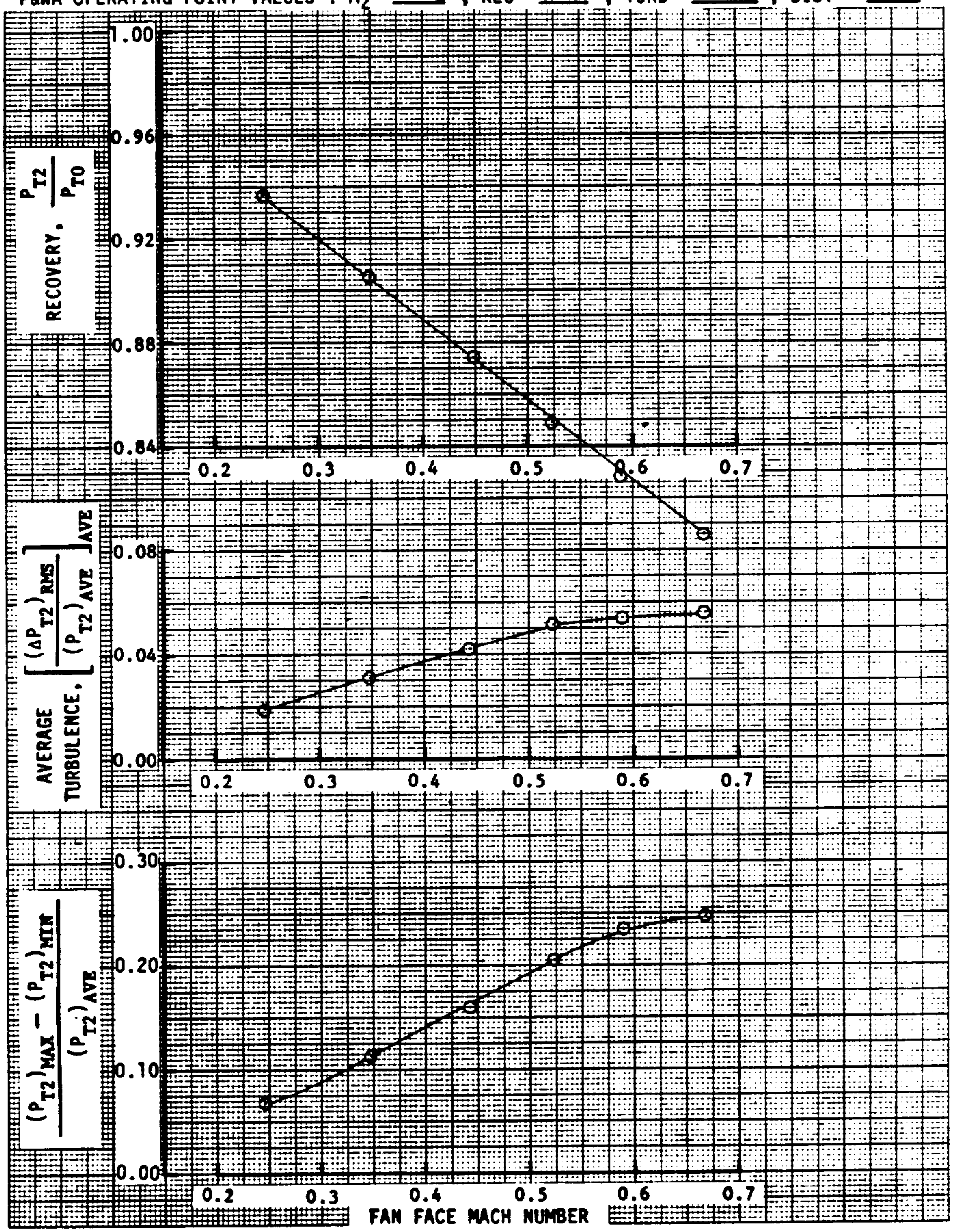
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2341-2346
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .035 ; DIST= .167



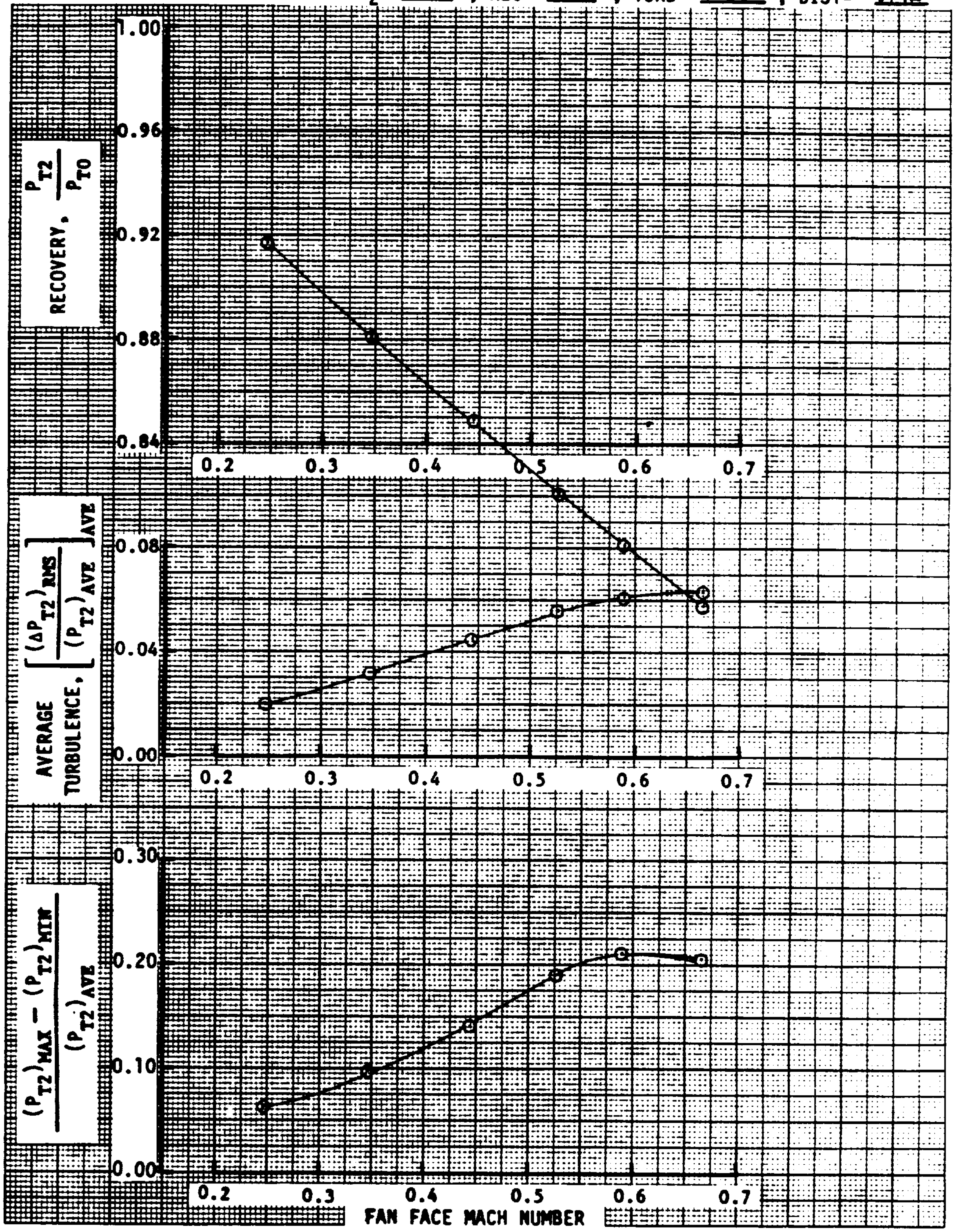
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 36 ; READING NUMBERS 2347-2355
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .878 ; TURB= .044 ; DIST= .205



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2356-2361
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .848 ; TURB= .052 ; DIST= .208



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3b ; READING NUMBERS 2362-2367
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .820 ; TURB= .056 ; DIST= .192



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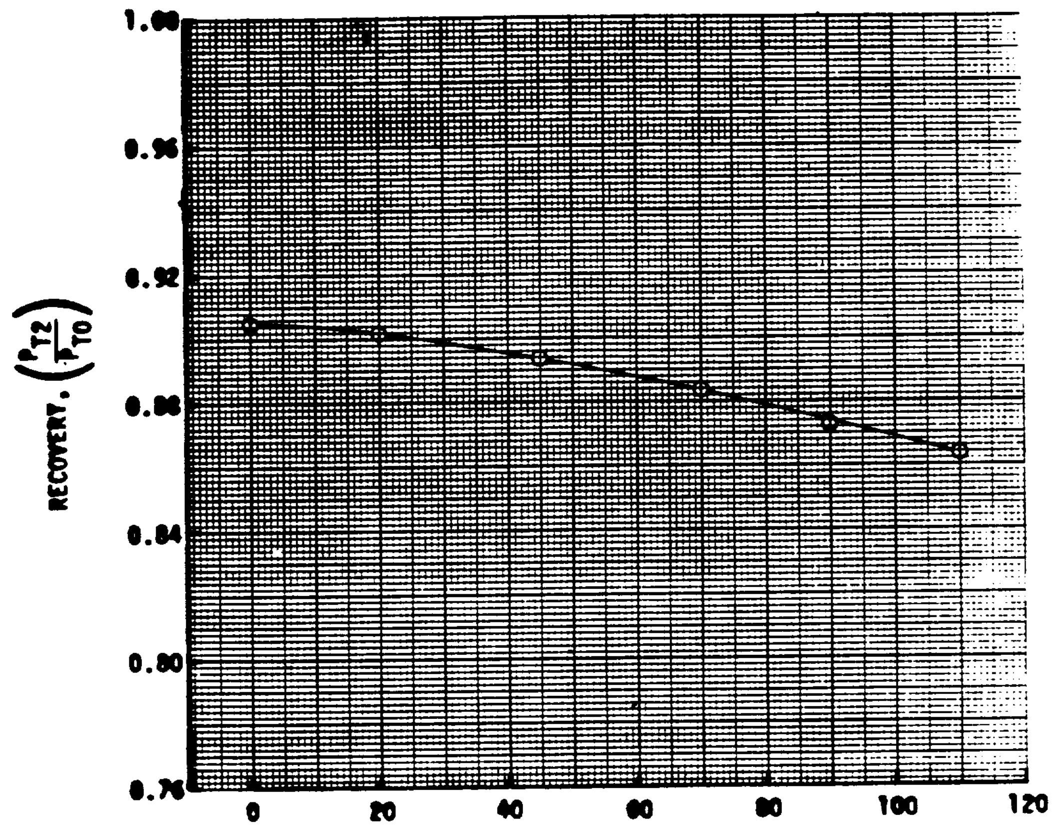
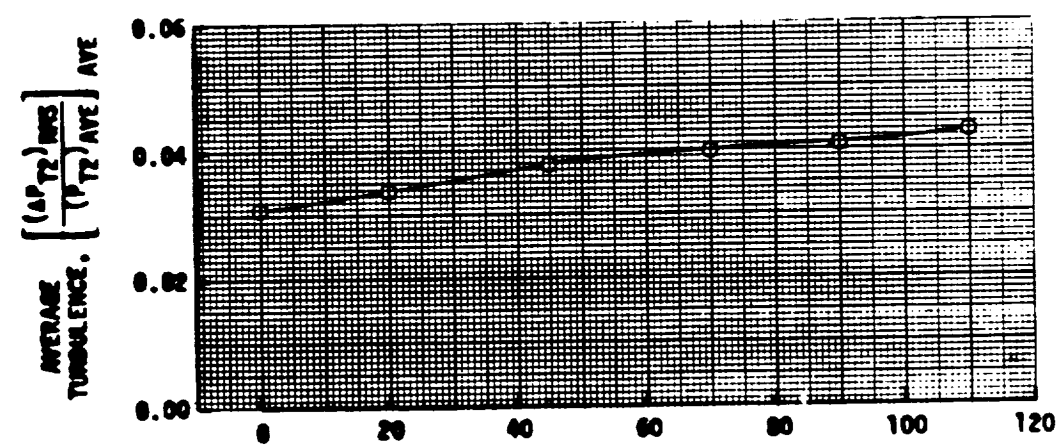
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3b ; DESCRIPTION Ramp Cavity Open

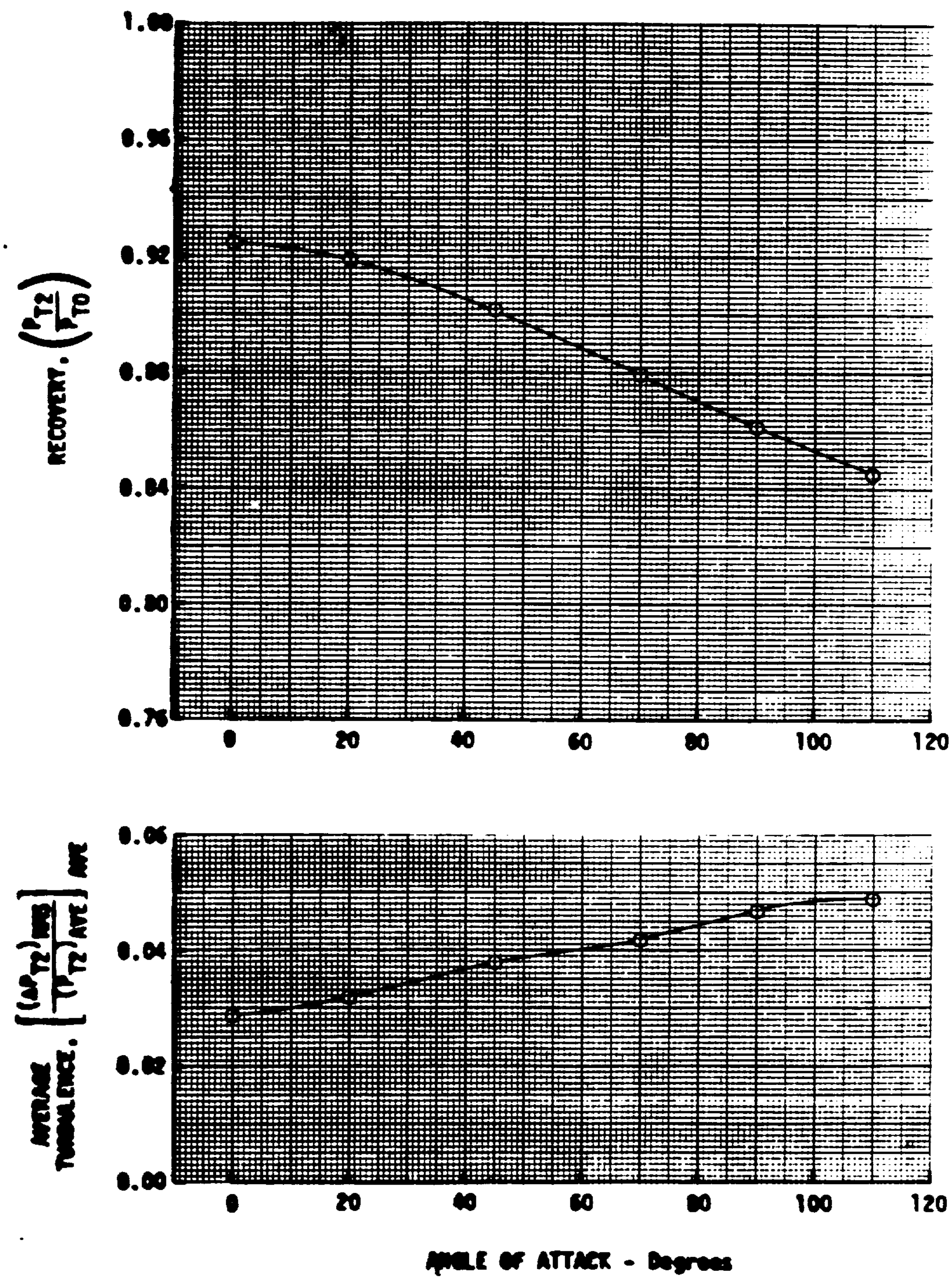




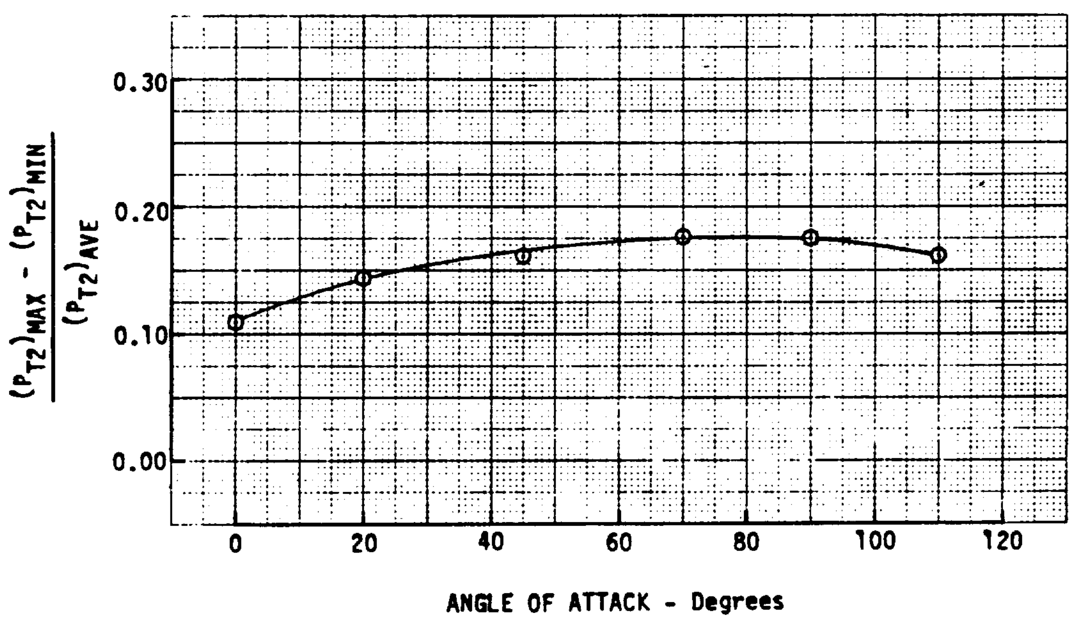
ANGLE OF ATTACK - Degrees

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
[illegible] F-300 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 36 ; DESCRIPTION Bamp Cavity Open



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3b ; DESCRIPTION Ramp Cavity Open



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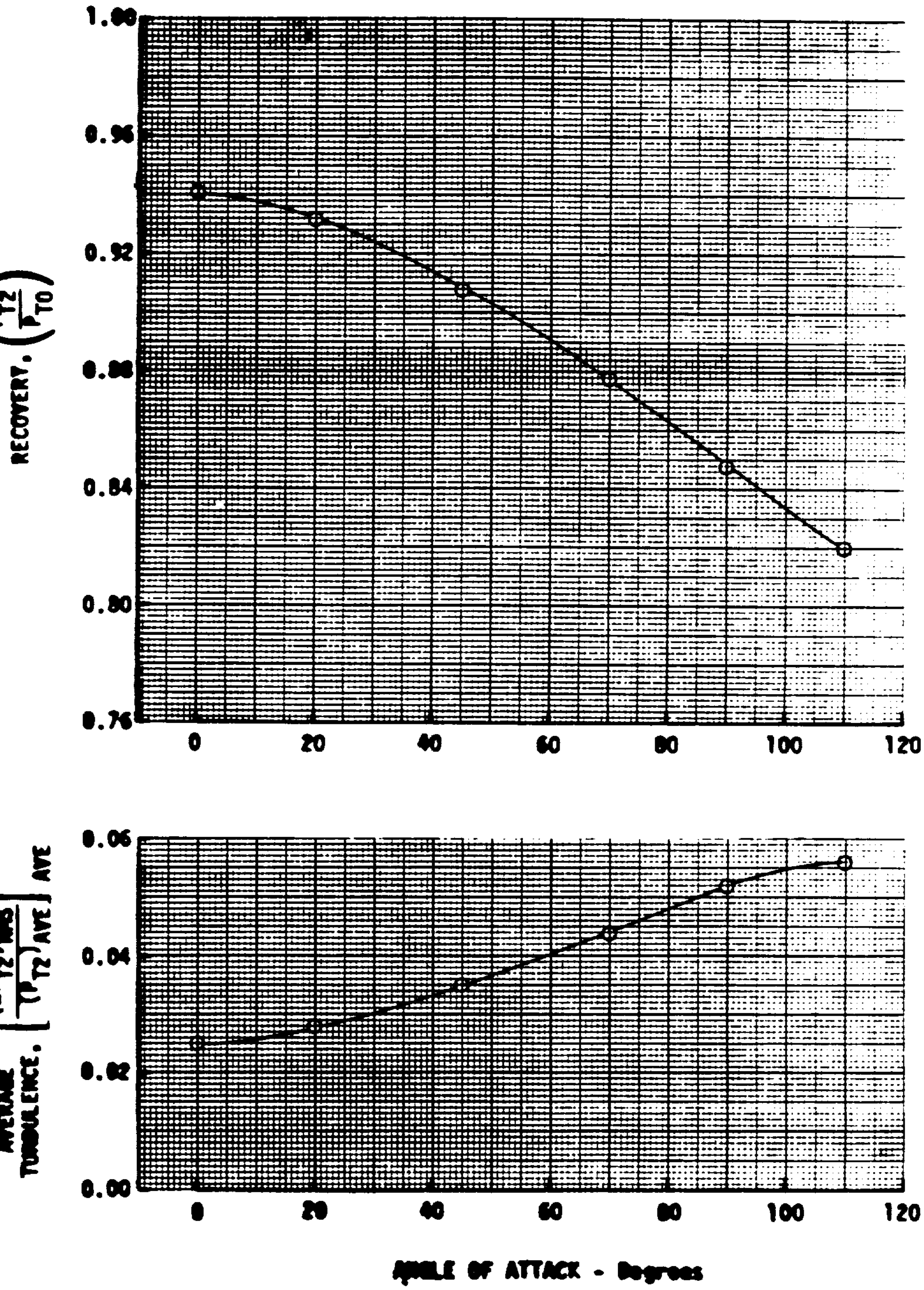
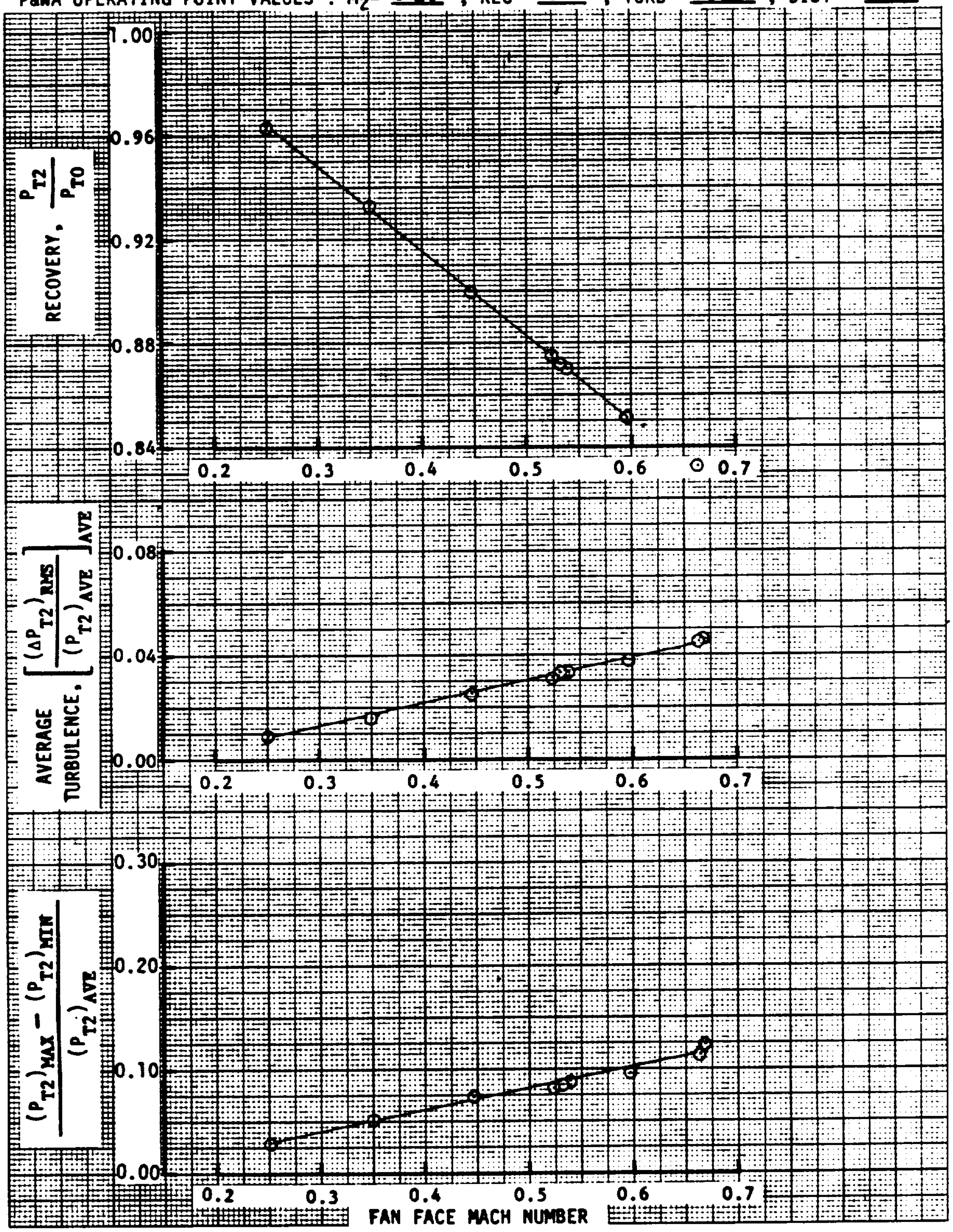
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PDMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

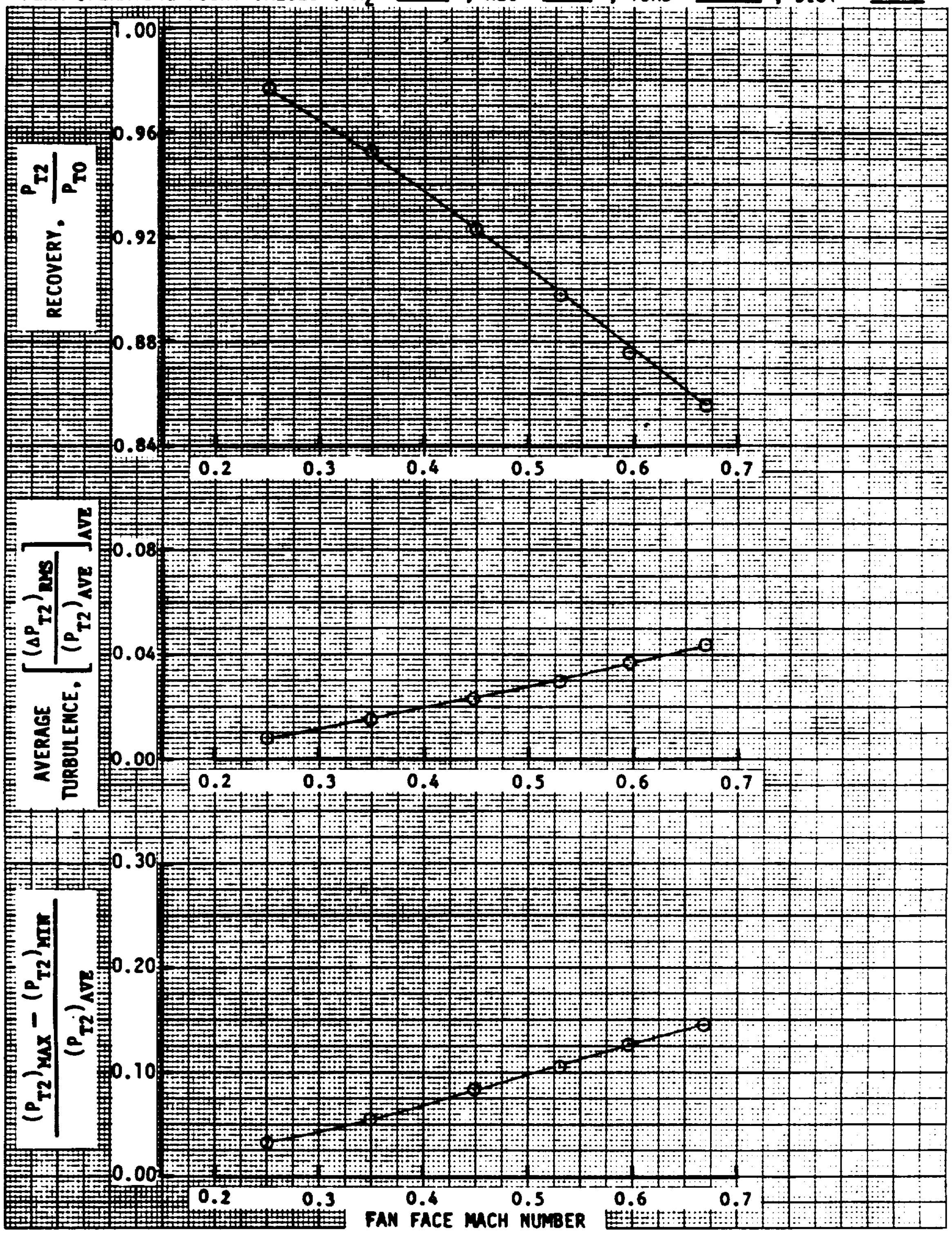
CONFIGURATION: NUMBER 3b ; DESCRIPTION Ramp Cavity Open



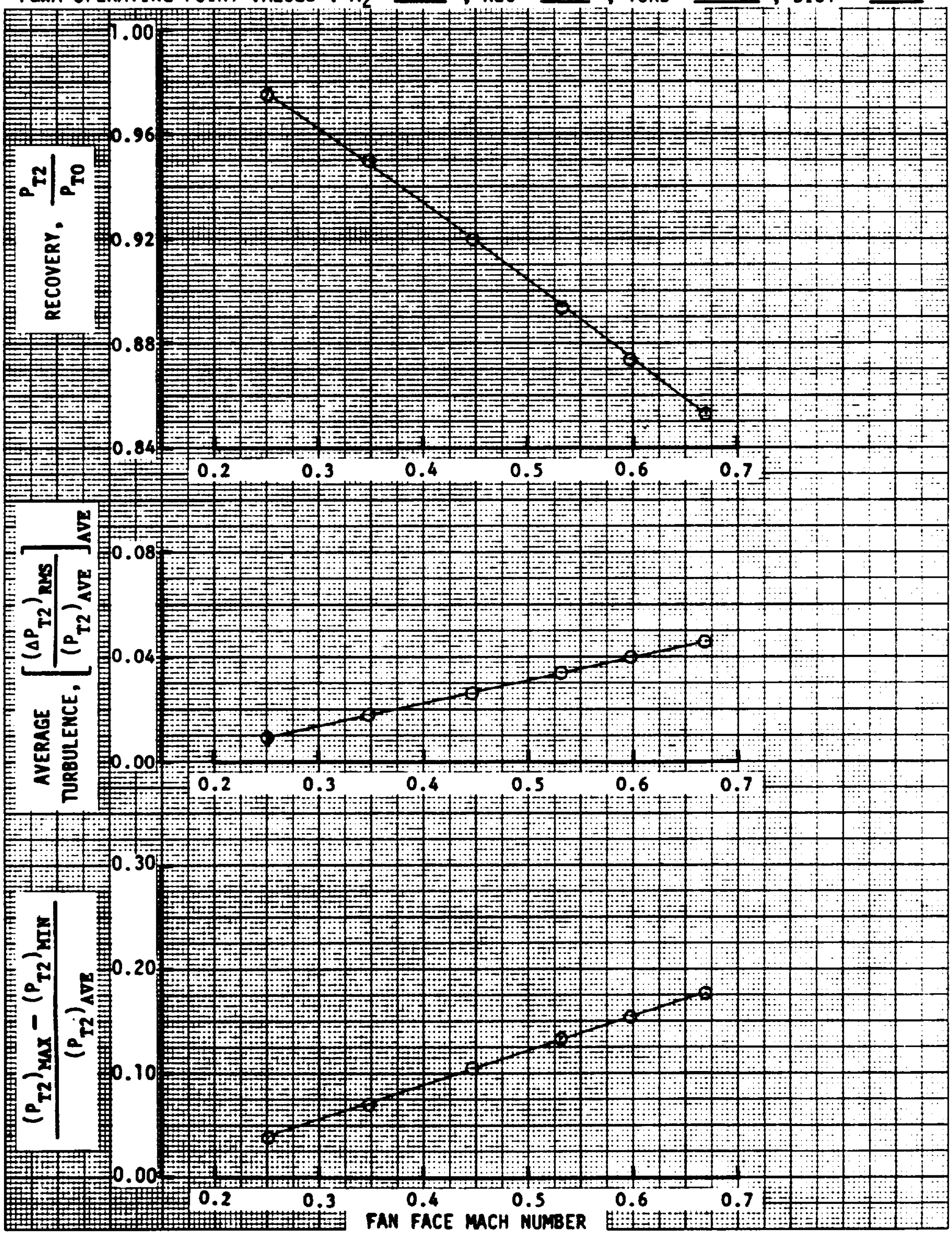
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 979-988
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .873 ; TURB= .033 ; DIST= .088



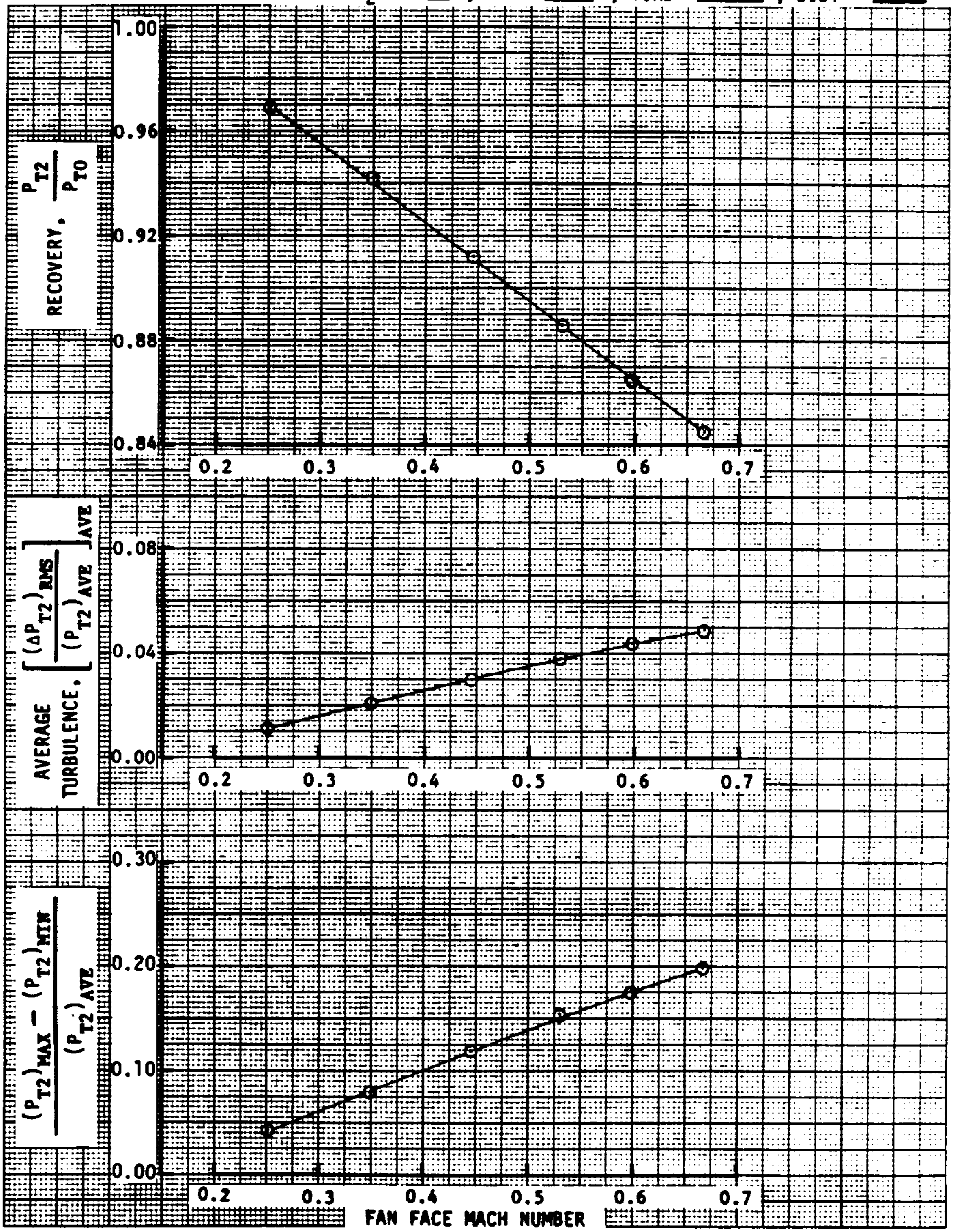
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 989-994
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .898 ; TURB= .030 ; DIST= .107



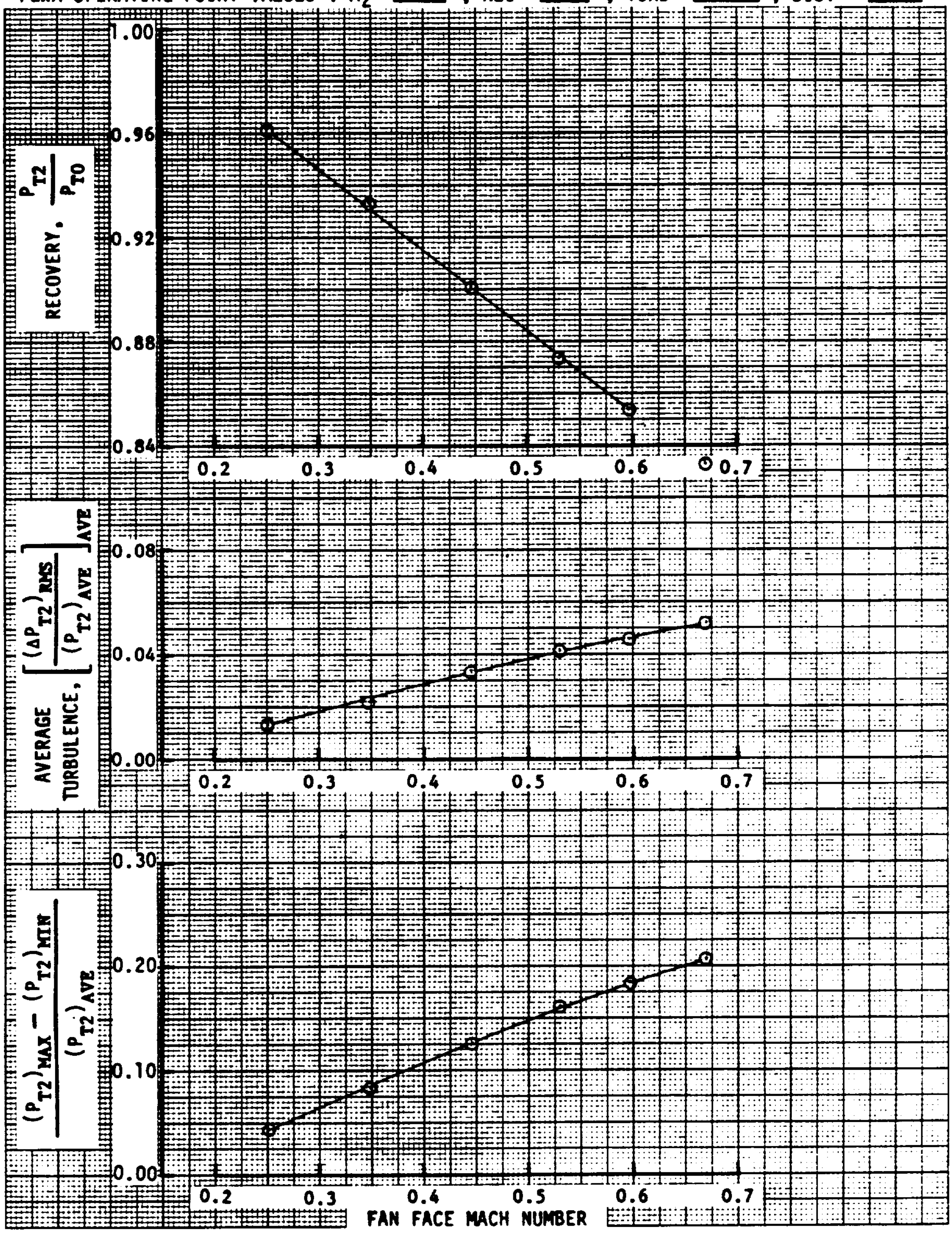
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 995-1000
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .895 ; TURB= .034 ; DIST= .132



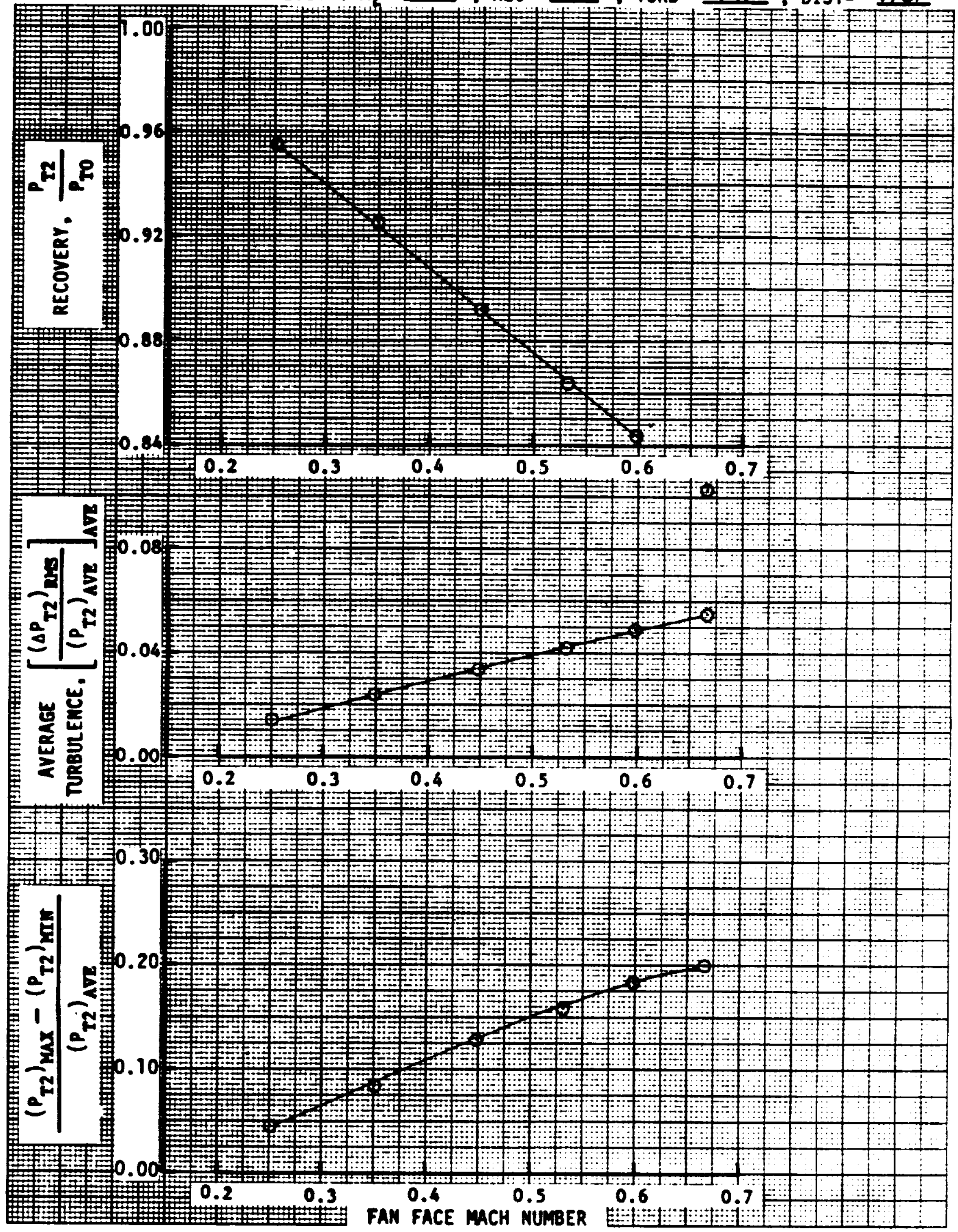
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1001-1006
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .886 ; TURB= .038 ; DIST= .151



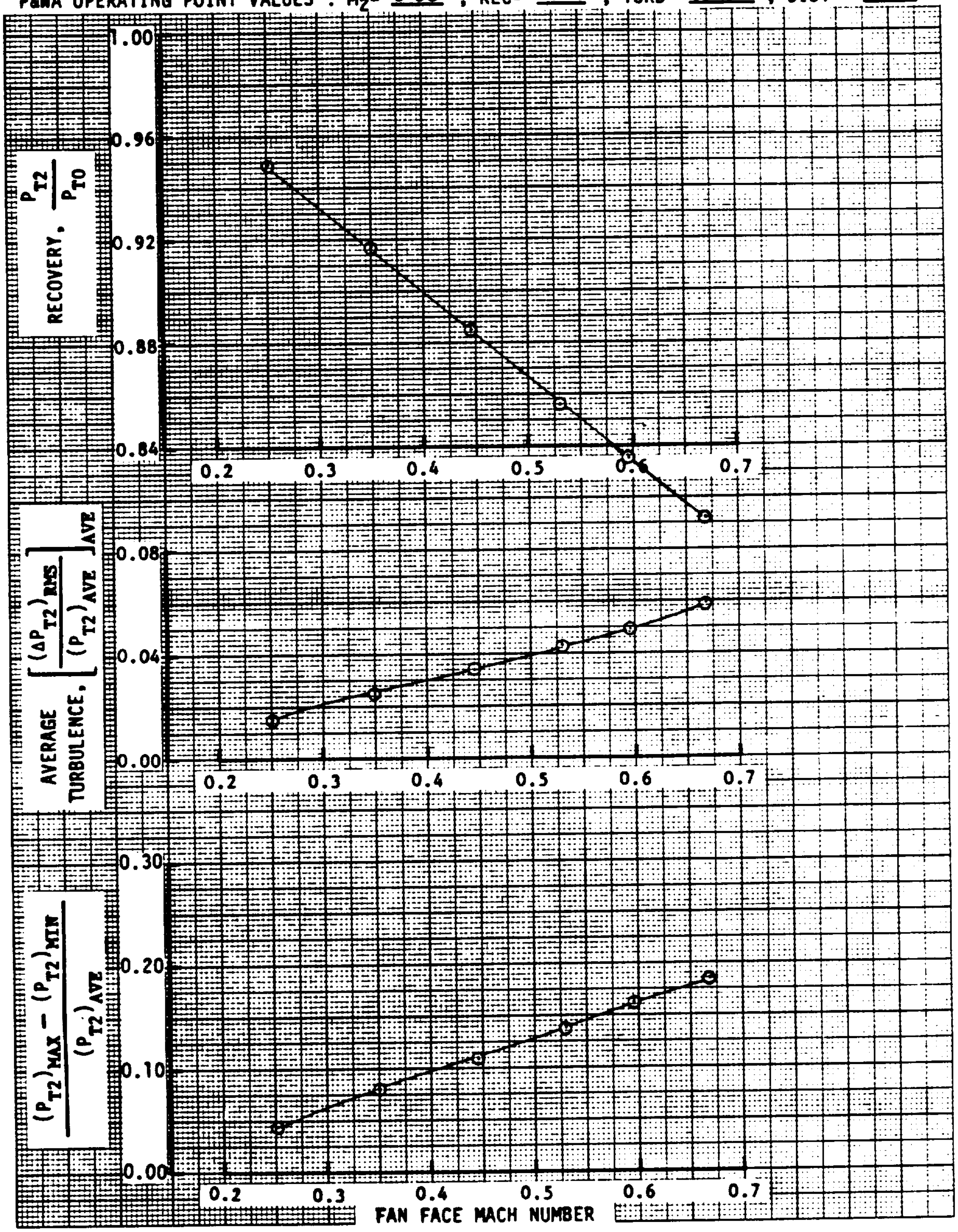
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1007-1012
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .874 ; TURB= .041 ; DIST= .159



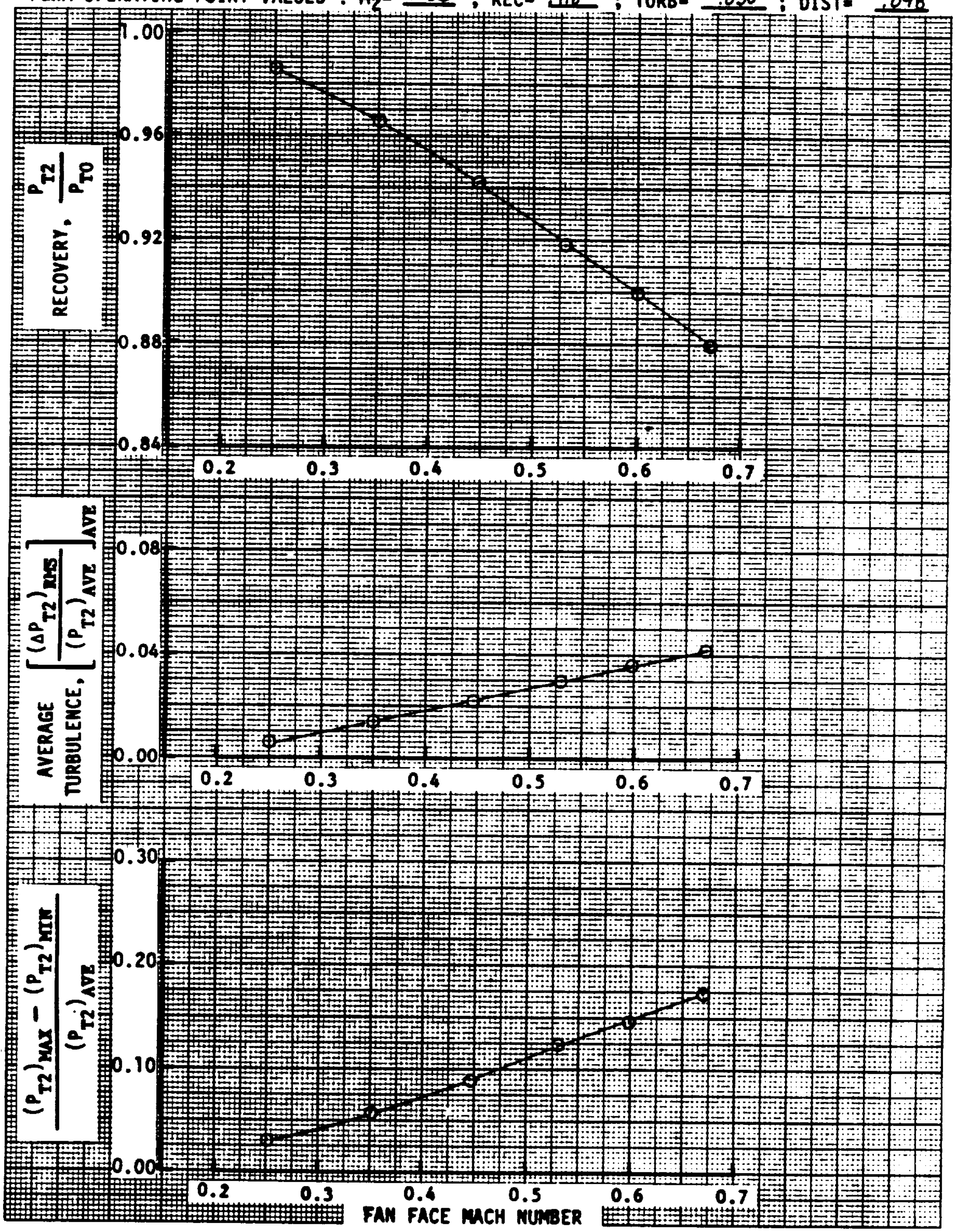
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1013-1018
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .865 ; TURB= .042 ; DIST= .161



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3C ; READING NUMBERS 1019-1024
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .856 ; TURB= .042 ; DIST= .138



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1025-1030
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .918 ; TURB= .030 ; DIST= .098

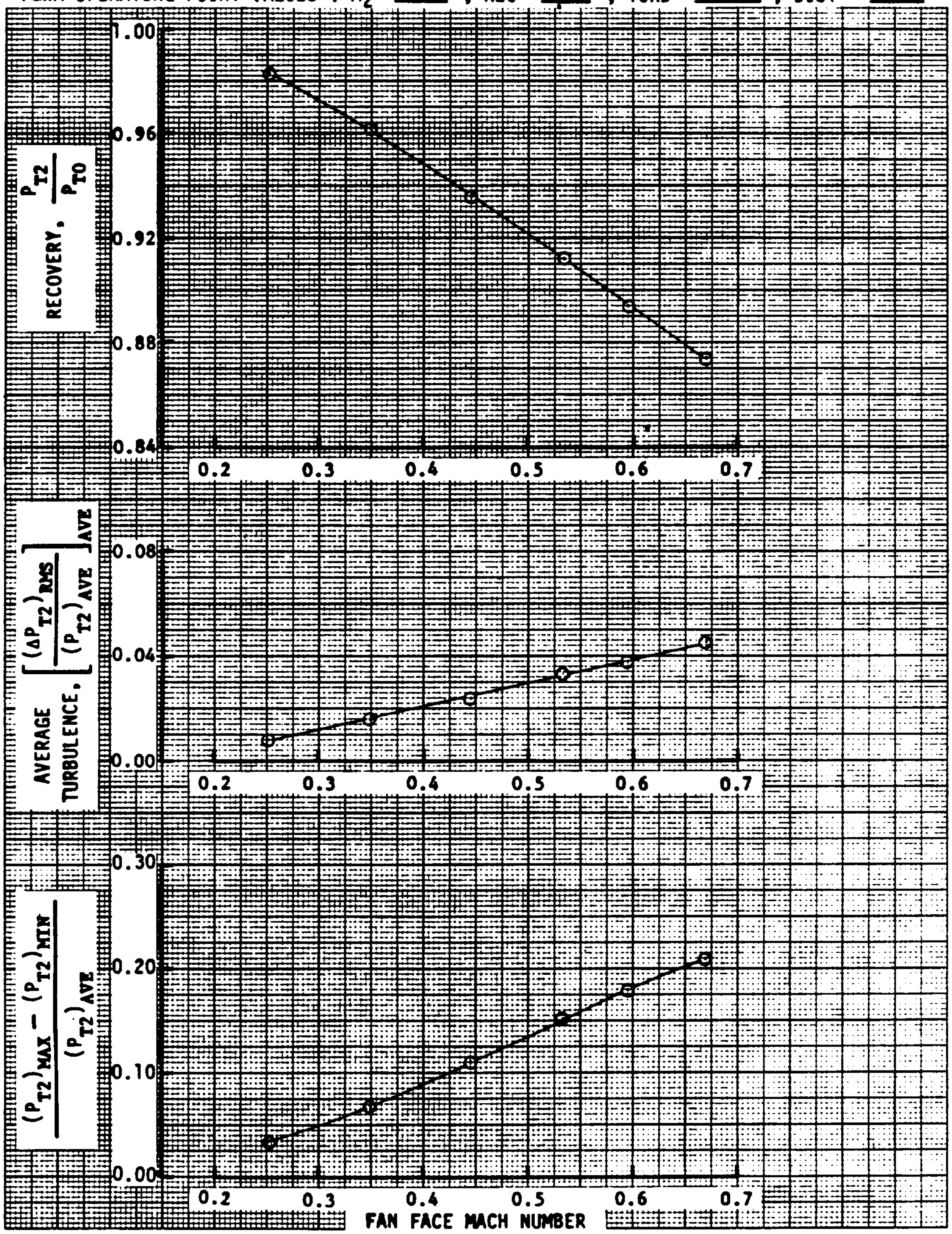


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

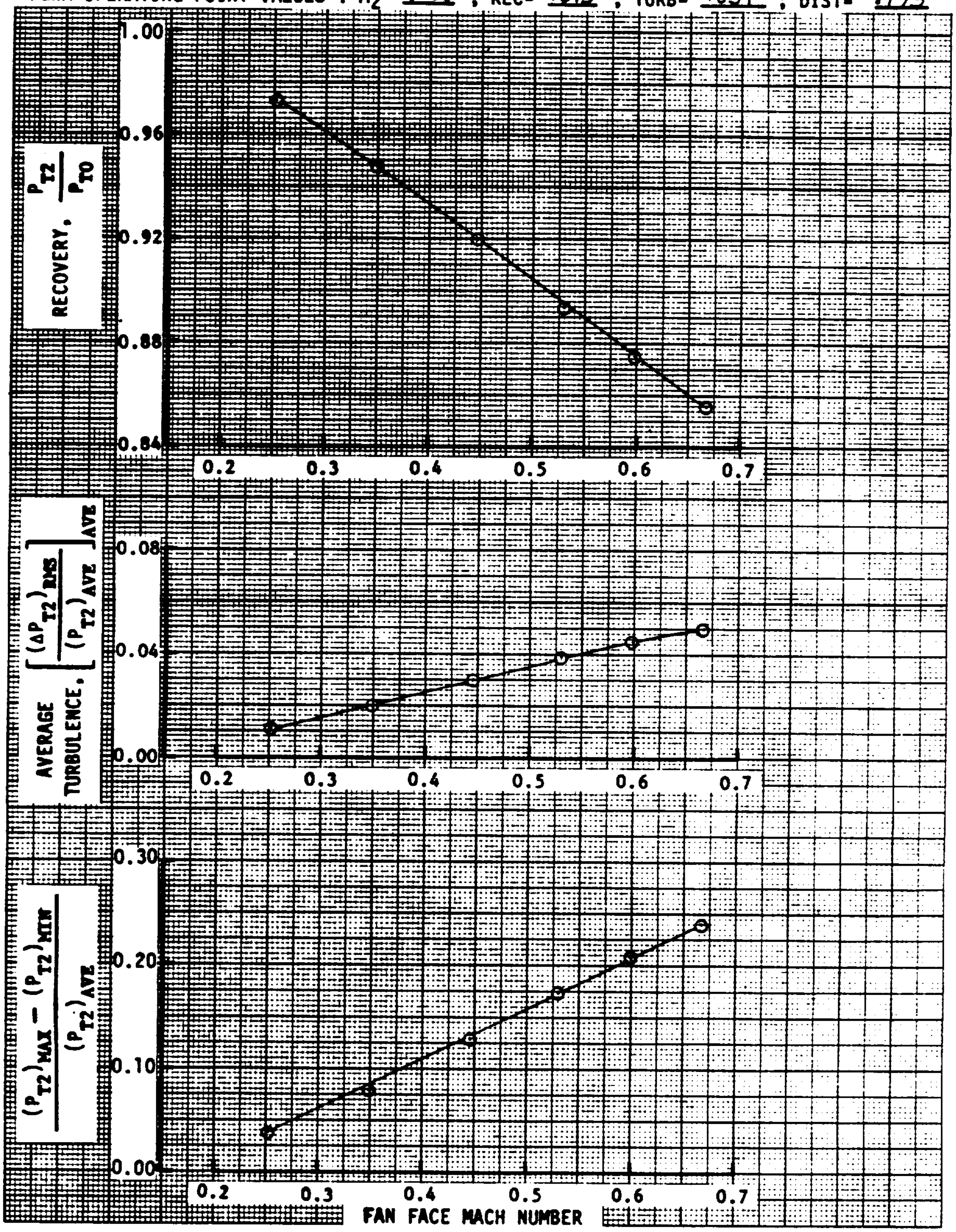
CONFIGURATION 32 ; READING NUMBERS 1031-1036

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.

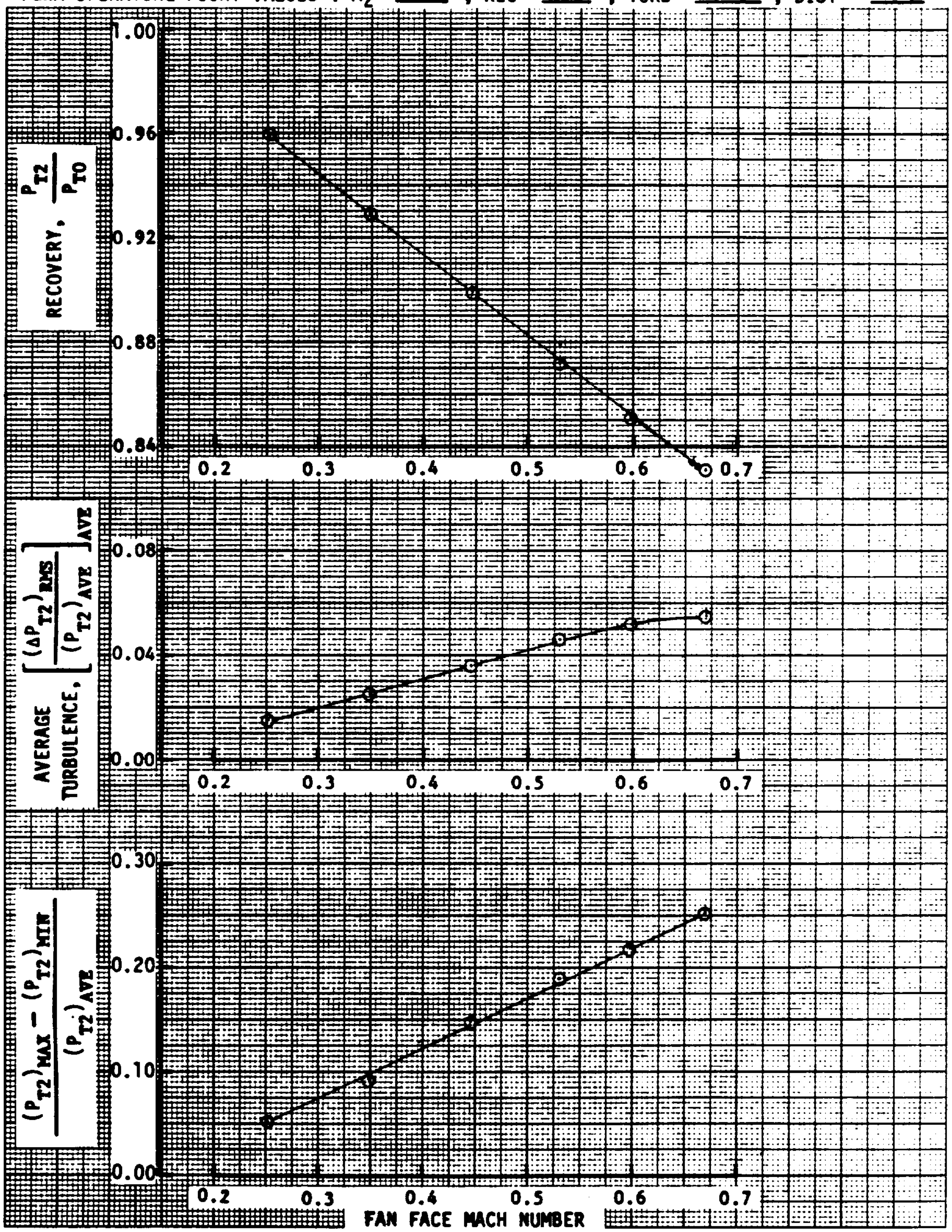
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .912 ; TURB= .032 ; DIST= .148



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1037-1042
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .895 ; TURB= .039 ; DIST= .173



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1043-1048
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .872 ; TURB= .046 ; DIST= .184

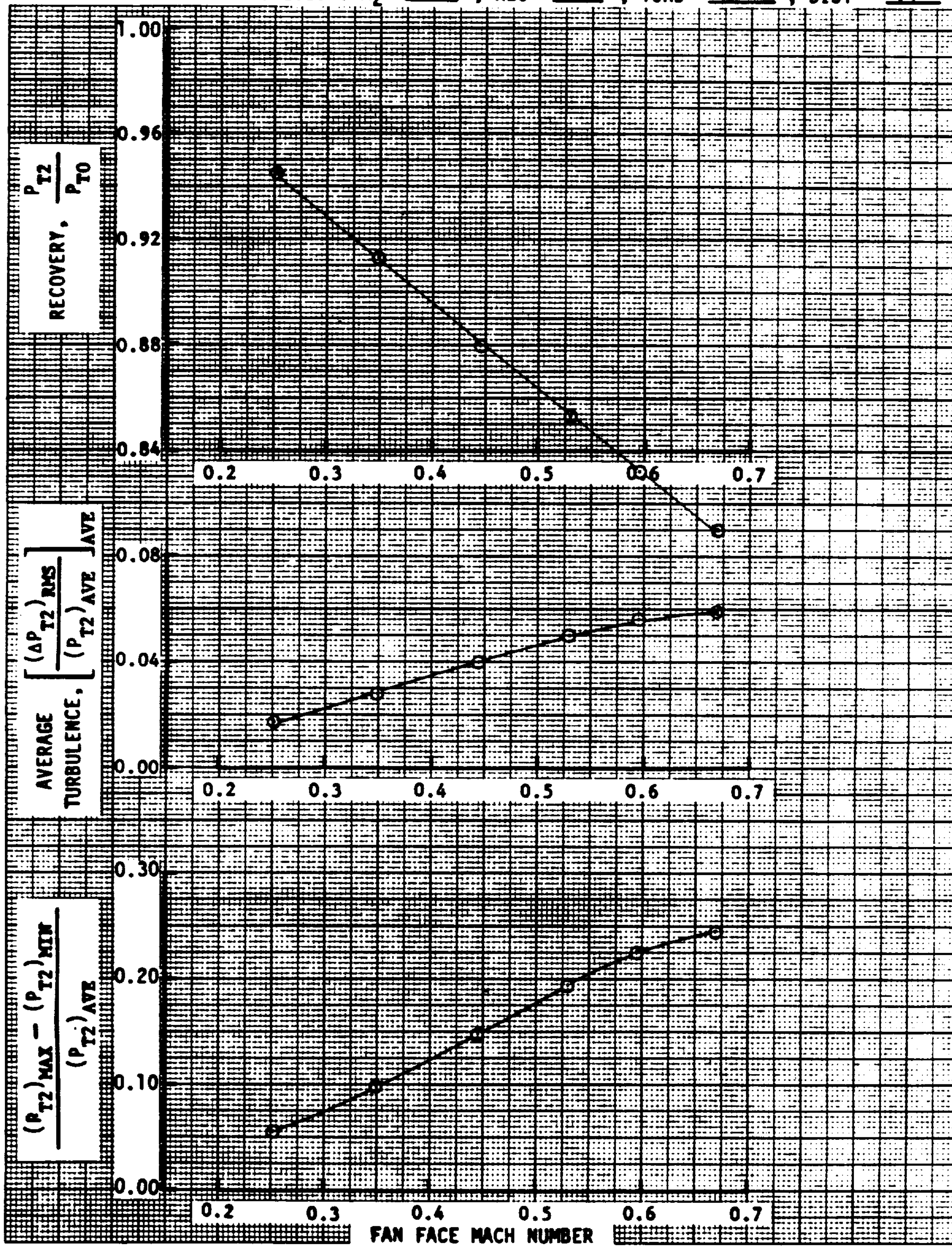


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

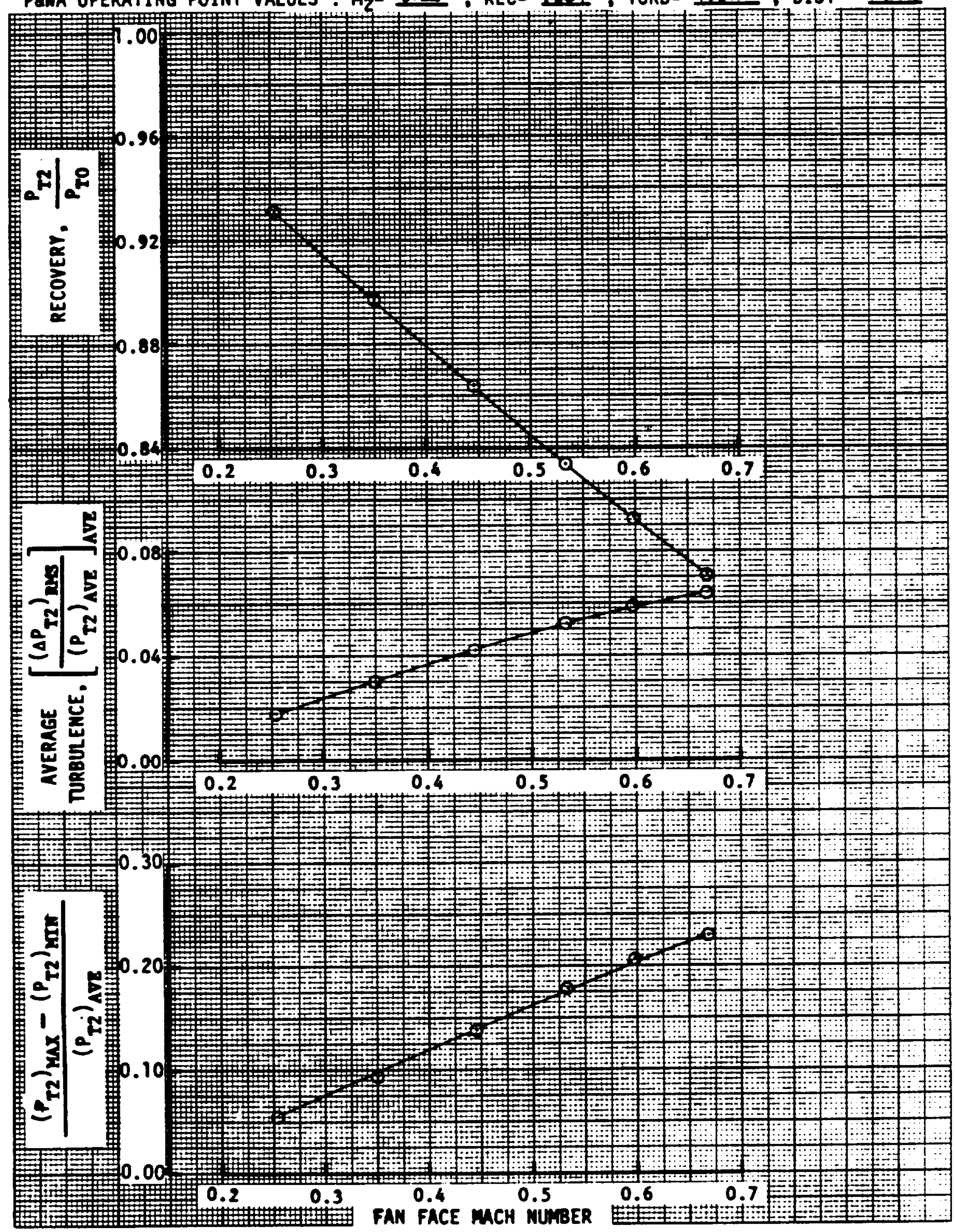
CONFIGURATION 3C ; READING NUMBERS 1049-1054

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.

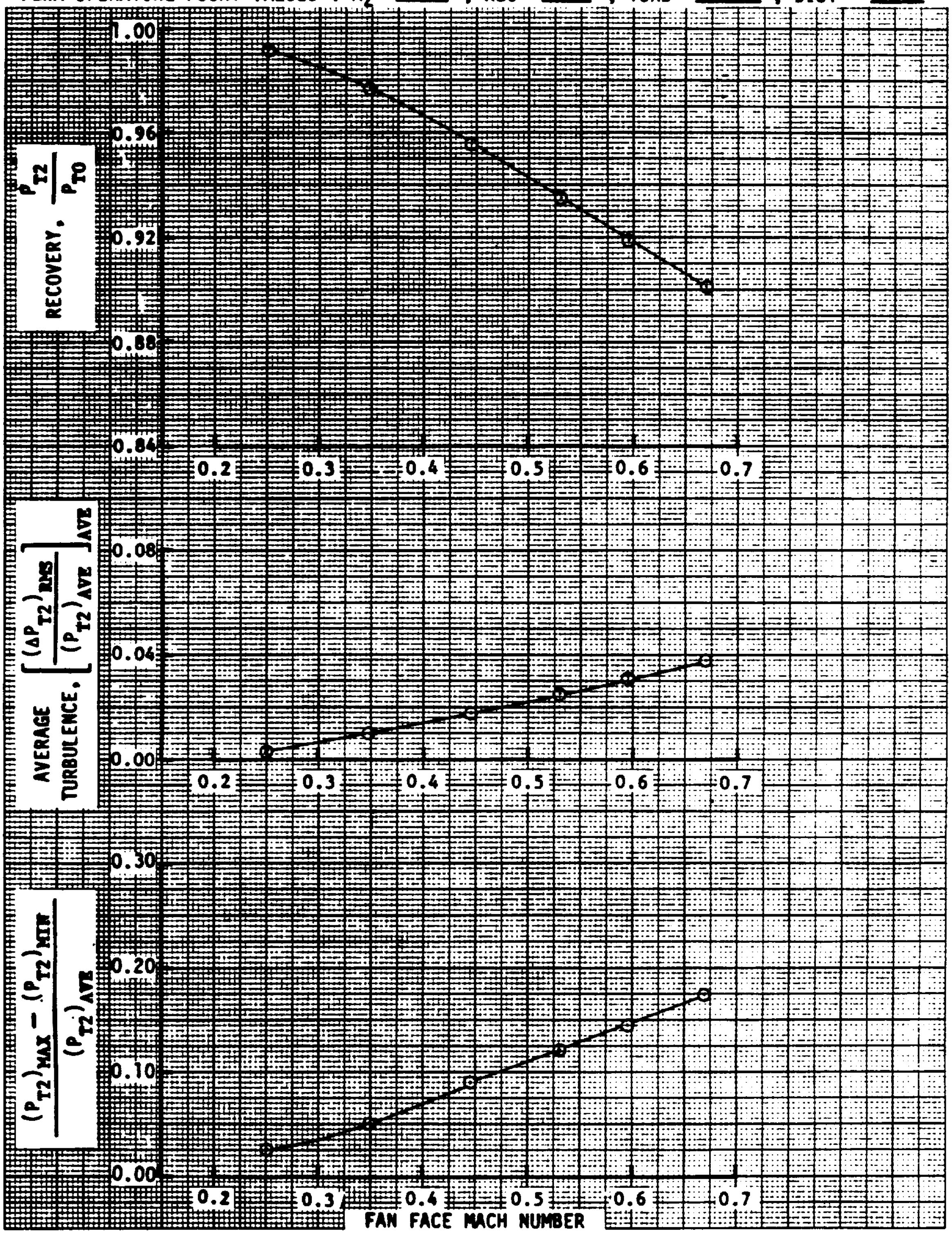
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .853 ; TURB= .050 ; DIST= .193



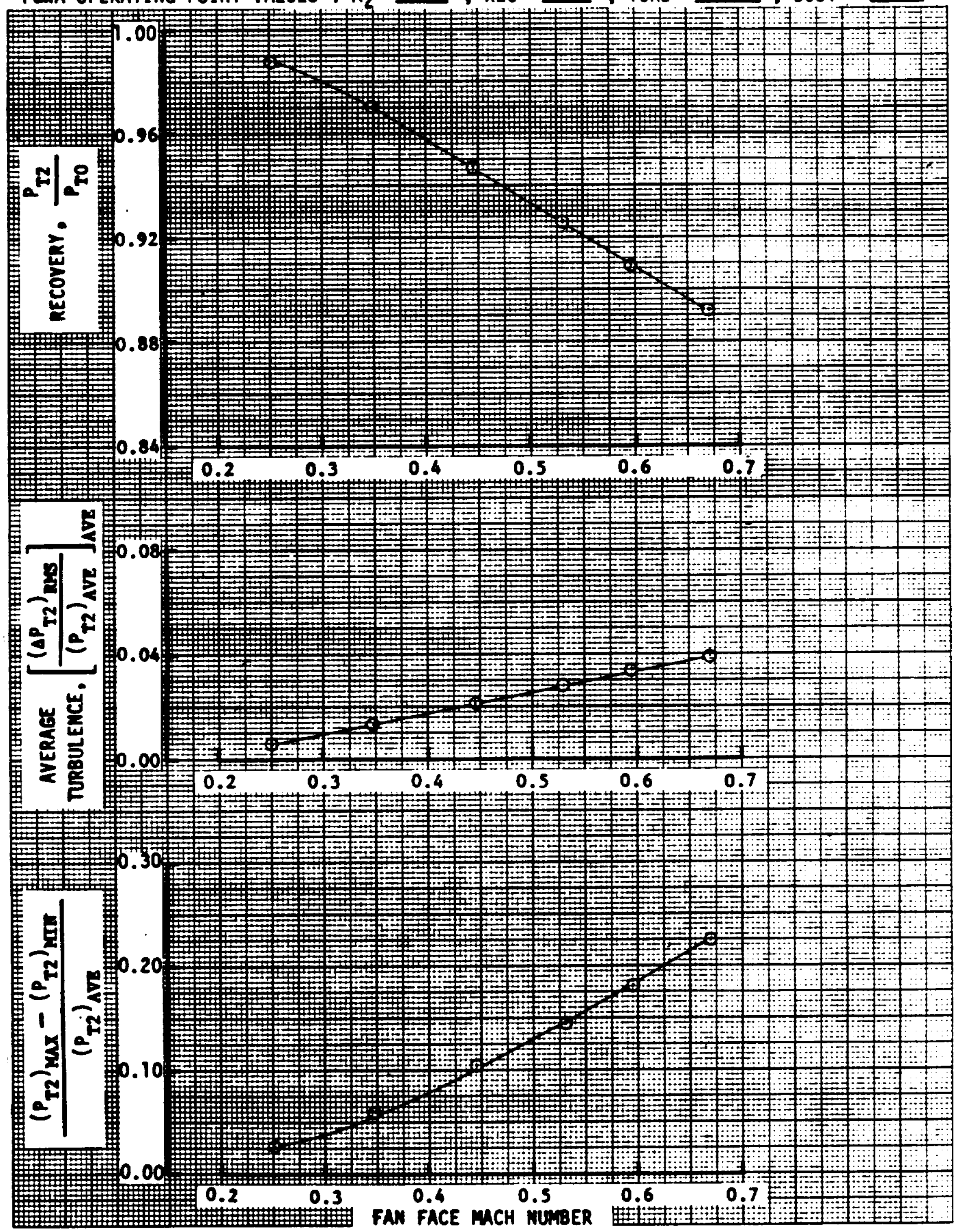
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1055-1060
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .834 ; TURB= .052 ; DIST= .174



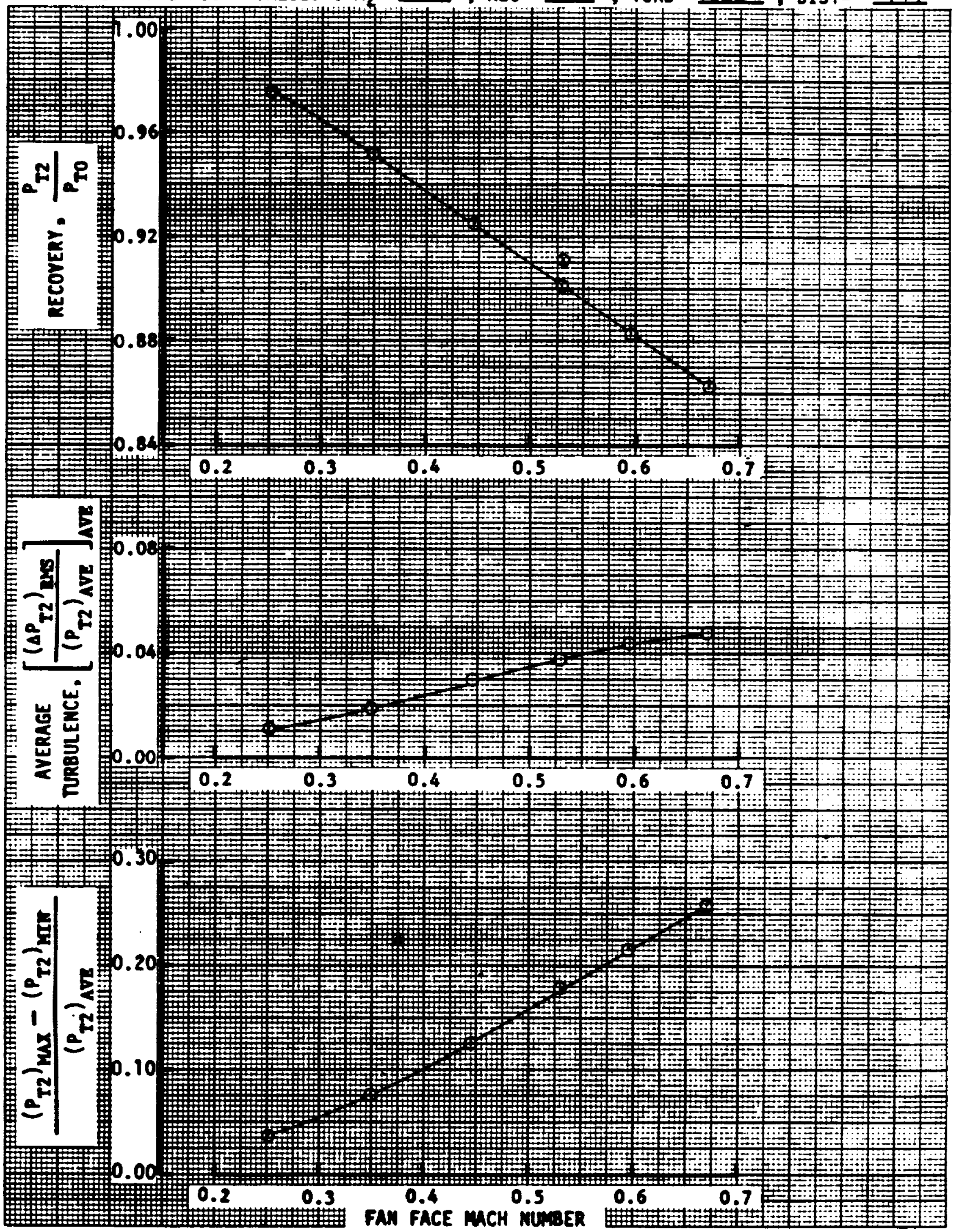
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1061 - 1066
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .935 ; TURB= .025 ; DIST= .122



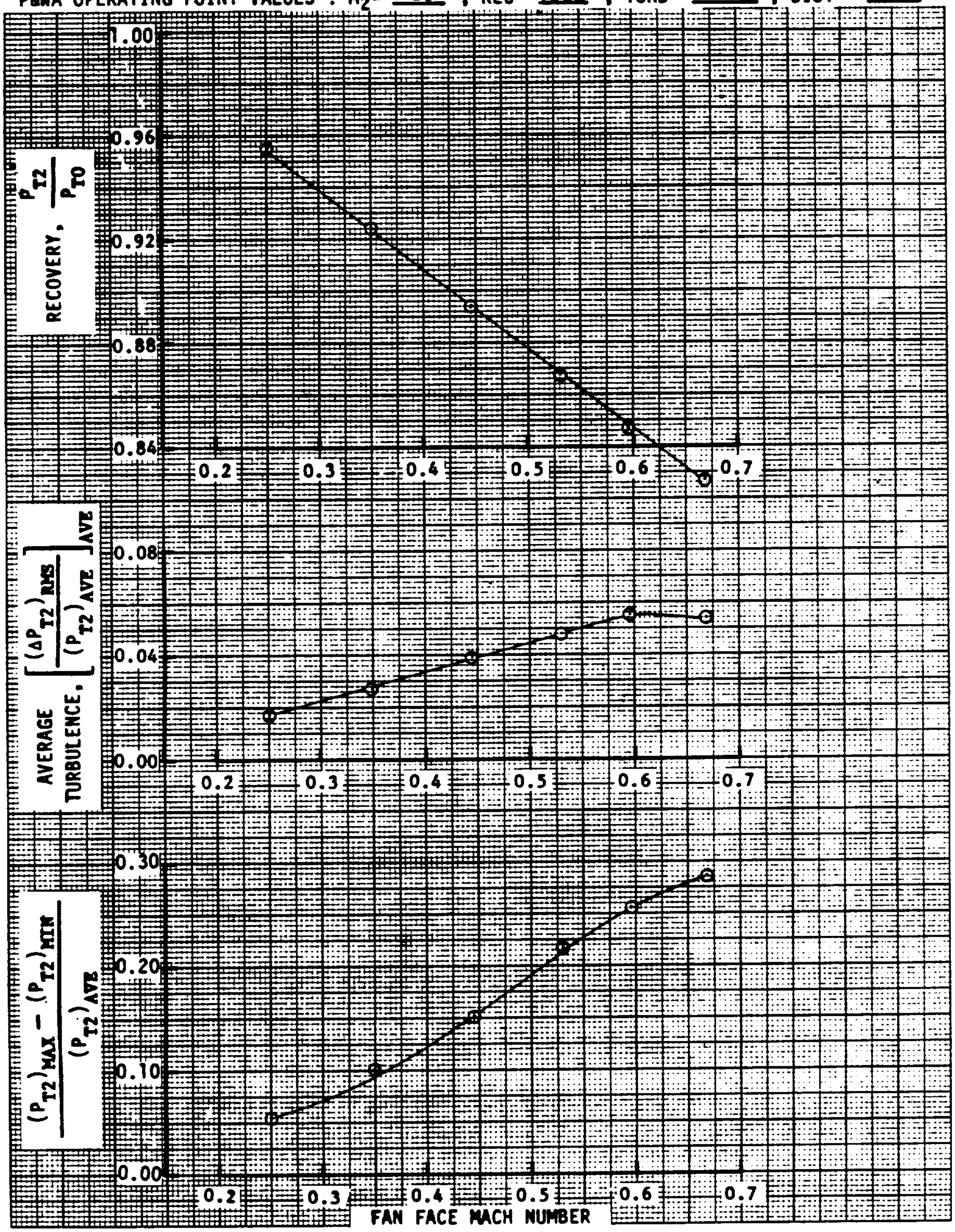
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1067-1072
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .926 ; TURB= .028 ; DIST= .146



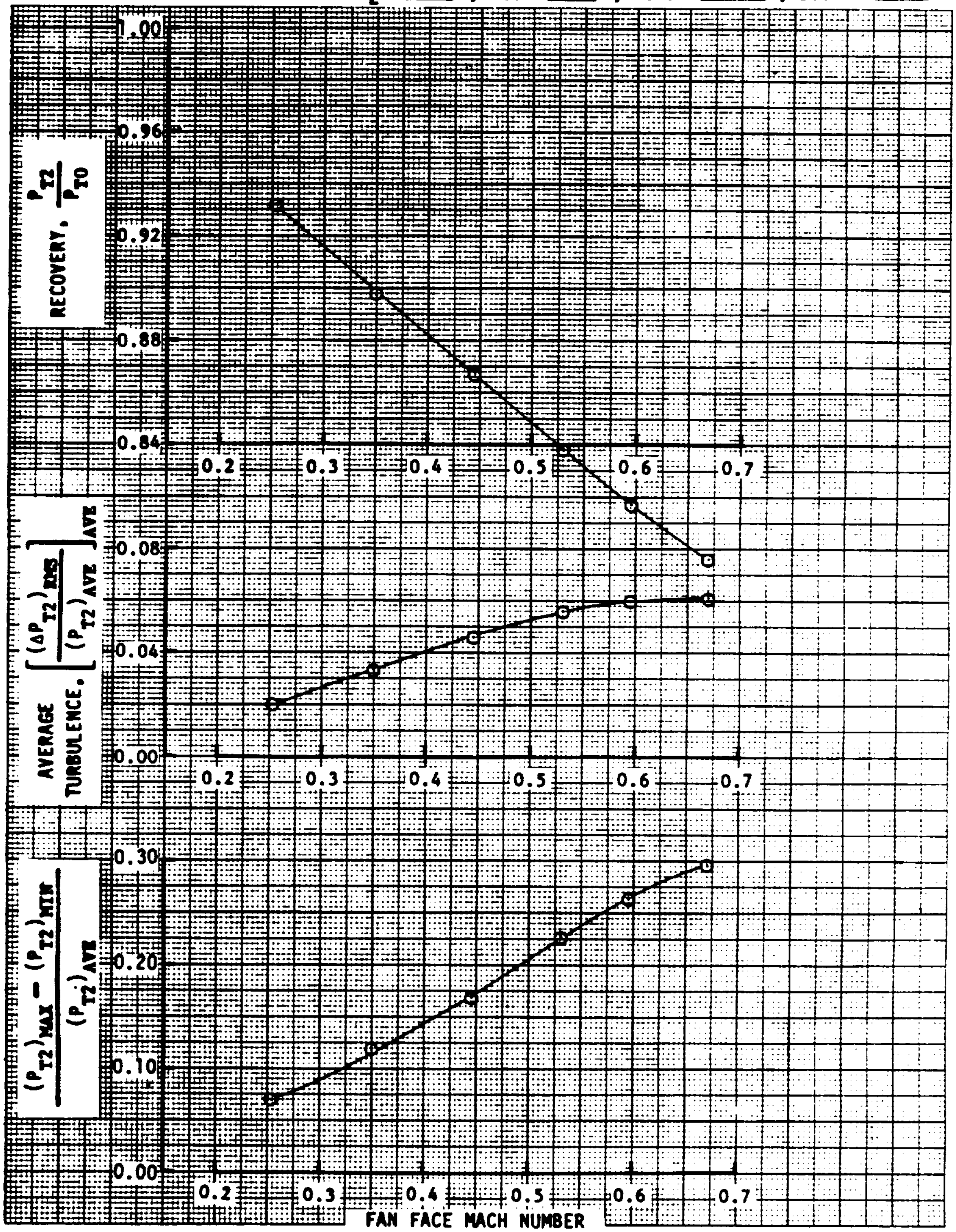
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1073-1078
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .901 ; TURB= .038 ; DIST= .177



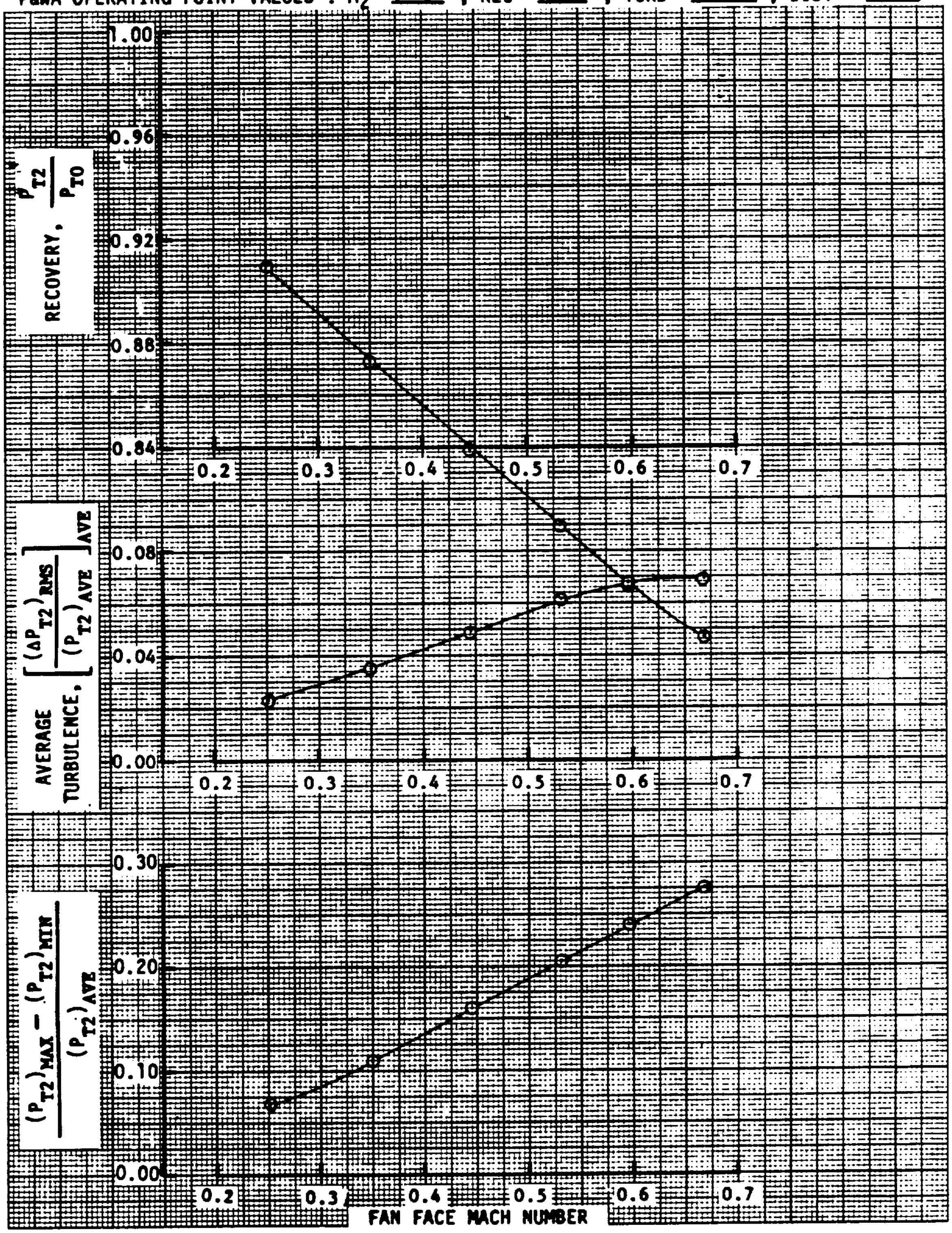
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3C ; READING NUMBERS 1079-1084
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .868 ; TURB= .048 ; DIST= .213



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1091-1096
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .838 ; TURB= .056 ; DIST= .225



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3c ; READING NUMBERS 1097-1102
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .810 ; TURB= .061 ; DIST= .204



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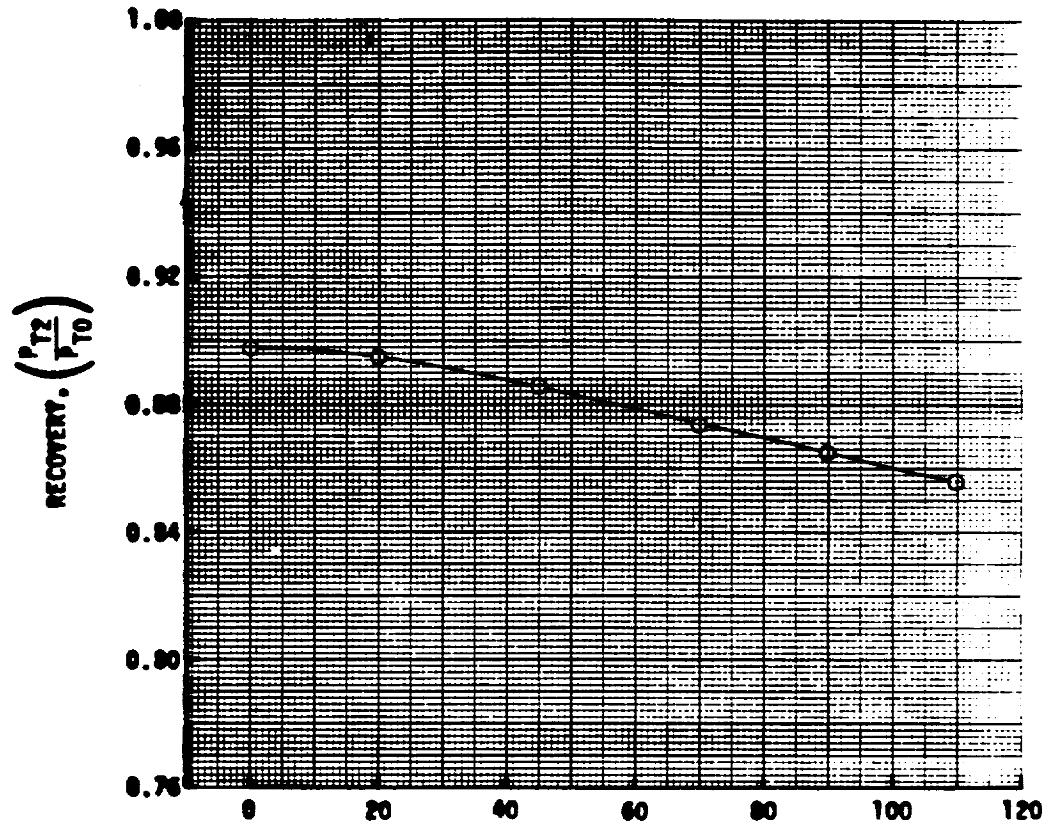
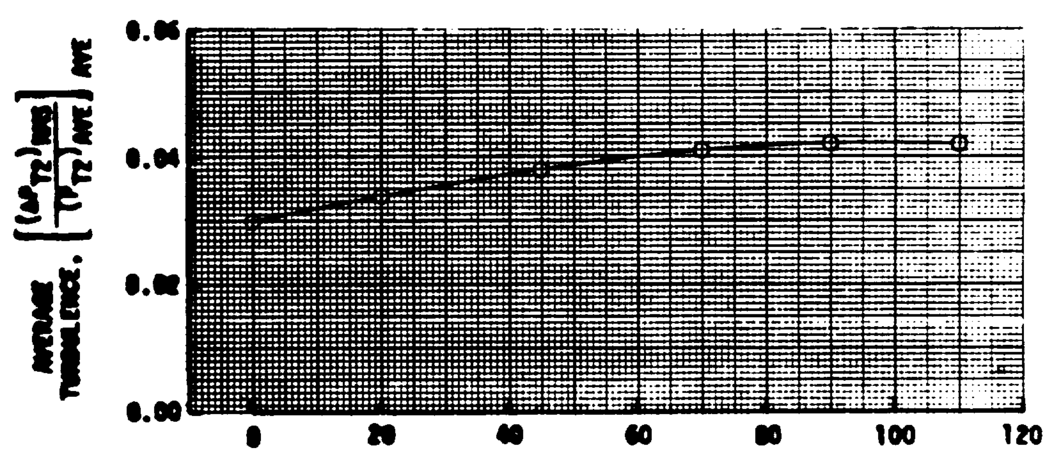
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3c ; DESCRIPTION All Cavities Open





ANGLE OF ATTACK - Degrees

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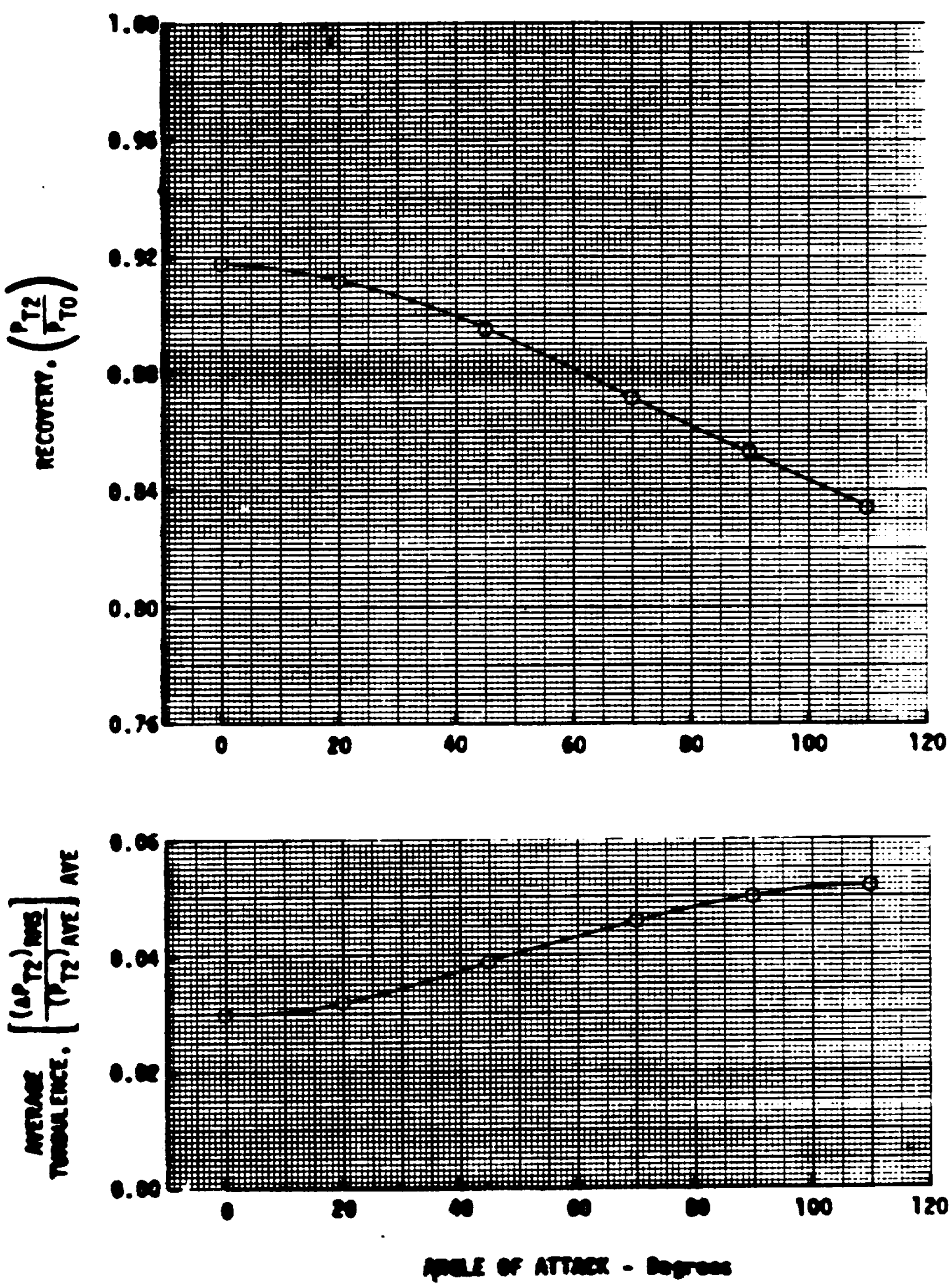
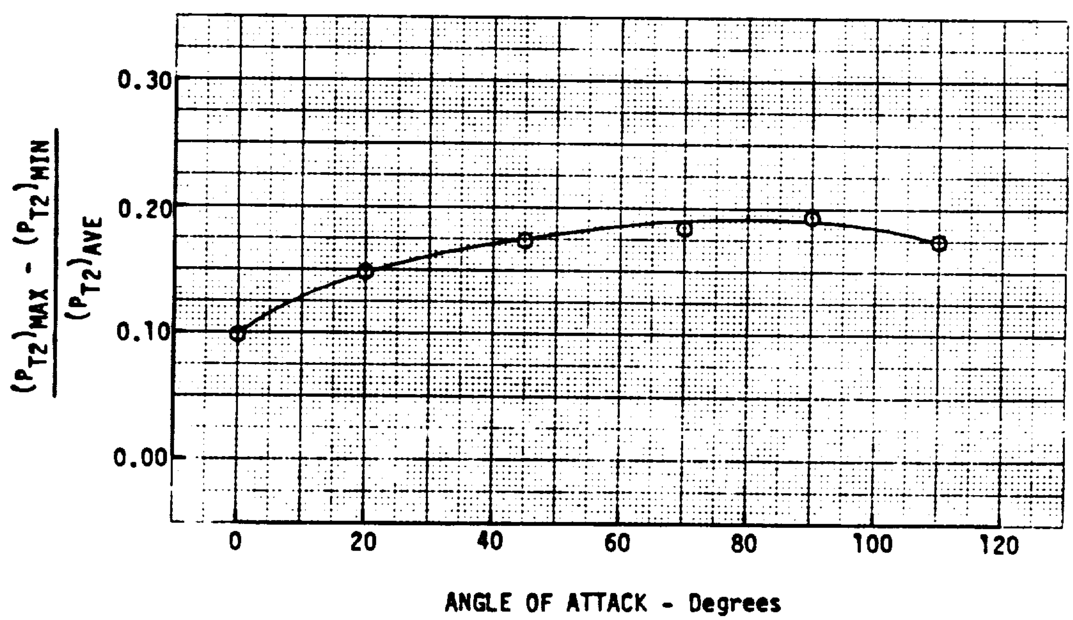
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3c; DESCRIPTION All Cavities Open

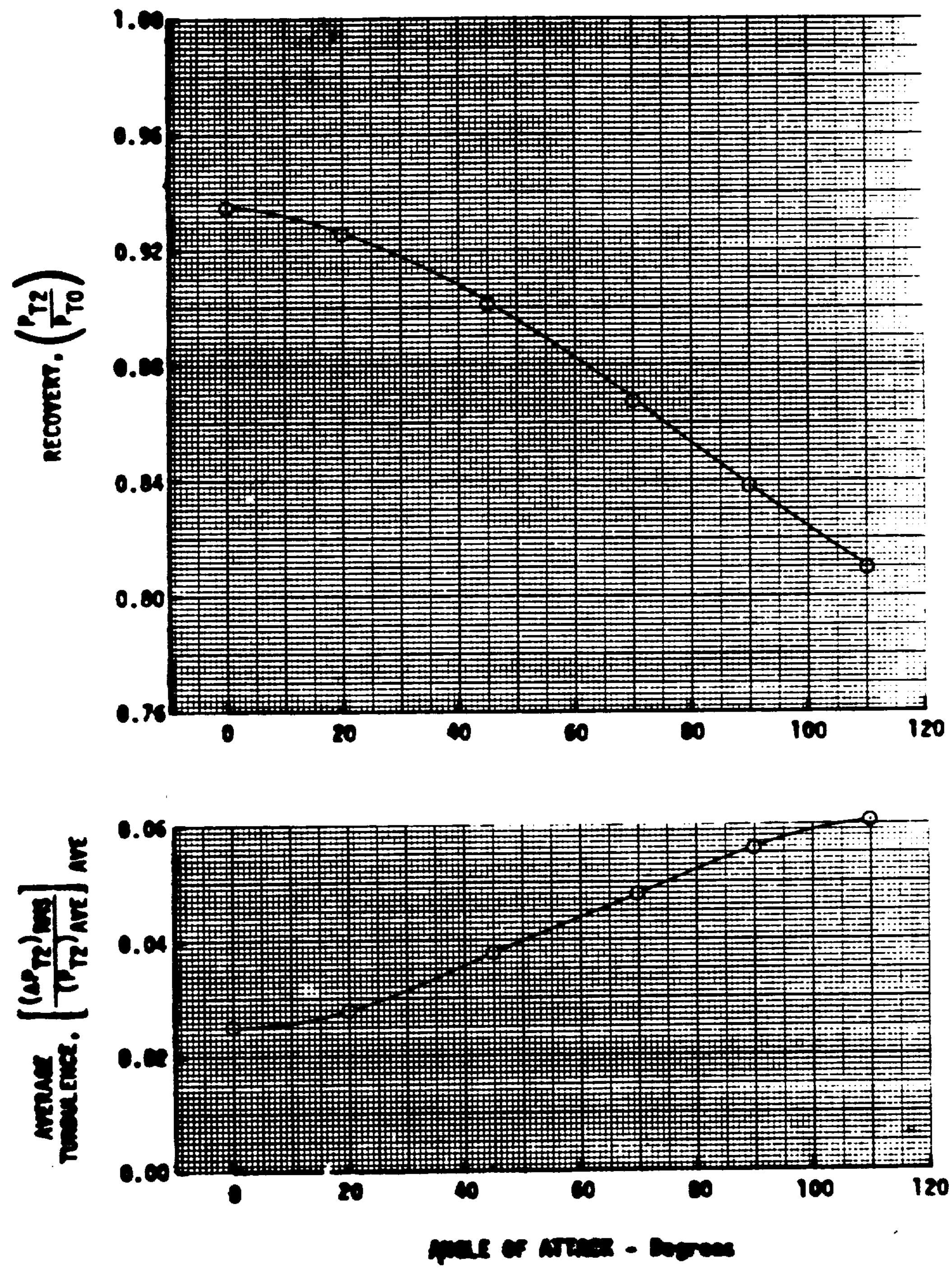


DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3c ; DESCRIPTION All Cavities Open



RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-300 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3c ; DESCRIPTION All Cavities Open



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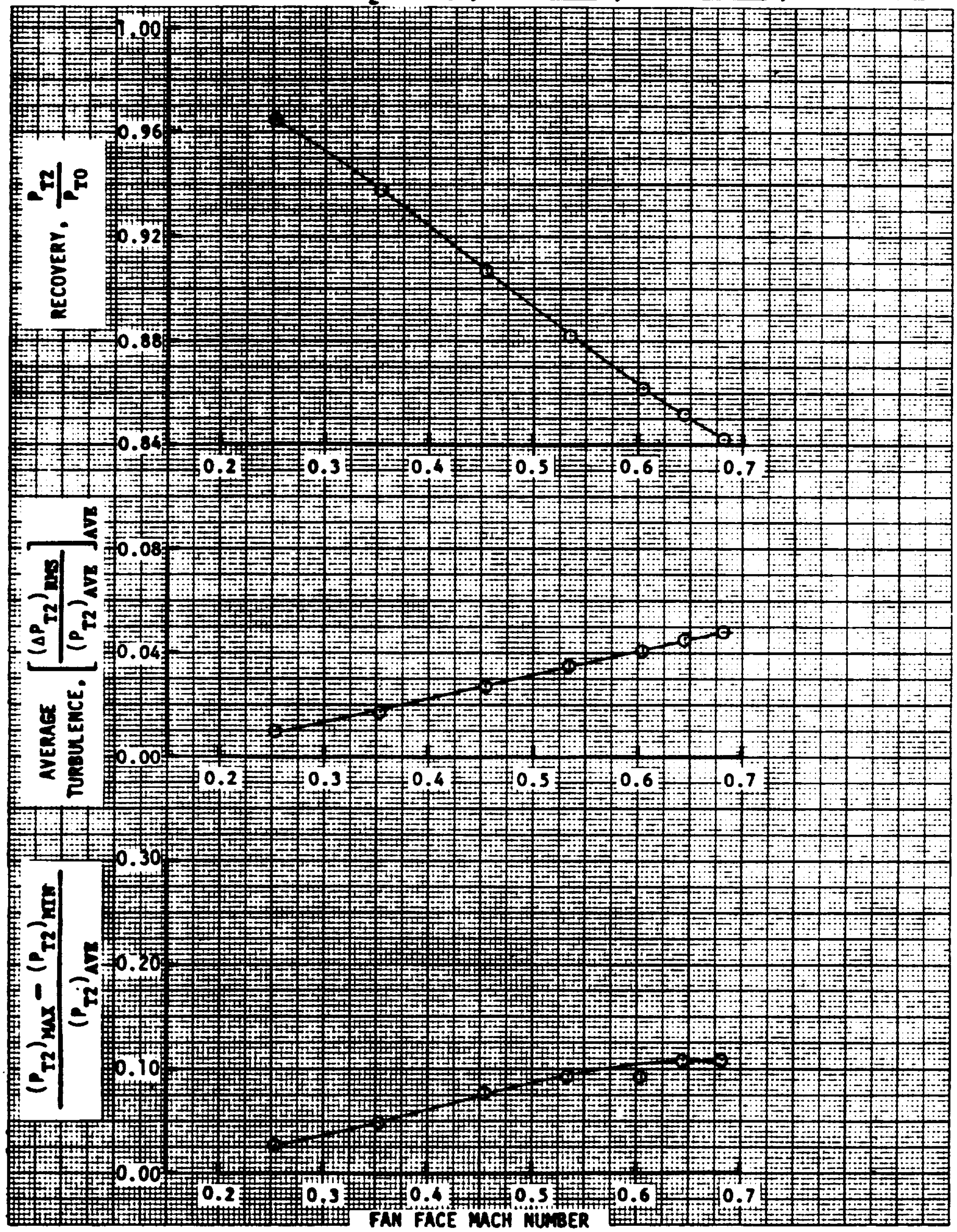
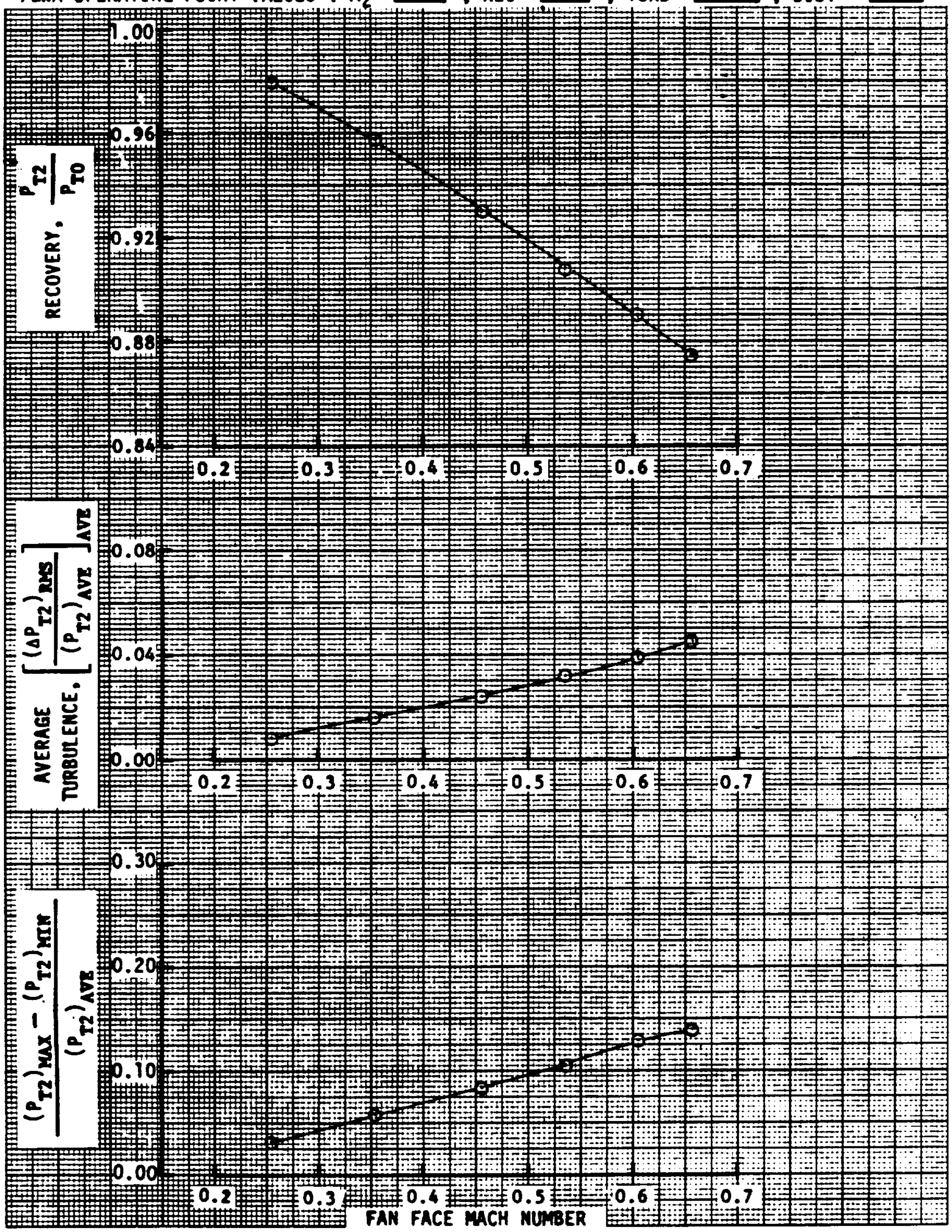
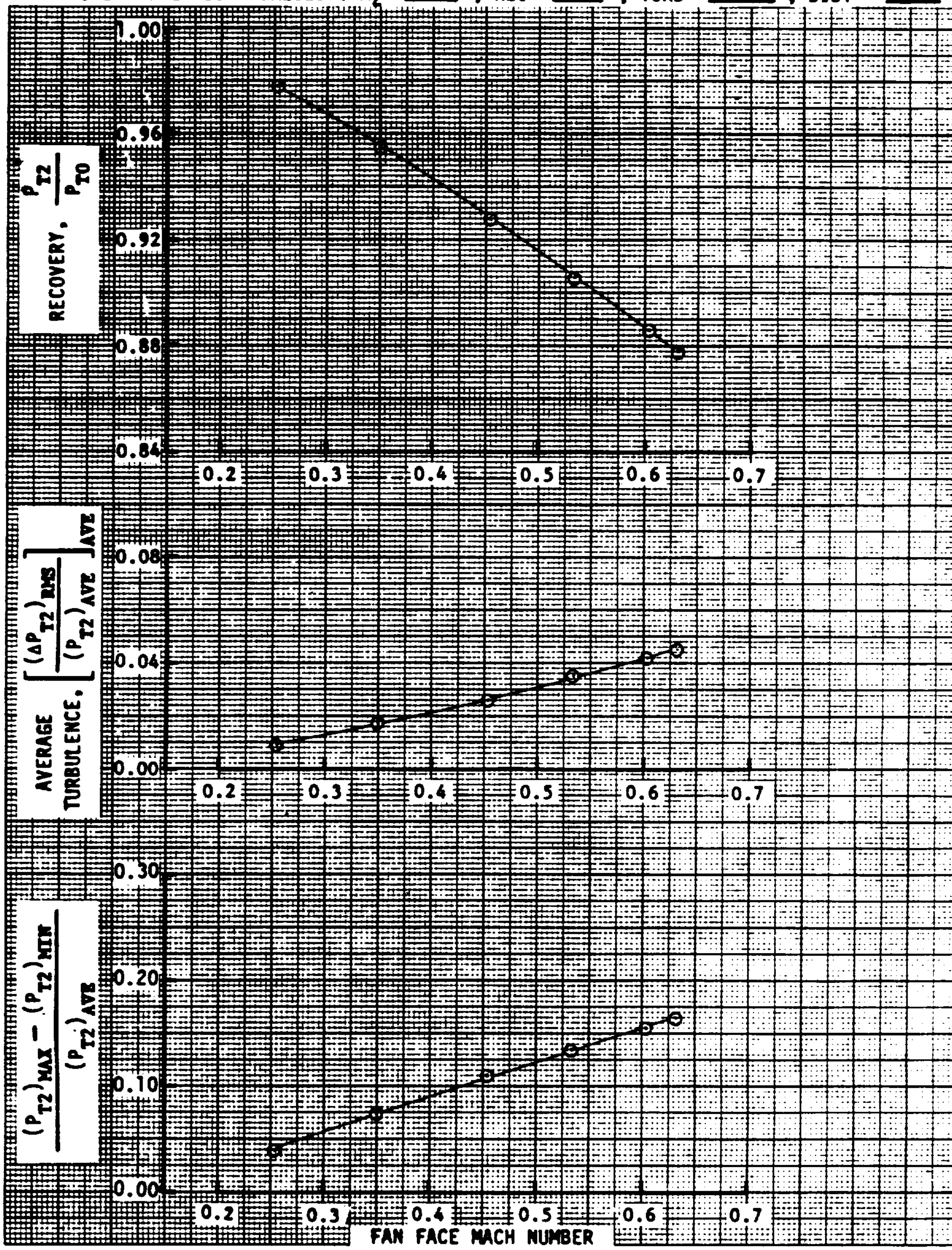
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3135-3145
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PWMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .884 ; TURB= .034 ; DIST= .093



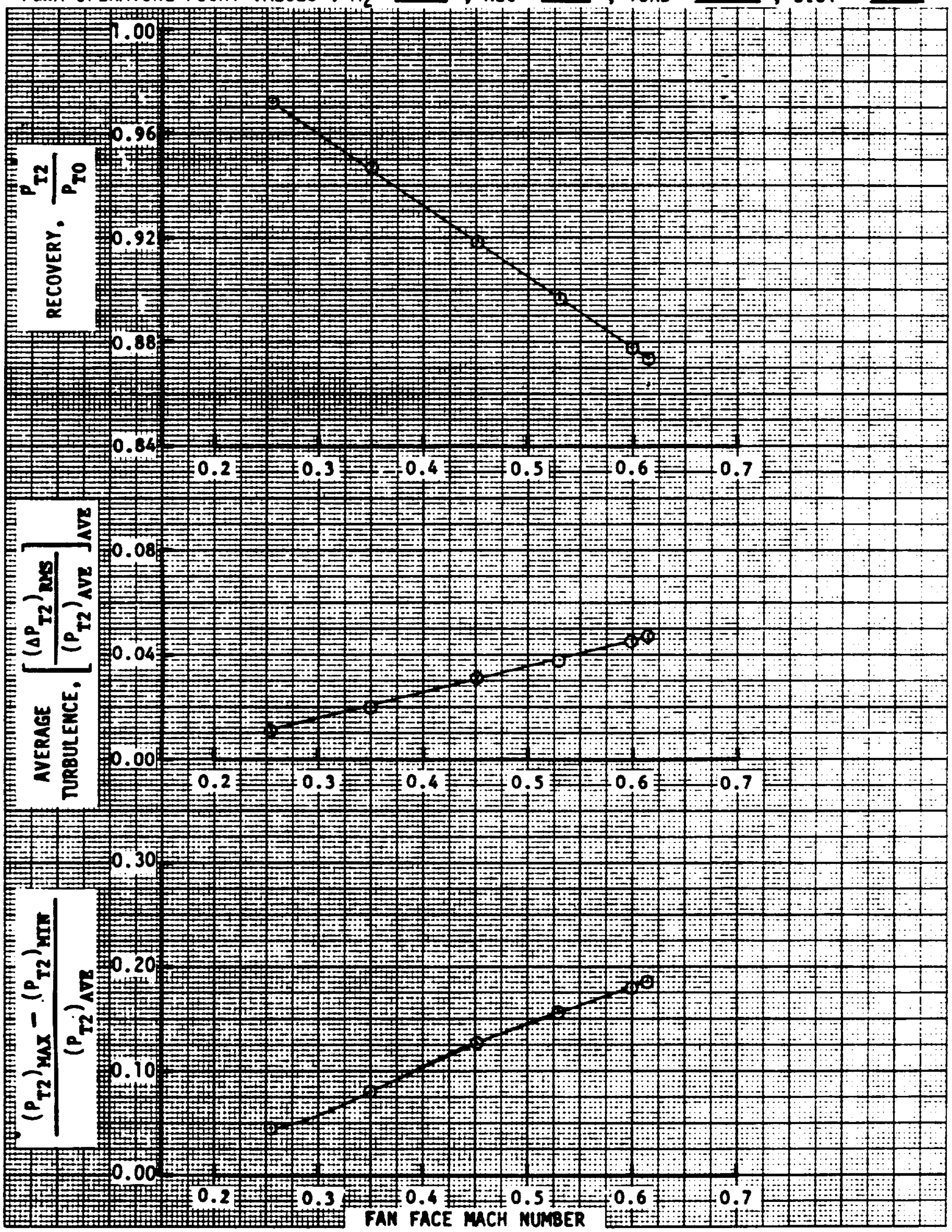
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3146-3151
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .911 ; TURB= .031 ; DIST= .104



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3152-3157
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .53 ; REC= .907 ; TURB= .034 ; DIST= .132



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3158 - 3163
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .897 ; TURB= .038 ; DIST= .157

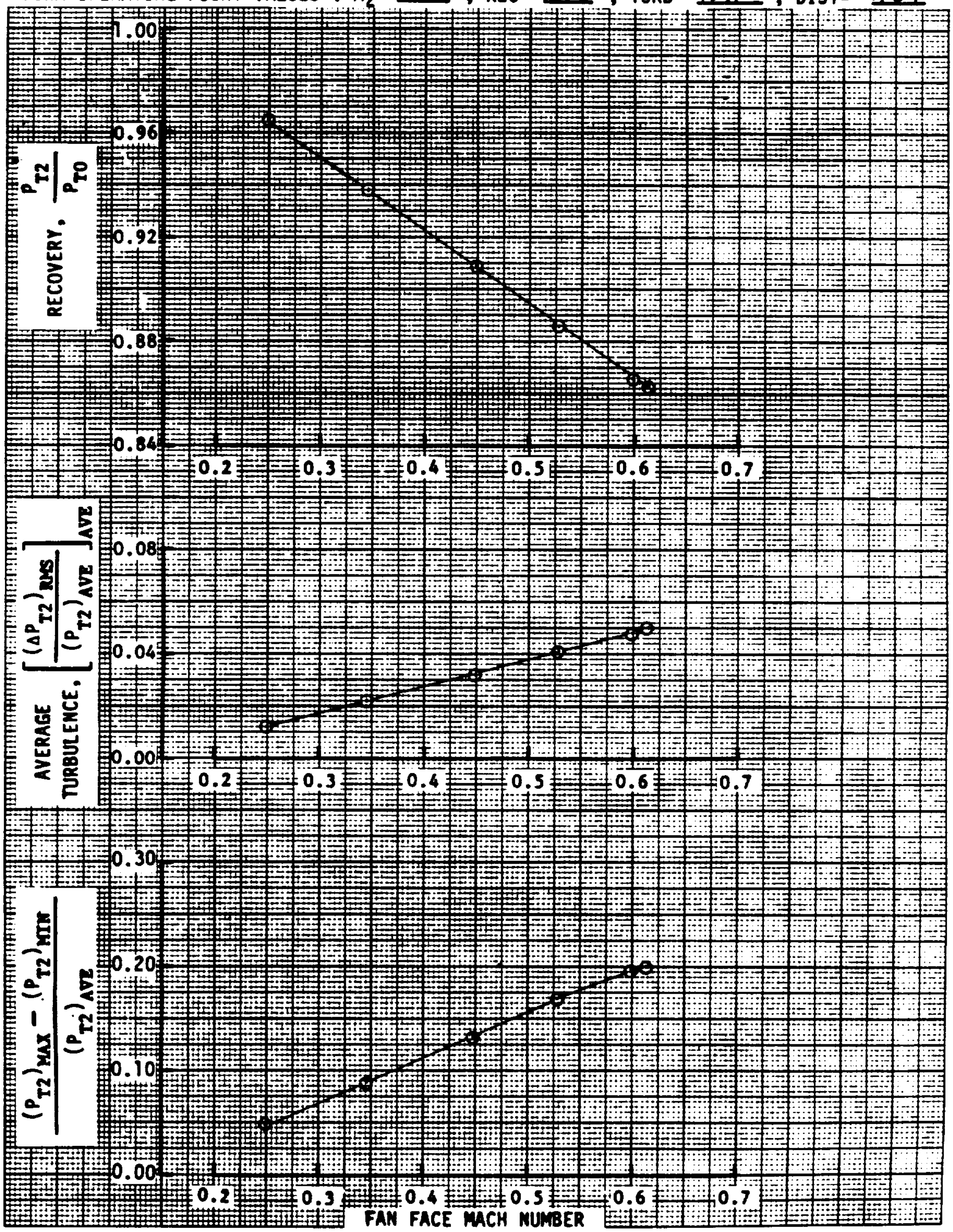


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

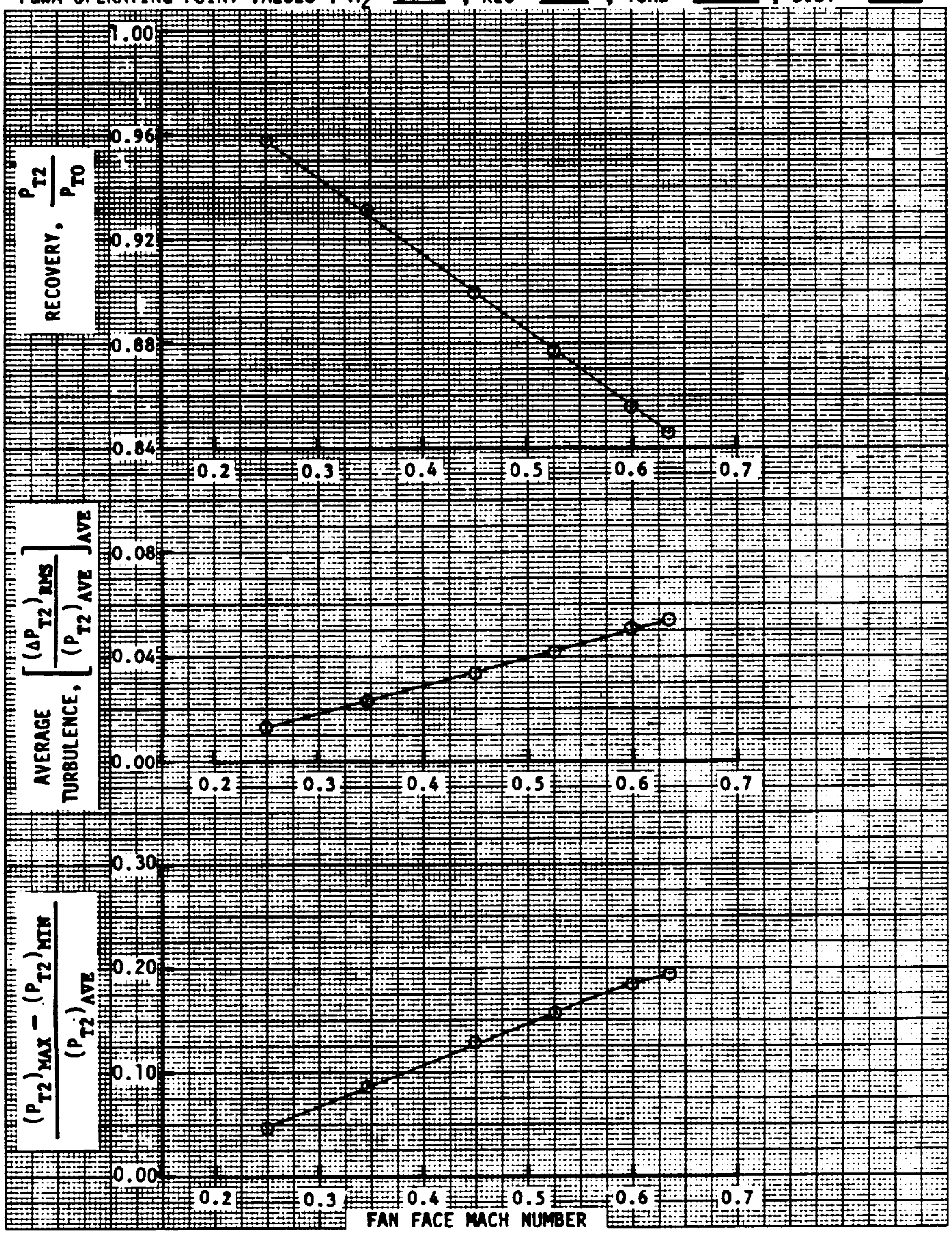
CONFIGURATION 3d ; READING NUMBERS 3164 - 3169

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

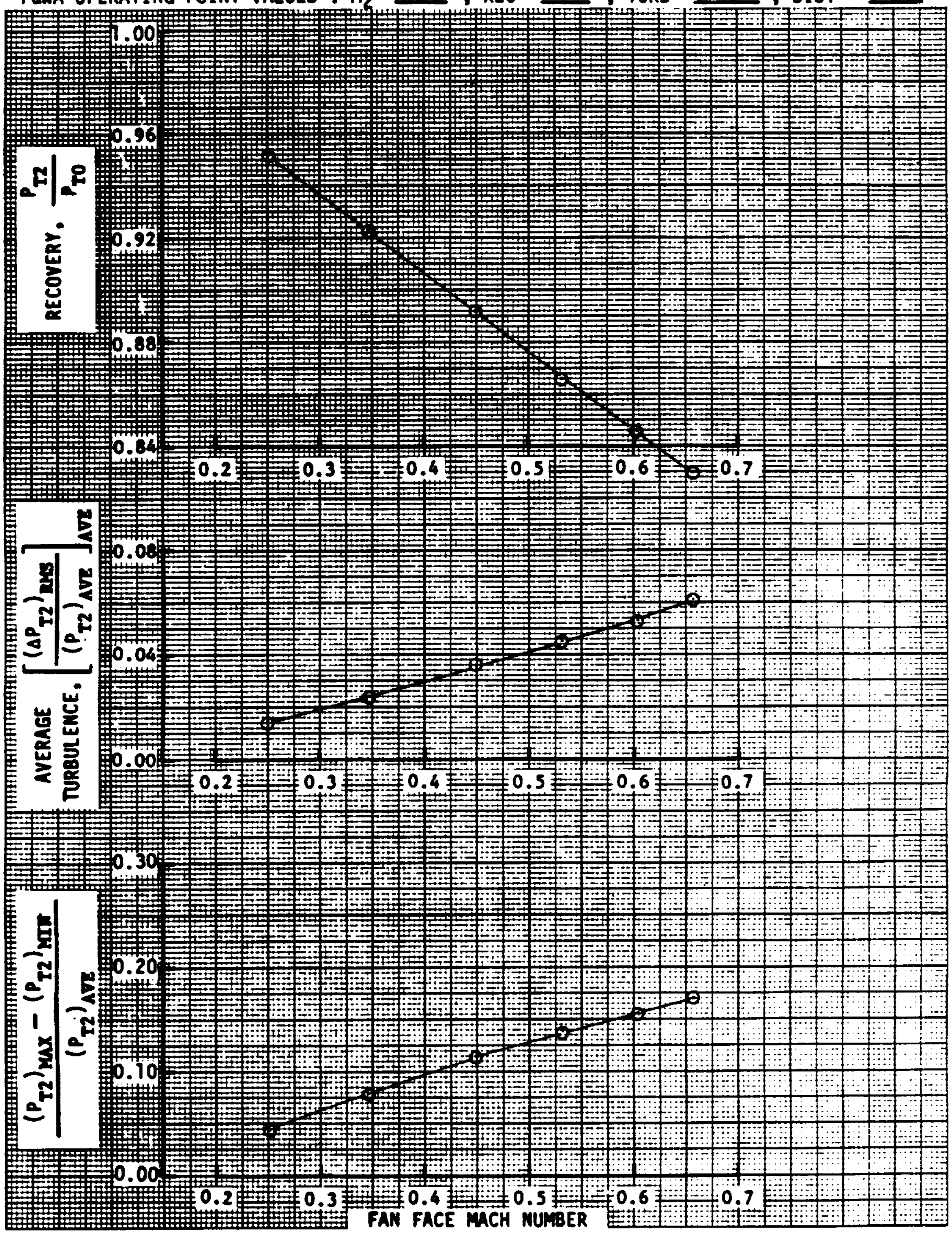
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .886 ; TURB= .041 ; DIST= .169



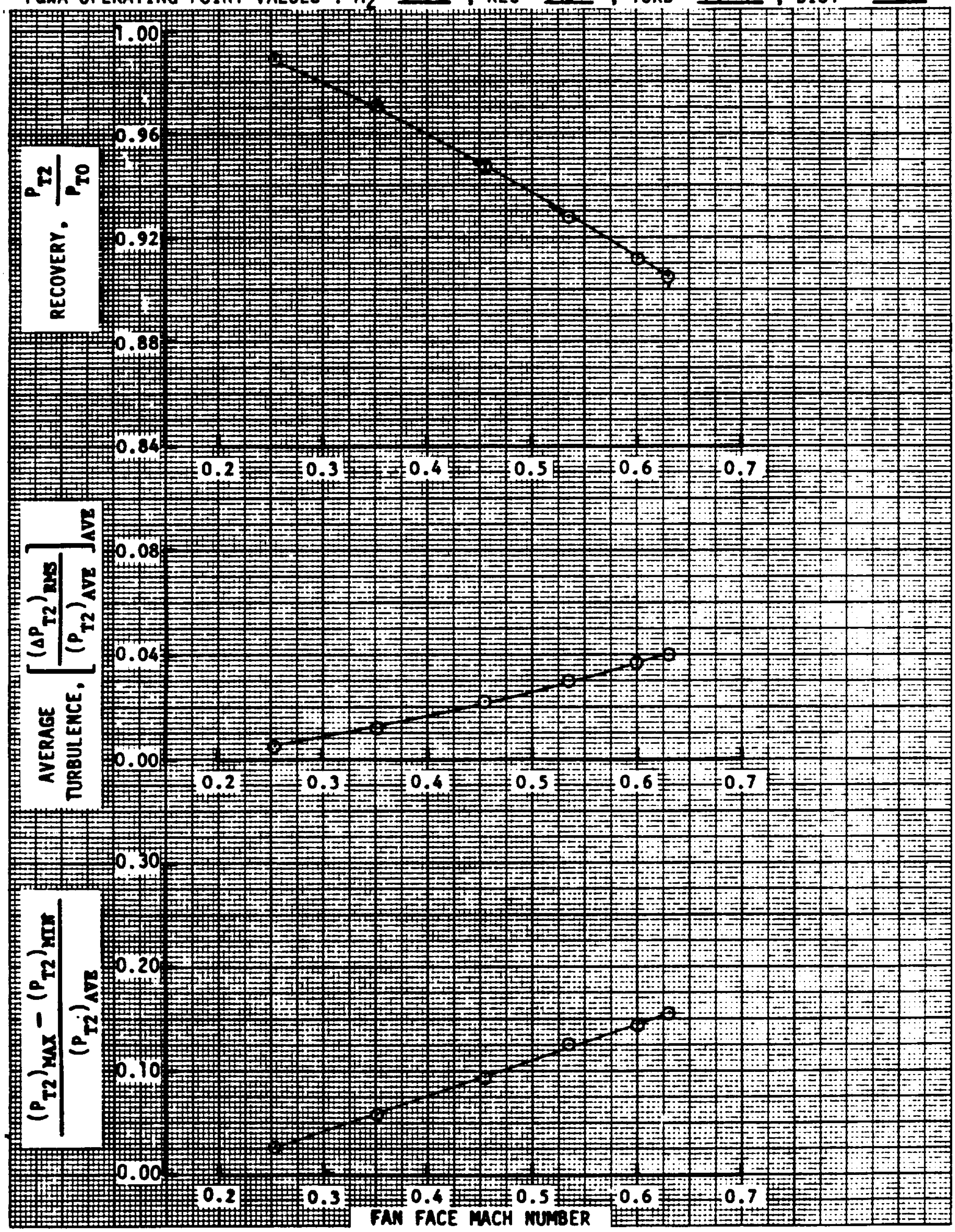
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3170-3175
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .876 ; TURB= .043 ; DIST= .158



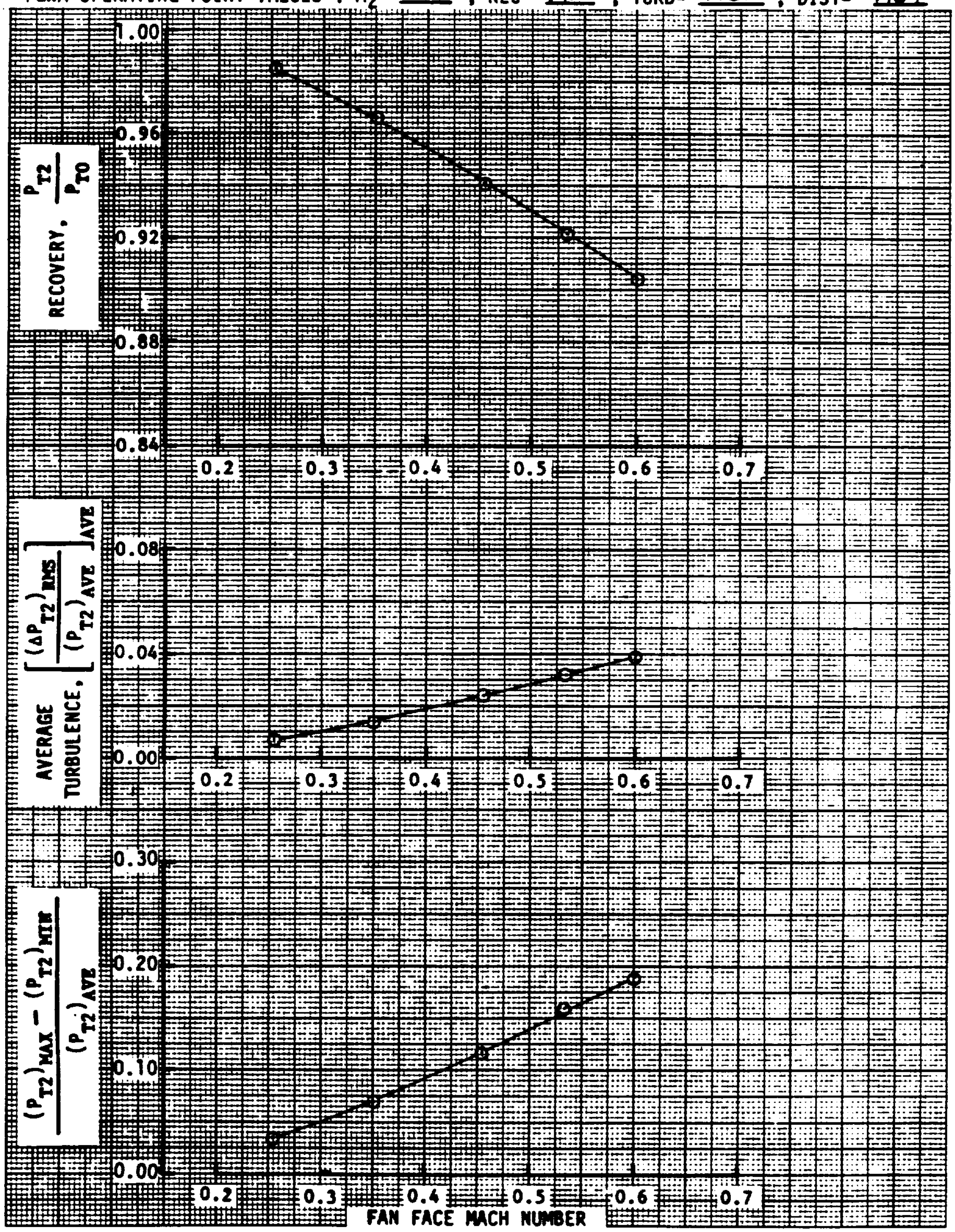
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3176-3181
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .867 ; TURB= .045 ; DIST= .137



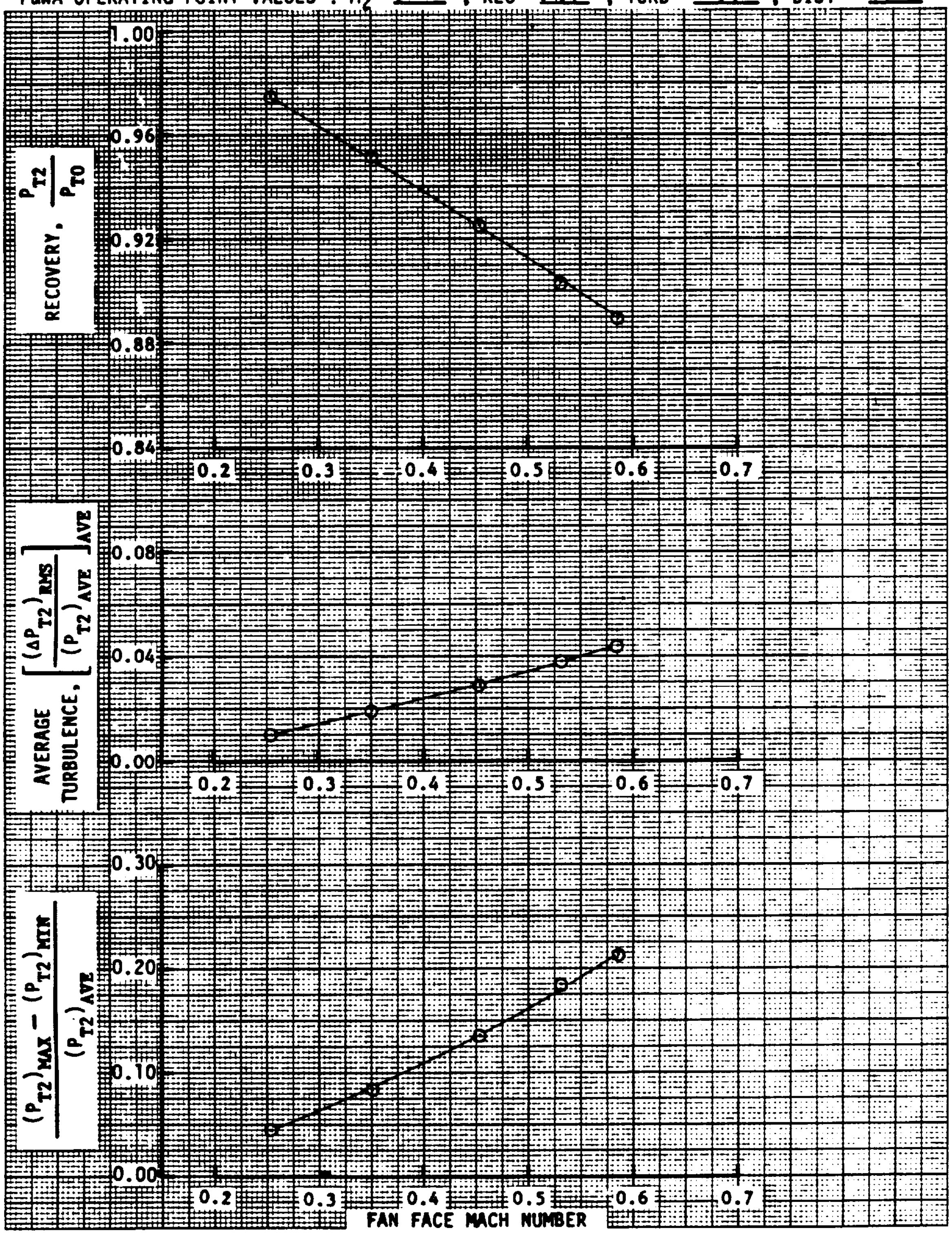
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3182-3187
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .930 ; TURB= .029 ; DIST= .120



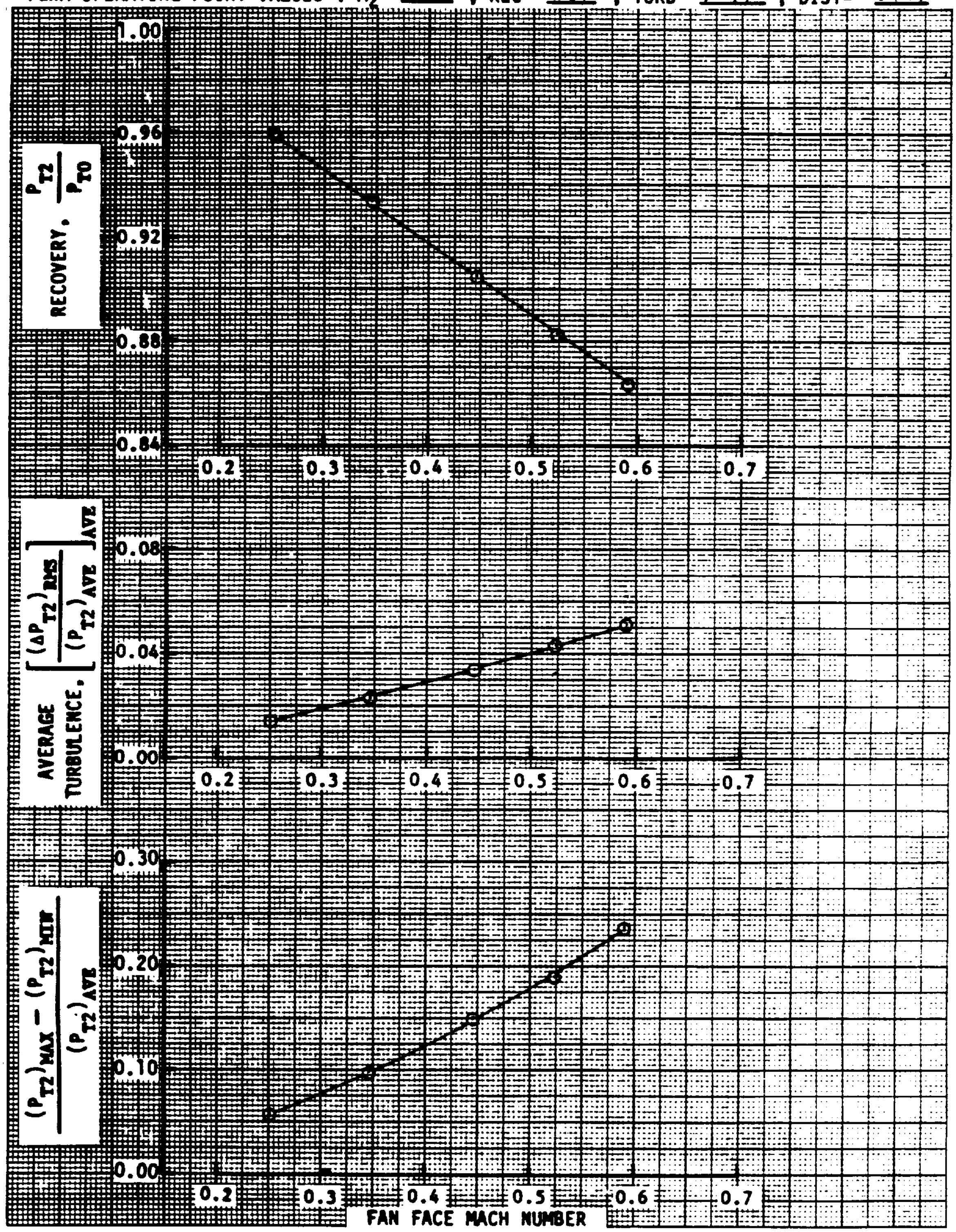
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3188-3192
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .922 ; TURB= .031 ; DIST= .154



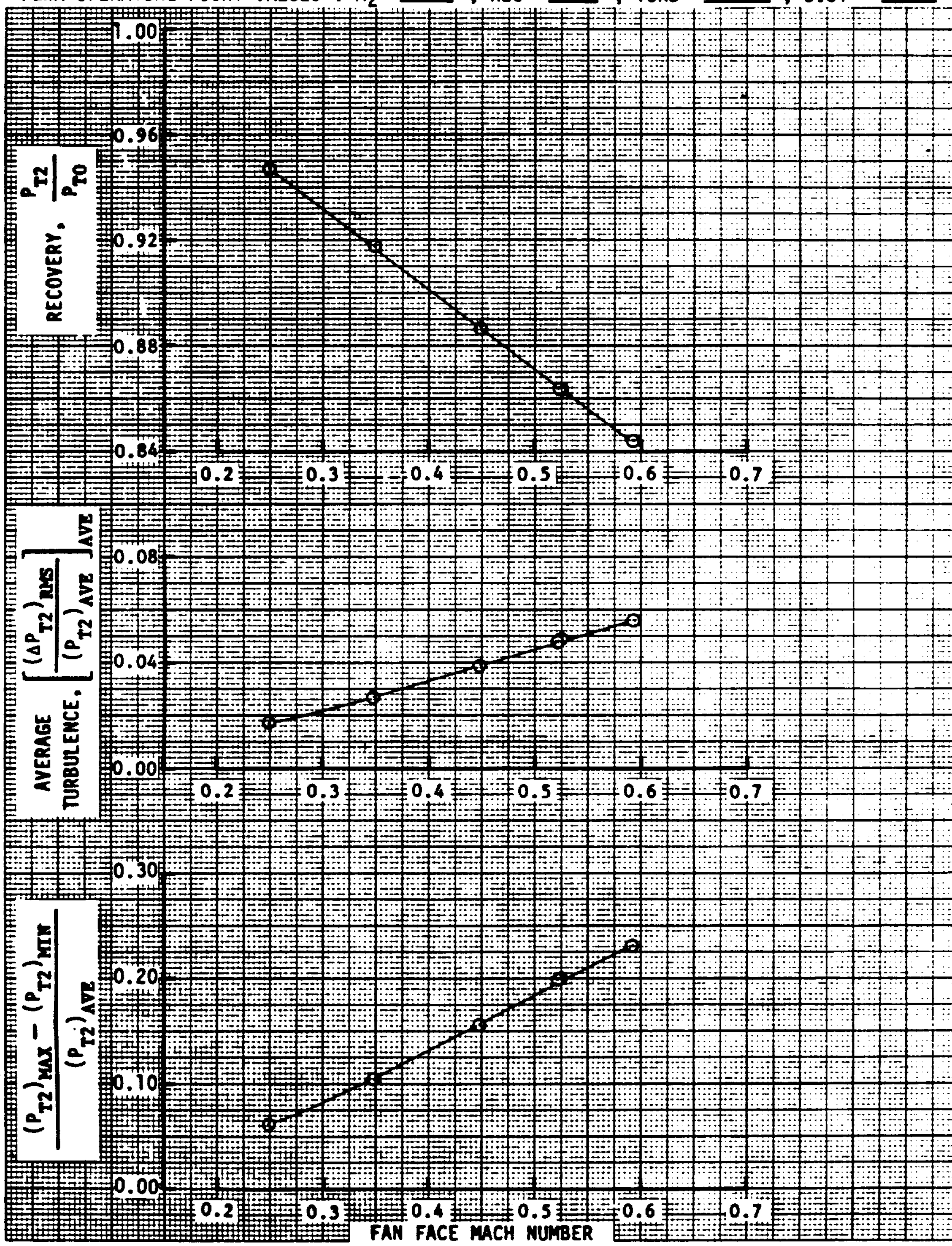
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3193-3197
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .904 ; TURB= .037 ; DIST= .178



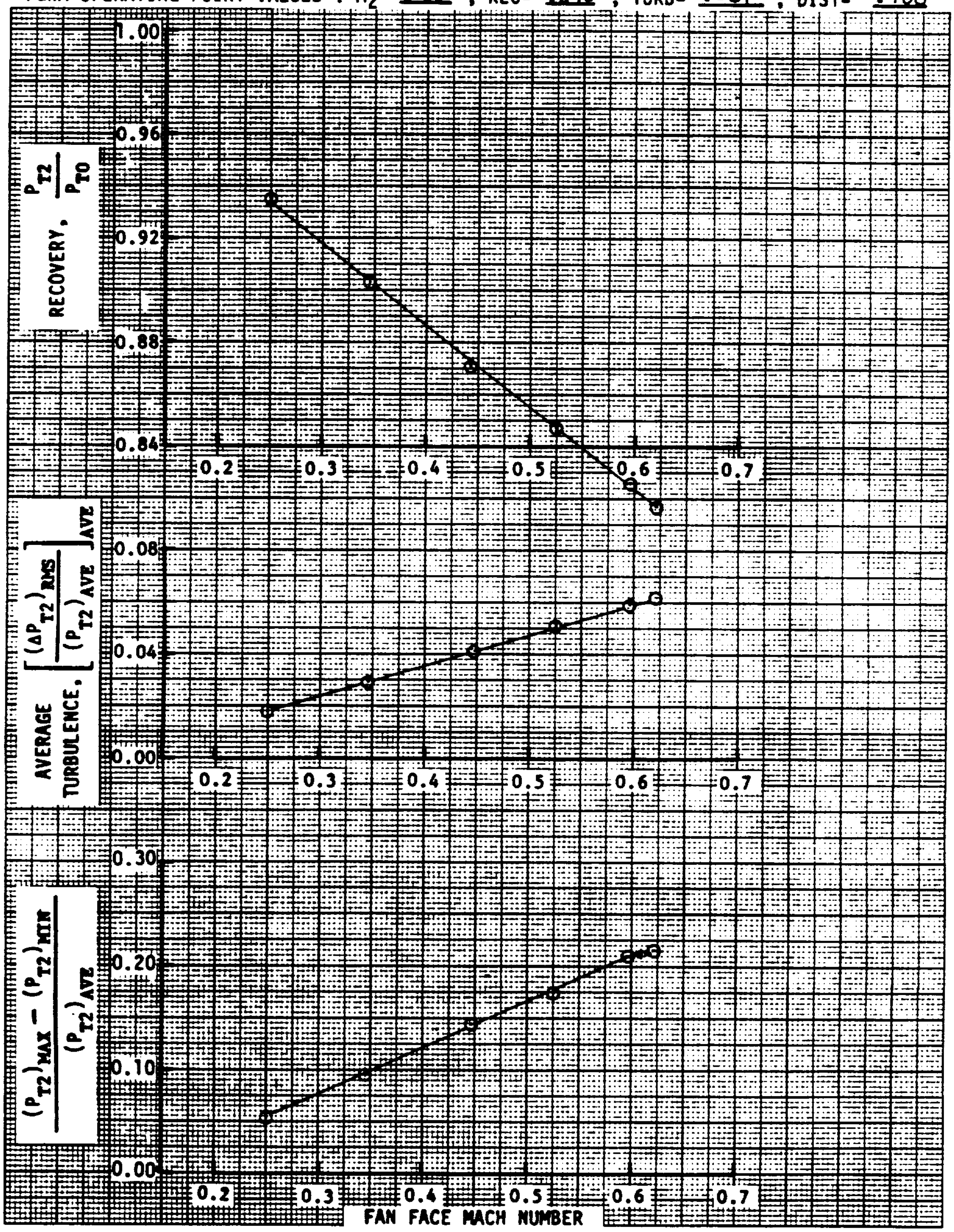
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3198-3202
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .881 ; TURB= .044 ; DIST= .197



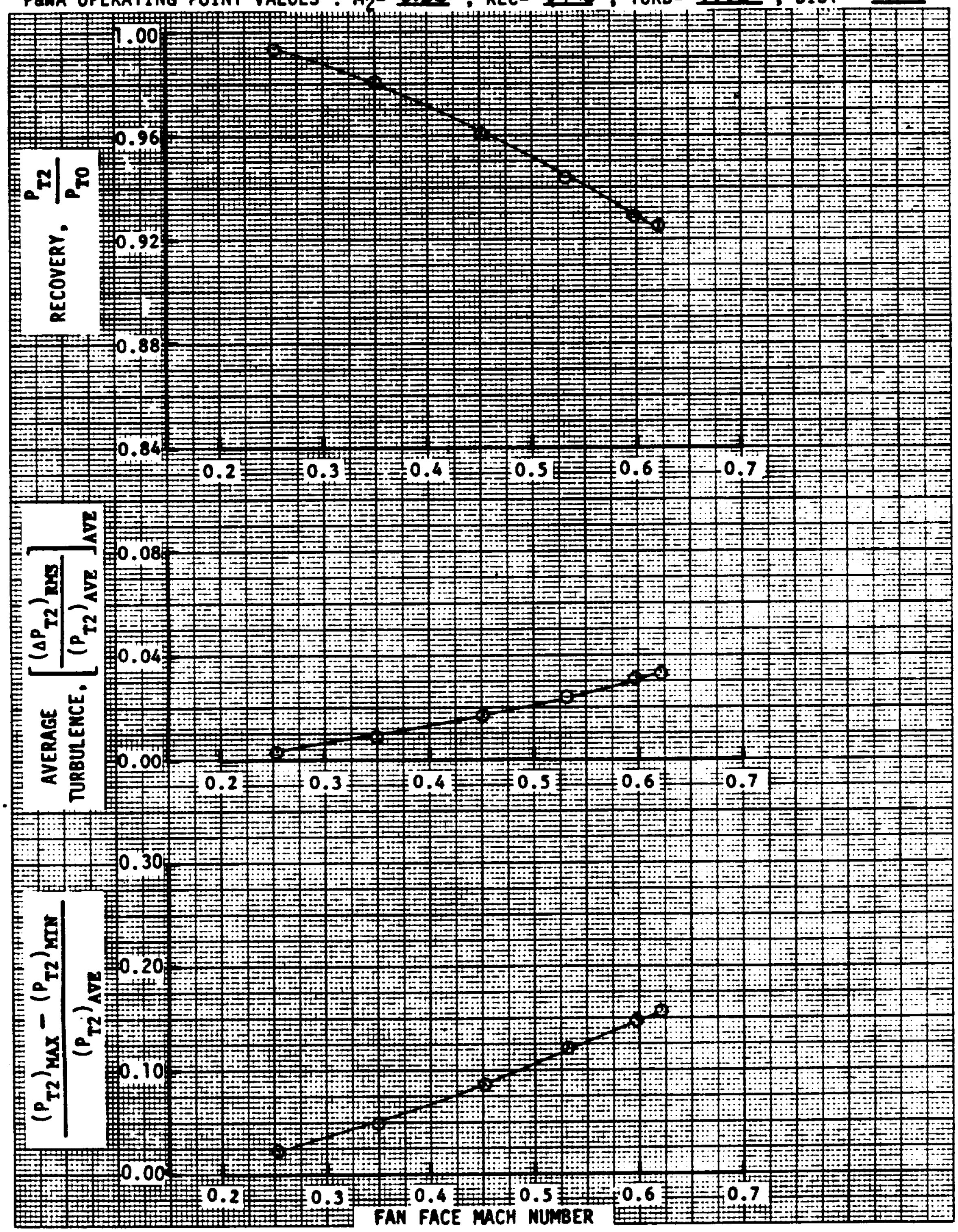
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3203-3208
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .862 ; TURB= .049 ; DIST= .200



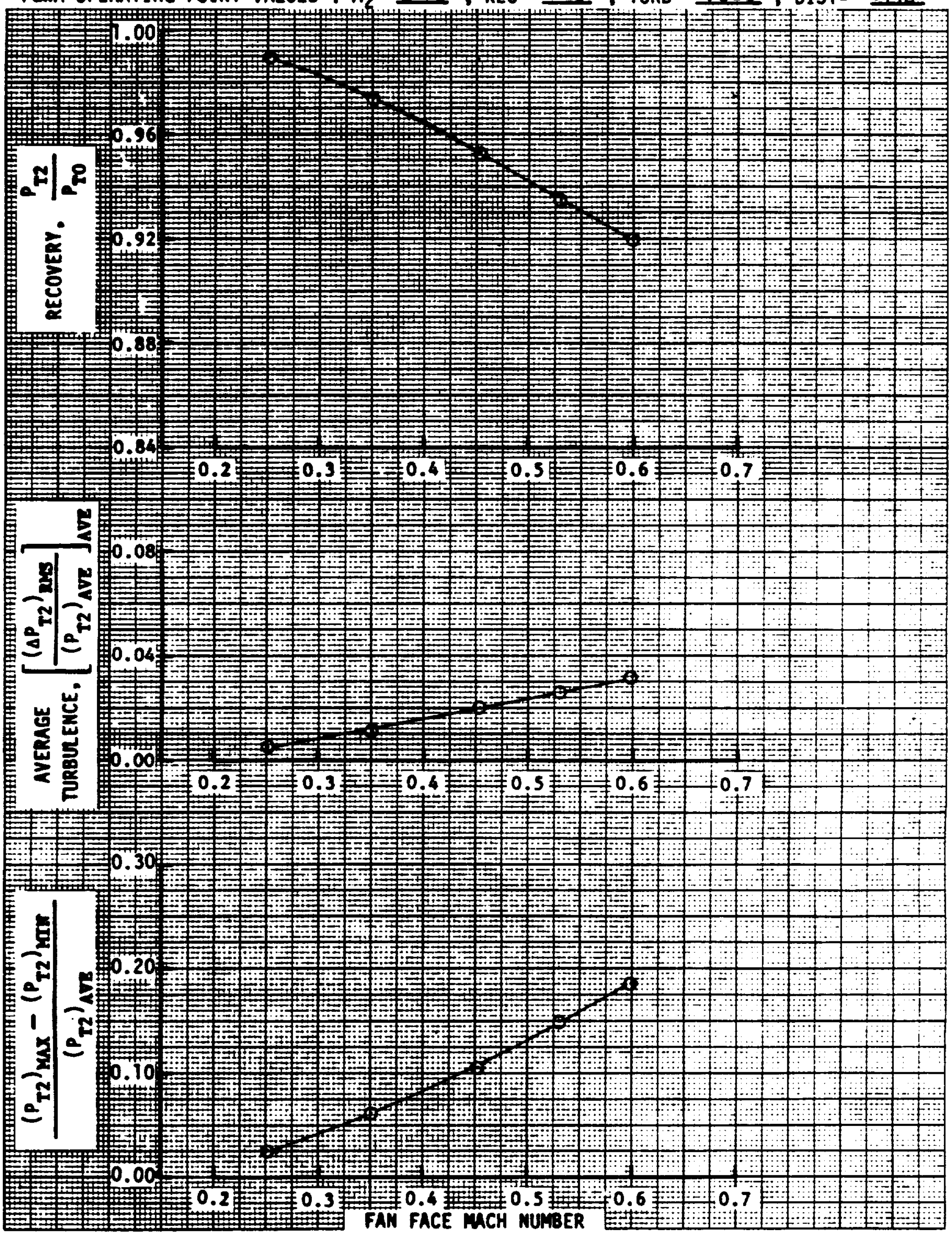
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3209-3214
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .845 ; TURB= .051 ; DIST= .180



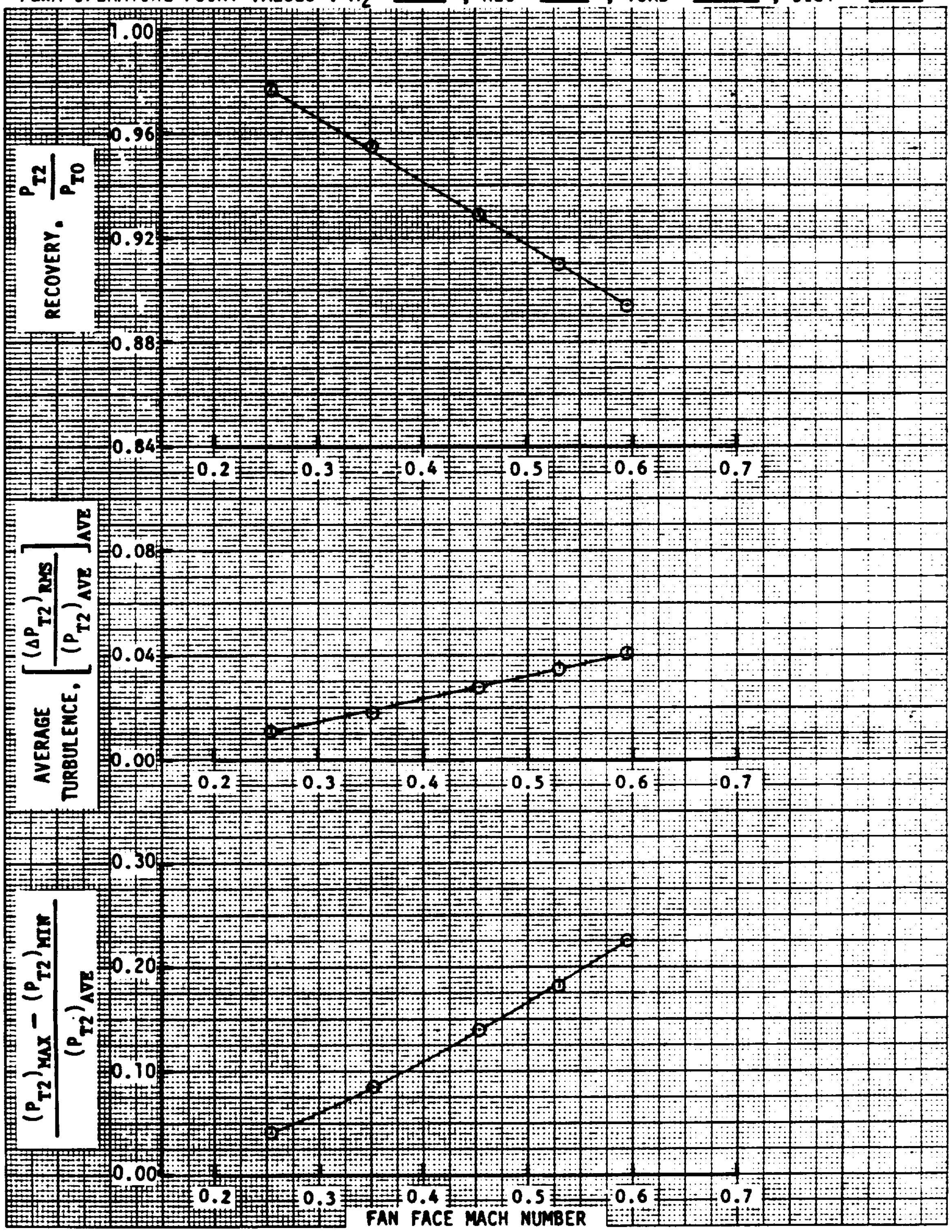
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3215 - 3220
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .945 ; TURB= .023 ; DIST= .118



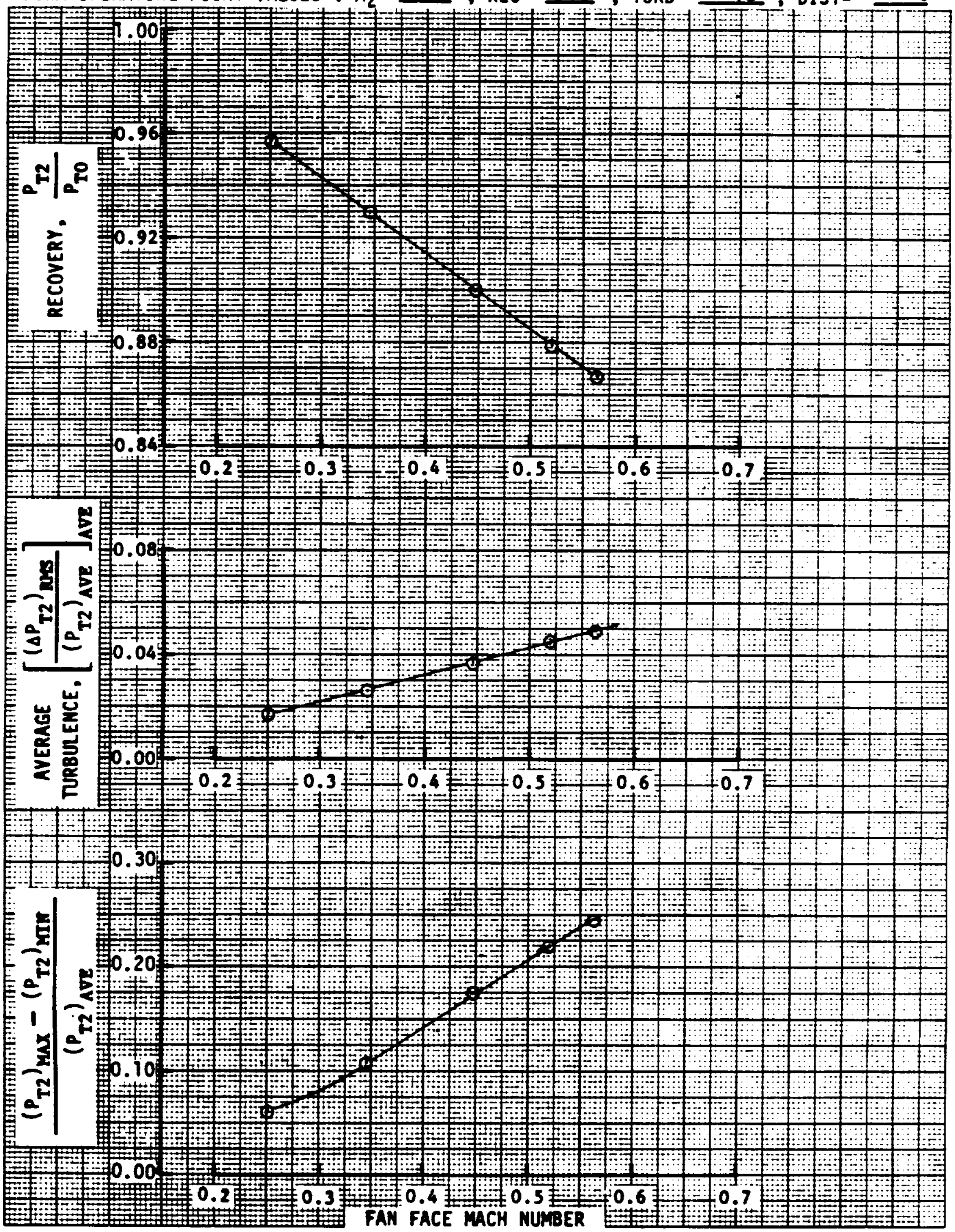
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3221-3225
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .935 ; TURB= .026 ; DIST= .148



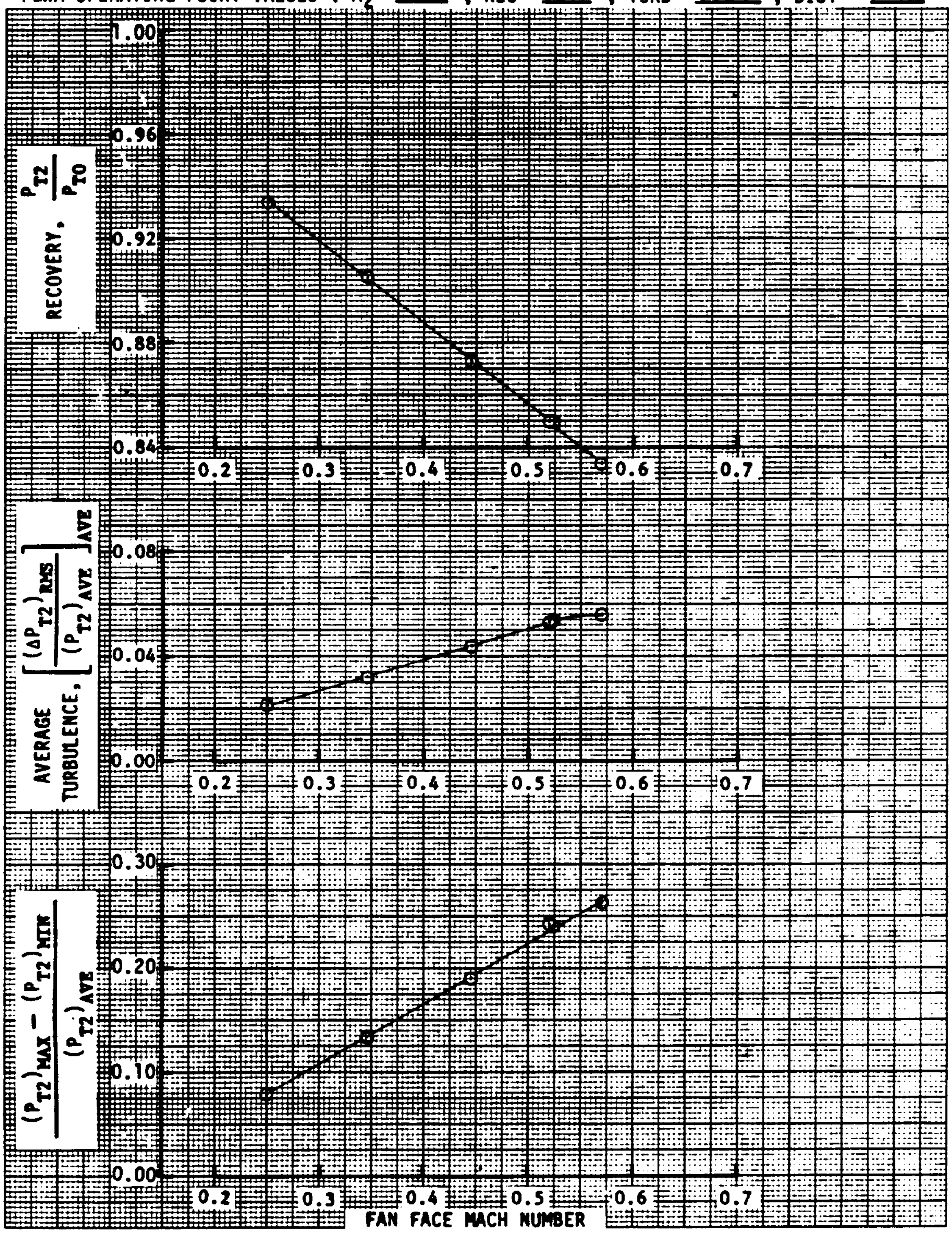
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3226- 3230
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .910 ; TURB= .035 ; DIST= .186



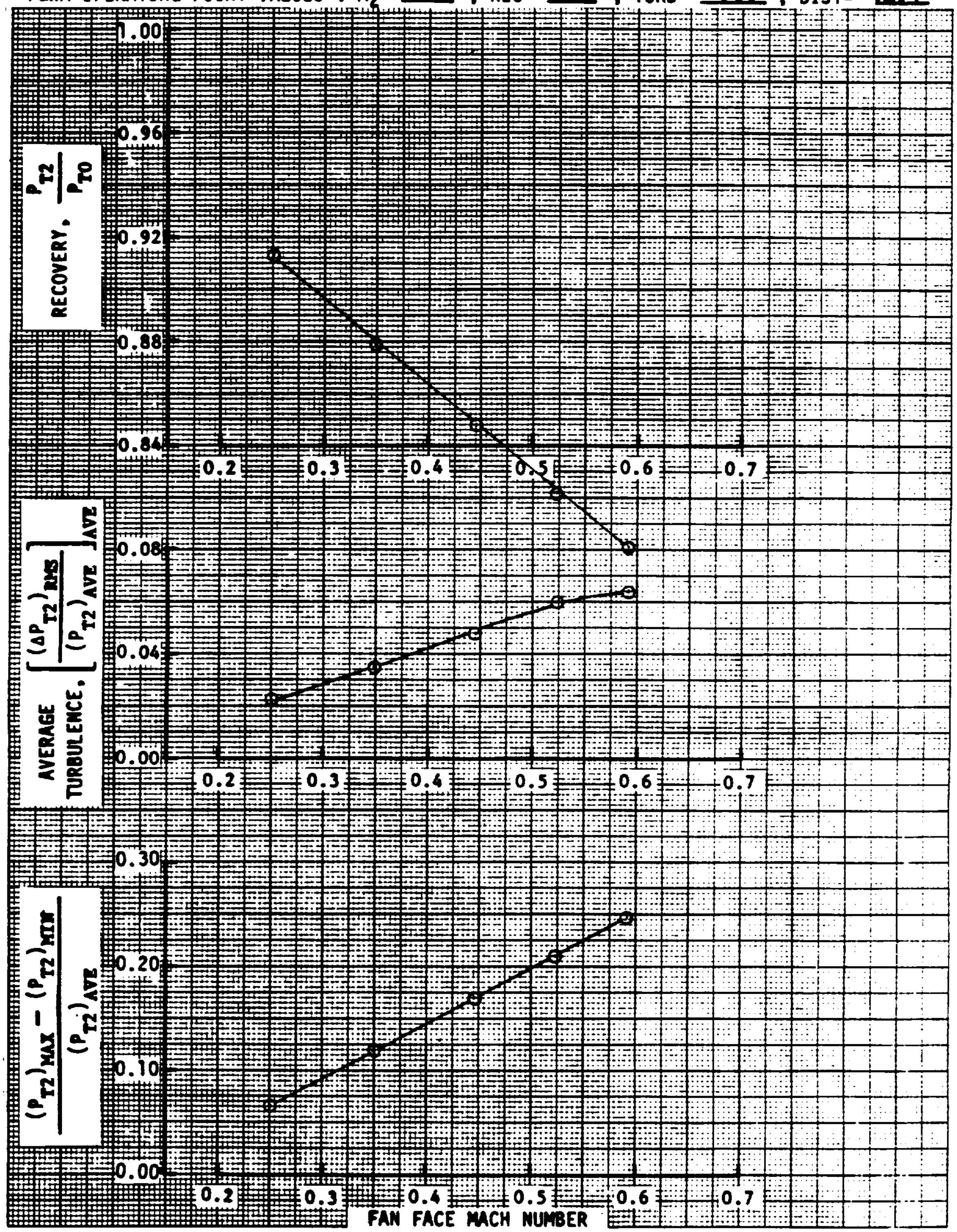
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3232-3236
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .876 ; TURB= .046 ; DIST= .226



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3237 - 3242
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .846 ; TURB= .054 ; DIST= .242



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 3d ; READING NUMBERS 3243-3247
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .821 ; TURB= .060 ; DIST= .2[illegible]



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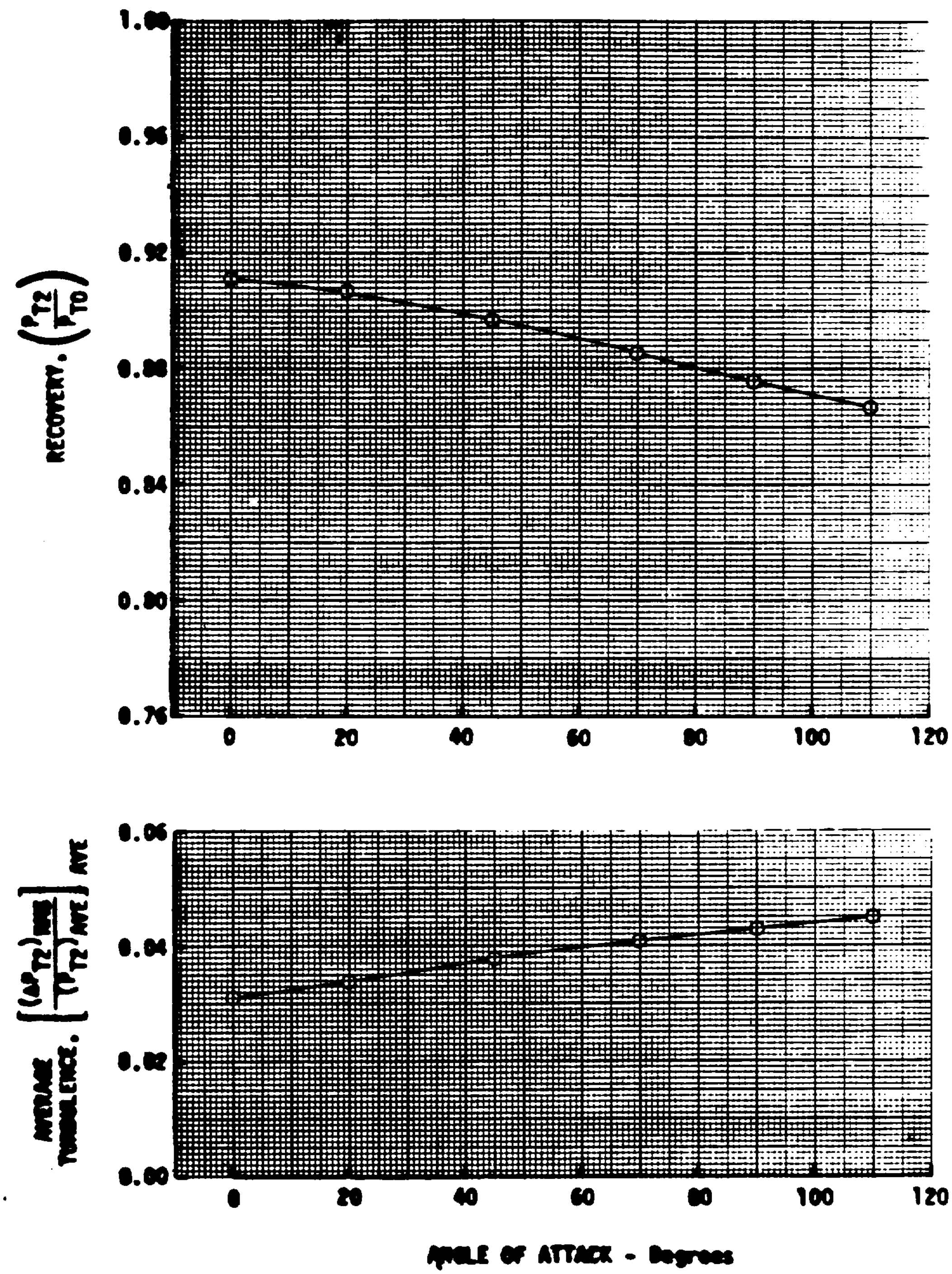
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3d ; DESCRIPTION No Fillets



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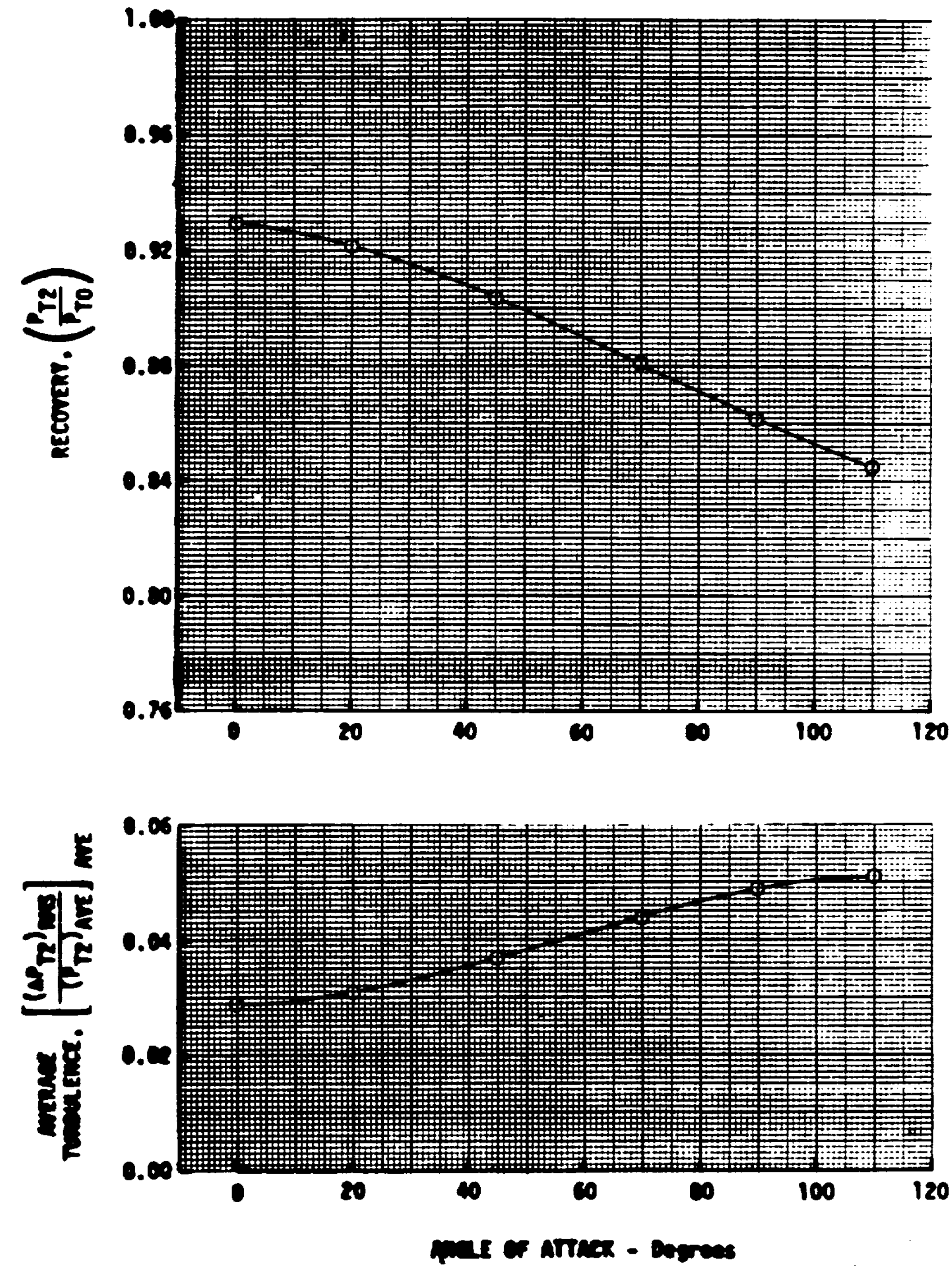
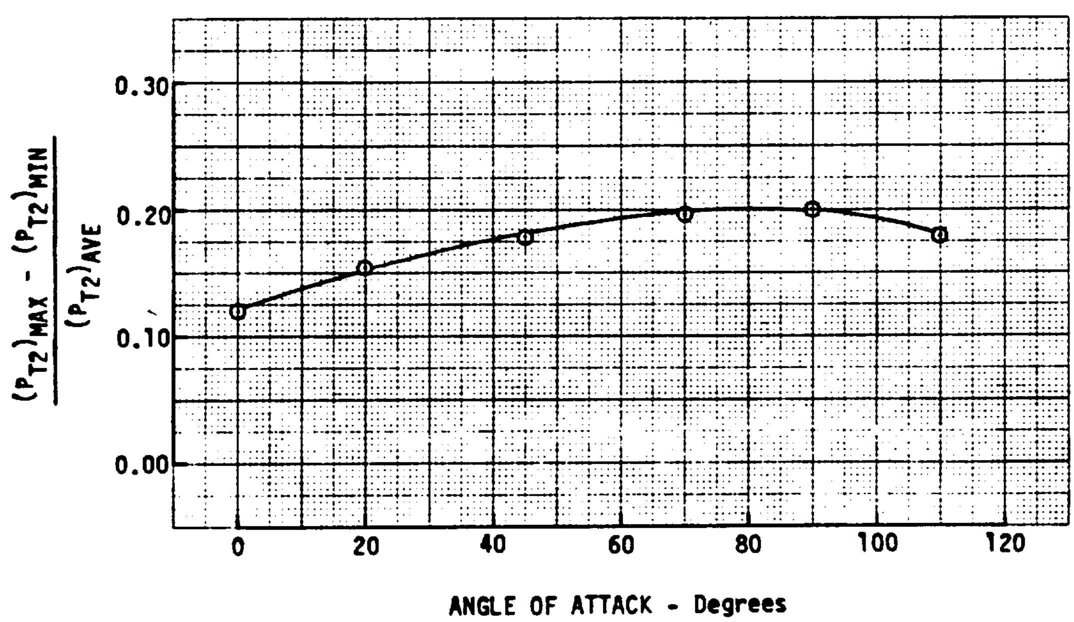
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 3d; DESCRIPTION No Fillets



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 3d ; DESCRIPTION No Fillets



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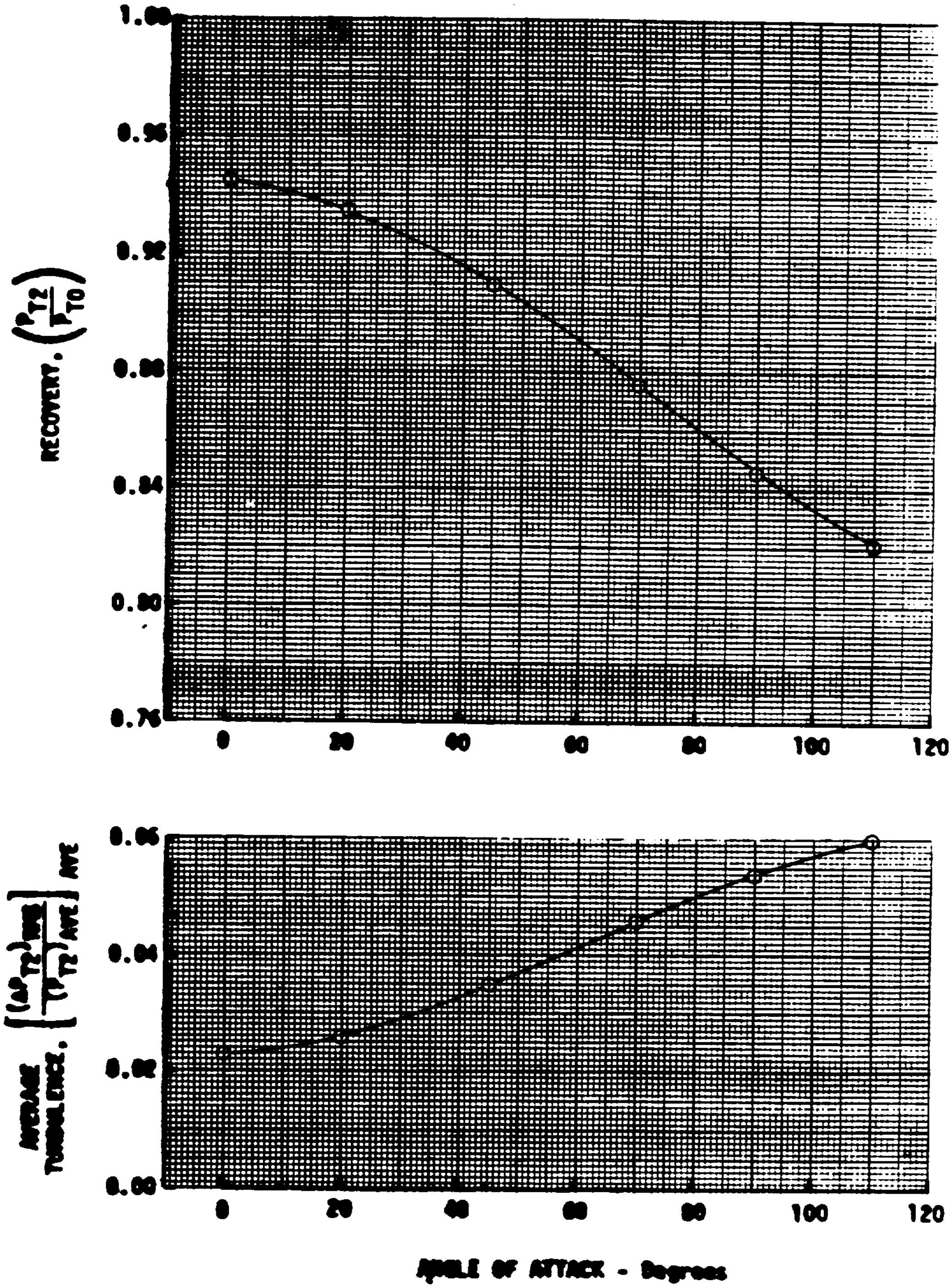
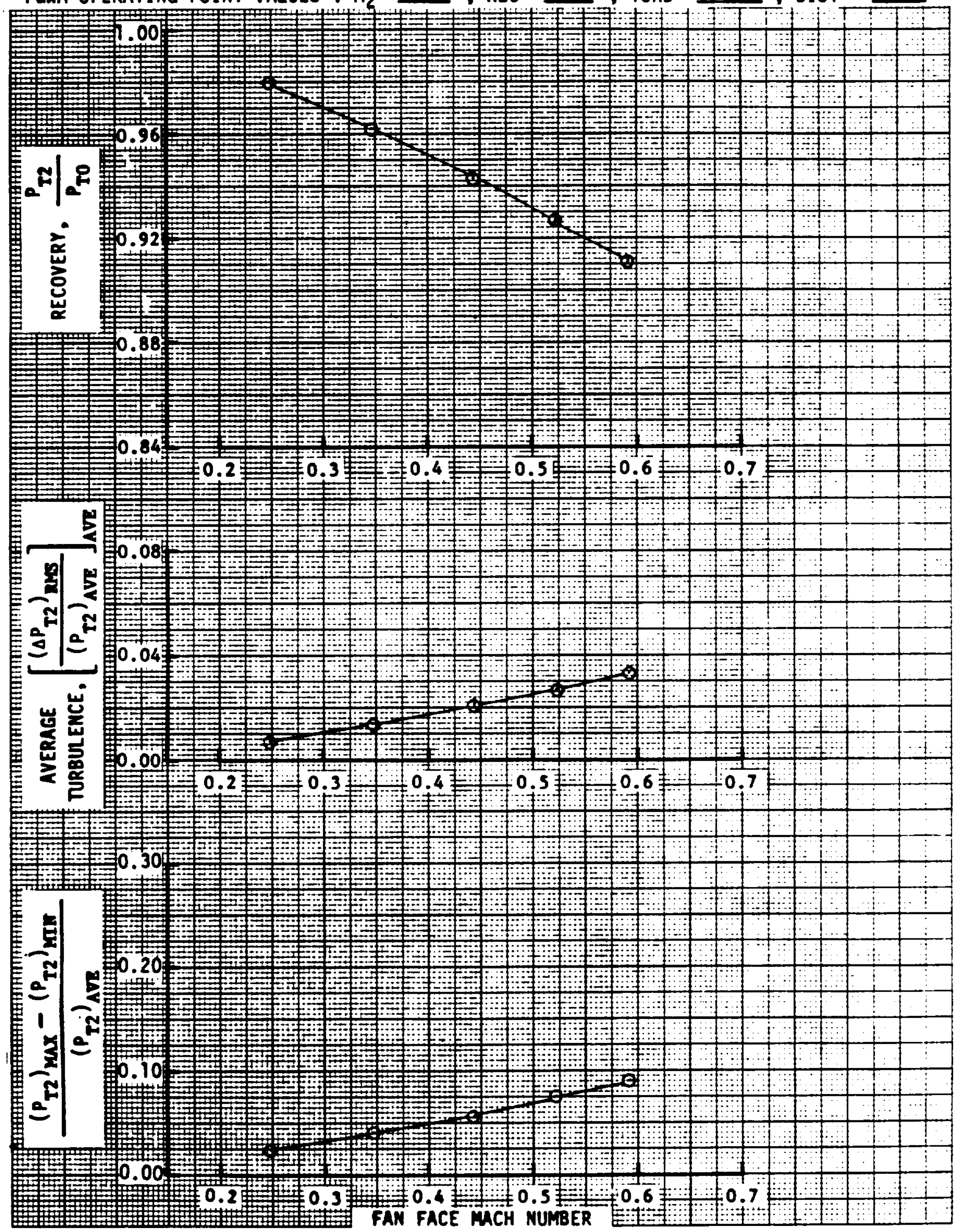
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
FROM F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

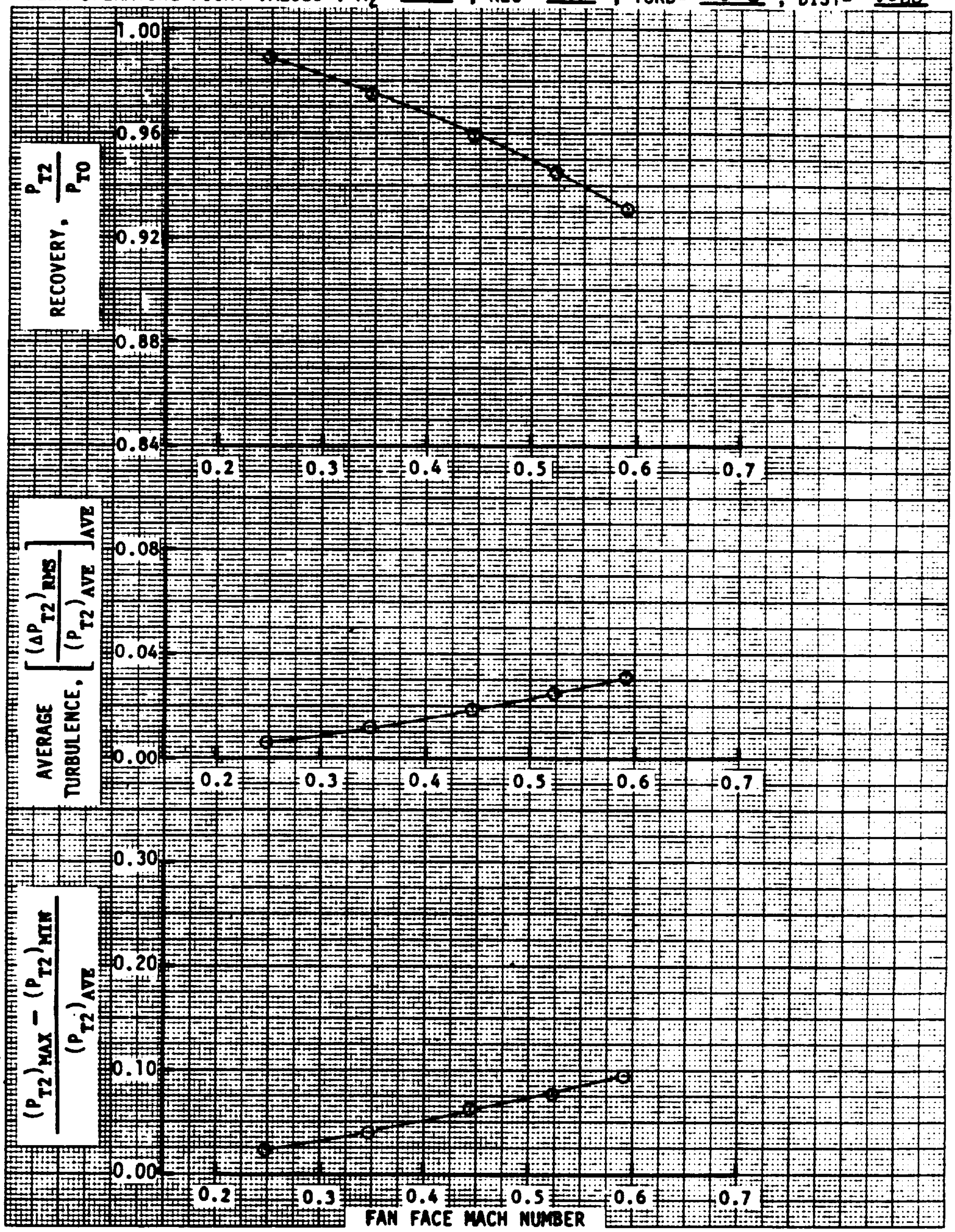
CONFIGURATION: NUMBER 3d; DESCRIPTION No Fillets



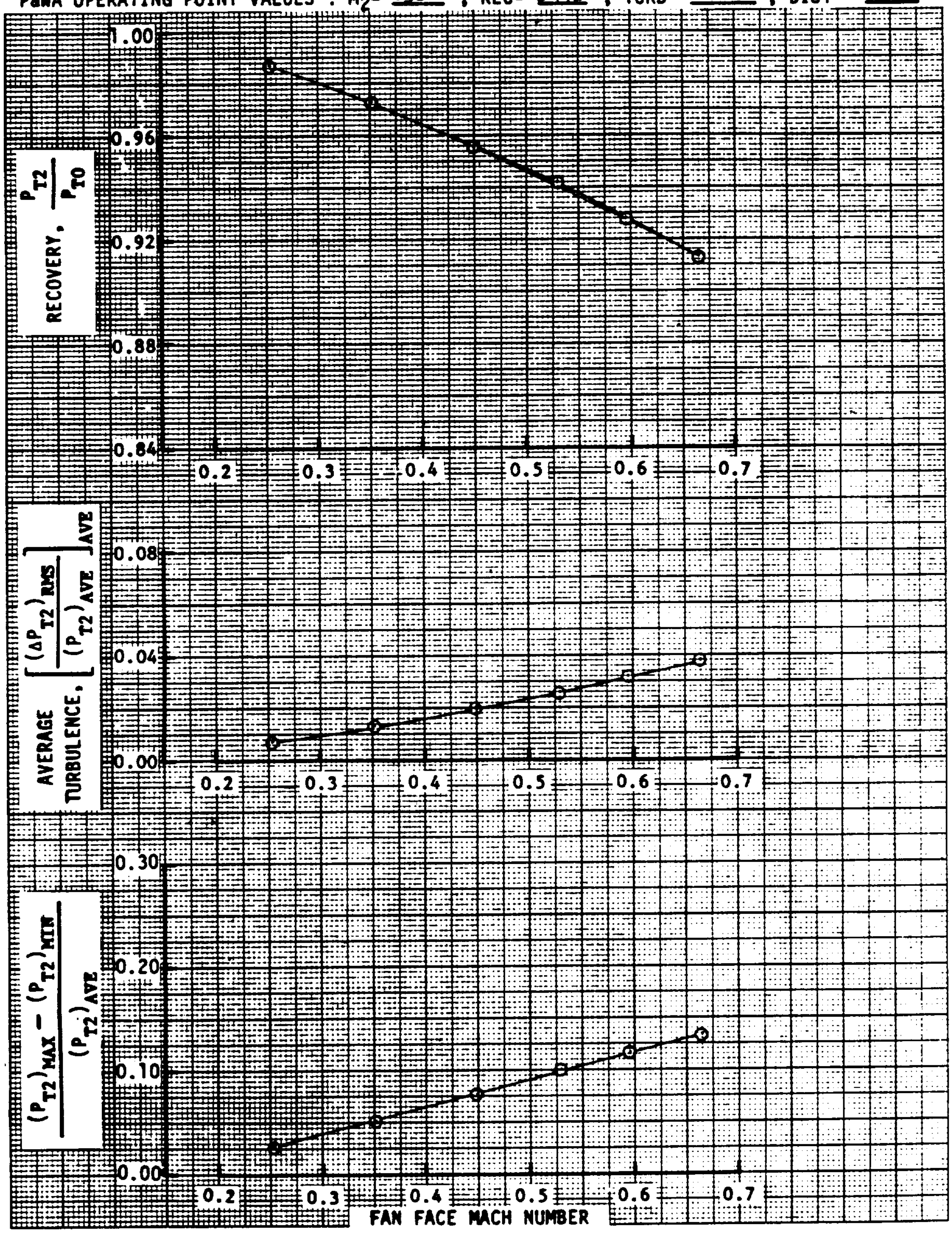
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 605-610
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .924 ; TURB= .028 ; DIST= .077



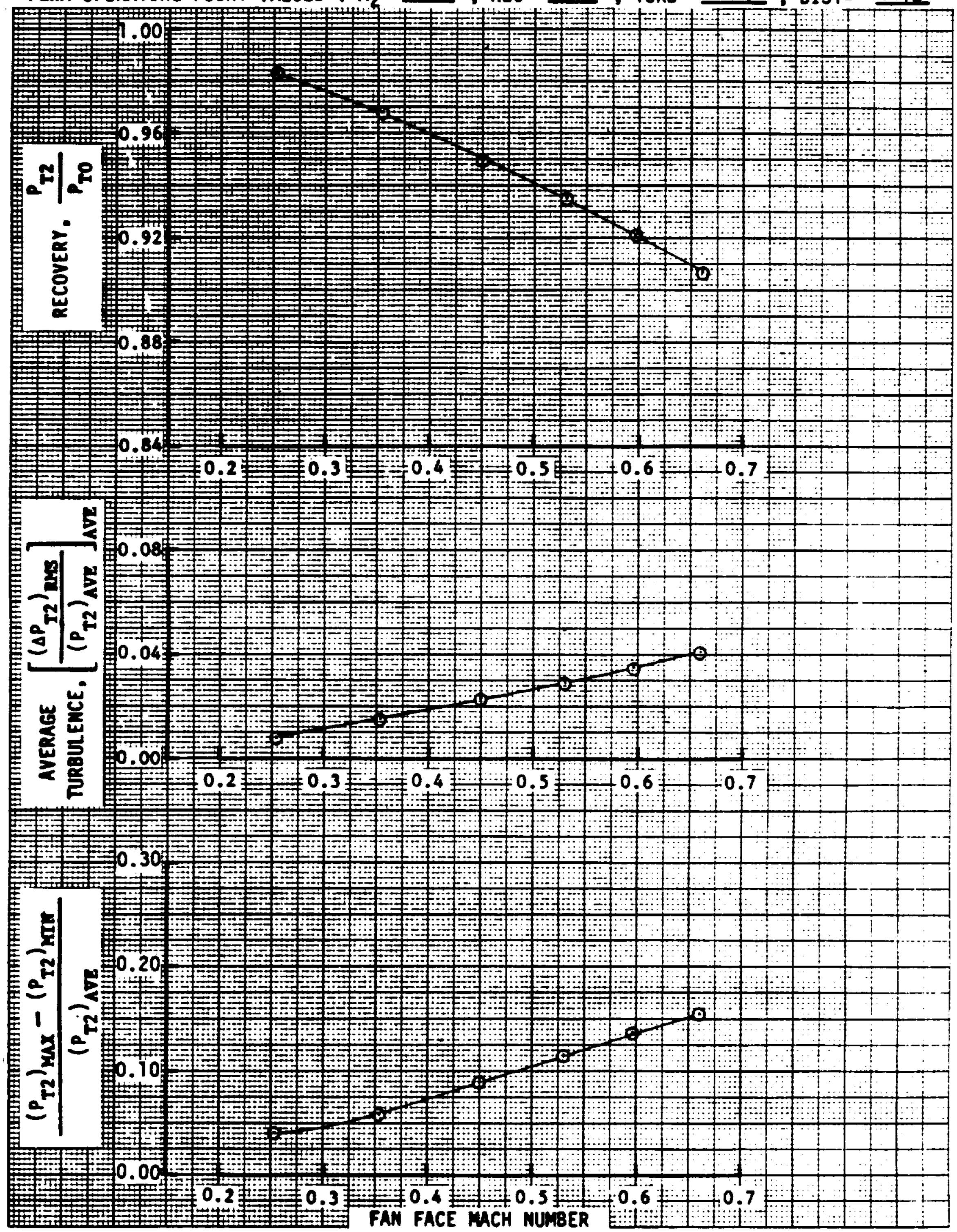
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 616-620
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .025 ; DIST= .080



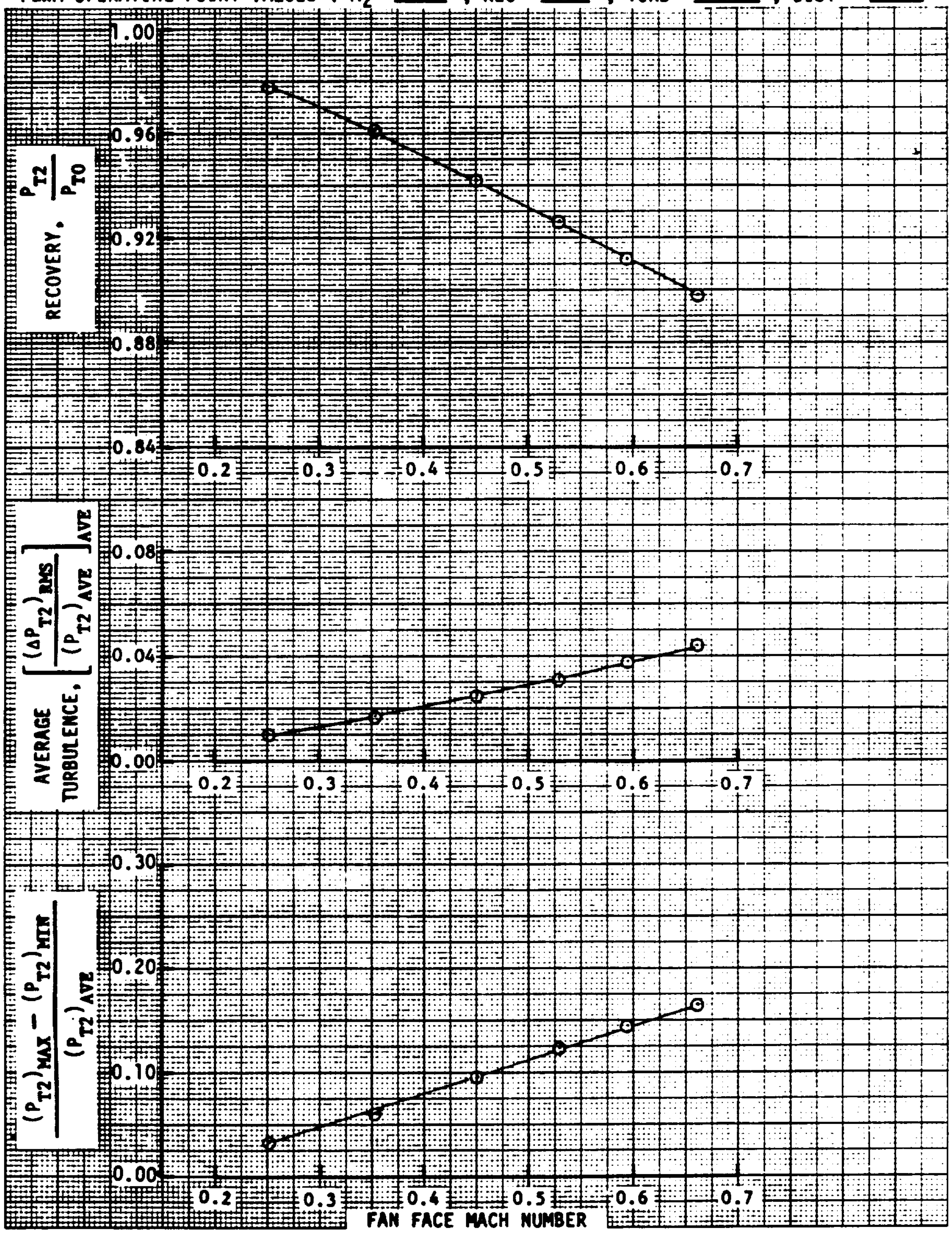
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 694-699
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .53 ; REC= .942 ; TURB= .026 ; DIST= .098



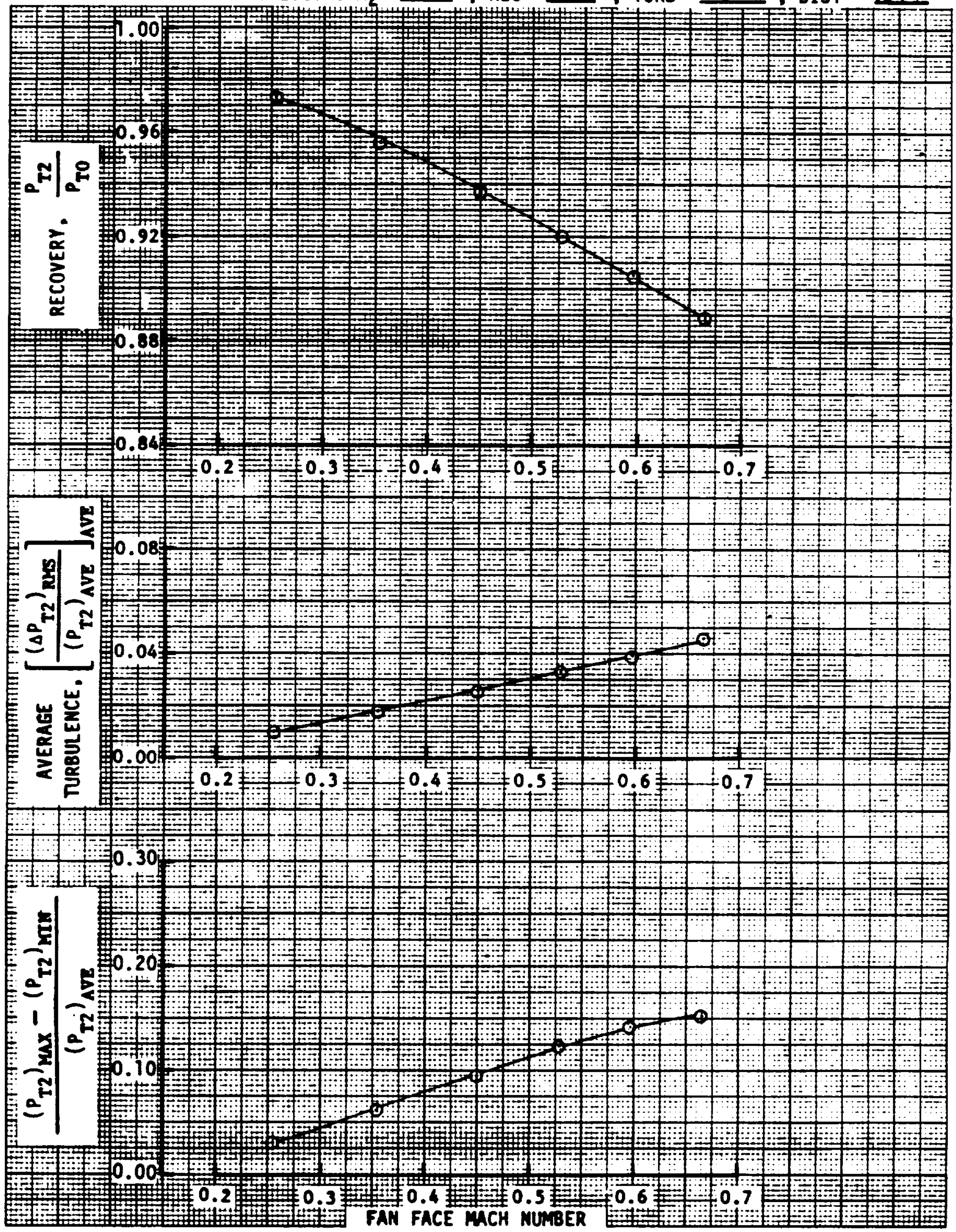
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 700 - 705
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .935 ; TURB= .029 ; DIST= .115



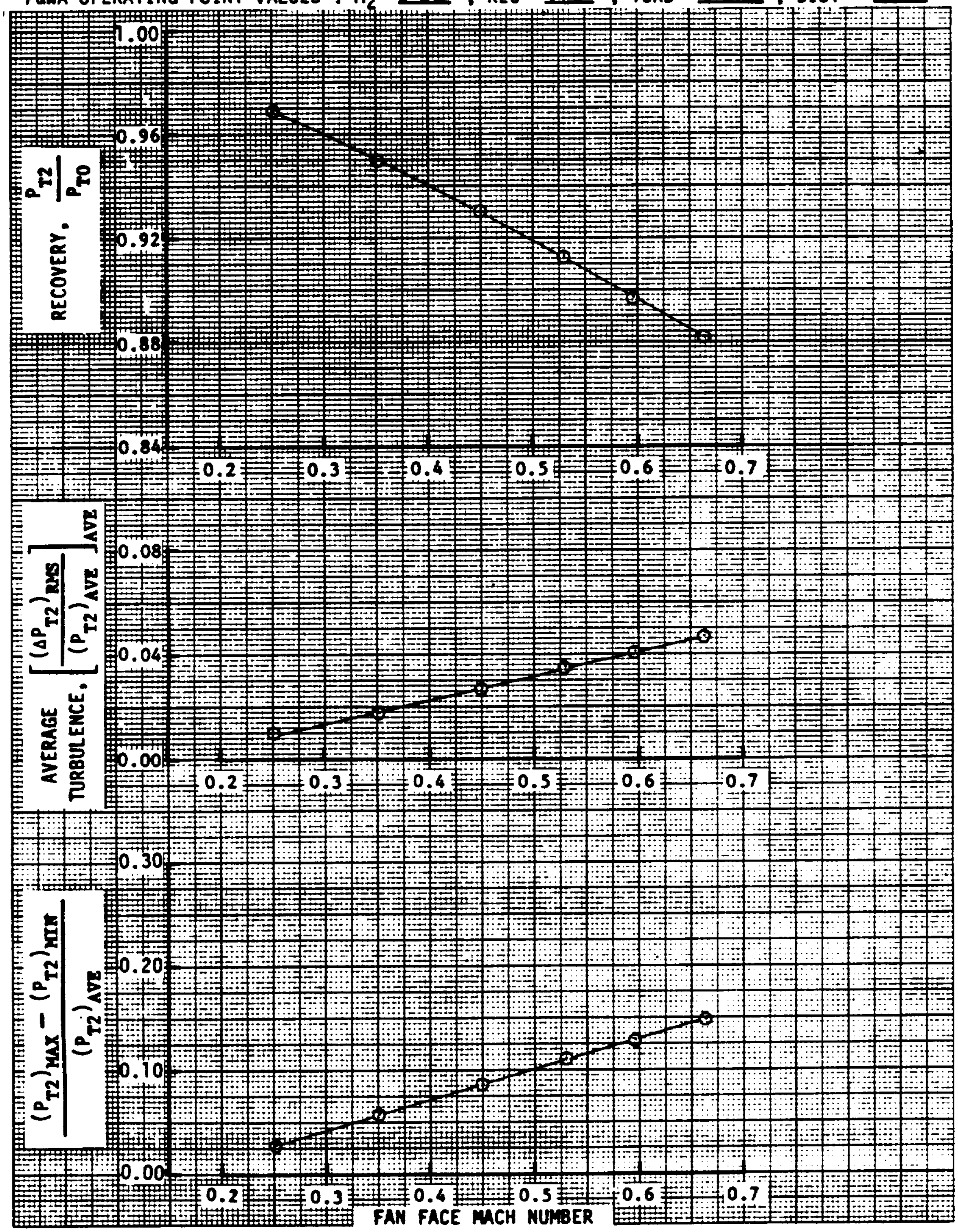
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 706-711
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .031 ; DIST= .097



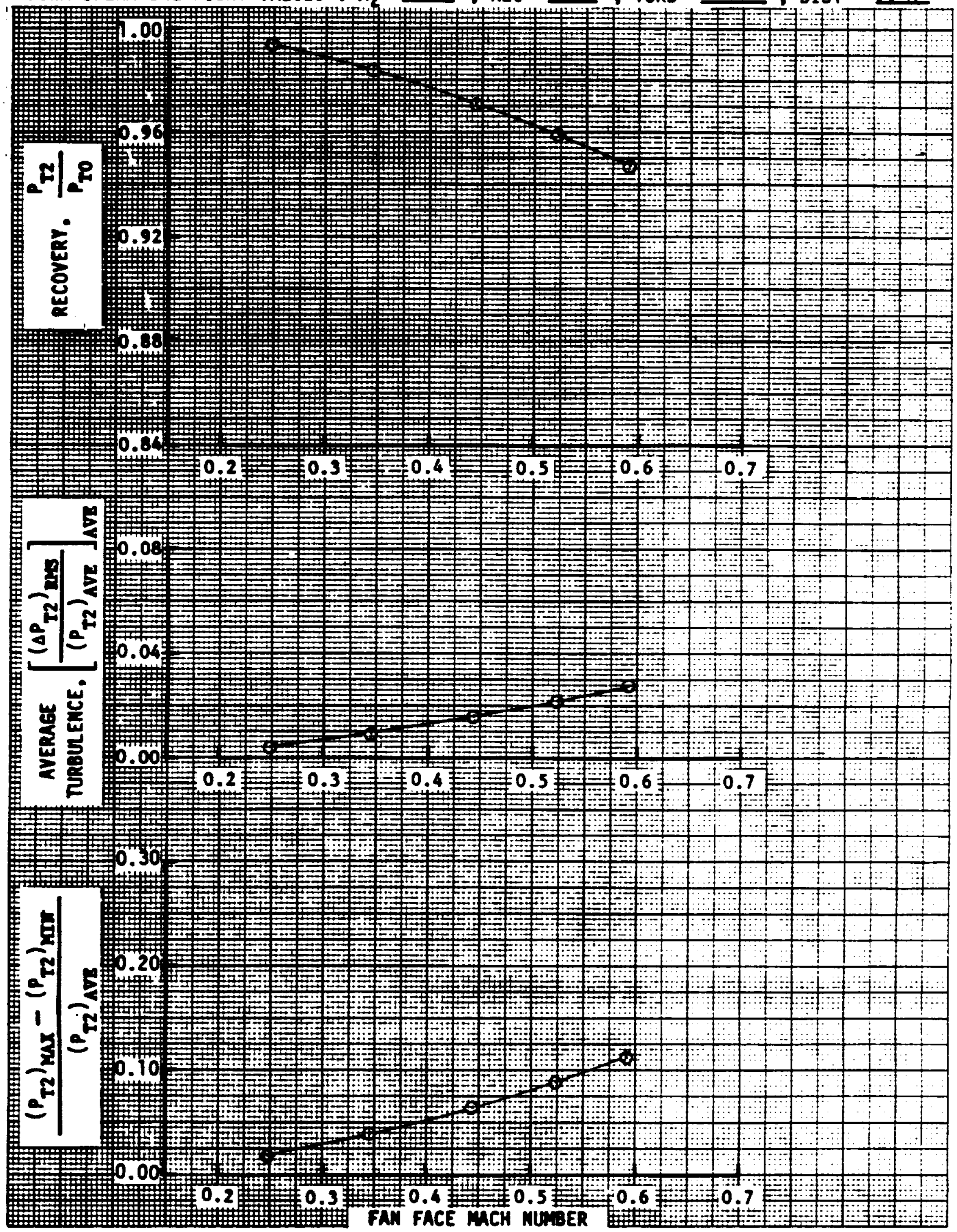
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 712-717
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .919 ; TURB= .033 ; DIST= .097



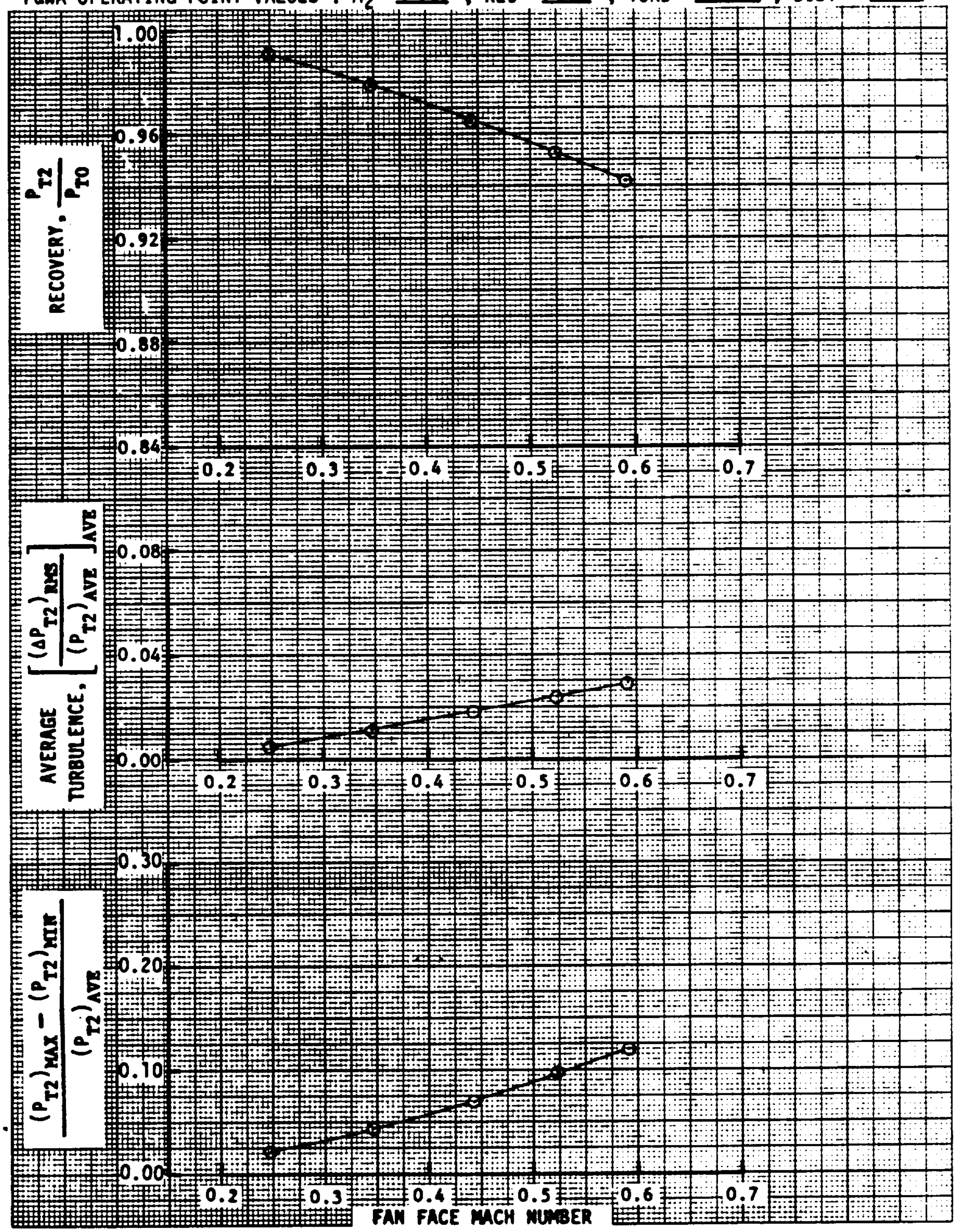
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 718-723
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .913 ; TURB= .034 ; DIST= .110



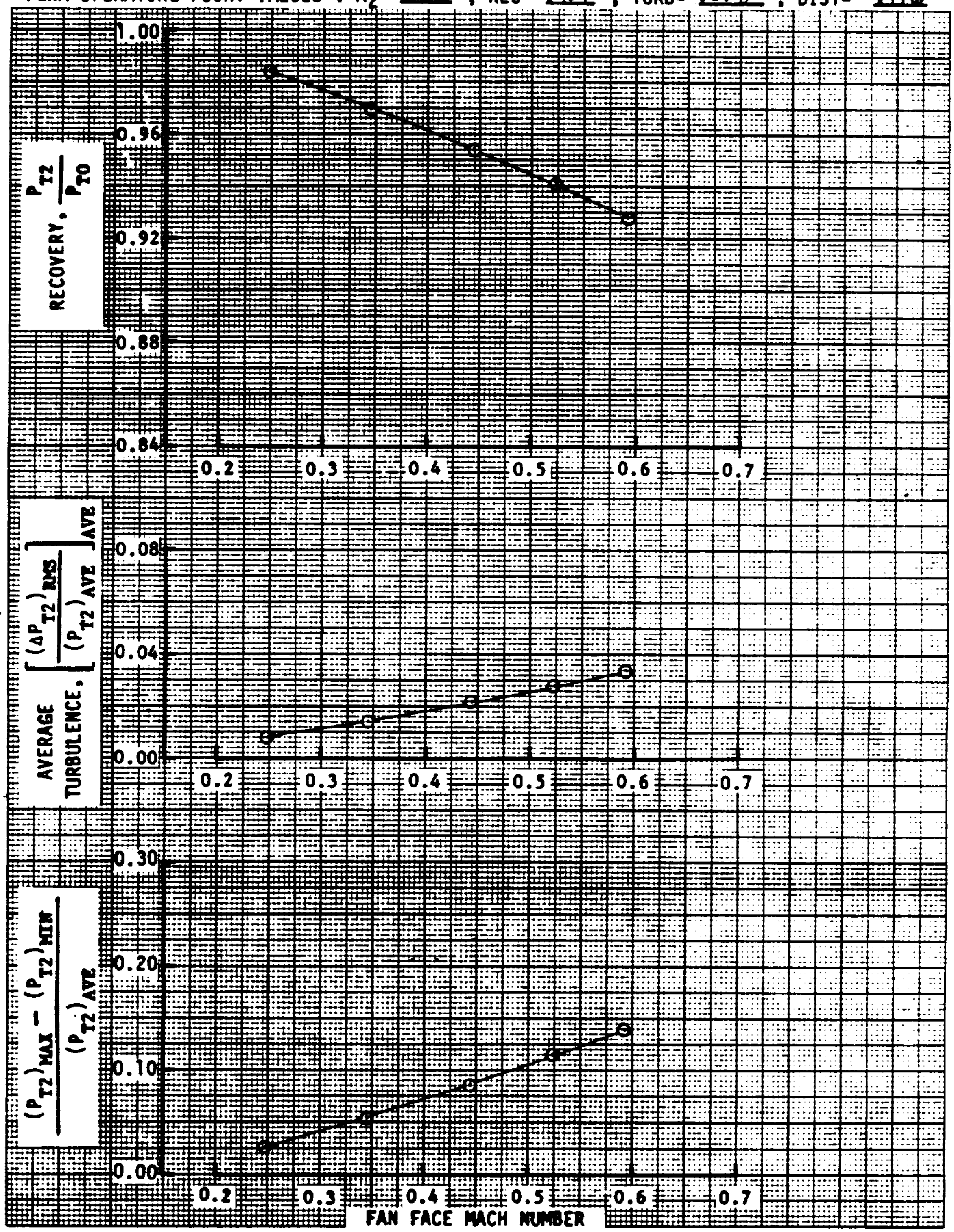
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 621-625
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .022 ; DIST= .091



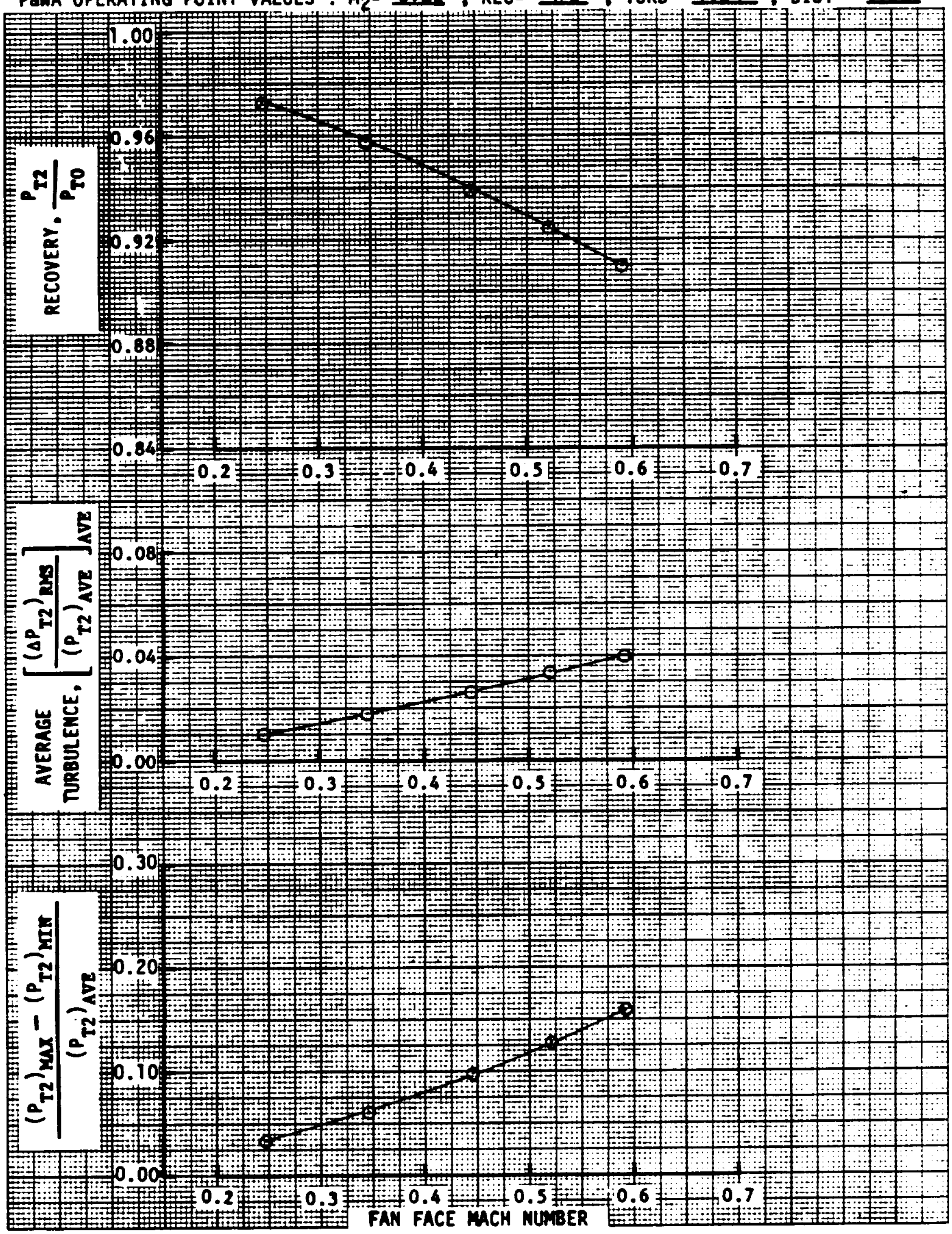
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 626-630
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .952 ; TURB= .024 ; DIST= .098



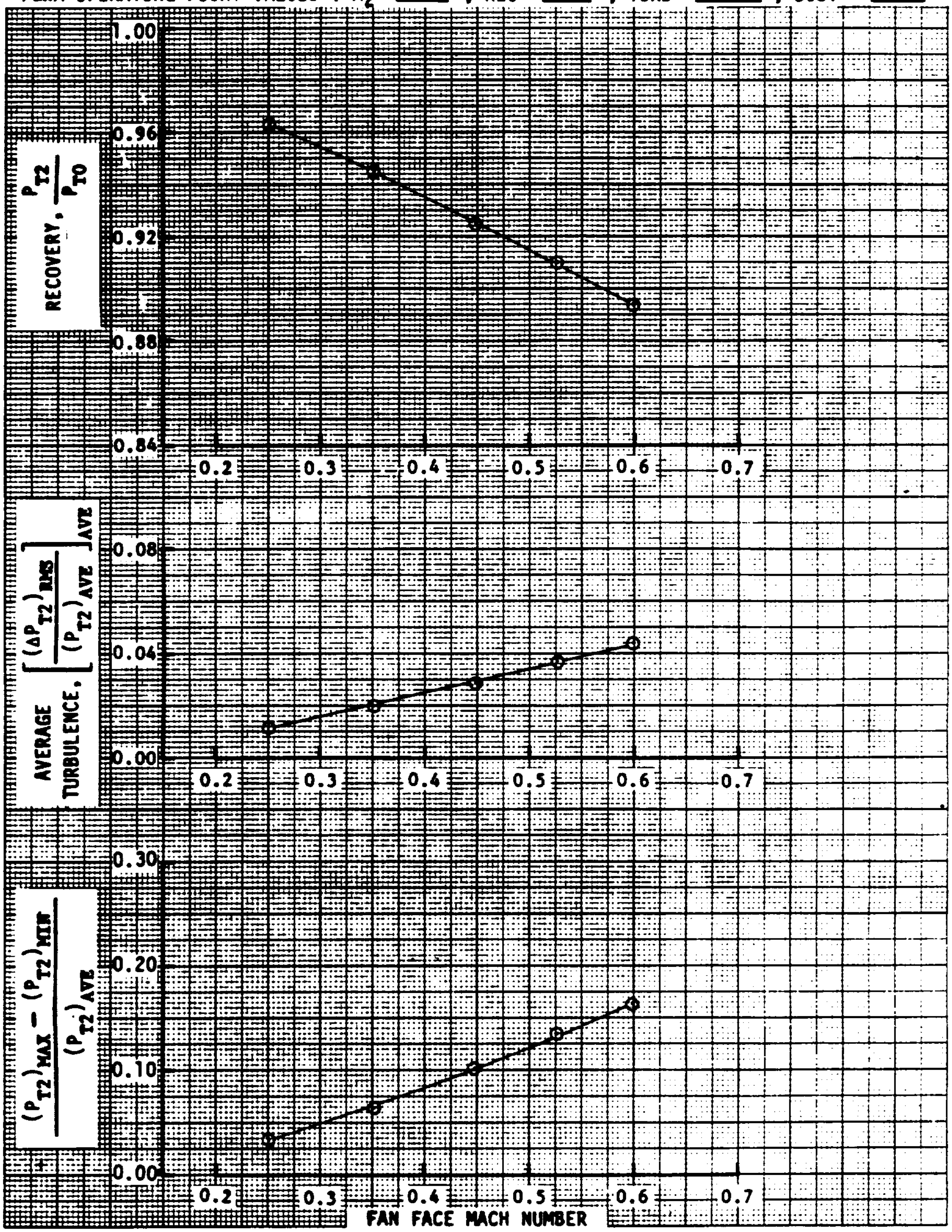
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 631-635
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .939 ; TURB= .028 ; DIST= .116



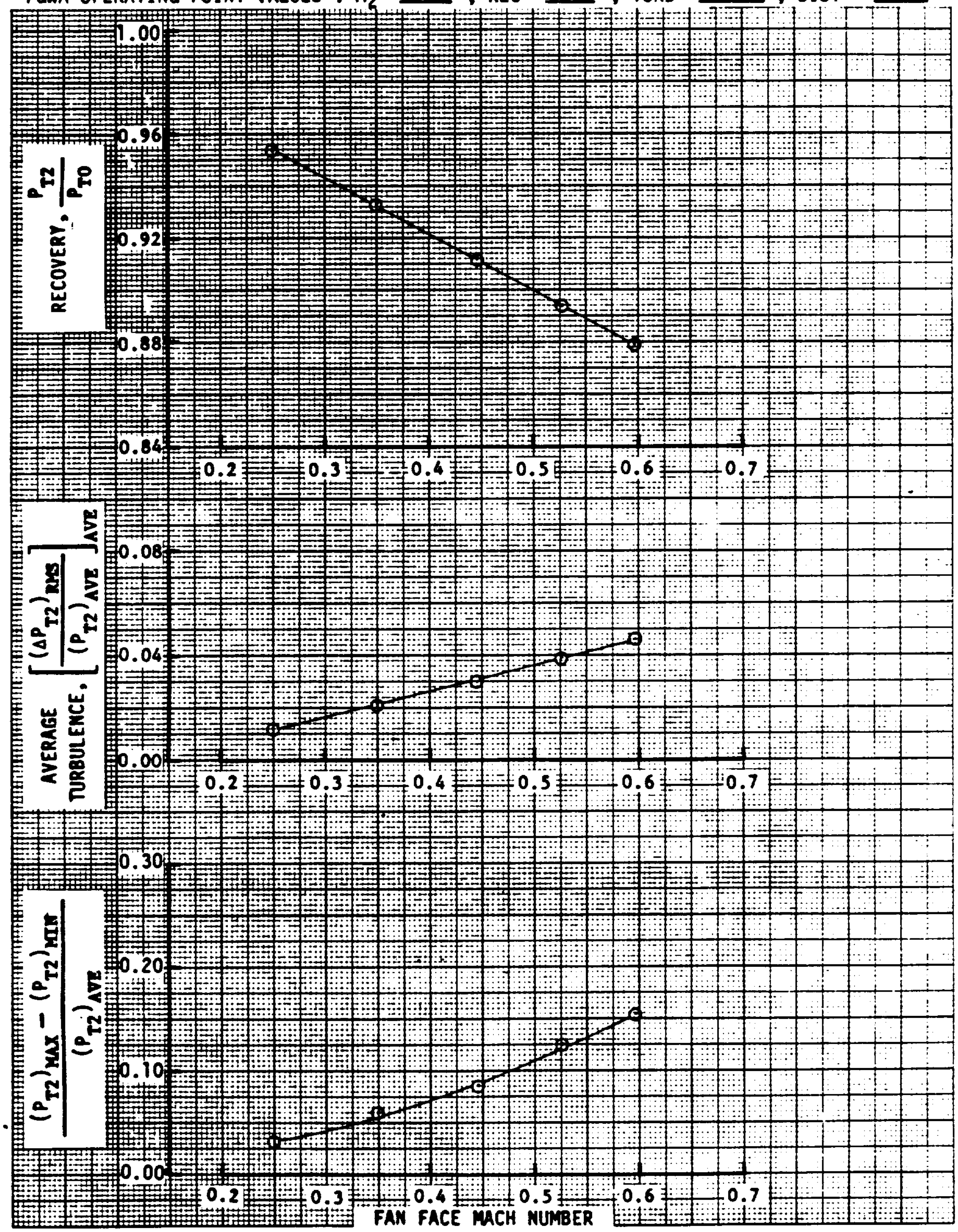
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 636-640
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .923 ; TURB= .034 ; DIST= .132



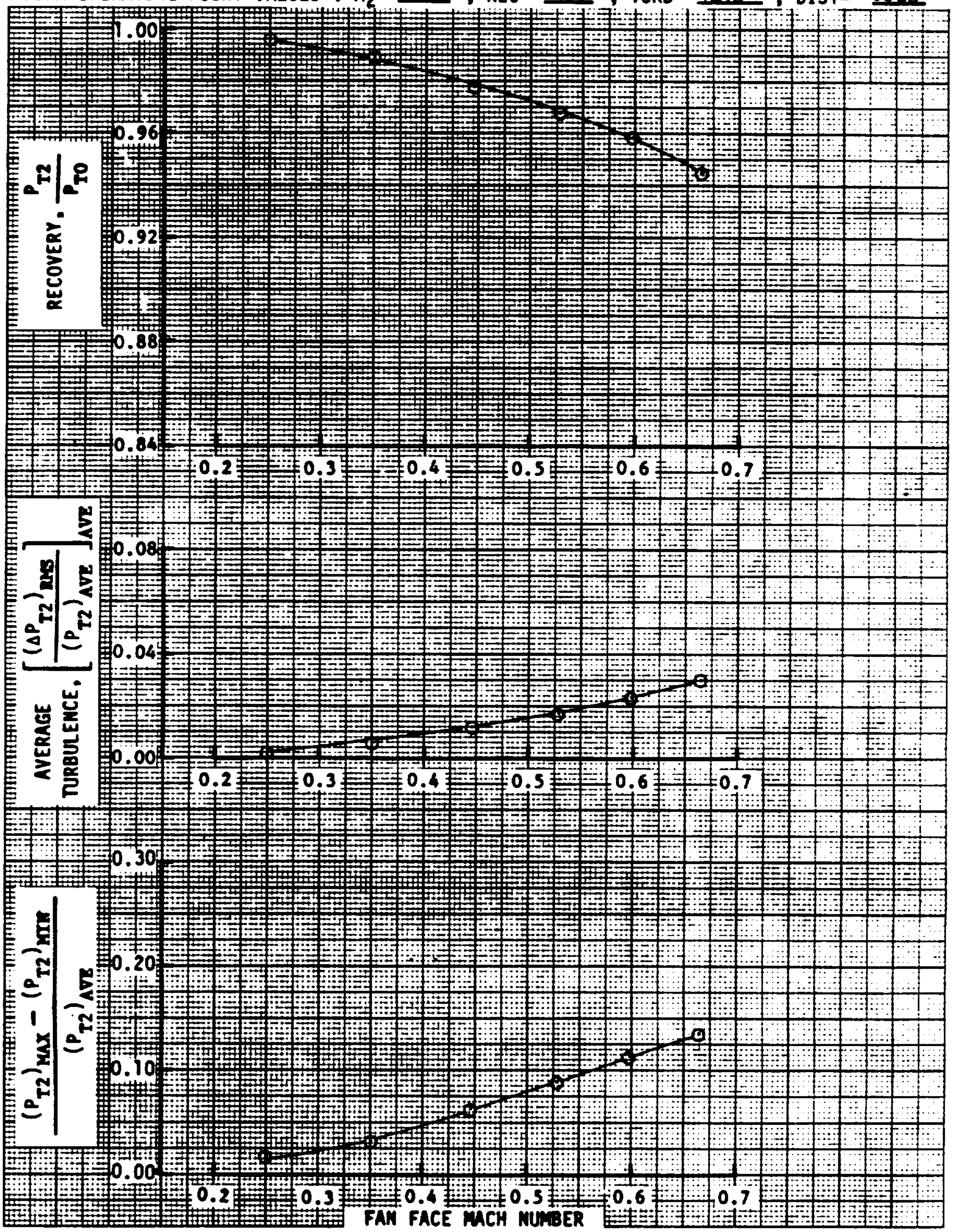
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 641-645
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .037 ; DIST= .133



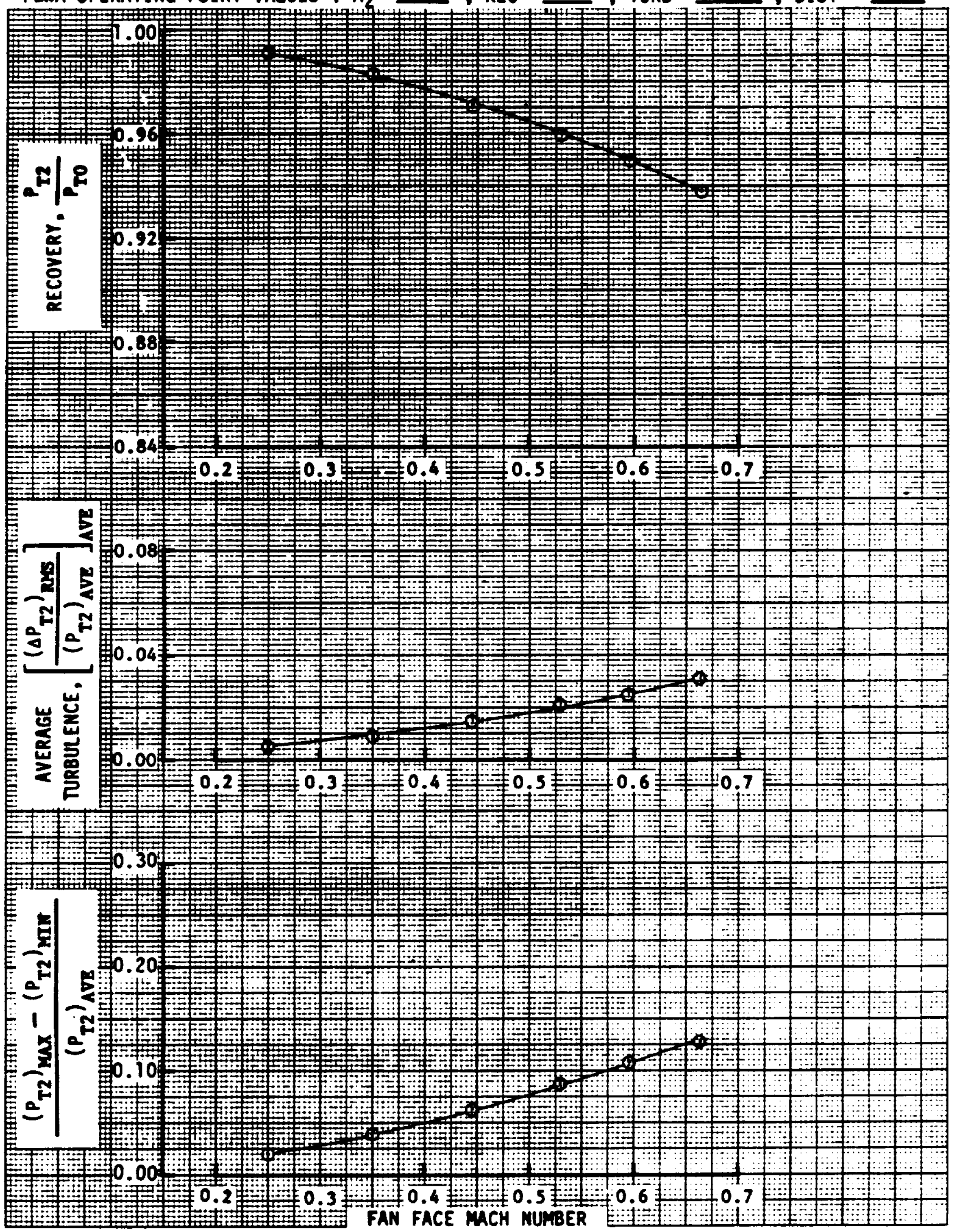
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 646-650
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .893 ; TURB= .039 ; DIST= .123



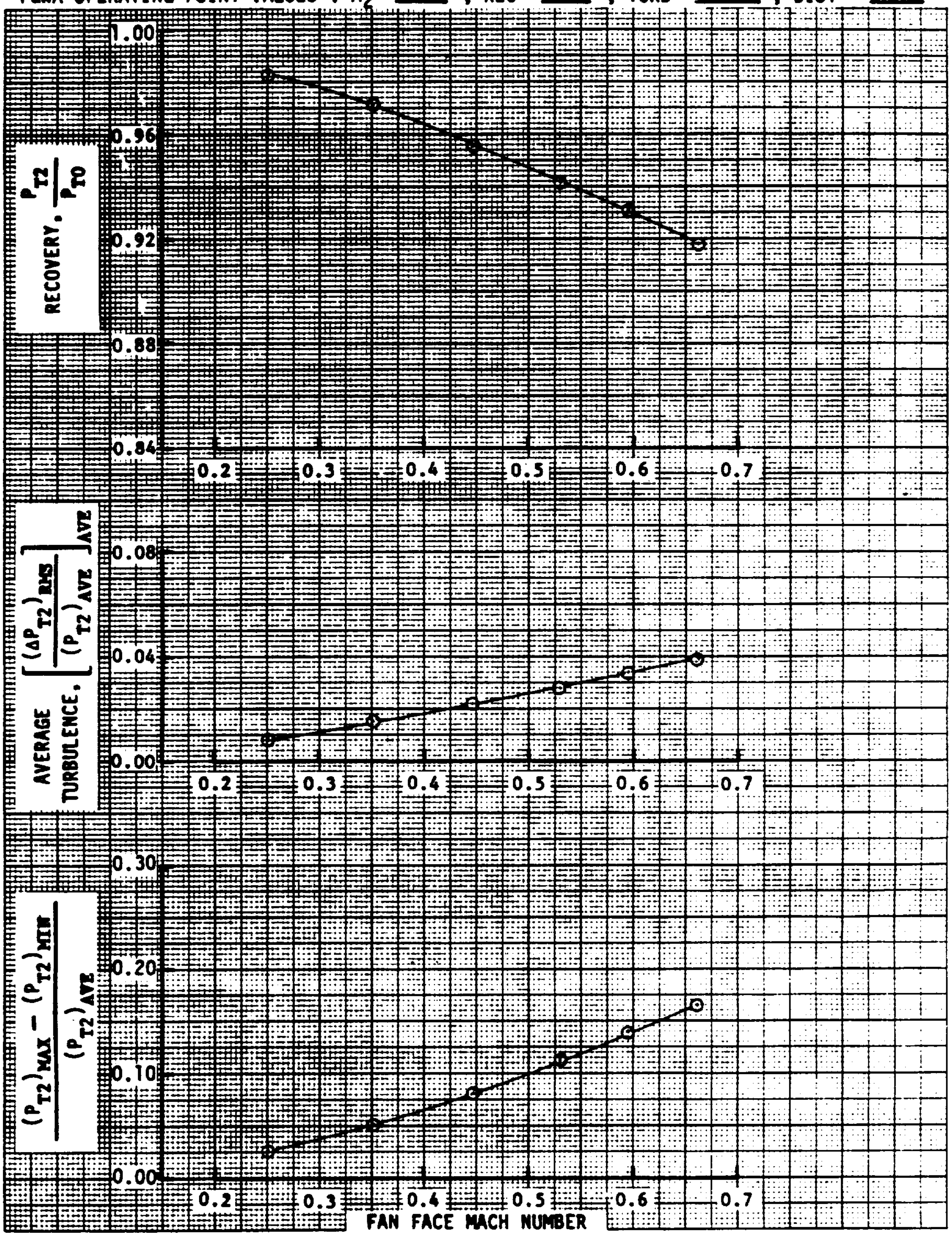
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 651-656
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .968 ; TURB= .018 ; DIST= .088



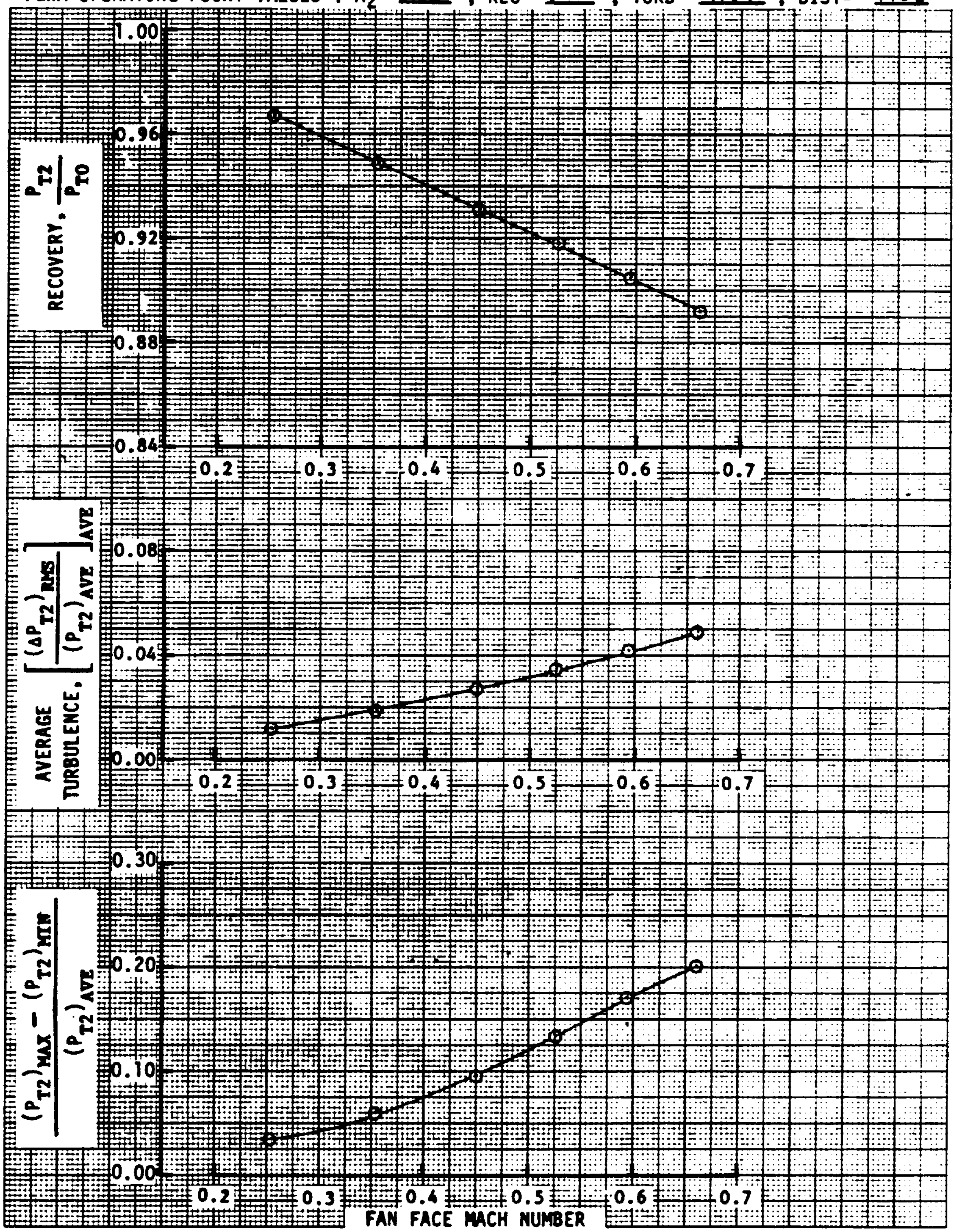
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 657-662
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .960 ; TURB= .020 ; DIST= .086



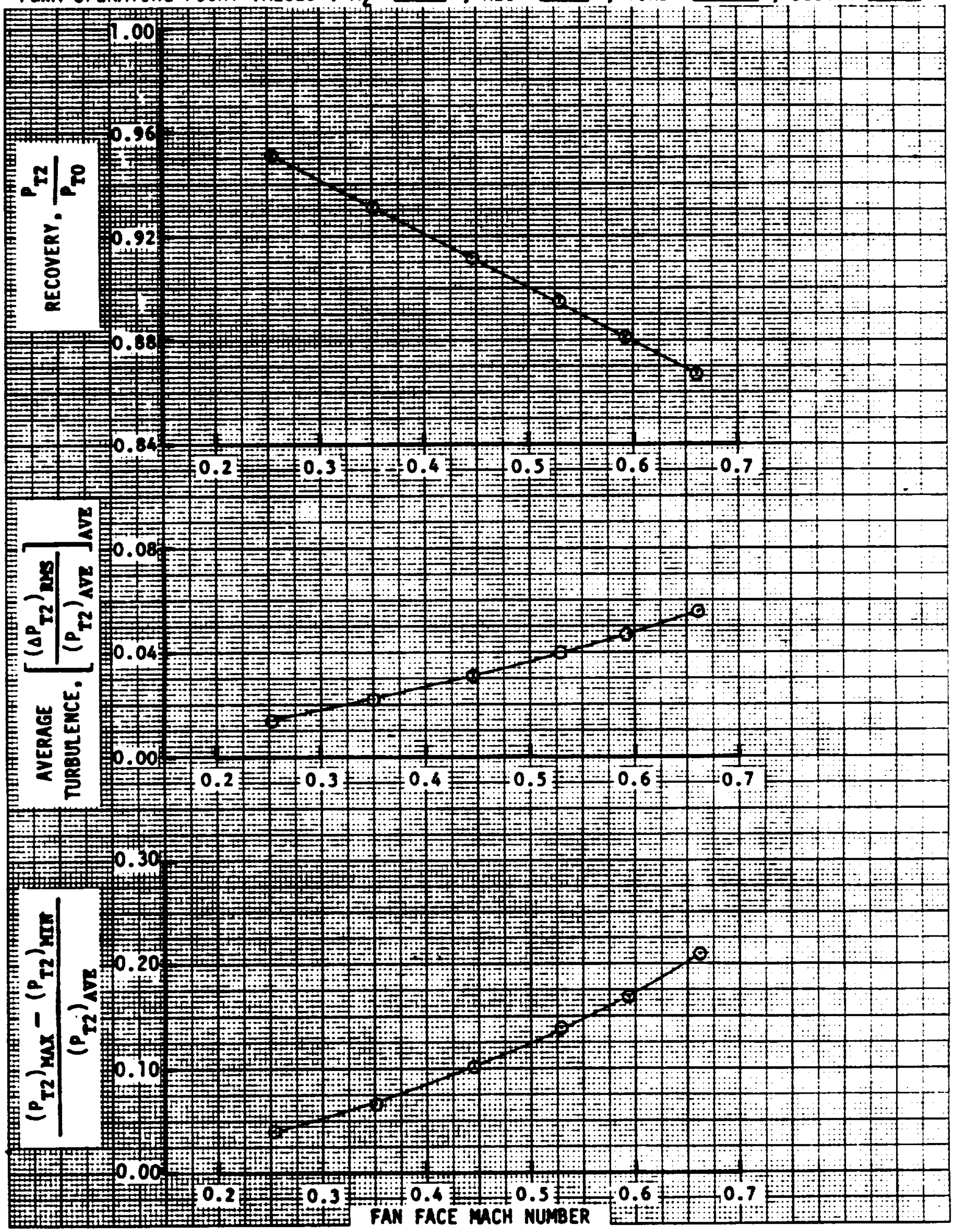
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 663-668
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .028 ; DIST= .111



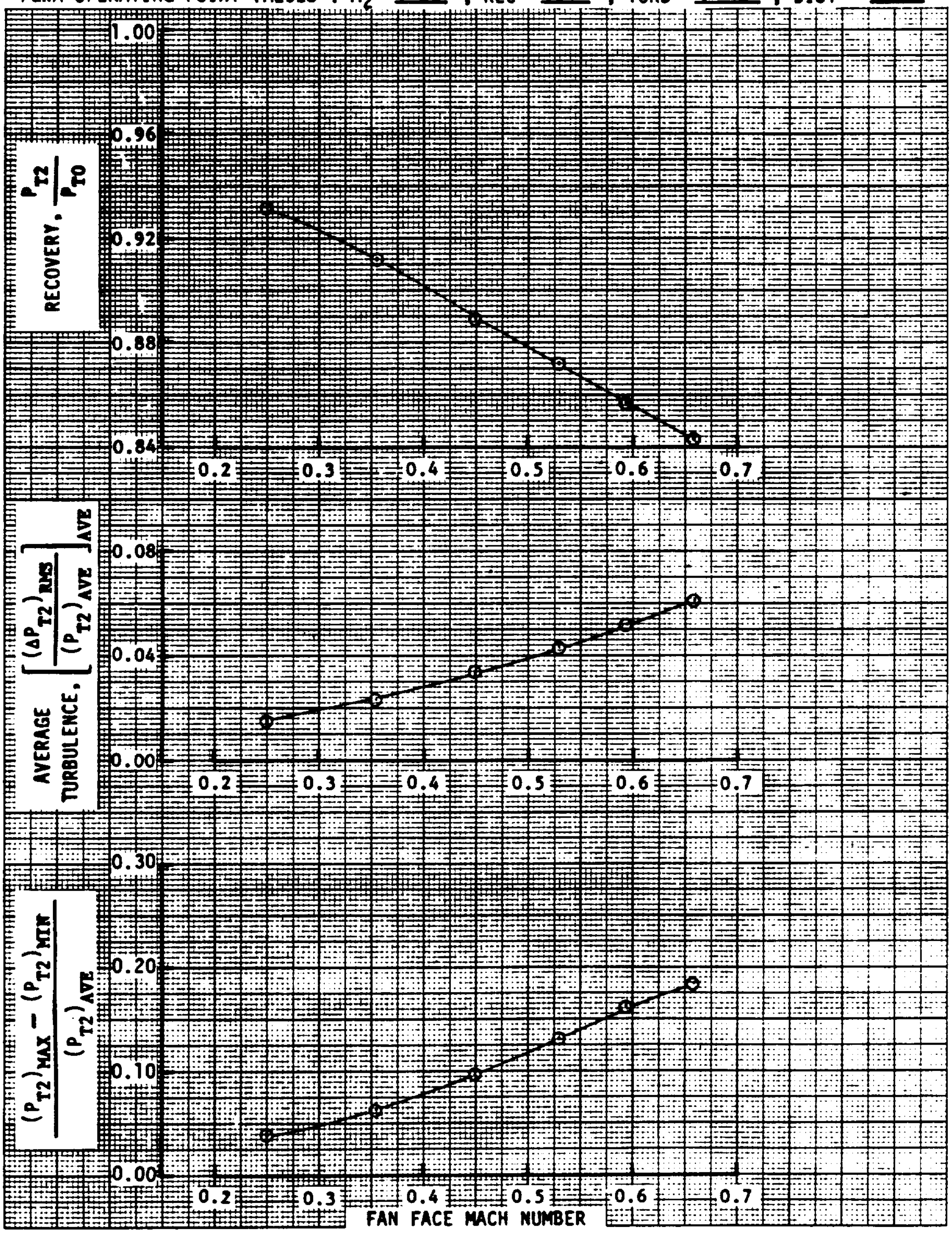
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 669-674
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .916 ; TURB= .034 ; DIST= .136



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 675-680
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .894 ; TURB= .040 ; DIST= .138



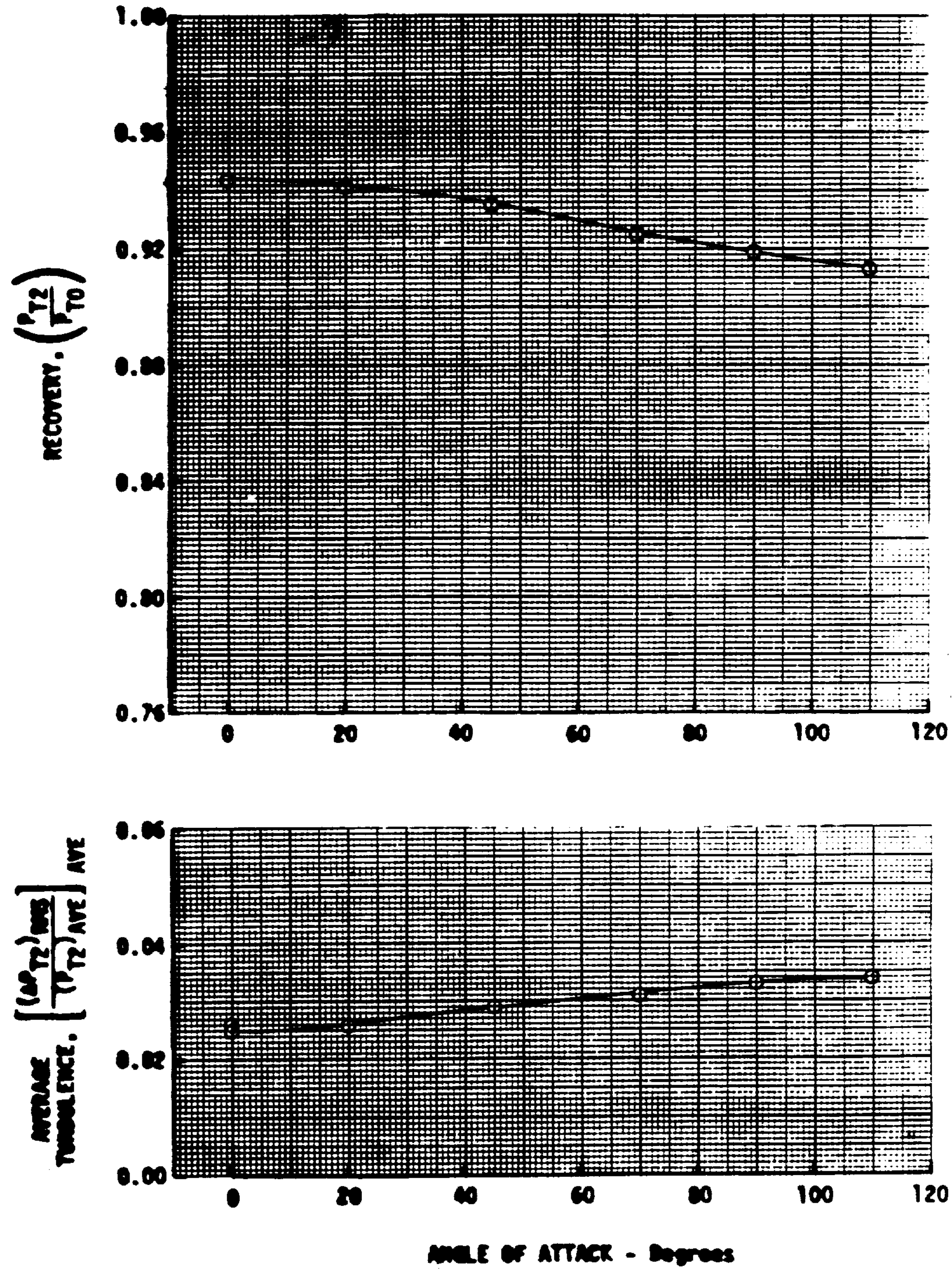
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 4 ; READING NUMBERS 681-686
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .872 ; TURB= .043 ; DIST= .131



ORIGINAL PAGE IS
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PDMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

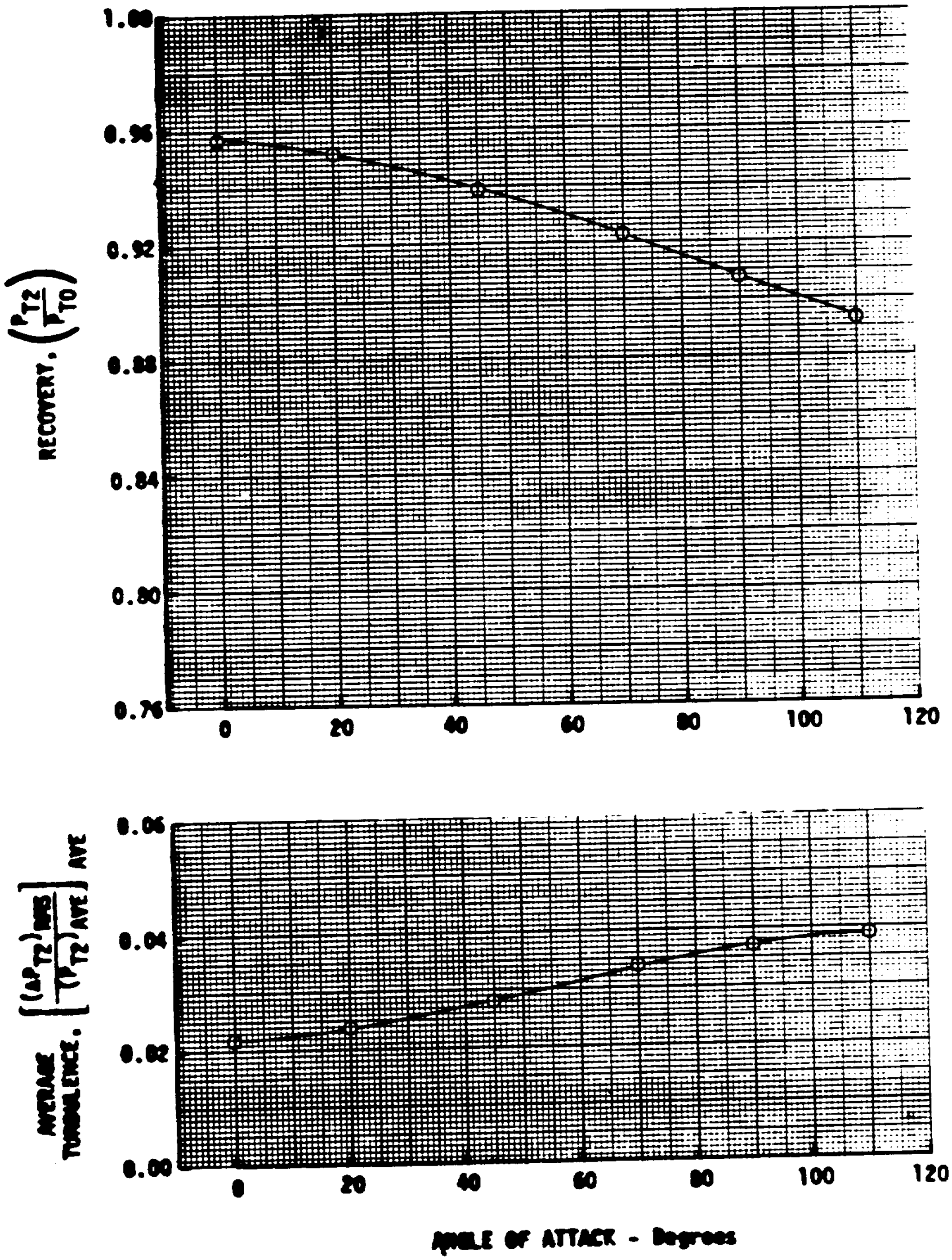
CONFIGURATION: NUMBER 4 **; DESCRIPTION** Left Auxiliary Inlet Open , Door



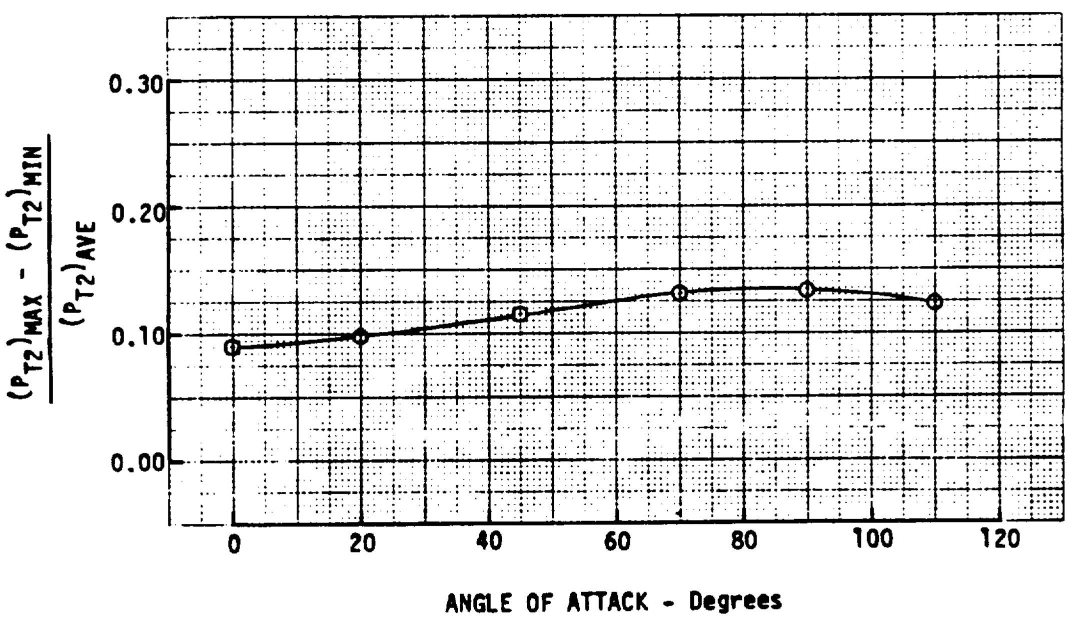
ORIGINAL PAGE IS
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
POWER F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 4 ; DESCRIPTION Left Auxiliary Inlet Open, Door



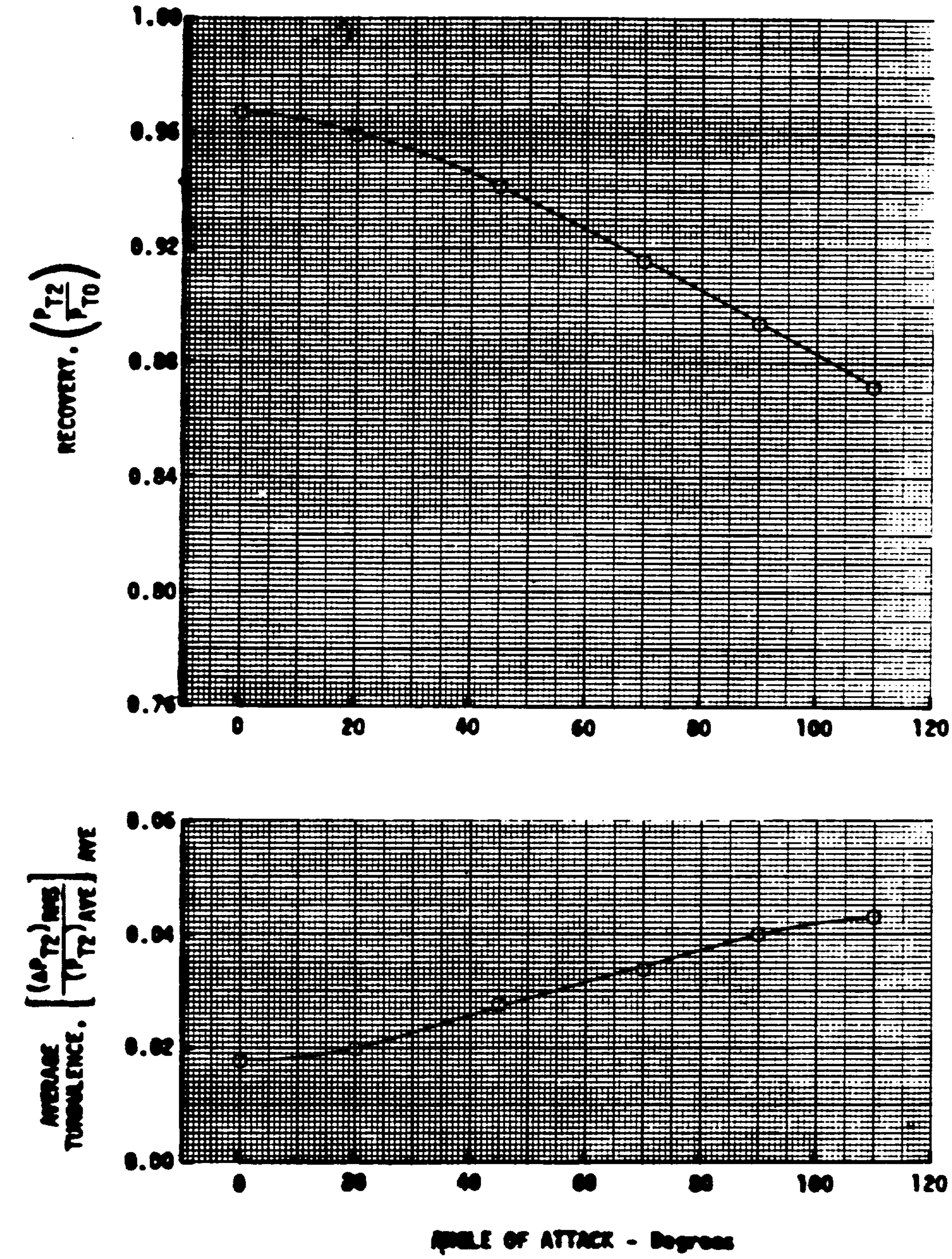
DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 4 ; DESCRIPTION Left Aux Inlet Open - Door



ORIGINAL PAGE IS
OF POOR QUALITY

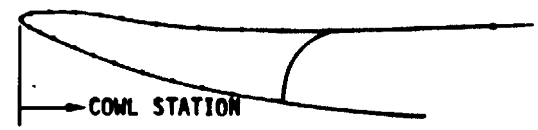
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

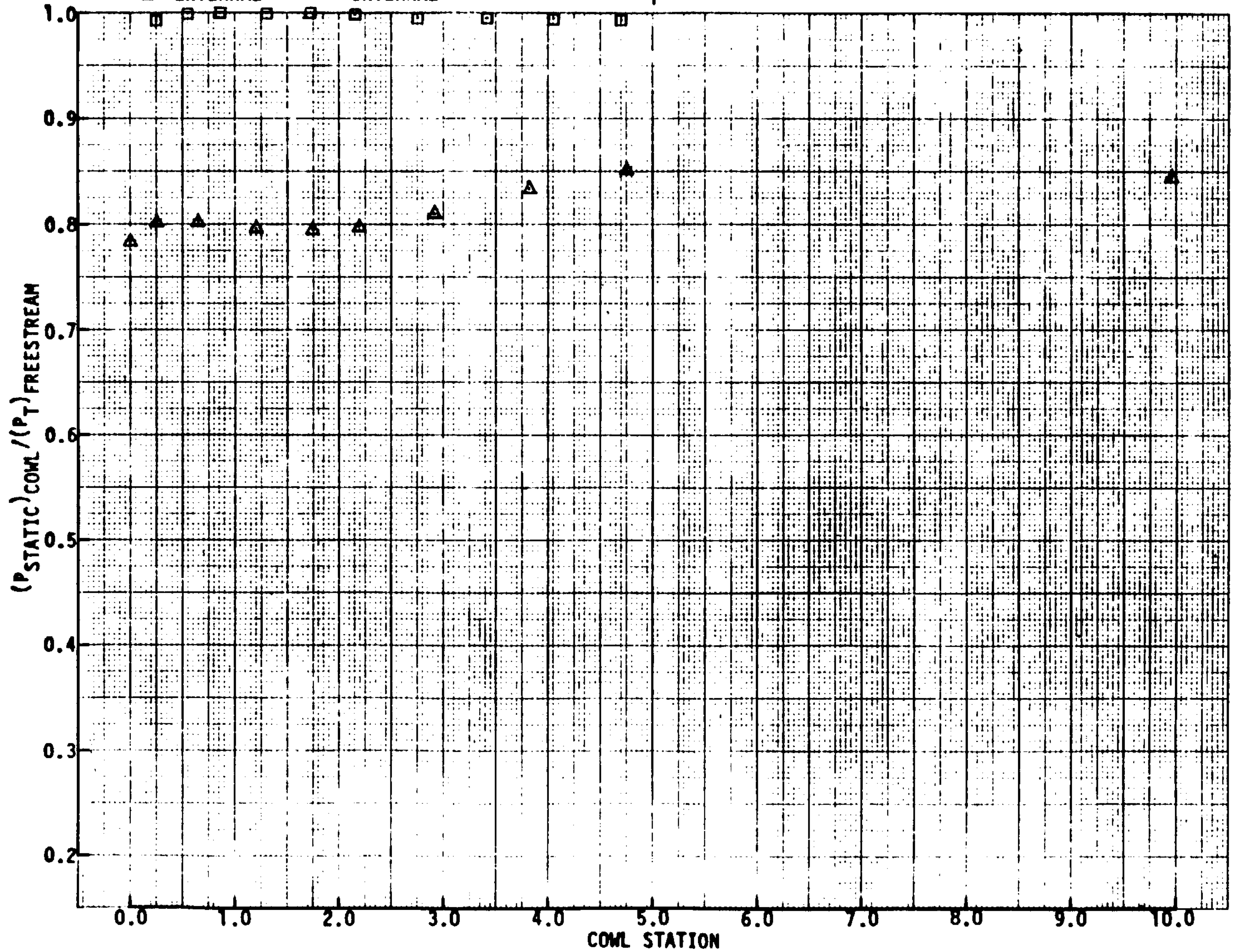
CONFIGURATION: NUMBER 4; DESCRIPTION Left Auxiliary Inlet Open, Door



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 4; Left Aux Open - Door
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
ENGINE FACE MACH NUMBER = .523
□ EXTERNAL △ INTERNAL





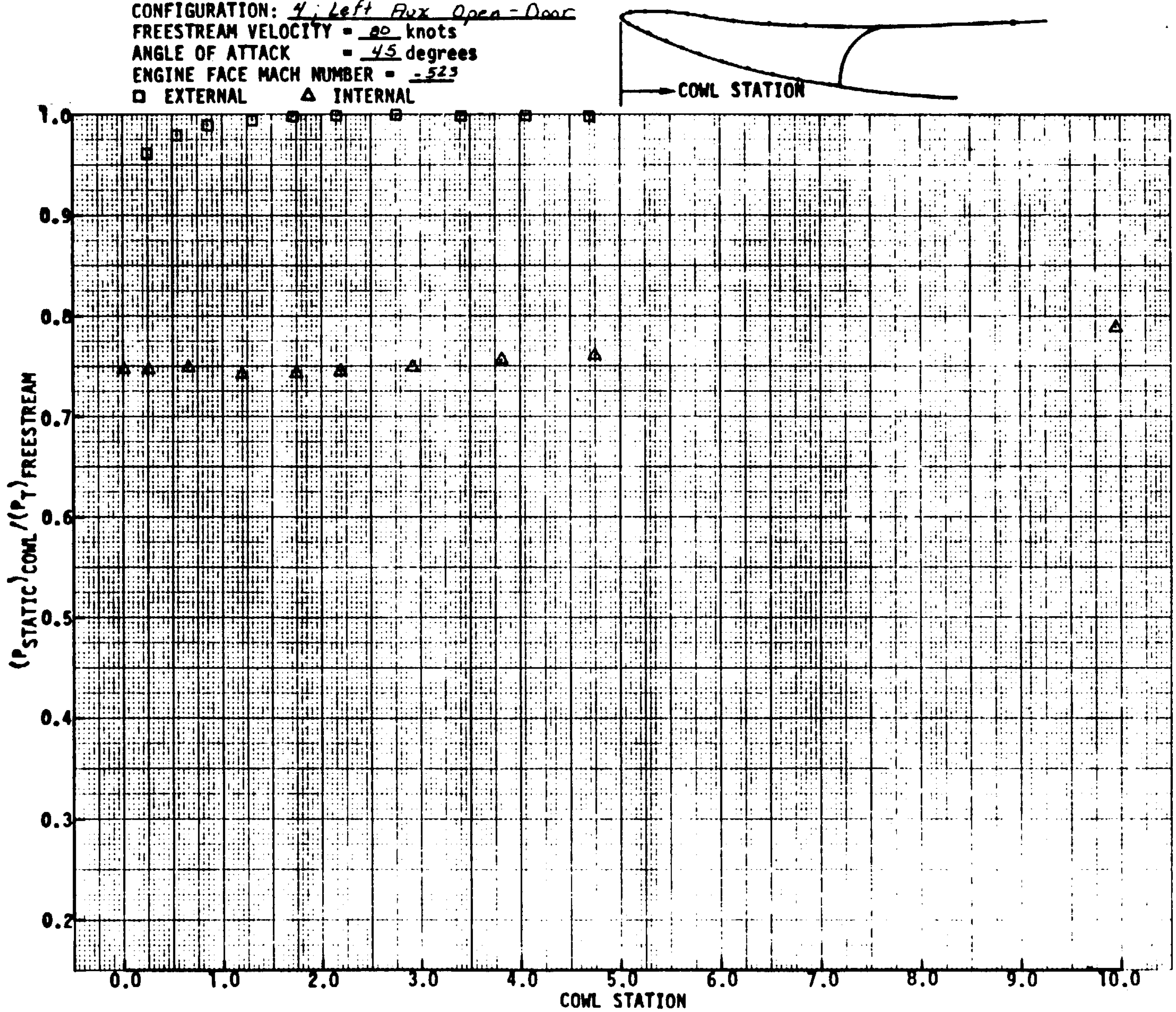
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 4; Left Aux Open-Door

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 45 degrees

ENGINE FACE MACH NUMBER = .523



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

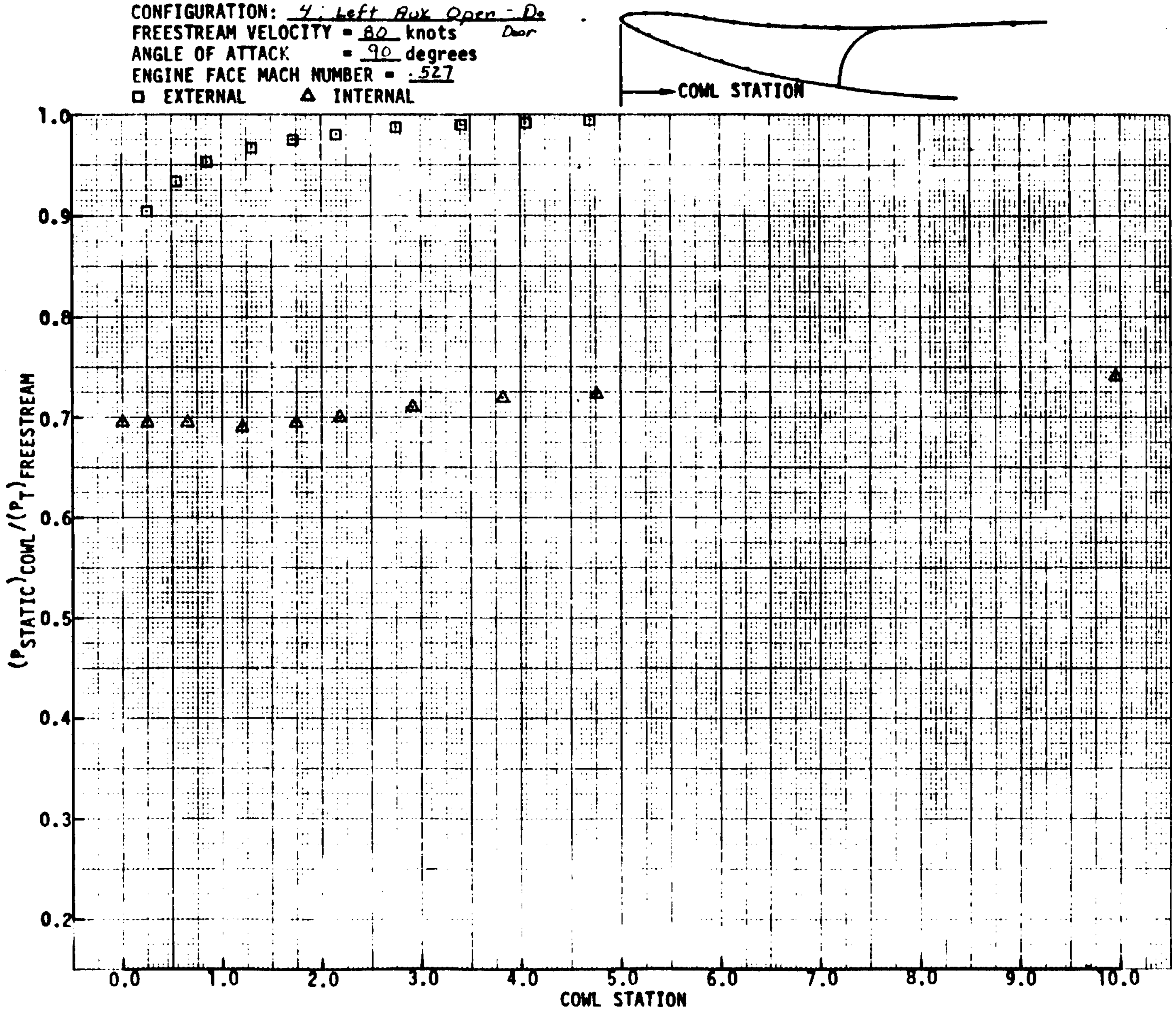
CONFIGURATION: 4; Left Aux Open - Door

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 90 degrees

ENGINE FACE MACH NUMBER = .527

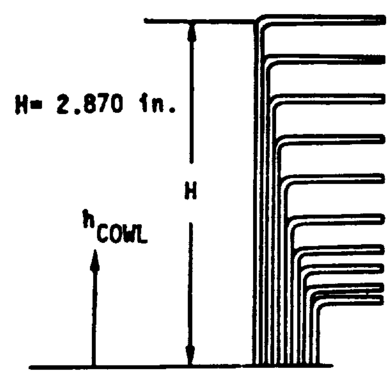
□ EXTERNAL △ INTERNAL

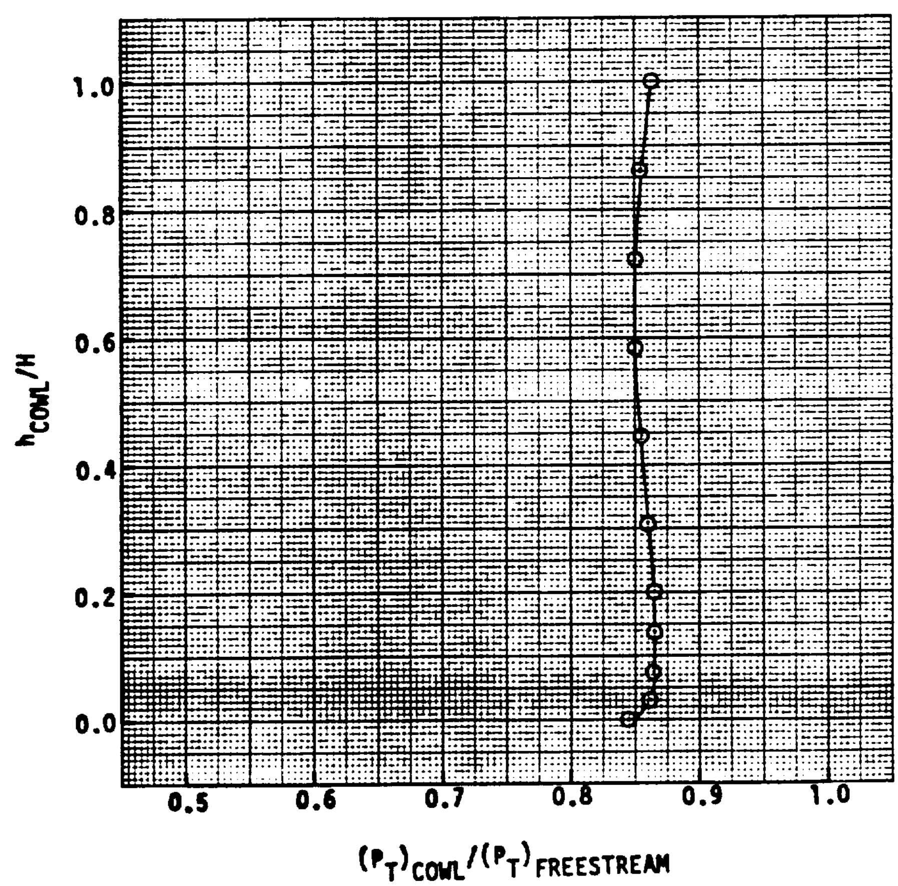


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 4; DESCRIPTION LEFT AUXILIARY INLET OPEN - DOOR

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .523

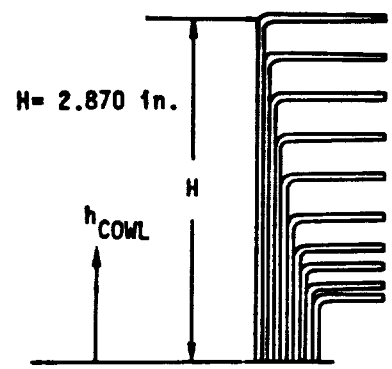


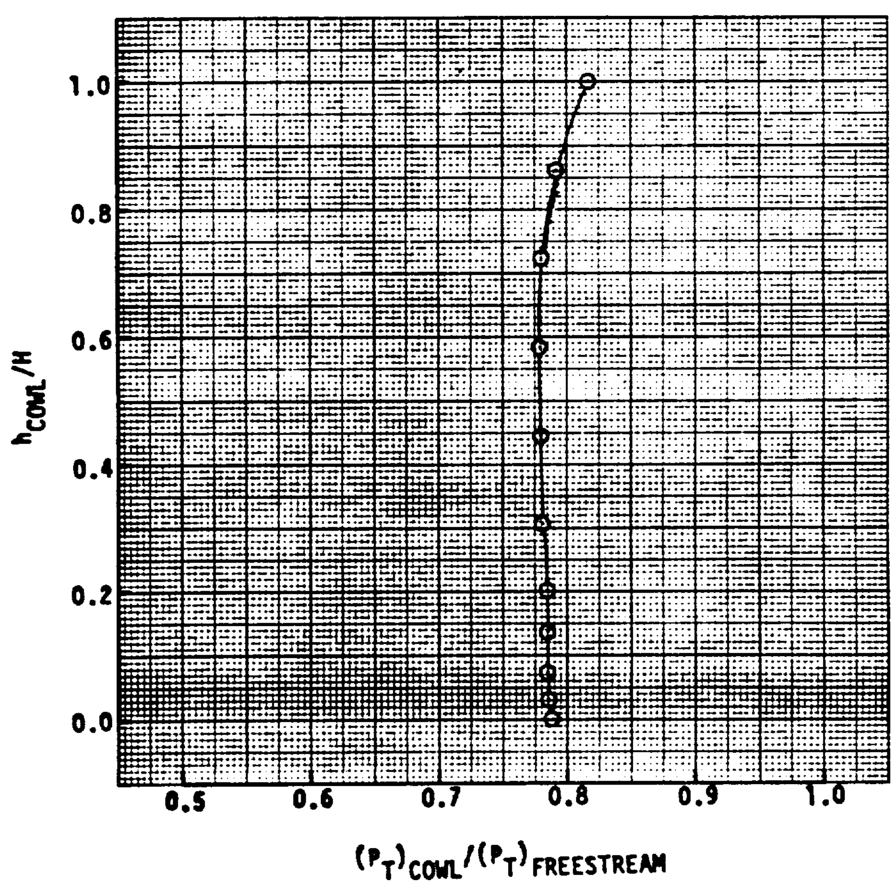


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 4 ; DESCRIPTION LEFT AUXILIARY INLET OPEN - DOOR

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .523

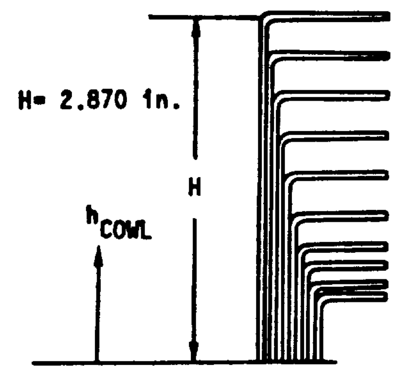


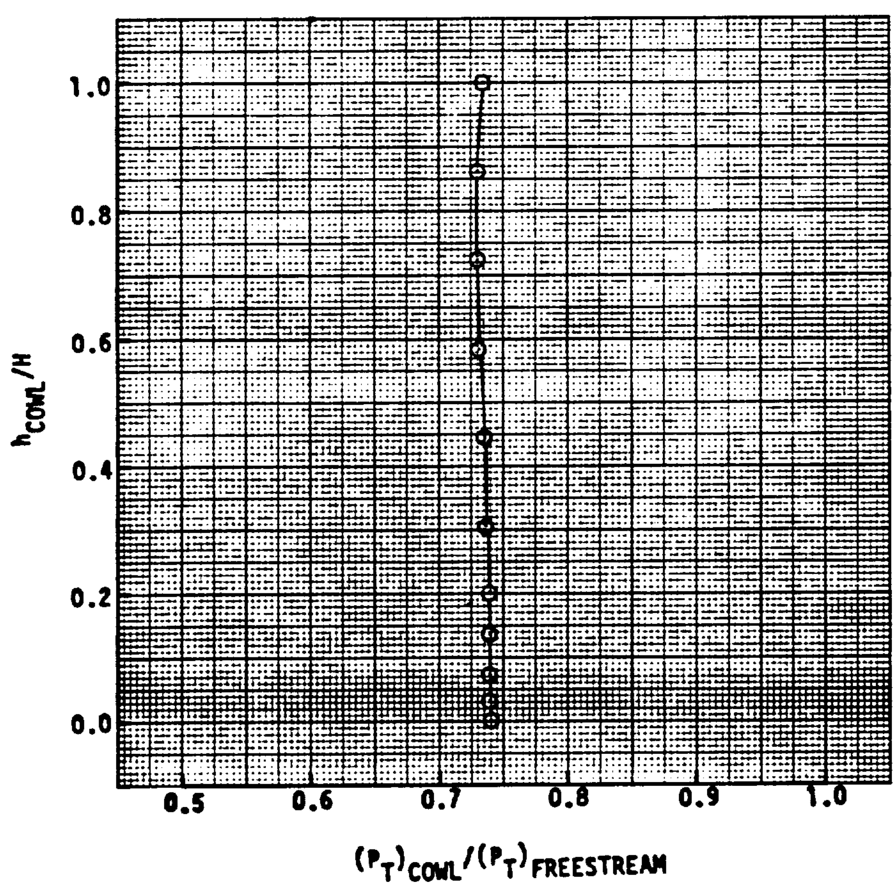


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

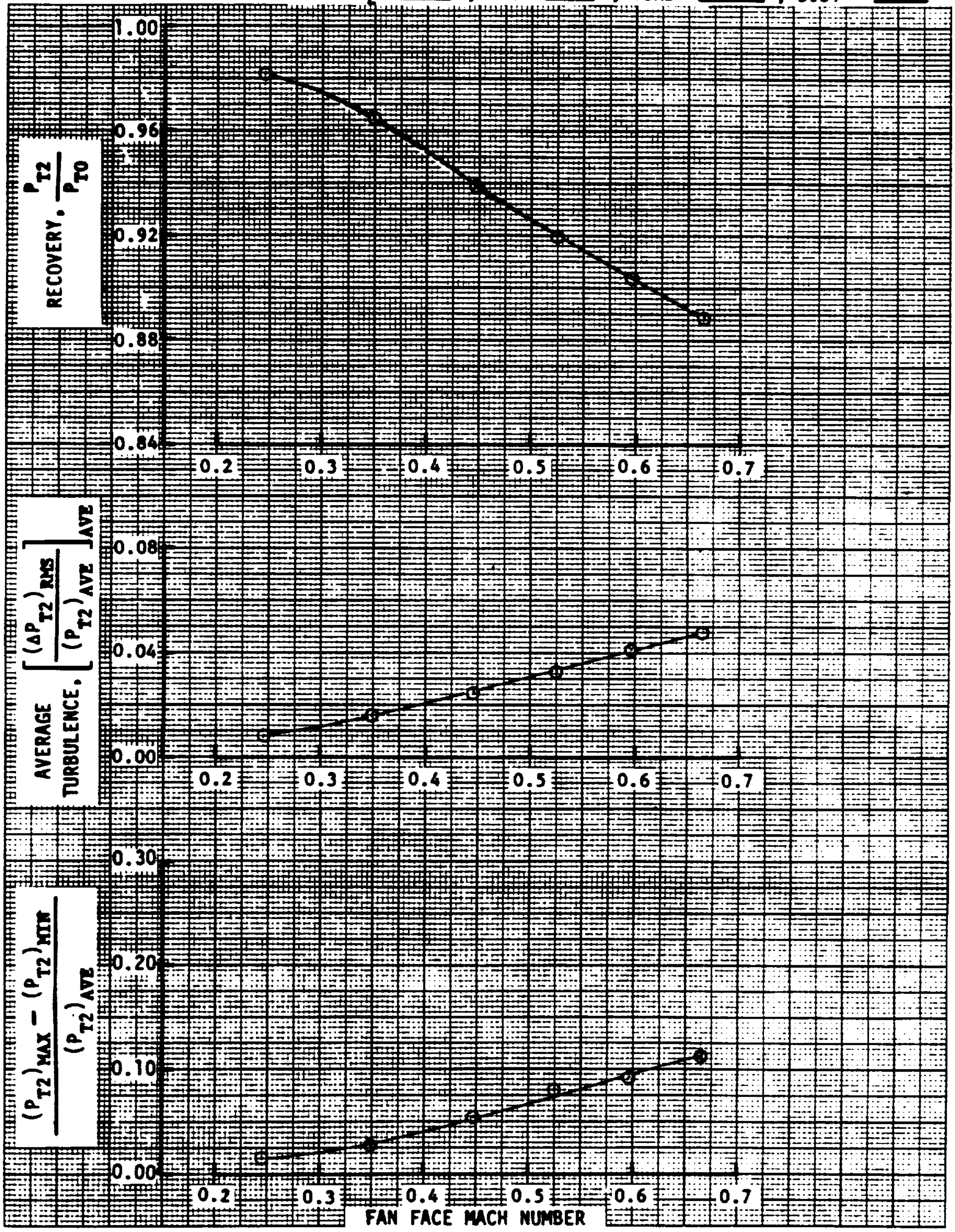
CONFIGURATION: NUMBER 4 ; DESCRIPTION LEFT AUXILIARY INLET OPEN - DOOR

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .527

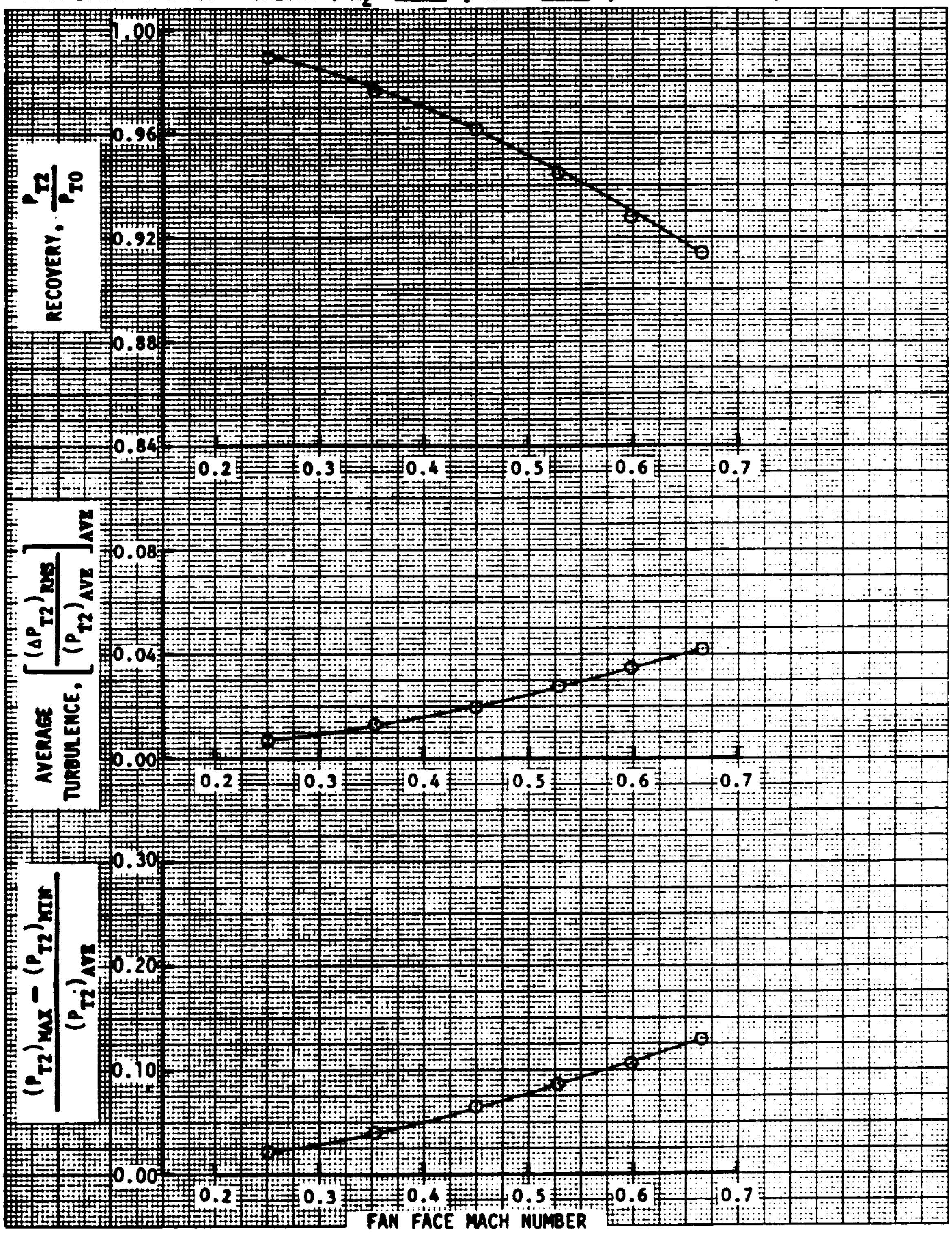




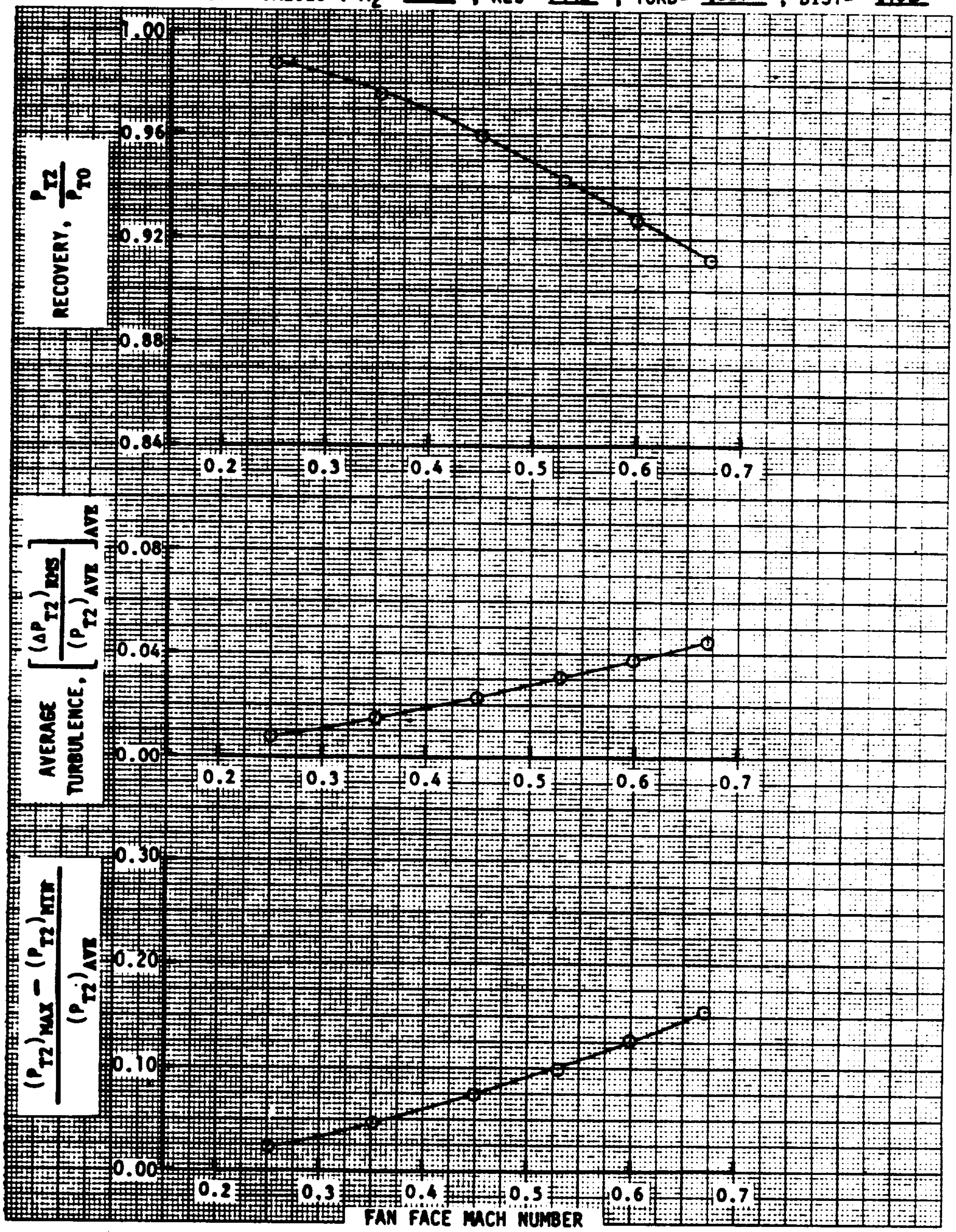
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION V ; READING NUMBERS 727-732
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .918 ; TURB= .034 ; DIST= .075



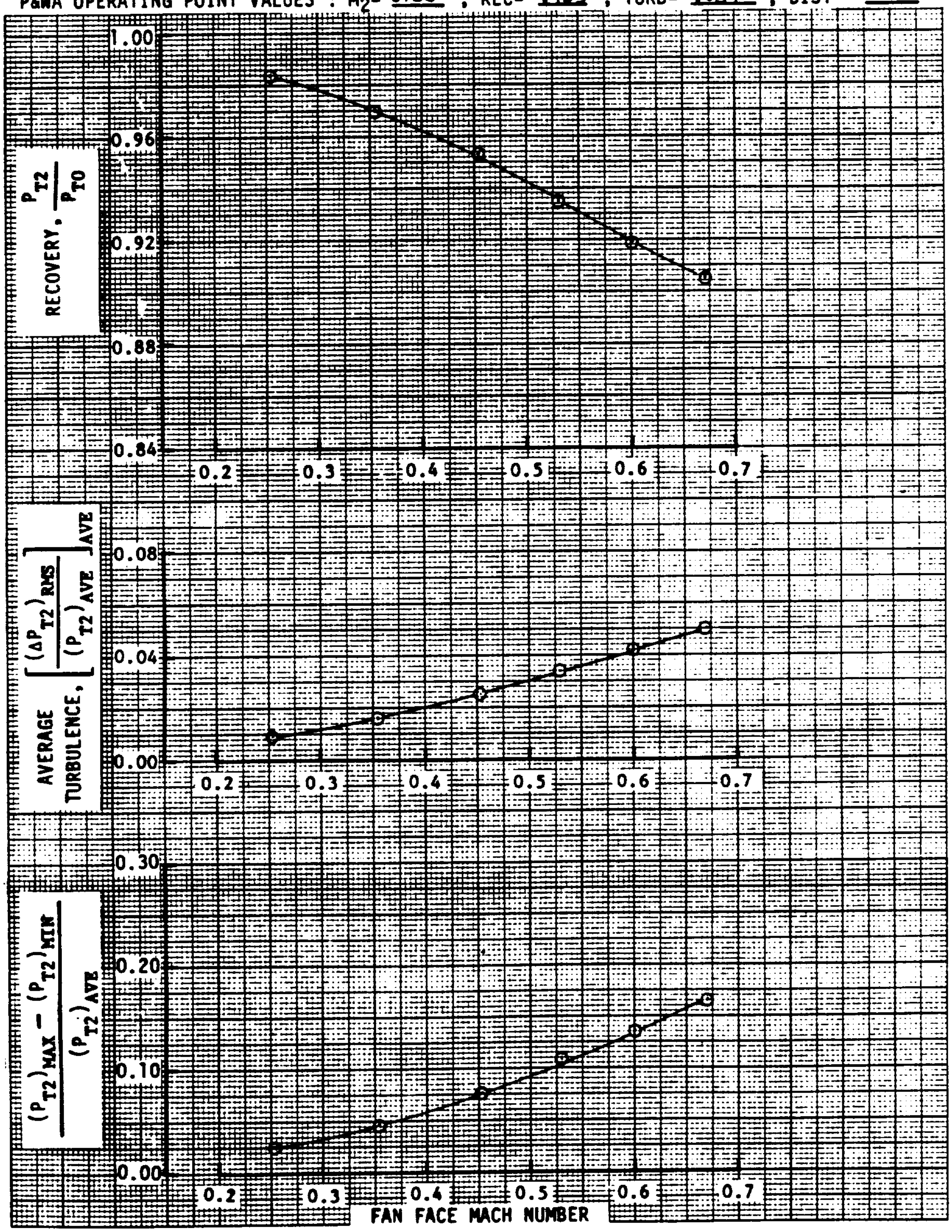
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 733-738
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .945 ; TURB= .028 ; DIST= .087



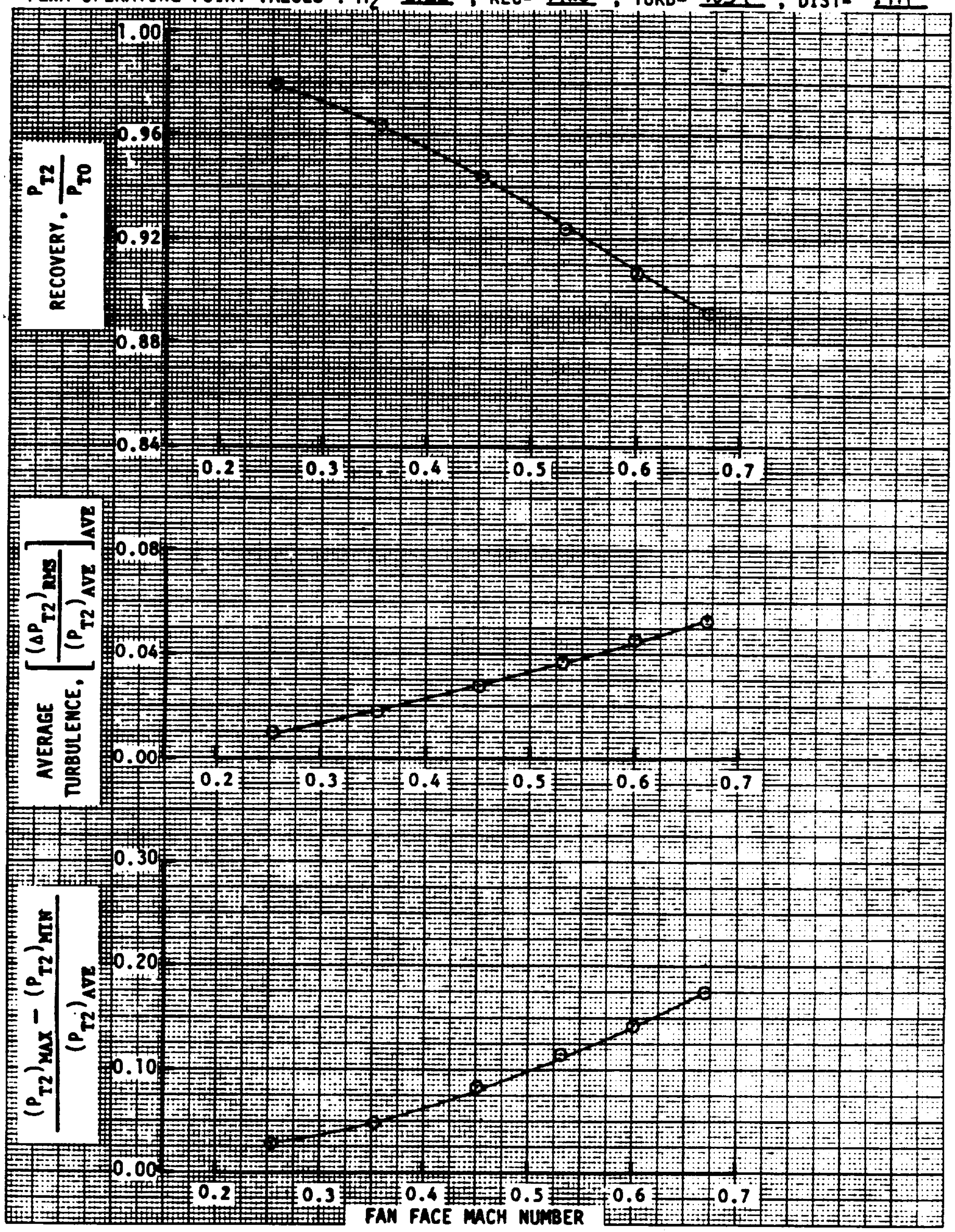
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 739-744
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .031 ; DIST= .102



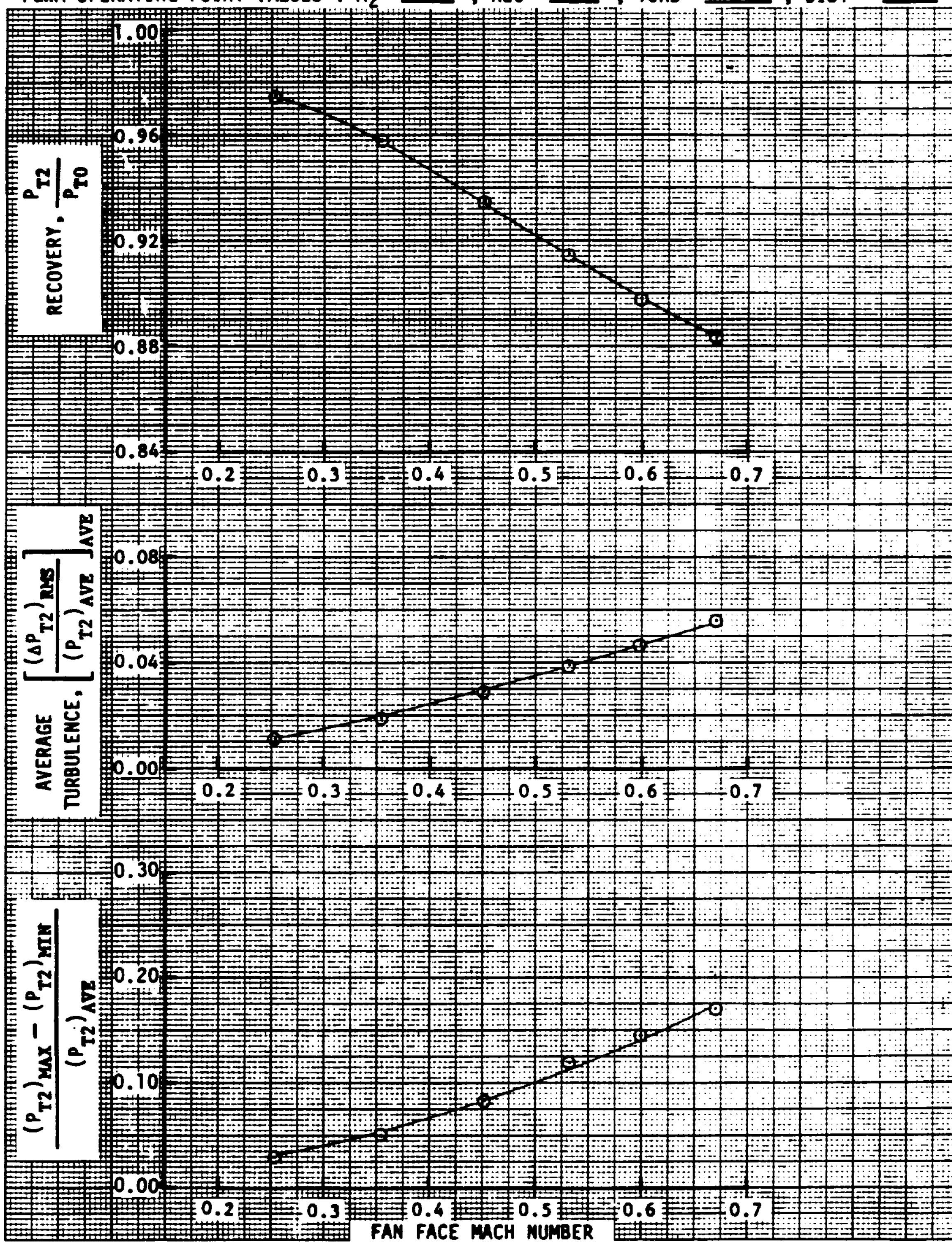
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 745-750
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .935 ; TURB= .034 ; DIST= .103



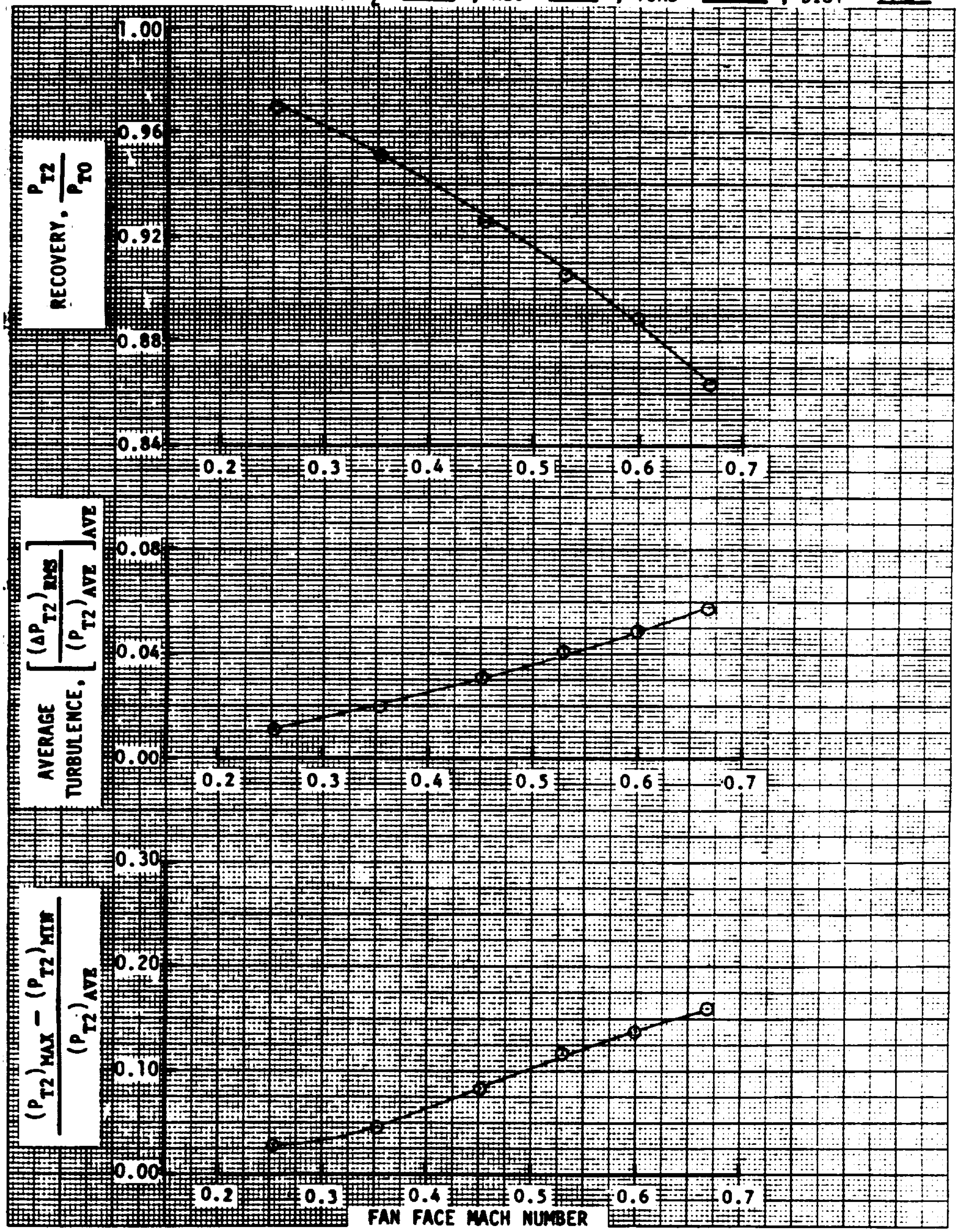
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 751-756
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .037 ; DIST= .111



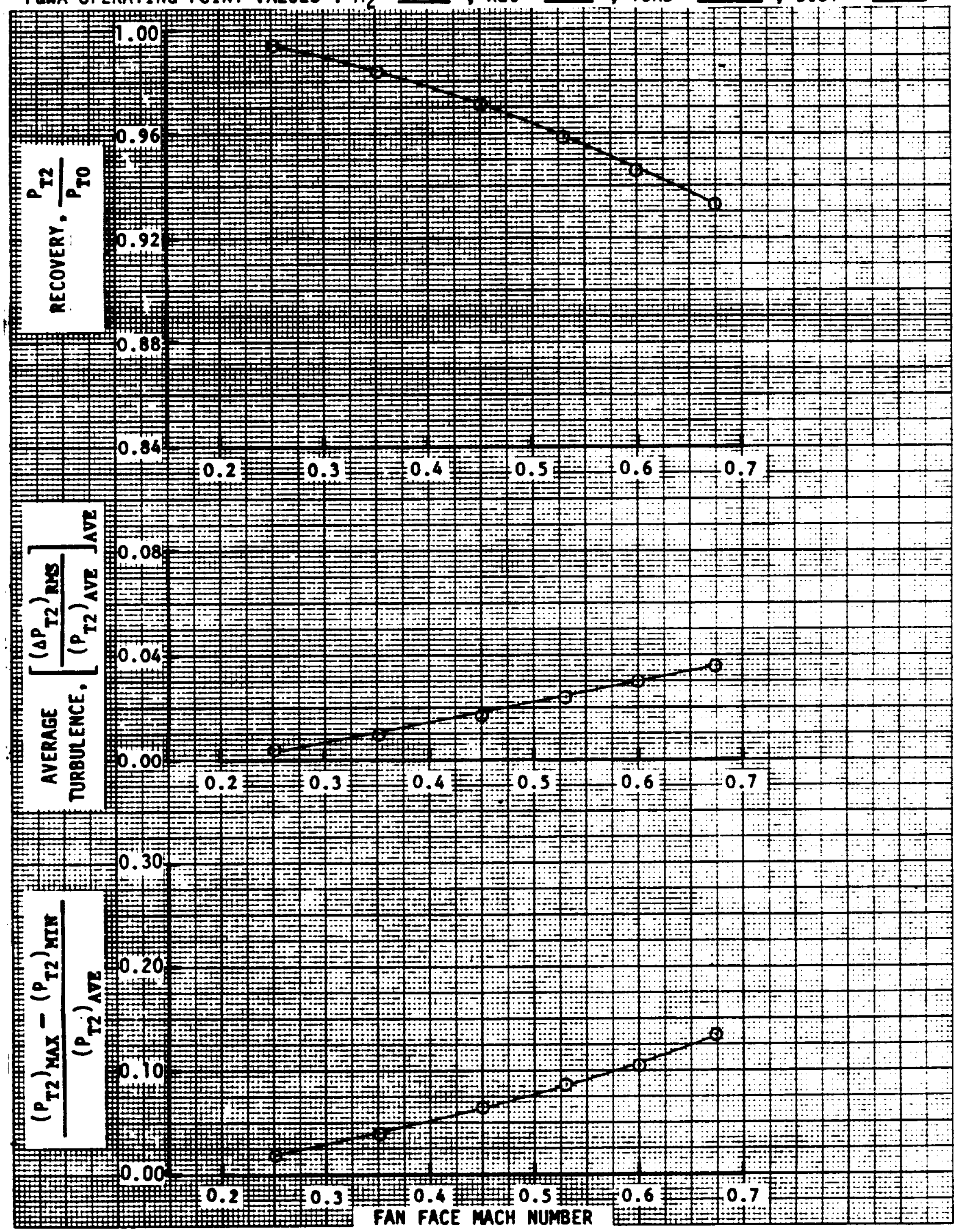
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 757-762
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .915 ; TURB= .038 ; DIST= .112



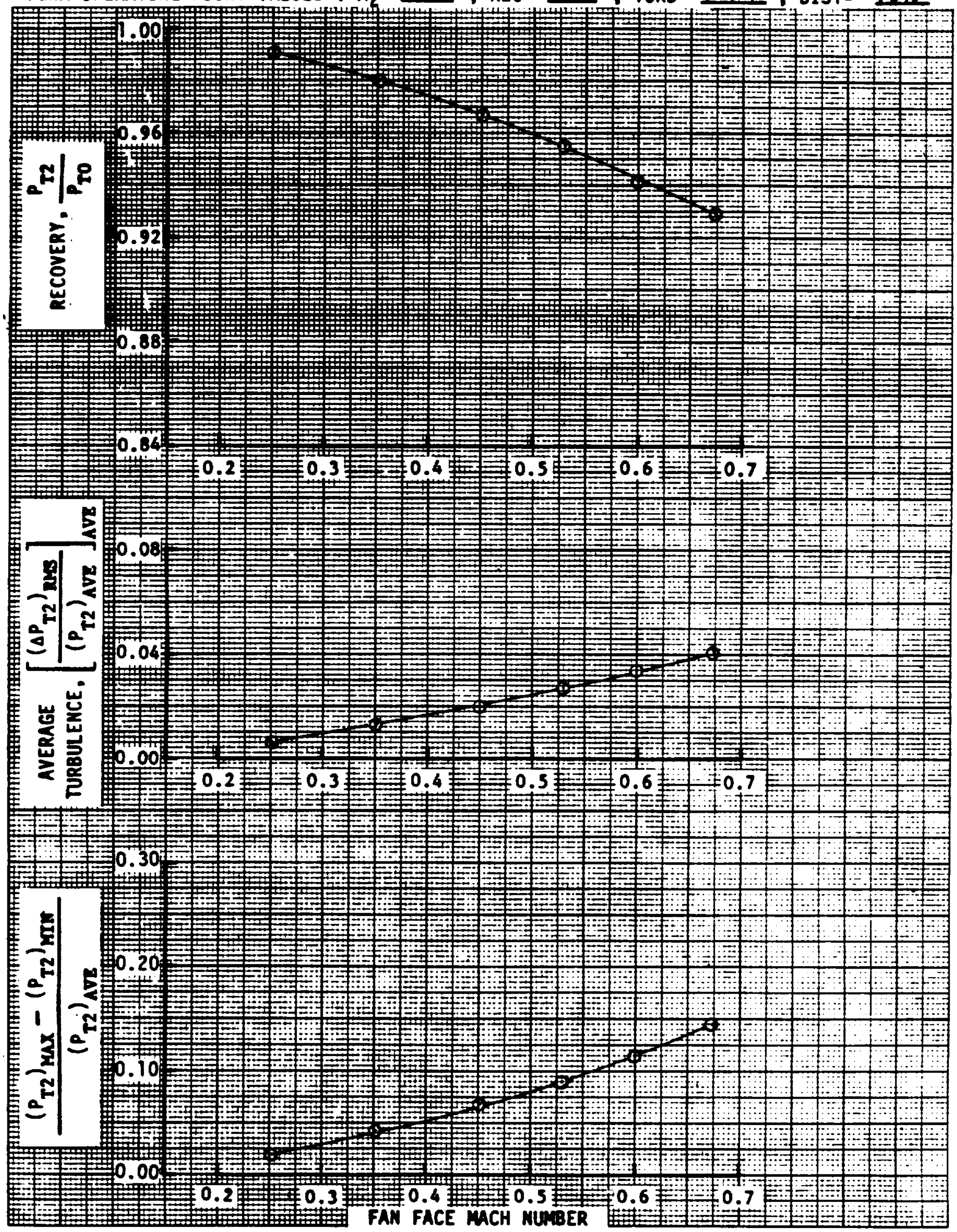
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 763-768
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .907 ; TURB= .040 ; DIST= .113



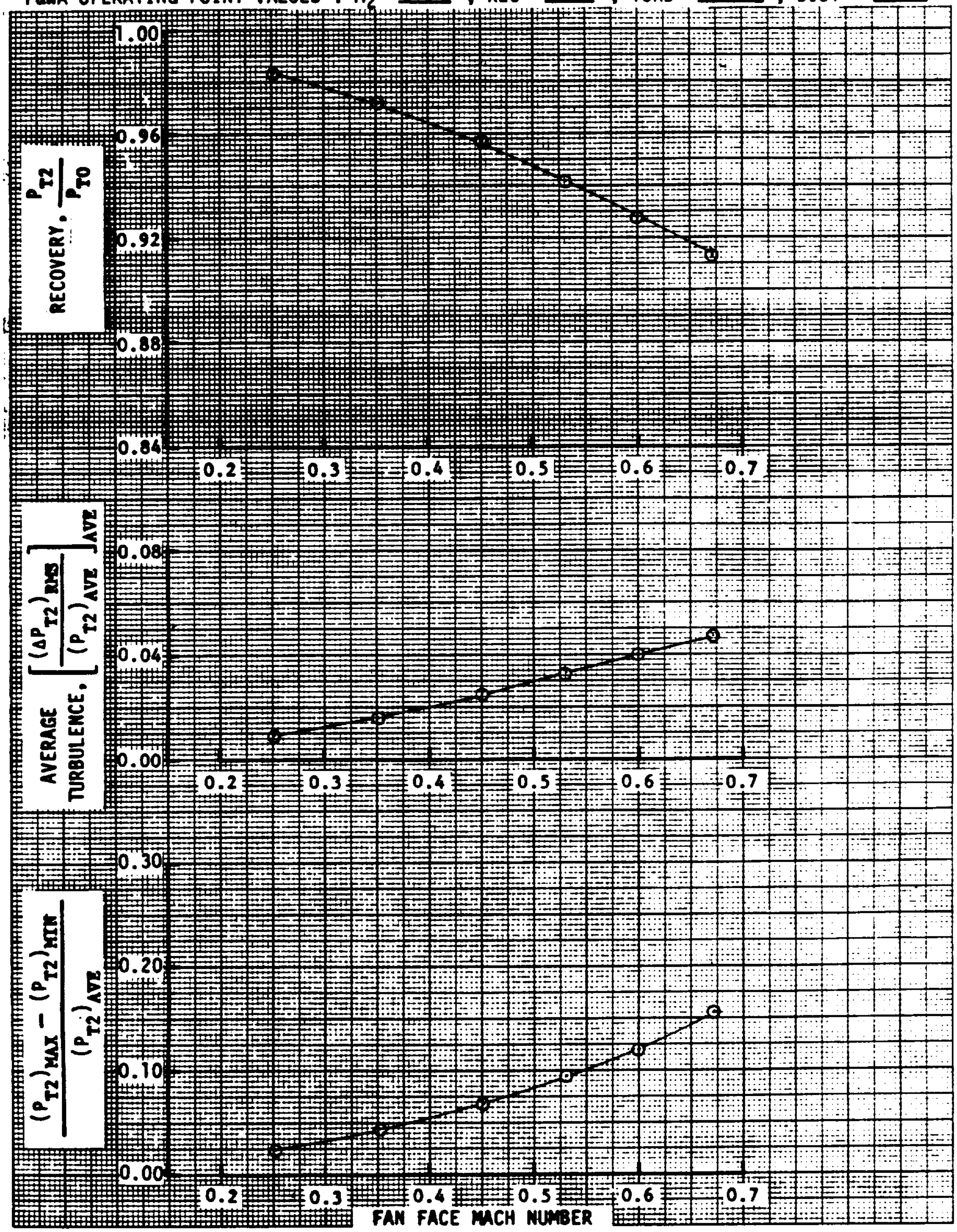
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 769-774
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .024 ; DIST= .086



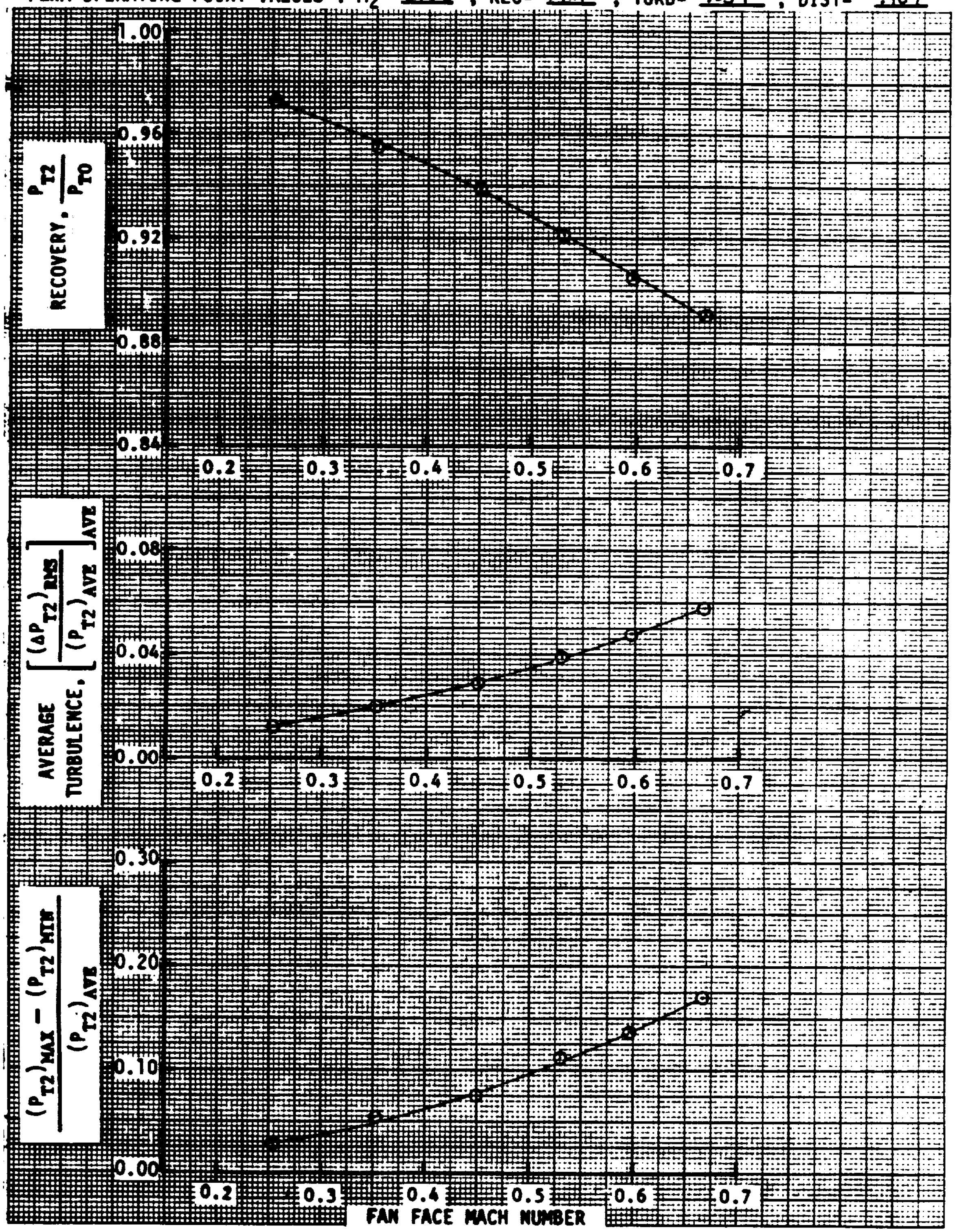
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 775-780
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .027 ; DIST= .090



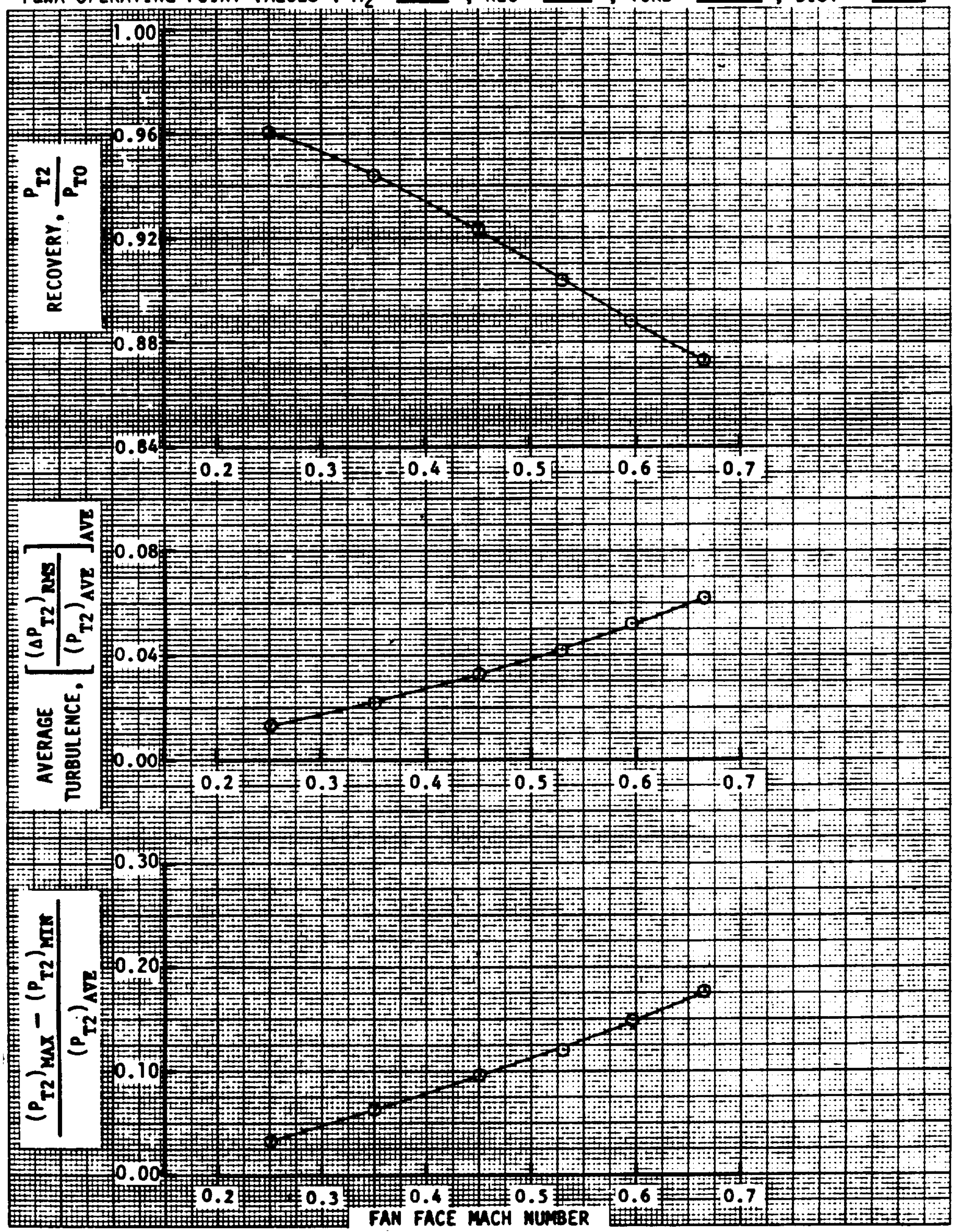
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 781-786
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .033 ; DIST= .095



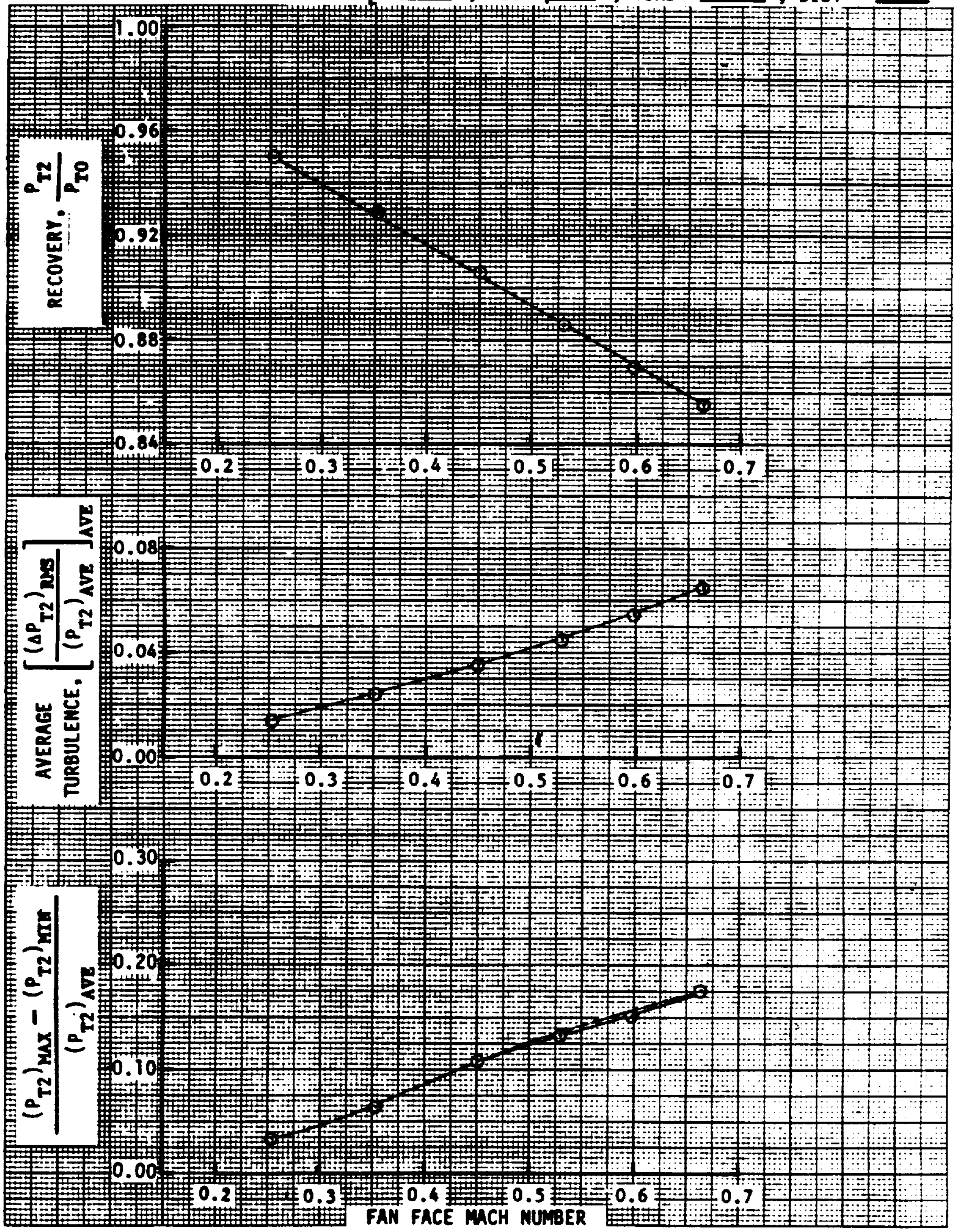
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 787-792
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .921 ; TURB= .039 ; DIST= .107



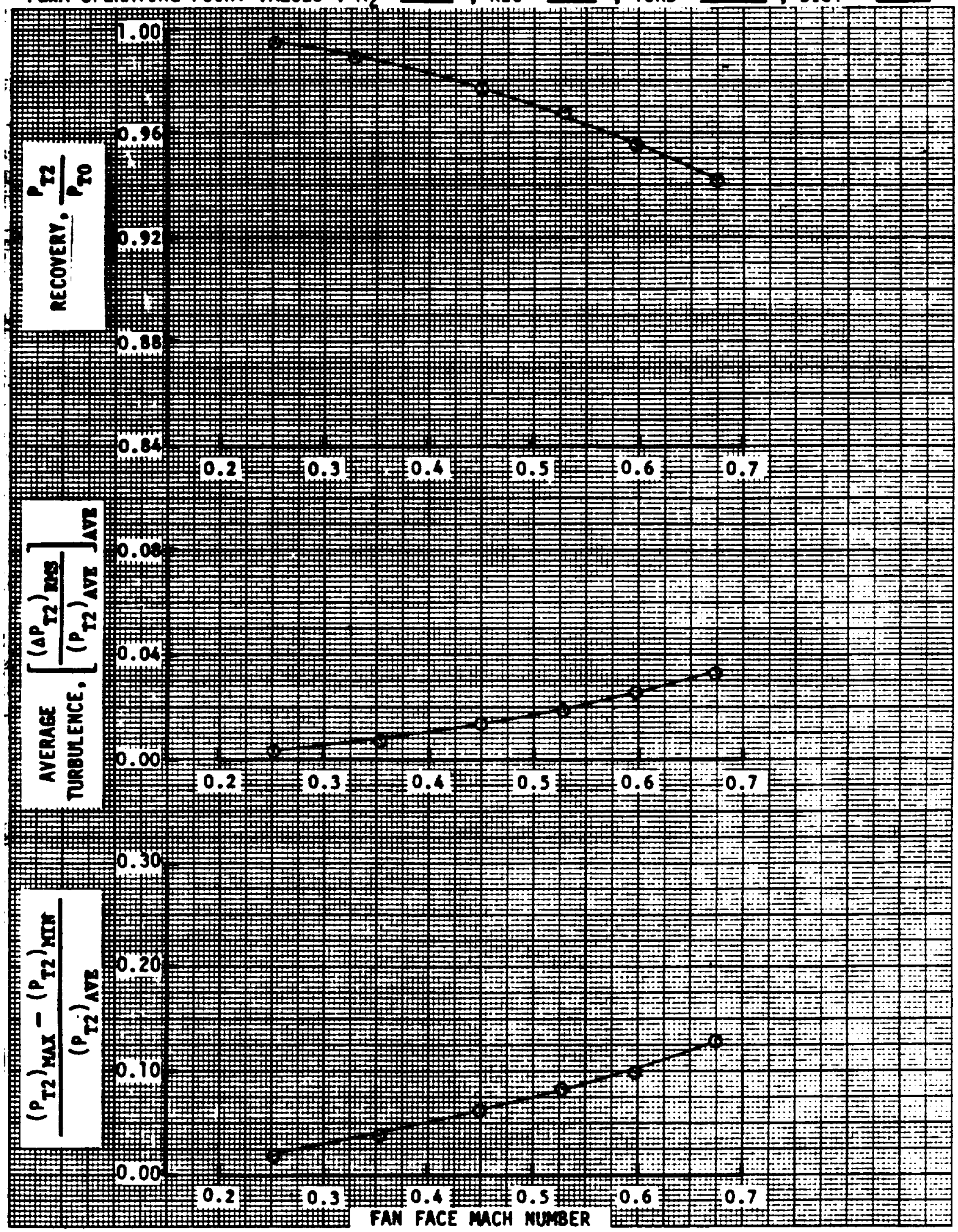
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 793-798
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .904 ; TURB= .042 ; DIST= .123



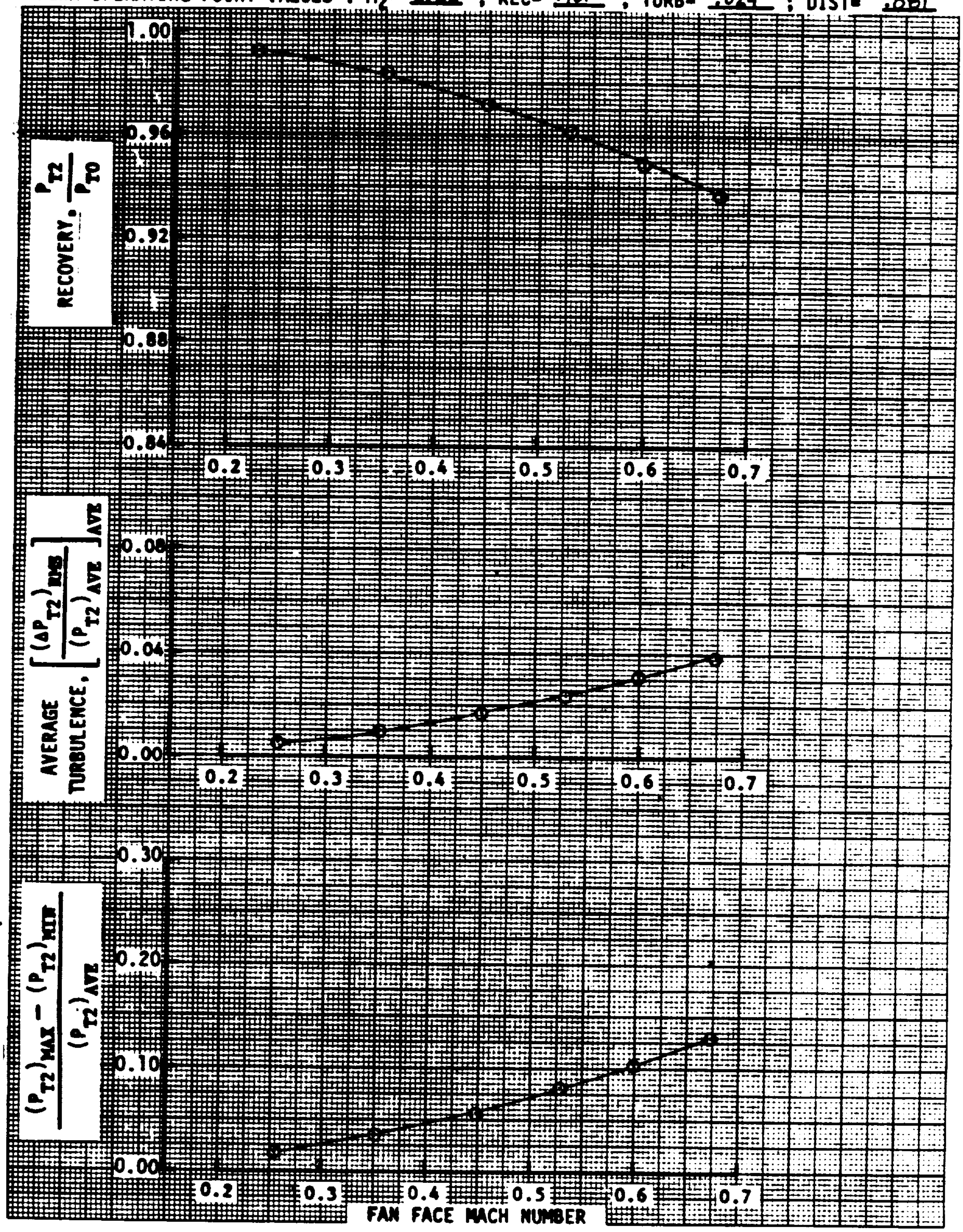
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 799-804
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .886 ; TURB= .046 ; DIST= .133



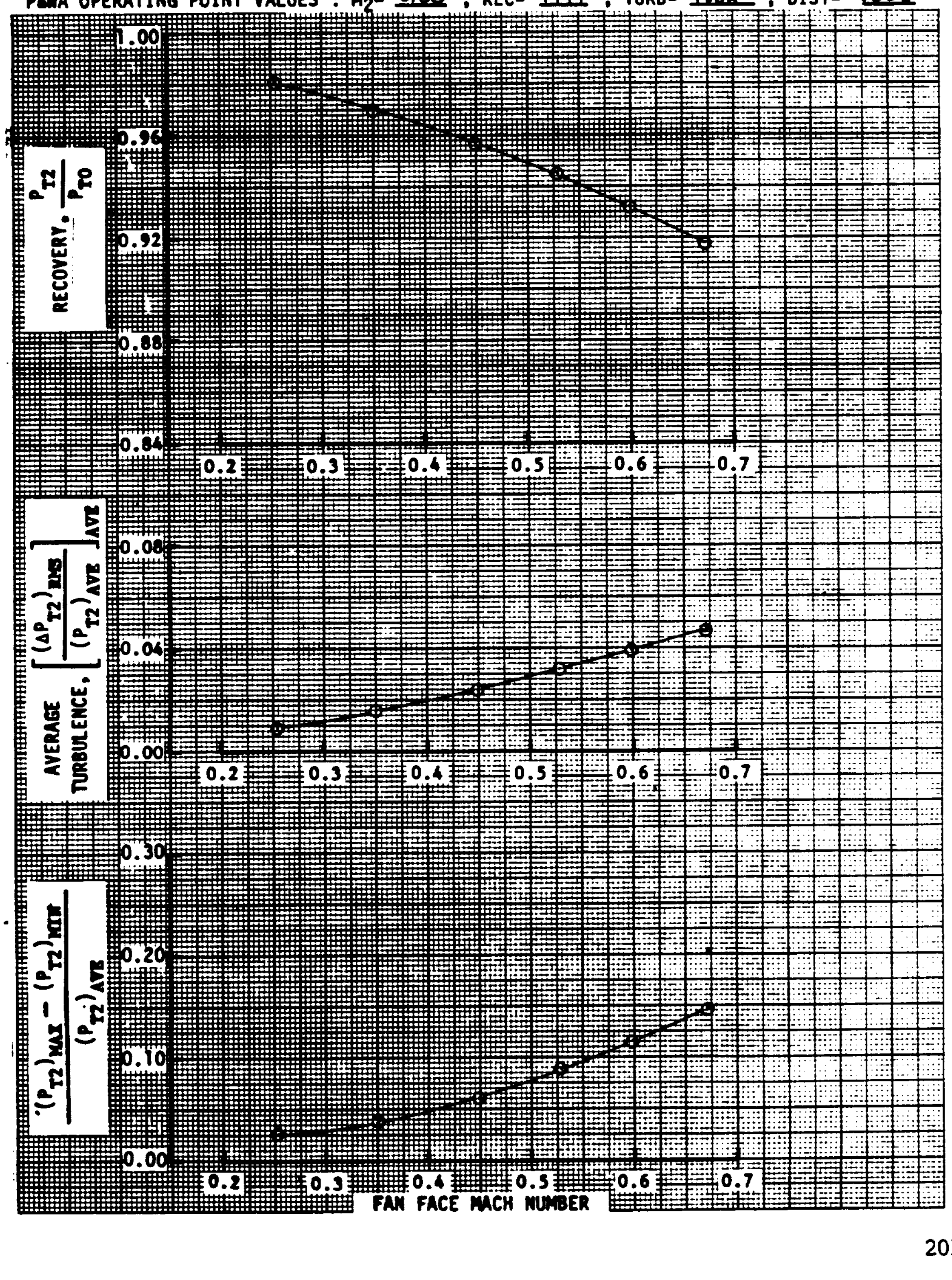
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 805-810
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .019 ; DIST= .083



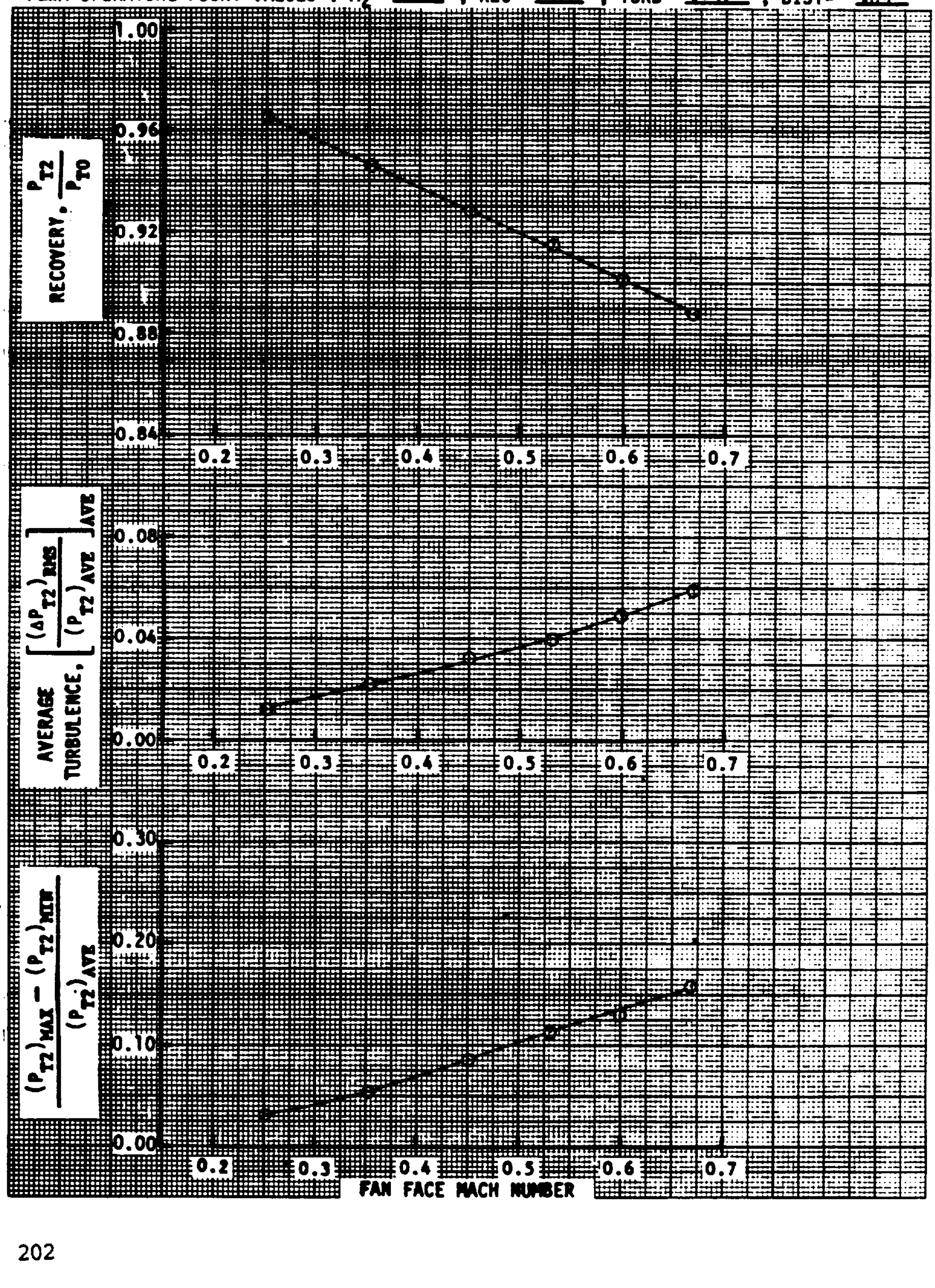
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 811-816
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .024 ; DIST= .081



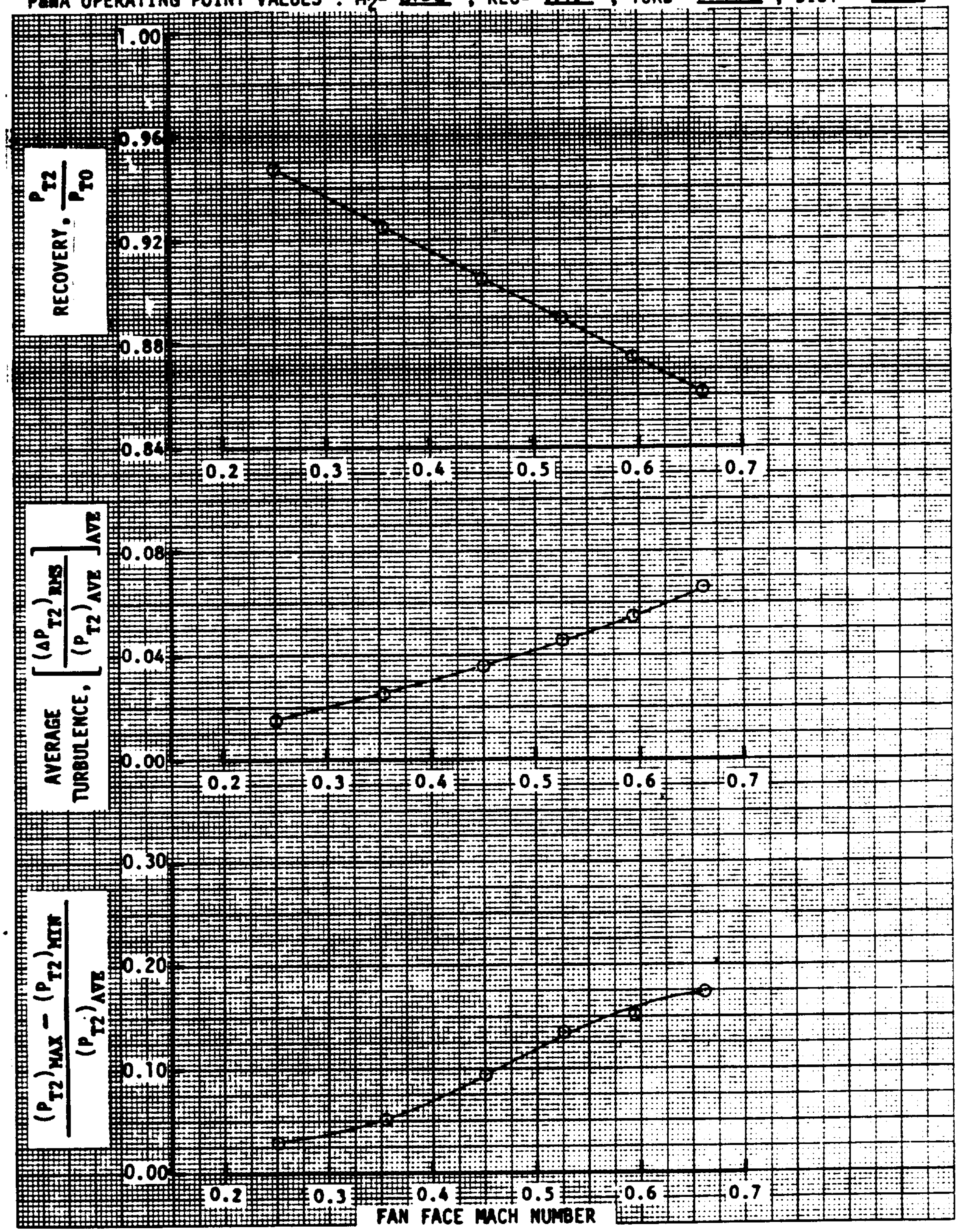
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 817- 822
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .032 ; DIST= .088



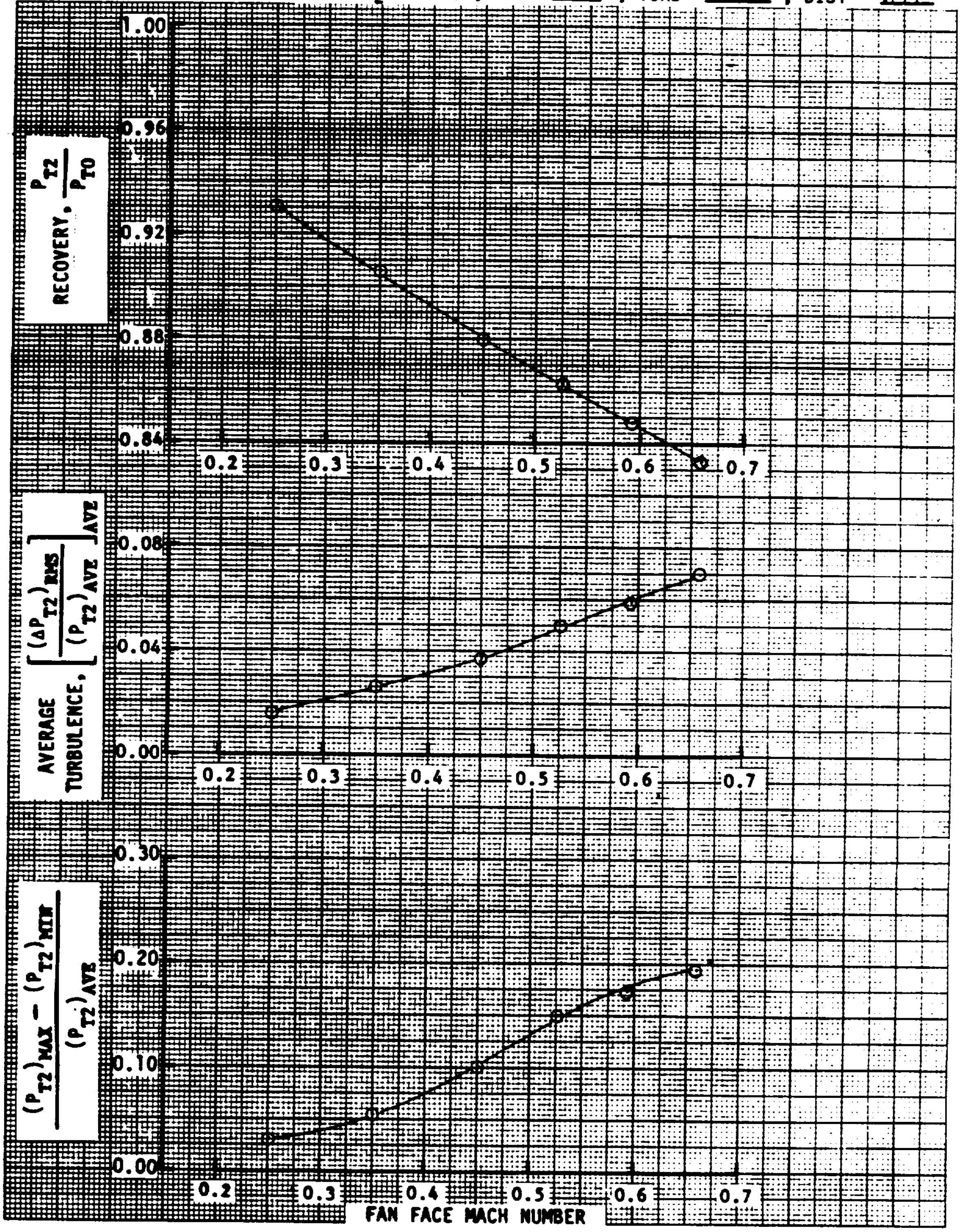
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 824-829
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .53 ; REC= .914 ; TURB= .040 ; DIST= .114



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 842-847
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .888 ; TURB= .046 ; DIST= .134



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 5 ; READING NUMBERS 836-841
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .861 ; TURB= .050 ; DIST= .149



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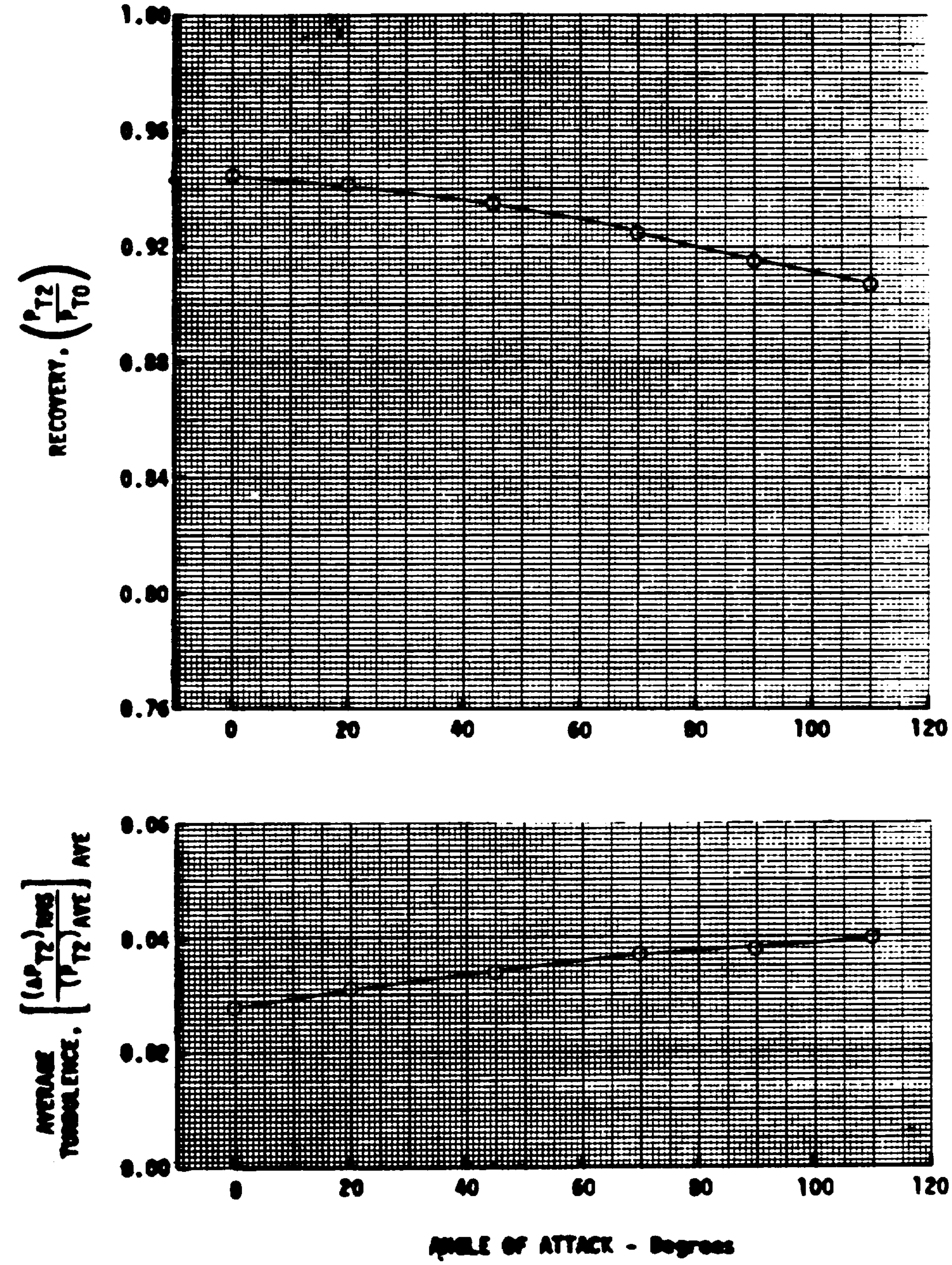
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 5 ; DESCRIPTION Left Auxiliary Inlet Open - Port



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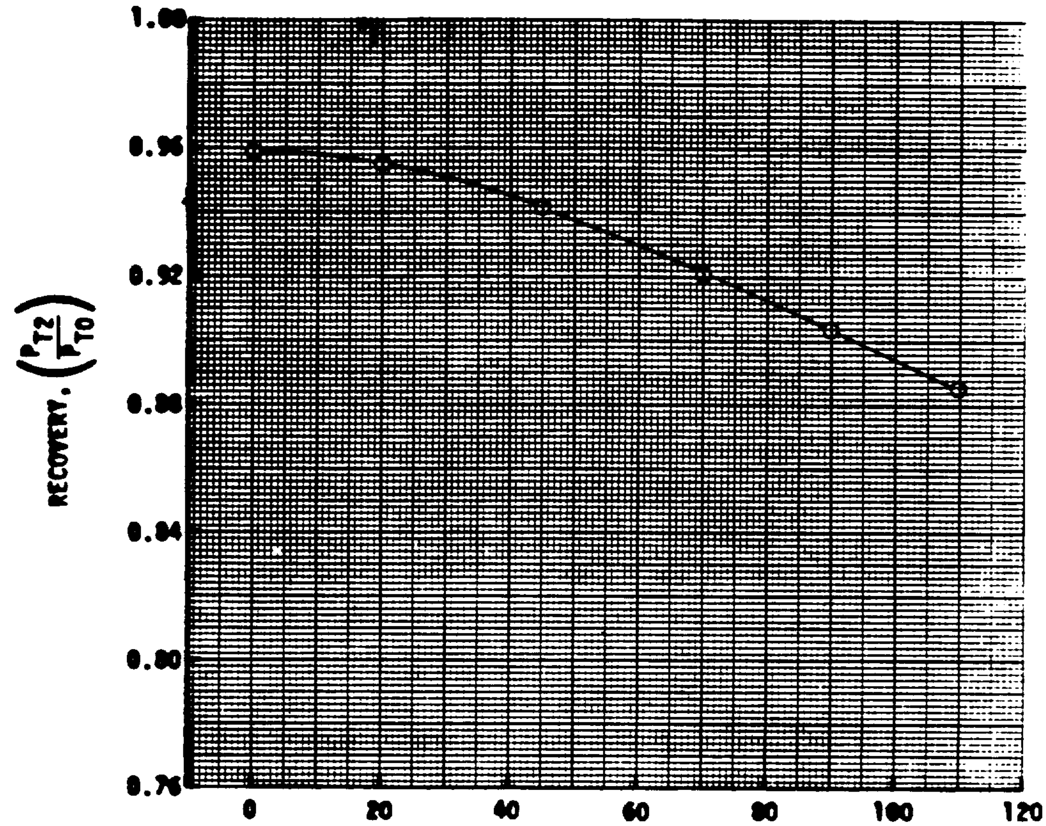
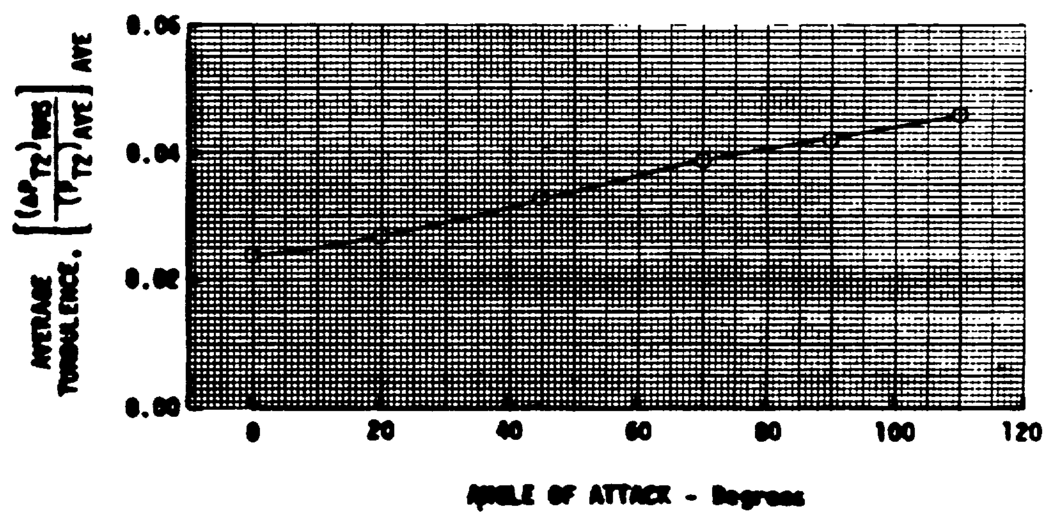
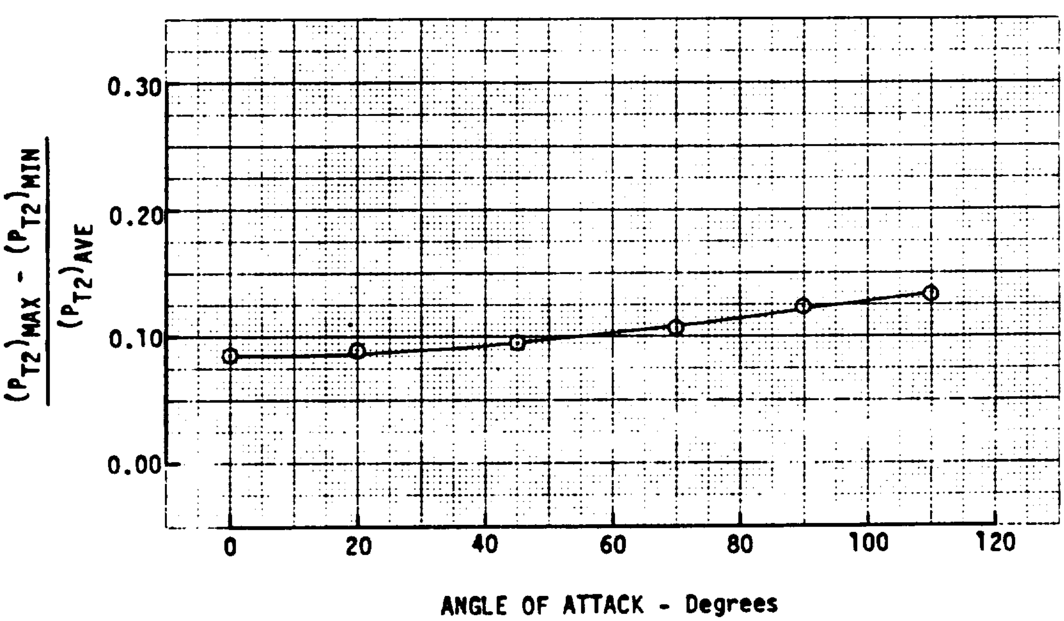
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
FOR F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 5 **; DESCRIPTION** Left Auxiliary Inlet Open - Part





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 5 ; DESCRIPTION Left Aux Open - Port



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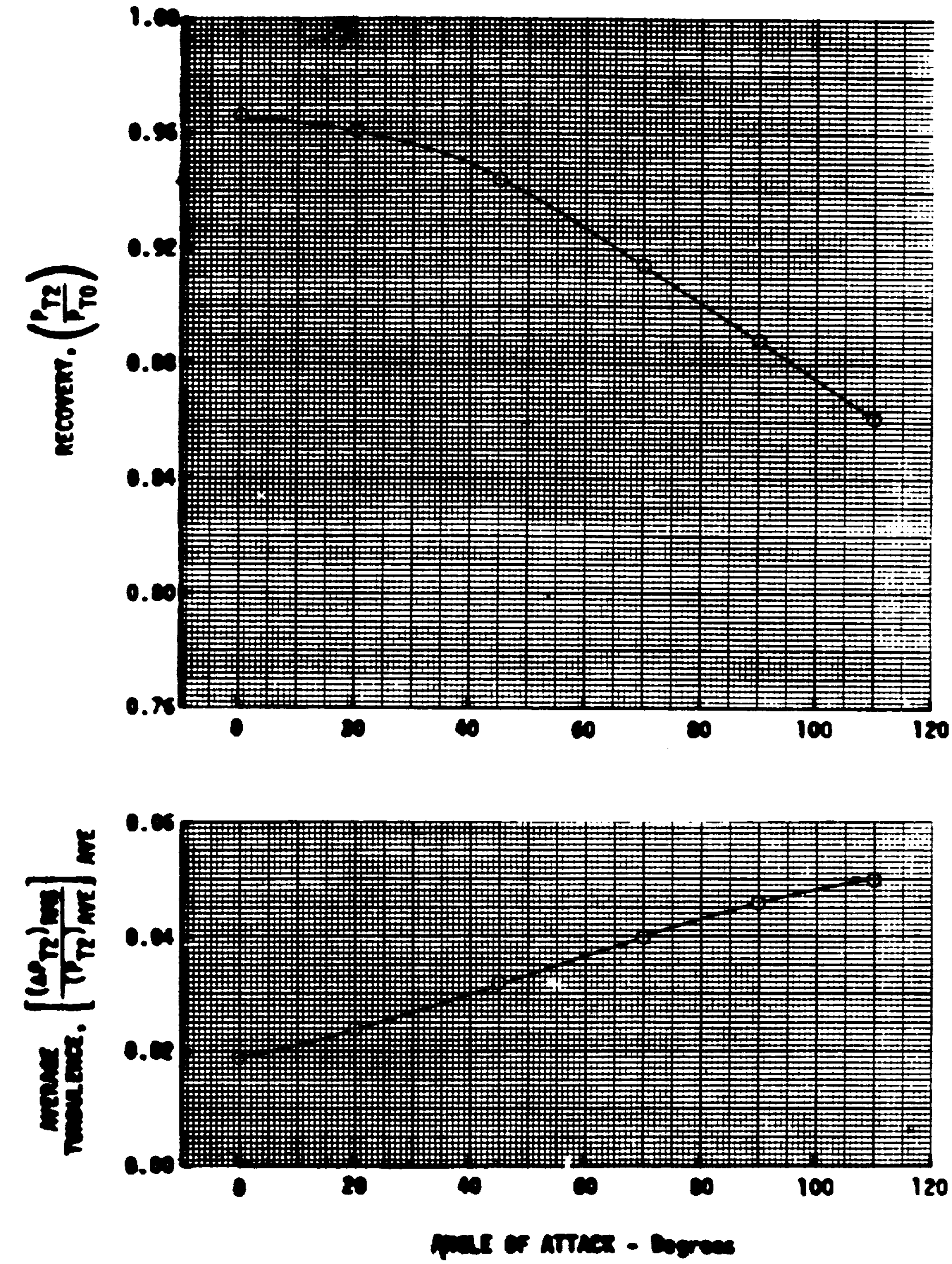
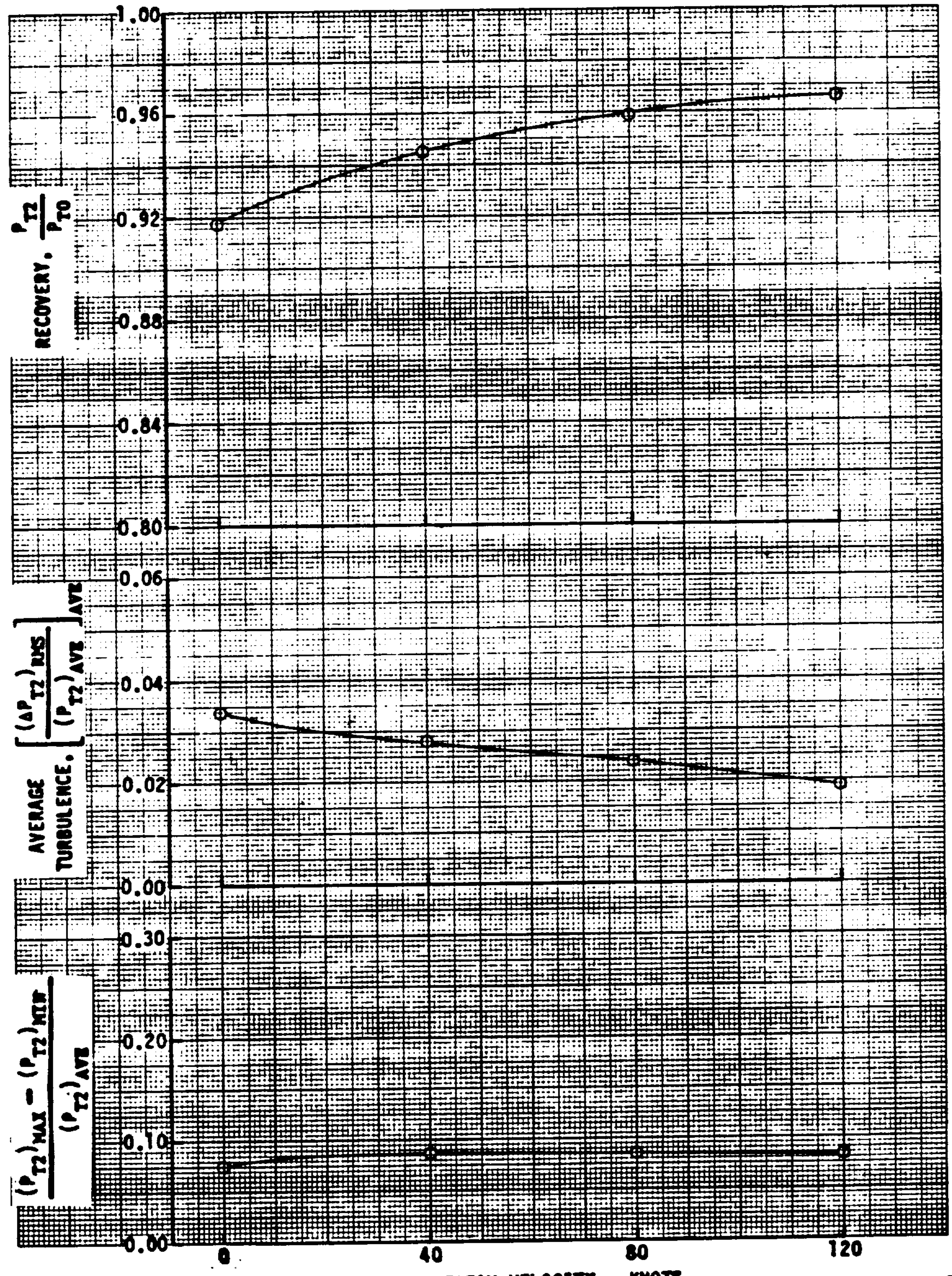
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
FROM F-[illegible] MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 5 ; DESCRIPTION Left Auxiliary Inlet Open - Port



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 5 ; DESCRIPTION LEFT AUXILIARY INLET OPEN - PORT



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

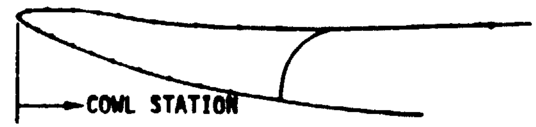
CONFIGURATION: 5; Left Aux Open-Por Port

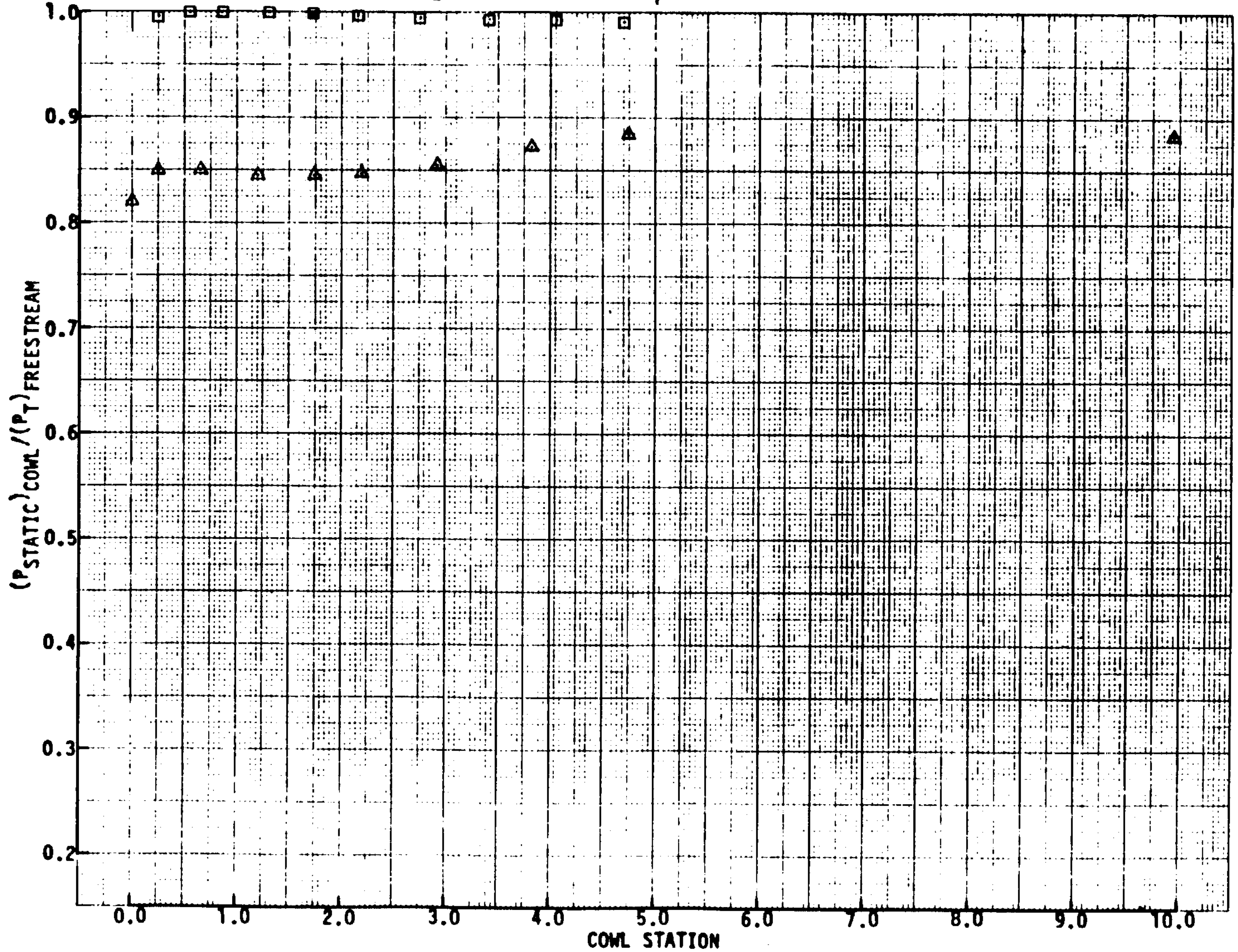
FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 0 degrees

ENGINE FACE MACH NUMBER = .531

□ EXTERNAL △ INTERNAL





COWL LIP STATIC PRESSURE PROFILES ; COWL L   STATIC PRESSURE RATIO VS. COWL LIP STATION

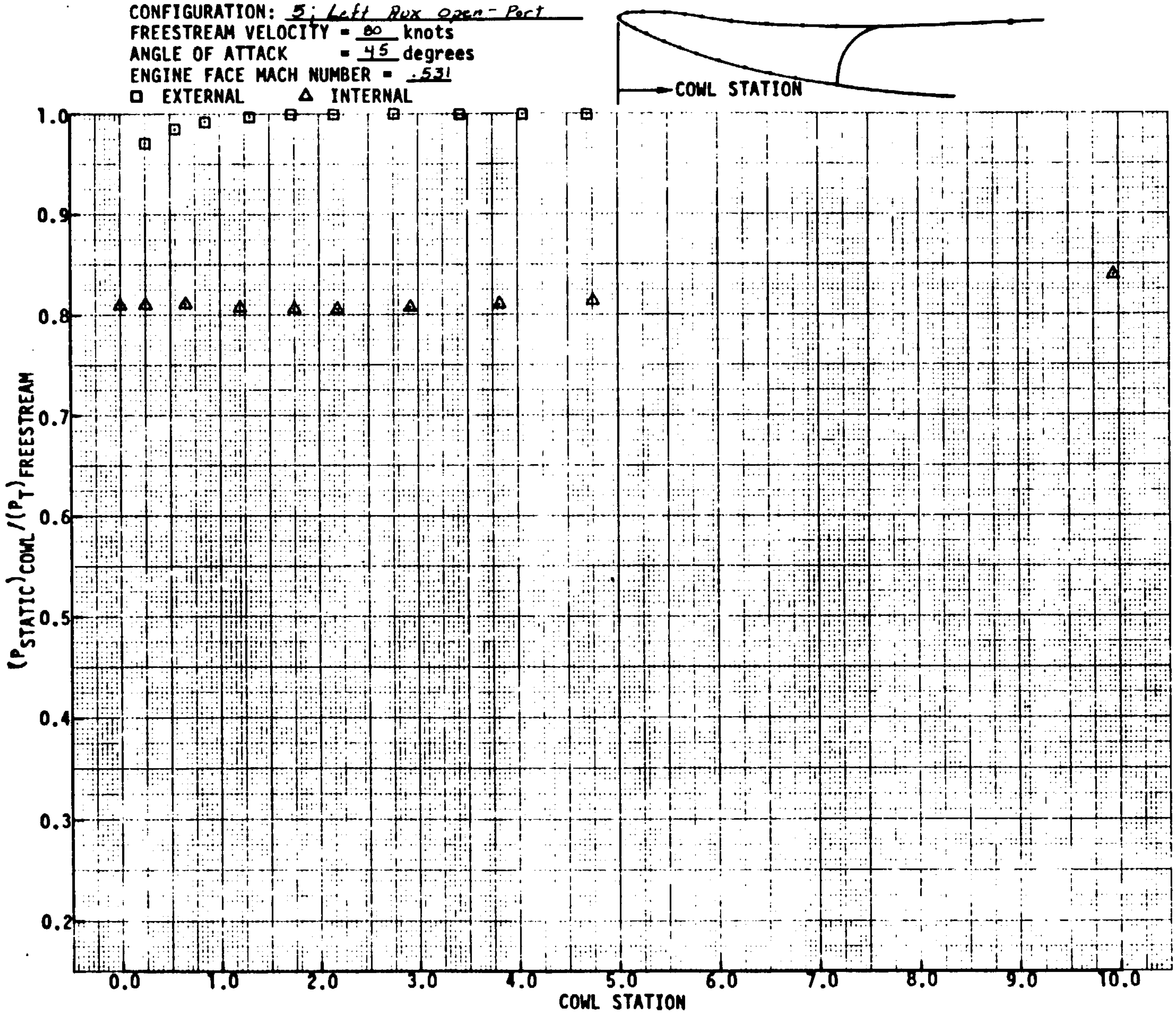
CONFIGURATION: 5; Left Aux open - Port

FREESTREAM VELOCITY = 80 knots

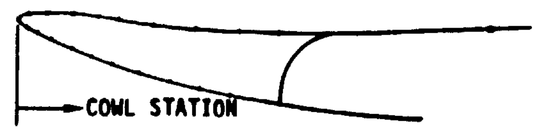
ANGLE OF ATTACK = 45 degrees

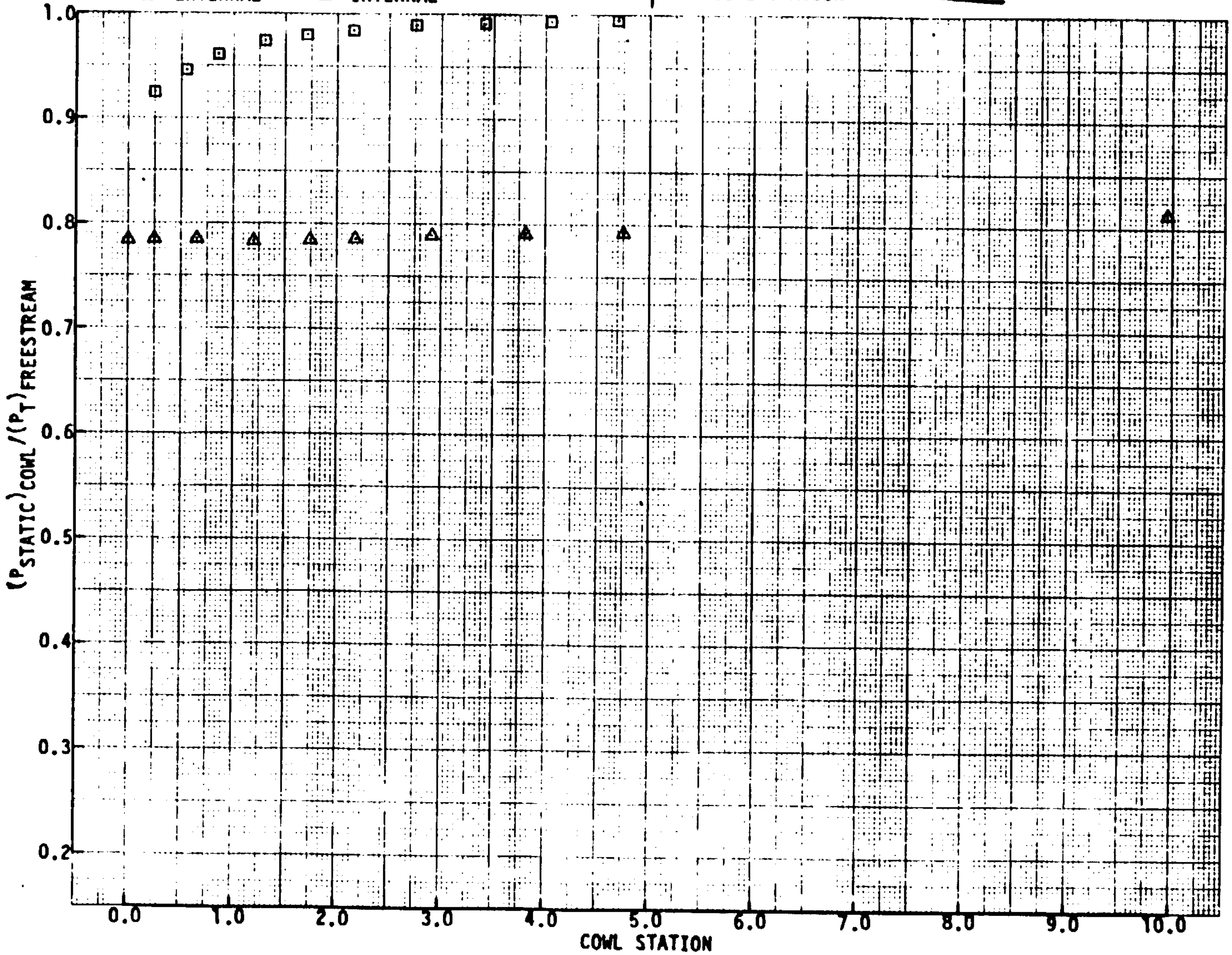
ENGINE FACE MACH NUMBER = .531

□ EXTERNAL   △ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LI. :ATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 5, Left Aux Open - Port
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
ENGINE FACE MACH NUMBER = .530
□ EXTERNAL △ INTERNAL

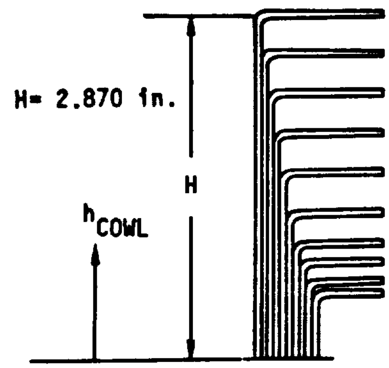


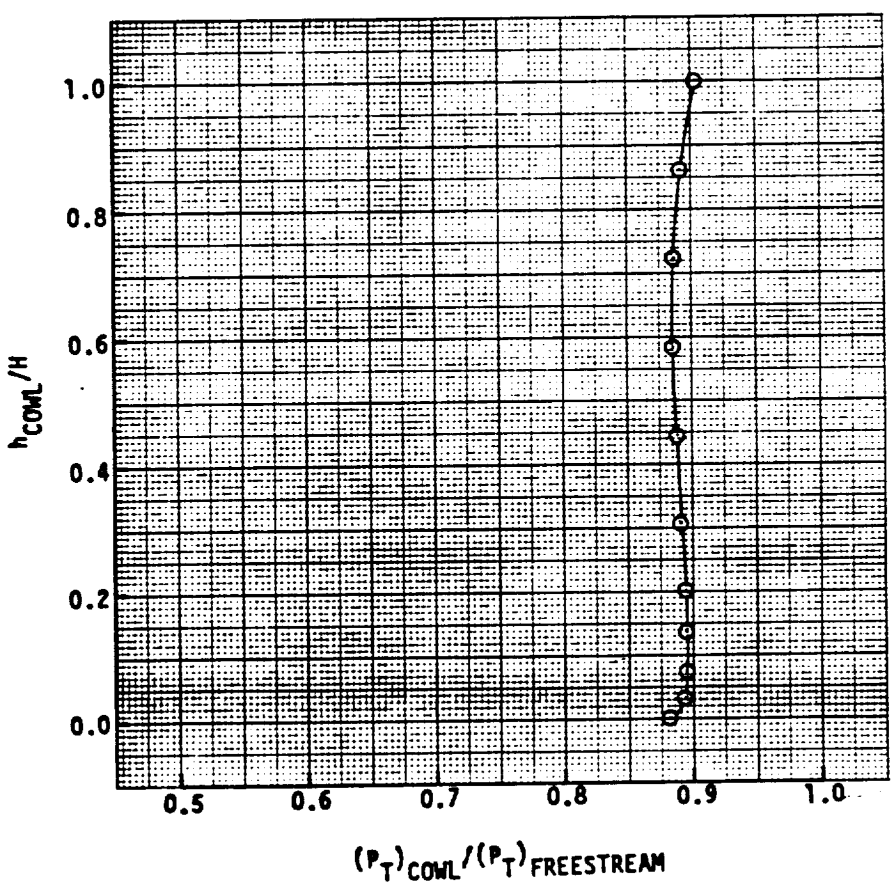


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 5 ; DESCRIPTION LEFT AUXILIARY INLET OPEN - PORT

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

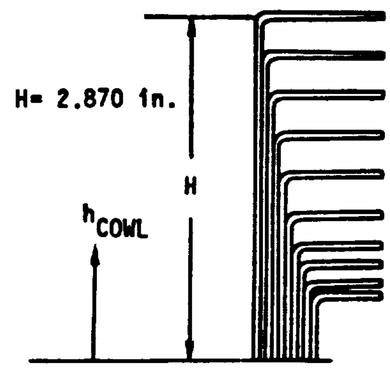


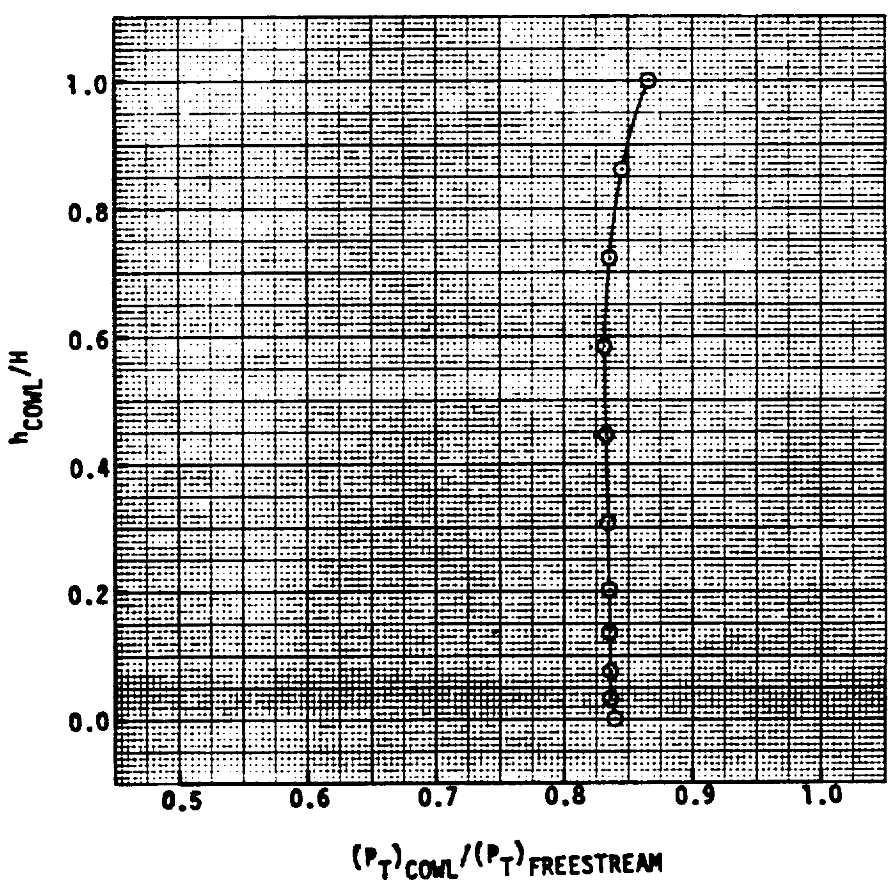


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 5 ; DESCRIPTION LEFT AUXILIARY INLET OPEN - PORT

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

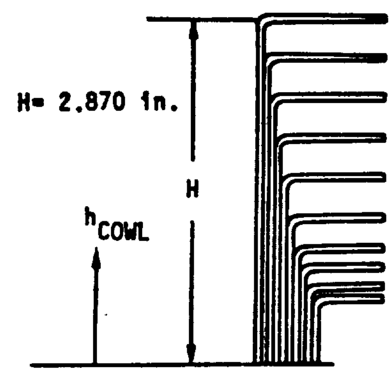


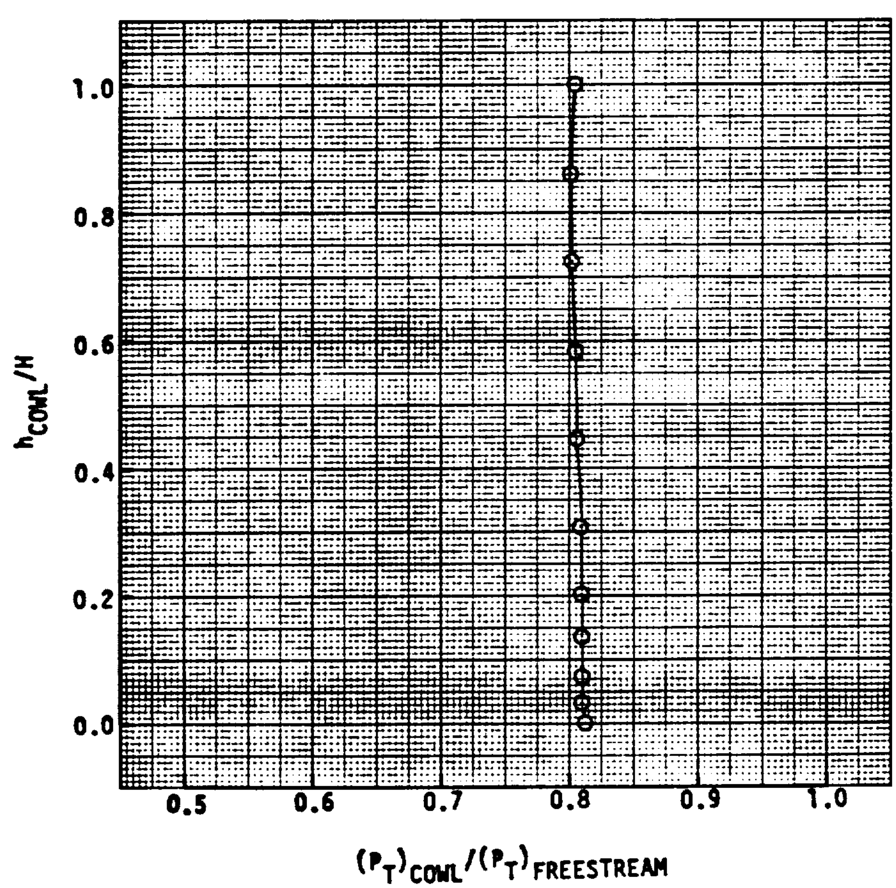


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 5 ; DESCRIPTION Left Auxiliary Inlet Open - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530





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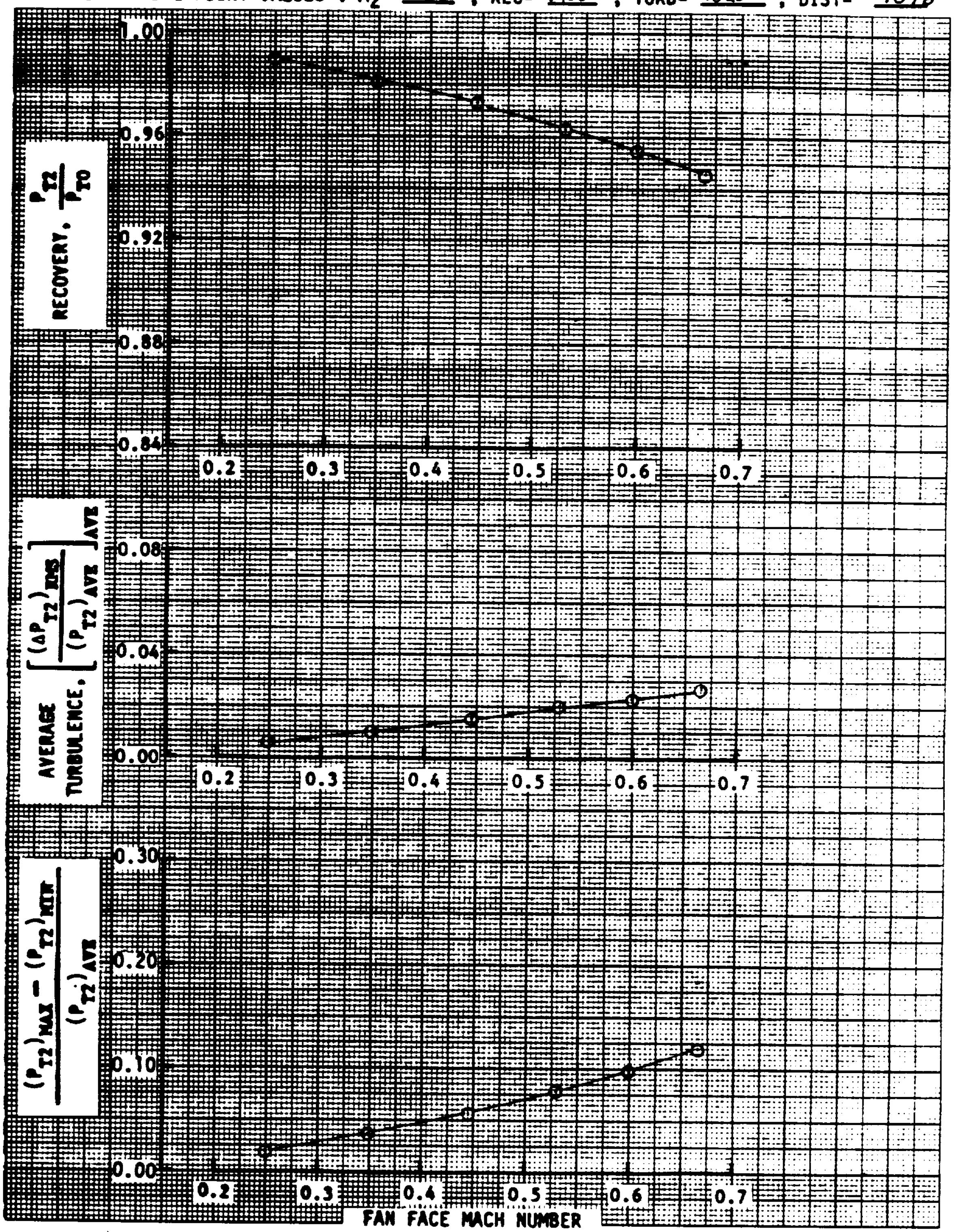
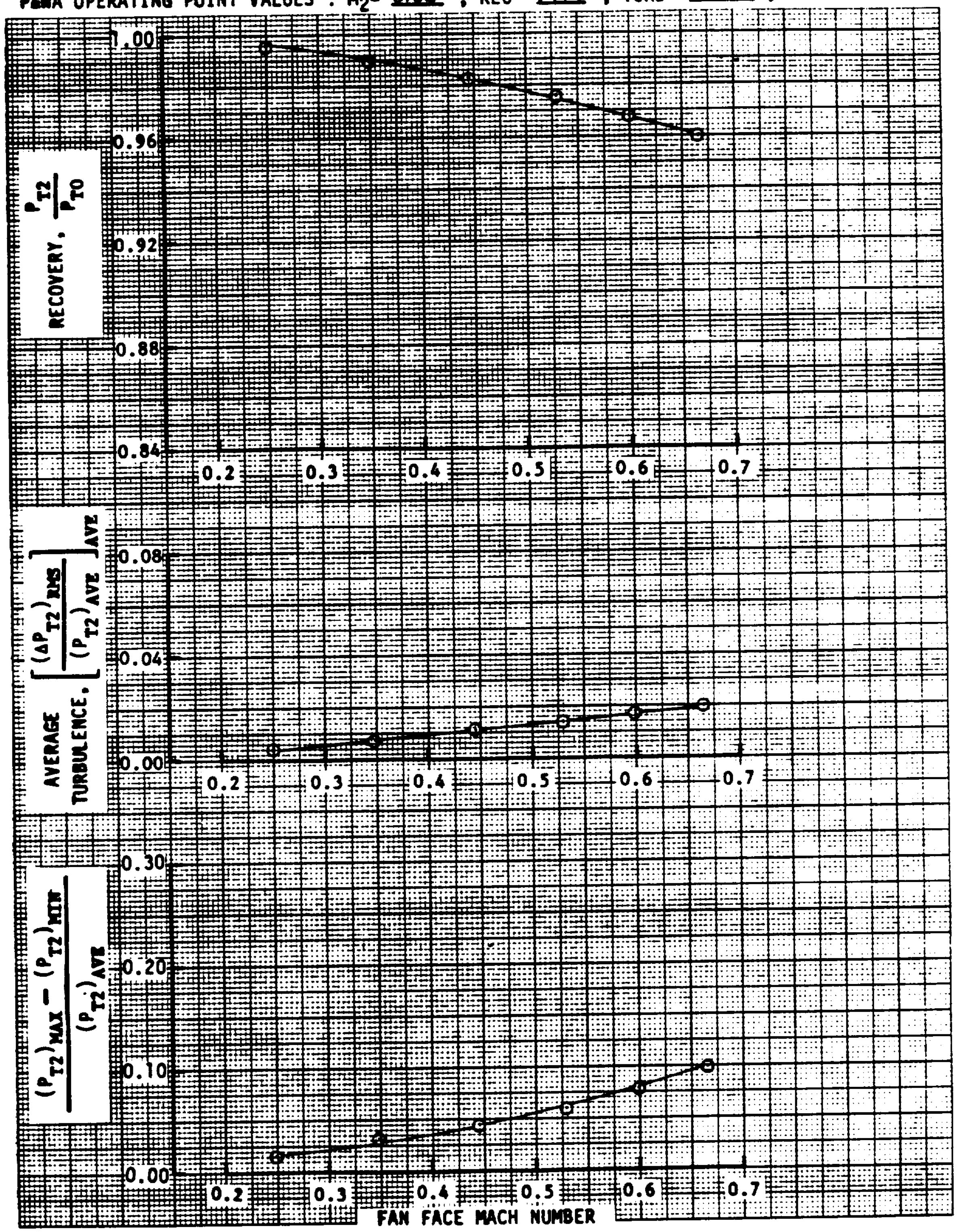
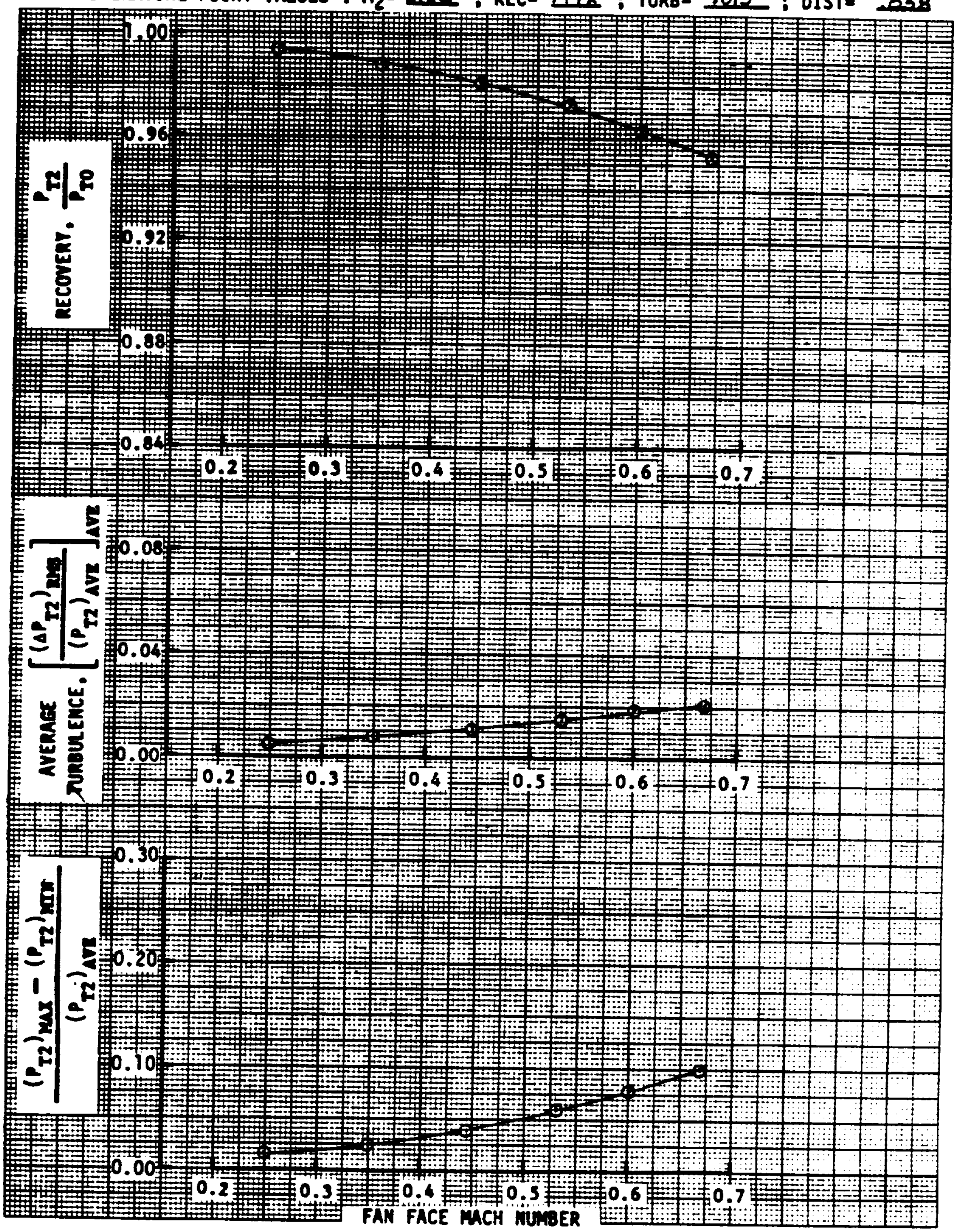
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 1984-1989
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .963 ; TURB= .020 ; DIST= .078



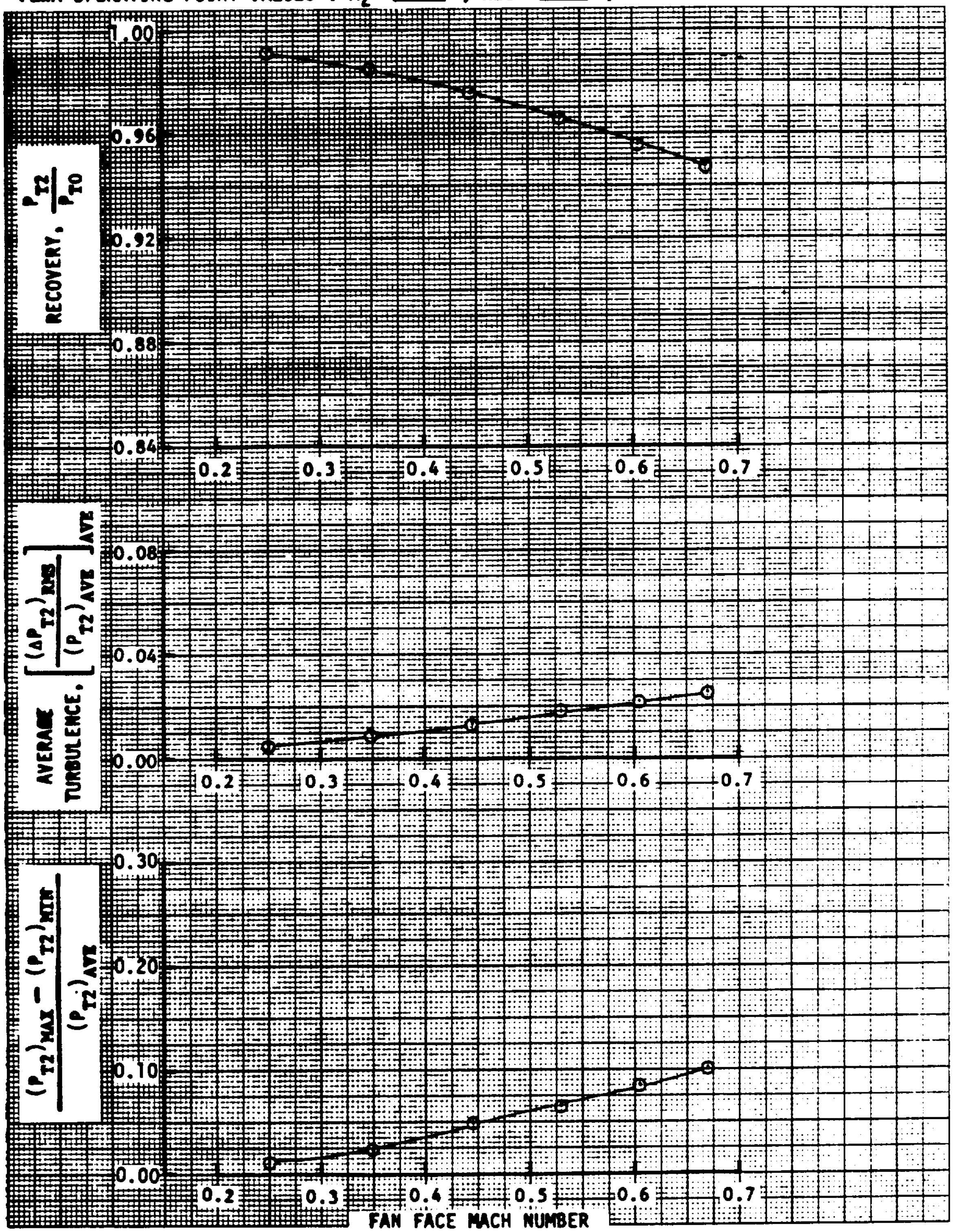
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 1990-1995
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .974 ; TURB= .014 ; DIST= .063



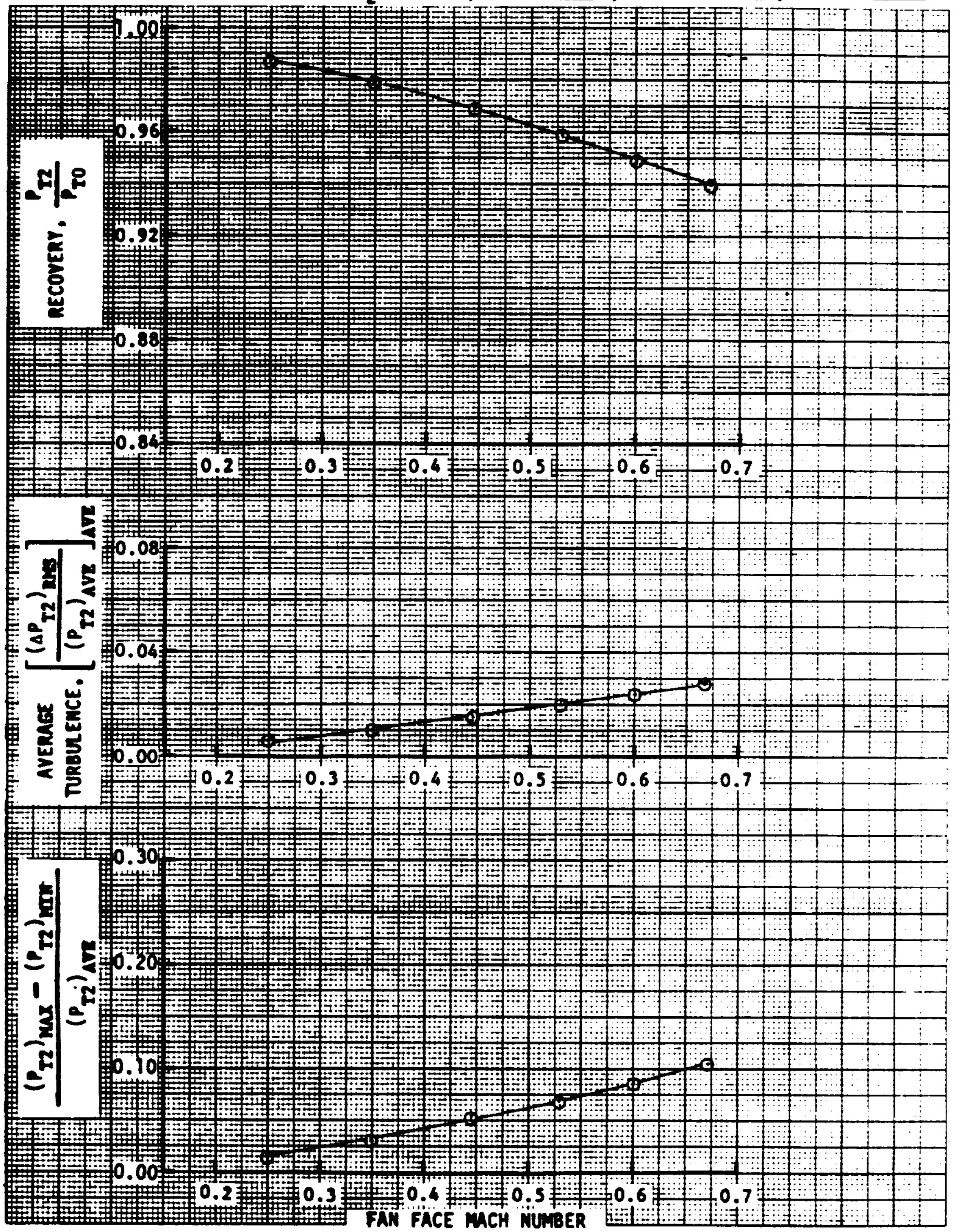
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 1996-2001
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .972 ; TURB= .015 ; DIST= .058



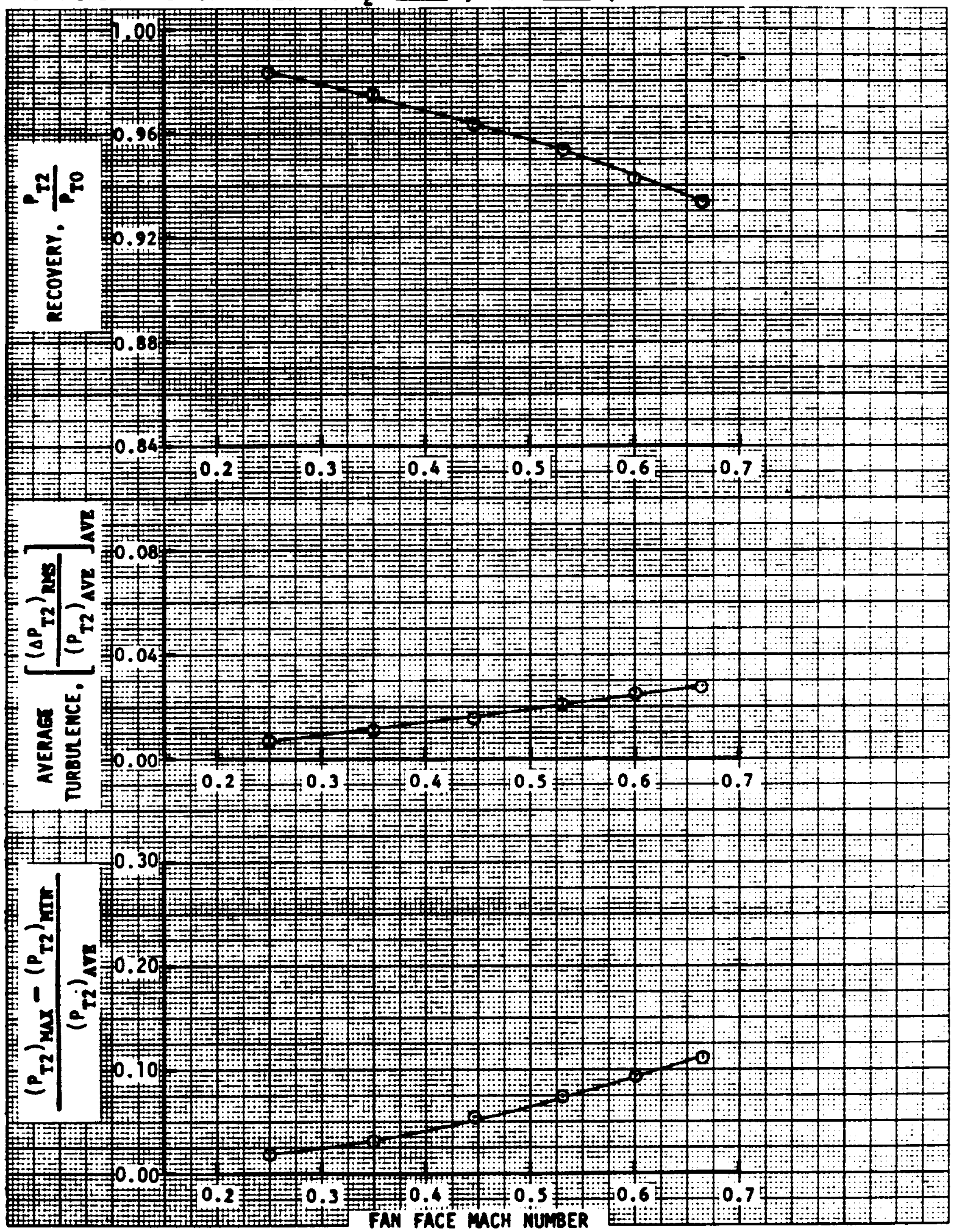
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2002-2007
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .017 ; DIST= .067



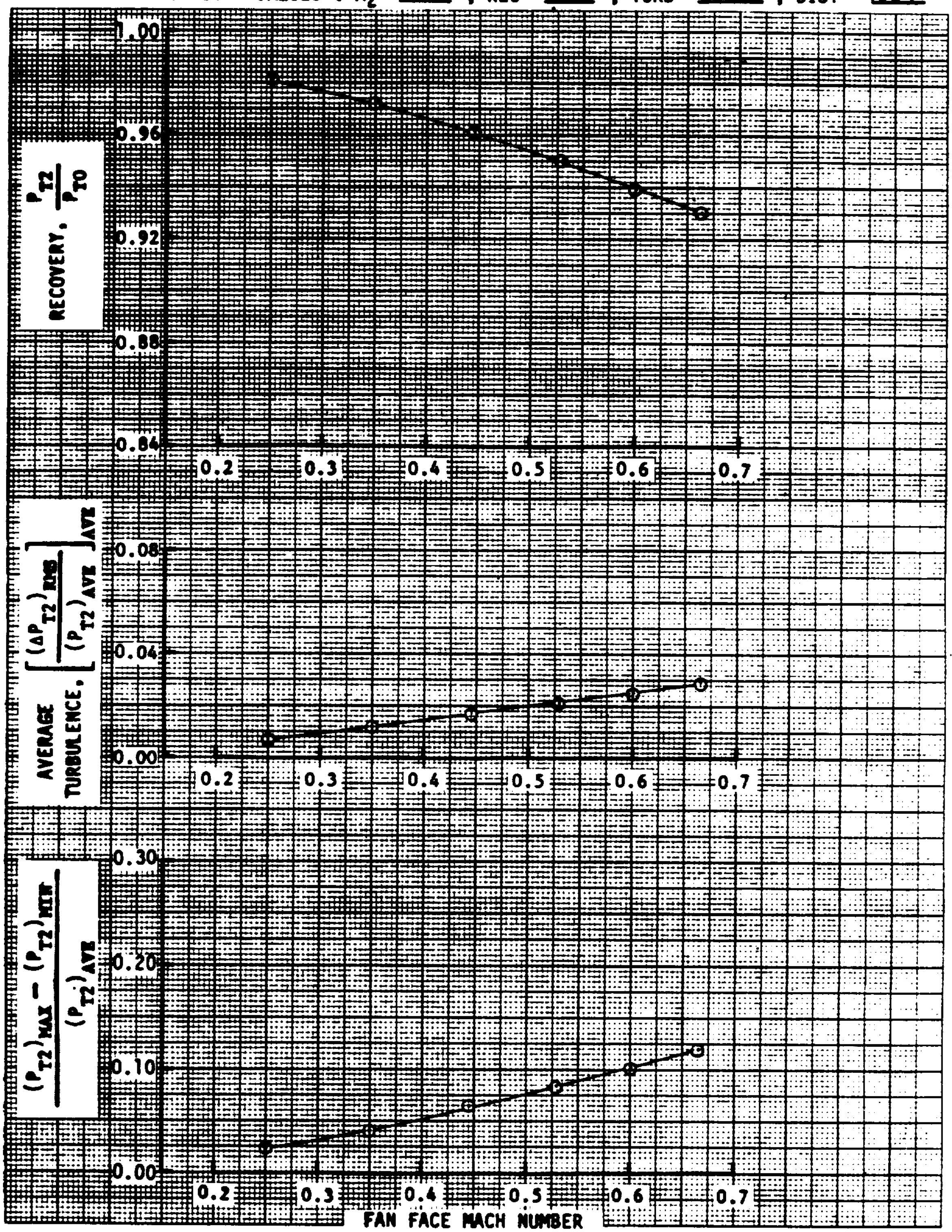
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2008 - 2013
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PNWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .020 ; DIST= .068



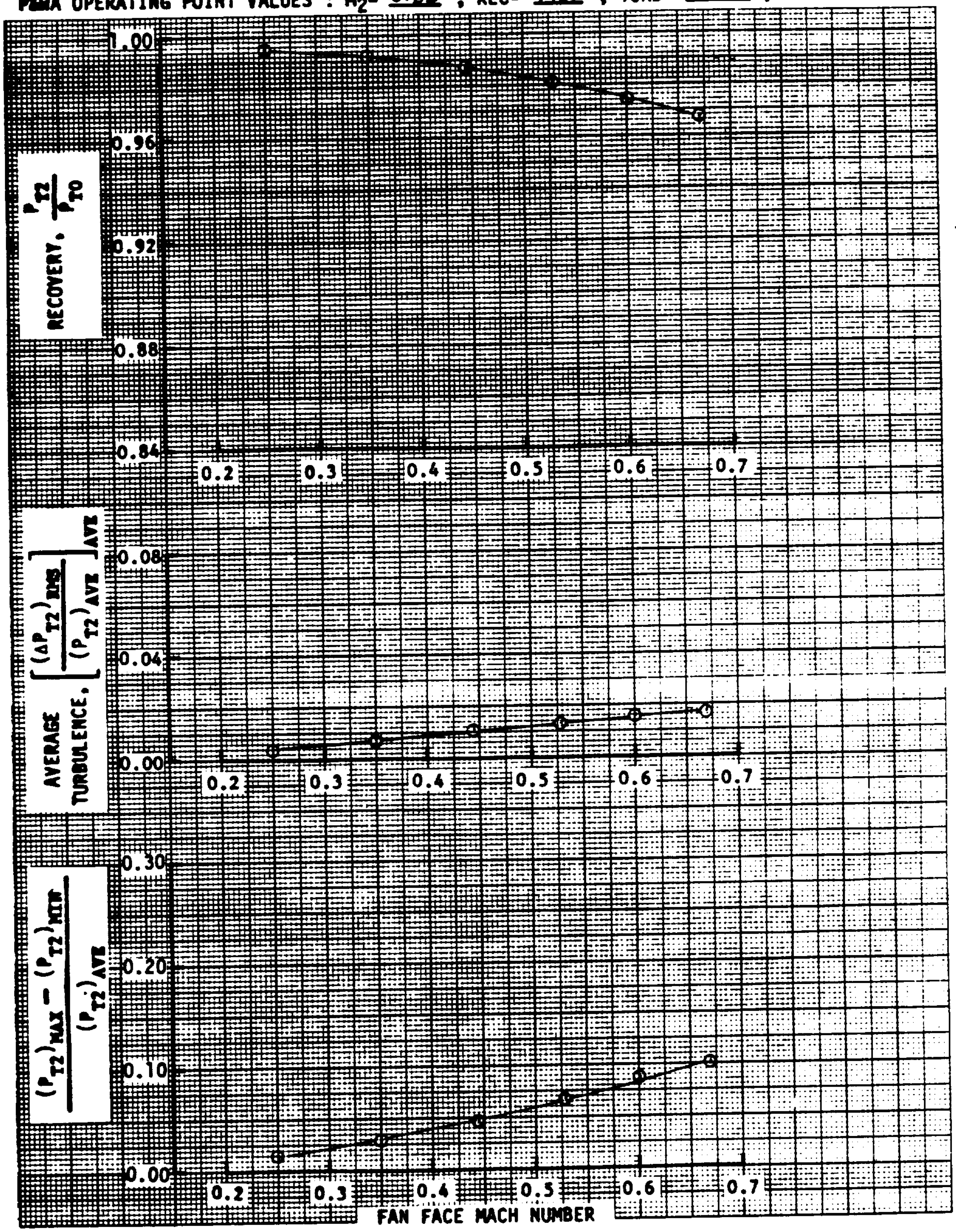
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2014-2019
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .021 ; DIST= .073



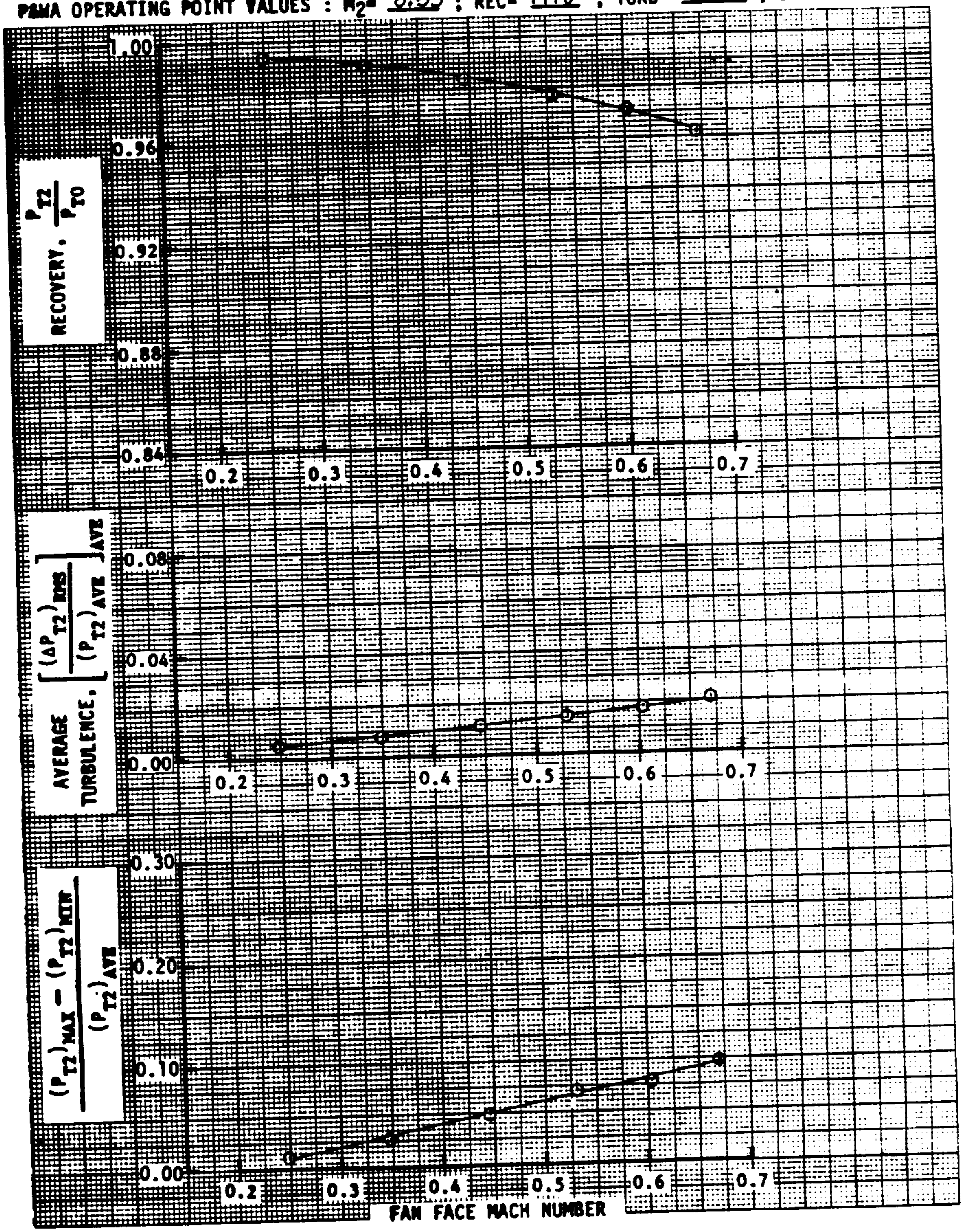
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2020 - 2025
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 40 deg. ; SIDESLIP ANGLE = 0 deg.
PGMA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .949 ; TURB= .022 ; DIST= .084



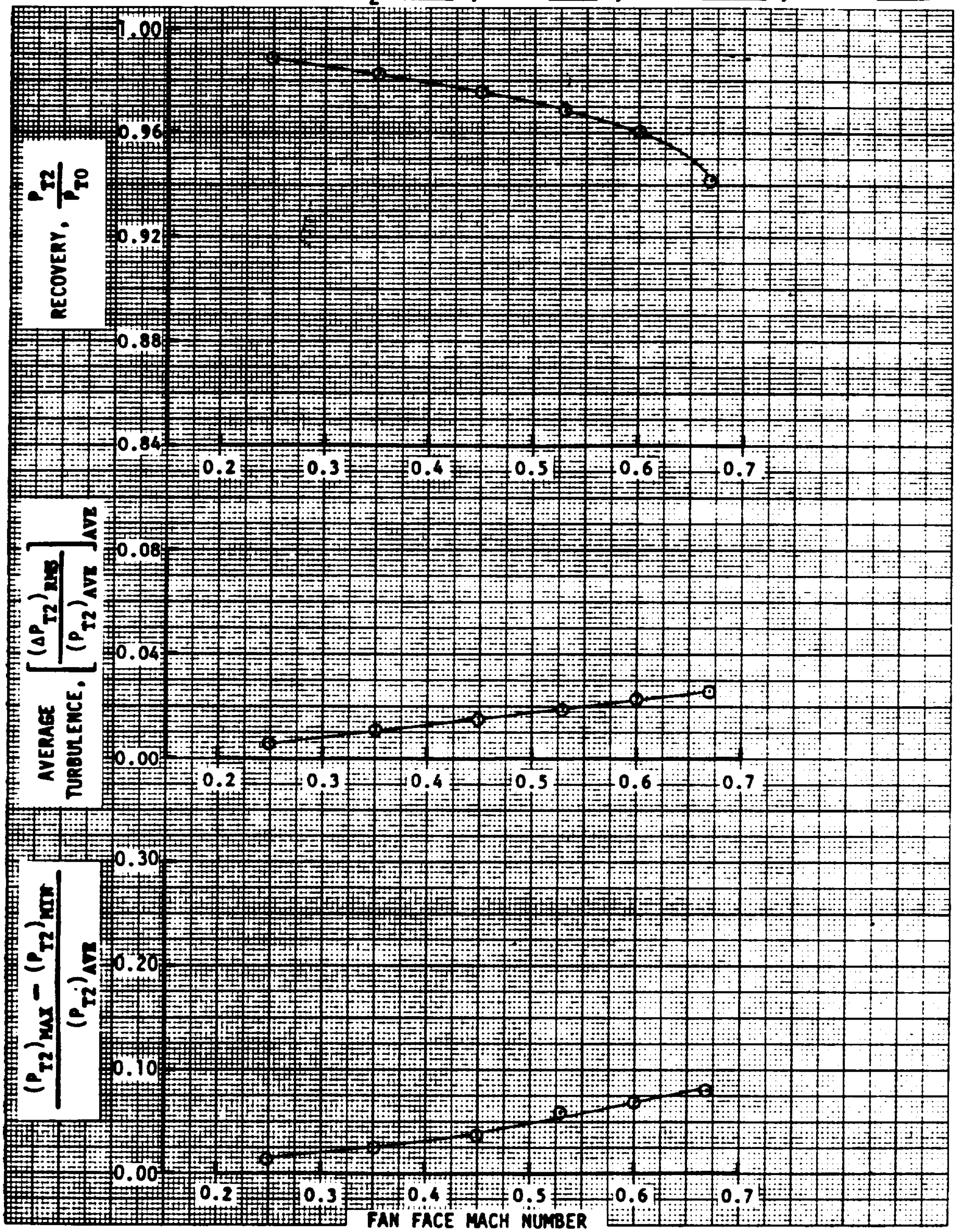
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2026-2031
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .013 ; DIST= .066



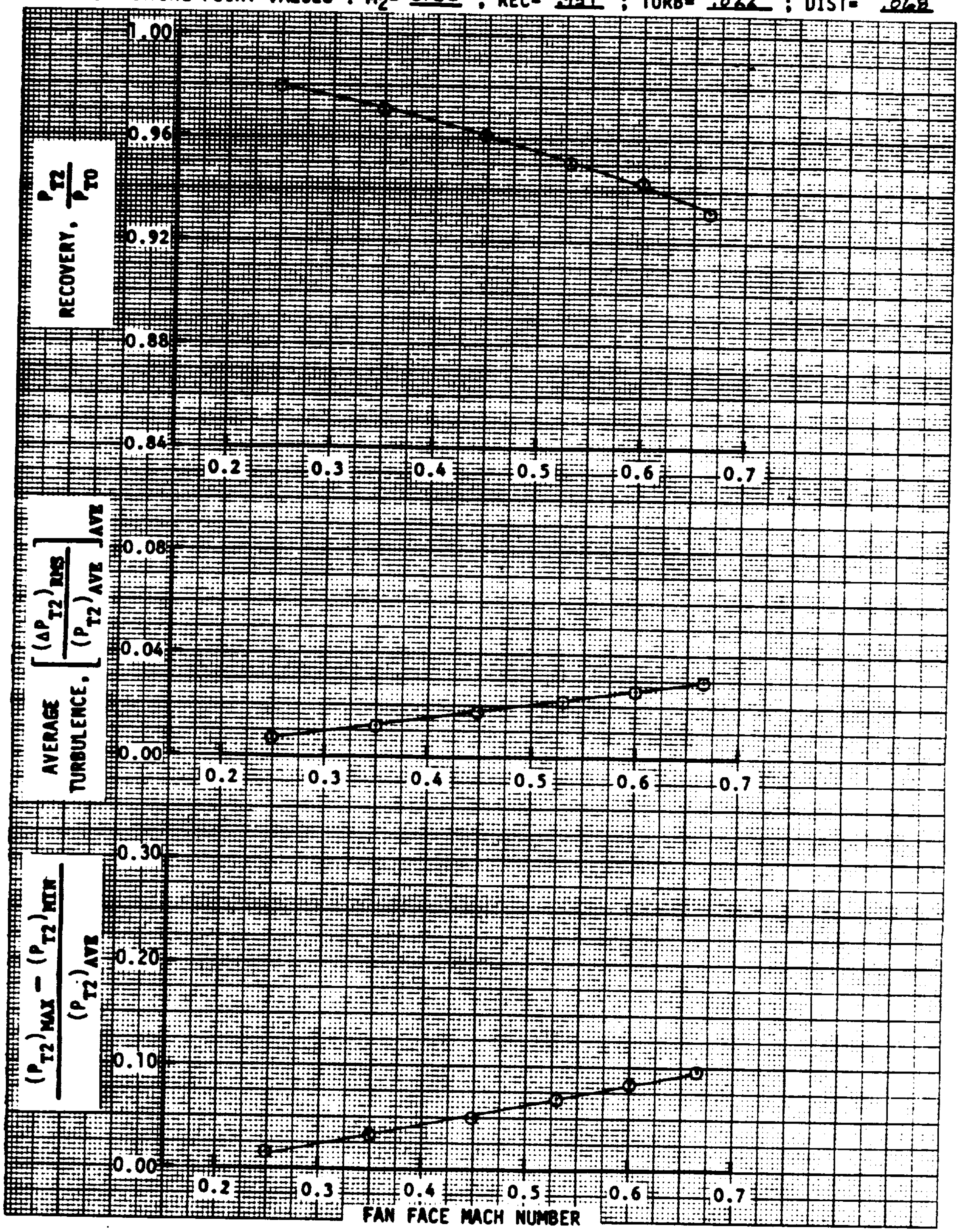
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2032-2037
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .015 ; DIST= .067



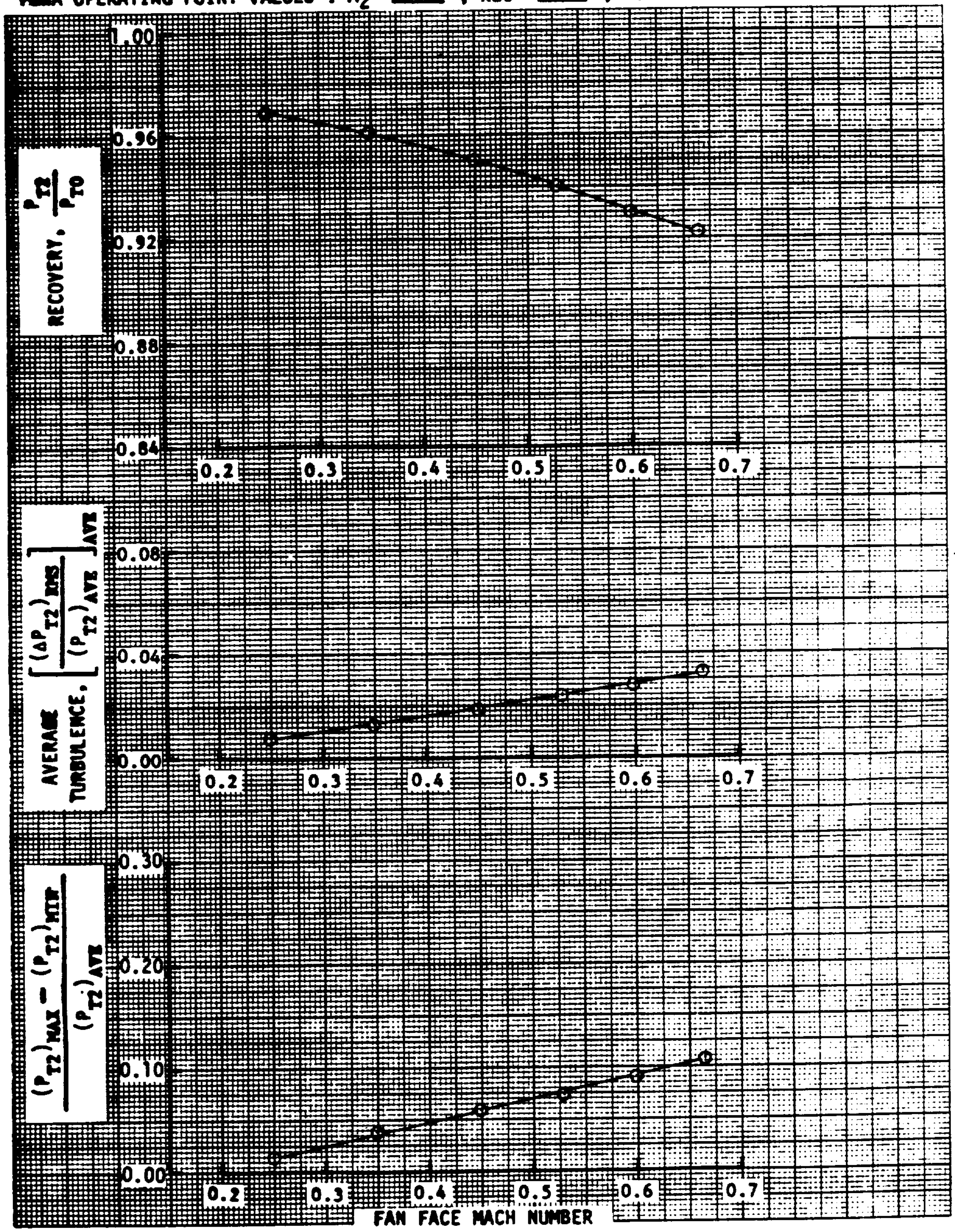
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2038-2043
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .969 ; TURB= .019 ; DIST= .054



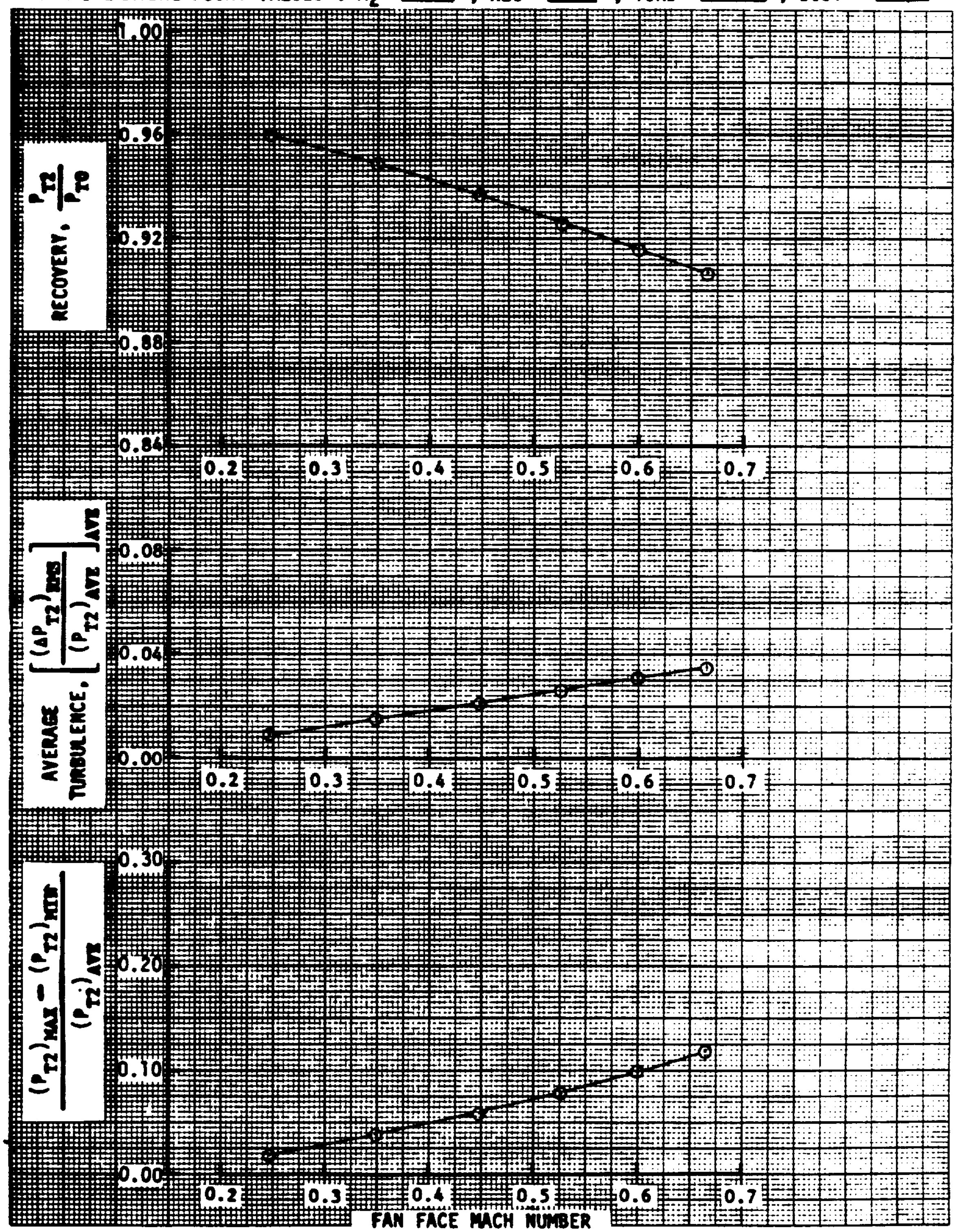
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2044- 2049
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .022 ; DIST= .068



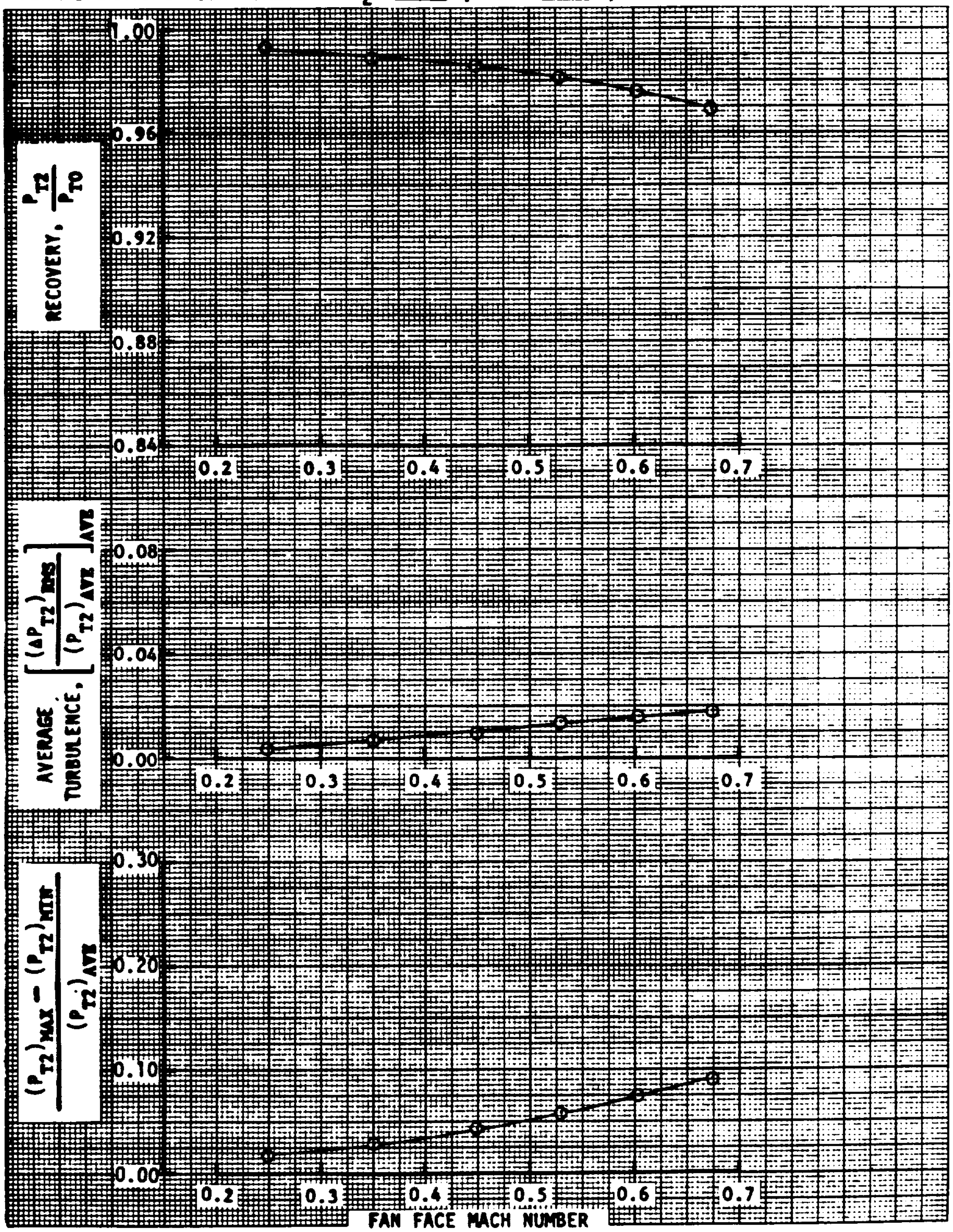
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2050-2055
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PDMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .940 ; TURB= .024 ; DIST= .076



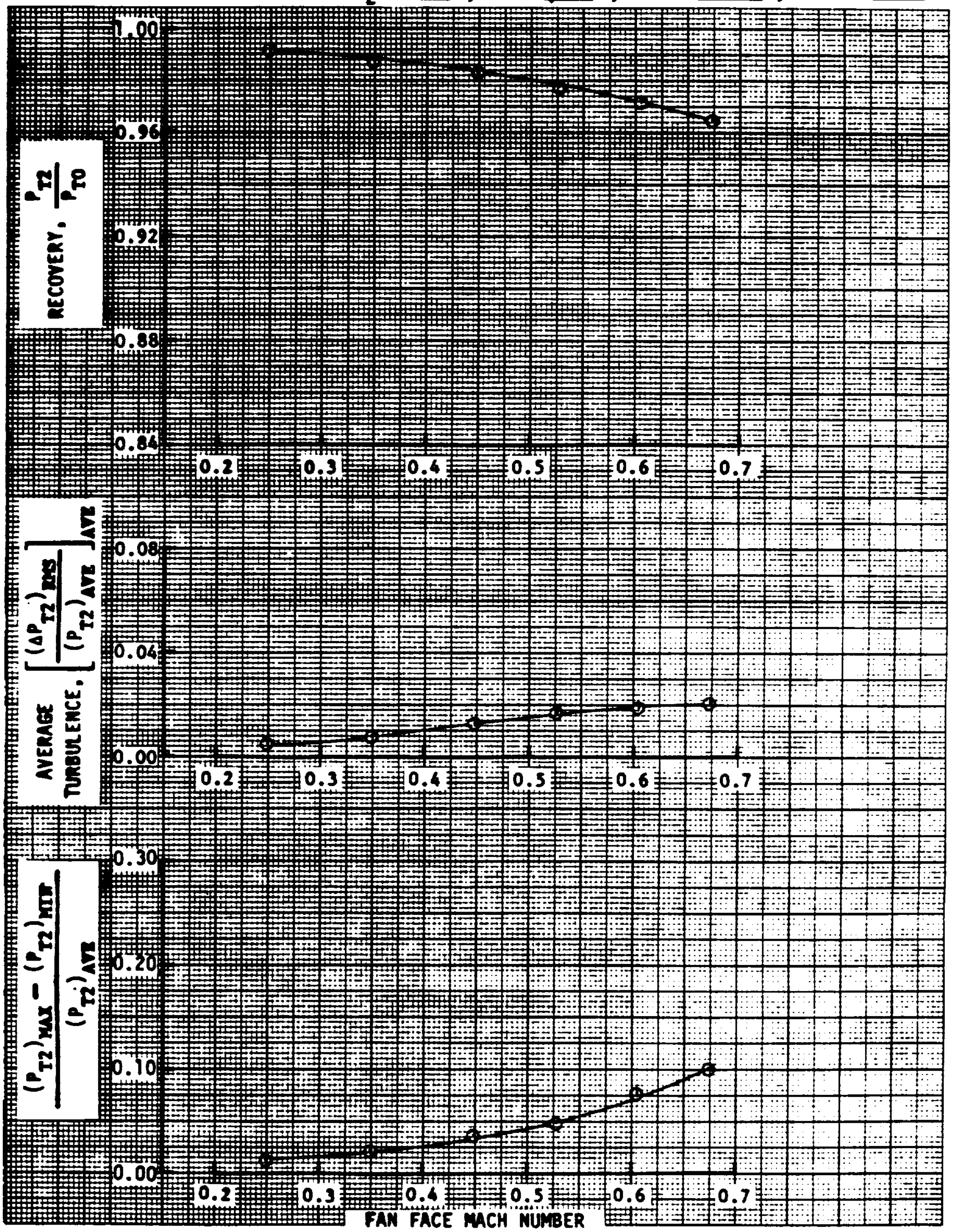
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2056-2061
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .026 ; DIST= .079



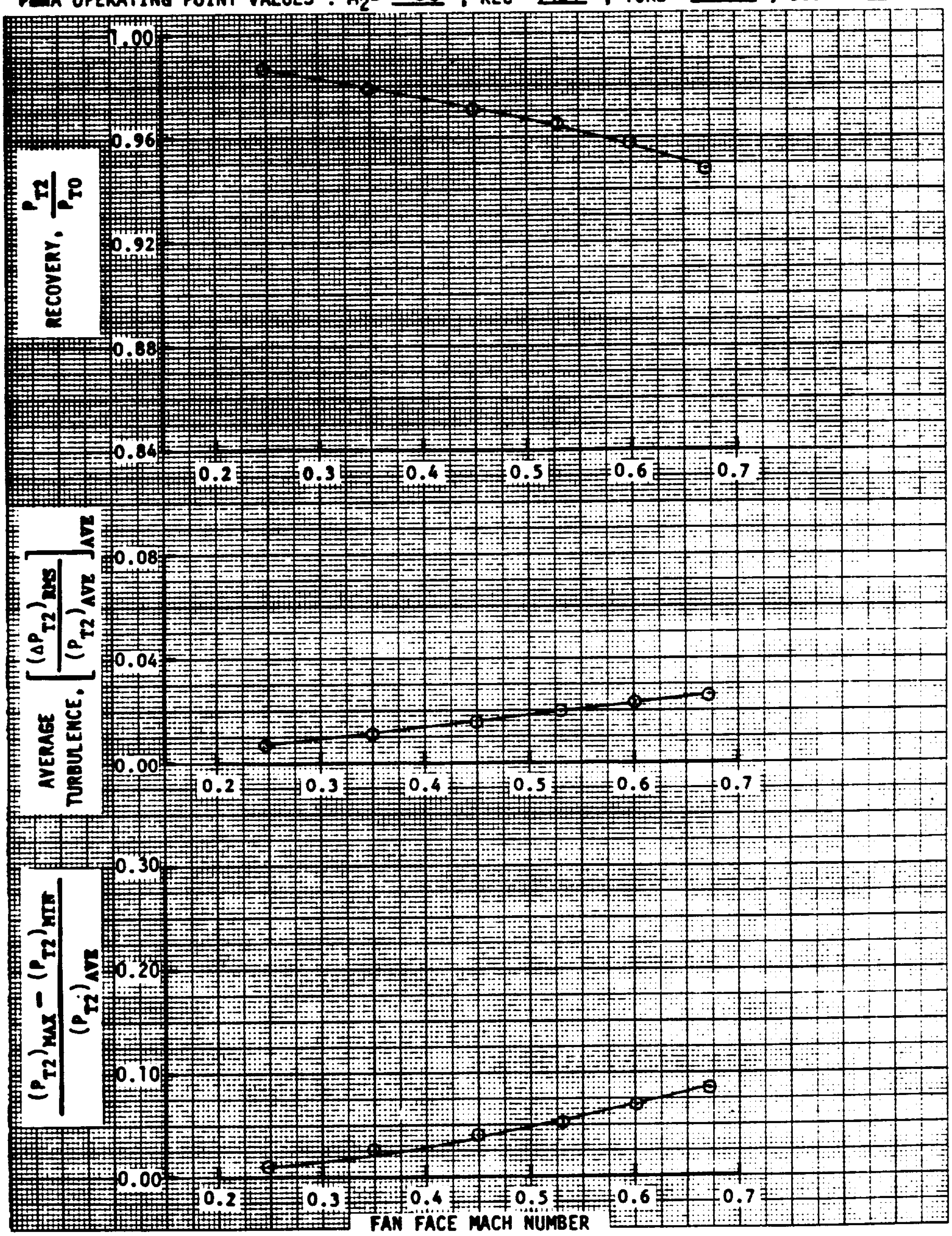
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2068-2073
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .013 ; DIST= .057



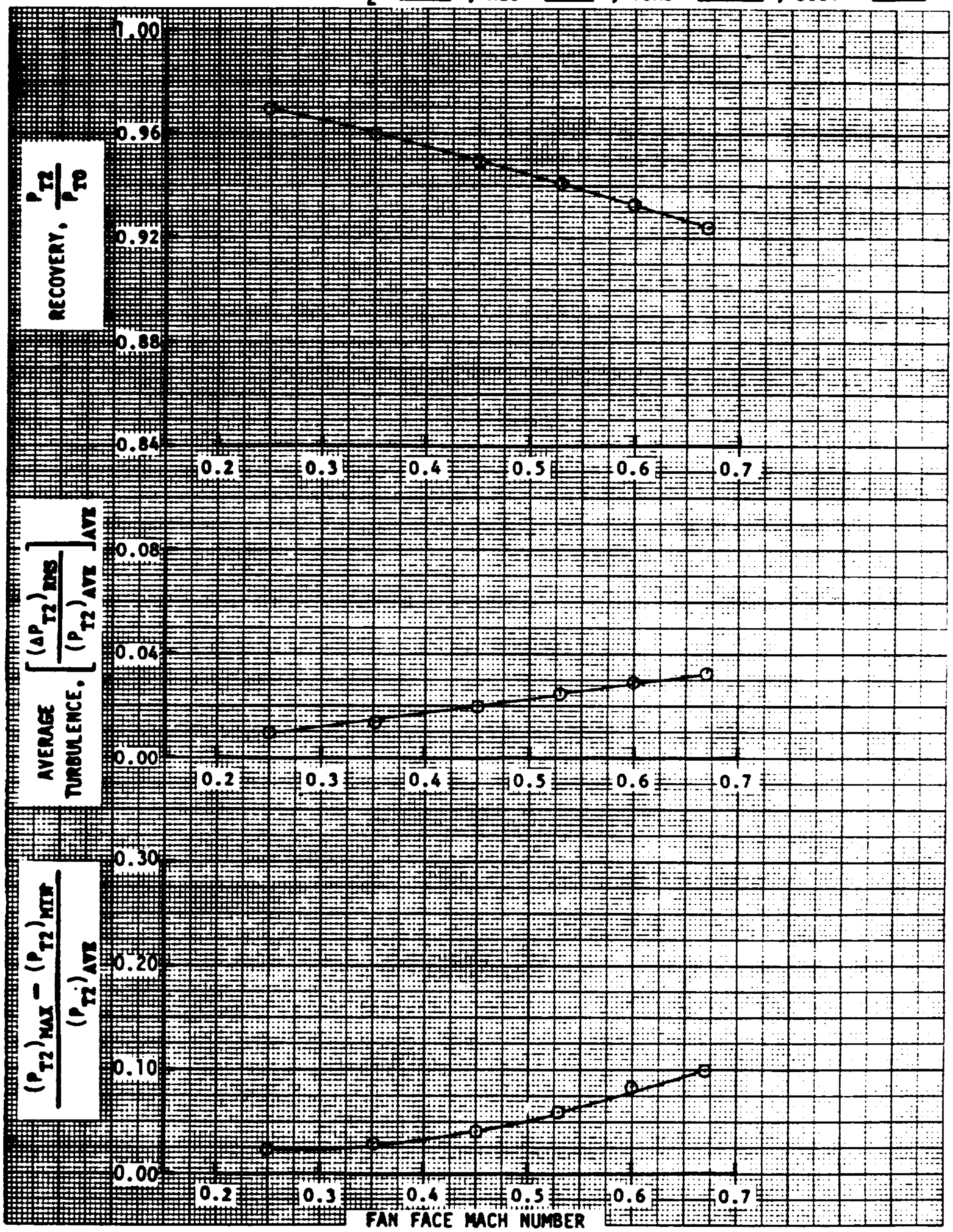
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2074-2079
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .017 ; DIST= .050



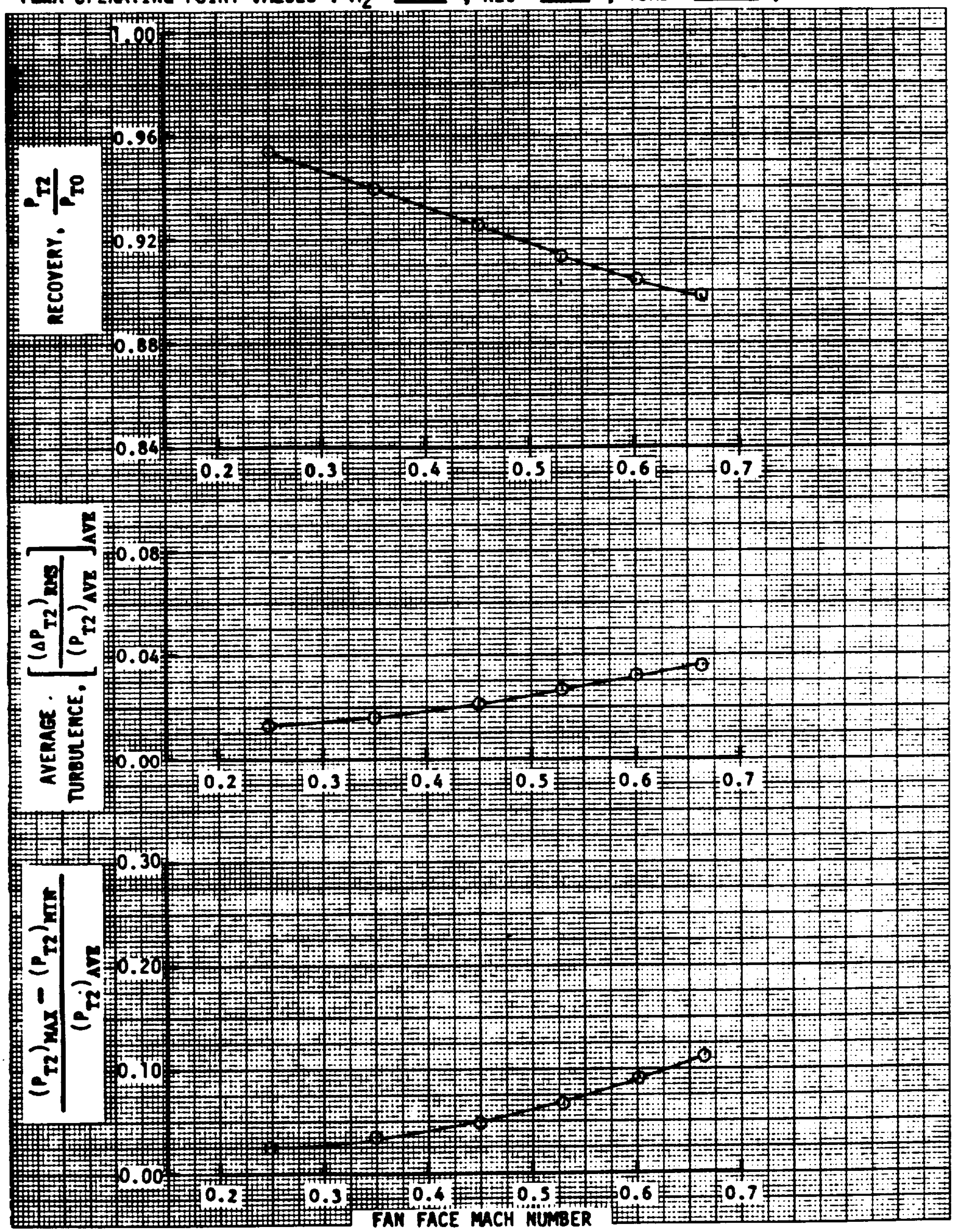
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2080-2085
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PNWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .020 ; DIST= .054



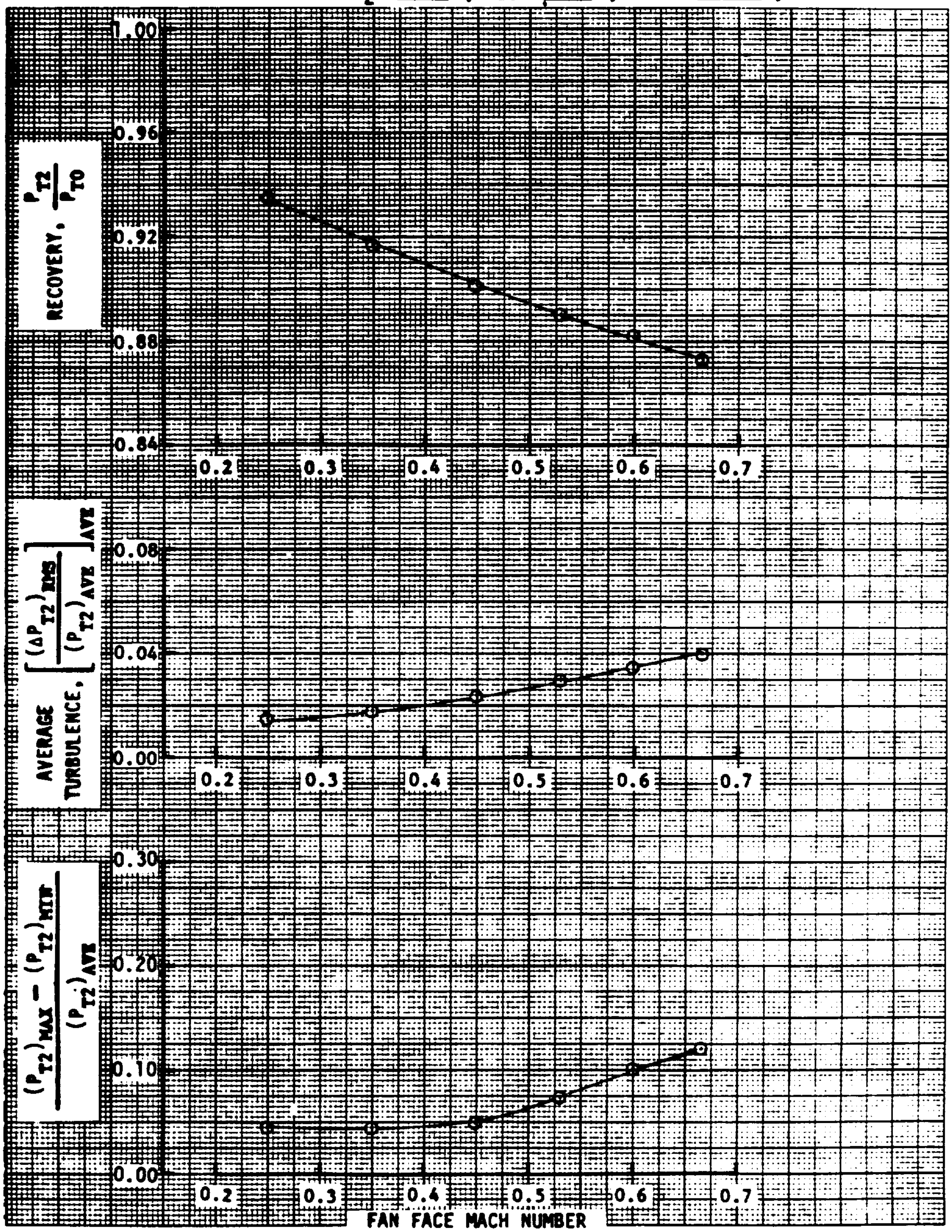
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2086-2091
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .941 ; TURB= .025 ; DIST= .060



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2092-2097
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .913 ; TURB= .026 ; DIST= .068



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 6 ; READING NUMBERS 2098-2103
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .890 ; TURB= .029 ; DIST= .073



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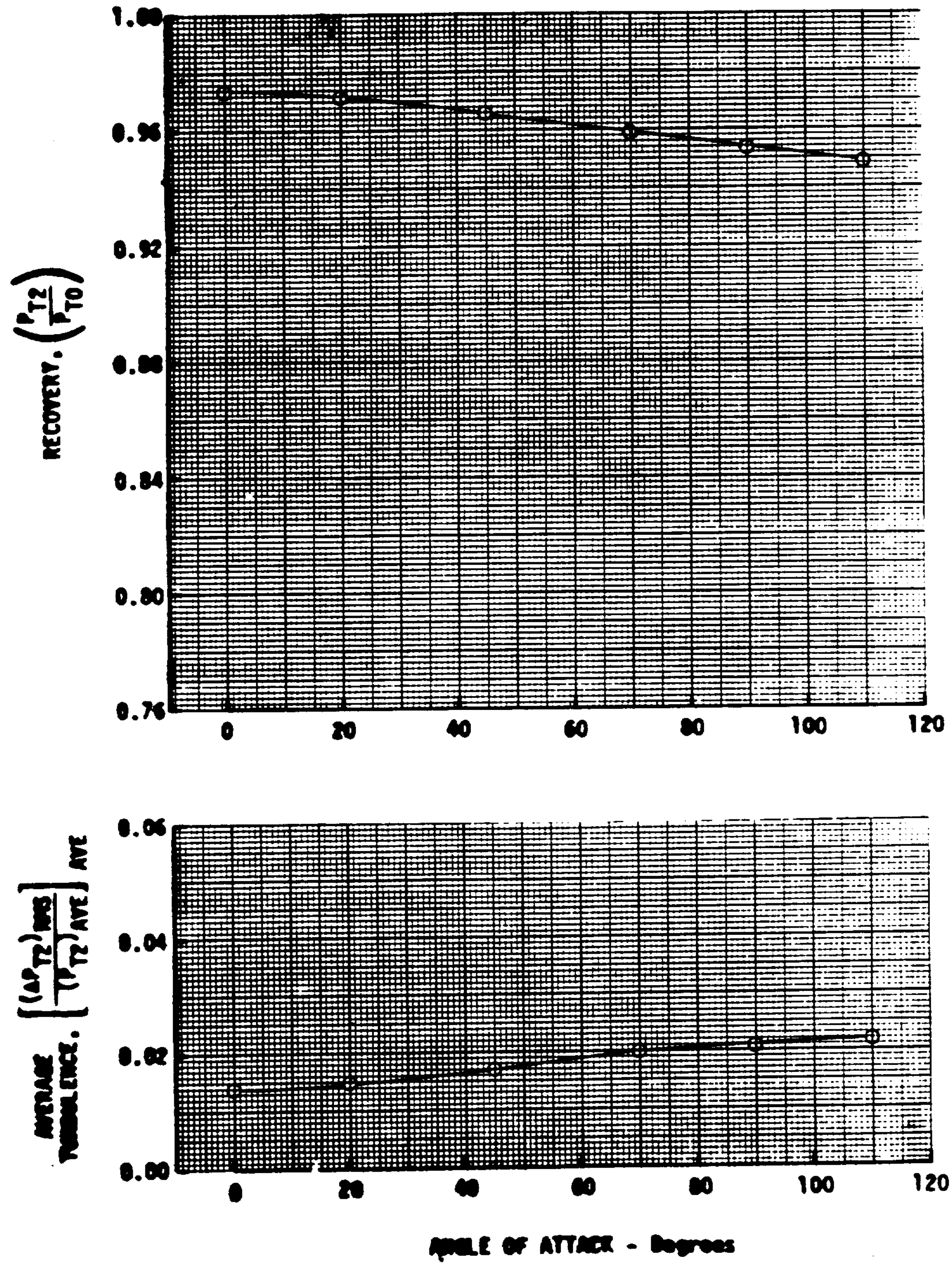
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
FOUR F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 6; DESCRIPTION All Auxiliary Inlets Open - Port



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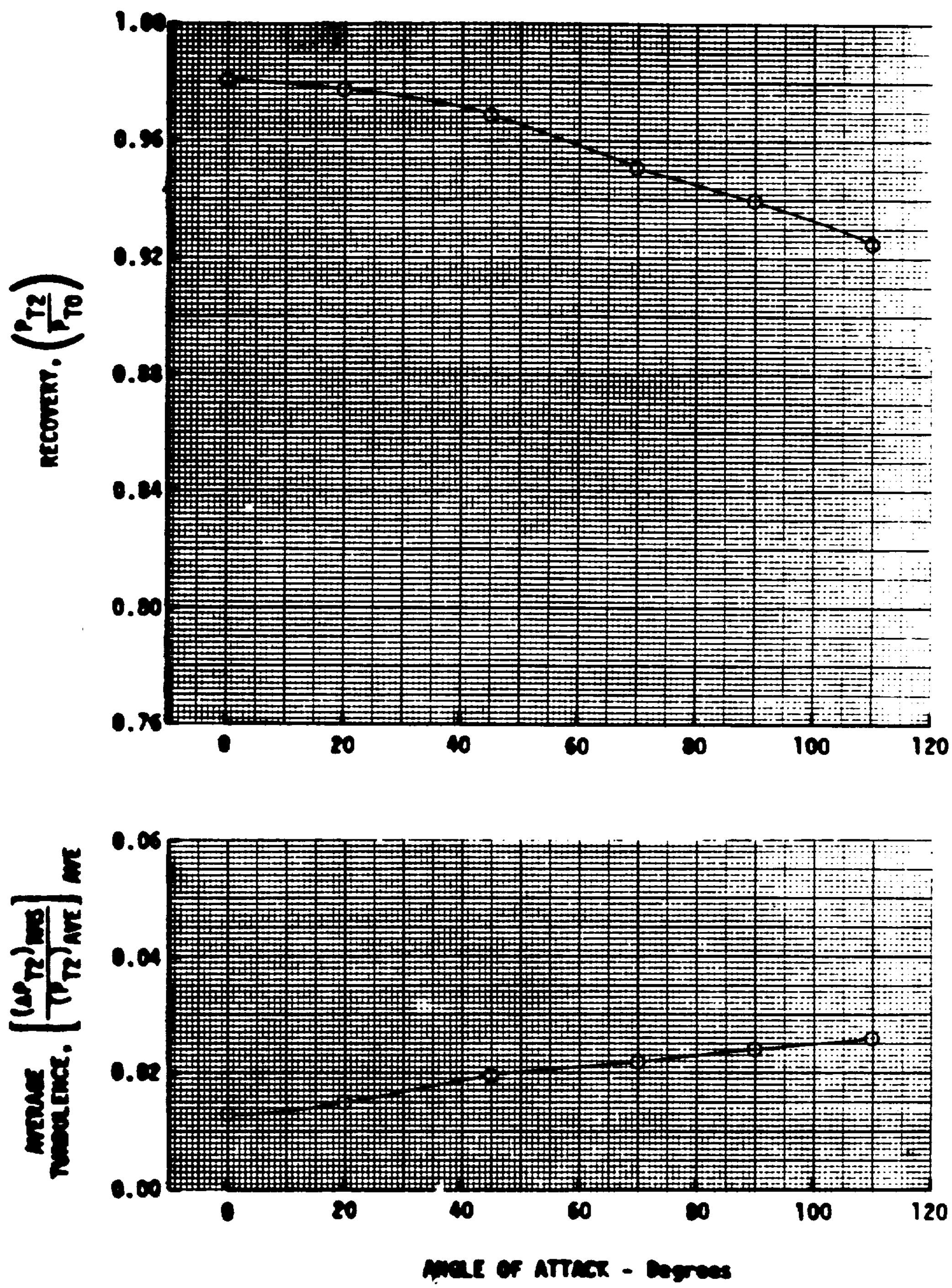
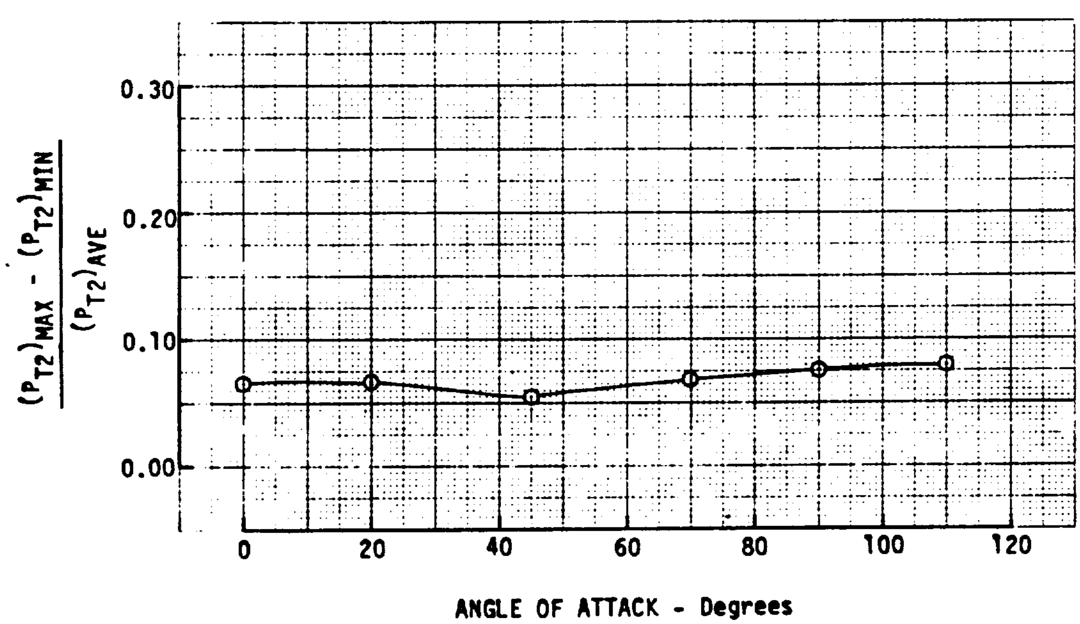
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 6 ; DESCRIPTION All Auxiliary Inlets Open - Port



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 6 ; DESCRIPTION All Auxiliary Inlets Open - Port



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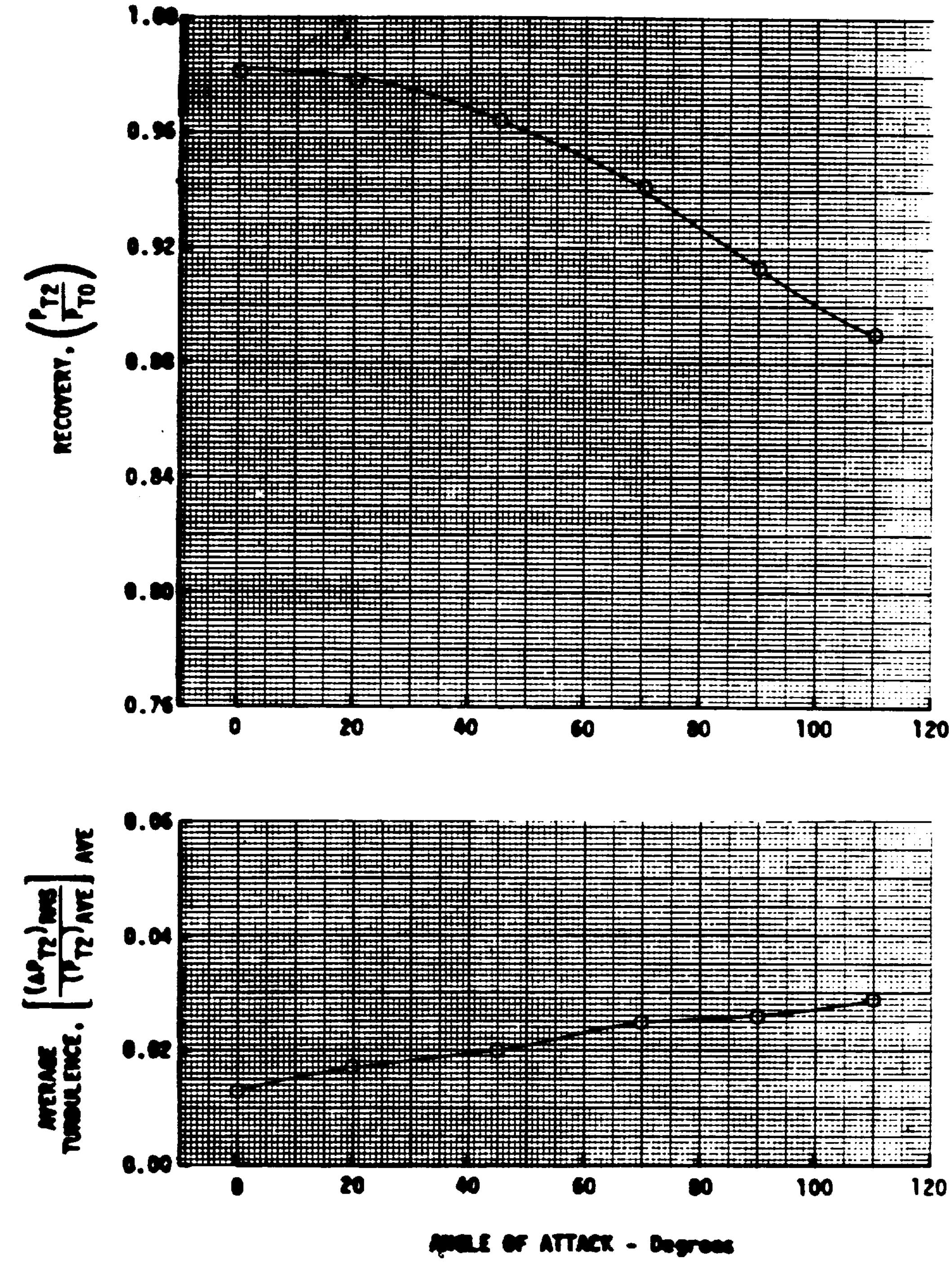
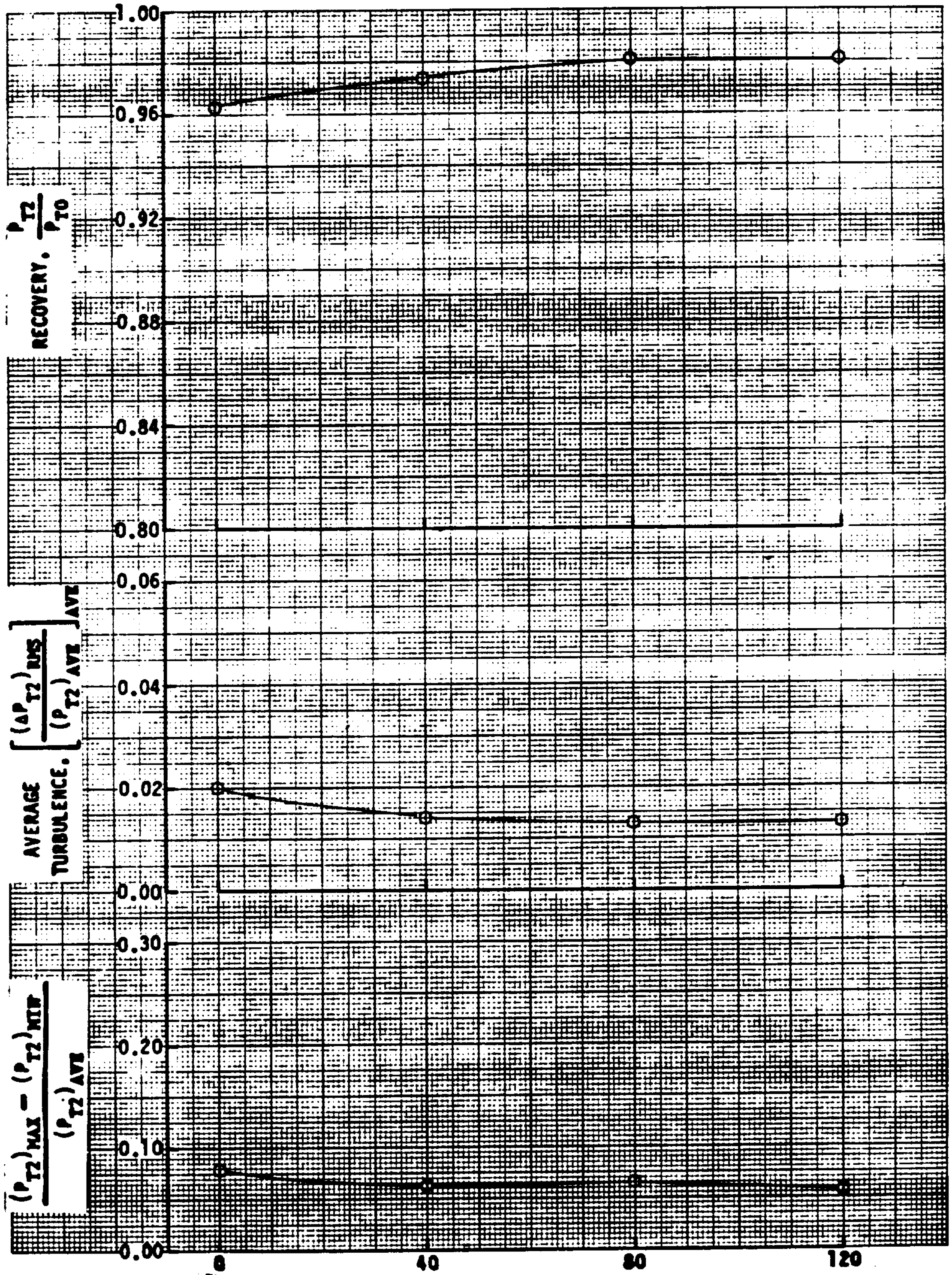
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 6; DESCRIPTION All Auxiliary Inlets Open- Port



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 6; DESCRIPTION ALL AUXILIARY INLETS OPEN - Port



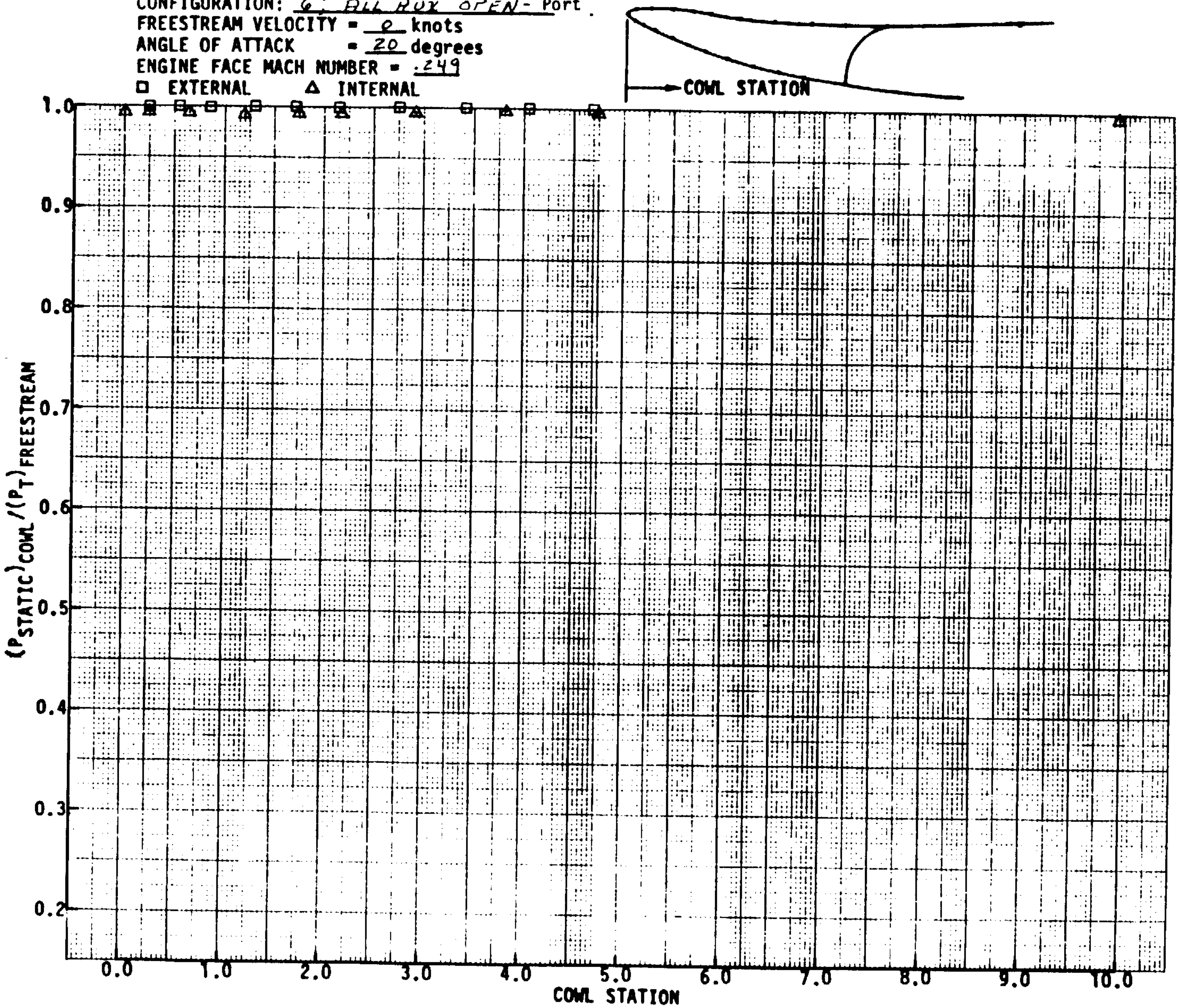
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 6; ALL AUX OPEN - Port

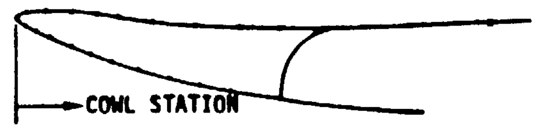
FREESTREAM VELOCITY = 0 knots

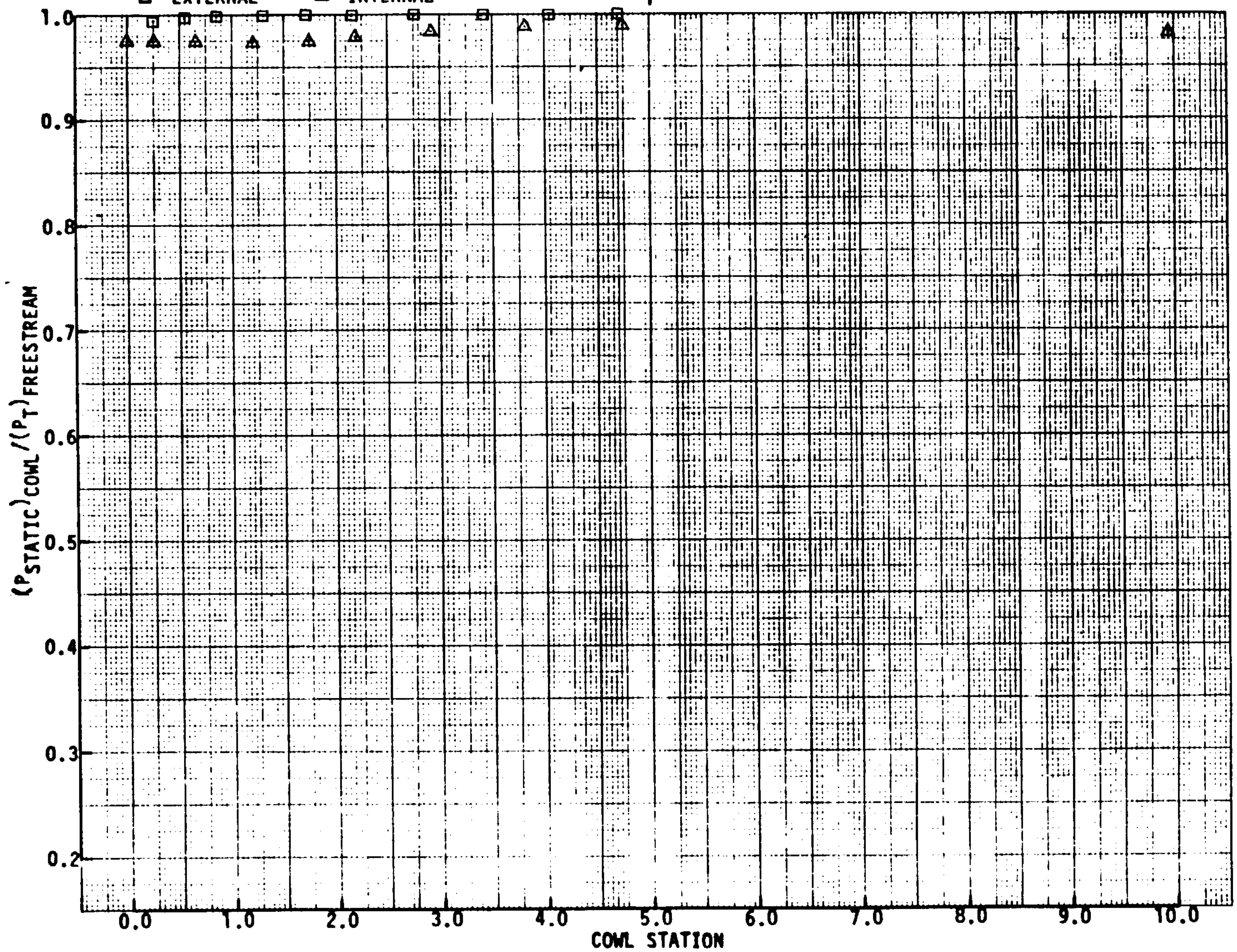
ANGLE OF ATTACK = 20 degrees

ENGINE FACE MACH NUMBER = .249



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 6 ; All Aux Open - Port
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .529
□ EXTERNAL   △ INTERNAL





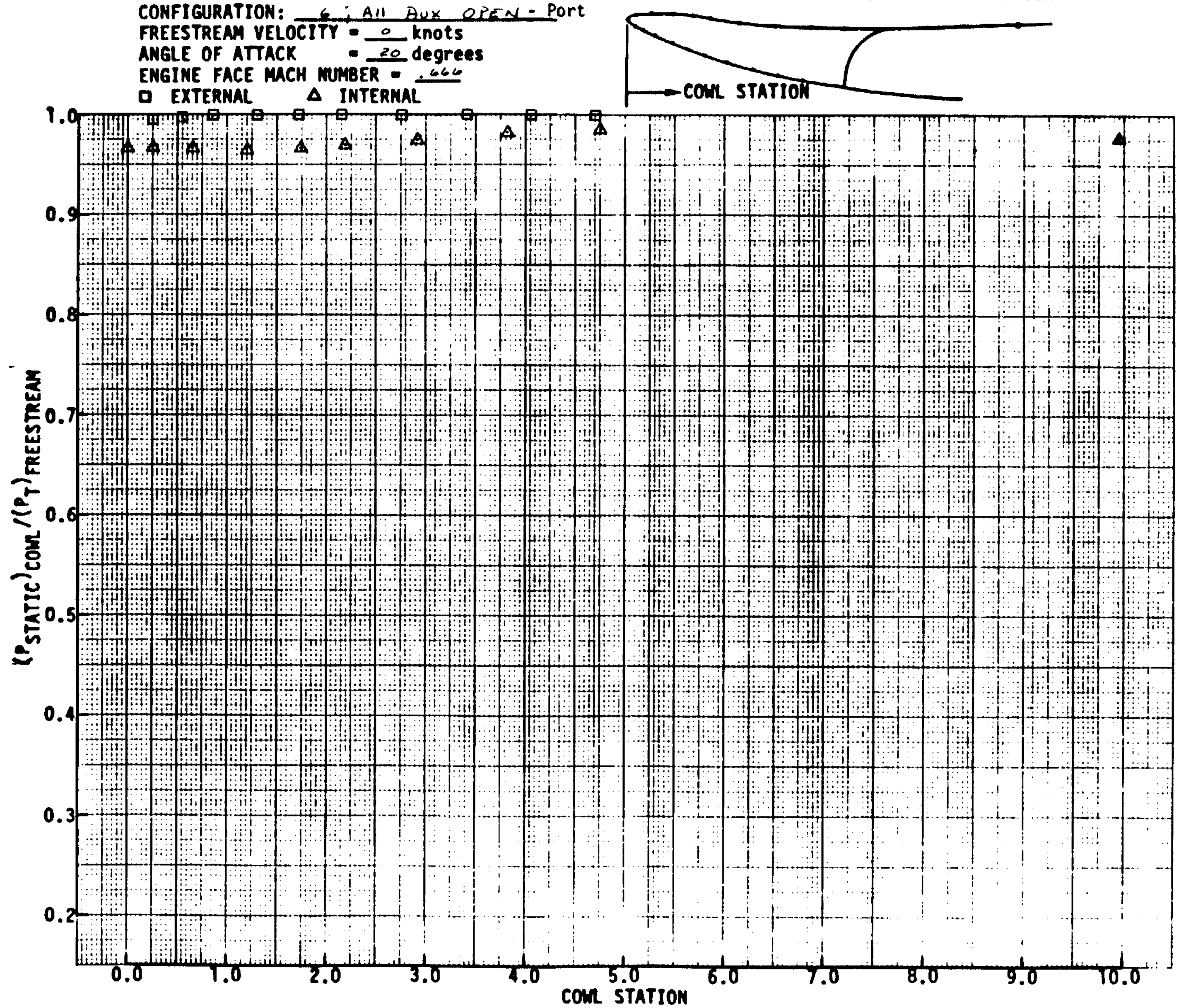
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 6 ; All Aux OPEN - Port

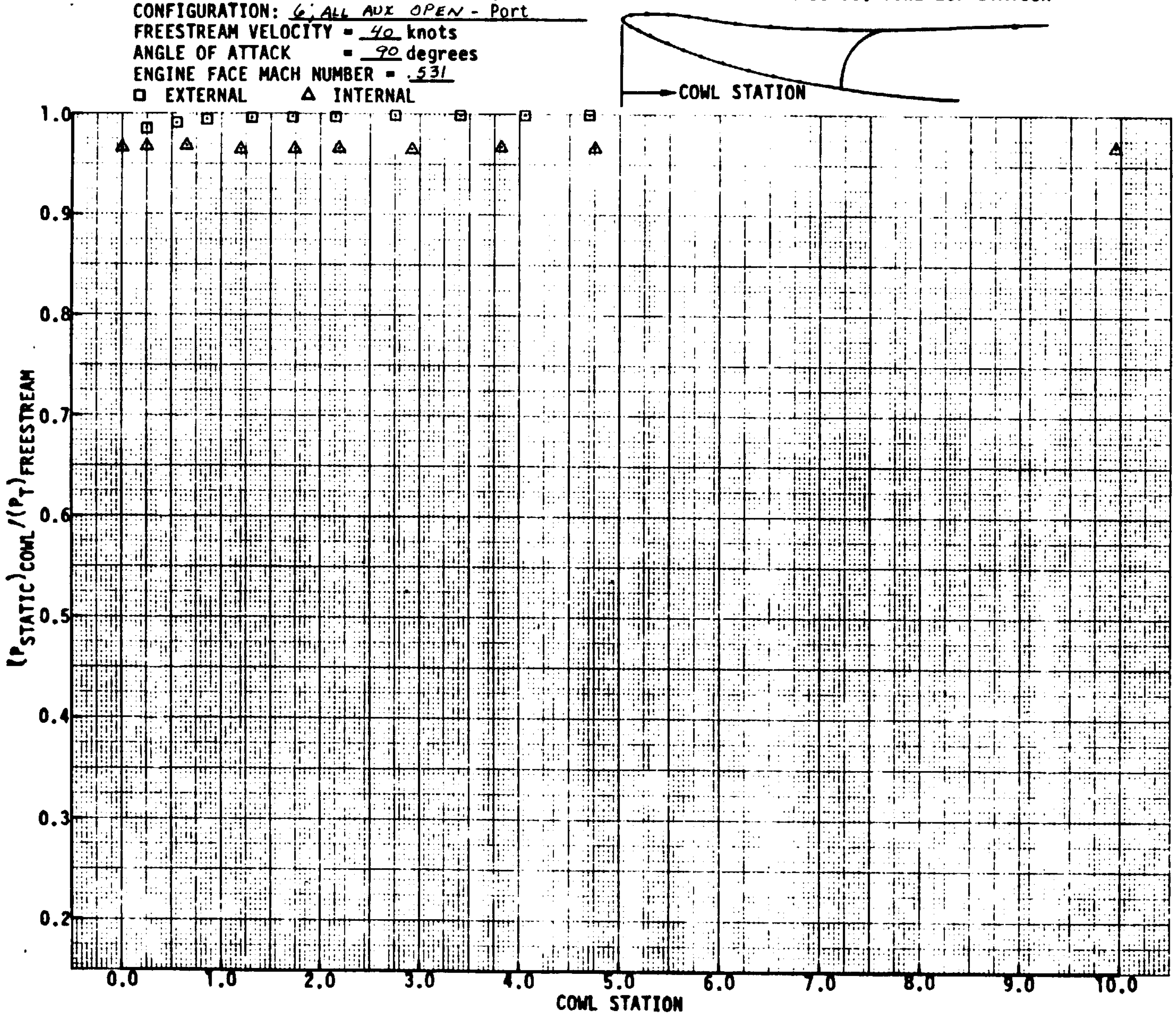
FREESTREAM VELOCITY = 0 knots

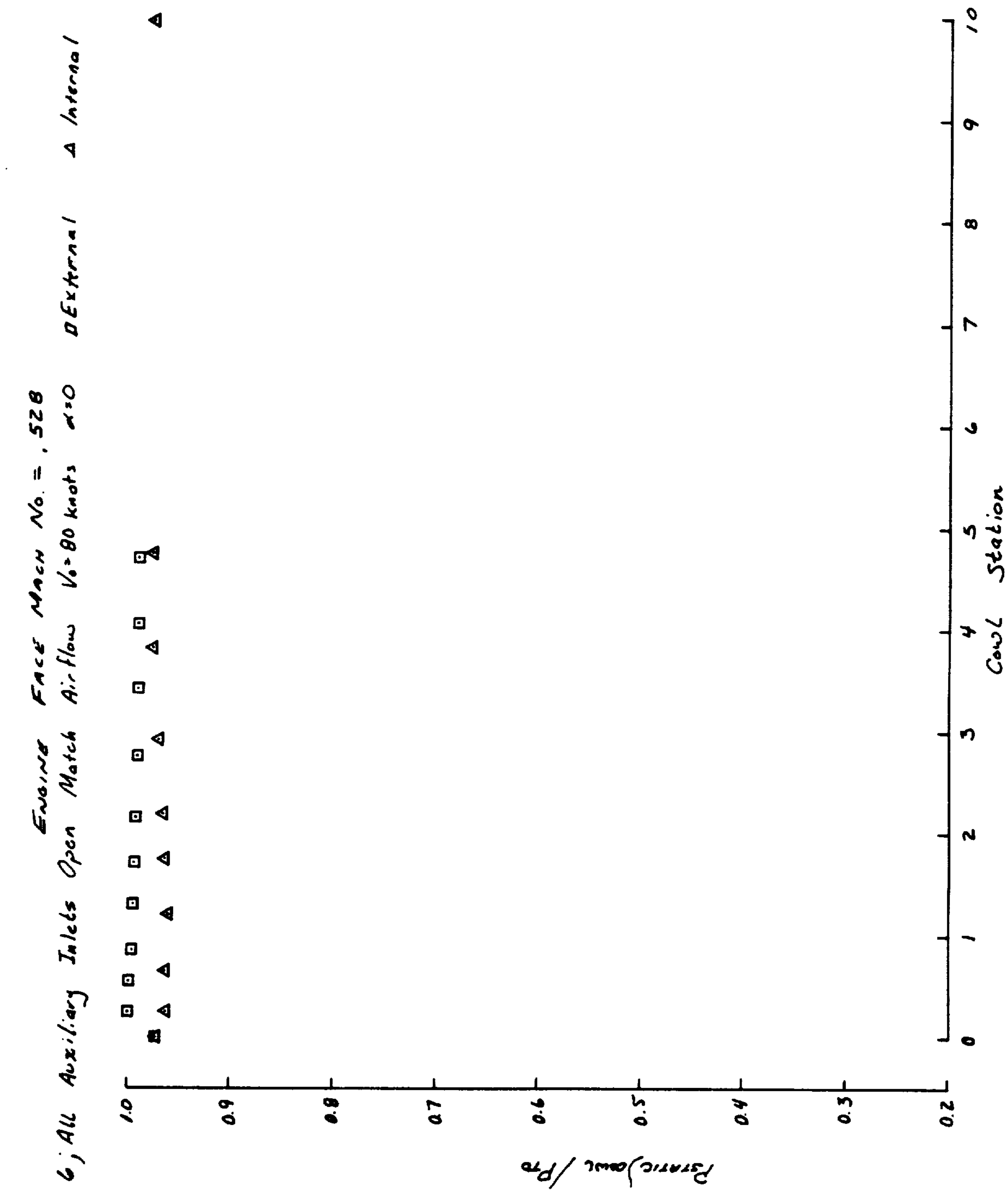
ANGLE OF ATTACK = 20 degrees

ENGINE FACE MACH NUMBER = .666



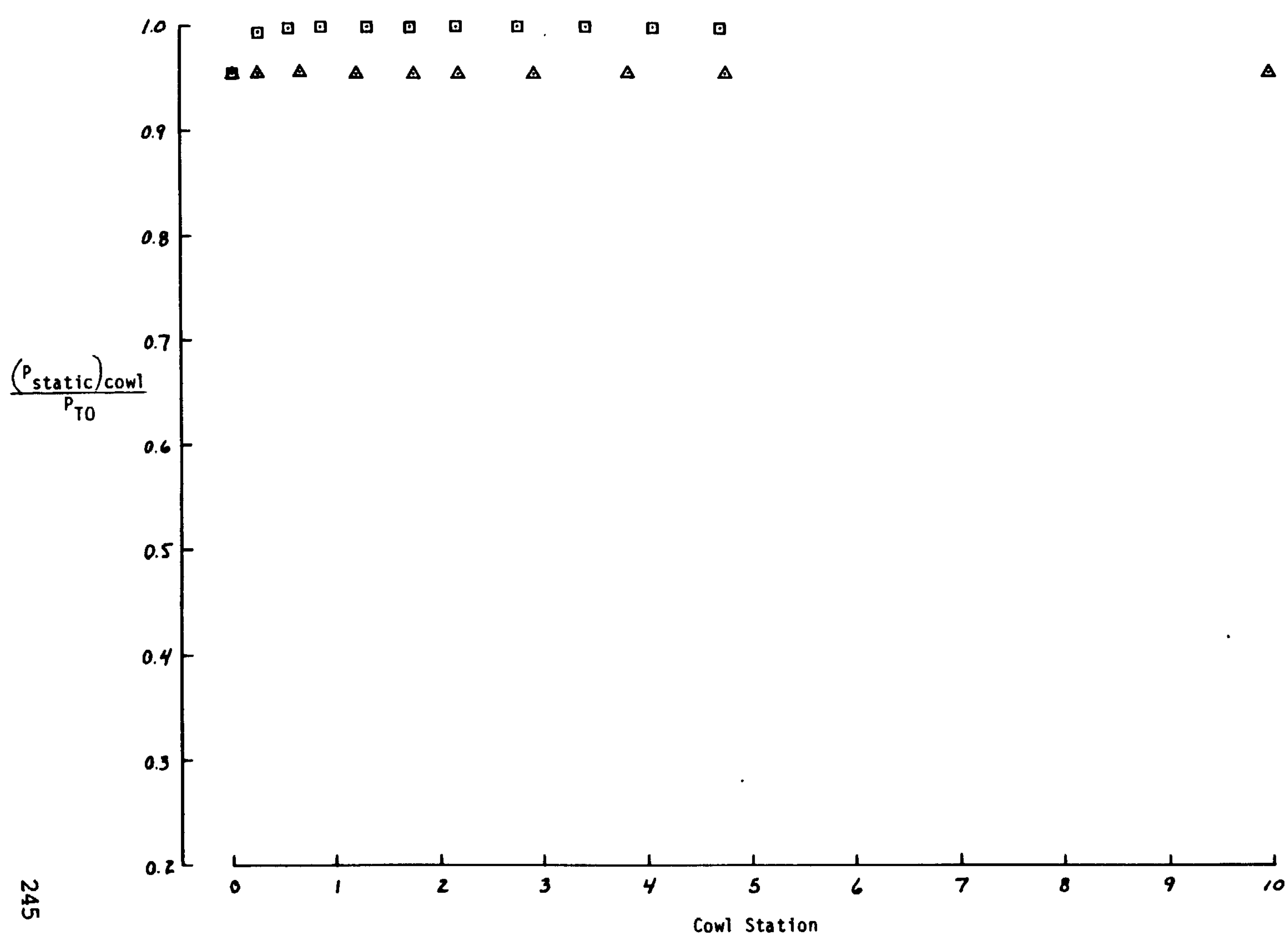
COWL LIP STATIC PRESSURE PROFILES ; COWL L TATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 6; ALL AUX OPEN - Port
FREESTREAM VELOCITY = 40 knots
ANGLE OF ATTACK = 90 degrees
ENGINE FACE MACH NUMBER = .531



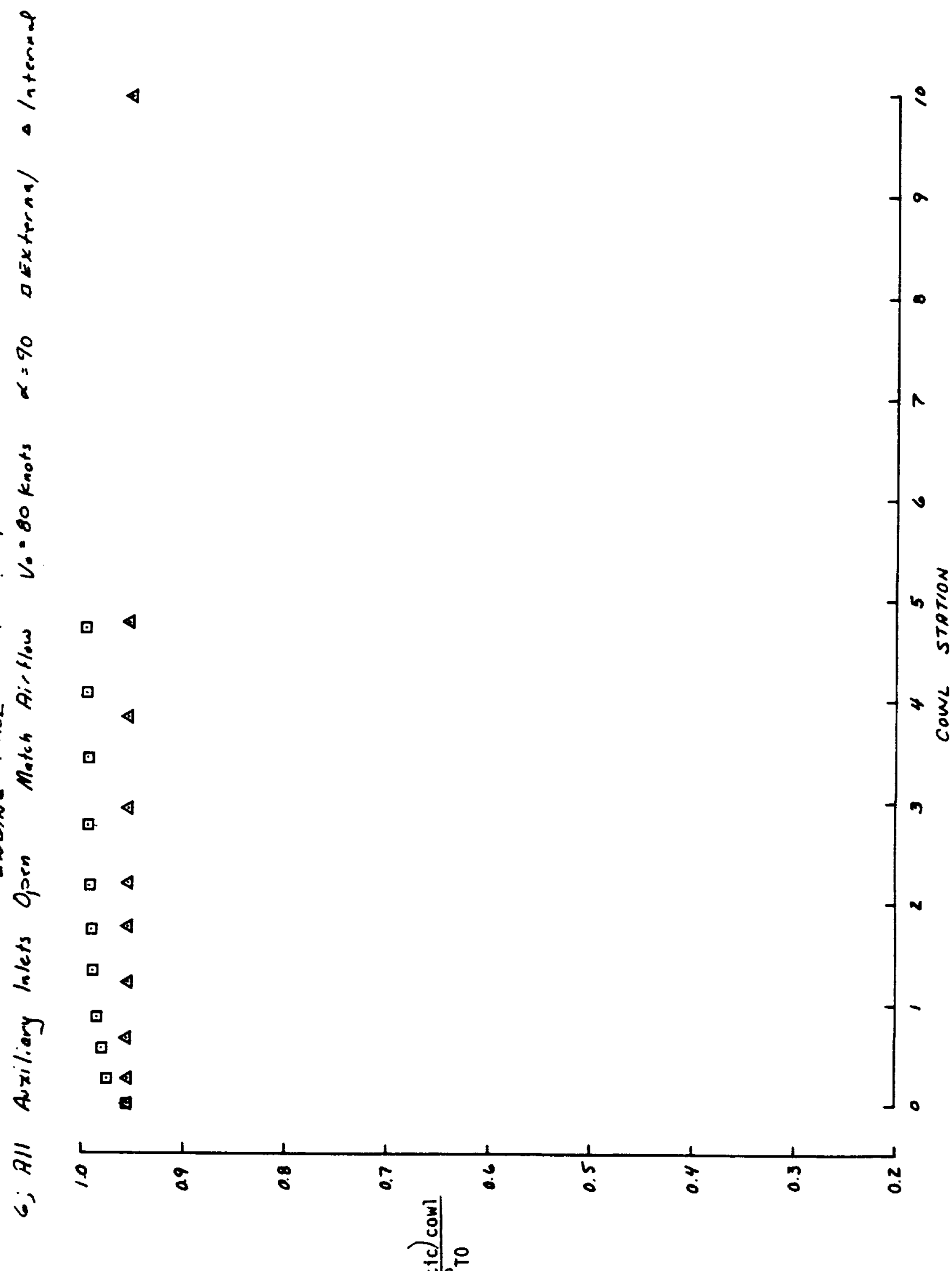

6; ALL Auxiliary Inlets Open Engine Face Mach No. = .528
Match Air Flow V₀=80 knots α=0
□ External
△ Internal
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
Pstatic)cowl /Pt0
0
1
2
3
4
5
6
7
8
9
10
Cowl Station

Engine Face Mach No. = .529

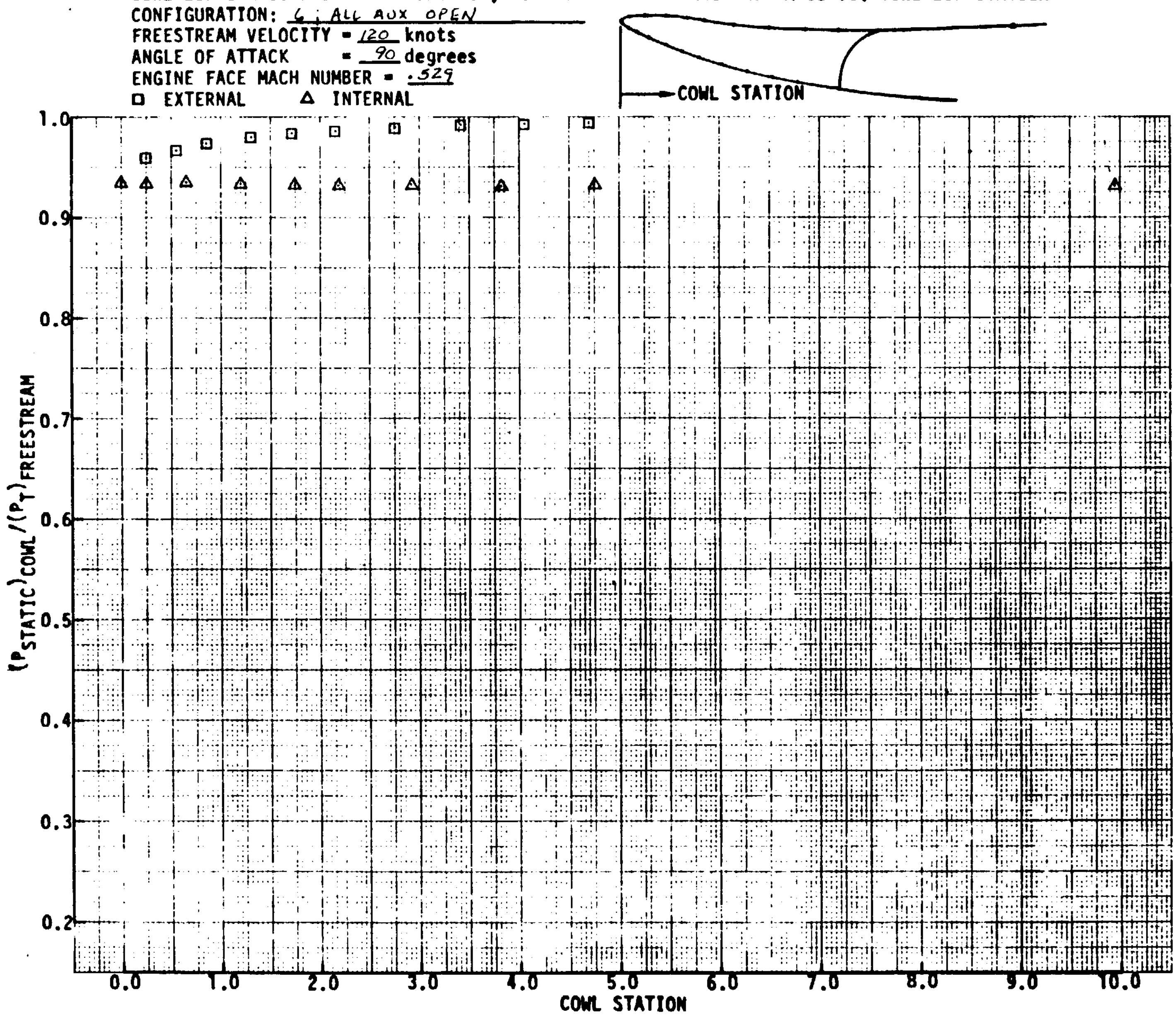
6; All Auxiliary Inlets Open Match Airflow V_0 = 80 knots α = 45 □ External △ Internal



ORIGINAL PAGE IS
OF POOR QUALITY



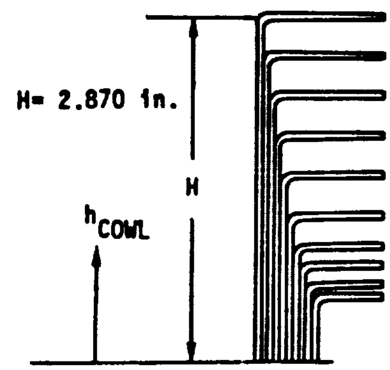
COWL LIP STATIC PRESSURE PROFILES ; COWL LI /ATIC PRESSURE RATIO VS. COWL LIP STATION

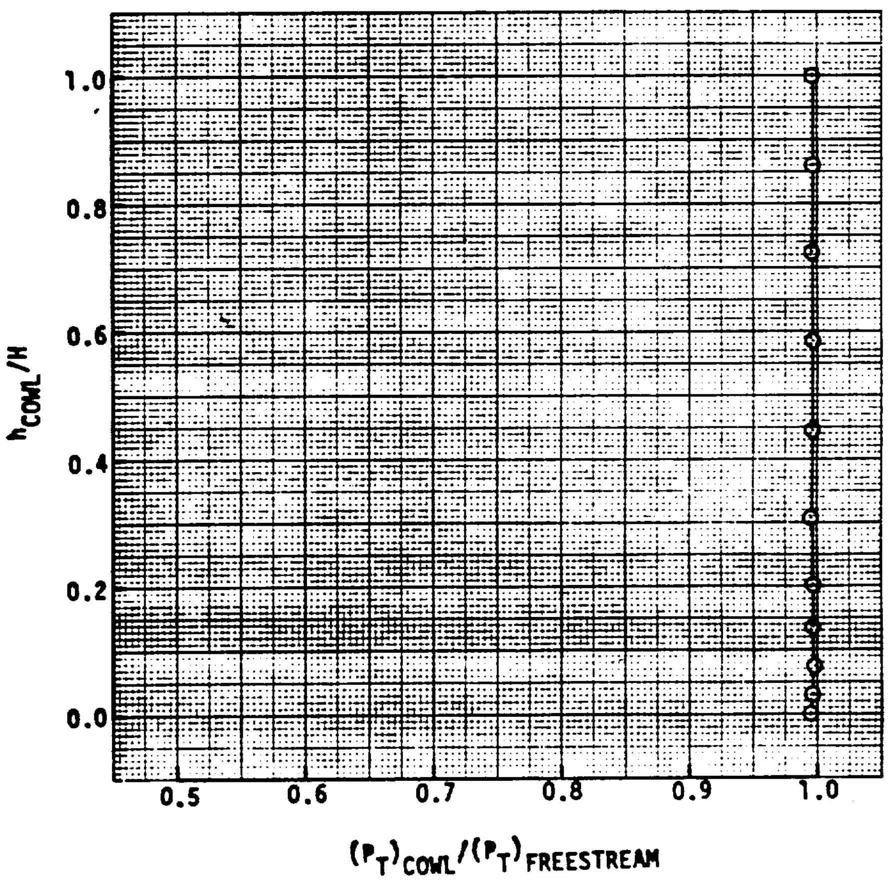


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .249

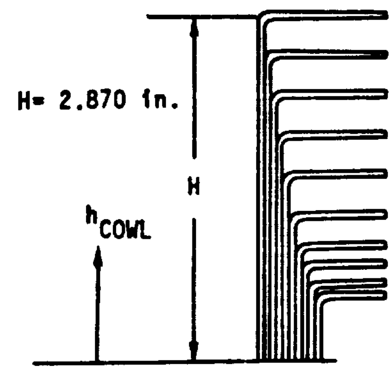


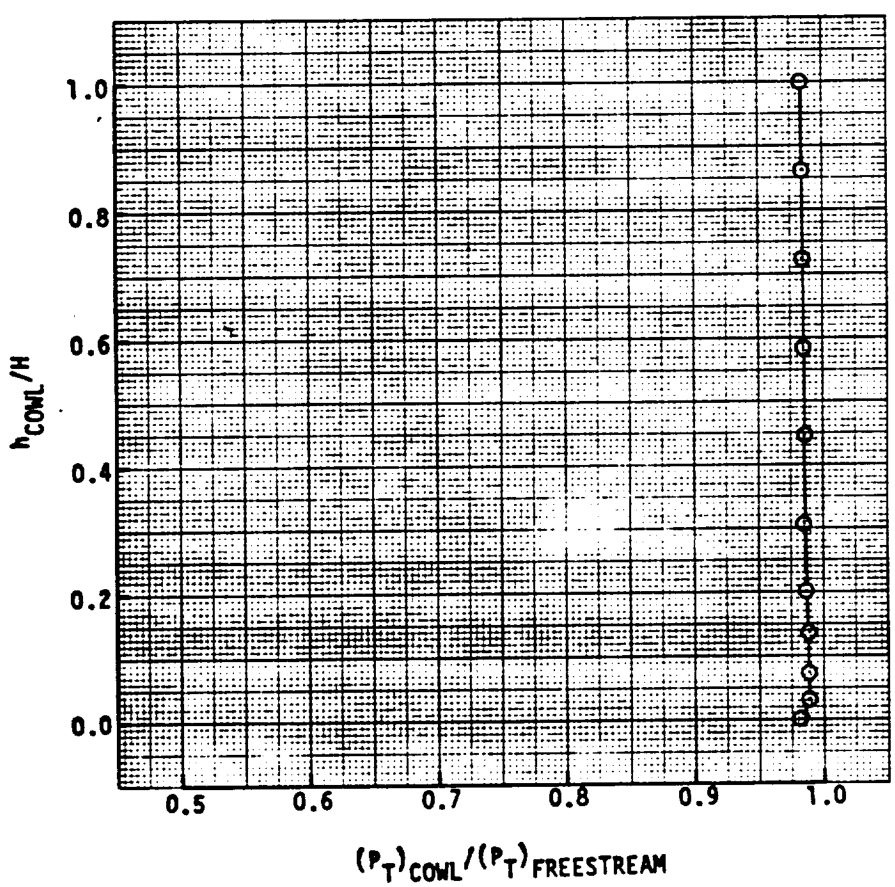


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6 ; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

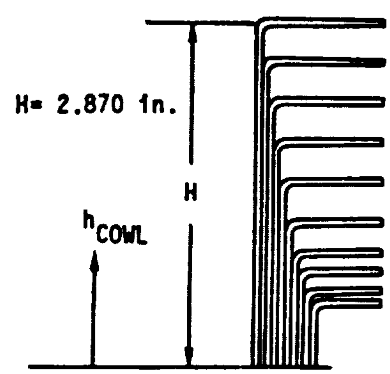


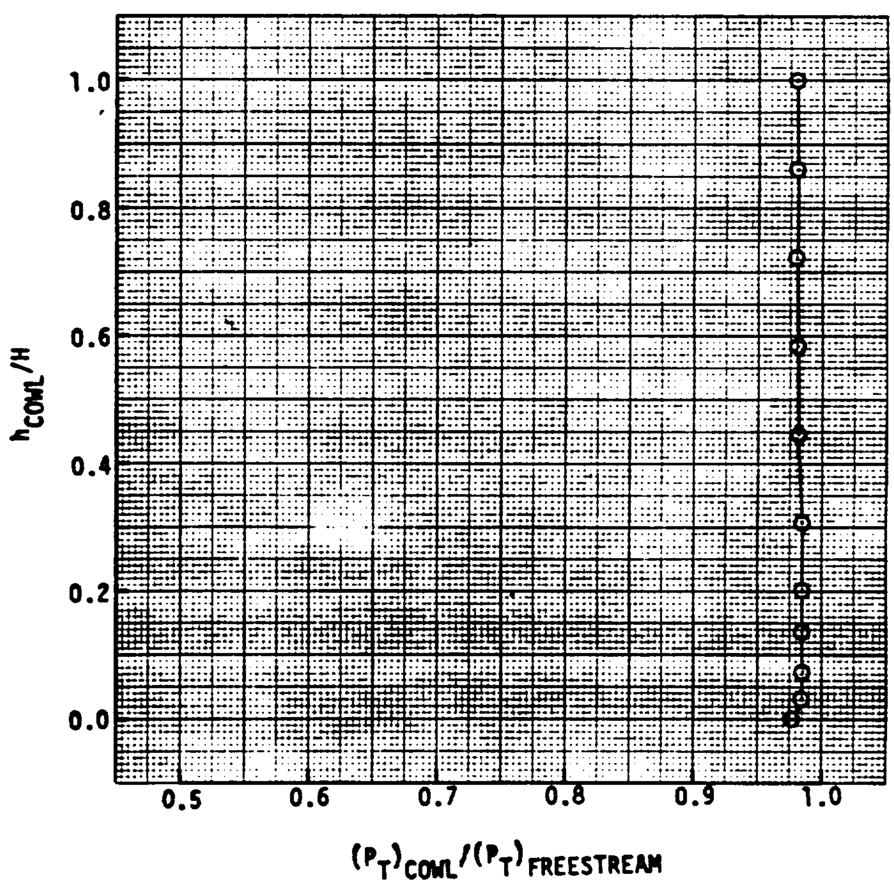


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .666

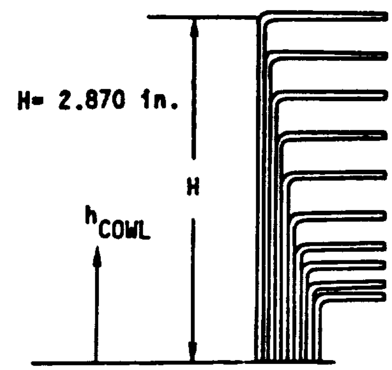


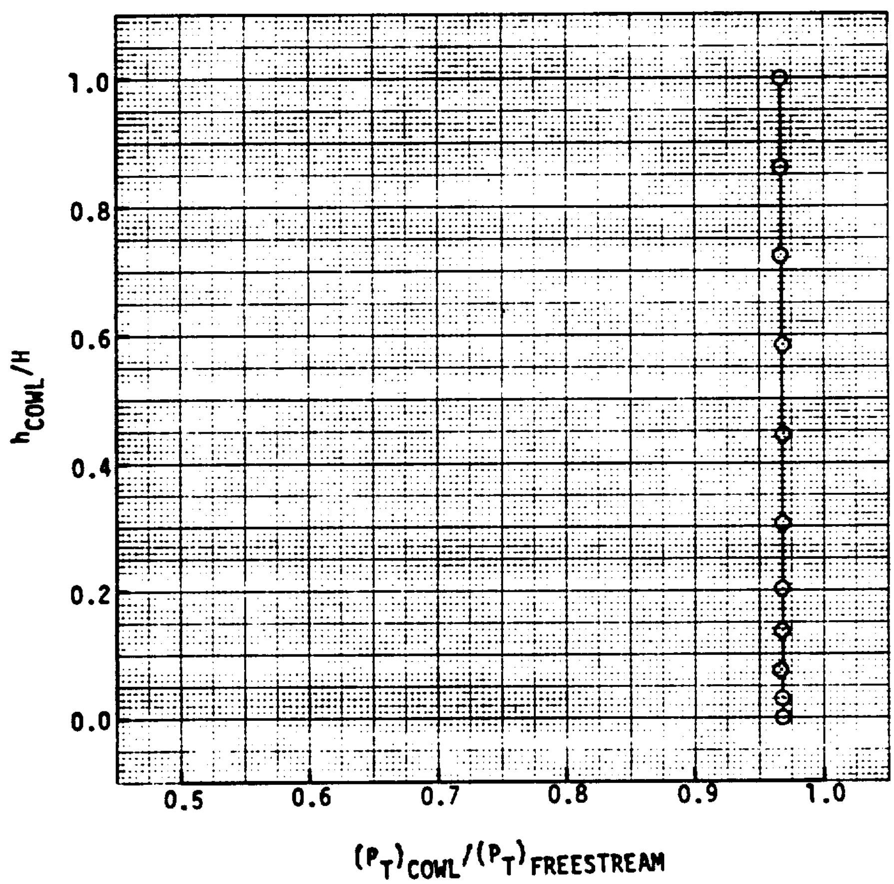


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6 ; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 40 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531



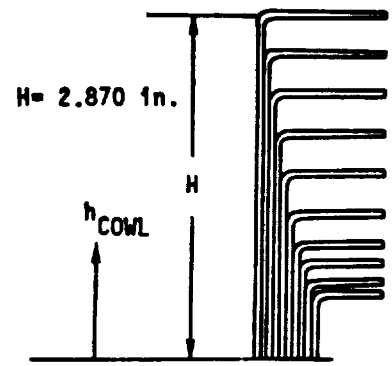


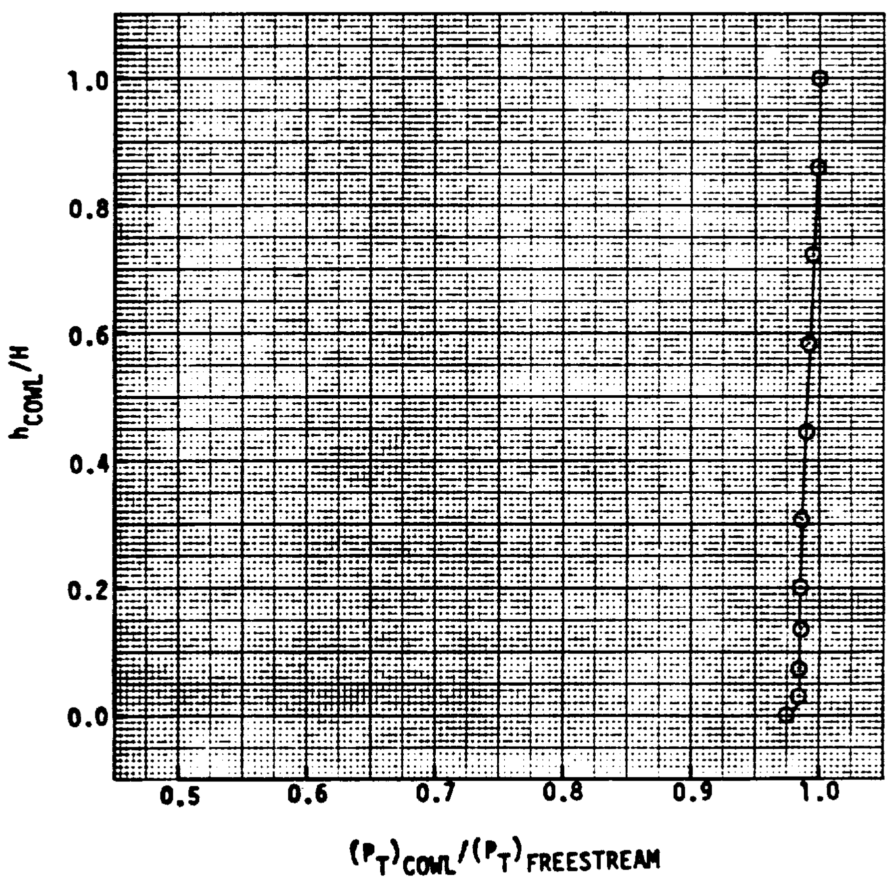
COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE

TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .528

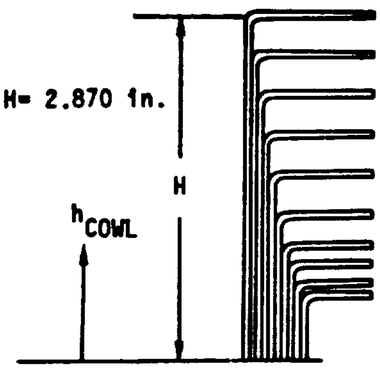


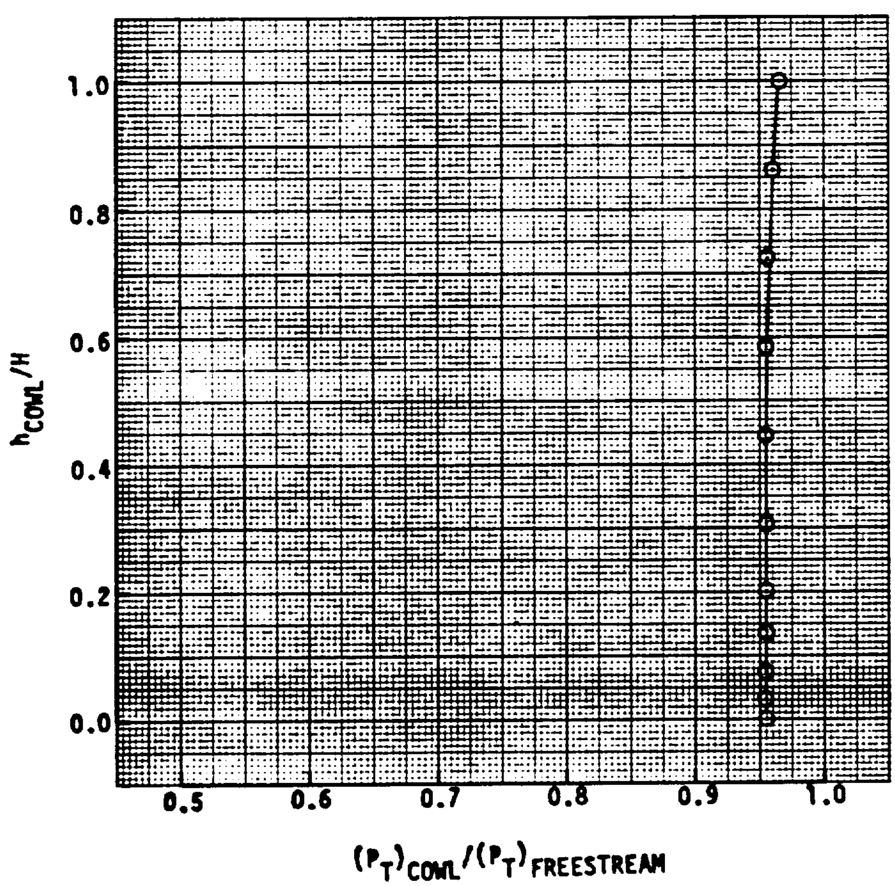


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6 ; DESCRIPTION All Auxiliary Inlets Open

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

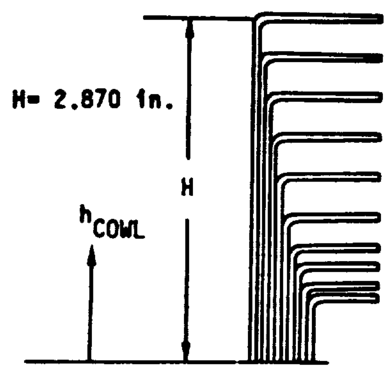


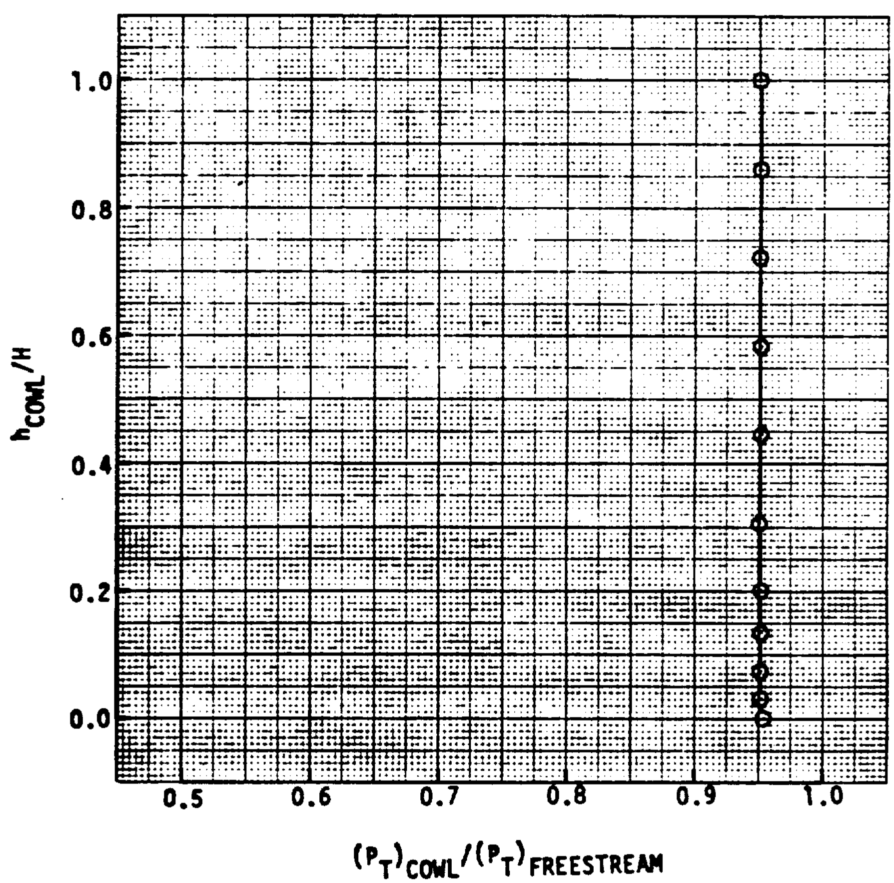


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 6 ; DESCRIPTION ALL AUXILIARY INLETS OPEN

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

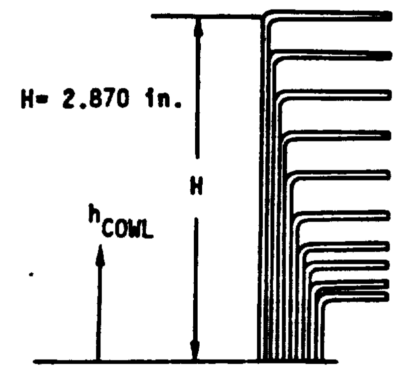


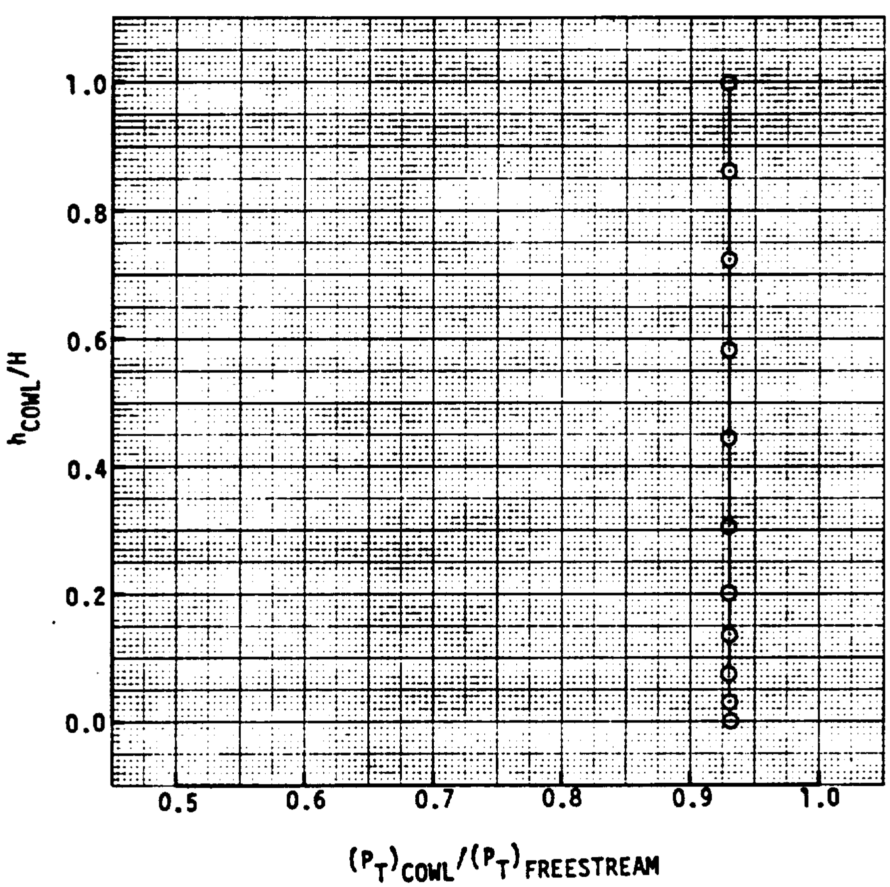


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

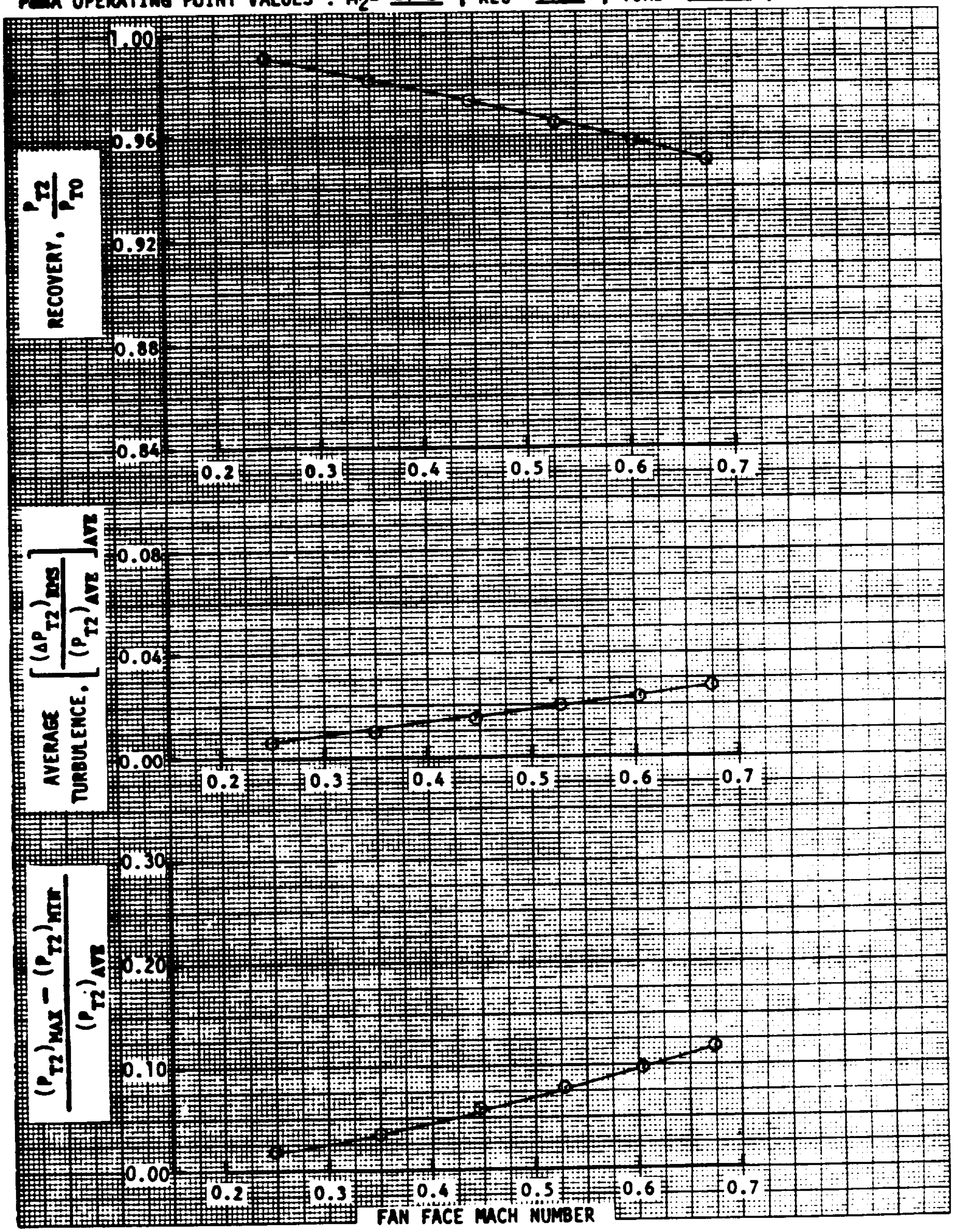
CONFIGURATION: NUMBER 6 ; DESCRIPTION ALL AUX INLETS OPEN

FREESTREAM VELOCITY = 120 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

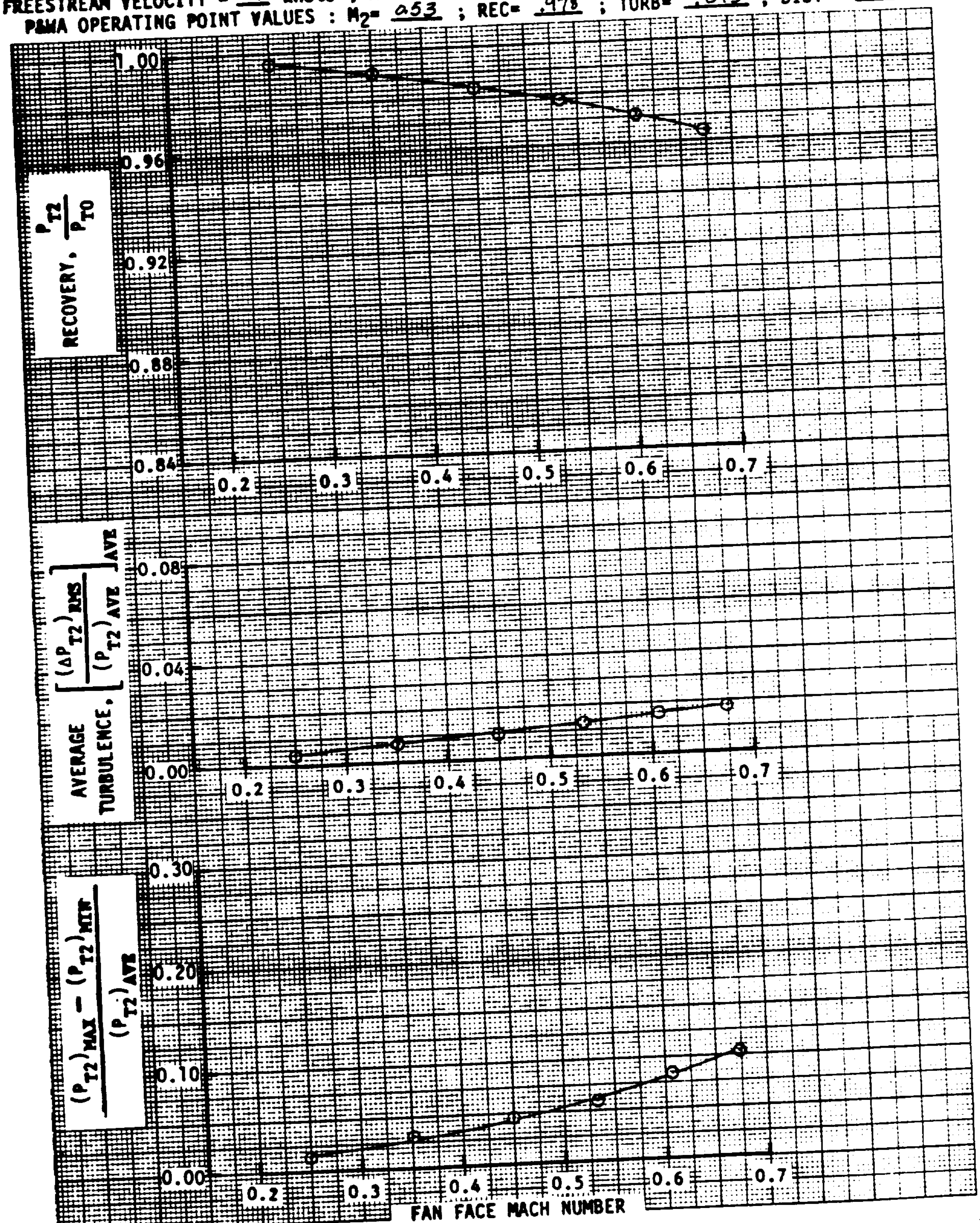




RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1861-1866
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .020 ; DIST= .077



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1867-1872
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .053 ; REC= .978 ; TURB= .013 ; DIST= .067

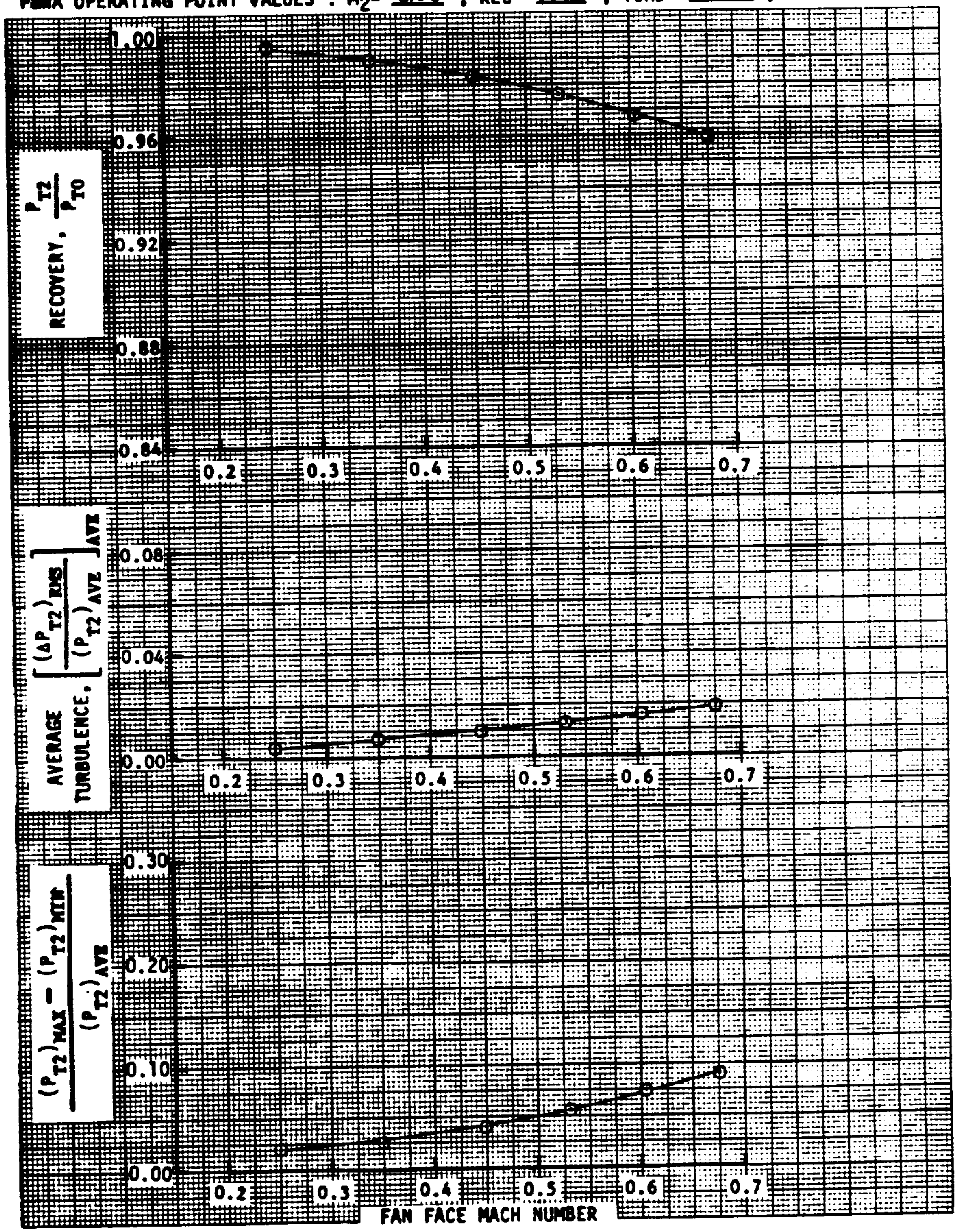


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 7 ; READING NUMBERS 1873-1878

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .976 ; TURB= .013 ; DIST= .055

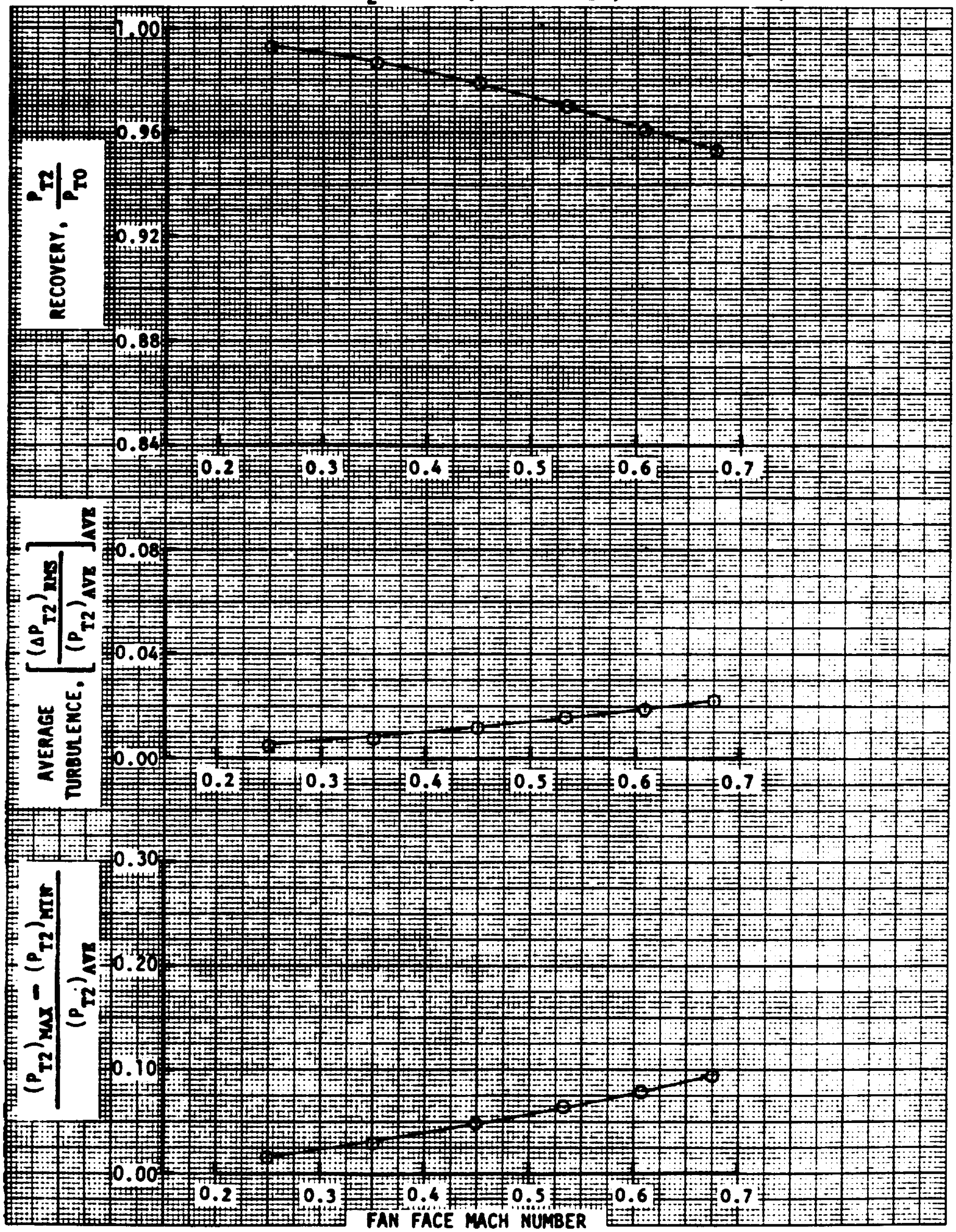


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

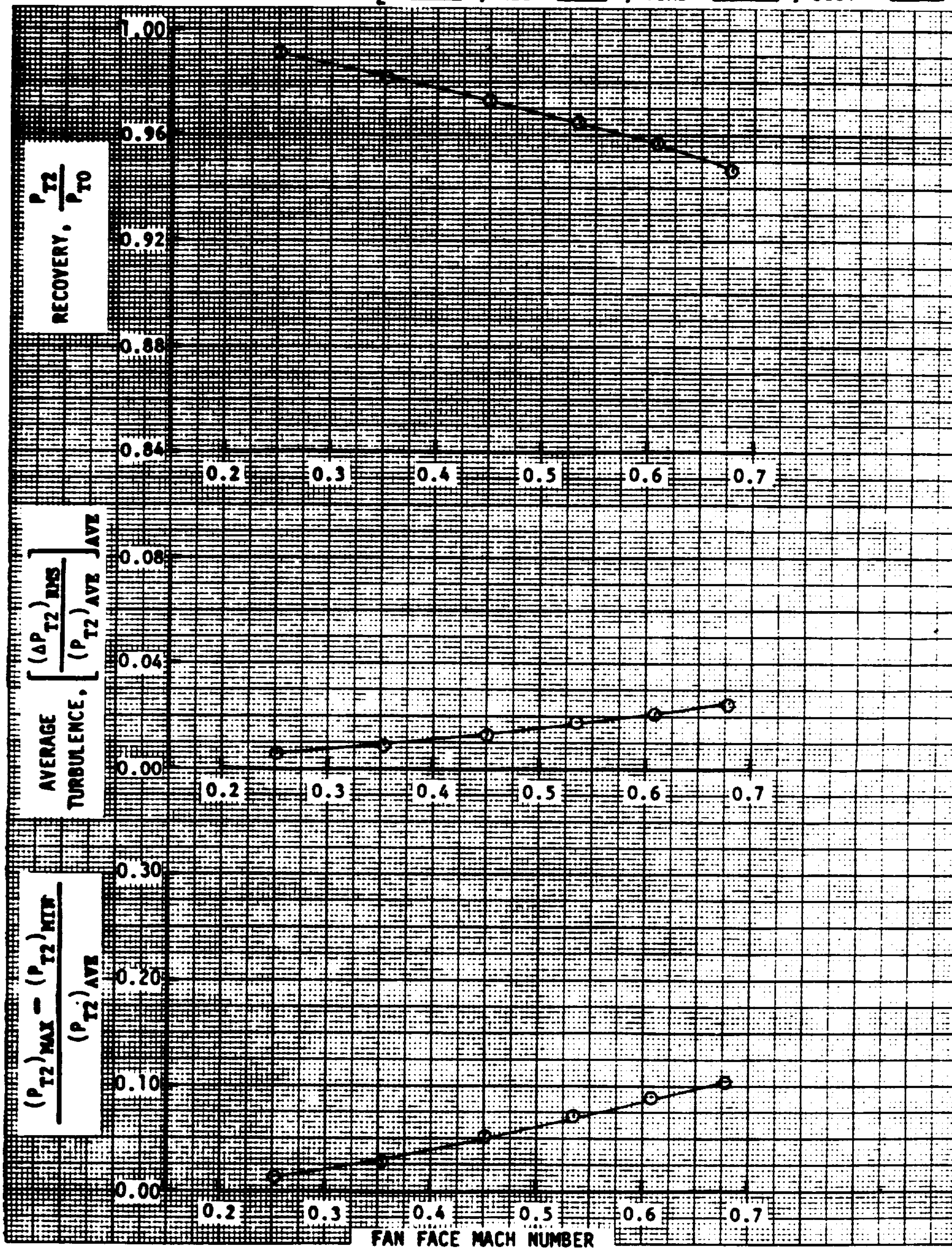
CONFIGURATION 7 ; READING NUMBERS 1879-1884

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

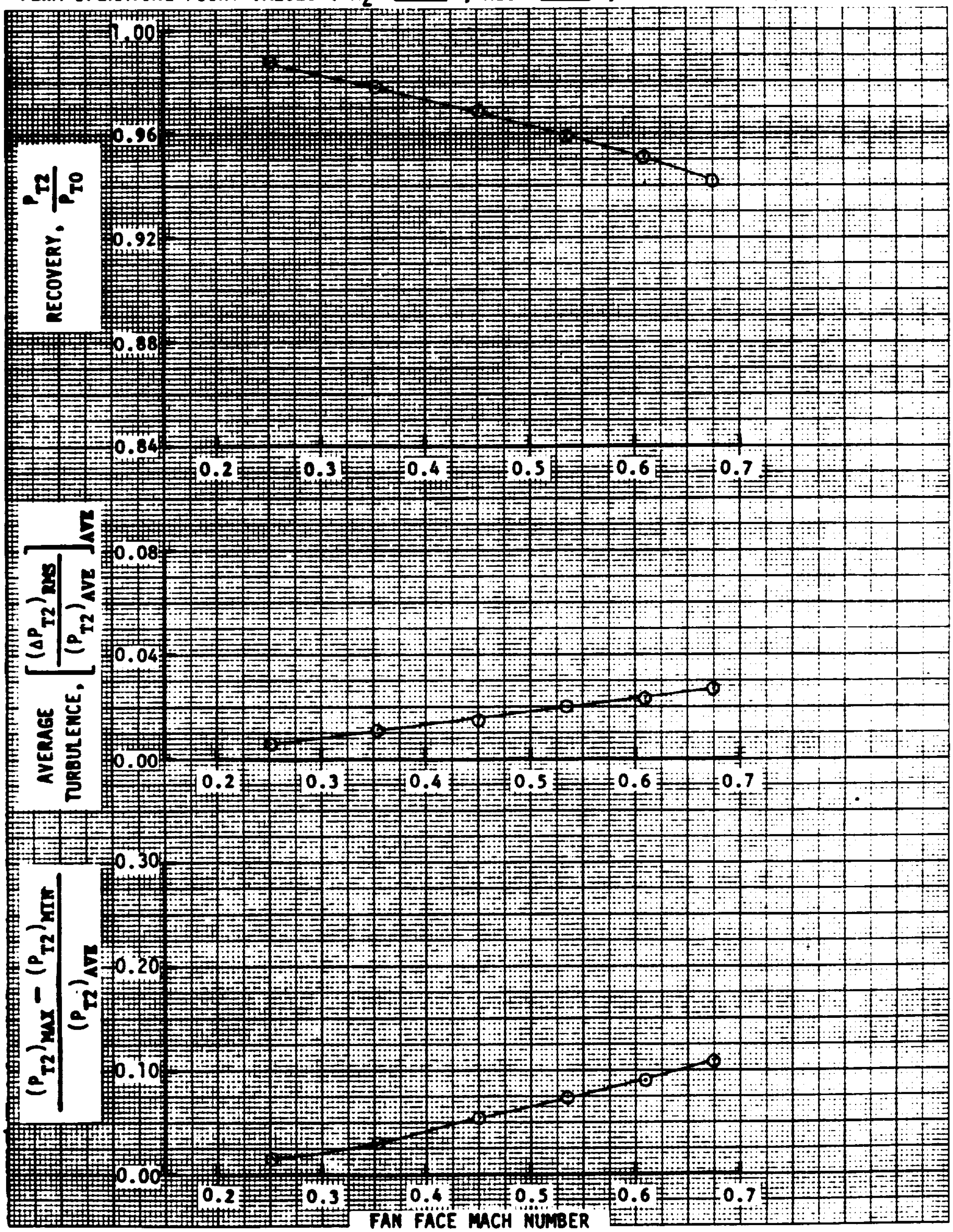
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .015 ; DIST= .063



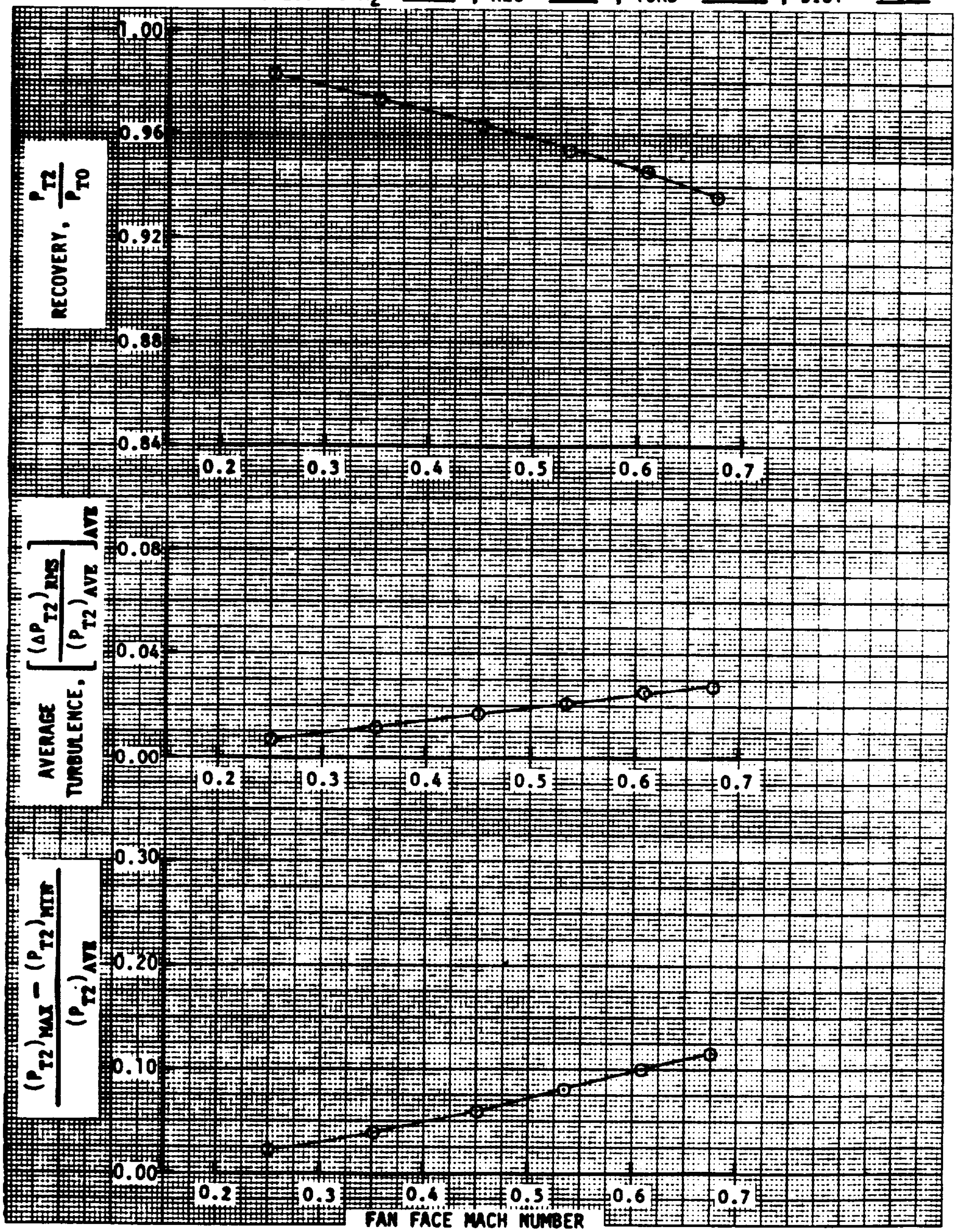
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1885-1890
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .017 ; DIST= .068



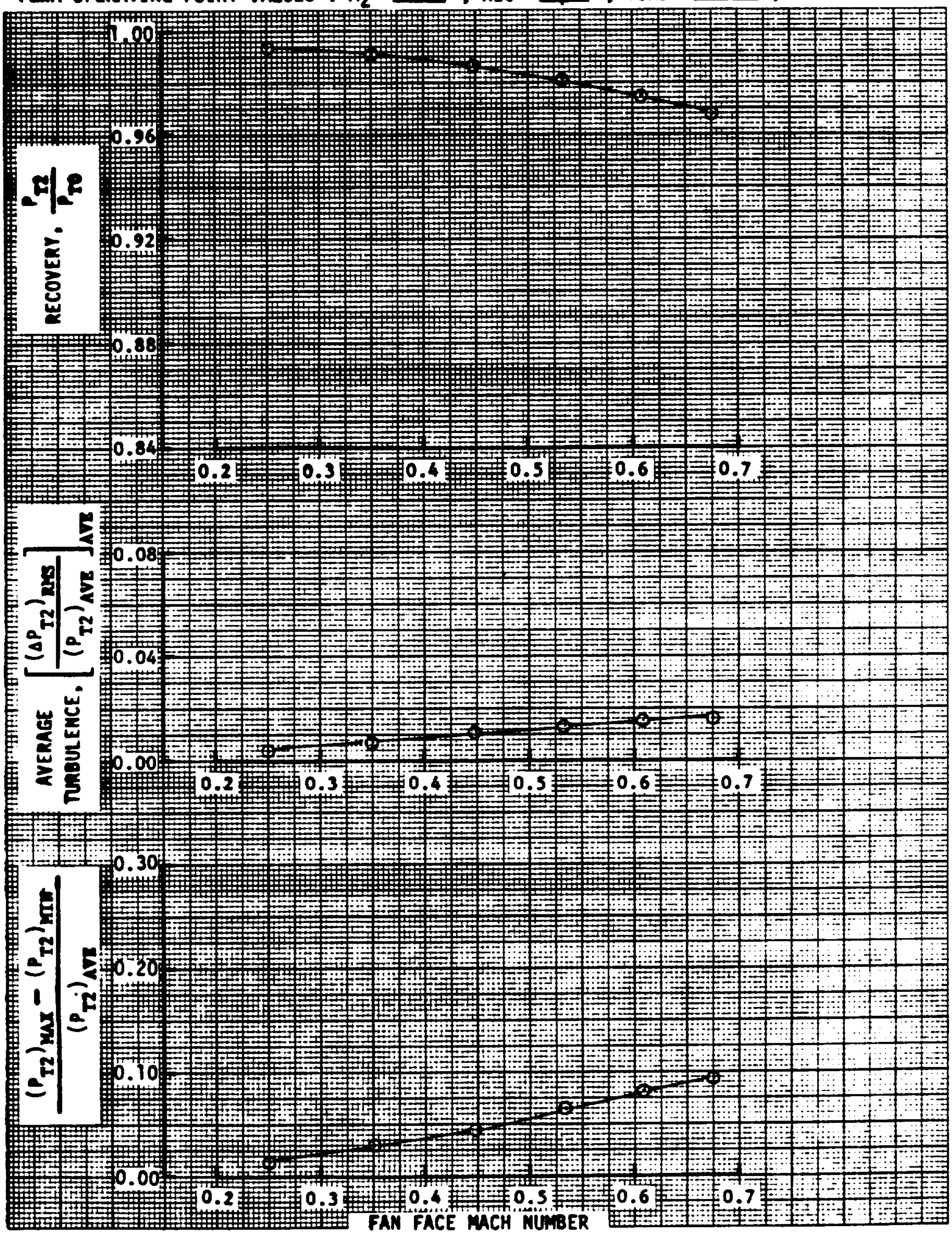
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1891-1896
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .960 ; TURB= .020 ; DIST= .072



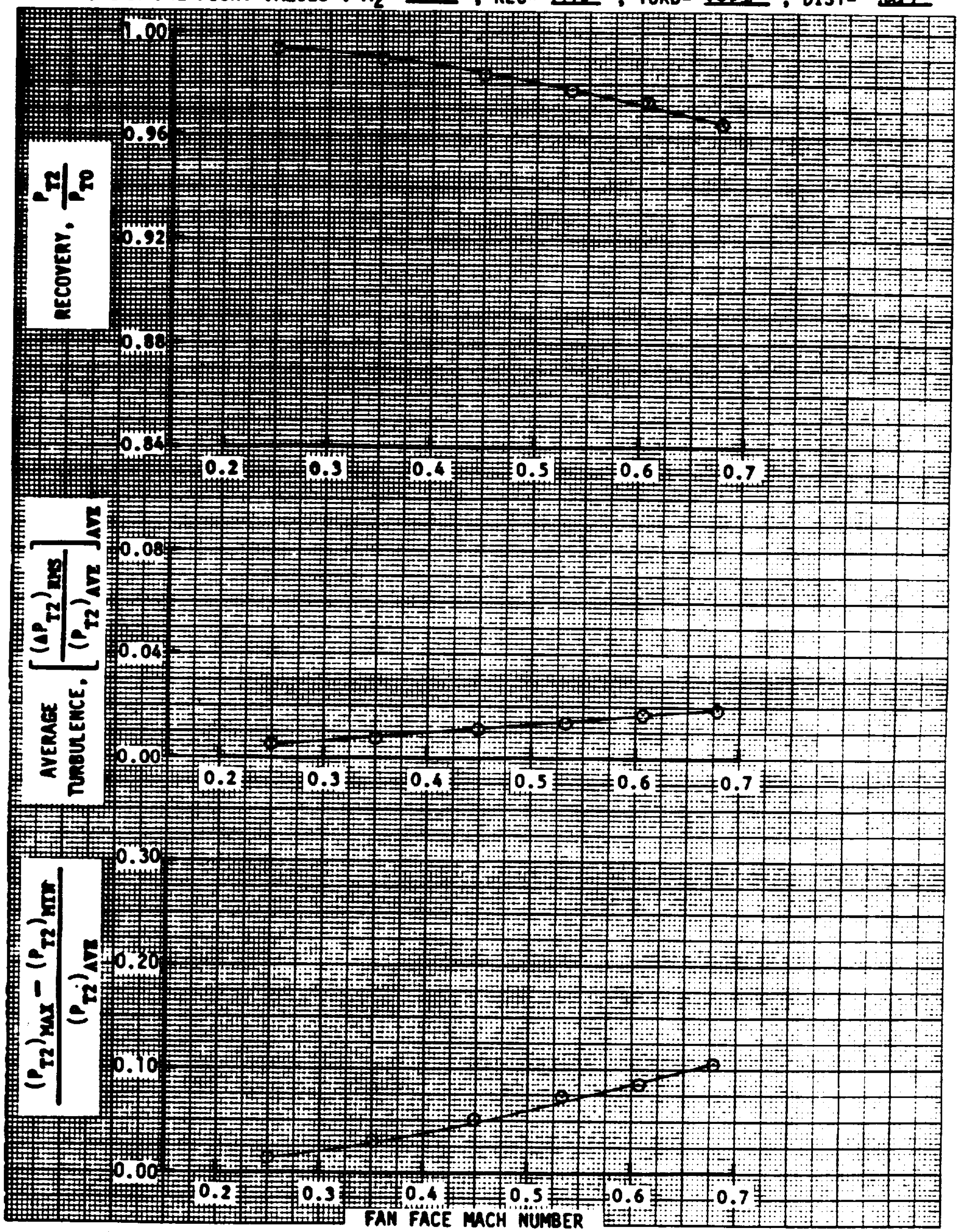
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1897-1902
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .021 ; DIST= .080



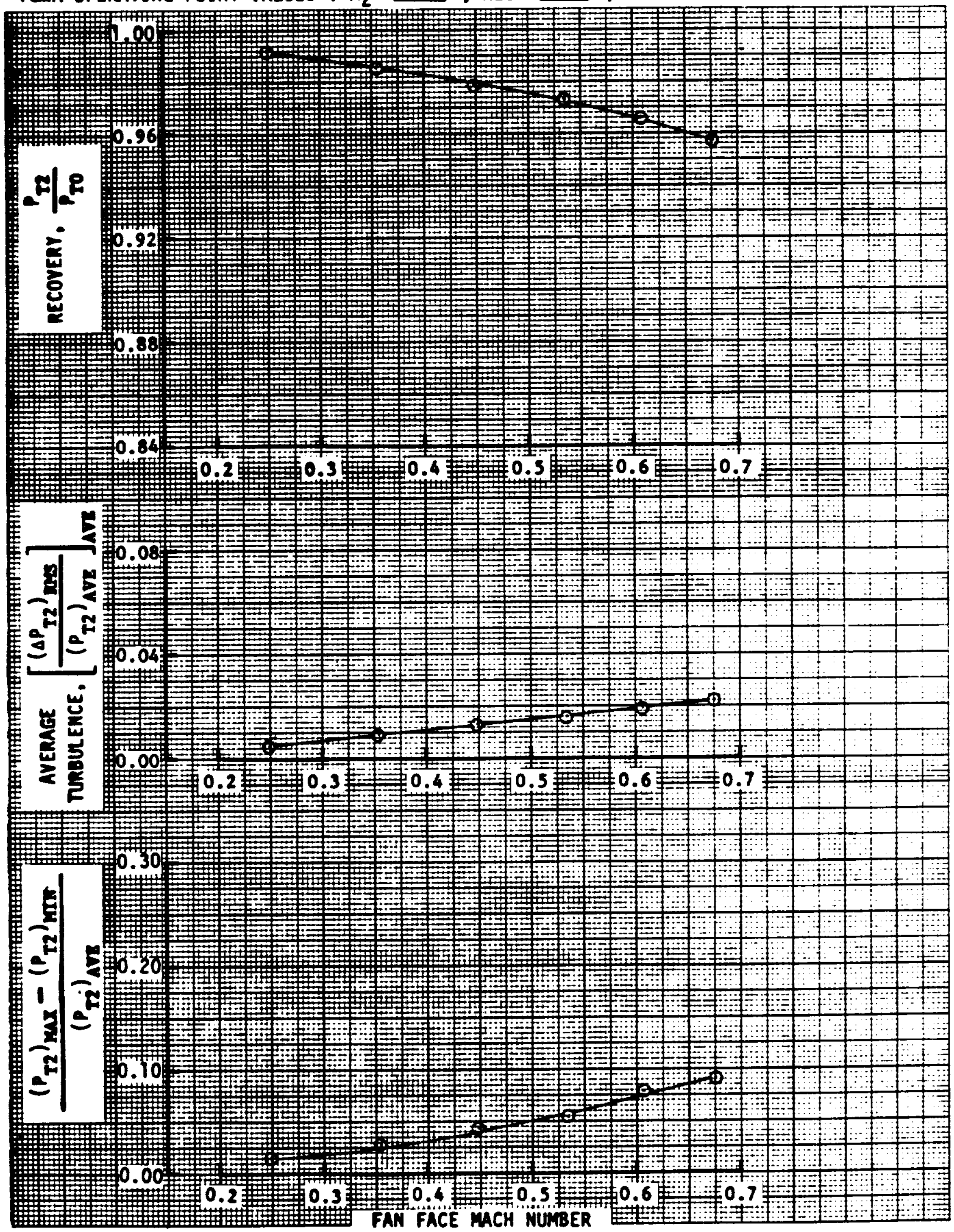
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1903-1908
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .013 ; DIST= .063



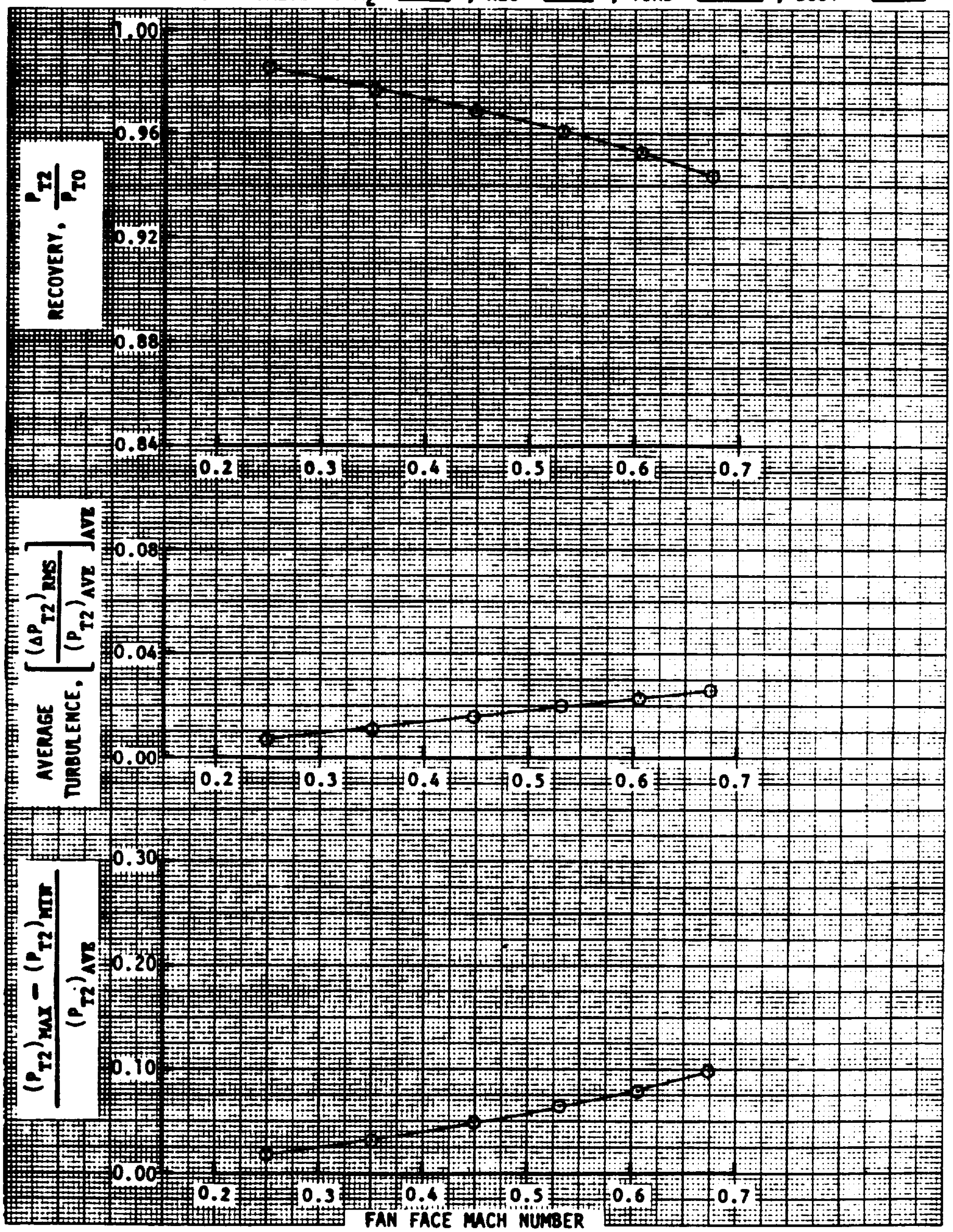
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1909-1914
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .014 ; DIST= .07



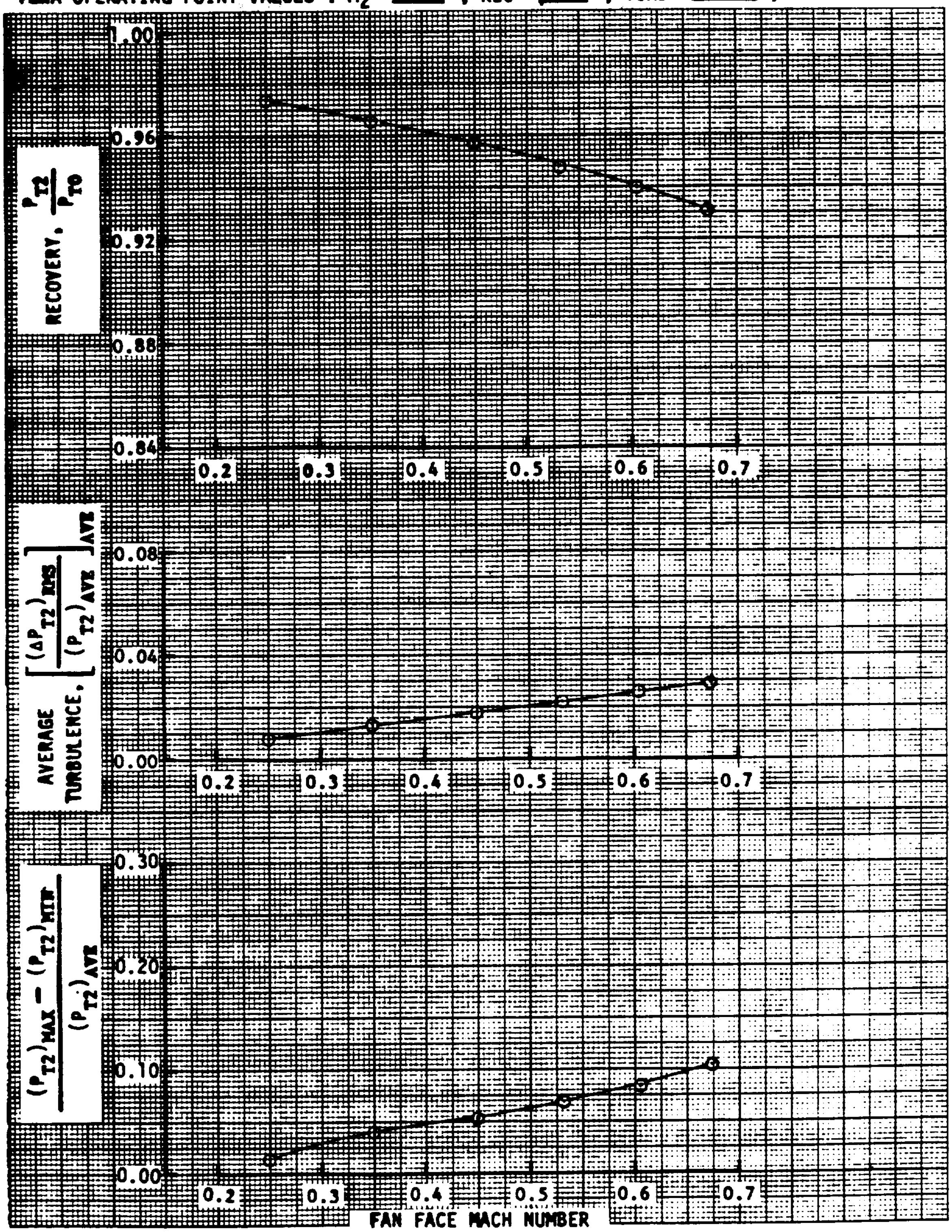
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1916-1921
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .016 ; DIST= .057



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1922-1927
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .020 ; DIST= .063



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1928-1933
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .949 ; TURB= .022 ; DIST= .069

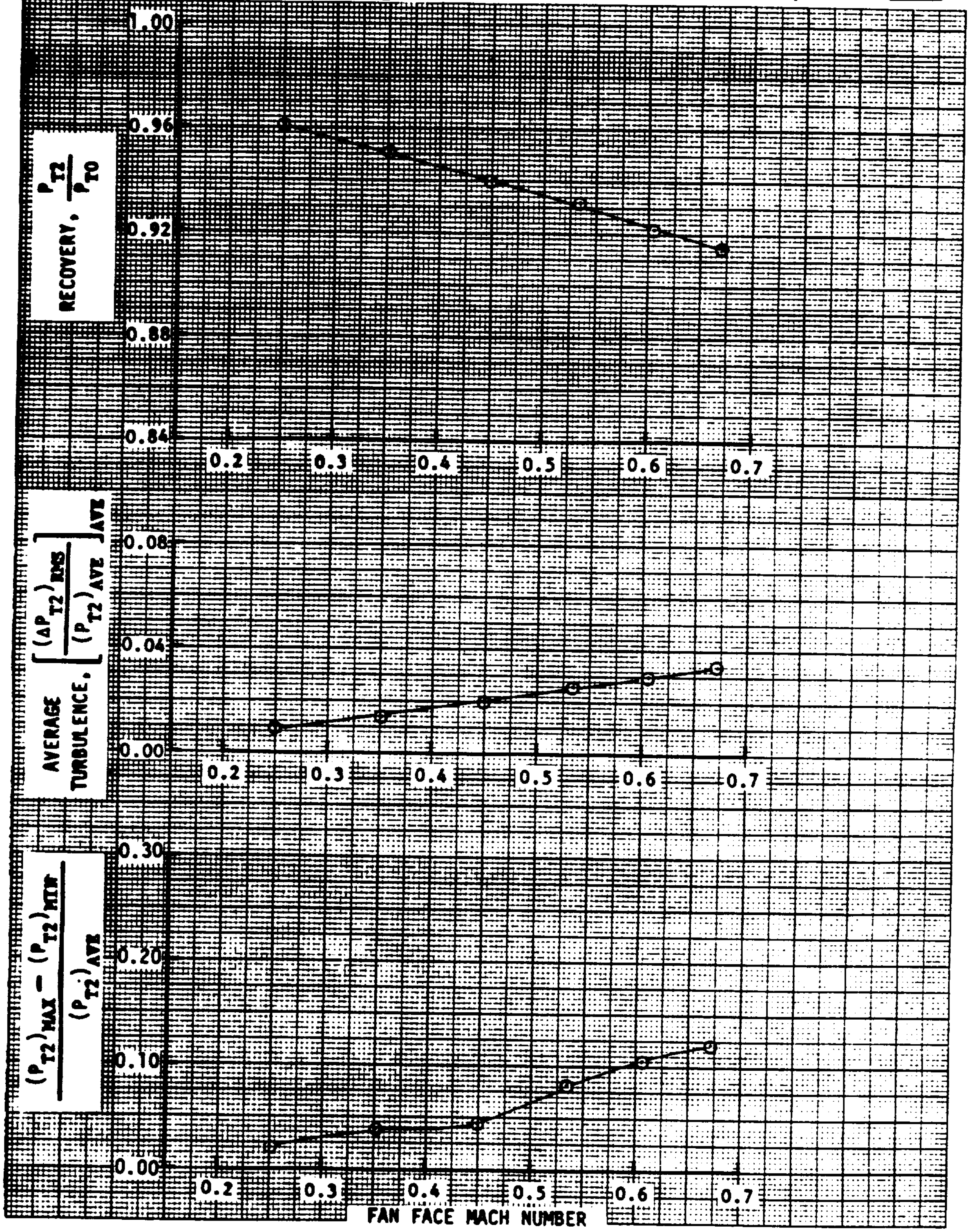


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

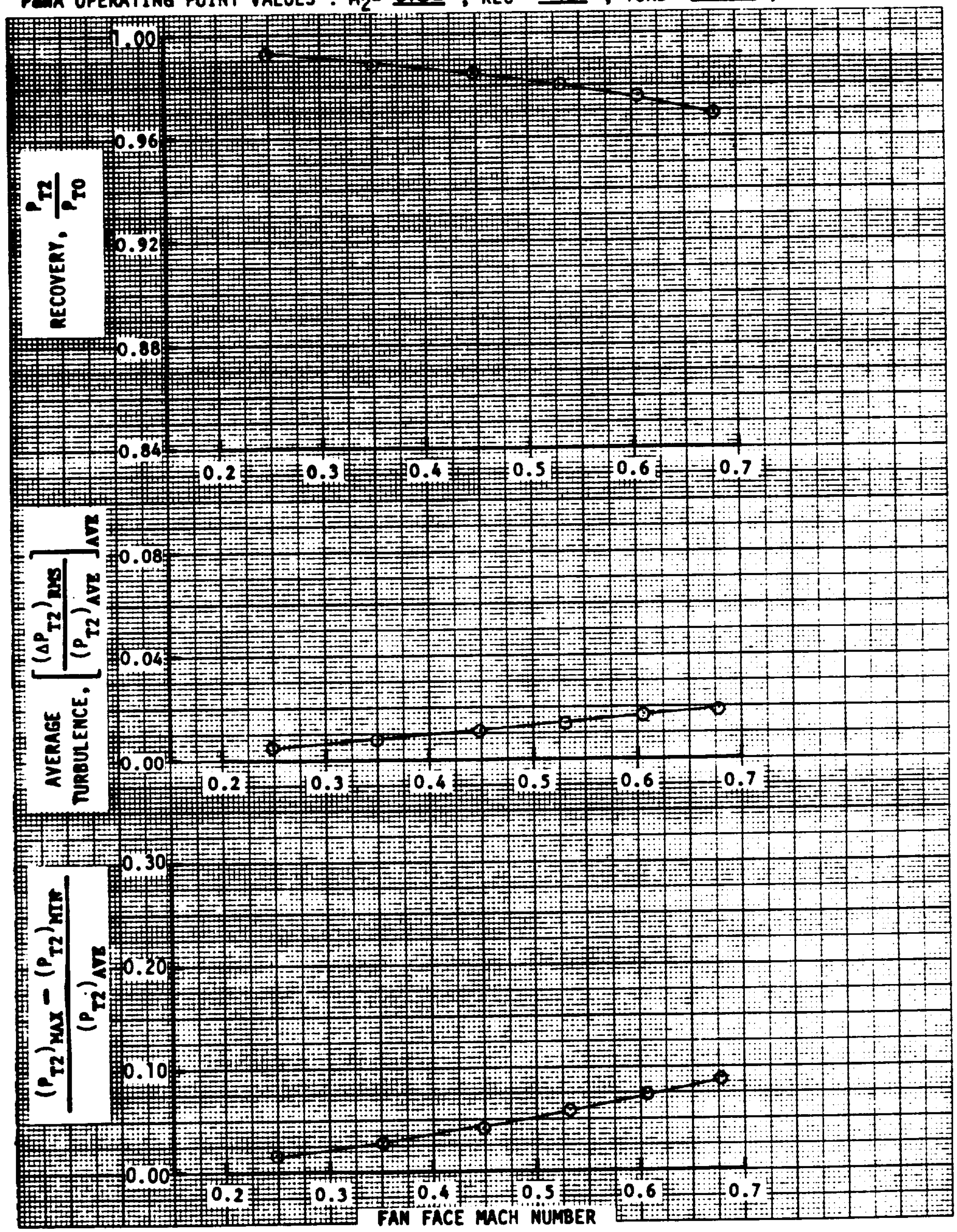
CONFIGURATION 7 ; READING NUMBERS 1934-1940

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.

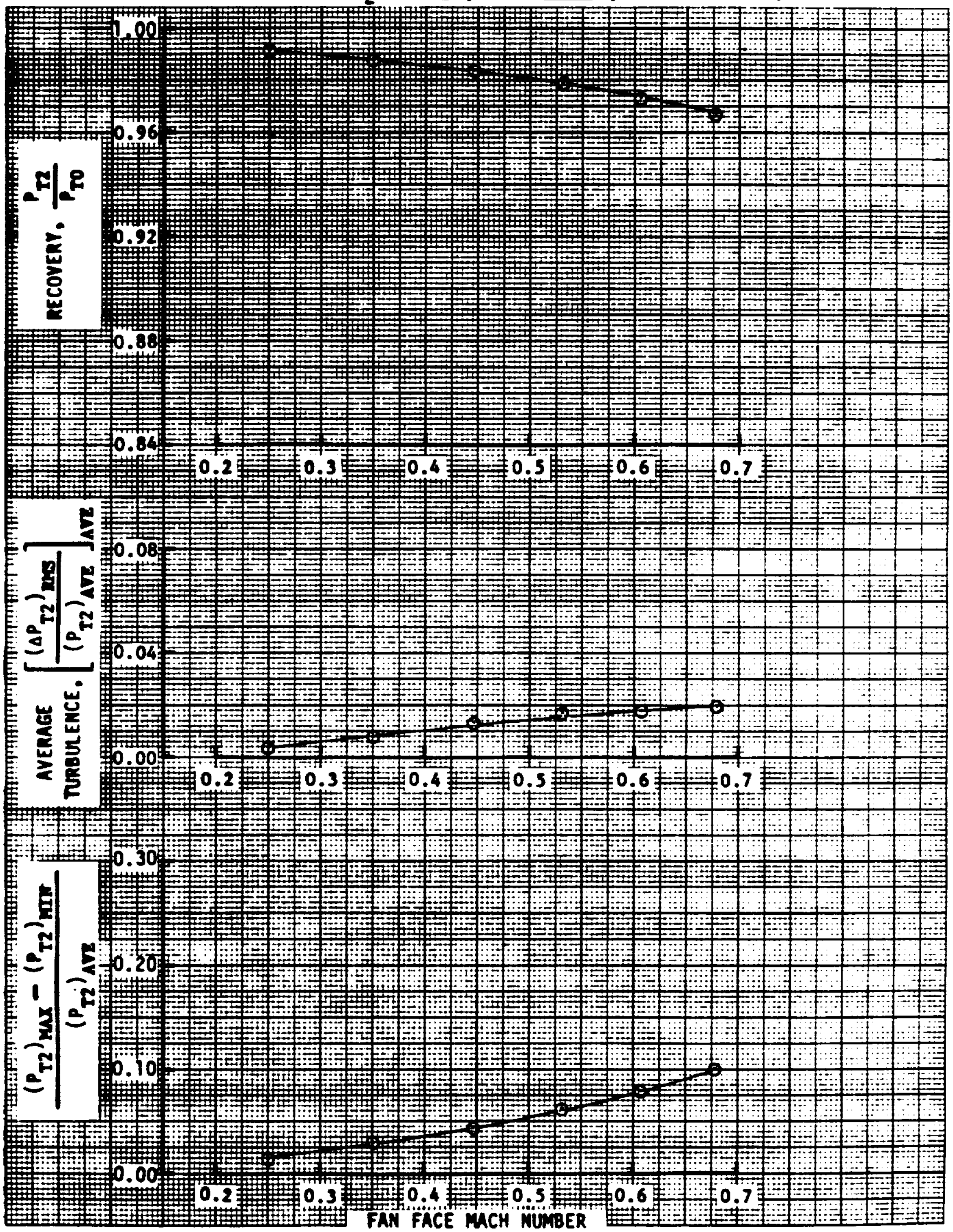
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .931 ; TURB= .025 ; DIST= .077



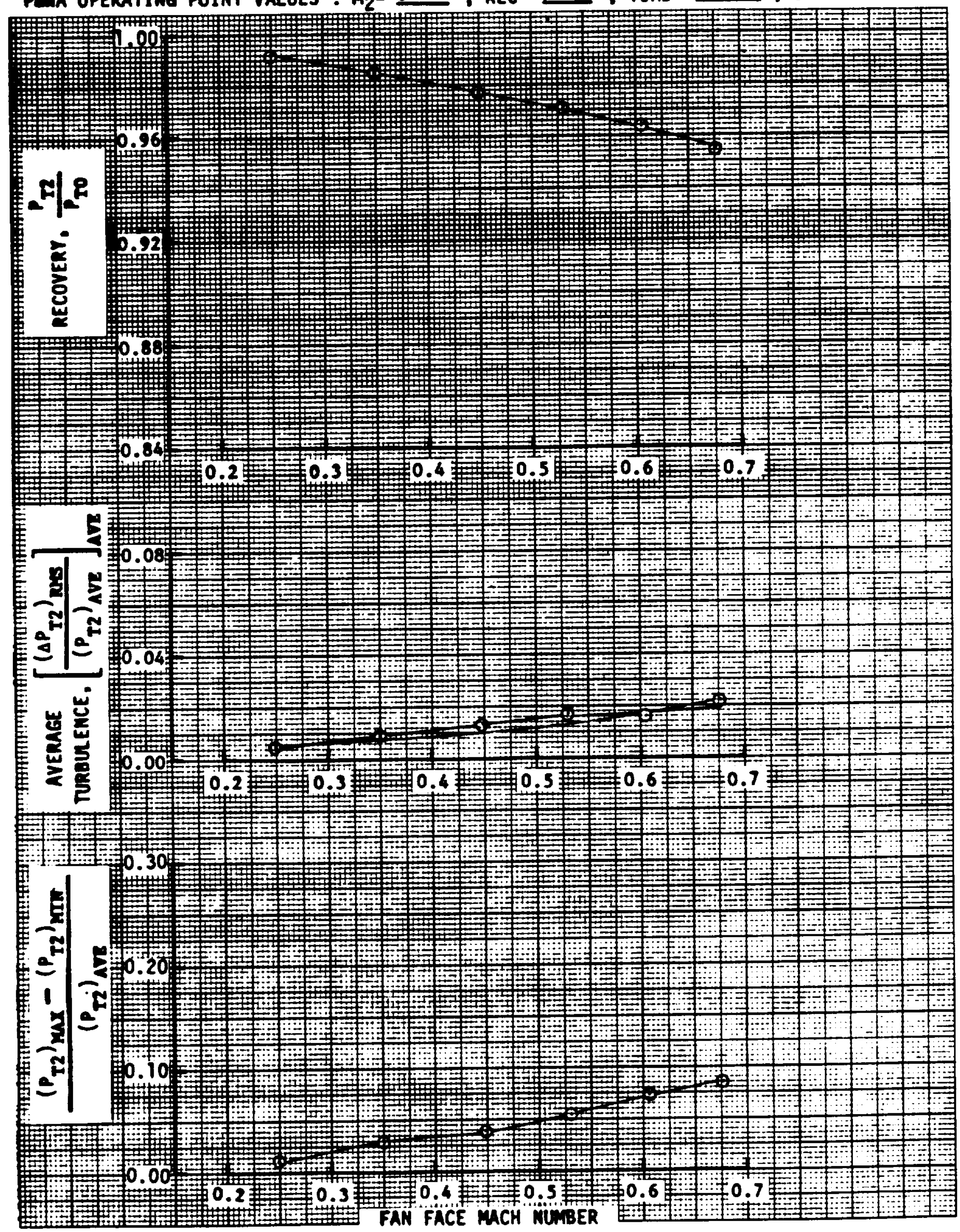
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1941-1946
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .014 ; DIST= .058



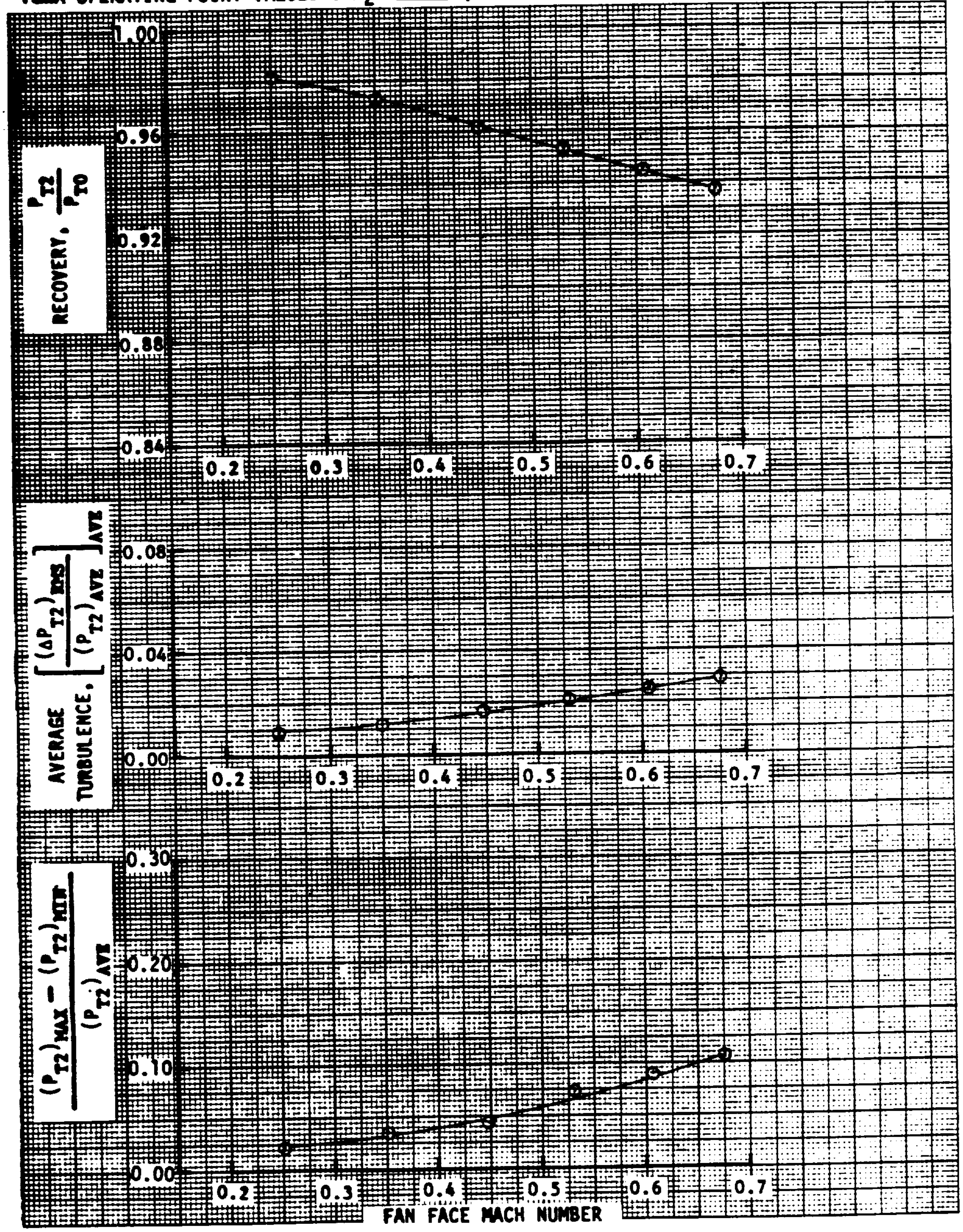
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1947-1952
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .979 ; TURB= .015 ; DIST= .060



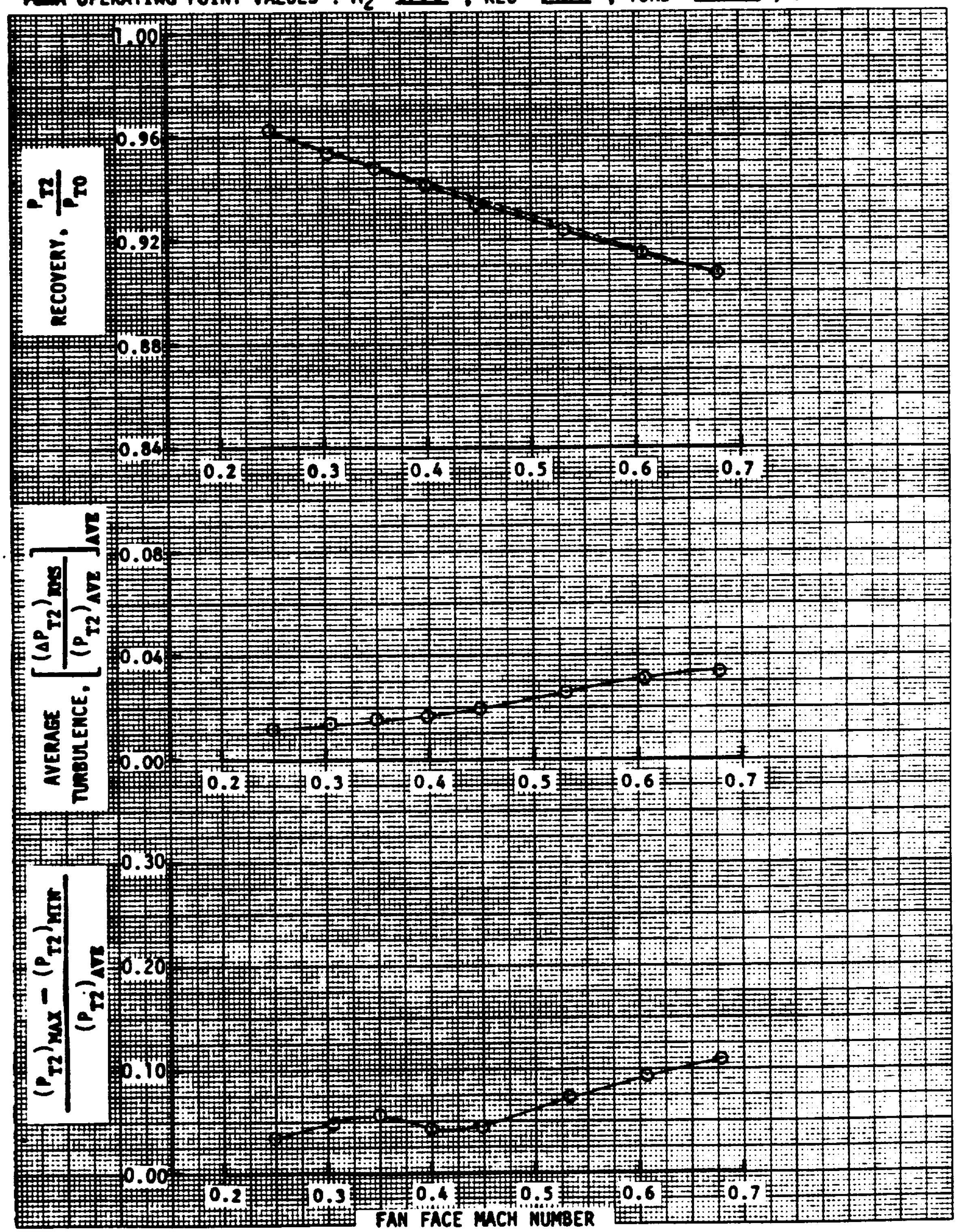
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1953-1958
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .016 ; DIST= .055



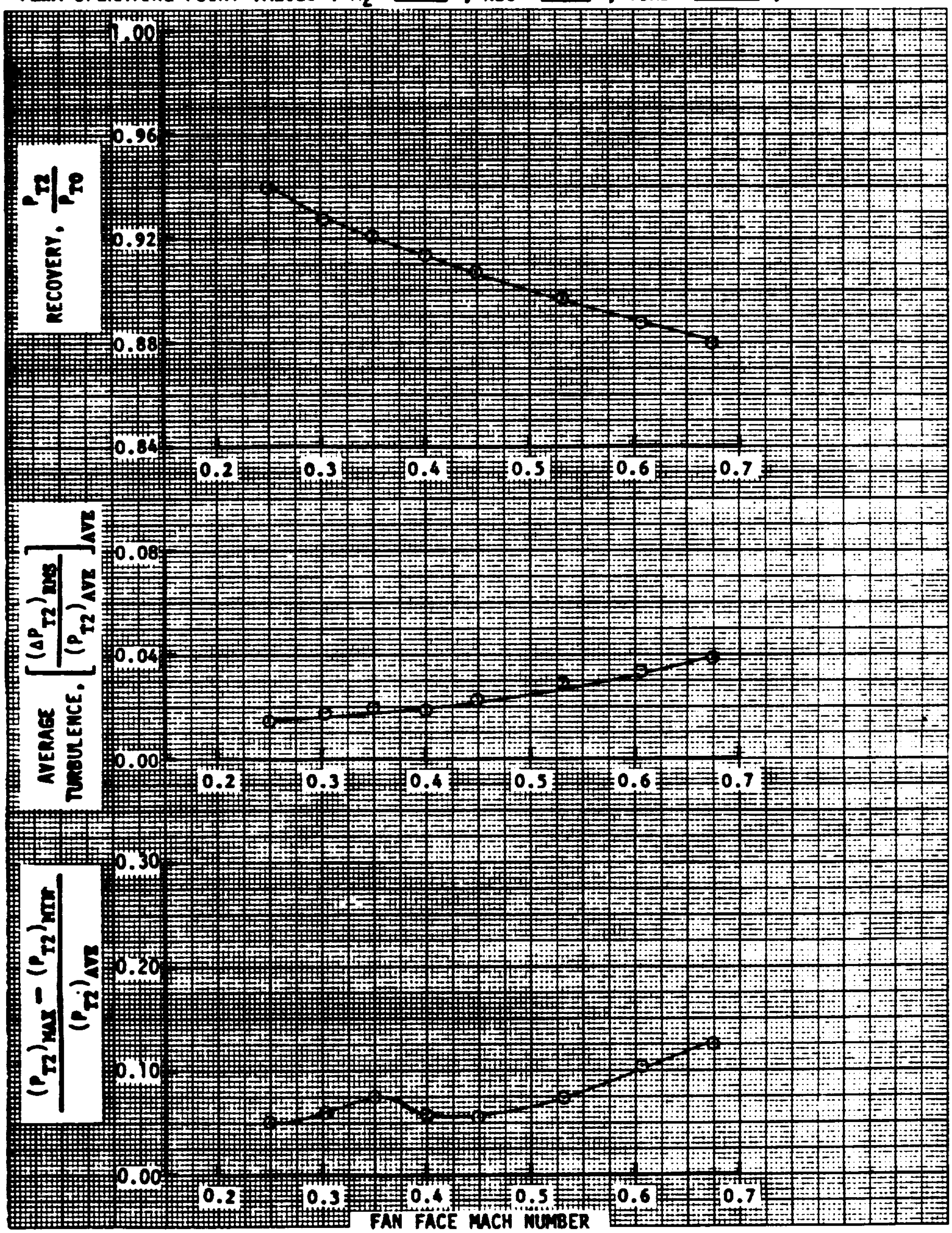
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1959-1964
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .953 ; TURB= .020 ; DIST= .065



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1965-1972
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
POMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .924 ; TURB= .025 ; DIST= .072



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 7 ; READING NUMBERS 1973-1983
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .896 ; TURB= .027 ; DIST= .073



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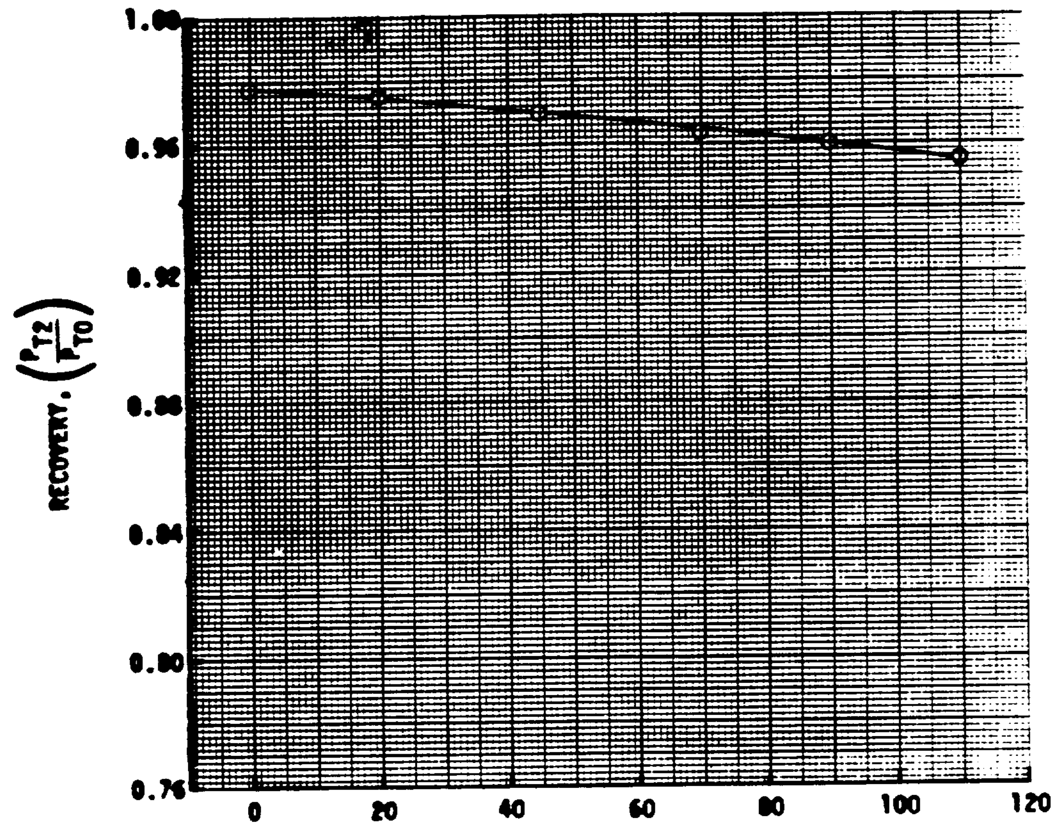
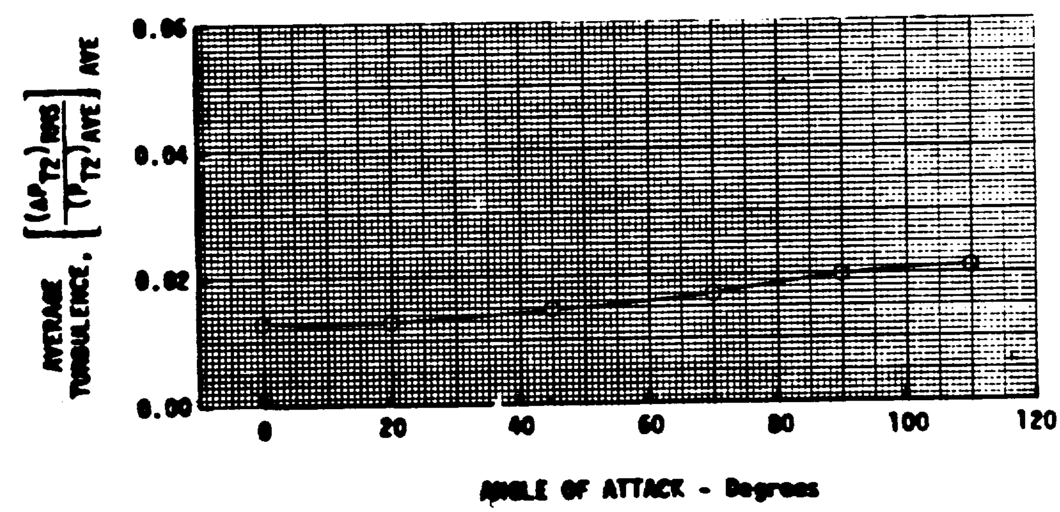
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
NOMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 7 ; DESCRIPTION 40° Droop Lip ; All Auxiliary Inlets Open - Port





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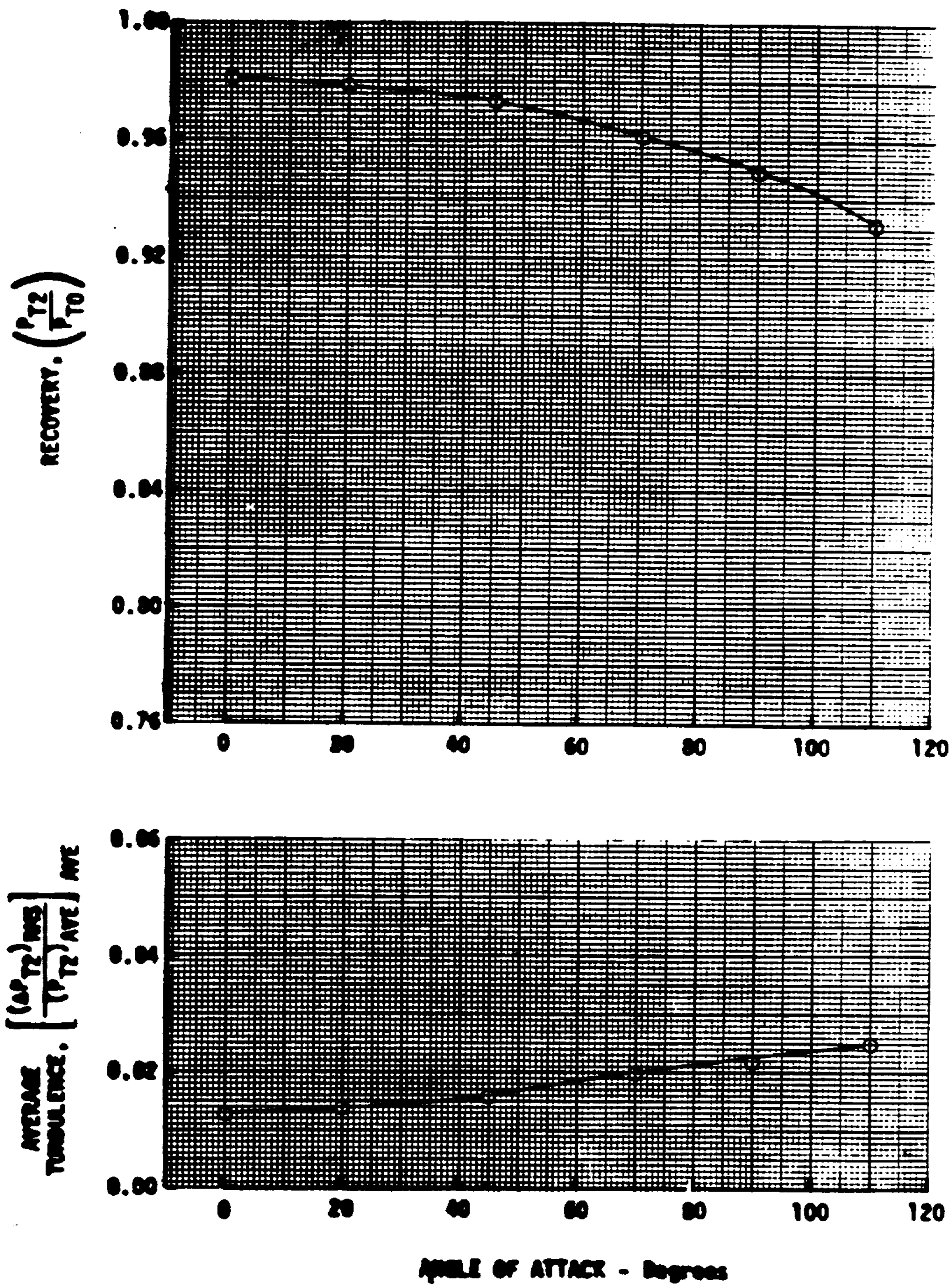
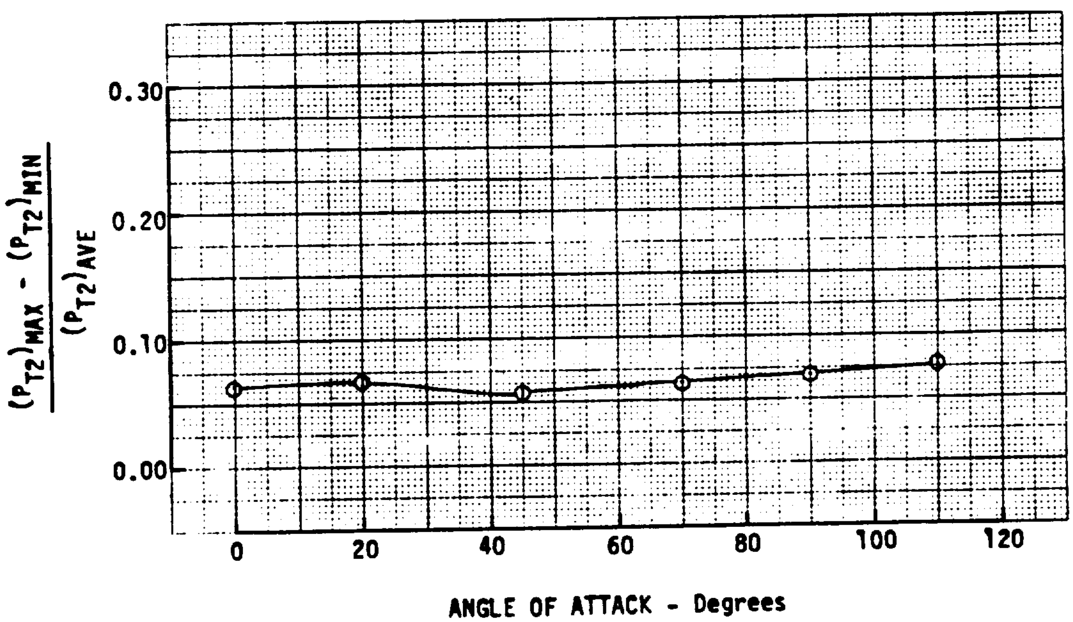
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 7; DESCRIPTION 40° Droop Lip; All Auxiliary Inlets Open- Port



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 7 ; DESCRIPTION 40° Droop Lip ; All Aux Inlets Open



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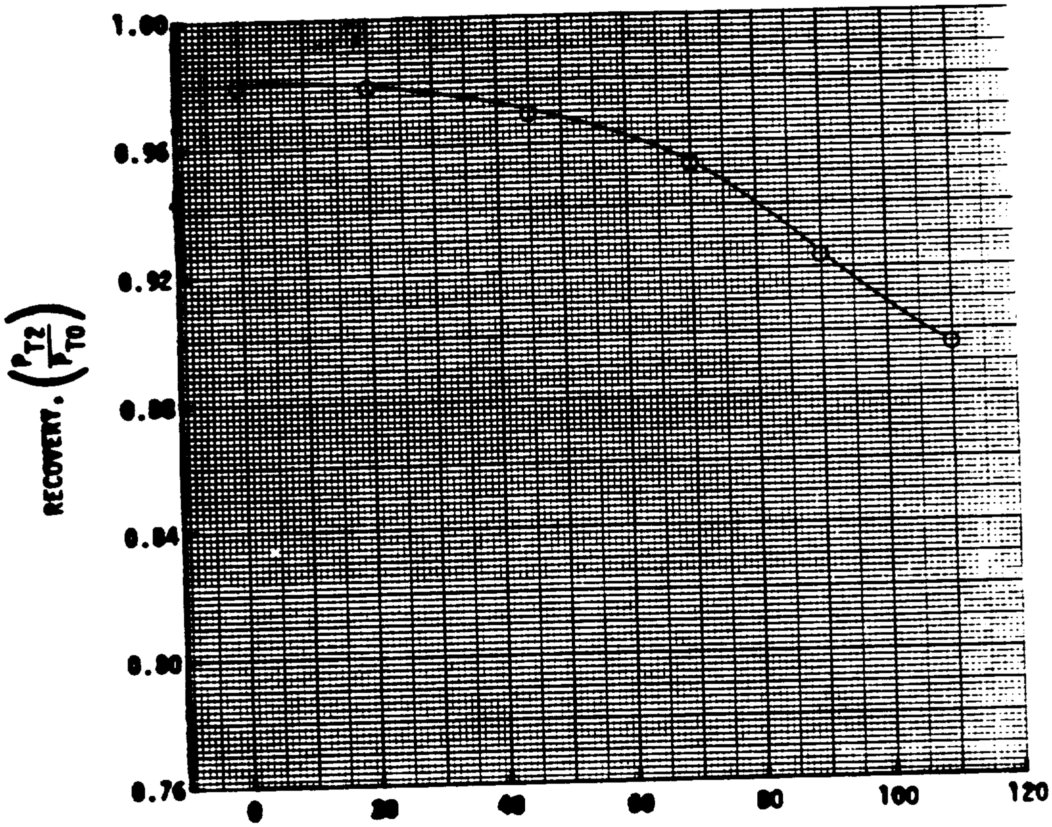
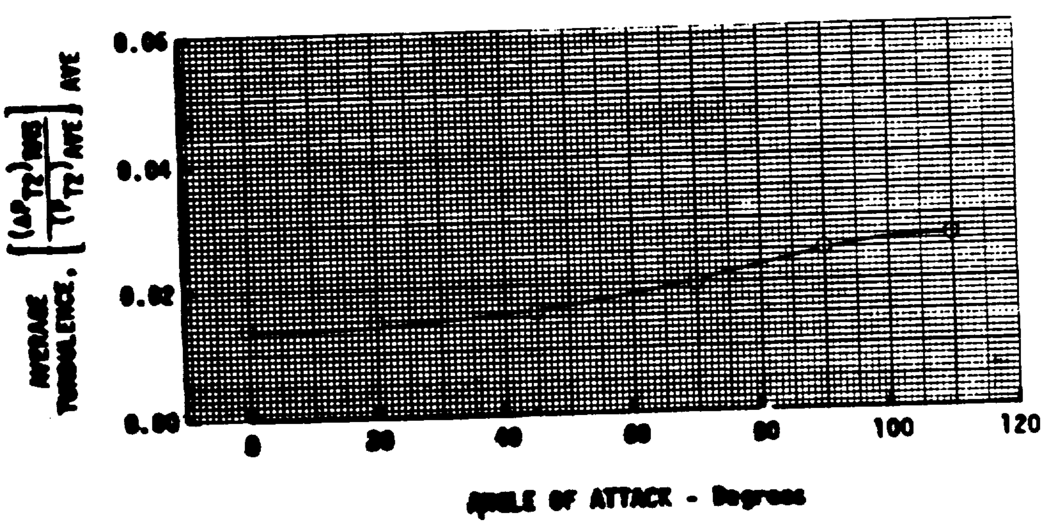
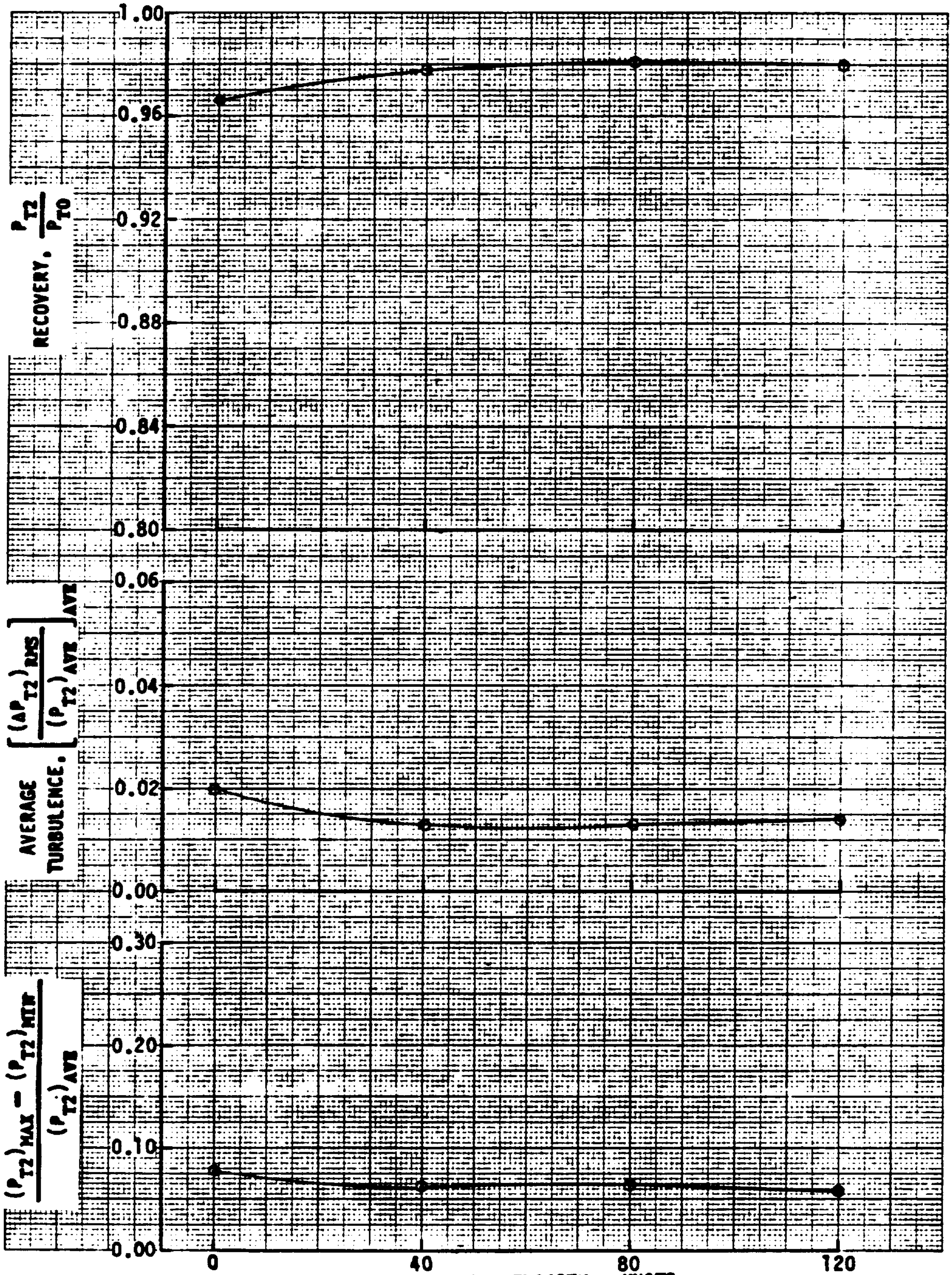
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.
CONFIGURATION: NUMBER 7; DESCRIPTION 40° Droop Lip; All Auxiliary Inlets Open-Aft





RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 7; DESCRIPTION 40° DROOP, ALL AUXILIARY INLETS OPEN - Port



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP 'ATIC PRESSURE RATIO VS. COWL LIP STATION

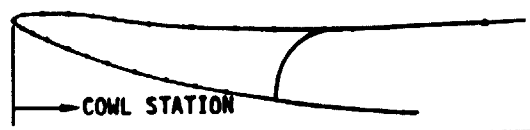
CONFIGURATION: 7 ; 40° DROOP LIP , ALL AUX OPEN - Port

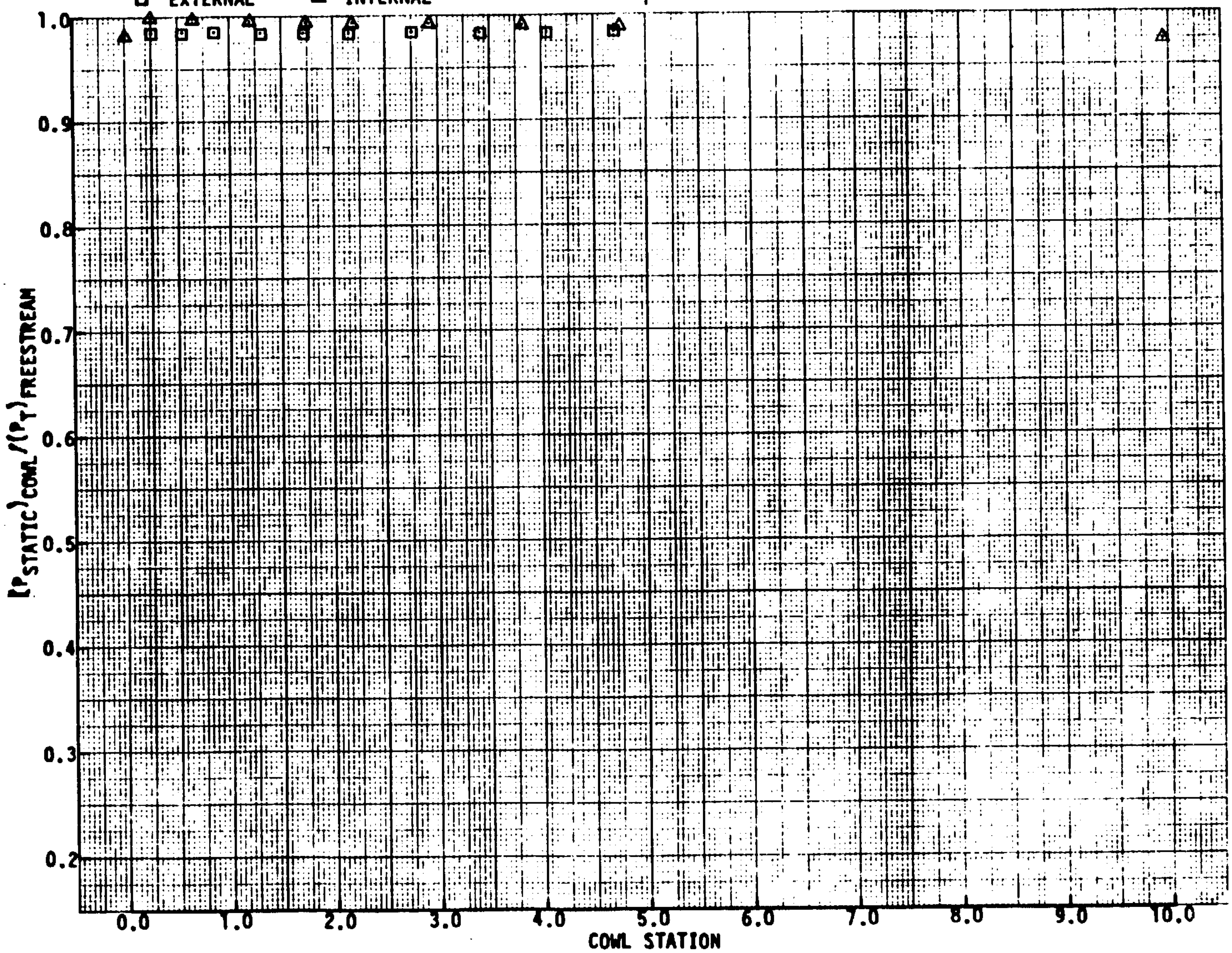
FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 0 degrees

ENGINE FACE MACH NUMBER = .533

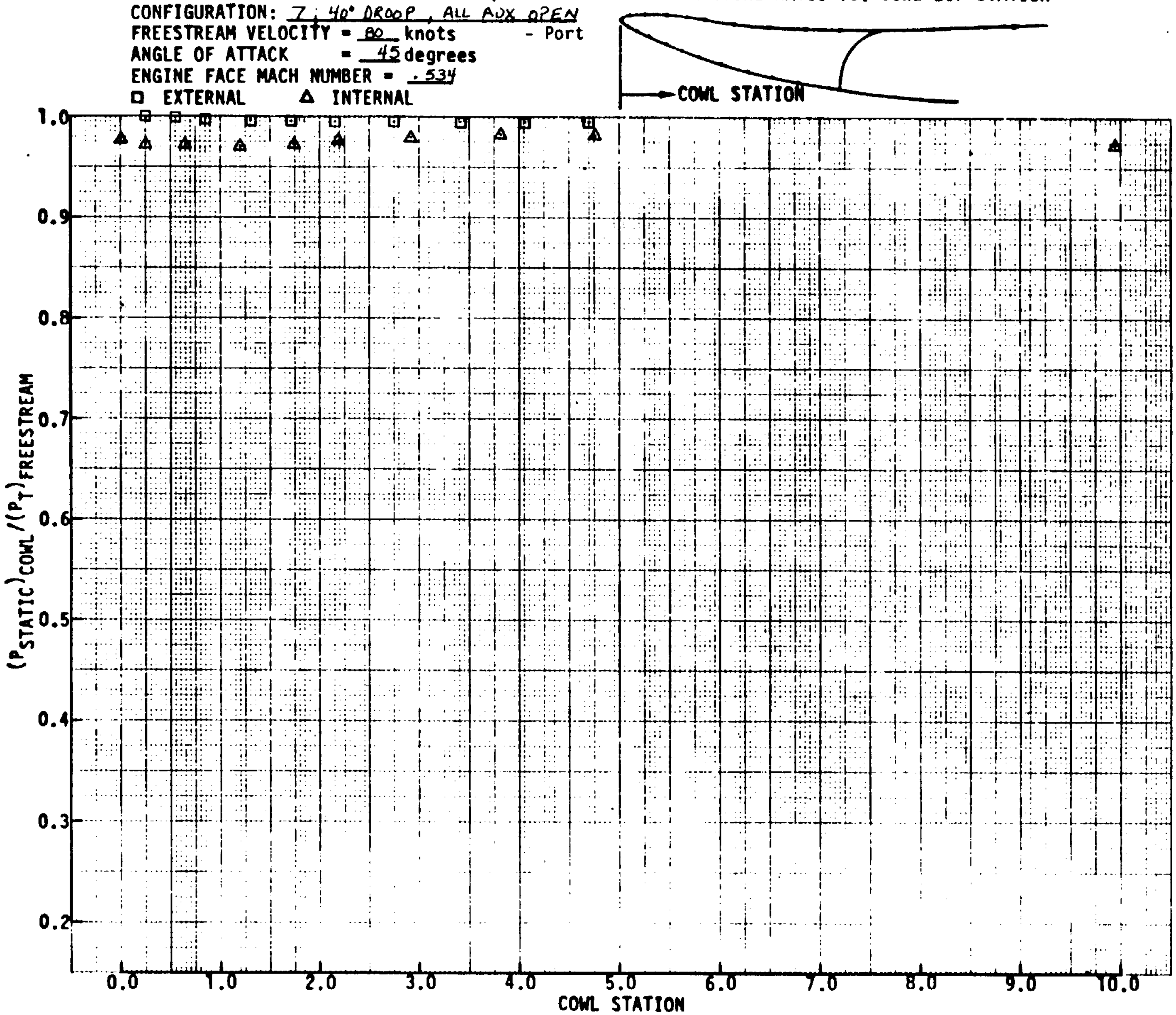
□ EXTERNAL △ INTERNAL





COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 7 ; 40° DROOP , ALL AUX OPEN
FREESTREAM VELOCITY = 80 knots - Port
ANGLE OF ATTACK = 45 degrees
ENGINE FACE MACH NUMBER = .534
□ EXTERNAL △ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

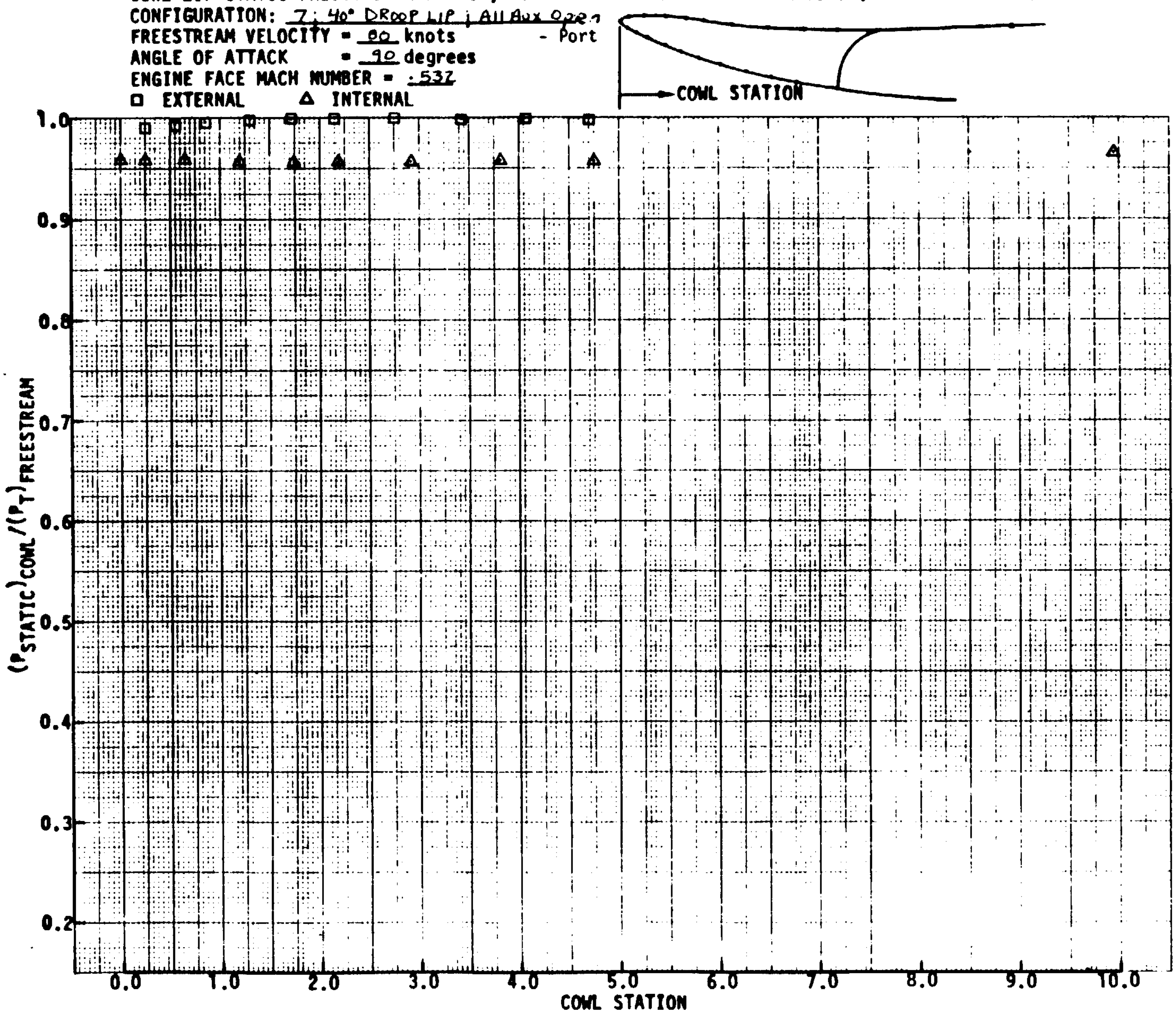
CONFIGURATION: 7; 40° DROOP LIP ; All Aux Open - Port

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 90 degrees

ENGINE FACE MACH NUMBER = .532

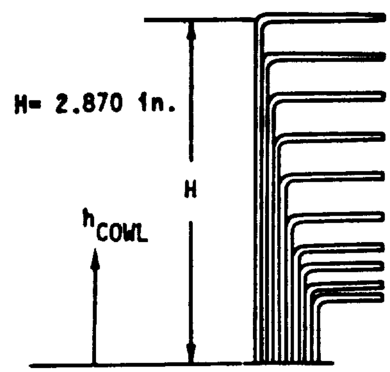
□ EXTERNAL △ INTERNAL

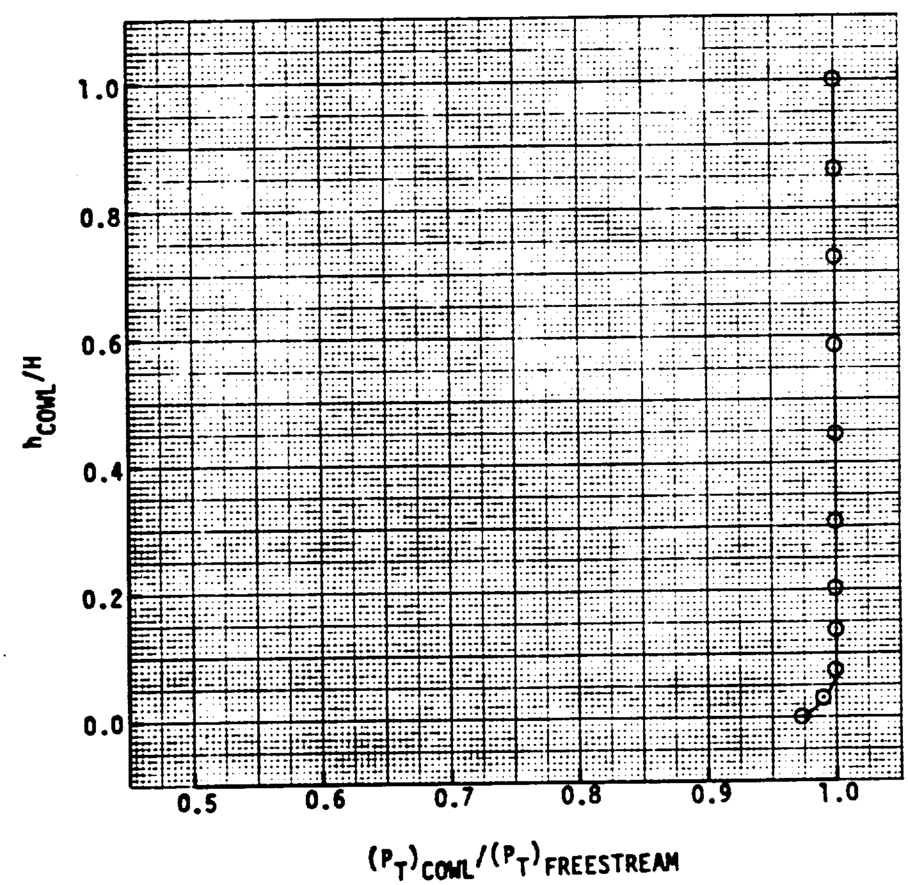


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 7 ; DESCRIPTION 40° DROOP LIP ; ALL AUX INLETS OPEN
- Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

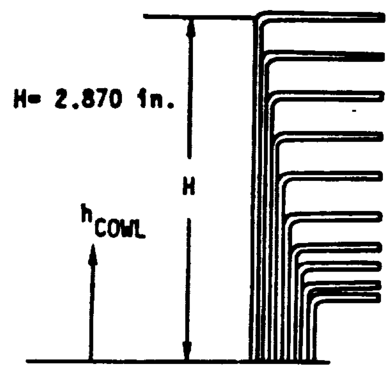


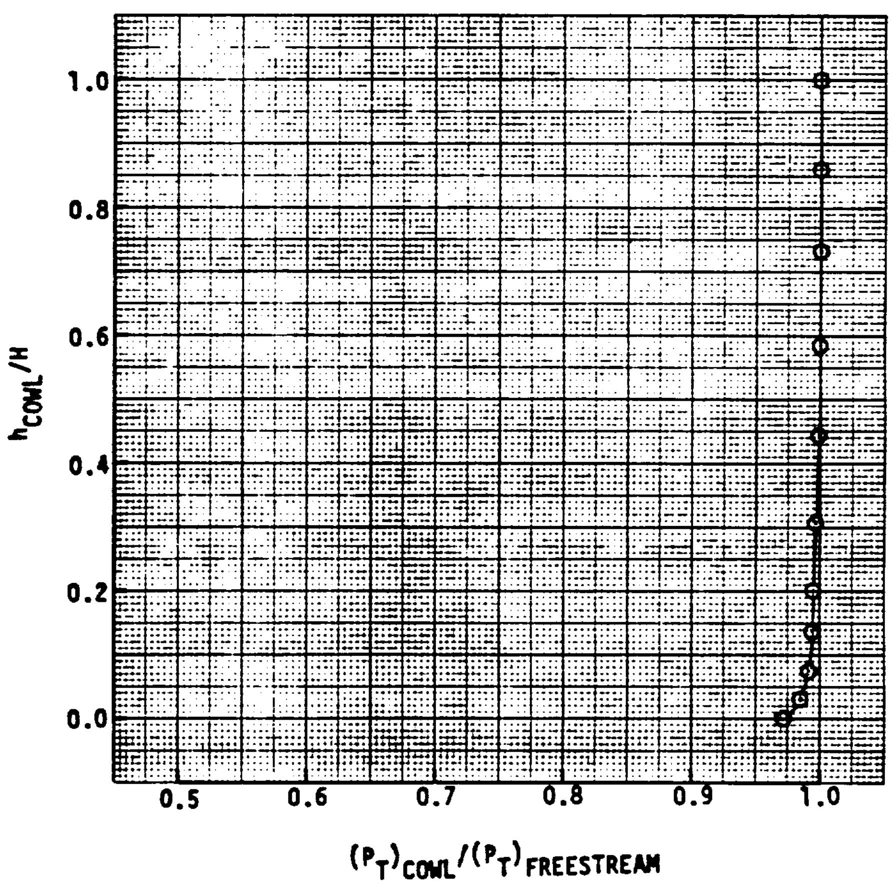


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 7; DESCRIPTION 40° DROOP LIP, ALL AUX INLETS OPEN- Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .534

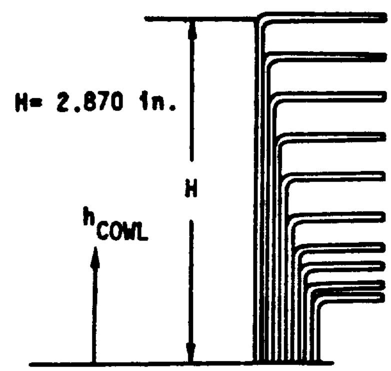


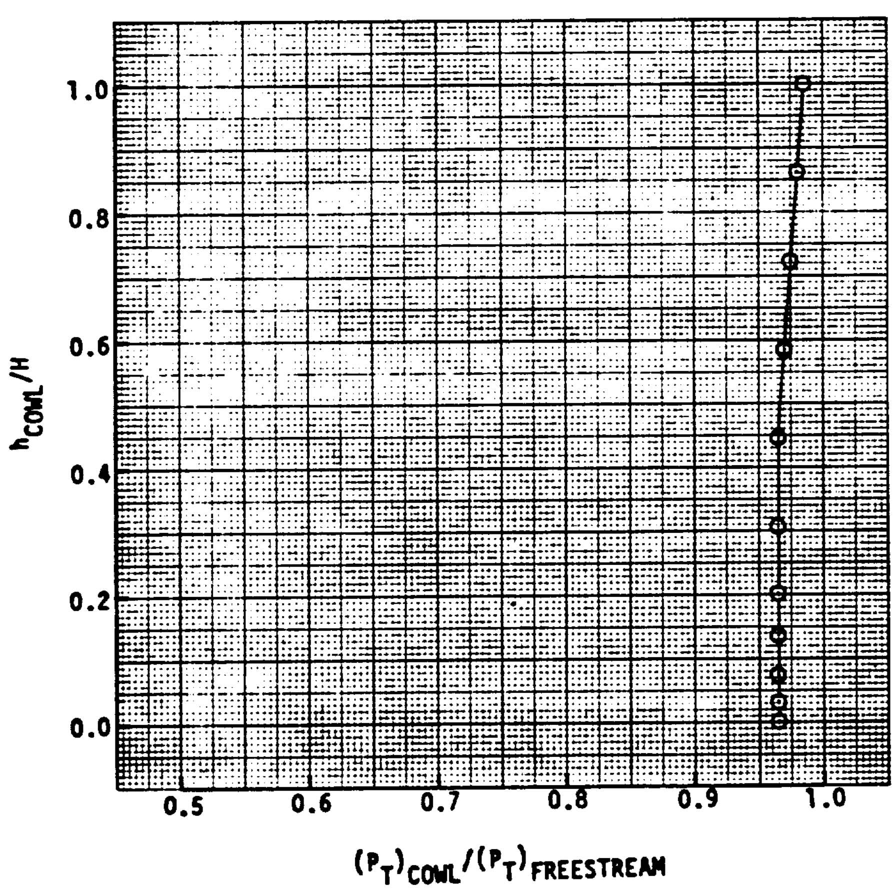


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

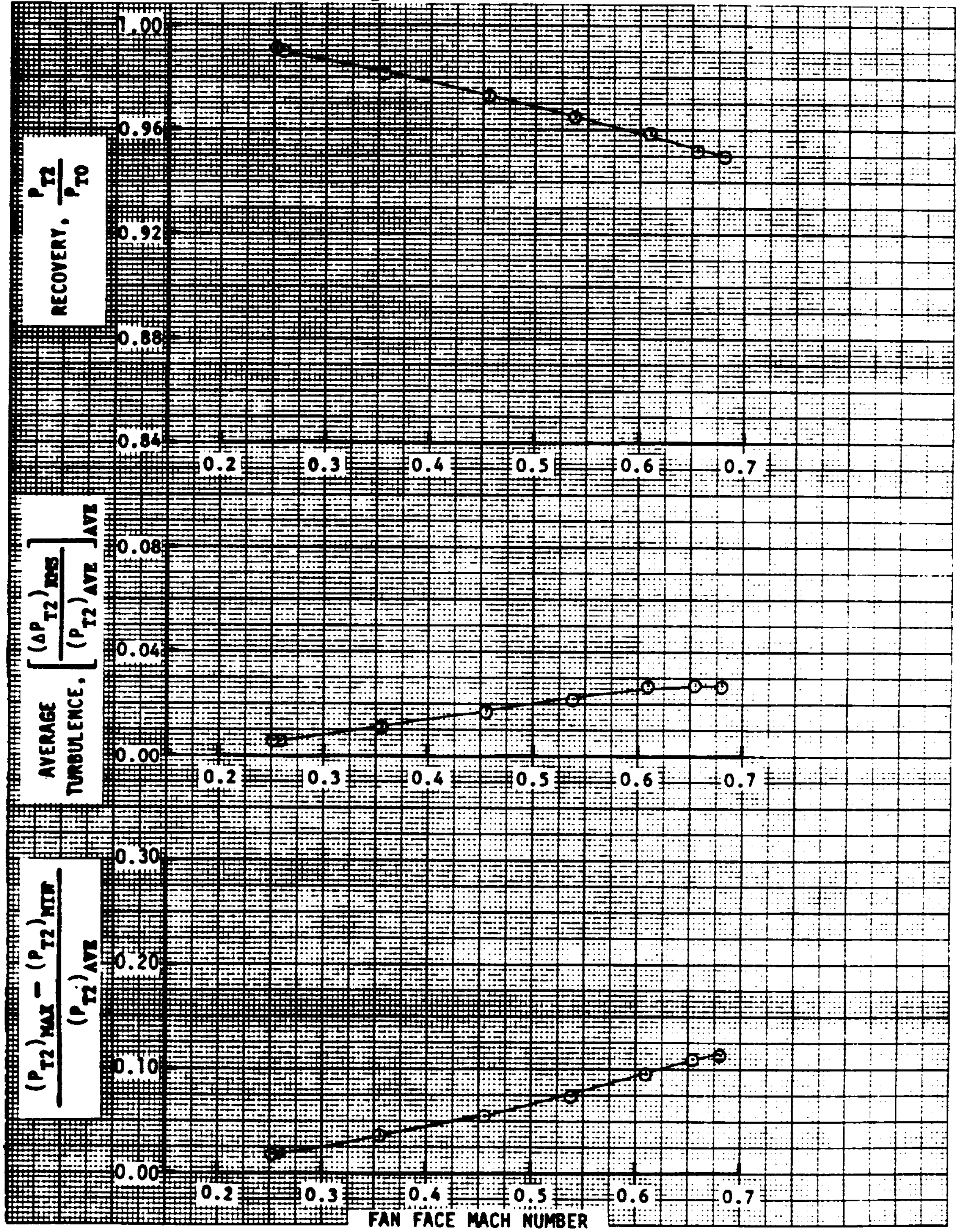
CONFIGURATION: NUMBER 7; DESCRIPTION 40° DROOP LIP, ALL AUX INLETS OPEN - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .532

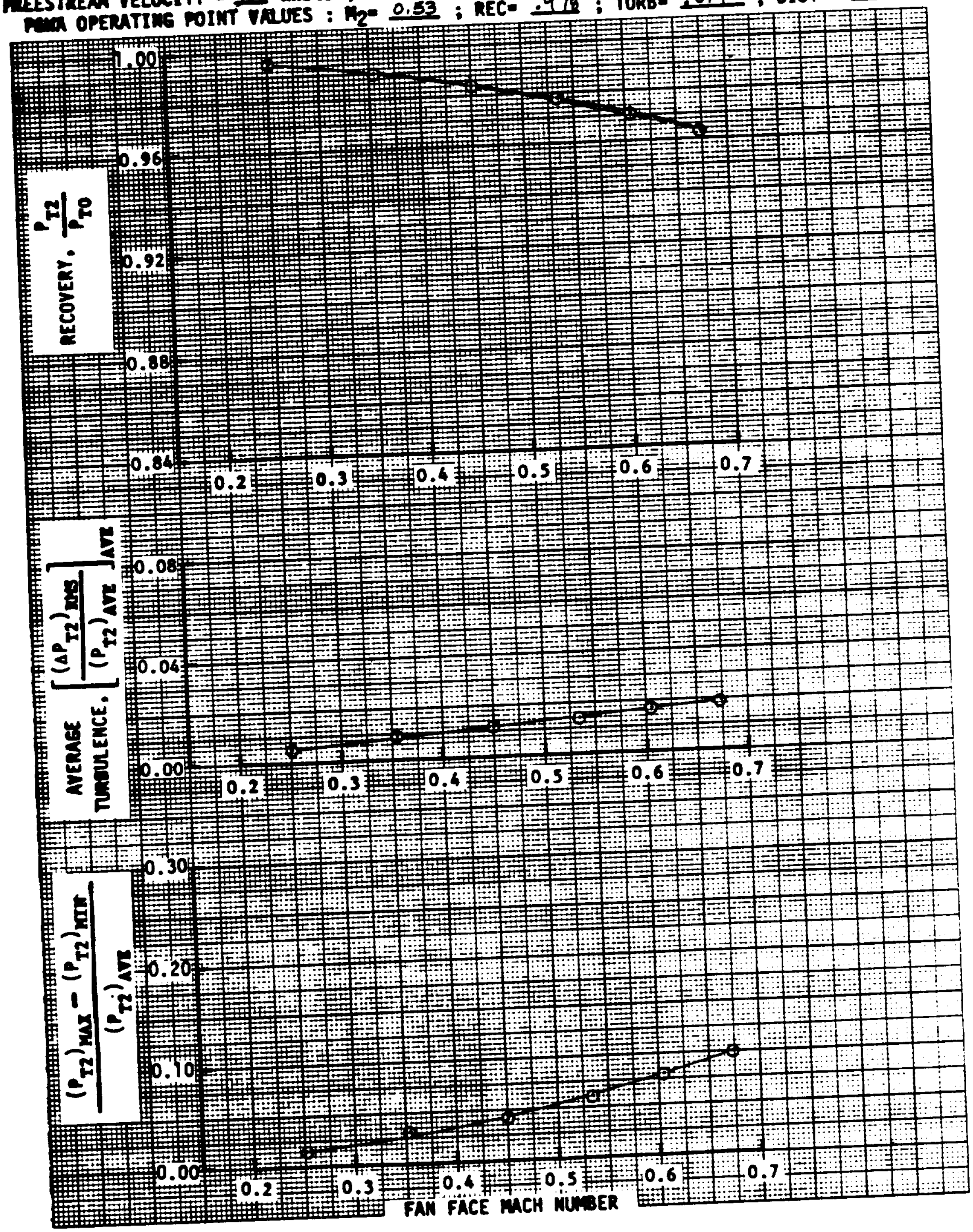




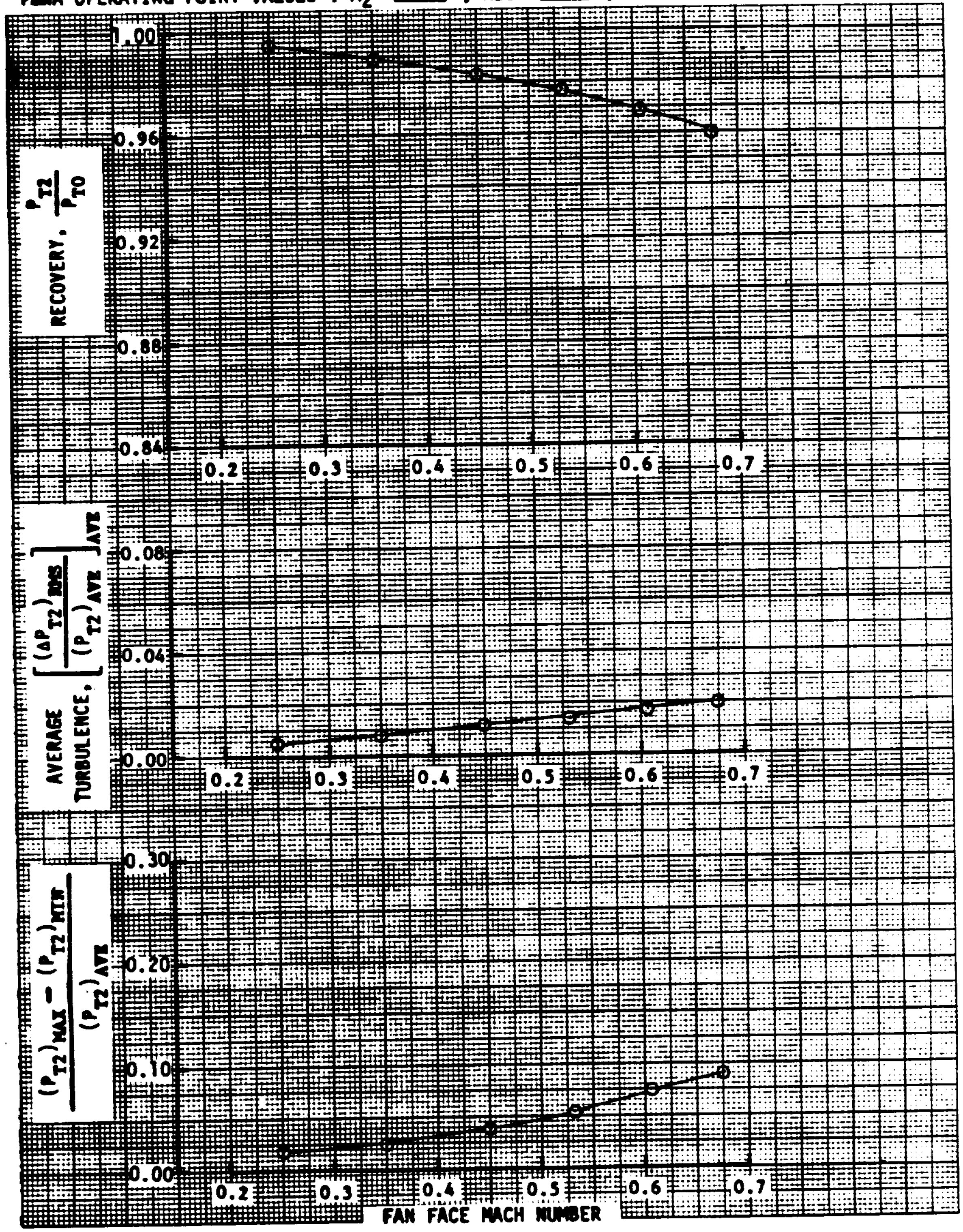
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1737-1745
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .022 ; DIST= .074



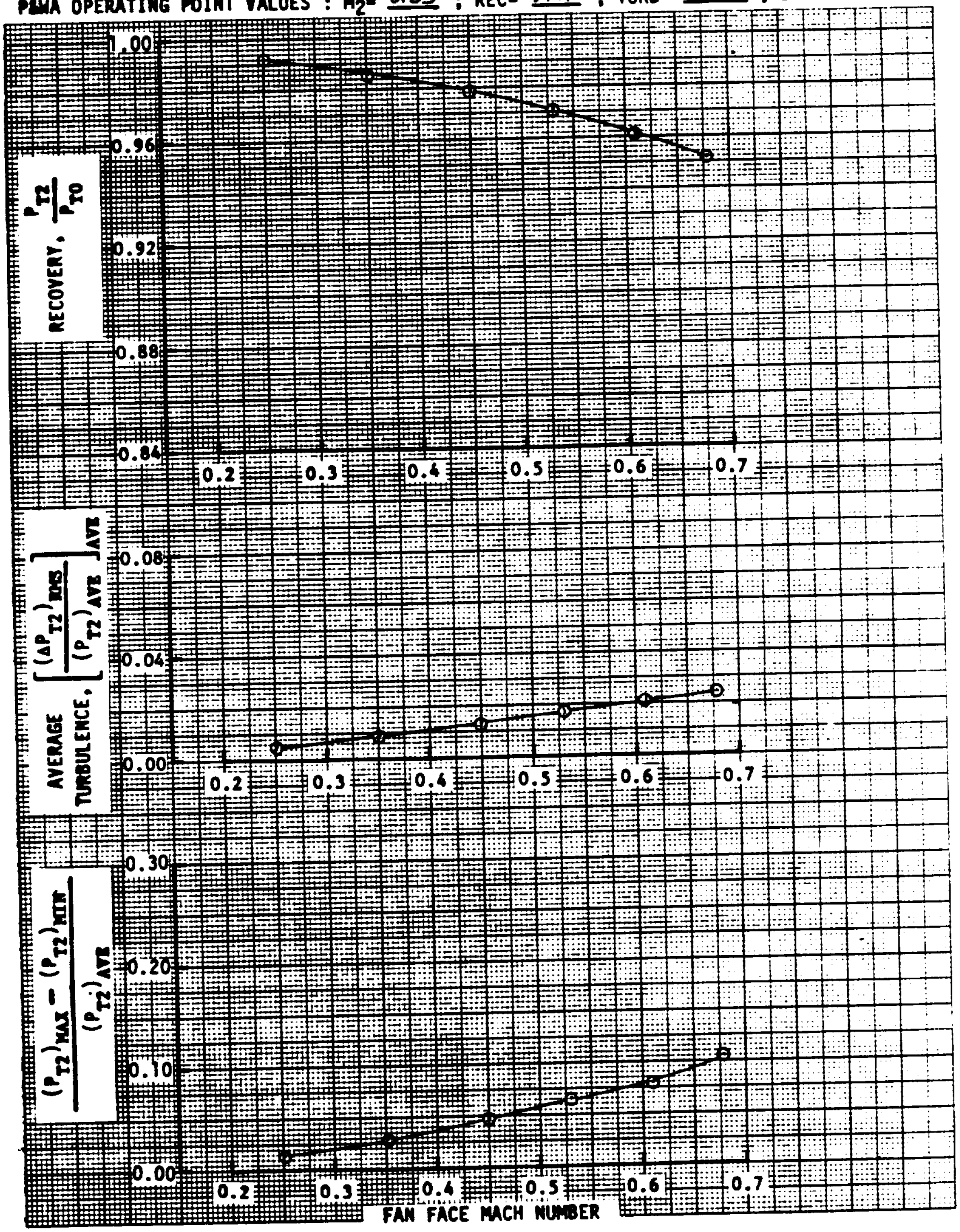
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1746-1751
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .014 ; DIST= .062



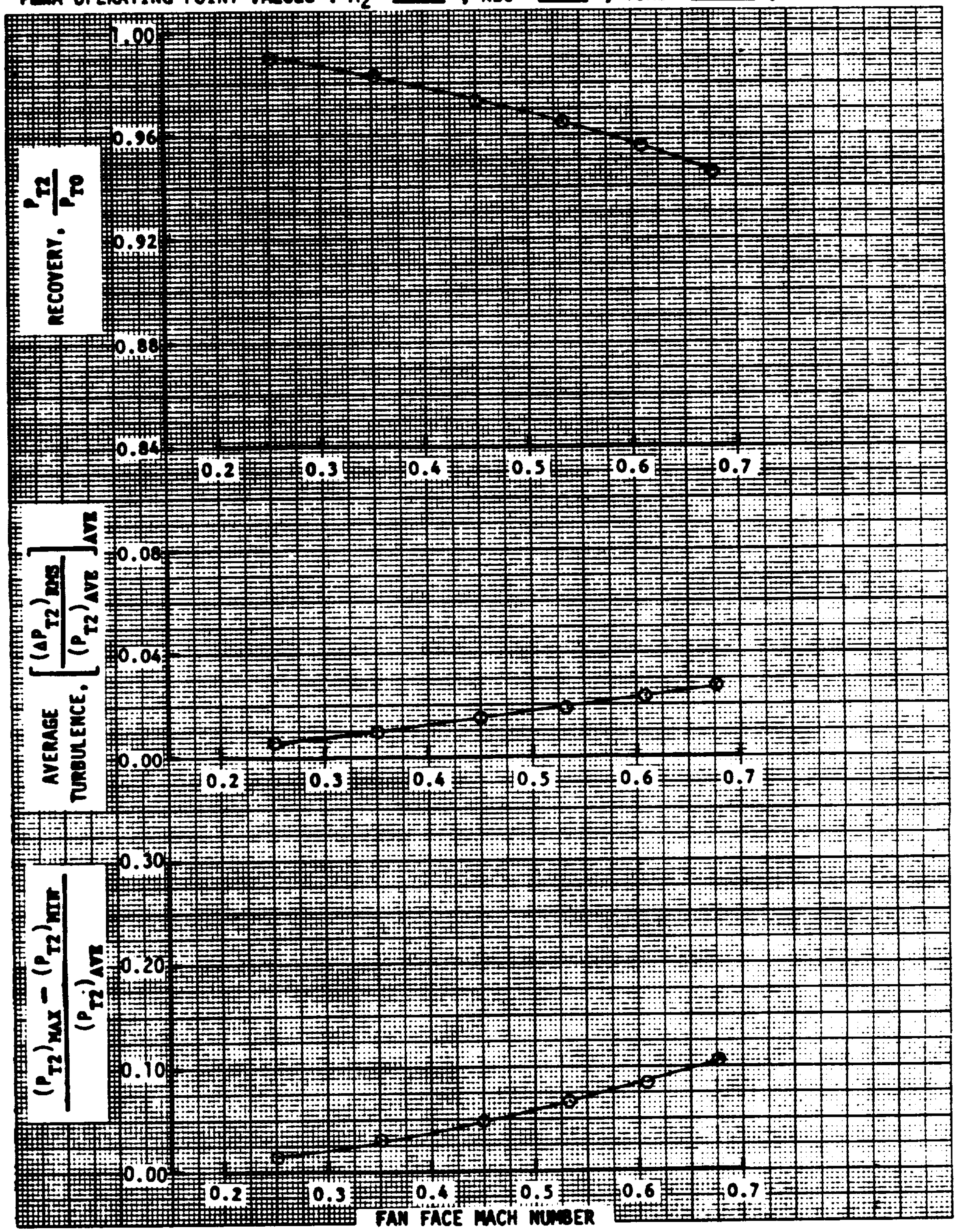
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION B ; READING NUMBERS 1752-1757
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PWMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .015 ; DIST= .053



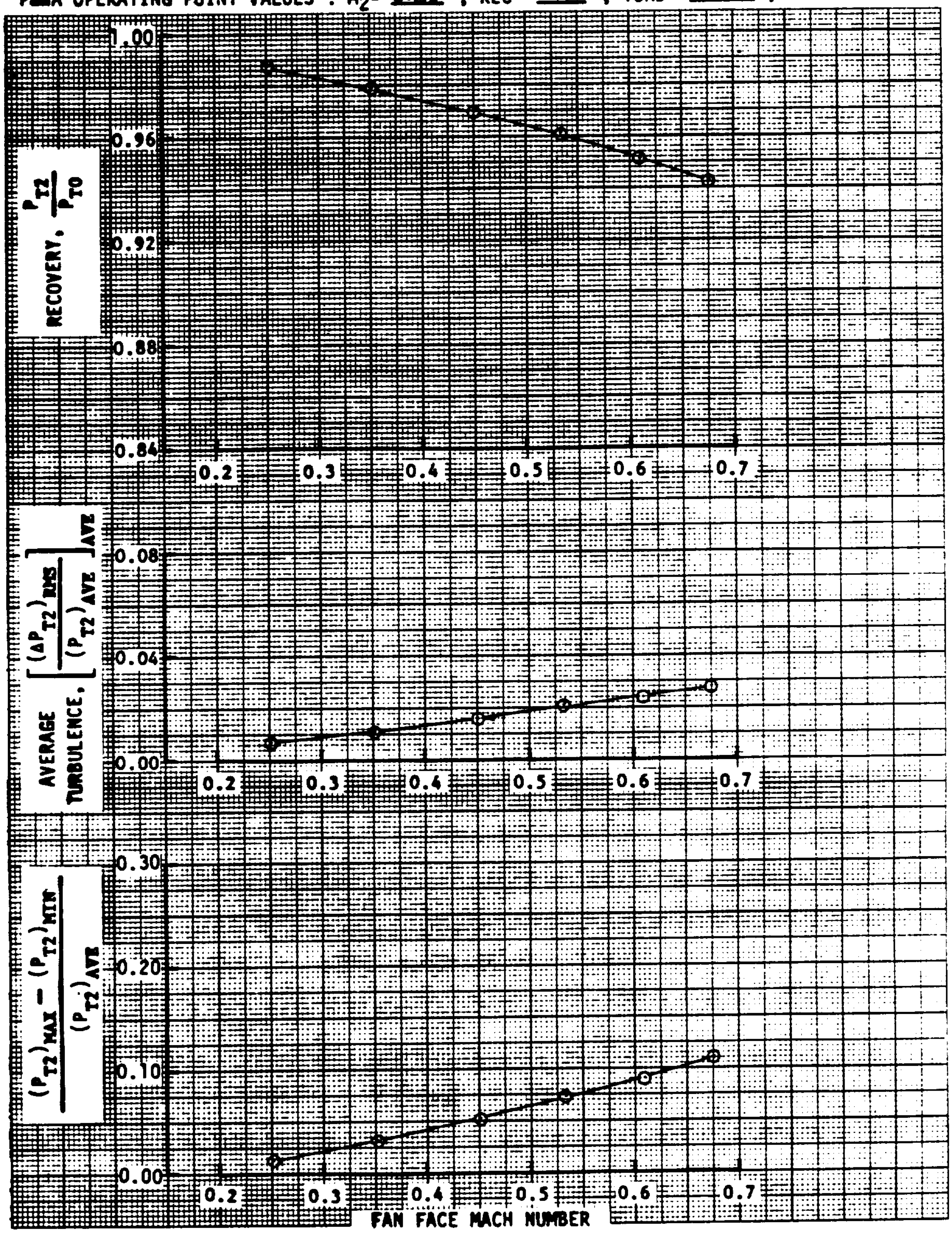
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1758-1763
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .017 ; DIST= .064



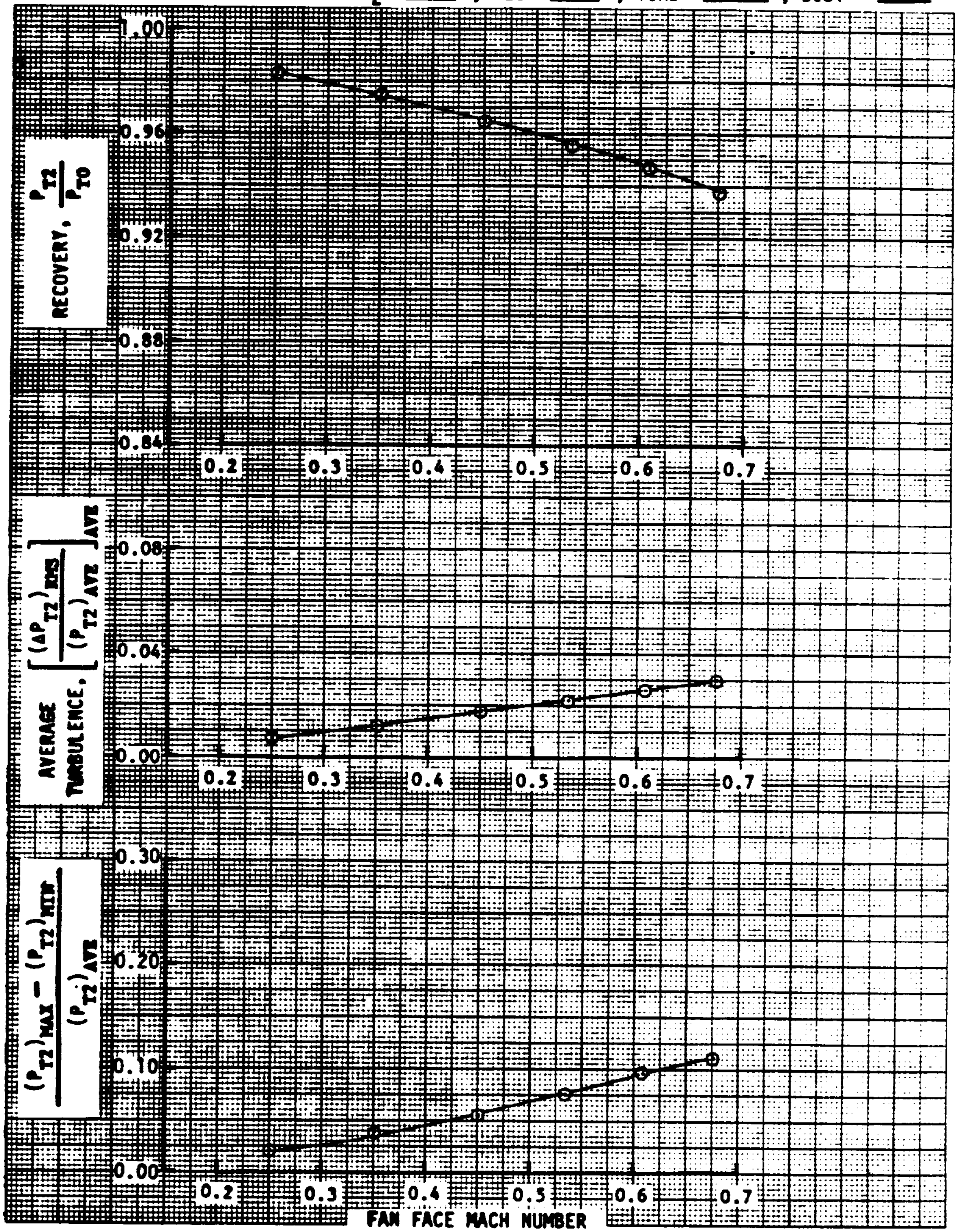
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1764-1769
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .019 ; DIST= .066



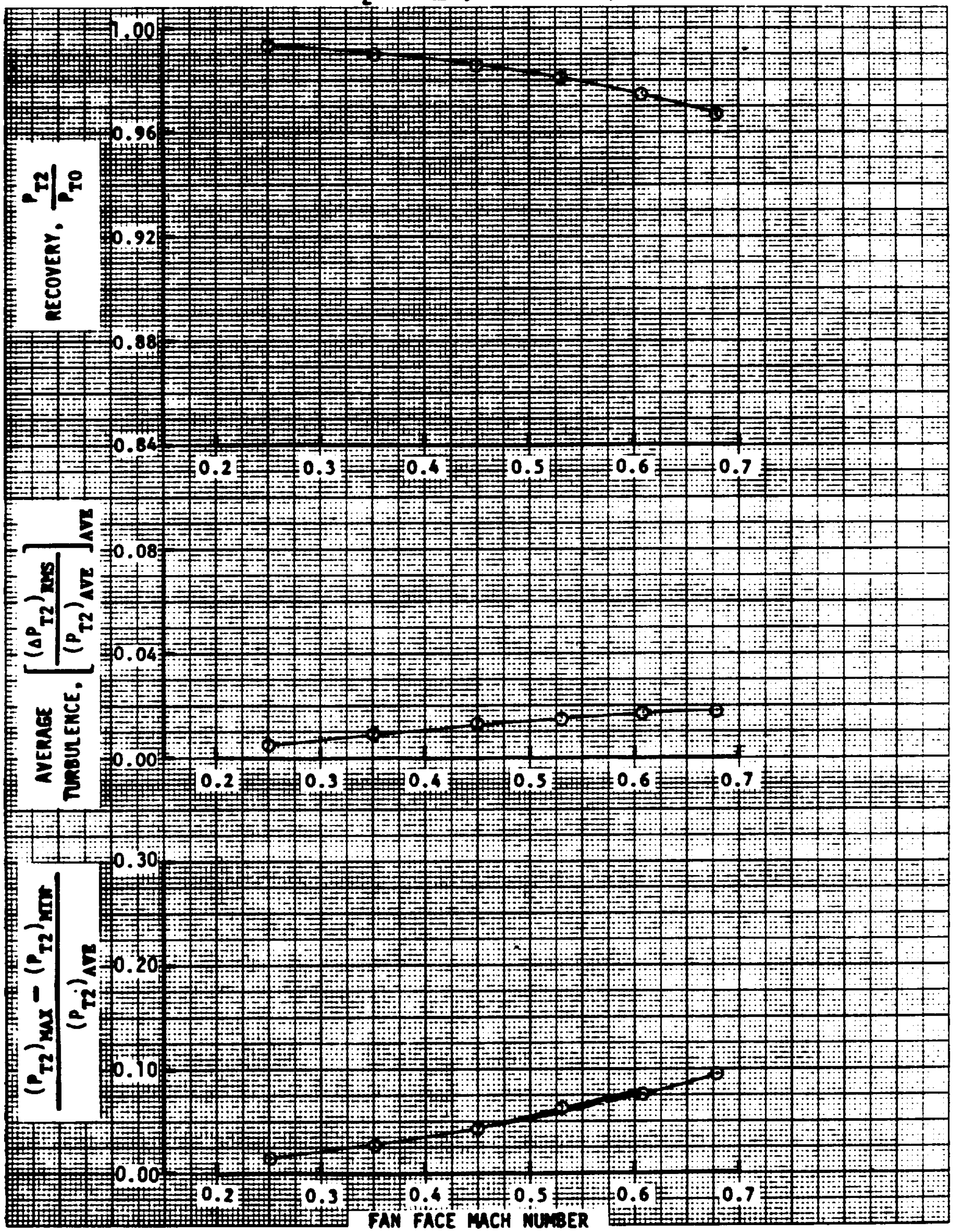
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1770-1775
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .020 ; DIST= .071



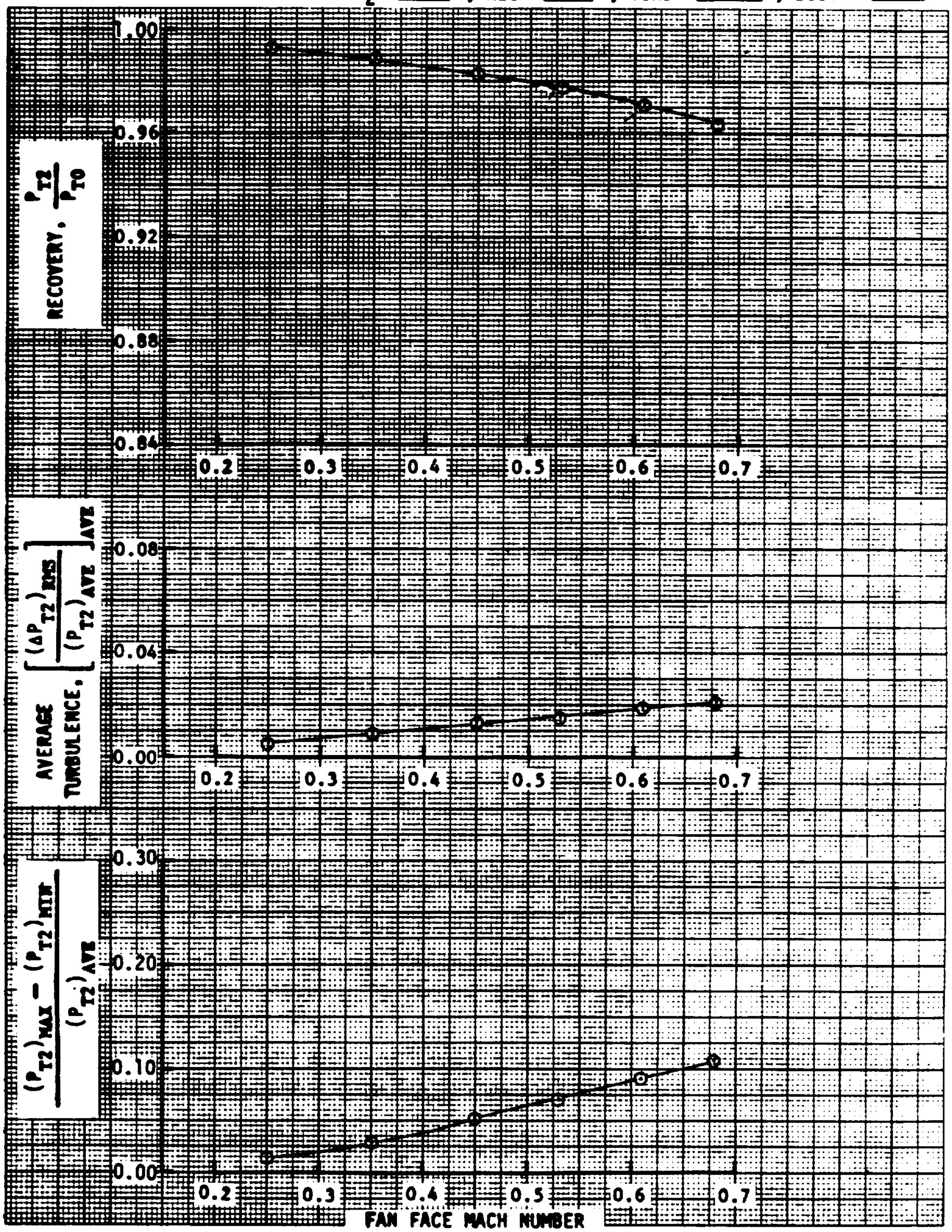
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1776-1781
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .022 ; DIST= .076



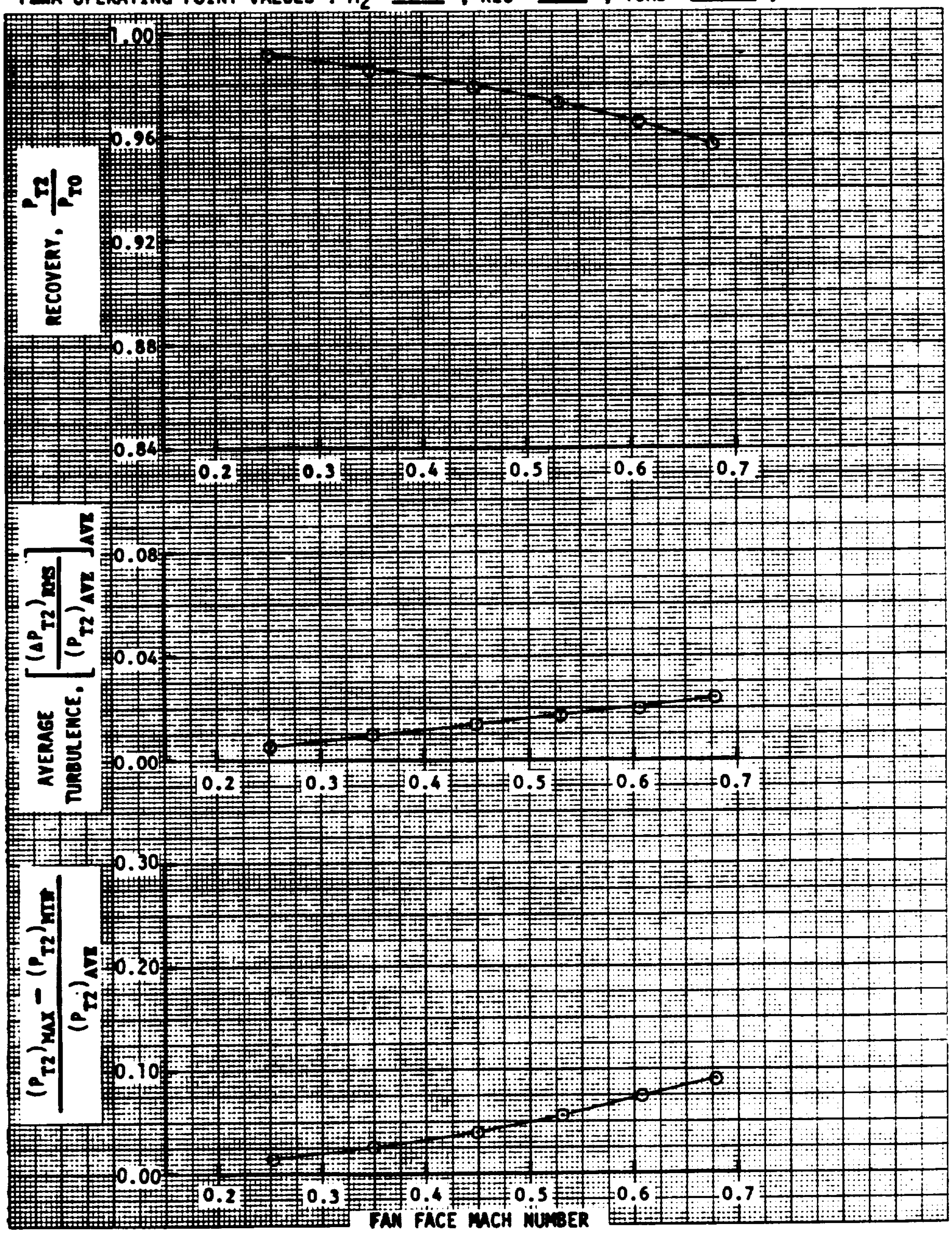
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1782-1787
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .015 ; DIST= .062



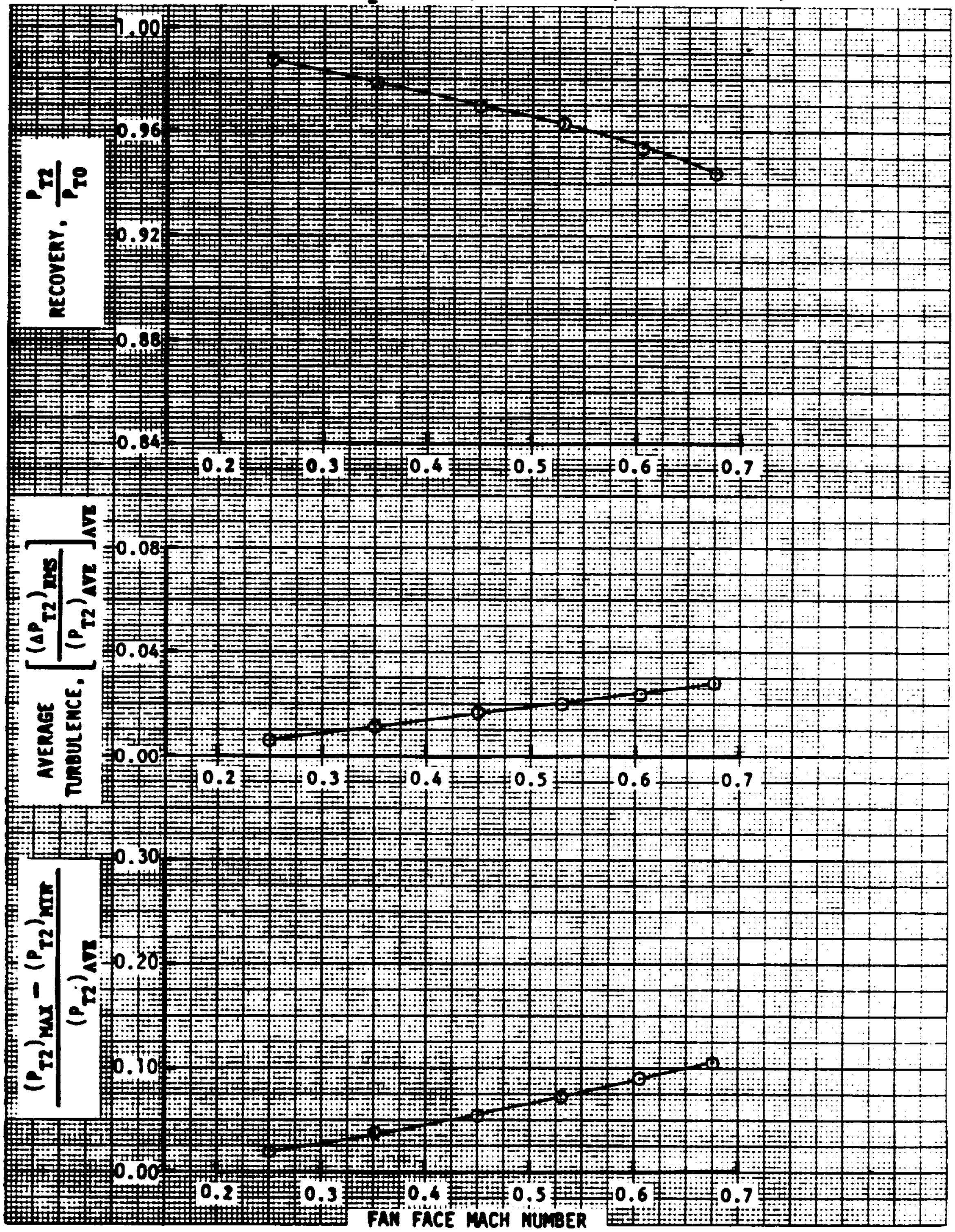
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1788-1793
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .016 ; DIST= .072



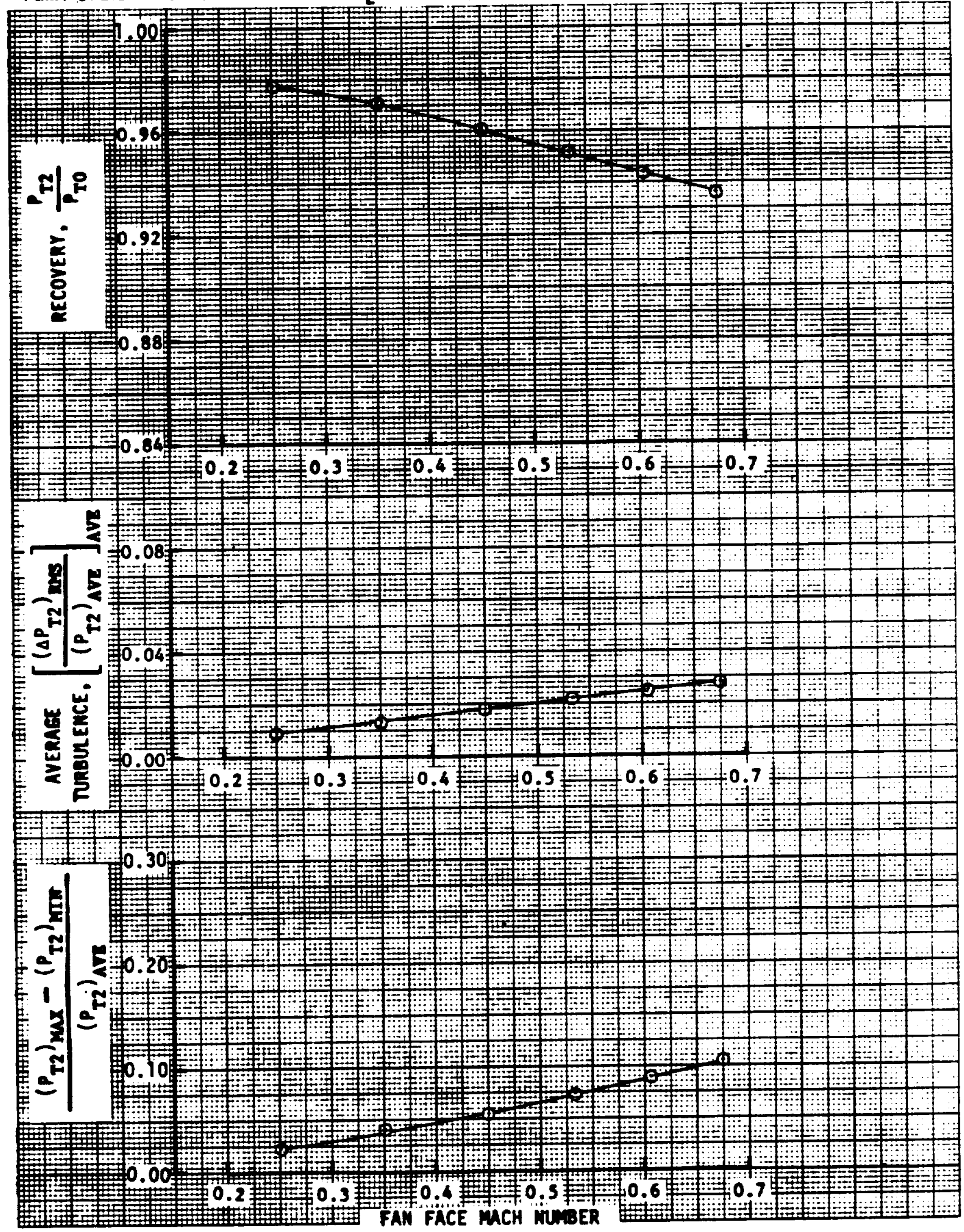
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION B ; READING NUMBERS 1794-1799
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .017 ; DIST= .056



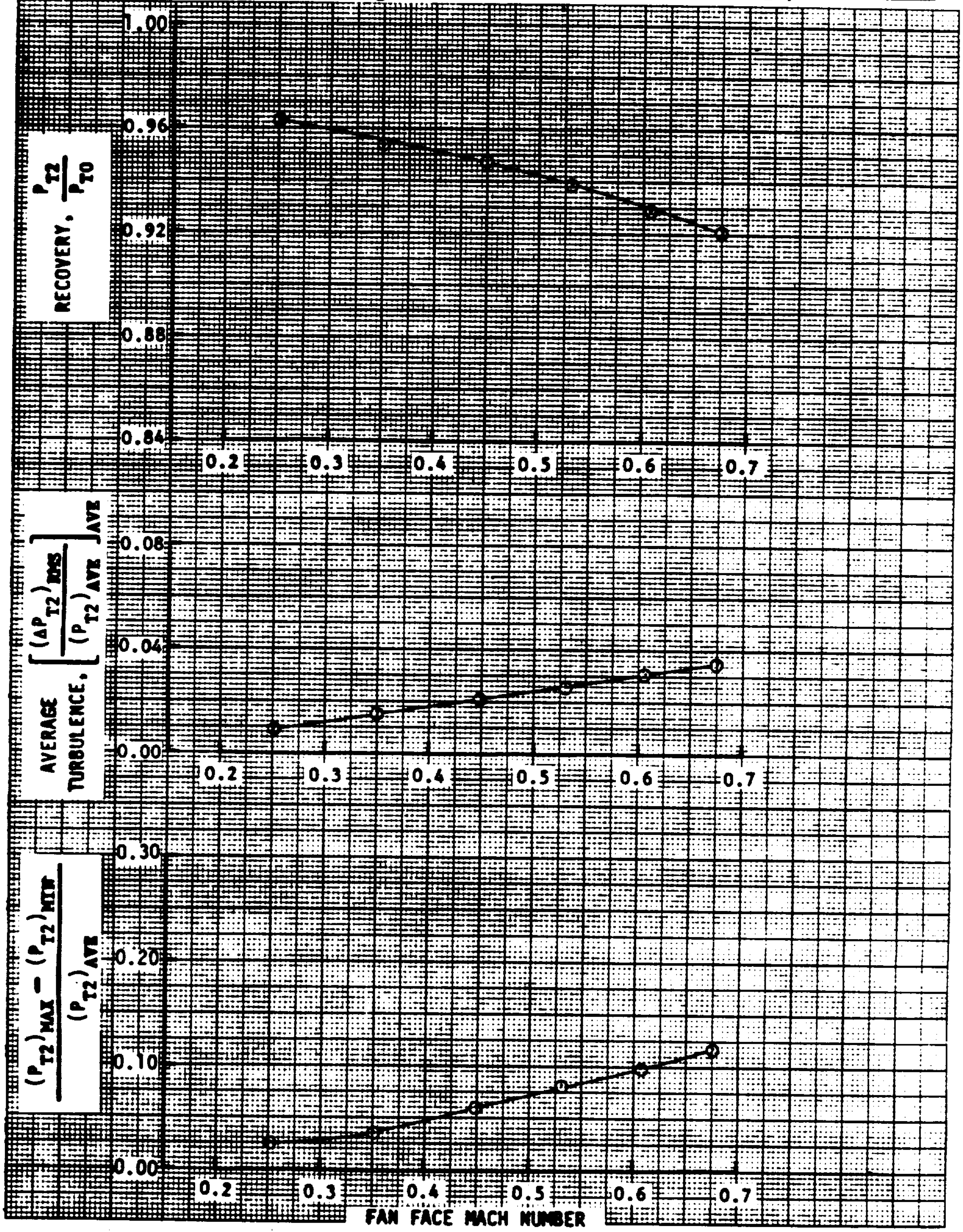
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1800-1805
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .020 ; DIST= .072



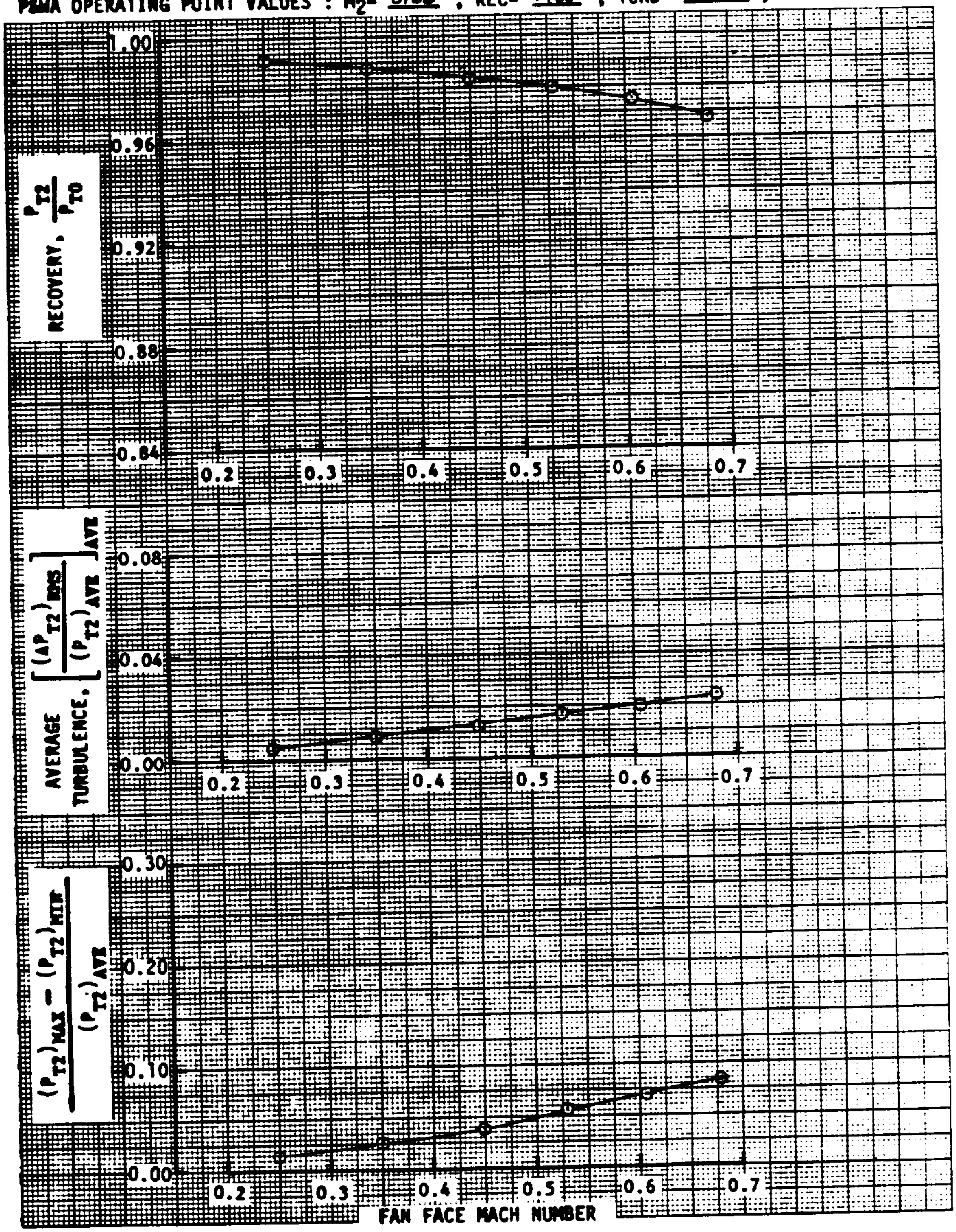
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1806-1811
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .952 ; TURB= .022 ; DIST= .072



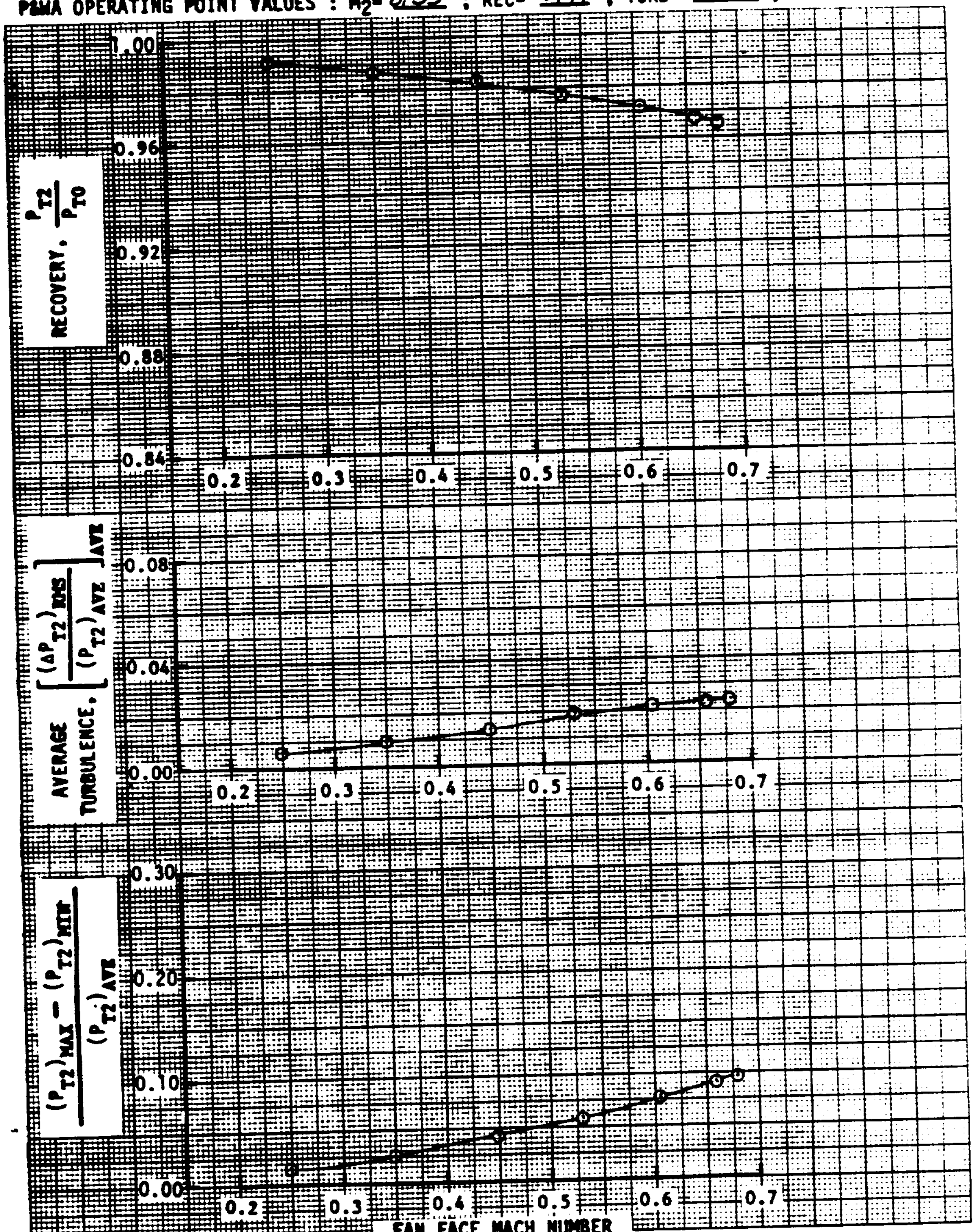
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1812-1817
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .939 ; TURB= .026 ; DIST= .078



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1818-1823
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .017 ; DIST= .035



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1824-1830
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .018 ; DIST= .058



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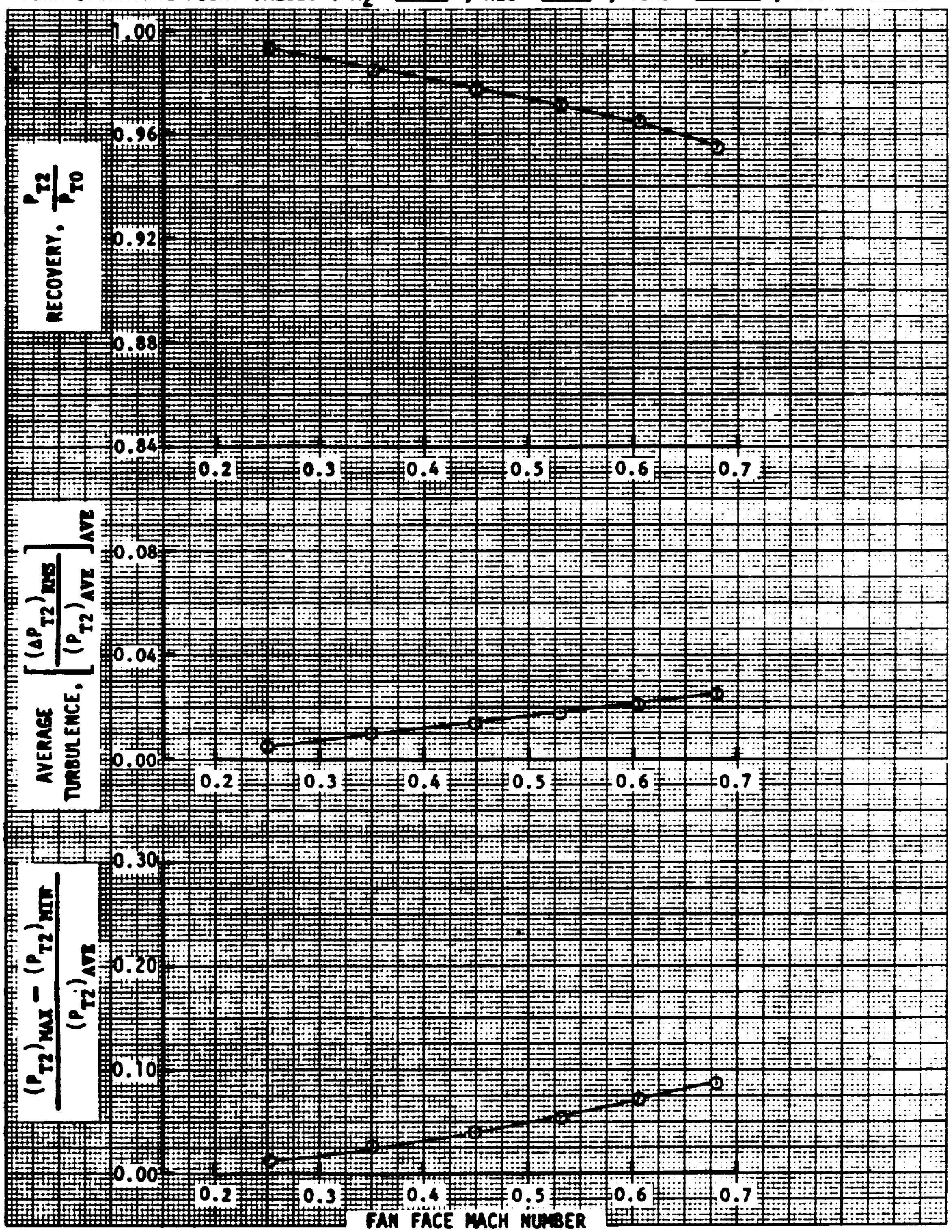
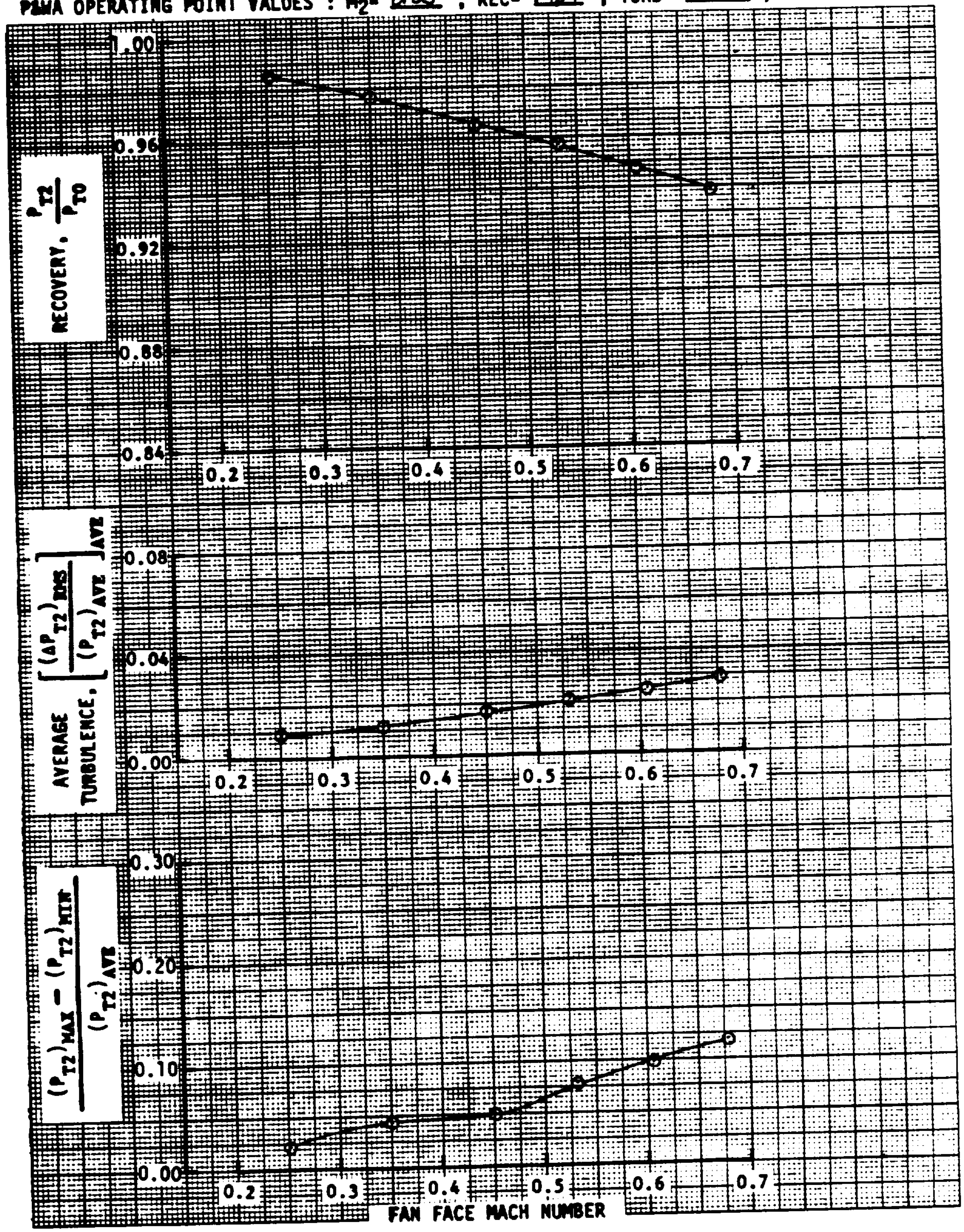
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1831-1836
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .018 ; DIST= .056



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1837-1842
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .021 ; DIST= .076



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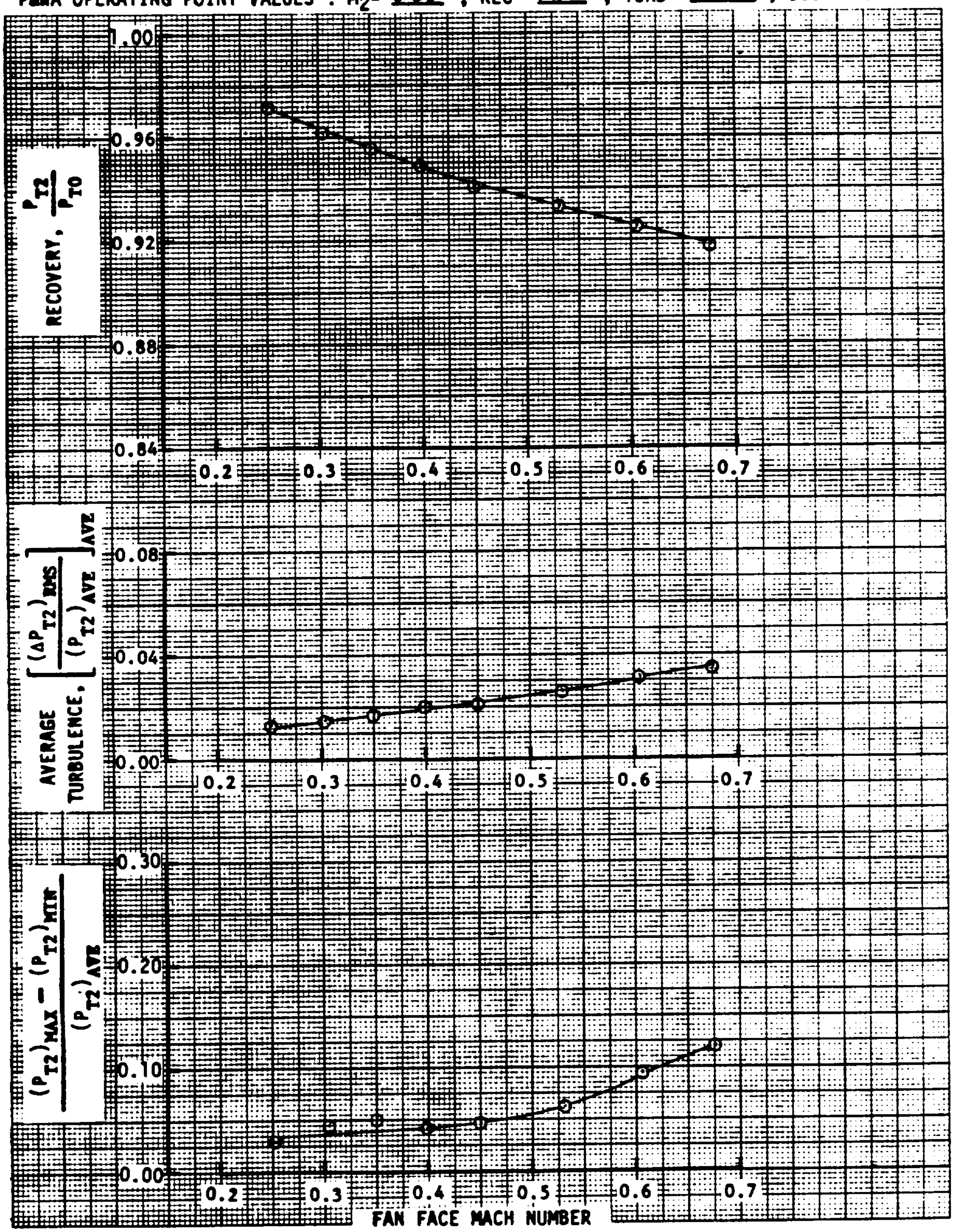
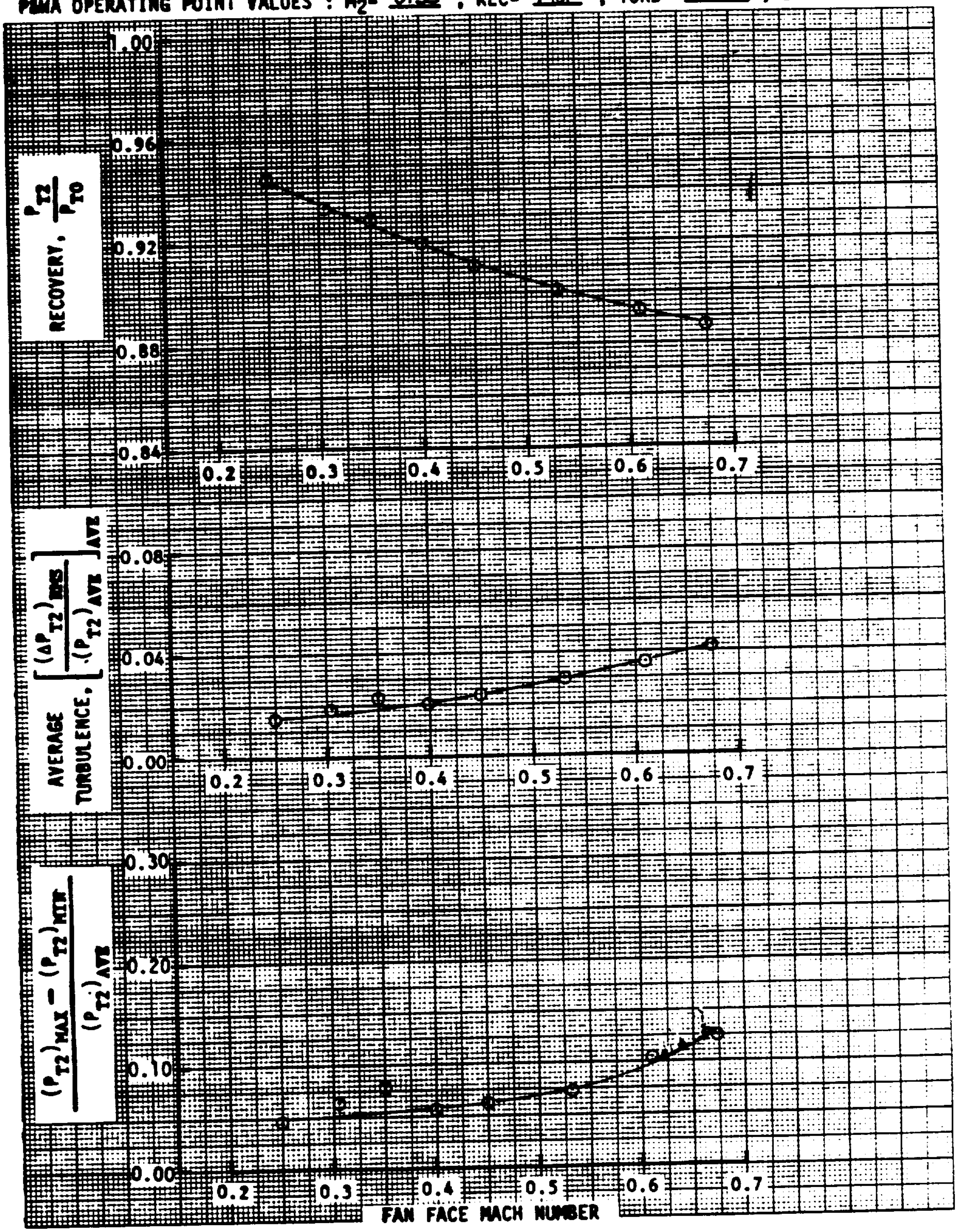
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1843-1851
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .933 ; TURB= .026 ; DIST= .062



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 8 ; READING NUMBERS 1852-1859
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .901 ; TURB= .030 ; DIST= .074



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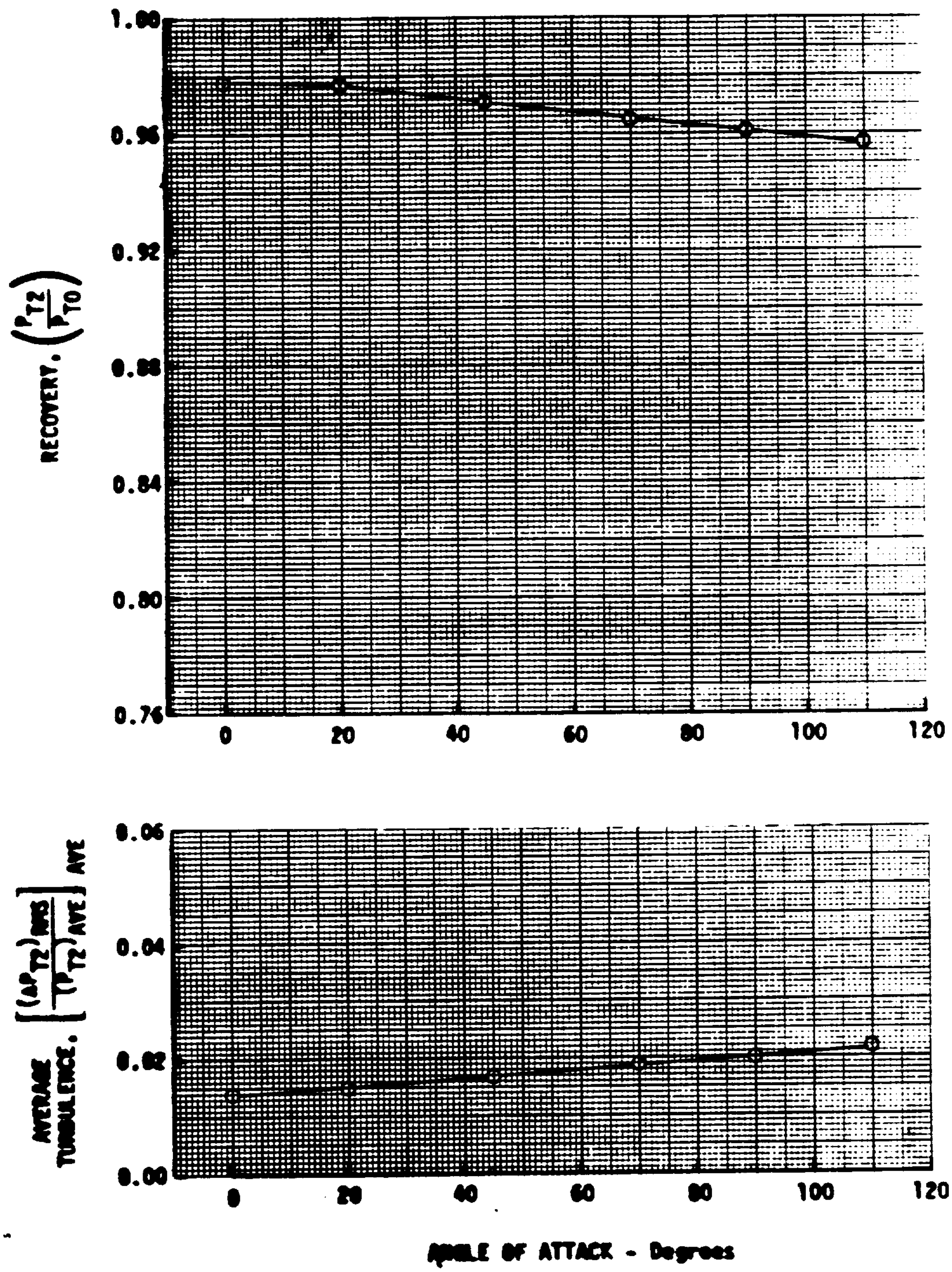
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PIMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 8 ; DESCRIPTION 70° Droop Lip; All Auxiliary Inlets Open-Port



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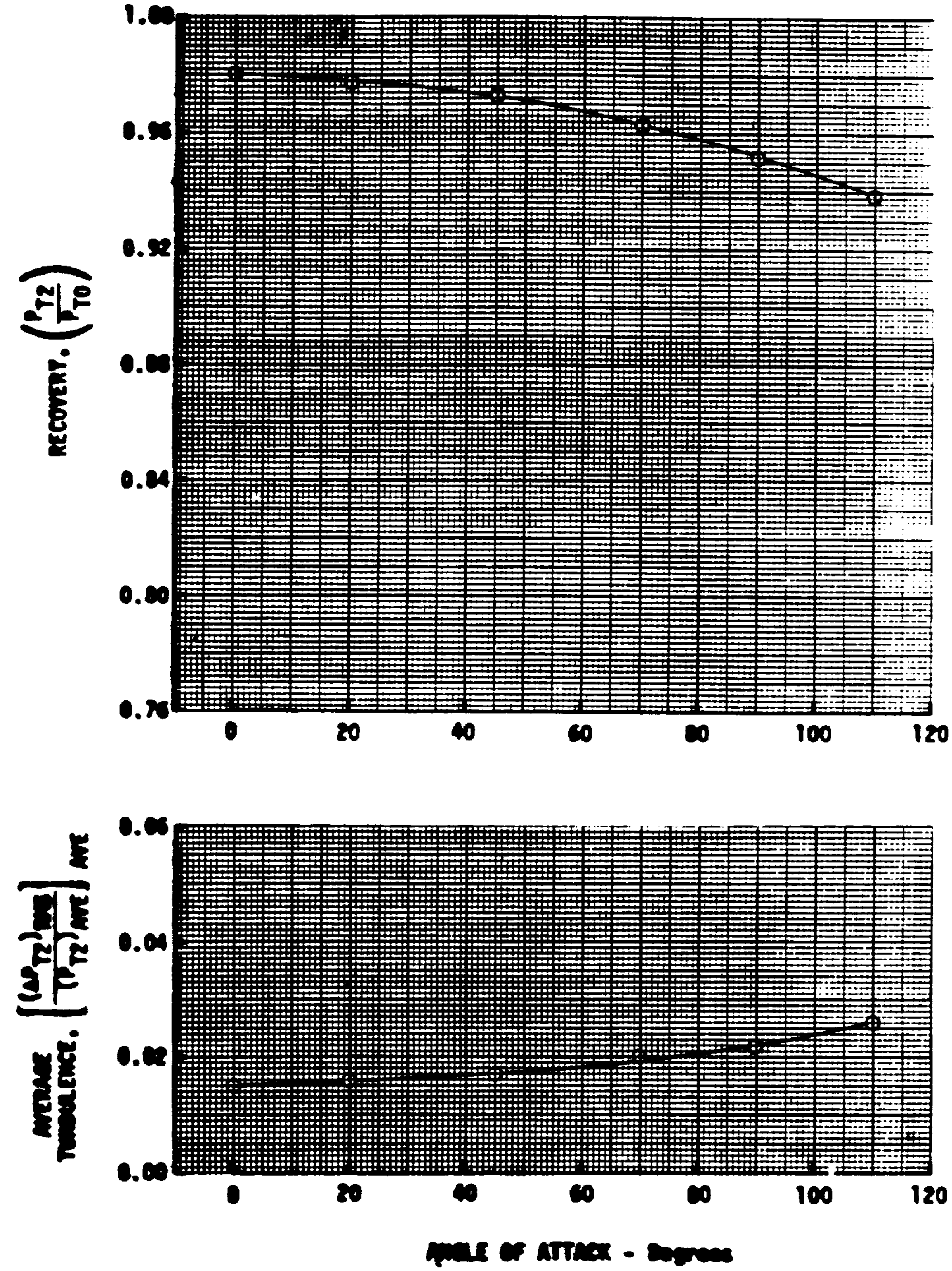
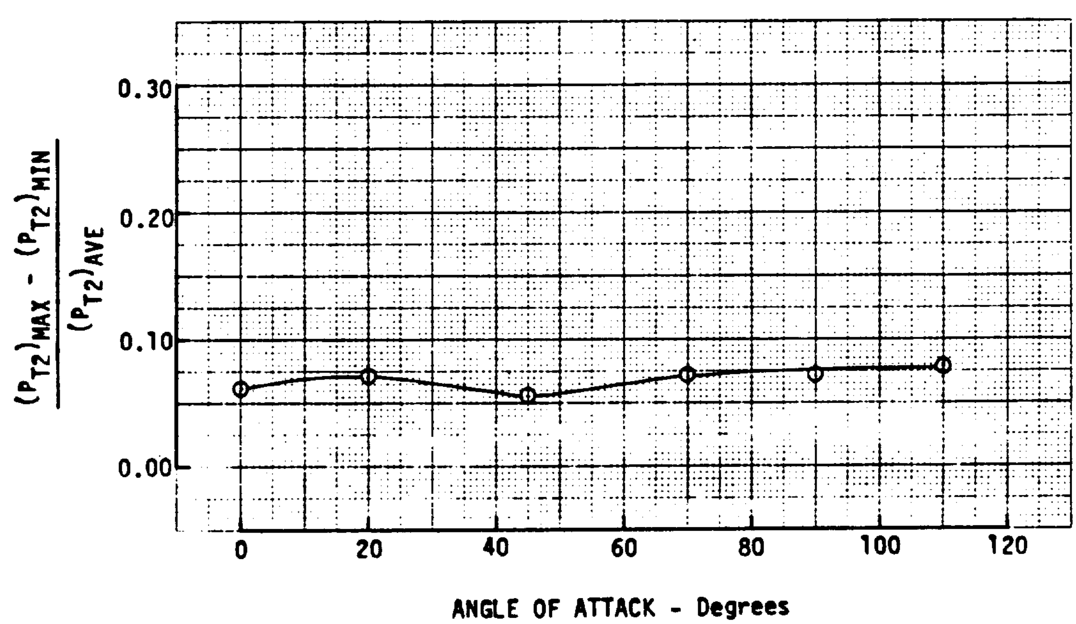
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 8; DESCRIPTION 70° Droop Lip; All Auxiliary Inlets Open - Port



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 8 ; DESCRIPTION 70° Droop Lip; All Aux Inlets Open - Port



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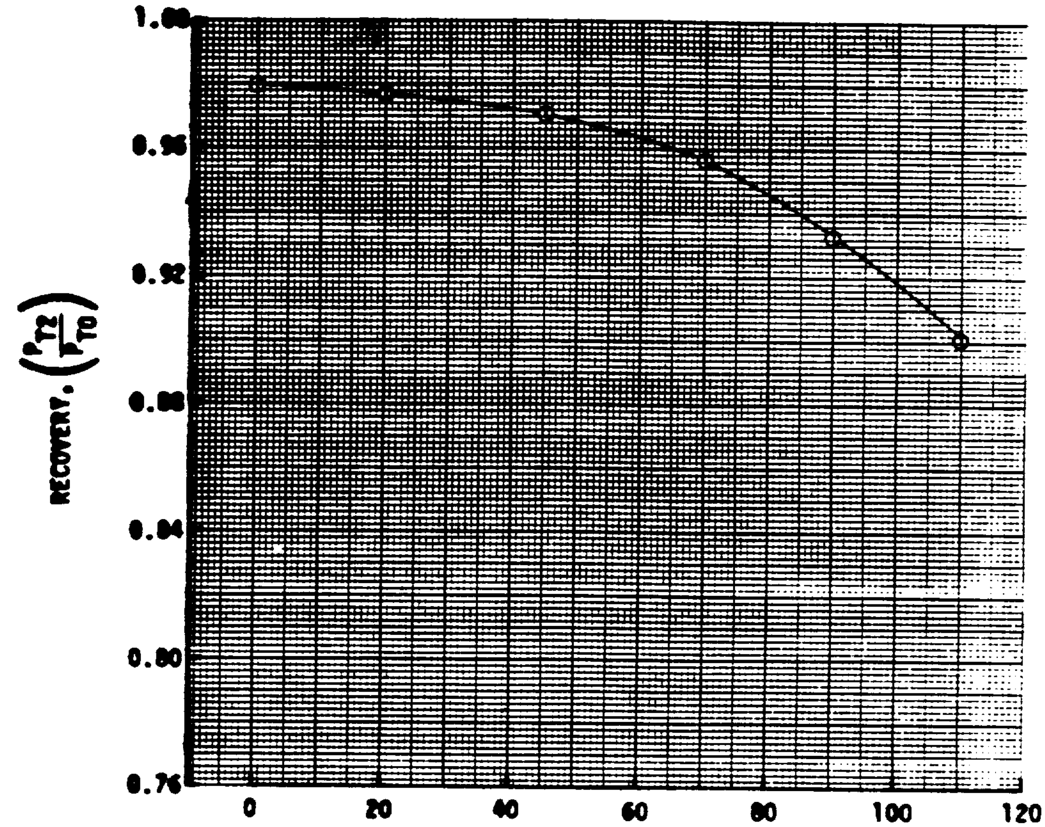
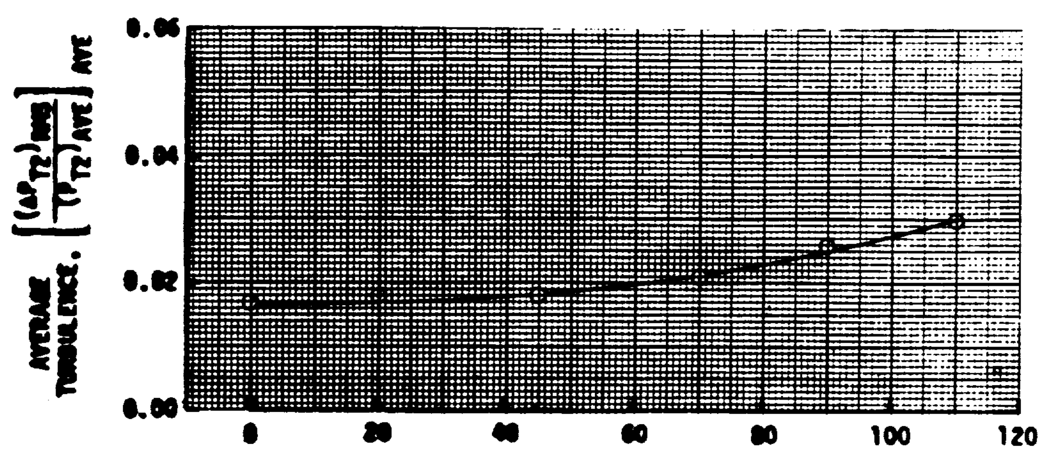
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PEAK F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 8; DESCRIPTION 70° Droop Lip; All Auxiliary Inlets Open-Port





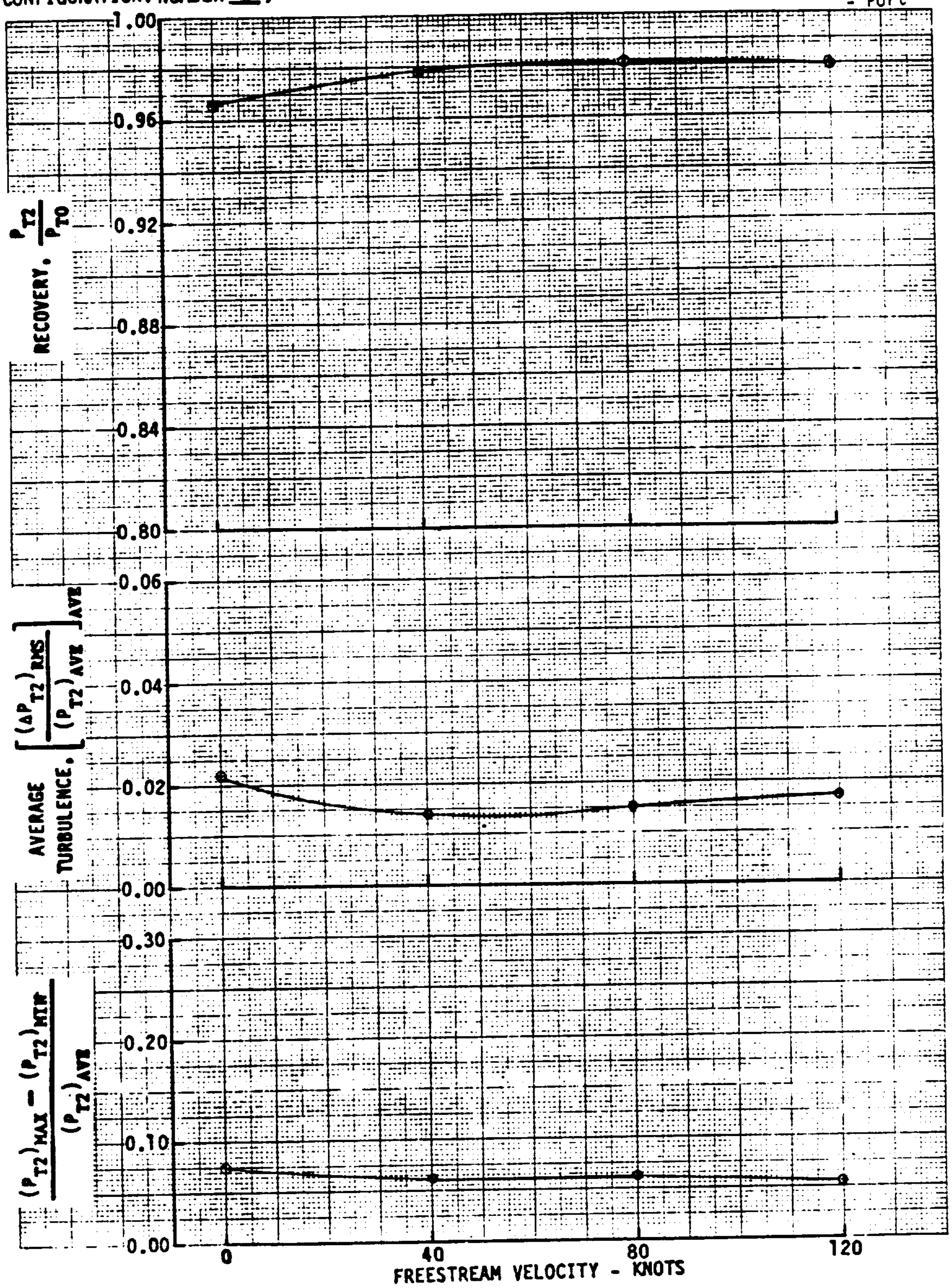
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY

ANGLE OF ATTACK = 0 DEGREES

SIDESLIP ANGLE = ____ DEGREES

P&WA F-100 MATCH AIRFLOW

CONFIGURATION: NUMBER 8; DESCRIPTION 70° DROOP LIP; ALL AUXILIARY INLETS OPEN - Port



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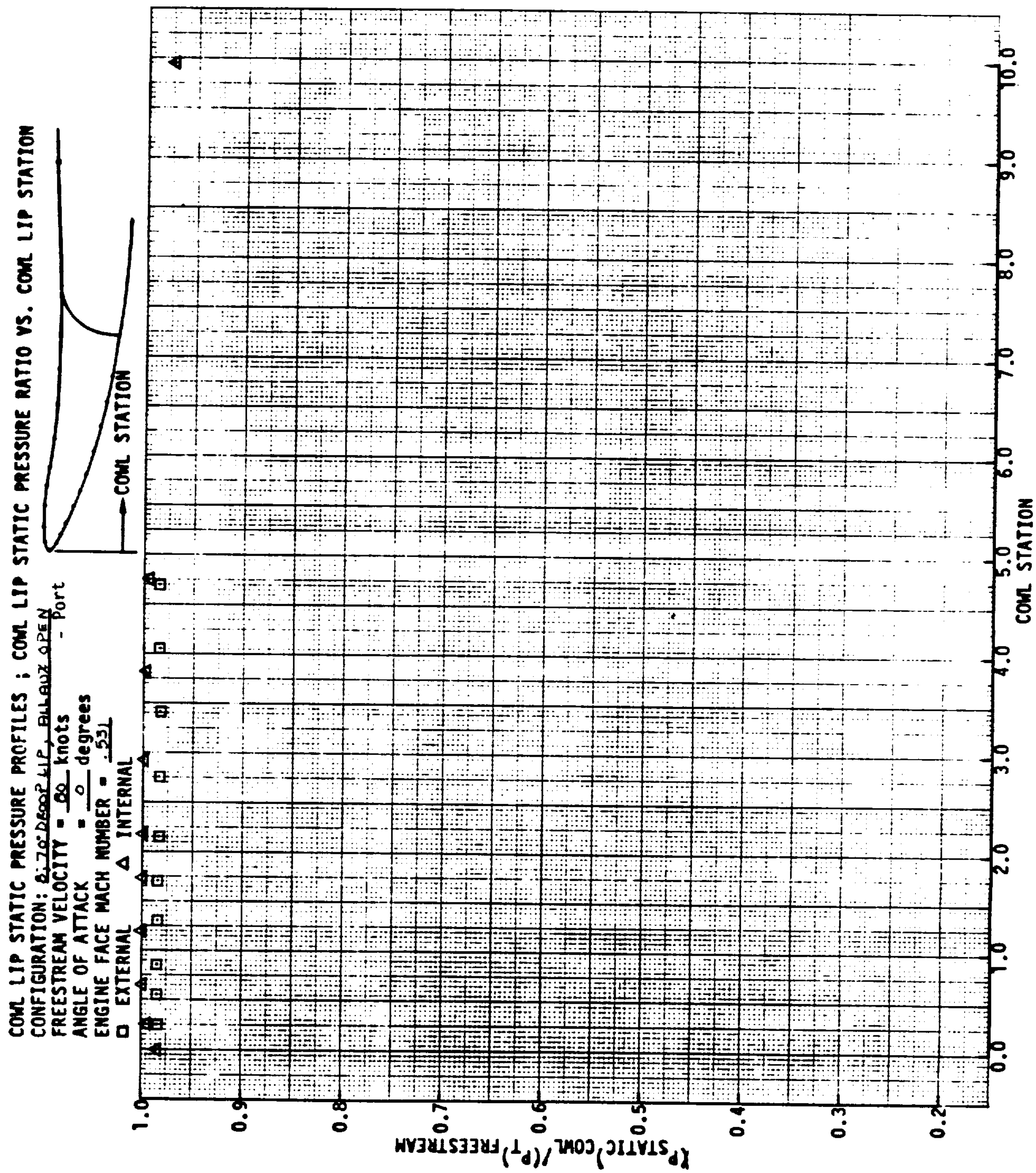
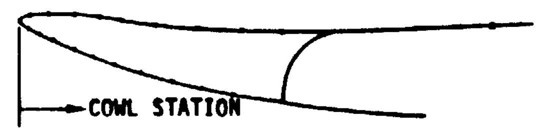
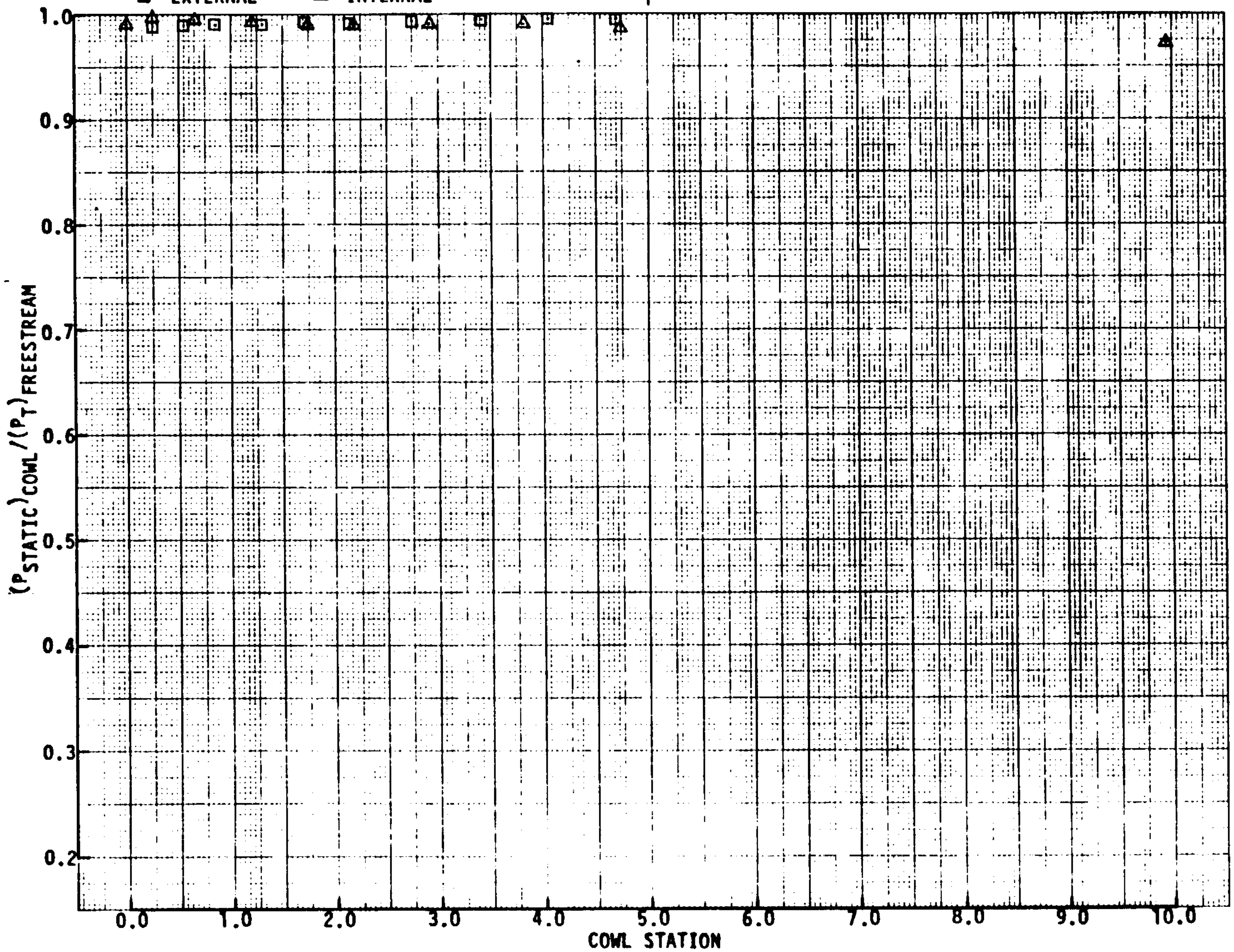
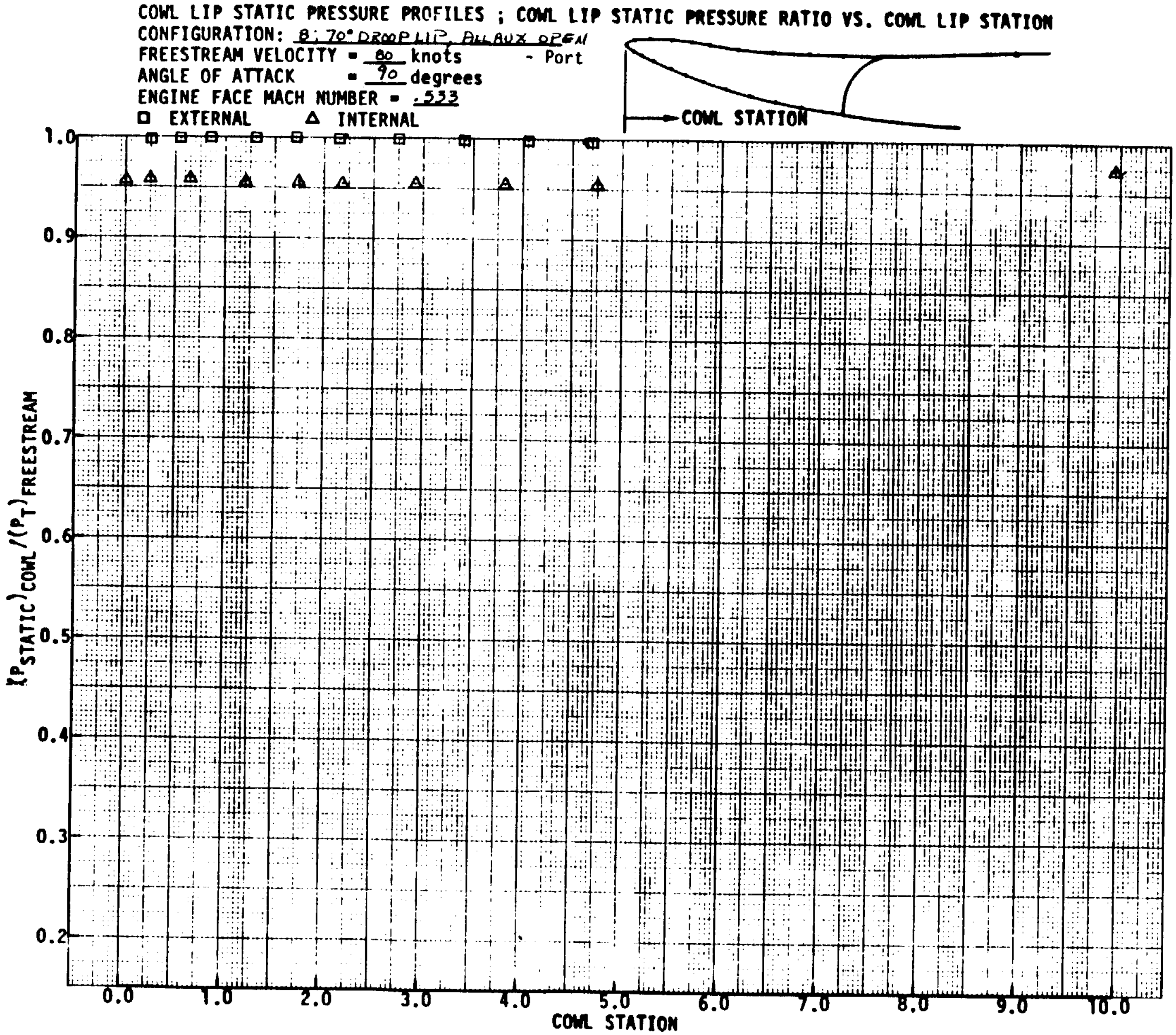


COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 8: 70° DROOP LIP ; ALL AUX OPEN
FREESTREAM VELOCITY = 80 knots - Port
ANGLE OF ATTACK = 45 degrees
ENGINE FACE MACH NUMBER = .531
□ EXTERNAL △ INTERNAL





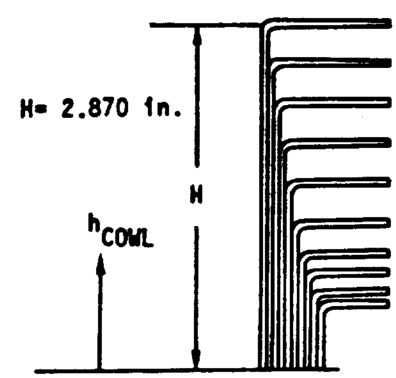


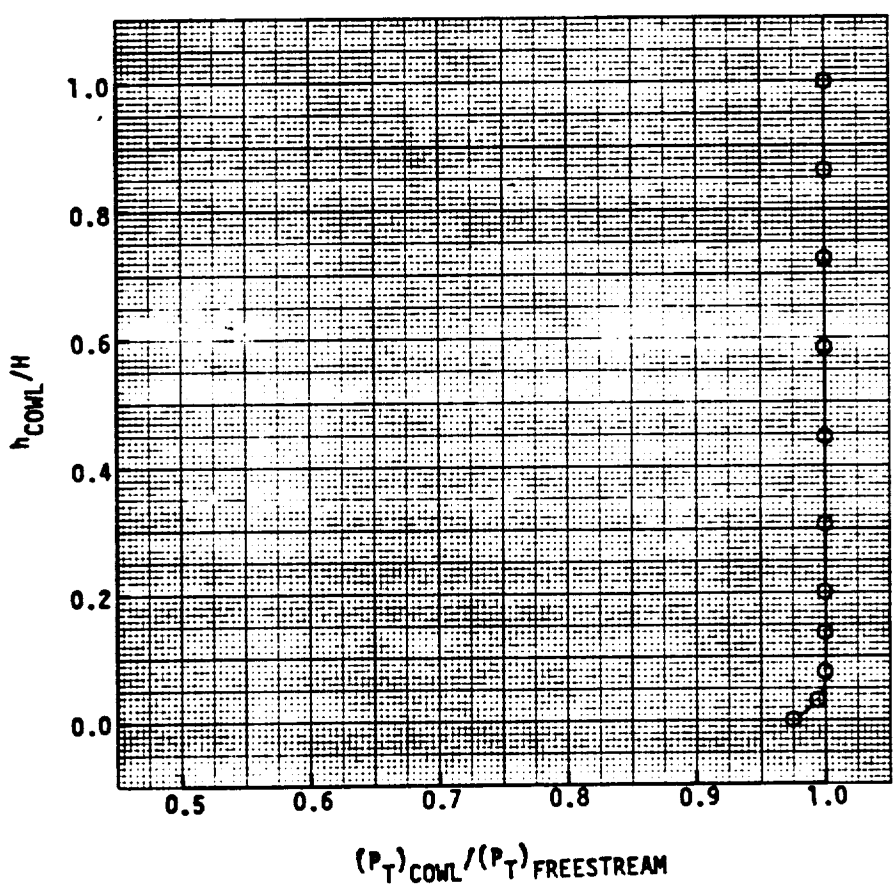
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 8; 70° DROOP LIP, ALL AUX OPEN
FREESTREAM VELOCITY = 80 knots - Port
ANGLE OF ATTACK = 90 degrees
ENGINE FACE MACH NUMBER = .533
□ EXTERNAL
Δ INTERNAL
COWL STATION
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION

COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 8; DESCRIPTION 70° DROOP LIP ; ALL AUX INLETS OPEN - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

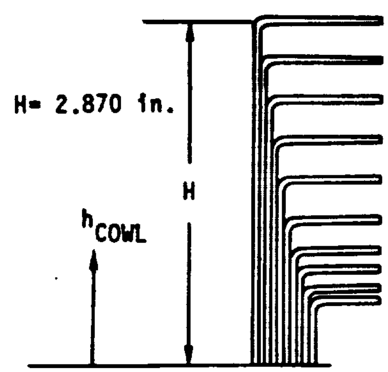


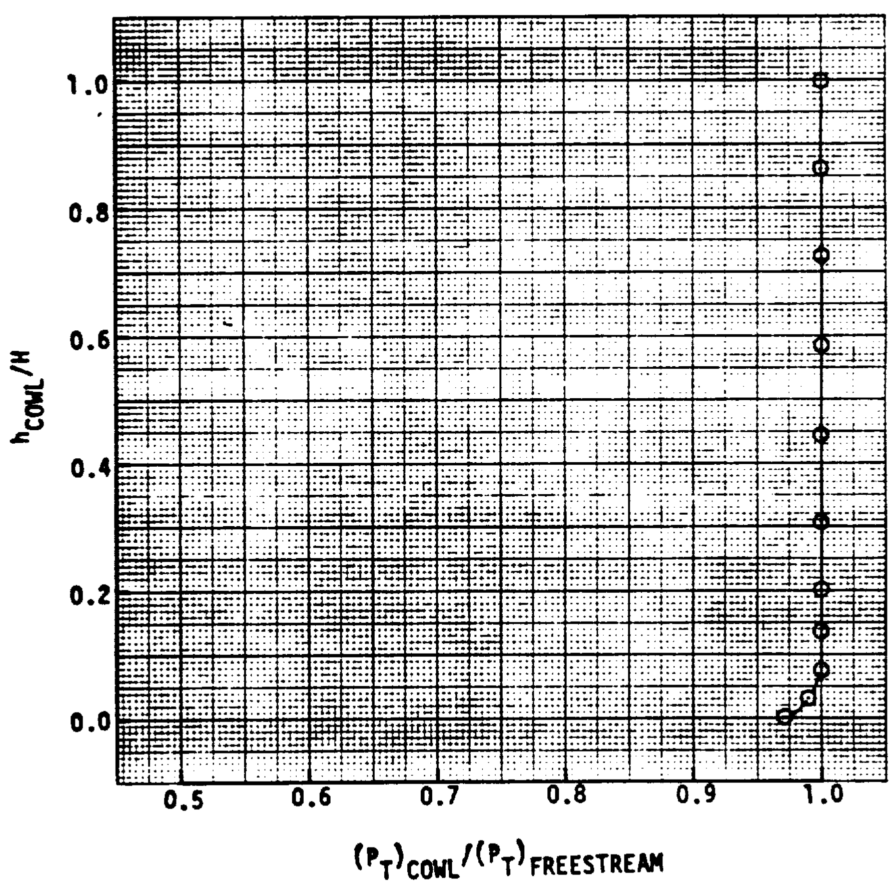


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 8; DESCRIPTION 70° DROOP LIP ; ALL AUXILIARY INLETS OPEN - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

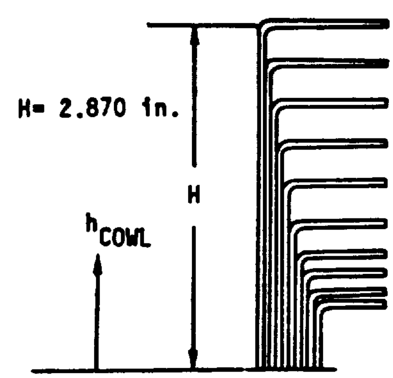


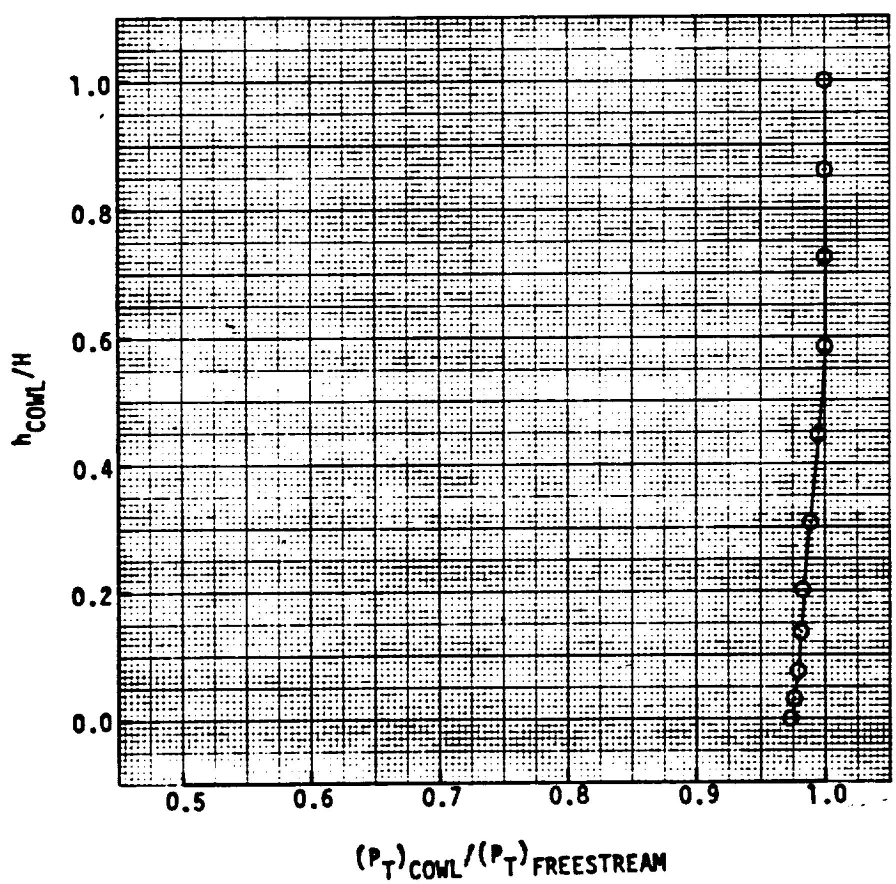


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 8 ; DESCRIPTION 70° DROOP LIP ; ALL AUXILIARY INLETS OPEN - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533





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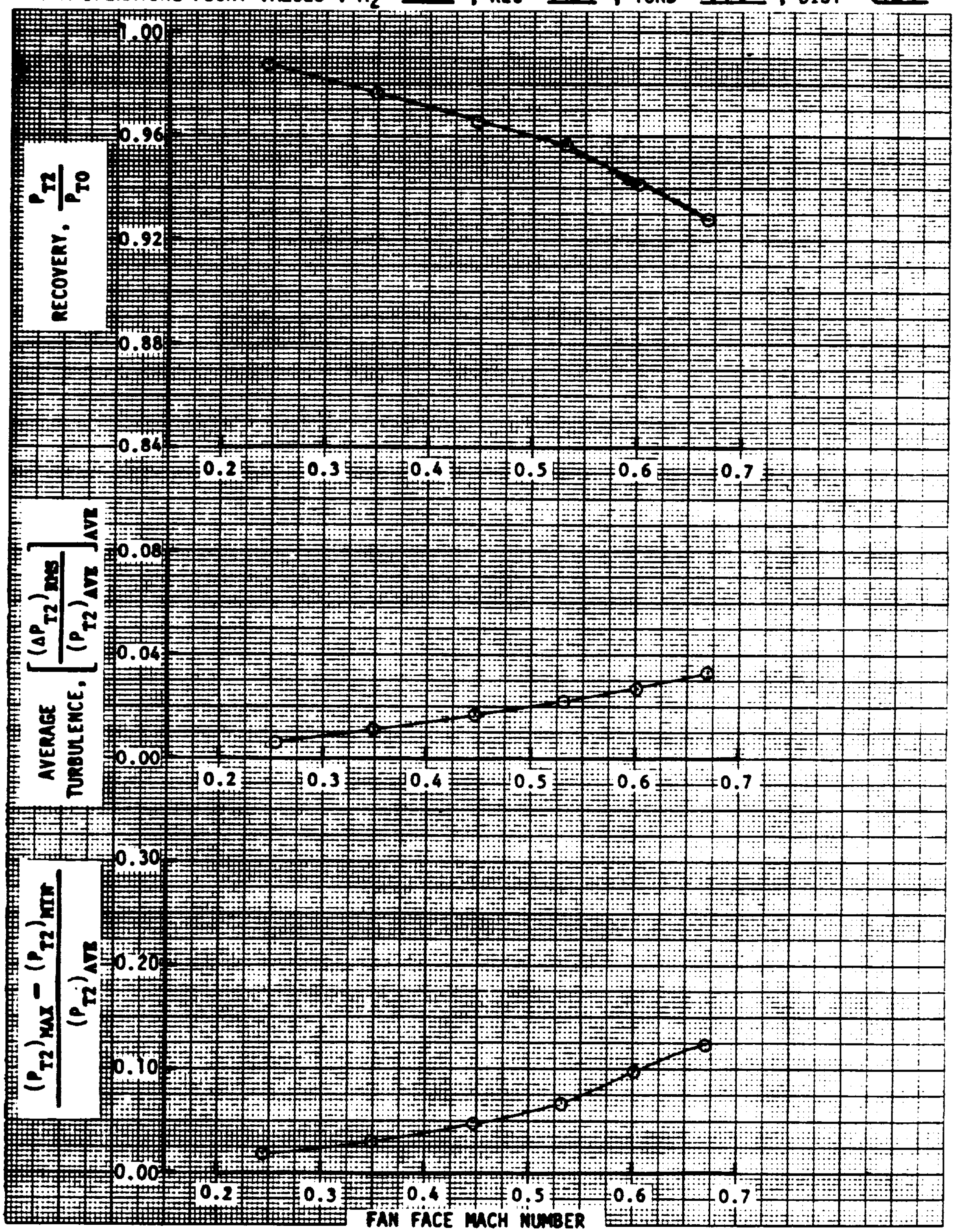
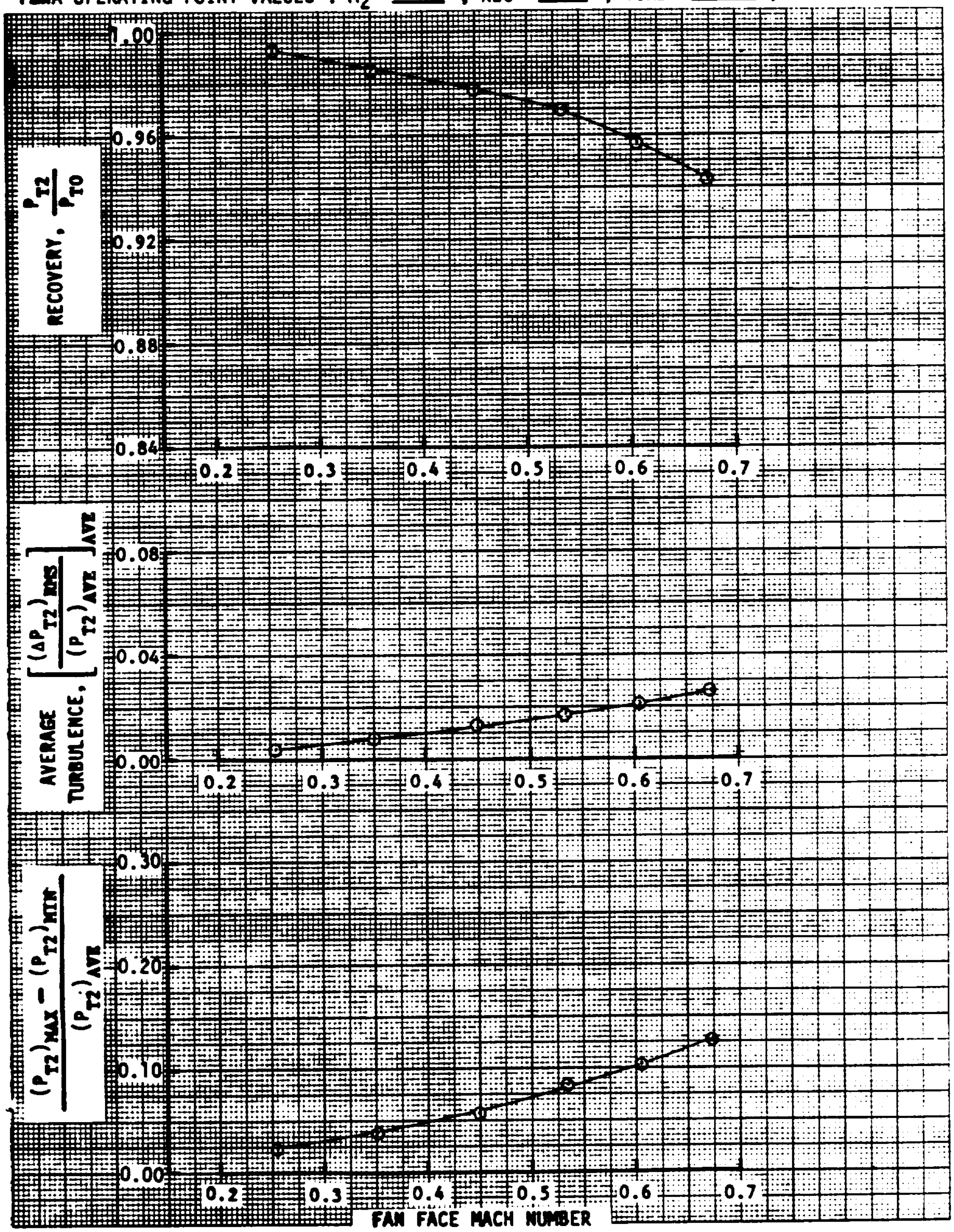
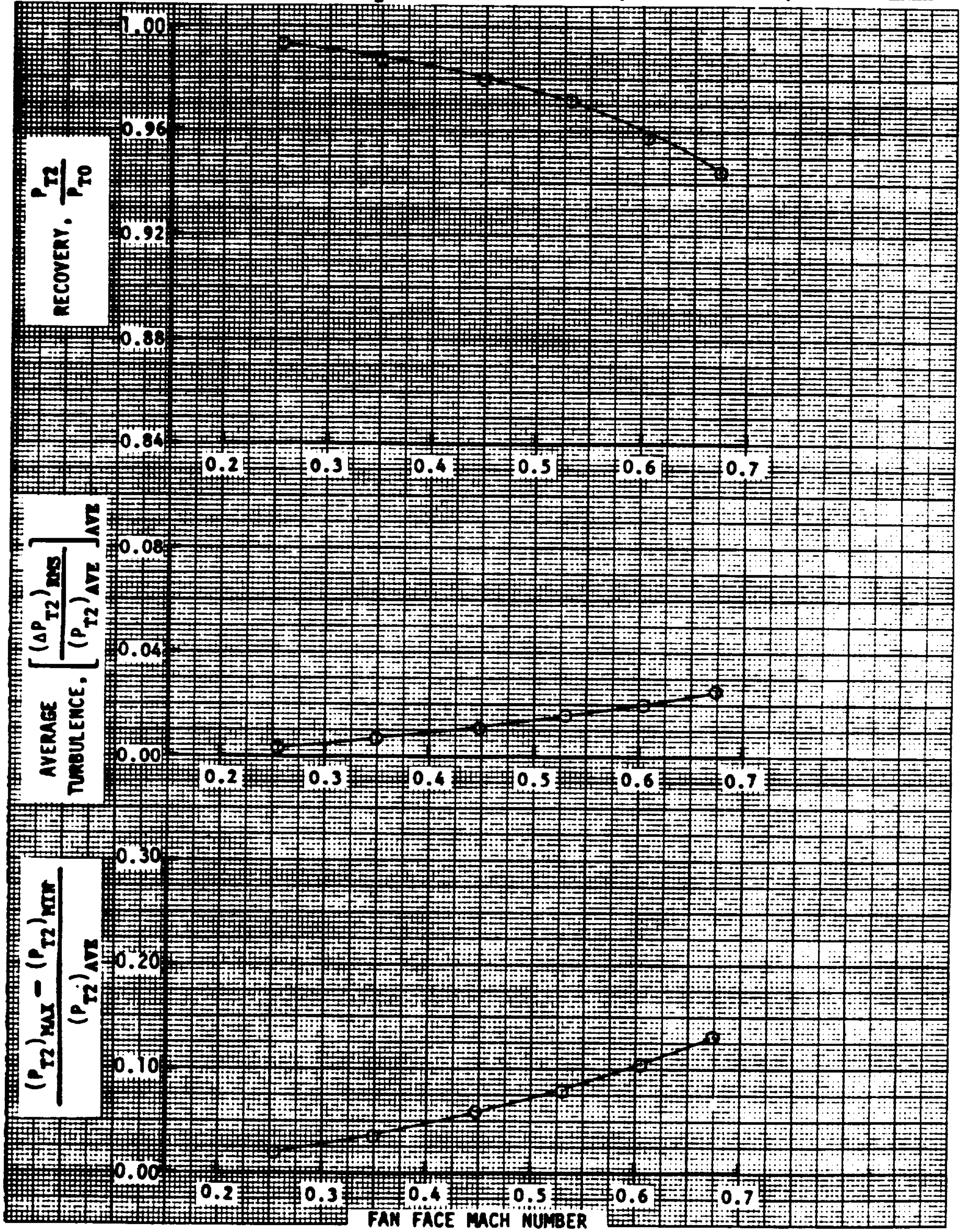
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1609-1614
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .022 ; DIST= .067



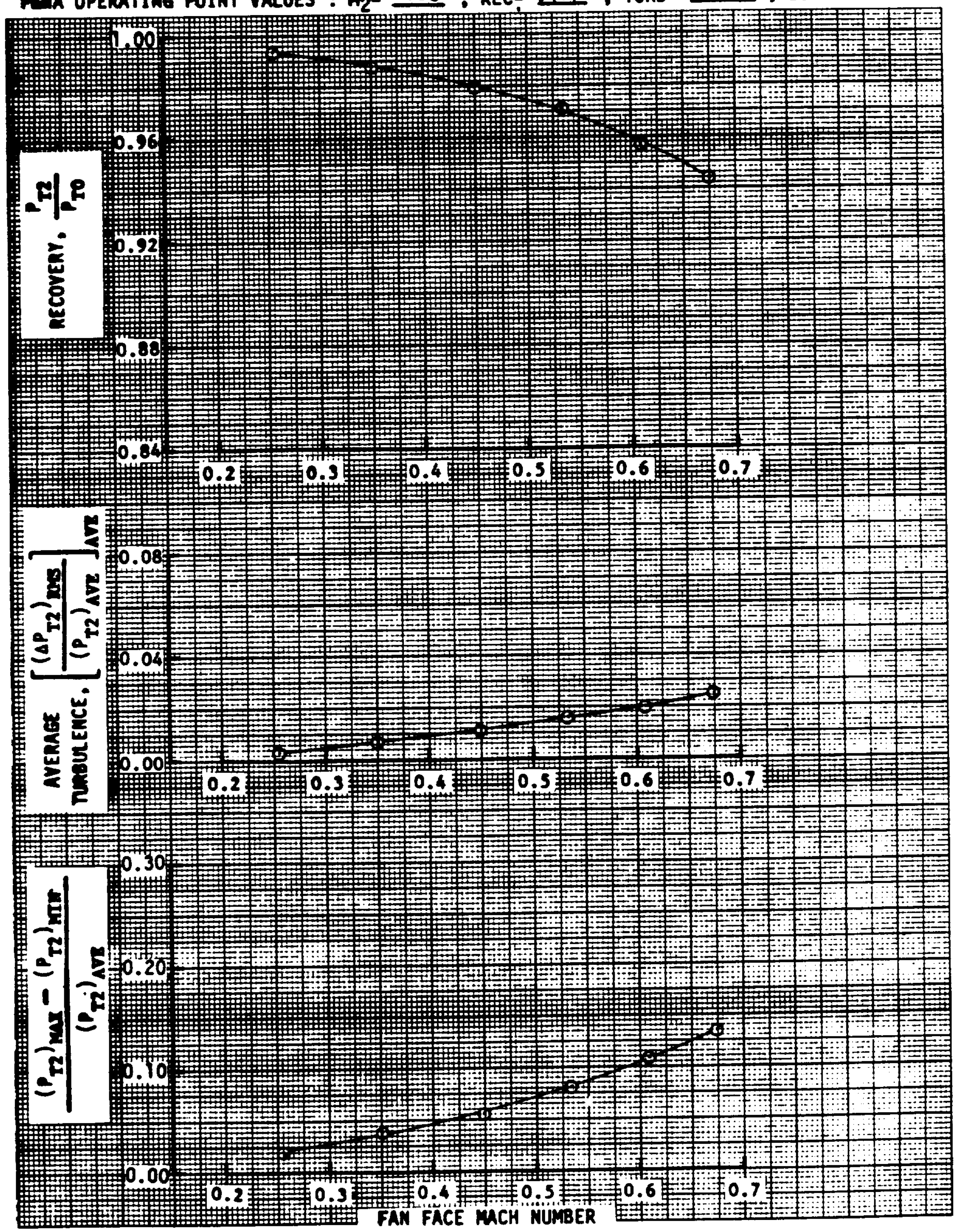
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1615-1620
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .017 ; DIST= .080



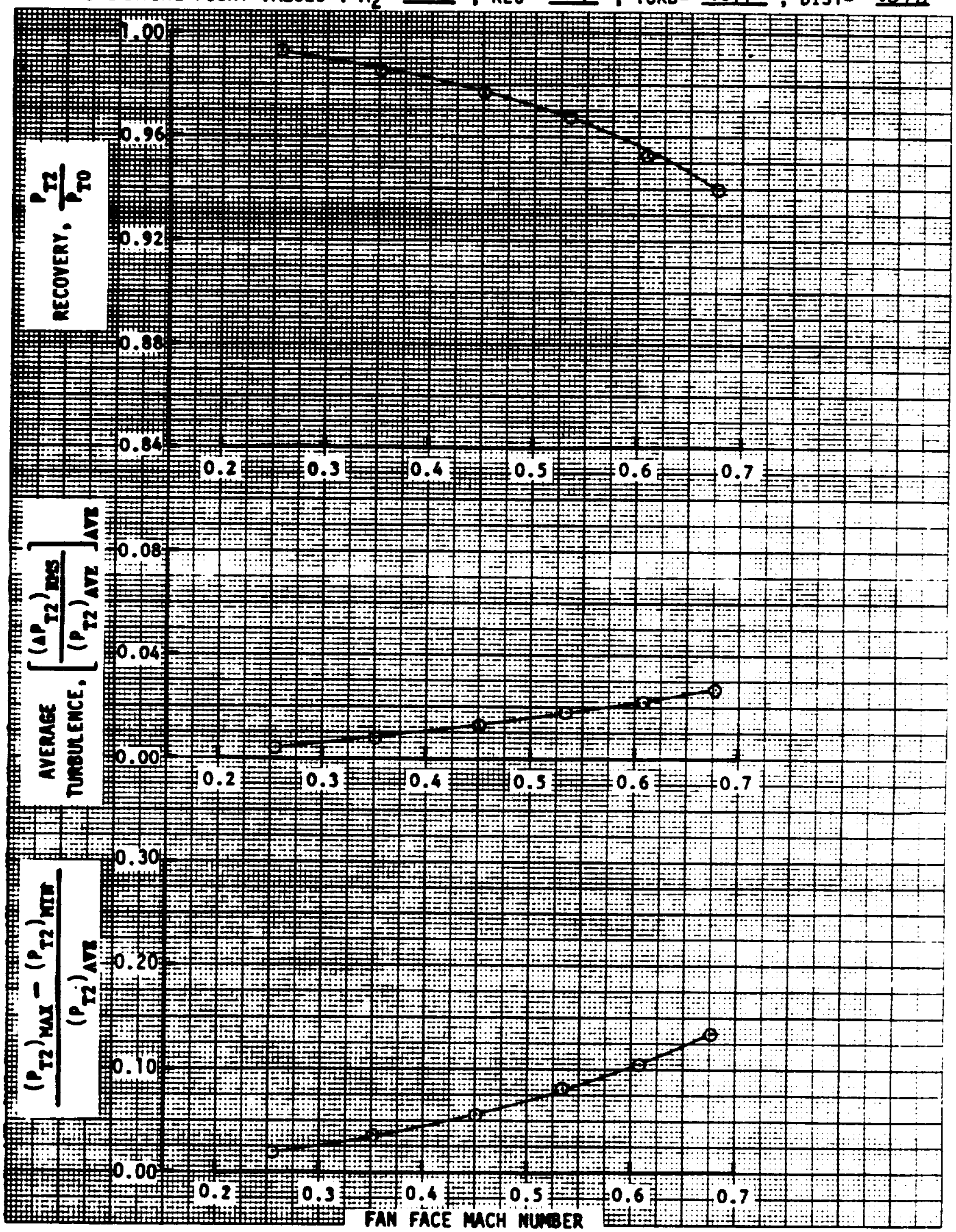
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1621-1626
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .972 ; TURB= .016 ; DIST= .082



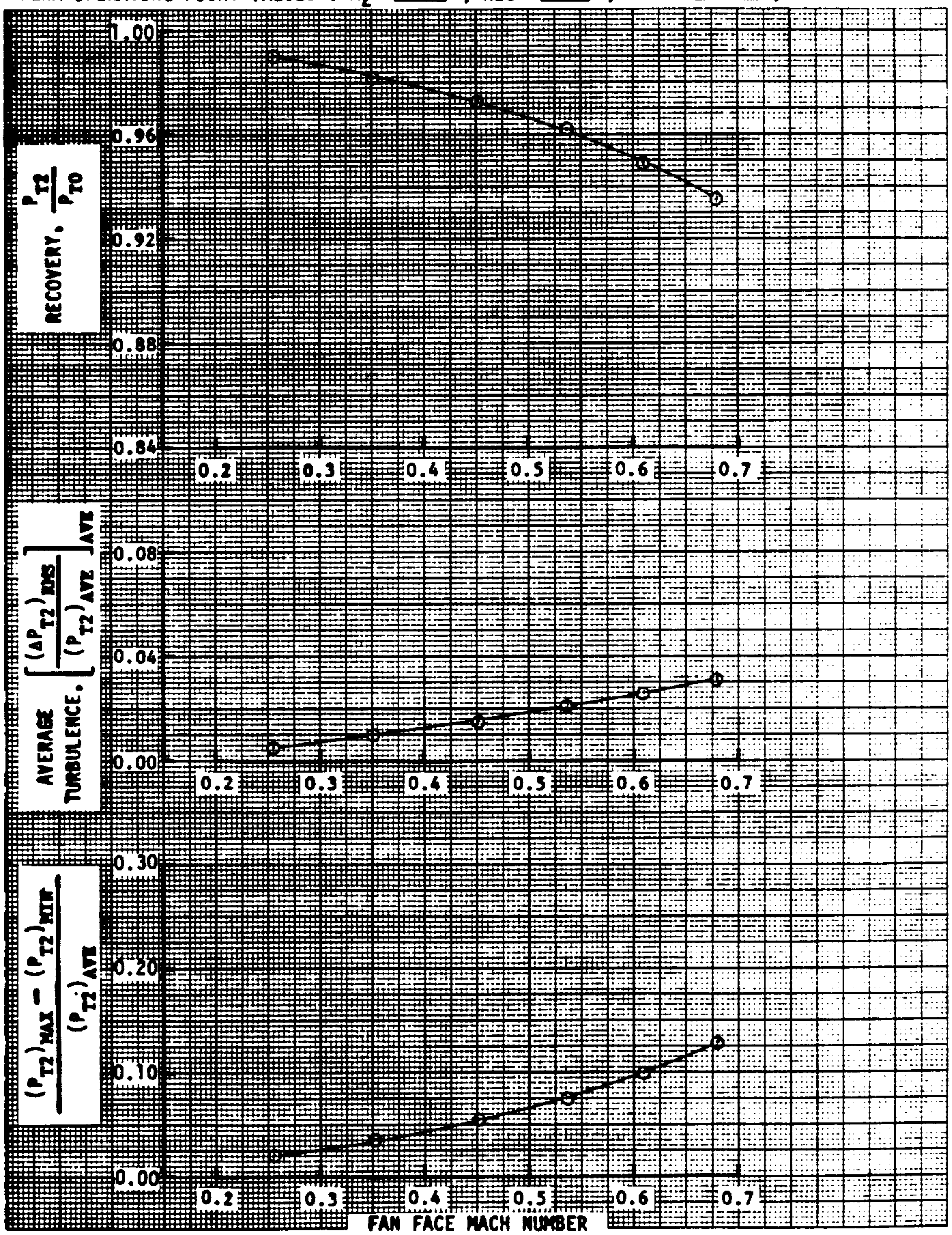
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1627-1632
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .016 ; DIST= .082



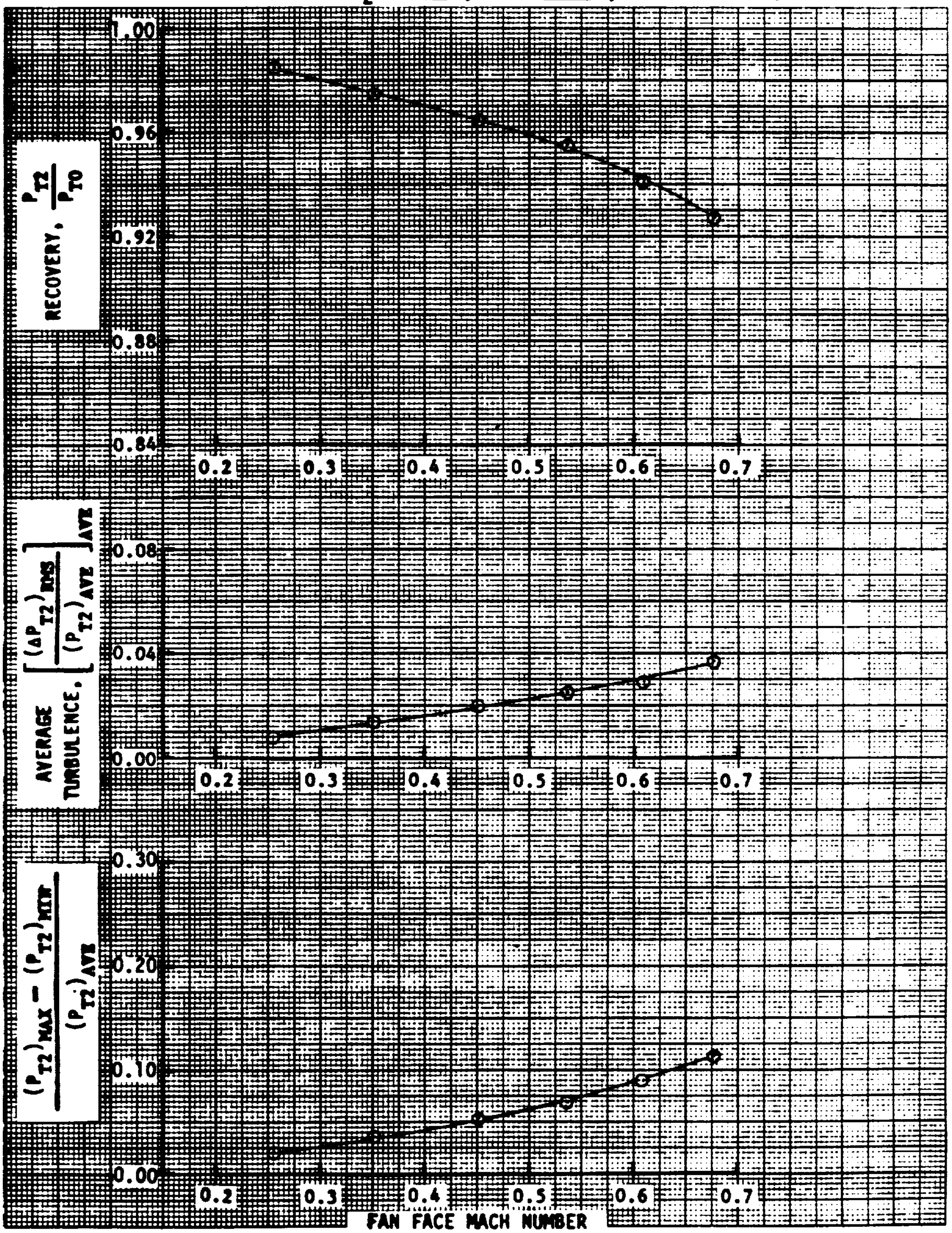
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1633-1638
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .968 ; TURB= .017 ; DIST= .078



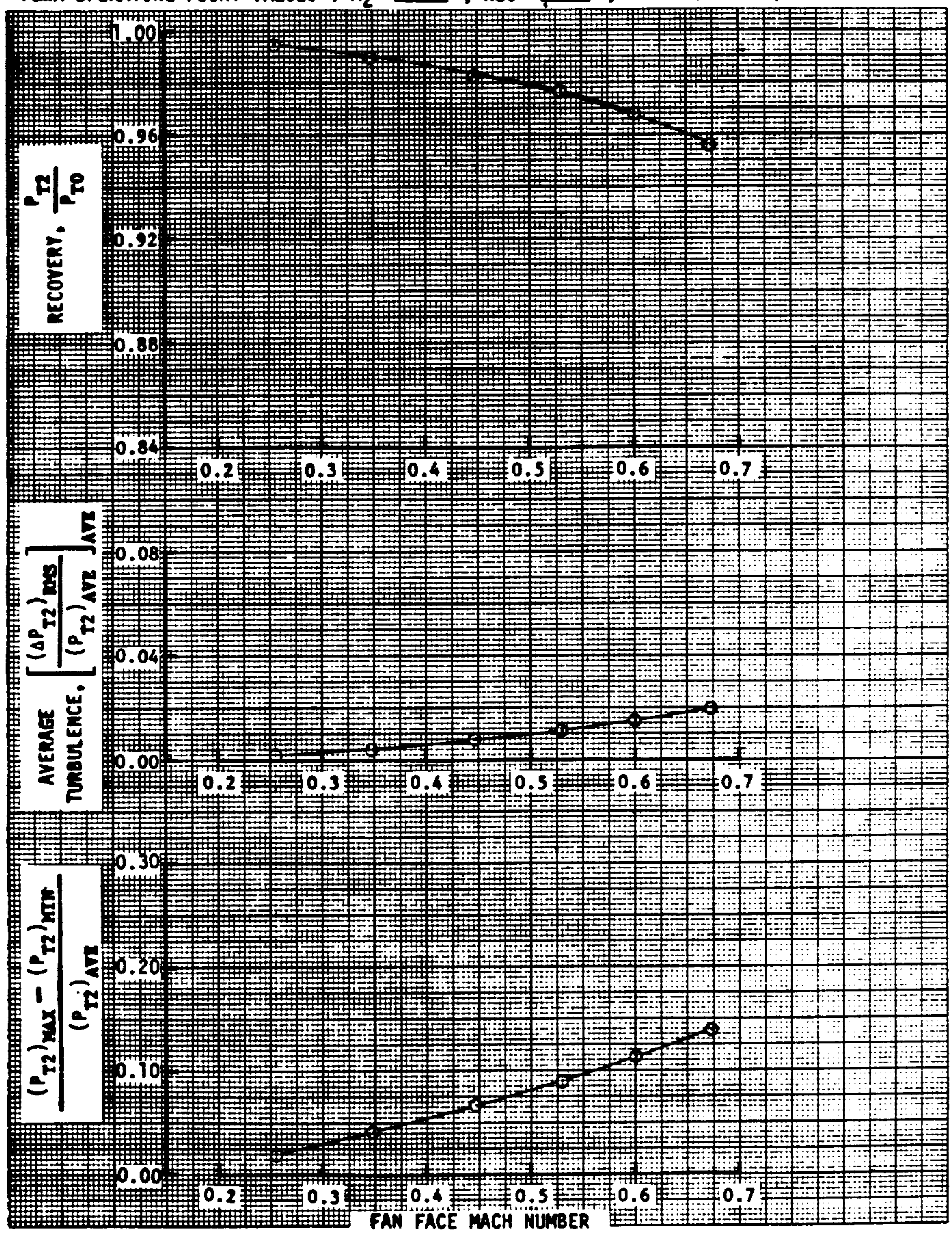
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1639-1644
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .020 ; DIST= .074



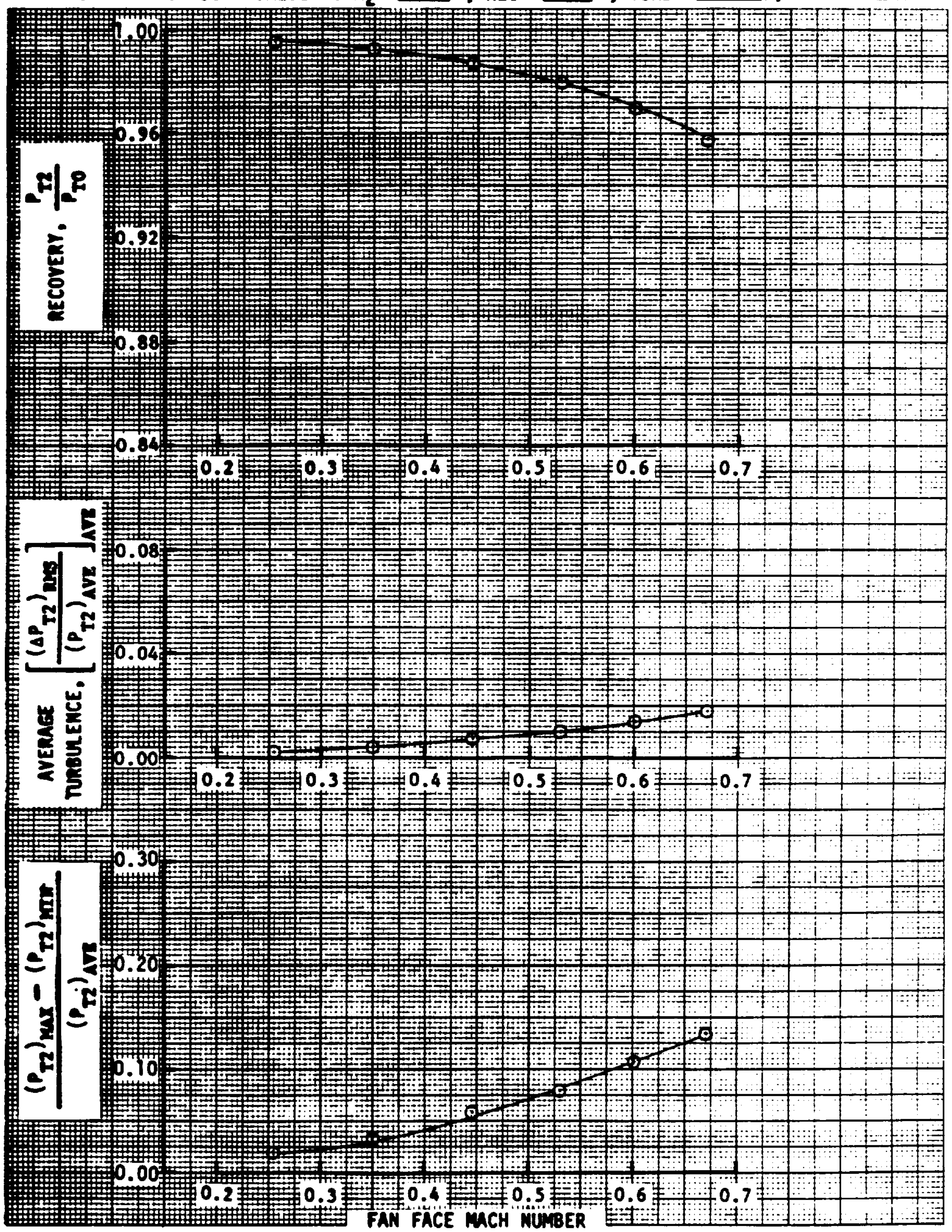
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1657-1662
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .024 ; DIST= .069



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1663-1668
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .011 ; DIST= .090



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1669 - 1674
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .010 ; DIST= .083

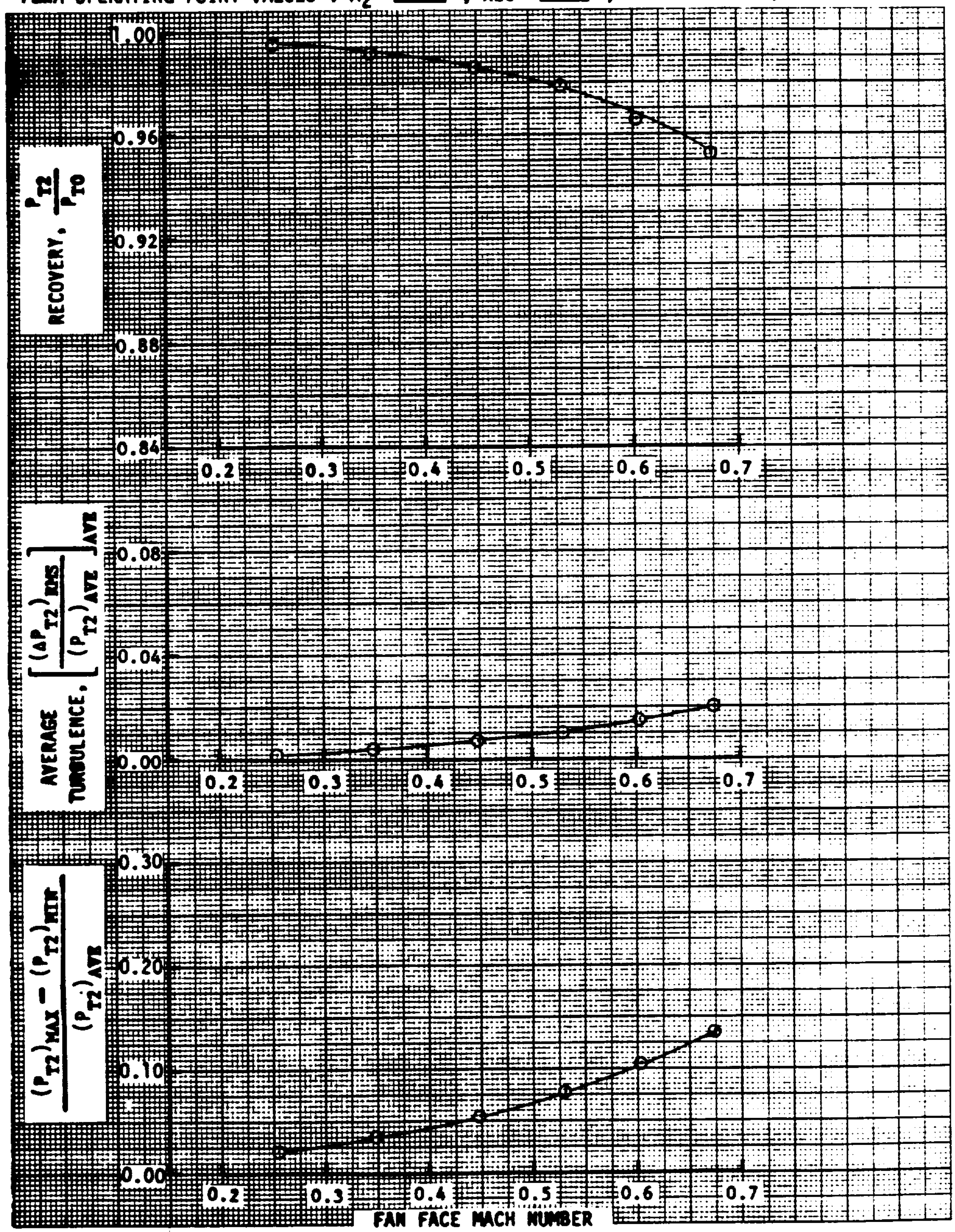


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 9 ; READING NUMBERS 1675-1680

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .010 ; DIST= .077

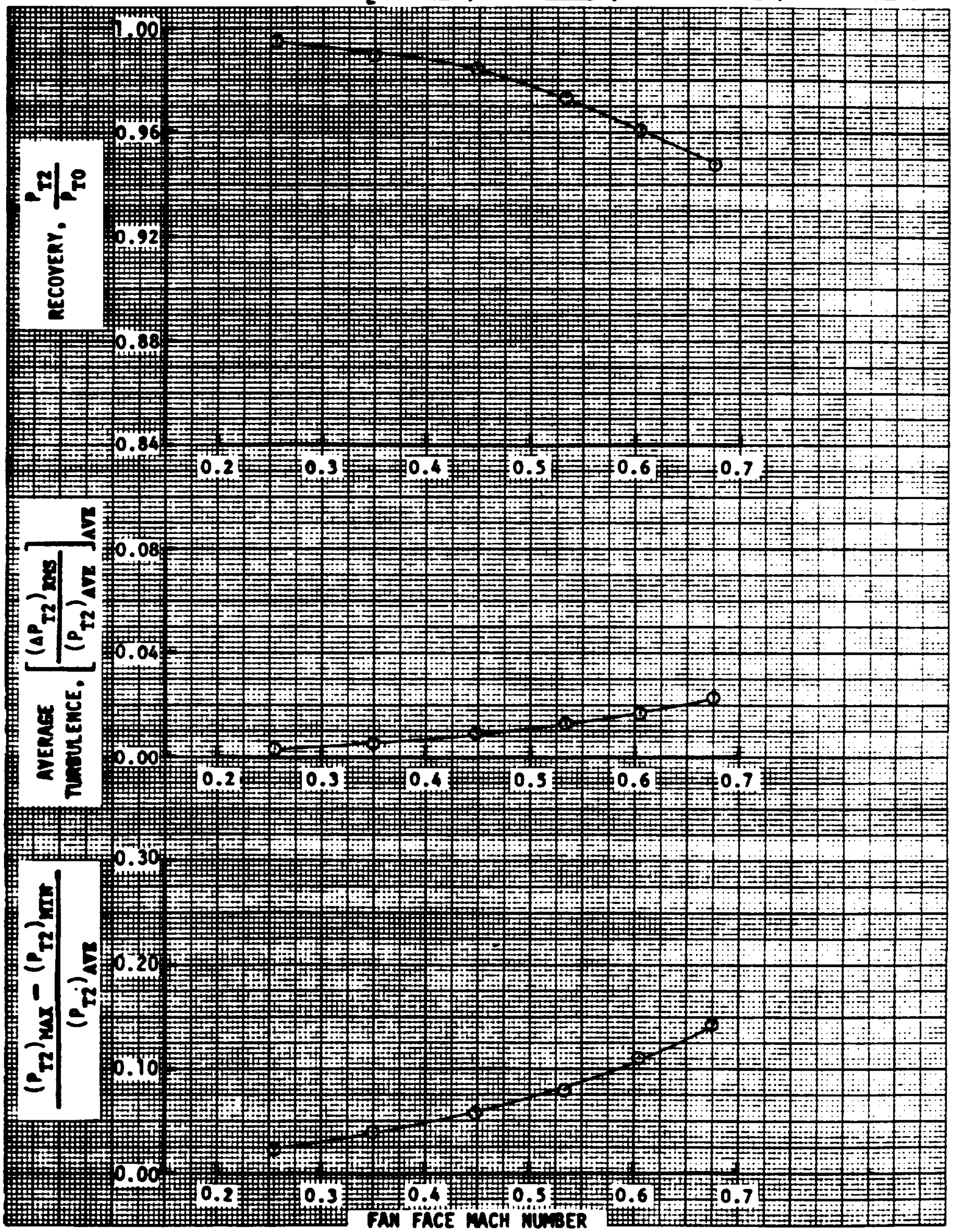


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

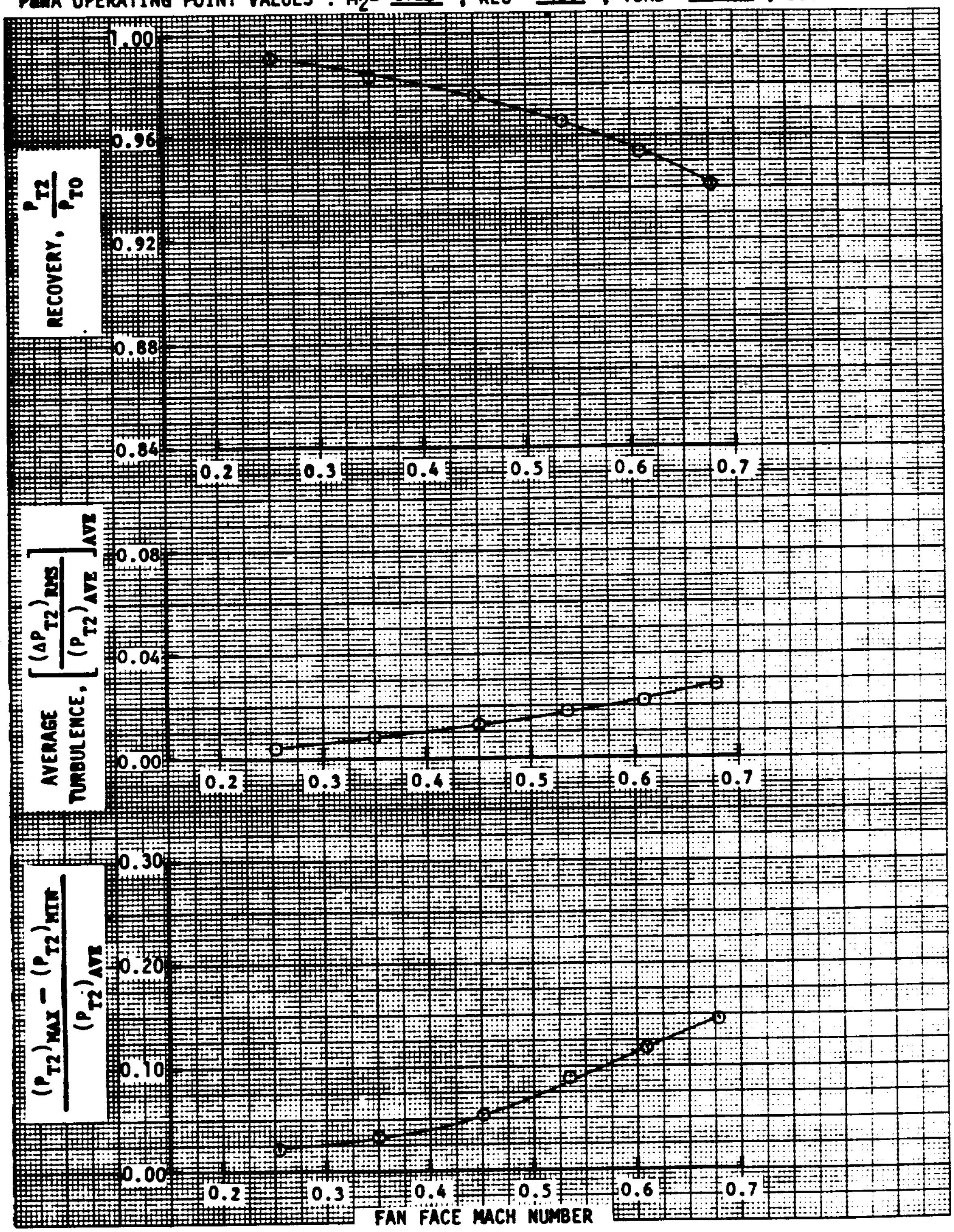
CONFIGURATION 9 ; READING NUMBERS 1681-1686

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

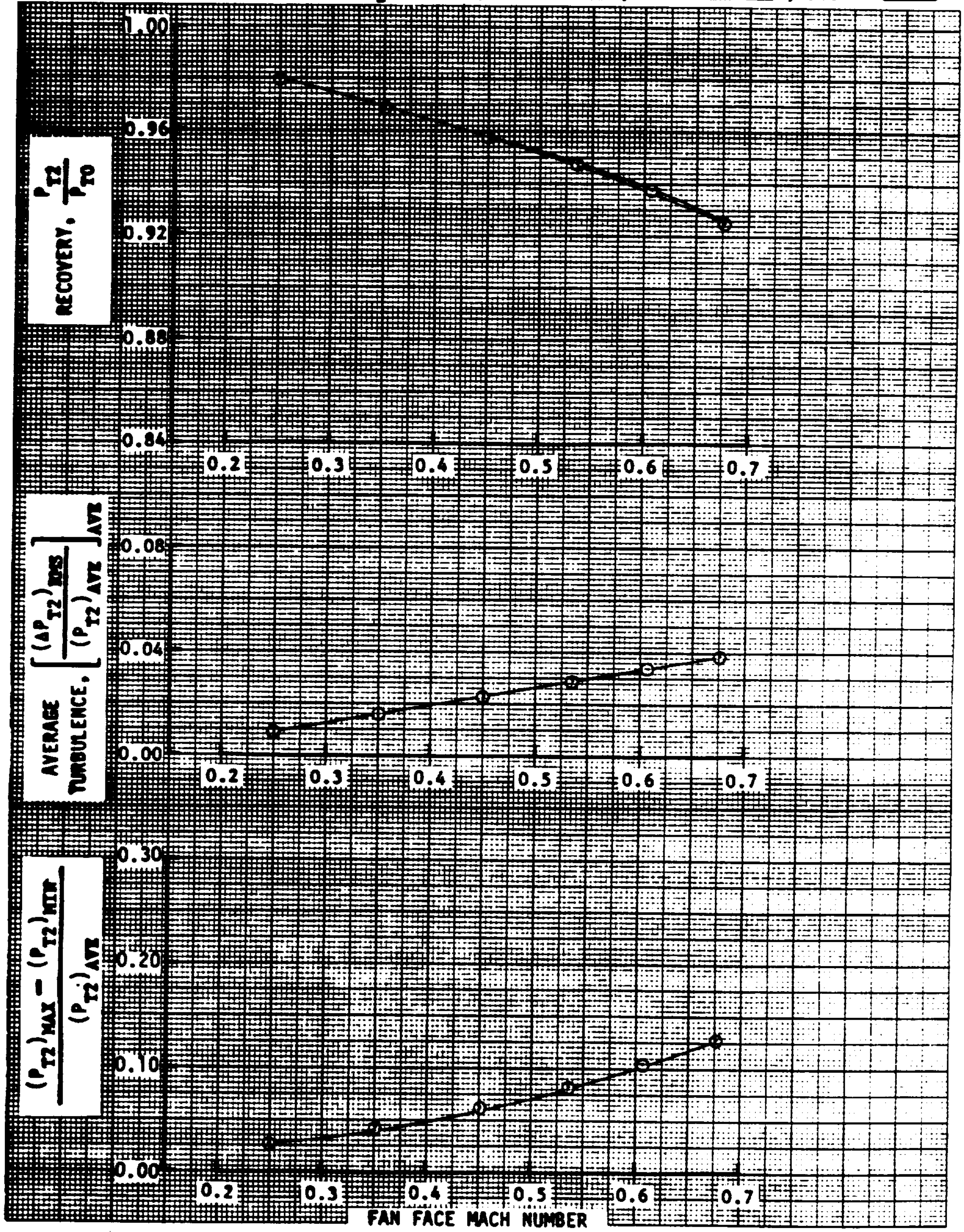
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .012 ; DIST= .082



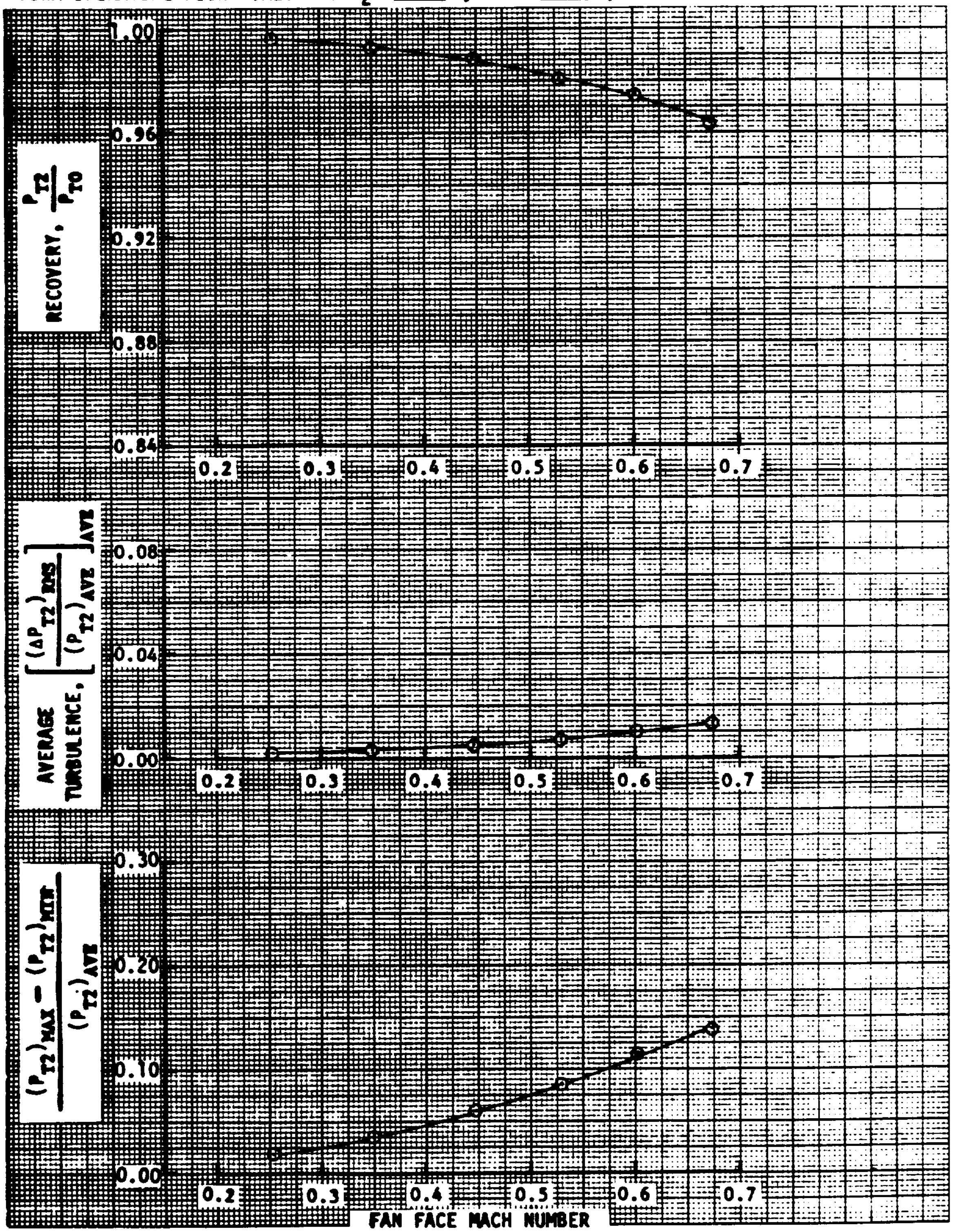
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1687-1692
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .017 ; DIST= .083



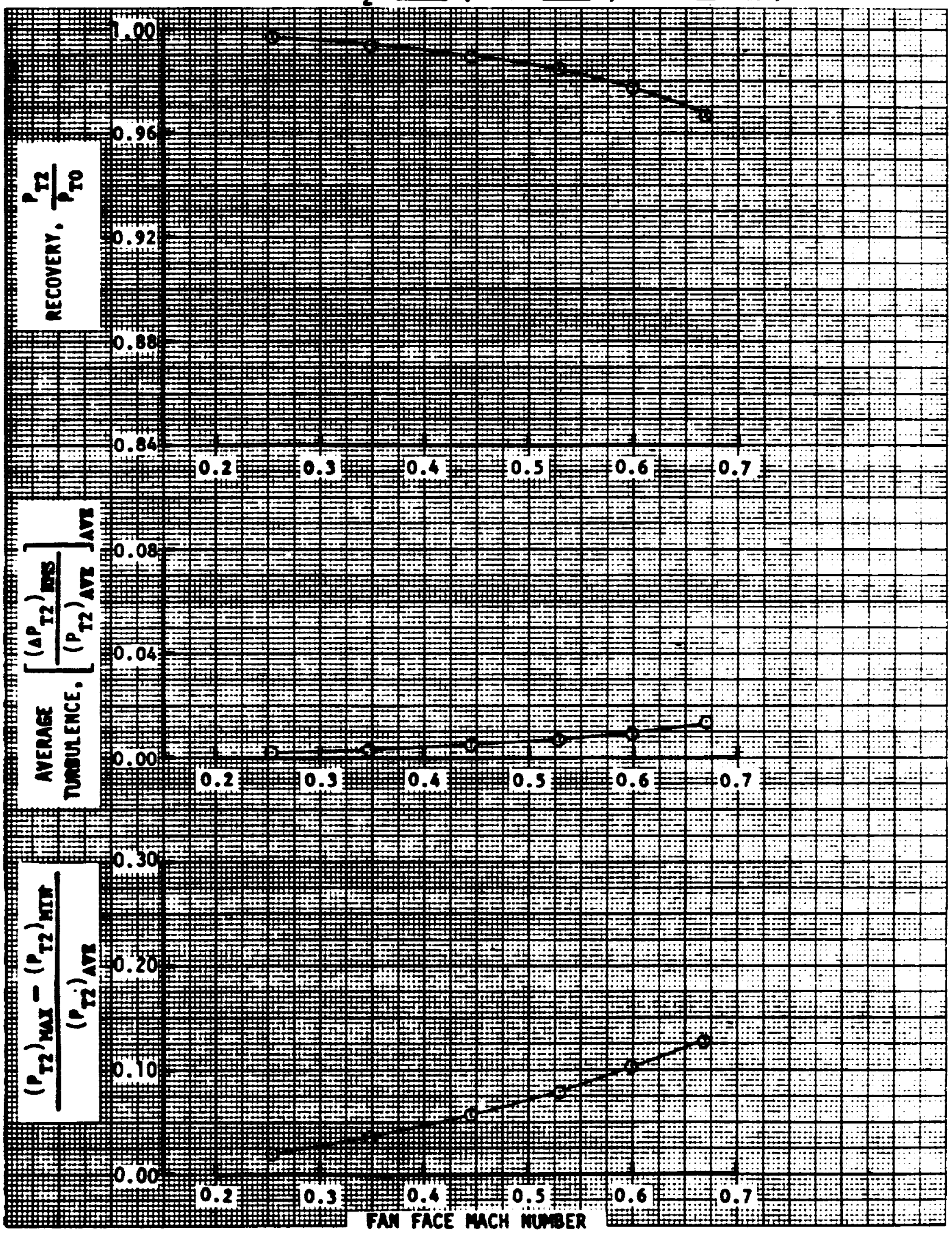
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1693-1698
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .949 ; TURB= .028 ; DIST= .078



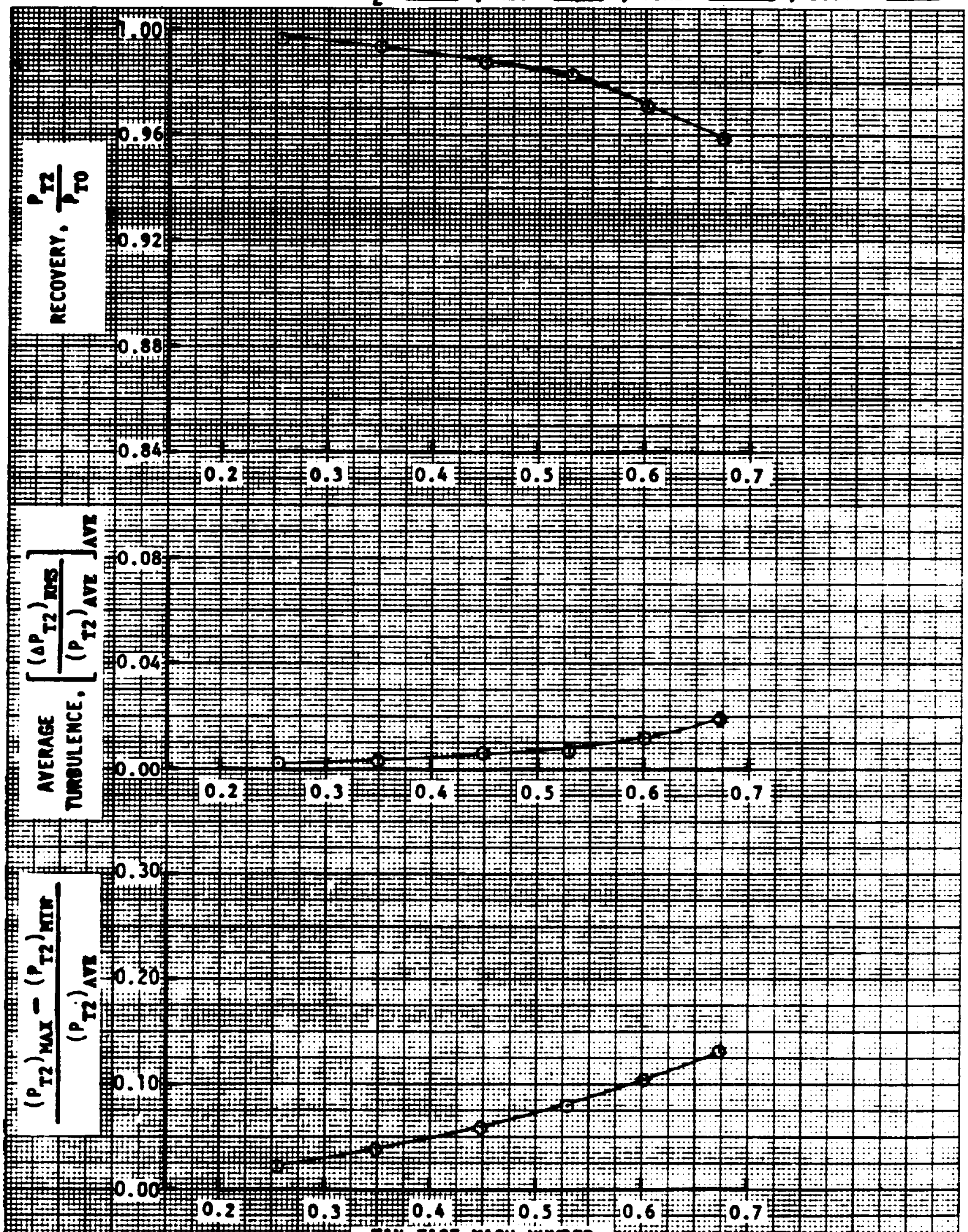
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1699-1704
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .007 ; DIST= .086



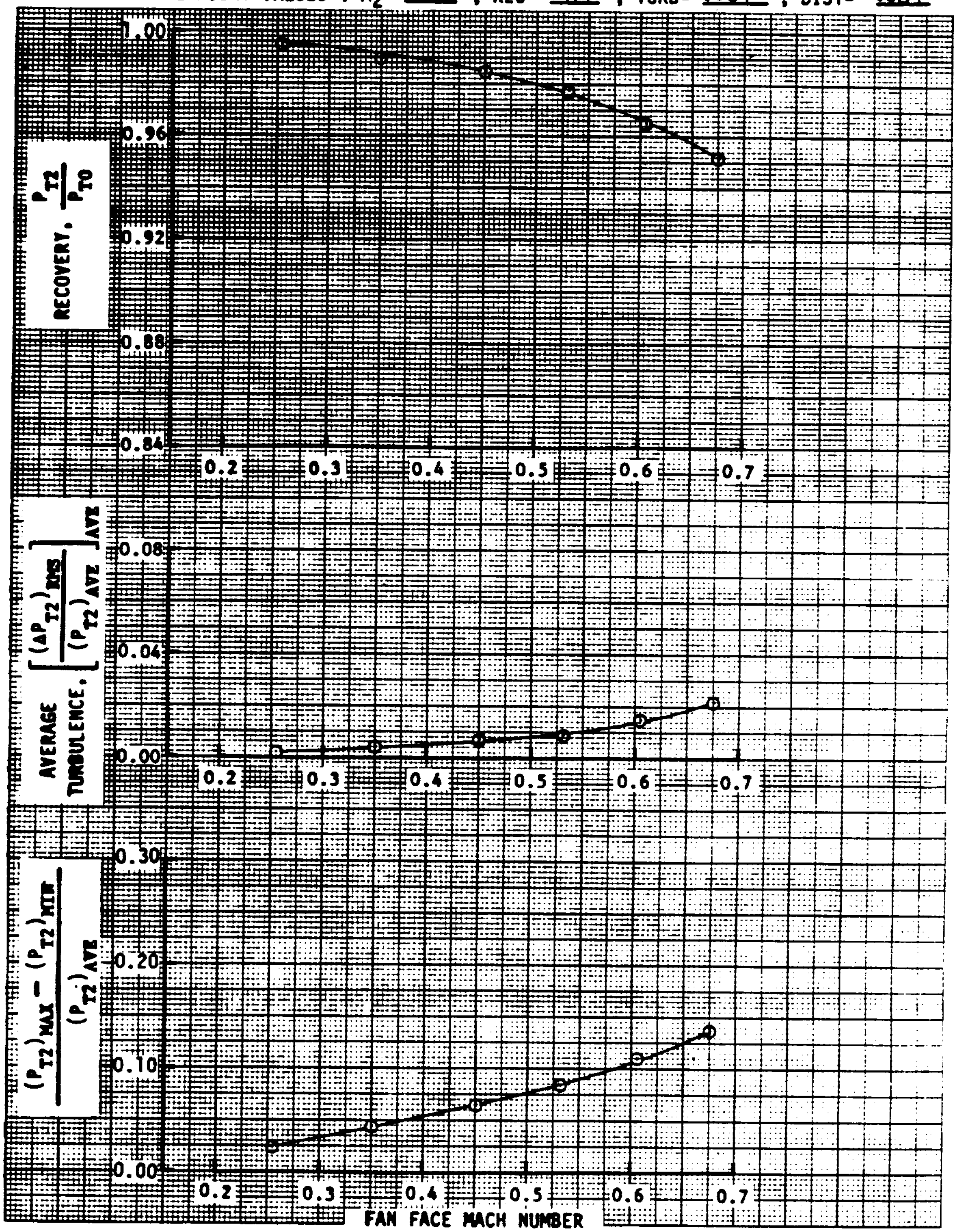
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1705-1710
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .007 ; DIST= .080



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1711-1716
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .982 ; TURB= .008 ; DIST= .083

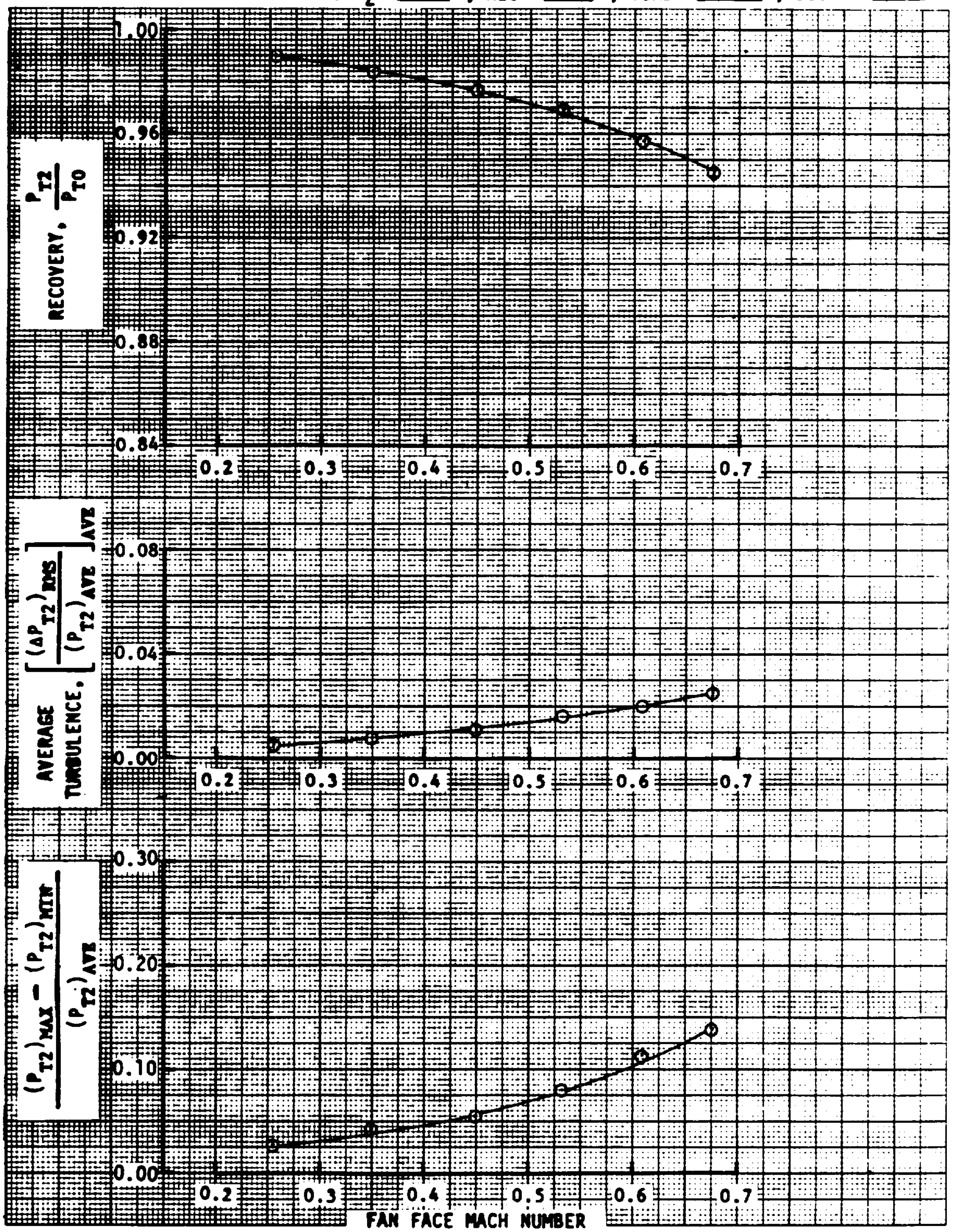


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1717-1722
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .009 ; DIST= .084



C-6

RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1723-1728
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .968 ; TURB= .015 ; DIST= .103



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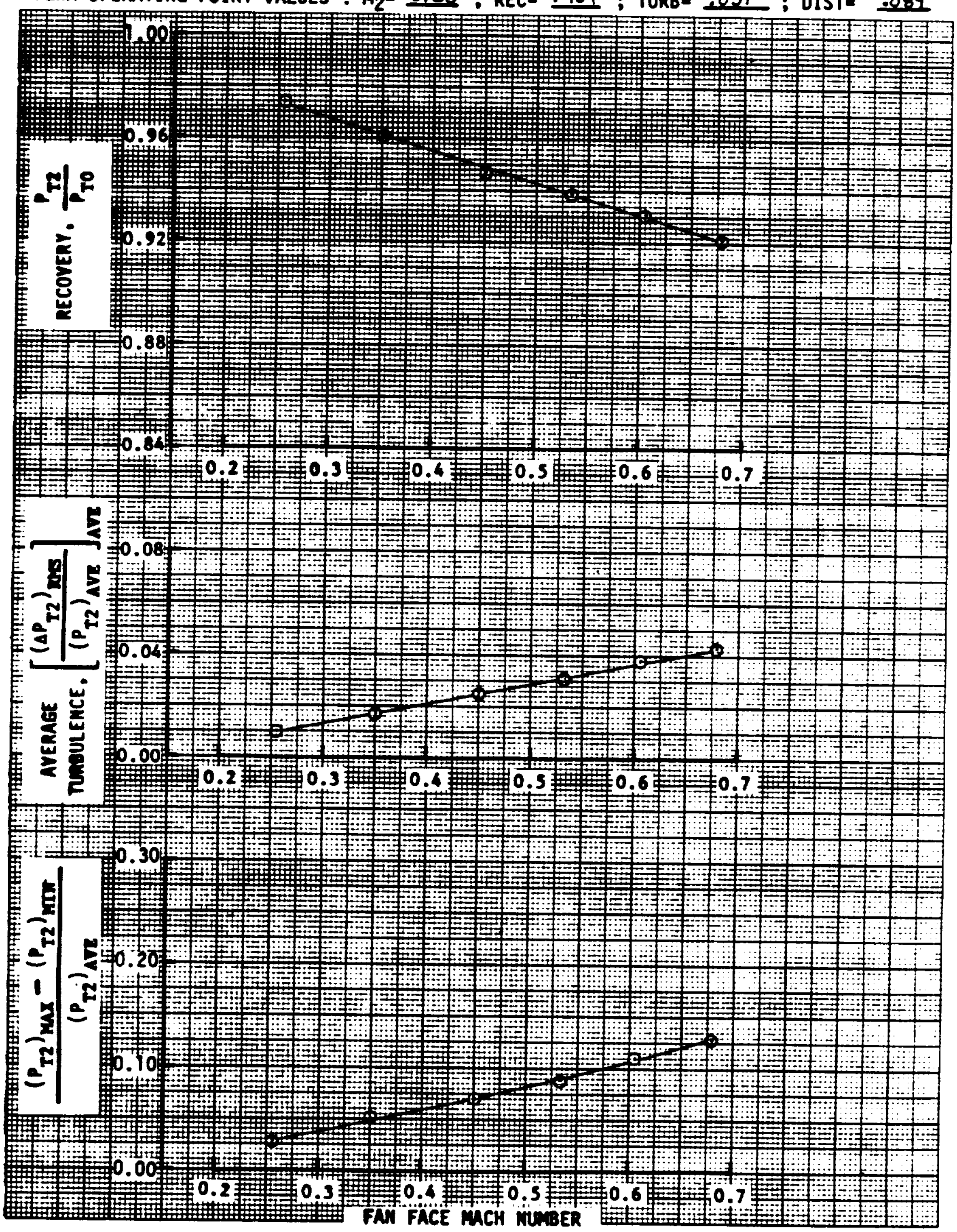
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 9 ; READING NUMBERS 1729-1734
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 40 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .939 ; TURB= .031 ; DIST= .089



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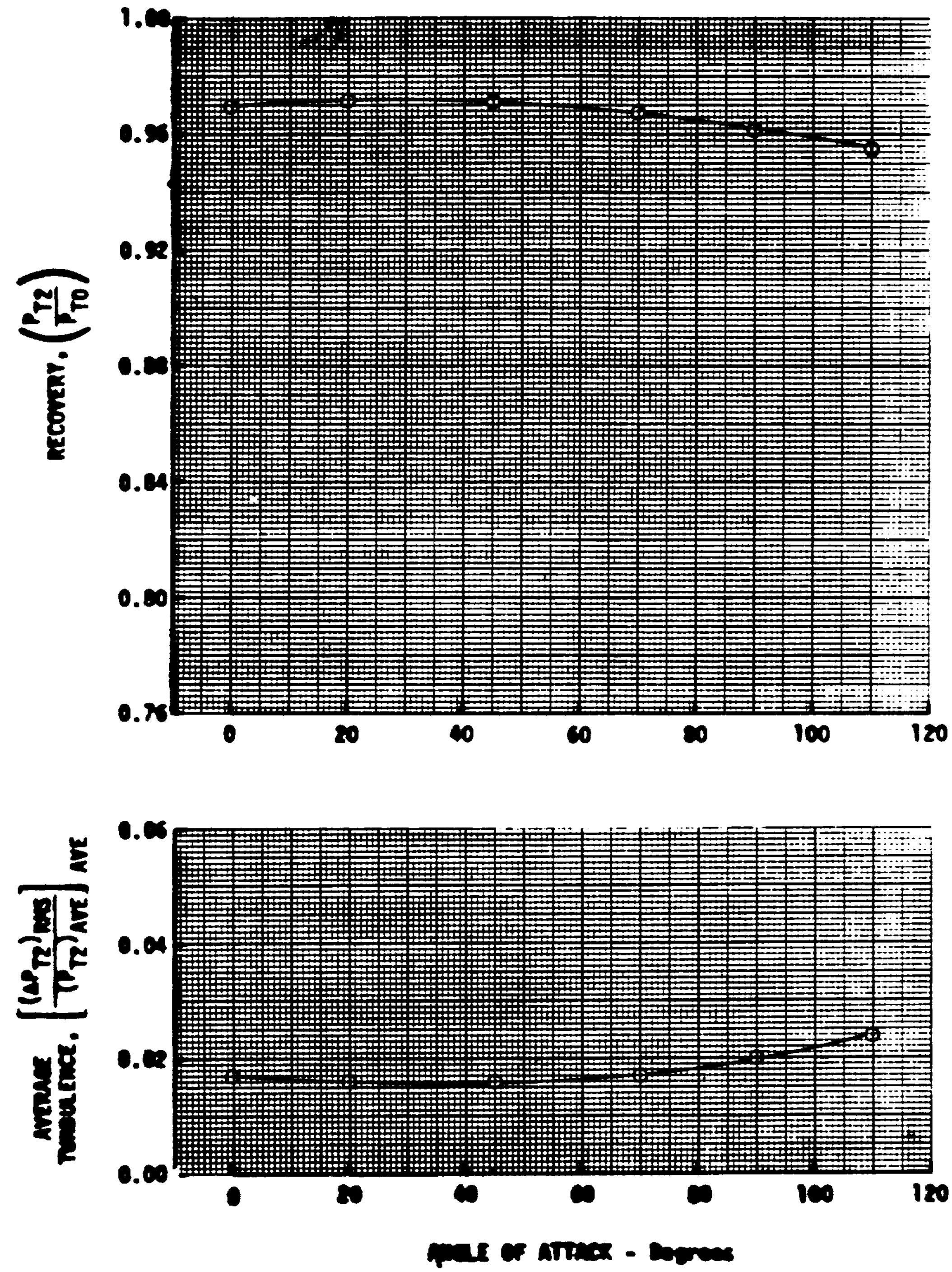
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° Droop Lip



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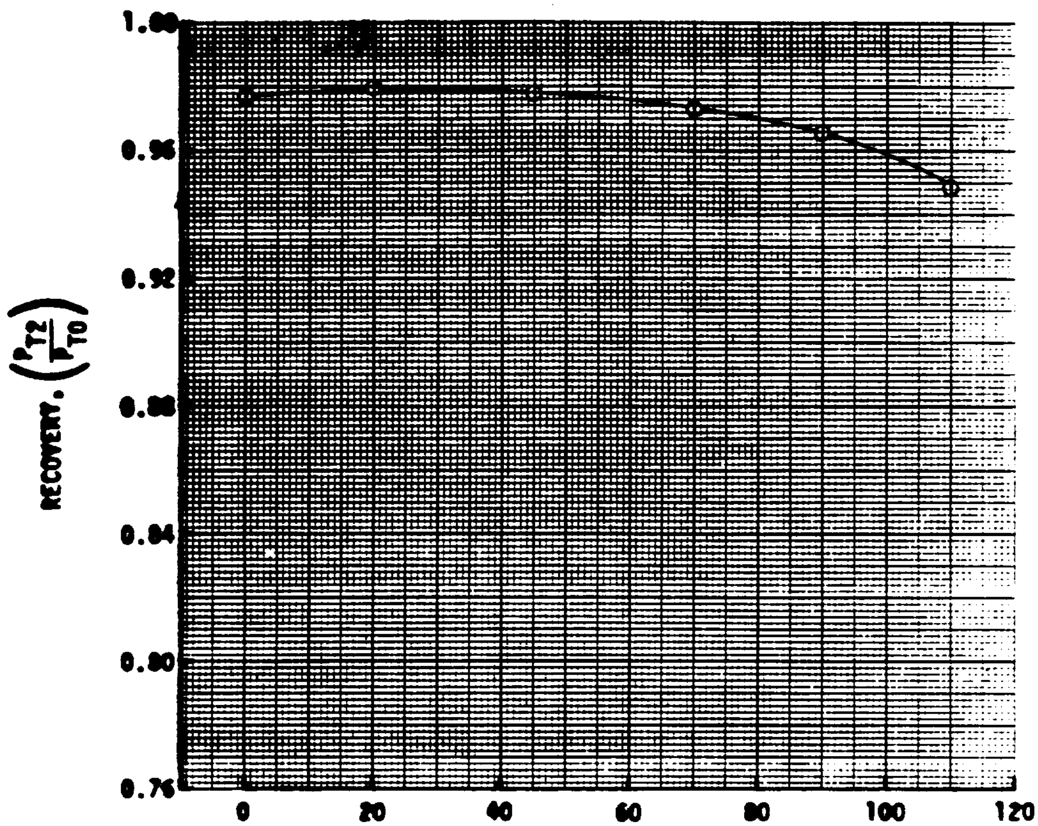
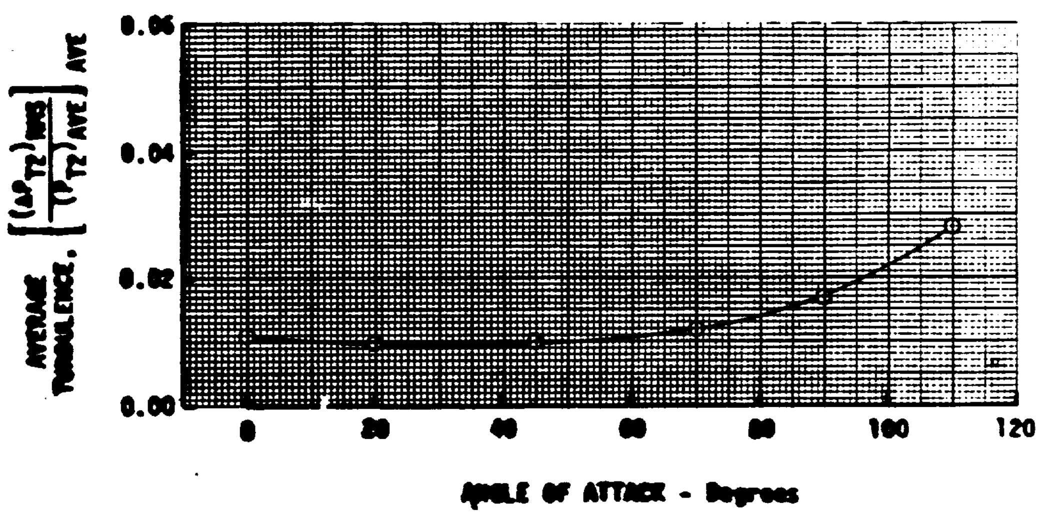
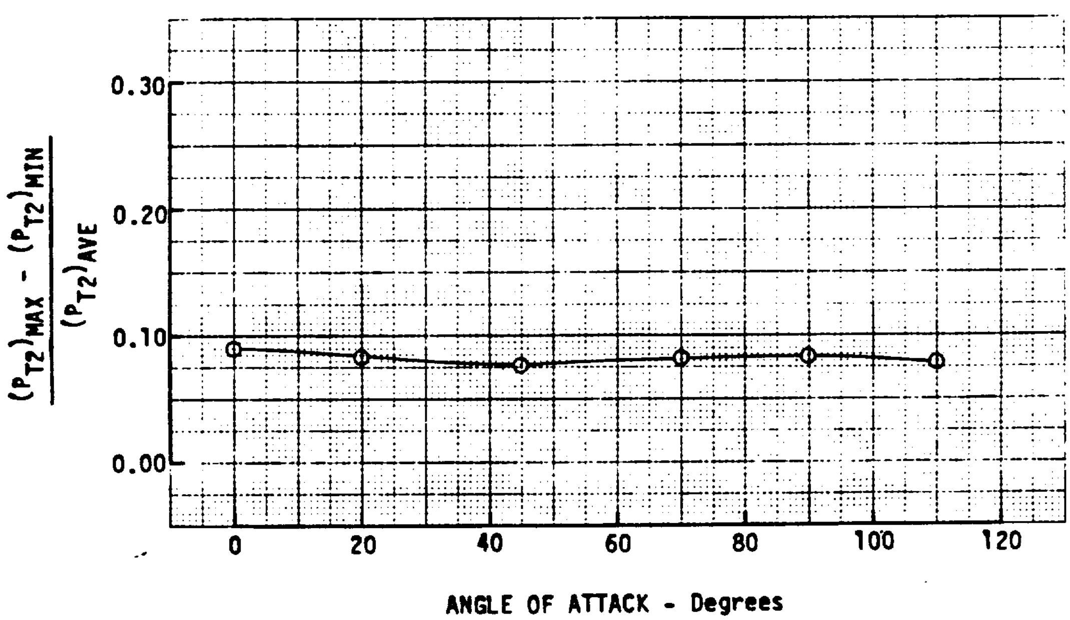
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
NASA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° Droop Lip





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP



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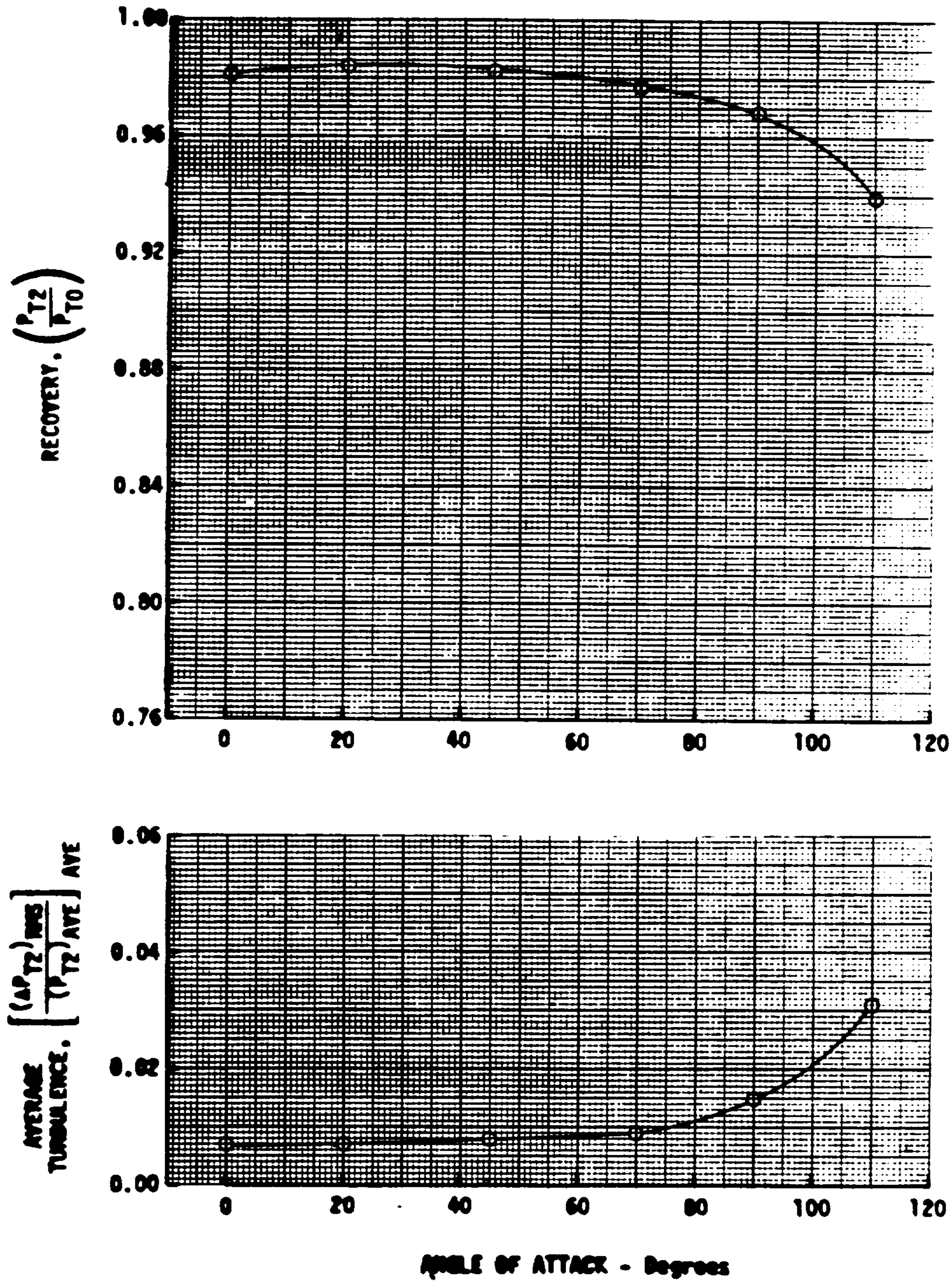
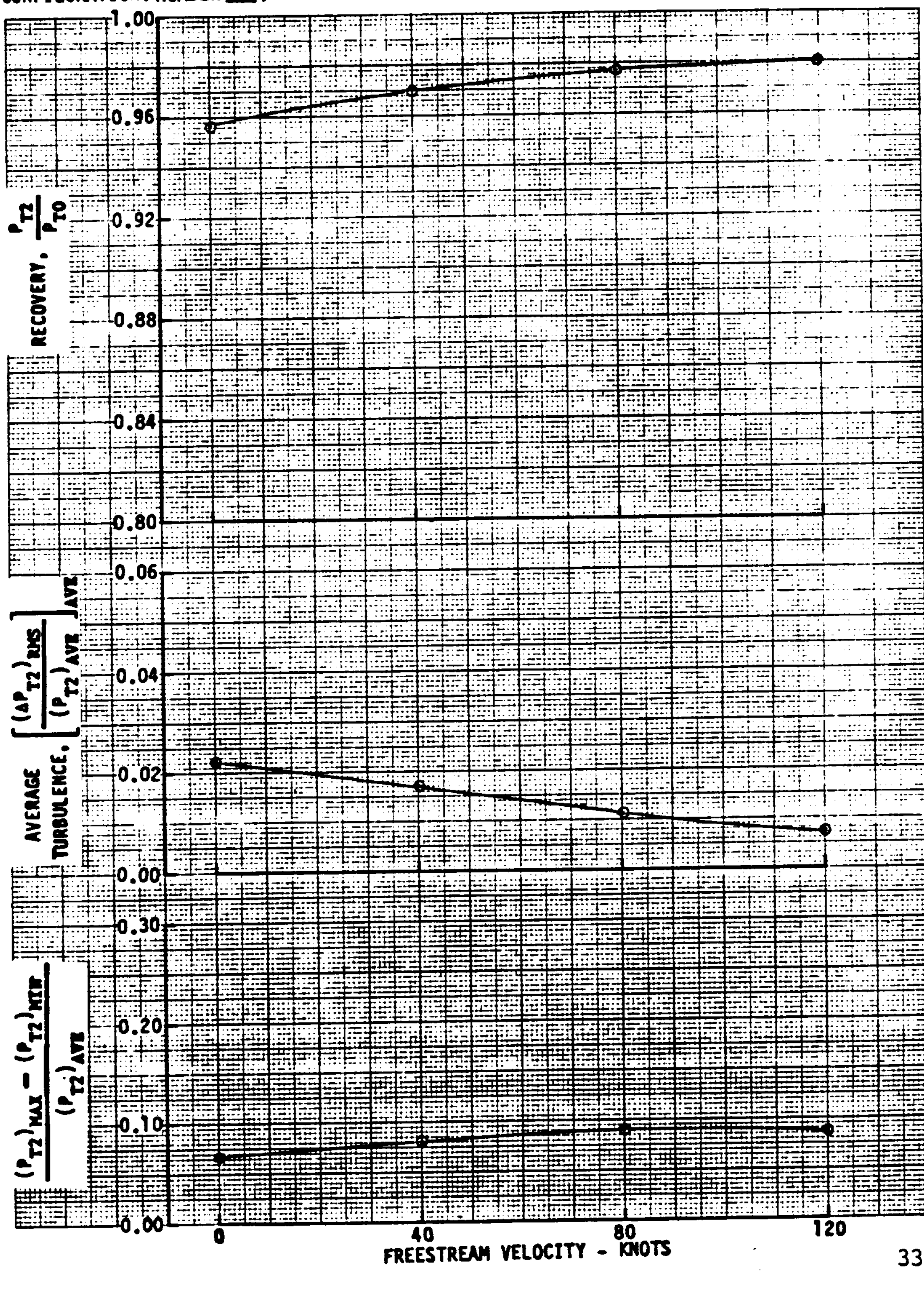
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PDMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° Droop Lip



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = ____ DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

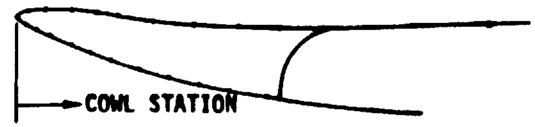
CONFIGURATION: 9 ; 70° DROOP LIP

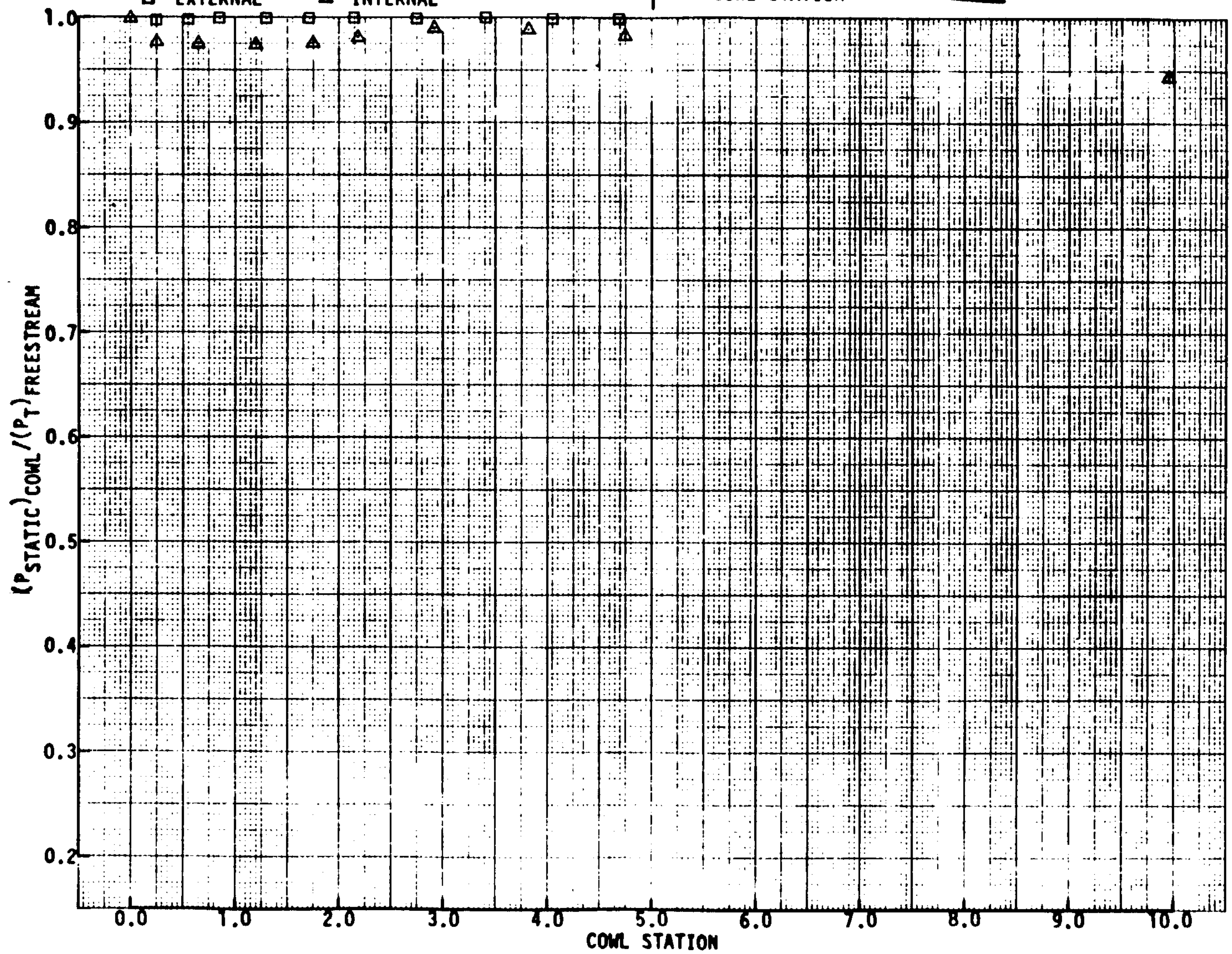
FREESTREAM VELOCITY = 0 knots

ANGLE OF ATTACK = 20 degrees

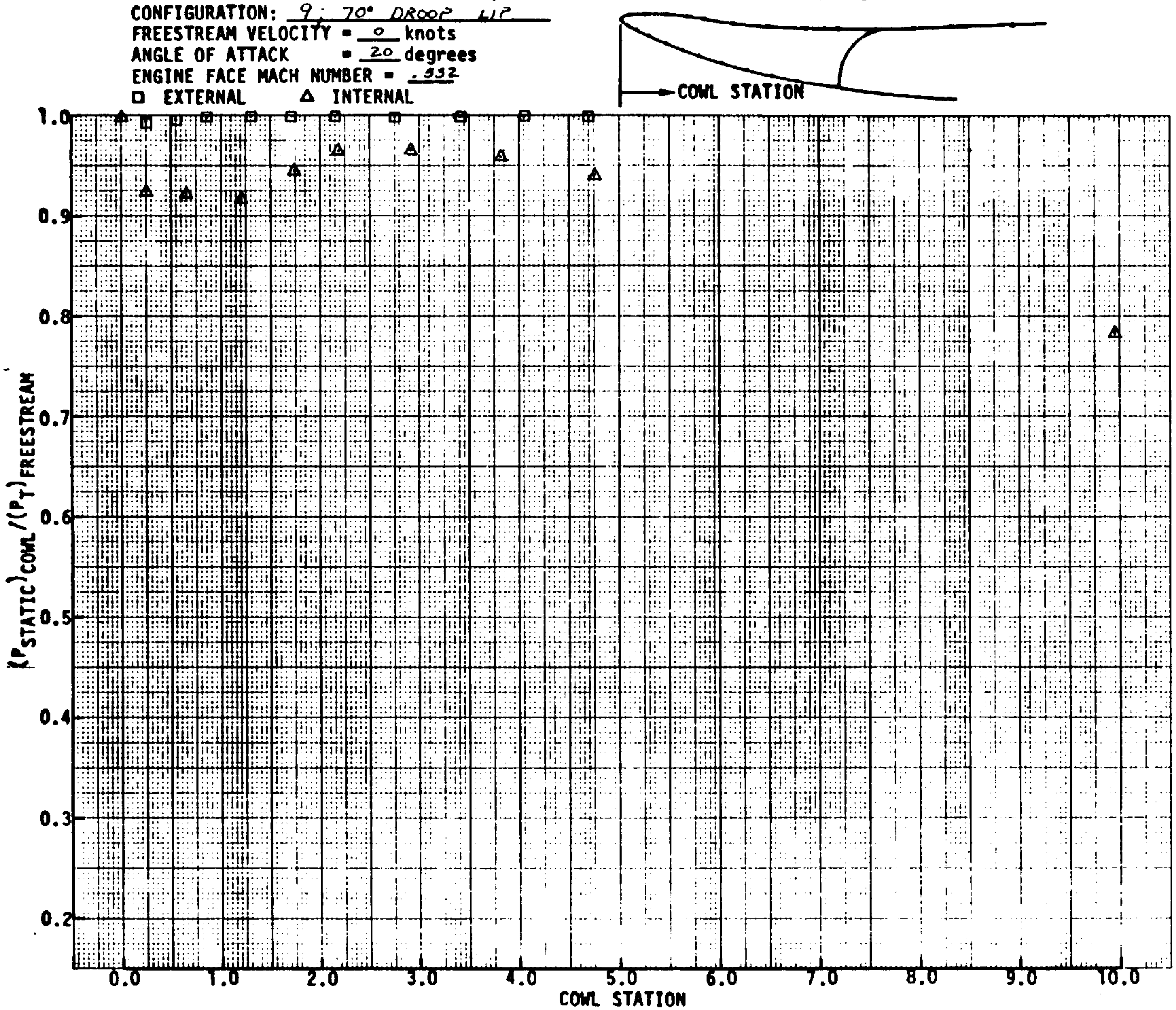
ENGINE FACE MACH NUMBER = .254

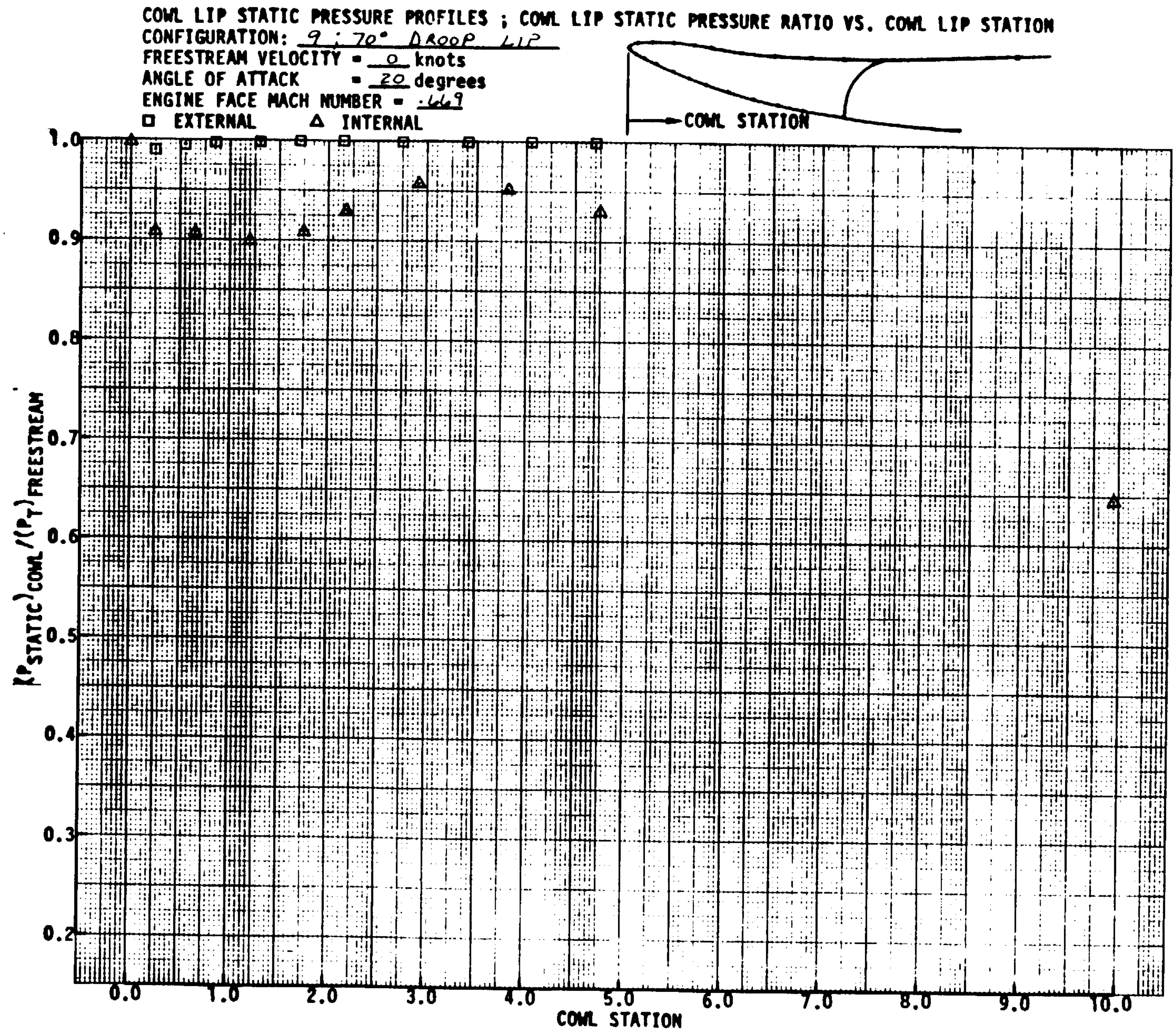
□ EXTERNAL △ INTERNAL





COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 9; 70° DROOP LIP
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .552
□ EXTERNAL △ INTERNAL




COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 9 ; 70° DROOP LIP
FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
ENGINE FACE MACH NUMBER = .669
□ EXTERNAL
△ INTERNAL
COWL STATION
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION

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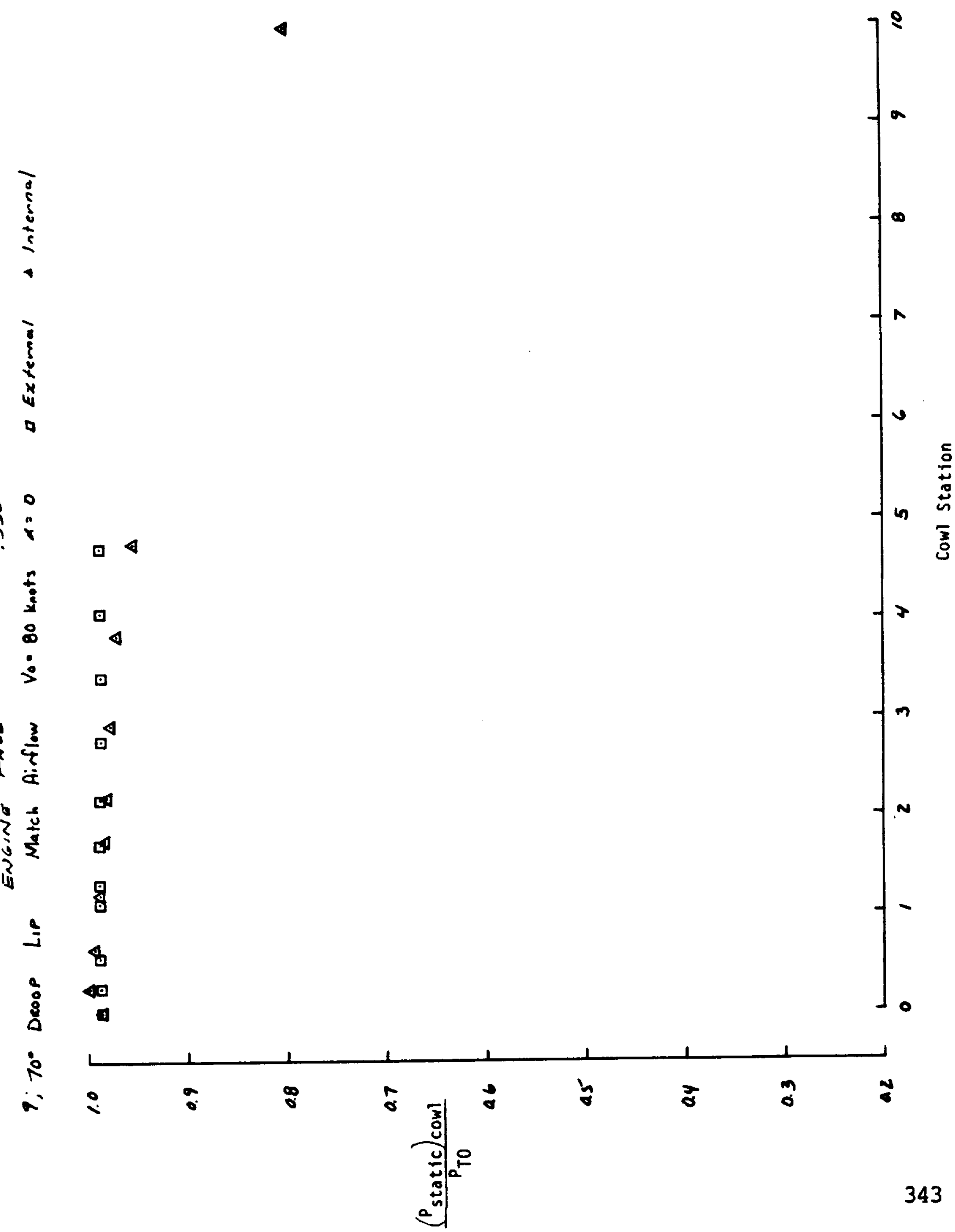
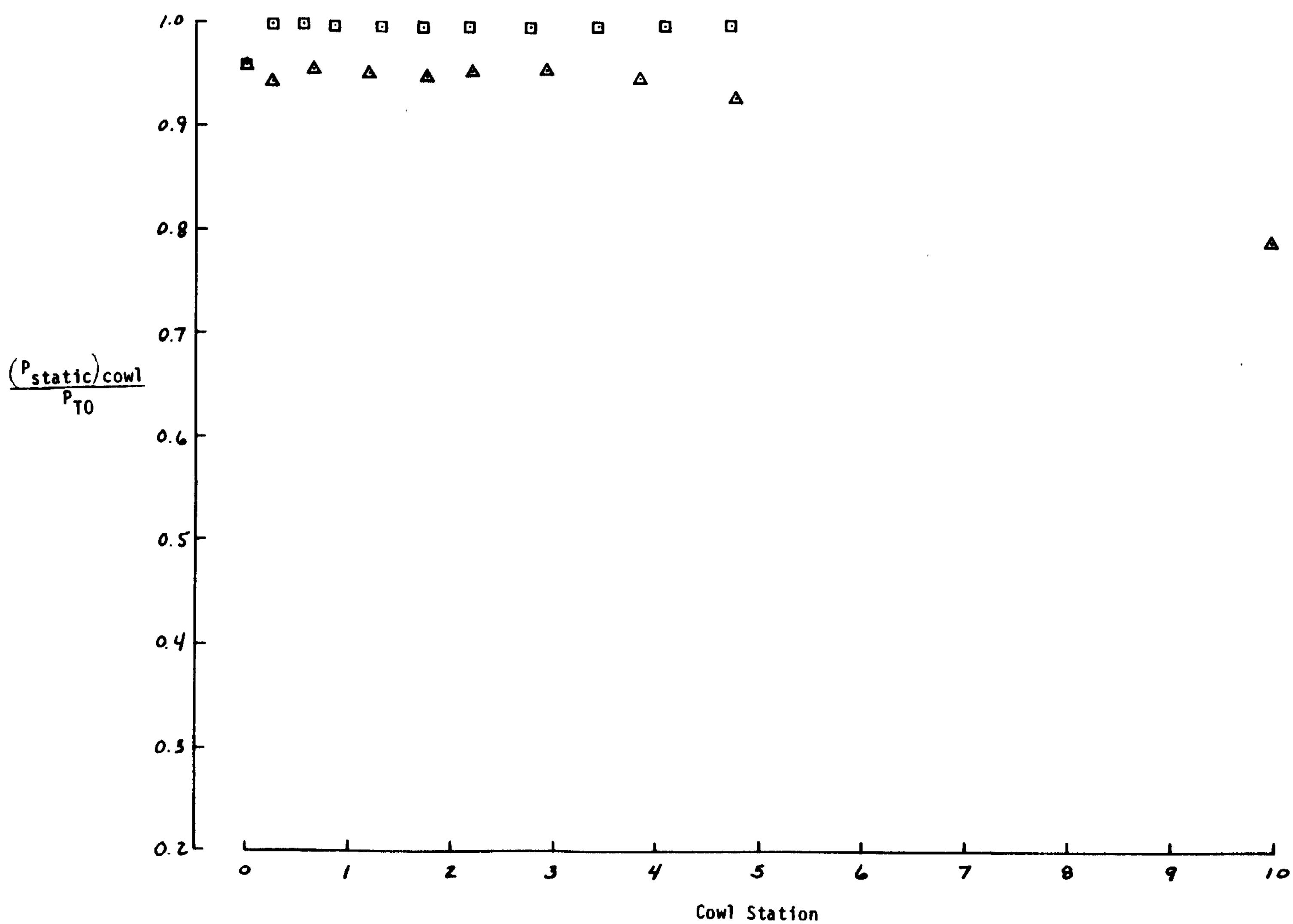


ENGINE FACE MACH NO. = .531

9; 70° DROOP LIP MATCH Airflow $V_0 = 80$ $\alpha = 45$ □ External △ Internal



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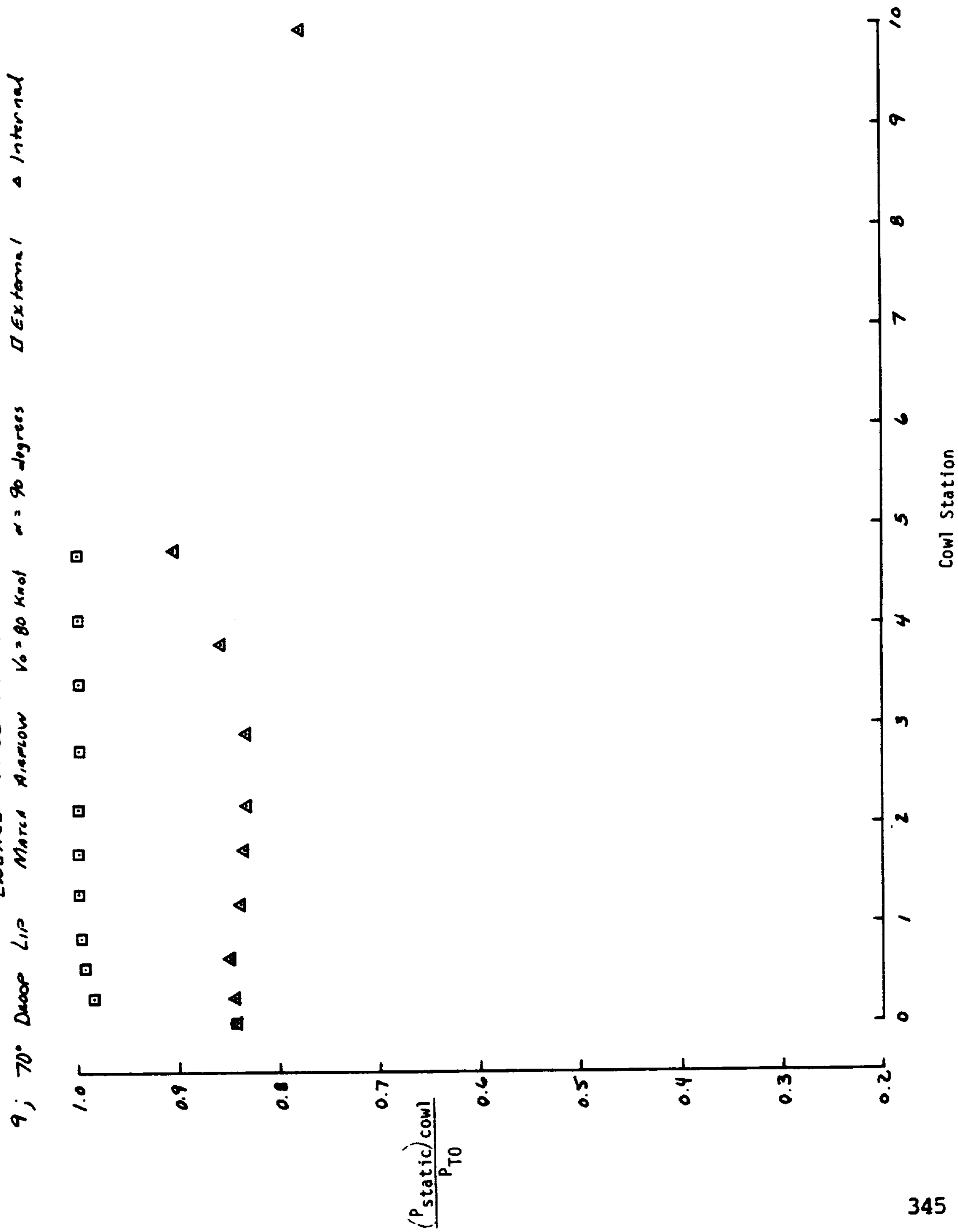
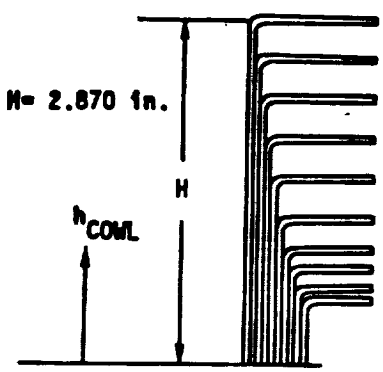
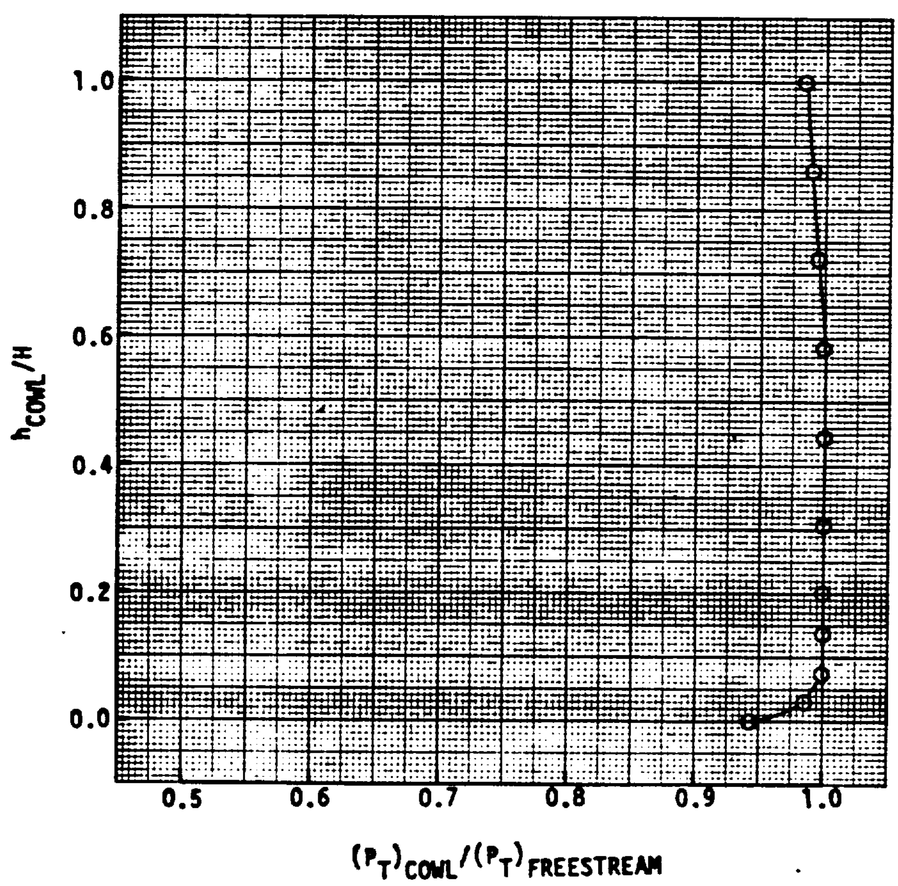


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .254

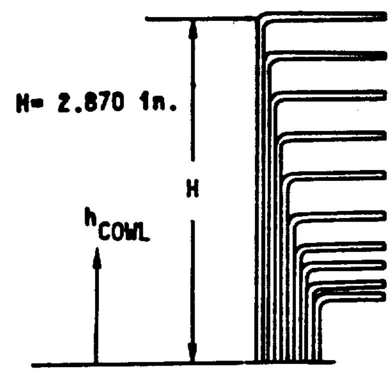


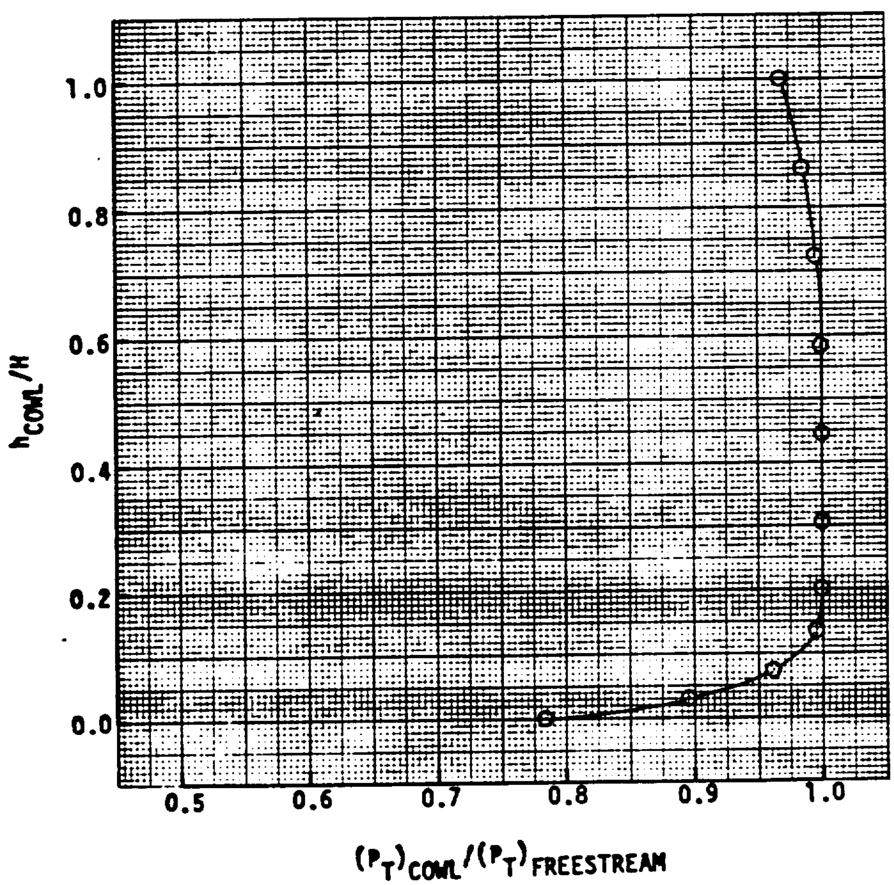


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .532

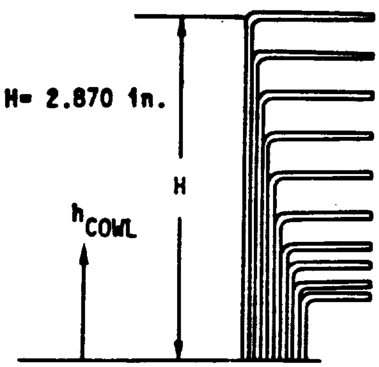


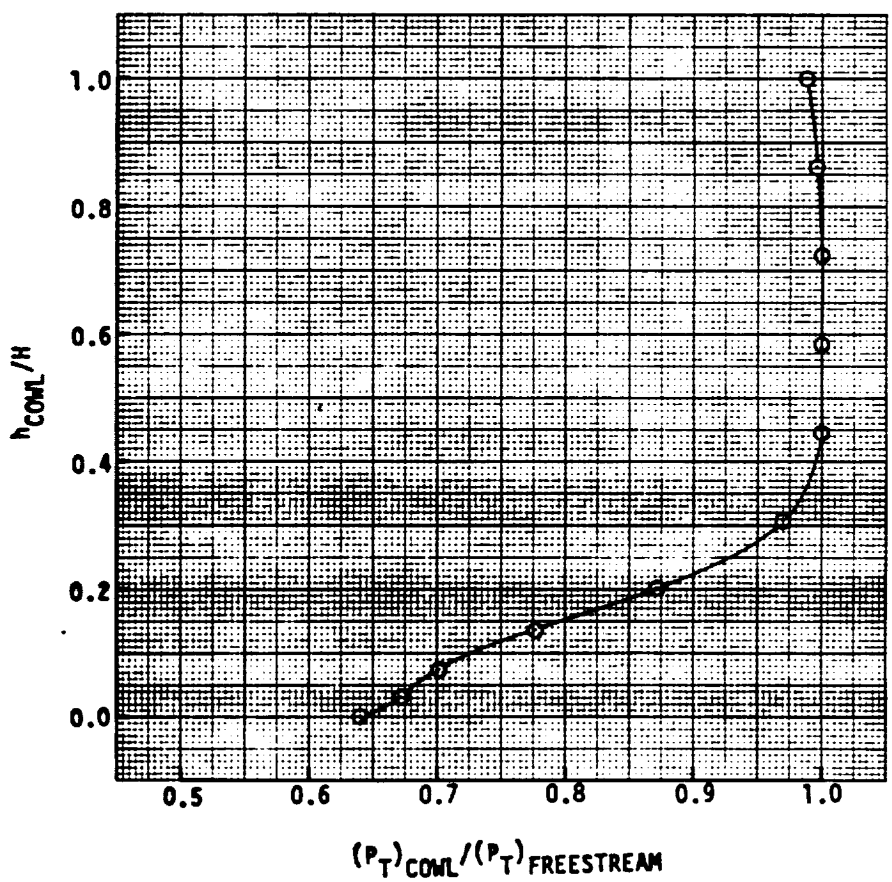


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 0 knots
ANGLE OF ATTACK = 20 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .669

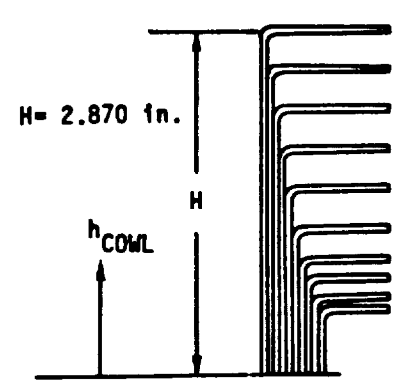


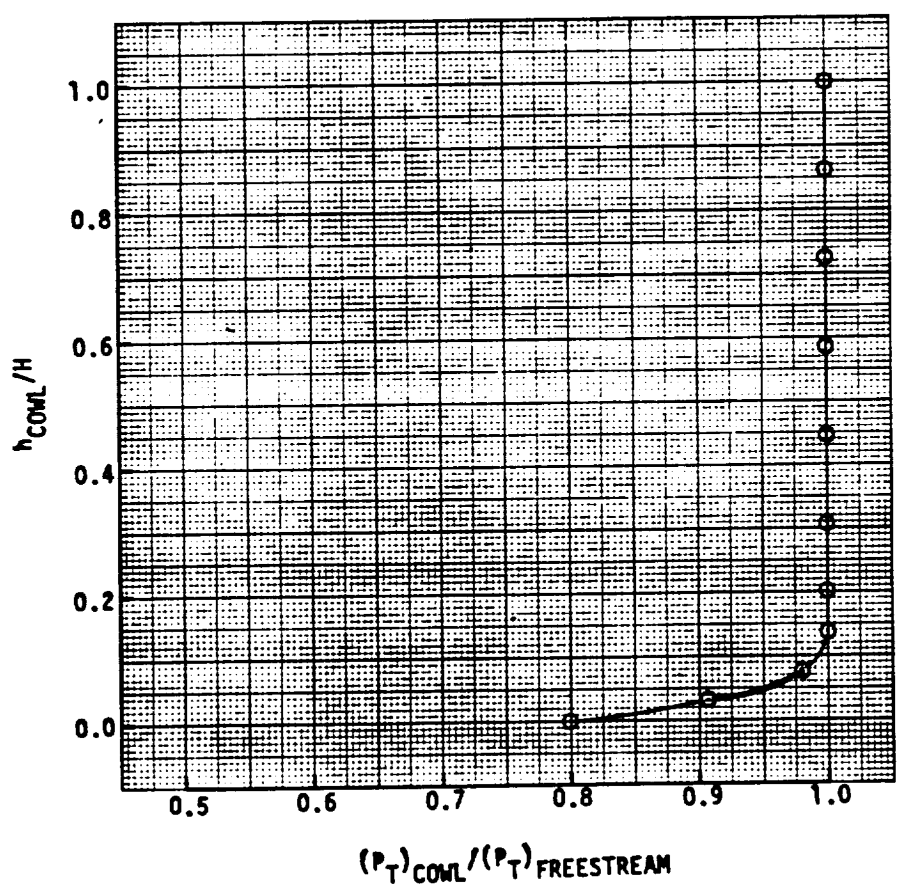


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530

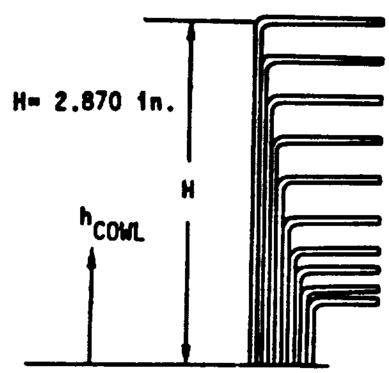


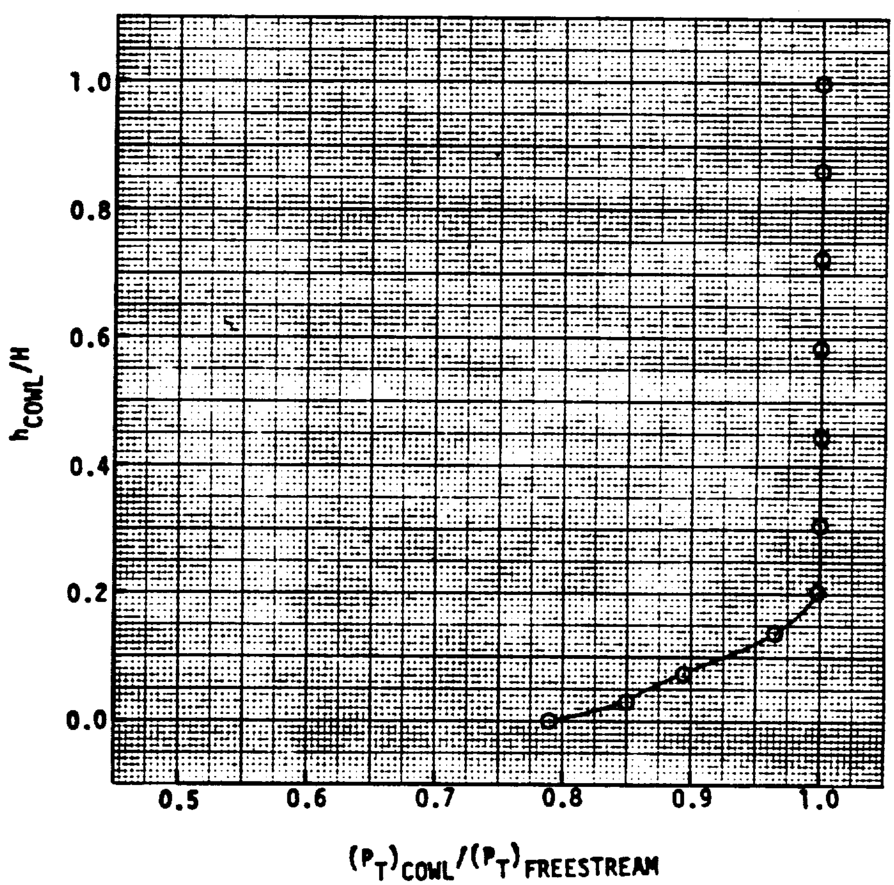


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

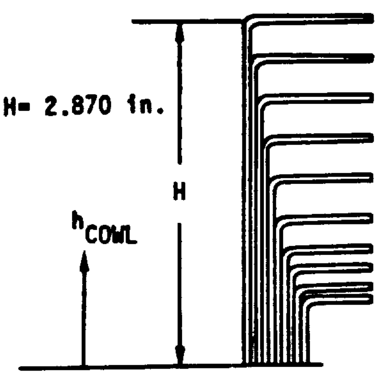


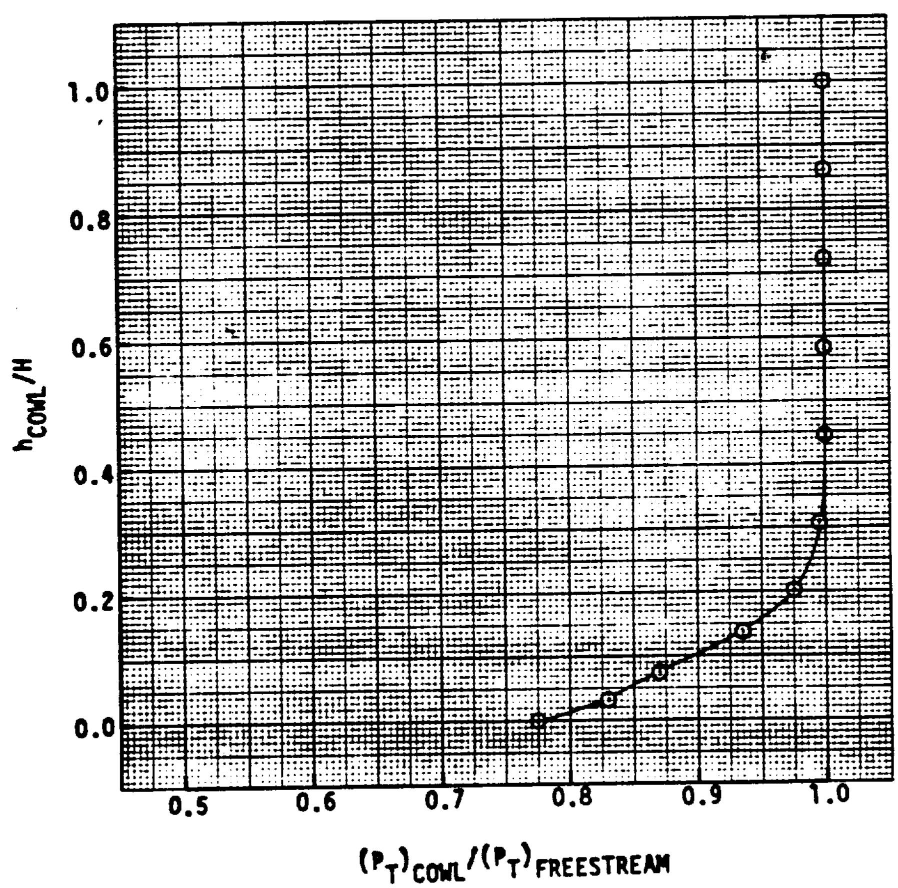


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

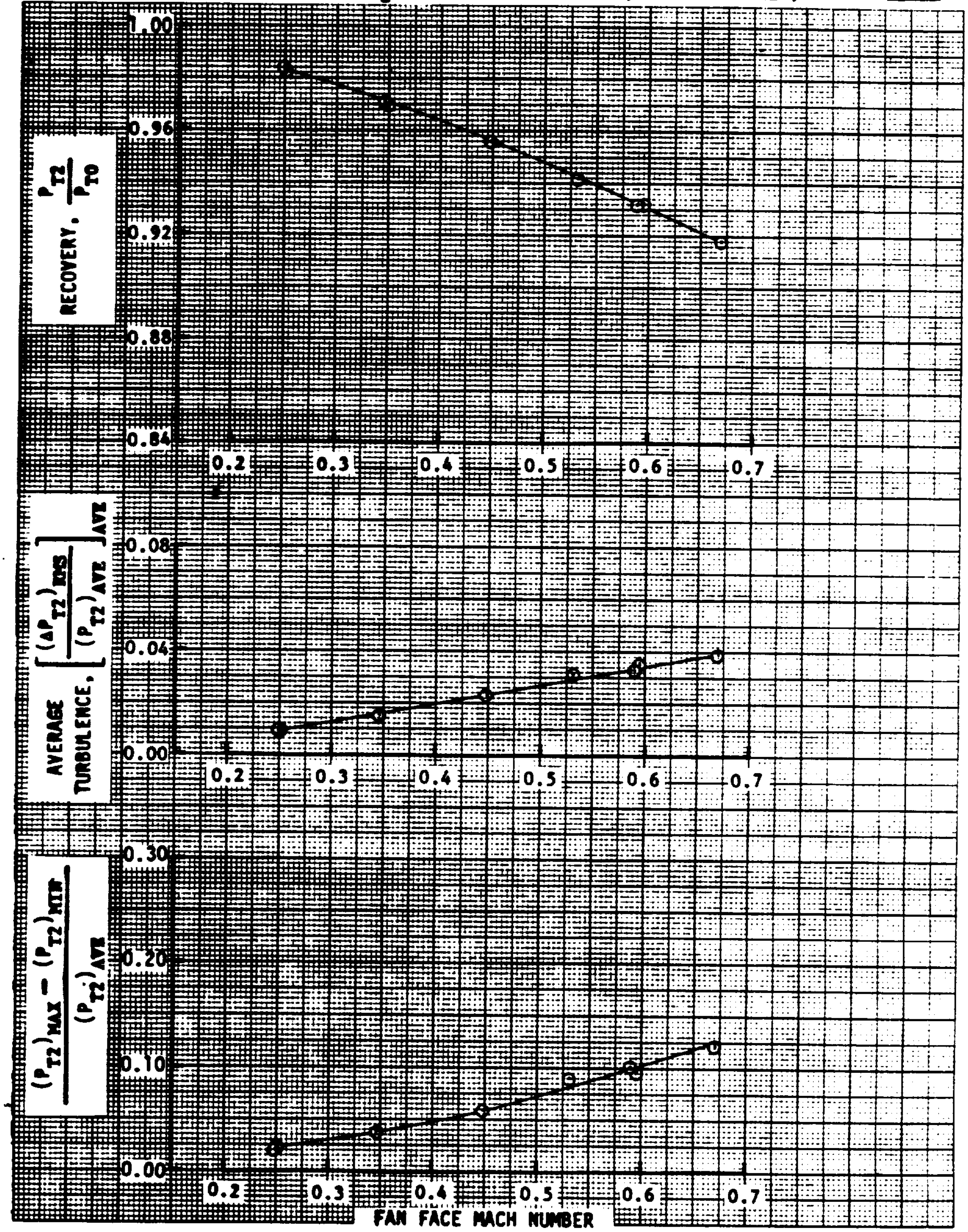
CONFIGURATION: NUMBER 9 ; DESCRIPTION 70° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .536





RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1109-1117
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .029 ; DIST= .082

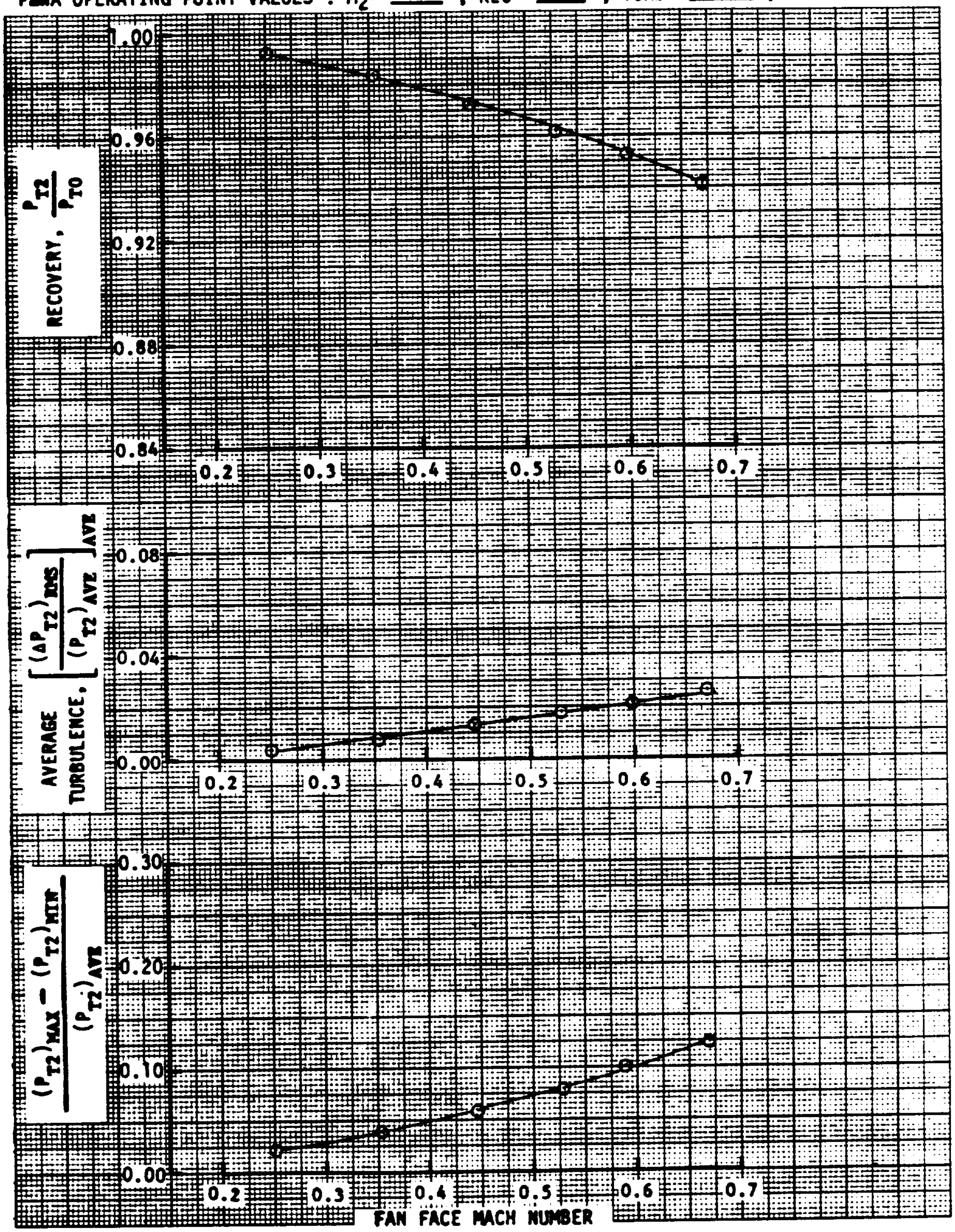


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 10 ; READING NUMBERS 1119-1124

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .963 ; TURB= .017 ; DIST= .082



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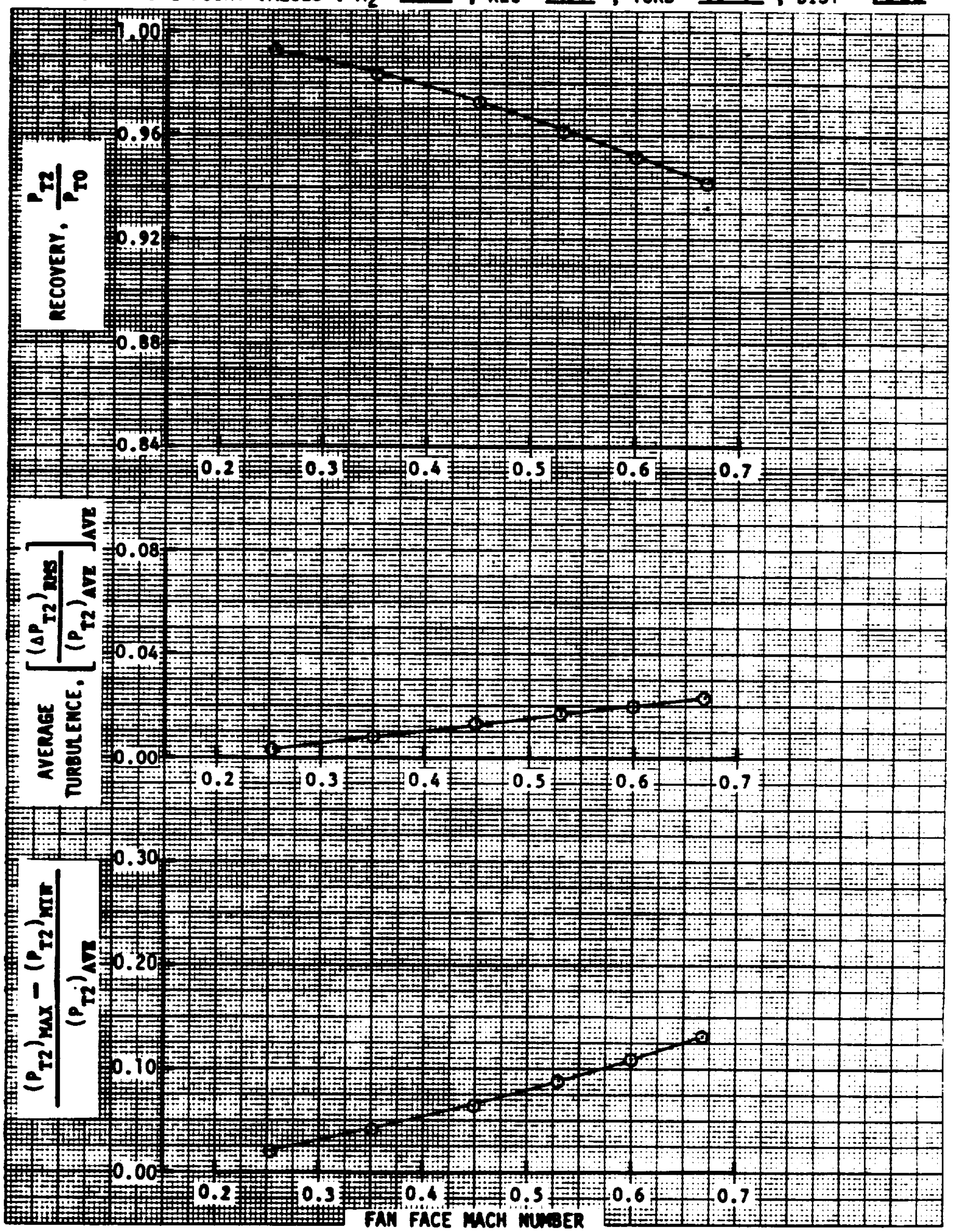
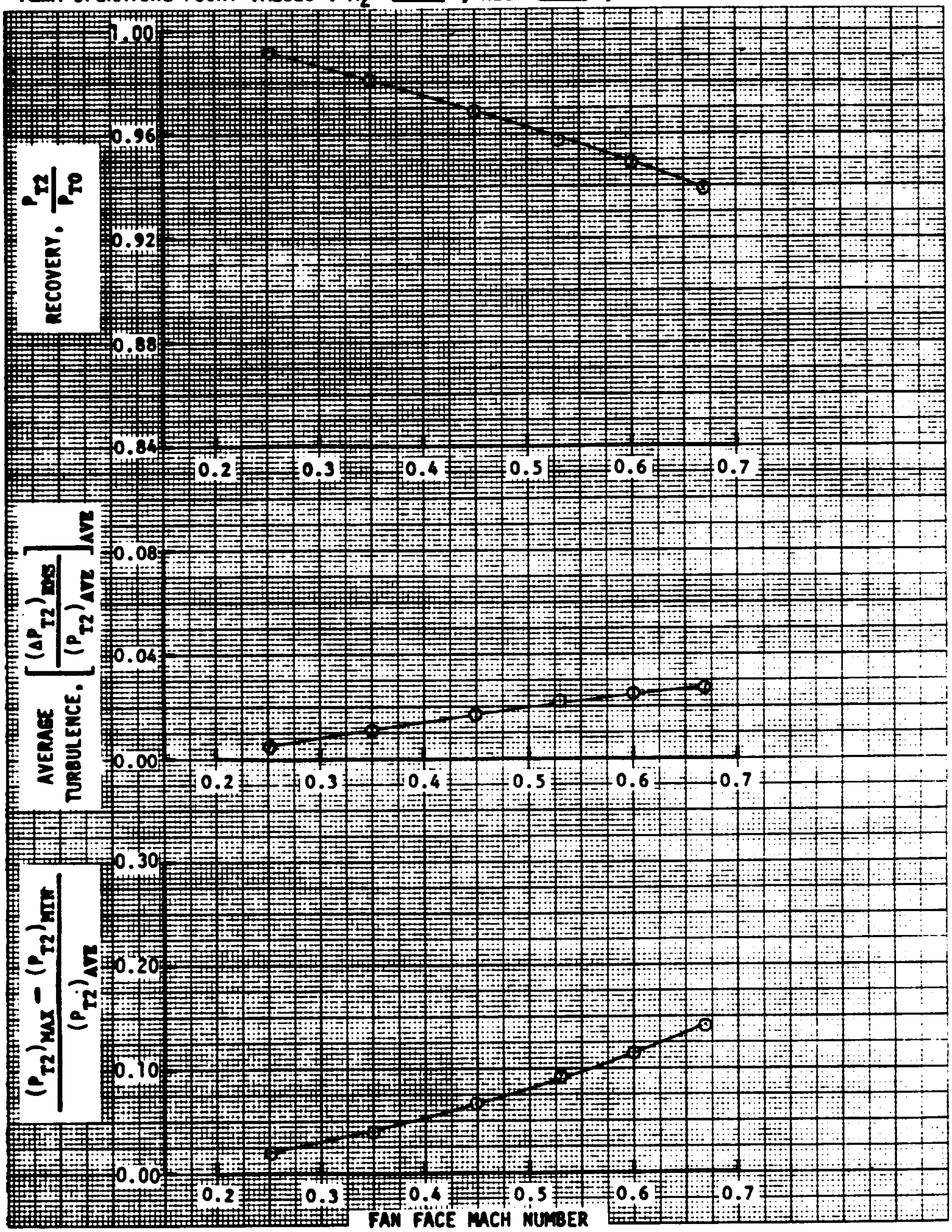
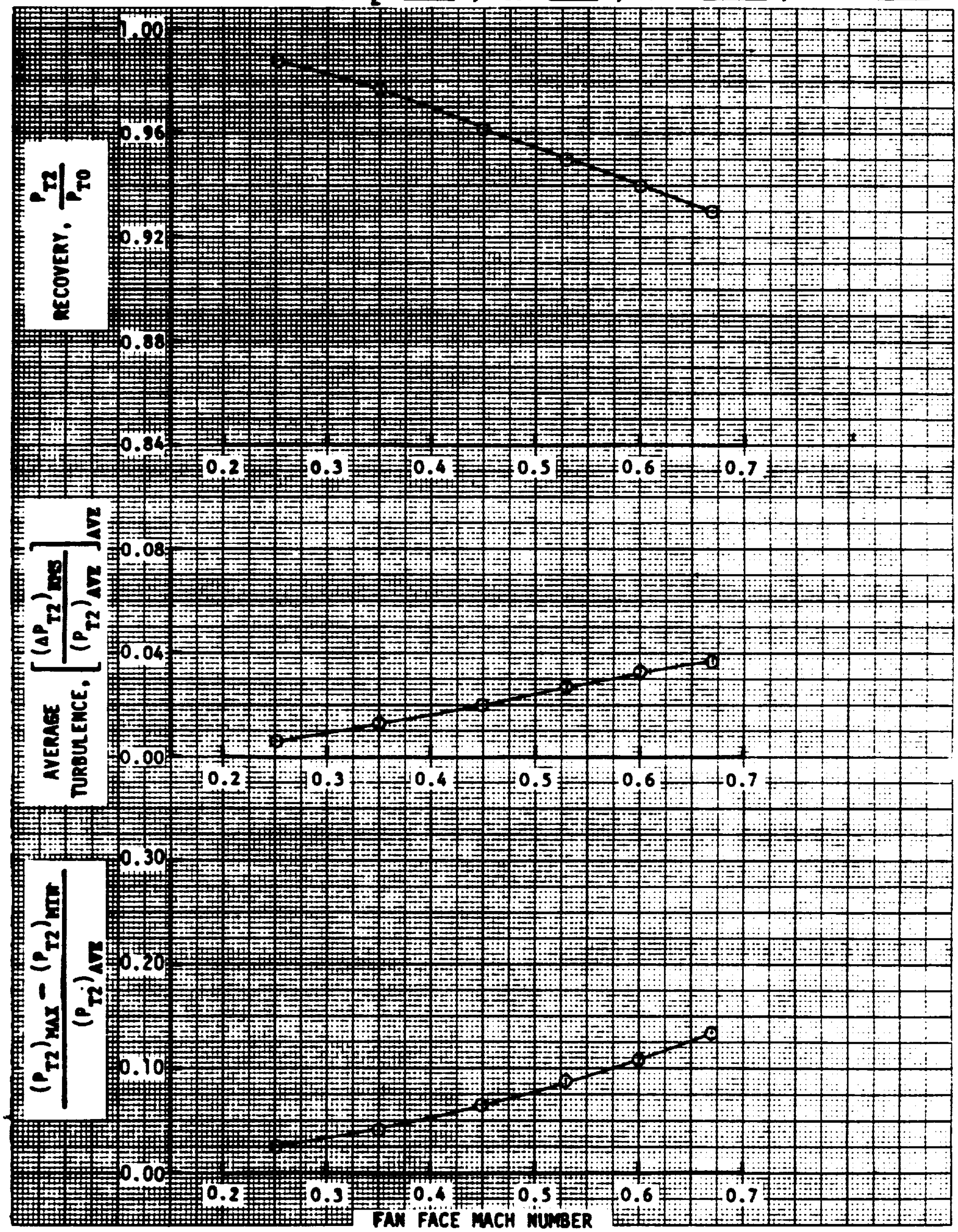
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1125-1130
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .017 ; DIST= .088



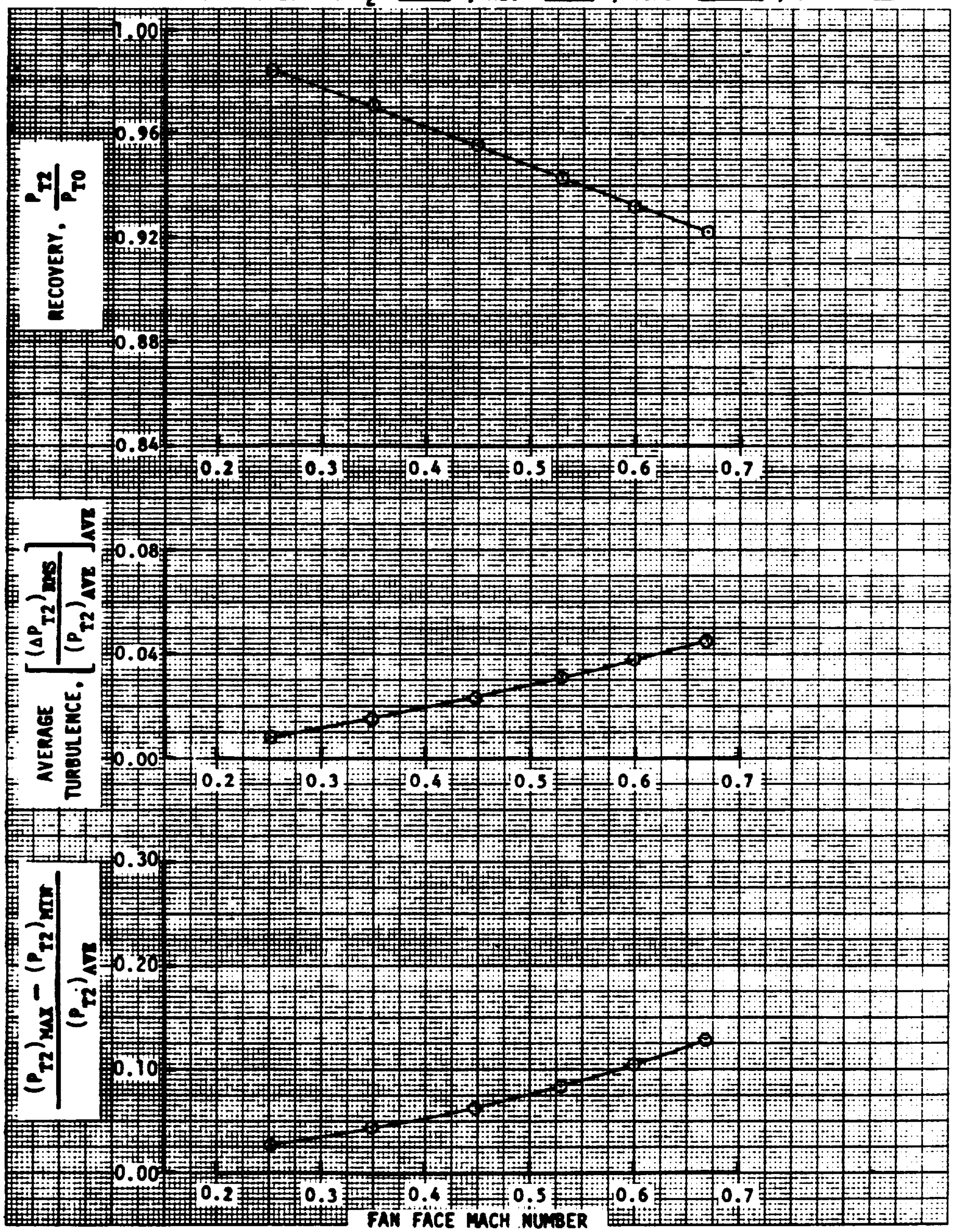
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1131-1136
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .021 ; DIST= .091



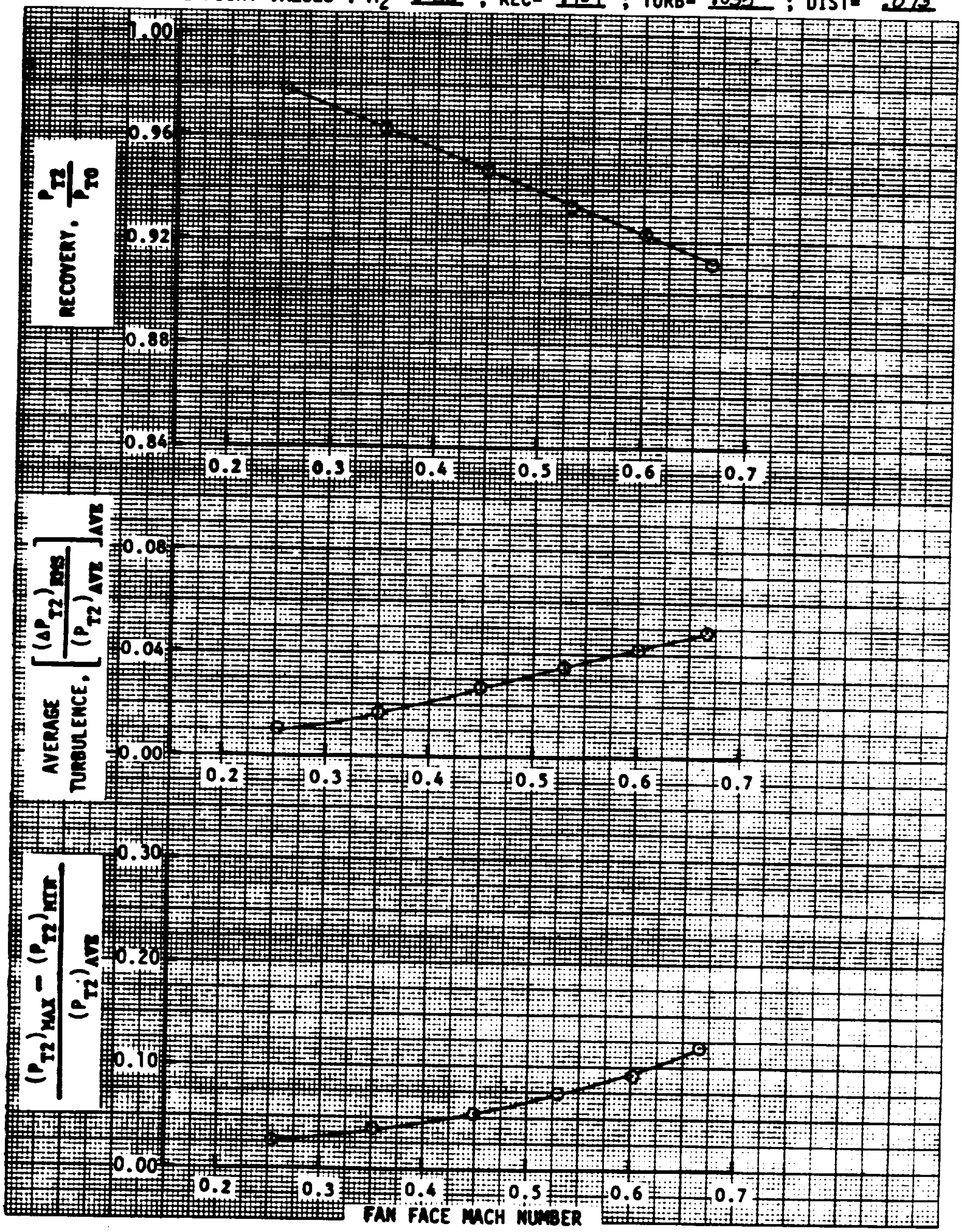
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1137-1142
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .027 ; DIST= .087



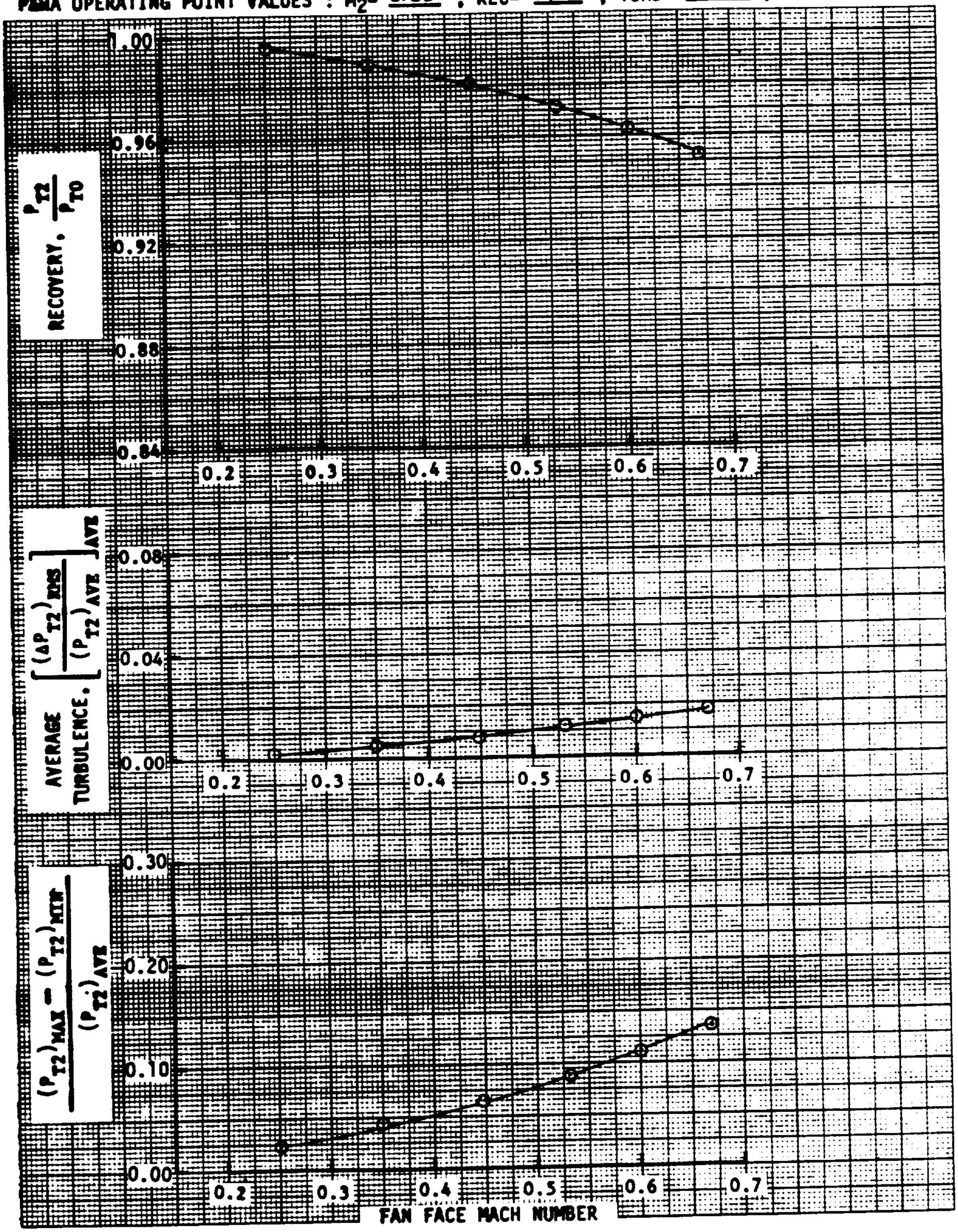
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1143-1148
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .943 ; TURB= .031 ; DIST= .084



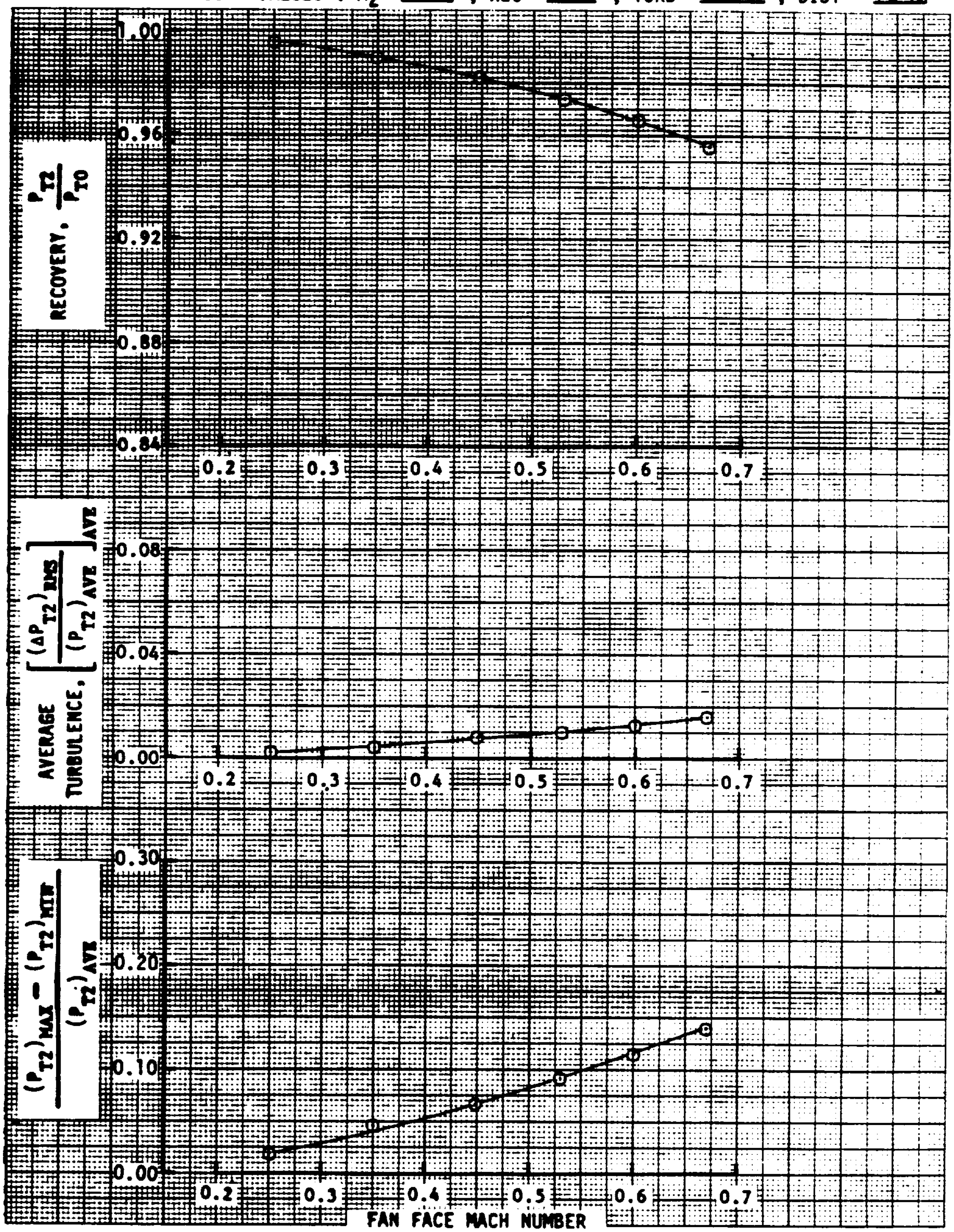
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1149- 1154
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .934 ; TURB= .035 ; DIST= .073



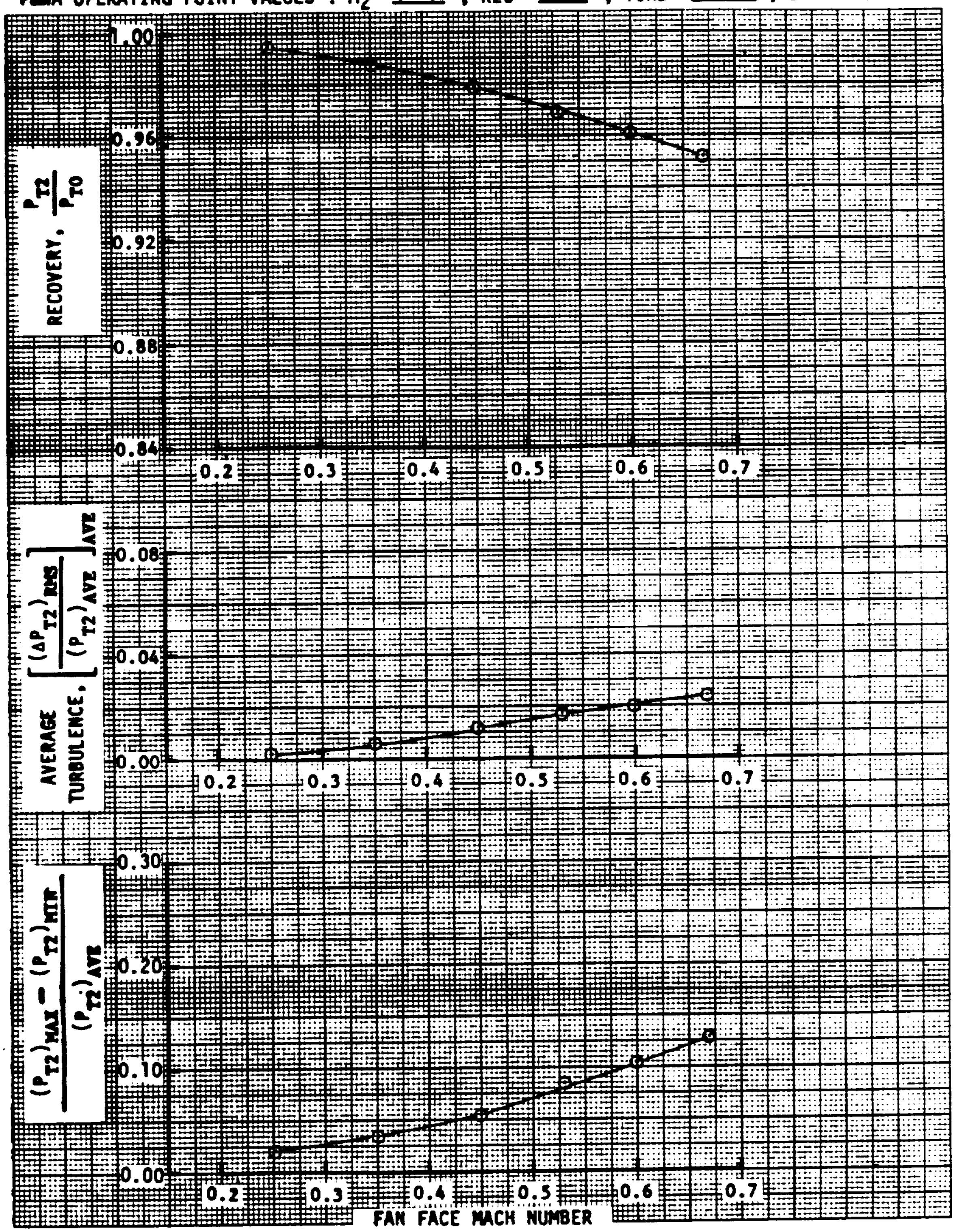
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1155-1160
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .972 ; TURB= .011 ; DIST= .087



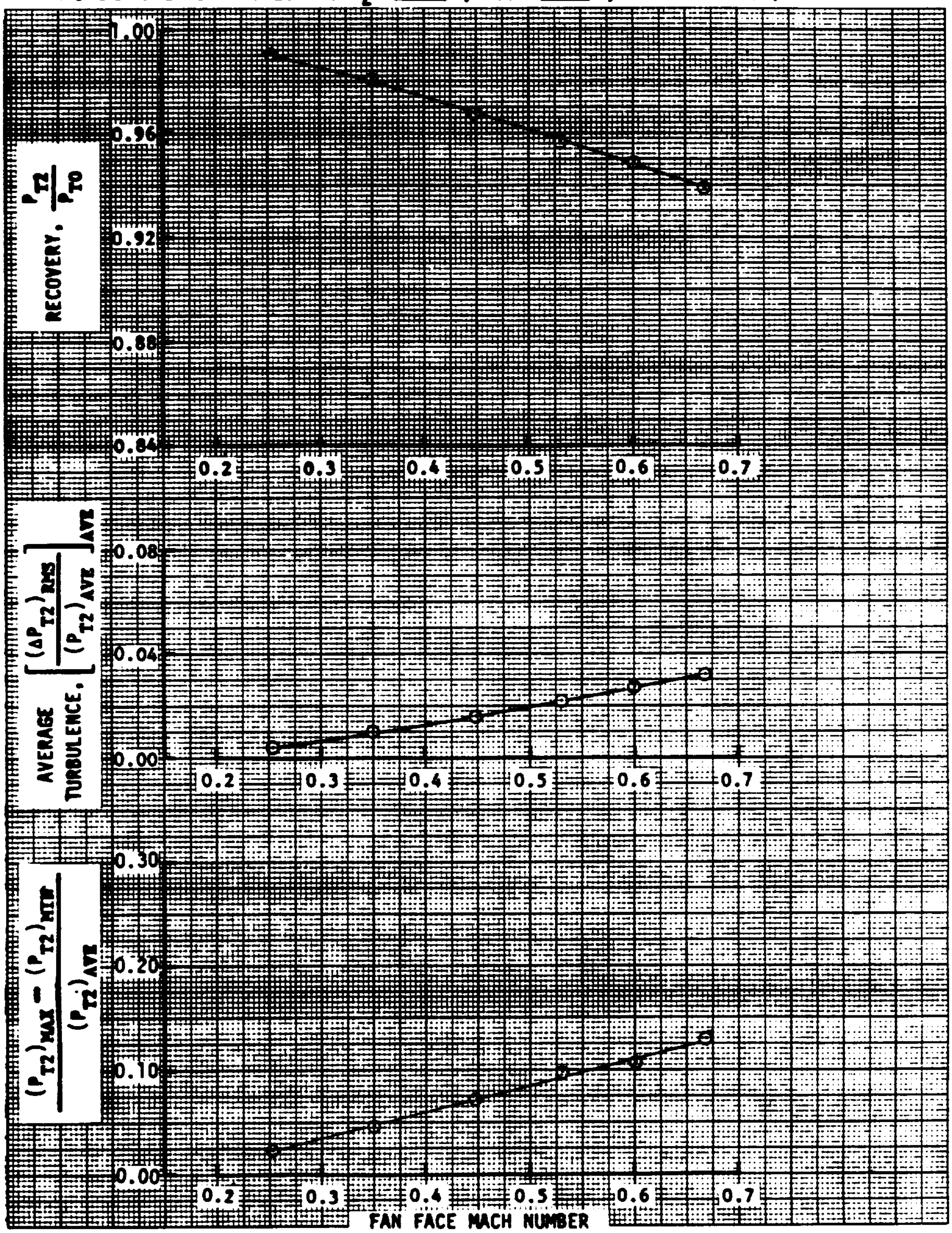
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1161-1166
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .974 ; TURB= .010 ; DIST= .092



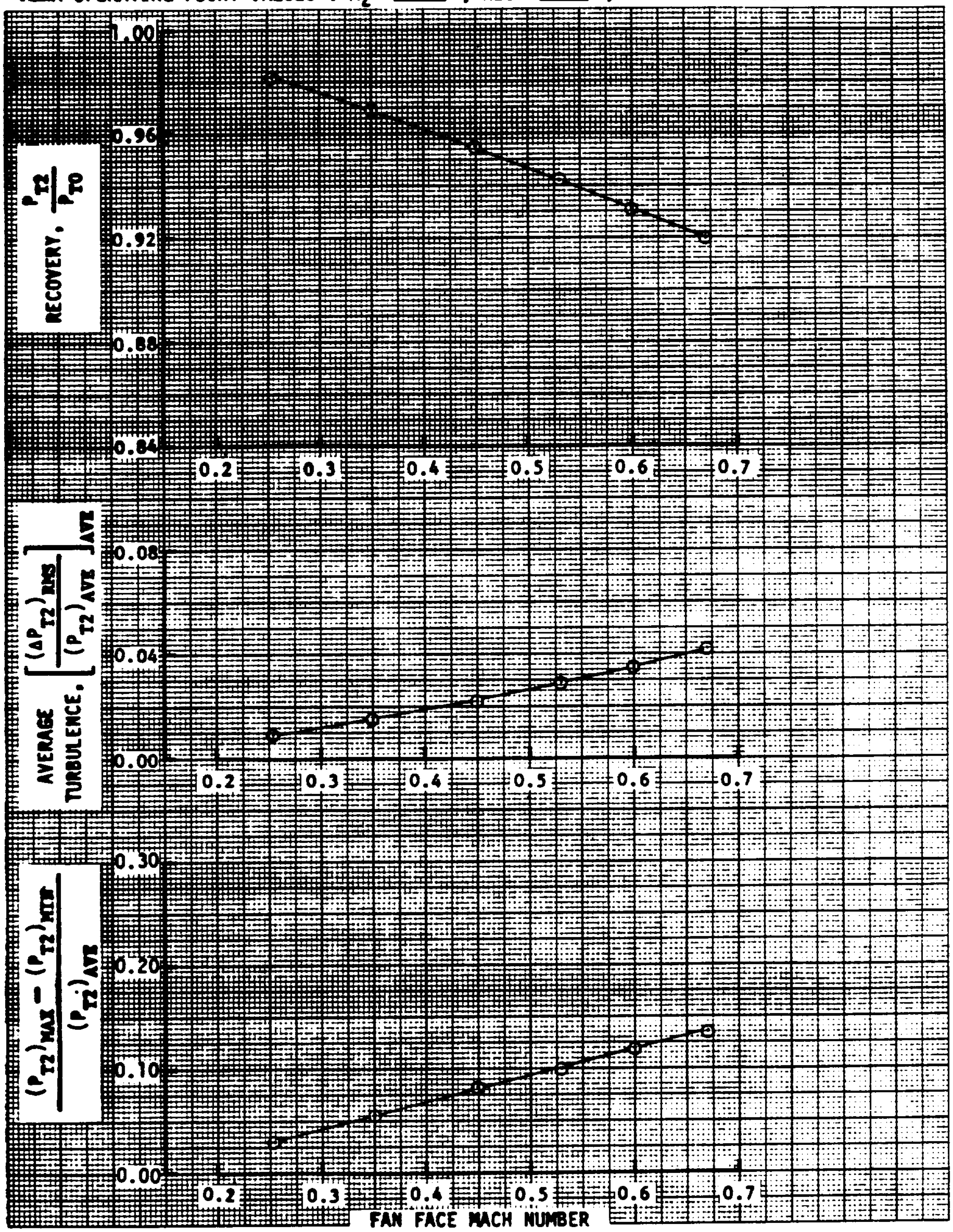
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1167-1172
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .969 ; TURB= .016 ; DIST= .080



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1173-1178
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .022 ; DIST= .092



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1179-1184
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .029 ; DIST= .102



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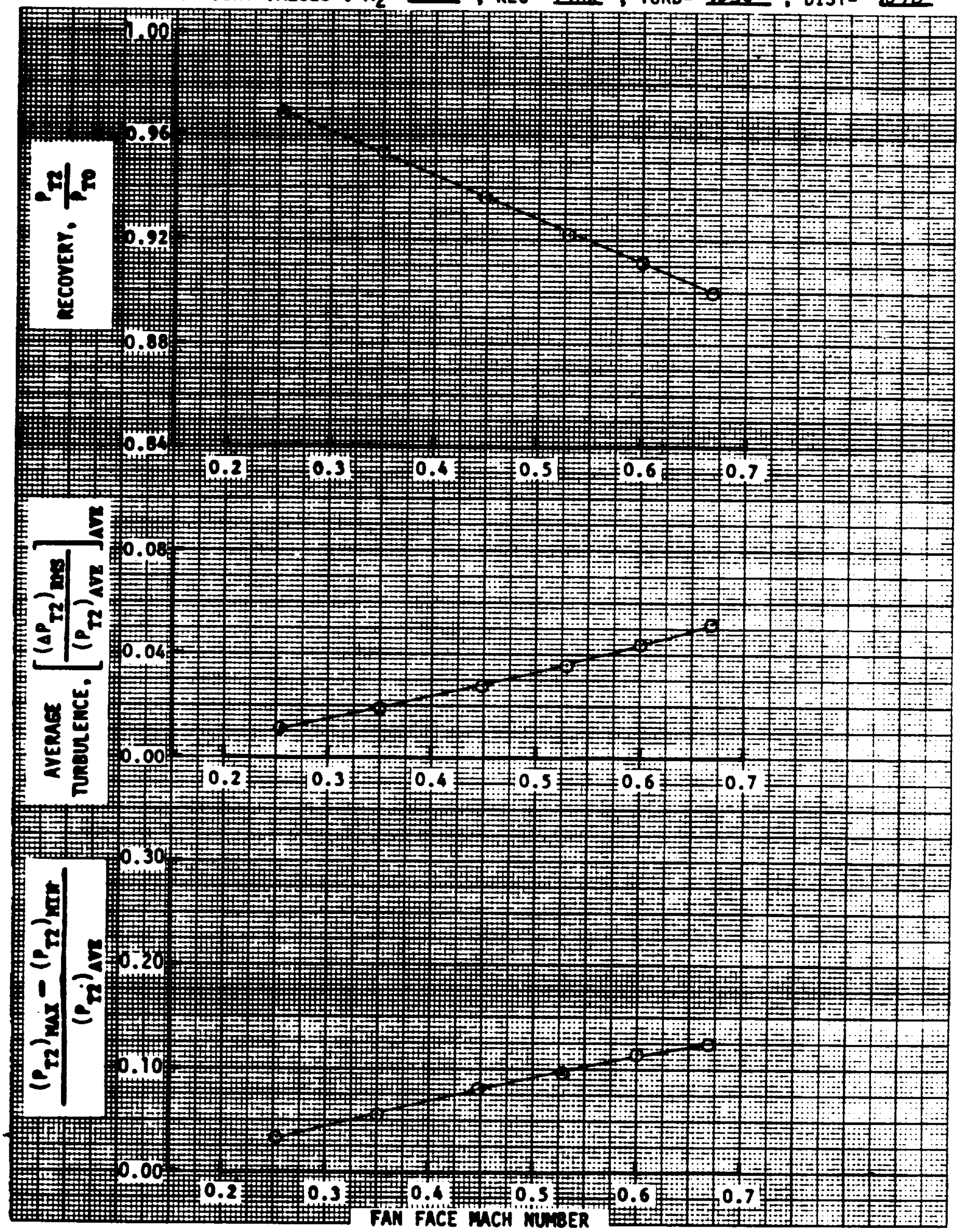
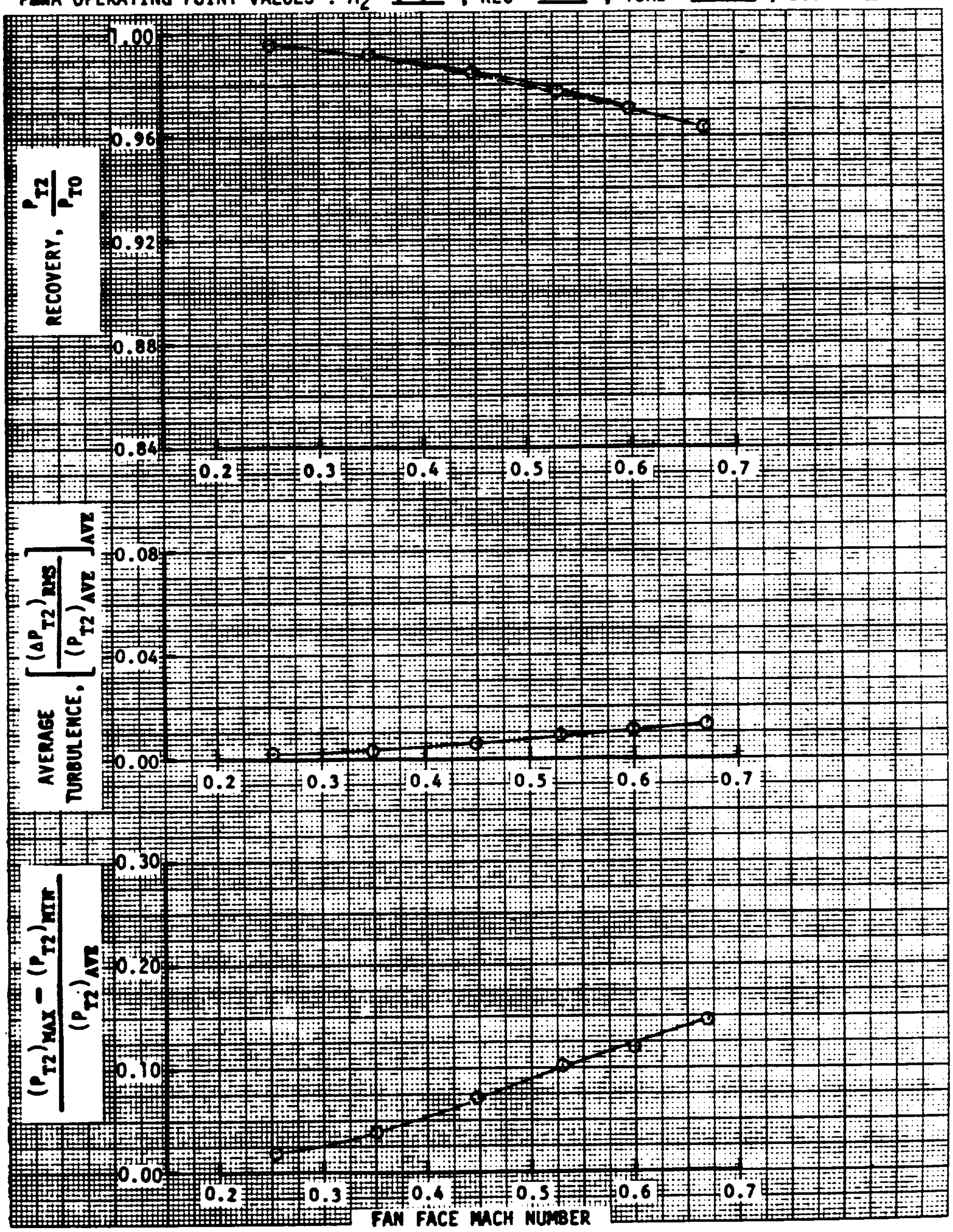
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1185-1190
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .922 ; TURB= .036 ; DIST= .098



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1191-1196
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .008 ; DIST= .102



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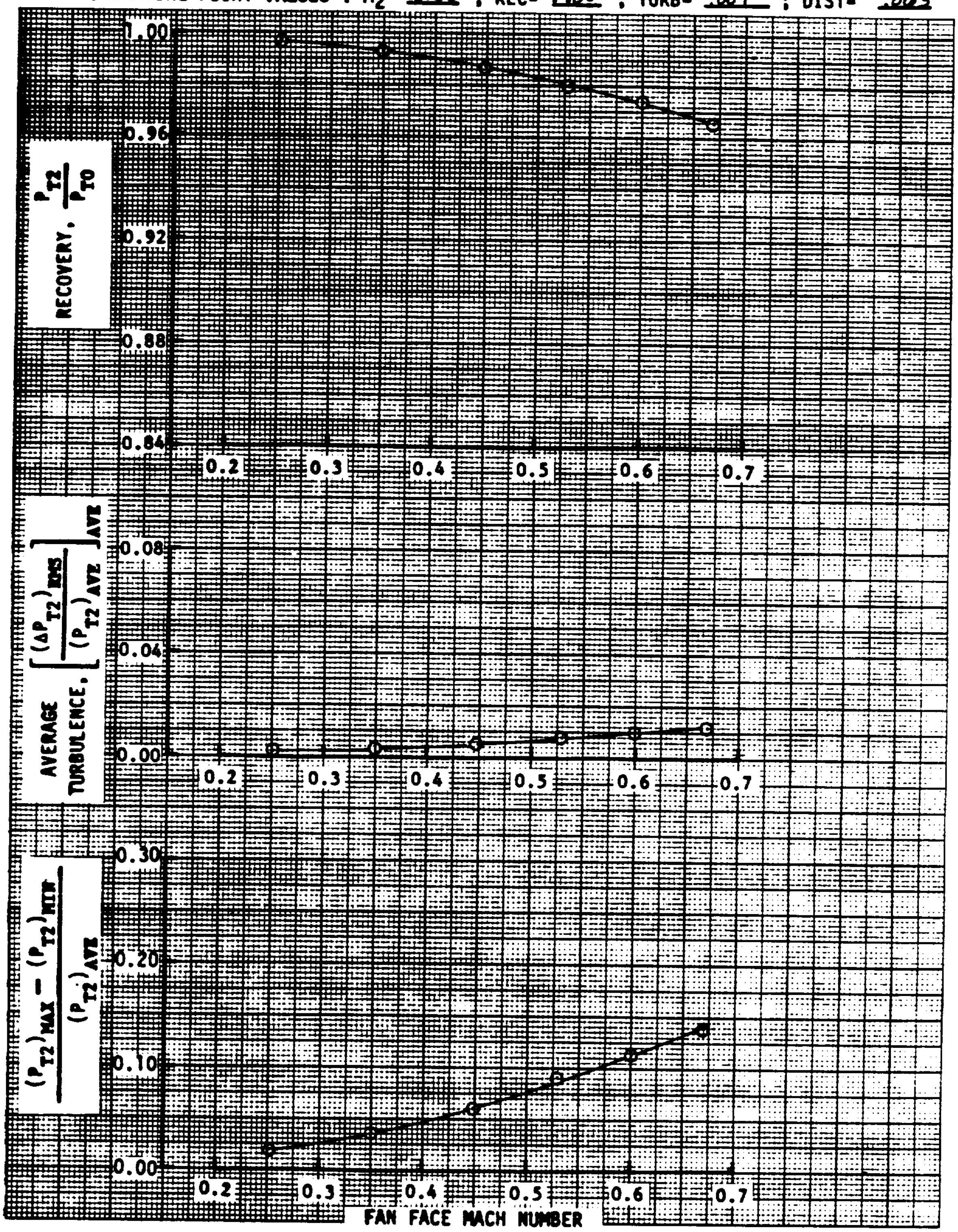
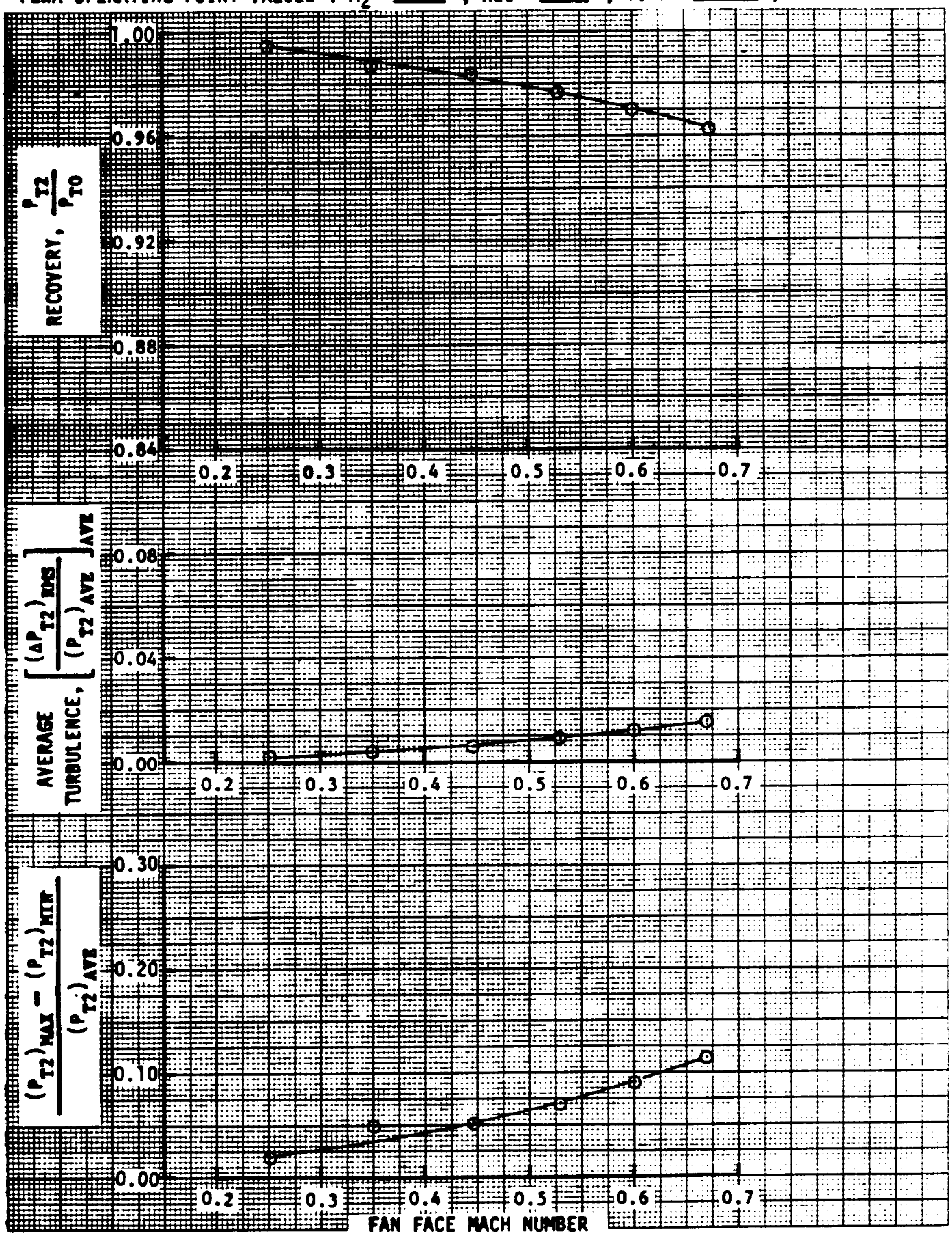
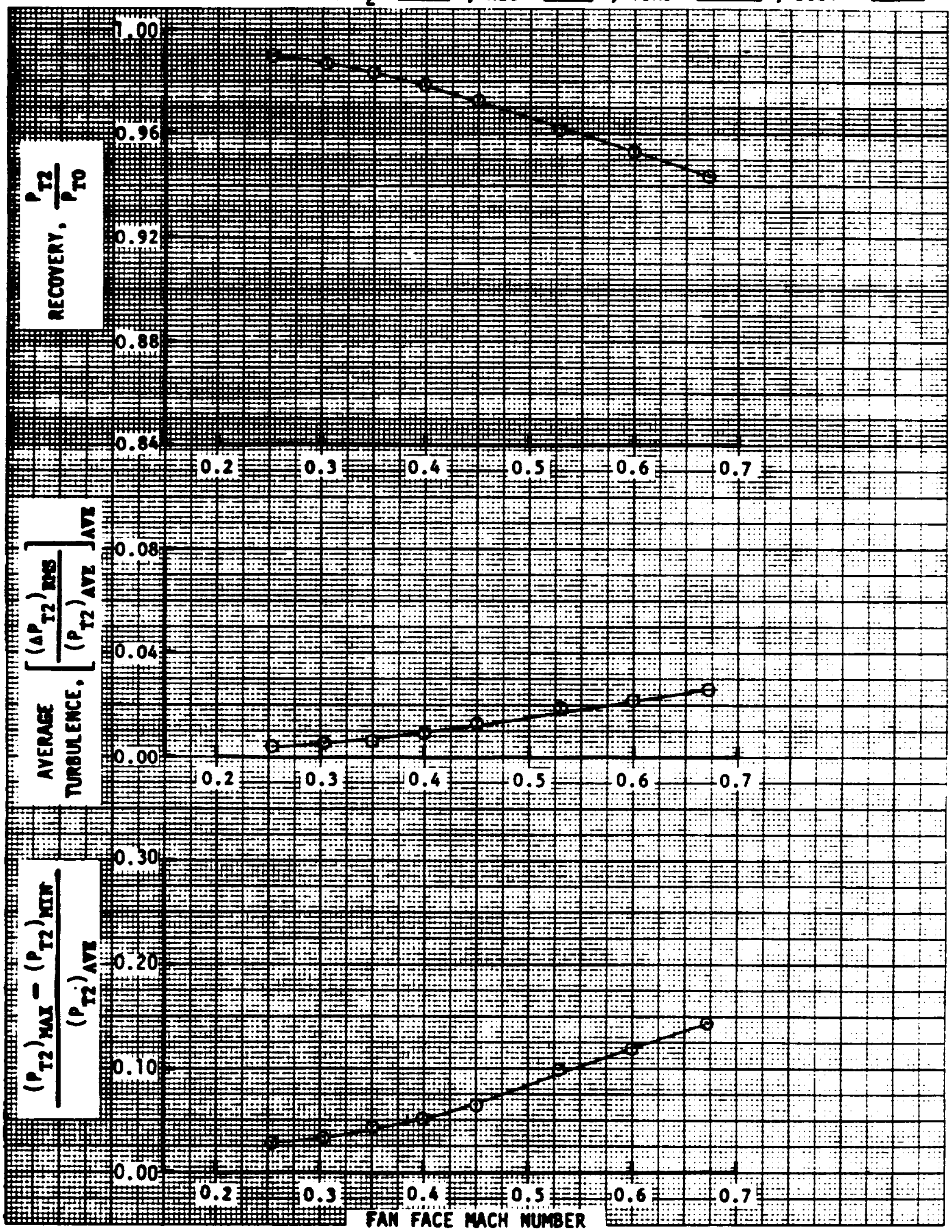
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1197-1202
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .007 ; DIST= .063



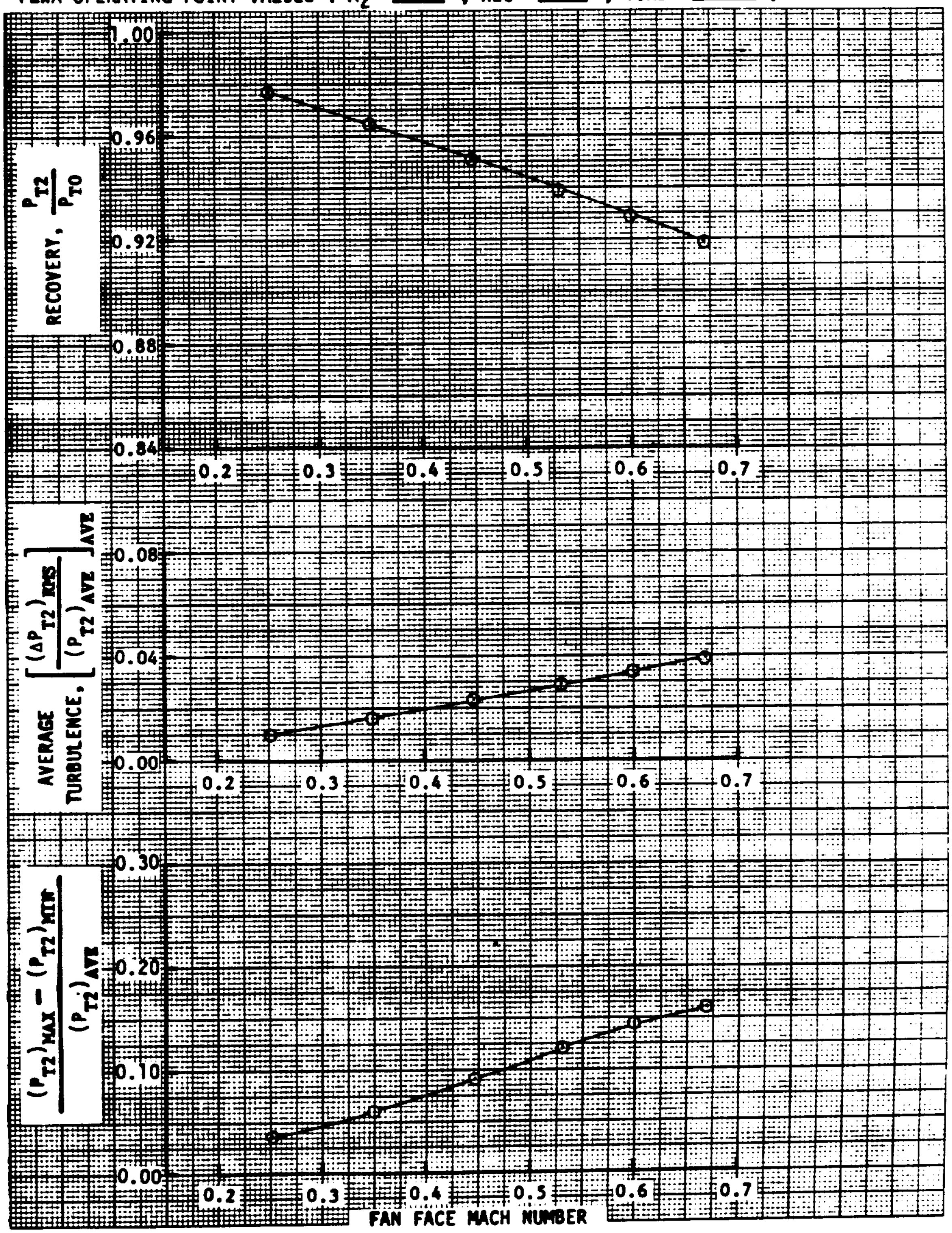
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1203-1208
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .976 ; TURB= .009 ; DIST= .071



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1209-1214, 1227, 1228
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .017 ; DIST= .095



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1215-1220
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .939 ; TURB= .029 ; DIST= .121



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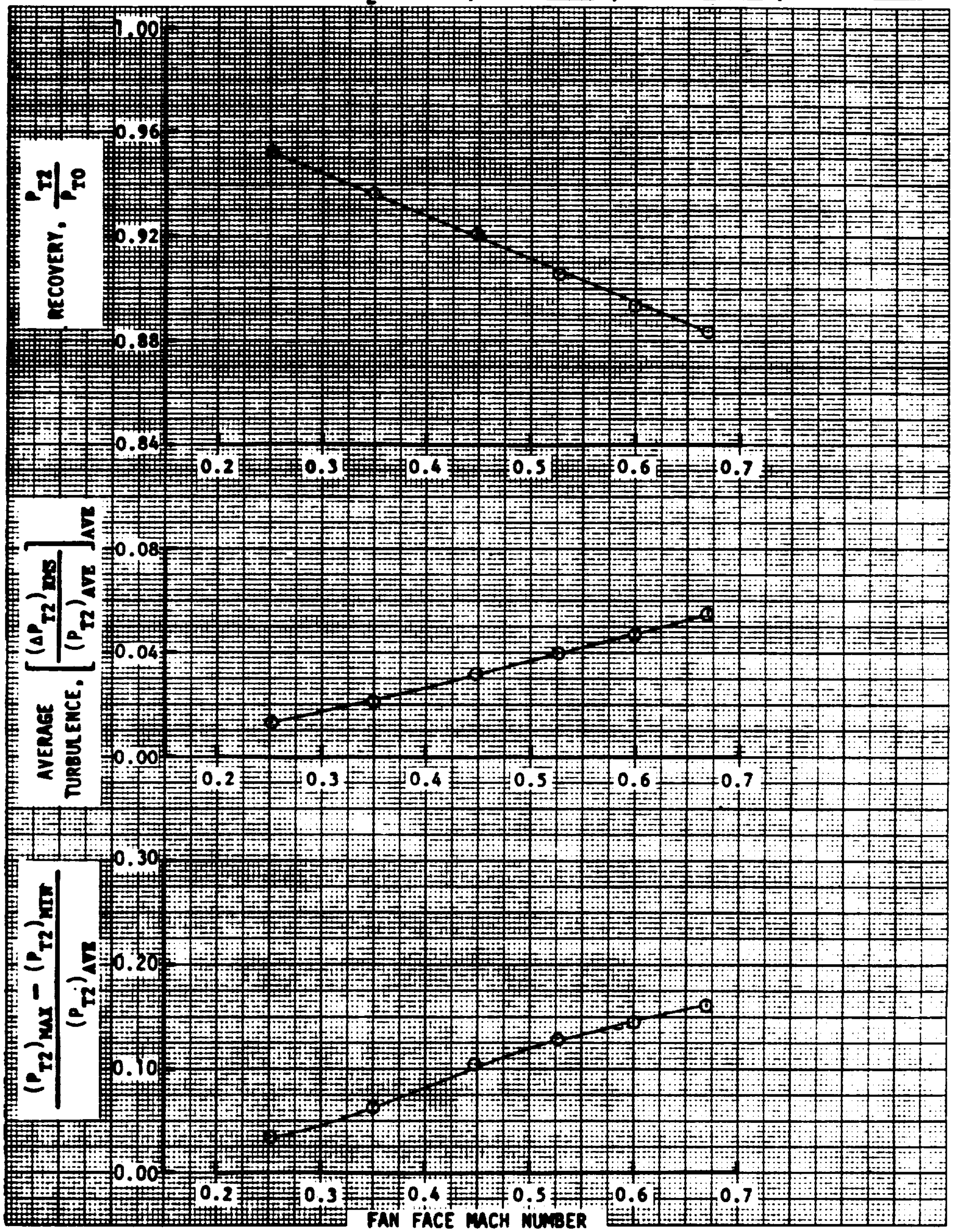
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 10 ; READING NUMBERS 1221-1226
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .906 ; TURB= .040 ; DIST= .127



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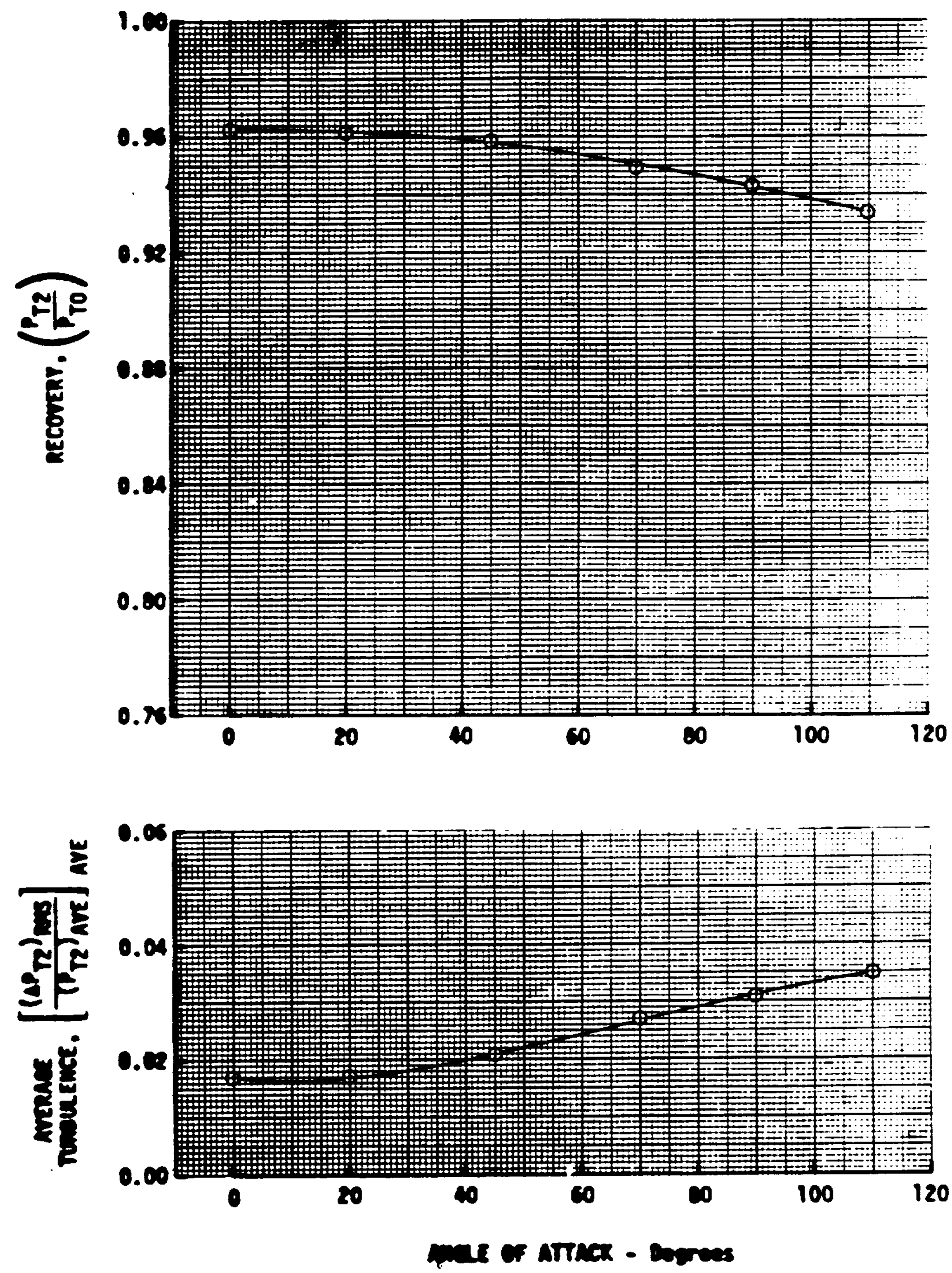
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 10; DESCRIPTION 40° Droop Lip



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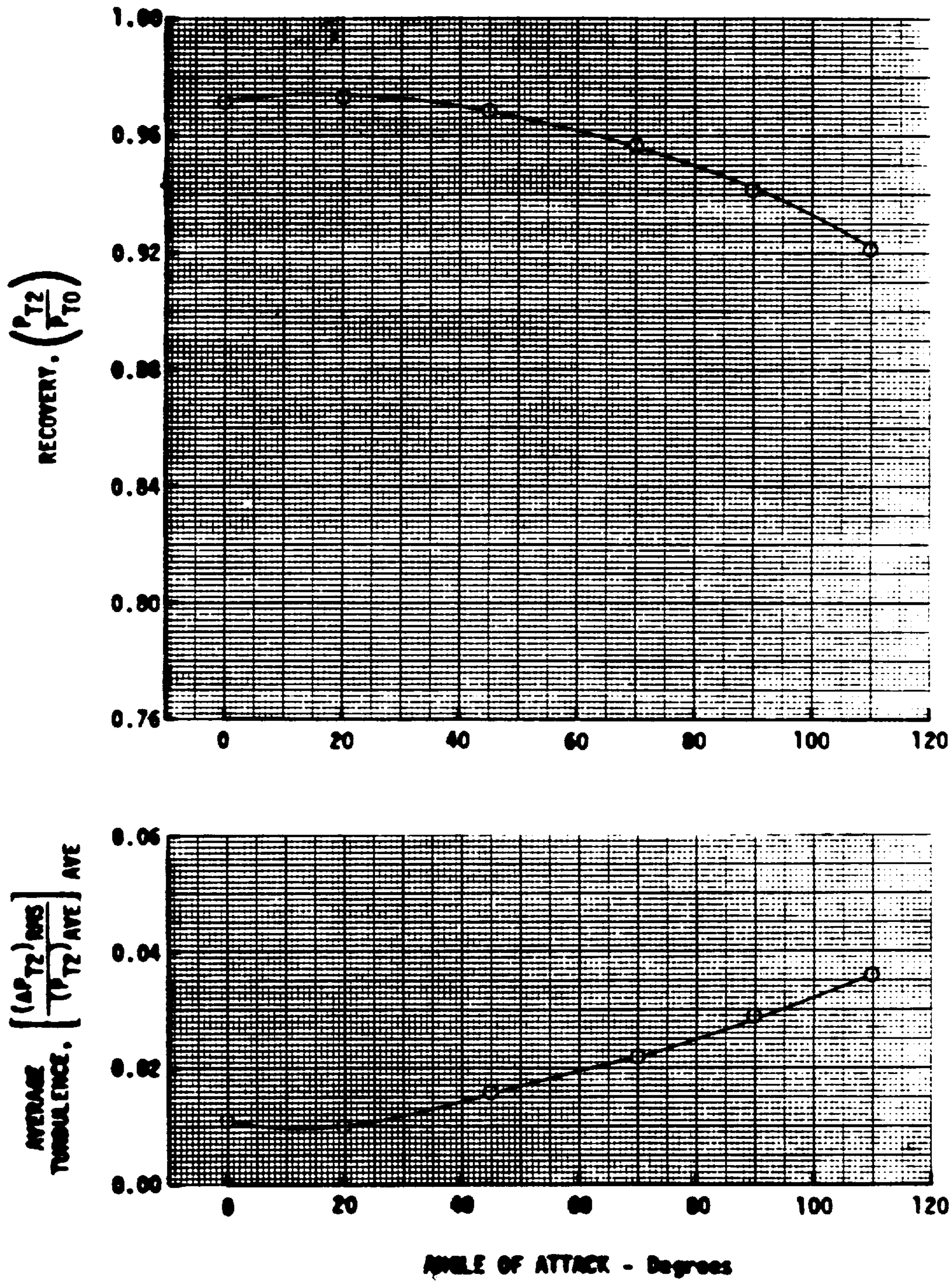
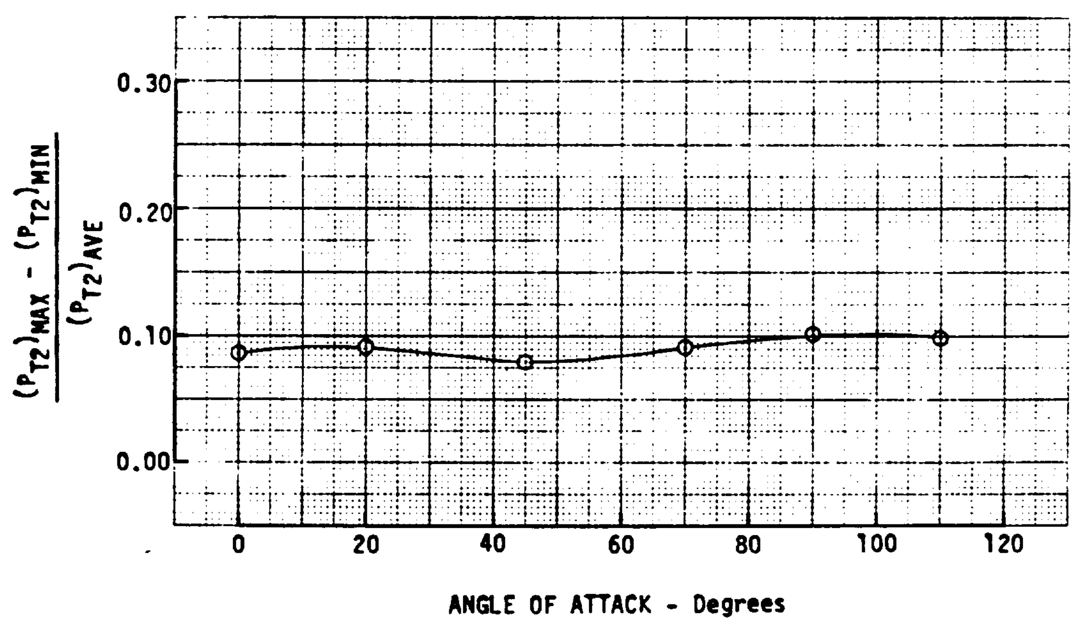
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 10 ; DESCRIPTION 40° Droop Lip



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 10 ; DESCRIPTION 40° DROOP LIP



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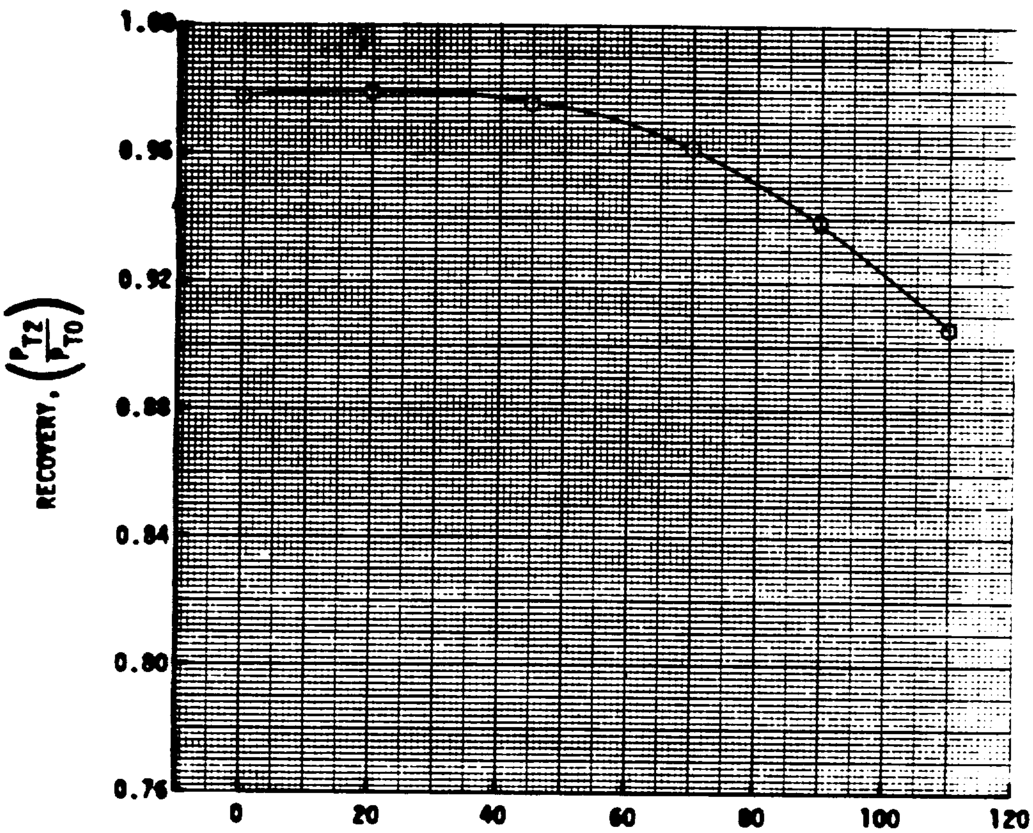
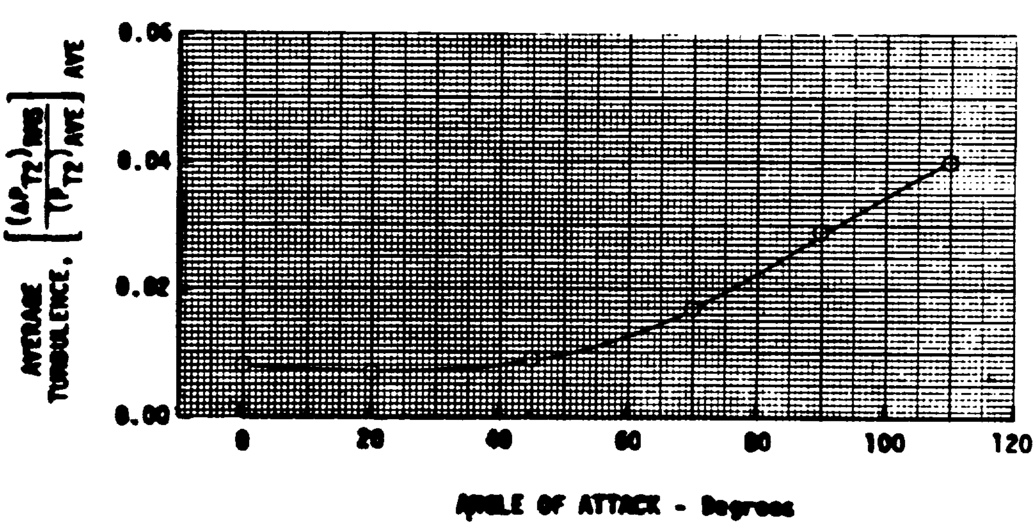
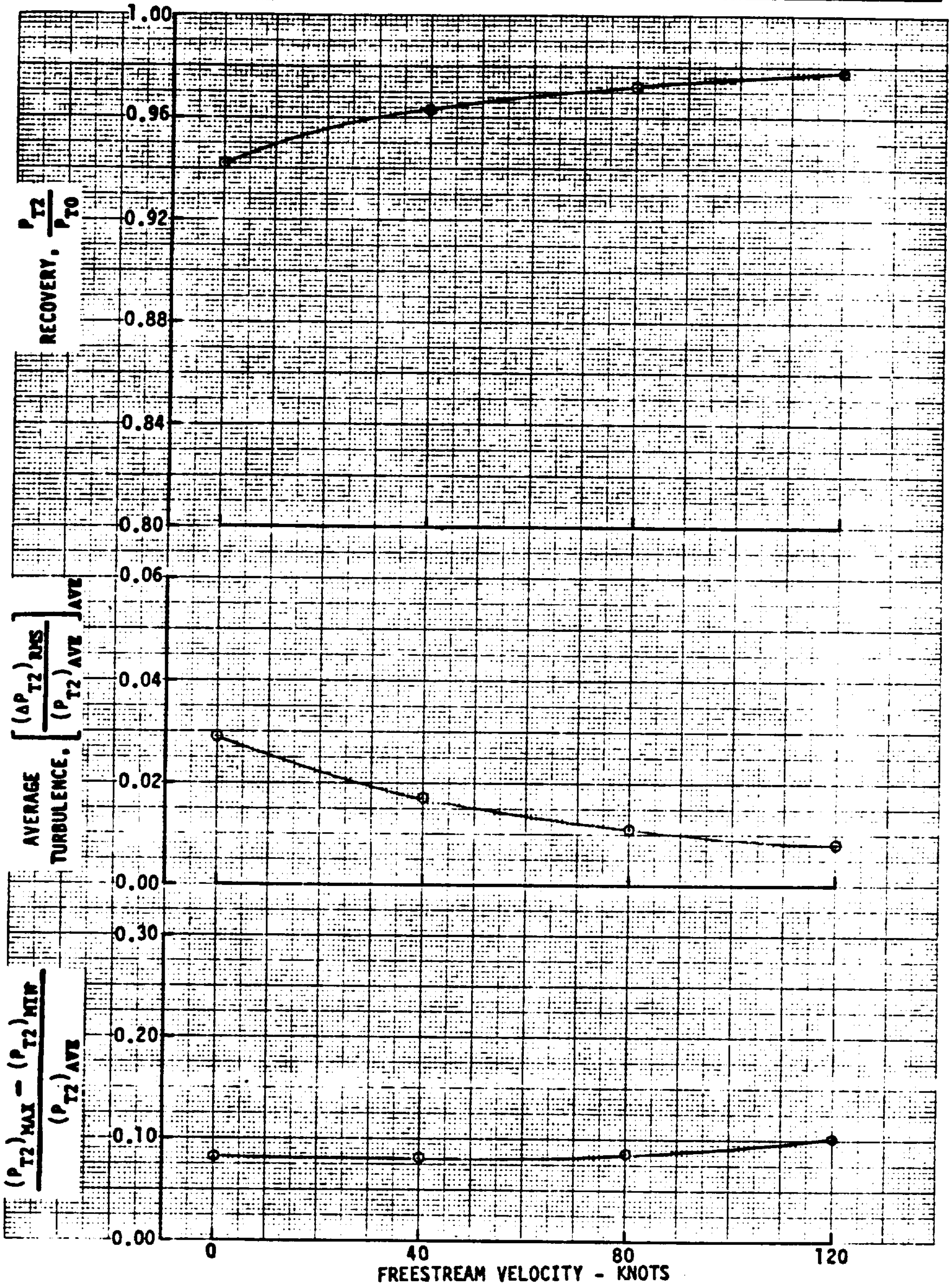
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PONA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

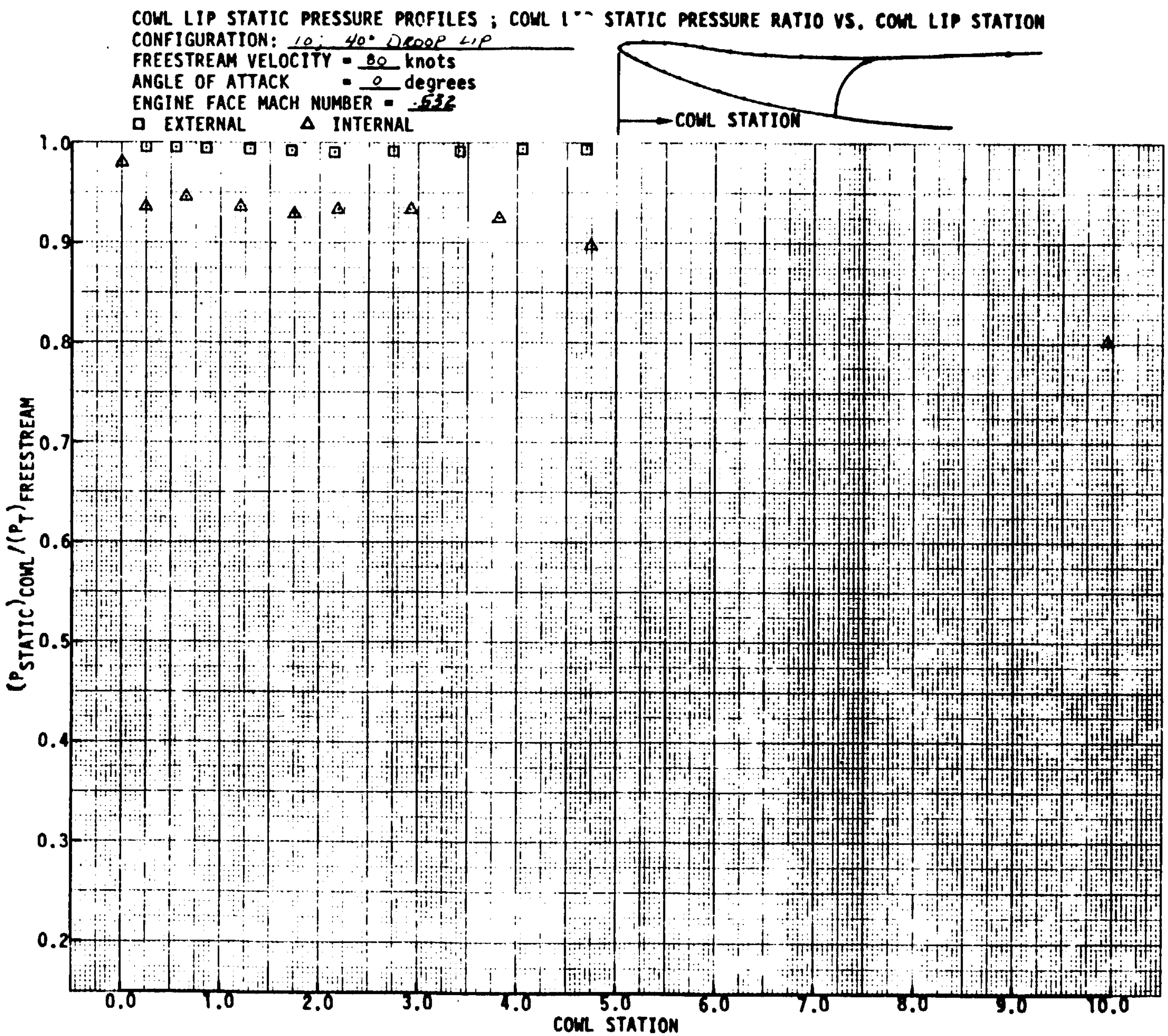
CONFIGURATION: NUMBER 10; DESCRIPTION 40° Droop Lip

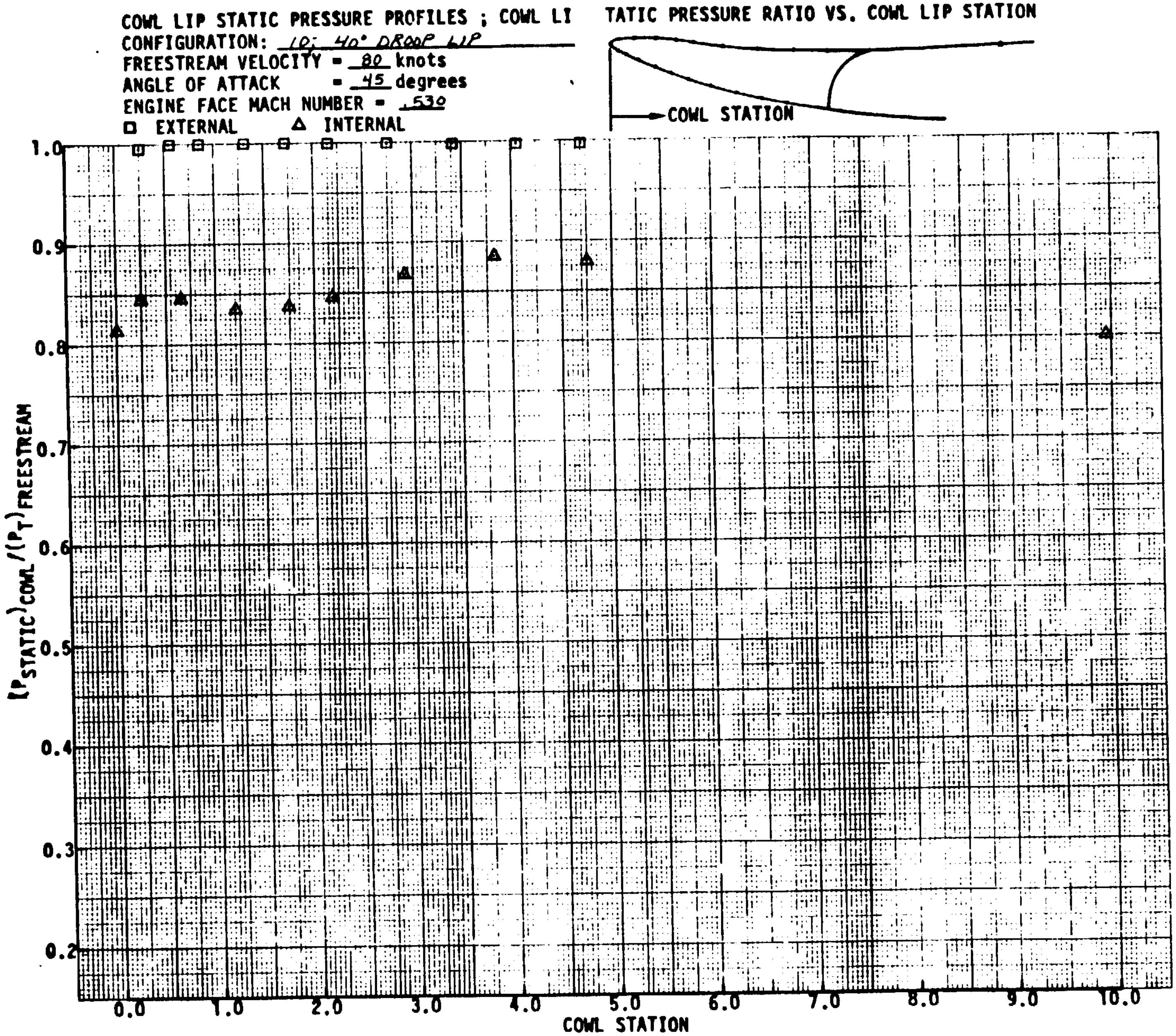


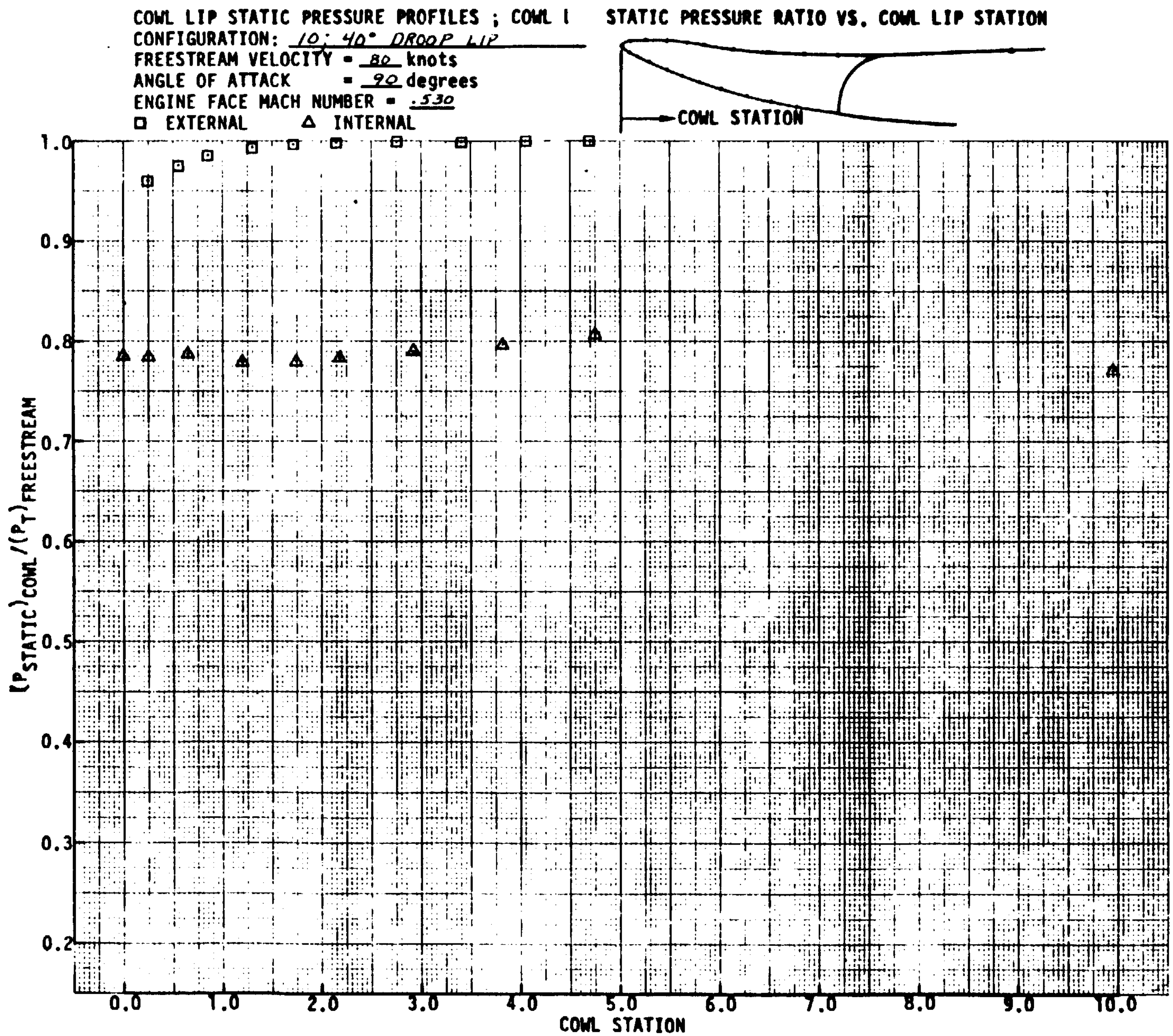


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = ____ DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 10; DESCRIPTION 40° DROOP LIP




COWL LIP STATIC PRESSURE PROFILES ; COWL L'` STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 10; 40° DROOP LIP
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
ENGINE FACE MACH NUMBER = .632
□ EXTERNAL
△ INTERNAL
COWL STATION
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION

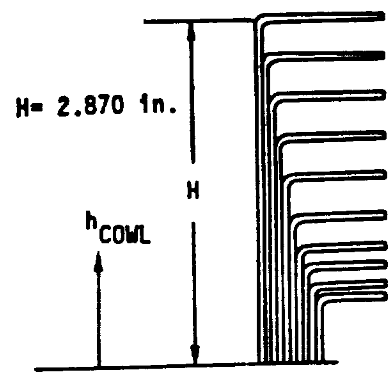

COWL LIP STATIC PRESSURE PROFILES ; COWL LI TATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 10: 40° DROOP LIP
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
ENGINE FACE MACH NUMBER = .530
□ EXTERNAL
△ INTERNAL
COWL STATION
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION

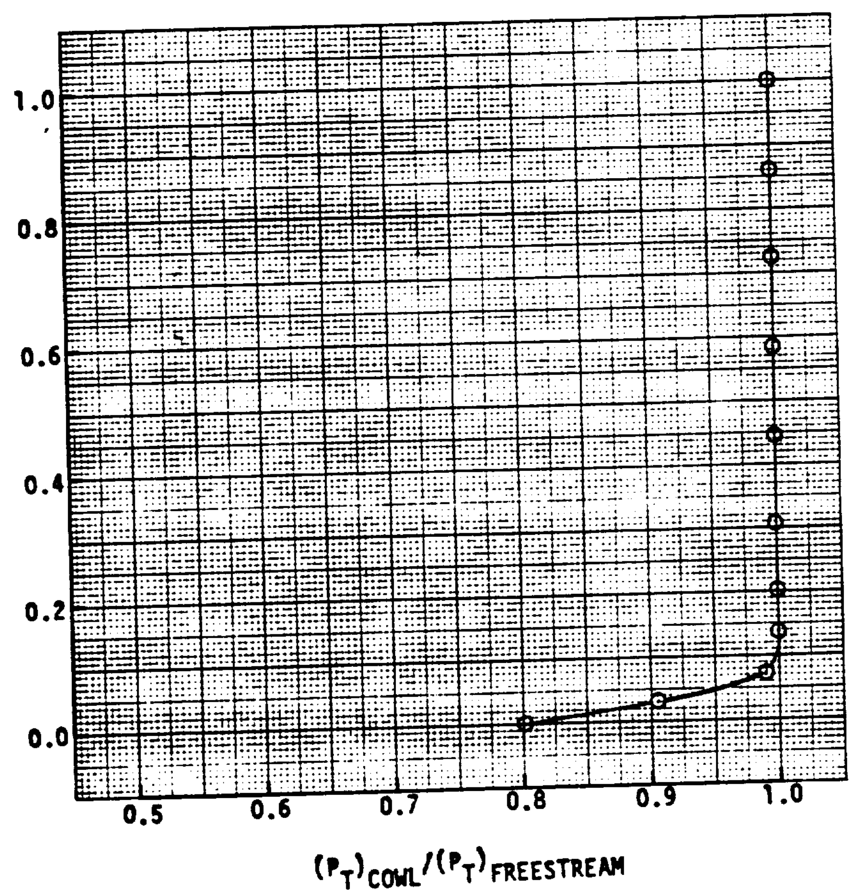

COWL LIP STATIC PRESSURE PROFILES ; COWL I
CONFIGURATION: 10; 40° DROOP LIP
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
ENGINE FACE MACH NUMBER = .530
EXTERNAL
INTERNAL
STATIC PRESSURE RATIO VS. COWL LIP STATION
COWL STATION
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
$(P_{STATIC})_{COWL}/(P_T)_{FREESTREAM}$
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
COWL STATION

COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 10; DESCRIPTION 40° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .532

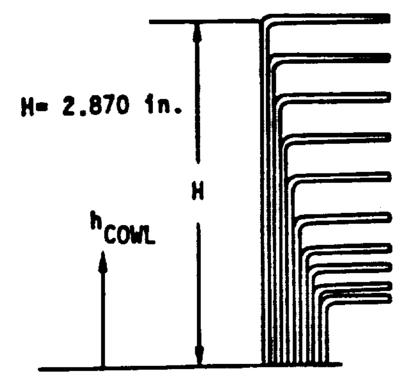


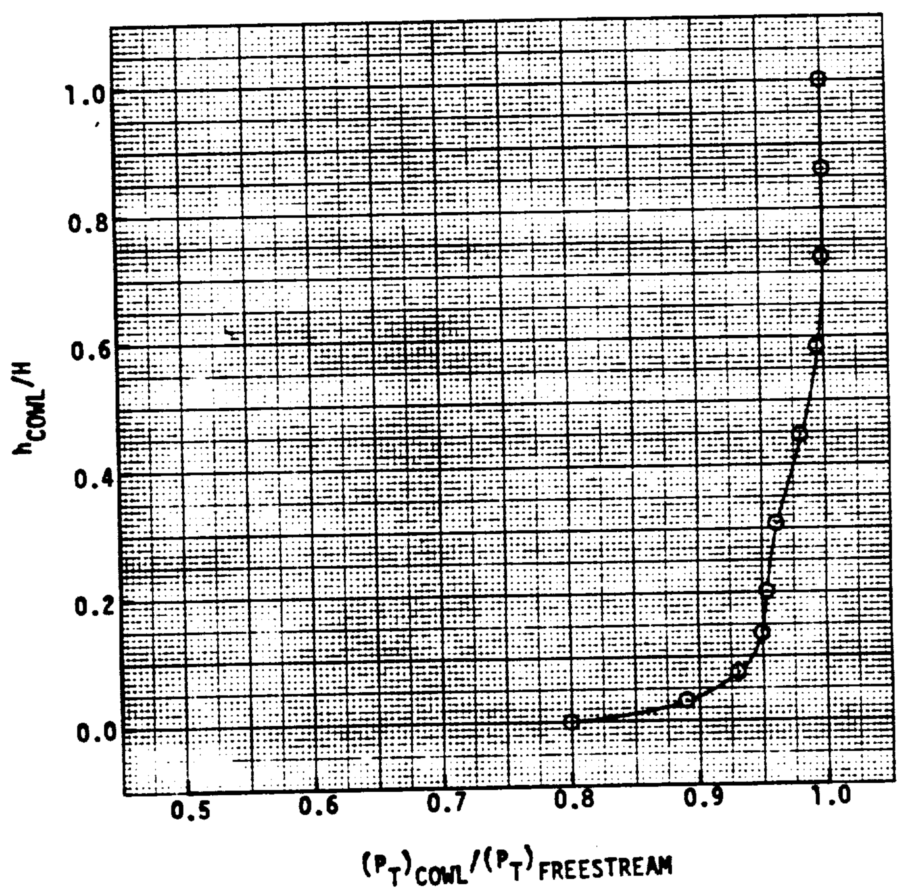


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 10; DESCRIPTION 40° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530

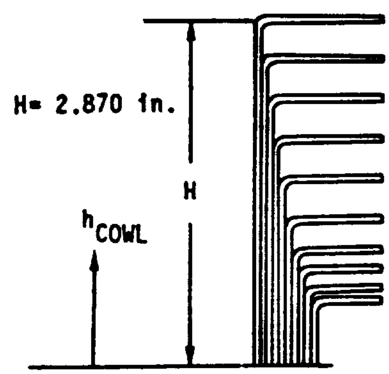


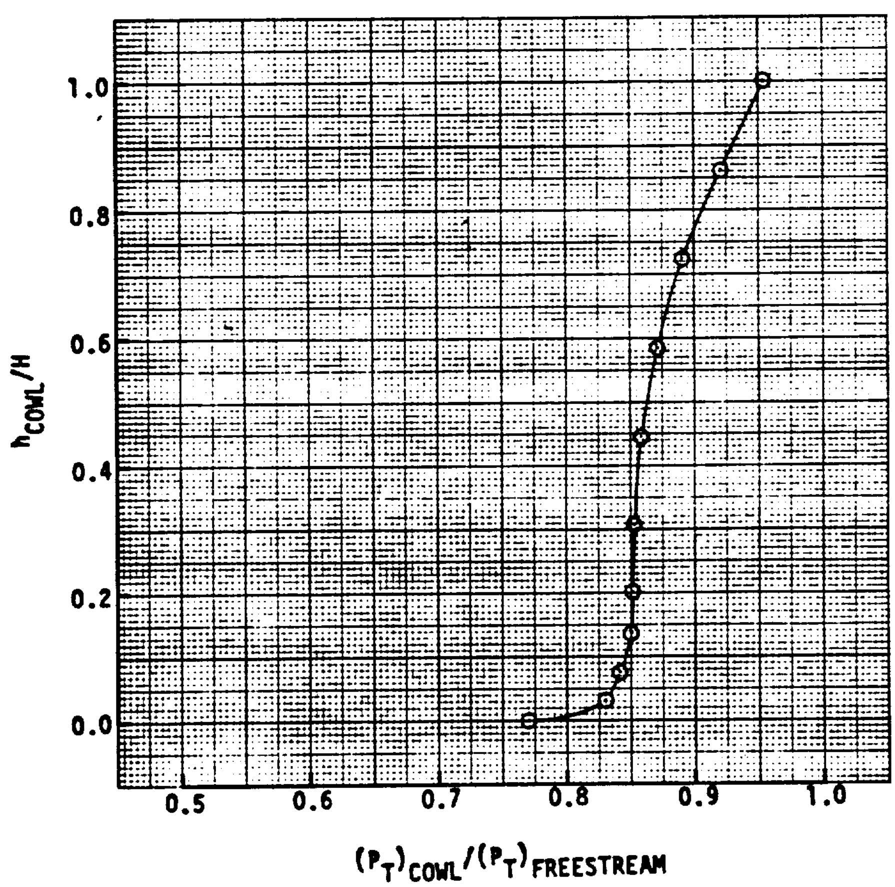


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 10; DESCRIPTION 40° DROOP LIP

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530





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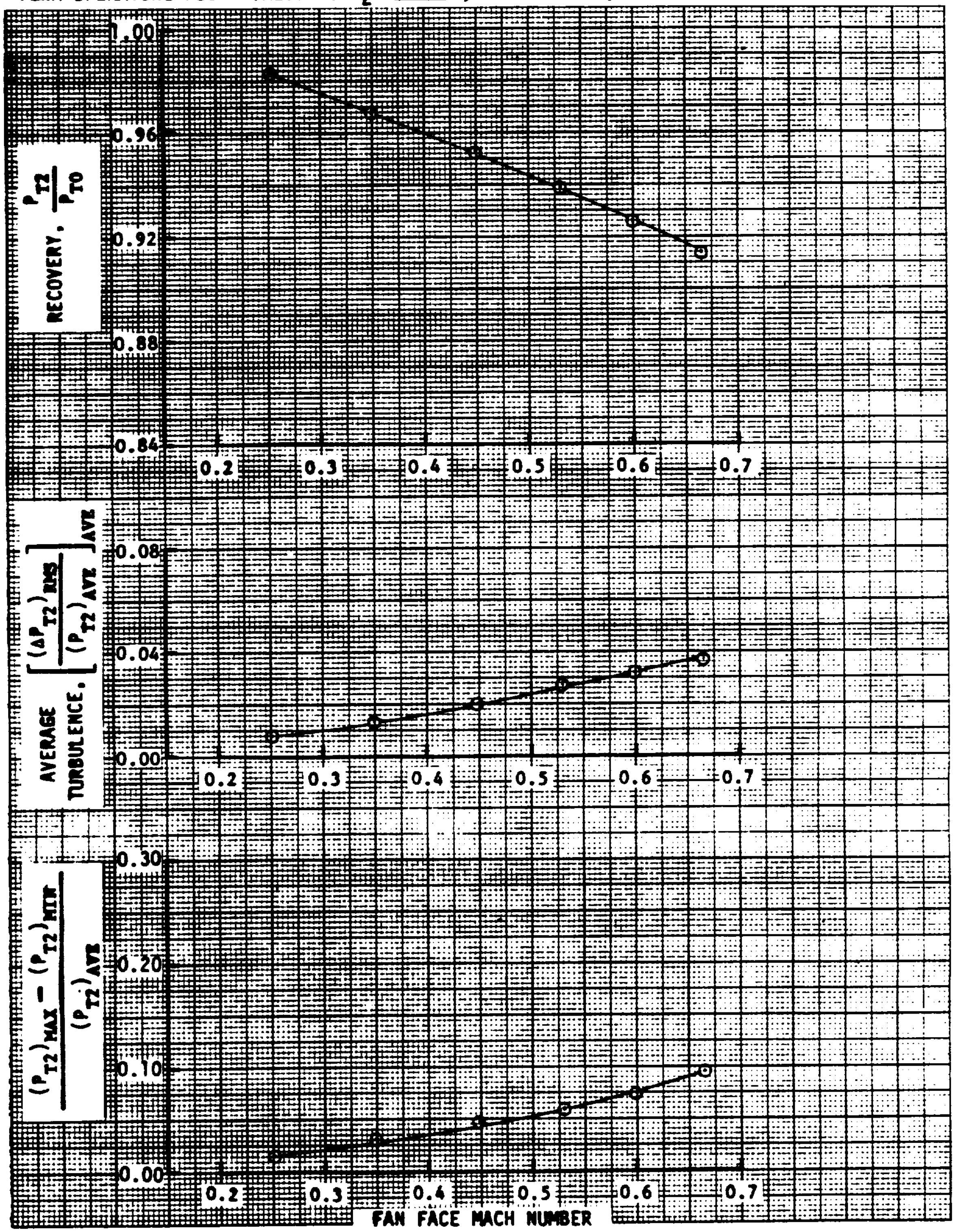
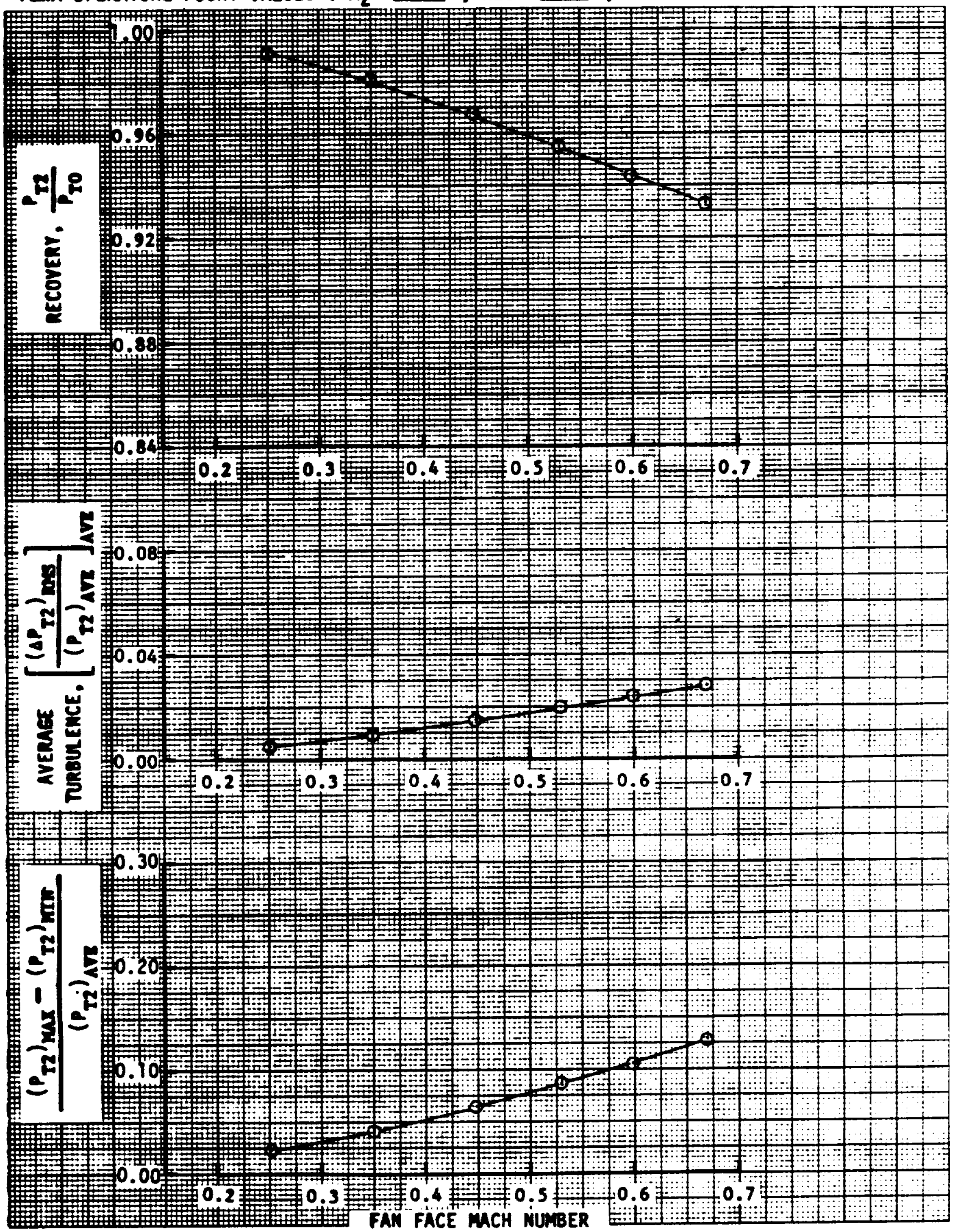
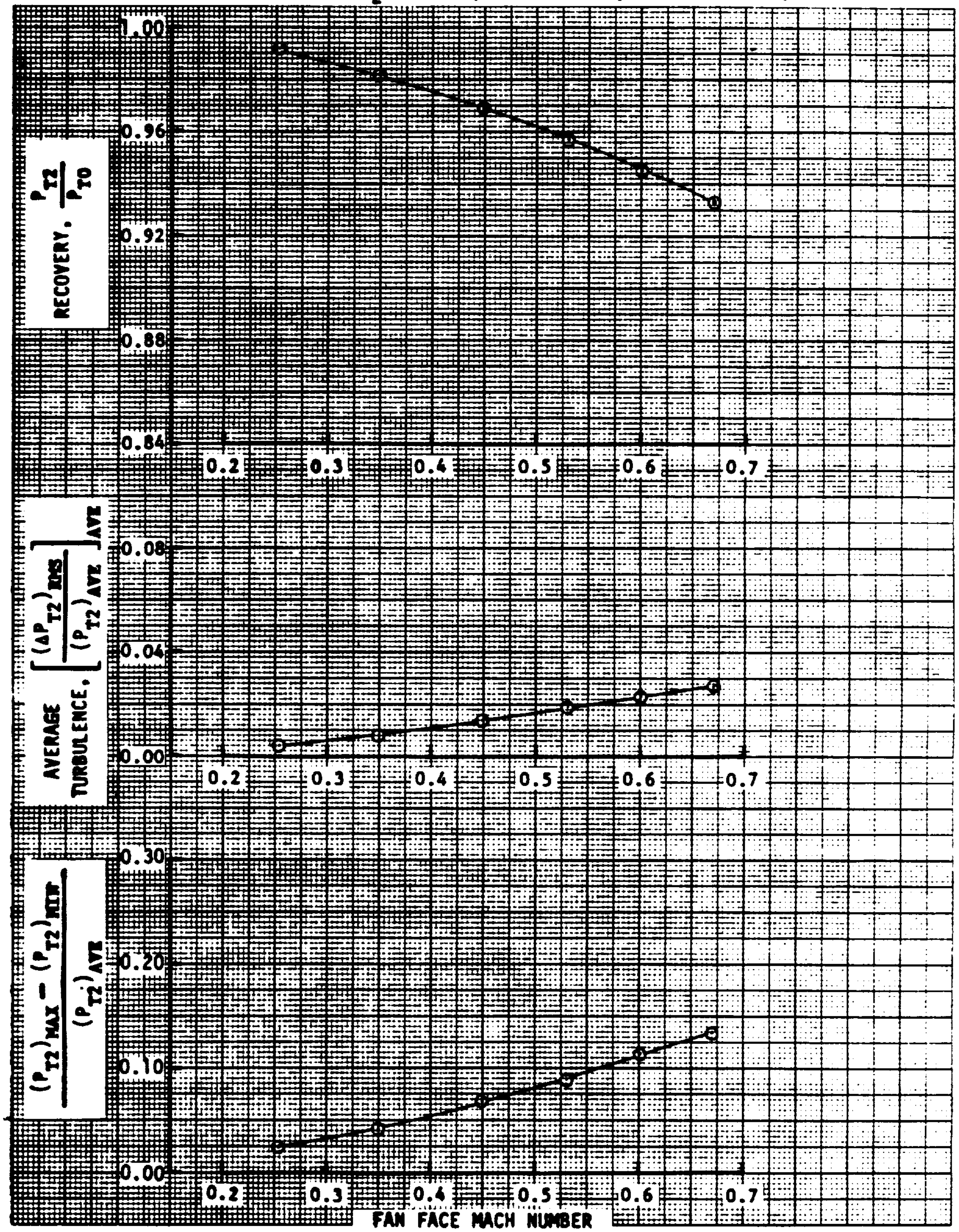
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1229-1234
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .026 ; DIST= .058



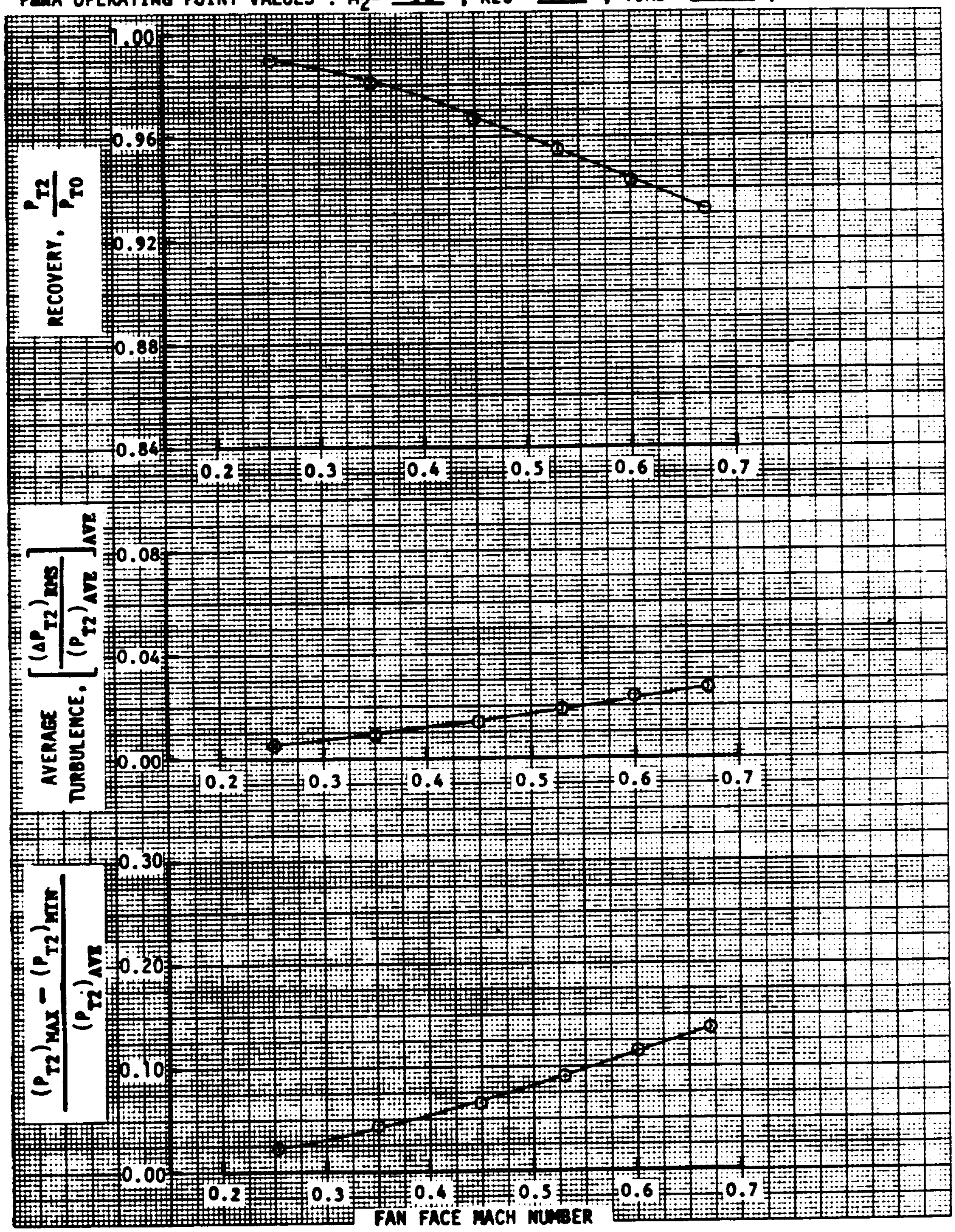
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1235-1240
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .955 ; TURB= .020 ; DIST= .088



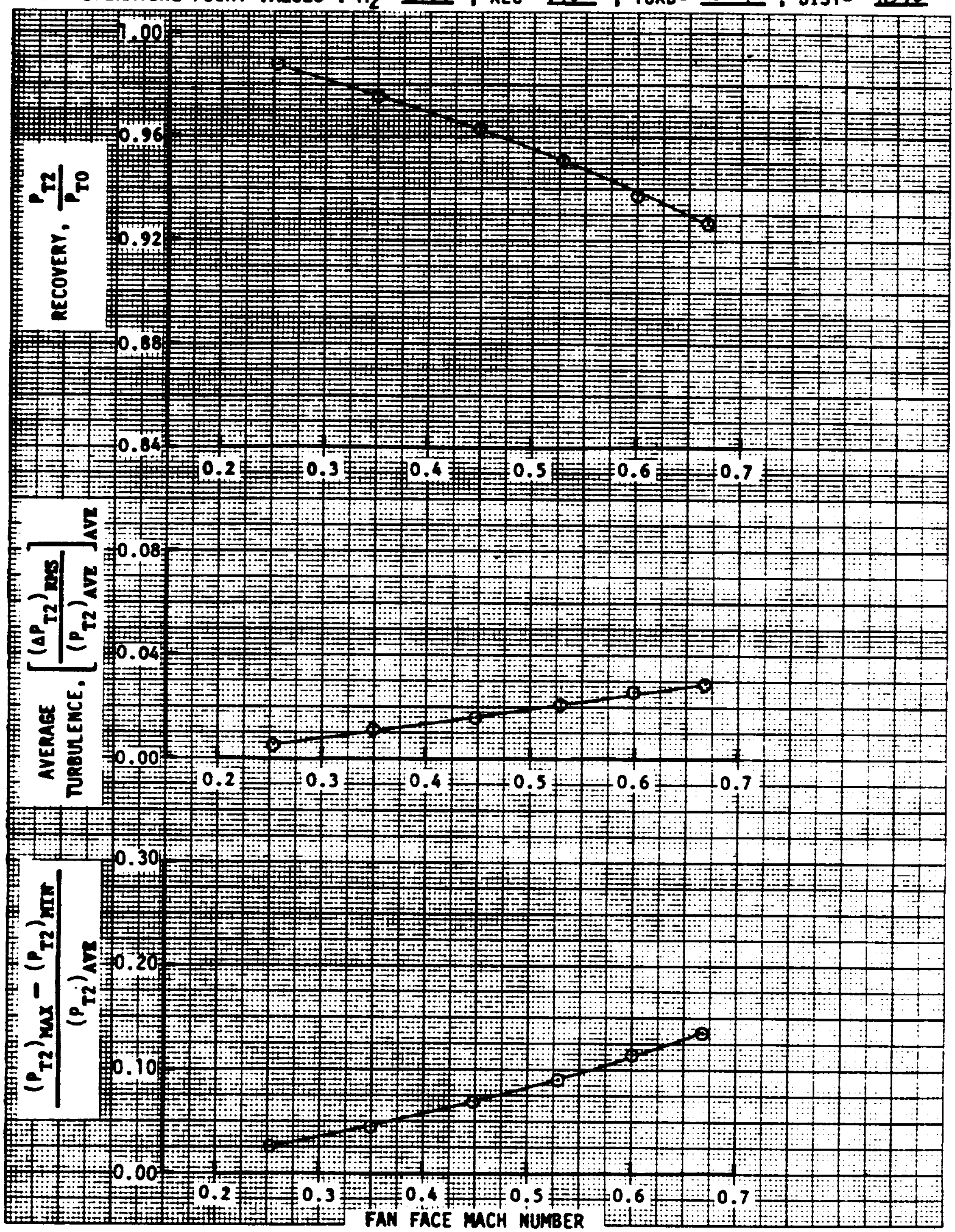
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1241-1246
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .957 ; TURB= .019 ; DIST= .091



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1247-1252
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .019 ; DIST= .092



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1253-1258
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .021 ; DIST= .090

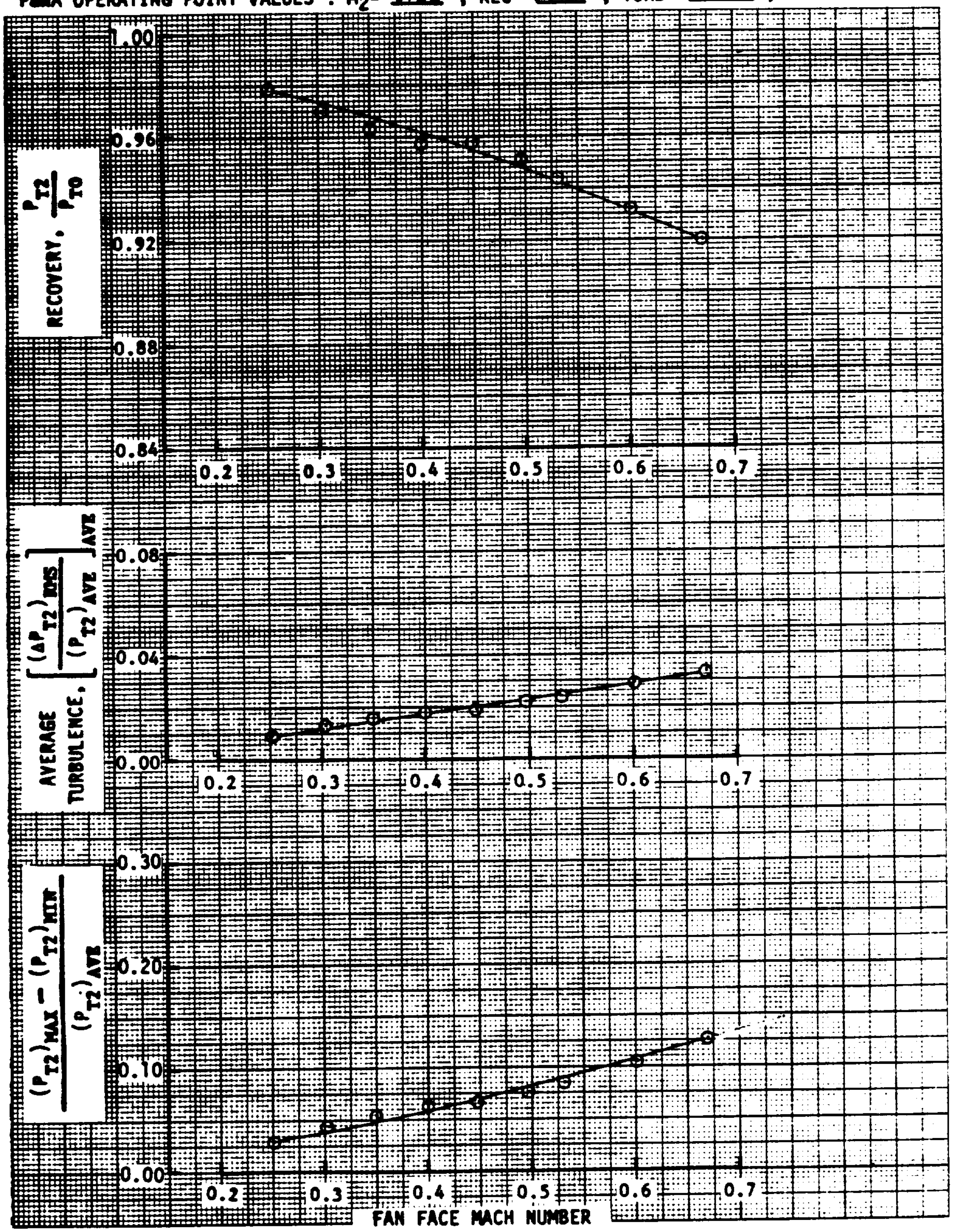


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 11 ; READING NUMBERS 1259-1268

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .943 ; TURB= .025 ; DIST= .090



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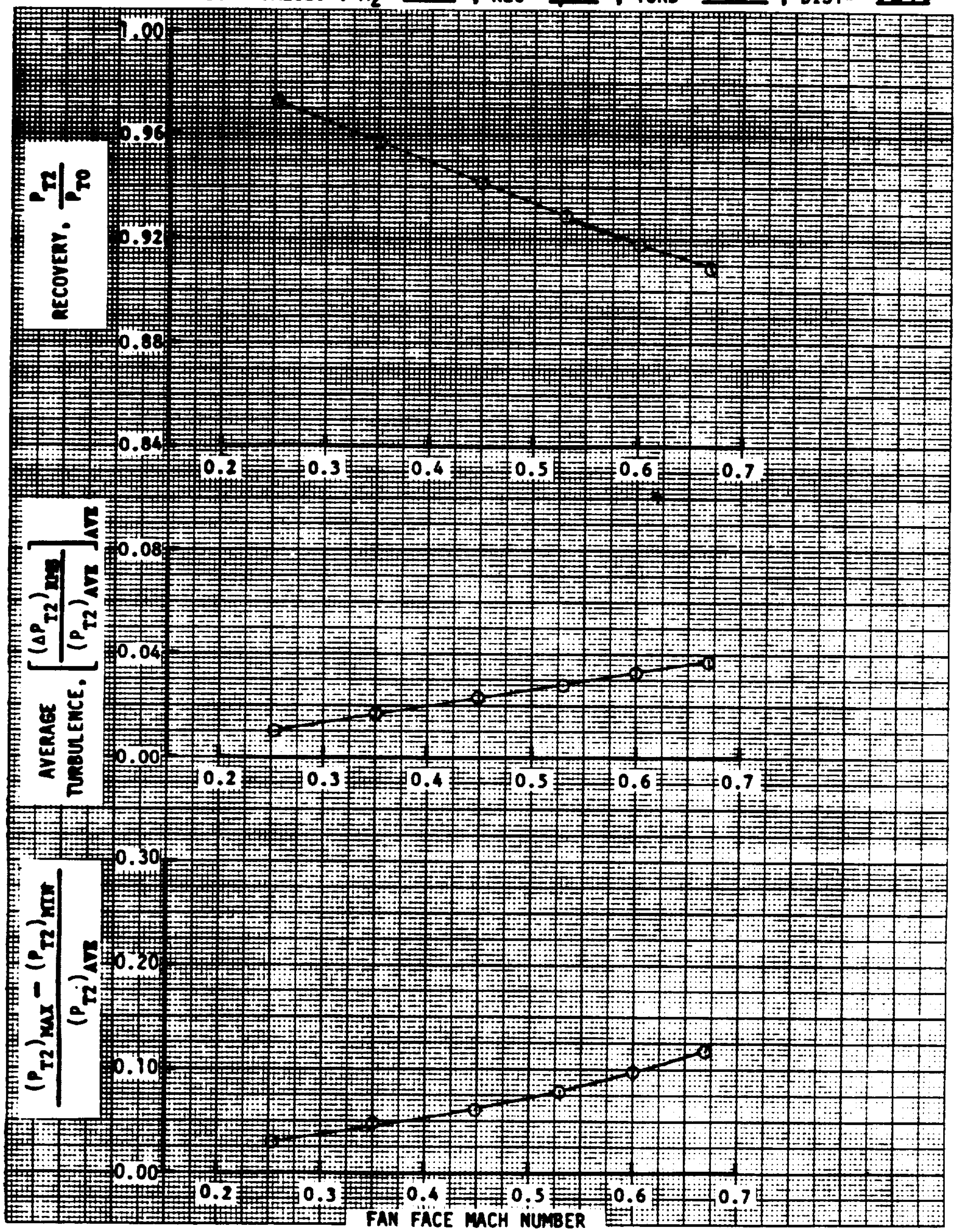
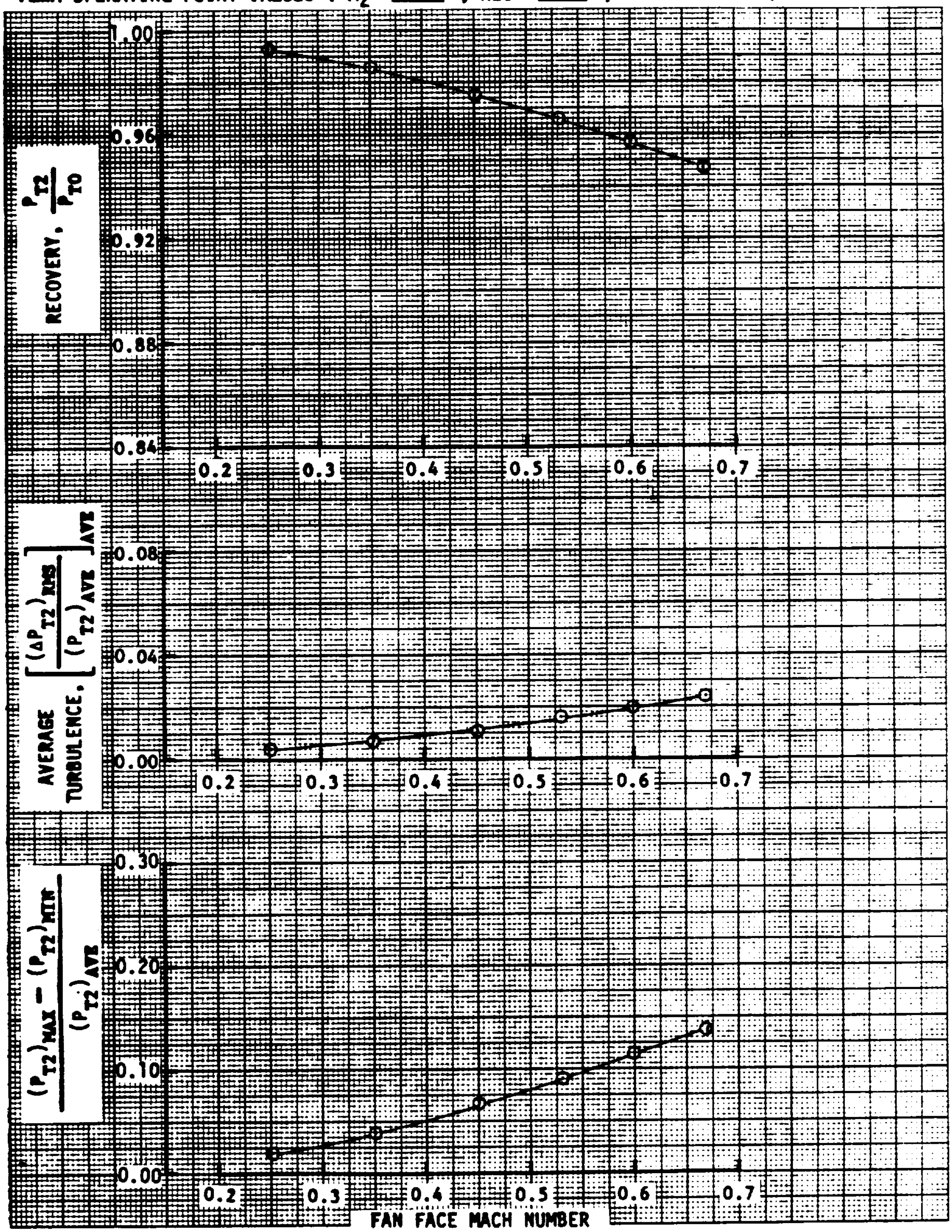
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1269-1274
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .929 ; TURB= .028 ; DIST= .078



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1275-1280
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .015 ; DIST= .090



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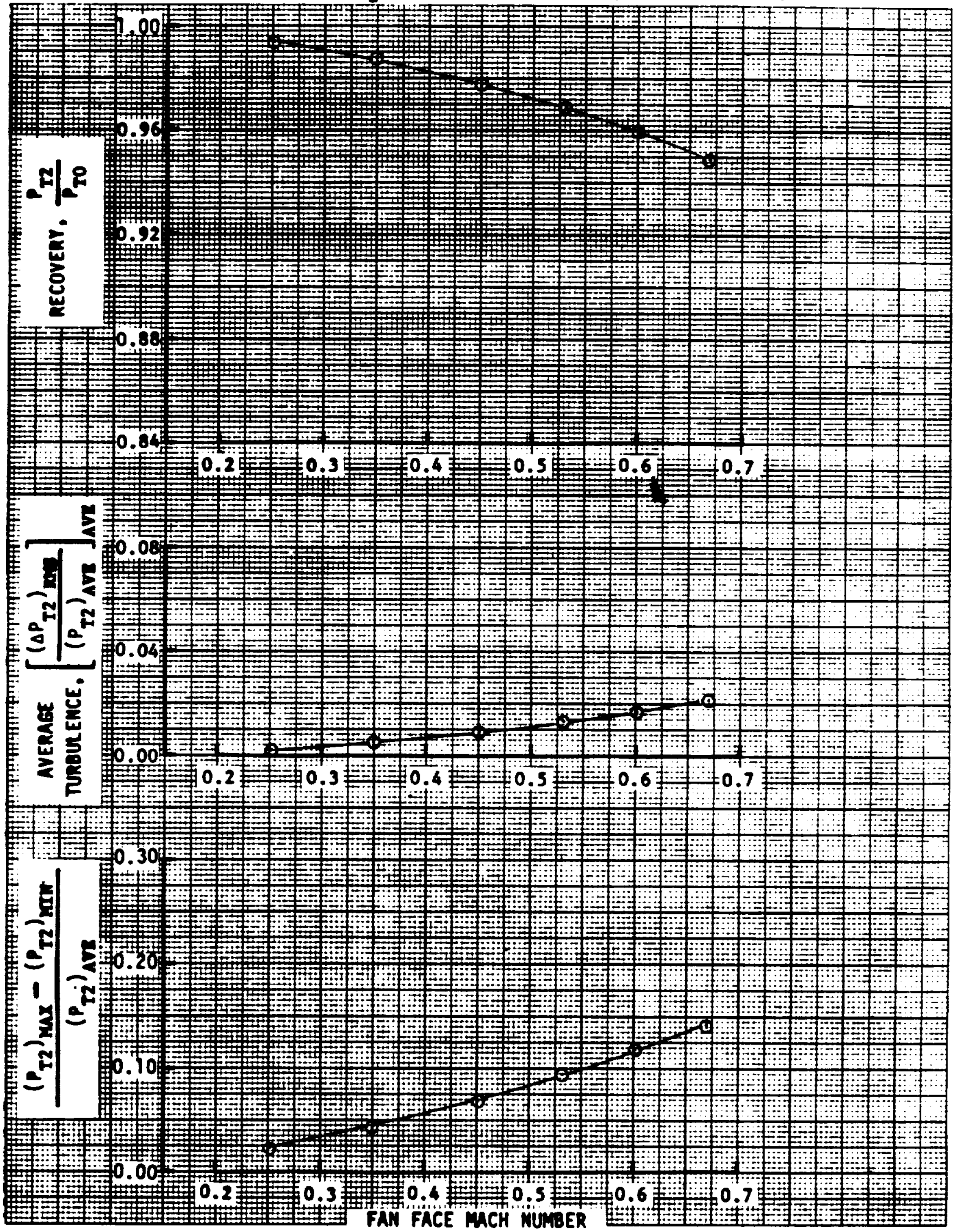
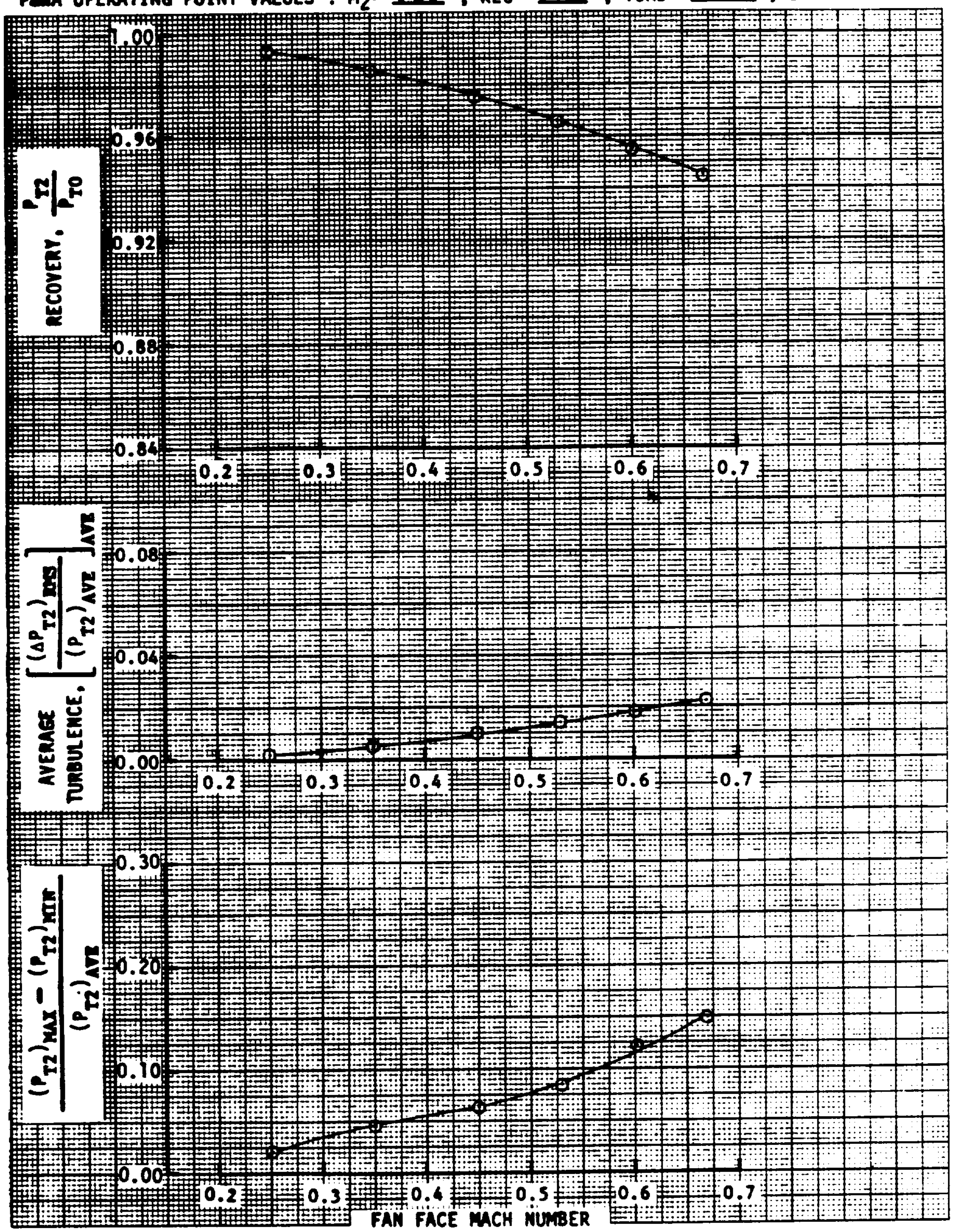
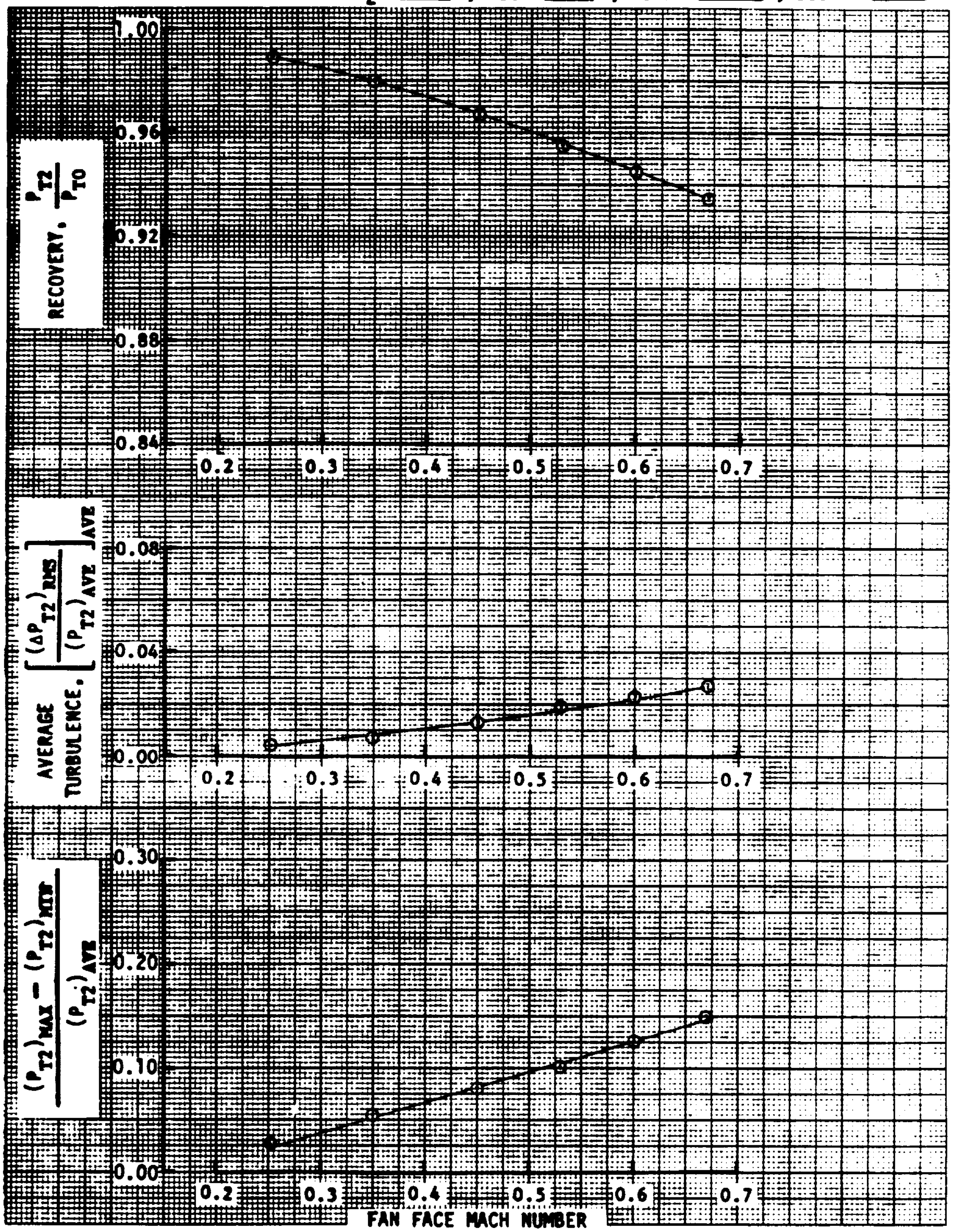
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1281-1286
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .969 ; TURB= .013 ; DIST= .093



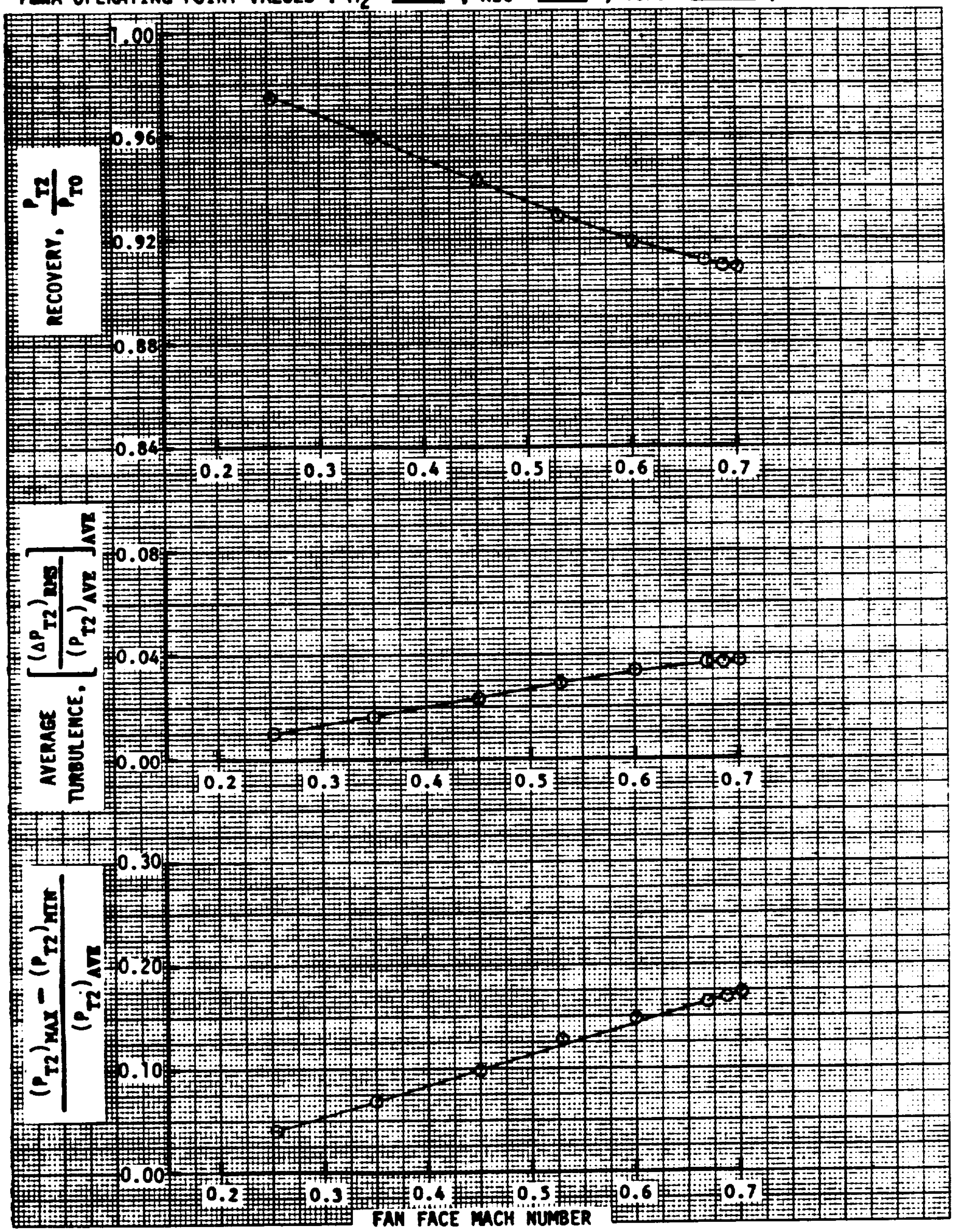
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1287-1292
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .014 ; DIST= .087



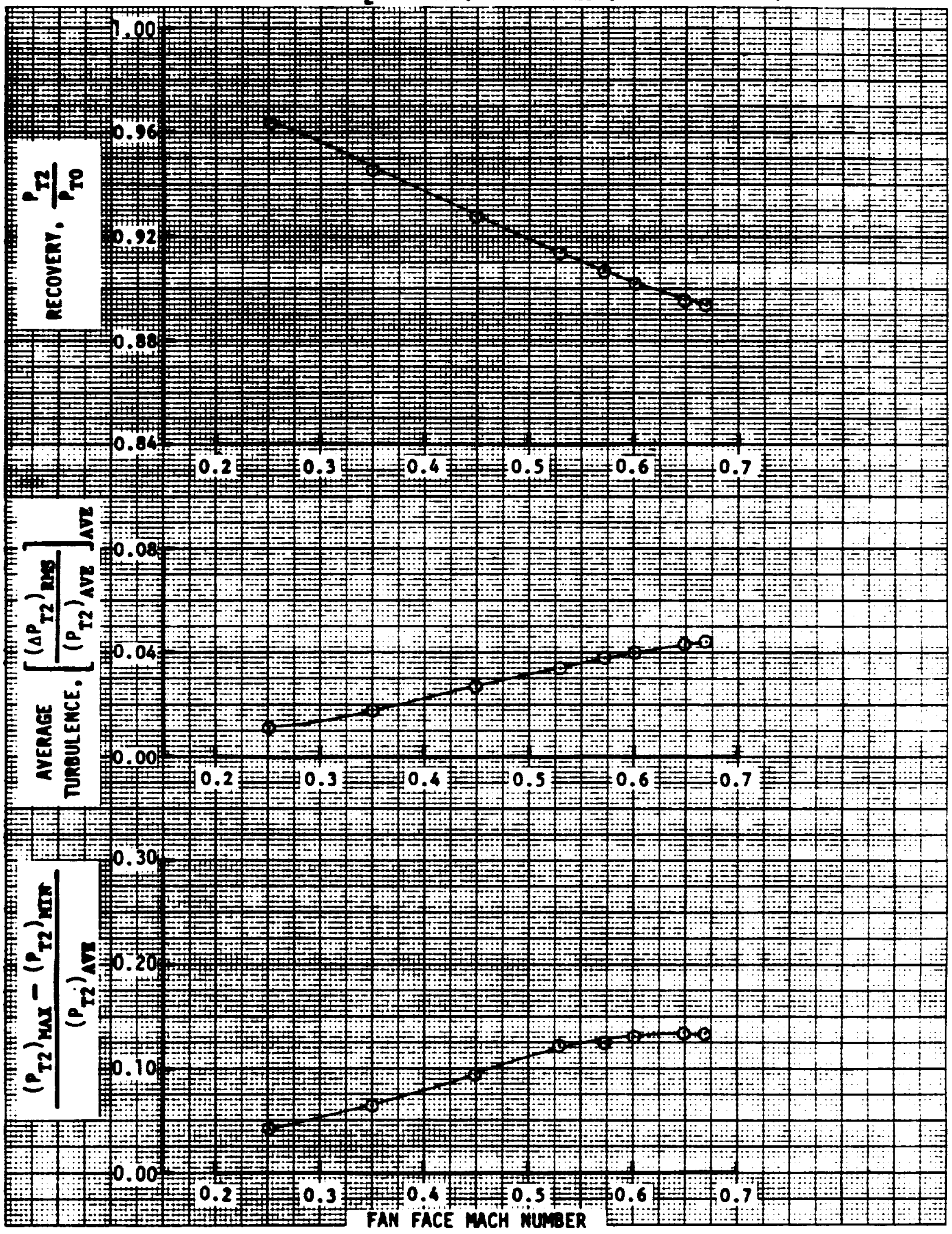
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1293-1298
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .956 ; TURB= .018 ; DIST= .104



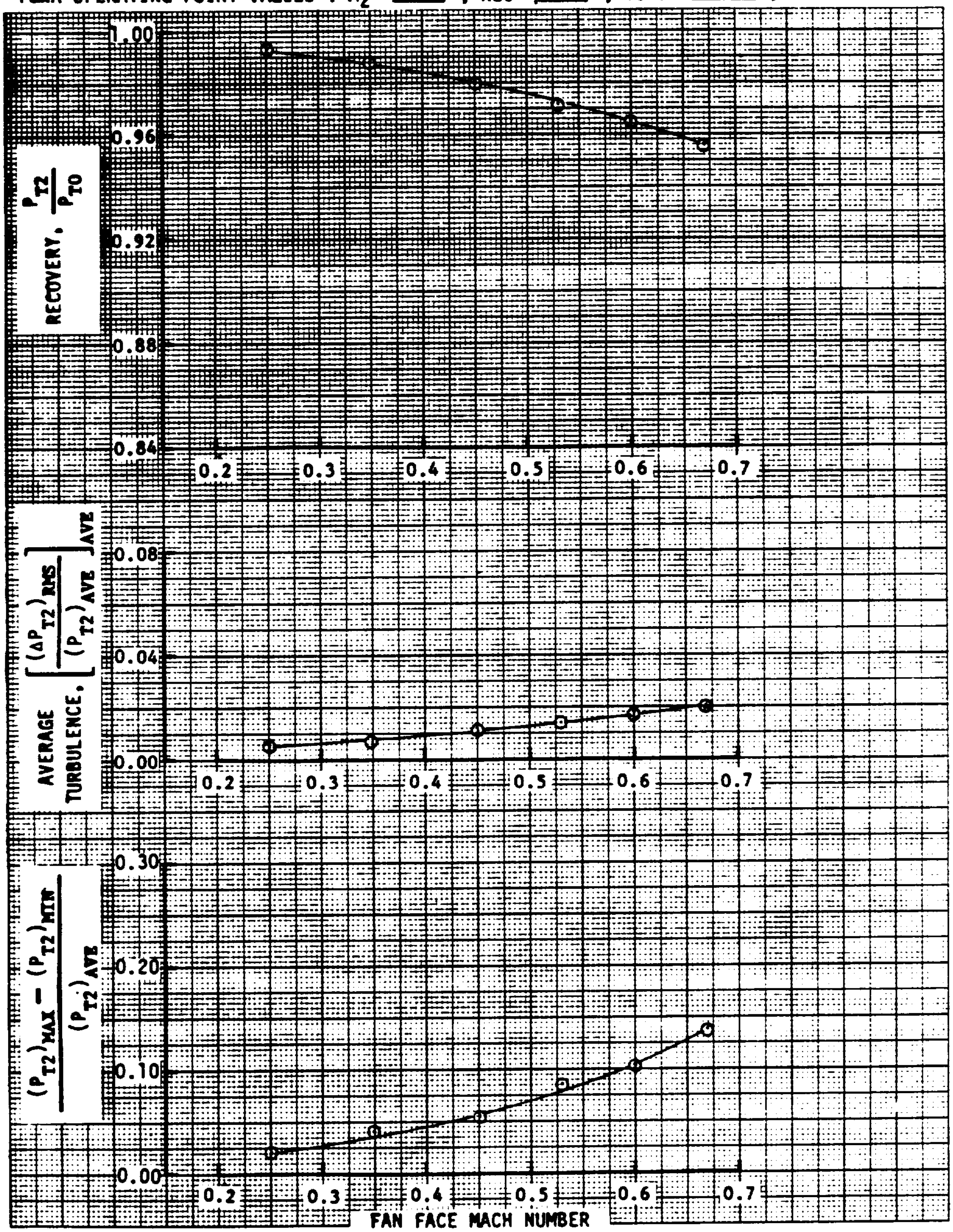
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1299-1306
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .930 ; TURB= .029 ; DIST= .122



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1307-1314
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.55 ; REC= .914 ; TURB= .034 ; DIST= .119



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1315-1320
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .014 ; DIST= .078

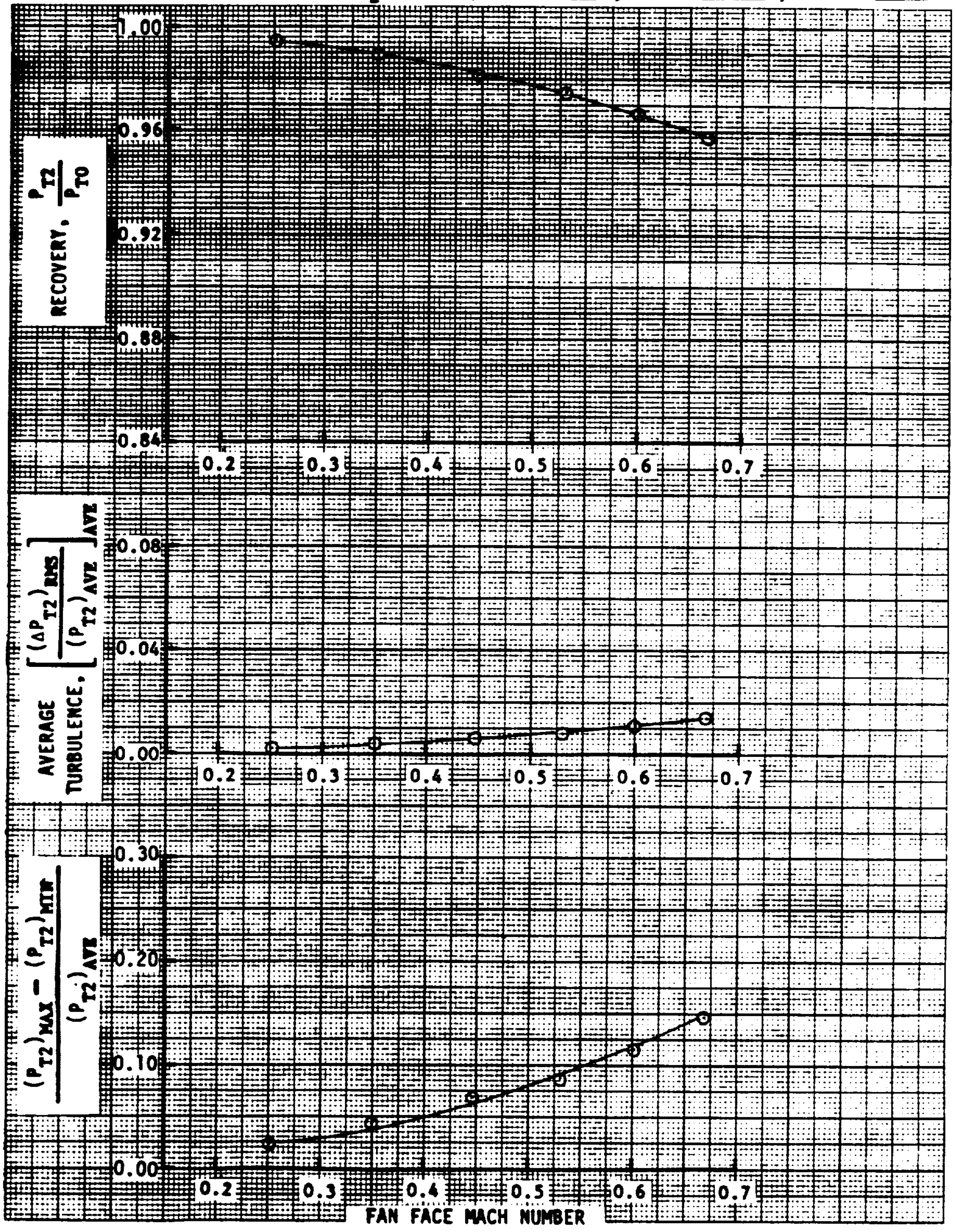


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

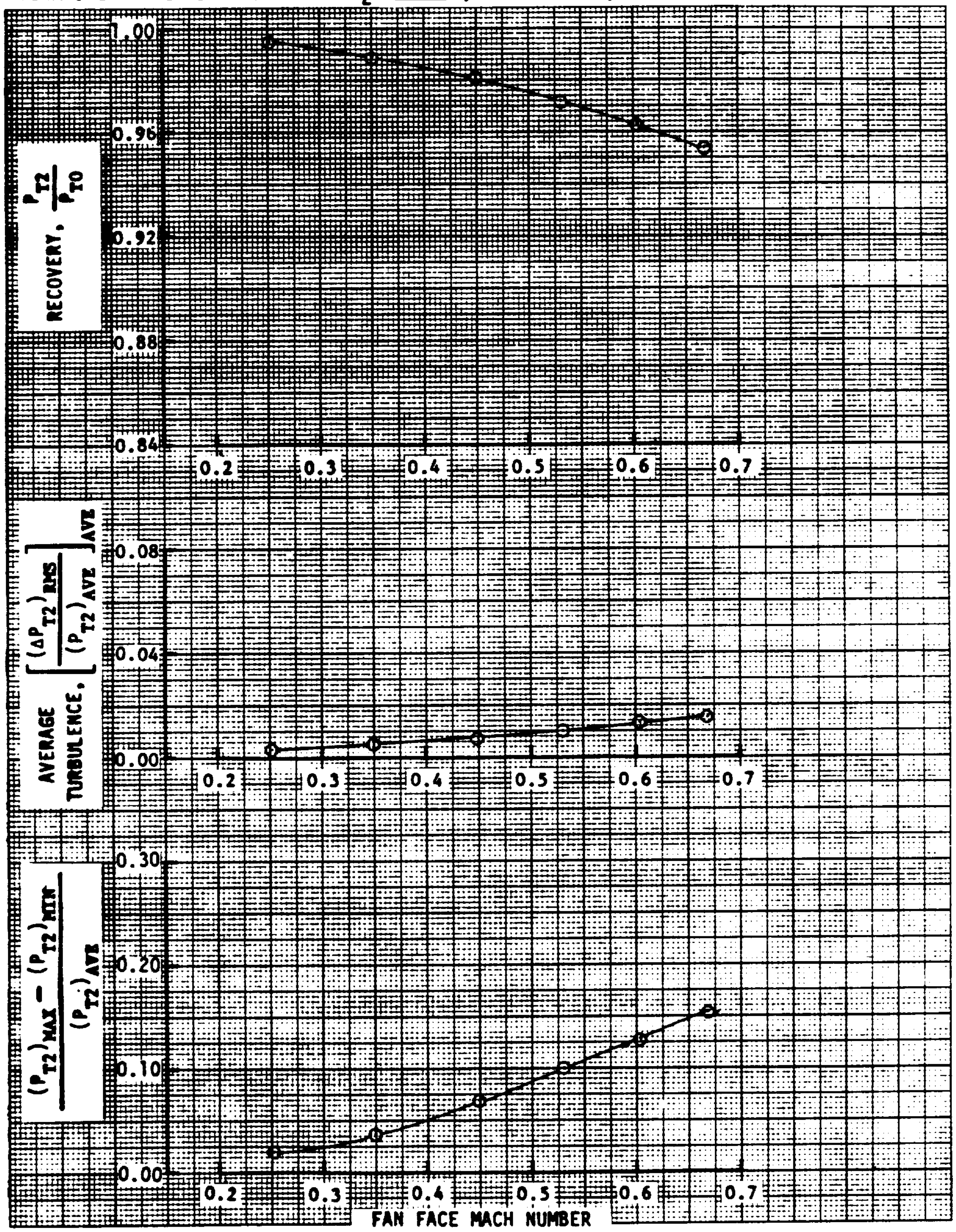
CONFIGURATION 11 ; READING NUMBERS 1321-1326

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.

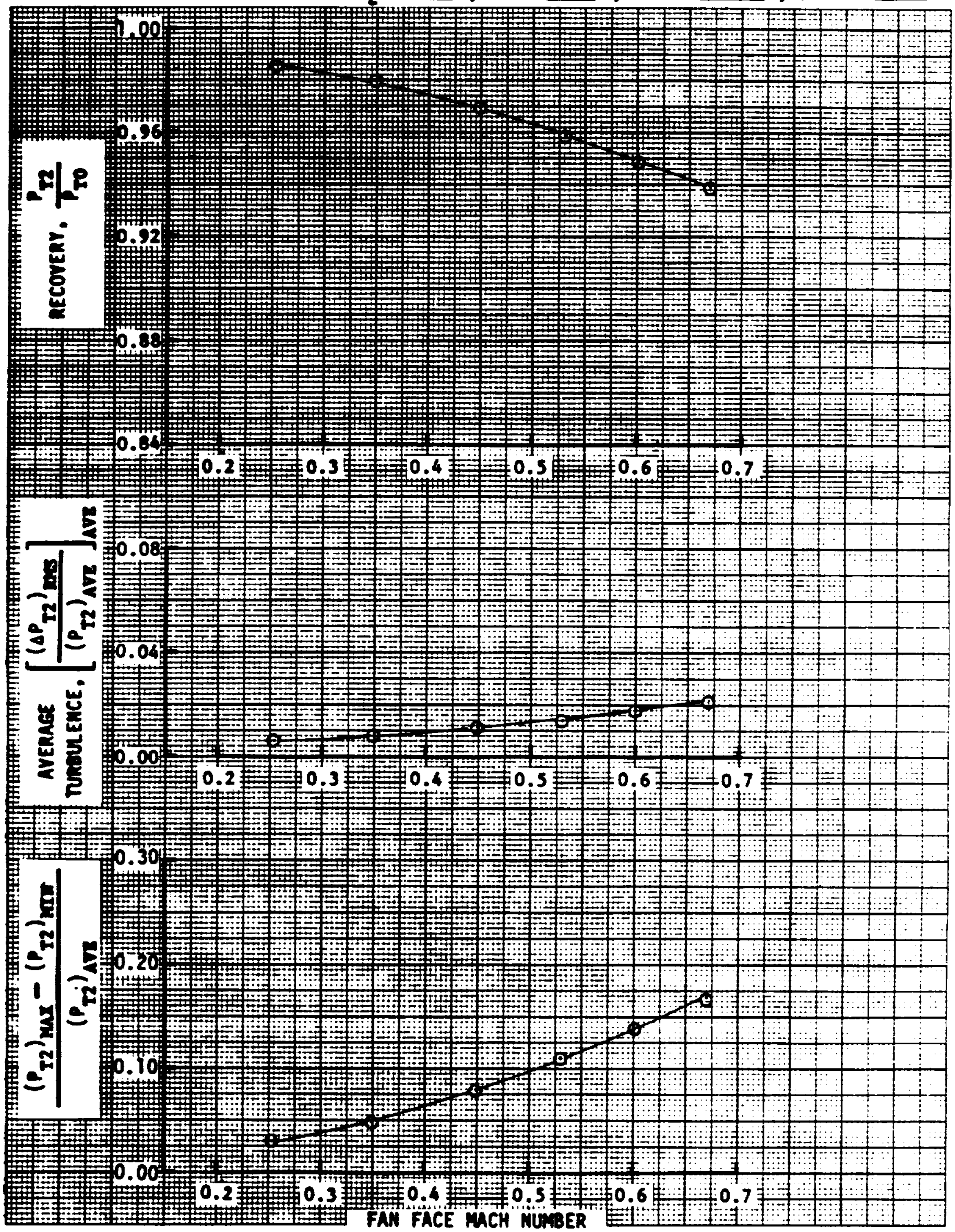
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .975 ; TURB= .009 ; DIST= .091



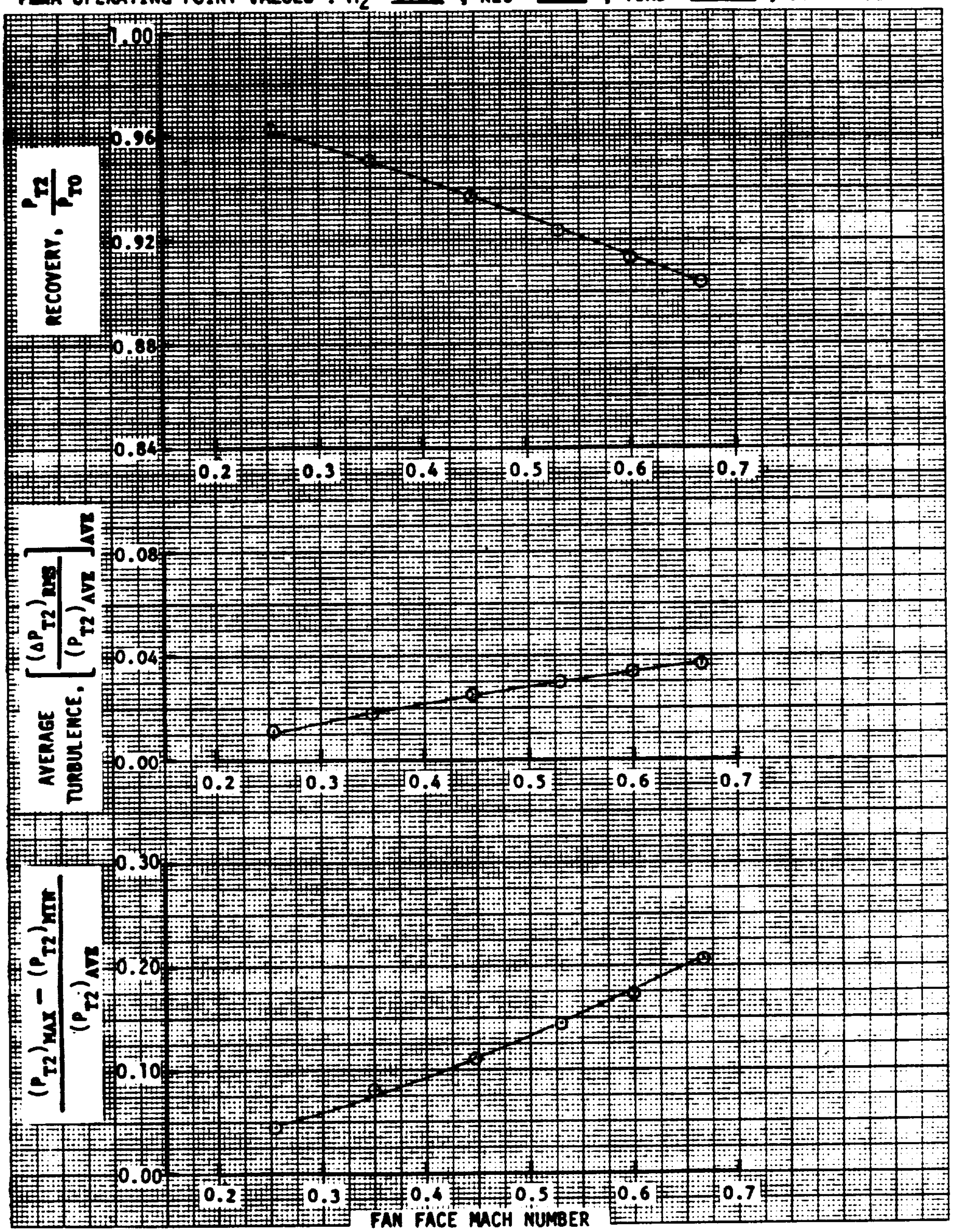
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1327-1332
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .972 ; TURB= .010 ; DIST= .100



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1333-1338
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .015 ; DIST= .110



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1339-1344
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .924 ; TURB= .030 ; DIST= .146



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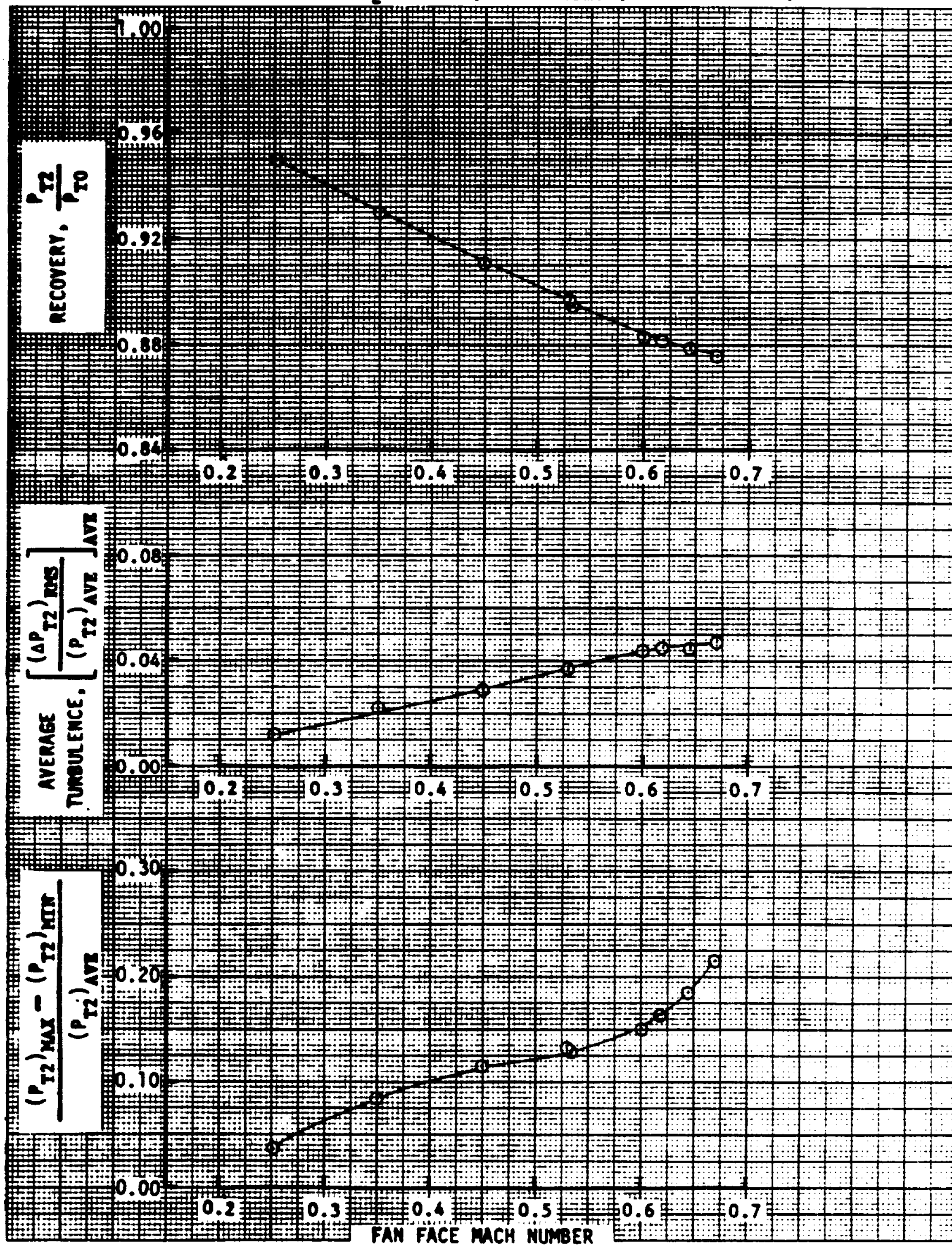
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 11 ; READING NUMBERS 1345-1354
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .897 ; TURB= .037 ; DIST= .128



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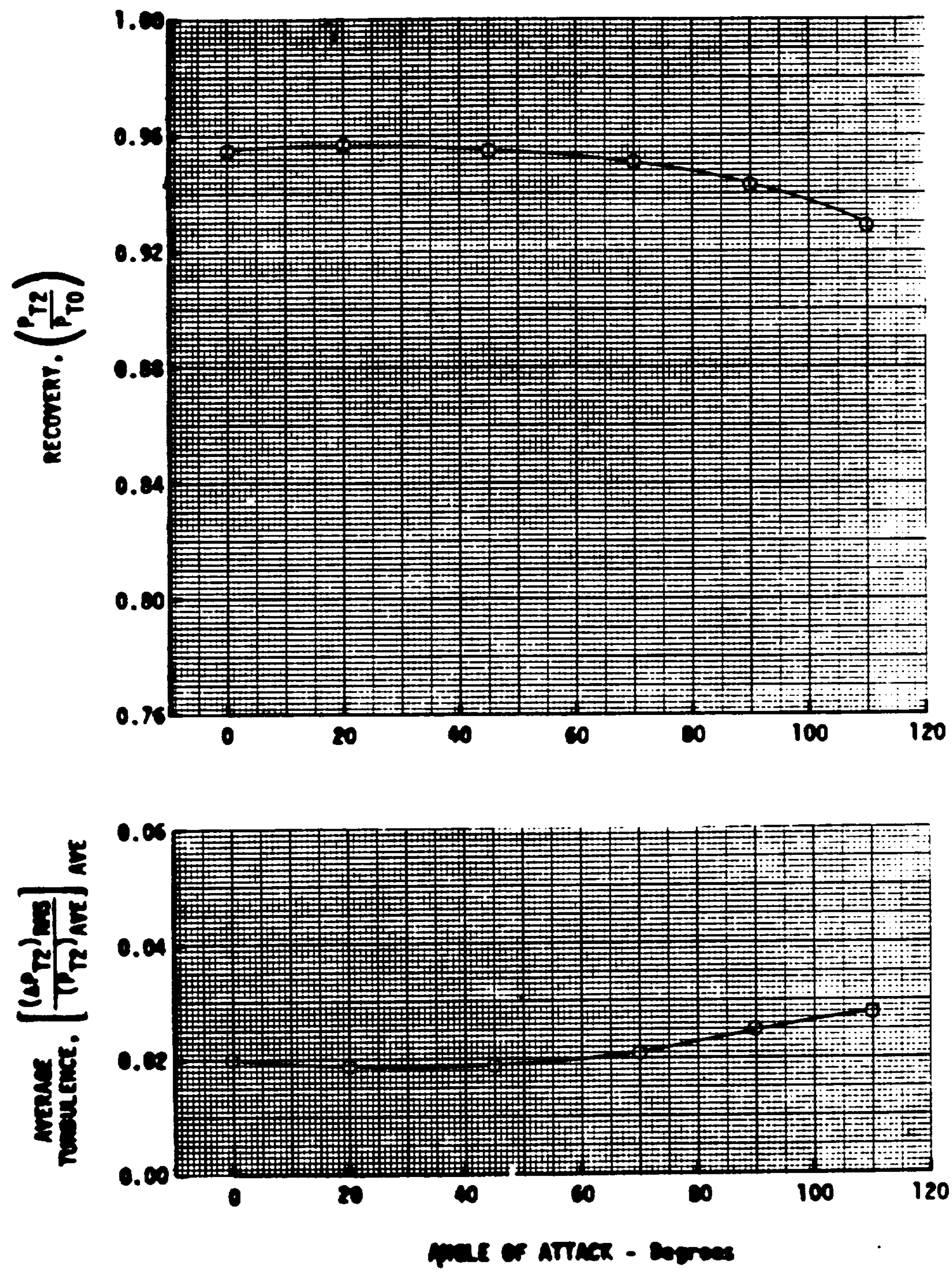
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 11 ; DESCRIPTION 40° Droop Lip ; ΔX = 2



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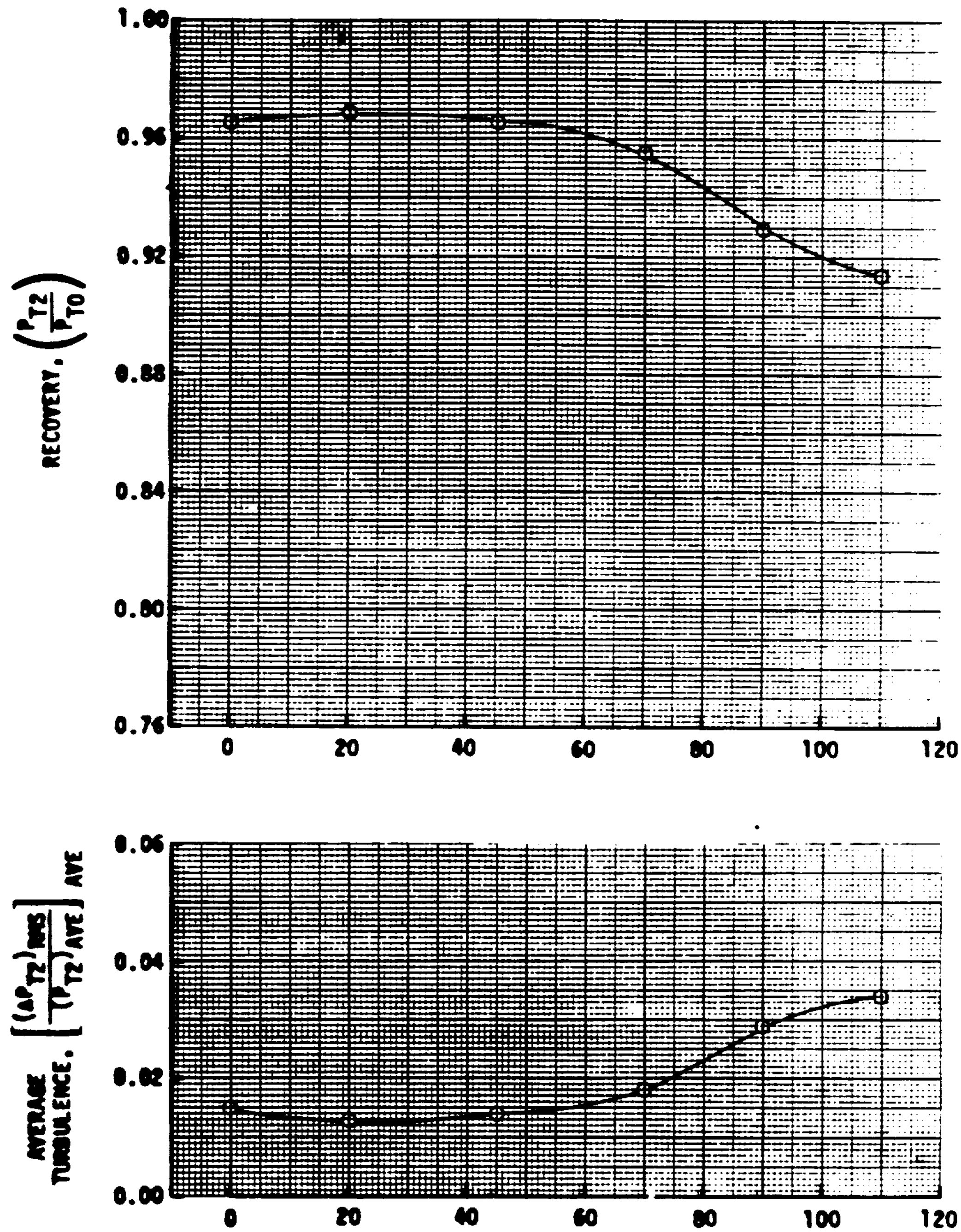
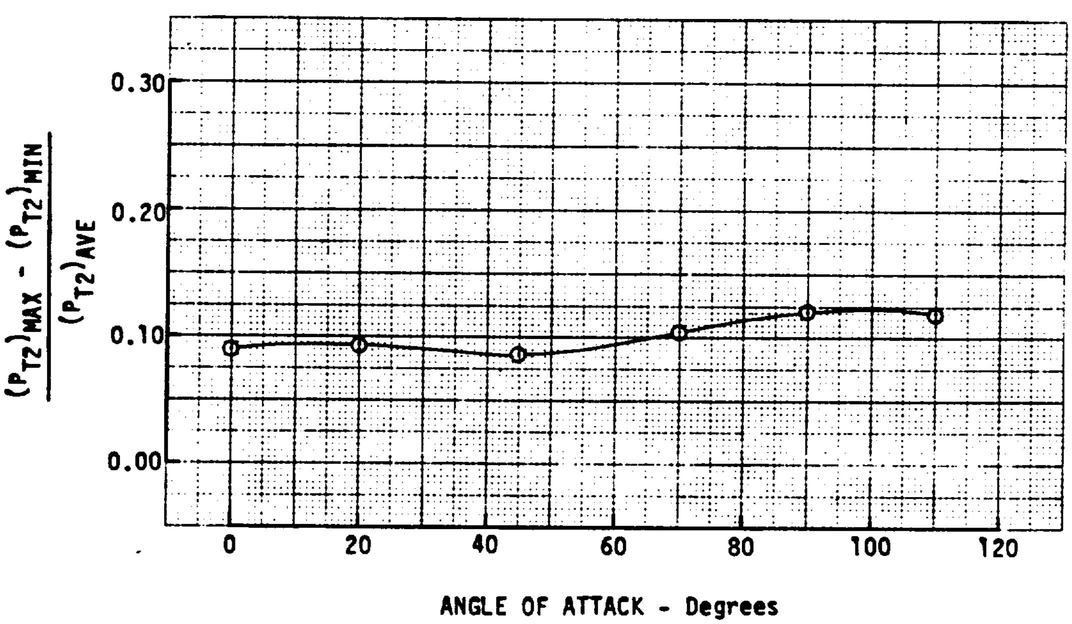
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 11; DESCRIPTION 40° Droop Lip; ΔX = 2

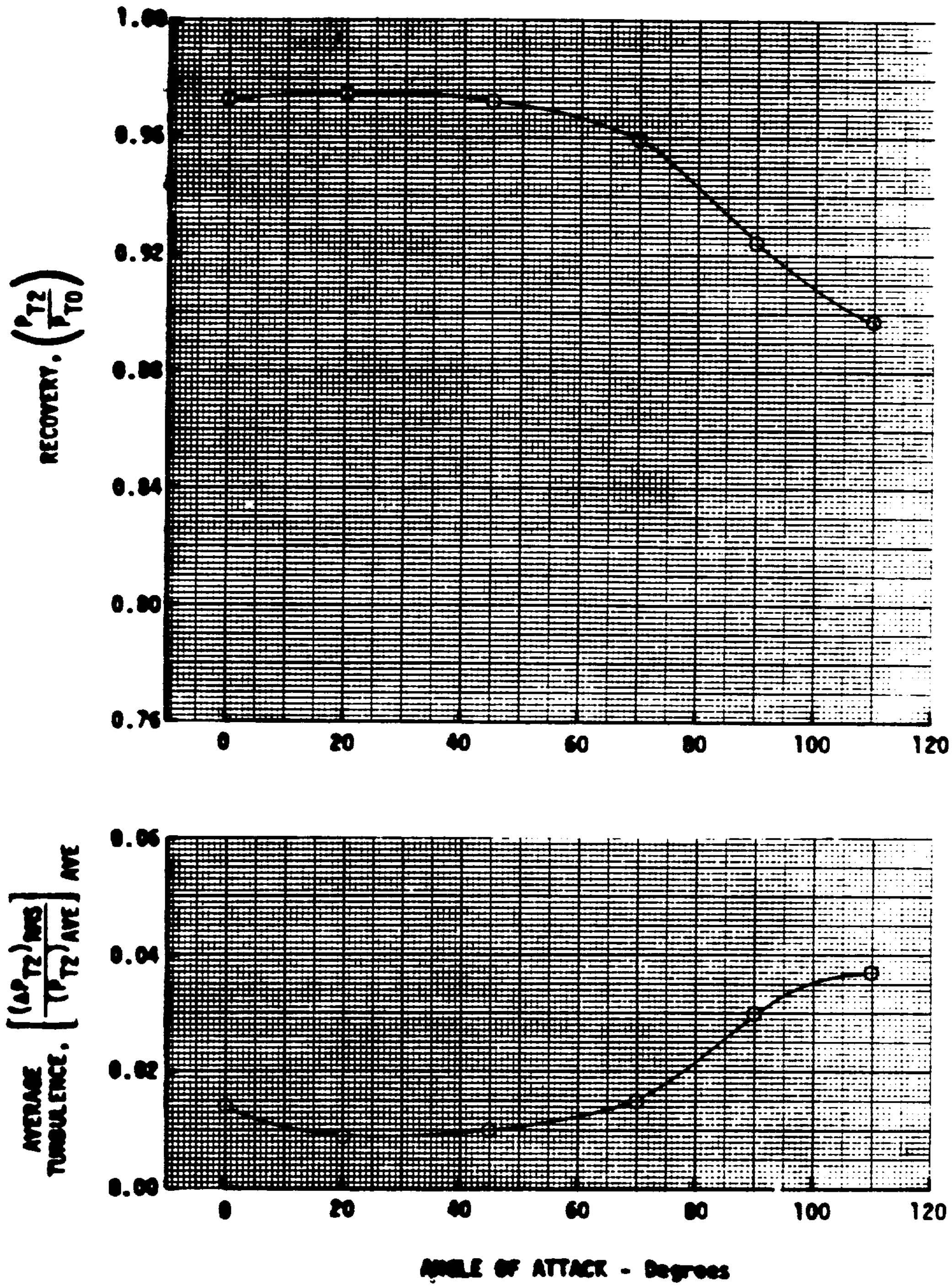


DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 11 ; DESCRIPTION 40° DROOP LIP $\Delta X=2$



RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 11 **; DESCRIPTION** 40° Droop Lip; ΔX = 2



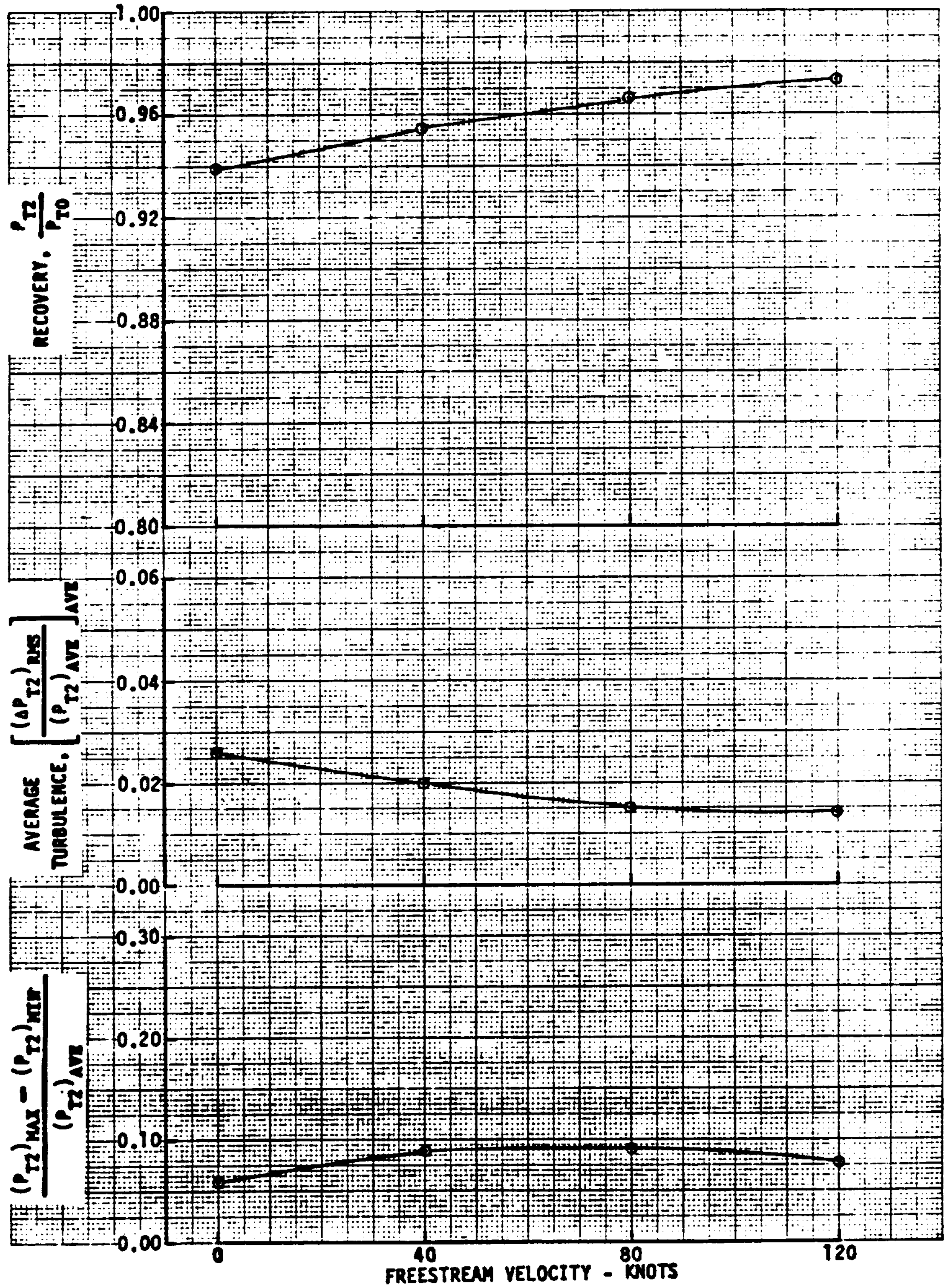
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY

ANGLE OF ATTACK = 0 DEGREES

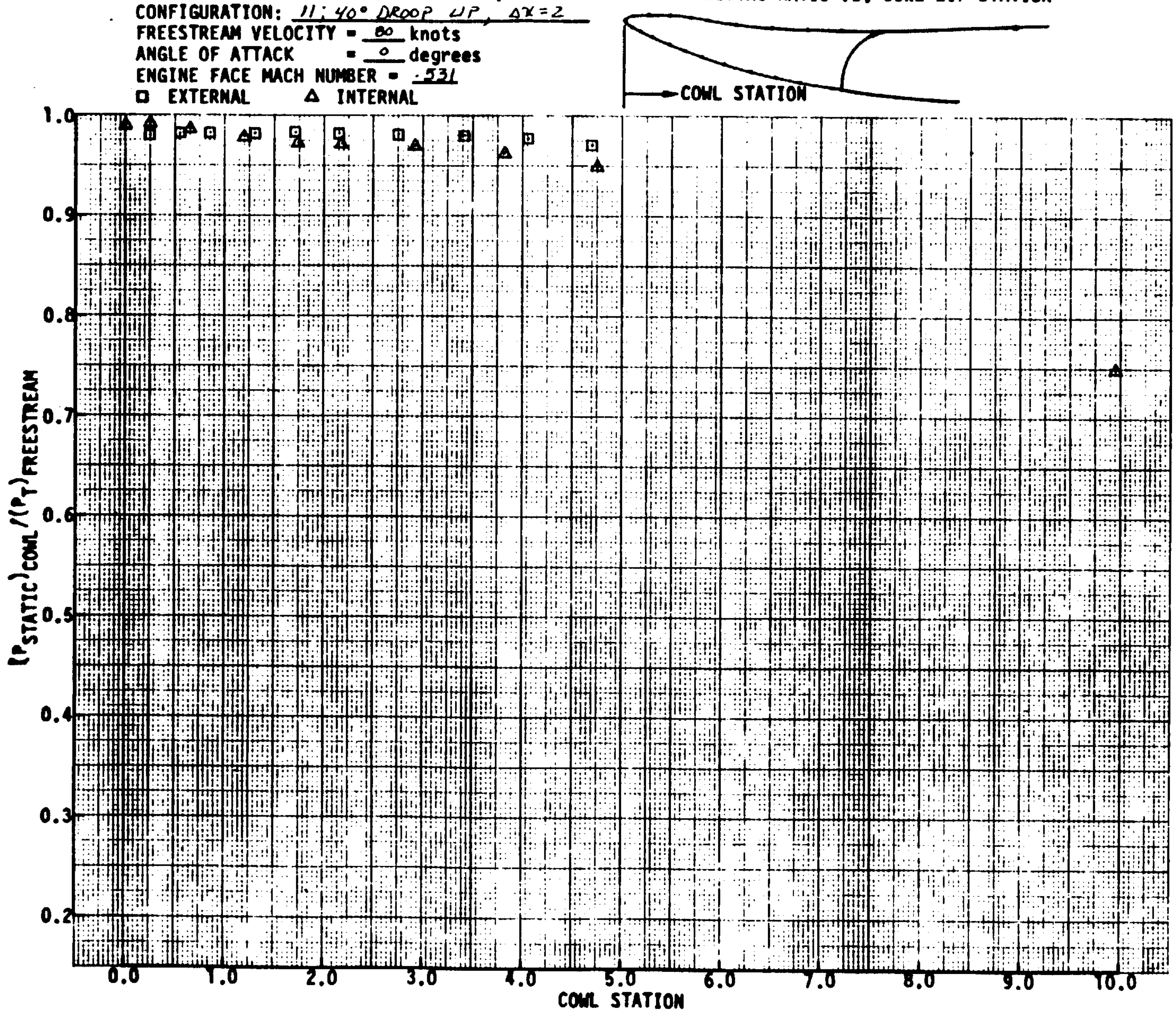
SIDESLIP ANGLE = ____ DEGREES

P&WA F-100 MATCH AIRFLOW

CONFIGURATION: NUMBER 11; DESCRIPTION 40° DROOP LIP; ΔX=2



COWL LIP STATIC PRESSURE PROFILES ; COWL L' STATIC PRESSURE RATIO VS. COWL LIP STATION



COWL LIP STATIC PRESSURE PROFILES ; COWL L' 'TATIC PRESSURE RATIO VS. COWL LIP STATION

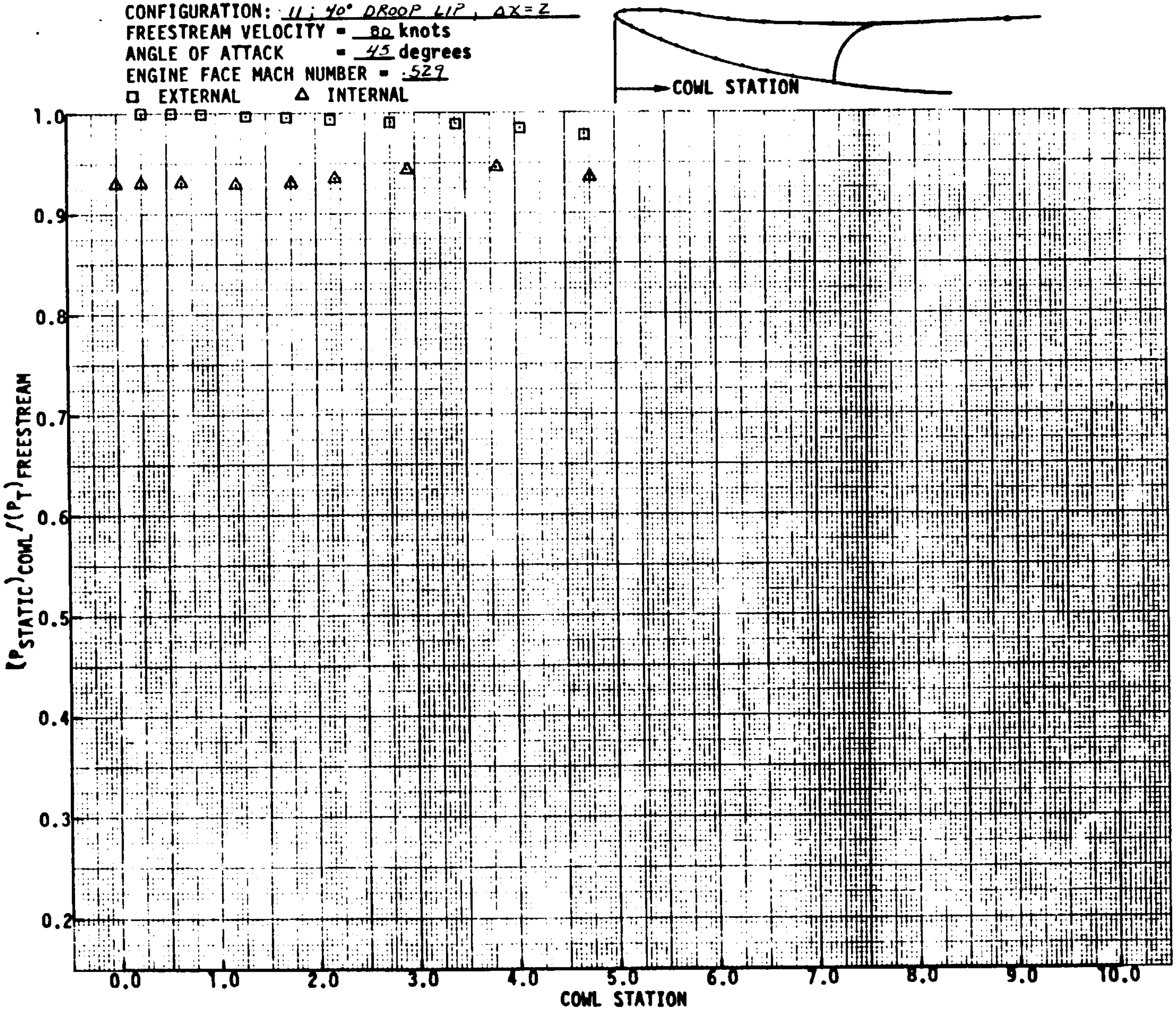
CONFIGURATION: 11; 40° DROOP LIP, ΔX=2

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 45 degrees

ENGINE FACE MACH NUMBER = .529

□ EXTERNAL Δ INTERNAL



COWL LIP STATIC PRESSURE PROFILES ; COWL LI TATIC PRESSURE RATIO VS. COWL LIP STATION

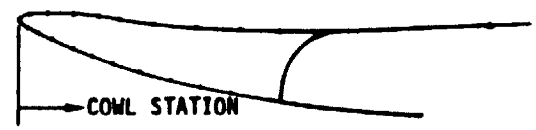
CONFIGURATION: 11 ; 45° DROOP LIP, ΔX = 2

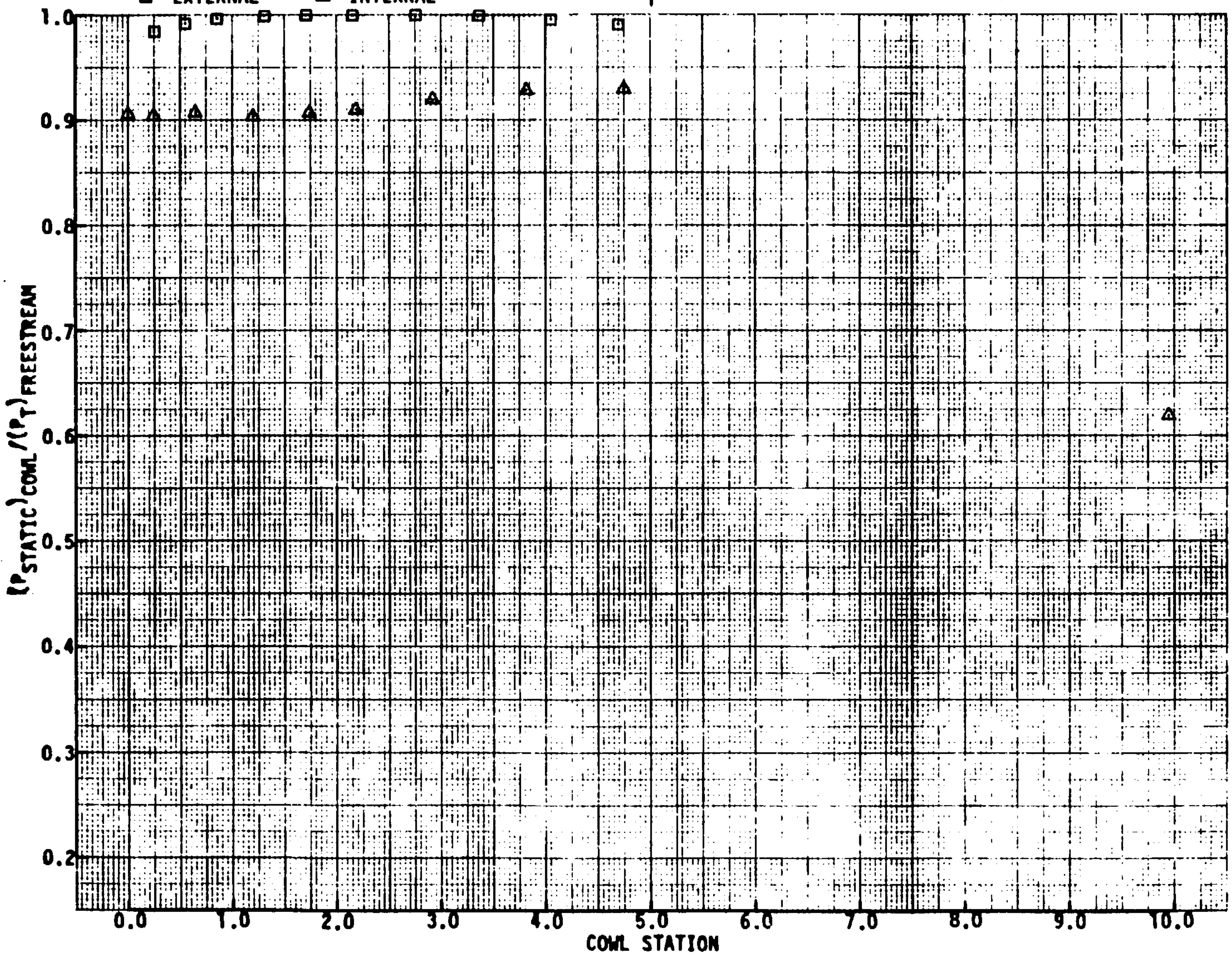
FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 90 degrees

ENGINE FACE MACH NUMBER = .529

□ EXTERNAL Δ INTERNAL

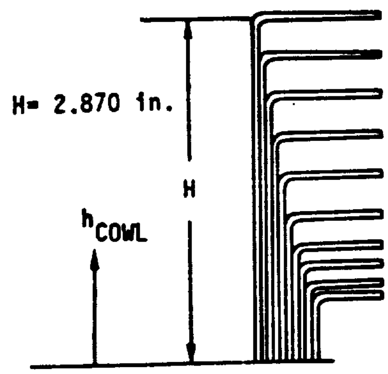


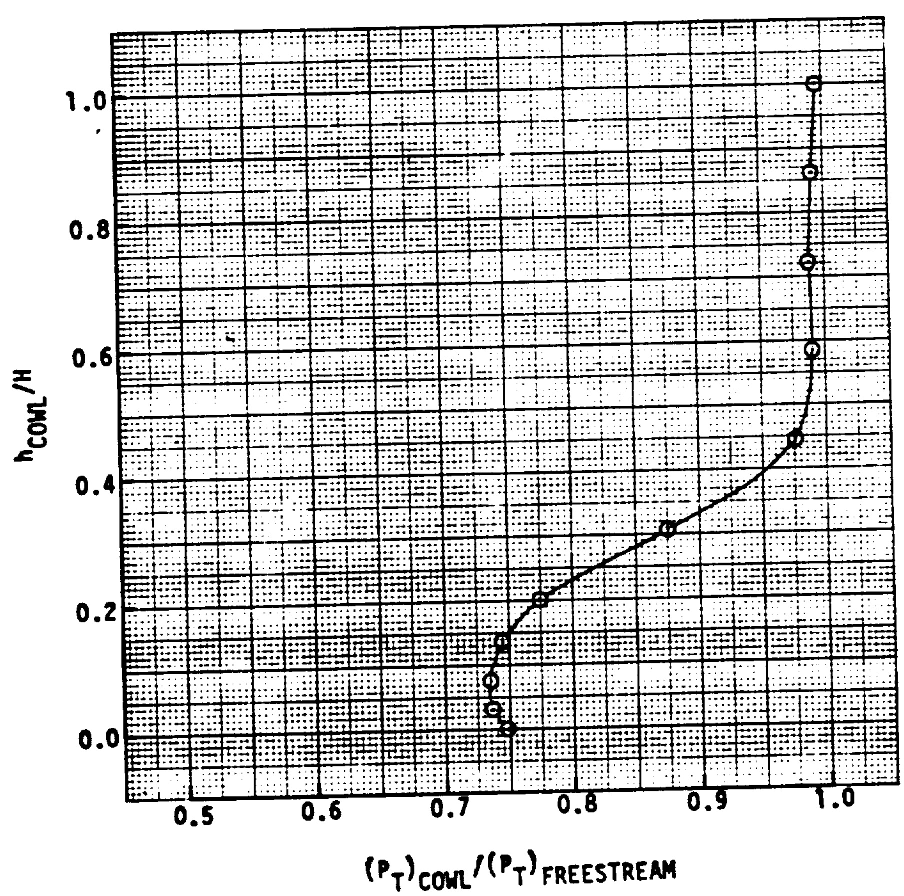


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 11 ; DESCRIPTION 40° DROOP LIP , ΔX=2

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

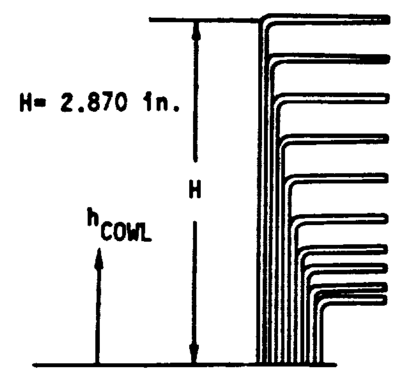


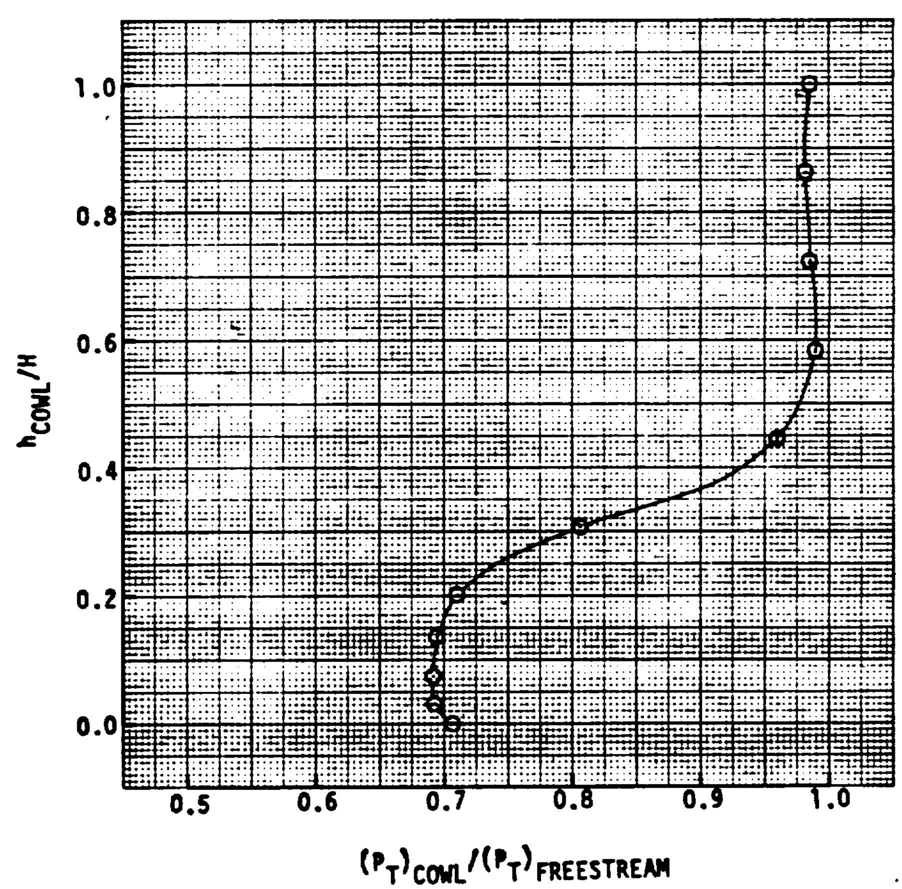


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 12; DESCRIPTION 40° DROOP LIP, ΔX = 2

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

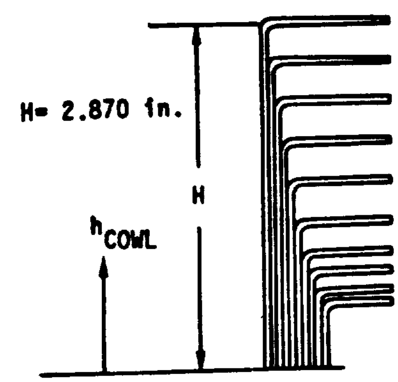


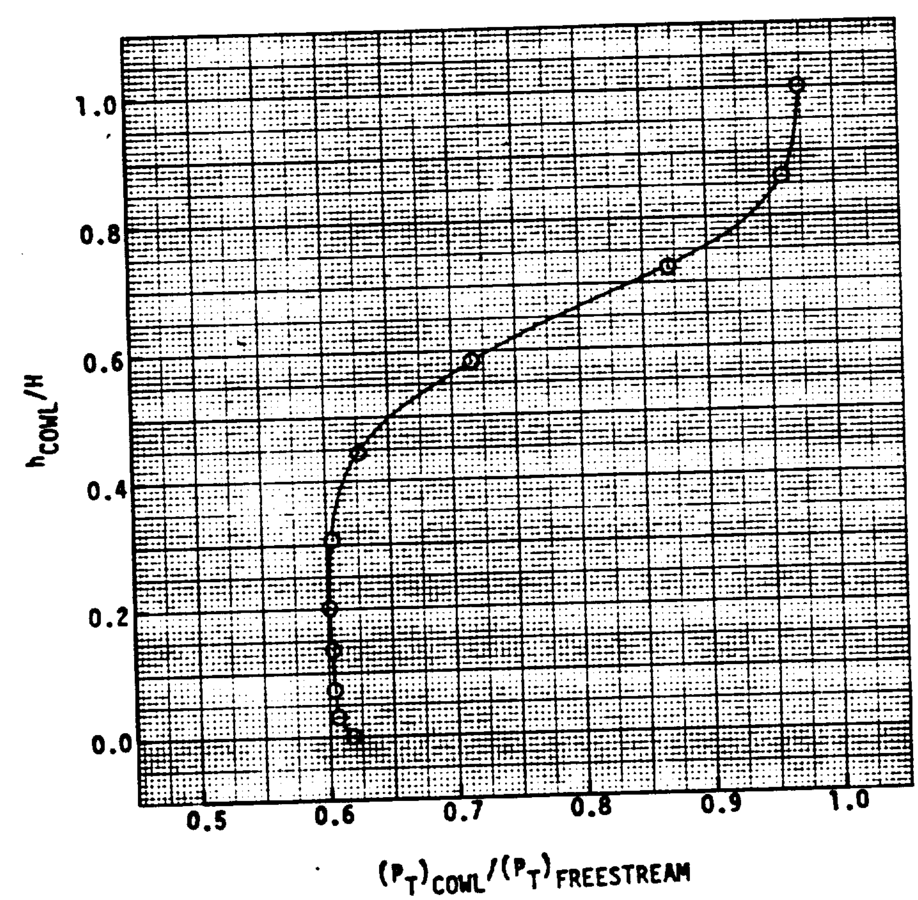


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

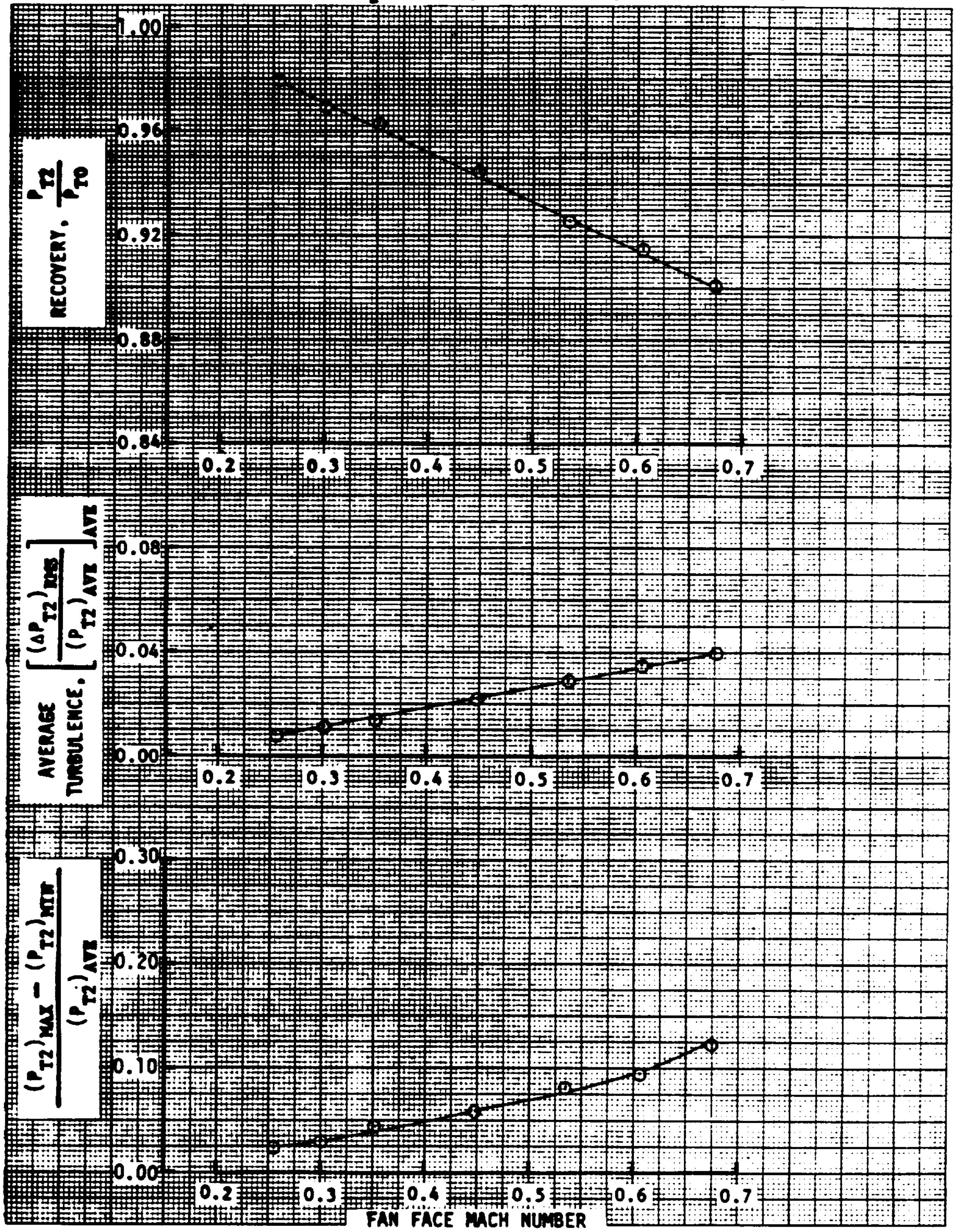
CONFIGURATION: NUMBER 11; DESCRIPTION 40° DROOP LIP ; ΔZ = 2

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

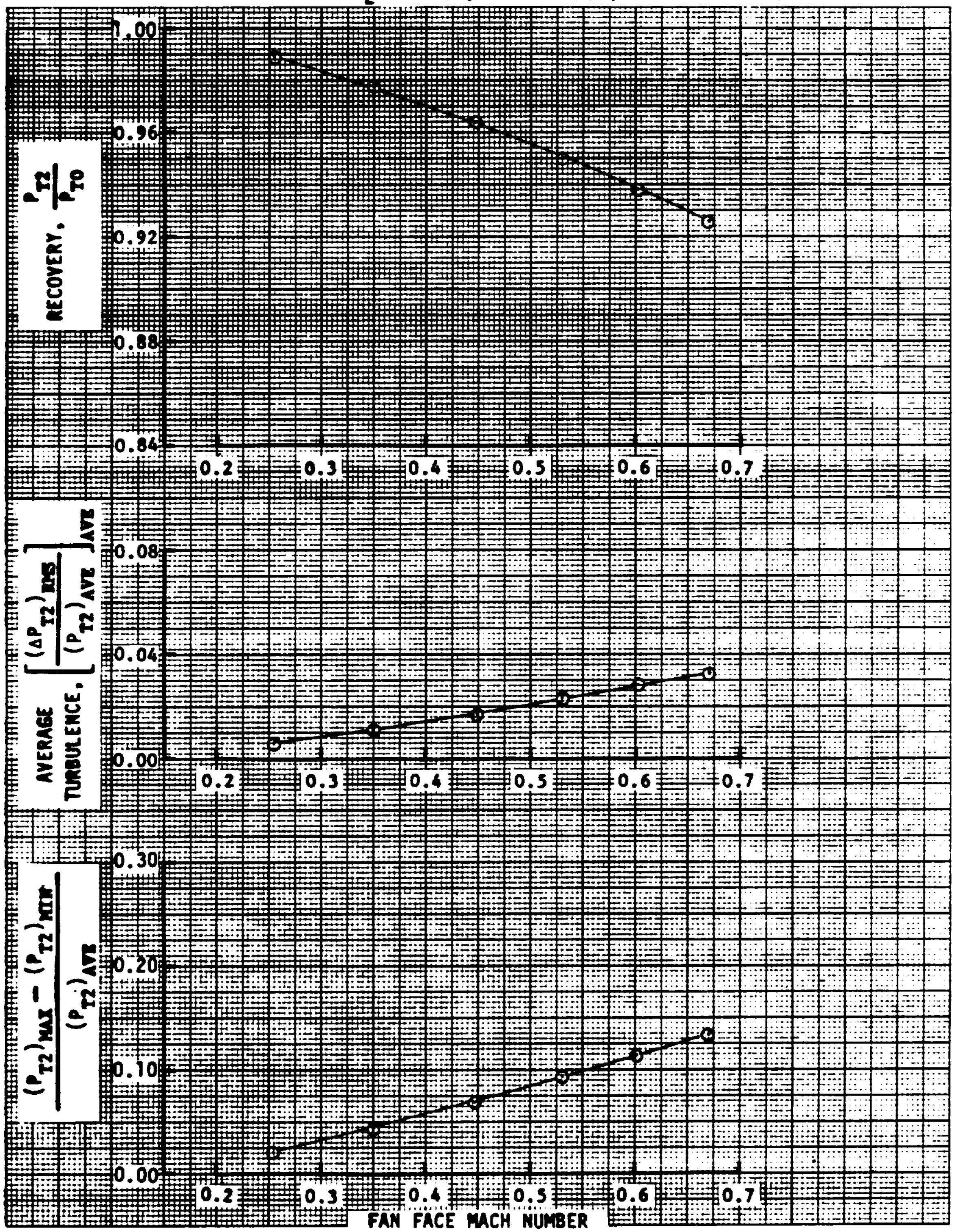




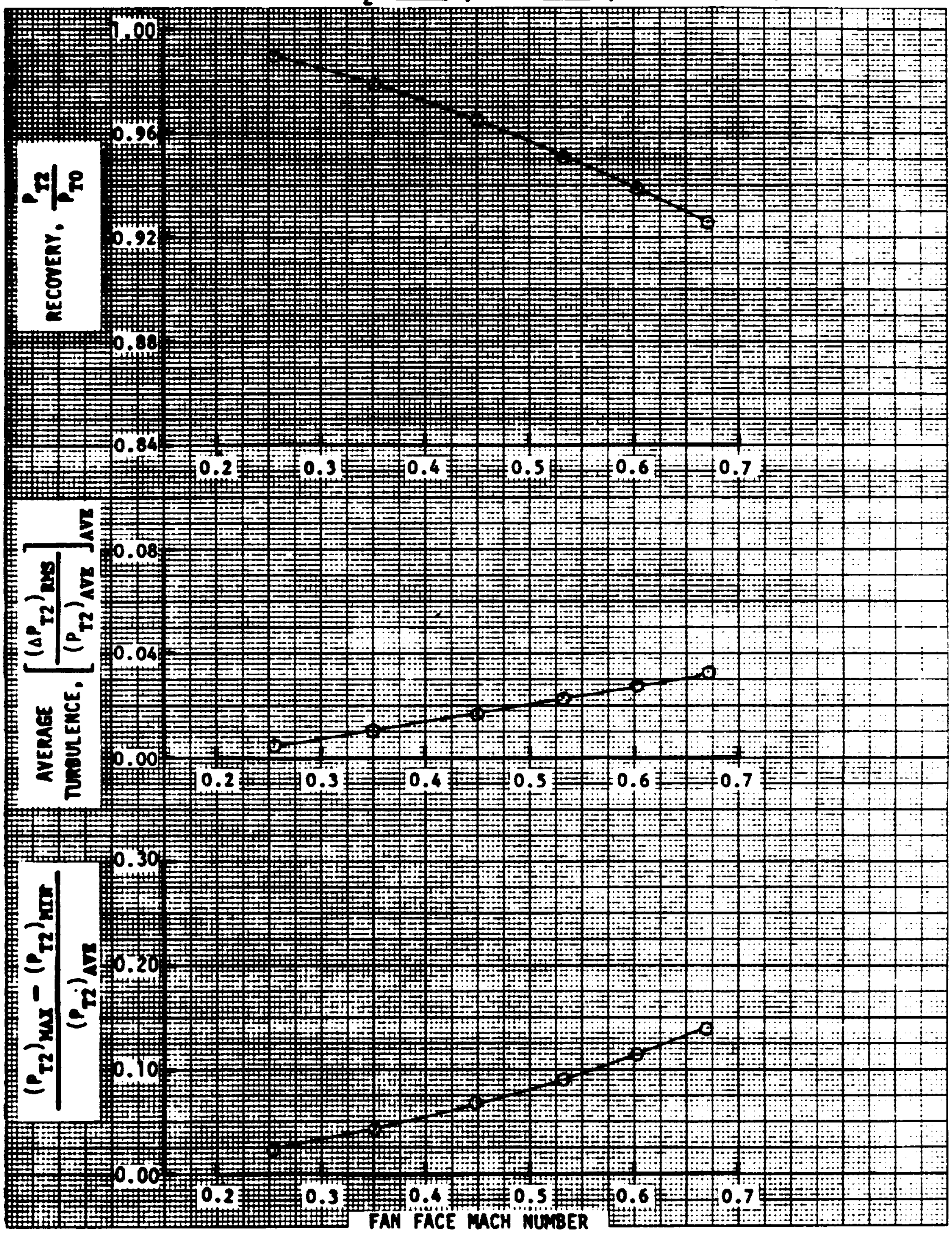
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1356-1362
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .927 ; TURB= .029 ; DIST= .077



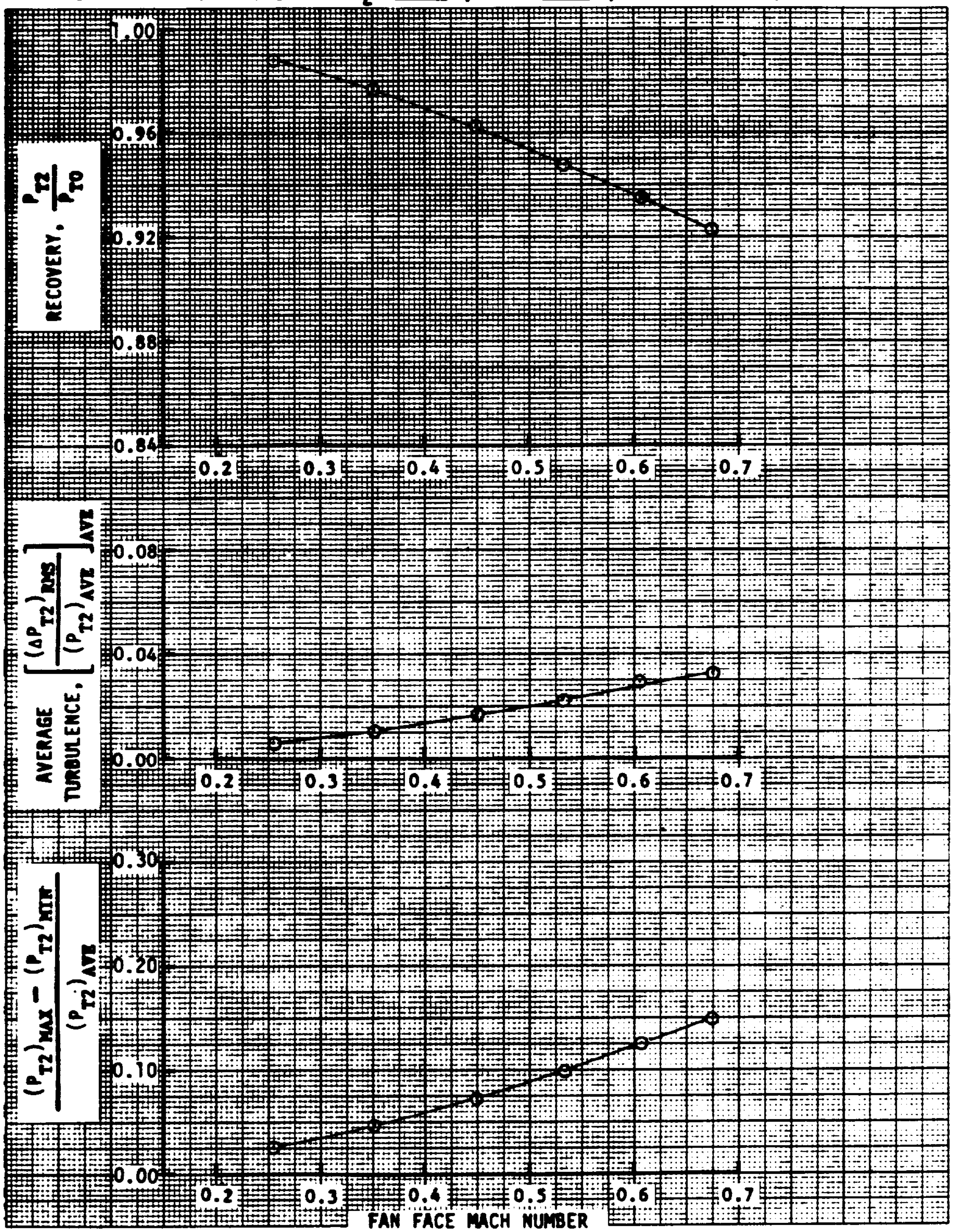
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER -
CONFIGURATION 12 ; READING NUMBERS 1363-1368
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PWMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .023 ; DIST= .093



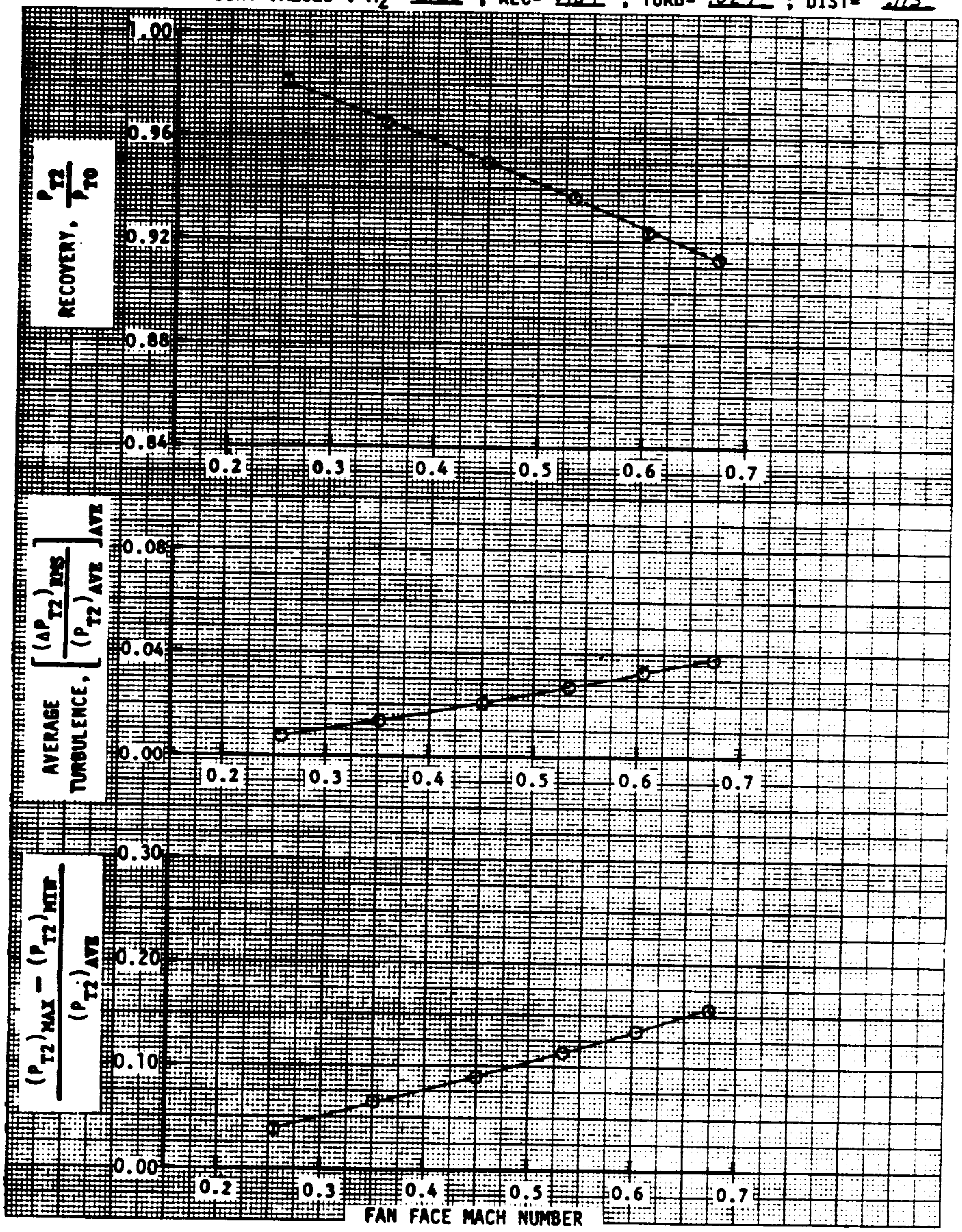
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1369-1374
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .952 ; TURB= .023 ; DIST= .091



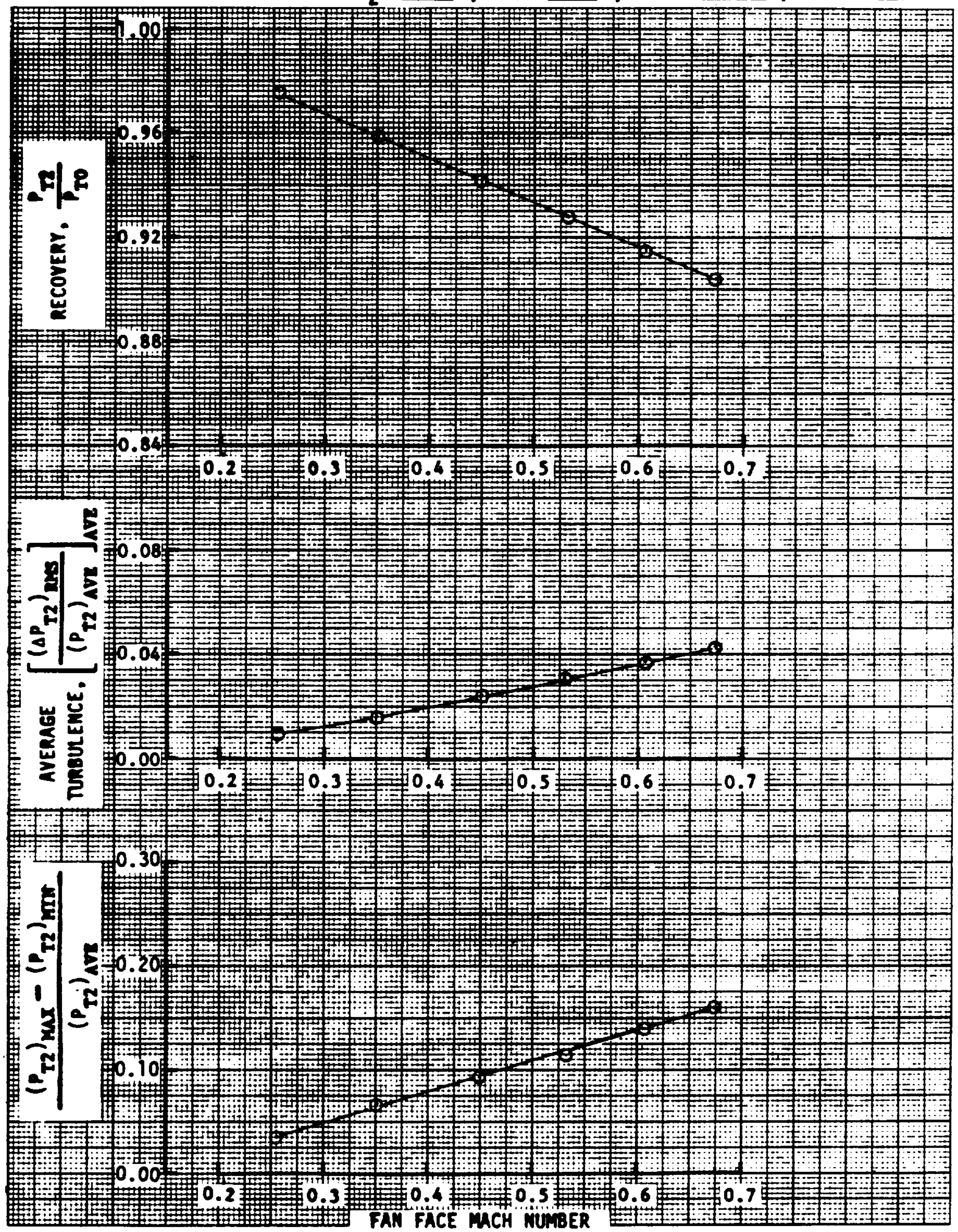
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1375-1380
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .948 ; TURB= .022 ; DIST= .099



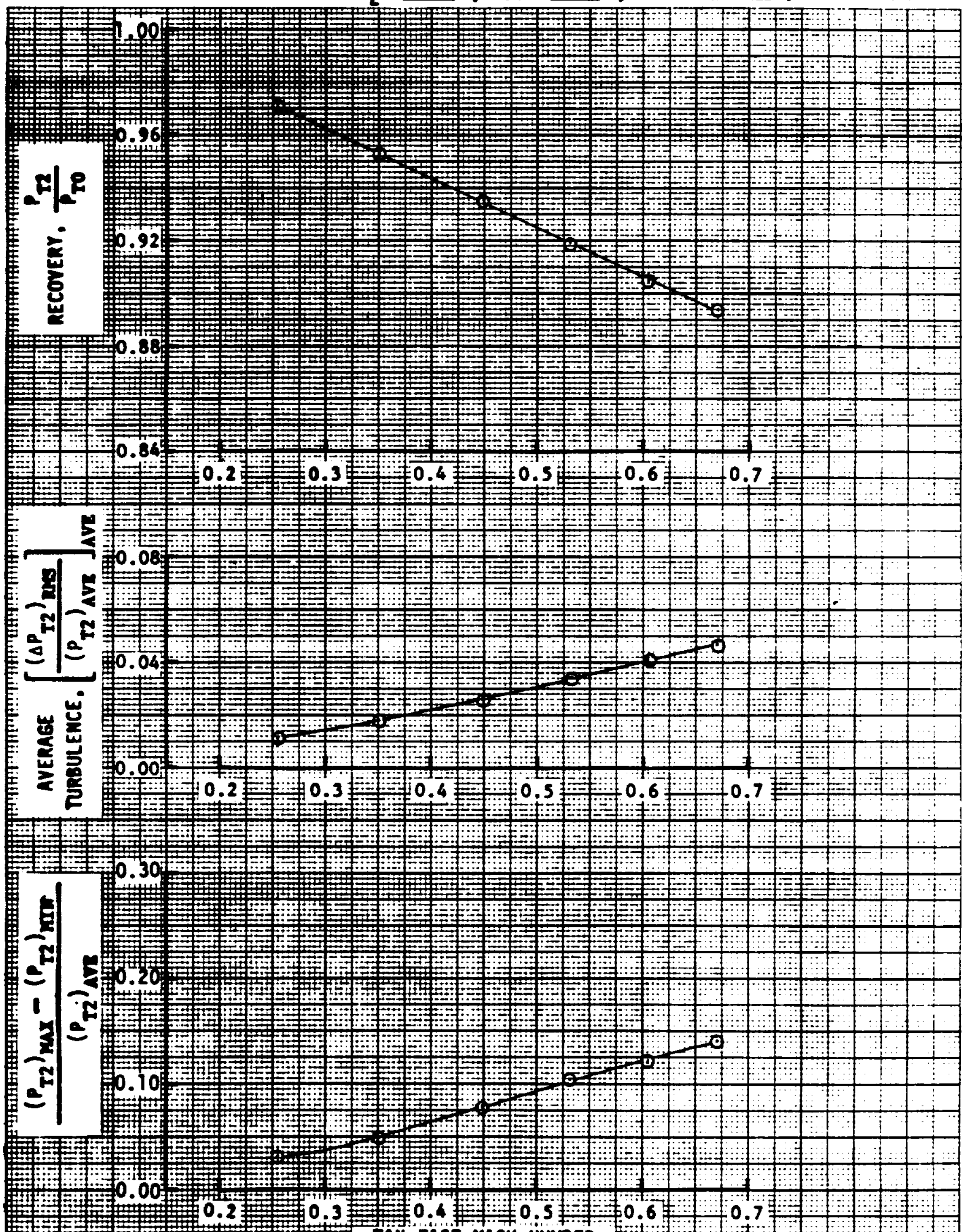
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1381-1386
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PRMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .937 ; TURB= .027 ; DIST= .113



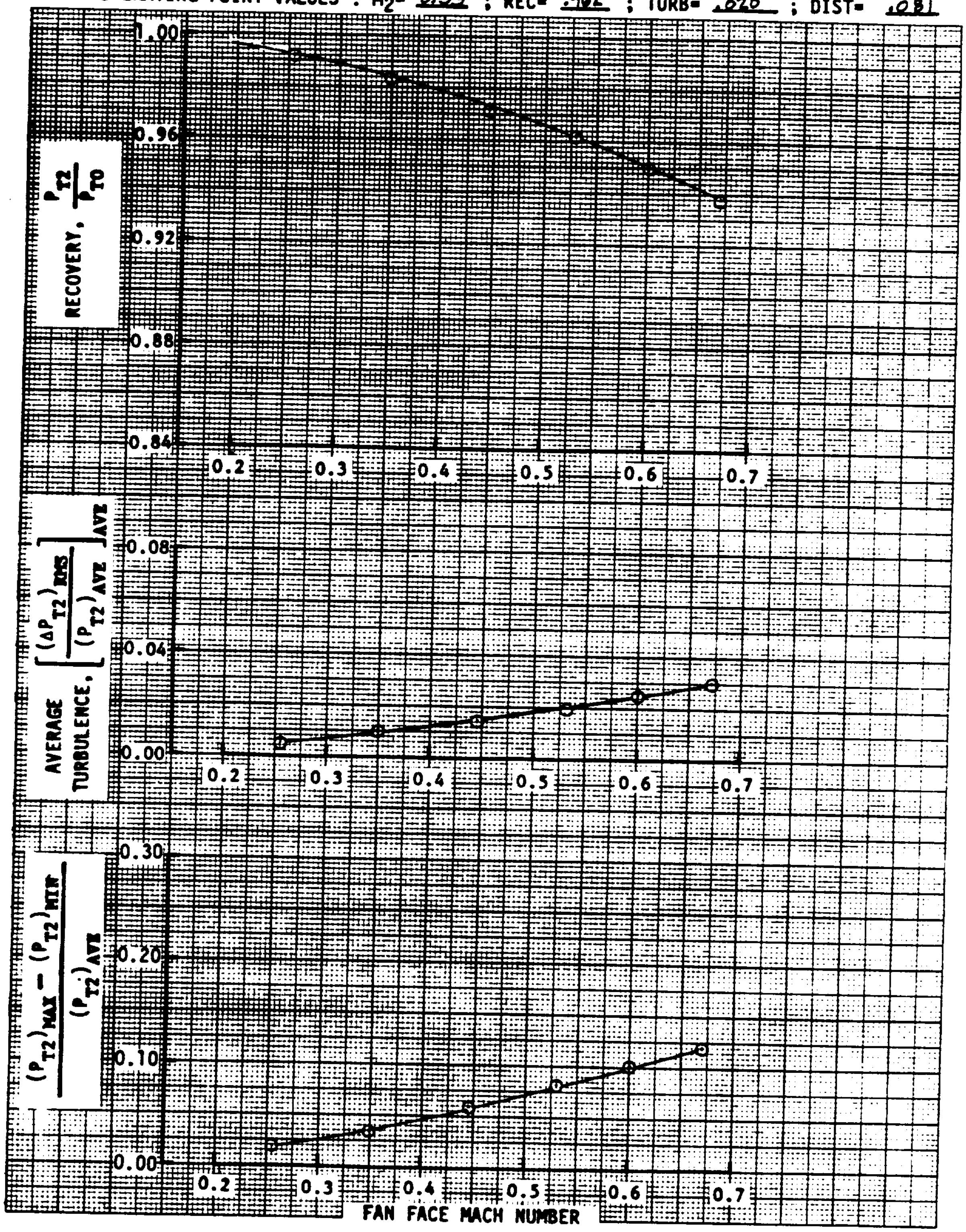
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1387-1392
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .928 ; TURB= .030 ; DIST= .118



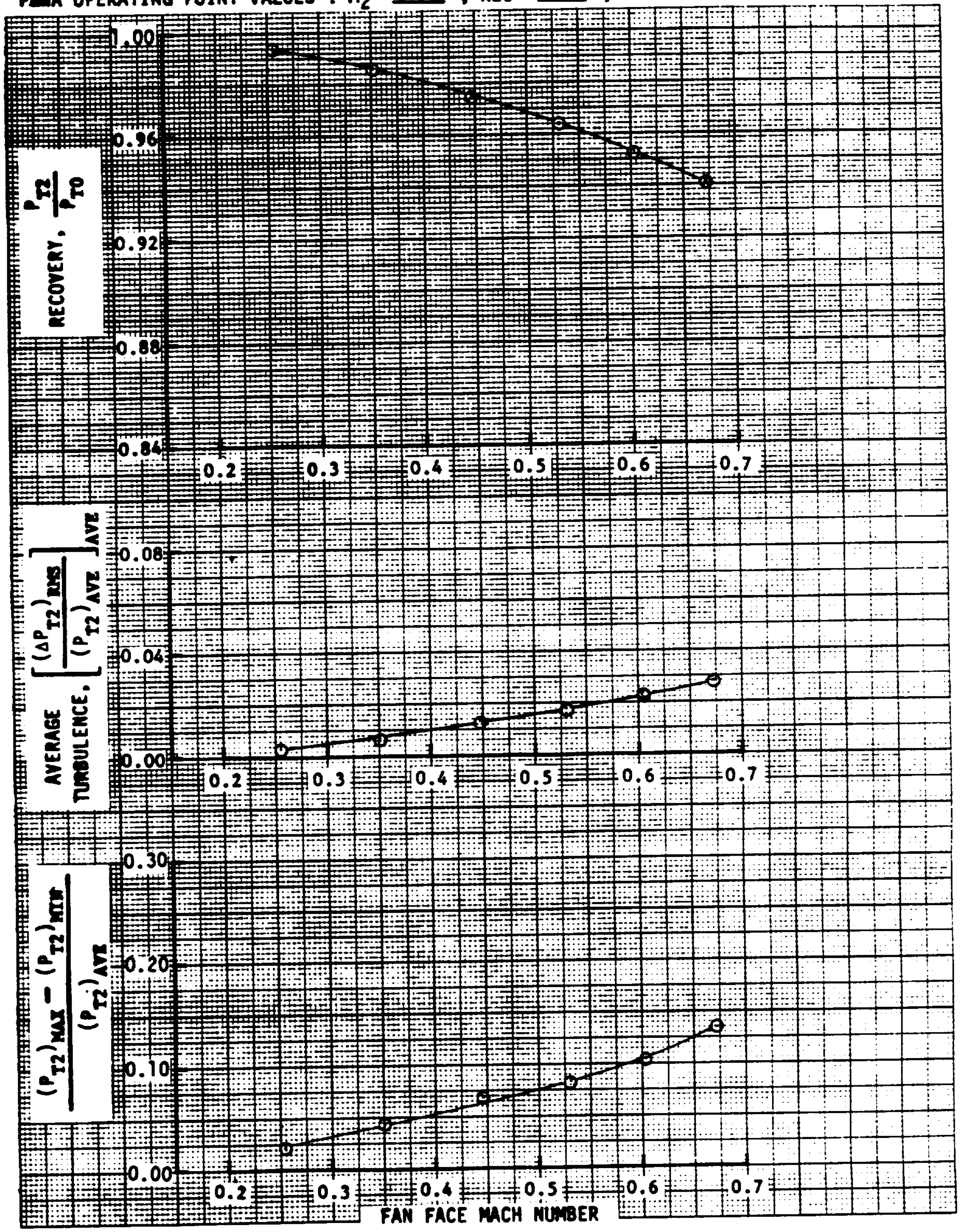
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1393-1398
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .919 ; TURB= .034 ; DIST= .103



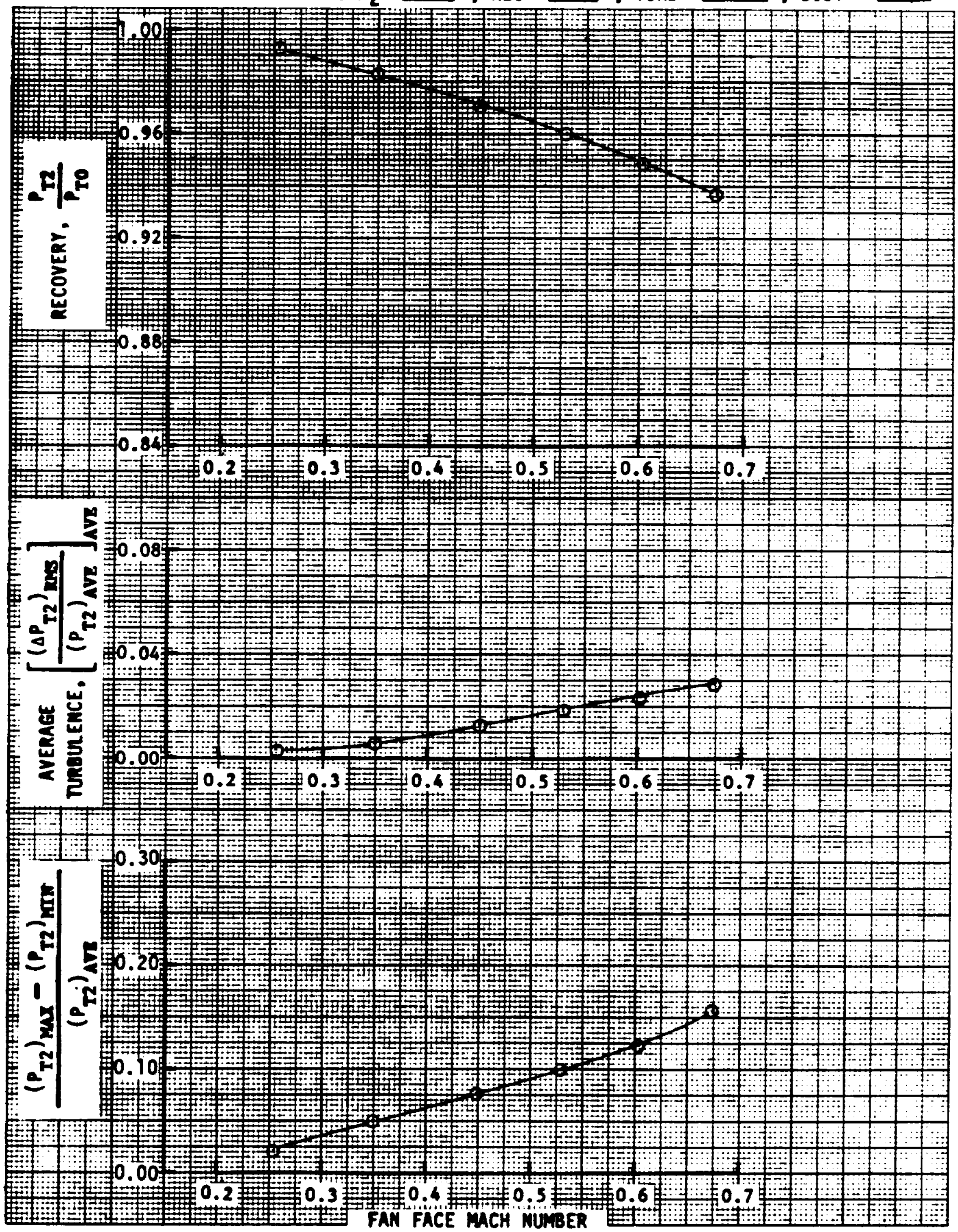
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1399-1404
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .020 ; DIST= .081



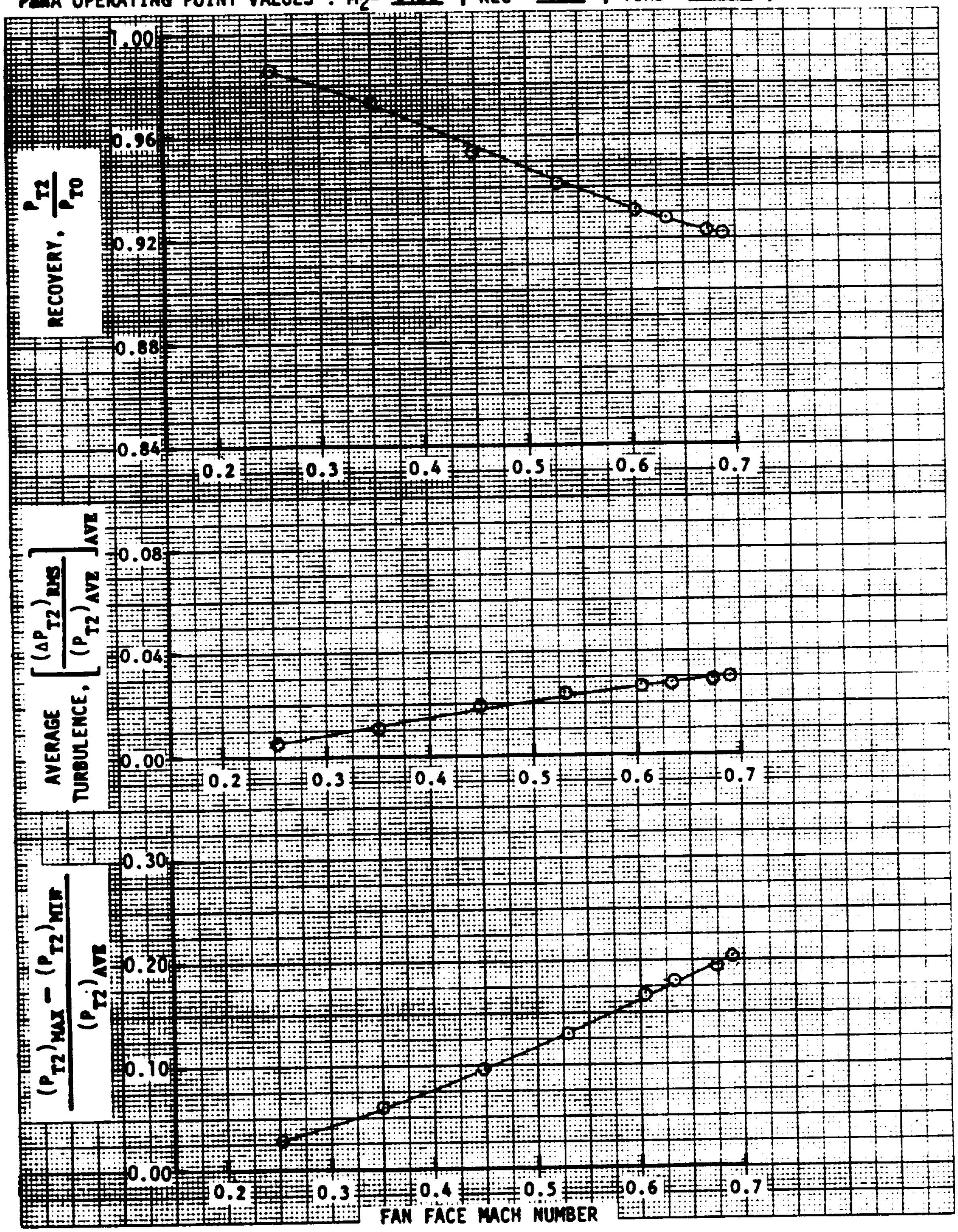
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1406-1411
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .018 ; DIST= .084



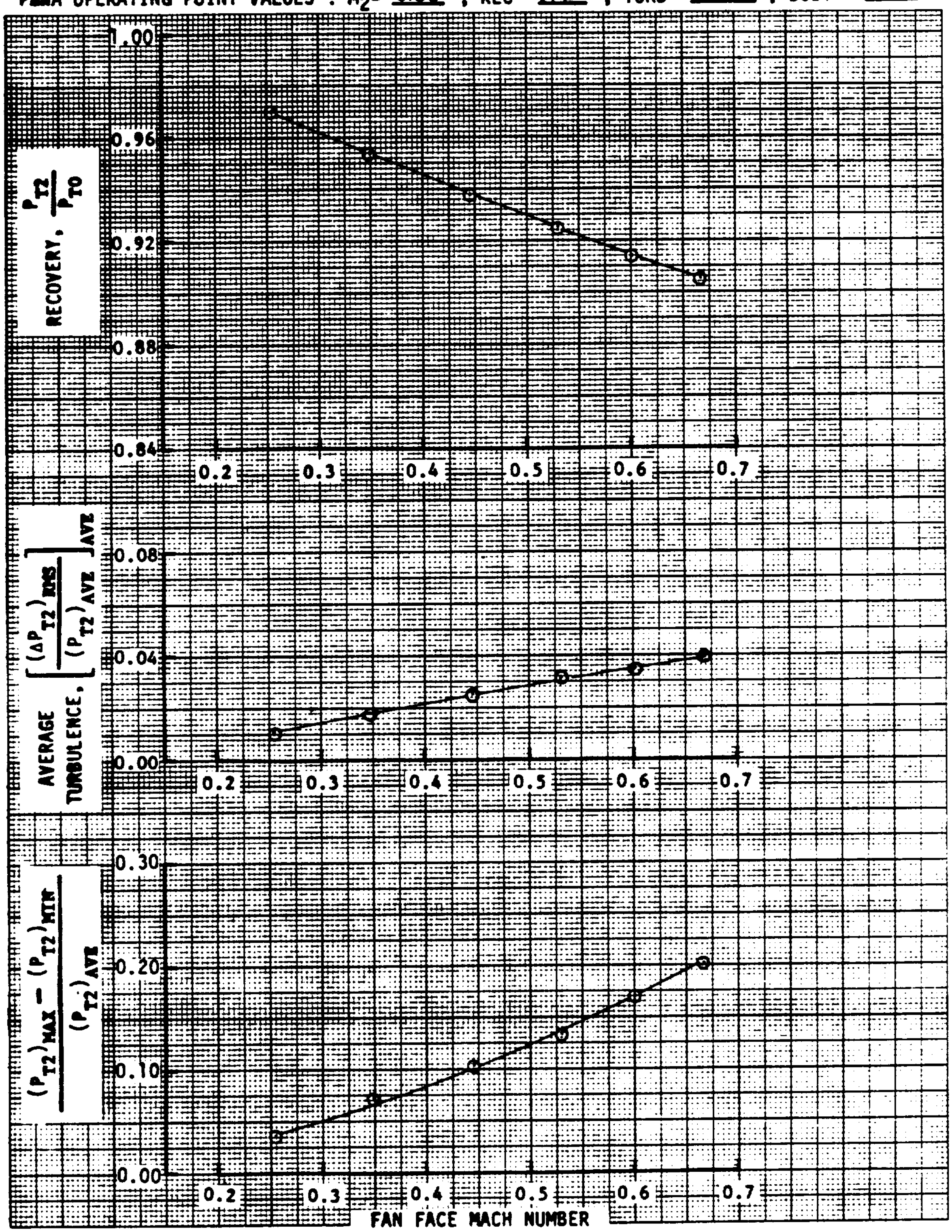
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1412-1417
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .960 ; TURB= .019 ; DIST= .099



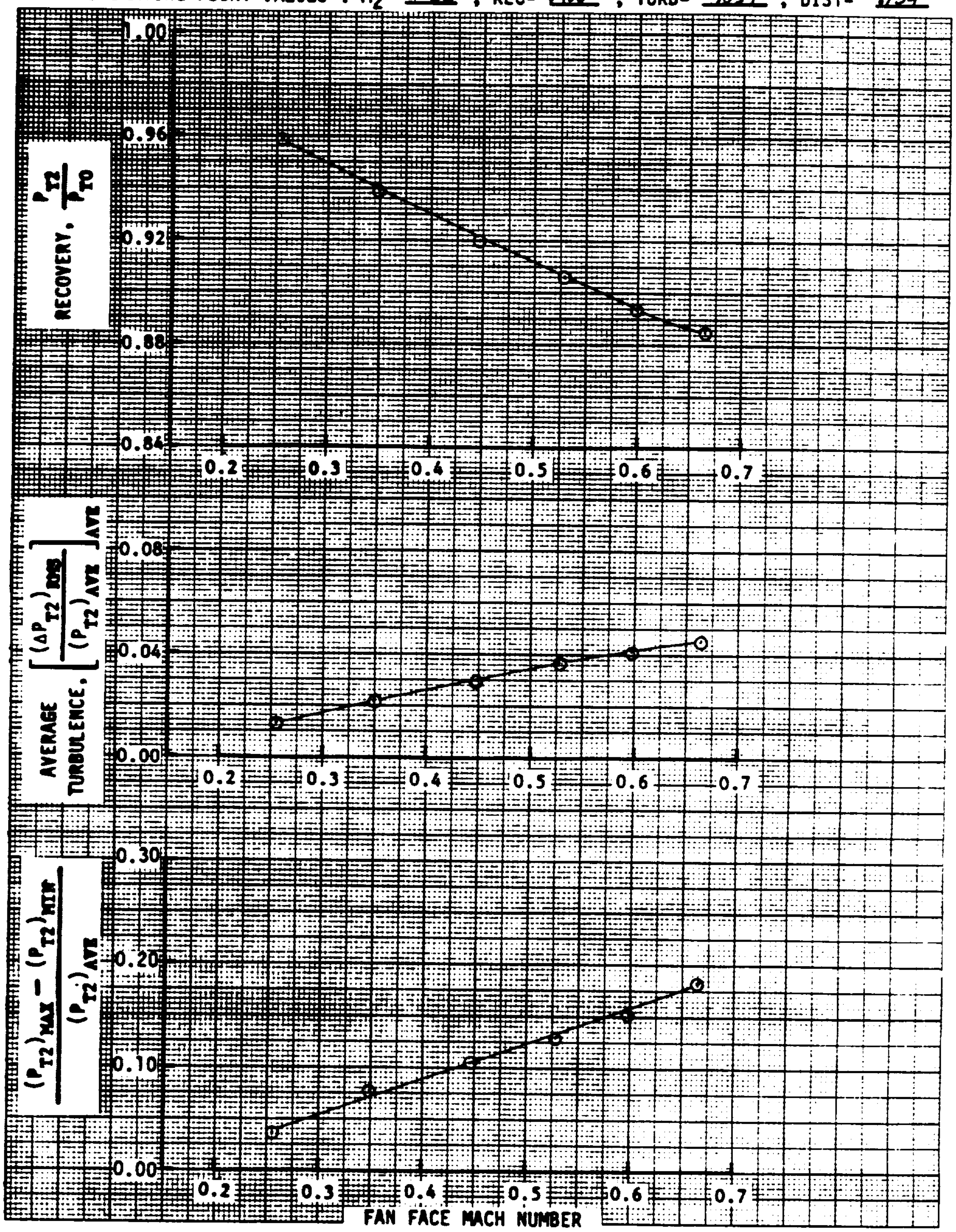
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1418-1425
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .942 ; TURB= .022 ; DIST= .132



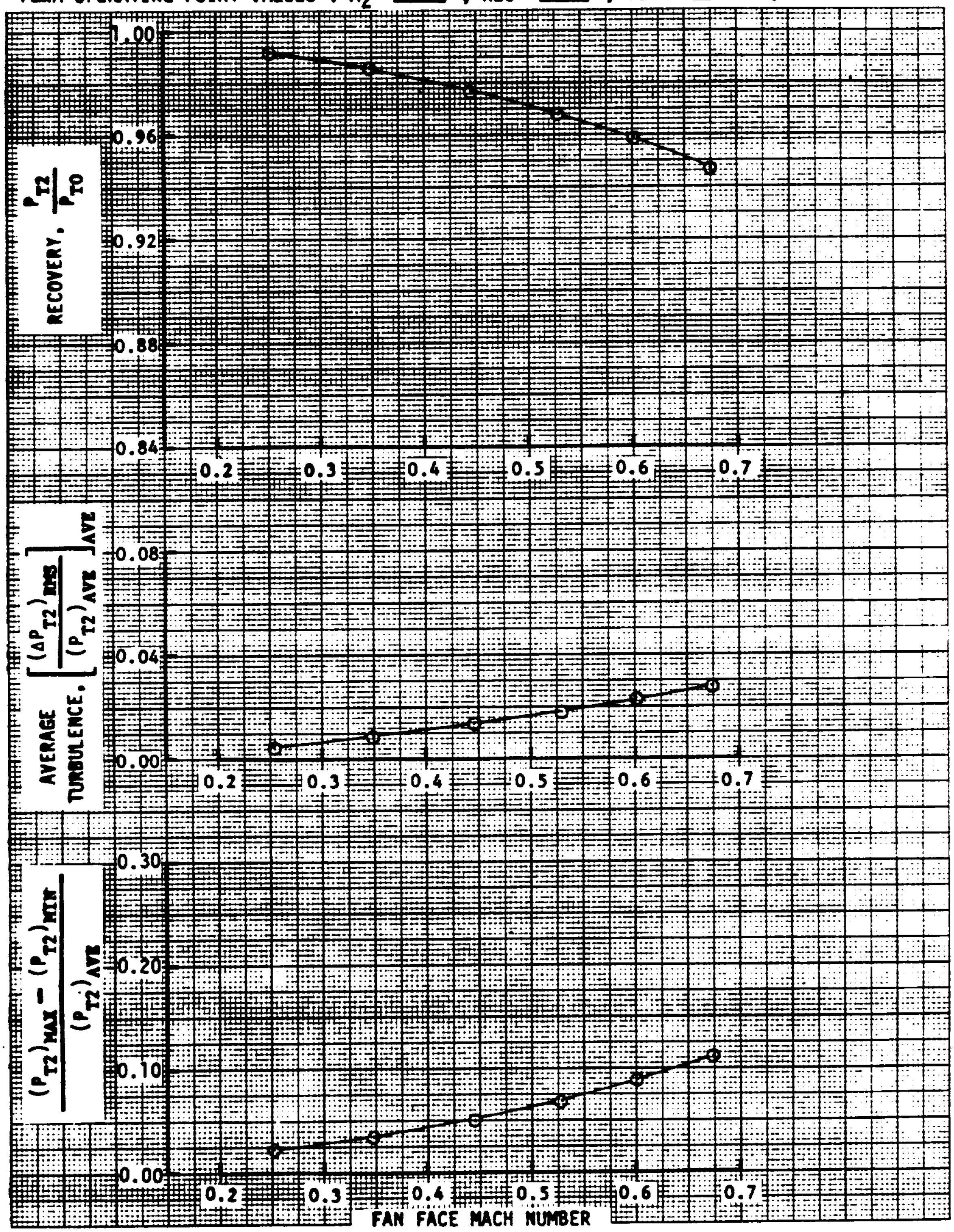
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1426-1431
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .031 ; DIST= .138



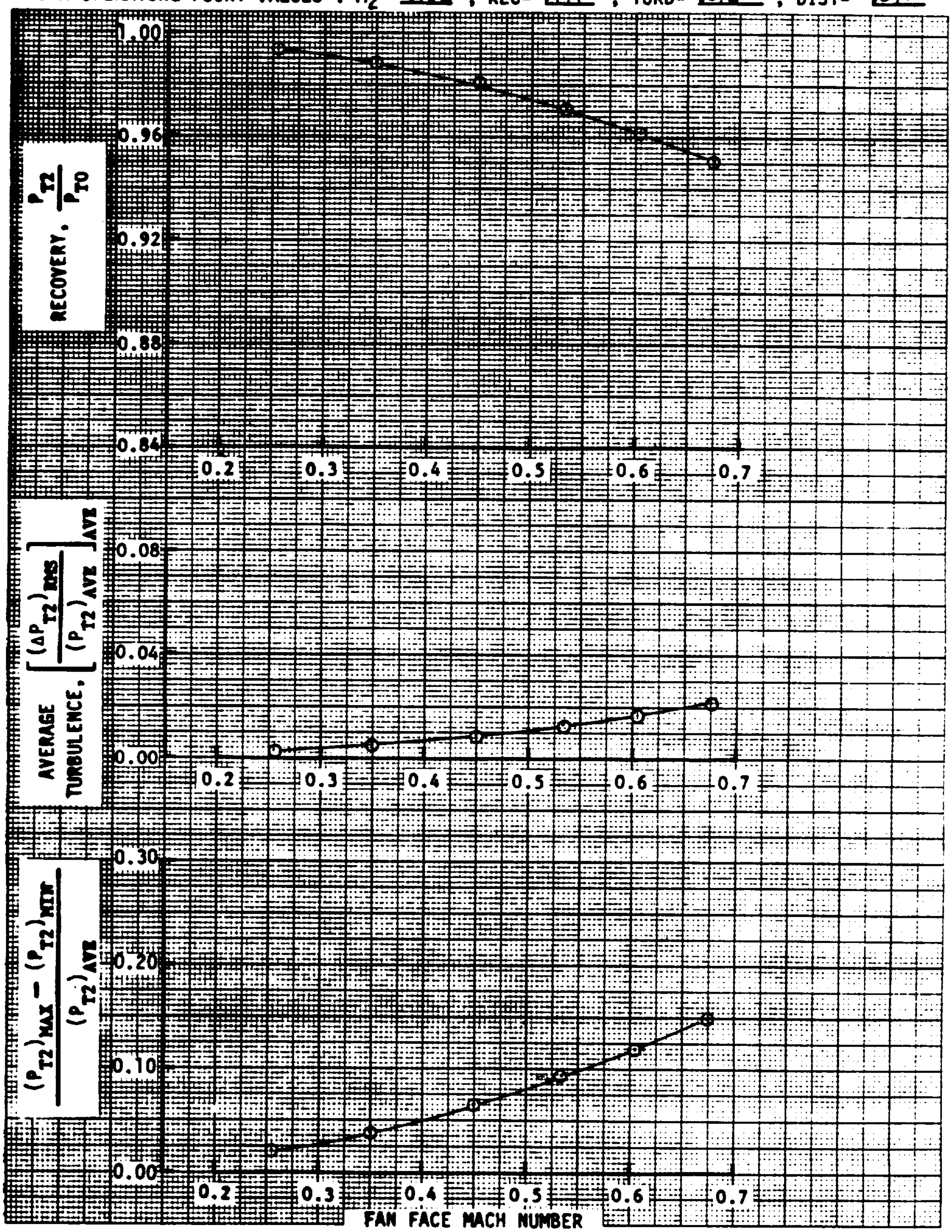
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1432-1437
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .906 ; TURB= .037 ; DIST= .134



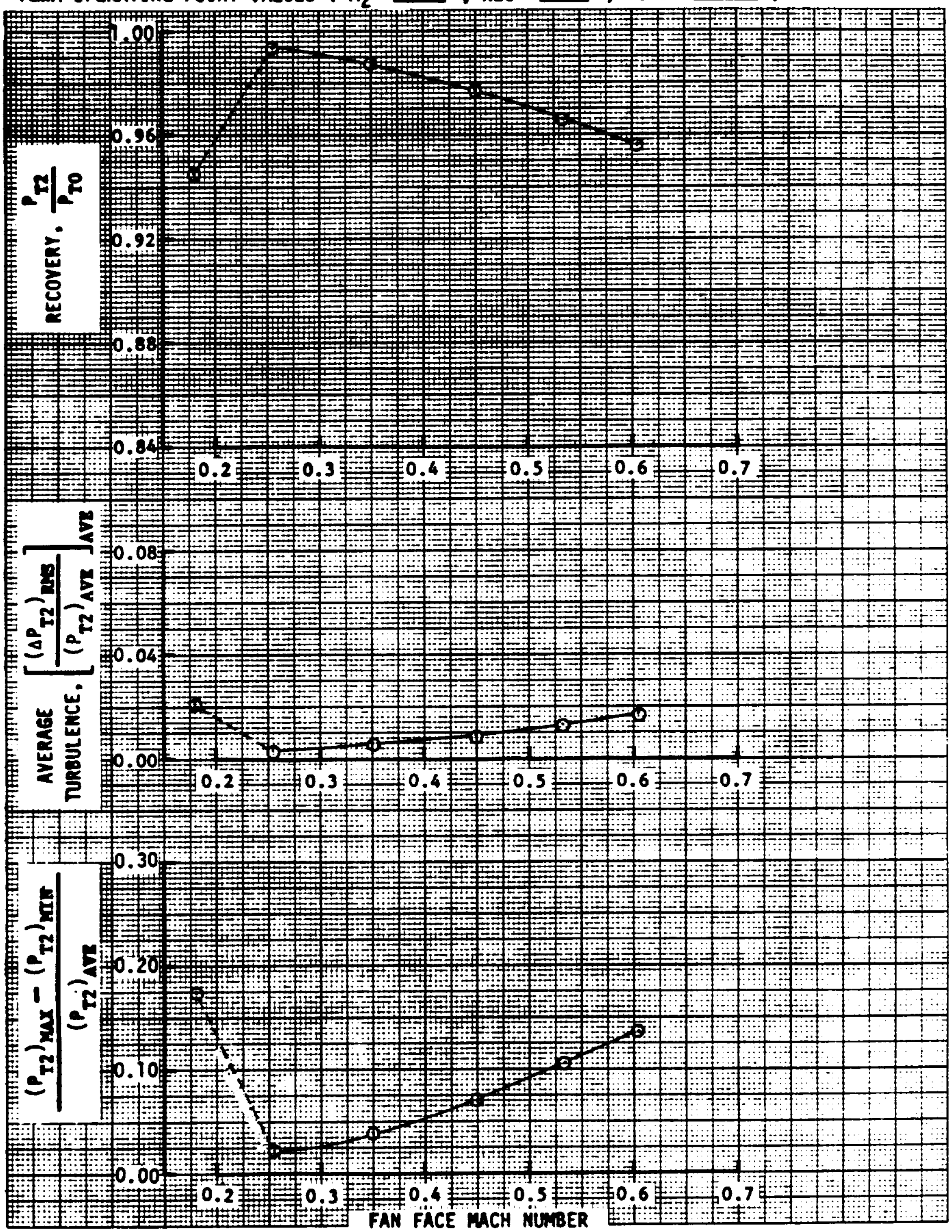
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1438-1443
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .968 ; TURB= .018 ; DIST= .070



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1444-1449
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .012 ; DIST= .091



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1450-1455
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .013 ; DIST= .107

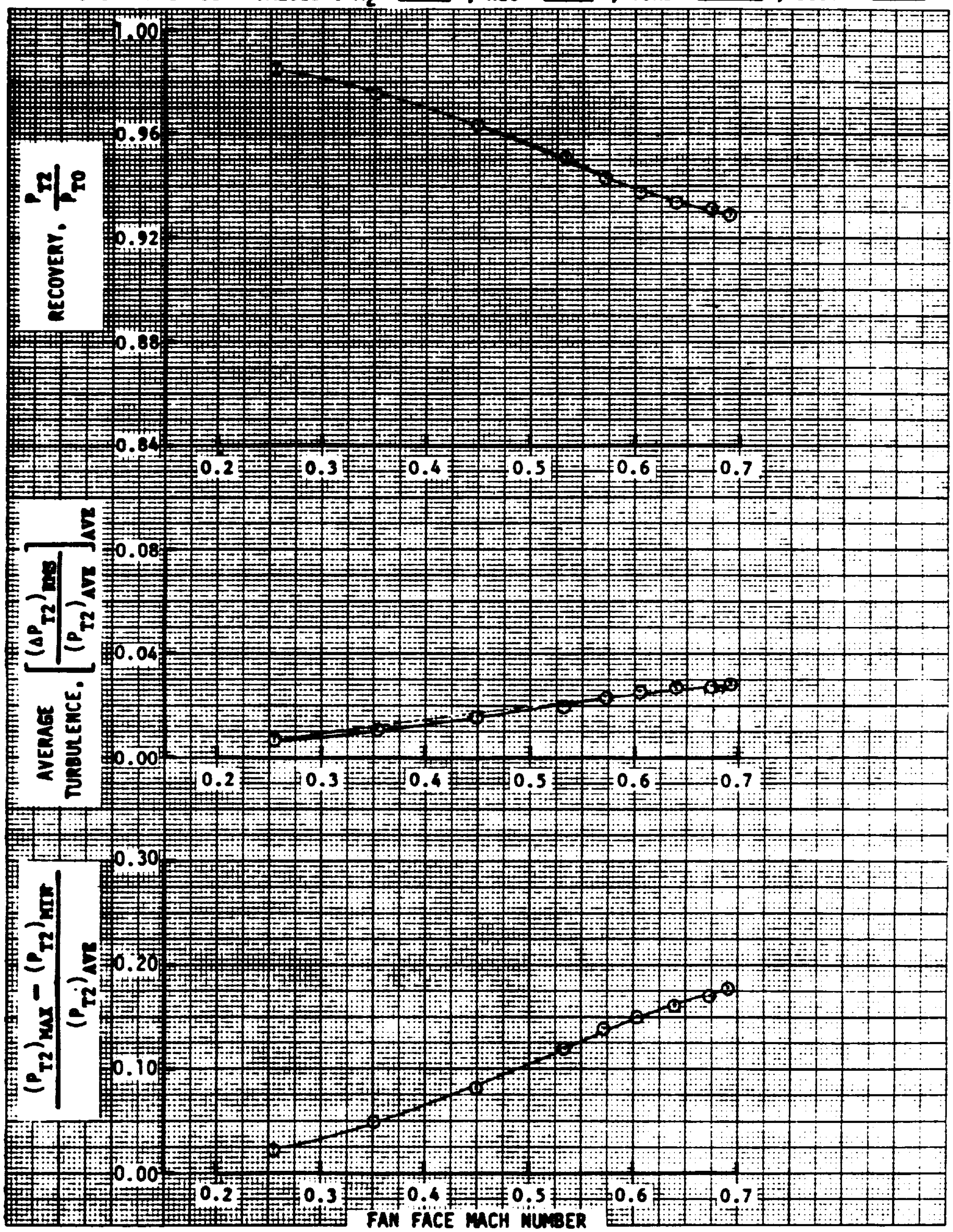


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 12 ; READING NUMBERS 1456-1465

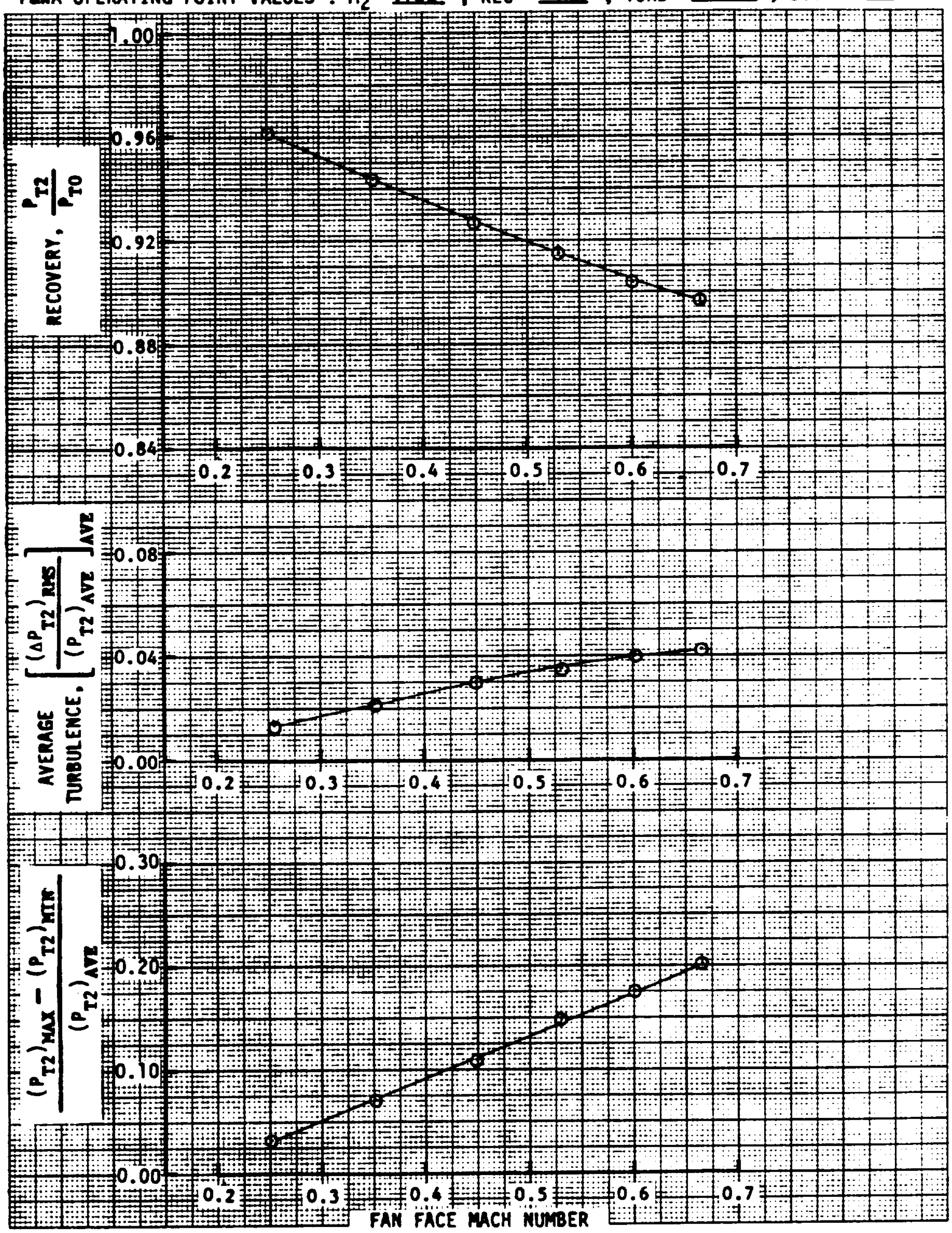
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .021 ; DIST= .117

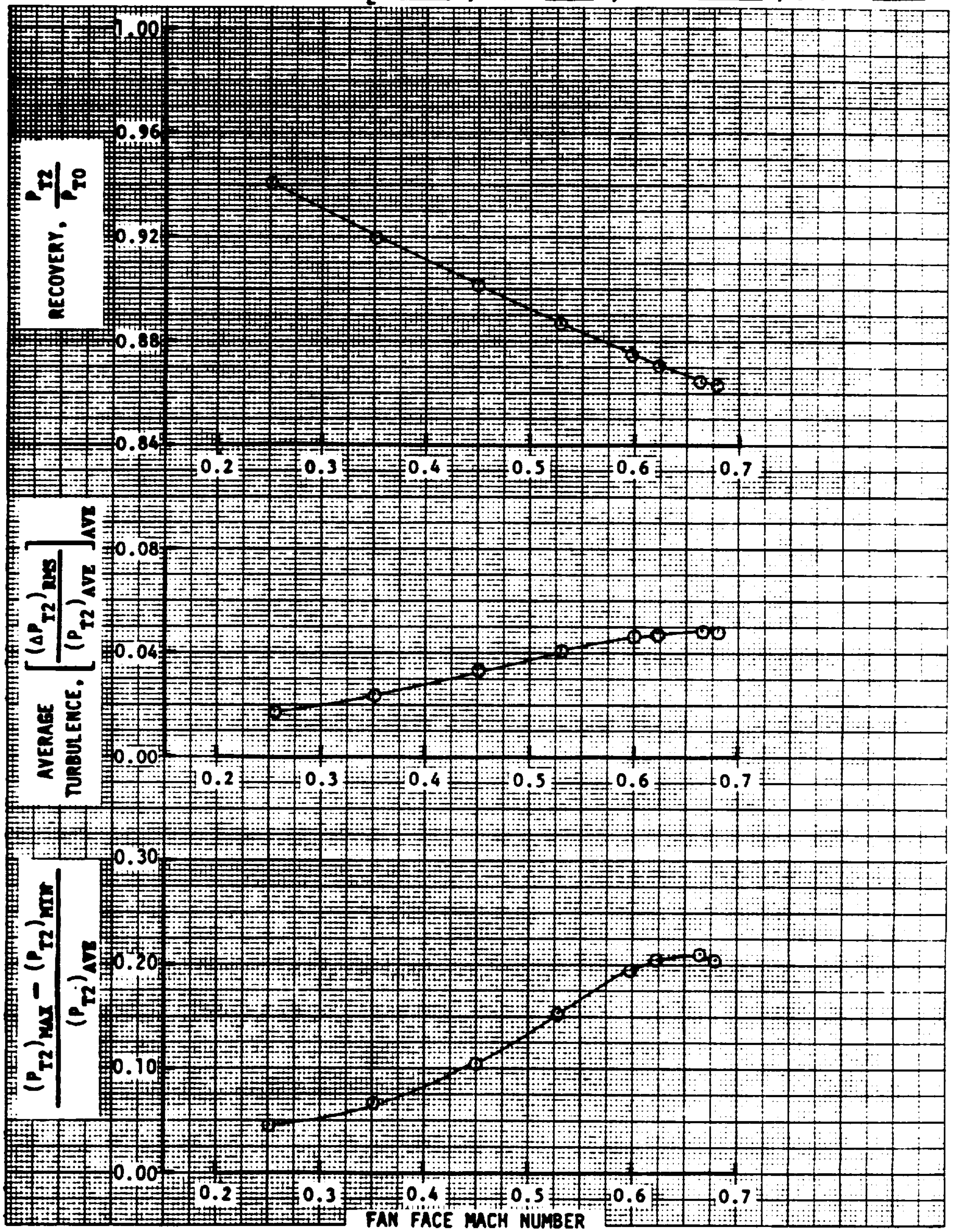


C-7

RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1466-1471
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .915 ; TURB= .036 ; DIST= .145



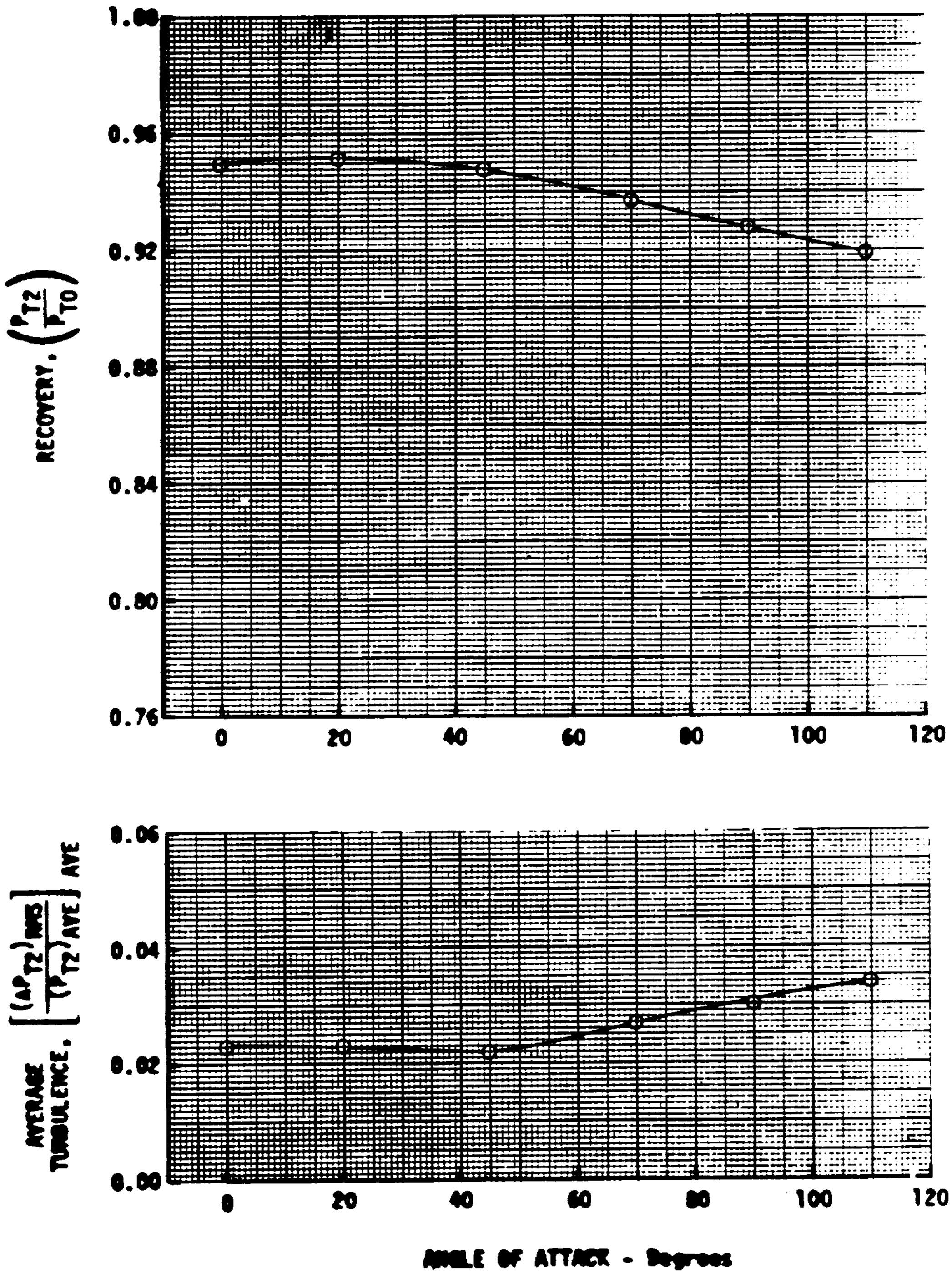
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 12 ; READING NUMBERS 1472-1479
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .867 ; TURB= .041 ; DIST= .154



ORIGINAL PAGE IS
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 12; DESCRIPTION 40° Droop Lip ; ΔX = 4



ORIGINAL PAGE IS
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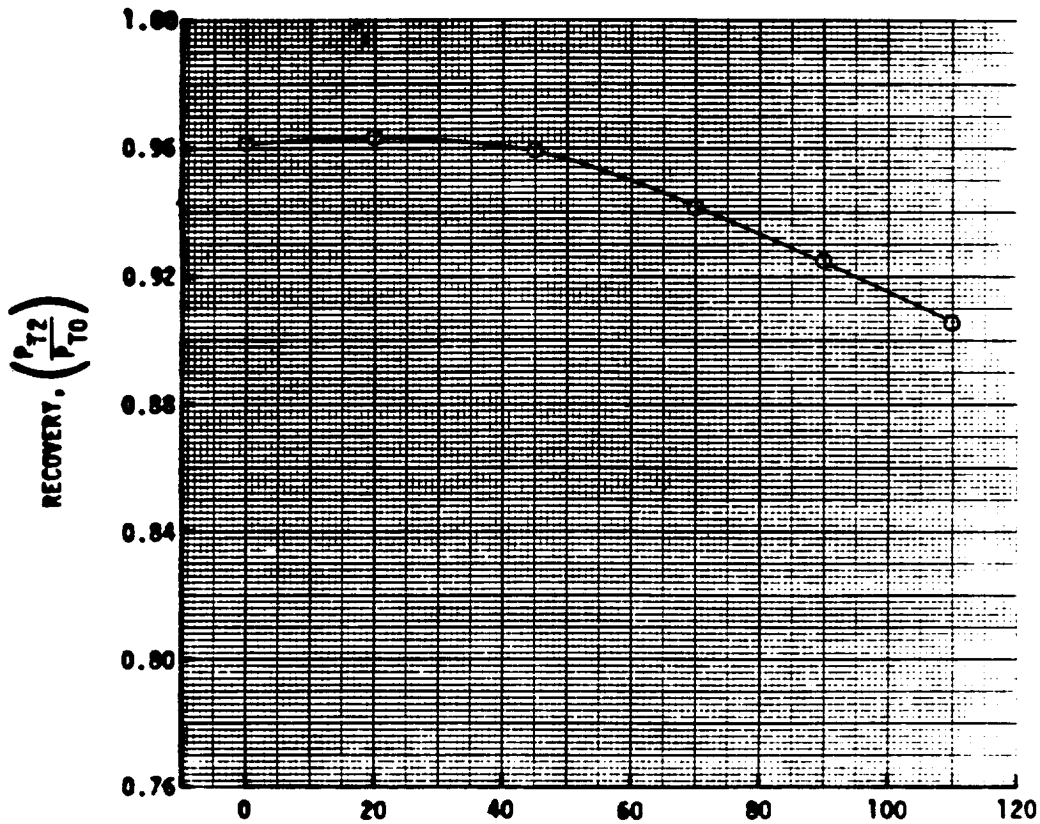
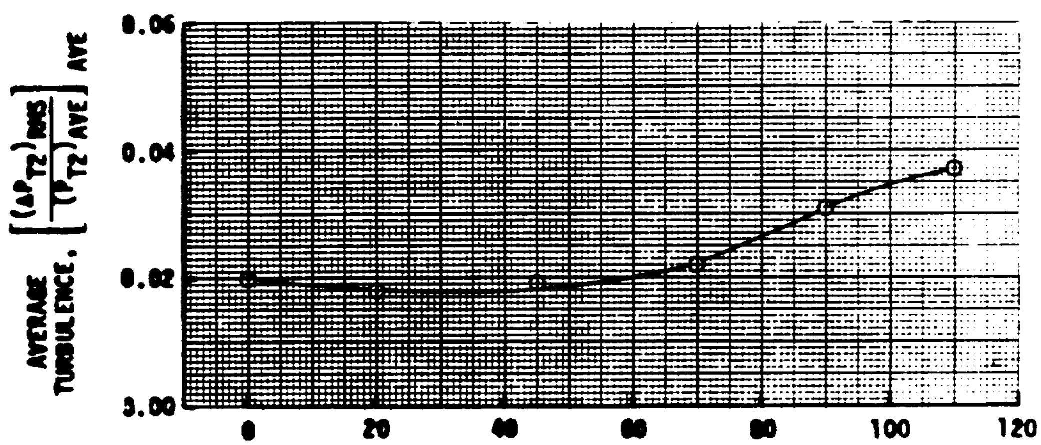
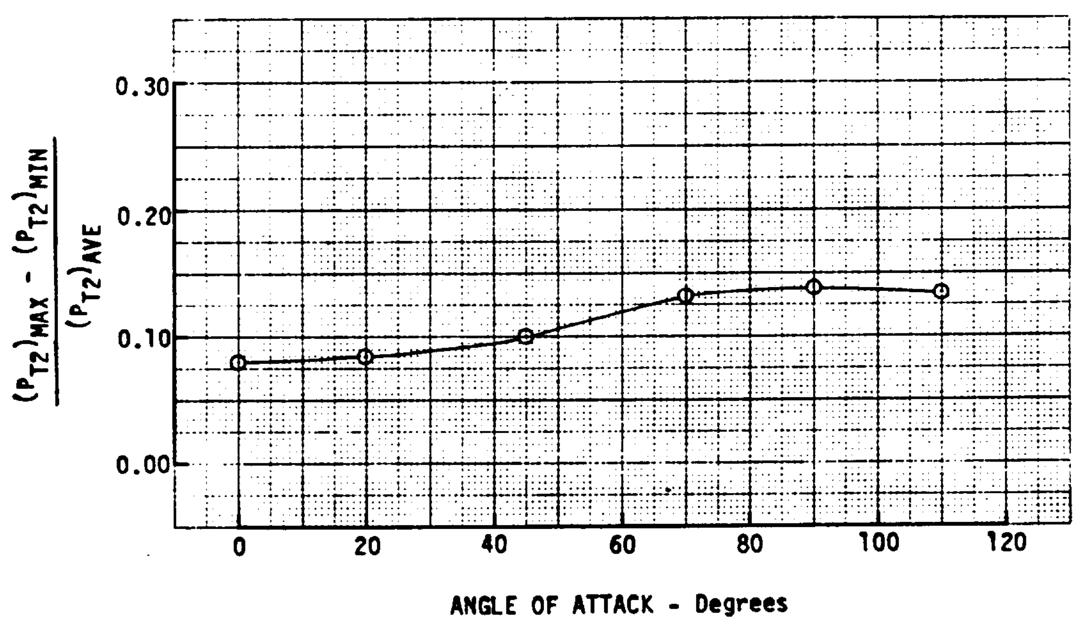
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 12; DESCRIPTION 40° Droop Lip; ΔX = 4





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 12 ; DESCRIPTION 40° DROOP LIP ; ΔX=4



ORIGINAL PAGE IS
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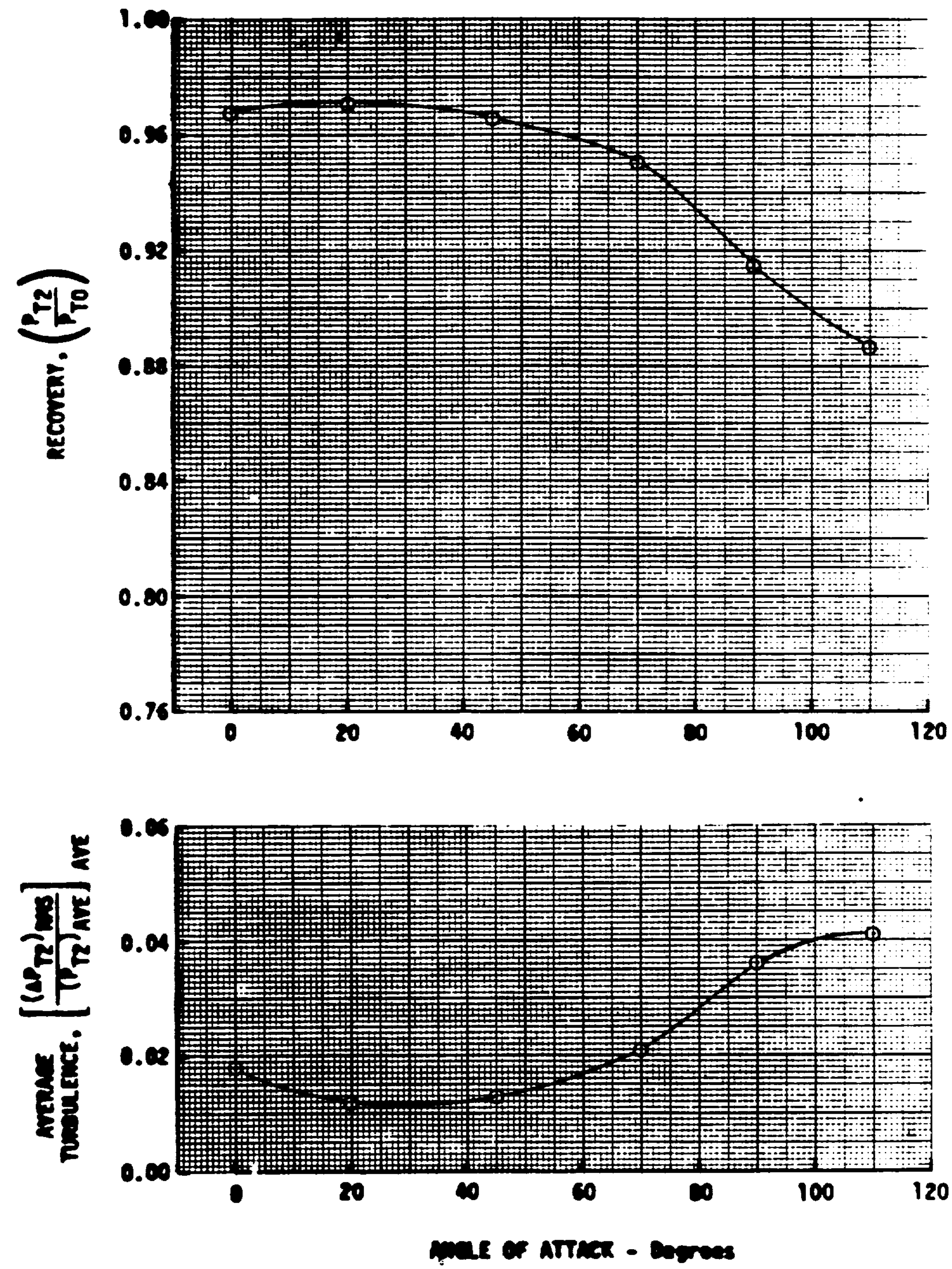
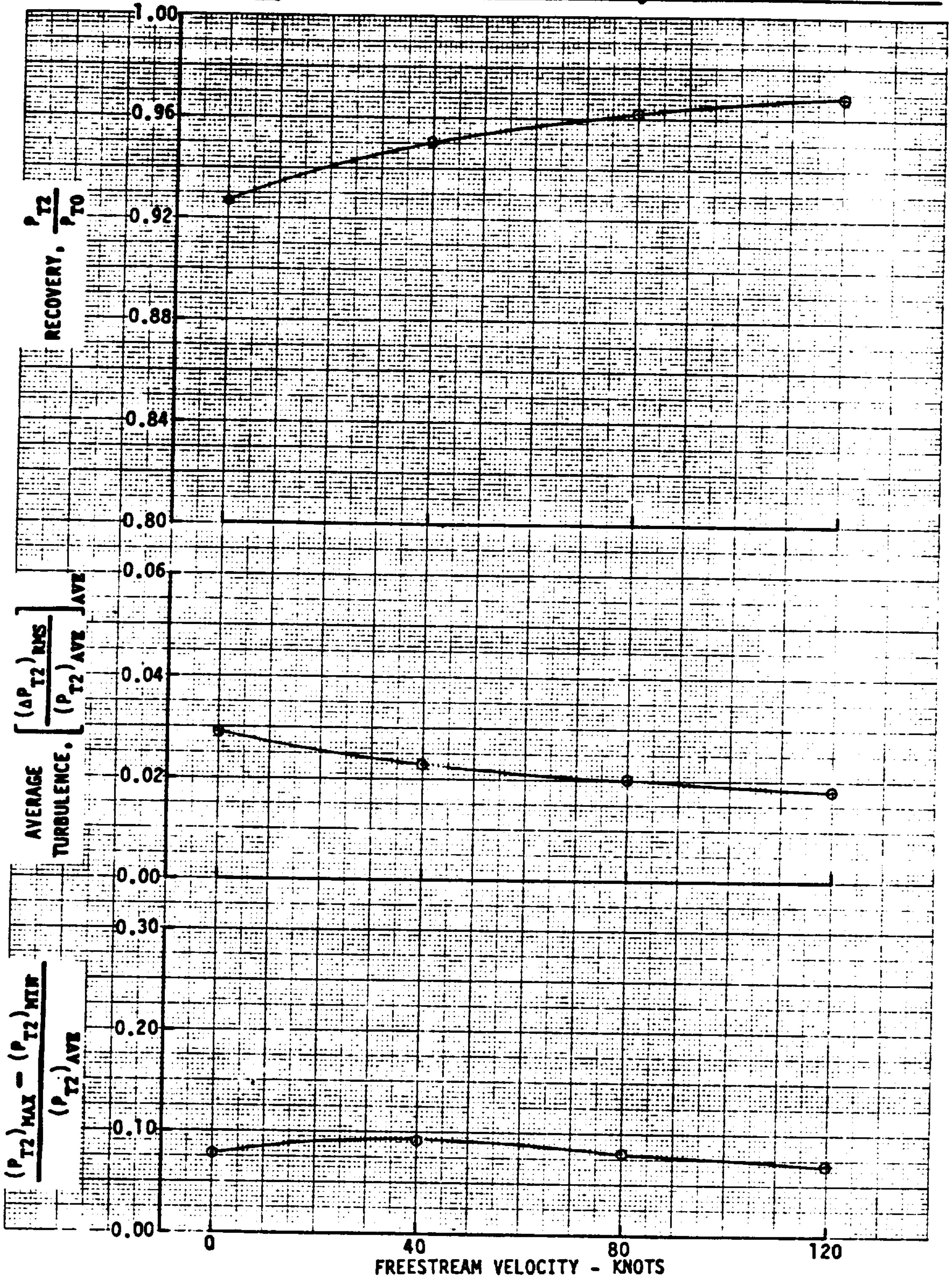
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

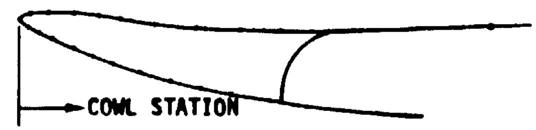
CONFIGURATION: NUMBER 12 ; DESCRIPTION 40° Droop Lip; ΔX = 4

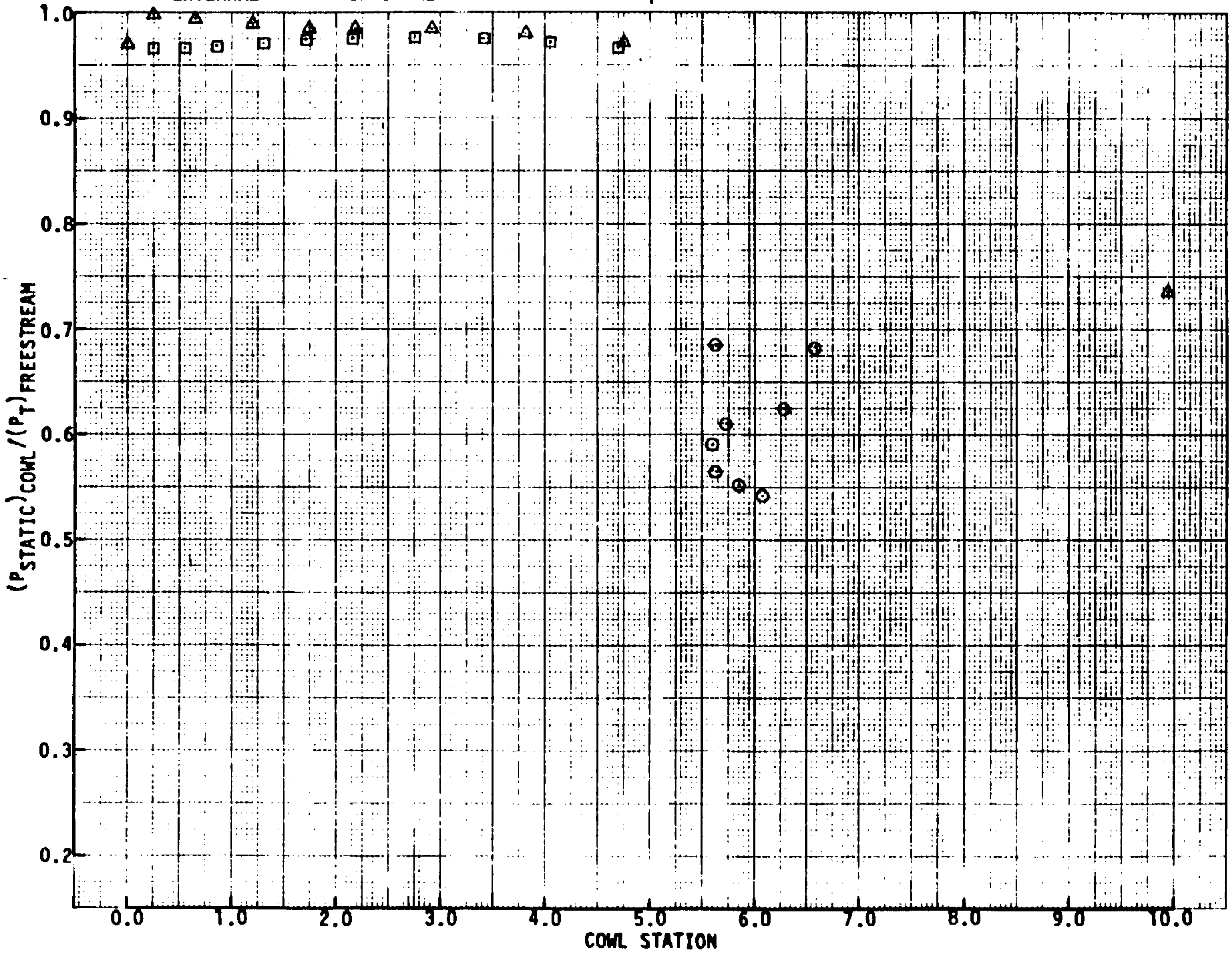


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 12 ; DESCRIPTION 40° DROOP LIP ; ΔX=4

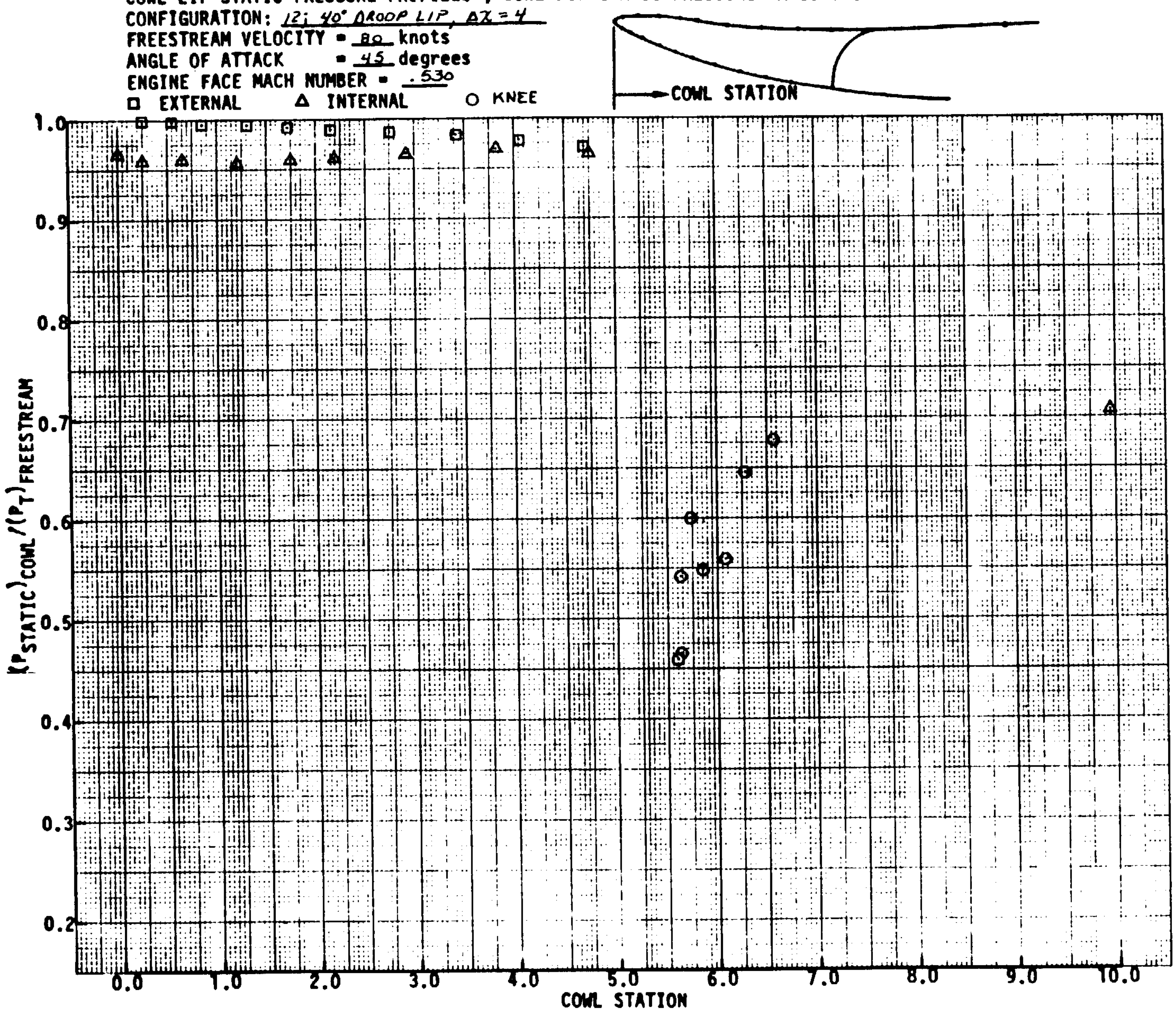


COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION
CONFIGURATION: 12; 40° DROOP LIP, ΔZ = 4
FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
ENGINE FACE MACH NUMBER = .530
□ EXTERNAL △ INTERNAL ○ KNEE





COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

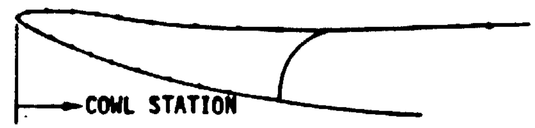
CONFIGURATION: 12; 40° DROOP LIP, ΔX = 4

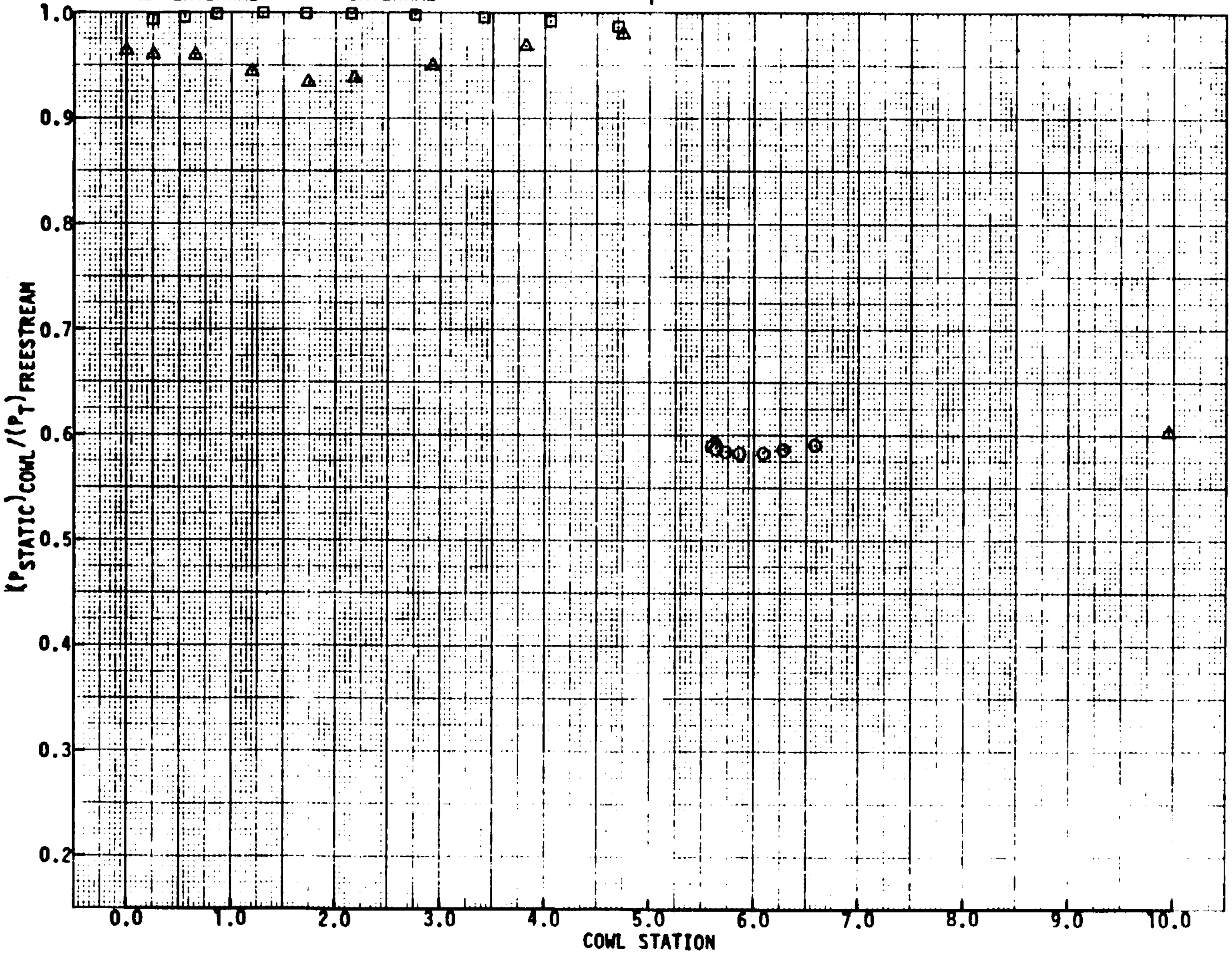
FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 90 degrees

ENGINE FACE MACH NUMBER = .530

□ EXTERNAL △ INTERNAL ○ KNEE

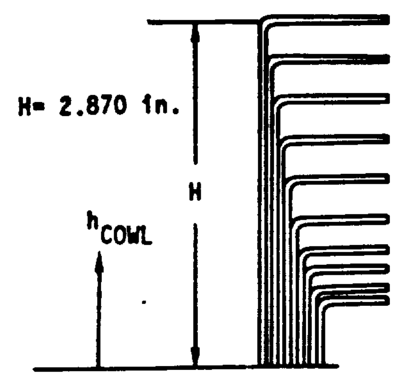


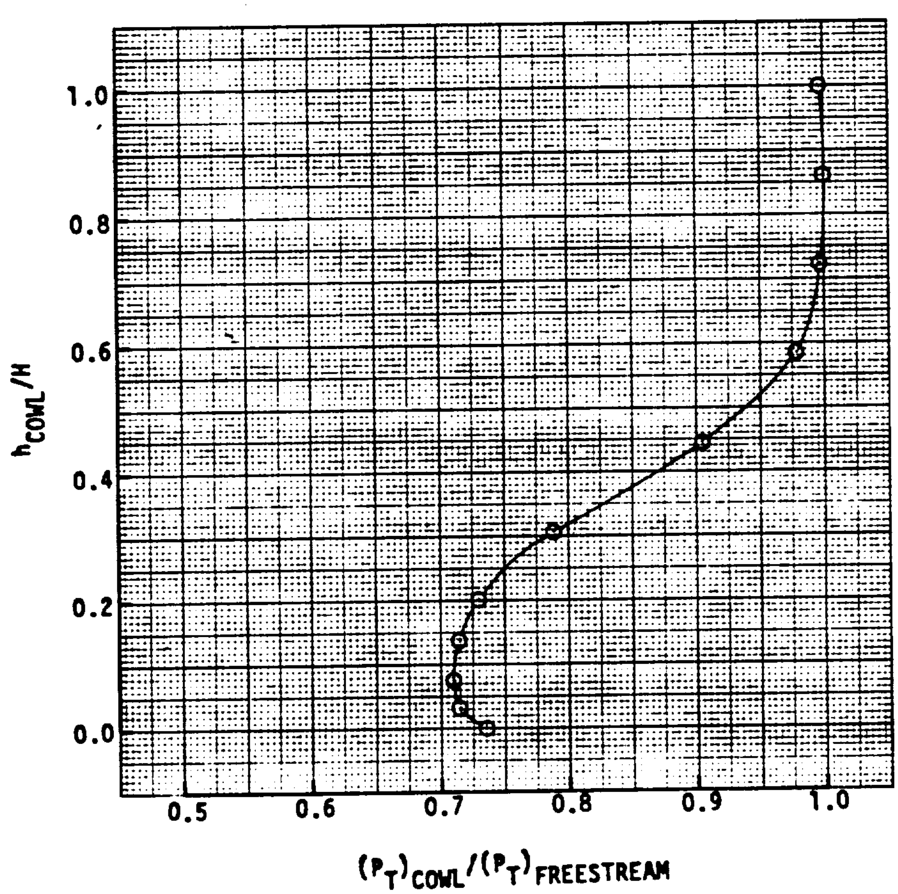


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 12 ; DESCRIPTION 40° DROOP LIP ; ΔX = 4

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530

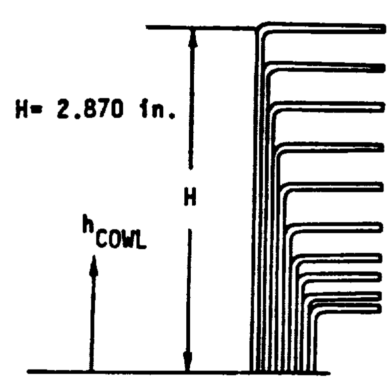


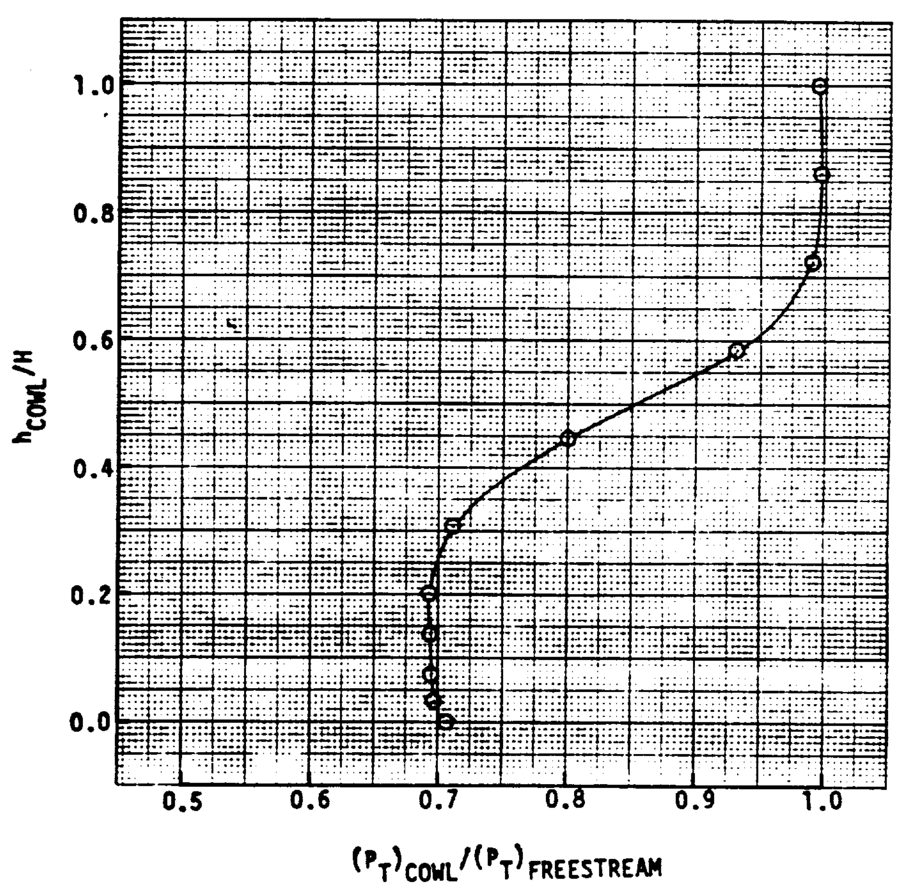


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 12; DESCRIPTION 40° DROOP LIP ; ΔX = 4

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530

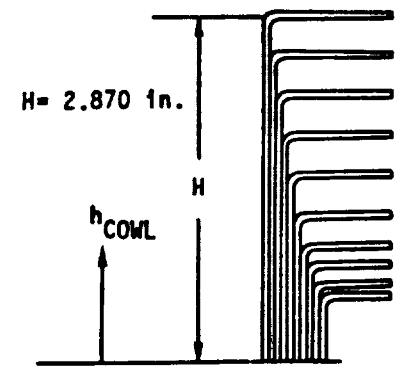


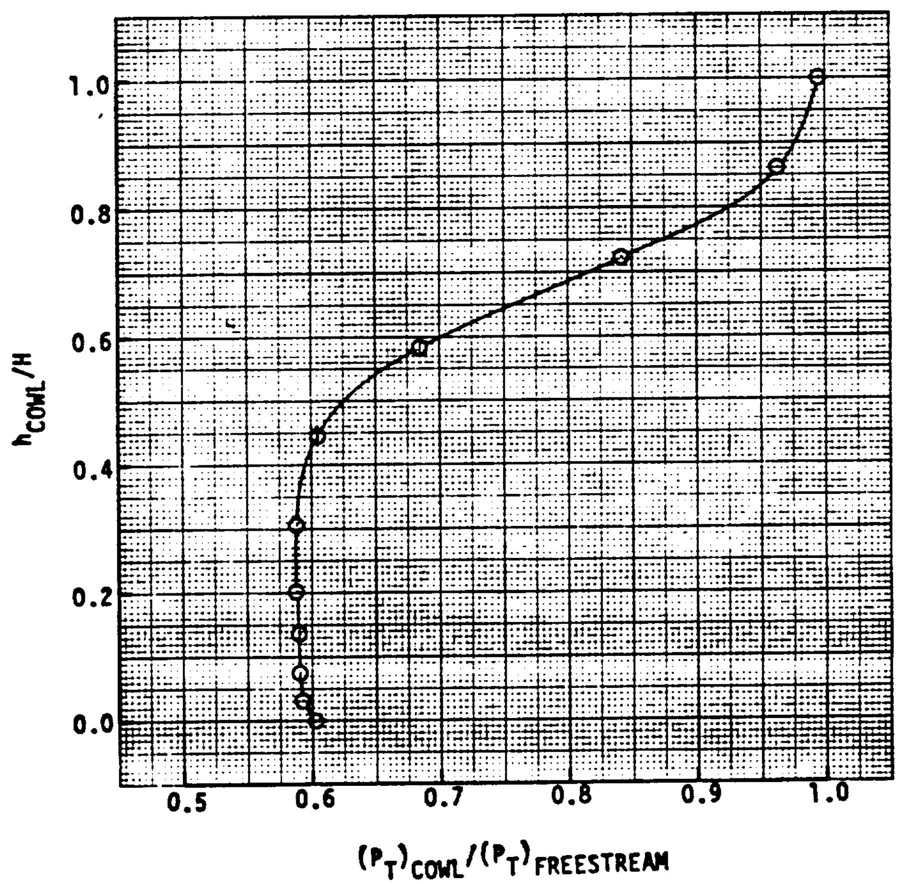


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

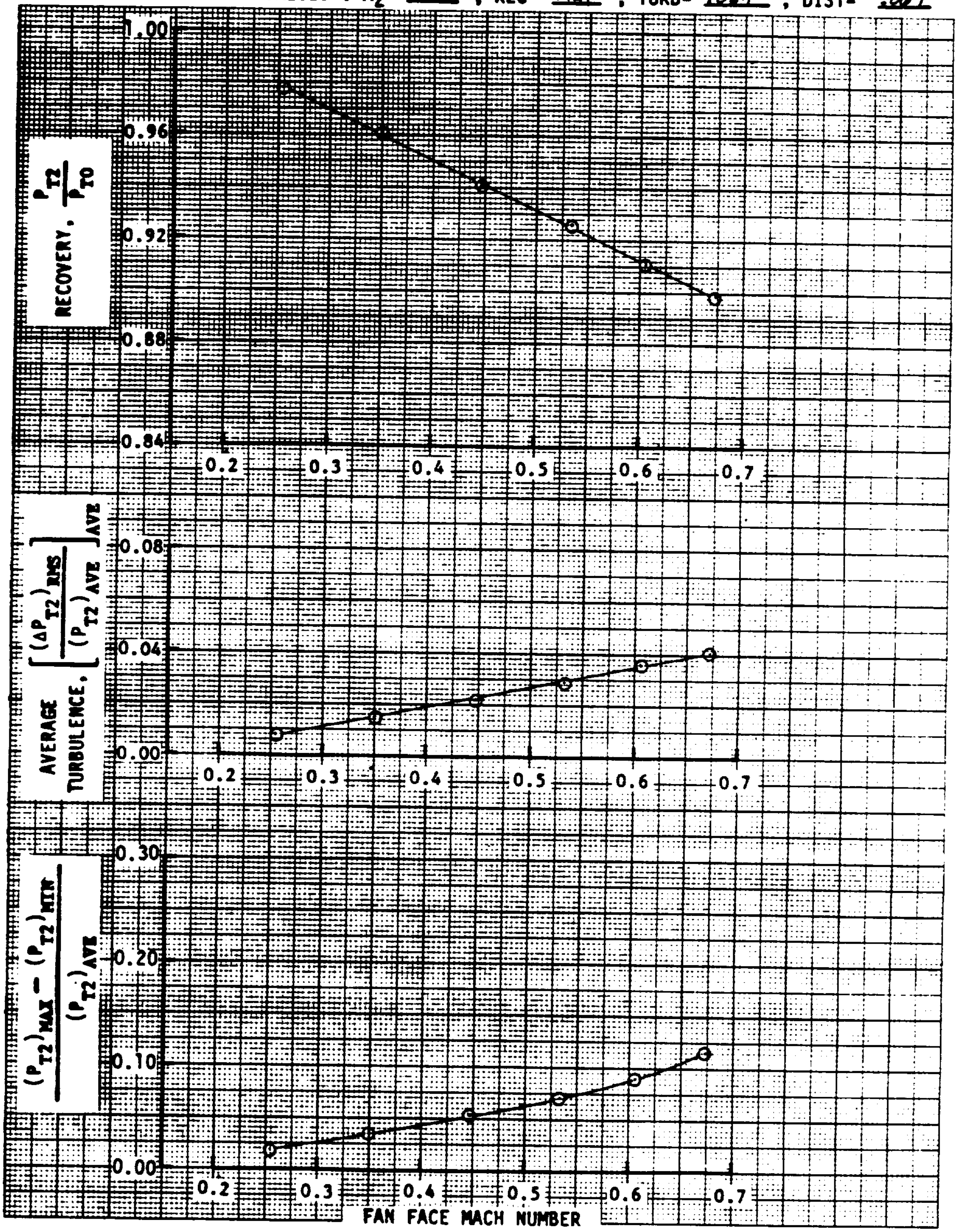
CONFIGURATION: NUMBER 12; DESCRIPTION 40° Droop Lip ; ΔZ=4

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .530

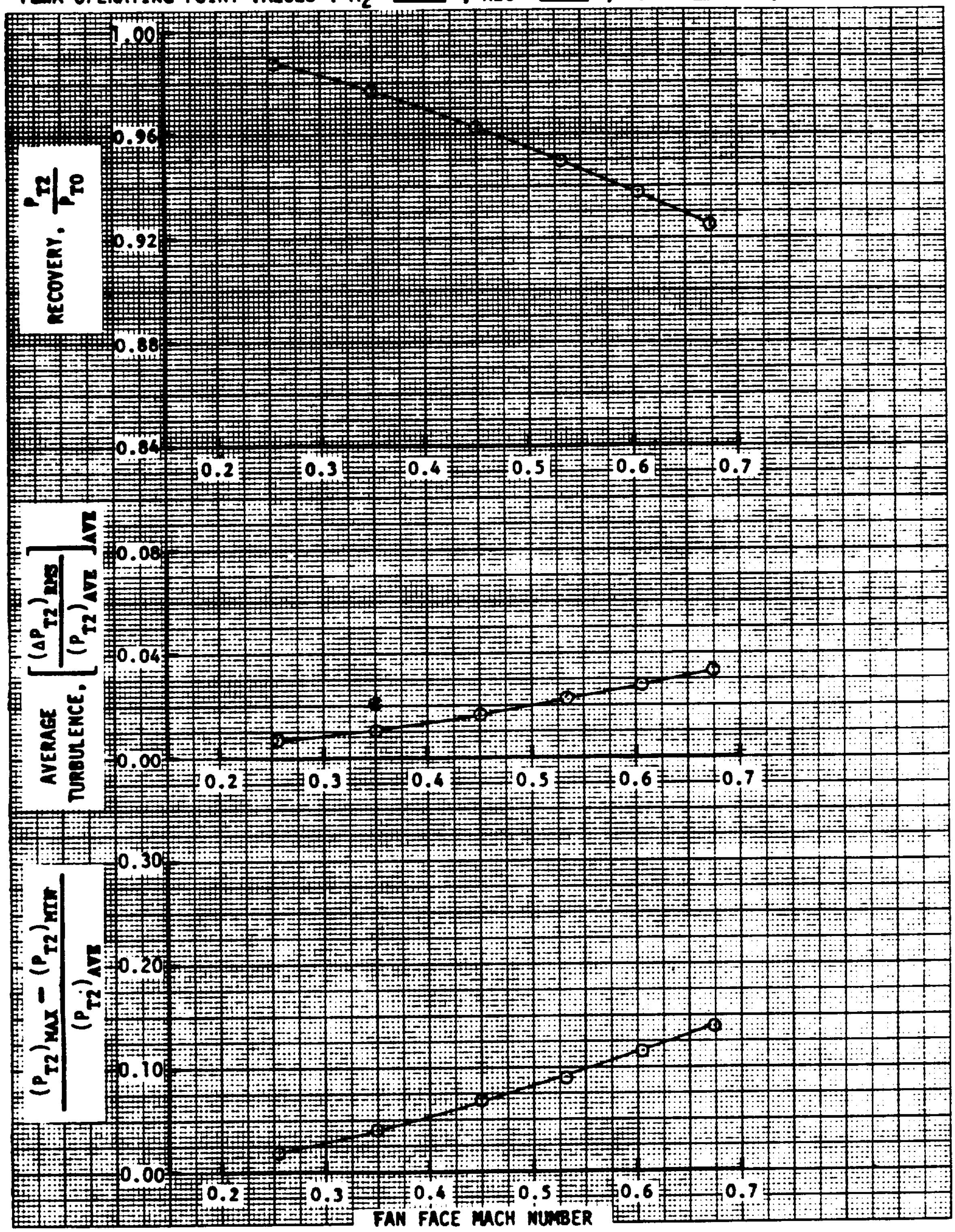




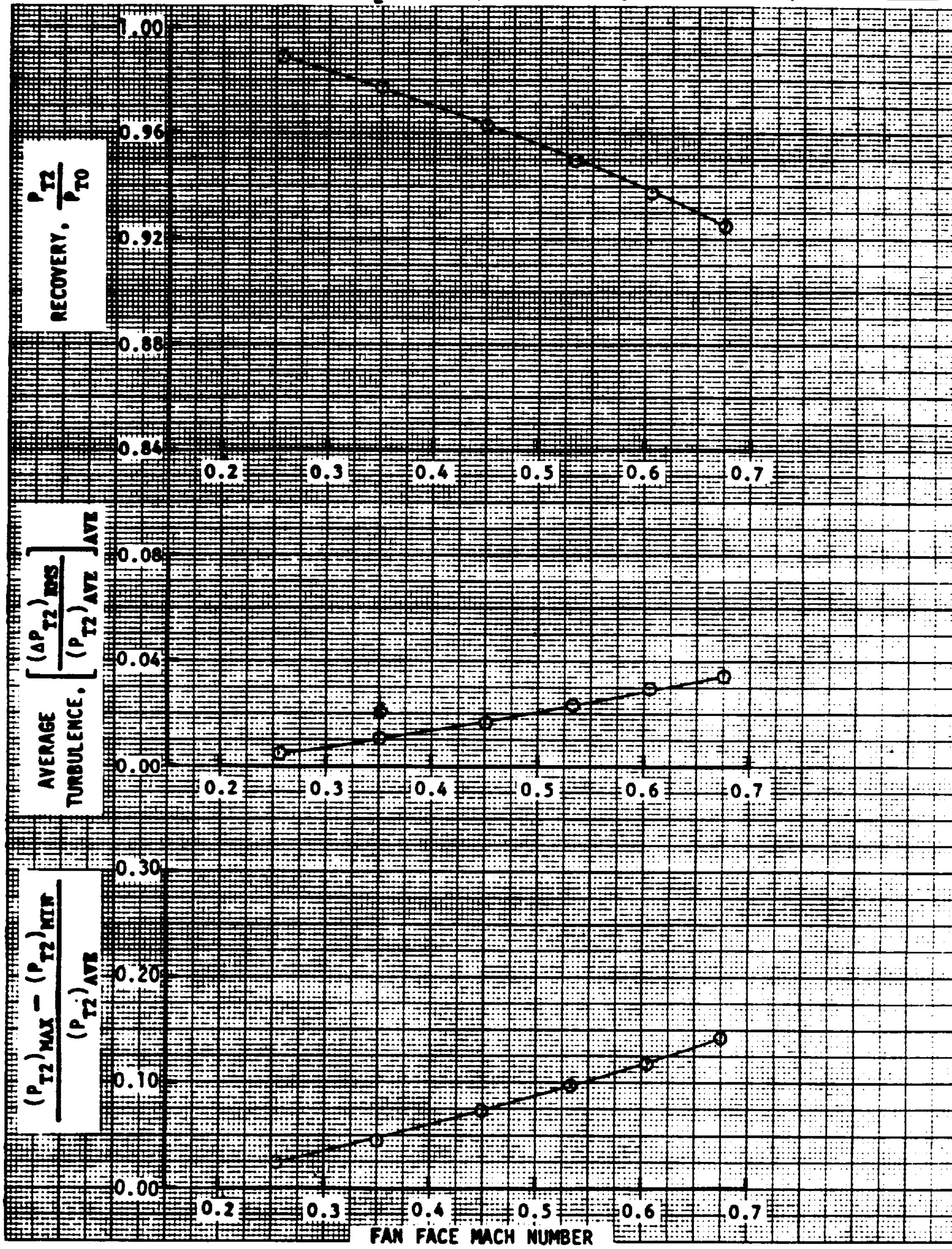
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1481-1487
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .924 ; TURB= .029 ; DIST= .069



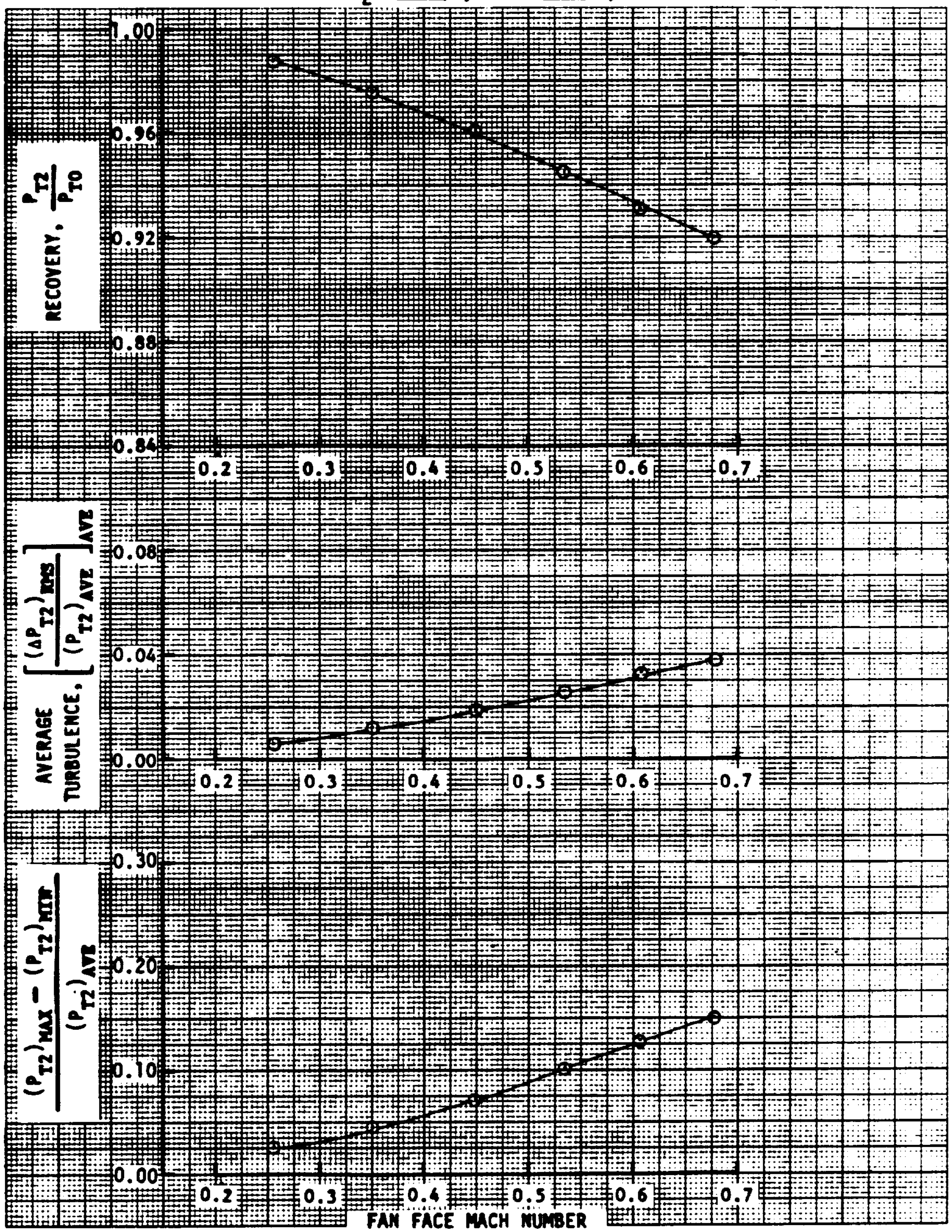
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1488-1493
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .022 ; DIST= .093



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1494-1499
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .023 ; DIST= .096



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1500-1505
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .946 ; TURB= .025 ; DIST= .099

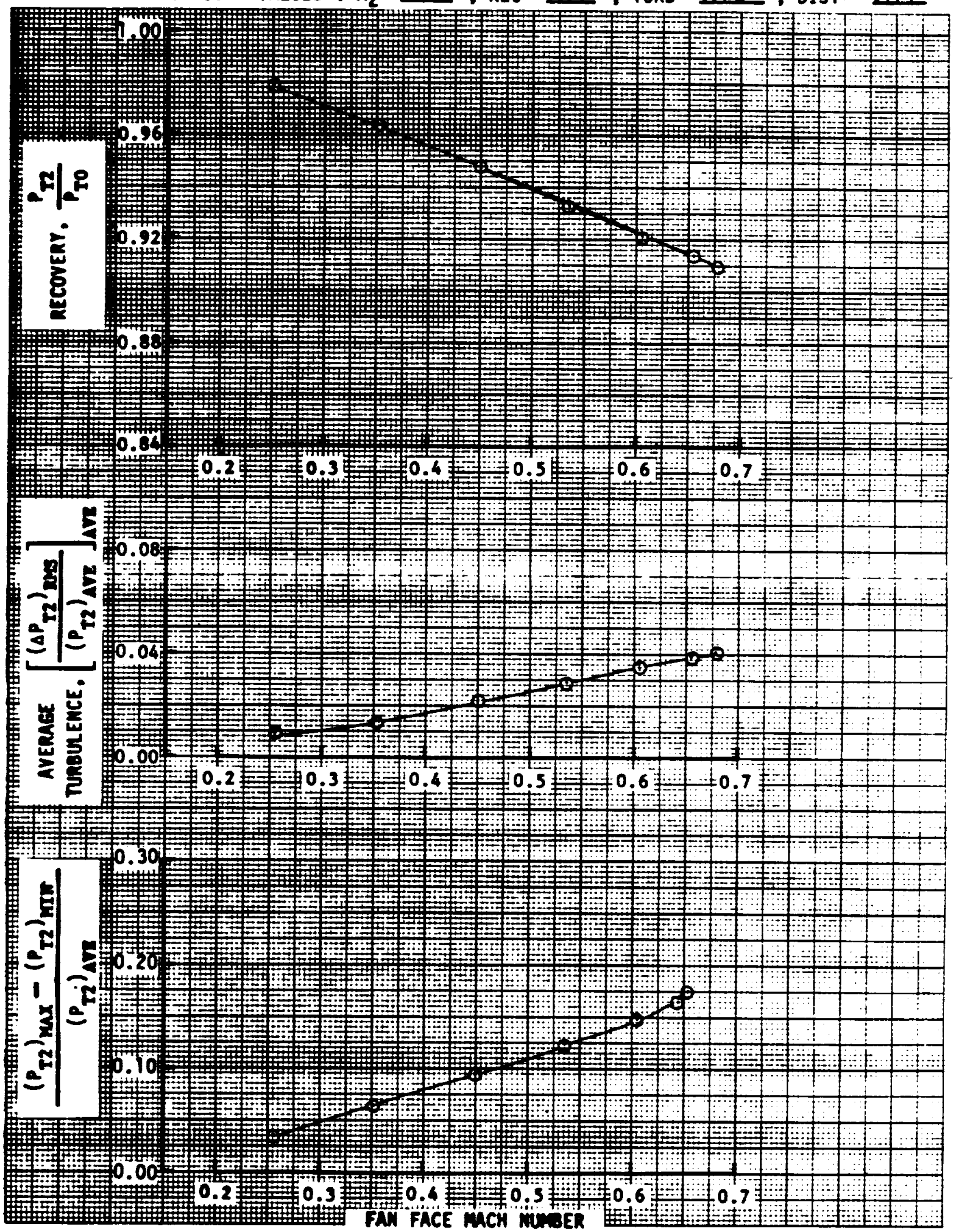


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

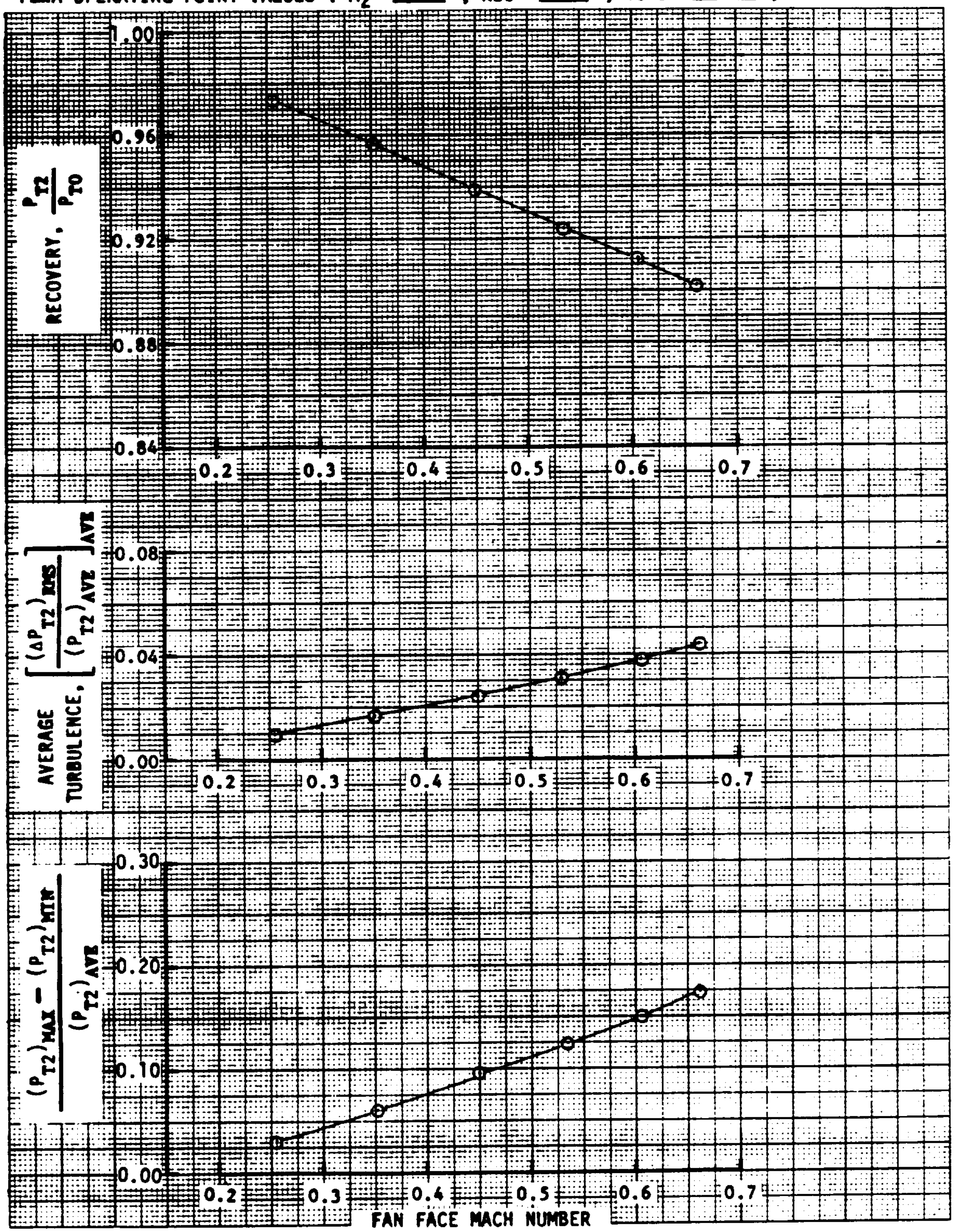
CONFIGURATION 13 ; READING NUMBERS 1506-1512

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

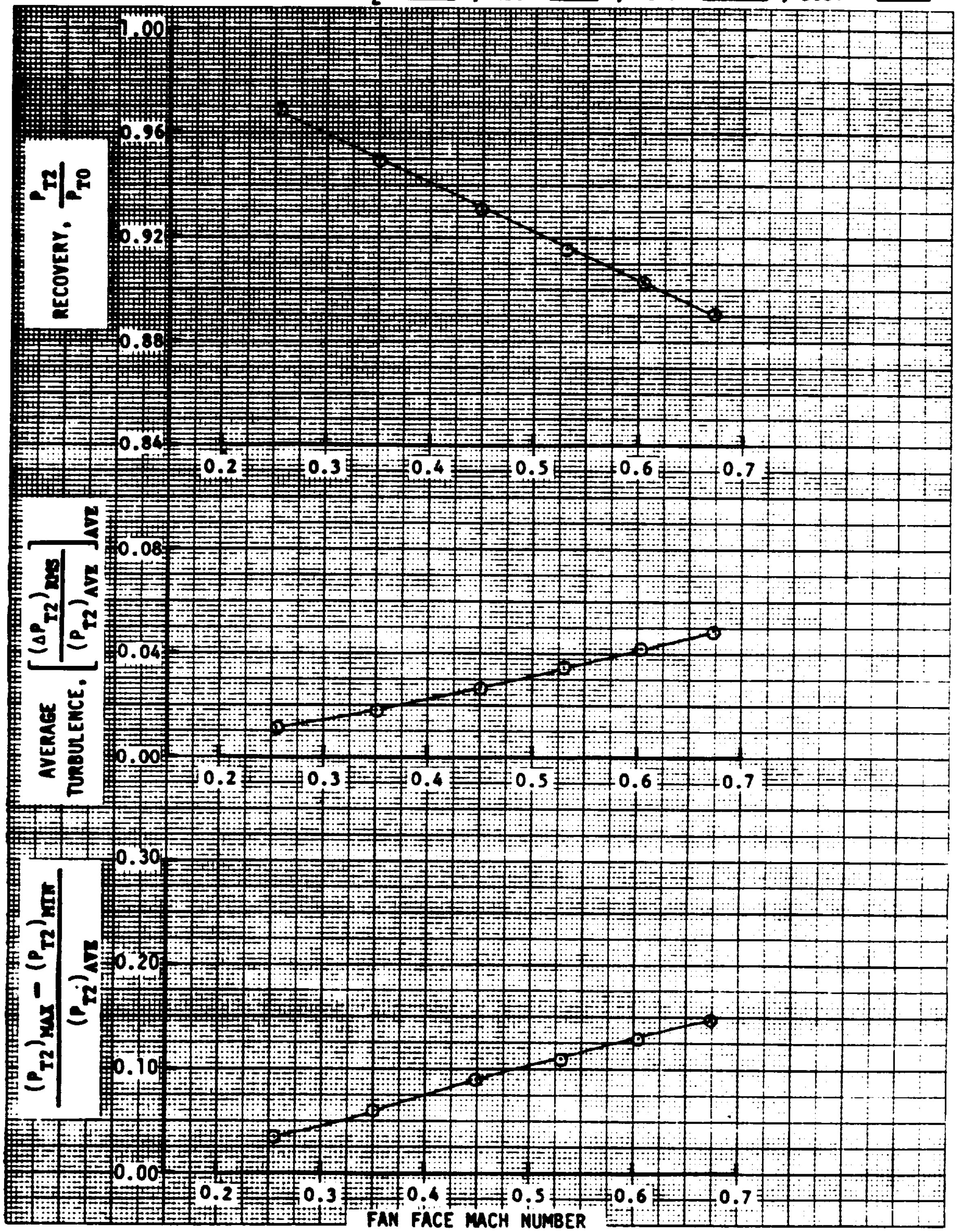
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .934 ; TURB= .028 ; DIST= .119



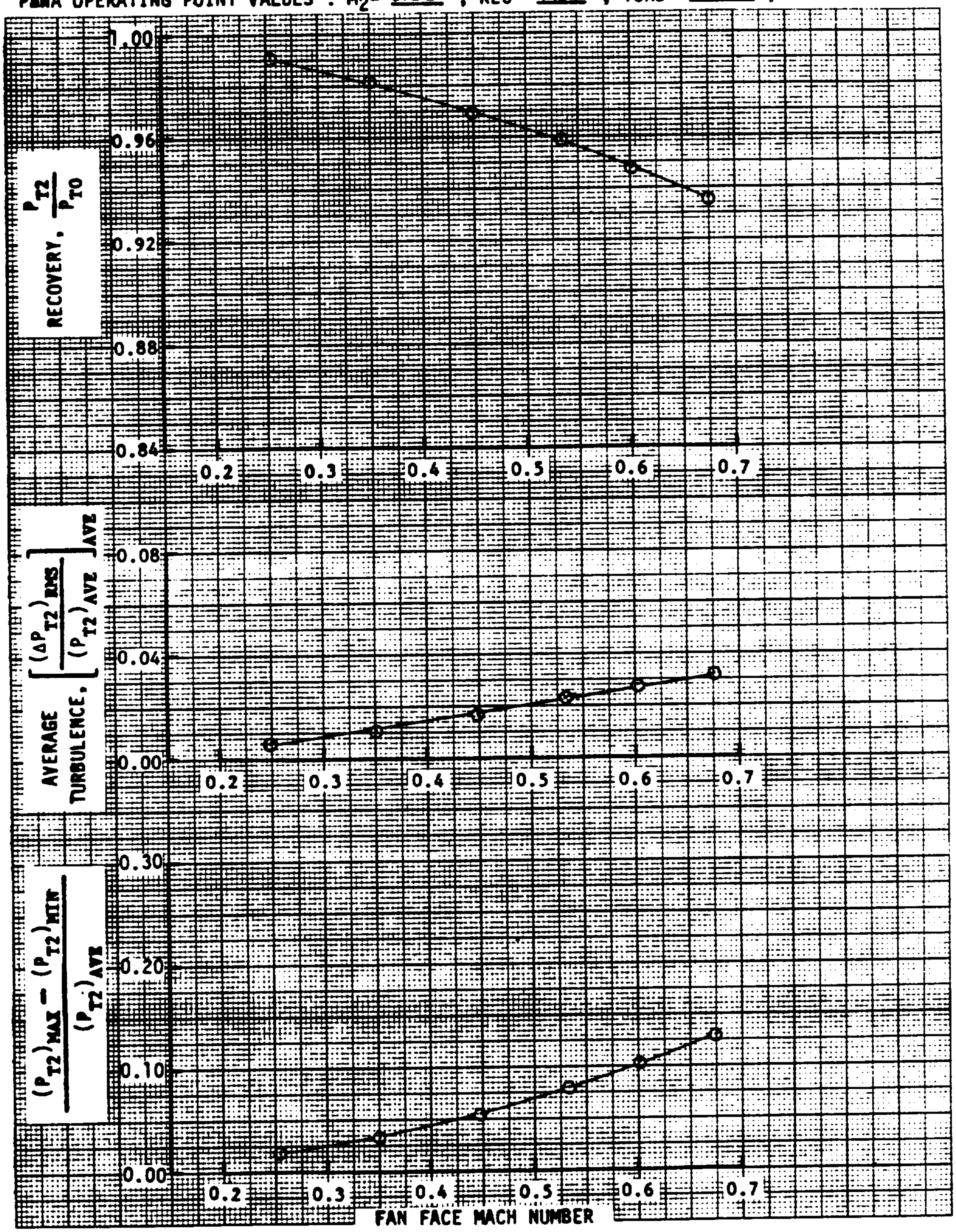
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1513-1518
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .925 ; TURB= .031 ; DIST= .122



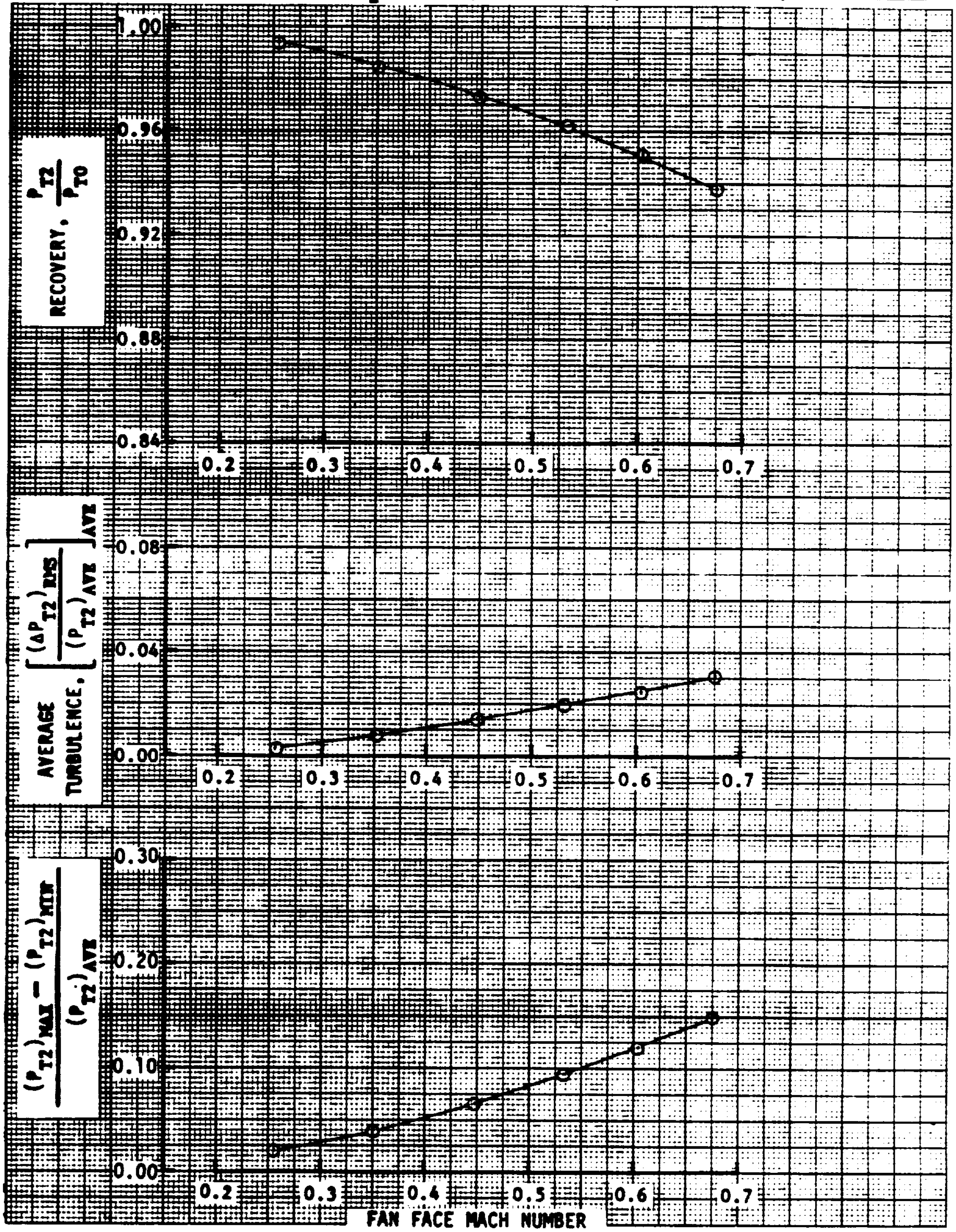
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1519-1524
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .916 ; TURB= .034 ; DIST= .111



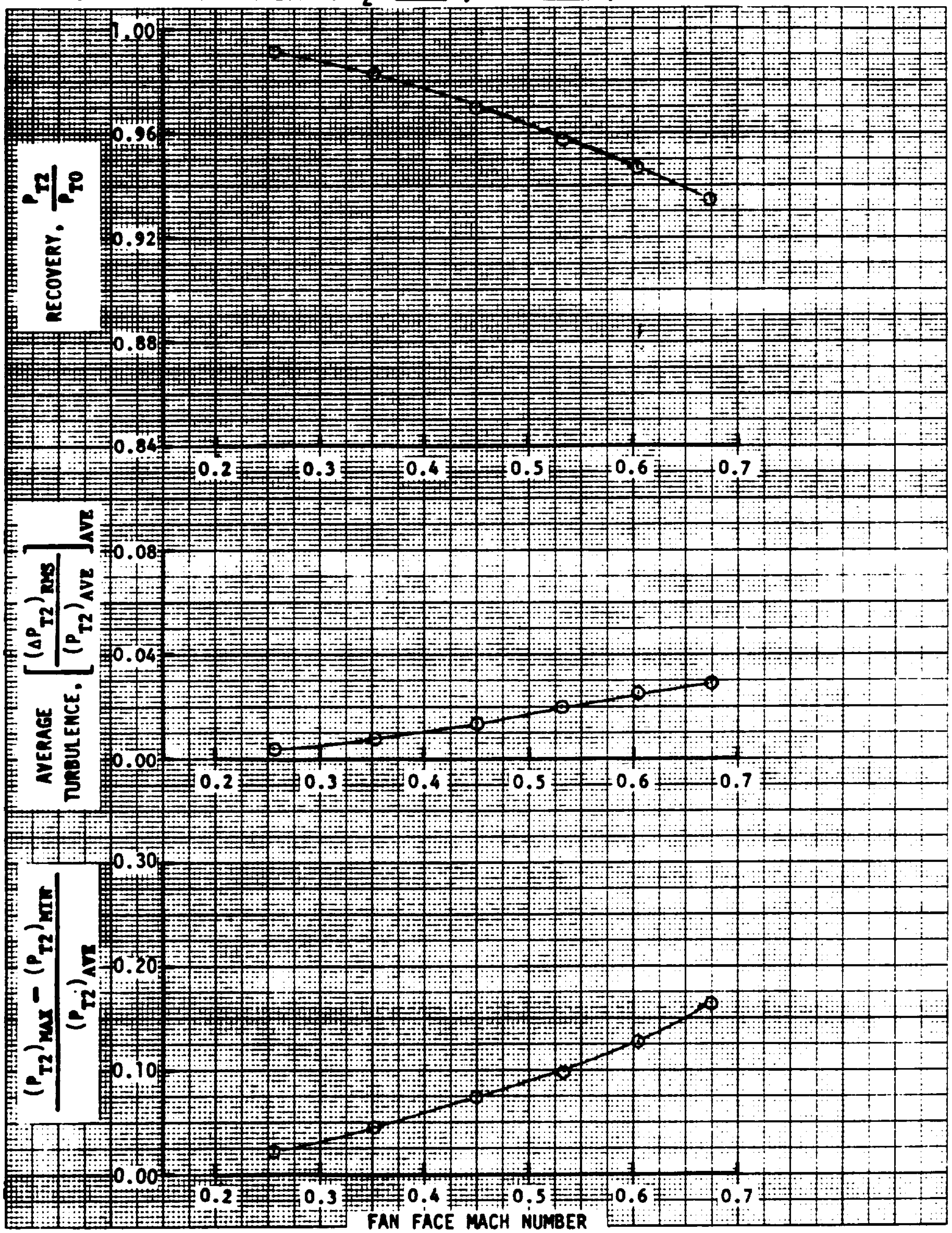
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1525-1530
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .022 ; DIST= .079



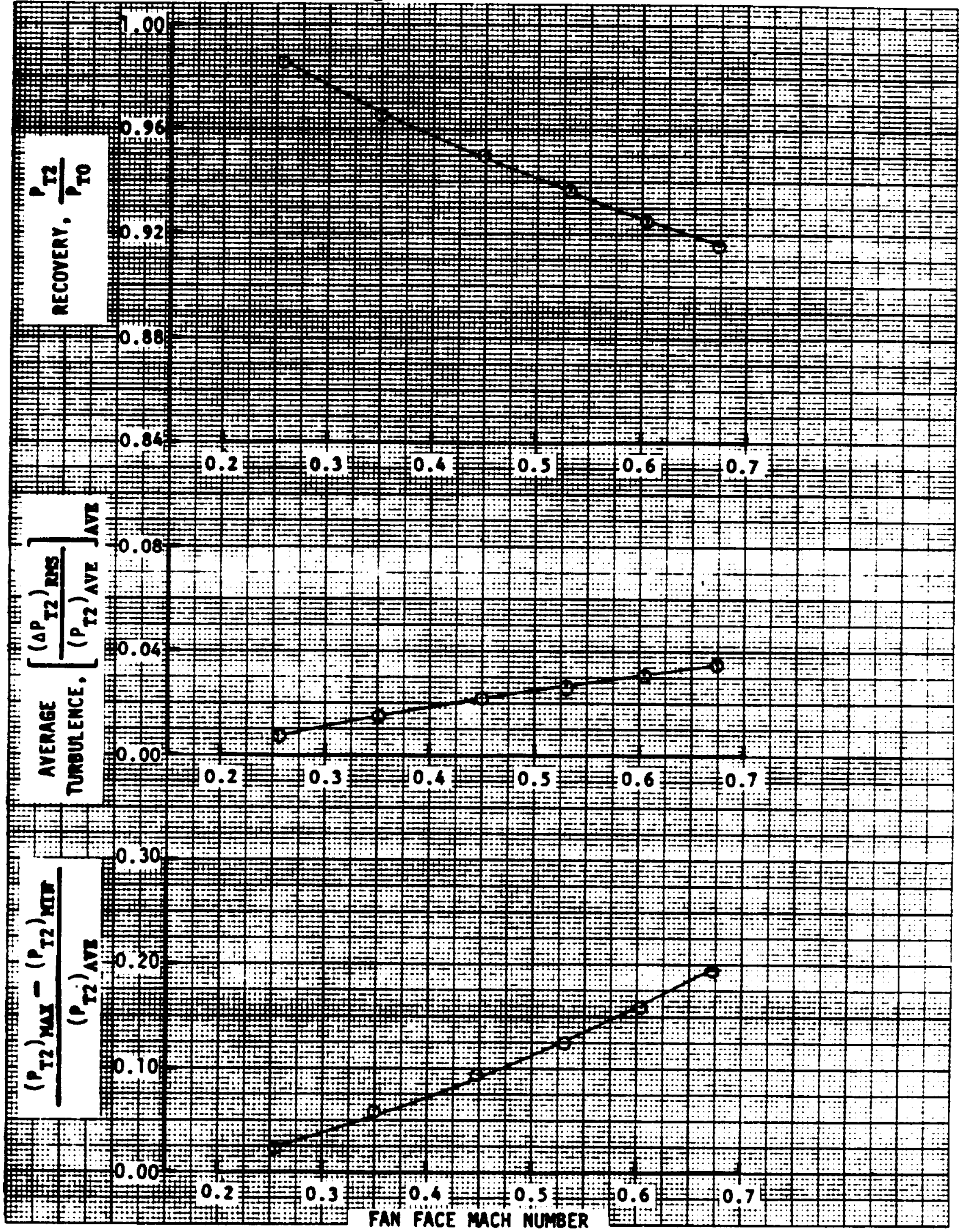
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1531-1536
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .020 ; DIST= .094



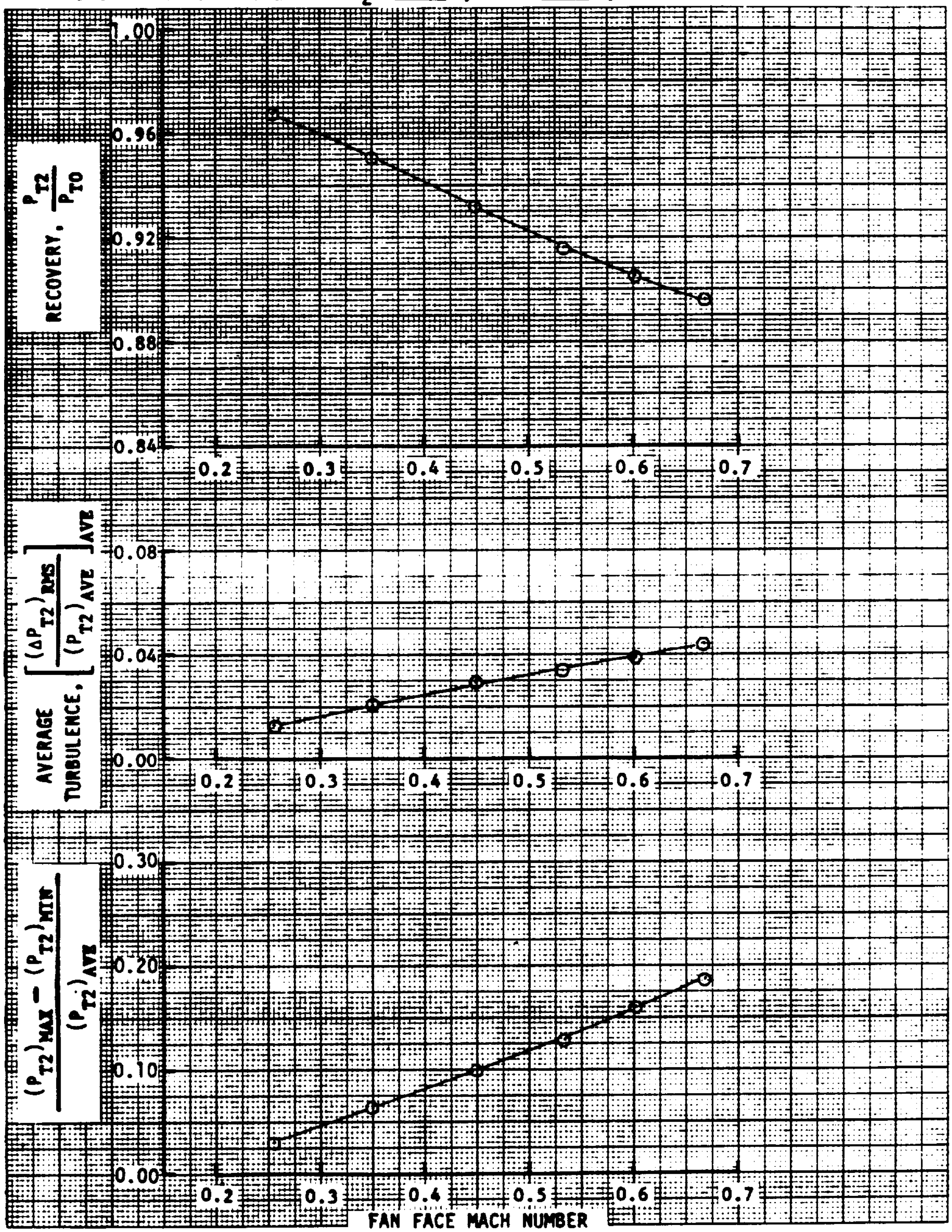
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1537-1542
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .020 ; DIST= .100



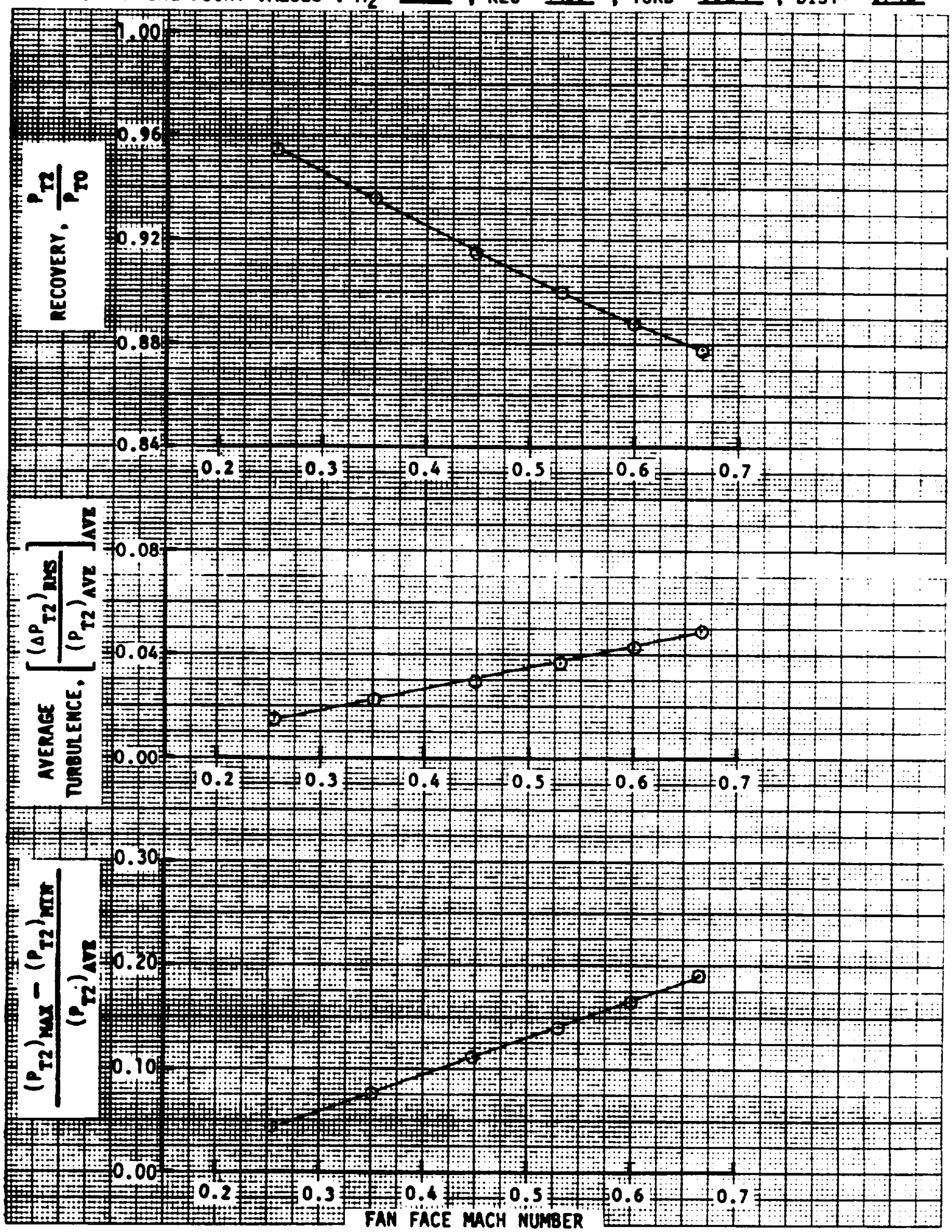
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1544-1549
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .937 ; TURB= .027 ; DIST= .127



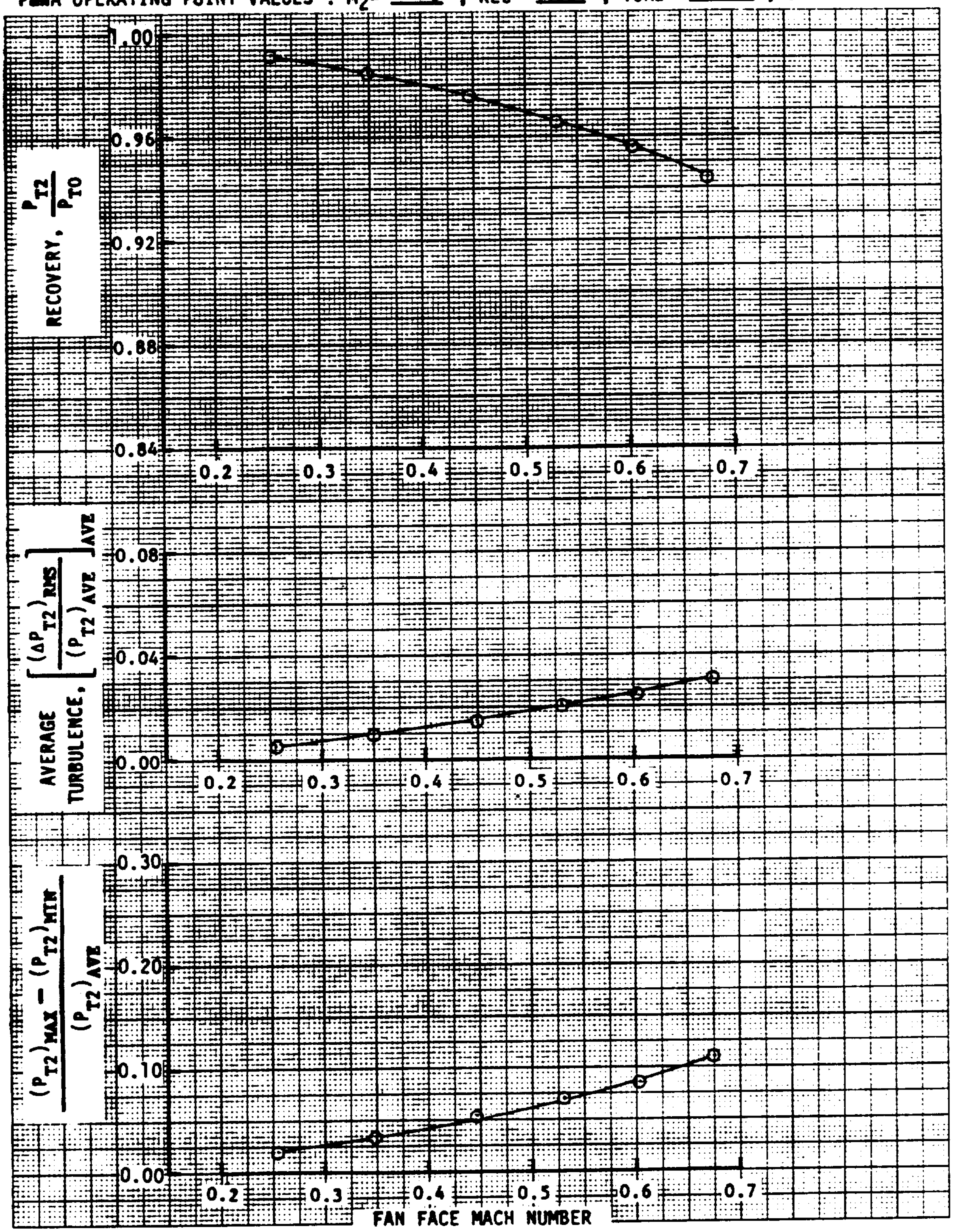
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1550-1555
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .917 ; TURB= .034 ; DIST= .130



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1556-1561
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .900 ; TURB= .037 ; DIST= .140



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1562-1567
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .020 ; DIST= .068

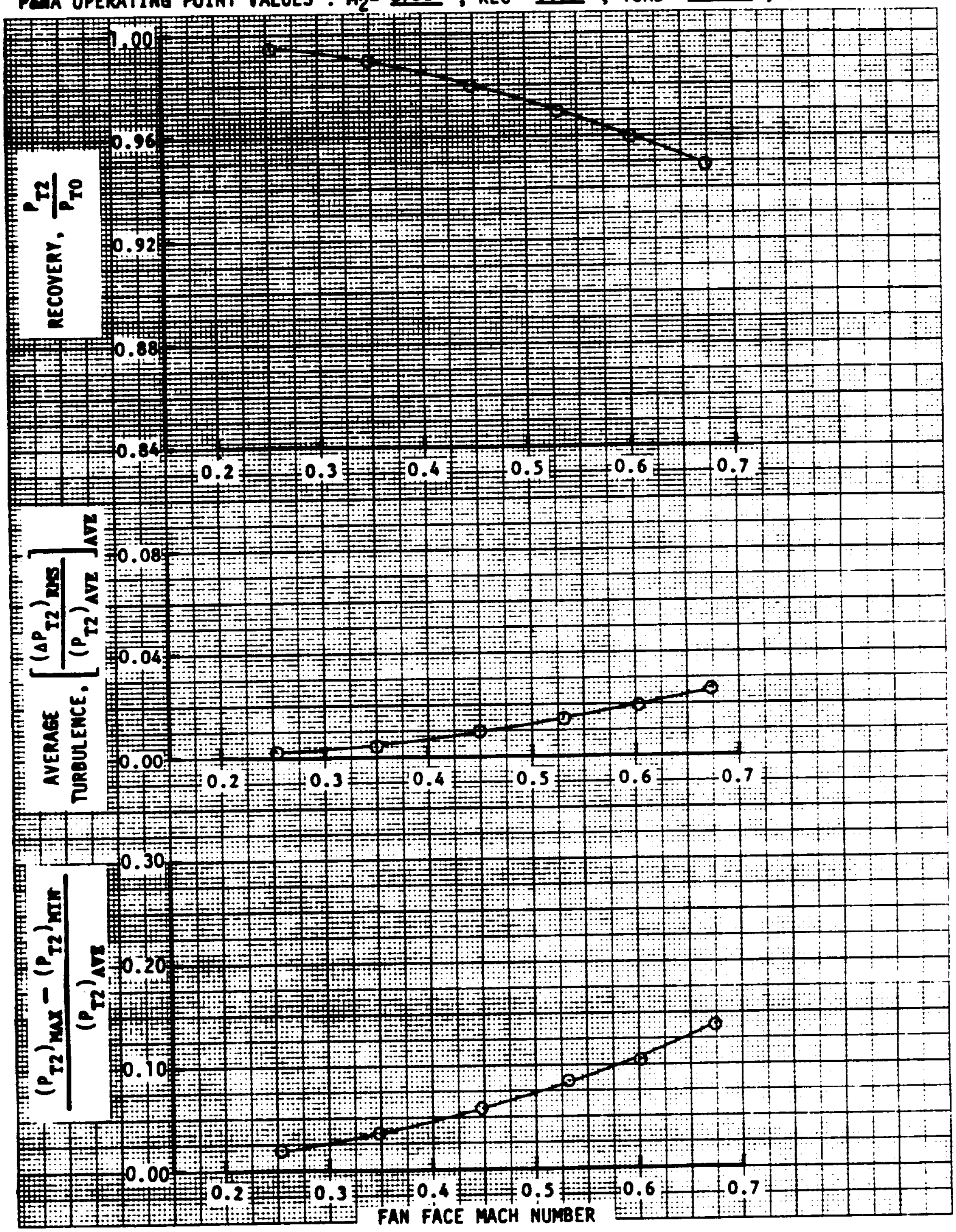


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

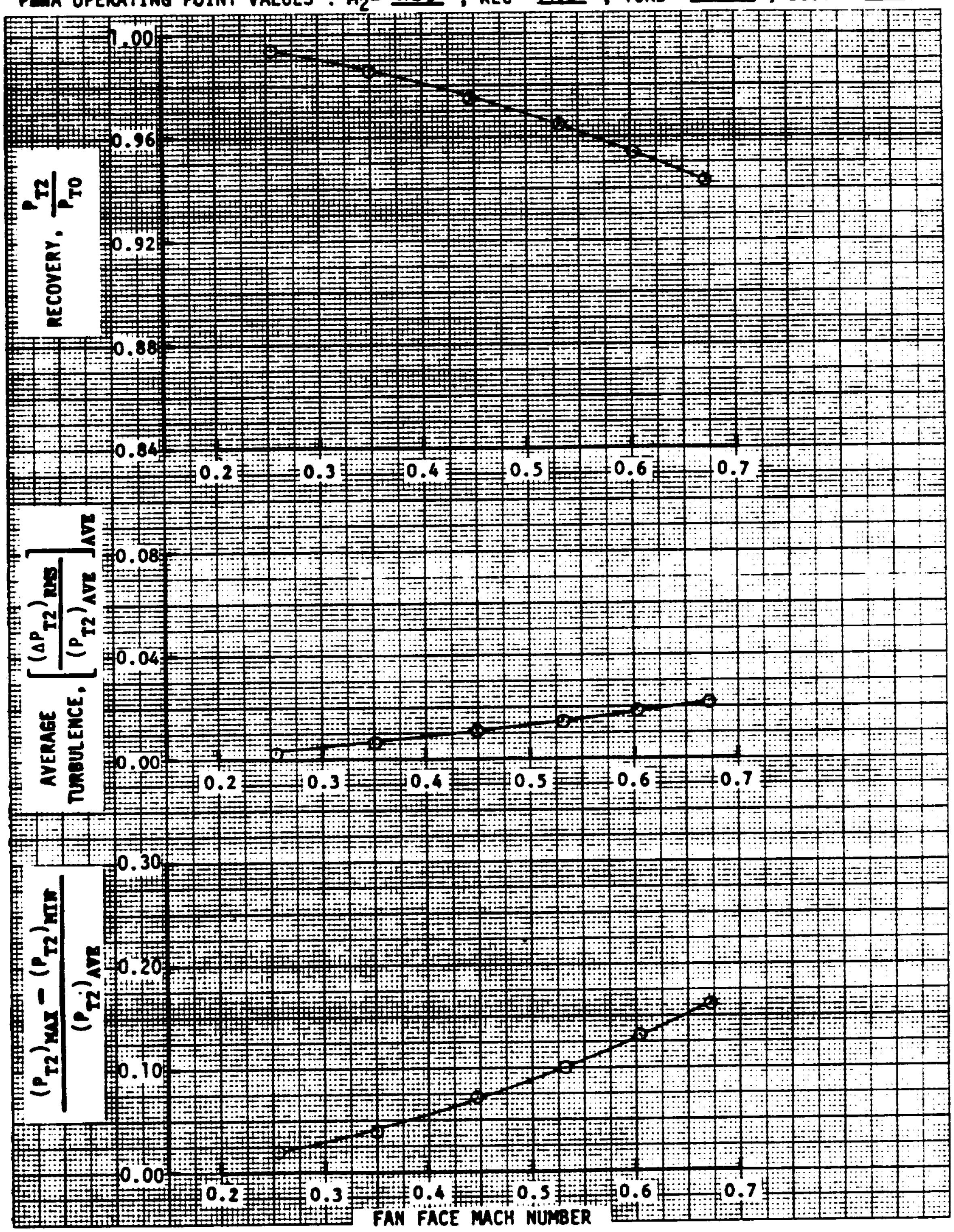
CONFIGURATION 13 ; READING NUMBERS 1568-1573

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.

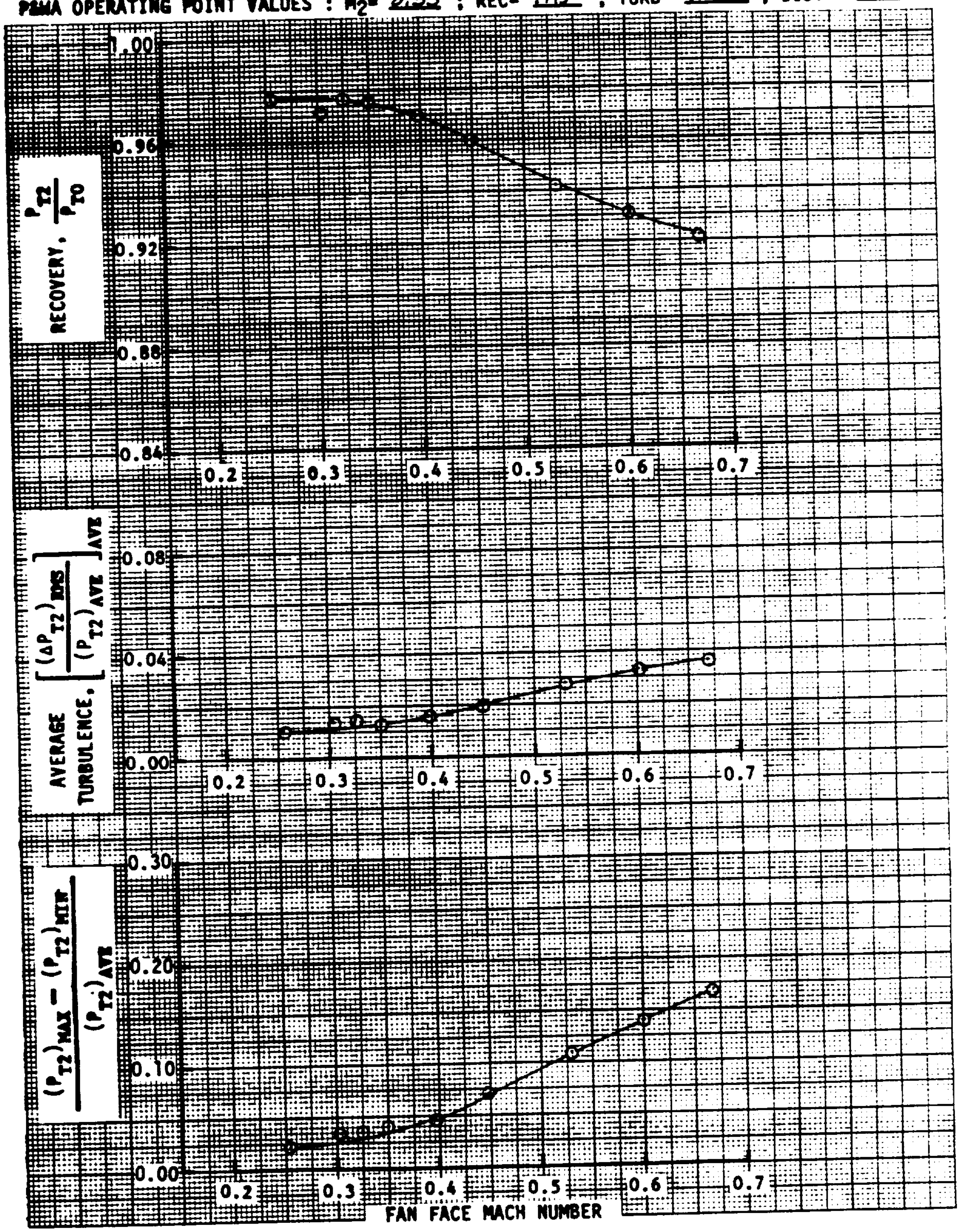
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .015 ; DIST= .083



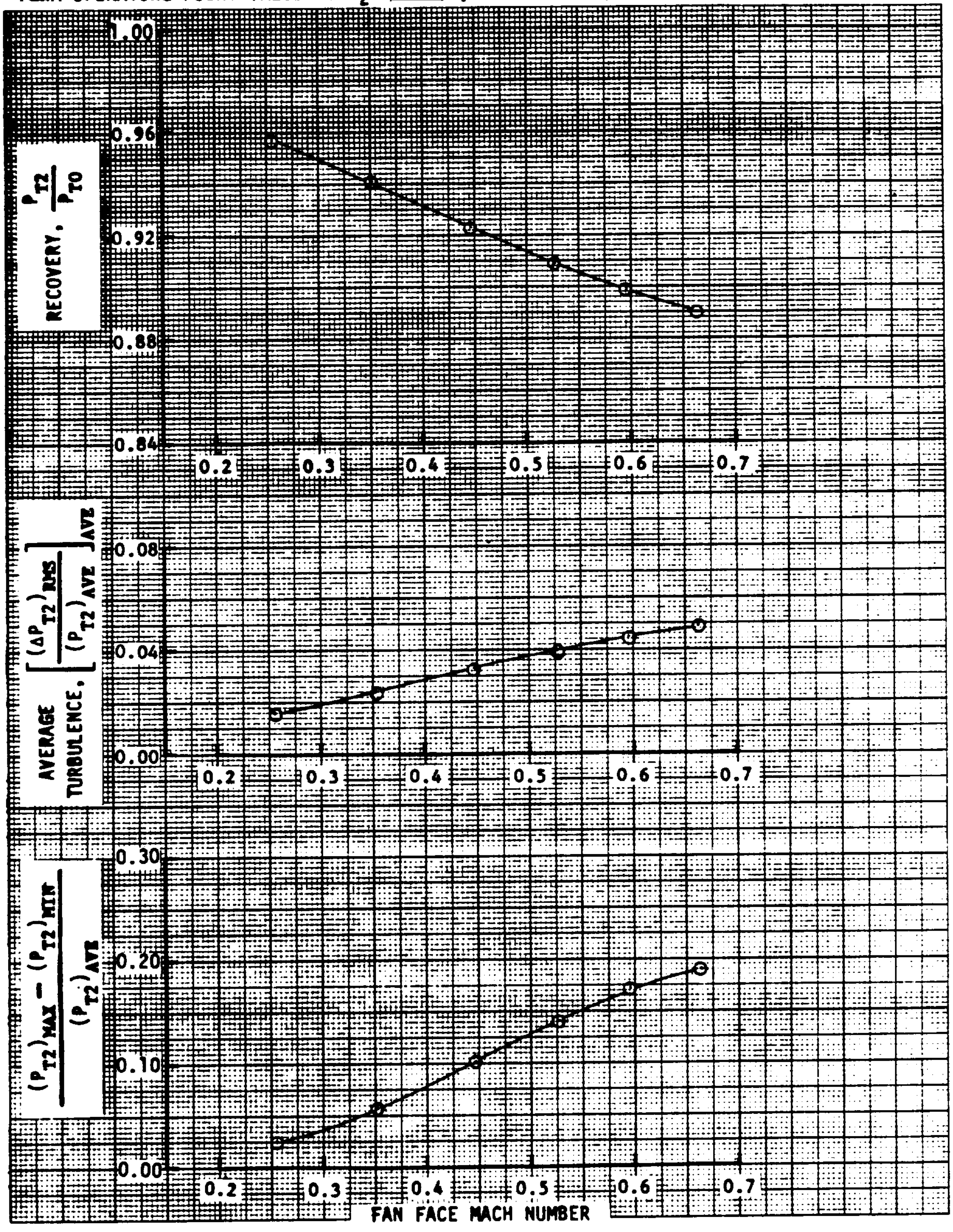
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1574-1579
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .014 ; DIST= .101



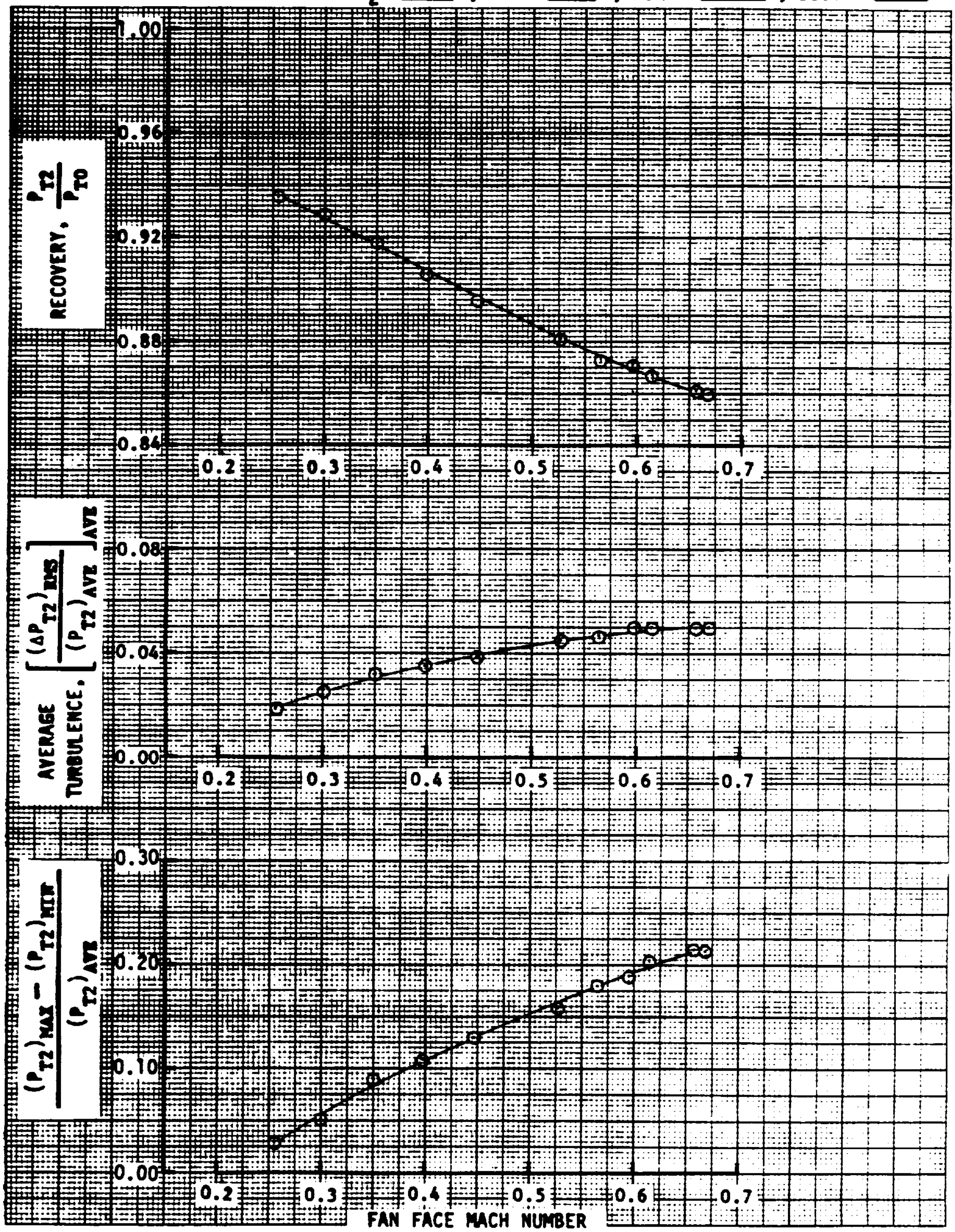
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1580-1591
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .943 ; TURB= .027 ; DIST= .108



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1592-1597
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PSWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .040 ; DIST= .143



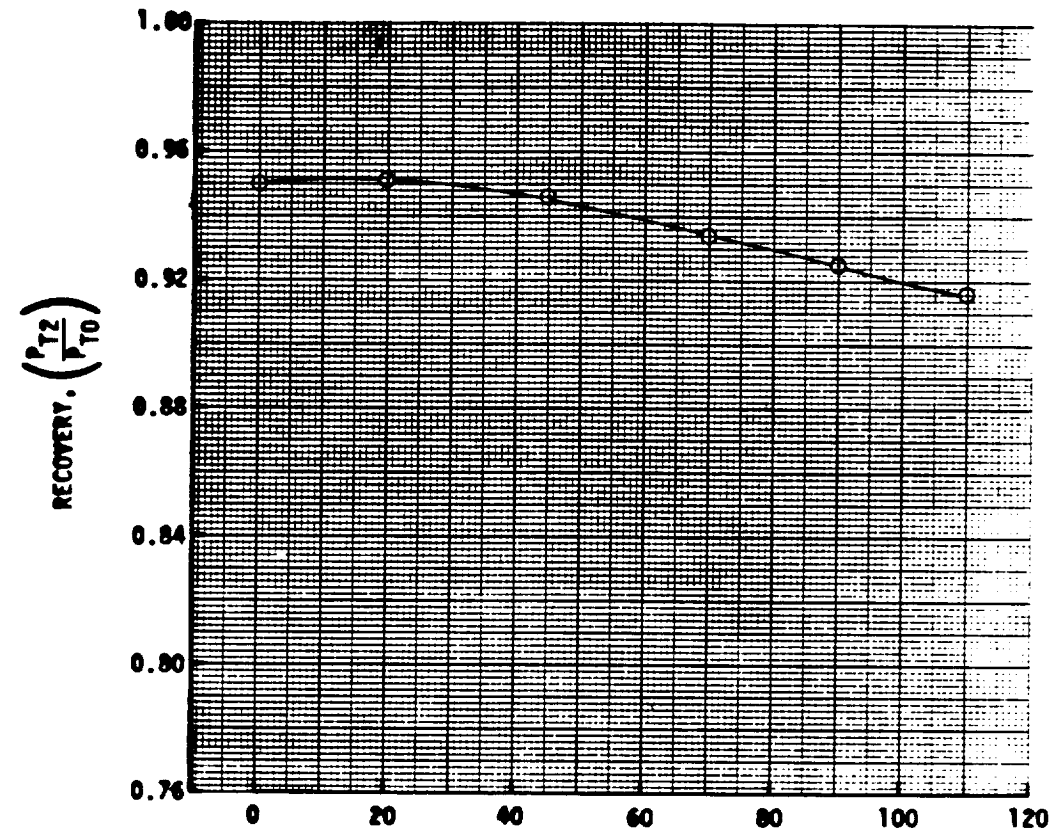
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 13 ; READING NUMBERS 1598-1608
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .880 ; TURB= .043 ; DIST= .166

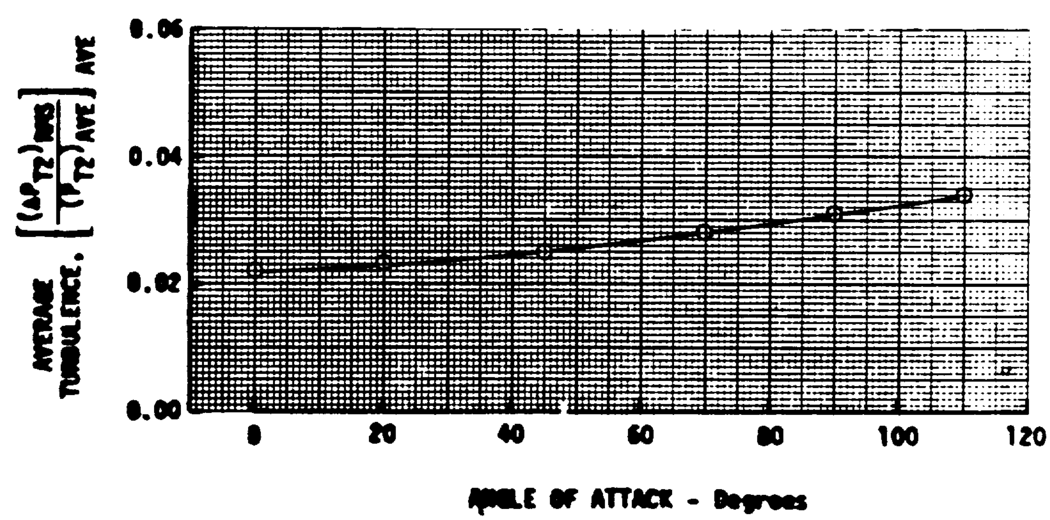


ORIGINAL PAGE IS
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 13; DESCRIPTION 40° Droop Lip; ΔX = 6





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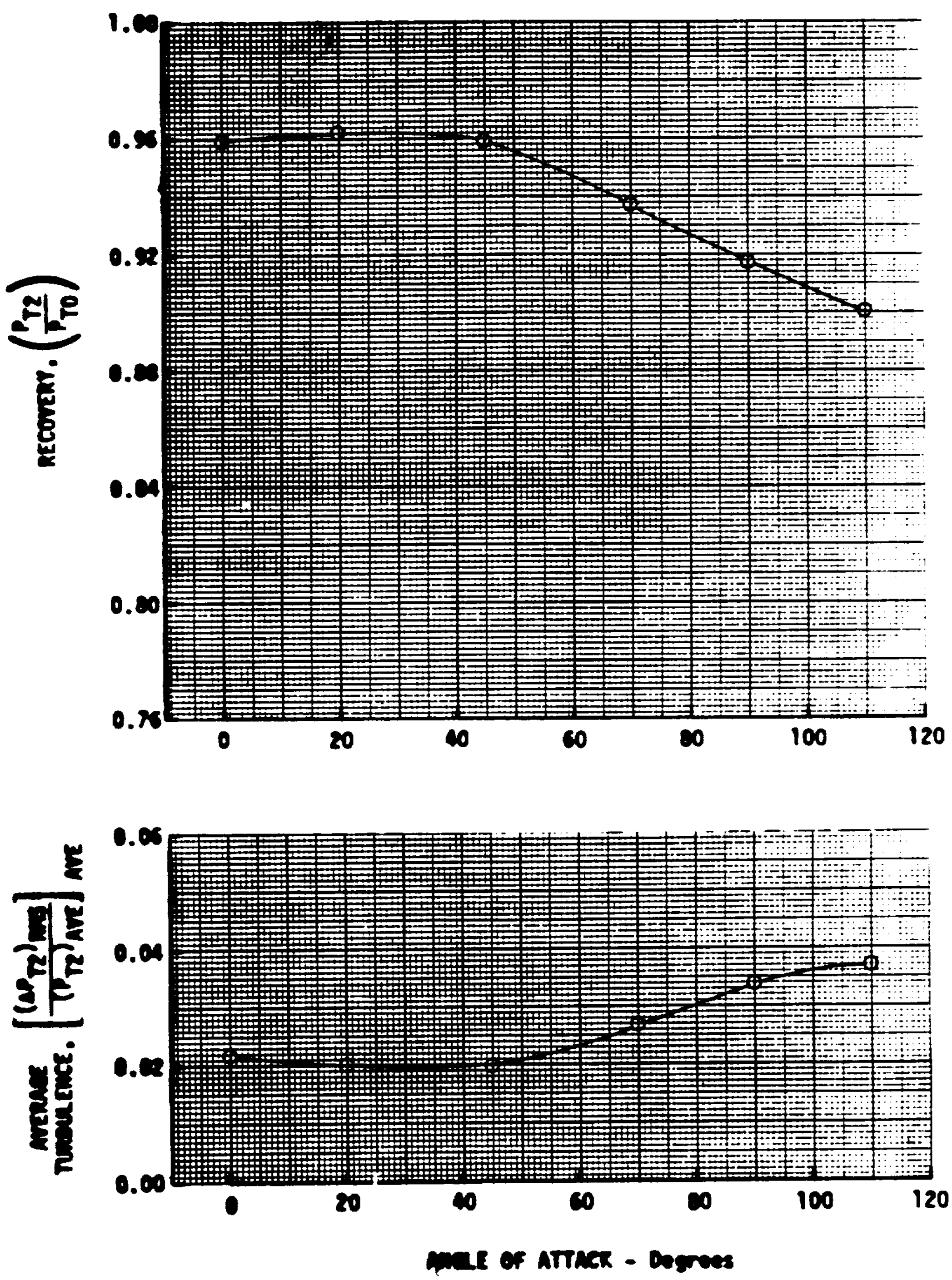
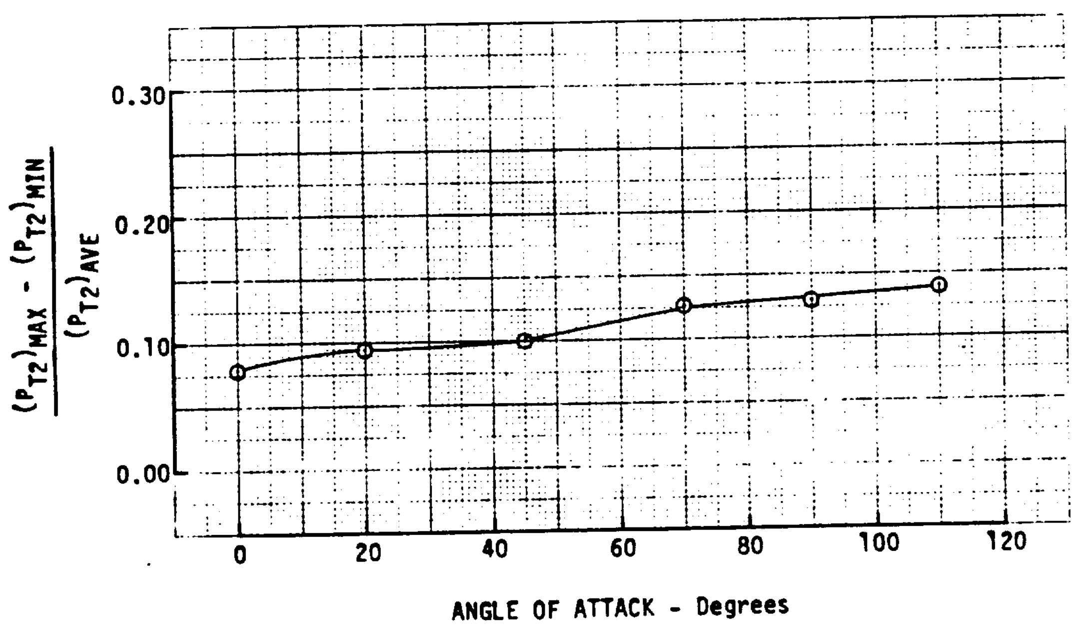
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 13; DESCRIPTION 40° Droop Lip; $\Delta X = 6$



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 13 ; DESCRIPTION 40° DROOP LIP ; ΔZ = 6



ORIGINAL PAGE IS
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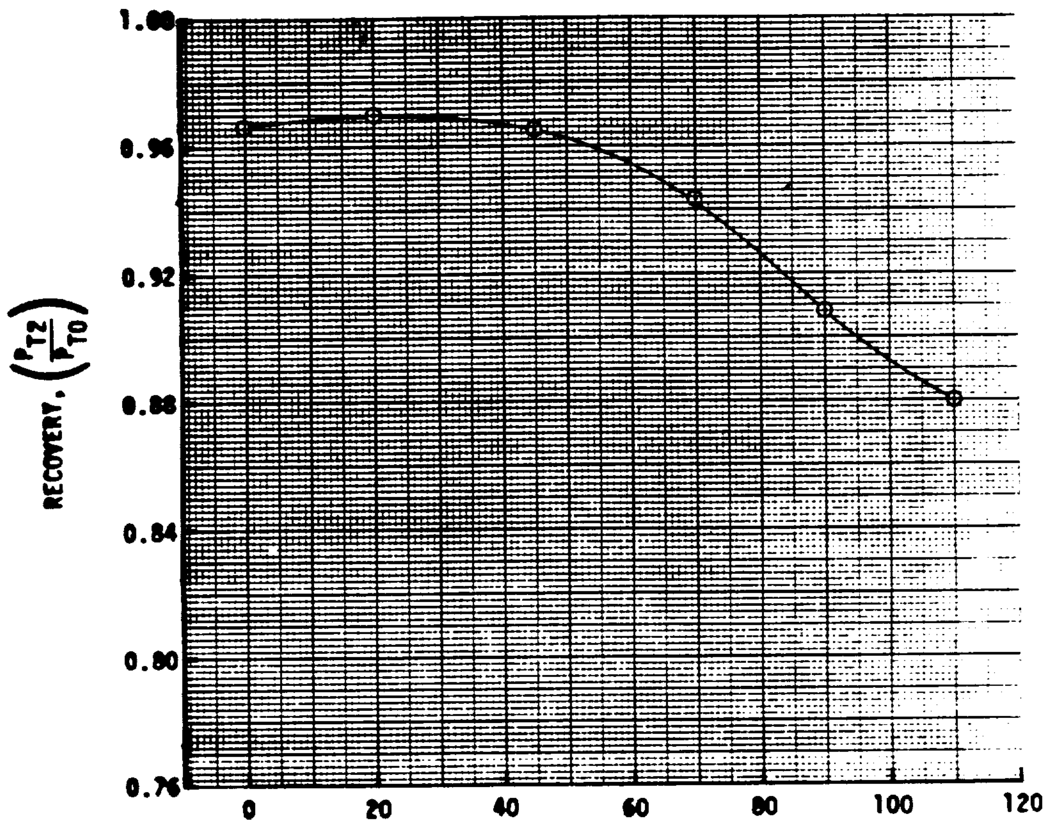
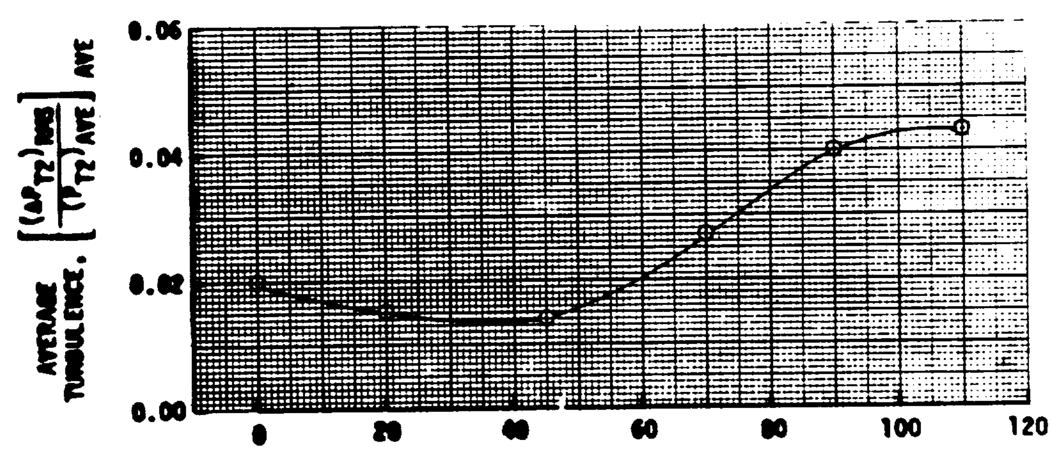
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 13; DESCRIPTION 40° Droop Lip; ΔX = 6





ANGLE OF ATTACK - Degrees

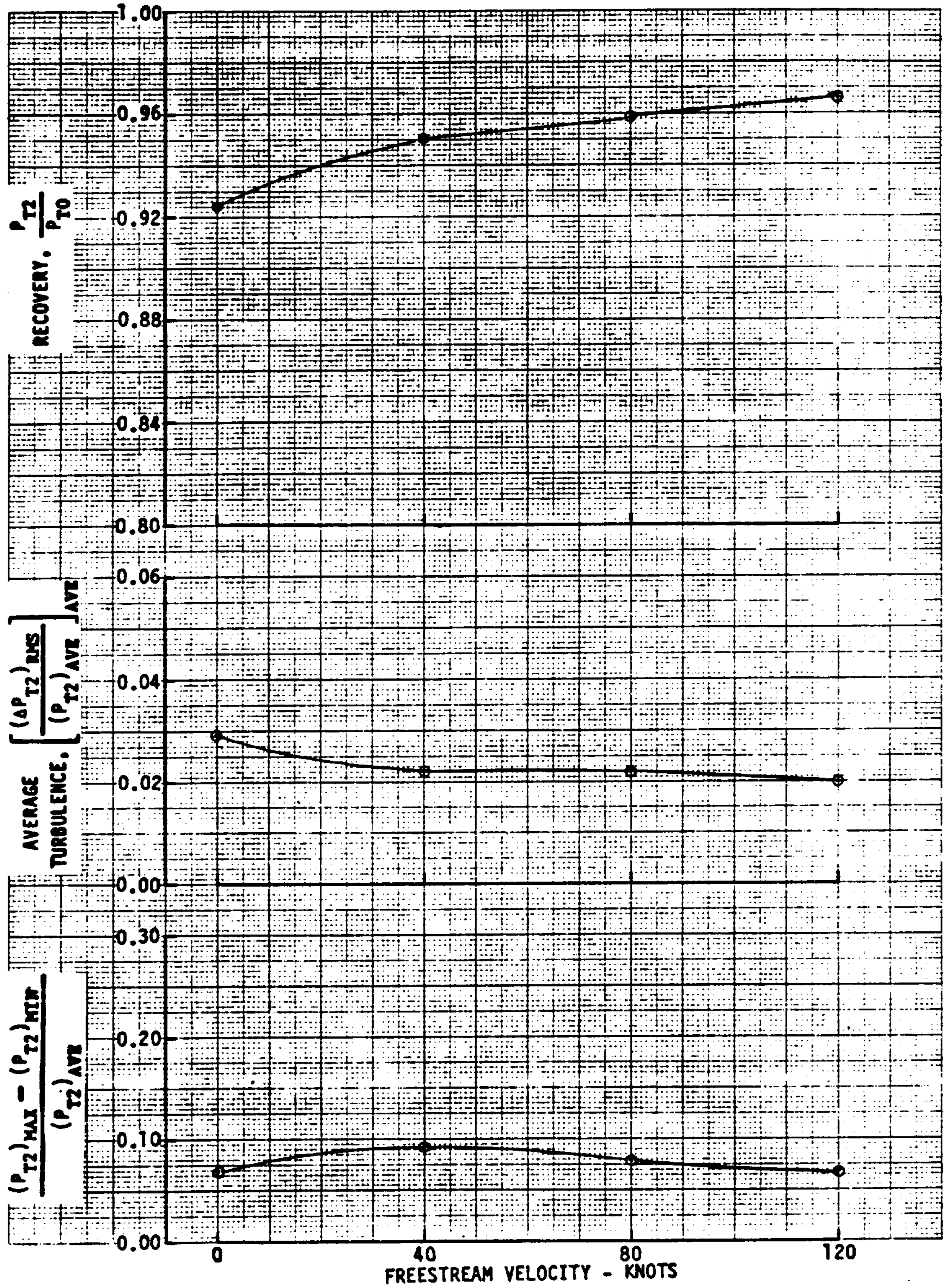
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY

ANGLE OF ATTACK = 0 DEGREES

SIDESLIP ANGLE = 0 DEGREES

P&WA F-100 MATCH AIRFLOW

CONFIGURATION: NUMBER 13 ; DESCRIPTION 40° DROOP LIP; $\Delta x = 6$



COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

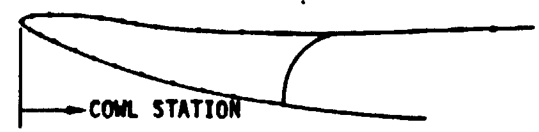
CONFIGURATION: 13; 40° DROOP LIP, ΔX=6

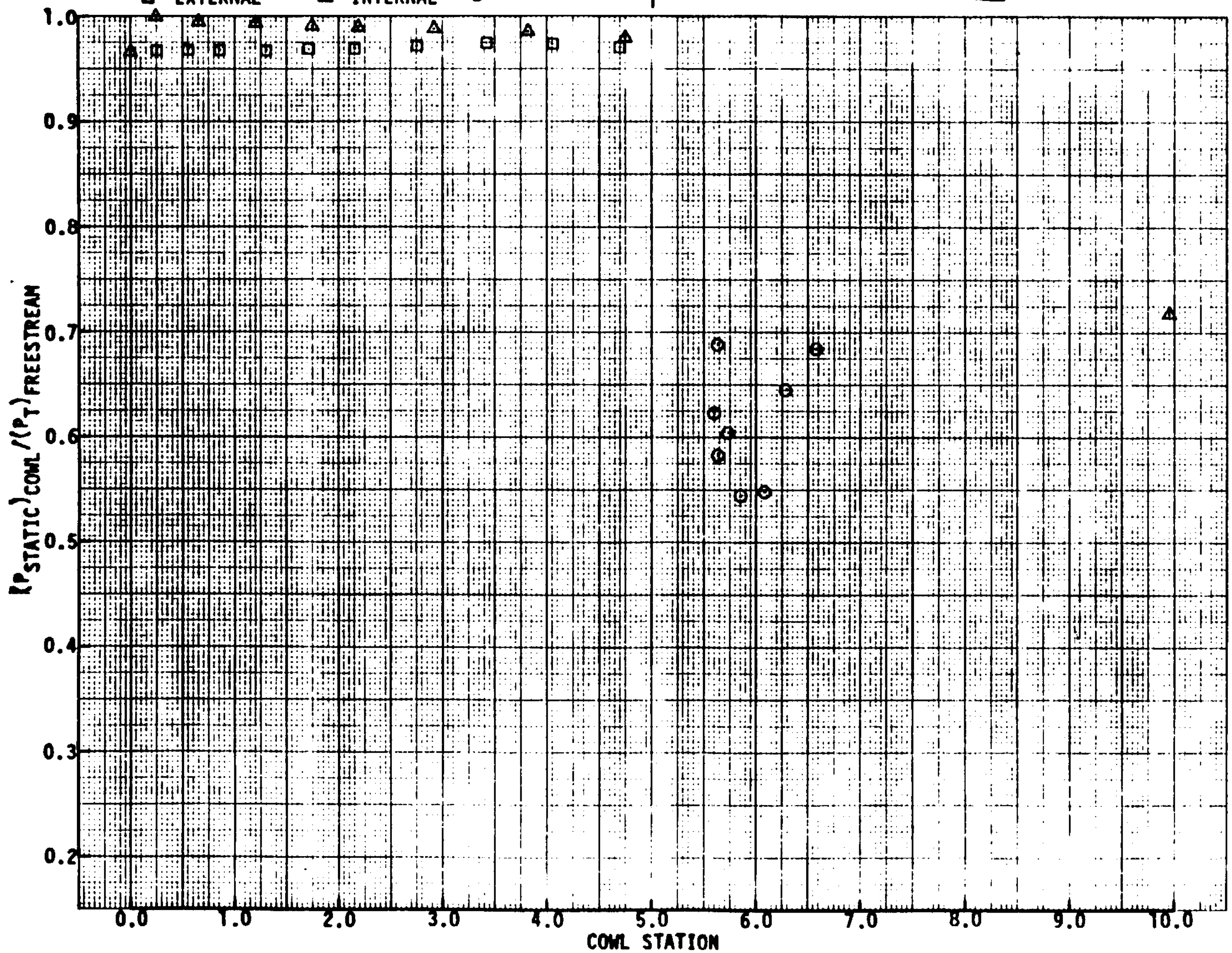
FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 0 degrees

ENGINE FACE MACH NUMBER = .533

□ EXTERNAL   △ INTERNAL   ○ KNEE





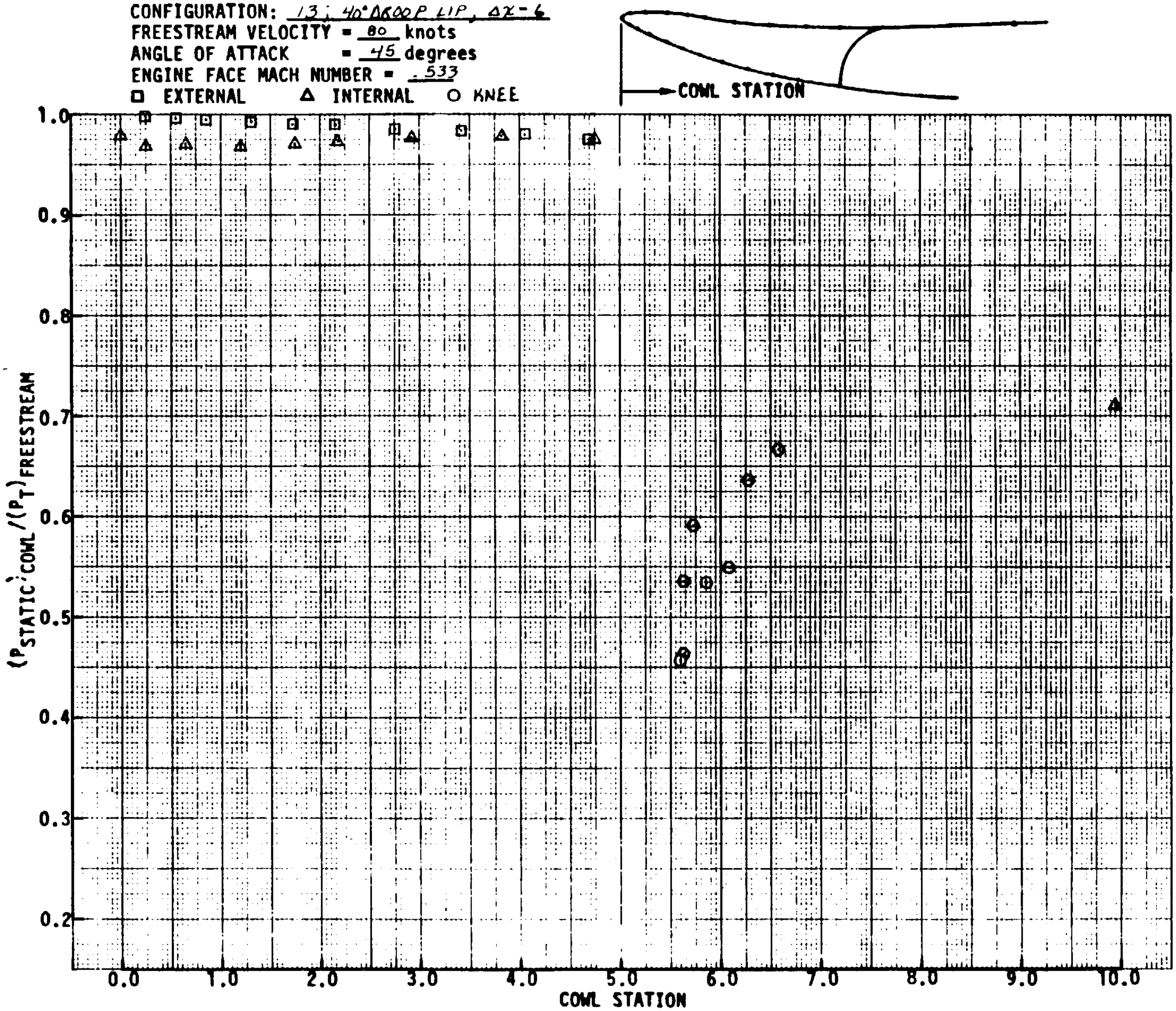
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 13; 40°Δ600P LIP, Δx-6

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 45 degrees

ENGINE FACE MACH NUMBER = .533



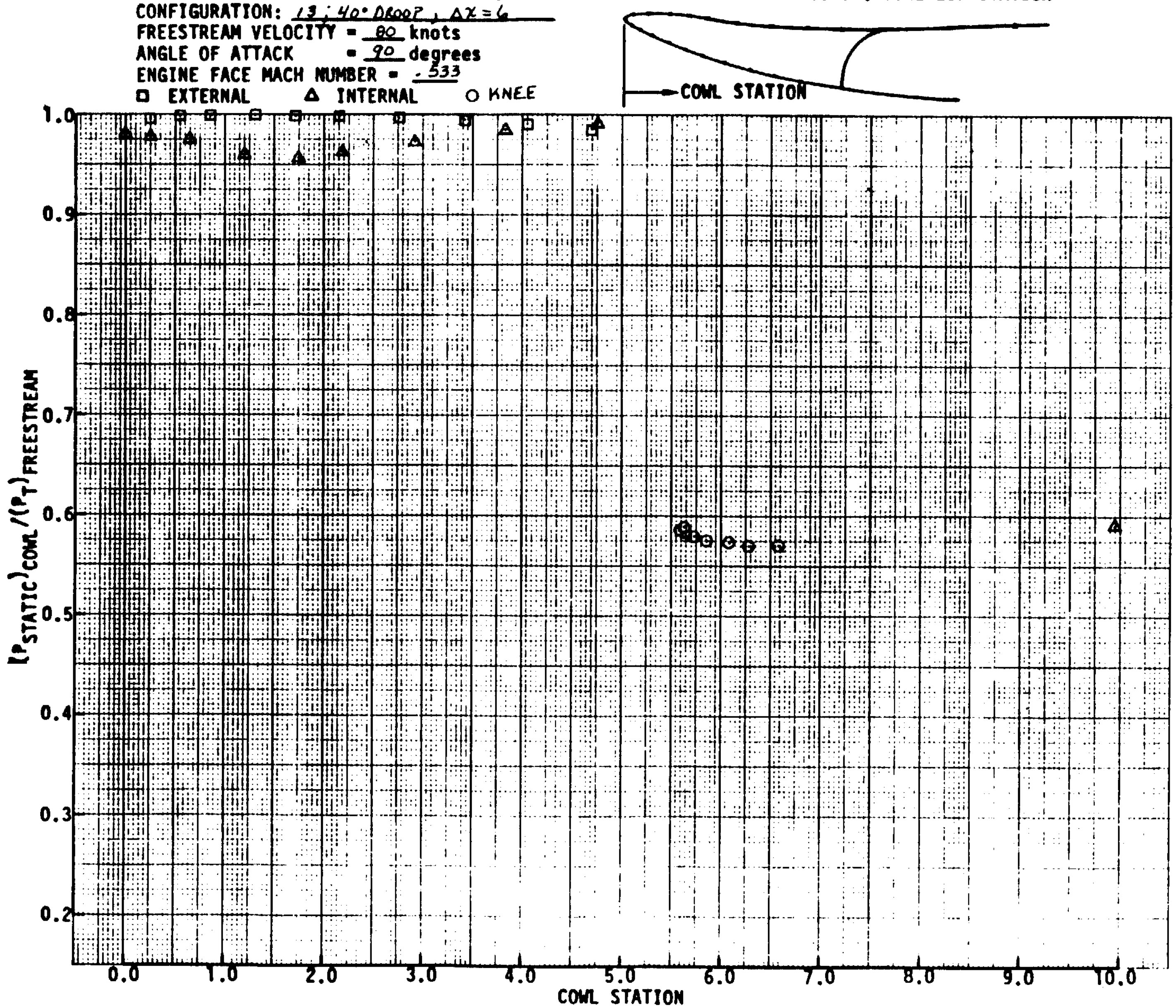
COWL LIP STATIC PRESSURE PROFILES ; COWL LIP STATIC PRESSURE RATIO VS. COWL LIP STATION

CONFIGURATION: 13 ; 40° DROOP , $\Delta X = 6$

FREESTREAM VELOCITY = 80 knots

ANGLE OF ATTACK = 90 degrees

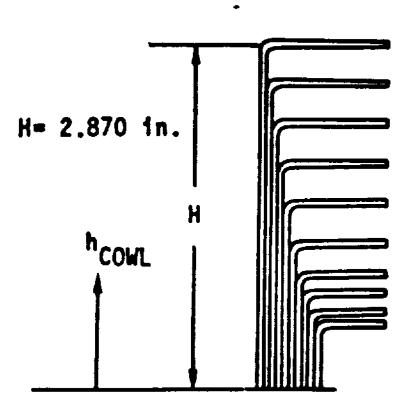
ENGINE FACE MACH NUMBER = .533

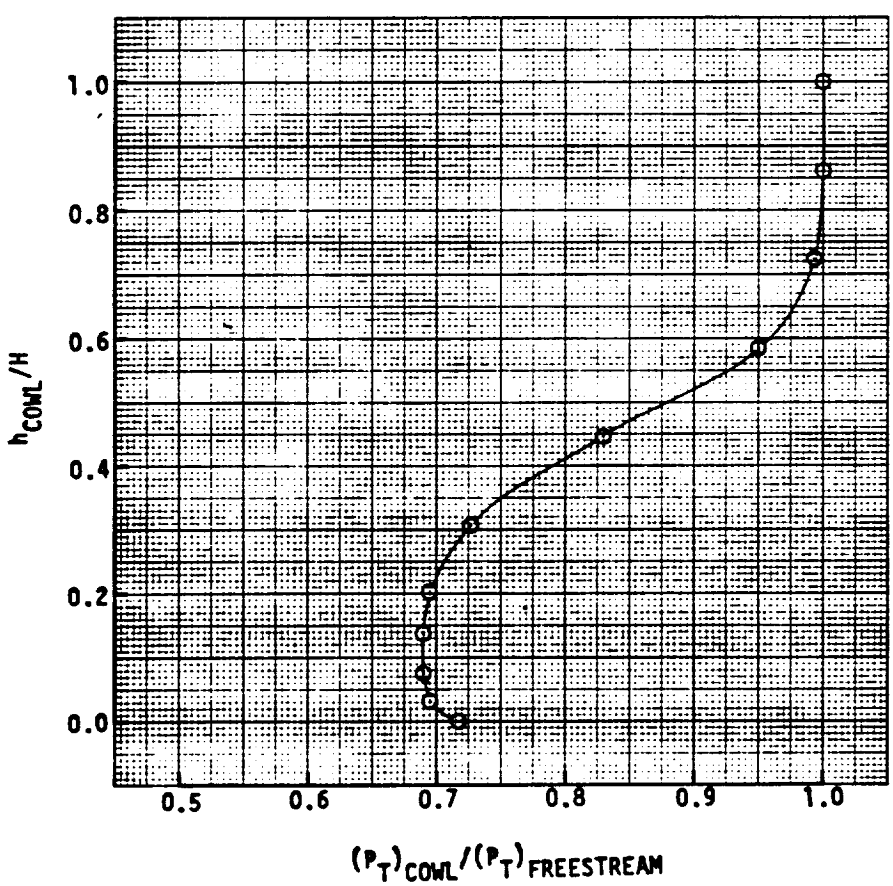


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 13 ; DESCRIPTION 40° DROOP LIP ; ΔX=6

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 0 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

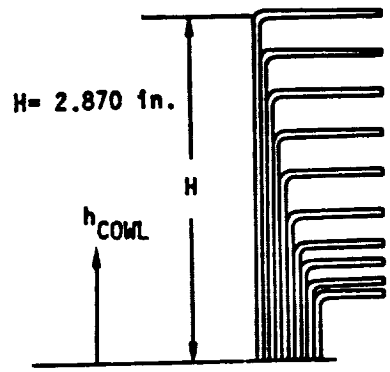


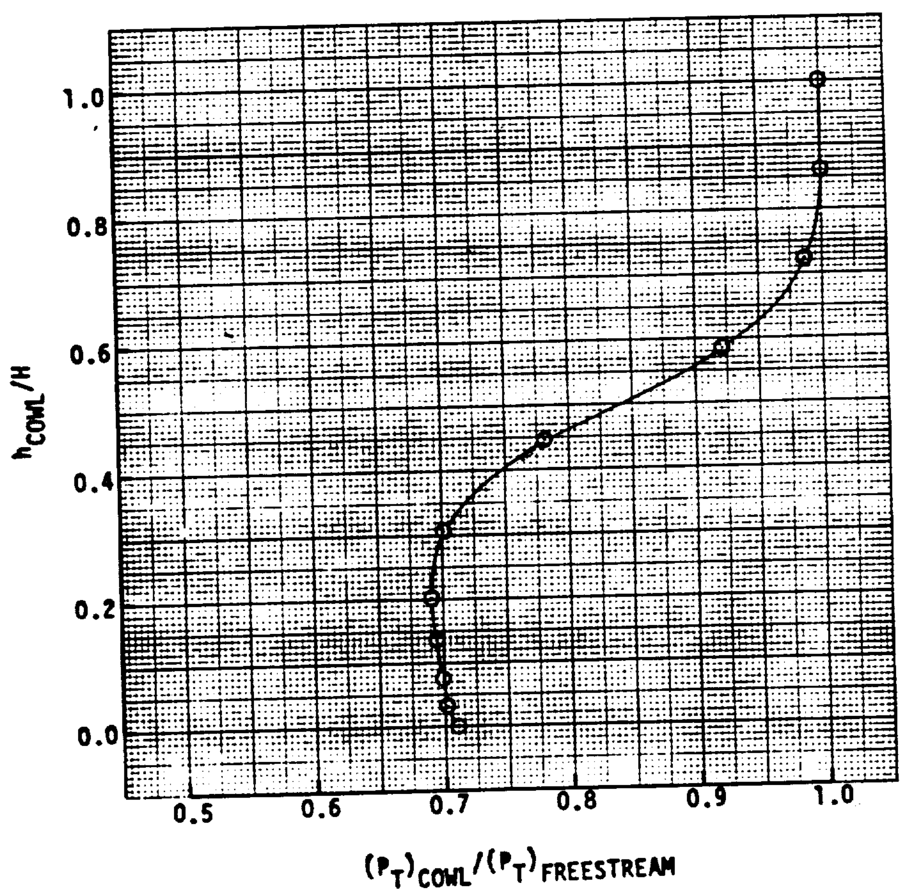


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

CONFIGURATION: NUMBER 13; DESCRIPTION 40° DROOP LIP, ΔX=6

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 45 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

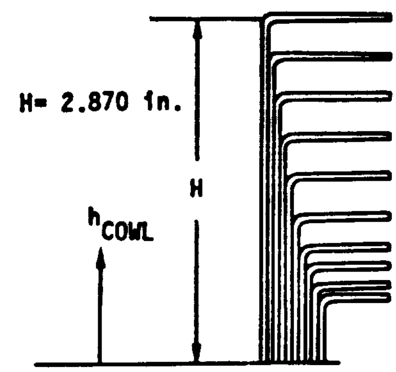


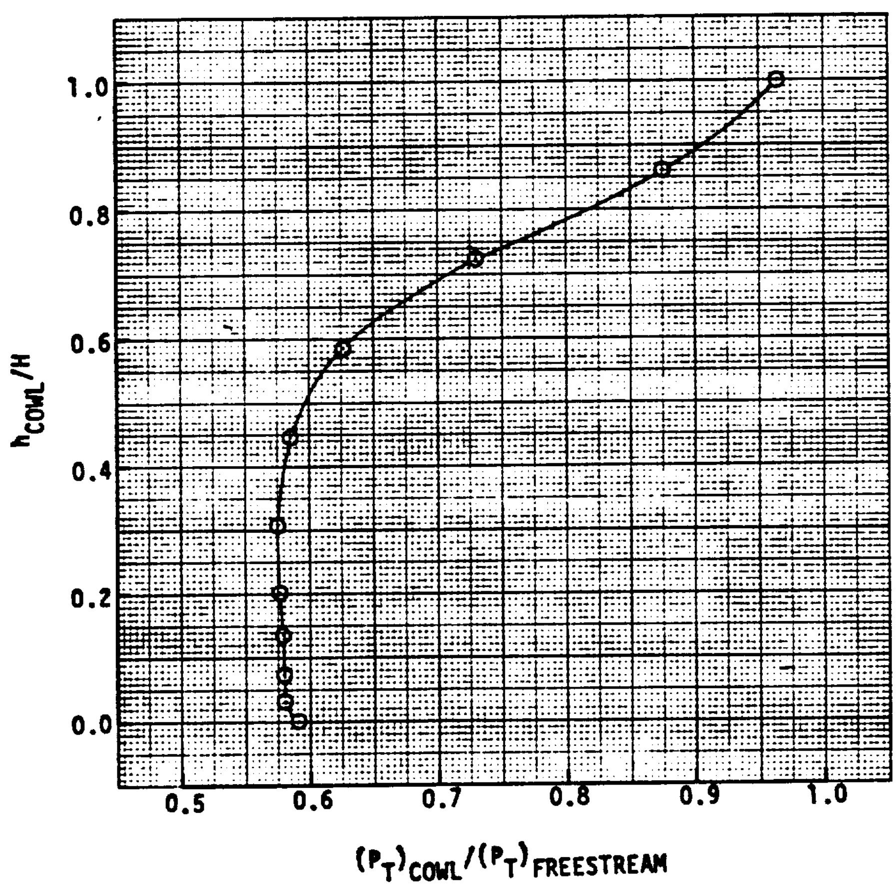


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

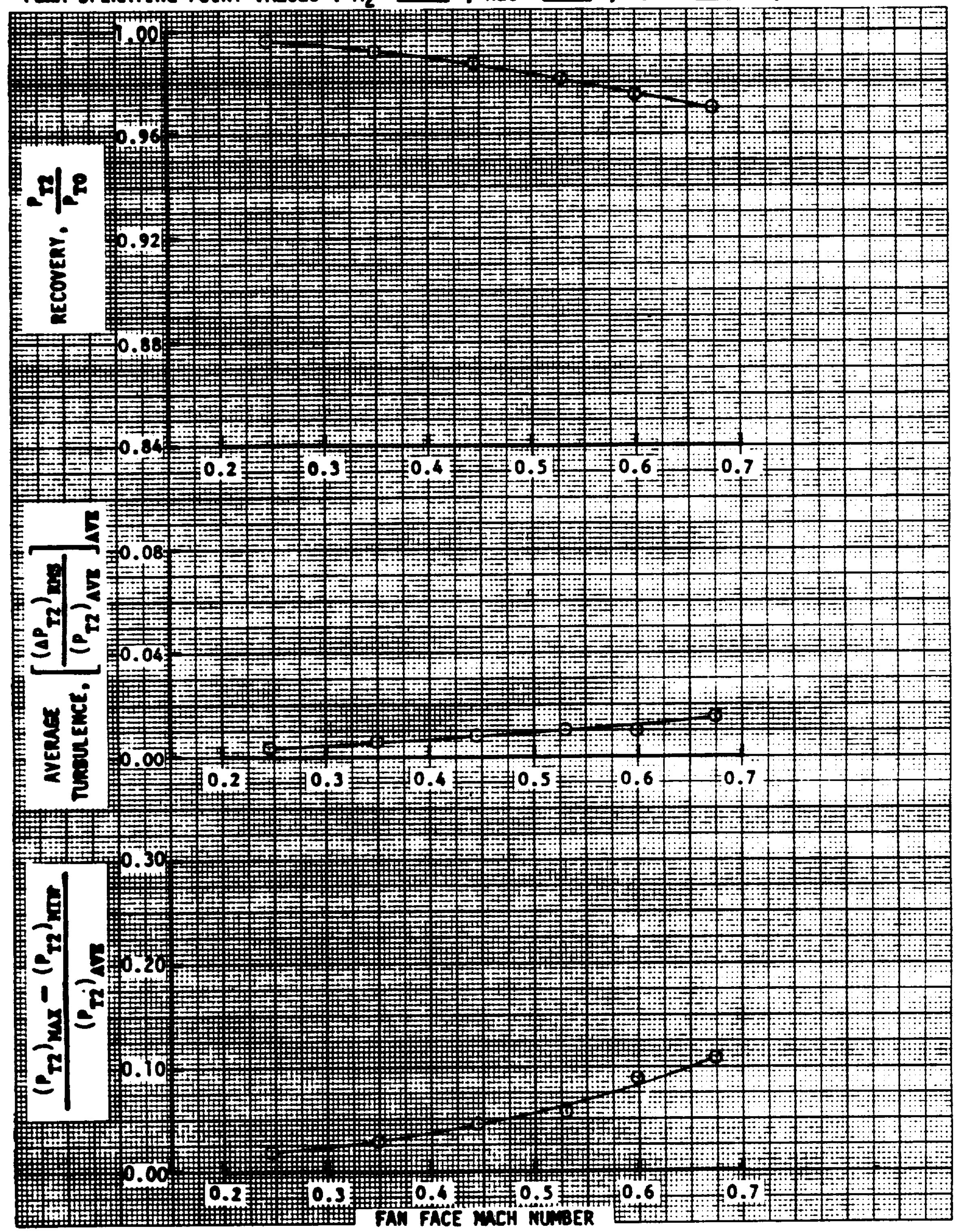
CONFIGURATION: NUMBER 13 ; DESCRIPTION 40° DROOP LIP ; ΔX=6

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .533

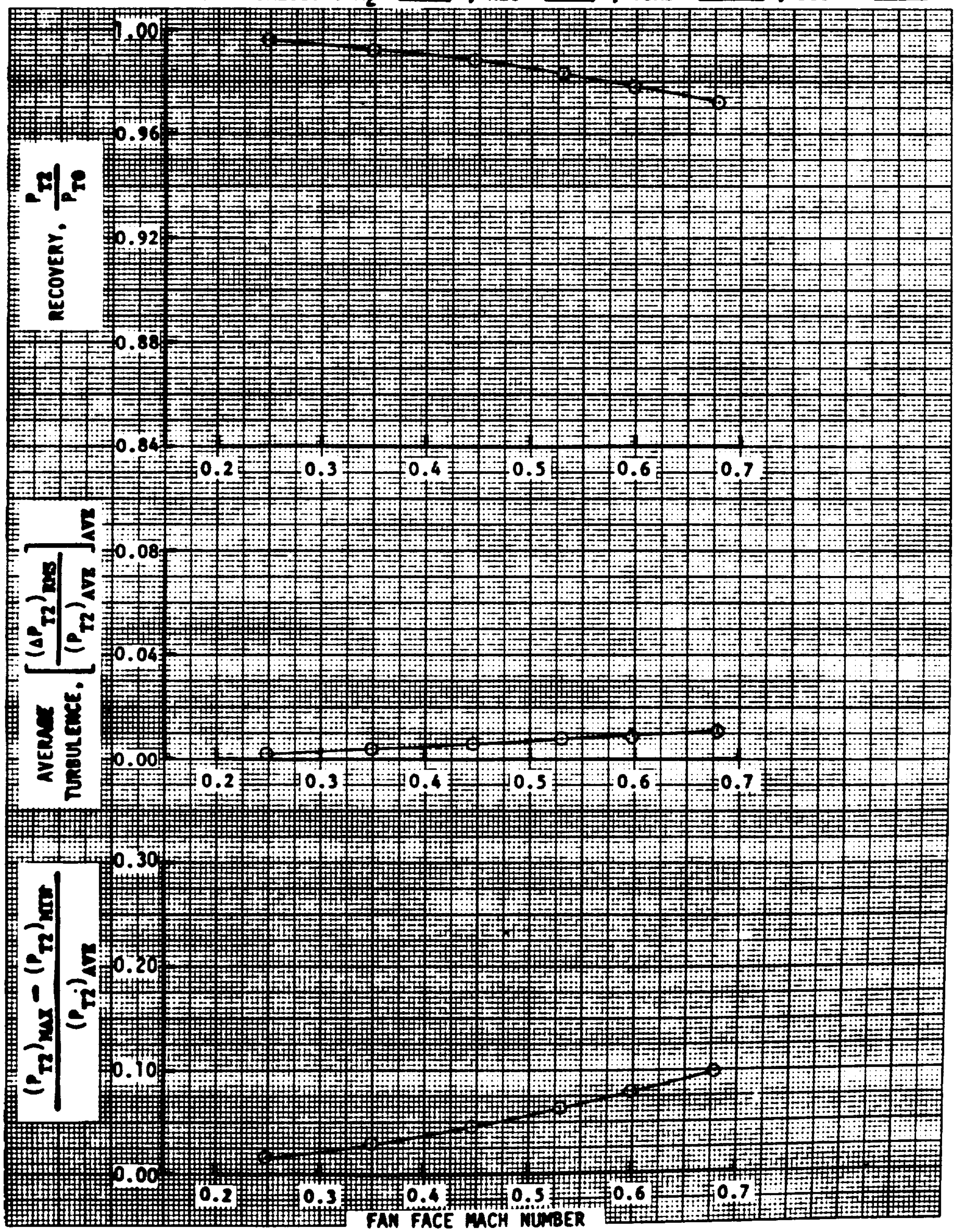




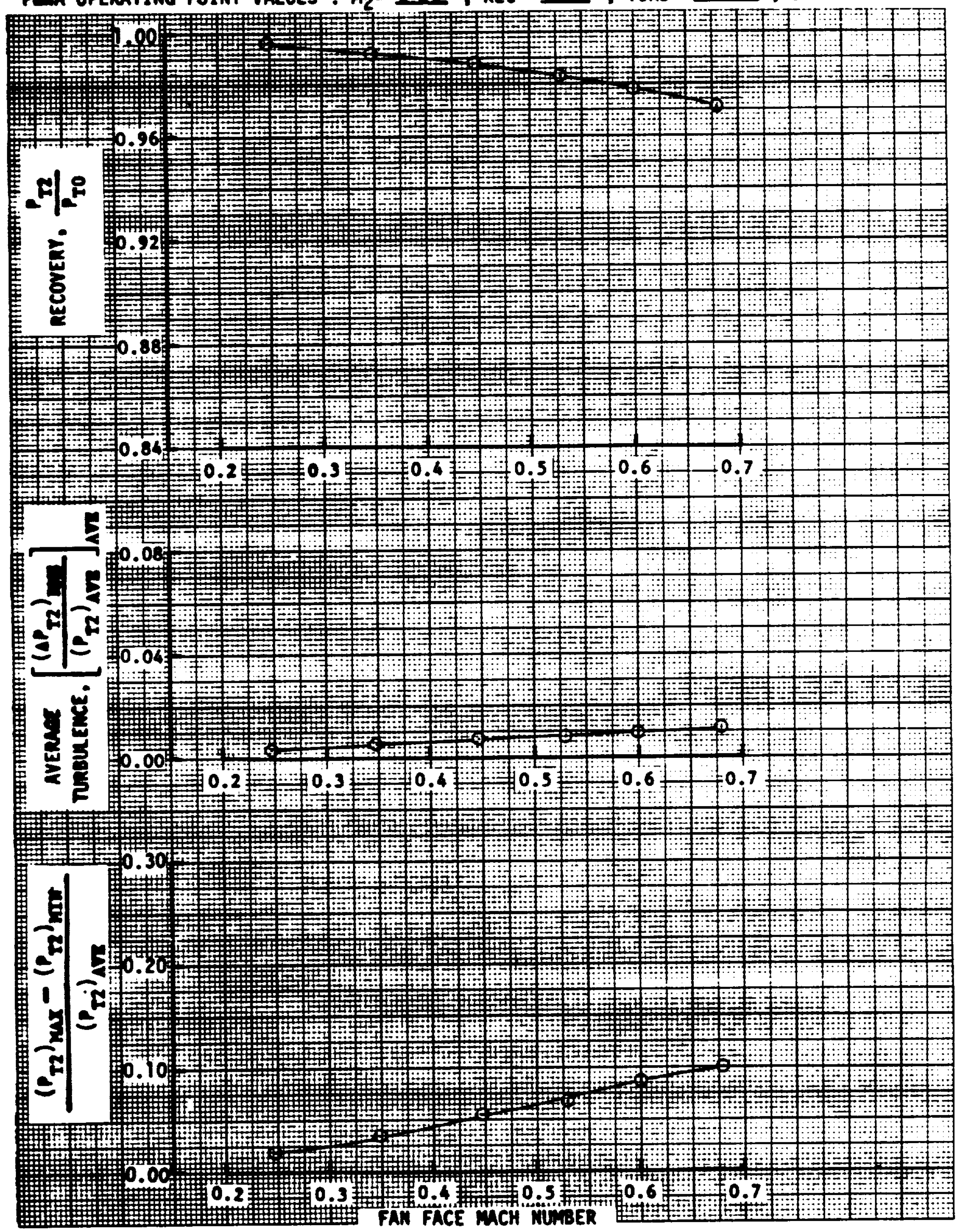
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2529-2534
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .010 ; DIST= .063



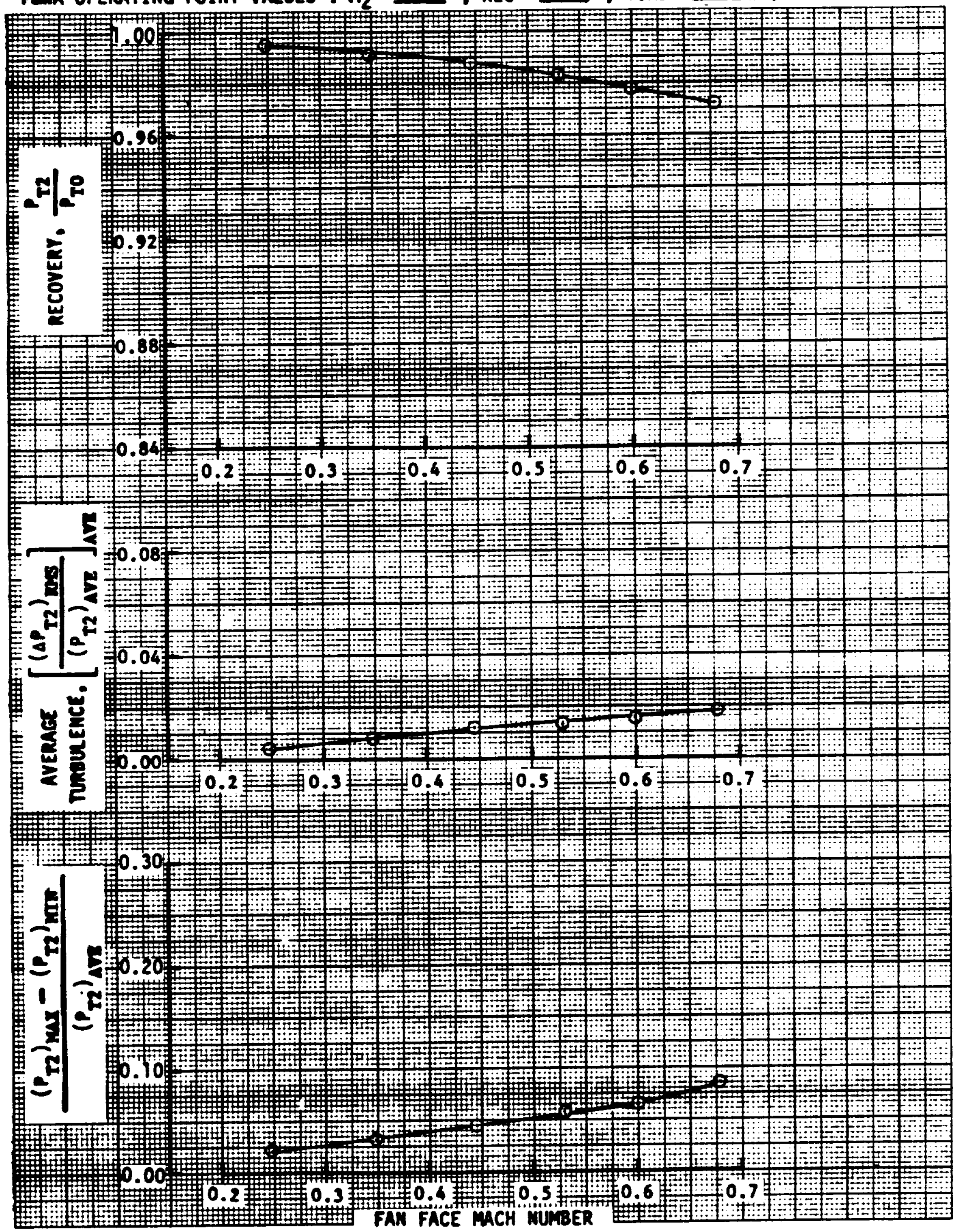
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2535-2540
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .008 ; DIST= .063



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2541-2546
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .008 ; DIST= .071



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2547-2552
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .014 ; DIST= .055

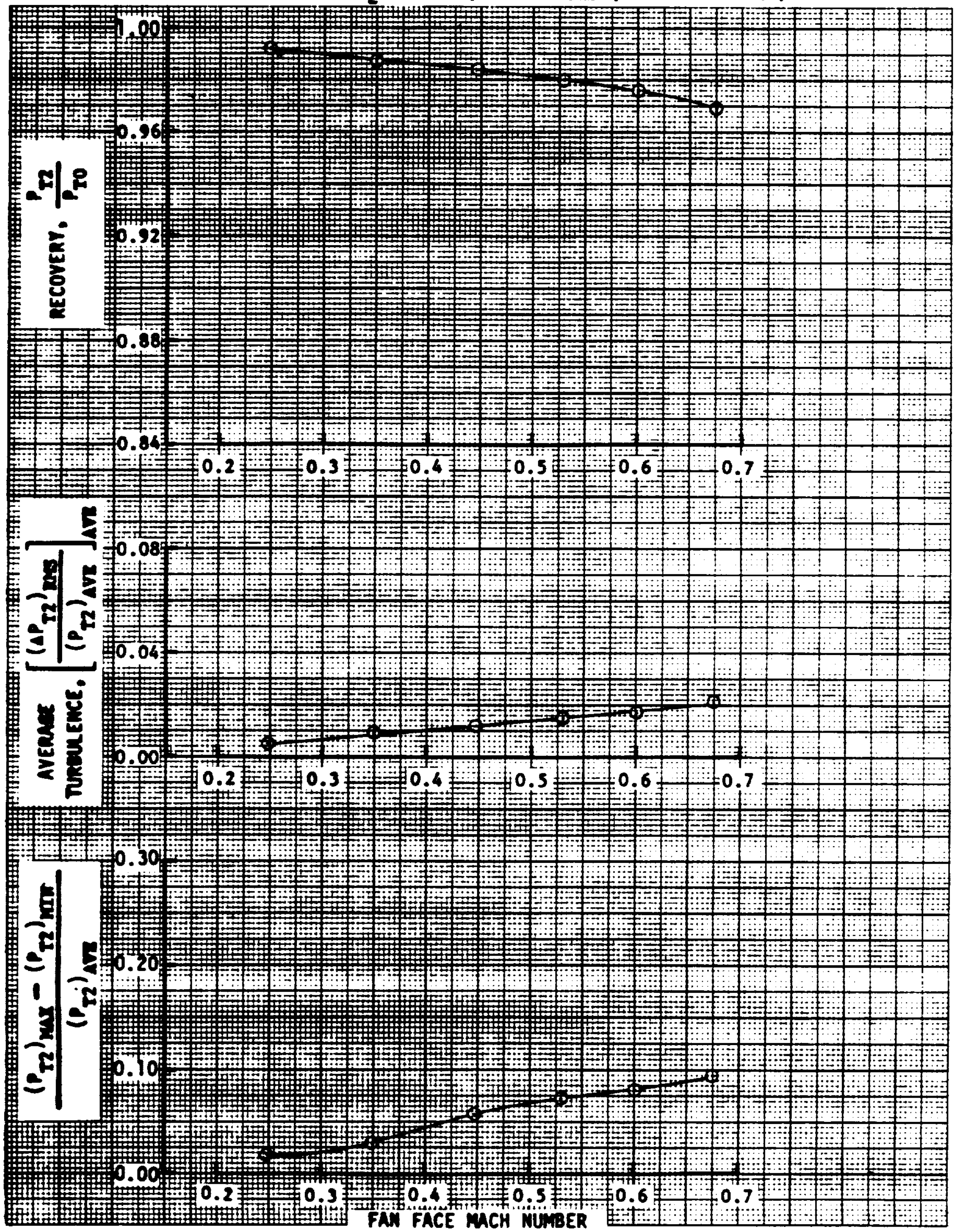


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

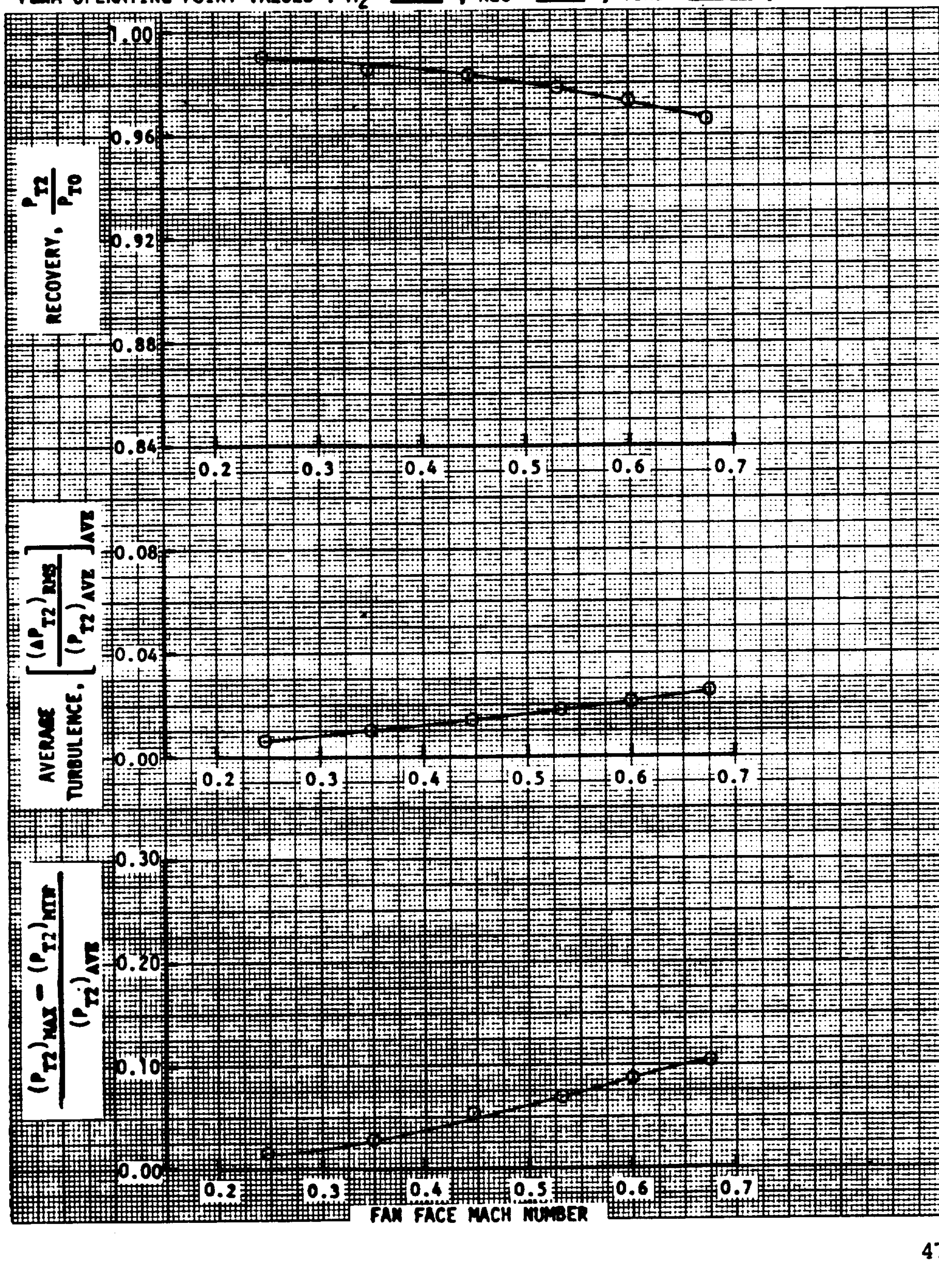
CONFIGURATION 14 ; READING NUMBERS 2553-2558

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

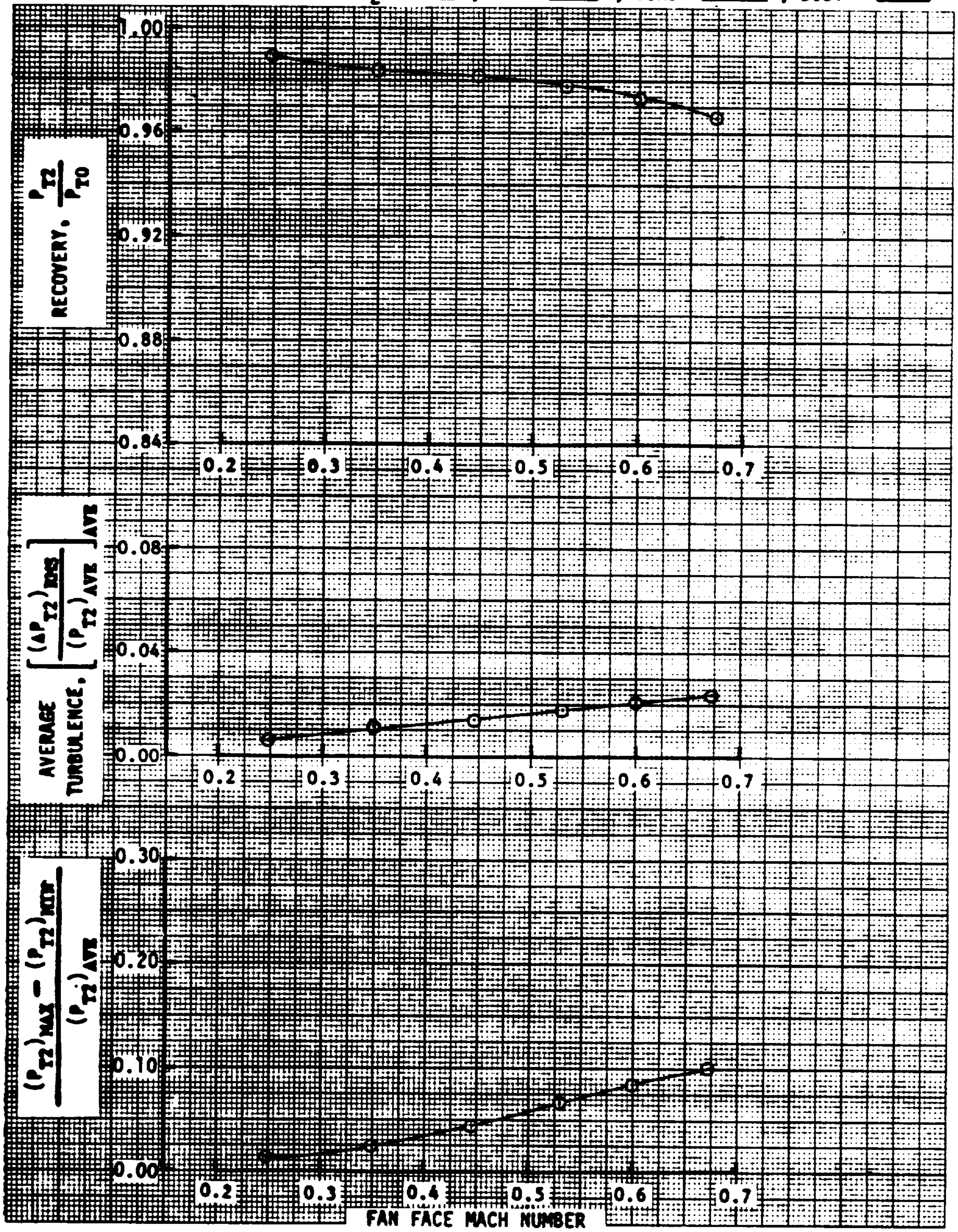
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .015 ; DIST= .072



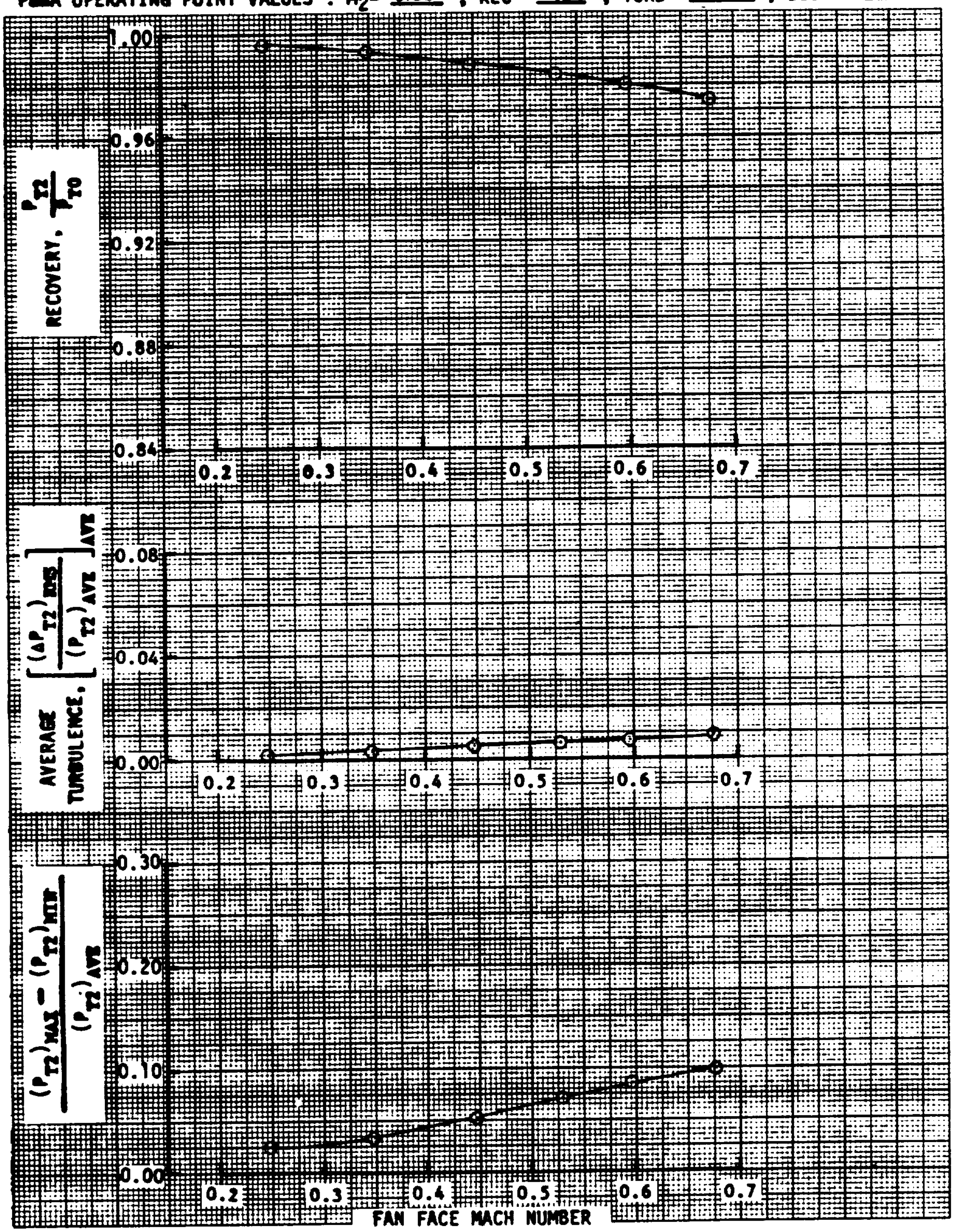
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2559-2564
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .018 ; DIST= .069



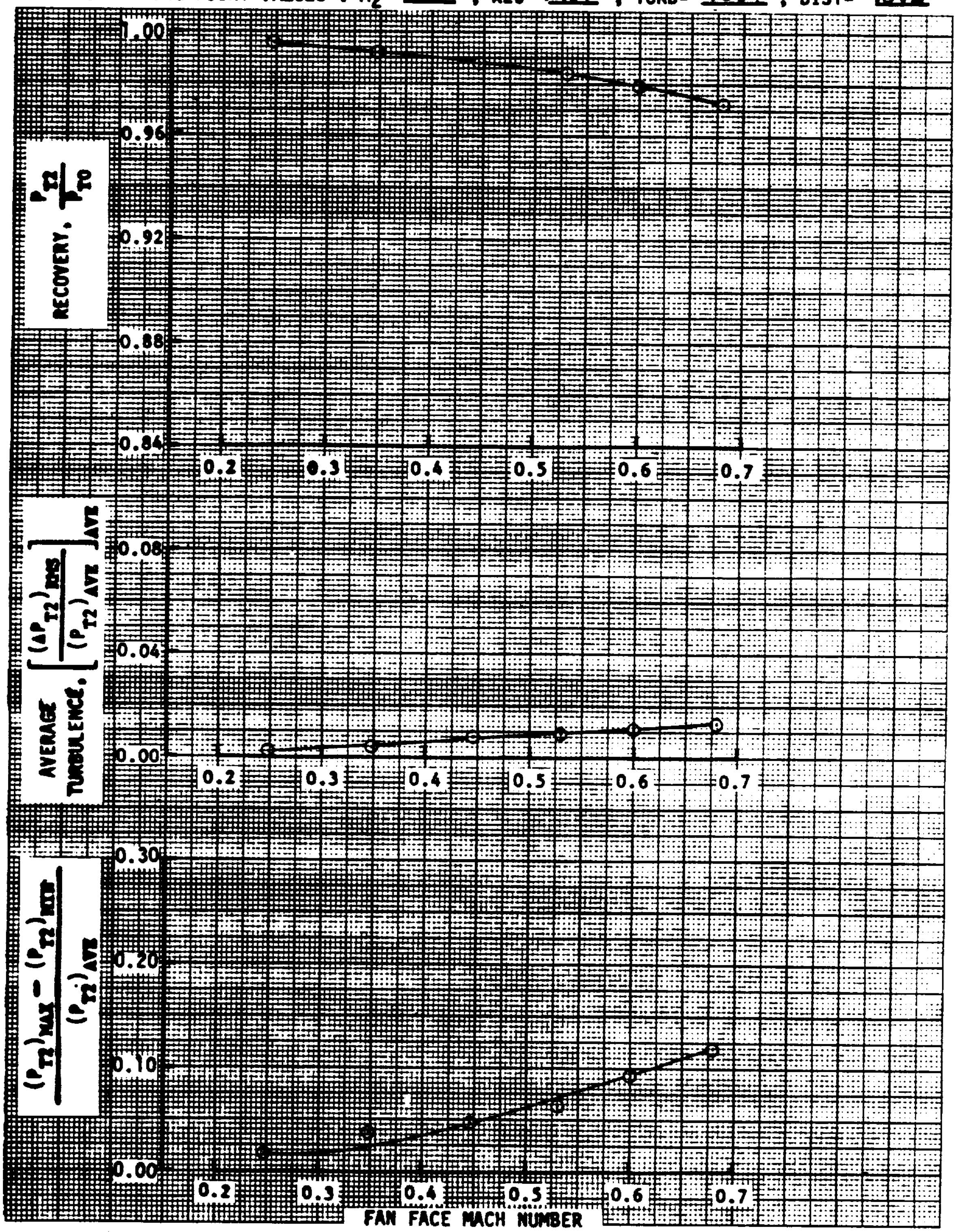
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2565-2570
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .018 ; DIST= .066



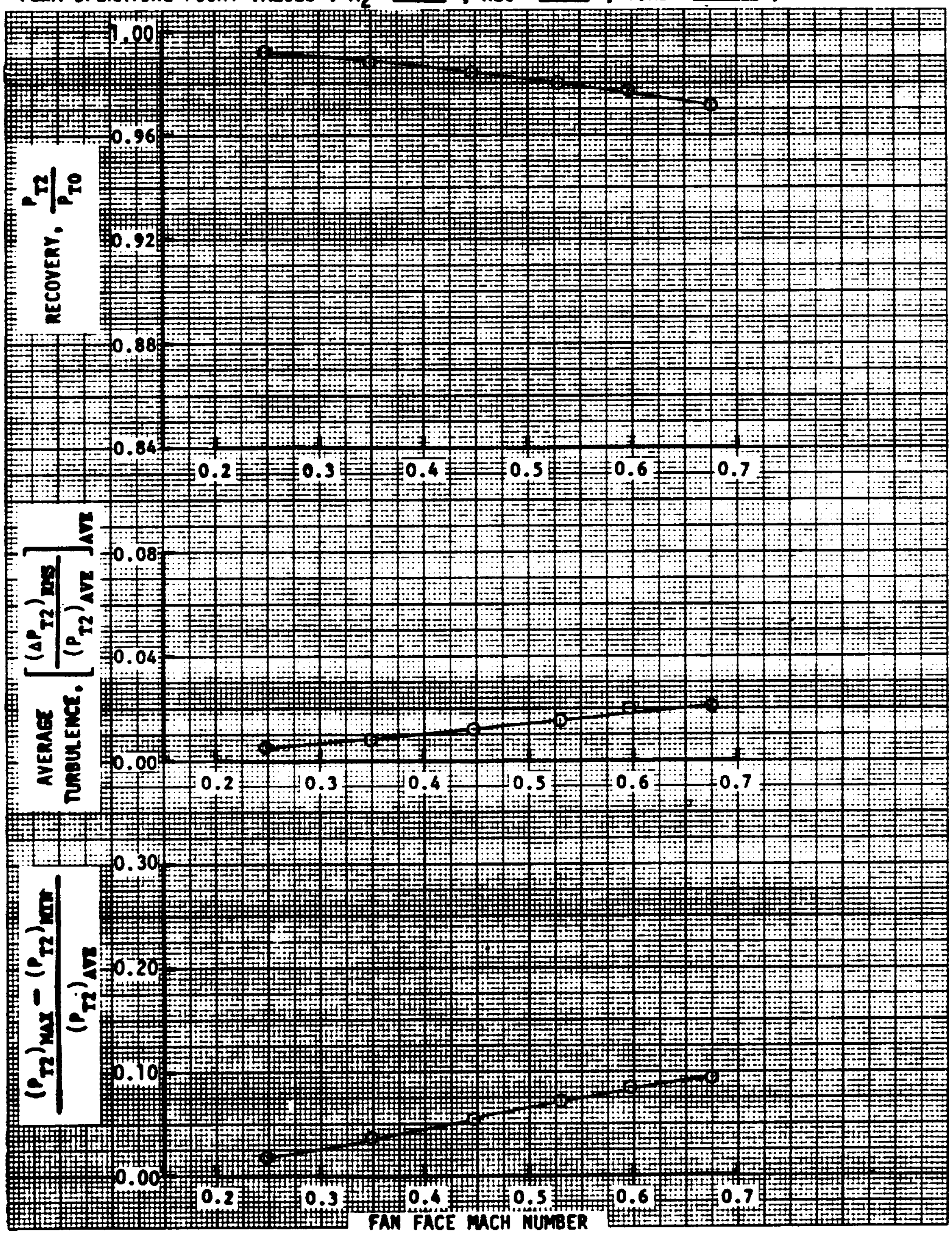
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2571-2576
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .006 ; DIST= .071



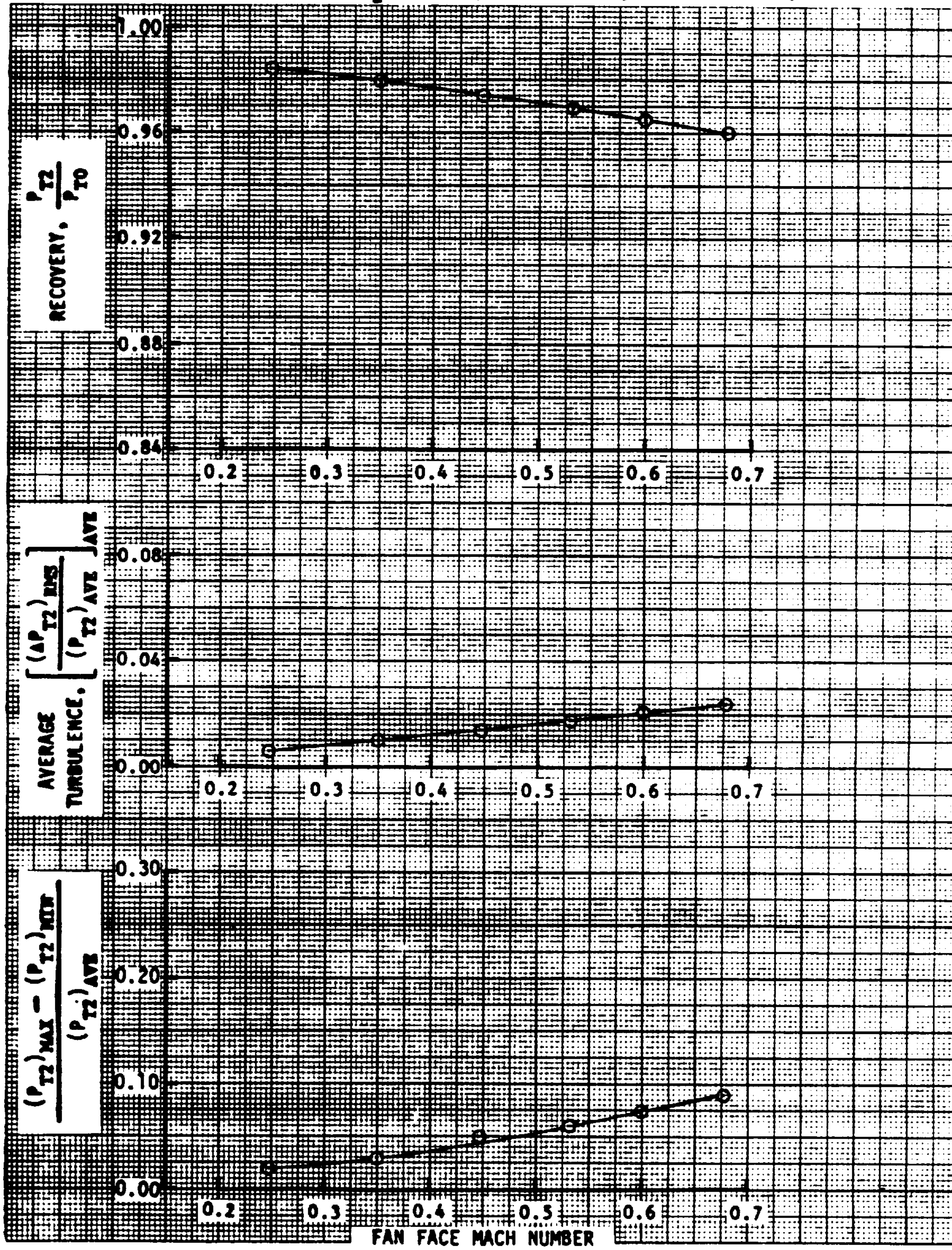
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2577-2582
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .009 ; DIST= .072



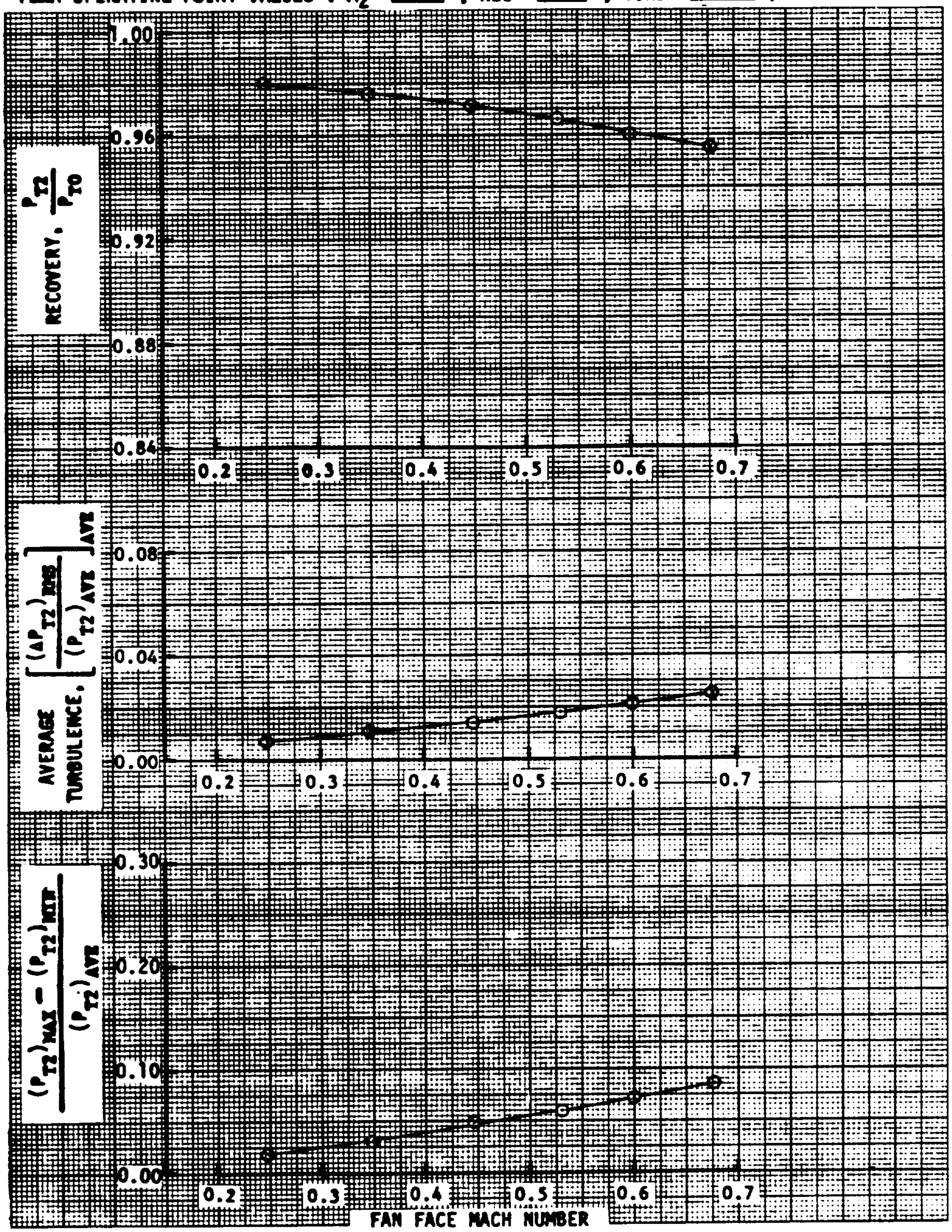
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2583-2588
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .015 ; DIST= .071



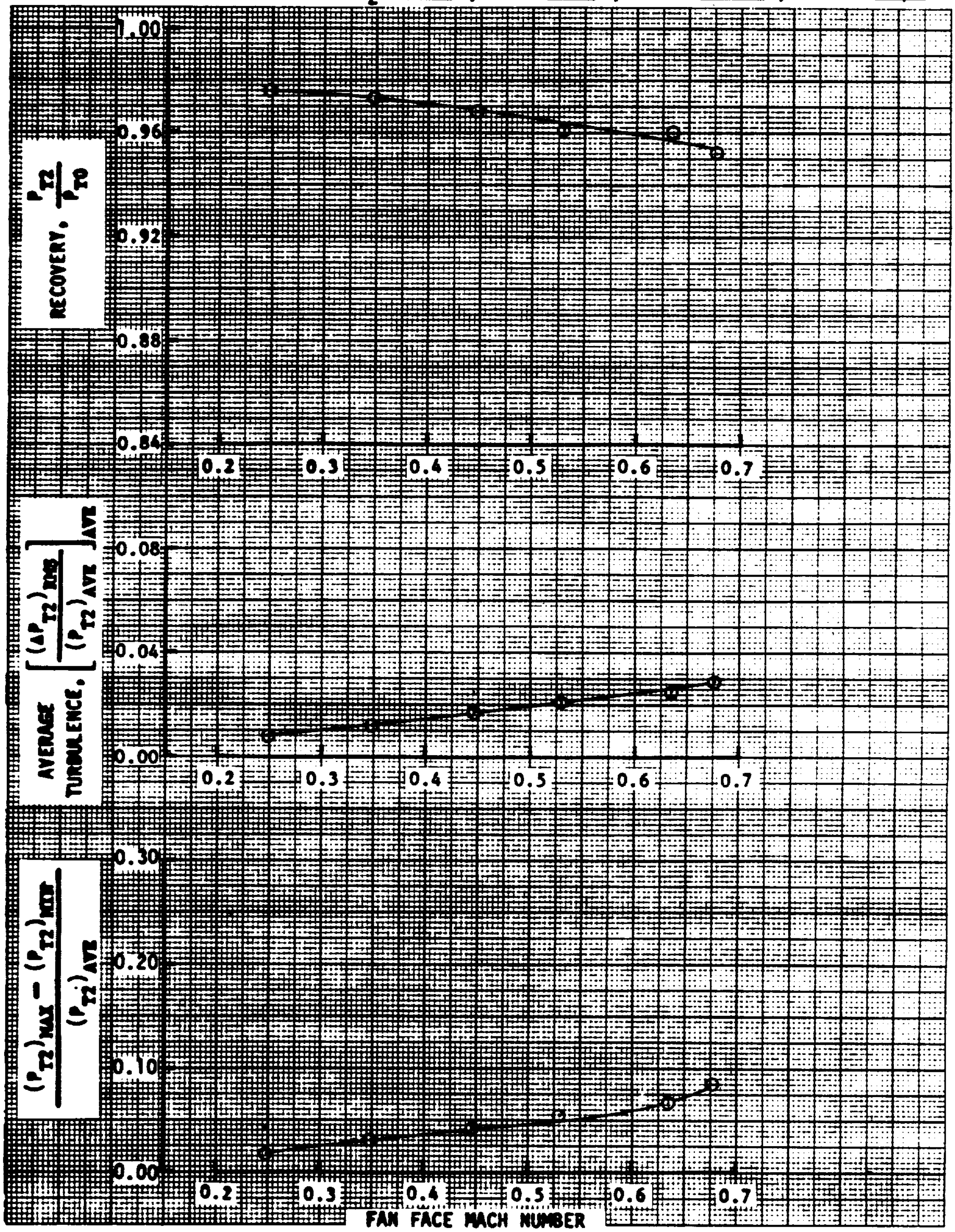
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2589-2594
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .969 ; TURB= .018 ; DIST= .059



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2595-2600
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .018 ; DIST= .060



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2601-2606
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PDMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .914 ; TURB= .021 ; DIST= .049

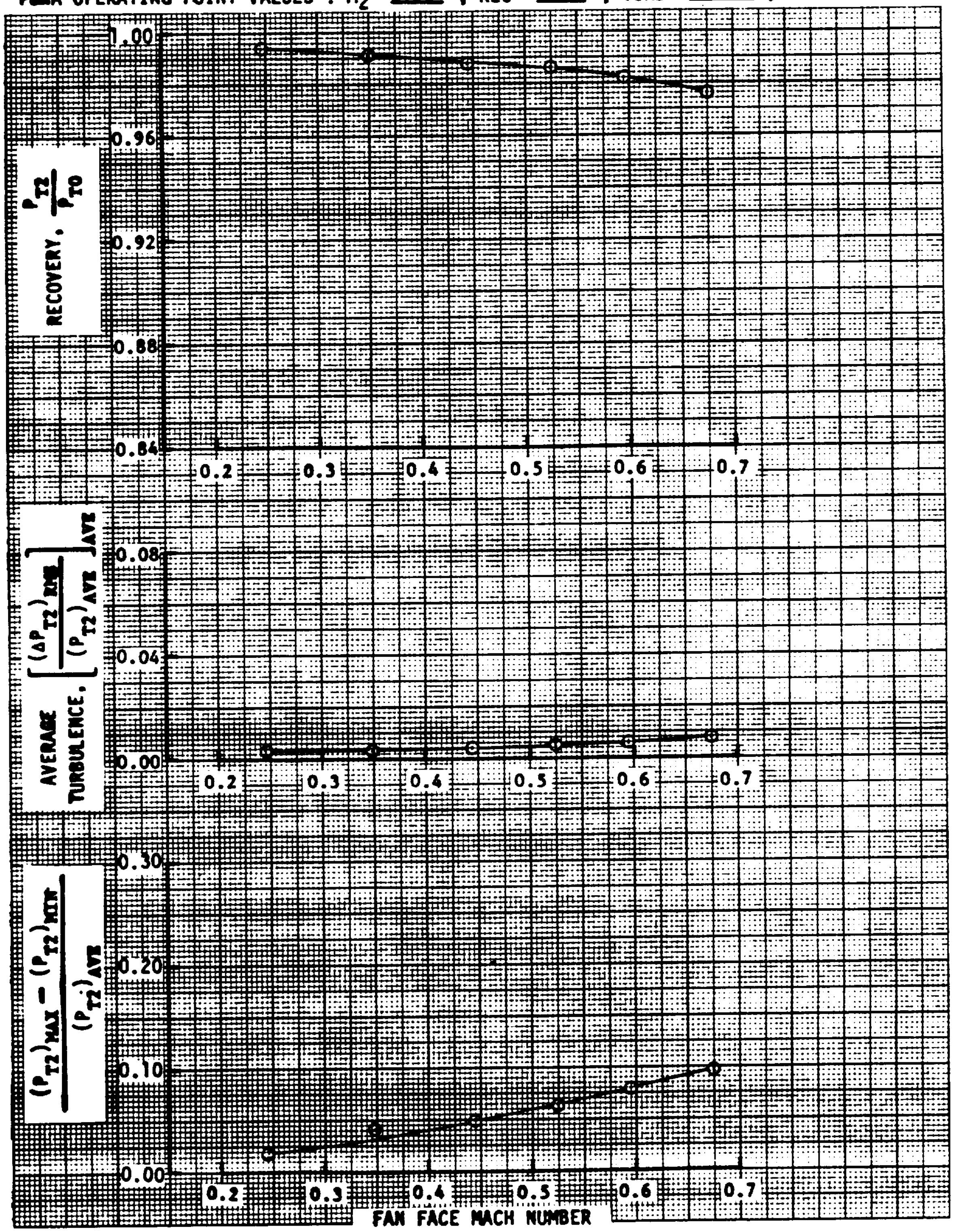


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

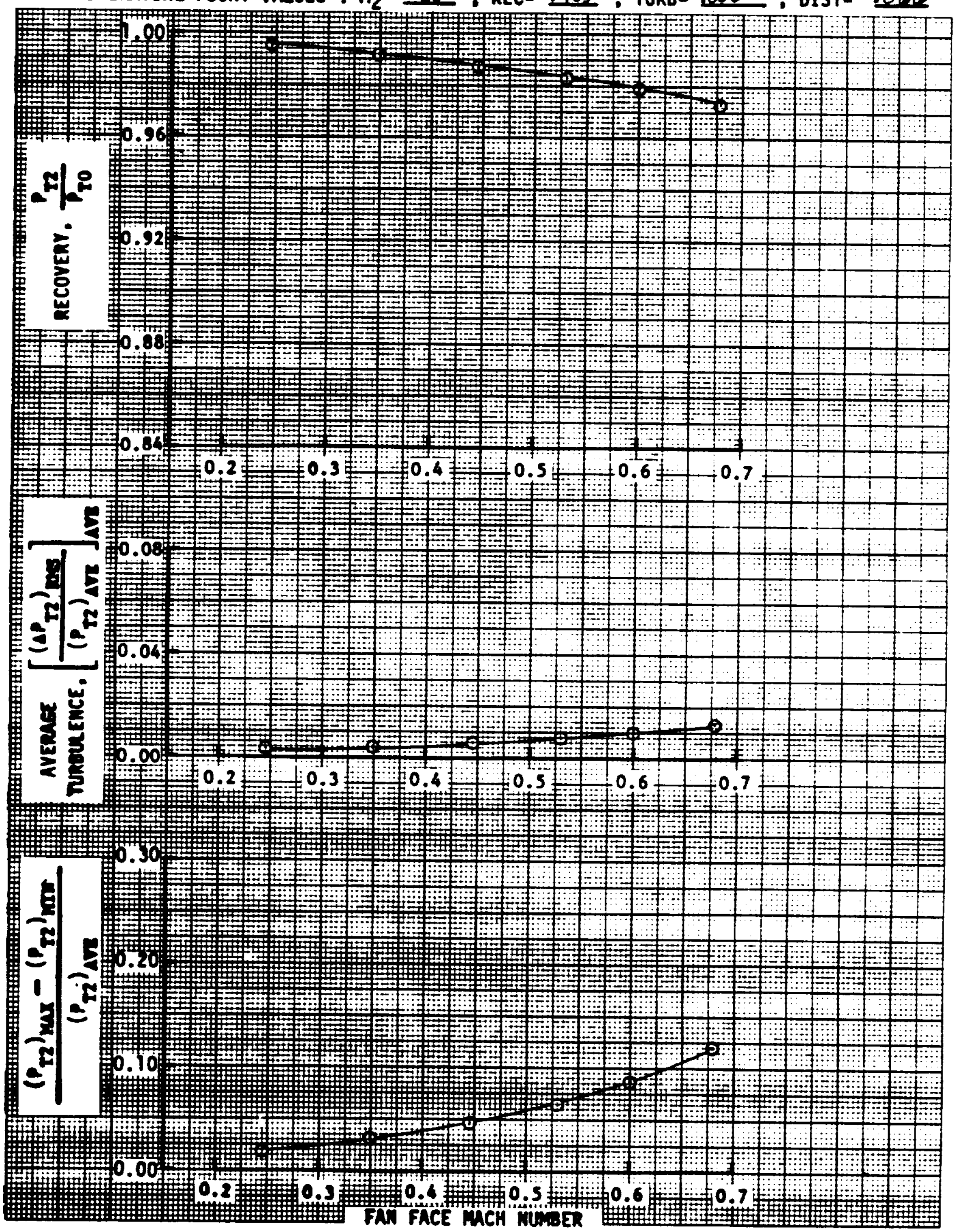
CONFIGURATION 14 ; READING NUMBERS 2607-2612

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

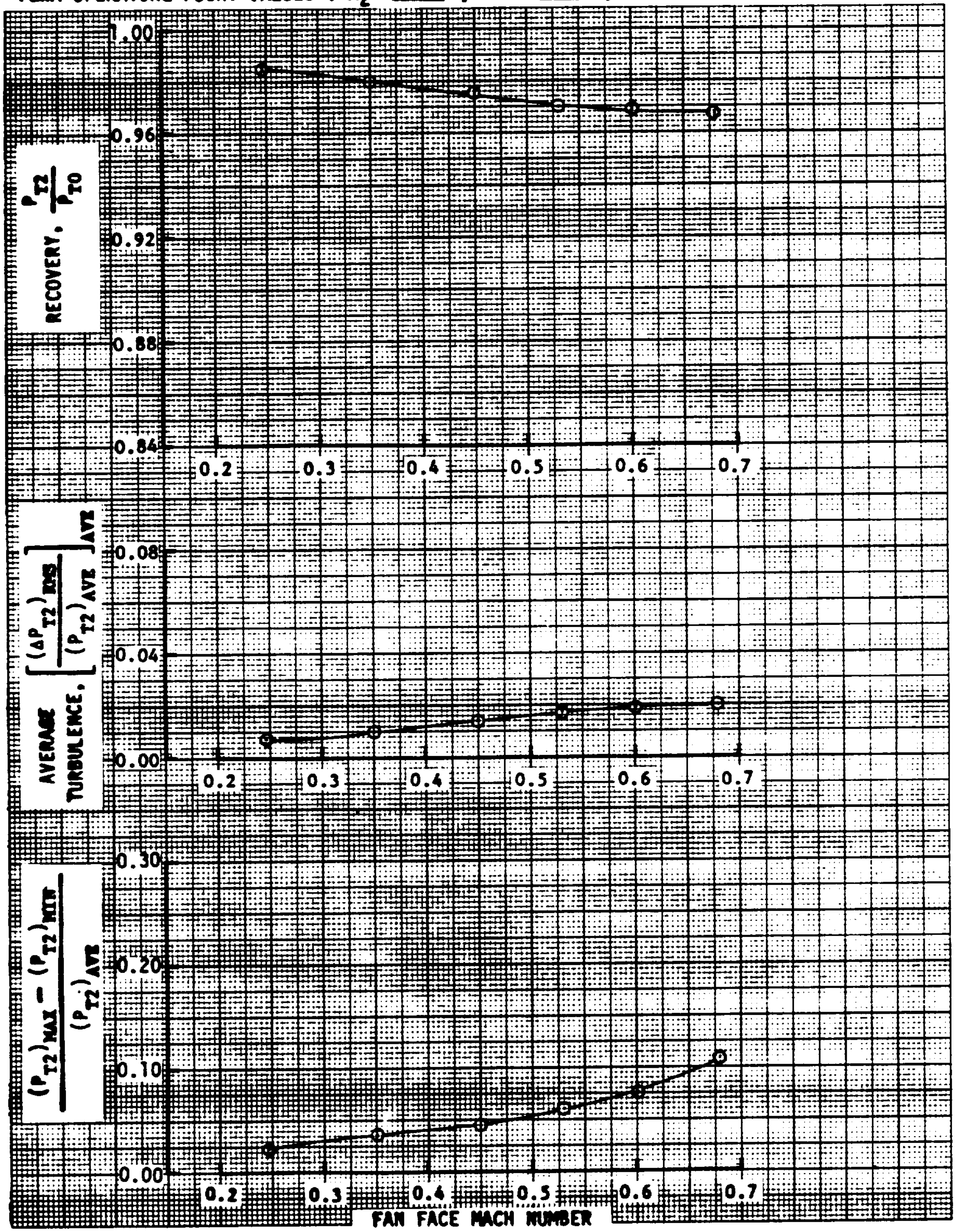
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .986 ; TURB= .005 ; DIST= .065



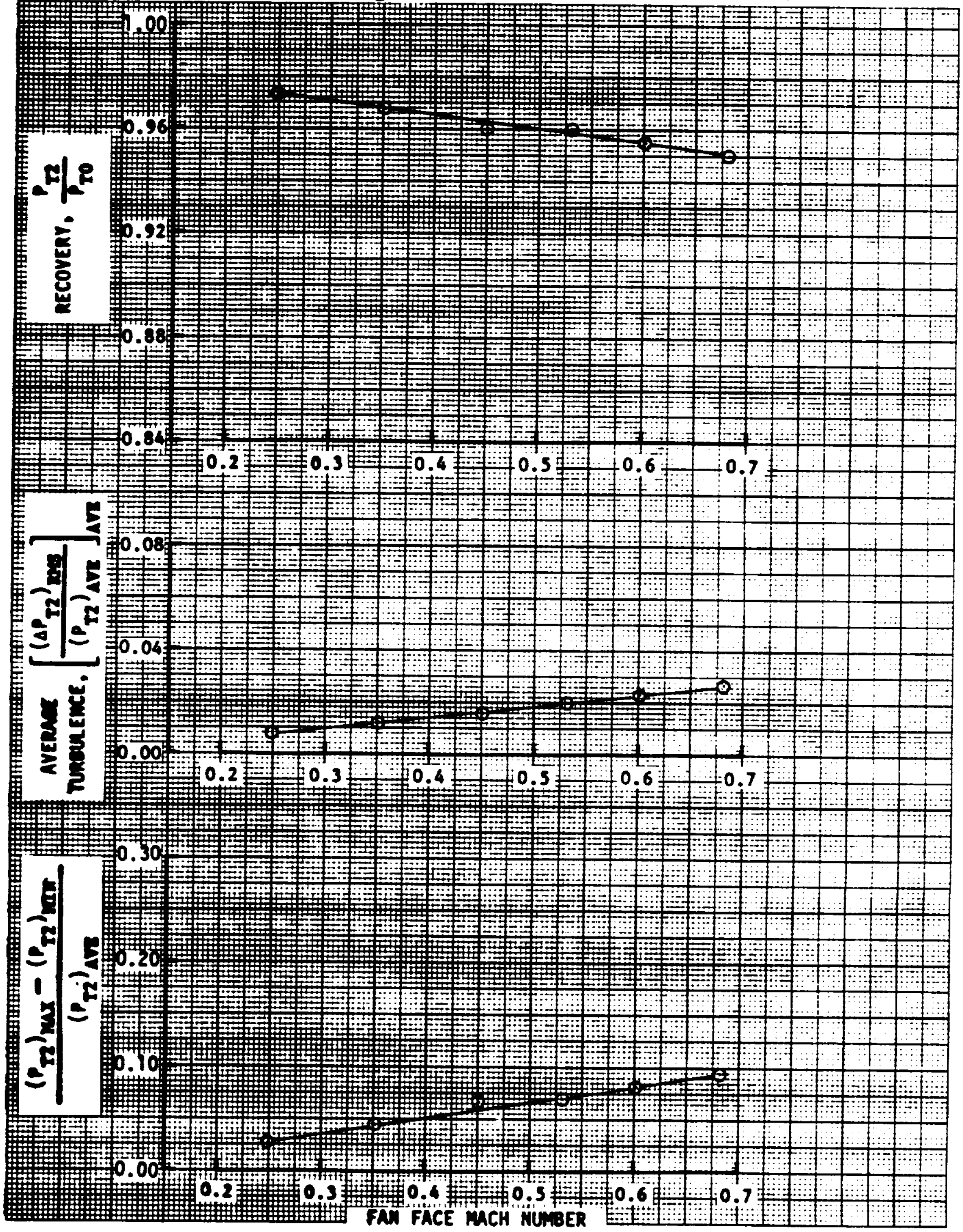
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2613-2618
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .983 ; TURB= .008 ; DIST= .066



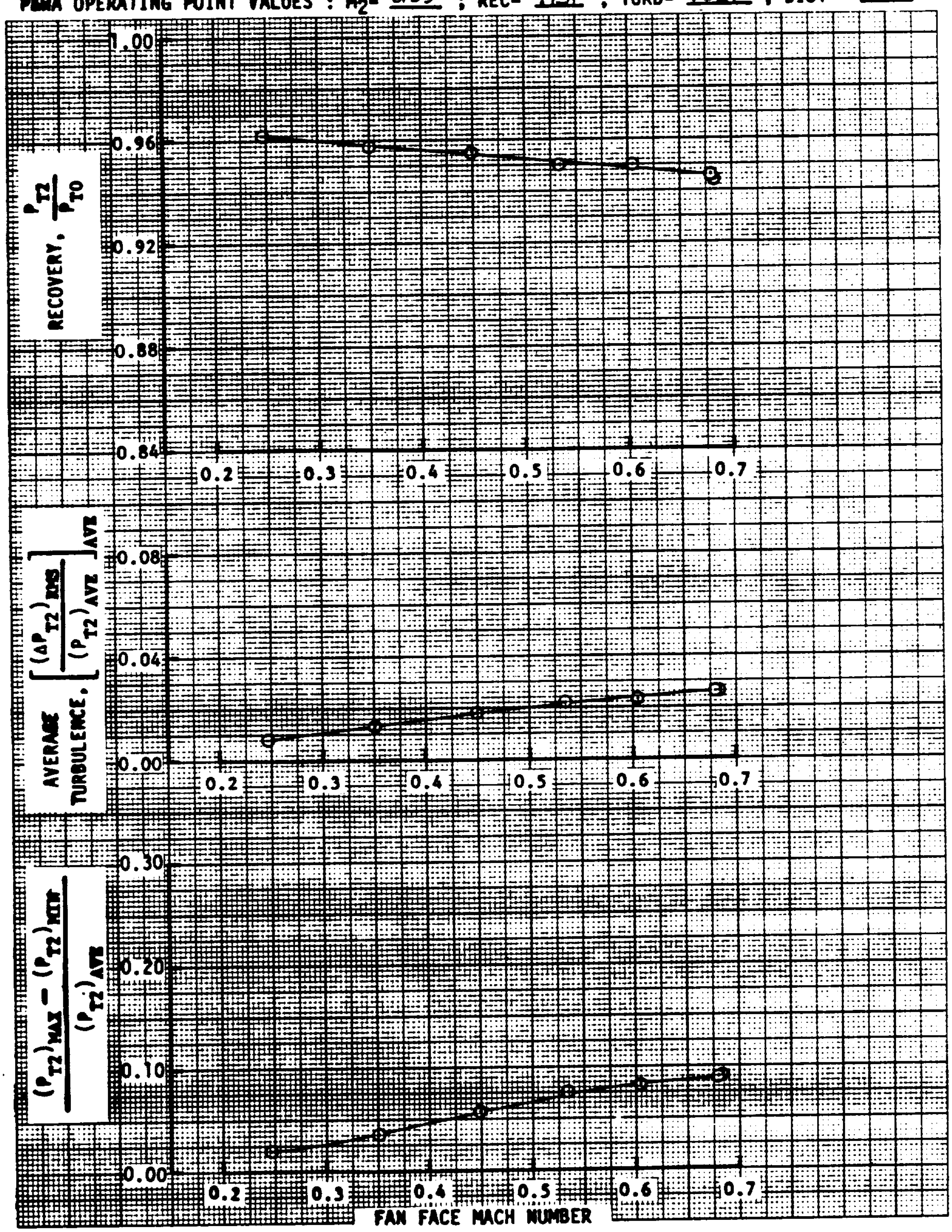
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2619-2624
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .017 ; DIST= .060



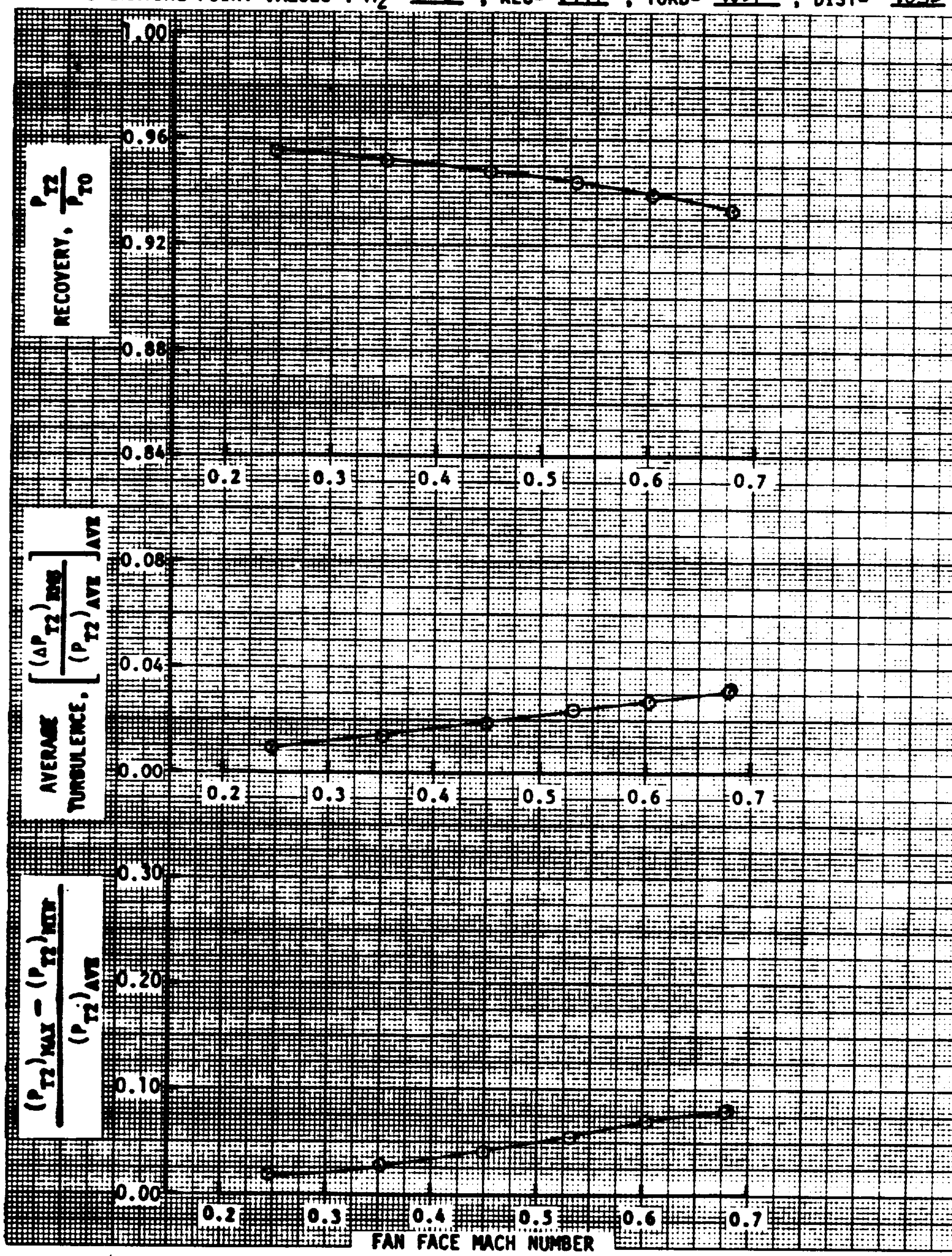
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2627-2632
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .020 ; DIST= .071



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2633-2639
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .021 ; DIST= .072



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 14 ; READING NUMBERS 2640-2646
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= .053 ; REC= .944 ; TURB= .024 ; DIST= .055



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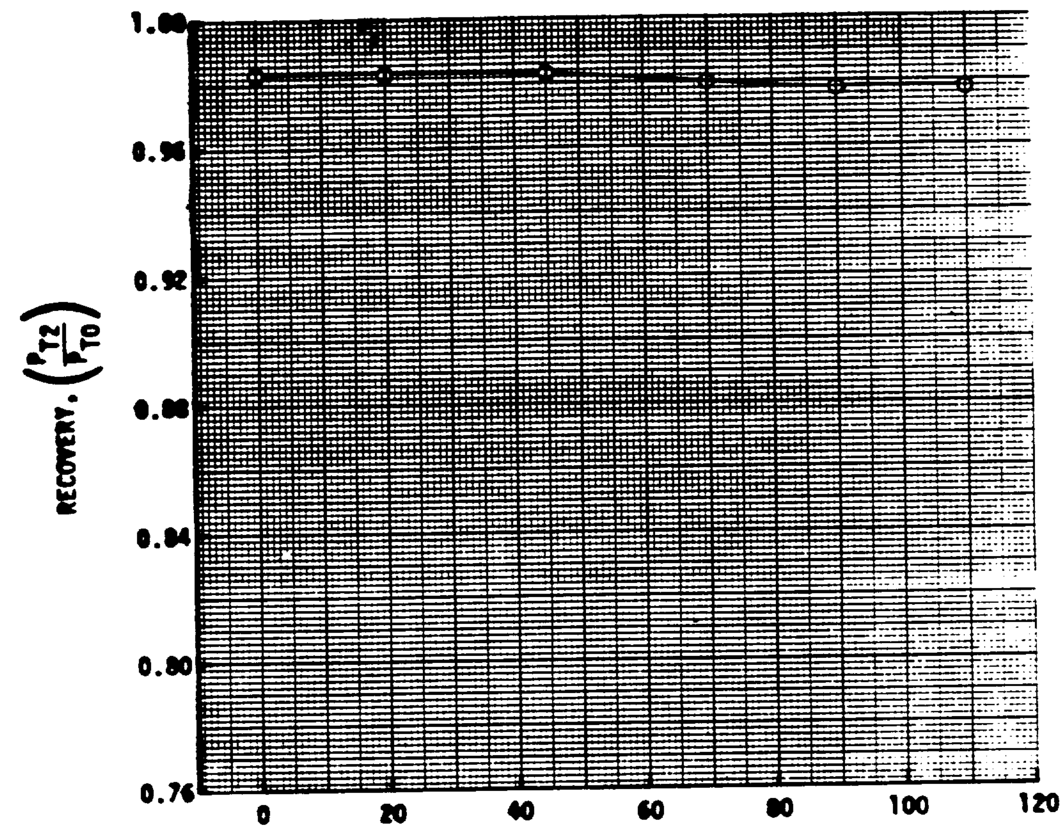
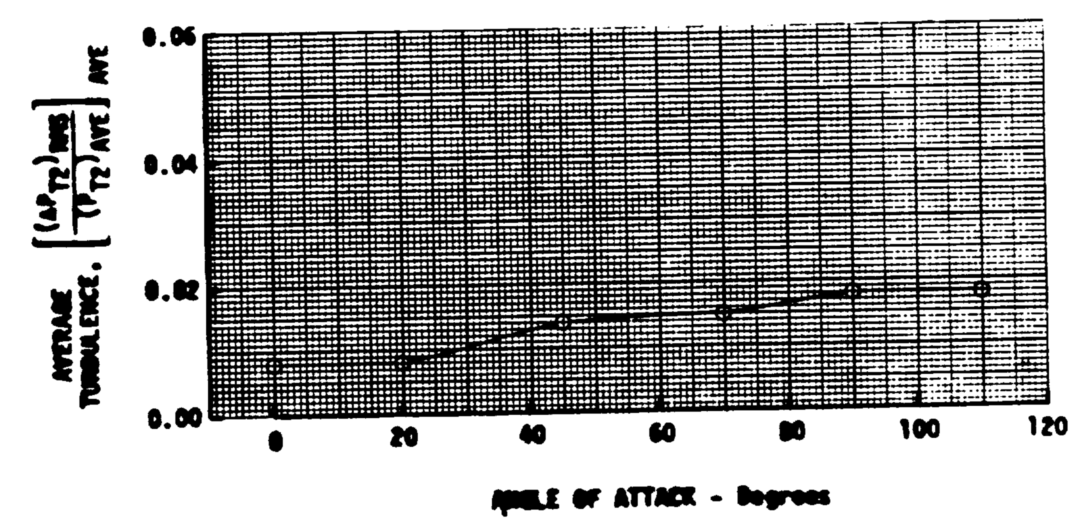
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 14 ; DESCRIPTION Thick Lip Inlet ; Top Aux Inlet Open -Port





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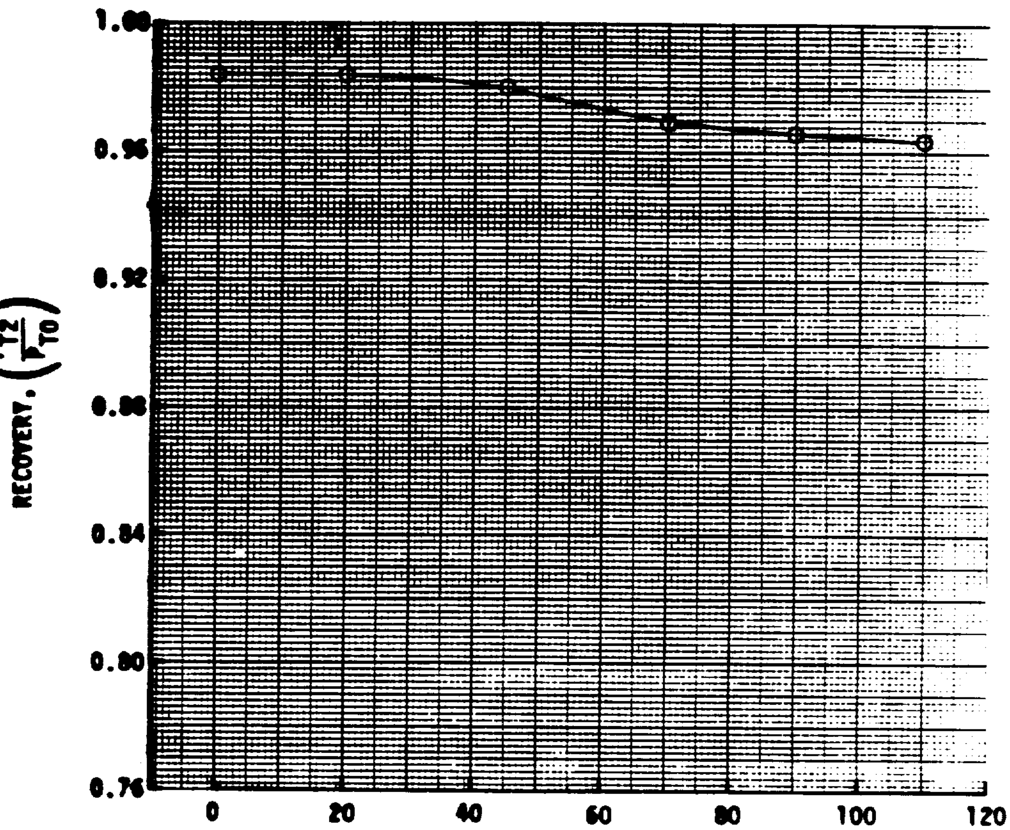
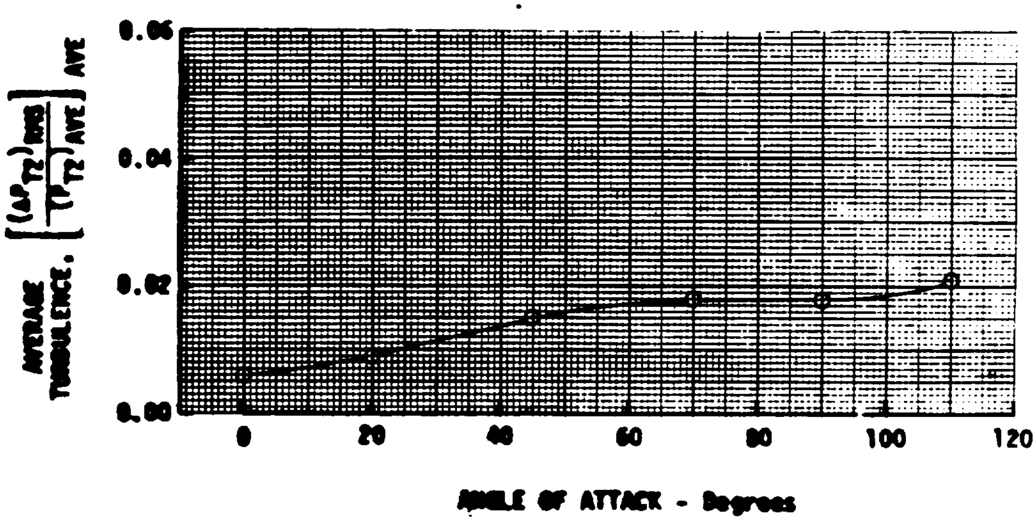
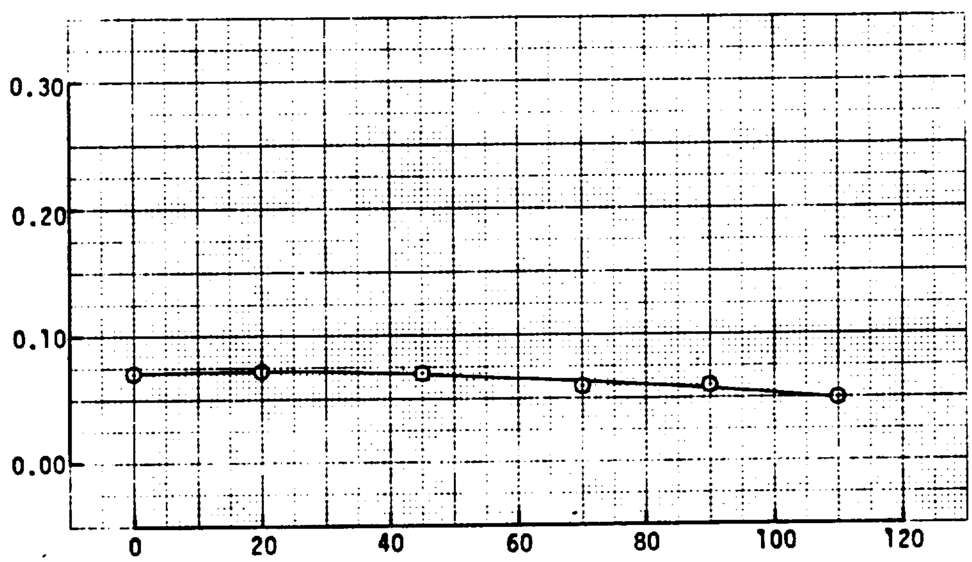
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 14; DESCRIPTION Thick Lip Inlet; Top Aux Inlet Open - Port





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 14 ; DESCRIPTION Thick Lip ; Top Aux Open- Port



$\frac{(P_{T2})_{MAX} - (P_{T2})_{MIN}}{(P_{T2})_{AVE}}$

ANGLE OF ATTACK - Degrees

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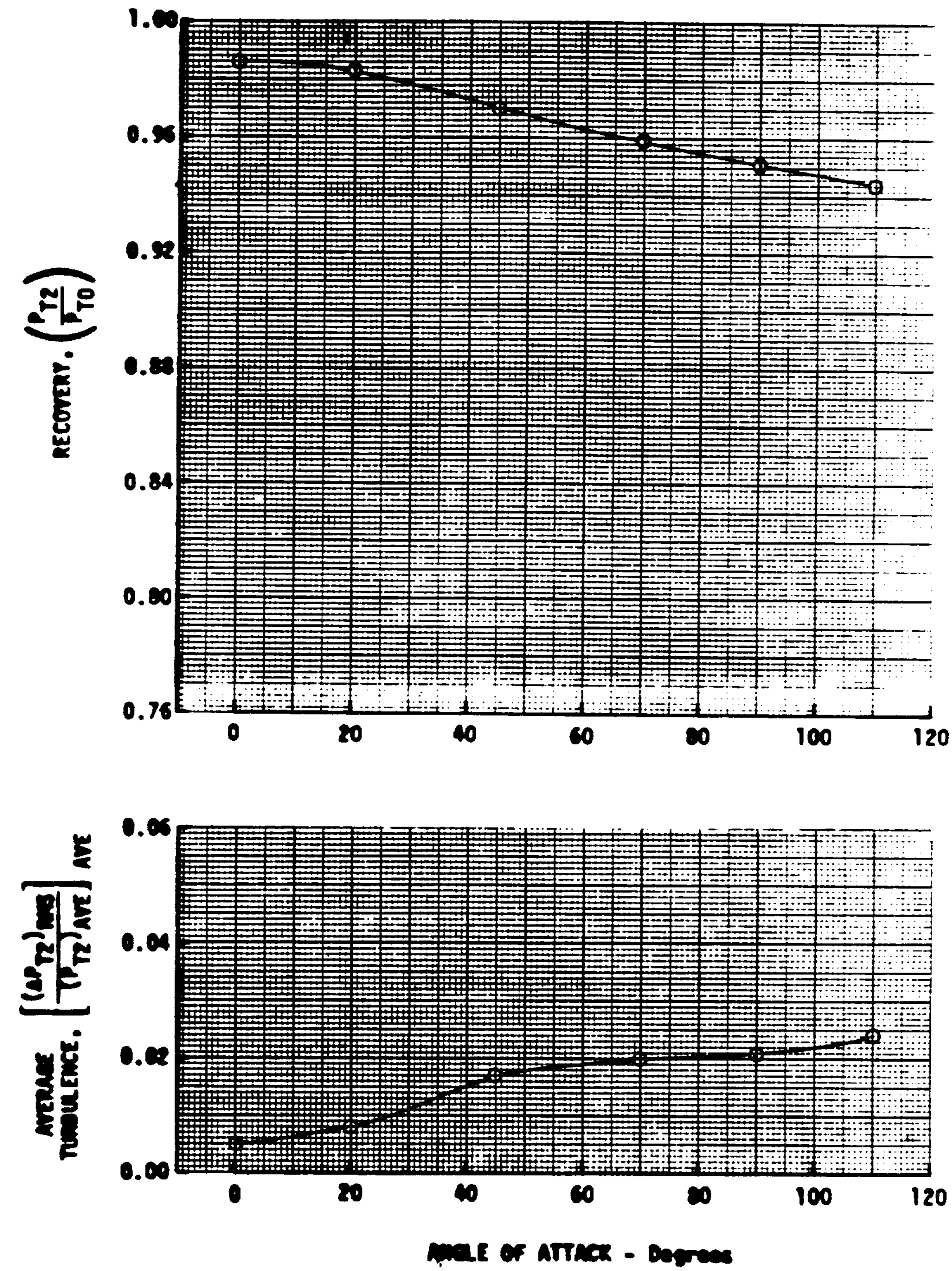
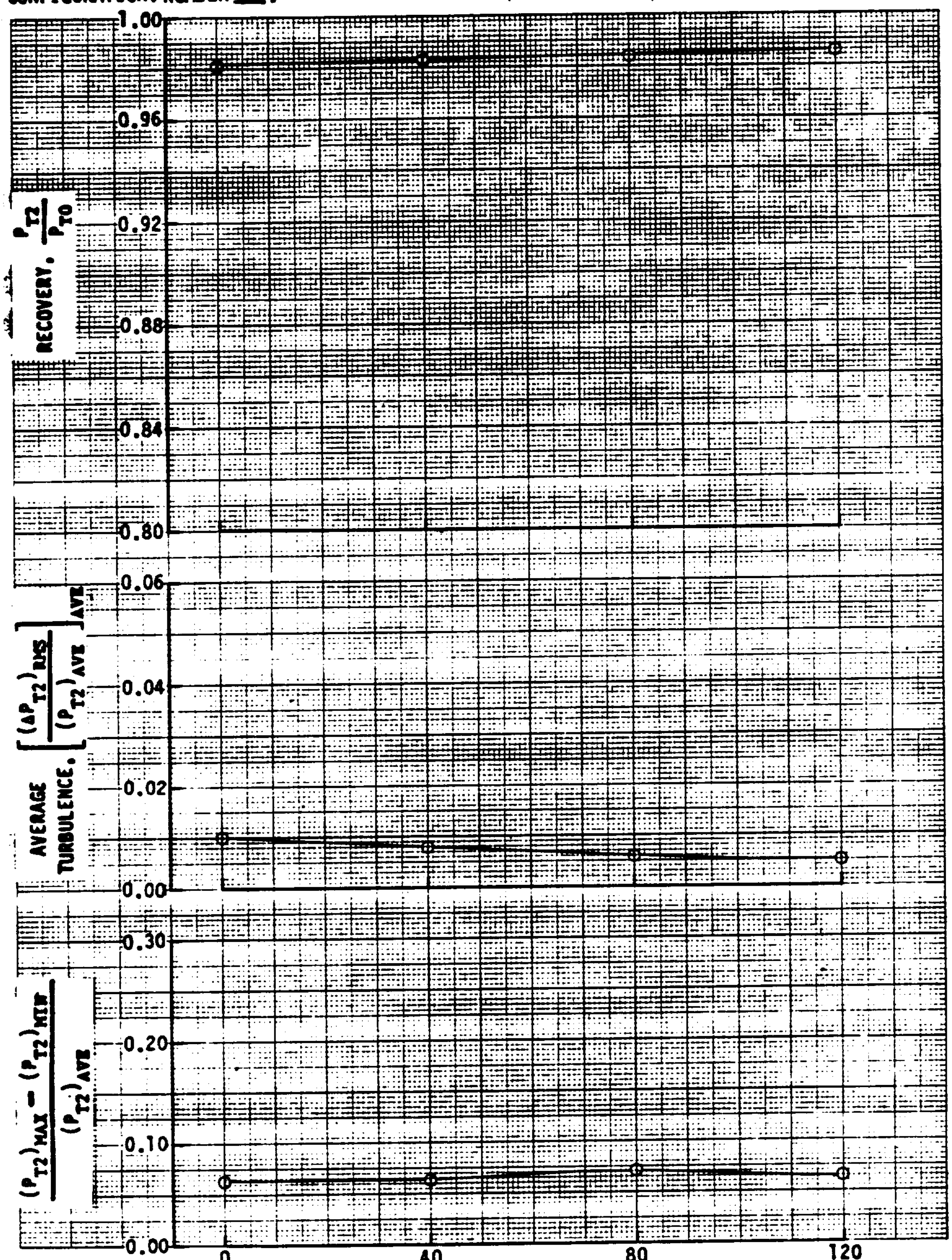
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 14; DESCRIPTION Thick Lip Inlet; Top Aux Inlet Open - Port

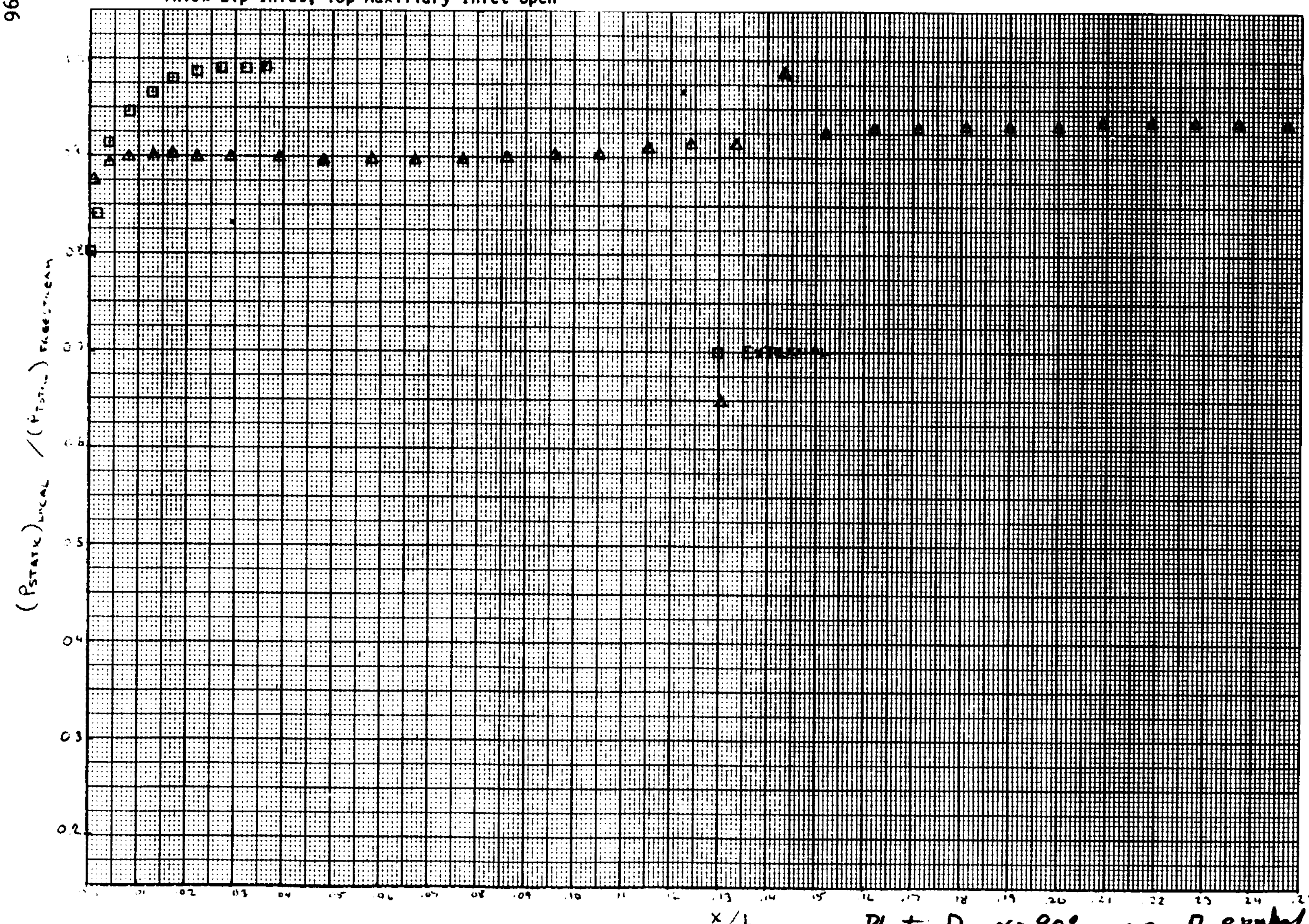


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 14; DESCRIPTION Thick Lip Inlet, Top Aux Inlet Open-Port



Configuration 14 V_0 = 80 Knots α = 90° EFMN = 0.531

Thick Lip Inlet, Top Auxiliary Inlet Open

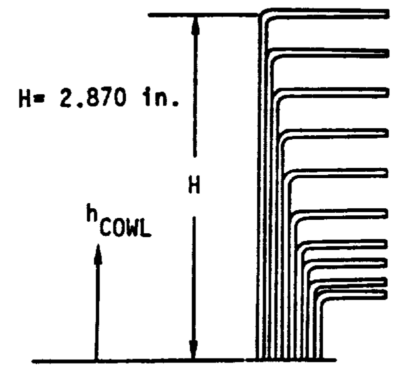


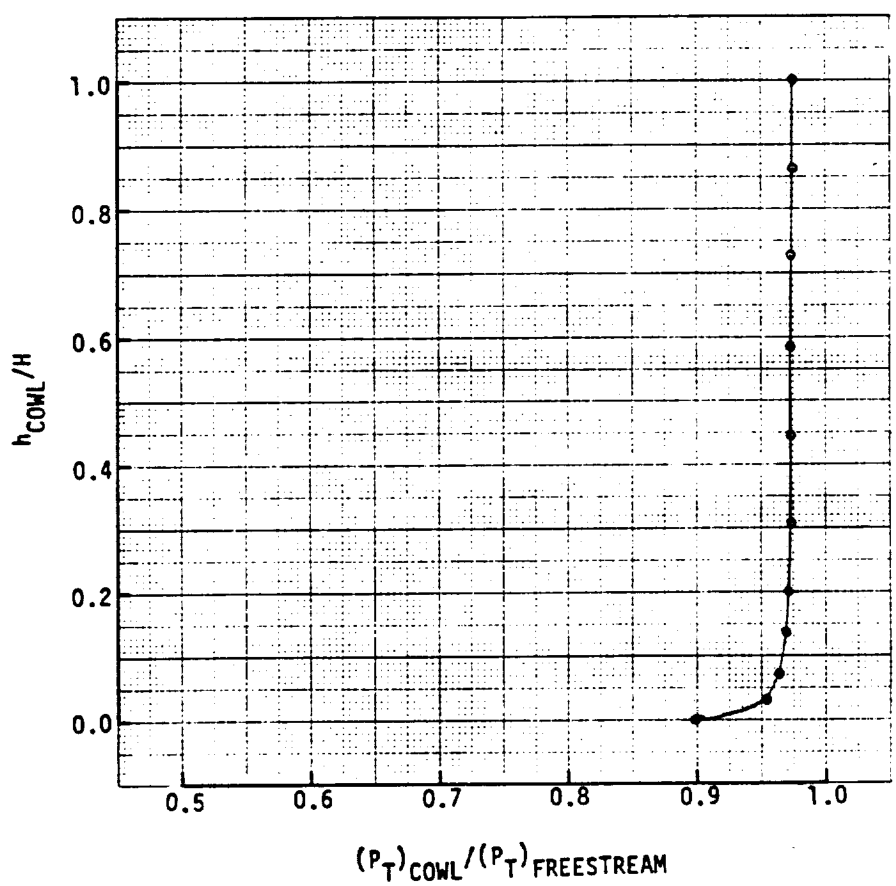
Plot D α=90° . use □ symbol

COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

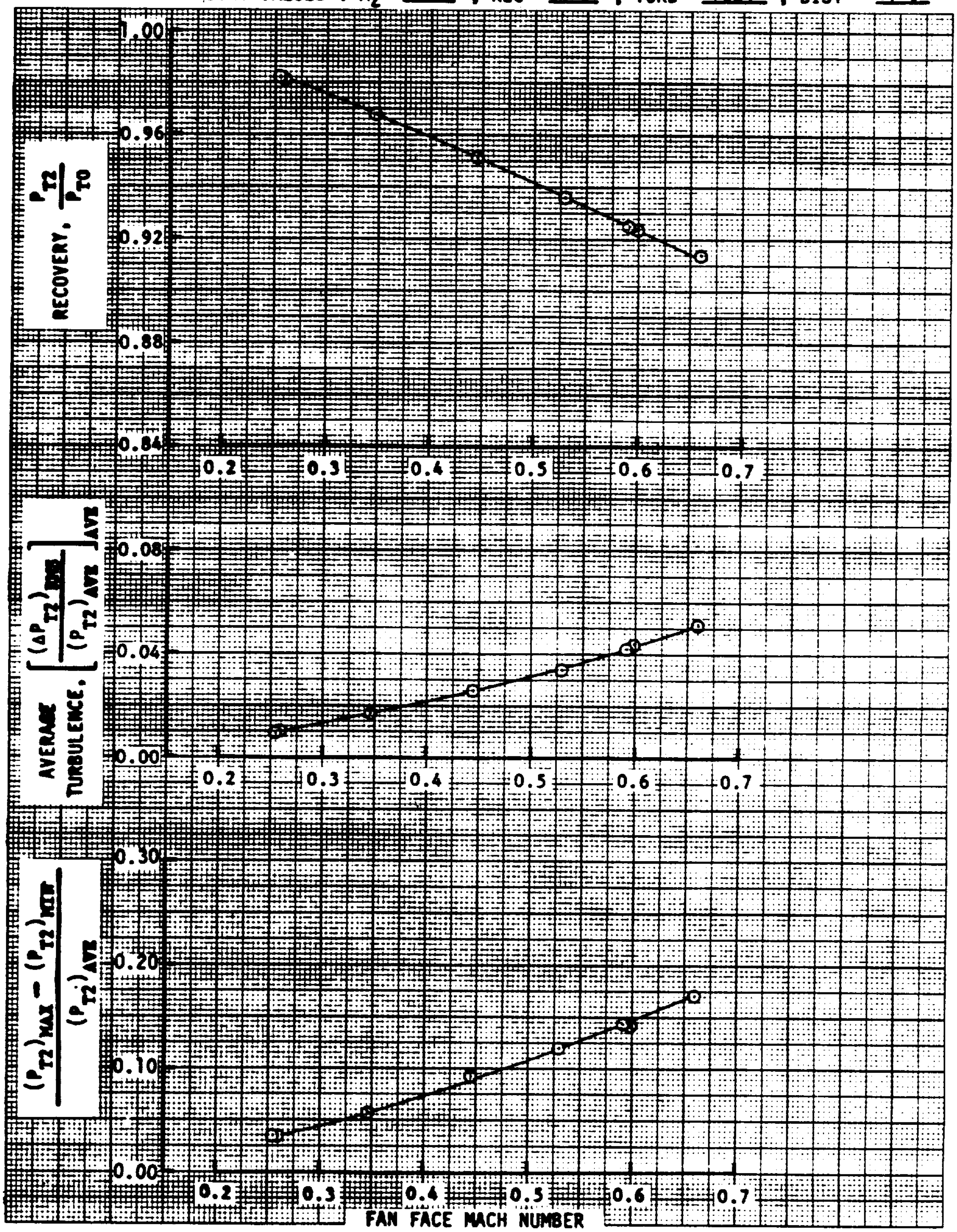
CONFIGURATION: NUMBER 14; DESCRIPTION Thick Lip Inlet, Top Auxiliary Inlet Open

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

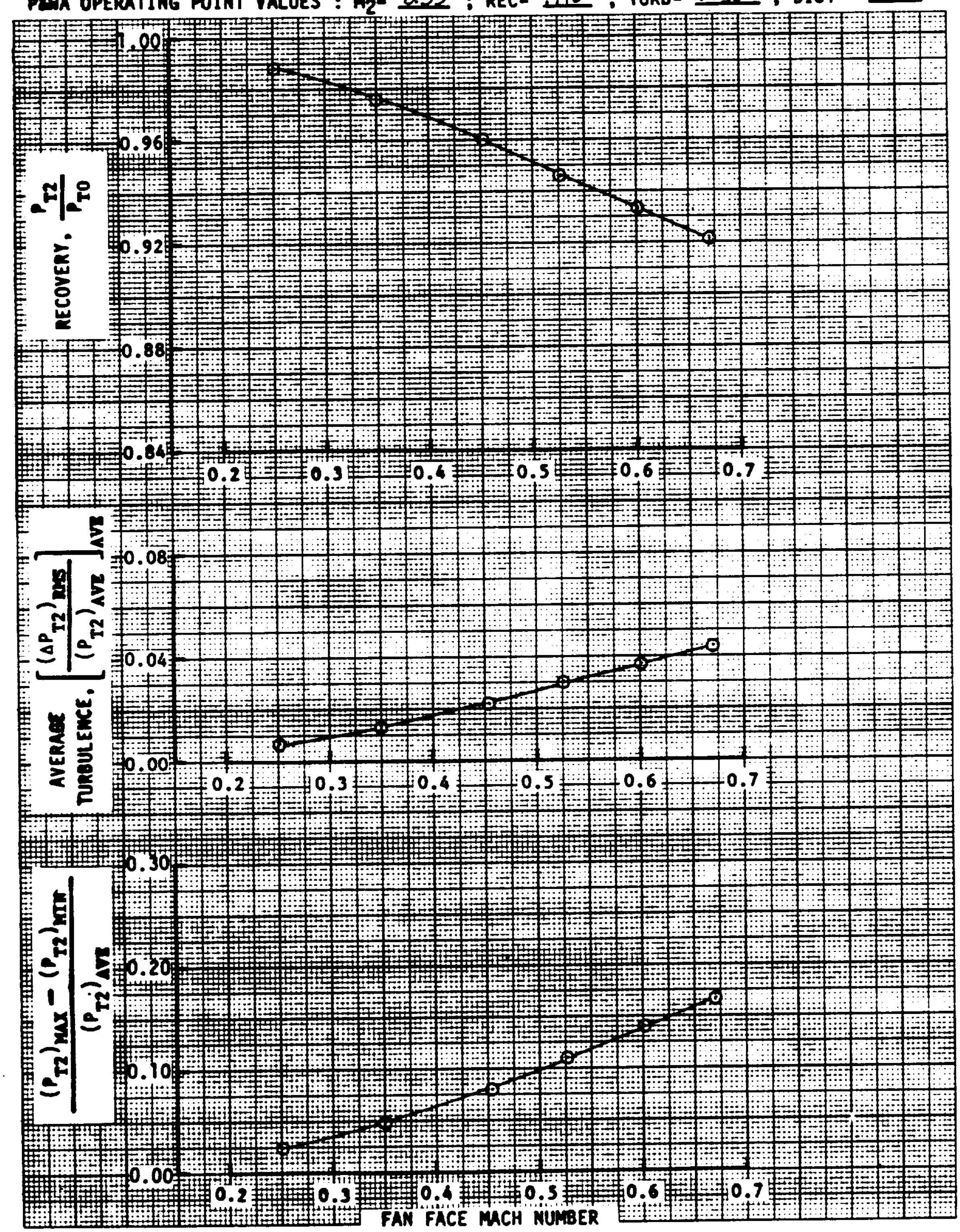




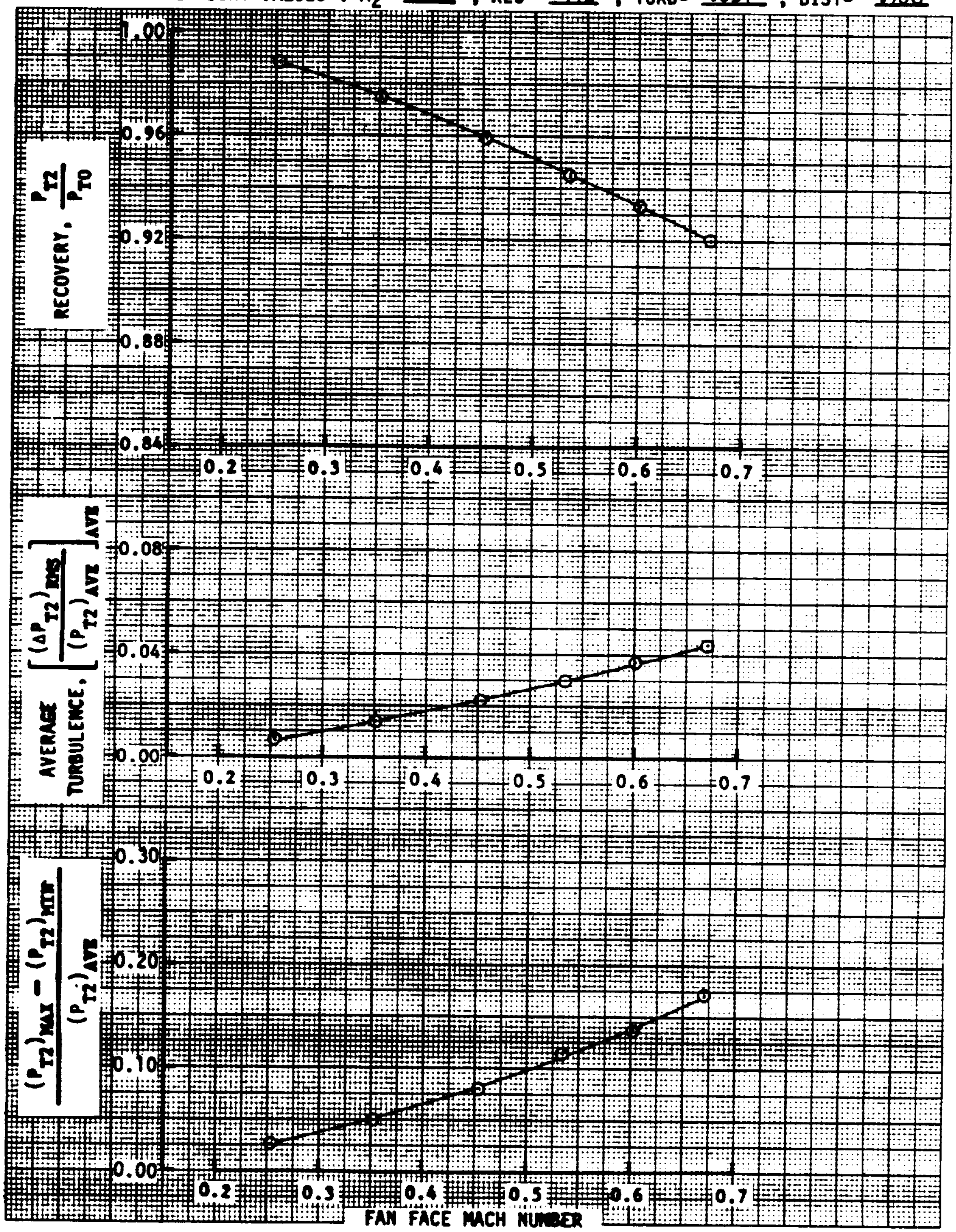
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2648-2655
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .936 ; TURB= .034 ; DIST= .120



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2656-2661
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .946 ; TURB= .030 ; DIST= .111



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2662-2667
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .946 ; TURB= .029 ; DIST= .108



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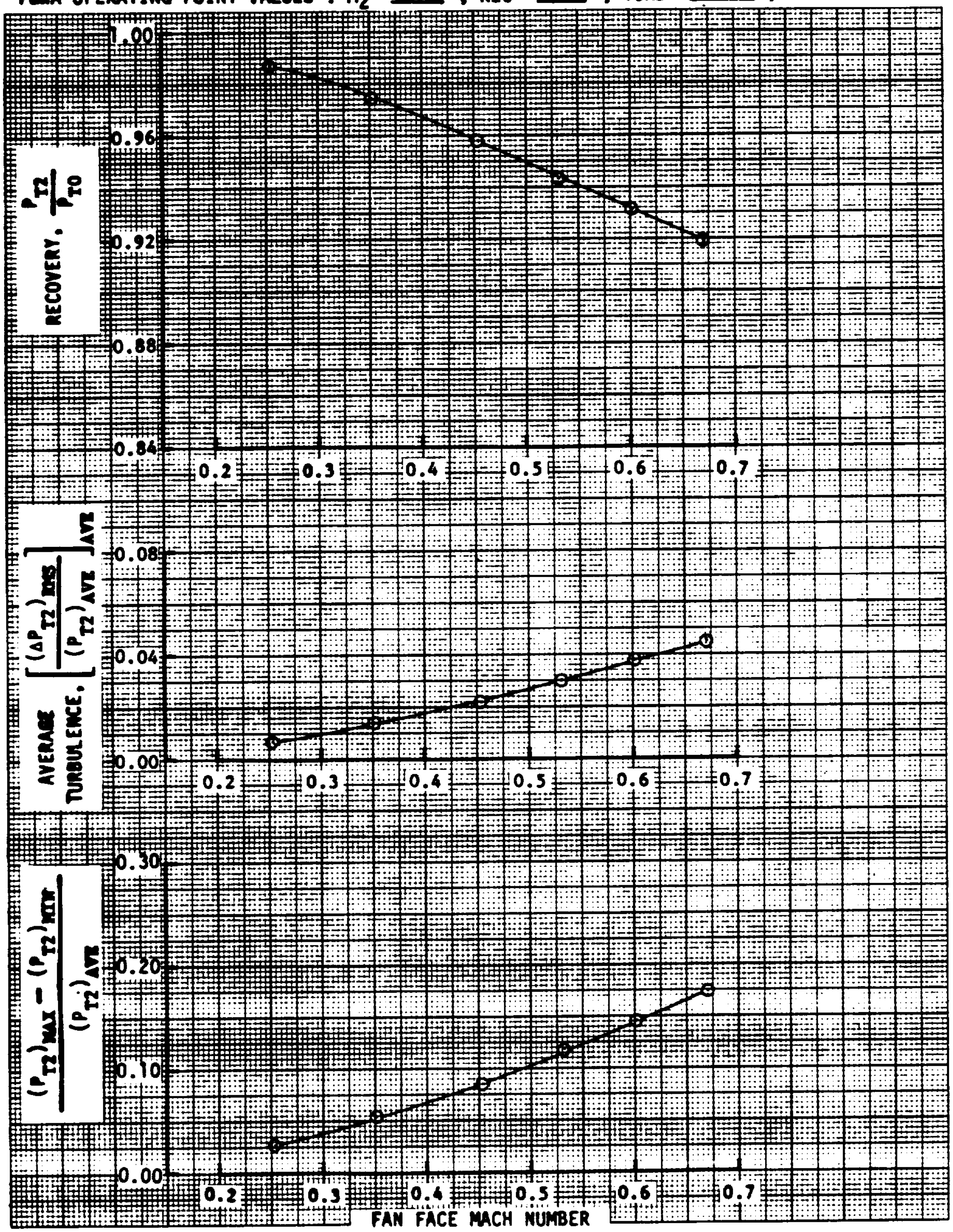
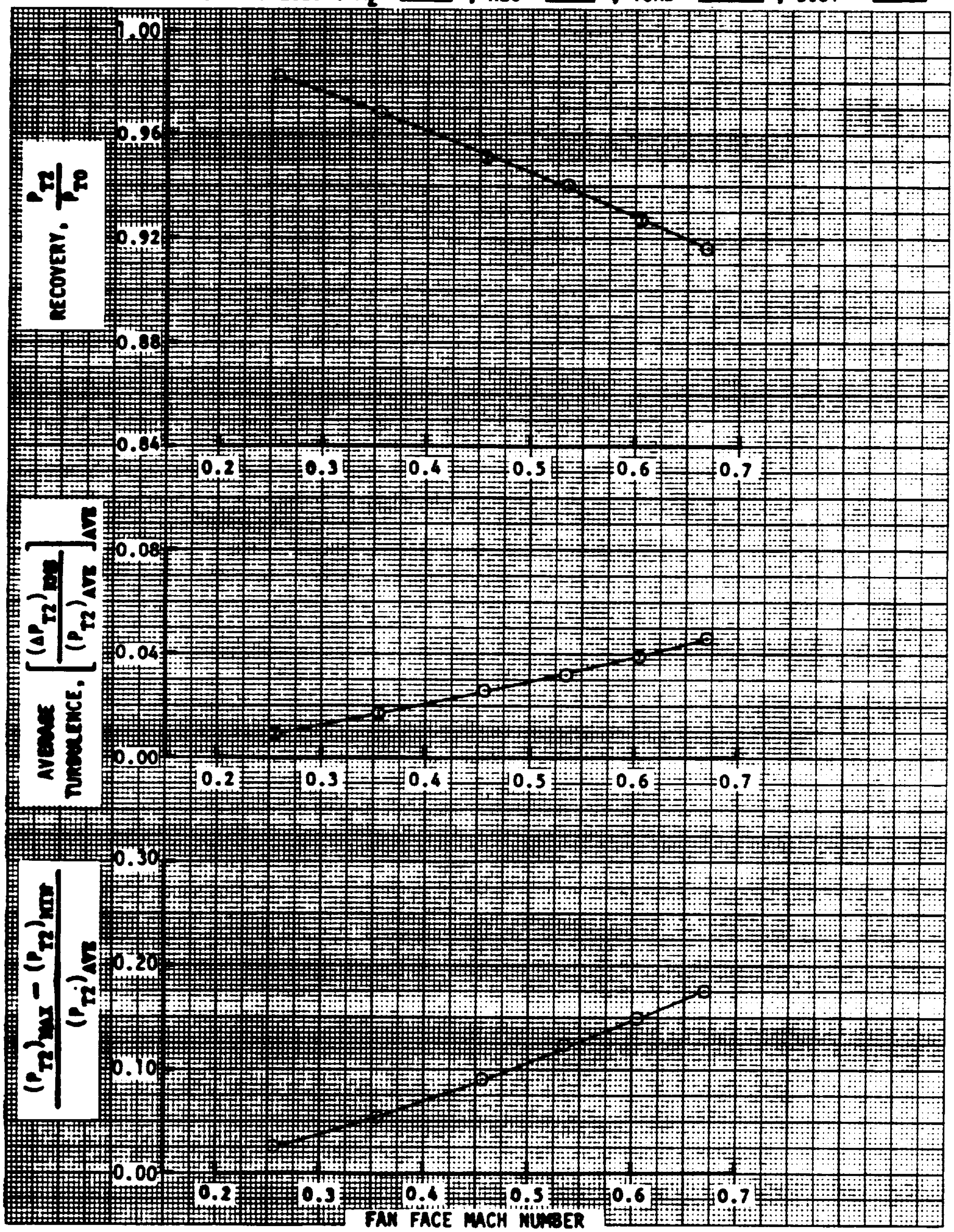
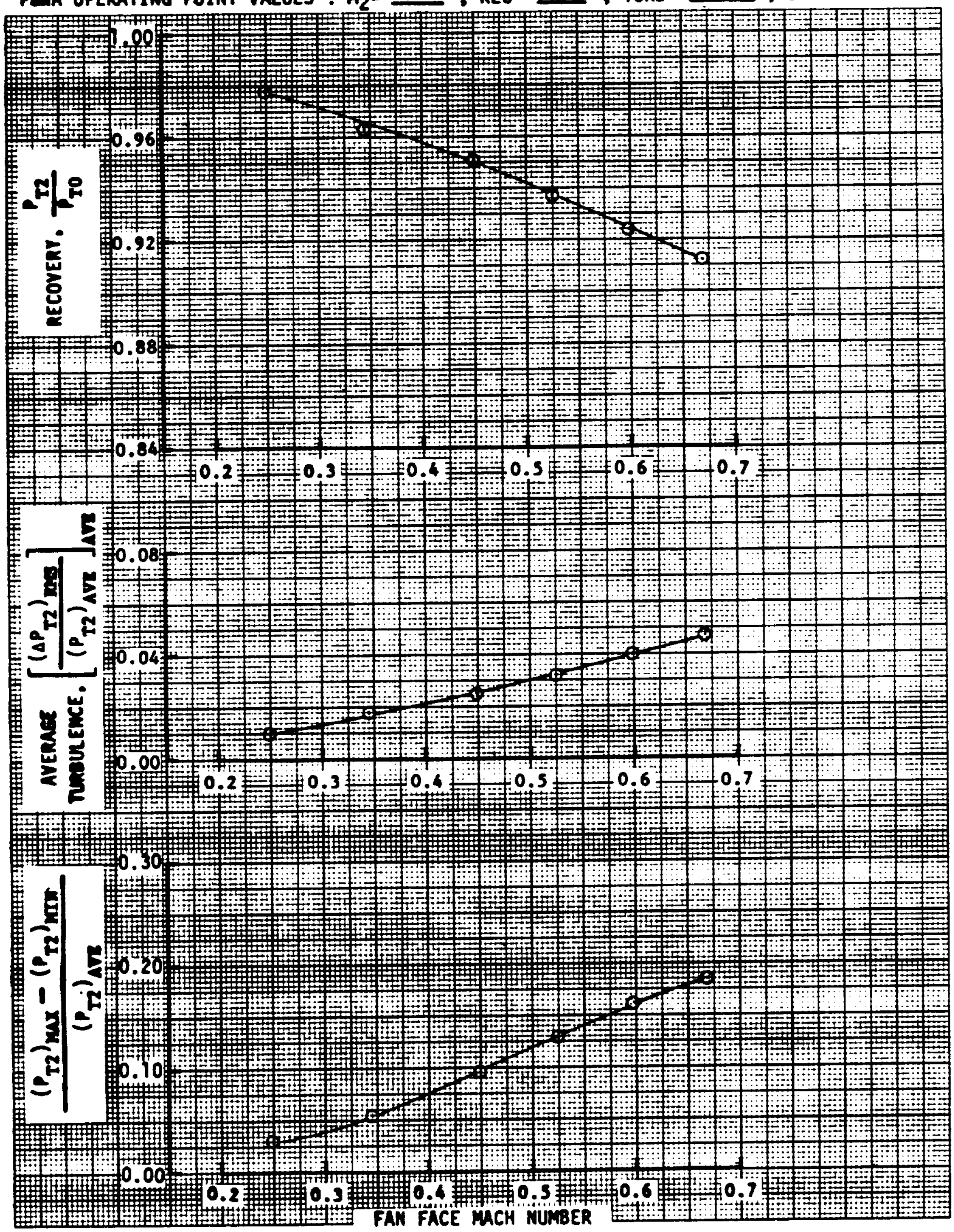
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2668-2673
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .941 ; TURB= .030 ; DIST= .115



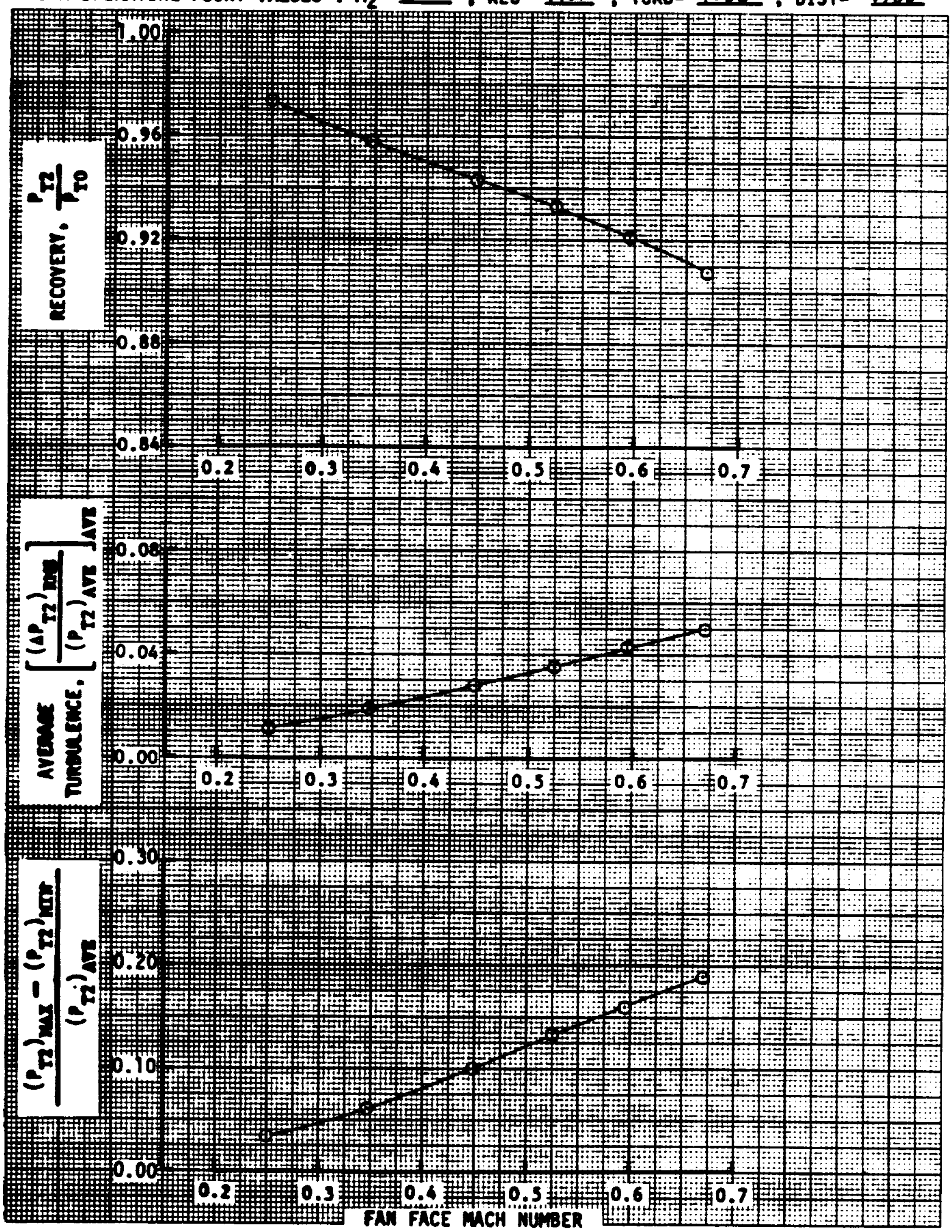
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2674-2679
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= .053 ; REC= .940 ; TURB= .032 ; DIST= .118



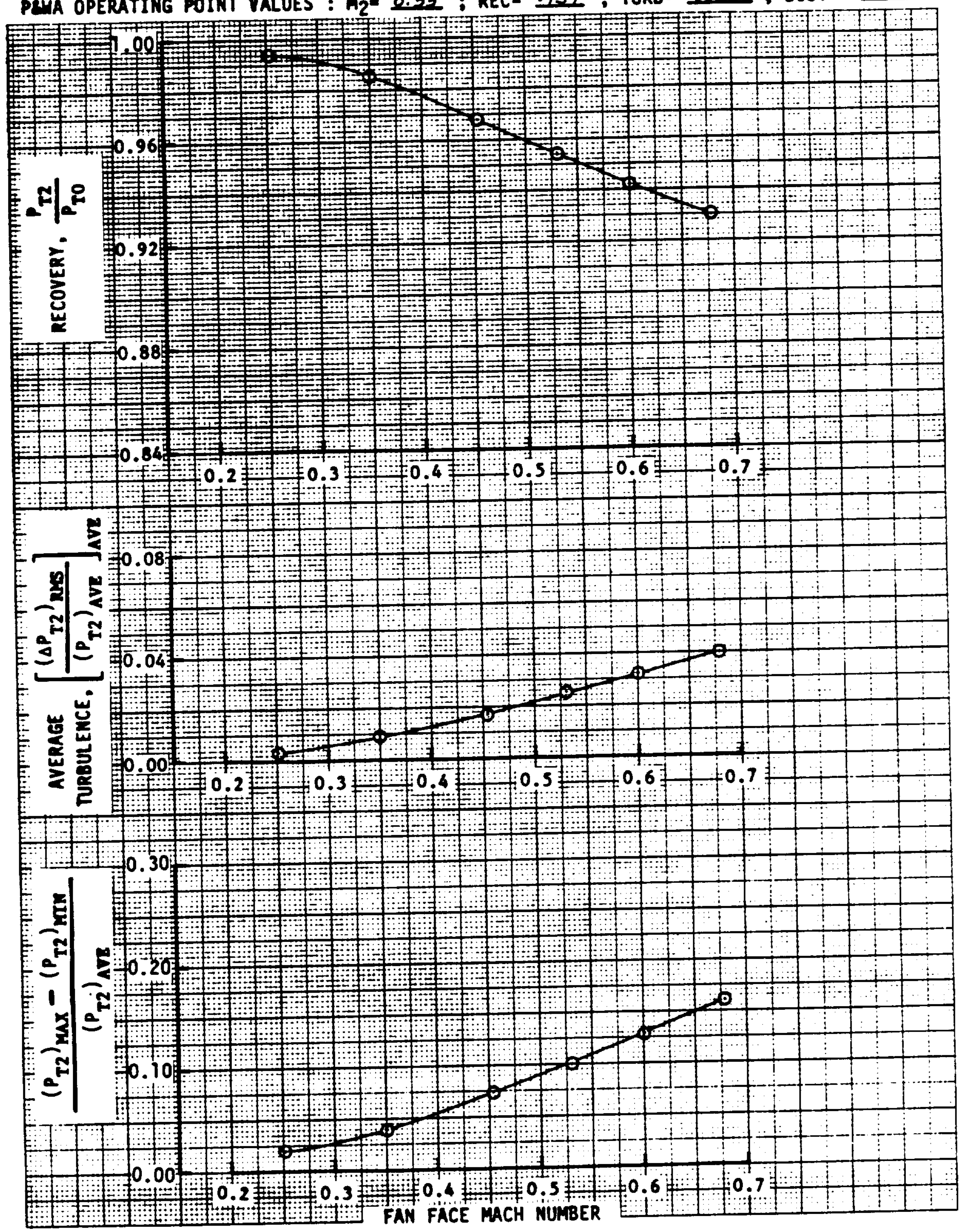
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2680-2685
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .936 ; TURB= .033 ; DIST= .132



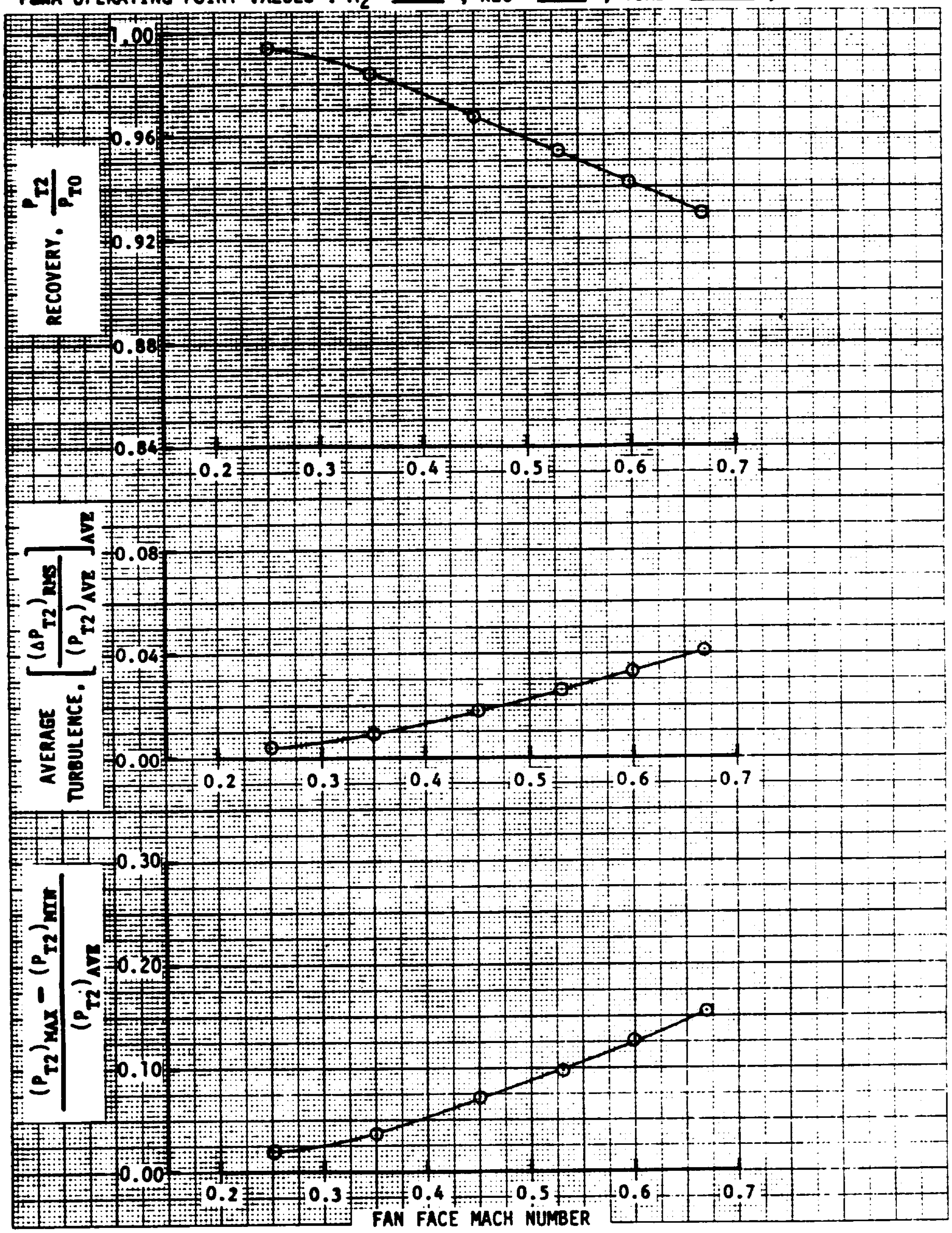
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2686-2691
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PDMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .931 ; TURB= .036 ; DIST= .135



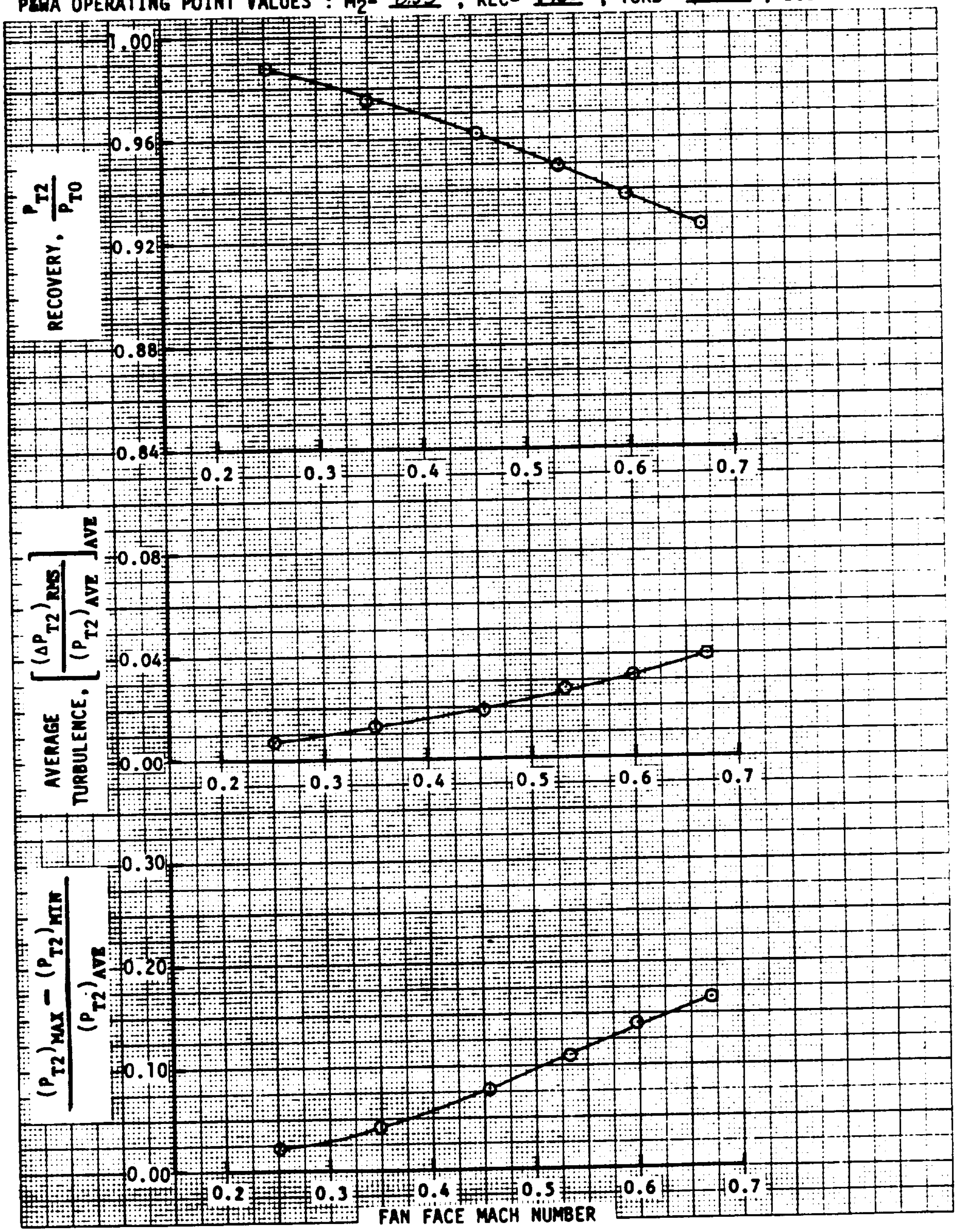
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2692-2697
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .025 ; DIST= .102



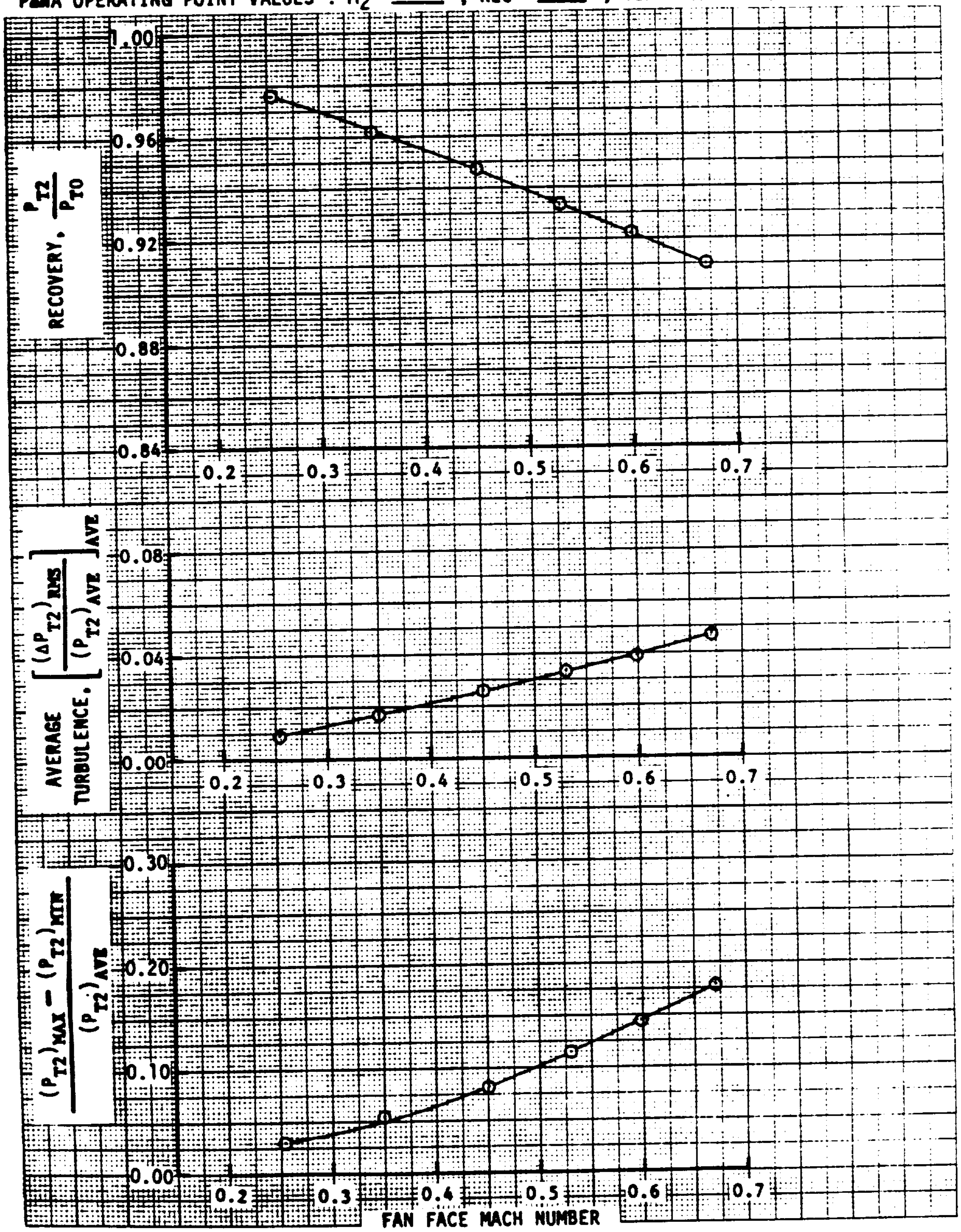
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2698-2703
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .026 ; DIST= .099



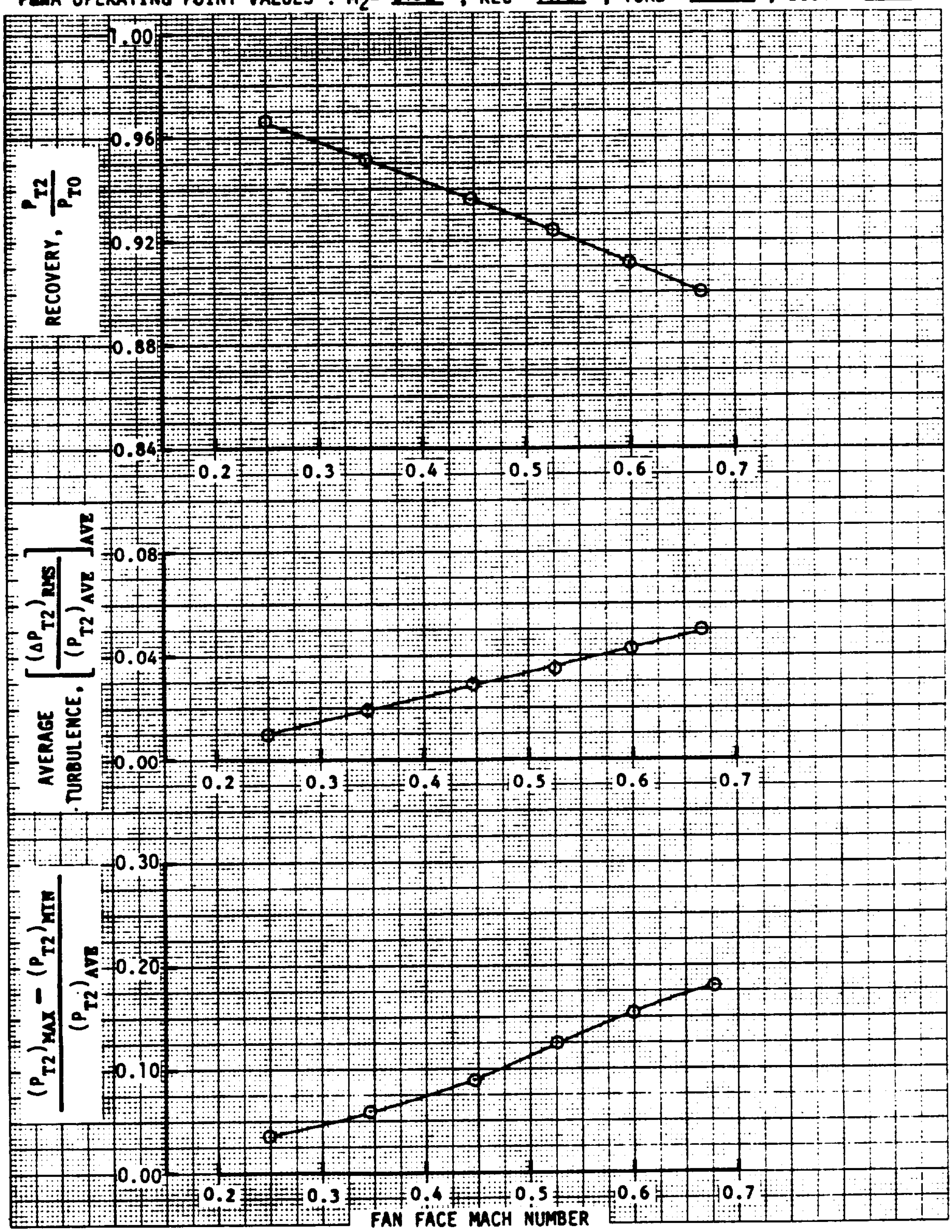
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2704-2709
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .025 ; DIST= .109



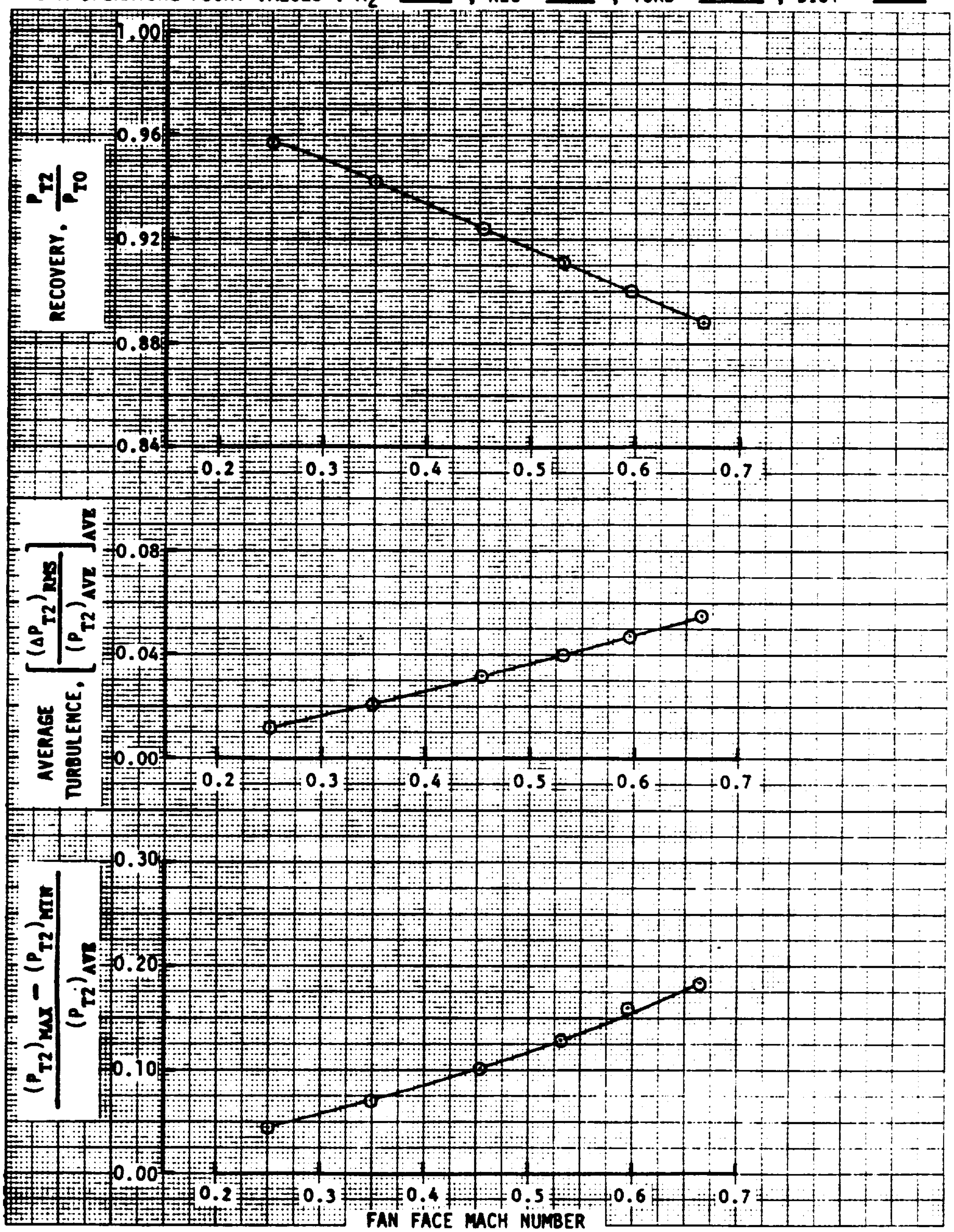
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION L5 ; READING NUMBERS 2710-2716
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .933 ; TURB= .035 ; DIST= .115



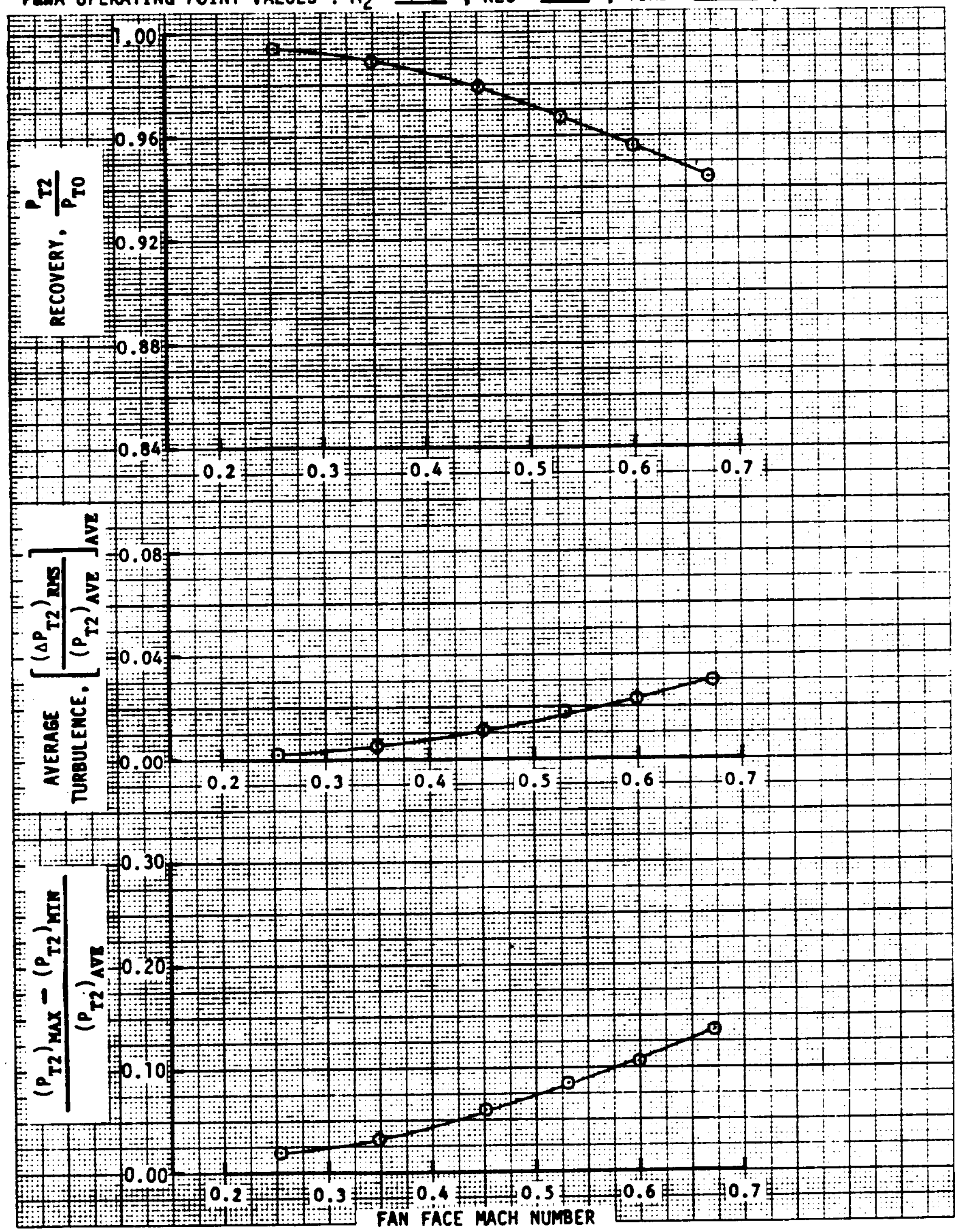
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2717-2722
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .923 ; TURB= .036 ; DIST= .126



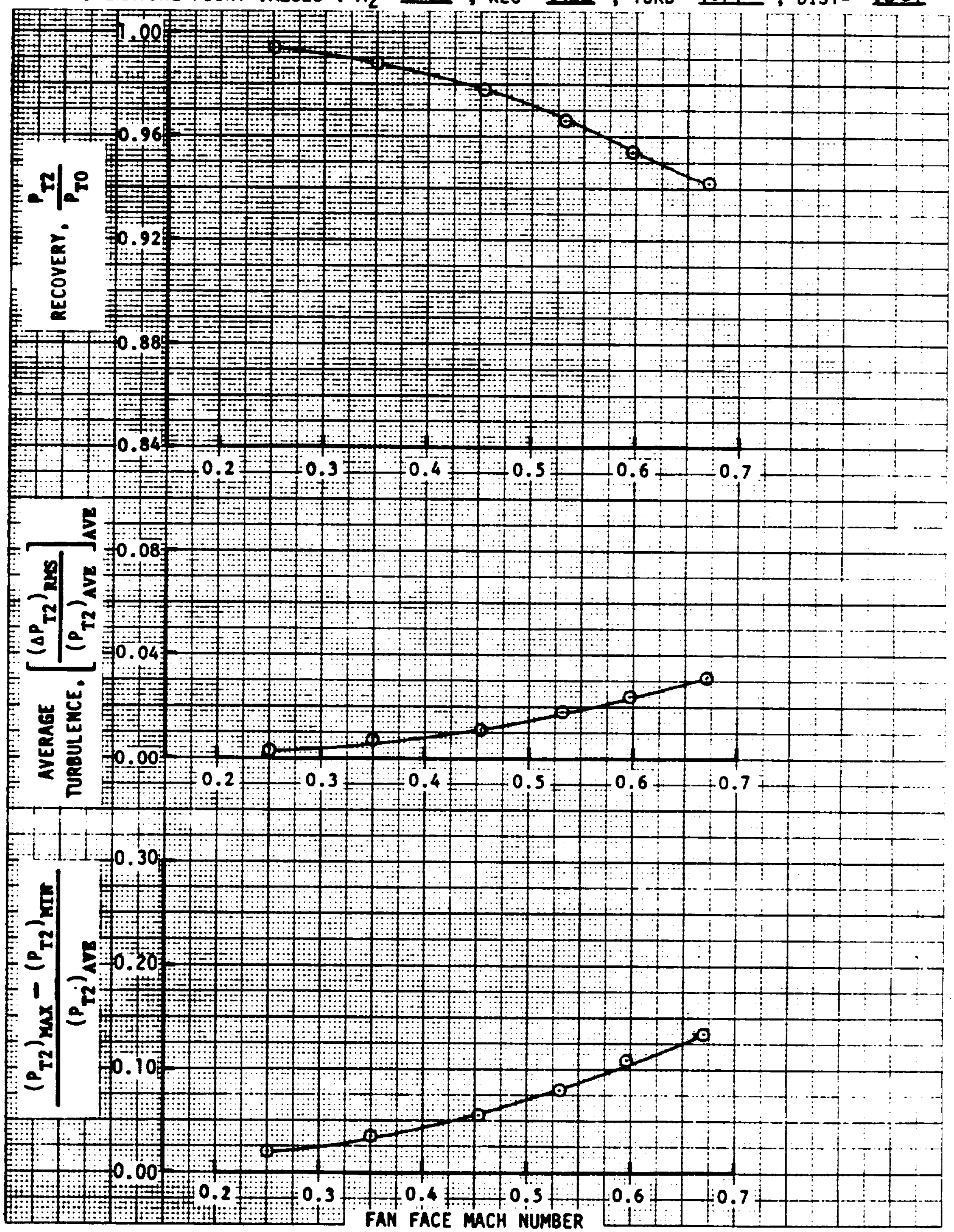
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2723-2728
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .911 ; TURB= .040 ; DIST= .128



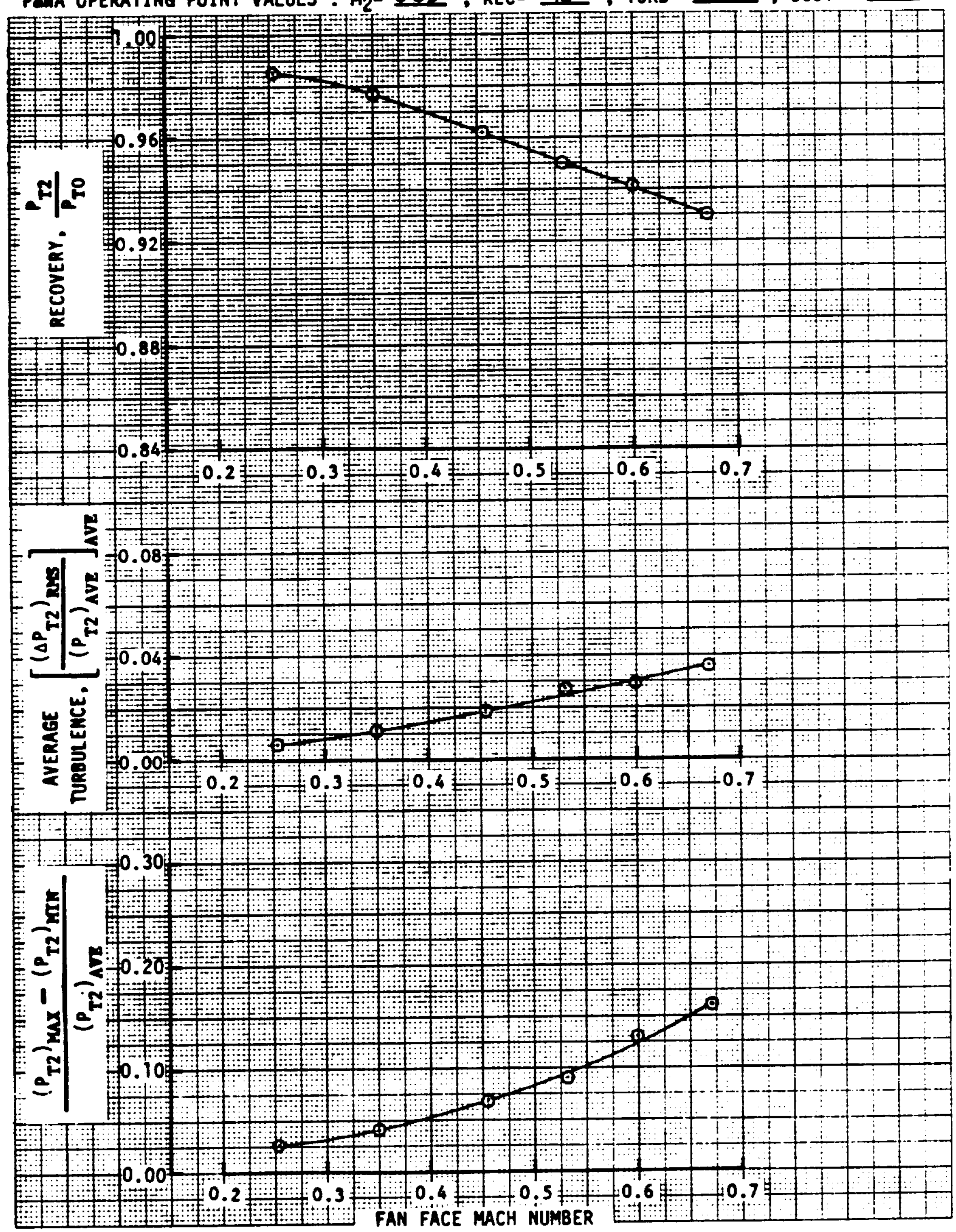
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2729-2734
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .017 ; DIST= .083



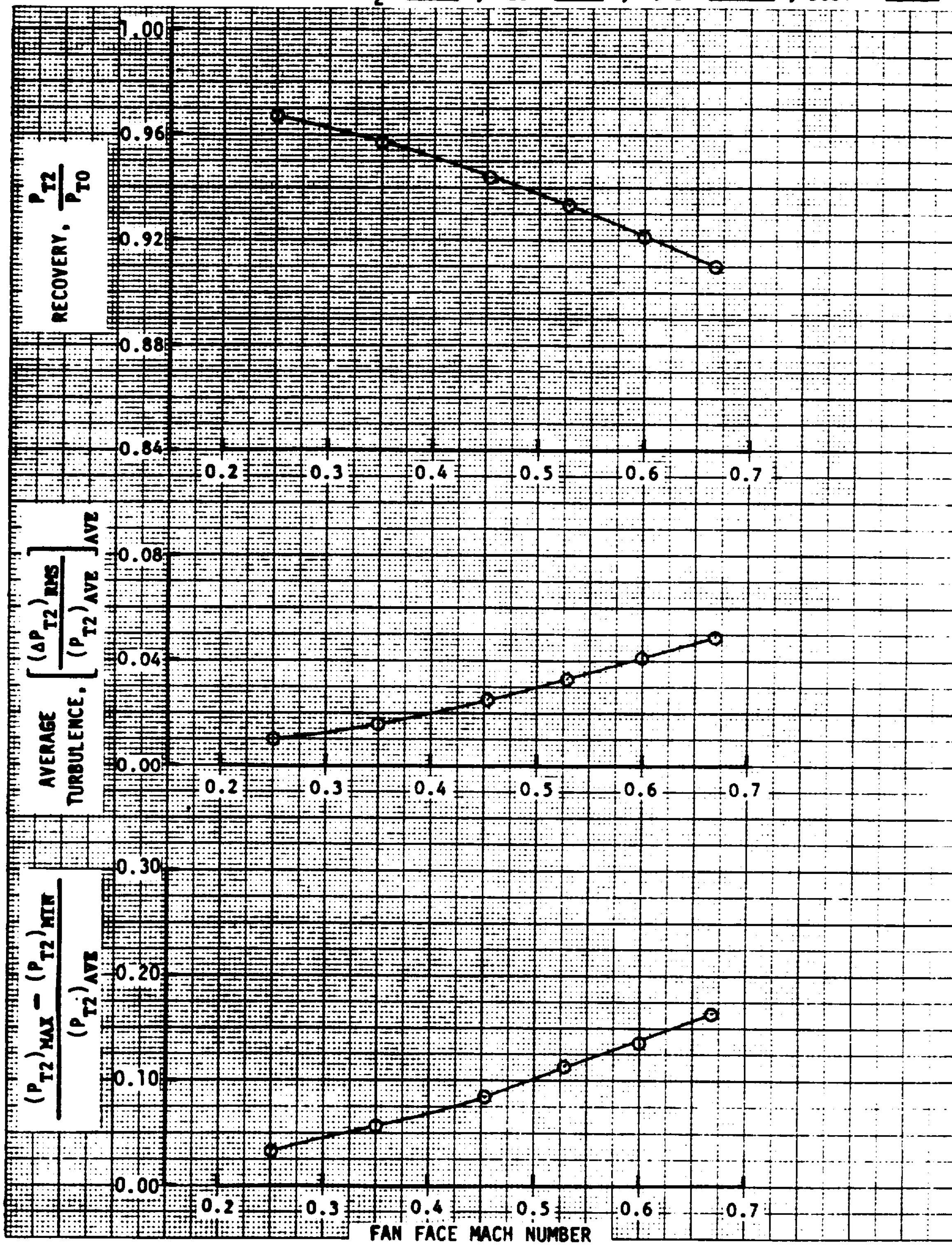
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2735-2740
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .017 ; DIST= .081



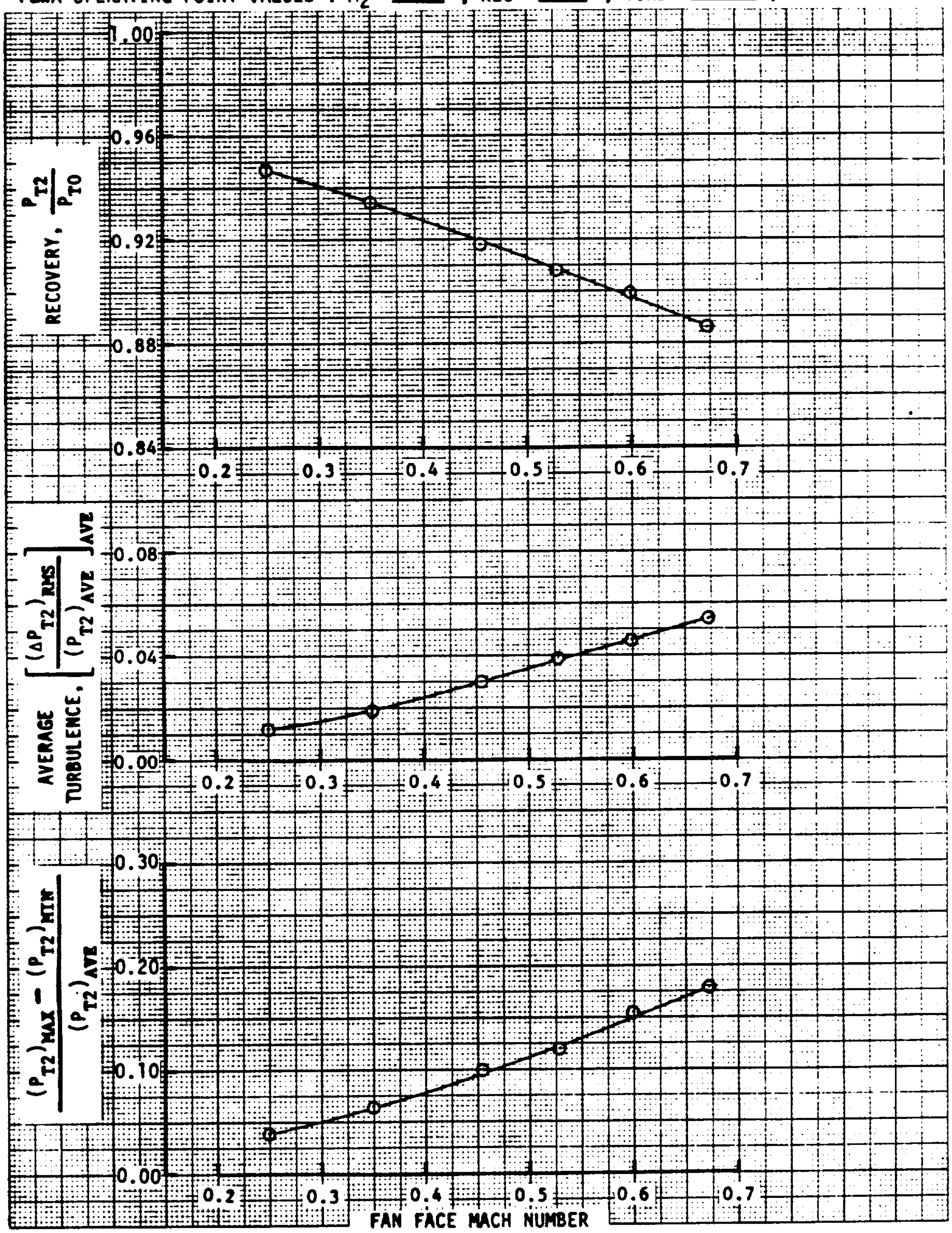
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2741-2746
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .025 ; DIST= .094



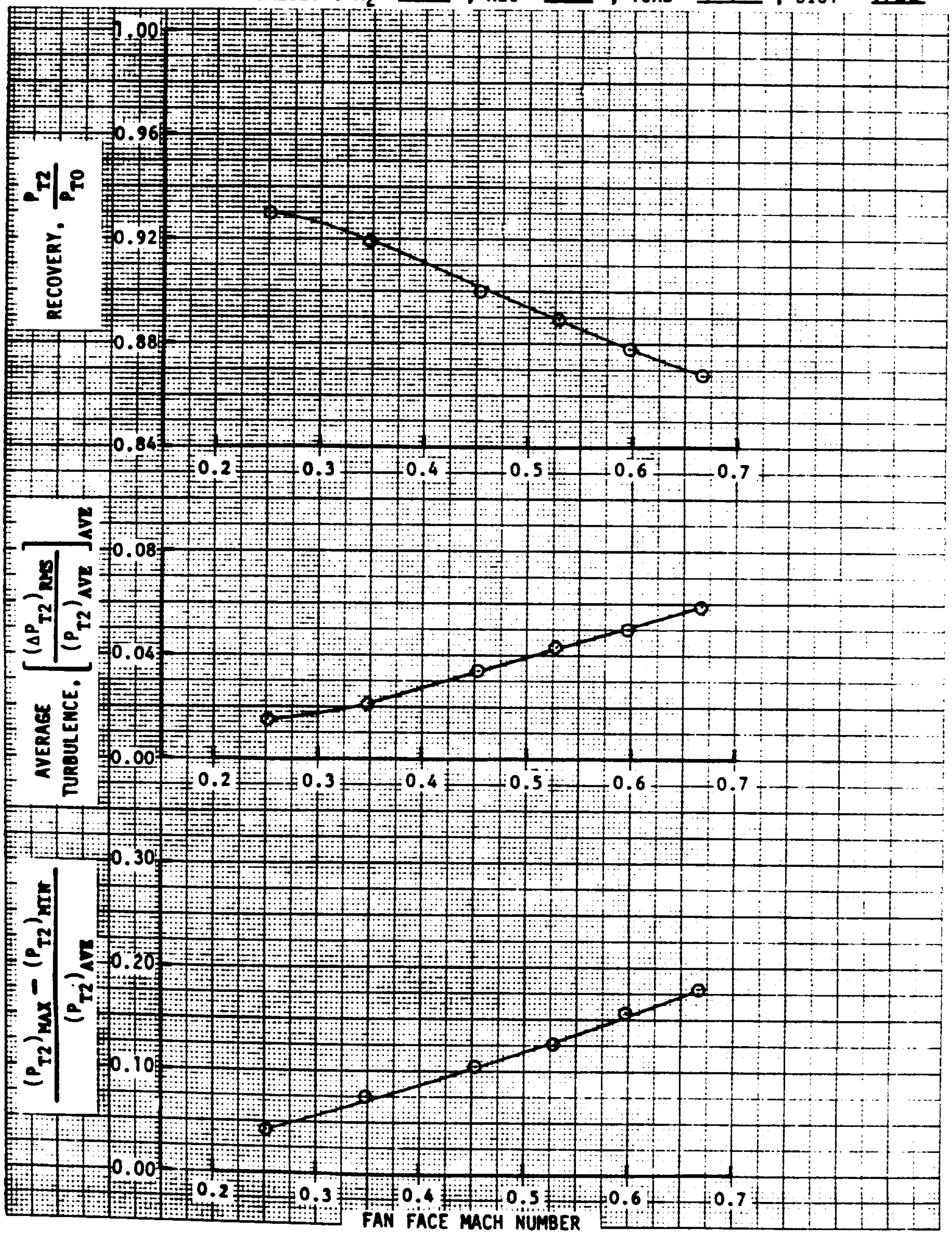
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2747-2752
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .933 ; TURB= .033 ; DIST= .113



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2753-2759
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .038 ; DIST= .123



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 15 ; READING NUMBERS 2760-2765
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .889 ; TURB= .043 ; DIST= .128



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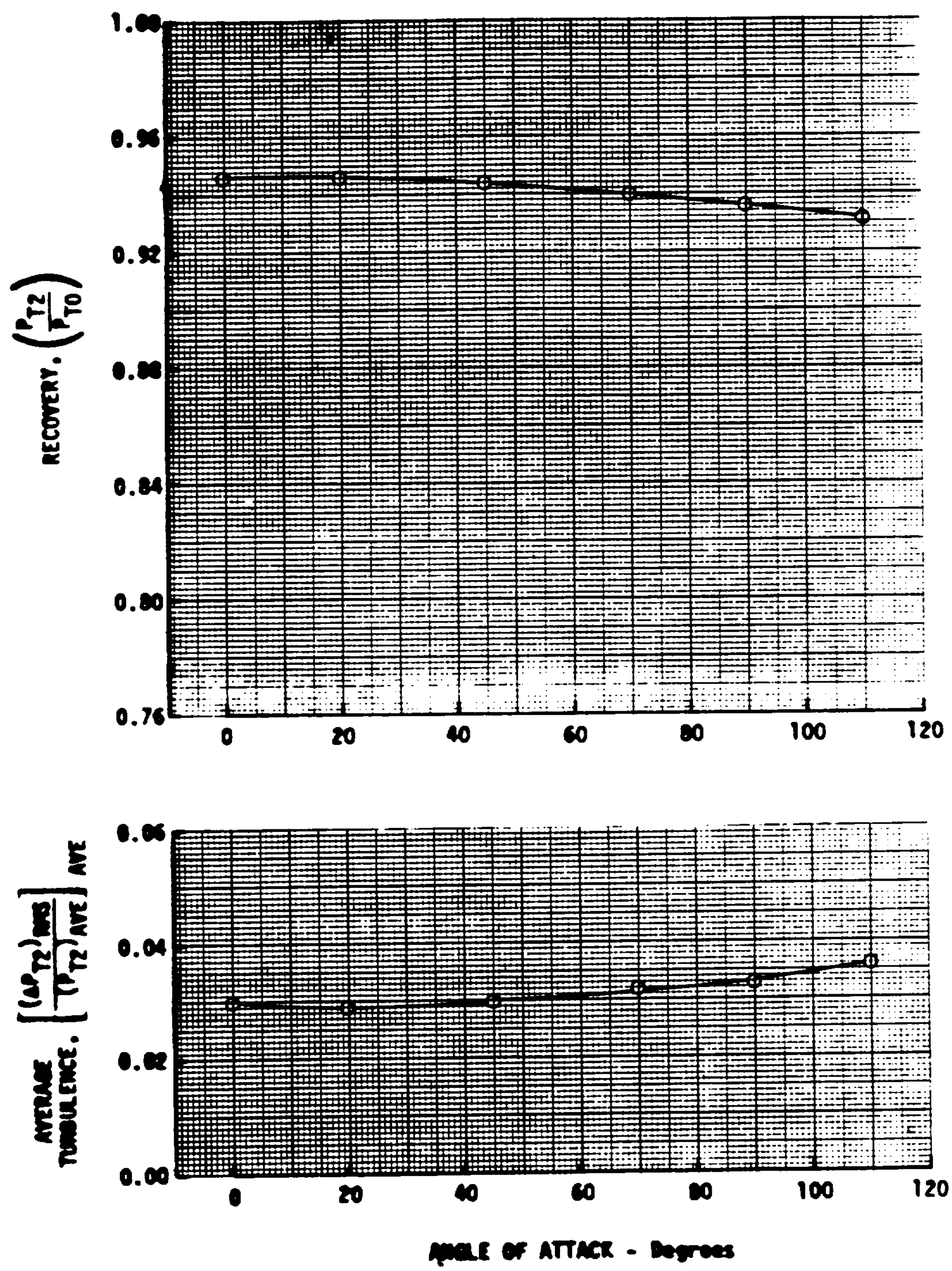
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 15 ; DESCRIPTION Thick Lip Inlet; Right Aux Inlet Open - Port



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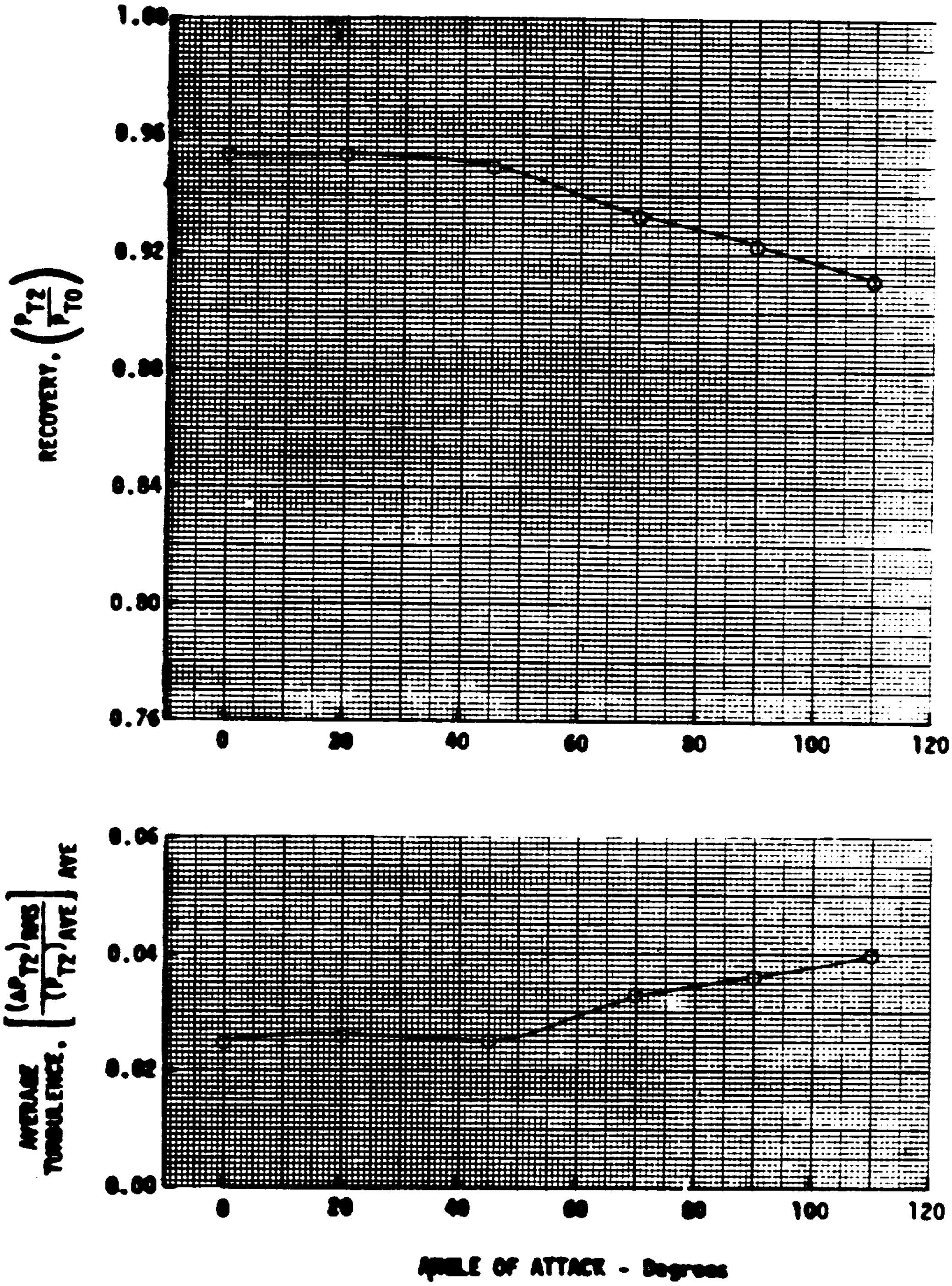
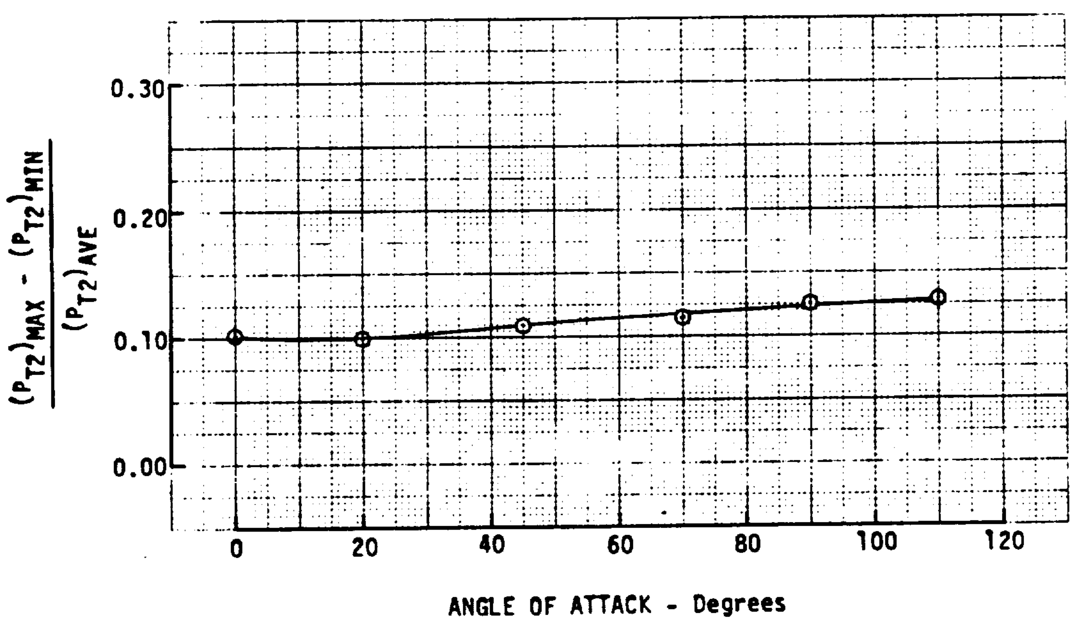
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 15; DESCRIPTION Thick Lip Inlet; Right Aux Open - Port



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 15 ; DESCRIPTION Thick Lip; Right Aux Open - Port



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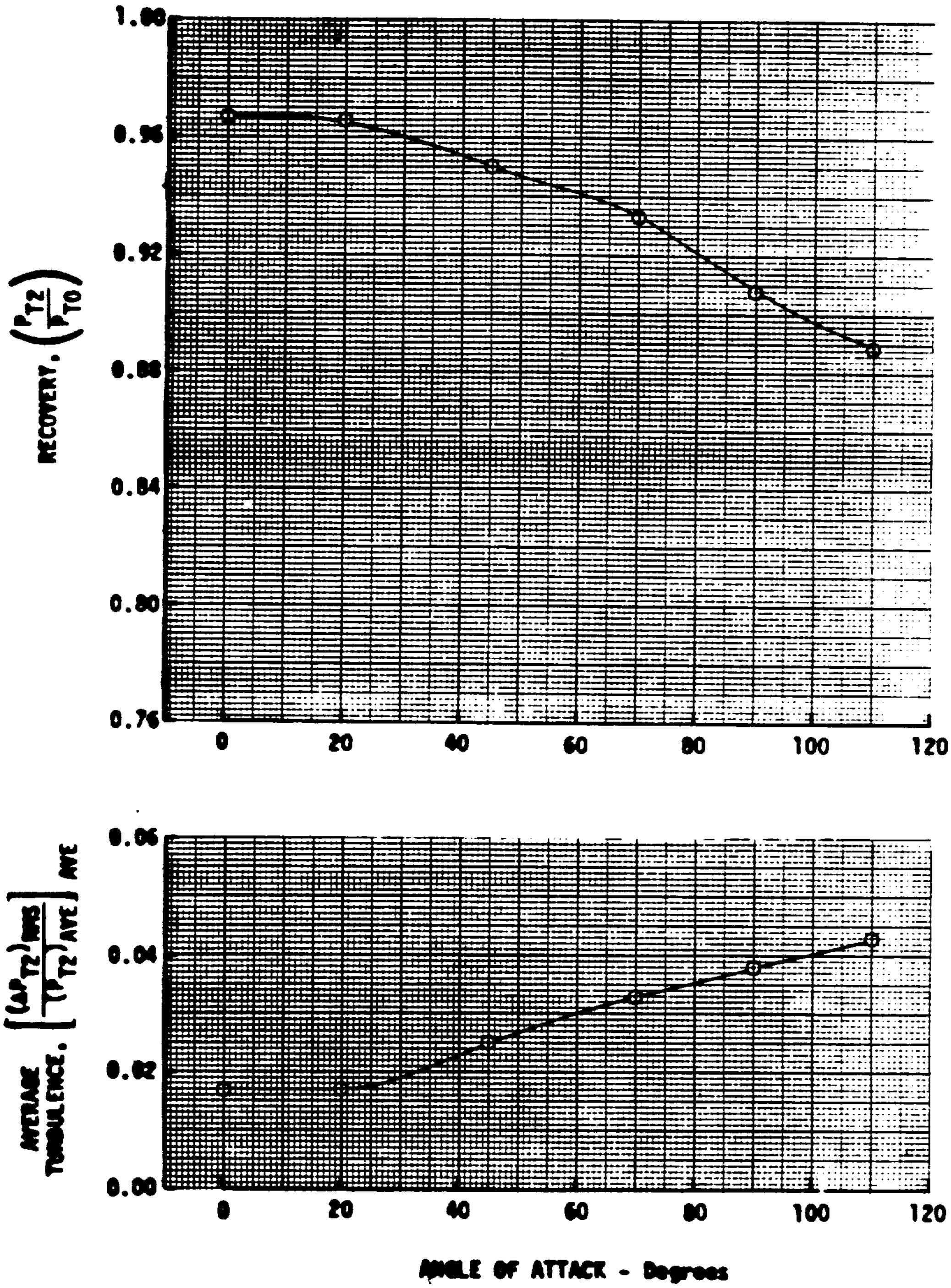
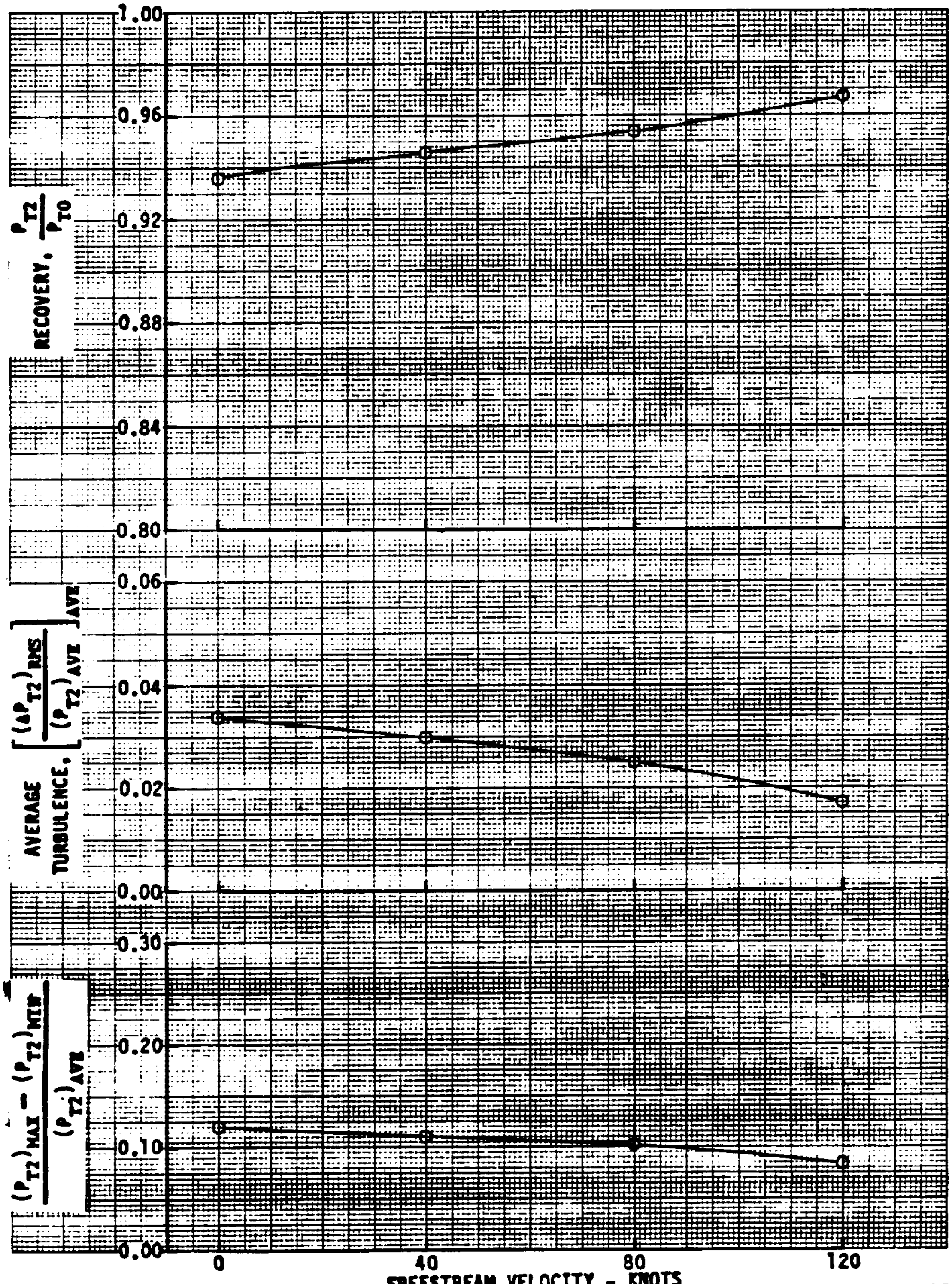
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 15; DESCRIPTION Thick Lip Inlet; Right Aux Open-Port



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 15; DESCRIPTION Thick Lip Inlet, Right Aux Inlet Open - Port



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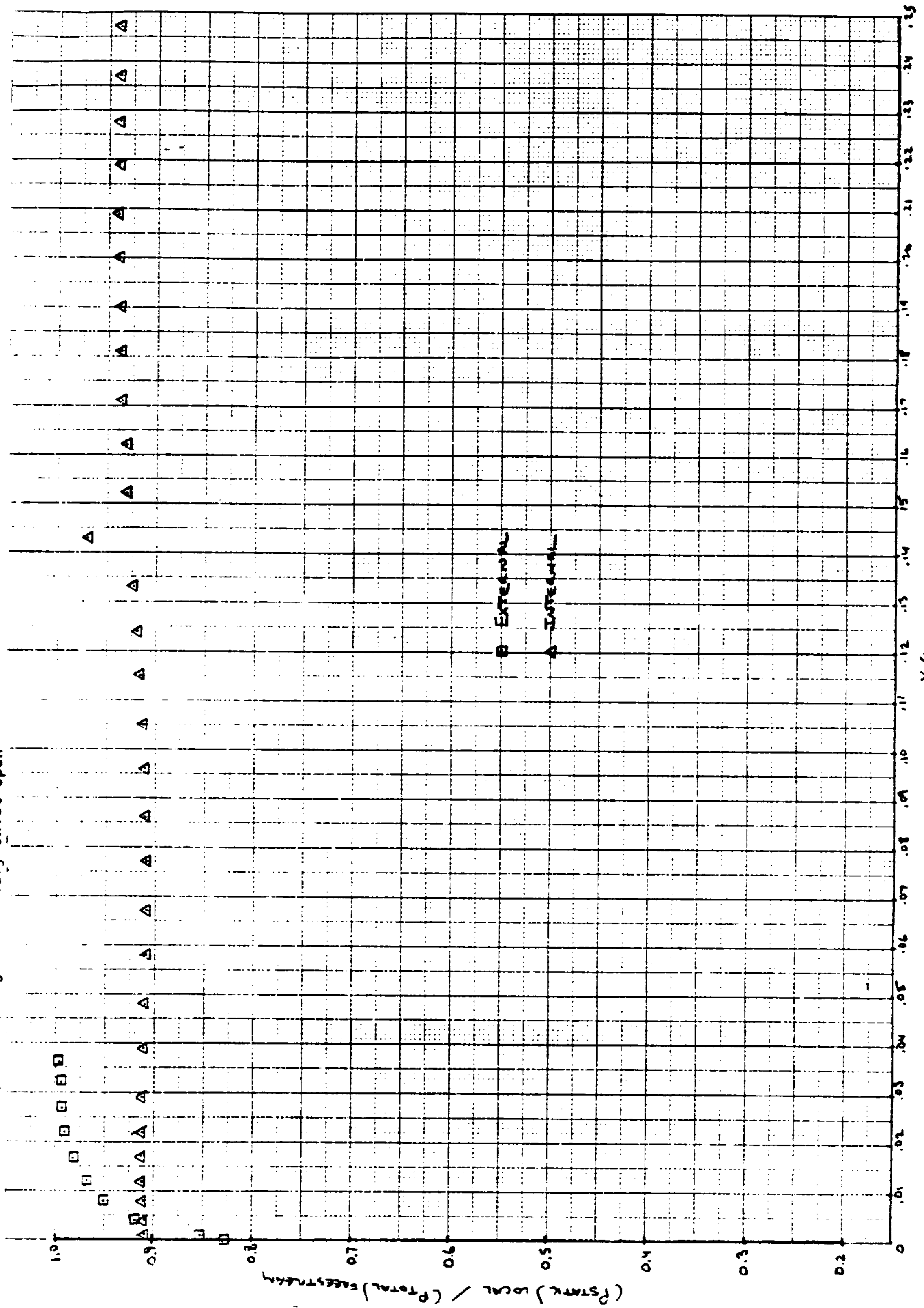
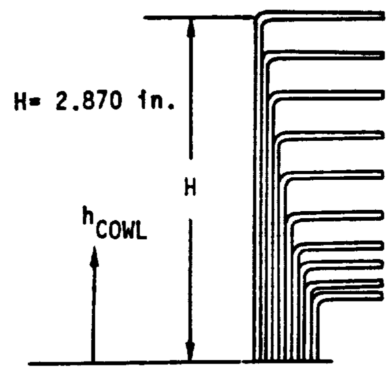
Configuration 15 V_0 = 80 Knots α = 90° EFMN = 0.526
Thick Lip Inlet, Right Auxiliary Inlet Open

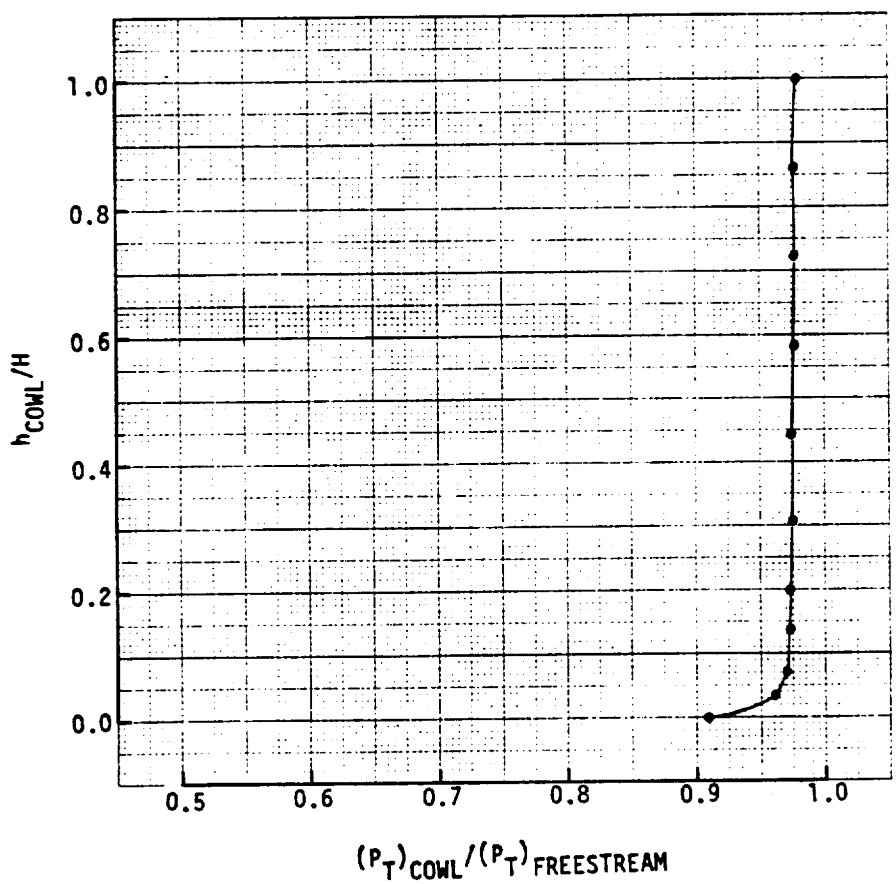


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

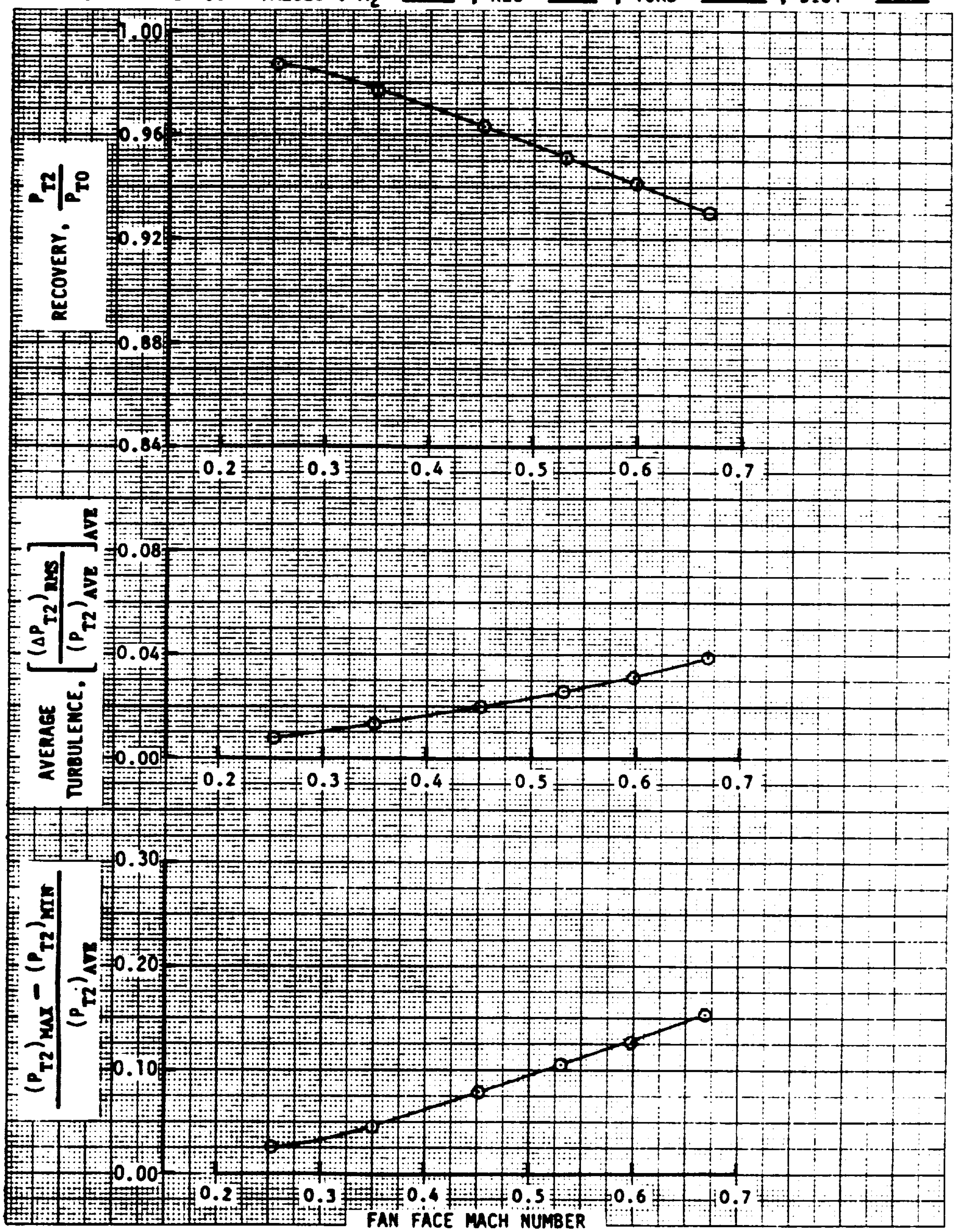
CONFIGURATION: NUMBER 15; DESCRIPTION Thick Lip Inlet, Right Auxiliary Inlet Open

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .526

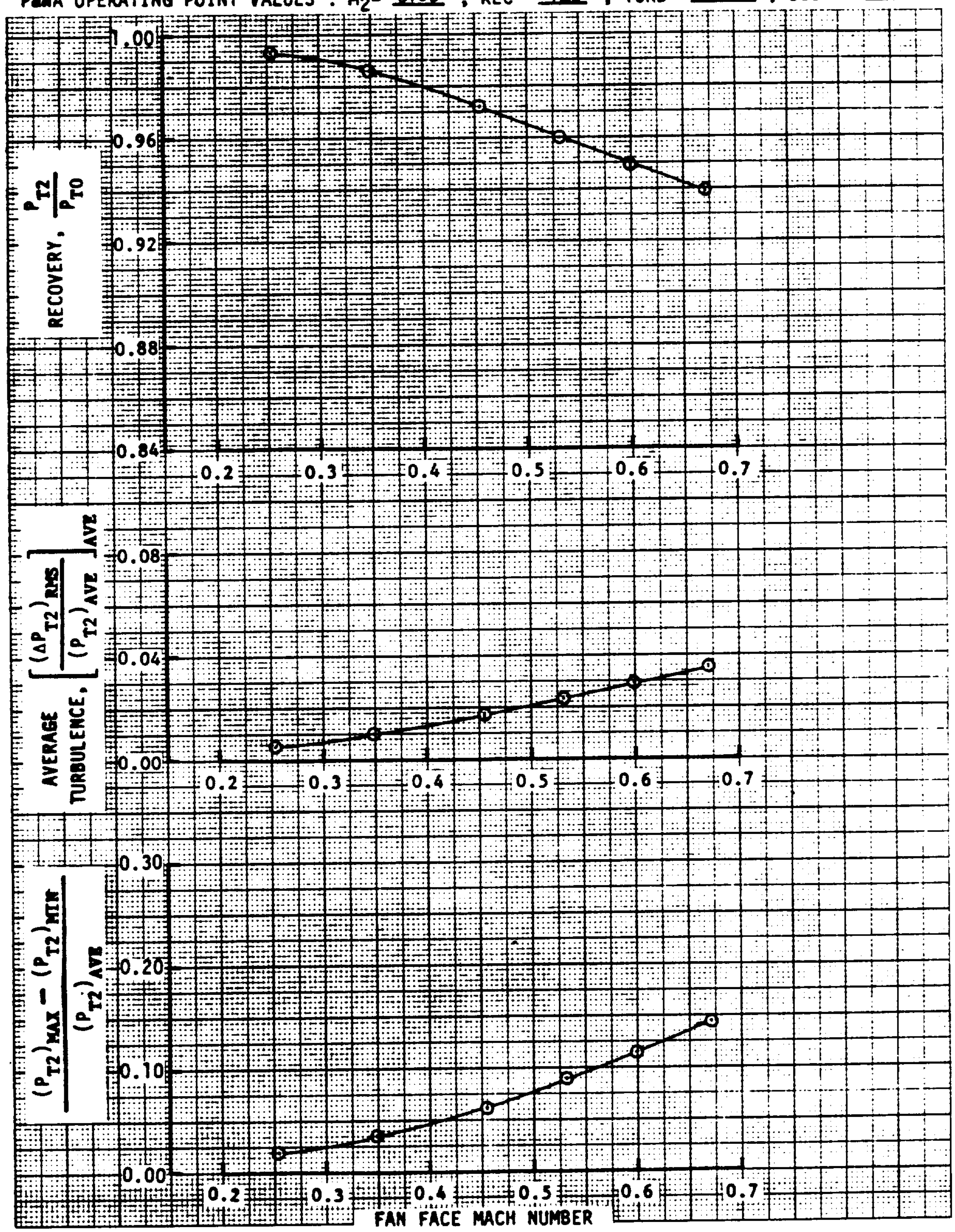




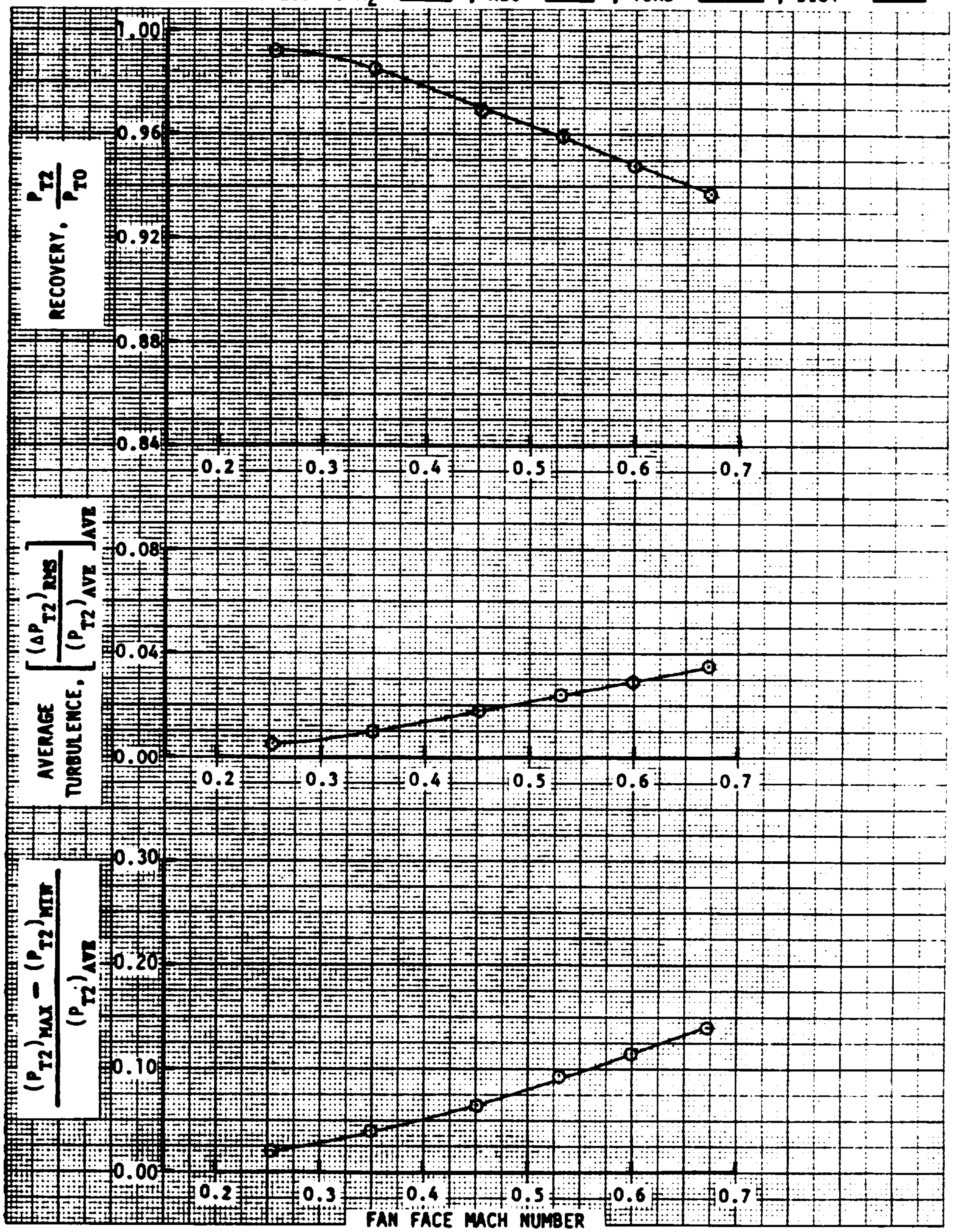
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2760-2773
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .026 ; DIST= .105



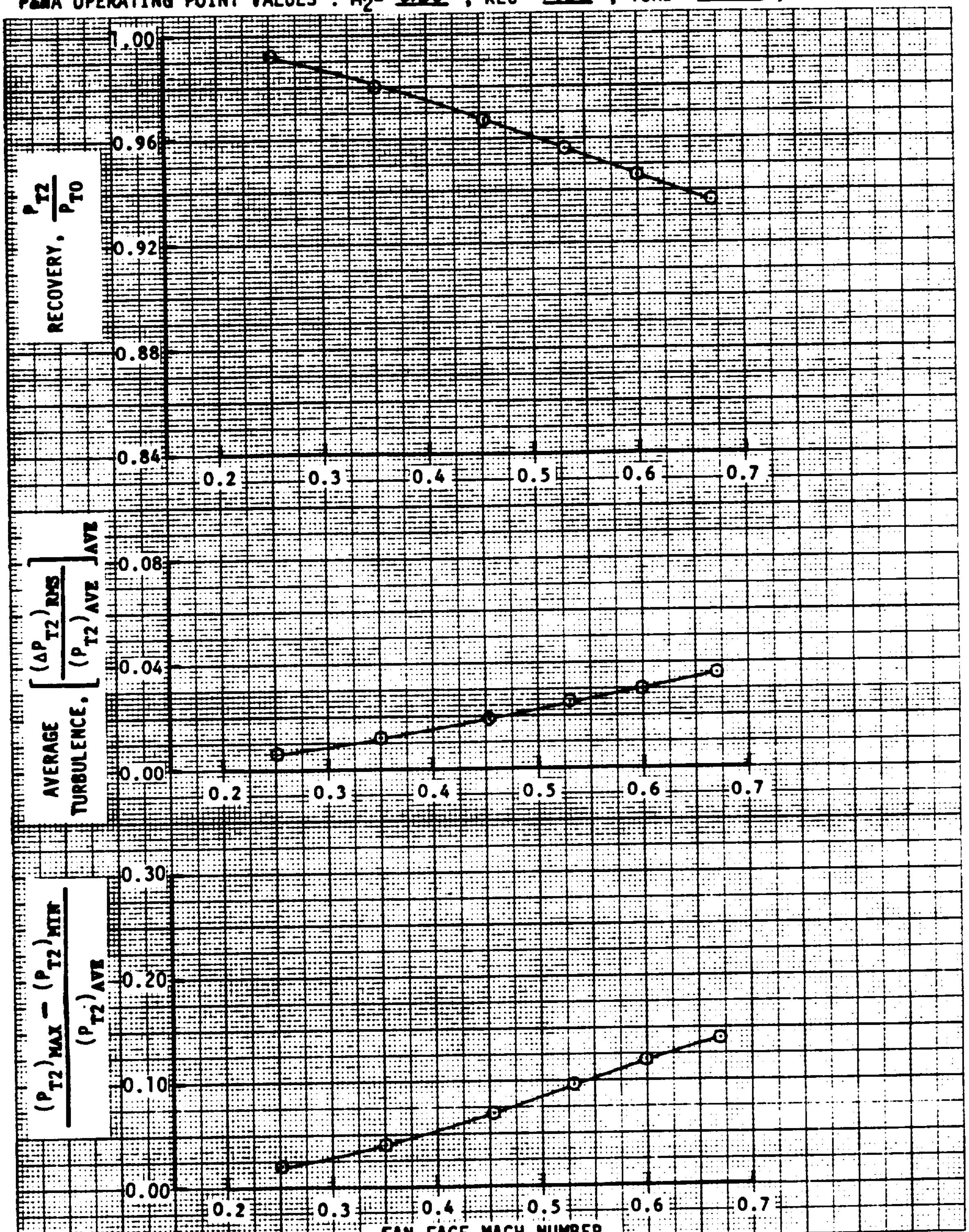
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2774-2779
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .960 ; TURB= .023 ; DIST= .080



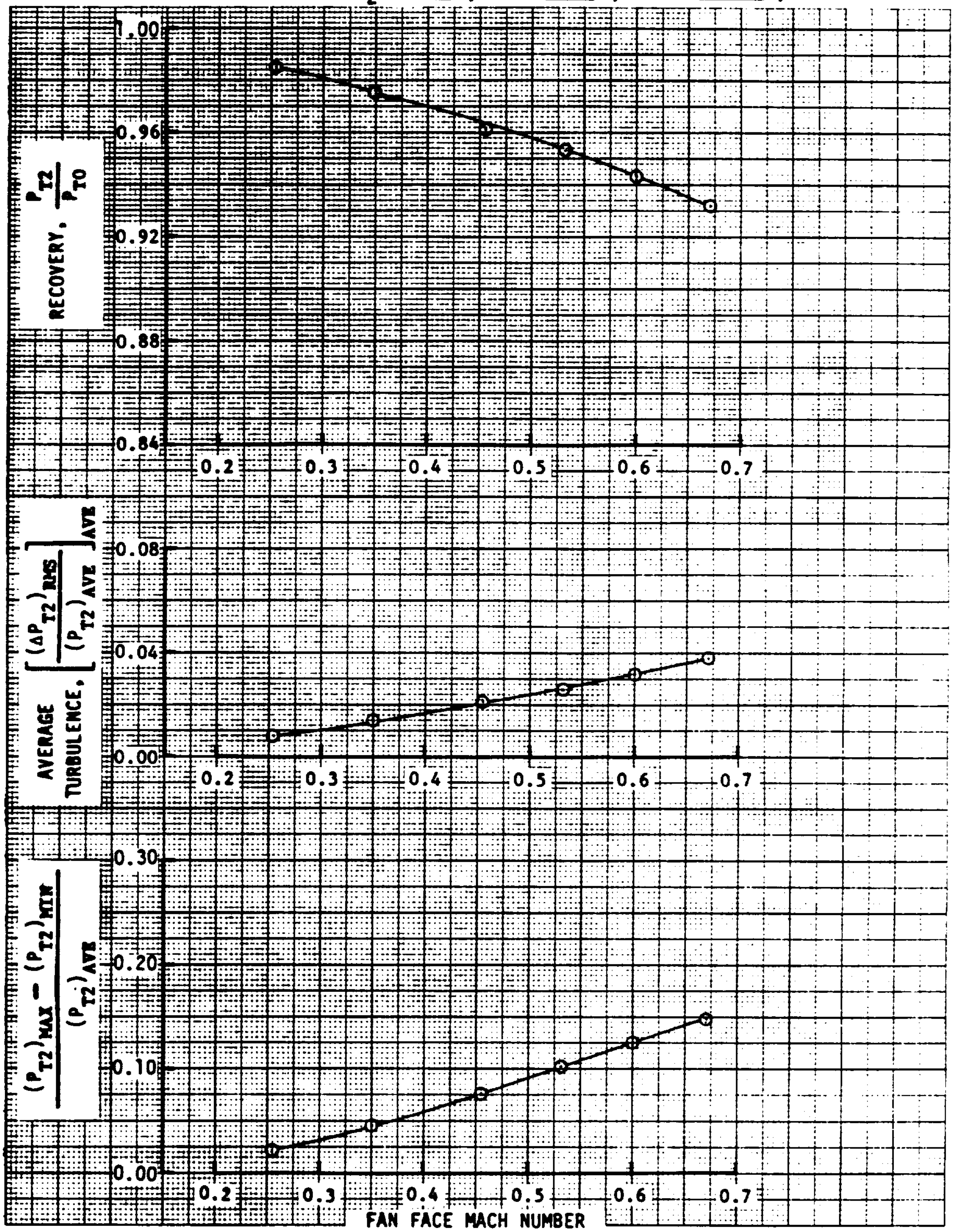
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2780-2785
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .959 ; TURB= .024 ; DIST= .090



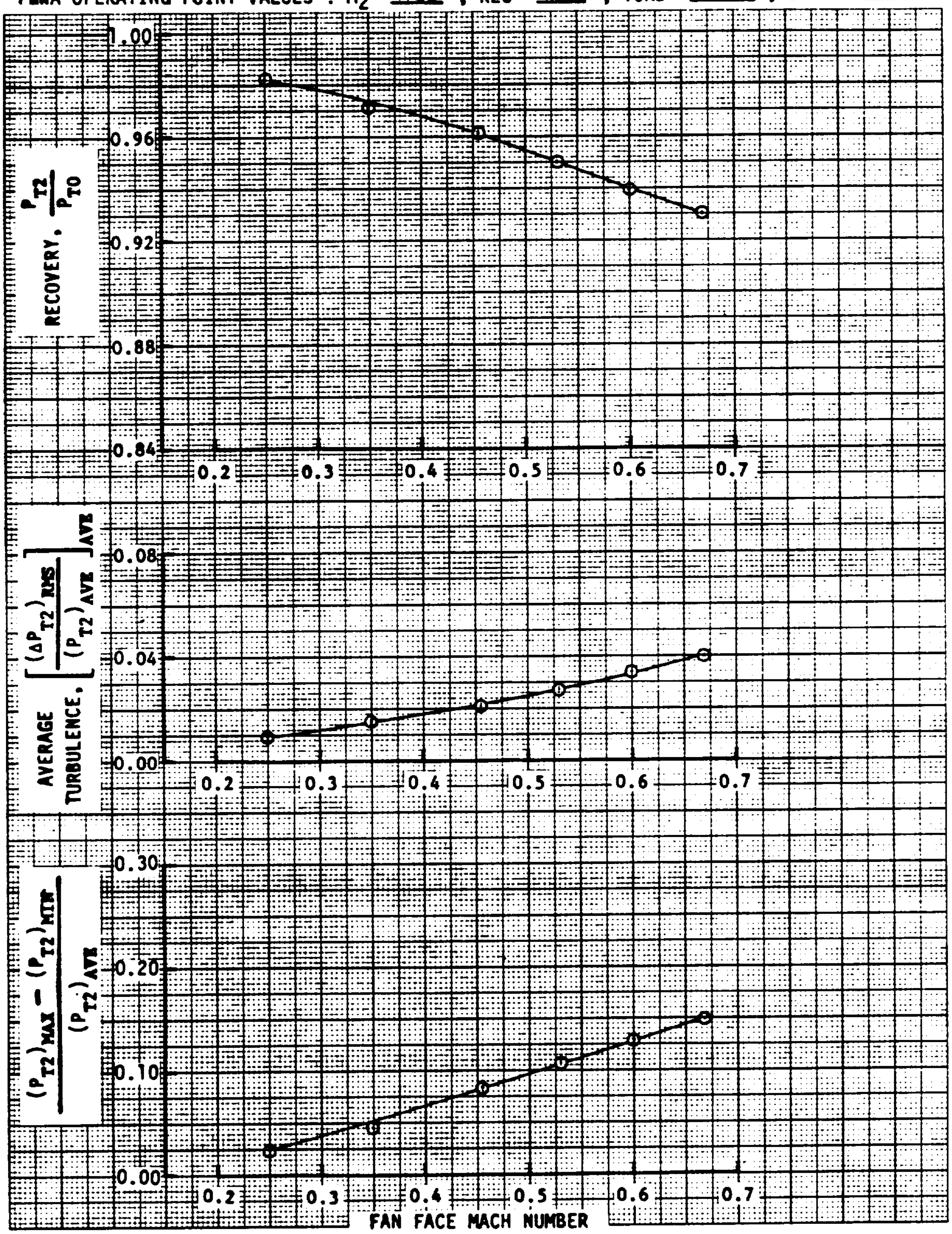
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2786-2791
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .956 ; TURB= .025 ; DIST= .095



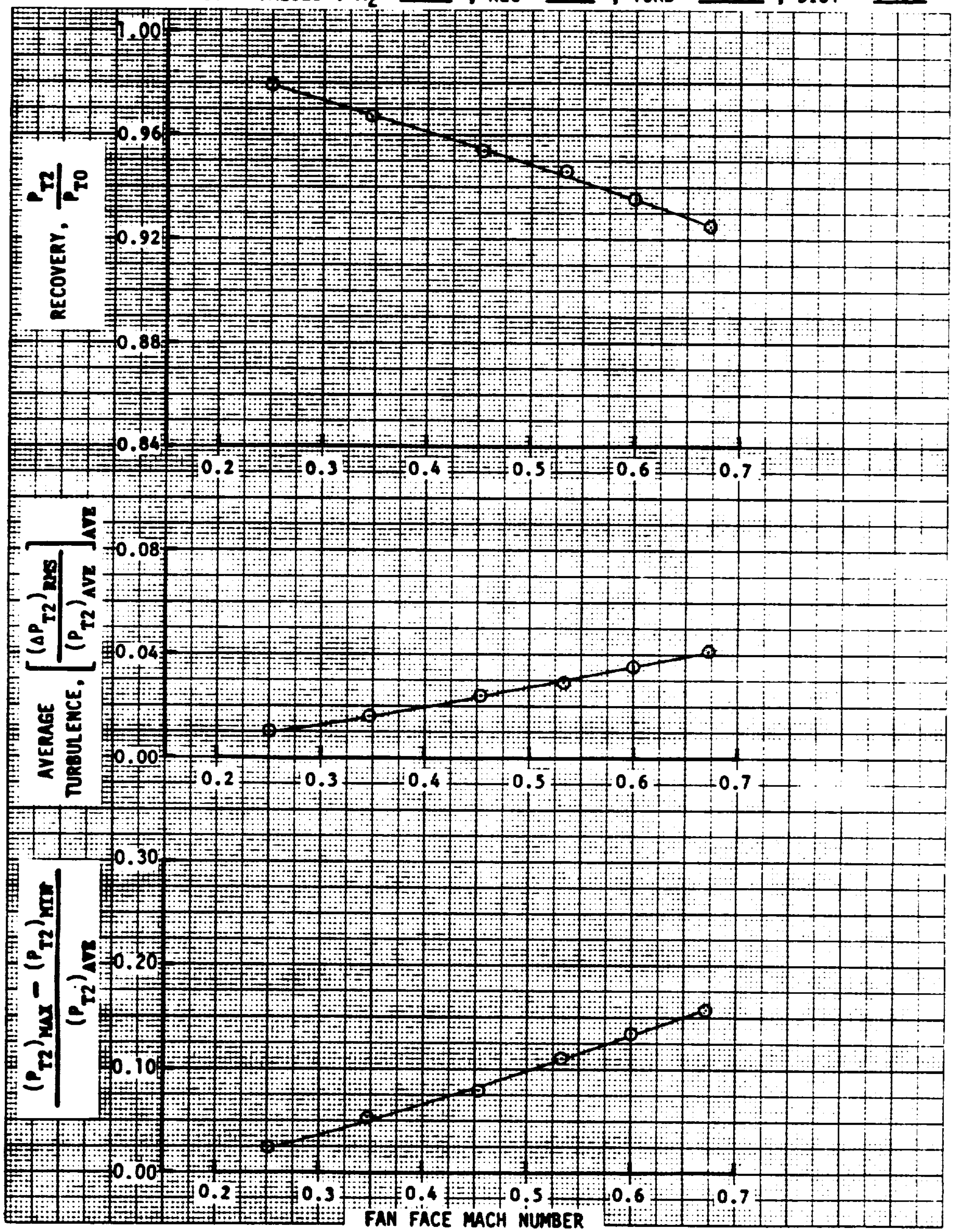
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2792-2797
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .026 ; DIST= .102



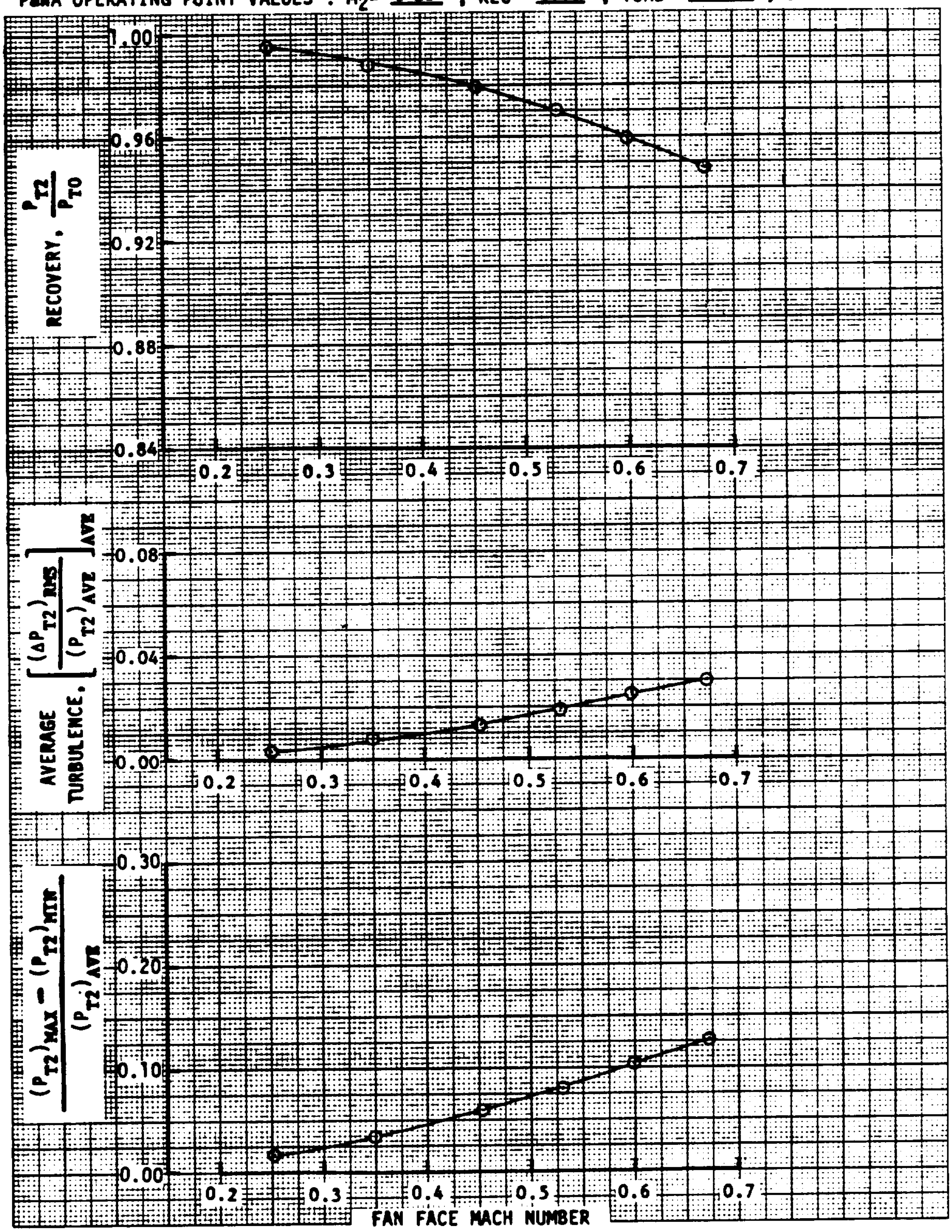
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2798-2803
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .027 ; DIST= .107



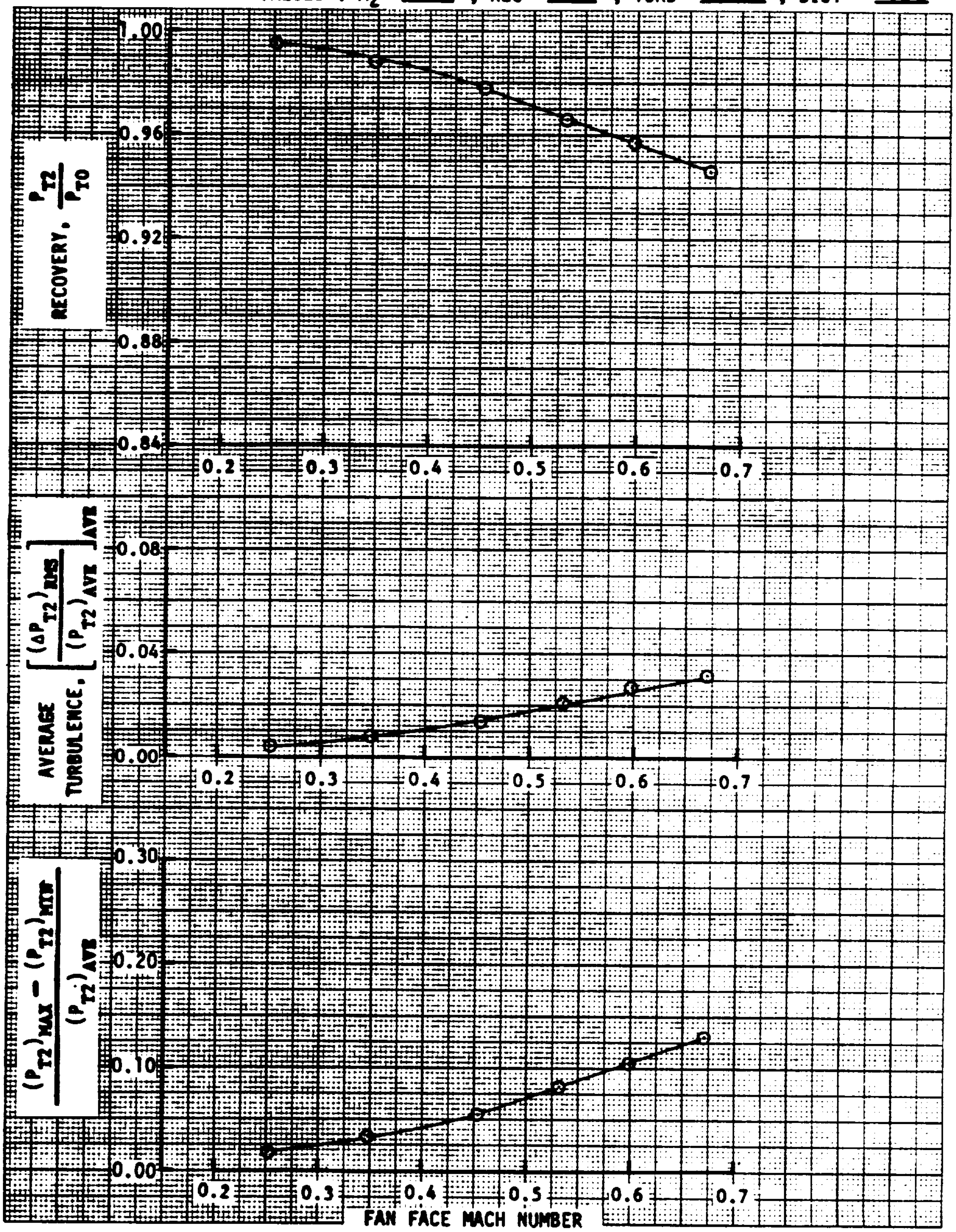
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2804-2809
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .030 ; DIST= .108



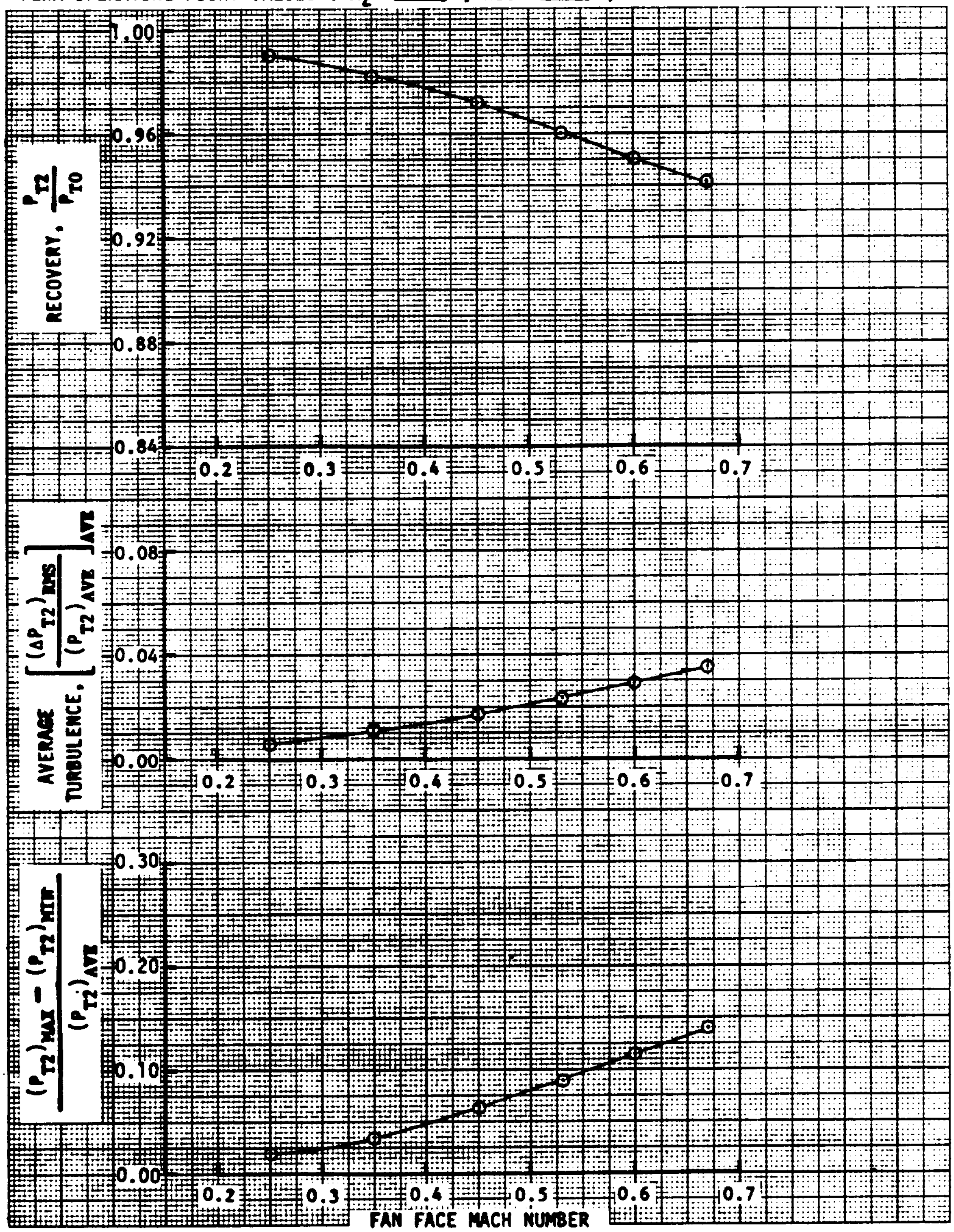
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2810-2815
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .019 ; DIST= .082



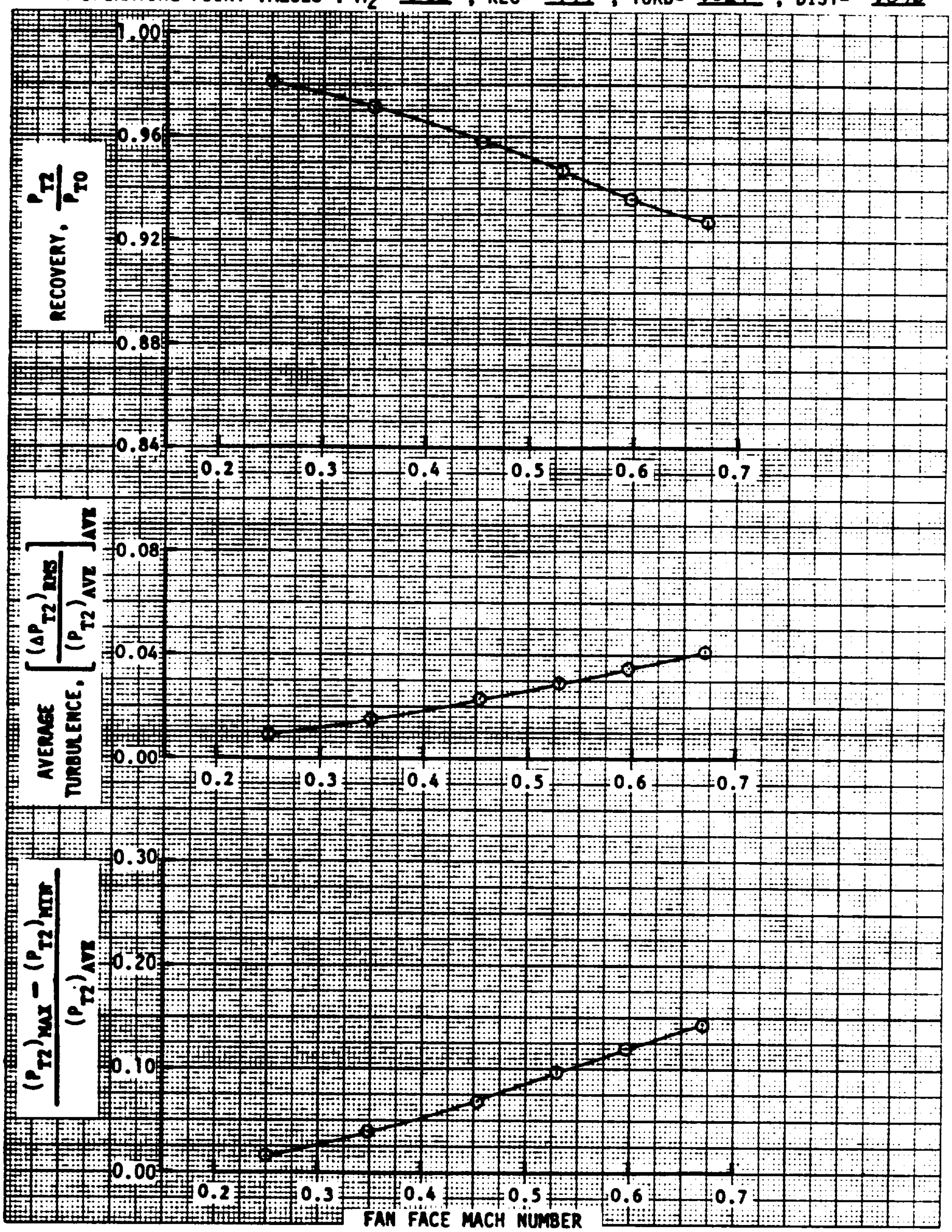
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2816-2821
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .020 ; DIST= .082



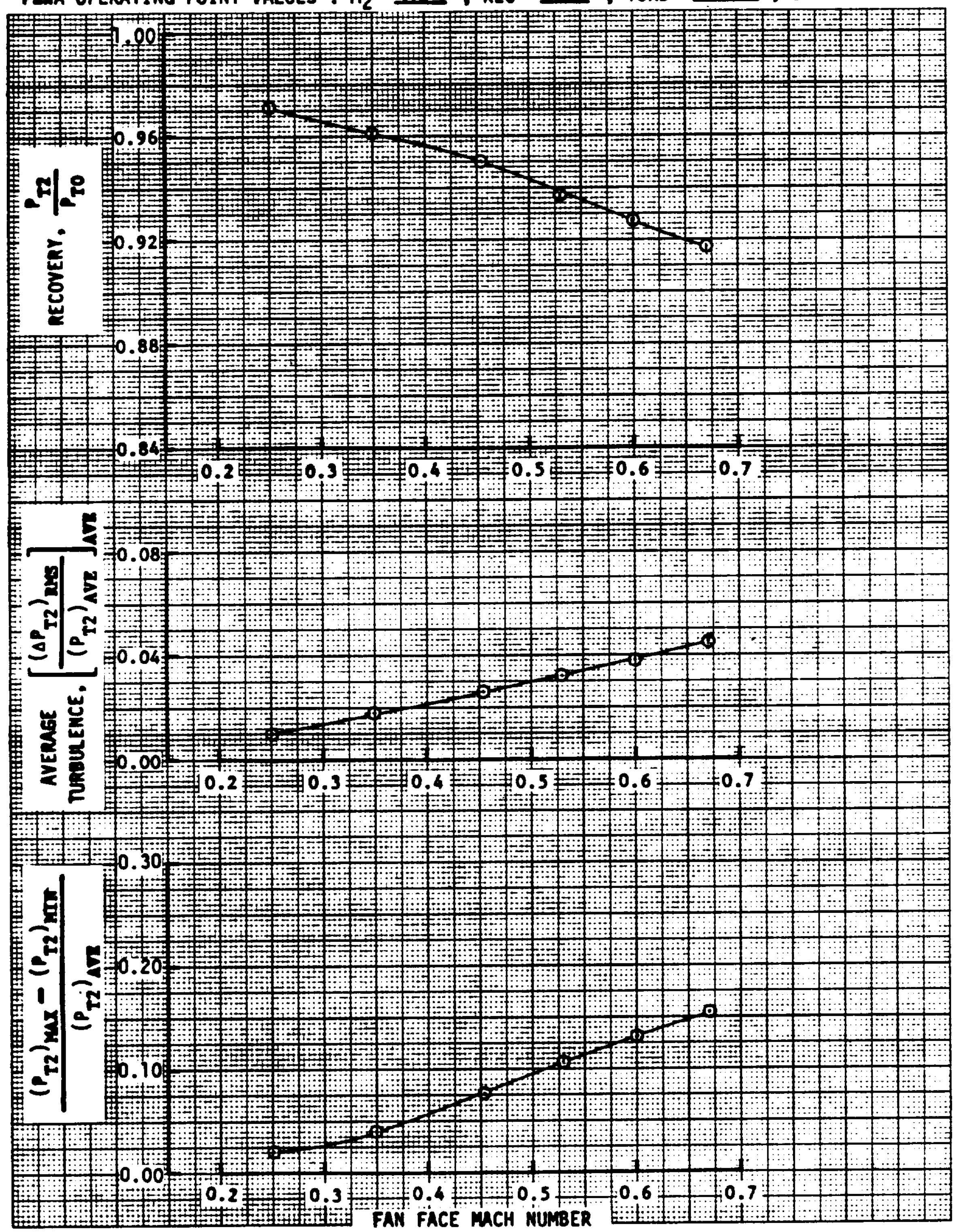
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2822-2827
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .024 ; DIST= .091



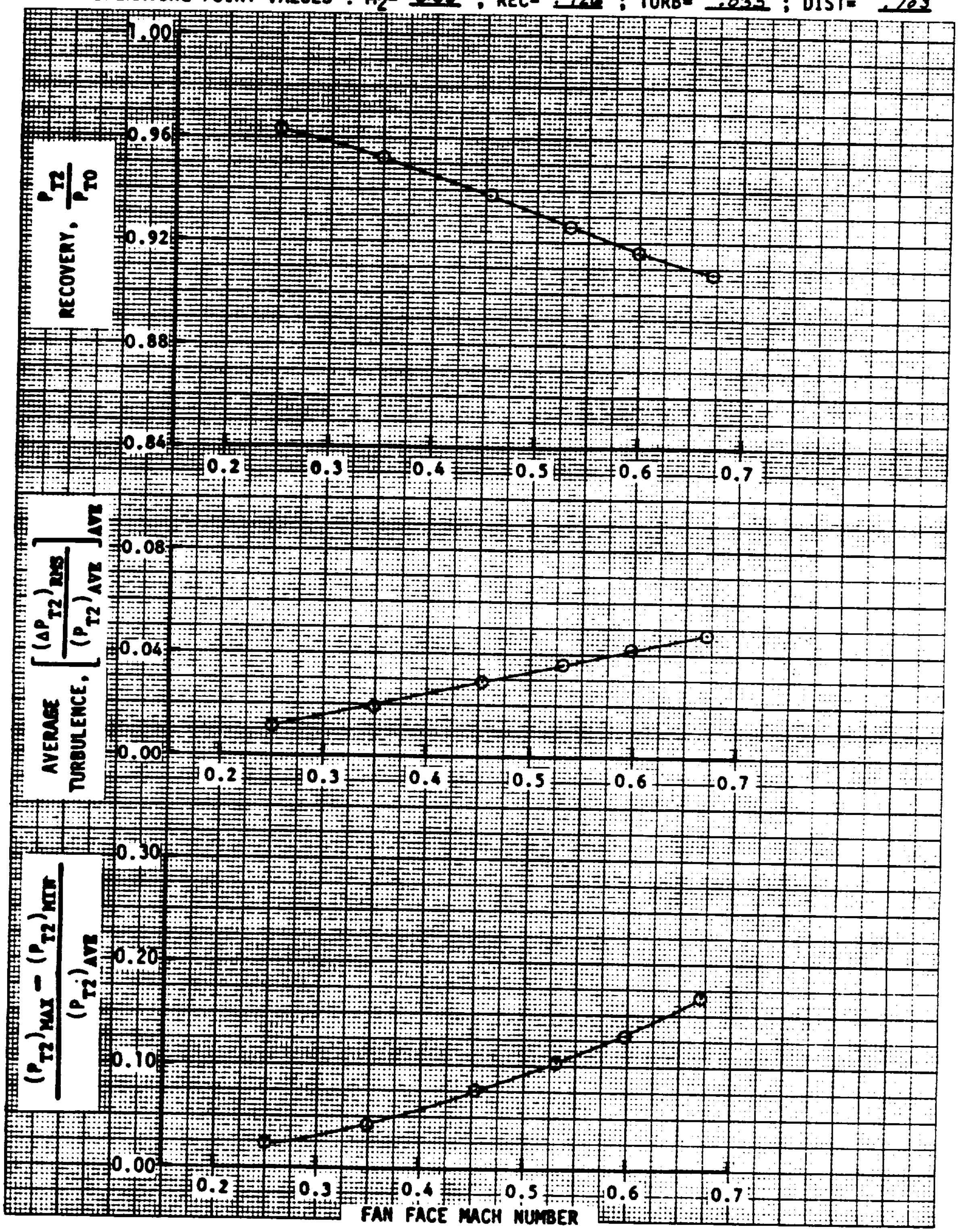
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2828-2833
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .947 ; TURB= .029 ; DIST= .096



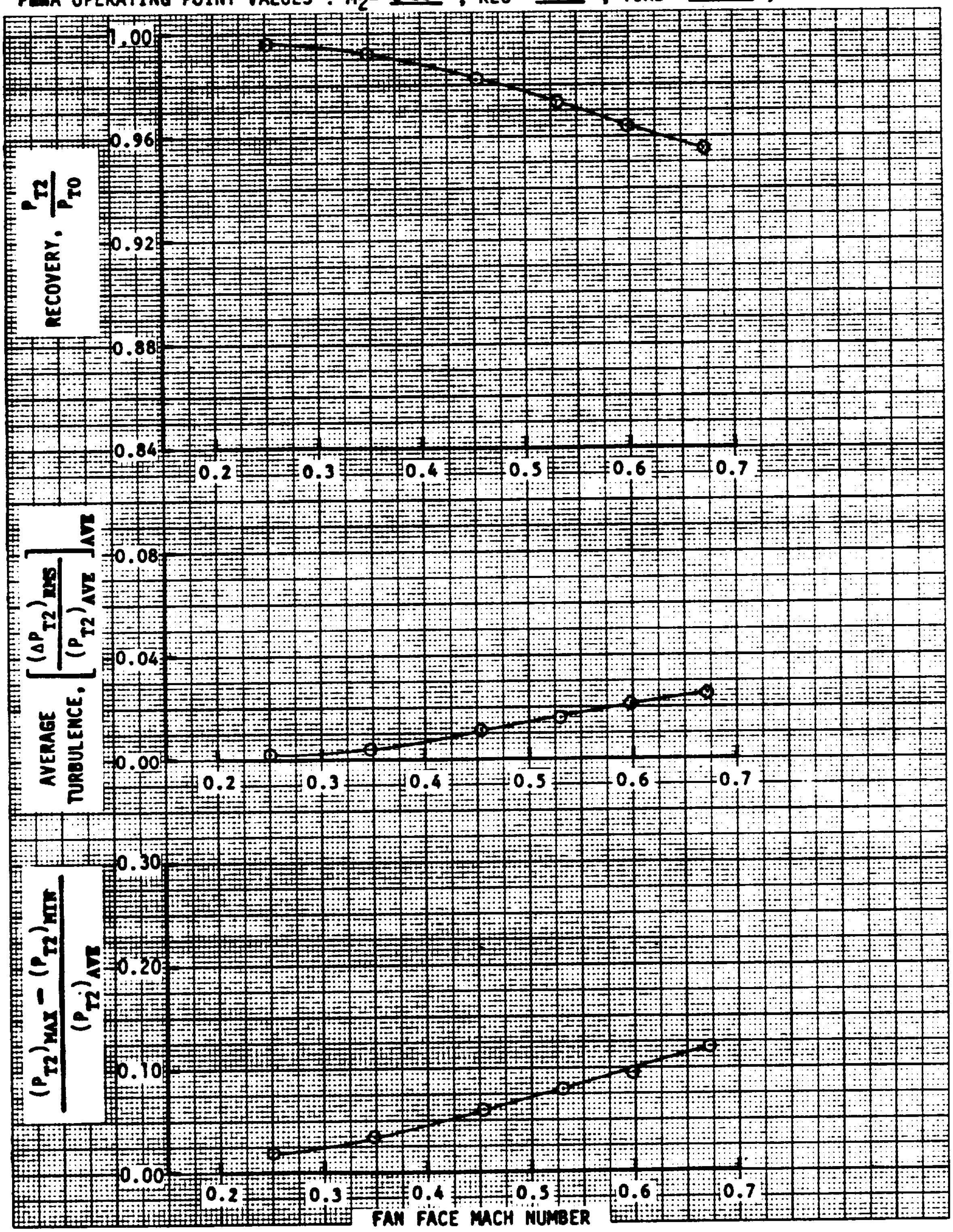
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2034-2039
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .938 ; TURB= .032 ; DIST= .106



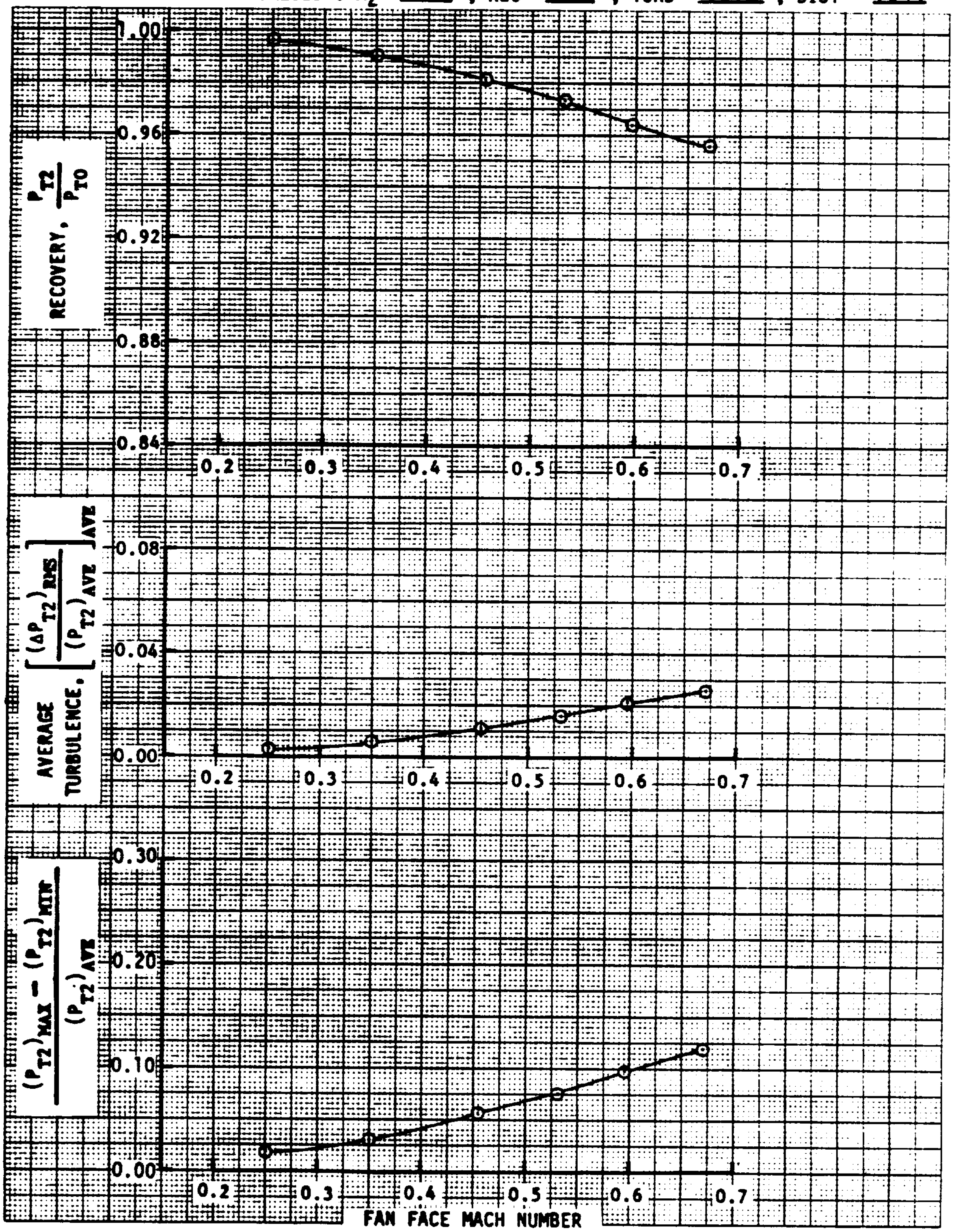
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION L6 ; READING NUMBERS 2840-2845
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .926 ; TURB= .035 ; DIST= .103



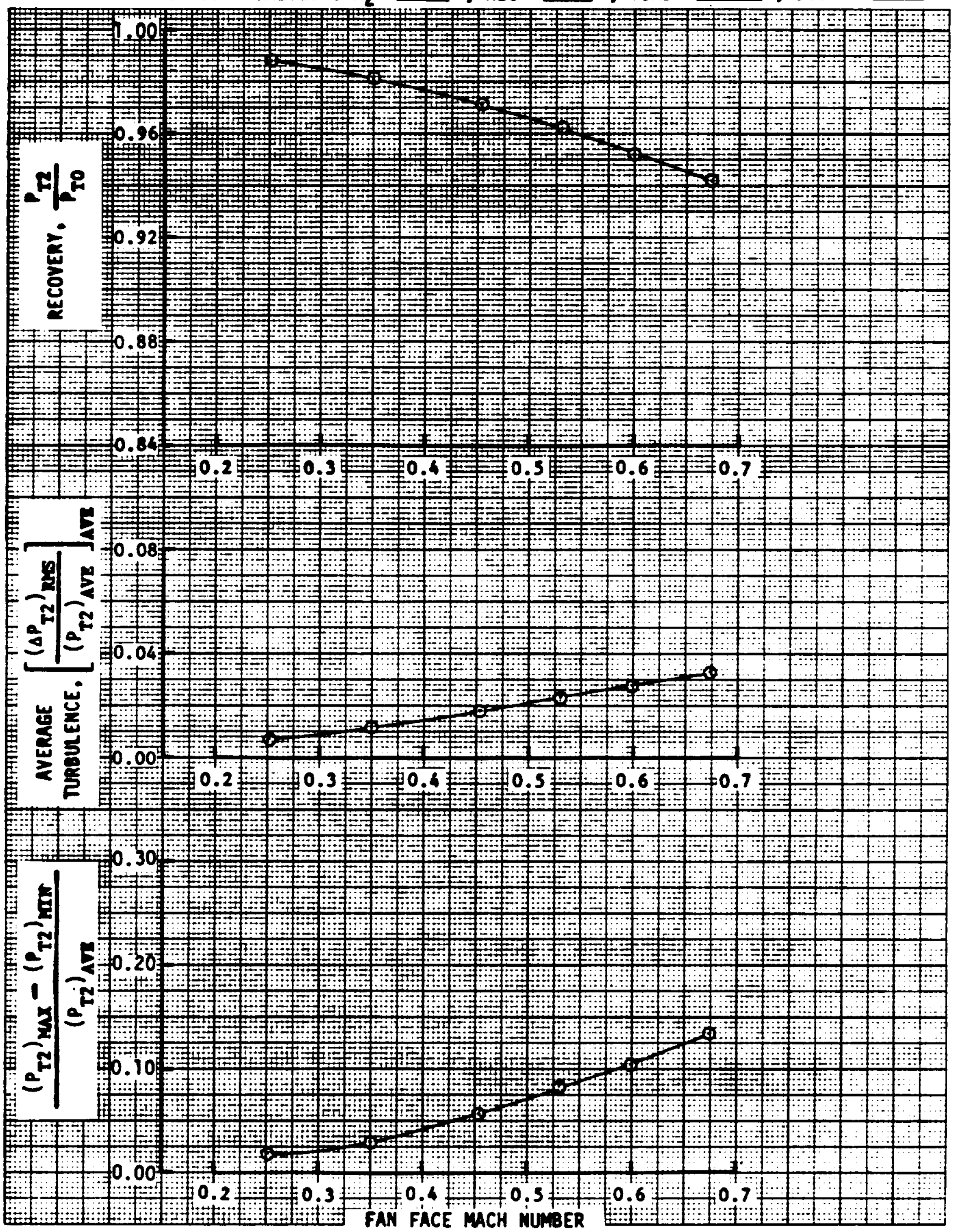
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2846-2851
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .016 ; DIST= .080



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2852-2858
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .016 ; DIST= .077



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2859-2864
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .023 ; DIST= .082

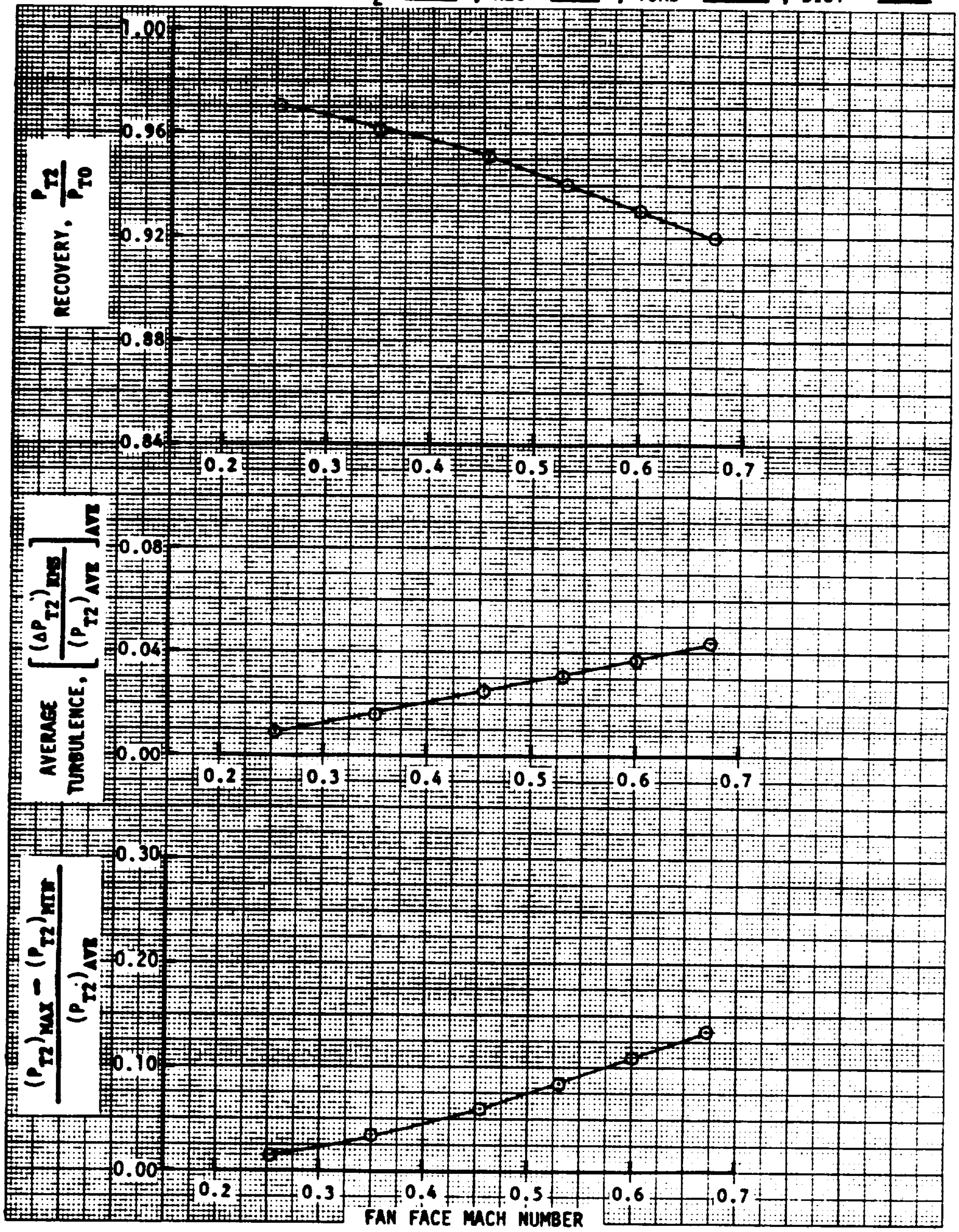


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

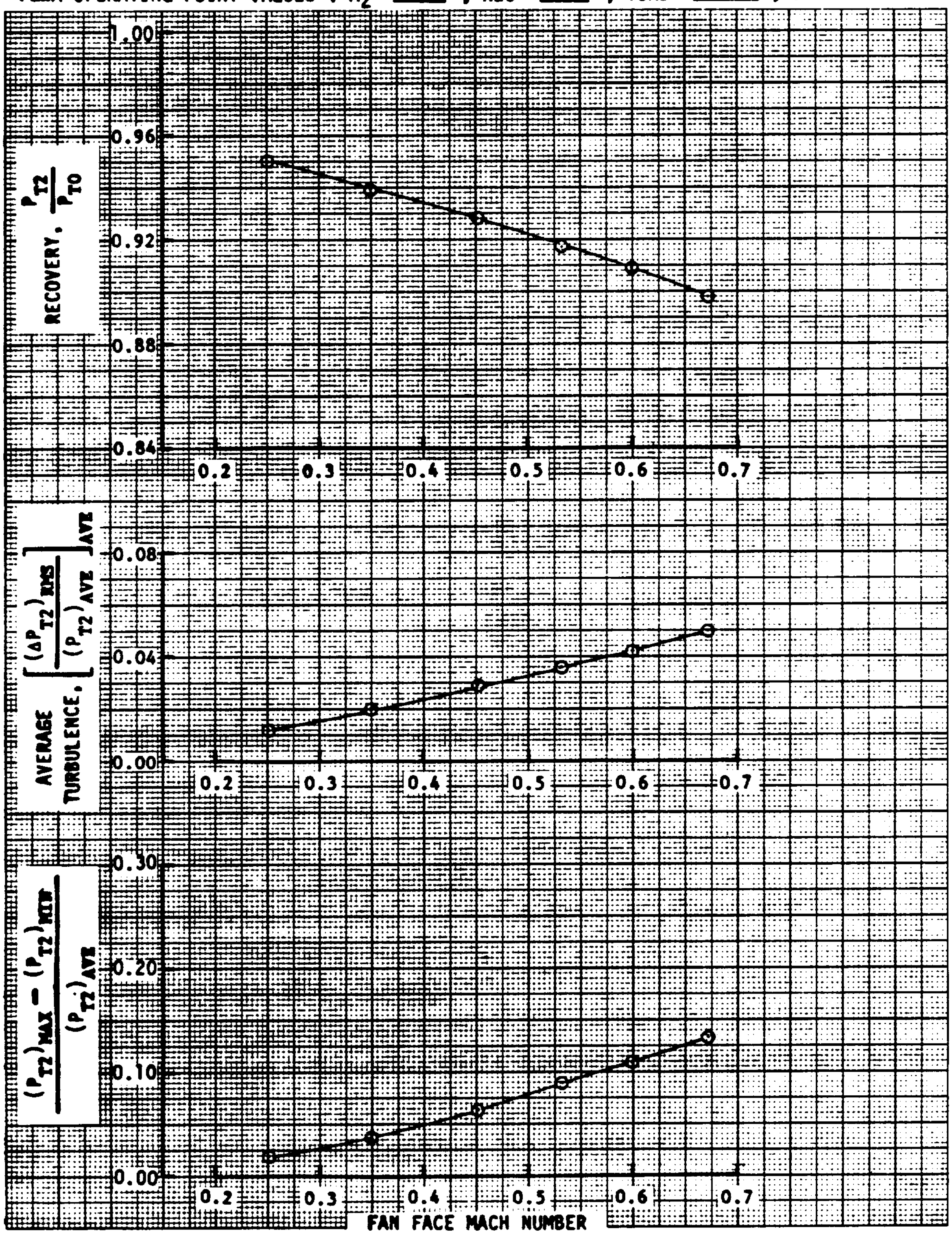
CONFIGURATION 16 ; READING NUMBERS 2865-2870

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

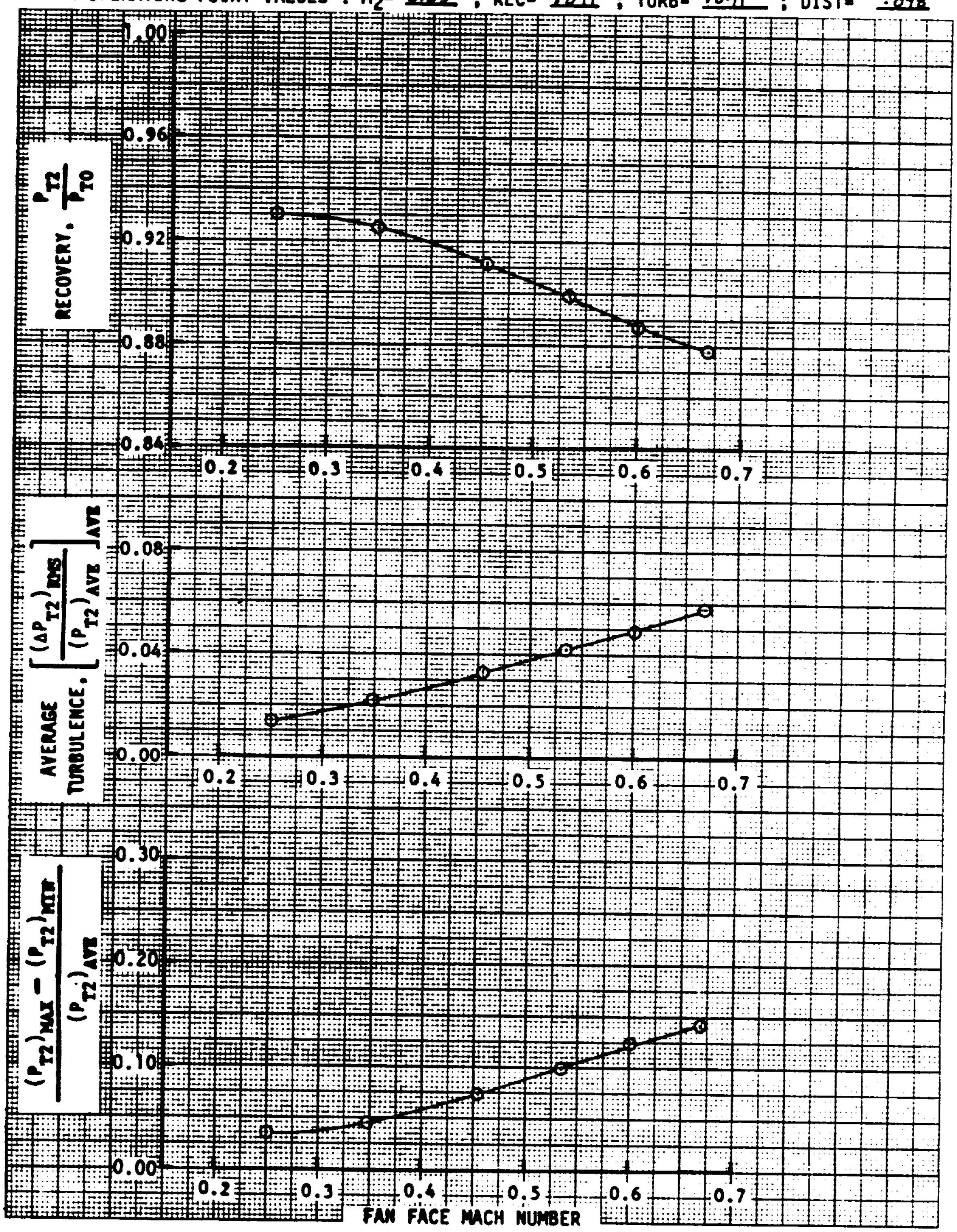
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .940 ; TURB= .031 ; DIST= .085



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 16 ; READING NUMBERS 2871-2876
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .918 ; TURB= .036 ; DIST= .088



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 26 ; READING NUMBERS 2877-2882
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .899 ; TURB= .041 ; DIST= .098



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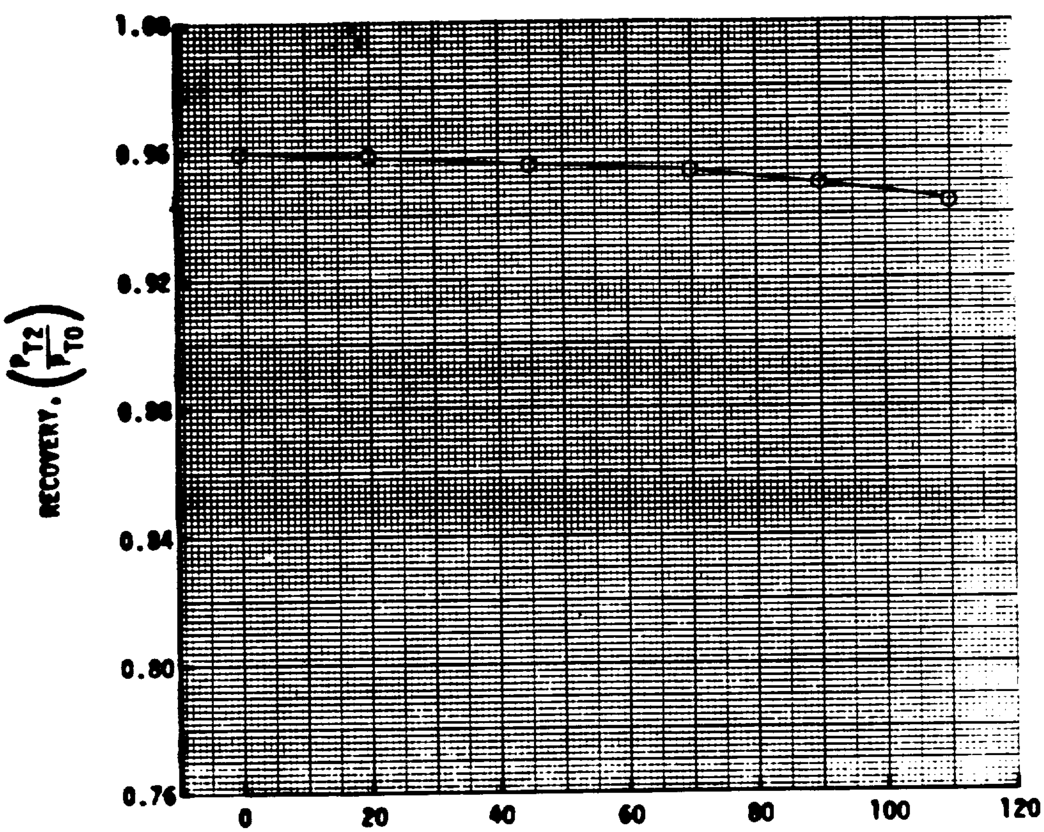
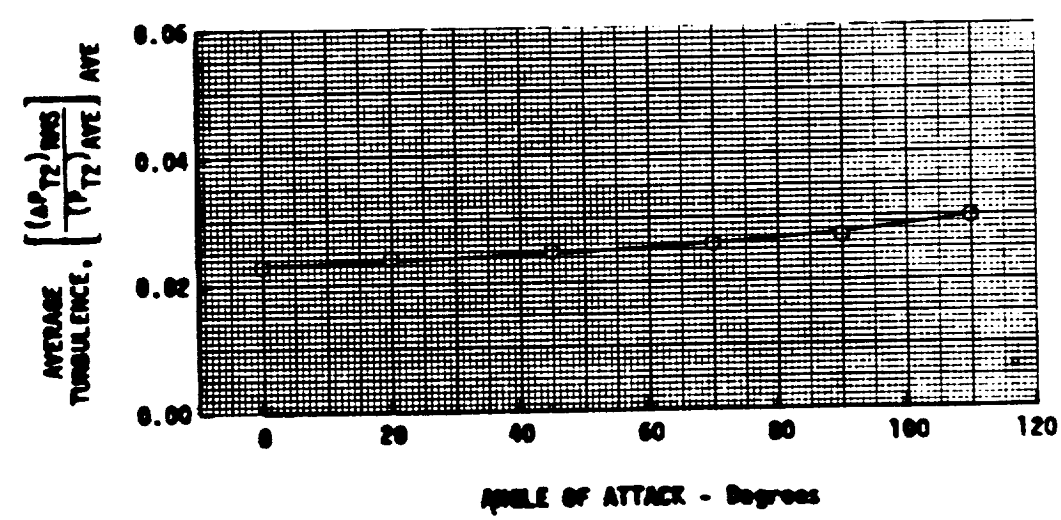
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 16; DESCRIPTION Thick Lip Inlet; Bottom Aux Open-Port





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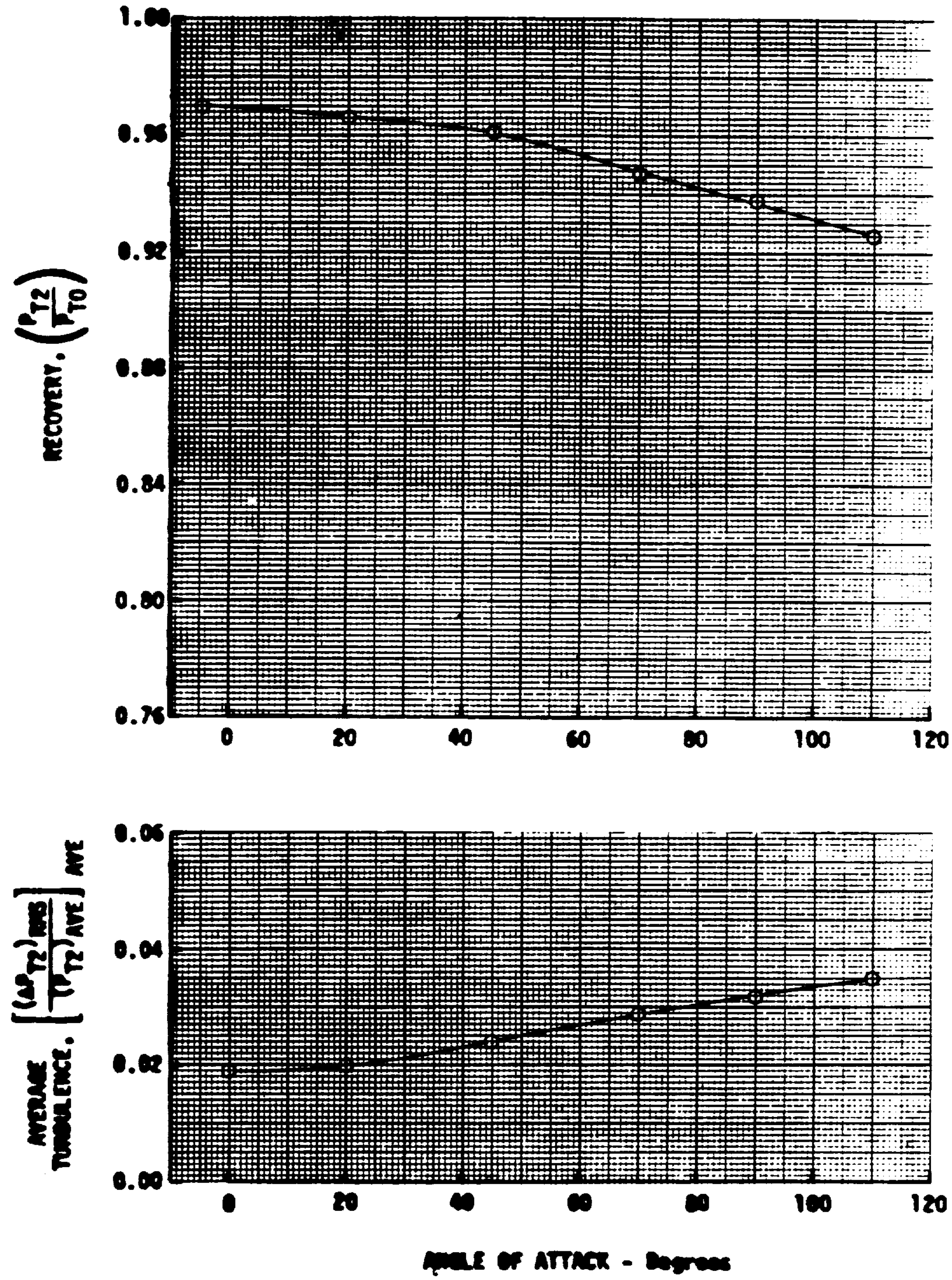
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 16**; DESCRIPTION** Thick Lip Inlet; Bottom Aux Open-Port

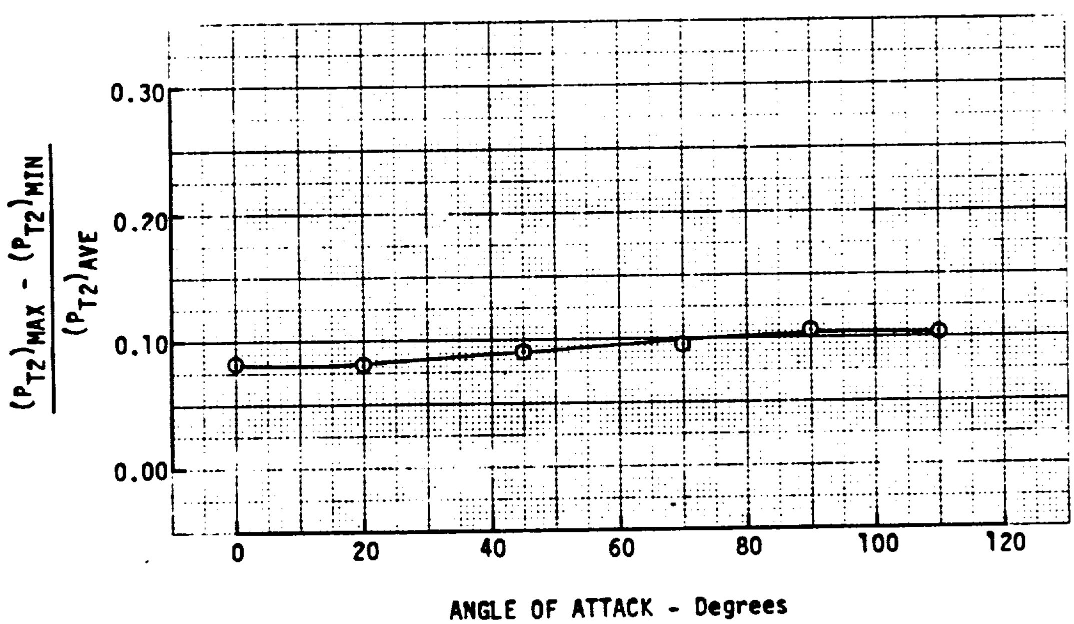


DISTORTION VS. ANGLE OF ATTACK

P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53

FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees

CONFIGURATION: NUMBER 16 ; DESCRIPTION Thick Lip Inlet; Bottom Aux Open - Port



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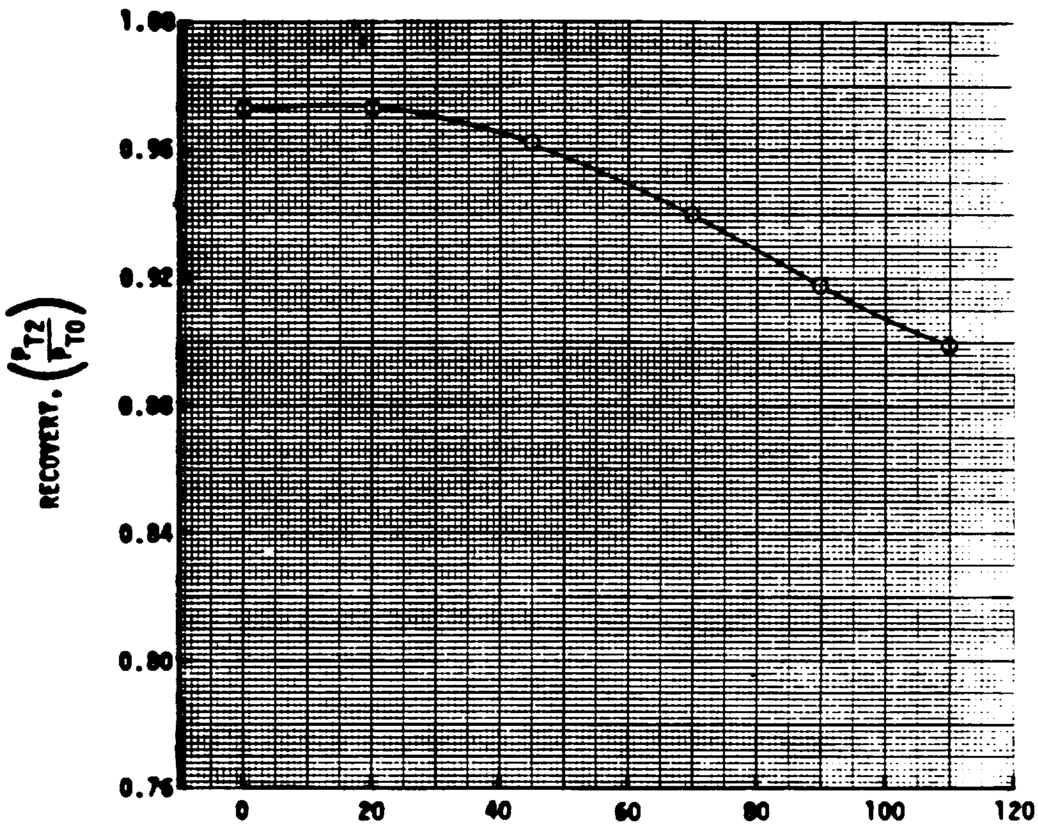
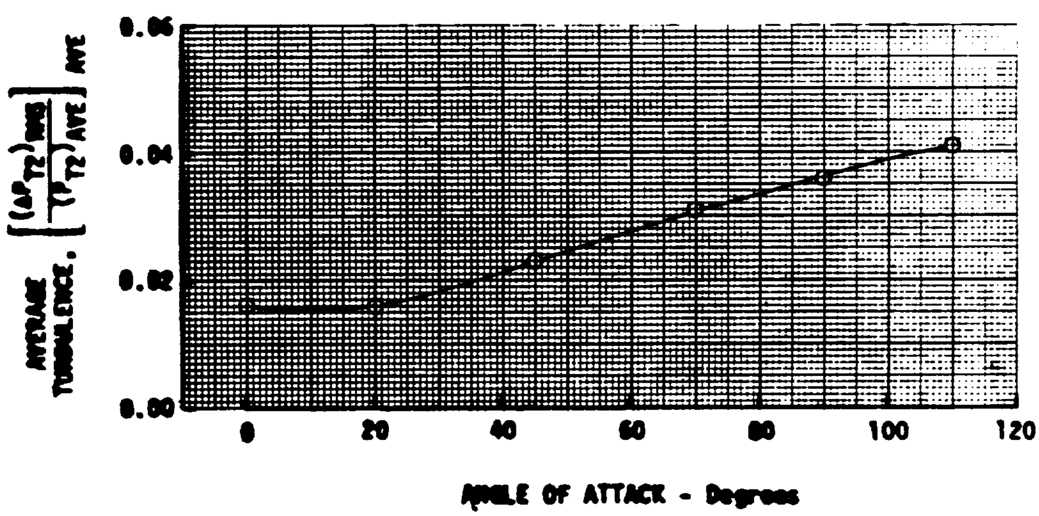
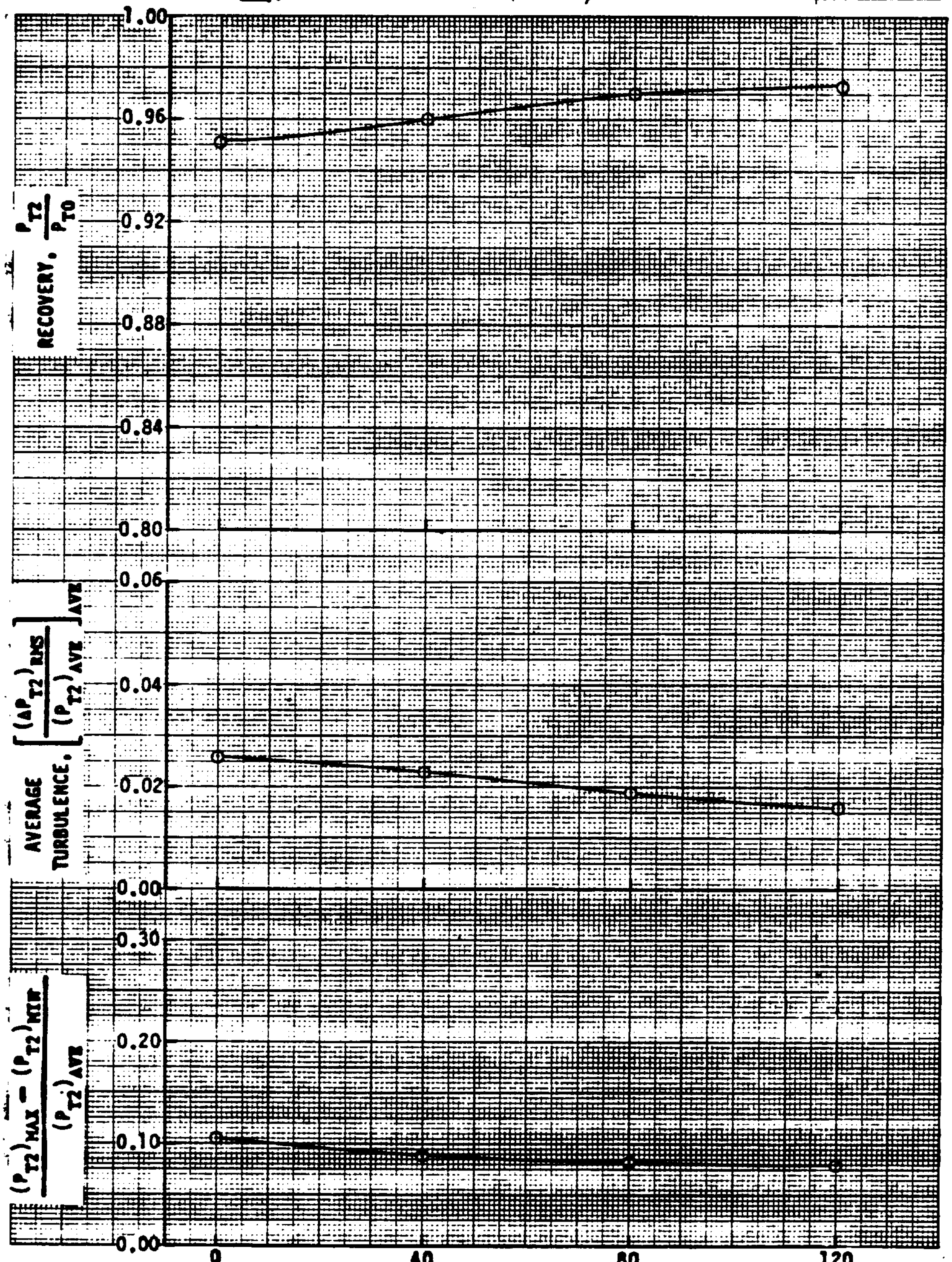
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 16; DESCRIPTION Thick Lip Inlet; Bottom Box Open-Port





RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 16; DESCRIPTION Thick Lip Inlet, Bottom Aux Inlet Open - Port



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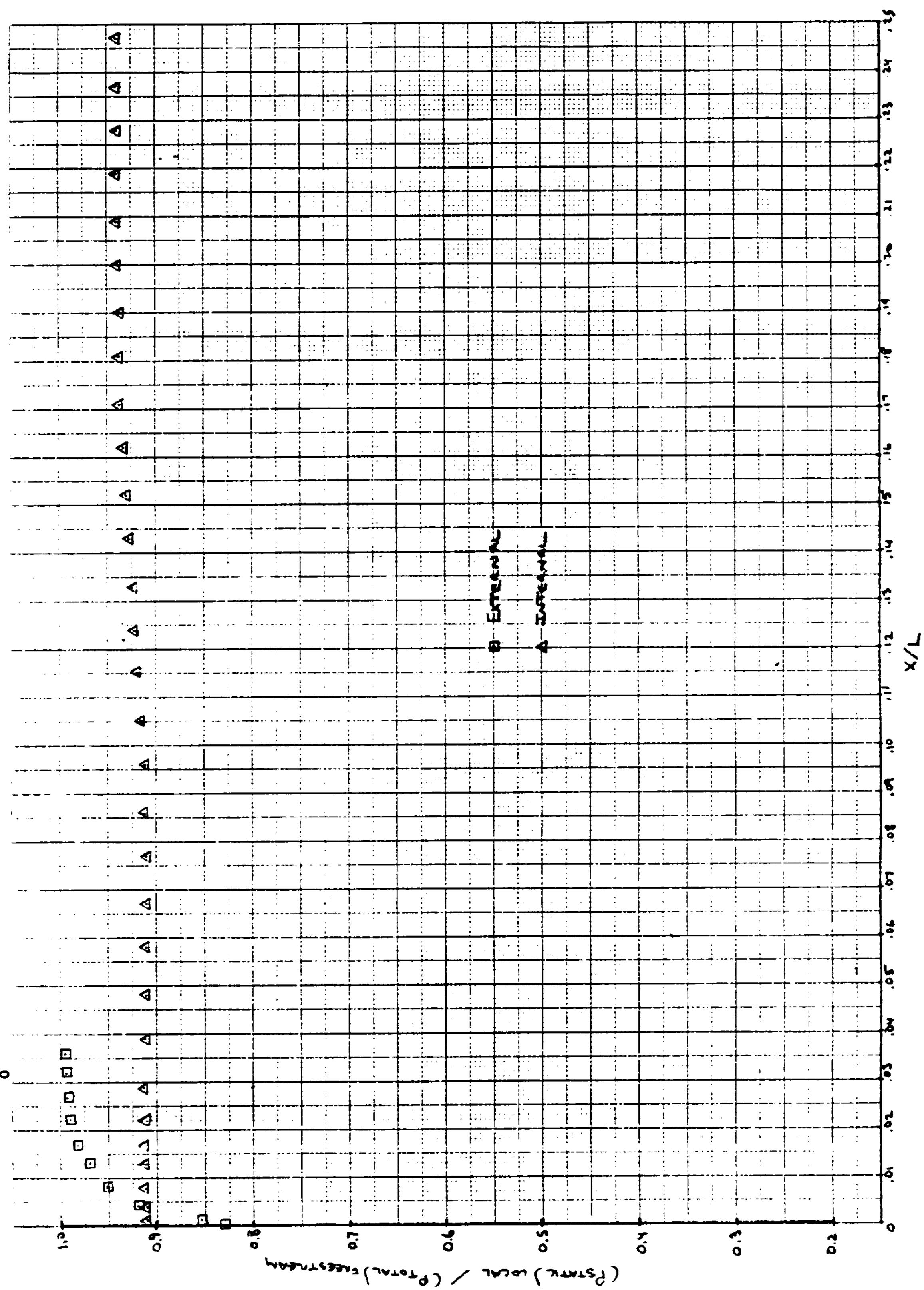
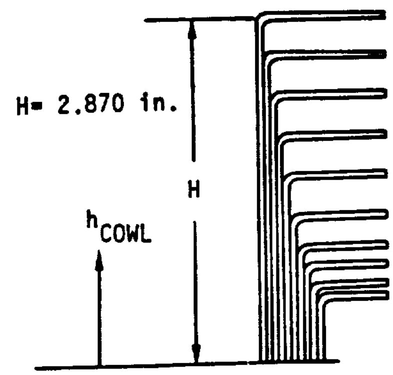


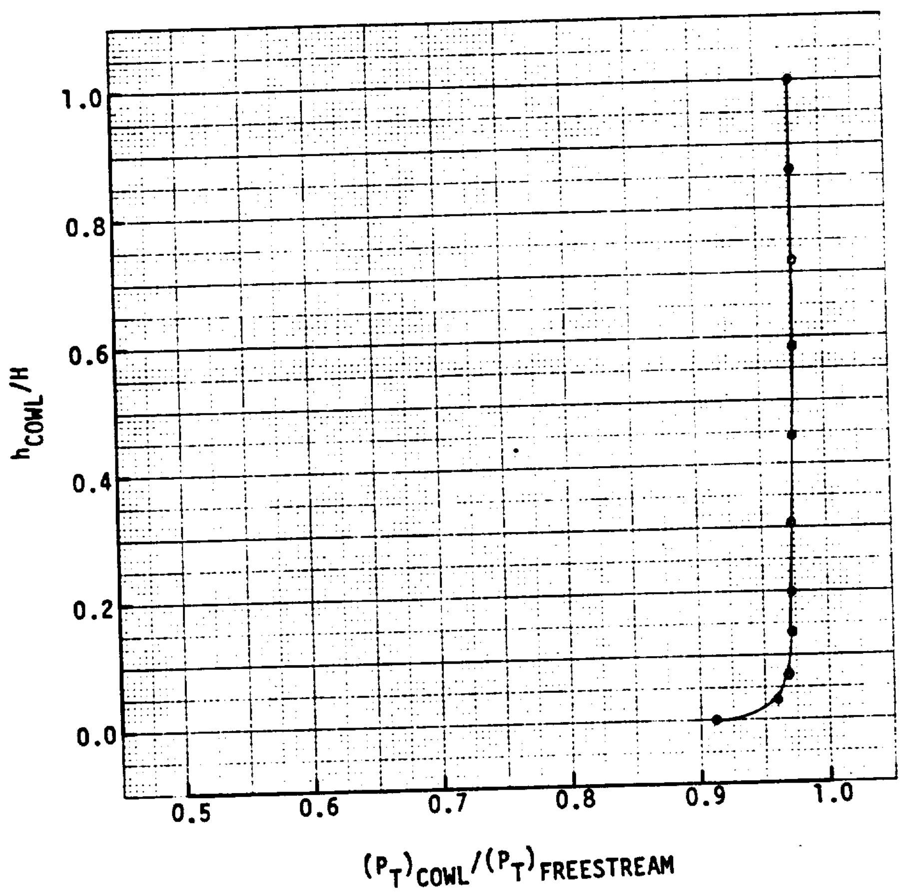
Configuration 16 Thick Lip Inlet, Bottom Auxiliary Inlet Open
V_o = 80 Knots α = 90° EFMN = 0.529

COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

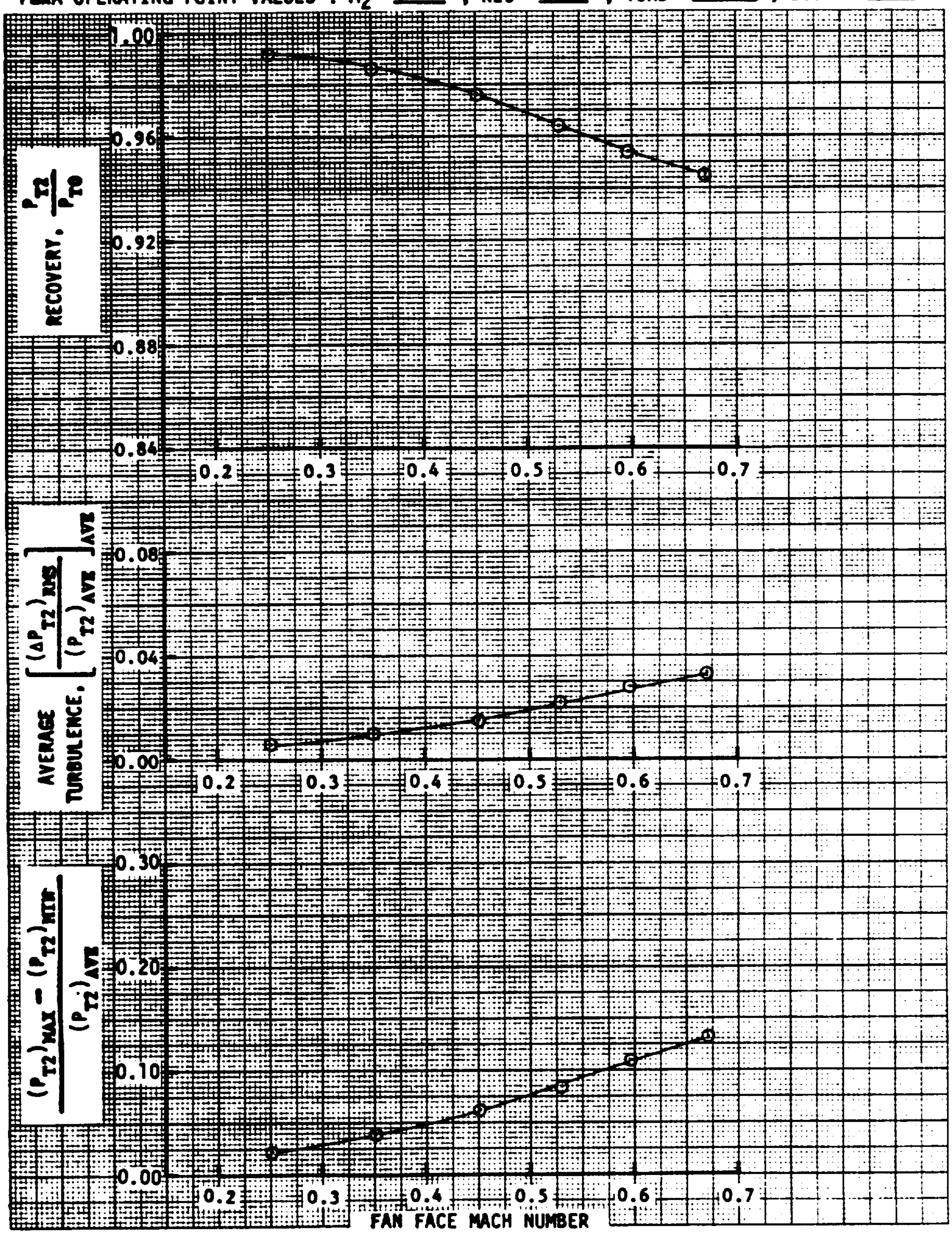
CONFIGURATION: NUMBER 16; DESCRIPTION Thick Lip Inlet, Bottom Auxiliary Inlet Open

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .529

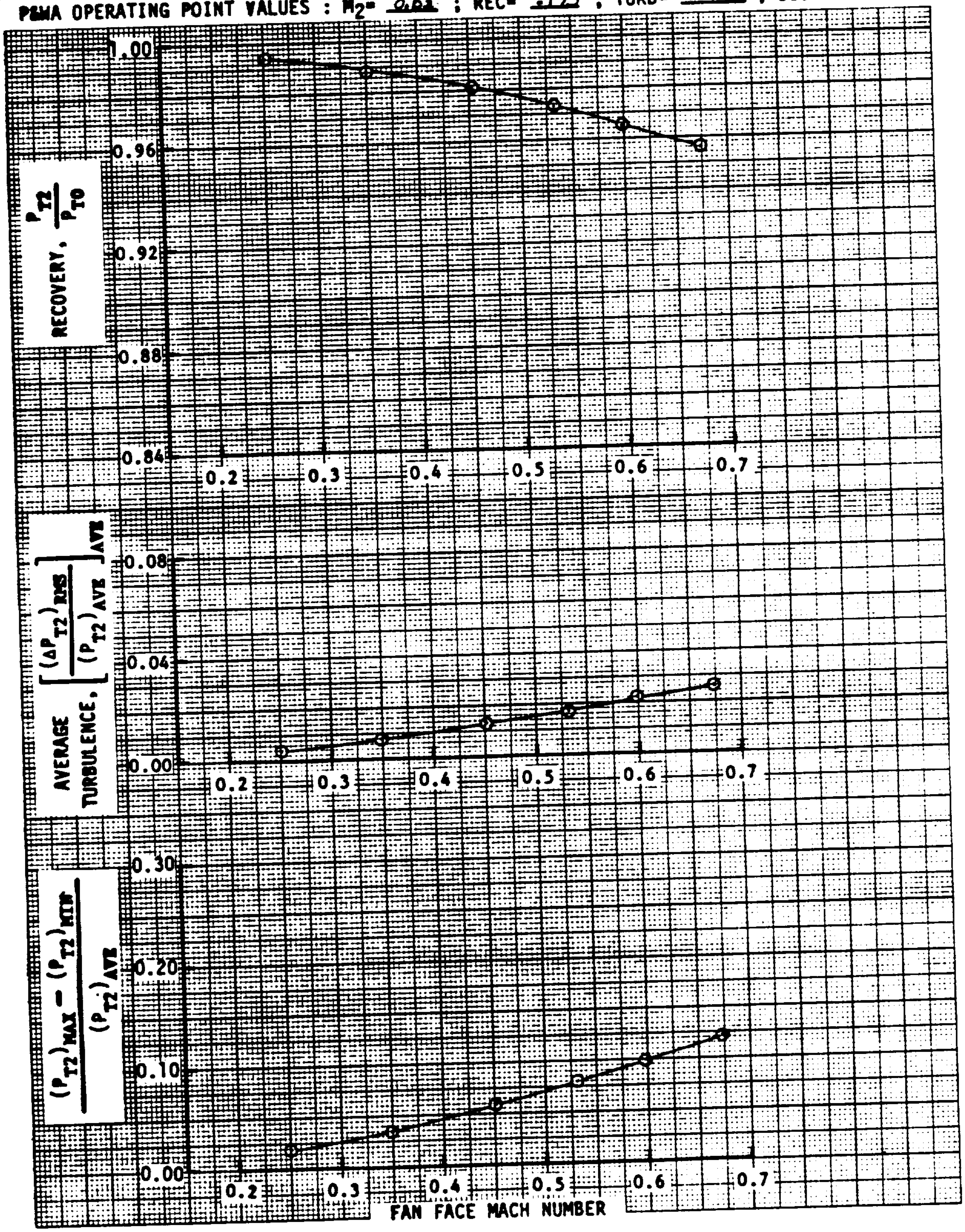




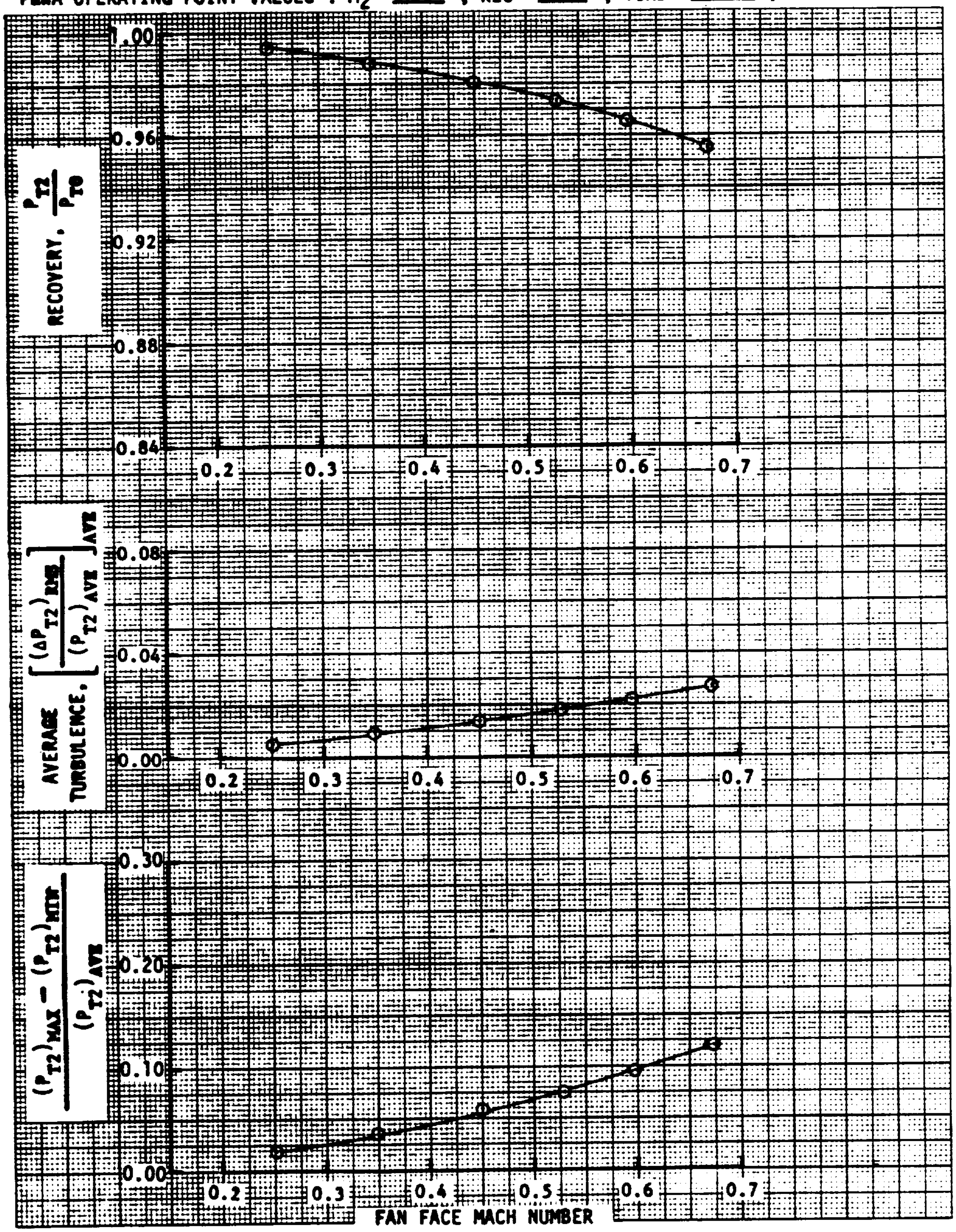
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2883-2888
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .022 ; DIST= .087



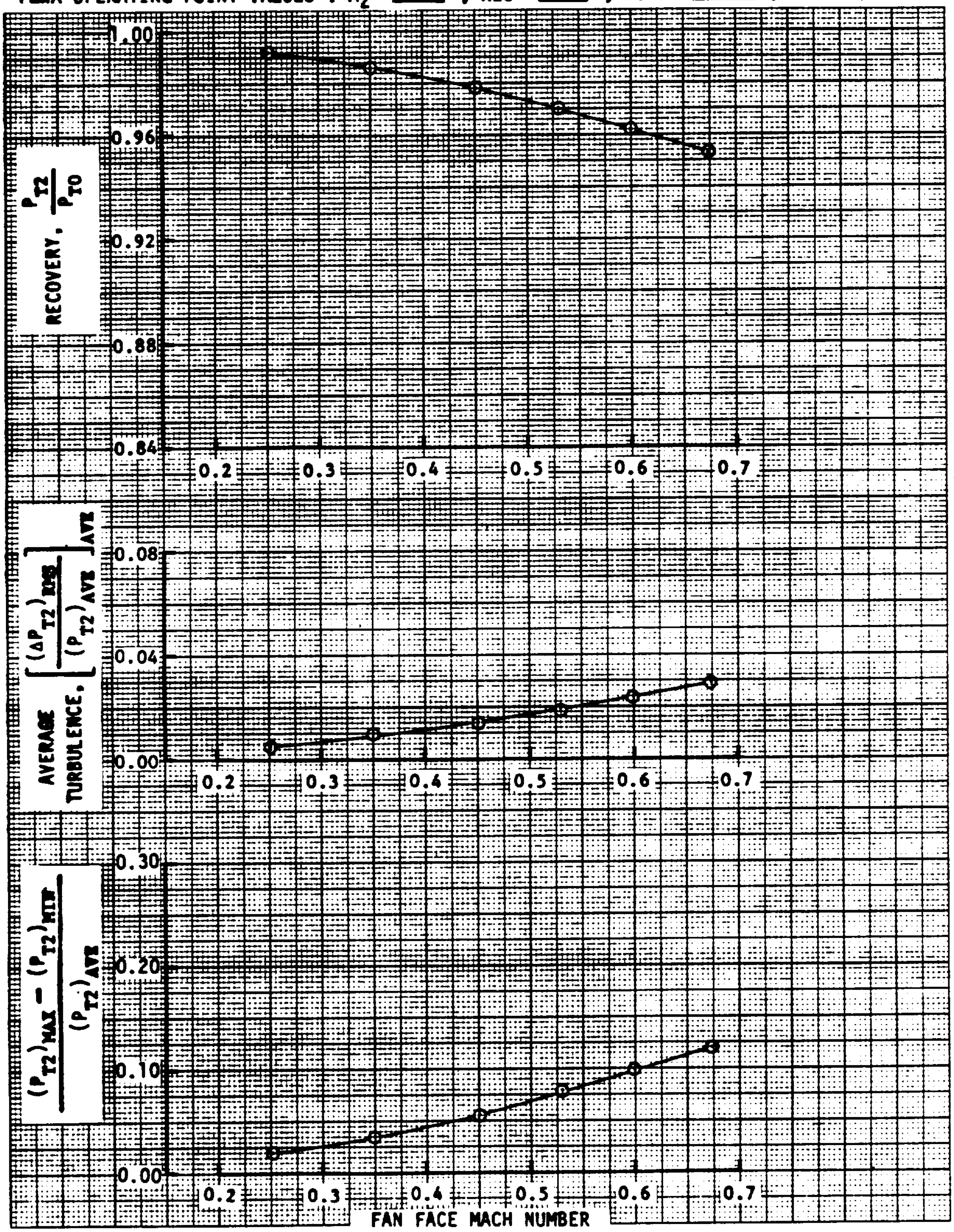
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2889-2894
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.63 ; REC= .973 ; TURB= .017 ; DIST= .105



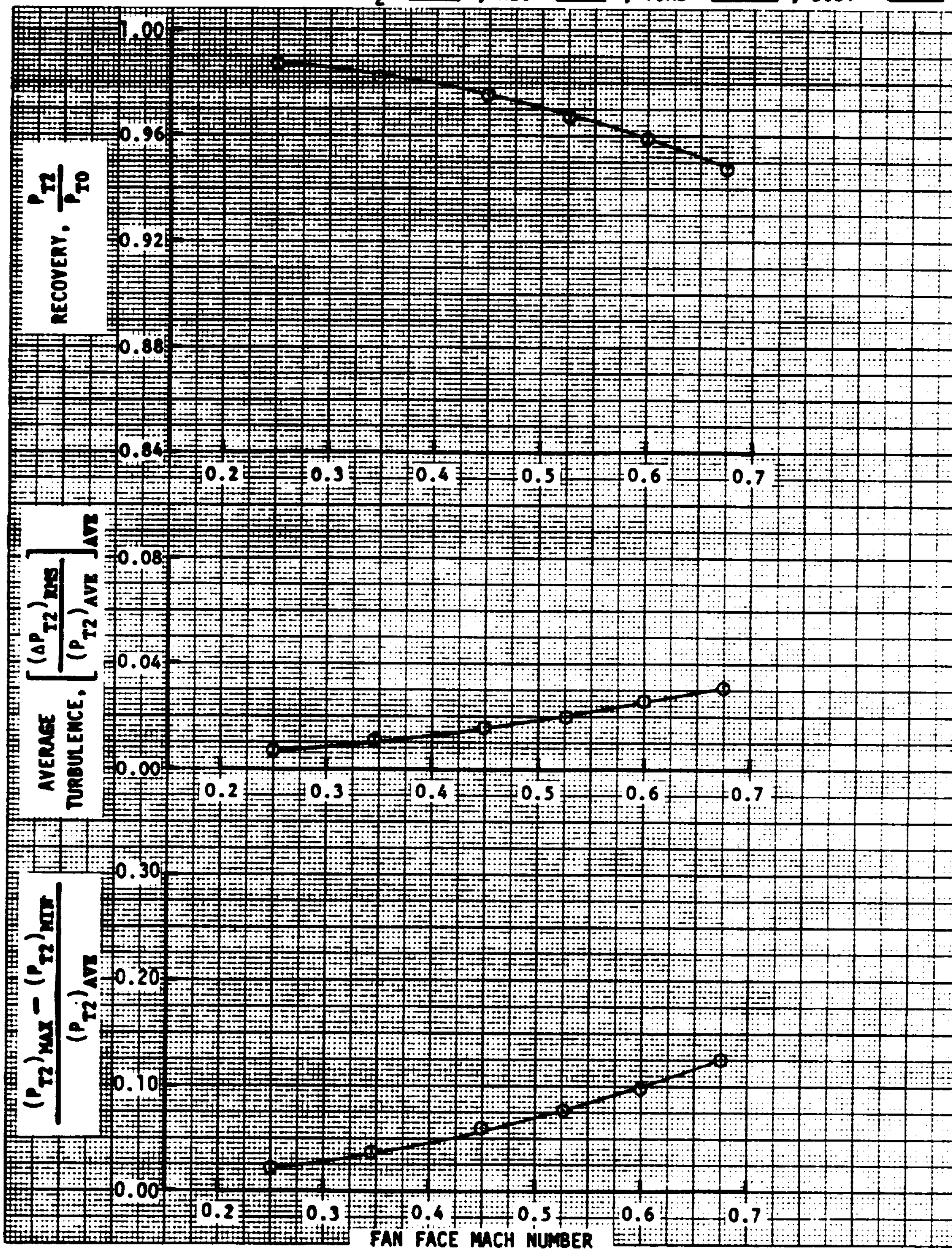
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2895-2900
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .973 ; TURB= .018 ; DIST= .077



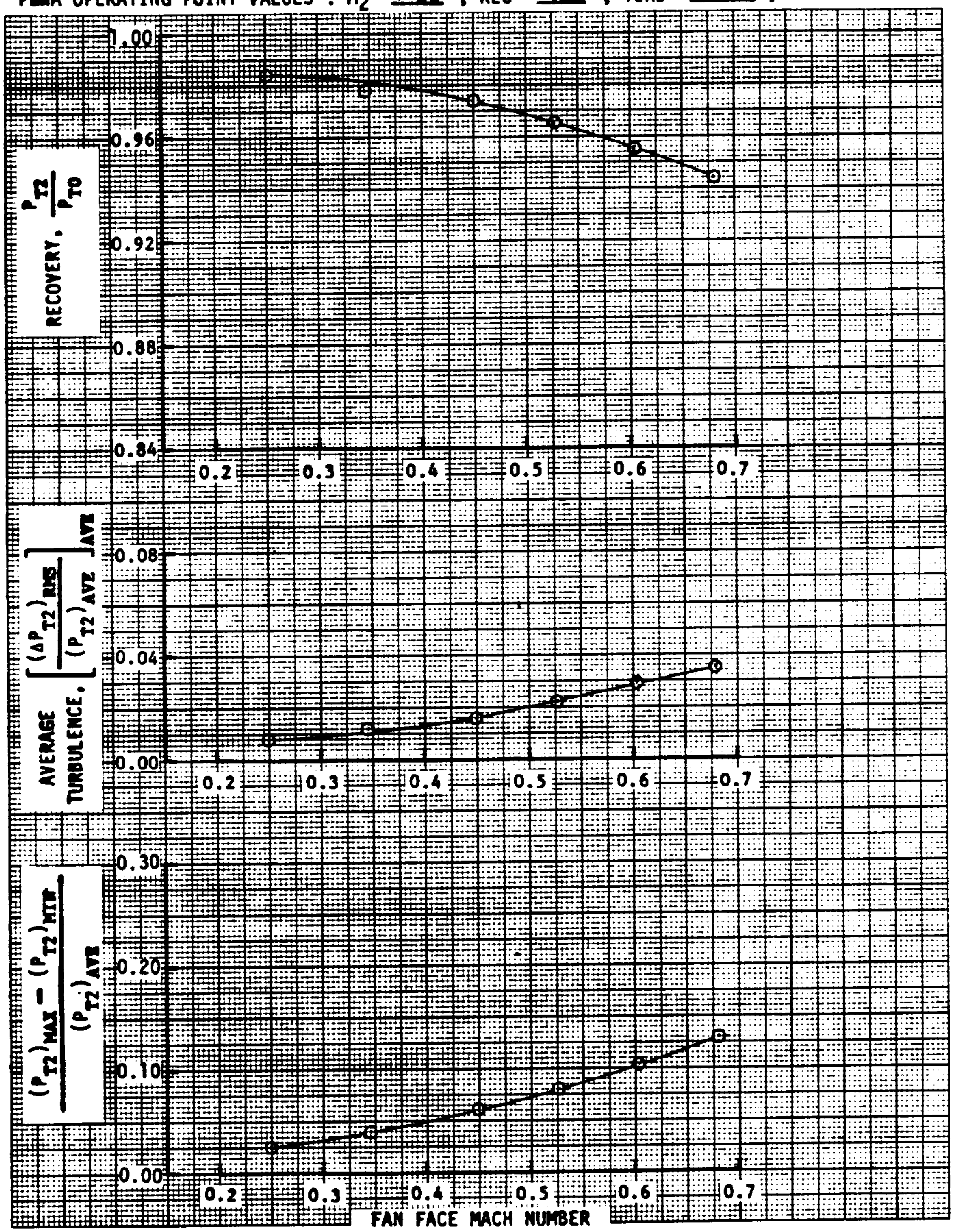
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2901-2906
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .970 ; TURB= .019 ; DIST= .078



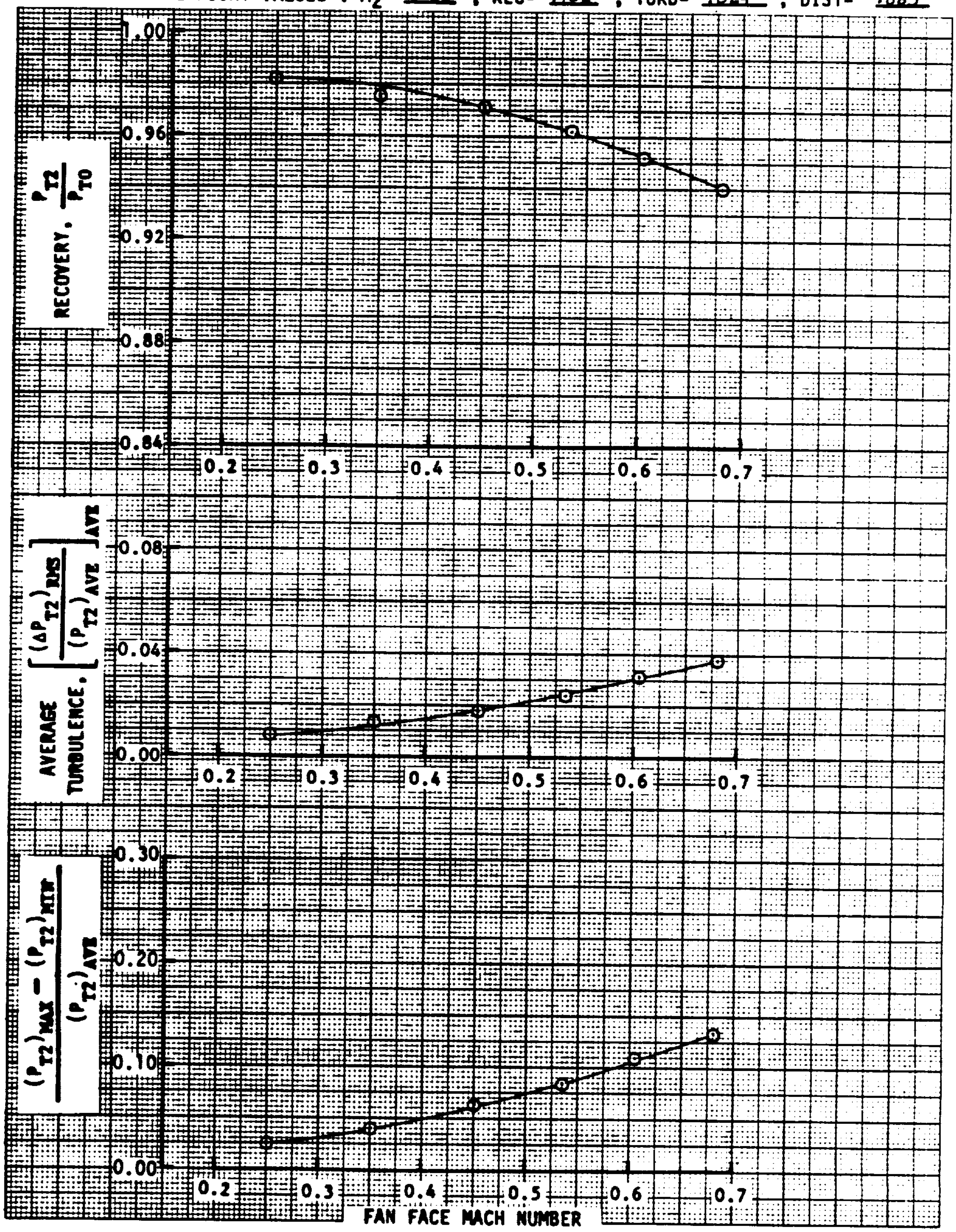
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2907-2912
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .021 ; DIST= .078



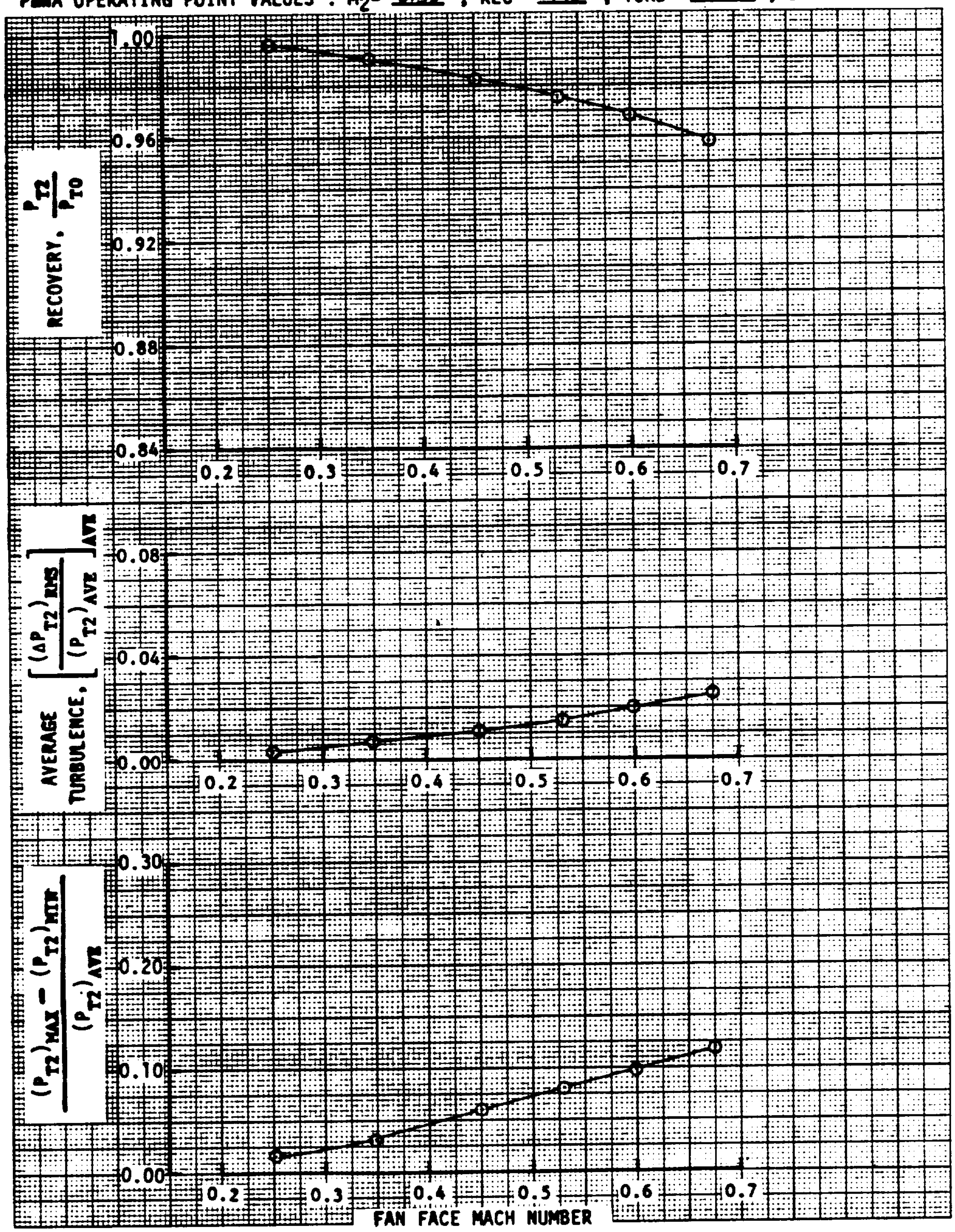
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2913-2918
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .022 ; DIST= .081



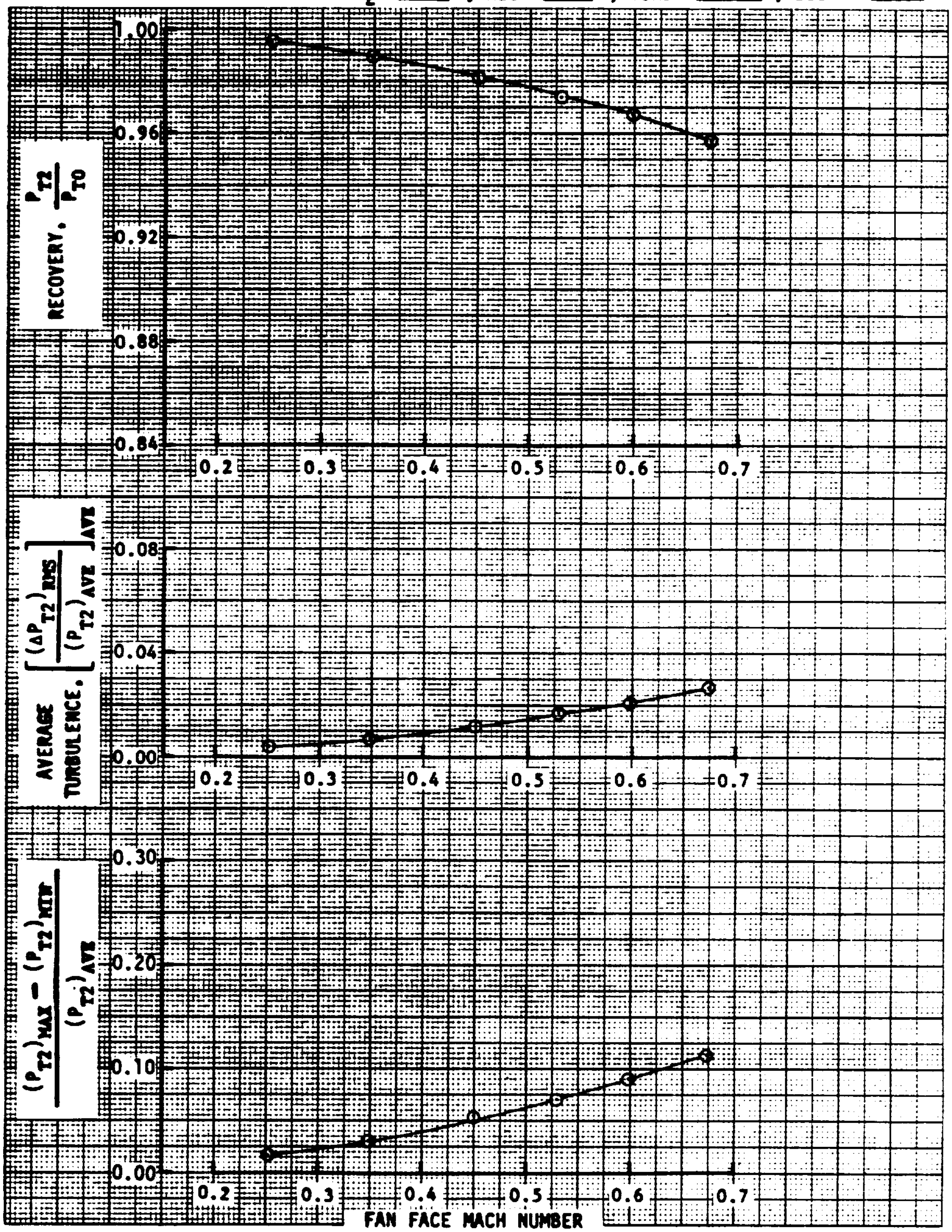
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2919-2924
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .024 ; DIST= .083



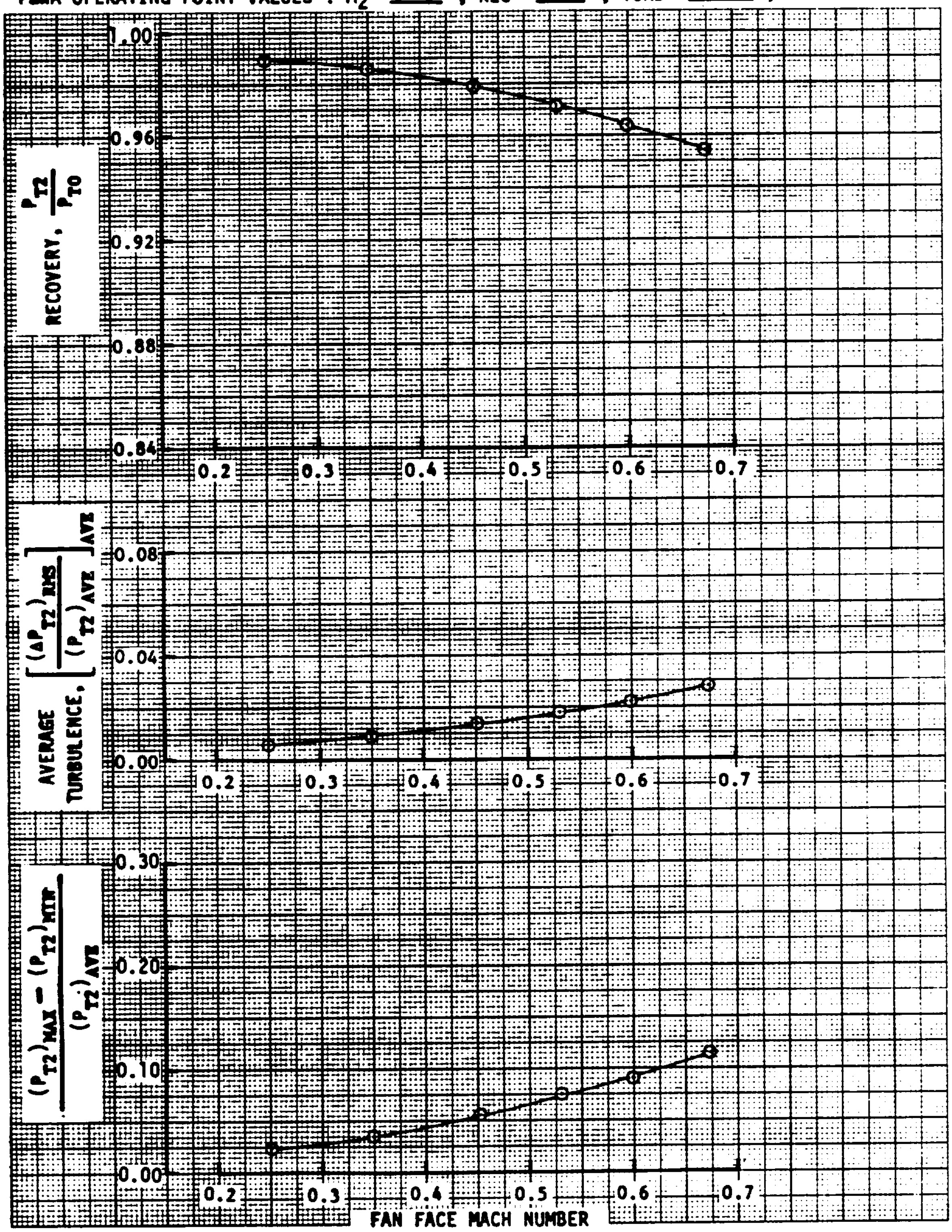
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2925-2930
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .975 ; TURB= .015 ; DIST= .081



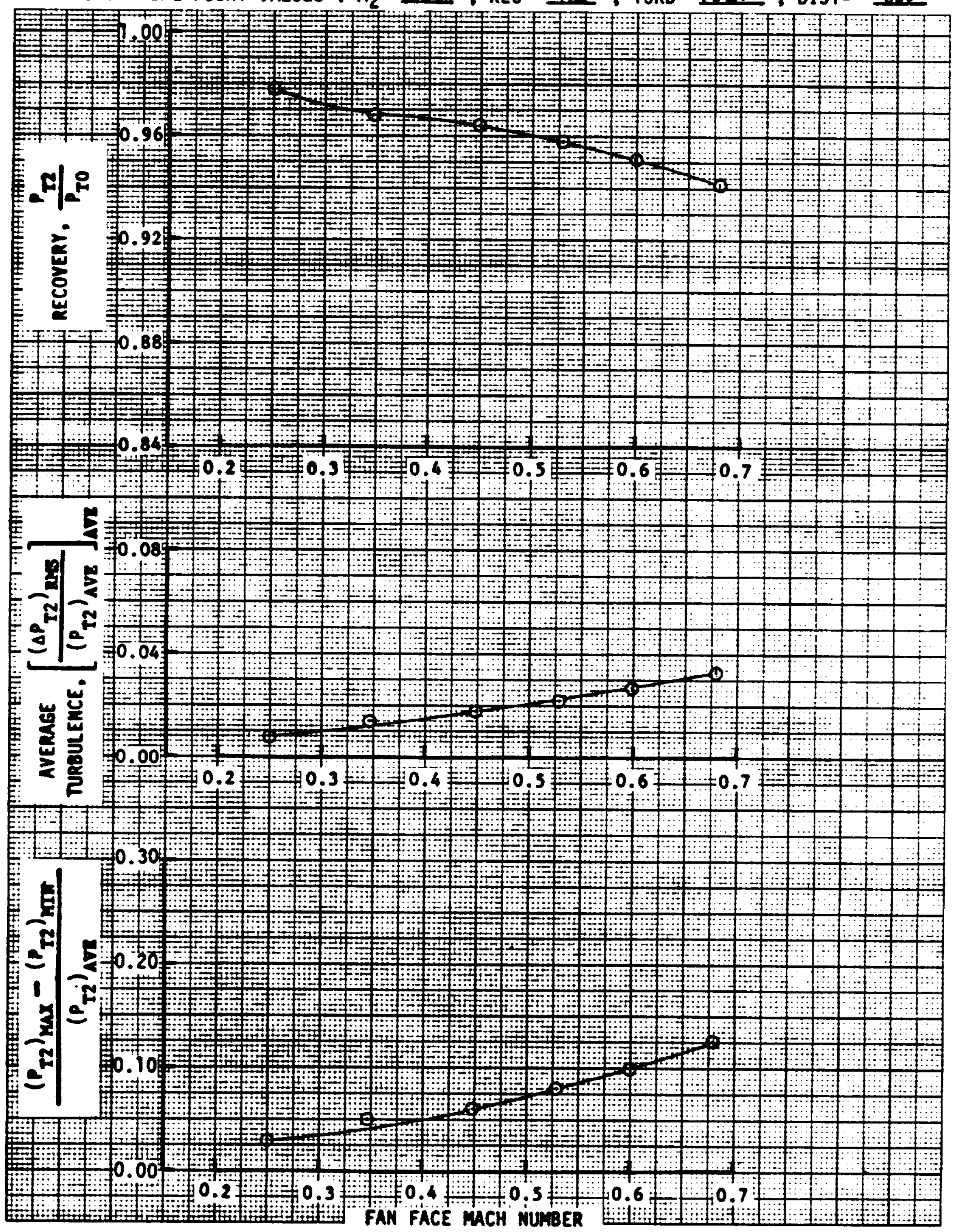
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2931-2936
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .974 ; TURB= .017 ; DIST= .071



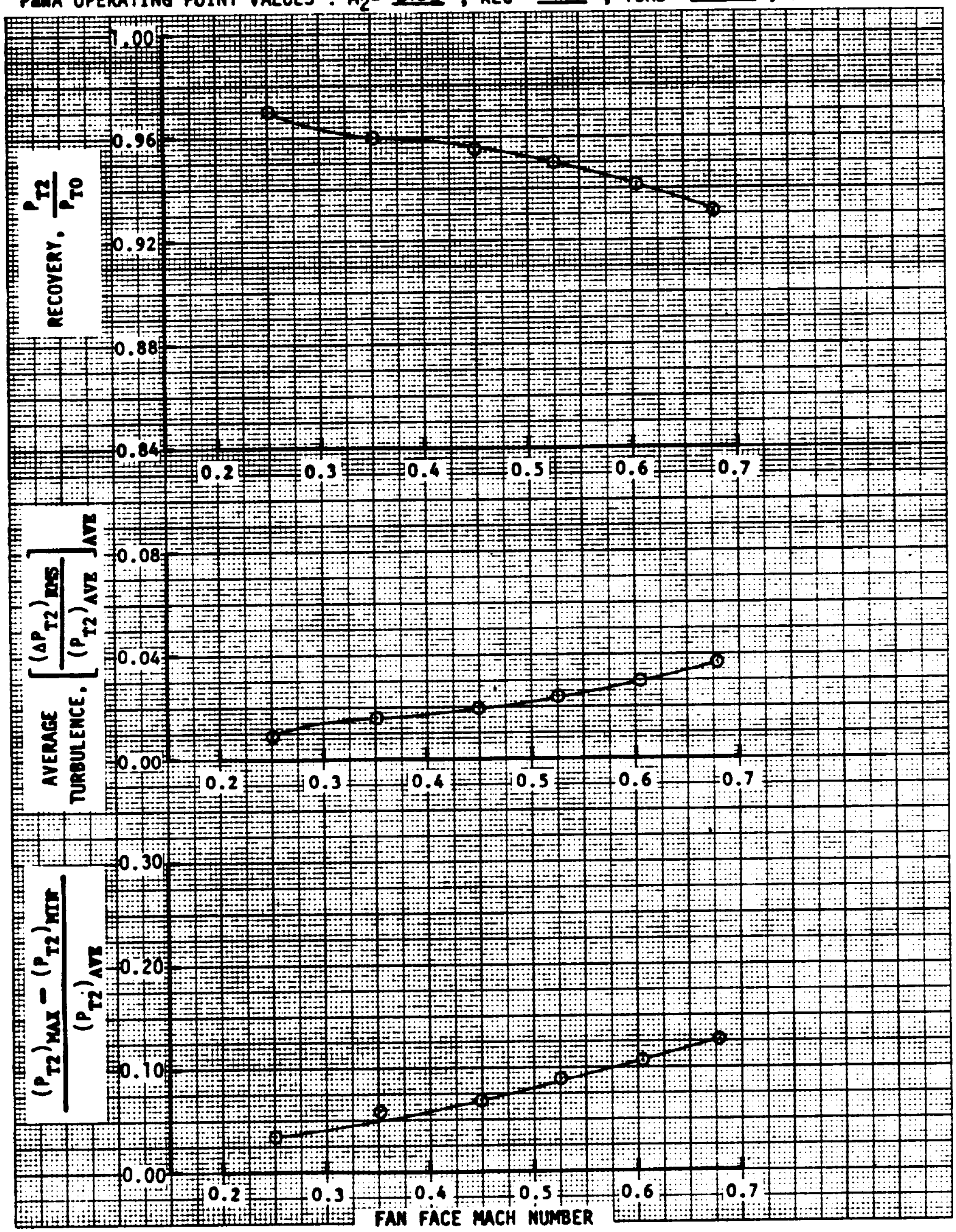
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2937-2942
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .972 ; TURB= .018 ; DIST= .074



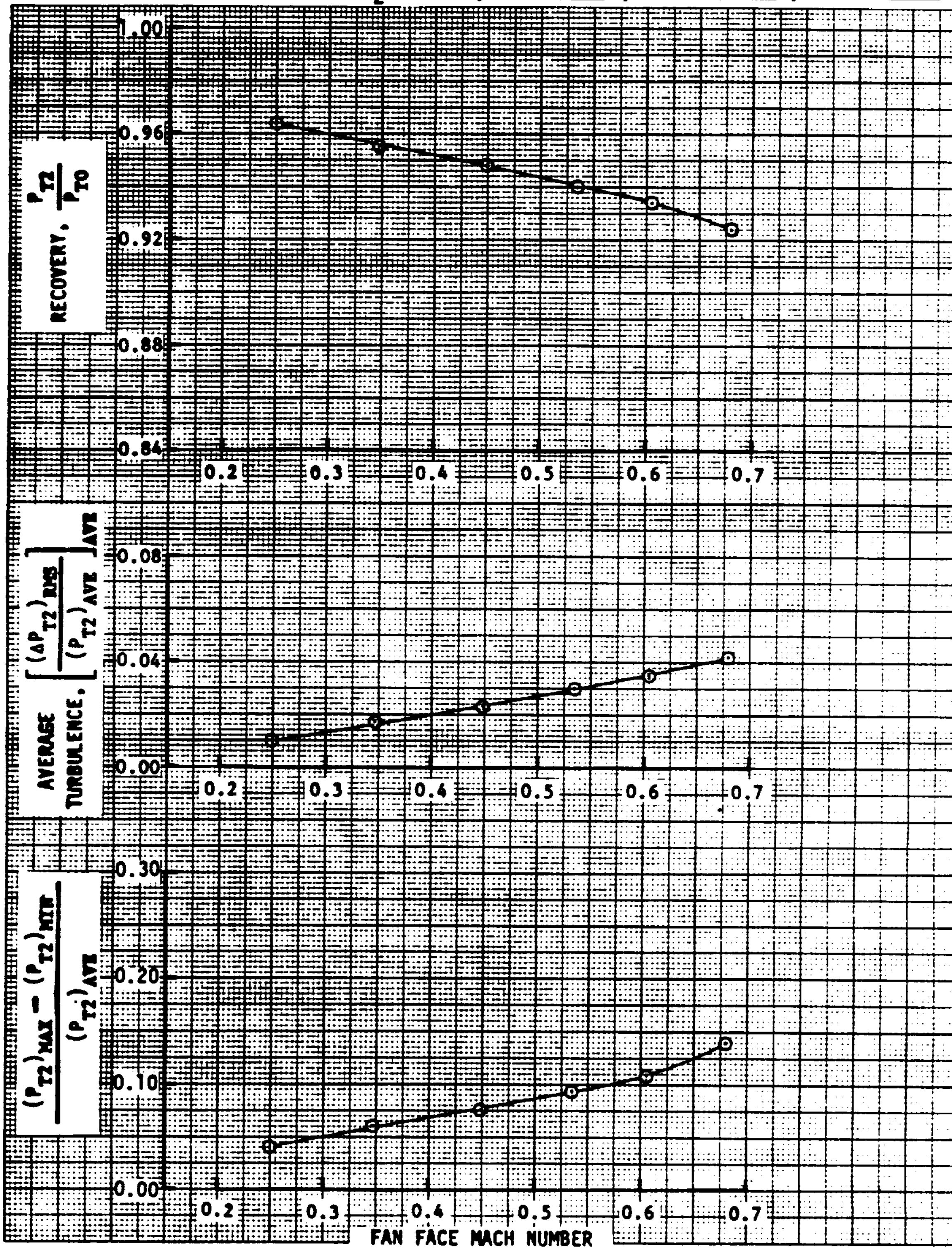
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2943-2948
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .958 ; TURB= .022 ; DIST= .080



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2949-2954
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .949 ; TURB= .024 ; DIST= .088



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2955-2960
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PEMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .941 ; TURB= .029 ; DIST= .092

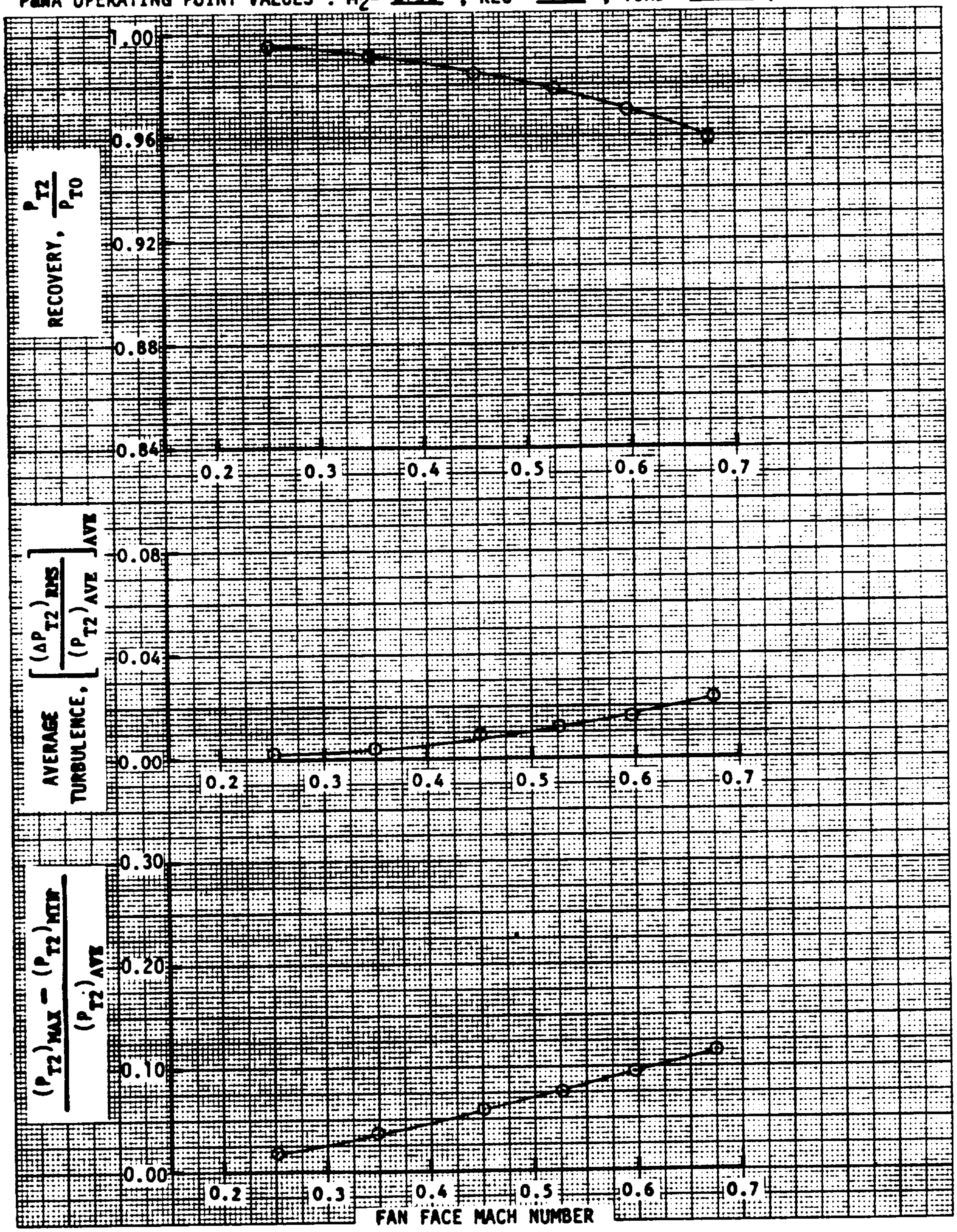


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

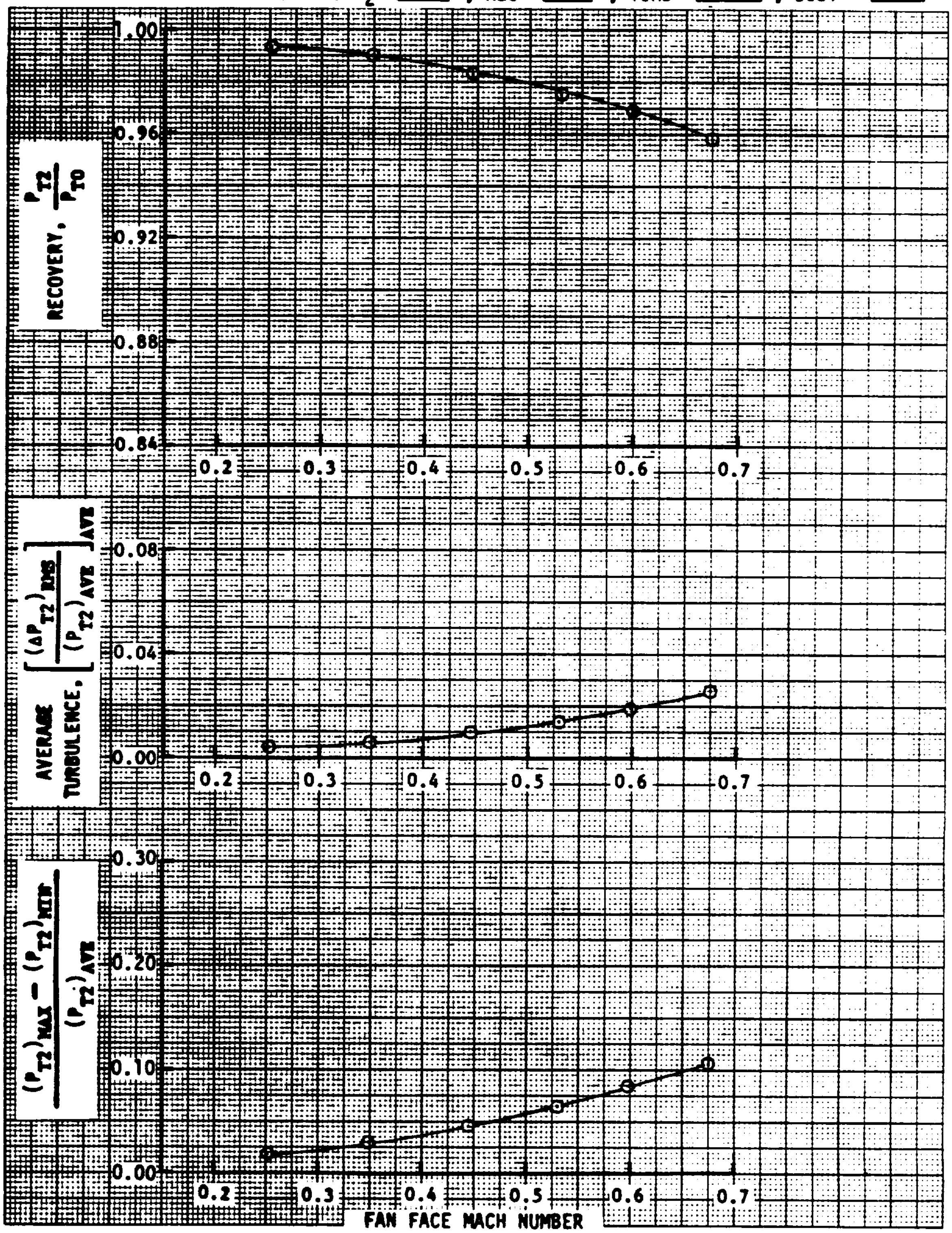
CONFIGURATION 17 ; READING NUMBERS 2961-2966

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

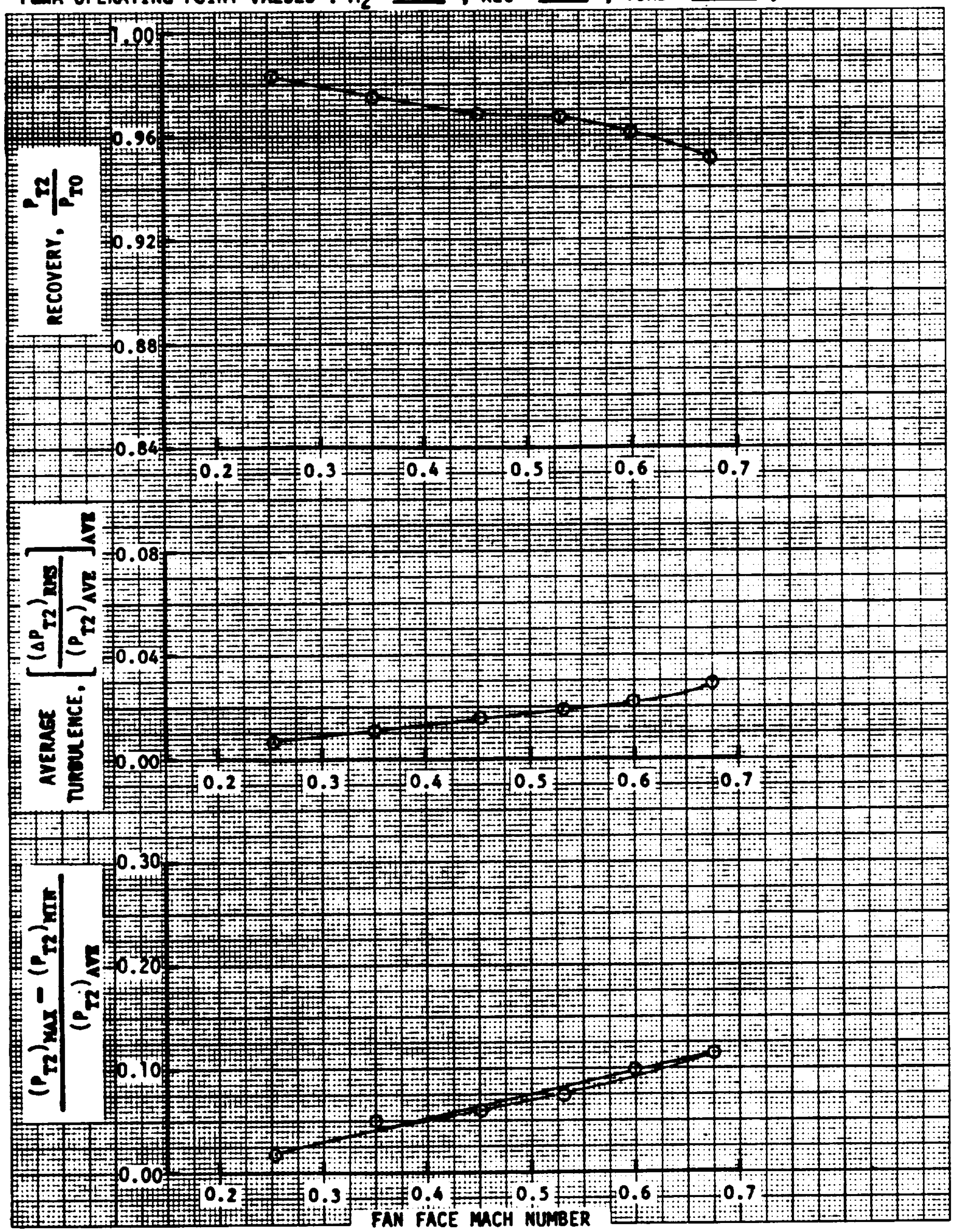
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .012 ; DIST= .078



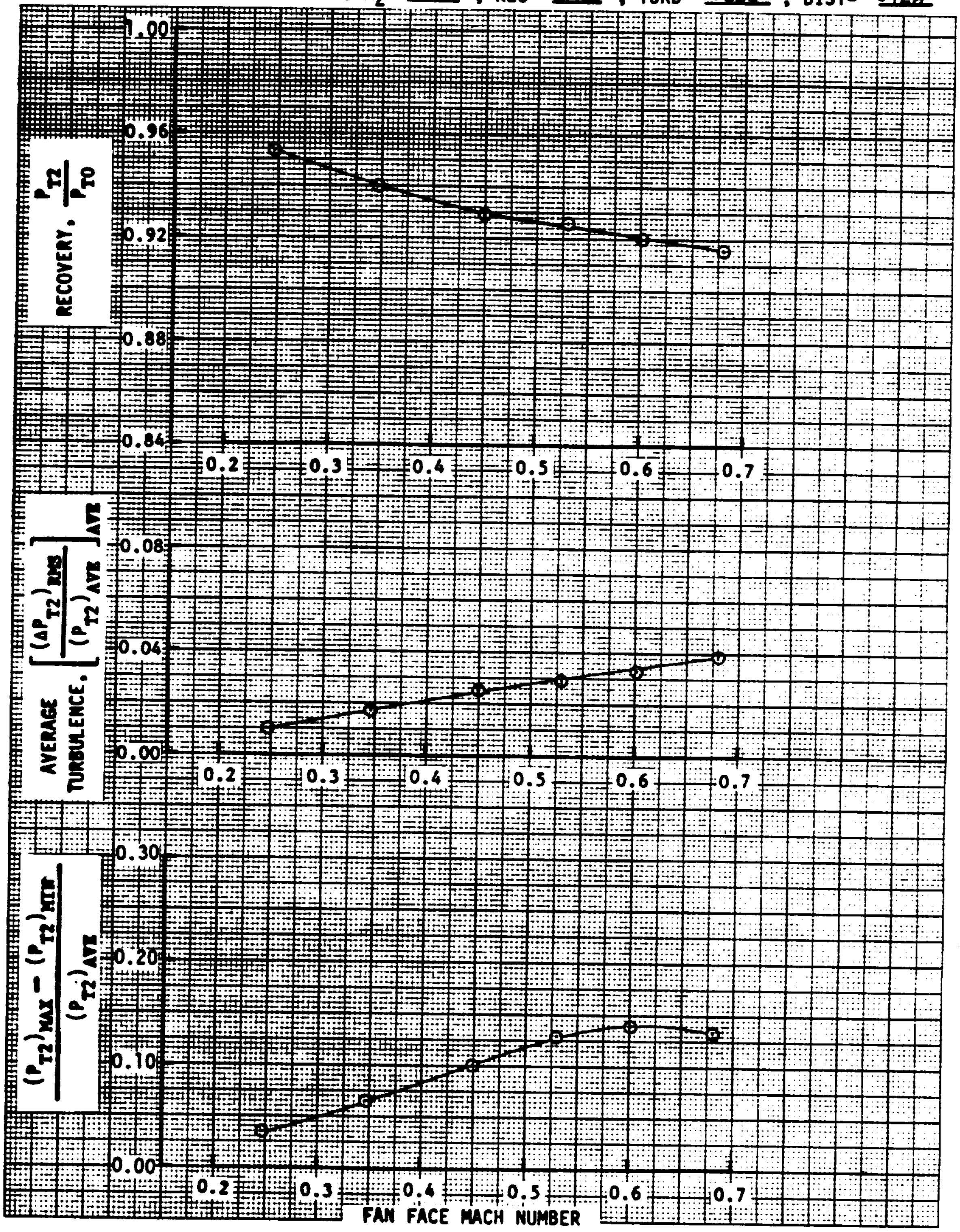
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2967-2972
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .053 ; REC= .976 ; TURB= .014 ; DIST= .065



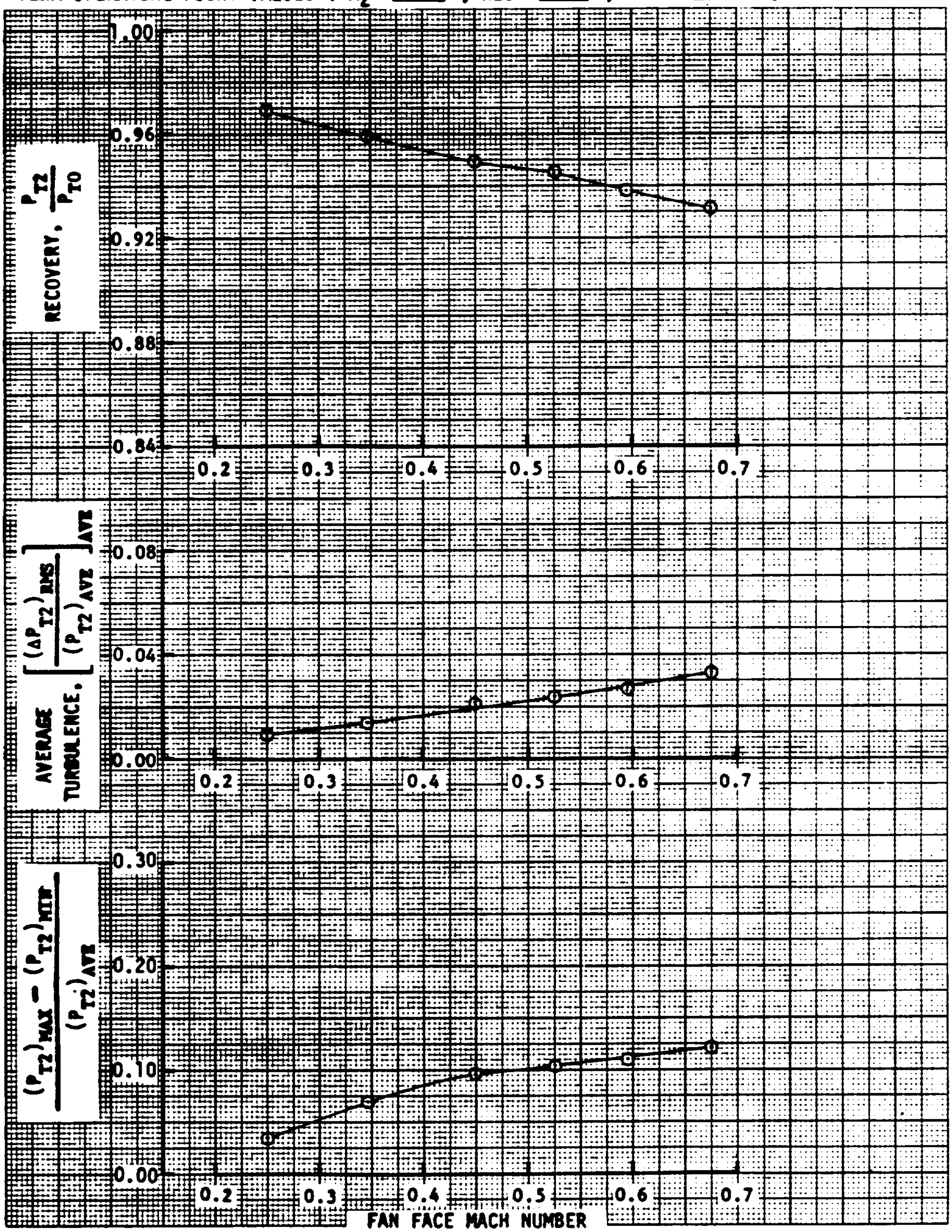
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2973-2979
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .019 ; DIST= .082



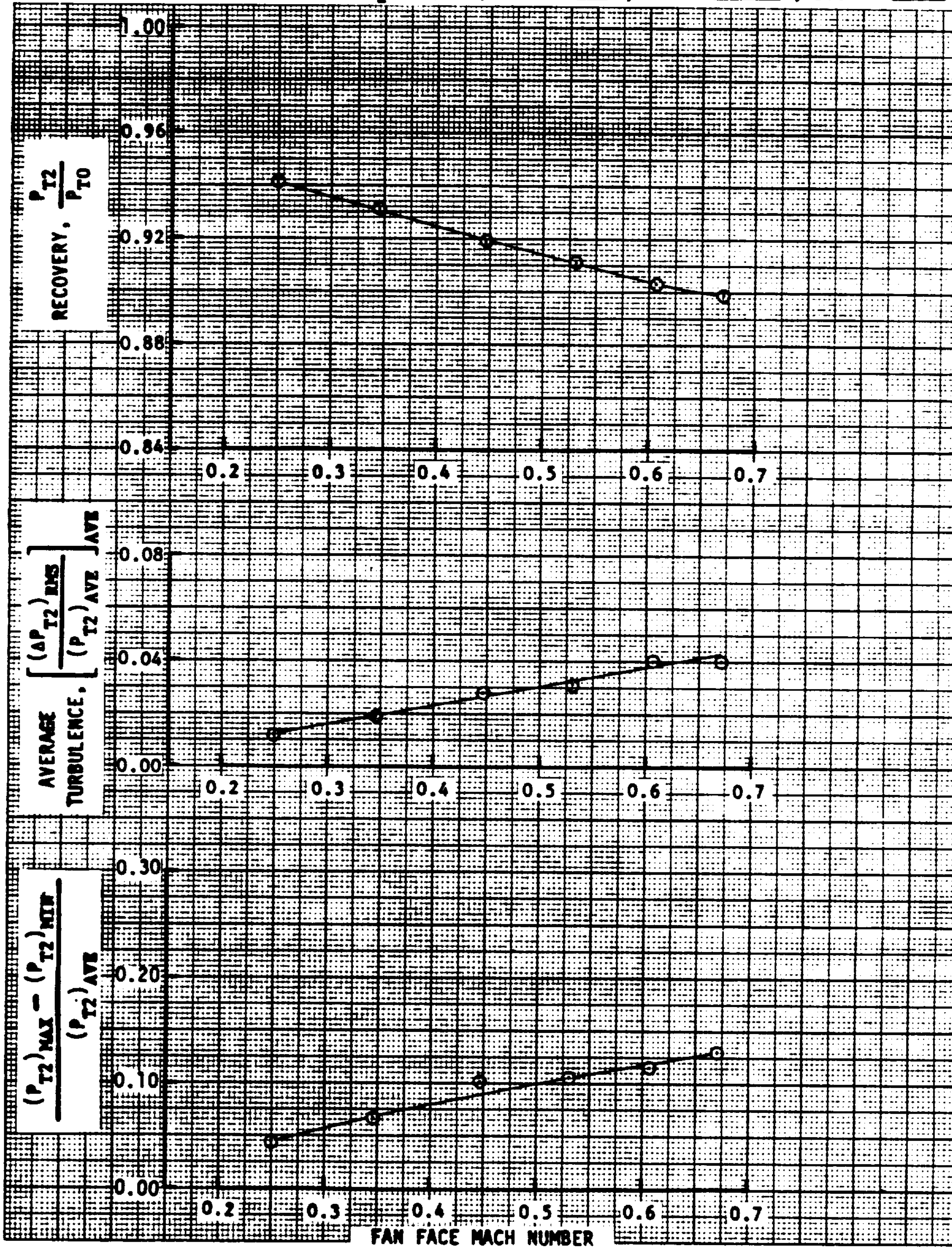
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2998-3003
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .925 ; TURB= .030 ; DIST= .128



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 2980-2985
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .024 ; DIST= .104



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 17 ; READING NUMBERS 3004-3009
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .911 ; TURB= .033 ; DIST= .106



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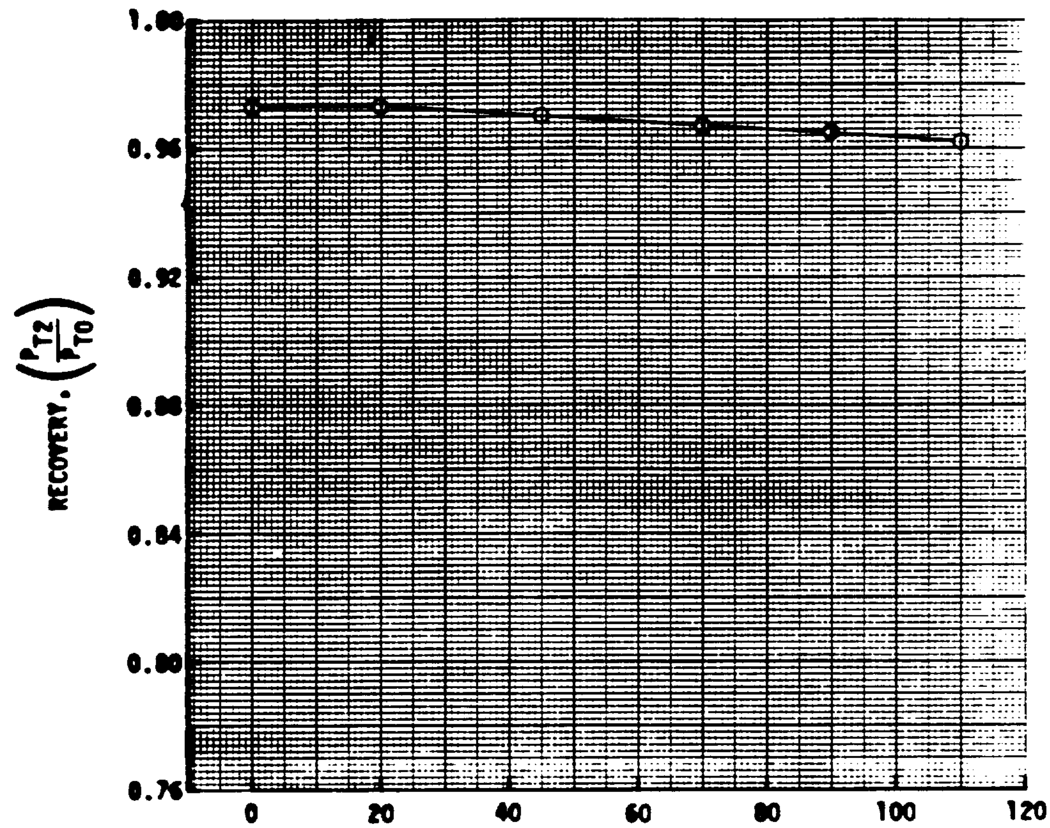
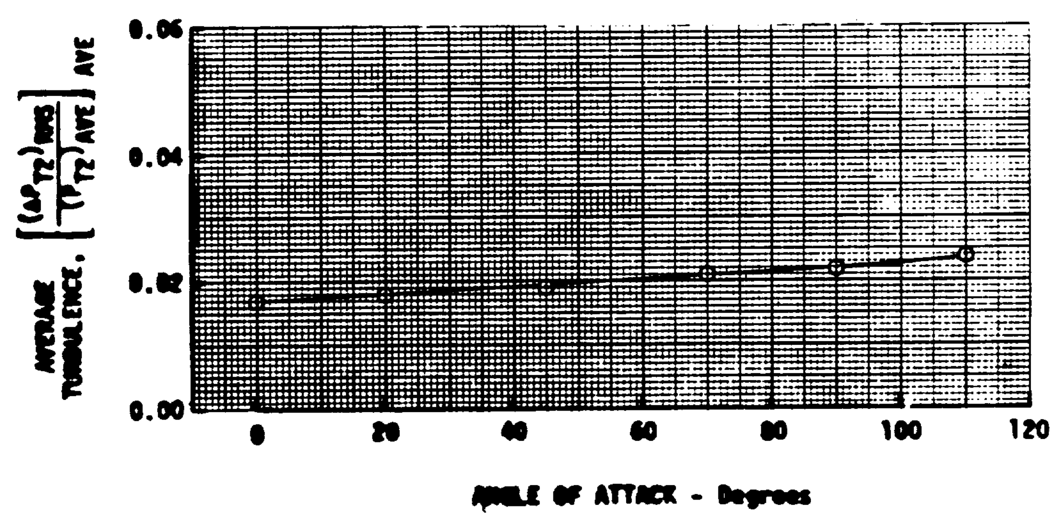
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PDMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 17; DESCRIPTION Thick Lip Inlet; Left Aux Open-Port





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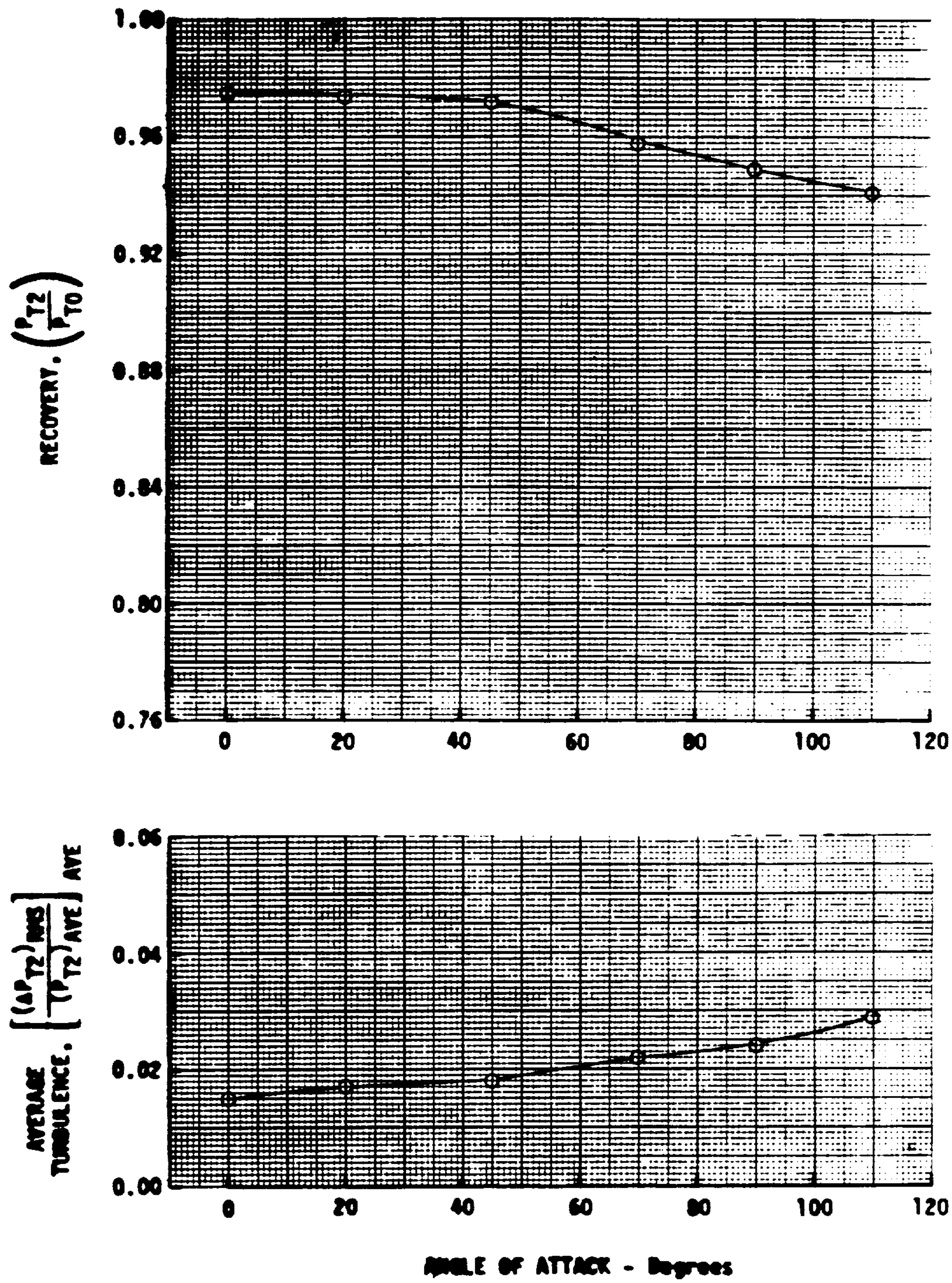
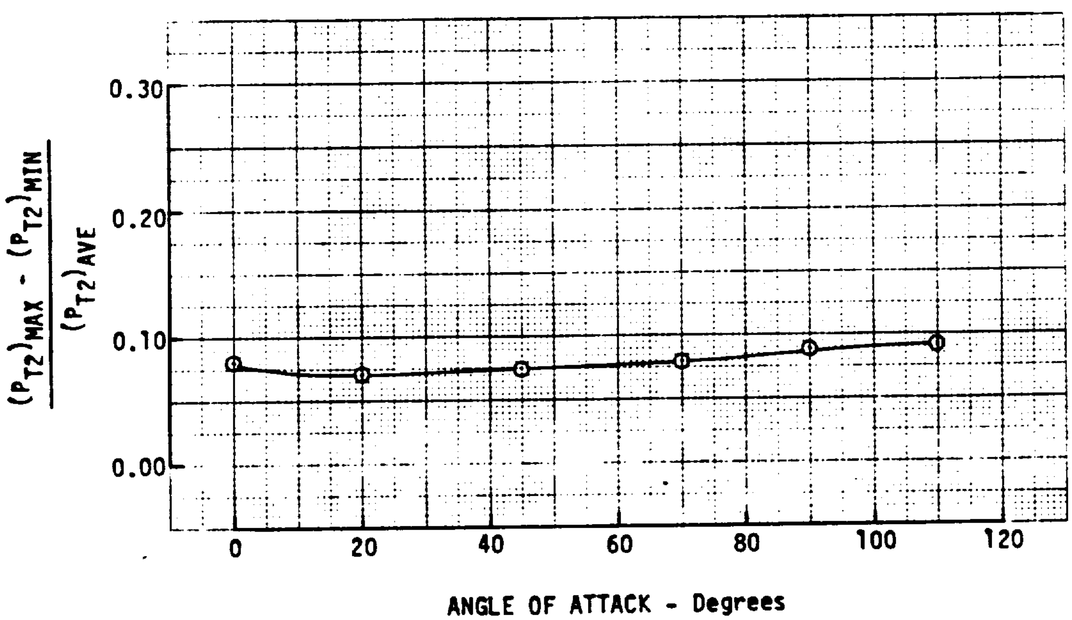
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 17; DESCRIPTION Thick Lip Inlet; Left Aux Open - Port



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 17 ; DESCRIPTION Thick Lip Inlet; Left Aux Open-Port



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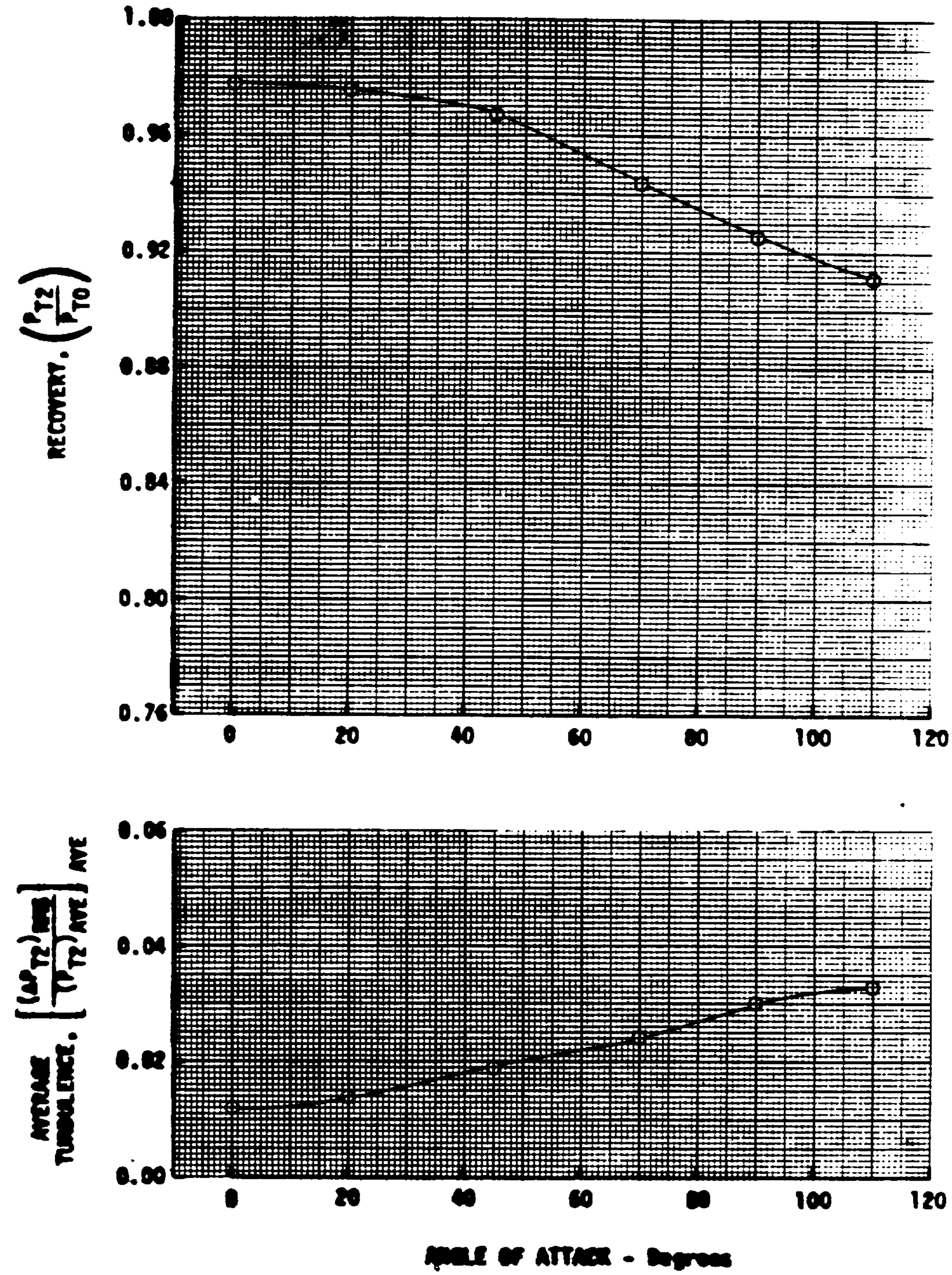
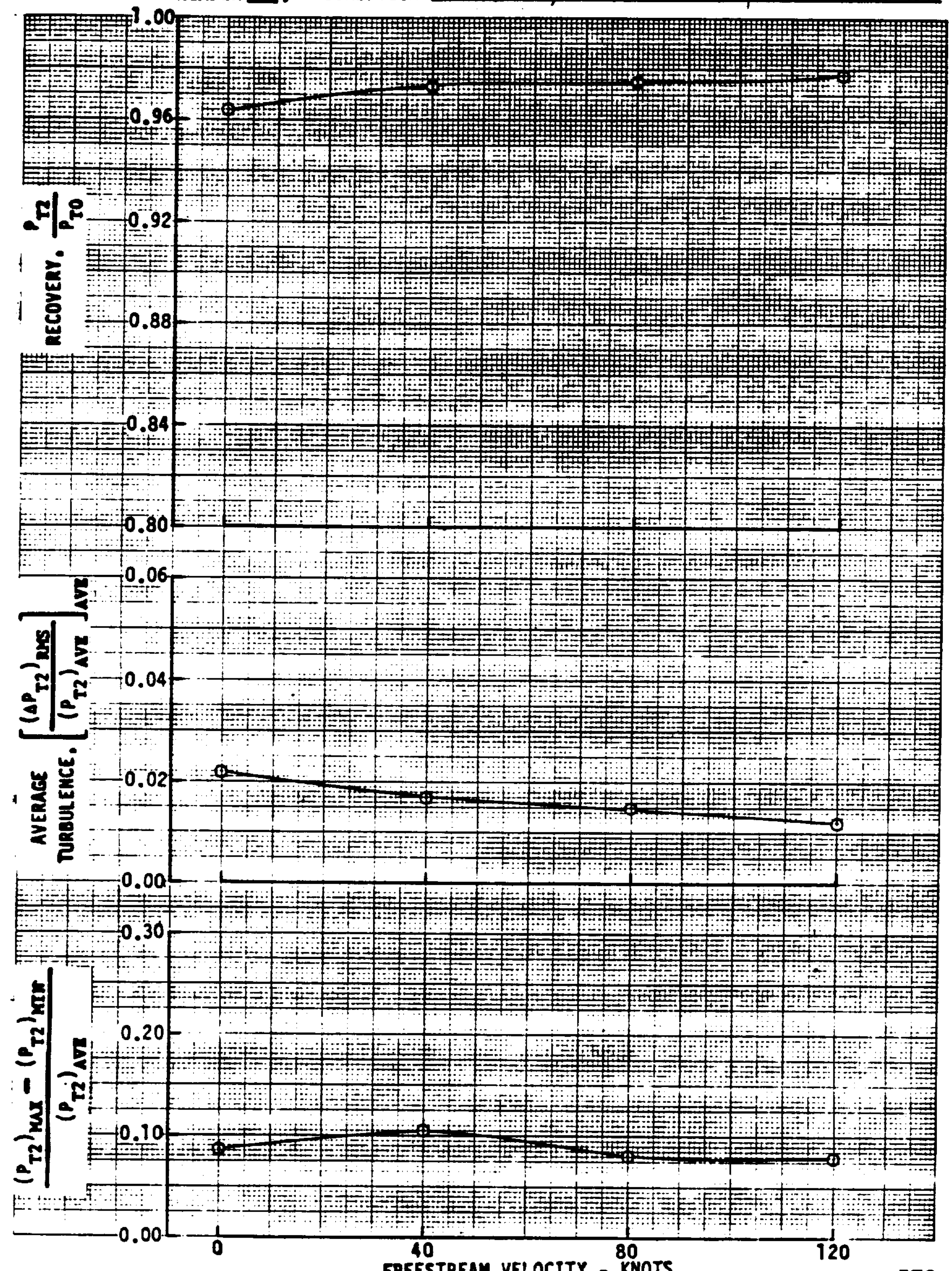
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 17; DESCRIPTION Thick Lip Inlet; Left Aux Open - Port

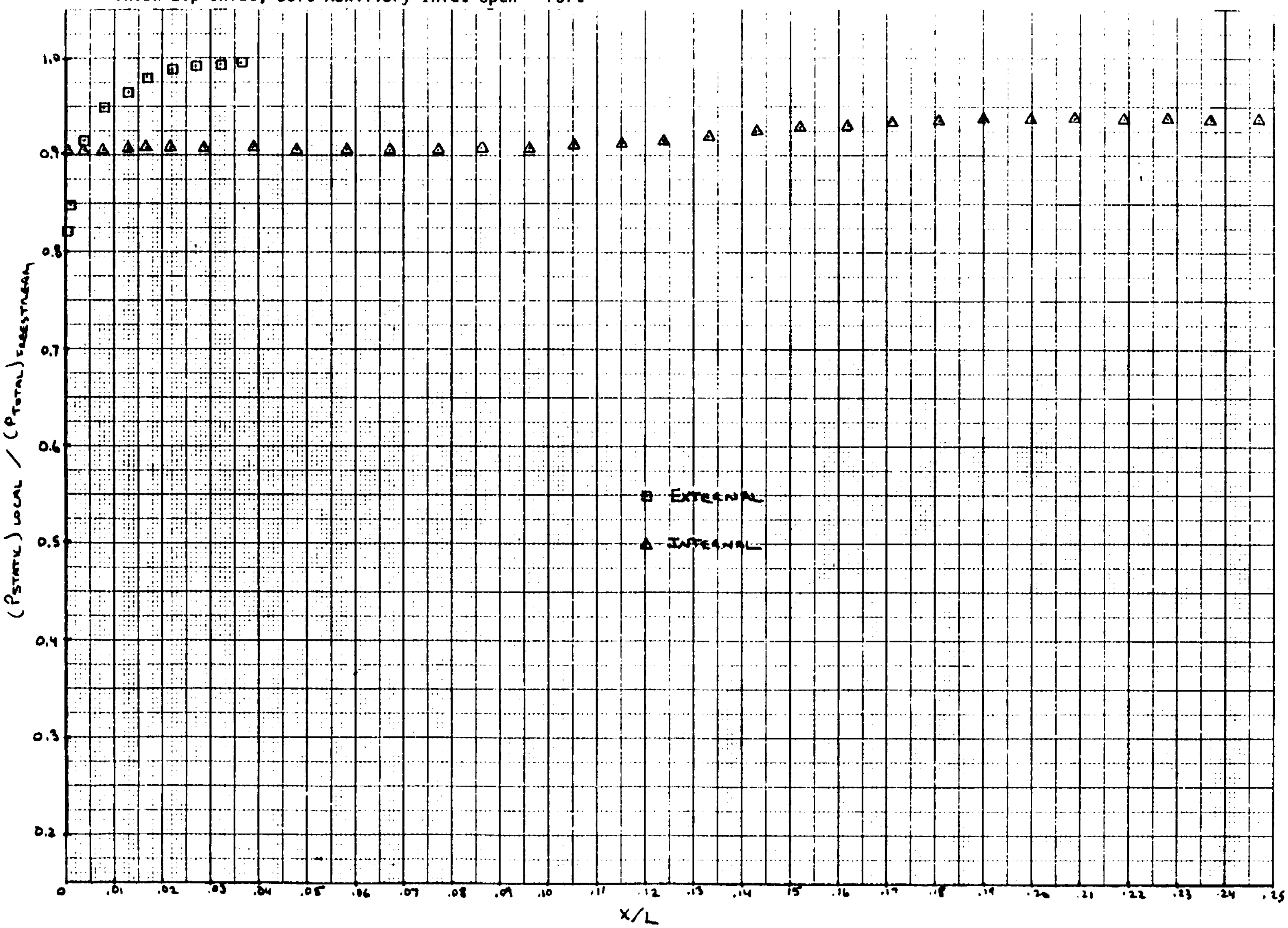


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 17; DESCRIPTION Thick Lip Inlet, Left Aux Inlet Open - Port



Configuration 17 V_0 = 80 Knots α = 90° EFMN = 0.526

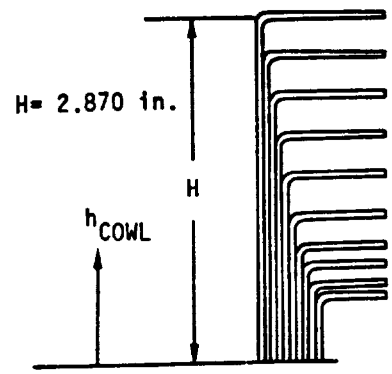
Thick Lip Inlet, Left Auxiliary Inlet Open - Port

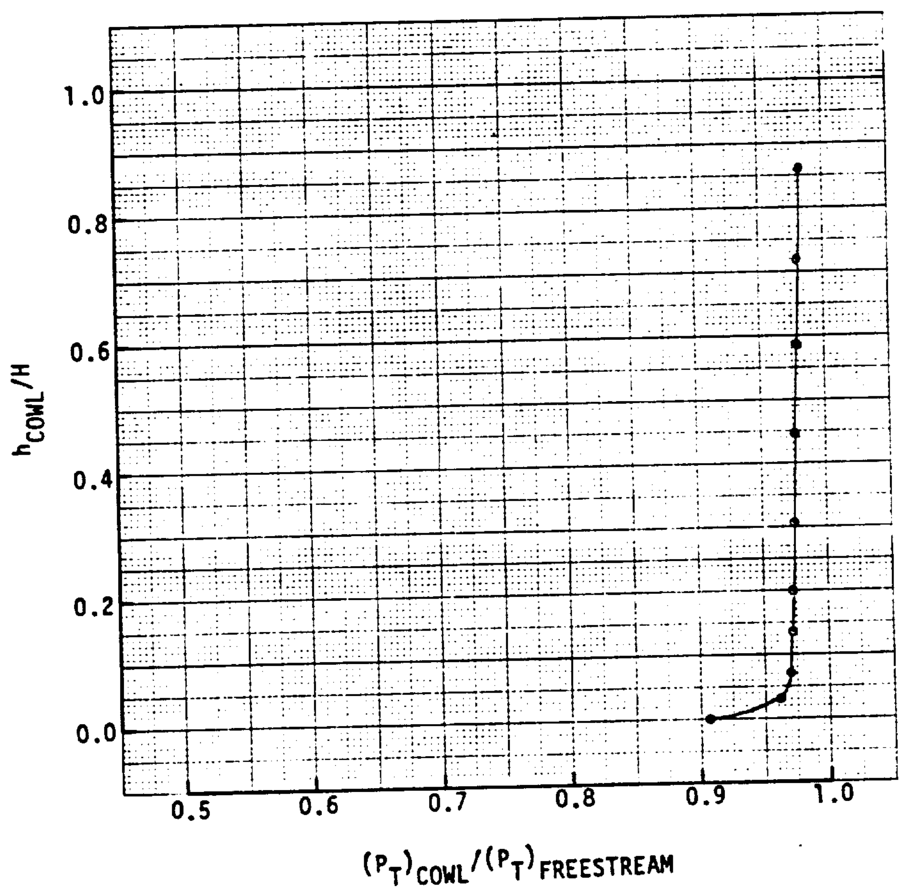


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

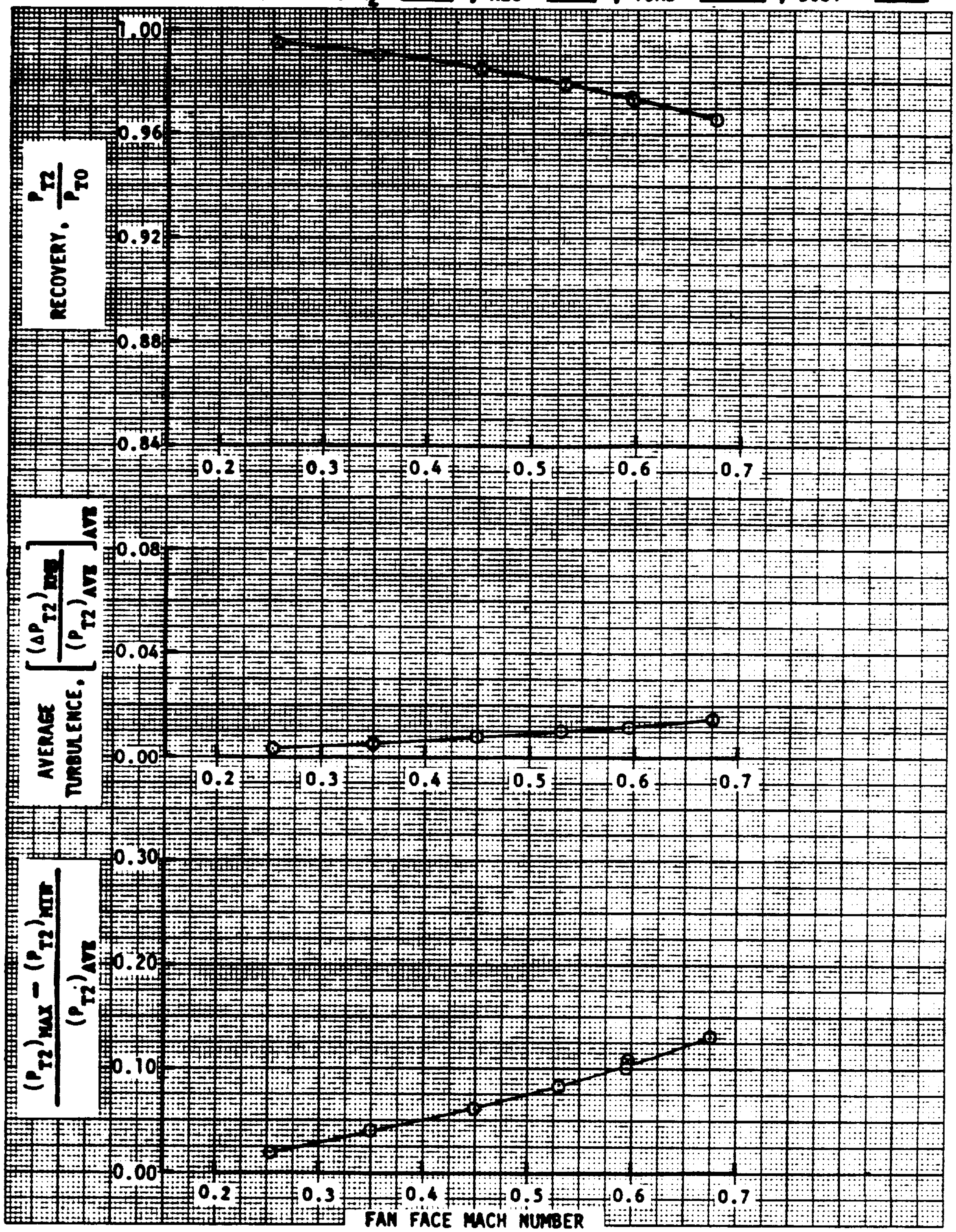
CONFIGURATION: NUMBER 17; DESCRIPTION Thick Lip Inlet, Left Auxiliary Inlet Open - Port

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .526

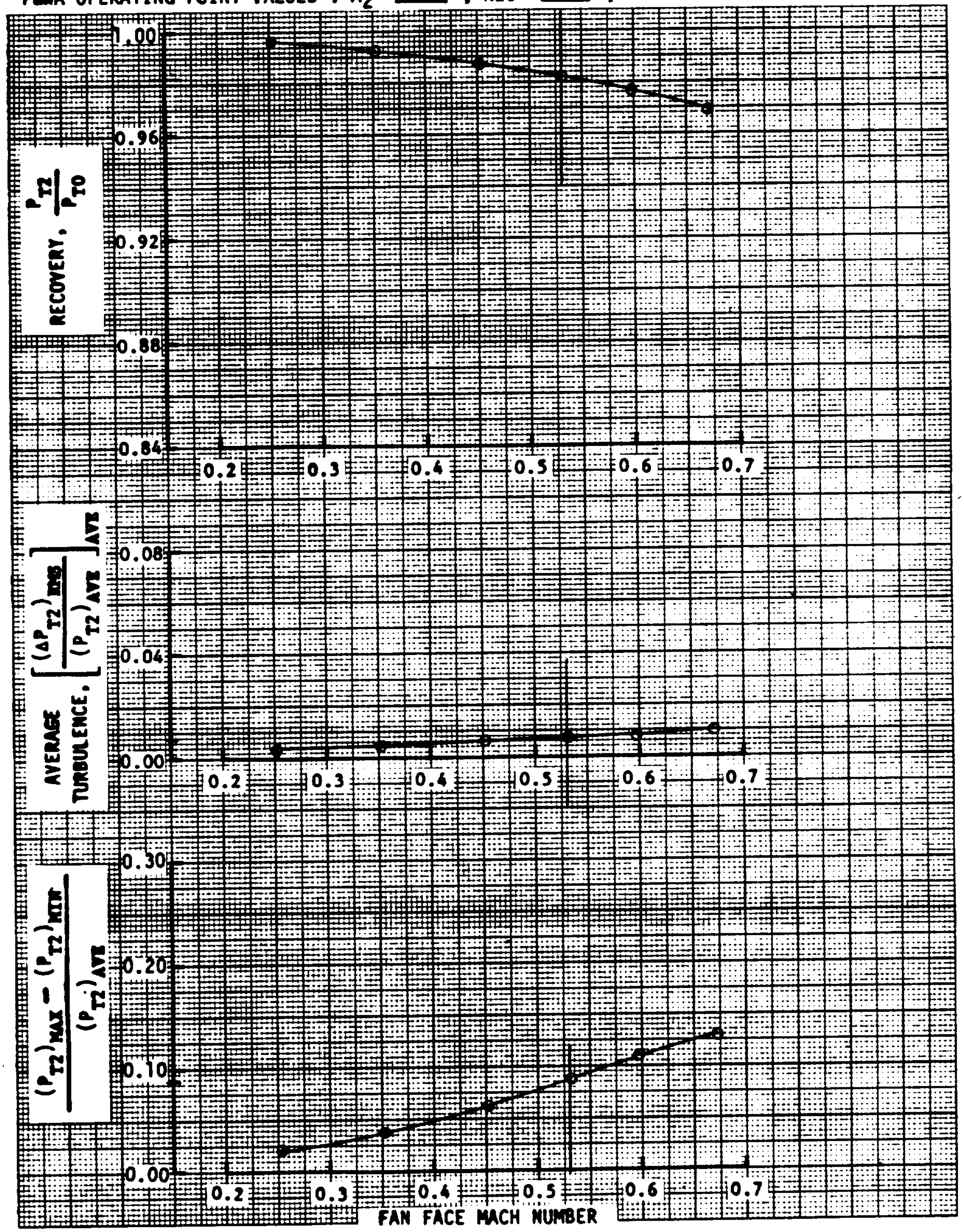




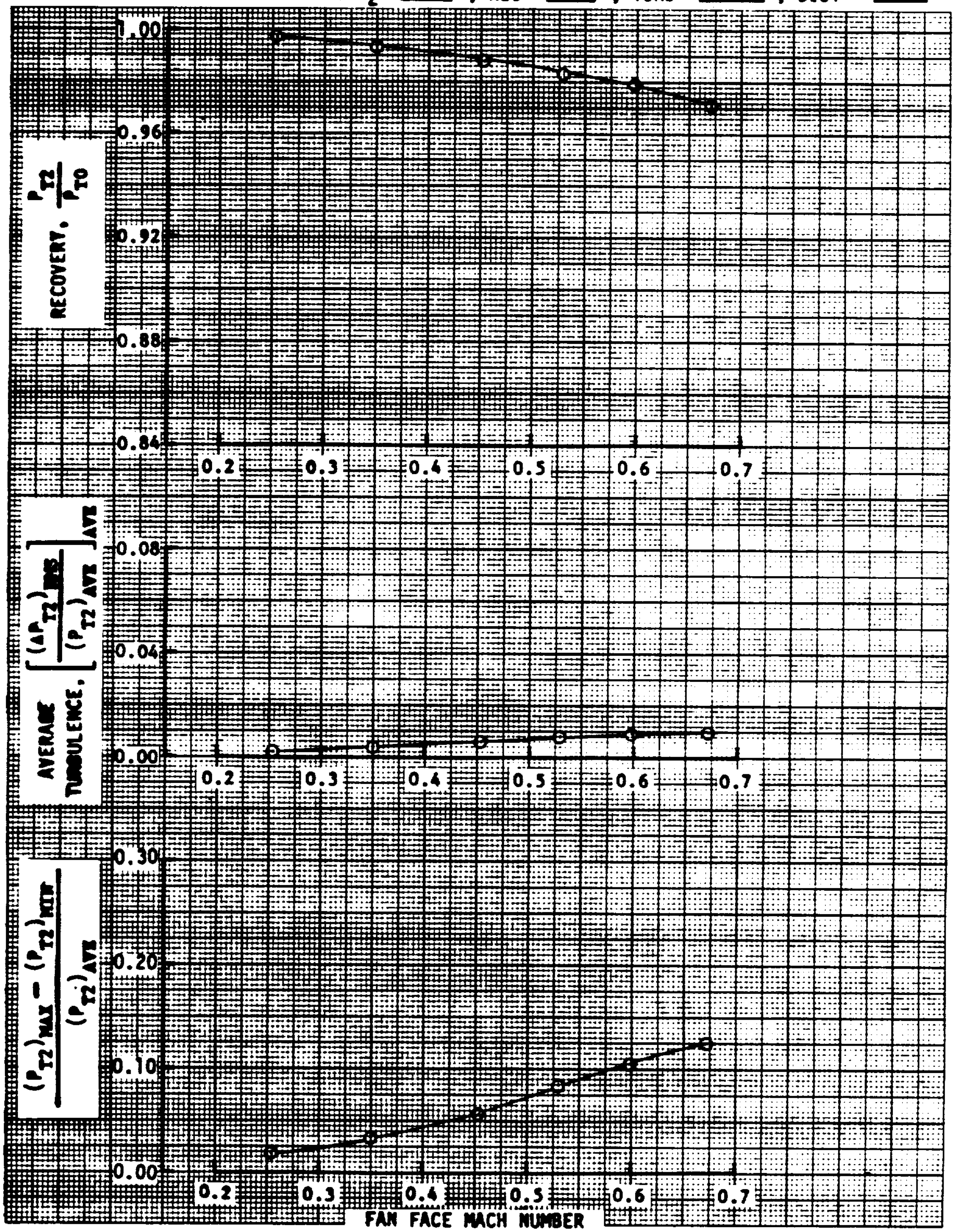
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3010-3016
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .979 ; TURB= .010 ; DIST= .083



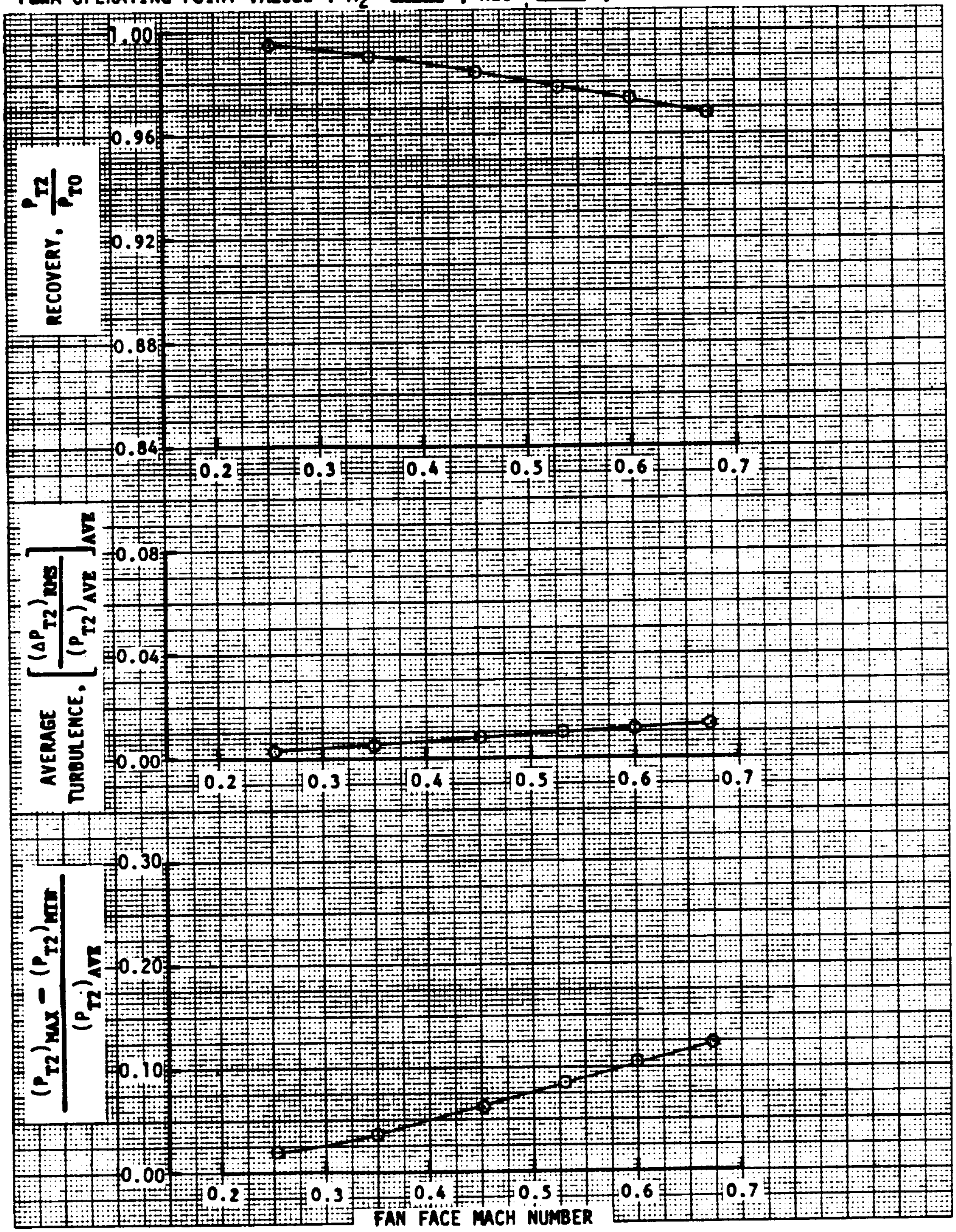
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3017,19,19,20,21,22
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .982 ; TURB= .007 ; DIST= .088



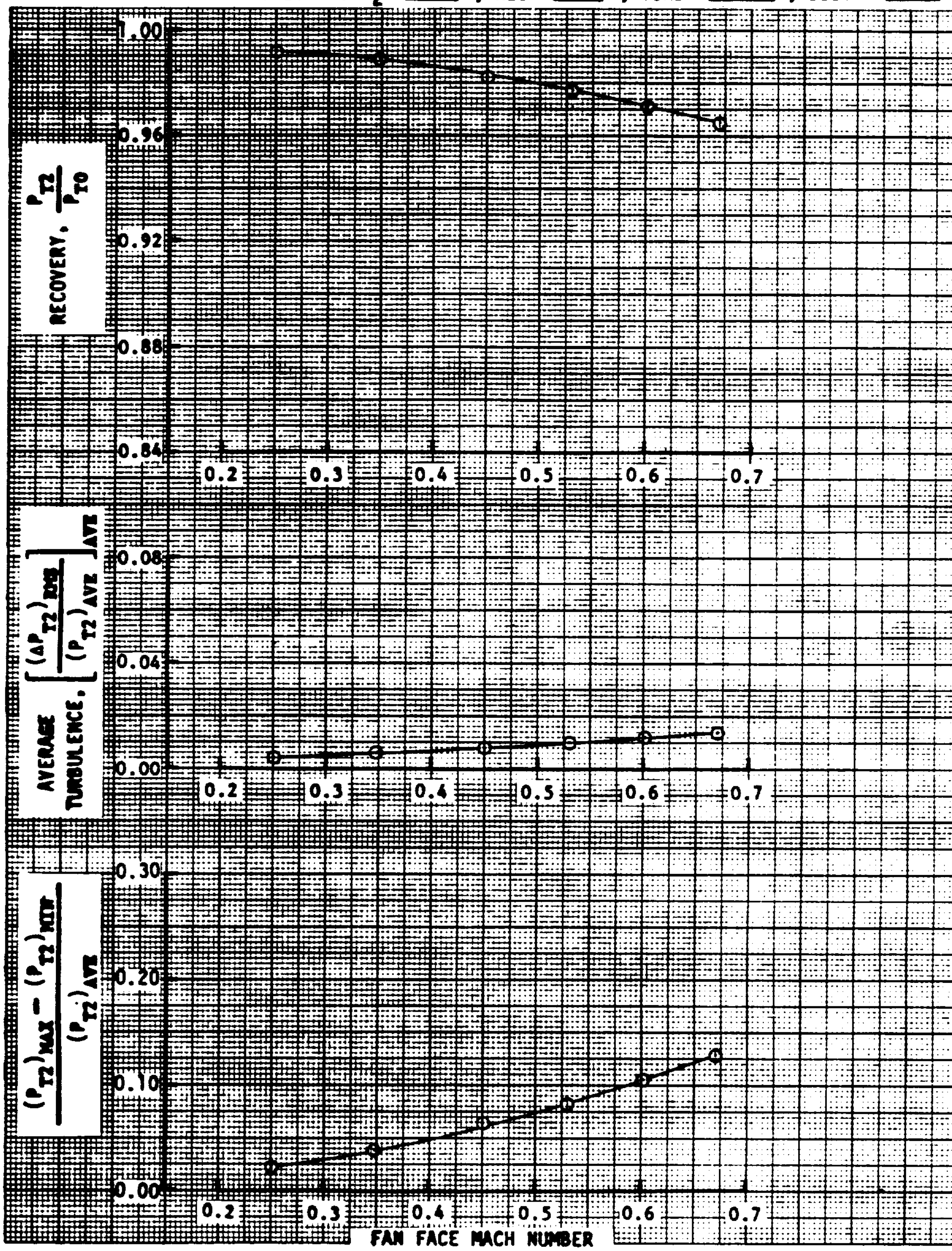
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3055-3060
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .984 ; TURB= .008 ; DIST= .083



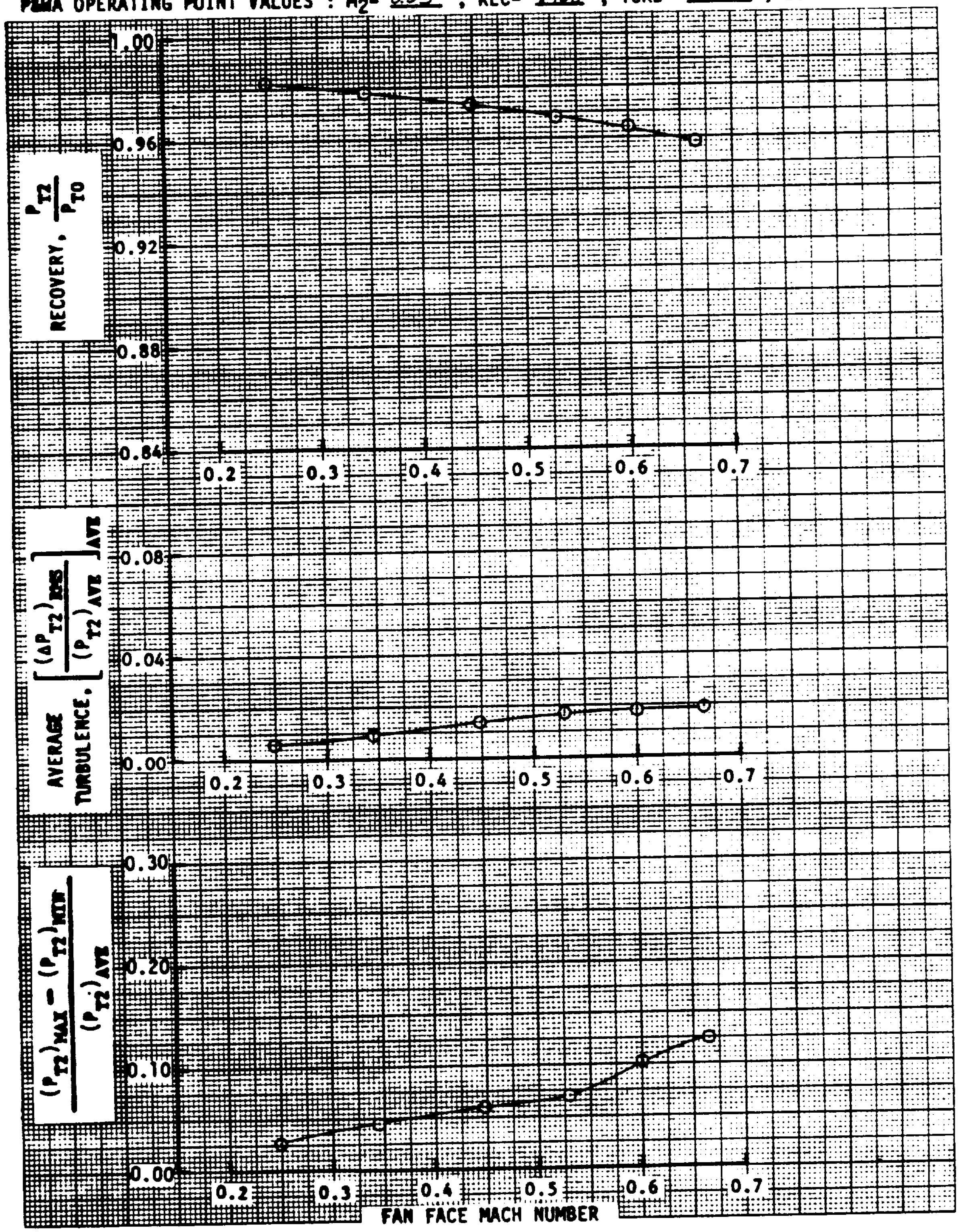
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3061-3066
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .978 ; TURB= .010 ; DIST= .085



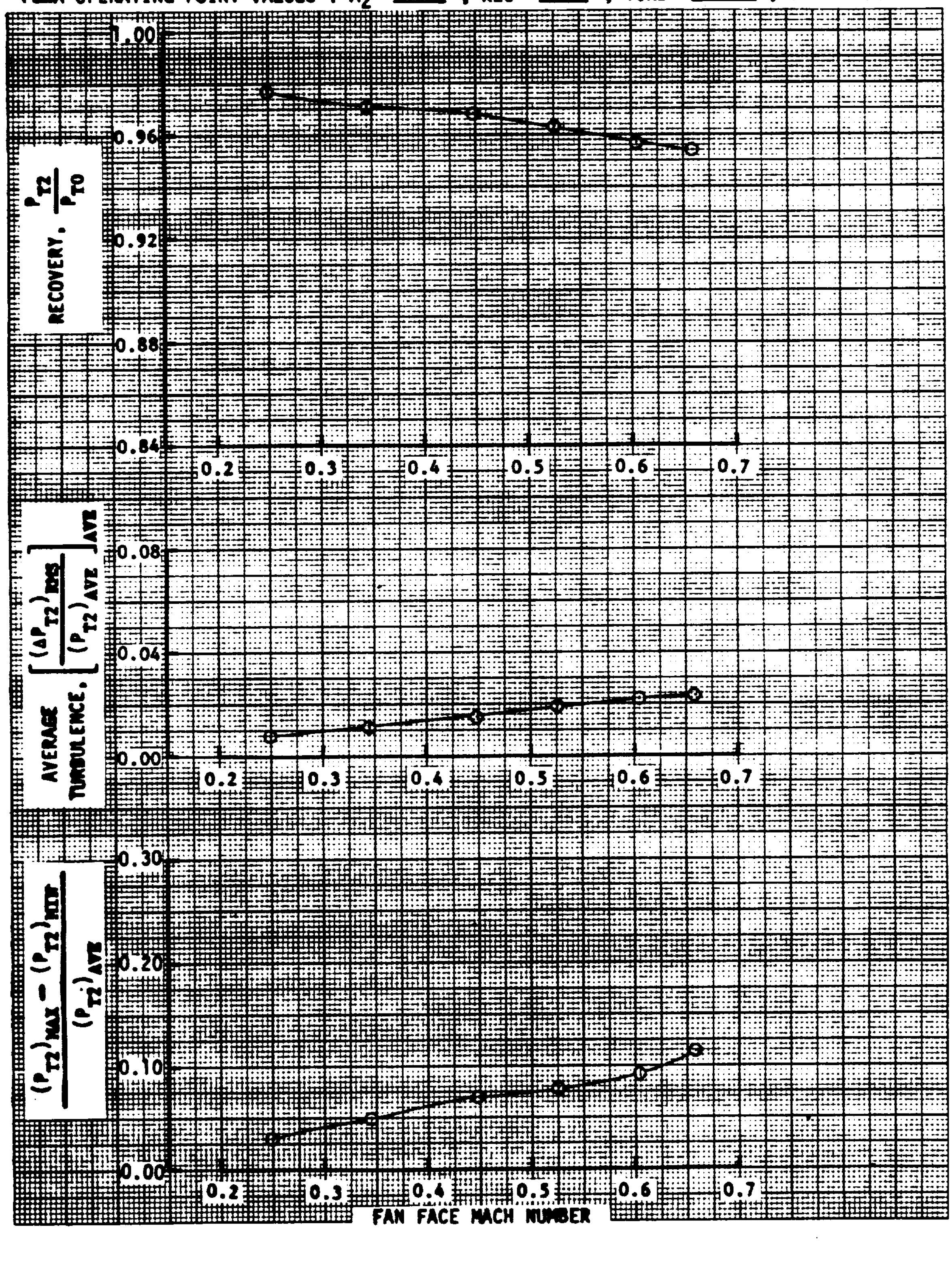
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3067-3072
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .010 ; DIST= .083



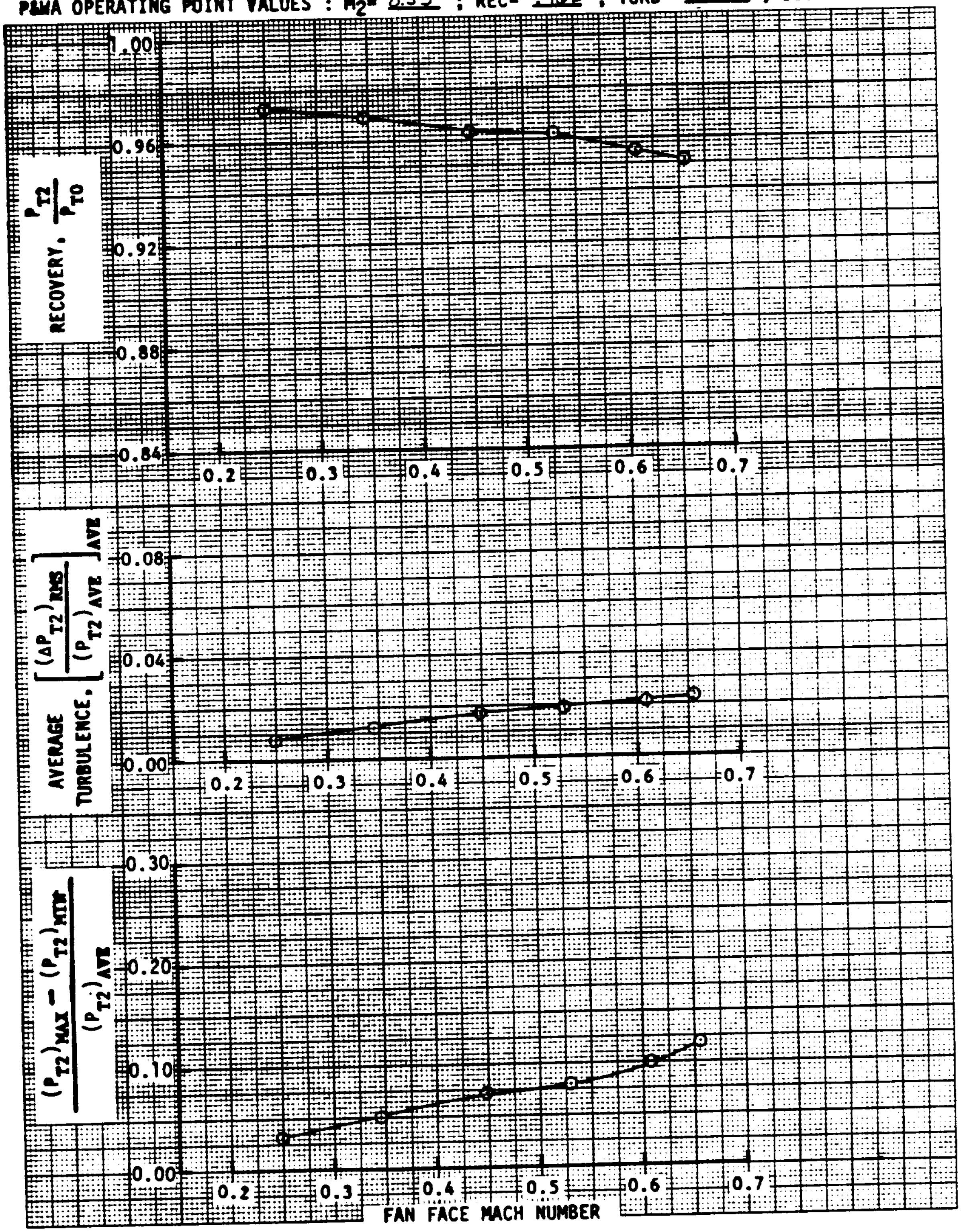
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3073-3078
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .968 ; TURB= .017 ; DIST= .070



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3079-3084
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .963 ; TURB= .019 ; DIST= .077



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18 ; READING NUMBERS 3085-3090
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .020 ; DIST= .080

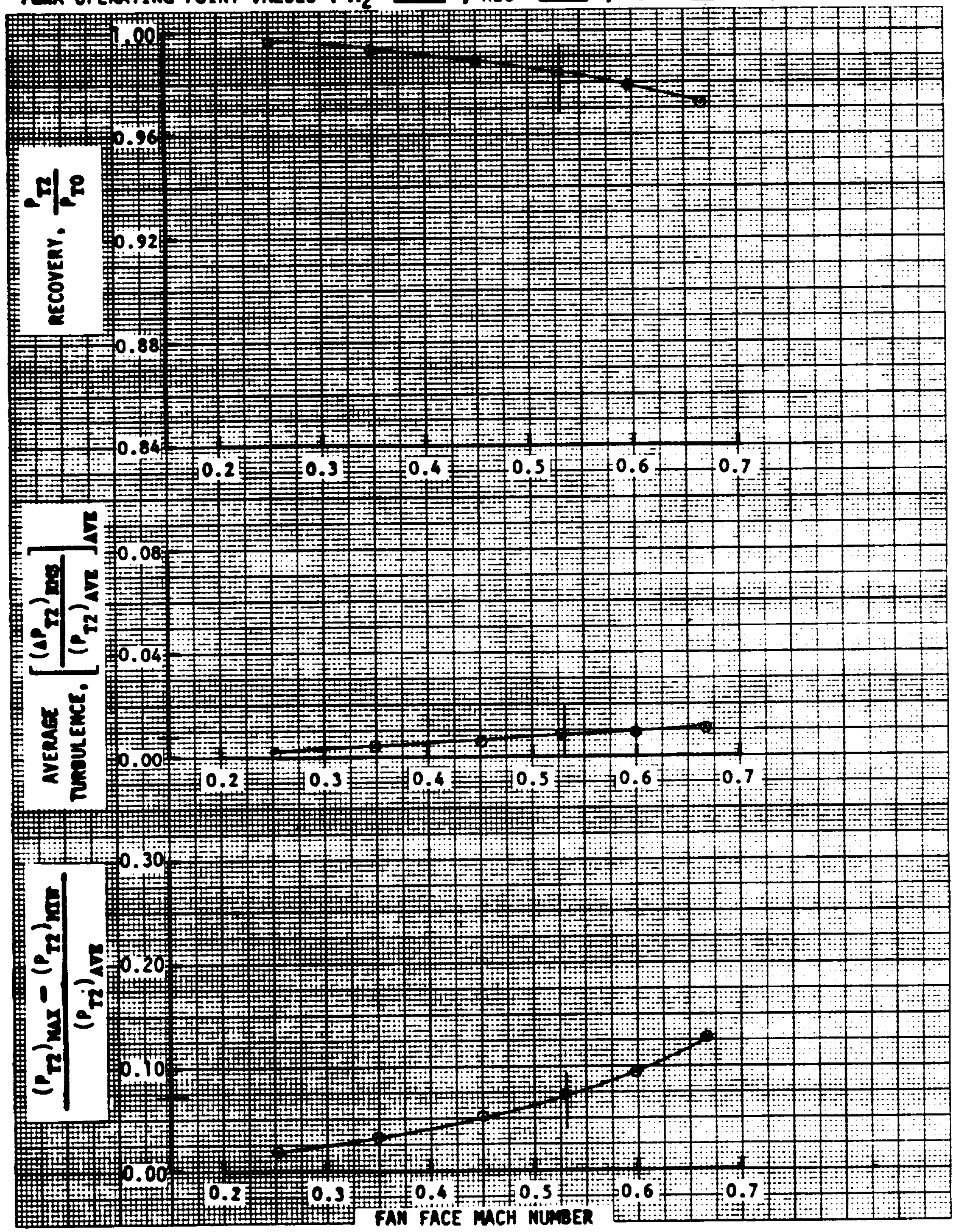


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 18 ; READING NUMBERS 391,92,93,94,95,96

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.

PAMA OPERATING POINT VALUES : M_2= .53 ; REC= .984 ; TURB= .008 ; DIST= .072



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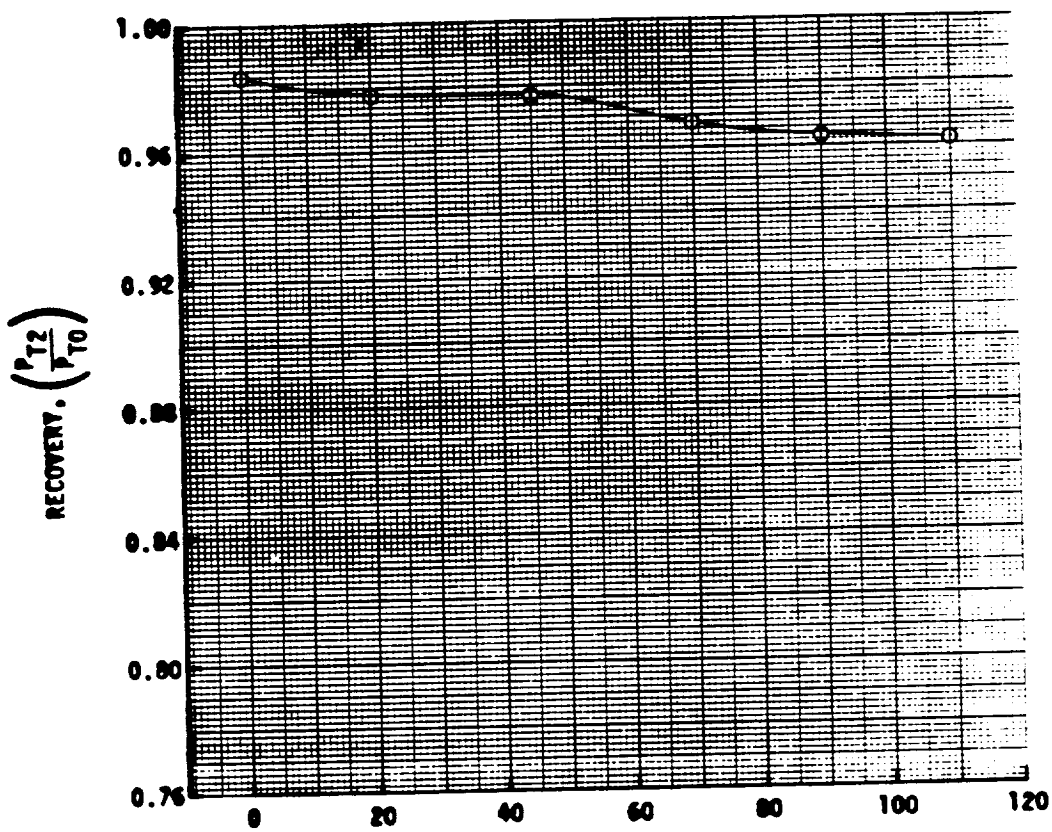
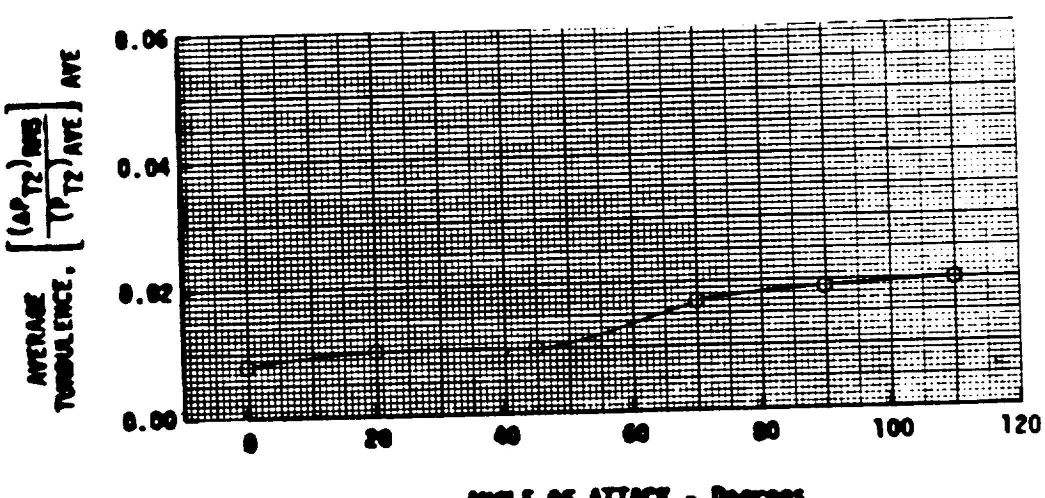
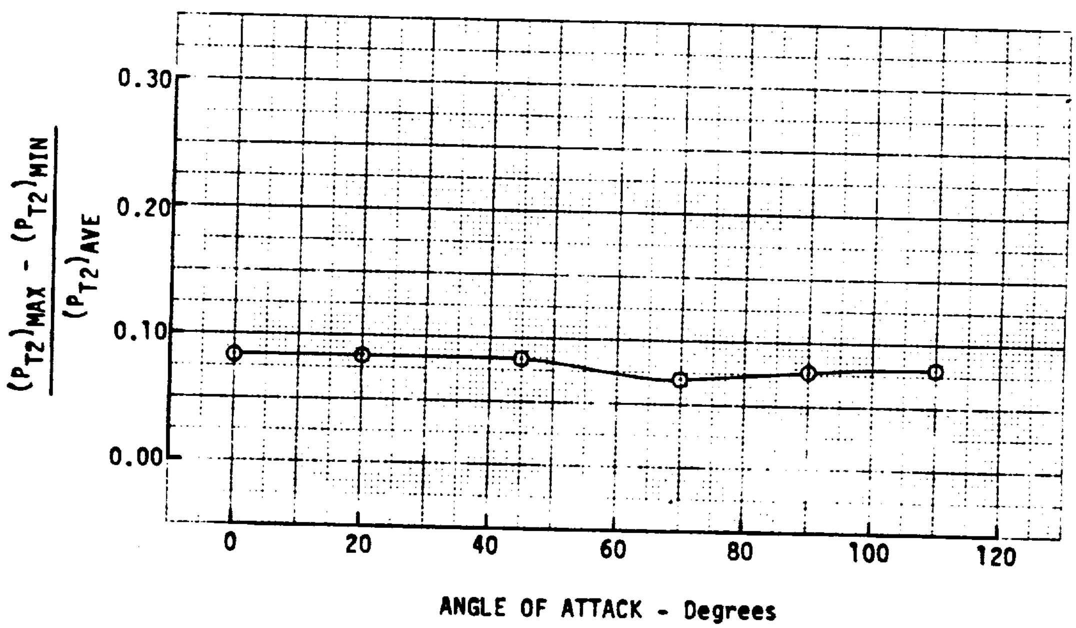
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 18 **; DESCRIPTION** Thick Lip Inlet; Left Aux Open - Door





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 18 ; DESCRIPTION Thick Lip Inlet; Left Aux Open - Door



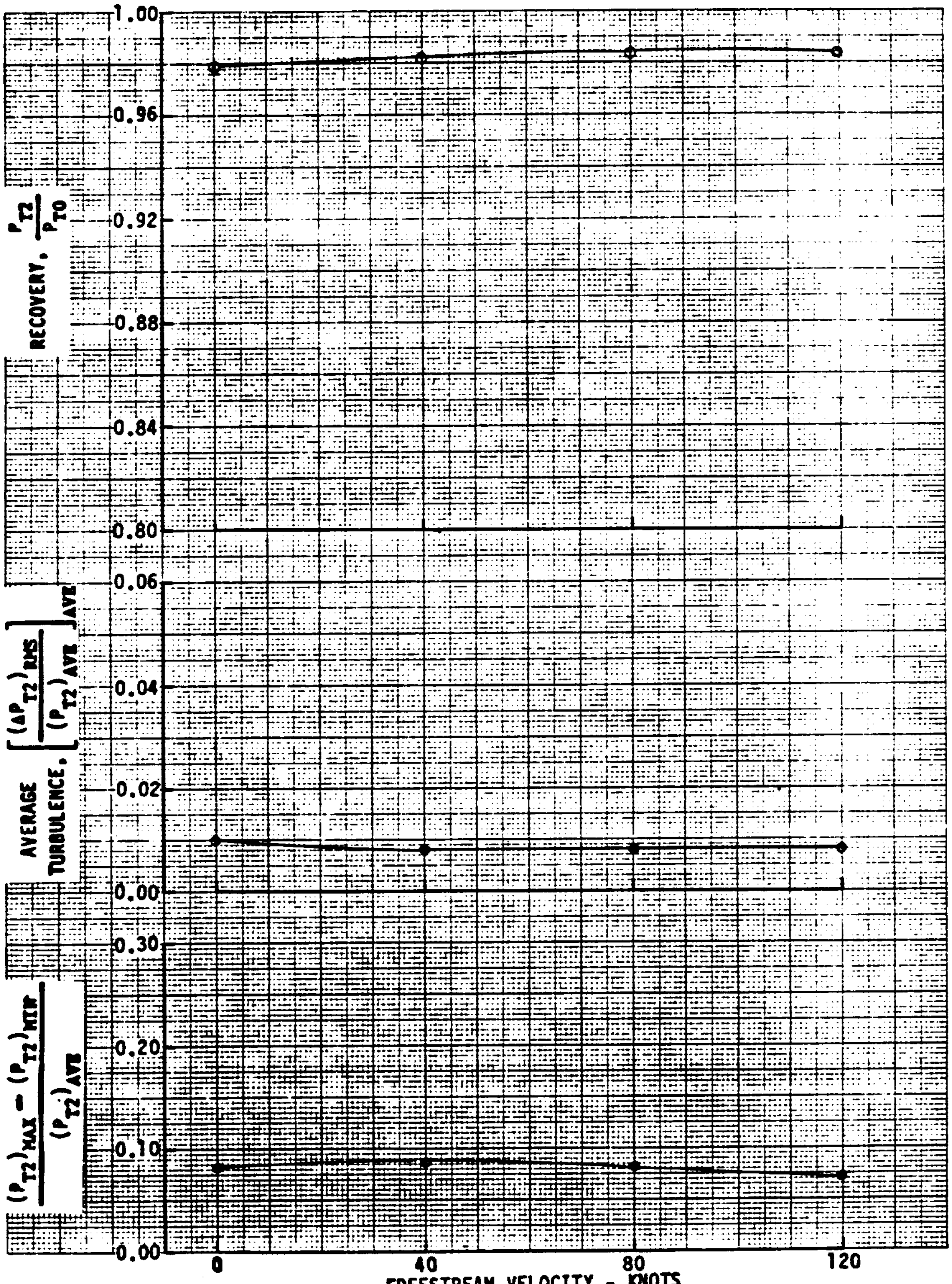
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY

ANGLE OF ATTACK = 0 DEGREES

SIDESLIP ANGLE = ____ DEGREES

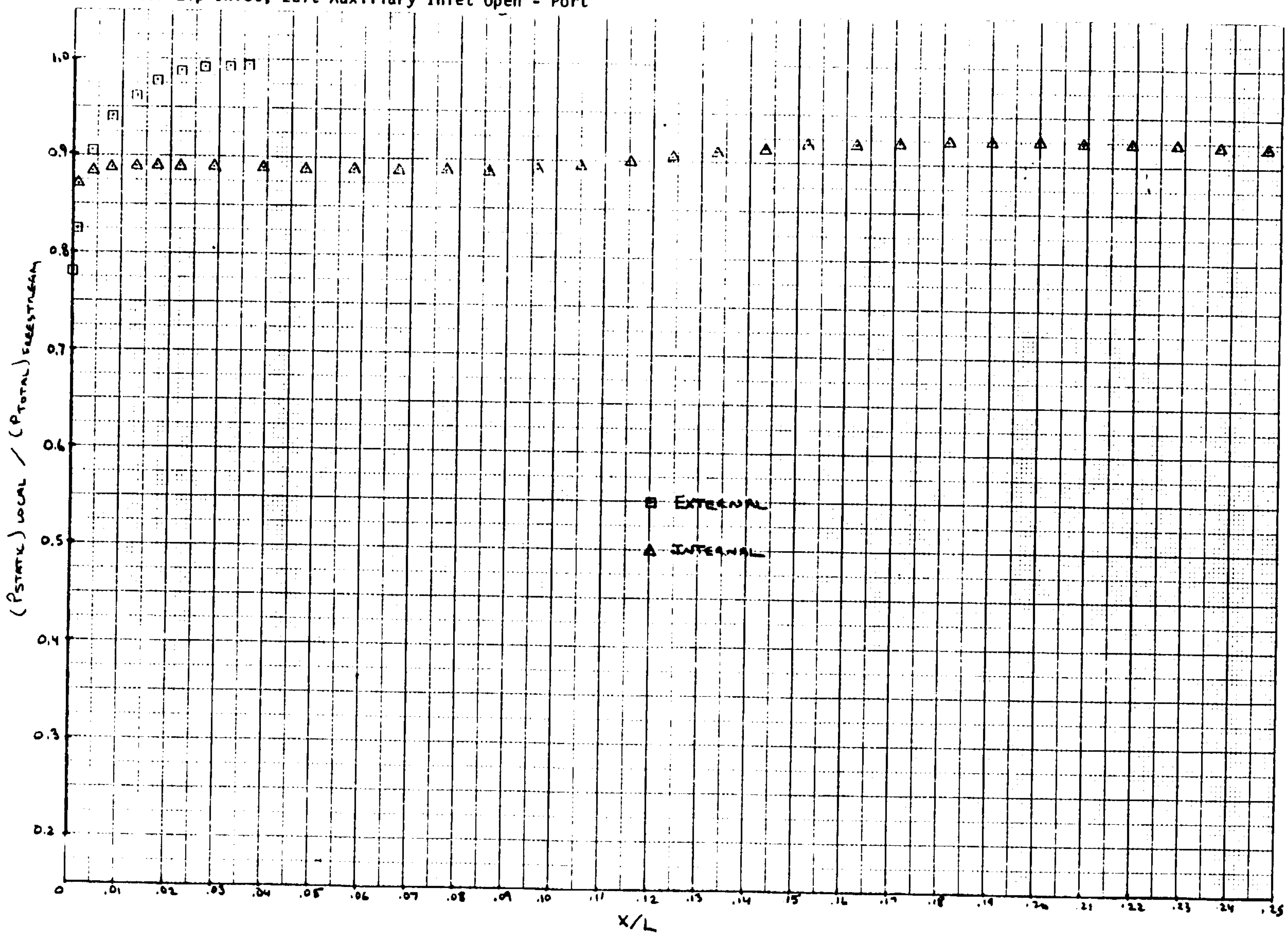
P&WA F-100 MATCH AIRFLOW

CONFIGURATION: NUMBER 18 ; DESCRIPTION THICK LIP, LEFT AUXILIARY INLET OPEN-DOOR



Configuration 18 V_0 = 80 Knots α = 90° EFMN = 0.526

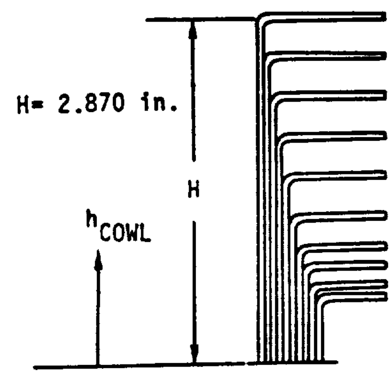
Thick Lip Inlet, Left Auxiliary Inlet Open - Port

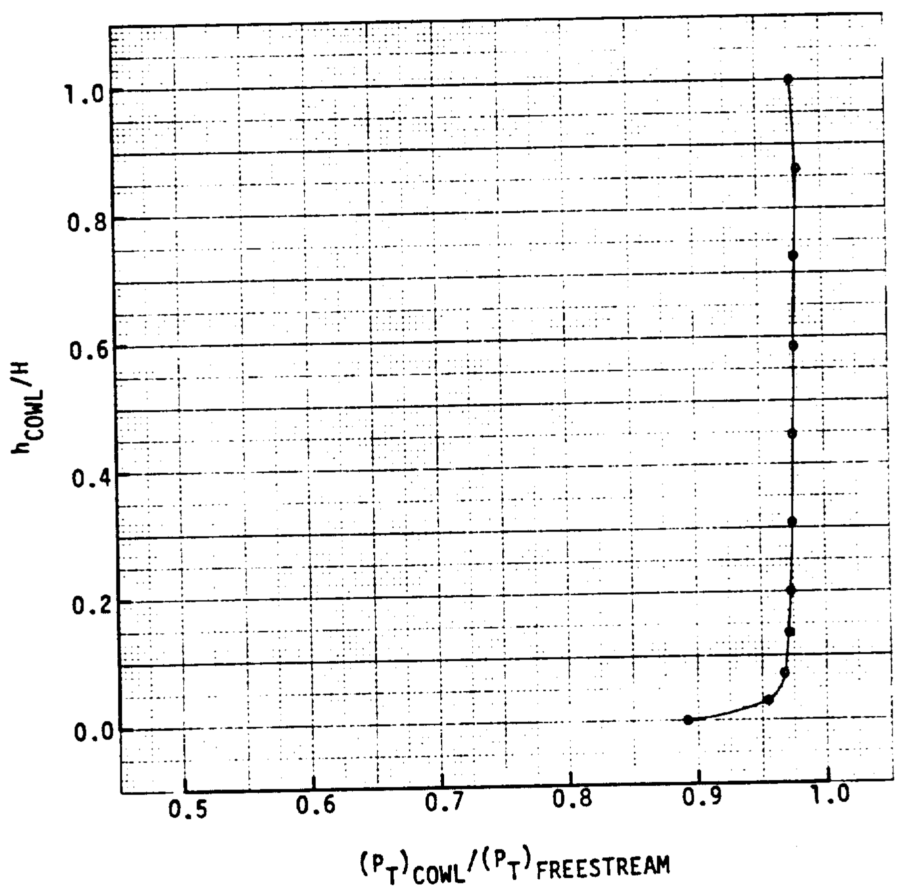


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

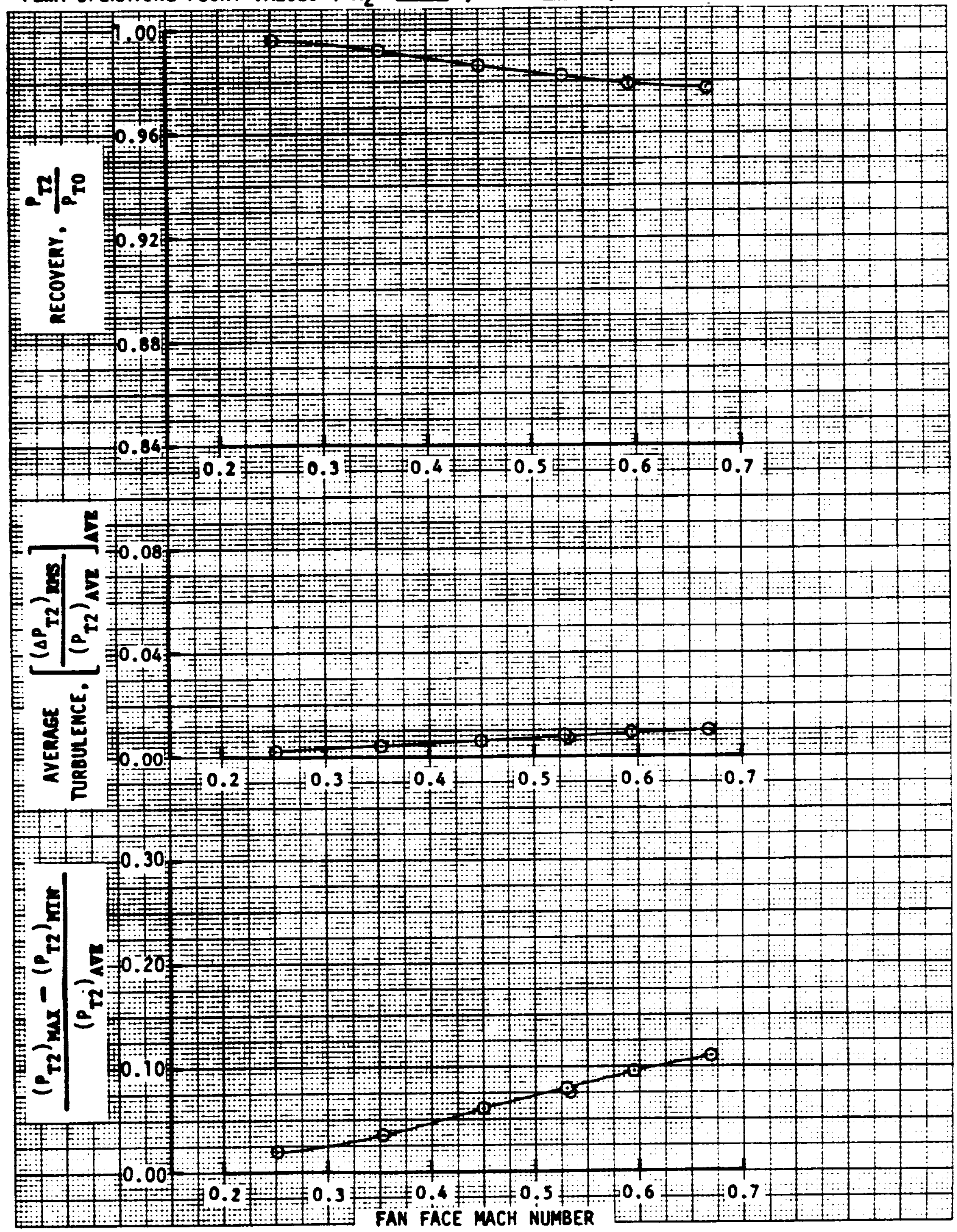
CONFIGURATION: NUMBER 18 ; DESCRIPTION Thick Lip Inlet, Left Auxiliary Inlet Open - Door

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .526

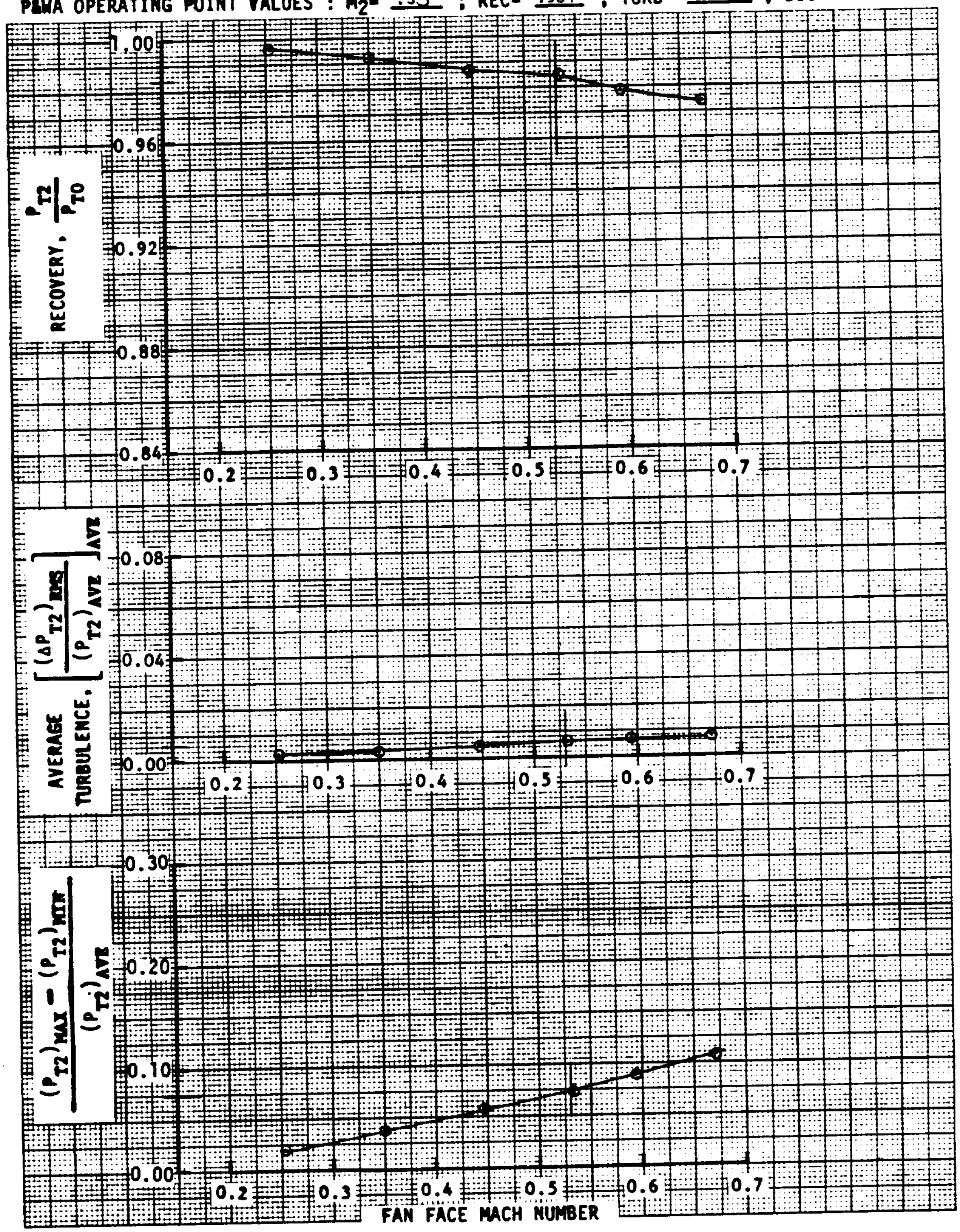




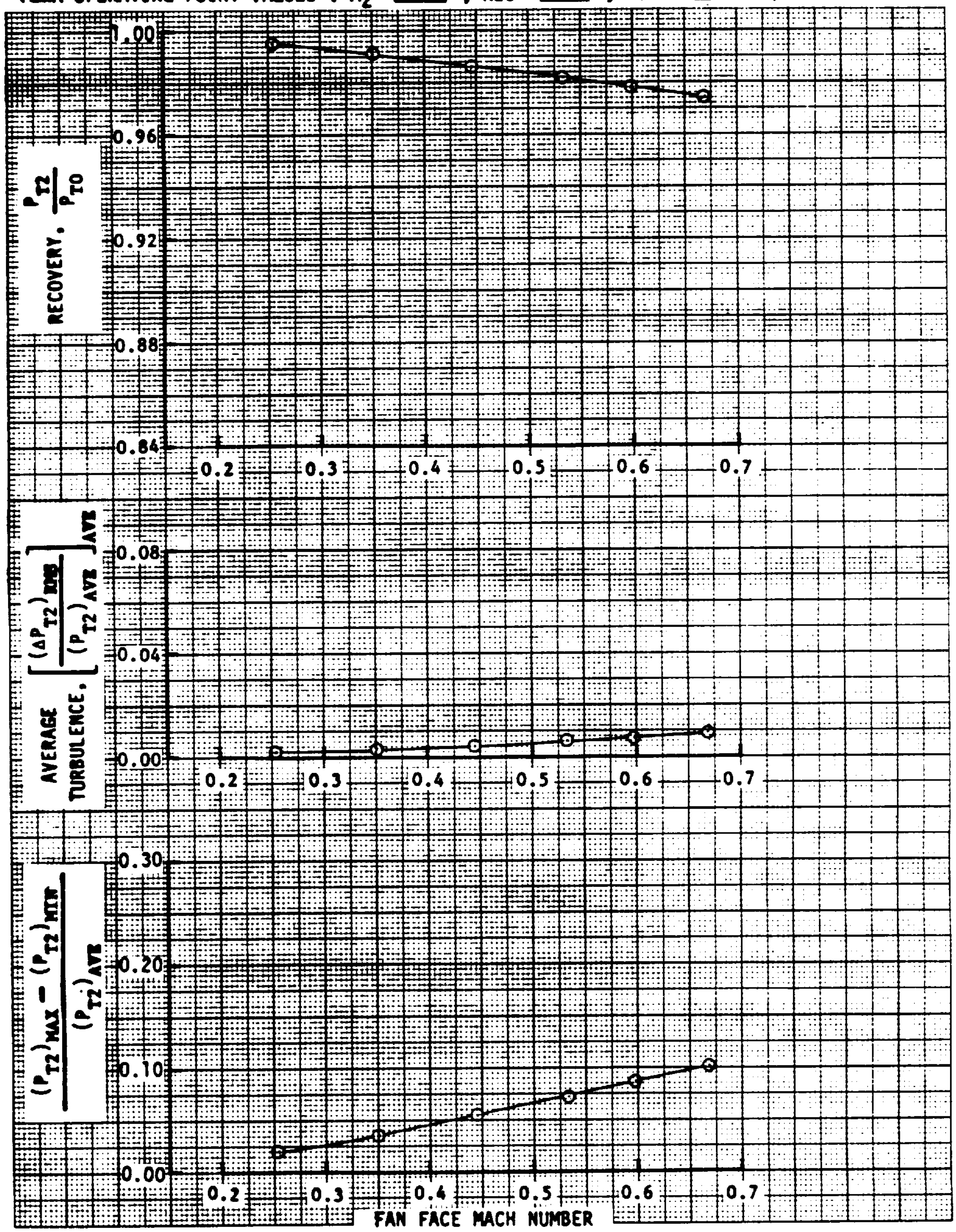
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 3856-3862
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .982 ; TURB= .008 ; DIST= .080



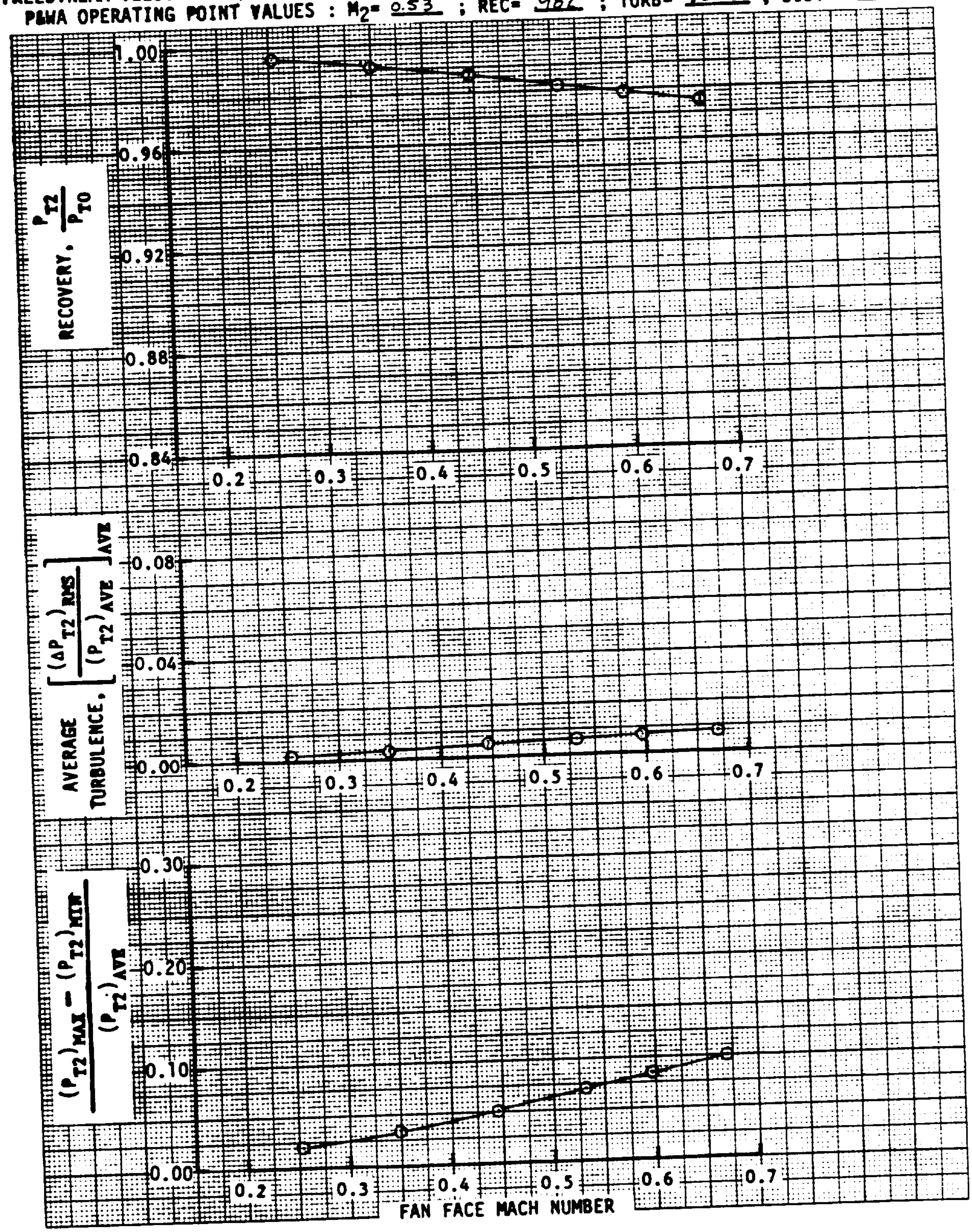
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 363,64,65,66,67,68
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= .53 ; REC= .984 ; TURB= .006 ; DIST= .074



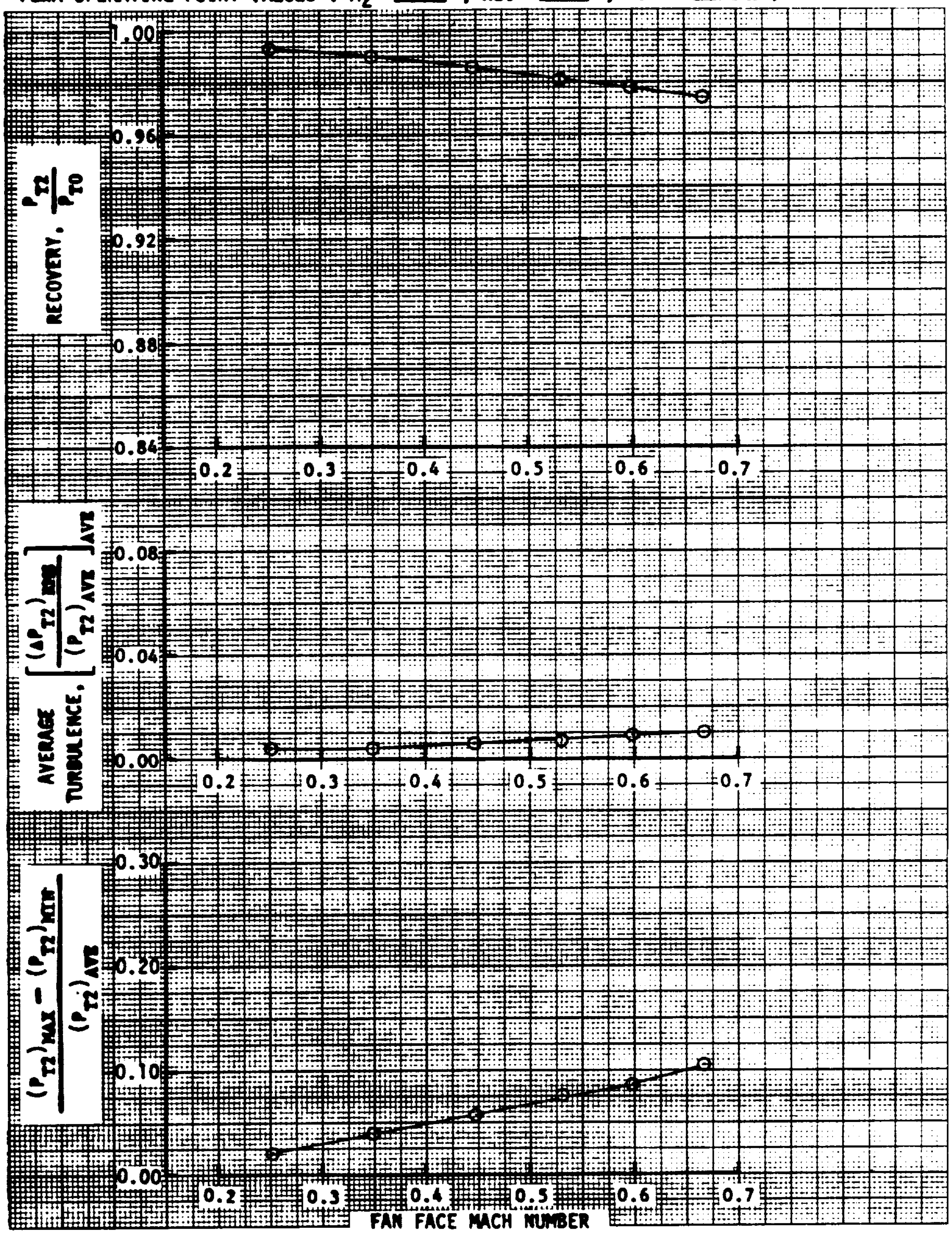
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 1Ba ; READING NUMBERS 3899-3904
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .982 ; TURB= .006 ; DIST= .073



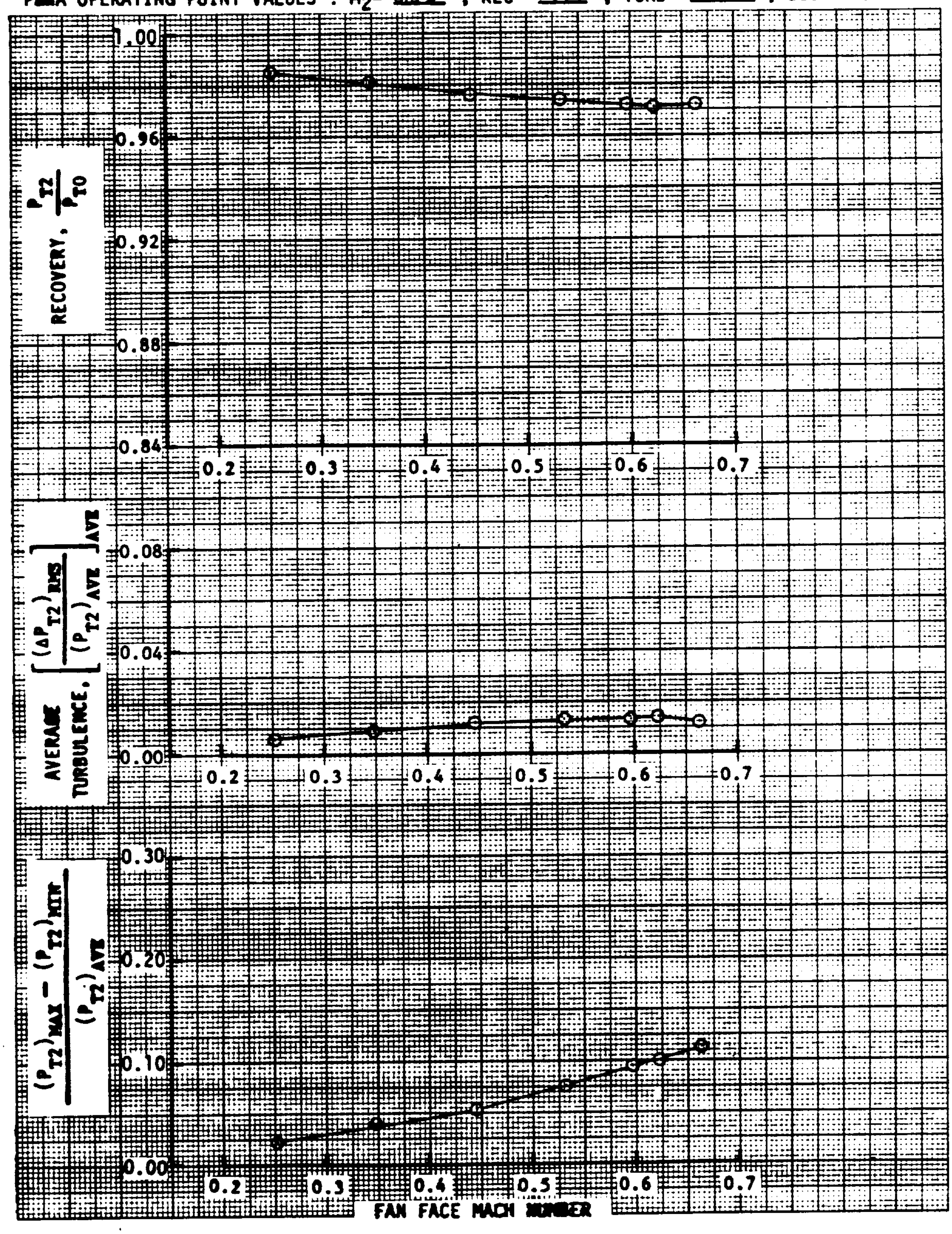
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 3905-3910
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .982 ; TURB= .006 ; DIST= .070



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 3911-3916
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .981 ; TURB= .0007 ; DIST= .074



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 3917-3923
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .974 ; TURB= .013 ; DIST= .076

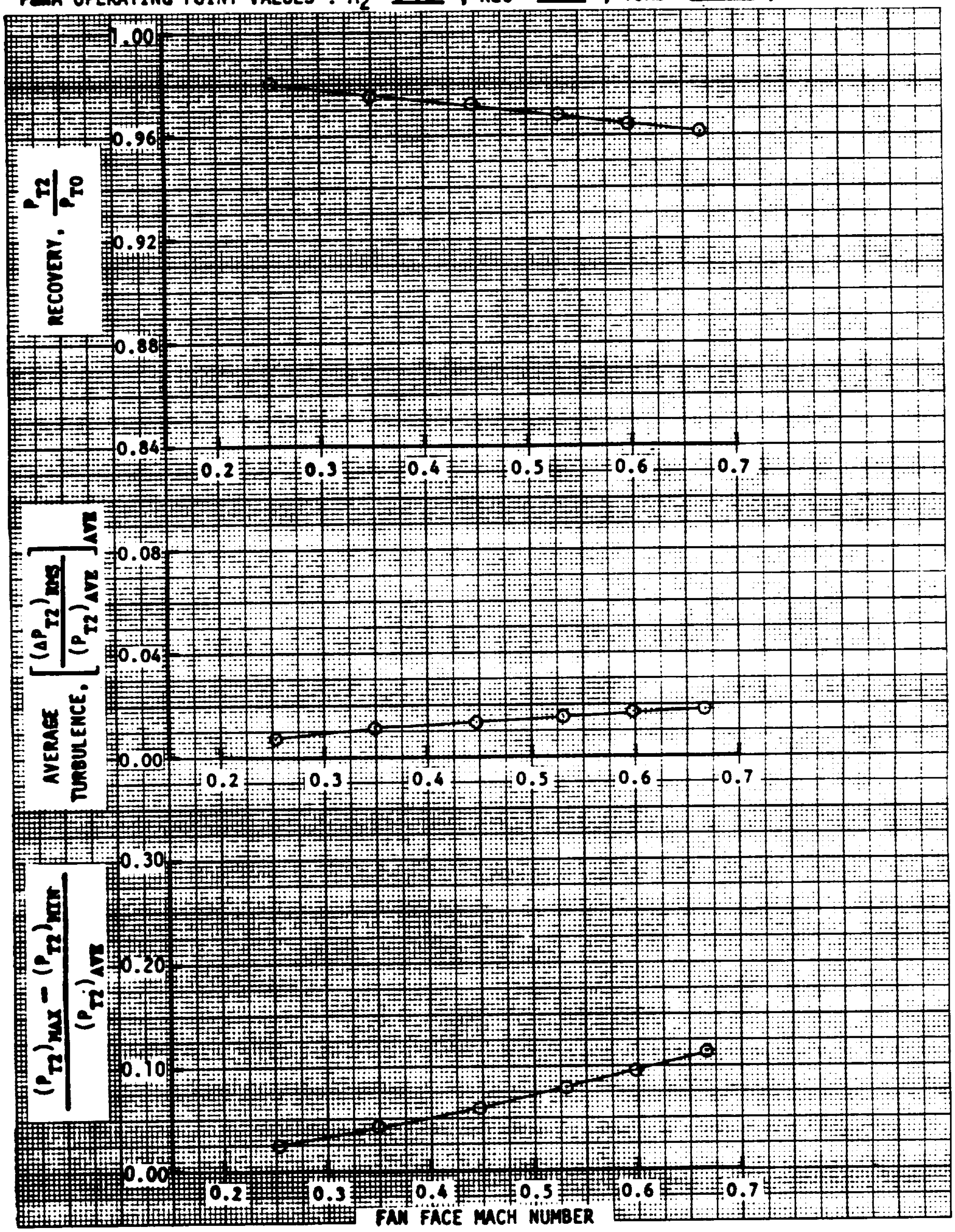


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

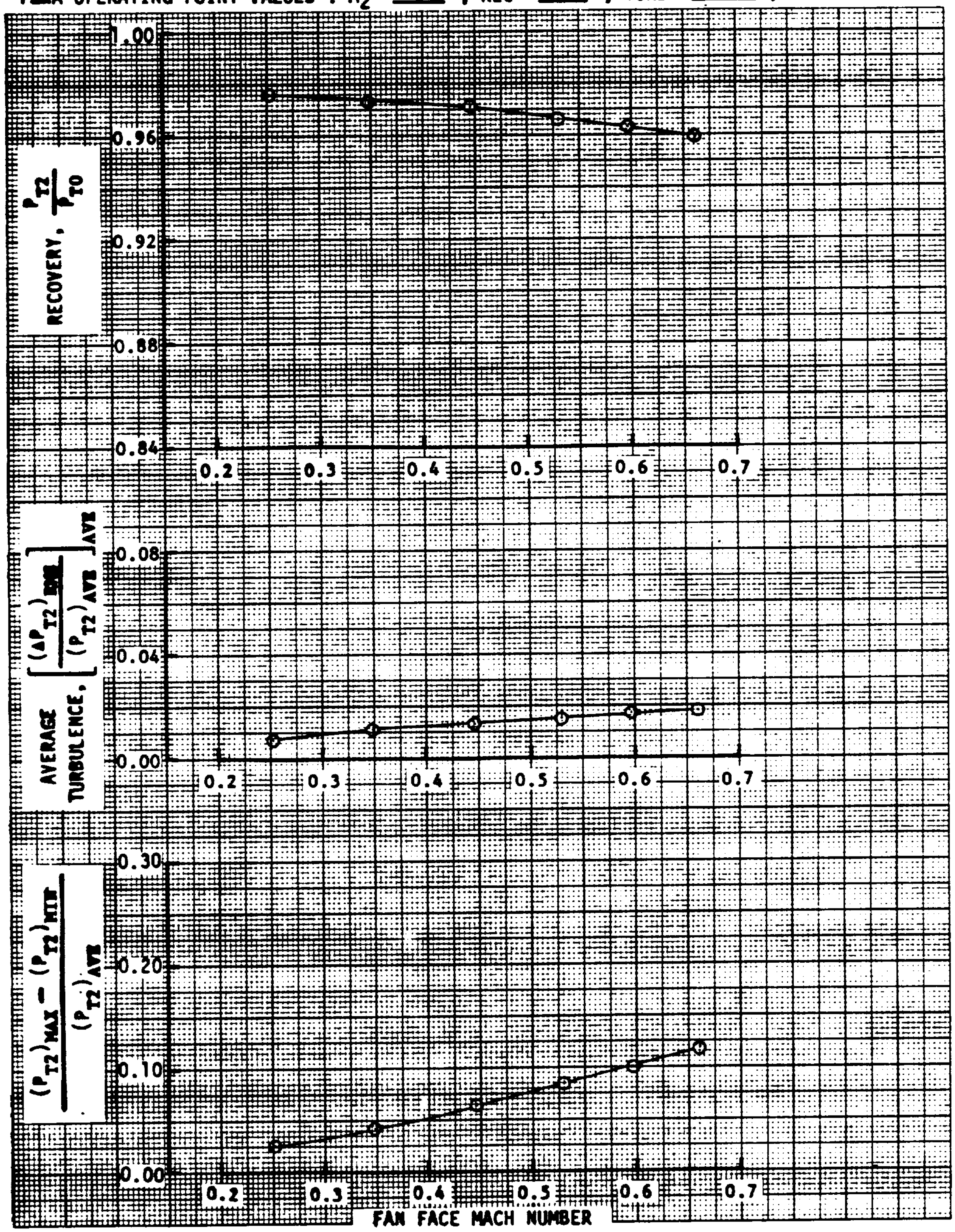
CONFIGURATION 18a ; READING NUMBERS 3924-3930

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.

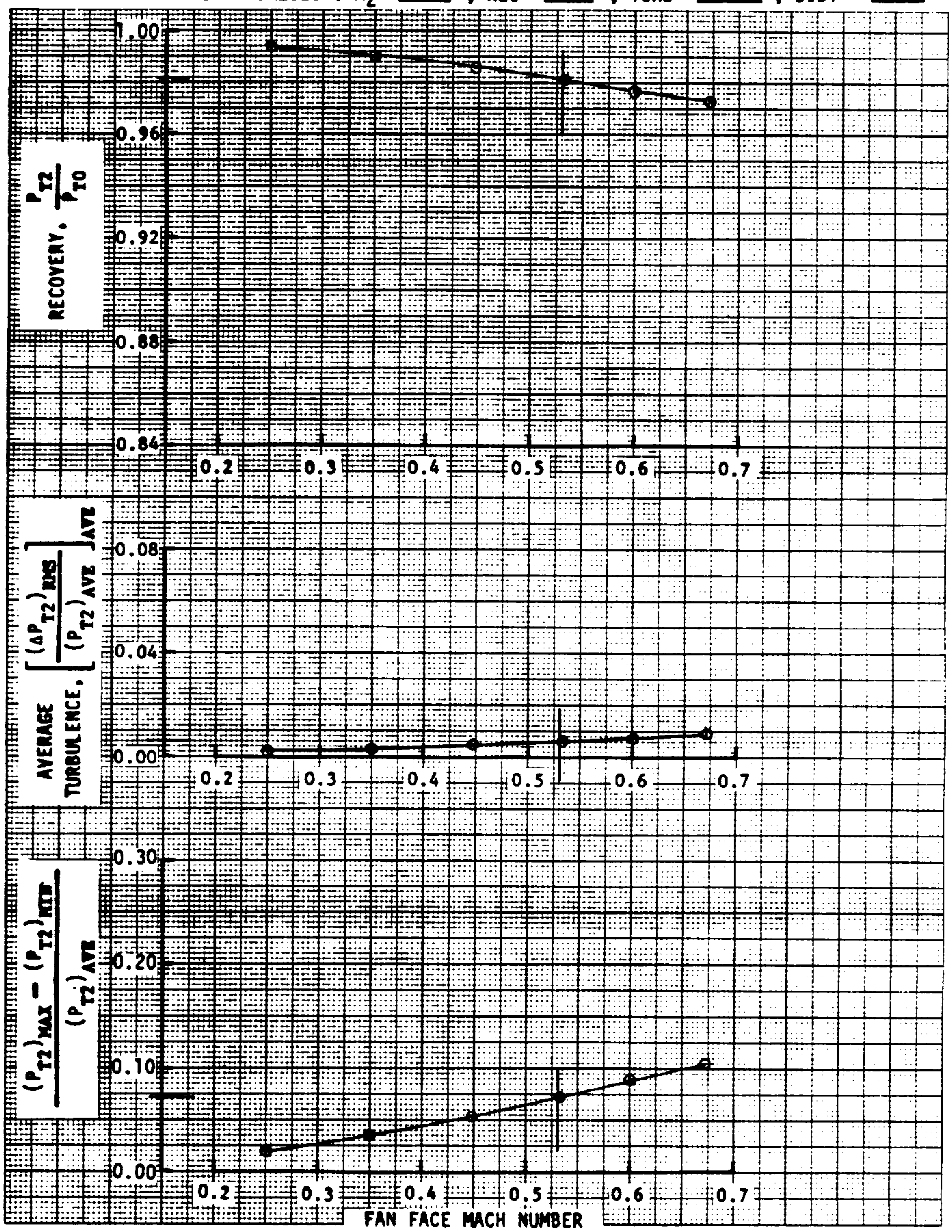
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .015 ; DIST= .079



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 3931-3936
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .015 ; DIST= .085



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 18a ; READING NUMBERS 37,38,39,40,41,42
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PSWA OPERATING POINT VALUES : M_2= .53 ; REC= .982 ; TURB= .006 ; DIST= .072



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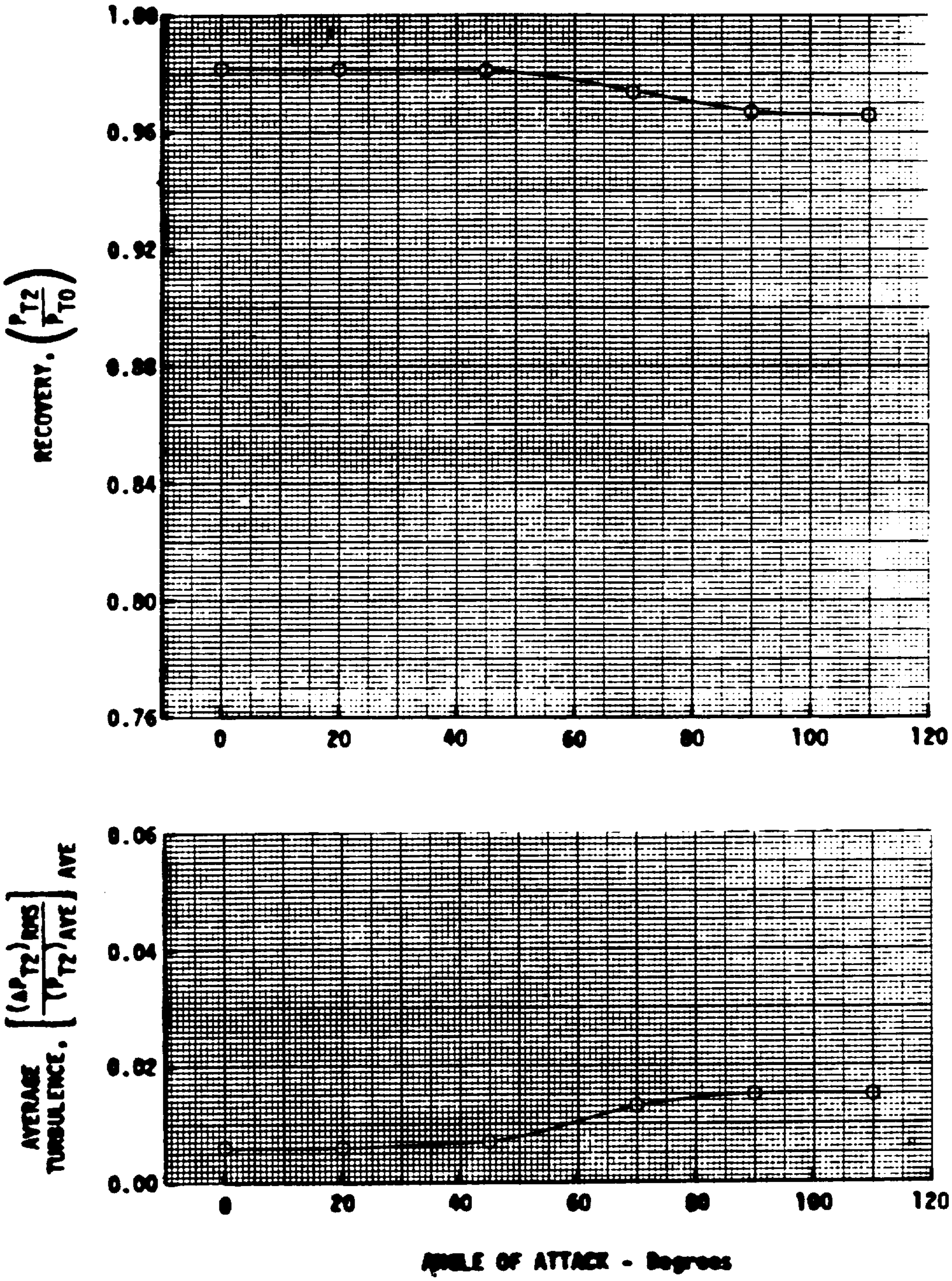
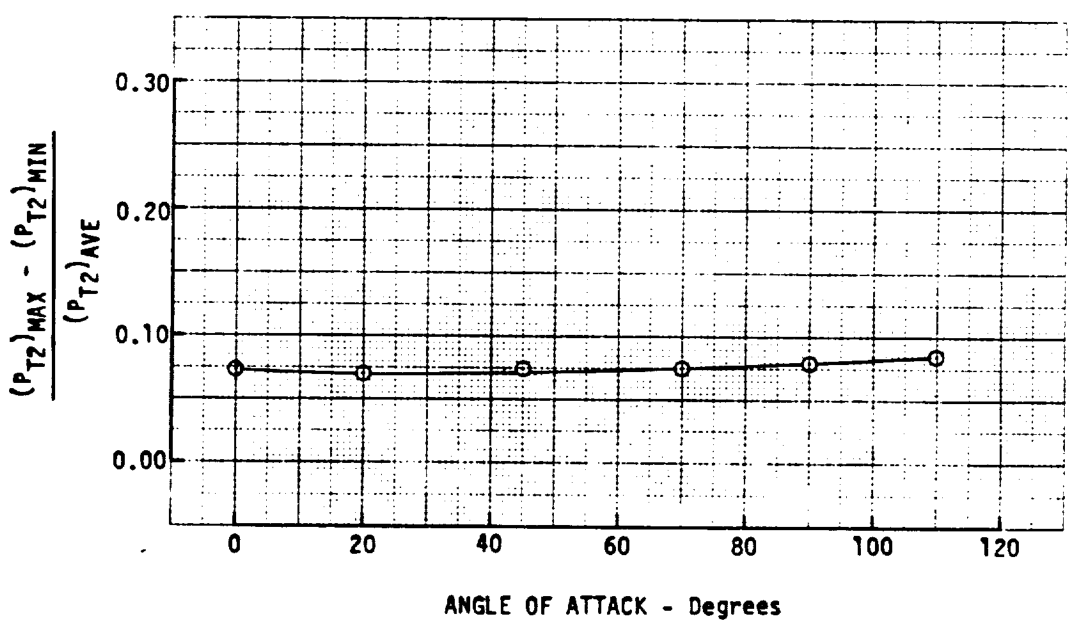
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 18a ; DESCRIPTION Thick Lip Inlet, Left Aux Open Door w/Sideplates



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 18a ; DESCRIPTION Thick Lip Inlet, Left Aux Open- Door w/sideplates



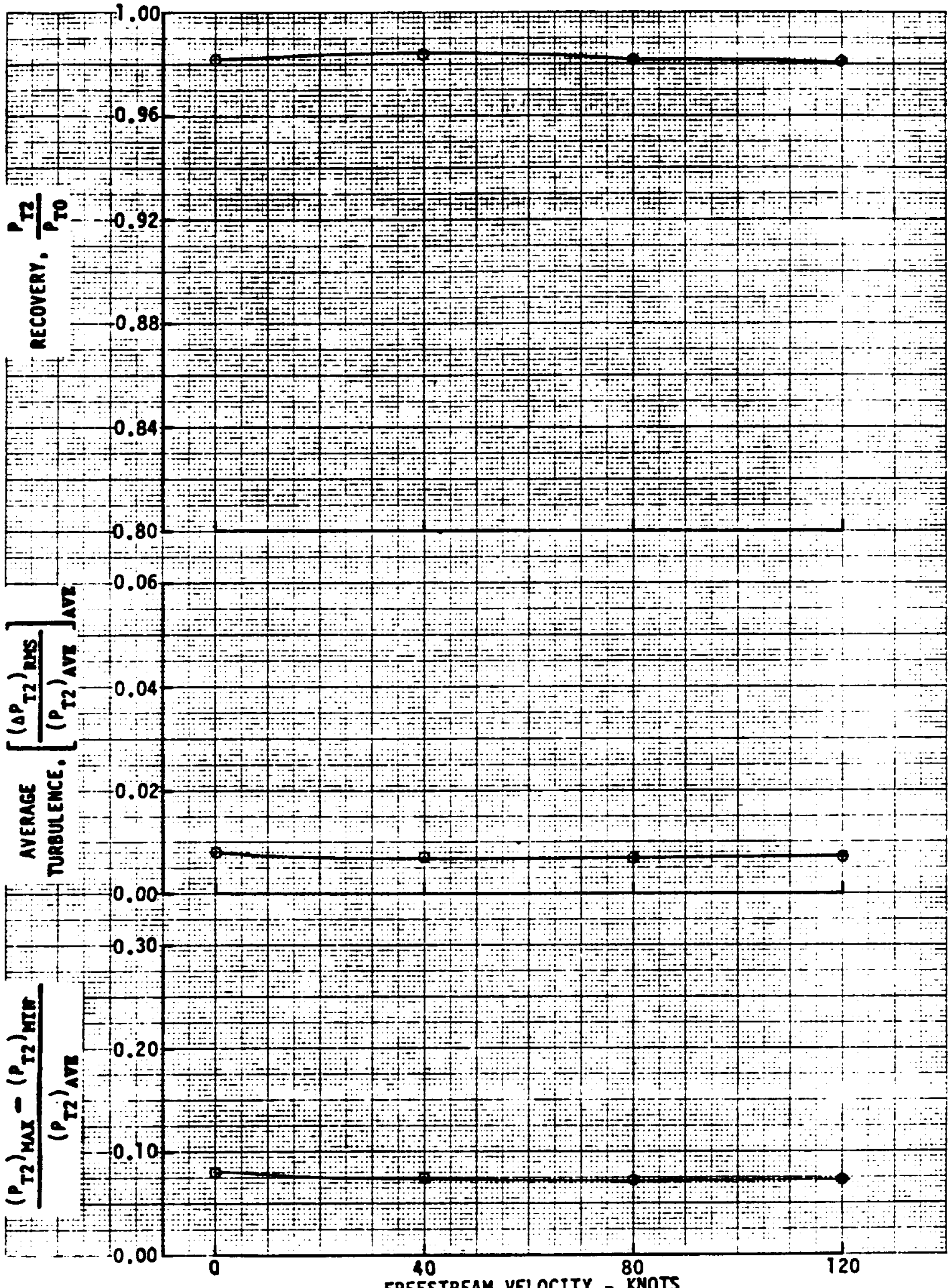
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY

ANGLE OF ATTACK = 0 DEGREES

SIDESLIP ANGLE = ____ DEGREES

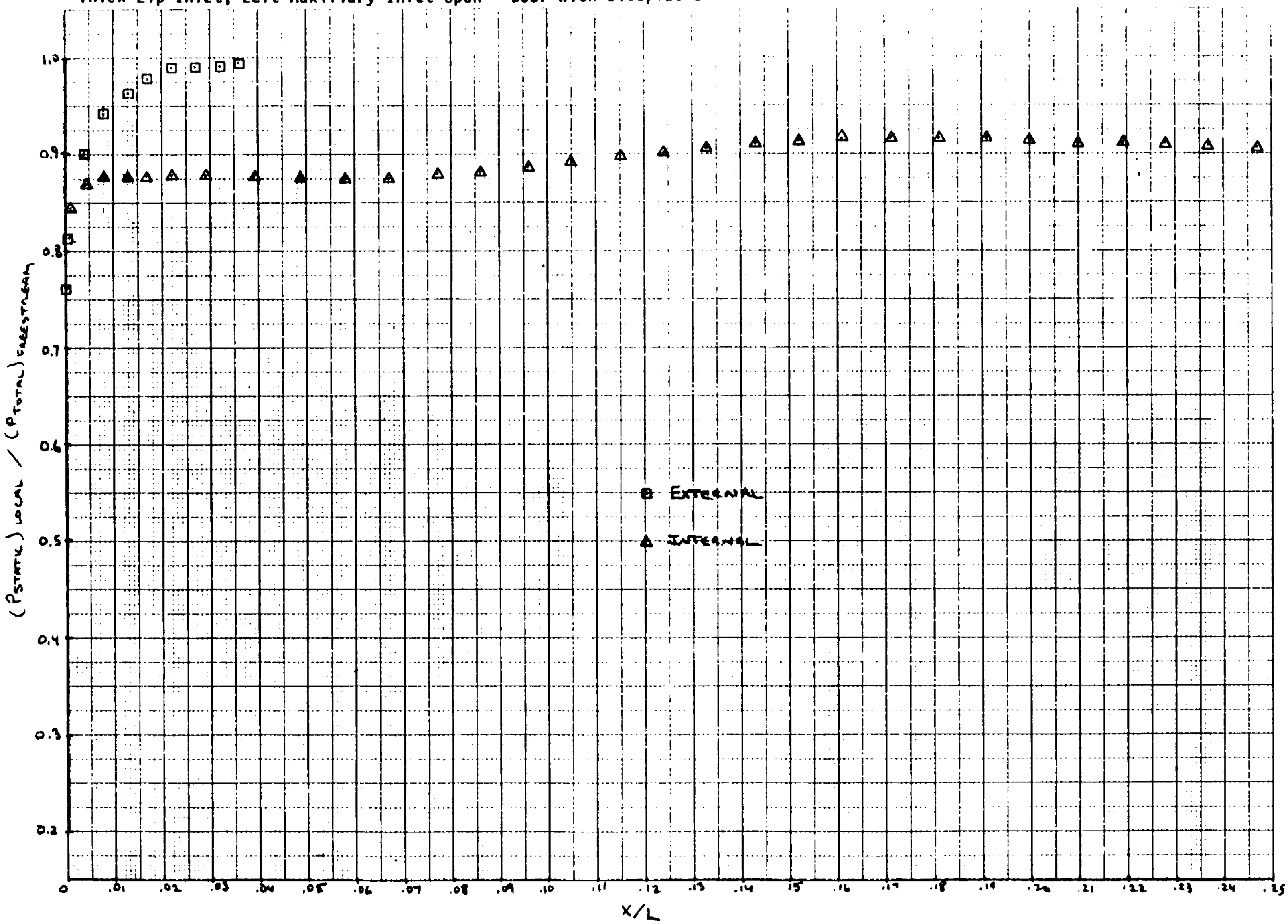
P&WA F-100 MATCH AIRFLOW

CONFIGURATION: NUMBER 18a; DESCRIPTION THICK LIP; LEFT AUXILIARY INLET OPEN-DOOR W/SIDEPLATES



Configuration 18a V_0 = 80 Knots α = 90° EFMN = 0.531

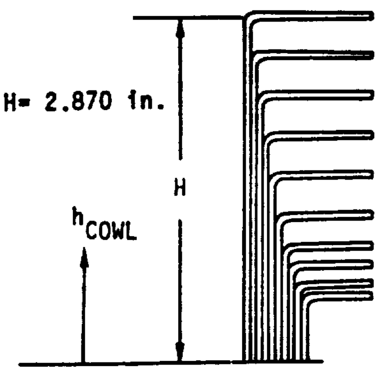
Thick Lip Inlet, Left Auxiliary Inlet Open - Door With Sideplates

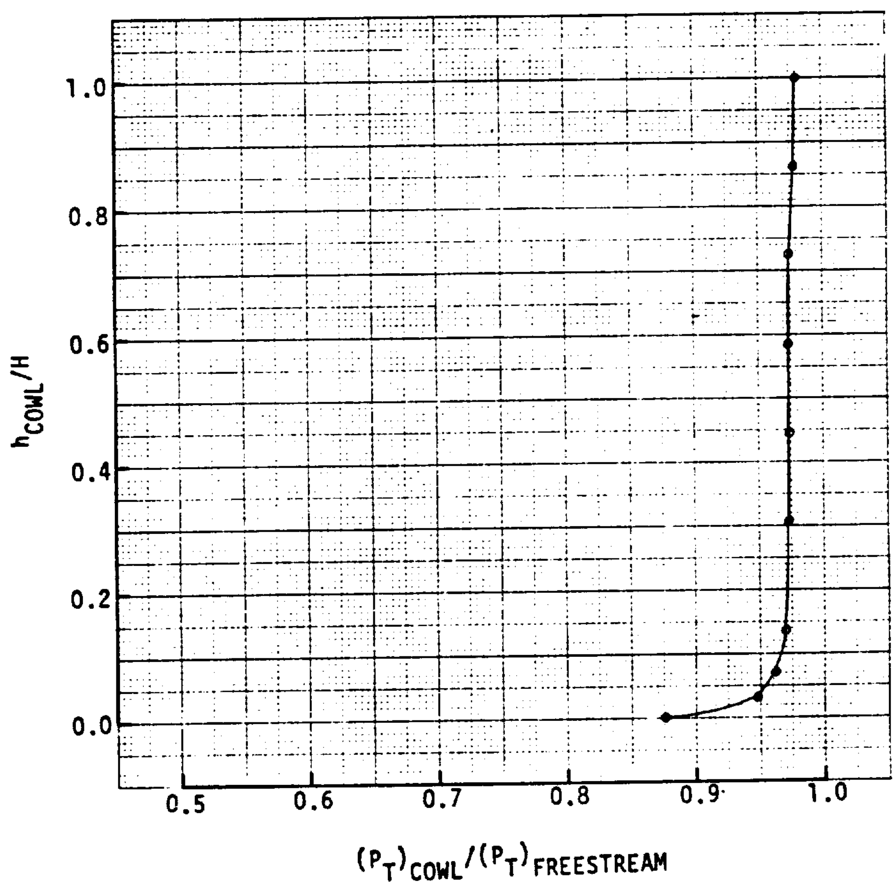


COWL LIP EXIT RAKE TOTAL PRESSURE PROFILE
TOTAL PRESSURE RATIO VS. RAKE HEIGHT RATIO

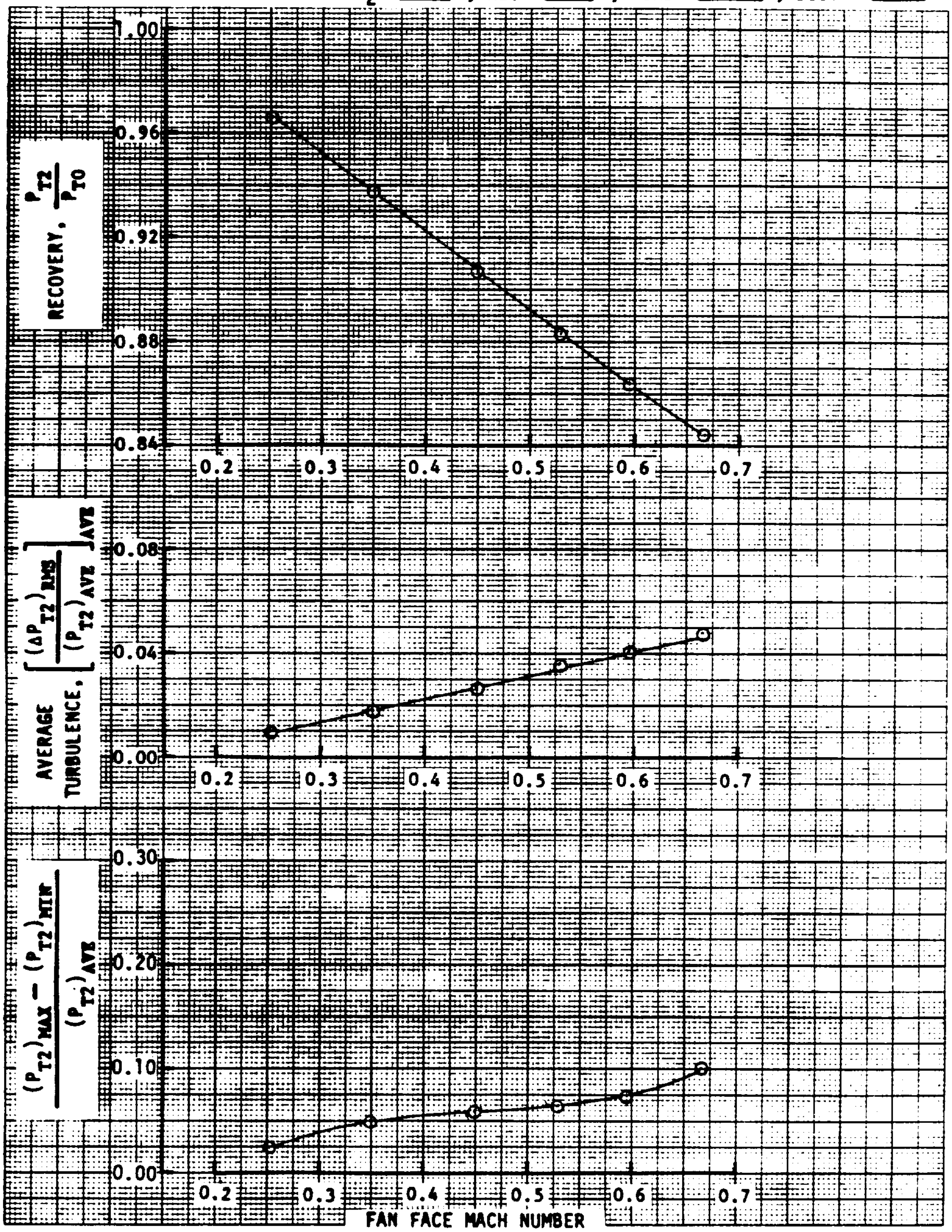
CONFIGURATION: NUMBER 18a ; DESCRIPTION Thick Lip Inlet, Left Auxiliary Inlet Open - Door With Sideplates

FREESTREAM VELOCITY = 80 knots
ANGLE OF ATTACK = 90 degrees
SIDESLIP ANGLE = 0 degrees
ENGINE FACE MACH NUMBER = .531

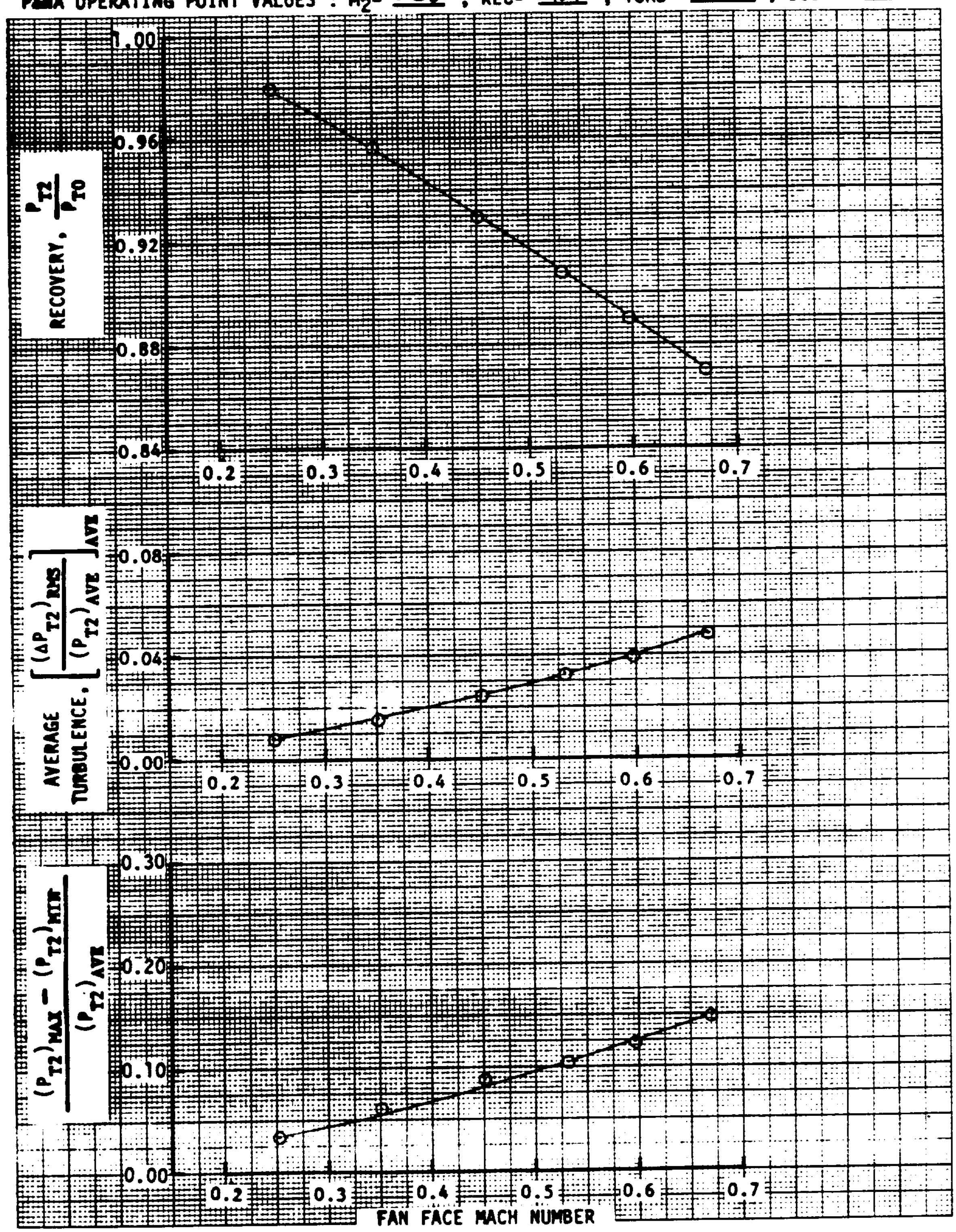




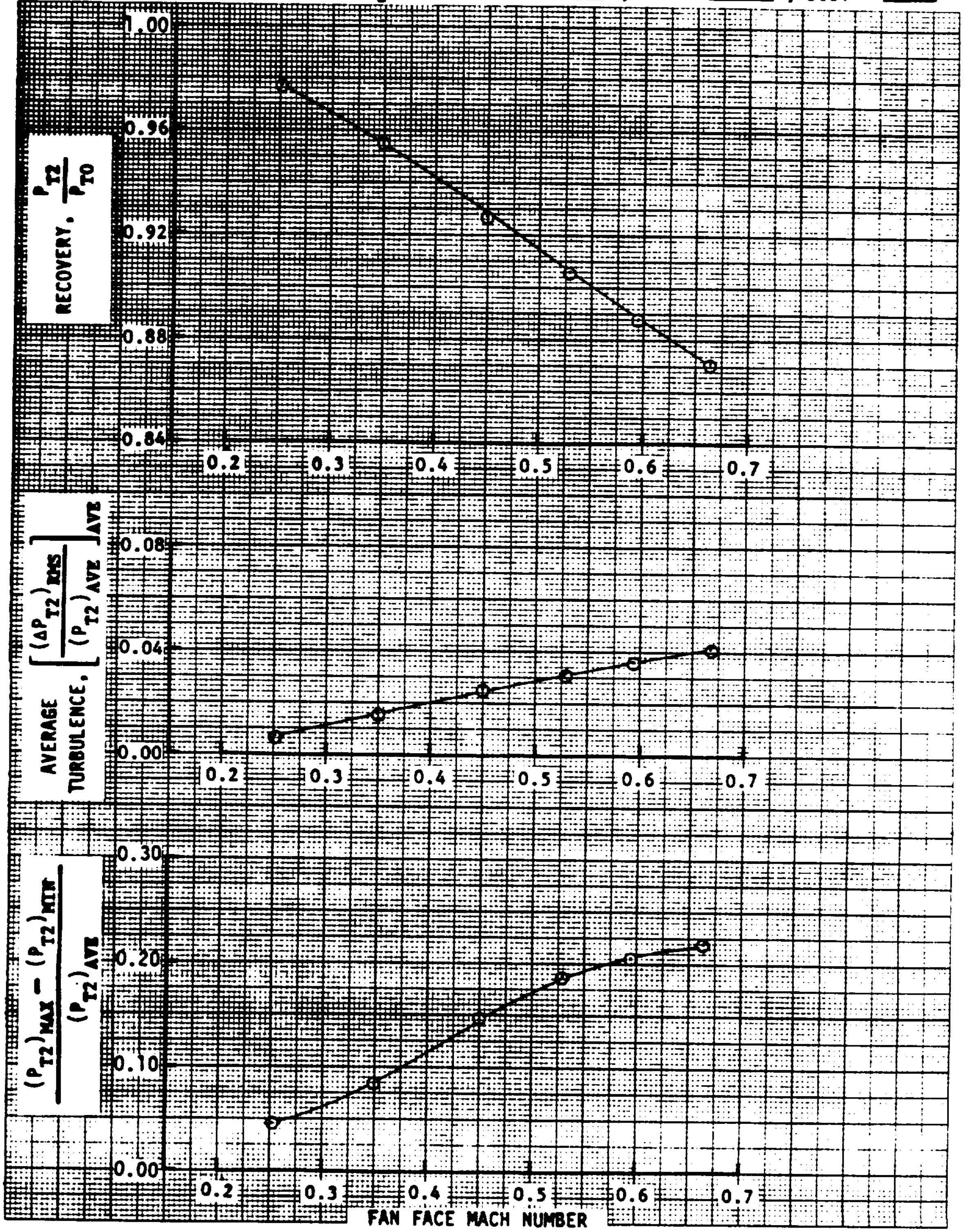
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3250-3255
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .883 ; TURB= .034 ; DIST= .065



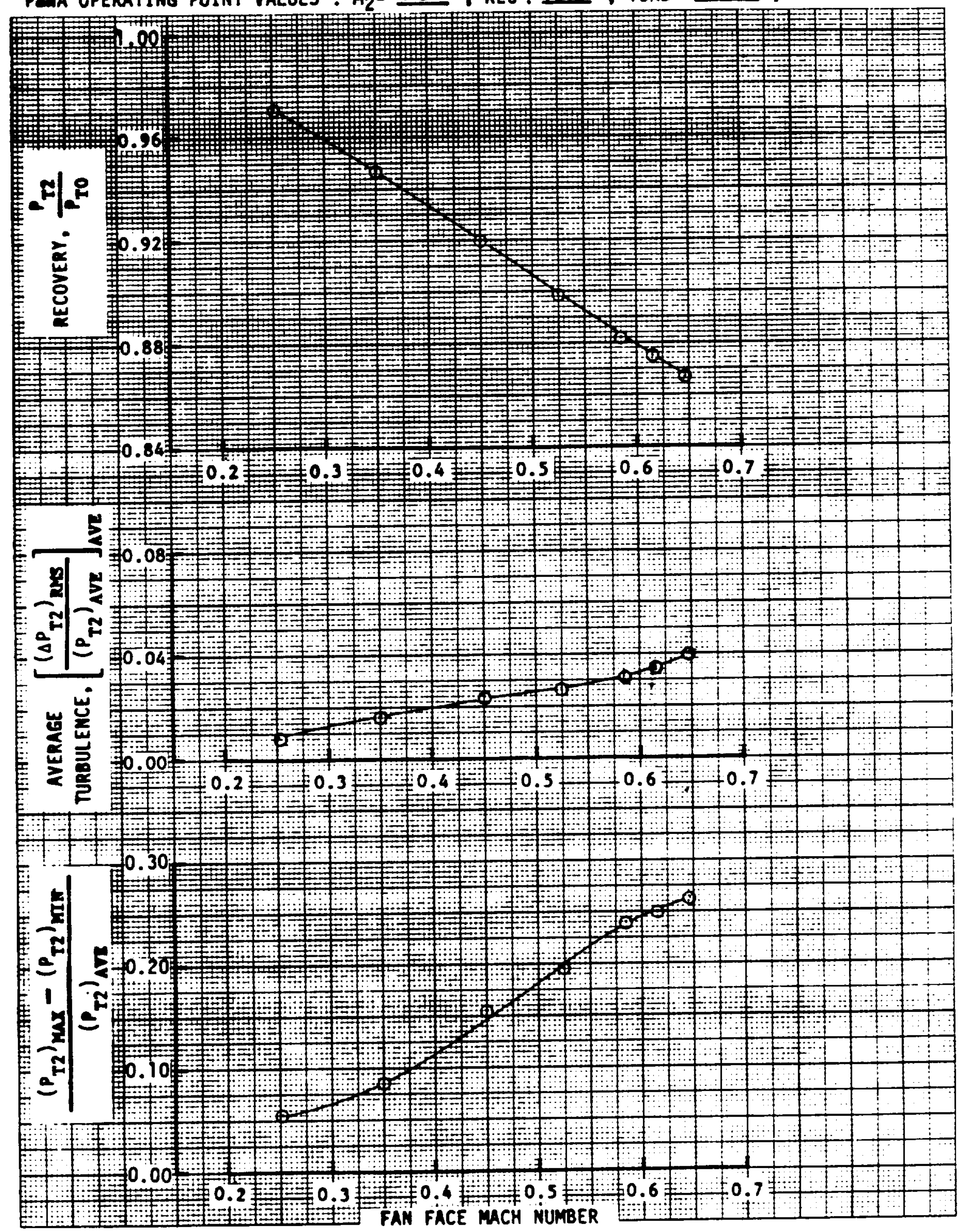
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3256-3261
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .909 ; TURB= .032 ; DIST= .105



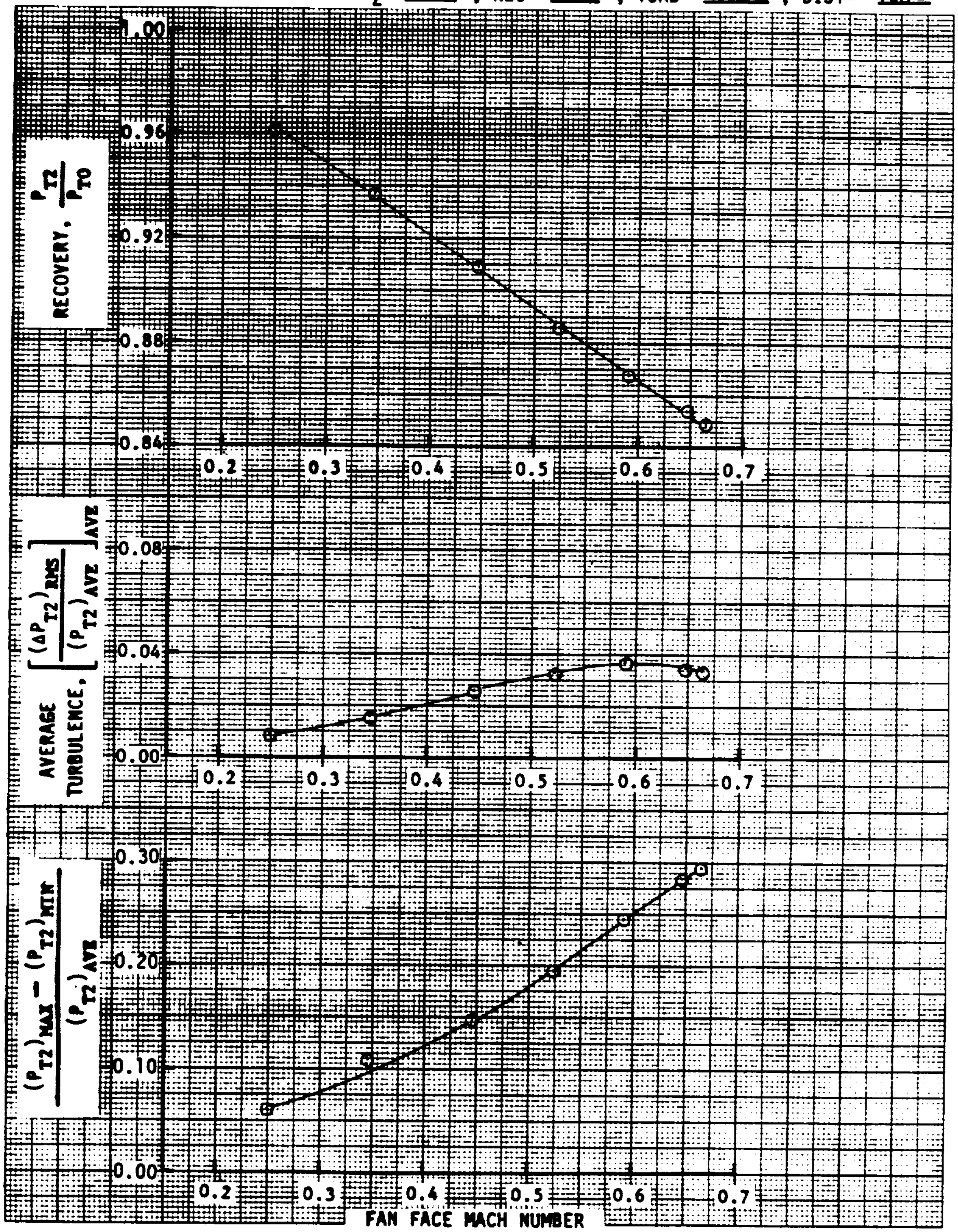
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3262-3267
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .906 ; TURB= .031 ; DIST= .186



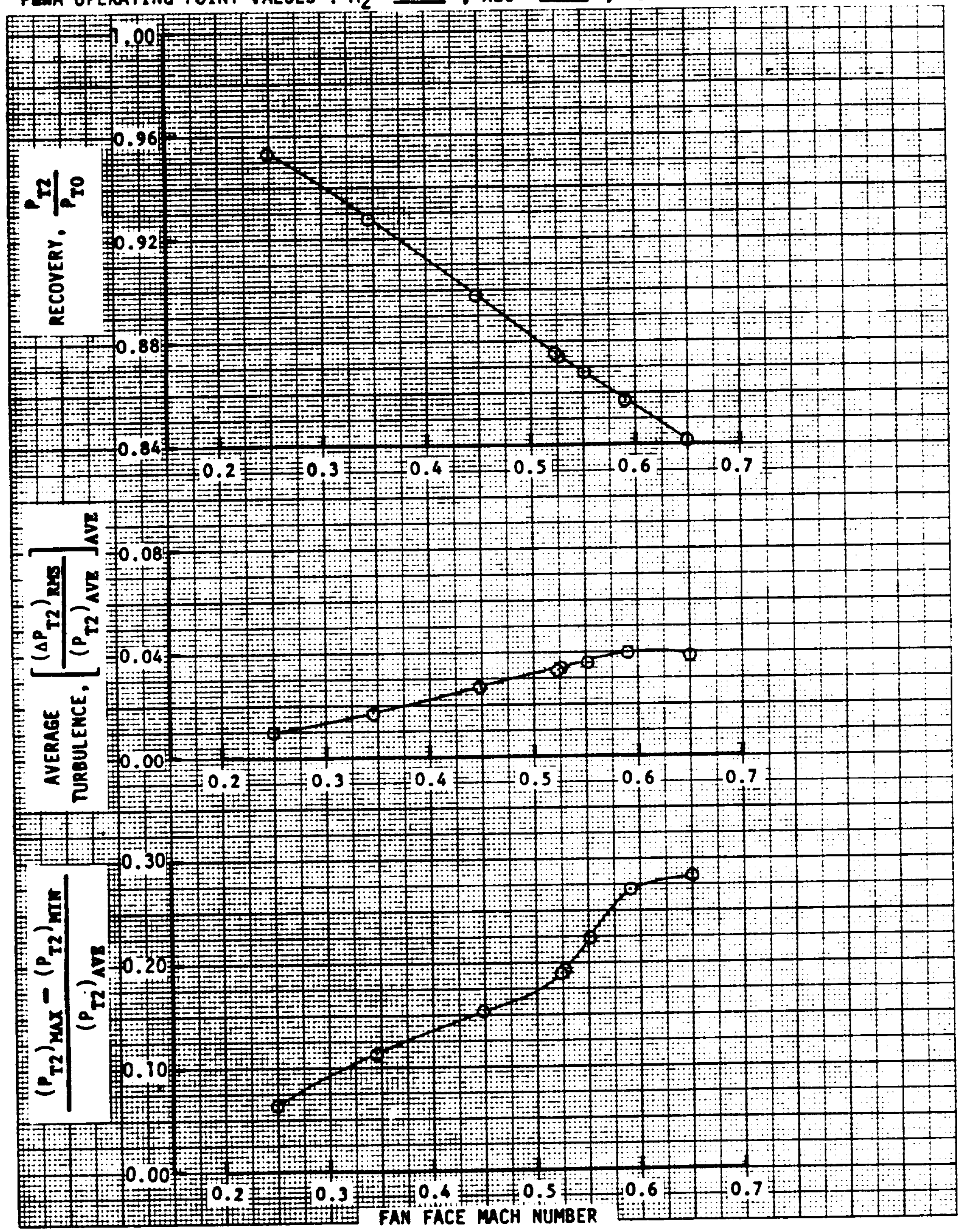
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3268-3274
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .898 ; TURB= .027 ; DIST= .203



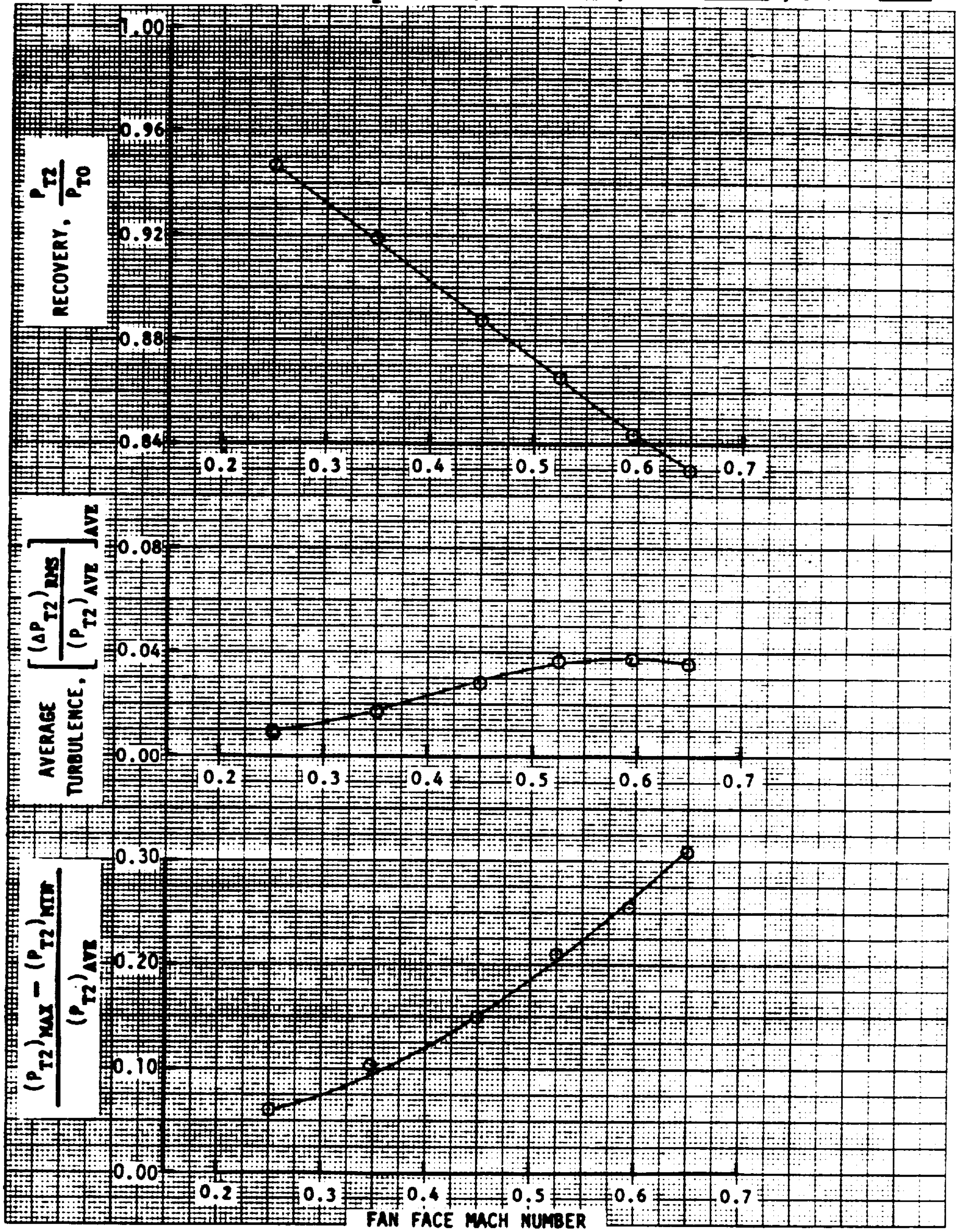
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3275-3281
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .885 ; TURB= .034 ; DIST= .202



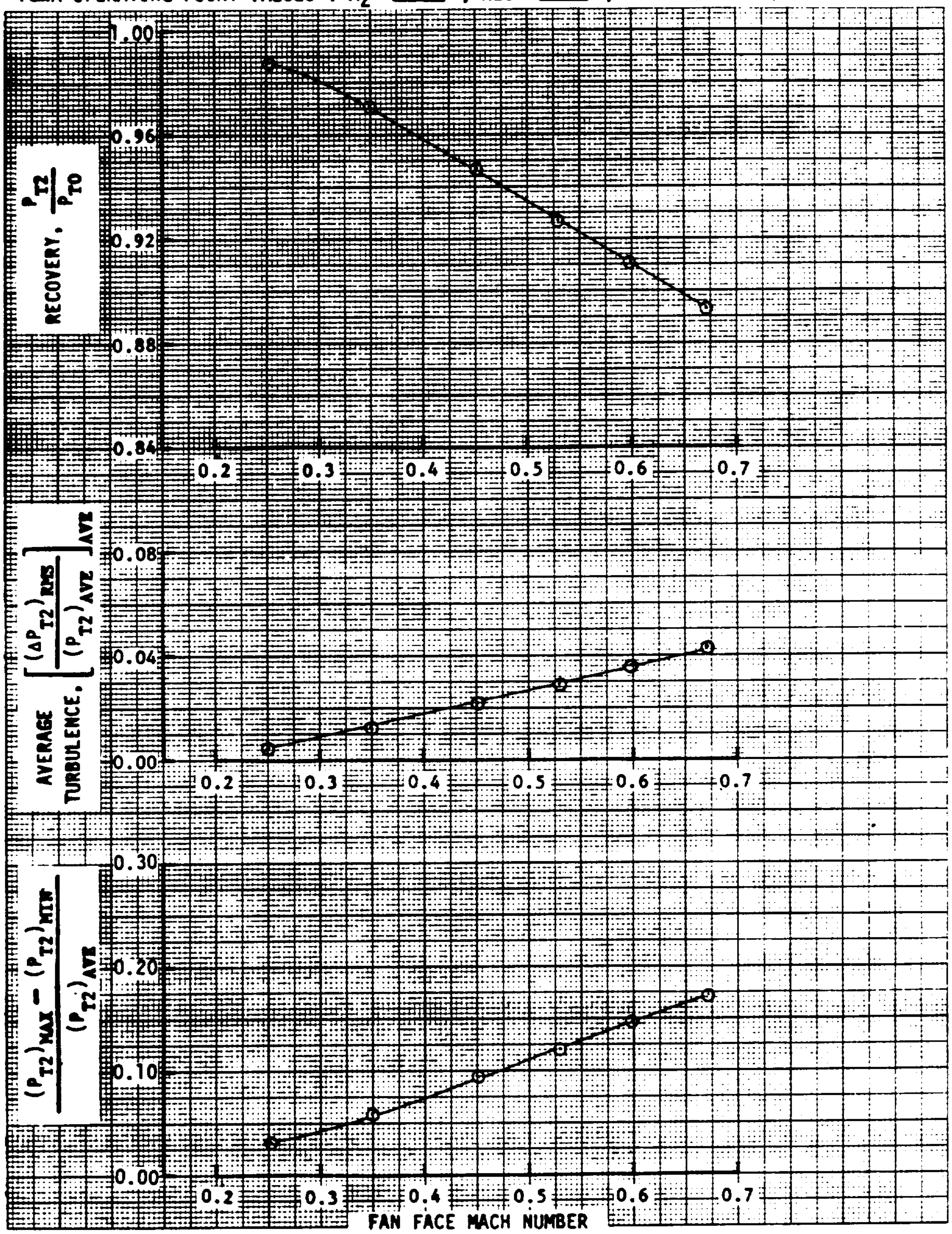
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3282-3289
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .873 ; TURB= .033 ; DIST= .193



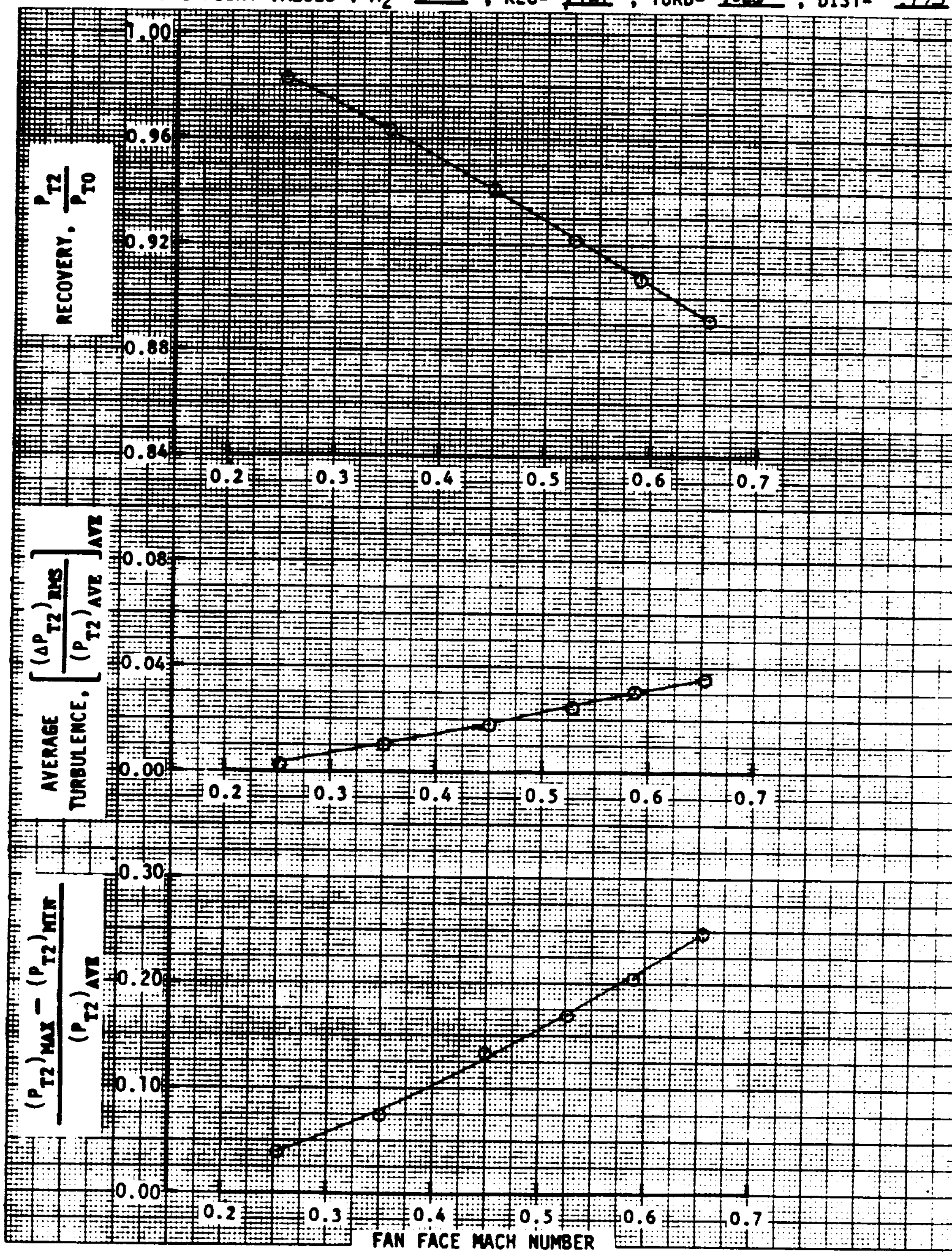
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3290-3295
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .863 ; TURB= .036 ; DIST= .208



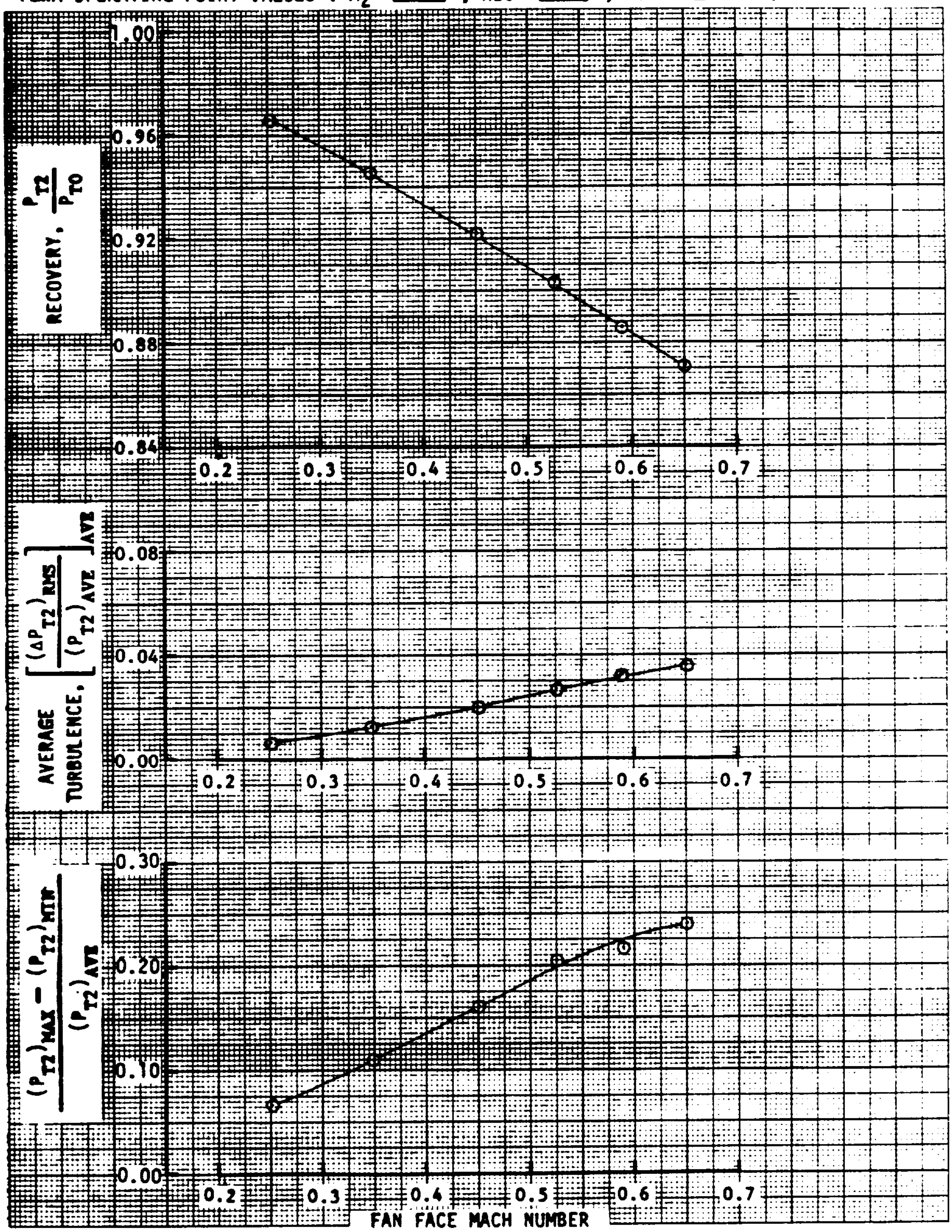
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3296-3301
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .927 ; TURB= .029 ; DIST= .122



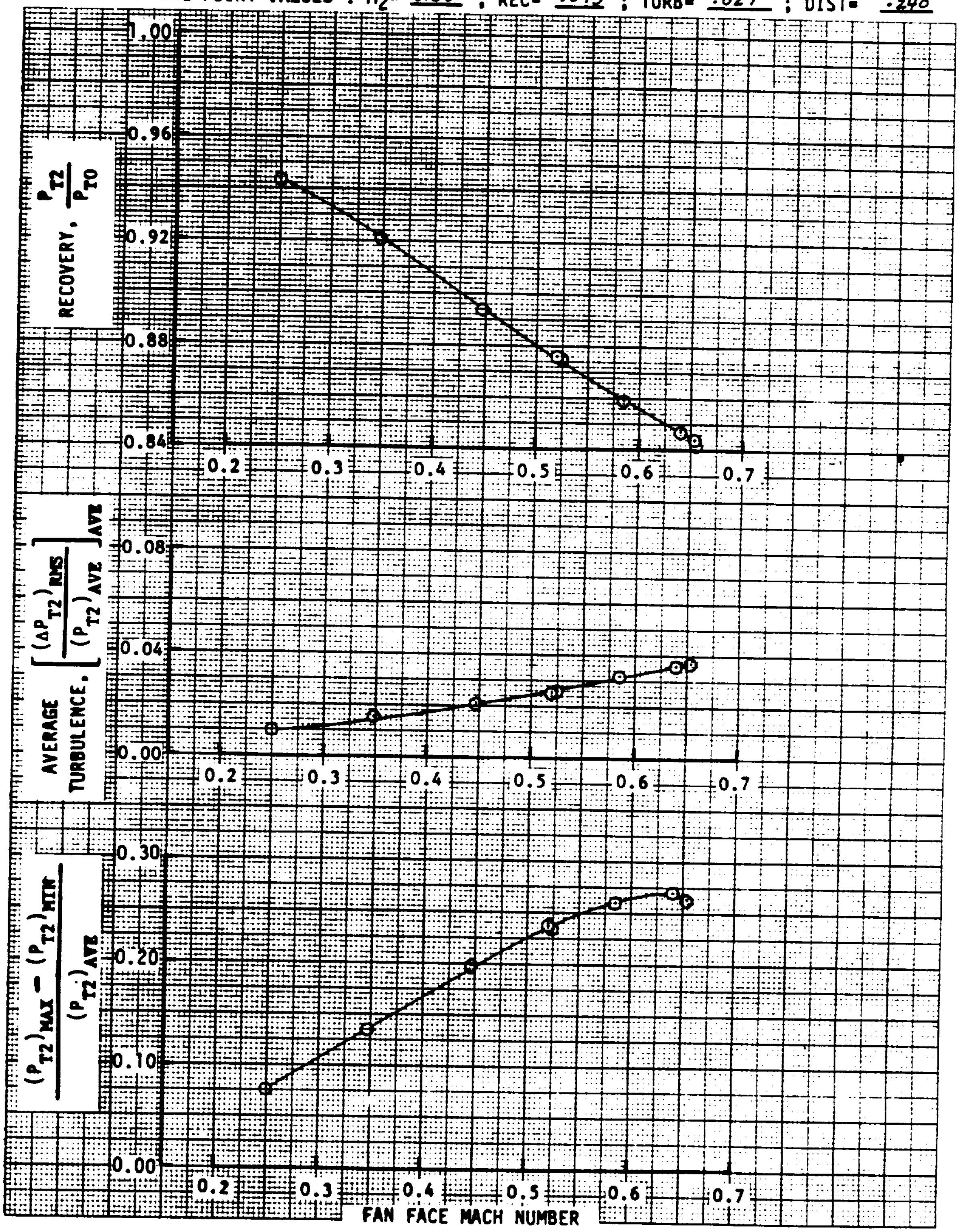
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3302-3307
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .921 ; TURB= .026 ; DIST= .173



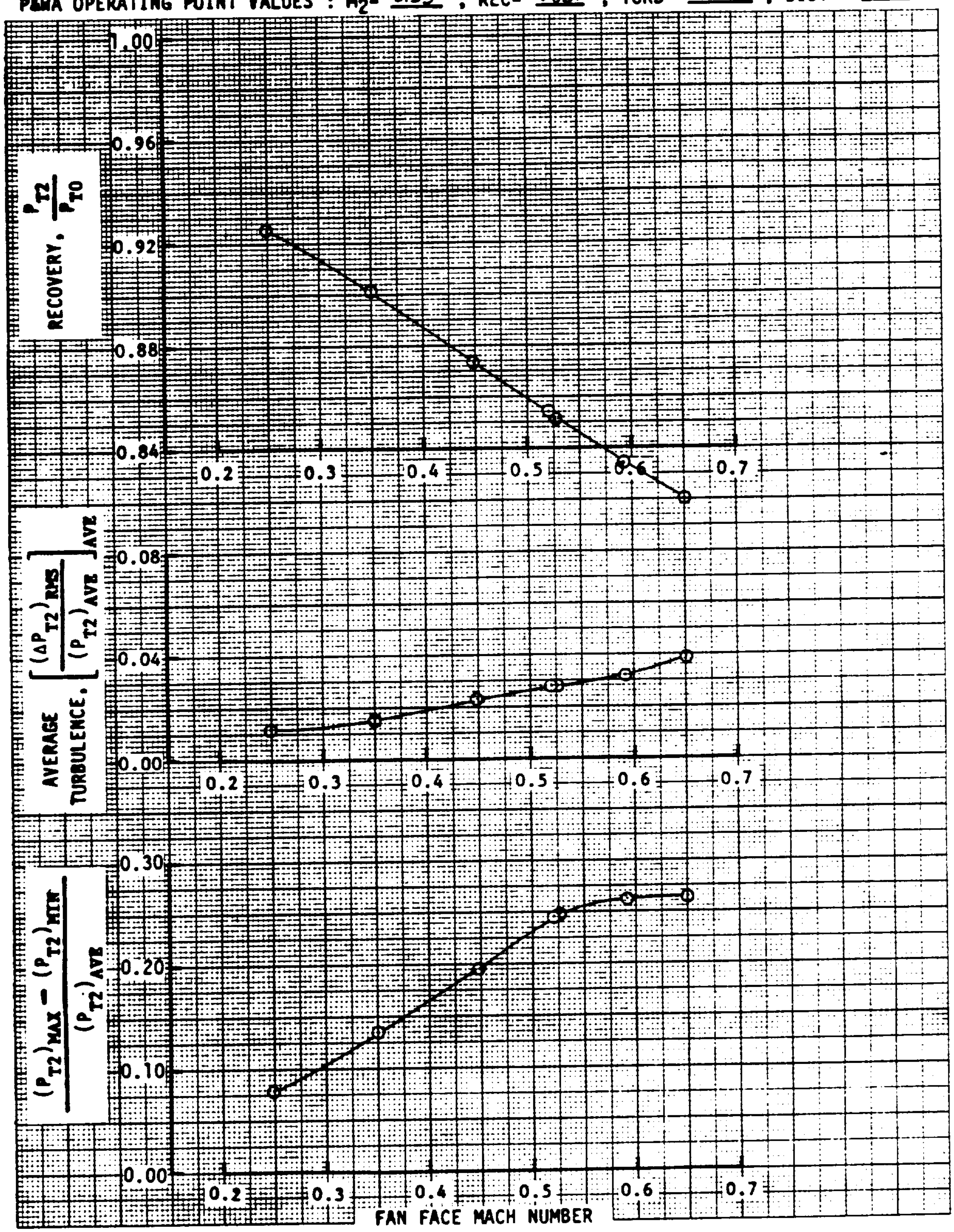
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3308-3314
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .901 ; TURB= .027 ; DIST= .202



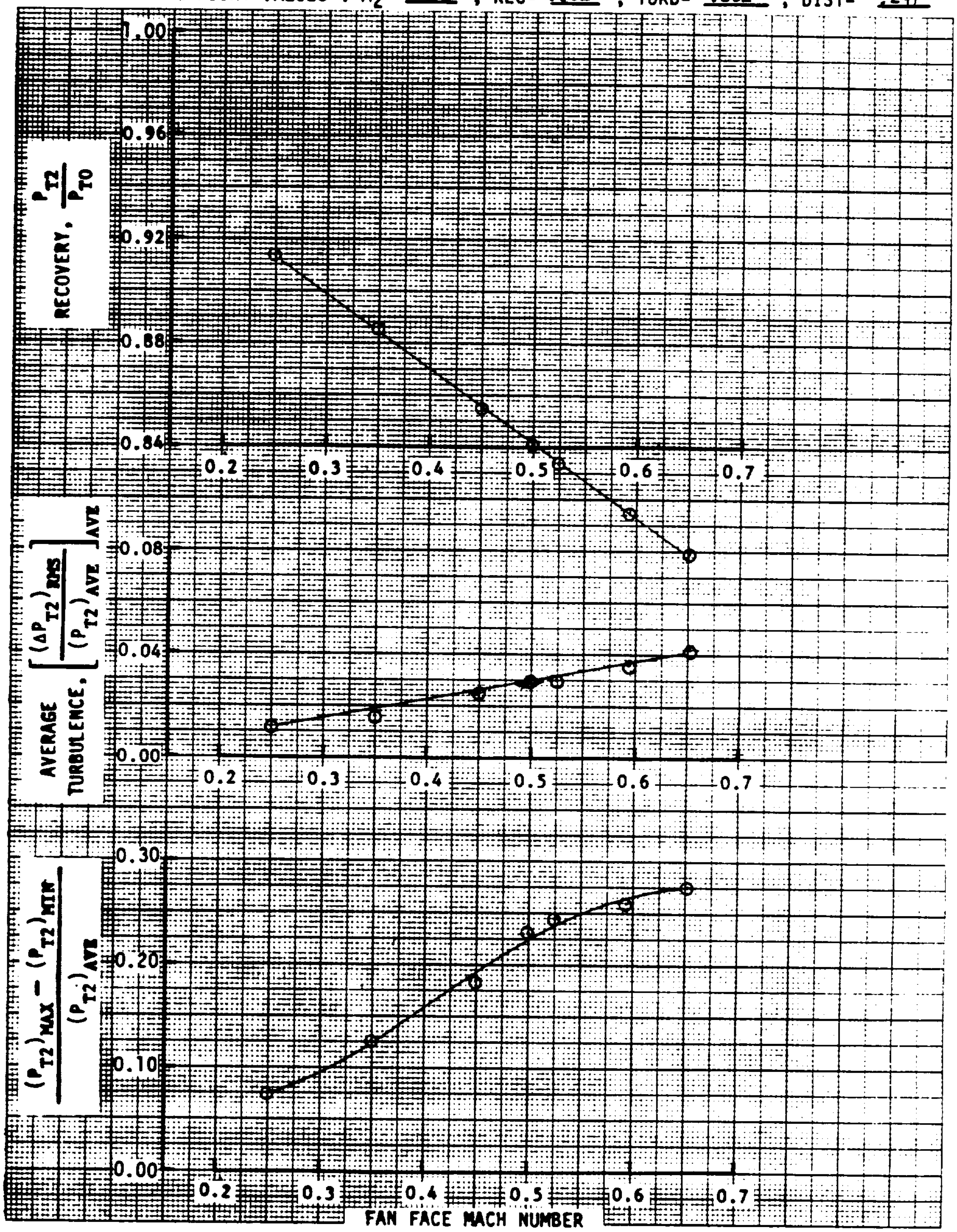
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3315-3323
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .873 ; TURB= .027 ; DIST= .240



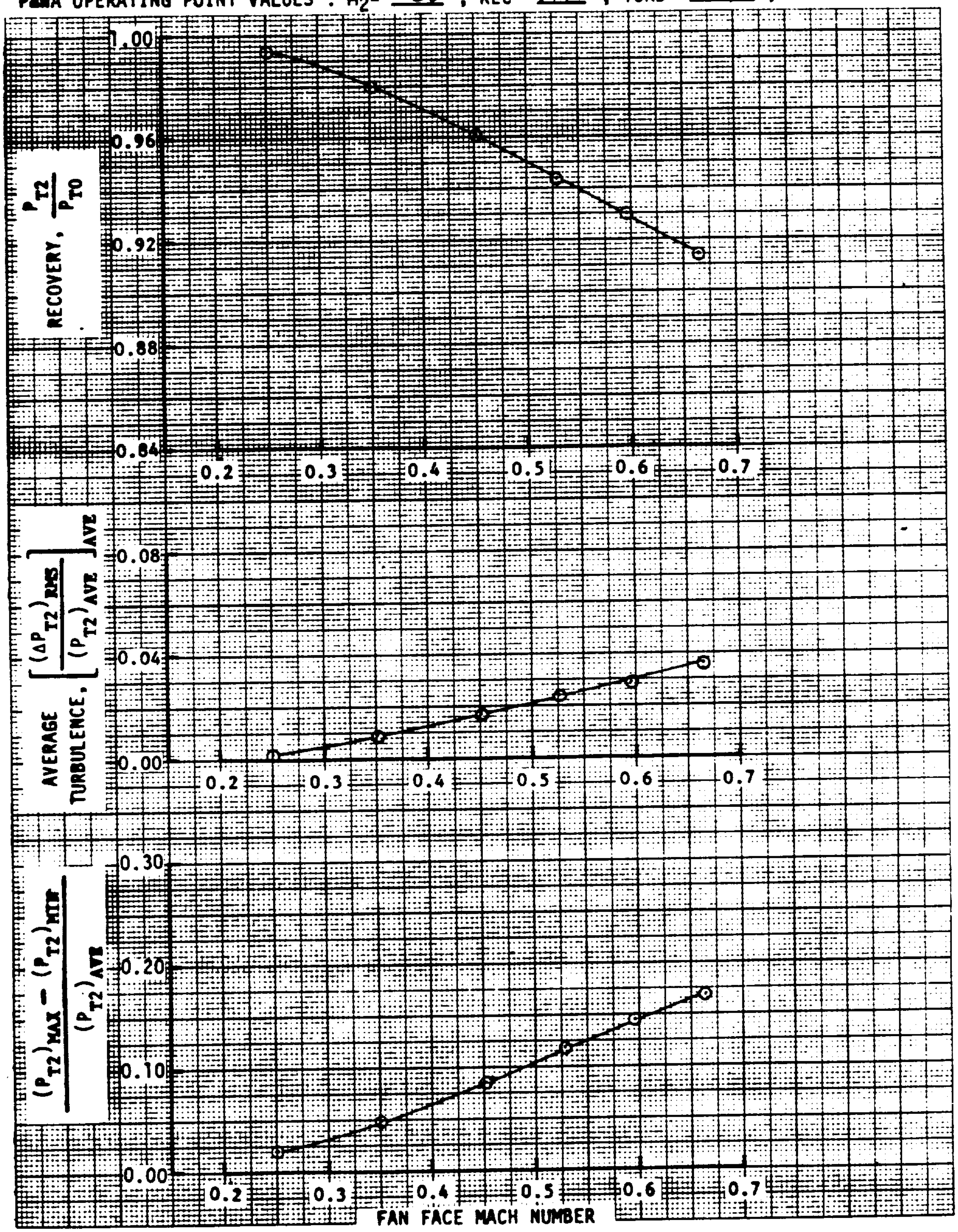
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3324-3330
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .851 ; TURB= .028 ; DIST= .248



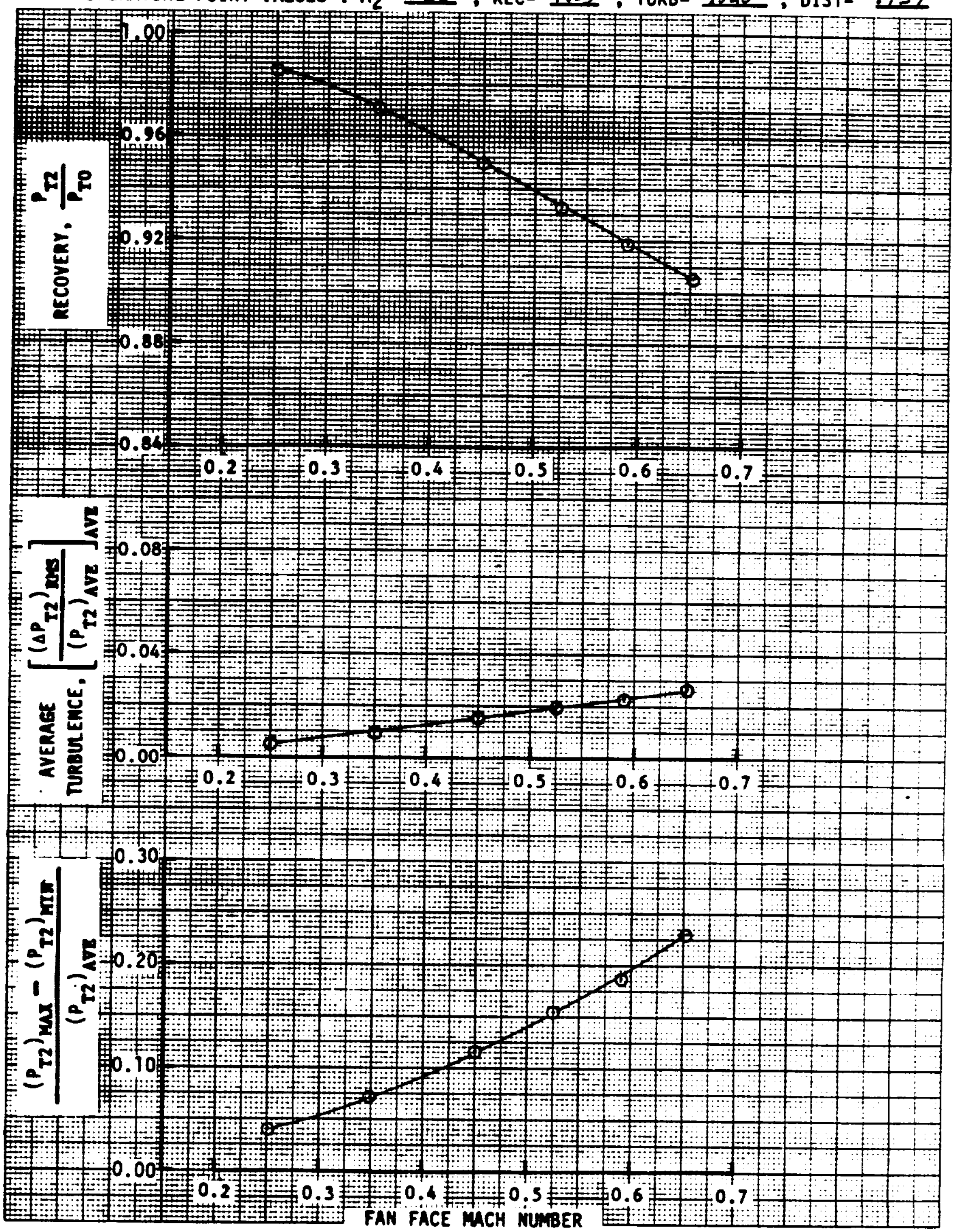
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3331-3337
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .832 ; TURB= .032 ; DIST= .241



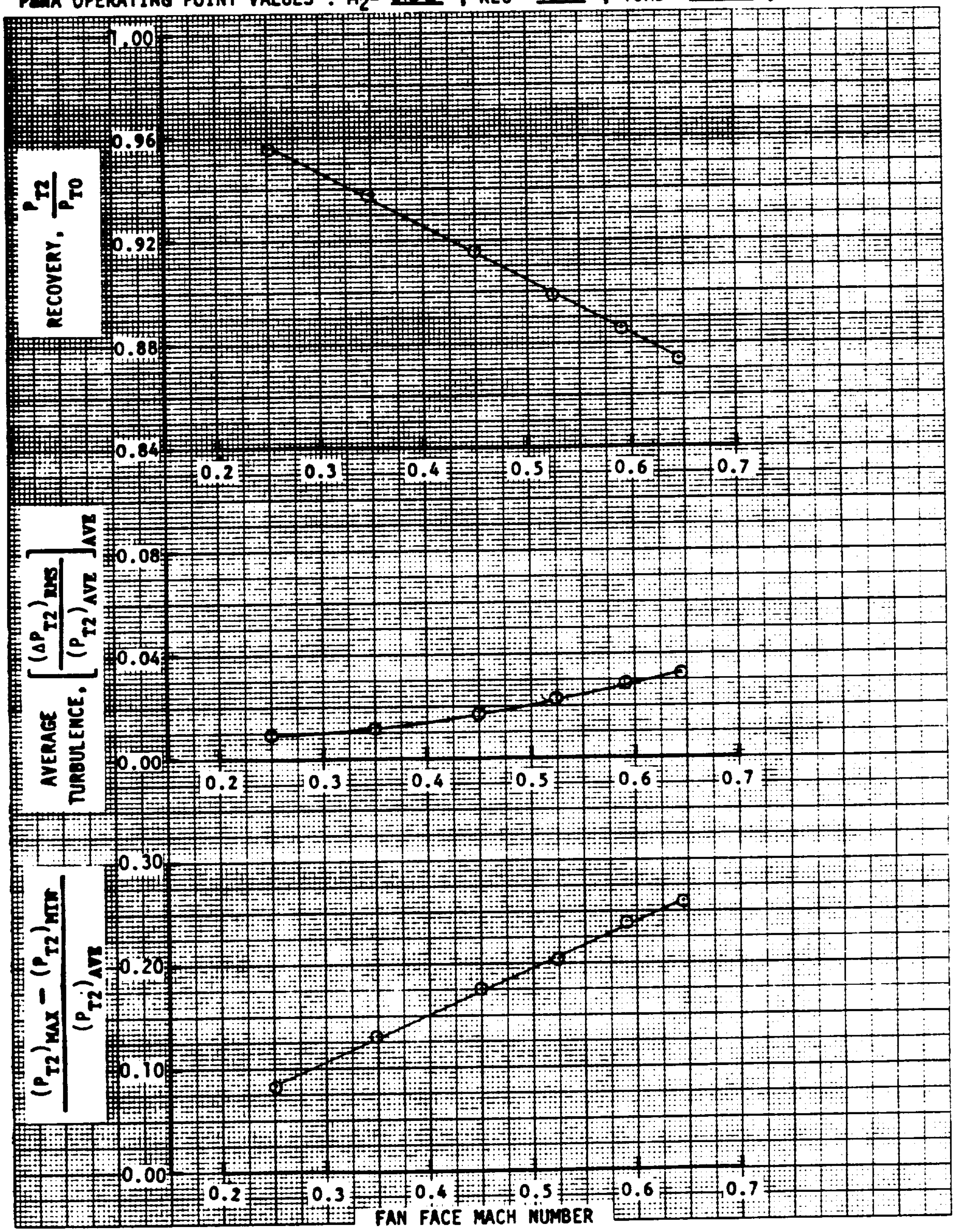
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3338-3343
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .024 ; DIST= .117



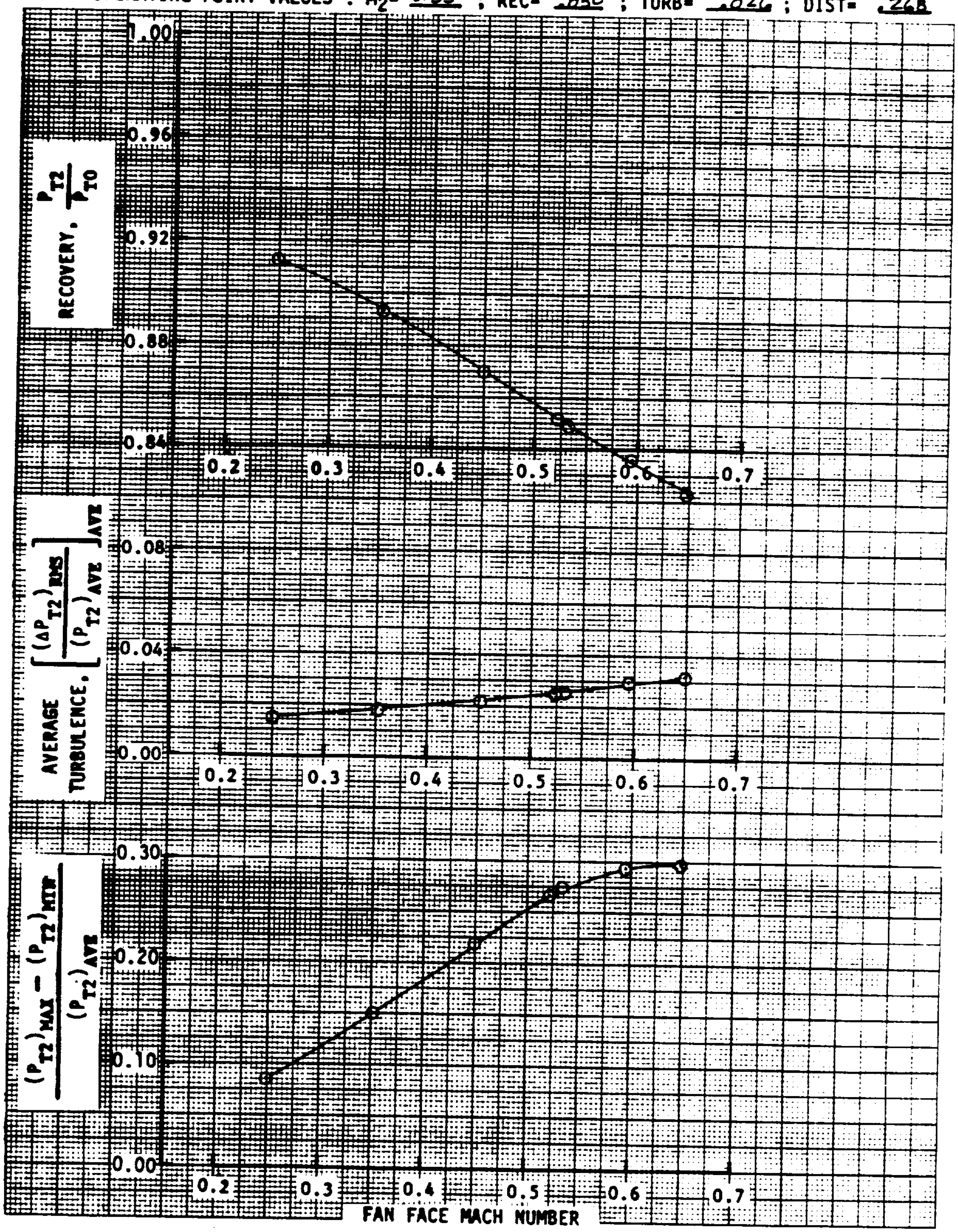
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3344-3349
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .933 ; TURB= .020 ; DIST= .157



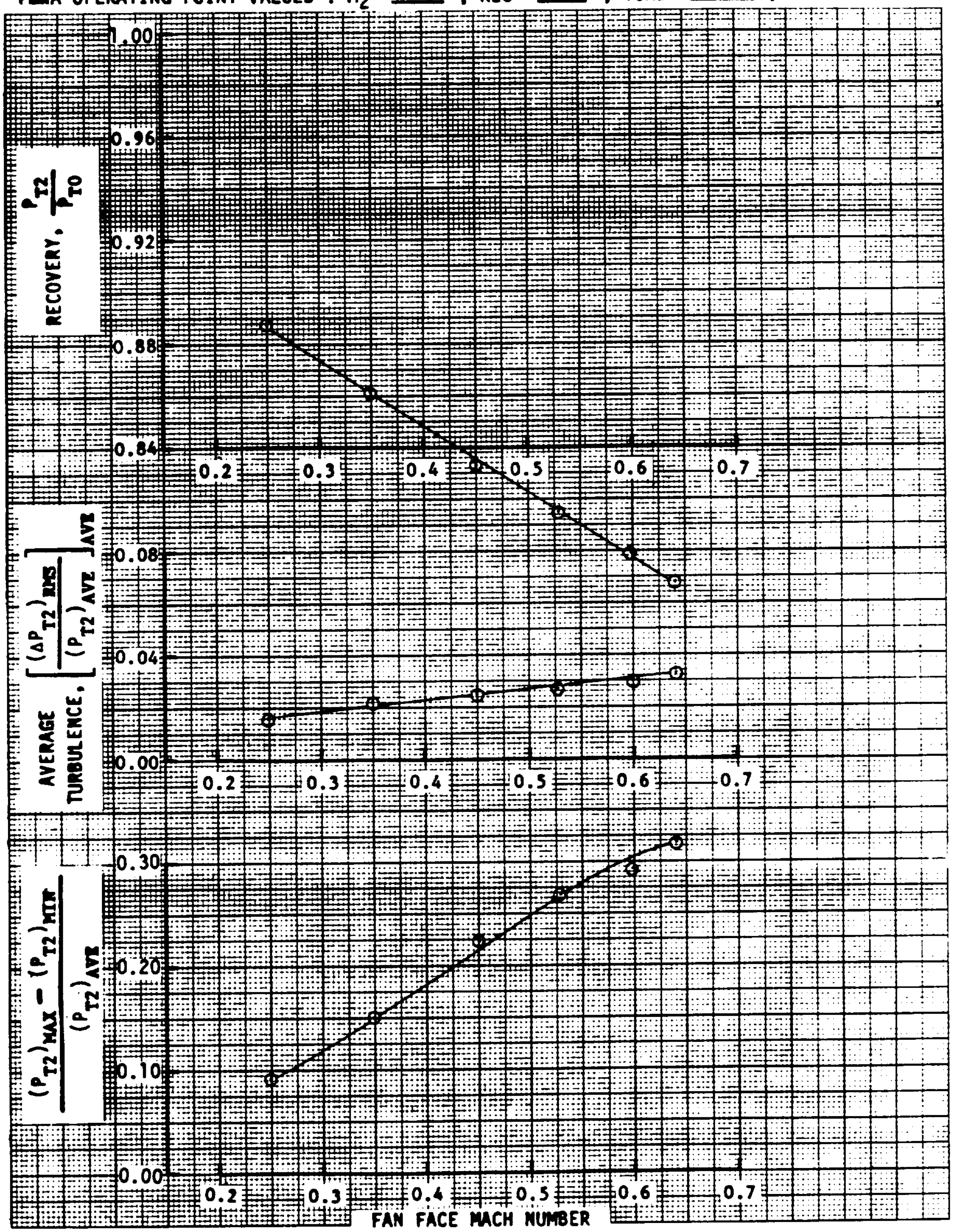
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3350-3355
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .898 ; TURB= .023 ; DIST= .209



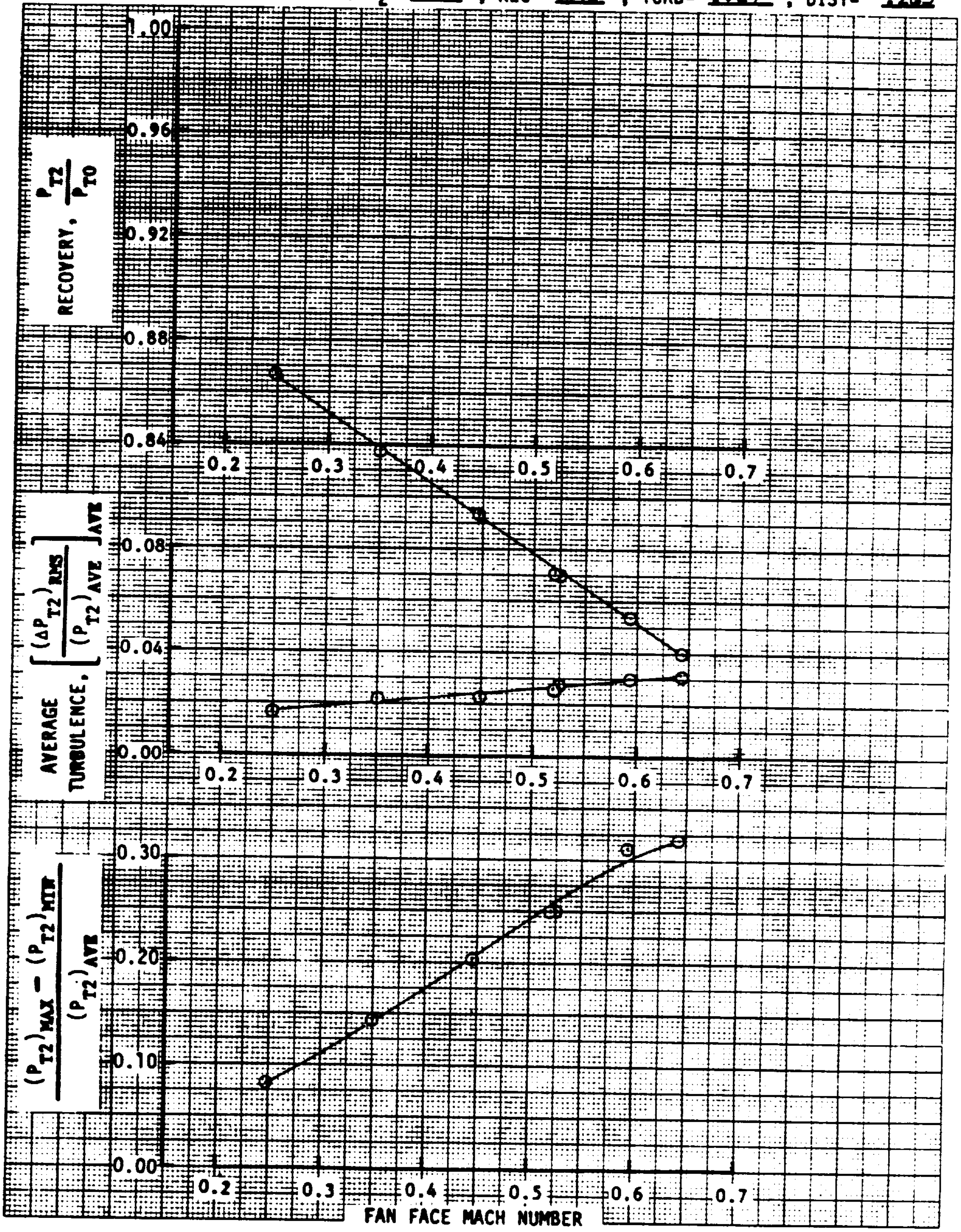
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3356-3363
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .850 ; TURB= .026 ; DIST= .268



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3364-3369
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .815 ; TURB= .028 ; DIST= .268



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19 ; READING NUMBERS 3370-3376
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .790 ; TURB= .027 ; DIST= .263



C-9

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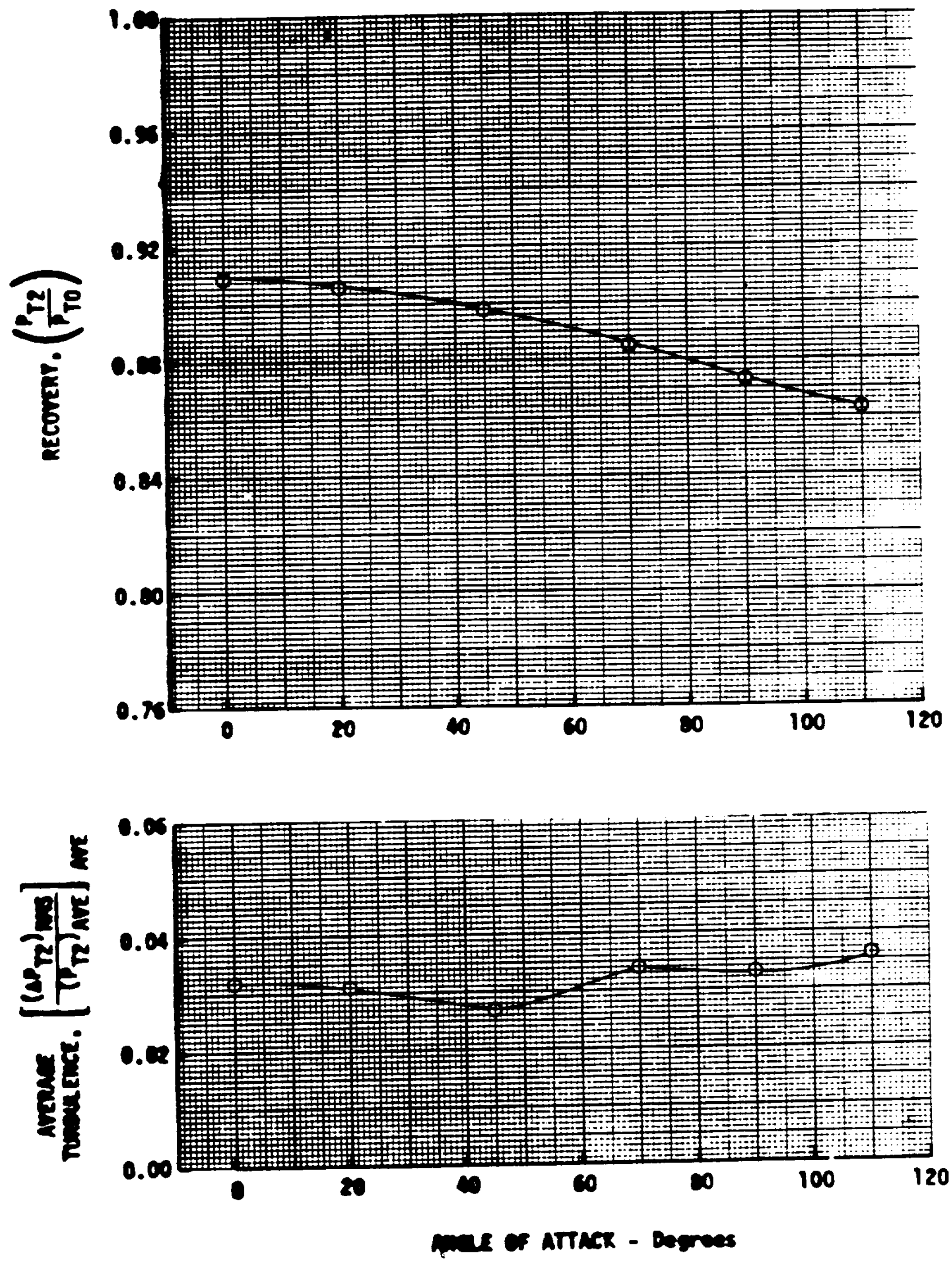
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19; DESCRIPTION 90° Counter Clockwise Rotation, Sharp Lip Inlet



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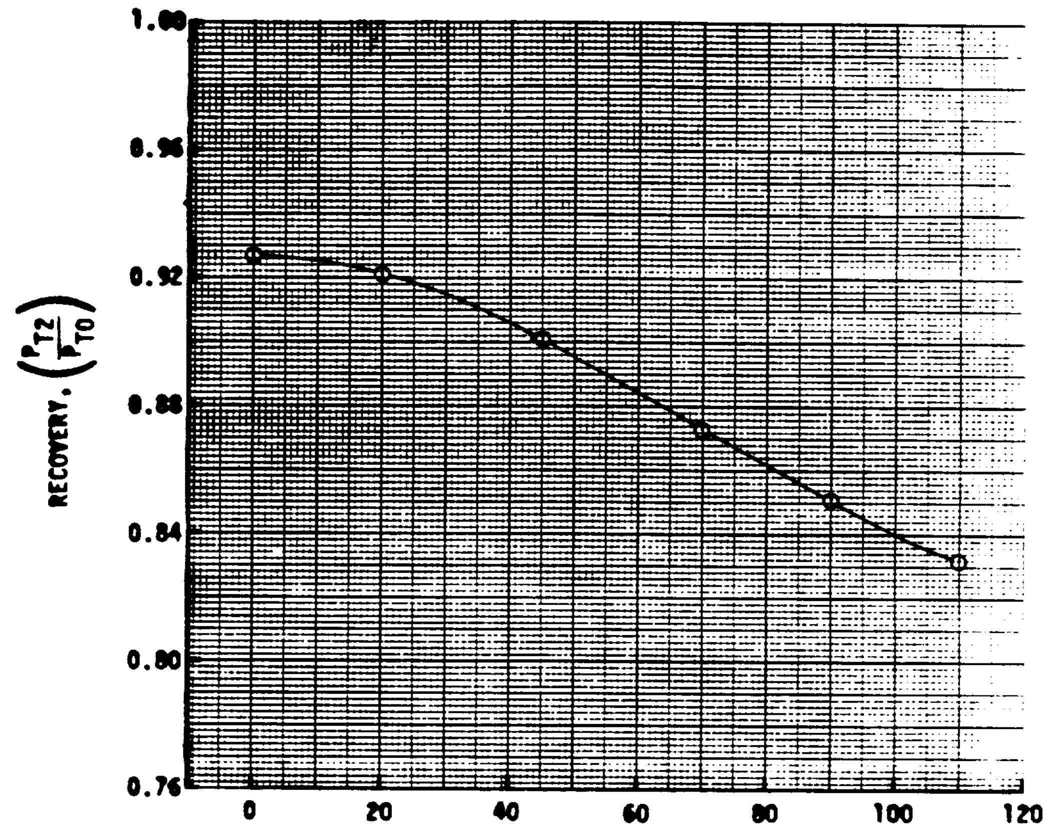
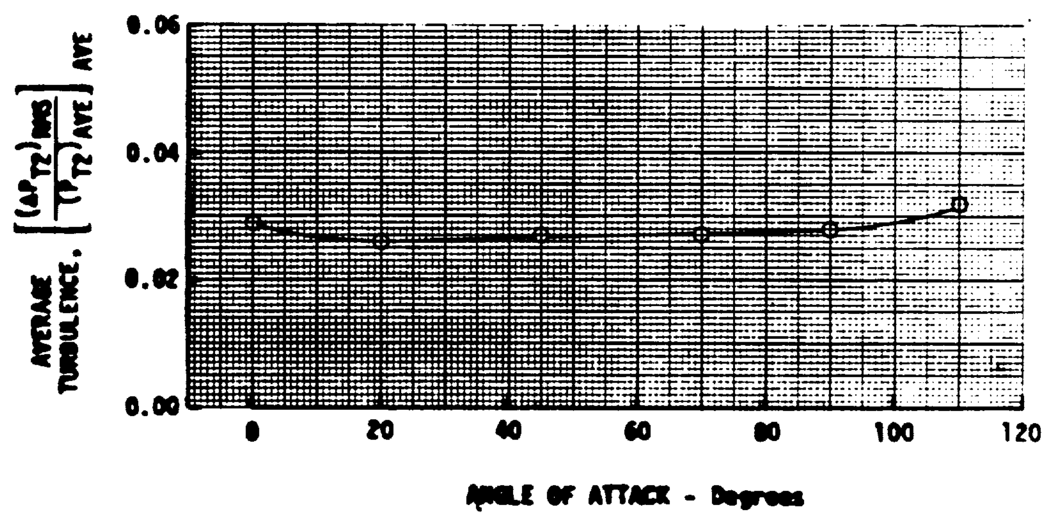
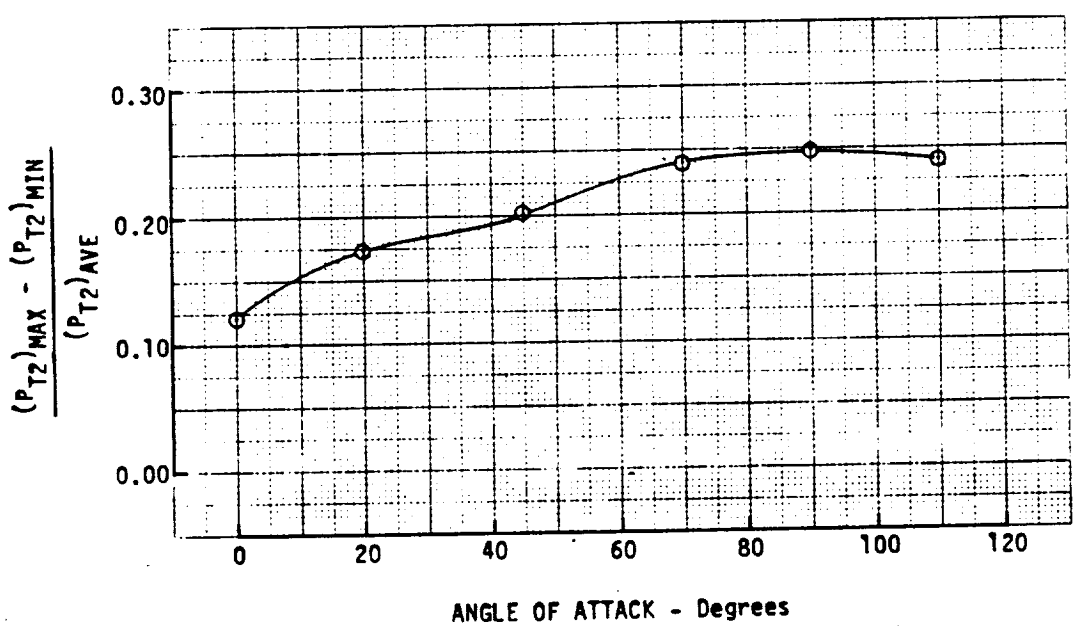
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19 ; DESCRIPTION 90° CCW Rotation, Sharp Lip Inlet





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 19 ; DESCRIPTION 90° Counter Clockwise Rotation,
Sharp Lip Inlet



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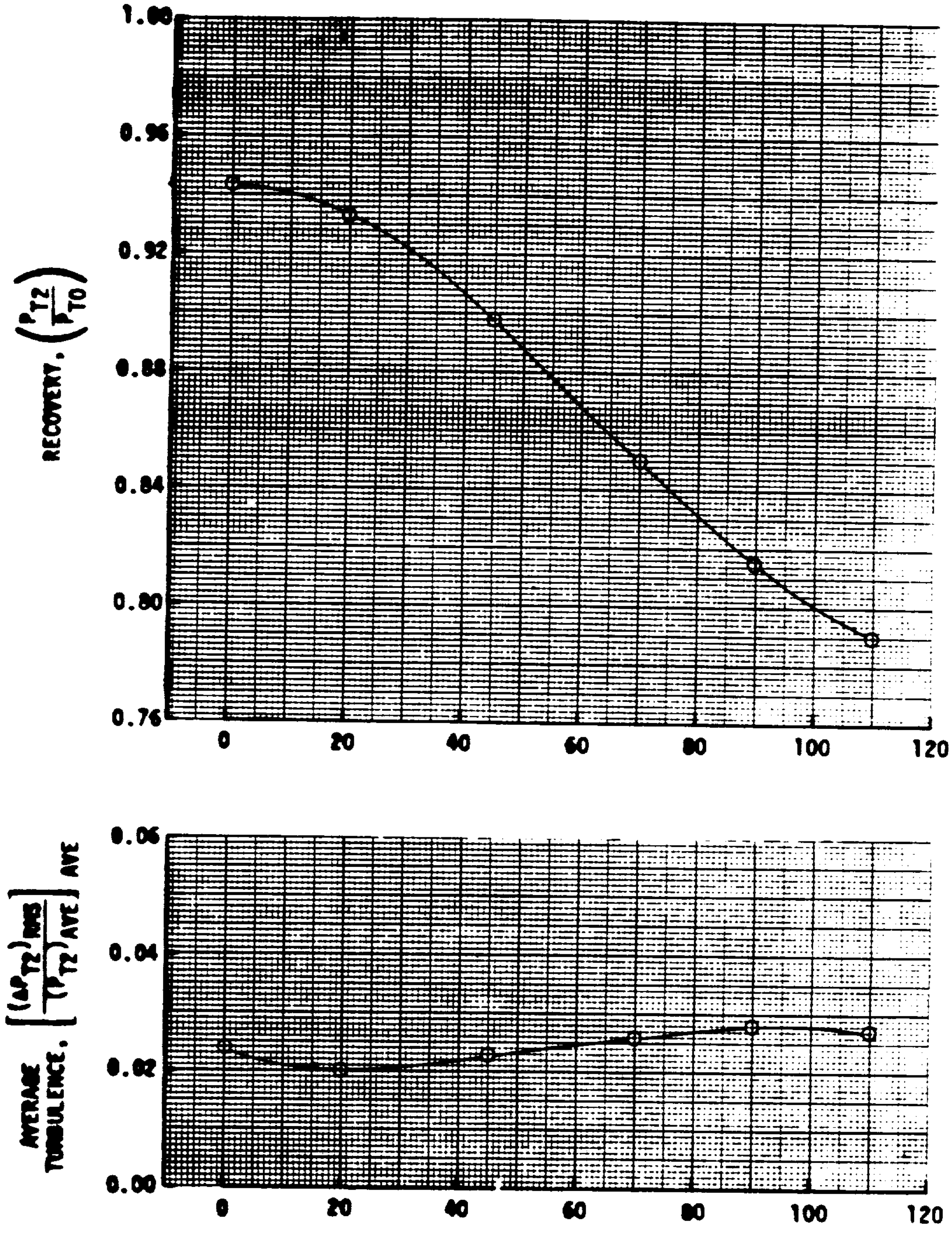
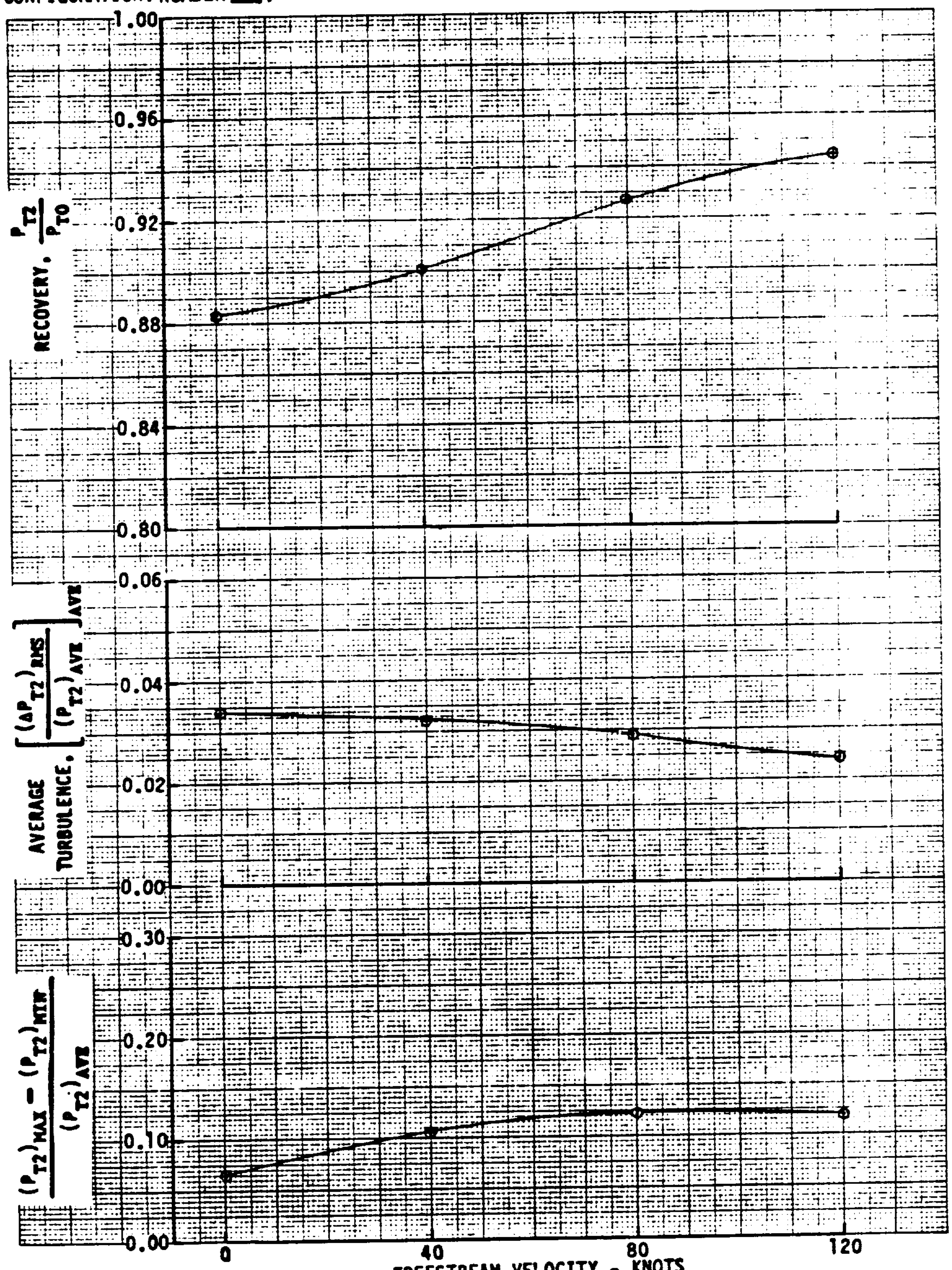
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

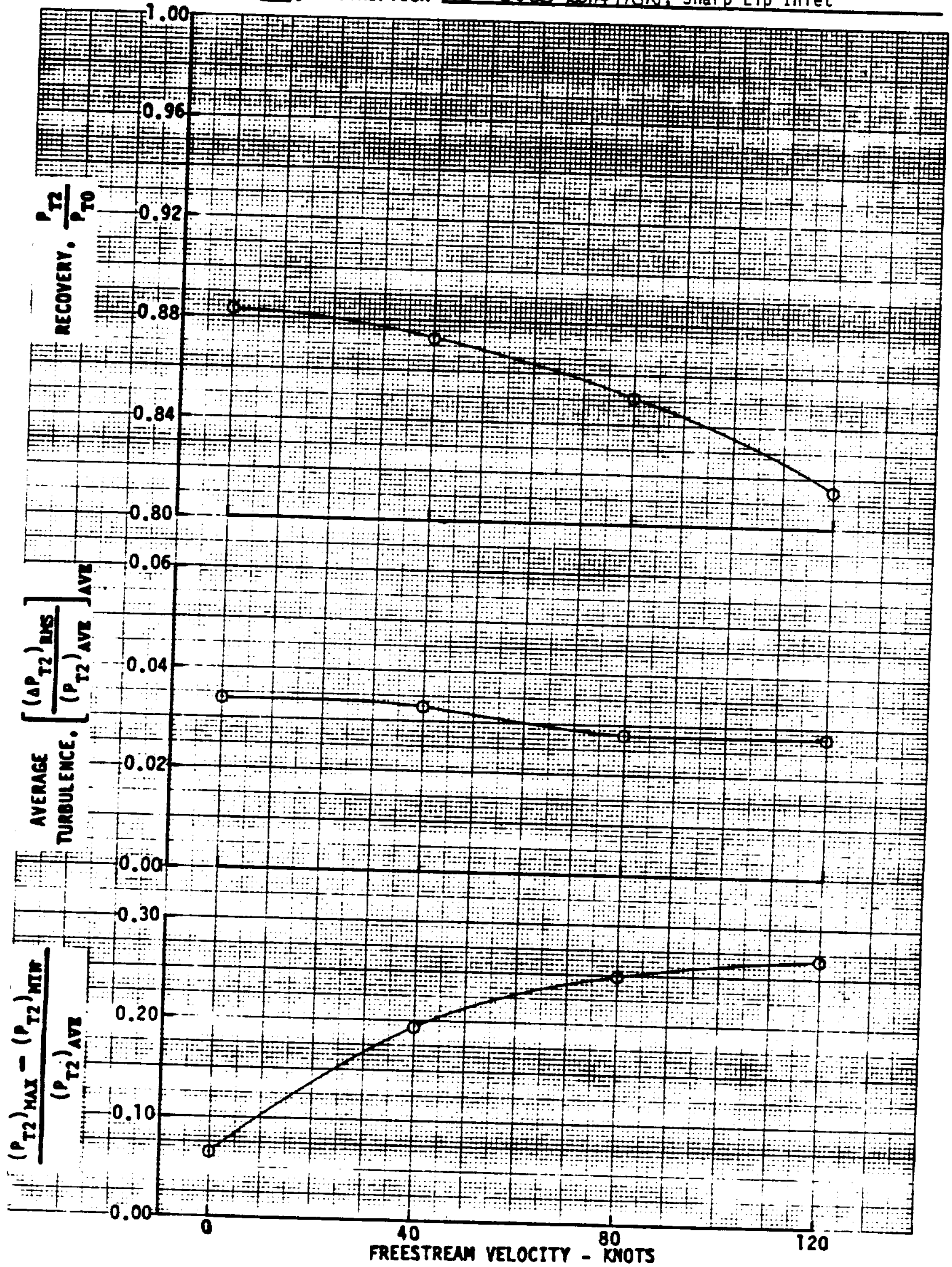
CONFIGURATION: NUMBER 19 ; DESCRIPTION 90° CCW Rotation, Sharp Lip Inlet



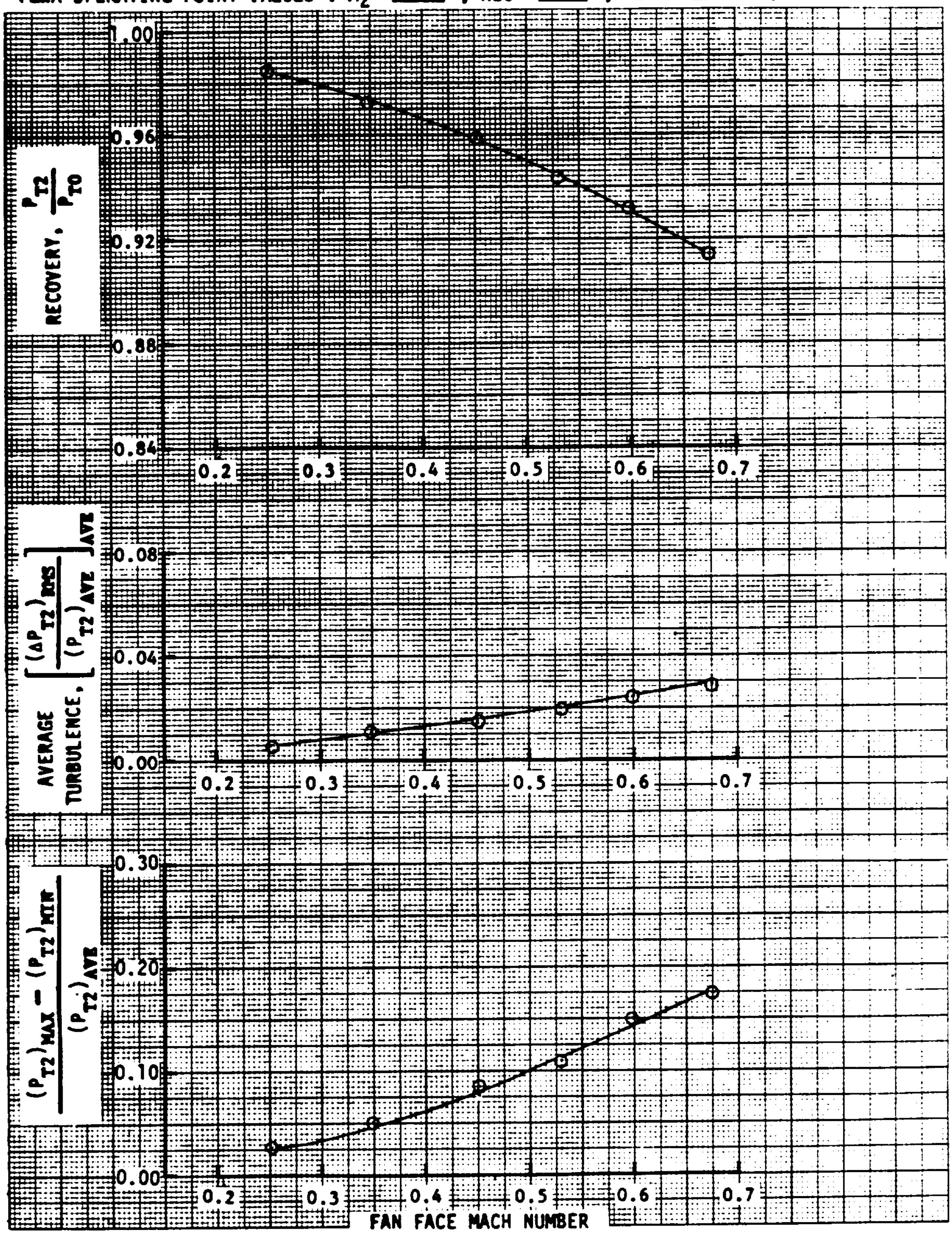
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = ____ DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 19; DESCRIPTION 90° COUNTERCLOCKWISE ROTATION, Sharp Lip Inlet



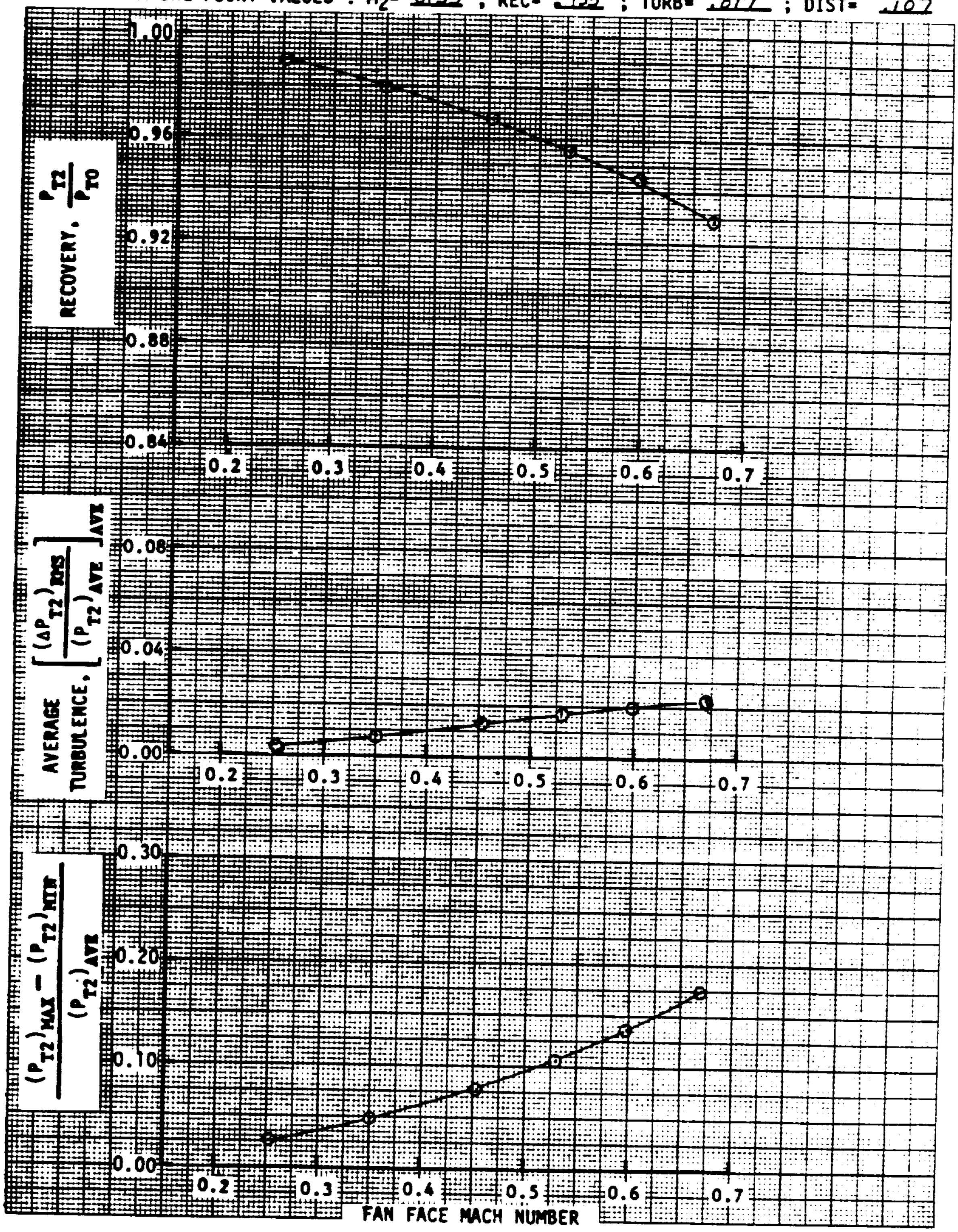
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 90 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 19 ; DESCRIPTION 90° CCW ROTATION, Sharp Lip Inlet



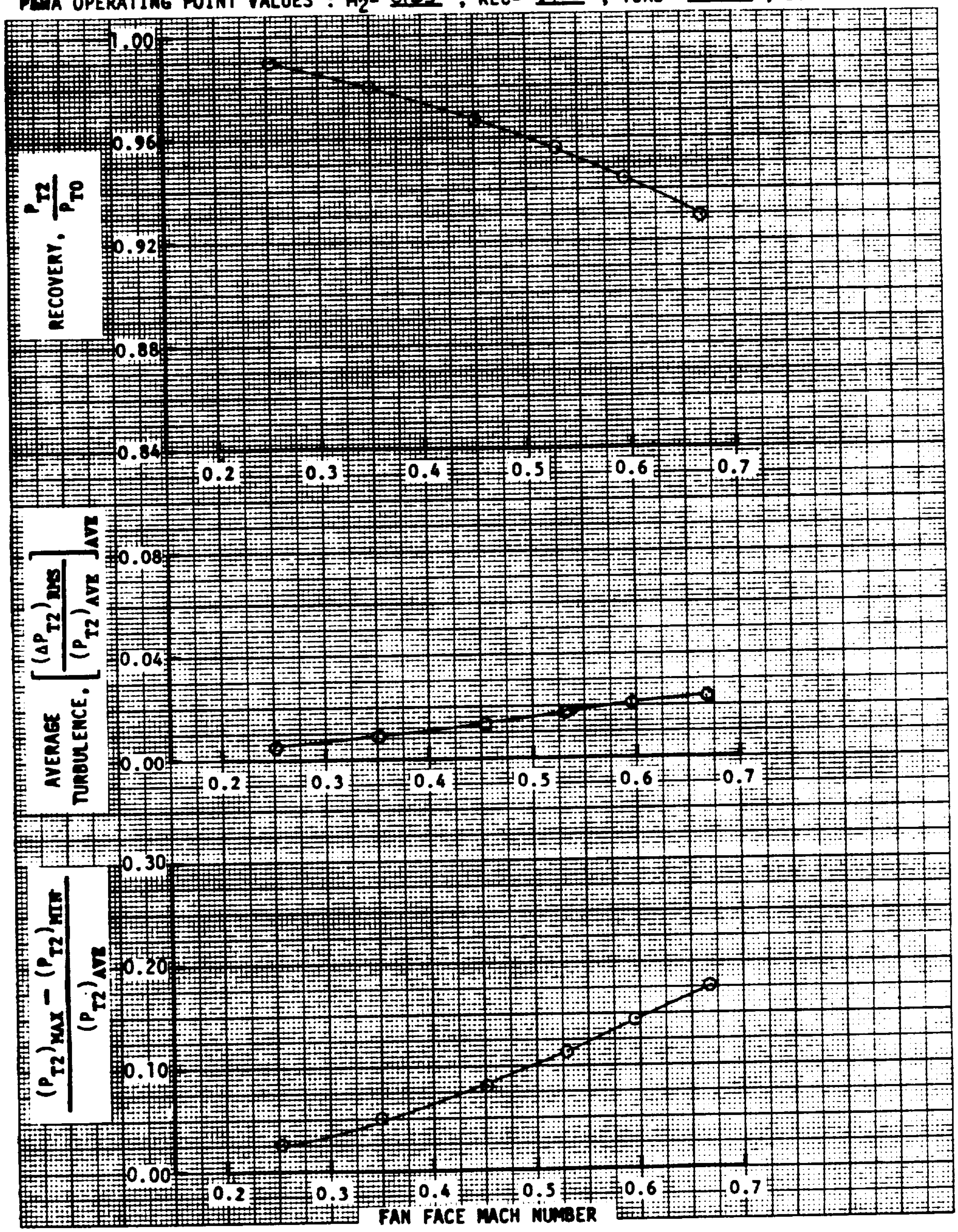
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3627-3633
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .020 ; DIST= .113



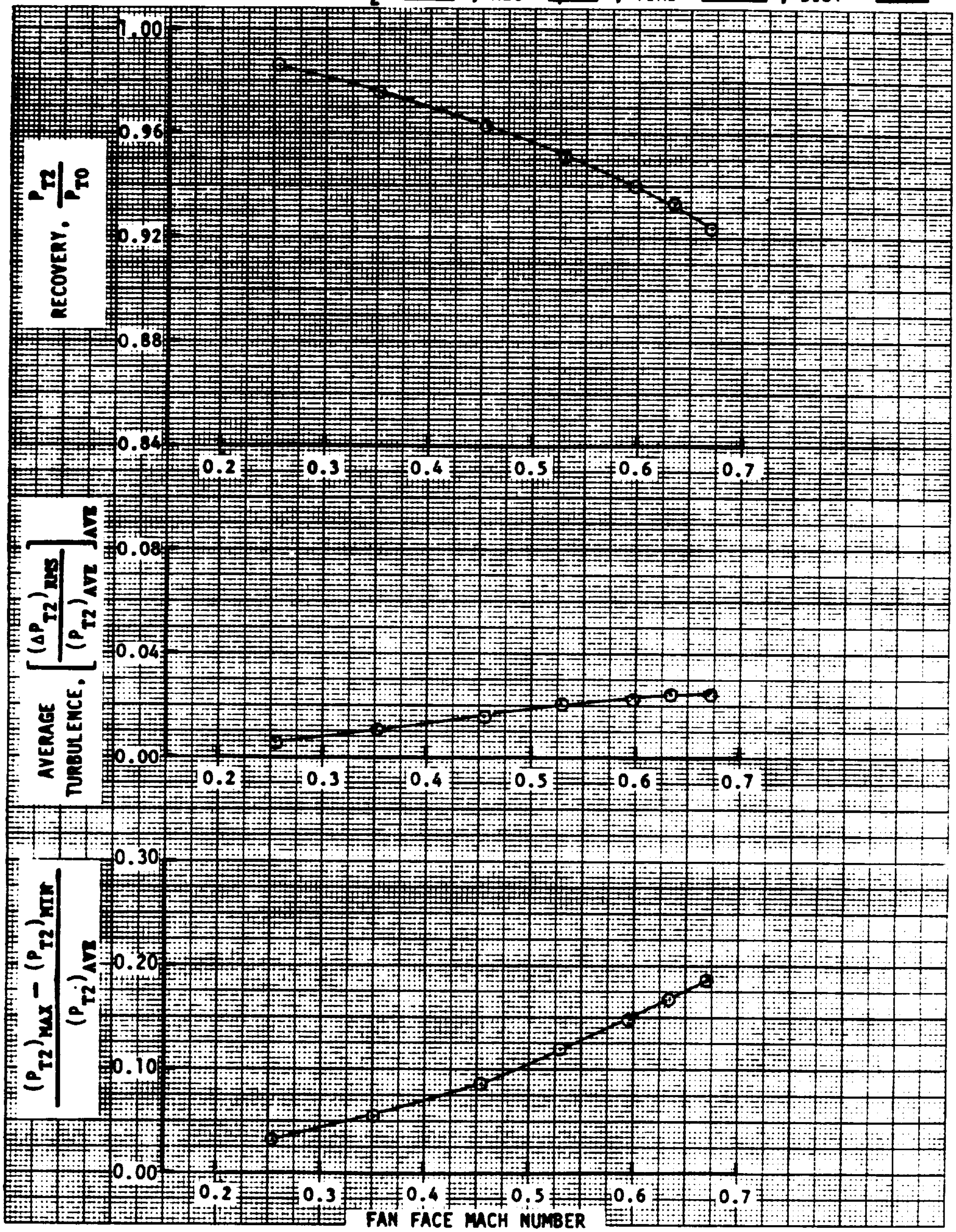
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3634-3639
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .017 ; DIST= .107



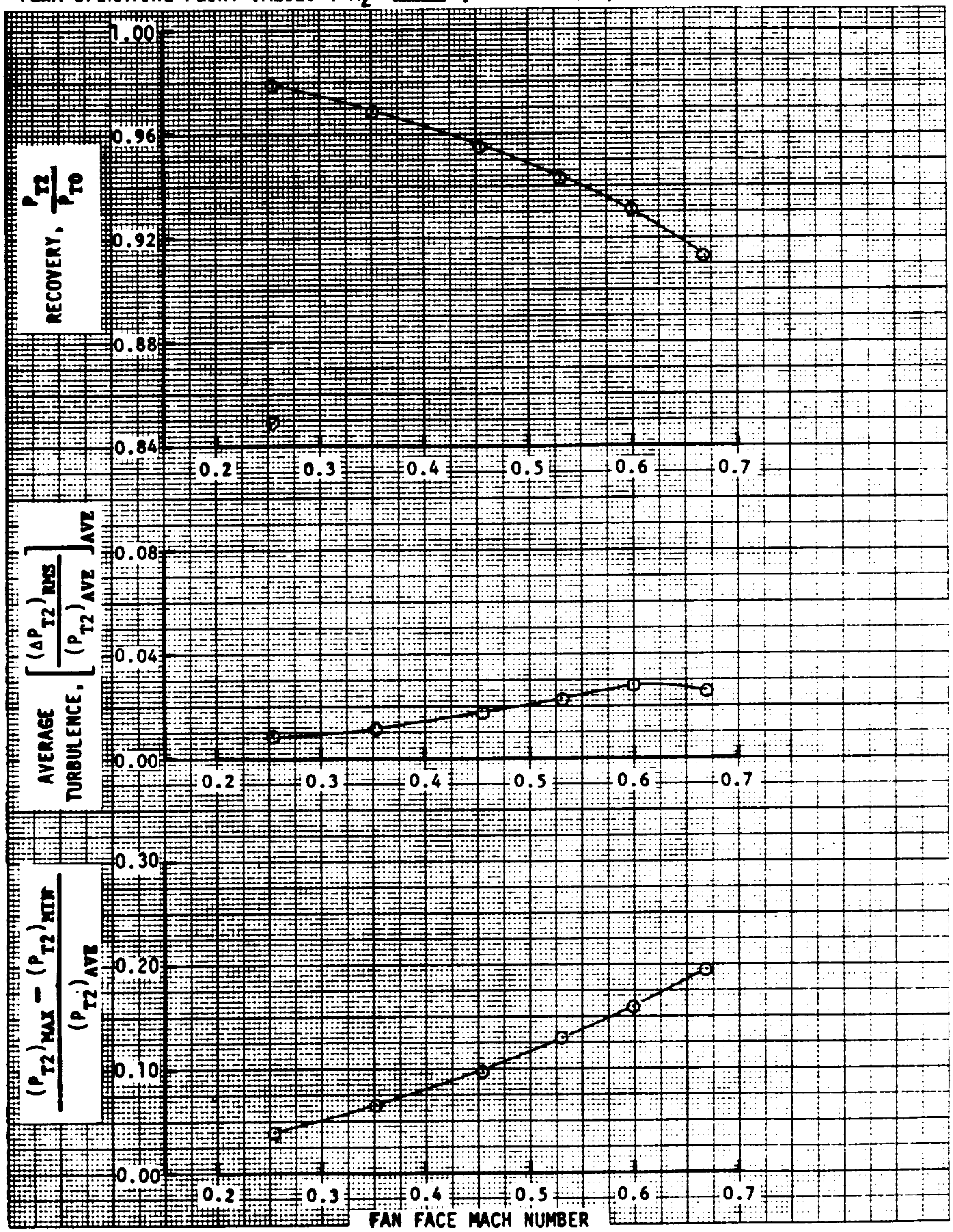
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3640-3645
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PEMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .017 ; DIST= .115



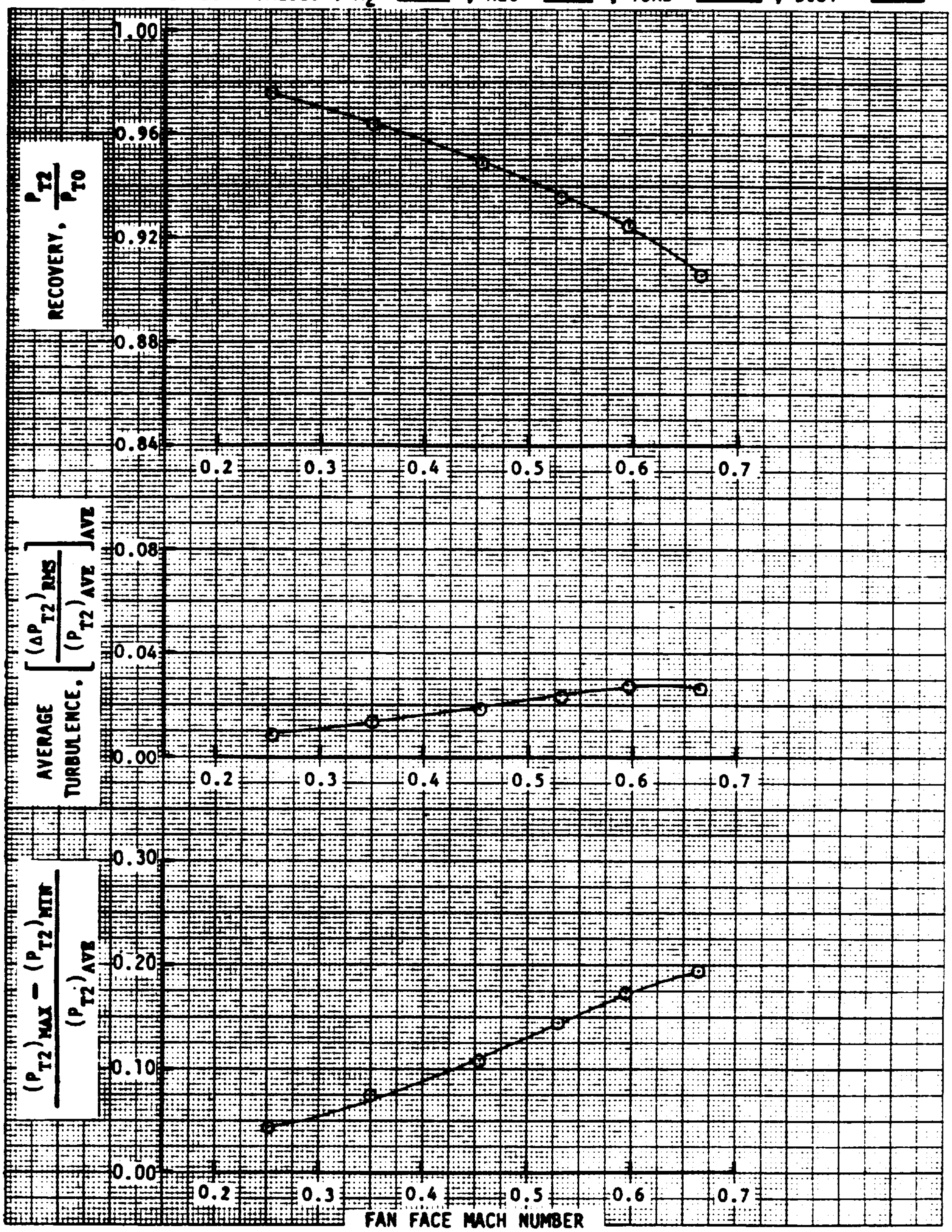
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3647-3653
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .951 ; TURB= .020 ; DIST= .119



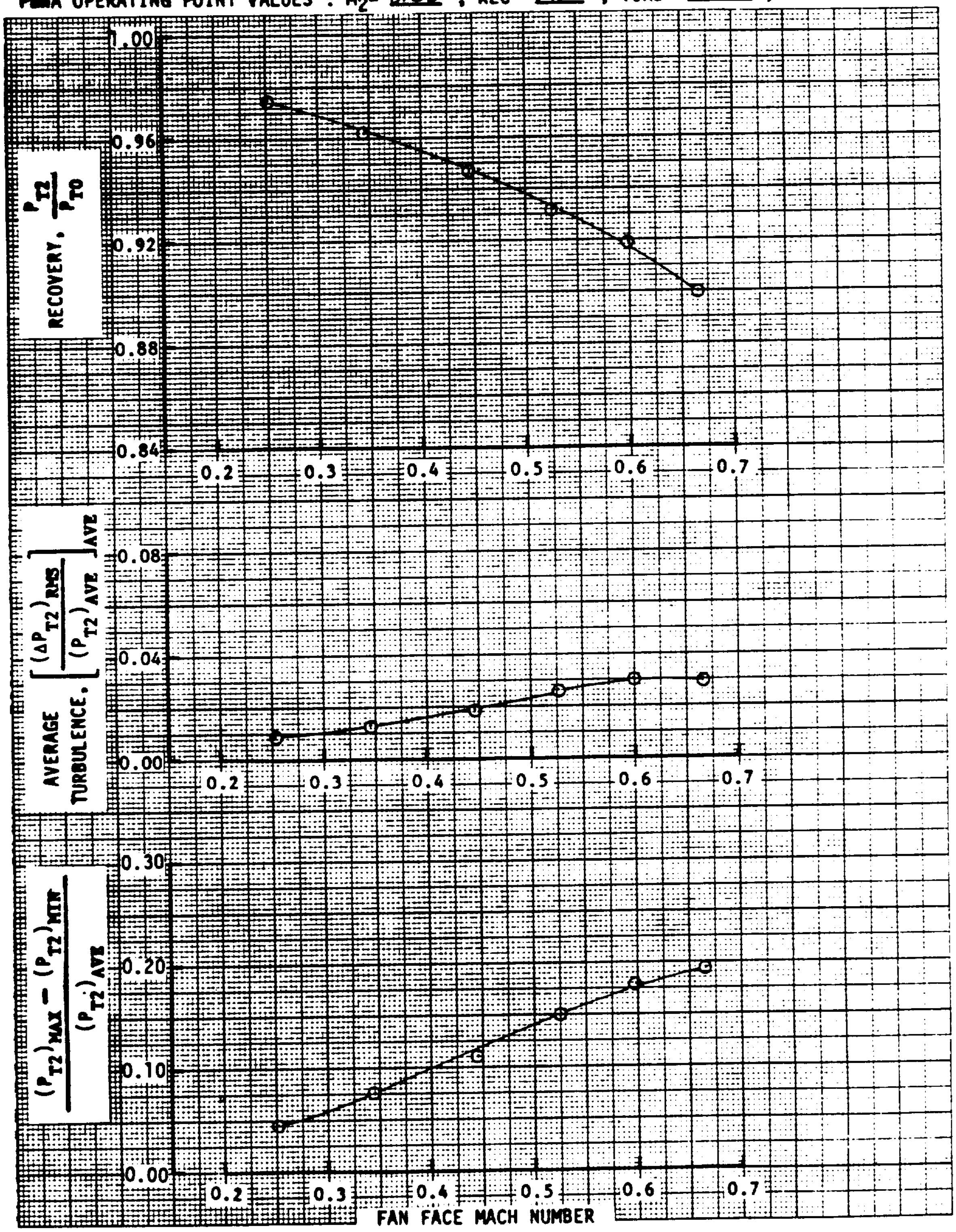
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3654-3659
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .943 ; TURB= .023 ; DIST= .130



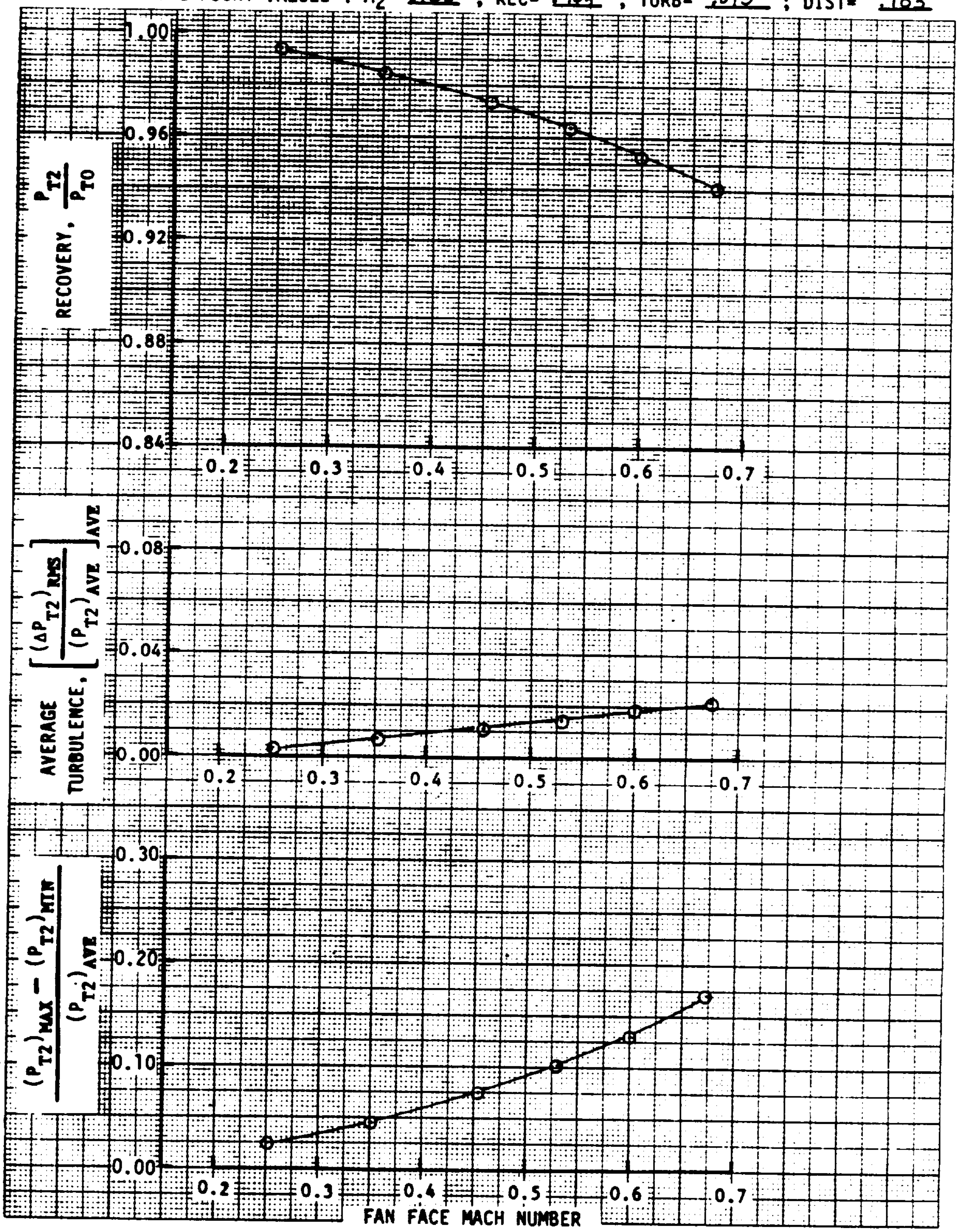
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3660-3665
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .936 ; TURB= .024 ; DIST= .144



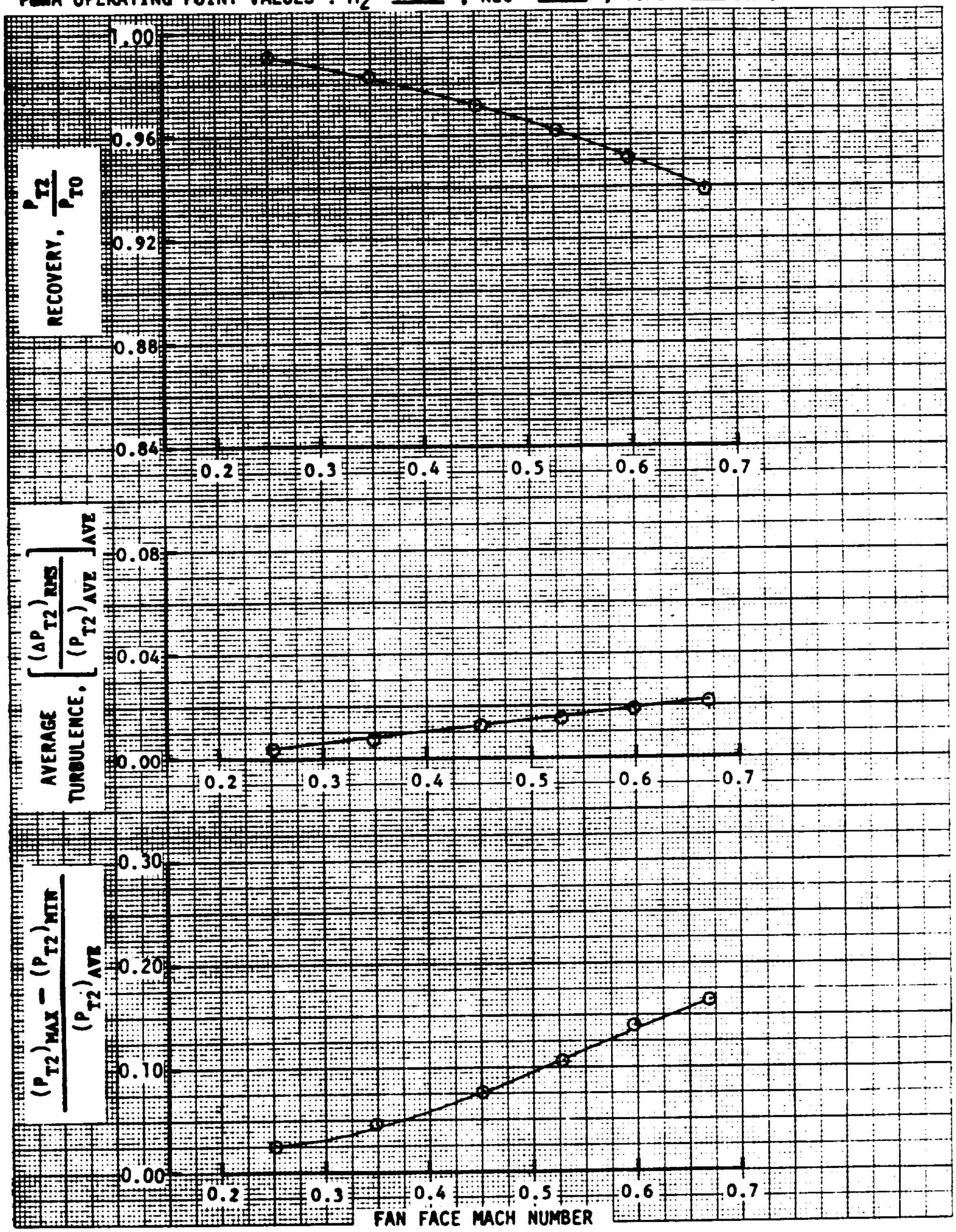
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3666-3671
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .932 ; TURB= .026 ; DIST= .153



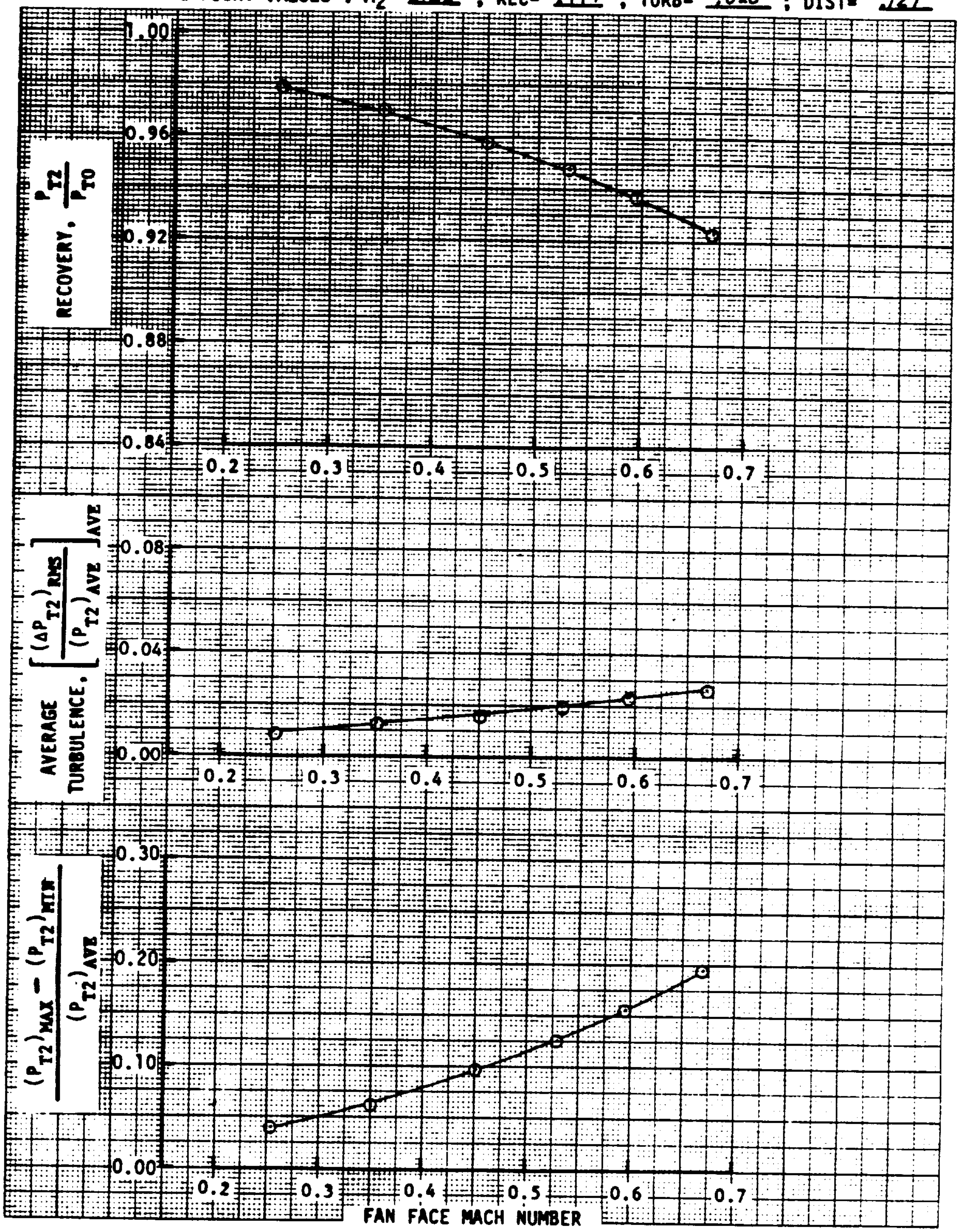
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3672-3677
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
PSWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .015 ; DIST= .103



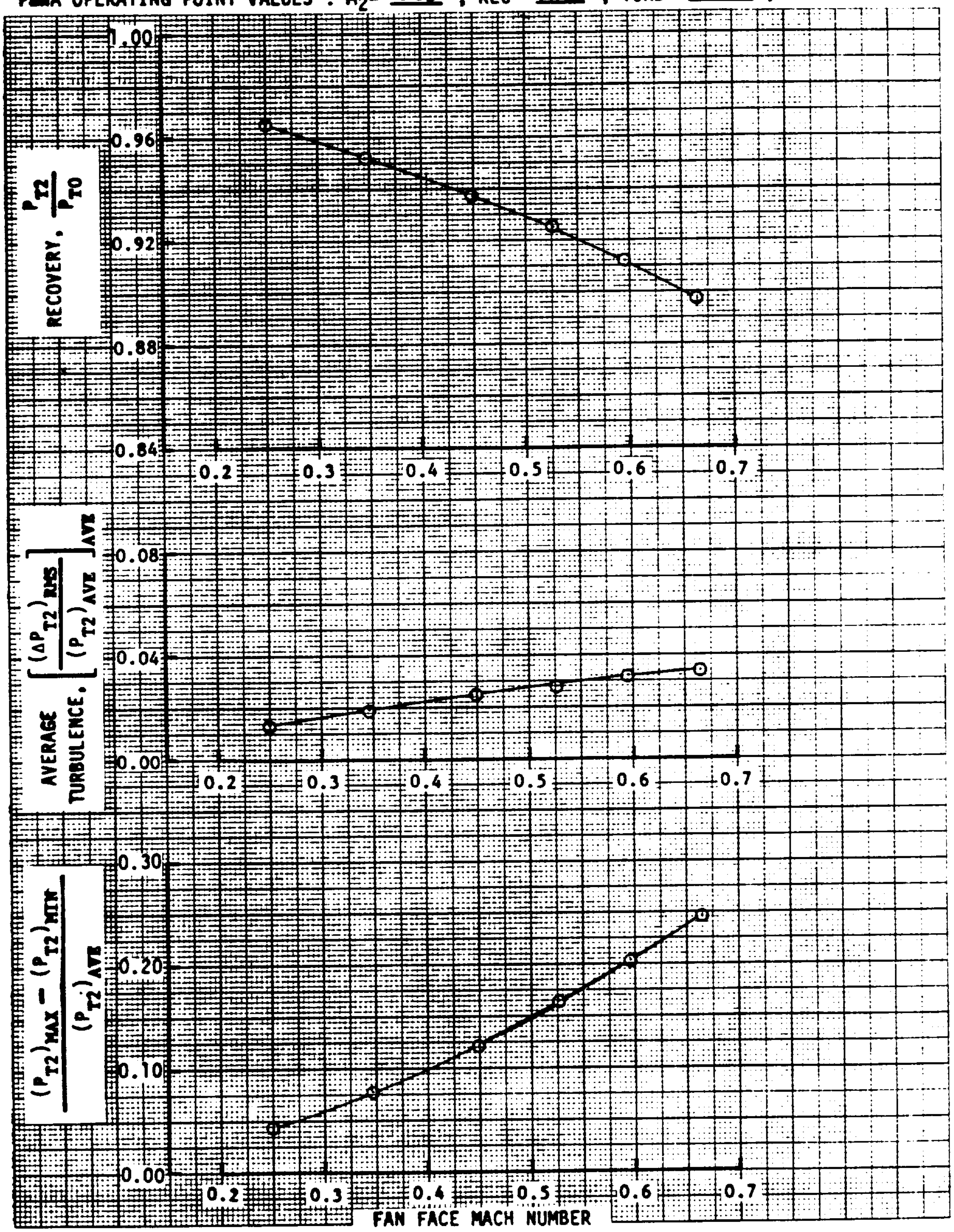
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3678-3683
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .016 ; DIST= .108



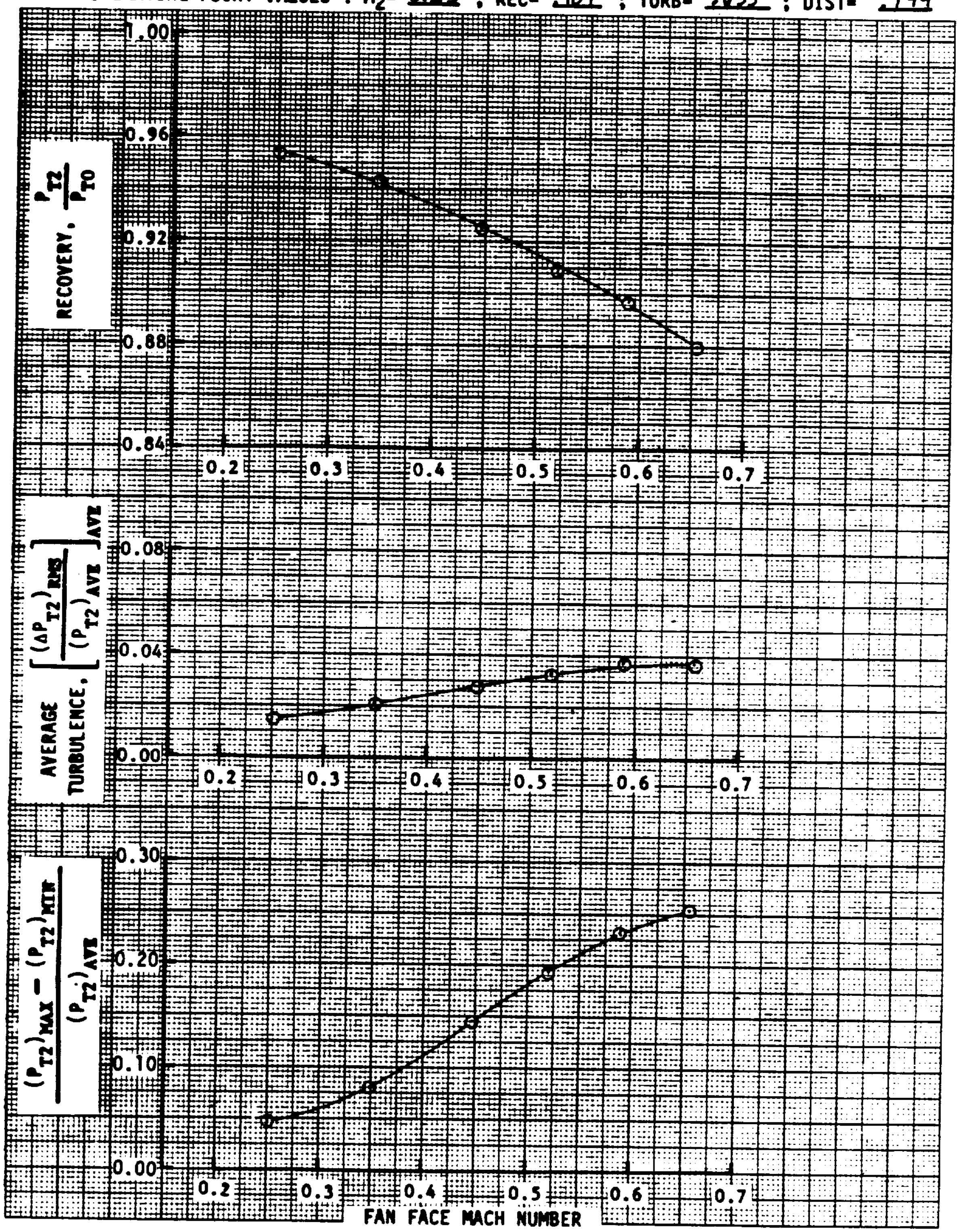
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3684-3689
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .947 ; TURB= .020 ; DIST= .127



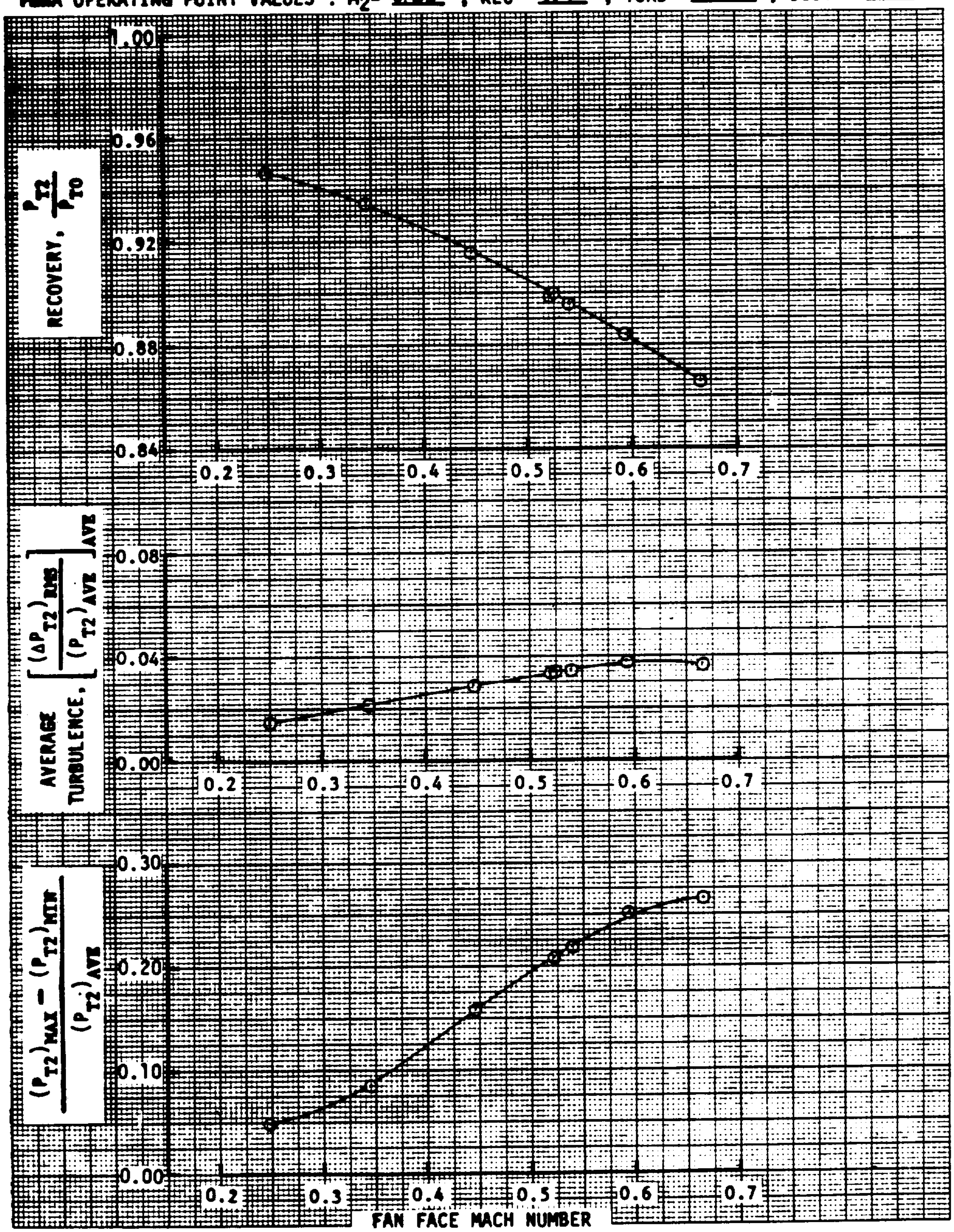
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3690-3695
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .923 ; TURB= .029 ; DIST= .167



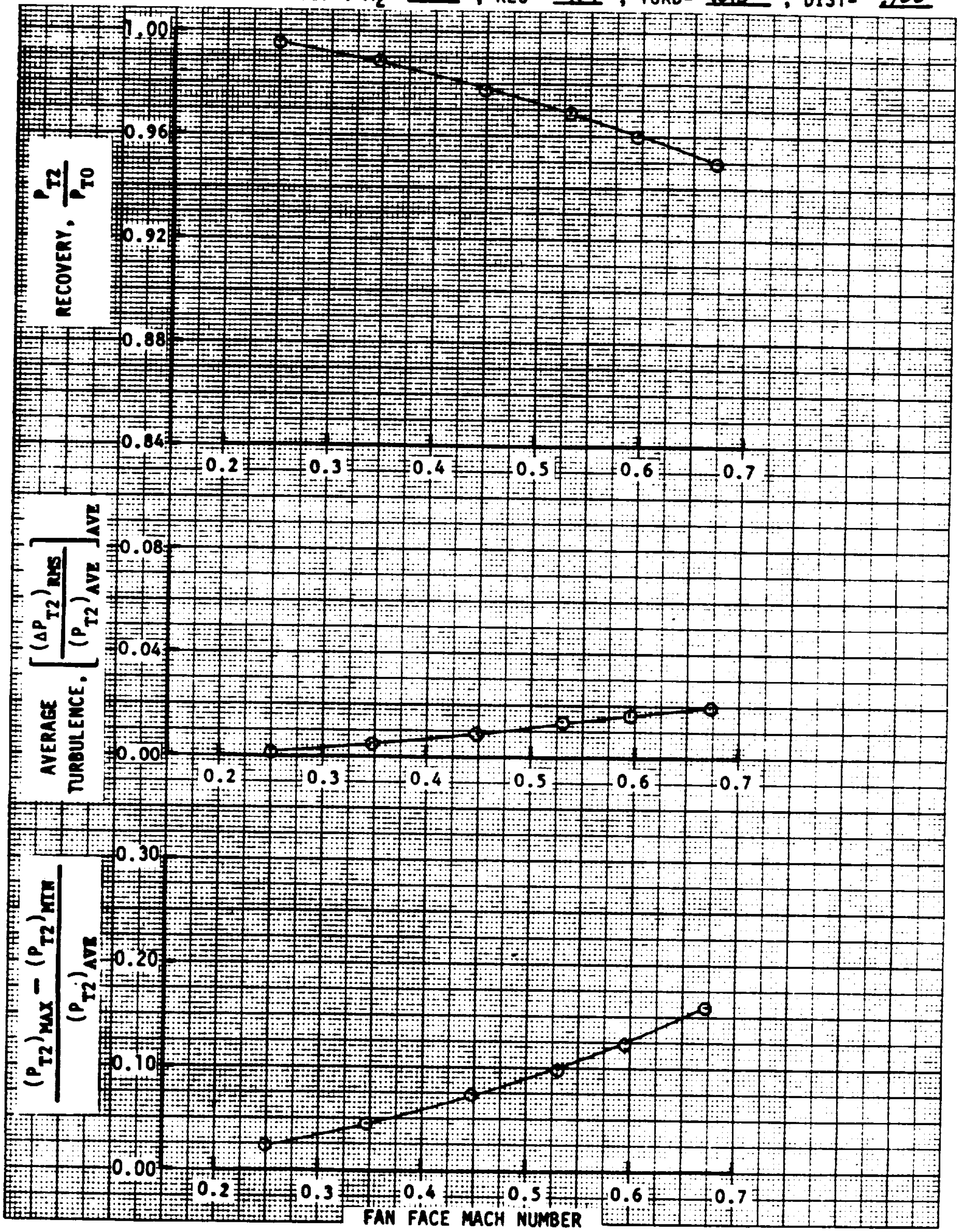
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3696-3701
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PAMA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .909 ; TURB= .033 ; DIST= .199



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3702-3710
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PNMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .898 ; TURB= .034 ; DIST= .213



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3711-3716
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .969 ; TURB= .013 ; DIST= .100

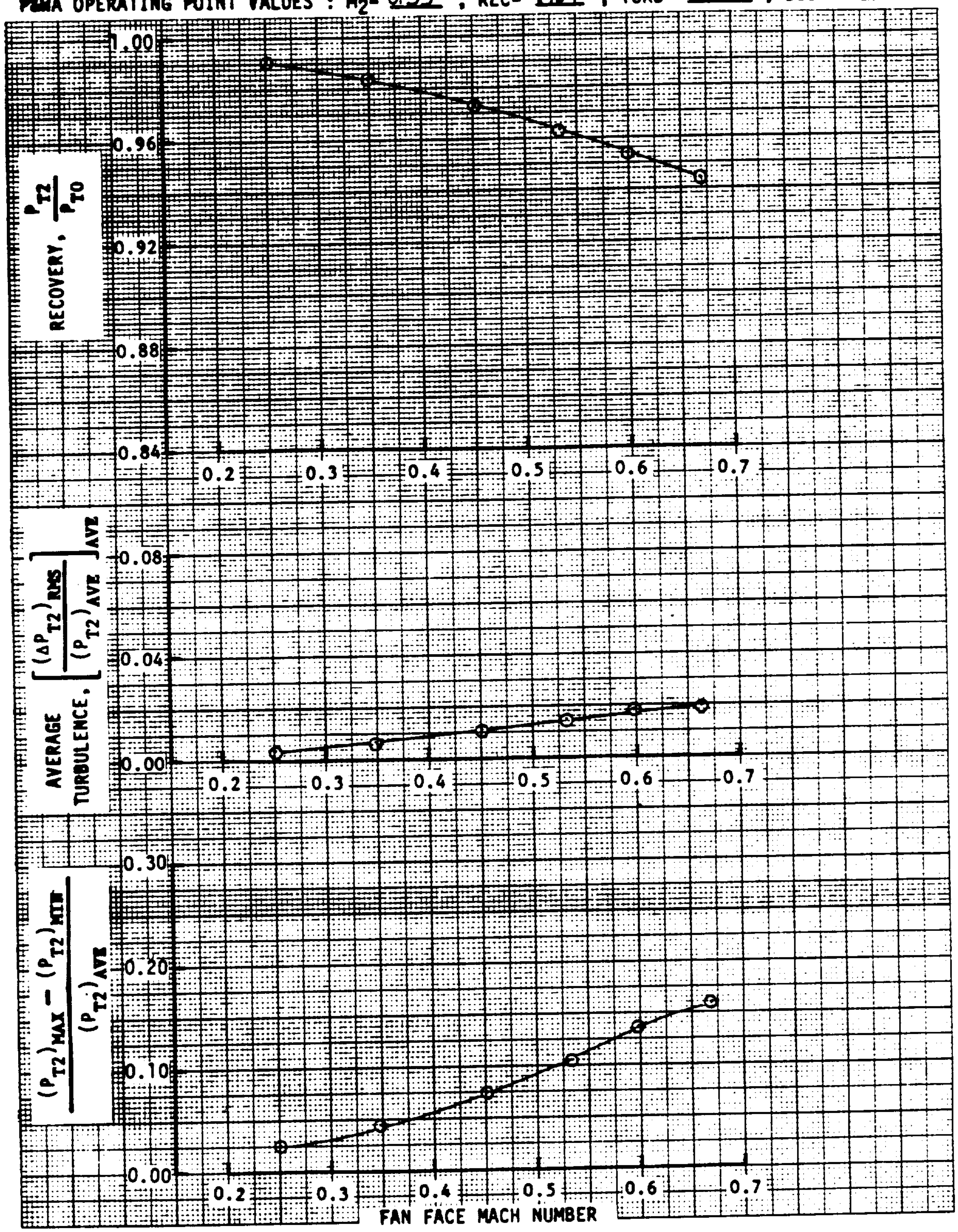


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

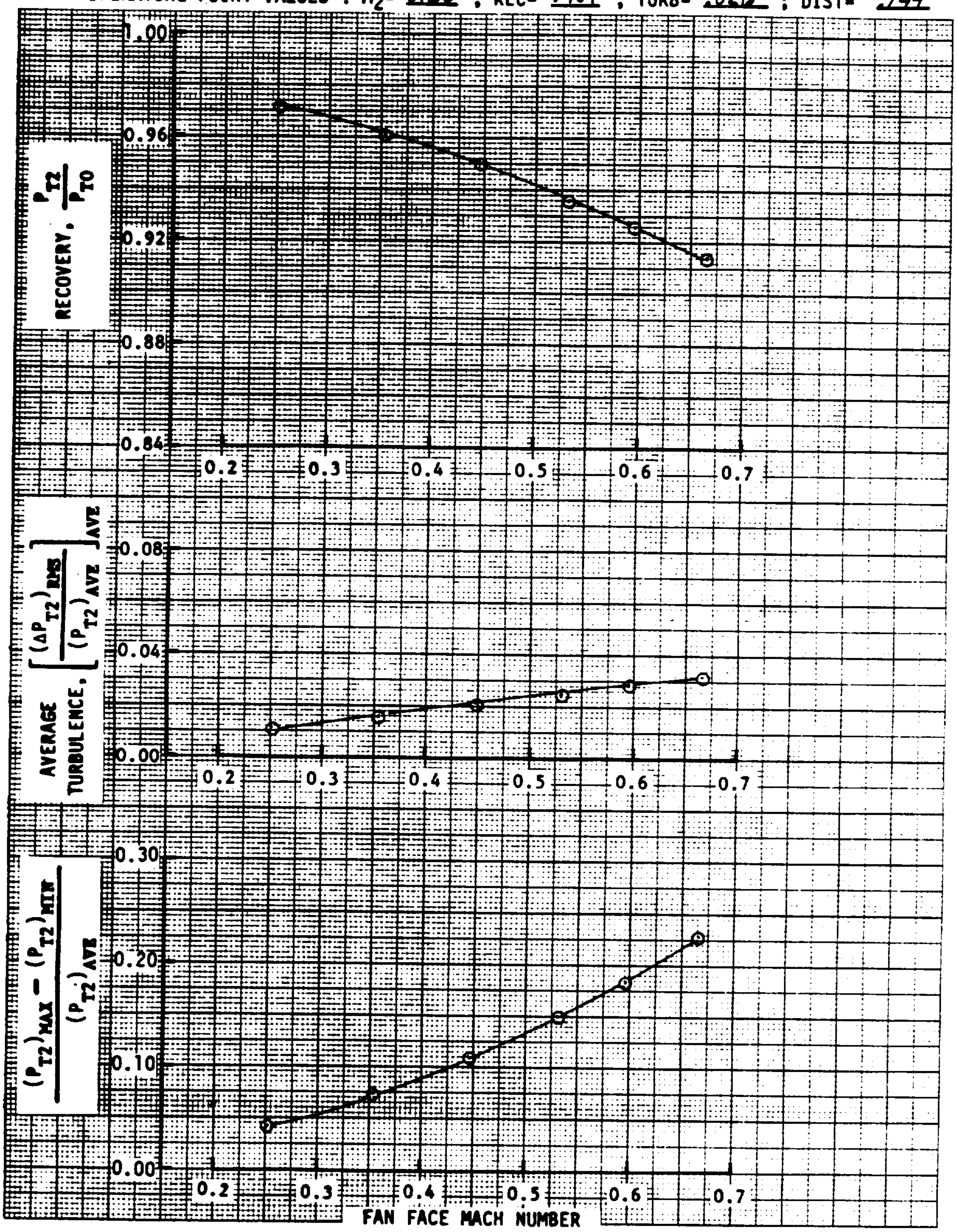
CONFIGURATION 19a ; READING NUMBERS 3717-3722

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.

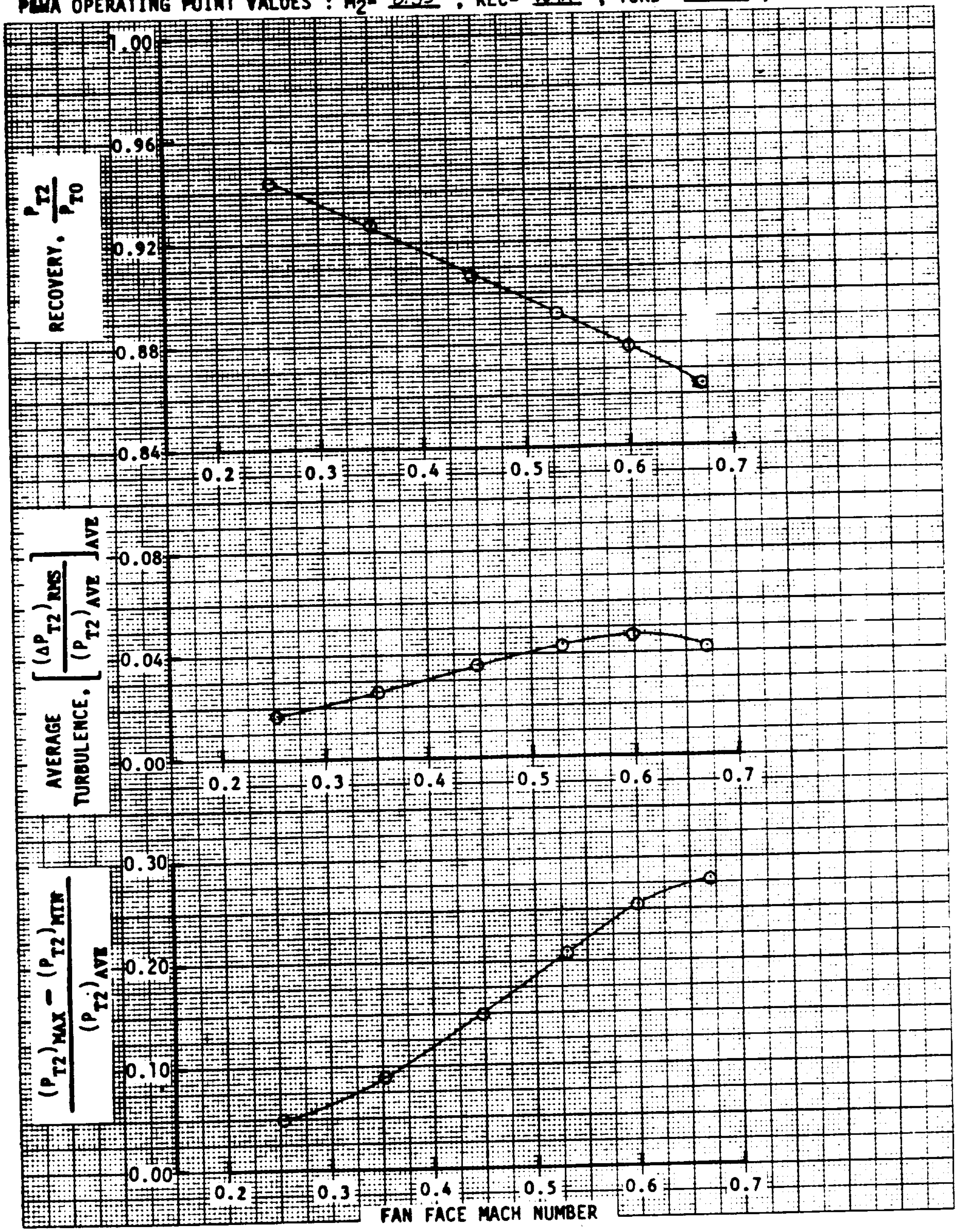
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .964 ; TURB= .014 ; DIST= .103



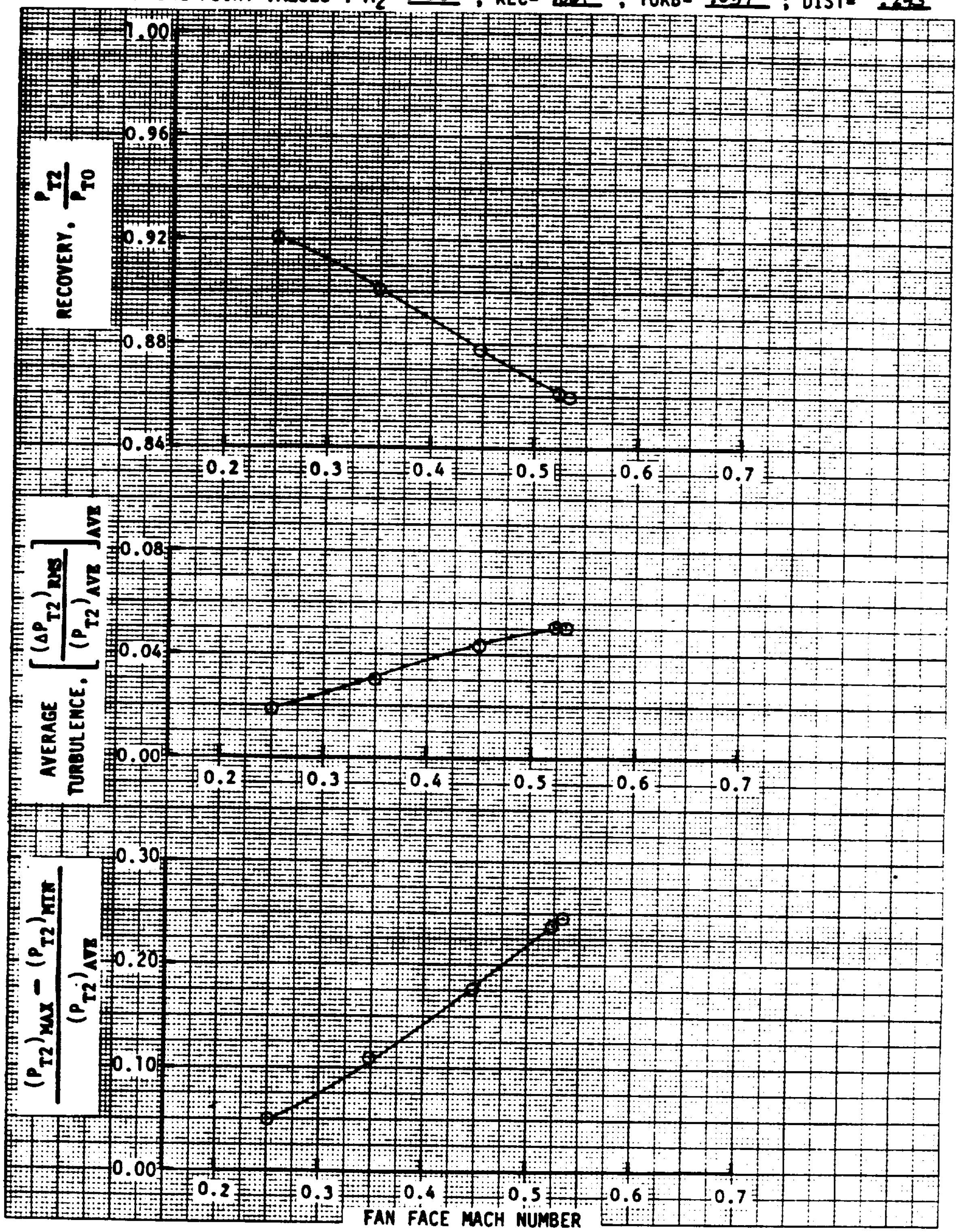
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3723-3728
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .937 ; TURB= .026 ; DIST= .149



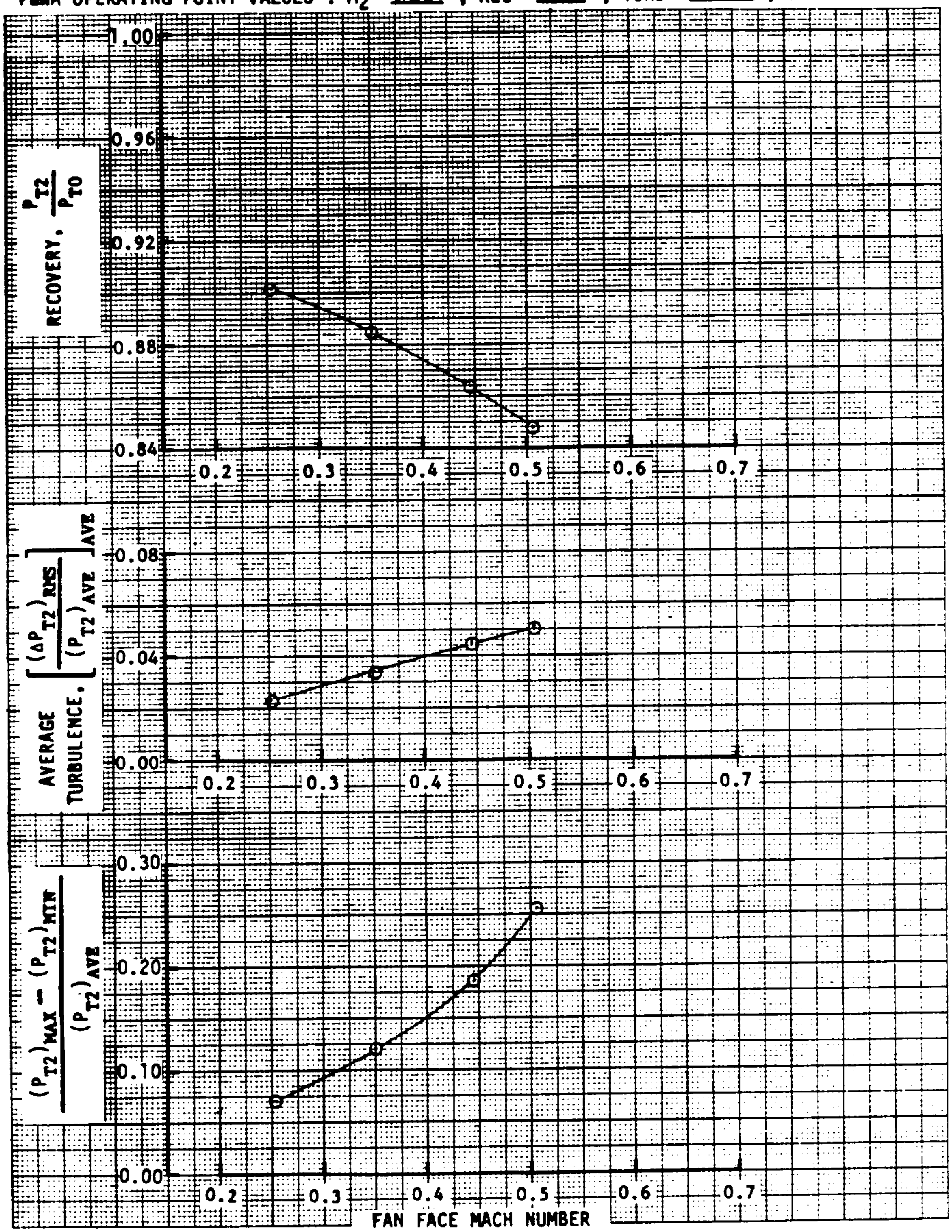
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3729-3734
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .892 ; TURB= .043 ; DIST= .208



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3735-3739
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .861 ; TURB= .051 ; DIST= .243



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19a ; READING NUMBERS 3740-3743
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= - ; TURB= - ; DIST= -



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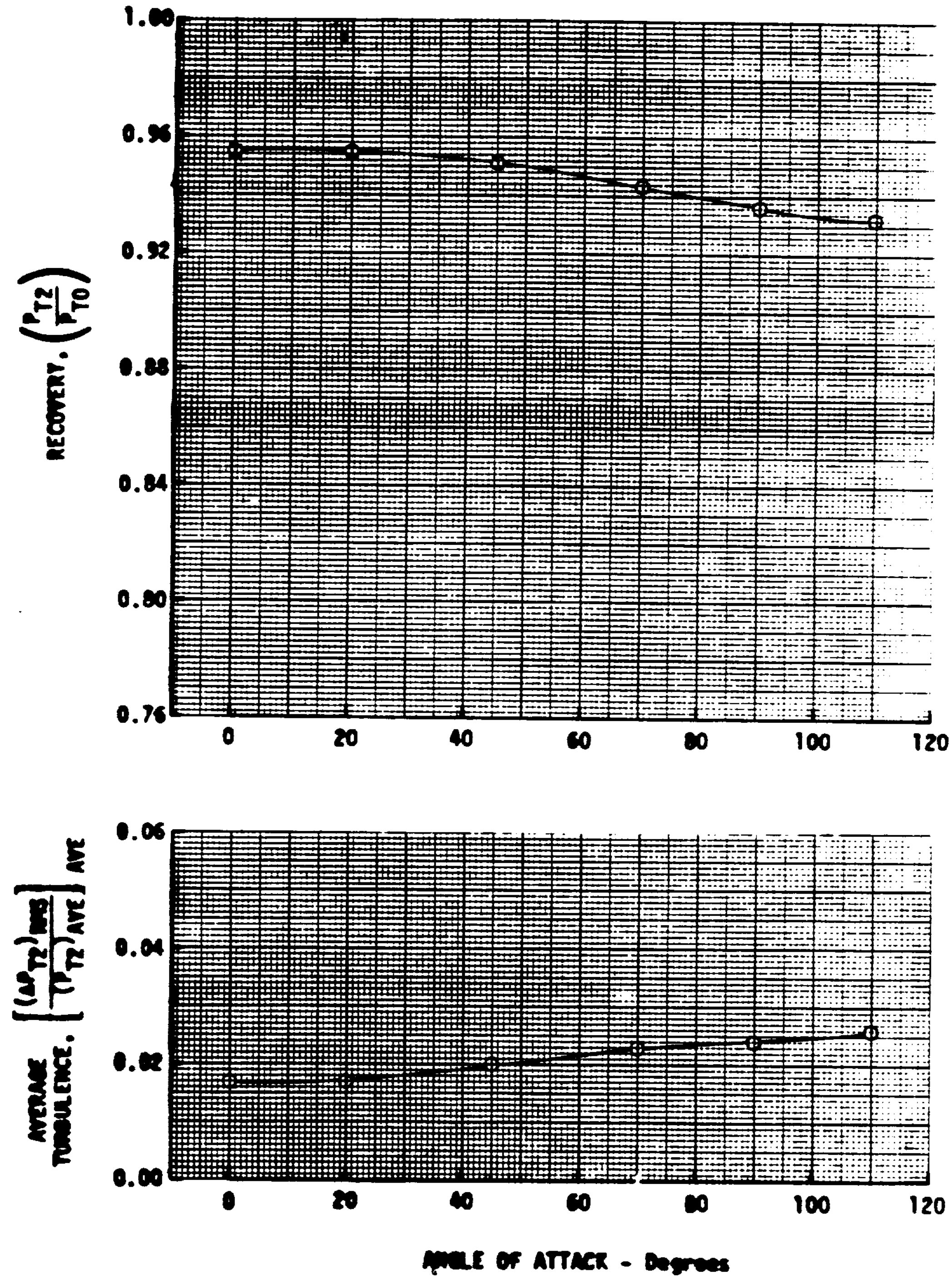
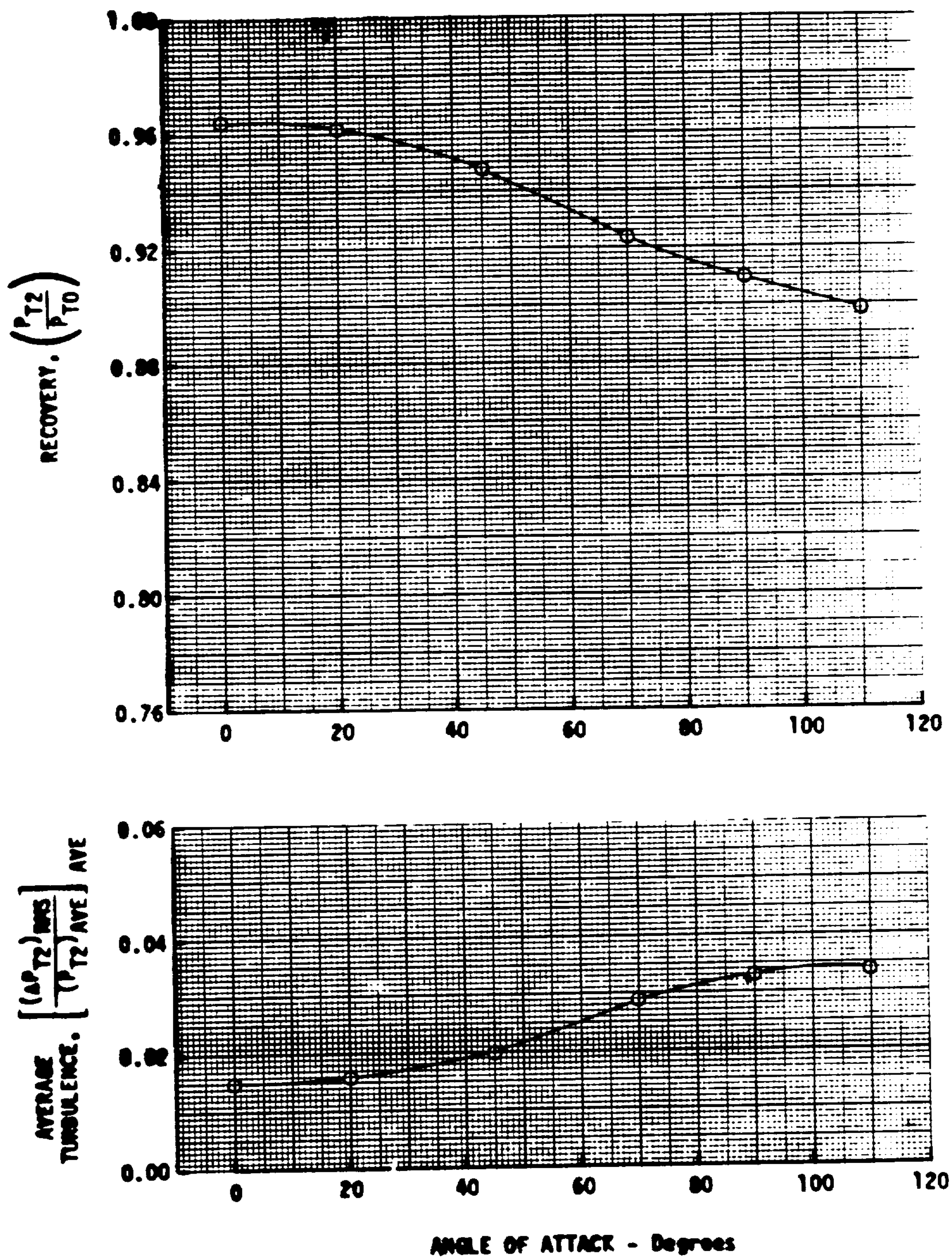
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
POWER F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19a; DESCRIPTION 90° CCW Rotation ; Retracted Side plates, Sharp Lip Inlet

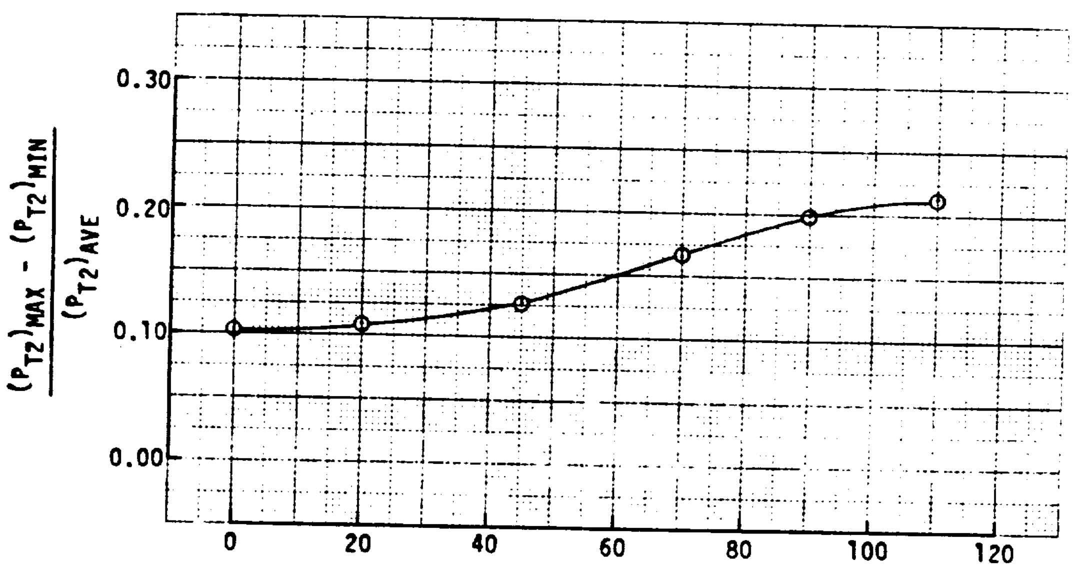


RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19a; DESCRIPTION 90° CCW Rotation; Retracted Sideplates, Sharp Lip Inlet

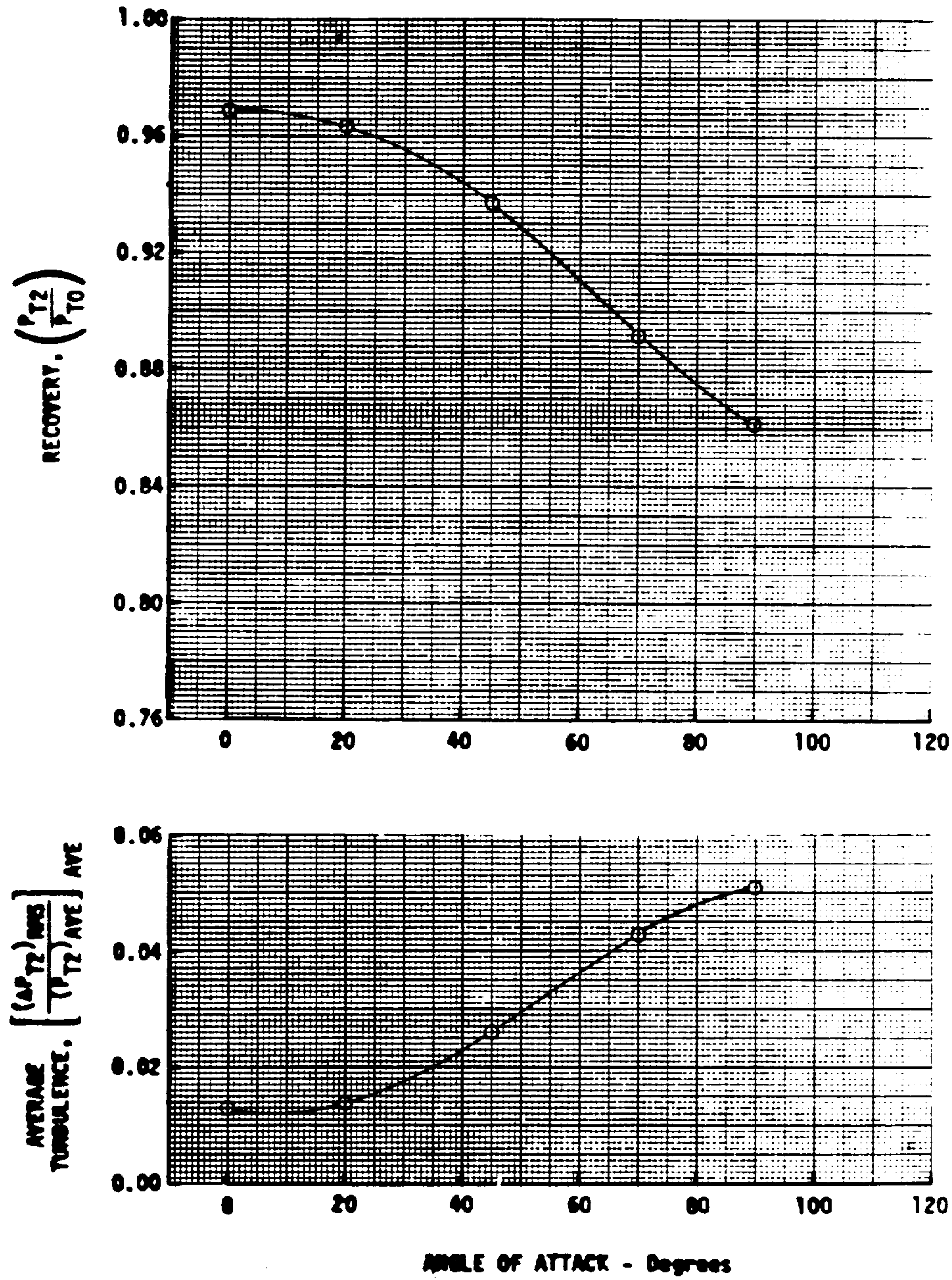


DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 19a; DESCRIPTION 90° CounterClockwise Rotation; Retracted S.P.,
Sharp Lip Inlet

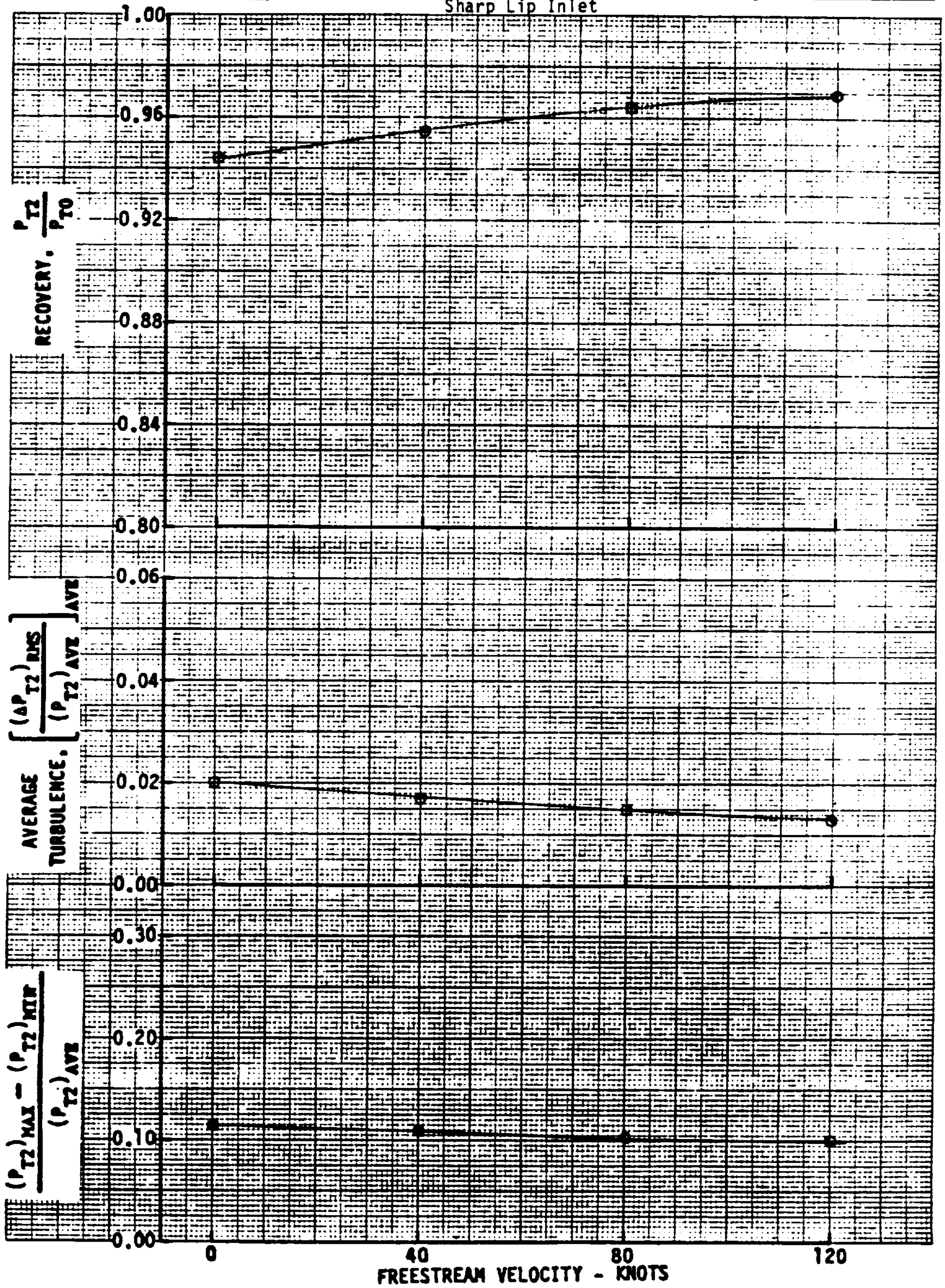


RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PMMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

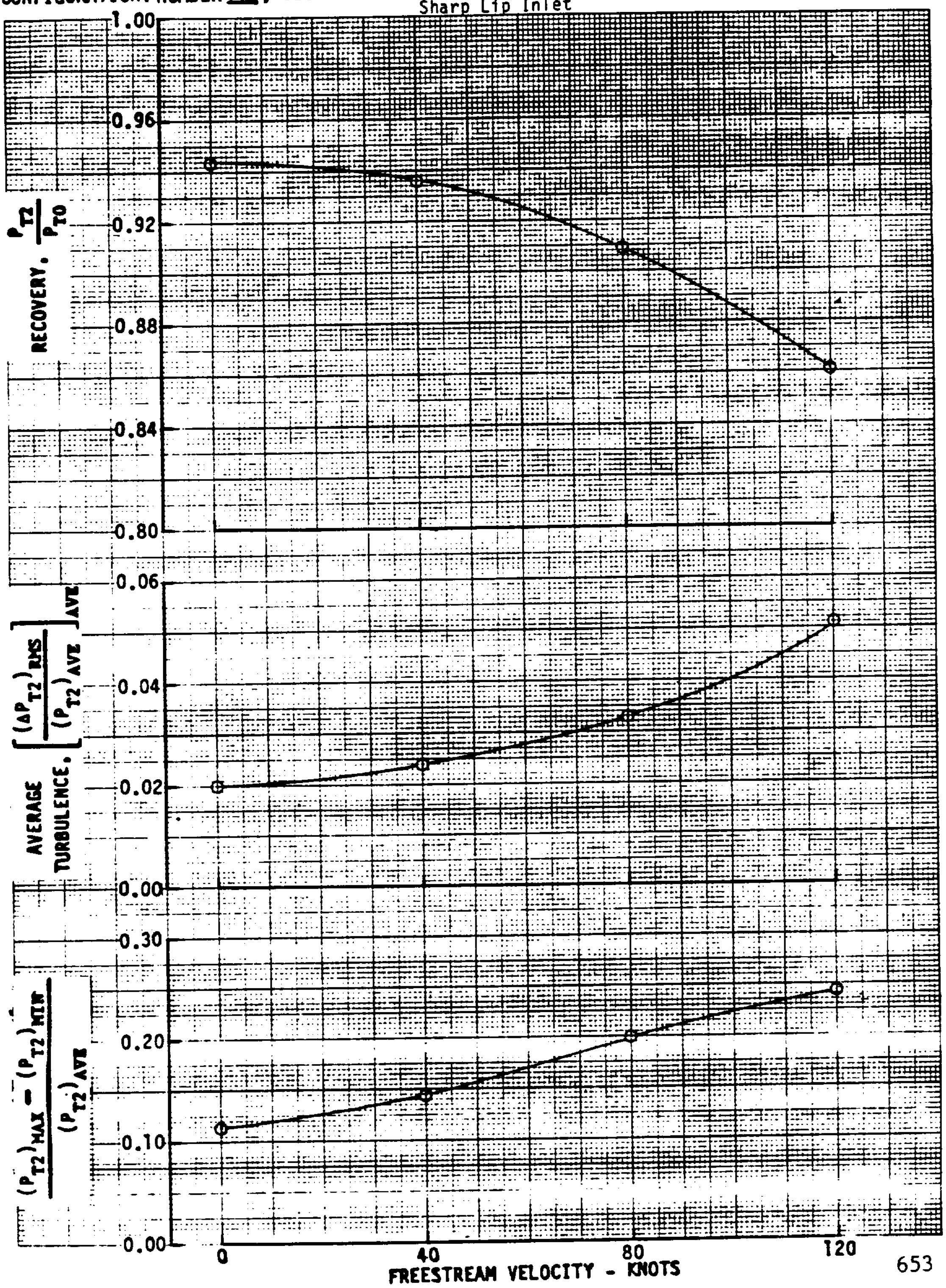
CONFIGURATION: NUMBER 19a; DESCRIPTION 90° CCW Rotation; Retracted Sideplates, Sharp Lip Inlet



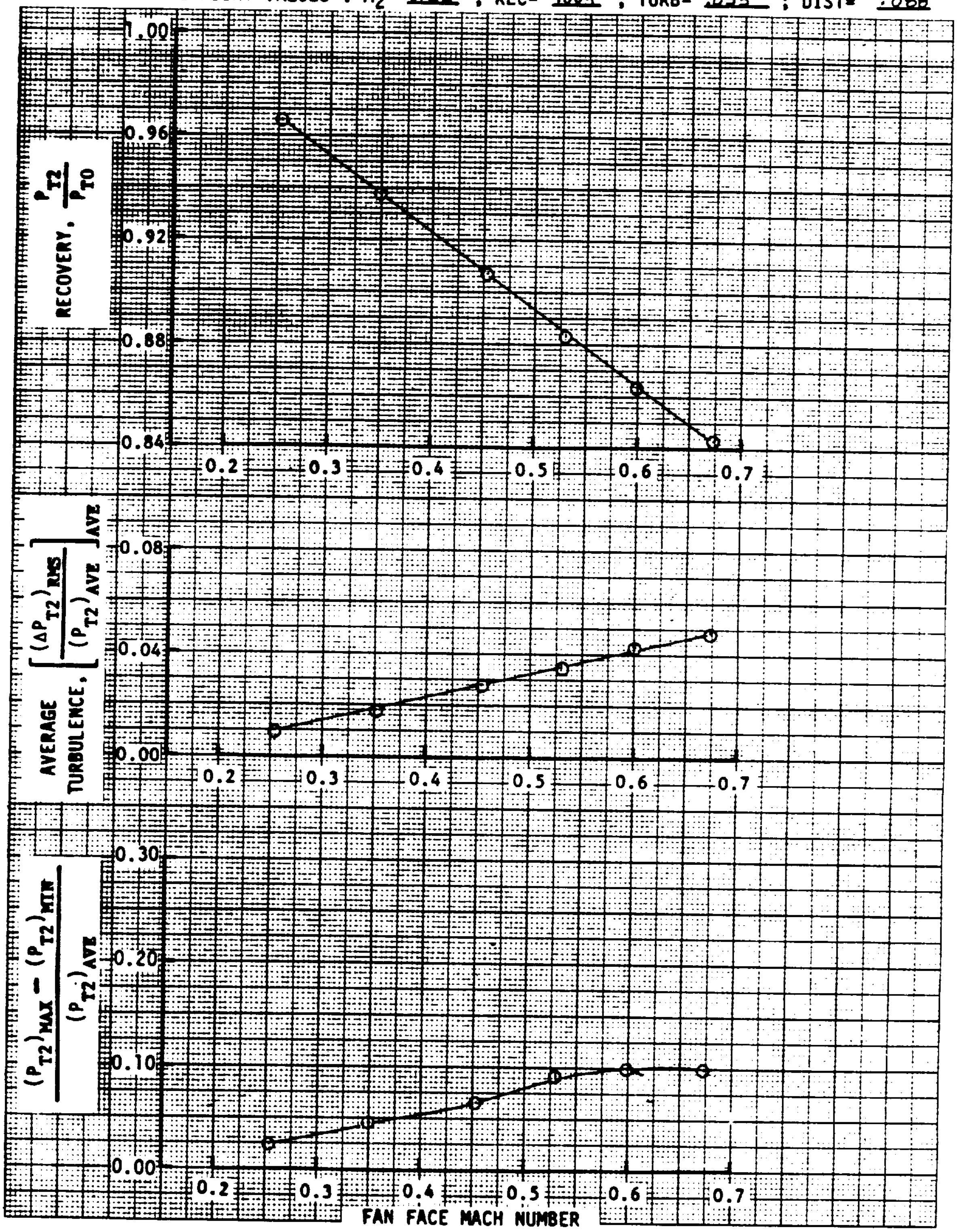
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 19a; DESCRIPTION 90° Counterclockwise Rotation, Retracted Sideplates, Sharp Lip Inlet



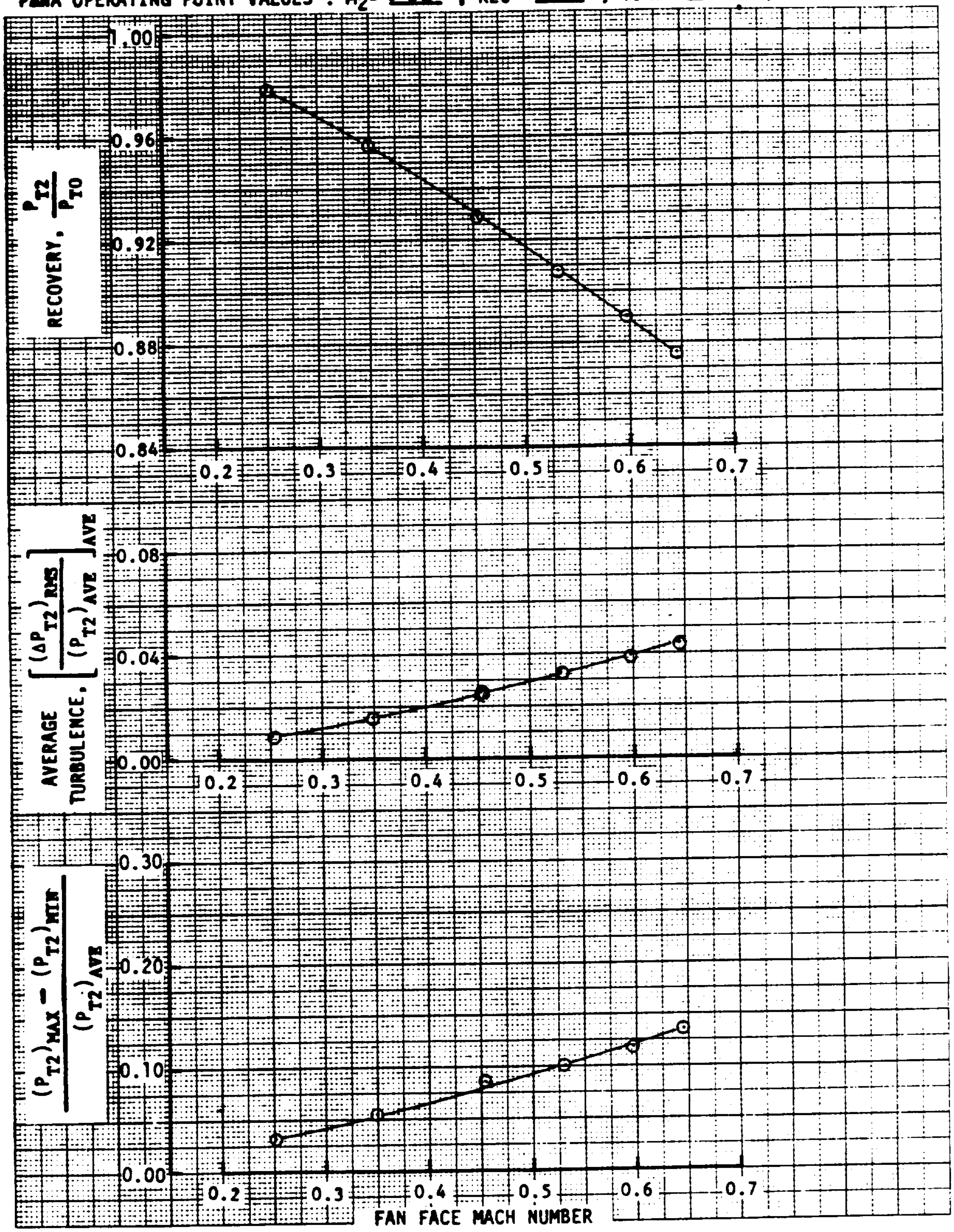
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 90 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 19a; DESCRIPTION 90° CCW Rot; Retracted Sideplates, Sharp Lip Inlet



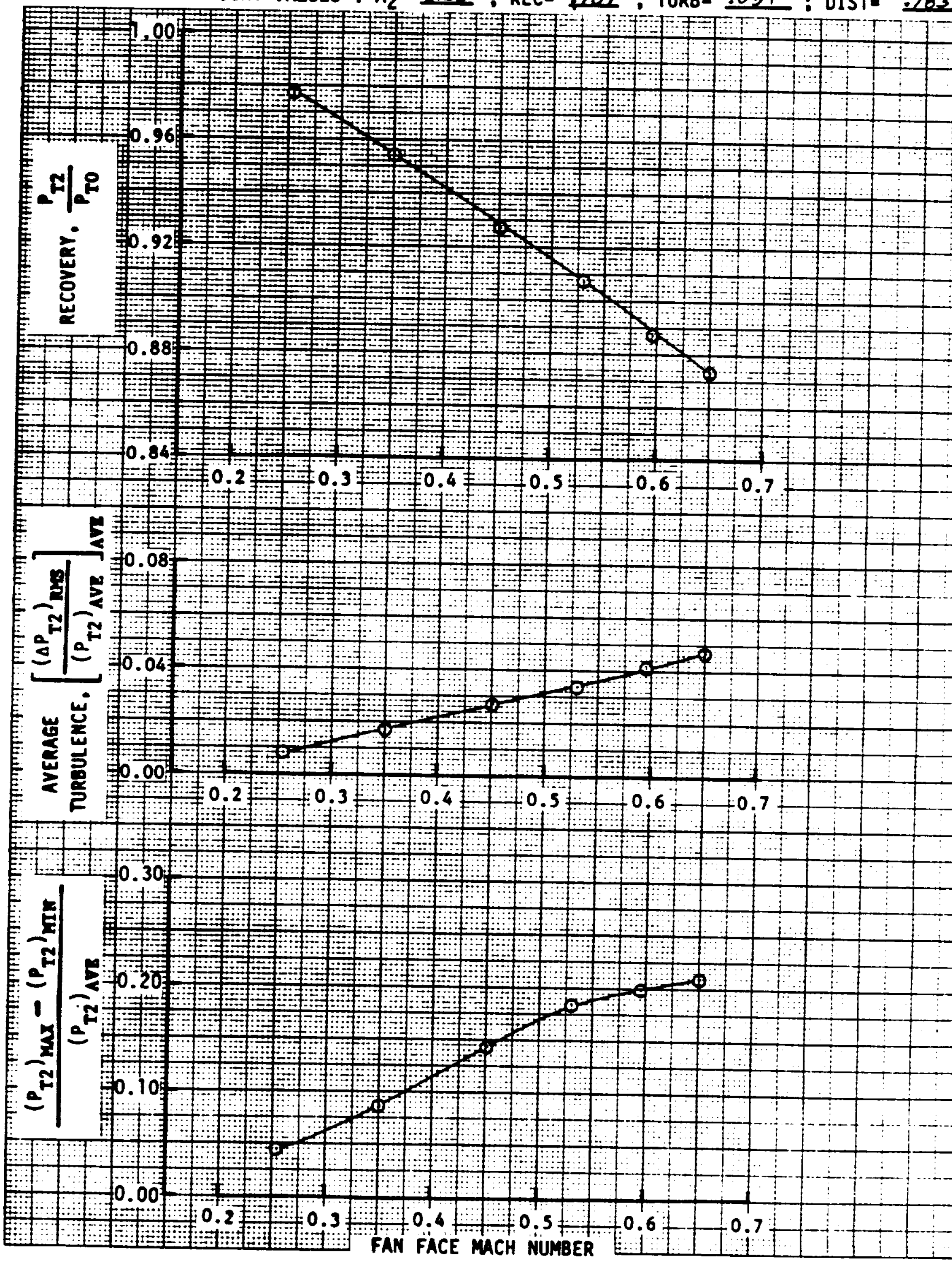
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3746-3751
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .884 ; TURB= .035 ; DIST= .088



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3752-3757
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .908 ; TURB= .032 ; DIST= .102



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3758-3763
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .907 ; TURB= .034 ; DIST= .183

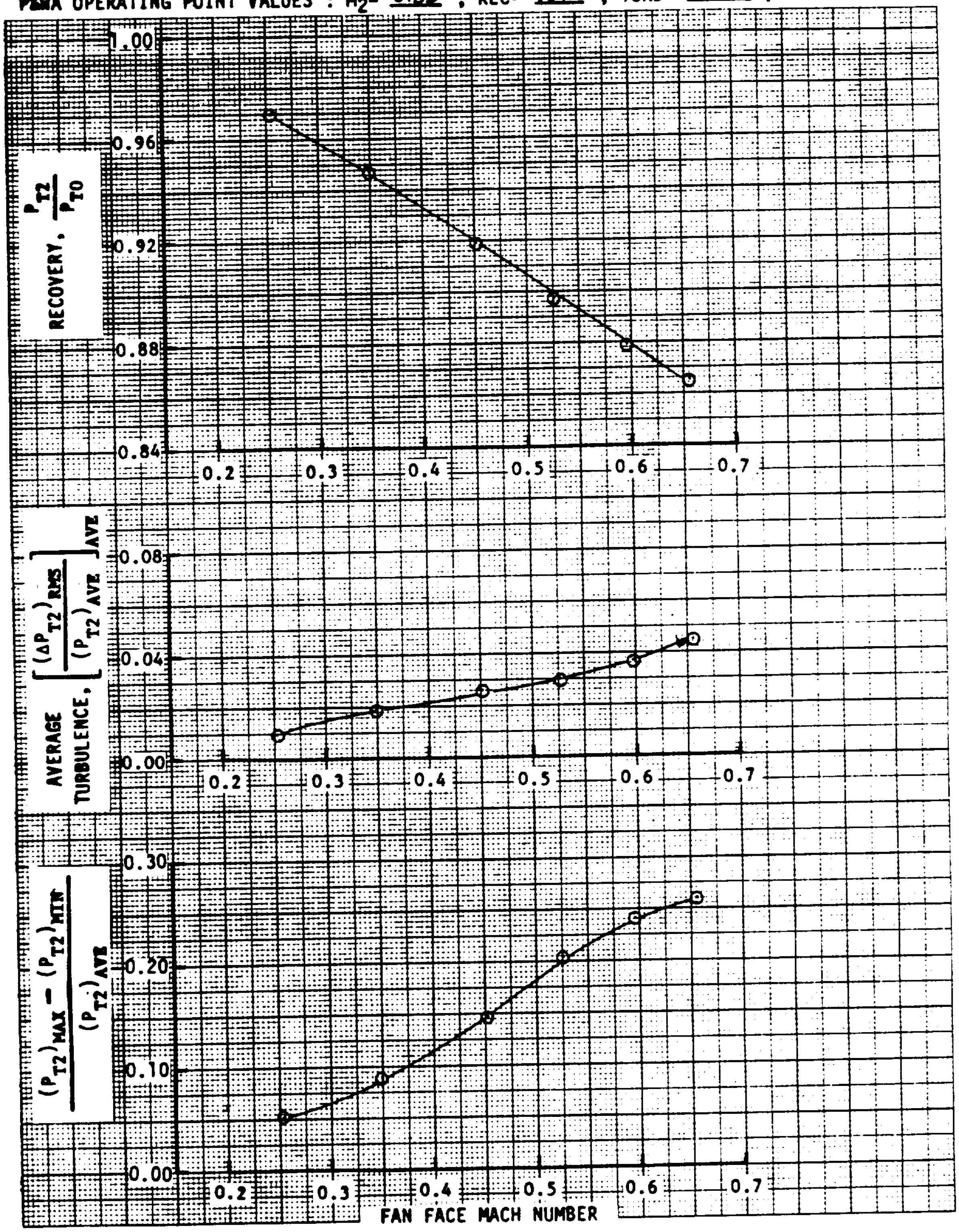


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

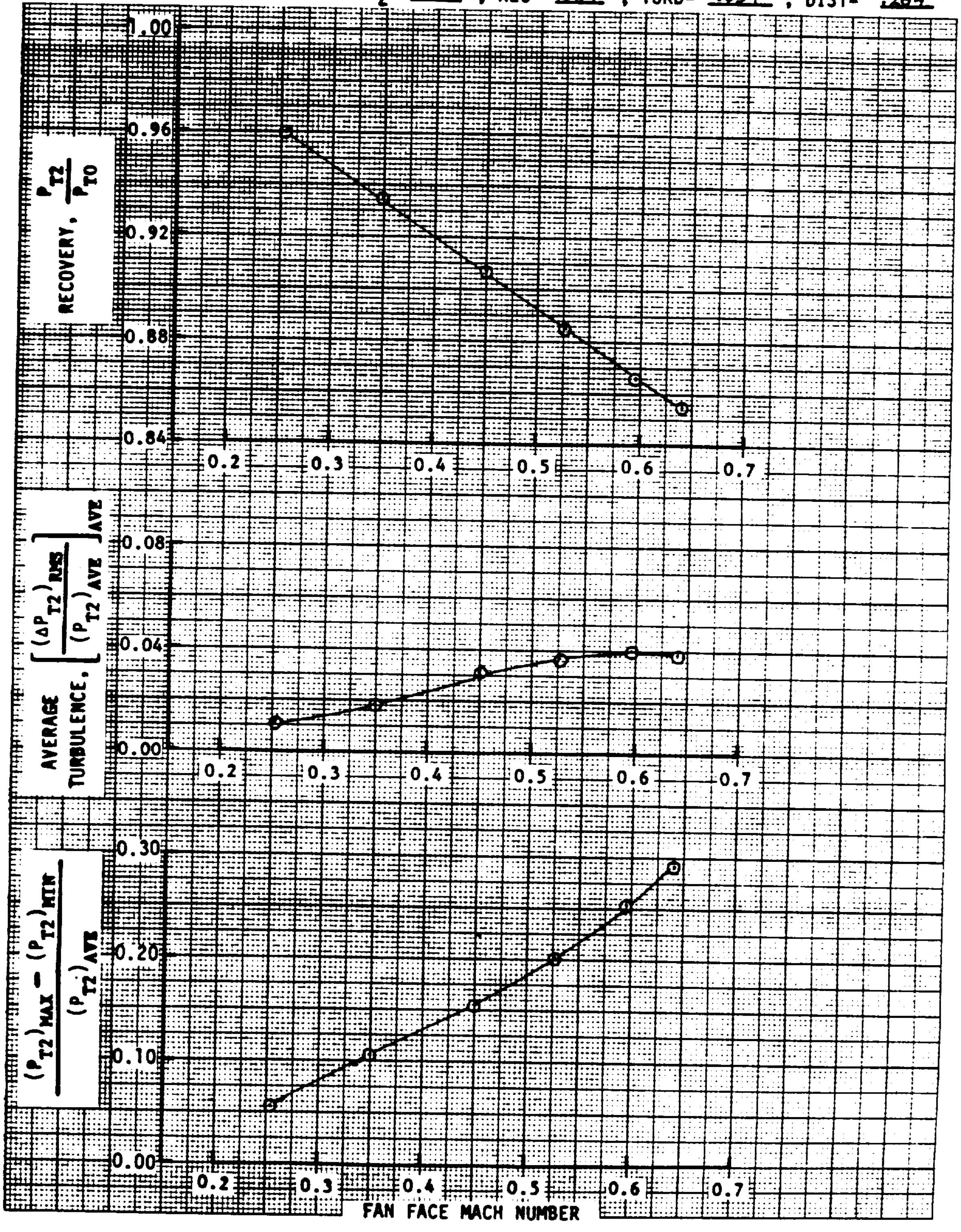
CONFIGURATION 19b ; READING NUMBERS 3764-3769

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

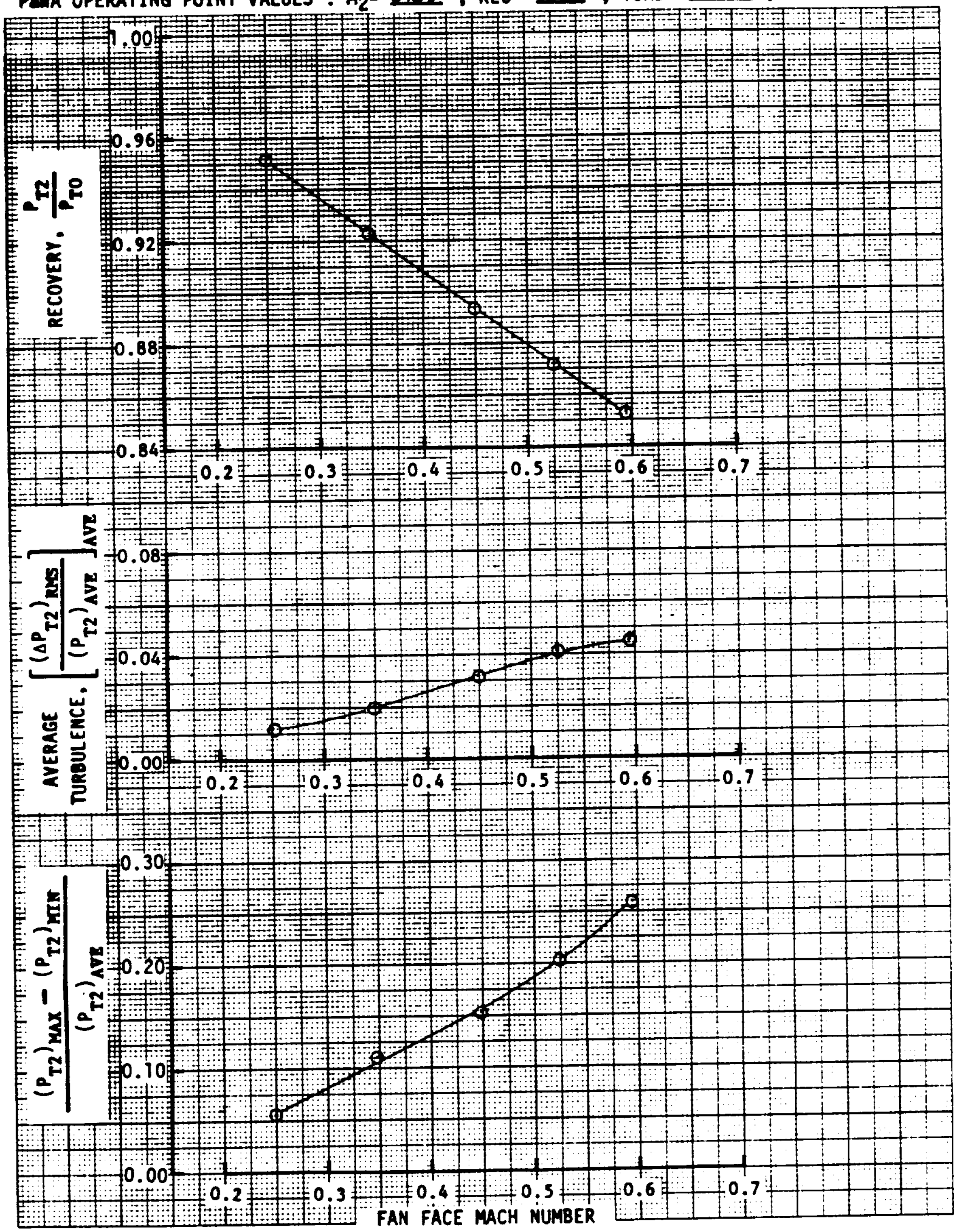
PAMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .898 ; TURB= .030 ; DIST= .203



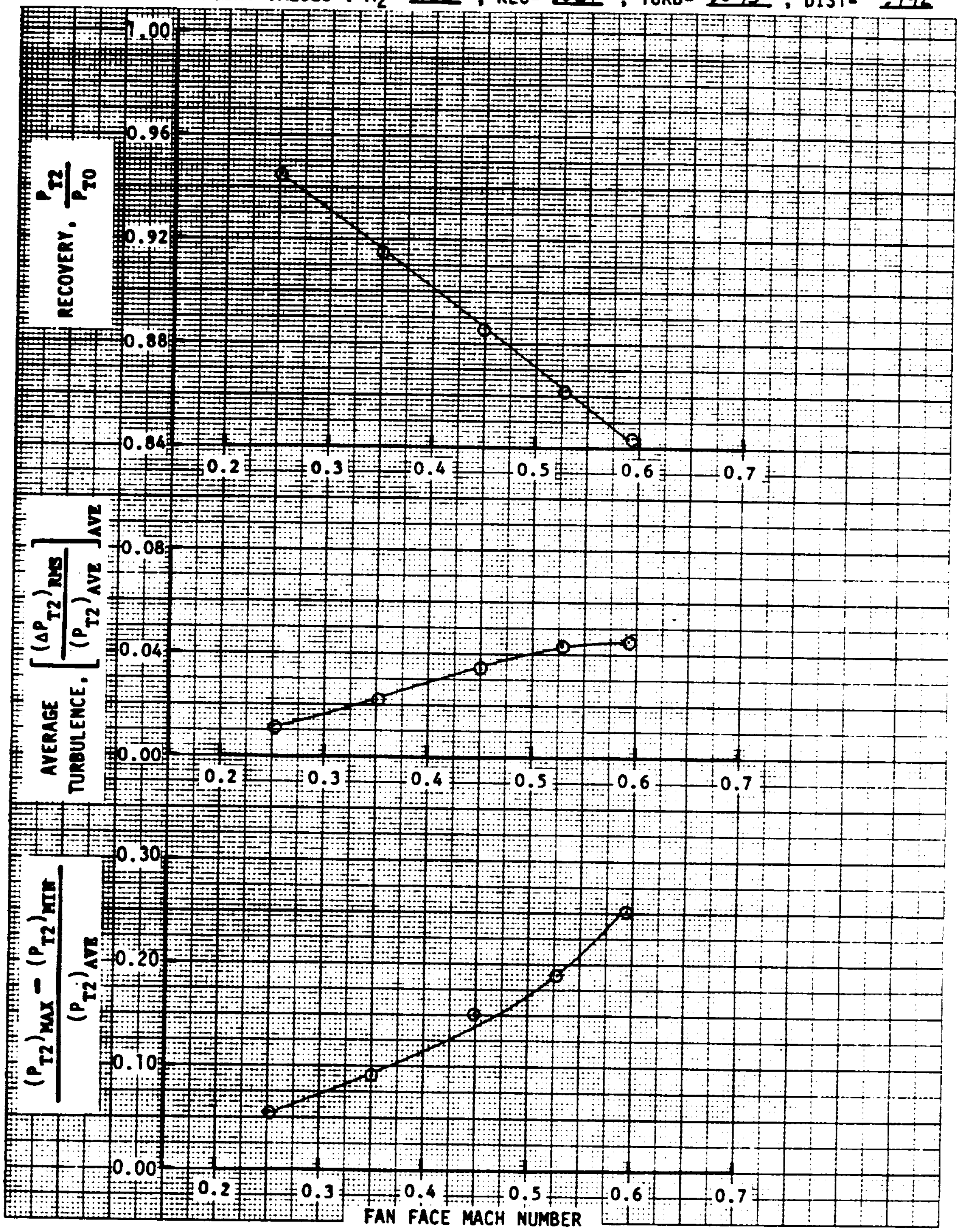
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3770-3775
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .884 ; TURB= .037 ; DIST= .204



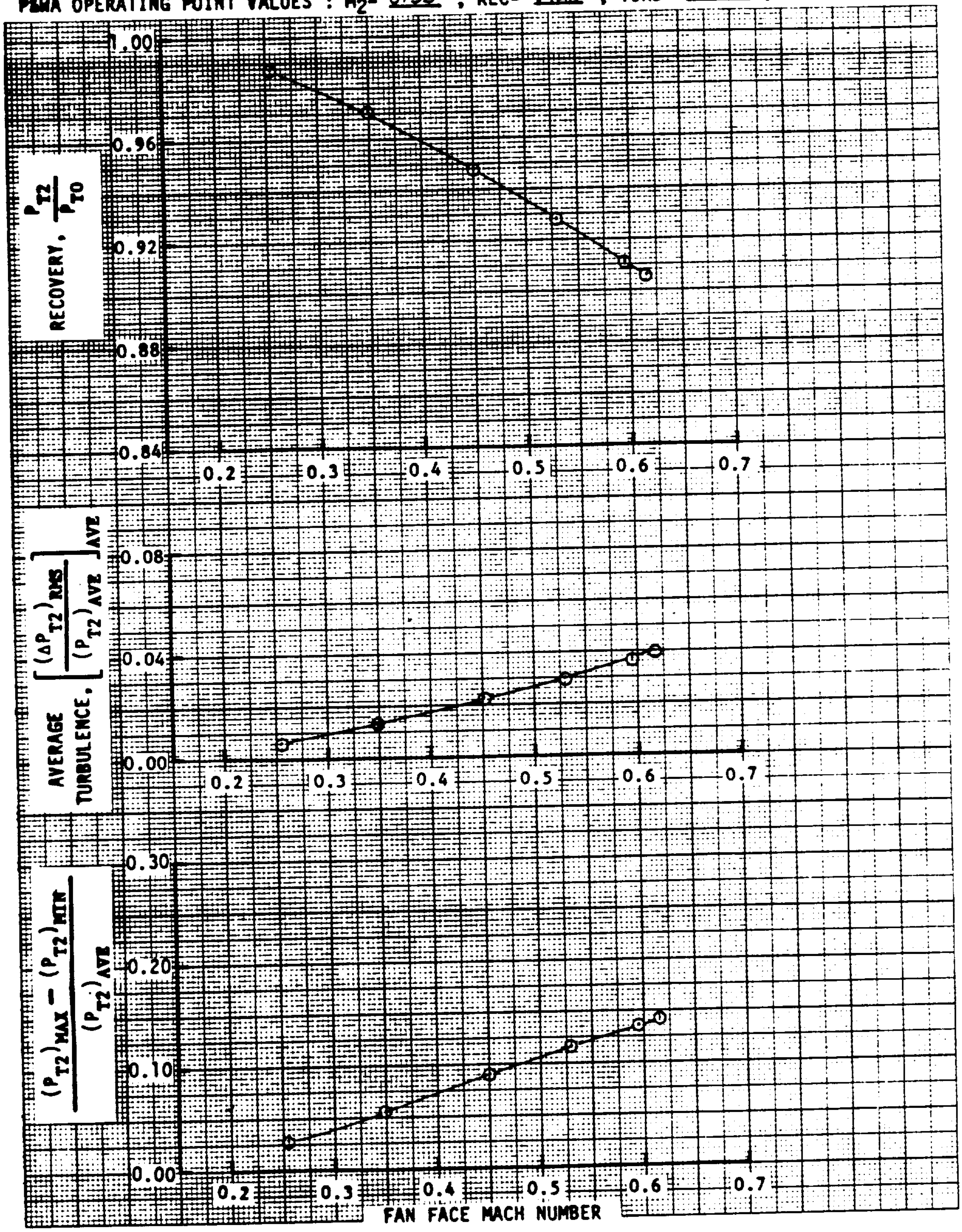
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3776-3780
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .870 ; TURB= .040 ; DIST= .207



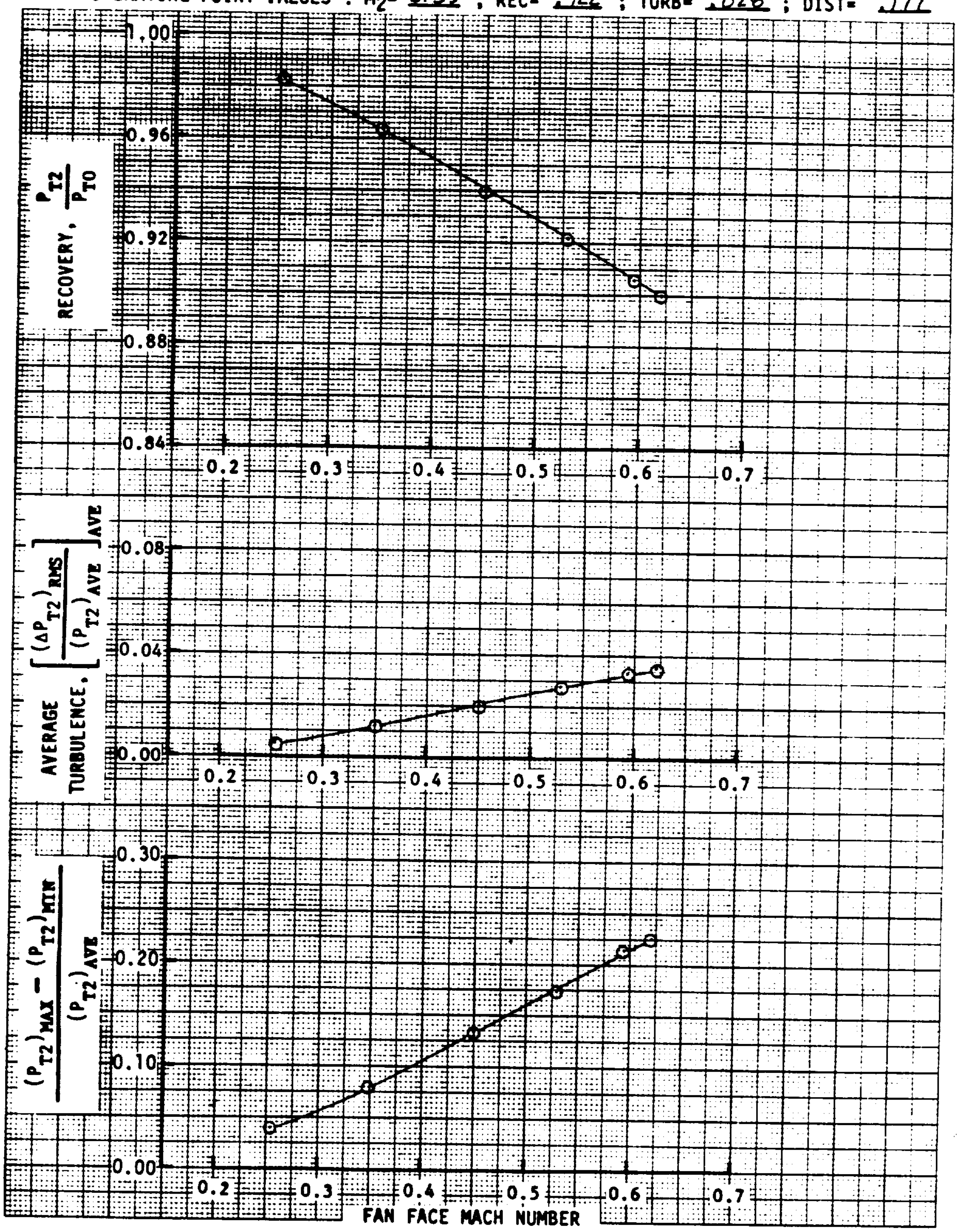
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3781-3786
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .861 ; TURB= .043 ; DIST= .192



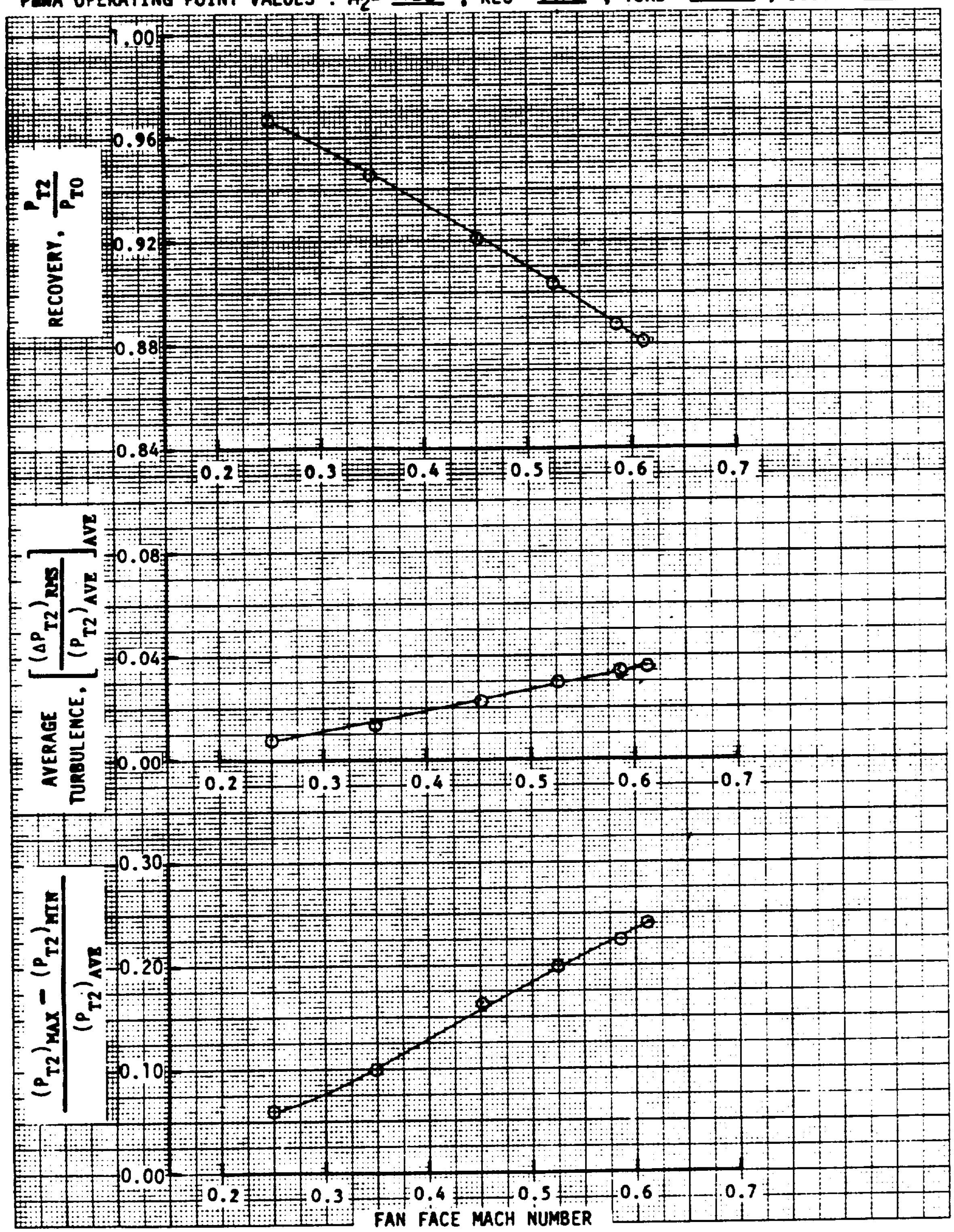
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3787-3792
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .928 ; TURB= .030 ; DIST= .116



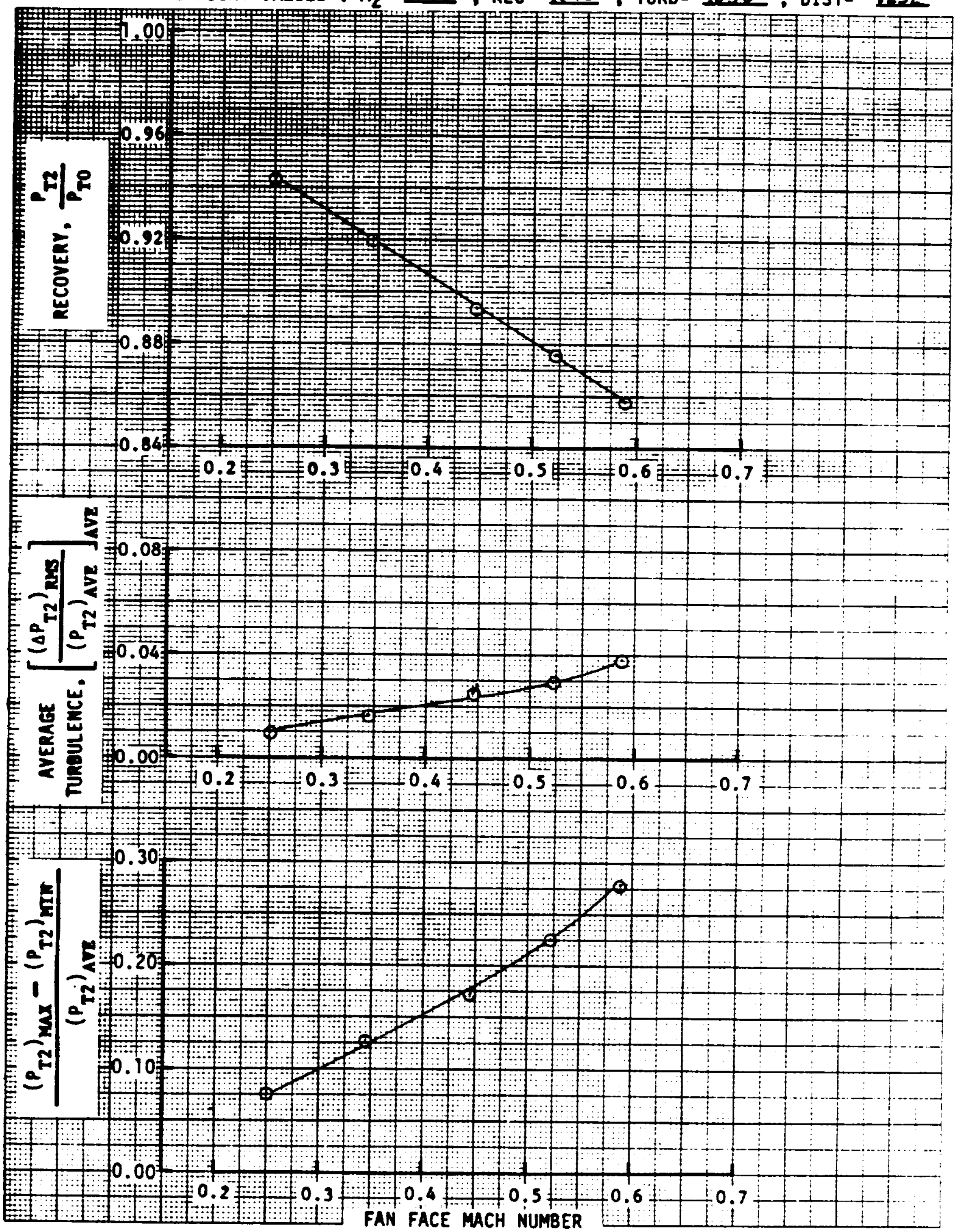
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3793-3798
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .922 ; TURB= .028 ; DIST= .177



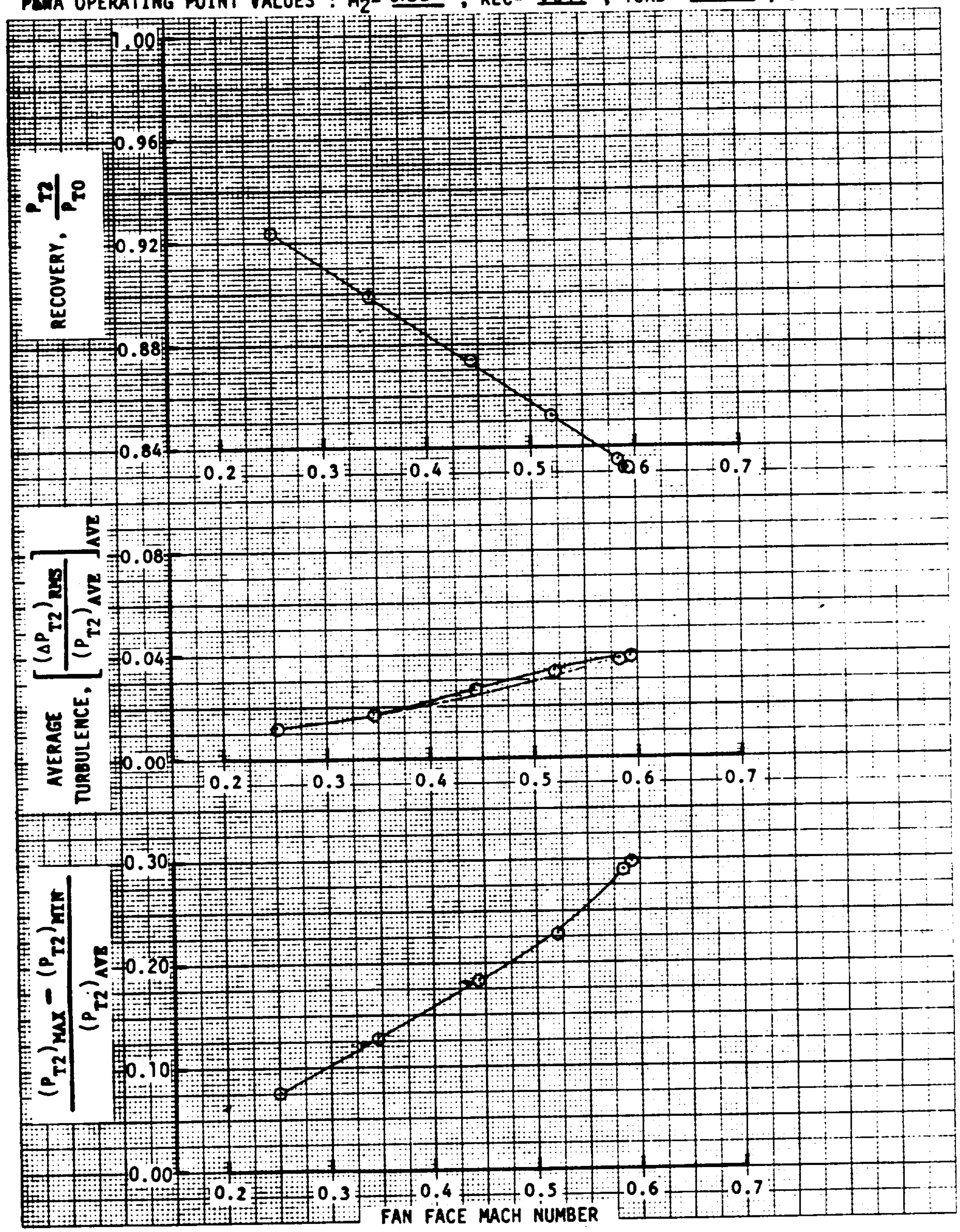
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3799-3804
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .902 ; TURB= .029 ; DIST= .200



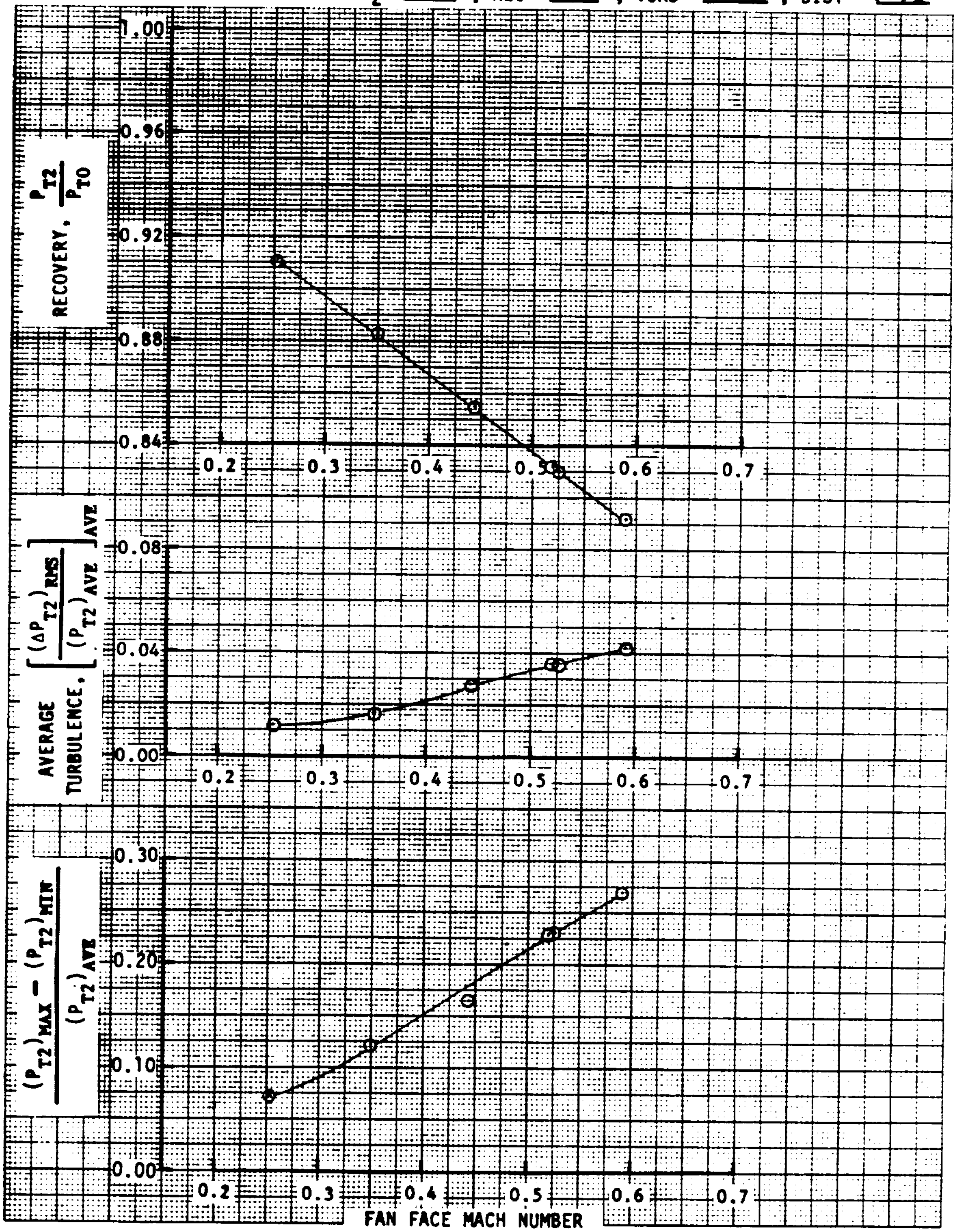
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3805-3809
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PSMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .873 ; TURB= .030 ; DIST= .232



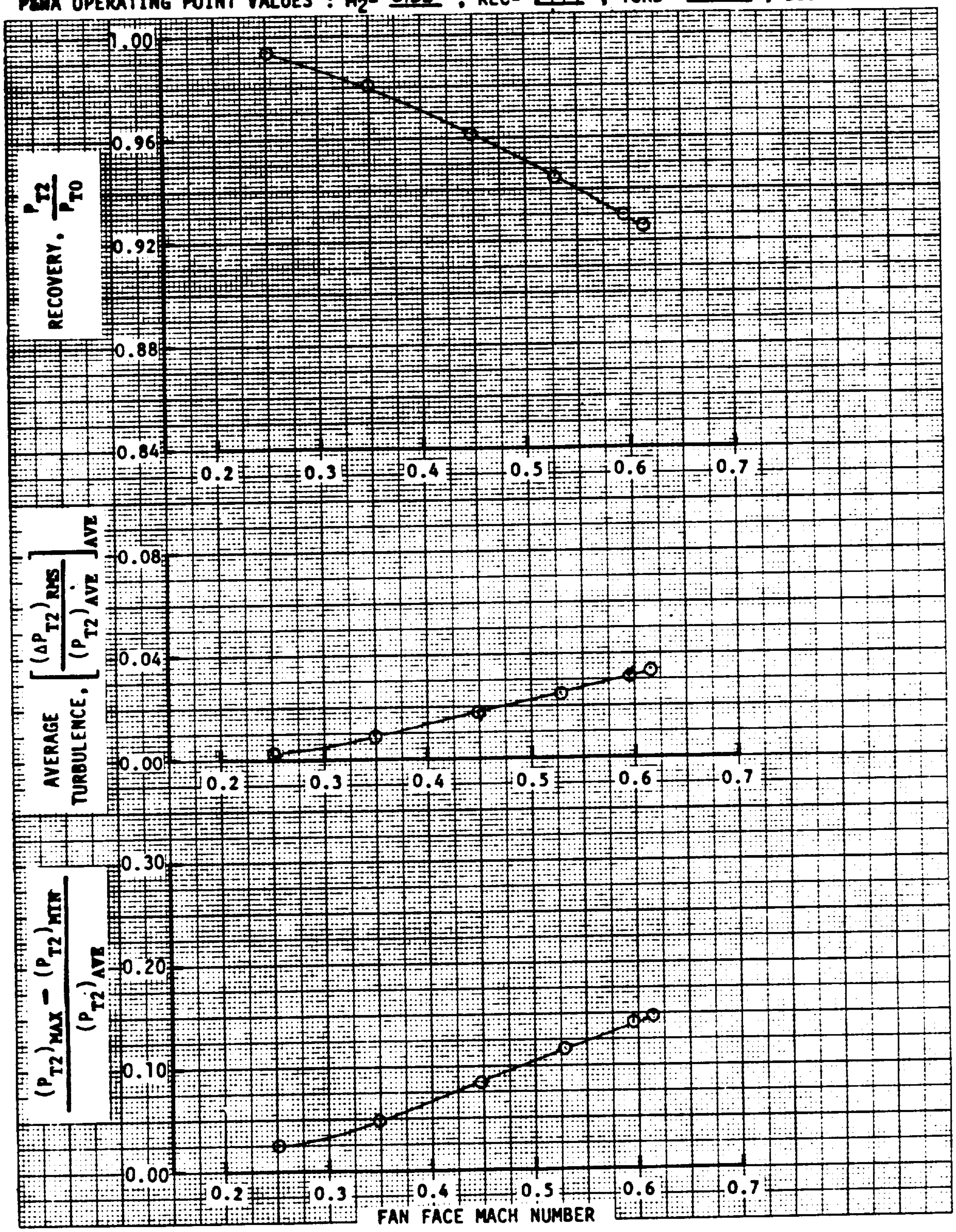
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3810-3822
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .849 ; TURB= .035 ; DIST= .238



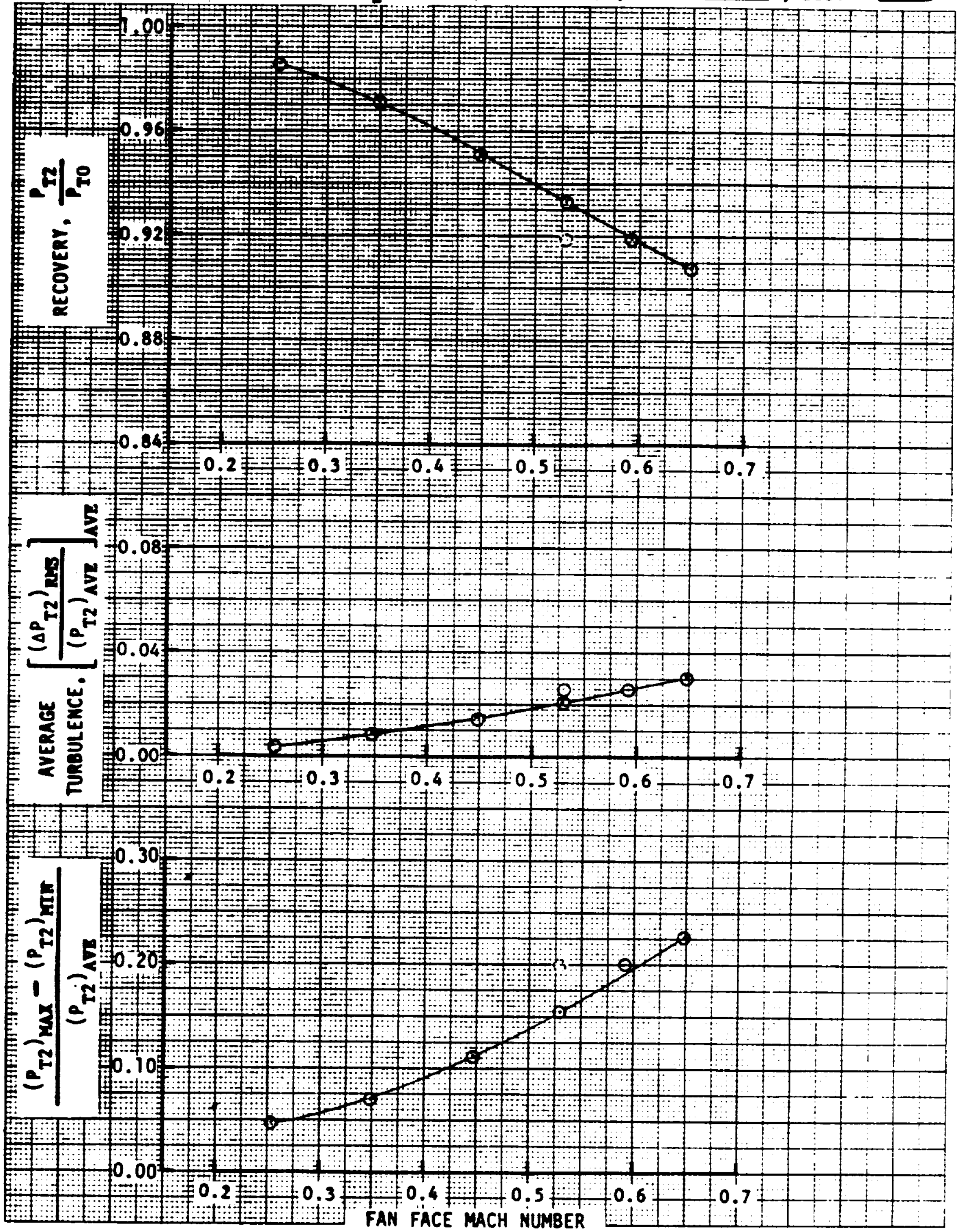
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3815-3821
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 10 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .828 ; TURB= .036 ; DIST= .233



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3823-3828
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .944 ; TURB= .025 ; DIST= .117



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3829-3834
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .933 ; TURB= .021 ; DIST= .156

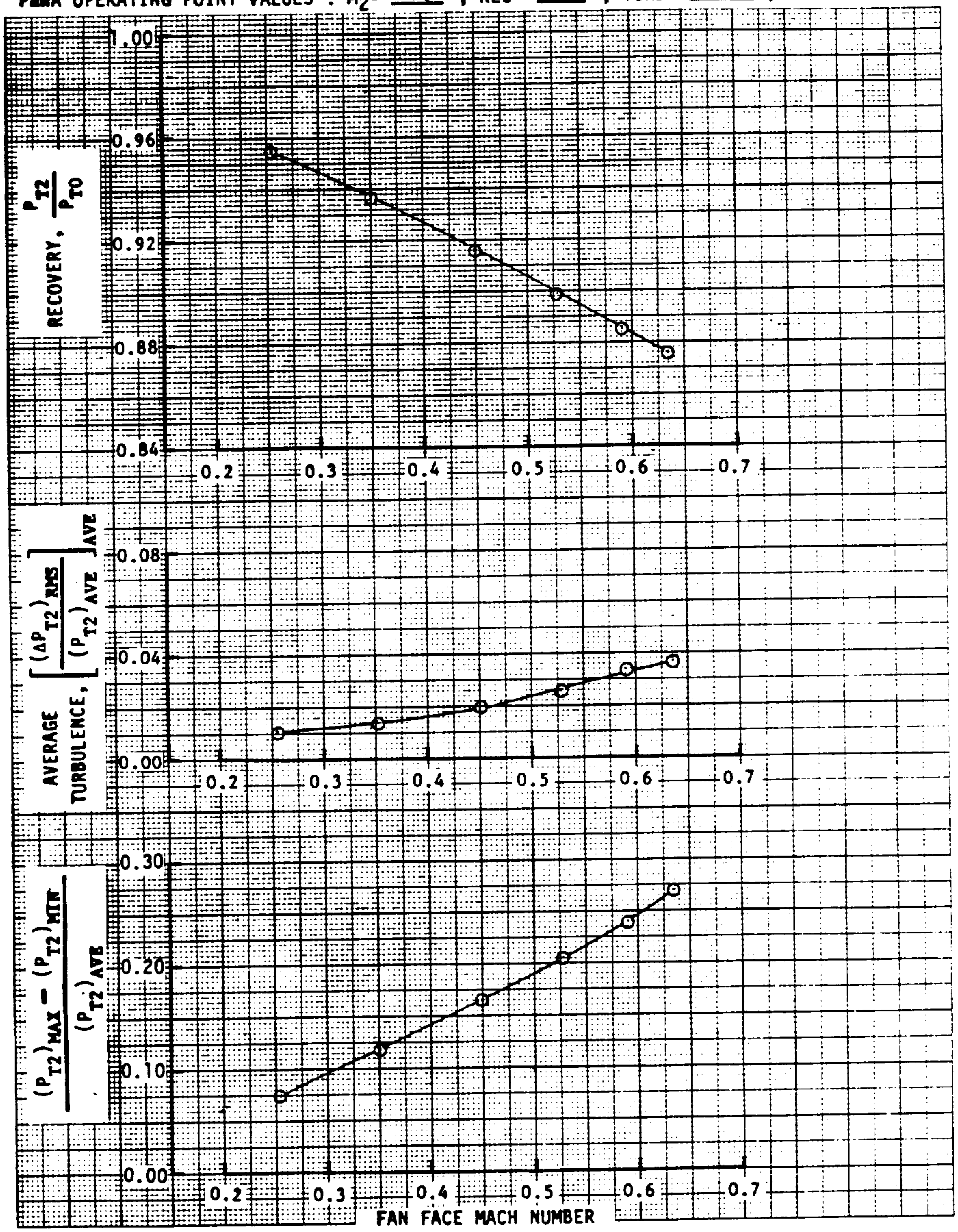


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

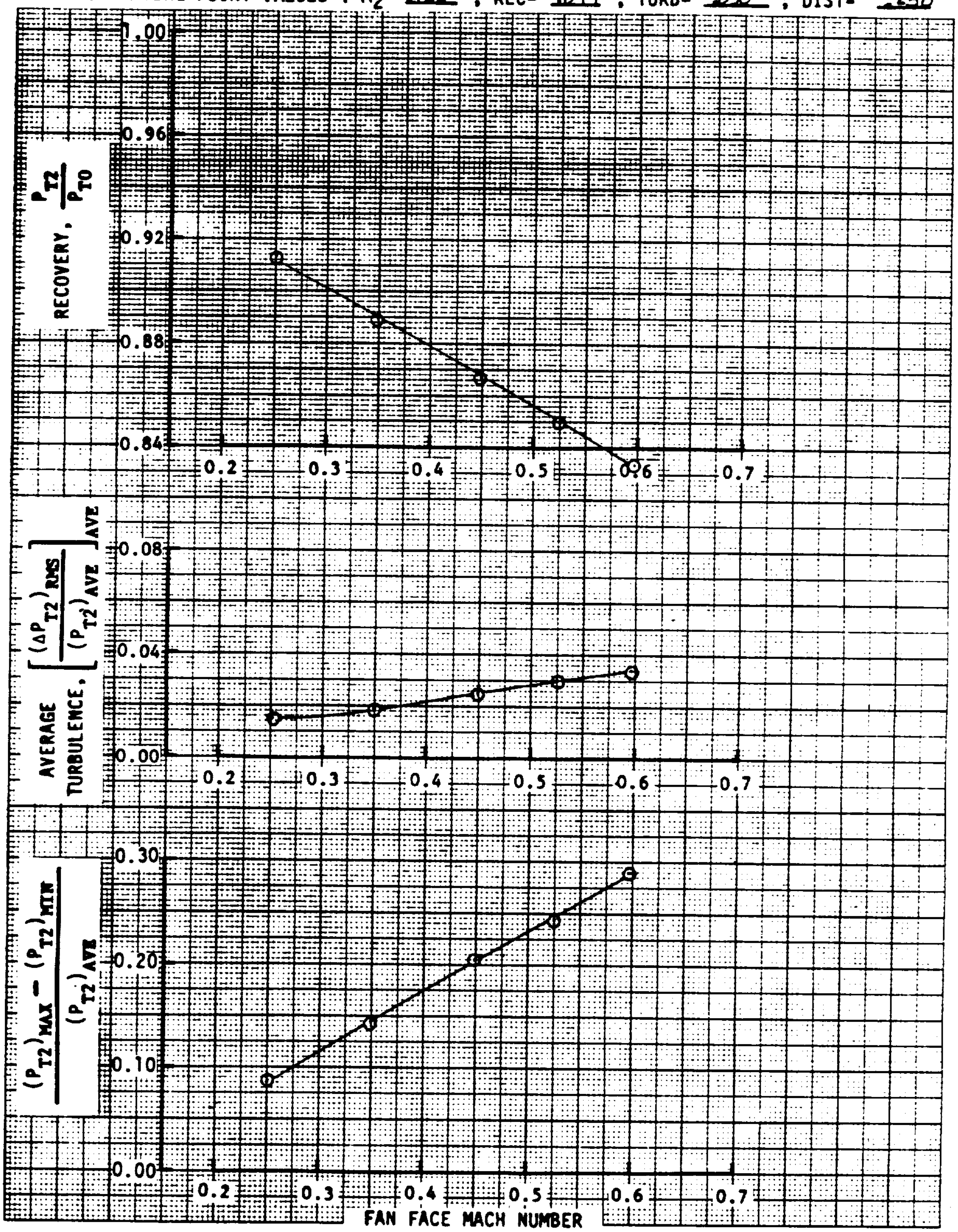
CONFIGURATION 19b ; READING NUMBERS 3835-3840

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

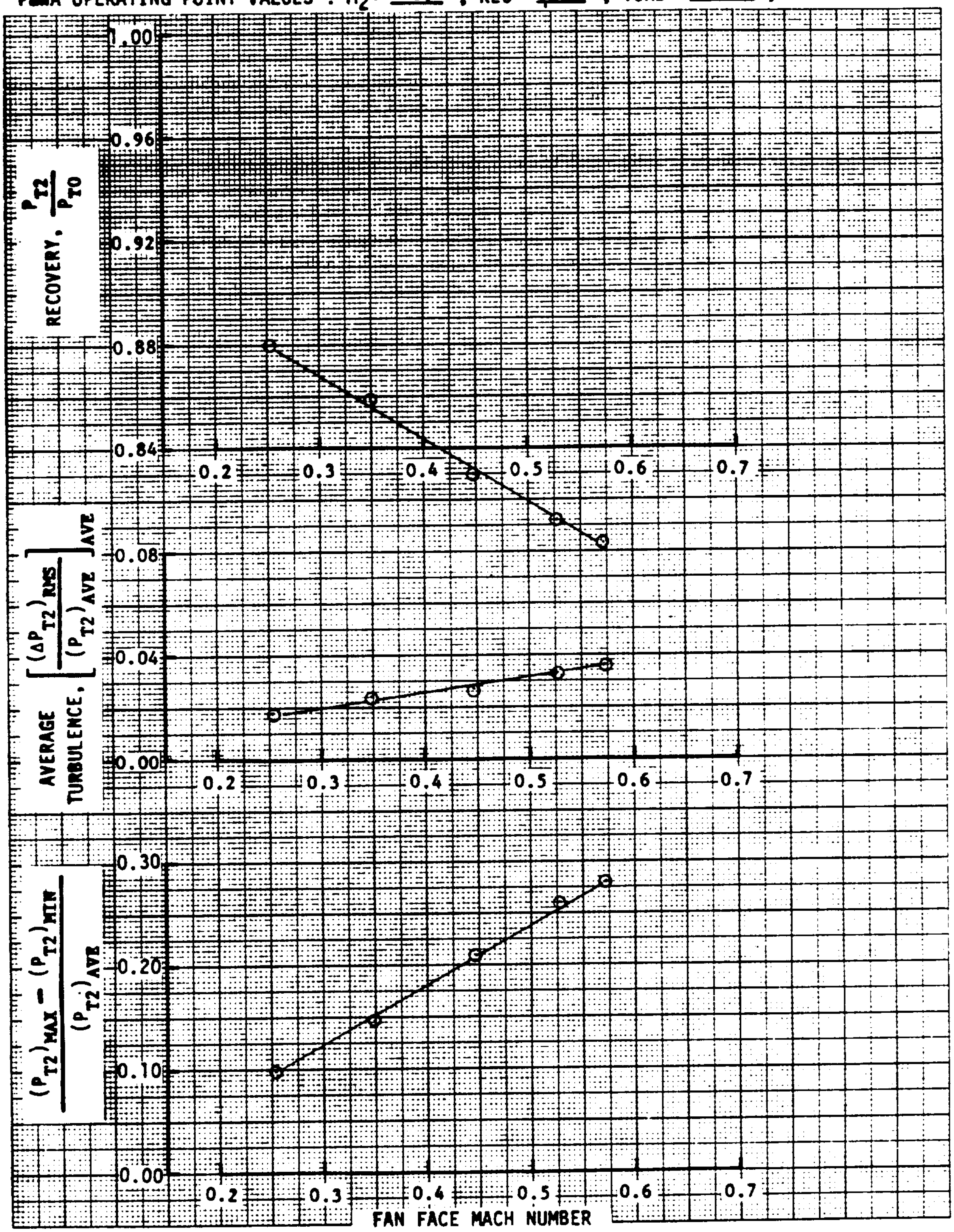
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .899 ; TURB= .026 ; DIST= .207



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3841-3845
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .849 ; TURB= .030 ; DIST= .250



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 19b ; READING NUMBERS 3846-3850
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .812 ; TURB= .033 ; DIST= .260

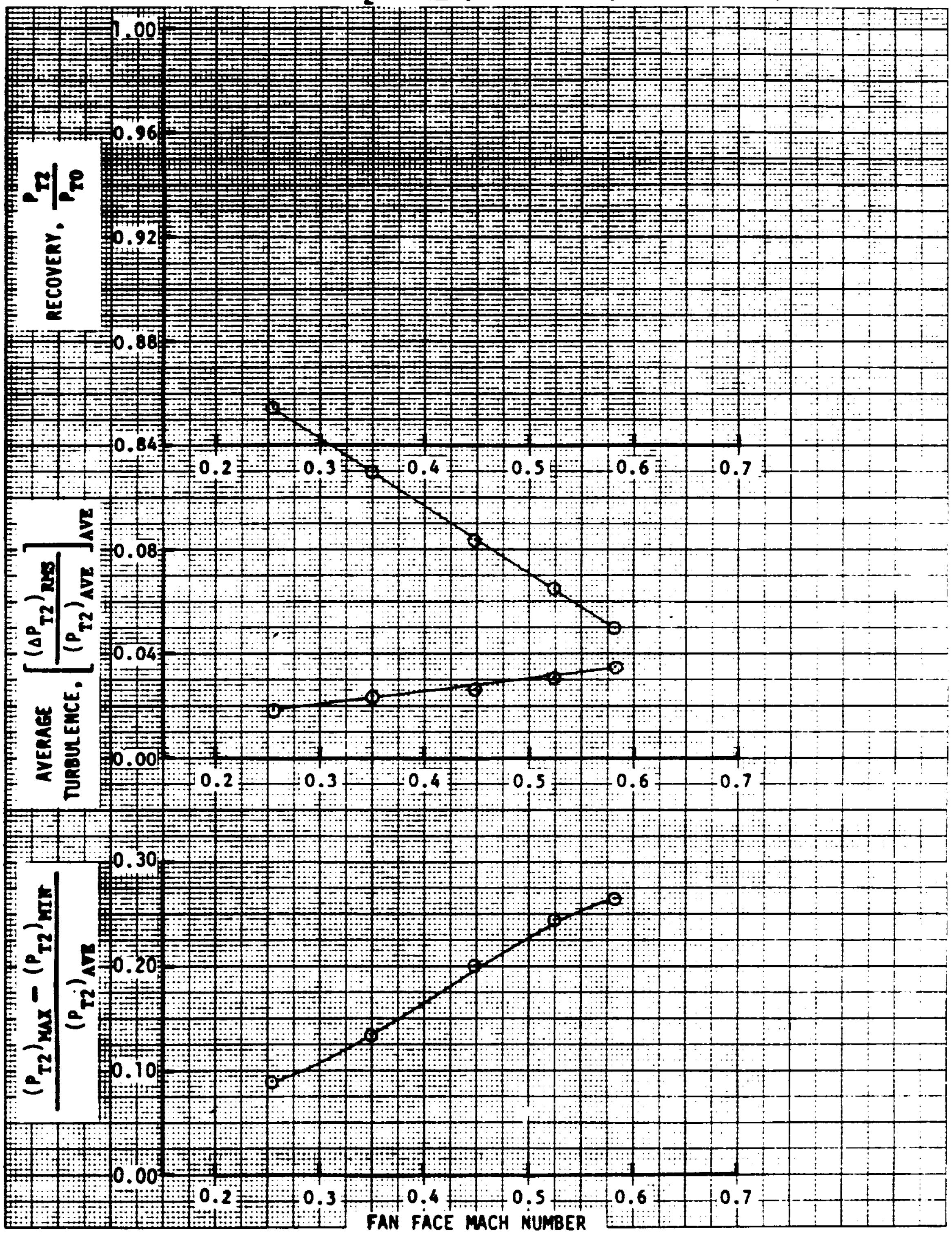


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

CONFIGURATION 19b ; READING NUMBERS 3851-3855

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.

P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .783 ; TURB= .032 ; DIST= .244



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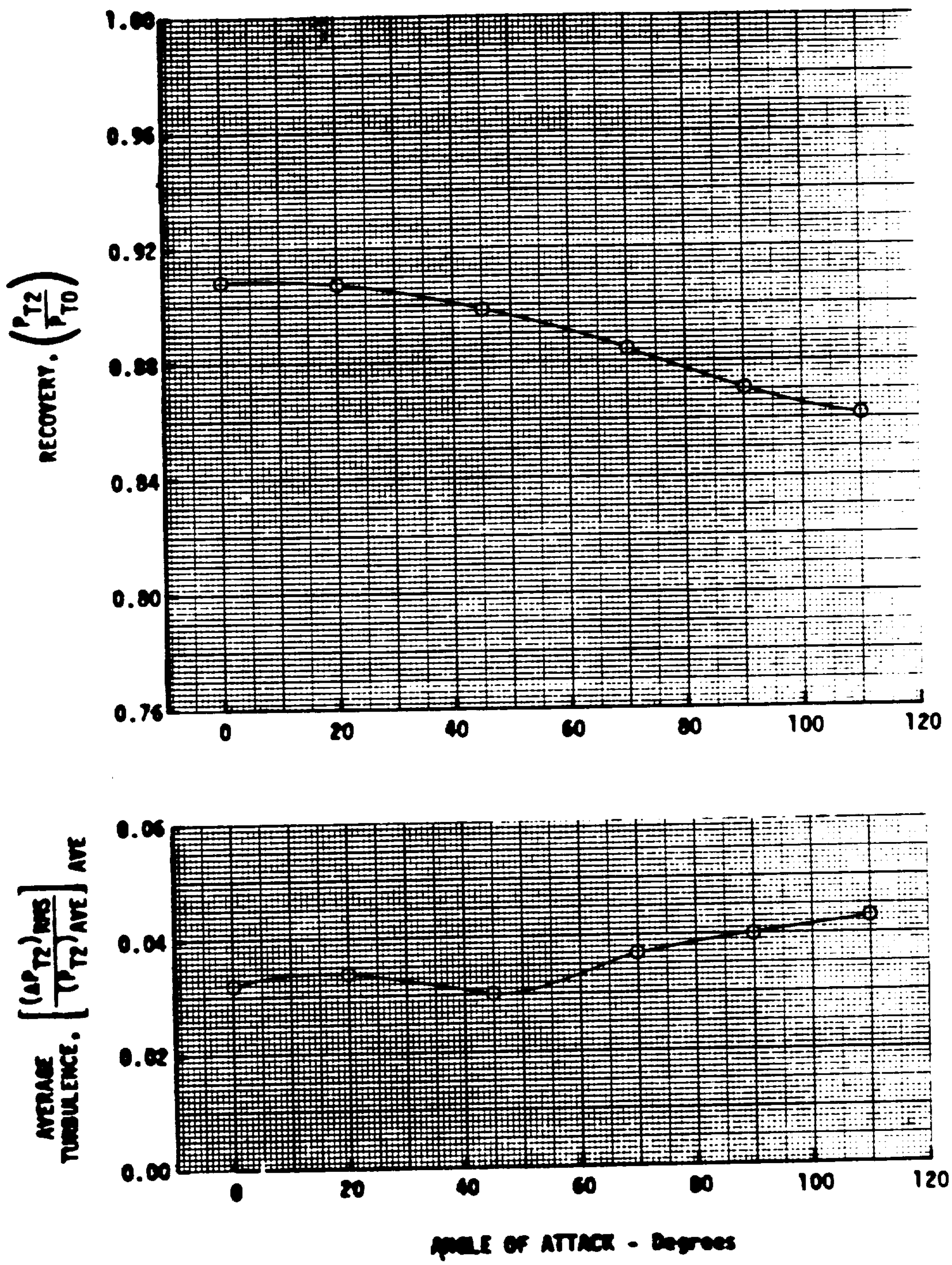
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19b; DESCRIPTION 90° CW Rotation, Sharp Lip Inlet



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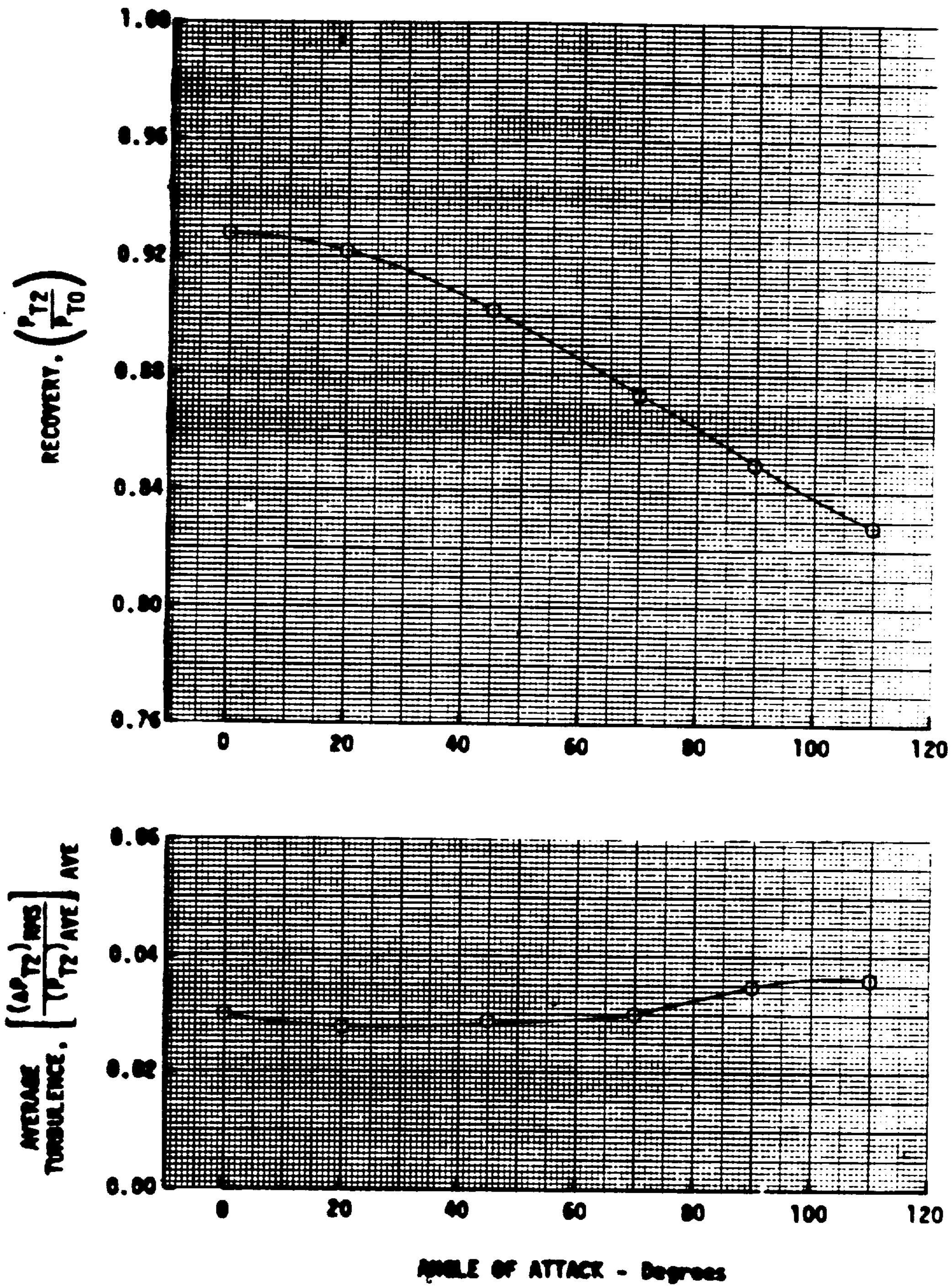
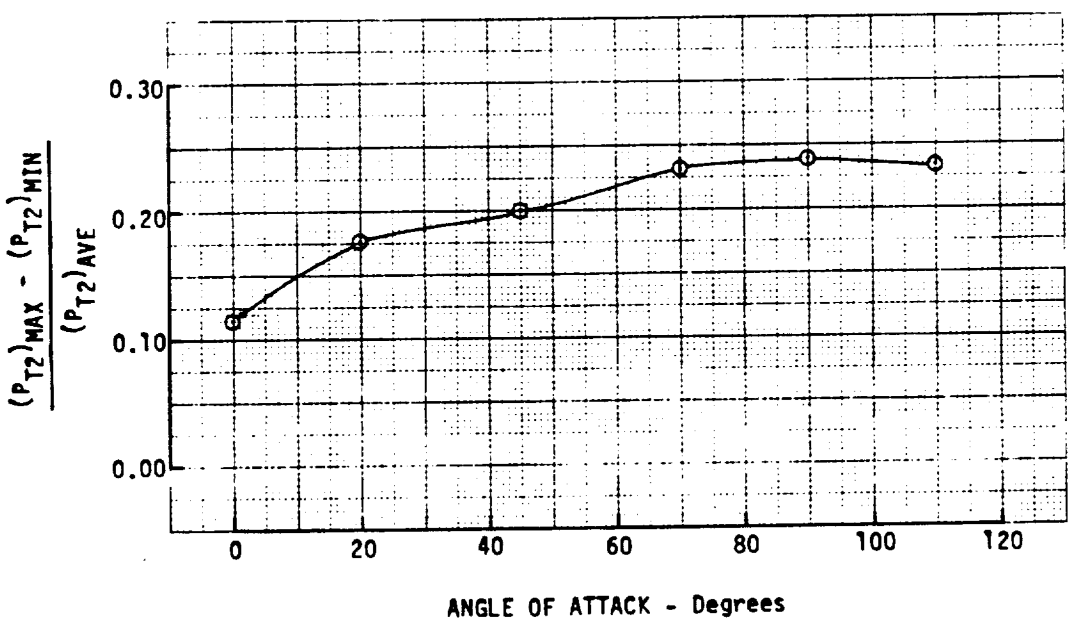
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 19b; DESCRIPTION 90° CW Rotation, Sharp Lip Inlet



DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 196; DESCRIPTION 90° Clockwise Rotation,
Sharp Lip Inlet



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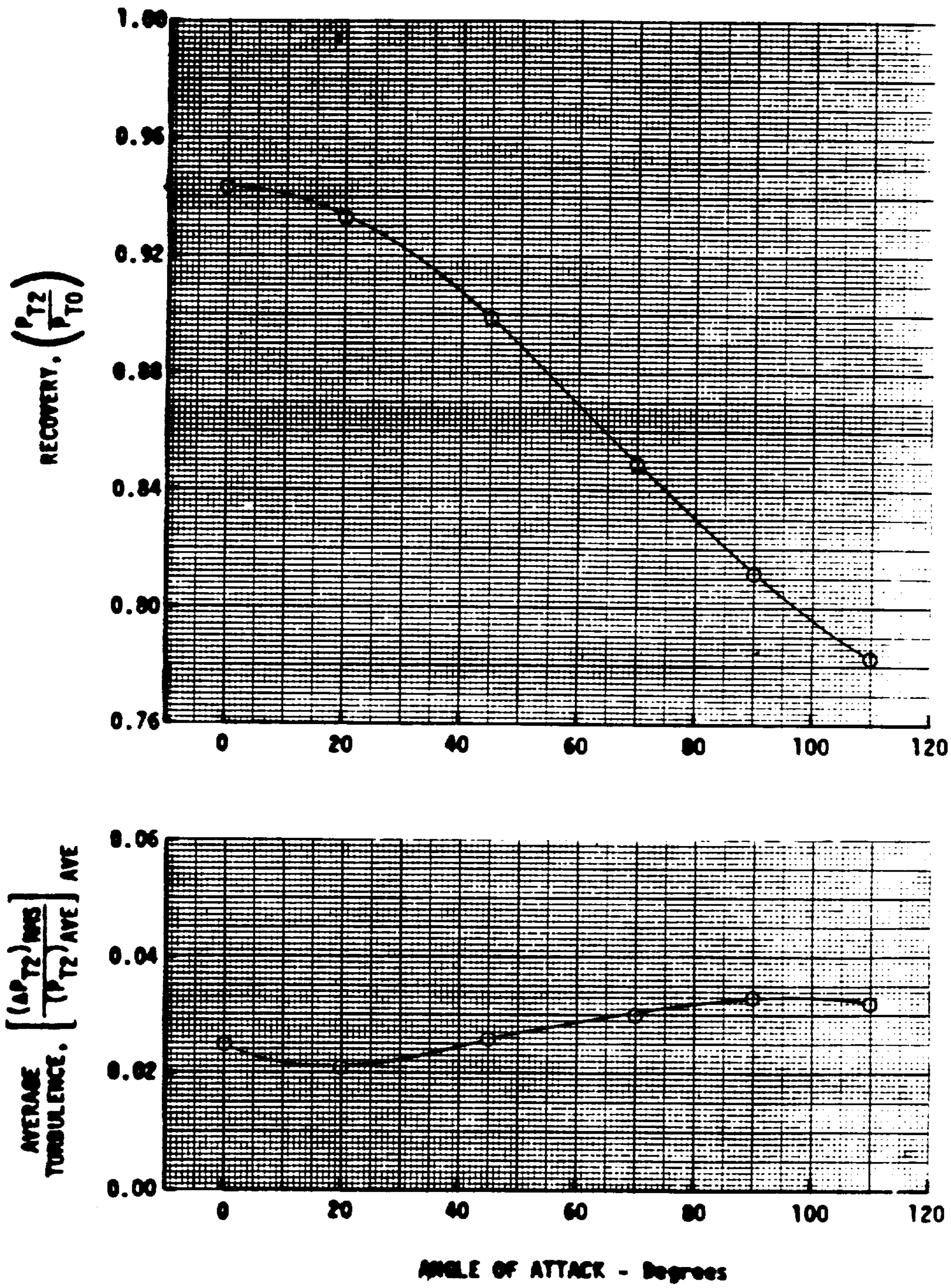
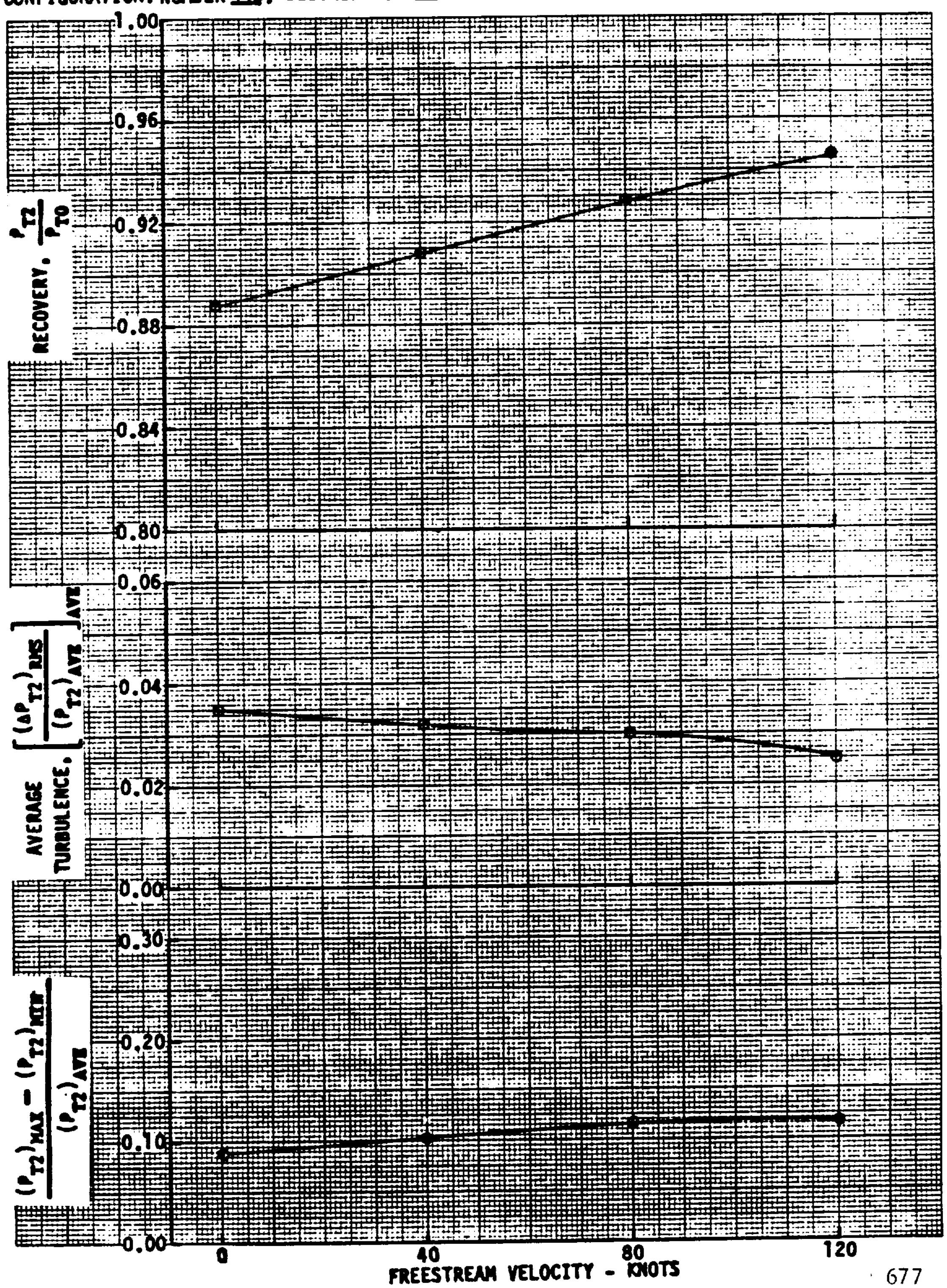
OF POOR QUALITY

RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

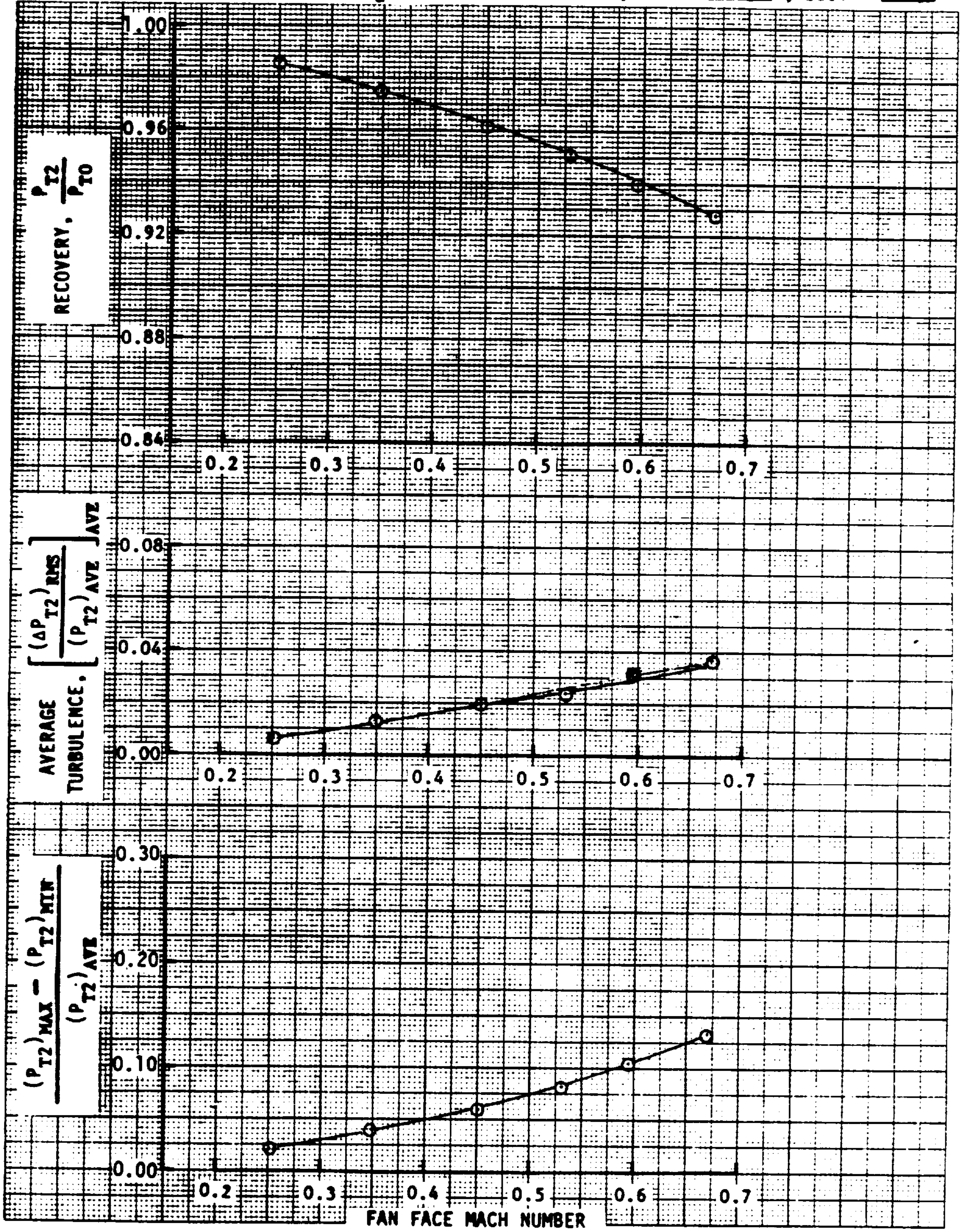
CONFIGURATION: NUMBER 19b; DESCRIPTION 90° CW Rotation, Sharp Lip Inlet



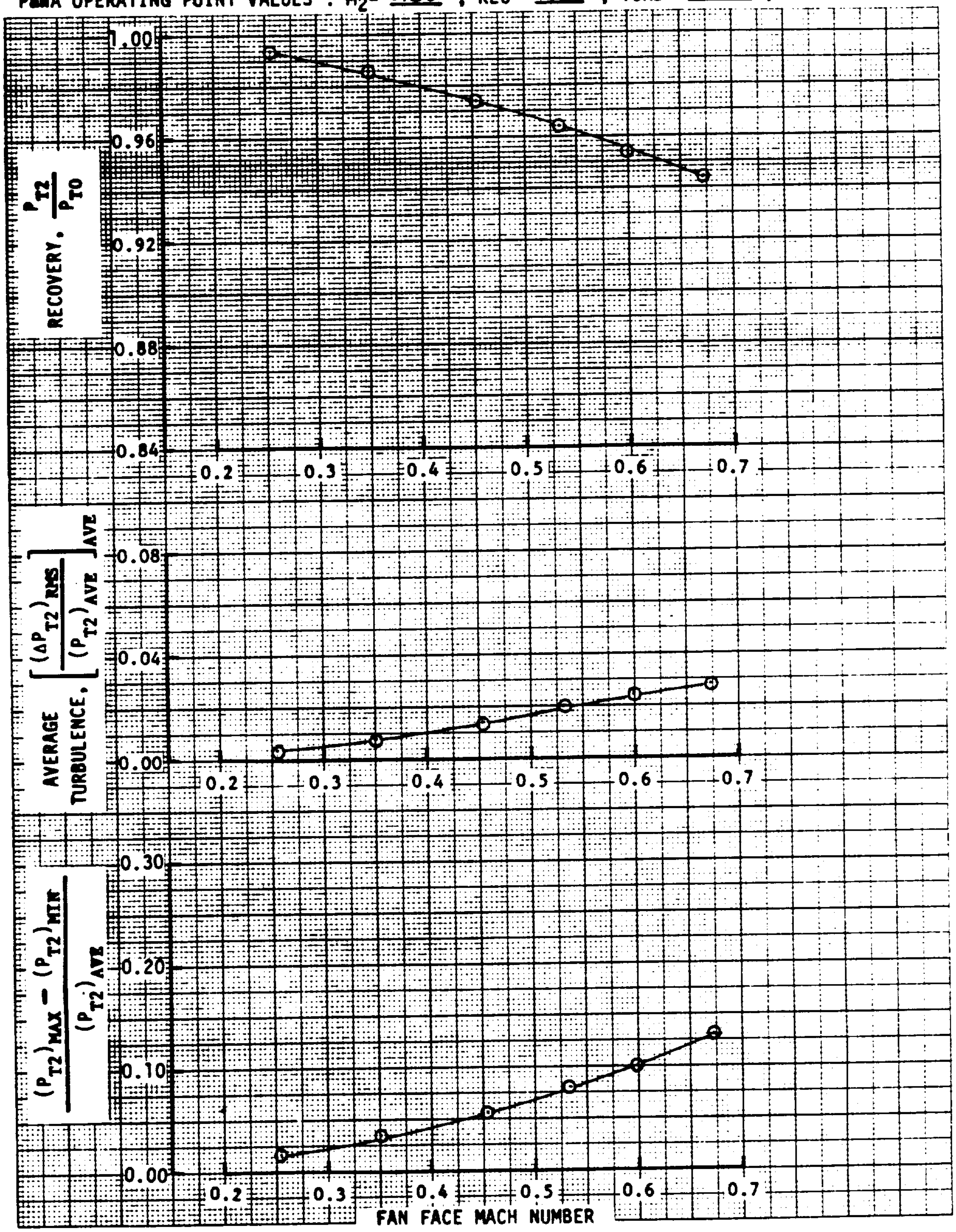
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 0 DEGREES
SIDESLIP ANGLE = ___ DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 19b; DESCRIPTION 90° CLOCKWISE ROTATION, Sharp Lip Inlet



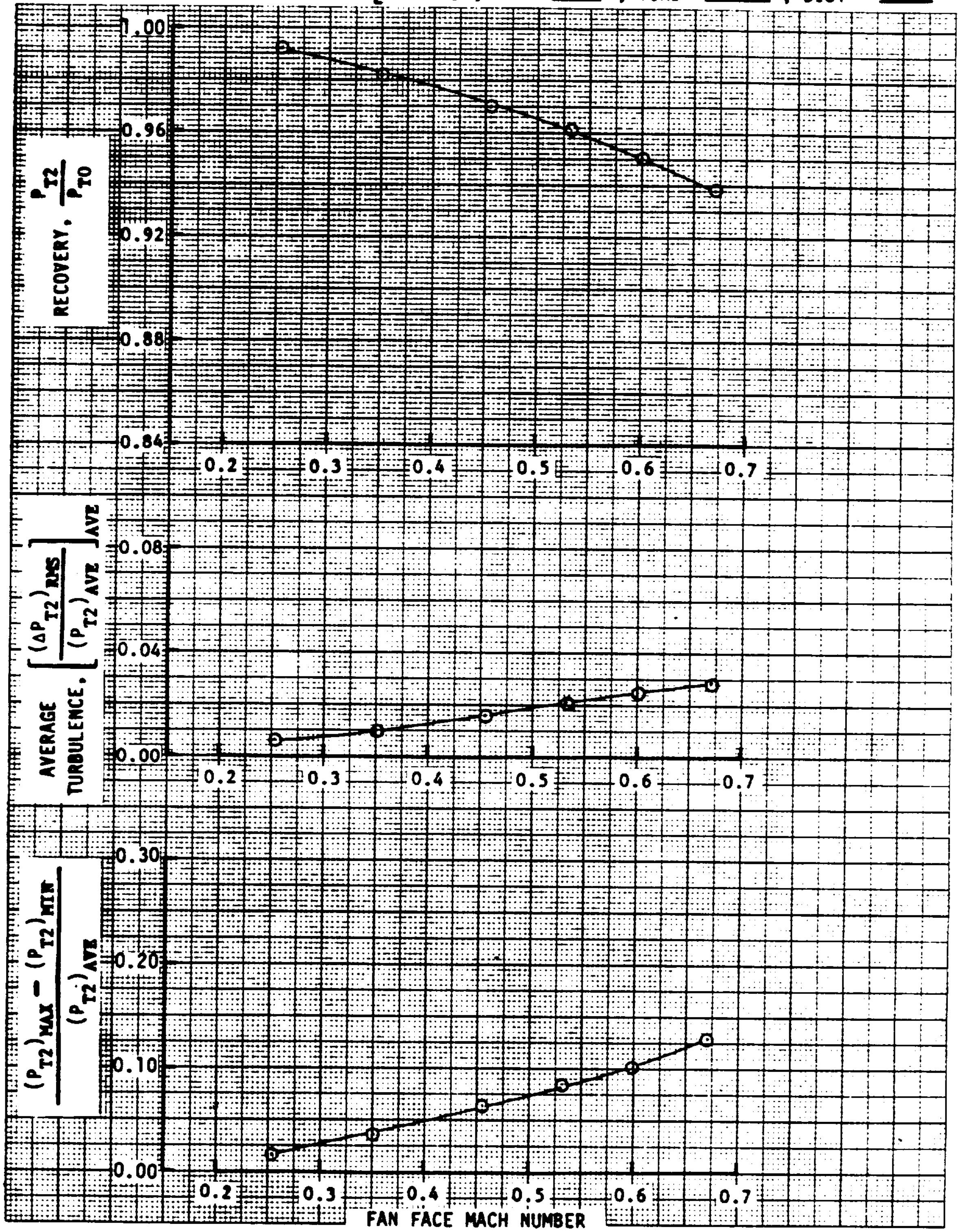
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3377-3382
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC = .951 ; TURB = .025 ; DIST = .084



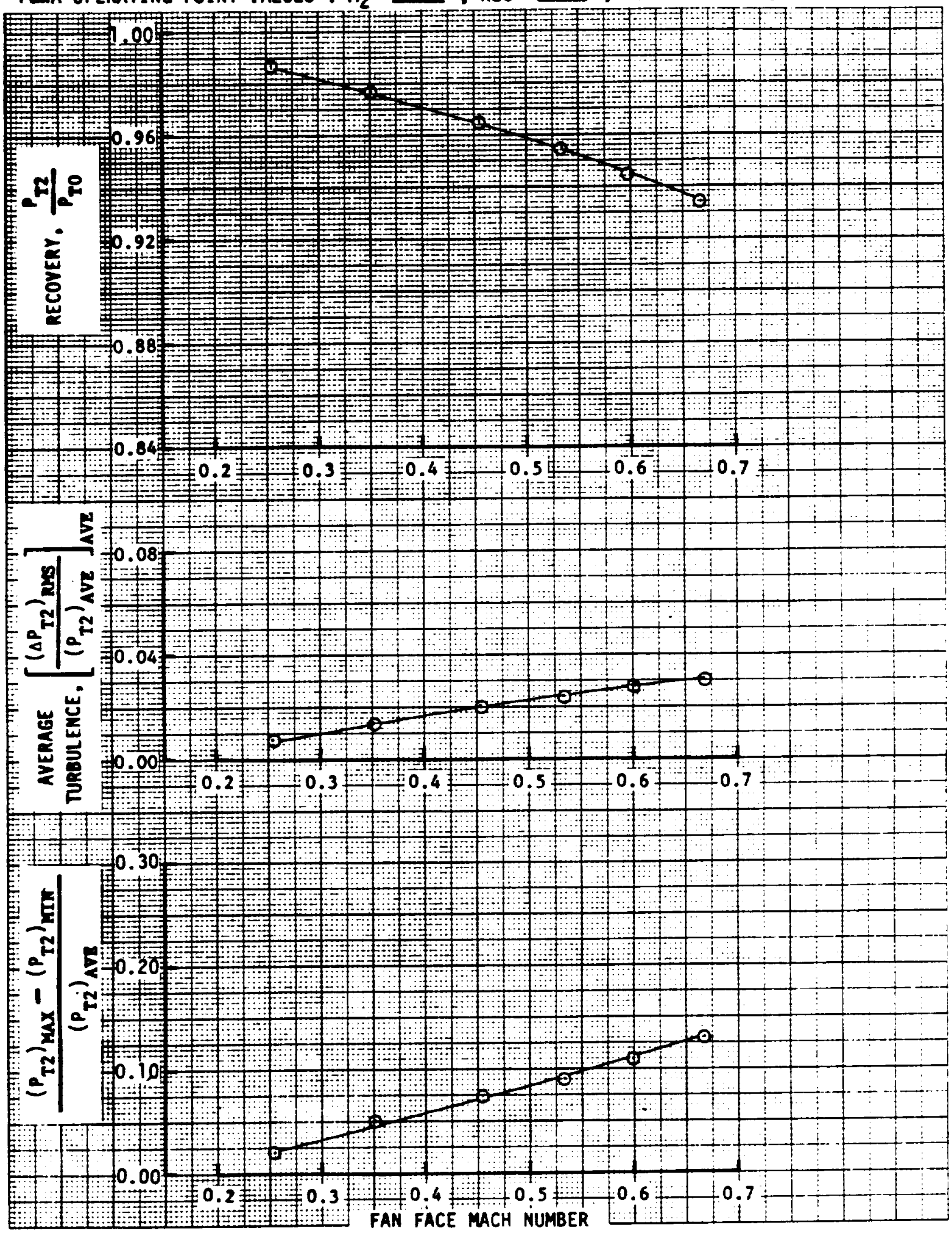
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3383-3388
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .019 ; DIST= .078



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3389-3394
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .961 ; TURB= .021 ; DIST= .082



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3395-3400
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .024 ; DIST= .093

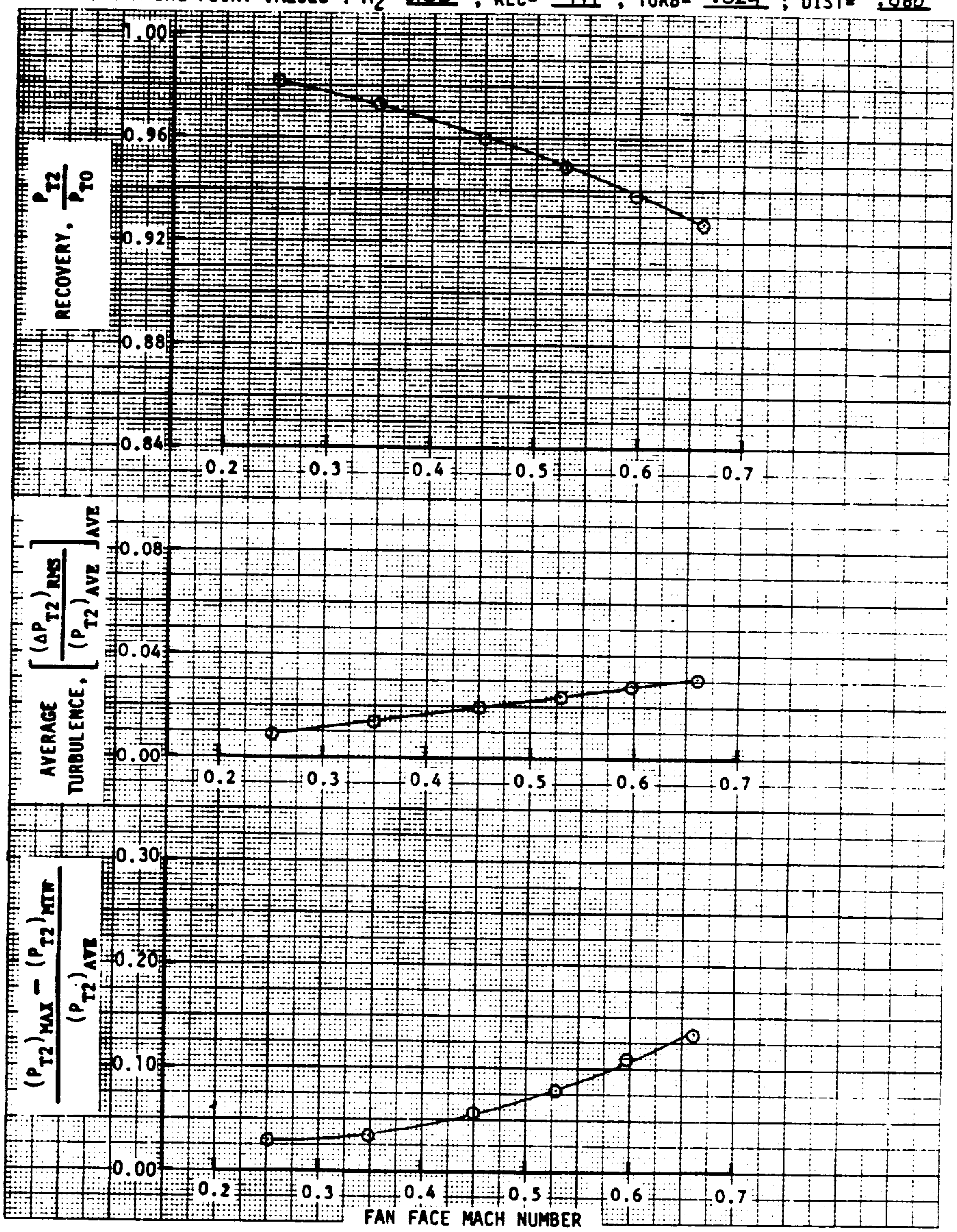


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

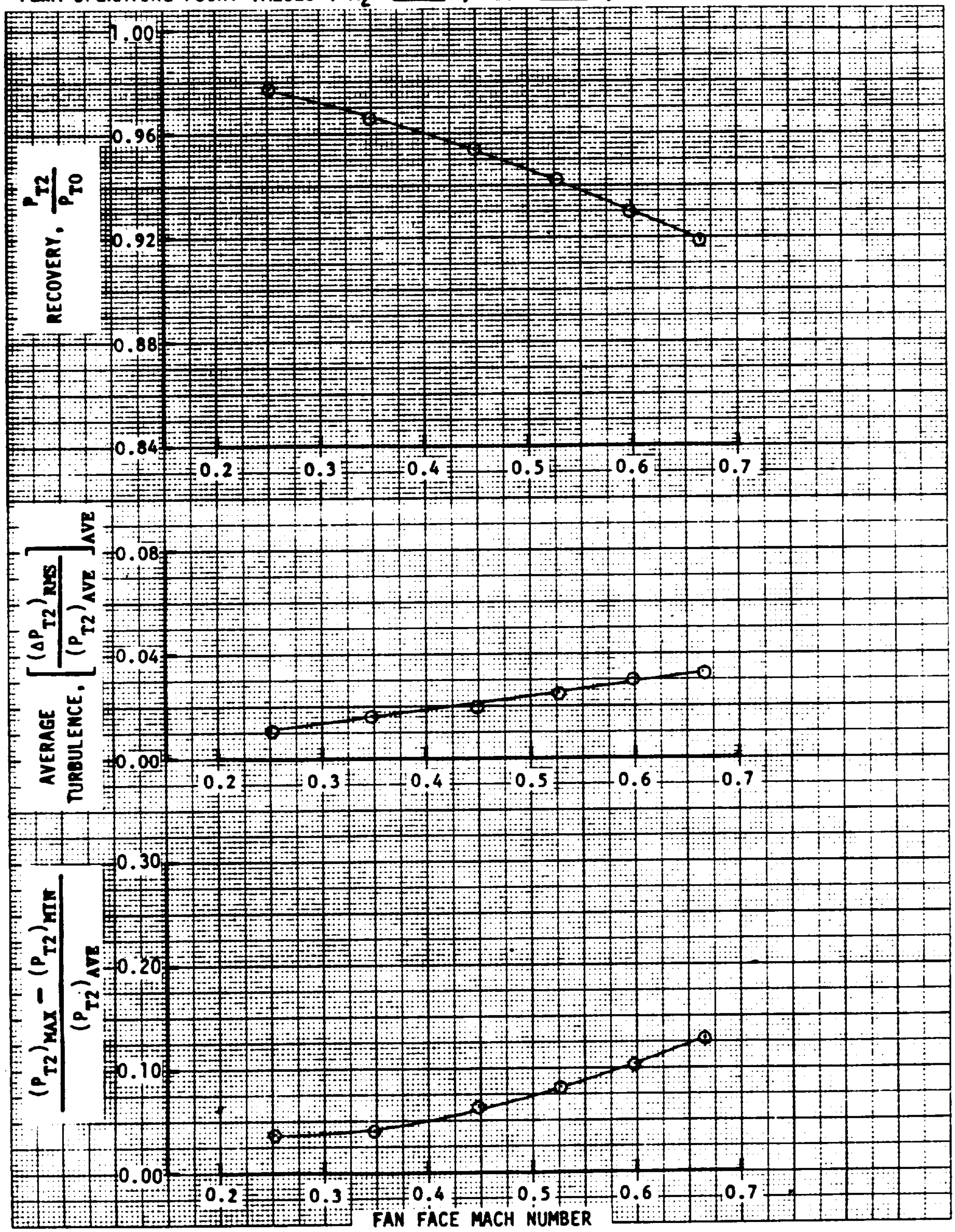
CONFIGURATION 20 ; READING NUMBERS 3401-3406

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.

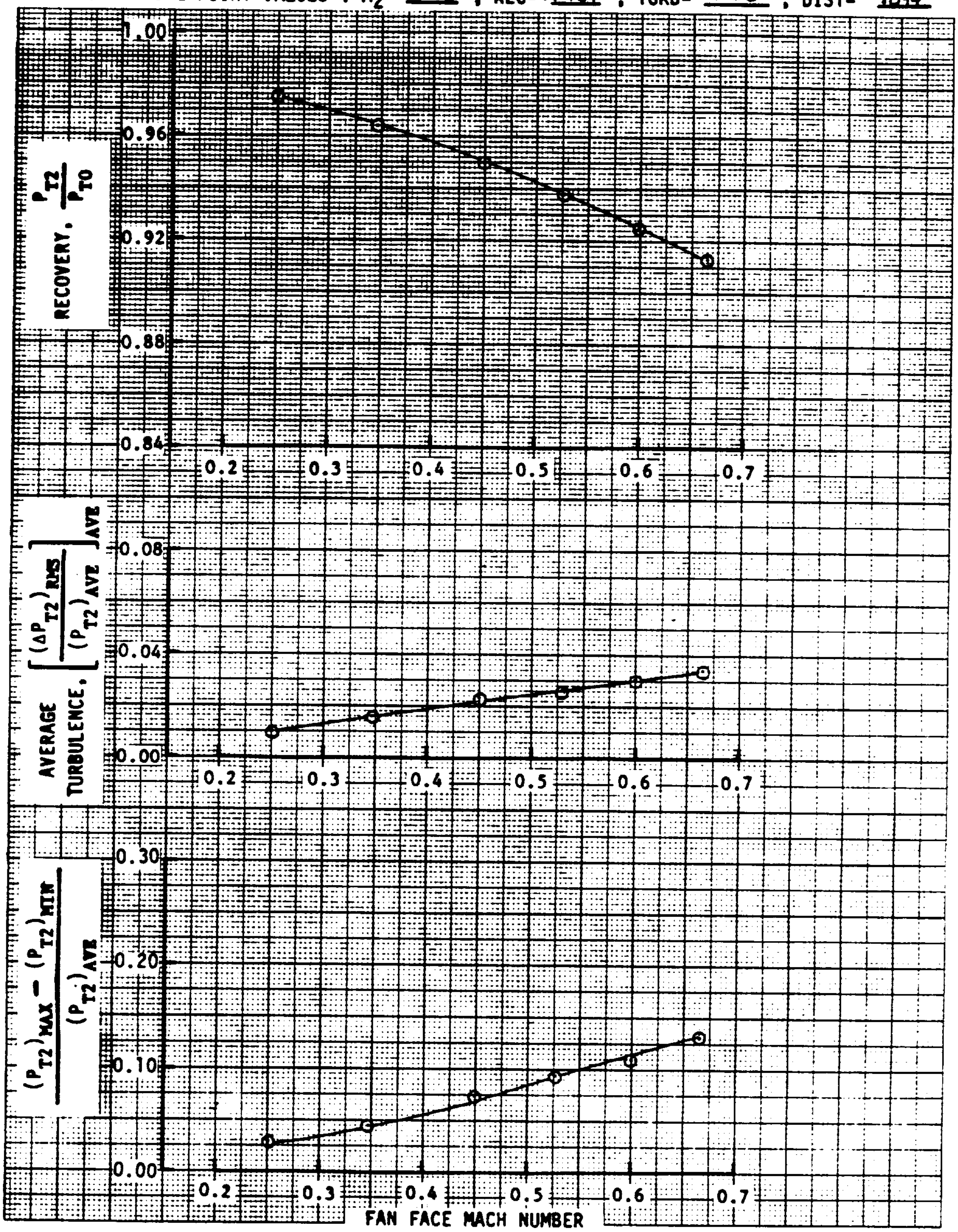
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .949 ; TURB= .024 ; DIST= .080



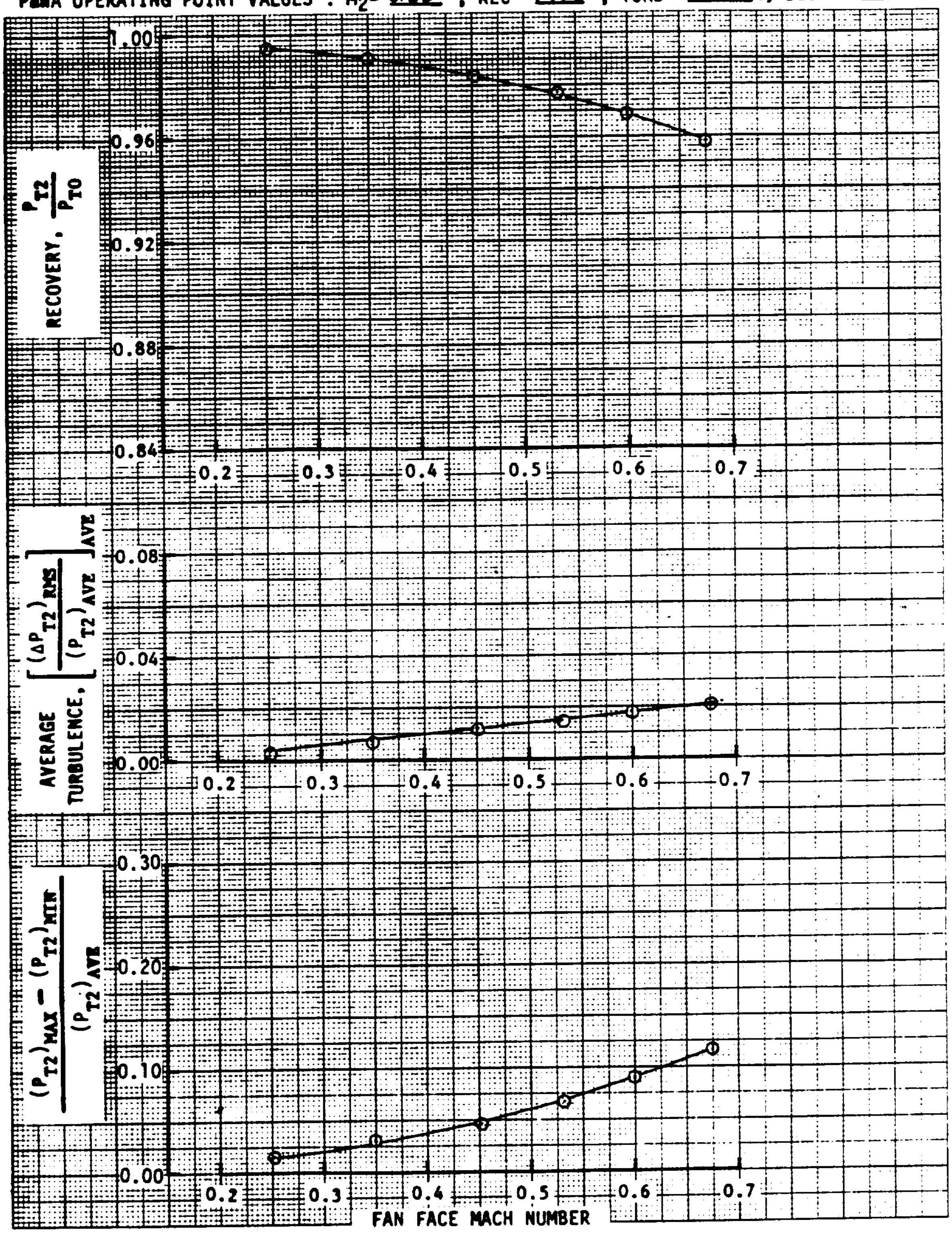
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3407-3412
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
PMMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .941 ; TURB= .025 ; DIST= .082



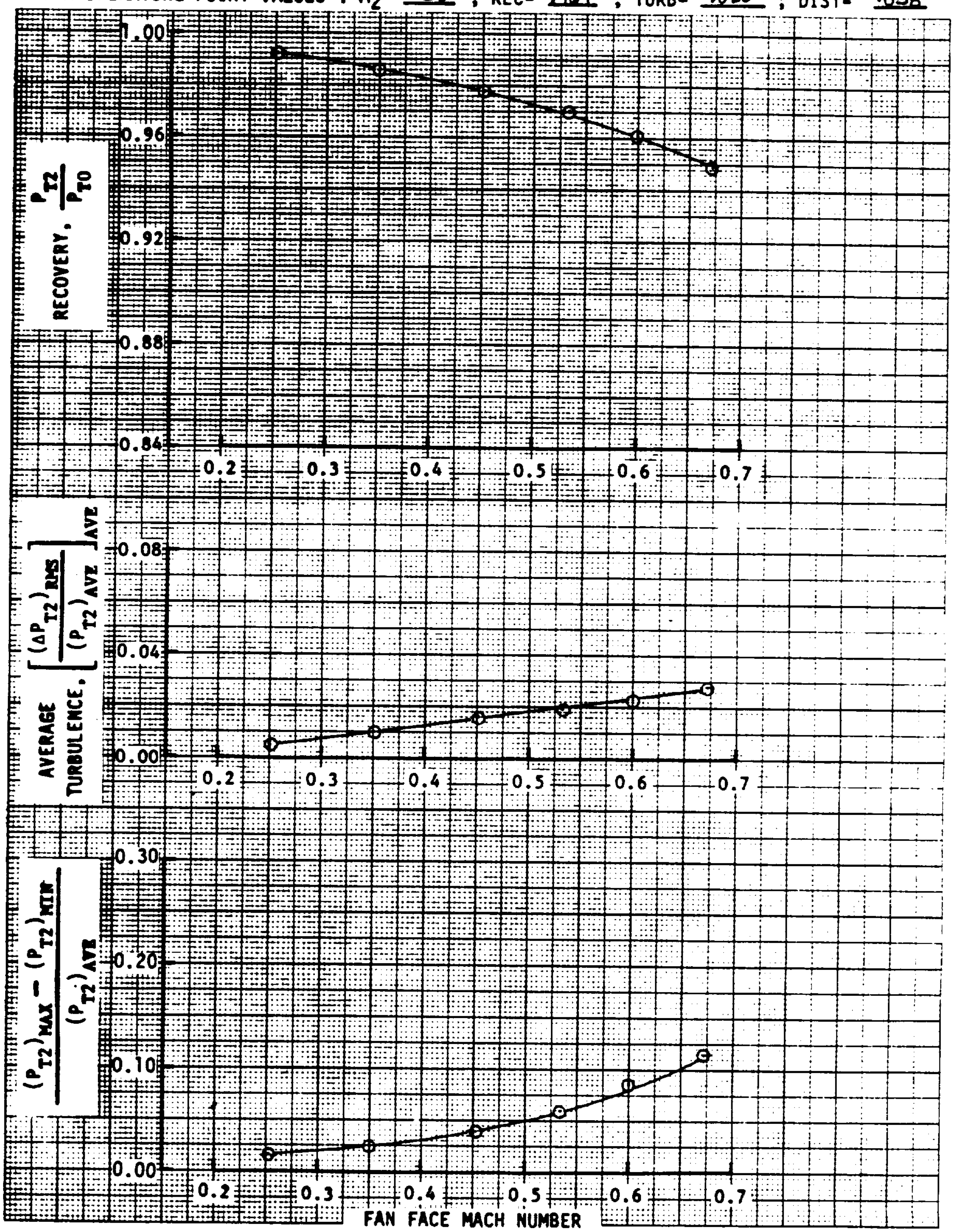
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3413-3418
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
PBMA OPERATING POINT VALUES : M_2 = 0.55 ; REC= .937 ; TURB= .026 ; DIST= .094



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3419-3424
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .976 ; TURB= .015 ; DIST= .068



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3425-3430
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .968 ; TURB= .020 ; DIST= .058

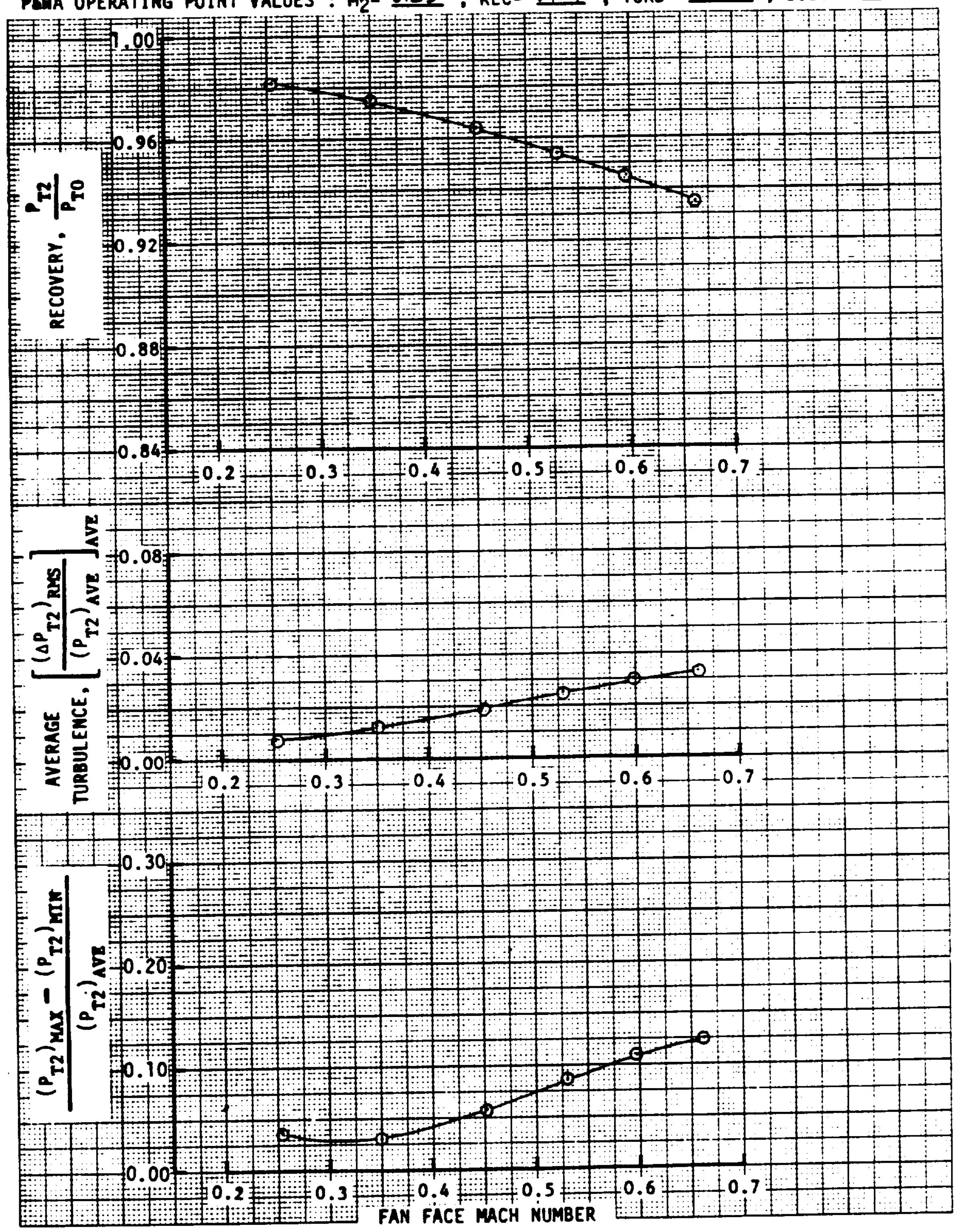


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

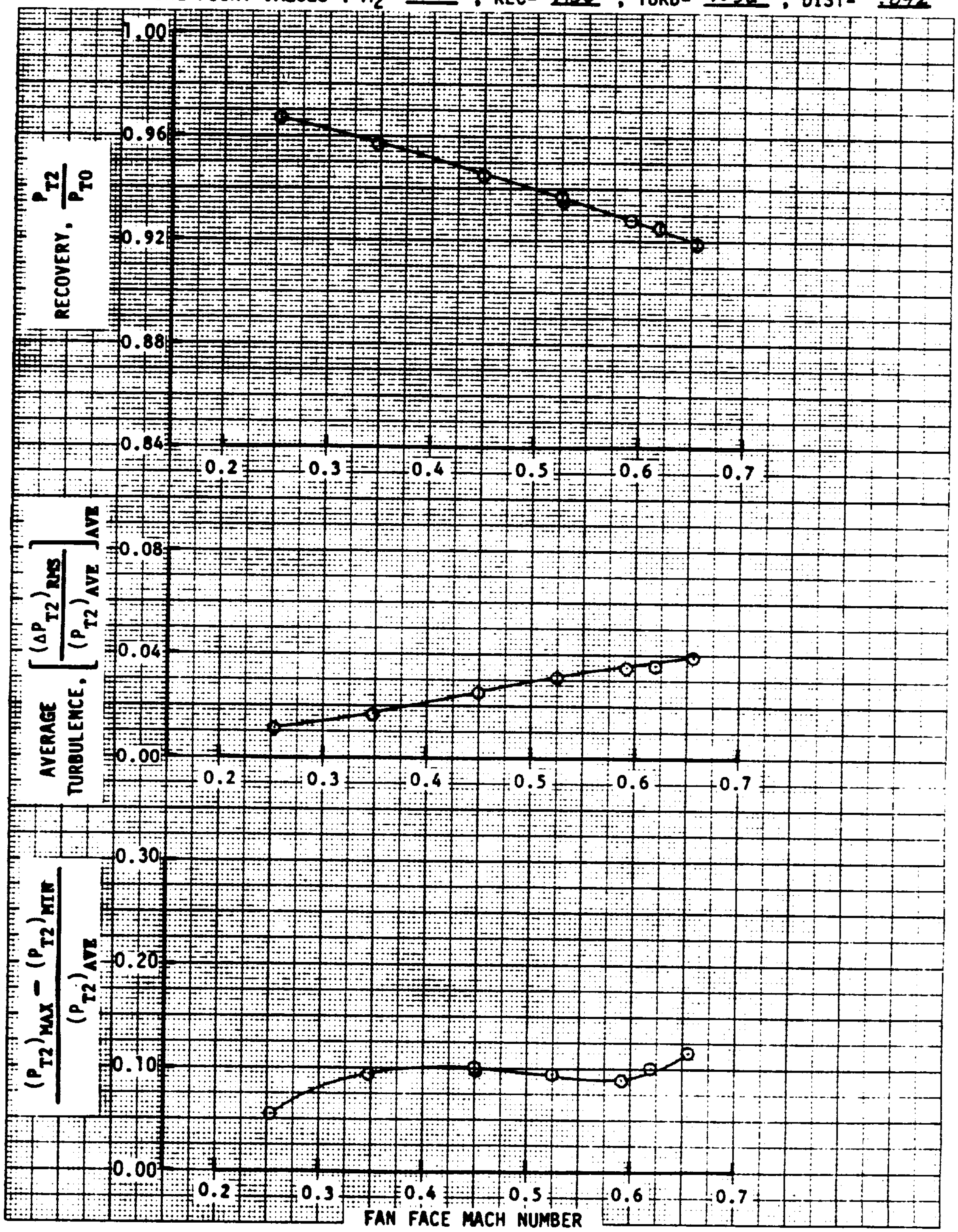
CONFIGURATION 20 ; READING NUMBERS 3431-3438

FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

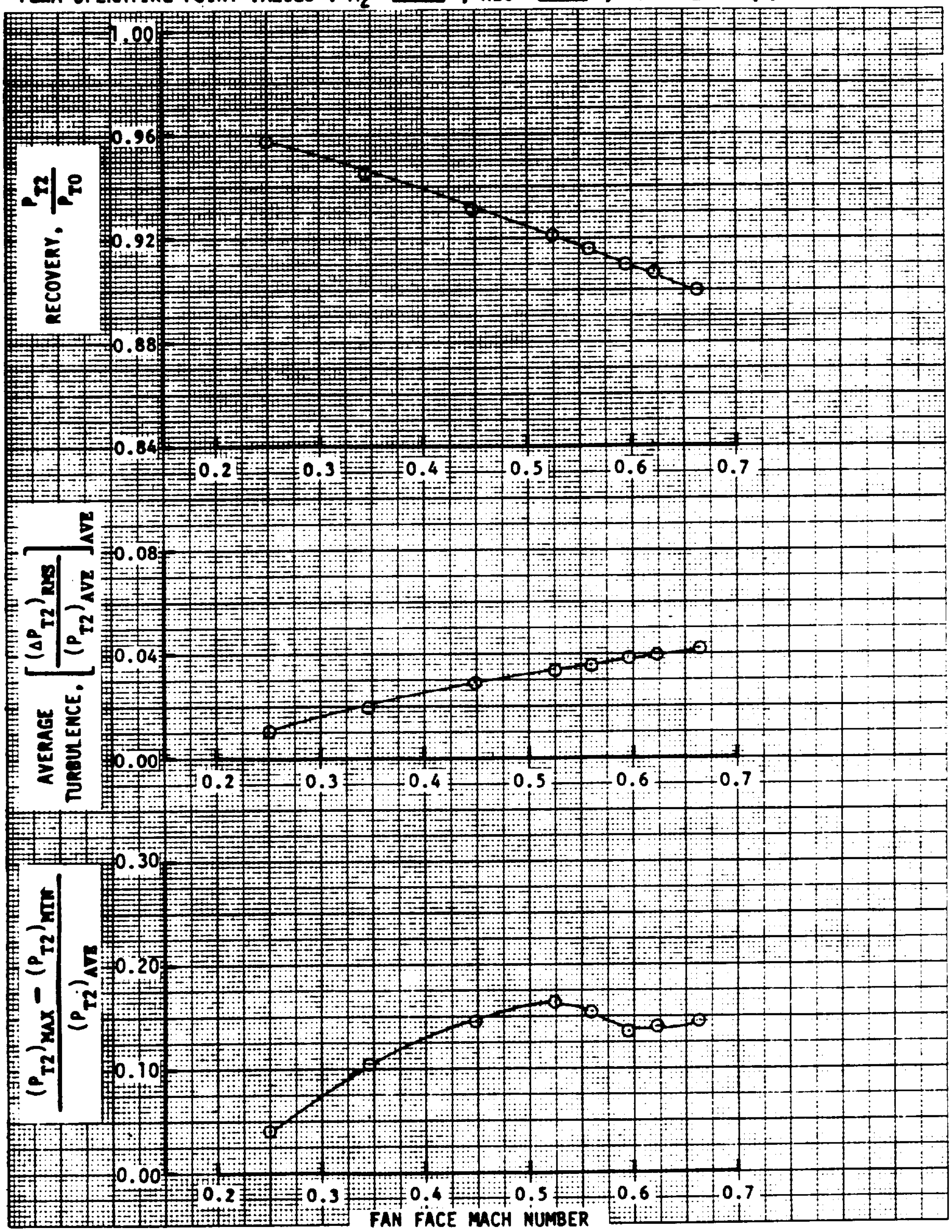
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .954 ; TURB= .025 ; DIST= .086



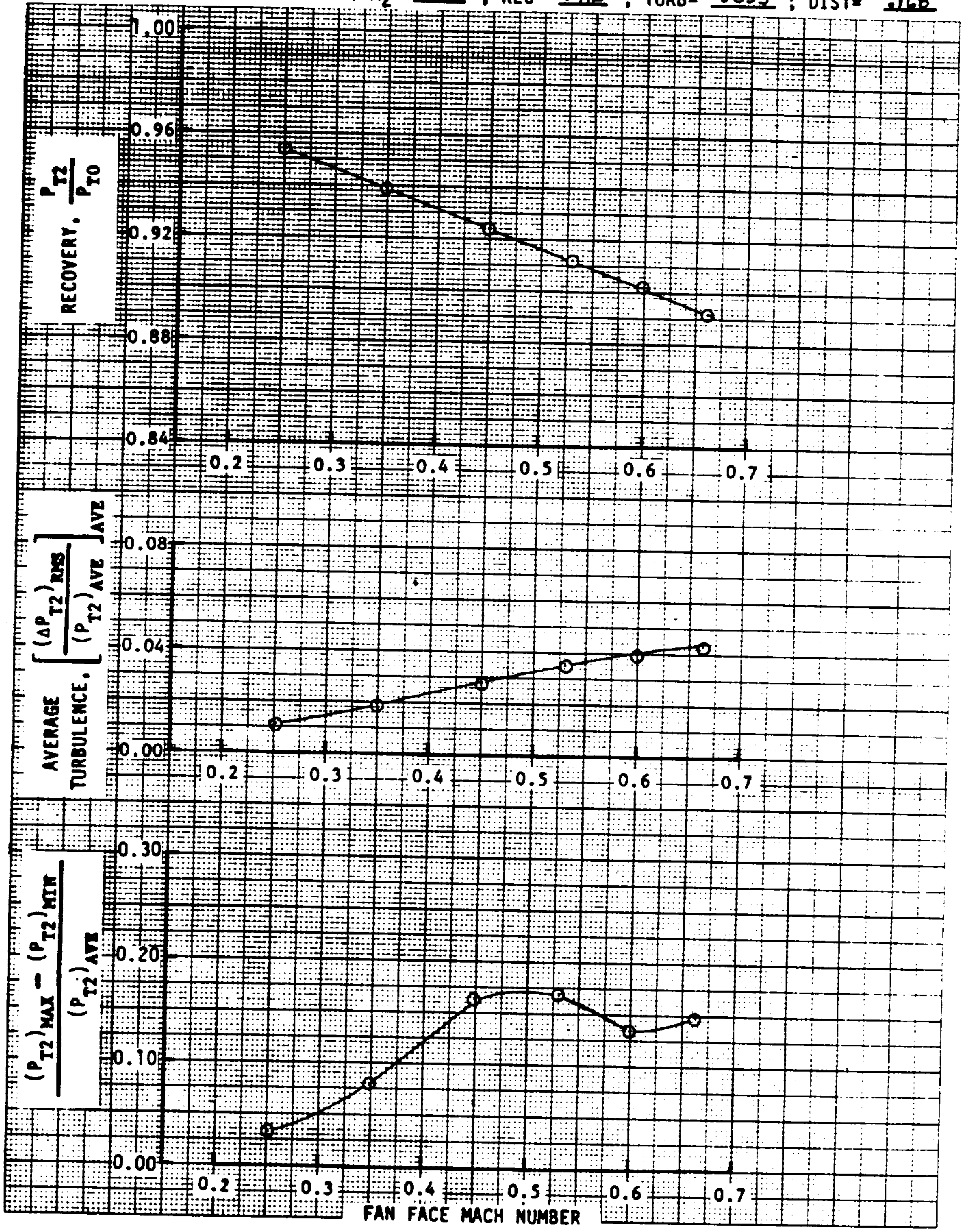
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3439-3447
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .936 ; TURB= .032 ; DIST= .092



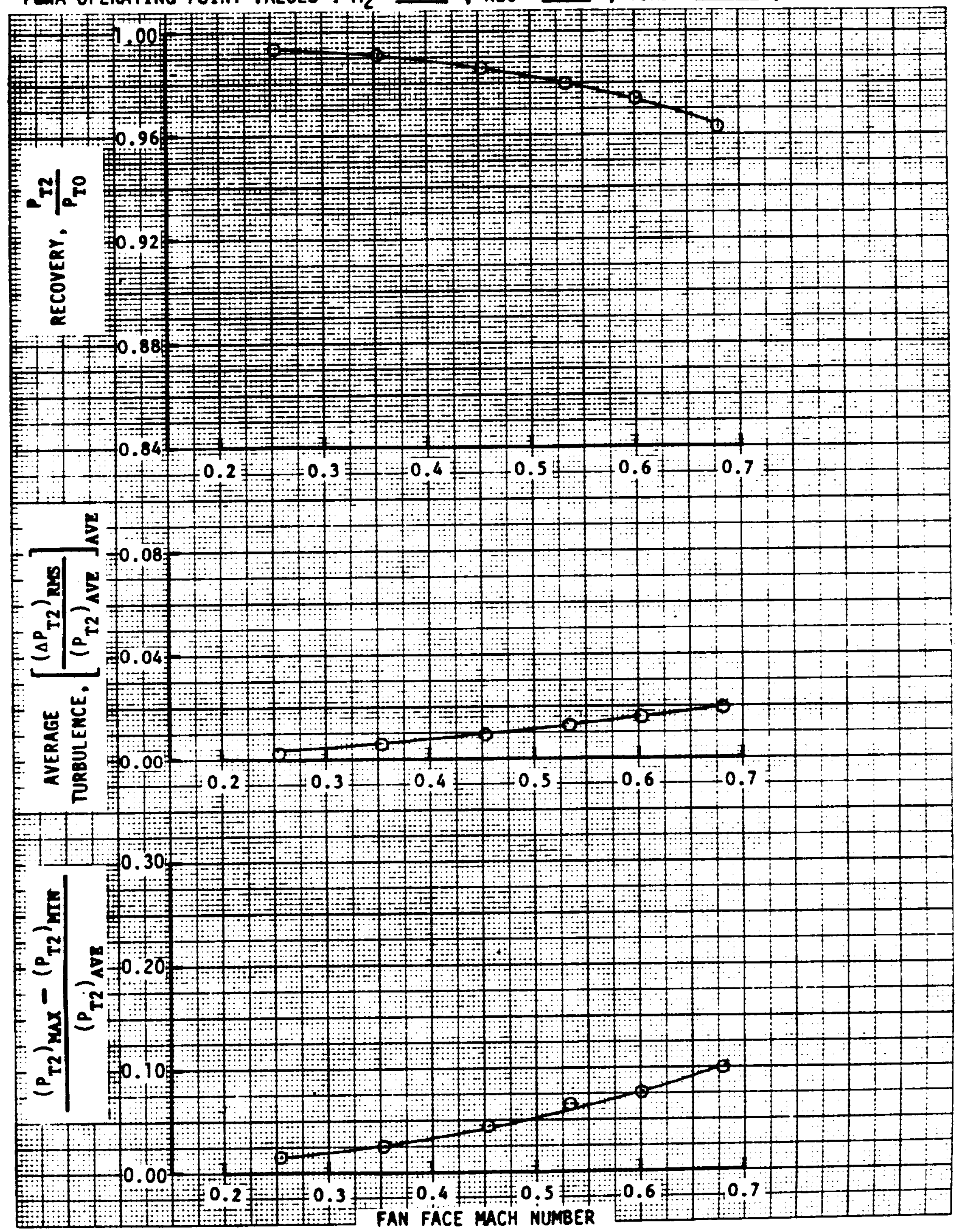
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3448-3455
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .920 ; TURB= .034 ; DIST= .162



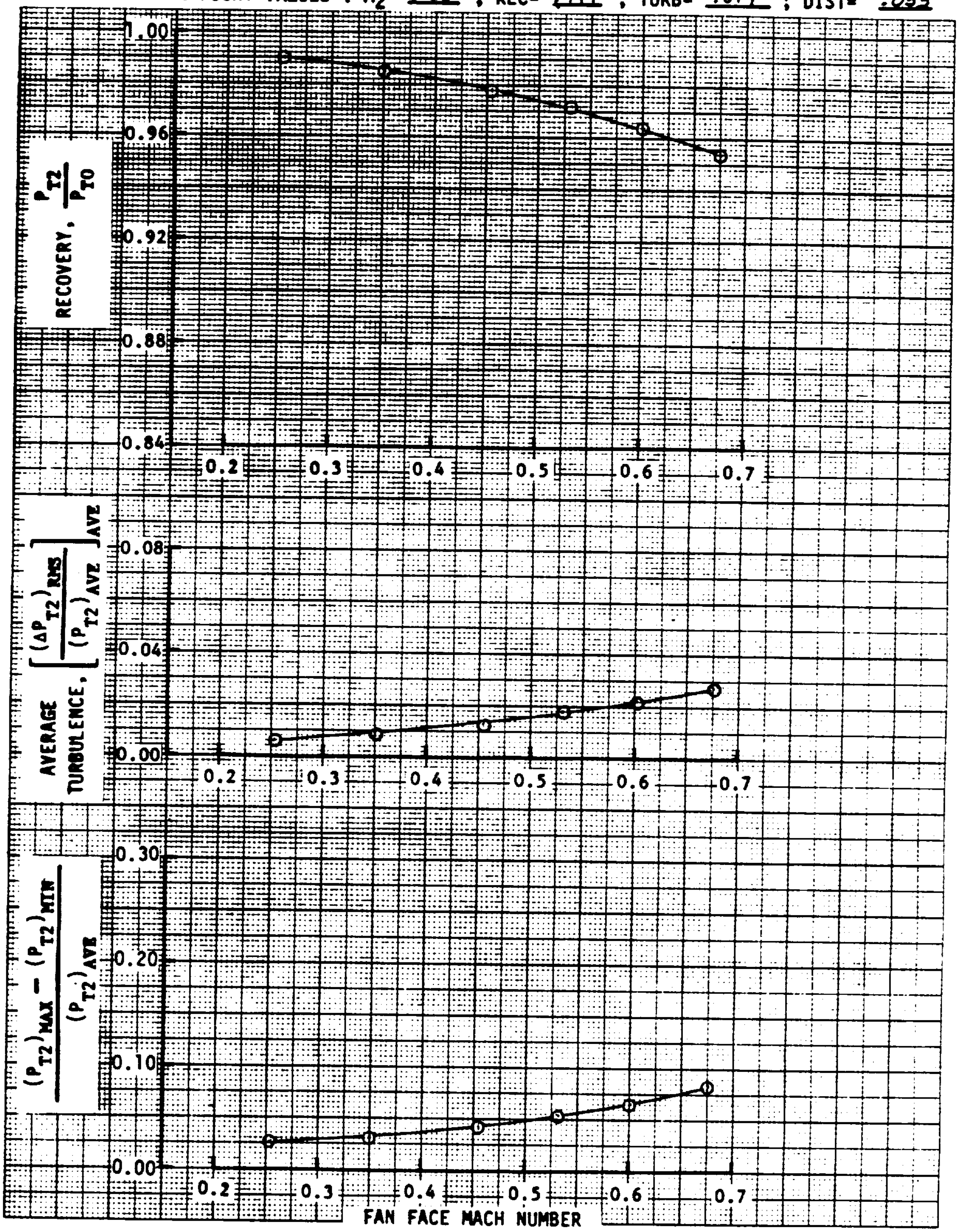
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3456-3461
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2 = 0.53 ; REC= .912 ; TURB= .035 ; DIST= .168



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3462-3467
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .980 ; TURB= .013 ; DIST= .058



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3468-3474
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .971 ; TURB= .017 ; DIST= .053

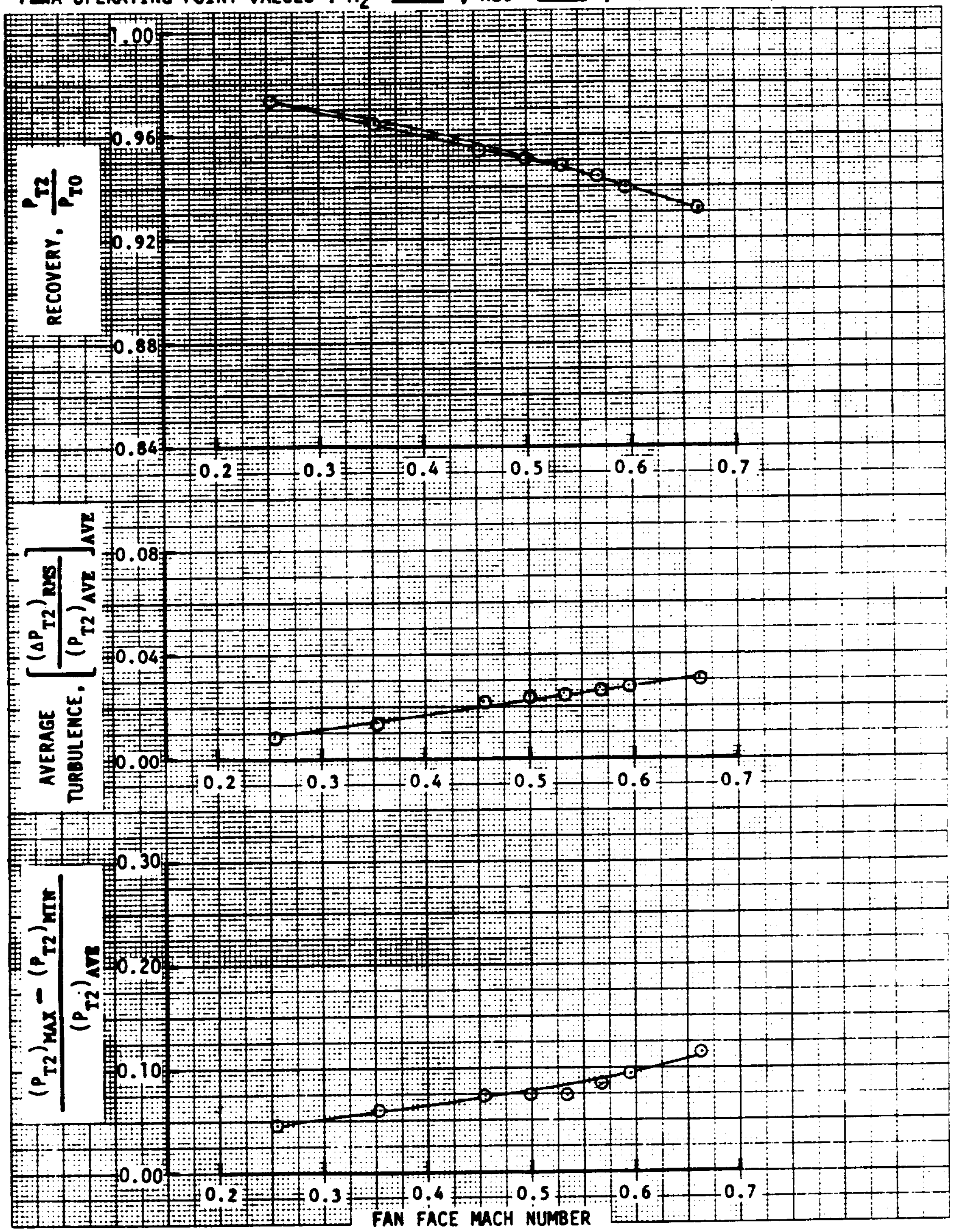


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

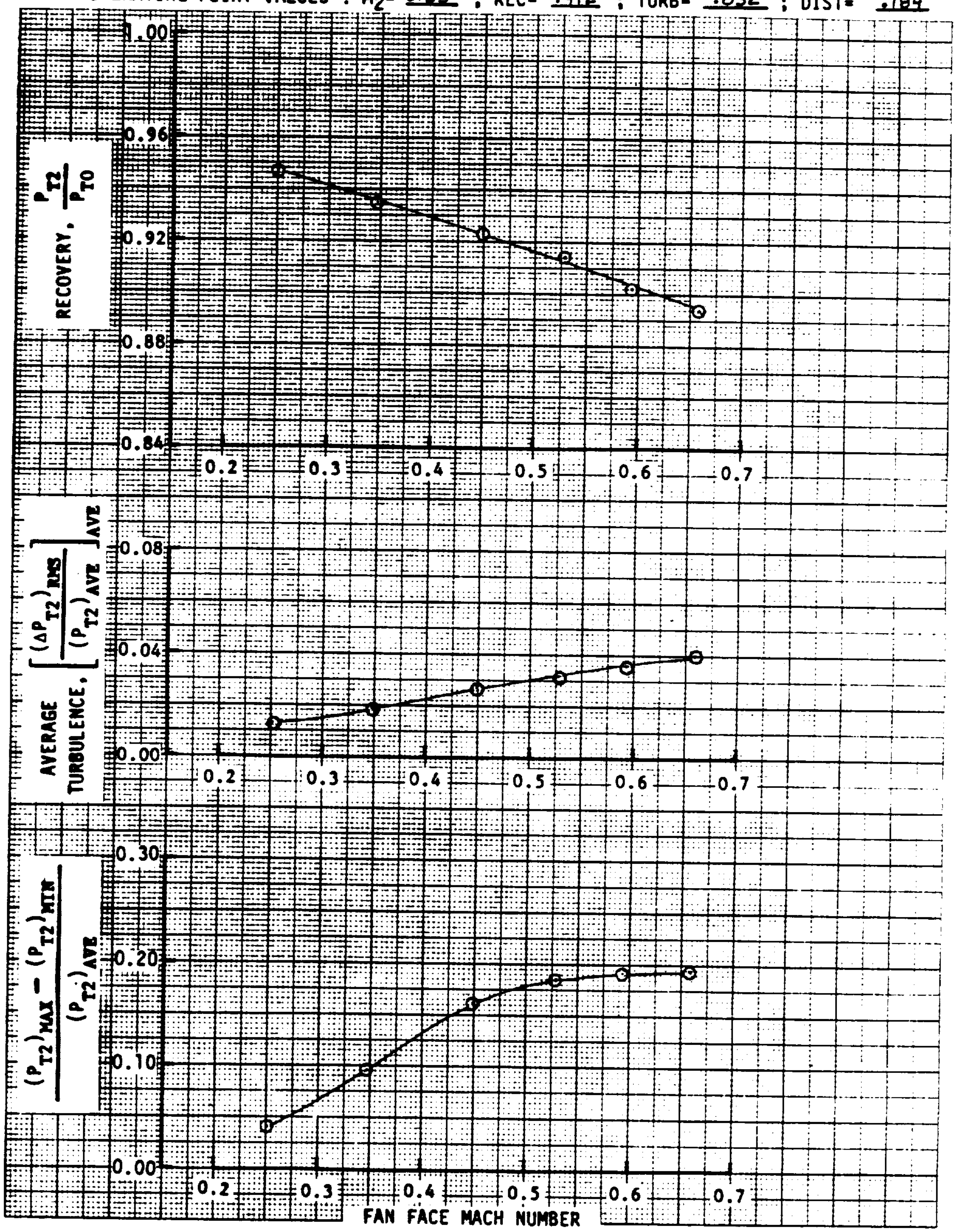
CONFIGURATION 20 ; READING NUMBERS 3475-3483

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

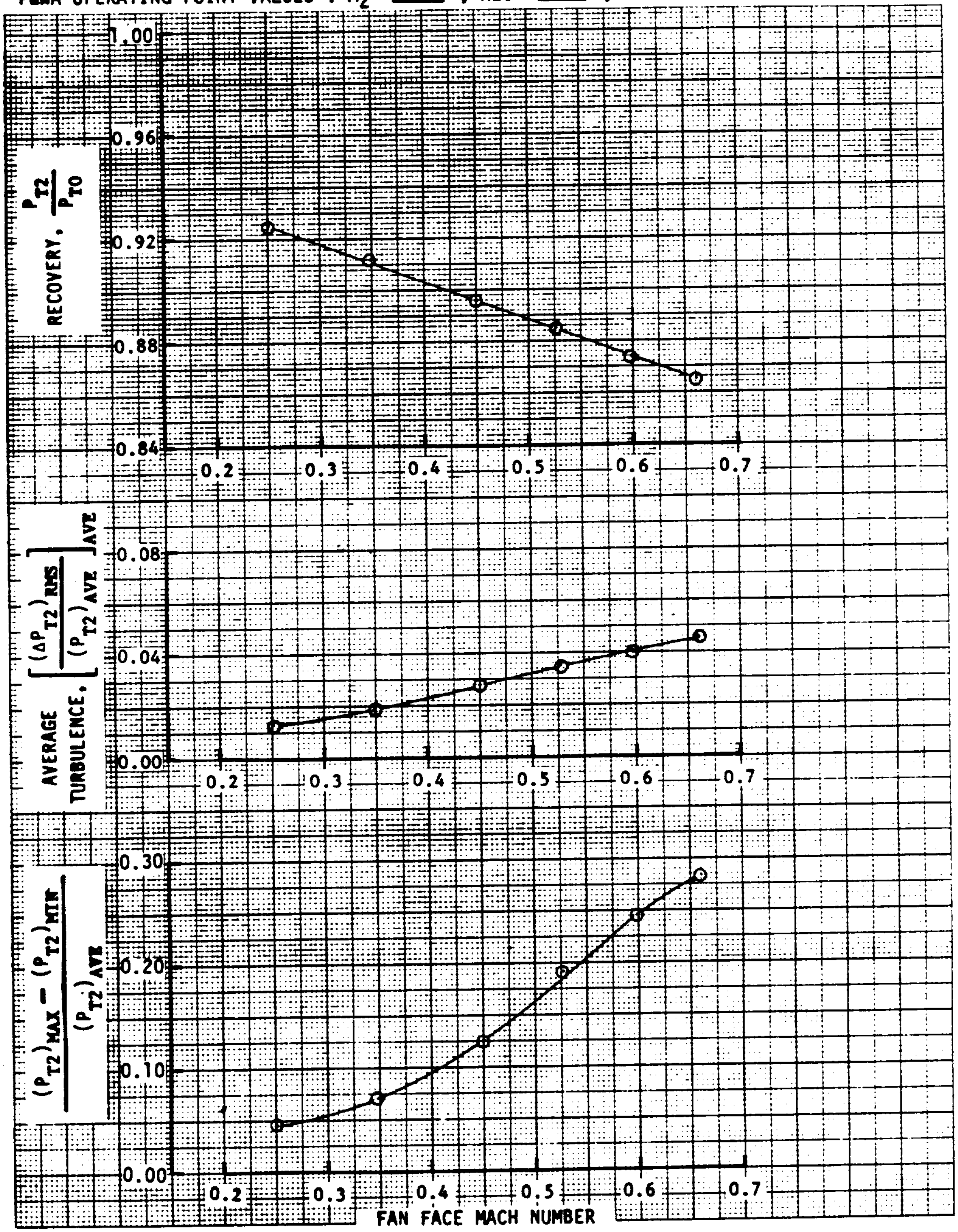
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .948 ; TURB= .024 ; DIST= .083



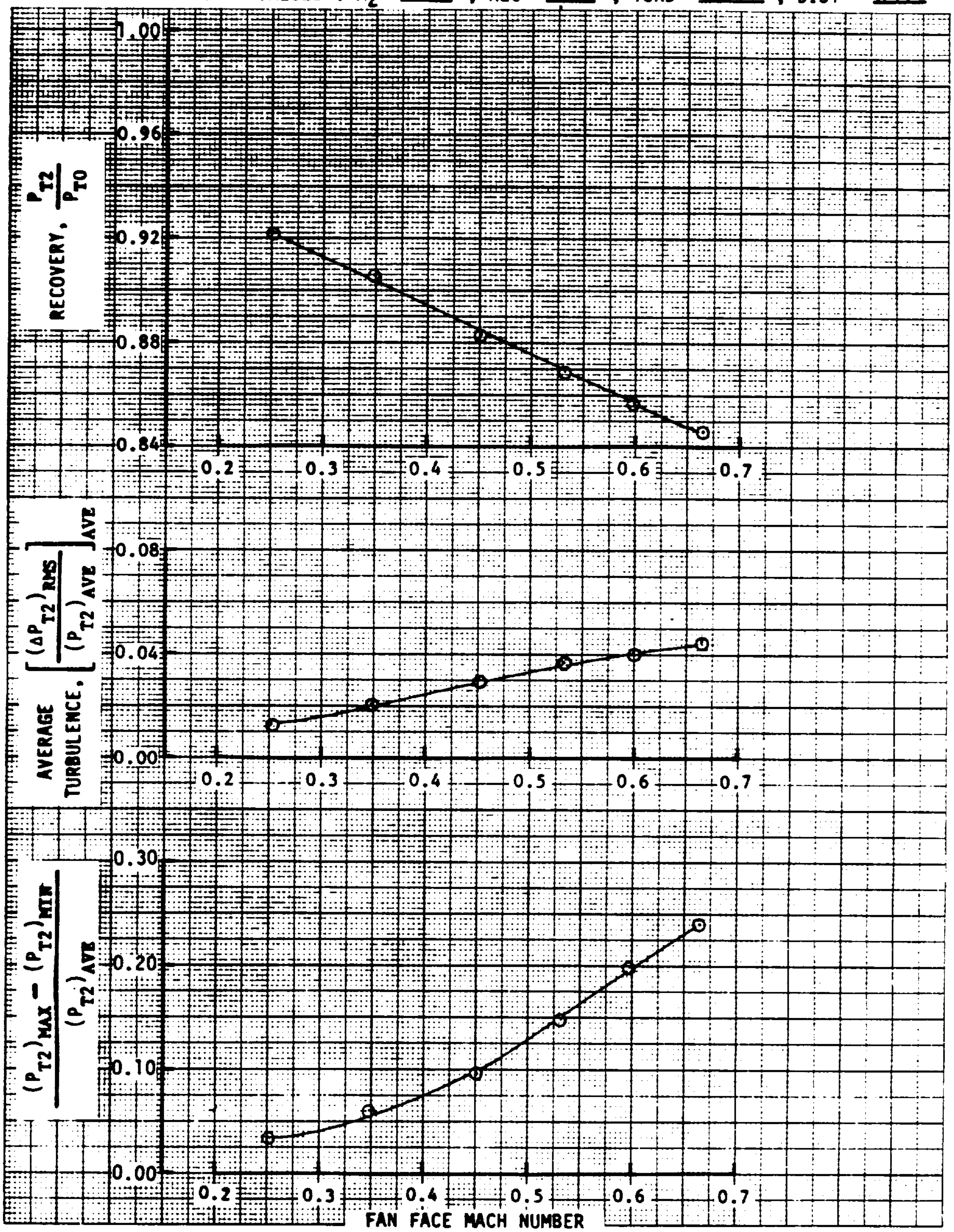
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3484-3489
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .912 ; TURB= .032 ; DIST= .184



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3490-3495
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .884 ; TURB= .035 ; DIST= .188



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20 ; READING NUMBERS 3496-3501
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .870 ; TURB= .036 ; DIST= .149



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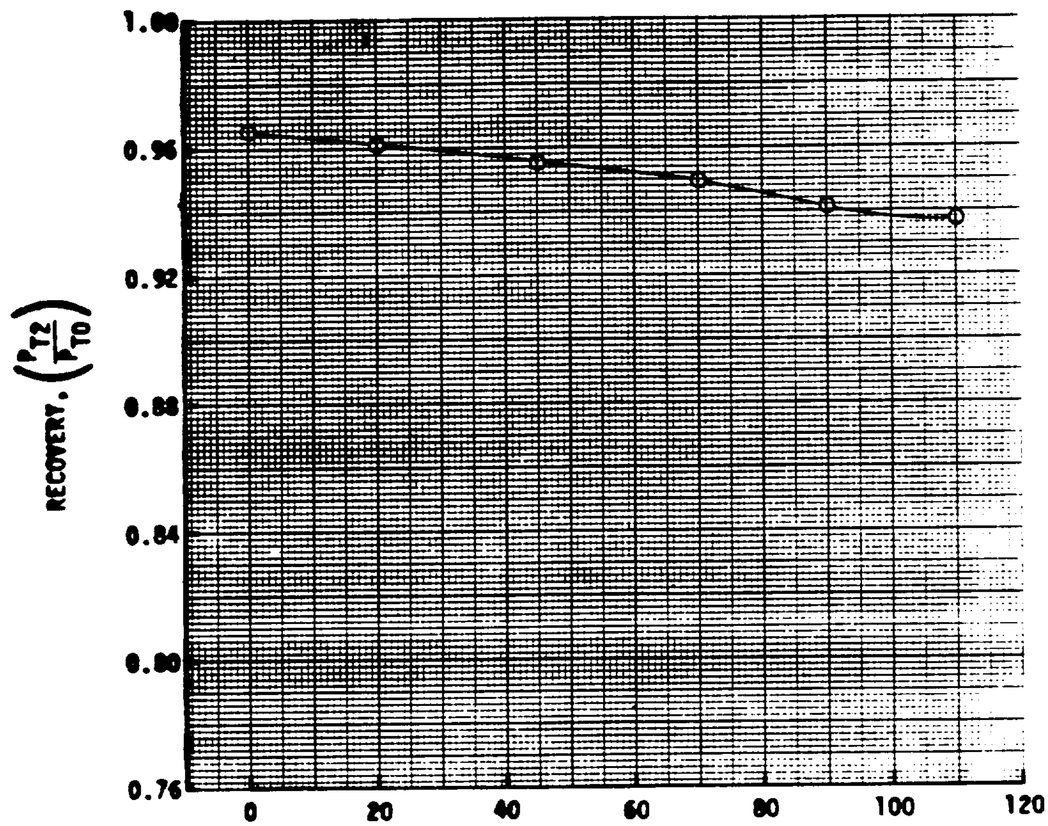
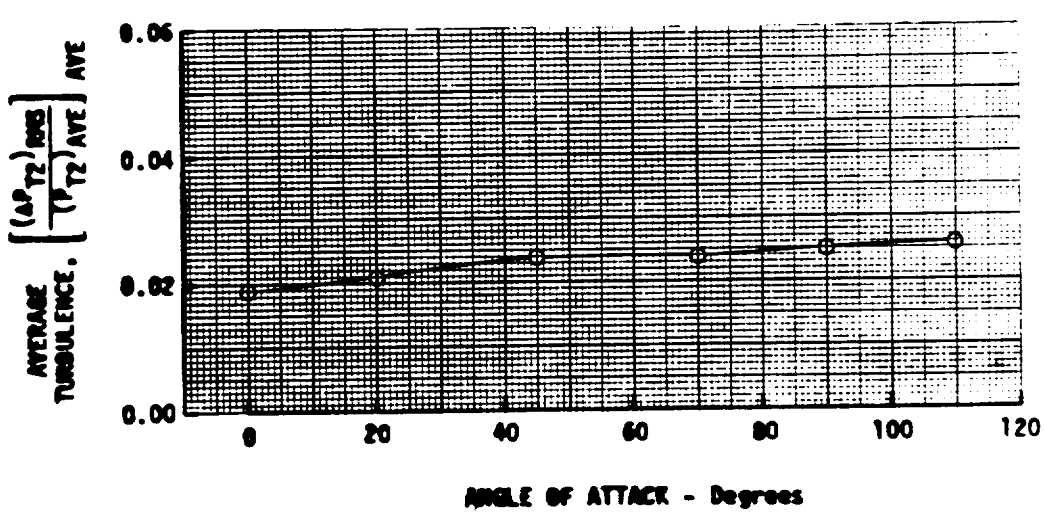
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PWA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 20 ; DESCRIPTION 90° CCW Rotation; Ramp Side Aux Inlet Closed - Port; Sharp Lip Inlet





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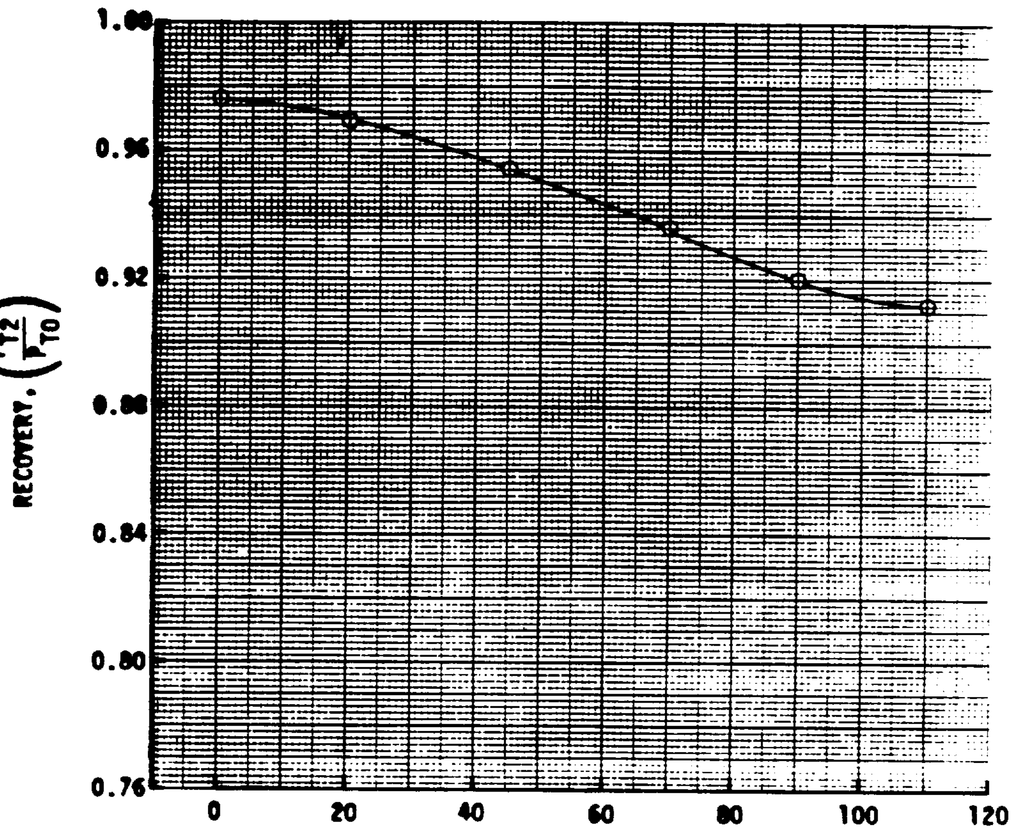
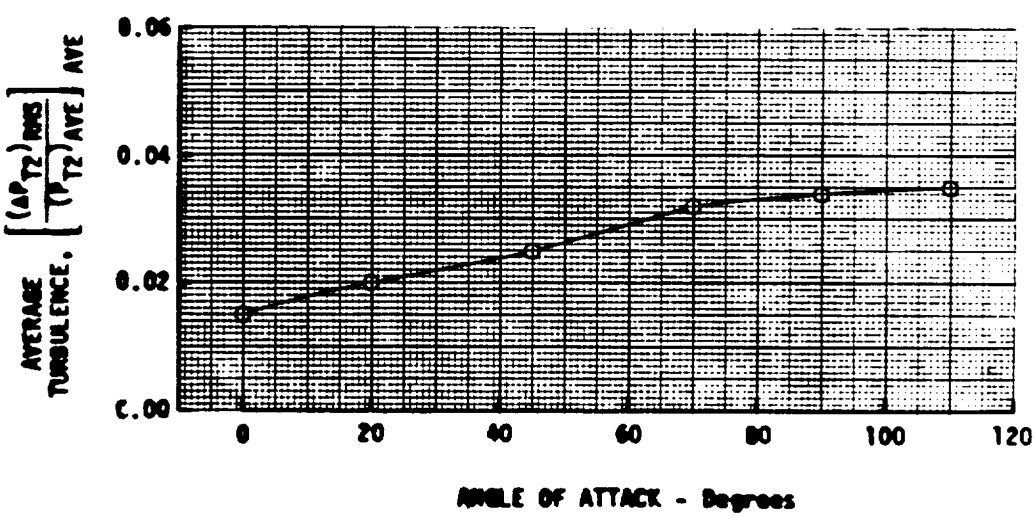
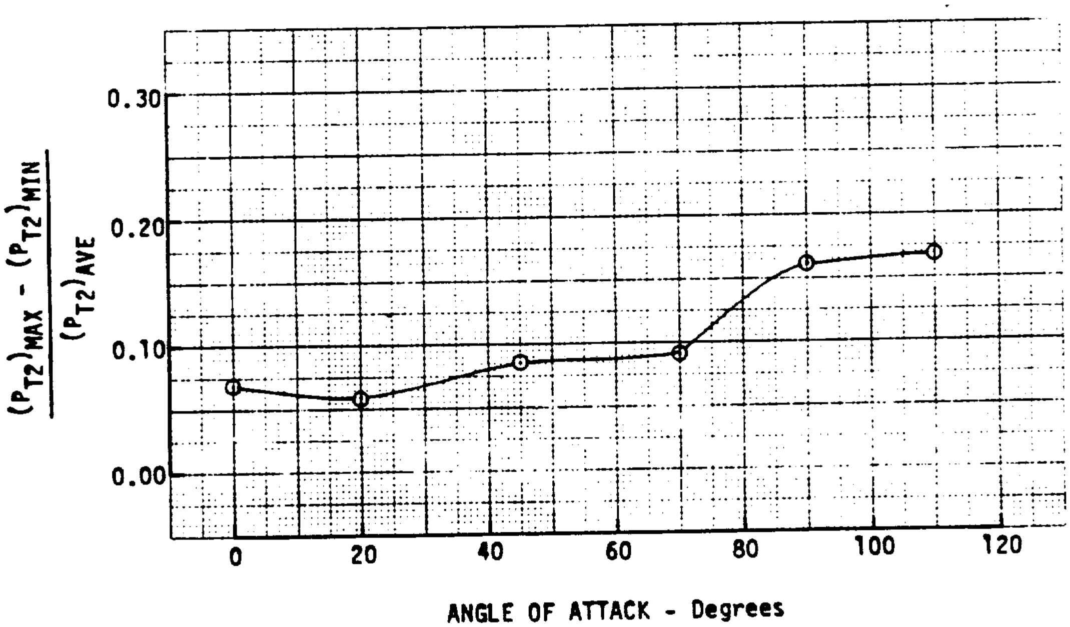
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 20 ; DESCRIPTION 90° CCW Rotation; Ramp Side Aux Inlet Closed-Port, Sharp Lip Inlet





DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 20 ; DESCRIPTION 90° CCW Rotation; Ramp Aux Closed, Left, Right, and Lip Aux Open, Sharp Lip Inlet



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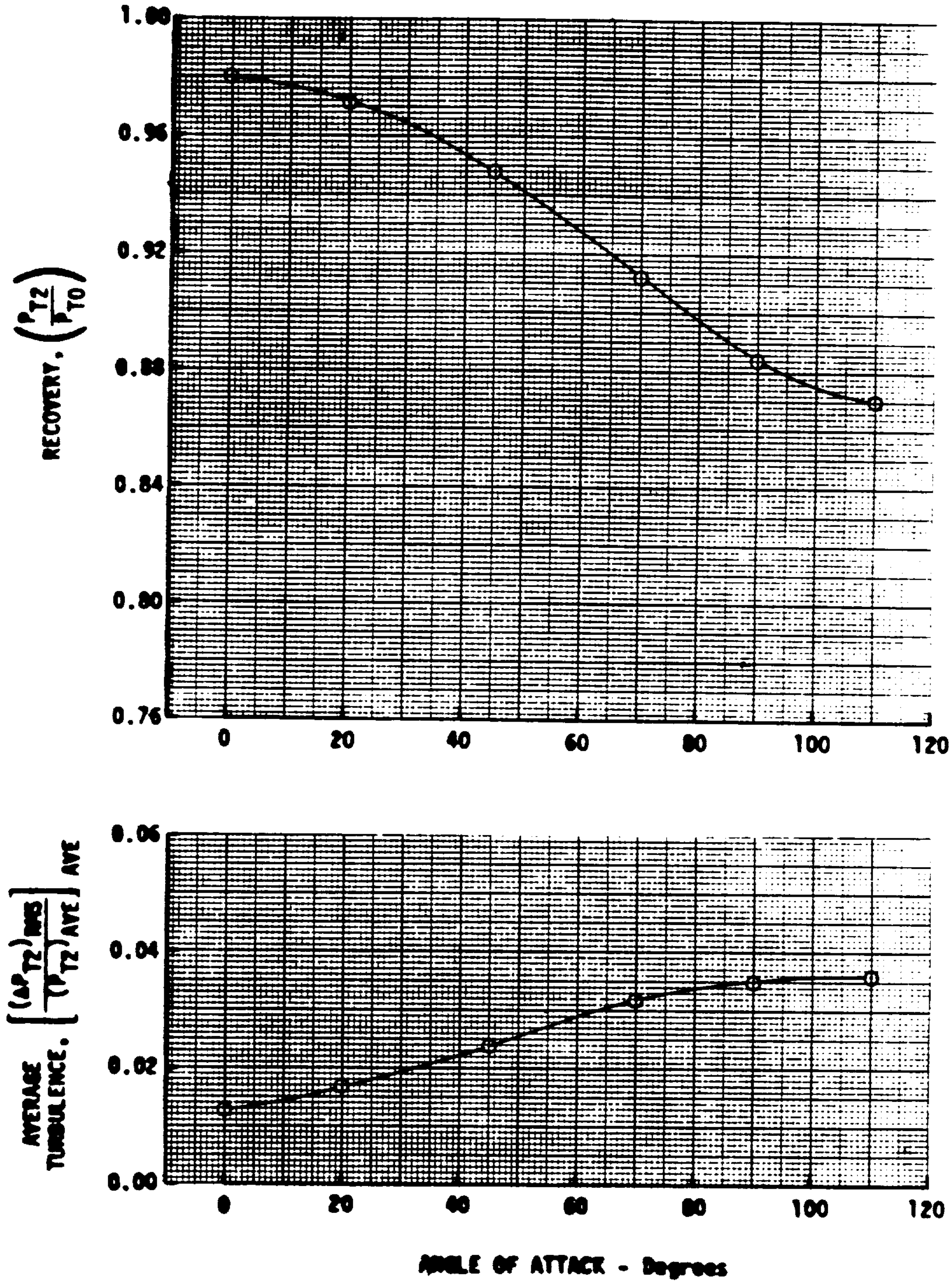
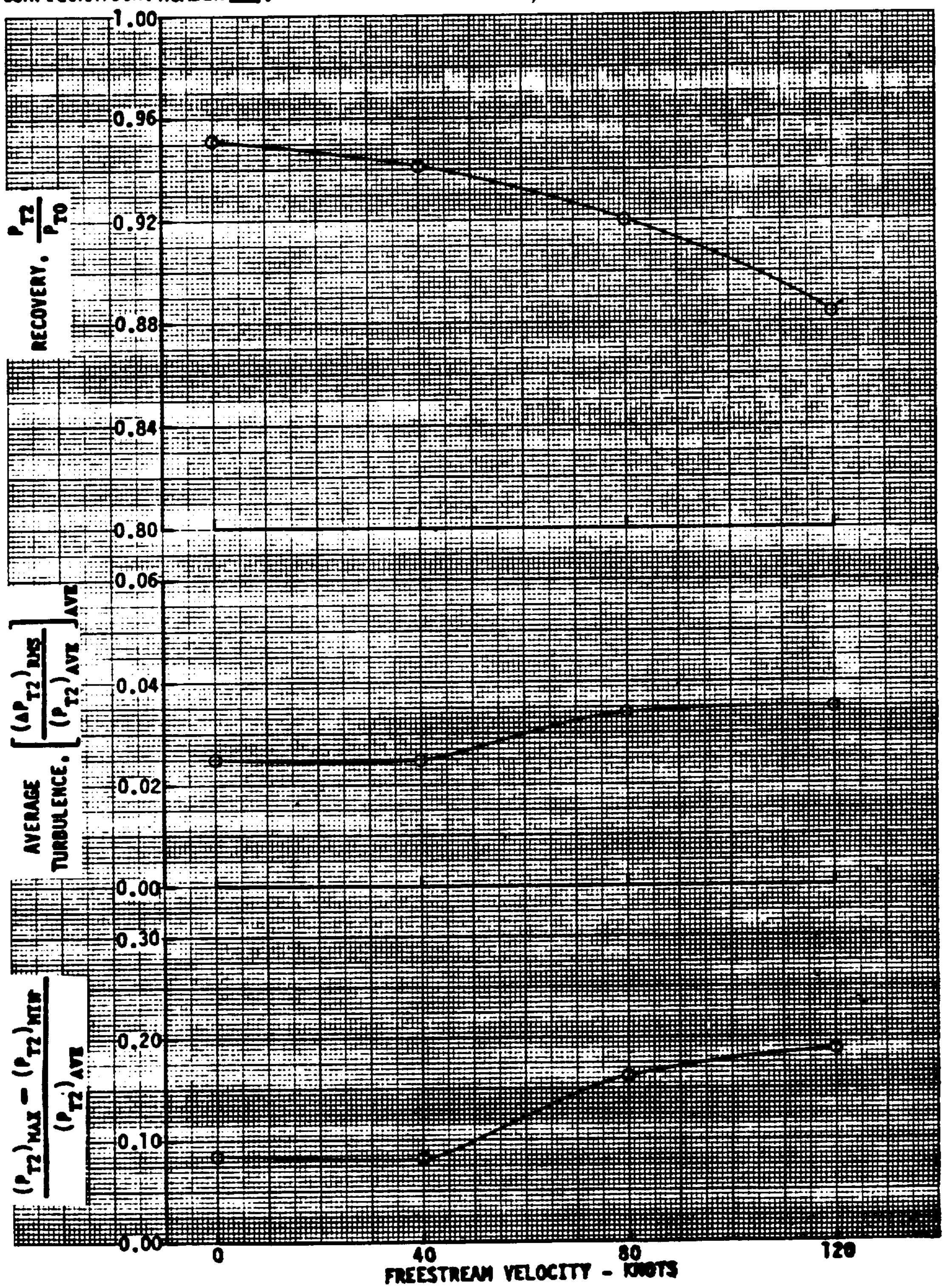
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

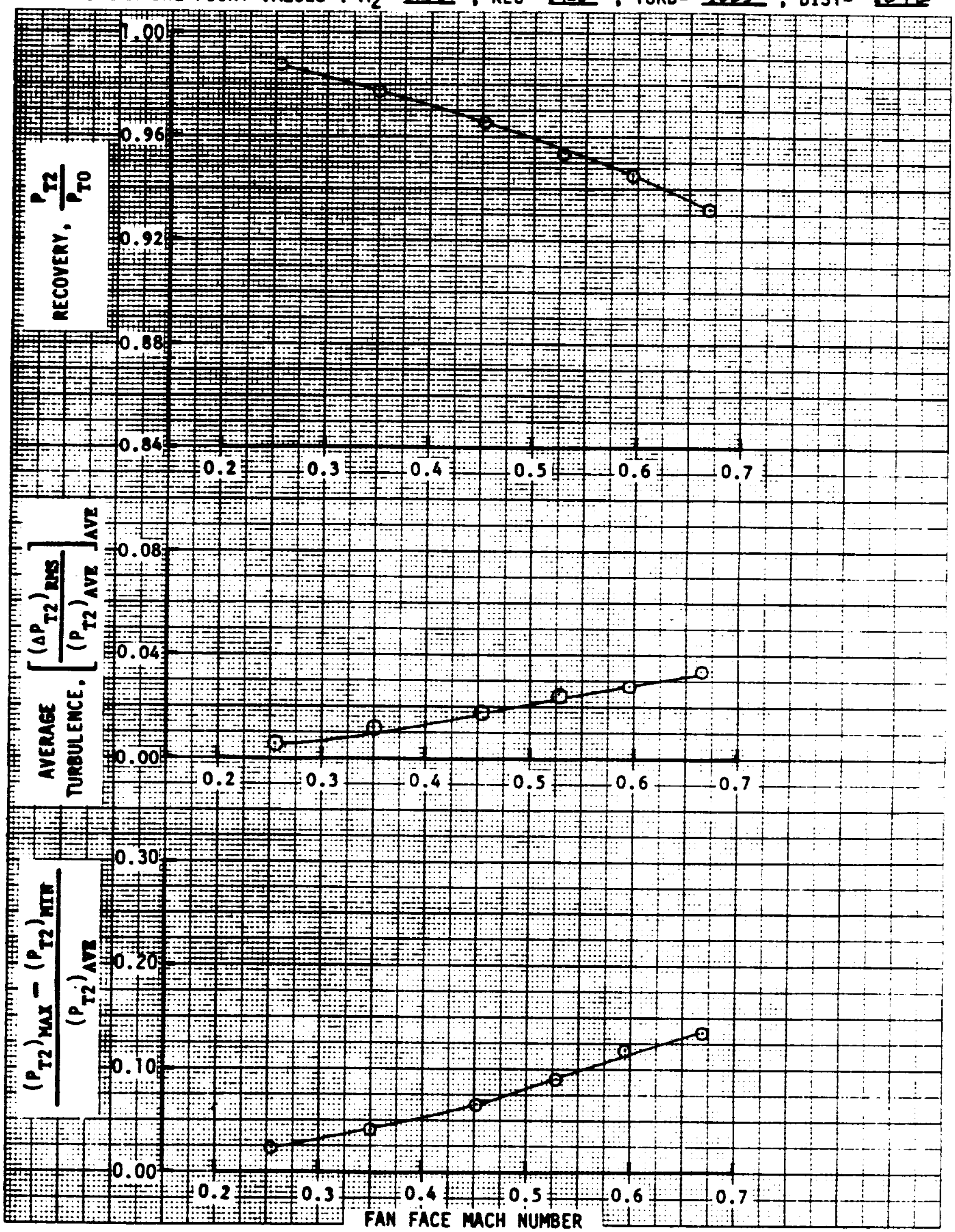
CONFIGURATION: NUMBER 20 ; DESCRIPTION 90° CCW Rotation; Bump Side Aux Inlet Closed - Port, Sharp Lip Inlet



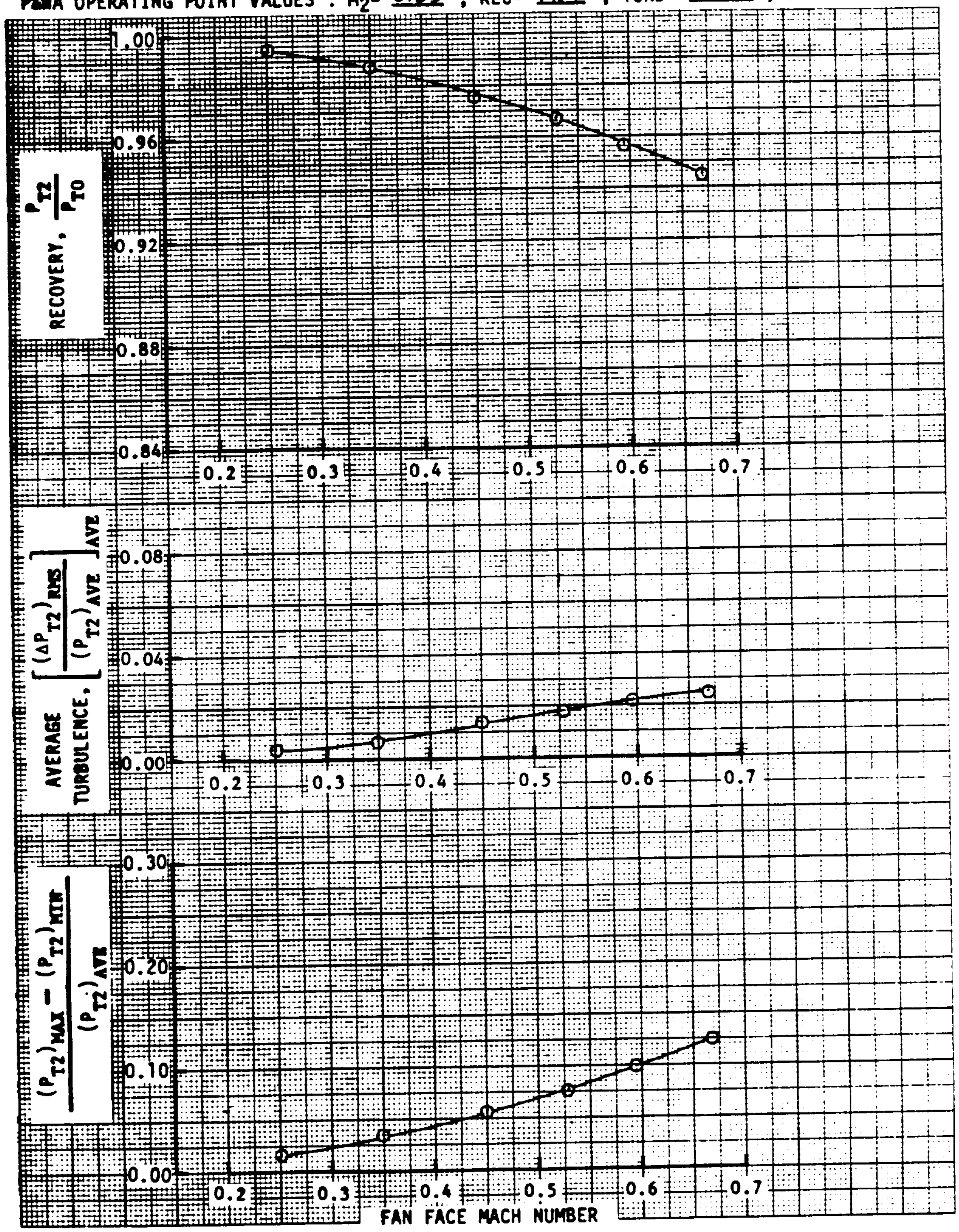
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 90 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 20; DESCRIPTION 90° CCW Rot; 3 AUX INLETS OPEN, Sharp Lip Inlet



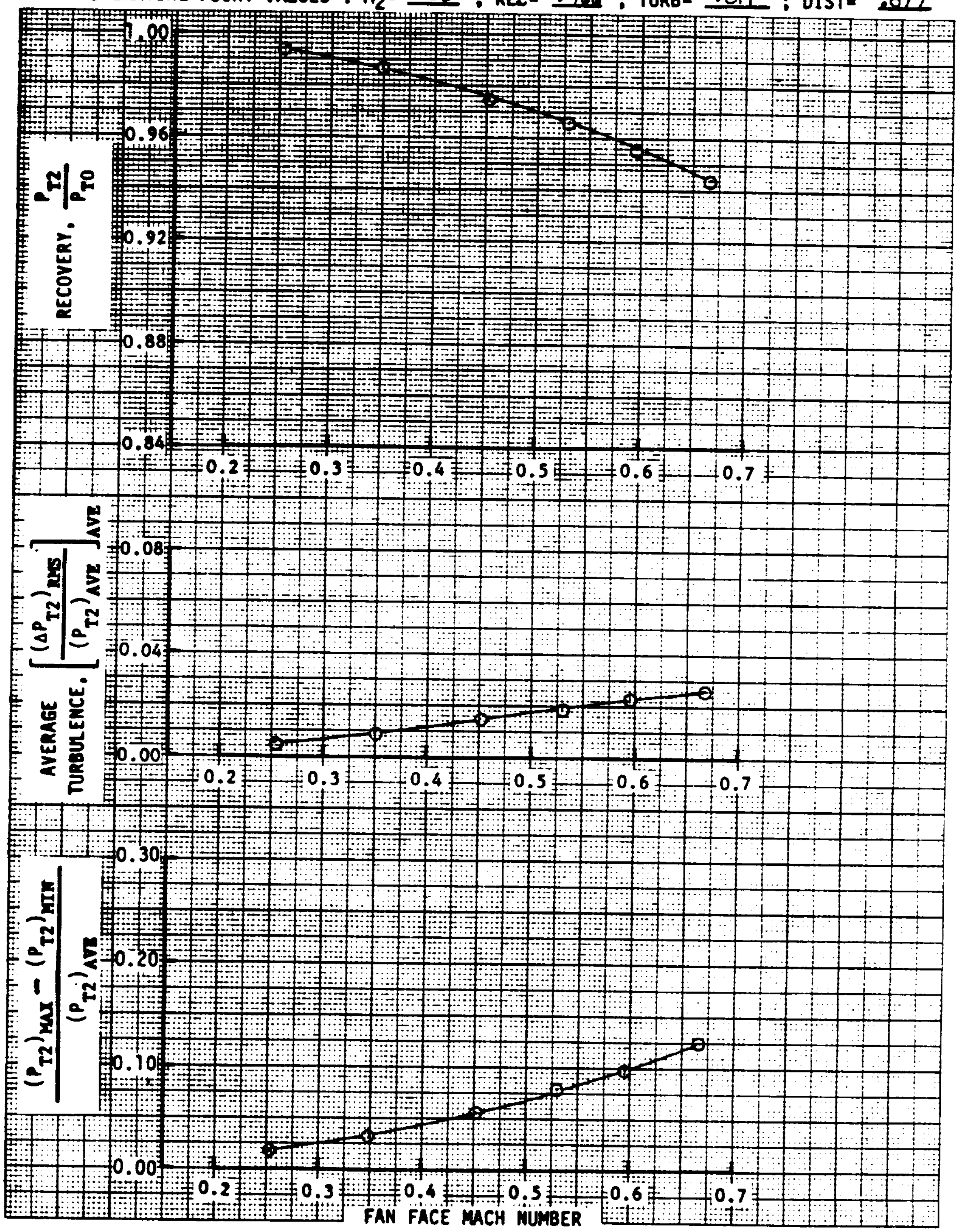
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a; READING NUMBERS 3503-3508
FREESTREAM VELOCITY = 0 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PMWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .023 ; DIST= .092



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3509-3514
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .967 ; TURB= .018 ; DIST= .077



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3515-3520
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
PNWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .966 ; TURB= .019 ; DIST= .077

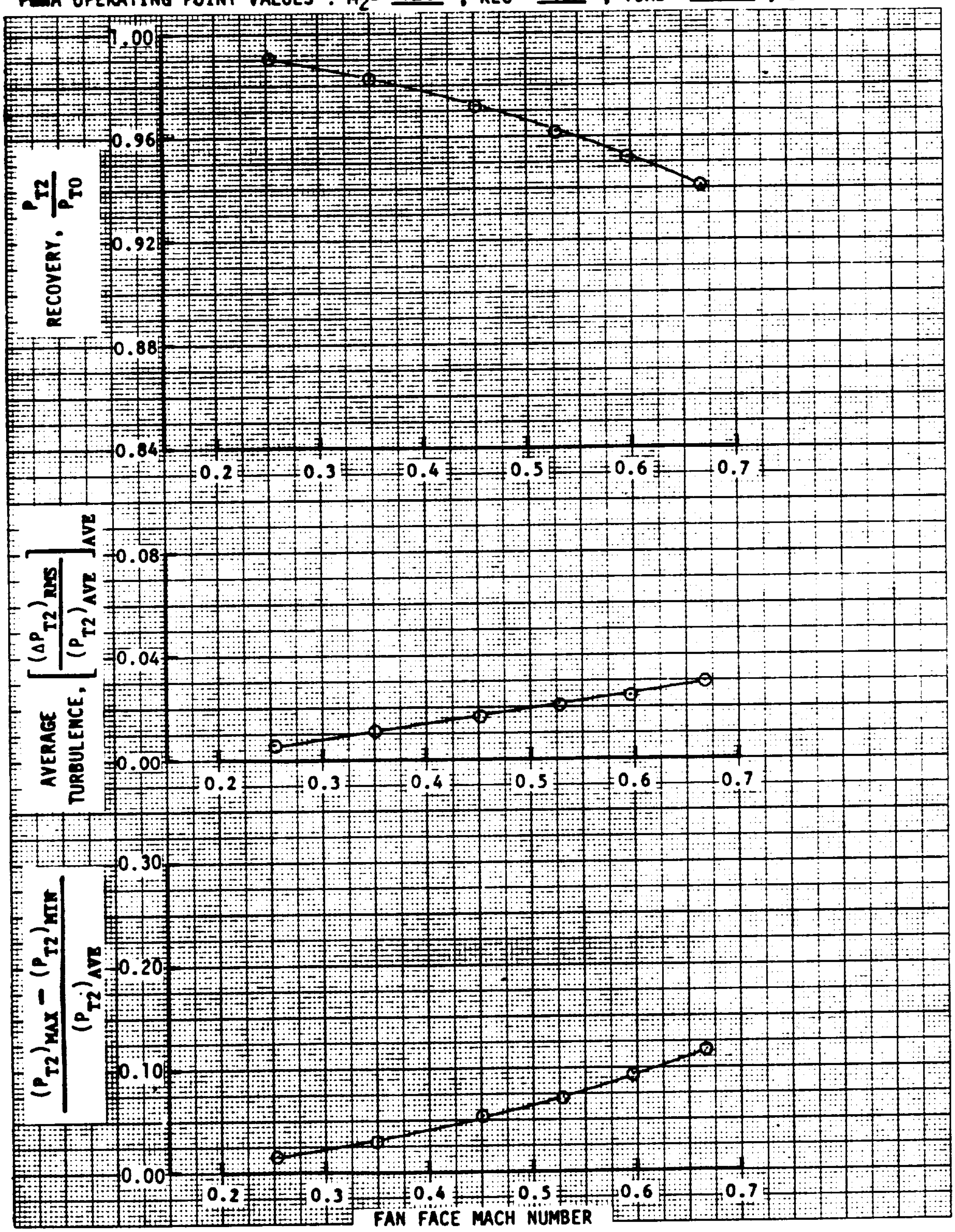


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

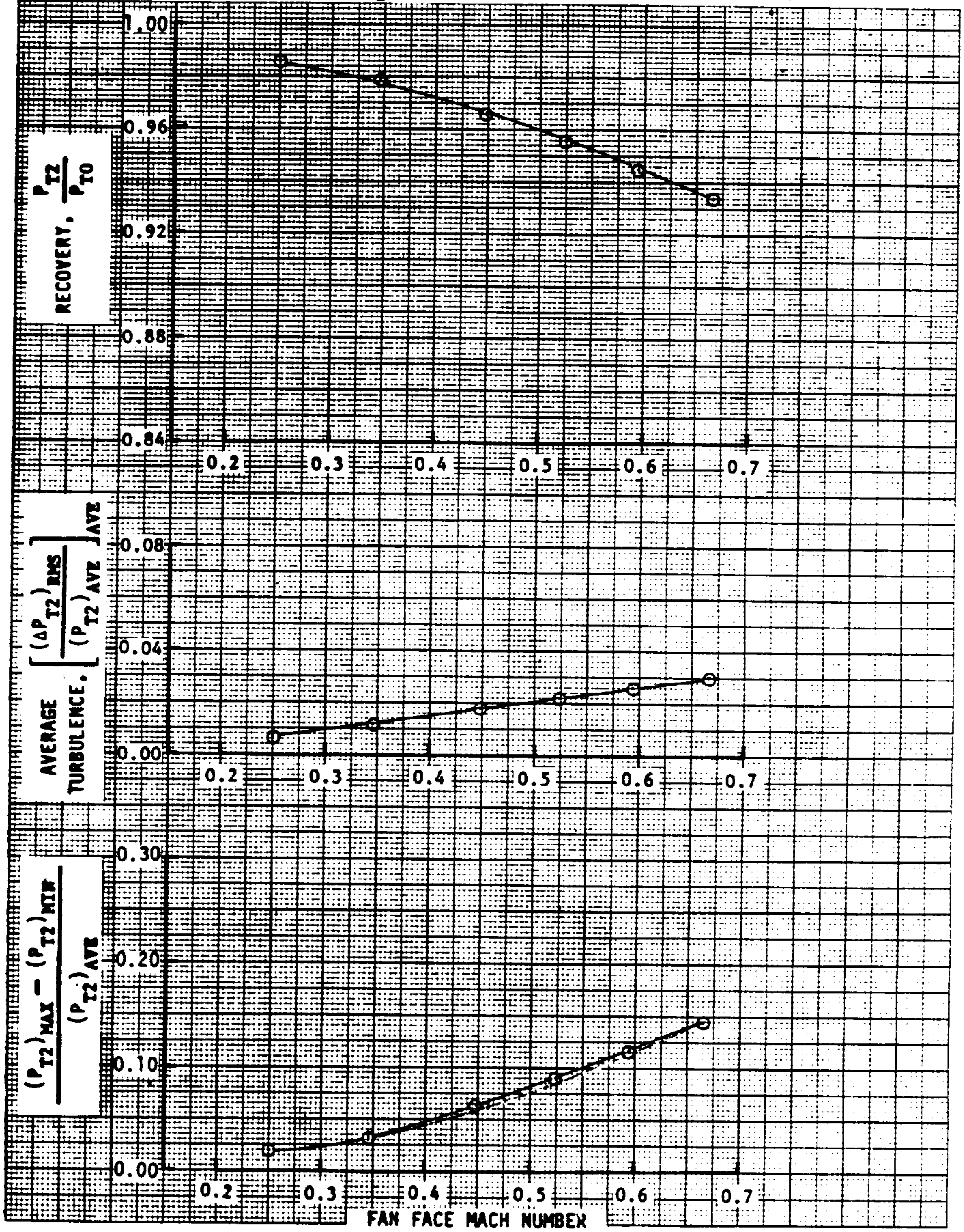
CONFIGURATION 20a ; READING NUMBERS 3521-3526

FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

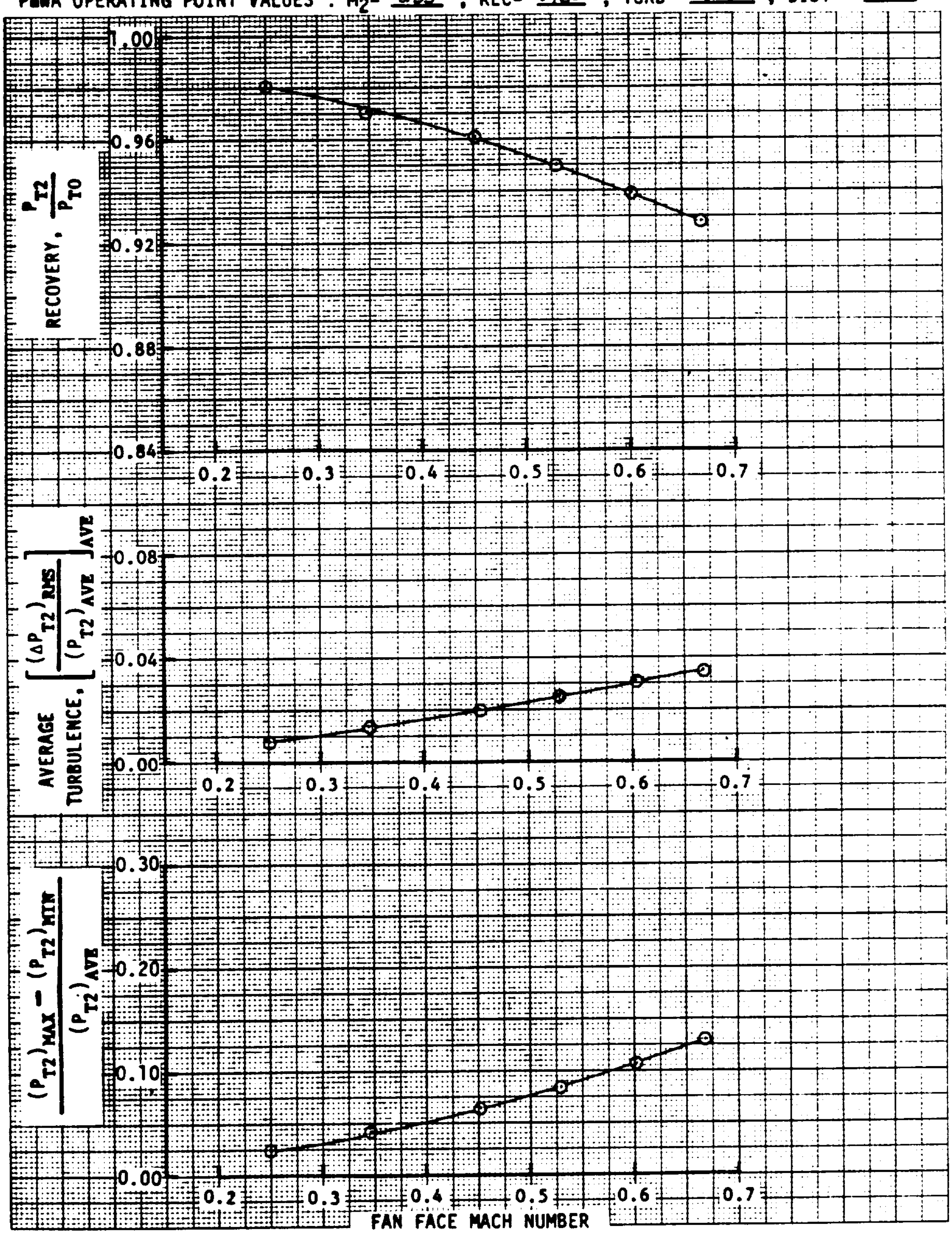
PGMA OPERATING POINT VALUES : M_2= 0.53 ; REC= .962 ; TURB= .021 ; DIST= .072



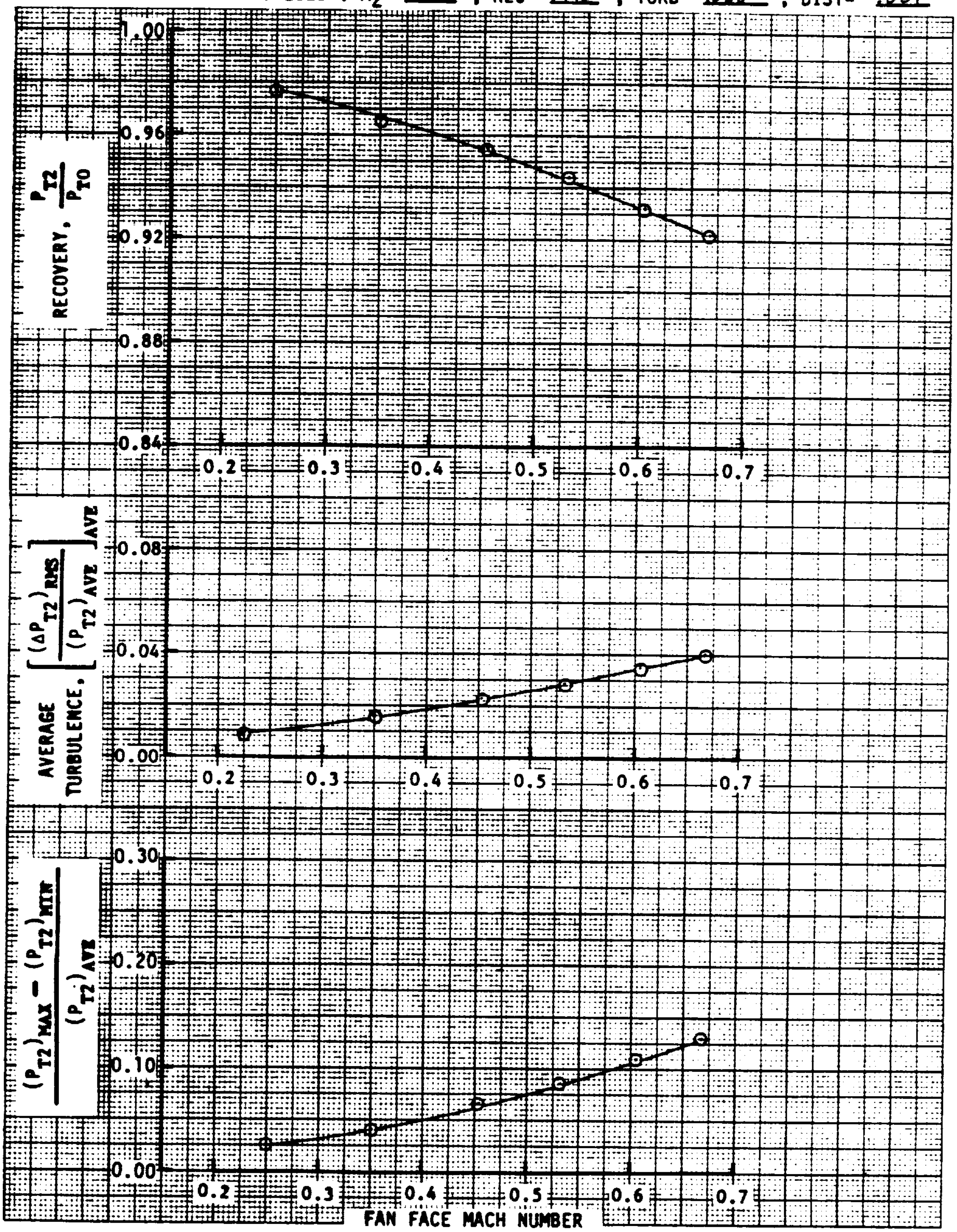
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3527-3532
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
PMWA OPERATING POINT VALUES : M_2= 0.53 ; REC= .955 ; TURB= .022 ; DIST= .093



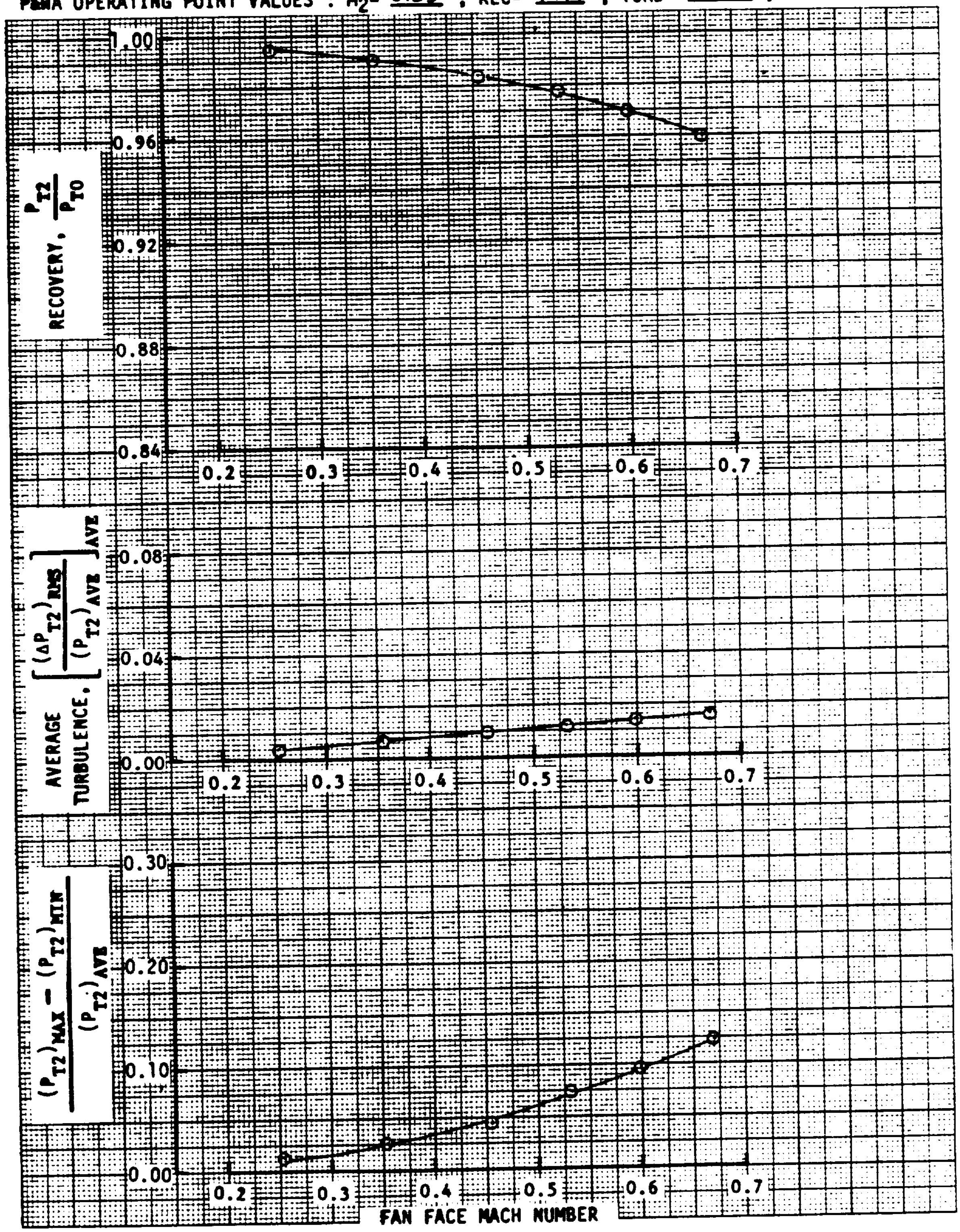
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3533-3538
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .950 ; TURB= .025 ; DIST= .085



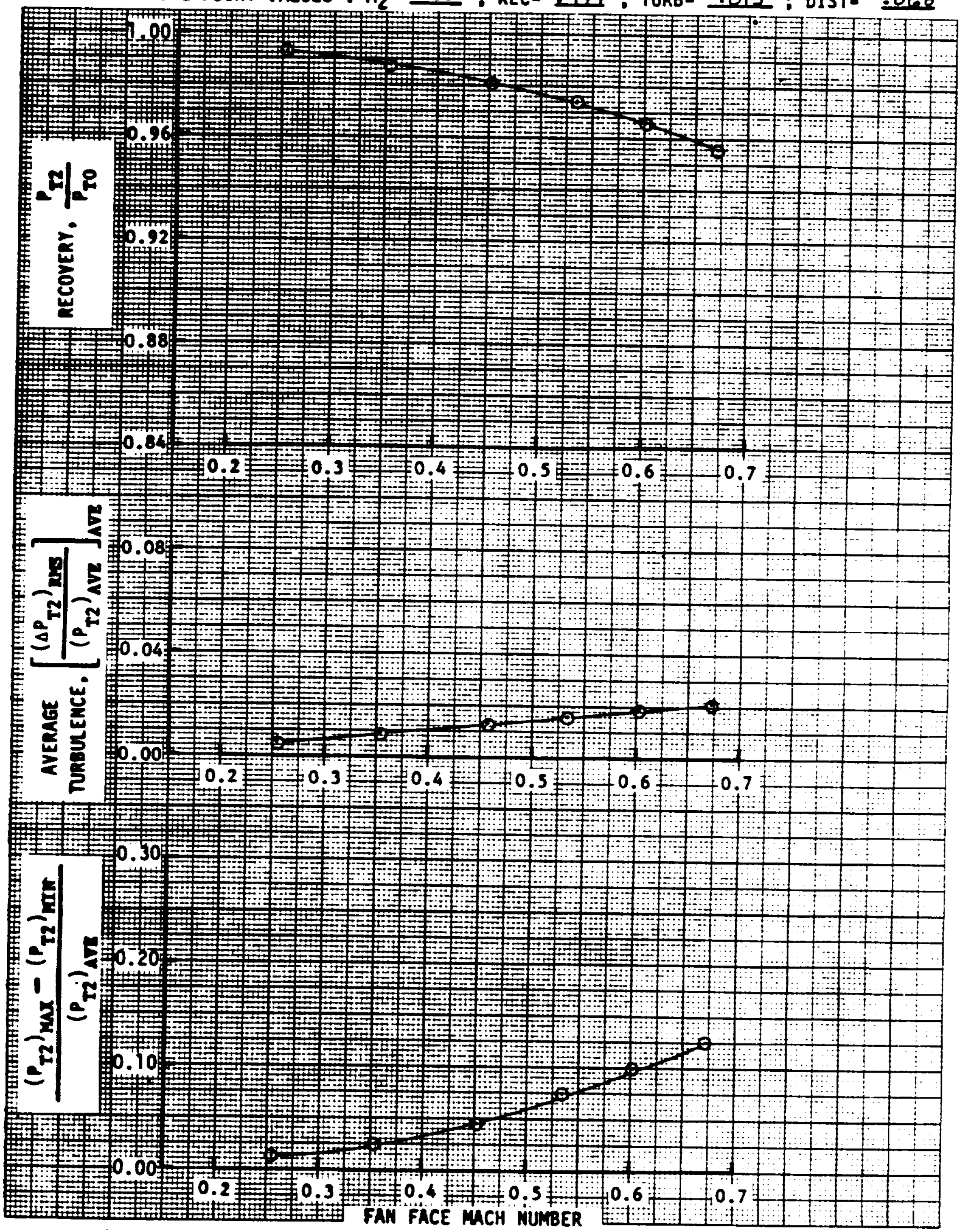
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3539-3544
FREESTREAM VELOCITY = 40 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .943 ; TURB= .028 ; DIST= .084



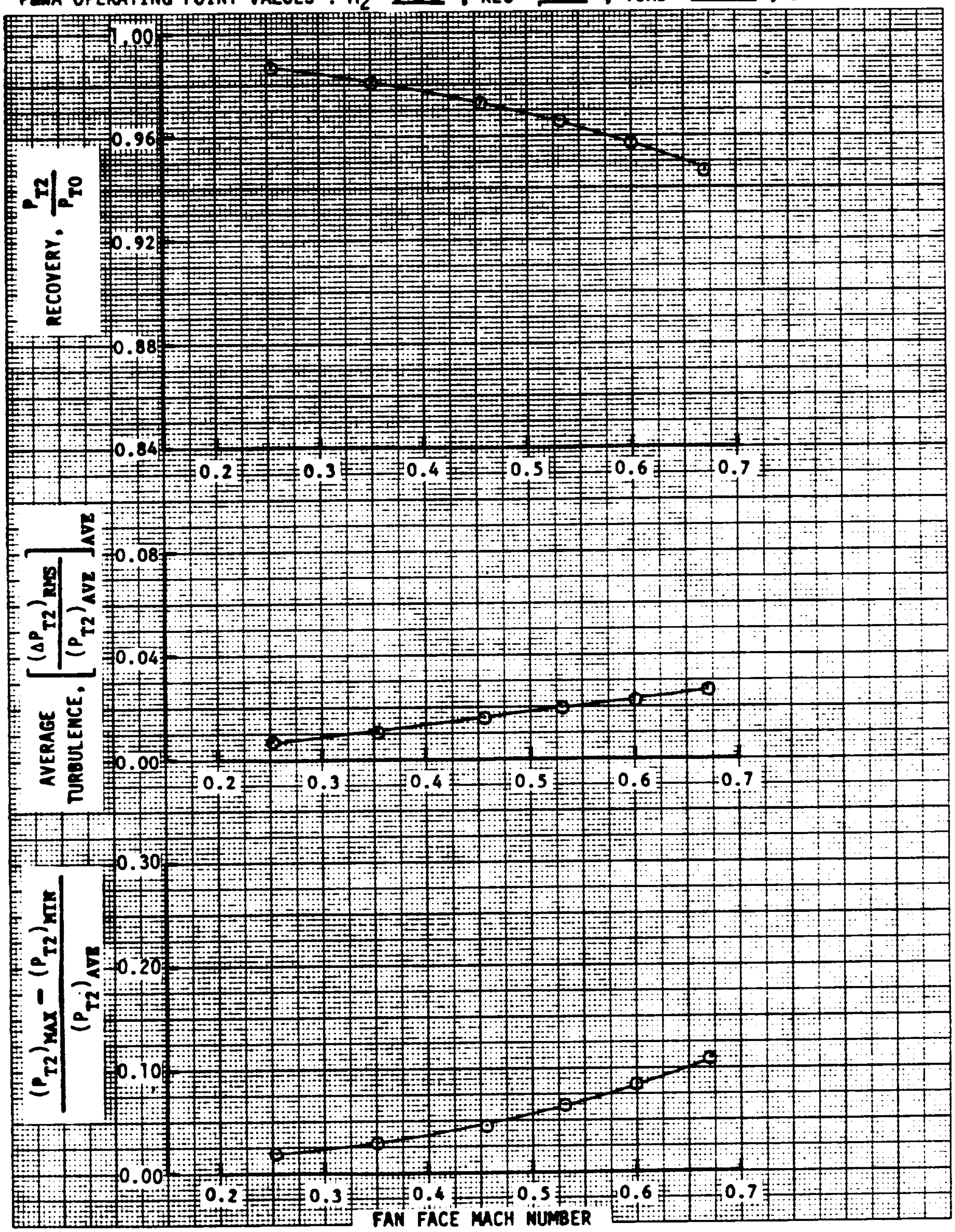
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20c ; READING NUMBERS 3546-3551
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .977 ; TURB= .012 ; DIST= .072



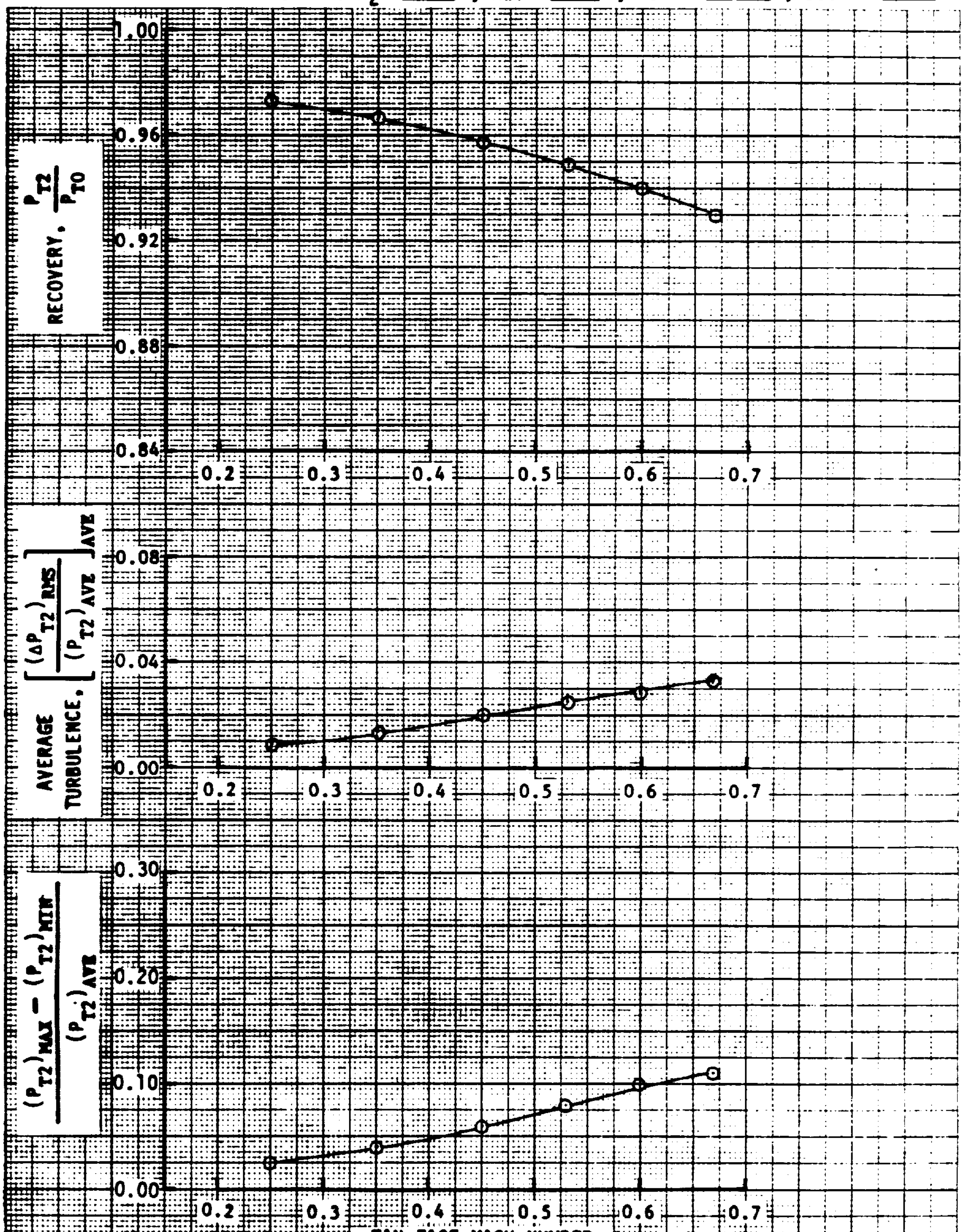
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3552-3557
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .974 ; TURB= .015 ; DIST= .068



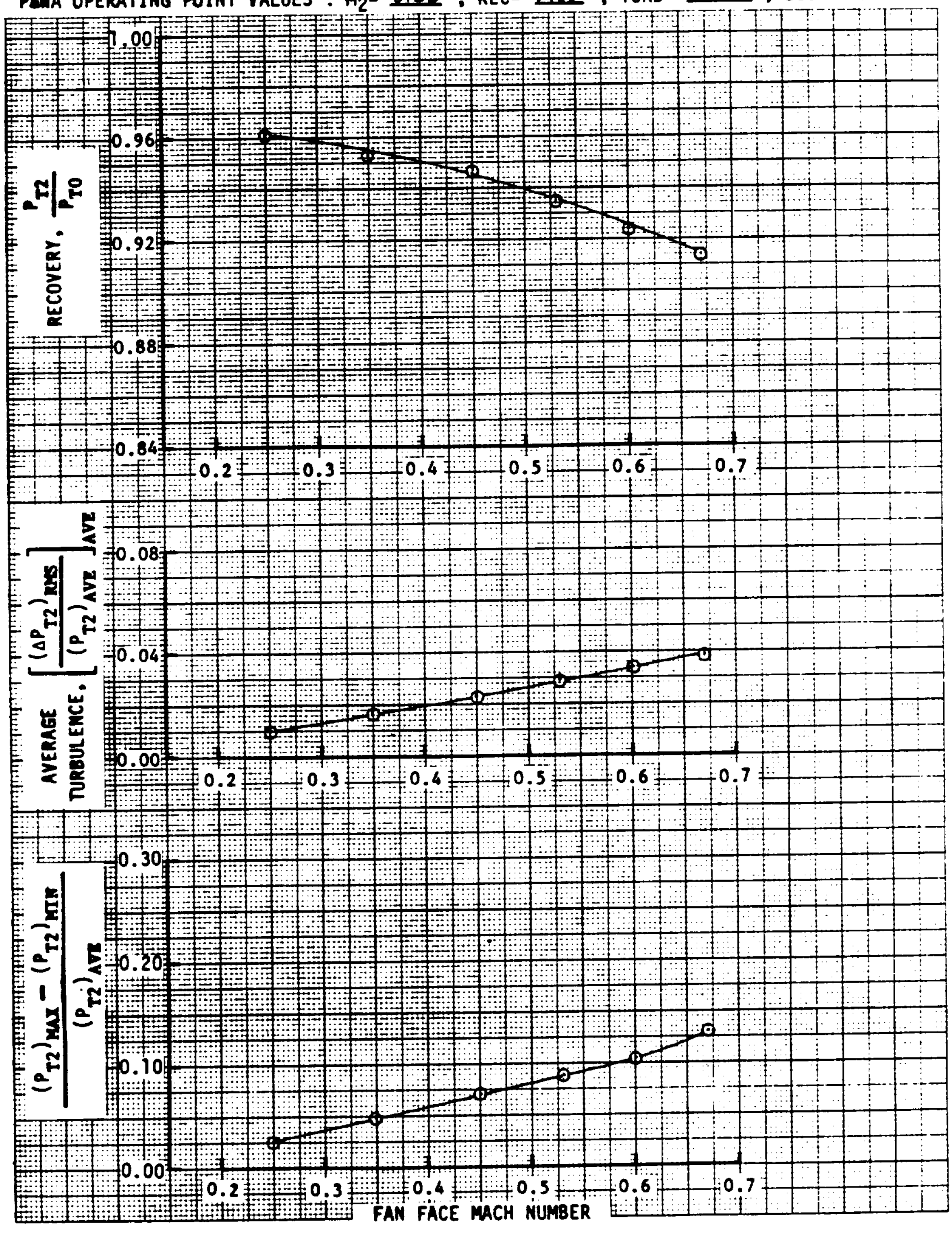
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3558-3563
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .020 ; DIST= .063



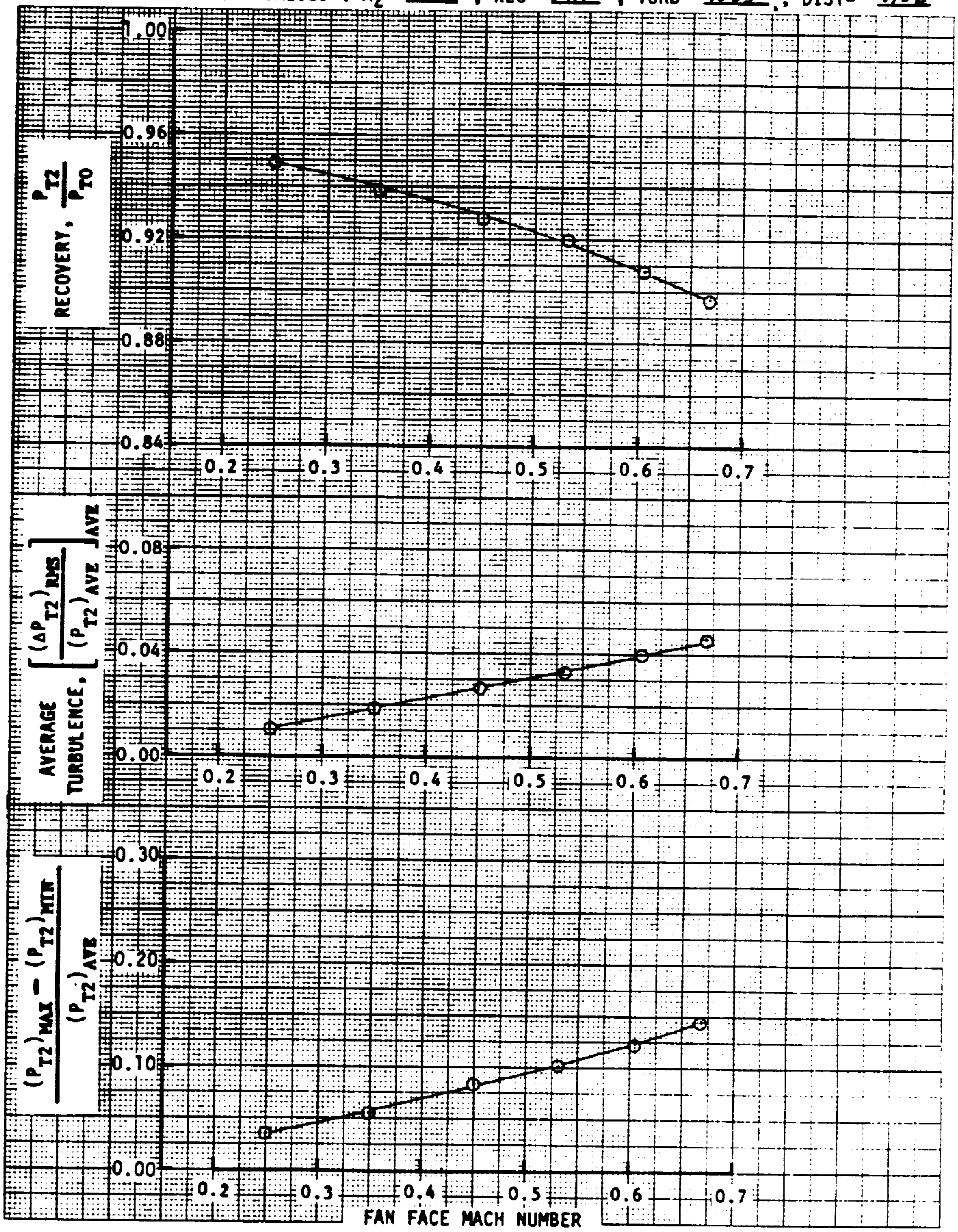
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3564-3569
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .949 ; TURB= .025 ; DIST= .078



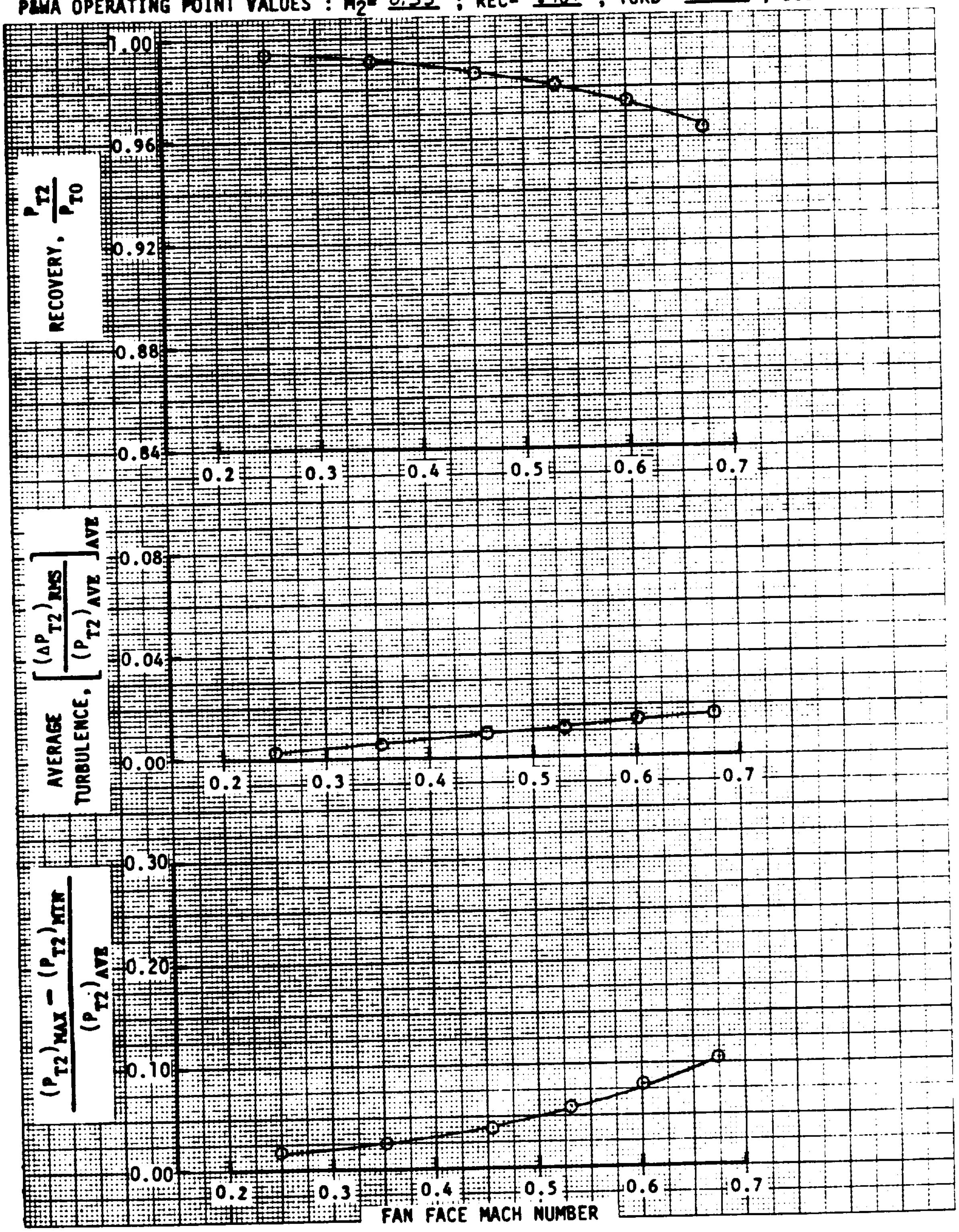
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3570-3575
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .935 ; TURB= .028 ; DIST= .088



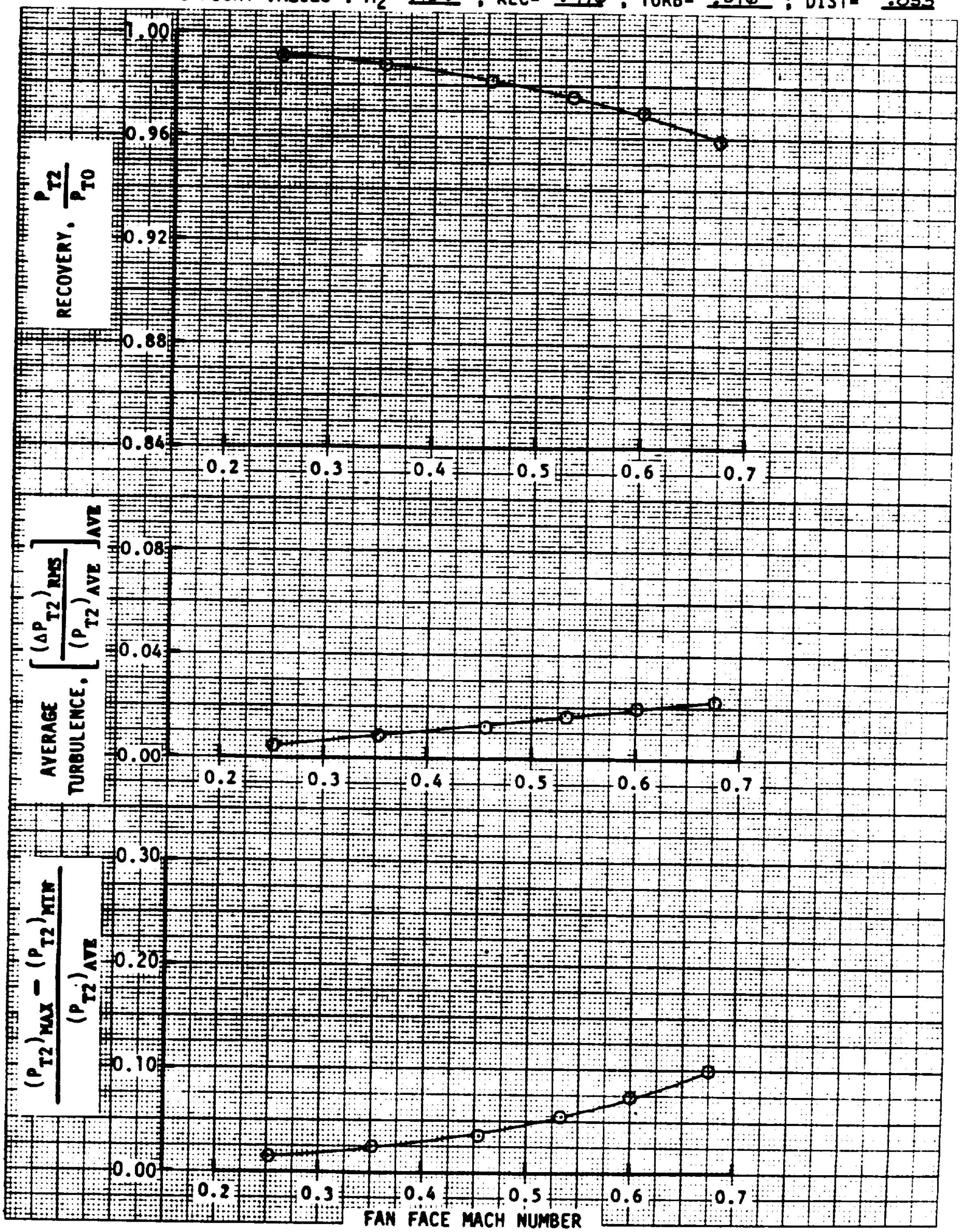
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3574-3581
FREESTREAM VELOCITY = 80 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .911 ; TURB= .033 ; DIST= .102



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3582-3587
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 0 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .981 ; TURB= .012 ; DIST= .057



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3588-3593
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 20 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .976 ; TURB= .016 ; DIST= .053

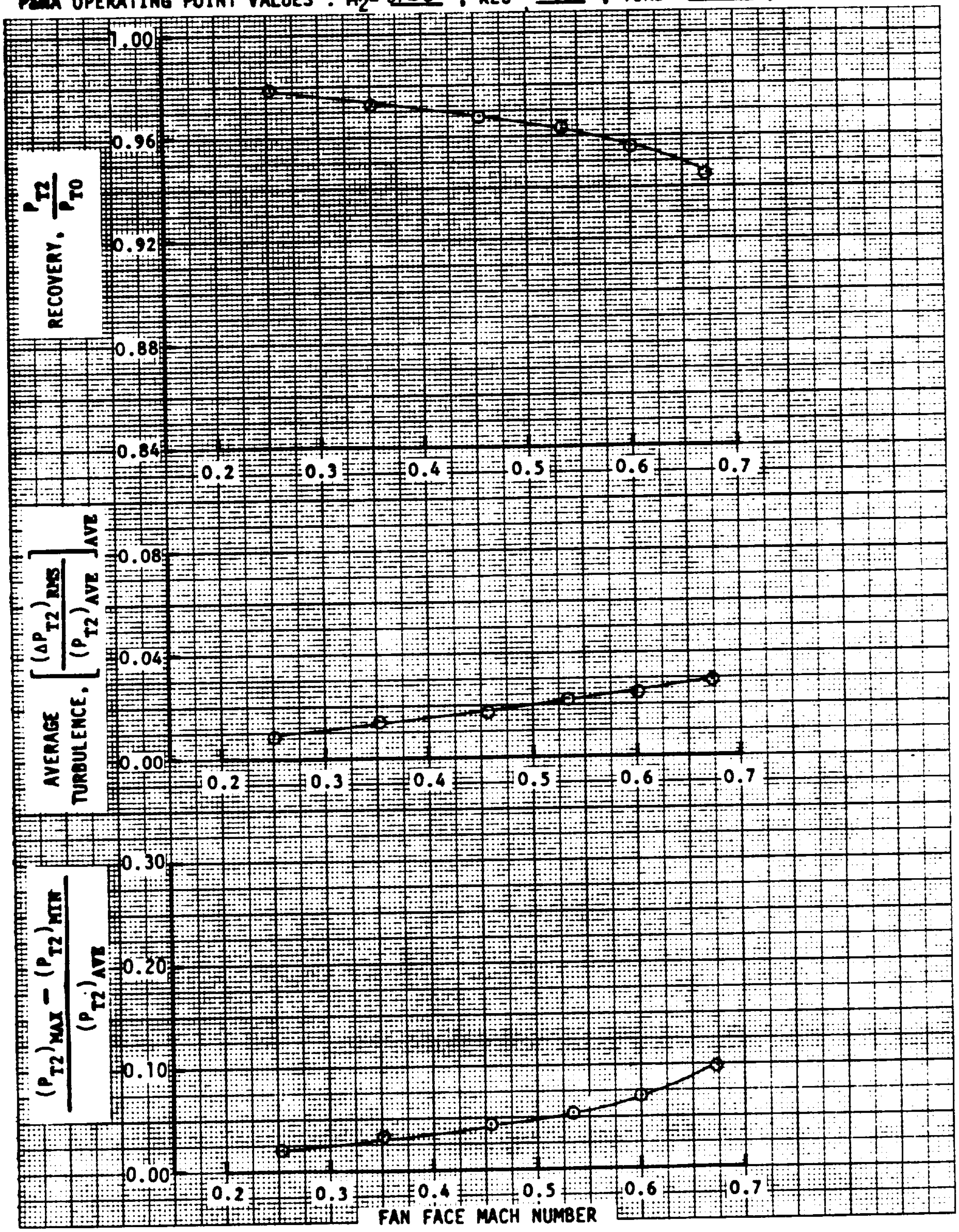


RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER

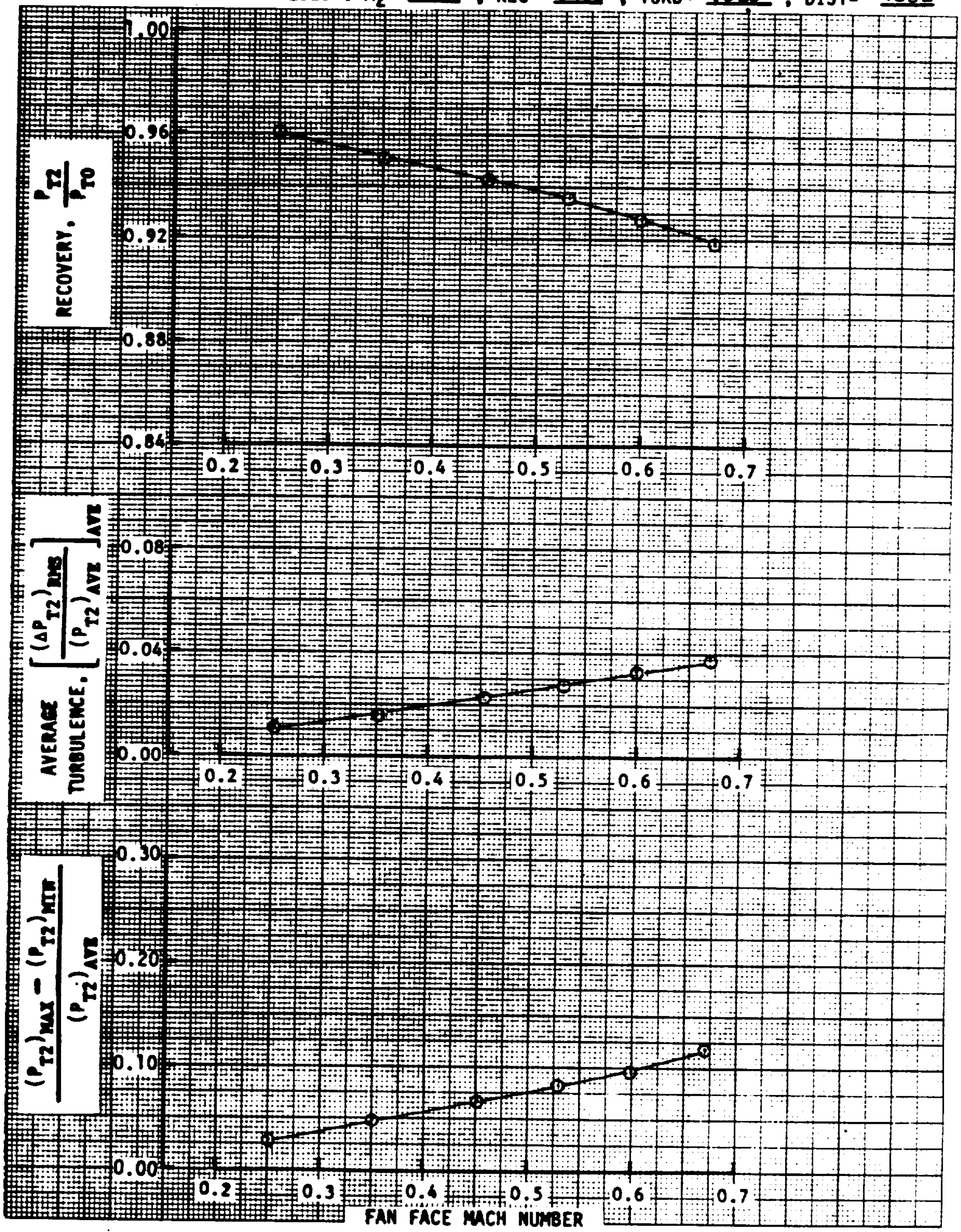
CONFIGURATION 20a ; READING NUMBERS 3594-3599

FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 45 deg. ; SIDESLIP ANGLE = 0 deg.

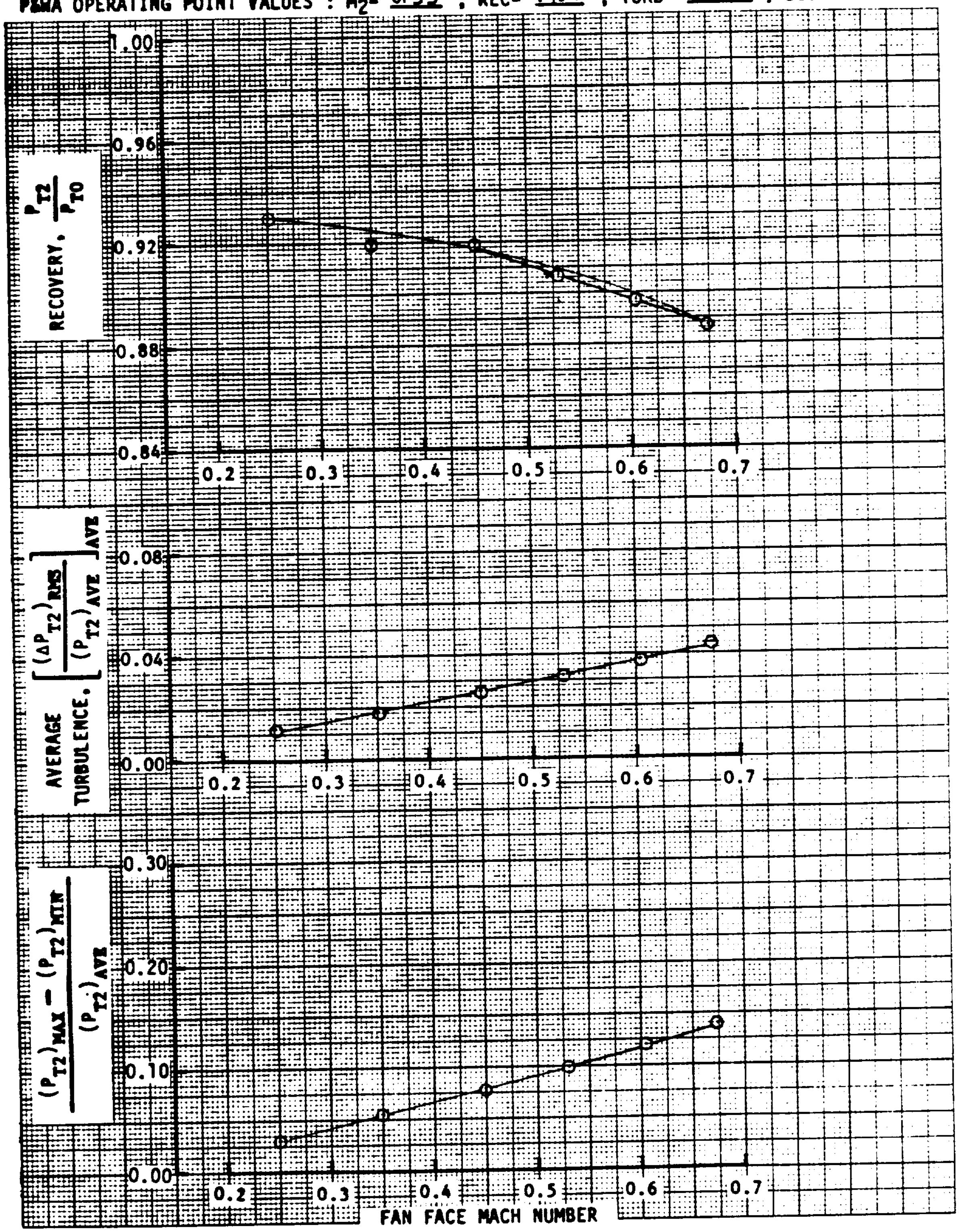
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .965 ; TURB= .021 ; DIST= .082



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3600-3605
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 70 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .936 ; TURB= .028 ; DIST= .082



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3606-3611
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 90 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .907 ; TURB= .032 ; DIST= .099



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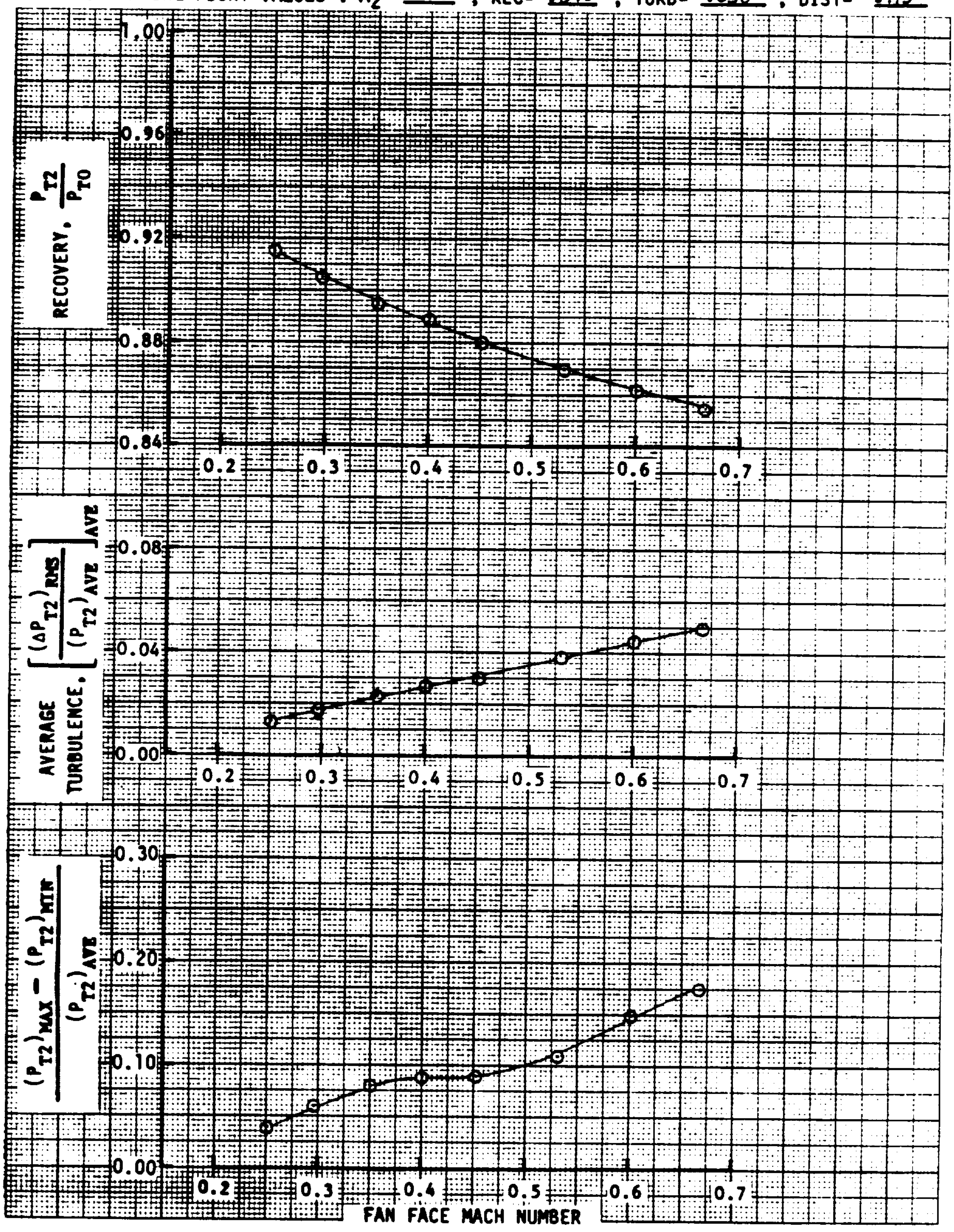
RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FAN FACE MACH NUMBER
CONFIGURATION 20a ; READING NUMBERS 3612-3619
FREESTREAM VELOCITY = 120 knots ; ANGLE OF ATTACK = 110 deg. ; SIDESLIP ANGLE = 0 deg.
P&WA OPERATING POINT VALUES : M_2= 0.53 ; REC= .870 ; TURB= .038 ; DIST= .113



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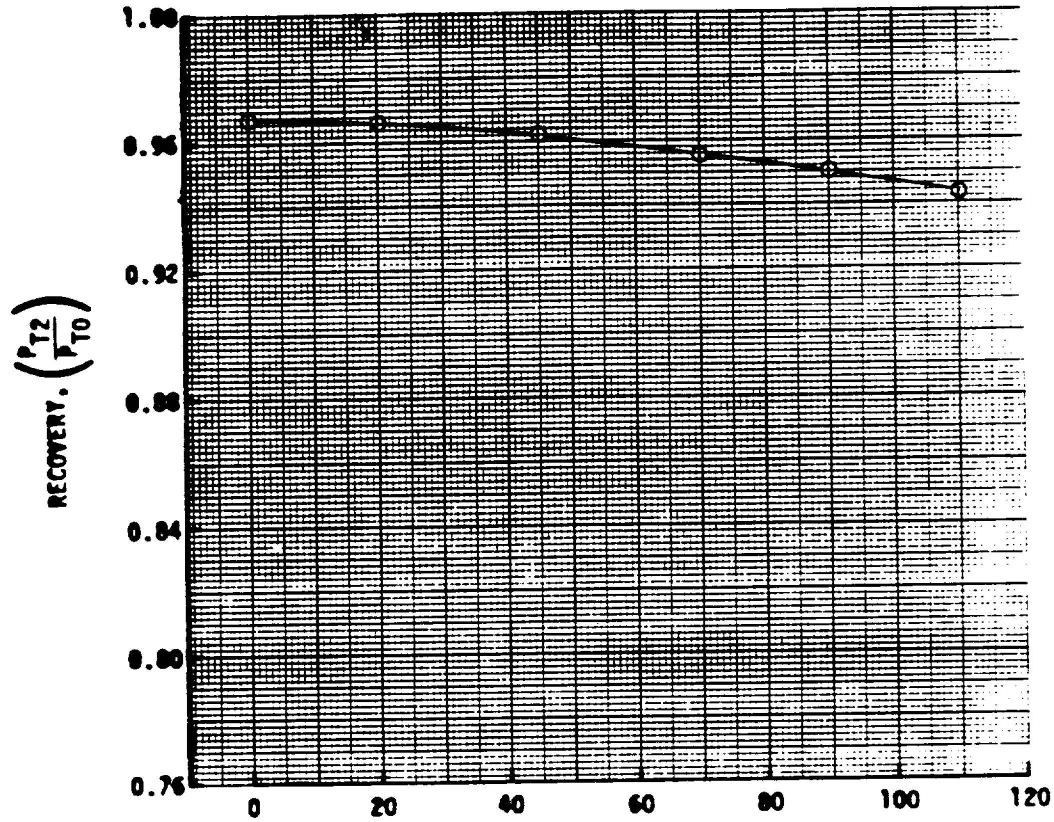
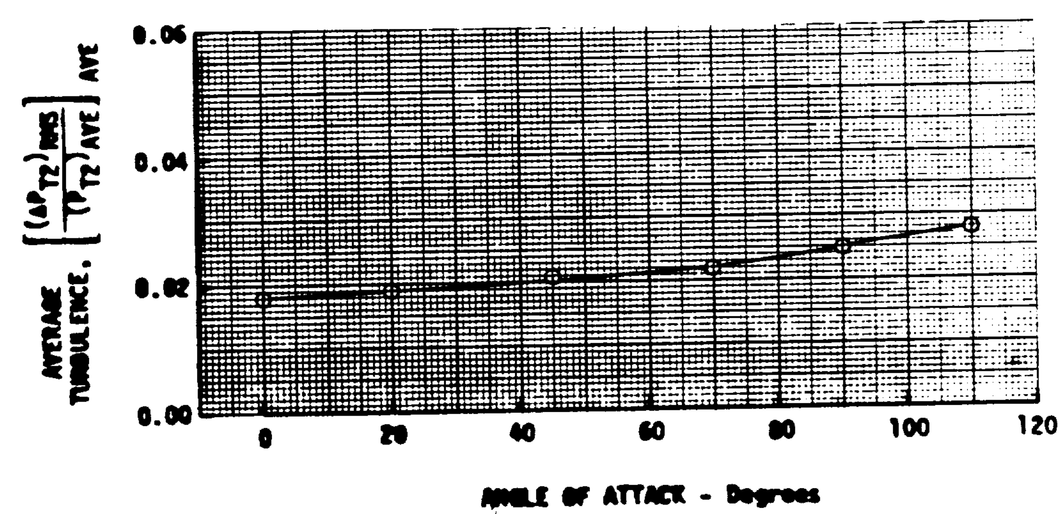
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PW&A F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 40 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 20a; DESCRIPTION Sharp Lip Inlet, 90° Counter Clockwise Rotation, Retracted Sideplates, Left, Right, and Cowl Lip Auxiliary Inlets Open - All Port Designs





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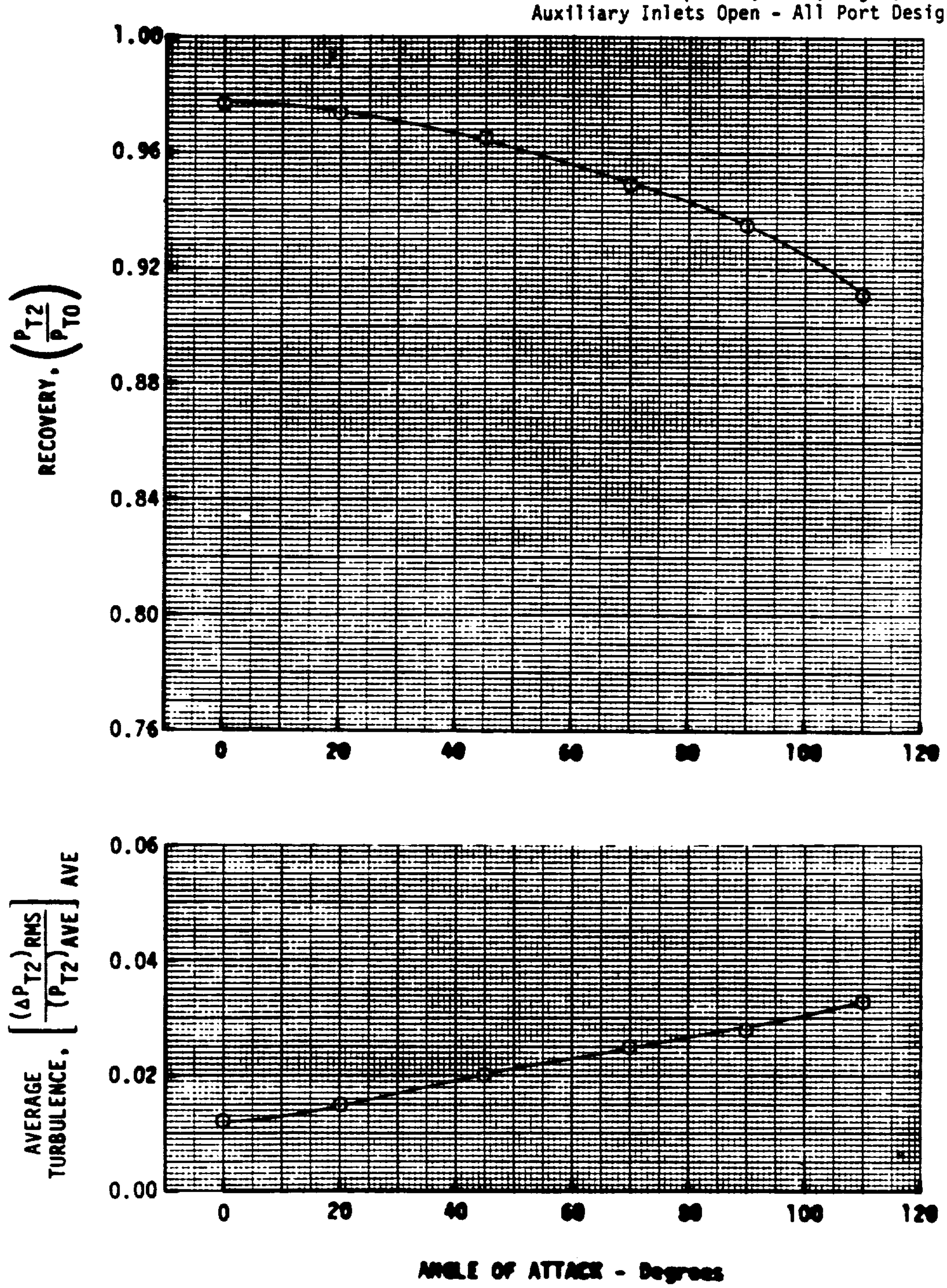
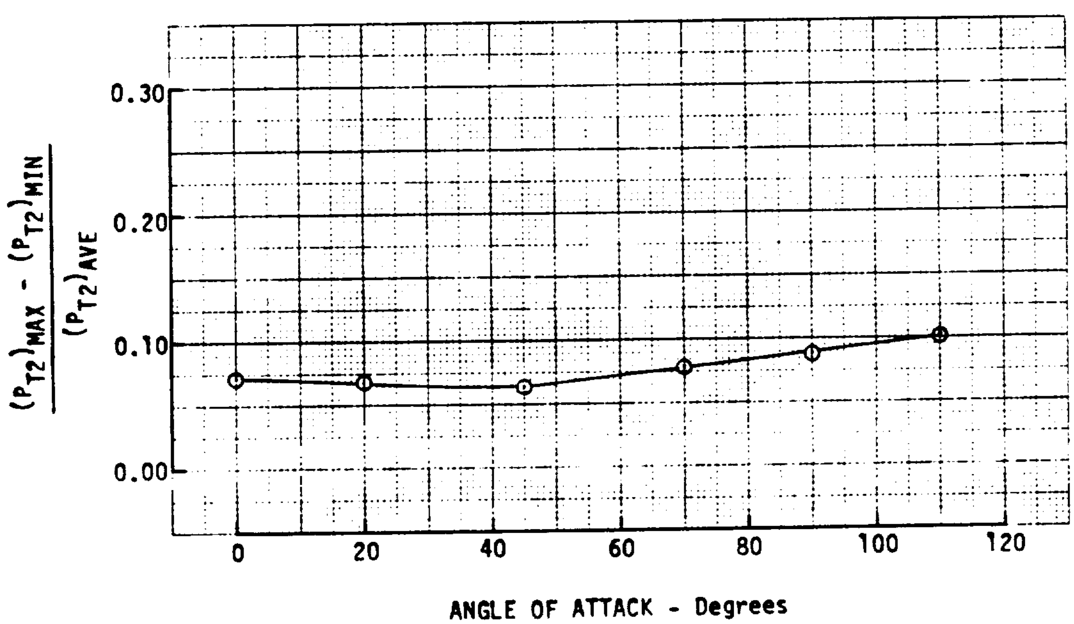
RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
PUMA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 20a ; DESCRIPTION Sharp Lip Inlet, 90° Counter Clockwise Rotation, Retracted Sideplates, Left, Right, and Cowl Lip Auxiliary Inlets Open - All Port Designs

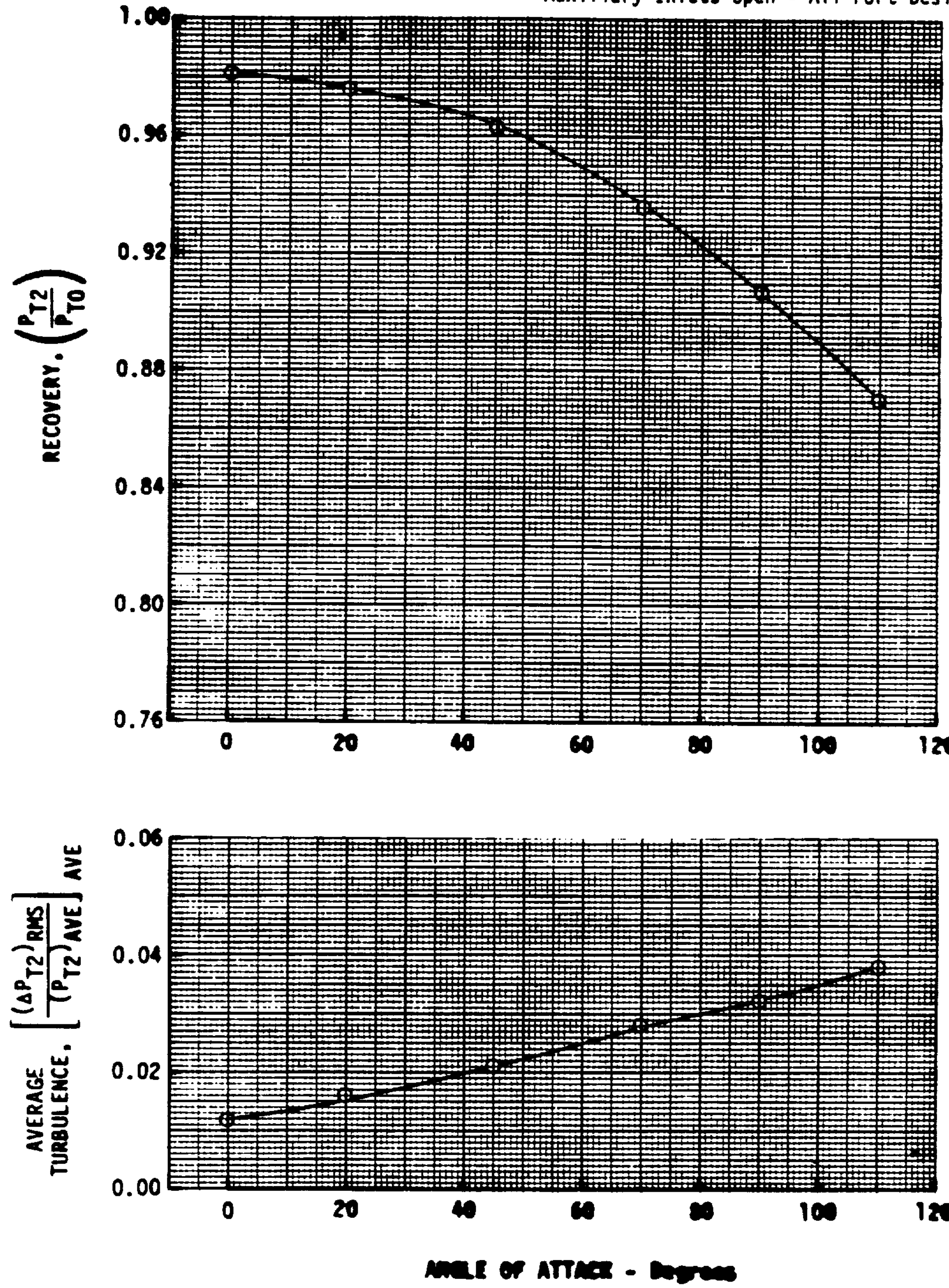


DISTORTION VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, ENGINE FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 80 knots; SIDESLIP ANGLE = 0 degrees
CONFIGURATION: NUMBER 20a ; DESCRIPTION Sharp Lip Inlet, 90° Counter Clockwise Rotation, Retracted Sideplates, Left, Right, and Cowl Lip Auxiliary Inlets Open - All Port Designs

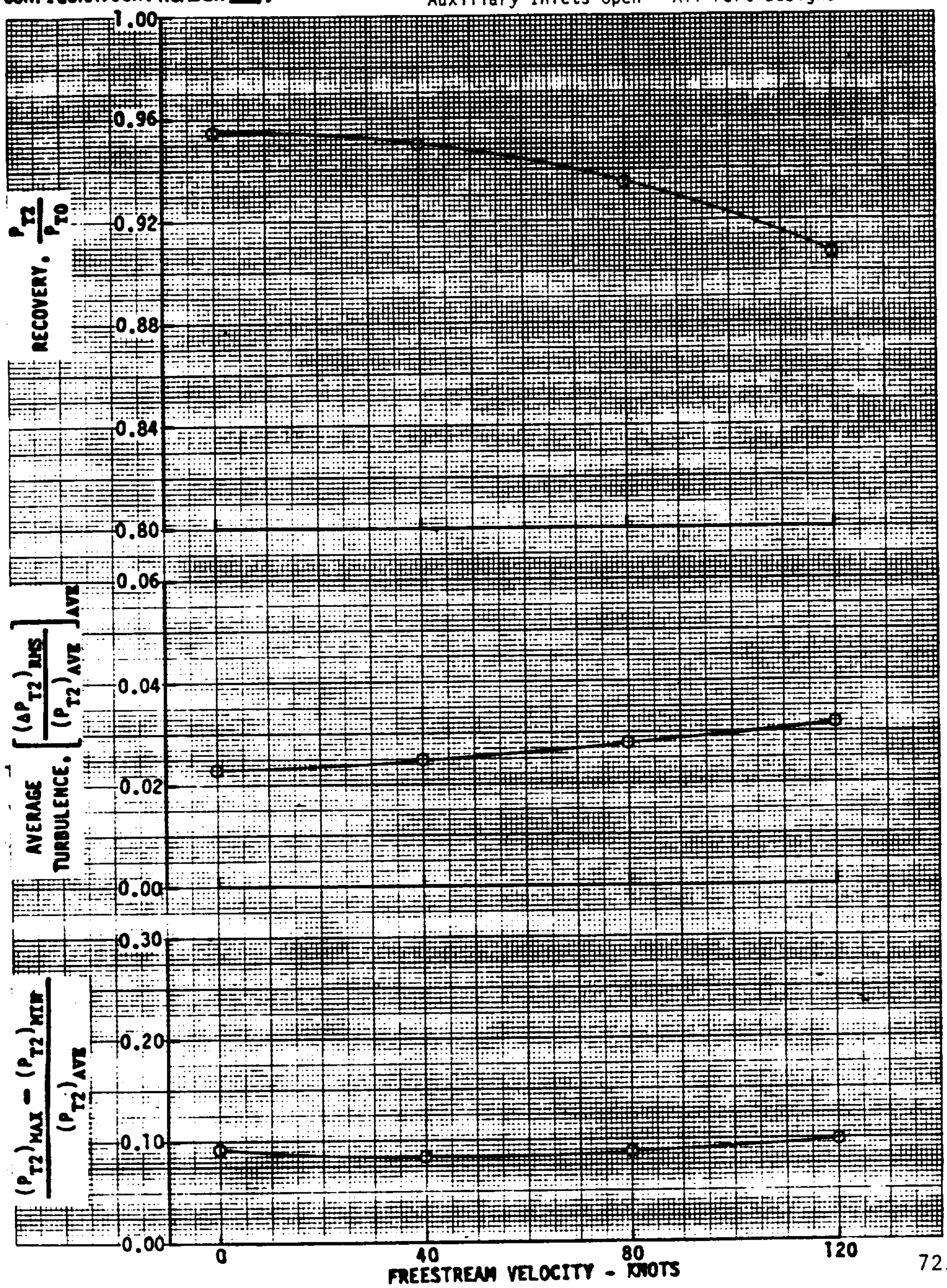


RECOVERY AND AVERAGE TURBULENCE VS. ANGLE OF ATTACK
P&WA F-100 MATCH AIRFLOW, FAN FACE MACH NUMBER = 0.53
FREESTREAM VELOCITY = 120 knots; SIDESLIP ANGLE = 0 deg.

CONFIGURATION: NUMBER 20a; DESCRIPTION Sharp Lip Inlet, 90° Counter Clockwise Rotation, Retracted Sideplates, Left, Right, and Cowl Lip Auxiliary Inlets Open - All Port Designs



RECOVERY, AVERAGE TURBULENCE, AND DISTORTION VS. FREESTREAM VELOCITY
ANGLE OF ATTACK = 90 DEGREES
SIDESLIP ANGLE = 0 DEGREES
P&WA F-100 MATCH AIRFLOW
CONFIGURATION: NUMBER 20a; DESCRIPTION Sharp Lip Inlet, 90° Counter Clockwise Rotation, Retracted Sideplates, Left, Right, and Cowl Lip Auxiliary Inlets Open - All Port Designs



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15. Supplementary Notes

PROJECT MANAGERS: R. R. Burley and A. L. Johns, Propulsion Systems Division, NASA Lewis Research Center, Cleveland, Ohio 44135

16. Abstract

A 43 percent scale (based on the GE F404 engine or 35 percent scale based on the P&W F-100 engine) two-dimensional inlet for supersonic V/STOL was designed, fabricated, and tested at low speeds up to 110° angle-of-attack. The model is extensively instrumented and is designed to parametrically investigate the effects of droop lips, auxiliary inlets, and retracted sideplates on inlet performance. An axisymmetric thick lip inlet section was also fabricated and used to isolate lip loss from diffuser loss and to calibrate the auxiliary inlets.

The droop lip was the most effective flow improvement device tested. The cowl lip and engine face instrumentation data indicated that the droop lip is capable of controlling lip separation at all velocities and angles-of-attack tested.

The auxiliary inlets, though not as effective as the droop lip, also improved the performance of the baseline two-dimensional inlet. They exhibited more sensitivity to angle-of-attack. Flowfield data indicates that auxiliary inlet contraction ratio is a major factor in performance improvements. Inlet performance can be further improved using doors and sideplates to direct auxiliary inlet airflow.

A data base for the design of high performance supersonic V/STOL inlet systems has been generated as a result of the testing conducted in this program. In addition, experimentally measured surface pressure distribution and velocity profiles are included to aid in the development and refinement of inlet design and analysis procedures.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
2-D V/STOL Inlet Design, Auxiliary Inlets, Droop Lips, Low Speed Inlet Performance, Highly Maneuverable Inlet Design	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of pages	22. Price*
unclassified	unclassified	725	

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