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Summary

An investigation was conducted in the Langley 16-Foot Transonic Tunnel to determine the multiaxis thrust-vectoring characteristics of the F-18 High-Alpha Research Vehicle (HARV). The HARV is a highly instrumented, full-scale flight research aircraft that has been modified by adding a multiaxis thrust-vectoring control system. The system utilizes externally mounted, individually actuated thrust-vectoring vanes to redirect the exhaust plume from each of the HARV's two turbofan engines. Controlled deflection of the exhaust plume provides the HARV with enhanced maneuverability and control in areas where conventional aerodynamic controls are ineffective, namely at low speeds and high angles of attack.

A wingtip supported, partially metric, 0.10-scale jet-effects model of an F-18 prototype aircraft was modified with hardware to simulate the thrust-vectoring control system of the HARV. Afterbody aerodynamic and thrust-vectoring forces and moments were measured with an internal six-component strain-gauge balance. Testing was conducted at free-stream Mach numbers ranging from 0.30 to 0.70, at angles of attack from 0° to 70°, and at nozzle pressure ratios from 1.0 to approximately 5.0. An extensive matrix of vane deflection angles was tested for two nozzle configurations: an afterburning power nozzle and a military power nozzle. Results indicate that the thrust-vectoring control system of the HARV can successfully generate multiaxis thrust-vectoring forces and moments. During vectoring, resultant thrust vector angles were always less than the corresponding geometric vane deflection angle and were accompanied by large thrust losses. Significant external flow effects that were dependent on Mach number and angle of attack were noted during vectoring operation. Comparisons of the aerodynamic and propulsive control capabilities of the HARV configuration indicate that substantial gains in controllability are provided by the multiaxis thrust-vectoring control system.

Introduction

Mission requirements for the next generation multirole fighter may necessitate aircraft capable of operating over a broader range of flight conditions than previously thought possible. To survive air combat engagements, aircraft will require improved handling qualities at high angles of attack (high alpha) including brief excursions into the poststall region. Several investigations have shown that the ability to perform transient maneuvers at low speeds and high angles of attack is a significant advantage in air combat (refs. 1 to 3). However, high-alpha maneuverability can be limited because of degraded stability characteristics and inadequate aerodynamic control power. Techniques for producing control forces and moments by redirecting engine exhaust flow, known as thrust vectoring, have been extensively investigated (refs. 4 to 8). The primary benefits of thrust vectoring are that it is independent of airspeed and angle of attack, within the limits of inlet capability, and can provide the control effectiveness necessary for high-alpha flight. Other applications and benefits of thrust vectoring can be found in references 9 to 11.

The lack of validated design criteria for establishing high-alpha maneuvering requirements has limited the exploitation of thrust-vectoring technology. High-alpha poststall flight research has not received the same in-depth attention as the conventional prestall tactical flight regime for the fighter aircraft mission (ref. 12). In order to accelerate the maturation of developing technologies, such as thrust vectoring, the National Aeronautics and Space Administration is conducting the High-Alpha Technology Program (ref. 13) to validate design methods for the next generation of highly maneuverable fighter aircraft. A carefully integrated effort is underway combining wind-tunnel testing, computational fluid dynamics, flight simulation, and full-scale flight experiments.

Flight experiments in the High-Alpha Technology Program are being conducted with a highly instrumented aircraft known as the High-Alpha Research Vehicle (HARV) (ref. 12). The HARV is an extensively modified F-18 fighter/attack aircraft powered by two F404-GE-400 afterburning turbofan engines rated at approximately 16000 lb static thrust at sea level. A photograph and three-view drawing of the HARV are presented in figure 1. One of the modifications to the HARV was the addition of a multiaxis thrust-vectoring control system (TVCS) for increased high-alpha maneuverability. The thrust-vectoring system consists of externally mounted, independently actuated engine vanes (three for each engine) for controlled deflection of the exhaust plume from each of the HARV's two turbofan engines. The ability to redirect the exhaust plume provides the HARV with enhanced maneuverability and control in areas where the conventional aerodynamic controls are ineffective. A photograph of the HARV during static testing of the TVCS is presented in figure 2.

This report presents the results of a wind-tunnel investigation of the F-18 HARV TVCS. A wingtip-supported, partially metric, 0.10-scale jet-effects model of an F-18 prototype aircraft was modified with hardware to simulate the thrust-vectoring control system of the HARV. Afterbody aerodynamic and thrust-vectoring forces and moments were measured with an internal six-component strain-gauge balance. Testing was conducted at free-stream Mach numbers ranging from 0.30 to 0.70, at angles of attack from 0° to 70°, and at nozzle pressure ratios from 1.0 to approximately 5.0. An extensive matrix of vane deflection angles was tested for two nozzle configurations: an afterburning power nozzle and a military power nozzle. The model wing leading-edge and trailing-edge flaps could not be deflected to match the standard control-law schedule for an F-18 at high angles of attack and were, therefore, fixed in the undeflected position throughout the investigation. All configurations were tested with the horizontal stabilators fixed at −5° (in order to clear the vane actuator covers without modifications to the stabilators) and the rudders fixed at 0°.

Symbols

All model longitudinal forces and moments are referred to the stability-axis system, and all lateral forces and moments are referred to the body-axis system. The model moment reference center was located at fuselage station (FS) 45.85, or approximately 23 percent of the mean aerodynamic chord (MAC). Thrust-vectoring vane hinge points were at FS 69.67, resulting in a moment arm from the hinge point of the thrust-vectoring vanes to the model moment reference center of 23.82 in. A discussion of the data reduction procedure, definitions of the aerodynamic force and moment terms, and the propulsion relationships used herein can be found in reference 14.

A_t — measured nozzle throat area, 3.48 in^2 (per nozzle) at afterburning power, 2.20 in^2 (per nozzle) at military power

BL — butt line, in.

b — reference wingspan, 44.88 in. (model), 37.40 ft (full-scale F-18 HARV)

C_A — afterbody axial-force coefficient along body axis, $\frac{F_A}{q_\infty S}$

$C_{A,a}$ — afterbody axial-force coefficient (thrust removed) along body axis, $C_{A,a} = C_A$ at NPR = 1.0 (jet off)

$C_{D,a}$ — afterbody aerodynamic (thrust removed) drag coefficient along stability axis, $C_{D,a} = C_{(D-F)}$ at NPR = 1.0 (jet off)

$C_{(D-F)}$ — afterbody drag-minus-thrust coefficient along stability axis, $C_A \cos\alpha + C_N \sin\alpha$

$C_{F,j}$ — thrust coefficient along body axis, $\frac{F_j}{p_a S}$

$C_{F,N}$ — jet normal-force coefficient in body-axis system, $\frac{F_N}{p_a S}$

$C_{F,S}$ — jet side-force coefficient, $\frac{F_S}{p_a S}$

C_L — total afterbody lift coefficient in stability-axis system, including thrust component, $C_N \cos\alpha - C_A \sin\alpha$

$C_{L,a}$ — afterbody aerodynamic (thrust removed) lift coefficient in stability-axis system, $C_{L,a} = C_L$ at NPR = 1.0 (jet off)

C_l — total afterbody rolling-moment coefficient in body-axis system, including thrust component, $\frac{\text{Rolling moment}}{q_\infty S b}$

$C_{l,a}$ — afterbody aerodynamic (thrust removed) rolling-moment coefficient in body-axis system, $C_{l,a} = C_l$ at NPR = 1.0 (jet off)

C_m — total afterbody pitching-moment coefficient including thrust component, $\frac{\text{Pitching moment}}{q_\infty S \bar{c}}$

$C_{m,a}$ — afterbody aerodynamic (thrust removed) pitching-moment coefficient, $C_{m,a} = C_m$ at NPR = 1.0 (jet off)

C_N — afterbody normal-force coefficient in body-axis system, $\frac{F_N}{q_\infty S}$

$C_{N,a}$ — afterbody normal-force coefficient (thrust removed) in body-axis system, $C_{N,a} = C_N$ at NPR = 1.0 (jet off)

C_n — total afterbody yawing-moment coefficient in body-axis system, including thrust component, $\frac{\text{Yawing moment}}{q_\infty S b}$

$C_{n,a}$ — afterbody aerodynamic (thrust removed) yawing-moment coefficient in body-axis system, $C_{n,a} = C_n$ at NPR = 1.0 (jet off)

C_Y — total afterbody side-force coefficient, including thrust component, $\frac{F_S}{q_\infty S}$

$C_{Y,a}$ — afterbody aerodynamic (thrust removed) side-force coefficient, $C_{Y,a} = C_Y$ at NPR = 1.0 (jet off)

$\bar{c}$ — reference wing mean aerodynamic chord, 13.82 in. (model), 11.52 ft (full-scale F-18 HARV)

D — afterbody drag along stability axis, lbf

d_t — measured minimum nozzle diameter at throat, in.

F — thrust along stability axis, lbf

F_A — measured axial force along body axis, positive downstream, lbf

$F_{g,l}$ gross thrust for full-scale F-18 HARV, left engine, lbf

$F_{g,r}$ gross thrust for full-scale F-18 HARV, right engine, lbf

F_i ideal isentropic gross thrust, $w_p \sqrt{\frac{R_j T_{t,j}}{g^2} \frac{2\gamma}{\gamma - 1}\left[1 - \left(\frac{1}{\text{NPR}}\right)^{(\gamma - 1)/\gamma}\right]}$, lbf

F_j measured thrust along body axis, lbf

F_N measured normal force in body-axis system, positive upward, lbf

F_r resultant thrust, $\sqrt{F_j^2 + F_N^2 + F_S^2}$, lbf

F_S measured side force, positive to right when looking upstream, lbf

g gravitational constant, 32.174 ft/sec^2

I_{yy} full-scale F-18 HARV pitch inertia with 60 percent of internal fuel capacity, 174246 slug-ft^2

I_{zz} full-scale F-18 HARV yaw inertia with 60 percent of internal fuel capacity, 189336 slug-ft^2

M free-stream Mach number

NPR nozzle pressure ratio, $p_{t,j}/p_a$ at $M = 0$ or $p_{t,j}/p_\infty$ at $M > 0$

NPR_d design nozzle pressure ratio (NPR for fully expanded flow at nozzle exit)

p_a ambient pressure, psi

$p_{t,j}$ average jet total pressure, psi

p_∞ free-stream static pressure, psi

$\dot{q}$ pitch acceleration, $\frac{180}{\pi} \times \frac{C_m q'_\infty S\bar{c}}{I_{yy}}$, deg/sec^2

q_∞ free-stream dynamic pressure, psi

q'_∞ flight dynamic pressure, 61.22 psf (for M = 0.30, Altitude = 20000 ft)

R_j gas constant, 1716 ft^2/sec^2-°R (for $\gamma = 1.3997$)

$\dot{r}$ yaw acceleration, $\frac{180}{\pi} \times \frac{C_n q'_\infty Sb}{I_{zz}}$, deg/sec^2

S wing reference area, 576.00 in^2 (model), 400 ft^2 (full-scale F-18 HARV)

$T_{t,j}$ average jet total temperature, °R

w_i ideal isentropic weight-flow rate, $A_t p_{t,j}\left(\frac{2}{\gamma + 1}\right)^{\frac{\gamma + 1}{2(\gamma - 1)}} \sqrt{\frac{\gamma g^2}{T_{t,j} R_j}}$, lbf/sec (for NPR > 1.89)

w_p measured weight-flow rate, lbf/sec

x axial distance measured from nozzle exit, positive downstream, used to define position of thrust-vectoring vanes relative to nozzle exit (see fig. 5(b)), in.

x_o axial location of nozzle exit, used to define position of thrust-vectoring vanes relative to nozzle exit (see fig. 5(b)), in.

y vertical distance measured from nozzle exit, positive away from nozzle centerline, used to define position of thrust-vectoring vanes relative to nozzle exit (see fig. 5(b)), in.

y_o vertical location of nozzle exit, used to define position of thrust-vectoring vanes relative to nozzle exit (see fig. 5(b)), in.

α angle of attack, deg

γ ratio of specific heats, 1.3997 for air

δ geometric vector angle of thrust-vectoring vane, deg

δ_p resultant pitch thrust vector angle at static conditions, positive deflection downward (pitch down), $\tan^{-1}(F_N/F_j)$, deg

δ_r rudder deflection, positive deflection trailing edge left, deg

δ_s stabilator deflection, positive deflection trailing edge down, deg

δ_y resultant yaw thrust vector angle, positive deflection to left (yaw left), $\tan^{-1}(F_S/F_j)$, deg

θ nozzle internal convergence angle (see fig. 7), deg

Abbreviations:

ASME American Society of Mechanical Engineers

FS fuselage station

HARV High-Alpha Research Vehicle

LEX leading-edge extension

MAC mean aerodynamic chord

TVCS thrust-vectoring control system

Subscripts:

A top vane, left engine

B lower left vane, left engine

C lower right vane, left engine

D top vane, right engine

E lower left vane, right engine

F lower right vane, right engine

Apparatus and Procedure

Wind Tunnel

This investigation was conducted in the Langley 16-Foot Transonic Tunnel, a single-return, continuous-flow, atmospheric wind tunnel with a slotted octagonal test section and continuous air exchange. The wind tunnel has a continuously variable airspeed with a Mach number range from 0.20 to 1.30. Test-section plenum suction is used for speeds above Mach 1.05. The wall divergence in the test section is adjusted as a function of Mach number and airstream dew point in order to eliminate any longitudinal static-pressure gradients in the test section. The average Reynolds number per foot ranges from about 1.20×10^6 at a free-stream Mach number of 0.2 to about 4.10×10^6 at a free-stream Mach number of 1.30. A complete description of this facility and its operating characteristics can be found in reference 15.

Model and Support System

An existing 0.10-scale afterbody jet-effects model of an F-18 prototype aircraft (ref. 16) was employed for this investigation and is shown in the sketch of figure 3 and the photographs of figure 4. The wingtip-supported model approximated the HARV external lines, with major differences being (1) faired over inlets (required for powered-model tests and located on the nonmetric forebody well forward of the metric afterbody), (2) wing alterations near the tips (required for the model support system), (3) nose strakes, and (4) leading-edge extension (LEX) slots. The model afterbody was extensively modified to simulate the thrust-vectoring control system of the F-18 HARV. Details of the thrust-vectoring hardware are presented in figure 5. The term "afterbody," as used in this paper, refers to the metric portion of the model (the shaded portion in fig. 3), on which forces and moments were measured with a six-component strain-gauge balance. The metric afterbody included the aft fuselage, nozzles (including internal thrust hardware), thrust-vectoring control system, and empennage surfaces. (See fig. 6.) The model forebody and wing were nonmetric, and the metric break was located at FS 57.00. A 0.10-in. gap in the external skin at the metric-break station prevented fouling between the nonmetric forebody and wing and the metric afterbody. A flexible Teflon strip in the metric-break gap was used as a seal to prevent flow into the model.

As shown in figures 3 and 4, the model was supported at the wingtips in the wind tunnel. The outer wing panels, from 65 percent of the semispan to the tip, were modified from airplane lines to accommodate the wingtip support system and air supply system. Two wingtip booms were attached to the tunnel support system with V-struts, as shown in figure 4(b). High-pressure air and instrumentation lines were routed through the V-struts and wingtip booms and entered the model fuselage through passages in both wings. High-pressure air routed through each wing was discharged into a common plenum in the center section of the model forebody.

The wingtip support system has the unique feature of being able to set a model to a fixed incidence angle relative to the support system, which has pitch angle capability from −10° to 25°. This allows testing of models to high angles of attack while keeping the model at or near the wind-tunnel centerline. During this investigation, the model incidence angle relative to the support system was initially set at 8° to allow testing at angles of attack from −2° to 33° (fig. 4(a)). With the test matrix completed for angles of attack up to 33°, the model incidence relative to the support system was changed to 45° to allow testing at angles of attack from 35° to 70° (fig. 4(b)). Changing model incidence relative to the support system often results in slight discontinuities in aerodynamic data obtained during wind-tunnel investigations. Not unexpectedly, the results of this investigation are characterized by slight discontinuities in the data between angles of attack of 32° and 35°.

Twin-Jet Propulsion Simulation System

An external high-pressure air source provided a continuous flow of clean, dry air to the model at a controlled stagnation temperature of about 530°R (70°F) at the nozzles. This high-pressure air was transferred from a common plenum in the model forebody to the metric afterbody by means of two flow-transfer assemblies. A sketch showing details of one of these assemblies is presented in figure 6. Two flexible metal bellows were located in each flow-transfer assembly to compensate for axial forces caused by pressurization and to act as seals between the nonmetric portion and the metric portion of the model.

Transition and instrumentation sections, including 17.9-percent-open choke plates, were attached to the downstream end of each flow-transfer assembly. Each instrumentation section contained six total-pressure probes (three probes each on two rakes) and one total-temperature probe downstream of the transition section and choke plate. Thus, ideal nozzle performance parameters calculated from these measurements are free of losses from the transition sections. The weight-flow rate of the high-pressure air supplied to the exhaust nozzles was determined from a calibrated critical flow venturi system in the air line external to the wind tunnel.

Thrust-Vectoring Control System

Full-Scale F-18 HARV

The full-scale F-18 HARV TVCS consists of three externally mounted deflecting vanes positioned about the periphery of each engine nozzle (fig. 1). During nonvectoring conditions, the vanes are retracted well outside the exhaust plume; multiaxis thrust vectoring is achieved by controlled deflection of selected vanes into the exhaust flow. To prevent thermal constraints on the aircraft engines, a maximum of two vanes on each engine are deployed at a given time. Vane actuation is accomplished by means of modified aileron electrohydraulic actuators mounted external to the aircraft; maximum vane rotation rate is 80 deg/sec. While an externally mounted vane actuation system is far from an optimum installation, aerodynamic drag penalties are acceptable for flight testing of the TVCS.

Static investigations of postexit vane-vectoring concepts and the F-18 HARV TVCS were performed to aid in the design of the thrust-vectoring vanes (refs. 17 through 19). These investigations concluded that the most effective vane design incorporated double curvature on the vectoring surface, that is, axial and radial curvature. In addition, the vanes were designed with clipped corners at the trailing edge to allow maximum vector angles without physical vane interference. The larger top vanes were designed to generate a greater nose-down pitching moment, while the bottom (lower left and lower right) vanes on each engine are used together to generate sufficient nose-up pitching moment.

The orientation of the HARV thrust-vectoring system was dictated by structural considerations and the necessity to avoid interference with the aerodynamic control surfaces. However, the inside trailing edges of the stabilators required slight modifications (top view of fig. 1(b)) to provide clearance for the lower outboard vane actuator housings. To accommodate the vane actuation system, the engines were modified by removing the divergent portion of each nozzle. Eliminating the divergent portions of the nozzles changed each nozzle type to a convergent nozzle (with lower performance at high NPR), but allowed easier installation of the vane actuation system on the flight test vehicle. The remaining convergent nozzle hardware was modified to maintain structural integrity.

The weight of the thrust-vectoring control system installation on the F-18 HARV is approximately 2200 lb. With the addition of a spin recovery chute system, emergency electrical and hydraulic systems, and ballast, an additional 1500 lb has been added for a thrust-vectoring control system weight increase of approximately 3700 lb. An additional 419 lb resulted from the inclusion of equipment and wiring not directly associated with the thrust-vectoring control system. Total weight for the modified F-18 HARV aircraft is 36099 lb at a 60-percent internal fuel condition.

0.10-Scale Jet-Effects Wind-Tunnel Model

Modifications were made to the existing 0.10-scale jet-effects wind-tunnel model (ref. 16) starting at FS 63.47 to simulate the thrust-vectoring control system of the HARV. These modifications consisted of removing the divergent section of the convergent-divergent exhaust nozzles and adding the thrust-vectoring hardware, vane actuator fairings, and spin-chute canister. These modifications are shown on the model in figures 5 and 6. Two nozzle power settings were investigated by using two sets of interchangeable inner nozzles; one set represented a military (dry power) setting with a measured throat area of 2.20 in^2, while the other set represented an afterburning power setting with a measured throat area of 3.48 in^2. A sketch showing geometric details of the inner nozzles is presented in figure 7.

The model vane planform area was 3.60 in^2 for each top vane and 2.63 in^2 for each lower vane (fig. 8). Thus, the top vanes were approximately 37 percent larger than the lower vanes. The thrust-vectoring vanes were mounted to the model vane supports, which were designed with multiple alignment holes in order to set vane deflection angles (fig. 9). The axial and radial locations of the thrust-vectoring vanes relative to the nozzle exit are presented in figure 5(b). (Note that left and right thrust-vectoring vane installations are mirror images of each other.) The vane supports were covered with simulated actuator fairings and a simulated spin-chute canister was added to model the flight test vehicle spin recovery chute system. Geometric details of the model vane support fairings and spin-chute canister are presented in figures 10 and 11, respectively.

Tests

This investigation was conducted in the Langley 16-Foot Transonic Tunnel at wind-off conditions and at free-stream Mach numbers of 0.30, 0.50, and 0.70. Angle of attack was varied from 0° to 70°, depending on Mach number. Angle of attack was limited at the higher Mach numbers by the maximum load capabilities of the wing. Nozzle pressure ratio was varied from 1.0 (jet off) to 5.0, depending on nozzle power setting and Mach number. Thrust-vectoring vane deployment angles investigated were −10° (fully retracted), 0°, 5°, 10°, 15°, 20°, and 25°. Vane deployment angles were chosen based on previous static investigations of the HARV TVCS (refs. 18 and 19), which determined that the thrust-vectoring vanes do not vector the exhaust flow until deployed at 10°. A complete listing of model configurations tested during this investigation is presented in table 1.

Basic data were obtained by holding nozzle pressure ratio constant and varying angle of attack; nozzle pressure ratio sweeps were conducted at selected, constant angles of attack. During angle-of-attack sweeps, nozzle pressure ratio was set to 4.15 at military power and 4.25 at afterburning power to approximate the NPR of the HARV at flight Mach numbers from 0.30 to 0.70. The model wing leading-edge and trailing-edge flaps could not be deflected to match the standard control-law schedule for the F-18 at high angles of attack and were, therefore, fixed in the undeflected position throughout the investigation. The horizontal stabilators were fixed at −5° (in order to clear the vane actuator covers without modifications to the stabilators), and the rudders were fixed at 0° throughout the investigation. All tests were conducted with 0.10-in-wide boundary-layer transition strips located 1.50 in. from the tip of the forebody nose and 1.00 in. aft (streamwise) of all lifting surfaces and inlet (imaginary) leading edges. These strips consisted of No. 100 carborundum grit sparsely distributed in a thin film of lacquer.

Data Reduction

All data for both the model and the wind tunnel were recorded on magnetic tape. Approximately 50 frames of data, measured at a rate of 10 frames per second, were taken for each data point. Averaged values of the data measurements were used to compute basic nozzle performance parameters and aerodynamic force and moment coefficients. These coefficients represent the total afterbody forces and moments (including thrust contributions) nondimensionalized by free-stream dynamic pressure, wing reference area (576 in^2), wing mean aerodynamic chord (13.82 in.), and wingspan (44.88 in.). The moment reference center was located at FS 45.85, and the thrust-vectoring vane hinge points were located at FS 69.67.

The balance measurements were initially corrected for model weight tares and isolated balance component interactions. Because the centerline of the balance was below the flow-transfer assembly (bellows) centerline, a force and moment interaction (tare) between the bellows and the balance existed. In addition, although the bellows arrangement in the flow-transfer system was designed to minimize forces on the balance caused by pressurization, small bellows tares on the six-component balance still existed. These tares resulted from a small pressure difference between the ends of the bellows when air system internal velocities were high and from small differences in the spring constant of the forward and aft bellows when the bellows were pressurized. Tares due to interactions between the bellows and the balance were determined by single and combined calibration loadings on the balance, with and without the jet operating with ASME calibration nozzles (which have known performance over the range of expected internal pressures) installed. Tare forces and moments were then removed from the appropriate balance component data. Additional balance corrections were also made to account for metric-break gap, base, and internal cavity pressure tares.

At static ($M = 0$) conditions, the internal thrust ratio F_j/F_i is the ratio of the measured thrust along the body axis to the ideal thrust. Ideal thrust F_i is based on measured weight flow w_p, jet total pressure $p_{t,j}$, and jet total temperature $T_{t,j}$. (See the section "Symbols.") The resultant thrust ratio F_r/F_i is the resultant thrust divided by the ideal thrust. Resultant thrust is obtained from the measured axial, normal, and side components of the jet resultant force. From the definitions of F_j and F_r, it is obvious that the thrust along the body axis F_j includes a reduction in thrust that results from turning the exhaust vector away from the axial direction, whereas the resultant thrust F_r does not.

The nozzle discharge coefficient w_p/w_i is the ratio of measured weight-flow rate from upstream venturi measurements to ideal weight-flow rate, which is calculated from total-pressure and total-temperature measurements and the nozzle throat area A_t (the measured geometric minimum area in the nozzle). This discharge coefficient is a measure of the nozzle efficiency in passing weight flow. The discharge coefficient is reduced by any momentum and vena contracta losses (the tendency for a local flow separation bubble to form in the vicinity of the nozzle throat, resulting in an effective throat area less than A_t).

The resultant pitch and yaw thrust vector angles δ_p and δ_y are the net effective angles at which the thrust-vectoring mechanism turns the exhaust flow away from the axial direction. As indicated in the section "Symbols," these angles are calculated from the force components measured by the balance and do not necessarily represent the actual plume angle of the exhaust flow.

At wind-on conditions, corrected longitudinal forces and moments measured by the balance were transferred from the body axis of the metric portion of the model to the stability-axis system. Angle of attack α, the angle between the afterbody centerline and the relative wind at zero sideslip, was determined by applying corrections for afterbody deflection (caused when the model and balance bend under aerodynamic load) and tunnel flow angularity to the angle of the nonmetric forebody determined from a calibrated attitude indicator. The flow angularity correction was 0.1°, which is the average upflow angle measured in the Langley 16-Foot Transonic Tunnel.

Because this investigation was conducted over a large angle-of-attack range, the attitude of the nonmetric forebody was determined with two calibrated attitude indicators: one in the model forebody, the other in the support system. During testing at angles of attack from −2° to 33°, the attitude indicator in the model nose was used to compute angle of attack. Because the attitude indicator in the model forebody was unreliable at angles of attack above 45°, the attitude indicator in the support system was used to determine the attitude of the nonmetric forebody when the model incidence was set at 45°. The difference between the angle of the model forebody and that of the attitude indicator in the support system was measured (wind off) and applied as an additional correction when computing the angle of attack of the metric afterbody. Because of the rigidity of the wingtip support system, any deflections of the support system at the high angle-of-attack, low Mach number conditions were considered to be negligible.

Presentation of Results

The results of this investigation are presented in both tabular and plotted form. Table 1 is an index to tables 2 to 39, which contain static and aeropropulsive performance characteristics for each model configuration investigated. Table 40 presents typical engine performance characteristics of the full-scale F-18 HARV obtained from reference 20. In the present report, a geometric vane deflection angle of −10° will always be considered the fully retracted vane position, and larger vane angles will be considered a deployed vane position.

Comparison and summary plots for selected configurations are presented in figures 12 to 31 as follows:

Figure

Effect of power setting on static performance characteristics with vanes fully retracted 12

Nozzle static performance with the thrust-vectoring vanes deployed at—
Afterburning power 13
Military power 14

Resultant static thrust-vectoring envelopes at—
Afterburning power 15
Military power 16

Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes fully retracted 17

Effect of power setting on afterbody aerodynamic characteristics at scheduled NPR with vanes fully retracted 18

Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with—
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Vanes B,E and C,F deployed 20
Vanes B,E deployed 21
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Individual afterbody drag and thrust contributions that make up $C_{(D-F)}$ 23

Variation in afterbody drag and thrust contributions with angle of attack at afterburning power with NPR = 4.25 and $M = 0.30$ 24

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Vanes A,D deployed 25
Vanes B,E and C,F deployed 26
Vanes B,E deployed 27
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External flow effects on pitching moment at afterburning power and NPR = 4.25. 29

External flow effects on yawing moment at afterburning power and NPR = 4.25 30

Computed aerodynamic and propulsive control capability for F-18 HARV 31

Results and Discussion

Static Performance

Static ($M = 0$) performance characteristics that show the effects of nozzle power setting and thrust vectoring are presented in figures 12 to 16. Static nozzle performance is presented in terms of internal thrust ratio F_j/F_i, resultant thrust ratio F_r/F_i, resultant pitch vector angle δ_p, resultant yaw vector angle δ_y, and nozzle discharge coefficient w_p/w_i. Recall that the divergent portion of each exhaust nozzle was removed prior to the installation of the thrust-vectoring control system, which changed each nozzle to a convergent type. It was expected that these modifications would result in thrust ratio trends typical of convergent nozzles (ref. 21).

Before continuing with the discussion of results, some general performance characteristics of convergent nozzles should be noted. In a convergent nozzle, thrust ratios peak when choked flow conditions are established and nozzle exit pressure is equal to ambient pressure (i.e., flow in the nozzle is fully expanded). The nozzle pressure ratio corresponding to the fully expanded condition is known as the design NPR (NPR_d) and is equal to

1.89 for a convergent nozzle. Losses in thrust ratio at NPR_d are attributed to friction in the nozzle and exit-flow angularity effects. When a convergent nozzle operates at NPR > 1.89, nozzle exit pressure is higher than ambient pressure and the exhaust flow must expand to ambient conditions downstream of the nozzle exit (i.e., flow in the nozzle is underexpanded). External flow expansion corresponds to a loss in possible thrust and results in losses in thrust ratio for convergent nozzles at NPR > 1.89.

Effects of Nozzle Power Setting

Static performance characteristics that show the effects of nozzle power setting (afterburning versus military) with the thrust-vectoring vanes fully retracted are presented in figure 12. The internal thrust ratio F_j/F_i, resultant thrust ratio F_r/F_i, and nozzle discharge coefficient w_p/w_i are presented as a function of nozzle pressure ratio NPR. Thrust ratio trends at the military power setting were typical of a convergent nozzle (ref. 21), which experiences peak performance at NPR = 1.89 and reduced performance at higher NPR due to increased flow underexpansion effects. However, thrust ratios at the afterburning power setting peaked at a higher NPR ($NPR_d \approx 2.5$), and their magnitude was larger than at the military power setting (fig. 12). This behavior is indicative of a convergent-divergent nozzle with an effective expansion ratio of about 1.17 (compared with an expansion ratio of 1.00 for a convergent nozzle). The increased proximity of the exhaust plume to the retracted vanes at afterburning power (fig. 5(b)) allowed flow expansion to occur on the retracted vane surfaces (thereby reducing underexpansion losses) and resulted in behavior typical of a low expansion ratio convergent-divergent nozzle. Note that with the vanes fully retracted F_j/F_i and F_r/F_i were identical, indicating that no vectoring of the exhaust plume occurred.

Discharge coefficient w_p/w_i levels differed between the afterburning and military power settings because w_p/w_i is influenced by nozzle geometry upstream of and in the vicinity of the nozzle throat (fig. 12). As indicated in figure 7, the nozzles at the military power setting had a higher internal convergence angle θ than at the afterburning power setting. The higher convergence angle resulted in higher vena contracta losses (the tendency for a local flow separation bubble to form near the nozzle throat) and, thus, in lower values of discharge coefficient. Such trends are typical of convergent nozzle performance (ref. 21). Geometric changes downstream of the nozzle throat plane do not generally affect discharge coefficient. For the nozzles of this investigation, thrust vectoring by vane deflection was always implemented downstream of the nozzle throat and resulted in insignificant effects on w_p/w_i. Consequently, w_p/w_i is not presented for the vectoring configurations, since the trends essentially mirrored results with the vanes fully retracted.

Effects of Thrust Vectoring

Static performance characteristics at afterburning and military power with the thrust-vectoring vanes deployed are presented in figures 13 and 14, respectively. The internal thrust ratio F_j/F_i, resultant thrust ratio F_r/F_i, resultant pitch vector angle δ_p, and resultant yaw vector angle δ_y are presented as a function of NPR. A matrix of vane deflection angles was tested at each power setting in order to provide a static thrust-vectoring envelope. During vectoring, at least one vane on each engine was always fully retracted, while one or two of the remaining vanes on each engine were deployed into the exhaust flow. The matrix of vane deflections tested was divided as follows: top vanes deployed for positive pitch vector angle (pitch down), lower left and lower right vanes deployed for negative pitch vector angle (pitch up), lower left vanes deployed for combined negative pitch vector and negative yaw vector angles (pitch up and yaw right), and top and lower left vanes deployed for combined positive pitch vector and negative yaw vector angles (pitch down and yaw right). The maximum vane deployment angle was 25° at each vectoring condition, except for the pitch up case, where physical interference between the model hardware limited the maximum vane deflections and resulted in vane deployment angles of 25° for vanes B and F and 20° for vanes C and E. Because the vane installations on the left and right engines were mirror images of each other, yaw vectoring was only performed in the negative direction (yaw right) during this investigation.

Certain trends (as calculated from the multiaxis thrust-vectoring forces and moments) dominated the vectored thrust data. Increased deflection of the vanes resulted in higher turning angles due to an increased amount of vane surface in contact with the exhaust flow (figs. 13 and 14). However, resultant thrust vector angles were always less than the corresponding geometric vane deflection angle, and large amounts of flow turning were always accompanied by large thrust losses. These losses were expected, based on previous studies, and were a direct result of deploying the vanes into the supersonic jet-exhaust flow (ref. 17).

Afterburning power. Resultant thrust vector angles at afterburning power did not always remain constant or behave linearly with increasing NPR (fig. 13). Thrust vector angles increased or decreased with increasing NPR, depending on which vanes were deployed and on the magnitude of the vane deployment angle. The largest variations in resultant thrust vector angles occurred when the top vanes were deployed. For example, δ_p at the full pitch down (top) vane deployment ($\delta_{A,D} = 25°$) increased from 8° at NPR = 2.0 to approximately 12° at NPR = 4.0 (fig. 13(b)). However, δ_p at the full pitch up (bottom) vane deployment ($\delta_{B,F} = 25°$, $\delta_{C,E} = 20°$) varied by only 1° across the NPR range (fig. 13(c)).

Because the vanes were not always entirely within the exhaust flow, many factors influenced the performance of the thrust-vectoring control system. The amount of vectoring generated by a deployed vane was highly dependent on vane position with respect to the exhaust plume. Once choked flow conditions are established in a convergent nozzle, a further increase in NPR typically results in a slightly larger exhaust plume. If this were the dominant factor, one would expect a fairly linear increase in resultant vector angles with increasing NPR as more of the vane surface comes into contact with the exhaust plume. However, many additional factors influenced the magnitude of resultant thrust vector angles generated. These include impingement effects of the vectored jet plume on the retracted vanes, venting of the exhaust plume between vanes during vectoring (an example can be seen in fig. 2 during static testing of the TVCS), and the inherently unpredictable aerodynamic characteristics on the back surface of the deflected vane(s) as the plume expands with increasing NPR.

Military power. The military power results for vane deployments are presented in figure 14. Trends in performance and thrust vectoring similar to those observed at the afterburning power setting were also apparent at the military power setting. However, nozzles at the afterburning power setting typically provided higher resultant thrust vector angles than at the military power setting, especially for bottom vane deployments. For example, the full pitch down (top) vane deployment ($\delta_{A,D} = 25°$) produced resultant pitch vector angles of 12° at both the afterburning and military power settings. (Compare figs. 13(b) and 14(b).) However, the full pitch up (bottom) vane deployment ($\delta_{B,F} = 25°$, $\delta_{C,E} = 20°$) produced resultant pitch vector angles of 17° at the afterburning power setting as compared with 14° at the military power setting. (Compare figs. 13(c) and 14(c).) The increased flow turning at afterburning power is attributable to the larger plume at the afterburning power setting. This placed the exhaust flow closer to the vanes and allowed the vanes to contact a larger portion of exhaust flow. Obviously, this effect was most substantial when multiple vanes on each engine were deployed.

One trend that differed between the afterburning and military power settings was the effect of increasing NPR on resultant vector angles. At afterburning power, the effect of NPR varied with vane deployment angle. At military power, the effect of NPR was predominately favorable as resultant thrust vector angles remained constant or increased with increasing NPR. (See fig. 14(c), for example.)

Thrust-Vectoring Envelopes

The results of the parametric vane deployments are summarized in figures 15 and 16 as a thrust-vectoring envelope for each nozzle power setting and NPR tested. Results are presented as resultant pitch vector angle δ_p plotted against resultant yaw vector angle δ_y. The perimeter of the envelope represents maximum vane deployment angles. Points within the maximum envelope represent resultant vector angles obtained with lesser vane deflections. Requirements for the F-18 HARV TVCS, obtained from reference 22, are plotted in figures 15 and 16 as solid symbols. As discussed previously, yaw vectoring was only performed in the negative direction during this investigation. The positive δ_y portion of the thrust-vectoring envelope was approximated by assuming that the envelope is symmetric in yaw.

In general, both the afterburning and military power thrust-vectoring envelopes are asymmetric in pitch, with the pitch-vectoring capability biased towards the negative side (pitch up) at low values of δ_y and towards the positive side (pitch down) at high values of δ_y, a result of the use of three thrust-vectoring vanes positioned asymmetrically about the periphery of each engine nozzle. Pure pitch vector or yaw vector angles are possible by utilizing specific vane deflection combinations. Unfortunately, maximum vector angles are not possible simultaneously in pitch and yaw; this was an anticipated result of the vane geometry.

Comparison of the afterburning power envelopes (fig. 15) with the military power envelopes (fig. 16) illustrates the increased turning effectiveness of the vanes when actuated on the afterburning power nozzle. The thrust-vectoring requirements fall within the afterburning power envelopes (fig. 15), but are typically outside the military power envelopes (fig. 16). This indicates that the afterburning power setting is needed to meet the requirements of reference 22.

Although useful levels of thrust vectoring were obtained, the resultant thrust vector angles generated by the thrust-vectoring control system were always less than the corresponding geometric vane deflection angle. Previous investigations (see refs. 5, 6, and 8, for example) have studied thrust-vectoring concepts that provide a more effective (resultant thrust vector angle approximately equal to geometric vector angle) thrust vector capability. However, the thrust-vectoring control system for the HARV was selected more from schedule, complexity, and cost issues, rather than from performance issues. In these respects, the external-vane concept was a good selection.

Performance at Forward Speeds

Basic data for each configuration investigated at wind-on conditions are presented as total afterbody aerodynamic coefficients (which include thrust contributions) in figures 17 to 28. Included are lift coefficient C_L, pitching-moment coefficient C_m, drag-minus-thrust coefficient $C_{(D-F)}$, rolling-moment coefficient C_l, yawing-moment coefficient C_n, and side-force coefficient C_Y. Recall that all longitudinal forces and moments (C_L, $C_{(D-F)}$, and C_m) are referred to the stability-axis system and the lateral forces and moments (C_l, C_n, and C_Y) are referred to the body-axis system. Because the six-component balance resolved the measured forces and moments into the body-axis system rather than the stability-axis system, C_L and $C_{(D-F)}$ were determined from the following equations:

$$C_L = C_N \cos\alpha - C_A \sin\alpha$$

$$C_{(D-F)} = C_A \cos\alpha + C_N \sin\alpha$$

where C_N and C_A are the balance-measured body-axis normal-force and axial-force coefficients, respectively. Body-axis axial-force coefficient C_A is measured positive in the downstream direction and is, therefore, increased by increased drag and reduced by increased thrust.

Afterbody Aerodynamic Characteristics With Vanes Fully Retracted

Afterbody aerodynamic characteristics that show the effects of Mach number and angle of attack are presented in figure 17 at afterburning power and NPR = 4.25 with the vanes fully retracted. The trends observed are typical of similar afterbody configurations previously tested (ref. 16). At a constant Mach number, lift coefficient C_L and drag-minus-thrust coefficient $C_{(D-F)}$ increased with increasing angle of attack, while pitching-moment coefficient decreased with increasing angle of attack. These changes result from increased lift on the stabilators and changes in stability axis thrust components that occur with increased angle of attack.

At constant angle of attack, the effect of increasing Mach number was to reduce C_L and increase $C_{(D-F)}$ because of increased drag and reduced thrust. Large increases in afterbody drag would not typically be expected for a clean afterbody configuration at the Mach numbers presented; however, the externally mounted vane actuation system and spin-chute canister of the HARV configuration contributed to increased afterbody drag at higher subsonic Mach numbers. The reduction in thrust with increasing Mach number is the result of a requirement to maintain constant NPR across the Mach number range. Because free-stream static pressure p_∞ decreases with increasing Mach number in the wind tunnel, jet total pressure $p_{t,j}$ required to maintain constant NPR also decreases. Lowering jet total pressure with Mach number reduces the momentum of the exhaust flow and, consequently, reduces thrust. A reduction in thrust with increasing Mach number is contrary to the behavior of the full-scale F-18 HARV, which experiences increased thrust (at constant altitude and power setting, see table 40) at higher Mach numbers.

As discussed previously, subscale model tests in the Langley 16-Foot Transonic Tunnel utilize a cold-jet propulsion simulation system to simulate engine exhaust. While the cold jet does not accurately model the thrust generated (because of the small scale, cold temperature, and lack of real gas effects), it does provide a reasonable representation of the flight exhaust plume shape and its variation with NPR and Mach number. Through the simulation of the plume shape, external flow effects (which result from the interaction of the free stream with the exhaust plume and adjacent model surfaces) can be determined. External flow effects are a critical contribution to propulsion-installation calculations that correct the installed engine thrust for inlet, nozzle, and throttle-dependent trim drags.

Effects of Nozzle Power Setting With Vanes Fully Retracted

The effects of nozzle power setting on afterbody aerodynamic characteristics at scheduled NPR with the vanes fully retracted are presented in figure 18. At a constant Mach number, changing from the military to afterburning power setting resulted in increased thrust. An increase in thrust at afterburning power results from increased mass flow through the nozzles and beneficial flow expansion on the retracted vane surfaces (discussed previously in the section "Static Performance"). Therefore, because of increased thrust, $C_{(D-F)}$ was lower at the afterburning power setting.

As shown in figure 18(a), changing from the military to afterburning power setting significantly increased C_L, especially at higher angles of attack. The increase in C_L is the result of a decrease in C_A that occurred with increased thrust. As shown in figure 18(b), the effects of nozzle power setting are diminished at $M = 0.50$ because of the decrease in thrust (at constant NPR) and increase in drag associated with higher Mach numbers (i.e., thrust is a proportionately smaller contributor to afterbody aerodynamic coefficients at higher Mach numbers in the wind tunnel).

Effects of Thrust Vectoring

Afterburning power. The effects of thrust vectoring at afterburning power are presented in figures 19 to 22 at

NPR = 4.25 for each Mach number investigated. In general, the variation of afterbody aerodynamic coefficients with vane deployments followed expected trends. Longitudinal forces and moments were generated by deploying the top vanes, $\delta_{A,D}$ (fig. 19), or the bottom vanes, $\delta_{B,E}$ and $\delta_{C,F}$ (fig. 20). A combination of longitudinal and lateral forces and moments were generated by deploying the lower left vanes, $\delta_{B,E}$ (fig. 21), or the top and lower left vanes, $\delta_{A,D}$ and $\delta_{B,E}$ (fig. 22). As indicated by the static thrust vector envelopes in figure 15, pure lateral forces and moments were possible with certain vane deflection combinations. As expected, deployment of the lower left vanes in conjunction with the top vanes reduced the magnitude of longitudinal forces and moments generated by the top vanes. (Compare figs. 19(a) and 22(a).)

The increment in C_L (or C_Y) generated by the deployed vanes was caused primarily by the jet-lift (or side) component of the nozzle resultant thrust. However, additional contributions resulted from an aerodynamic flap effect of the deflected vanes and a jet-induced interference effect. These "external flow effects" will be discussed in detail in a subsequent section. Vane deployments at higher Mach numbers were less effective at producing multiaxis thrust-vectoring forces and moments because of the reduction in thrust for the wind-tunnel model (discussed previously) that occurred at higher Mach numbers. (Compare figs. 19(a), 19(b), and 19(c), for example.)

As shown in figures 19 to 22, the increment in force or moment coefficients that results from thrust vectoring was nearly constant over the entire angle-of-attack range for each Mach number investigated. This lack of angle-of-attack dependency for thrust vectoring is similar to results presented in reference 7 and is the main reason why thrust vectoring can augment aerodynamic control at low speeds and high angles of attack. Because aerodynamic controls are typically sized for low-speed flight, they are generally oversized at higher speeds. Thrust vectoring could supplement aerodynamic controls at low speeds, reducing the required size of aerodynamic control surfaces. Ultimately, this could lead to a reduction in aircraft drag and weight (ref. 5).

One interesting performance characteristic that varied with vane deployment and angle of attack was the behavior of $C_{(D-F)}$. For configurations that produced positive (pitch down) pitch vectoring, increased vane deployment angles resulted in increased $C_{(D-F)}$. (See figs. 19 and 22.) However, for configurations that produced negative (pitch up) pitch vectoring, $C_{(D-F)}$ increased with vane deployment at angles of attack below 40° but decreased at higher angles of attack. (See figs. 20 and 21.) The reasons for this behavior become clear when one considers the factors than influence $C_{(D-F)}$ during vectoring. In the stability-axis system, $C_{(D-F)}$ can be written as $C_{(D-F)} = C_{D,a} - C_{F,j} \cos \alpha + C_{F,N} \sin \alpha$ where $C_{F,j}$ and $C_{F,N}$ are the body-axis axial and normal components of the jet-resultant force, respectively. (See fig. 23.) A breakdown of the individual drag and thrust contributions that make up $C_{(D-F)}$ is presented in figure 24 for each vectoring configuration. When the top vanes are deployed such that positive pitch vector angles are generated, then $C_{F,N}$ increases and $C_{F,j}$ decreases (fig. 24(a)). It is obvious from the equation above that $C_{(D-F)}$ will increase throughout the angle-of-attack range. Similarly, configurations with the top and lower left vanes deployed exhibit the same trends (fig. 24(d)). However, when the bottom vanes are deployed such that negative pitch vector angles are generated, then both $C_{F,N}$ and $C_{F,j}$ decrease (fig. 24(b)). As a result, $C_{(D-F)}$ initially increases with angle of attack, but then decreases. Because the decreases in $C_{F,N}$ and $C_{F,j}$ that occur with vectoring are of similar magnitude, the vectored and nonvectored $C_{(D-F)}$ curves cross each other near $\alpha = 45°$ (where $\sin \alpha = \cos \alpha$). Configurations with only the lower left vanes deployed exhibit similar trends (fig. 24(c)), although their magnitude is reduced by lesser resultant thrust vector angles.

Military power. The effects of thrust vectoring at military power on afterbody aerodynamic characteristics are presented in figures 25 to 28 for $M = 0.30$ and 0.50. The trends observed at the afterburning power setting were also apparent at the military power setting. Increased vane deflection resulted in multiaxis thrust-vectoring force and moment increments that remained nearly constant with angle of attack. However, because the vanes contacted less of the exhaust flow with the nozzles at military power than at afterburning power, the magnitude of the thrust-vectoring force and moment increments generated was smaller at the military power setting. For example, at $M = 0.30$ and $\alpha = 0°$, the increment in C_L and C_m generated with maximum top vane deployment at military power was approximately half of that generated at afterburning power. (Compare figs. 19(a) and 25(a).) This result was indicated earlier by the reduction in the static ($M = 0$) thrust-vectoring envelopes when the nozzles were changed from the afterburning power setting to the military power setting (figs. 15 and 16).

External Flow Effects on Pitching and Yawing Moments

Although the thrust-vectoring control system of the F-18 HARV is less effective at static conditions than other vectoring concepts (see refs. 5, 6, and 8), previous investigations have indicated that vectoring concepts with deflected surfaces washed by external flow are influenced by large external flow effects (ref. 5). These external flow effects can, in some cases, substantially improve the performance of the thrust-vectoring system. The effects of external flow on pitching and yawing moments generated by the HARV thrust-vectoring control system are presented in figures 29 and 30, respectively. Each figure contains a breakdown of the individual components of the total moment increment generated by a pitch- or yaw-vectoring configuration. The data denoted by circles were obtained at wind-on, jet-off conditions with the vanes fully retracted. An increment, represented by the crosshatched regions, was obtained between vanes fully retracted and vanes deployed with the jet off. This represents an aerodynamic flap effect, that is, any moment generated aerodynamically by the deflected vanes when deployed from the fully retracted position. The data denoted by diamonds were obtained at wind-on, jet-on conditions with the vanes deployed and represent the final total moment coefficient. Any difference between this final value and the sum of aerodynamic flap and thrust contributions (symbolized by arrows and determined by static thrust measurements) represents a jet-induced interference effect caused by the interaction of the external flow with the vectored exhaust plume and any adjacent model surfaces.

External flow effects on pitching moment. As shown in figure 29, external flow effects on pitching moment typically improved the performance of the thrust-vectoring control system. Aerodynamic flap effects had little influence on C_m, especially for configurations with the top vanes ($\delta_{A,D}$) or top and lower left vanes ($\delta_{A,D}$ and $\delta_{B,E}$) deployed (figs. 29(a) and 29(d)). This result was not unexpected, since the top vanes are shielded behind the vane support fairings and spin-chute canister. Aerodynamic flap effects were slightly larger for configurations with the bottom ($\delta_{B,E}$ and $\delta_{C,F}$) or lower left ($\delta_{B,E}$) vanes deployed, and in isolated cases the impact on C_m was unfavorable (figs. 29(b) and 29(c)). For example, aerodynamic flap effects reduced nose down pitching moment generated by the bottom vanes at angles of attack from approximately 15° to 32° (fig. 29(b)). However, in all cases the aerodynamic flap effect was a small percentage (less than 5 percent) of the total pitching-moment increment generated by the deployed vanes.

In many cases, jet-induced interference effects resulted in large favorable increases (dark shading) in pitching moment generated by the thrust-vectoring system. These jet-induced interference effects may result from external flow altering the angle of the jet plume, changing the pressure distribution on the back surface of the vanes or inducing pressures on the afterbody (ref. 5). Favorable interference effects were largest for configurations with the top vanes ($\delta_{A,D}$) or top and lower left vanes ($\delta_{A,D}$ and $\delta_{B,E}$) deployed (figs. 29(a) and 29(d)). For example, favorable interference accounted for as much as 40 percent of the nose down pitching-moment coefficient generated by the top vanes at $M = 0.30$ and 0.50 (fig. 29(a)). Favorable jet-induced interference effects also existed with the lower left ($\delta_{B,E}$) or bottom vanes deployed ($\delta_{B,E}$ and $\delta_{C,F}$); however, their magnitude was much smaller than in cases with the top vanes deployed. (Compare figs. 29(b) and 29(c) with 29(a) and 29(d).)

External flow effects on yawing moment. As shown in figure 30, external flow effects on yawing moment had both favorable and adverse components that influenced the yaw-vectoring performance of the thrust-vectoring control system. The aerodynamic flap effect resulting from deploying the lower left ($\delta_{B,E}$) or top and lower left ($\delta_{A,D}$ and $\delta_{B,E}$) vanes resulted in small favorable increases in C_n throughout the angle-of-attack range, while jet-induced interference effects varied with vane deployment, Mach number, and angle of attack (fig. 30). With the lower left vanes deployed ($\delta_{B,E}$) at $M = 0.50$, jet-induced interference effects resulted in small favorable increases in yawing moment across the entire angle-of-attack range investigated (fig. 30(a)). However, at $M = 0.30$ jet-induced interference effects on the lower left vanes reduced C_n (light shading) slightly at angles of attack between 20° and 35°. Favorable interference effects existed elsewhere and in some cases, such as at $\alpha = 70°$, favorable interference accounted for approximately 15 percent of the total yawing moment increment generated by the deployed vanes (fig. 30(a)).

When both the top and lower left ($\delta_{A,D}$ and $\delta_{B,E}$) vanes on each engine were deployed at $M = 0.50$ (fig. 30(b)), jet-induced interference effects had little influence on yawing moment. However, at $M = 0.30$ jet-induced interference effects were adverse at angles of attack less than approximately 35° and favorable at higher angles of attack. As shown in figure 30(b), adverse interference effects were largest at lower angles of attack and typically decreased with increasing angle of attack. Adverse interference decreased the yawing moment increment generated by the deployed vanes by as much as 10 percent. At $\alpha > 35°$, favorable jet-induced interference effects typically increased with increasing angle of attack. At $\alpha = 70°$, favorable interference increased the yawing moment increment generated by the deployed vanes by approximately 25 percent.

Comparison of Aerodynamic and Propulsive Control Capability

An assessment of the aerodynamic and propulsive control capability of the F-18 HARV is presented in figure 31. The comparisons are made at $M = 0.30$ and an altitude of 20000 ft, which corresponds to a typical high-alpha air combat maneuvering condition. Longitudinal and directional control-power characteristics are presented as pitch acceleration $\dot{q}$ and yaw acceleration $\dot{r}$, respectively. Aerodynamic control power generated from the stabilators and rudders was obtained from an aerodynamic database outlined in reference 20. Control power from thrust vectoring was calculated by using installed F-18 HARV engine data (table 40) obtained from an engine thrust model outlined in reference 20 and correcting thrust contributions from the wind-tunnel model. Control power from thrust vectoring represents an increment between having the vanes deployed and having the vanes fully retracted, with the jet operating.

Longitudinal control. A comparison of pitch acceleration available from thrust vectoring versus stabilator deflections is presented in figure 31(a). Control power from thrust vectoring is evaluated at afterburning power and NPR = 4.25 at the vane deployments noted. As shown in figure 31(a), positive pitch acceleration available from the stabilators is relatively constant up to angles of attack of 35° and then decreases. Positive pitch acceleration from thrust vectoring adds a constant increment in $\dot{q}$ across the angle-of-attack range, substantially increasing positive pitch authority. Negative pitch acceleration available from the stabilators slowly decreases with increasing angle of attack from 10° to 50° and then increases again. However, negative pitch acceleration from thrust vectoring is constant, providing an increment across the angle-of-attack range that more than doubles the negative pitch authority at angles of attack near 50°. As indicated in reference 3, the ability to rapidly pitch down is critical in high-alpha maneuvers so that high-speed, low-alpha flight can be resumed.

Directional control. A comparison of yaw acceleration available from thrust vectoring versus rudder deflections is presented in figure 31(b). Yaw acceleration available from thrust vectoring shows no degradation with increasing angle of attack and is larger in magnitude than that available from the rudders across the entire angle-of-attack range. The ability to rapidly roll the aircraft about the velocity vector is critical in high-alpha maneuvers in order to point the aircraft for target acquisition or point the normal force vector for tight radius turns. At high angles of attack, a roll about the velocity vector requires controls that generate large body axis yawing moments (ref. 3). Rudders are ineffective at high angles of attack because they are engulfed in the wake of the aircraft. As indicated in figure 31(b), this is not a problem for thrust vectoring, as substantial control authority is maintained across the entire angle-of-attack range.

Conclusions

An investigation was conducted in the Langley 16-Foot Transonic Tunnel to determine the multiaxis thrust-vectoring characteristics of the F-18 High-Alpha Research Vehicle (HARV). A wingtip-supported, partially metric, 0.10-scale jet-effects model of an F-18 prototype aircraft was modified with hardware to simulate the thrust-vectoring control system of the HARV. The model was tested for static and aeropropulsive performance at free-stream Mach numbers ranging from 0.30 to 0.70, at angles of attack from 0° to 70°, and at nozzle pressure ratios from 1.0 to approximately 5.0. An extensive matrix of vane deflection angles was tested for two nozzle configurations: an afterburning power nozzle and a military power nozzle. The results of this investigation indicate the following conclusions:

1. The three-vane thrust-vectoring control system of the F-18 HARV can generate useful levels of multiaxis thrust vectoring.

2. During vectored thrust operation, resultant thrust vector angles were always less than the corresponding geometric vane deflection angle and were accompanied by large thrust losses.

3. The afterburning power setting typically provided higher resultant thrust vector angles than the military power setting. Increased flow turning at afterburning power is attributable to the larger exhaust plume at that setting.

4. Thrust-vectoring requirements for the F-18 HARV fall within the afterburning power envelopes, but are typically outside the military power envelopes. This indicates that the afterburning power setting is necessary to obtain the desired multiaxis vector angles for the HARV design requirements.

5. The increments in force or moment coefficients that result from thrust vectoring were generally constant over the entire angle-of-attack range for each Mach number investigated.

6. The thrust-vectoring control system experiences large external flow effects that, in some cases, substantially improve performance of the thrust-vectoring control system.

7. Comparisons of the aerodynamic and propulsive control capabilities of the HARV configuration indicate that substantial gains in controllability are provided by

the multiaxis thrust-vectoring control system, especially at high angles of attack.

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Table 1. Index of Data Tables

(a) Afterburning power

Table	$\delta_{A,D}$, deg	$\delta_{B,E}$, deg	$\delta_{C,F}$, deg	M
Unvectored				
2	−10	−10	−10	0, 0.3, 0.5, 0.7
3	0	0	0	0, 0.3, 0.5, 0.7
4	5	5	5	0, 0.3, 0.5, 0.7
Pitch down				
5	10	−10	−10	0, 0.3, 0.5, 0.7
6	15	−10	−10	0, 0.3, 0.5, 0.7
7	20	−10	−10	0, 0.3, 0.5, 0.7
8	25	−10	−10	0, 0.3, 0.5
Pitch up				
9	−10	10	10	0, 0.3, 0.5, 0.7
10	−10	15	15	0, 0.3
11	−10	20	20	0, 0.3, 0.5, 0.7
12	−10	25, 20	20, 25	0, 0.3, 0.5
Yaw right				
13	−10	15, 10	−10	0, 0.3, 0.5, 0.7
14	−10	15	−10	0, 0.3
15	−10	20	−10	0, 0.3
16	−10	25	−10	0, 0.3, 0.5
Pitch down and yaw right				
17	15	15	−10	0, 0.3
18	20	20	−10	0, 0.3, 0.5
19	25	25	−10	0, 0.3, 0.5
20	15	15, 10	−10	0, 0.3, 0.5, 0.7
21	15	25	−10	0, 0.3, 0.5
22	25	15, 10	−10	0, 0.3, 0.5
23	25	15	−10	0, 0.3, 0.5

Table 1. Concluded

(b) Military power

Table	$\delta_{A,D}$, deg	$\delta_{B,E}$, deg	$\delta_{C,F}$, deg	M
Unvectored				
24	−10	−10	−10	0, 0.3, 0.5
25	10	10	10	0, 0.3, 0.5
Pitch down				
26	15	−10	−10	0, 0.3, 0.5
27	20	−10	−10	0, 0.3, 0.5
28	25	−10	−10	0, 0.3, 0.5
Pitch up				
29	−10	10	10	0, 0.3, 0.5
30	−10	15	15	0, 0.3
31	−10	20	20	0, 0.3, 0.5
32	−10	25, 20	20, 25	0, 0.3, 0.5
Pitch up and yaw right				
33	−10	15	−10	0, 0.3, 0.5
34	−10	25	−10	0, 0.3, 0.5
35	−10	25	15	0, 0.3, 0.5
Pitch down and yaw right				
36	15	15	−10	0, 0.3, 0.5
37	25	25	−10	0, 0.3, 0.5
38	15	25	−10	0, 0.3, 0.5
39	25	15	−10	0, 0.3, 0.5

Table 2. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9908	0.9901	1.99	0.74	−0.0173	0.0006	−0.0004	0.0002	−0.0001	−0.0001
3.00	0.9905	0.9895	2.33	0.94	−0.0328	0.0013	−0.0009	0.0005	−0.0001	−0.0001
3.99	0.9827	0.9819	2.17	1.03	−0.0479	0.0018	−0.0013	0.0009	−0.0002	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	−0.02	1.00	−0.0554	0.0154	0.0880	0.0010	0.0000	−0.0023	−0.0554	0.0154	0.0880	0.0010	0.0000	−0.0023
0.301	0.03	2.00	−0.0422	−0.2595	0.0769	0.0052	−0.0009	−0.0019	−0.0521	0.0187	0.0837	0.0015	−0.0001	−0.0010
0.301	−0.03	3.00	−0.0349	−0.4937	0.0708	0.0083	−0.0017	−0.0021	−0.0557	0.0253	0.0857	−0.0002	0.0003	−0.0010
0.301	−0.01	4.24	−0.0154	−0.7866	0.0560	0.0141	−0.0031	−0.0024	−0.0456	0.0264	0.0769	−0.0007	0.0005	−0.0013
0.301	14.99	1.00	0.0349	0.0147	−0.0666	0.0140	−0.0042	0.0003	0.0349	0.0147	−0.0666	0.0140	−0.0042	0.0003
0.301	14.96	2.01	0.1021	−0.2491	−0.0615	0.0143	−0.0038	0.0005	0.0207	0.0176	−0.0547	0.0106	−0.0030	0.0013
0.301	14.97	2.98	0.1624	−0.4709	−0.0600	0.0141	−0.0036	−0.0001	0.0089	0.0217	−0.0452	0.0056	−0.0016	0.0010
0.301	14.99	4.23	0.2406	−0.7556	−0.0598	0.0185	−0.0045	−0.0003	0.0012	0.0208	−0.0389	0.0037	−0.0009	0.0009
0.298	24.93	1.00	0.1223	0.0554	−0.2187	0.0101	−0.0030	0.0010	0.1223	0.0554	−0.2187	0.0101	−0.0030	0.0010
0.301	24.99	2.00	0.2469	−0.1844	−0.2310	0.0134	−0.0037	0.0007	0.1205	0.0638	−0.2242	0.0098	−0.0029	0.0016
0.301	24.93	3.00	0.3523	−0.3963	−0.2352	0.0157	−0.0041	0.0006	0.1147	0.0648	−0.2204	0.0072	−0.0021	0.0017
0.301	24.92	4.25	0.4824	−0.6619	−0.2406	0.0217	−0.0056	0.0005	0.1111	0.0649	−0.2196	0.0069	−0.0018	0.0017
0.299	45.02	0.98	0.2552	0.2672	−0.5230	−0.0006	−0.0001	0.0021	0.2552	0.2672	−0.5230	−0.0006	−0.0001	0.0021
0.299	44.98	1.99	0.4598	0.0792	−0.5452	−0.0001	−0.0006	0.0021	0.2619	0.2722	−0.5446	−0.0028	0.0003	0.0025
0.299	44.97	3.00	0.6308	−0.0883	−0.5525	0.0017	−0.0012	0.0021	0.2626	0.2742	−0.5526	−0.0063	0.0014	0.0025
0.299	44.97	4.25	0.8355	−0.3002	−0.5489	−0.0019	−0.0005	0.0017	0.2571	0.2686	−0.5489	−0.0180	0.0046	0.0020
0.299	60.00	0.97	0.1987	0.3917	−0.6123	0.0043	−0.0009	0.0044	0.1987	0.3917	−0.6123	0.0043	−0.0009	0.0044
0.297	59.98	2.00	0.4504	0.2557	−0.6253	−0.0002	0.0003	0.0036	0.2057	0.3930	−0.6247	−0.0029	0.0012	0.0039
0.300	59.98	3.00	0.6527	0.1463	−0.6352	0.0009	−0.0004	0.0027	0.2073	0.3987	−0.6353	−0.0069	0.0022	0.0031
0.301	59.96	4.25	0.9030	0.0005	−0.6357	0.0027	−0.0012	0.0030	0.2070	0.3950	−0.6357	−0.0131	0.0037	0.0033
0.300	0.01	1.00	−0.0582	0.0096	0.0905	0.0042	−0.0009	−0.0018	−0.0582	0.0096	0.0905	0.0042	−0.0009	−0.0018
0.300	5.02	1.00	−0.0175	0.0095	0.0352	0.0039	−0.0009	−0.0019	−0.0175	0.0095	0.0352	0.0039	−0.0009	−0.0019
0.300	10.00	1.00	0.0116	0.0128	−0.0136	0.0041	−0.0010	−0.0015	0.0116	0.0128	−0.0136	0.0041	−0.0010	−0.0015
0.300	15.02	1.00	0.0348	0.0159	−0.0662	0.0140	−0.0041	0.0003	0.0348	0.0159	−0.0662	0.0140	−0.0041	0.0003
0.299	19.98	0.99	0.0662	0.0273	−0.1348	0.0105	−0.0033	0.0020	0.0662	0.0273	−0.1348	0.0105	−0.0033	0.0020
0.300	24.94	0.99	0.1184	0.0586	−0.2170	0.0080	−0.0024	0.0012	0.1184	0.0586	−0.2170	0.0080	−0.0024	0.0012
0.301	29.90	0.99	0.1612	0.0946	−0.2978	0.0127	−0.0041	0.0014	0.1612	0.0946	−0.2978	0.0127	−0.0041	0.0014
0.297	32.43	0.99	0.1817	0.1161	−0.3388	0.0123	−0.0043	0.0010	0.1817	0.1161	−0.3388	0.0123	−0.0043	0.0010
0.299	35.47	0.99	0.2171	0.1509	−0.3959	0.0080	−0.0025	0.0022	0.2171	0.1509	−0.3959	0.0080	−0.0025	0.0022
0.299	37.99	0.98	0.2281	0.1803	−0.4299	0.0124	−0.0042	0.0024	0.2281	0.1803	−0.4299	0.0124	−0.0042	0.0024
0.299	39.99	0.98	0.2369	0.2040	−0.4572	0.0063	−0.0022	0.0017	0.2369	0.2040	−0.4572	0.0063	−0.0022	0.0017
0.299	42.03	0.98	0.2490	0.2329	−0.4932	0.0168	−0.0051	0.0032	0.2490	0.2329	−0.4932	0.0168	−0.0051	0.0032
0.299	44.99	0.98	0.2530	0.2643	−0.5222	0.0085	−0.0027	0.0024	0.2530	0.2643	−0.5222	0.0085	−0.0027	0.0024

Table 2. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	50.02	0.98	0.2509	0.3208	–0.5753	–0.0006	0.0001	0.0013	0.2509	0.3208	–0.5753	–0.0006	0.0001	0.0013
0.302	55.01	0.97	0.2282	0.3602	–0.5962	0.0059	–0.0013	0.0038	0.2282	0.3602	–0.5962	0.0059	–0.0013	0.0038
0.299	60.02	0.97	0.1989	0.3968	–0.6191	0.0056	–0.0010	0.0041	0.1989	0.3968	–0.6191	0.0056	–0.0010	0.0041
0.298	65.02	0.97	0.1776	0.4517	–0.6776	0.0106	–0.0029	0.0039	0.1776	0.4517	–0.6776	0.0106	–0.0029	0.0039
0.297	68.56	0.97	0.1571	0.4936	–0.7240	0.0153	–0.0044	0.0051	0.1571	0.4936	–0.7240	0.0153	–0.0044	0.0051
0.300	–0.03	4.23	–0.0209	–0.7899	0.0602	0.0156	–0.0037	–0.0020	–0.0511	0.0253	0.0813	0.0008	–0.0001	–0.0009
0.301	4.98	4.26	0.0838	–0.7898	0.0097	0.0169	–0.0041	–0.0018	–0.0177	0.0225	0.0307	0.0020	–0.0004	–0.0007
0.301	10.01	4.26	0.1831	–0.7775	–0.0408	0.0176	–0.0043	–0.0016	0.0104	0.0246	–0.0197	0.0027	–0.0006	–0.0004
0.300	15.00	4.26	0.2374	–0.7698	–0.0521	0.0180	–0.0045	–0.0002	–0.0056	0.0182	–0.0309	0.0030	–0.0009	0.0010
0.300	19.96	4.26	0.3636	–0.7333	–0.1510	0.0226	–0.0062	0.0009	0.0532	0.0311	–0.1297	0.0076	–0.0025	0.0020
0.299	24.95	4.25	0.4827	–0.6748	–0.2352	0.0198	–0.0053	0.0006	0.1066	0.0605	–0.2139	0.0048	–0.0017	0.0017
0.300	29.92	4.25	0.5922	–0.6000	–0.3252	0.0260	–0.0075	0.0011	0.1550	0.0978	–0.3040	0.0110	–0.0037	0.0023
0.299	32.34	4.25	0.6475	–0.5641	–0.3698	0.0237	–0.0070	0.0008	0.1784	0.1190	–0.3484	0.0086	–0.0032	0.0019
0.299	44.97	4.25	0.8355	–0.3002	–0.5489	–0.0019	–0.0005	0.0017	0.2571	0.2686	–0.5489	–0.0180	0.0046	0.0020
0.301	35.30	4.25	0.6774	–0.4946	–0.4068	0.0137	–0.0045	0.0027	0.2093	0.1547	–0.4067	–0.0021	0.0005	0.0030
0.301	37.99	4.25	0.7246	–0.4398	–0.4528	0.0179	–0.0064	0.0030	0.2264	0.1867	–0.4528	0.0020	–0.0013	0.0033
0.301	39.96	4.25	0.7562	–0.3987	–0.4845	0.0109	–0.0043	0.0025	0.2366	0.2106	–0.4845	–0.0050	0.0008	0.0028
0.301	42.01	4.25	0.7885	–0.3588	–0.5131	0.0137	–0.0050	0.0027	0.2454	0.2336	–0.5131	–0.0022	0.0001	0.0030
0.300	44.97	4.25	0.8301	–0.2984	–0.5492	0.0039	–0.0021	0.0018	0.2547	0.2677	–0.5492	–0.0121	0.0030	0.0021
0.298	49.96	4.25	0.8781	–0.2054	–0.5857	–0.0001	–0.0005	0.0024	0.2499	0.3133	–0.5857	–0.0162	0.0046	0.0027
0.302	54.96	4.25	0.8918	–0.0950	–0.6156	0.0040	–0.0016	0.0028	0.2348	0.3573	–0.6155	–0.0118	0.0034	0.0030
0.299	59.98	4.25	0.9106	–0.0080	–0.6334	0.0063	–0.0021	0.0037	0.2036	0.3922	–0.6334	–0.0098	0.0030	0.0040
0.302	64.97	4.25	0.8958	0.0915	–0.6502	0.0114	–0.0044	0.0023	0.1701	0.4227	–0.6502	–0.0044	0.0007	0.0026
0.299	68.46	4.25	0.8976	0.1422	–0.6499	0.0175	–0.0066	0.0023	0.1393	0.4339	–0.6499	0.0014	–0.0015	0.0026
0.501	0.07	0.99	–0.0691	0.0185	0.1024	–0.0027	0.0010	–0.0005	–0.0691	0.0185	0.1024	–0.0027	0.0010	–0.0005
0.501	0.02	2.02	–0.0627	–0.0807	0.0959	–0.0012	0.0005	–0.0007	–0.0663	0.0210	0.0984	–0.0026	0.0009	–0.0003
0.500	0.01	3.00	–0.0581	–0.1641	0.0920	0.0011	–0.0001	–0.0007	–0.0657	0.0241	0.0974	–0.0020	0.0007	–0.0003
0.500	0.07	4.23	–0.0526	–0.2687	0.0876	0.0029	–0.0005	–0.0009	–0.0640	0.0261	0.0952	–0.0025	0.0008	–0.0004
0.501	14.99	0.99	0.0323	0.0169	–0.0697	0.0091	–0.0030	0.0017	0.0323	0.0169	–0.0697	0.0091	–0.0030	0.0017
0.500	14.95	1.99	0.0598	–0.0755	–0.0724	0.0109	–0.0035	0.0016	0.0310	0.0191	–0.0700	0.0096	–0.0032	0.0018
0.501	14.95	3.00	0.0848	–0.1586	–0.0750	0.0130	–0.0040	0.0017	0.0290	0.0210	–0.0696	0.0099	–0.0033	0.0020
0.501	14.93	4.27	0.1153	–0.2608	–0.0774	0.0157	–0.0047	0.0015	0.0283	0.0226	–0.0698	0.0103	–0.0034	0.0019
0.501	24.85	0.97	0.1455	0.0725	–0.2484	0.0018	–0.0010	–0.0001	0.1455	0.0725	–0.2484	0.0018	–0.0010	–0.0001
0.500	24.87	2.02	0.1951	–0.0161	–0.2577	0.0033	–0.0013	0.0002	0.1487	0.0754	–0.2552	0.0019	–0.0010	0.0005
0.500	24.83	2.98	0.2315	–0.0889	–0.2599	0.0049	–0.0017	0.0004	0.1463	0.0770	–0.2545	0.0019	–0.0010	0.0008
0.500	24.87	4.25	0.2815	–0.1847	–0.2651	0.0060	–0.0019	0.0005	0.1471	0.0790	–0.2575	0.0007	–0.0006	0.0009
0.499	0.02	0.99	–0.0696	0.0167	0.1029	–0.0007	0.0003	–0.0005	–0.0696	0.0167	0.1029	–0.0007	0.0003	–0.0005
0.502	5.00	0.99	–0.0317	0.0148	0.0499	–0.0007	0.0003	–0.0005	–0.0317	0.0148	0.0499	–0.0007	0.0003	–0.0005
0.500	10.00	0.99	–0.0010	0.0154	–0.0009	0.0004	–0.0001	–0.0002	–0.0010	0.0154	–0.0009	0.0004	–0.0001	–0.0002
0.499	14.94	0.99	0.0310	0.0169	–0.0685	0.0098	–0.0032	0.0019	0.0310	0.0169	–0.0685	0.0098	–0.0032	0.0019
0.499	19.96	0.98	0.0910	0.0382	–0.1628	0.0044	–0.0016	0.0008	0.0910	0.0382	–0.1628	0.0044	–0.0016	0.0008
0.498	24.83	0.98	0.1444	0.0721	–0.2471	0.0019	–0.0010	0.0001	0.1444	0.0721	–0.2471	0.0019	–0.0010	0.0001
0.499	29.81	0.97	0.1882	0.1129	–0.3292	0.0100	–0.0034	0.0003	0.1882	0.1129	–0.3292	0.0100	–0.0034	0.0003
0.502	0.07	4.25	–0.0512	–0.2688	0.0858	0.0017	–0.0001	–0.0010	–0.0625	0.0245	0.0934	–0.0036	0.0013	–0.0006
0.502	5.02	4.24	0.0119	–0.2689	0.0323	0.0032	–0.0006	–0.0010	–0.0247	0.0217	0.0399	–0.0022	0.0008	–0.0006
0.501	9.99	4.24	0.0658	–0.2650	–0.0180	0.0029	–0.0006	–0.0008	0.0041	0.0219	–0.0104	–0.0024	0.0007	–0.0004

Table 2. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	14.93	4.24	0.1167	−0.2593	−0.0795	0.0132	−0.0039	0.0012	0.0302	0.0223	−0.0719	0.0078	−0.0026	0.0017
0.500	19.91	4.28	0.2024	−0.2334	−0.1737	0.0091	−0.0027	0.0006	0.0902	0.0436	−0.1661	0.0036	−0.0013	0.0010
0.499	24.82	4.28	0.2830	−0.1887	−0.2646	0.0051	−0.0017	0.0003	0.1470	0.0787	−0.2569	−0.0003	−0.0003	0.0007
0.700	0.08	1.99	−0.0755	−0.0300	0.1091	−0.0030	0.0010	0.0001	−0.0773	0.0206	0.1103	−0.0037	0.0012	0.0003
0.701	0.11	3.05	−0.0739	−0.0750	0.1076	−0.0027	0.0010	0.0001	−0.0780	0.0229	0.1104	−0.0043	0.0014	0.0003
0.701	0.07	4.25	−0.0711	−0.1270	0.1051	−0.0020	0.0008	−0.0001	−0.0769	0.0236	0.1090	−0.0048	0.0015	0.0001
0.699	0.07	5.03	−0.0705	−0.1614	0.1047	−0.0014	0.0006	−0.0001	−0.0775	0.0243	0.1094	−0.0049	0.0015	0.0001
0.701	14.94	0.98	0.0449	0.0202	−0.0866	0.0016	−0.0007	0.0009	0.0449	0.0202	−0.0866	0.0016	−0.0007	0.0009
0.701	14.91	1.99	0.0582	−0.0279	−0.0874	0.0020	−0.0008	0.0010	0.0434	0.0206	−0.0862	0.0013	−0.0006	0.0011
0.701	14.87	3.01	0.0705	−0.0703	−0.0887	0.0026	−0.0010	0.0010	0.0421	0.0215	−0.0860	0.0010	−0.0006	0.0011
0.701	14.89	4.27	0.0860	−0.1223	−0.0904	0.0031	−0.0011	0.0008	0.0416	0.0227	−0.0865	0.0004	−0.0004	0.0010
0.698	14.87	5.07	0.0974	−0.1574	−0.0924	0.0047	−0.0016	0.0009	0.0426	0.0224	−0.0877	0.0012	−0.0006	0.0011
0.696	0.10	0.98	−0.0790	0.0193	0.1132	−0.0028	0.0010	0.0001	−0.0790	0.0193	0.1132	−0.0028	0.0010	0.0001
0.702	5.03	0.98	−0.0437	0.0155	0.0639	−0.0027	0.0008	−0.0001	−0.0437	0.0155	0.0639	−0.0027	0.0008	−0.0001
0.700	10.02	0.99	−0.0103	0.0133	0.0100	−0.0020	0.0005	−0.0001	−0.0103	0.0133	0.0100	−0.0020	0.0005	−0.0001
0.700	19.85	0.97	0.0996	0.0408	−0.1727	0.0031	−0.0012	0.0007	0.0996	0.0408	−0.1727	0.0031	−0.0012	0.0007
0.699	0.09	4.28	−0.0684	−0.1299	0.1033	−0.0007	0.0004	−0.0002	−0.0744	0.0227	0.1073	−0.0034	0.0011	0.0000
0.702	5.08	4.26	−0.0172	−0.1301	0.0504	0.0004	0.0000	−0.0003	−0.0361	0.0192	0.0543	−0.0023	0.0007	−0.0002
0.702	10.02	4.26	0.0240	−0.1283	0.0021	0.0004	−0.0001	−0.0003	−0.0077	0.0190	0.0060	−0.0024	0.0006	−0.0001
0.700	14.90	4.26	0.0895	−0.1216	−0.0927	0.0036	−0.0012	0.0006	0.0451	0.0233	−0.0888	0.0009	−0.0005	0.0008
0.698	19.83	4.29	0.1571	−0.0973	−0.1799	0.0049	−0.0017	0.0010	0.0997	0.0449	−0.1759	0.0021	−0.0010	0.0012

Table 3. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 0°;\ \delta_{B,E} = 0°;\ \delta_{C,F} = 0°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9842	0.9831	2.62	0.21	−0.0175	0.0008	−0.0006	0.0001	0.0000	0.0000
3.01	0.9927	0.9919	2.27	0.62	−0.0327	0.0013	−0.0010	0.0004	−0.0001	−0.0001
4.01	0.9797	0.9789	2.20	0.85	−0.0479	0.0018	−0.0015	0.0007	−0.0002	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	0.17	1.00	−0.0692	0.0210	0.0979	−0.0075	0.0024	−0.0017	−0.0692	0.0210	0.0979	−0.0075	0.0024	−0.0017
0.301	0.12	2.10	−0.0570	−0.2799	0.0897	−0.0044	0.0017	−0.0014	−0.0710	0.0184	0.1002	−0.0059	0.0018	−0.0001
0.302	0.07	3.00	−0.0465	−0.4846	0.0816	0.0014	0.0002	−0.0017	−0.0674	0.0242	0.0968	−0.0041	0.0012	−0.0006
0.300	−0.01	4.27	−0.0324	−0.7929	0.0674	0.0081	−0.0017	−0.0020	−0.0637	0.0298	0.0926	−0.0046	0.0014	−0.0007
0.300	15.03	1.00	0.0199	0.0142	−0.0534	0.0052	−0.0017	0.0005	0.0199	0.0142	−0.0534	0.0052	−0.0017	0.0005
0.300	14.99	2.01	0.0869	−0.2499	−0.0469	0.0095	−0.0028	0.0005	0.0025	0.0162	−0.0368	0.0084	−0.0027	0.0018
0.300	14.97	3.00	0.1467	−0.4792	−0.0427	0.0069	−0.0017	0.0000	−0.0068	0.0153	−0.0272	0.0013	−0.0006	0.0010
0.300	14.9	4.28	0.2241	−0.7731	−0.0445	0.0076	−0.0017	0.0001	−0.0188	0.0174	−0.0192	−0.0053	0.0015	0.0014
0.301	24.89	1.00	0.1058	0.0550	−0.2055	−0.0002	−0.0003	0.0013	0.1058	0.0550	−0.2055	−0.0002	−0.0003	0.0013
0.300	24.84	2.01	0.2225	−0.1947	−0.2055	0.0028	−0.0010	0.0011	0.0939	0.0527	−0.1954	0.0018	−0.0009	0.0024
0.300	24.8	3.00	0.3263	−0.4074	−0.2084	0.0064	−0.0018	0.0007	0.0916	0.0517	−0.1930	0.0008	−0.0008	0.0018
0.300	24.72	4.24	0.4591	−0.6672	−0.2209	0.0122	−0.0032	0.0007	0.0904	0.0592	−0.1960	−0.0003	−0.0003	0.0020
0.299	0.18	1.00	−0.0681	0.0121	0.0974	−0.0036	0.0012	−0.0011	−0.0681	0.0121	0.0974	−0.0036	0.0012	−0.0011
0.300	5.16	1.00	−0.0349	0.0107	0.0490	−0.0032	0.0010	−0.0013	−0.0349	0.0107	0.0490	−0.0032	0.0010	−0.0013
0.300	10.13	1.00	−0.0080	0.0111	0.0031	−0.0032	0.0009	−0.0010	−0.0080	0.0111	0.0031	−0.0032	0.0009	−0.0010
0.300	15.02	1.00	0.0186	0.0131	−0.0523	0.0061	−0.0020	0.0008	0.0186	0.0131	−0.0523	0.0061	−0.0020	0.0008
0.298	19.93	1.00	0.0516	0.0246	−0.1226	0.0053	−0.0019	0.0023	0.0516	0.0246	−0.1226	0.0053	−0.0019	0.0023
0.298	24.85	1.00	0.1011	0.0522	−0.2004	0.0006	−0.0006	0.0016	0.1011	0.0522	−0.2004	0.0006	−0.0006	0.0016
0.301	29.78	0.99	0.1463	0.0876	−0.2827	0.0088	−0.0032	0.0017	0.1463	0.0876	−0.2827	0.0088	−0.0032	0.0017
0.299	32.38	0.99	0.1688	0.1099	−0.3260	0.0015	−0.0014	0.0006	0.1688	0.1099	−0.3260	0.0015	−0.0014	0.0006
0.299	0.02	4.27	−0.0312	−0.7983	0.0666	0.0084	−0.0016	−0.0017	−0.0631	0.0288	0.0919	−0.0044	0.0015	−0.0004
0.300	5.02	4.28	0.0730	−0.7953	0.0173	0.0098	−0.0020	−0.0016	−0.0309	0.0255	0.0426	−0.0031	0.0010	−0.0003
0.300	9.94	4.28	0.1668	−0.7823	−0.0281	0.0098	−0.0023	−0.0013	−0.0068	0.0254	−0.0029	−0.0030	0.0008	0.0000
0.299	14.90	4.28	0.2239	−0.7772	−0.0432	0.0101	−0.0023	0.0002	−0.0203	0.0172	−0.0178	−0.0027	0.0008	0.0015
0.300	19.77	4.28	0.3429	−0.7370	−0.1352	0.0136	−0.0039	0.0010	0.0344	0.0282	−0.1100	0.0008	−0.0008	0.0023
0.299	24.72	4.27	0.4607	−0.6822	−0.2163	0.0106	−0.0028	0.0007	0.0862	0.0557	−0.1910	−0.0022	0.0003	0.0020
0.303	29.62	4.28	0.5669	−0.5983	−0.3088	0.0155	−0.0044	0.0009	0.1396	0.0907	−0.2840	0.0029	−0.0015	0.0022
0.300	32.20	4.28	0.6292	−0.5657	−0.3570	0.0138	−0.0043	0.0008	0.1628	0.1158	−0.3317	0.0010	−0.0012	0.0021
0.502	0.49	1.00	−0.0706	0.0178	0.1025	−0.0026	0.0010	−0.0002	−0.0706	0.0178	0.1025	−0.0026	0.0010	−0.0002
0.500	0.42	2.01	−0.0651	−0.0812	0.0985	−0.0023	0.0010	−0.0003	−0.0704	0.0192	0.1022	−0.0027	0.0010	0.0002
0.501	0.37	3.01	−0.0609	−0.1655	0.0951	−0.0010	0.0006	−0.0004	−0.0695	0.0205	0.1006	−0.0030	0.0010	0.0000
0.501	0.31	4.26	−0.0545	−0.2708	0.0886	0.0007	0.0003	−0.0006	−0.0673	0.0234	0.0976	−0.0038	0.0013	−0.0002
0.499	14.98	1.00	0.0257	0.0159	−0.0640	0.0079	−0.0027	0.0023	0.0257	0.0159	−0.0640	0.0079	−0.0027	0.0023
0.501	14.95	2.00	0.0509	−0.0784	−0.0620	0.0068	−0.0022	0.0019	0.0209	0.0163	−0.0584	0.0064	−0.0022	0.0024

Table 3. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	14.92	3.01	0.0736	–0.1620	–0.0621	0.0092	–0.0029	0.0018	0.0186	0.0158	–0.0566	0.0072	–0.0025	0.0023
0.500	14.87	4.25	0.1043	–0.2636	–0.0663	0.0110	–0.0034	0.0017	0.0181	0.0172	–0.0574	0.0064	–0.0023	0.0022
0.499	24.84	0.98	0.1378	0.0692	–0.2401	–0.0013	–0.0002	0.0002	0.1378	0.0692	–0.2401	–0.0013	–0.0002	0.0002
0.499	24.95	2.01	0.1867	–0.0181	–0.2489	–0.0008	–0.0002	0.0003	0.1401	0.0711	–0.2452	–0.0011	–0.0002	0.0009
0.499	24.86	3.01	0.2233	–0.0963	–0.2488	0.0005	–0.0005	0.0004	0.1376	0.0709	–0.2432	–0.0016	–0.0002	0.0009
0.499	24.80	4.26	0.2722	–0.1904	–0.2549	0.0019	–0.0009	0.0006	0.1377	0.0737	–0.2458	–0.0027	0.0002	0.0011
0.504	0.36	1.00	–0.0730	0.0173	0.1039	–0.0045	0.0015	–0.0002	–0.0730	0.0173	0.1039	–0.0045	0.0015	–0.0002
0.499	5.26	1.00	–0.0379	0.0147	0.0537	–0.0038	0.0012	–0.0003	–0.0379	0.0147	0.0537	–0.0038	0.0012	–0.0003
0.500	10.09	1.00	–0.0091	0.0143	0.0053	–0.0031	0.0008	–0.0002	–0.0091	0.0143	0.0053	–0.0031	0.0008	–0.0002
0.499	14.97	1.00	0.0244	0.0155	–0.0634	0.0070	–0.0024	0.0022	0.0244	0.0155	–0.0634	0.0070	–0.0024	0.0022
0.495	19.68	0.99	0.0803	0.0340	–0.1514	0.0014	–0.0008	0.0010	0.0803	0.0340	–0.1514	0.0014	–0.0008	0.0010
0.497	24.49	0.98	0.1331	0.0660	–0.2334	–0.0019	0.0001	0.0003	0.1331	0.0660	–0.2334	–0.0019	0.0001	0.0003
0.501	29.30	0.97	0.1767	0.1046	–0.3132	0.0051	–0.0020	0.0003	0.1767	0.1046	–0.3132	0.0051	–0.0020	0.0003
0.502	0.20	4.27	–0.0560	–0.2710	0.0895	0.0000	0.0004	–0.0007	–0.0683	0.0230	0.0985	–0.0046	0.0015	–0.0003
0.498	5.10	4.26	0.0038	–0.2751	0.0387	0.0002	0.0002	–0.0007	–0.0340	0.0202	0.0478	–0.0044	0.0013	–0.0002
0.499	10.00	4.28	0.0540	–0.2715	–0.0052	0.0011	–0.0002	–0.0005	–0.0089	0.0196	0.0040	–0.0035	0.0010	–0.0001
0.501	14.75	4.29	0.1010	–0.2659	–0.0626	0.0105	–0.0032	0.0016	0.0145	0.0182	–0.0535	0.0059	–0.0021	0.0021
0.499	19.54	4.33	0.1883	–0.2432	–0.1589	0.0047	–0.0016	0.0008	0.0762	0.0380	–0.1497	0.0000	–0.0004	0.0013
0.501	24.32	4.28	0.2644	–0.1954	–0.2460	0.0007	–0.0005	0.0005	0.1324	0.0693	–0.2370	–0.0039	0.0006	0.0010
0.499	29.13	4.26	0.3350	–0.1432	–0.3333	0.0084	–0.0028	0.0010	0.1809	0.1100	–0.3242	0.0038	–0.0017	0.0015
0.699	0.13	0.98	–0.0804	0.0189	0.1152	–0.0031	0.0011	0.0003	–0.0804	0.0189	0.1152	–0.0031	0.0011	0.0003
0.699	0.15	2.04	–0.0781	–0.0329	0.1129	–0.0034	0.0012	0.0001	–0.0806	0.0196	0.1148	–0.0036	0.0012	0.0003
0.700	0.11	2.99	–0.0762	–0.0745	0.1108	–0.0033	0.0012	0.0001	–0.0802	0.0200	0.1136	–0.0043	0.0014	0.0003
0.699	0.11	4.26	–0.0728	–0.1298	0.1066	–0.0022	0.0010	0.0000	–0.0789	0.0212	0.1112	–0.0045	0.0015	0.0002
0.700	0.09	5.03	–0.0719	–0.1626	0.1062	–0.0013	0.0007	–0.0001	–0.0792	0.0221	0.1119	–0.0044	0.0015	0.0002
0.699	14.92	0.97	0.0403	0.0191	–0.0809	0.0012	–0.0005	0.0010	0.0403	0.0191	–0.0809	0.0012	–0.0005	0.0010
0.700	14.94	2.00	0.0537	–0.0305	–0.0811	0.0012	–0.0005	0.0010	0.0383	0.0180	–0.0792	0.0011	–0.0005	0.0012
0.699	14.91	3.01	0.0659	–0.0726	–0.0816	0.0017	–0.0006	0.0010	0.0377	0.0187	–0.0787	0.0006	–0.0004	0.0011
0.700	14.93	4.24	0.0822	–0.1233	–0.0856	0.0027	–0.0009	0.0009	0.0382	0.0197	–0.0810	0.0004	–0.0003	0.0011
0.702	14.93	5.04	0.0945	–0.1553	–0.0906	0.0030	–0.0010	0.0008	0.0403	0.0209	–0.0849	–0.0001	–0.0002	0.0010
0.699	0.08	0.98	–0.0825	0.0195	0.1166	–0.0039	0.0013	0.0003	–0.0825	0.0195	0.1166	–0.0039	0.0013	0.0003
0.701	5.07	0.98	–0.0467	0.0151	0.0670	–0.0035	0.0011	0.0001	–0.0467	0.0151	0.0670	–0.0035	0.0011	0.0001
0.702	10.02	0.99	–0.0152	0.0141	0.0155	–0.0029	0.0009	0.0003	–0.0152	0.0141	0.0155	–0.0029	0.0009	0.0003
0.701	14.94	0.97	0.0401	0.0192	–0.0812	0.0004	–0.0003	0.0010	0.0401	0.0192	–0.0812	0.0004	–0.0003	0.0010
0.701	19.85	0.96	0.0929	0.0396	–0.1652	0.0019	–0.0010	0.0010	0.0929	0.0396	–0.1652	0.0019	–0.0010	0.0010
0.700	0.12	4.23	–0.0721	–0.1284	0.1059	–0.0029	0.0011	–0.0002	–0.0781	0.0207	0.1104	–0.0052	0.0017	0.0000
0.699	5.02	4.23	–0.0230	–0.1323	0.0553	–0.0021	0.0008	–0.0003	–0.0418	0.0163	0.0599	–0.0044	0.0013	0.0000
0.701	10.03	4.25	0.0183	–0.1308	0.0081	–0.0002	0.0002	–0.0002	–0.0134	0.0157	0.0127	–0.0026	0.0007	0.0001
0.700	14.91	4.25	0.0834	–0.1236	–0.0864	0.0026	–0.0009	0.0008	0.0392	0.0200	–0.0818	0.0003	–0.0003	0.0010
0.699	19.87	4.26	0.1524	–0.0988	–0.1754	0.0035	–0.0013	0.0011	0.0956	0.0414	–0.1708	0.0012	–0.0007	0.0014

Table 4. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 5°;\ \delta_{B,E} = 5°;\ \delta_{C,F} = 5°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9777	0.9762	3.06	0.54	−0.0174	0.0009	−0.0008	0.0002	0.0000	−0.0001
3.01	0.9797	0.9788	2.41	0.53	−0.0327	0.0014	−0.0012	0.0003	−0.0001	−0.0001
4.01	0.9669	0.9659	2.46	0.81	−0.0474	0.0020	−0.0019	0.0007	−0.0002	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.00	1.00	−0.0684	0.0244	0.0998	−0.0077	0.0023	−0.0013	−0.0684	0.0244	0.0998	−0.0077	0.0023	−0.0013
0.302	−0.01	2.01	−0.0585	−0.2476	0.0919	−0.0025	0.0010	−0.0012	−0.0730	0.0245	0.1042	−0.0051	0.0015	−0.0001
0.299	0.01	3.02	−0.0395	−0.4912	0.0754	0.0036	−0.0005	−0.0016	−0.0616	0.0322	0.0941	−0.0012	0.0005	−0.0002
0.300	−0.02	4.24	−0.0245	−0.7698	0.0576	0.0103	−0.0025	−0.0020	−0.0589	0.0353	0.0905	−0.0018	0.0007	−0.0007
0.300	14.96	1.00	0.0247	0.0208	−0.0573	0.0078	−0.0025	0.0008	0.0247	0.0208	−0.0573	0.0078	−0.0025	0.0008
0.300	14.97	2.02	0.0926	−0.2421	−0.0521	0.0102	−0.0032	0.0009	0.0062	0.0239	−0.0396	0.0076	−0.0027	0.0020
0.300	14.98	2.99	0.1495	−0.4658	−0.0478	0.0092	−0.0025	0.0002	−0.0046	0.0263	−0.0295	0.0044	−0.0015	0.0016
0.301	14.96	4.26	0.2283	−0.7447	−0.0554	0.0149	−0.0042	0.0003	−0.0142	0.0275	−0.0224	0.0027	−0.0010	0.0016
0.299	24.94	0.99	0.1077	0.0596	−0.2074	0.0008	−0.0008	0.0012	0.1077	0.0596	−0.2074	0.0008	−0.0008	0.0012
0.300	24.98	2.00	0.2281	−0.1791	−0.2160	0.0039	−0.0016	0.0010	0.0988	0.0639	−0.2036	0.0013	−0.0010	0.0021
0.300	24.93	3.00	0.3313	−0.3921	−0.2185	0.0078	−0.0025	0.0008	0.0941	0.0667	−0.2002	0.0030	−0.0015	0.0022
0.301	24.92	4.25	0.4663	−0.6469	−0.2363	0.0117	−0.0035	0.0003	0.0950	0.0697	−0.2034	−0.0004	−0.0003	0.0017
0.303	45.02	0.98	0.2508	0.2643	−0.5160	−0.0012	−0.0003	0.0013	0.2508	0.2643	−0.5160	−0.0012	−0.0003	0.0013
0.301	44.99	1.99	0.4469	0.0814	−0.5351	−0.0033	−0.0003	0.0010	0.2549	0.2685	−0.5327	−0.0068	0.0009	0.0016
0.300	44.98	2.98	0.6118	−0.0853	−0.5397	−0.0009	−0.0013	0.0010	0.2503	0.2682	−0.5350	−0.0089	0.0013	0.0016
0.300	44.95	4.22	0.8133	−0.2812	−0.5514	−0.0001	−0.0019	0.0010	0.2492	0.2674	−0.5383	−0.0168	0.0035	0.0014
0.300	60.02	0.97	0.1973	0.3930	−0.6144	0.0028	−0.0009	0.0039	0.1973	0.3930	−0.6144	0.0028	−0.0009	0.0039
0.300	59.96	1.99	0.4345	0.2555	−0.6148	−0.0023	0.0001	0.0030	0.1986	0.3878	−0.6124	−0.0059	0.0012	0.0035
0.300	59.99	2.99	0.6404	0.1404	−0.6218	−0.0020	−0.0003	0.0019	0.1981	0.3890	−0.6170	−0.0101	0.0023	0.0024
0.300	59.96	4.22	0.8912	0.0079	−0.6397	−0.0004	−0.0011	0.0024	0.2021	0.3928	−0.6266	−0.0172	0.0043	0.0027
0.305	0.00	1.00	−0.0688	0.0171	0.1003	−0.0041	0.0012	−0.0013	−0.0688	0.0171	0.1003	−0.0041	0.0012	−0.0013
0.300	5.02	1.00	−0.0297	0.0173	0.0466	−0.0052	0.0015	−0.0016	−0.0297	0.0173	0.0466	−0.0052	0.0015	−0.0016
0.301	10.00	1.00	−0.0018	0.0192	−0.0007	−0.0028	0.0008	−0.0010	−0.0018	0.0192	−0.0007	−0.0028	0.0008	−0.0010
0.300	14.98	1.00	0.0206	0.0204	−0.0548	0.0087	−0.0030	0.0010	0.0206	0.0204	−0.0548	0.0087	−0.0030	0.0010
0.298	19.95	0.99	0.0547	0.0321	−0.1249	0.0049	−0.0020	0.0023	0.0547	0.0321	−0.1249	0.0049	−0.0020	0.0023
0.299	24.96	0.99	0.1031	0.0605	−0.2035	0.0017	−0.0010	0.0016	0.1031	0.0605	−0.2035	0.0017	−0.0010	0.0016
0.301	29.95	0.99	0.1478	0.0960	−0.2881	0.0064	−0.0027	0.0017	0.1478	0.0960	−0.2881	0.0064	−0.0027	0.0017
0.300	32.49	0.99	0.1699	0.1188	−0.3293	0.0035	−0.0022	0.0010	0.1699	0.1188	−0.3293	0.0035	−0.0022	0.0010
0.299	35.29	0.99	0.2135	0.1463	−0.3891	0.0045	−0.0018	0.0019	0.2135	0.1463	−0.3891	0.0045	−0.0018	0.0019
0.299	38.00	0.99	0.2252	0.1775	−0.4243	0.0066	−0.0030	0.0017	0.2252	0.1775	−0.4243	0.0066	−0.0030	0.0017
0.298	40.02	0.98	0.2331	0.2013	−0.4513	0.0034	−0.0018	0.0014	0.2331	0.2013	−0.4513	0.0034	−0.0018	0.0014
0.298	42.02	0.98	0.2446	0.2294	−0.4847	0.0093	−0.0034	0.0020	0.2446	0.2294	−0.4847	0.0093	−0.0034	0.0020
0.304	44.99	0.98	0.2494	0.2614	−0.5146	0.0037	−0.0017	0.0018	0.2494	0.2614	−0.5146	0.0037	−0.0017	0.0018
0.297	50.02	0.98	0.2483	0.3180	−0.5674	−0.0021	0.0001	0.0015	0.2483	0.3180	−0.5674	−0.0021	0.0001	0.0015

Table 4. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	54.99	0.97	0.2275	0.3604	−0.5922	0.0017	−0.0006	0.0039	0.2275	0.3604	−0.5922	0.0017	−0.0006	0.0039
0.302	59.98	0.97	0.1978	0.3927	−0.6093	0.0013	−0.0003	0.0037	0.1978	0.3927	−0.6093	0.0013	−0.0003	0.0037
0.300	65.02	0.97	0.1755	0.4508	−0.6713	0.0062	−0.0020	0.0034	0.1755	0.4508	−0.6713	0.0062	−0.0020	0.0034
0.299	68.46	0.96	0.1570	0.4935	−0.7193	0.0125	−0.0039	0.0053	0.1570	0.4935	−0.7193	0.0125	−0.0039	0.0053
0.300	0.02	4.27	−0.0228	−0.7780	0.0557	0.0082	−0.0019	−0.0017	−0.0581	0.0332	0.0889	−0.0040	0.0013	−0.0004
0.301	4.97	4.24	0.0763	−0.7646	0.0076	0.0081	−0.0022	−0.0016	−0.0276	0.0310	0.0403	−0.0039	0.0010	−0.0003
0.301	10.00	4.24	0.1714	−0.7497	−0.0392	0.0096	−0.0025	−0.0013	−0.0014	0.0319	−0.0065	−0.0024	0.0007	0.0000
0.300	15.01	4.25	0.2267	−0.7461	−0.0542	0.0148	−0.0042	0.0003	−0.0162	0.0249	−0.0212	0.0027	−0.0010	0.0016
0.299	19.93	4.25	0.3513	−0.7161	−0.1505	0.0151	−0.0048	0.0009	0.0402	0.0387	−0.1173	0.0029	−0.0016	0.0022
0.298	24.92	4.24	0.4717	−0.6589	−0.2377	0.0113	−0.0035	0.0005	0.0950	0.0683	−0.2043	−0.0010	−0.0002	0.0018
0.301	29.88	4.25	0.5738	−0.5758	−0.3271	0.0184	−0.0060	0.0012	0.1432	0.1039	−0.2943	0.0064	−0.0028	0.0025
0.299	32.17	4.25	0.6271	−0.5434	−0.3702	0.0180	−0.0060	0.0010	0.1649	0.1256	−0.3370	0.0058	−0.0028	0.0024
0.301	35.11	4.22	0.6696	−0.4817	−0.4136	0.0079	−0.0033	0.0023	0.2086	0.1539	−0.4006	−0.0087	0.0021	0.0025
0.301	37.99	4.23	0.7200	−0.4242	−0.4622	0.0115	−0.0051	0.0024	0.2267	0.1886	−0.4491	−0.0052	0.0004	0.0028
0.301	39.98	4.23	0.7515	−0.3839	−0.4920	0.0044	−0.0029	0.0019	0.2364	0.2121	−0.4789	−0.0124	0.0025	0.0022
0.300	42.00	4.23	0.7829	−0.3426	−0.5210	0.0055	−0.0032	0.0019	0.2457	0.2365	−0.5079	−0.0113	0.0023	0.0023
0.299	44.99	4.23	0.8214	−0.2853	−0.5524	0.0030	−0.0024	0.0019	0.2514	0.2681	−0.5392	−0.0139	0.0030	0.0022
0.298	49.98	4.23	0.8720	−0.1903	−0.5954	−0.0077	0.0011	0.0017	0.2492	0.3171	−0.5820	−0.0248	0.0067	0.0020
0.298	54.97	4.23	0.8977	−0.0914	−0.6233	0.0001	−0.0009	0.0027	0.2332	0.3598	−0.6100	−0.0170	0.0047	0.0030
0.303	59.93	4.24	0.8843	0.0136	−0.6404	0.0013	−0.0011	0.0034	0.2059	0.3930	−0.6275	−0.0153	0.0043	0.0037
0.300	64.97	4.23	0.8879	0.0967	−0.6508	0.0101	−0.0049	0.0017	0.1656	0.4211	−0.6376	−0.0067	0.0006	0.0021
0.298	68.36	4.23	0.8895	0.1524	−0.6603	0.0120	−0.0054	0.0020	0.1384	0.4376	−0.6470	−0.0051	0.0003	0.0024
0.502	0.38	0.99	−0.0720	0.0224	0.1035	−0.0067	0.0020	−0.0002	−0.0720	0.0224	0.1035	−0.0067	0.0020	−0.0002
0.503	0.36	2.00	−0.0681	−0.0746	0.1028	−0.0050	0.0017	−0.0004	−0.0739	0.0229	0.1072	−0.0059	0.0018	−0.0001
0.502	0.30	2.99	−0.0635	−0.1596	0.0987	−0.0034	0.0012	−0.0005	−0.0723	0.0243	0.1053	−0.0051	0.0017	0.0000
0.503	0.23	4.22	−0.0565	−0.2589	0.0916	−0.0010	0.0006	−0.0007	−0.0699	0.0265	0.1032	−0.0053	0.0017	−0.0003
0.502	0.18	5.01	−0.0511	−0.3231	0.0851	0.0005	0.0001	−0.0008	−0.0675	0.0291	0.1000	−0.0054	0.0017	−0.0003
0.502	14.92	0.99	0.0271	0.0184	−0.0651	0.0061	−0.0023	0.0021	0.0271	0.0184	−0.0651	0.0061	−0.0023	0.0021
0.502	14.90	2.00	0.0526	−0.0752	−0.0641	0.0072	−0.0025	0.0019	0.0222	0.0187	−0.0596	0.0063	−0.0024	0.0024
0.502	14.88	2.99	0.0753	−0.1546	−0.0656	0.0098	−0.0032	0.0020	0.0207	0.0209	−0.0590	0.0082	−0.0029	0.0024
0.502	14.79	4.25	0.1054	−0.2536	−0.0719	0.0113	−0.0037	0.0017	0.0199	0.0217	−0.0601	0.0070	−0.0025	0.0022
0.500	14.76	4.98	0.1243	−0.3138	−0.0751	0.0142	−0.0046	0.0018	0.0195	0.0237	−0.0601	0.0083	−0.0030	0.0023
0.499	24.49	0.98	0.1365	0.0702	−0.2365	−0.0022	0.0001	0.0002	0.1365	0.0702	−0.2365	−0.0022	0.0001	0.0002
0.499	24.42	2.00	0.1815	−0.0180	−0.2422	−0.0012	−0.0002	0.0005	0.1356	0.0703	−0.2377	−0.0021	0.0000	0.0009
0.499	24.39	3.02	0.2193	−0.0959	−0.2447	0.0008	−0.0007	0.0006	0.1343	0.0723	−0.2380	−0.0010	−0.0003	0.0011
0.500	24.35	4.29	0.2697	−0.1881	−0.2543	0.0021	−0.0011	0.0006	0.1365	0.0753	−0.2422	−0.0024	0.0001	0.0010
0.500	24.36	5.03	0.3005	−0.2395	−0.2631	0.0031	−0.0014	0.0008	0.1396	0.0785	−0.2479	−0.0029	0.0003	0.0012
0.500	0.03	1.00	−0.0750	0.0194	0.1072	−0.0053	0.0017	−0.0001	−0.0750	0.0194	0.1072	−0.0053	0.0017	−0.0001
0.502	5.05	0.99	−0.0370	0.0168	0.0550	−0.0043	0.0013	−0.0003	−0.0370	0.0168	0.0550	−0.0043	0.0013	−0.0003
0.501	9.97	0.99	−0.0077	0.0165	0.0059	−0.0032	0.0009	0.0000	−0.0077	0.0165	0.0059	−0.0032	0.0009	0.0000
0.500	14.97	0.99	0.0268	0.0187	−0.0648	0.0068	−0.0024	0.0023	0.0268	0.0187	−0.0648	0.0068	−0.0024	0.0023
0.497	19.91	0.98	0.0854	0.0391	−0.1564	0.0010	−0.0007	0.0010	0.0854	0.0391	−0.1564	0.0010	−0.0007	0.0010
0.499	24.84	0.97	0.1388	0.0727	−0.2409	−0.0011	−0.0003	0.0003	0.1388	0.0727	−0.2409	−0.0011	−0.0003	0.0003
0.500	29.84	0.96	0.1813	0.1121	−0.3217	0.0074	−0.0030	0.0005	0.1813	0.1121	−0.3217	0.0074	−0.0030	0.0005
0.502	0.03	4.21	−0.0599	−0.2597	0.0947	0.0003	0.0003	−0.0005	−0.0724	0.0263	0.1063	−0.0040	0.0014	−0.0001

Table 4. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	5.02	4.26	0.0028	–0.2650	0.0408	0.0004	0.0001	–0.0007	–0.0350	0.0228	0.0526	–0.0040	0.0012	–0.0002
0.502	10.00	4.27	0.0566	–0.2600	–0.0095	0.0017	–0.0005	–0.0005	–0.0060	0.0234	0.0023	–0.0027	0.0007	–0.0001
0.500	14.92	4.26	0.1104	–0.2565	–0.0752	0.0118	–0.0038	0.0016	0.0230	0.0227	–0.0632	0.0074	–0.0027	0.0020
0.499	19.88	4.26	0.1956	–0.2281	–0.1712	0.0050	–0.0018	0.0008	0.0841	0.0432	–0.1593	0.0006	–0.0006	0.0012
0.500	24.82	4.26	0.2763	–0.1813	–0.2624	0.0026	–0.0012	0.0004	0.1421	0.0788	–0.2505	–0.0018	–0.0001	0.0009
0.498	29.77	4.26	0.3460	–0.1290	–0.3505	0.0121	–0.0042	0.0014	0.1889	0.1201	–0.3385	0.0077	–0.0030	0.0018
0.700	0.58	0.99	–0.0775	0.0206	0.1109	–0.0040	0.0013	0.0003	–0.0775	0.0206	0.1109	–0.0040	0.0013	0.0003
0.699	0.56	2.02	–0.0765	–0.0304	0.1114	–0.0042	0.0014	0.0002	–0.0797	0.0210	0.1137	–0.0047	0.0015	0.0004
0.697	0.53	3.00	–0.0753	–0.0733	0.1105	–0.0040	0.0014	0.0002	–0.0802	0.0223	0.1139	–0.0048	0.0016	0.0004
0.700	0.48	4.25	–0.0722	–0.1252	0.1071	–0.0026	0.0010	0.0001	–0.0798	0.0232	0.1131	–0.0049	0.0016	0.0003
0.699	0.44	5.00	–0.0688	–0.1566	0.1032	–0.0027	0.0010	–0.0001	–0.0781	0.0243	0.1109	–0.0057	0.0018	0.0002
0.699	14.70	0.98	0.0373	0.0196	–0.0774	0.0004	–0.0004	0.0012	0.0373	0.0196	–0.0774	0.0004	–0.0004	0.0012
0.701	14.70	1.99	0.0501	–0.0280	–0.0775	0.0008	–0.0004	0.0011	0.0349	0.0197	–0.0753	0.0004	–0.0003	0.0014
0.699	14.66	3.04	0.0632	–0.0732	–0.0788	0.0009	–0.0004	0.0011	0.0348	0.0195	–0.0754	0.0000	–0.0003	0.0014
0.700	14.58	4.25	0.0781	–0.1206	–0.0826	0.0017	–0.0007	0.0011	0.0346	0.0215	–0.0765	–0.0005	–0.0001	0.0014
0.700	14.56	5.06	0.0904	–0.1526	–0.0875	0.0020	–0.0008	0.0010	0.0367	0.0225	–0.0797	–0.0011	0.0001	0.0012
0.700	14.52	5.75	0.1001	–0.1796	–0.0907	0.0030	–0.0010	0.0011	0.0377	0.0240	–0.0815	–0.0008	0.0000	0.0013
0.699	0.54	0.99	–0.0771	0.0204	0.1096	–0.0052	0.0017	0.0003	–0.0771	0.0204	0.1096	–0.0052	0.0017	0.0003
0.702	5.37	0.99	–0.0436	0.0164	0.0626	–0.0050	0.0015	0.0001	–0.0436	0.0164	0.0626	–0.0050	0.0015	0.0001
0.700	10.2	0.99	–0.0141	0.0154	0.0129	–0.0044	0.0012	0.0001	–0.0141	0.0154	0.0129	–0.0044	0.0012	0.0001
0.699	14.72	0.98	0.0373	0.0199	–0.0777	–0.0003	–0.0002	0.0011	0.0373	0.0199	–0.0777	–0.0003	–0.0002	0.0011
0.694	19.37	0.97	0.0872	0.0371	–0.1573	0.0002	–0.0005	0.0009	0.0872	0.0371	–0.1573	0.0002	–0.0005	0.0009
0.700	0.43	4.22	–0.0708	–0.1239	0.1056	–0.0032	0.0011	–0.0002	–0.0782	0.0234	0.1116	–0.0054	0.0017	0.0001
0.704	5.28	4.19	–0.0231	–0.1228	0.0555	–0.0023	0.0008	–0.0003	–0.0426	0.0201	0.0614	–0.0044	0.0014	0.0000
0.703	10.08	4.25	0.0177	–0.1252	0.0070	–0.0015	0.0004	–0.0001	–0.0143	0.0188	0.0130	–0.0037	0.0010	0.0001
0.698	14.58	4.10	0.0776	–0.1148	–0.0827	0.0022	–0.0008	0.0010	0.0358	0.0218	–0.0769	0.0001	–0.0003	0.0013
0.698	19.25	4.25	0.1439	–0.0978	–0.1678	0.0028	–0.0011	0.0011	0.0887	0.0407	–0.1618	0.0005	–0.0005	0.0014

Table 5. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 10°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9778	0.9734	5.30	1.20	−0.0170	0.0016	−0.0019	0.0004	−0.0001	−0.0001
2.98	0.9723	0.9705	3.29	1.13	−0.0319	0.0018	−0.0028	0.0006	−0.0002	−0.0001
4.02	0.9566	0.9556	2.53	0.92	−0.0470	0.0021	−0.0046	0.0008	−0.0002	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	−0.01	1.00	−0.0725	0.0200	0.1036	−0.0086	0.0024	−0.0014	−0.0725	0.0200	0.1036	−0.0086	0.0024	−0.0014
0.299	0.00	2.03	−0.0462	−0.2496	0.0690	−0.0032	0.0017	−0.0013	−0.0715	0.0316	0.1004	−0.0090	0.0031	−0.0002
0.301	0.01	3.01	−0.0230	−0.4711	0.0363	0.0009	0.0005	−0.0015	−0.0521	0.0382	0.0804	−0.0091	0.0031	−0.0007
0.301	−0.03	4.25	0.0208	−0.7512	−0.0417	0.0087	−0.0015	−0.0010	−0.0125	0.0433	0.0365	−0.0036	0.0015	−0.0015
0.300	14.97	0.99	0.0354	0.0232	−0.0696	0.0056	−0.0022	−0.0007	0.0354	0.0232	−0.0696	0.0056	−0.0022	−0.0007
0.301	14.99	1.99	0.0968	−0.2245	−0.0783	0.0110	−0.0030	0.0006	0.0033	0.0284	−0.0478	0.0054	−0.0017	0.0017
0.301	15.00	2.99	0.1704	−0.4445	−0.1013	0.0102	−0.0024	0.0000	0.0114	0.0367	−0.0576	0.0002	0.0002	0.0009
0.301	14.95	4.24	0.2896	−0.7074	−0.1854	0.0119	−0.0029	−0.0001	0.0520	0.0519	−0.1071	−0.0004	0.0001	−0.0005
0.299	24.95	0.99	0.1305	0.0704	−0.2341	−0.0005	−0.0004	−0.0010	0.1305	0.0704	−0.2341	−0.0005	−0.0004	−0.0010
0.299	24.96	2.00	0.2621	−0.1528	−0.2750	0.0019	−0.0002	−0.0008	0.1235	0.0851	−0.2440	−0.0038	0.0012	0.0003
0.299	24.93	3.01	0.3820	−0.3586	−0.3084	0.0045	−0.0007	−0.0006	0.1381	0.0965	−0.2637	−0.0057	0.0019	0.0002
0.300	24.91	4.26	0.5520	−0.5922	−0.4006	0.0070	−0.0012	−0.0003	0.1822	0.1233	−0.3212	−0.0055	0.0017	−0.0008
0.300	0.01	0.99	−0.0727	0.0173	0.1055	−0.0048	0.0017	−0.0011	−0.0727	0.0173	0.1055	−0.0048	0.0017	−0.0011
0.301	5.01	0.99	−0.0310	0.0167	0.0485	−0.0053	0.0016	−0.0017	−0.0310	0.0167	0.0485	−0.0053	0.0016	−0.0017
0.300	9.98	0.99	0.0016	0.0196	−0.0045	−0.0032	0.0008	−0.0016	0.0016	0.0196	−0.0045	−0.0032	0.0008	−0.0016
0.300	14.97	0.99	0.0376	0.0247	−0.0709	0.0063	−0.0024	−0.0006	0.0376	0.0247	−0.0709	0.0063	−0.0024	−0.0006
0.299	19.97	0.99	0.0787	0.0402	−0.1523	0.0045	−0.0019	0.0003	0.0787	0.0402	−0.1523	0.0045	−0.0019	0.0003
0.300	24.96	0.99	0.1301	0.0726	−0.2352	0.0003	−0.0008	−0.0009	0.1301	0.0726	−0.2352	0.0003	−0.0008	−0.0009
0.298	29.91	0.99	0.1733	0.1103	−0.3184	0.0102	−0.0038	−0.0006	0.1733	0.1103	−0.3184	0.0102	−0.0038	−0.0006
0.299	32.48	0.98	0.1976	0.1363	−0.3644	0.0035	−0.0023	−0.0017	0.1976	0.1363	−0.3644	0.0035	−0.0023	−0.0017
0.300	−0.03	4.25	0.0207	−0.7541	−0.0415	0.0041	0.0003	−0.0008	−0.0126	0.0418	0.0368	−0.0083	0.0033	−0.0012
0.300	5.00	4.26	0.0984	−0.7494	−0.0708	0.0039	0.0001	−0.0005	−0.0049	0.0448	0.0081	−0.0085	0.0031	−0.0010
0.300	10.01	4.23	0.1929	−0.7269	−0.1204	0.0031	0.0004	−0.0008	0.0217	0.0494	−0.0422	−0.0092	0.0035	−0.0012
0.299	14.98	4.27	0.2973	−0.7155	−0.1900	0.0092	−0.0017	−0.0003	0.0558	0.0558	−0.1103	−0.0033	0.0014	−0.0008
0.298	19.94	4.24	0.4317	−0.6687	−0.3010	0.0090	−0.0020	0.0000	0.1238	0.0799	−0.2214	−0.0036	0.0010	−0.0005
0.299	24.90	4.24	0.5474	−0.5951	−0.3932	0.0061	−0.0010	−0.0003	0.1788	0.1183	−0.3142	−0.0064	0.0021	−0.0008
0.298	29.87	4.23	0.6549	−0.5192	−0.4868	0.0111	−0.0029	−0.0003	0.2236	0.1630	−0.4075	−0.0014	0.0002	−0.0008
0.300	32.07	4.27	0.7076	−0.4776	−0.5367	0.0114	−0.0032	−0.0004	0.2501	0.1886	−0.4571	−0.0011	−0.0002	−0.0009
0.499	0.05	0.99	−0.0802	0.0202	0.1128	−0.0044	0.0015	0.0004	−0.0802	0.0202	0.1128	−0.0044	0.0015	0.0004
0.500	0.09	2.01	−0.0686	−0.0752	0.0964	−0.0037	0.0014	0.0003	−0.0778	0.0233	0.1075	−0.0057	0.0019	0.0007
0.500	0.08	3.00	−0.0593	−0.1580	0.0833	−0.0020	0.0010	0.0002	−0.0701	0.0257	0.0992	−0.0056	0.0019	0.0004
0.499	−0.08	4.25	−0.0383	−0.2614	0.0486	−0.0002	0.0004	0.0000	−0.0502	0.0275	0.0770	−0.0047	0.0015	−0.0002
0.499	14.98	0.98	0.0345	0.0212	−0.0748	0.0069	−0.0025	0.0017	0.0345	0.0212	−0.0748	0.0069	−0.0025	0.0017
0.499	14.93	2.01	0.0702	−0.0694	−0.0928	0.0076	−0.0026	0.0016	0.0360	0.0239	−0.0816	0.0055	−0.0021	0.0020

Table 5. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.499	14.95	3.02	0.1002	–0.1490	–0.1059	0.0083	–0.0028	0.0015	0.0420	0.0280	–0.0898	0.0047	–0.0018	0.0018
0.499	14.92	4.26	0.1477	–0.2428	–0.1423	0.0097	–0.0032	0.0015	0.0611	0.0343	–0.1137	0.0052	–0.0021	0.0013
0.500	24.87	0.97	0.1505	0.0787	–0.2572	–0.0027	0.0001	–0.0006	0.1505	0.0787	–0.2572	–0.0027	0.0001	–0.0006
0.500	24.81	2.01	0.2079	–0.0035	–0.2839	–0.0017	–0.0001	–0.0003	0.1583	0.0823	–0.2728	–0.0038	0.0004	0.0002
0.500	24.81	3.01	0.2531	–0.0754	–0.2999	–0.0004	–0.0003	–0.0001	0.1662	0.0875	–0.2839	–0.0040	0.0006	0.0002
0.500	24.74	4.26	0.3164	–0.1573	–0.3383	0.0014	–0.0009	0.0003	0.1846	0.0997	–0.3098	–0.0031	0.0002	0.0001
0.501	0.02	0.99	–0.0805	0.0205	0.1129	–0.0059	0.0018	0.0003	–0.0805	0.0205	0.1129	–0.0059	0.0018	0.0003
0.502	5.06	0.99	–0.0409	0.0173	0.0576	–0.0058	0.0017	0.0000	–0.0409	0.0173	0.0576	–0.0058	0.0017	0.0000
0.499	10.00	0.99	–0.0076	0.0180	0.0037	–0.0041	0.0010	–0.0001	–0.0076	0.0180	0.0037	–0.0041	0.0010	–0.0001
0.501	14.96	0.98	0.0329	0.0206	–0.0734	0.0050	–0.0020	0.0016	0.0329	0.0206	–0.0734	0.0050	–0.0020	0.0016
0.499	19.90	0.98	0.0956	0.0431	–0.1703	–0.0003	–0.0004	0.0002	0.0956	0.0431	–0.1703	–0.0003	–0.0004	0.0002
0.498	24.86	0.97	0.1509	0.0791	–0.2578	–0.0035	0.0003	–0.0007	0.1509	0.0791	–0.2578	–0.0035	0.0003	–0.0007
0.499	29.76	0.96	0.1935	0.1193	–0.3384	0.0049	–0.0023	–0.0004	0.1935	0.1193	–0.3384	0.0049	–0.0023	–0.0004
0.502	–0.01	4.24	–0.0232	–0.2564	0.0341	–0.0045	0.0020	–0.0007	–0.0352	0.0283	0.0621	–0.0090	0.0030	–0.0009
0.502	4.95	4.25	0.0359	–0.2563	–0.0181	–0.0026	0.0012	–0.0006	–0.0008	0.0277	0.0101	–0.0071	0.0024	–0.0008
0.502	9.98	4.25	0.0750	–0.2478	–0.0551	–0.0029	0.0012	–0.0005	0.0136	0.0314	–0.0270	–0.0073	0.0024	–0.0007
0.500	14.90	4.27	0.1556	–0.2380	–0.1499	0.0074	–0.0023	0.0007	0.0693	0.0388	–0.1213	0.0029	–0.0011	0.0005
0.498	19.83	4.25	0.2411	–0.2057	–0.2482	0.0017	–0.0005	–0.0001	0.1312	0.0629	–0.2197	–0.0028	0.0005	–0.0003
0.498	24.79	4.26	0.3228	–0.1547	–0.3443	–0.0009	0.0000	–0.0003	0.1899	0.1040	–0.3157	–0.0054	0.0011	–0.0004
0.499	29.74	4.27	0.3903	–0.0962	–0.4347	0.0071	–0.0025	0.0002	0.2358	0.1495	–0.4061	0.0027	–0.0015	0.0000
0.700	0.12	0.98	–0.0844	0.0223	0.1187	–0.0051	0.0017	0.0006	–0.0844	0.0223	0.1187	–0.0051	0.0017	0.0006
0.698	0.19	2.00	–0.0770	–0.0284	0.1079	–0.0048	0.0016	0.0003	–0.0818	0.0220	0.1136	–0.0059	0.0018	0.0004
0.700	0.11	3.02	–0.0724	–0.0708	0.1015	–0.0043	0.0015	0.0003	–0.0780	0.0238	0.1097	–0.0062	0.0019	0.0003
0.699	0.09	4.24	–0.0605	–0.1222	0.0822	–0.0033	0.0011	0.0003	–0.0669	0.0247	0.0966	–0.0056	0.0017	0.0002
0.700	0.08	5.00	–0.0500	–0.1535	0.0653	–0.0025	0.0010	0.0002	–0.0570	0.0253	0.0836	–0.0050	0.0016	–0.0001
0.699	14.97	0.97	0.0425	0.0218	–0.0860	–0.0004	–0.0003	0.0010	0.0425	0.0218	–0.0860	–0.0004	–0.0003	0.0010
0.698	14.88	2.00	0.0615	–0.0245	–0.0966	0.0006	–0.0005	0.0010	0.0442	0.0228	–0.0909	–0.0005	–0.0003	0.0012
0.698	14.81	2.99	0.0756	–0.0649	–0.1021	0.0015	–0.0008	0.0010	0.0465	0.0244	–0.0940	–0.0004	–0.0003	0.0011
0.698	14.92	4.30	0.1051	–0.1143	–0.1277	0.0019	–0.0010	0.0009	0.0606	0.0287	–0.1129	–0.0004	–0.0004	0.0008
0.698	14.80	5.01	0.1210	–0.1407	–0.1419	0.0029	–0.0012	0.0010	0.0685	0.0316	–0.1235	0.0003	–0.0006	0.0008
0.699	0.20	0.98	–0.0800	0.0222	0.1136	–0.0050	0.0016	0.0002	–0.0800	0.0222	0.1136	–0.0050	0.0016	0.0002
0.701	5.08	0.98	–0.0451	0.0177	0.0643	–0.0046	0.0013	0.0002	–0.0451	0.0177	0.0643	–0.0046	0.0013	0.0002
0.700	10.04	0.99	–0.0138	0.0166	0.0127	–0.0041	0.0011	0.0003	–0.0138	0.0166	0.0127	–0.0041	0.0011	0.0003
0.699	14.93	0.97	0.0420	0.0221	–0.0847	0.0003	–0.0005	0.0010	0.0420	0.0221	–0.0847	0.0003	–0.0005	0.0010
0.700	19.89	0.96	0.0969	0.0432	–0.1717	0.0026	–0.0013	0.0009	0.0969	0.0432	–0.1717	0.0026	–0.0013	0.0009
0.701	0.09	4.25	–0.0666	–0.1203	0.0892	0.0009	–0.0001	0.0006	–0.0730	0.0261	0.1036	–0.0013	0.0004	0.0005
0.702	5.00	4.25	–0.0151	–0.1232	0.0348	0.0026	–0.0007	0.0004	–0.0340	0.0220	0.0492	0.0003	–0.0002	0.0003
0.702	10.03	4.24	0.0187	–0.1205	–0.0080	0.0036	–0.0011	0.0008	–0.0128	0.0221	0.0064	0.0013	–0.0006	0.0007
0.698	14.96	4.23	0.1022	–0.1104	–0.1238	0.0057	–0.0020	0.0010	0.0582	0.030	–0.1094	0.0034	–0.0015	0.0009
0.699	19.84	4.26	0.1716	–0.0828	–0.2149	0.0066	–0.0024	0.0014	0.1156	0.0541	–0.2003	0.0043	–0.0017	0.0013

Table 6. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9194	0.9105	7.85	1.37	-0.0162	0.0022	-0.0035	0.0004	-0.0001	-0.0001
3.00	0.9271	0.9242	4.44	0.77	-0.0307	0.0024	-0.0051	0.0004	-0.0001	0.0000
3.99	0.9242	0.9196	5.66	0.80	-0.0448	0.0044	-0.0091	0.0006	-0.0001	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	-0.18	1.00	-0.0764	0.0242	0.1065	-0.0089	0.0027	-0.0009	-0.0764	0.0242	0.1065	-0.0089	0.0027	-0.0009
0.302	0.01	2.00	-0.0290	-0.2326	0.0344	-0.0030	0.0012	-0.0010	-0.0641	0.0221	0.0889	-0.0091	0.0024	-0.0002
0.301	-0.03	2.98	0.0095	-0.4573	-0.0271	0.0057	-0.0012	-0.0006	-0.0277	0.0221	0.0521	-0.0008	-0.0002	-0.0004
0.302	-0.05	4.24	0.0325	-0.7314	-0.0973	0.0049	-0.0006	0.0006	-0.0445	0.0271	0.0616	-0.0058	0.0014	0.0003
0.302	15.03	1.00	0.0346	0.0199	-0.0702	0.0063	-0.0023	0.0003	0.0346	0.0199	-0.0702	0.0063	-0.0023	0.0003
0.301	14.97	2.00	0.1193	-0.2188	-0.1200	0.0146	-0.0044	0.0016	0.0198	0.0176	-0.0655	0.0085	-0.0033	0.0024
0.301	14.94	3.03	0.2129	-0.4314	-0.1803	0.0110	-0.0031	0.0007	0.0497	0.0312	-0.0989	0.0044	-0.0021	0.0009
0.302	14.93	4.25	0.3526	-0.6757	-0.2989	0.0191	-0.0053	0.0012	0.0812	0.0393	-0.1393	0.0084	-0.0034	0.0009
0.299	24.94	0.99	0.1321	0.0681	-0.2372	0.0002	-0.0005	0.0001	0.1321	0.0681	-0.2372	0.0002	-0.0005	0.0001
0.300	24.88	2.00	0.2793	-0.1403	-0.3150	0.0034	-0.0010	0.0002	0.1384	0.0791	-0.2596	-0.0028	0.0002	0.0010
0.301	24.93	3.01	0.4090	-0.3289	-0.3787	0.0063	-0.0017	0.0003	0.1693	0.0967	-0.2981	-0.0002	-0.0005	0.0005
0.298	24.87	4.26	0.5908	-0.5665	-0.4910	0.0033	-0.0002	0.0014	0.1903	0.1072	-0.3274	-0.0077	0.0018	0.0011
0.299	45.01	0.98	0.2557	0.2682	-0.5246	-0.0002	-0.0001	0.0034	0.2557	0.2682	-0.5246	-0.0002	-0.0001	0.0034
0.299	44.97	2.00	0.4840	0.1192	-0.6222	-0.0079	0.0017	0.0024	0.2812	0.2896	-0.5784	-0.0162	0.0042	0.0024
0.298	44.96	2.99	0.6707	-0.0147	-0.6915	-0.0057	0.0008	0.0029	0.2969	0.3067	-0.6123	-0.0191	0.0050	0.0025
0.297	44.98	4.25	0.9204	-0.1723	-0.8102	-0.0081	0.0013	0.0038	0.3150	0.3255	-0.6518	-0.0262	0.0068	0.0024
0.298	60.01	0.97	0.2037	0.3985	-0.6220	0.0012	0.0002	0.0051	0.2037	0.3985	-0.6220	0.0012	0.0002	0.0051
0.297	59.98	2.00	0.4654	0.2979	-0.6995	-0.0012	0.0003	0.0044	0.2216	0.4118	-0.6550	-0.0096	0.0030	0.0044
0.296	59.96	2.99	0.6858	0.2179	-0.7715	-0.0011	0.0000	0.0034	0.2346	0.4349	-0.6911	-0.0147	0.0043	0.0030
0.299	59.99	4.26	0.9589	0.1393	-0.8916	-0.0010	-0.0004	0.0037	0.2500	0.4610	-0.7342	-0.0189	0.0051	0.0024
0.301	0.00	1.00	-0.0795	0.0160	0.1093	-0.0062	0.0020	-0.0001	-0.0795	0.0160	0.1093	-0.0062	0.0020	-0.0001
0.302	5.02	1.00	-0.0377	0.0141	0.0521	-0.0066	0.0020	-0.0004	-0.0377	0.0141	0.0521	-0.0066	0.0020	-0.0004
0.302	10.02	1.00	-0.0061	0.0153	0.0005	-0.0052	0.0013	-0.0004	-0.0061	0.0153	0.0005	-0.0052	0.0013	-0.0004
0.301	15.00	1.00	0.0339	0.0207	-0.0703	0.0088	-0.0030	0.0009	0.0339	0.0207	-0.0703	0.0088	-0.0030	0.0009
0.300	19.90	1.00	0.0759	0.0351	-0.1508	0.0045	-0.0020	0.0012	0.0759	0.0351	-0.1508	0.0045	-0.0020	0.0012
0.298	24.94	0.99	0.1288	0.0675	-0.2345	-0.0005	-0.0005	0.0001	0.1288	0.0675	-0.2345	-0.0005	-0.0005	0.0001
0.301	29.92	0.99	0.1747	0.1061	-0.3201	0.0065	-0.0029	0.0003	0.1747	0.1061	-0.3201	0.0065	-0.0029	0.0003
0.299	32.37	0.99	0.1953	0.1292	-0.3607	0.0036	-0.0022	-0.0004	0.1953	0.1292	-0.3607	0.0036	-0.0022	-0.0004
0.298	35.23	0.99	0.2218	0.1518	-0.4004	0.0048	-0.0017	0.0030	0.2218	0.1518	-0.4004	0.0048	-0.0017	0.0030
0.298	38.00	0.99	0.2337	0.1839	-0.4376	0.0119	-0.0039	0.0035	0.2337	0.1839	-0.4376	0.0119	-0.0039	0.0035
0.298	40.00	0.98	0.2413	0.2072	-0.4644	0.0045	-0.0017	0.0025	0.2413	0.2072	-0.4644	0.0045	-0.0017	0.0025
0.298	41.98	0.98	0.2517	0.2338	-0.4958	0.0097	-0.0032	0.0032	0.2517	0.2338	-0.4958	0.0097	-0.0032	0.0032
0.297	45.01	0.98	0.2550	0.2666	-0.5252	0.0039	-0.0014	0.0030	0.2550	0.2666	-0.5252	0.0039	-0.0014	0.0030
0.300	49.99	0.98	0.2534	0.3204	-0.5765	-0.0029	0.0008	0.0021	0.2534	0.3204	-0.5765	-0.0029	0.0008	0.0021

Table 6. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	55.01	0.98	0.2303	0.3613	–0.5987	0.0027	–0.0004	0.0047	0.2303	0.3613	–0.5987	0.0027	–0.0004	0.0047
0.304	59.97	0.97	0.2024	0.3949	–0.6185	0.0036	–0.0006	0.0044	0.2024	0.3949	–0.6185	0.0036	–0.0006	0.0044
0.302	65.01	0.97	0.1805	0.4559	–0.6853	0.0088	–0.0024	0.0046	0.1805	0.4559	–0.6853	0.0088	–0.0024	0.0046
0.301	68.29	0.97	0.1624	0.4958	–0.7292	0.0156	–0.0044	0.0065	0.1624	0.4958	–0.7292	0.0156	–0.0044	0.0065
0.301	–0.09	4.25	0.0281	–0.7294	–0.0942	0.0003	0.0013	0.0010	–0.0490	0.0335	0.0658	–0.0105	0.0033	0.0008
0.300	4.98	4.24	0.1362	–0.7230	–0.1527	0.0006	0.0011	0.0009	–0.0088	0.0344	0.0081	–0.0102	0.0031	0.0006
0.300	10.02	4.24	0.2370	–0.7030	–0.2124	–0.0010	0.0014	0.0005	0.0269	0.0360	–0.0523	–0.0117	0.0034	0.0002
0.300	14.94	4.24	0.3383	–0.6790	–0.2825	0.0088	–0.0017	0.0014	0.0642	0.0430	–0.1216	–0.0020	0.0003	0.0011
0.300	19.92	4.25	0.4692	–0.6264	–0.3945	0.0061	–0.0012	0.0017	0.1337	0.0682	–0.2336	–0.0047	0.0008	0.0014
0.298	24.87	4.26	0.5908	–0.5665	–0.4910	0.0033	–0.0002	0.0014	0.1903	0.1072	–0.3274	–0.0077	0.0018	0.0011
0.302	29.88	4.24	0.6817	–0.4667	–0.5802	0.0095	–0.0024	0.0018	0.2368	0.1516	–0.4214	–0.0012	–0.0004	0.0015
0.302	31.84	4.25	0.7236	–0.4309	–0.6200	0.0077	–0.0021	0.0014	0.2569	0.1730	–0.4607	–0.0030	–0.0001	0.0010
0.299	34.95	4.26	0.7705	–0.3949	–0.6524	0.0025	–0.0016	0.0038	0.2671	0.1934	–0.4959	–0.0153	0.0039	0.0024
0.299	37.97	4.26	0.8202	–0.3278	–0.7076	0.0094	–0.0044	0.0041	0.2860	0.2337	–0.5509	–0.0084	0.0012	0.0027
0.299	39.95	4.26	0.8491	–0.2837	–0.7393	0.0054	–0.0030	0.0039	0.2960	0.2589	–0.5826	–0.0124	0.0024	0.0025
0.299	41.97	4.26	0.8752	–0.2406	–0.7674	0.0035	–0.0024	0.0037	0.3024	0.2831	–0.6105	–0.0143	0.0031	0.0024
0.301	44.92	4.26	0.9009	–0.1686	–0.8008	–0.0040	0.0000	0.0036	0.3093	0.3186	–0.6458	–0.0217	0.0054	0.0021
0.299	50.00	4.26	0.9367	–0.0685	–0.8357	–0.0072	0.0016	0.0044	0.2976	0.3691	–0.6791	–0.0250	0.0071	0.0030
0.297	54.95	4.25	0.9634	0.0338	–0.8729	–0.0038	0.0006	0.0041	0.2798	0.4198	–0.7142	–0.0219	0.0061	0.0027
0.302	59.98	4.26	0.9416	0.1403	–0.8831	–0.0002	–0.0006	0.0039	0.2475	0.4555	–0.7289	–0.0177	0.0048	0.0025
0.298	64.96	4.25	0.9423	0.2210	–0.8930	0.0135	–0.0057	0.0028	0.2038	0.4817	–0.7347	–0.0045	–0.0002	0.0014
0.297	67.95	4.25	0.9279	0.2711	–0.8929	0.0088	–0.0039	0.0037	0.1759	0.4931	–0.7344	–0.0092	0.0017	0.0022
0.500	0.06	0.99	–0.0805	0.0211	0.1134	–0.0055	0.0018	0.0005	–0.0805	0.0211	0.1134	–0.0055	0.0018	0.0005
0.501	0.06	2.00	–0.0589	–0.0691	0.0808	–0.0038	0.0016	0.0003	–0.0717	0.0232	0.1006	–0.0060	0.0020	0.0006
0.500	0.00	3.00	–0.0440	–0.1503	0.0563	–0.0029	0.0013	0.0002	–0.0576	0.0248	0.0852	–0.0053	0.0017	0.0003
0.500	–0.23	4.25	–0.0198	–0.2503	0.0132	0.0009	0.0003	0.0003	–0.0471	0.0262	0.0712	–0.0030	0.0010	0.0002
0.499	14.95	0.99	0.0363	0.0196	–0.0766	0.0066	–0.0024	0.0017	0.0363	0.0196	–0.0766	0.0066	–0.0024	0.0017
0.499	14.95	2.01	0.0796	–0.0639	–0.1099	0.0089	–0.0030	0.0017	0.0430	0.0234	–0.0898	0.0066	–0.0025	0.0020
0.498	15.01	3.00	0.1165	–0.1379	–0.1371	0.0091	–0.0029	0.0017	0.0576	0.0289	–0.1081	0.0067	–0.0025	0.0017
0.502	14.77	4.24	0.1672	–0.2256	–0.1819	0.0117	–0.0037	0.0019	0.0700	0.0326	–0.1244	0.0078	–0.0030	0.0017
0.498	24.86	0.97	0.1517	0.0769	–0.2581	–0.0021	–0.0001	–0.0004	0.1517	0.0769	–0.2581	–0.0021	–0.0001	–0.0004
0.499	24.85	2.00	0.2175	0.0045	–0.3029	–0.0012	–0.0001	–0.0002	0.1667	0.0837	–0.2829	–0.0034	0.0003	0.0001
0.498	24.71	3.00	0.2653	–0.0636	–0.3282	0.0011	–0.0007	0.0002	0.1790	0.0911	–0.2991	–0.0013	–0.0003	0.0003
0.499	24.47	4.25	0.3326	–0.1442	–0.3756	0.0022	–0.0010	0.0007	0.1914	0.0970	–0.3173	–0.0017	–0.0003	0.0006
0.501	0.05	0.99	–0.0808	0.0195	0.1123	–0.0059	0.0019	0.0003	–0.0808	0.0195	0.1123	–0.0059	0.0019	0.0003
0.496	5.05	0.99	–0.0409	0.0168	0.0568	–0.0050	0.0015	0.0002	–0.0409	0.0168	0.0568	–0.0050	0.0015	0.0002
0.504	10.02	1.00	–0.0078	0.0147	0.0037	–0.0036	0.0010	0.0002	–0.0078	0.0147	0.0037	–0.0036	0.0010	0.0002
0.500	14.98	0.99	0.0344	0.0194	–0.0756	0.0067	–0.0024	0.0018	0.0344	0.0194	–0.0756	0.0067	–0.0024	0.0018
0.500	19.89	0.98	0.0964	0.0414	–0.1712	0.0008	–0.0008	0.0004	0.0964	0.0414	–0.1712	0.0008	–0.0008	0.0004
0.498	24.90	0.97	0.1518	0.0774	–0.2585	–0.0014	–0.0003	–0.0003	0.1518	0.0774	–0.2585	–0.0014	–0.0003	–0.0003
0.498	29.87	0.97	0.1951	0.1180	–0.3408	0.0054	–0.0024	–0.0003	0.1951	0.1180	–0.3408	0.0054	–0.0024	–0.0003
0.498	0.05	4.26	–0.0132	–0.2565	0.0062	0.0019	–0.0003	0.0002	–0.0422	0.0234	0.0650	–0.0020	0.0005	0.0001
0.500	4.99	4.26	0.0309	–0.2526	–0.0312	0.0001	0.0002	0.0005	–0.0216	0.0213	0.0270	–0.0038	0.0010	0.0003
0.500	9.96	4.25	0.0850	–0.2441	–0.0838	–0.0017	0.0005	0.0002	0.0091	0.0239	–0.0257	–0.0056	0.0013	0.0000
0.502	14.89	4.26	0.1664	–0.2292	–0.1807	0.0087	–0.0029	0.0017	0.0680	0.0303	–0.1227	0.0048	–0.0021	0.0016

Table 6. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	19.85	4.27	0.2533	–0.1954	–0.2810	0.0027	–0.0010	0.0008	0.1318	0.0569	–0.2224	–0.0013	–0.0003	0.0006
0.498	24.77	4.26	0.3358	–0.1452	–0.3779	0.0007	–0.0006	0.0005	0.1927	0.0963	–0.3193	–0.0032	0.0001	0.0004
0.494	29.74	4.26	0.4069	–0.0880	–0.4717	0.0077	–0.0030	0.0010	0.2408	0.1439	–0.4122	0.0037	–0.0022	0.0010
0.697	0.08	0.98	–0.0860	0.0205	0.1210	–0.0038	0.0014	0.0010	–0.0860	0.0205	0.1210	–0.0038	0.0014	0.0010
0.700	0.15	1.99	–0.0736	–0.0252	0.1020	–0.0048	0.0019	0.0007	–0.0802	0.0217	0.1120	–0.0059	0.0021	0.0009
0.700	0.08	2.99	–0.0655	–0.0656	0.0887	–0.0039	0.0017	0.0006	–0.0725	0.0236	0.1034	–0.0051	0.0018	0.0006
0.700	0.09	4.27	–0.0489	–0.1177	0.0620	–0.0029	0.0014	0.0006	–0.0638	0.0243	0.0918	–0.0049	0.0017	0.0005
0.699	0.04	5.00	–0.0356	–0.1478	0.0410	–0.0022	0.0012	0.0005	–0.0548	0.0251	0.0796	–0.0047	0.0017	0.0004
0.700	14.91	0.97	0.0486	0.0228	–0.0915	0.0012	–0.0006	0.0007	0.0486	0.0228	–0.0915	0.0012	–0.0006	0.0007
0.699	14.87	2.00	0.0750	–0.0202	–0.1145	0.0018	–0.0007	0.0006	0.0565	0.0241	–0.1043	0.0007	–0.0004	0.0008
0.700	14.89	3.01	0.0955	–0.0566	–0.1312	0.0016	–0.0005	0.0006	0.0656	0.0284	–0.1163	0.0004	–0.0003	0.0006
0.699	14.90	4.25	0.1252	–0.1019	–0.1598	0.0022	–0.0008	0.0006	0.0748	0.0312	–0.1301	0.0002	–0.0004	0.0006
0.700	14.85	4.97	0.1449	–0.1275	–0.1803	0.0029	–0.0010	0.0008	0.0830	0.0328	–0.1422	0.0005	–0.0005	0.0006
0.700	0.12	0.98	–0.0859	0.0210	0.1201	–0.0057	0.0019	0.0008	–0.0859	0.0210	0.1201	–0.0057	0.0019	0.0008
0.701	5.11	0.98	–0.0483	0.0167	0.0679	–0.0044	0.0014	0.0006	–0.0483	0.0167	0.0679	–0.0044	0.0014	0.0006
0.700	10.01	0.98	–0.0158	0.0159	0.0150	–0.0034	0.0010	0.0003	–0.0158	0.0159	0.0150	–0.0034	0.0010	0.0003
0.695	14.90	0.96	0.0466	0.0235	–0.0903	–0.0002	–0.0003	0.0006	0.0466	0.0235	–0.0903	–0.0002	–0.0003	0.0006
0.697	19.80	0.96	0.0999	0.0435	–0.1746	0.0011	–0.0007	0.0006	0.0999	0.0435	–0.1746	0.0011	–0.0007	0.0006
0.701	0.06	4.25	–0.0432	–0.1181	0.0551	–0.0044	0.0018	0.0002	–0.0578	0.0227	0.0846	–0.0064	0.0022	0.0002
0.700	4.99	4.24	0.0045	–0.1183	0.0039	–0.0024	0.0010	0.0002	–0.0221	0.0207	0.0334	–0.0044	0.0014	0.0001
0.701	9.99	4.24	0.0359	–0.1154	–0.0378	–0.0024	0.0008	0.0001	–0.0026	0.0206	–0.0083	–0.0043	0.0011	0.0001
0.698	14.85	4.26	0.1239	–0.1031	–0.1582	0.0011	–0.0004	0.0005	0.0733	0.0307	–0.1283	–0.0009	–0.0001	0.0004
0.699	19.74	4.25	0.1901	–0.0731	–0.2461	0.0030	–0.0011	0.0010	0.1286	0.0551	–0.2165	0.0010	–0.0007	0.0009

Table 7. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 20°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.8766	0.8677	8.13	0.79	−0.0154	0.0022	−0.0043	0.0002	0.0000	0.0000
3.00	0.8885	0.8801	7.86	0.47	−0.0292	0.0040	−0.0085	0.0002	0.0000	0.0000
4.00	0.8964	0.8847	9.24	0.79	−0.0432	0.0070	−0.0140	0.0006	−0.0001	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.02	1.00	−0.0770	0.0267	0.1101	−0.0073	0.0019	−0.0005	−0.0770	0.0267	0.1101	−0.0073	0.0019	−0.0005
0.301	0.00	1.99	−0.0185	−0.1912	0.0090	−0.0055	0.0032	0.0006	−0.0529	0.0495	0.0771	−0.0088	0.0035	0.0008
0.301	0.02	2.99	0.0113	−0.4002	−0.0605	−0.0030	0.0027	0.0016	−0.0522	0.0578	0.0727	−0.0068	0.0029	0.0012
0.301	−0.07	4.25	0.0673	−0.6746	−0.1725	0.0018	0.0017	0.0023	−0.0562	0.0624	0.0727	−0.0146	0.0037	0.0015
0.300	15.00	1.00	0.0328	0.0226	−0.0642	0.0056	−0.0017	0.0005	0.0328	0.0226	−0.0642	0.0056	−0.0017	0.0005
0.300	14.97	2.01	0.1191	−0.1812	−0.1450	−0.0005	0.0020	0.0025	0.0215	0.0475	−0.0753	−0.0039	0.0023	0.0027
0.300	14.98	3.00	0.2229	−0.3719	−0.2359	0.0004	0.0019	0.0026	0.0410	0.0600	−0.1008	−0.0034	0.0021	0.0023
0.300	14.91	4.27	0.3744	−0.6165	−0.3735	0.0053	0.0010	0.0033	0.0614	0.0701	−0.1256	−0.0117	0.0030	0.0026
0.299	24.98	0.99	0.1316	0.0716	−0.2331	−0.0027	0.0010	0.0003	0.1316	0.0716	−0.2331	−0.0027	0.0010	0.0003
0.300	24.92	2.01	0.2915	−0.0898	−0.3620	0.0054	0.0004	0.0001	0.1555	0.1193	−0.2921	0.0020	0.0007	0.0003
0.300	24.92	3.00	0.4358	−0.2557	−0.4647	0.0080	0.0000	0.0005	0.1819	0.1385	−0.3295	0.0041	0.0002	0.0002
0.300	24.84	4.25	0.6311	−0.4664	−0.6081	0.0121	−0.0010	0.0016	0.2061	0.1540	−0.3615	−0.0044	0.0011	0.0009
0.300	44.99	0.98	0.2553	0.2685	−0.5247	−0.0004	0.0002	0.0031	0.2553	0.2685	−0.5247	−0.0004	0.0002	0.0031
0.299	44.99	2.01	0.4977	0.1442	−0.6689	−0.0031	0.0006	0.0028	0.2925	0.2972	−0.5973	−0.0130	0.0035	0.0024
0.299	45.00	3.00	0.6920	0.0338	−0.7768	−0.0023	0.0000	0.0033	0.3096	0.3155	−0.6360	−0.0140	0.0035	0.0025
0.298	44.99	4.25	0.9392	−0.1092	−0.9107	−0.0072	0.0011	0.0042	0.3268	0.3330	−0.6722	−0.0214	0.0054	0.0017
0.299	59.99	0.97	0.2007	0.3962	−0.6186	0.0043	−0.0005	0.0051	0.2007	0.3962	−0.6186	0.0043	−0.0005	0.0051
0.298	59.99	2.00	0.4735	0.3276	−0.7502	0.0009	0.0002	0.0045	0.2345	0.4227	−0.6783	−0.0091	0.0031	0.0041
0.299	59.99	3.00	0.6922	0.2728	−0.8575	0.0022	−0.0007	0.0038	0.2510	0.4456	−0.7171	−0.0094	0.0028	0.0030
0.299	59.98	4.25	0.9653	0.2039	−0.9926	0.0006	−0.0007	0.0036	0.2644	0.4708	−0.7558	−0.0134	0.0036	0.0011
0.301	0.01	1.00	−0.0707	0.0175	0.1034	−0.0022	0.0004	−0.0005	−0.0707	0.0175	0.1034	−0.0022	0.0004	−0.0005
0.301	5.03	1.00	−0.0307	0.0171	0.0482	−0.0027	0.0006	−0.0010	−0.0307	0.0171	0.0482	−0.0027	0.0006	−0.0010
0.301	10.02	1.00	0.0009	0.0195	−0.0027	−0.0019	0.0005	−0.0007	0.0009	0.0195	−0.0027	−0.0019	0.0005	−0.0007
0.300	15.02	1.00	0.0321	0.0241	−0.0644	0.0057	−0.0017	0.0008	0.0321	0.0241	−0.0644	0.0057	−0.0017	0.0008
0.299	19.95	1.00	0.0748	0.0384	−0.1457	0.0031	−0.0010	0.0017	0.0748	0.0384	−0.1457	0.0031	−0.0010	0.0017
0.299	24.92	0.99	0.1281	0.0702	−0.2291	−0.0017	0.0008	0.0006	0.1281	0.0702	−0.2291	−0.0017	0.0008	0.0006
0.300	29.94	0.99	0.1729	0.1076	−0.3144	0.0040	−0.0011	0.0001	0.1729	0.1076	−0.3144	0.0040	−0.0011	0.0001
0.299	32.37	0.99	0.1934	0.1303	−0.3559	−0.0019	0.0003	−0.0007	0.1934	0.1303	−0.3559	−0.0019	0.0003	−0.0007
0.300	35.49	0.99	0.2192	0.1532	−0.3993	0.0087	−0.0024	0.0030	0.2192	0.1532	−0.3993	0.0087	−0.0024	0.0030
0.300	37.99	0.99	0.2299	0.1828	−0.4325	0.0092	−0.0031	0.0025	0.2299	0.1828	−0.4325	0.0092	−0.0031	0.0025
0.299	39.97	0.98	0.2375	0.2059	−0.4588	0.0060	−0.0019	0.0022	0.2375	0.2059	−0.4588	0.0060	−0.0019	0.0022
0.300	42.02	0.98	0.2497	0.2341	−0.4939	0.0122	−0.0036	0.0032	0.2497	0.2341	−0.4939	0.0122	−0.0036	0.0032
0.300	44.99	0.98	0.2526	0.2655	−0.5225	0.0049	−0.0014	0.0024	0.2526	0.2655	−0.5225	0.0049	−0.0014	0.0024
0.299	50.00	0.98	0.2531	0.3221	−0.5784	−0.0015	0.0006	0.0017	0.2531	0.3221	−0.5784	−0.0015	0.0006	0.0017

Table 7. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	54.99	0.98	0.2291	0.3610	–0.5980	0.0051	–0.0009	0.0045	0.2291	0.3610	–0.5980	0.0051	–0.0009	0.0045
0.300	60.01	0.97	0.1978	0.3937	–0.6142	0.0071	–0.0013	0.0045	0.1978	0.3937	–0.6142	0.0071	–0.0013	0.0045
0.300	65.01	0.97	0.1778	0.4545	–0.6816	0.0120	–0.0030	0.0049	0.1778	0.4545	–0.6816	0.0120	–0.0030	0.0049
0.299	68.48	0.97	0.1588	0.4970	–0.7287	0.0181	–0.0049	0.0062	0.1588	0.4970	–0.7287	0.0181	–0.0049	0.0062
0.300	–0.02	4.26	0.0638	–0.6567	–0.1685	0.0070	0.0013	0.0031	–0.0619	0.0884	0.0796	–0.0098	0.0034	0.0024
0.301	4.95	4.25	0.1577	–0.6389	–0.2202	0.0049	0.0019	0.0030	–0.0297	0.0848	0.0249	–0.0114	0.0039	0.0022
0.301	9.95	4.25	0.2490	–0.6190	–0.2774	0.0034	0.0024	0.0028	–0.0004	0.0843	–0.0326	–0.0130	0.0045	0.0021
0.299	14.95	4.24	0.3465	–0.5963	–0.3500	0.0168	–0.0017	0.0040	0.0341	0.0887	–0.1033	0.0005	0.0004	0.0033
0.299	19.90	4.25	0.4710	–0.5506	–0.4606	0.0055	0.0017	0.0039	0.0978	0.1098	–0.2117	–0.0112	0.0039	0.0032
0.297	24.89	4.25	0.5861	–0.4883	–0.5575	0.0003	0.0036	0.0038	0.1516	0.1448	–0.3055	–0.0167	0.0057	0.0030
0.300	29.85	4.23	0.6759	–0.3906	–0.6514	0.0031	0.0024	0.0033	0.2021	0.1863	–0.4071	–0.0127	0.0044	0.0026
0.299	31.76	4.26	0.7264	–0.3648	–0.6990	0.0014	0.0028	0.0030	0.2255	0.2046	–0.4501	–0.0154	0.0050	0.0023
0.299	34.99	4.25	0.8020	–0.3441	–0.7472	0.0059	–0.0021	0.0044	0.2763	0.1970	–0.5089	–0.0082	0.0021	0.0020
0.298	37.95	4.26	0.8520	–0.2761	–0.8077	0.0123	–0.0049	0.0048	0.2966	0.2395	–0.5682	–0.0018	–0.0006	0.0024
0.300	39.98	4.25	0.8739	–0.2236	–0.8388	0.0039	–0.0025	0.0039	0.3075	0.2661	–0.6023	–0.0101	0.0017	0.0015
0.299	41.96	4.25	0.9001	–0.1797	–0.8688	0.0005	–0.0014	0.0037	0.3146	0.2922	–0.6313	–0.0135	0.0028	0.0012
0.300	44.94	4.25	0.9256	–0.1123	–0.8997	–0.0037	0.0001	0.0040	0.3188	0.3267	–0.6631	–0.0177	0.0043	0.0017
0.298	49.97	4.25	0.9593	–0.0090	–0.9398	–0.0055	0.0016	0.0050	0.3104	0.3786	–0.7010	–0.0196	0.0058	0.0025
0.302	54.99	4.26	0.9561	0.1025	–0.9619	–0.0043	0.0011	0.0044	0.2905	0.4247	–0.7283	–0.0181	0.0052	0.0020
0.298	59.98	4.25	0.9686	0.1947	–0.9876	0.0021	–0.0010	0.0041	0.2612	0.4639	–0.7486	–0.0120	0.0033	0.0017
0.299	64.98	4.25	0.9394	0.2790	–0.9830	0.0239	–0.0094	0.0013	0.2137	0.4849	–0.7447	0.0098	–0.0052	–0.0011
0.299	68.12	4.25	0.9191	0.3318	–0.9825	0.0121	–0.0048	0.0034	0.1827	0.4978	–0.7440	–0.0020	–0.0006	0.0010
0.503	0.07	0.99	–0.0787	0.0229	0.1105	–0.0074	0.0023	0.0003	–0.0787	0.0229	0.1105	–0.0074	0.0023	0.0003
0.502	0.02	2.00	–0.0496	–0.0631	0.0636	–0.0058	0.0021	0.0002	–0.0621	0.0239	0.0882	–0.0070	0.0022	0.0003
0.502	0.01	3.00	–0.0243	–0.1386	0.0228	–0.0032	0.0014	0.0003	–0.0473	0.0277	0.0712	–0.0046	0.0015	0.0002
0.502	–0.03	4.26	–0.0060	–0.2346	–0.0174	–0.0012	0.0010	0.0007	–0.0508	0.0315	0.0712	–0.0072	0.0017	0.0004
0.501	–0.02	5.00	0.0084	–0.2926	–0.0481	–0.0022	0.0013	0.0010	–0.0508	0.0330	0.0664	–0.0157	0.0027	0.0006
0.501	14.99	0.99	0.0386	0.0216	–0.0789	0.0064	–0.0024	0.0014	0.0386	0.0216	–0.0789	0.0064	–0.0024	0.0014
0.501	14.96	1.99	0.0899	–0.0540	–0.1301	0.0073	–0.0024	0.0015	0.0554	0.0269	–0.1054	0.0061	–0.0024	0.0016
0.501	14.93	3.00	0.1347	–0.1210	–0.1727	0.0097	–0.0031	0.0017	0.0696	0.0339	–0.1242	0.0083	–0.0030	0.0016
0.501	14.88	4.26	0.1936	–0.2081	–0.2298	0.0109	–0.0033	0.0020	0.0817	0.0381	–0.1411	0.0049	–0.0026	0.0017
0.501	14.88	5.00	0.2348	–0.2568	–0.2734	0.0124	–0.0037	0.0024	0.0937	0.0431	–0.1588	–0.0010	–0.0023	0.0021
0.499	24.87	0.97	0.1542	0.0789	–0.2604	–0.0016	–0.0001	–0.0006	0.1542	0.0789	–0.2604	–0.0016	–0.0001	–0.0006
0.499	24.84	2.00	0.2273	0.0150	–0.3229	–0.0010	–0.0001	–0.0003	0.1788	0.0899	–0.2979	–0.0023	0.0000	–0.0002
0.499	24.80	2.99	0.2842	–0.0434	–0.3677	0.0004	–0.0003	0.0001	0.1931	0.0987	–0.3190	–0.0010	–0.0003	0.0000
0.499	24.76	4.25	0.3604	–0.1167	–0.4294	0.0020	–0.0008	0.0006	0.2070	0.1078	–0.3403	–0.0039	–0.0001	0.0003
0.499	24.73	5.00	0.4091	–0.1570	–0.4738	0.0037	–0.0013	0.0013	0.2175	0.1160	–0.3585	–0.0099	0.0001	0.0010
0.502	0.04	0.99	–0.0763	0.0199	0.1088	–0.0048	0.0016	0.0003	–0.0763	0.0199	0.1088	–0.0048	0.0016	0.0003
0.501	5.03	0.99	–0.0375	0.0174	0.0544	–0.0045	0.0014	–0.0001	–0.0375	0.0174	0.0544	–0.0045	0.0014	–0.0001
0.501	10.02	0.99	–0.0043	0.0182	0.0007	–0.0030	0.0007	–0.0003	–0.0043	0.0182	0.0007	–0.0030	0.0007	–0.0003
0.500	14.94	0.99	0.0376	0.0218	–0.0784	0.0068	–0.0024	0.0016	0.0376	0.0218	–0.0784	0.0068	–0.0024	0.0016
0.499	19.90	0.98	0.0985	0.0438	–0.1731	0.0009	–0.0007	0.0001	0.0985	0.0438	–0.1731	0.0009	–0.0007	0.0001
0.498	24.88	0.98	0.1540	0.0797	–0.2607	–0.0020	–0.0001	–0.0006	0.1540	0.0797	–0.2607	–0.0020	–0.0001	–0.0006
0.501	29.82	0.97	0.1972	0.1209	–0.3431	0.0073	–0.0029	–0.0003	0.1972	0.1209	–0.3431	0.0073	–0.0029	–0.0003
0.502	0.02	4.26	–0.0084	–0.2282	–0.0147	–0.0039	0.0022	0.0010	–0.0533	0.0374	0.0737	–0.0099	0.0030	0.0008

Table 7. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.498	5.01	4.25	0.0413	−0.2290	−0.0598	−0.0049	0.0024	0.0010	−0.0275	0.0351	0.0297	−0.0108	0.0031	0.0008
0.499	9.95	4.25	0.0970	−0.2193	−0.1159	−0.0042	0.0020	0.0006	0.0061	0.0370	−0.0268	−0.0101	0.0028	0.0003
0.498	14.91	4.25	0.1796	−0.2048	−0.2169	0.0060	−0.0012	0.0024	0.0665	0.0436	−0.1274	0.0000	−0.0004	0.0022
0.499	19.83	4.25	0.2600	−0.1685	−0.3123	0.0006	0.0003	0.0016	0.1267	0.0680	−0.2233	−0.0053	0.0010	0.0013
0.498	24.76	4.23	0.3412	−0.1164	−0.4112	−0.0011	0.0006	0.0012	0.1884	0.1075	−0.3225	−0.0069	0.0013	0.0010
0.500	29.72	4.25	0.4099	−0.0550	−0.5043	−0.0017	0.0013	0.0013	0.2383	0.1547	−0.4154	−0.0077	0.0020	0.0010
0.699	0.11	0.98	−0.0863	0.0207	0.1214	−0.0044	0.0016	0.0010	−0.0863	0.0207	0.1214	−0.0044	0.0016	0.0010
0.698	0.04	2.00	−0.0682	−0.0235	0.0921	−0.0045	0.0017	0.0008	−0.0746	0.0217	0.1049	−0.0051	0.0018	0.0008
0.700	0.12	3.01	−0.0539	−0.0628	0.0689	−0.0040	0.0017	0.0007	−0.0659	0.0229	0.0939	−0.0047	0.0017	0.0007
0.698	−0.03	4.27	−0.0362	−0.1124	0.0392	−0.0032	0.0014	0.0006	−0.0594	0.0252	0.0850	−0.0063	0.0018	0.0005
0.700	−0.01	5.01	−0.0219	−0.1409	0.0160	−0.0020	0.0010	0.0007	−0.0523	0.0262	0.0748	−0.0089	0.0017	0.0005
0.699	14.94	0.98	0.0484	0.0226	−0.0917	0.0003	−0.0004	0.0006	0.0484	0.0226	−0.0917	0.0003	−0.0004	0.0006
0.698	14.90	2.00	0.0800	−0.0157	−0.1253	0.0008	−0.0005	0.0005	0.0622	0.0261	−0.1125	0.0002	−0.0004	0.0006
0.699	14.73	3.01	0.1024	−0.0512	−0.1472	0.0012	−0.0006	0.0007	0.0690	0.0290	−0.1221	0.0005	−0.0005	0.0007
0.698	14.88	4.25	0.1384	−0.0933	−0.1854	0.0017	−0.0008	0.0006	0.0808	0.0332	−0.1398	−0.0013	−0.0004	0.0005
0.700	0.11	0.99	−0.0850	0.0209	0.1183	−0.0065	0.0021	0.0009	−0.0850	0.0209	0.1183	−0.0065	0.0021	0.0009
0.700	5.06	0.99	−0.0480	0.0168	0.0672	−0.0055	0.0017	0.0005	−0.0480	0.0168	0.0672	−0.0055	0.0017	0.0005
0.698	10.04	0.99	−0.0144	0.0160	0.0129	−0.0041	0.0011	0.0003	−0.0144	0.0160	0.0129	−0.0041	0.0011	0.0003
0.699	14.94	0.98	0.0483	0.0228	−0.0921	−0.0002	−0.0003	0.0006	0.0483	0.0228	−0.0921	−0.0002	−0.0003	0.0006
0.696	19.84	0.97	0.1020	0.0434	−0.1772	0.0006	−0.0006	0.0006	0.1020	0.0434	−0.1772	0.0006	−0.0006	0.0006
0.701	0.07	4.27	−0.0343	−0.1122	0.0374	−0.0040	0.0016	0.0005	−0.0576	0.0243	0.0829	−0.0071	0.0020	0.0004
0.701	5.04	4.24	0.0076	−0.1105	−0.0089	−0.0023	0.0010	0.0006	−0.0270	0.0223	0.0360	−0.0053	0.0014	0.0004
0.700	9.98	4.27	0.0428	−0.1087	−0.0553	−0.0041	0.0012	0.0002	−0.0038	0.0224	−0.0096	−0.0073	0.0017	0.0001
0.700	14.84	4.27	0.1339	−0.0937	−0.1795	−0.0001	−0.0002	0.0007	0.0765	0.0327	−0.1339	−0.0032	0.0002	0.0006
0.695	19.79	4.24	0.2009	−0.0644	−0.2695	0.0014	−0.0006	0.0014	0.1324	0.0574	−0.2237	−0.0017	−0.0003	0.0012

Table 8. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.6885	0.6820	7.85	0.17	−0.0122	0.0017	−0.0047	0.0000	0.0002	0.0001
3.01	0.7643	0.7533	9.71	0.89	−0.0254	0.0043	−0.0103	0.0004	0.0001	0.0001
4.02	0.8065	0.7897	11.69	0.99	−0.0390	0.0081	−0.0168	0.0007	0.0000	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.03	1.00	−0.0731	0.0229	0.1071	−0.0049	0.0012	−0.0003	−0.0731	0.0229	0.1071	−0.0049	0.0012	−0.0003
0.300	−0.01	2.01	0.0133	−0.1934	−0.0384	0.0000	0.0010	0.0010	−0.0133	0.0000	0.0361	−0.0006	−0.0014	−0.0001
0.300	−0.01	2.99	0.0434	−0.3868	−0.1215	0.0024	0.0005	0.0024	−0.0246	0.0116	0.0404	−0.0037	−0.0007	0.0006
0.301	−0.07	4.26	0.1301	−0.6492	−0.2671	0.0107	−0.0017	0.0028	−0.0105	0.0181	0.0224	−0.0010	−0.0013	0.0003
0.300	15.02	0.99	0.0345	0.0234	−0.0650	0.0066	−0.0020	0.0010	0.0345	0.0234	−0.0650	0.0066	−0.0020	0.0010
0.300	15.00	2.02	0.1515	−0.1685	−0.1942	0.0162	−0.0039	0.0027	0.0749	0.0129	−0.1190	0.0156	−0.0063	0.0017
0.300	14.95	3.01	0.2780	−0.3420	−0.3248	0.0190	−0.0044	0.0030	0.1073	0.0296	−0.1609	0.0128	−0.0057	0.0012
0.299	14.90	4.27	0.4384	−0.5742	−0.4822	0.0284	−0.0071	0.0041	0.1264	0.0415	−0.1889	0.0166	−0.0067	0.0016
0.299	24.96	0.99	0.1280	0.0712	−0.2280	−0.0016	0.0008	0.0010	0.1280	0.0712	−0.2280	−0.0016	0.0008	0.0010
0.299	24.92	2.02	0.3200	−0.0921	−0.4053	0.0013	0.0007	0.0006	0.2116	0.0758	−0.3290	0.0007	−0.0017	−0.0004
0.301	24.91	3.00	0.4746	−0.2348	−0.5378	0.0051	−0.0001	0.0012	0.2453	0.0974	−0.3762	−0.0010	−0.0012	−0.0005
0.302	24.83	4.27	0.6755	−0.4347	−0.6969	0.0110	−0.0015	0.0025	0.2685	0.1093	−0.4083	−0.0007	−0.0011	0.0001
0.300	0.04	1.00	−0.0737	0.0189	0.1073	−0.0019	0.0004	0.0000	−0.0737	0.0189	0.1073	−0.0019	0.0004	0.0000
0.301	5.01	1.00	−0.0342	0.0171	0.0525	−0.0038	0.0010	−0.0005	−0.0342	0.0171	0.0525	−0.0038	0.0010	−0.0005
0.300	10.03	1.00	−0.0040	0.0191	0.0024	−0.0037	0.0010	−0.0002	−0.0040	0.0191	0.0024	−0.0037	0.0010	−0.0002
0.300	14.98	1.00	0.0305	0.0244	−0.0618	0.0068	−0.0021	0.0013	0.0305	0.0244	−0.0618	0.0068	−0.0021	0.0013
0.299	20.00	0.99	0.0728	0.0396	−0.1432	0.0027	−0.0007	0.0021	0.0728	0.0396	−0.1432	0.0027	−0.0007	0.0021
0.300	24.98	0.99	0.1272	0.0712	−0.2286	−0.0014	0.0008	0.0010	0.1272	0.0712	−0.2286	−0.0014	0.0008	0.0010
0.298	29.94	0.99	0.1706	0.1090	−0.3134	0.0012	−0.0004	0.0003	0.1706	0.1090	−0.3134	0.0012	−0.0004	0.0003
0.298	32.51	0.99	0.1925	0.1325	−0.3558	−0.0008	0.0000	−0.0002	0.1925	0.1325	−0.3558	−0.0008	0.0000	−0.0002
0.299	−0.04	4.23	0.1568	−0.6546	−0.3004	0.0137	−0.0021	0.0014	0.0165	0.0121	−0.0113	0.0020	−0.0017	−0.0010
0.300	4.90	4.25	0.2549	−0.6338	−0.3568	0.0140	−0.0020	0.0013	0.0577	0.0171	−0.0681	0.0023	−0.0017	−0.0011
0.300	9.94	4.24	0.3475	−0.6004	−0.4154	0.0109	−0.0011	0.0010	0.0937	0.0314	−0.1264	−0.0008	−0.0008	−0.0014
0.299	14.88	4.25	0.4532	−0.5709	−0.5011	0.0270	−0.0060	0.0030	0.1433	0.0417	−0.2096	0.0152	−0.0057	0.0006
0.298	19.87	4.26	0.5815	−0.5165	−0.6168	0.0153	−0.0024	0.0026	0.2145	0.0745	−0.3214	0.0033	−0.0020	0.0002
0.298	24.85	4.26	0.6875	−0.4375	−0.7101	0.0108	−0.0009	0.0024	0.2710	0.1190	−0.4149	−0.0012	−0.0005	−0.0002
0.301	29.83	4.27	0.7717	−0.3374	−0.8003	0.0132	−0.0017	0.0024	0.3169	0.1712	−0.5105	0.0015	−0.0014	0.0000
0.299	31.50	4.26	0.8057	−0.3078	−0.8354	0.0121	−0.0015	0.0020	0.3327	0.1913	−0.5434	0.0003	−0.0010	−0.0005
0.500	0.09	0.99	−0.0830	0.0206	0.1181	−0.0013	0.0004	0.0014	−0.0830	0.0206	0.1181	−0.0013	0.0004	0.0014
0.500	0.04	2.00	−0.0447	−0.0440	0.0544	−0.0027	0.0020	0.0015	−0.0543	0.0252	0.0810	−0.0029	0.0011	0.0011
0.499	0.02	3.01	−0.0143	−0.1157	0.0026	0.0007	0.0010	0.0017	−0.0393	0.0301	0.0618	−0.0016	0.0007	0.0011
0.499	−0.04	4.25	−0.0012	−0.2079	−0.0352	−0.0001	0.0015	0.0025	−0.0521	0.0333	0.0695	−0.0043	0.0017	0.0017
0.499	0.01	5.01	0.0249	−0.2648	−0.0782	0.0011	0.0012	0.0025	−0.0425	0.0359	0.0548	−0.0044	0.0017	0.0016
0.501	14.98	0.98	0.0297	0.0204	−0.0665	0.0071	−0.0023	0.0027	0.0297	0.0204	−0.0665	0.0071	−0.0023	0.0027

Table 8. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	14.91	2.00	0.0911	−0.0347	−0.1396	0.0096	−0.0023	0.0025	0.0642	0.0294	−0.1131	0.0094	−0.0031	0.0022
0.500	14.88	3.02	0.1435	−0.0960	−0.1973	0.0122	−0.0029	0.0028	0.0818	0.0386	−0.1379	0.0100	−0.0033	0.0021
0.500	14.87	4.28	0.2077	−0.1772	−0.2635	0.0115	−0.0025	0.0030	0.0953	0.0448	−0.1577	0.0073	−0.0024	0.0021
0.500	14.84	4.99	0.2464	−0.2226	−0.3059	0.0120	−0.0025	0.0033	0.1059	0.0481	−0.1743	0.0066	−0.0021	0.0023
0.499	24.86	0.97	0.1453	0.0765	−0.2475	−0.0054	0.0017	0.0006	0.1453	0.0765	−0.2475	−0.0054	0.0017	0.0006
0.500	24.79	2.00	0.2255	0.0265	−0.3302	−0.0033	0.0016	0.0007	0.1878	0.0853	−0.3035	−0.0035	0.0007	0.0003
0.500	24.78	3.00	0.2895	−0.0235	−0.3908	−0.0016	0.0011	0.0010	0.2067	0.0971	−0.3322	−0.0038	0.0007	0.0003
0.499	24.68	4.24	0.3655	−0.0924	−0.4564	−0.0019	0.0013	0.0015	0.2191	0.1046	−0.3523	−0.0061	0.0014	0.0006
0.500	24.67	5.00	0.4170	−0.1309	−0.5051	−0.0011	0.0010	0.0019	0.2317	0.1127	−0.3730	−0.0065	0.0016	0.0009
0.501	0.06	0.99	−0.0838	0.0213	0.1185	−0.0027	0.0008	0.0015	−0.0838	0.0213	0.1185	−0.0027	0.0008	0.0015
0.500	5.05	0.99	−0.0448	0.0175	0.0641	−0.0036	0.0010	0.0010	−0.0448	0.0175	0.0641	−0.0036	0.0010	0.0010
0.500	10.01	0.99	−0.0115	0.0178	0.0103	−0.0030	0.0009	0.0009	−0.0115	0.0178	0.0103	−0.0030	0.0009	0.0009
0.498	15.01	0.98	0.0277	0.0204	−0.0654	0.0048	−0.0016	0.0027	0.0277	0.0204	−0.0654	0.0048	−0.0016	0.0027
0.500	19.91	0.98	0.0899	0.0418	−0.1611	−0.0016	0.0005	0.0014	0.0899	0.0418	−0.1611	−0.0016	0.0005	0.0014
0.499	24.85	0.97	0.1446	0.0763	−0.2476	−0.0060	0.0017	0.0004	0.1446	0.0763	−0.2476	−0.0060	0.0017	0.0004
0.498	29.83	0.96	0.1900	0.1173	−0.3327	0.0003	−0.0002	0.0002	0.1900	0.1173	−0.3327	0.0003	−0.0002	0.0002
0.500	0.00	4.24	0.0131	−0.2206	−0.0501	0.0035	−0.0005	0.0016	−0.0377	0.0190	0.0539	−0.0007	−0.0003	0.0007
0.502	4.94	4.25	0.0730	−0.2152	−0.1053	0.0029	−0.0003	0.0012	0.0023	0.0179	−0.0019	−0.0013	−0.0002	0.0003
0.502	10.02	4.24	0.1285	−0.2026	−0.1623	0.0012	0.0002	0.0007	0.0374	0.0233	−0.0589	−0.0030	0.0003	−0.0002
0.499	14.83	4.26	0.2094	−0.1884	−0.2623	0.0109	−0.0028	0.0030	0.0978	0.0325	−0.1572	0.0066	−0.0027	0.0021
0.502	19.79	4.25	0.2886	−0.1485	−0.3587	0.0025	−0.0003	0.0017	0.1601	0.0592	−0.2550	−0.0017	−0.0002	0.0009
0.499	24.72	4.26	0.3674	−0.0971	−0.4564	−0.0013	0.0008	0.0017	0.2195	0.1015	−0.3513	−0.0055	0.0010	0.0007
0.500	29.71	4.25	0.4321	−0.0348	−0.5482	0.0035	−0.0007	0.0014	0.2687	0.1488	−0.4439	−0.0008	−0.0005	0.0005

Table 9. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 10°;\ \delta_{C,F} = 10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.8882	0.8875	−1.73	−1.41	−0.0158	−0.0005	0.0013	−0.0004	0.0002	0.0000
3.00	0.9253	0.9251	−1.01	−0.34	−0.0309	−0.0005	0.0019	−0.0002	0.0002	−0.0001
4.23	0.9185	0.9181	−1.77	0.04	−0.0488	−0.0015	0.0049	0.0000	0.0001	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	0.01	1.00	−0.0778	0.0165	0.1133	−0.0020	0.0005	0.0000	−0.0778	0.0165	0.1133	−0.0020	0.0005	0.0000
0.300	0.03	2.00	−0.0790	−0.2359	0.1277	−0.0036	0.0017	−0.0003	−0.0716	0.0156	0.1077	0.0026	−0.0017	0.0004
0.300	0.03	3.00	−0.0792	−0.4692	0.1388	0.0001	0.0009	−0.0005	−0.0707	0.0212	0.1080	0.0030	−0.0017	0.0003
0.300	0.07	4.24	−0.1015	−0.7550	0.1958	0.0055	−0.0004	−0.0010	−0.0783	0.0222	0.1169	0.0050	−0.0022	0.0006
0.300	15.01	1.00	0.0285	0.0160	−0.0551	0.0059	−0.0017	0.0011	0.0285	0.0160	−0.0551	0.0059	−0.0017	0.0011
0.299	15.01	2.00	0.0894	−0.2290	−0.0357	0.0044	−0.0003	0.0008	0.0315	0.0166	−0.0557	0.0106	−0.0037	0.0015
0.299	15.00	2.99	0.1498	−0.4551	−0.0245	0.0043	−0.0002	−0.0002	0.0307	0.0228	−0.0552	0.0073	−0.0029	0.0006
0.300	15.05	4.25	0.2074	−0.7330	0.0251	0.0061	−0.0005	−0.0010	0.0288	0.0250	−0.0542	0.0055	−0.0023	0.0008
0.298	24.99	0.99	0.1240	0.0614	−0.2192	0.0000	0.0003	0.0012	0.1240	0.0614	−0.2192	0.0000	0.0003	0.0012
0.299	24.99	2.00	0.2125	−0.1781	−0.1848	0.0008	0.0009	0.0017	0.1124	0.0549	−0.2049	0.0070	−0.0025	0.0024
0.299	24.99	3.00	0.3076	−0.3928	−0.1701	0.0012	0.0010	0.0014	0.1065	0.0596	−0.2012	0.0041	−0.0017	0.0022
0.300	25.00	4.25	0.4109	−0.6569	−0.1194	0.0050	0.0000	0.0006	0.1032	0.0601	−0.1987	0.0044	−0.0017	0.0023
0.299	5.04	1.00	−0.0320	0.0117	0.0519	−0.0009	0.0003	−0.0003	−0.0320	0.0117	0.0519	−0.0009	0.0003	−0.0003
0.299	10.03	1.00	−0.0044	0.0128	0.0043	−0.0006	0.0002	0.0002	−0.0044	0.0128	0.0043	−0.0006	0.0002	0.0002
0.302	15.01	1.00	0.0286	0.0170	−0.0564	0.0067	−0.0018	0.0014	0.0286	0.0170	−0.0564	0.0067	−0.0018	0.0014
0.300	19.96	1.00	0.0714	0.0308	−0.1378	0.0058	−0.0017	0.0024	0.0714	0.0308	−0.1378	0.0058	−0.0017	0.0024
0.297	24.95	1.00	0.1224	0.0620	−0.2188	0.0008	0.0001	0.0014	0.1224	0.0620	−0.2188	0.0008	0.0001	0.0014
0.298	29.96	0.99	0.1681	0.0986	−0.3030	0.0044	−0.0013	0.0009	0.1681	0.0986	−0.3030	0.0044	−0.0013	0.0009
0.302	32.60	0.99	0.1933	0.1242	−0.3502	0.0016	−0.0006	0.0002	0.1933	0.1242	−0.3502	0.0016	−0.0006	0.0002
0.302	0.03	1.00	−0.0733	0.0126	0.1070	0.0004	−0.0002	0.0002	−0.0733	0.0126	0.1070	0.0004	−0.0002	0.0002
0.299	0.09	4.26	−0.1072	−0.7551	0.2013	0.0001	0.0017	−0.0007	−0.0837	0.0344	0.1208	−0.0006	0.0000	0.0010
0.300	5.05	4.25	0.0051	−0.7490	0.1403	0.0010	0.0015	−0.0009	−0.0394	0.0312	0.0608	0.0005	−0.0003	0.0008
0.299	10.06	4.26	0.1040	−0.7431	0.0890	−0.0002	0.0018	−0.0009	−0.0089	0.0334	0.0091	−0.0007	0.0001	0.0008
0.299	15.03	4.27	0.2029	−0.7312	0.0284	0.0046	0.0004	−0.0006	0.0218	0.0385	−0.0523	0.0040	−0.0012	0.0010
0.300	20.00	4.26	0.3157	−0.6922	−0.0618	0.0056	0.0000	0.0009	0.0718	0.0493	−0.1414	0.0050	−0.0017	0.0025
0.299	25.01	4.26	0.3956	−0.6570	−0.1057	−0.0016	0.0025	0.0015	0.0861	0.0642	−0.1857	−0.0022	0.0009	0.0031
0.298	29.93	4.25	0.4993	−0.6022	−0.1866	−0.0014	0.0024	0.0011	0.1270	0.0940	−0.2669	−0.0019	0.0006	0.0028
0.302	32.62	4.25	0.5497	−0.5436	−0.2396	−0.0059	0.0033	0.0007	0.1558	0.1161	−0.3176	−0.0064	0.0017	0.0024
0.500	0.12	0.99	−0.0875	0.0216	0.1221	−0.0050	0.0013	0.0010	−0.0875	0.0216	0.1221	−0.0050	0.0013	0.0010
0.500	0.10	2.03	−0.0892	−0.0693	0.1281	−0.0055	0.0018	0.0010	−0.0866	0.0240	0.1208	−0.0033	0.0006	0.0012
0.500	0.10	3.02	−0.0900	−0.1515	0.1332	−0.0046	0.0016	0.0008	−0.0871	0.0268	0.1219	−0.0036	0.0006	0.0010
0.501	0.13	4.26	−0.0989	−0.2496	0.1542	−0.0021	0.0010	0.0004	−0.0907	0.0305	0.1256	−0.0023	0.0003	0.0010
0.501	14.98	0.99	0.0246	0.0173	−0.0596	0.0052	−0.0018	0.0025	0.0246	0.0173	−0.0596	0.0052	−0.0018	0.0025
0.501	14.99	2.00	0.0417	−0.0737	−0.0470	0.0077	−0.0024	0.0027	0.0210	0.0142	−0.0542	0.0099	−0.0036	0.0030

Table 9. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	14.99	2.99	0.0618	–0.1525	–0.0415	0.0087	–0.0026	0.0024	0.0196	0.0171	–0.0524	0.0098	–0.0036	0.0026
0.501	15.05	4.26	0.0857	–0.2537	–0.0255	0.0098	–0.0028	0.0019	0.0215	0.0188	–0.0540	0.0095	–0.0034	0.0025
0.499	15.03	5.00	0.1042	–0.3129	–0.0174	0.0107	–0.0030	0.0015	0.0268	0.0220	–0.0565	0.0098	–0.0035	0.0024
0.500	24.89	0.97	0.1433	0.0728	–0.2427	–0.0043	0.0013	0.0005	0.1433	0.0728	–0.2427	–0.0043	0.0013	0.0005
0.499	24.87	2.01	0.1835	–0.0146	–0.2381	–0.0043	0.0015	0.0003	0.1474	0.0697	–0.2454	–0.0021	0.0003	0.0006
0.500	24.86	3.01	0.2177	–0.0903	–0.2338	–0.0039	0.0014	0.0004	0.1456	0.0728	–0.2451	–0.0029	0.0004	0.0007
0.501	24.85	4.25	0.2495	–0.1843	–0.2113	–0.0040	0.0015	0.0003	0.1397	0.0734	–0.2399	–0.0042	0.0009	0.0010
0.501	24.92	5.00	0.2668	–0.2425	–0.1923	–0.0035	0.0014	0.0003	0.1338	0.0722	–0.2312	–0.0044	0.0010	0.0011
0.501	0.05	0.99	–0.0860	0.0199	0.1218	–0.0030	0.0008	0.0010	–0.0860	0.0199	0.1218	–0.0030	0.0008	0.0010
0.499	5.05	0.99	–0.0471	0.0161	0.0679	–0.0036	0.0010	0.0006	–0.0471	0.0161	0.0679	–0.0036	0.0010	0.0006
0.500	10.02	0.99	–0.0131	0.0160	0.0139	–0.0026	0.0007	0.0007	–0.0131	0.0160	0.0139	–0.0026	0.0007	0.0007
0.498	14.99	0.99	0.0252	0.0186	–0.0598	0.0064	–0.0021	0.0025	0.0252	0.0186	–0.0598	0.0064	–0.0021	0.0025
0.501	19.97	0.98	0.0877	0.0396	–0.1561	–0.0018	0.0006	0.0011	0.0877	0.0396	–0.1561	–0.0018	0.0006	0.0011
0.498	24.86	0.97	0.1420	0.0731	–0.2417	–0.0059	0.0017	0.0003	0.1420	0.0731	–0.2417	–0.0059	0.0017	0.0003
0.498	29.81	0.97	0.1877	0.1137	–0.3252	0.0022	–0.0005	0.0001	0.1877	0.1137	–0.3252	0.0022	–0.0005	0.0001
0.501	0.08	4.25	–0.0850	–0.2534	0.1409	0.0001	0.0003	–0.0005	–0.0767	0.0259	0.1124	–0.0001	–0.0003	0.0001
0.499	5.04	4.24	–0.0212	–0.2582	0.0856	–0.0002	0.0003	–0.0006	–0.0372	0.0218	0.0571	–0.0004	–0.0003	0.0000
0.501	10.07	4.25	0.0355	–0.2554	0.0338	–0.0001	0.0003	–0.0005	–0.0049	0.0219	0.0053	–0.0003	–0.0003	0.0001
0.498	15.01	4.24	0.0878	–0.2528	–0.0274	0.0111	–0.0030	0.0017	0.0233	0.0215	–0.0560	0.0109	–0.0037	0.0023
0.501	19.96	4.24	0.1631	–0.2272	–0.1152	0.0021	–0.0002	0.0008	0.0759	0.0381	–0.1436	0.0019	–0.0008	0.0014
0.499	24.89	4.24	0.2430	–0.1869	–0.2033	–0.0003	0.0004	0.0006	0.1327	0.0717	–0.2319	–0.0005	–0.0002	0.0011
0.500	29.85	4.25	0.3158	–0.1354	–0.2941	0.0074	–0.0017	0.0006	0.1835	0.1129	–0.3227	0.0072	–0.0024	0.0012
0.699	0.13	0.98	–0.0930	0.0213	0.1319	–0.0021	0.0006	0.0020	–0.0930	0.0213	0.1319	–0.0021	0.0006	0.0020
0.701	0.19	2.00	–0.0946	–0.0227	0.1354	–0.0046	0.0017	0.0018	–0.0934	0.0232	0.1318	–0.0034	0.0011	0.0019
0.699	0.19	3.00	–0.0948	–0.0651	0.1373	–0.0045	0.0017	0.0017	–0.0935	0.0254	0.1316	–0.0039	0.0012	0.0018
0.701	0.15	4.25	–0.0957	–0.1167	0.1416	–0.0071	0.0028	0.0005	–0.0917	0.0257	0.1272	–0.0072	0.0024	0.0009
0.700	0.21	5.02	–0.1016	–0.1499	0.1532	–0.0066	0.0027	0.0003	–0.0960	0.0261	0.1331	–0.0071	0.0024	0.0008
0.699	14.96	0.97	0.0391	0.0206	–0.0768	–0.0001	0.0000	0.0017	0.0391	0.0206	–0.0768	–0.0001	0.0000	0.0017
0.699	14.96	2.02	0.0480	–0.0281	–0.0698	0.0009	–0.0003	0.0017	0.0371	0.0178	–0.0736	0.0021	–0.0009	0.0018
0.699	14.98	3.01	0.0571	–0.0685	–0.0661	0.0012	–0.0003	0.0017	0.0352	0.0196	–0.0718	0.0017	–0.0008	0.0017
0.699	14.97	4.24	0.0635	–0.1186	–0.0531	0.0010	–0.0002	0.0015	0.0308	0.0209	–0.0677	0.0009	–0.0005	0.0017
0.699	14.97	5.00	0.0668	–0.1513	–0.0422	0.0005	0.0000	0.0013	0.0275	0.0197	–0.0622	0.0000	–0.0002	0.0017
0.701	0.12	0.98	–0.0933	0.0217	0.1305	–0.0040	0.0011	0.0016	–0.0933	0.0217	0.1305	–0.0040	0.0011	0.0016
0.699	5.11	0.98	–0.0556	0.0163	0.0783	–0.0041	0.0011	0.0012	–0.0556	0.0163	0.0783	–0.0041	0.0011	0.0012
0.701	10.02	0.99	–0.0220	0.0148	0.0246	–0.0041	0.0011	0.0010	–0.0220	0.0148	0.0246	–0.0041	0.0011	0.0010
0.701	14.93	0.97	0.0371	0.0205	–0.0749	–0.0015	0.0003	0.0016	0.0371	0.0205	–0.0749	–0.0015	0.0003	0.0016
0.701	19.87	0.96	0.0910	0.0394	–0.1603	–0.0021	0.0006	0.0015	0.0910	0.0394	–0.1603	–0.0021	0.0006	0.0015
0.701	0.14	4.25	–0.0918	–0.1183	0.1384	–0.0031	0.0010	0.0004	–0.0877	0.0244	0.1239	–0.0032	0.0006	0.0008
0.701	5.09	4.24	–0.0415	–0.1229	0.0857	–0.0028	0.0008	0.0003	–0.0497	0.0190	0.0713	–0.0029	0.0005	0.0007
0.700	10.07	4.27	0.0014	–0.1251	0.0369	–0.0033	0.0010	0.0002	–0.0193	0.0175	0.0222	–0.0034	0.0007	0.0005
0.699	14.98	4.25	0.0619	–0.1194	–0.0511	0.0006	–0.0001	0.0015	0.0292	0.0204	–0.0657	0.0005	–0.0004	0.0017
0.700	19.87	4.26	0.1305	–0.0969	–0.1406	–0.0007	0.0003	0.0015	0.0859	0.0396	–0.1553	–0.0008	0.0001	0.0018

Table 10. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = 15°\right]$$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.98	0.9286	0.9259	−4.35	0.15	−0.0161	−0.0012	0.0026	0.0000	0.0000	−0.0001
3.03	0.9220	0.9186	−4.93	0.33	−0.0306	−0.0026	0.0055	0.0002	−0.0001	−0.0001
4.00	0.9119	0.9071	−5.87	0.55	−0.0438	−0.0045	0.0093	0.0004	−0.0001	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	44.98	0.98	0.2518	0.2597	−0.5125	0.0027	−0.0011	0.0024	0.2518	0.2597	−0.5125	0.0027	−0.0011	0.0024
0.299	44.99	1.97	0.4178	0.0649	−0.4775	−0.0033	0.0002	0.0010	0.2516	0.2585	−0.5183	−0.0040	0.0004	0.0021
0.300	44.99	2.99	0.5585	−0.1080	−0.4358	−0.0003	−0.0010	0.0005	0.2508	0.2578	−0.5217	−0.0030	−0.0001	0.0018
0.301	45.02	4.24	0.7149	−0.3288	−0.3525	0.0080	−0.0036	0.0002	0.2457	0.2504	−0.5136	0.0004	−0.0013	0.0019
0.299	60.02	0.97	0.1979	0.3878	−0.6056	0.0034	−0.0008	0.0038	0.1979	0.3878	−0.6056	0.0034	−0.0008	0.0038
0.299	60.03	1.97	0.4085	0.2359	−0.5576	−0.0010	0.0001	0.0024	0.1971	0.3803	−0.5985	−0.0017	0.0003	0.0034
0.301	59.99	3.00	0.5863	0.0989	−0.5052	0.0013	−0.0009	0.0013	0.1940	0.3728	−0.5912	−0.0014	0.0000	0.0026
0.301	59.99	4.25	0.8008	−0.0711	−0.4301	0.0069	−0.0026	0.0014	0.1978	0.3675	−0.5914	−0.0007	−0.0003	0.0030
0.301	35.24	0.99	0.2154	0.1463	−0.3878	0.0050	−0.0017	0.0017	0.2154	0.1463	−0.3878	0.0050	−0.0017	0.0017
0.301	38.01	0.98	0.2291	0.1790	−0.4267	0.0057	−0.0024	0.0015	0.2291	0.1790	−0.4267	0.0057	−0.0024	0.0015
0.301	40.03	0.98	0.2386	0.2034	−0.4551	0.0082	−0.0028	0.0018	0.2386	0.2034	−0.4551	0.0082	−0.0028	0.0018
0.301	42.02	0.98	0.2489	0.2294	−0.4856	0.0065	−0.0024	0.0017	0.2489	0.2294	−0.4856	0.0065	−0.0024	0.0017
0.300	45.01	0.98	0.2514	0.2607	−0.5139	0.0042	−0.0017	0.0017	0.2514	0.2607	−0.5139	0.0042	−0.0017	0.0017
0.300	49.98	0.98	0.2508	0.3156	−0.5666	−0.0036	0.0007	0.0006	0.2508	0.3156	−0.5666	−0.0036	0.0007	0.0006
0.298	55.03	0.97	0.2265	0.3542	−0.5850	0.0029	−0.0007	0.0037	0.2265	0.3542	−0.5850	0.0029	−0.0007	0.0037
0.301	60.02	0.97	0.1974	0.3877	−0.6042	0.0031	−0.0007	0.0035	0.1974	0.3877	−0.6042	0.0031	−0.0007	0.0035
0.299	65.01	0.97	0.1782	0.4469	−0.6688	0.0070	−0.0020	0.0035	0.1782	0.4469	−0.6688	0.0070	−0.0020	0.0035
0.298	68.24	0.97	0.1608	0.4871	−0.7136	0.0113	−0.0035	0.0045	0.1608	0.4871	−0.7136	0.0113	−0.0035	0.0045
0.302	35.17	4.24	0.5587	−0.5102	−0.2127	0.0183	−0.0063	0.0004	0.1973	0.1376	−0.3729	0.0107	−0.0040	0.0021
0.301	37.98	4.24	0.6105	−0.4587	−0.2614	0.0220	−0.0078	0.0010	0.2166	0.1727	−0.4222	0.0145	−0.0057	0.0026
0.302	39.99	4.24	0.6411	−0.4232	−0.2898	0.0159	−0.0059	0.0006	0.2259	0.1931	−0.4504	0.0083	−0.0037	0.0023
0.301	41.98	4.24	0.6767	−0.3852	−0.3208	0.0152	−0.0058	0.0007	0.2380	0.2194	−0.4822	0.0076	−0.0036	0.0024
0.301	44.99	4.24	0.7136	−0.3303	−0.3517	0.0096	−0.0042	0.0003	0.2446	0.2495	−0.5128	0.0020	−0.0019	0.0020
0.299	50.00	4.24	0.7663	−0.2466	−0.3897	0.0001	−0.0009	0.0002	0.2431	0.2955	−0.5525	−0.0076	0.0014	0.0019
0.303	54.96	4.25	0.7879	−0.1488	−0.4205	0.0067	−0.0026	0.0010	0.2299	0.3374	−0.5806	−0.0009	−0.0003	0.0028
0.299	59.99	4.24	0.8081	−0.0764	−0.4284	0.0088	−0.0033	0.0017	0.1981	0.3672	−0.5913	0.0012	−0.0010	0.0034
0.299	64.97	4.24	0.8155	0.0101	−0.4488	0.0152	−0.0059	0.0005	0.1671	0.4004	−0.6123	0.0075	−0.0037	0.0023
0.298	68.37	4.24	0.8174	0.0643	−0.4599	0.0148	−0.0056	0.0009	0.1430	0.4176	−0.6244	0.0070	−0.0033	0.0026

Table 11. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 20°;\ \delta_{C,F} = 20°\right]$$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.7212	0.6963	−15.10	0.15	−0.0123	−0.0033	0.0062	0.0000	0.0002	0.0000
2.99	0.7778	0.7569	−13.31	0.64	−0.0249	−0.0059	0.0116	0.0003	0.0001	−0.0001
4.02	0.7972	0.7761	−13.17	0.85	−0.0381	−0.0089	0.0178	0.0006	0.0000	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	0.01	1.00	−0.0750	0.0255	0.1101	−0.0075	0.0023	−0.0013	−0.0750	0.0255	0.1101	−0.0075	0.0023	−0.0013
0.299	0.01	1.99	−0.1410	−0.1685	0.2290	−0.0097	0.0051	−0.0005	−0.0880	0.0282	0.1297	−0.0102	0.0029	−0.0003
0.299	0.05	2.98	−0.1915	−0.3617	0.3288	−0.0080	0.0048	−0.0010	−0.0980	0.0345	0.1437	−0.0124	0.0035	−0.0003
0.299	0.08	4.25	−0.2595	−0.6209	0.4610	−0.0054	0.0044	−0.0022	−0.1070	0.0363	0.1553	−0.0155	0.0044	−0.0005
0.299	14.99	1.00	0.0313	0.0169	−0.0595	0.0099	−0.0029	0.0010	0.0313	0.0169	−0.0595	0.0099	−0.0029	0.0010
0.300	14.99	1.99	0.0250	−0.1821	0.0529	0.0065	0.0003	0.0003	0.0254	0.0199	−0.0457	0.0060	−0.0019	0.0004
0.300	15.03	3.00	0.0281	−0.3835	0.1506	0.0042	0.0012	−0.0007	0.0158	0.0269	−0.0360	−0.0003	−0.0001	0.0001
0.300	15.06	4.25	0.0346	−0.6384	0.2722	0.0045	0.0014	−0.0017	0.0123	0.0295	−0.0307	−0.0055	0.0016	−0.0001
0.301	24.93	0.99	0.1283	0.0627	−0.2232	0.0002	0.0003	0.0009	0.1283	0.0627	−0.2232	0.0002	0.0003	0.0009
0.300	25.00	2.01	0.1539	−0.1320	−0.1144	0.0131	−0.0014	0.0013	0.1187	0.0692	−0.2139	0.0125	−0.0037	0.0016
0.299	24.96	3.00	0.2290	−0.3185	−0.0518	0.0132	−0.0012	−0.0007	0.1457	0.0855	−0.2393	0.0086	−0.0026	0.0001
0.299	25.00	4.24	0.2861	−0.5624	0.0609	0.0112	−0.0003	−0.0022	0.1485	0.0929	−0.2426	0.0012	−0.0002	−0.0006
0.299	−0.05	1.00	−0.0726	0.0101	0.1076	0.0028	−0.0008	0.0000	−0.0726	0.0101	0.1076	0.0028	−0.0008	0.0000
0.300	4.98	1.00	−0.0332	0.0090	0.0538	0.0009	−0.0003	−0.0004	−0.0332	0.0090	0.0538	0.0009	−0.0003	−0.0004
0.300	9.97	1.00	−0.0020	0.0114	0.0033	0.0017	−0.0003	−0.0002	−0.0020	0.0114	0.0033	0.0017	−0.0003	−0.0002
0.299	15.00	1.00	0.0310	0.0162	−0.0592	0.0108	−0.0032	0.0014	0.0310	0.0162	−0.0592	0.0108	−0.0032	0.0014
0.298	19.96	1.00	0.0712	0.0305	−0.1375	0.0038	−0.0010	0.0022	0.0712	0.0305	−0.1375	0.0038	−0.0010	0.0022
0.300	24.91	0.99	0.1251	0.0619	−0.2199	0.0011	0.0001	0.0012	0.1251	0.0619	−0.2199	0.0011	0.0001	0.0012
0.300	29.90	0.99	0.1713	0.0986	−0.3062	0.0061	−0.0017	0.0007	0.1713	0.0986	−0.3062	0.0061	−0.0017	0.0007
0.299	32.40	0.99	0.1932	0.1211	−0.3475	0.0025	−0.0009	−0.0001	0.1932	0.1211	−0.3475	0.0025	−0.0009	−0.0001
0.300	0.08	4.25	−0.2642	−0.6074	0.4634	0.0047	0.0018	−0.0009	−0.1135	0.0420	0.1612	−0.0053	0.0019	0.0007
0.301	5.09	4.26	−0.1637	−0.6263	0.4036	0.0066	0.0013	−0.0010	−0.0698	0.0371	0.1000	−0.0035	0.0014	0.0007
0.301	10.07	4.25	−0.0700	−0.6262	0.3460	0.0056	0.0015	−0.0009	−0.0345	0.0358	0.0455	−0.0043	0.0017	0.0008
0.300	15.02	4.24	0.0222	−0.6284	0.2823	0.0070	0.0011	−0.0008	0.0004	0.0377	−0.0198	−0.0029	0.0013	0.0009
0.299	20.02	4.25	0.1494	−0.6104	0.1750	0.0080	0.0007	−0.0008	0.0688	0.0592	−0.1306	−0.0021	0.0009	0.0009
0.297	25.00	4.25	0.2601	−0.5783	0.0948	0.0048	0.0021	−0.0005	0.1203	0.0880	−0.2138	−0.0053	0.0022	0.0012
0.300	30.00	4.26	0.3585	−0.5222	0.0025	0.0131	−0.0006	−0.0002	0.1636	0.1211	−0.3022	0.0031	−0.0005	0.0015
0.298	32.87	4.25	0.4138	−0.4924	−0.0430	0.0087	0.0004	−0.0003	0.1851	0.1455	−0.3501	−0.0014	0.0005	0.0013
0.502	0.07	0.99	−0.0884	0.0332	0.1242	−0.0081	0.0028	0.0010	−0.0884	0.0332	0.1242	−0.0081	0.0028	0.0010
0.502	0.07	2.00	−0.1042	−0.0509	0.1579	−0.0071	0.0025	0.0005	−0.0853	0.0193	0.1225	−0.0073	0.0017	0.0006
0.502	0.13	3.05	−0.1273	−0.1252	0.2023	−0.0067	0.0025	0.0003	−0.0931	0.0211	0.1340	−0.0084	0.0021	0.0006
0.501	0.11	4.24	−0.1535	−0.2089	0.2513	−0.0049	0.0021	−0.0002	−0.0996	0.0238	0.1430	−0.0085	0.0022	0.0003
0.501	0.13	5.00	−0.1680	−0.2641	0.2787	−0.0031	0.0015	−0.0005	−0.1016	0.0246	0.1445	−0.0078	0.0018	0.0003
0.501	14.97	0.99	0.0318	0.0165	−0.0661	0.0049	−0.0017	0.0023	0.0318	0.0165	−0.0661	0.0049	−0.0017	0.0023

Table 11. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	14.98	1.99	0.0355	−0.0634	−0.0284	0.0083	−0.0024	0.0023	0.0357	0.0087	−0.0636	0.0081	−0.0032	0.0024
0.502	14.99	2.99	0.0430	−0.1332	0.0015	0.0069	−0.0019	0.0012	0.0387	0.0124	−0.0648	0.0053	−0.0024	0.0015
0.502	14.98	4.26	0.0450	−0.2242	0.0471	0.0072	−0.0020	0.0004	0.0373	0.0158	−0.0617	0.0036	−0.0020	0.0010
0.502	14.99	4.98	0.0474	−0.2776	0.0705	0.0077	−0.0022	0.0000	0.0377	0.0157	−0.0624	0.0029	−0.0018	0.0008
0.500	24.85	0.98	0.1471	0.0720	−0.2451	−0.0052	0.0016	0.0003	0.1471	0.0720	−0.2451	−0.0052	0.0016	0.0003
0.500	24.86	1.99	0.1617	−0.0090	−0.2063	−0.0042	0.0016	0.0004	0.1494	0.0627	−0.2419	−0.0044	0.0007	0.0005
0.502	24.89	3.00	0.1726	−0.0800	−0.1680	−0.0037	0.0014	0.0003	0.1432	0.0635	−0.2346	−0.0053	0.0010	0.0005
0.499	24.89	4.24	0.1872	−0.1736	−0.1196	−0.0034	0.0014	0.0001	0.1381	0.0627	−0.2291	−0.0070	0.0014	0.0006
0.499	24.92	5.00	0.1993	−0.2285	−0.0953	−0.0027	0.0012	−0.0001	0.1383	0.0630	−0.2302	−0.0075	0.0016	0.0007
0.499	0.02	0.99	−0.0804	0.0167	0.1160	−0.0020	0.0005	0.0009	−0.0804	0.0167	0.1160	−0.0020	0.0005	0.0009
0.501	5.03	0.99	−0.0417	0.0136	0.0627	−0.0026	0.0007	0.0005	−0.0417	0.0136	0.0627	−0.0026	0.0007	0.0005
0.502	9.98	1.00	−0.0081	0.0138	0.0093	−0.0019	0.0005	0.0005	−0.0081	0.0138	0.0093	−0.0019	0.0005	0.0005
0.499	14.96	0.99	0.0314	0.0169	−0.0656	0.0062	−0.0020	0.0024	0.0314	0.0169	−0.0656	0.0062	−0.0020	0.0024
0.500	19.89	0.99	0.0911	0.0374	−0.1585	−0.0011	0.0004	0.0011	0.0911	0.0374	−0.1585	−0.0011	0.0004	0.0011
0.500	24.83	0.98	0.1462	0.0717	−0.2444	−0.0045	0.0014	0.0004	0.1462	0.0717	−0.2444	−0.0045	0.0014	0.0004
0.498	29.79	0.97	0.1919	0.1122	−0.3284	0.0029	−0.0008	0.0002	0.1919	0.1122	−0.3284	0.0029	−0.0008	0.0002
0.502	0.14	4.25	−0.1577	−0.2050	0.2554	−0.0009	0.0011	0.0002	−0.1038	0.0284	0.1469	−0.0045	0.0012	0.0007
0.500	5.06	4.25	−0.0967	−0.2164	0.1993	−0.0005	0.0010	0.0001	−0.0628	0.0222	0.0901	−0.0041	0.0011	0.0007
0.501	10.09	4.25	−0.0408	−0.2182	0.1448	0.0001	0.0010	0.0003	−0.0280	0.0210	0.0362	−0.0035	0.0010	0.0008
0.500	15.02	4.24	0.0303	−0.2151	0.0599	0.0084	−0.0017	0.0012	0.0225	0.0249	−0.0489	0.0048	−0.0017	0.0018
0.498	19.95	4.24	0.1025	−0.1997	−0.0256	0.0035	0.0000	0.0011	0.0738	0.0410	−0.1355	−0.0001	0.0001	0.0017
0.499	24.89	4.25	0.1586	−0.1698	−0.0935	−0.0022	0.0017	0.0012	0.1095	0.0665	−0.2029	−0.0059	0.0017	0.0018
0.498	29.88	4.25	0.2375	−0.1239	−0.1927	0.0037	0.0001	0.0010	0.1675	0.1087	−0.3029	0.0001	0.0001	0.0016
0.700	0.13	0.99	−0.0883	0.0190	0.1255	−0.0027	0.0008	0.0016	−0.0883	0.0190	0.1255	−0.0027	0.0008	0.0016
0.696	0.16	2.00	−0.1007	−0.0190	0.1473	−0.0052	0.0017	0.0014	−0.0910	0.0176	0.1289	−0.0053	0.0014	0.0015
0.700	0.19	3.01	−0.1131	−0.0549	0.1700	−0.0052	0.0018	0.0012	−0.0959	0.0188	0.1356	−0.0060	0.0016	0.0013
0.700	0.16	4.26	−0.1297	−0.0990	0.2000	−0.0048	0.0017	0.0009	−0.1019	0.0211	0.1441	−0.0067	0.0017	0.0011
0.700	0.21	5.03	−0.1382	−0.1275	0.2155	−0.0045	0.0016	0.0006	−0.1041	0.0213	0.1463	−0.0069	0.0017	0.0010
0.700	14.90	0.98	0.0413	0.0191	−0.0788	−0.0013	0.0003	0.0015	0.0413	0.0191	−0.0788	−0.0013	0.0003	0.0015
0.699	14.96	2.00	0.0377	−0.0240	−0.0533	0.0000	0.0001	0.0016	0.0378	0.0135	−0.0715	−0.0001	−0.0003	0.0017
0.699	14.97	3.01	0.0357	−0.0613	−0.0317	0.0000	0.0001	0.0016	0.0335	0.0143	−0.0661	−0.0008	−0.0001	0.0017
0.699	15.01	4.27	0.0437	−0.1065	−0.0155	−0.0001	0.0002	0.0011	0.0397	0.0177	−0.0718	−0.0019	0.0002	0.0014
0.699	14.95	5.00	0.0475	−0.1343	−0.0058	0.0005	0.0000	0.0008	0.0426	0.0180	−0.0748	−0.0020	0.0002	0.0012
0.699	14.98	5.75	0.0501	−0.1619	0.0050	0.0003	0.0000	0.0005	0.0441	0.0187	−0.0768	−0.0028	0.0003	0.0010
0.700	0.09	0.99	−0.0889	0.0196	0.1257	−0.0036	0.0010	0.0016	−0.0889	0.0196	0.1257	−0.0036	0.0010	0.0016
0.700	5.11	0.99	−0.0525	0.0147	0.0754	−0.0038	0.0010	0.0012	−0.0525	0.0147	0.0754	−0.0038	0.0010	0.0012
0.701	10.03	0.99	−0.0192	0.0134	0.0218	−0.0038	0.0010	0.0010	−0.0192	0.0134	0.0218	−0.0038	0.0010	0.0010
0.700	14.92	0.98	0.0406	0.0193	−0.0784	−0.0014	0.0003	0.0016	0.0406	0.0193	−0.0784	−0.0014	0.0003	0.0016
0.699	19.84	0.97	0.0950	0.0388	−0.1644	−0.0026	0.0009	0.0014	0.0950	0.0388	−0.1644	−0.0026	0.0009	0.0014
0.698	0.18	4.25	−0.1301	−0.0970	0.2002	−0.0047	0.0017	0.0009	−0.1024	0.0233	0.1443	−0.0065	0.0017	0.0011
0.700	5.12	4.22	−0.0808	−0.1038	0.1460	−0.0045	0.0017	0.0008	−0.0638	0.0168	0.0908	−0.0063	0.0017	0.0010
0.702	10.11	4.25	−0.0393	−0.1065	0.0963	−0.0057	0.0022	0.0006	−0.0328	0.0154	0.0410	−0.0075	0.0022	0.0010
0.699	14.98	4.25	0.0353	−0.1029	−0.0075	−0.0019	0.0010	0.0014	0.0314	0.0205	−0.0635	−0.0037	0.0010	0.0017
0.699	19.89	4.25	0.0884	−0.0871	−0.0827	−0.0025	0.0012	0.0017	0.0740	0.0351	−0.1384	−0.0044	0.0012	0.0020

Table 12. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°;\ \delta_B = 25°;\ \delta_E = 20°;\ \delta_C = 20°;\ \delta_F = 25°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.6946	0.6640	−16.96	−1.84	−0.0118	−0.0036	0.0072	−0.0004	0.0003	−0.0001
3.01	0.7503	0.7201	−16.30	−0.79	−0.0239	−0.0070	0.0140	−0.0003	0.0002	−0.0001
3.99	0.7688	0.7404	−15.61	−0.45	−0.0359	−0.0100	0.0199	−0.0003	0.0002	−0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	0.01	1.00	−0.0790	0.0181	0.1099	−0.0036	0.0010	−0.0004	−0.0790	0.0181	0.1099	−0.0036	0.0010	−0.0004
0.302	0.00	2.01	−0.1603	−0.1599	0.2549	−0.0043	0.0030	0.0001	−0.1031	0.0277	0.1401	0.0016	−0.0003	0.0011
0.300	0.10	3.01	−0.2231	−0.3481	0.3782	−0.0036	0.0030	−0.0007	−0.1122	0.0338	0.1554	0.0017	−0.0003	0.0009
0.300	0.07	4.23	−0.2873	−0.5814	0.5005	−0.0012	0.0024	−0.0017	−0.1170	0.0352	0.1621	0.0031	−0.0008	0.0007
0.299	14.97	1.00	0.0411	0.0128	−0.0702	0.0109	−0.0035	−0.0002	0.0411	0.0128	−0.0702	0.0109	−0.0035	−0.0002
0.300	15.03	2.00	0.0368	−0.1700	0.0455	0.0151	−0.0030	−0.0017	0.0434	0.0261	−0.0694	0.0211	−0.0065	−0.0006
0.301	15.03	3.00	0.0245	−0.3656	0.1656	0.0140	−0.0024	−0.0020	0.0333	0.0275	−0.0549	0.0192	−0.0058	−0.0005
0.300	15.01	4.24	0.0262	−0.6102	0.2847	0.0122	−0.0018	−0.0033	0.0317	0.0302	−0.0540	0.0164	−0.0050	−0.0009
0.301	24.95	0.99	0.1462	0.0680	−0.2484	0.0053	−0.0017	0.0001	0.1462	0.0680	−0.2484	0.0053	−0.0017	0.0001
0.302	24.95	2.00	0.1629	−0.1094	−0.1269	0.0216	−0.0046	0.0004	0.1360	0.0825	−0.2405	0.0276	−0.0080	0.0015
0.300	24.90	3.00	0.2171	−0.2927	−0.0399	0.0183	−0.0036	−0.0019	0.1581	0.0976	−0.2613	0.0236	−0.0069	−0.0004
0.300	24.93	4.26	0.2735	−0.5305	0.0660	0.0181	−0.0035	−0.0037	0.1678	0.1056	−0.2747	0.0224	−0.0065	−0.0012
0.298	45.01	0.98	0.2543	0.2583	−0.5126	0.0022	−0.0008	0.0029	0.2543	0.2583	−0.5126	0.0022	−0.0008	0.0029
0.298	45.09	1.99	0.3736	0.0585	−0.4098	−0.0016	−0.0002	0.0008	0.2548	0.2564	−0.5197	0.0016	−0.0011	0.0024
0.298	44.98	2.99	0.4619	−0.1170	−0.3004	0.0048	−0.0023	−0.0003	0.2490	0.2527	−0.5156	0.0080	−0.0031	0.0022
0.298	44.98	4.21	0.5874	−0.3252	−0.1909	0.0159	−0.0057	−0.0017	0.2517	0.2522	−0.5224	0.0153	−0.0053	0.0021
0.299	59.99	0.97	0.1992	0.3847	−0.6028	0.0035	−0.0006	0.0044	0.1992	0.3847	−0.6028	0.0035	−0.0006	0.0044
0.298	60.00	1.99	0.3689	0.2142	−0.4896	0.0006	−0.0001	0.0025	0.2027	0.3754	−0.5998	0.0038	−0.0011	0.0041
0.299	60.08	2.98	0.5039	0.0730	−0.3873	0.0043	−0.0013	0.0010	0.2040	0.3726	−0.6011	0.0075	−0.0022	0.0036
0.299	60.01	4.21	0.6786	−0.0975	−0.2775	0.0133	−0.0042	0.0002	0.2089	0.3690	−0.6060	0.0127	−0.0037	0.0039
0.302	0.01	1.00	−0.0760	0.0149	0.1072	0.0011	−0.0001	0.0002	−0.0760	0.0149	0.1072	0.0011	−0.0001	0.0002
0.299	5.00	1.00	−0.0349	0.0112	0.0523	−0.0001	0.0002	−0.0002	−0.0349	0.0112	0.0523	−0.0001	0.0002	−0.0002
0.302	9.96	1.00	−0.0002	0.0103	−0.0017	−0.0011	0.0003	−0.0006	−0.0002	0.0103	−0.0017	−0.0011	0.0003	−0.0006
0.300	14.98	1.00	0.0371	0.0121	−0.0674	0.0109	−0.0032	0.0010	0.0371	0.0121	−0.0674	0.0109	−0.0032	0.0010
0.300	19.96	1.00	0.0906	0.0261	−0.1579	0.0089	−0.0027	0.0016	0.0906	0.0261	−0.1579	0.0089	−0.0027	0.0016
0.300	24.92	0.99	0.1456	0.0577	−0.2439	0.0049	−0.0015	0.0006	0.1456	0.0577	−0.2439	0.0049	−0.0015	0.0006
0.300	29.91	0.99	0.1939	0.0941	−0.3290	0.0124	−0.0037	0.0007	0.1939	0.0941	−0.3290	0.0124	−0.0037	0.0007
0.302	32.42	0.99	0.2190	0.1186	−0.3732	0.0110	−0.0035	0.0002	0.2190	0.1186	−0.3732	0.0110	−0.0035	0.0002
0.300	35.23	0.98	0.2134	0.1413	−0.3826	0.0067	−0.0020	0.0024	0.2134	0.1413	−0.3826	0.0067	−0.0020	0.0024
0.300	38.02	0.98	0.2275	0.1742	−0.4216	0.0095	−0.0034	0.0024	0.2275	0.1742	−0.4216	0.0095	−0.0034	0.0024
0.299	39.98	0.98	0.2362	0.1977	−0.4490	0.0071	−0.0024	0.0021	0.2362	0.1977	−0.4490	0.0071	−0.0024	0.0021
0.299	42.02	0.98	0.2474	0.2249	−0.4812	0.0123	−0.0039	0.0027	0.2474	0.2249	−0.4812	0.0123	−0.0039	0.0027
0.299	45.03	0.98	0.2497	0.2556	−0.5091	0.0037	−0.0015	0.0021	0.2497	0.2556	−0.5091	0.0037	−0.0015	0.0021
0.298	49.96	0.98	0.2506	0.3116	−0.5635	−0.0022	0.0003	0.0013	0.2506	0.3116	−0.5635	−0.0022	0.0003	0.0013

Table 12. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	54.99	0.97	0.2276	0.3502	−0.5822	0.0032	−0.0007	0.0040	0.2276	0.3502	−0.5822	0.0032	−0.0007	0.0040
0.299	59.99	0.97	0.1994	0.3852	−0.6022	0.0033	−0.0006	0.0041	0.1994	0.3852	−0.6022	0.0033	−0.0006	0.0041
0.294	65.03	0.97	0.1781	0.4448	−0.6657	0.0090	−0.0025	0.0039	0.1781	0.4448	−0.6657	0.0090	−0.0025	0.0039
0.299	68.42	0.97	0.1610	0.4825	−0.7084	0.0129	−0.0037	0.0049	0.1610	0.4825	−0.7084	0.0129	−0.0037	0.0049
0.302	0.08	4.26	−0.2880	−0.5741	0.4988	0.0105	−0.0010	−0.0017	−0.1181	0.0418	0.1613	0.0147	−0.0042	0.0007
0.300	5.09	4.25	−0.1905	−0.6001	0.4416	0.0121	−0.0016	−0.0017	−0.0738	0.0348	0.1004	0.0164	−0.0047	0.0007
0.300	10.05	4.25	−0.1001	−0.6084	0.3855	0.0136	−0.0022	−0.0016	−0.0387	0.0348	0.0439	0.0179	−0.0052	0.0009
0.301	15.06	4.24	−0.0049	−0.6035	0.3134	0.0171	−0.0031	−0.0016	0.0001	0.0352	−0.0243	0.0213	−0.0062	0.0009
0.300	20.00	4.24	0.1218	−0.5851	0.2020	0.0210	−0.0048	−0.0013	0.0715	0.0553	−0.1376	0.0253	−0.0078	0.0011
0.302	24.98	4.24	0.2315	−0.5398	0.1072	0.0165	−0.0030	−0.0013	0.1272	0.0851	−0.2278	0.0207	−0.0061	0.0010
0.302	29.98	4.23	0.3313	−0.4923	0.0193	0.0227	−0.0050	−0.0009	0.1729	0.1213	−0.3159	0.0269	−0.0081	0.0016
0.298	32.94	4.25	0.3938	−0.4707	−0.0281	0.0222	−0.0051	−0.0008	0.1984	0.1512	−0.3726	0.0265	−0.0083	0.0017
0.301	35.49	4.25	0.4497	−0.4748	−0.0657	0.0233	−0.0071	−0.0010	0.2156	0.1453	−0.3946	0.0226	−0.0067	0.0027
0.301	38.00	4.25	0.4842	−0.4390	−0.0983	0.0306	−0.0100	−0.0008	0.2229	0.1708	−0.4274	0.0298	−0.0096	0.0030
0.301	40.00	4.25	0.5119	−0.4088	−0.1245	0.0213	−0.0072	−0.0014	0.2293	0.1920	−0.4539	0.0206	−0.0068	0.0024
0.300	42.01	4.25	0.5464	−0.3742	−0.1570	0.0240	−0.0080	−0.0013	0.2417	0.2185	−0.4876	0.0233	−0.0076	0.0025
0.299	44.98	4.25	0.5872	−0.3270	−0.1904	0.0193	−0.0067	−0.0016	0.2508	0.2517	−0.5225	0.0185	−0.0063	0.0023
0.298	50.00	4.25	0.6388	−0.2523	−0.2289	0.0099	−0.0037	−0.0021	0.2500	0.2989	−0.5636	0.0092	−0.0032	0.0017
0.299	54.97	4.25	0.6706	−0.1737	−0.2594	0.0150	−0.0048	−0.0009	0.2372	0.3398	−0.5928	0.0143	−0.0044	0.0030
0.303	60.02	4.26	0.6747	−0.0932	−0.2808	0.0142	−0.0044	0.0002	0.2085	0.3695	−0.6066	0.0135	−0.0041	0.0039
0.299	64.97	4.25	0.6984	−0.0174	−0.3102	0.0139	−0.0044	0.0005	0.1837	0.4121	−0.6428	0.0132	−0.0040	0.0044
0.298	68.75	4.25	0.6993	0.0225	−0.3029	0.0248	−0.0088	−0.0010	0.1523	0.4209	−0.6387	0.0241	−0.0084	0.0029
0.499	0.03	0.99	−0.0771	0.0173	0.1104	−0.0014	0.0005	0.0002	−0.0771	0.0173	0.1104	−0.0014	0.0005	0.0002
0.499	0.09	2.00	−0.1110	−0.0417	0.1670	0.0024	0.0001	0.0003	−0.0905	0.0261	0.1255	0.0046	−0.0011	0.0008
0.499	0.08	3.00	−0.1375	−0.1078	0.2160	0.0018	0.0003	−0.0001	−0.0976	0.0294	0.1358	0.0037	−0.0010	0.0005
0.500	0.10	4.27	−0.1654	−0.1922	0.2666	0.0019	0.0003	−0.0005	−0.1034	0.0330	0.1432	0.0035	−0.0009	0.0003
0.500	0.15	5.01	−0.1776	−0.2435	0.2897	0.0015	0.0004	−0.0009	−0.1030	0.0330	0.1412	0.0029	−0.0007	0.0002
0.499	14.90	0.98	0.0394	0.0113	−0.0739	0.0116	−0.0037	0.0020	0.0394	0.0113	−0.0739	0.0116	−0.0037	0.0020
0.499	14.97	2.01	0.0388	−0.0567	−0.0318	0.0155	−0.0043	0.0017	0.0413	0.0145	−0.0735	0.0176	−0.0056	0.0021
0.499	14.98	3.00	0.0401	−0.1255	0.0067	0.0148	−0.0041	0.0009	0.0434	0.0171	−0.0733	0.0167	−0.0053	0.0014
0.499	15.04	4.26	0.0434	−0.2131	0.0488	0.0147	−0.0040	−0.0001	0.0452	0.0201	−0.0745	0.0162	−0.0051	0.0009
0.500	14.99	5.00	0.0416	−0.2567	0.0731	0.0142	−0.0039	−0.0008	0.0429	0.0291	−0.0752	0.0155	−0.0050	0.0003
0.499	24.83	0.97	0.1651	0.0667	−0.2642	−0.0029	0.0009	−0.0003	0.1651	0.0667	−0.2642	−0.0029	0.0009	−0.0003
0.500	24.85	1.99	0.1714	0.0022	−0.2205	0.0045	−0.0006	−0.0004	0.1617	0.0716	−0.2615	0.0067	−0.0018	0.0000
0.500	24.86	3.00	0.1763	−0.0686	−0.1746	0.0026	−0.0001	−0.0005	0.1552	0.0715	−0.2541	0.0045	−0.0013	0.0000
0.500	24.85	4.26	0.1920	−0.1563	−0.1312	0.0033	−0.0003	−0.0008	0.1543	0.0727	−0.2539	0.0048	−0.0014	0.0001
0.503	0.05	0.99	−0.0764	0.0178	0.1100	−0.0027	0.0008	0.0000	−0.0764	0.0178	0.1100	−0.0027	0.0008	0.0000
0.499	5.03	0.99	−0.0373	0.0147	0.0561	−0.0026	0.0007	−0.0002	−0.0373	0.0147	0.0561	−0.0026	0.0007	−0.0002
0.499	9.98	0.99	−0.0048	0.0152	0.0044	−0.0013	0.0003	−0.0002	−0.0048	0.0152	0.0044	−0.0013	0.0003	−0.0002
0.502	14.92	0.98	0.0381	0.0185	−0.0748	0.0103	−0.0033	0.0018	0.0381	0.0185	−0.0748	0.0103	−0.0033	0.0018
0.500	19.88	0.98	0.1056	0.0312	−0.1737	0.0013	−0.0004	0.0004	0.1056	0.0312	−0.1737	0.0013	−0.0004	0.0004
0.499	24.83	0.97	0.1638	0.0660	−0.2628	−0.0026	0.0008	−0.0002	0.1638	0.0660	−0.2628	−0.0026	0.0008	−0.0002
0.500	29.74	0.97	0.2107	0.1051	−0.3441	0.0058	−0.0017	−0.0003	0.2107	0.1051	−0.3441	0.0058	−0.0017	−0.0003
0.499	0.12	4.25	−0.1676	−0.1930	0.2693	0.0004	0.0007	−0.0004	−0.1059	0.0315	0.1462	0.0019	−0.0004	0.0004
0.500	5.11	4.27	−0.1057	−0.2038	0.2109	0.0003	0.0007	−0.0004	−0.0637	0.0253	0.0879	0.0018	−0.0004	0.0004

Table 12. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	10.08	4.25	−0.0504	−0.2055	0.1557	0.0019	0.0003	−0.0002	−0.0286	0.0241	0.0338	0.0035	−0.0009	0.0007
0.500	15.05	4.27	0.0198	−0.2065	0.0722	0.0139	−0.0037	0.0006	0.0216	0.0265	−0.0509	0.0154	−0.0047	0.0015
0.502	19.98	4.26	0.0977	−0.1849	−0.0250	0.0060	−0.0010	0.0006	0.0797	0.0449	−0.1468	0.0075	−0.0021	0.0015
0.499	24.90	4.26	0.1545	−0.1599	−0.0933	−0.0003	0.0008	0.0007	0.1164	0.0701	−0.2165	0.0012	−0.0003	0.0016
0.500	29.83	4.25	0.2253	−0.1138	−0.1844	0.0106	−0.0024	0.0013	0.1679	0.1109	−0.3070	0.0122	−0.0035	0.0022

Table 13. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$$\left[\delta_{A,D} = -10°;\ \delta_B = 15°;\ \delta_E = 10°;\ \delta_{C,F} = -10°\right]$$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.9637	0.9633	−0.75	−1.40	−0.0172	−0.0002	0.0007	−0.0004	0.0003	−0.0001
2.99	0.9661	0.9658	−0.42	−1.40	−0.0317	−0.0002	0.0012	−0.0008	0.0004	−0.0001
4.01	0.9556	0.9545	−1.39	−2.26	−0.0463	−0.0011	0.0030	−0.0018	0.0010	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	0.03	1.00	−0.0771	0.0175	0.1077	0.0019	0.0001	−0.0007	−0.0771	0.0175	0.1077	0.0019	0.0001	−0.0007
0.299	0.00	2.01	−0.0747	−0.2467	0.1140	−0.0090	0.0058	−0.0016	−0.0711	0.0281	0.1024	−0.0022	0.0017	−0.0009
0.299	−0.03	3.00	−0.0820	−0.4777	0.1289	−0.0168	0.0104	−0.0020	−0.0779	0.0314	0.1091	−0.0043	0.0030	−0.0010
0.299	−0.01	4.25	−0.1035	−0.7611	0.1713	−0.0405	0.0243	−0.0023	−0.0819	0.0342	0.1162	−0.0074	0.0048	−0.0016
0.298	15.00	1.00	0.0236	0.0474	−0.0614	0.0124	−0.0028	0.0002	0.0236	0.0474	−0.0614	0.0124	−0.0028	0.0002
0.297	15.01	1.99	0.0886	−0.2109	−0.0493	0.0028	0.0024	−0.0003	0.0210	0.0551	−0.0609	0.0095	−0.0015	0.0003
0.297	14.99	3.00	0.1422	−0.4404	−0.0338	−0.0026	0.0064	−0.0006	0.0128	0.0582	−0.0540	0.0101	−0.0011	0.0003
0.297	15.01	4.03	0.1877	−0.6736	−0.0031	−0.0236	0.0179	−0.0005	0.0107	0.0581	−0.0524	0.0062	0.0003	0.0002
0.298	25.03	0.99	0.1284	0.1142	−0.2489	0.0083	−0.0017	0.0005	0.1284	0.1142	−0.2489	0.0083	−0.0017	0.0005
0.298	25.00	1.98	0.2301	−0.1259	−0.2317	0.0000	0.0032	0.0003	0.1198	0.1189	−0.2430	0.0066	−0.0007	0.0010
0.299	24.99	3.05	0.3249	−0.3581	−0.2119	−0.0081	0.0081	0.0002	0.1082	0.1177	−0.2333	0.0054	0.0001	0.0011
0.299	25.03	4.24	0.4217	−0.6108	−0.1753	−0.0283	0.0206	0.0005	0.1056	0.1166	−0.2302	0.0047	0.0012	0.0012
0.301	0.02	1.00	−0.0785	0.0147	0.1082	0.0009	0.0006	−0.0013	−0.0785	0.0147	0.1082	0.0009	0.0006	−0.0013
0.301	5.01	1.00	−0.0405	0.0209	0.0554	0.0017	0.0004	−0.0010	−0.0405	0.0209	0.0554	0.0017	0.0004	−0.0010
0.302	10.01	1.00	−0.0079	0.0308	0.0014	0.0034	−0.0003	−0.0006	−0.0079	0.0308	0.0014	0.0034	−0.0003	−0.0006
0.301	15.00	1.00	0.0247	0.0450	−0.0623	0.0121	−0.0028	−0.0001	0.0247	0.0450	−0.0623	0.0121	−0.0028	−0.0001
0.299	20.03	0.99	0.0822	0.0746	−0.1635	0.0110	−0.0027	0.0004	0.0822	0.0746	−0.1635	0.0110	−0.0027	0.0004
0.297	24.99	0.99	0.1290	0.1161	−0.2492	0.0096	−0.0020	0.0005	0.1290	0.1161	−0.2492	0.0096	−0.0020	0.0005
0.297	30.02	0.99	0.1648	0.1610	−0.3314	0.0134	−0.0032	0.0016	0.1648	0.1610	−0.3314	0.0134	−0.0032	0.0016
0.304	32.53	0.99	0.1865	0.1819	−0.3751	0.0106	−0.0027	0.0017	0.1865	0.1819	−0.3751	0.0106	−0.0027	0.0017
0.302	0.02	4.25	−0.1052	−0.7465	0.1716	−0.0411	0.0244	−0.0022	−0.0846	0.0323	0.1176	−0.0086	0.0053	−0.0015
0.299	5.01	4.22	0.0014	−0.7493	0.1167	−0.0402	0.0241	−0.0019	−0.0466	0.0377	0.0624	−0.0075	0.0049	−0.0011
0.299	10.02	4.22	0.1000	−0.7333	0.0636	−0.0383	0.0234	−0.0017	−0.0165	0.0467	0.0093	−0.0056	0.0043	−0.0009
0.298	15.02	4.26	0.1966	−0.7234	0.0067	−0.0318	0.0218	−0.0008	0.0096	0.0573	−0.0491	0.0018	0.0021	−0.0001
0.298	19.99	4.26	0.3169	−0.6783	−0.0922	−0.0219	0.0185	0.0004	0.0634	0.0817	−0.1478	0.0116	−0.0012	0.0012
0.302	24.99	4.26	0.4193	−0.6036	−0.1774	−0.0290	0.0206	0.0006	0.1070	0.1166	−0.2320	0.0038	0.0013	0.0013
0.300	30.02	4.26	0.5221	−0.5357	−0.2635	−0.0286	0.0204	0.0012	0.1448	0.1599	−0.3184	0.0045	0.0010	0.0019
0.299	32.47	4.25	0.5724	−0.4992	−0.3072	−0.0295	0.0206	0.0015	0.1623	0.1852	−0.3625	0.0038	0.0010	0.0023
0.499	0.02	0.99	−0.0806	0.0182	0.1125	−0.0032	0.0013	−0.0009	−0.0806	0.0182	0.1125	−0.0032	0.0013	−0.0009
0.499	0.04	1.99	−0.0767	−0.0752	0.1106	−0.0072	0.0035	−0.0010	−0.0755	0.0219	0.1065	−0.0048	0.0020	−0.0008
0.498	0.02	3.04	−0.0781	−0.1616	0.1153	−0.0108	0.0054	−0.0012	−0.0766	0.0246	0.1078	−0.0061	0.0026	−0.0009
0.500	0.04	4.03	−0.0842	−0.2414	0.1270	−0.0180	0.0096	−0.0011	−0.0777	0.0257	0.1095	−0.0074	0.0034	−0.0009
0.500	15.04	0.98	0.0409	0.0328	−0.0803	0.0097	−0.0030	0.0006	0.0409	0.0328	−0.0803	0.0097	−0.0030	0.0006
0.500	15.03	1.96	0.0617	−0.0571	−0.0735	0.0064	−0.0011	0.0005	0.0384	0.0342	−0.0774	0.0087	−0.0025	0.0007

Table 13. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	15.01	3.00	0.0799	–0.1402	–0.0662	0.0060	–0.0002	0.0004	0.0341	0.0357	–0.0732	0.0105	–0.0029	0.0008
0.500	15.00	4.03	0.0945	–0.2233	–0.0534	–0.0001	0.0036	0.0006	0.0319	0.0357	–0.0709	0.0105	–0.0026	0.0009
0.500	25.03	0.97	0.1496	0.0961	–0.2611	–0.0015	0.0008	0.0008	0.1496	0.0961	–0.2611	–0.0015	0.0008	0.0008
0.500	25.00	1.98	0.1867	0.0075	–0.2562	–0.0072	0.0035	0.0007	0.1472	0.0952	–0.2603	–0.0049	0.0021	0.0010
0.500	25.01	2.98	0.2171	–0.0687	–0.2495	–0.0113	0.0055	0.0007	0.1421	0.0951	–0.2565	–0.0069	0.0029	0.0010
0.500	24.97	4.23	0.2519	–0.1655	–0.2342	–0.0222	0.0112	0.0008	0.1394	0.0941	–0.2537	–0.0104	0.0043	0.0010
0.500	24.99	4.77	0.2668	–0.2070	–0.2268	–0.0290	0.0145	0.0007	0.1379	0.0939	–0.2518	–0.0141	0.0058	0.0010
0.499	0.00	0.99	–0.0791	0.0172	0.1101	–0.0049	0.0017	–0.0005	–0.0791	0.0172	0.1101	–0.0049	0.0017	–0.0005
0.501	5.02	0.99	–0.0405	0.0177	0.0572	–0.0047	0.0017	–0.0003	–0.0405	0.0177	0.0572	–0.0047	0.0017	–0.0003
0.503	10.02	0.99	–0.0072	0.0218	0.0039	–0.0023	0.0009	–0.0003	–0.0072	0.0218	0.0039	–0.0023	0.0009	–0.0003
0.501	15.02	0.99	0.0421	0.0314	–0.0812	0.0080	–0.0025	0.0007	0.0421	0.0314	–0.0812	0.0080	–0.0025	0.0007
0.504	20.02	0.98	0.0994	0.0568	–0.1740	0.0002	0.0002	0.0007	0.0994	0.0568	–0.1740	0.0002	0.0002	0.0007
0.498	25.03	0.97	0.1511	0.0955	–0.2617	–0.0038	0.0013	0.0008	0.1511	0.0955	–0.2617	–0.0038	0.0013	0.0008
0.497	30.01	0.96	0.1922	0.1389	–0.3428	0.0078	–0.0020	0.0013	0.1922	0.1389	–0.3428	0.0078	–0.0020	0.0013
0.500	0.00	4.26	–0.0863	–0.2601	0.1300	–0.0213	0.0111	–0.0011	–0.0786	0.0250	0.1102	–0.0094	0.0040	–0.0009
0.503	5.00	4.25	–0.0226	–0.2564	0.0756	–0.0205	0.0106	–0.0009	–0.0396	0.0246	0.0561	–0.0088	0.0037	–0.0006
0.503	10.02	4.25	0.0320	–0.2500	0.0247	–0.0177	0.0097	–0.0008	–0.0095	0.0281	0.0053	–0.0060	0.0029	–0.0005
0.501	15.03	4.24	0.0971	–0.2405	–0.0508	–0.0038	0.0051	0.0006	0.0311	0.0343	–0.0703	0.0080	–0.0017	0.0009
0.504	20.01	4.25	0.1758	–0.2082	–0.1441	–0.0181	0.0098	0.0007	0.0870	0.0574	–0.1634	–0.0064	0.0029	0.0010
0.500	24.99	4.23	0.2528	–0.1653	–0.2337	–0.0238	0.0115	0.0008	0.1399	0.0948	–0.2533	–0.0120	0.0045	0.0010
0.499	29.97	4.23	0.3216	–0.1114	–0.3222	–0.0140	0.0086	0.0014	0.1861	0.1386	–0.3418	–0.0022	0.0017	0.0017
0.700	0.02	0.97	–0.0843	0.0201	0.1183	–0.0055	0.0018	–0.0006	–0.0843	0.0201	0.1183	–0.0055	0.0018	–0.0006
0.696	–0.04	2.00	–0.0811	–0.0293	0.1161	–0.0086	0.0033	–0.0006	–0.0805	0.0211	0.1140	–0.0074	0.0026	–0.0005
0.700	–0.05	2.98	–0.0818	–0.0696	0.1181	–0.0102	0.0042	–0.0008	–0.0810	0.0225	0.1145	–0.0079	0.0029	–0.0006
0.700	–0.02	4.26	–0.0858	–0.1227	0.1258	–0.0155	0.0071	–0.0009	–0.0818	0.0229	0.1157	–0.0094	0.0036	–0.0008
0.699	–0.01	5.01	–0.0890	–0.1539	0.1318	–0.0196	0.0095	–0.0010	–0.0831	0.0234	0.1178	–0.0112	0.0046	–0.0009
0.699	0.02	5.64	–0.0919	–0.1805	0.1370	–0.0233	0.0115	–0.0010	–0.0845	0.0233	0.1197	–0.0130	0.0055	–0.0009
0.700	15.02	0.96	0.0518	0.0300	–0.0930	–0.0005	0.0000	0.0002	0.0518	0.0300	–0.0930	–0.0005	0.0000	0.0002
0.699	15.03	2.03	0.0619	–0.0209	–0.0876	–0.0030	0.0014	0.0001	0.0492	0.0290	–0.0898	–0.0018	0.0006	0.0003
0.699	15.03	3.00	0.0703	–0.0604	–0.0843	–0.0048	0.0023	0.0002	0.0468	0.0298	–0.0879	–0.0025	0.0010	0.0003
0.699	15.05	4.23	0.0792	–0.1111	–0.0762	–0.0093	0.0049	0.0001	0.0453	0.0301	–0.0862	–0.0033	0.0014	0.0003
0.699	15.01	4.99	0.0839	–0.1421	–0.0700	–0.0130	0.0070	0.0001	0.0437	0.0301	–0.0840	–0.0047	0.0022	0.0003
0.698	15.03	5.62	0.0881	–0.1688	–0.0650	–0.0164	0.0089	0.0001	0.0425	0.0298	–0.0823	–0.0062	0.0029	0.0002
0.702	0.01	0.97	–0.0830	0.0198	0.1171	–0.0070	0.0022	–0.0007	–0.0830	0.0198	0.1171	–0.0070	0.0022	–0.0007
0.699	4.99	0.97	–0.0467	0.0182	0.0669	–0.0064	0.0020	–0.0005	–0.0467	0.0182	0.0669	–0.0064	0.0020	–0.0005
0.701	10.02	0.97	–0.0133	0.0199	0.0130	–0.0045	0.0014	–0.0004	–0.0133	0.0199	0.0130	–0.0045	0.0014	–0.0004
0.702	14.99	0.96	0.0508	0.0301	–0.0919	–0.0006	0.0001	0.0002	0.0508	0.0301	–0.0919	–0.0006	0.0001	0.0002

Table 13. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.698	20.02	0.95	0.1037	0.0538	−0.1777	0.0000	0.0001	0.0007	0.1037	0.0538	−0.1777	0.0000	0.0001	0.0007
0.699	0.040	4.23	−0.0854	−0.1222	0.1253	−0.0153	0.0071	−0.0010	−0.0816	0.0225	0.1153	−0.0093	0.0035	−0.0008
0.703	5.030	4.25	−0.0358	−0.1232	0.0733	−0.0150	0.0069	−0.0008	−0.0446	0.0203	0.0634	−0.0090	0.0034	−0.0006
0.702	10.01	4.24	0.0050	−0.1207	0.0257	−0.0134	0.0063	−0.0006	−0.0162	0.0217	0.0158	−0.0074	0.0028	−0.0005
0.697	15.02	4.22	0.0774	−0.1114	−0.0749	−0.0102	0.0052	0.0003	0.0436	0.0297	−0.0849	−0.0041	0.0017	0.0003
0.698	19.97	4.22	0.1430	−0.0851	−0.1625	−0.0124	0.0060	0.0007	0.0972	0.0525	−0.1725	−0.0064	0.0025	0.0009

Table 14. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°; \delta_{B,E} = 15°; \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.9587	0.9575	−1.91	−2.22	−0.0171	−0.0006	0.0012	−0.0007	0.0004	0.0000
3.02	0.9581	0.9568	−1.91	−2.21	−0.0317	−0.0011	0.0024	−0.0012	0.0008	0.0000
4.01	0.9495	0.9468	−2.83	−3.20	−0.0460	−0.0023	0.0046	−0.0026	0.0016	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.297	45.04	0.98	0.2508	0.2685	−0.5209	0.0073	−0.0026	0.0026	0.2508	0.2685	−0.5209	0.0073	−0.0026	0.0026
0.305	44.98	2.00	0.4314	0.0740	−0.5120	−0.0181	0.0080	0.0019	0.2535	0.2643	−0.5307	−0.0080	0.0021	0.0024
0.300	44.97	2.98	0.5905	−0.1007	−0.4960	−0.0312	0.0151	0.0020	0.2515	0.2620	−0.5331	−0.0121	0.0032	0.0023
0.300	44.97	4.27	0.7802	−0.3244	−0.4537	−0.0573	0.0309	0.0025	0.2510	0.2637	−0.5366	−0.0109	0.0034	0.0023
0.297	60.01	0.97	0.1965	0.3924	−0.6147	−0.0029	0.0006	0.0047	0.1965	0.3924	−0.6147	−0.0029	0.0006	0.0047
0.300	59.98	1.99	0.4252	0.2440	−0.5882	−0.0216	0.0097	0.0036	0.1983	0.3854	−0.6075	−0.0113	0.0036	0.0040
0.300	59.95	2.98	0.6189	0.1225	−0.5746	−0.0335	0.0164	0.0030	0.1973	0.3855	−0.6118	−0.0144	0.0045	0.0033
0.300	59.99	4.27	0.8595	−0.0464	−0.5295	−0.0650	0.0336	0.0032	0.1965	0.3842	−0.6124	−0.0186	0.0061	0.0030
0.301	35.23	0.98	0.2113	0.1474	−0.3899	0.0021	−0.0012	0.0026	0.2113	0.1474	−0.3899	0.0021	−0.0012	0.0026
0.302	38.00	0.98	0.2253	0.1808	−0.4280	0.0053	−0.0026	0.0024	0.2253	0.1808	−0.4280	0.0053	−0.0026	0.0024
0.301	40.00	0.98	0.2348	0.2065	−0.4572	−0.0008	−0.0007	0.0013	0.2348	0.2065	−0.4572	−0.0008	−0.0007	0.0013
0.301	45.01	0.98	0.2494	0.2653	−0.5188	0.0007	−0.0011	0.0020	0.2494	0.2653	−0.5188	0.0007	−0.0011	0.0020
0.301	45.01	0.98	0.2488	0.2645	−0.5182	0.0021	−0.0014	0.0021	0.2488	0.2645	−0.5182	0.0021	−0.0014	0.0021
0.300	50.02	0.98	0.2473	0.3193	−0.5697	−0.0048	0.0008	0.0014	0.2473	0.3193	−0.5697	−0.0048	0.0008	0.0014
0.301	55.01	0.97	0.2253	0.3618	−0.5937	0.0009	−0.0003	0.0040	0.2253	0.3618	−0.5937	0.0009	−0.0003	0.0040
0.299	60.01	0.97	0.1951	0.3952	−0.6126	0.0015	−0.0004	0.0038	0.1951	0.3952	−0.6126	0.0015	−0.0004	0.0038
0.299	64.99	0.97	0.1742	0.4507	−0.6723	0.0059	−0.0020	0.0038	0.1742	0.4507	−0.6723	0.0059	−0.0020	0.0038
0.299	68.23	0.96	0.1569	0.4915	−0.7185	0.0102	−0.0032	0.0054	0.1569	0.4915	−0.7185	0.0102	−0.0032	0.0054
0.301	35.17	4.28	0.6275	−0.5134	−0.3124	−0.0490	0.0290	0.0030	0.2069	0.1550	−0.3953	−0.0026	0.0015	0.0027
0.301	37.97	4.27	0.6747	−0.4560	−0.3606	−0.0435	0.0267	0.0032	0.2244	0.1875	−0.4430	0.0026	−0.0006	0.0030
0.300	39.96	4.27	0.7064	−0.4211	−0.3890	−0.0532	0.0298	0.0029	0.2322	0.2087	−0.4717	−0.0070	0.0024	0.0026
0.300	41.96	4.27	0.7418	−0.3812	−0.4220	−0.0482	0.0286	0.0037	0.2443	0.2337	−0.5049	−0.0018	0.0010	0.0034
0.300	44.97	4.27	0.7818	−0.3242	−0.4540	−0.0574	0.0312	0.0031	0.2515	0.2651	−0.5372	−0.0109	0.0036	0.0029
0.298	49.98	4.26	0.8307	−0.2366	−0.4887	−0.0685	0.0349	0.0030	0.2454	0.3093	−0.5725	−0.0216	0.0071	0.0027
0.300	54.98	4.27	0.8527	−0.1334	−0.5192	−0.0617	0.0329	0.0037	0.2313	0.3522	−0.6019	−0.0154	0.0055	0.0034
0.300	59.96	4.26	0.8627	−0.0457	−0.5334	−0.0613	0.0329	0.0043	0.2001	0.3849	−0.6162	−0.0150	0.0055	0.0040
0.300	64.98	4.26	0.8658	0.0468	−0.5542	−0.0631	0.0335	0.0042	0.1667	0.4186	−0.6372	−0.0167	0.0060	0.0039

Table 15. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 20°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9116	0.9047	-3.07	-6.32	-0.0159	-0.0009	0.0021	-0.0018	0.0010	0.0000
2.99	0.9283	0.9225	-2.86	-5.73	-0.0305	-0.0015	0.0039	-0.0031	0.0017	0.0001
4.00	0.9302	0.9230	-3.12	-6.45	-0.0450	-0.0025	0.0061	-0.0051	0.0028	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	44.99	0.98	0.2493	0.2642	-0.5162	-0.0019	0.0001	0.0010	0.2493	0.2642	-0.5162	-0.0019	0.0001	0.0010
0.300	44.97	1.96	0.4186	0.0753	-0.4949	-0.0292	0.0138	0.0005	0.2542	0.2648	-0.5298	-0.0085	0.0018	0.0005
0.300	44.96	2.98	0.5660	-0.0980	-0.4646	-0.0465	0.0246	0.0010	0.2531	0.2656	-0.5339	-0.0046	0.0004	0.0008
0.300	44.98	4.26	0.7447	-0.3167	-0.4132	-0.0861	0.0458	0.0010	0.2508	0.2671	-0.5348	-0.0091	0.0024	0.0003
0.297	59.98	0.97	0.1960	0.3910	-0.6103	0.0014	-0.0001	0.0039	0.1960	0.3910	-0.6103	0.0014	-0.0001	0.0039
0.300	59.99	1.98	0.4121	0.2429	-0.5743	-0.0281	0.0142	0.0028	0.2006	0.3857	-0.6098	-0.0070	0.0021	0.0028
0.300	59.98	2.99	0.5981	0.1136	-0.5401	-0.0510	0.0262	0.0017	0.2007	0.3844	-0.6097	-0.0089	0.0020	0.0014
0.301	59.98	4.22	0.8223	-0.0440	-0.4963	-0.0888	0.0468	0.0024	0.2033	0.3857	-0.6159	-0.0132	0.0041	0.0018
0.307	35.33	0.99	0.2143	0.1480	-0.3904	0.0028	-0.0012	0.0017	0.2143	0.1480	-0.3904	0.0028	-0.0012	0.0017
0.299	37.99	0.99	0.2261	0.1782	-0.4256	0.0060	-0.0027	0.0017	0.2261	0.1782	-0.4256	0.0060	-0.0027	0.0017
0.300	39.99	0.98	0.2357	0.2030	-0.4534	0.0007	-0.0009	0.0011	0.2357	0.2030	-0.4534	0.0007	-0.0009	0.0011
0.300	42.03	0.98	0.2479	0.2306	-0.4876	0.0061	-0.0024	0.0020	0.2479	0.2306	-0.4876	0.0061	-0.0024	0.0020
0.299	45.00	0.98	0.2514	0.2631	-0.5174	-0.0020	0.0001	0.0011	0.2514	0.2631	-0.5174	-0.0020	0.0001	0.0011
0.297	50.03	0.98	0.2508	0.3197	-0.5724	-0.0081	0.0020	0.0009	0.2508	0.3197	-0.5724	-0.0081	0.0020	0.0009
0.300	54.98	0.97	0.2278	0.3588	-0.5922	-0.0022	0.0009	0.0034	0.2278	0.3588	-0.5922	-0.0022	0.0009	0.0034
0.300	60.01	0.97	0.1988	0.3945	-0.6140	-0.0017	0.0009	0.0037	0.1988	0.3945	-0.6140	-0.0017	0.0009	0.0037
0.299	65.00	0.97	0.1783	0.4501	-0.6727	0.0026	-0.0007	0.0035	0.1783	0.4501	-0.6727	0.0026	-0.0007	0.0035
0.298	68.43	0.97	0.1591	0.4925	-0.7209	0.0073	-0.0020	0.0049	0.1591	0.4925	-0.7209	0.0073	-0.0020	0.0049
0.302	35.27	4.27	0.5924	-0.5038	-0.2693	-0.0777	0.0440	0.0024	0.2059	0.1520	-0.3904	-0.0010	0.0007	0.0017
0.301	37.99	4.27	0.6430	-0.4522	-0.3175	-0.0731	0.0420	0.0025	0.2248	0.1861	-0.4389	0.0038	-0.0014	0.0018
0.301	39.98	4.27	0.6761	-0.4153	-0.3481	-0.0805	0.0443	0.0019	0.2345	0.2101	-0.4699	-0.0033	0.0008	0.0013
0.300	42.00	4.28	0.7103	-0.3764	-0.3789	-0.0794	0.0440	0.0021	0.2456	0.2349	-0.5011	-0.0021	0.0003	0.0014
0.300	44.98	4.27	0.7509	-0.3208	-0.4133	-0.0842	0.0457	0.0021	0.2535	0.2672	-0.5359	-0.0066	0.0019	0.0015
0.299	50.00	4.27	0.7986	-0.2340	-0.4475	-0.0951	0.0492	0.0020	0.2486	0.3115	-0.5707	-0.0171	0.0052	0.0014
0.304	54.92	4.28	0.8120	-0.1271	-0.4814	-0.0884	0.0469	0.0028	0.2350	0.3541	-0.6010	-0.0127	0.0041	0.0022
0.300	59.99	4.27	0.8340	-0.0553	-0.4883	-0.0885	0.0475	0.0035	0.2018	0.3836	-0.6108	-0.0109	0.0037	0.0029
0.297	64.94	4.27	0.8545	0.0312	-0.5148	-0.0937	0.0496	0.0040	0.1719	0.4223	-0.6400	-0.0144	0.0048	0.0034
0.299	68.49	4.27	0.8359	0.0892	-0.5153	-0.0888	0.0474	0.0033	0.1415	0.4318	-0.6385	-0.0107	0.0033	0.0027

Table 16. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.8980	0.8795	−4.87	−10.65	−0.0158	−0.0013	0.0030	−0.0030	0.0015	0.0001
3.01	0.9031	0.8873	−4.90	−9.60	−0.0295	−0.0025	0.0056	−0.0050	0.0026	0.0002
4.06	0.9106	0.8949	−4.65	−9.60	−0.0435	−0.0035	0.0081	−0.0074	0.0038	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.01	1.00	−0.0725	0.0178	0.1074	−0.0061	0.0019	−0.0004	−0.0725	0.0178	0.1074	−0.0061	0.0019	−0.0004
0.301	0.07	2.01	−0.1054	−0.2180	0.1720	−0.0530	0.0266	0.0014	−0.0847	0.0290	0.1251	−0.0065	0.0031	0.0003
0.301	0.10	3.00	−0.1323	−0.4291	0.2226	−0.0904	0.0461	0.0024	−0.0935	0.0344	0.1352	−0.0120	0.0050	0.0003
0.302	0.06	4.25	−0.1622	−0.6948	0.2845	−0.1404	0.0723	0.0035	−0.1046	0.0269	0.1510	−0.0183	0.0083	0.0005
0.300	14.99	0.99	0.0331	0.0198	−0.0621	0.0063	−0.0017	0.0011	0.0331	0.0198	−0.0621	0.0063	−0.0017	0.0011
0.301	15.01	2.01	0.0635	−0.2144	0.0014	−0.0373	0.0218	0.0017	0.0198	0.0299	−0.0456	0.0092	−0.0017	0.0007
0.300	15.02	3.00	0.0980	−0.4276	0.0492	−0.0801	0.0432	0.0025	0.0153	0.0351	−0.0391	−0.0009	0.0017	0.0004
0.300	15.02	4.25	0.1391	−0.6985	0.1105	−0.1369	0.0714	0.0033	0.0068	0.0224	−0.0246	−0.0134	0.0064	0.0003
0.299	24.95	0.99	0.1345	0.0679	−0.2310	−0.0009	0.0010	0.0003	0.1345	0.0679	−0.2310	−0.0009	0.0010	0.0003
0.299	24.97	2.00	0.1903	−0.1663	−0.1539	−0.0342	0.0208	0.0020	0.1042	0.0689	−0.2013	0.0128	−0.0028	0.0010
0.299	24.96	2.99	0.2636	−0.3666	−0.1110	−0.0643	0.0382	0.0021	0.1025	0.0745	−0.1993	0.0149	−0.0034	−0.0001
0.299	25.01	4.25	0.3778	−0.6161	−0.0768	−0.1158	0.0648	0.0021	0.1208	0.0756	−0.2128	0.0086	−0.0004	−0.0009
0.302	45.02	0.98	0.2545	0.2634	−0.5184	0.0005	0.0000	0.0027	0.2545	0.2634	−0.5184	0.0005	0.0000	0.0027
0.302	45.01	2.00	0.4130	0.0731	−0.4795	−0.0343	0.0186	0.0021	0.2560	0.2657	−0.5282	−0.0029	0.0008	0.0022
0.303	45.02	3.00	0.5439	−0.0920	−0.4373	−0.0659	0.0354	0.0017	0.2548	0.2659	−0.5307	−0.0053	0.0014	0.0017
0.303	45.02	4.01	0.6785	−0.2600	−0.3952	−0.0987	0.0530	0.0020	0.2540	0.2671	−0.5331	−0.0067	0.0022	0.0019
0.302	45.01	4.26	0.7092	−0.3078	−0.3784	−0.1099	0.0586	0.0015	0.2491	0.2642	−0.5281	−0.0096	0.0035	0.0015
0.299	59.99	0.97	0.1951	0.3875	−0.6058	0.0016	0.0003	0.0042	0.1951	0.3875	−0.6058	0.0016	0.0003	0.0042
0.299	60.00	1.99	0.4052	0.2339	−0.5551	−0.0402	0.0213	0.0032	0.1998	0.3822	−0.6048	−0.0082	0.0032	0.0033
0.299	60.00	3.00	0.5804	0.1054	−0.5116	−0.0719	0.0382	0.0024	0.2011	0.3818	−0.6069	−0.0101	0.0036	0.0024
0.300	60.02	4.24	0.7972	−0.0537	−0.4560	−0.1129	0.0603	0.0026	0.1990	0.3838	−0.6071	−0.0116	0.0046	0.0026
0.298	−0.02	1.00	−0.0743	0.0142	0.1110	−0.0016	0.0008	0.0000	−0.0743	0.0142	0.1110	−0.0016	0.0008	0.0000
0.298	5.02	1.00	−0.0327	0.0125	0.0544	−0.0022	0.0010	−0.0007	−0.0327	0.0125	0.0544	−0.0022	0.0010	−0.0007
0.299	10.02	0.99	0.0000	0.0149	0.0019	−0.0009	0.0006	−0.0008	0.0000	0.0149	0.0019	−0.0009	0.0006	−0.0008
0.298	14.98	0.99	0.0344	0.0197	−0.0610	0.0076	−0.0018	0.0010	0.0344	0.0197	−0.0610	0.0076	−0.0018	0.0010
0.299	19.97	0.99	0.0776	0.0353	−0.1443	0.0027	−0.0004	0.0017	0.0776	0.0353	−0.1443	0.0027	−0.0004	0.0017
0.301	24.97	0.99	0.1328	0.0682	−0.2292	−0.0016	0.0010	0.0003	0.1328	0.0682	−0.2292	−0.0016	0.0010	0.0003
0.298	29.94	0.99	0.1779	0.1067	−0.3150	0.0027	−0.0003	−0.0001	0.1779	0.1067	−0.3150	0.0027	−0.0003	−0.0001
0.297	32.49	0.99	0.2001	0.1299	−0.3586	−0.0003	0.0002	−0.0010	0.2001	0.1299	−0.3586	−0.0003	0.0002	−0.0010
0.298	35.32	0.98	0.2114	0.1463	−0.3855	0.0050	−0.0011	0.0025	0.2114	0.1463	−0.3855	0.0050	−0.0011	0.0025
0.298	38.00	0.98	0.2259	0.1787	−0.4250	0.0094	−0.0028	0.0029	0.2259	0.1787	−0.4250	0.0094	−0.0028	0.0029
0.302	40.01	0.98	0.2346	0.2032	−0.4525	0.0019	−0.0006	0.0017	0.2346	0.2032	−0.4525	0.0019	−0.0006	0.0017
0.300	42.01	0.98	0.2458	0.2307	−0.4862	0.0101	−0.0029	0.0031	0.2458	0.2307	−0.4862	0.0101	−0.0029	0.0031
0.300	45.02	0.98	0.2497	0.2622	−0.5158	0.0005	−0.0001	0.0019	0.2497	0.2622	−0.5158	0.0005	−0.0001	0.0019

Table 16. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	50.02	0.97	0.2479	0.3153	−0.5662	−0.0023	0.0009	0.0019	0.2479	0.3153	−0.5662	−0.0023	0.0009	0.0019
0.302	54.98	0.97	0.2255	0.3556	−0.5872	0.0022	0.0000	0.0042	0.2255	0.3556	−0.5872	0.0022	0.0000	0.0042
0.298	59.99	0.97	0.1953	0.3893	−0.6064	0.0003	0.0008	0.0044	0.1953	0.3893	−0.6064	0.0003	0.0008	0.0044
0.298	64.99	0.97	0.1754	0.4465	−0.6680	0.0056	−0.0010	0.0044	0.1754	0.4465	−0.6680	0.0056	−0.0010	0.0044
0.300	68.47	0.96	0.1573	0.4887	−0.7165	0.0094	−0.0021	0.0051	0.1573	0.4887	−0.7165	0.0094	−0.0021	0.0051
0.299	0.09	4.29	−0.1382	−0.7173	0.2641	−0.1438	0.0746	0.0013	−0.0793	0.0259	0.1268	−0.0181	0.0086	−0.0017
0.300	5.03	4.27	−0.0321	−0.7137	0.2046	−0.1423	0.0736	0.0013	−0.0374	0.0250	0.0685	−0.0178	0.0082	−0.0017
0.301	10.04	4.25	0.0625	−0.7032	0.1536	−0.1384	0.0717	0.0015	−0.0066	0.0254	0.0187	−0.0150	0.0070	−0.0015
0.300	15.01	4.25	0.1600	−0.6963	0.0907	−0.1328	0.0702	0.0018	0.0272	0.0281	−0.0450	−0.0086	0.0051	−0.0012
0.298	20.01	4.26	0.2870	−0.6727	−0.0097	−0.1229	0.0673	0.0024	0.0892	0.0462	−0.1470	0.0028	0.0014	−0.0007
0.301	25.00	4.27	0.3757	−0.6140	−0.0765	−0.1130	0.0639	0.0022	0.1208	0.0720	−0.2113	0.0103	−0.0009	−0.0008
0.300	29.96	4.24	0.4625	−0.5672	−0.1435	−0.1087	0.0625	0.0026	0.1482	0.0968	−0.2789	0.0151	−0.0025	−0.0003
0.298	32.69	4.24	0.5227	−0.5326	−0.1930	−0.1132	0.0637	0.0021	0.1736	0.1222	−0.3297	0.0119	−0.0020	−0.0010
0.300	35.33	4.22	0.5598	−0.4906	−0.2340	−0.0983	0.0559	0.0024	0.2017	0.1518	−0.3840	0.0021	0.0007	0.0024
0.299	38.00	4.22	0.6082	−0.4418	−0.2804	−0.0919	0.0533	0.0029	0.2196	0.1846	−0.4307	0.0088	−0.0020	0.0028
0.299	39.98	4.22	0.6396	−0.4048	−0.3106	−0.1002	0.0559	0.0019	0.2291	0.2087	−0.4611	0.0006	0.0004	0.0019
0.299	42.00	4.23	0.6726	−0.3653	−0.3418	−0.0947	0.0545	0.0027	0.2403	0.2339	−0.4925	0.0062	−0.0010	0.0027
0.298	44.98	4.23	0.7165	−0.3126	−0.3776	−0.1050	0.0575	0.0020	0.2503	0.2675	−0.5294	−0.0034	0.0016	0.0020
0.299	49.99	4.23	0.7580	−0.2208	−0.4145	−0.1126	0.0599	0.0019	0.2464	0.3129	−0.5652	−0.0117	0.0043	0.0018
0.299	59.98	4.23	0.7990	−0.0529	−0.4546	−0.1085	0.0592	0.0038	0.2003	0.3855	−0.6059	−0.0071	0.0034	0.0038
0.301	64.98	4.24	0.7959	0.0411	−0.4828	−0.1112	0.0598	0.0040	0.1703	0.4201	−0.6319	−0.0113	0.0048	0.0040
0.298	68.59	4.23	0.8019	0.0873	−0.4823	−0.1196	0.0633	0.0044	0.1402	0.4332	−0.6346	−0.0176	0.0072	0.0044
0.498	0.07	0.99	−0.0903	0.0199	0.1247	−0.0038	0.0012	0.0014	−0.0903	0.0199	0.1247	−0.0038	0.0012	0.0014
0.499	0.10	2.00	−0.1092	−0.0474	0.1537	−0.0232	0.0116	0.0019	−0.1017	0.0418	0.1368	−0.0064	0.0031	0.0016
0.499	0.08	2.99	−0.1196	−0.1234	0.1737	−0.0363	0.0187	0.0022	−0.1054	0.0453	0.1418	−0.0077	0.0038	0.0014
0.500	0.12	4.26	−0.1340	−0.2212	0.2003	−0.0561	0.0288	0.0023	−0.1131	0.0432	0.1514	−0.0114	0.0054	0.0011
0.499	0.11	4.97	−0.1444	−0.2776	0.2185	−0.0679	0.0352	0.0023	−0.1197	0.0414	0.1599	−0.0139	0.0069	0.0010
0.499	14.99	0.98	0.0192	0.0150	−0.0565	0.0038	−0.0011	0.0027	0.0192	0.0150	−0.0565	0.0038	−0.0011	0.0027
0.499	15.04	2.01	0.0223	−0.0687	−0.0260	−0.0076	0.0061	0.0023	0.0064	0.0202	−0.0431	0.0093	−0.0024	0.0018
0.499	15.01	3.01	0.0412	−0.1433	−0.0147	−0.0168	0.0118	0.0022	0.0113	0.0244	−0.0468	0.0119	−0.0032	0.0014
0.499	15.00	4.26	0.0571	−0.2398	0.0071	−0.0367	0.0218	0.0024	0.0091	0.0222	−0.0419	0.0082	−0.0017	0.0013
0.499	15.00	5.01	0.0675	−0.2969	0.0197	−0.0503	0.0286	0.0025	0.0088	0.0210	−0.0395	0.0042	−0.0001	0.0013
0.499	24.86	0.97	0.1456	0.0731	−0.2464	−0.0070	0.0024	0.0006	0.1456	0.0731	−0.2464	−0.0070	0.0024	0.0006
0.500	24.87	1.99	0.1726	−0.0102	−0.2257	−0.0209	0.0100	0.0010	0.1425	0.0725	−0.2424	−0.0044	0.0017	0.0006
0.501	24.85	2.99	0.1983	−0.0828	−0.2100	−0.0335	0.0168	0.0012	0.1410	0.0750	−0.2416	−0.0052	0.0020	0.0004
0.500	24.89	4.27	0.2308	−0.1770	−0.1882	−0.0515	0.0263	0.0014	0.1390	0.0716	−0.2370	−0.0068	0.0029	0.0003
0.501	24.88	5.02	0.2486	−0.2318	−0.1740	−0.0637	0.0326	0.0015	0.1368	0.0699	−0.2329	−0.0094	0.0041	0.0002
0.500	0.07	0.99	−0.0816	0.0178	0.1165	−0.0045	0.0014	0.0010	−0.0816	0.0178	0.1165	−0.0045	0.0014	0.0010
0.502	5.05	0.99	−0.0435	0.0141	0.0635	−0.0050	0.0017	0.0008	−0.0435	0.0141	0.0635	−0.0050	0.0017	0.0008
0.501	10.00	0.99	−0.0102	0.0147	0.0100	−0.0038	0.0013	0.0008	−0.0102	0.0147	0.0100	−0.0038	0.0013	0.0008
0.500	14.98	0.98	0.0289	0.0177	−0.0654	0.0043	−0.0012	0.0026	0.0289	0.0177	−0.0654	0.0043	−0.0012	0.0026
0.500	19.94	0.98	0.0899	0.0383	−0.1595	−0.0030	0.0012	0.0012	0.0899	0.0383	−0.1595	−0.0030	0.0012	0.0012
0.499	24.84	0.97	0.1442	0.0729	−0.2449	−0.0071	0.0024	0.0005	0.1442	0.0729	−0.2449	−0.0071	0.0024	0.0005
0.498	29.81	0.96	0.1905	0.1134	−0.3301	0.0001	0.0003	0.0003	0.1905	0.1134	−0.3301	0.0001	0.0003	0.0003
0.501	0.12	4.24	−0.1026	−0.2336	0.1690	−0.0575	0.0287	0.0008	−0.0820	0.0282	0.1206	−0.0132	0.0054	−0.0003

Table 16. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	5.06	4.24	−0.0402	−0.2388	0.1136	−0.0562	0.0283	0.0008	−0.0422	0.0244	0.0651	−0.0118	0.0050	−0.0003
0.501	10.05	4.25	0.0129	−0.2383	0.0649	−0.0545	0.0277	0.0010	−0.0121	0.0244	0.0162	−0.0100	0.0044	−0.0001
0.499	14.99	4.24	0.0784	−0.2340	−0.0127	−0.0362	0.0218	0.0019	0.0308	0.0266	−0.0615	0.0084	−0.0017	0.0008
0.500	19.95	4.26	0.1475	−0.2120	−0.0957	−0.0442	0.0244	0.0016	0.0775	0.0431	−0.1445	0.0004	0.0010	0.0005
0.501	24.89	4.26	0.2254	−0.1697	−0.1852	−0.0498	0.0260	0.0014	0.1340	0.0777	−0.2338	−0.0053	0.0026	0.0003
0.498	29.82	4.24	0.2978	−0.1233	−0.2763	−0.0448	0.0246	0.0014	0.1846	0.1173	−0.3253	0.0000	0.0010	0.0003

Table 17. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.9087	0.9061	3.85	−2.05	−0.0161	0.0011	−0.0019	−0.0006	0.0004	0.0000
3.00	0.8983	0.8958	3.52	−2.45	−0.0295	0.0018	−0.0036	−0.0013	0.0009	0.0001
4.00	0.8850	0.8809	3.97	−3.84	−0.0427	0.0030	−0.0060	−0.0029	0.0017	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	45.01	0.98	0.2549	0.2671	−0.5216	−0.0016	0.0005	0.0031	0.2549	0.2671	−0.5216	−0.0016	0.0005	0.0031
0.300	44.98	2.00	0.4644	0.1163	−0.5933	−0.0214	0.0102	0.0025	0.2728	0.2839	−0.5629	−0.0123	0.0040	0.0025
0.303	44.98	3.01	0.6271	−0.0130	−0.6396	−0.0392	0.0196	0.0030	0.2803	0.2937	−0.5839	−0.0193	0.0059	0.0023
0.302	44.96	4.25	0.8395	−0.1650	−0.7186	−0.0775	0.0390	0.0035	0.2947	0.3083	−0.6152	−0.0264	0.0079	0.0014
0.301	60.00	0.97	0.2008	0.3932	−0.6137	0.0017	0.0003	0.0047	0.2008	0.3932	−0.6137	0.0017	0.0003	0.0047
0.300	59.98	2.00	0.4430	0.2912	−0.6704	−0.0192	0.0104	0.0037	0.2134	0.4040	−0.6398	−0.0100	0.0041	0.0037
0.300	59.98	3.00	0.6479	0.2118	−0.7282	−0.0396	0.0208	0.0040	0.2260	0.4221	−0.6716	−0.0194	0.0069	0.0032
0.300	59.98	4.25	0.8968	0.1173	−0.8053	−0.0807	0.0413	0.0053	0.2372	0.4385	−0.7001	−0.0287	0.0098	0.0032
0.299	35.24	0.99	0.2185	0.1481	−0.3943	0.0044	−0.0012	0.0024	0.2185	0.1481	−0.3943	0.0044	−0.0012	0.0024
0.300	38.00	0.99	0.2299	0.1804	−0.4308	0.0108	−0.0034	0.0030	0.2299	0.1804	−0.4308	0.0108	−0.0034	0.0030
0.299	40.01	0.98	0.2374	0.2040	−0.4569	0.0026	−0.0009	0.0017	0.2374	0.2040	−0.4569	0.0026	−0.0009	0.0017
0.299	42.02	0.98	0.2501	0.2333	−0.4921	0.0079	−0.0024	0.0026	0.2501	0.2333	−0.4921	0.0079	−0.0024	0.0026
0.298	45.01	0.98	0.2521	0.2643	−0.520	0.0057	−0.0016	0.0028	0.2521	0.2643	−0.5200	0.0057	−0.0016	0.0028
0.298	50.03	0.98	0.2504	0.3180	−0.5708	−0.0027	0.0010	0.0019	0.2504	0.3180	−0.5708	−0.0027	0.0010	0.0019
0.303	55.01	0.98	0.2284	0.3581	−0.5924	0.0026	0.0000	0.0044	0.2284	0.3581	−0.5924	0.0026	0.0000	0.0044
0.299	59.99	0.98	0.1980	0.3926	−0.6116	0.0040	−0.0003	0.0045	0.1980	0.3926	−0.6116	0.0040	−0.0003	0.0045
0.299	65.01	0.97	0.1776	0.4483	−0.6718	0.0076	−0.0016	0.0042	0.1776	0.4483	−0.6718	0.0076	−0.0016	0.0042
0.298	68.32	0.97	0.1594	0.4904	−0.7192	0.0130	−0.0031	0.0056	0.1594	0.4904	−0.7192	0.0130	−0.0031	0.0056
0.300	34.95	4.26	0.7132	−0.3886	−0.5731	−0.0653	0.0364	0.0038	0.2503	0.1831	−0.4676	−0.0131	0.0047	0.0017
0.300	37.99	4.26	0.7638	−0.3208	−0.6317	−0.0573	0.0332	0.0044	0.2722	0.2245	−0.5264	−0.0052	0.0016	0.0023
0.300	39.96	4.26	0.7898	−0.2807	−0.6595	−0.0661	0.0356	0.0035	0.2793	0.2477	−0.5542	−0.0140	0.0040	0.0014
0.299	41.96	4.26	0.8161	−0.2408	−0.6874	−0.0663	0.0360	0.0038	0.2860	0.2710	−0.5817	−0.0140	0.0043	0.0017
0.299	44.97	4.26	0.8509	−0.1801	−0.7214	−0.0719	0.0380	0.0038	0.2920	0.3054	−0.6153	−0.0194	0.0061	0.0017
0.297	49.99	4.25	0.8881	−0.0854	−0.7559	−0.0798	0.0413	0.0044	0.2834	0.3534	−0.6488	−0.0270	0.0091	0.0022
0.302	55.00	4.26	0.8871	0.0238	−0.7795	−0.0771	0.0401	0.0045	0.2645	0.3971	−0.6754	−0.0256	0.0088	0.0024
0.298	59.99	4.25	0.9038	0.1123	−0.8062	−0.0772	0.0409	0.0062	0.2364	0.4372	−0.6998	−0.0247	0.0089	0.0040
0.298	64.97	4.25	0.8863	0.1975	−0.8116	−0.0821	0.0425	0.0061	0.1955	0.4624	−0.7055	−0.0297	0.0107	0.0040
0.298	68.05	4.25	0.8729	0.2439	−0.8095	−0.0801	0.0417	0.0056	0.1660	0.4722	−0.7030	−0.0275	0.0098	0.0034

Table 18. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 20°;\ \delta_{B,E} = 20°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.6917	0.6795	8.07	−7.25	−0.0120	0.0017	−0.0031	−0.0015	0.0011	0.0001
3.00	0.7430	0.7297	7.06	−8.35	−0.0242	0.0030	−0.0061	−0.0035	0.0023	0.0002
3.99	0.7596	0.7431	7.26	−9.63	−0.0364	0.0046	−0.0095	−0.0062	0.0037	0.0003

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	0.06	1.00	−0.0720	0.0135	0.1025	−0.0025	0.0009	−0.0005	−0.0720	0.0135	0.1025	−0.0025	0.0009	−0.0005
0.298	0.01	2.00	−0.0163	−0.1698	0.0200	−0.0258	0.0185	0.0003	−0.0439	0.0244	0.0700	−0.0011	0.0008	−0.0008
0.298	0.00	3.01	0.0213	−0.3604	−0.0485	−0.0615	0.0383	0.0018	−0.0271	0.0301	0.0495	−0.0041	0.0016	−0.0006
0.298	−0.01	4.25	0.0542	−0.5986	−0.1185	−0.1044	0.0631	0.0029	−0.0269	0.0354	0.0477	0.0054	−0.0017	−0.0017
0.298	15.03	1.00	0.0433	0.0159	−0.0748	0.0152	−0.0044	0.0000	0.0433	0.0159	−0.0748	0.0152	−0.0044	0.0000
0.298	15.06	2.00	0.1261	−0.1495	−0.1464	0.0030	0.0094	0.0010	0.0493	0.0304	−0.0965	0.0276	−0.0083	−0.0002
0.299	15.00	3.01	0.2189	−0.3223	−0.2219	−0.0328	0.0294	0.0019	0.0715	0.0416	−0.1242	0.0245	−0.0074	−0.0005
0.299	14.94	4.25	0.3355	−0.5384	−0.3164	−0.0855	0.0568	0.0035	0.0941	0.0520	−0.1506	0.0241	−0.0078	−0.0011
0.299	24.97	0.99	0.1476	0.0682	−0.2508	0.0086	−0.0022	0.0002	0.1476	0.0682	−0.2508	0.0086	−0.0022	0.0002
0.299	24.92	2.00	0.2715	−0.0720	−0.3387	−0.0106	0.0138	0.0007	0.1660	0.0906	−0.2892	0.0138	−0.0037	−0.0004
0.299	24.91	3.00	0.4002	−0.2241	−0.4235	−0.0498	0.0348	0.0018	0.1941	0.1061	−0.3267	0.0069	−0.0016	−0.0006
0.297	24.88	4.26	0.5697	−0.4230	−0.5356	−0.1096	0.0647	0.0034	0.2257	0.1237	−0.3676	0.0015	−0.0007	−0.0014
0.297	45.00	0.98	0.2528	0.2657	−0.5185	−0.0052	0.0016	0.0019	0.2528	0.2657	−0.5185	−0.0052	0.0016	0.0019
0.298	44.98	2.00	0.4658	0.1402	−0.6271	−0.0352	0.0180	0.0024	0.2803	0.2865	−0.5758	−0.0111	0.0029	0.0016
0.300	44.98	3.00	0.6297	0.0414	−0.7101	−0.0670	0.0358	0.0037	0.2961	0.3039	−0.6120	−0.0113	0.0030	0.0015
0.300	44.95	4.25	0.8342	−0.0894	−0.8065	−0.1228	0.0631	0.0042	0.3072	0.3158	−0.6369	−0.0188	0.0045	0.0003
0.299	59.99	0.98	0.1998	0.3913	−0.6135	0.0015	0.0004	0.0044	0.1998	0.3913	−0.6135	0.0015	0.0004	0.0044
0.298	60.00	2.01	0.4461	0.3187	−0.7150	−0.0351	0.0188	0.0045	0.2295	0.4117	−0.6638	−0.0111	0.0037	0.0037
0.298	59.97	3.00	0.6429	0.2675	−0.8068	−0.0754	0.0391	0.0041	0.2481	0.4368	−0.7075	−0.0190	0.0058	0.0019
0.299	59.97	4.26	0.8865	0.2072	−0.9255	−0.1335	0.0676	0.0059	0.2682	0.4637	−0.7547	−0.0287	0.0086	0.0020
0.300	0.06	1.00	−0.0738	0.0131	0.1044	0.0024	−0.0003	0.0003	−0.0738	0.0131	0.1044	0.0024	−0.0003	0.0003
0.301	5.03	1.00	−0.0369	0.0107	0.0530	0.0025	−0.0003	−0.0001	−0.0369	0.0107	0.0530	0.0025	−0.0003	−0.0001
0.302	10.03	1.00	−0.0029	0.0100	−0.0007	0.0014	−0.0002	−0.0006	−0.0029	0.0100	−0.0007	0.0014	−0.0002	−0.0006
0.301	14.98	1.00	0.0349	0.0145	−0.0670	0.0133	−0.0037	0.0008	0.0349	0.0145	−0.0670	0.0133	−0.0037	0.0008
0.298	19.96	0.99	0.0833	0.0312	−0.1548	0.0100	−0.0029	0.0015	0.0833	0.0312	−0.1548	0.0100	−0.0029	0.0015
0.300	25.15	0.99	0.1407	0.0663	−0.2464	0.0060	−0.0016	0.0004	0.1407	0.0663	−0.2464	0.0060	−0.0016	0.0004
0.297	29.92	0.99	0.1870	0.1053	−0.3291	0.0134	−0.0037	0.0003	0.1870	0.1053	−0.3291	0.0134	−0.0037	0.0003
0.301	32.37	0.99	0.2076	0.1284	−0.3690	0.0114	−0.0033	0.0002	0.2076	0.1284	−0.3690	0.0114	−0.0033	0.0002
0.300	35.24	0.99	0.2158	0.1473	−0.3920	0.0057	−0.0016	0.0024	0.2158	0.1473	−0.3920	0.0057	−0.0016	0.0024
0.300	38.01	0.99	0.2280	0.1790	−0.4286	0.0109	−0.0034	0.0030	0.2280	0.1790	−0.4286	0.0109	−0.0034	0.0030
0.299	40.00	0.98	0.2382	0.2034	−0.4576	0.0061	−0.0018	0.0022	0.2382	0.2034	−0.4576	0.0061	−0.0018	0.0022
0.299	42.00	0.98	0.2480	0.2299	−0.4887	0.0107	−0.0030	0.0030	0.2480	0.2299	−0.4887	0.0107	−0.0030	0.0030
0.299	45.01	0.98	0.2503	0.2616	−0.5164	−0.0001	0.0001	0.0017	0.2503	0.2616	−0.5164	−0.0001	0.0001	0.0017
0.299	50.00	0.98	0.2499	0.3166	−0.5699	−0.0034	0.0012	0.0015	0.2499	0.3166	−0.5699	−0.0034	0.0012	0.0015

Table 18. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	55.02	0.98	0.2263	0.3546	−0.5895	0.0031	−0.0001	0.0044	0.2263	0.3546	−0.5895	0.0031	−0.0001	0.0044
0.298	59.99	0.98	0.1979	0.3899	−0.6104	0.0035	0.0000	0.0047	0.1979	0.3899	−0.6104	0.0035	0.0000	0.0047
0.298	65.01	0.97	0.1770	0.4474	−0.6716	0.0078	−0.0016	0.0044	0.1770	0.4474	−0.6716	0.0078	−0.0016	0.0044
0.300	68.31	0.97	0.1584	0.4879	−0.7172	0.0150	−0.0037	0.0058	0.1584	0.4879	−0.7172	0.0150	−0.0037	0.0058
0.298	0.02	4.25	0.0393	−0.5929	−0.1032	−0.0919	0.0594	0.0041	−0.0422	0.0421	0.0632	0.0182	−0.0054	−0.0005
0.298	4.98	4.25	0.1152	−0.5843	−0.1431	−0.0928	0.0596	0.0043	−0.0205	0.0395	0.0229	0.0170	−0.0051	−0.0004
0.299	9.98	4.26	0.1995	−0.5662	−0.1969	−0.0941	0.0597	0.0044	0.0103	0.0422	−0.0312	0.0155	−0.0049	−0.0003
0.298	14.97	4.24	0.2925	−0.5459	−0.2720	−0.0786	0.0550	0.0059	0.0499	0.0467	−0.1056	0.0314	−0.0098	0.0013
0.300	19.94	4.26	0.4019	−0.4945	−0.3750	−0.0890	0.0578	0.0061	0.1129	0.0671	−0.2108	0.0196	−0.0062	0.0015
0.299	24.91	4.25	0.5075	−0.4369	−0.4702	−0.0978	0.0607	0.0063	0.1686	0.1011	−0.3049	0.0114	−0.0037	0.0017
0.297	29.88	4.25	0.6085	−0.3671	−0.5679	−0.0897	0.0588	0.0069	0.2185	0.1471	−0.4001	0.0212	−0.0065	0.0022
0.298	31.83	4.25	0.6413	−0.3301	−0.6044	−0.0919	0.0587	0.0065	0.2380	0.1658	−0.4382	0.0180	−0.0060	0.0019
0.300	34.98	4.26	0.7083	−0.3042	−0.6511	−0.1150	0.0617	0.0047	0.2591	0.1865	−0.4813	−0.0108	0.0030	0.0008
0.300	37.97	4.26	0.7562	−0.2392	−0.7108	−0.1066	0.0584	0.0052	0.2815	0.2278	−0.5409	−0.0023	−0.0003	0.0014
0.303	39.96	4.26	0.7699	−0.1888	−0.7362	−0.1116	0.0592	0.0046	0.2898	0.2519	−0.5699	−0.0096	0.0017	0.0008
0.302	41.98	4.25	0.7924	−0.1483	−0.7636	−0.1130	0.0595	0.0045	0.2969	0.2754	−0.5974	−0.0110	0.0021	0.0007
0.301	44.94	4.25	0.8229	−0.0888	−0.7997	−0.1196	0.0619	0.0045	0.3032	0.3109	−0.6325	−0.0170	0.0042	0.0007
0.300	49.98	4.25	0.8544	0.0041	−0.8374	−0.1255	0.0646	0.0058	0.2964	0.3601	−0.6686	−0.0220	0.0063	0.0018
0.301	54.95	4.25	0.8701	0.1053	−0.8784	−0.1281	0.0656	0.0064	0.2859	0.4102	−0.7104	−0.0250	0.0076	0.0025
0.301	59.97	4.25	0.8733	0.2075	−0.9189	−0.1266	0.0652	0.0067	0.2658	0.4597	−0.7511	−0.0237	0.0072	0.0029
0.298	64.96	4.24	0.8647	0.2884	−0.9341	−0.1293	0.0662	0.0063	0.2243	0.4909	−0.7629	−0.0243	0.0071	0.0024
0.297	67.87	4.24	0.8385	0.3214	−0.9133	−0.1509	0.0752	0.0100	0.1865	0.4917	−0.7416	−0.0456	0.0159	0.0061
0.499	0.10	0.99	−0.0803	0.0160	0.1115	−0.0019	0.0009	0.0004	−0.0803	0.0160	0.1115	−0.0019	0.0009	0.0004
0.499	0.08	2.01	−0.0618	−0.0452	0.0813	−0.0105	0.0073	0.0008	−0.0717	0.0238	0.0991	−0.0018	0.0010	0.0003
0.499	0.04	3.00	−0.0413	−0.1118	0.0504	−0.0230	0.0145	0.0011	−0.0586	0.0273	0.0853	−0.0025	0.0014	0.0003
0.499	0.02	4.25	−0.0209	−0.1965	0.0152	−0.0402	0.0239	0.0016	−0.0499	0.0295	0.0745	−0.0010	0.0008	−0.0001
0.500	0.01	5.00	−0.0114	−0.2493	−0.0010	−0.0475	0.0279	0.0017	−0.0474	0.0290	0.0729	0.0029	−0.0012	−0.0004
0.498	14.98	0.99	0.0405	0.0181	−0.0799	0.0104	−0.0031	0.0019	0.0405	0.0181	−0.0799	0.0104	−0.0031	0.0019
0.499	14.93	2.00	0.0820	−0.0403	−0.1183	0.0028	0.0026	0.0012	0.0548	0.0238	−0.1005	0.0116	−0.0037	0.0008
0.499	14.92	3.00	0.1194	−0.1005	−0.1515	−0.0102	0.0097	0.0014	0.0668	0.0297	−0.1166	0.0103	−0.0034	0.0005
0.498	14.88	4.26	0.1702	−0.1766	−0.1966	−0.0297	0.0197	0.0017	0.0836	0.0359	−0.1370	0.0098	−0.0036	0.0000
0.498	14.91	5.01	0.1982	−0.2243	−0.2193	−0.0419	0.0253	0.0018	0.0912	0.0371	−0.1449	0.0089	−0.0040	−0.0003
0.499	24.84	0.97	0.1596	0.0773	−0.2653	−0.0034	0.0012	−0.0004	0.1596	0.0773	−0.2653	−0.0034	0.0012	−0.0004
0.498	24.83	2.00	0.2224	0.0324	−0.3197	−0.0070	0.0059	−0.0003	0.1844	0.0912	−0.3018	0.0018	−0.0004	−0.0008
0.499	24.84	3.00	0.2716	−0.0187	−0.3561	−0.0214	0.0133	0.0002	0.1976	0.1001	−0.3213	−0.0011	0.0003	−0.0007
0.500	24.73	4.25	0.3346	−0.0830	−0.4023	−0.0405	0.0232	0.0008	0.2141	0.1095	−0.3432	−0.0014	0.0002	−0.0009
0.500	24.76	5.01	0.3724	−0.1252	−0.4267	−0.0502	0.0280	0.0011	0.2230	0.1128	−0.3527	0.0003	−0.0011	−0.0010
0.502	0.01	0.99	−0.0780	0.0191	0.1102	−0.0033	0.0012	0.0002	−0.0780	0.0191	0.1102	−0.0033	0.0012	0.0002
0.498	5.05	0.99	−0.0382	0.0149	0.0556	−0.0035	0.0013	−0.0001	−0.0382	0.0149	0.0556	−0.0035	0.0013	−0.0001
0.501	10.00	0.99	−0.0040	0.0146	0.0020	−0.0015	0.0006	−0.0003	−0.0040	0.0146	0.0020	−0.0015	0.0006	−0.0003
0.499	15.00	0.99	0.0425	0.0183	−0.0819	0.0099	−0.0030	0.0017	0.0425	0.0183	−0.0819	0.0099	−0.0030	0.0017
0.501	19.90	0.98	0.1030	0.0404	−0.1758	0.0014	−0.0003	0.0003	0.1030	0.0404	−0.1758	0.0014	−0.0003	0.0003
0.497	24.85	0.97	0.1587	0.0769	−0.2648	−0.0044	0.0015	−0.0005	0.1587	0.0769	−0.2648	−0.0044	0.0015	−0.0005
0.495	29.82	0.96	0.2026	0.1180	−0.3453	0.0058	−0.0016	−0.0002	0.2026	0.1180	−0.3453	0.0058	−0.0016	−0.0002
0.502	0.01	4.26	−0.0236	−0.1960	0.0189	−0.0435	0.0246	0.0016	−0.0524	0.0284	0.0778	−0.0046	0.0017	−0.0001

Table 18. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	4.98	4.26	0.0289	−0.1962	−0.0310	−0.0412	0.0239	0.0016	−0.0195	0.0264	0.0283	−0.0020	0.0008	−0.0001
0.500	9.94	4.25	0.0676	−0.1895	−0.0722	−0.0399	0.0233	0.0014	0.0003	0.0273	−0.0132	−0.0009	0.0003	−0.0003
0.498	14.92	4.25	0.1450	−0.1807	−0.1698	−0.0311	0.0202	0.0029	0.0582	0.0318	−0.1101	0.0083	−0.0030	0.0011
0.498	19.90	4.24	0.2273	−0.1472	−0.2703	−0.0406	0.0235	0.0024	0.1227	0.0563	−0.2108	−0.0013	0.0004	0.0008
0.500	24.80	4.27	0.3050	−0.0984	−0.3681	−0.0469	0.0253	0.0024	0.1836	0.0951	−0.3087	−0.0076	0.0021	0.0008
0.498	29.69	4.26	0.3737	−0.0419	−0.4611	−0.0398	0.0233	0.0024	0.2354	0.1417	−0.4013	−0.0002	0.0001	0.0008

Table 19. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.6293	0.5904	14.65	−14.60	−0.0105	0.0027	−0.0048	−0.0027	0.0017	0.0001
3.00	0.6663	0.6355	10.51	−14.29	−0.0211	0.0039	−0.0079	−0.0054	0.0032	0.0003
4.02	0.6847	0.6573	10.08	−12.99	−0.0322	0.0057	−0.0111	−0.0074	0.0042	0.0003

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	0.05	1.00	−0.0701	0.0141	0.1000	−0.0002	0.0003	−0.0009	−0.0701	0.0141	0.1000	−0.0002	0.0003	−0.0009
0.298	−0.01	2.00	0.0028	−0.1794	−0.0122	−0.0424	0.0260	0.0004	−0.0412	−0.0110	0.0652	0.0015	−0.0017	−0.0016
0.298	−0.03	2.98	0.0516	−0.3404	−0.0967	−0.0800	0.0476	0.0012	−0.0108	−0.0042	0.0297	0.0056	−0.0036	−0.0026
0.299	−0.02	4.28	0.0769	−0.5643	−0.1509	−0.1095	0.0639	0.0019	−0.0222	−0.0017	0.0394	0.0182	−0.0079	−0.0037
0.299	14.97	0.99	0.0700	−0.0175	−0.0918	0.0018	−0.0019	−0.0013	0.0700	−0.0175	−0.0918	0.0018	−0.0019	−0.0013
0.299	14.97	2.00	0.1530	−0.1527	−0.1825	−0.0215	0.0189	−0.0001	0.0679	−0.0031	−0.1059	0.0218	−0.0085	−0.0021
0.298	14.95	2.99	0.2533	−0.2972	−0.2794	−0.0658	0.0430	0.0009	0.1055	0.0132	−0.1525	0.0202	−0.0085	−0.0030
0.299	14.93	4.27	0.3629	−0.4965	−0.3636	−0.1028	0.0618	0.0021	0.1226	0.0199	−0.1738	0.0246	−0.0099	−0.0035
0.300	24.94	0.99	0.1787	0.0380	−0.2661	−0.0037	−0.0001	−0.0019	0.1787	0.0380	−0.2661	−0.0037	−0.0001	−0.0019
0.300	24.93	2.00	0.3137	−0.0677	−0.3919	−0.0374	0.0240	−0.0007	0.2044	0.0646	−0.3156	0.0058	−0.0033	−0.0027
0.300	24.90	2.99	0.4403	−0.1903	−0.4939	−0.0879	0.0499	0.0003	0.2442	0.0854	−0.3690	−0.0032	−0.0007	−0.0034
0.300	24.85	4.29	0.5904	−0.3668	−0.5881	−0.1278	0.0697	0.0017	0.2659	0.0989	−0.3990	−0.0010	−0.0017	−0.0038
0.299	0.03	1.00	−0.0676	0.0095	0.0980	0.0043	−0.0007	−0.0006	−0.0676	0.0095	0.0980	0.0043	−0.0007	−0.0006
0.300	9.98	1.00	0.0266	−0.0239	−0.0223	−0.0090	0.0016	−0.0021	0.0266	−0.0239	−0.0223	−0.0090	0.0016	−0.0021
0.299	15.02	0.99	0.0643	−0.0176	−0.0869	0.0022	−0.0018	−0.0008	0.0643	−0.0176	−0.0869	0.0022	−0.0018	−0.0008
0.298	20.00	0.99	0.1194	0.0028	−0.1780	0.0000	−0.0011	−0.0003	0.1194	0.0028	−0.1780	0.0000	−0.0011	−0.0003
0.300	24.96	0.99	0.1735	0.0382	−0.2625	−0.0047	0.0003	−0.0012	0.1735	0.0382	−0.2625	−0.0047	0.0003	−0.0012
0.298	29.92	0.99	0.2203	0.0782	−0.3442	0.0022	−0.0019	−0.0010	0.2203	0.0782	−0.3442	0.0022	−0.0019	−0.0010
0.291	32.46	0.99	0.2456	0.1054	−0.3899	−0.0011	−0.0012	−0.0019	0.2456	0.1054	−0.3899	−0.0011	−0.0012	−0.0019
0.301	−0.02	4.25	0.0869	−0.5454	−0.1624	−0.1259	0.0693	0.0004	−0.0101	0.0046	0.0239	−0.0009	−0.0011	−0.0050
0.301	4.97	4.24	0.1773	−0.5281	−0.2196	−0.1271	0.0694	0.0006	0.0339	0.0072	−0.0346	−0.0030	−0.0004	−0.0047
0.302	9.96	4.27	0.2639	−0.5082	−0.2819	−0.1273	0.0694	0.0006	0.0735	0.0157	−0.0961	−0.0026	−0.0008	−0.0048
0.301	14.94	4.25	0.3578	−0.4768	−0.3652	−0.1176	0.0663	0.0018	0.1228	0.0278	−0.1795	0.0071	−0.0039	−0.0036
0.299	19.89	4.24	0.4795	−0.4298	−0.4849	−0.1265	0.0695	0.0023	0.1991	0.0575	−0.2972	−0.0006	−0.0015	−0.0032
0.297	24.88	4.25	0.5901	−0.3670	−0.5903	−0.1336	0.0725	0.0024	0.2618	0.1036	−0.3989	−0.0052	0.0002	−0.0031
0.299	29.82	4.25	0.6780	−0.2784	−0.6870	−0.1245	0.0693	0.0030	0.3159	0.1554	−0.4984	0.0020	−0.0020	−0.0024
0.298	31.86	4.24	0.7153	−0.2395	−0.7292	−0.1230	0.0687	0.0030	0.3371	0.1822	−0.5402	0.0039	−0.0028	−0.0025
0.502	0.03	0.99	−0.0698	0.0004	0.1008	−0.0053	0.0012	−0.0003	−0.0698	0.0004	0.1008	−0.0053	0.0012	−0.0003
0.501	0.06	2.00	−0.0491	−0.0500	0.0636	−0.0221	0.0118	0.0005	−0.0647	0.0095	0.0910	−0.0066	0.0019	−0.0002
0.501	0.04	2.98	−0.0289	−0.1060	0.0297	−0.0371	0.0200	0.0010	−0.0512	0.0136	0.0746	−0.0066	0.0018	−0.0004
0.501	−0.02	4.24	−0.0092	−0.1812	−0.0017	−0.0492	0.0267	0.0010	−0.0441	0.0163	0.0653	−0.0043	0.0013	−0.0009
0.501	0.03	5.00	−0.0013	−0.2302	−0.0142	−0.0539	0.0288	0.0010	−0.0441	0.0149	0.0662	−0.0002	−0.0008	−0.0013
0.500	14.98	0.98	0.0500	0.0042	−0.0858	0.0078	−0.0030	0.0016	0.0500	0.0042	−0.0858	0.0078	−0.0030	0.0016
0.500	14.95	2.01	0.0976	−0.0392	−0.1397	−0.0059	0.0061	0.0008	0.0670	0.0148	−0.1122	0.0097	−0.0037	0.0001

Table 19. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.499	14.87	2.99	0.1359	−0.0885	−0.1791	−0.0228	0.0150	0.0010	0.0835	0.0219	−0.1340	0.0078	−0.0033	−0.0004
0.500	14.86	4.26	0.1827	−0.1569	−0.2210	−0.0396	0.0230	0.0011	0.0973	0.0273	−0.1533	0.0058	−0.0026	−0.0009
0.499	14.88	5.01	0.2077	−0.2002	−0.2389	−0.0453	0.0256	0.0011	0.1027	0.0274	−0.1579	0.0089	−0.0042	−0.0011
0.499	24.85	0.97	0.1696	0.0649	−0.2701	−0.0077	0.0019	−0.0007	0.1696	0.0649	−0.2701	−0.0077	0.0019	−0.0007
0.498	24.82	1.99	0.2351	0.0330	−0.3374	−0.0198	0.0105	−0.0005	0.1960	0.0805	−0.3101	−0.0043	0.0006	−0.0012
0.498	24.75	3.02	0.2894	−0.0097	−0.3853	−0.0387	0.0202	−0.0002	0.2172	0.0925	−0.3393	−0.0075	0.0016	−0.0016
0.499	24.73	4.25	0.3461	−0.0658	−0.4269	−0.0546	0.0279	0.0003	0.2307	0.1006	−0.3594	−0.0093	0.0023	−0.0017
0.499	24.73	5.03	0.3818	−0.1051	−0.4493	−0.0619	0.0310	0.0005	0.2385	0.1026	−0.3678	−0.0074	0.0010	−0.0018
0.503	0.05	0.99	−0.0753	0.0173	0.1062	−0.0017	0.0007	0.0001	−0.0753	0.0173	0.1062	−0.0017	0.0007	0.0001
0.499	5.03	0.99	−0.0363	0.0145	0.0529	−0.0019	0.0008	−0.0001	−0.0363	0.0145	0.0529	−0.0019	0.0008	−0.0001
0.498	10.05	0.99	0.0021	0.0004	−0.0030	−0.0067	0.0015	−0.0006	0.0021	0.0004	−0.0030	−0.0067	0.0015	−0.0006
0.505	14.98	0.99	0.0494	0.0036	−0.0860	0.0050	−0.0022	0.0014	0.0494	0.0036	−0.0860	0.0050	−0.0022	0.0014
0.499	14.97	0.98	0.0494	0.0046	−0.0857	0.0060	−0.0024	0.0014	0.0494	0.0046	−0.0857	0.0060	−0.0024	0.0014
0.503	19.91	0.98	0.1121	0.0274	−0.1810	−0.0040	0.0009	0.0000	0.1121	0.0274	−0.1810	−0.0040	0.0009	0.0000
0.498	24.84	0.97	0.1678	0.0641	−0.2686	−0.0092	0.0023	−0.0007	0.1678	0.0641	−0.2686	−0.0092	0.0023	−0.0007
0.498	29.81	0.96	0.2142	0.1072	−0.3509	0.0007	−0.0006	−0.0007	0.2142	0.1072	−0.3509	0.0007	−0.0006	−0.0007
0.501	0.01	4.25	−0.0036	−0.1831	−0.0083	−0.0481	0.0261	0.0000	−0.0387	0.0152	0.0589	−0.0031	0.0008	−0.0019
0.502	4.99	4.26	0.0489	−0.1797	−0.0592	−0.0493	0.0264	0.0002	−0.0032	0.0144	0.0078	−0.0044	0.0011	−0.0018
0.503	9.96	4.25	0.0979	−0.1698	−0.1128	−0.0492	0.0260	−0.0001	0.0296	0.0179	−0.0462	−0.0045	0.0009	−0.0020
0.500	14.88	4.25	0.1781	−0.1562	−0.2154	−0.0389	0.0227	0.0014	0.0931	0.0270	−0.1480	0.0063	−0.0027	−0.0006
0.500	19.86	4.25	0.2572	−0.1222	−0.3148	−0.0459	0.0254	0.0010	0.1566	0.0529	−0.2474	−0.0007	−0.0002	−0.0010
0.502	24.77	4.25	0.3294	−0.0713	−0.4087	−0.0523	0.0270	0.0010	0.2148	0.0936	−0.3417	−0.0074	0.0017	−0.0010
0.498	29.70	4.26	0.3959	−0.0165	−0.5009	−0.0430	0.0246	0.0017	0.2653	0.1406	−0.4328	0.0027	−0.0011	−0.0003

Table 20. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 15°;\ \delta_B = 15°;\ \delta_E = 10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9299	0.9260	5.13	−1.02	−0.0163	0.0015	−0.0024	−0.0003	0.0003	0.0000
3.01	0.9224	0.9194	4.44	−1.29	−0.0302	0.0023	−0.0044	−0.0007	0.0005	0.0000
3.99	0.9111	0.9071	4.66	−2.61	−0.0435	0.0035	−0.0068	−0.0020	0.0012	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	0.00	1.00	−0.0764	0.0166	0.1028	−0.0077	0.0029	−0.0010	−0.0764	0.0166	0.1028	−0.0077	0.0029	−0.0010
0.303	0.00	2.01	−0.0462	−0.2292	0.0554	−0.0131	0.0073	−0.0016	−0.0690	0.0261	0.0938	−0.0085	0.0036	−0.0013
0.303	0.01	2.99	−0.0236	−0.4371	0.0154	−0.0179	0.0119	−0.0014	−0.0601	0.0316	0.0829	−0.0073	0.0034	−0.0017
0.303	−0.01	4.26	0.0063	−0.6958	−0.0426	−0.0345	0.0237	−0.0005	−0.0536	0.0360	0.0739	0.0018	0.0013	−0.0015
0.303	14.99	0.99	0.0252	0.0422	−0.0658	0.0091	−0.0020	−0.0001	0.0252	0.0422	−0.0658	0.0091	−0.0020	−0.0001
0.303	15.01	2.01	0.1121	−0.1872	−0.1099	0.0060	0.0018	−0.0003	0.0237	0.0542	−0.0714	0.0106	−0.0019	−0.0001
0.303	15.01	3.00	0.1848	−0.3819	−0.1482	−0.0069	0.0089	−0.0001	0.0283	0.0614	−0.0807	0.0036	0.0003	−0.0003
0.301	14.99	4.25	0.2876	−0.6331	−0.2132	−0.0347	0.0240	0.0010	0.0370	0.0671	−0.0953	0.0019	0.0014	−0.0001
0.300	25.01	0.99	0.1283	0.1119	−0.2513	0.0073	−0.0013	0.0007	0.1283	0.1119	−0.2513	0.0073	−0.0013	0.0007
0.300	24.98	2.01	0.2638	−0.1025	−0.3079	−0.0039	0.0049	0.0009	0.1325	0.1240	−0.2687	0.0008	0.0010	0.0011
0.300	24.98	3.00	0.3730	−0.2867	−0.3496	−0.0175	0.0122	0.0013	0.1373	0.1311	−0.2807	−0.0067	0.0035	0.0010
0.301	24.96	4.25	0.5150	−0.5098	−0.4153	−0.0492	0.0284	0.0024	0.1471	0.1364	−0.2973	−0.0126	0.0057	0.0013
0.301	0.00	1.00	−0.0776	0.0117	0.1034	−0.0007	0.0013	−0.0012	−0.0776	0.0117	0.1034	−0.0007	0.0013	−0.0012
0.301	5.02	1.00	−0.0399	0.0192	0.0517	0.0000	0.0010	−0.0010	−0.0399	0.0192	0.0517	0.0000	0.0010	−0.0010
0.302	10.00	1.00	−0.0078	0.0297	−0.0008	0.0023	0.0002	−0.0006	−0.0078	0.0297	−0.0008	0.0023	0.0002	−0.0006
0.301	15.01	1.00	0.0261	0.0443	−0.0669	0.0130	−0.0031	−0.0002	0.0261	0.0443	−0.0669	0.0130	−0.0031	−0.0002
0.300	20.00	0.99	0.0813	0.0730	−0.1636	0.0123	−0.0030	0.0003	0.0813	0.0730	−0.1636	0.0123	−0.0030	0.0003
0.299	25.01	0.99	0.1289	0.1149	−0.2519	0.0092	−0.0019	0.0006	0.1289	0.1149	−0.2519	0.0092	−0.0019	0.0006
0.300	30.00	0.99	0.1665	0.1606	−0.3358	0.0141	−0.0035	0.0015	0.1665	0.1606	−0.3358	0.0141	−0.0035	0.0015
0.299	32.62	0.99	0.1831	0.1883	−0.3783	0.0141	−0.0036	0.0017	0.1831	0.1883	−0.3783	0.0141	−0.0036	0.0017
0.302	−0.03	4.24	−0.0001	−0.6998	−0.0370	−0.0345	0.0241	−0.0006	−0.0599	0.0338	0.0797	0.0017	0.0017	−0.0017
0.303	4.98	4.25	0.0997	−0.6838	−0.0907	−0.0350	0.0242	−0.0003	−0.0239	0.0413	0.0260	0.0013	0.0018	−0.0012
0.302	9.98	4.25	0.1927	−0.6615	−0.1460	−0.0381	0.0250	−0.0001	0.0053	0.0539	−0.0287	−0.0017	0.0024	−0.0010
0.301	14.97	4.25	0.2889	−0.6339	−0.2144	−0.0326	0.0236	0.0011	0.0384	0.0671	−0.0963	0.0040	0.0010	0.0001
0.299	19.97	4.24	0.4138	−0.5844	−0.3250	−0.0378	0.0252	0.0024	0.1009	0.0971	−0.2061	−0.0010	0.0024	0.0014
0.300	24.96	4.25	0.5216	−0.5134	−0.4195	−0.0473	0.0281	0.0027	0.1504	0.1384	−0.3005	−0.0103	0.0052	0.0017
0.298	29.97	4.25	0.6210	−0.4345	−0.5151	−0.0442	0.0272	0.0034	0.1903	0.1883	−0.3950	−0.0069	0.0041	0.0024
0.297	32.19	4.25	0.6654	−0.3954	−0.5596	−0.0457	0.0276	0.0034	0.2075	0.2148	−0.4386	−0.0082	0.0044	0.0024
0.498	−0.01	0.99	−0.0762	0.0200	0.1068	−0.0073	0.0023	−0.0004	−0.0762	0.0200	0.1068	−0.0073	0.0023	−0.0004
0.498	−0.01	2.01	−0.0632	−0.0715	0.0862	−0.0093	0.0042	−0.0007	−0.0716	0.0228	0.1004	−0.0076	0.0028	−0.0006
0.498	−0.01	2.99	−0.0528	−0.1473	0.0688	−0.0121	0.0064	−0.0008	−0.0662	0.0256	0.0937	−0.0082	0.0032	−0.0009
0.499	−0.03	4.26	−0.0374	−0.2433	0.0411	−0.0189	0.0110	−0.0005	−0.0594	0.0271	0.0842	−0.0055	0.0027	−0.0010
0.499	−0.04	4.74	−0.0300	−0.2798	0.0280	−0.0215	0.0129	−0.0004	−0.0554	0.0281	0.0780	−0.0045	0.0026	−0.0010
0.499	14.99	0.99	0.0424	0.0315	−0.0833	0.0098	−0.0029	0.0009	0.0424	0.0315	−0.0833	0.0098	−0.0029	0.0009

Table 20. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.498	15.00	2.00	0.0797	–0.0526	–0.1068	0.0037	0.0000	0.0008	0.0473	0.0359	–0.0927	0.0054	–0.0013	0.0009
0.498	15.00	3.01	0.1084	–0.1253	–0.1237	–0.0001	0.0024	0.0010	0.0503	0.0394	–0.0986	0.0038	–0.0008	0.0009
0.499	14.99	4.25	0.1489	–0.2135	–0.1528	–0.0110	0.0081	0.0013	0.0576	0.0417	–0.1098	0.0024	–0.0002	0.0010
0.499	14.99	4.75	0.1660	–0.2479	–0.1667	–0.0174	0.0112	0.0014	0.0614	0.0437	–0.1165	–0.0002	0.0009	0.0010
0.503	25.02	0.97	0.1514	0.0956	–0.2643	–0.0015	0.0009	0.0010	0.1514	0.0956	–0.2643	–0.0015	0.0009	0.0010
0.502	24.99	2.01	0.2052	0.0195	–0.2940	–0.0071	0.0036	0.0009	0.1585	0.1001	–0.2800	–0.0055	0.0022	0.0010
0.503	24.98	3.00	0.2450	–0.0455	–0.3123	–0.0128	0.0064	0.0010	0.1612	0.1031	–0.2878	–0.0089	0.0033	0.0010
0.503	24.96	4.25	0.3002	–0.1239	–0.3426	–0.0255	0.0125	0.0014	0.1686	0.1074	–0.3003	–0.0124	0.0044	0.0010
0.503	24.97	4.76	0.3248	–0.1548	–0.3586	–0.0322	0.0156	0.0015	0.1736	0.1101	–0.3092	–0.0153	0.0054	0.0010
0.500	0.00	0.99	–0.0770	0.0170	0.1063	–0.0056	0.0020	–0.0008	–0.0770	0.0170	0.1063	–0.0056	0.0020	–0.0008
0.501	5.00	0.99	–0.0397	0.0178	0.0548	–0.0051	0.0018	–0.0006	–0.0397	0.0178	0.0548	–0.0051	0.0018	–0.0006
0.501	10.01	0.99	–0.0078	0.0223	0.0030	–0.0015	0.0007	–0.0003	–0.0078	0.0223	0.0030	–0.0015	0.0007	–0.0003
0.500	14.99	0.99	0.0422	0.0318	–0.0829	0.0078	–0.0024	0.0006	0.0422	0.0318	–0.0829	0.0078	–0.0024	0.0006
0.502	20.01	0.98	0.0991	0.0575	–0.1756	0.0017	–0.0003	0.0006	0.0991	0.0575	–0.1756	0.0017	–0.0003	0.0006
0.497	24.99	0.97	0.1503	0.0959	–0.2626	–0.0026	0.0010	0.0007	0.1503	0.0959	–0.2626	–0.0026	0.0010	0.0007
0.497	30.01	0.96	0.1917	0.1399	–0.3442	0.0105	–0.0028	0.0013	0.1917	0.1399	–0.3442	0.0105	–0.0028	0.0013
0.499	–0.02	4.25	–0.0382	–0.2439	0.0416	–0.0179	0.0108	–0.0006	–0.0602	0.0258	0.0845	–0.0046	0.0025	–0.0010
0.501	4.98	4.25	0.0181	–0.2380	–0.0073	–0.0169	0.0103	–0.0003	–0.0270	0.0264	0.0353	–0.0037	0.0021	–0.0007
0.502	10.00	4.25	0.0691	–0.2266	–0.0575	–0.0170	0.0101	–0.0003	0.0013	0.0322	–0.0151	–0.0039	0.0020	–0.0007
0.500	14.99	4.25	0.1474	–0.2128	–0.1519	–0.0111	0.0081	0.0014	0.0564	0.0416	–0.1090	0.0022	–0.0002	0.0010
0.502	19.97	4.25	0.2244	–0.1753	–0.2466	–0.0232	0.0118	0.0015	0.1130	0.0672	–0.2042	–0.0100	0.0037	0.0011
0.501	24.99	4.25	0.3016	–0.1258	–0.3428	–0.0262	0.0127	0.0015	0.1685	0.1078	–0.3002	–0.0129	0.0045	0.0011
0.499	29.95	4.26	0.3688	–0.0693	–0.4340	–0.0178	0.0103	0.0017	0.2146	0.1538	–0.3909	–0.0044	0.0020	0.0013
0.699	–0.01	0.98	–0.0808	0.0196	0.1128	–0.0050	0.0017	–0.0004	–0.0808	0.0196	0.1128	–0.0050	0.0017	–0.0004
0.699	–0.02	2.00	–0.0726	–0.0262	0.1006	–0.0087	0.0035	–0.0004	–0.0768	0.0215	0.1078	–0.0079	0.0028	–0.0004
0.702	0.01	3.01	–0.0672	–0.0649	0.0918	–0.0114	0.0050	–0.0004	–0.0741	0.0229	0.1044	–0.0094	0.0034	–0.0005
0.701	–0.02	4.25	–0.0582	–0.1123	0.0763	–0.0157	0.0077	–0.0003	–0.0693	0.0246	0.0981	–0.0089	0.0035	–0.0005
0.700	0.00	5.00	–0.0522	–0.1416	0.0654	–0.0185	0.0095	–0.0003	–0.0661	0.0249	0.0927	–0.0089	0.0037	–0.0005
0.698	0.01	5.60	–0.0469	–0.1656	0.0561	–0.0208	0.0109	–0.0002	–0.0630	0.0253	0.0879	–0.0088	0.0038	–0.0005
0.699	15.01	0.97	0.0516	0.0299	–0.0947	0.0003	0.0000	0.0003	0.0516	0.0299	–0.0947	0.0003	0.0000	0.0003
0.701	15.00	2.00	0.0714	–0.0137	–0.1081	–0.0016	0.0010	0.0003	0.0550	0.0310	–0.1010	–0.0008	0.0003	0.0003
0.700	15.00	3.01	0.0874	–0.0501	–0.1190	–0.0046	0.0026	0.0003	0.0579	0.0333	–0.1063	–0.0026	0.0010	0.0003
0.700	14.98	4.25	0.1084	–0.0944	–0.1353	–0.0107	0.0057	0.0003	0.0621	0.0351	–0.1135	–0.0040	0.0015	0.0002
0.699	14.99	5.01	0.1227	–0.1211	–0.1474	–0.0150	0.0078	0.0004	0.0660	0.0366	–0.1200	–0.0053	0.0020	0.0002
0.699	15.00	5.61	0.1346	–0.1427	–0.1580	–0.0185	0.0095	0.0005	0.0697	0.0375	–0.1261	–0.0065	0.0024	0.0002
0.699	0.02	0.98	–0.0803	0.0196	0.1125	–0.0072	0.0024	–0.0004	–0.0803	0.0196	0.1125	–0.0072	0.0024	–0.0004
0.703	4.98	0.98	–0.0445	0.0182	0.0634	–0.0061	0.0020	–0.0003	–0.0445	0.0182	0.0634	–0.0061	0.0020	–0.0003
0.698	10.00	0.98	–0.0129	0.0202	0.0115	–0.0030	0.0010	–0.0003	–0.0129	0.0202	0.0115	–0.0030	0.0010	–0.0003
0.699	15.01	0.97	0.0518	0.0300	–0.0944	0.0004	–0.0002	0.0003	0.0518	0.0300	–0.0944	0.0004	–0.0002	0.0003
0.699	20.01	0.96	0.1054	0.0544	–0.1805	0.0013	–0.0003	0.0007	0.1054	0.0544	–0.1805	0.0013	–0.0003	0.0007
0.701	–0.02	4.26	–0.0580	–0.1139	0.0761	–0.0150	0.0073	–0.0004	–0.0692	0.0231	0.0979	–0.0082	0.0031	–0.0007
0.699	4.99	4.25	–0.0103	–0.1137	0.0250	–0.0143	0.0071	–0.0002	–0.0335	0.0222	0.0469	–0.0075	0.0029	–0.0003
0.702	9.99	4.26	0.0273	–0.1086	–0.0220	–0.0122	0.0062	–0.0004	–0.0075	0.0241	–0.0002	–0.0054	0.0020	–0.0006
0.701	14.99	4.26	0.1087	–0.0949	–0.1362	–0.0127	0.0063	0.0006	0.0625	0.0343	–0.1145	–0.0059	0.0021	0.0004
0.702	19.99	4.26	0.1733	–0.0654	–0.2238	–0.0140	0.0067	0.0011	0.1161	0.0593	–0.2020	–0.0072	0.0025	0.0010

Table 21. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.6684	0.6598	3.30	−8.63	−0.0121	0.0007	−0.0014	−0.0018	0.0013	0.0001
2.99	0.7180	0.7113	1.40	−7.69	−0.0241	0.0006	−0.0030	−0.0033	0.0024	0.0003
4.00	0.7418	0.7335	2.24	−8.27	−0.0367	0.0014	−0.0056	−0.0053	0.0036	0.0004

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	0.02	1.00	−0.0747	0.0135	0.1040	−0.0038	0.0011	−0.0008	−0.0747	0.0135	0.1040	−0.0038	0.0011	−0.0008
0.302	0.05	2.00	−0.0522	−0.1662	0.0697	−0.0341	0.0219	0.0016	−0.0633	0.0227	0.0920	−0.0054	0.0018	0.0003
0.302	0.02	3.00	−0.0191	−0.3558	0.0136	−0.0679	0.0413	0.0030	−0.0287	0.0242	0.0604	−0.0165	0.0043	−0.0017
0.301	−0.06	4.25	0.0299	−0.5950	−0.0729	−0.1170	0.0670	0.0040	0.0048	0.0311	0.0255	−0.0250	0.0064	−0.0030
0.302	14.97	0.99	0.0429	0.0117	−0.0749	0.0133	−0.0041	0.0003	0.0429	0.0117	−0.0749	0.0133	−0.0041	0.0003
0.300	15.03	2.00	0.1024	−0.1573	−0.1058	−0.0172	0.0169	0.0017	0.0420	0.0249	−0.0832	0.0118	−0.0035	0.0004
0.300	14.97	2.98	0.1804	−0.3315	−0.1618	−0.0499	0.0357	0.0021	0.0730	0.0340	−0.1150	0.0015	−0.0013	−0.0026
0.300	14.96	4.25	0.2984	−0.5539	−0.2574	−0.1038	0.0632	0.0043	0.1097	0.0511	−0.1579	−0.0108	0.0018	−0.0029
0.300	24.95	0.99	0.1555	0.0655	−0.2576	0.0080	−0.0023	−0.0003	0.1555	0.0655	−0.2576	0.0080	−0.0023	−0.0003
0.300	24.92	1.99	0.2600	−0.0758	−0.3128	−0.0148	0.0159	0.0003	0.1699	0.0920	−0.2904	0.0140	−0.0043	−0.0010
0.300	24.91	3.01	0.3833	−0.2384	−0.3843	−0.0558	0.0377	0.0015	0.2119	0.1078	−0.3366	−0.0035	0.0002	−0.0033
0.301	24.86	4.25	0.5479	−0.4256	−0.4946	−0.1045	0.0633	0.0030	0.2596	0.1350	−0.3955	−0.0120	0.0023	−0.0040
0.298	44.98	0.98	0.2526	0.2657	−0.5182	−0.0051	0.0015	0.0021	0.2526	0.2657	−0.5182	−0.0051	0.0015	0.0021
0.299	44.99	2.00	0.4510	0.1288	−0.5940	−0.0444	0.0219	0.0023	0.2748	0.2831	−0.5660	−0.0134	0.0032	0.0015
0.299	44.95	3.00	0.6134	0.0190	−0.6634	−0.0771	0.0404	0.0034	0.2886	0.2991	−0.5996	−0.0148	0.0037	0.0015
0.299	45.00	4.26	0.8270	−0.1138	−0.7665	−0.1309	0.0664	0.0040	0.3073	0.3179	−0.6377	−0.0214	0.0049	0.0003
0.299	59.99	0.97	0.2002	0.3927	−0.6130	−0.0003	0.0010	0.0047	0.2002	0.3927	−0.6130	−0.0003	0.0010	0.0047
0.298	60.00	2.00	0.4332	0.3012	−0.6775	−0.0449	0.0231	0.0045	0.2213	0.4054	−0.6493	−0.0136	0.0043	0.0037
0.299	59.95	3.01	0.6284	0.2436	−0.7593	−0.0838	0.0430	0.0041	0.2414	0.4304	−0.6952	−0.0213	0.0064	0.0021
0.299	59.98	4.26	0.8773	0.1815	−0.8785	−0.1400	0.0703	0.0053	0.2639	0.4640	−0.7497	−0.0306	0.0089	0.0016
0.301	0.04	1.00	−0.0622	0.0030	0.0913	0.0051	−0.0014	−0.0006	−0.0622	0.0030	0.0913	0.0051	−0.0014	−0.0006
0.301	5.02	1.00	−0.0217	0.0026	0.0372	0.0033	−0.0010	−0.0008	−0.0217	0.0026	0.0372	0.0033	−0.0010	−0.0008
0.298	10.02	1.00	0.0136	0.0068	−0.0168	0.0030	−0.0010	−0.0013	0.0136	0.0068	−0.0168	0.0030	−0.0010	−0.0013
0.301	14.99	0.99	0.0500	0.0129	−0.0822	0.0128	−0.0037	0.0003	0.0500	0.0129	−0.0822	0.0128	−0.0037	0.0003
0.298	19.99	0.99	0.0978	0.0304	−0.1686	0.0101	−0.0031	0.0009	0.0978	0.0304	−0.1686	0.0101	−0.0031	0.0009
0.301	24.95	0.99	0.1537	0.0662	−0.2566	0.0059	−0.0017	−0.0002	0.1537	0.0662	−0.2566	0.0059	−0.0017	−0.0002
0.299	29.92	0.99	0.1971	0.1046	−0.3383	0.0098	−0.0030	−0.0003	0.1971	0.1046	−0.3383	0.0098	−0.0030	−0.0003
0.297	32.49	0.99	0.2205	0.1311	−0.3830	0.0094	−0.0030	−0.0005	0.2205	0.1311	−0.3830	0.0094	−0.0030	−0.0005
0.300	35.19	0.99	0.2173	0.1485	−0.3932	0.0048	−0.0013	0.0030	0.2173	0.1485	−0.3932	0.0048	−0.0013	0.0030
0.300	37.98	0.99	0.2305	0.1819	−0.4318	0.0096	−0.0030	0.0030	0.2305	0.1819	−0.4318	0.0096	−0.0030	0.0030
0.299	40.03	0.98	0.2386	0.2061	−0.4586	0.0000	−0.0003	0.0017	0.2386	0.2061	−0.4586	0.0000	−0.0003	0.0017
0.299	42.00	0.98	0.2502	0.2332	−0.4919	0.0082	−0.0025	0.0030	0.2502	0.2332	−0.4919	0.0082	−0.0025	0.0030
0.299	44.99	0.98	0.2521	0.2644	−0.5194	−0.0012	0.0003	0.0020	0.2521	0.2644	−0.5194	−0.0012	0.0003	0.0020
0.298	50.00	0.98	0.2523	0.3207	−0.5748	−0.0060	0.0019	0.0017	0.2523	0.3207	−0.5748	−0.0060	0.0019	0.0017

Table 21. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	54.99	0.98	0.2278	0.3579	−0.5922	0.0000	0.0006	0.0043	0.2278	0.3579	−0.5922	0.0000	0.0006	0.0043
0.297	60.00	0.98	0.1987	0.3935	−0.6132	0.0000	0.0008	0.0044	0.1987	0.3935	−0.6132	0.0000	0.0008	0.0044
0.300	64.99	0.97	0.1779	0.4494	−0.6733	0.0051	−0.0009	0.0041	0.1779	0.4494	−0.6733	0.0051	−0.0009	0.0041
0.299	68.28	0.97	0.1598	0.4888	−0.7172	0.0098	−0.0023	0.0056	0.1598	0.4888	−0.7172	0.0098	−0.0023	0.0056
0.299	0.01	4.27	0.0316	−0.6074	−0.0771	−0.1013	0.0633	0.0044	0.0050	0.0335	0.0239	−0.0071	0.0012	−0.0029
0.300	4.99	4.21	0.1109	−0.5851	−0.1187	−0.0959	0.0611	0.0043	0.0310	0.0360	−0.0207	−0.0041	0.0004	−0.0028
0.299	9.99	4.25	0.1841	−0.5785	−0.1631	−0.1003	0.0623	0.0040	0.0484	0.0413	−0.0634	−0.0072	0.0010	−0.0031
0.298	14.97	4.24	0.2753	−0.5633	−0.2339	−0.0917	0.0599	0.0053	0.0852	0.0460	−0.1337	0.0020	−0.0018	−0.0018
0.298	19.91	4.23	0.3896	−0.5217	−0.340	−0.1020	0.0630	0.0064	0.1478	0.0690	−0.2399	−0.0084	0.0013	−0.0008
0.302	24.89	4.25	0.4875	−0.4514	−0.4315	−0.1050	0.0632	0.0064	0.2015	0.1040	−0.3333	−0.0133	0.0027	−0.0007
0.300	29.89	4.25	0.5874	−0.3844	−0.5268	−0.0987	0.0615	0.0073	0.2509	0.1490	−0.4278	−0.0061	0.0004	0.0003
0.299	32.05	4.24	0.6111	−0.3529	−0.5545	−0.0883	0.0592	0.0097	0.2531	0.1699	−0.4551	0.0046	−0.0021	0.0025
0.300	34.96	4.25	0.6927	−0.3237	−0.6089	−0.1203	0.0641	0.0050	0.2595	0.1882	−0.4812	−0.0117	0.0031	0.0012
0.300	38.00	4.26	0.7427	−0.2583	−0.6705	−0.1143	0.0612	0.0051	0.2816	0.2314	−0.5423	−0.0053	0.0001	0.0014
0.299	39.95	4.25	0.7701	−0.2190	−0.7019	−0.1196	0.0630	0.0048	0.2914	0.2558	−0.5735	−0.0103	0.0017	0.0010
0.299	41.99	4.26	0.7935	−0.1785	−0.7290	−0.1215	0.0636	0.0047	0.2971	0.2799	−0.6002	−0.0120	0.0022	0.0010
0.298	44.95	4.25	0.8245	−0.1179	−0.7651	−0.1248	0.0647	0.0049	0.3038	0.3154	−0.6361	−0.0151	0.0030	0.0010
0.299	49.96	4.26	0.8505	−0.0210	−0.7991	−0.1308	0.0670	0.0052	0.2959	0.3638	−0.6705	−0.0215	0.0057	0.0015
0.304	54.97	4.26	0.8513	0.0865	−0.8313	−0.1326	0.0673	0.0060	0.2827	0.4115	−0.7064	−0.0265	0.0077	0.0024
0.299	59.96	4.26	0.8752	0.1790	−0.8774	−0.1343	0.0688	0.0067	0.2626	0.4615	−0.7488	−0.0250	0.0074	0.0030
0.298	64.99	4.25	0.8597	0.2604	−0.8859	−0.1344	0.0687	0.0063	0.2209	0.4895	−0.7566	−0.0244	0.0071	0.0025
0.296	67.97	4.25	0.8414	0.2941	−0.8694	−0.1541	0.0768	0.0091	0.1835	0.4921	−0.7386	−0.0429	0.0144	0.0053
0.502	0.05	0.99	−0.0760	0.0131	0.1063	−0.0019	0.0007	0.0006	−0.0760	0.0131	0.1063	−0.0019	0.0007	0.0006
0.499	0.03	1.99	−0.0726	−0.0474	0.0974	−0.0117	0.0080	0.0013	−0.0766	0.0212	0.1054	−0.0013	0.0008	0.0009
0.500	0.07	3.00	−0.0589	−0.1167	0.0745	−0.0249	0.0156	0.0018	−0.0625	0.0218	0.0916	−0.0062	0.0021	0.0002
0.499	0.03	4.25	−0.0441	−0.2001	0.0444	−0.0351	0.0229	0.0029	−0.0536	0.0278	0.0802	−0.0017	0.0009	0.0003
0.499	0.01	5.00	−0.0333	−0.2542	0.0258	−0.0432	0.0275	0.0031	−0.0464	0.0286	0.0732	−0.0007	0.0003	0.0000
0.499	14.98	0.98	0.0433	0.0156	−0.0834	0.0089	−0.0028	0.0024	0.0433	0.0156	−0.0834	0.0089	−0.0028	0.0024
0.498	14.94	1.99	0.0745	−0.0416	−0.1061	0.0054	0.0024	0.0018	0.0529	0.0239	−0.0980	0.0158	−0.0050	0.0014
0.498	14.93	3.01	0.1087	−0.1054	−0.1334	−0.0089	0.0101	0.0023	0.0693	0.0288	−0.1161	0.0100	−0.0036	0.0006
0.500	14.87	4.24	0.1492	−0.1811	−0.1705	−0.0212	0.0179	0.0034	0.0819	0.0360	−0.1348	0.0121	−0.0041	0.0009
0.499	14.87	5.04	0.1784	−0.2340	−0.1941	−0.0325	0.0235	0.0037	0.0925	0.0381	−0.1463	0.0105	−0.0041	0.0006
0.498	24.84	0.97	0.1613	0.0748	−0.2674	−0.0051	0.0016	0.0003	0.1613	0.0748	−0.2674	−0.0051	0.0016	0.0003
0.499	24.82	2.00	0.2156	0.0285	−0.3077	−0.0140	0.0084	0.0002	0.1829	0.0898	−0.2995	−0.0034	0.0010	−0.0003
0.498	24.79	3.01	0.2641	−0.0275	−0.3410	−0.0313	0.0171	0.0007	0.2021	0.0983	−0.3236	−0.0123	0.0034	−0.0010
0.498	24.75	4.27	0.3198	−0.0949	−0.3815	−0.0467	0.0259	0.0021	0.2147	0.1103	−0.3452	−0.0128	0.0036	−0.0005
0.499	24.74	5.00	0.3554	−0.1364	−0.4053	−0.0560	0.0308	0.0025	0.2253	0.1148	−0.3580	−0.0135	0.0034	−0.0006
0.500	0.02	0.99	−0.0790	0.0156	0.1097	−0.0040	0.0014	0.0010	−0.0790	0.0156	0.1097	−0.0040	0.0014	0.0010
0.500	5.03	0.99	−0.0387	0.0125	0.0551	−0.0039	0.0014	0.0007	−0.0387	0.0125	0.0551	−0.0039	0.0014	0.0007
0.500	10.02	0.98	−0.0046	0.0124	0.0016	−0.0025	0.0008	0.0006	−0.0046	0.0124	0.0016	−0.0025	0.0008	0.0006
0.499	15.00	0.98	0.0417	0.0157	−0.0817	0.0084	−0.0027	0.0026	0.0417	0.0157	−0.0817	0.0084	−0.0027	0.0026
0.500	19.91	0.98	0.1046	0.0384	−0.1781	−0.0006	0.0003	0.0010	0.1046	0.0384	−0.1781	−0.0006	0.0003	0.0010
0.498	24.86	0.97	0.1604	0.0752	−0.2661	−0.0046	0.0014	0.0006	0.1604	0.0752	−0.2661	−0.0046	0.0014	0.0006
0.497	29.83	0.96	0.2052	0.1175	−0.3485	0.0037	−0.0011	0.0003	0.2052	0.1175	−0.3485	0.0037	−0.0011	0.0003
0.500	0.04	4.20	−0.0393	−0.1966	0.0404	−0.0389	0.0240	0.0026	−0.0486	0.0275	0.0754	−0.0060	0.0023	0.0001

Table 21. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	5.14	4.22	0.0174	−0.1972	−0.0149	−0.0354	0.0230	0.0026	−0.0119	0.0255	0.0203	−0.0025	0.0012	0.0001
0.502	10.00	4.28	0.0578	−0.1956	−0.0581	−0.0332	0.0222	0.0024	0.0089	0.0275	−0.0221	0.0003	0.0001	−0.0003
0.500	14.93	4.25	0.1280	−0.1859	−0.1480	−0.0212	0.0179	0.0044	0.0603	0.0317	−0.1122	0.0122	−0.0041	0.0018
0.501	19.87	4.25	0.2078	−0.1567	−0.2463	−0.0369	0.0231	0.0038	0.1220	0.0532	−0.2107	−0.0036	0.0012	0.0013
0.501	24.82	4.24	0.2858	−0.1089	−0.3445	−0.0443	0.0252	0.0038	0.1825	0.0924	−0.3090	−0.0111	0.0032	0.0013
0.494	31.90	4.23	0.3801	−0.0333	−0.4721	−0.0331	0.0220	0.0045	0.2497	0.1582	−0.4358	0.0009	−0.0004	0.0020

Table 22. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 25°;\ \delta_B = 15°;\ \delta_E = 10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.8397	0.8223	11.27	−3.13	−0.0145	0.0029	−0.0051	−0.0008	0.0005	0.0000
3.01	0.8253	0.8083	10.43	−5.25	−0.0266	0.0049	−0.0089	−0.0024	0.0015	0.0001
4.00	0.8239	0.8054	10.18	−6.82	−0.0387	0.0070	−0.0127	−0.0046	0.0026	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.01	1.00	−0.0750	0.0186	0.1016	−0.0073	0.0028	−0.0006	−0.0750	0.0186	0.1016	−0.0073	0.0028	−0.0006
0.303	−0.02	2.00	−0.0122	−0.1979	−0.0042	−0.0186	0.0117	−0.0006	−0.0572	0.0287	0.0755	−0.0062	0.0029	−0.0011
0.304	0.01	3.00	0.0238	−0.3743	−0.0714	−0.0365	0.0235	−0.0002	−0.0515	0.0345	0.0661	0.0011	0.0010	−0.0013
0.303	0.00	4.25	0.0623	−0.6139	−0.1442	−0.0770	0.0453	0.0005	−0.0543	0.0383	0.0683	0.0039	0.0000	−0.0018
0.303	15.00	1.00	0.0208	0.0439	−0.0620	0.0074	−0.0016	0.0003	0.0208	0.0439	−0.0620	0.0074	−0.0016	0.0003
0.302	15.00	2.01	0.1399	−0.1503	−0.1741	−0.0073	0.0083	0.0005	0.0360	0.0604	−0.0932	0.0055	−0.0008	0.0000
0.302	15.00	3.00	0.2265	−0.3141	−0.2488	−0.0330	0.0225	0.0011	0.0452	0.0673	−0.1090	0.0052	−0.0004	0.0000
0.302	15.00	4.25	0.3309	−0.5331	−0.3282	−0.0770	0.0453	0.0020	0.0479	0.0701	−0.1146	0.0044	−0.0003	−0.0003
0.299	25.01	0.99	0.1258	0.1137	−0.2498	0.0065	−0.0011	0.0014	0.1258	0.1137	−0.2498	0.0065	−0.0011	0.0014
0.299	25.02	2.01	0.2859	−0.0612	−0.3731	−0.0189	0.0120	0.0017	0.1447	0.1312	−0.2908	−0.0060	0.0028	0.0012
0.299	24.99	3.00	0.4069	−0.2103	−0.4555	−0.0472	0.0270	0.0024	0.1570	0.1410	−0.3128	−0.0083	0.0037	0.0011
0.299	24.98	4.25	0.5499	−0.4115	−0.5380	−0.0929	0.0504	0.0032	0.1601	0.1428	−0.3207	−0.0102	0.0041	0.0008
0.300	45.08	0.99	0.2560	0.2596	−0.5177	−0.0001	0.0001	0.0028	0.2560	0.2596	−0.5177	−0.0001	0.0001	0.0028
0.300	45.07	2.01	0.4810	0.1588	−0.6679	−0.0238	0.0119	0.0022	0.2861	0.2938	−0.5907	−0.0083	0.0023	0.0016
0.299	45.04	3.01	0.6510	0.0601	−0.7591	−0.0544	0.0275	0.0027	0.2952	0.3086	−0.6181	−0.0114	0.0028	0.0013
0.298	45.04	4.25	0.8585	−0.0782	−0.8494	−0.1010	0.0511	0.0033	0.2996	0.3176	−0.6342	−0.0139	0.0031	0.0007
0.303	60.07	0.98	0.2007	0.3903	−0.6132	0.0003	0.0004	0.0045	0.2007	0.3903	−0.6132	0.0003	0.0004	0.0045
0.302	60.08	2.01	0.4547	0.3423	−0.7555	−0.0271	0.0139	0.0046	0.2354	0.4208	−0.6797	−0.0119	0.0044	0.0041
0.301	60.07	3.01	0.6521	0.2986	−0.8581	−0.0594	0.0298	0.0038	0.2496	0.4443	−0.7190	−0.0170	0.0054	0.0024
0.301	60.05	4.25	0.8883	0.2315	−0.9609	−0.1096	0.0543	0.0049	0.2593	0.4640	−0.7502	−0.0243	0.0073	0.0023
0.301	0.00	1.00	−0.0790	0.0147	0.1043	−0.0016	0.0014	−0.0007	−0.0790	0.0147	0.1043	−0.0016	0.0014	−0.0007
0.302	5.02	1.00	−0.0412	0.0219	0.0524	−0.0010	0.0011	−0.0005	−0.0412	0.0219	0.0524	−0.0010	0.0011	−0.0005
0.301	10.00	1.00	−0.0104	0.0326	0.0006	0.0014	0.0003	−0.0001	−0.0104	0.0326	0.0006	0.0014	0.0003	−0.0001
0.301	15.01	1.00	0.0216	0.0458	−0.0630	0.0106	−0.0025	0.0003	0.0216	0.0458	−0.0630	0.0106	−0.0025	0.0003
0.300	20.01	0.99	0.0782	0.0750	−0.1626	0.0108	−0.0027	0.0009	0.0782	0.0750	−0.1626	0.0108	−0.0027	0.0009
0.299	25.01	0.99	0.1231	0.1154	−0.2464	0.0082	−0.0017	0.0012	0.1231	0.1154	−0.2464	0.0082	−0.0017	0.0012
0.300	29.99	0.99	0.1620	0.1611	−0.3319	0.0111	−0.0026	0.0019	0.1620	0.1611	−0.3319	0.0111	−0.0026	0.0019
0.299	32.63	0.99	0.1801	0.1897	−0.3772	0.0119	−0.0029	0.0022	0.1801	0.1897	−0.3772	0.0119	−0.0029	0.0022
0.300	35.56	0.99	0.2155	0.1492	−0.3935	0.0075	−0.0022	0.0031	0.2155	0.1492	−0.3935	0.0075	−0.0022	0.0031
0.300	38.08	0.99	0.2272	0.1793	−0.4274	0.0031	−0.0016	0.0021	0.2272	0.1793	−0.4274	0.0031	−0.0016	0.0021
0.300	40.06	0.98	0.2352	0.2026	−0.4542	0.0070	−0.0023	0.0027	0.2352	0.2026	−0.4542	0.0070	−0.0023	0.0027
0.300	42.08	0.98	0.2462	0.2301	−0.4874	0.0102	−0.0032	0.0032	0.2462	0.2301	−0.4874	0.0102	−0.0032	0.0032
0.300	45.07	0.98	0.2501	0.2623	−0.5170	0.0029	−0.0010	0.0025	0.2501	0.2623	−0.5170	0.0029	−0.0010	0.0025
0.299	50.10	0.98	0.2496	0.3174	−0.5703	−0.0035	0.0010	0.0019	0.2496	0.3174	−0.5703	−0.0035	0.0010	0.0019

Table 22. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	55.05	0.98	0.2276	0.3582	–0.5927	0.0023	–0.0003	0.0045	0.2276	0.3582	–0.5927	0.0023	–0.0003	0.0045
0.302	60.06	0.97	0.1960	0.3887	–0.6068	0.0026	–0.0002	0.0045	0.1960	0.3887	–0.6068	0.0026	–0.0002	0.0045
0.300	65.07	0.97	0.1755	0.4465	–0.6688	0.0063	–0.0015	0.0044	0.1755	0.4465	–0.6688	0.0063	–0.0015	0.0044
0.299	68.65	0.97	0.1566	0.4913	–0.7204	0.0119	–0.0032	0.0059	0.1566	0.4913	–0.7204	0.0119	–0.0032	0.0059
0.302	0.00	4.25	0.0542	–0.6170	–0.1367	–0.0794	0.0464	–0.0003	–0.0625	0.0351	0.0757	0.0015	0.0012	–0.0026
0.302	5.01	4.26	0.1506	–0.5992	–0.1946	–0.0827	0.0472	0.0003	–0.0230	0.0423	0.0185	–0.0015	0.0018	–0.0022
0.301	10.00	4.25	0.2385	–0.5722	–0.2533	–0.0841	0.0475	0.0004	0.0086	0.0550	–0.0391	–0.0025	0.0018	–0.0020
0.301	15.00	4.25	0.3323	–0.5369	–0.3288	–0.0778	0.0458	0.0018	0.0473	0.0703	–0.1138	0.0041	0.0000	–0.0005
0.298	19.99	4.24	0.4555	–0.4859	–0.4470	–0.0837	0.0477	0.0030	0.1138	0.1029	–0.2287	–0.0006	0.0013	0.0006
0.301	24.99	4.25	0.5463	–0.4035	–0.5359	–0.0891	0.0490	0.0031	0.1617	0.1432	–0.3216	–0.0075	0.0034	0.0007
0.299	29.99	4.24	0.6385	–0.3247	–0.6328	–0.0866	0.0485	0.0039	0.2023	0.1929	–0.4158	–0.0040	0.0023	0.0015
0.298	32.00	4.24	0.6733	–0.2892	–0.6714	–0.0873	0.0487	0.0041	0.2164	0.2158	–0.4530	–0.0043	0.0022	0.0017
0.299	35.10	4.25	0.7322	–0.2946	–0.6923	–0.0961	0.0504	0.0041	0.2528	0.1888	–0.4784	–0.0094	0.0028	0.0014
0.299	35.55	4.25	0.7399	–0.2841	–0.7018	–0.0930	0.0494	0.0043	0.2569	0.1953	–0.4880	–0.0064	0.0017	0.0016
0.299	38.04	4.25	0.7789	–0.2277	–0.7521	–0.0860	0.0465	0.0046	0.2756	0.2302	–0.5382	0.0006	–0.0011	0.0019
0.299	40.01	4.25	0.8035	–0.1857	–0.7820	–0.0948	0.0490	0.0038	0.2843	0.2550	–0.5680	–0.0081	0.0012	0.0011
0.299	42.07	4.25	0.8258	–0.1426	–0.8105	–0.0984	0.0500	0.0037	0.2910	0.2792	–0.5964	–0.0117	0.0024	0.0010
0.298	45.06	4.25	0.8565	–0.0795	–0.8479	–0.1028	0.0515	0.0037	0.2985	0.3153	–0.6331	–0.0158	0.0037	0.0010
0.300	50.03	4.26	0.8813	0.0225	–0.8870	–0.1067	0.0534	0.0050	0.2948	0.3653	–0.6735	–0.0203	0.0058	0.0023
0.297	55.06	4.25	0.9086	0.1240	–0.9367	–0.1114	0.0558	0.0056	0.2834	0.4193	–0.7194	–0.0234	0.0073	0.0029
0.299	60.02	4.26	0.9003	0.2239	–0.9638	–0.1080	0.0545	0.0059	0.2590	0.4614	–0.7489	–0.0210	0.0065	0.0032
0.298	65.02	4.25	0.8832	0.3143	–0.9831	–0.1071	0.0539	0.0049	0.2197	0.4960	–0.7669	–0.0196	0.0058	0.0022
0.298	68.24	4.25	0.8510	0.3535	–0.9626	–0.1132	0.0565	0.0066	0.1809	0.4972	–0.7472	–0.0260	0.0085	0.0039
0.501	0.02	0.99	–0.0775	0.0193	0.1074	–0.0051	0.0018	–0.0004	–0.0775	0.0193	0.1074	–0.0051	0.0018	–0.0004
0.499	–0.01	2.00	–0.0475	–0.0598	0.0596	–0.0117	0.0059	–0.0004	–0.0640	0.0232	0.0888	–0.0071	0.0027	–0.0006
0.499	0.03	3.01	–0.0272	–0.1264	0.0255	–0.0195	0.0108	–0.0003	–0.0554	0.0263	0.0769	–0.0055	0.0024	–0.0008
0.498	–0.03	4.25	–0.0119	–0.2125	–0.0033	–0.0316	0.0180	0.0000	–0.0548	0.0285	0.0752	–0.0017	0.0013	–0.0009
0.498	0.00	4.75	–0.0063	–0.2477	–0.0142	–0.0361	0.0206	0.0000	–0.0554	0.0284	0.0751	0.0002	0.0006	–0.0010
0.502	15.04	0.99	0.0414	0.0333	–0.0830	0.0100	–0.0030	0.0009	0.0414	0.0333	–0.0830	0.010	–0.0030	0.0009
0.502	14.81	2.01	0.0897	–0.0371	–0.1300	0.0025	0.0011	0.0010	0.0525	0.0389	–0.1008	0.0071	–0.0022	0.0009
0.501	15.02	3.00	0.1302	–0.0949	–0.1705	–0.0092	0.0071	0.0012	0.0643	0.0436	–0.1198	0.0047	–0.0013	0.0008
0.501	14.96	4.25	0.1700	–0.1733	–0.2036	–0.0253	0.0154	0.0015	0.0674	0.0457	–0.1261	0.0042	–0.0011	0.0006
0.501	14.97	4.76	0.1866	–0.2064	–0.2177	–0.0318	0.0186	0.0016	0.0689	0.0457	–0.1292	0.0041	–0.0013	0.0005
0.499	24.99	0.97	0.1491	0.0965	–0.2632	0.0001	0.0003	0.0010	0.1491	0.0965	–0.2632	0.0001	0.0003	0.0010
0.498	24.99	2.01	0.2164	0.0346	–0.3212	–0.0112	0.0056	0.0012	0.1659	0.1036	–0.2917	–0.0065	0.0023	0.0010
0.498	25.01	3.00	0.2651	–0.0166	–0.3600	–0.0230	0.0115	0.0012	0.1750	0.1099	–0.3087	–0.0090	0.0031	0.0008
0.498	24.99	4.25	0.3202	–0.0879	–0.3962	–0.0417	0.0205	0.0016	0.1792	0.1126	–0.3176	–0.0117	0.0037	0.0007
0.499	24.95	4.76	0.3429	–0.1164	–0.4111	–0.0479	0.0235	0.0017	0.1820	0.1132	–0.3219	–0.0116	0.0035	0.0006
0.503	0.01	0.99	–0.0770	0.0185	0.1067	–0.0064	0.0022	–0.0005	–0.0770	0.0185	0.1067	–0.0064	0.0022	–0.0005
0.504	5.02	0.99	–0.0401	0.0194	0.0555	–0.0046	0.0017	–0.0003	–0.0401	0.0194	0.0555	–0.0046	0.0017	–0.0003
0.505	10.00	0.99	–0.0080	0.0238	0.0035	–0.0021	0.0009	–0.0001	–0.0080	0.0238	0.0035	–0.0021	0.0009	–0.0001
0.503	15.00	0.99	0.0410	0.0331	–0.0816	0.0086	–0.0027	0.0009	0.0410	0.0331	–0.0816	0.0086	–0.0027	0.0009
0.499	20.01	0.98	0.0983	0.0588	–0.1748	0.0014	–0.0002	0.0010	0.0983	0.0588	–0.1748	0.0014	–0.0002	0.0010
0.500	25.03	0.97	0.1500	0.0975	–0.2629	–0.0019	0.0008	0.0010	0.1500	0.0975	–0.2629	–0.0019	0.0008	0.0010
0.501	30.01	0.96	0.1903	0.1407	–0.3434	0.0100	–0.0026	0.0015	0.1903	0.1407	–0.3434	0.0100	–0.0026	0.0015

Table 22. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.505	−0.02	4.25	−0.0140	−0.2079	−0.0010	−0.0307	0.0176	−0.0003	−0.0559	0.0269	0.0755	−0.0016	0.0012	−0.0012
0.503	4.98	4.25	0.0401	−0.2028	−0.0507	−0.0305	0.0175	0.0000	−0.0224	0.0285	0.0261	−0.0013	0.0011	−0.0009
0.504	10.01	4.25	0.0904	−0.1903	−0.1040	−0.0321	0.0176	−0.0001	0.0081	0.0338	−0.0274	−0.0029	0.0013	−0.0009
0.501	15.00	4.25	0.1678	−0.1754	−0.2023	−0.0284	0.0163	0.0016	0.0651	0.0433	−0.1249	0.0011	−0.0002	0.0007
0.504	20.00	4.27	0.2440	−0.1377	−0.2981	−0.0397	0.0197	0.0016	0.1234	0.0700	−0.2210	−0.0103	0.0032	0.0007
0.499	24.98	4.25	0.3196	−0.0880	−0.3949	−0.0440	0.0211	0.0017	0.1794	0.1114	−0.3168	−0.0142	0.0044	0.0009
0.500	29.97	4.26	0.3832	−0.0278	−0.4867	−0.0345	0.0183	0.0019	0.2262	0.1586	−0.4085	−0.0047	0.0016	0.0010

Table 23. Static and Aeropropulsive Performance Characteristics at Afterburning Power

$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9104	0.8991	8.90	1.66	−0.0158	0.0025	−0.0045	0.0005	−0.0001	0.0000
2.99	0.8988	0.8902	7.95	0.38	−0.0290	0.0041	−0.0079	0.0002	0.0001	0.0001
3.99	0.8948	0.8857	8.19	−0.62	−0.0424	0.0061	−0.0118	−0.0005	0.0005	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	0.11	1.00	−0.0699	0.0187	0.0980	−0.0084	0.0026	−0.0003	−0.0699	0.0187	0.0980	−0.0084	0.0026	−0.0003
0.301	0.12	2.03	−0.0045	−0.2279	−0.0059	−0.0033	0.0024	−0.0003	−0.0450	0.0291	0.0665	−0.0103	0.0036	−0.0004
0.302	0.11	3.00	0.0263	−0.4227	−0.0676	0.0019	0.0025	0.0006	−0.0384	0.0335	0.0569	−0.0011	0.0007	−0.0003
0.300	0.06	4.26	0.0686	−0.6913	−0.1496	−0.0133	0.0115	0.0018	−0.0377	0.0379	0.0546	−0.0033	0.0015	−0.0006
0.301	15.13	1.00	0.0362	0.0481	−0.0805	0.0143	−0.0045	0.0011	0.0362	0.0481	−0.0805	0.0143	−0.0045	0.0011
0.301	15.12	1.97	0.1462	−0.1639	−0.1723	0.0116	−0.0025	0.0018	0.0462	0.0605	−0.1037	0.0046	−0.0013	0.0017
0.301	15.10	2.97	0.2398	−0.3525	−0.2477	0.0068	0.0009	0.0025	0.0601	0.0696	−0.1237	0.0037	−0.0009	0.0017
0.301	15.07	4.21	0.3545	−0.5890	−0.3365	−0.0125	0.0111	0.0037	0.0683	0.0757	−0.1361	−0.0030	0.0014	0.0013
0.301	25.10	0.99	0.1406	0.1208	−0.2671	−0.0018	0.0006	0.0022	0.1406	0.1208	−0.2671	−0.0018	0.0006	0.0022
0.299	25.12	0.99	0.1416	0.1226	−0.2687	−0.0012	0.0006	0.0022	0.1416	0.1226	−0.2687	−0.0012	0.0006	0.0022
0.301	25.10	1.98	0.3027	−0.0677	−0.3783	−0.0119	0.0051	0.0026	0.1633	0.1390	−0.3087	−0.0191	0.0064	0.0025
0.301	25.09	2.98	0.4302	−0.2340	−0.4590	−0.0187	0.0090	0.0034	0.1803	0.1500	−0.3351	−0.0219	0.0071	0.0025
0.299	25.08	4.22	0.5916	−0.4544	−0.5540	−0.0371	0.0189	0.0044	0.1899	0.1572	−0.3513	−0.0275	0.0090	0.0021
0.300	45.01	0.98	0.2522	0.2648	−0.5178	0.0009	−0.0003	0.0032	0.2522	0.2648	−0.5178	0.0009	−0.0003	0.0032
0.298	44.98	2.00	0.4784	0.1602	−0.6642	−0.0283	0.0148	0.0030	0.2927	0.2954	−0.5958	−0.0110	0.0026	0.0021
0.297	44.99	3.00	0.6497	0.0598	−0.7544	−0.0655	0.0339	0.0033	0.3045	0.3110	−0.6261	−0.0167	0.0043	0.0015
0.298	44.98	4.25	0.8521	−0.0687	−0.8470	−0.1162	0.0594	0.0041	0.3146	0.3223	−0.6488	−0.0196	0.0047	0.0006
0.298	60.02	0.98	0.1996	0.3915	−0.6130	0.0010	0.0004	0.0048	0.1996	0.3915	−0.6130	0.0010	0.0004	0.0048
0.301	60.00	2.00	0.4489	0.3387	−0.7458	−0.0308	0.0163	0.0047	0.2383	0.4196	−0.6786	−0.0138	0.0043	0.0039
0.300	59.98	3.00	0.6437	0.2910	−0.8434	−0.0665	0.0348	0.0044	0.2532	0.4412	−0.7177	−0.0187	0.0058	0.0026
0.299	59.95	4.25	0.8899	0.2255	−0.9555	−0.1246	0.0633	0.0053	0.2694	0.4645	−0.7572	−0.0279	0.0085	0.0019
0.301	31.33	0.99	0.1914	0.1848	−0.3791	0.0053	−0.0013	0.0031	0.1914	0.1848	−0.3791	0.0053	−0.0013	0.0031
0.301	30.13	0.99	0.1815	0.1710	−0.3568	0.0043	−0.0010	0.0029	0.1815	0.1710	−0.3568	0.0043	−0.0010	0.0029
0.301	0.09	1.00	−0.0691	0.0164	0.0987	−0.0042	0.0015	−0.0003	−0.0691	0.0164	0.0987	−0.0042	0.0015	−0.0003
0.302	5.10	1.00	−0.0311	0.0227	0.0448	−0.0027	0.0011	−0.0001	−0.0311	0.0227	0.0448	−0.0027	0.0011	−0.0001
0.301	10.12	1.00	0.0011	0.0339	−0.0091	−0.0018	0.0009	0.0001	0.0011	0.0339	−0.0091	−0.0018	0.0009	0.0001
0.301	15.11	1.00	0.0380	0.0486	−0.0823	0.0166	−0.0048	0.0016	0.0380	0.0486	−0.0823	0.0166	−0.0048	0.0016
0.298	20.11	0.99	0.0942	0.0805	−0.1806	0.0023	−0.0005	0.0017	0.0942	0.0805	−0.1806	0.0023	−0.0005	0.0017
0.300	31.69	0.99	0.1937	0.1893	−0.3848	0.0059	−0.0016	0.0030	0.1937	0.1893	−0.3848	0.0059	−0.0016	0.0030
0.299	35.24	0.99	0.2149	0.1469	−0.3923	0.0079	−0.0022	0.0029	0.2149	0.1469	−0.3923	0.0079	−0.0022	0.0029
0.299	38.01	0.99	0.2270	0.1796	−0.4289	0.0072	−0.0024	0.0024	0.2270	0.1796	−0.4289	0.0072	−0.0024	0.0024
0.299	40.01	0.98	0.2357	0.2036	−0.4569	0.0049	−0.0016	0.0022	0.2357	0.2036	−0.4569	0.0049	−0.0016	0.0022
0.299	42.00	0.98	0.2465	0.2306	−0.4888	0.0122	−0.0035	0.0033	0.2465	0.2306	−0.4888	0.0122	−0.0035	0.0033
0.299	45.01	0.98	0.2486	0.2607	−0.5160	0.0071	−0.0021	0.0030	0.2486	0.2607	−0.5160	0.0071	−0.0021	0.0030

Table 23. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	50.00	0.98	0.2492	0.3164	–0.5700	–0.0025	0.0010	0.0020	0.2492	0.3164	–0.5700	–0.0025	0.0010	0.0020
0.302	55.01	0.98	0.2271	0.3562	–0.5913	0.0039	–0.0004	0.0044	0.2271	0.3562	–0.5913	0.0039	–0.0004	0.0044
0.297	60.00	0.98	0.1967	0.3907	–0.6113	0.0033	0.0000	0.0044	0.1967	0.3907	–0.6113	0.0033	0.0000	0.0044
0.298	65.02	0.97	0.1752	0.4470	–0.6705	0.0071	–0.0013	0.0044	0.1752	0.4470	–0.6705	0.0071	–0.0013	0.0044
0.300	68.31	0.97	0.1591	0.4893	–0.7200	0.0140	–0.0034	0.0061	0.1591	0.4893	–0.7200	0.0140	–0.0034	0.0061
0.301	0.09	4.23	0.0624	–0.6829	–0.1417	–0.0198	0.0137	0.0011	–0.0428	0.0371	0.0599	–0.0101	0.0038	–0.0012
0.302	5.09	4.23	0.1630	–0.6575	–0.1985	–0.0207	0.0139	0.0014	–0.0034	0.0457	0.0016	–0.0111	0.0041	–0.0010
0.302	10.09	4.23	0.2529	–0.6264	–0.2545	–0.0223	0.0143	0.0016	0.0260	0.0591	–0.0545	–0.0128	0.0045	–0.0008
0.299	15.08	4.26	0.3632	–0.6052	–0.3444	–0.0079	0.0102	0.0037	0.0697	0.0760	–0.1389	0.0022	0.0000	0.0013
0.299	20.09	4.26	0.4840	–0.5455	–0.4535	–0.0255	0.0158	0.0044	0.1316	0.1084	–0.2477	–0.0154	0.0056	0.0020
0.300	25.09	4.26	0.5890	–0.4607	–0.5516	–0.0342	0.0183	0.0047	0.1845	0.1546	–0.3476	–0.0242	0.0082	0.0024
0.298	30.10	4.26	0.6926	–0.3774	–0.6558	–0.0300	0.0171	0.0054	0.2289	0.2093	–0.4486	–0.0198	0.0068	0.0030
0.297	31.22	4.26	0.7183	–0.3561	–0.6817	–0.0262	0.0160	0.0055	0.2402	0.2251	–0.4732	–0.0160	0.0057	0.0030
0.299	34.97	4.25	0.7194	–0.2861	–0.6823	–0.1060	0.0572	0.0044	0.2614	0.1888	–0.4855	–0.0101	0.0029	0.0010
0.299	37.99	4.25	0.7668	–0.2196	–0.7433	–0.0996	0.0544	0.0048	0.2843	0.2307	–0.5466	–0.0037	0.0001	0.0014
0.299	39.98	4.25	0.7912	–0.1792	–0.7734	–0.1063	0.0564	0.0043	0.2926	0.2548	–0.5763	–0.0102	0.0020	0.0009
0.299	41.98	4.25	0.8140	–0.1380	–0.8016	–0.1085	0.0571	0.0044	0.3008	0.2780	–0.6046	–0.0125	0.0027	0.0010
0.298	44.96	4.24	0.8481	–0.0760	–0.8435	–0.1129	0.0588	0.0043	0.3093	0.3162	–0.6448	–0.0161	0.0040	0.0008
0.302	49.98	4.25	0.8588	0.0287	–0.8715	–0.1172	0.0603	0.0052	0.3012	0.3642	–0.6774	–0.0226	0.0067	0.0019
0.299	55.00	4.25	0.8882	0.1271	–0.9217	–0.1215	0.0623	0.0056	0.2935	0.4173	–0.7244	–0.0253	0.0079	0.0022
0.299	59.96	4.25	0.8872	0.2258	–0.9557	–0.1203	0.0621	0.0063	0.2702	0.4633	–0.7586	–0.0242	0.0077	0.0029
0.297	64.94	4.24	0.8697	0.3059	–0.9638	–0.1183	0.0613	0.0051	0.2263	0.4913	–0.7642	–0.0211	0.0063	0.0017
0.297	67.92	4.26	0.8464	0.3388	–0.9450	–0.1135	0.0596	0.0049	0.1900	0.4913	–0.7441	–0.0154	0.0041	0.0014
0.502	0.09	0.99	–0.0762	0.0192	0.1066	–0.0031	0.0010	–0.0004	–0.0762	0.0192	0.1066	–0.0031	0.0010	–0.0004
0.500	0.08	1.98	–0.0488	–0.0662	0.0641	–0.0033	0.0017	–0.0004	–0.0628	0.0223	0.0891	–0.0059	0.0022	–0.0005
0.500	0.08	3.01	–0.0295	–0.1417	0.0308	–0.0029	0.0024	–0.0002	–0.0531	0.0251	0.0763	–0.0040	0.0017	–0.0005
0.499	0.10	4.23	–0.0108	–0.2345	–0.0033	–0.0045	0.0045	0.0004	–0.0492	0.0278	0.0702	–0.0010	0.0010	–0.0004
0.498	0.08	4.72	–0.0048	–0.2717	–0.0166	–0.0069	0.0060	0.0007	–0.0489	0.0288	0.0679	–0.0016	0.0013	–0.0003
0.498	15.11	0.99	0.0559	0.0359	–0.1041	0.0064	–0.0019	0.0012	0.0559	0.0359	–0.1041	0.0064	–0.0019	0.0012
0.502	15.13	2.01	0.1057	–0.0433	–0.1493	0.0042	–0.0008	0.0014	0.0683	0.0409	–0.1236	0.0017	–0.0003	0.0013
0.501	15.10	3.06	0.1439	–0.1121	–0.1828	0.0009	0.0010	0.0016	0.0768	0.0456	–0.1364	0.0000	0.0002	0.0012
0.501	15.11	4.28	0.1895	–0.1960	–0.2222	–0.0062	0.0047	0.0021	0.0840	0.0486	–0.1483	–0.0025	0.0010	0.0012
0.500	15.07	4.73	0.2070	–0.2267	–0.2386	–0.0091	0.0063	0.0023	0.0875	0.0502	–0.1545	–0.0037	0.0015	0.0012
0.499	25.12	0.97	0.1688	0.1063	–0.2909	–0.0010	0.0004	0.0013	0.1688	0.1063	–0.2909	–0.0010	0.0004	0.0013
0.500	25.12	1.96	0.2326	0.0387	–0.3408	–0.0047	0.0021	0.0015	0.1832	0.1119	–0.3161	–0.0073	0.0025	0.0015
0.500	25.06	2.99	0.2848	–0.0225	–0.3781	–0.0085	0.0039	0.0017	0.1935	0.1181	–0.3328	–0.0096	0.0032	0.0015
0.499	25.08	4.28	0.3497	–0.1002	–0.4230	–0.0166	0.0079	0.0023	0.2024	0.1239	–0.3487	–0.0129	0.0043	0.0014
0.499	25.05	4.72	0.3727	–0.1270	–0.4404	–0.0214	0.0100	0.0025	0.2063	0.1259	–0.3561	–0.0161	0.0052	0.0014
0.502	0.10	0.99	–0.0751	0.0181	0.1044	–0.0058	0.0019	–0.0005	–0.0751	0.0181	0.1044	–0.0058	0.0019	–0.0005
0.503	5.12	0.99	–0.0351	0.0190	0.0489	–0.0047	0.0016	–0.0002	–0.0351	0.0190	0.0489	–0.0047	0.0016	–0.0002
0.500	10.11	0.99	–0.0038	0.0233	–0.0044	–0.0024	0.0009	–0.0004	–0.0038	0.0233	–0.0044	–0.0024	0.0009	–0.0004
0.501	15.08	0.99	0.0573	0.0356	–0.1055	0.0056	–0.0019	0.0012	0.0573	0.0356	–0.1055	0.0056	–0.0019	0.0012
0.498	20.08	0.98	0.1150	0.0644	–0.1985	–0.0002	0.0002	0.0011	0.1150	0.0644	–0.1985	–0.0002	0.0002	0.0011
0.500	25.12	0.97	0.1685	0.1061	–0.2902	–0.0027	0.0009	0.0014	0.1685	0.1061	–0.2902	–0.0027	0.0009	0.0014
0.499	30.10	0.96	0.2103	0.1521	–0.3754	0.0059	–0.0019	0.0014	0.2103	0.1521	–0.3754	0.0059	–0.0019	0.0014

Table 23. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	0.09	4.29	−0.0095	−0.2386	−0.0053	−0.0068	0.0051	0.0003	−0.0483	0.0268	0.0690	−0.0031	0.0014	−0.0005
0.502	5.11	4.27	0.0470	−0.2278	−0.0554	−0.0069	0.0051	0.0006	−0.0140	0.0295	0.0178	−0.0033	0.0014	−0.0003
0.500	10.08	4.27	0.1000	−0.2169	−0.1111	−0.0082	0.0053	0.0007	0.0164	0.0356	−0.0374	−0.0046	0.0017	−0.0002
0.502	15.07	4.27	0.1860	−0.1954	−0.2188	−0.0076	0.0050	0.0023	0.0814	0.0475	−0.1456	−0.0039	0.0014	0.0014
0.496	20.08	4.25	0.2701	−0.1562	−0.3209	−0.0158	0.0077	0.0023	0.1427	0.0805	−0.2464	−0.0121	0.0040	0.0014
0.500	25.06	4.26	0.3477	−0.0989	−0.4211	−0.0189	0.0085	0.0024	0.2019	0.1232	−0.3475	−0.0153	0.0049	0.0015
0.500	30.04	4.26	0.4124	−0.0367	−0.5141	−0.0129	0.0064	0.0026	0.2477	0.1721	−0.4404	−0.0092	0.0029	0.0017

Table 24. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9897	0.9895	0.42	1.04	−0.0106	0.0001	0.0000	0.0002	−0.0001	0.0000
3.00	0.9823	0.9822	0.62	0.79	−0.0199	0.0002	−0.0001	0.0003	−0.0001	0.0000
4.16	0.9743	0.9741	0.58	1.08	−0.0306	0.0003	−0.0001	0.0006	−0.0002	0.0000
5.00	0.9683	0.9681	0.54	1.15	−0.0384	0.0004	−0.0001	0.0008	−0.0003	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	0.01	1.00	−0.0702	0.0184	0.1010	−0.0128	0.0033	−0.0002	−0.0702	0.0184	0.1010	−0.0128	0.0033	−0.0002
0.301	−0.02	2.01	−0.0592	−0.1361	0.0901	−0.0110	0.0028	−0.0005	−0.0604	0.0322	0.0906	−0.0140	0.0037	−0.0004
0.300	−0.01	3.01	−0.0573	−0.2835	0.0898	−0.0095	0.0024	−0.0009	−0.0607	0.0337	0.0913	−0.0139	0.0039	−0.0007
0.301	−0.04	4.16	−0.0548	−0.4430	0.0891	−0.0056	0.0012	−0.0010	−0.0594	0.0414	0.0913	−0.0147	0.0043	−0.0010
0.301	−0.02	5.00	−0.0515	−0.5621	0.0868	−0.0017	−0.0002	−0.0010	−0.0570	0.0459	0.0887	−0.0139	0.0037	−0.0012
0.300	15.01	1.00	0.0366	0.0474	−0.0795	0.0104	−0.0039	0.0011	0.0366	0.0474	−0.0795	0.0104	−0.0039	0.0011
0.300	14.97	2.00	0.0786	−0.1028	−0.0807	0.0119	−0.0044	0.0010	0.0341	0.0588	−0.0803	0.0088	−0.0034	0.0012
0.300	14.99	3.00	0.1159	−0.2434	−0.0786	0.0132	−0.0047	0.0007	0.0307	0.0615	−0.0771	0.0088	−0.0031	0.0009
0.300	15.01	4.13	0.1552	−0.3994	−0.0755	0.0108	−0.0040	0.0004	0.0256	0.0654	−0.0733	0.0017	−0.0010	0.0003
0.300	14.98	5.00	0.1859	−0.5152	−0.0750	0.0120	−0.0044	0.0005	0.0227	0.0723	−0.0731	−0.0002	−0.0003	0.0003
0.300	25.01	0.99	0.1428	0.1209	−0.2691	−0.0052	0.0010	0.0019	0.1428	0.1209	−0.2691	−0.0052	0.0010	0.0019
0.300	24.98	1.99	0.2108	−0.0200	−0.2717	−0.0057	0.0011	0.0019	0.1395	0.1301	−0.2713	−0.0087	0.0021	0.0020
0.300	24.99	3.00	0.2746	−0.1533	−0.2731	−0.0043	0.0006	0.0017	0.1379	0.1318	−0.2715	−0.0087	0.0022	0.0019
0.300	24.96	4.14	0.3419	−0.2984	−0.2720	−0.0023	0.0000	0.0017	0.1337	0.1373	−0.2698	−0.0114	0.0030	0.0017
0.300	24.98	4.99	0.3922	−0.4082	−0.2711	−0.0004	−0.0005	0.0019	0.1305	0.1399	−0.2692	−0.0125	0.0035	0.0017
0.299	44.97	5.00	0.6920	−0.1568	−0.5502	0.0065	−0.0026	0.0026	0.2541	0.2735	−0.5483	−0.0058	0.0014	0.0024
0.298	45.02	0.98	0.2564	0.2655	−0.5243	0.0026	−0.0010	0.0030	0.2564	0.2655	−0.5243	0.0026	−0.0010	0.0030
0.299	45.02	1.99	0.3822	0.1567	−0.5443	0.0012	−0.0008	0.0023	0.2623	0.2747	−0.5438	−0.0018	0.0002	0.0024
0.299	44.99	3.00	0.4885	0.0517	−0.5497	0.0021	−0.0012	0.0021	0.2602	0.2752	−0.5482	−0.0023	0.0004	0.0023
0.299	44.99	4.15	0.6063	−0.0689	−0.5506	0.0051	−0.0022	0.0024	0.2571	0.2735	−0.5484	−0.0040	0.0009	0.0024
0.299	59.99	0.97	0.2013	0.3930	−0.6185	0.0045	−0.0008	0.0044	0.2013	0.3930	−0.6185	0.0045	−0.0008	0.0044
0.299	59.99	1.99	0.3509	0.3110	−0.6245	0.0028	−0.0004	0.0039	0.2043	0.3943	−0.6241	−0.0002	0.0005	0.0040
0.299	60.00	2.99	0.4793	0.2388	−0.6282	0.0034	−0.0010	0.0030	0.2024	0.3946	−0.6266	−0.0010	0.0005	0.0031
0.300	59.98	4.16	0.6285	0.1569	−0.6348	0.0041	−0.0012	0.0038	0.2045	0.3962	−0.6326	−0.0051	0.0018	0.0037
0.300	60.00	5.00	0.7339	0.0958	−0.6358	0.0038	−0.0013	0.0039	0.2017	0.3965	−0.6339	−0.0084	0.0027	0.0037
0.300	−0.01	1.00	−0.0709	0.0138	0.1018	−0.0106	0.0027	−0.0004	−0.0709	0.0138	0.1018	−0.0106	0.0027	−0.0004
0.300	5.00	1.00	−0.0320	0.0213	0.0469	−0.0085	0.0021	−0.0001	−0.0320	0.0213	0.0469	−0.0085	0.0021	−0.0001
0.301	9.99	1.00	−0.0003	0.0321	−0.0062	−0.0070	0.0017	−0.0001	−0.0003	0.0321	−0.0062	−0.0070	0.0017	−0.0001
0.299	15.01	1.00	0.0400	0.0479	−0.0817	0.0136	−0.0047	0.0011	0.0400	0.0479	−0.0817	0.0136	−0.0047	0.0011
0.300	20.00	0.99	0.0937	0.0781	−0.1773	0.0013	−0.0010	0.0013	0.0937	0.0781	−0.1773	0.0013	−0.0010	0.0013
0.299	25.00	0.99	0.1435	0.1223	−0.2693	−0.0028	0.0004	0.0019	0.1435	0.1223	−0.2693	−0.0028	0.0004	0.0019
0.302	29.98	0.99	0.1835	0.1687	−0.3571	0.0030	−0.0013	0.0029	0.1835	0.1687	−0.3571	0.0030	−0.0013	0.0029
0.301	31.66	0.99	0.1958	0.1868	−0.3851	0.0011	−0.0010	0.0025	0.1958	0.1868	−0.3851	0.0011	−0.0010	0.0025
0.299	35.26	0.99	0.2178	0.1456	−0.3940	0.0075	−0.0024	0.0024	0.2178	0.1456	−0.3940	0.0075	−0.0024	0.0024

Table 24. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	38.03	0.98	0.2317	0.1798	−0.4342	0.0111	−0.0037	0.0023	0.2317	0.1798	−0.4342	0.0111	−0.0037	0.0023
0.298	39.99	0.98	0.2399	0.2026	−0.4604	0.0092	−0.0027	0.0020	0.2399	0.2026	−0.4604	0.0092	−0.0027	0.0020
0.298	42.00	0.98	0.2516	0.2304	−0.4943	0.0133	−0.0040	0.0028	0.2516	0.2304	−0.4943	0.0133	−0.0040	0.0028
0.299	44.99	0.98	0.2553	0.2630	−0.5248	0.0068	−0.0021	0.0024	0.2553	0.2630	−0.5248	0.0068	−0.0021	0.0024
0.298	50.03	0.98	0.2500	0.3134	−0.5686	0.0042	−0.0010	0.0026	0.2500	0.3134	−0.5686	0.0042	−0.0010	0.0026
0.302	55.03	0.97	0.2301	0.3587	−0.5971	0.0063	−0.0013	0.0043	0.2301	0.3587	−0.5971	0.0063	−0.0013	0.0043
0.299	60.01	0.97	0.2012	0.3942	−0.6192	0.0057	−0.0010	0.0041	0.2012	0.3942	−0.6192	0.0057	−0.0010	0.0041
0.302	64.98	0.97	0.1824	0.4518	−0.6821	0.0096	−0.0024	0.0041	0.1824	0.4518	−0.6821	0.0096	−0.0024	0.0041
0.300	68.35	0.97	0.1621	0.4930	−0.7277	0.0155	−0.0043	0.0053	0.1621	0.4930	−0.7277	0.0155	−0.0043	0.0053
0.301	−0.02	4.15	−0.0555	−0.4409	0.0896	−0.0028	0.0005	−0.0007	−0.0602	0.0394	0.0918	−0.0118	0.0035	−0.0007
0.300	5.03	4.15	0.0246	−0.4401	0.0341	−0.0005	−0.0002	−0.0004	−0.0230	0.0446	0.0363	−0.0096	0.0030	−0.0004
0.300	10.00	4.16	0.0929	−0.4240	−0.0175	0.0029	−0.0014	−0.0005	0.0033	0.0552	−0.0153	−0.0062	0.0017	−0.0006
0.299	15.00	4.15	0.1613	−0.4041	−0.0796	0.0176	−0.0060	0.0004	0.0299	0.0670	−0.0774	0.0084	−0.0029	0.0003
0.299	20.00	4.16	0.2566	−0.3623	−0.1789	0.0079	−0.0031	0.0012	0.0843	0.0969	−0.1767	−0.0013	−0.0001	0.0012
0.301	24.98	4.14	0.3390	−0.2985	−0.2700	0.0023	−0.0014	0.0017	0.1315	0.1354	−0.2678	−0.0068	0.0017	0.0016
0.298	29.99	4.14	0.4219	−0.2375	−0.3641	0.0043	−0.0020	0.0024	0.1721	0.1855	−0.3619	−0.0049	0.0010	0.0023
0.300	31.56	4.14	0.4434	−0.2085	−0.3941	0.0046	−0.0022	0.0027	0.1870	0.1997	−0.3919	−0.0044	0.0009	0.0026
0.300	35.15	4.16	0.4949	−0.2388	−0.4069	0.0098	−0.0033	0.0029	0.2099	0.1575	−0.4047	0.0006	−0.0003	0.0028
0.299	37.99	4.15	0.5329	−0.1899	−0.4546	0.0143	−0.0049	0.0033	0.2293	0.1908	−0.4524	0.0052	−0.0018	0.0032
0.299	40.01	4.15	0.5562	−0.1564	−0.4851	0.0068	−0.0025	0.0025	0.2386	0.2144	−0.4829	−0.0023	0.0005	0.0024
0.298	41.98	4.15	0.5818	−0.1221	−0.5176	0.0090	−0.0034	0.0028	0.2500	0.2393	−0.5153	−0.0002	−0.0003	0.0027
0.298	45.02	4.15	0.6070	−0.0728	−0.5487	0.0045	−0.0019	0.0024	0.2560	0.2711	−0.5465	−0.0047	0.0011	0.0024
0.300	50.01	4.16	0.6243	0.0076	−0.5830	−0.0011	0.0000	0.0030	0.2490	0.3160	−0.5808	−0.0102	0.0030	0.0030
0.298	54.97	4.15	0.6410	0.0835	−0.6174	0.0052	−0.0017	0.0036	0.2352	0.3619	−0.6152	−0.0040	0.0015	0.0035
0.301	60.00	4.16	0.6263	0.1580	−0.6345	0.0056	−0.0016	0.0040	0.2049	0.3957	−0.6323	−0.0035	0.0015	0.0040
0.298	64.99	4.15	0.6236	0.2343	−0.6708	0.0040	−0.0011	0.0044	0.1744	0.4385	−0.6685	−0.0053	0.0020	0.0044
0.292	68.34	4.14	0.6158	0.2634	−0.6643	0.0194	−0.0071	0.0029	0.1407	0.4465	−0.6620	0.0098	−0.0039	0.0029
0.501	0.03	0.99	−0.0770	0.0187	0.1080	−0.0048	0.0016	−0.0003	−0.0770	0.0187	0.1080	−0.0048	0.0016	−0.0003
0.500	−0.01	2.00	−0.0743	−0.0355	0.1046	−0.0056	0.0018	−0.0003	−0.0747	0.0251	0.1048	−0.0067	0.0022	−0.0003
0.499	0.00	2.99	−0.0705	−0.0868	0.1008	−0.0047	0.0015	−0.0004	−0.0717	0.0273	0.1013	−0.0063	0.0021	−0.0003
0.499	−0.03	4.17	−0.0681	−0.1461	0.0983	−0.0040	0.0012	−0.0005	−0.0698	0.0298	0.0991	−0.0073	0.0024	−0.0005
0.499	0.01	4.99	−0.0665	−0.1885	0.0968	−0.0028	0.0009	−0.0004	−0.0686	0.0310	0.0975	−0.0072	0.0023	−0.0005
0.499	15.01	0.98	0.0568	0.0369	−0.1038	0.0070	−0.0024	0.0011	0.0568	0.0369	−0.1038	0.0070	−0.0024	0.0011
0.499	15.02	2.00	0.0744	−0.0167	−0.1065	0.0074	−0.0026	0.0008	0.0582	0.0419	−0.1064	0.0063	−0.0023	0.0009
0.499	14.99	3.00	0.0882	−0.0667	−0.1073	0.0077	−0.0027	0.0009	0.0575	0.0434	−0.1067	0.0061	−0.0022	0.0010
0.499	15.00	4.14	0.1034	−0.1229	−0.1076	0.0080	−0.0029	0.0010	0.0565	0.0452	−0.1068	0.0047	−0.0017	0.0010
0.499	14.98	5.01	0.1144	−0.1652	−0.1075	0.0083	−0.0030	0.0010	0.0553	0.0475	−0.1068	0.0039	−0.0015	0.0010
0.500	24.99	0.97	0.1704	0.1073	−0.2921	−0.0004	−0.0001	0.0012	0.1704	0.1073	−0.2921	−0.0004	−0.0001	0.0012
0.499	24.99	2.02	0.1950	0.0545	−0.2948	−0.0012	0.0002	0.0010	0.1685	0.1102	−0.2947	−0.0023	0.0005	0.0011
0.500	25.00	3.01	0.2172	0.0081	−0.2964	−0.0019	0.0003	0.0011	0.1676	0.1116	−0.2958	−0.0035	0.0009	0.0012
0.500	24.96	4.16	0.2423	−0.0446	−0.2977	−0.0027	0.0004	0.0011	0.1668	0.1134	−0.2969	−0.0059	0.0015	0.0011
0.500	24.98	5.00	0.2603	−0.0842	−0.2975	−0.0032	0.0006	0.0011	0.1654	0.1145	−0.2968	−0.0076	0.0020	0.0010
0.499	0.00	0.99	−0.0763	0.0184	0.1065	−0.0059	0.0017	−0.0004	−0.0763	0.0184	0.1065	−0.0059	0.0017	−0.0004
0.500	4.99	0.99	−0.0360	0.0194	0.0507	−0.0060	0.0017	−0.0001	−0.0360	0.0194	0.0507	−0.0060	0.0017	−0.0001
0.500	10.03	0.99	−0.0037	0.0232	−0.0039	−0.0032	0.0008	−0.0004	−0.0037	0.0232	−0.0039	−0.0032	0.0008	−0.0004

Table 24. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	15.00	0.98	0.0568	0.0360	−0.1035	0.0041	−0.0017	0.0011	0.0568	0.0360	−0.1035	0.0041	−0.0017	0.0011
0.501	20.00	0.98	0.1164	0.0649	−0.1989	−0.0005	0.0000	0.0011	0.1164	0.0649	−0.1989	−0.0005	0.0000	0.0011
0.498	25.01	0.97	0.1700	0.1066	−0.2910	−0.0033	0.0008	0.0013	0.1700	0.1066	−0.2910	−0.0033	0.0008	0.0013
0.499	30.01	0.96	0.2112	0.1521	−0.3762	0.0075	−0.0026	0.0016	0.2112	0.1521	−0.3762	0.0075	−0.0026	0.0016
0.501	−0.01	4.13	−0.0661	−0.1452	0.0964	−0.0036	0.0009	−0.0006	−0.0678	0.0279	0.0972	−0.0069	0.0020	−0.0006
0.502	5.00	4.16	−0.0124	−0.1431	0.0405	−0.0035	0.0008	−0.0003	−0.0293	0.0296	0.0413	−0.0067	0.0019	−0.0003
0.502	10.01	4.16	0.0294	−0.1378	−0.0089	−0.0013	0.0001	−0.0005	−0.0026	0.0333	−0.0081	−0.0046	0.0011	−0.0005
0.499	15.00	4.14	0.0999	−0.1259	−0.1049	0.0048	−0.0020	0.0012	0.0529	0.0427	−0.1041	0.0015	−0.0009	0.0011
0.500	20.01	4.14	0.1731	−0.0923	−0.2001	−0.0027	0.0004	0.0012	0.1119	0.0706	−0.1993	−0.0059	0.0016	0.0012
0.500	24.97	4.16	0.2436	−0.0450	−0.2969	−0.0050	0.0010	0.0015	0.1682	0.1126	−0.2962	−0.0083	0.0022	0.0014
0.499	29.97	4.16	0.3023	0.0085	−0.3885	0.0045	−0.0019	0.0019	0.2132	0.1595	−0.3877	0.0012	−0.0008	0.0018

Table 25. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 10°;\ \delta_{B,E} = 10°;\ \delta_{C,F} = 10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9814	0.9812	0.72	1.04	−0.0103	0.0001	−0.0001	0.0002	−0.0001	0.0000
2.99	0.9815	0.9813	0.96	0.85	−0.0197	0.0003	−0.0003	0.0003	−0.0001	0.0000
4.14	0.9672	0.9669	0.79	1.09	−0.0297	0.0004	−0.0003	0.0006	−0.0002	0.0000
4.99	0.9518	0.9515	0.88	1.09	−0.0370	0.0006	−0.0006	0.0007	−0.0002	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	0.01	1.00	−0.0714	0.0140	0.0999	−0.0054	0.0017	−0.0004	−0.0714	0.0140	0.0999	−0.0054	0.0017	−0.0004
0.299	−0.02	1.99	−0.0687	−0.1421	0.1002	−0.0046	0.0014	−0.0010	−0.0707	0.0215	0.1019	−0.0076	0.0023	−0.0010
0.300	−0.01	2.99	−0.0653	−0.2879	0.0975	−0.0021	0.0006	−0.0011	−0.0705	0.0253	0.1015	−0.0068	0.0019	−0.0010
0.301	0.02	4.12	−0.0587	−0.4415	0.0902	0.0022	−0.0006	−0.0014	−0.0652	0.0261	0.0953	−0.0067	0.0018	−0.0015
0.300	−0.01	4.97	−0.0532	−0.5560	0.0827	0.0042	−0.0013	−0.0015	−0.0621	0.0291	0.0918	−0.0070	0.0017	−0.0015
0.301	15.02	1.00	0.0360	0.0422	−0.0794	0.0174	−0.0054	0.0009	0.0360	0.0422	−0.0794	0.0174	−0.0054	0.0009
0.301	15.00	1.99	0.0734	−0.1067	−0.0745	0.0185	−0.0055	0.0008	0.0294	0.0497	−0.0729	0.0155	−0.0046	0.0008
0.299	14.97	4.15	0.1526	−0.4018	−0.0730	0.0235	−0.0069	−0.0001	0.0235	0.0558	−0.0678	0.0144	−0.0044	−0.0002
0.300	25.01	0.99	0.1441	0.1148	−0.2673	−0.0003	0.0002	0.0017	0.1441	0.1148	−0.2673	−0.0003	0.0002	0.0017
0.300	25.00	2.00	0.2126	−0.0246	−0.2710	−0.0015	0.0004	0.0014	0.1413	0.1235	−0.2693	−0.0045	0.0013	0.0014
0.300	24.99	2.98	0.2714	−0.1516	−0.2711	0.0003	−0.0001	0.0014	0.1352	0.1282	−0.2671	−0.0044	0.0011	0.0016
0.298	25.01	4.03	0.3326	−0.2891	−0.2683	0.0015	−0.0007	0.0014	0.1315	0.1276	−0.2633	−0.0073	0.0018	0.0013
0.302	25.00	5.00	0.3853	−0.3969	−0.2736	0.0057	−0.0018	0.0014	0.1307	0.1280	−0.2644	−0.0054	0.0012	0.0013
0.299	0.03	1.00	−0.0727	0.0126	0.1014	−0.0009	0.0006	−0.0002	−0.0727	0.0126	0.1014	−0.0009	0.0006	−0.0002
0.300	4.99	1.00	−0.0349	0.0185	0.0485	0.0011	0.0000	0.0000	−0.0349	0.0185	0.0485	0.0011	0.0000	0.0000
0.300	9.99	1.00	−0.0027	0.0287	−0.0050	0.0013	0.0000	−0.0001	−0.0027	0.0287	−0.0050	0.0013	0.0000	−0.0001
0.299	15.02	1.00	0.0371	0.0426	−0.0811	0.0203	−0.0058	0.0011	0.0371	0.0426	−0.0811	0.0203	−0.0058	0.0011
0.299	19.98	4.16	0.2477	−0.3618	−0.1726	0.0153	−0.0044	0.0007	0.0779	0.0860	−0.1673	0.0062	−0.0019	0.0006
0.299	24.99	0.99	0.1414	0.1156	−0.2660	0.0015	−0.0002	0.0015	0.1414	0.1156	−0.2660	0.0015	−0.0002	0.0015
0.298	29.99	0.99	0.1814	0.1639	−0.3537	0.0065	−0.0017	0.0024	0.1814	0.1639	−0.3537	0.0065	−0.0017	0.0024
0.297	31.61	0.99	0.1927	0.1812	−0.3807	0.0087	−0.0025	0.0024	0.1927	0.1812	−0.3807	0.0087	−0.0025	0.0024
0.301	0.00	4.16	−0.0608	−0.4458	0.0906	0.0052	−0.0012	−0.0013	−0.0673	0.0267	0.0959	−0.0038	0.0013	−0.0014
0.301	5.01	4.16	0.0161	−0.4354	0.0388	0.0061	−0.0016	−0.0010	−0.0315	0.0338	0.0441	−0.0029	0.0009	−0.0011
0.301	9.97	4.15	0.0824	−0.4192	−0.0095	0.0081	−0.0022	−0.0011	−0.0052	0.0424	−0.0043	−0.0008	0.0003	−0.0012
0.299	14.97	4.15	0.1526	−0.4018	−0.0730	0.0235	−0.0069	−0.0001	0.0235	0.0558	−0.0678	0.0144	−0.0044	−0.0002
0.299	19.98	4.16	0.2477	−0.3618	−0.1726	0.0153	−0.0044	0.0007	0.0779	0.0860	−0.1673	0.0062	−0.0019	0.0006
0.301	24.98	4.16	0.3345	−0.2996	−0.2672	0.0079	−0.0023	0.0013	0.1291	0.1258	−0.2619	−0.0011	0.0003	0.0012
0.300	30.01	4.17	0.4135	−0.2334	−0.3606	0.0108	−0.0033	0.0022	0.1699	0.1751	−0.3552	0.0017	−0.0008	0.0021
0.299	31.53	4.14	0.4366	−0.2115	−0.3869	0.0143	−0.0044	0.0024	0.1828	0.1898	−0.3817	0.0052	−0.0018	0.0023
0.502	0.02	0.99	−0.0756	0.0175	0.1058	−0.0030	0.0009	−0.0006	−0.0756	0.0175	0.1058	−0.0030	0.0009	−0.0006
0.500	0.01	2.00	−0.0772	−0.0374	0.1098	−0.0035	0.0010	−0.0008	−0.0780	0.0216	0.1104	−0.0045	0.0014	−0.0008
0.500	−0.02	3.02	−0.0768	−0.0902	0.1096	−0.0032	0.0010	−0.0009	−0.0776	0.0224	0.1102	−0.0052	0.0017	−0.0010

Table 25. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	−0.01	4.11	−0.0754	−0.1426	0.1074	−0.0025	0.0009	−0.0009	−0.0776	0.0247	0.1092	−0.0056	0.0017	−0.0009
0.501	−0.01	5.03	−0.0737	−0.1856	0.1049	−0.0016	0.0004	−0.0009	−0.0769	0.0267	0.1083	−0.0056	0.0016	−0.0009
0.499	15.00	0.99	0.0566	0.0335	−0.1040	0.0062	−0.0021	0.0010	0.0566	0.0335	−0.1040	0.0062	−0.0021	0.0010
0.499	14.98	2.01	0.0707	−0.0207	−0.1027	0.0062	−0.0022	0.0009	0.0545	0.0367	−0.1021	0.0051	−0.0018	0.0009
0.499	15.02	3.00	0.0826	−0.0690	−0.1017	0.0056	−0.0020	0.0009	0.0518	0.0394	−0.1005	0.0038	−0.0016	0.0009
0.499	14.99	4.15	0.0965	−0.1266	−0.1001	0.0070	−0.0025	0.0010	0.0499	0.0381	−0.0982	0.0037	−0.0016	0.0009
0.499	15.00	5.02	0.1098	−0.1653	−0.1048	0.0070	−0.0024	0.0009	0.0514	0.0401	−0.1015	0.0029	−0.0013	0.0009
0.500	25.02	0.97	0.1675	0.1022	−0.2867	−0.0023	0.0006	0.0010	0.1675	0.1022	−0.2867	−0.0023	0.0006	0.0010
0.499	24.98	1.96	0.1933	0.0538	−0.2919	−0.0007	0.0002	0.0010	0.1681	0.1061	−0.2913	−0.0018	0.0004	0.0010
0.499	24.99	3.02	0.2164	0.0041	−0.2930	−0.0014	0.0003	0.0011	0.1679	0.1062	−0.2924	−0.0035	0.0009	0.0010
0.499	24.99	4.21	0.2418	−0.0484	−0.2948	−0.0020	0.0004	0.0011	0.1661	0.1084	−0.2928	−0.0054	0.0014	0.0011
0.499	24.97	5.03	0.2590	−0.0844	−0.2964	−0.0030	0.0007	0.0010	0.1654	0.1088	−0.2930	−0.0071	0.0017	0.0010
0.501	0.02	0.99	−0.0749	0.0166	0.1046	−0.0047	0.0014	−0.0006	−0.0749	0.0166	0.1046	−0.0047	0.0014	−0.0006
0.502	4.99	0.99	−0.0356	0.0171	0.0504	−0.0036	0.0010	−0.0003	−0.0356	0.0171	0.0504	−0.0036	0.0010	−0.0003
0.501	9.99	0.99	−0.0032	0.0212	−0.0037	−0.0016	0.0004	−0.0006	−0.0032	0.0212	−0.0037	−0.0016	0.0004	−0.0006
0.499	15.02	0.99	0.0568	0.0329	−0.1038	0.0057	−0.0019	0.0010	0.0568	0.0329	−0.1038	0.0057	−0.0019	0.0010
0.502	20.02	0.98	0.1155	0.0615	−0.1974	0.0002	0.0000	0.0010	0.1155	0.0615	−0.1974	0.0002	0.0000	0.0010
0.501	24.99	0.97	0.1689	0.1025	−0.2882	−0.0016	0.0004	0.0011	0.1689	0.1025	−0.2882	−0.0016	0.0004	0.0011
0.500	29.99	0.96	0.2105	0.1482	−0.3724	0.0071	−0.0024	0.0014	0.2105	0.1482	−0.3724	0.0071	−0.0024	0.0014
0.502	0.01	4.13	−0.0740	−0.1458	0.1059	−0.0025	0.0009	−0.0008	−0.0763	0.0222	0.1077	−0.0057	0.0017	−0.0008
0.500	5.02	4.14	−0.0186	−0.1455	0.0487	−0.0019	0.0006	−0.0005	−0.0358	0.0233	0.0506	−0.0052	0.0015	−0.0005
0.500	9.99	4.14	0.0269	−0.1397	−0.0050	0.0011	−0.0003	−0.0007	−0.0048	0.0269	−0.0031	−0.0021	0.0005	−0.0007
0.498	14.99	4.16	0.0966	−0.1278	−0.1002	0.0067	−0.0024	0.0010	0.0497	0.0380	−0.0983	0.0034	−0.0014	0.0009
0.501	19.99	4.18	0.1727	−0.0926	−0.2001	0.0001	−0.0001	0.0010	0.1120	0.0673	−0.1982	−0.0031	0.0008	0.0010
0.498	24.98	4.15	0.2419	−0.0478	−0.2942	−0.0037	0.0010	0.0011	0.1670	0.1072	−0.2923	−0.0070	0.0018	0.0011
0.499	29.96	4.17	0.3000	0.0063	−0.3845	0.0054	−0.0020	0.0017	0.2117	0.1545	−0.3825	0.0021	−0.0010	0.0017

Table 26. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.9616	0.9604	2.60	0.94	−0.0104	0.0005	−0.0008	0.0002	−0.0001	0.0000
3.01	0.9538	0.9525	2.59	1.37	−0.0194	0.0009	−0.0015	0.0005	−0.0002	0.0000
4.16	0.9431	0.9418	2.61	1.50	−0.0297	0.0014	−0.0027	0.0008	−0.0003	0.0000
5.01	0.9274	0.9256	3.32	1.41	−0.0368	0.0021	−0.0045	0.0009	−0.0003	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	−0.01	1.00	−0.0704	0.0152	0.0997	−0.0077	0.0019	0.0000	−0.0704	0.0152	0.0997	−0.0077	0.0019	0.0000
0.301	0.00	2.01	−0.0558	−0.1362	0.0801	−0.0044	0.0010	−0.0003	−0.0633	0.0279	0.0922	−0.0070	0.0018	−0.0003
0.301	0.02	3.00	−0.0431	−0.2770	0.0604	−0.0023	0.0004	−0.0004	−0.0570	0.0277	0.0847	−0.0096	0.0027	−0.0004
0.302	−0.03	4.00	−0.0291	−0.4126	0.0375	0.0010	−0.0005	−0.0005	−0.0491	0.0307	0.0771	−0.0105	0.0031	−0.0008
0.302	0.00	4.15	−0.0254	−0.4321	0.0315	0.0025	−0.0010	−0.0005	−0.0466	0.0317	0.0734	−0.0097	0.0029	−0.0009
0.302	−0.01	5.00	−0.0045	−0.5404	−0.0066	0.0079	−0.0026	−0.0003	−0.0378	0.0348	0.0638	−0.0063	0.0019	−0.0011
0.302	15.00	0.99	0.0374	0.0456	−0.0810	0.0157	−0.0051	0.0014	0.0374	0.0456	−0.0810	0.0157	−0.0051	0.0014
0.302	14.98	1.99	0.0801	−0.0972	−0.0929	0.0154	−0.0051	0.0013	0.0318	0.0552	−0.0811	0.0128	−0.0043	0.0014
0.302	15.02	3.00	0.1230	−0.2305	−0.1063	0.0163	−0.0053	0.0011	0.0312	0.0587	−0.0822	0.0091	−0.0030	0.0011
0.302	14.98	4.14	0.1748	−0.3775	−0.1290	0.0149	−0.0047	0.0010	0.0351	0.0631	−0.0873	0.0028	−0.0010	0.0006
0.302	14.97	4.99	0.2241	−0.4792	−0.1691	0.0149	−0.0047	0.0014	0.0430	0.0690	−0.0989	0.0007	−0.0002	0.0006
0.299	24.99	0.99	0.1436	0.1214	−0.2711	0.0014	−0.0004	0.0024	0.1436	0.1214	−0.2711	0.0014	−0.0004	0.0024
0.301	24.99	2.00	0.2224	−0.0109	−0.2963	−0.0042	0.0010	0.0024	0.1472	0.1328	−0.2843	−0.0068	0.0018	0.0024
0.301	25.01	2.99	0.2912	−0.1339	−0.3148	−0.0041	0.0010	0.0024	0.1503	0.1357	−0.2907	−0.0113	0.0032	0.0024
0.301	24.99	4.15	0.3711	−0.2701	−0.3421	−0.0038	0.0008	0.0025	0.1555	0.1423	−0.3001	−0.0160	0.0047	0.0021
0.301	25.02	4.99	0.4398	−0.3607	−0.3854	−0.0038	0.0009	0.0030	0.1650	0.1491	−0.3148	−0.0181	0.0055	0.0021
0.298	45.00	0.98	0.2517	0.2682	−0.5231	0.0023	−0.0009	0.0035	0.2517	0.2682	−0.5231	0.0023	−0.0009	0.0035
0.299	45.02	2.00	0.3837	0.1694	−0.5629	−0.0014	−0.0001	0.0027	0.2615	0.2809	−0.5507	−0.0041	0.0007	0.0028
0.302	45.00	3.01	0.4932	0.0813	−0.5894	−0.0001	−0.0006	0.0029	0.2684	0.2868	−0.5652	−0.0074	0.0017	0.0029
0.302	44.97	4.16	0.6183	−0.0194	−0.6236	0.0022	−0.0014	0.0033	0.2753	0.2941	−0.5817	−0.0099	0.0024	0.0029
0.302	44.99	5.01	0.7175	−0.0820	−0.6712	−0.0017	−0.0004	0.0030	0.2846	0.3035	−0.6003	−0.0160	0.0041	0.0023
0.297	60.02	0.97	0.1997	0.3976	−0.6207	0.0020	−0.0003	0.0046	0.1997	0.3976	−0.6207	0.0020	−0.0003	0.0046
0.300	60.01	2.00	0.3507	0.3274	−0.6470	0.0023	−0.0003	0.0044	0.2053	0.4027	−0.6348	−0.0004	0.0003	0.0046
0.301	60.00	3.01	0.4815	0.2653	−0.6678	0.0031	−0.0010	0.0037	0.2082	0.4070	−0.6434	−0.0042	0.0013	0.0037
0.301	59.96	4.16	0.6307	0.2034	−0.7055	0.0039	−0.0014	0.0041	0.2150	0.4192	−0.6632	−0.0084	0.0024	0.0037
0.301	59.97	5.01	0.7462	0.1692	−0.7553	0.0034	−0.0015	0.0041	0.2236	0.4320	−0.6837	−0.0110	0.0031	0.0033
0.300	0.01	1.00	−0.0690	0.0133	0.0986	−0.0065	0.0019	−0.0001	−0.0690	0.0133	0.0986	−0.0065	0.0019	−0.0001
0.301	5.01	1.00	−0.0310	0.0209	0.0450	−0.0032	0.0010	0.0002	−0.0310	0.0209	0.0450	−0.0032	0.0010	0.0002
0.301	9.99	1.00	0.0005	0.0319	−0.0088	−0.0017	0.0004	0.0002	0.0005	0.0319	−0.0088	−0.0017	0.0004	0.0002
0.300	14.98	1.00	0.0396	0.0472	−0.0834	0.0178	−0.0056	0.0015	0.0396	0.0472	−0.0834	0.0178	−0.0056	0.0015
0.301	20.00	0.99	0.0957	0.0784	−0.1808	0.0042	−0.0014	0.0017	0.0957	0.0784	−0.1808	0.0042	−0.0014	0.0017
0.301	30.02	0.99	0.1861	0.1705	−0.3617	0.0072	−0.0022	0.0034	0.1861	0.1705	−0.3617	0.0072	−0.0022	0.0034

Table 26. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	31.58	0.99	0.1955	0.1873	−0.3869	0.0075	−0.0024	0.0035	0.1955	0.1873	−0.3869	0.0075	−0.0024	0.0035
0.300	35.26	0.99	0.2185	0.1516	−0.3982	0.0043	−0.0016	0.0022	0.2185	0.1516	−0.3982	0.0043	−0.0016	0.0022
0.301	38.02	0.99	0.2304	0.1835	−0.4358	0.0094	−0.0033	0.0028	0.2304	0.1835	−0.4358	0.0094	−0.0033	0.0028
0.301	40.02	0.98	0.2383	0.2073	−0.4620	0.0054	−0.0019	0.0020	0.2383	0.2073	−0.4620	0.0054	−0.0019	0.0020
0.301	42.00	0.98	0.2495	0.2353	−0.4965	0.0130	−0.0041	0.0033	0.2495	0.2353	−0.4965	0.0130	−0.0041	0.0033
0.300	45.03	0.98	0.2523	0.2673	−0.5253	0.0093	−0.0029	0.0032	0.2523	0.2673	−0.5253	0.0093	−0.0029	0.0032
0.299	50.02	0.98	0.2492	0.3194	−0.5734	0.0018	−0.0005	0.0027	0.2492	0.3194	−0.5734	0.0018	−0.0005	0.0027
0.298	55.00	0.98	0.2269	0.3619	−0.5973	0.0059	−0.0013	0.0049	0.2269	0.3619	−0.5973	0.0059	−0.0013	0.0049
0.301	60.01	0.97	0.1985	0.3976	−0.6202	0.0047	−0.0009	0.0045	0.1985	0.3976	−0.6202	0.0047	−0.0009	0.0045
0.299	65.01	0.97	0.1756	0.4524	−0.6776	0.0089	−0.0024	0.0043	0.1756	0.4524	−0.6776	0.0089	−0.0024	0.0043
0.299	68.35	0.97	0.1591	0.4985	−0.7321	0.0169	−0.0048	0.0064	0.1591	0.4985	−0.7321	0.0169	−0.0048	0.0064
0.301	0.00	4.14	−0.0268	−0.4350	0.0322	0.0036	−0.0010	−0.0005	−0.0480	0.0311	0.0742	−0.0085	0.0028	−0.0009
0.301	5.02	4.15	0.0518	−0.4216	−0.0249	0.0079	−0.0024	−0.0002	−0.0102	0.0412	0.0172	−0.0042	0.0014	−0.0005
0.301	9.98	4.16	0.1144	−0.4015	−0.0717	0.0121	−0.0037	−0.0001	0.0126	0.0544	−0.0295	−0.0001	0.0001	−0.0004
0.300	14.98	4.15	0.1786	−0.3801	−0.1314	0.0159	−0.0050	0.0006	0.0368	0.0670	−0.0891	0.0037	−0.0011	0.0003
0.299	19.99	4.14	0.2817	−0.3381	−0.2427	0.0108	−0.0034	0.0018	0.1001	0.0981	−0.2001	−0.0015	0.0005	0.0015
0.300	24.97	4.15	0.3679	−0.2752	−0.3391	0.0013	−0.0006	0.0023	0.1499	0.1420	−0.2966	−0.0110	0.0032	0.0019
0.299	29.99	4.14	0.4485	−0.2058	−0.4355	0.0047	−0.0017	0.0030	0.1941	0.1920	−0.3929	−0.0076	0.0022	0.0027
0.301	31.39	4.16	0.4684	−0.1791	−0.4642	0.0055	−0.0020	0.0031	0.2071	0.2081	−0.4220	−0.0067	0.0018	0.0028
0.300	35.07	4.15	0.5189	−0.1974	−0.4824	0.0091	−0.0032	0.0032	0.2312	0.1751	−0.4399	−0.0032	0.0007	0.0029
0.300	37.99	4.16	0.5547	−0.1465	−0.5311	0.0127	−0.0048	0.0035	0.2480	0.2112	−0.4886	0.0004	−0.0010	0.0031
0.300	39.97	4.16	0.5741	−0.1144	−0.5576	0.0077	−0.0032	0.0031	0.2549	0.2329	−0.5149	−0.0046	0.0007	0.0028
0.299	41.99	4.16	0.5969	−0.0801	−0.5876	0.0076	−0.0032	0.0031	0.2639	0.2575	−0.5448	−0.0048	0.0007	0.0027
0.299	44.98	4.16	0.6181	−0.0308	−0.6172	0.0045	−0.0022	0.0028	0.2672	0.2896	−0.5742	−0.0079	0.0017	0.0024
0.298	49.99	4.16	0.6424	0.0477	−0.6565	−0.0005	−0.0003	0.0035	0.2615	0.3388	−0.6132	−0.0130	0.0037	0.0030
0.297	55.00	4.15	0.6518	0.1291	−0.6923	0.0038	−0.0013	0.0039	0.2460	0.3865	−0.6490	−0.0088	0.0026	0.0035
0.298	59.97	4.16	0.6359	0.2001	−0.7070	0.0043	−0.0014	0.0045	0.2129	0.4196	−0.6640	−0.0081	0.0026	0.0041
0.299	64.98	4.16	0.6195	0.2772	−0.7360	0.0045	−0.0015	0.0048	0.1818	0.4577	−0.6933	−0.0079	0.0024	0.0044
0.297	68.22	4.16	0.6056	0.3141	−0.7406	0.0112	−0.0042	0.0039	0.1519	0.4718	−0.6972	−0.0014	−0.0002	0.0035
0.501	−0.02	0.99	−0.0770	0.0196	0.1076	−0.0034	0.0010	−0.0004	−0.0770	0.0196	0.1076	−0.0034	0.0010	−0.0004
0.501	−0.07	2.04	−0.0722	−0.0372	0.0993	−0.0031	0.0010	−0.0004	−0.0749	0.0238	0.1039	−0.0041	0.0013	−0.0004
0.500	−0.01	3.01	−0.0666	−0.0856	0.0910	−0.0027	0.0009	−0.0005	−0.0716	0.0255	0.0998	−0.0054	0.0017	−0.0004
0.500	−0.02	4.00	−0.0607	−0.1355	0.0814	−0.0025	0.0009	−0.0005	−0.0680	0.0262	0.0959	−0.0067	0.0022	−0.0006
0.499	0.08	4.17	−0.0583	−0.1449	0.0780	−0.0024	0.0008	−0.0004	−0.0663	0.0261	0.0935	−0.0068	0.0022	−0.0006
0.501	0.00	4.99	−0.0496	−0.1805	0.0630	−0.0012	0.0004	−0.0003	−0.0617	0.0282	0.0884	−0.0063	0.0020	−0.0006
0.500	15.00	0.99	0.0576	0.0362	−0.1058	0.0061	−0.0021	0.0012	0.0576	0.0362	−0.1058	0.0061	−0.0021	0.0012
0.501	14.98	2.03	0.0783	−0.0167	−0.1160	0.0069	−0.0023	0.0012	0.0600	0.0410	−0.1115	0.0059	−0.0020	0.0012
0.500	15.00	3.00	0.0946	−0.0624	−0.1230	0.0079	−0.0026	0.0012	0.0611	0.0431	−0.1142	0.0053	−0.0018	0.0012
0.500	14.98	4.19	0.1163	−0.1172	−0.1357	0.0080	−0.0027	0.0013	0.0645	0.0458	−0.1200	0.0035	−0.0012	0.0011
0.500	14.96	4.98	0.1351	−0.1517	−0.1523	0.0075	−0.0024	0.0014	0.0694	0.0471	−0.1269	0.0023	−0.0008	0.0011
0.503	24.99	0.97	0.1706	0.1066	−0.2930	−0.0004	0.0000	0.0013	0.1706	0.1066	−0.2930	−0.0004	0.0000	0.0013
0.502	24.99	2.04	0.2022	0.0583	−0.3079	−0.0010	0.0002	0.0013	0.1742	0.1120	−0.3035	−0.0020	0.0004	0.0014
0.502	24.97	3.01	0.2284	0.0165	−0.3190	−0.0011	0.0002	0.0013	0.1773	0.1144	−0.3102	−0.0037	0.0010	0.0013
0.502	24.96	4.20	0.2600	−0.0332	−0.3339	−0.0021	0.0003	0.0014	0.1811	0.1176	−0.3182	−0.0065	0.0017	0.0012

Table 26. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	24.96	5.00	0.2845	−0.0641	−0.3501	−0.0017	0.0002	0.0015	0.1853	0.1202	−0.3246	−0.0068	0.0018	0.0012
0.500	−0.01	0.99	−0.0749	0.0182	0.1042	−0.0048	0.0014	−0.0003	−0.0749	0.0182	0.1042	−0.0048	0.0014	−0.0003
0.502	5.01	0.99	−0.0344	0.0193	0.0479	−0.0044	0.0013	−0.0001	−0.0344	0.0193	0.0479	−0.0044	0.0013	−0.0001
0.497	10.00	0.99	−0.0027	0.0242	−0.0057	−0.0019	0.0005	−0.0004	−0.0027	0.0242	−0.0057	−0.0019	0.0005	−0.0004
0.502	14.99	0.99	0.0588	0.0355	−0.1078	0.0054	−0.0020	0.0012	0.0588	0.0355	−0.1078	0.0054	−0.0020	0.0012
0.500	19.99	0.98	0.1172	0.0646	−0.2013	0.0002	−0.0002	0.0012	0.1172	0.0646	−0.2013	0.0002	−0.0002	0.0012
0.500	25.00	0.97	0.1711	0.1067	−0.2935	−0.0009	0.0002	0.0015	0.1711	0.1067	−0.2935	−0.0009	0.0002	0.0015
0.502	29.99	0.96	0.2133	0.1527	−0.3793	0.0073	−0.0025	0.0016	0.2133	0.1527	−0.3793	0.0073	−0.0025	0.0016
0.503	0.01	4.19	−0.0576	−0.1429	0.0771	−0.0029	0.0008	−0.0004	−0.0655	0.0265	0.0927	−0.0073	0.0022	−0.0006
0.502	4.98	4.19	−0.0027	−0.1403	0.0194	−0.0017	0.0004	−0.0002	−0.0252	0.0278	0.0349	−0.0062	0.0018	−0.0003
0.502	10.02	4.18	0.0377	−0.1332	−0.0301	0.0020	−0.0008	−0.0003	0.0006	0.0322	−0.0147	−0.0024	0.0006	−0.0005
0.503	14.99	4.20	0.1147	−0.1184	−0.1348	0.0050	−0.0019	0.0014	0.0632	0.0435	−0.1192	0.0005	−0.0005	0.0012
0.499	19.98	4.17	0.1901	−0.0824	−0.2346	−0.0009	0.0001	0.0014	0.1244	0.0753	−0.2191	−0.0054	0.0015	0.0013
0.499	25.00	4.17	0.2606	−0.0335	−0.3333	−0.0037	0.0007	0.0016	0.1812	0.1182	−0.3177	−0.0081	0.0021	0.0014
0.503	29.97	4.18	0.3172	0.0231	−0.4241	0.0029	−0.0014	0.0019	0.2263	0.1653	−0.4087	−0.0015	0.0000	0.0018

Table 27. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 20°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9302	0.9230	7.06	1.06	−0.0098	0.0012	−0.0021	0.0002	−0.0001	0.0000
3.01	0.9191	0.9131	6.43	1.17	−0.0186	0.0021	−0.0038	0.0004	−0.0001	0.0000
4.15	0.9056	0.8999	6.26	1.40	−0.0282	0.0031	−0.0061	0.0007	−0.0002	0.0001
5.03	0.8959	0.8883	7.37	1.18	−0.0352	0.0046	−0.0090	0.0007	−0.0002	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	−0.02	1.00	−0.0724	0.0181	0.1001	−0.0061	0.0019	−0.0003	−0.0724	0.0181	0.1001	−0.0061	0.0019	−0.0003
0.303	−0.01	2.03	−0.0435	−0.1311	0.0549	−0.0021	0.0007	−0.0006	−0.0629	0.0264	0.0882	−0.0050	0.0015	−0.0005
0.303	−0.03	3.03	−0.0196	−0.2626	0.0152	0.0010	−0.0003	−0.0007	−0.0523	0.0296	0.0757	−0.0050	0.0015	−0.0009
0.303	−0.02	4.17	0.0085	−0.4089	−0.0360	0.0055	−0.0017	−0.0003	−0.0400	0.0316	0.0606	−0.0052	0.0015	−0.0010
0.303	−0.05	5.03	0.0253	−0.5160	−0.0754	0.0136	−0.0040	0.0006	−0.0450	0.0312	0.0642	0.0024	−0.0007	−0.0007
0.303	15.02	1.00	0.0401	0.0489	−0.0861	0.0185	−0.0058	0.0015	0.0401	0.0489	−0.0861	0.0185	−0.0058	0.0015
0.303	15.00	2.03	0.0969	−0.0880	−0.1253	0.0189	−0.0058	0.0017	0.0378	0.0580	−0.0921	0.0160	−0.0051	0.0017
0.300	14.98	3.02	0.1509	−0.2142	−0.1607	0.0203	−0.0062	0.0017	0.0418	0.0638	−0.0994	0.0142	−0.0044	0.0015
0.300	14.98	4.17	0.2147	−0.3513	−0.2116	0.0185	−0.0057	0.0021	0.0508	0.0698	−0.1131	0.0076	−0.0024	0.0013
0.300	14.95	5.05	0.2717	−0.4526	−0.2656	0.0203	−0.0061	0.0029	0.0568	0.0703	−0.1223	0.0087	−0.0026	0.0016
0.303	25.01	0.99	0.1420	0.1221	−0.2715	0.0003	0.0000	0.0024	0.1420	0.1221	−0.2715	0.0003	0.0000	0.0024
0.303	25.00	2.03	0.2341	−0.0005	−0.3250	−0.0010	0.0004	0.0024	0.1500	0.1340	−0.2916	−0.0040	0.0012	0.0025
0.303	24.97	3.02	0.3108	−0.1100	−0.3667	−0.0016	0.0007	0.0027	0.1579	0.1406	−0.3064	−0.0075	0.0024	0.0025
0.304	24.98	4.17	0.3993	−0.2317	−0.4194	−0.0019	0.0007	0.0030	0.1696	0.1463	−0.3229	−0.0126	0.0038	0.0023
0.301	25.03	5.05	0.4785	−0.3221	−0.4790	−0.0023	0.0009	0.0033	0.1773	0.1521	−0.3365	−0.0137	0.0043	0.0020
0.303	0.01	1.00	−0.0722	0.0157	0.1006	−0.0028	0.0011	−0.0003	−0.0722	0.0157	0.1006	−0.0028	0.0011	−0.0003
0.302	4.99	1.00	−0.0316	0.0229	0.0441	−0.0007	0.0006	0.0000	−0.0316	0.0229	0.0441	−0.0007	0.0006	0.0000
0.302	10.01	1.00	−0.0018	0.0339	−0.0078	0.0008	0.0001	0.0001	−0.0018	0.0339	−0.0078	0.0008	0.0001	0.0001
0.301	15.00	1.00	0.0394	0.0501	−0.0851	0.0194	−0.0057	0.0016	0.0394	0.0501	−0.0851	0.0194	−0.0057	0.0016
0.300	20.00	1.00	0.0918	0.0805	−0.1788	0.0083	−0.0022	0.0019	0.0918	0.0805	−0.1788	0.0083	−0.0022	0.0019
0.302	25.01	0.99	0.1413	0.1232	−0.2709	0.0027	−0.0005	0.0023	0.1413	0.1232	−0.2709	0.0027	−0.0005	0.0023
0.300	30.00	0.99	0.1823	0.1730	−0.3605	0.0083	−0.0022	0.0032	0.1823	0.1730	−0.3605	0.0083	−0.0022	0.0032
0.299	31.59	0.99	0.1927	0.1900	−0.3861	0.0099	−0.0029	0.0032	0.1927	0.1900	−0.3861	0.0099	−0.0029	0.0032
0.301	−0.04	4.17	0.0083	−0.4131	−0.0371	0.0096	−0.0025	−0.0001	−0.0405	0.0325	0.0605	−0.0012	0.0006	−0.0010
0.302	5.01	4.20	0.0752	−0.3959	−0.0832	0.0151	−0.0044	0.0007	−0.0138	0.0469	0.0161	0.0043	−0.0011	−0.0002
0.302	9.99	4.14	0.1404	−0.3696	−0.1370	0.0129	−0.0037	0.0006	0.0162	0.0566	−0.0408	0.0022	−0.0005	−0.0002
0.301	15.00	4.14	0.2174	−0.3436	−0.2144	0.0259	−0.0077	0.0019	0.0560	0.0712	−0.1180	0.0151	−0.0045	0.0012
0.300	19.99	4.14	0.3145	−0.2994	−0.3210	0.0108	−0.0030	0.0026	0.1161	0.1029	−0.2238	0.0000	0.0002	0.0018
0.300	24.99	4.14	0.4006	−0.2344	−0.4212	0.0039	−0.0008	0.0030	0.1682	0.1486	−0.3241	−0.0070	0.0024	0.0023
0.300	26.61	4.14	0.4239	−0.2144	−0.4478	0.0032	−0.0007	0.0031	0.1804	0.1624	−0.3506	−0.0077	0.0025	0.0024
0.301	31.28	4.16	0.4926	−0.1382	−0.5413	0.0107	−0.0030	0.0039	0.2200	0.2165	−0.4441	−0.0001	0.0002	0.0031
0.500	0.16	0.99	−0.0758	0.0195	0.1055	−0.0020	0.0007	−0.0003	−0.0758	0.0195	0.1055	−0.0020	0.0007	−0.0003

Table 27. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.501	−0.02	2.01	−0.0628	−0.0339	0.0856	−0.0019	0.0007	−0.0004	−0.0698	0.0227	0.0976	−0.0029	0.0010	−0.0004
0.501	−0.03	3.02	−0.0522	−0.0817	0.0683	−0.0005	0.0003	−0.0004	−0.0642	0.0248	0.0903	−0.0026	0.0010	−0.0005
0.501	0.01	4.18	−0.0378	−0.1355	0.0442	0.0009	−0.0001	−0.0003	−0.0558	0.0264	0.0799	−0.0031	0.0010	−0.0007
0.501	0.00	5.01	−0.0257	−0.1737	0.0231	0.0021	−0.0004	−0.0003	−0.0515	0.0263	0.0740	−0.0021	0.0008	−0.0007
0.501	14.98	0.99	0.0588	0.0369	−0.1075	0.0079	−0.0024	0.0014	0.0588	0.0369	−0.1075	0.0079	−0.0024	0.0014
0.501	14.98	2.01	0.0846	−0.0113	−0.1286	0.0074	−0.0024	0.0013	0.0632	0.0418	−0.1165	0.0064	−0.0021	0.0013
0.500	15.01	3.03	0.1080	−0.0553	−0.1476	0.0079	−0.0024	0.0015	0.0687	0.0449	−0.1255	0.0057	−0.0017	0.0014
0.500	15.02	4.19	0.1360	−0.1043	−0.1728	0.0077	−0.0024	0.0017	0.0763	0.0484	−0.1369	0.0038	−0.0011	0.0014
0.500	14.96	5.02	0.1554	−0.1390	−0.1915	0.0079	−0.0024	0.0018	0.0786	0.0480	−0.1405	0.0038	−0.0012	0.0014
0.500	24.99	0.97	0.1697	0.1077	−0.2927	0.0016	−0.0003	0.0015	0.1697	0.1077	−0.2927	0.0016	−0.0003	0.0015
0.500	24.98	2.01	0.2076	0.0640	−0.3202	0.0015	−0.0003	0.0014	0.1772	0.1126	−0.3082	0.0005	−0.0001	0.0015
0.500	24.98	3.03	0.2388	0.0241	−0.3409	0.0009	−0.0003	0.0015	0.1825	0.1163	−0.3187	−0.0012	0.0004	0.0014
0.500	25.00	4.22	0.2747	−0.0201	−0.3661	0.0001	−0.0001	0.0016	0.1883	0.1214	−0.3295	−0.0039	0.0010	0.0012
0.500	25.00	5.02	0.3037	−0.0491	−0.3903	0.0005	−0.0002	0.0017	0.1954	0.1219	−0.3392	−0.0036	0.0010	0.0013
0.500	−0.01	0.99	−0.0762	0.0184	0.1047	−0.0020	0.0008	−0.0004	−0.0762	0.0184	0.1047	−0.0020	0.0008	−0.0004
0.501	5.02	0.99	−0.0353	0.0202	0.0482	−0.0027	0.0010	−0.0002	−0.0353	0.0202	0.0482	−0.0027	0.0010	−0.0002
0.501	10.00	0.99	−0.0027	0.0244	−0.0061	−0.0001	0.0002	−0.0003	−0.0027	0.0244	−0.0061	−0.0001	0.0002	−0.0003
0.499	15.00	0.99	0.0571	0.0357	−0.1059	0.0071	−0.0023	0.0014	0.0571	0.0357	−0.1059	0.0071	−0.0023	0.0014
0.501	20.00	0.98	0.1159	0.0655	−0.2003	0.0022	−0.0005	0.0014	0.1159	0.0655	−0.2003	0.0022	−0.0005	0.0014
0.500	24.99	0.97	0.1701	0.1076	−0.2926	0.0016	−0.0004	0.0014	0.1701	0.1076	−0.2926	0.0016	−0.0004	0.0014
0.499	30.00	0.96	0.2106	0.1535	−0.3774	0.0114	−0.0036	0.0018	0.2106	0.1535	−0.3774	0.0114	−0.0036	0.0018
0.503	0.01	4.15	−0.0392	−0.1335	0.0451	−0.0003	0.0003	−0.0004	−0.0567	0.0257	0.0799	−0.0042	0.0014	−0.0007
0.501	5.00	4.17	0.0145	−0.1300	−0.0125	0.0017	−0.0004	−0.0001	−0.0173	0.0291	0.0228	−0.0022	0.0007	−0.0003
0.501	10.02	4.15	0.0530	−0.1209	−0.0610	0.0028	−0.0009	−0.0001	0.0077	0.0340	−0.0260	−0.0011	0.0003	−0.0003
0.504	15.01	4.16	0.1328	−0.1024	−0.1707	0.0054	−0.0017	0.0017	0.0746	0.0469	−0.1359	0.0016	−0.0006	0.0014
0.499	20.01	4.15	0.2050	−0.0675	−0.2675	−0.0001	0.0001	0.0017	0.1329	0.0784	−0.2322	−0.0040	0.0012	0.0013
0.500	24.97	4.17	0.2739	−0.0187	−0.3649	−0.0020	0.0005	0.0017	0.1896	0.1202	−0.3295	−0.0060	0.0017	0.0014
0.500	29.99	4.16	0.3297	0.0377	−0.4562	0.0057	−0.0020	0.0022	0.2336	0.1685	−0.4209	0.0018	−0.0009	0.0018

Table 28. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = -10°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.8672	0.8516	10.57	2.62	−0.0092	0.0017	−0.0032	0.0004	−0.0001	0.0000
3.01	0.8499	0.8368	9.88	1.97	−0.0170	0.0030	−0.0060	0.0006	−0.0002	0.0000
4.16	0.8487	0.8324	11.13	1.57	−0.0262	0.0052	−0.0102	0.0007	−0.0003	0.0001
5.00	0.8495	0.8322	11.53	1.25	−0.0331	0.0067	−0.0132	0.0007	−0.0003	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	0.05	1.00	−0.0710	0.0153	0.0996	−0.0099	0.0026	−0.0004	−0.0710	0.0153	0.0996	−0.0099	0.0026	−0.0004
0.301	0.00	2.03	−0.0197	−0.1217	0.0173	−0.0044	0.0011	−0.0003	−0.0470	0.0252	0.0693	−0.0111	0.0030	−0.0007
0.301	0.00	3.04	0.0184	−0.2449	−0.0491	0.0020	−0.0008	0.0001	−0.0293	0.0276	0.0472	−0.0072	0.0023	−0.0005
0.301	−0.02	4.19	0.0477	−0.3824	−0.1109	0.0088	−0.0031	0.0006	−0.0342	0.0339	0.0503	−0.0025	0.0006	−0.0008
0.302	0.00	5.07	0.0767	−0.4865	−0.1629	0.0116	−0.0042	0.0010	−0.0315	0.0424	0.0489	0.0002	−0.0003	−0.0012
0.301	14.98	1.00	0.0359	0.0445	−0.0805	0.0126	−0.0044	0.0014	0.0359	0.0445	−0.0805	0.0126	−0.0044	0.0014
0.302	15.01	2.03	0.1147	−0.0748	−0.1588	0.0150	−0.0051	0.0017	0.0503	0.0600	−0.1069	0.0083	−0.0032	0.0014
0.302	14.97	3.02	0.1806	−0.1827	−0.2232	0.0167	−0.0054	0.0024	0.0658	0.0648	−0.1283	0.0075	−0.0024	0.0017
0.302	14.98	4.20	0.2570	−0.3079	−0.2987	0.0186	−0.0061	0.0030	0.0703	0.0727	−0.1374	0.0073	−0.0024	0.0015
0.302	15.00	5.01	0.3125	−0.3984	−0.3531	0.0175	−0.0059	0.0035	0.0753	0.0765	−0.1452	0.0062	−0.0020	0.0013
0.299	25.12	0.99	0.1441	0.1202	−0.2725	−0.0017	0.0003	0.0022	0.1441	0.1202	−0.2725	−0.0017	0.0003	0.0022
0.299	24.99	2.05	0.2549	0.0121	−0.3627	−0.0047	0.0012	0.0026	0.1647	0.1385	−0.3088	−0.0116	0.0032	0.0023
0.299	25.01	3.03	0.3437	−0.0825	−0.4331	−0.0069	0.0017	0.0031	0.1829	0.1476	−0.3353	−0.0163	0.0049	0.0025
0.299	25.00	4.21	0.4436	−0.1937	−0.5114	−0.0073	0.0017	0.0034	0.1878	0.1564	−0.3464	−0.0188	0.0056	0.0019
0.299	24.99	5.06	0.5193	−0.2764	−0.5706	−0.0051	0.0011	0.0040	0.1937	0.1629	−0.3561	−0.0166	0.0051	0.0017
0.302	45.01	0.98	0.2526	0.2695	−0.5242	0.0011	−0.0006	0.0034	0.2526	0.2695	−0.5242	0.0011	−0.0006	0.0034
0.301	45.01	2.00	0.4015	0.2098	−0.6308	0.0000	−0.0007	0.0027	0.2803	0.2928	−0.5797	−0.0066	0.0012	0.0024
0.301	45.00	3.00	0.5219	0.1520	−0.7097	−0.0019	−0.0003	0.0029	0.2995	0.3084	−0.6154	−0.0111	0.0027	0.0024
0.301	45.00	4.14	0.6590	0.0862	−0.8010	−0.0009	−0.0009	0.0037	0.3098	0.3207	−0.6415	−0.0123	0.0029	0.0023
0.301	44.97	5.01	0.7589	0.0308	−0.8614	0.0000	−0.0014	0.0043	0.3130	0.3260	−0.6520	−0.0114	0.0025	0.0021
0.300	60.01	0.97	0.2007	0.3983	−0.6225	0.0029	−0.0003	0.0047	0.2007	0.3983	−0.6225	0.0029	−0.0003	0.0047
0.299	59.99	2.00	0.3647	0.3644	−0.7131	0.0035	−0.0008	0.0051	0.2248	0.4138	−0.6615	−0.0032	0.0011	0.0047
0.299	59.99	3.00	0.5046	0.3426	−0.8014	0.0031	−0.0009	0.0050	0.2462	0.4373	−0.7059	−0.0062	0.0022	0.0044
0.298	59.98	4.15	0.6560	0.3089	−0.8838	0.0034	−0.0013	0.0052	0.2512	0.4475	−0.7214	−0.0082	0.0025	0.0038
0.298	59.99	5.01	0.7697	0.2849	−0.9477	0.0044	−0.0019	0.0047	0.2540	0.4572	−0.7348	−0.0072	0.0021	0.0024
0.302	0.01	1.00	−0.0692	0.0133	0.0984	−0.0048	0.0013	−0.0004	−0.0692	0.0133	0.0984	−0.0048	0.0013	−0.0004
0.302	5.01	1.00	−0.0298	0.0207	0.0435	−0.0027	0.0008	0.0000	−0.0298	0.0207	0.0435	−0.0027	0.0008	0.0000
0.302	10.01	1.00	0.0006	0.0314	−0.0093	−0.0017	0.0005	0.0001	0.0006	0.0314	−0.0093	−0.0017	0.0005	0.0001
0.302	15.00	1.00	0.0392	0.0464	−0.0834	0.0171	−0.0053	0.0016	0.0392	0.0464	−0.0834	0.0171	−0.0053	0.0016
0.300	20.00	0.99	0.0958	0.0779	−0.1813	0.0029	−0.0010	0.0017	0.0958	0.0779	−0.1813	0.0029	−0.0010	0.0017
0.298	25.01	0.99	0.1446	0.1219	−0.2728	−0.0006	0.0001	0.0022	0.1446	0.1219	−0.2728	−0.0006	0.0001	0.0022
0.299	30.00	0.99	0.1851	0.1700	−0.3610	0.0057	−0.0018	0.0031	0.1851	0.1700	−0.3610	0.0057	−0.0018	0.0031

Table 28. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	31.54	0.99	0.1965	0.1866	−0.3871	0.0039	−0.0014	0.0029	0.1965	0.1866	−0.3871	0.0039	−0.0014	0.0029
0.298	35.26	0.99	0.2181	0.1514	−0.3985	0.0092	−0.0029	0.0029	0.2181	0.1514	−0.3985	0.0092	−0.0029	0.0029
0.300	38.03	0.99	0.2301	0.1845	−0.4358	0.0086	−0.0030	0.0025	0.2301	0.1845	−0.4358	0.0086	−0.0030	0.0025
0.300	39.98	0.98	0.2378	0.2074	−0.4619	0.0067	−0.0022	0.0021	0.2378	0.2074	−0.4619	0.0067	−0.0022	0.0021
0.299	42.02	0.98	0.2483	0.2346	−0.4946	0.0115	−0.0035	0.0030	0.2483	0.2346	−0.4946	0.0115	−0.0035	0.0030
0.299	45.01	0.98	0.2515	0.2668	−0.5245	0.0085	−0.0026	0.0030	0.2515	0.2668	−0.5245	0.0085	−0.0026	0.0030
0.303	50.00	0.98	0.2527	0.3218	−0.5792	0.0003	−0.0001	0.0020	0.2527	0.3218	−0.5792	0.0003	−0.0001	0.0020
0.303	50.01	0.98	0.2495	0.3197	−0.5745	0.0004	−0.0001	0.0024	0.2495	0.3197	−0.5745	0.0004	−0.0001	0.0024
0.301	55.02	0.98	0.2254	0.3600	−0.5949	0.0065	−0.0015	0.0047	0.2254	0.3600	−0.5949	0.0065	−0.0015	0.0047
0.299	60.02	0.98	0.1969	0.3959	−0.6180	0.0066	−0.0013	0.0045	0.1969	0.3959	−0.6180	0.0066	−0.0013	0.0045
0.298	65.01	0.97	0.1757	0.4551	−0.6819	0.0098	−0.0025	0.0044	0.1757	0.4551	−0.6819	0.0098	−0.0025	0.0044
0.300	68.35	0.97	0.1572	0.4932	−0.7253	0.0159	−0.0044	0.0059	0.1572	0.4932	−0.7253	0.0159	−0.0044	0.0059
0.302	0.02	4.19	0.0457	−0.3778	−0.1080	0.0125	−0.0040	0.0006	−0.0364	0.0380	0.0531	0.0013	−0.0003	−0.0008
0.302	5.00	4.19	0.1197	−0.3585	−0.1648	0.0114	−0.0036	0.0010	0.0025	0.0463	−0.0046	0.0001	0.0002	−0.0005
0.302	10.00	4.17	0.1841	−0.3340	−0.2207	0.0103	−0.0033	0.0010	0.0327	0.0578	−0.0612	−0.0010	0.0004	−0.0004
0.302	15.00	4.17	0.2593	−0.3036	−0.3013	0.0257	−0.0080	0.0031	0.0737	0.0745	−0.1414	0.0144	−0.0044	0.0017
0.300	19.97	4.16	0.3550	−0.2570	−0.4102	0.0064	−0.0020	0.0033	0.1354	0.1070	−0.2488	−0.0050	0.0017	0.0018
0.298	24.98	4.19	0.4391	−0.1938	−0.5097	0.0001	−0.0003	0.0036	0.1839	0.1559	−0.3452	−0.0115	0.0035	0.0021
0.299	29.96	4.19	0.5115	−0.1160	−0.6074	0.0066	−0.0024	0.0041	0.2283	0.2086	−0.4436	−0.0049	0.0015	0.0026
0.298	31.18	4.17	0.5287	−0.0976	−0.6310	0.0061	−0.0023	0.0043	0.2387	0.2210	−0.4674	−0.0055	0.0016	0.0028
0.302	34.99	4.15	0.5625	−0.0984	−0.6456	0.0083	−0.0031	0.0040	0.2606	0.1921	−0.4866	−0.0030	0.0006	0.0026
0.301	37.97	4.16	0.5978	−0.0432	−0.7019	0.0156	−0.0059	0.0046	0.2802	0.2319	−0.5424	0.0043	−0.0022	0.0032
0.301	40.01	4.16	0.6168	−0.0073	−0.7329	0.0096	−0.0042	0.0039	0.2892	0.2566	−0.5732	−0.0017	−0.0004	0.0025
0.300	42.01	4.16	0.6354	0.0274	−0.7617	0.0072	−0.0035	0.0036	0.2963	0.2816	−0.6008	−0.0042	0.0003	0.0021
0.300	45.00	4.15	0.6546	0.0793	−0.7958	−0.0012	−0.0008	0.0033	0.3026	0.3157	−0.6349	−0.0126	0.0030	0.0019
0.299	49.99	4.15	0.6689	0.1585	−0.8331	−0.0017	0.0002	0.0045	0.2950	0.3648	−0.6711	−0.0132	0.0040	0.0030
0.296	54.97	4.15	0.6744	0.2343	−0.8656	0.0038	−0.0015	0.0049	0.2783	0.4100	−0.7013	−0.0079	0.0024	0.0034
0.301	59.97	4.16	0.6464	0.3070	−0.8762	0.0048	−0.0015	0.0053	0.2485	0.4433	−0.7165	−0.0065	0.0023	0.0039
0.298	65.00	4.16	0.6184	0.3644	−0.8789	0.0218	−0.0082	0.0024	0.1997	0.4679	−0.7151	0.0102	−0.0044	0.0010
0.298	68.07	4.15	0.5949	0.4022	−0.8840	0.0074	−0.0027	0.0044	0.1733	0.4828	−0.7211	−0.0042	0.0011	0.0030
0.500	0.02	0.99	−0.0766	0.0188	0.1066	−0.0031	0.0009	−0.0004	−0.0766	0.0188	0.1066	−0.0031	0.0009	−0.0004
0.501	0.01	2.03	−0.0535	−0.0309	0.0700	−0.0025	0.0008	−0.0003	−0.0634	0.0223	0.0888	−0.0049	0.0015	−0.0004
0.500	0.03	3.05	−0.0355	−0.0749	0.0401	−0.0013	0.0006	−0.0002	−0.0529	0.0243	0.0752	−0.0047	0.0017	−0.0004
0.500	0.01	4.11	−0.0184	−0.1217	0.0105	0.0006	−0.0001	0.0000	−0.0474	0.0262	0.0676	−0.0035	0.0013	−0.0005
0.499	−0.01	4.98	−0.0068	−0.1602	−0.0109	0.0033	−0.0010	0.0002	−0.0452	0.0285	0.0645	−0.0008	0.0005	−0.0006
0.498	14.99	0.99	0.0584	0.0359	−0.1070	0.0064	−0.0022	0.0013	0.0584	0.0359	−0.1070	0.0064	−0.0022	0.0013
0.498	15.02	2.02	0.0939	−0.0065	−0.1447	0.0069	−0.0023	0.0014	0.0705	0.0426	−0.1258	0.0045	−0.0016	0.0013
0.498	15.00	3.02	0.1212	−0.0453	−0.1730	0.0062	−0.0021	0.0016	0.0789	0.0459	−0.1381	0.0028	−0.0010	0.0013
0.499	14.97	4.13	0.1509	−0.0873	−0.2047	0.0060	−0.0021	0.0017	0.0840	0.0493	−0.1470	0.0019	−0.0007	0.0012
0.500	14.98	5.02	0.1738	−0.1211	−0.2286	0.0058	−0.0021	0.0019	0.0874	0.0520	−0.1528	0.0016	−0.0007	0.0011
0.501	25.02	0.97	0.1724	0.1074	−0.2952	−0.0005	0.0001	0.0012	0.1724	0.1074	−0.2952	−0.0005	0.0001	0.0012
0.500	24.98	2.04	0.2169	0.0684	−0.3363	−0.0004	0.0000	0.0014	0.1850	0.1132	−0.3172	−0.0028	0.0007	0.0013
0.500	24.98	2.99	0.2495	0.0370	−0.3652	−0.0012	0.0002	0.0015	0.1933	0.1176	−0.3311	−0.0045	0.0012	0.0012
0.500	25.00	4.14	0.2892	−0.0003	−0.4008	−0.0015	0.0002	0.0017	0.1997	0.1224	−0.3432	−0.0056	0.0015	0.0012
0.500	24.97	5.05	0.3213	−0.0312	−0.4288	−0.0027	0.0004	0.0019	0.2051	0.1257	−0.3522	−0.0068	0.0019	0.0011

Table 28. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	0.02	0.99	–0.0748	0.0169	0.1041	–0.0048	0.0014	–0.0003	–0.0748	0.0169	0.1041	–0.0048	0.0014	–0.0003
0.501	4.98	0.99	–0.0337	0.0192	0.0471	–0.0041	0.0012	–0.0001	–0.0337	0.0192	0.0471	–0.0041	0.0012	–0.0001
0.501	10.00	0.99	–0.0022	0.0233	–0.0061	–0.0019	0.0005	–0.0003	–0.0022	0.0233	–0.0061	–0.0019	0.0005	–0.0003
0.499	14.99	0.99	0.0595	0.0356	–0.1086	0.0050	–0.0018	0.0014	0.0595	0.0356	–0.1086	0.0050	–0.0018	0.0014
0.500	19.99	0.98	0.1183	0.0649	–0.2026	–0.0008	0.0002	0.0012	0.1183	0.0649	–0.2026	–0.0008	0.0002	0.0012
0.499	24.98	0.97	0.1713	0.1065	–0.2939	–0.0021	0.0005	0.0015	0.1713	0.1065	–0.2939	–0.0021	0.0005	0.0015
0.498	29.98	0.96	0.2131	0.1528	–0.3791	0.0074	–0.0025	0.0017	0.2131	0.1528	–0.3791	0.0074	–0.0025	0.0017
0.500	0.00	4.13	–0.0163	–0.1232	0.0086	–0.0009	0.0003	–0.0001	–0.0455	0.0254	0.0660	–0.0050	0.0016	–0.0005
0.502	4.98	4.14	0.0291	–0.1162	–0.0408	0.0015	–0.0005	0.0002	–0.0127	0.0287	0.0163	–0.0025	0.0008	–0.0003
0.501	10.03	4.14	0.0732	–0.1066	–0.0969	0.0009	–0.0005	0.0001	0.0186	0.0345	–0.0396	–0.0032	0.0008	–0.0004
0.500	14.98	4.14	0.1499	–0.0892	–0.2039	0.0044	–0.0017	0.0019	0.0830	0.0473	–0.1463	0.0003	–0.0003	0.0014
0.500	19.97	4.14	0.2219	–0.0524	–0.3018	–0.0028	0.0007	0.0017	0.1435	0.0777	–0.2442	–0.0069	0.0020	0.0012
0.500	24.96	4.16	0.2899	–0.0017	–0.4006	–0.0056	0.0013	0.0017	0.1998	0.1219	–0.3426	–0.0097	0.0027	0.0012
0.501	29.98	4.18	0.3457	0.0563	–0.4928	0.0037	–0.0016	0.0023	0.2451	0.1716	–0.4346	–0.0004	–0.0003	0.0017

Table 29. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 10°;\ \delta_{C,F} = 10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.02	0.9809	0.9809	0.44	0.12	−0.0105	0.0001	0.0000	0.0000	0.0000	0.0000
3.02	0.9786	0.9786	0.31	0.30	−0.0199	0.0001	0.0002	0.0001	0.0000	0.0000
4.16	0.9681	0.9680	0.06	0.54	−0.0303	0.0000	0.0005	0.0003	−0.0001	0.0000
5.04	0.9545	0.9544	−0.66	0.58	−0.0378	−0.0004	0.0015	0.0004	−0.0001	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	14.99	1.00	0.0336	0.0476	−0.0759	0.0156	−0.0051	0.0009	0.0336	0.0476	−0.0759	0.0156	−0.0051	0.0009
0.296	25.03	0.99	0.1355	0.1224	−0.2615	0.0029	−0.0007	0.0020	0.1355	0.1224	−0.2615	0.0029	−0.0007	0.0020
0.300	−0.01	1.00	−0.0751	0.0184	0.1054	−0.0083	0.0024	−0.0006	−0.0751	0.0184	0.1054	−0.0083	0.0024	−0.0006
0.302	0.00	2.00	−0.0652	−0.1342	0.0965	−0.0075	0.0022	−0.0011	−0.0664	0.0277	0.0962	−0.0078	0.0022	−0.0008
0.300	−0.02	3.01	−0.0673	−0.2816	0.1024	−0.0055	0.0016	−0.0016	−0.0689	0.0329	0.0998	−0.0071	0.0019	−0.0011
0.301	0.02	4.15	−0.0671	−0.4431	0.1073	−0.0029	0.0007	−0.0017	−0.0678	0.0328	0.0993	−0.0073	0.0019	−0.0011
0.300	0.02	5.00	−0.0752	−0.5609	0.1260	−0.0013	0.0003	−0.0018	−0.0689	0.0344	0.1028	−0.0073	0.0020	−0.0013
0.300	14.99	1.00	0.0327	0.0469	−0.0757	0.0132	−0.0044	0.0011	0.0327	0.0469	−0.0757	0.0132	−0.0044	0.0011
0.300	15.01	2.00	0.0724	−0.1027	−0.0719	0.0134	−0.0043	0.0008	0.0285	0.0559	−0.0723	0.0131	−0.0043	0.0010
0.300	14.98	3.01	0.1107	−0.2445	−0.0696	0.0155	−0.0048	0.0007	0.0275	0.0597	−0.0722	0.0139	−0.0044	0.0011
0.300	15.00	4.15	0.1512	−0.4040	−0.0634	0.0171	−0.0052	0.0003	0.0264	0.0597	−0.0715	0.0126	−0.0040	0.0008
0.300	15.00	5.00	0.1754	−0.5145	−0.0499	0.0185	−0.0057	0.0003	0.0275	0.0628	−0.0731	0.0125	−0.0039	0.0008
0.301	25.03	0.99	0.1363	0.1196	−0.2609	−0.0016	0.0003	0.0019	0.1363	0.1196	−0.2609	−0.0016	0.0003	0.0019
0.301	25.00	2.00	0.1985	−0.0204	−0.2543	−0.0005	0.0002	0.0017	0.1288	0.1259	−0.2546	−0.0009	0.0002	0.0020
0.296	24.99	3.00	0.2604	−0.1600	−0.2489	0.0000	0.0000	0.0017	0.1230	0.1306	−0.2516	−0.0017	0.0003	0.0022
0.301	25.00	4.15	0.3220	−0.3042	−0.2392	0.0009	−0.0003	0.0015	0.1205	0.1266	−0.2473	−0.0036	0.0009	0.0019
0.299	25.01	4.98	0.3641	−0.4185	−0.2209	0.0058	−0.0019	0.0014	0.1175	0.1256	−0.2440	−0.0002	−0.0002	0.0019
0.301	−0.01	1.00	−0.0750	0.0156	0.1060	−0.0045	0.0015	−0.0006	−0.0750	0.0156	0.1060	−0.0045	0.0015	−0.0006
0.301	5.00	1.00	−0.0373	0.0221	0.0527	−0.0025	0.0009	−0.0004	−0.0373	0.0221	0.0527	−0.0025	0.0009	−0.0004
0.301	10.02	1.00	−0.0063	0.0325	−0.0004	−0.0015	0.0005	−0.0003	−0.0063	0.0325	−0.0004	−0.0015	0.0005	−0.0003
0.300	15.01	1.00	0.0353	0.0484	−0.0775	0.0170	−0.0052	0.0010	0.0353	0.0484	−0.0775	0.0170	−0.0052	0.0010
0.300	20.01	1.00	0.0888	0.0788	−0.1726	0.0058	−0.0017	0.0014	0.0888	0.0788	−0.1726	0.0058	−0.0017	0.0014
0.300	25.02	0.99	0.1369	0.1210	−0.2621	0.0010	−0.0003	0.0019	0.1369	0.1210	−0.2621	0.0010	−0.0003	0.0019
0.298	29.98	0.99	0.1762	0.1687	−0.3492	0.0065	−0.0018	0.0027	0.1762	0.1687	−0.3492	0.0065	−0.0018	0.0027
0.302	31.67	0.99	0.1900	0.1864	−0.3795	0.0056	−0.0017	0.0027	0.1900	0.1864	−0.3795	0.0056	−0.0017	0.0027
0.300	0.00	4.15	−0.0670	−0.4458	0.1078	0.0012	−0.0002	−0.0014	−0.0675	0.0341	0.0997	−0.0033	0.0011	−0.0010
0.301	5.01	4.17	0.0101	−0.4364	0.0563	0.0026	−0.0006	−0.0013	−0.0322	0.0423	0.0480	−0.0019	0.0006	−0.0009
0.300	9.99	4.14	0.0751	−0.4244	0.0108	0.0041	−0.0011	−0.0013	−0.0085	0.0473	0.0027	−0.0003	0.0002	−0.0009
0.299	14.98	4.14	0.1553	−0.4028	−0.0662	0.0208	−0.0061	0.0002	0.0304	0.0622	−0.0743	0.0164	−0.0048	0.0006
0.299	19.97	4.15	0.2346	−0.3654	−0.1460	0.0124	−0.0037	0.0009	0.0691	0.0885	−0.1542	0.0078	−0.0024	0.0013
0.298	24.97	4.15	0.3227	−0.3124	−0.2367	0.0076	−0.0022	0.0014	0.1167	0.1290	−0.2449	0.0030	−0.0010	0.0019
0.298	30.02	4.16	0.4035	−0.2451	−0.3312	0.0120	−0.0036	0.0024	0.1585	0.1779	−0.3395	0.0075	−0.0023	0.0029

Table 29. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	31.61	4.16	0.4199	−0.2129	−0.3578	0.0109	−0.0035	0.0022	0.1710	0.1908	−0.3658	0.0065	−0.0023	0.0027
0.500	0.01	0.99	−0.0802	0.0196	0.1123	−0.0030	0.0010	−0.0005	−0.0802	0.0196	0.1123	−0.0030	0.0010	−0.0005
0.498	−0.02	2.00	−0.0710	−0.0366	0.1019	−0.0024	0.0009	−0.0007	−0.0715	0.0231	0.1017	−0.0025	0.0009	−0.0006
0.499	0.03	3.01	−0.0705	−0.0879	0.1025	−0.0023	0.0009	−0.0008	−0.0712	0.0259	0.1016	−0.0029	0.0010	−0.0006
0.499	0.01	4.17	−0.0713	−0.1470	0.1050	−0.0017	0.0006	−0.0009	−0.0715	0.0271	0.1020	−0.0033	0.0010	−0.0007
0.499	0.01	5.03	−0.0764	−0.1883	0.1139	−0.0021	0.0007	−0.0010	−0.0740	0.0282	0.1053	−0.0042	0.0013	−0.0009
0.499	14.98	0.99	0.0526	0.0347	−0.0978	0.0067	−0.0022	0.0011	0.0526	0.0347	−0.0978	0.0067	−0.0022	0.0011
0.499	15.00	2.00	0.0663	−0.0186	−0.0957	0.0077	−0.0024	0.0010	0.0506	0.0383	−0.0958	0.0076	−0.0024	0.0011
0.499	14.99	3.01	0.0792	−0.0699	−0.0936	0.0084	−0.0027	0.0010	0.0491	0.0400	−0.0946	0.0079	−0.0025	0.0010
0.498	15.01	4.15	0.0931	−0.1274	−0.0908	0.0094	−0.0030	0.0009	0.0479	0.0405	−0.0937	0.0078	−0.0025	0.0010
0.499	15.01	4.98	0.0998	−0.1671	−0.0837	0.0095	−0.0030	0.0008	0.0466	0.0401	−0.0920	0.0074	−0.0024	0.0010
0.499	25.02	0.98	0.1656	0.1044	−0.2843	−0.0005	0.0002	0.0012	0.1656	0.1044	−0.2843	−0.0005	0.0002	0.0012
0.499	25.00	2.00	0.1874	0.0536	−0.2819	−0.0003	0.0001	0.0012	0.1620	0.1070	−0.2820	−0.0004	0.0001	0.0013
0.498	24.97	3.01	0.2084	0.0045	−0.2803	0.0000	−0.0001	0.0010	0.1597	0.1076	−0.2813	−0.0006	0.0001	0.0012
0.499	24.96	4.16	0.2307	−0.0500	−0.2761	−0.0009	0.0002	0.0010	0.1571	0.1079	−0.2791	−0.0026	0.0006	0.0012
0.499	25.00	4.98	0.2446	−0.0888	−0.2694	−0.0007	0.0000	0.0010	0.1561	0.1066	−0.2777	−0.0029	0.0006	0.0012
0.498	−0.02	0.99	−0.0792	0.0186	0.1105	−0.0038	0.0012	−0.0006	−0.0792	0.0186	0.1105	−0.0038	0.0012	−0.0006
0.500	5.00	0.99	−0.0393	0.0189	0.0551	−0.0042	0.0012	−0.0003	−0.0393	0.0189	0.0551	−0.0042	0.0012	−0.0003
0.501	10.00	0.99	−0.0062	0.0225	0.0003	−0.0019	0.0005	−0.0005	−0.0062	0.0225	0.0003	−0.0019	0.0005	−0.0005
0.499	14.98	0.99	0.0523	0.0348	−0.0975	0.0062	−0.0022	0.0011	0.0523	0.0348	−0.0975	0.0062	−0.0022	0.0011
0.500	20.02	0.98	0.1124	0.0635	−0.1932	0.0009	−0.0002	0.0011	0.1124	0.0635	−0.1932	0.0009	−0.0002	0.0011
0.499	25.00	0.98	0.1650	0.1041	−0.2830	−0.0008	0.0002	0.0013	0.1650	0.1041	−0.2830	−0.0008	0.0002	0.0013
0.499	29.98	0.97	0.2075	0.1497	−0.3693	0.0093	−0.0029	0.0016	0.2075	0.1497	−0.3693	0.0093	−0.0029	0.0016
0.502	0.01	4.16	−0.0705	−0.1446	0.1035	−0.0028	0.0009	−0.0009	−0.0707	0.0267	0.1006	−0.0044	0.0013	−0.0007
0.502	5.03	4.17	−0.0178	−0.1443	0.0496	−0.0025	0.0007	−0.0006	−0.0330	0.0272	0.0466	−0.0041	0.0011	−0.0004
0.501	9.98	4.15	0.0223	−0.1402	0.0040	−0.0008	0.0001	−0.0008	−0.0076	0.0290	0.0011	−0.0024	0.0006	−0.0006
0.499	14.99	4.16	0.0898	−0.1288	−0.0883	0.0068	−0.0024	0.0010	0.0447	0.0391	−0.0912	0.0052	−0.0019	0.0011
0.504	20.00	4.18	0.1622	−0.0938	−0.1824	0.0000	−0.0002	0.0010	0.1035	0.0673	−0.1854	−0.0016	0.0003	0.0011
0.502	24.95	4.18	0.2315	−0.0498	−0.2760	−0.0037	0.0009	0.0012	0.1583	0.1071	−0.2791	−0.0053	0.0013	0.0014
0.499	29.99	4.15	0.2891	0.0034	−0.3661	0.0060	−0.0022	0.0017	0.2022	0.1535	−0.3690	0.0044	−0.0017	0.0019

Table 30. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = 15°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9631	0.9629	−1.10	0.56	−0.0104	−0.0002	0.0005	0.0001	0.0000	0.0000
3.00	0.9497	0.9493	−1.55	0.51	−0.0193	−0.0005	0.0012	0.0002	−0.0001	0.0000
4.17	0.9373	0.9366	−1.94	0.80	−0.0295	−0.0010	0.0024	0.0004	−0.0002	0.0000
4.99	0.9202	0.9188	−3.05	0.70	−0.0364	−0.0019	0.0043	0.0004	−0.0002	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	44.99	0.98	0.2484	0.2615	−0.5112	0.0003	−0.0005	0.0029	0.2484	0.2615	−0.5112	0.0003	−0.0005	0.0029
0.299	45.00	2.00	0.3630	0.1483	−0.5103	−0.0007	−0.0005	0.0022	0.2483	0.2676	−0.5186	−0.0023	0.0000	0.0024
0.299	44.98	3.00	0.4581	0.0437	−0.5000	0.0023	−0.0017	0.0023	0.2460	0.2678	−0.5197	−0.0004	−0.0006	0.0027
0.299	44.97	4.14	0.5635	−0.0787	−0.4798	0.0021	−0.0019	0.0019	0.2432	0.2643	−0.5170	−0.0044	0.0004	0.0024
0.299	44.99	5.00	0.6333	−0.1717	−0.4490	0.0038	−0.0028	0.0015	0.2423	0.2635	−0.5175	−0.0033	0.0000	0.0023
0.298	59.99	0.98	0.1962	0.3898	−0.6060	0.0010	0.0000	0.0044	0.1962	0.3898	−0.6060	0.0010	0.0000	0.0044
0.298	60.01	2.00	0.3348	0.3036	−0.5968	0.0003	0.0000	0.0038	0.1924	0.3895	−0.6052	−0.0014	0.0005	0.0041
0.299	60.00	2.99	0.4499	0.2232	−0.5776	0.0012	−0.0008	0.0026	0.1884	0.3837	−0.5971	−0.0015	0.0003	0.0030
0.300	59.99	4.15	0.5826	0.1313	−0.5535	0.0026	−0.0016	0.0029	0.1849	0.3793	−0.5907	−0.0039	0.0009	0.0033
0.300	60.01	5.00	0.6694	0.0604	−0.5204	0.0048	−0.0024	0.0024	0.1839	0.3762	−0.5882	−0.0023	0.0003	0.0031
0.300	35.46	0.99	0.2134	0.1478	−0.3875	0.0053	−0.0020	0.0022	0.2134	0.1478	−0.3875	0.0053	−0.0020	0.0022
0.300	38.00	0.99	0.2238	0.1772	−0.4214	0.0089	−0.0033	0.0024	0.2238	0.1772	−0.4214	0.0089	−0.0033	0.0024
0.300	40.00	0.99	0.2322	0.2009	−0.4484	0.0093	−0.0029	0.0025	0.2322	0.2009	−0.4484	0.0093	−0.0029	0.0025
0.300	42.01	0.98	0.2427	0.2276	−0.4802	0.0093	−0.0031	0.0022	0.2427	0.2276	−0.4802	0.0093	−0.0031	0.0022
0.299	45.01	0.98	0.2459	0.2600	−0.5100	0.0044	−0.0016	0.0022	0.2459	0.2600	−0.5100	0.0044	−0.0016	0.0022
0.298	49.97	0.98	0.2453	0.3150	−0.5636	0.0001	−0.0003	0.0017	0.2453	0.3150	−0.5636	0.0001	−0.0003	0.0017
0.297	55.04	0.98	0.2217	0.3564	−0.5862	0.0052	−0.0014	0.0044	0.2217	0.3564	−0.5862	0.0052	−0.0014	0.0044
0.299	60.01	0.98	0.1936	0.3882	−0.6045	0.0047	−0.0010	0.0041	0.1936	0.3882	−0.6045	0.0047	−0.0010	0.0041
0.297	65.01	0.97	0.1718	0.4446	−0.6646	0.0091	−0.0026	0.0040	0.1718	0.4446	−0.6646	0.0091	−0.0026	0.0040
0.300	68.56	0.97	0.1545	0.4862	−0.7120	0.0140	−0.0041	0.0055	0.1545	0.4862	−0.7120	0.0140	−0.0041	0.0055
0.301	35.42	4.16	0.4517	−0.2338	−0.3424	0.0097	−0.0039	0.0018	0.1955	0.1536	−0.3793	0.0032	−0.0016	0.0024
0.302	37.97	4.15	0.4816	−0.1919	−0.3812	0.0140	−0.0058	0.0022	0.2101	0.1813	−0.4179	0.0076	−0.0034	0.0027
0.301	39.98	4.16	0.5064	−0.1597	−0.4139	0.0082	−0.0037	0.0017	0.2202	0.2061	−0.4508	0.0018	−0.0013	0.0022
0.301	41.98	4.15	0.5315	−0.1258	−0.4457	0.0096	−0.0042	0.0018	0.2317	0.2309	−0.4827	0.0032	−0.0018	0.0023
0.300	45.01	4.15	0.5581	−0.0781	−0.4798	0.0053	−0.0030	0.0016	0.2392	0.2630	−0.5169	−0.0012	−0.0006	0.0021
0.300	49.98	4.15	0.5785	−0.0096	−0.5082	−0.0002	−0.0010	0.0017	0.2310	0.3028	−0.5453	−0.0067	0.0013	0.0021
0.298	55.01	4.15	0.5946	0.0648	−0.5428	0.0053	−0.0024	0.0026	0.2171	0.3486	−0.5803	−0.0013	0.0001	0.0031
0.302	59.96	4.15	0.5774	0.1335	−0.5548	0.0061	−0.0024	0.0030	0.1856	0.3781	−0.5915	−0.0003	0.0000	0.0034
0.298	64.96	4.15	0.5756	0.2076	−0.5900	0.0051	−0.0020	0.0034	0.1551	0.4217	−0.6275	−0.0014	0.0003	0.0039
0.298	68.60	4.15	0.5528	0.2341	−0.5733	0.0179	−0.0070	0.0017	0.1184	0.4216	−0.6108	0.0113	−0.0045	0.0023

Table 31. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 20°;\ \delta_{C,F} = 20°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9082	0.9043	−5.27	−0.17	−0.0095	−0.0009	0.0017	0.0000	0.0000	0.0000
3.01	0.8957	0.8915	−5.57	−0.12	−0.0181	−0.0018	0.0036	0.0000	0.0000	−0.0001
4.15	0.8696	0.8617	−7.73	−0.01	−0.0268	−0.0036	0.0073	0.0000	0.0000	−0.0001
5.00	0.8520	0.8402	−9.58	0.15	−0.0331	−0.0056	0.0109	0.0001	0.0000	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	−0.01	1.00	−0.0789	0.0133	0.1082	−0.0094	0.0026	−0.0015	−0.0789	0.0133	0.1082	−0.0094	0.0026	−0.0015
0.301	0.01	2.00	−0.0941	−0.1268	0.1409	−0.0076	0.0020	−0.0023	−0.0801	0.0247	0.1132	−0.0071	0.0019	−0.0017
0.301	−0.02	3.01	−0.1122	−0.2548	0.1775	−0.0066	0.0018	−0.0027	−0.0844	0.0290	0.1205	−0.0060	0.0017	−0.0018
0.301	−0.01	4.16	−0.1429	−0.3881	0.2382	−0.0047	0.0011	−0.0033	−0.0852	0.0348	0.1230	−0.0046	0.0013	−0.0020
0.302	0.01	5.02	−0.1753	−0.4845	0.3002	−0.0036	0.0009	−0.0039	−0.0871	0.0364	0.1276	−0.0050	0.0013	−0.0023
0.302	14.99	1.00	0.0300	0.0436	−0.0729	0.0152	−0.0050	0.0004	0.0300	0.0436	−0.0729	0.0152	−0.0050	0.0004
0.301	15.00	2.03	0.0551	−0.0993	−0.0428	0.0144	−0.0046	0.0000	0.0289	0.0542	−0.0713	0.0149	−0.0048	0.0006
0.302	14.99	3.00	0.0710	−0.2231	−0.0099	0.0148	−0.0047	−0.0004	0.0245	0.0567	−0.0666	0.0154	−0.0049	0.0004
0.302	14.98	4.19	0.0775	−0.3675	0.0509	0.0157	−0.0051	−0.0010	0.0240	0.0588	−0.0661	0.0157	−0.0050	0.0003
0.302	15.01	5.02	0.0716	−0.4659	0.1101	0.0158	−0.0050	−0.0013	0.0219	0.0616	−0.0633	0.0144	−0.0045	0.0004
0.303	25.00	0.99	0.1359	0.1150	−0.2593	0.0001	0.0001	0.0013	0.1359	0.1150	−0.2593	0.0001	0.0001	0.0013
0.298	25.00	2.00	0.1781	−0.0239	−0.2225	0.0017	−0.0005	0.0009	0.1255	0.1228	−0.2508	0.0022	−0.0006	0.0015
0.298	24.99	3.02	0.2162	−0.1512	−0.1869	0.0049	−0.0016	0.0003	0.1186	0.1256	−0.2456	0.0055	−0.0017	0.0011
0.298	25.04	4.17	0.2479	−0.2921	−0.1280	0.0109	−0.0034	−0.0002	0.1182	0.1251	−0.2460	0.0109	−0.0032	0.0011
0.299	25.04	5.02	0.2710	−0.3926	−0.0784	0.0160	−0.0049	−0.0005	0.1273	0.1284	−0.2550	0.0146	−0.0044	0.0011
0.301	0.01	1.00	−0.0791	0.0137	0.1088	−0.0017	0.0008	−0.0013	−0.0791	0.0137	0.1088	−0.0017	0.0008	−0.0013
0.302	5.00	1.00	−0.0405	0.0198	0.0551	−0.0003	0.0004	−0.0010	−0.0405	0.0198	0.0551	−0.0003	0.0004	−0.0010
0.302	10.00	1.00	−0.0096	0.0298	0.0023	0.0006	0.0001	−0.0010	−0.0096	0.0298	0.0023	0.0006	0.0001	−0.0010
0.301	15.01	1.00	0.0328	0.0449	−0.0759	0.0200	−0.0059	0.0006	0.0328	0.0449	−0.0759	0.020	−0.0059	0.0006
0.299	19.99	0.99	0.0857	0.0748	−0.1686	0.0079	−0.0022	0.0006	0.0857	0.0748	−0.1686	0.0079	−0.0022	0.0006
0.299	24.99	0.99	0.1335	0.1166	−0.2573	0.0049	−0.0012	0.0011	0.1335	0.1166	−0.2573	0.0049	−0.0012	0.0011
0.303	29.99	0.99	0.1752	0.1626	−0.3459	0.0111	−0.0030	0.0020	0.1752	0.1626	−0.3459	0.0111	−0.0030	0.0020
0.302	31.59	0.99	0.1865	0.1796	−0.3726	0.0115	−0.0033	0.0020	0.1865	0.1796	−0.3726	0.0115	−0.0033	0.0020
0.300	−0.01	4.19	−0.1485	−0.3962	0.2447	−0.0002	0.0003	−0.0031	−0.0892	0.0350	0.1263	−0.0002	0.0005	−0.0018
0.301	4.99	4.15	−0.0717	−0.3903	0.1861	−0.0010	0.0005	−0.0030	−0.0514	0.0371	0.0710	−0.0009	0.0007	−0.0017
0.300	9.99	4.15	−0.0022	−0.3819	0.1297	0.0012	−0.0003	−0.0030	−0.0192	0.0458	0.0146	0.0013	−0.0003	−0.0017
0.299	15.00	4.15	0.0776	−0.3692	0.0524	0.0210	−0.0064	−0.0010	0.0227	0.0609	−0.0643	0.0211	−0.0063	0.0003
0.297	19.98	4.15	0.1762	−0.3378	−0.0509	0.0158	−0.0046	−0.0004	0.0830	0.0919	−0.1693	0.0158	−0.0044	0.0009
0.298	25.02	4.16	0.2454	−0.2898	−0.1274	0.0145	−0.0043	−0.0004	0.1159	0.1265	−0.2449	0.0146	−0.0042	0.0010
0.301	29.95	4.16	0.3192	−0.2262	−0.2202	0.0150	−0.0046	0.0003	0.1573	0.1705	−0.3358	0.0151	−0.0045	0.0016
0.300	31.66	4.16	0.3431	−0.2060	−0.2481	0.0173	−0.0055	0.0004	0.1683	0.1885	−0.3646	0.0174	−0.0053	0.0017
0.501	0.01	0.99	−0.0789	0.0177	0.1105	−0.0030	0.0010	−0.0005	−0.0789	0.0177	0.1105	−0.0030	0.0010	−0.0005

Table 31. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.499	0.01	2.01	−0.0828	−0.0335	0.1195	−0.0031	0.0010	−0.0008	−0.0777	0.0223	0.1093	−0.0030	0.0010	−0.0005
0.497	0.01	3.00	−0.0905	−0.0790	0.1343	−0.0030	0.0010	−0.0010	−0.0804	0.0251	0.1134	−0.0028	0.0010	−0.0006
0.499	−0.02	4.17	−0.1057	−0.1275	0.1612	−0.0030	0.0010	−0.0013	−0.0845	0.0275	0.1189	−0.0030	0.0010	−0.0008
0.499	−0.01	4.99	−0.1201	−0.1623	0.1871	−0.0026	0.0009	−0.0016	−0.0880	0.0277	0.1244	−0.0030	0.0010	−0.0010
0.498	15.02	0.99	0.0545	0.0349	−0.1001	0.0076	−0.0024	0.0009	0.0545	0.0349	−0.1001	0.0076	−0.0024	0.0009
0.500	14.97	2.02	0.0592	−0.0177	−0.0839	0.0089	−0.0029	0.0004	0.0498	0.0376	−0.0942	0.0091	−0.0030	0.0006
0.500	14.99	3.00	0.0646	−0.0631	−0.0716	0.0093	−0.0030	0.0002	0.0477	0.0389	−0.0923	0.0095	−0.0031	0.0005
0.499	15.00	4.18	0.0649	−0.1149	−0.0470	0.0104	−0.0035	0.0001	0.0452	0.0403	−0.0894	0.0105	−0.0034	0.0006
0.499	14.99	5.00	0.0659	−0.1511	−0.0287	0.0114	−0.0038	0.0000	0.0477	0.0409	−0.0915	0.0110	−0.0037	0.0006
0.498	25.02	0.97	0.1654	0.1032	−0.2839	0.0013	−0.0003	0.0010	0.1654	0.1032	−0.2839	0.0013	−0.0003	0.0010
0.499	24.99	2.02	0.1788	0.0514	−0.2682	0.0009	−0.0003	0.0008	0.1599	0.1043	−0.2784	0.0011	−0.0003	0.0010
0.499	25.00	3.01	0.1906	0.0073	−0.2555	0.0002	−0.0002	0.0007	0.1560	0.1051	−0.2762	0.0004	−0.0003	0.0010
0.499	24.98	4.15	0.1983	−0.0439	−0.2307	0.0001	−0.0003	0.0004	0.1522	0.1044	−0.2724	0.0001	−0.0002	0.0010
0.500	24.99	5.00	0.2004	−0.0817	−0.2062	0.0015	−0.0006	0.0003	0.1494	0.1036	−0.2688	0.0010	−0.0004	0.0010
0.502	0.01	0.99	−0.0800	0.0176	0.1108	−0.0049	0.0015	−0.0008	−0.0800	0.0176	0.1108	−0.0049	0.0015	−0.0008
0.502	5.00	0.99	−0.0388	0.0179	0.0548	−0.0044	0.0013	−0.0006	−0.0388	0.0179	0.0548	−0.0044	0.0013	−0.0006
0.501	10.00	0.99	−0.0060	0.0218	0.0002	−0.0015	0.0004	−0.0007	−0.0060	0.0218	0.0002	−0.0015	0.0004	−0.0007
0.499	15.00	0.99	0.0538	0.0339	−0.0994	0.0050	−0.0017	0.0008	0.0538	0.0339	−0.0994	0.0050	−0.0017	0.0008
0.499	20.00	0.98	0.1116	0.0615	−0.1920	0.0013	−0.0003	0.0010	0.1116	0.0615	−0.1920	0.0013	−0.0003	0.0010
0.500	24.99	0.97	0.1651	0.1023	−0.2827	−0.0005	0.0001	0.0010	0.1651	0.1023	−0.2827	−0.0005	0.0001	0.0010
0.498	30.00	0.96	0.2063	0.1475	−0.3678	0.0099	−0.0032	0.0013	0.2063	0.1475	−0.3678	0.0099	−0.0032	0.0013
0.501	0.02	4.18	−0.1038	−0.1261	0.1591	−0.0039	0.0011	−0.0014	−0.0828	0.0278	0.1169	−0.0039	0.0011	−0.0010
0.503	4.97	4.18	−0.0513	−0.1276	0.1034	−0.0042	0.0011	−0.0013	−0.0437	0.0265	0.0615	−0.0042	0.0012	−0.0008
0.500	10.01	4.18	−0.0058	−0.1251	0.0486	−0.0023	0.0004	−0.0014	−0.0118	0.0305	0.0063	−0.0022	0.0005	−0.0010
0.498	14.99	4.17	0.0629	−0.1157	−0.0457	0.0084	−0.0030	0.0003	0.0432	0.0401	−0.0882	0.0085	−0.0030	0.0007
0.500	19.99	4.17	0.1321	−0.0861	−0.1377	0.0015	−0.0007	0.0003	0.0993	0.0657	−0.1798	0.0015	−0.0006	0.0009
0.497	25.01	4.17	0.1998	−0.0447	−0.2305	−0.0011	0.0001	0.0006	0.1532	0.1055	−0.2731	−0.0011	0.0001	0.0011
0.499	29.97	4.17	0.2563	0.0044	−0.3197	0.0068	−0.0025	0.0010	0.1972	0.1493	−0.3620	0.0068	−0.0024	0.0016

Table 32. Static and Aeropropulsive Performance Characteristics at Military Power

$$\left[\delta_{A,D} = -10°;\ \delta_B = 25°;\ \delta_E = 20°;\ \delta_C = 20°;\ \delta_F = 25°\right]$$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.8500	0.8400	−8.78	−0.21	−0.0090	−0.0014	0.0027	0.0000	0.0000	0.0000
3.00	0.8301	0.8181	−9.76	−0.27	−0.0166	−0.0029	0.0057	−0.0001	0.0000	−0.0001
4.16	0.8073	0.7885	−12.38	−0.10	−0.0247	−0.0054	0.0106	0.0000	0.0000	−0.0001
5.00	0.7959	0.7734	−13.64	0.02	−0.0307	−0.0074	0.0145	0.0000	0.0000	−0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	−0.01	1.00	−0.0711	0.0173	0.1013	−0.0098	0.0026	−0.0004	−0.0711	0.0173	0.1013	−0.0098	0.0026	−0.0004
0.301	0.03	2.01	−0.0977	−0.1146	0.1533	−0.0100	0.0025	−0.0014	−0.0755	0.0288	0.1095	−0.0095	0.0024	−0.0009
0.301	0.03	3.00	−0.1264	−0.2318	0.2080	−0.0099	0.0023	−0.0021	−0.0814	0.0302	0.1181	−0.0087	0.0022	−0.0010
0.301	0.02	4.13	−0.1710	−0.3532	0.2917	−0.0094	0.0020	−0.0029	−0.0867	0.0327	0.1275	−0.0088	0.0024	−0.0012
0.301	0.02	5.00	−0.2070	−0.4447	0.3594	−0.0077	0.0014	−0.0036	−0.0901	0.0381	0.1311	−0.0078	0.0020	−0.0015
0.301	15.01	1.00	0.0337	0.0500	−0.0765	0.0117	−0.0042	0.0013	0.0337	0.0500	−0.0765	0.0117	−0.0042	0.0013
0.300	15.00	2.01	0.0472	−0.0864	−0.0305	0.0122	−0.0043	0.0010	0.0315	0.0585	−0.0745	0.0127	−0.0044	0.0015
0.300	15.00	3.01	0.0507	−0.2096	0.0228	0.0116	−0.0042	0.0003	0.0263	0.0577	−0.0682	0.0128	−0.0043	0.0014
0.300	15.01	4.13	0.0407	−0.3404	0.1052	0.0087	−0.0034	−0.0003	0.0221	0.0575	−0.0604	0.0094	−0.0031	0.0014
0.300	15.01	5.00	0.0297	−0.4383	0.1722	0.0068	−0.0030	−0.0012	0.0178	0.0622	−0.0580	0.0066	−0.0024	0.0010
0.299	24.98	0.99	0.1363	0.1194	−0.2605	−0.0051	0.0011	0.0022	0.1363	0.1194	−0.2605	−0.0051	0.0011	0.0022
0.300	25.01	2.02	0.1696	−0.0131	−0.2112	−0.0049	0.0010	0.0014	0.1287	0.1277	−0.2555	−0.0044	0.0010	0.0019
0.300	25.01	3.00	0.1961	−0.1330	−0.1609	−0.0018	−0.0001	0.0010	0.1257	0.1256	−0.2516	−0.0006	−0.0001	0.0020
0.300	25.01	4.15	0.2203	−0.2616	−0.0910	0.0057	−0.0025	0.0003	0.1325	0.1304	−0.2586	0.0063	−0.0022	0.0021
0.301	25.00	4.99	0.2336	−0.3546	−0.0349	0.0053	−0.0024	−0.0001	0.1353	0.1338	−0.2637	0.0051	−0.0018	0.0020
0.301	45.00	0.98	0.2510	0.2562	−0.5102	0.0012	−0.0007	0.0029	0.2510	0.2562	−0.5102	0.0012	−0.0007	0.0029
0.301	45.02	1.99	0.3357	0.1482	−0.4766	−0.0001	−0.0005	0.0020	0.2517	0.2628	−0.5193	0.0003	−0.0006	0.0025
0.301	45.00	2.99	0.4016	0.0450	−0.4290	0.0012	−0.0012	0.0013	0.2489	0.2610	−0.5183	0.0024	−0.0013	0.0024
0.301	44.97	4.13	0.4603	−0.0770	−0.3497	0.0028	−0.0021	0.0003	0.2465	0.2570	−0.5148	0.0035	−0.0017	0.0019
0.301	44.97	4.98	0.5033	−0.1669	−0.2882	0.0066	−0.0033	−0.0002	0.2459	0.2557	−0.5153	0.0065	−0.0027	0.0019
0.300	59.98	0.98	0.2003	0.3852	−0.6033	0.0018	−0.0002	0.0045	0.2003	0.3852	−0.6033	0.0018	−0.0002	0.0045
0.300	60.01	1.99	0.3081	0.2934	−0.5588	0.0012	−0.0003	0.0033	0.1968	0.3828	−0.6017	0.0016	−0.0003	0.0038
0.300	59.99	3.01	0.4037	0.2112	−0.5154	0.0013	−0.0006	0.0021	0.1968	0.3835	−0.6066	0.0025	−0.0006	0.0031
0.300	60.02	4.16	0.4954	0.1047	−0.4322	0.0045	−0.0019	0.0014	0.1971	0.3769	−0.6008	0.0051	−0.0016	0.0031
0.300	59.99	5.00	0.5619	0.0265	−0.3701	0.0076	−0.0030	0.0010	0.1989	0.3728	−0.6008	0.0074	−0.0024	0.0031
0.299	−0.01	1.00	−0.0733	0.0168	0.1044	−0.0062	0.0017	−0.0003	−0.0733	0.0168	0.1044	−0.0062	0.0017	−0.0003
0.299	5.00	1.00	−0.0352	0.0235	0.0506	−0.0041	0.0010	−0.0001	−0.0352	0.0235	0.0506	−0.0041	0.0010	−0.0001
0.300	9.98	1.00	−0.0046	0.0336	−0.0021	−0.0038	0.0010	0.0001	−0.0046	0.0336	−0.0021	−0.0038	0.0010	0.0001
0.300	14.99	1.00	0.0353	0.0486	−0.0778	0.0166	−0.0053	0.0017	0.0353	0.0486	−0.0778	0.0166	−0.0053	0.0017
0.303	19.98	1.00	0.0895	0.0771	−0.1725	0.0016	−0.0007	0.0017	0.0895	0.0771	−0.1725	0.0016	−0.0007	0.0017
0.302	25.02	0.99	0.1381	0.1204	−0.2628	−0.0013	0.0002	0.0021	0.1381	0.1204	−0.2628	−0.0013	0.0002	0.0021
0.299	29.99	0.99	0.1777	0.1687	−0.3510	0.0036	−0.0013	0.0030	0.1777	0.1687	−0.3510	0.0036	−0.0013	0.0030

Table 32. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	31.63	0.99	0.1899	0.1861	–0.3784	0.0060	–0.0021	0.0034	0.1899	0.1861	–0.3784	0.0060	–0.0021	0.0034
0.297	35.46	0.99	0.2147	0.1423	–0.3866	0.0073	–0.0024	0.0023	0.2147	0.1423	–0.3866	0.0073	–0.0024	0.0023
0.300	38.02	0.99	0.2272	0.1732	–0.4223	0.0104	–0.0037	0.0025	0.2272	0.1732	–0.4223	0.0104	–0.0037	0.0025
0.300	40.00	0.99	0.2347	0.1966	–0.4483	0.0077	–0.0025	0.0020	0.2347	0.1966	–0.4483	0.0077	–0.0025	0.0020
0.300	42.01	0.98	0.2467	0.2243	–0.4821	0.0132	–0.0041	0.0030	0.2467	0.2243	–0.4821	0.0132	–0.0041	0.0030
0.300	45.00	0.98	0.2499	0.2562	–0.5110	0.0052	–0.0018	0.0023	0.2499	0.2562	–0.5110	0.0052	–0.0018	0.0023
0.299	50.01	0.98	0.2491	0.3104	–0.5625	0.0010	–0.0004	0.0018	0.2491	0.3104	–0.5625	0.0010	–0.0004	0.0018
0.297	55.02	0.98	0.2270	0.3524	–0.5863	0.0057	–0.0014	0.0040	0.2270	0.3524	–0.5863	0.0057	–0.0014	0.0040
0.300	60.00	0.98	0.1987	0.3846	–0.6041	0.0041	–0.0008	0.0040	0.1987	0.3846	–0.6041	0.0041	–0.0008	0.0040
0.300	65.03	0.97	0.1774	0.4389	–0.6603	0.0090	–0.0024	0.0037	0.1774	0.4389	–0.6603	0.0090	–0.0024	0.0037
0.298	68.57	0.97	0.1578	0.4828	–0.7093	0.0152	–0.0043	0.0053	0.1578	0.4828	–0.7093	0.0152	–0.0043	0.0053
0.299	0.00	4.15	–0.1726	–0.3583	0.2949	–0.0051	0.0010	–0.0024	–0.0862	0.0357	0.1268	–0.0044	0.0014	–0.0008
0.300	5.03	4.14	–0.0989	–0.3585	0.2370	–0.0035	0.0006	–0.0023	–0.0477	0.0390	0.0700	–0.0029	0.0010	–0.0006
0.300	10.02	4.13	–0.0325	–0.3523	0.1810	–0.0020	0.0001	–0.0023	–0.0164	0.0470	0.0148	–0.0014	0.0004	–0.0006
0.300	14.97	4.15	0.0433	–0.3399	0.1036	0.0166	–0.0057	–0.0004	0.0251	0.0615	–0.0639	0.0172	–0.0053	0.0012
0.301	20.00	4.13	0.1369	–0.3038	–0.0016	0.0078	–0.0029	–0.0001	0.0842	0.0881	–0.1662	0.0084	–0.0026	0.0016
0.300	25.01	4.14	0.2152	–0.2627	–0.0870	0.0090	–0.0034	0.0003	0.1274	0.1283	–0.2539	0.0097	–0.0030	0.0021
0.297	30.00	4.13	0.2840	–0.2161	–0.1686	0.0118	–0.0043	0.0008	0.1608	0.1709	–0.3375	0.0124	–0.0039	0.0025
0.298	31.80	4.15	0.3090	–0.1914	–0.2004	0.0115	–0.0044	0.0005	0.1735	0.1929	–0.3703	0.0122	–0.0040	0.0023
0.300	35.58	4.16	0.3583	–0.2236	–0.2115	0.0120	–0.0044	0.0003	0.1997	0.1465	–0.3796	0.0126	–0.0040	0.0020
0.300	38.01	4.15	0.3869	–0.1883	–0.2490	0.0192	–0.0070	0.0008	0.2129	0.1743	–0.4168	0.0199	–0.0066	0.0025
0.300	40.18	4.16	0.4103	–0.1577	–0.2804	0.0089	–0.0038	–0.0003	0.2222	0.1992	–0.4488	0.0095	–0.0035	0.0015
0.299	41.98	4.16	0.4326	–0.1296	–0.3094	0.0121	–0.0048	0.0003	0.2329	0.2220	–0.4781	0.0127	–0.0044	0.0021
0.299	44.99	4.15	0.4599	–0.0859	–0.3443	0.0091	–0.0038	0.0002	0.2418	0.2549	–0.5130	0.0098	–0.0035	0.0019
0.298	49.98	4.15	0.4875	–0.0228	–0.3818	–0.0009	–0.0008	–0.0003	0.2387	0.3002	–0.5518	–0.0002	–0.0004	0.0015
0.299	55.02	4.16	0.4993	0.0455	–0.4145	0.0056	–0.0022	0.0010	0.2255	0.3429	–0.5832	0.0063	–0.0018	0.0028
0.300	60.00	4.15	0.4920	0.1035	–0.4309	0.0058	–0.0024	0.0014	0.1956	0.3741	–0.5984	0.0065	–0.0020	0.0031
0.298	65.00	4.16	0.4922	0.1722	–0.4692	0.0058	–0.0022	0.0021	0.1692	0.4190	–0.6387	0.0065	–0.0018	0.0037
0.299	68.76	4.16	0.4725	0.1997	–0.4592	0.0102	–0.0039	0.0010	0.1359	0.4237	–0.6280	0.0109	–0.0036	0.0028
0.500	–0.03	0.99	–0.0798	0.0195	0.1119	–0.0035	0.0010	–0.0004	–0.0798	0.0195	0.1119	–0.0035	0.0010	–0.0004
0.500	–0.03	2.04	–0.0864	–0.0296	0.1264	–0.0038	0.0011	–0.0008	–0.0781	0.0237	0.1099	–0.0036	0.0011	–0.0005
0.500	0.02	2.97	–0.0971	–0.0676	0.1462	–0.0045	0.0012	–0.0010	–0.0810	0.0259	0.1142	–0.0041	0.0012	–0.0006
0.500	0.01	4.95	–0.1318	–0.1467	0.2087	–0.0044	0.0012	–0.0016	–0.0899	0.0271	0.1268	–0.0044	0.0014	–0.0008
0.499	14.99	0.99	0.0533	0.0351	–0.0993	0.0057	–0.0020	0.0012	0.0533	0.0351	–0.0993	0.0057	–0.0020	0.0012
0.499	15.01	2.03	0.0549	–0.0150	–0.0778	0.0071	–0.0024	0.0008	0.0491	0.0383	–0.0941	0.0073	–0.0024	0.0010
0.500	15.00	2.97	0.0556	–0.0558	–0.0598	0.0076	–0.0027	0.0006	0.0470	0.0386	–0.0917	0.0081	–0.0028	0.0010
0.500	15.00	2.97	0.0558	–0.0561	–0.0596	0.0076	–0.0027	0.0006	0.0471	0.0385	–0.0917	0.0081	–0.0027	0.0010
0.501	15.00	4.14	0.0533	–0.1053	–0.0310	0.0079	–0.0030	0.0004	0.0467	0.0380	–0.0907	0.0081	–0.0028	0.0010
0.500	14.98	4.98	0.0519	–0.1395	–0.0087	0.0089	–0.0032	0.0003	0.0476	0.0400	–0.0910	0.0089	–0.0030	0.0011
0.499	24.98	0.97	0.1664	0.1037	–0.2849	–0.0016	0.0003	0.0013	0.1664	0.1037	–0.2849	–0.0016	0.0003	0.0013
0.499	25.01	2.04	0.1775	0.0536	–0.2654	–0.0028	0.0006	0.0011	0.1625	0.1054	–0.2818	–0.0026	0.0006	0.0014
0.499	25.00	2.99	0.1837	0.0122	–0.2456	–0.0032	0.0006	0.0010	0.1584	0.1051	–0.2781	–0.0028	0.0006	0.0014
0.499	24.97	4.15	0.1858	–0.0370	–0.2127	–0.0030	0.0005	0.0009	0.1542	0.1044	–0.2731	–0.0028	0.0006	0.0015
0.499	24.98	4.98	0.1874	–0.0729	–0.1881	–0.0023	0.0003	0.0005	0.1519	0.1035	–0.2707	–0.0024	0.0004	0.0013
0.501	0.01	0.99	–0.0773	0.0184	0.1087	–0.0064	0.0017	–0.0004	–0.0773	0.0184	0.1087	–0.0064	0.0017	–0.0004

Table 32. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.503	5.02	0.99	–0.0374	0.0184	0.0534	–0.0053	0.0014	–0.0002	–0.0374	0.0184	0.0534	–0.0053	0.0014	–0.0002
0.502	9.97	0.99	–0.0051	0.0228	–0.0009	–0.0030	0.0007	–0.0003	–0.0051	0.0228	–0.0009	–0.0030	0.0007	–0.0003
0.500	14.99	0.99	0.0547	0.0346	–0.1007	0.0042	–0.0017	0.0013	0.0547	0.0346	–0.1007	0.0042	–0.0017	0.0013
0.501	19.98	0.98	0.1134	0.0628	–0.1943	–0.0012	0.0003	0.0013	0.1134	0.0628	–0.1943	–0.0012	0.0003	0.0013
0.498	24.99	0.97	0.1662	0.1037	–0.2843	–0.0034	0.0008	0.0014	0.1662	0.1037	–0.2843	–0.0034	0.0008	0.0014
0.498	30.03	0.97	0.2084	0.1494	–0.3698	0.0047	–0.0017	0.0017	0.2084	0.1494	–0.3698	0.0047	–0.0017	0.0017
0.501	–0.01	4.14	–0.1155	–0.1144	0.1806	–0.0051	0.0012	–0.0013	–0.0847	0.0259	0.1208	–0.0048	0.0014	–0.0007
0.502	5.00	4.16	–0.0624	–0.1166	0.1232	–0.0056	0.0014	–0.0011	–0.0440	0.0259	0.0632	–0.0054	0.0015	–0.0005
0.501	9.97	4.17	–0.0184	–0.1146	0.0690	–0.0041	0.0009	–0.0012	–0.0123	0.0298	0.0086	–0.0039	0.0010	–0.0006
0.499	14.99	4.14	0.0530	–0.1064	–0.0295	0.0067	–0.0026	0.0005	0.0464	0.0382	–0.0898	0.0070	–0.0024	0.0011
0.503	19.99	4.19	0.1180	–0.0778	–0.1183	–0.0002	–0.0003	0.0005	0.0991	0.0652	–0.1788	0.0000	–0.0002	0.0011
0.500	24.97	4.14	0.1858	–0.0363	–0.2123	–0.0048	0.0010	0.0008	0.1544	0.1042	–0.2723	–0.0046	0.0011	0.0014
0.502	29.99	4.17	0.2439	0.0126	–0.3033	0.0036	–0.0017	0.0012	0.2002	0.1505	–0.3638	0.0038	–0.0016	0.0018

Table 33. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.99	0.9712	0.9711	−0.86	−0.28	−0.0104	−0.0002	0.0003	−0.0001	0.0001	0.0000
3.00	0.9644	0.9643	−0.75	−0.35	−0.0196	−0.0003	0.0006	−0.0001	0.0002	0.0000
4.16	0.9548	0.9546	−1.00	−0.58	−0.0300	−0.0005	0.0012	−0.0003	0.0003	0.0000
5.00	0.9432	0.9425	−1.74	−1.48	−0.0375	−0.0011	0.0024	−0.0010	0.0007	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	−0.03	1.00	−0.0706	0.0147	0.1011	−0.0143	0.0039	−0.0004	−0.0706	0.0147	0.1011	−0.0143	0.0039	−0.0004
0.301	−0.05	2.01	−0.0675	−0.1385	0.1024	−0.0170	0.0057	−0.0010	−0.0649	0.0280	0.0972	−0.0162	0.0046	−0.0009
0.302	−0.07	3.00	−0.0721	−0.2796	0.1119	−0.0197	0.0076	−0.0013	−0.0677	0.0286	0.1019	−0.0178	0.0053	−0.0012
0.301	−0.05	4.13	−0.0739	−0.4387	0.1198	−0.0248	0.0108	−0.0013	−0.0654	0.0301	0.1007	−0.0201	0.0061	−0.0013
0.300	−0.05	4.95	−0.0815	−0.5550	0.1356	−0.0339	0.0164	−0.0012	−0.0636	0.0319	0.0995	−0.0193	0.0058	−0.0014
0.299	14.94	1.00	0.0395	0.0460	−0.0812	0.0085	−0.0032	0.0011	0.0395	0.0460	−0.0812	0.0085	−0.0032	0.0011
0.299	14.96	2.01	0.0787	−0.1051	−0.0752	0.0087	−0.0022	0.0010	0.0376	0.0584	−0.0805	0.0095	−0.0032	0.0012
0.299	14.94	3.00	0.1131	−0.2446	−0.0687	0.0066	−0.0005	0.0010	0.0366	0.0580	−0.0788	0.0086	−0.0028	0.0010
0.299	14.97	4.14	0.1495	−0.4012	−0.0580	−0.0028	0.0040	0.0006	0.0344	0.0614	−0.0775	0.0020	−0.0008	0.0007
0.300	14.96	5.01	0.1724	−0.5158	−0.0430	−0.0129	0.0101	0.0009	0.0358	0.0657	−0.0805	0.0025	−0.0010	0.0008
0.300	24.97	0.99	0.1416	0.1184	−0.2654	−0.0076	0.0018	0.0019	0.1416	0.1184	−0.2654	−0.0076	0.0018	0.0019
0.301	24.95	2.00	0.2037	−0.0211	−0.2588	−0.0103	0.0037	0.0017	0.1366	0.1289	−0.2639	−0.0095	0.0027	0.0018
0.301	24.93	3.00	0.2622	−0.1540	−0.2532	−0.0143	0.0059	0.0017	0.1358	0.1274	−0.2632	−0.0124	0.0037	0.0017
0.298	24.96	4.14	0.3276	−0.3112	−0.2399	−0.0189	0.0092	0.0017	0.1321	0.1286	−0.2595	−0.0141	0.0044	0.0017
0.300	24.95	5.00	0.3648	−0.4105	−0.2243	−0.0257	0.0139	0.0017	0.1312	0.1340	−0.2614	−0.0105	0.0030	0.0016
0.303	45.02	0.98	0.2508	0.2651	−0.5166	−0.0021	0.0005	0.0032	0.2508	0.2651	−0.5166	−0.0021	0.0005	0.0032
0.301	45.00	1.99	0.3690	0.1587	−0.5278	−0.0056	0.0024	0.0022	0.2557	0.2754	−0.5329	−0.0048	0.0014	0.0024
0.302	44.97	3.00	0.4665	0.0548	−0.5234	−0.0073	0.0038	0.0024	0.2531	0.2741	−0.5332	−0.0054	0.0017	0.0025
0.302	44.95	4.13	0.5750	−0.0635	−0.5150	−0.0146	0.0078	0.0023	0.2503	0.2732	−0.5340	−0.0100	0.0030	0.0023
0.303	44.98	5.02	0.6488	−0.1532	−0.4967	−0.0250	0.0137	0.0025	0.2488	0.2724	−0.5335	−0.0098	0.0028	0.0024
0.300	60.00	0.97	0.1938	0.3926	−0.6092	0.0003	0.0006	0.0041	0.1938	0.3926	−0.6092	0.0003	0.0006	0.0041
0.299	59.98	1.98	0.3358	0.3086	−0.6058	−0.0062	0.0037	0.0037	0.1954	0.3925	−0.6110	−0.0054	0.0026	0.0039
0.299	59.99	2.98	0.4631	0.2352	−0.6046	−0.0098	0.0054	0.0029	0.1975	0.3933	−0.6146	−0.0079	0.0031	0.0030
0.299	59.97	4.15	0.6041	0.1455	−0.5921	−0.0177	0.0098	0.0031	0.1942	0.3920	−0.6116	−0.0129	0.0050	0.0031
0.300	59.97	5.01	0.7025	0.0759	−0.5732	−0.0298	0.0164	0.0031	0.1941	0.3908	−0.6108	−0.0143	0.0053	0.0030
0.300	−0.03	1.00	−0.0700	0.0127	0.1010	−0.0120	0.0032	−0.0006	−0.0700	0.0127	0.1010	−0.0120	0.0032	−0.0006
0.300	4.97	1.00	−0.0308	0.0200	0.0465	−0.0098	0.0027	−0.0003	−0.0308	0.0200	0.0465	−0.0098	0.0027	−0.0003
0.301	9.95	1.00	0.0000	0.0309	−0.0056	−0.0089	0.0024	−0.0002	0.0000	0.0309	−0.0056	−0.0089	0.0024	−0.0002
0.300	14.96	1.00	0.0402	0.0464	−0.0810	0.0098	−0.0034	0.0011	0.0402	0.0464	−0.0810	0.0098	−0.0034	0.0011
0.301	19.94	1.00	0.0944	0.0765	−0.1763	−0.0012	0.0001	0.0013	0.0944	0.0765	−0.1763	−0.0012	0.0001	0.0013
0.298	24.98	0.99	0.1423	0.1221	−0.2667	−0.0049	0.0012	0.0017	0.1423	0.1221	−0.2667	−0.0049	0.0012	0.0017
0.300	29.97	0.99	0.1824	0.1676	−0.3537	0.0015	−0.0007	0.0027	0.1824	0.1676	−0.3537	0.0015	−0.0007	0.0027

Table 33. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.298	31.65	0.99	0.1945	0.1866	–0.3825	0.0003	–0.0006	0.0025	0.1945	0.1866	–0.3825	0.0003	–0.0006	0.0025
0.299	35.31	0.98	0.2128	0.1504	–0.3883	0.0027	–0.0009	0.0022	0.2128	0.1504	–0.3883	0.0027	–0.0009	0.0022
0.298	38.04	0.98	0.2237	0.1839	–0.4258	0.0069	–0.0024	0.0023	0.2237	0.1839	–0.4258	0.0069	–0.0024	0.0023
0.298	40.02	0.98	0.2339	0.2063	–0.4546	0.0089	–0.0025	0.0028	0.2339	0.2063	–0.4546	0.0089	–0.0025	0.0028
0.298	42.01	0.98	0.2452	0.2341	–0.4883	0.0100	–0.0030	0.0030	0.2452	0.2341	–0.4883	0.0100	–0.0030	0.0030
0.298	45.00	0.98	0.2484	0.2648	–0.5168	0.0049	–0.0016	0.0028	0.2484	0.2648	–0.5168	0.0049	–0.0016	0.0028
0.302	50.00	0.97	0.2468	0.3195	–0.5690	–0.0041	0.0012	0.0015	0.2468	0.3195	–0.5690	–0.0041	0.0012	0.0015
0.301	54.98	0.97	0.2243	0.3596	–0.5897	0.0015	0.0001	0.0042	0.2243	0.3596	–0.5897	0.0015	0.0001	0.0042
0.296	59.99	0.97	0.1927	0.3938	–0.6092	0.0013	0.0003	0.0041	0.1927	0.3938	–0.6092	0.0013	0.0003	0.0041
0.298	64.98	0.97	0.1728	0.4500	–0.6704	0.0053	–0.0010	0.0039	0.1728	0.450	–0.6704	0.0053	–0.0010	0.0039
0.297	68.46	0.96	0.1542	0.4943	–0.7212	0.0117	–0.0029	0.0057	0.1542	0.4943	–0.7212	0.0117	–0.0029	0.0057
0.300	–0.05	4.16	–0.0733	–0.4433	0.1191	–0.0220	0.0103	–0.0011	–0.0646	0.0324	0.0996	–0.0172	0.0055	–0.0011
0.300	4.96	4.14	0.0045	–0.4365	0.0657	–0.0198	0.0096	–0.0009	–0.0282	0.0356	0.0463	–0.0151	0.0049	–0.0008
0.300	9.96	4.14	0.0734	–0.4214	0.0153	–0.0183	0.0092	–0.0009	–0.0003	0.0458	–0.0040	–0.0136	0.0044	–0.0008
0.300	14.93	4.14	0.1495	–0.4017	–0.0562	–0.0023	0.0044	0.0004	0.0351	0.0595	–0.0756	0.0024	–0.0004	0.0004
0.300	19.97	4.17	0.2364	–0.3608	–0.1472	–0.0084	0.0060	0.0012	0.0816	0.0898	–0.1668	–0.0036	0.0011	0.0013
0.299	24.96	4.14	0.3245	–0.3090	–0.2379	–0.0155	0.0083	0.0017	0.1301	0.1283	–0.2574	–0.0107	0.0035	0.0017
0.300	29.92	4.16	0.4008	–0.2404	–0.3297	–0.0105	0.0067	0.0024	0.1709	0.1756	–0.3492	–0.0057	0.0019	0.0024
0.299	31.58	4.14	0.4294	–0.2182	–0.3616	–0.0113	0.0069	0.0025	0.1853	0.1948	–0.3812	–0.0065	0.0021	0.0025
0.308	35.2	4.13	0.4589	–0.2153	–0.3723	–0.0088	0.0063	0.0026	0.2068	0.1556	–0.3906	–0.0044	0.0018	0.0030
0.306	38.00	4.13	0.4979	–0.1749	–0.4184	–0.0055	0.0049	0.0028	0.2244	0.1879	–0.4370	–0.0010	0.0003	0.0037
0.299	40.00	4.13	0.5321	–0.1572	–0.4477	–0.0126	0.0073	0.0021	0.2321	0.2134	–0.4671	–0.0079	0.0025	0.0040
0.299	41.99	4.12	0.5551	–0.1223	–0.4774	–0.0096	0.0065	0.0026	0.2435	0.2362	–0.4968	–0.0048	0.0017	0.0045
0.299	44.96	4.11	0.5800	–0.0749	–0.5091	–0.0164	0.0085	0.0019	0.2507	0.2664	–0.5284	–0.0117	0.0038	0.0026
0.297	49.97	4.11	0.6097	–0.0019	–0.5486	–0.0215	0.0104	0.0021	0.2468	0.3139	–0.5681	–0.0167	0.0056	0.0028
0.301	54.96	4.14	0.6116	0.0836	–0.5818	–0.0164	0.0091	0.0029	0.2291	0.3619	–0.6011	–0.0116	0.0044	0.0022
0.296	59.96	4.14	0.6128	0.1413	–0.5937	–0.0162	0.0094	0.0037	0.1957	0.3923	–0.6135	–0.0113	0.0045	0.0026
0.299	64.96	4.13	0.5986	0.2317	–0.6404	–0.0177	0.0101	0.0039	0.1711	0.4405	–0.6598	–0.0130	0.0053	0.0020
0.298	68.42	4.11	0.5896	0.2847	–0.6675	–0.0187	0.0108	0.0045	0.1493	0.4678	–0.6869	–0.0140	0.0060	0.0022
0.500	–0.05	0.99	–0.0778	0.0182	0.1094	–0.0052	0.0017	–0.0004	–0.0778	0.0182	0.1094	–0.0052	0.0017	–0.0004
0.500	–0.04	2.02	–0.0746	–0.0368	0.1064	–0.0065	0.0027	–0.0006	–0.0736	0.0240	0.1045	–0.0062	0.0023	–0.0005
0.498	–0.06	2.98	–0.0763	–0.0859	0.1099	–0.0081	0.0035	–0.0006	–0.0747	0.0258	0.1063	–0.0074	0.0027	–0.0006
0.499	–0.05	4.13	–0.0771	–0.1441	0.1129	–0.0103	0.0048	–0.0007	–0.0740	0.0267	0.1059	–0.0086	0.0031	–0.0007
0.498	–0.05	5.00	–0.0807	–0.1870	0.1198	–0.0150	0.0073	–0.0007	–0.0739	0.0290	0.1063	–0.0094	0.0034	–0.0008
0.498	14.97	0.99	0.0569	0.0359	–0.1030	0.0054	–0.0017	0.0011	0.0569	0.0359	–0.1030	0.0054	–0.0017	0.0011
0.499	14.95	2.01	0.0704	–0.0181	–0.0993	0.0048	–0.0010	0.0009	0.0555	0.0410	–0.1012	0.0051	–0.0014	0.0009
0.498	14.94	3.00	0.0822	–0.0669	–0.0963	0.0048	–0.0006	0.0008	0.0546	0.0423	–0.1000	0.0055	–0.0015	0.0009
0.498	14.96	4.15	0.0962	–0.1248	–0.0931	0.0038	0.0003	0.0007	0.0546	0.0425	–0.1002	0.0055	–0.0015	0.0007
0.498	14.96	4.99	0.1032	–0.1652	–0.0867	0.0004	0.0024	0.0008	0.0540	0.0443	–0.1001	0.0059	–0.0015	0.0008
0.498	24.95	0.97	0.1691	0.1058	–0.2890	–0.0003	0.0003	0.0010	0.1691	0.1058	–0.2890	–0.0003	0.0003	0.0010
0.498	24.97	2.01	0.1898	0.0532	–0.2858	–0.0035	0.0017	0.0010	0.1649	0.1087	–0.2878	–0.0032	0.0012	0.0010
0.500	24.95	3.00	0.2096	0.0068	–0.2836	–0.0052	0.0024	0.0009	0.1637	0.1088	–0.2872	–0.0045	0.0017	0.0010
0.500	24.93	4.17	0.2318	–0.0470	–0.2798	–0.0089	0.0043	0.0010	0.1620	0.1105	–0.2869	–0.0071	0.0025	0.0010
0.499	24.93	5.00	0.2448	–0.0864	–0.2720	–0.0131	0.0066	0.0010	0.1604	0.1107	–0.2854	–0.0076	0.0027	0.0010
0.499	–0.04	0.99	–0.0777	0.0180	0.1085	–0.0077	0.0024	–0.0005	–0.0777	0.0180	0.1085	–0.0077	0.0024	–0.0005

Table 33. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	4.98	0.99	−0.0370	0.0186	0.0523	−0.0073	0.0023	−0.0003	−0.0370	0.0186	0.0523	−0.0073	0.0023	−0.0003
0.500	9.97	0.99	−0.0043	0.0226	−0.0023	−0.0043	0.0013	−0.0005	−0.0043	0.0226	−0.0023	−0.0043	0.0013	−0.0005
0.501	14.94	0.99	0.0562	0.0347	−0.1021	0.0031	−0.0012	0.0011	0.0562	0.0347	−0.1021	0.0031	−0.0012	0.0011
0.500	19.94	0.98	0.1144	0.0633	−0.1951	−0.0019	0.0006	0.0010	0.1144	0.0633	−0.1951	−0.0019	0.0006	0.0010
0.498	24.96	0.97	0.1689	0.1049	−0.2880	−0.0032	0.0010	0.0011	0.1689	0.1049	−0.2880	−0.0032	0.0010	0.0011
0.498	29.95	0.96	0.2104	0.1506	−0.3731	0.0066	−0.0021	0.0014	0.2104	0.1506	−0.3731	0.0066	−0.0021	0.0014
0.500	−0.05	4.15	−0.0756	−0.1451	0.1114	−0.0116	0.0050	−0.0009	−0.0725	0.0260	0.1044	−0.0099	0.0032	−0.0009
0.501	4.98	4.16	−0.0218	−0.1440	0.0555	−0.0119	0.0051	−0.0005	−0.0336	0.0270	0.0485	−0.0102	0.0034	−0.0005
0.501	9.98	4.15	0.0221	−0.1392	0.0041	−0.0097	0.0044	−0.0006	−0.0045	0.0294	−0.0028	−0.0079	0.0026	−0.0005
0.498	14.94	4.15	0.0933	−0.1270	−0.0907	−0.0015	0.0018	0.0010	0.0517	0.0405	−0.0977	0.0003	0.0001	0.0010
0.500	19.97	4.16	0.1655	−0.0934	−0.1852	−0.0088	0.0043	0.0011	0.1098	0.0687	−0.1922	−0.0070	0.0025	0.0011
0.500	24.96	4.16	0.2351	−0.0475	−0.2805	−0.0120	0.0051	0.0012	0.1652	0.1099	−0.2876	−0.0103	0.0034	0.0012
0.500	29.94	4.17	0.2925	0.0047	−0.3704	−0.0028	0.0023	0.0017	0.2091	0.1557	−0.3775	−0.0010	0.0005	0.0017

Table 34. Static and Aeropropulsive Performance Characteristics at Military Power

$$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.97	0.9470	0.9454	−1.59	−3.02	−0.0099	−0.0003	0.0007	−0.0005	0.0003	0.0000
3.03	0.9406	0.9387	−1.91	−3.11	−0.0194	−0.0006	0.0015	−0.0011	0.0006	0.0000
4.12	0.9327	0.9302	−2.54	−3.29	−0.0290	−0.0013	0.0027	−0.0017	0.0010	0.0000
5.06	0.9202	0.9159	−3.42	−4.41	−0.0368	−0.0022	0.0044	−0.0028	0.0016	0.0000

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	−0.01	1.00	−0.0735	0.0193	0.1038	−0.0109	0.0030	−0.0001	−0.0735	0.0193	0.1038	−0.0109	0.0030	−0.0001
0.303	−0.01	1.99	−0.0798	−0.1225	0.1219	−0.0242	0.0104	−0.0008	−0.0754	0.0347	0.1113	−0.0159	0.0058	−0.0007
0.300	−0.01	3.01	−0.0916	−0.2633	0.1456	−0.0382	0.0179	−0.0013	−0.0814	0.0421	0.1215	−0.0216	0.0086	−0.0011
0.300	−0.01	4.14	−0.1033	−0.4188	0.1695	−0.0550	0.0272	−0.0016	−0.0824	0.0455	0.1258	−0.0280	0.0117	−0.0014
0.301	0.00	5.02	−0.1179	−0.5266	0.1967	−0.0735	0.0372	−0.0017	−0.0837	0.0513	0.1282	−0.0293	0.0122	−0.0017
0.301	14.99	1.00	0.0348	0.0468	−0.0773	0.0113	−0.0038	0.0015	0.0348	0.0468	−0.0773	0.0113	−0.0038	0.0015
0.301	14.98	2.01	0.0640	−0.0975	−0.0568	0.0008	0.0028	0.0010	0.0268	0.0590	−0.0677	0.0094	−0.0018	0.0011
0.301	14.98	3.00	0.0874	−0.2300	−0.0350	−0.0138	0.0103	0.0005	0.0189	0.0650	−0.0588	0.0027	0.0011	0.0007
0.301	14.99	4.15	0.1146	−0.3807	−0.0100	−0.0306	0.0194	0.0003	0.0155	0.0700	−0.0535	−0.0037	0.0040	0.0005
0.301	14.99	4.99	0.1297	−0.4913	0.0159	−0.0493	0.0294	0.0003	0.0144	0.0688	−0.0513	−0.0060	0.0050	0.0003
0.298	24.98	0.99	0.1379	0.1198	−0.2631	−0.0027	0.0007	0.0020	0.1379	0.1198	−0.2631	−0.0027	0.0007	0.0020
0.300	25.02	2.01	0.1901	−0.0191	−0.2416	−0.0163	0.0080	0.0017	0.1259	0.1291	−0.2526	−0.0078	0.0034	0.0017
0.301	25.01	3.01	0.2386	−0.1465	−0.2220	−0.0269	0.0142	0.0015	0.1194	0.1329	−0.2459	−0.0104	0.0050	0.0017
0.300	25.01	4.15	0.2931	−0.2917	−0.1989	−0.0412	0.0228	0.0016	0.1160	0.1371	−0.2426	−0.0142	0.0073	0.0017
0.301	25.02	4.99	0.3266	−0.3966	−0.1728	−0.0590	0.0325	0.0016	0.1152	0.1357	−0.2402	−0.0156	0.0079	0.0017
0.299	45.00	0.98	0.2503	0.2663	−0.5184	−0.0012	0.0005	0.0030	0.2503	0.2663	−0.5184	−0.0012	0.0005	0.0030
0.298	44.99	2.01	0.3677	0.1515	−0.5188	−0.0129	0.0065	0.0022	0.2542	0.2715	−0.5300	−0.0041	0.0018	0.0023
0.299	45.00	3.01	0.4624	0.0495	−0.5101	−0.0220	0.0113	0.0018	0.2516	0.2747	−0.5344	−0.0052	0.0020	0.0020
0.299	44.98	4.19	0.5708	−0.0736	−0.4926	−0.0303	0.0174	0.0027	0.2519	0.2761	−0.5378	−0.0023	0.0013	0.0029
0.299	44.99	5.06	0.6433	−0.1670	−0.4668	−0.0508	0.0282	0.0023	0.2522	0.2739	−0.5370	−0.0055	0.0026	0.0023
0.300	60.00	0.98	0.1963	0.3950	−0.6124	0.0038	0.0000	0.0044	0.1963	0.3950	−0.6124	0.0038	0.0000	0.0044
0.300	59.98	2.00	0.3330	0.3083	−0.6004	−0.0093	0.0064	0.0037	0.1959	0.3927	−0.6113	−0.0007	0.0017	0.0038
0.300	59.97	3.02	0.4550	0.2309	−0.5892	−0.0189	0.0112	0.0030	0.1948	0.3932	−0.6134	−0.0022	0.0019	0.0031
0.301	59.98	4.20	0.5878	0.1368	−0.5638	−0.0334	0.0189	0.0030	0.1925	0.3901	−0.6088	−0.0055	0.0029	0.0031
0.301	59.99	5.03	0.6759	0.0692	−0.5389	−0.0519	0.0287	0.0033	0.1935	0.3873	−0.6074	−0.0078	0.0037	0.0033
0.301	−0.01	1.00	−0.0728	0.0154	0.1034	−0.0087	0.0025	−0.0004	−0.0728	0.0154	0.1034	−0.0087	0.0025	−0.0004
0.301	5.02	1.00	−0.0339	0.0223	0.0491	−0.0061	0.0018	−0.0003	−0.0339	0.0223	0.0491	−0.0061	0.0018	−0.0003
0.302	9.97	1.00	−0.0015	0.0329	−0.0052	−0.0045	0.0013	−0.0001	−0.0015	0.0329	−0.0052	−0.0045	0.0013	−0.0001
0.302	14.98	1.00	0.0373	0.0478	−0.0798	0.0150	−0.0047	0.0013	0.0373	0.0478	−0.0798	0.0150	−0.0047	0.0013
0.300	19.99	0.99	0.0912	0.0789	−0.1748	0.0014	−0.0005	0.0015	0.0912	0.0789	−0.1748	0.0014	−0.0005	0.0015
0.298	25.02	0.99	0.1396	0.1221	−0.2648	−0.0009	0.0003	0.0019	0.1396	0.1221	−0.2648	−0.0009	0.0003	0.0019
0.302	29.99	0.99	0.1814	0.1696	−0.3542	0.0041	−0.0012	0.0028	0.1814	0.1696	−0.3542	0.0041	−0.0012	0.0028

Table 34. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	31.59	0.99	0.1923	0.1865	–0.3806	0.0018	–0.0007	0.0027	0.1923	0.1865	–0.3806	0.0018	–0.0007	0.0027
0.301	35.08	0.99	0.2147	0.1483	–0.3886	0.0053	–0.0014	0.0022	0.2147	0.1483	–0.3886	0.0053	–0.0014	0.0022
0.300	38.01	0.99	0.2280	0.1828	–0.4305	0.0112	–0.0033	0.0027	0.2280	0.1828	–0.4305	0.0112	–0.0033	0.0027
0.300	40.01	0.98	0.2371	0.2073	–0.4583	0.0079	–0.0020	0.0021	0.2371	0.2073	–0.4583	0.0079	–0.0020	0.0021
0.300	42.03	0.98	0.2479	0.2345	–0.4905	0.0097	–0.0026	0.0025	0.2479	0.2345	–0.4905	0.0097	–0.0026	0.0025
0.300	45.00	0.98	0.2506	0.2661	–0.5197	0.0069	–0.0017	0.0027	0.2506	0.2661	–0.5197	0.0069	–0.0017	0.0027
0.298	49.99	0.98	0.2481	0.3198	–0.5697	–0.0008	0.0007	0.0020	0.2481	0.3198	–0.5697	–0.0008	0.0007	0.0020
0.298	54.99	0.98	0.2249	0.3607	–0.5915	0.0034	–0.0001	0.0044	0.2249	0.3607	–0.5915	0.0034	–0.0001	0.0044
0.304	59.99	0.97	0.1952	0.3925	–0.6090	0.0040	–0.0002	0.0045	0.1952	0.3925	–0.6090	0.0040	–0.0002	0.0045
0.303	59.99	0.98	0.1958	0.3934	–0.6107	0.0017	0.0005	0.0039	0.1958	0.3934	–0.6107	0.0017	0.0005	0.0039
0.301	64.99	0.97	0.1760	0.4513	–0.6730	0.0067	–0.0012	0.0039	0.1760	0.4513	–0.6730	0.0067	–0.0012	0.0039
0.301	68.22	0.97	0.1575	0.4884	–0.7148	0.0099	–0.0020	0.0049	0.1575	0.4884	–0.7148	0.0099	–0.0020	0.0049
0.302	–0.01	4.15	–0.1039	–0.4139	0.1691	–0.0505	0.0258	–0.0017	–0.0833	0.0444	0.1259	–0.0238	0.0105	–0.0015
0.303	5.00	4.15	–0.0268	–0.4059	0.1127	–0.0473	0.0248	–0.0013	–0.0460	0.0496	0.0697	–0.0208	0.0096	–0.0012
0.301	9.99	4.17	0.0410	–0.4001	0.0615	–0.0448	0.0241	–0.0013	–0.0186	0.0591	0.0175	–0.0177	0.0085	–0.0011
0.301	15.00	4.16	0.1197	–0.3834	–0.0142	–0.0226	0.0174	0.0005	0.0197	0.0706	–0.0582	0.0046	0.0018	0.0006
0.299	19.98	4.16	0.2076	–0.3496	–0.1052	–0.0307	0.0200	0.0010	0.0676	0.0973	–0.1495	–0.0033	0.0042	0.0011
0.298	25.00	4.19	0.2931	–0.3001	–0.1946	–0.0368	0.0219	0.0012	0.1111	0.1419	–0.2404	–0.0085	0.0057	0.0013
0.295	29.99	4.16	0.3751	–0.2421	–0.2877	–0.0339	0.0210	0.0019	0.1539	0.1847	–0.3331	–0.0059	0.0049	0.0021
0.301	31.57	4.16	0.3914	–0.2069	–0.3179	–0.0344	0.0207	0.0021	0.1674	0.1975	–0.3616	–0.0073	0.0052	0.0022
0.303	35.03	4.17	0.4508	–0.2287	–0.3487	–0.0242	0.0157	0.0025	0.2048	0.1586	–0.3924	0.0027	0.0002	0.0026
0.303	38.00	4.18	0.4886	–0.1812	–0.3969	–0.0192	0.0139	0.0030	0.2219	0.1943	–0.4408	0.0079	–0.0017	0.0030
0.302	39.99	4.18	0.5116	–0.1503	–0.4259	–0.0271	0.0163	0.0024	0.2312	0.2167	–0.4700	0.0001	0.0007	0.0025
0.302	42.01	4.17	0.5360	–0.1150	–0.4583	–0.0234	0.0152	0.0029	0.2429	0.2416	–0.5022	0.0037	–0.0003	0.0030
0.302	45.00	4.18	0.5609	–0.0686	–0.4894	–0.0316	0.0175	0.0021	0.2491	0.2730	–0.5334	–0.0044	0.0019	0.0023
0.301	50.01	4.18	0.5842	–0.0003	–0.5207	–0.0388	0.0200	0.0020	0.2413	0.3150	–0.5650	–0.0114	0.0043	0.0021
0.298	55.00	4.17	0.6022	0.0735	–0.5559	–0.0339	0.0189	0.0030	0.2274	0.3621	–0.6009	–0.0061	0.0030	0.0030
0.300	59.99	4.17	0.5880	0.1369	–0.5639	–0.0326	0.0187	0.0035	0.1927	0.3899	–0.6085	–0.0051	0.0029	0.0036
0.301	64.97	4.18	0.5780	0.2227	–0.6111	–0.0344	0.0193	0.0040	0.1664	0.4382	–0.6554	–0.0070	0.0036	0.0042
0.298	68.28	4.17	0.5720	0.2621	–0.6228	–0.0374	0.0208	0.0045	0.1398	0.4574	–0.6679	–0.0096	0.0049	0.0047
0.502	0.01	0.99	–0.0781	0.0201	0.1099	–0.0049	0.0017	–0.0005	–0.0781	0.0201	0.1099	–0.0049	0.0017	–0.0005
0.500	0.00	2.04	–0.0790	–0.0341	0.1131	–0.0112	0.0050	–0.0007	–0.0773	0.0259	0.1090	–0.0080	0.0032	–0.0006
0.500	0.00	2.99	–0.0832	–0.0779	0.1216	–0.0163	0.0076	–0.0008	–0.0796	0.0307	0.1131	–0.0104	0.0044	–0.0008
0.500	0.00	2.98	–0.0832	–0.0778	0.1217	–0.0163	0.0076	–0.0008	–0.0796	0.0305	0.1132	–0.0104	0.0043	–0.0007
0.499	0.00	4.04	–0.0869	–0.1296	0.1297	–0.0224	0.0108	–0.0009	–0.0798	0.0327	0.1147	–0.0131	0.0055	–0.0009
0.501	0.00	4.16	–0.0875	–0.1341	0.1308	–0.0230	0.0112	–0.0010	–0.0800	0.0330	0.1150	–0.0133	0.0056	–0.0009
0.501	0.02	5.01	–0.0936	–0.1734	0.1419	–0.0305	0.0151	–0.0010	–0.0815	0.0340	0.1174	–0.0147	0.0062	–0.0010
0.500	15.01	0.99	0.0558	0.0364	–0.1020	0.0059	–0.0019	0.0010	0.0558	0.0364	–0.1020	0.0059	–0.0019	0.0010
0.500	15.02	2.05	0.0646	–0.0173	–0.0914	0.0011	0.0009	0.0007	0.0506	0.0416	–0.0955	0.0043	–0.0009	0.0007
0.500	15.01	2.98	0.0731	–0.0611	–0.0851	–0.0020	0.0030	0.0007	0.0485	0.0445	–0.0936	0.0039	–0.0003	0.0008
0.500	15.01	4.14	0.0824	–0.1174	–0.0753	–0.0075	0.0062	0.0007	0.0464	0.0455	–0.0910	0.0022	0.0006	0.0008
0.500	15.03	5.02	0.0871	–0.1570	–0.0648	–0.0142	0.0098	0.0007	0.0450	0.0477	–0.0896	0.0018	0.0008	0.0007
0.501	24.98	0.97	0.1685	0.1057	–0.2878	–0.0017	0.0007	0.0012	0.1685	0.1057	–0.2878	–0.0017	0.0007	0.0012
0.500	24.97	2.05	0.1854	0.0533	–0.2781	–0.0077	0.0037	0.0009	0.1616	0.1086	–0.2822	–0.0045	0.0021	0.0009
0.500	24.97	2.98	0.1999	0.0105	–0.2707	–0.0120	0.0061	0.0010	0.1575	0.1102	–0.2792	–0.0061	0.0029	0.0010

Table 34. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	24.96	4.15	0.2188	−0.0433	−0.2612	−0.0204	0.0102	0.0010	0.1551	0.1115	−0.2770	−0.0106	0.0046	0.0010
0.501	24.98	4.99	0.2301	−0.0816	−0.2512	−0.0280	0.0141	0.0010	0.1539	0.1108	−0.2756	−0.0123	0.0052	0.0010
0.501	−0.02	0.99	−0.0773	0.0188	0.1080	−0.0064	0.0020	−0.0005	−0.0773	0.0188	0.1080	−0.0064	0.0020	−0.0005
0.503	4.98	0.99	−0.0370	0.0197	0.0528	−0.0061	0.0019	−0.0002	−0.0370	0.0197	0.0528	−0.0061	0.0019	−0.0002
0.503	9.97	0.99	−0.0044	0.0233	−0.0020	−0.0030	0.0010	−0.0004	−0.0044	0.0233	−0.0020	−0.0030	0.0010	−0.0004
0.500	14.99	0.99	0.0557	0.0356	−0.1016	0.0042	−0.0015	0.0011	0.0557	0.0356	−0.1016	0.0042	−0.0015	0.0011
0.501	20.01	0.98	0.1147	0.0633	−0.1959	−0.0013	0.0005	0.0011	0.1147	0.0633	−0.1959	−0.0013	0.0005	0.0011
0.499	24.99	0.97	0.1666	0.1043	−0.2852	−0.0042	0.0013	0.0013	0.1666	0.1043	−0.2852	−0.0042	0.0013	0.0013
0.499	30.00	0.96	0.2076	0.1499	−0.3710	0.0084	−0.0026	0.0017	0.2076	0.1499	−0.3710	0.0084	−0.0026	0.0017
0.501	0.00	4.16	−0.0875	−0.1341	0.1308	−0.0230	0.0112	−0.0010	−0.0800	0.0330	0.1150	−0.0133	0.0056	−0.0009
0.502	5.01	4.16	−0.0326	−0.1349	0.0733	−0.0229	0.0109	−0.0008	−0.0397	0.0313	0.0576	−0.0132	0.0053	−0.0007
0.500	15.00	4.15	0.0785	−0.1202	−0.0713	−0.0110	0.0071	0.0008	0.0424	0.0436	−0.0871	−0.0013	0.0015	0.0009
0.503	20.01	4.16	0.1512	−0.0876	−0.1669	−0.0186	0.0096	0.0009	0.1015	0.0709	−0.1827	−0.0089	0.0040	0.0010
0.501	24.97	4.15	0.2203	−0.0436	−0.2617	−0.0232	0.0109	0.0011	0.1566	0.1110	−0.2775	−0.0134	0.0053	0.0011
0.496	29.97	4.14	0.2785	0.0056	−0.3513	−0.0161	0.0086	0.0015	0.2004	0.1562	−0.3673	−0.0063	0.0030	0.0015

Table 35. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = -10°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = 15°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.8858	0.8780	−6.65	−3.65	−0.0095	−0.0011	0.0021	−0.0006	0.0003	0.0000
3.01	0.8714	0.8623	−7.41	−3.78	−0.0176	−0.0023	0.0044	−0.0012	0.0006	−0.0001
4.16	0.8539	0.8426	−8.71	−3.38	−0.0265	−0.0041	0.0079	−0.0016	0.0008	−0.0001
5.03	0.8401	0.8267	−9.83	−2.97	−0.0329	−0.0057	0.0111	−0.0017	0.0009	−0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.304	−0.03	1.00	−0.0744	0.0167	0.1050	−0.0078	0.0022	0.0000	−0.0744	0.0167	0.1050	−0.0078	0.0022	0.0000
0.301	−0.02	2.02	−0.0869	−0.1293	0.1329	−0.0171	0.0068	−0.0010	−0.0692	0.0216	0.0992	−0.0075	0.0013	−0.0006
0.302	0.00	3.02	−0.1035	−0.2582	0.1662	−0.0232	0.0100	−0.0018	−0.0673	0.0191	0.0966	−0.0049	0.0002	−0.0010
0.302	−0.03	4.16	−0.1325	−0.3991	0.2209	−0.0271	0.0122	−0.0024	−0.0687	0.0153	0.0978	−0.0026	−0.0005	−0.0013
0.302	0.01	5.01	−0.1595	−0.5018	0.2729	−0.0286	0.0131	−0.0030	−0.0708	0.0118	0.1002	−0.0019	−0.0005	−0.0016
0.302	14.97	1.00	0.0350	0.0468	−0.0764	0.0149	−0.0050	0.0011	0.0350	0.0468	−0.0764	0.0149	−0.0050	0.0011
0.302	14.97	2.03	0.0594	−0.0980	−0.0478	0.0095	−0.0013	0.0009	0.0375	0.0521	−0.0815	0.0191	−0.0067	0.0012
0.302	14.99	3.02	0.0776	−0.2258	−0.0170	0.0013	0.0025	0.0002	0.0410	0.0500	−0.0862	0.0195	−0.0073	0.0010
0.303	15.02	4.16	0.0894	−0.3679	0.0323	−0.0041	0.0051	−0.0003	0.0437	0.0460	−0.0900	0.0202	−0.0076	0.0008
0.303	14.98	5.01	0.0899	−0.4753	0.0836	−0.0104	0.0075	−0.0009	0.0432	0.0411	−0.0883	0.0162	−0.0060	0.0005
0.303	25.02	0.99	0.1371	0.1171	−0.2607	0.0006	−0.0003	0.0022	0.1371	0.1171	−0.2607	0.0006	−0.0003	0.0022
0.306	24.96	2.02	0.1834	−0.0232	−0.2291	−0.0080	0.0041	0.0015	0.1371	0.1169	−0.2618	0.0014	−0.0012	0.0018
0.306	24.97	3.02	0.2225	−0.1433	−0.1990	−0.0110	0.0062	0.0011	0.1402	0.1171	−0.2670	0.0069	−0.0035	0.0019
0.299	25.01	4.15	0.2617	−0.2929	−0.1474	−0.0103	0.0071	0.0006	0.1419	0.1169	−0.2727	0.0146	−0.0059	0.0018
0.303	24.98	5.02	0.2816	−0.3879	−0.1034	−0.0093	0.0071	0.0003	0.1463	0.1116	−0.2751	0.0172	−0.0064	0.0018
0.302	44.99	0.98	0.2482	0.2607	−0.5124	0.0070	−0.0025	0.0022	0.2482	0.2607	−0.5124	0.0070	−0.0025	0.0022
0.301	44.99	2.01	0.3398	0.1437	−0.4849	−0.0072	0.0040	0.0010	0.2468	0.2612	−0.5180	0.0023	−0.0014	0.0014
0.298	44.98	3.02	0.4198	0.0334	−0.4486	−0.0154	0.0082	0.0005	0.2444	0.2615	−0.5203	0.0035	−0.0019	0.0013
0.298	45.02	4.15	0.4967	−0.0902	−0.3899	−0.0203	0.0106	−0.0001	0.2414	0.2573	−0.5165	0.0048	−0.0024	0.0010
0.303	44.98	5.01	0.5447	−0.1753	−0.3415	−0.0181	0.0103	0.0002	0.2473	0.2468	−0.5125	0.0084	−0.0032	0.0017
0.296	59.99	0.98	0.1937	0.3833	−0.6022	0.0029	−0.0009	0.0035	0.1937	0.3833	−0.6022	0.0029	−0.0009	0.0035
0.299	59.99	1.99	0.3172	0.2937	−0.5704	−0.0117	0.0059	0.0027	0.1968	0.3834	−0.6036	−0.0022	0.0004	0.0030
0.297	59.98	3.00	0.4212	0.2077	−0.5306	−0.0200	0.0099	0.0017	0.1936	0.3819	−0.6018	−0.0012	−0.0002	0.0024
0.298	60.00	4.16	0.5307	0.1012	−0.4640	−0.0244	0.0124	0.0013	0.1948	0.3704	−0.5904	0.0007	−0.0007	0.0024
0.299	59.99	5.01	0.6078	0.0260	−0.4147	−0.0249	0.0127	0.0013	0.1998	0.3660	−0.5906	0.0024	−0.0011	0.0028
0.301	0.01	1.00	−0.0746	0.0135	0.1048	−0.0055	0.0016	−0.0003	−0.0746	0.0135	0.1048	−0.0055	0.0016	−0.0003
0.301	4.98	1.00	−0.0360	0.0206	0.0516	−0.0035	0.0010	−0.0002	−0.0360	0.0206	0.0516	−0.0035	0.0010	−0.0002
0.302	10.00	1.00	−0.0041	0.0309	−0.0023	−0.0014	0.0003	−0.0001	−0.0041	0.0309	−0.0023	−0.0014	0.0003	−0.0001
0.301	14.99	1.00	0.0364	0.0466	−0.0782	0.0172	−0.0053	0.0014	0.0364	0.0466	−0.0782	0.0172	−0.0053	0.0014
0.303	19.96	1.00	0.0908	0.0761	−0.1731	0.0046	−0.0014	0.0017	0.0908	0.0761	−0.1731	0.0046	−0.0014	0.0017
0.301	24.98	0.99	0.1387	0.1190	−0.2629	0.0024	−0.0007	0.0022	0.1387	0.1190	−0.2629	0.0024	−0.0007	0.0022
0.306	30.00	0.99	0.1804	0.1631	−0.3500	0.0074	−0.0022	0.0030	0.1804	0.1631	−0.3500	0.0074	−0.0022	0.0030

Table 35. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.303	31.56	0.99	0.1901	0.1820	–0.3759	0.0063	–0.0021	0.0029	0.1901	0.1820	–0.3759	0.0063	–0.0021	0.0029
0.300	35.10	0.99	0.2122	0.1417	–0.3838	0.0051	–0.0022	0.0019	0.2122	0.1417	–0.3838	0.0051	–0.0022	0.0019
0.300	37.97	0.99	0.2250	0.1762	–0.4225	0.0068	–0.0030	0.0021	0.2250	0.1762	–0.4225	0.0068	–0.0030	0.0021
0.300	39.97	0.98	0.2339	0.2001	–0.4498	0.0048	–0.0023	0.0016	0.2339	0.2001	–0.4498	0.0048	–0.0023	0.0016
0.300	42.01	0.98	0.2460	0.2285	–0.4840	0.0079	–0.0031	0.0020	0.2460	0.2285	–0.4840	0.0079	–0.0031	0.0020
0.299	44.98	0.98	0.2480	0.2587	–0.5107	0.0043	–0.0021	0.0020	0.2480	0.2587	–0.5107	0.0043	–0.0021	0.0020
0.298	49.98	0.98	0.2455	0.3114	–0.5591	–0.0012	–0.0003	0.0018	0.2455	0.3114	–0.5591	–0.0012	–0.0003	0.0018
0.302	55.00	0.97	0.2255	0.3552	–0.5861	0.0026	–0.0009	0.0039	0.2255	0.3552	–0.5861	0.0026	–0.0009	0.0039
0.298	59.99	0.97	0.1967	0.3897	–0.6073	0.0017	–0.0005	0.0036	0.1967	0.3897	–0.6073	0.0017	–0.0005	0.0036
0.299	65.00	0.97	0.1766	0.4494	–0.6724	0.0065	–0.0023	0.0038	0.1766	0.4494	–0.6724	0.0065	–0.0023	0.0038
0.298	68.25	0.97	0.1586	0.4861	–0.7117	0.0101	–0.0033	0.0046	0.1586	0.4861	–0.7117	0.0101	–0.0033	0.0046
0.302	0.01	4.16	–0.1317	–0.3990	0.2200	–0.0226	0.0112	–0.0018	–0.0682	0.0160	0.0967	0.0019	–0.0016	–0.0007
0.302	5.01	4.16	–0.0541	–0.3950	0.1619	–0.0203	0.0106	–0.0016	–0.0272	0.0221	0.0392	0.0041	–0.0021	–0.0004
0.303	9.99	4.17	0.0133	–0.3830	0.1076	–0.0194	0.0100	–0.0016	0.0040	0.0336	–0.0150	0.0048	–0.0026	–0.0004
0.302	14.98	4.16	0.0908	–0.3701	0.0330	0.0005	0.0039	–0.0003	0.0449	0.0470	–0.0902	0.0250	–0.0088	0.0008
0.300	19.98	4.16	0.1834	–0.3385	–0.0647	–0.0033	0.0052	0.0003	0.1006	0.0772	–0.1892	0.0214	–0.0077	0.0015
0.301	24.99	4.15	0.2584	–0.2892	–0.1457	–0.0070	0.0061	0.0005	0.1402	0.1153	–0.2694	0.0176	–0.0067	0.0017
0.300	29.98	4.15	0.3345	–0.2313	–0.2359	–0.0035	0.0050	0.0012	0.1810	0.1628	–0.3600	0.0211	–0.0078	0.0024
0.302	31.63	4.17	0.3580	–0.2062	–0.2674	–0.0047	0.0052	0.0013	0.1943	0.1812	–0.3910	0.0198	–0.0076	0.0024
0.300	35.17	4.16	0.3870	–0.2320	–0.2529	–0.0143	0.0091	0.0010	0.1980	0.1478	–0.3775	0.0105	–0.0037	0.0022
0.300	38.01	4.15	0.4238	–0.1892	–0.2991	–0.0113	0.0077	0.0011	0.2164	0.1801	–0.4233	0.0134	–0.0052	0.0023
0.299	40.01	4.16	0.4481	–0.1603	–0.3305	–0.0171	0.0098	0.0009	0.2260	0.2050	–0.4561	0.0078	–0.0032	0.0020
0.299	42.00	4.15	0.4727	–0.1275	–0.3627	–0.0178	0.0098	0.0009	0.2388	0.2286	–0.4877	0.0071	–0.0031	0.0020
0.299	44.97	4.15	0.4986	–0.0842	–0.3947	–0.0179	0.0099	0.0009	0.2456	0.2608	–0.5203	0.0070	–0.0031	0.0020
0.297	50.00	4.14	0.5264	–0.0193	–0.4305	–0.0263	0.0126	0.0011	0.2415	0.3051	–0.5571	–0.0011	–0.0004	0.0023
0.304	54.99	4.16	0.5256	0.0610	–0.4638	–0.0231	0.0118	0.0020	0.2276	0.3460	–0.5849	0.0009	–0.0007	0.0030
0.299	59.99	4.15	0.5264	0.1110	–0.4720	–0.0224	0.0118	0.0017	0.1925	0.3786	–0.5977	0.0025	–0.0013	0.0028
0.299	65.01	4.15	0.5197	0.1868	–0.5114	–0.0248	0.0125	0.0025	0.1660	0.4227	–0.6361	0.0000	–0.0005	0.0037
0.298	68.39	4.15	0.5035	0.2109	–0.4999	–0.0125	0.0078	0.0008	0.1316	0.4283	–0.6263	0.0126	–0.0053	0.0020
0.501	–0.01	0.99	–0.0797	0.0186	0.1121	–0.0035	0.0010	–0.0004	–0.0797	0.0186	0.1121	–0.0035	0.0010	–0.0004
0.501	–0.02	1.99	–0.0810	–0.0325	0.1166	–0.0067	0.0028	–0.0007	–0.0747	0.0206	0.1048	–0.0033	0.0009	–0.0005
0.499	0.00	3.02	–0.0885	–0.0799	0.1307	–0.0097	0.0043	–0.0009	–0.0753	0.0212	0.1054	–0.0031	0.0007	–0.0006
0.501	0.04	4.17	–0.0999	–0.1308	0.1522	–0.0109	0.0050	–0.0011	–0.0767	0.0204	0.1072	–0.0020	0.0003	–0.0008
0.501	14.99	0.99	0.0559	0.0348	–0.1013	0.0070	–0.0023	0.0012	0.0559	0.0348	–0.1013	0.0070	–0.0023	0.0012
0.501	15.01	2.00	0.0607	–0.0167	–0.0862	0.0045	–0.0009	0.0008	0.0529	0.0365	–0.0981	0.0079	–0.0028	0.0010
0.501	15.02	3.02	0.0667	–0.0640	–0.0740	0.0029	0.0002	0.0006	0.0533	0.0365	–0.0992	0.0096	–0.0034	0.0009
0.502	15.00	4.18	0.0687	–0.1169	–0.0526	0.0036	0.0002	0.0005	0.0521	0.0353	–0.0977	0.0124	–0.0044	0.0010
0.501	15.03	5.01	0.0708	–0.1536	–0.0371	0.0044	0.0000	0.0004	0.0536	0.0347	–0.0997	0.0141	–0.0049	0.0010
0.503	24.99	0.97	0.1670	0.1037	–0.2847	0.0006	–0.0002	0.0012	0.1670	0.1037	–0.2847	0.0006	–0.0002	0.0012
0.502	24.99	2.01	0.1822	0.0536	–0.2730	–0.0027	0.0015	0.0010	0.1652	0.1049	–0.2849	0.0007	–0.0004	0.0011
0.502	24.98	3.02	0.1936	0.0072	–0.2584	–0.0059	0.0029	0.0009	0.1631	0.1036	–0.2836	0.0008	–0.0007	0.0011
0.502	24.98	4.16	0.2036	–0.0436	–0.2377	–0.0075	0.0036	0.0007	0.1611	0.1019	–0.2822	0.0014	–0.0010	0.0010
0.502	25.01	5.01	0.2098	–0.0818	–0.2191	–0.0073	0.0037	0.0006	0.1604	0.1000	–0.2815	0.0023	–0.0012	0.0011
0.501	–0.02	0.99	–0.0786	0.0179	0.1096	–0.0044	0.0013	–0.0004	–0.0786	0.0179	0.1096	–0.0044	0.0013	–0.0004
0.503	5.00	0.99	–0.0392	0.0182	0.0550	–0.0041	0.0012	–0.0002	–0.0392	0.0182	0.0550	–0.0041	0.0012	–0.0002

Table 35. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.503	9.97	0.99	–0.0061	0.0219	0.0002	–0.0020	0.0005	–0.0004	–0.0061	0.0219	0.0002	–0.0020	0.0005	–0.0004
0.501	14.97	0.99	0.0538	0.0339	–0.0990	0.0063	–0.0022	0.0013	0.0538	0.0339	–0.0990	0.0063	–0.0022	0.0013
0.504	20.01	0.98	0.1130	0.0621	–0.1934	0.0010	–0.0003	0.0012	0.1130	0.0621	–0.1934	0.0010	–0.0003	0.0012
0.499	25.00	0.97	0.1672	0.1036	–0.2849	–0.0001	0.0000	0.0014	0.1672	0.1036	–0.2849	–0.0001	0.0000	0.0014
0.498	30.00	0.97	0.2082	0.1490	–0.3691	0.0095	–0.0030	0.0018	0.2082	0.1490	–0.3691	0.0095	–0.0030	0.0018
0.503	0.02	4.19	–0.0991	–0.1303	0.1516	–0.0116	0.0050	–0.0012	–0.0760	0.0203	0.1067	–0.0028	0.0003	–0.0008
0.503	5.01	4.16	–0.0462	–0.1308	0.0951	–0.0122	0.0051	–0.0010	–0.0364	0.0203	0.0507	–0.0034	0.0005	–0.0006
0.503	10.03	4.16	–0.0015	–0.1269	0.0416	–0.0101	0.0044	–0.0010	–0.0049	0.0242	–0.0028	–0.0013	–0.0002	–0.0006
0.501	14.97	4.16	0.0662	–0.1174	–0.0514	0.0005	0.0010	0.0006	0.0496	0.0342	–0.0962	0.0094	–0.0036	0.0010
0.503	19.95	4.16	0.1363	–0.0868	–0.1439	–0.0065	0.0033	0.0006	0.1069	0.0613	–0.1883	0.0023	–0.0012	0.0010
0.501	25.01	4.15	0.2055	–0.0439	–0.2381	–0.0097	0.0042	0.0009	0.1628	0.1021	–0.2828	–0.0008	–0.0004	0.0013
0.499	29.97	4.15	0.2635	0.0051	–0.3282	–0.0006	0.0013	0.0014	0.2080	0.1476	–0.3731	0.0083	–0.0034	0.0017

Table 36. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.00	0.9498	0.9494	1.65	−0.41	−0.0101	0.0003	−0.0005	−0.0001	0.0001	0.0000
3.00	0.9432	0.9427	1.93	−0.37	−0.0192	0.0006	−0.0010	−0.0001	0.0001	0.0000
4.16	0.9269	0.9264	1.82	−0.60	−0.0293	0.0009	−0.0018	−0.0003	0.0003	0.0000
5.00	0.9035	0.9026	2.12	−1.30	−0.0357	0.0013	−0.0028	−0.0008	0.0006	0.0001

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.301	−0.01	1.00	−0.0729	0.0140	0.1014	−0.0102	0.0028	−0.0009	−0.0729	0.0140	0.1014	−0.0102	0.0028	−0.0009
0.301	0.00	1.98	−0.0683	−0.1272	0.0983	−0.0191	0.0081	−0.0017	−0.0728	0.0289	0.1060	−0.0180	0.0071	−0.0014
0.301	−0.01	2.99	−0.0619	−0.2595	0.0898	−0.0281	0.0133	−0.0017	−0.0720	0.0426	0.1061	−0.0262	0.0113	−0.0017
0.302	0.01	4.17	−0.0447	−0.4033	0.0613	−0.0416	0.0213	−0.0012	−0.0595	0.0581	0.0892	−0.0367	0.0166	−0.0016
0.302	0.00	4.99	−0.0282	−0.4984	0.0307	−0.0554	0.0293	−0.0007	−0.0489	0.0608	0.0740	−0.0427	0.0193	−0.0017
0.302	15.00	1.00	0.0381	0.0445	−0.0818	0.0135	−0.0044	0.0009	0.0381	0.0445	−0.0818	0.0135	−0.0044	0.0009
0.302	15.01	2.00	0.0747	−0.0943	−0.0822	0.0068	0.0002	0.0010	0.0290	0.0585	−0.0744	0.0080	−0.0009	0.0011
0.301	14.98	3.00	0.1102	−0.2198	−0.0869	−0.0011	0.0051	0.0010	0.0223	0.0694	−0.0707	0.0009	0.0030	0.0010
0.301	14.98	4.17	0.1591	−0.3541	−0.1122	−0.0202	0.0147	0.0012	0.0256	0.0878	−0.0844	−0.0154	0.0100	0.0009
0.301	15.01	5.03	0.2011	−0.4448	−0.1432	−0.0371	0.0239	0.0017	0.0344	0.0954	−0.0990	−0.0240	0.0136	0.0007
0.300	25.02	0.99	0.1407	0.1175	−0.2664	−0.0032	0.0009	0.0019	0.1407	0.1175	−0.2664	−0.0032	0.0009	0.0019
0.300	24.98	2.01	0.2103	−0.0133	−0.2775	−0.0141	0.0067	0.0015	0.1376	0.1318	−0.2695	−0.0129	0.0058	0.0017
0.300	25.00	3.03	0.2724	−0.1309	−0.2886	−0.0256	0.0128	0.0016	0.1323	0.1450	−0.2718	−0.0235	0.0108	0.0016
0.300	24.98	4.18	0.3443	−0.2527	−0.3149	−0.0415	0.0215	0.0020	0.1338	0.1638	−0.2866	−0.0365	0.0167	0.0017
0.300	25.00	5.01	0.4069	−0.3371	−0.3524	−0.0607	0.0315	0.0024	0.1474	0.1693	−0.3082	−0.0477	0.0213	0.0014
0.298	45.00	0.98	0.2538	0.2694	−0.5234	−0.0010	0.0001	0.0025	0.2538	0.2694	−0.5234	−0.0010	0.0001	0.0025
0.298	45.02	1.98	0.3748	0.1659	−0.5495	0.0002	0.0005	0.0025	0.2578	0.2762	−0.5416	0.0014	−0.0004	0.0028
0.298	44.97	3.04	0.4853	0.0686	−0.5670	−0.0091	0.0043	0.0018	0.2553	0.2839	−0.5499	−0.0070	0.0022	0.0018
0.302	44.98	4.16	0.5927	−0.0205	−0.5908	−0.0186	0.0091	0.0023	0.2584	0.2932	−0.5632	−0.0138	0.0044	0.0019
0.302	44.98	5.03	0.6846	−0.0840	−0.6277	−0.0293	0.0157	0.0029	0.2711	0.3001	−0.5836	−0.0162	0.0054	0.0018
0.295	60.03	0.98	0.1978	0.3961	−0.6159	0.0021	0.0000	0.0041	0.1978	0.3961	−0.6159	0.0021	0.0000	0.0041
0.299	60.01	2.01	0.3432	0.3219	−0.6302	−0.0058	0.0033	0.0036	0.1994	0.3995	−0.6222	−0.0046	0.0024	0.0038
0.299	59.96	3.02	0.4726	0.2606	−0.6504	−0.0117	0.0060	0.0030	0.1982	0.4073	−0.6336	−0.0096	0.0039	0.0030
0.298	60.02	4.16	0.6158	0.1948	−0.6767	−0.0224	0.0116	0.0036	0.1994	0.4177	−0.6483	−0.0174	0.0068	0.0032
0.298	60.00	4.98	0.7181	0.1567	−0.7084	−0.0345	0.0181	0.0035	0.2113	0.4249	−0.6641	−0.0216	0.0079	0.0024
0.301	−0.01	1.00	−0.0721	0.0120	0.1006	−0.0075	0.0024	−0.0007	−0.0721	0.0120	0.1006	−0.0075	0.0024	−0.0007
0.302	4.99	1.00	−0.0327	0.0191	0.0462	−0.0055	0.0017	−0.0005	−0.0327	0.0191	0.0462	−0.0055	0.0017	−0.0005
0.301	10.01	1.00	−0.0021	0.0306	−0.0064	−0.0039	0.0013	−0.0003	−0.0021	0.0306	−0.0064	−0.0039	0.0013	−0.0003
0.300	15.00	1.00	0.0403	0.0459	−0.0847	0.0152	−0.0046	0.0012	0.0403	0.0459	−0.0847	0.0152	−0.0046	0.0012
0.299	20.00	1.00	0.0930	0.0764	−0.1777	0.0026	−0.0007	0.0012	0.0930	0.0764	−0.1777	0.0026	−0.0007	0.0012
0.307	25.00	0.99	0.1449	0.1159	−0.2698	−0.0017	0.0006	0.0017	0.1449	0.1159	−0.2698	−0.0017	0.0006	0.0017
0.300	29.98	0.99	0.1827	0.1674	−0.3567	0.0073	−0.0021	0.0027	0.1827	0.1674	−0.3567	0.0073	−0.0021	0.0027

Table 36. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	31.59	0.99	0.1935	0.1852	–0.3831	0.0051	–0.0014	0.0028	0.1935	0.1852	–0.3831	0.0051	–0.0014	0.0028
0.300	35.22	0.99	0.2197	0.1521	–0.3959	0.0024	–0.0010	0.0024	0.2197	0.1521	–0.3959	0.0024	–0.0010	0.0024
0.299	38.01	0.99	0.2312	0.1841	–0.4331	0.0104	–0.0033	0.0034	0.2312	0.1841	–0.4331	0.0104	–0.0033	0.0034
0.299	40.03	0.98	0.2404	0.2088	–0.4617	0.0072	–0.0022	0.0030	0.2404	0.2088	–0.4617	0.0072	–0.0022	0.0030
0.299	42.03	0.98	0.2495	0.2348	–0.4922	0.0089	–0.0027	0.0033	0.2495	0.2348	–0.4922	0.0089	–0.0027	0.0033
0.299	45.02	0.98	0.2521	0.2661	–0.5196	0.0017	–0.0006	0.0027	0.2521	0.2661	–0.5196	0.0017	–0.0006	0.0027
0.298	49.99	0.98	0.2506	0.3204	–0.5717	–0.0037	0.0011	0.0024	0.2506	0.3204	–0.5717	–0.0037	0.0011	0.0024
0.296	55.01	0.98	0.2282	0.3628	–0.5956	0.0012	0.0001	0.0048	0.2282	0.3628	–0.5956	0.0012	0.0001	0.0048
0.300	60.01	0.98	0.1987	0.3964	–0.6150	–0.0005	0.0008	0.0045	0.1987	0.3964	–0.6150	–0.0005	0.0008	0.0045
0.300	65.01	0.97	0.1767	0.4525	–0.6751	0.0048	–0.0010	0.0047	0.1767	0.4525	–0.6751	0.0048	–0.0010	0.0047
0.299	68.21	0.97	0.1608	0.4931	–0.7219	0.0092	–0.0023	0.0057	0.1608	0.4931	–0.7219	0.0092	–0.0023	0.0057
0.300	0.01	4.15	–0.0472	–0.4067	0.0625	–0.0399	0.0213	–0.0012	–0.0620	0.0559	0.0903	–0.0351	0.0166	–0.0016
0.301	5.00	4.16	0.0281	–0.3943	0.0072	–0.0369	0.0203	–0.0009	–0.0269	0.0655	0.0351	–0.0320	0.0157	–0.0012
0.301	10.01	4.16	0.0943	–0.3753	–0.0472	–0.0324	0.0189	–0.0006	–0.0003	0.0761	–0.0194	–0.0275	0.0143	–0.0010
0.300	15.01	4.15	0.1626	–0.3562	–0.1142	–0.0134	0.0130	0.0010	0.0282	0.0883	–0.0863	–0.0085	0.0083	0.0007
0.299	20.00	4.16	0.2582	–0.3167	–0.2171	–0.0311	0.0186	0.0014	0.0834	0.1199	–0.1887	–0.0261	0.0139	0.0010
0.299	24.98	4.15	0.3445	–0.2549	–0.3156	–0.0371	0.0205	0.0020	0.1339	0.1619	–0.2875	–0.0323	0.0157	0.0016
0.303	29.98	4.19	0.4165	–0.1799	–0.4098	–0.0336	0.0192	0.0026	0.1739	0.2111	–0.3817	–0.0285	0.0143	0.0023
0.301	31.43	4.16	0.4391	–0.1597	–0.4385	–0.0339	0.0193	0.0027	0.1862	0.2259	–0.4107	–0.0291	0.0146	0.0024
0.301	35.06	4.15	0.4990	–0.1929	–0.4536	–0.0128	0.0079	0.0033	0.2213	0.1771	–0.4258	–0.0080	0.0032	0.0030
0.300	38.05	4.15	0.5341	–0.1415	–0.5023	–0.0086	0.0062	0.0036	0.2372	0.2139	–0.4745	–0.0038	0.0015	0.0031
0.300	39.98	4.15	0.5568	–0.1097	–0.5319	–0.0117	0.0073	0.0032	0.2467	0.2370	–0.5040	–0.0068	0.0026	0.0029
0.299	42.00	4.15	0.5789	–0.0742	–0.5618	–0.0138	0.0078	0.0033	0.2560	0.2622	–0.5337	–0.0089	0.0031	0.0029
0.299	44.99	4.15	0.6026	–0.0248	–0.5948	–0.0170	0.0090	0.0030	0.2616	0.2953	–0.5667	–0.0121	0.0043	0.0026
0.298	49.98	4.15	0.6247	0.0492	–0.6309	–0.0257	0.0120	0.0027	0.2540	0.3408	–0.6025	–0.0207	0.0072	0.0024
0.302	54.95	4.16	0.6203	0.1321	–0.6599	–0.0218	0.0112	0.0035	0.2366	0.3834	–0.6323	–0.0170	0.0066	0.0030
0.300	59.98	4.16	0.6100	0.1984	–0.6755	–0.0211	0.0113	0.0038	0.2016	0.4173	–0.6476	–0.0163	0.0066	0.0035
0.294	65.02	4.14	0.6122	0.2740	–0.7168	–0.0229	0.0120	0.0045	0.1698	0.4631	–0.6879	–0.0179	0.0072	0.0041
0.297	68.12	4.15	0.5875	0.3142	–0.7223	–0.0204	0.0111	0.0044	0.1431	0.4764	–0.6938	–0.0155	0.0063	0.0041
0.497	–0.02	0.99	–0.0773	0.0189	0.1078	–0.0040	0.0013	–0.0005	–0.0773	0.0189	0.1078	–0.0040	0.0013	–0.0005
0.499	0.01	2.04	–0.0748	–0.0359	0.1051	–0.0094	0.0041	–0.0008	–0.0766	0.0242	0.1080	–0.0089	0.0037	–0.0007
0.501	–0.02	2.99	–0.0729	–0.0793	0.1021	–0.0132	0.0061	–0.0009	–0.0765	0.0295	0.1080	–0.0125	0.0054	–0.0009
0.501	–0.01	4.14	–0.0656	–0.1299	0.0900	–0.0192	0.0094	–0.0008	–0.0708	0.0359	0.1000	–0.0174	0.0078	–0.0009
0.501	0.00	4.99	–0.0579	–0.1658	0.0767	–0.0247	0.0126	–0.0005	–0.0654	0.0374	0.0924	–0.0201	0.0090	–0.0009
0.500	15.02	0.99	0.0568	0.0347	–0.1049	0.0053	–0.0017	0.0010	0.0568	0.0347	–0.1049	0.0053	–0.0017	0.0010
0.499	14.99	2.01	0.0725	–0.0152	–0.1074	0.0011	0.0006	0.0008	0.0558	0.0408	–0.1045	0.0015	0.0003	0.0009
0.499	15.00	2.99	0.0874	–0.0591	–0.1120	–0.0018	0.0024	0.0008	0.0555	0.0458	–0.1061	–0.0011	0.0017	0.0008
0.499	14.98	4.17	0.1068	–0.1072	–0.1233	–0.0078	0.0057	0.0010	0.0580	0.0540	–0.1132	–0.0060	0.0039	0.0008
0.502	14.98	5.00	0.1245	–0.1382	–0.1393	–0.0146	0.0092	0.0012	0.0649	0.0555	–0.1236	–0.0100	0.0056	0.0009
0.503	25.01	0.97	0.1694	0.1050	–0.2901	–0.0004	0.0003	0.0010	0.1694	0.1050	–0.2901	–0.0004	0.0003	0.0010
0.503	25.01	2.00	0.1959	0.0588	–0.2987	–0.0057	0.0028	0.0009	0.1701	0.1101	–0.2959	–0.0052	0.0024	0.0010
0.502	24.96	3.02	0.2170	0.0166	–0.3029	–0.0110	0.0052	0.0010	0.1673	0.1146	–0.2970	–0.0103	0.0045	0.0010
0.502	24.98	4.17	0.2455	–0.0259	–0.3171	–0.0189	0.0091	0.0010	0.1704	0.1228	–0.3071	–0.0171	0.0074	0.0009
0.502	24.96	5.00	0.2684	–0.0561	–0.3314	–0.0272	0.0130	0.0012	0.1759	0.1247	–0.3157	–0.0226	0.0094	0.0008
0.502	–0.03	0.99	–0.0765	0.0173	0.1058	–0.0069	0.0022	–0.0006	–0.0765	0.0173	0.1058	–0.0069	0.0022	–0.0006

Table 36. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.502	5.03	0.99	–0.0355	0.0181	0.0496	–0.0058	0.0018	–0.0003	–0.0355	0.0181	0.0496	–0.0058	0.0018	–0.0003
0.502	9.98	0.99	–0.0035	0.0223	–0.0042	–0.0033	0.0010	–0.0006	–0.0035	0.0223	–0.0042	–0.0033	0.0010	–0.0006
0.500	15.02	0.99	0.0580	0.0346	–0.1060	0.0037	–0.0013	0.0010	0.0580	0.0346	–0.1060	0.0037	–0.0013	0.0010
0.500	20.02	0.98	0.1162	0.0634	–0.1989	–0.0010	0.0004	0.0011	0.1162	0.0634	–0.1989	–0.0010	0.0004	0.0011
0.502	24.99	0.97	0.1694	0.1046	–0.2896	–0.0027	0.0009	0.0011	0.1694	0.1046	–0.2896	–0.0027	0.0009	0.0011
0.500	30.01	0.96	0.2106	0.1502	–0.3743	0.0069	–0.0022	0.0014	0.2106	0.1502	–0.3743	0.0069	–0.0022	0.0014
0.501	–0.01	4.14	–0.0651	–0.1310	0.0895	–0.0202	0.0096	–0.0008	–0.0703	0.0348	0.0995	–0.0185	0.0079	–0.0010
0.502	5.00	4.17	–0.0118	–0.1288	0.0326	–0.0193	0.0093	–0.0005	–0.0316	0.0367	0.0427	–0.0175	0.0076	–0.0006
0.502	9.99	4.15	0.0310	–0.1216	–0.0203	–0.0150	0.0078	–0.0004	–0.0029	0.0403	–0.0103	–0.0132	0.0062	–0.0006
0.500	14.98	4.17	0.1042	–0.1084	–0.1213	–0.0108	0.0064	0.0010	0.0557	0.0524	–0.1111	–0.0090	0.0047	0.0009
0.501	19.98	4.14	0.1783	–0.0736	–0.2205	–0.0181	0.0089	0.0012	0.1168	0.0802	–0.2105	–0.0163	0.0072	0.0010
0.502	25.00	4.17	0.2472	–0.0254	–0.3179	–0.0209	0.0096	0.0011	0.1721	0.1232	–0.3078	–0.0191	0.0078	0.0010
0.499	29.97	4.16	0.3047	0.0273	–0.4089	–0.0131	0.0072	0.0017	0.2161	0.1702	–0.3987	–0.0113	0.0055	0.0016

Table 37. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
1.98	0.8084	0.7984	8.31	-3.61	−0.0084	0.0012	−0.0023	−0.0005	0.0003	0.0000
3.00	0.7864	0.7764	7.81	−4.85	−0.0158	0.0022	−0.0043	−0.0013	0.0009	0.0001
4.13	0.7588	0.7444	8.16	−7.71	−0.0232	0.0033	−0.0067	−0.0031	0.0018	0.0002
5.03	0.7481	0.7294	8.80	−9.48	−0.0291	0.0045	−0.0089	−0.0049	0.0028	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	0.01	1.00	−0.0706	0.0161	0.0998	−0.0078	0.0022	−0.0002	−0.0706	0.0161	0.0998	−0.0078	0.0022	−0.0002
0.302	−0.02	2.03	−0.0426	−0.1022	0.0557	−0.0241	0.0125	−0.0006	−0.0624	0.0349	0.0936	−0.0152	0.0066	−0.0011
0.301	0.02	3.02	−0.0199	−0.1998	0.0153	−0.0428	0.0240	−0.0004	−0.0547	0.0527	0.0836	−0.0210	0.0101	−0.0016
0.301	−0.02	4.15	0.0074	−0.3016	−0.0380	−0.0751	0.0425	0.0003	−0.0453	0.0660	0.0679	−0.0252	0.0129	−0.0019
0.301	−0.03	5.04	0.0292	−0.3864	−0.0796	−0.0983	0.0558	0.0010	−0.0417	0.0724	0.0606	−0.0217	0.0120	−0.0021
0.301	15.00	1.00	0.0376	0.0470	−0.0817	0.0180	−0.0052	0.0017	0.0376	0.0470	−0.0817	0.0180	−0.0052	0.0017
0.301	15.02	2.03	0.0867	−0.0627	−0.1198	0.0000	0.0049	0.0017	0.0319	0.0648	−0.0818	0.0090	−0.0010	0.0013
0.301	14.99	3.03	0.1349	−0.1510	−0.1625	−0.0251	0.0185	0.0019	0.0360	0.0841	−0.0941	−0.0031	0.0044	0.0007
0.302	14.98	4.18	0.1961	−0.2433	−0.2259	−0.0602	0.0378	0.0025	0.0490	0.1001	−0.1192	−0.0094	0.0078	0.0003
0.301	14.99	5.03	0.2427	−0.3164	−0.2723	−0.0861	0.0513	0.0031	0.0561	0.1069	−0.1325	−0.0098	0.0078	0.0001
0.298	25.02	0.99	0.1407	0.1217	−0.2681	0.0027	−0.0005	0.0024	0.1407	0.1217	−0.2681	0.0027	−0.0005	0.0024
0.299	25.02	2.04	0.2223	0.0206	−0.3203	−0.0193	0.0112	0.0022	0.1442	0.1397	−0.2813	−0.0100	0.0051	0.0017
0.299	24.99	2.99	0.2866	−0.0547	−0.3668	−0.0427	0.0240	0.0026	0.1488	0.1591	−0.2987	−0.0213	0.0103	0.0014
0.299	25.02	4.14	0.3678	−0.1358	−0.4362	−0.0811	0.0443	0.0030	0.1619	0.1790	−0.3290	−0.0306	0.0143	0.0008
0.299	24.98	5.05	0.4327	−0.2047	−0.4887	−0.1115	0.0598	0.0035	0.1704	0.1872	−0.3462	−0.0335	0.0152	0.0003
0.299	45.00	0.98	0.2507	0.2668	−0.5188	−0.0008	0.0003	0.0028	0.2507	0.2668	−0.5188	−0.0008	0.0003	0.0028
0.298	45.02	1.98	0.3810	0.2028	−0.5990	−0.0117	0.0065	0.0029	0.2722	0.2838	−0.5618	−0.0032	0.0009	0.0024
0.298	44.98	2.97	0.4831	0.1423	−0.6523	−0.0301	0.0158	0.0027	0.2808	0.2959	−0.5843	−0.0088	0.0021	0.0016
0.298	45.01	4.15	0.5953	0.0808	−0.7176	−0.0623	0.0329	0.0034	0.2903	0.3091	−0.6089	−0.0109	0.0024	0.0012
0.301	44.98	5.01	0.6731	0.0415	−0.7657	−0.0901	0.0468	0.0034	0.2998	0.3150	−0.6261	−0.0141	0.0033	0.0003
0.298	60.00	0.97	0.1966	0.3912	−0.6121	0.0017	0.0002	0.0042	0.1966	0.3912	−0.6121	0.0017	0.0002	0.0042
0.298	60.02	2.01	0.3473	0.3548	−0.6862	−0.0144	0.0083	0.0044	0.2182	0.4061	−0.6482	−0.0055	0.0024	0.0039
0.300	60.01	2.99	0.4642	0.3288	−0.7469	−0.0302	0.0166	0.0041	0.2307	0.4240	−0.6794	−0.0090	0.0030	0.0030
0.301	60.01	4.14	0.5859	0.3020	−0.8121	−0.0647	0.0341	0.0046	0.2426	0.4395	−0.7068	−0.0151	0.0046	0.0024
0.301	59.97	5.02	0.6827	0.2825	−0.8662	−0.0953	0.0494	0.0046	0.2525	0.4496	−0.7270	−0.0194	0.0060	0.0016
0.300	−0.01	1.00	−0.0723	0.0146	0.1014	−0.0036	0.0013	−0.0004	−0.0723	0.0146	0.1014	−0.0036	0.0013	−0.0004
0.301	4.99	1.00	−0.0351	0.0214	0.0482	−0.0027	0.0011	0.0000	−0.0351	0.0214	0.0482	−0.0027	0.0011	0.0000
0.301	10.01	1.00	−0.0035	0.0321	−0.0052	−0.0005	0.0004	0.0001	−0.0035	0.0321	−0.0052	−0.0005	0.0004	0.0001
0.301	15.00	1.00	0.0376	0.0470	−0.0817	0.0180	−0.0052	0.0017	0.0376	0.0470	−0.0817	0.0180	−0.0052	0.0017
0.299	19.98	1.00	0.0911	0.0780	−0.1762	0.0056	−0.0014	0.0018	0.0911	0.0780	−0.1762	0.0056	−0.0014	0.0018
0.298	25.02	0.99	0.1407	0.1217	−0.2681	0.0027	−0.0005	0.0024	0.1407	0.1217	−0.2681	0.0027	−0.0005	0.0024
0.299	30.01	0.99	0.1803	0.1706	−0.3561	0.0063	−0.0016	0.0030	0.1803	0.1706	−0.3561	0.0063	−0.0016	0.0030

Table 37. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.299	31.59	0.99	0.1922	0.1855	–0.3818	0.0093	–0.0026	0.0033	0.1922	0.1855	–0.3818	0.0093	–0.0026	0.0033
0.299	35.12	0.99	0.2112	0.1449	–0.3878	0.0084	–0.0025	0.0026	0.2112	0.1449	–0.3878	0.0084	–0.0025	0.0026
0.299	38.01	0.98	0.2253	0.1792	–0.4278	0.0065	–0.0024	0.0022	0.2253	0.1792	–0.4278	0.0065	–0.0024	0.0022
0.299	40.03	0.98	0.2332	0.2022	–0.4546	0.0052	–0.0017	0.0018	0.2332	0.2022	–0.4546	0.0052	–0.0017	0.0018
0.298	42.03	0.98	0.2458	0.2316	–0.4898	0.0108	–0.0031	0.0030	0.2458	0.2316	–0.4898	0.0108	–0.0031	0.0030
0.299	45.02	0.98	0.2487	0.2631	–0.5182	0.0027	–0.0008	0.0022	0.2487	0.2631	–0.5182	0.0027	–0.0008	0.0022
0.305	49.99	0.98	0.2485	0.3143	–0.5672	–0.0030	0.0010	0.0017	0.2485	0.3143	–0.5672	–0.0030	0.0010	0.0017
0.303	50.00	0.98	0.2474	0.3148	–0.5675	–0.0012	0.0005	0.0018	0.2474	0.3148	–0.5675	–0.0012	0.0005	0.0018
0.297	55.01	0.98	0.2250	0.3571	–0.5909	0.0037	–0.0004	0.0045	0.2250	0.3571	–0.5909	0.0037	–0.0004	0.0045
0.298	60.02	0.97	0.1954	0.3926	–0.6131	0.0025	0.0002	0.0043	0.1954	0.3926	–0.6131	0.0025	0.0002	0.0043
0.301	65.01	0.97	0.1753	0.4484	–0.6727	0.0065	–0.0013	0.0043	0.1753	0.4484	–0.6727	0.0065	–0.0013	0.0043
0.299	68.24	0.97	0.1577	0.4897	–0.7200	0.0118	–0.0029	0.0057	0.1577	0.4897	–0.7200	0.0118	–0.0029	0.0057
0.303	–0.05	4.18	0.0032	–0.3008	–0.0350	–0.0715	0.0418	0.0003	–0.0494	0.0660	0.0710	–0.0211	0.0120	–0.0018
0.303	5.02	4.18	0.0689	–0.2854	–0.0899	–0.0695	0.0411	0.0010	–0.0157	0.0746	0.0158	–0.0193	0.0114	–0.0012
0.301	10.00	4.17	0.1248	–0.2699	–0.1435	–0.0712	0.0416	0.0006	0.0078	0.0859	–0.0365	–0.0204	0.0115	–0.0016
0.301	14.98	4.20	0.1964	–0.2426	–0.2252	–0.0539	0.0362	0.0025	0.0478	0.1042	–0.1172	–0.0022	0.0056	0.0003
0.298	19.97	4.17	0.2883	–0.2009	–0.3365	–0.0720	0.0420	0.0028	0.1085	0.1348	–0.2277	–0.0203	0.0114	0.0005
0.298	25.02	4.18	0.3663	–0.1404	–0.4344	–0.0791	0.0440	0.0031	0.1573	0.1787	–0.3253	–0.0271	0.0132	0.0009
0.298	29.98	4.17	0.4373	–0.0716	–0.5347	–0.0701	0.0414	0.0044	0.2010	0.2290	–0.4255	–0.0183	0.0107	0.0021
0.303	31.31	4.18	0.4484	–0.0446	–0.5555	–0.0684	0.0403	0.0044	0.2128	0.2410	–0.4497	–0.0180	0.0105	0.0023
0.298	34.81	4.14	0.5012	–0.0946	–0.5637	–0.0561	0.0317	0.0037	0.2441	0.1813	–0.4563	–0.0055	0.0017	0.0016
0.298	38.00	4.14	0.5374	–0.0387	–0.6218	–0.0473	0.0281	0.0044	0.2652	0.2226	–0.5143	0.0033	–0.0019	0.0021
0.298	39.98	4.14	0.5536	–0.0059	–0.6503	–0.0554	0.0307	0.0037	0.2726	0.2458	–0.5429	–0.0048	0.0007	0.0015
0.298	42.00	4.14	0.5714	0.0276	–0.6794	–0.0549	0.0308	0.0039	0.2801	0.2706	–0.5714	–0.0039	0.0005	0.0017
0.299	44.98	4.14	0.5885	0.0789	–0.7127	–0.0574	0.0313	0.0037	0.2876	0.3044	–0.6056	–0.0068	0.0012	0.0015
0.299	49.97	4.14	0.6008	0.1509	–0.7471	–0.0668	0.0348	0.0041	0.2808	0.3498	–0.6397	–0.0161	0.0047	0.0019
0.301	54.96	4.14	0.6043	0.2317	–0.7887	–0.0645	0.0343	0.0051	0.2725	0.3998	–0.6827	–0.0145	0.0046	0.0030
0.298	59.98	4.14	0.5930	0.2967	–0.8126	–0.0649	0.0346	0.0052	0.2419	0.4375	–0.7048	–0.0140	0.0044	0.0030
0.297	64.99	4.14	0.5708	0.3655	–0.8383	–0.0654	0.0348	0.0051	0.2071	0.4755	–0.7300	–0.0143	0.0044	0.0029
0.298	68.02	4.14	0.5464	0.4027	–0.8458	–0.0637	0.0342	0.0058	0.1794	0.4929	–0.7381	–0.0129	0.0041	0.0036
0.502	0.01	0.99	–0.0751	0.0179	0.1043	–0.0052	0.0017	–0.0003	–0.0751	0.0179	0.1043	–0.0052	0.0017	–0.0003
0.502	0.01	1.99	–0.0625	–0.0236	0.0847	–0.0138	0.0064	–0.0004	–0.0695	0.0246	0.0981	–0.0107	0.0044	–0.0006
0.501	–0.01	2.01	–0.0630	–0.0241	0.0857	–0.0123	0.0060	–0.0005	–0.0702	0.0249	0.0993	–0.0092	0.0039	–0.0007
0.501	–0.02	2.99	–0.0510	–0.0583	0.0655	–0.0209	0.0109	–0.0004	–0.0633	0.0315	0.0898	–0.0133	0.0059	–0.0009
0.499	4.80	4.13	0.0103	–0.0923	–0.0120	–0.0310	0.0168	0.0000	–0.0199	0.0387	0.0263	–0.0130	0.0061	–0.0008
0.500	–0.01	4.19	–0.0362	–0.0973	0.0399	–0.0328	0.0178	–0.0003	–0.0556	0.0375	0.0788	–0.0143	0.0068	–0.0010
0.500	–0.02	5.02	–0.0288	–0.1263	0.0260	–0.0405	0.0220	–0.0002	–0.0544	0.0396	0.0767	–0.0129	0.0063	–0.0013
0.501	15.00	0.99	0.0572	0.0350	–0.1053	0.0052	–0.0016	0.0013	0.0572	0.0350	–0.1053	0.0052	–0.0016	0.0013
0.500	15.00	1.98	0.0817	–0.0019	–0.1276	–0.0020	0.0025	0.0012	0.0626	0.0426	–0.1143	0.0010	0.0005	0.0010
0.500	14.99	3.00	0.1036	–0.0334	–0.1488	–0.0100	0.0072	0.0013	0.0682	0.0508	–0.1244	–0.0023	0.0023	0.0010
0.500	14.97	4.19	0.1266	–0.0676	–0.1728	–0.0225	0.0139	0.0013	0.0729	0.0578	–0.1338	–0.0039	0.0028	0.0004
0.500	14.97	5.01	0.1449	–0.0924	–0.1920	–0.0320	0.0186	0.0013	0.0775	0.0607	–0.1415	–0.0045	0.0029	0.0002
0.501	24.99	0.97	0.1689	0.1055	–0.2892	–0.0008	0.0004	0.0013	0.1689	0.1055	–0.2892	–0.0008	0.0004	0.0013
0.501	24.99	2.05	0.2040	0.0695	–0.3180	–0.0096	0.0051	0.0014	0.1760	0.1121	–0.3040	–0.0063	0.0029	0.0012
0.500	24.97	2.99	0.2276	0.0432	–0.3366	–0.0183	0.0095	0.0013	0.1785	0.1195	–0.3123	–0.0106	0.0046	0.0009

Table 37. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.500	24.98	4.19	0.2596	0.0136	–0.3651	–0.0313	0.0165	0.0013	0.1848	0.1279	–0.3260	–0.0127	0.0054	0.0004
0.500	24.96	5.02	0.2831	–0.0082	–0.3864	–0.0419	0.0215	0.0014	0.1900	0.1312	–0.3358	–0.0143	0.0058	0.0003
0.502	0.02	0.99	–0.0753	0.0180	0.1051	–0.0062	0.0020	–0.0003	–0.0753	0.0180	0.1051	–0.0062	0.0020	–0.0003
0.500	4.99	0.99	–0.0355	0.0189	0.0499	–0.0052	0.0017	–0.0001	–0.0355	0.0189	0.0499	–0.0052	0.0017	–0.0001
0.504	9.98	0.99	–0.0025	0.0229	–0.0050	–0.0029	0.0010	–0.0003	–0.0025	0.0229	–0.0050	–0.0029	0.0010	–0.0003
0.501	15.00	0.99	0.0580	0.0354	–0.1057	0.0046	–0.0016	0.0013	0.0580	0.0354	–0.1057	0.0046	–0.0016	0.0013
0.502	19.98	0.98	0.1158	0.0637	–0.1984	–0.0006	0.0003	0.0012	0.1158	0.0637	–0.1984	–0.0006	0.0003	0.0012
0.500	25.00	0.97	0.1692	0.1054	–0.2894	–0.0015	0.0005	0.0015	0.1692	0.1054	–0.2894	–0.0015	0.0005	0.0015
0.502	29.99	0.96	0.2105	0.1506	–0.3739	0.0063	–0.0019	0.0017	0.2105	0.1506	–0.3739	0.0063	–0.0019	0.0017
0.499	0.02	4.11	–0.0366	–0.0962	0.0409	–0.0336	0.0176	–0.0004	–0.0556	0.0361	0.0790	–0.0158	0.0071	–0.0012
0.500	5.01	4.11	0.0122	–0.0918	–0.0142	–0.0317	0.0170	0.0000	–0.0183	0.0382	0.0237	–0.0139	0.0064	–0.0008
0.500	9.98	4.13	0.0509	–0.0837	–0.0663	–0.0284	0.0158	0.0000	0.0092	0.0438	–0.0281	–0.0105	0.0051	–0.0008
0.503	14.98	4.16	0.1258	–0.0673	–0.1725	–0.0243	0.0141	0.0014	0.0732	0.0555	–0.1344	–0.0062	0.0034	0.0006
0.502	19.98	4.15	0.1925	–0.0327	–0.2657	–0.0306	0.0160	0.0013	0.1293	0.0853	–0.2275	–0.0126	0.0053	0.0005
0.499	24.98	4.15	0.2589	0.0141	–0.3634	–0.0330	0.0167	0.0016	0.1848	0.1275	–0.3247	–0.0147	0.0059	0.0008
0.500	29.94	4.15	0.3131	0.0684	–0.4552	–0.0245	0.0142	0.0023	0.2297	0.1747	–0.4167	–0.0063	0.0034	0.0015

Table 38. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 15°;\ \delta_{B,E} = 25°;\ \delta_{C,F} = -10°\right]$

(a) Static (M = 0) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	$C_{F,j}$	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.01	0.8740	0.8706	−1.07	−4.94	−0.0094	−0.0002	0.0004	−0.0008	0.0005	0.0000
3.00	0.8586	0.8542	−0.32	−5.80	−0.0173	−0.0001	0.0003	−0.0018	0.0010	0.0000
4.15	0.8354	0.8297	1.30	−6.60	−0.0260	0.0006	−0.0012	−0.0030	0.0017	0.0001
5.02	0.8167	0.8094	2.32	−7.31	−0.0322	0.0013	−0.0029	−0.0041	0.0024	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.297	0.03	1.00	−0.0729	0.0121	0.1012	−0.0109	0.0029	−0.0007	−0.0729	0.0121	0.1012	−0.0109	0.0029	−0.0007
0.300	−0.01	2.00	−0.0748	−0.1245	0.1090	−0.0309	0.0132	−0.0012	−0.0720	0.0235	0.1032	−0.0181	0.0051	−0.0013
0.300	0.01	3.00	−0.0714	−0.2477	0.1053	−0.0463	0.0220	−0.0011	−0.0699	0.0259	0.1011	−0.0186	0.0055	−0.0017
0.301	0.02	4.00	−0.0550	−0.3630	0.0780	−0.0617	0.0318	−0.0005	−0.0630	0.0294	0.0937	−0.0168	0.0052	−0.0018
0.298	0.01	4.15	−0.0506	−0.3873	0.0711	−0.0654	0.0341	−0.0003	−0.0601	0.0297	0.0900	−0.0172	0.0055	−0.0018
0.299	0.01	5.01	−0.0288	−0.4828	0.0324	−0.0821	0.0442	0.0001	−0.0496	0.0300	0.0777	−0.0164	0.0056	−0.0021
0.299	15.00	1.00	0.0420	0.0465	−0.0857	0.0131	−0.0047	0.0010	0.0420	0.0465	−0.0857	0.0131	−0.0047	0.0010
0.298	14.98	2.00	0.0739	−0.0904	−0.0772	−0.0022	0.0044	0.0010	0.0379	0.0552	−0.0832	0.0108	−0.0038	0.0009
0.299	15.00	3.00	0.1054	−0.2099	−0.0778	−0.0151	0.0123	0.0012	0.0355	0.0569	−0.0820	0.0128	−0.0044	0.0006
0.299	14.98	4.15	0.1539	−0.3368	−0.1070	−0.0417	0.0264	0.0018	0.0375	0.0619	−0.0881	0.0064	−0.0020	0.0004
0.299	15.00	5.01	0.2007	−0.4253	−0.1476	−0.0613	0.0374	0.0025	0.0477	0.0654	−0.1021	0.0045	−0.0013	0.0003
0.299	25.02	0.99	0.1413	0.1193	−0.2678	−0.0053	0.0011	0.0018	0.1413	0.1193	−0.2678	−0.0053	0.0011	0.0018
0.300	24.99	2.00	0.2012	−0.0087	−0.2671	−0.0207	0.0101	0.0015	0.1409	0.1271	−0.2730	−0.0079	0.0019	0.0013
0.300	25.00	2.99	0.2577	−0.1196	−0.2743	−0.0366	0.0190	0.0017	0.1434	0.1293	−0.2784	−0.0088	0.0024	0.0010
0.300	24.97	4.15	0.3333	−0.2346	−0.3112	−0.0597	0.0320	0.0022	0.1501	0.1365	−0.2923	−0.0119	0.0037	0.0008
0.300	24.97	5.04	0.3946	−0.3135	−0.3520	−0.0829	0.0440	0.0027	0.1590	0.1429	−0.3061	−0.0170	0.0052	0.0005
0.301	45.01	0.98	0.2494	0.2660	−0.5184	0.0006	−0.0003	0.0027	0.2494	0.2660	−0.5184	0.0006	−0.0003	0.0027
0.300	44.99	2.01	0.3599	0.1656	−0.5327	−0.0164	0.0091	0.0024	0.2564	0.2731	−0.5386	−0.0035	0.0010	0.0024
0.300	44.99	3.01	0.4547	0.0813	−0.5471	−0.0345	0.0185	0.0024	0.2610	0.2771	−0.5510	−0.0064	0.0017	0.0017
0.300	45.02	4.15	0.5641	0.0029	−0.5880	−0.0565	0.0304	0.0031	0.2660	0.2876	−0.5692	−0.0089	0.0022	0.0017
0.300	44.98	5.01	0.6520	−0.0462	−0.6379	−0.0797	0.0424	0.0035	0.2780	0.2990	−0.5930	−0.0146	0.0041	0.0013
0.301	59.99	0.98	0.1978	0.3905	−0.6107	−0.0003	0.0009	0.0045	0.1978	0.3905	−0.6107	−0.0003	0.0009	0.0045
0.300	60.00	2.02	0.3313	0.3178	−0.6158	−0.0205	0.0110	0.0037	0.2025	0.3954	−0.6217	−0.0074	0.0028	0.0036
0.300	59.97	3.03	0.4459	0.2578	−0.6264	−0.0388	0.0203	0.0031	0.2053	0.3984	−0.6301	−0.0104	0.0034	0.0025
0.299	59.97	4.15	0.5792	0.2142	−0.6757	−0.0633	0.0331	0.0042	0.2136	0.4146	−0.6566	−0.0151	0.0045	0.0028
0.299	59.98	5.02	0.6834	0.1884	−0.7272	−0.0887	0.0457	0.0047	0.2271	0.4279	−0.6815	−0.0227	0.0069	0.0024
0.297	0.03	1.00	−0.0729	0.0121	0.1012	−0.0109	0.0029	−0.0007	−0.0729	0.0121	0.1012	−0.0109	0.0029	−0.0007
0.298	4.99	1.00	−0.0335	0.0199	0.0474	−0.0088	0.0024	−0.0004	−0.0335	0.0199	0.0474	−0.0088	0.0024	−0.0004
0.299	10.01	1.00	−0.0029	0.0304	−0.0049	−0.0079	0.0020	−0.0003	−0.0029	0.0304	−0.0049	−0.0079	0.0020	−0.0003
0.299	15.00	1.00	0.0389	0.0466	−0.0824	0.0139	−0.0047	0.0011	0.0389	0.0466	−0.0824	0.0139	−0.0047	0.0011
0.299	20.03	0.99	0.0937	0.0776	−0.1783	0.0013	−0.0008	0.0012	0.0937	0.0776	−0.1783	0.0013	−0.0008	0.0012
0.302	25.01	0.99	0.1418	0.1195	−0.2671	−0.0027	0.0005	0.0017	0.1418	0.1195	−0.2671	−0.0027	0.0005	0.0017

Table 38. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.300	29.99	0.99	0.1805	0.1678	−0.3536	0.0046	−0.0017	0.0026	0.1805	0.1678	−0.3536	0.0046	−0.0017	0.0026
0.298	31.68	0.99	0.1909	0.1862	−0.3806	0.0035	−0.0015	0.0024	0.1909	0.1862	−0.3806	0.0035	−0.0015	0.0024
0.301	35.09	0.99	0.2129	0.1478	−0.3886	0.0005	−0.0004	0.0024	0.2129	0.1478	−0.3886	0.0005	−0.0004	0.0024
0.299	38.01	0.98	0.2260	0.1818	−0.4273	0.0032	−0.0016	0.0023	0.2260	0.1818	−0.4273	0.0032	−0.0016	0.0023
0.298	40.02	0.98	0.2357	0.2065	−0.4564	0.0014	−0.0007	0.0021	0.2357	0.2065	−0.4564	0.0014	−0.0007	0.0021
0.301	42.00	0.98	0.2464	0.2340	−0.4894	0.0019	−0.0009	0.0023	0.2464	0.2340	−0.4894	0.0019	−0.0009	0.0023
0.301	44.99	0.98	0.2494	0.2651	−0.5177	0.0004	−0.0003	0.0025	0.2494	0.2651	−0.5177	0.0004	−0.0003	0.0025
0.300	50.03	0.97	0.2483	0.3189	−0.5688	−0.0036	0.0010	0.0024	0.2483	0.3189	−0.5688	−0.0036	0.0010	0.0024
0.298	54.99	0.97	0.2265	0.3606	−0.5925	−0.0008	0.0007	0.0046	0.2265	0.3606	−0.5925	−0.0008	0.0007	0.0046
0.297	60.02	0.97	0.1974	0.3956	−0.6143	−0.0021	0.0012	0.0044	0.1974	0.3956	−0.6143	−0.0021	0.0012	0.0044
0.299	64.99	0.97	0.1775	0.4536	−0.6773	0.0026	−0.0003	0.0044	0.1775	0.4536	−0.6773	0.0026	−0.0003	0.0044
0.298	68.24	0.96	0.1586	0.4893	−0.7168	0.0073	−0.0017	0.0058	0.1586	0.4893	−0.7168	0.0073	−0.0017	0.0058
0.300	0.01	4.16	−0.0560	−0.3846	0.0760	−0.0618	0.0330	−0.0008	−0.0656	0.0291	0.0951	−0.0138	0.0047	−0.0022
0.297	4.99	4.14	0.0187	−0.3796	0.0188	−0.0603	0.0328	−0.0002	−0.0271	0.0375	0.0378	−0.0118	0.0042	−0.0016
0.298	10.01	4.16	0.0842	−0.3609	−0.0363	−0.0563	0.0315	0.0000	0.0020	0.0502	−0.0170	−0.0077	0.0028	−0.0015
0.299	15.02	4.15	0.1553	−0.3368	−0.1084	−0.0364	0.0250	0.0018	0.0387	0.0614	−0.0896	0.0115	−0.0033	0.0003
0.301	20.01	4.15	0.2479	−0.2910	−0.2124	−0.0510	0.0294	0.0020	0.0987	0.0917	−0.1937	−0.0035	0.0013	0.0006
0.298	24.98	4.14	0.3346	−0.2373	−0.3108	−0.0569	0.0315	0.0024	0.1499	0.1370	−0.2919	−0.0087	0.0030	0.0009
0.300	29.99	4.15	0.4086	−0.1657	−0.4088	−0.0506	0.0294	0.0033	0.1942	0.1870	−0.3900	−0.0029	0.0013	0.0019
0.299	31.53	4.15	0.4303	−0.1447	−0.4366	−0.0531	0.0301	0.0031	0.2053	0.2041	−0.4177	−0.0051	0.0018	0.0017
0.301	34.90	4.16	0.4703	−0.1622	−0.4483	−0.0561	0.0311	0.0035	0.2273	0.1695	−0.4292	−0.0084	0.0030	0.0021
0.302	37.97	4.16	0.5029	−0.1099	−0.4974	−0.0504	0.0286	0.0037	0.2441	0.2067	−0.4786	−0.0031	0.0005	0.0024
0.301	39.97	4.15	0.5257	−0.0778	−0.5299	−0.0563	0.0305	0.0034	0.2547	0.2310	−0.5111	−0.0088	0.0024	0.0020
0.301	41.97	4.15	0.5450	−0.0451	−0.5574	−0.0573	0.0307	0.0033	0.2632	0.2543	−0.5387	−0.0097	0.0026	0.0019
0.300	45.02	4.15	0.5672	0.0033	−0.5901	−0.0587	0.0311	0.0035	0.2694	0.2879	−0.5713	−0.0110	0.0030	0.0021
0.299	50.01	4.15	0.5887	0.0726	−0.6265	−0.0672	0.0340	0.0031	0.2632	0.3333	−0.6075	−0.0190	0.0055	0.0017
0.298	54.98	4.15	0.5952	0.1450	−0.6565	−0.0632	0.0331	0.0042	0.2476	0.3771	−0.6374	−0.0149	0.0045	0.0028
0.300	59.97	4.15	0.5795	0.2126	−0.6729	−0.0629	0.0330	0.0046	0.2169	0.4114	−0.6541	−0.0151	0.0048	0.0032
0.298	64.95	4.15	0.5695	0.2867	−0.7108	−0.0663	0.0342	0.0048	0.1865	0.4552	−0.6917	−0.0179	0.0057	0.0034
0.298	68.15	4.15	0.5522	0.3250	−0.7197	−0.0648	0.0339	0.0049	0.1606	0.4718	−0.7006	−0.0164	0.0053	0.0034
0.498	0.02	0.99	−0.0769	0.0189	0.1075	−0.0049	0.0017	−0.0003	−0.0769	0.0189	0.1075	−0.0049	0.0017	−0.0003
0.499	0.00	2.00	−0.0783	−0.0305	0.1098	−0.0132	0.0060	−0.0004	−0.0773	0.0230	0.1077	−0.0086	0.0031	−0.0005
0.499	0.02	3.00	−0.0753	−0.0746	0.1064	−0.0203	0.0097	−0.0004	−0.0748	0.0247	0.1049	−0.0103	0.0037	−0.0007
0.498	0.03	4.00	−0.0684	−0.1168	0.0946	−0.0274	0.0137	−0.0004	−0.0713	0.0267	0.1003	−0.0110	0.0040	−0.0009
0.498	0.02	4.16	−0.0668	−0.1235	0.0919	−0.0288	0.0144	−0.0003	−0.0703	0.0270	0.0989	−0.0114	0.0041	−0.0009
0.499	0.02	5.03	−0.0575	−0.1567	0.0760	−0.0353	0.0182	−0.0002	−0.0651	0.0280	0.0925	−0.0116	0.0043	−0.0010
0.499	15.03	0.98	0.0603	0.0384	−0.1066	0.0047	−0.0017	0.0009	0.0603	0.0384	−0.1066	0.0047	−0.0017	0.0009
0.499	15.00	2.01	0.0739	−0.0122	−0.1070	−0.0006	0.0015	0.0008	0.0609	0.0402	−0.1092	0.0041	−0.0014	0.0007
0.499	14.97	3.00	0.0864	−0.0542	−0.1094	−0.0058	0.0047	0.0009	0.0612	0.0419	−0.1108	0.0043	−0.0013	0.0006
0.499	14.99	4.15	0.1067	−0.0985	−0.1244	−0.0155	0.0098	0.0010	0.0649	0.0447	−0.1176	0.0018	−0.0004	0.0005
0.499	14.97	5.01	0.1239	−0.1294	−0.1400	−0.0225	0.0136	0.0012	0.0692	0.0467	−0.1237	0.0011	−0.0003	0.0004
0.500	25.00	0.97	0.1703	0.1055	−0.2906	−0.0020	0.0005	0.0010	0.1703	0.1055	−0.2906	−0.0020	0.0005	0.0010
0.499	25.02	1.99	0.1933	0.0610	−0.2954	−0.0087	0.0040	0.0010	0.1719	0.1092	−0.2975	−0.0041	0.0011	0.0009
0.499	24.99	3.00	0.2138	0.0206	−0.2990	−0.0154	0.0077	0.0010	0.1724	0.1106	−0.3005	−0.0053	0.0017	0.0009
0.499	24.97	4.13	0.2426	−0.0191	−0.3168	−0.0260	0.0130	0.0011	0.1768	0.1142	−0.3101	−0.0088	0.0028	0.0006

Table 38. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.499	25.01	5.00	0.2663	–0.0462	–0.3348	–0.0330	0.0168	0.0013	0.1818	0.1175	–0.3186	–0.0094	0.0030	0.0005
0.500	0.01	0.99	–0.0750	0.0178	0.1047	–0.0087	0.0025	–0.0004	–0.0750	0.0178	0.1047	–0.0087	0.0025	–0.0004
0.501	4.99	0.99	–0.0347	0.0188	0.0492	–0.0076	0.0022	–0.0003	–0.0347	0.0188	0.0492	–0.0076	0.0022	–0.0003
0.502	9.99	0.99	–0.0027	0.0228	–0.0045	–0.0043	0.0012	–0.0005	–0.0027	0.0228	–0.0045	–0.0043	0.0012	–0.0005
0.499	15.02	0.99	0.0587	0.0355	–0.1064	0.0026	–0.0011	0.0010	0.0587	0.0355	–0.1064	0.0026	–0.0011	0.0010
0.500	19.98	0.98	0.1165	0.0639	–0.1982	–0.0014	0.0003	0.0010	0.1165	0.0639	–0.1982	–0.0014	0.0003	0.0010
0.499	25.00	0.97	0.1700	0.1055	–0.2901	–0.0036	0.0010	0.0010	0.1700	0.1055	–0.2901	–0.0036	0.0010	0.0010
0.500	29.98	0.96	0.2110	0.1511	–0.3745	0.0077	–0.0025	0.0015	0.2110	0.1511	–0.3745	0.0077	–0.0025	0.0015
0.500	0.00	4.16	–0.0665	–0.1222	0.0922	–0.0289	0.0140	–0.0007	–0.0699	0.0264	0.0991	–0.0117	0.0038	–0.0012
0.501	4.99	4.15	–0.0141	–0.1199	0.0354	–0.0274	0.0136	–0.0003	–0.0303	0.0271	0.0421	–0.0103	0.0035	–0.0009
0.499	9.98	4.13	0.0278	–0.1141	–0.0177	–0.0235	0.0122	–0.0003	–0.0012	0.0315	–0.0111	–0.0063	0.0021	–0.0008
0.501	14.99	4.14	0.1026	–0.0989	–0.1219	–0.0182	0.0104	0.0012	0.0613	0.0426	–0.1153	–0.0012	0.0003	0.0008
0.500	20.00	4.16	0.1756	–0.0671	–0.2190	–0.0256	0.0129	0.0012	0.1213	0.0720	–0.2121	–0.0083	0.0027	0.0007
0.499	25.00	4.16	0.2443	–0.0201	–0.3168	–0.0283	0.0137	0.0015	0.1780	0.1140	–0.3099	–0.0110	0.0034	0.0010
0.499	29.98	4.17	0.3004	0.0331	–0.4078	–0.0206	0.0112	0.0016	0.2226	0.1610	–0.4008	–0.0032	0.0009	0.0010

Table 39. Static and Aeropropulsive Performance Characteristics at Military Power

$\left[\delta_{A,D} = 25°;\ \delta_{B,E} = 15°;\ \delta_{C,F} = -10°\right]$

(a) Static ($M = 0$) performance characteristics

NPR	F_r/F_i	F_j/F_i	δ_p, deg	δ_y, deg	C_{F_j}	$C_{F,N}$	C_m	$C_{F,S}$	C_n	C_l
2.02	0.8427	0.8307	9.62	0.77	−0.0090	0.0015	−0.0028	0.0001	0.0001	0.0000
3.01	0.8211	0.8110	8.96	−0.70	−0.0164	0.0026	−0.0050	−0.0002	0.0003	0.0001
4.15	0.8018	0.7908	8.86	−3.48	−0.0247	0.0038	−0.0075	−0.0015	0.0010	0.0001
5.01	0.7900	0.7771	8.98	−5.32	−0.0307	0.0049	−0.0094	−0.0029	0.0017	0.0002

(b) Aeropropulsive performance characteristics

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.302	0.01	1.00	−0.0700	0.0182	0.0983	−0.0097	0.0029	−0.0003	−0.0700	0.0182	0.0983	−0.0097	0.0029	−0.0003
0.302	0.00	2.00	−0.0303	−0.1128	0.0343	−0.0119	0.0051	−0.0003	−0.0539	0.0264	0.0780	−0.0138	0.0043	−0.0007
0.300	−0.02	3.00	−0.0024	−0.2328	−0.0158	−0.0153	0.0085	0.0000	−0.0433	0.0268	0.0634	−0.0122	0.0041	−0.0010
0.301	0.01	4.16	0.0178	−0.3610	−0.0549	−0.0301	0.0185	0.0007	−0.0433	0.0304	0.0637	−0.0061	0.0024	−0.0010
0.299	0.00	4.99	0.0323	−0.4579	−0.0839	−0.0483	0.0291	0.0013	−0.0449	0.0309	0.0653	−0.0032	0.0018	−0.0010
0.299	15.00	1.00	0.0380	0.0485	−0.0826	0.0140	−0.0045	0.0013	0.0380	0.0485	−0.0826	0.0140	−0.0045	0.0013
0.299	15.01	1.99	0.1033	−0.0711	−0.1417	0.0094	−0.0016	0.0016	0.0440	0.0582	−0.0977	0.0075	−0.0024	0.0012
0.300	15.01	3.00	0.1625	−0.1784	−0.1934	0.0035	0.0024	0.0020	0.0553	0.0625	−0.1139	0.0066	−0.0019	0.0011
0.299	15.00	4.18	0.2198	−0.2990	−0.2385	−0.0187	0.0147	0.0027	0.0573	0.0684	−0.1182	0.0059	−0.0017	0.0009
0.300	15.00	4.98	0.2619	−0.3826	−0.2726	−0.0368	0.0253	0.0033	0.0621	0.0667	−0.1244	0.0080	−0.0018	0.0010
0.300	25.02	0.99	0.1403	0.1206	−0.2672	−0.0037	0.0010	0.0022	0.1403	0.1206	−0.2672	−0.0037	0.0010	0.0022
0.300	24.99	1.98	0.2366	0.0188	−0.3411	−0.0109	0.0049	0.0024	0.1575	0.1335	−0.2979	−0.0128	0.0040	0.0021
0.300	24.97	3.00	0.3157	−0.0776	−0.3960	−0.0196	0.0097	0.0030	0.1694	0.1398	−0.3171	−0.0165	0.0053	0.0022
0.300	24.99	4.16	0.3972	−0.1840	−0.4472	−0.0439	0.0224	0.0033	0.1759	0.1460	−0.3283	−0.0198	0.0064	0.0015
0.300	24.97	4.99	0.4557	−0.2599	−0.4827	−0.0632	0.0331	0.0037	0.1816	0.1472	−0.3347	−0.0184	0.0061	0.0014
0.298	45.02	0.98	0.2493	0.2644	−0.5180	0.0049	−0.0013	0.0027	0.2493	0.2644	−0.5180	0.0049	−0.0013	0.0027
0.301	44.99	2.00	0.3894	0.2023	−0.6086	−0.0052	0.0032	0.0027	0.2744	0.2840	−0.5649	−0.0071	0.0024	0.0024
0.300	45.00	3.00	0.5001	0.1406	−0.6707	−0.0112	0.0071	0.0031	0.2882	0.2948	−0.5917	−0.0081	0.0028	0.0023
0.299	44.98	4.15	0.6134	0.0692	−0.7252	−0.0377	0.0205	0.0031	0.2923	0.3039	−0.6061	−0.0139	0.0045	0.0014
0.299	45.00	5.00	0.6999	0.0184	−0.7698	−0.0586	0.0317	0.0037	0.2977	0.3109	−0.6198	−0.0130	0.0043	0.0012
0.305	60.00	0.98	0.1997	0.3912	−0.6116	0.0038	0.0001	0.0048	0.1997	0.3912	−0.6116	0.0038	0.0001	0.0048
0.301	60.00	2.00	0.3518	0.3582	−0.6916	−0.0037	0.0037	0.0042	0.2192	0.4075	−0.6478	−0.0056	0.0028	0.0038
0.301	59.98	3.00	0.4807	0.3306	−0.7601	−0.0134	0.0085	0.0038	0.2368	0.4244	−0.6813	−0.0103	0.0042	0.0030
0.301	60.00	4.16	0.6109	0.2926	−0.8162	−0.0397	0.0218	0.0048	0.2422	0.4352	−0.6979	−0.0159	0.0059	0.0030
0.301	59.97	5.00	0.7034	0.2651	−0.8564	−0.0655	0.0346	0.0059	0.2472	0.4407	−0.7089	−0.0206	0.0076	0.0036
0.300	0.03	1.00	−0.0696	0.0147	0.0987	−0.0073	0.0022	−0.0003	−0.0696	0.0147	0.0987	−0.0073	0.0022	−0.0003
0.301	5.01	1.00	−0.0322	0.0218	0.0456	−0.0053	0.0017	−0.0002	−0.0322	0.0218	0.0456	−0.0053	0.0017	−0.0002
0.301	9.99	1.00	−0.0015	0.0327	−0.0071	−0.0042	0.0013	0.0001	−0.0015	0.0327	−0.0071	−0.0042	0.0013	0.0001
0.300	15.02	1.00	0.0386	0.0482	−0.0826	0.0159	−0.0050	0.0014	0.0386	0.0482	−0.0826	0.0159	−0.0050	0.0014
0.298	19.98	1.00	0.0932	0.0796	−0.1785	0.0035	−0.0010	0.0017	0.0932	0.0796	−0.1785	0.0035	−0.0010	0.0017
0.298	25.00	0.99	0.1418	0.1223	−0.2690	−0.0006	0.0002	0.0023	0.1418	0.1223	−0.2690	−0.0006	0.0002	0.0023
0.298	29.99	0.99	0.1787	0.1696	−0.3542	0.0049	−0.0015	0.0030	0.1787	0.1696	−0.3542	0.0049	−0.0015	0.0030

Table 39. Continued

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.303	31.66	0.99	0.1939	0.1873	−0.3848	0.0015	−0.0007	0.0030	0.1939	0.1873	−0.3848	0.0015	−0.0007	0.0030
0.299	35.06	0.99	0.2153	0.1491	−0.3909	0.0050	−0.0013	0.0025	0.2153	0.1491	−0.3909	0.0050	−0.0013	0.0025
0.299	38.01	0.98	0.2281	0.1836	−0.4312	0.0093	−0.0029	0.0027	0.2281	0.1836	−0.4312	0.0093	−0.0029	0.0027
0.299	40.03	0.98	0.2362	0.2071	−0.4586	0.0113	−0.0030	0.0032	0.2362	0.2071	−0.4586	0.0113	−0.0030	0.0032
0.299	42.03	0.98	0.2473	0.2341	−0.4911	0.0116	−0.0032	0.0033	0.2473	0.2341	−0.4911	0.0116	−0.0032	0.0033
0.298	45.02	0.98	0.2493	0.2644	−0.5180	0.0049	−0.0013	0.0027	0.2493	0.2644	−0.5180	0.0049	−0.0013	0.0027
0.297	49.99	0.98	0.2459	0.3164	−0.5662	0.0004	0.0003	0.0028	0.2459	0.3164	−0.5662	0.0004	0.0003	0.0028
0.302	54.99	0.98	0.2285	0.3575	−0.5922	0.0033	−0.0002	0.0046	0.2285	0.3575	−0.5922	0.0033	−0.0002	0.0046
0.296	60.03	0.97	0.1958	0.3938	−0.6126	0.0024	0.0002	0.0044	0.1958	0.3938	−0.6126	0.0024	0.0002	0.0044
0.299	65.01	0.97	0.1755	0.4544	−0.6788	0.0067	−0.0012	0.0046	0.1755	0.4544	−0.6788	0.0067	−0.0012	0.0046
0.298	68.22	0.97	0.1573	0.4907	−0.7196	0.0132	−0.0031	0.0059	0.1573	0.4907	−0.7196	0.0132	−0.0031	0.0059
0.300	0.00	4.16	0.0057	−0.3639	−0.0427	−0.0334	0.0195	0.0002	−0.0554	0.0286	0.0763	−0.0093	0.0036	−0.0016
0.301	5.02	4.15	0.0795	−0.3473	−0.0998	−0.0317	0.0190	0.0004	−0.0151	0.0355	0.0183	−0.0080	0.0032	−0.0013
0.301	9.95	4.18	0.1439	−0.3244	−0.1561	−0.0323	0.0190	0.0004	0.0157	0.0517	−0.0371	−0.0079	0.0029	−0.0013
0.300	15.02	4.15	0.2214	−0.2978	−0.2403	−0.0161	0.0141	0.0027	0.0604	0.0658	−0.1213	0.0079	−0.0018	0.0009
0.300	19.99	4.15	0.3131	−0.2481	−0.3460	−0.0315	0.0190	0.0030	0.1221	0.0987	−0.2275	−0.0077	0.0031	0.0012
0.298	24.99	4.15	0.3973	−0.1883	−0.4466	−0.0405	0.0217	0.0032	0.1739	0.1448	−0.3265	−0.0164	0.0057	0.0014
0.302	30.01	4.16	0.4645	−0.1088	−0.5415	−0.0340	0.0194	0.0040	0.2190	0.1958	−0.4243	−0.0104	0.0037	0.0023
0.301	31.38	4.16	0.4838	−0.0880	−0.5675	−0.0344	0.0194	0.0040	0.2296	0.2123	−0.4496	−0.0106	0.0037	0.0023
0.300	34.97	4.16	0.5225	−0.1070	−0.5769	−0.0313	0.0187	0.0038	0.2471	0.1799	−0.4579	−0.0072	0.0027	0.0020
0.300	37.98	4.16	0.5562	−0.0533	−0.6307	−0.0213	0.0152	0.0045	0.2662	0.2187	−0.5116	0.0027	−0.0008	0.0027
0.299	39.96	4.15	0.5754	−0.0205	−0.6600	−0.0311	0.0179	0.0035	0.2752	0.2422	−0.5405	−0.0070	0.0019	0.0017
0.299	41.97	4.15	0.5934	0.0141	−0.6895	−0.0297	0.0175	0.0037	0.2836	0.2664	−0.5698	−0.0057	0.0016	0.0019
0.298	44.96	4.15	0.6132	0.0636	−0.7230	−0.0362	0.0198	0.0035	0.2899	0.3000	−0.6031	−0.0122	0.0037	0.0017
0.300	49.98	4.16	0.6242	0.1420	−0.7582	−0.0453	0.0230	0.0036	0.2840	0.3478	−0.6391	−0.0213	0.0071	0.0018
0.298	55.00	4.16	0.6307	0.2159	−0.7918	−0.0377	0.0209	0.0045	0.2695	0.3932	−0.6714	−0.0134	0.0048	0.0028
0.301	59.96	4.14	0.6085	0.2877	−0.8111	−0.0379	0.0211	0.0056	0.2434	0.4292	−0.6938	−0.0145	0.0055	0.0038
0.299	64.95	4.15	0.5930	0.3604	−0.8448	−0.0413	0.0223	0.0057	0.2089	0.4719	−0.7251	−0.0172	0.0064	0.0039
0.297	68.00	4.15	0.5701	0.3906	−0.8414	−0.0459	0.0243	0.0064	0.1770	0.4824	−0.7205	−0.0217	0.0082	0.0046
0.502	0.02	0.99	−0.0761	0.0181	0.1061	−0.0041	0.0014	−0.0005	−0.0761	0.0181	0.1061	−0.0041	0.0014	−0.0005
0.501	0.03	2.00	−0.0587	−0.0298	0.0791	−0.0054	0.0025	−0.0005	−0.0673	0.0209	0.0951	−0.0061	0.0022	−0.0007
0.500	0.02	2.99	−0.0466	−0.0708	0.0587	−0.0080	0.0042	−0.0005	−0.0613	0.0224	0.0871	−0.0069	0.0026	−0.0008
0.500	0.00	4.16	−0.0357	−0.1170	0.0396	−0.0155	0.0085	−0.0003	−0.0577	0.0243	0.0824	−0.0069	0.0028	−0.0010
0.499	−0.01	4.99	−0.0282	−0.1507	0.0263	−0.0222	0.0125	−0.0001	−0.0559	0.0246	0.0798	−0.0060	0.0027	−0.0010
0.499	15.03	0.99	0.0566	0.0359	−0.1041	0.0062	−0.0019	0.0013	0.0566	0.0359	−0.1041	0.0062	−0.0019	0.0013
0.499	15.01	2.00	0.0875	−0.0070	−0.1342	0.0036	−0.0006	0.0013	0.0659	0.0401	−0.1181	0.0029	−0.0010	0.0012
0.499	14.97	2.99	0.1092	−0.0443	−0.1540	0.0005	0.0012	0.0015	0.0708	0.0423	−0.1255	0.0016	−0.0003	0.0011
0.500	14.99	4.15	0.1337	−0.0859	−0.1762	−0.0076	0.0057	0.0017	0.0759	0.0448	−0.1334	0.0009	0.0000	0.0010
0.500	14.98	4.99	0.1499	−0.1166	−0.1901	−0.0154	0.0098	0.0017	0.0779	0.0454	−0.1366	0.0008	0.0000	0.0008
0.500	24.99	0.97	0.1699	0.1061	−0.2906	−0.0003	0.0003	0.0013	0.1699	0.1061	−0.2906	−0.0003	0.0003	0.0013
0.499	24.98	2.00	0.2084	0.0675	−0.3231	−0.0041	0.0020	0.0014	0.1791	0.1098	−0.3072	−0.0047	0.0017	0.0013
0.499	24.98	2.99	0.2379	0.0343	−0.3461	−0.0074	0.0037	0.0016	0.1851	0.1127	−0.3176	−0.0063	0.0022	0.0012
0.498	24.99	4.16	0.2708	−0.0031	−0.3711	−0.0170	0.0086	0.0017	0.1905	0.1166	−0.3279	−0.0083	0.0028	0.0010
0.498	24.95	4.99	0.2933	−0.0298	−0.3870	−0.0254	0.0129	0.0017	0.1939	0.1180	−0.3333	−0.0091	0.0030	0.0009
0.500	−0.03	0.99	−0.0754	0.0182	0.1049	−0.0056	0.0018	−0.0004	−0.0754	0.0182	0.1049	−0.0056	0.0018	−0.0004

Table 39. Concluded

M	α, deg	NPR	C_L	$C_{(D-F)}$	C_m	C_Y	C_n	C_l	$C_{L,a}$	$C_{D,a}$	$C_{m,a}$	$C_{Y,a}$	$C_{n,a}$	$C_{l,a}$
0.499	5.01	0.99	–0.0352	0.0192	0.0493	–0.0052	0.0017	–0.0002	–0.0352	0.0192	0.0493	–0.0052	0.0017	–0.0002
0.500	10.01	0.99	–0.0033	0.0232	–0.0045	–0.0026	0.0010	–0.0003	–0.0033	0.0232	–0.0045	–0.0026	0.0010	–0.0003
0.500	14.98	0.99	0.0568	0.0352	–0.1045	0.0049	–0.0016	0.0013	0.0568	0.0352	–0.1045	0.0049	–0.0016	0.0013
0.501	20.00	0.98	0.1156	0.0641	–0.1985	–0.0006	0.0003	0.0013	0.1156	0.0641	–0.1985	–0.0006	0.0003	0.0013
0.500	24.98	0.97	0.1686	0.1051	–0.2887	–0.0023	0.0008	0.0013	0.1686	0.1051	–0.2887	–0.0023	0.0008	0.0013
0.499	29.98	0.96	0.2097	0.1513	–0.3735	0.0073	–0.0023	0.0017	0.2097	0.1513	–0.3735	0.0073	–0.0023	0.0017
0.501	0.00	4.16	–0.0340	–0.1170	0.0377	–0.0166	0.0087	–0.0003	–0.0560	0.0240	0.0804	–0.0080	0.0030	–0.0010
0.501	5.00	4.17	0.0161	–0.1128	–0.0175	–0.0139	0.0079	0.0001	–0.0182	0.0262	0.0254	–0.0052	0.0022	–0.0005
0.501	9.99	4.17	0.0548	–0.1037	–0.0672	–0.0121	0.0071	0.0001	0.0087	0.0313	–0.0245	–0.0033	0.0014	–0.0005
0.499	14.99	4.17	0.1328	–0.0879	–0.1761	–0.0091	0.0061	0.0017	0.0745	0.0439	–0.1329	–0.0003	0.0003	0.0011
0.503	19.99	4.17	0.2035	–0.0508	–0.2733	–0.0160	0.0084	0.0017	0.1349	0.0737	–0.2308	–0.0073	0.0026	0.0010
0.500	24.97	4.17	0.2710	–0.0029	–0.3701	–0.0186	0.0091	0.0018	0.1911	0.1163	–0.3272	–0.0099	0.0032	0.0012
0.500	29.98	4.17	0.3252	0.0522	–0.4604	–0.0109	0.0066	0.0024	0.2352	0.1640	–0.4174	–0.0022	0.0008	0.0017

Table 40. Typical Engine Performance Characteristics for Full-Scale F-18 HARV at Afterburning Power

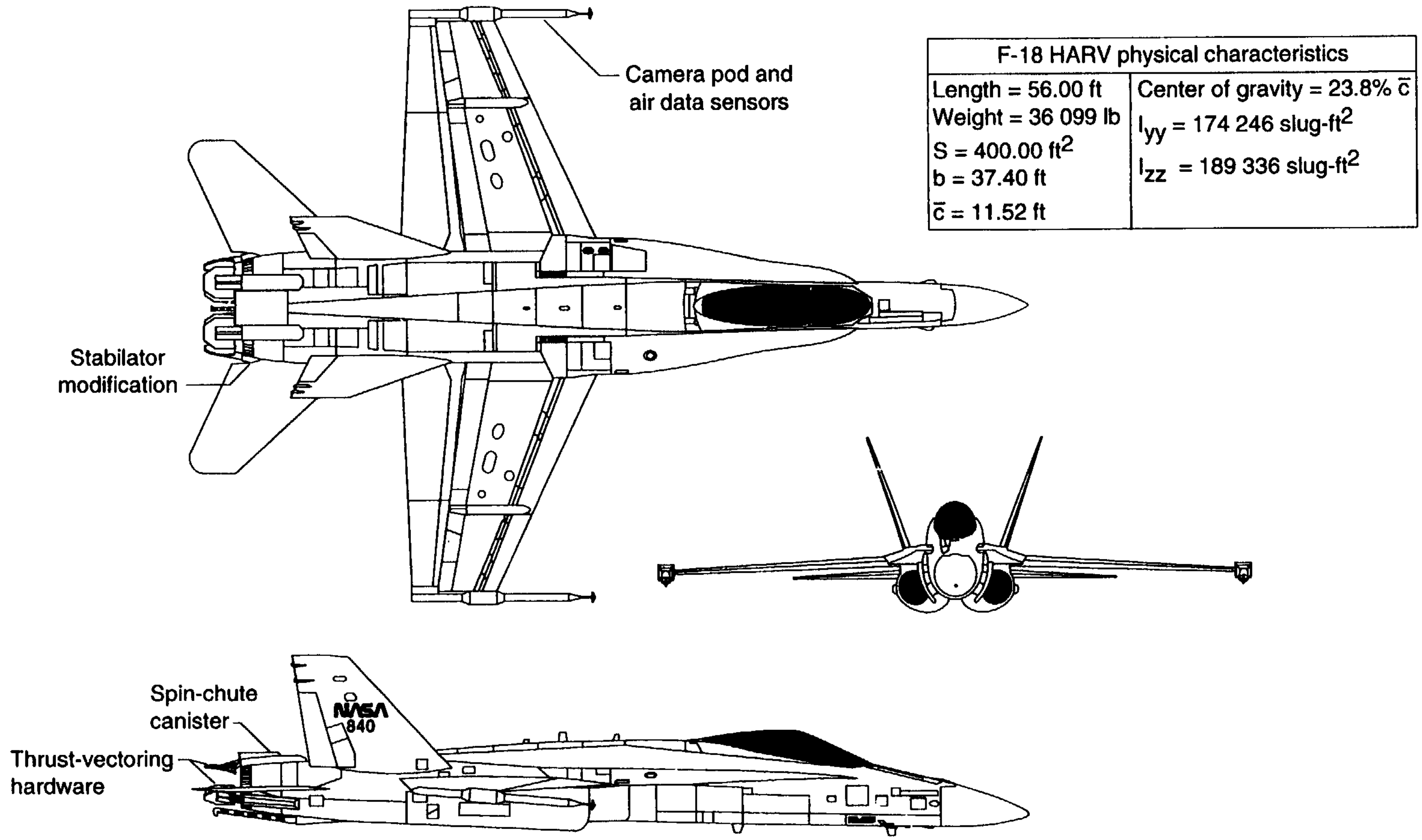
[NPR ≈ 4.25; Altitude = 20000 ft]

M	α, deg	$F_{g,l}$	$F_{g,r}$
0.30	5	9443.96	9443.96
.30	10	9450.69	9450.69
.30	20	9425.58	9425.58
.30	30	9349.08	9349.08
.30	40	9221.19	9221.19
.30	50	9041.90	9041.90
.30	60	8811.22	8811.22
.30	70	8529.14	8529.14
.30	5	9443.96	9443.96
.40	5	9976.97	9976.97
.50	5	10704.81	10704.81
.60	5	11432.64	11432.64
.70	5	12479.99	12479.99

L-91-03651

(a) F-18 HARV in flight.

Figure 1. The F-18 High-Alpha Research Vehicle.



F-18 HARV physical characteristics	
Length = 56.00 ft	Center of gravity = 23.8% $\bar{c}$
Weight = 36 099 lb	I_{yy} = 174 246 slug-ft^2
S = 400.00 ft^2	I_{zz} = 189 336 slug-ft^2
b = 37.40 ft	
$\bar{c}$ = 11.52 ft	

(b) Three-view drawing of F-18 HARV.

Figure 1. Concluded.

L-91-3645

Figure 2. F-18 HARV during static testing of thrust-vectoring control system.

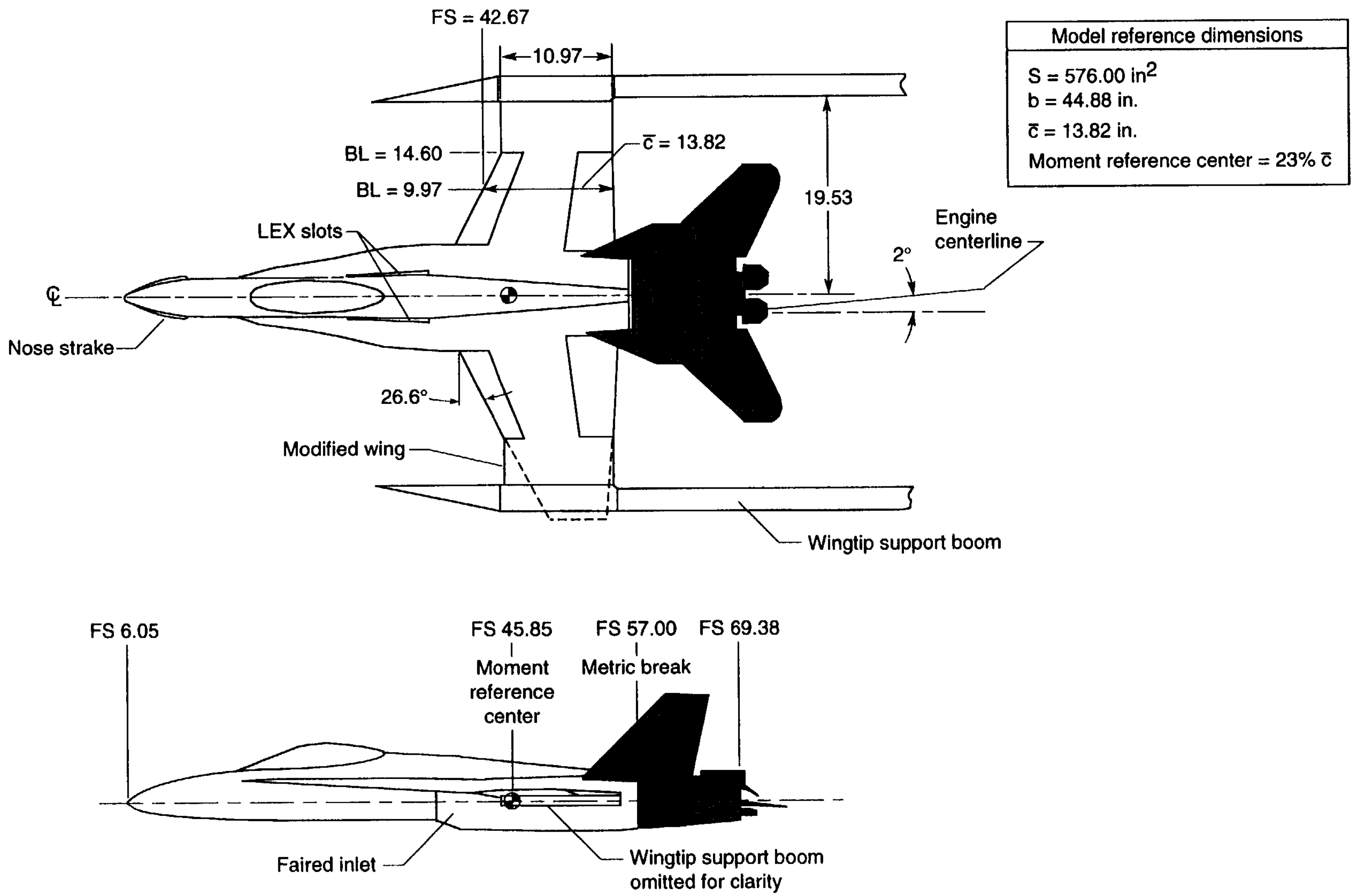
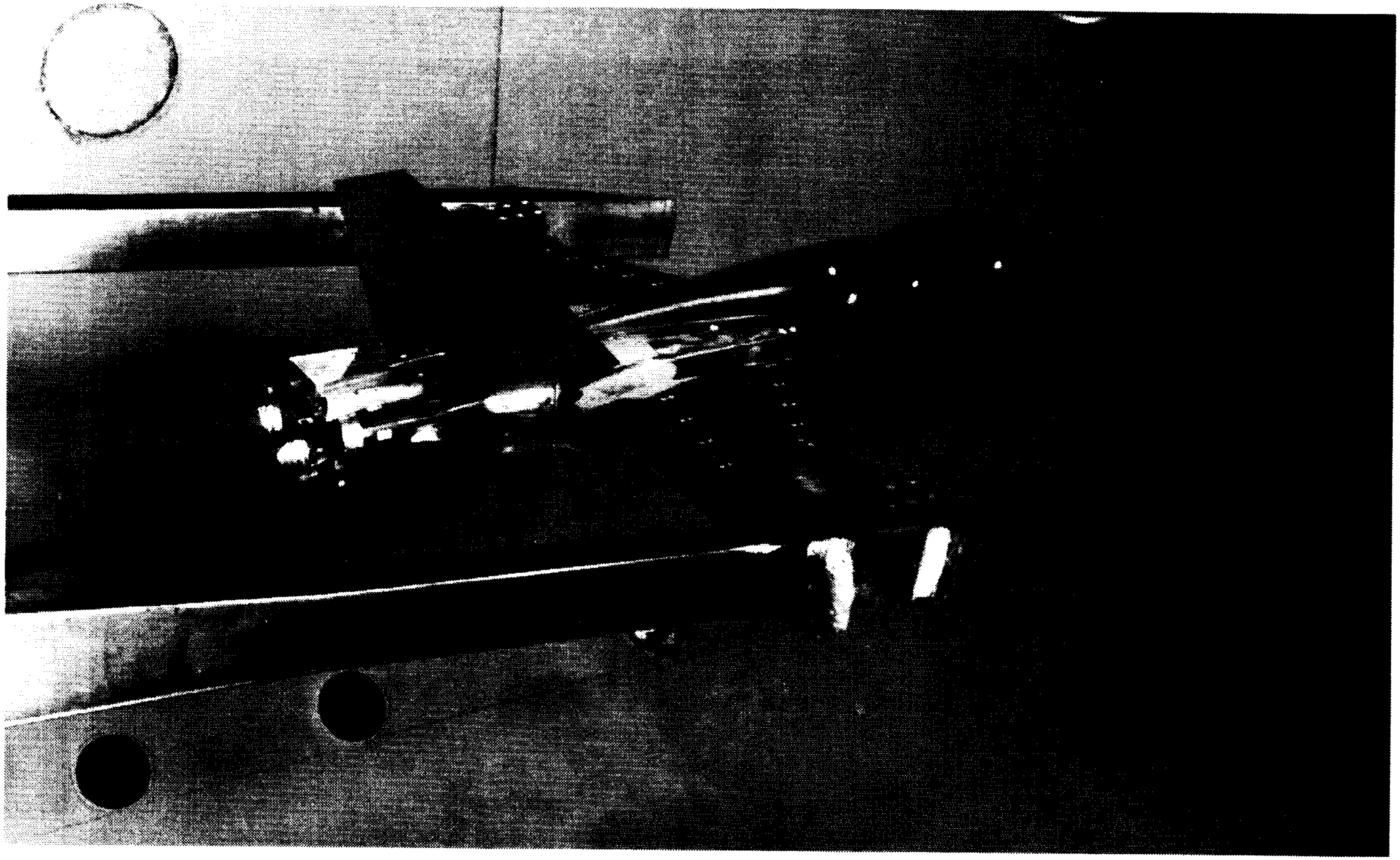


Figure 3. Details of F-18 prototype model. Dimensions are in inches unless otherwise noted.



L-91-10935

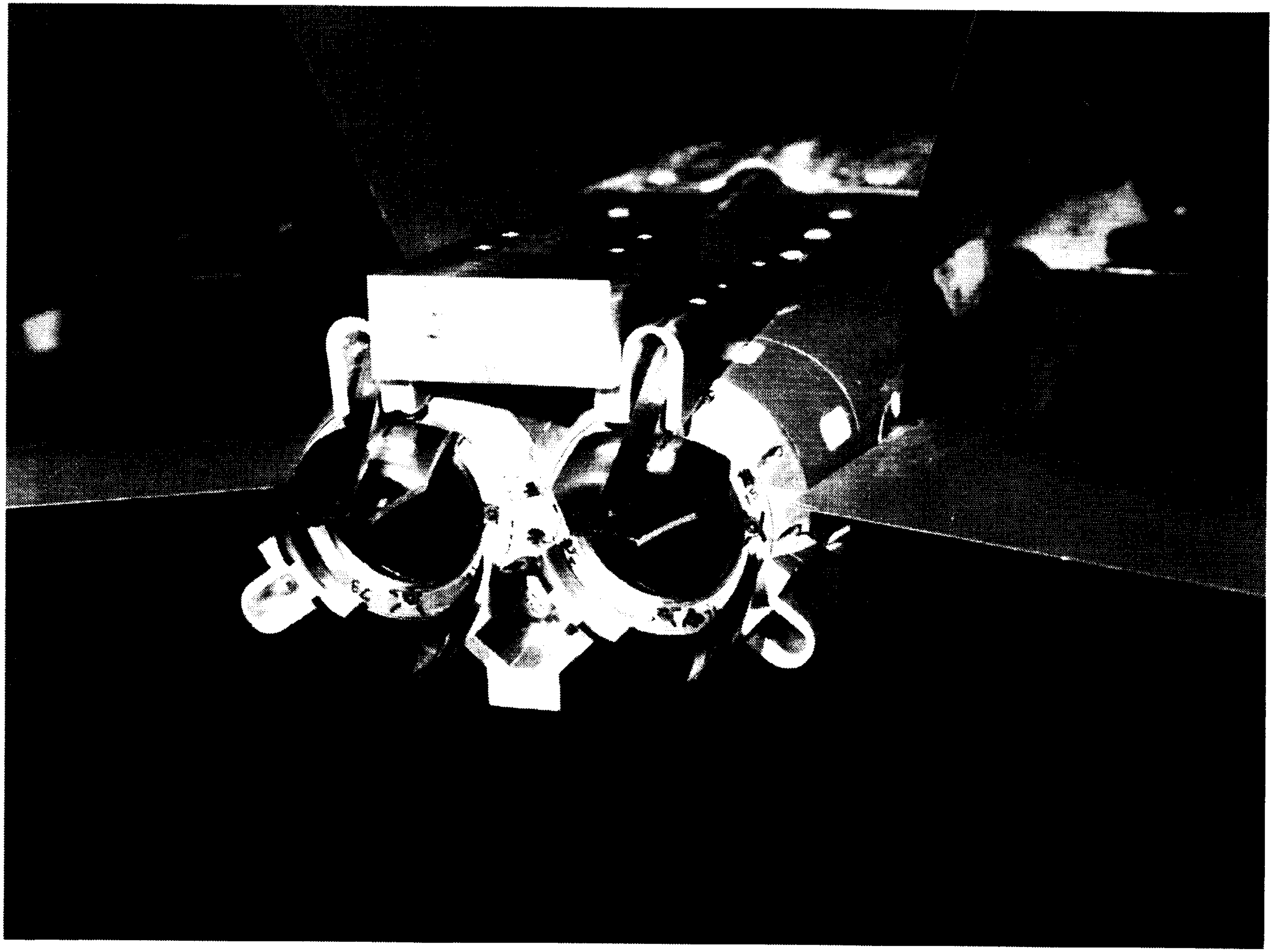
(a) Low-angle-of-attack installation.

Figure 4. Installation of F-18 prototype model in Langley 16-Foot Transonic Tunnel.

L-91-13854

(b) High-angle-of-attack installation.

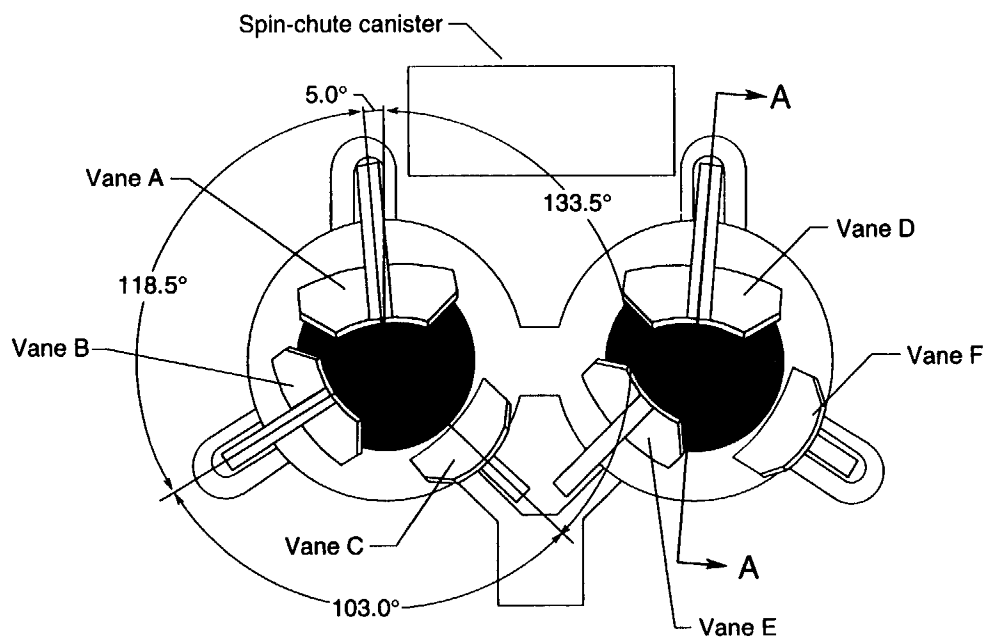
Figure 4. Concluded.

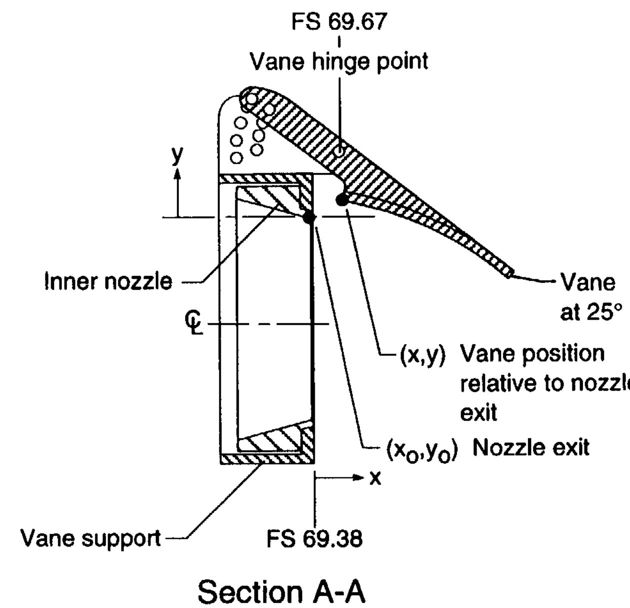


L-91-10943

(a) Thrust-vectoring hardware.

Figure 5. Details of thrust-vectoring hardware installed on F-18 prototype model.





Military power		
δ, deg	x, in.	y, in.
-10	0.6330	0.5007
-5	0.5946	0.4725
0	0.5540	0.4478
5	0.5114	0.4267
10	0.4670	0.4094
15	0.4214	0.3960
20	0.3747	0.3867
25	0.3274	0.3814

Afterburning power		
δ, deg	x, in.	y, in.
-10	0.6330	0.2748
-5	0.5946	0.2466
0	0.5540	0.2219
5	0.5114	0.2008
10	0.4670	0.1835
15	0.4214	0.1701
20	0.3747	0.1608
25	0.3274	0.1555

(b) Sketch of thrust-vectoring hardware showing vane position relative to nozzle exit. Nozzles shown at afterburning power setting.

Figure 5. Concluded.

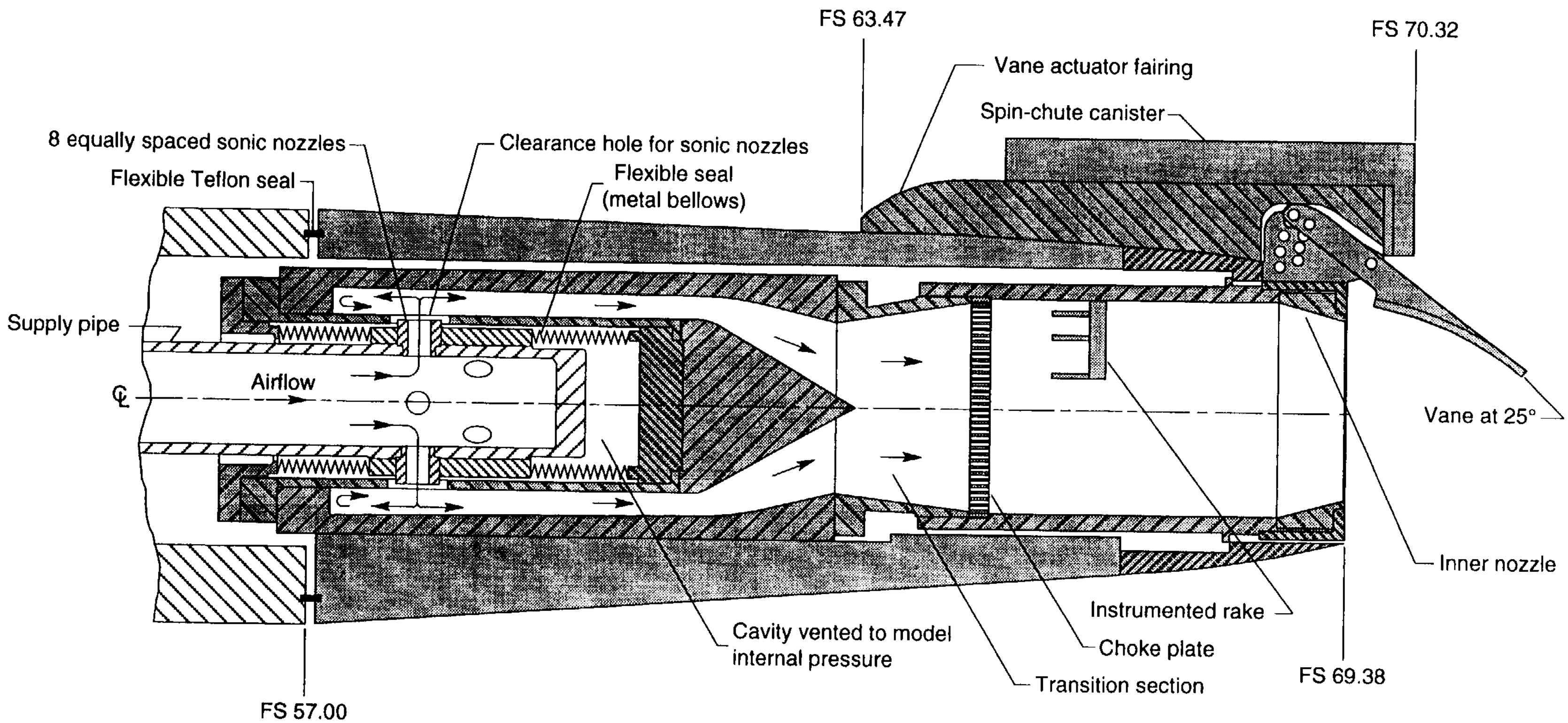
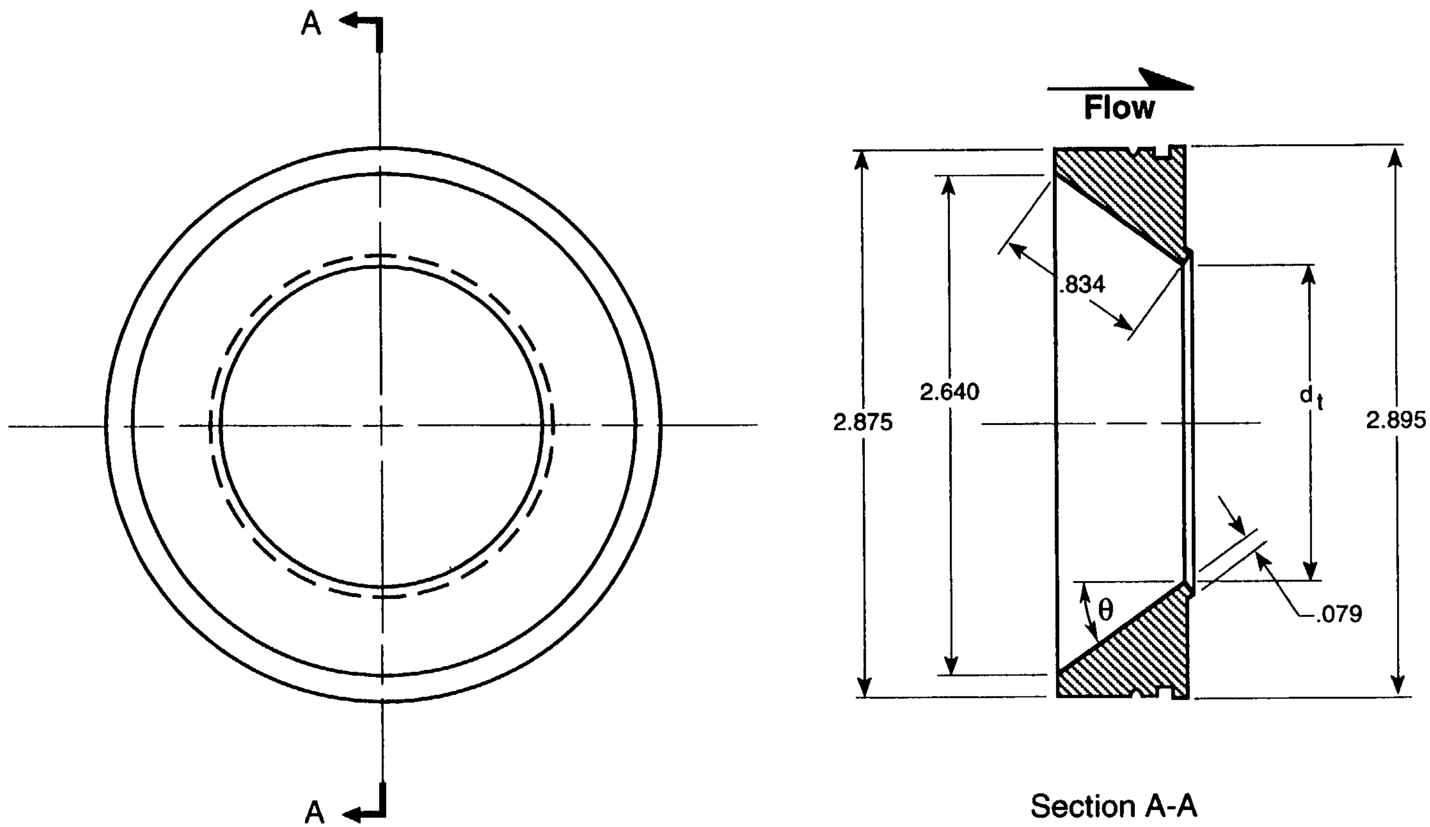
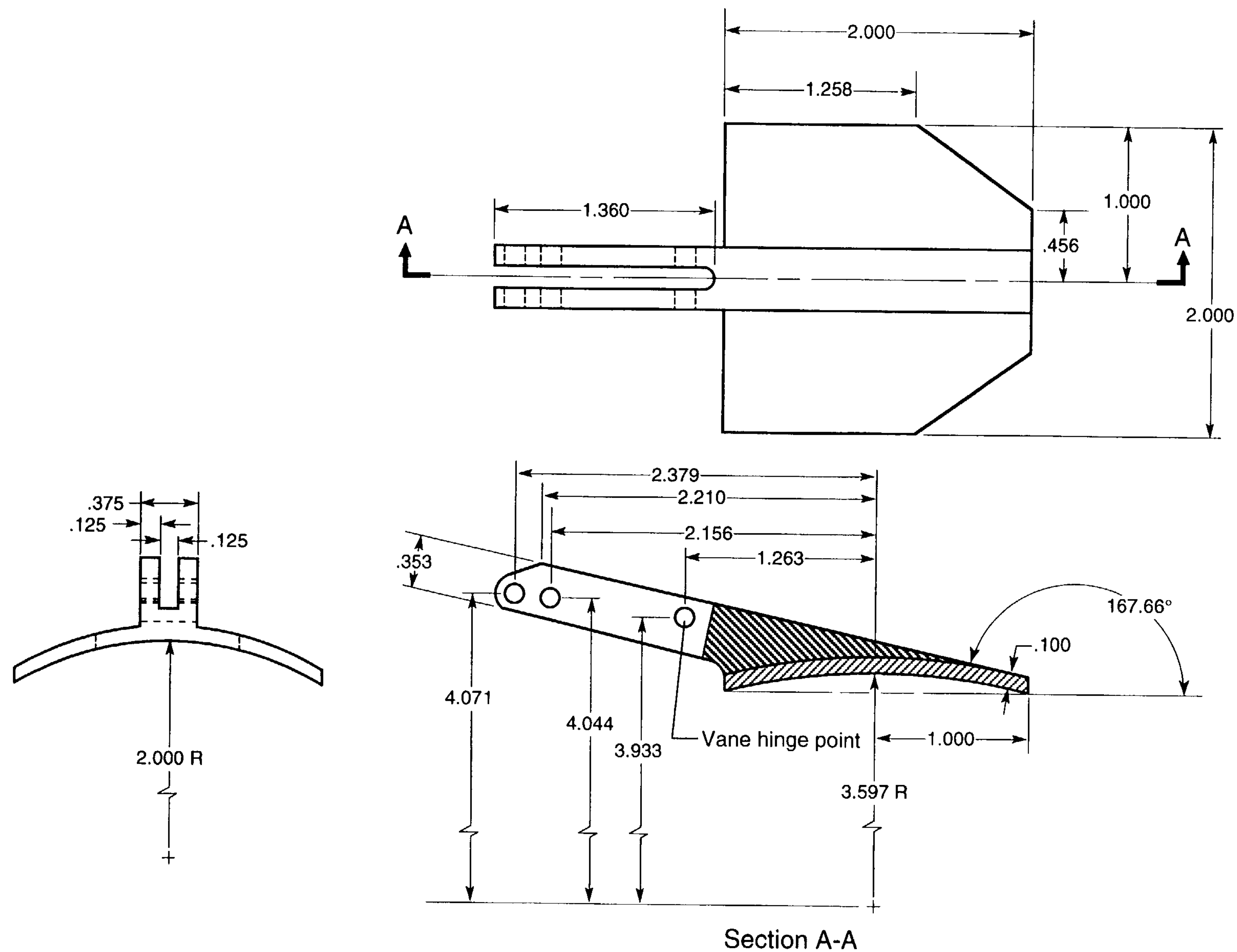


Figure 6. Details of twin-jet propulsion simulation system and flow-transfer assembly with metric portion shaded. Empennage and lower thrust-vectoring vanes not shown for clarity. Dimensions are in inches unless otherwise noted.



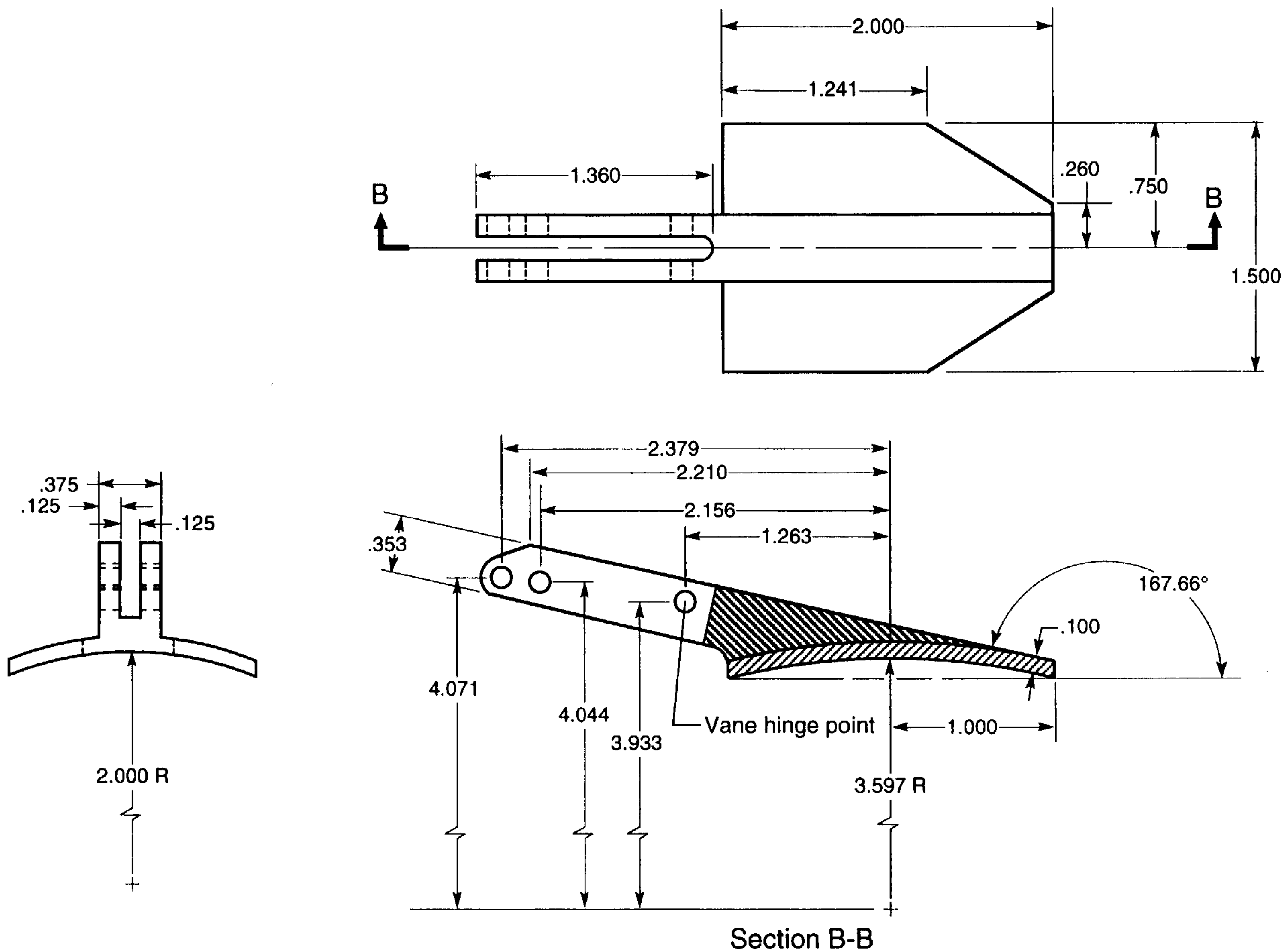
Power setting	d_t, in.	θ, deg
Military power	1.674	35.390
Afterburning power	2.105	18.708

Figure 7. Geometric details of inner nozzles. Dimensions are in inches unless otherwise noted.



(a) Top vanes A and D. Vane planform area = 3.60 in^2.

Figure 8. Geometry of thrust-vectoring vanes. Dimensions are in inches unless otherwise noted.



(b) Lower vanes B, C, E, and F. Vane planform area = 2.63 in^2.

Figure 8. Concluded.

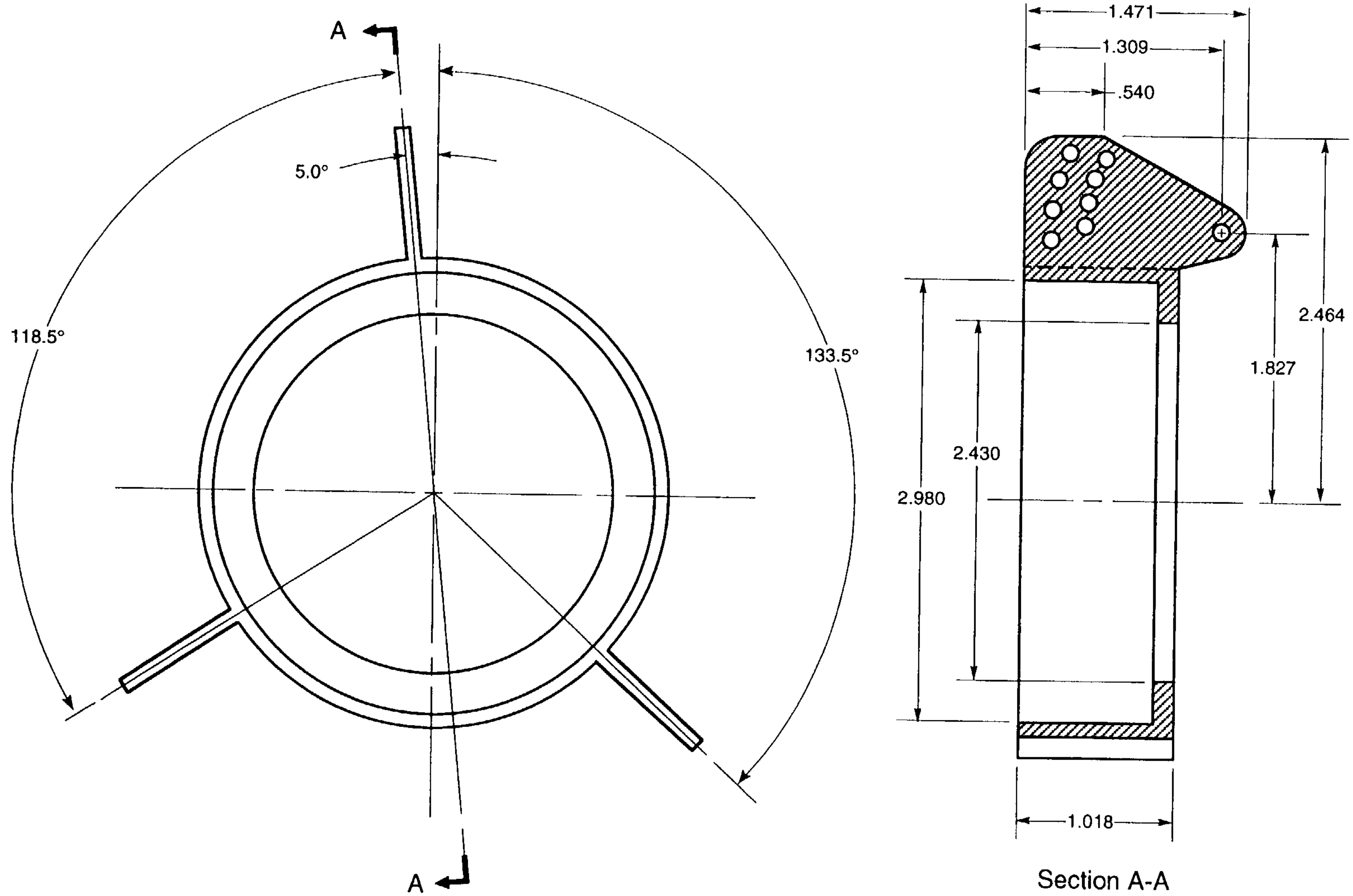
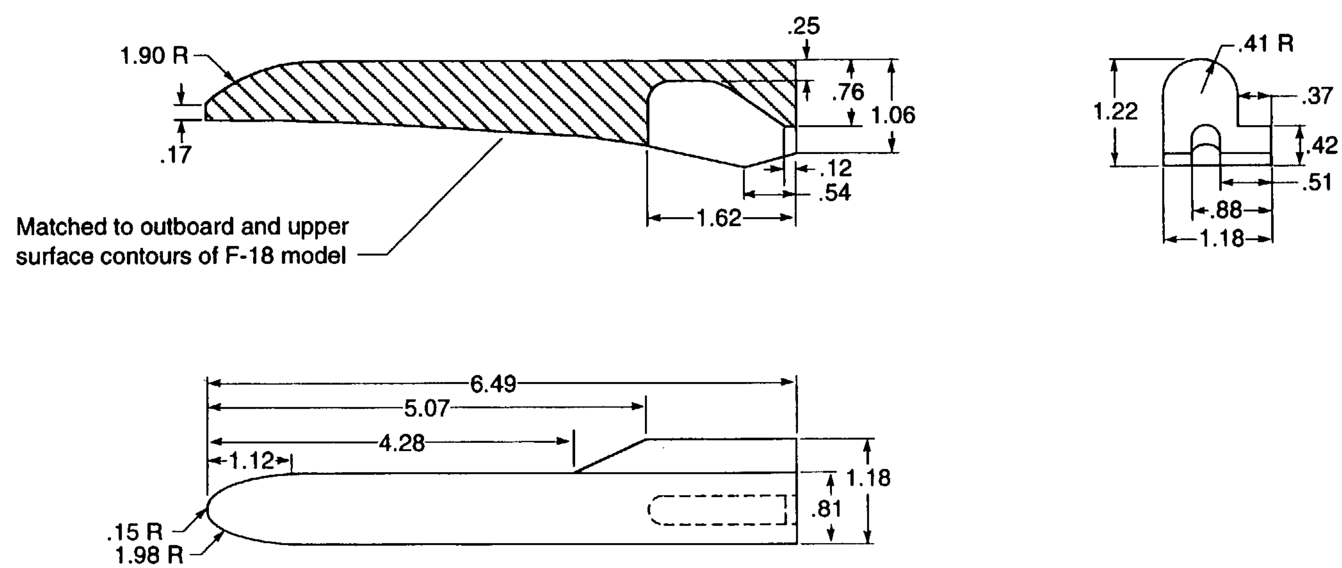
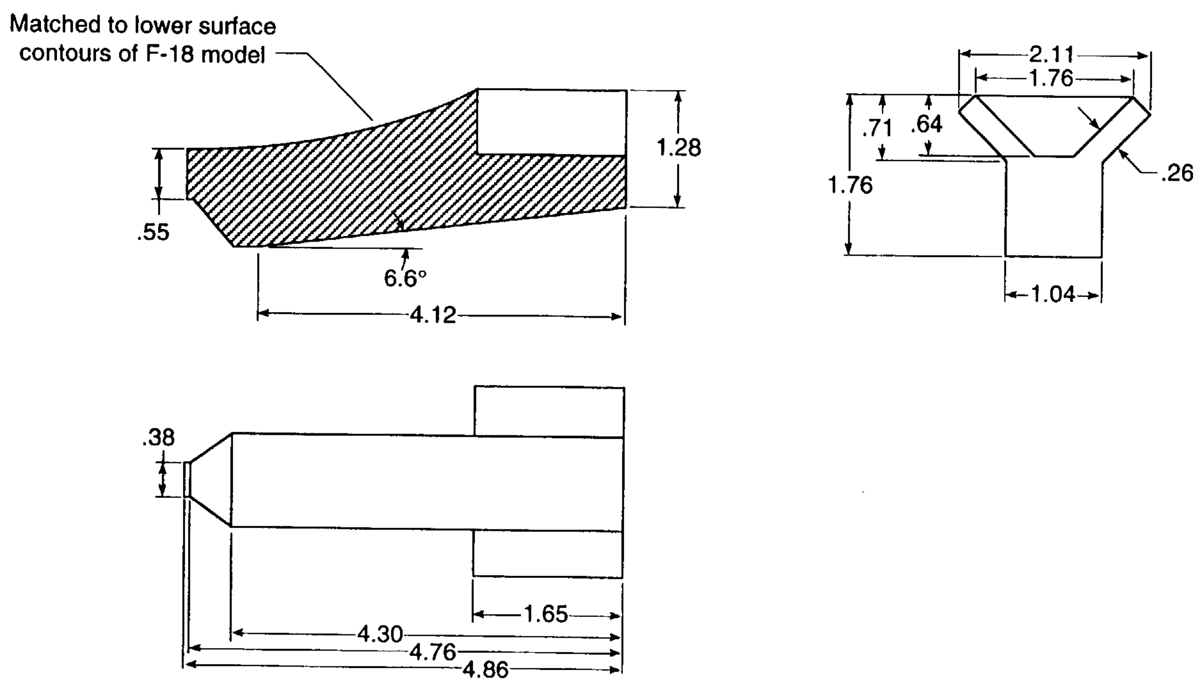


Figure 9. Geometry details of a typical vane support. Dimensions are in inches unless otherwise noted.



(a) Typical outboard and upper surface vane support fairing.

Figure 10. Details of vane support fairings. Dimensions are in inches unless otherwise noted.



(b) Lower vane support fairing.

Figure 10. Concluded.

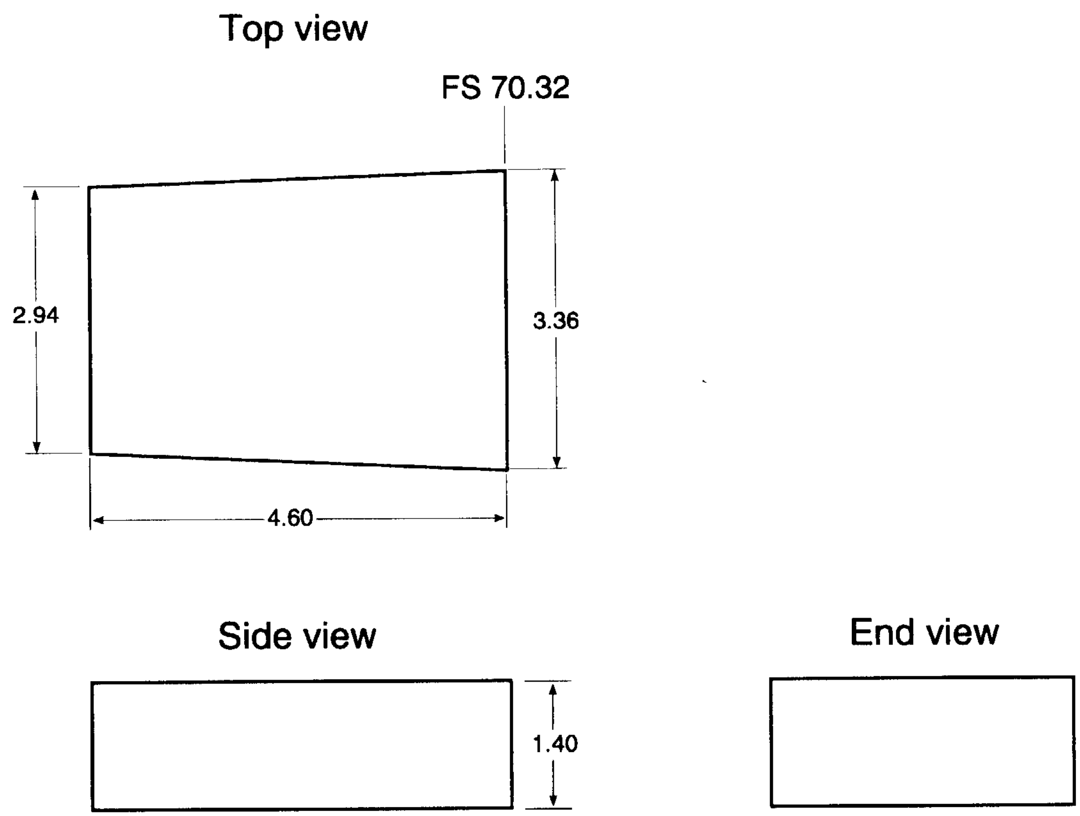


Figure 11. Details of spin-chute canister. Dimensions are in inches.

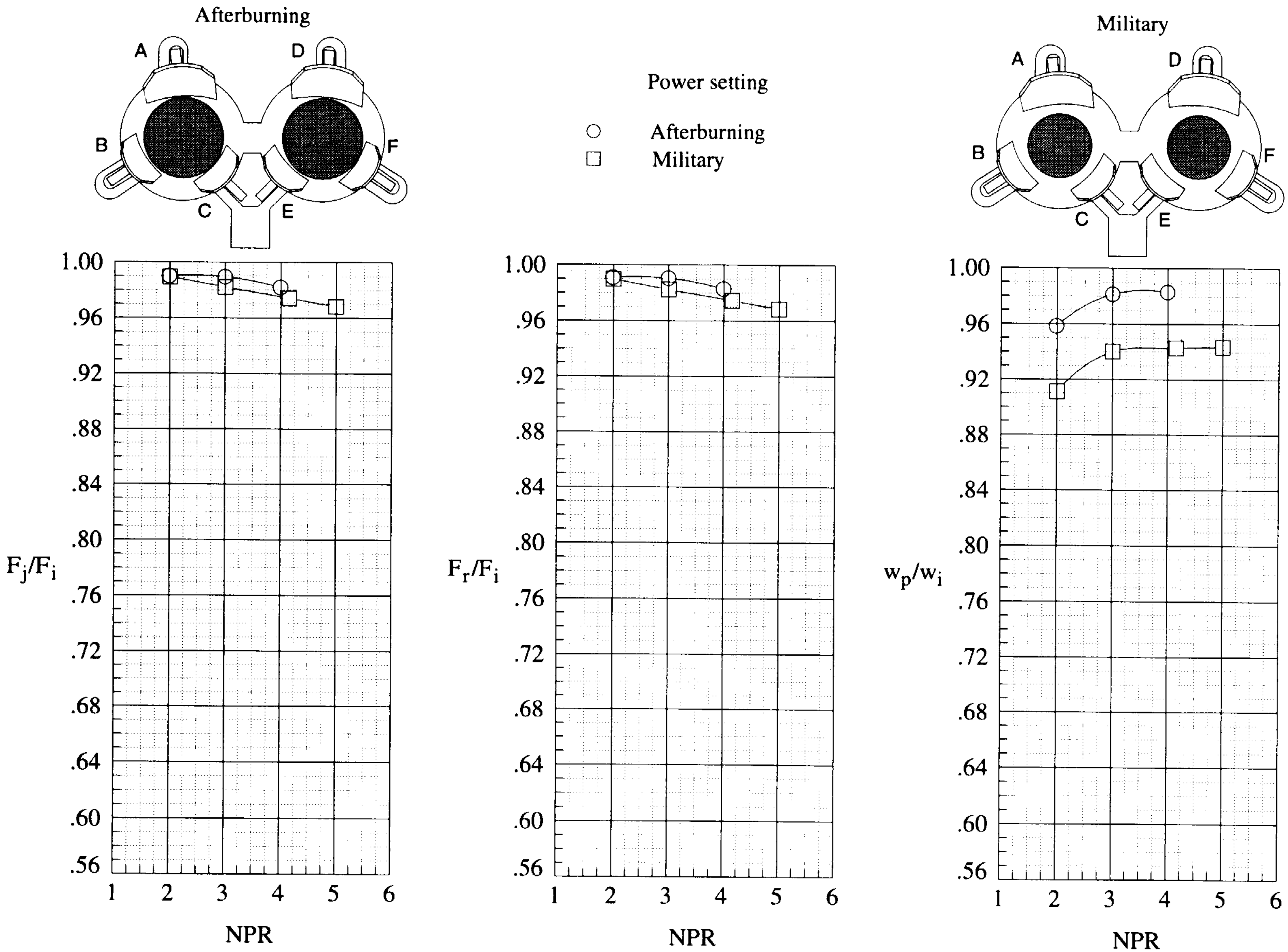
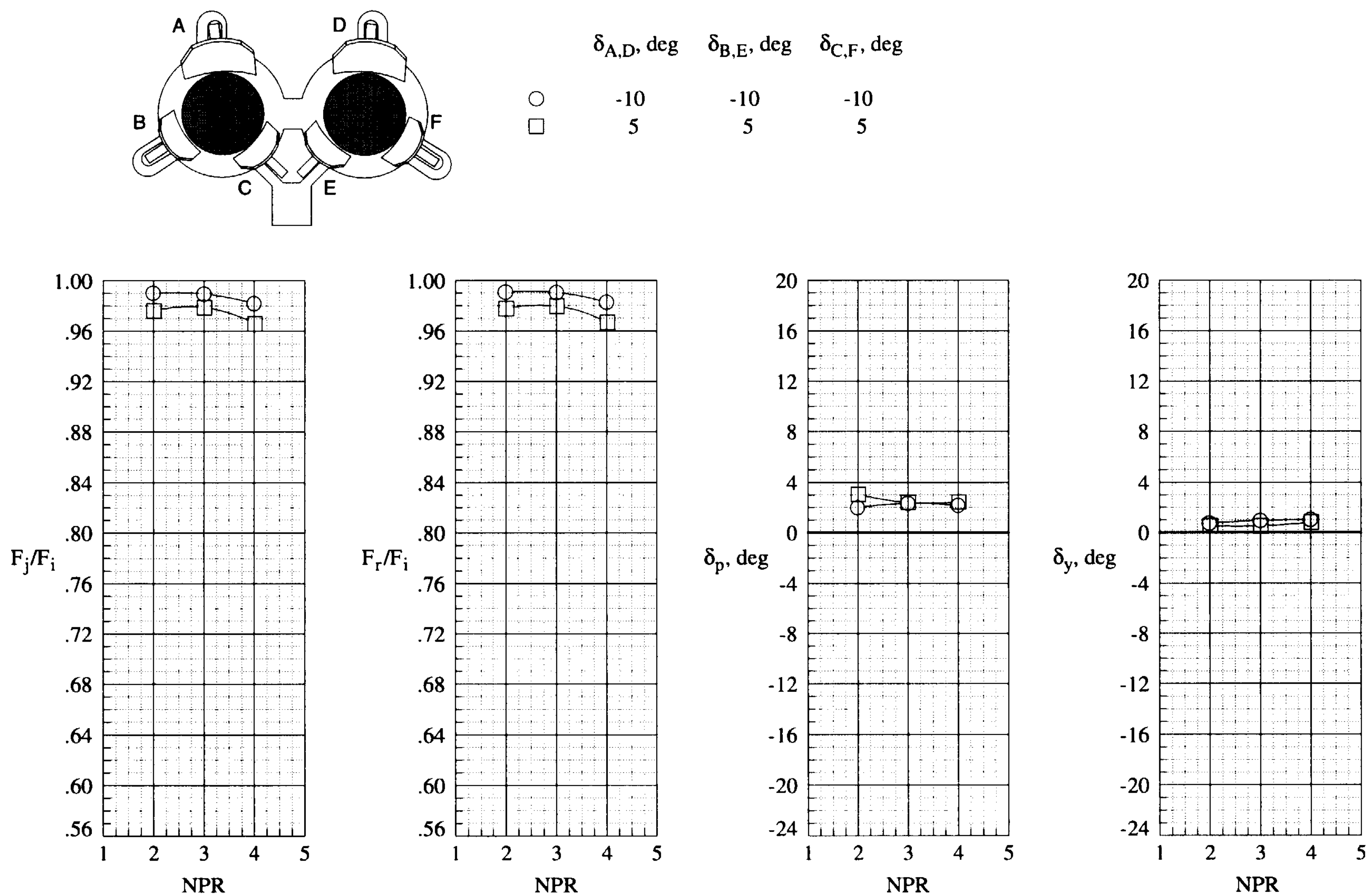
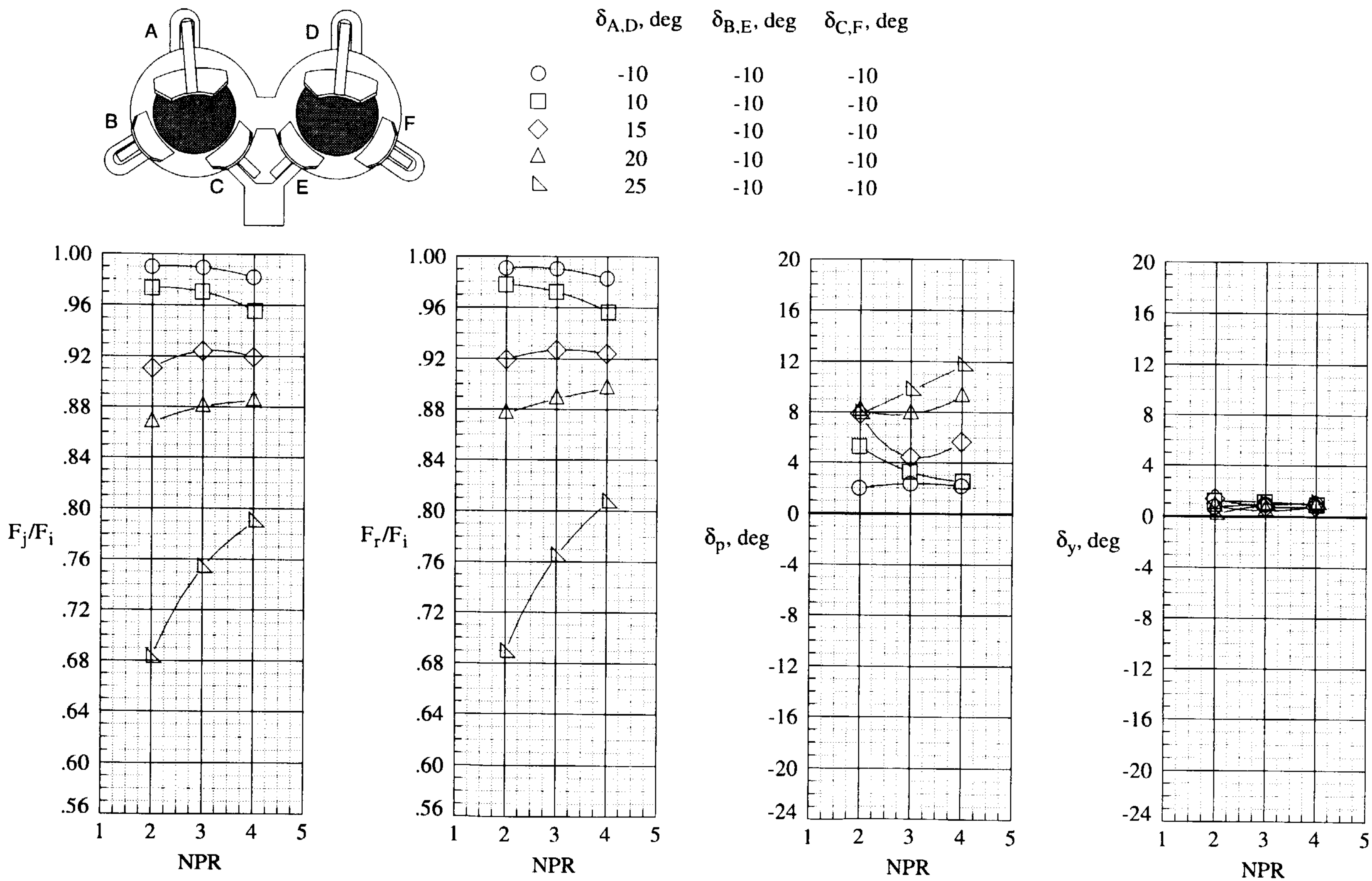


Figure 12. Effect of nozzle power setting on static performance characteristics at $M = 0$ with vanes fully retracted.



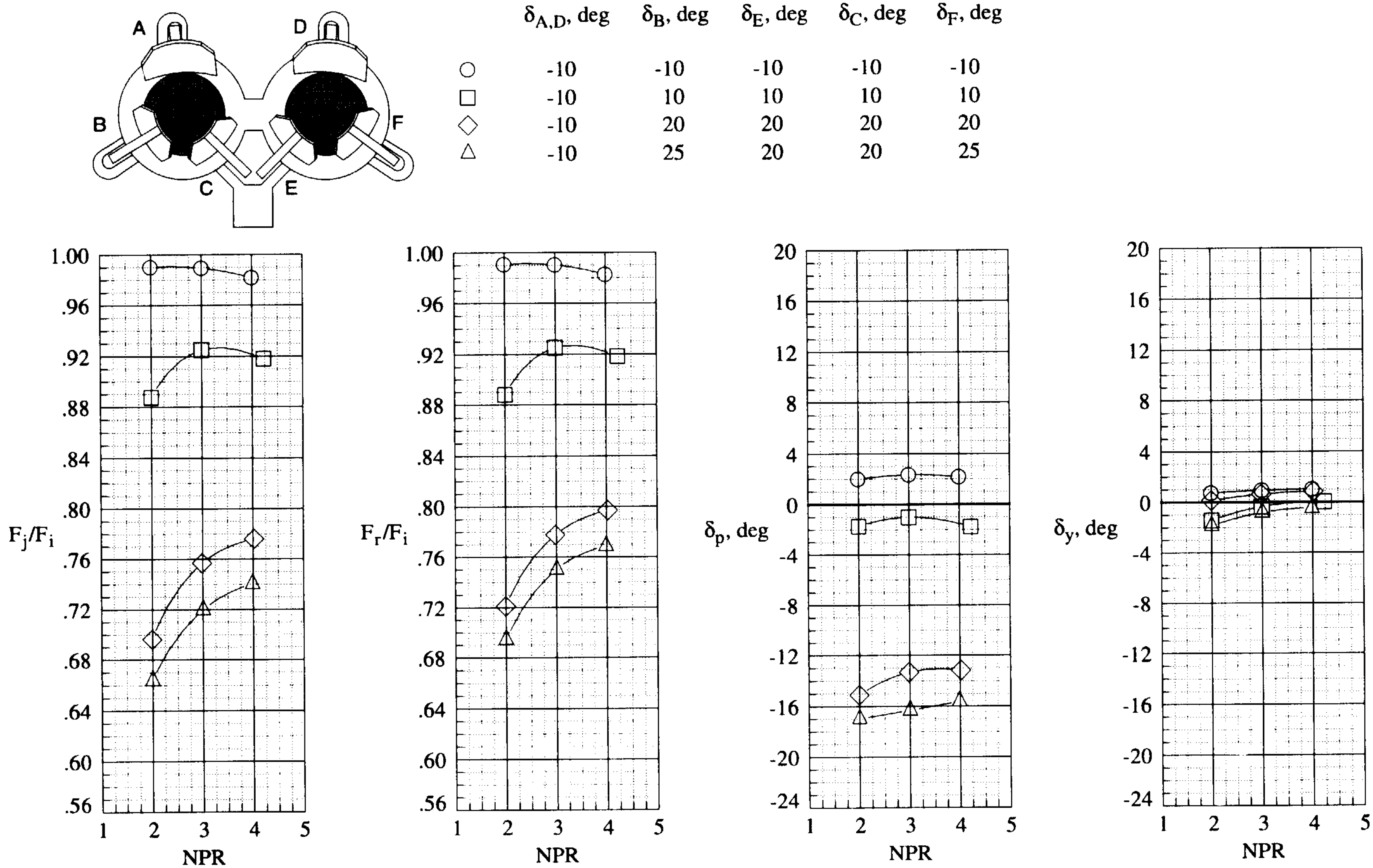
(a) Unvectored.

Figure 13. Static performance characteristics at afterburning power and $M = 0$.



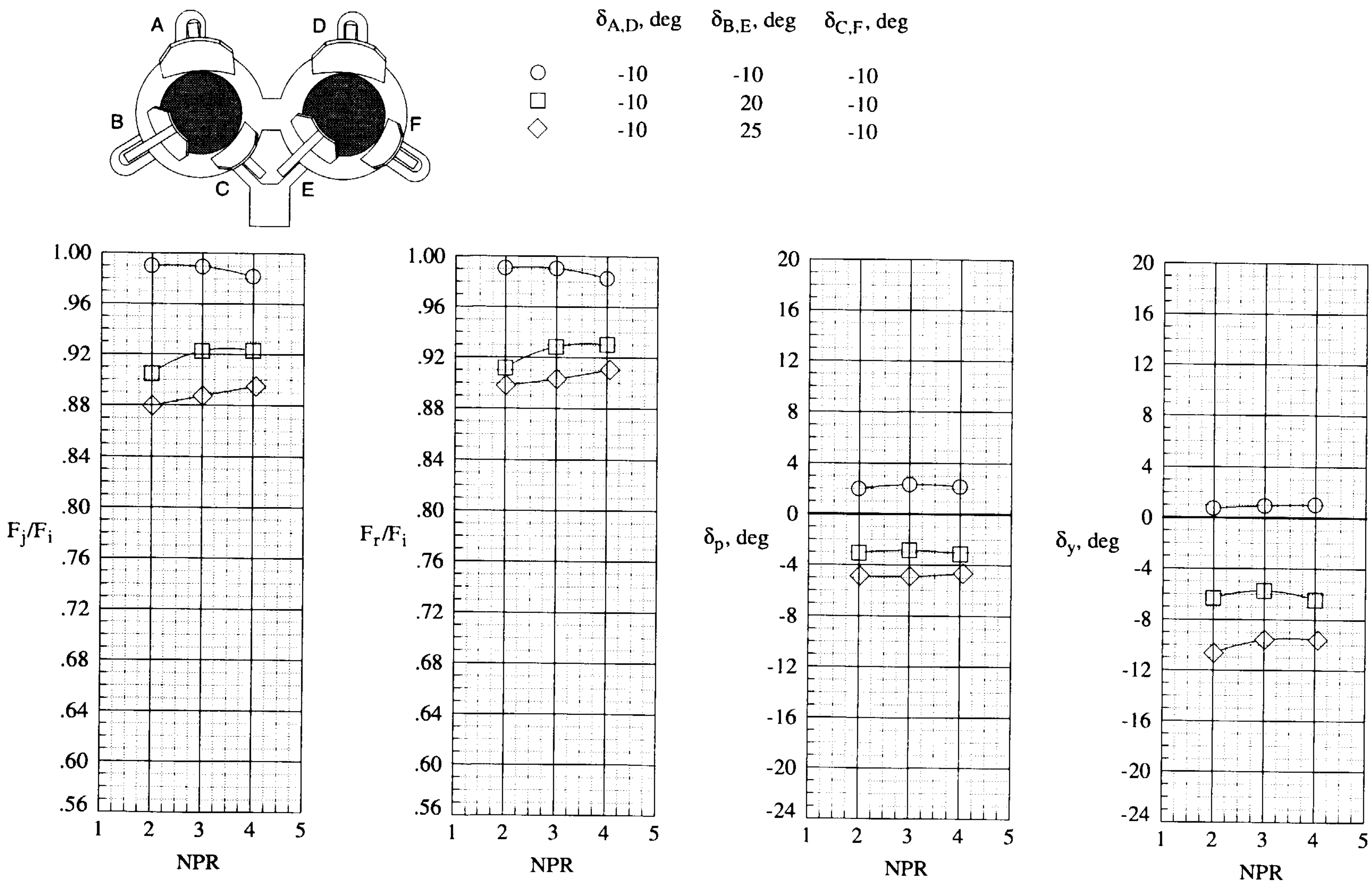
(b) Vanes A,D deployed.

Figure 13. Continued.



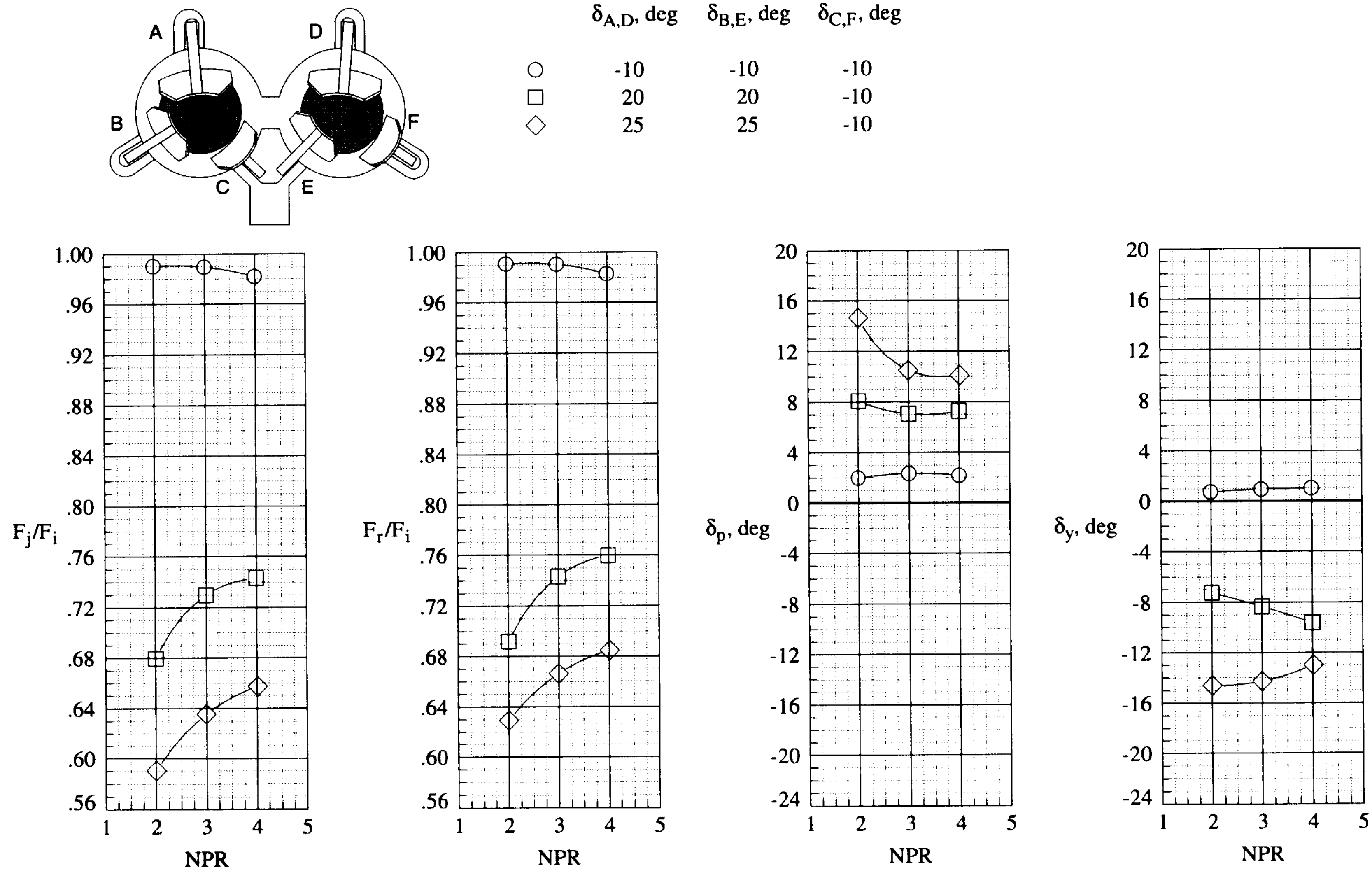
(c) Vanes B,E and C,F deployed.

Figure 13. Continued.



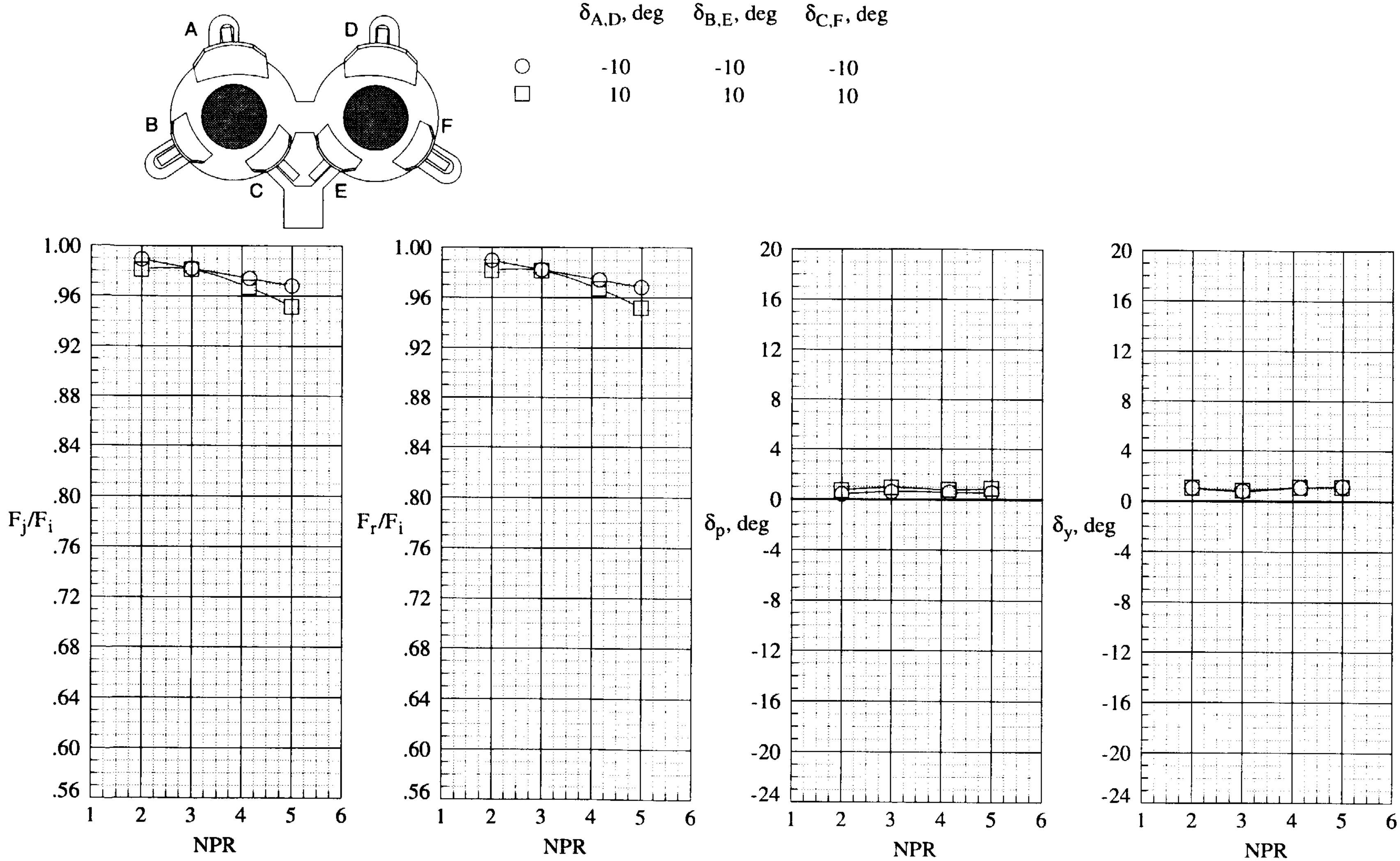
(d) Vanes B,E deployed.

Figure 13. Continued.



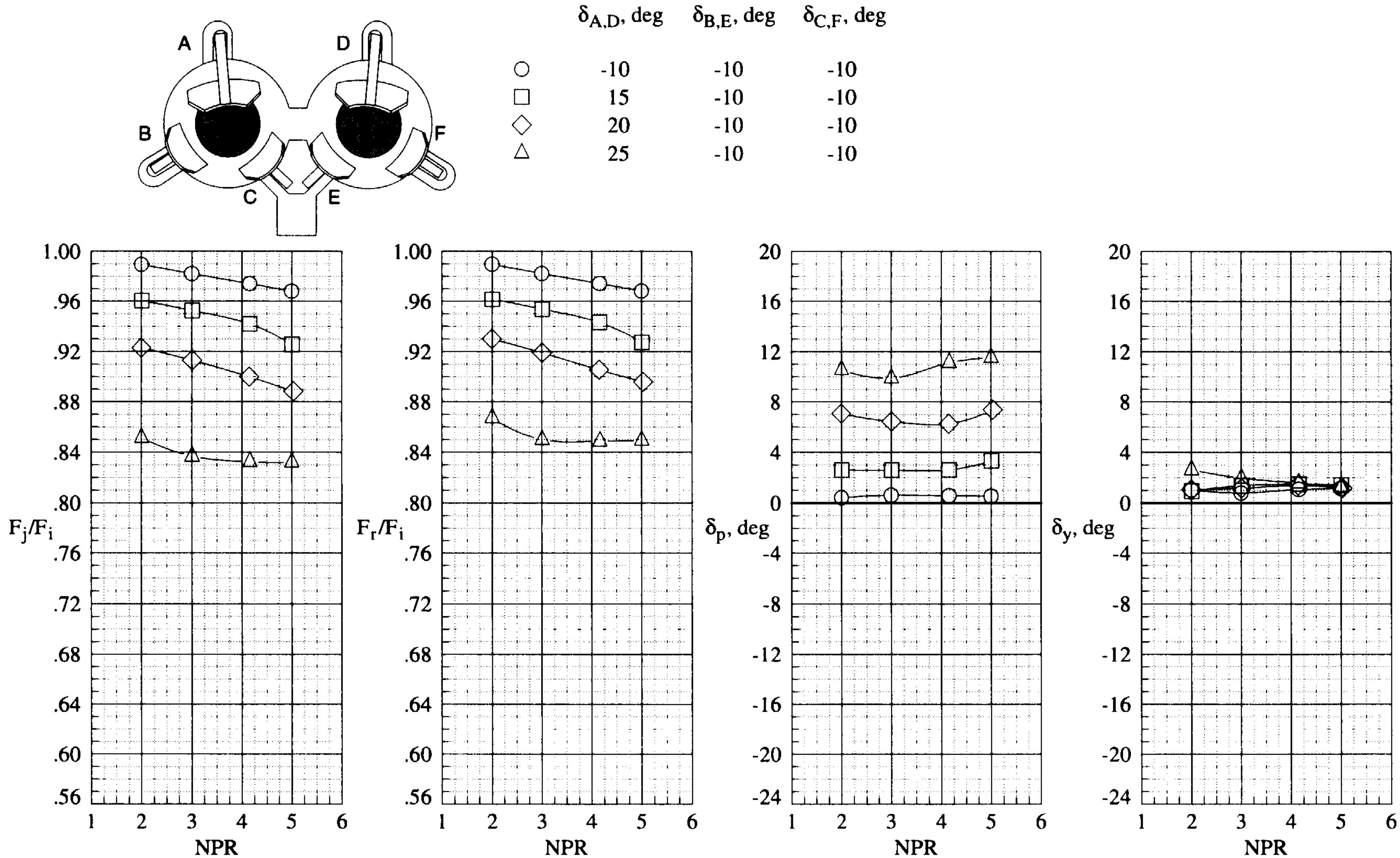
(e) Vanes A,D and B,E deployed.

Figure 13. Concluded.



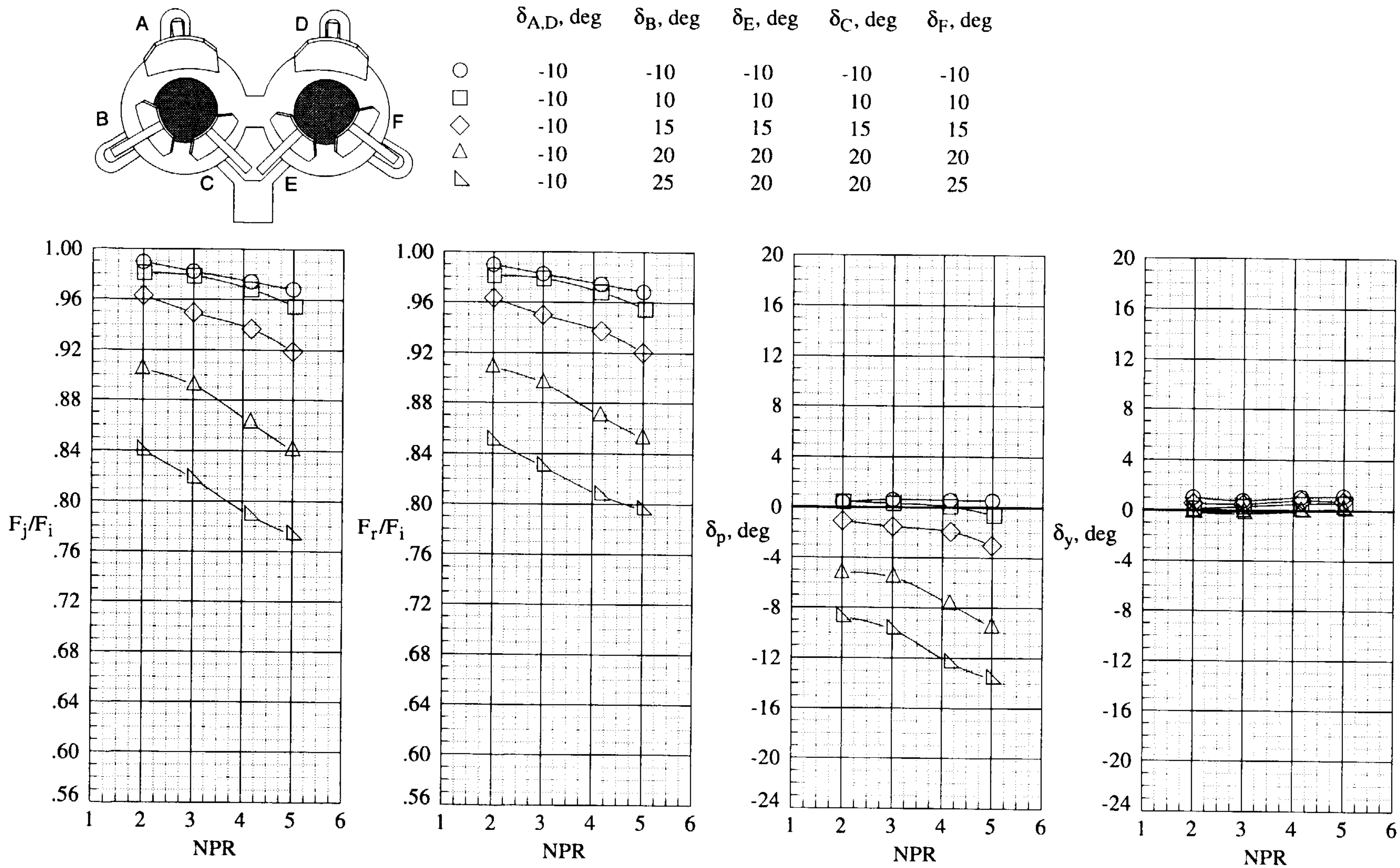
(a) Unvectored.

Figure 14. Static performance characteristics at military power and $M = 0$.



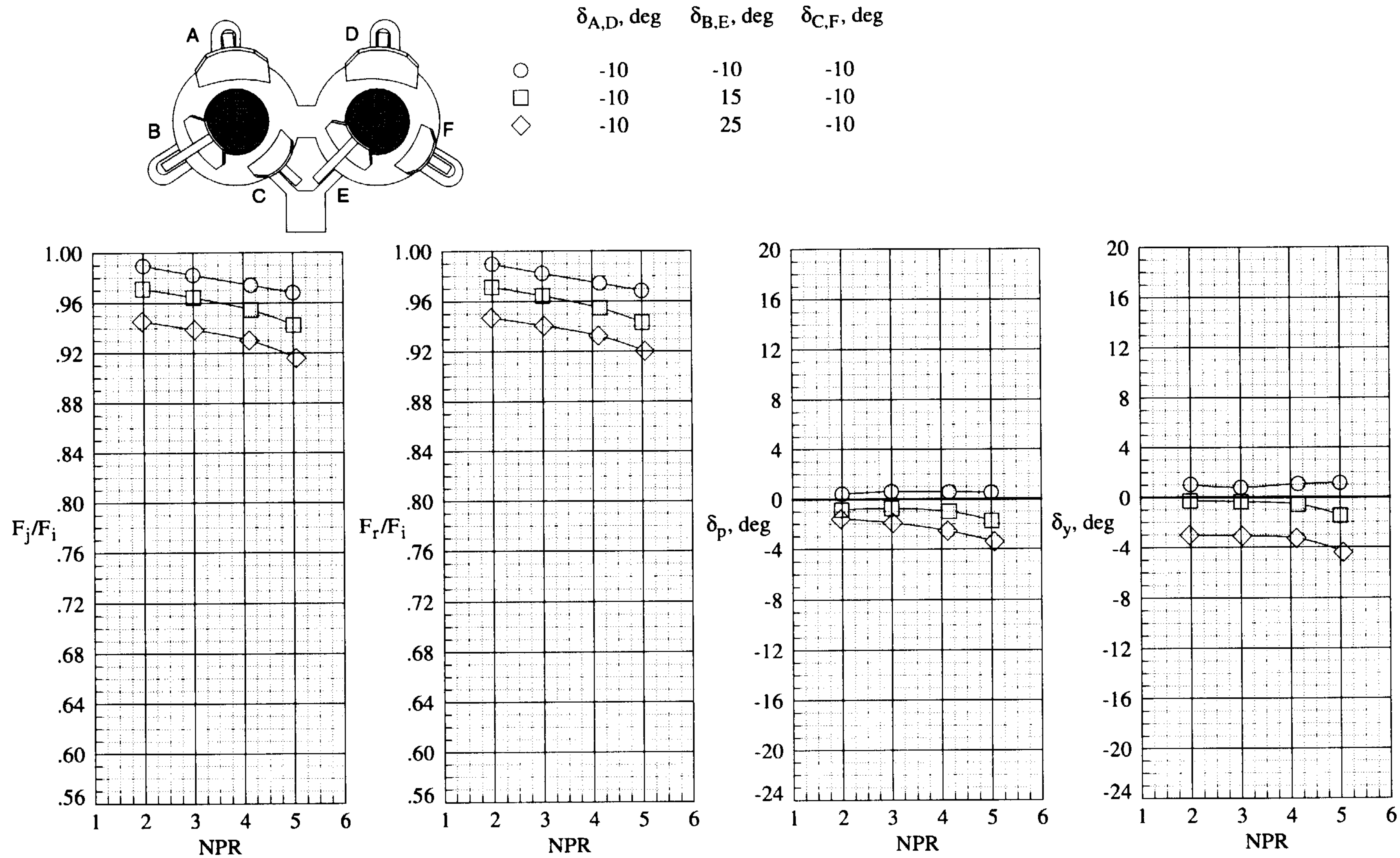
(b) Vanes A,D deployed.

Figure 14. Continued.



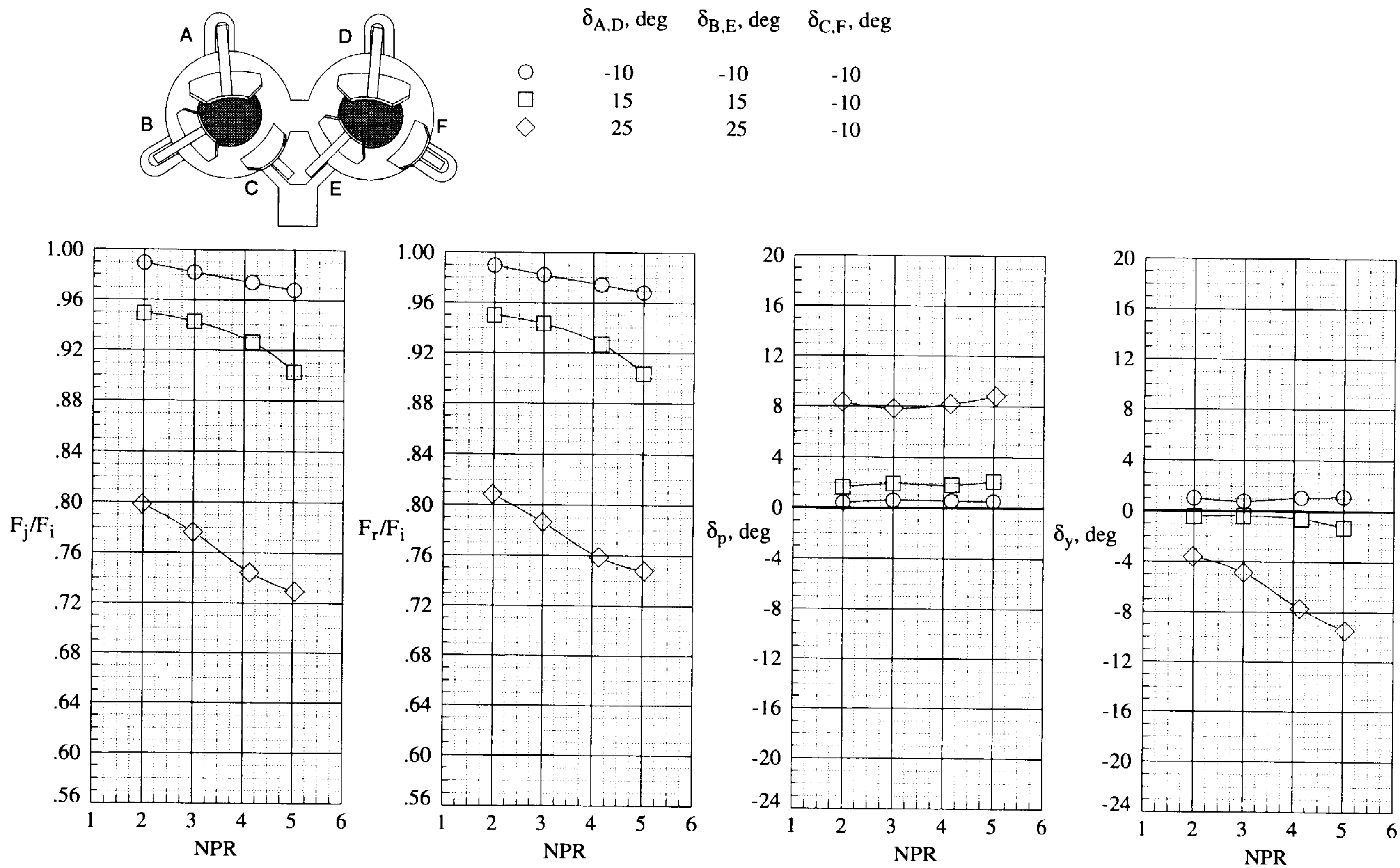
(c) Vanes B,E and C,F deployed.

Figure 14. Continued.



(d) Vanes B,E deployed.

Figure 14. Continued.



(e) Vanes A,D and B,E deployed.

Figure 14. Concluded.

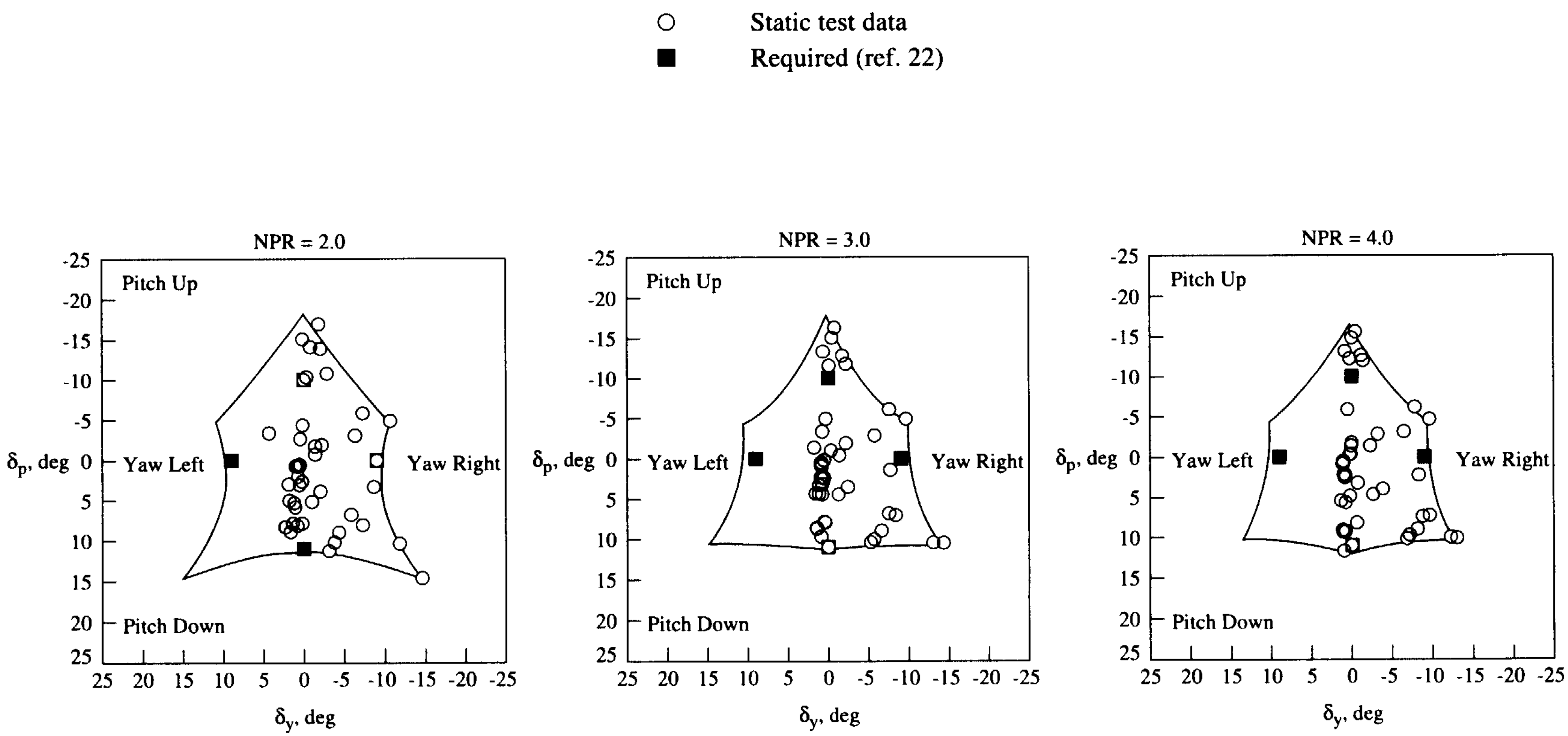


Figure 15. Resultant thrust-vectoring envelope at afterburning power and $M = 0$. Maximum vane deflection angle of 25°.

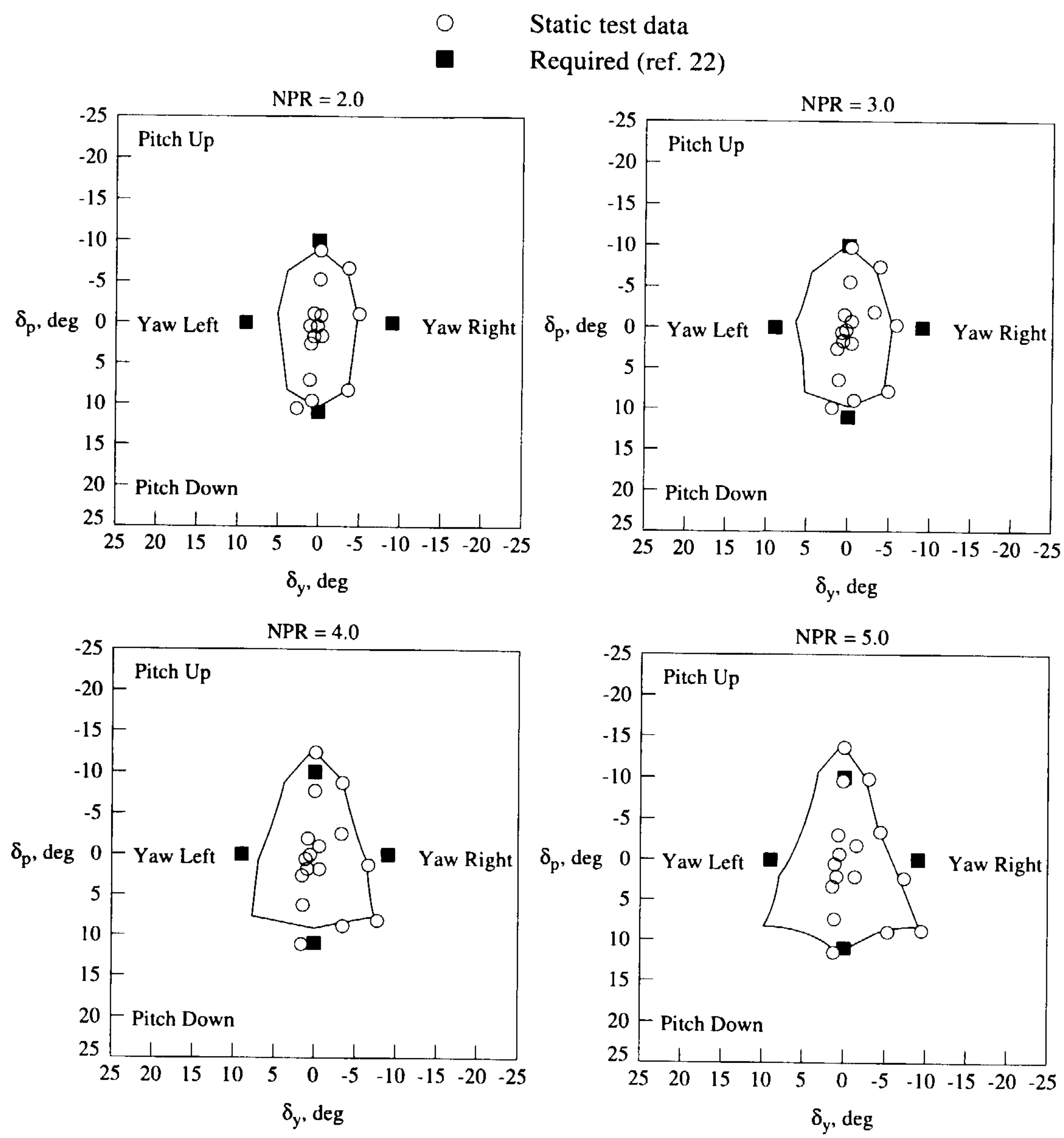


Figure 16. Resultant thrust-vectoring envelope at military power and $M = 0$. Maximum vane deflection angle of 25°.

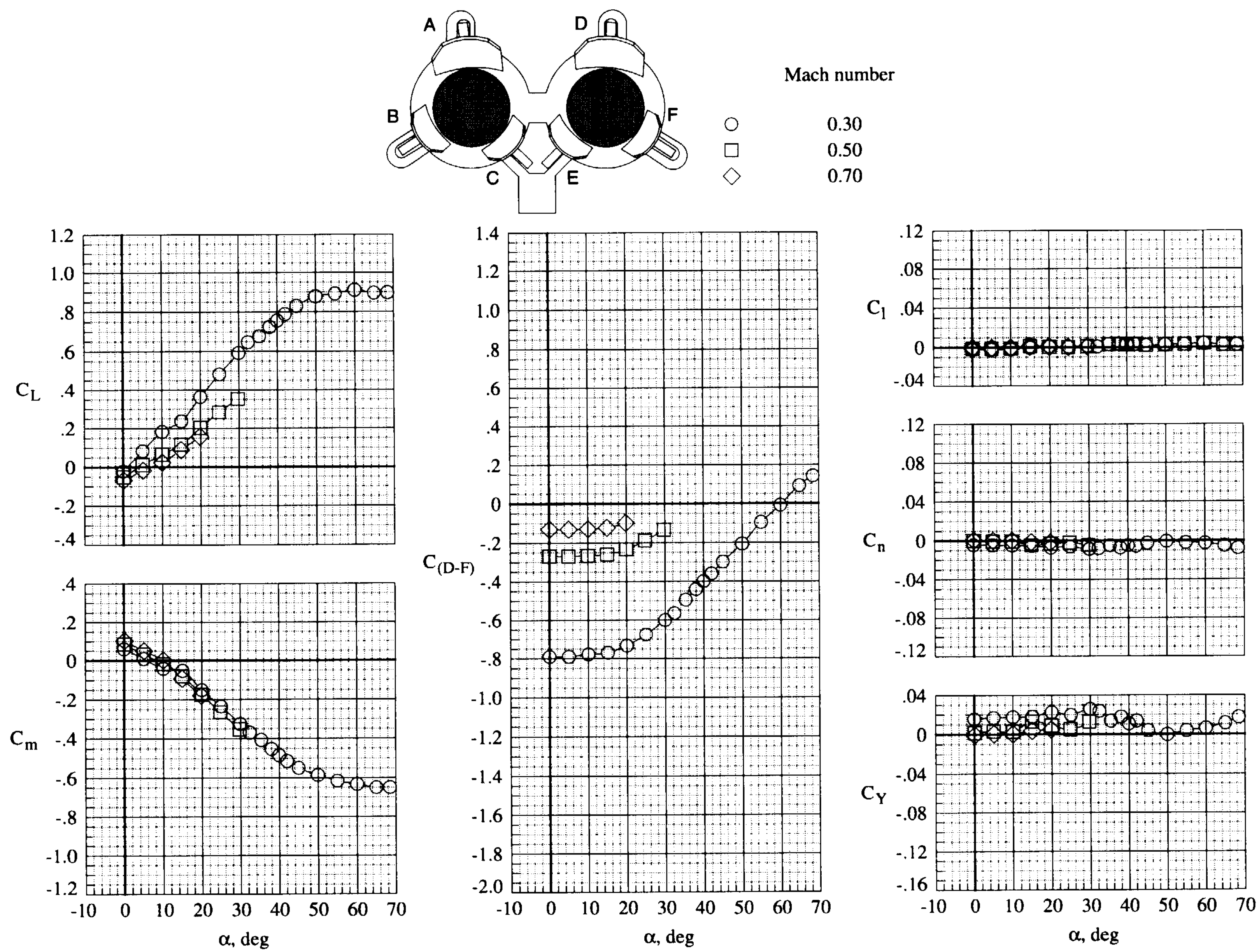
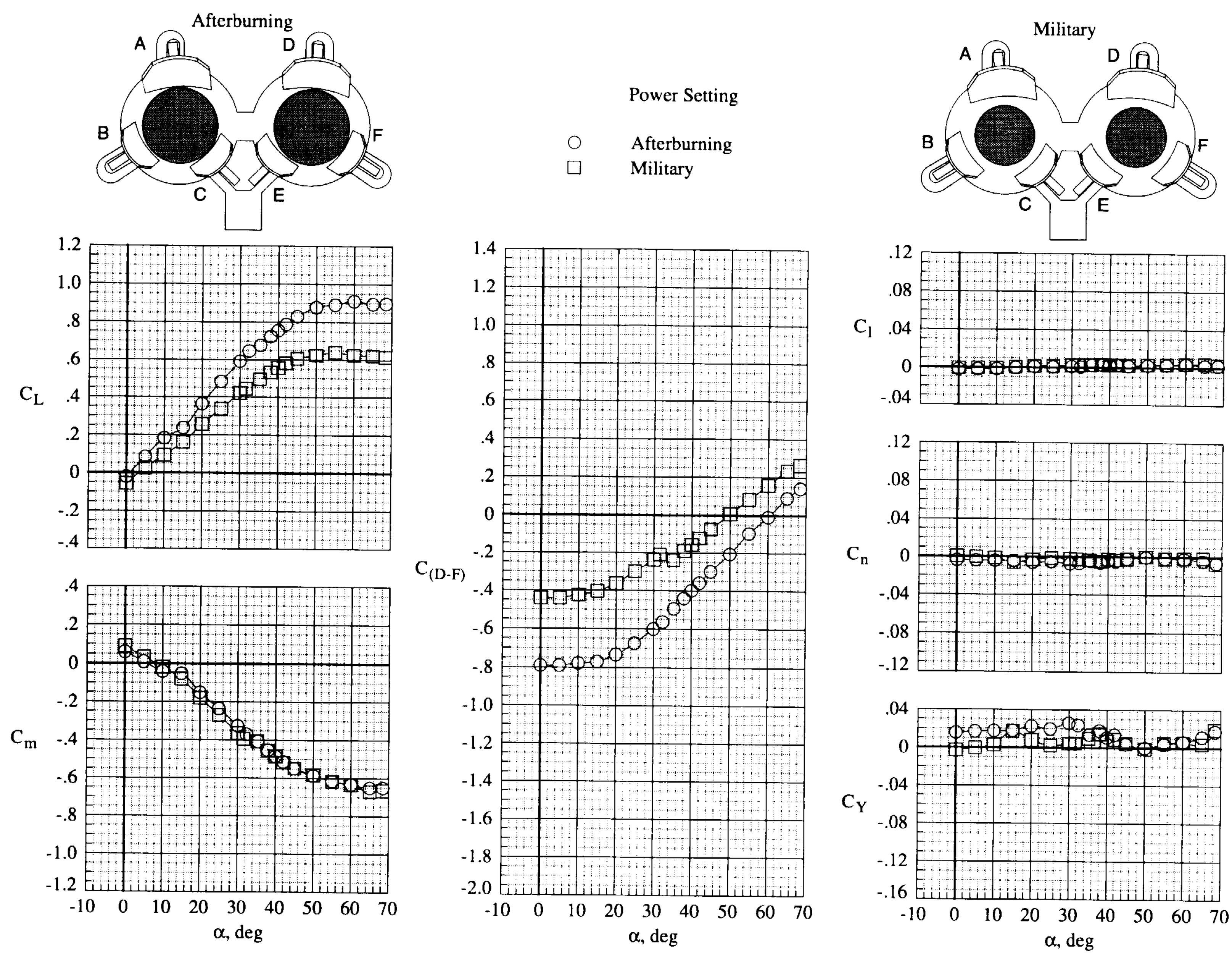
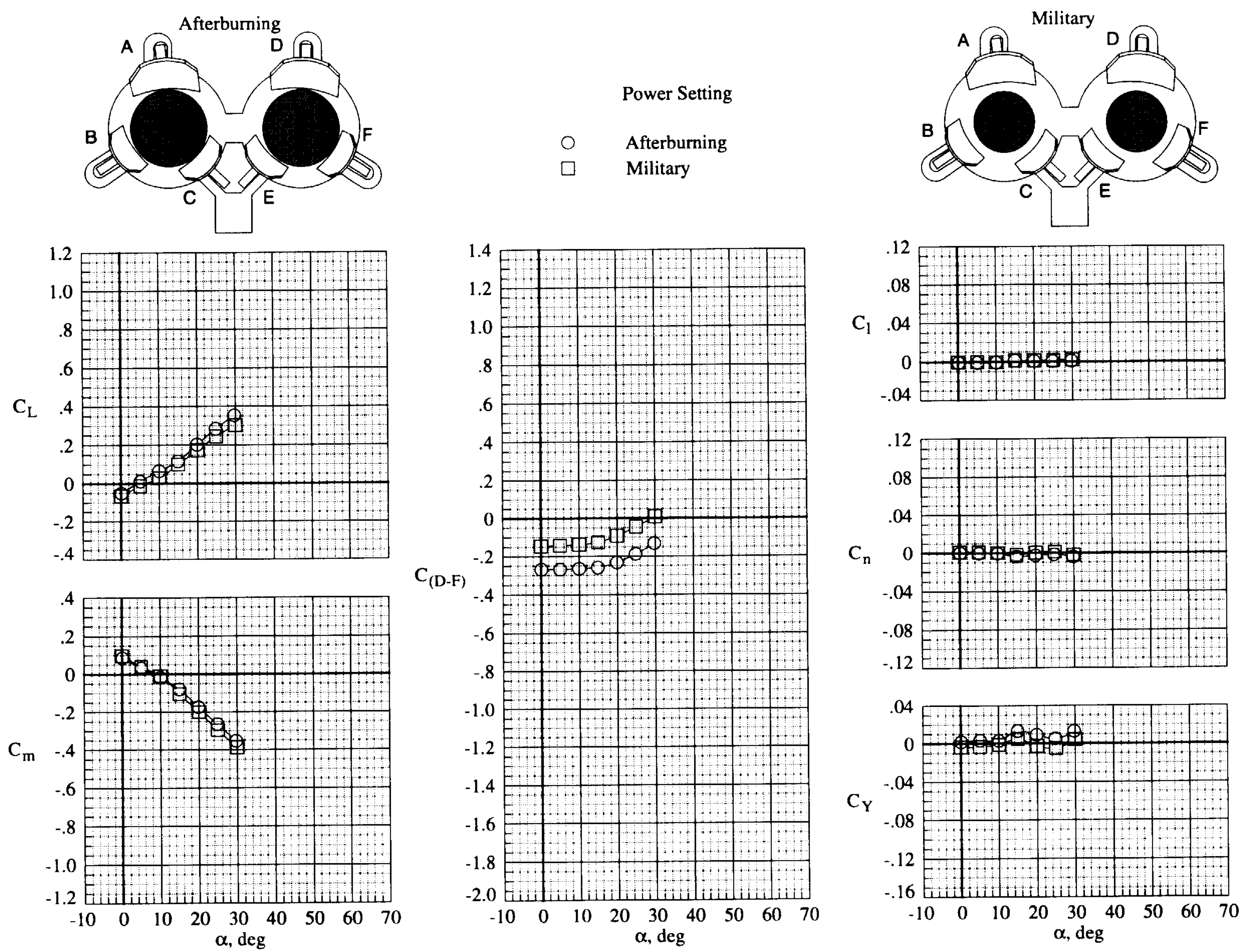


Figure 17. Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes fully retracted.



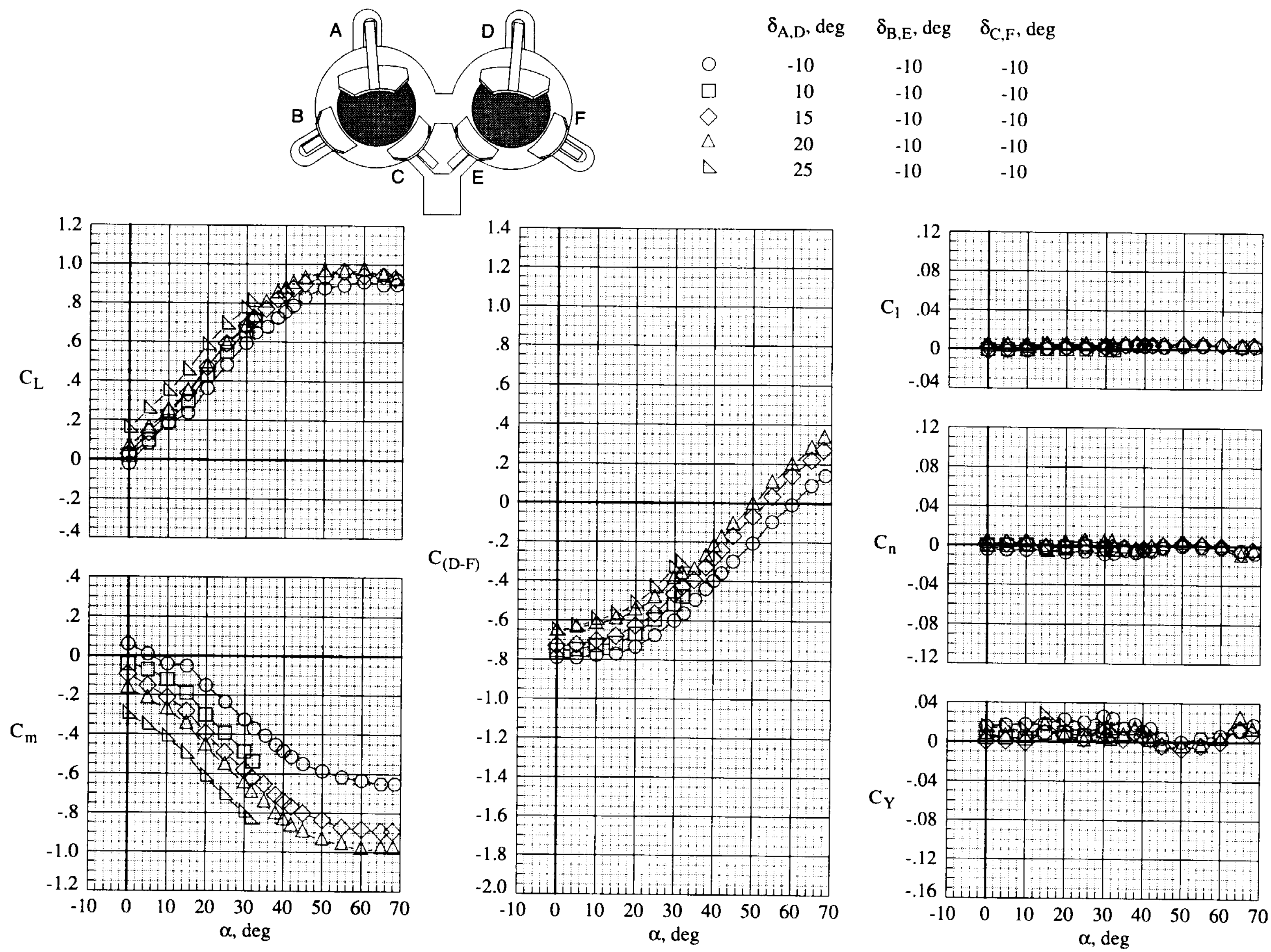
(a) $M = 0.30$.

Figure 18. Effect of nozzle power setting on afterbody aerodynamic characteristics at scheduled NPR with vanes fully retracted.



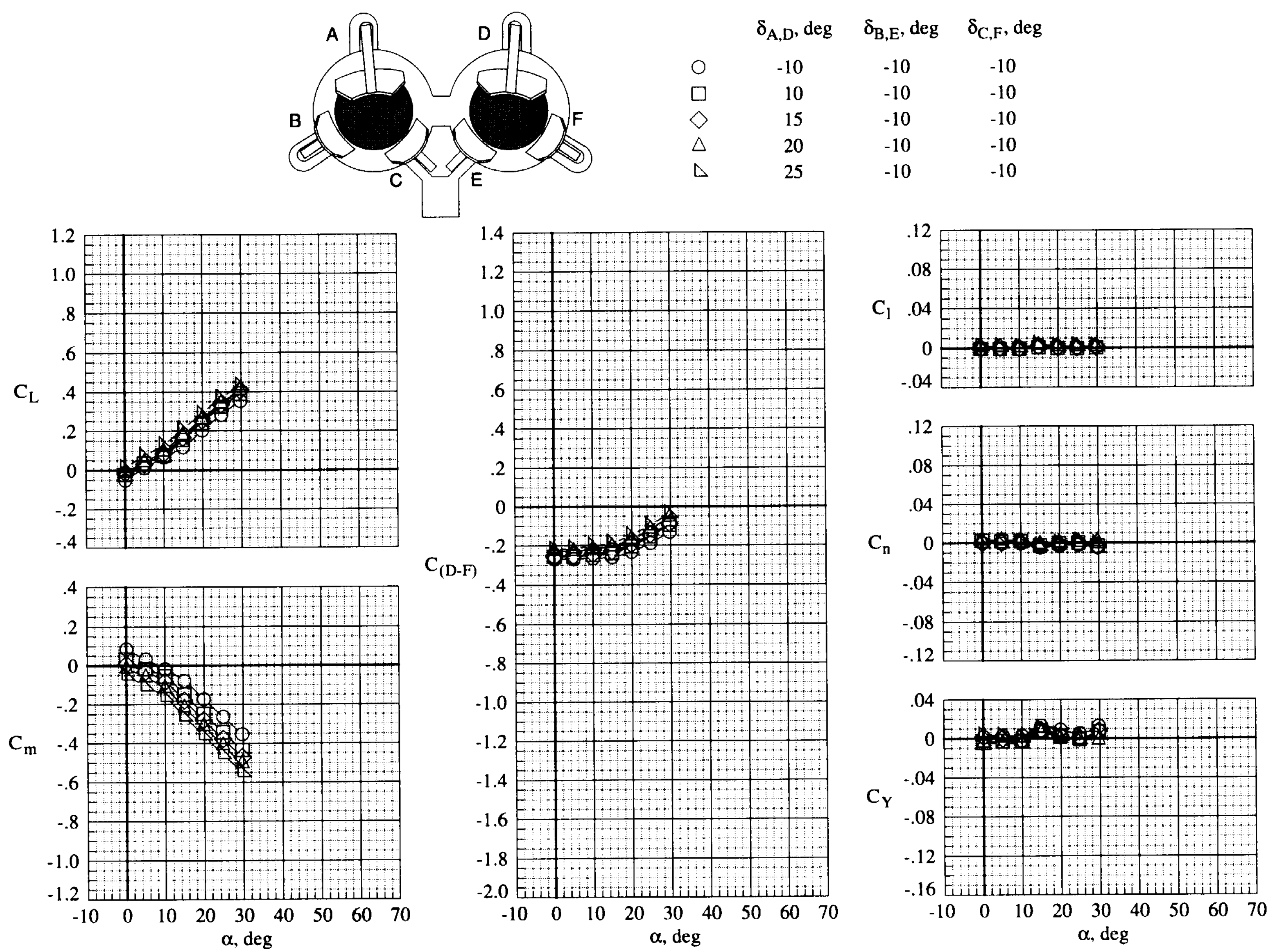
(b) $M = 0.50$.

Figure 18. Concluded.



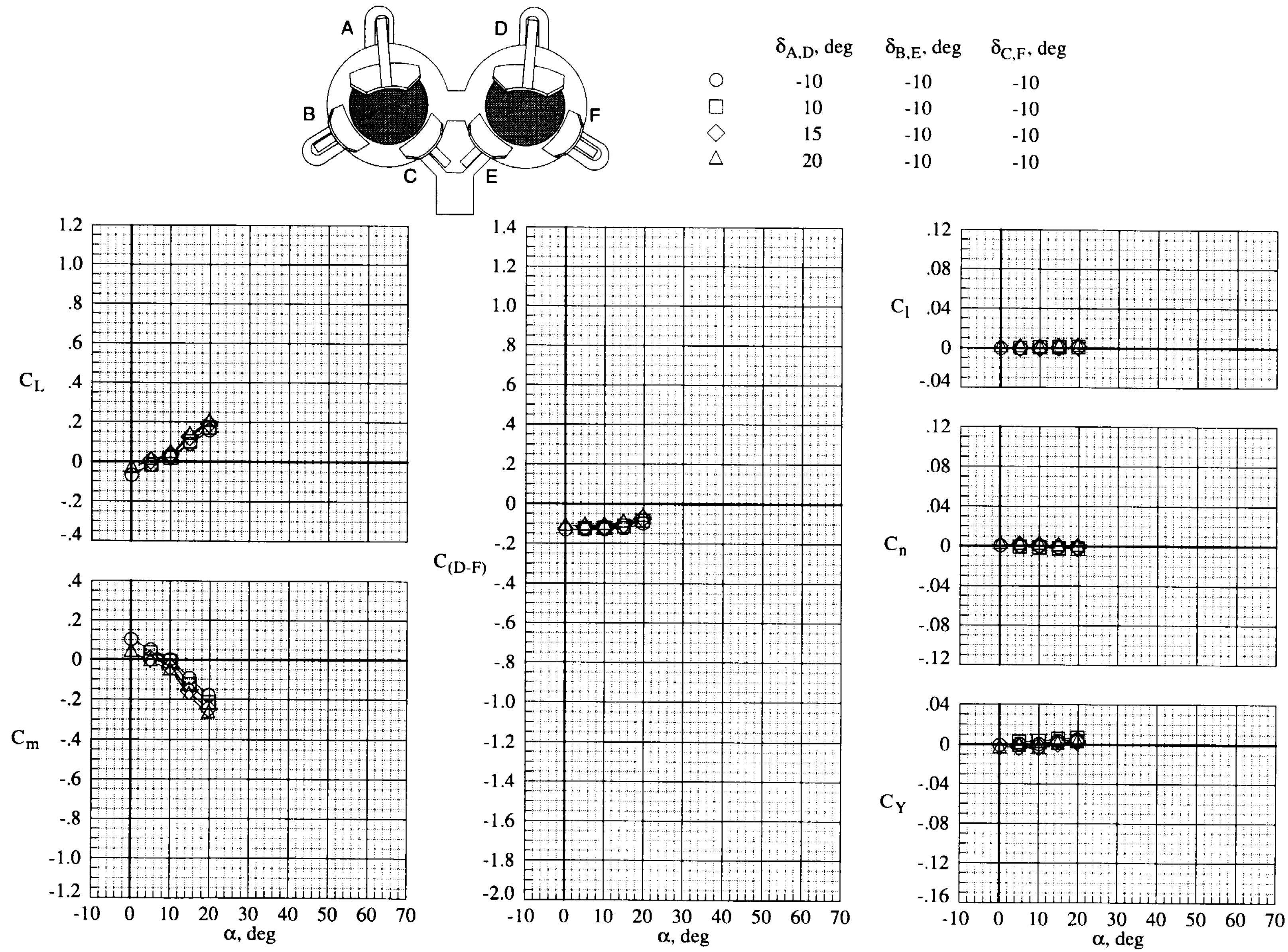
(a) $M = 0.30$.

Figure 19. Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes A,D deployed.



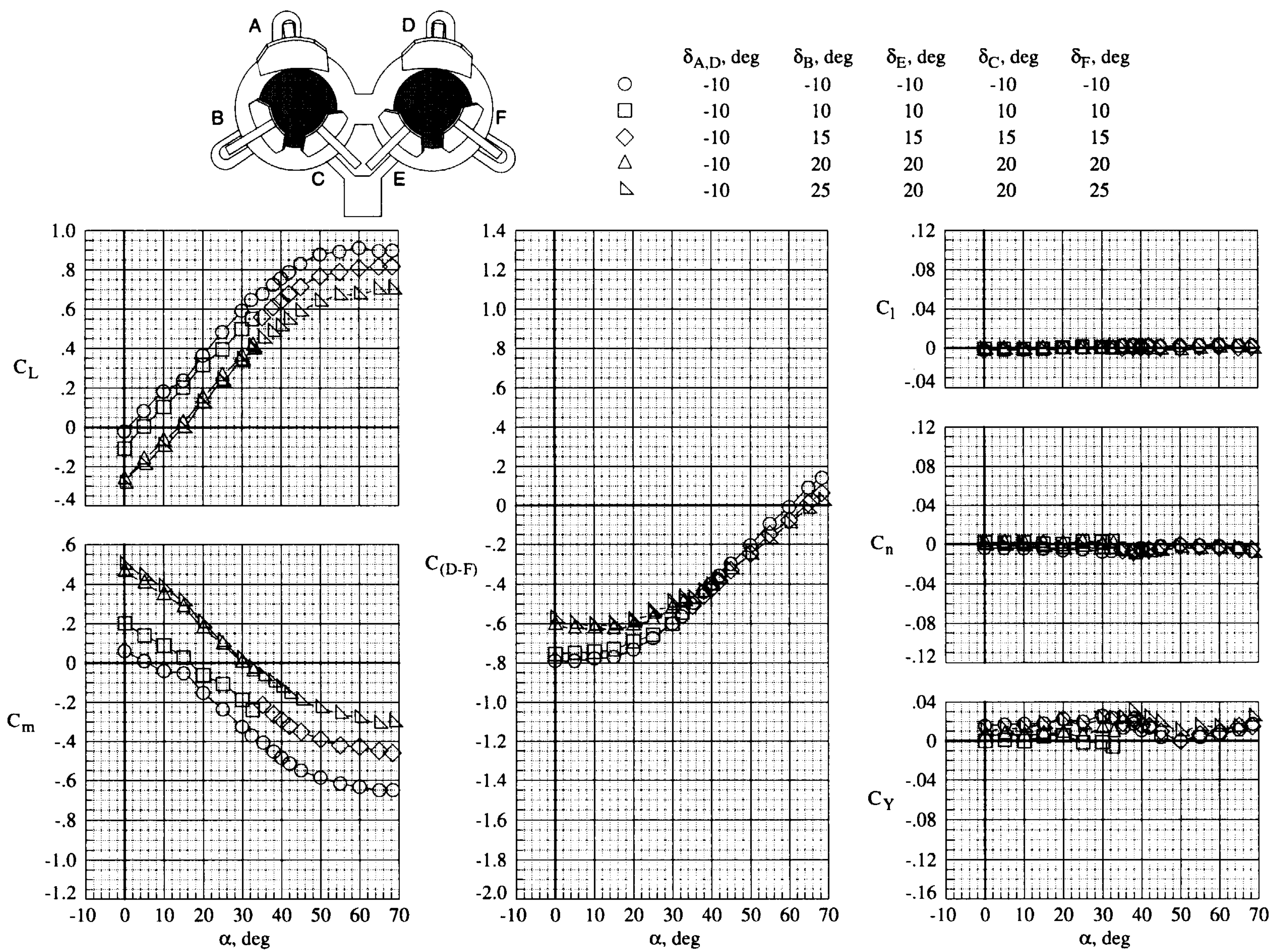
(b) $M = 0.50$.

Figure 19. Continued.



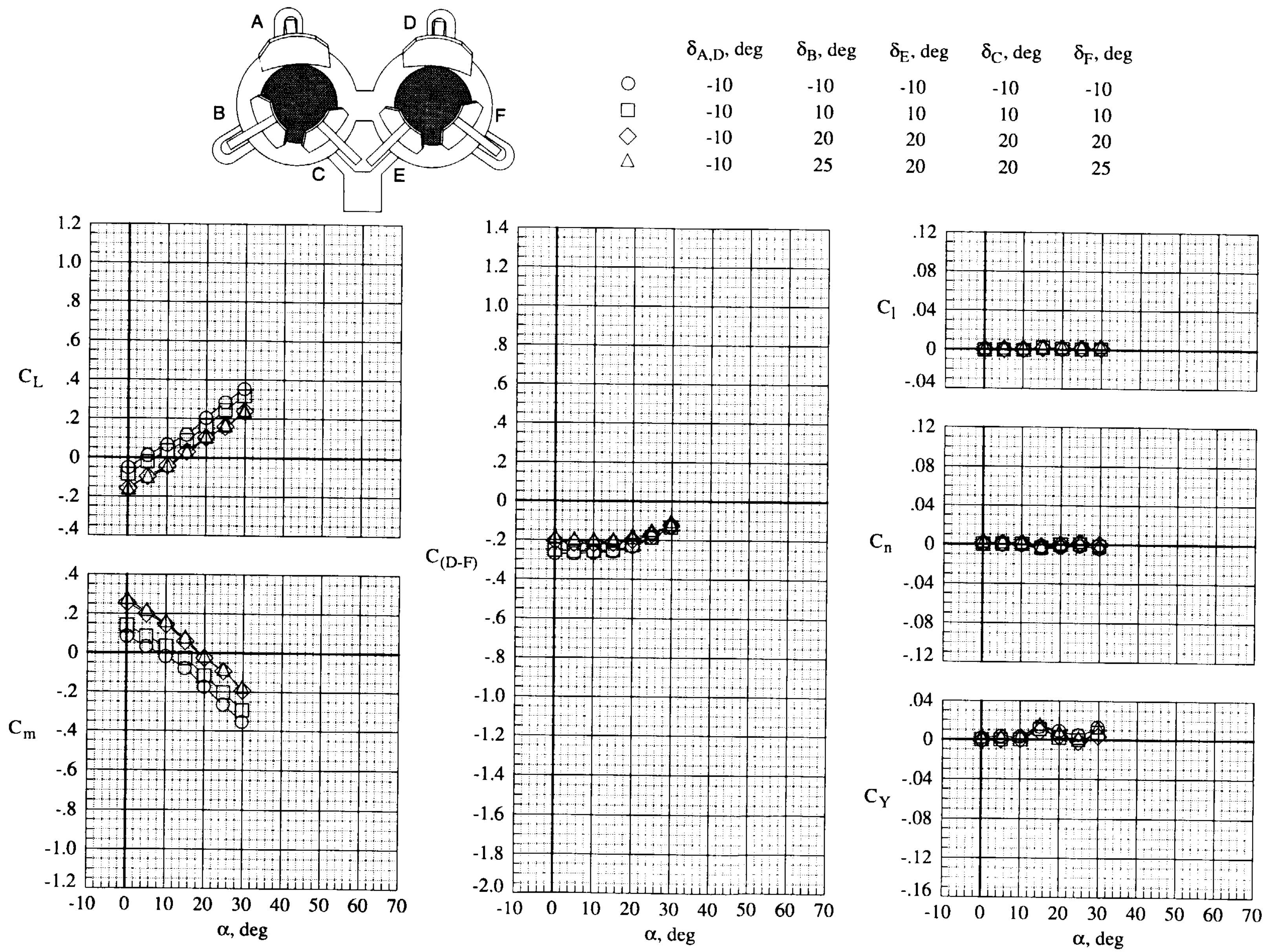
(c) $M = 0.70$.

Figure 19. Concluded.



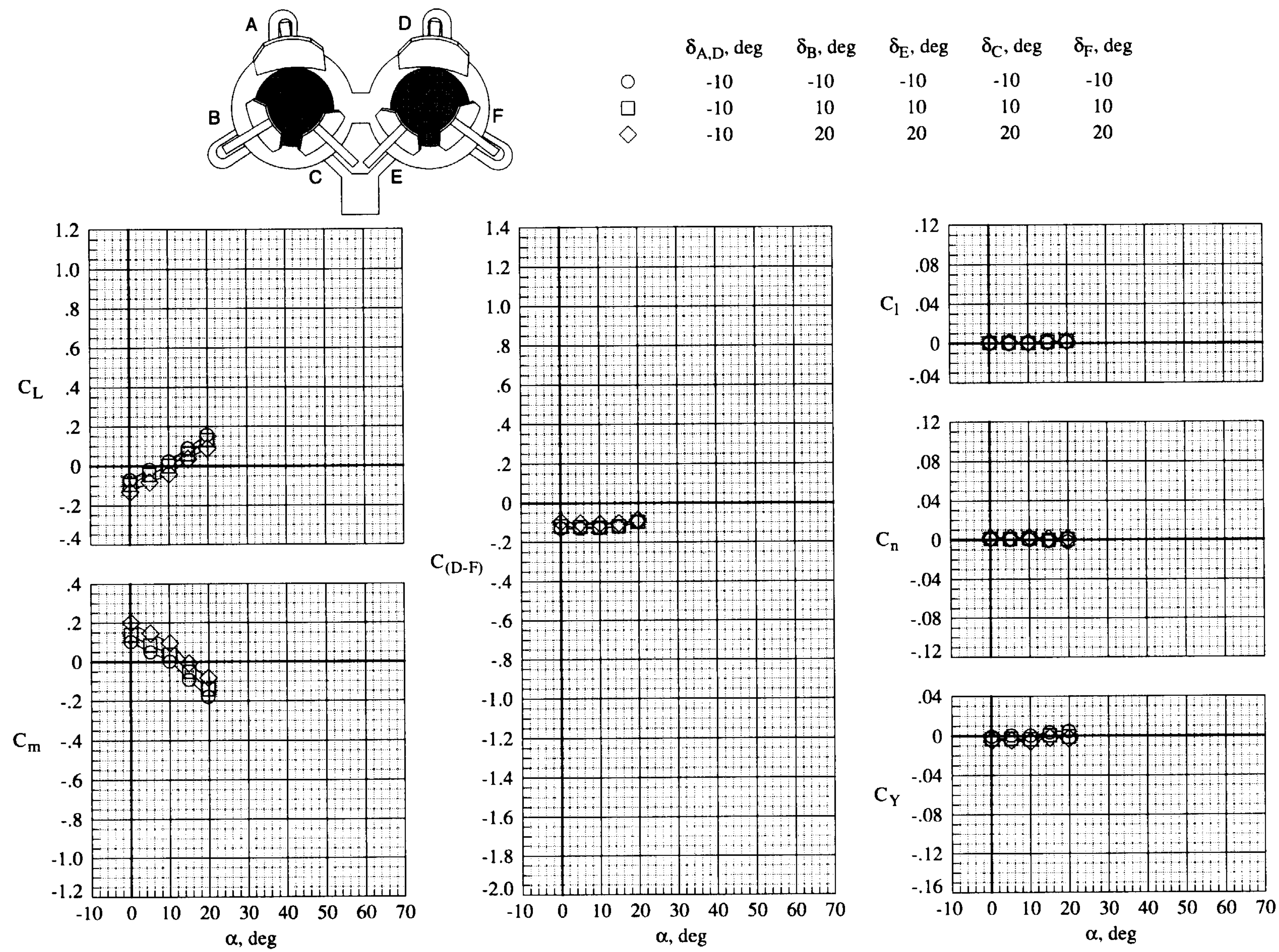
(a) $M = 0.30$.

Figure 20. Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes B,E and C,F deployed.



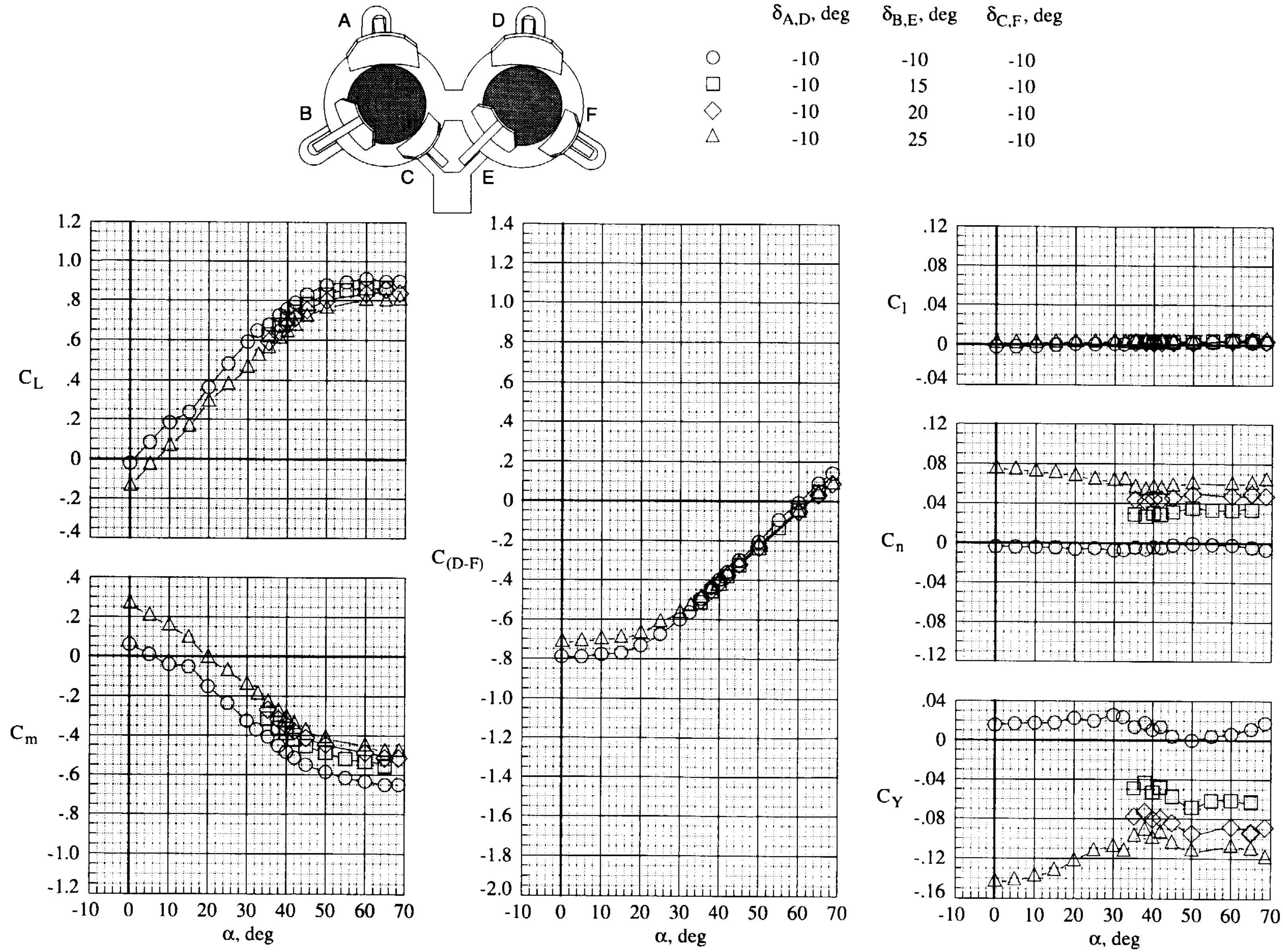
(b) $M = 0.50$.

Figure 20. Continued.



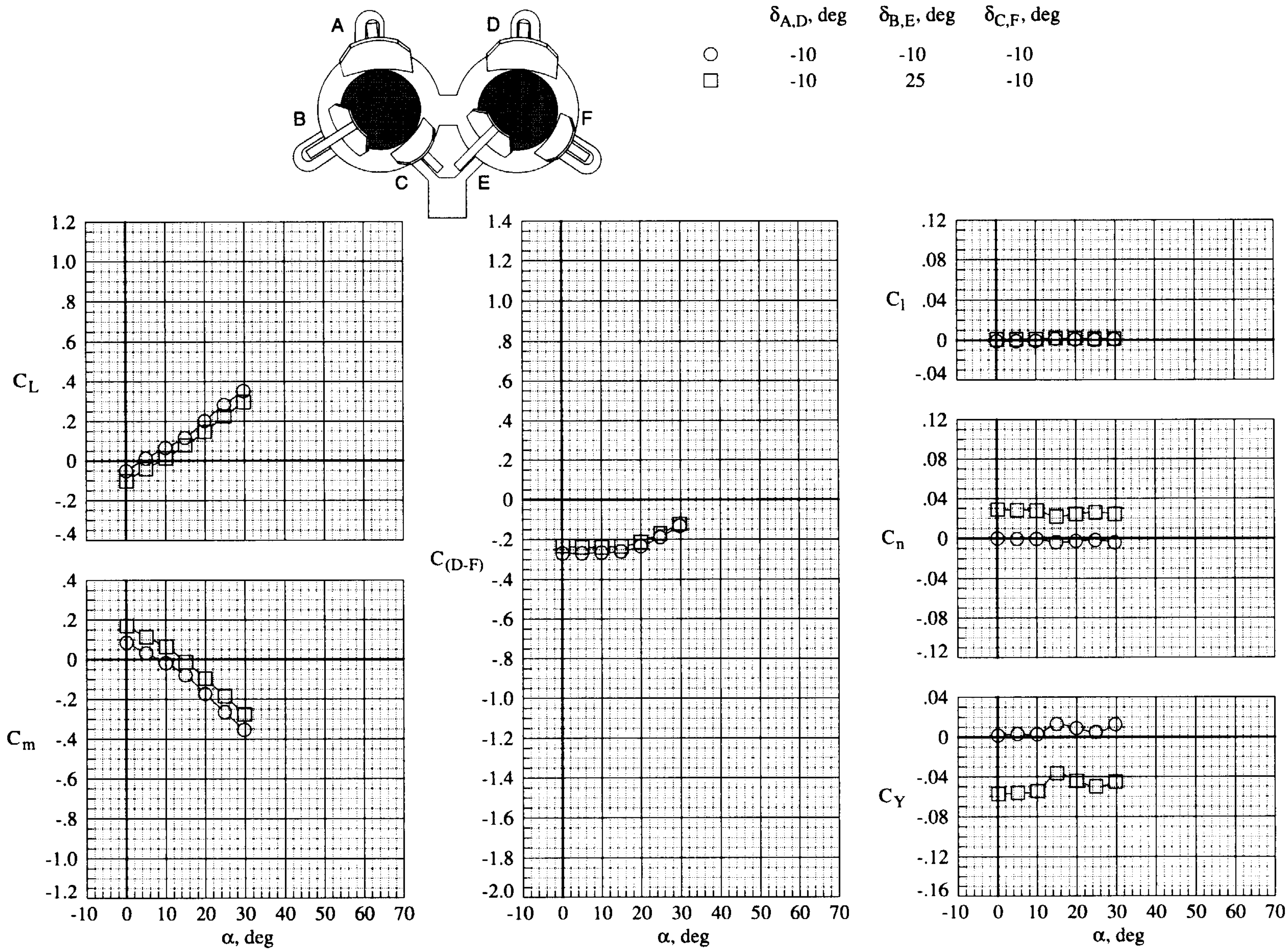
(c) $M = 0.70$.

Figure 20. Concluded.



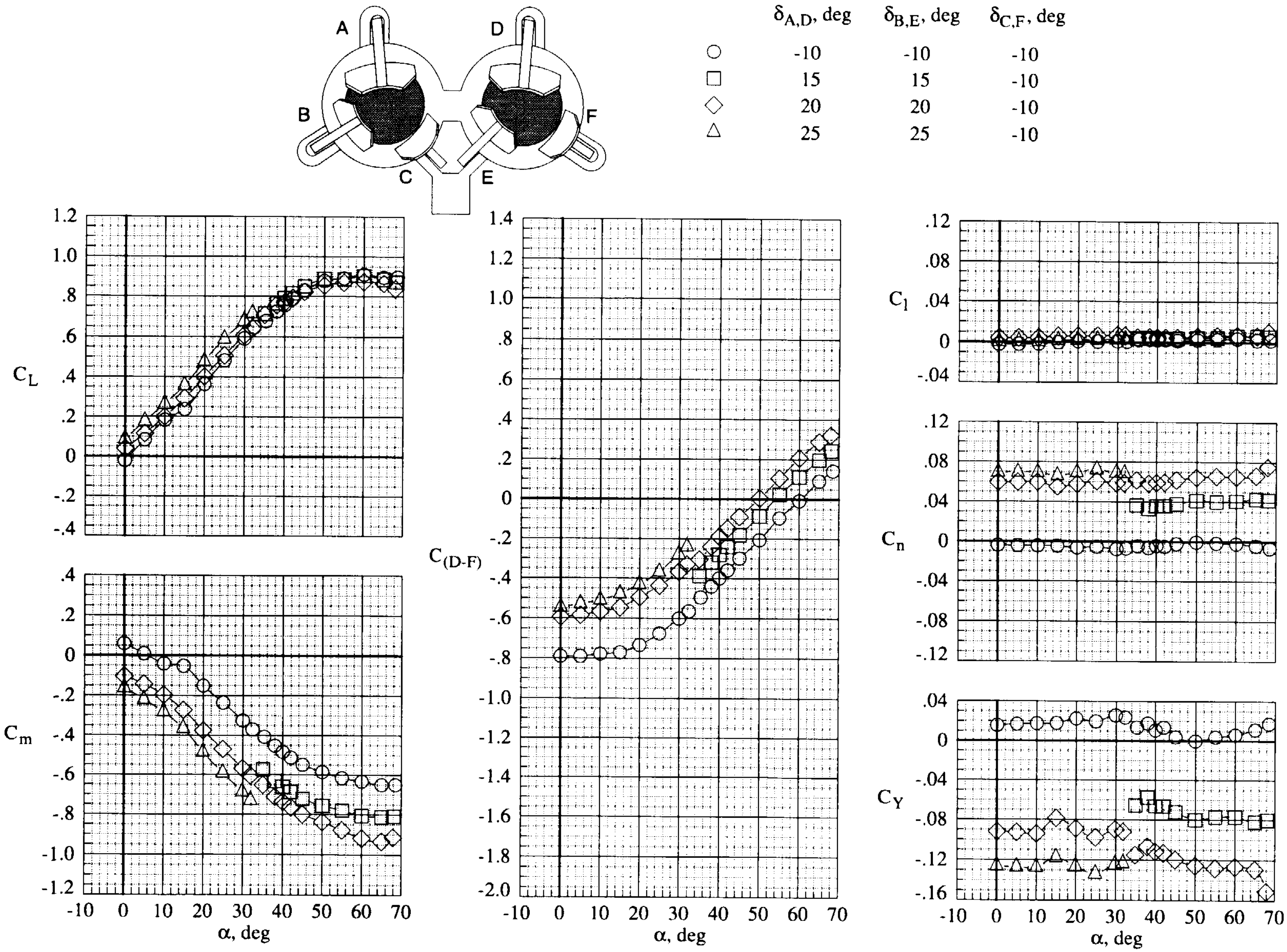
(a) $M = 0.30$.

Figure 21. Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes B,E deployed.



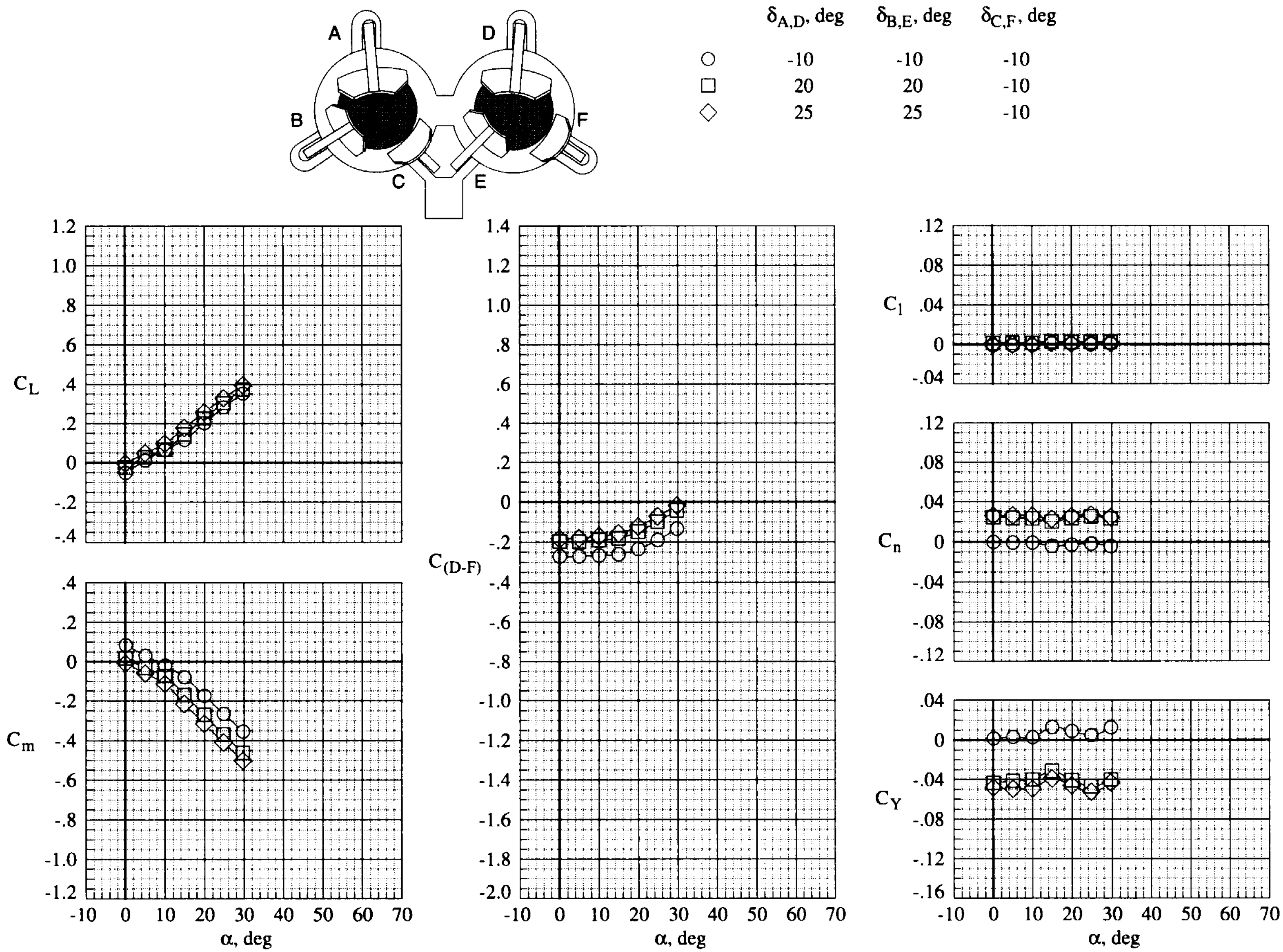
(b) $M = 0.50$.

Figure 21. Concluded.



(a) $M = 0.30$.

Figure 22. Afterbody aerodynamic characteristics at afterburning power and NPR = 4.25 with vanes A,D and B,E deployed.



(b) $M = 0.50$.

Figure 22. Concluded.

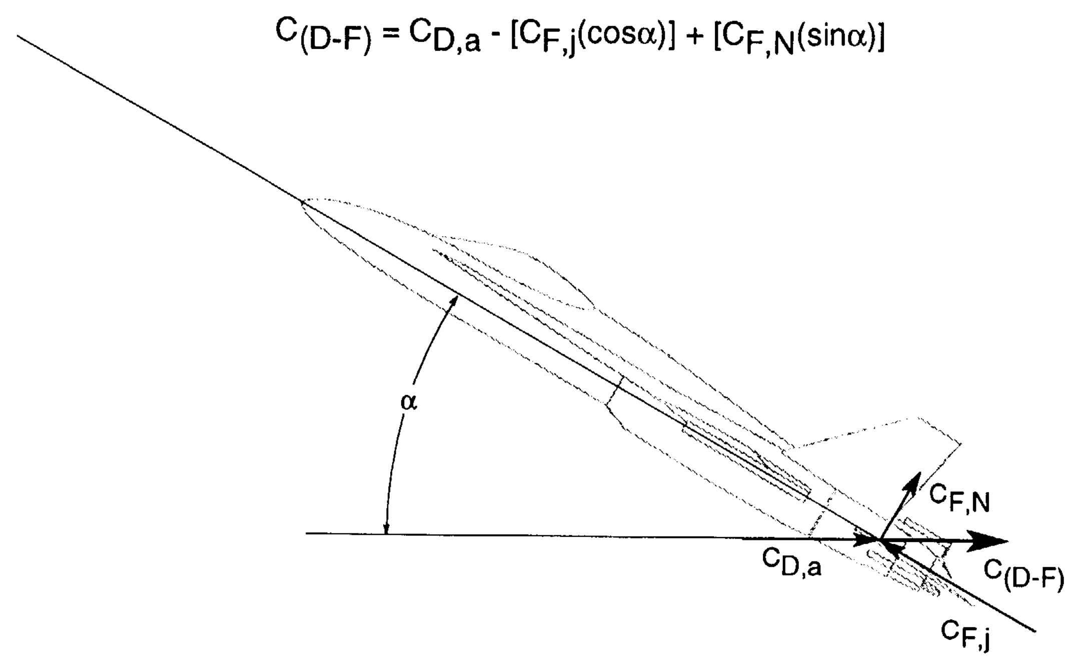
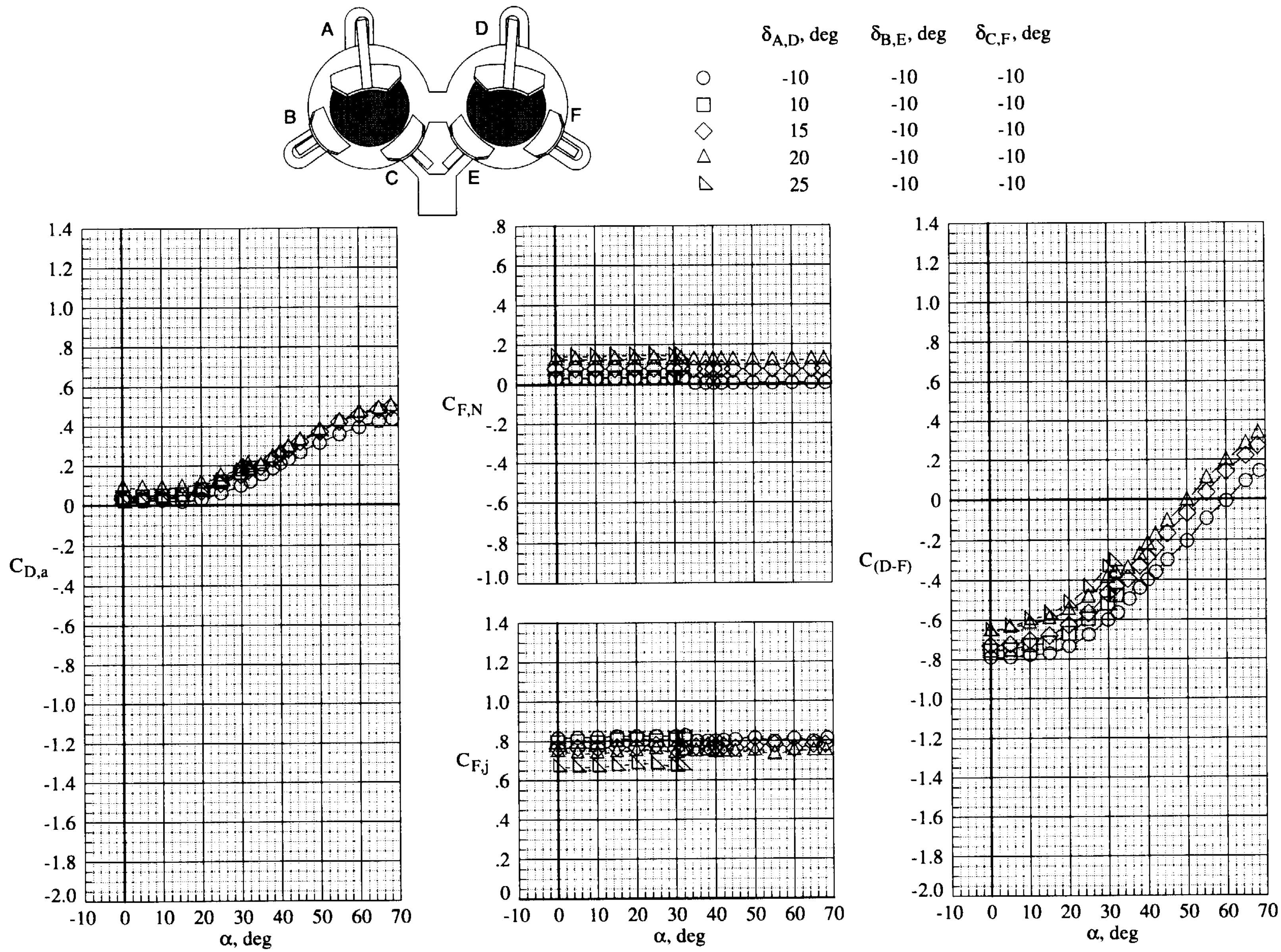
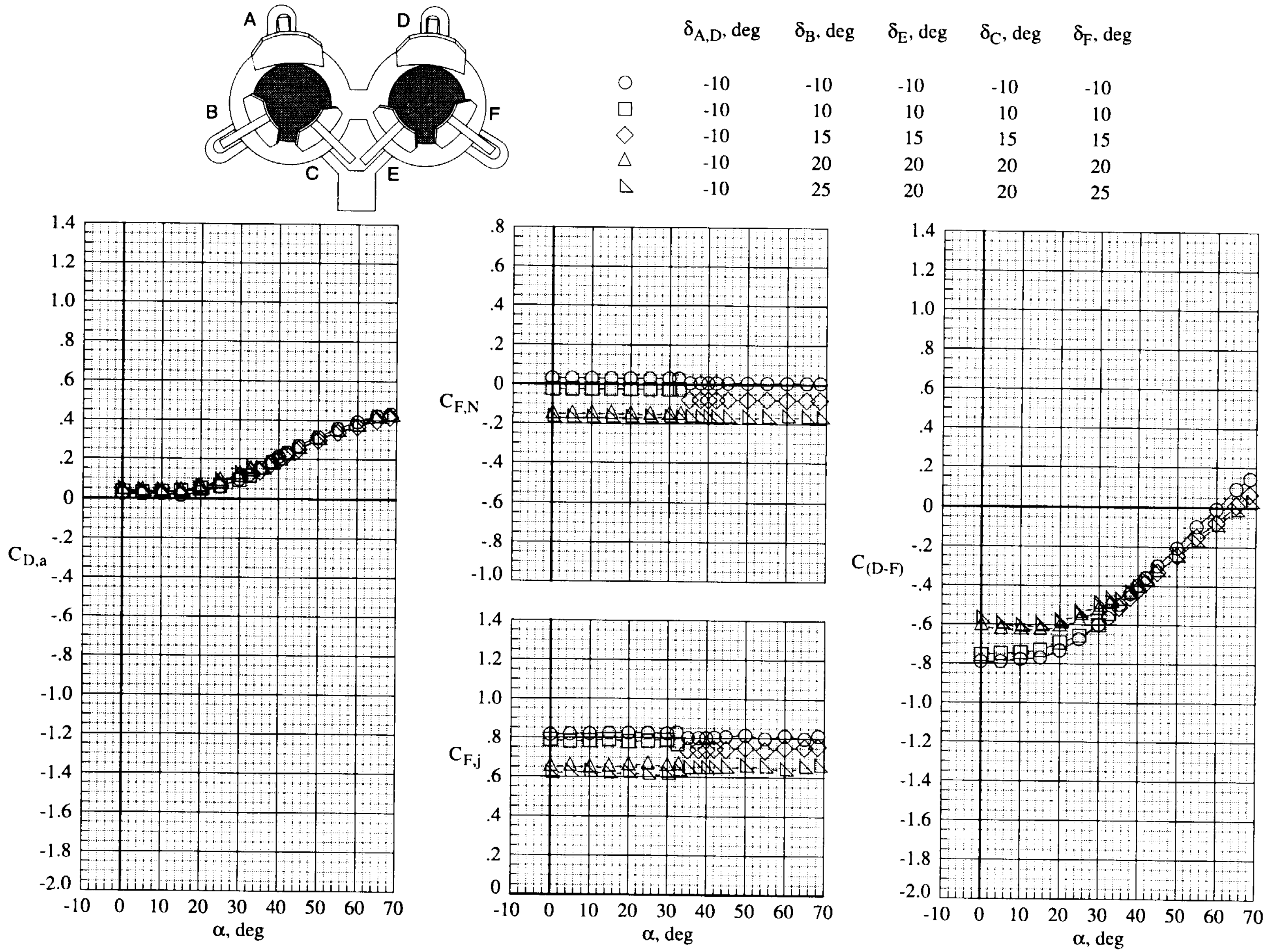


Figure 23. Individual drag and thrust contributions that make up $C_{(D-F)}$.



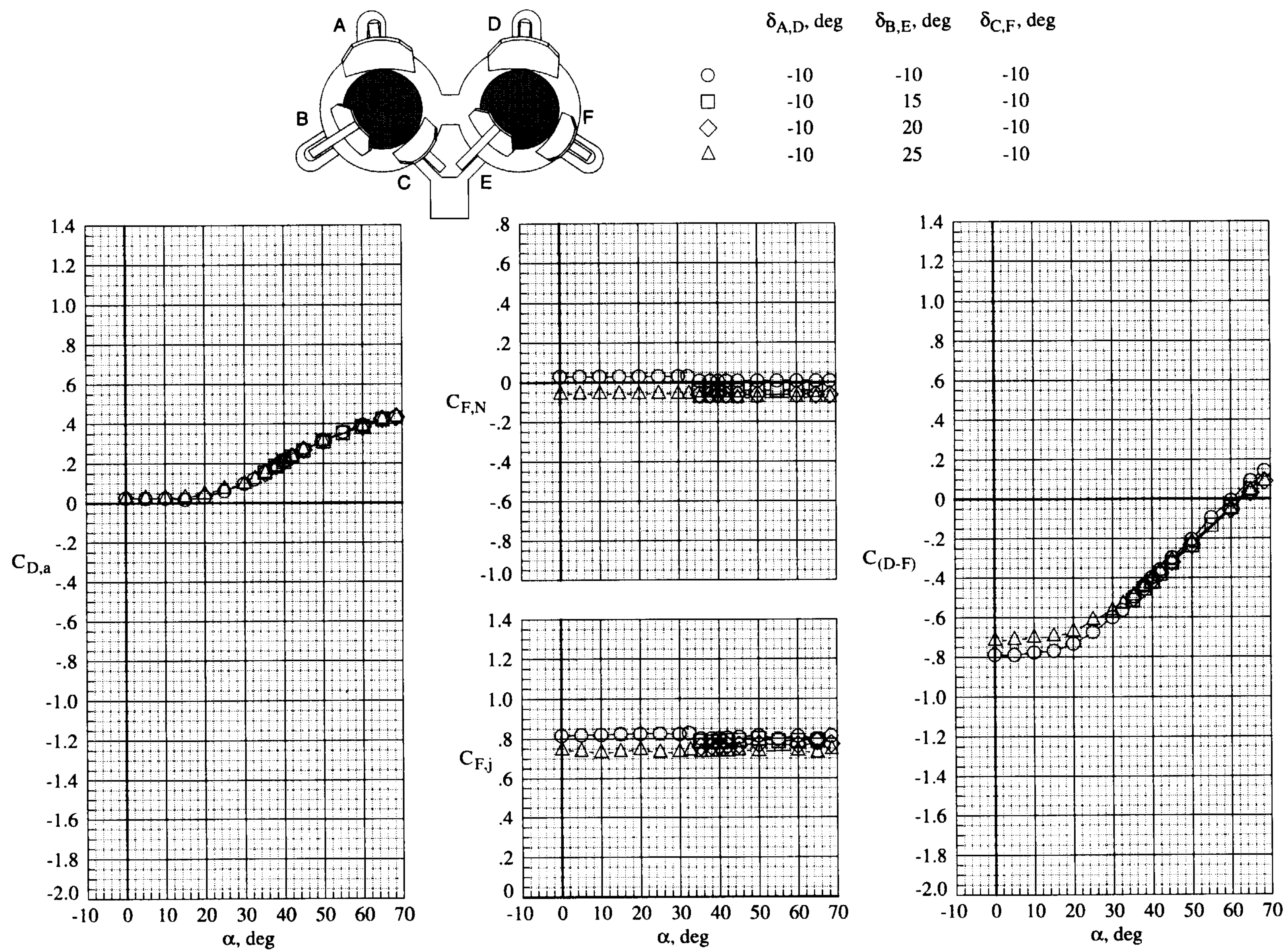
(a) Vanes A,D deployed.

Figure 24. Variation in afterbody drag and thrust contributions with angle of attack at afterburning power with NPR = 4.25 and $M = 0.30$.



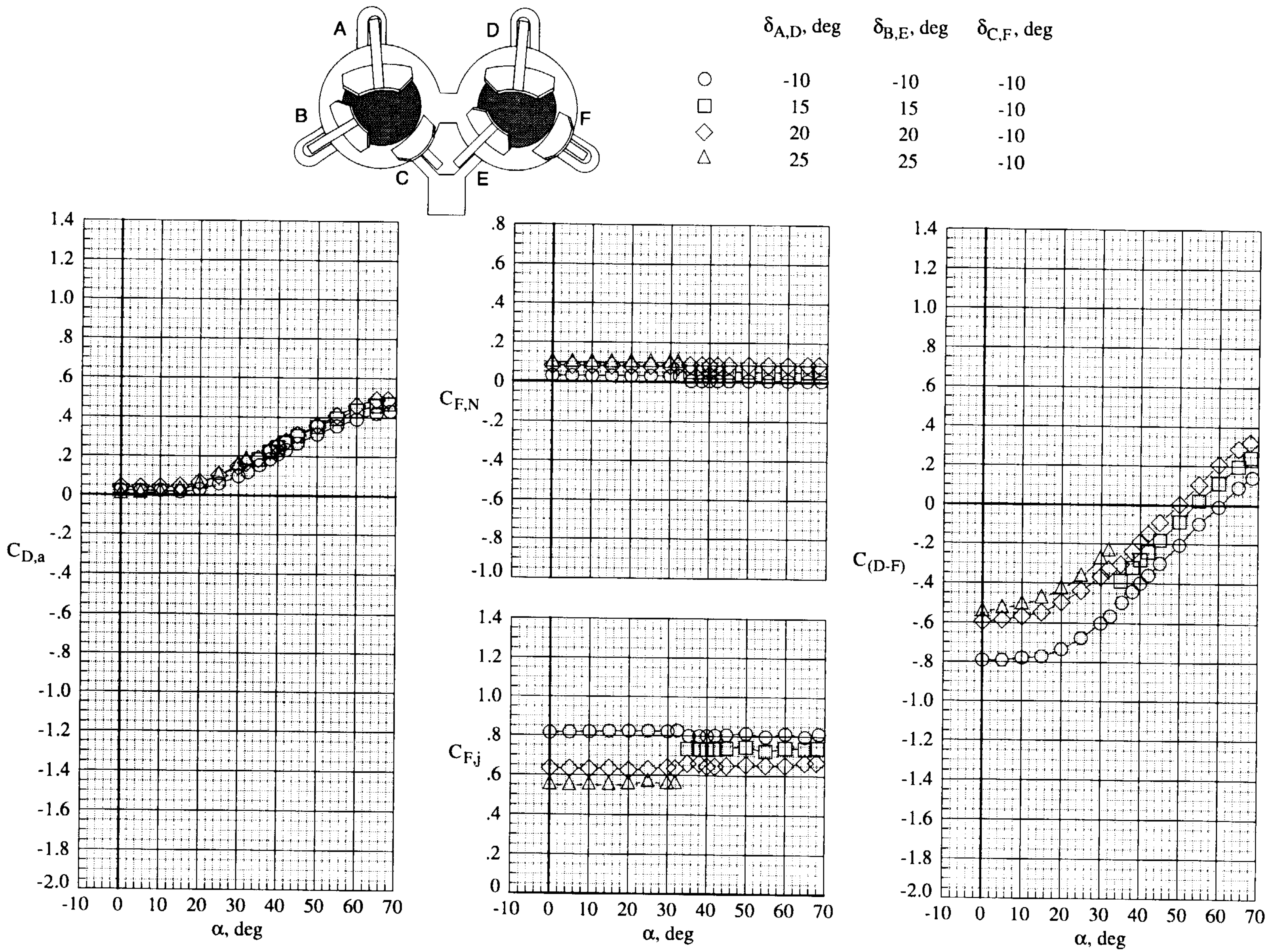
(b) Vanes B,E and C,F deployed.

Figure 24. Continued.



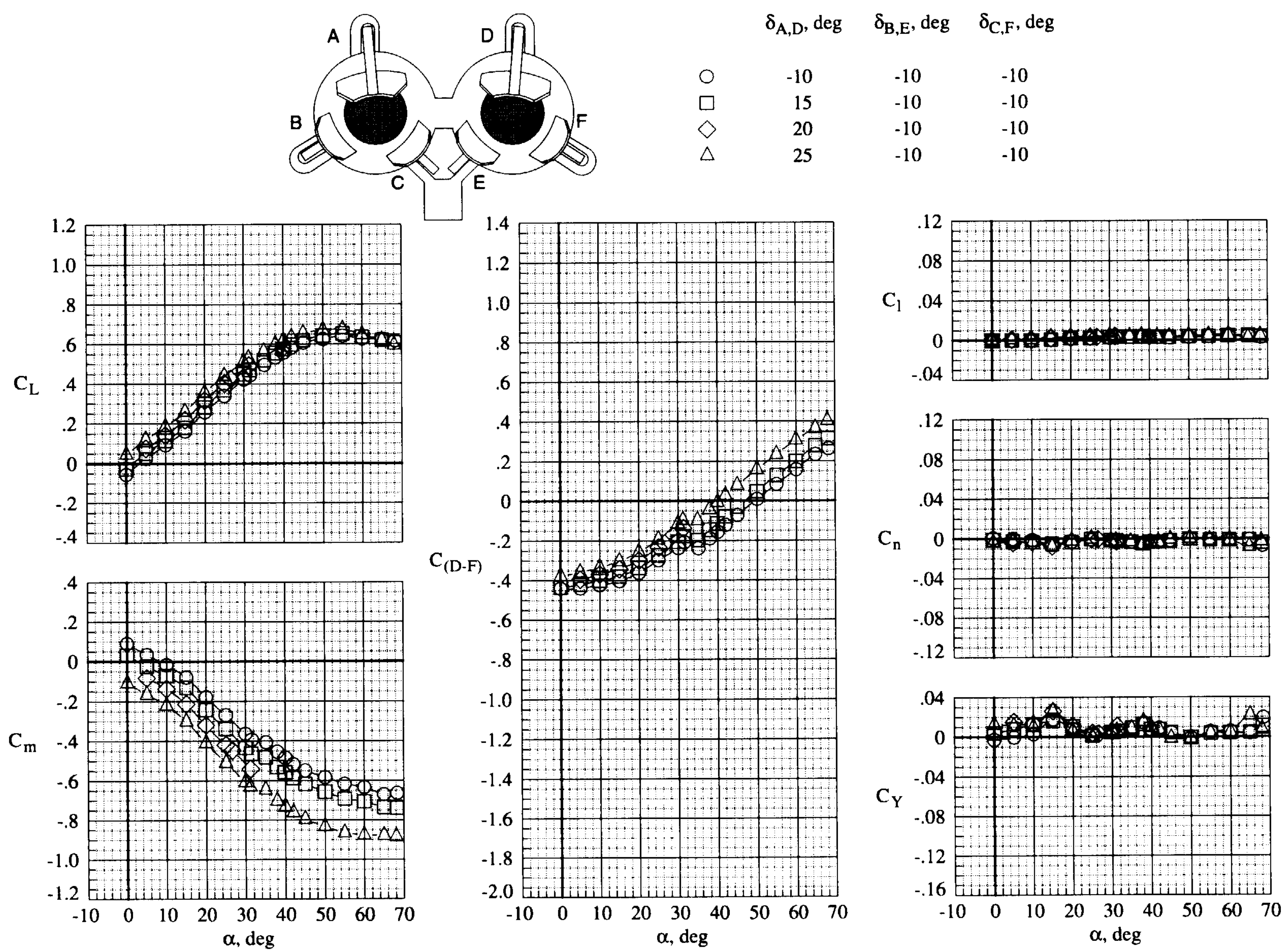
(c) Vanes B,E deployed.

Figure 24. Continued.



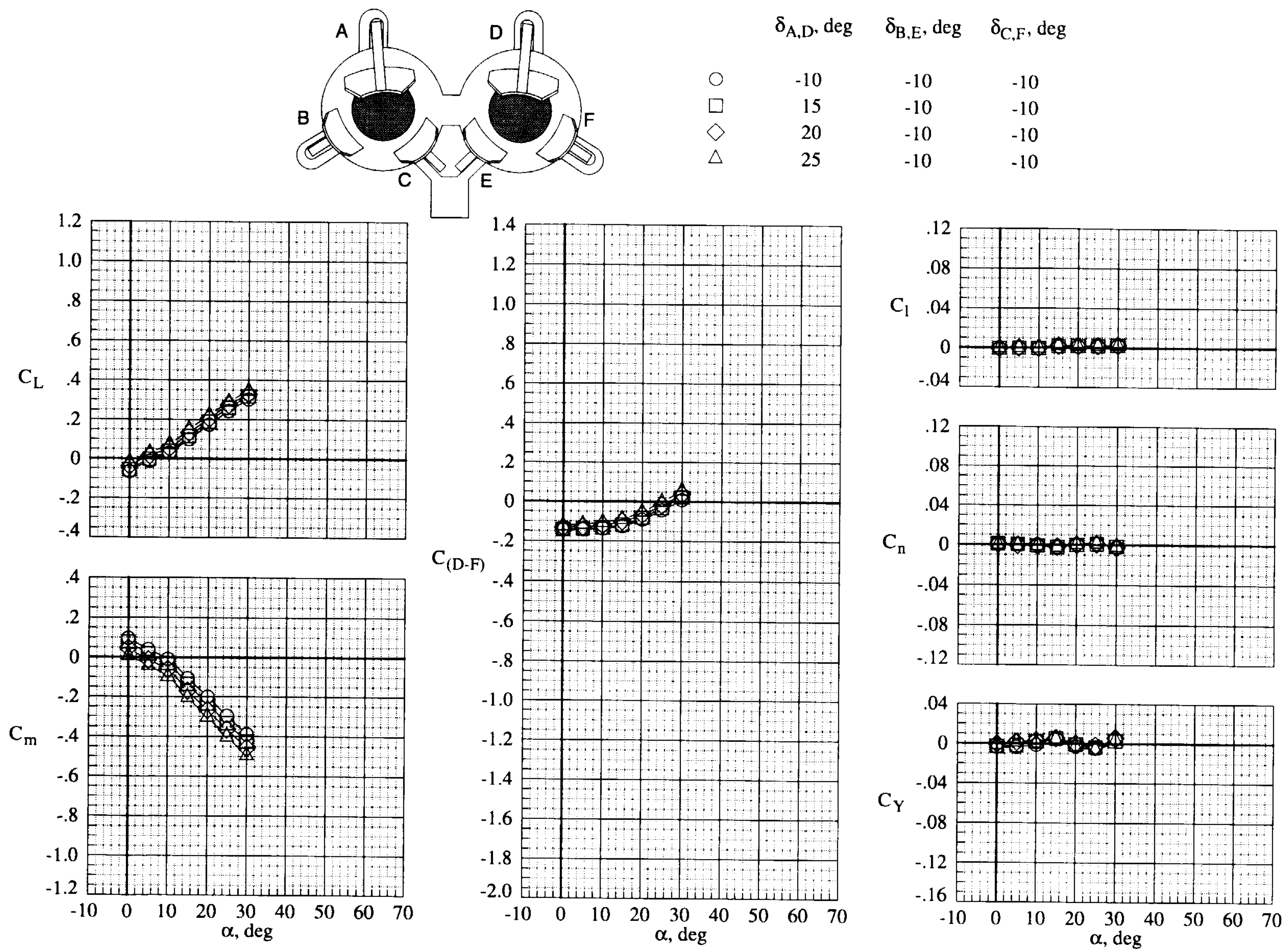
(d) Vanes A,D and B,E deployed.

Figure 24. Concluded.



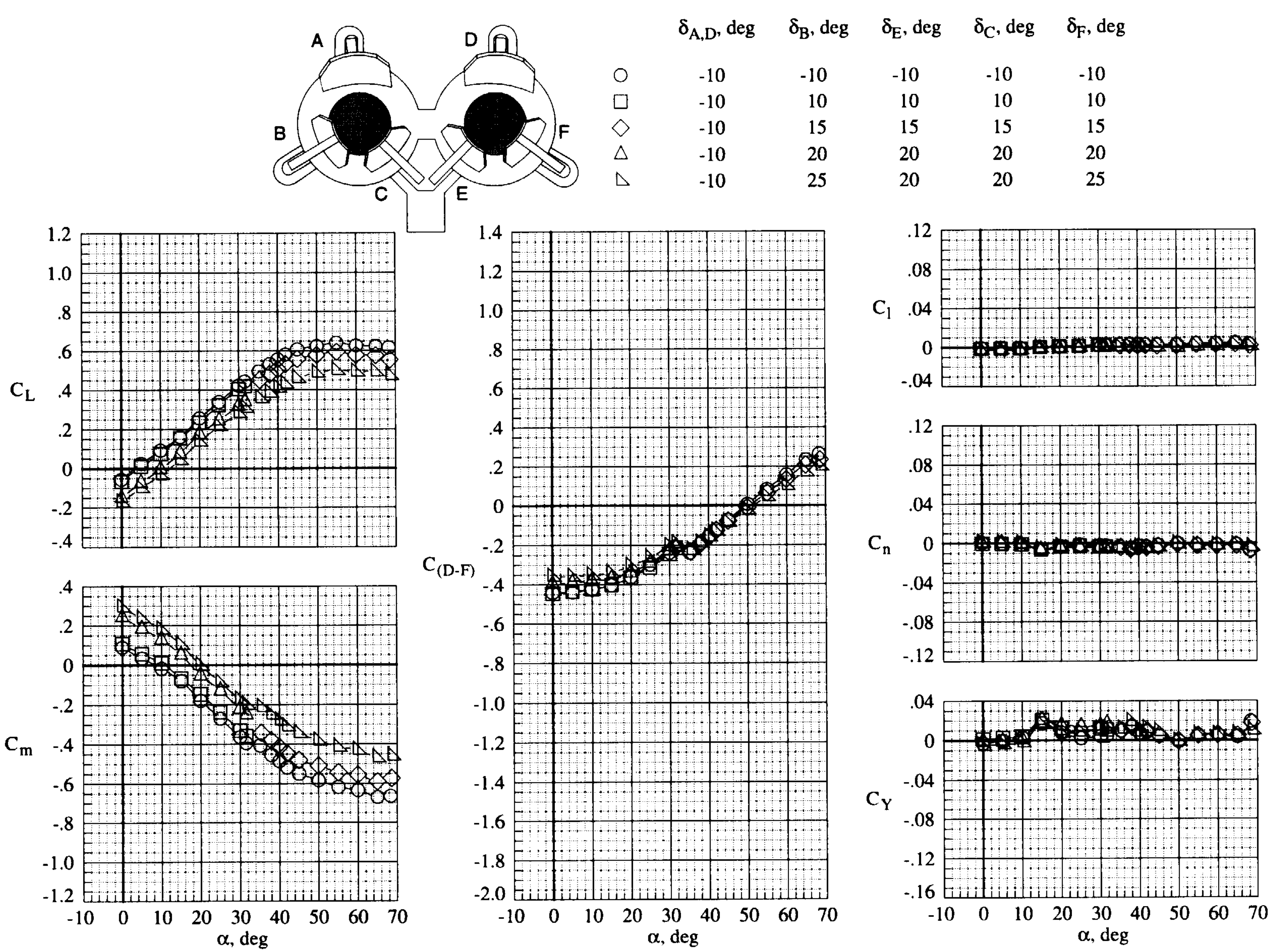
(a) $M = 0.30$.

Figure 25. Afterbody aerodynamic characteristics at military power and NPR = 4.15 with vanes A,D deployed.



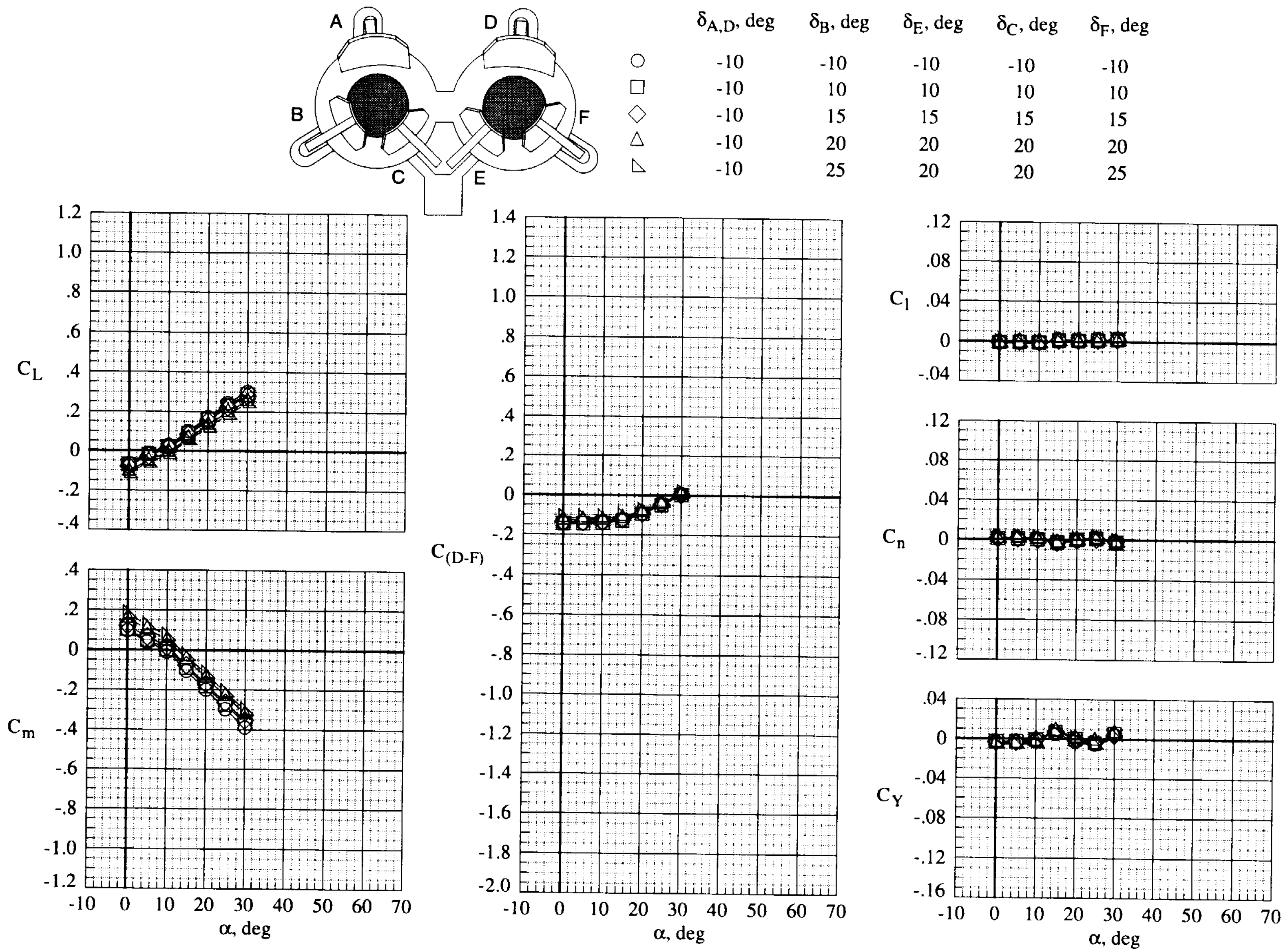
(b) $M = 0.50$.

Figure 25. Concluded.



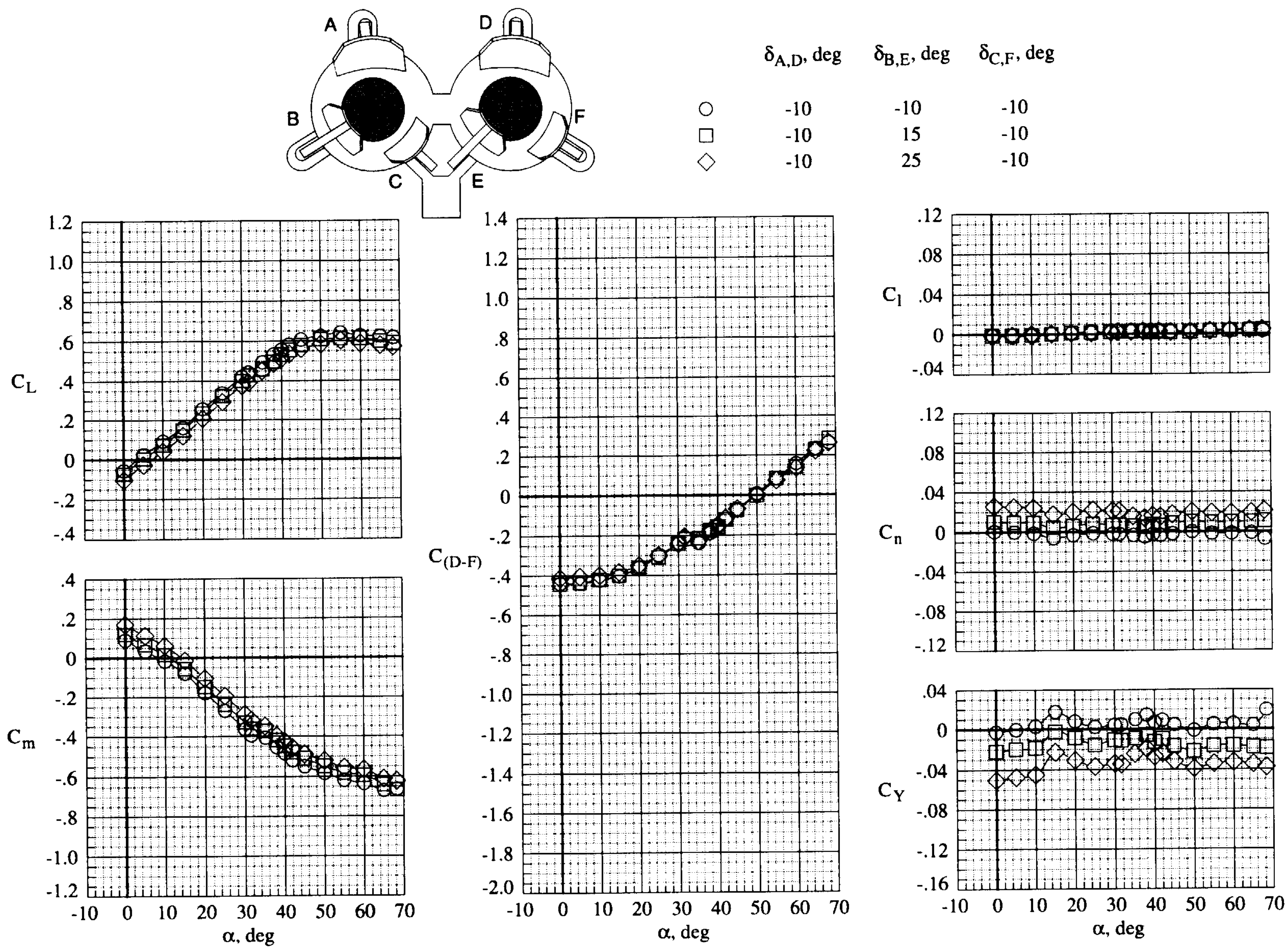
(a) $M = 0.30$.

Figure 26. Afterbody aerodynamic characteristics at military power and NPR = 4.15 with vanes B,E and C,F deployed.



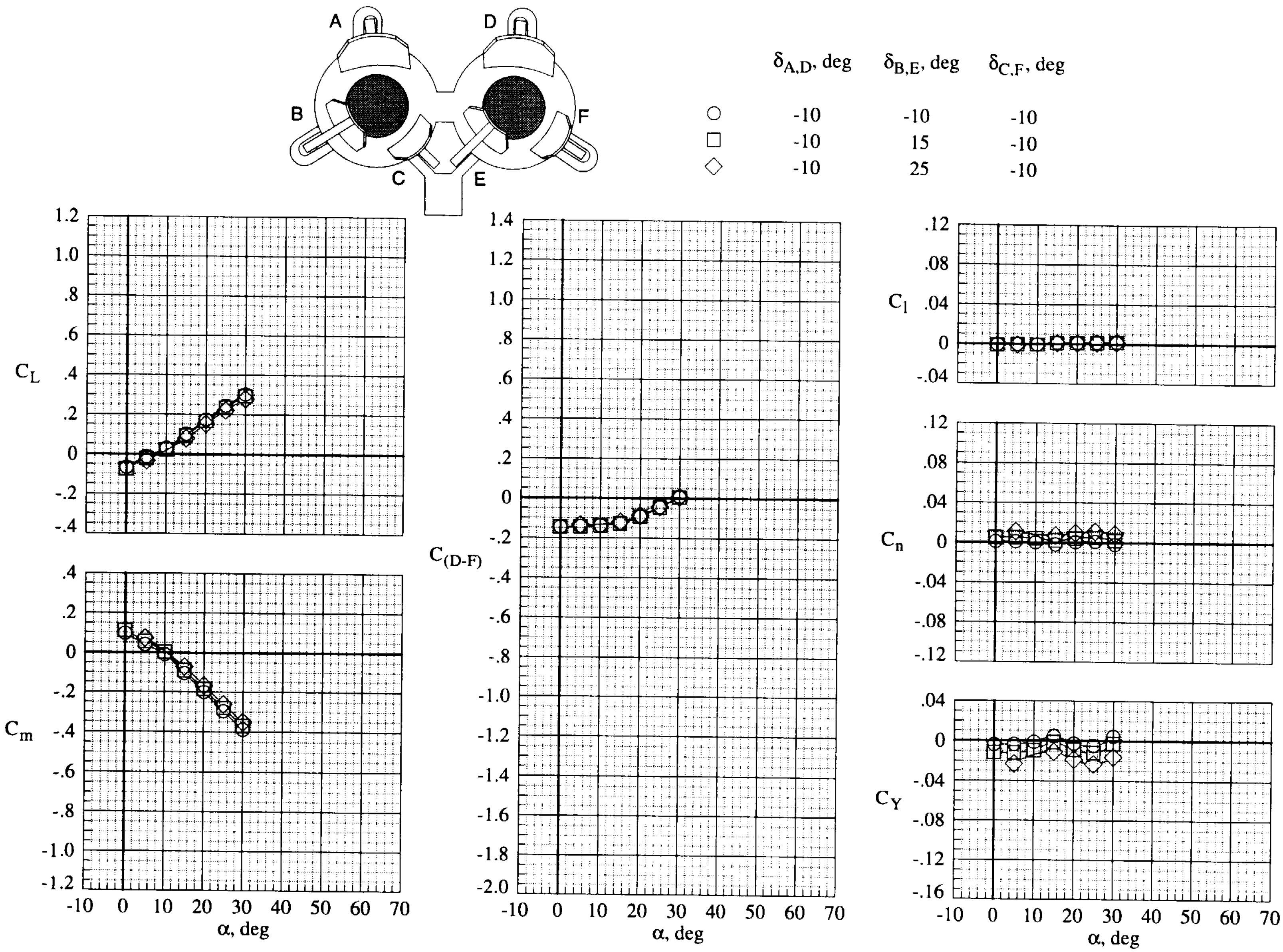
(b) $M = 0.50$.

Figure 26. Concluded.



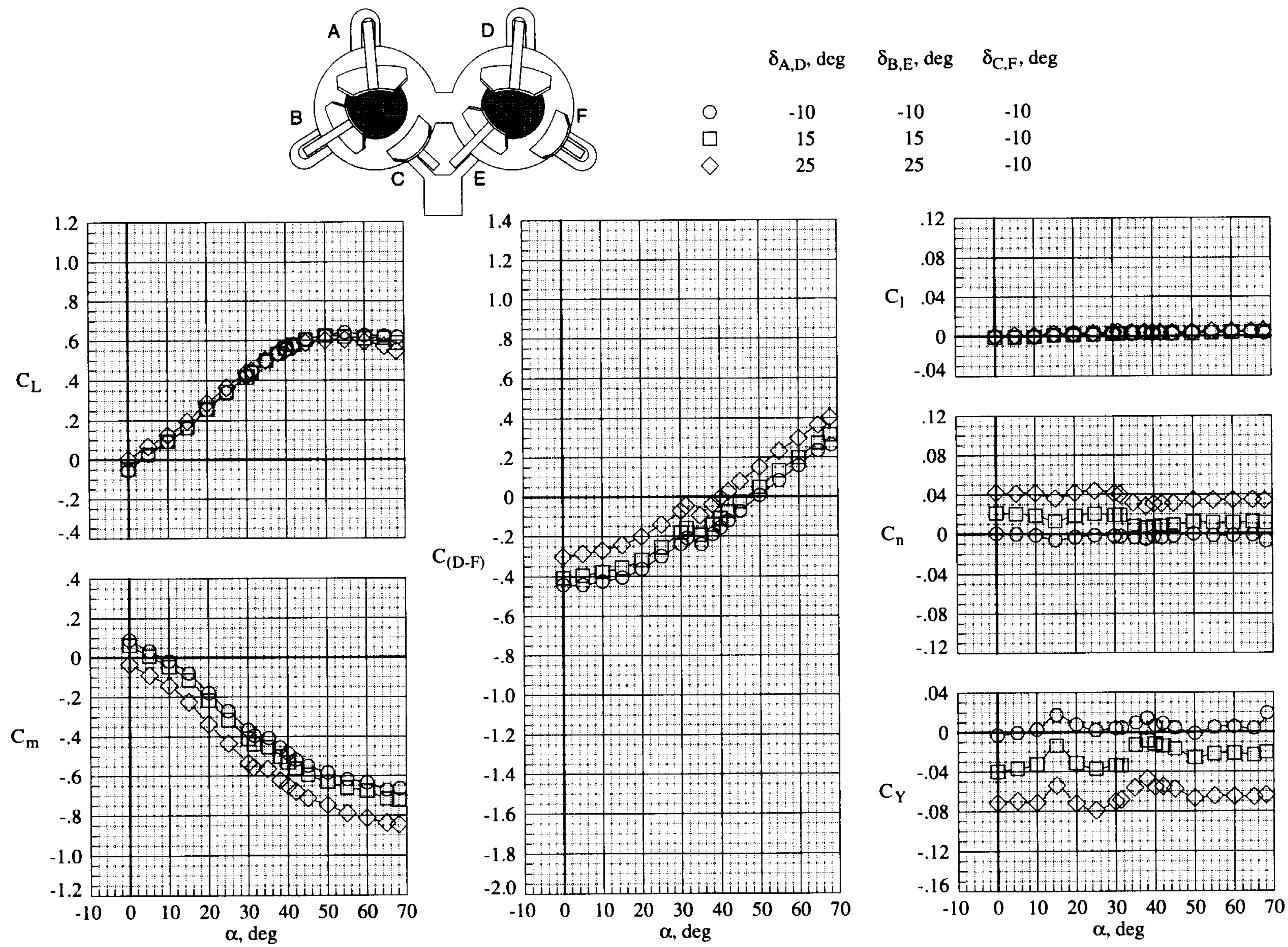
(a) $M = 0.30$.

Figure 27. Afterbody aerodynamic characteristics at military power and NPR = 4.15 with vanes B,E deployed.



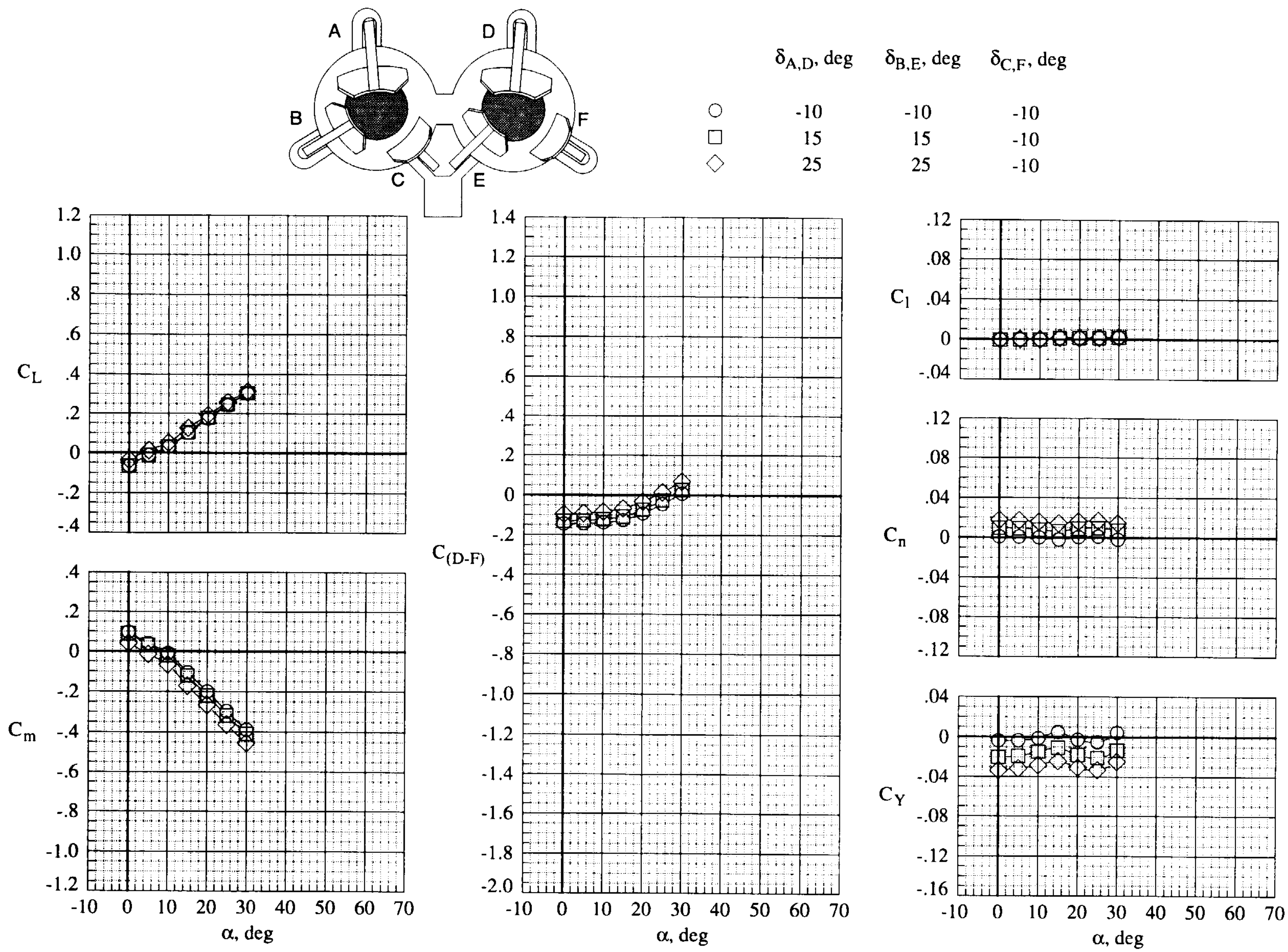
(b) $M = 0.50$.

Figure 27. Concluded.



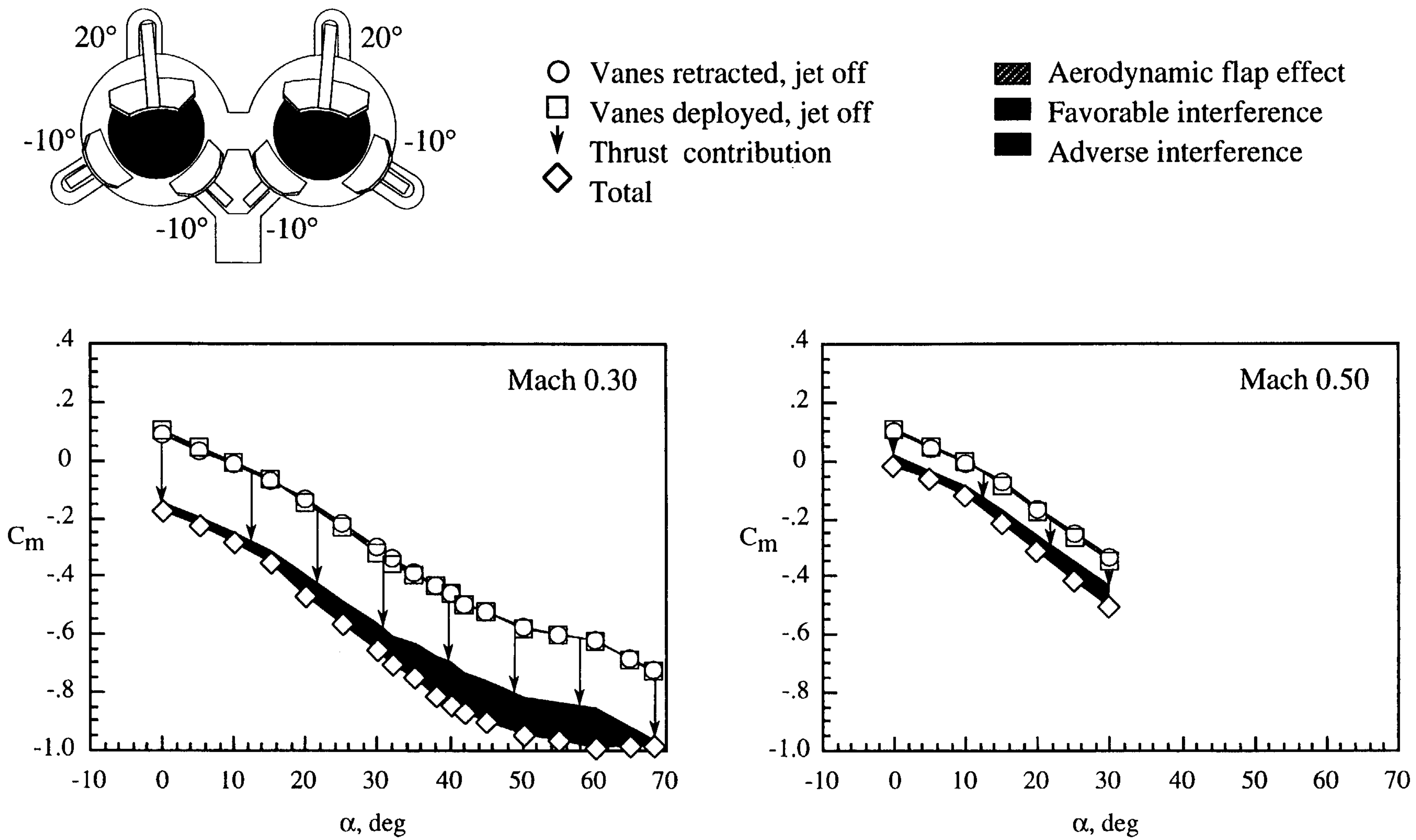
(a) $M = 0.30$.

Figure 28. Afterbody aerodynamic characteristics at military power and NPR = 4.15 with vanes A,D and B,E deployed.



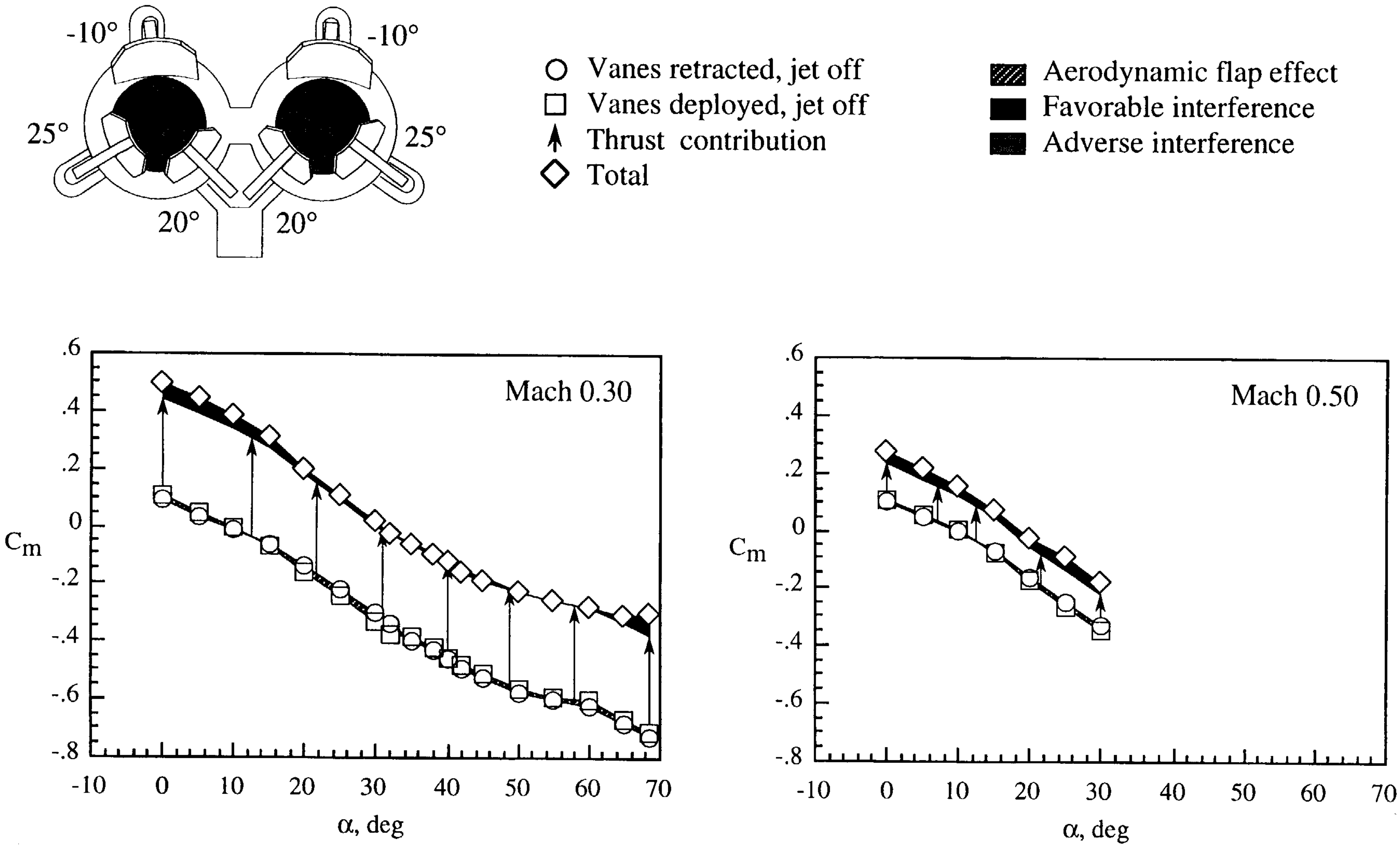
(b) $M = 0.50$.

Figure 28. Concluded.



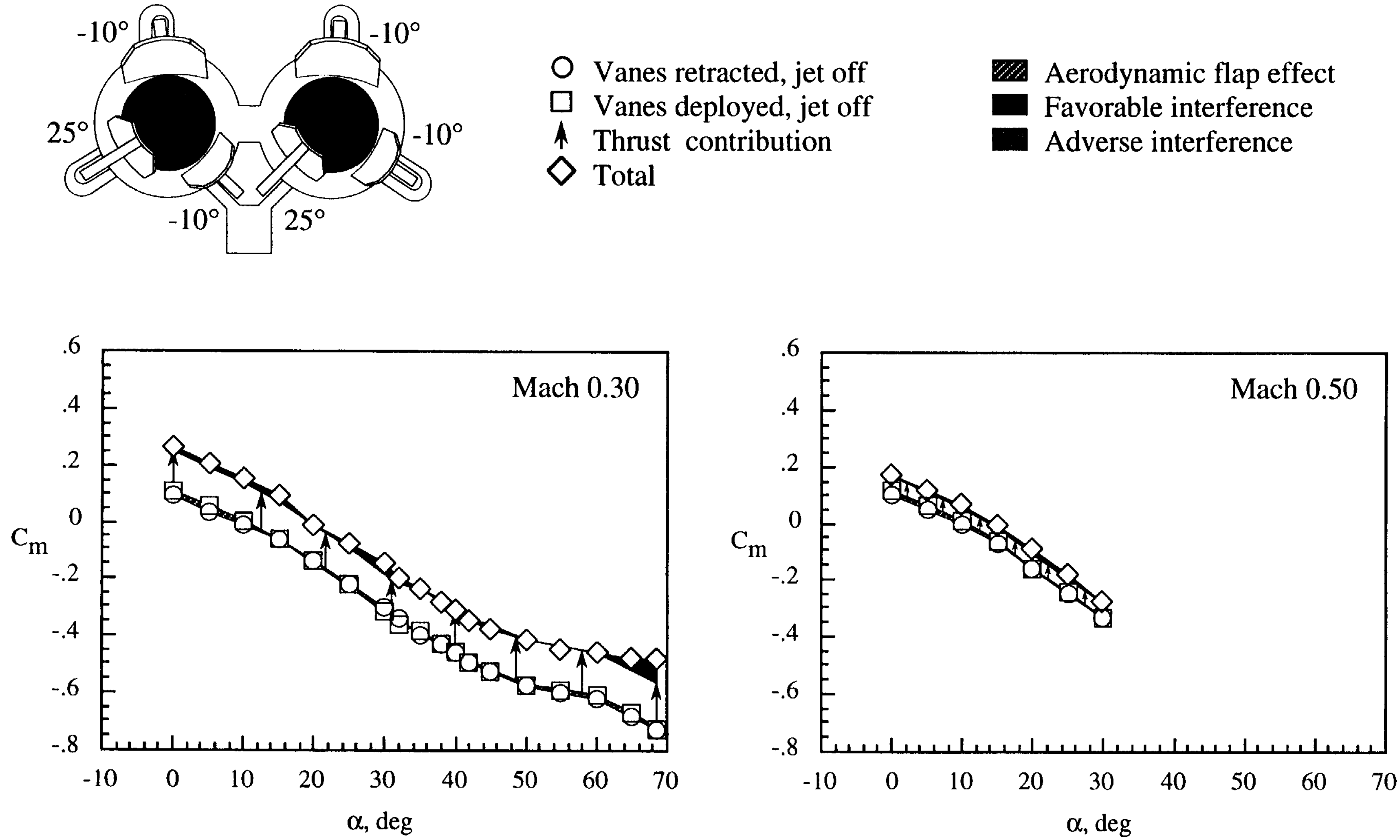
(a) Vanes A,D deployed.

Figure 29. Effect of external flow on pitching moment at afterburning power with NPR = 4.25.



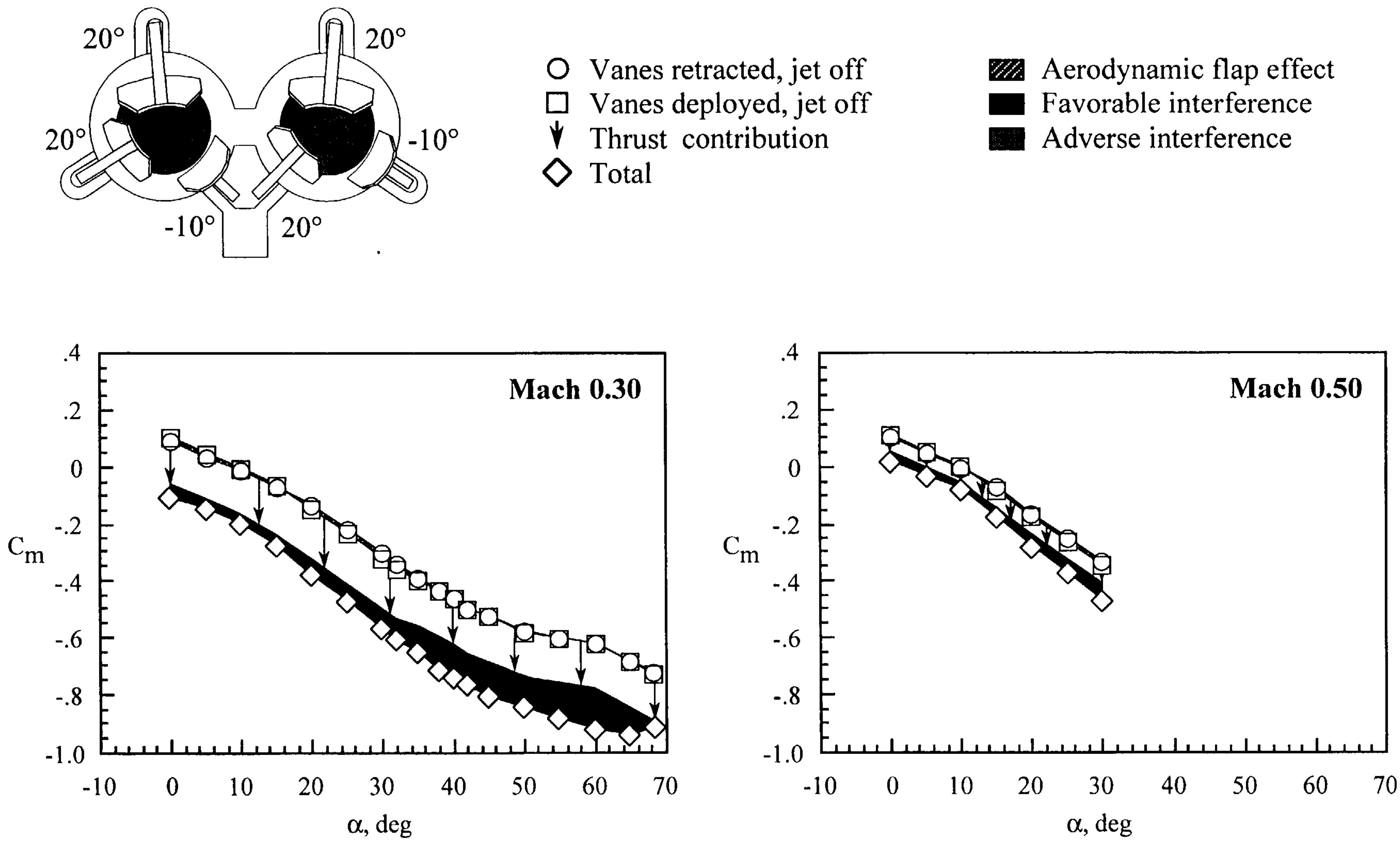
(b) Vanes B,E and C,F deployed.

Figure 29. Continued.



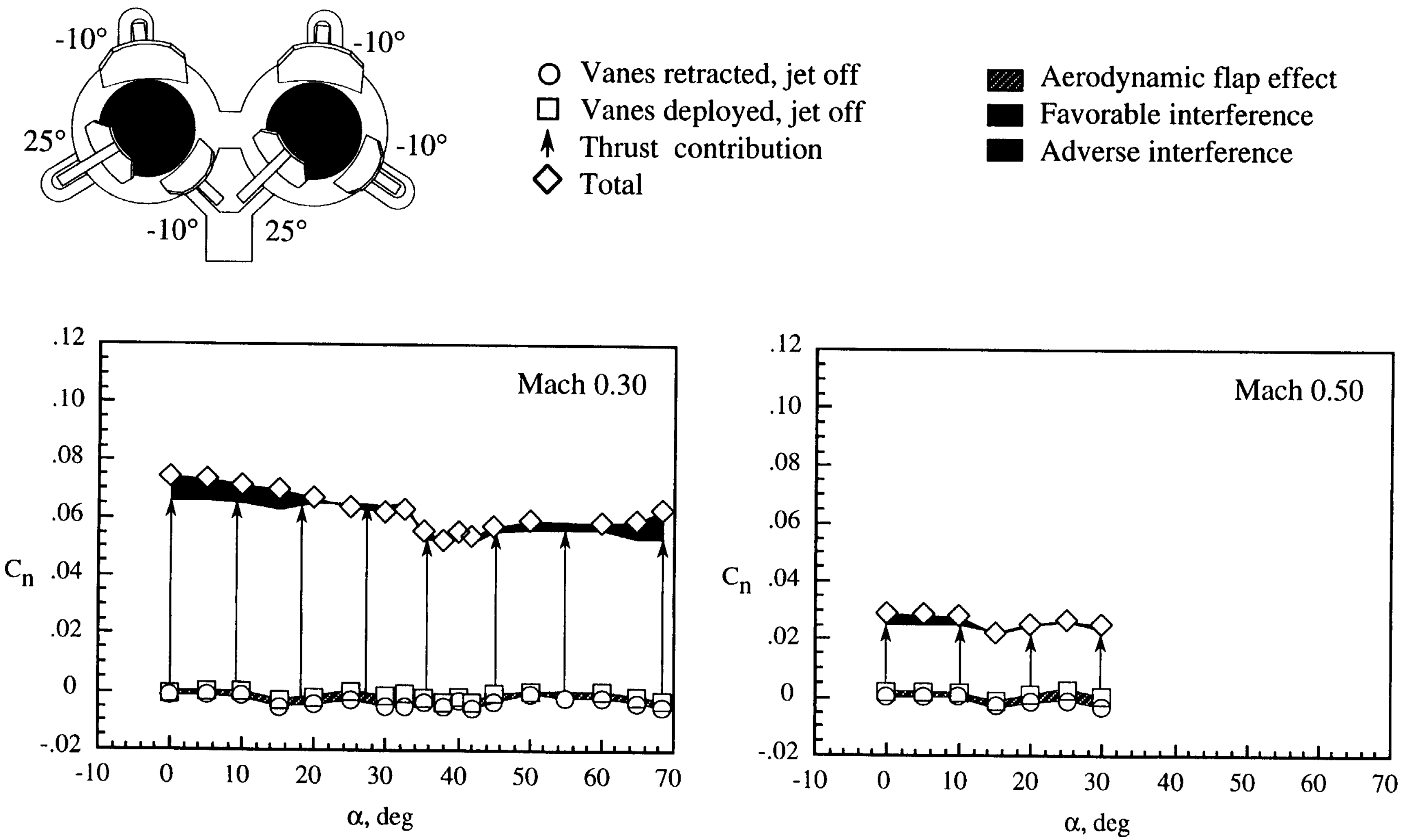
(c) Vanes B,E deployed.

Figure 29. Continued.



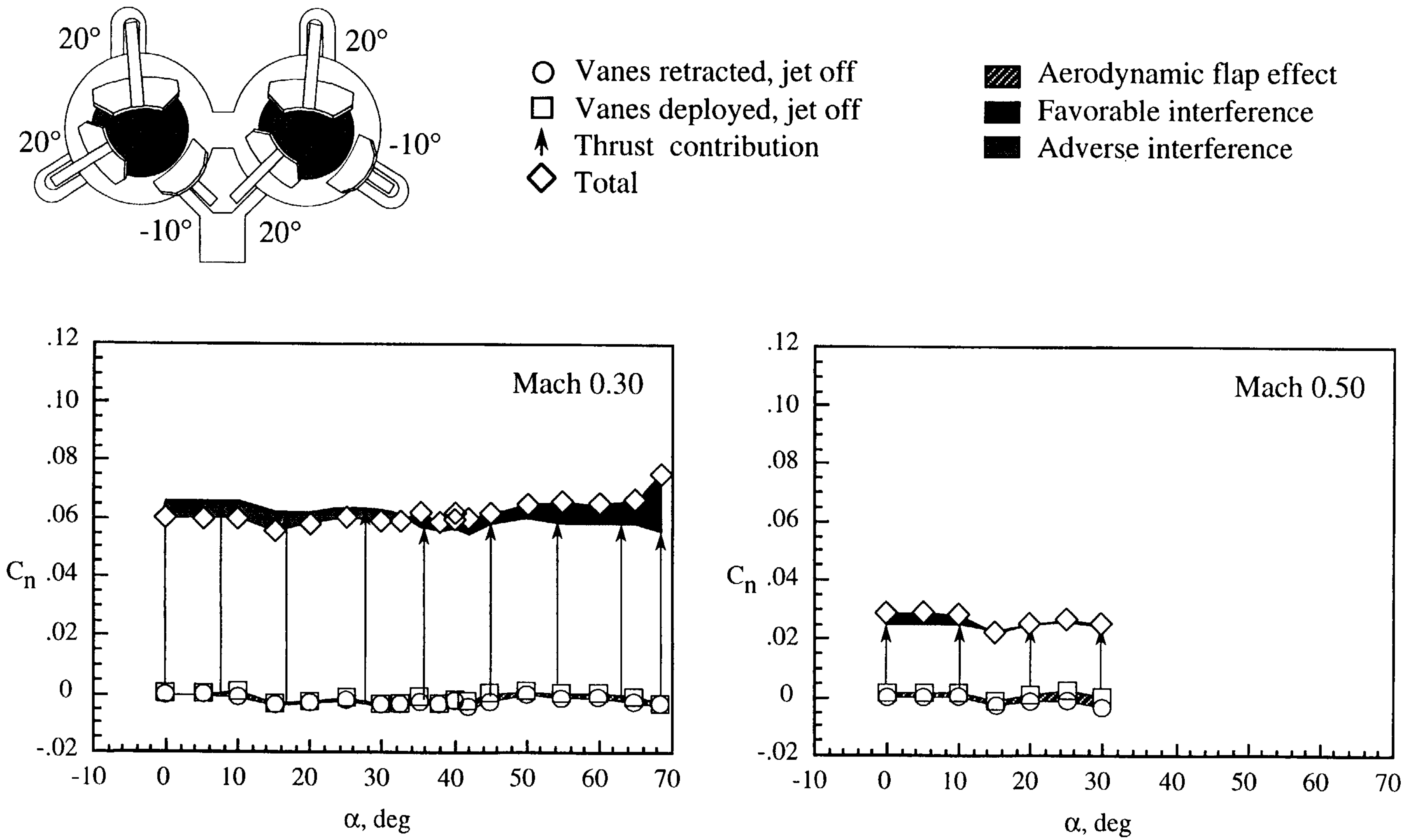
(d) Vanes A,D and B,E deployed.

Figure 29. Concluded.



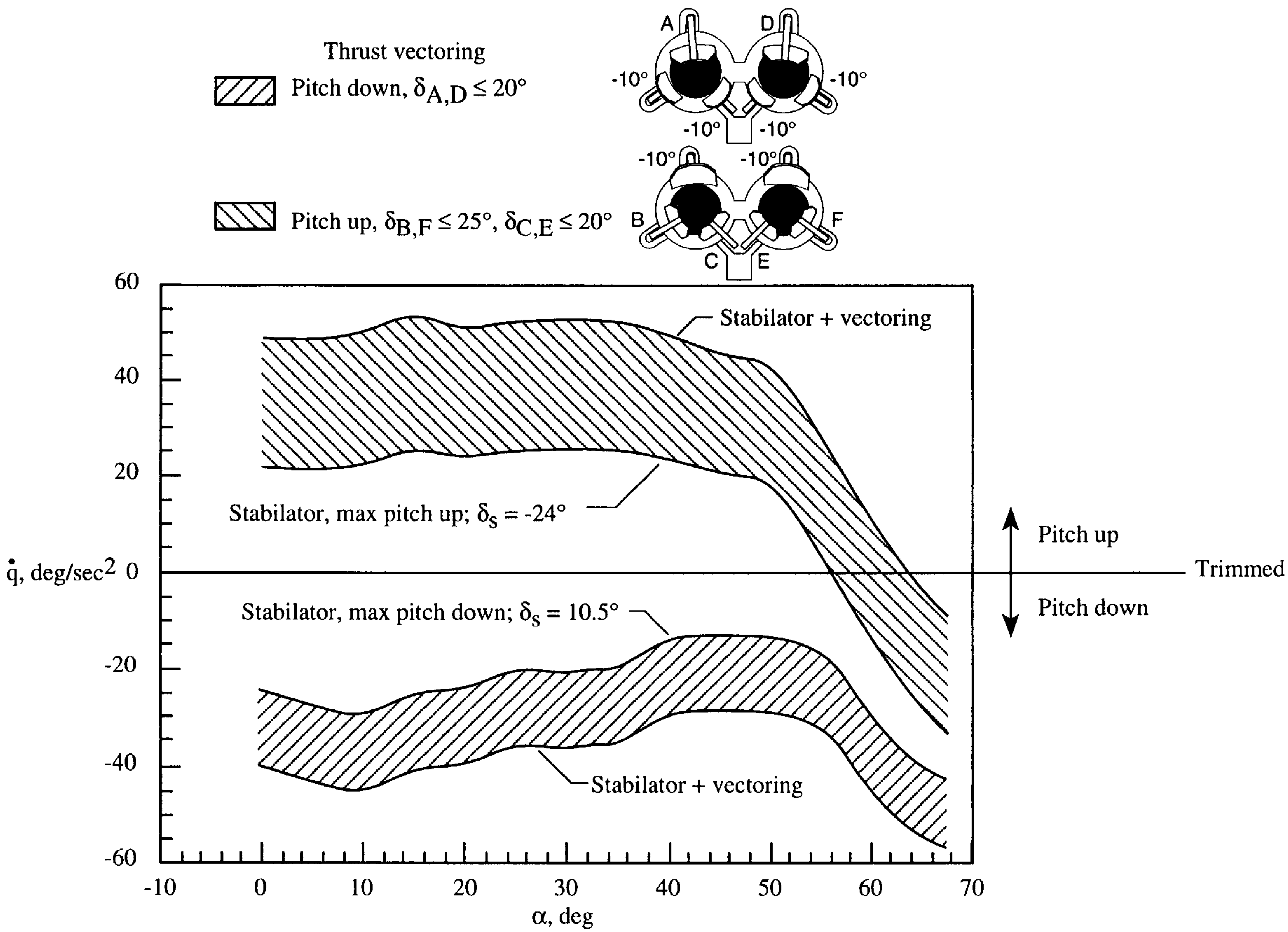
(a) Vanes B,E deployed.

Figure 30. Effect of external flow on yawing moment at afterburning power with NPR = 4.25.



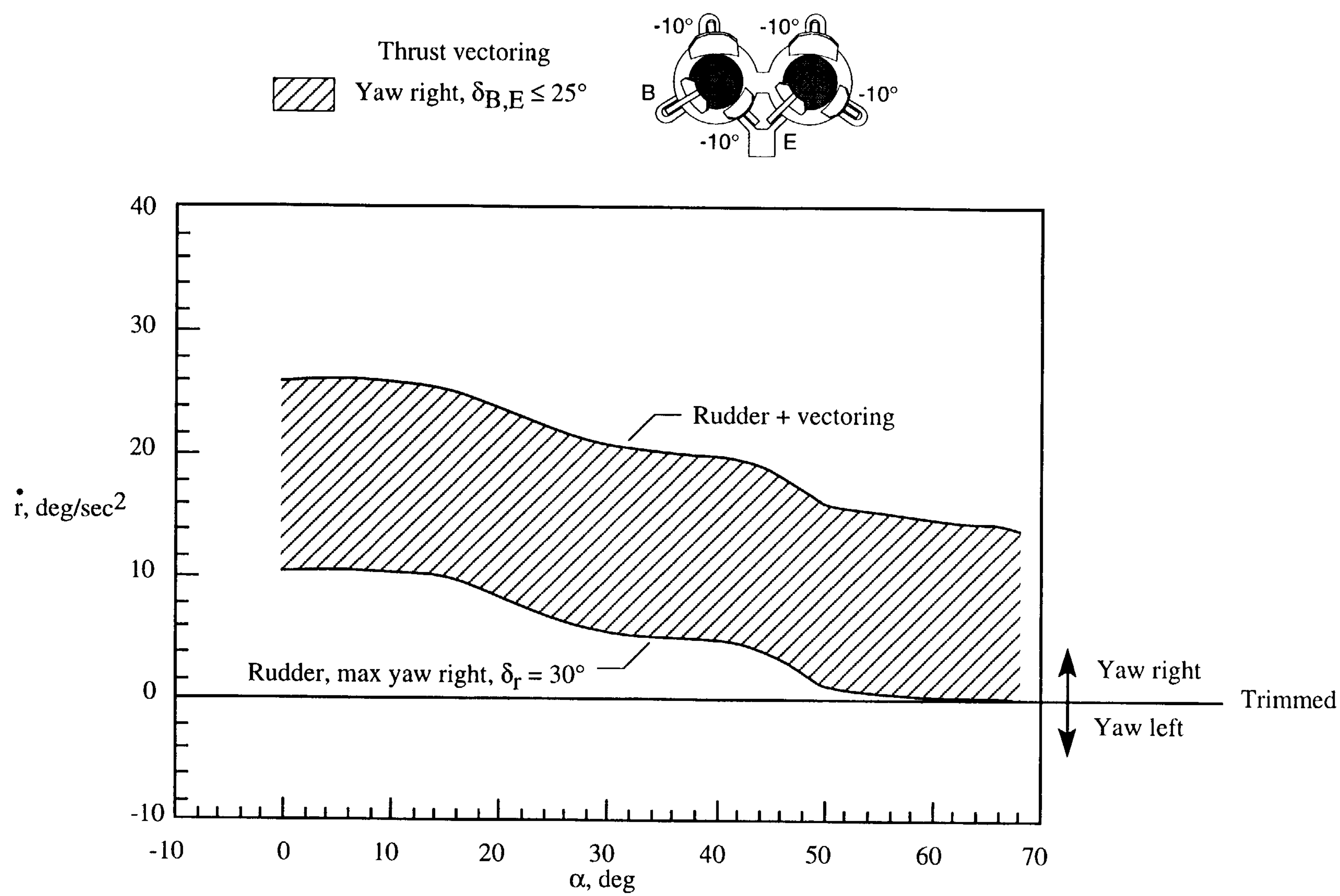
(b) Vanes A,D and B,E deployed.

Figure 30. Concluded.



(a) Longitudinal control.

Figure 31. Computed aerodynamic and propulsive control capability for F-18 HARV. M = 0.30; Altitude = 20000 ft; Afterburning power; NPR = 4.25.



(b) Directional control.

Figure 31. Concluded.

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13. ABSTRACT *(Maximum 200 words)*

An investigation was conducted in the Langley 16-Foot Transonic Tunnel to determine the multiaxis thrust-vectoring characteristics of the F-18 High-Alpha Research Vehicle (HARV). A wingtip supported, partially metric, 0.10-scale jet-effects model of an F-18 prototype aircraft was modified with hardware to simulate the thrust-vectoring control system of the HARV. Testing was conducted at free-stream Mach numbers ranging from 0.30 to 0.70, at angles of attack from 0° to 70°, and at nozzle pressure ratios from 1.0 to approximately 5.0. Results indicate that the thrust-vectoring control system of the HARV can successfully generate multiaxis thrust-vectoring forces and moments. During vectoring, resultant thrust vector angles were always less than the corresponding geometric vane deflection angle and were accompanied by large thrust losses. Significant external flow effects that were dependent on Mach number and angle of attack were noted during vectoring operation. Comparisons of the aerodynamic and propulsive control capabilities of the HARV configuration indicate that substantial gains in controllability are provided by the multiaxis thrust-vectoring control system.

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