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Washington, D. Q.

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Bureau of Aeronautics, Nevy Department

WIND-TUNNEL INVESTIGATION OF A 1/5-SCALE

MODEL OF THE RYAN XF2R ALRPLANE

By Park Y. Wong

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CLASSIFIGATIONUGANCELLED

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NATIONAL ADVISORY COMMITTEE

FOR AERONAUTICS

WASHINGTON June 27, 1947

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NACA RM No SA 7E26

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WIND-TUNNEL INVESTIGATION OF A 1/5-SCALE

MODEL OF THE RYAN XF2R AIRPLANE

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SUMMARY

Wind-tunnel tests on a 1/5-scale model of the Ryan XF2R airplane were conducted to determine the aerodynamic characteristics of the air intake for the front power plant, a General Electric TG-100 gas turbine, and to determine the stability and control characteristics of the airplane. The results indicated low-dynamic-pressure recovery for the air intake to the TG-100 gas turbine with the standard propeller in operation. Propeller cuffs were designed and tested for the purpose of improving the dynamic-pressure recovery. Data obtained with the cuffs installed and the gap between the spinner and the cuff sealed indicated a substantial gain in dynamic pressure recovery over that obtained with the standard propeller and with the cuffed propeller unsealed.

Stability and control tests were conducted with the sealed cuffs installed on the propeller. The data from these tests indicated the following unsatisfactory characteristics for the airplane:

- 1. Marginal static longitudinal stability
- 2. Inadequate directional stability and control
- 3. Rudder-pedal-force reversal in the climb condition
- 4. Negative dihedral effect in the power-on approach and wave-off conditions

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INTRODUCTION

At the request of the Bureau of Aeronautics, Navy Department, tests were conducted on a 1/5-scale model of the Ryan XF2R airplane in the Ames Aeronautical Laboratory 7- by 10-foot wind tunnel No. 2. The XF2R airplane was designed primarily for the development of the cowl for the front power-plant installation, a General Electric TG-100 gas turbine. The turbine and the resultant cowl design were intended for incorporation in a later airplane. Therefore, the primary purpose of these tests was to determine the aerodynamic characteristics of the air-intake system for the TG-100 gas turbine. These tests included measurements of the dynamic pressure recovery in the ducting system, the cowl pressure distribution, and the velocity distribution at the simulated entrance to the TG-100 turbine.

Since relatively few XF2R airplanes were to be constructed, stability and control tests were considered to be of secondary importance. Only a limited investigation was made of the longitudinal-, directional-, and lateral-stability and -control characteristics of the model to reveal any unsafe or undesirable handling characteristics that might be present in the airplane. Some comparisons were made of the predicted characteristics of the XF2R and the FR-1 to facilitate a comparative analysis based on the known handling qualities of the FR-1 airplane.

DESCRIPTION OF MODEL AND APPARATUS

The RYAN XF2R airplane, a single-place, low-wing, carrierbased, fighter-type aircraft with a fully retractable tricycle landing gear, differs from the FR-1 airplane only in the front power plant. The Wright R-1820 reciprocating engine of the FR-1 is replaced by a General Electric TG-100 gas turbine accompanied by a resultant modification in cowl and propeller design. The rear power plant, however, remains a General Electric I-16 jet motor located aft of the cockpit, supplied by air from leading-edge wing ducts and exhausting out the rear of the fuselage. A three-view drawing of the airplane is presented in figure 1. The basic physical characteristics of the airplane and the configuration notation used in these tests may be found in appendixes A and B. Photographs of the model mounted in the tunnel in various configurations are presented in figures 2 to 4, inclusive.

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A llo-horsepower electric motor was utilized to drive the four-blade model propeller (Aeroproducts H2O-156-28) used in these tests. Photographs of the model propeller with and without the cuffs installed are presented in figures 5 to 7. Presented in figure 8 are the geometric characteristics of the propeller and of the propeller cuffs developed. Ordinates for the blade cuffs are presented in table I. The aerodynamic characteristics of the propeller with and without cuffs, as determined on the 1/5-scale model, are presented in figure 9 for maximum power output (1800 bhp) of the TG-100 unit.

The quantity of air flow through the cowl entrance was controlled by an air pump located outside the test chamber and was determined by means of an ASME standard 5-inch-diameter orificemeter located in the air pipe. A pressure rake containing 44 total pressure tubes and 4 static pressure tubes was located in the model at the position corresponding to the entrance to the TC-100 gas turbine. The pressures were measured by an averaging manometer from which the average pressure loss in the cowl ducting was determined. Similarly, air flow through the oil-cooler duct on the underside of the cowl was measured with a pressure rake consisting of nine total pressure and three static pressure tubes. The rate of air flow through the oil-cooler duct, however, was adjusted by varying the exit area at the rear of the fuselage. The relative location of the rakes may be seen on figure 10, which is a sketch of the model showing the various pressure-tube locations and the numbering system employed in identifying these tubes. A detail drawing of the tube locations in the cowl rake is given in figure 11. Photographs of the model showing the pressure orifice locations are presented in figures 12, 13, and 14.

TESTS AND TEST METHODS

The air-flow tests, which included measurements of dynamicpressure recovery, pressure distribution, and velocity distribution, were conducted with the model having the flaps and gear retracted, tail off, and with the exit pipe for the cowl air installed on the under side of the fuselage. (See fig. 2 for a photograph of the model in this configuration.) To simulate flight conditions, various inlet-velocity ratios at the cowl entrance were obtained by the adjustment of the air-pump output and the tunnel airspeed. Presented in figure 15 is the predicted variation of cowl inlet-velocity ratio with free-stream velocity as furnished by the Ryan Aeronautical Company for the XF2R airplane. The variation of lift coefficient

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with geometric angle of attack 1 as measured for the model in this series of tests is presented in figure 16.

For all stability and control tests, the TG-100 gas turbine jet-exhaust outlets on both sides of the fuselage were plugged and faired. Tuft studies indicated this advisable, since air bleeding through the cowl and out the side exhaust channels had an adverse effect on the air flow over the wing. Accordingly, to provide air flow through the cowl, the cowl air was allowed to discharge from a 3-inch-diameter hole on the underside of the fuselage. (See fig. 17.) This did not produce an appreciable flow disturbance. The air from the oil cooler and wing ducts was exhausted out the rear of the fuselage. For the stability and control tests, the oilcooler inlet-velocity ratio was about 0.9 and the cowl inlet-velocity ratio was about 0.7.

Propeller calibrations were made at 0° angle of attack, and no corrections were applied to the thrust coefficients for differences in model attitude or configuration. Presented in figures 18 and 19 are the variations of thrust coefficient with lift coefficient and airplane velocity for various power conditions as furnished by the Ryan Aeronautical Company.

Constant power polars were obtained by testing the model throughout the angle-of-attack range at various values of Tc and cross-plotting the results for the power condition desired. Full-scale flight conditions matched in directional-stability and-control tests are listed in table II.

SYMBOLS, COEFFICIENTS, AND CORRECTIONS

All results are presented as standard NACA coefficients and are corrected for tares, tunnel-wall interference (reference 1) and stream inclination. All coefficients are referred to the wind axis with the exception of the rolling and pitching-moment coefficients C_{l} ' and C_{m} ', which are given about the stability axis. The coefficients used are defined as follows:

lift	coefficient	$\left(\frac{\text{lift}}{qS}\right)$
drag	coofficient	$\left(\frac{\text{drag}}{\text{qS}}\right)$

CD drag coofficient

Ct.

¹Uncorrected for tunnel-wall effects and stream inclination.

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īc	wing mean aerodynamic chord, feet
Ъ	wing span, feet
ďe	elevator span, feet
c o	elevator root-mean-square chord aft of hinge line, feet
br	rudder span, feet
ēr	rudder root-mean-square chord aft of hinge line, feet
ρ	mass density of air, slugs per cubic foot
V	airspeed, feet per second
D	propeller diameter, feet
٥ţ	propellor-blade width, foet
h	propeller-blade thickness, feet
n	propeller speed, revolutions per second
Δp	pressure differential between the free-stream static and the local static pressures, pounds per square foot
qŢ,	local dynamic pressure as determined by the individual rake tube readings, pounds per square foot
ΔH	total head loss, pounds per square foot
are	In addition to the coefficients defined, the following symbols utilized in the presentation of results:
α	angle of attack of the fuselage reference line corrected for stream inclination and tunnel-wall effects, degrees
au	uncorrected angle of attack of the fuselage reference line, degrees
ψ	angle of yaw measured from the plane of symmetry, degrees
β	propeller-blade angle, degrees
δ _e	elevator deflection, degrees

 δ_r rudder deflection, degrees

it tail incidence, degrees

Moment coefficients are presented about a center of gravity located at 18.3 percent of the mean aerodynamic chord aft of the wing leading edge and 2.06 percent of the mean aerodynamic chord above the fuselage reference line. This is the predicted centerof-gravity location for the airplane with wheels up and a normal gross weight of 10,450 pounds. Various center-of-gravity locations with corresponding weights of the airplane are listed in table III.

RESULTS AND DISCUSSION

Air-Flow Tests

Dynamic-pressure recovery .- The results of the dynamic-pressurerecovery tests are presented in figures 20 to 29, inclusive. Figure 20 presents data obtained with the propeller removed at several values of cowl inlet-velocity ratio with varying angle of attack. The oil-cooler inlet-velocity ratio for these tests was approximately 0.9. Variation of oil-cooler inlet-velocity ratio on the pressure recovery at the entrance to the TG-100 unit was found to be negligible. These data indicate that for the airplane at speeds above 150 miles per hour (α_1 , less than 4°) the effect of angle of attack on the dynamic pressure recovery will be small. For speeds below 150 miles per hour to the stall (α_u greater than 4°), the pressure recovery drops off 10 to 20 percent of the free-stream dynamic pressure. It is also noted from these data that the peakpressure recovery of about 82 percent occurs at a cowl-inletvelocity ratio between 0.7 and 0.8; whereas 74-percent recovery is obtained at 0.4. the inlet-velocity ratio for high-speed flight.

Presented in figure 21 is the variation of dynamic-pressurerecovery coefficient with cowl-inlet-velocity ratio for the propeller operating under conditions simulating high-speed flight. With the standard propeller, an additional 12- to 30-percent loss in dynamic pressure is obtained over that measured with the propeller removed. Since the dynamic-pressure recovery for high-speed flight $(V_i/V_0 = 0.4)$ with the standard propeller is only 58 percent of the free-stream dynamic pressure, the predicted high-speed performance of the airplane will be **impaired considerably**. Consequently blade cuffs were designed for the propeller to improve the dynamicpressure-recovery characteristics in the cowl. Data for two

conditions of the cuffed blades are also presented in figure 21. With the cuffs installed, but with a small gap between the spinner and the base of the cuff to allow clearance for blade-angle changes, a considerable gain is experienced over results obtained with the standard propeller. Additional gain is obtained with the cuffs installed and the gap sealed making the dynamic-pressure recovery greater with the propeller on than with the propeller off. However, the peak-recovery-pressure coefficient of 0.82 occurs at an inletvelocity ratio of 0.7, and at the high-speed inlet-velocity ratio (0.4) the dynamic-pressure-recovery coefficient is only 0.76.

To determine the effect of propeller parameters on the pressure recovery in the cowl in the high-speed flight range, measurements were taken for propeller-blade angles of 50° , 55° , and 60° at a constant thrust coefficient T_c and for various thrust coefficients at a constant blade angle. These results, summarized in figures 22 and 23, indicate that the effect of these parameters in the highspeed-flight range is minor.

Various flight conditions were investigated throughout the cowl inlet velocity and angle-of-attack range. Dynamic-pressure-recovery data for the following flight conditions are presented in the figures indicated.

Condition	Airplane velocity (mph)	Propeller blade angle (deg)	Thrust coeffi- cient, Tc	Cowl inlet velocity ratio, Vi/Vo	Angle of attack (deg)	Figure number
High speed Climb Take-off	445 245 74	55 45 35	0.01 0.07 1.00	0.4 0.7 2.0	- 1.5 1.0 1.0 10.0	21, 24 25, 26 27, 28

For each condition investigated, a considerable gain in dynamicpressure recovery is obtained with the propeller cuffs installed and sealed.

Figure 29 presents a summary of the dynamic-pressure-recovery data for maximum TG-100 power utilizing information presented in figures 9, 15, and 16. These data indicate that at 450 miles per hour

an additional 15-percent loss in dynamic-pressure recovery is incurred with the installation of the standard propeller over that obtained with propeller removed. The addition of the propeller cuffs with the gaps unsealed regains 11 percent of the dynamic-pressure recovery and sealing the gaps regains another 6 percent. This gives a dynamic-pressure recovery of 75 percent which is 2 percent better than that obtained with propeller removed.

It is doubtful that any further gain could be obtained utilizing the pumping action of the cuffs at the high-speed blade angles. However, the peak recovery pressure (as shown in fig. 22) occurs at an inlet-velocity ratio of approximately 0.7 and the high-speed inlet-velocity ratio for the existing cowl is 0.4. Since it is more important to have a high pressure recovery for high-speed flight, better pressure-recovery characteristics throughout the high-speed flight range may be obtained by increasing the cowl velocity ratio at a given airplane velocity. It is believed that by reducing the cowl-entrance area, thus increasing the inlet-velocity ratios, an increase in dynamic-pressure recovery may be obtained for the highspeed flight condition with the cuffed propeller sealed. Estimated values for a 40-percent reduction of entrance area, not considering any change in internal ducting efficiency, are shown in figure 29 for the propeller with sealed cuffs.

It should be pointed out that the cuff developed for these tests has a high thickness ratio at the spinner surface $(h/b^{\dagger} = 0.32)$ which is the minimum possible because of the propeller-shank thickness. In high-speed flight, greater pressure losses than those indicated by the data are expected because the flow Mach number at the cuff will exceed the critical value for the cuff sections. Therefore, a propeller design with thinner root sections should be considered.

<u>Cowl pressure distribution</u>.— The pressure-distribution data are presented in the form of pressure coefficient versus distance² in inches from the cowl leading edge. The term "pressure coefficient" is defined as $\Delta p/q_0$ where Δp is the pressure differential between the free-stream static pressure and the local static pressure, and q_0 is the free-stream dynamic pressure. The pressure coefficient

²This distance is measured normal to the plane of the cowl leading edge with distances toward the tail considered positive and those toward the nose considered negative.

is negative when the local static pressure is less than the free-stream static pressure.

In the presentation of the data, the cowl is divided into six sections as follows (fig. 10):

1. Upper center line, tubes 54 to 57 and 123 to 135.

2. Lower center line, tubes 86 to 101.

3. Spinner fairing, upper, tubes 65 to 74.

4. Spinnor fairing, lower, tubes 58 to 64.

5. Oil-cooler fillet, tubes 102 to 122.

6. Oil cooler, upper center line, tubes 49 to 53 and 75 to 85.

The flagged symbols, as used in the presentation of results, indicate the pressure coefficients of the internal surfaces.

Pressure-distribution data for the model in various configurations and power conditions are presented in figures 30 to 35, inclusive. Figure 30 presents the effect of cowl inlet-velocity ratio on the pressure distribution over the various sections of the cowl with the propellor removed at -1.5° angle of attack. All external pressure distributions appear to be satisfactory with the exception of a pressure peak over the oil-cooler fillet leading edge. This is due to a flat spot (fig. 13) at the leading edge of the juncture of the oil-cooler duct and the cowl. No attempt was made to alloviato this prossure peak as the model is not an exact duplicate of the prototype airplane at this point. The high negative pressure coefficients occurring on the interior of the ducts at high inlet-velocity ratios are not detrimental to flow over the external surfaces. Figure 31 presents the effect of the variation of oil-cooler inlet-velocity ratio with propeller off, a cowl inlet velocity of 0.4, and -1.5° angle of attack.

The effect of various propeller modifications (figs. 5, 6, and 7) is presented in figure 32 for the model in the high-speed condition ($\beta = 55^{\circ}$, T_c = 0.01, V_i/V_o = 0.4, and $\alpha_u = -1.5^{\circ}$). These data indicate that the effect on the external surfaces is small, while, for the internal surfaces, the installation of the sealed cuffs increases the pressure coefficient positively, resulting in a favorable reduction in internal recovery losses.

The effects of angle of attack and cowl--inlet-velocity ratio on pressure distribution are presented in figures 33 and 34, respectively, for the model in the high-speed condition with sealed, cuffed propeller. These data show no undesirably high pressure peaks. The effect of small variations of cowl inlet velocity on external pressure distribution is negligibly small, while, internally, the pressure coefficient decreases with increase in inlet-velocity ratio.

Presented in figure 35 is a comparison of the pressure distributions for the model in the high-speed, climb, and take-off conditions. These data were obtained for the propeller with sealed cuffs.

Velocity distribution.- Velocity-distribution studies at the simulated entrance to the TG-100 gas turbine were made for various model configurations and flight conditions. The results for the high-speed, climb, and take-off conditions for various propeller configurations are presented in table IV in the form of local dynamic-pressure coefficients at the various tube locations of the pressure-measuring rake. The local dynamic-pressure coefficient q_L/q_0 is defined as the ratio of the local dynamic pressure to the free-stream dynamic pressure. The local dynamic pressure was determined from the local total pressure indicated by the individual total-pressure tubes and the average static pressure in the duct as indicated by an average of the four static pressure tubes.

Aerodynamic characteristics in pitch. - The longitudinal aerodynamic characteristics of the Ryan XF2R model with various configurations are presented in figures 36 to 42, inclusive.

Figures 36 and 37 present the effect of power on the characteristics of the model with flaps deflected 40°, gear extended, and with flaps and gear retracted. Predicted variations of the stick-fixed neutral-point³ location with lift coefficient (determined from figs. 36 and 37) are presented in figures 38 and 39 for various power conditions, flaps and gear deflected and retracted. Figure 38 indicates that the airplane with flaps deflected 40° and gear extended will be stable in the landing condition ($T_c = 0$) and in the approach condition with 40-percent maximum power but will only be marginally stable at lift coefficients above 1.0 with maximum power at the most aft center-of-gravity location. As indicated in figure 39, the

³Computed by method of reference 2.

airplane will be stable in the glide condition $(T_c = 0)$ with flaps and gear retracted, but only marginally stable with maximum continuous power at the most aft center-of-gravity location for lift coefficients above 0.6. Above $C_L = 1.1$ (fig. 38) and $C_L = 0.6$ (fig. 39), an aft movement of the neutral point was noted for the respective conditions. This rearward shift in neutral point is probably due to the change in downwash associated with the slight reduction in the lift-curve slope for these conditions. It is possible that the reduction in lift-curve slope and hence the aft movement of the neutral point may not occur for the airplane at full-scale Reynolds number.

The effect of elevator deflection on the aerodynamic characteristics is presented in figures 40 and 41 for the model in the flaps 40°, gear-extended, and in the flaps- and gear-retracted conditions, respectively. These data were obtained with the normal horizontal tail incidence of 1.5° and at zero thrust coefficient. Also shown in figure 41 is the effect of the removal of the propeller cuffs. Presented in figure 42 is the effect of elevator deflection on the aerodynamic characteristics of the model with flaps deflected 40°. gear extended, horizontal-tail incidence at 6.4°, and at zero thrust coefficient. The increase in tail incidence approximates the change in angle of attack of the tail in the presence of the ground. These figures indicate that the airplane should possess adequate elevator control for the normal center-of-gravity location. It is estimated⁴ that approximately 25° up-elevator deflection is required for landing with the center of gravity located at 18.3 percent M.A.C. The elevator hinge moments are not applicable in the computation of stick forces for the airplane as the elevator balance seal of the XF2R was not duplicated on the 1/5-scale model.

<u>Aerodynamic characteristics in yaw</u>. The directional, lateral, and longitudinal characteristics of the model in yaw are presented in figures 43 to 48, inclusive. Data for the high-speed, climb, and glide conditions⁵ were obtained with a propellor-blade angle of 45[°] and the model with flaps and gear retracted; whereas data for the power-off approach, the power-on approach, and the wave-off conditions were obtained with a propeller-blade angle of 35[°] and with flaps and gear extended. Two blade-angle settings were used to simplify testing, as exact simulation of the variable-pitch-propeller conditions

⁴By method of reference 3 ⁵See table II for matched power conditions.

through the speed range would require a different blade-angle setting for each power condition.

The directional characteristics of the model in the high-speed condition are presented in figure 43(a). The data indicate a low value for the directional stability of the XF2R airplane. The static directional-stability parameter $dC_n/d\psi$ is -0.00065 as compared with -0.00165 for the FR-1 airplane. (See reference 4.) Also shown is the effect of propeller cuff removal, which increased $dC_n/d\psi$ to -0.00085, yielding a net gain of -0.0002. Figure 44(a) presents the directional characteristics of the model in a simulated maximum power climb. The occurrence of a rudder-pedal-force reversal⁶ is evident for the airplane does not balance with more than 18° left rudder and 22° right rudder for the yaw range investigated. Presented in figure 45(a) are the directional characteristics of the model in a simulated specific to for the simulated glide condition which appears marginally satisfactory.

The directional characteristics of the model for the power-off approach, the power-on approach, and the wave-off conditions are presented in figures 46(a), 47(a), and 48(a), respectively. A lightening of the pedal force beyond 30° right rudder is noticed for the power-off approach condition. For the power-on approach, the data indicate that the airplane will not balance with more than 17° left rudder and 33° right rudder. Figure 48(a) shows that the airplane will not balance beyond 8° left rudder in the wave-off condition.

The angle of left sideslip available $\Delta\beta_{\rm L}$ beyond the angle of sideslip for wings level $C_{\rm Y} = 0 = C_{\rm n}$ and the incremental yawingmoment coefficient available $\Delta C_{\rm n}$ at the angle of sideslip for wings level can be used as an indication of the rudder control existing for the critical power-on approach and wave-off conditions of figures 47 and 48. Marginal, if not inadequate, rudder control is available for the airplane in both these flight conditions. A comparison of the rudder control available for the XF2R airplane and the FR-l airplane (obtained from reference 4) under similar

⁶Indicated by the variation of C_{h_r} with ψ at $C_n = 0$.

	Rudder	Pow	er-on	Wave-off		
	deflection	approach	condition	condition		
Airplane	(deg)	∆βL (deg)	∆C _n	∆β _L (deg)	△c _n	
XF2R	35	4.1	0.016	1.0	0.004	
	30	3.6	0.012	0.6	0.003	
FR1	30	6.5	0.017	2.6	0.010	

flight conditions is given in the following table:

As indicated by the preceding data, the airplane will possess unsatisfactory directional-stability and -control characteristics. It is believed that the installation of a considerably larger dorsal fin will improve the directional characteristics of the airplane in the various power conditions.

Lateral-stability characteristics of the model in the high-speed, climb, and glide conditions are presented in figures 43(b), 44(b), and 45(b). As indicated by these data, the airplane will possess positive lateral stability in these conditions. For the high-speed condition, the parameter $dC_2'/d\psi$ is 0.0012 as compared to 0.0014 for the FR-1 airplane. (See reference 4.) Presented in figures 46(b), 47(b), and 48(b) are the lateral-stability characteristics of the model in the power-off approach, the power-on approach, and the wave-off conditions. Lateral instability is revealed for the poweron-approach and wave-off conditions. The following table includes a tabulated comparison of $dC_2'/d\psi$ for the XF2R and FR-1 airplanes.

Flight condition	9C1/9A			
THERE CONCLUSION	XF2R	FR-1		
Power-off approach	0.0013	0.0010		
Power-on approach	0.0001	-0.0001		
Wave-off	-0.0012	-0.0011		

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CONCLUSIONS

The following aerodynamic characteristics are revealed by these tests on the 1/5-scale model of the Ryan XF2R airplane:

Air-Flow Tests

1. Poor dynamic pressure recovery (58 percent) for the cowl duct is indicated for the model in the high-speed condition with the standard propeller. A gain of 17 percent in pressure recovery is realized with the installation of the propeller with sealed cuffs.

2. The peak dynamic-pressure recovery (82 percent) occurs at an inlet-velocity ratio of approximately 0.7 for the propeller with sealed cuffs. Since the high-speed inlet-velocity ratio is about 0.4 for the existing cowl, it is believed that some increase in dynamic-pressure recovery may be obtained by increasing the inletvelocity ratio at a given airplane velocity.

3. Pressure distribution over various parts of the cowl investigated appears to be satisfactory.

Stability and Control Tests

- 1. Marginal stick-fixed static longitudinal stability
- 2. Adequate elevator control
- 3. Low directional stability $(dC_n/d\psi)$ is -0.00065 for high-speed condition.)
- 4. Rudder-pedal-force reversal in climb condition
- 5. Inadequate rudder control in the power-on approach and wave-off conditions
- 6. Negative dihedral effect in the power-on approach and wave-off conditions
- Ames Aeronautical Laboratory, National Advisory Committee for Aeronautics, Moffett Field, Calif.

APPENDIX A

Physical Characteristics of the Ryan XF2R-1 Airplane [All dimensions are full scale.]

General
Design gross weight, 1b
Overload gross weight, 1b
Fuel
Normal, gal
Maximum (including external tanks), gal
Wing Dimensions
Airfoil section description
Root NACA $65,2-117, a = 1.0$
Tip NACA 65,2-115, a = 0.5
Total wing area, sq ft
Chord
Root, in
Tip, in
Mean aerodynamic, in
Span, ft
Incidence at root, deg 1
Twist, dog 0
Dihedral
Center section, deg 0

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Outer panel, deg $$
Sweepback of leading edge, deg
Horizontal Tail
Airfoil section
Span,
Aera, sq ft
Aspect ratio
Taper ratio
Elevators
Span (each), ft
Chord
Percent stabilizer chord,
Root-mean-square, ft
Area, sq ft
Balance
Type
Chord (percent elevator chord) 45 (approx.)
Angular displacement
Down, deg
Up, deg
Total, deg
Vertical Tail
Airfoil section NACA 63,2-012 (modified)

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Span, ft 6.792
Area, sq ft
Aspect ratio
Taper ratio 2.83:1
Rudder
Span, ft
Chord
Percent fin chord,
Root-mean-square, ft
Aroa, sq ft
Balance
Type
Chord (percent rudder chord)
Angular displacement, deg
Aileron
Type Internal sealed balance
Span, ft
Chord (aft hinge line), percent wing chord 17
Area (aft of hinge line), sq ft 12.8
Flaps
Type NACA single-slotted flap
Chord chord chord chord
Span of inner flap 4 ft 6글 in.

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Span of outer flap 4 ft $8\frac{1}{2}$ in.
Total area, sq ft
Travel, deg
Landing gear
Type Retractable tricycle
Ground angle of thrust line, deg 1
Power plant
Forward engine General Electric TG-100 gas turbine
Gear ratio
Rear engine General Electric I-16 (centrifugal compressor type J.P.M.)
Propeller
Type
Hub
Blade
Number of blades
Diameter
h/b at 0.75R 0.0712
Activity factor

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APPENDIX B

CONFIGURATION KEY

1/5-SCALE MODEL OF THE RYAN XF2R AIRPLANE

- W Wing (with duct entrances)
- B Bare fuselage
- K Cockpit enclosure
- Xw Wing fillets
- X₊ Tail fillets
- H Horizontal tail with internal-sealed-balance elevators
- V Vertical tail
- f_D Dorsal fin
- F^O O^O flap deflection ^h
- F^{40} 40° flap deflection
- S Standard configuration = $WBKX_wHVX_{+}f_DF^{\circ}$
- G Tricycle landing gear down
- E_X Exit pipe(TG-100 unit)
- P Standard propeller
- P¹ Propeller + cuffs (unsealed)
- P² Propeller + cuffs (sealed)

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REFERENCES

- Swanson, Robert S., and Schuldenfrei, Marvin J.: Jet-Boundary Corrections to the Downwash Behind Powered Models in Rectangular Wind Tunnels with Numerical Values for 7- by 10-Foot Closed Wind Tunnels. NACA ARR, Aug. 1942.
- 2. Schuldenfrei, Marvin: Some Notes on the Determination of the Stick-Fixed Neutral Point From Wind-Tunnel Data. NACA RB No. 3I20, 1943.
- 3. Katzoff, S., and Sweberg, Harold H.: Ground Effect on Downwash Angles and Wake Location. NACA Rep. No. 738, 1943.
- 4. Sacks, Alvin H.: Wind-Tunnel Investigation of a 1/5-Scale Model of the Ryan XFR-1 Airplane with Various Modifications. (TED No. 2370) NACA CMR No. A6J18, 1946.

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TABLE I.- PROPELLER-BLADE CUFF ORDINATES, RYAN XF2R AIRPLANE

[Radius station (r/R) = 0.1875]

Station	Station					
(Percent chord)	(Percent chord)					
0	0					
2.5	4.80					
5.0	6.56					
10.0	9.00					
20.0	12.14					
30.0	14.00					
40.0	14.82					
50.0	15.00					
60.0	14.04					
70.0	12.00					
80.0	8.83					
90.0	4.80					
95.0	2.60					
100.0	0					
T.E. radius = 0.5 .						

Cuff ordinates match blade ordinates at radius station (r/R) = 0.375.

Cuff contour formed of straight constant percent chord lines between radius stations 0.1875 and 0.375.

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Full-	Scale Airp	lane Condit	ions ¹					Mode	l Conditions		
Airspeed at S. L. (mph)	Power	Flaps and gear	C ^L	"T _c	au	сľ	T _c	ß	Propeller speed (rpm)	-q_ (1b/sq ft)	Fig. No.
450	Military and J.P.M. ²	Retracted	0.075	0.013]	0.09	o	45	2000	40.5	43
156	Military	Retracted	.61	.22	5	•73	.22	49	4000	33.0	եե
116	Zero thrust	Retracted	1.11	0	10	1.11	0	45	2000	40.5	45
99. 6	Zero thrust	Flaps 40 ⁰ and gear extended	1.50	0	8	1.50	0	35	2400	28.7	46
95.2	405 maximum	Flaps 40° and gear extended	1.64	.4	8	1.63	.4	35	5000	25 .0	47
94.8	Take-off	Flaps 40 ⁰ and gear extended	1.66	.69	8	1.72	.69	35	5000	16.0	48
	Full- Airspeed at S. L. (mph) 450 156 116 99.6 95.2 94.8	Full-Scale AirrAirspeed at S. L. (mph)Power (military and J.P.M.2450Military and J.P.M.2156Military Military116Zero thrust99.6Zero thrust95.240% maximum94.8Take-off	Full-Scale Airplane ConditAirspeed at S. L. (mph)PowerFlaps and gear450Military and J.P.M.2Retracted156Military AlitaryRetracted156Military AlitaryRetracted16Zero thrustRetracted99.6Zero thrustFlaps 40° and gear extended95.240% maximumFlaps 40° and gear extended94.8Take-offFlaps 40° and gear extended	Full-Scale Airplane Conditions 1Airspeed at S. L. (mph)Power PowerFlaps and gearC_L450Military and J.P.M.2Retracted0.075156Military RetractedRetracted.61116Zero thrustRetracted1.1199.6Zero thrustFlaps 40° and gear extended1.5095.240% maximumFlaps 40° and gear extended1.6494.8Take-offFlaps 40° and gear extended1.66	Full-Scale Airplane Conditions 1Airspeed at S. L. (mph)PowerFlaps and gear C_L T_c 450Military and J.P.M.2Retracted0.0750.013156Military RetractedRetracted.61.22116Zero thrustRetracted1.11099.6Zero thrustFlaps 40° and gear extended1.50095.2 40_{5} maximumFlaps 40° and gear extended1.64.494.8Take-offFlaps 40° and gear extended1.66.69	Full-Scale Airplane Conditions 1Airs peed at S. L. (mph)PowerFlaps and gearCLTcGu450Military and J.P.M.2Retracted0.0750.013-1156Military AlitaryRetracted.61.225116Zero thrustRetracted1.1101099.6Zero thrustFlaps 40° and gear extended1.500895.240% maximumFlaps 40° and gear extended1.64.4894.8Take-offFlaps 40° and gear extended1.66.698	Full-Scale Airplane Conditions 1Airspeed at S. L. (mph)PowerFlaps and gearCLTccuCL450Military and J.P.M.2Retracted0.0750.013-10.09156Military Retracted.61.225.73116Zero thrustRetracted1.110101.1199.6Zero thrustFlaps 40° and gear extended1.50081.5095.2405 maximumFlaps 40° and gear extended1.64.481.6394.8Take-offFlaps 40° and gear extended1.66.6981.72	Full-Scale Airplane Conditions 1 Airspeed at S. L. (mph)PowerFlaps and gear C_L T_c α_u C_L T_c 450Military and J.P.M.2Retracted 0.075 0.013 -1 0.099 0 156Military RetractedRetracted.61.22 5 $.733$.22116Zero thrustRetracted 1.11 0 10 1.11 0 99.6Zero thrustFlaps 40° and gear extended 1.64 $.4$ 8 1.63 $.4$ 94.8Take-offFlaps 40° and gear extended 1.66 $.69$ 8 1.72 $.69$	Full-Scale Airplane Conditions 1 Model Airspeed at S. L. (mph) Power Flaps and gear C_L T_c q_u C_L T_c T_c p_c 450 Military and J.P.M. ² Retracted 0.075 0.013 -1 0.099 0 45 156 Military Retracted $.61$ $.22$ 5 $.73$ $.22$ 45 116 Zero thrust Retracted 1.11 0 10 1.11 0 45 99.6 Zero thrust Flaps 40° and gear 1.50 0 8 1.63 $.4$ 35 99.6 Zero thrust Flaps 40° and gear 1.64 $.4$ 8 1.63 $.4$ 35 99.2 $40g$ maximum Flaps 40° 1.66 $.69$ 8 1.72 $.69$ 35	Full-Scale Airplane Conditions 1Model Conditions 1Airspeed at S. L. (mph)Power gearFlape and gear C_L T_c α_u C_L T_c β Propeller speed (rpm)450Military and J.P.M.2Retracted 0.075 0.013 -1 0.099 0 45 2000 156Military Retracted.61.22 5 $.73$ $.22$ 45 4000 116Zero thrustRetracted1.11 0 10 1.11 0 45 2000 99.6Zero thrustFlape 40° and gear 1.50 0 8 1.50 0 35 2400 95.2 $40g$ maximumFlape 40° and gear 1.64 $.4$ 8 1.63 $.4$ 35 5000 94.8Take-offFlape 40° and gear 1.66 $.69$ 8 1.72 $.69$ 35 5000	Null-Scale Airplane Conditions 1 Model Conditions Airspeed at S. L. (mph) Power Flape and gear C_L T_c a_u C_L T_c T_c F_c F_c F_c F_c F_c T_c T_c F_c

TABLE II.- TEST CONDITIONS FOR DIRECTIONAL CHARACTERISTICS OF THE 1/5-SCALE MODEL OF THE RYAN XF2R AIRPLANE

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Condition	Weight (1b)		Wheels down		Wheels up				
		Horizontal c.g.		Vertical c.g.	Horizontal	c.g.	Vertical c.g.		
		1 Aft of station 0 (in.)	Percent M.A.C.	From fuselage H.R.L. (in.)	1 Aft of station 0 (in.)	Percent M.A.C.	From fuselage H.R.L. ² (in.)		
Weight empty	8324	122.0	14.8	0	123.0	16.0	1.5		
Light weight most forward center-of- gravity	9309	121.5	14.3	30	755.0	14.8	1.10		
Light weight most aft center-of- gravity	10,150	126.0	19.4	1.0	126.5	20.0	2.3		
Normal gross weight	10,450	124.70	17.94	.60	125.0	18.30	1.80		
Overload gross weight 1-100 gallon auxi- liary tank	11,151				126.0	19.4	2.00		

TABLE III. - WEIGHTS AND CORRESPONDING CENTER-OF-GRAVITY LOCATIONS FOR THE RYAN XF2R AIRPLANE

¹ Station 0 is 109 inches forward of the leading edge of the outer panel.

² Horizontal reference line is the same as the thrust line of model FR-1.

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Flight Righ a condition			ed	Climb		Take - off						
Propeller config.	Off	Standard	Guffed, Bealed	110	Standard	Cuffed, sealed	Off	Standard	Cuffed, sealed	Off	Standard	Cuffed, sealed
ß	0000	55	55		45	45		35	35	1	35	35
T		0.01	0.01		0.07	0.07		1.0	1.0		1.0	1.0
90	40.5	42.3	35.5	40.5	41.7	42.9	10.4	10.0	4.2	10.4	10.2	4.0
V1/V0	0.40	0.39	0.40	0.71	0.69	0.69	1.96	2.00	1.95	1.94	1.98	1.99
αu	-1	-1.5	-1.5	2	2	2	1	1	1	10	10	10
Tube no.	qL/qo	qL/qo	qL/qo	qL/qo	q_1/q_0	q _L /q _o	qL/qo	q _I /q _o	q _L /q _o	9L/90	q _L /q _o	q _L /q _o
1 34 56 7 8 9 1 1 1 1 1 1 1 1 9 2 1 2 3 4 5 7 8 9 0 1 2 3 4 56 7 9 0 1 2 3 4 5 6 7 8 9 0 1 1 2 3 4 5 6 7 8 9 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.2382 2382 2382 2382 2382 2382 2382 2382	0.300 315 3290 315 3290 315 3299 3299 3299 3299 3299 3299 3299 329	0.283 3054 363 364 365 367 300 315 300 315 300 315 300 315 300 315 300 315 300 315 300 315 300 315 300 315 325 325 325 325 325 325 325 325 325 32	1.063 .896 .966 .956 .956 .956 .956 .956 .956 .9	0. 546 98466 5666 5846 5846 5846 5846 5846 5846	0.988 .7599.8769 .7559.7769 .75769.77778 .75769.77778 .75769.77778 .75769.77778 .75769.77778 .75769.77778 .75769.77778 .75769.77778 .5588.777778 .75768 .75888.77778 .5888.77778 .5888.77778 .58768 .75769.408 .77778 .58768 .77778 .58769.77778 .58777778 .58777778 .58777778 .587777778 .587777778 .58777778 .58777778 .587777778 .587777777777	7777676767676766777757677776767678780944 1 627777787	292366336926177777777777777777777777777777777777	9455666916668169306720600966166686674683164783898 945566699999999999999999999999999999999	677567776080798538666663550007881421998154666740009 677567776758827775087798853866667778777756777676767666666740009	020224826804264620442024602628262826886222026844820007	599455232572727777777772676445777777777754295777777778577 599455232577777777777777776764457777777754295777777778577 599455232557272227772542957777777554295 577777777775557777777542955777777755429557777777555777777755577777775557

TABLE IV.- LOCAL DYNAMIC PRESSURE COEFFICIENTS AT THE SIMULATED ENTRANCE TO THE TG-100 GAS TURBINE. 1/5-SCALE MODEL OF THE RYAN XF2R AIRPLANE.

NOTE: Tubes 2, 14, 26, and 38 are static tubes.

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FIGURE LEGENDS

- Figure 1.- Three-view drawing of the Ryan XF2R airplane. (Full-scale airplane dimensions.)
- Figure 2.- Front view of 1/5-scale model of the Ryan XF2R airplane mounted in the Ames 7- by 10-foot wind tunnel for the cowl-duct investigation.
- Figure 3.- Front view of the 1/5-scale model of the Ryan XF2R airplane with 40° flap deflection and landing gear extended.
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- Figure 5.- Standard propeller on the 1/5-scale model of the Ryan XF2R airplane.
- Figure 6.- Propeller with cuffs unsealed on the 1/5-scale model of the Ryan XF2R airplane.
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- Figure 8.- Geometric characteristics of the aeroproducts H-20-156-28 propeller on the Ryan XF2R airplane.
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- Figure 10.- Pressure-tube locations. 1/5-scale model of the Ryan XF2R airplane.
- Figure 11.- Tube locations of the pressure rake in the simulated entrance to the TG-100 gas turbine. 1/5-scale model of Ryan XF2R-airplane.
- Figure 12.- Pressure orifices atop spinner fairing and cowl. 1/5-scale model of the Ryan XF2R airplane.
- Figure 13.- Pressure orifices on lower side of spinner fairing and oil cooler on the 1/5-scale model of the Ryan XF2R airplane.

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- Figure 14.- Pressure orifices in the oil-cooler fillet. 1/5-scale model of Ryan XF2R airplane.
- Figure 15.- Variation of cowl inlet-velocity ratio with free-stream velocity for the Ryan XF2R airplane. (Obtained from Ryan Aero-nautical Company).
- Figure 16.- Variation of lift coefficient with uncorrected angle of attack for the 1/5-scale model of the Ryan XF2R airplane.
- Figure 17.- Detail view of the 1/5-scale model of the Ryan XF2R airplane showing the 3-inch-diameter hole used for discharging air from the cowl.
- Figure 18.-- Predicted variations of the lift coefficient with thrust coefficient of the Ryan XF2R airplane with various power conditions. (Normal gross weight = 10,450 lb).
- Figure 19.- Predicted variations of the thrust coefficient with velocity of the Ryan XF2R airplane at various power conditions.
- Figure 20.- Variation of the Dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with angle of attack for various cowl-inlet-velocity ratios with propeller off. 1/5-scale model of the Ryan XF2R airplane. (a) $V_i/V_0 = 0$ to 0.8.

Figure 20.- Concluded. (b) $V_i/V_o = 1.0$ to 1.8.

- Figure 21.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with cowl inlet-velocity ratio for the various propeller modifications. Simulated high-speed conditions.
- Figure 22.- Effect of Propeller-blade angle on the variation of dynamic-pressure-recovery coefficient at the entrance to the TG-100 unit, with cowl-inlet-velocity ratio for various propeller modifications.
- Figure 23.- Effect of propeller thrust coefficient on the variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with cowl-inlet-velocity ratio for various propeller modifications.
- Figure 24.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with angle of attack for various cowl-inlet-velocity ratios and propeller modifications. Simulated high-speed conditions.

- Figure 25.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with cowl-inlet-velocity ratio for various propeller modifications. Simulated climb conditions.
- Figure 26.- Variation of dynamic-pressure-recovery coefficient, at ... the entrance to the TG-100 unit, with angle of attack for various propeller modifications. Simulated climb conditions.
- Figure 27.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with cowl-inlet-velocity ratio for various propeller modifications. Simulated take-off conditions.
- Figure 28.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with angle of attack for various cowl-inlet-velocity ratios and propeller modifications. Simulated take-off conditions.
- Figure 29.- Variation of dynamic-pressure-recovery coefficient, at the entrance to the TG-100 unit, with airplane velocity as determined on a 1/5-scale model of the XF2R airplane maximum TG-100 power.
- Figure 30.- Effect of variation of cowl-inlet-velocity ratio, poweroff, $\alpha_u = -1.5^\circ$, for the 1/5-scale model of the Ryan XF2R airplane. (a) Upper center line.

Figure 30.- Continued. (b) Lower center line.

- Figure 30.- Continued. (c) Spinner fairing, upper. (d) Spinner fairing, lower.
- Figure 30.- Concluded. (e) Oil-Cooler fillet. (f) Oil cooler, upper center line.
- Figure 31.- Effect of variation of oil-cooler inlet-velocity ratio, propeller off, $V_i/V_0 = 0.4$, $\alpha_u = -1.5^{\circ}$ for the 1/5-scale model of the Ryan XF2R airplane. (a) Lower center line. (b) Spinner fairing, lower.
- Figure 31.- Concluded. (c) Oil-cooler fillet. (d) Oil cooler, upper center line.
- Figure 32.- Effect of propeller modification with $\beta = 55^{\circ}$, $T_c = 0.01$, $V_1/V_0 = 0.4$, $\alpha_u = -1.5^{\circ}$, for the 1/5-scale model of the Ryan XF2R airplane. (a) Upper center line. (b) Lower center line.

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- Figure 32.- Continued. (c) Spinner fairing, upper. (d) Spinner fairing, lower.
- Figure 32.- Concluded. (e) Oil-cooler fillet. (f) Oil cooler, upper center line.
- Figure 33.- Effect of variation of angle of attack, $V_1/V_0 = 0.4$, $T_c = 0.01$, $\beta = 55^{\circ}$ cuffs sealed for the 1/5-scale model of the Ryan XF2R airplane. (a) Upper center line. (b) Lower center line.
- Figure 33.- Continued. (c) Spinner fairing, upper. (d) Spinner fairing, lower.
- Figure 33.- C oncluded. (e) Oil-cooler fillet. (f) Oil cooler, upper center line.
- Figure 34.- Effect of the variation of cowl inlet-velocity ratio, $\beta = 55^{\circ}$ with cuffs sealed, $T_c = 0.01$, $\alpha_u = -1.5^{\circ}$, for the 1/5-scale model of the Ryan XF2R airplane. (a) Upper center line. (b) Lower center line.
- Figure 34.- Continued. (c) Spinner fairing, upper. (d) Spinner fairing, lower.
- Figure 34.- Concluded. (e) Oil-cooler fillet. (f) Oil cooler, upper center line.
- Figure 35.- Pressure distribution for the high speed, climb, and take-off conditions with the propeller with sealed cuffs. 1/5-scale model of the Ryan XF2R airplane. (a) Upper center line. (b) Lower center line.
- Figure 35.- Contined. (c) Spinner fairing, upper. (d) Spinner fairing, lower.
- Figure 35.- Concluded. (e) Oil-cooler fillet. (f) Oil Cooler, upper center line.
- Figure 36.- Effect of power on the aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Flaps 40° gear extended, elevator deflections 0° and -10°. (a) $C_{\rm L}$ vs a.

Figure 36.- Concluded. (b) C_{I} , vs C_{m} , $C_{h_{e}}$.

Figure 37.- Effect of power on the aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Flaps and gear retracted. Elevator deflections 0° and -5° . (a) $C_{\rm L}$ vs α .

Figure 37.- Concluded. (b) C_{L} vs C_{m} , $C_{h_{c}}$.

- Figure 38.- Predicted variation of stick-fixed neutral-point location with lift coefficient. Ryan XF2R airplane with flaps at 40° and gear extended.
- Figure 39.- Predicted variation of stick-fixed neutral-point location with lift coefficient. Ryan XF2R airplane with flaps and gear retracted.
- Figure 40.- Effect of elevator deflection on the aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Flaps deflected 40° and gear extended. Horizontal-tail incidence = 1.5° . $T_{c} = 0$.
- Figure 41.- Effect of elevator deflection on the aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Flaps and gear retracted. Horizontal-tail incidence = 1.5° . $T_c = 0^{\circ}$.
- Figure 42.- Effect of elevator deflection on the aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Flaps deflected 40° and gear extended. Horizontal--tail incidence = 6.4° . $T_c = 0^{\circ}$.
- Figure 43.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane in yaw. High-speed condition with flaps and gear retracted. (a) C_n , C_{h_r} vs ψ .
- Figure 43.- Continued. (b) C_{Z}^{i} , C_{Y} vs ψ .
- Figure 43.- Concluded. (c) C_{T} , C_{D} , C_{m}^{\dagger} vs ψ .
- Figure 44.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane in yaw. Climb condition with flaps and gear retracted. (a) C_n , C_{hr} vs ψ .
- Figure 44.- Continued. (b) C_{χ}^{\dagger} , C_{γ} vs ψ .
- Figure 44.- Concluded. (c) C_{T_i} , C_{D_i} , $C_{m'}$ vs ψ .

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Figure 45.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane in yaw. Glide condition with flaps and gear retracted. (a) C_n , C_{hr} vs ψ .

Figure 45.- Continued. (b) C_7^{\dagger} , C_Y vs ψ .

Figure 45.- Concluded. (c) C_T , C_D , C_m^* vs Ψ .

Figure 46.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane in yaw. Power-off approach condition with flaps deflected 40° and gear extended. (a) C_n , C_{hr} , vs ψ .

Figure 46.- Continued. (b) C_1 , C_v vs Ψ .

Figure 46.- Concluded. (c) $C_{T,}$, C_{D} , C_{m} ' vs Ψ .

Figure 47.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane in yaw. Power-on approach condition with flaps deflected 40° and gear extended. (a) C_{n} , C_{hr} vs ψ .

Figure 47.- Continued. (b) C_l^i , C_v vs ψ .

Figure 47.- Concluded. (c) C_T , C_D , C_m ⁱ vs Ψ .

- Figure 48.- Aerodynamic characteristics of the 1/5-scale model of the Ryan XF2R airplane. Wave-off condition with flaps deflected 40° and gear extended. (a) $C_{\rm n}$, $C_{\rm hr}$ vs ψ .
- Figure 48.- Continued. (b) C_7^{t} , C_Y vs Ψ .

Figure 48.- Concluded. (c) $C_{T,}$, C_{D} , C_{m}^{i} vs Ψ .

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Figure 2.- Front view of 1/5-scale model of the Ryan XF2R airplane mounted in the Ames 7- by 10-foot wind tunnel for the cowl-duct investigation.

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Figure 3.- Front view of the 1/5-scale model of the Ryan XF2R airplane with 40° flap deflection and landing gear extended.





Figure 4.- Rear view of the 1/5-scale model of the Ryan XF2R airplane with flaps and landing gear retracted.




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Figure 5.- Standard propeller on the 1/5-scale model of the Ryan XF2R airplane.





Figure 6.- Propeller with cuffs unsealed on the 1/5 scale model of the Ryan XF2R airplane.



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Figure 7.- Propeller with cuffs sealed on the 1/5-scale model of the Ryan XF2R airplane.



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FIGURE 10. - PRESSURE-TUBE LOCATIONS. "SSCALE MODEL OF THE RYAN XF2R AIRPLANE.



FIGURE 11. TUBE LOCATIONS OF THE PRESSURE RAKE IN THE SIMULATED ENTRANCE TO THE TG-100 GAS TURBINE. 15-SCALE MODEL OF RYAN XEZR AIRPLANE.

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Figure 12.- Pressure orifices atop spinner fairing and cowl. $1/5\mathchar`-scale$ model of the Ryan XF2R airplane.



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Figure 13.- Pressure orifices on lower side of spinner fairing and oil cooler on the 1/5-scale model of the Ryan XF2R airplane.



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Figure 14.- Pressure orifices in the oil-cooler fillet. 1/5-scale model of Ryan XF2R airplane.



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Figure 17.- Detail view of the 1/5-scale model of the Ryan XF2R airplane showing the 3-inch-diameter hole used for discharging air from the cowl.

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FIGURE 46 - AERODYNAMIC CHARACTERISTICS OF THE VS-SCALE MODEL OF THE RYAN X-22 AIRPLANE IN VAW. POWER-OAF APPROACH CONDITION WITH FLAPS DEFLECTED 40° AND GEAR EXTENDED 2

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FIGURE 47 - AERODYNAMIC CHARACTERISTICS OF THE US-SCALE MODEL OF THE RYAN XEZR AIRPLANE IN YAW. POWER-ON APPROACH CONDITION WITH ELAPS DEFLECTED 40° AND GEAR EXTENDED

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