NASA/CR—2017–219485

A Reexamination of the Hover Performance of the XC-142A Tiltwing

(Including the U.S. Air Force Propeller Static Performance Test Data Bank)

Franklin D. Harris
F. D. Harris & Associates
Ames Research Center, Moffett Field, California

Michelle Dominguez
Science and Technology Corporation
Ames Research Center, Moffett Field, California

March 2017

NASA STI Program ... in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA scientific and technical information (STI) program plays a key part in helping NASA maintain this important role.

The NASA STI program operates under the auspices of the Agency Chief Information Officer. It collects, organizes, provides for archiving, and disseminates NASA's STI. The NASA STI program provides access to the NTRS Registered and its public interface, the NASA Technical Reports Server, thus providing one of the largest collections of aeronautical and space science STI in the world. Results are published in both non-NASA channels and by NASA in the NASA STI Report Series, which includes the following report types:

- TECHNICAL PUBLICATION. Reports of completed research or a major significant phase of research that present the results of NASA Programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.

- TECHNICAL MEMORANDUM. Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.

- CONTRACTOR REPORT. Scientific and technical findings by NASA-sponsored contractors and grantees.

- CONFERENCE PUBLICATION. Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.

- SPECIAL PUBLICATION. Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.

- TECHNICAL TRANSLATION. English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services also include organizing and publishing research results, distributing specialized research announcements and feeds, providing information desk and personal search support, and enabling data exchange services.

For more information about the NASA STI program, see the following:

- Access the NASA STI program home page at http://www.sti.nasa.gov

- E-mail your question to help@sti.nasa.gov

- Phone the NASA STI Information Desk at 757-864-9658

- Write to:
  NASA STI Information Desk
  Mail Stop 148
  NASA Langley Research Center
  Hampton, VA 23681-2199

NASA/CR—2017–219485

A Reexamination of the Hover Performance of the XC-142A Tiltwing

(Including the U.S. Air Force Propeller Static Performance Test Data Bank)

Franklin D. Harris
F. D. Harris & Associates
Ames Research Center, Moffett Field, California

Michelle Dominguez
Science and Technology Corporation
Ames Research Center, Moffett Field, California

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, CA 94035-1000

March 2017

ACKNOWLEDGMENTS

Aeromechanics Branch interns at Ames Research Center were assigned the task of redigitizing the tabulated data in reference 3. This group of interns included Geoffrey Ament, Witold Koning, Cory Loob, Keith Pacheco, and Christina Wilson. They did a terrific job in less than a month. Their efforts are very much appreciated.

Available from:

NASA STI Support Services
Mail Stop 148
NASA Langley Research Center
Hampton, VA 23681-2199
757-864-9658

National Technical Information Service
5301 Shawnee Road
Alexandria, VA 22312
webmail@ntis.gov
703-605-6000

This report is also available in electronic form at

http://ntrs.nasa.gov

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

APPENDICES (cont.)

TABLE OF CONTENTS (cont.)

APPENDICES (cont.)

A REEXAMINATION OF THE HOVER PERFORMANCE OF THE XC-142A TILTWING

(Including the U.S. Air Force Propeller Static Performance Test Data Bank)

Franklin D. Harris[1] and Michelle Dominguez[2]

Ames Research Center

SUMMARY

This reports reexamines the hover performance of the XC-142A tiltwing. Two reports, published nearly four decades ago, were used in this reexamination. The first report provided experimental thrust and power measurements for 28 propellers in the static condition (i.e., hover). This data has been redigitized into a Microsoft Excel workbook. Two of the 28 propellers were flight tested on the XC-142A, and the preferred propeller's performance was documented in the second report. Both tabulated and graphical data forms show that the four-bladed, 15.625-foot-diameter Hamilton Standard propeller (2FF16A1-4A) performed better on the aircraft in hovering flight than as an isolated propeller on a test stand. Static testing showed that data point repeatability at fixed blade pitch angle and constant shaft horsepower was no better than about 175 pounds thrust out of 9,000 pounds. Unfortunately, 175 pounds is just about the weight of 1 troop in an aircraft designed to carry 32 fully equipped combat troops.

At this time, no theoretical calculations paralleling this propeller performance comparison have been made.

INTRODUCTION

During the 1960s the U.S. Air Force funded development of the LTV XC-142A tiltwing transport/cargo aircraft, shown hovering here in Figure 1 (ref. 1). The propellers for this aircraft were designed and built by Hamilton Standard with features illustrated in Figure 2. This initial Hamilton Standard design was designated as the 2FE16A3-4A. Early hover testing of the aircraft in the late 1960s and early 1970s established a 12-percent shortfall in thrust at the design power with this initial propeller design. An immediate propeller redesign program was started to obtain a propeller that would ensure that the aircraft would meet its contractually specified hover performance.

A major contributor to the redesign program was the staff at the V/STOL Propulsion Branch, Directorate of Propulsion and Power Subsystems office. This group was part of the then Aeronautical Systems Division of the Air Force Systems Command located at Wright–Patterson Air Force Base (WPAFB) in Dayton, Ohio. At that time, the V/STOL Propulsion Branch had several whirl tower rigs used to statically test propellers and helicopter rotors. One key output of the Branch was testing of the initially designed propeller (2FE16A3-4A) and then the redesigned XC-142A propeller, which was designated as the 2FF16A1-4A. Both of these four-bladed propellers had diameters of 15.625 feet. The redesigned blade (primarily with an increase in chord) improved the hover performance of the XC-142A so that the thrust shortfall was quoted as being only about 1 percent. Then, a relatively small uprating of the General

[1] F. D. Harris & Associates, Piedmont, OK, 73078.
[2] Science and Technology Corporation (SAIC), Ames Research Center, Moffett Field, CA 94035-1000.

Electric T64-GE-1 turboshaft engine—from 2,850 shp to 3,080 shp—appeared to have removed hover performance as an issue with the aircraft. Additional tests—more in the research line—were made starting with a 0.832-scaled version of the 2FF16A1-4A redesigned propeller. This contribution established static performance for changes in twist, tip shape, activity factor per blade (i.e., power weighted solidity per blade), airfoil camber, inboard blade spar fairing with cuffs, and airfoil sections.

In January of 1970, Matthew H. Chopin authored a two-part report that documented some of the V/STOL Propulsion Branch's propeller research effort in support of the XC-142A program (refs. 2,3). Part II of this report was prepared by Gerald Cafarelli and contains 357 pages of tabulated static performance test data for 28 different propellers. The Part II tabulated test data has been redigitized into one Microsoft Excel file. This Excel file is identified as "*USAF Propeller Static Performance Data Bank from Chopin's ASD-TR-69-15*" and is attached to this report under separate cover.

Chopin's summary report (ref. 2) provides a key figure showing the difference between the initial Hamilton Standard propeller (2FE16A3-4A) and the redesigned propeller (2FF16A1-4A). This comparison is reproduced here as Figure 3. Furthermore, the following remarks were included in Chopin's introduction:

> "This report presents the results of an extensive propeller test program conducted in support of the XC-142A System Program Office. The basic purpose of the testing was to obtain data necessary to improve propeller static performance of the XC-142A V/STOL cargo transport. The XC-142A is a prototype tilt-wing vertical takeoff cargo aircraft with four wing-mounted turboprop power plants, which provide thrust for both vertical and forward propulsion. A static thrust of approximately 10,000 pounds per propeller was required for the design takeoff gross weight of 37,470 pounds (plus control power) at sea level standard (S.L.S.) day conditions. This thrust corresponds to a propeller disc loading of approximately 50 pounds per square foot. Initial flight testing of the XC-142A indicated a need for additional propeller static thrust to provide the desired vertical takeoff capability for the aircraft. A program was initiated by the XC-42A System Program Office to increase the static thrust performance of the propeller system.
>
> The XC-142A aircraft operational requirements that dictated the specific propeller design were the following:
>
> a. V_{max} – 37,474 lbs gross weight (G. W.) on a standard day at sea level, at military rated shaft power (not less than) --- 355 kts (409 mph).
>
> b. Vertical thrust to weight ratio – 37,474 lbs G. W. on a standard day at sea level, out of ground effect, at takeoff rated shaft power, not less than 1. 15 lbs thrust/lb gross weight.
>
> In general, the hover performance of V/STOL aircraft has been below expectation, due in part to the lack of an accurate propeller-performance prediction theory at zero airspeed. Developing a theory for calculating static performance requires good experimental data to check the accuracy of the theory. Very little experimental test data is available for propellers intended for high static thrust. Data which are available have been obtained on various commercial and government test devices, and results obtained from different devices make direct comparison difficult. Data in this report was obtained under controlled conditions from the same test facilities.
>
> In the absence of accurate theoretical performance prediction methods, the empirical findings contained in this report are believed to be of vital significance to the performance of advanced propellers and to the early development of successful V/STOL aircraft. It is hoped that these tests will contribute to a better understanding of the factors affecting static thrust of propellers and may aid in the development of an accurate method of predicting the static performance of propellers for V/STOL aircraft application."

Figure 1. The XC-142A tiltwing was built by Ling-Temco-Vought and Hiller and Ryan after they won the U.S. Air Force Tri-Service competition for an assault transport. The 41,500-pound aircraft, with a weight empty of 24,700 pounds, first flew on September 29, 1964. The initial design gross weight was 37,474 pounds.

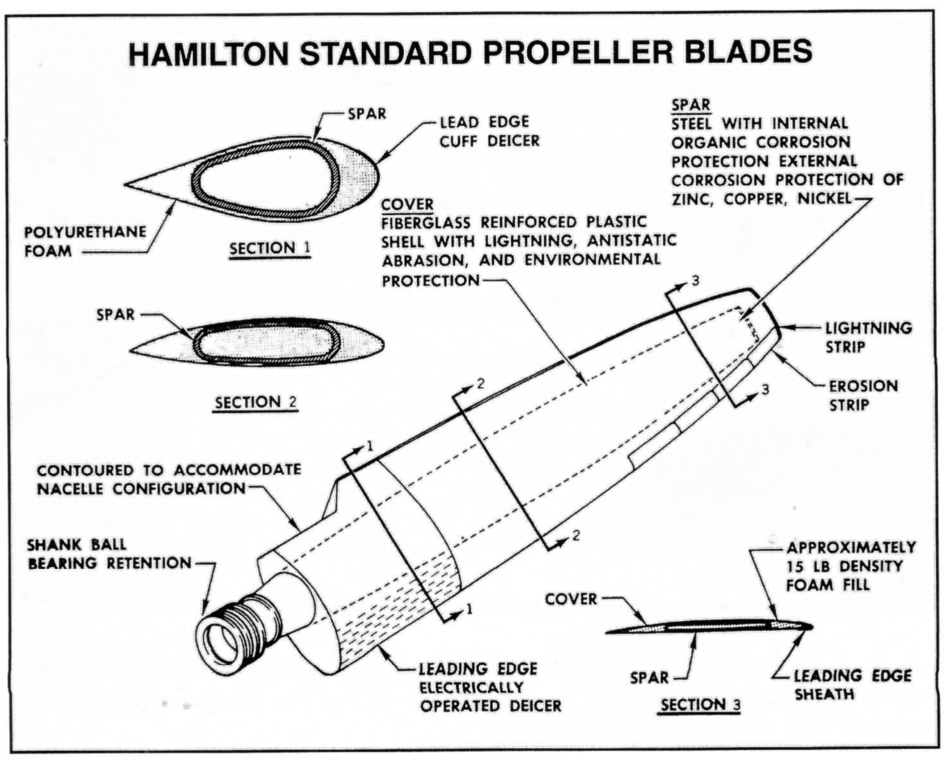


Figure 2. Basic design approach in support of V/STOL aircraft programs.

The performance comparison of the two propellers designed and statically tested on the whirl tower rig—and then in flight—is shown in Figure 3. Note that Figure of Merit (FM) is graphed against the propeller power coefficient (C_P). Propeller performance coefficients are not defined by the rotorcraft industry. Chopin's experimental data reduction process used

$$\text{Prop } C_P = 0.5000\frac{(HP/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^3(Dia/10)^5} = \frac{\pi^4}{4}\left(\text{Rotor } C_P = \frac{P}{\rho A V_t^3}\right)$$

$$\text{Prop } C_T = 0.1515\frac{(T/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^2(Dia/10)^4} = \frac{\pi^2}{4}\left(\text{Rotor } C_T = \frac{T}{\rho A V_t^2}\right)$$

$$FM = 0.798\frac{(\text{Prop } C_T)^{3/2}}{\text{Prop } C_P} = \frac{1}{\sqrt{2}}\frac{(\text{Rotor } C_T)^{3/2}}{\text{Rotor } C_P}$$

Chopin stated in his summary report that the horsepower available would be a propeller power coefficient of C_P = 0.0854, and each of the four 15.625-foot-diameter propellers would be operating at 1,232 revolutions per minute (1,008 ft/sec tip speed or a tip Mach number of 0.903). A C_P of 0.0854 at sea level on a standard day was based on the General Electric T64-GE-1 turboshaft engine takeoff rating of 3,080 shp. The actual power to the propeller shaft is obtained by accounting for transmission efficiency (0.98) and accessory losses (44 hp) as

$$\text{Prop SHP} = \text{Engine SHP} \times \eta_{\text{transmission}} - \text{SHP}_{\text{accessory}}.$$

Flight test factors such as engine residual jet thrust or wing/propeller interference were not considered. Entering Figure 3 at a C_P of 0.854 leads to the following result:

Propellers	Prop No.	Prop SHP	Thrust (lbs)	RPM	Prop C_T	Prop C_P	FM
Initial Design	2FE16A3-4A	2,974	10,043	1,232	0.1682	0.0854	0.645
Redesigned	2FF16A1-4A	2,974	11,003	1,232	0.1842	0.0854	0.739

The propeller thrust required so that the XC-142A would meet its hover performance specification was quoted by Chopin as 37,474(1.15)/4 equals 10,773 pounds per propeller.

Appendix I of Chopin's summary report provides blade characteristic sheets for the 28 propeller blades that were studied in the V/STOL Propulsion Branch propeller research effort supporting the XC-142A program (ref. 2). Sheet No. 2 gives characteristics for both the initial and the redesigned blades and is included here as Figure 4.

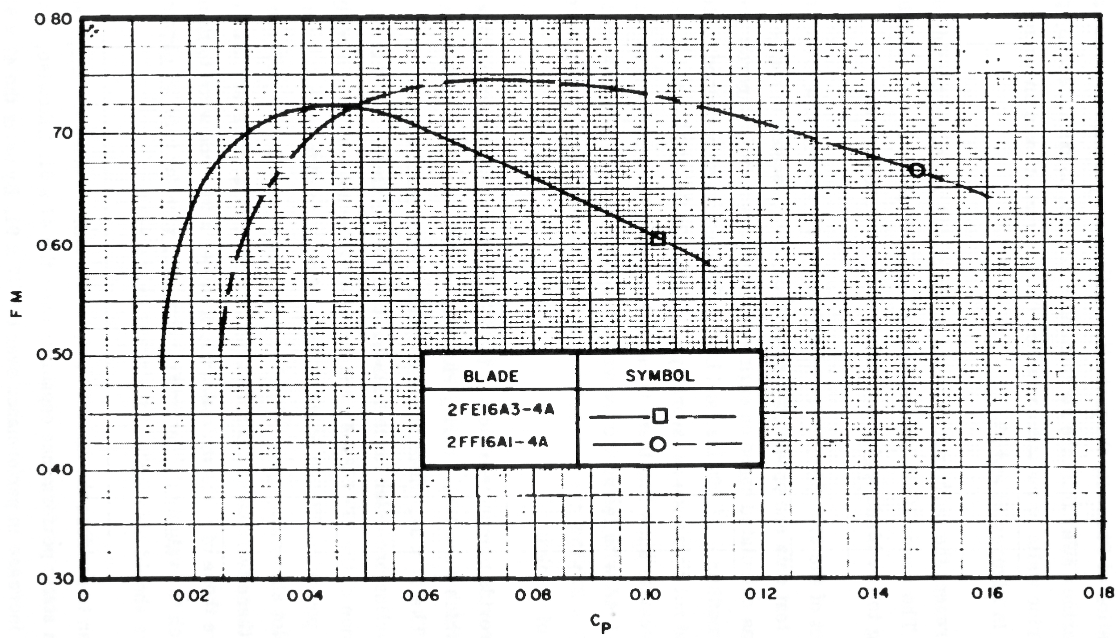


Figure 3. Hover performance of initial and redesigned propellers for the XC-142A (ref. 2).

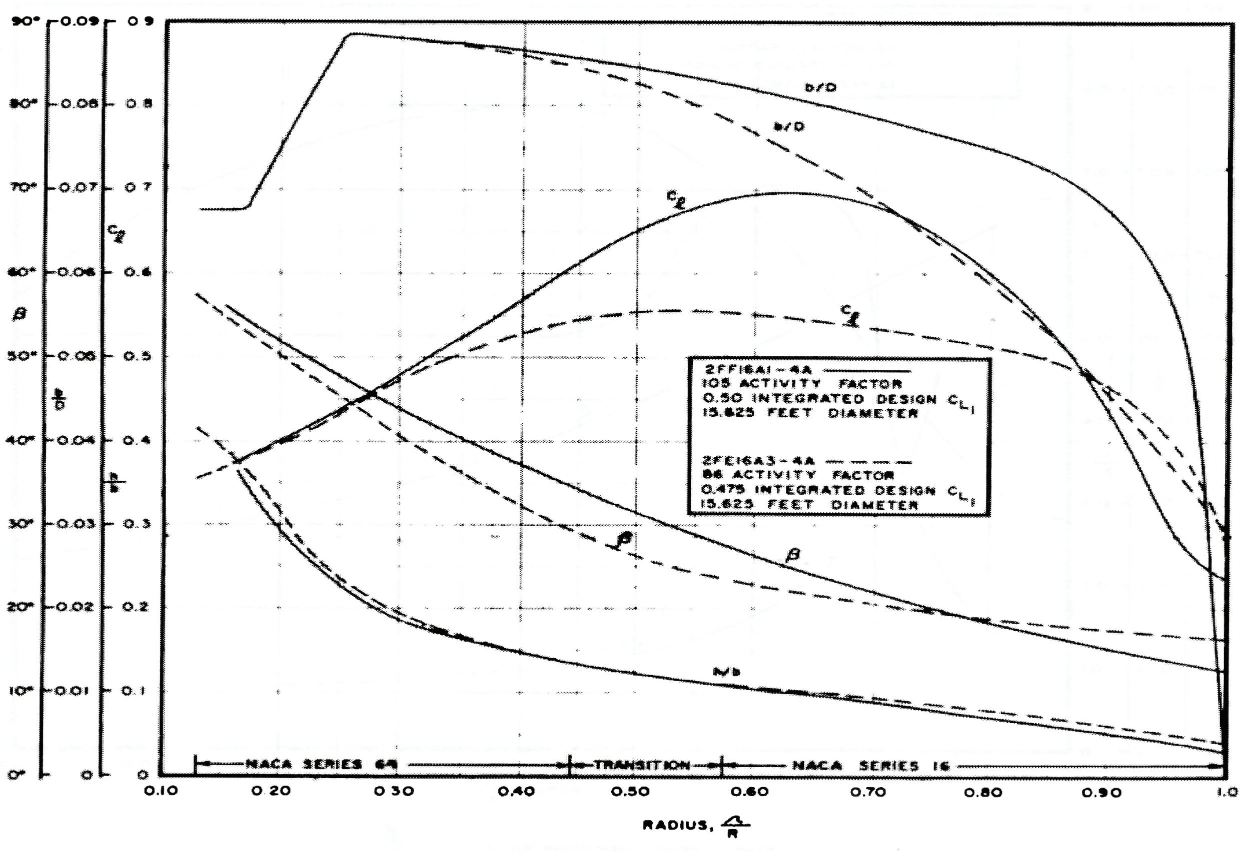


Figure 4. Blade characteristics of initial and redesigned propellers for the XC-142A (ref. 3).

DISCUSSION

Excel file titled U.S. Air Force Propeller Static Performance Test Data Bank

Part II of Chopin's report is titled Test Data (Appendix III); it was prepared by Gerald Cafarelli and contains 357 pages of tabulated static performance test data for 28 different propellers. This Part II tabulated test data has been redigitized as a single Microsoft Excel file. The Excel file is attached to this current report under separate cover. The first tab in the Excel file is a *Read Me* sheet that contains detailed information about the complete file.

Reexamination of the Hover Performance of the XC-142A Tiltwing

The redigitizing of the experimental static performance data of the initial and redesigned XC-142A propellers (2 of the 28 propellers tested) offers an opportunity to reexamine in more detail the conclusion Chopin arrived at with Figure 3. Furthermore, the Category II Performance Evaluation of the XC-142A published in October of 1968 (ref. 4) is historically significant because it allows a comparison of isolated propeller performance to propeller performance on the aircraft, which is always valuable research knowledge.

Consider the flight test data first. Appendix III of the flight test report (ref. 4) tabulates 15 data points of hover performance at a wheel height of 30 feet, which is assumed to be out of ground effect (OGE). A summary of this data is included here as Table 1.

Table 1. XC-142A OGE Hover Performance With Redesigned Propeller Blades (All Data Flown in 2 to 6 knots of Wind).

Data Point	Gross Weight (lb)	Engine SHP	Prop SHP	Prop Thrust (lb)	RPM	Tip Mach No.	Prop C_T	Prop C_P	Figure of Merit
1	36,147	2,188	2,097	8,936	1166.7	0.8530	0.1669	0.07093	0.7674
2	35,798	2,142	2,051	8,852	1166.7	0.8527	0.1655	0.06943	0.7739
3	35,426	2,123	2,033	8,760	1169.2	0.8542	0.1632	0.06841	0.7690
4	34,914	2,097	2,006	8,633	1169.2	0.8538	0.1610	0.06760	0.7627
5	34,577	2,051	1,961	8,552	1167.9	0.8526	0.1599	0.06634	0.7695
6	34,220	2,028	1,938	8,464	1171.6	0.8550	0.1574	0.06498	0.7670
7	33,900	2,008	1,918	8,385	1171.6	0.8549	0.1560	0.06433	0.7642
8	39,995	2,569	2,475	9,872	1167.9	0.8559	0.1831	0.08303	0.7531
9	39,485	2,482	2,389	9,752	1169.2	0.8568	0.1805	0.07988	0.7661
10	38,881	2,424	2,332	9,605	1170.4	0.8569	0.1778	0.07788	0.7678
11	38,348	2,385	2,293	9,473	1164.2	0.8523	0.1773	0.07783	0.7651
12	37,920	2,359	2,267	9,368	1164.2	0.8521	0.1754	0.07698	0.7612
13	37,526	2,299	2,208	9,274	1164.2	0.8520	0.1737	0.07500	0.7701
14	37,121	2,268	2,176	9,174	1166.7	0.8535	0.1712	0.07352	0.7689
15	36,550	2,198	2,107	9,037	1166.7	0.8532	0.1688	0.07124	0.7766

Several key points related to Table 1 need to be observed. First and foremost, the test data was obtained not at the design propeller RPM of 1,232, but at 94 percent of the design RPM. Second, the data was acquired at Point Mugu, California, on June 4, 1966. The pressure altitude on that day was, on average, minus 113 feet, and the outside air temperature was, on average, 61.2°F. For practical purposes the test condition was a standard day at sea level, although the speed of sound was, on average, 1,119 feet per second. Of course, the "exact" density and speed of sound during the run were computed and used for each data point on Table 1. Third, the conversion from Engine SHP to propeller SHP followed as

$$\text{Prop SHP} = \text{Engine SHP} \times \eta_{\text{transmission}} - \text{SHP}_{\text{accessory}}$$

where the transmission efficiency varied with engine shaft horsepower and propeller RPM in accordance with the curve shown on page 63 of reference 4. The accessory power was fixed at 44 hp per engine.

Data analysis in this reexamination report includes two minor refinements to arrive at the propeller thrust for each data point. The first refinement was to include an estimate of residual engine jet thrust with

$$\text{Residual Jet Thrust } (T_J) \approx \frac{\text{Engine SHP}}{10} \text{ in pounds.}$$

The second was to include wing download. In contrast to tiltrotors such as the XV-15 and the MV-22B, tiltwing V/STOLs have a minor wing download. The download of the XC-142A was treated as a wing vertical drag following the approximation

$$\text{Wing Vertical Drag } (F_{\text{Wing}}) \approx q_{\text{slipstream}} A_{SS} C_{Do} \text{ in pounds.}$$

The slipstream dynamic pressure is on the order of the disc loading, the portion of the wing area in the propeller slipstream (A_{SS}) was taken as the propeller diameter (15.625 feet) times the wing's mean aerodynamic chord (8.0 feet), and a drag coefficient (C_{Do}) of 0.02 was estimated. Based on these approximations, the summation of vertical forces must equal zero in hover and, therefore, the gross weight (GW) must be supported according to

$$\text{GW} = \text{No. of Props}\left(\frac{T_{\text{Prop}}}{\text{per Prop}}\right) + \text{No. of Engines}\left(\frac{T_{\text{Jet}}}{\text{per Eng}}\right) - \text{No. of Props}\left(\frac{F_{\text{Wing}}}{\text{per Prop}}\right),$$

and it follows that the thrust of each propeller is found from

$$\frac{T_{\text{Prop}}}{\text{per Prop}} = \frac{\text{GW}}{\text{No. of Props}} - \frac{\text{No. of Engines}}{\text{No. of Props}}\left(\frac{T_{\text{Jet}}}{\text{per Eng}}\right) + \left(\frac{F_{\text{Wing}}}{\text{per Prop}}\right).$$

For the XC-142A shown in Figure 1, the Prop Thrust given in the fifth column of Table 1 is calculated as

$$\frac{T_{\text{Prop}}}{\text{per Prop}} = \frac{\text{GW}}{4} - \frac{\text{SHP}_{\text{Engine}}}{10} + \frac{\text{GW}/4}{\pi/4(15.625)^2}(15.625\times 8)(0.02).$$

Using point 1 on Table 1 as a numerical example, $T_{\text{Prop}} = 9{,}037 - 219 + 118 = 8{,}936$ pounds.

Now consider the Air Force's measured static performance for the redesigned XC-142A propeller identified by Hamilton Standard as 2FF16A1-4A. This performance data is found from Data Sets #9, #10, and #23 in the Excel file attached under separate cover to this report. This data is summarized here in Table 2. Note that this propeller was tested with two configurations of the safety walls and with two different torque capacity drive shafts. Of course, this introduces test variables that slightly cloud the absolute accuracy, a subject to be discussed shortly.

Tables 1 and 2 provide experimental data that can be compared.

Table 2. Redesigned XC-142A Propeller (2FF16A1-4A) Static Performance (SHP and Thrust Corrected to Sea Level Standard Day Density of 0.0023769 slug/ft^3 and RPM Adjusted to Give a Tip Mach Number of 0.85).

Data Set	$BETA_{3/4R}$ (deg)	Prop SHP	Prop Thrust (lb)	RPM	Prop C_T	Prop C_P	FM
Rig #4 - Phase II, Walls Down, 30,00 ft-lbs Shaft							
9	11.9	2,250	9,141	1,144	0.1775	0.08068	0.7398
9	14.0	2,863	10,532	1,133	0.2085	0.10568	0.7191
9	16.0	3,897	12,603	1,143	0.2452	0.14011	0.6915
9	18.6	4,837	13,349	1,133	0.2643	0.17855	0.6073
Rig #4 - Phase II, Walls Down, 15,000 ft-lbs Shaft							
10	0.0	526	2,182	1,126	0.0437	0.01978	0.3691
10	2.1	615	2,932	1,126	0.0588	0.02313	0.4917
10	4.1	763	3,870	1,130	0.0770	0.02839	0.6010
10	6.1	987	4,994	1,130	0.0994	0.03672	0.6811
10	7.4	1,153	5,697	1,124	0.1146	0.04359	0.7103
10	10.1	1,700	7,674	1,130	0.1528	0.06325	0.7532
10	12.1	2,262	9,243	1,121	0.1870	0.08621	0.7483
Rig #4 - Phase III, Walls Relocated, 30,000 ft-lbs Shaft							
23	-2.0	566	1,601	1,166	0.0299	0.01917	0.2156
23	0.0	596	2,465	1,164	0.0462	0.02029	0.3911
23	2.2	726	3,392	1,168	0.0632	0.02446	0.5183
23	8.0	1,525	6,989	1,174	0.1289	0.05060	0.7298
23	8.0	1,372	6,484	1,168	0.1208	0.04623	0.7248
23	10.0	2,003	8,532	1,178	0.1563	0.06578	0.7494
23	10.0	1,811	8,014	1,170	0.1488	0.06071	0.7545
23	10.4	1,972	8,388	1,180	0.1531	0.06444	0.7420
23	10.4	2,013	8,598	1,180	0.1570	0.06578	0.7544
23	10.4	1,998	8,589	1,176	0.1579	0.06595	0.7588
23	10.5	1,967	8,352	1,182	0.1519	0.06395	0.7391
23	10.5	1,985	8,554	1,183	0.1554	0.06437	0.7591
23	10.5	1,957	8,380	1,187	0.1512	0.06282	0.7466
23	10.5	1,983	8,492	1,180	0.1550	0.06480	0.7517
23	12.0	2,339	9,478	1,171	0.1757	0.07820	0.7514
23	13.0	3,013	10,991	1,168	0.2048	0.10152	0.7284
23	13.5	3,073	11,197	1,166	0.2093	0.10407	0.7344
23	14.0	3,278	11,864	1,178	0.2173	0.10766	0.7509
23	16.0	4,008	12,968	1,172	0.2400	0.13366	0.7018

Notes:

1. The test procedure was to set the blade collective pitch at the 3/4 radius to an angle beta. Then the propeller RPM was swept from as low as 550 up to as high as 1,200. The measured thrust and horsepower were then plotted versus RPM, and a curve fit with a second order polynomial was made. The polynomial was used to calculate thrust and power at each of several tip Mach numbers. Since the speed of sound was different for each RPM sweep, the propeller RPM (shown in column 5) varied slightly.

2. No information is currently available for the structural properties of the blade, hub, and pitch change hardware. This means that elastic twisting and blade bending during an RPM sweep are unknown variables.

3. No information is given about wind speed.

Propeller Static Performance Comparison

The static performance data provided in Tables 1 and 2 is shown graphically in Figure 5 and with the enlargement, Figure 6. Figure 5 presents the experimental static (i.e., hover) performance comparison at a scale frequently used in technical reports and papers by the research community. Here it would appear that the propeller performance on the XC-142A (i.e., the solid brown circles) is in virtual agreement with that measured with an isolated propeller. Perhaps one might say “It’s a little high, but agreement is quite satisfactory.” However, the closer look provided by Figure 6 suggests that the faired curve fit with regression analysis (i.e., the red line) represents the “true” static performance to no better than ±100 pounds thrust and/or ±50 horsepower. The XC-142A flight test data appears to have less “scatter” of points about its regression analysis curve fit. When the two curve fit lines are taken together, it appears that the flight test results show that the propeller performance on the aircraft provided about 175 pounds more thrust at a given power than when the propeller was tested statically on the whirl test stand.

One might suggest that a difference of 175 pounds out of, say, 9,000 pounds is quite remarkable —all things considered—since this is just under a 2-percent difference. However, 175 pounds is just about the weight of 1 troop in an aircraft designed to carry 32 fully equipped combat troops. Therefore the difference observed on Figure 6 amounts to a 3-percent inaccuracy factor. Helicopter and V/STOL advocates have been forced to work around this technology inaccuracy for decades.

Finally, Chopin included a comparison of the redesigned XC-142A propeller performance as figure 27a and 27b in his summary report. These two figures are reproduced here as Figure 7a and 7b. His summary report provides insufficient basic data to pursue the three flight test points in more depth. However, in the conclusion of his summary report, Chopin wrote:

> “b. The redesigned XC-142A propeller (2FF16A1-4A) provided a significant increase in static thrust over the original propeller (2FE16A3-4A). Approximately 90 percent of the original thrust deficiency was eliminated. (F. M. = 0. 745 at Cp = 0.085 and M = 0.90 test conditions).”

Since his conclusion was reached before the complete Category II Report (ref. 4) was published (and detailed data such as that provided here in Table 1 became available), and in view of the fact that the XC-142A program came to an end November 1967, it may be that Chopin was somewhat premature.

CLOSING REMARKS

At this time, no theoretical calculations paralleling this propeller performance comparison have been made. Furthermore, the influence on performance when isolated propeller results are used to predict on-aircraft results is not well understood. Currently, one should expect that even today’s theoreticians will not be able to reduce the inaccuracy established above. Therefore, no less than a 3-percent thrust–power margin of error must be included during design and marketing efforts.

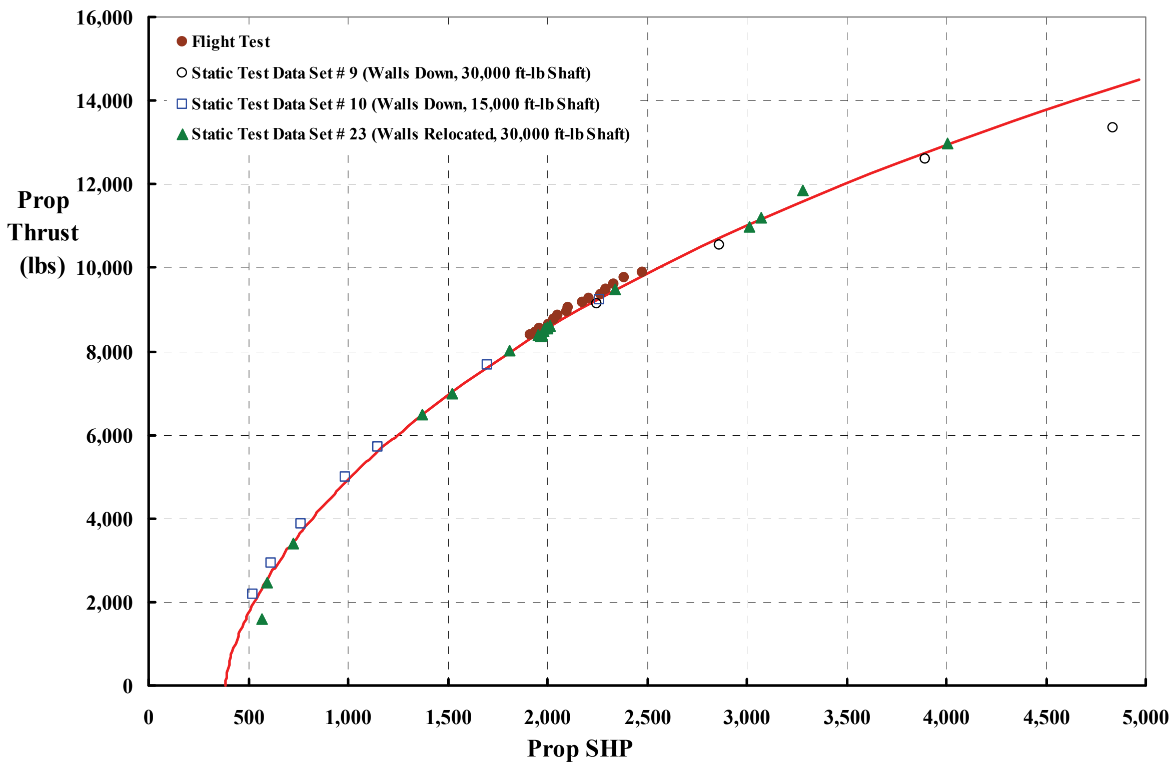


Figure 5. Comparison of isolated 2FF16A1-4A propeller static performance to on-aircraft performance.

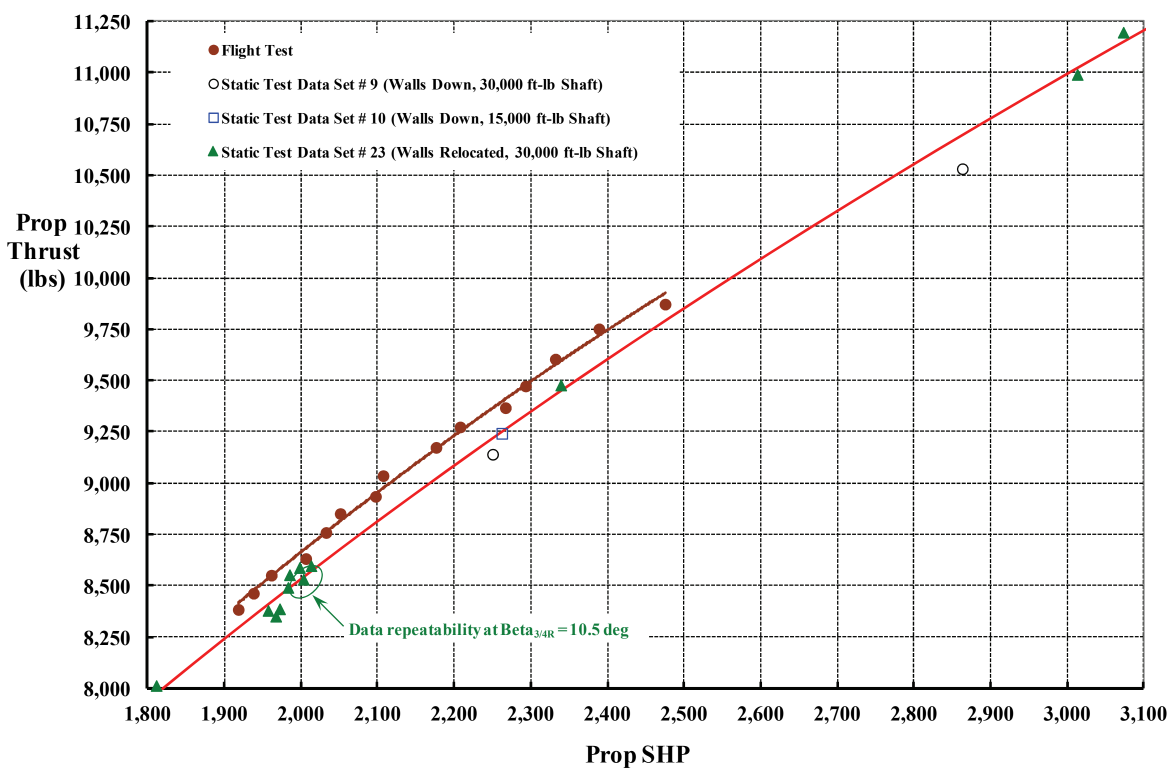


Figure 6. Comparison of isolated 2FF16A1-4A propeller static performance to on-aircraft performance.

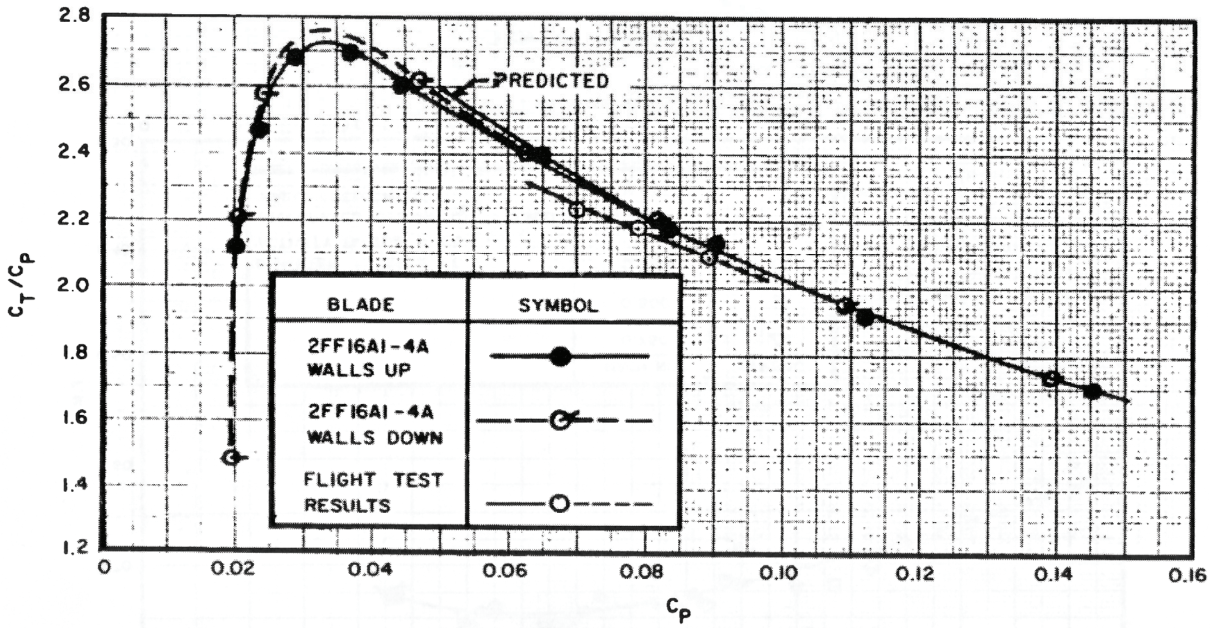


Figure 27. Test Correlation for the 2FF16A-1-4A at Tip Mach Number = 0.900; Walls Down, Walls Relocated, Predicted, and Flight Test Performances

a. C_T/C_P vs C_P plot

Figure 7a.

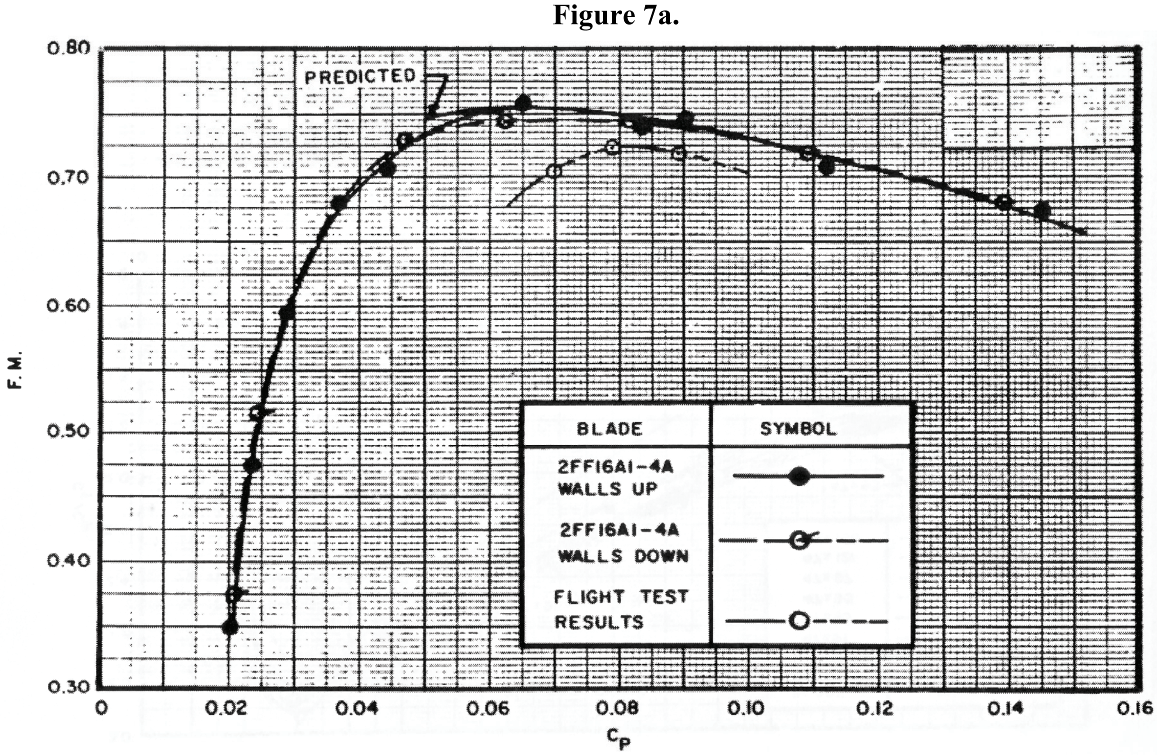


Figure 27. Continued

b. F.M. vs C_P plot

Figure 7b.

REFERENCES

1. Norton, W. J.: Vought/Hiller/Ryan XC-142A Tiltwing VSTOL Transport (Air Force Legends No. 213). Simi Valley, Calif.: Steve Ginter Books, 2006.

2 Chopin, M. H.: Propeller Static Performance Tests for V/STOL Aircraft—Part I, Summary Report. ASD-TR-69-15 (DTIC AD708501), Jan. 1970.

3. Chopin, M. H.: Propeller Static Performance Tests for V/STOL Aircraft—Part II, Test Data (Appendix III). ASD-TR-69-15 (DTIC AD 708742), Jan. 1970.

4. Hendrickson, C. L.; and Jones, G. E.: XC-142A VSTOL Transport Category II Performance Evaluation. AFFTC FTC-TR-68-21, Air Force Flight Test Center, Edwards Air Force Base, Calif., Oct. 1968.

APPENDICES

A. Read Me

U.S. Air Force Propeller Static Performance Testing
In Support of the XC-142A Program

During the 1960s the U.S. Air Force funded development of the LTV XC-142A tilt wing transport/cargo aircraft.[1] The propellers for this aircraft were designed and built by Hamilton Standard with features illustrated by the attached figure. Early hover testing of the aircraft in the late 1960s and early 1970s established a 12 percent shortfall in thrust at the design power with this initial design. This initial Ham Standard design was designated as the 2FF16A3-4A. An immediate propeller redesign program was started to obtain a propeller that would insure the aircraft would meet its hover performance spec.

A major contributor to the redesign program was the staff at the V/STOL Propulsion Branch, Directorate of Propulsion and Power Subsystems office. This group was part of the then Aeronautical Systems Division of the Air Force Systems Command located on Wright Patterson Air Force Base, Dayton Ohio. At that time, the V/STOL Propulsion Branch had several whirl tower rigs used to statically test propellers and helicopter rotors. One key output of the branch was testing of the initial design (2FF16A3-4A) propeller and then the redesigned XC 142A propeller, which was designated as the 2FF16A1-4A. The redesigned blade (primarily an increase in chord) improved the XC-142A's hover performance so that the thrust shortfall was only about 1 percent. (Then, a relatively small uprating of the General Electric T64-GE-1 turbo shaft engine – from 2,850 shp to 3,080 shp – removed hover performance as an issue with the aircraft.) Additional tests – more in the research line – were made starting with a 0.852 scaled version of the 2FF16A1-4A redesigned propeller. This contribution established static performance for changes in twist, tip shape, activity factor per blade (i.e. power weighted solidity per blade), airfoil camber, inboard blade spar fairing with cuffs and airfoil sections.

In January of 1970, a Mr. Matthew H. Chopin, authored a two part report that documented some of the V/STOL Propulsion Branch's propeller research effort.[2] The report's Part II was prepared by a Mr. Gerald Cafarelli and contains 337 pages of tabulated static performance test data for 28 different propellers. Now, with considerable help from several interns (led by Michelle Dominguez) working for Bill Warmbrodt, head of the Aeromechanics Branch at NASA Ames, we have redigitized the Part II tabulated test data in to this single Microsoft EXCEL file.

There are many tabs included in this EXCEL file. Thirty-four tabs are given over to tabulated data for the 28 propellers as shown on the second tab (reading left to right at the bottom of the file), which is labeled Table of Contents. The reason there are more data tabs than propellers is because a few propellers were retested with a different configuration of safety walls around the test site, including walls completely removed.

The third tab in this EXCEL file– labeled Propeller Configurations – summarizes key reference data about each of the 28 propellers. Note that on the second column of this worksheet we have numbered the Data Set number we gave for each of the 34 tests that were conducted. Here we followed Chopin's organization by the Test Categories (see column 4), which he grouped by Phase I Walls Up, then Phase II Walls Down and then by Phase III Walls Relocated (to provide a larger space around the propeller test stand). All these tests were conducted with the preferred test stand called Rig # 4. The fourth phase provided some limited data for the Curtiss X-19 propeller that was tested on a different propeller test rig (# 1) and with the walls up. Finally, the first column on this Propeller Configurations tab shows how we grouped the Data Sets with a color coding so we could more easily find our way along all the subsequent tabs on this EXCEL file.

1

The fourth and subsequent tabs provide the static performance data for each propeller data set. The tabs are gathered together in groups and color coded to follow the first column of the Propeller Configuration tab. We have included three graphs at the end of each color coded group with labels of

Graph 1. T over HP versus DL – Thrust/Horsepower versus Disc Loading where disc loading is $DL = \dfrac{T}{\left(\frac{\rho}{\rho_0}\right)\left(\frac{\pi}{4}D^2\right)}$

Graph 2. FM vs. CT – Figure of Merit is calculated as $FM = 0.798C_T^{3/2}/C_P$ where the thrust and power coefficients, using propeller notation of the time, are:

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$$

These coefficients may be converted to helicopter rotor form as follows:

$$\text{Rotor } C_T = \left(4/\pi^3\right)\text{Propeller } C_T \qquad \text{Rotor } C_P = \left(4/\pi^4\right)\text{Propeller } C_P$$

Graph 3. FM vs. DL

These graphs were used to double check our redigitizing effort and to provide a quick look at performance trends of each propeller. A selection of any one propeller data point plus a reformatting step of the data series to include a line will show a clear picture of that propeller's performance. We used this technique to spot any data point that needed a triple check.

The Data Set for each propeller contains two major sets of columns. Columns A through and including S provides the basic test data in both dimensional and non-dimensional forms. The recorded data is there in black in Columns A through H. This thrust and horsepower data has been corrected to sea level, standard day density. Note that the test approach was to set blade pitch angle (Beta in degrees) at the ¾ R radius station and then sweep propeller RPM. The nondimensional form of this data (Columns I and J) is in propeller coefficient form as calculated with the above equations. Columns K through S are of secondary interest.

The second major set of information is shown with Columns W through and including AL. These columns are an interesting result of curve fitting the recorded thrust and horsepower as a function of RPM using a second order polynomial. This data analysis effort was done by a Mr. Harold Schuetz of the Propulsion Branch using an IBM 7094 computer. Mr. Schuetz's analysis[3] allowed interpolation for tip Mach number and helped establish the XC-142A's propeller static performance at the design tip Mach number (M_{tip}) of 0.903.

This EXCEL file provides a valuable set of experimental data, which, along with Chopin's two part report, should help to better understand and more accurately estimate hover performance of tiltrotor, tiltwing and other types of V/STOL aircraft.

2

Should there be some questions or assistance is required, contact Frank Harris at

popharris@earthlink.net

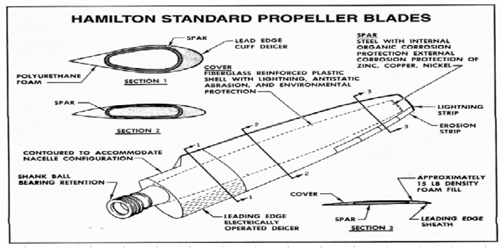
405-373-0587/0580 (No answering machine, so if no answer I am otherwise occupied)

15505 Valley Drive   Piedmont, Oklahoma   73078

1. Bill Norton's book on the XC-142A aircraft and program is absolutely invaluable in any discussion of this aircraft. The paper back book is titled "Vought/Hiller/Ryan XC-142A Tiltwing VSTOL transport" and was published in 2006 as an Air Force Legends Number 213. The ISBN is 0-942612-88-4.

2. See ASD-TR-69-15, *Propeller Static Performance Tests for V/STOL Aircraft-Part I. Summary Report*, which is available as DTIC AD 0708501. A Part II. Test Data (Appendix III) is available as DTIC AD 0708742.

3. See ASD-TR-69-19, which DTIC says they have – but they have yet to PDF it, although a request has been made.



B. Data Set Numbers

ASD-TR-69-15 (See DTIC AD0708742)
Part II-Test Data (Appendix III)
(Note: Harris edited version of page 3.)
Data is presented for the following propeller configurations tested as indicated below:

Prop Count	RELATED AIRCRAFT	PROPELLER	Rig 4 Phase I Walls Up	Rig 4 Phase II Walls Down	Rig 4 Phase III Walls Relocated	Rig 1 Walls Up
1	XC-142A	2FE16A3-4A	DS#1	DS#6		
2	XC-142A	2FE16A3-4A (with Tabs)		DS#7		
3	Fairchild Flying Boxcar (C-119)	2J17G3-26R	DS#2	DS#8		
4	XC-142A	Curtiss (156109A2P3)	DS#3			
5	XC-142A	2FF16A1-4A (30,000 ft-lb shaft)		DS#9	DS#23	
6	XC-142A	2FF16A1-4A (15,000 ft-lb shaft)		DS#10		
7	XC-142A	SK59868-0	DS#4	DS#11		
8	XC-142A	SK59868-0R (Round Tip)		DS#12		
9	XC-142A	SK59868-12 (Cut Down, Square Tip)		DS#13		
10	XC-142A	SK59868-12R (Round Tip)		DS#14		
11	XC-142A	SK59868-18 (Cut Down Square Tip)		DS#15		
12	XC-142A	SK59868-18R (Round Tip)		DS#16		
13	Lockeed Constellation (C-121)	6903A-0 (34E60 Hub)		DS#17		
14	Lockeed Constellation (C-121)	6903A-0T (34E60 Hub New Twist)		DS#18		
15	Lockeed Constellation (C-121)	6903A-0 (43E60 Hub)		DS#19		
16	Canadair CL-84	1498A2P3		DS#20		
17	Research	47 x 75 (Re-Twisted SK59868-0)		DS#21		
18	Research	47 x 91 (0.832-Scale of 2FF16A1-4A)			DS#24	
19	Research	47 x 92			DS#25	
20	Research	47 x 93			DS#26	
21	Research	47 x 94			DS#27	
22	Research	47 x 95			DS#28	
23	Research	47 x 96			DS#29	
24	Research	47 x 97			DS#30	
25	Research	47 x 121			DS#31	
26	Research	47 x 138			DS#32	
27	Curtiss X-19	13166A10P3				DS#34
28	Whirl Stand	Calibrator	DS#5	DS#22	DS#33	No Data

Note: The blade geometric shape for each of these blades is included in Appendix I of ASD-TR-69-15 Part I. The graphs are in the standard format of the time. The graphs give blade chord and airfoil thickness non-dimensionalized by propeller diameter versus blade radius station (r/R). Additionally, twist (i.e., beta) and the airfoil design C_l following NACA airfoil shape standards are provided versus radius station. See Abbott and von Doenhoff's book "Theory of Wing Sections."

C. Propeller Configurations

ASD-TR-69-15 (See DTIC AD0708742)

Part II-Test Data (Appendix III)

(Note: Harris edited version of pages 4 and 5. Rearranged in order of test data page tabulations.)

$$\frac{\text{ActivityFactor}}{\text{Blade}} = \frac{100,000}{16}\int_{x_c}^{1}\left(\frac{\text{Chord}}{D}\right)x^3dx$$

LIST OF PROPELLER CONFIGURATIONS TESTED

Harris Grouping	Harris Data Set Number	Pages	Test Categories	Diameter (ft)	Number Blades	Activity Factor per Blade	Integrated Lift Coeff. CLi	NACA Airfoil Section	Twist 23% R-Tip (deg)	Blade Construction Details	Propeller Configuration Comments	Rotorcraft Power Weighted Solidity $\sigma_{power} \equiv \left(\frac{128\times blade\#}{100,000\pi}\right)(\text{AF per Blade})$	Power Weighted Chord (ft) $c_{power} = \frac{\pi R \sigma_{power}}{blade\#}$
			Rig #4 - Phase I, Walls Up					(See Note 1 Below)					
Group # 1	**1**	8 thru 18	2FE16A3-4A	15.625	4	86	0.475	16,64	29.0	Fiberglass*	Original XC-142A Prop by Hamilton Standard	0.14016	0.86000
Group # 1	**2**	19 thru 32	2J17G3-26R	14.917	4	122	0.459	16,64	35.2	Steel Core & Shell	C-119 Production Prop	0.19883	1.16472
Group # 1	**3**	34 thru 39	156109A2P3	15.500	4	109	0.482	na	37.0	Fiberglass	Designed for XC-142A (by Curtiss??)	0.17764	1.08128
Group # 1	**4**	40 thru 49	SK59868-0	16.600	4	98	0.407	16,64	35.0	Fiberglass*	Basic XC-142A SK59868-0 Blade	0.15972	1.04115
Group # 1	**5**	52 thru 66	Calibrator (Curtiss 836-14C2-18R1)(15,000 ft-lb shaft)	13.000	4	98	0.500	na	32.0	Hollow Steel	Standard Rig Calibrator (Low Torque Shaft)	0.15972	0.81536
			Rig #4 - Phase II, Walls Down										
Group # 2-Part 1	**6**	68 thru 79	2FE16A3-4A	15.625	4	86	0.475	16,64	29.0	Fiberglass*	Original XC-142A Prop by Hamilton Standard	0.14016	0.86000
Group # 2-Part 1	**7**	80 thru 83	2FE16A3-4A (with tabs)	15.625	4	86	0.475+	16,64	29.0	Fiberglass*	(See Note 2 Below)	0.14016	0.86000
Group # 2-Part 1	**8**	84 thru 93	2J17G3-26R	14.917	4	122	0.459	16,64	35.2	Steel Core -Shell	C-119 Production Prop	0.19883	1.16472
Group # 2-Part 1	**9**	94 thru 98	2FF16A1-4A (30,000 ft-lb shaft)	15.625	4	105	0.500	16,64	35.5	Fiberglass*	Redesigned XC-142A Prop by Hamilton Standard	0.17112	1.05000
Group # 2-Part 1	**10**	99 thru 107	2FF16A1-4A (15,000 ft-lb shaft)	15.625	4	105	0.500	16,64	35.5	Fiberglass*	Redesigned XC-142A Prop by Hamilton Standard	0.17112	1.05000
Group # 2-Part 2	**11**	108 thru 117	SK59868 -0	16.600	4	98	0.407	16,64	35.0	Fiberglass*	Alternate XC-142A SK59868-0 Blade Square Tip	0.15972	1.04115
Group # 2-Part 2	**12**	118 thru 126	SK59868 -0Round	16.600	4	89	0.407	16,64	35.0	Fiberglass*	Round Tip SK59868-0	0.14505	0.94554
Group # 2-Part 2	**13**	127 thru 135	SK59868-12.22	15.625	4	109	0.476	16,64	30.0	Fiberglass*	Cut Down SK59868-12.22 Square Tip	0.17764	1.09000
Group # 2-Part 2	**14**	136 thru 144	SK59858-12.22Round	15.625	4	99	0.476	16,64	30.0	Fiberglass*	Round Tip SK59868-12.22	0.16134	0.99000
Group # 2-Part 2	**15**	145 thru 153	SK59868-17.22	15.208	4	115	0.497	16,64	28.3	Fiberglass*	Cut Down SK59868-17.22 Square Tip	0.18742	1.11931
Group # 2-Part 2	**16**	154 thru 162	SK59868-17.22Round	15.208	4	105	0.497	16,64	28.3	Fiberglass*	Round Tip SK59868-17.22	0.17112	1.02198
Group # 2-Part 3	**17**	163 thru 167	6903A-0 (34E60 hub (4-way)	15.160	4	99	0.500	16	33.7	Solid Dural	Lockheed Constellation (C-121) Production *Blades* in 4-Way Hub	0.16134	0.96054
Group # 2-Part 3	**18**	168 thru 173	6903A-0T (34E60 hub 4-way)	15.160	4	99	0.500	16	38.5	Solid Dural	Twisted 6903A Blade in 4-Way Hub	0.16134	0.96054
Group # 2-Part 3	**19**	174 thru 177	6903A-0 (43E60 hub 3-way)	15.160	Three	99	0.500	16	33.7	Solid Dural	Lockheed Constellation (C-121) Production Propeller (3-Way Hub)	0.12101	0.96054
Group # 2-Part 3	**20**	178 thru 181	1490A2P3	14.000	4	90	0.498	65	39.0	Fiberglass**	CL-84 Propeller	0.14668	0.80640
Group # 2-Part 3	**21**	182 thru 190	47 x 75	16.602	4	98	0.407	16,64	28.4	Fiberglass*	Twisted SK59868-0	0.15972	1.04128
Group # 2-Part 3	**22**	191 thru 220	Calibrator (15,000 ft-lb shaft PLUS 30,000 ft-lb shaft)	13.000	4	98	0.500	na	32.0	Hollow Steel	Standard Rig Calibrator (Low & High Torque Shafts)	0.15972	0.81536
			Rig #4 - Phase III, Walls Relocated										
Group # 3	**23**	222 thru 241	2FF16A1-4A plus some data locked at Beta = 10.6 deg	15.625	4	105	0.500	16,64	35.5	Fiberglass*	Redesigned XC-142A Prop by Hamilton Standard	0.17112	1.05000
Group # 3	**24**	242 thru 253	47 x 91	13.000	4	105	0.500	16,64	35.5	Solid Dural	0.832-Scale of 2FF16A1-4A	0.17112	0.87360
Group # 3	**25**	254 thru 262	47 x 92	13.000	4	103	0.500	16	35.5	Solid Dural	47 x 91 Without Cuff	0.16786	0.85696
Group # 3	**26**	263 thru 273	47 x 93	13.000	4	117	0.500	16,64	35.5	Solid Dural	117 Activity Factor 2FF16A1-4A	0.19068	0.97344
Group # 3	**27**	274 thru 280	47 x 94	13.000	4	115	0.500	16	35.5	Solid Dural	47 x 93 Without Cuff	0.18742	0.95680
Group # 3	**28**	281 thru 292	47 x 95	13.000	4	105	0.500	16,64	38.5	Solid Dural	Twisted 47 x 91 0.832-Scale of 2FF16A1-4A	0.17112	0.87360
Group # 3	**29**	293 thru 300	47 x 96	13.000	4	103	0.500	16	38.5	Solid Dural	47 x 95 Without Cuff	0.16786	0.85696
Group # 3	**30**	301 thru 310	47 x 97	13.000	4	115	0.558	16	35.5	Solid Dural	Recambered 47 x 94	0.18742	0.95680
Group # 3	**31**	311 thru 321	47 x 121	13.000	4	117	0.600	65	35.5	Solid Dural with Fiberglass	47 x 93 with NACA Series 65 Section for full radius	0.19068	0.97344
Group # 3	**32**	322 thru 332	47 x 138	13.000	4	103	0.500	16	30.3	Solid Dural	Retwisted 47 x 92	0.16786	0.85696
Group # 3	**33**	333 thru 338	Calibrator (30,000 ft-lb shaft)	13.000	4	98	0.500	na	32.0	Hollow Steel	Standard Rig Calibrator (High Torque Shaft)	0.15972	0.81536
			Rig #1 - Walls Up										
Group # 4	**34**	340 thru 357	13166A10P3	13.000	Three	166	0.055	64	33.6	Fiberglass**	Curtiss X-19 Propeller	0.20290	1.38112
Group # 5	35	No Data	Calibrator	13.000	4	98	0.500	na	32.0	Hollow 8teel	Standard Rig Calibrator	0.15972	0.81536

* Fiberglass shell over steel core, foam filled

** Fiberglass monocoque with steel shank.

NOTE 1: The NACA Series 64 airfoils extend from r/R = 0.13 to r/R = 0.44. Transition is then made to the NACA Series 16 airfoil starting at r/R = 0.575 and going to the tip. See Abbott and Von Doenhoff's Theory of Wing Sections, Chapter 6, starting on page 111.

NOTE 2: Original 2FE16A3-4A Prop with Balsa Wedge on Face Side T.E. (78 In. Sta - 12.6 deg, 1.54 inch width; to Tip-12.0 deg, 0.816 inch width). Harris note: I do not understand this description.

D. Data Set # 1

DATA SET Number 1

XC-142A (2FE16A3-4A1)	Activity Factor	Diameter (feet)	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	86	15.625	4	23.5	533.990	0.957

Power weighted solidity = 0.14016

Twist (0.25R -Tip in deg) = 29.0

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

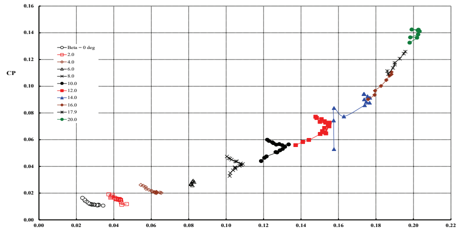
$$C_T = 0.1515 \frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2 (Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3 (Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

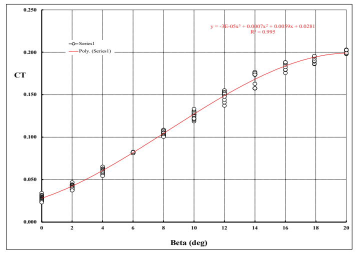
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	Harris Computed CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
8	41	Up	0.00	729	77	716	0.526	0.03424	0.01067	3.2093	0.4739	9.2987		3.73	9.299	0.4739	596	1,134
8	41	Up	0.00	867	138	940	0.626	0.03178	0.01137	2.7960	0.3978	6.8116		4.90	6.812	0.3978	709	1,133
8	41	Up	0.00	918	158	1055	0.663	0.03182	0.01096	2.9020	0.4131	6.6772		5.50	6.677	0.4131	751	1,133
8	41	Up	0.00	977	189	1170	0.705	0.03116	0.01088	2.8634	0.4033	6.1905		6.10	6.190	0.4033	799	1,134
8	41	Up	0.00	1022	221	1275	0.738	0.03103	0.01111	2.7915	0.3924	5.7692		6.65	5.769	0.3924	836	1,133
8	41	Up	0.00	1104	283	1421	0.797	0.02963	0.01129	2.6245	0.3605	5.0212		7.41	5.021	0.3605	903	1,133
8	41	Up	0.00	1134	308	1494	0.819	0.02953	0.01134	2.6042	0.3571	4.8506		7.79	4.851	0.3571	928	1,133
8	41	Up	0.00	1162	333	1555	0.839	0.02927	0.01139	2.5689	0.3507	4.6697		8.11	4.670	0.3507	951	1,133
8	41	Up	0.00	1193	360	1587	0.861	0.02834	0.01138	2.4899	0.3345	4.4083		8.28	4.408	0.3345	976	1,134
8	41	Up	0.00	1218	392	1650	0.879	0.02827	0.01165	2.4272	0.3257	4.2092		8.61	4.209	0.3257	996	1,134
8	41	Up	0.00	1251	427	1712	0.903	0.02780	0.01171	2.3746	0.3160	4.0094		8.93	4.009	0.3160	1,023	1,133
8	41	Up	0.00	1284	469	1775	0.927	0.02737	0.01189	2.3007	0.3037	3.7846		9.26	3.785	0.3037	1,050	1,133
8	41	Up	0.00	1315	510	1837	0.949	0.02700	0.01204	2.2425	0.2941	3.6020		9.58	3.602	0.2941	1,076	1,134
8	41	Up	0.00	1343	564	1879	0.970	0.02648	0.01250	2.1183	0.2751	3.3316		9.80	3.332	0.2751	1,099	1,133
8	41	Up	0.00	1375	659	1900	0.993	0.02554	0.01361	1.8769	0.2394	2.8832		9.91	2.883	0.2394	1,125	1,133
8	41	Up	0.00	1405	734	1920	1.014	0.02472	0.01421	1.7400	0.2183	2.6158		10.01	2.616	0.2183	1,149	1,134
8	41	Up	0.00	1432	833	1962	1.034	0.02432	0.01523	1.5968	0.1987	2.3553		10.23	2.355	0.1987	1,172	1,133
8	41	Up	0.00	1473	978	1983	1.063	0.02323	0.01643	1.4140	0.1720	2.0276		10.34	2.028	0.1720	1,205	1,134
9	24	Up	2.00	734	87	992	0.529	0.04680	0.01181	3.9623	0.6840	11.4023		5.17	11.402	0.6840	601	1,135
9	24	Up	2.00	853	131	1266	0.615	0.04423	0.01133	3.9028	0.6550	9.6641		6.60	9.664	0.6550	698	1,135
9	24	Up	2.00	982	232	1666	0.708	0.04391	0.01315	3.3386	0.5583	7.1810		8.69	7.181	0.5583	803	1,135
9	24	Up	2.00	1100	364	2070	0.793	0.04348	0.01468	2.9616	0.4928	5.6868		10.80	5.687	0.4928	900	1,135
9	24	Up	2.00	1129	396	2195	0.814	0.04377	0.01477	2.9628	0.4946	5.5429		11.45	5.543	0.4946	924	1,135
9	24	Up	2.00	1162	439	2258	0.838	0.04251	0.01502	2.8296	0.4655	5.1435		11.78	5.144	0.4655	951	1,134
9	24	Up	2.00	1196	495	2425	0.863	0.04309	0.01553	2.7740	0.4595	4.8990		12.65	4.899	0.4595	978	1,134
9	24	Up	2.00	1225	531	2510	0.884	0.04251	0.01551	2.7414	0.4511	4.7269		13.09	4.727	0.4511	1,002	1,134
9	24	Up	2.00	1252	562	2532	0.903	0.04106	0.01537	2.6705	0.4318	4.5053		13.20	4.505	0.4318	1,024	1,134
9	24	Up	2.00	1285	624	2700	0.927	0.04156	0.01579	2.6324	0.4282	4.3269		14.08	4.327	0.4282	1,051	1,134
9	24	Up	2.00	1313	669	2785	0.947	0.04106	0.01587	2.5878	0.4184	4.1629		14.52	4.163	0.4184	1,074	1,134
9	24	Up	2.00	1350	762	2891	0.974	0.04032	0.01663	2.4249	0.3886	3.7940		15.08	3.794	0.3886	1,104	1,134
9	24	Up	2.00	1375	802	2849	0.992	0.03830	0.01656	2.3125	0.3612	3.5524		14.86	3.552	0.3612	1,125	1,134
9	24	Up	2.00	1409	909	3019	1.016	0.03865	0.01745	2.2155	0.3476	3.3212		15.74	3.321	0.3476	1,153	1,135
9	24	Up	2.00	1437	1031	3189	1.037	0.03925	0.01865	2.1043	0.3327	3.0931		16.63	3.093	0.3327	1,176	1,134
9	24	Up	2.00	1469	1127	3166	1.060	0.03729	0.01909	1.9538	0.3011	2.8092		16.51	2.809	0.3011	1,202	1,134
10	26	Up	4.00	733	150	1365	0.528	0.06457	0.02045	3.1580	0.6404	9.1000		7.12	9.100	0.6404	600	1,136
10	26	Up	4.00	861	240	1905	0.620	0.06532	0.02019	3.2356	0.6599	7.9375		9.93	7.938	0.6599	704	1,136
10	26	Up	4.00	984	355	2390	0.709	0.06274	0.02000	3.1364	0.6269	6.7324		12.46	6.732	0.6269	805	1,135
10	26	Up	4.00	1102	508	3005	0.794	0.06289	0.02038	3.0862	0.6176	5.9154		15.67	5.915	0.6176	902	1,135
10	26	Up	4.00	1127	540	3110	0.812	0.06224	0.02025	3.0729	0.6118	5.7593		16.22	5.759	0.6118	922	1,135
10	26	Up	4.00	1164	601	3300	0.838	0.06191	0.02046	3.0259	0.6008	5.4908		17.21	5.491	0.6008	952	1,136
10	26	Up	4.00	1192	654	3510	0.858	0.06279	0.02073	3.0288	0.6056	5.3670		18.31	5.367	0.6056	975	1,137
10	26	Up	4.00	1224	715	3700	0.881	0.06277	0.02093	2.9987	0.5996	5.1748		19.30	5.175	0.5996	1,001	1,137
10	26	Up	4.00	1252	761	3808	0.902	0.06175	0.02082	2.9661	0.5882	5.0039		19.86	5.004	0.5882	1,024	1,136
10	26	Up	4.00	1284	831	3933	0.925	0.06064	0.02108	2.8771	0.5653	4.7329		20.51	4.733	0.5653	1,050	1,136
10	26	Up	4.00	1316	920	4105	0.948	0.06025	0.02167	2.7800	0.5445	4.4620		21.41	4.462	0.5445	1,077	1,136
10	26	Up	4.00	1348	1029	4200	0.971	0.05875	0.02255	2.6049	0.5038	4.0816		21.90	4.082	0.5038	1,103	1,136
10	26	Up	4.00	1378	1135	4274	0.992	0.05721	0.02329	2.4567	0.4689	3.7656		22.29	3.766	0.4689	1,127	1,136
10	26	Up	4.00	1405	1269	4430	1.012	0.05704	0.02456	2.3221	0.4426	3.4909		23.10	3.491	0.4426	1,149	1,136
10	26	Up	4.00	1439	1416	4538	1.036	0.05570	0.02551	2.1834	0.4112	3.2048		23.67	3.205	0.4112	1,177	1,136
10	26	Up	4.00	1467	1537	4610	1.056	0.05445	0.02614	2.0831	0.3879	2.9993		24.04	2.999	0.3879	1,200	1,137
11	28	Up	6.00	732	210	1728	0.527	0.08197	0.02874	2.8517	0.6515	8.2286		9.01	8.229	0.6515	599	1,136
11	28	Up	6.00	856	302	2363	0.616	0.08197	0.02585	3.1710	0.7245	7.8245		12.32	7.825	0.7245	700	1,137
11	28	Up	6.00	977	464	3052	0.704	0.08127	0.02671	3.0425	0.6921	6.5776		15.92	6.578	0.6921	799	1,135
11	28	Up	6.00	1106	680	3910	0.796	0.08125	0.02698	3.0108	0.6848	5.7500		20.39	5.750	0.6848	905	1,137
11	28	Up	6.00	1131	736	4090	0.814	0.08127	0.02731	2.9756	0.6769	5.5571		21.33	5.557	0.6769	925	1,137
11	28	Up	6.00	1246	1024	5063	0.897	0.08289	0.02842	2.9167	0.6701	4.9443		26.40	4.944	0.6701	1,019	1,136
11	28	Up	6.00	1294	1183	5426	0.932	0.08237	0.02931	2.8099	0.6435	4.5866		28.30	4.587	0.6435	1,059	1,136
12	28	Up	8.00	730	238	2135	0.526	0.10183	0.03285	3.1003	0.7895	8.9706		11.13	8.971	0.7895	597	1,135
12	28	Up	8.00	858	412	2960	0.619	0.10220	0.03502	2.9184	0.7445	7.1845		15.44	7.184	0.7445	702	1,134
12	28	Up	8.00	978	647	3900	0.705	0.10364	0.03713	2.7910	0.7170	6.0278		20.34	6.028	0.7170	800	1,135
12	28	Up	8.00	1097	941	4970	0.791	0.10497	0.03827	2.7431	0.7092	5.2816		25.92	5.282	0.7092	897	1,135
12	28	Up	8.00	1127	1047	5240	0.813	0.10486	0.03927	2.6704	0.6901	5.0048		27.33	5.005	0.6901	922	1,134
12	28	Up	8.00	1160	1140	5538	0.836	0.10461	0.03921	2.6679	0.6886	4.8579		28.88	4.858	0.6886	949	1,135
12	28	Up	8.00	1191	1270	5980	0.859	0.10715	0.04036	2.6550	0.6936	4.7087		31.19	4.709	0.6936	974	1,134
12	28	Up	8.00	1222	1393	6360	0.881	0.10825	0.04098	2.6414	0.6935	4.5657		33.17	4.566	0.6935	1,000	1,135
12	28	Up	8.00	1247	1510	6660	0.899	0.10886	0.04181	2.6039	0.6856	4.4106		34.73	4.411	0.6856	1,020	1,135
12	28	Up	8.00	1254	1515	6660	0.904	0.10765	0.04125	2.6099	0.6833	4.3960		34.73	4.396	0.6833	1,026	1,135
12	28	Up	8.00	1282	1656	6965	0.924	0.10772	0.04220	2.5528	0.6686	4.2059		36.32	4.206	0.6686	1,049	1,135
12	28	Up	8.00	1322	1877	7255	0.953	0.10551	0.04362	2.4192	0.6271	3.8652		37.84	3.865	0.6271	1,082	1,135
12	28	Up	8.00	1341	1969	7465	0.967	0.10551	0.04384	2.4070	0.6239	3.7913		38.93	3.791	0.6239	1,097	1,135
12	28	Up	8.00	1347	1991	7485	0.971	0.10485	0.04374	2.3975	0.6195	3.7594		39.04	3.759	0.6195	1,102	1,135
12	28	Up	8.00	1381	2210	7720	0.996	0.10289	0.04505	2.2839	0.5846	3.4932		40.26	3.493	0.5846	1,130	1,134
12	28	Up	8.00	1407	2381	7950	1.014	0.10207	0.04589	2.2242	0.5671	3.3389		41.46	3.339	0.5671	1,151	1,135
12	28	Up	8.00	1436	2547	8225	1.035	0.10138	0.04618	2.1955	0.5578	3.2293		42.89	3.229	0.5578	1,175	1,135
12	28	Up	8.00	1467	2789	8500	1.058	0.10039	0.04743	2.1167	0.5352	3.0477		44.33	3.048	0.5352	1,200	1,134
13	31	Up	10.00	735	326	2523	0.532	0.11871	0.04408	2.6931	0.7404	7.7393		13.16	7.739	0.7404	601	1,130
13	31	Up	10.00	860	550	3503	0.622	0.12039	0.04642	2.5932	0.7180	6.3691		18.27	6.369	0.7180	704	1,131
13	31	Up	10.00	984	843	4629	0.712	0.12151	0.04750	2.5581	0.7116	5.4911		24.14	5.491	0.7116	805	1,131
13	31	Up	10.00	1105	1270	6110	0.800	0.12719	0.05053	2.5169	0.7163	4.8110		31.86	4.811	0.7163	904	1,130
13	31	Up	10.00	1125	1346	6298	0.814	0.12648	0.05075	2.4921	0.7073	4.6790		32.85	4.679	0.7073	920	1,131
13	31	Up	10.00	1155	1494	6757	0.836	0.12874	0.05206	2.4731	0.7081	4.5228		35.24	4.523	0.7081	945	1,130
13	31	Up	10.00	1189	1662	7236	0.861	0.13010	0.05308	2.4508	0.7054	4.3538		37.74	4.354	0.7054	973	1,130
13	31	Up	10.00	1227	1881	7778	0.888	0.13131	0.05467	2.4021	0.6946	4.1350		40.56	4.135	0.6946	1,004	1,130
13	31	Up	10.00	1253	2069	8237	0.907	0.13335	0.05646	2.3617	0.6882	3.9812		42.96	3.981	0.6882	1,025	1,130
13	31	Up	10.00	1284	2205	8425	0.929	0.12989	0.05592	2.3227	0.6680	3.8209		43.94	3.821	0.6680	1,050	1,131
13	31	Up	10.00	1314	2395	8717	0.951	0.12832	0.05667	2.2642	0.6473	3.6397		45.46	3.640	0.6473	1,075	1,130
13	31	Up	10.00	1349	2574	9071	0.976	0.12670	0.05629	2.2507	0.6393	3.5241		47.31	3.524	0.6393	1,104	1,131
13	31	Up	10.00	1374	2773	9300	0.994	0.12521	0.05739	2.1816	0.6160	3.3538		48.50	3.354	0.6160	1,124	1,131
13	31	Up	10.00	1411	3039	9759	1.021	0.12459	0.05808	2.1452	0.6042	3.2113		50.90	3.211	0.6042	1,154	1,131
13	31	Up	10.00	1436	3258	9968	1.039	0.12287	0.05907	2.0801	0.5818	3.0595		51.99	3.060	0.5818	1,175	1,131
13	31	Up	10.00	1467	3531	10323	1.062	0.12192	0.06005	2.0305	0.5658	2.9235		53.84	2.924	0.5658	1,200	1,130
14	32	Up	12.00	734	412	2906	0.529	0.13710	0.05593	2.4511	0.7242	7.0534		15.16	7.053	0.7242	601	1,135
14	32	Up	12.00	854	676	4043	0.615	0.14090	0.05827	2.4181	0.7243	5.9808		21.09	5.981	0.7243	699	1,136
14	32	Up	12.00	975	1032	5391	0.702	0.14414	0.05978	2.4113	0.7306	5.2238		28.12	5.224	0.7306	798	1,136
14	32	Up	12.00	1096	1575	7097	0.789	0.15017	0.06423	2.3381	0.7230	4.5060		37.01	4.506	0.7230	897	1,136
14	32	Up	12.00	1130	1786	7603	0.814	0.15134	0.06645	2.2774	0.7070	4.2570		39.65	4.257	0.7070	924	1,136
14	32	Up	12.00	1158	1990	8045	0.834	0.15249	0.06880	2.2164	0.6907	4.0427	Repeat	41.96	4.043	0.6907	947	1,136
14	32	Up	12.00	1162	1916	8087	0.837	0.15223	0.06556	2.3220	0.7230	4.2208	Repeat	42.18	4.221	0.7230	951	1,136
14	32	Up	12.00	1190	2196	8635	0.857	0.15499	0.06996	2.2153	0.6960	3.9321	Repeat	45.03	3.932	0.6960	974	1,136
14	32	Up	12.00	1192	2233	8634	0.858	0.15445	0.07078	2.1820	0.6843	3.8665	Repeat	45.03	3.867	0.6843	975	1,137
14	32	Up	12.00	1227	2229	9077	0.884	0.15324	0.06478	2.3656	0.7390	4.0722	Repeat	47.34	4.072	0.7390	1,004	1,136
14	32	Up	12.00	1229	2518	9222	0.885	0.15519	0.07282	2.1310	0.6699	3.6624	Repeat	48.09	3.662	0.6699	1,005	1,136
14	32	Up	12.00	1260	2711	9561	0.907	0.15307	0.07276	2.1038	0.6568	3.5267		49.86	3.527	0.6568	1,031	1,137
14	32	Up	12.00	1290	2952	9982	0.929	0.15247	0.07383	2.0652	0.6435	3.3814		52.06	3.381	0.6435	1,055	1,136
14	32	Up	12.00	1318	3129	10256	0.949	0.15007	0.07337	2.0453	0.6323	3.2777		53.49	3.278	0.6323	1,078	1,136
14	32	Up	12.00	1345	3416	10741	0.969	0.15092	0.07537	2.0022	0.6207	3.1443		56.02	3.144	0.6207	1,100	1,136
14	32	Up	12.00	1375	3692	11035	0.990	0.14835	0.07625	1.9457	0.5980	2.9889		57.55	2.989	0.5980	1,125	1,136
14	32	Up	12.00	1409	4023	11540	1.015	0.14775	0.07721	1.9135	0.5869	2.8685		60.18	2.869	0.5869	1,153	1,136
15	33	Up	14.00	739	398	3385	0.531	0.15754	0.05294	2.9757	0.9425	8.5050	Problem	17.65	8.505	0.9425	605	1,139
15	33	Up	14.00	863	891	4613	0.620	0.15743	0.07442	2.1153	0.6698	5.1773		24.06	5.177	0.6698	706	1,139
15	33	Up	14.00	882	1070	4824	0.634	0.15762	0.08372	1.8826	0.5964	4.5084	Problem	25.16	4.508	0.5964	722	1,138
15	33	Up	14.00	977	1345	6115	0.702	0.16283	0.07743	2.1030	0.6772	4.5465		31.89	4.546	0.6772	799	1,139
15	33	Up	14.00	1101	2131	8295	0.792	0.17393	0.08572	2.0290	0.6753	3.8925		43.26	3.893	0.6753	901	1,137
15	33	Up	14.00	1127	2337	8824	0.810	0.17658	0.08765	2.0146	0.6756	3.7758		46.02	3.776	0.6756	922	1,138
15	33	Up	14.00	1162	2579	9289	0.835	0.17486	0.08825	1.9815	0.6612	3.6018		48.44	3.602	0.6612	951	1,139
15	33	Up	14.00	1187	2808	9628	0.853	0.17369	0.09014	1.9269	0.6408	3.4288		50.21	3.429	0.6408	971	1,138
15	33	Up	14.00	1226	3137	10453	0.881	0.17676	0.09139	1.9341	0.6489	3.3322		54.51	3.332	0.6489	1,003	1,139
15	33	Up	14.00	1255	3407	10876	0.902	0.17552	0.09254	1.8967	0.6341	3.1923		56.72	3.192	0.6341	1,027	1,138
15	33	Up	14.00	1288	3751	11321	0.926	0.17345	0.09425	1.8404	0.6117	3.0181		59.04	3.018	0.6117	1,054	1,138
15	33	Up	14.00	1299	3845	11532	0.934	0.17371	0.09418	1.8445	0.6135	2.9992		60.14	2.999	0.6135	1,063	1,138
16	36	Up	16.00	733	662	3715	0.532	0.17575	0.09024	1.9475	0.6515	5.6118		19.37	5.612	0.6515	600	1,127
16	36	Up	16.00	857	1096	5180	0.622	0.17927	0.09348	1.9176	0.6479	4.7263		27.01	4.726	0.6479	701	1,127
16	36	Up	16.00	976	1674	6729	0.709	0.17955	0.09667	1.8574	0.6281	4.0197		35.09	4.020	0.6281	798	1,126
16	36	Up	16.00	1025	2010	7550	0.744	0.18266	0.10021	1.8228	0.6217	3.7562		39.37	3.756	0.6217	839	1,127
16	36	Up	16.00	1104	2622	8895	0.802	0.18550	0.10462	1.7731	0.6094	3.3924		46.39	3.392	0.6094	903	1,126
16	36	Up	16.00	1128	2883	9370	0.819	0.18718	0.10784	1.7357	0.5992	3.2501		48.87	3.250	0.5992	923	1,127
16	36	Up	16.00	1159	3159	9948	0.842	0.18824	0.10894	1.7280	0.5983	3.1491		51.88	3.149	0.5983	948	1,126
16	36	Up	16.00	1184	3421	10381	0.860	0.18822	0.11065	1.7010	0.5889	3.0345		54.14	3.034	0.5889	969	1,126
17	37	Up	17.90	733	817	3933	0.531	0.18606	0.11137	1.6706	0.5750	4.8140		20.51	4.814	0.5750	600	1,129
17	37	Up	17.90	734	804	3954	0.532	0.18654	0.10915	1.7090	0.5890	4.9179		20.62	4.918	0.5890	601	1,129
17	37	Up	17.90	862	1357	5527	0.625	0.18906	0.11374	1.6622	0.5767	4.0730		28.82	4.073	0.5767	705	1,128
17	37	Up	17.90	922	1697	6355	0.668	0.19001	0.11624	1.6347	0.5686	3.7448		33.14	3.745	0.5686	754	1,129
17	37	Up	17.90	983	2079	7224	0.713	0.19002	0.11751	1.6171	0.5625	3.4747		37.67	3.475	0.5625	804	1,128
17	37	Up	17.90	1028	2442	8011	0.745	0.19268	0.12068	1.5966	0.5593	3.2805		41.78	3.281	0.5593	841	1,129
17	37	Up	17.90	1100	3084	9274	0.798	0.19481	0.12440	1.5661	0.5516	3.0071		48.37	3.007	0.5516	900	1,128
17	37	Up	17.90	1117	3267	9605	0.810	0.19567	0.12585	1.5548	0.5488	2.9400		50.09	2.940	0.5488	914	1,128
18	38	Up	20.00	737	989	4231	0.533	0.19799	0.13264	1.4927	0.5300	4.2781		22.07	4.278	0.5300	603	1,131
18	38	Up	20.00	858	1604	5848	0.621	0.20191	0.13634	1.4810	0.5311	3.6459	Repeat	30.50	3.646	0.5311	702	1,130
18	38	Up	20.00	858	1607	5744	0.621	0.19832	0.13659	1.4519	0.5160	3.5744	Repeat	29.96	3.574	0.5160	702	1,130
18	38	Up	20.00	924	2039	6802	0.669	0.20250	0.13876	1.4593	0.5240	3.3359		35.47	3.336	0.5240	756	1,130
18	38	Up	20.00	977	2452	7631	0.707	0.20320	0.14116	1.4395	0.5178	3.1122		39.80	3.112	0.5178	799	1,131
18	38	Up	20.00	1022	2819	8316	0.740	0.20237	0.14178	1.4274	0.5124	2.9500		43.37	2.950	0.5124	836	1,130
18	38	Up	20.00	1042	3002	8503	0.754	0.19905	0.14245	1.3973	0.4975	2.8324	Problem	44.34	2.832	0.4975	852	1,131
18	38	Up	20.00	1050	3070	8792	0.760	0.20269	0.14238	1.4236	0.5115	2.8638		45.85	2.864	0.5115	859	1,130

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	Harris Computed CT	CP	CT/CP	FM	T/HP	Disc Loading Repe
8	0.0	0.725	207	1232	822	1004	0.0311	0.0110	2.829	0.398	5.952	6.43
8	0.0	0.750	232	1299	850	1039	0.0306	0.0111	2.754	0.384	5.599	6.77
8	0.0	0.775	258	1369	878	1073	0.0302	0.0112	2.696	0.374	5.306	7.14
8	0.0	0.800	287	1442	907	1108	0.0299	0.0113	2.636	0.363	5.024	7.52
8	0.0	0.825	315	1505	935	1143	0.0293	0.0113	2.585	0.353	4.778	7.85
8	0.0	0.850	347	1573	963	1177	0.0289	0.0114	2.526	0.342	4.533	8.20
8	0.0	0.875	383	1635	992	1212	0.0283	0.0115	2.456	0.329	4.269	8.53
8	0.0	0.900	422	1699	1020	1247	0.0276	0.0117	2.377	0.316	4.026	8.86
8	0.0	0.925	465	1773	1048	1281	0.0275	0.0119	2.312	0.306	3.813	9.25
8	0.0	0.950	515	1837	1077	1316	0.0270	0.0121	2.222	0.291	3.567	9.58
8	0.0	0.975	586	1878	1105	1351	0.0262	0.0128	2.050	0.265	3.205	9.79
8	0.0	1.000	681	1912	1133	1385	0.0253	0.0138	1.841	0.234	2.808	9.97
9	2.0	0.725	261	1738	822	1005	0.0437	0.0138	3.168	0.529	6.659	9.06
9	2.0	0.750	297	1853	851	1040	0.0433	0.0142	3.072	0.512	6.239	9.66
9	2.0	0.775	334	1971	879	1074	0.0430	0.0145	3.001	0.499	5.901	10.28
9	2.0	0.800	372	2101	907	1109	0.0434	0.0148	2.965	0.493	5.648	10.96
9	2.0	0.825	417	2225	936	1144	0.0432	0.0150	2.890	0.479	5.336	11.60
9	2.0	0.850	466	2353	964	1178	0.0431	0.0153	2.816	0.467	5.049	12.27
9	2.0	0.875	513	2450	992	1213	0.0423	0.0154	2.743	0.450	4.776	12.78
9	2.0	0.900	563	2567	1021	1248	0.0419	0.0157	2.694	0.440	4.560	13.39
9	2.0	0.925	615	2669	1049	1282	0.0413	0.0157	2.634	0.427	4.340	13.92
9	2.0	0.950	681	2780	1077	1317	0.0407	0.0160	2.545	0.410	4.082	14.50
9	2.0	0.975	750	2840	1106	1352	0.0395	0.0163	2.424	0.384	3.787	14.81
9	2.0	1.000	867	2957	1134	1386	0.0391	0.0175	2.238	0.353	3.411	15.42
10	4.0	0.725	383	2526	824	1007	0.0633	0.0201	3.144	0.631	6.595	13.17
10	4.0	0.750	426	2690	852	1041	0.0631	0.0203	3.112	0.624	6.315	14.03
10	4.0	0.775	471	2859	880	1076	0.0631	0.0203	3.092	0.618	6.070	14.91
10	4.0	0.800	519	3028	909	1111	0.0624	0.0203	3.069	0.612	5.834	15.79
10	4.0	0.825	573	3226	937	1146	0.0626	0.0204	3.055	0.609	5.630	16.82
10	4.0	0.850	632	3425	966	1180	0.0625	0.0207	3.026	0.604	5.419	17.86
10	4.0	0.875	695	3630	994	1215	0.0625	0.0208	3.004	0.599	5.223	18.93
10	4.0	0.900	761	3809	1022	1250	0.0620	0.0209	2.962	0.588	5.005	19.86
10	4.0	0.925	836	3958	1051	1285	0.0609	0.0212	2.880	0.567	4.734	20.64
10	4.0	0.950	928	4088	1079	1319	0.0597	0.0217	2.751	0.536	4.405	21.32
10	4.0	0.975	1050	4220	1108	1354	0.0585	0.0227	2.576	0.497	4.019	22.01
10	4.0	1.000	1191	4365	1136	1389	0.0575	0.0239	2.410	0.461	3.665	22.76
11	6.0	0.725	502	3233	824	1007	0.0810	0.0264	3.070	0.697	6.440	16.86
11	6.0	0.750	562	3466	852	1041	0.0813	0.0267	3.040	0.692	6.167	18.08
11	6.0	0.775	627	3709	880	1076	0.0814	0.0270	3.013	0.686	5.915	19.34
11	6.0	0.800	695	3953	909	1111	0.0814	0.0272	2.992	0.681	5.688	20.62
11	6.0	0.825	773	4214	937	1146	0.0816	0.0276	2.958	0.674	5.451	21.98
11	6.0	0.850	857	4485	966	1180	0.0819	0.0280	2.924	0.668	5.233	23.39
11	6.0	0.875	947	4767	994	1215	0.0821	0.0283	2.896	0.662	5.034	24.86
11	6.0	0.900	1043	5060	1022	1250	0.0823	0.0287	2.871	0.657	4.851	26.39
11	6.0	0.925	1146	5363	1051	1285	0.0826	0.0290	2.847	0.653	4.680	27.97
12	8.0	0.725	710	4132	823	1006	0.1036	0.0374	2.772	0.713	5.820	21.55
12	8.0	0.750	796	4433	851	1040	0.1042	0.0380	2.742	0.706	5.569	23.12
12	8.0	0.775	889	4743	879	1075	0.1044	0.0384	2.716	0.700	5.337	24.73
12	8.0	0.800	986	5051	908	1110	0.1046	0.0388	2.701	0.698	5.143	26.34
12	8.0	0.825	1096	5426	936	1144	0.1054	0.0391	2.681	0.695	4.951	28.30
12	8.0	0.850	1219	5801	965	1179	0.1061	0.0399	2.656	0.690	4.759	30.25
12	8.0	0.875	1355	6230	993	1214	0.1074	0.0408	2.643	0.691	4.598	32.49
12	8.0	0.900	1502	6642	1021	1248	0.1084	0.0415	2.613	0.686	4.422	34.64
12	8.0	0.925	1667	6947	1050	1283	0.1073	0.0424	2.531	0.662	4.167	36.23
12	8.0	0.950	1843	7244	1078	1318	0.1060	0.0432	2.453	0.637	3.931	37.78
12	8.0	0.975	2038	7514	1106	1352	0.1045	0.0443	2.360	0.609	3.687	39.19
12	8.0	1.000	2243	7784	1135	1387	0.1028	0.0451	2.279	0.583	3.470	40.60
13	10.0	0.725	907	4853	820	1002	0.1229	0.0484	2.538	0.710	5.351	25.31
13	10.0	0.750	1021	5242	848	1036	0.1241	0.0493	2.518	0.708	5.134	27.34
13	10.0	0.775	1144	5652	876	1071	0.1252	0.0500	2.505	0.707	4.941	29.48
13	10.0	0.800	1271	6073	904	1105	0.1264	0.0506	2.500	0.709	4.778	31.67
13	10.0	0.825	1420	6541	933	1140	0.1279	0.0515	2.486	0.710	4.606	34.11
13	10.0	0.850	1583	7008	961	1174	0.1292	0.0523	2.461	0.706	4.427	36.55
13	10.0	0.875	1786	7560	989	1209	0.1315	0.0543	2.423	0.701	4.233	39.43
13	10.0	0.900	1983	8025	1017	1243	0.1320	0.0555	2.379	0.690	4.043	41.85
13	10.0	0.925	2190	8416	1046	1278	0.1310	0.0563	2.325	0.672	3.843	43.89
13	10.0	0.950	2380	8739	1074	1313	0.1288	0.0564	2.283	0.654	3.672	45.58
13	10.0	0.975	2580	9028	1102	1347	0.1265	0.0567	2.232	0.633	3.499	47.08
13	10.0	1.000	2816	9408	1130	1382	0.1252	0.0573	2.186	0.617	3.341	49.06
14	12.0	0.725	1171	5827	824	1007	0.1461	0.0616	2.372	0.724	4.976	30.39
14	12.0	0.750	1329	6298	852	1041	0.1477	0.0632	2.336	0.716	4.739	32.85
14	12.0	0.775	1501	6793	880	1076	0.1491	0.0647	2.305	0.710	4.526	35.43
14	12.0	0.800	1666	7303	909	1111	0.1503	0.0652	2.305	0.713	4.382	38.08
14	12.0	0.825	1873	7856	937	1145	0.1517	0.0668	2.270	0.708	4.194	40.97
14	12.0	0.850	2121	8435	966	1180	0.1540	0.0693	2.222	0.702	3.977	43.99
14	12.0	0.875	2330	8987	994	1215	0.1547	0.0697	2.219	0.696	3.857	46.87
14	12.0	0.900	2583	9455	1022	1250	0.1537	0.0710	2.164	0.677	3.657	49.27
14	12.0	0.925	2901	9870	1051	1285	0.1519	0.0734	2.070	0.648	3.402	51.47
14	12.0	0.950	3174	10334	1079	1319	0.1516	0.0733	2.033	0.630	3.256	53.89
14	12.0	0.975	3482	10792	1108	1354	0.1496	0.0753	1.987	0.613	3.099	56.28
14	12.0	1.000	3819	11256	1136	1389	0.1485	0.0765	1.938	0.596	2.947	58.70
15	14.0	0.725	1540	6680	825	1008	0.1671	0.0807	2.070	0.675	4.338	34.84
15	14.0	0.750	1741	7249	853	1043	0.1694	0.0824	2.056	0.675	4.164	37.80
15	14.0	0.775	1964	7843	882	1078	0.1715	0.0842	2.038	0.674	3.993	40.90
15	14.0	0.800	2198	8456	910	1113	0.1735	0.0856	2.027	0.674	3.847	44.10
15	14.0	0.825	2482	9083	939	1148	0.1752	0.0881	1.989	0.664	3.660	47.37
15	14.0	0.850	2760	9634	967	1182	0.1753	0.0897	1.953	0.653	3.491	50.24
15	14.0	0.875	3056	10233	996	1217	0.1753	0.0910	1.926	0.643	3.342	53.26
15	14.0	0.900	3384	10817	1024	1252	0.1754	0.0926	1.895	0.633	3.197	56.41
15	14.0	0.925	3726	11340	1053	1287	0.1740	0.0938	1.854	0.617	3.043	59.14
16	16.0	0.725	1835	7122	817	998	0.1817	0.0981	1.854	0.624	3.883	37.14
16	16.0	0.750	2060	7651	845	1033	0.1822	0.1003	1.816	0.619	3.714	39.90
16	16.0	0.775	2327	8237	873	1067	0.1839	0.1028	1.788	0.612	3.540	42.96
16	16.0	0.800	2620	8856	901	1102	0.1854	0.1051	1.764	0.606	3.380	46.19
16	16.0	0.825	2937	9501	929	1136	0.1871	0.1076	1.740	0.601	3.235	49.55
16	16.0	0.850	3280	10140	958	1170	0.1883	0.1099	1.712	0.593	3.091	52.88
17	17.9	0.7250	2216	7526	818	1000	0.1913	0.1190	1.608	0.561	3.396	39.25
17	17.9	0.7500	2494	8101	846	1034	0.1926	0.1211	1.590	0.557	3.248	42.25
17	17.9	0.7750	2796	8707	875	1069	0.1937	0.1229	1.576	0.553	3.114	45.41
17	17.9	0.8000	3125	9344	903	1103	0.1952	0.1250	1.561	0.551	2.990	48.73
18	20.0	0.725	2648	7998	820	1002	0.2025	0.1413	1.433	0.513	3.020	41.71
18	20.0	0.750	2948	8514	848	1036	0.2016	0.1423	1.417	0.508	2.888	44.40





E. Data Set # 2

DATA SET Number 2

C-119 (2J17G3-26R)

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
122	16.917	4	27.0	540.200	0.9400

Power weighted solidity = 0.19882

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

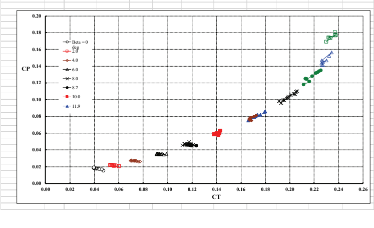
$$C_T = 0.1515 \frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2 (Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3 (Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

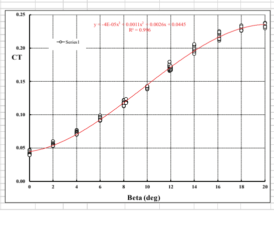
REDUCED TEST DATA POINTS

FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
0.5286	8.6091	5.41873	8.60909	0.5286	612	1,139
0.4651	6.7207	6.88355	6.72067	0.4651	698	1,139
0.4292	5.5348	8.64593	5.53480	0.4292	801	1,140
0.3870	4.5631	10.33964	4.56313	0.3870	897	1,139
0.3751	4.3310	10.78023	4.33103	0.3751	922	1,139
0.3639	4.0994	11.32954	4.09938	0.3639	951	1,139
0.3507	3.8895	11.68430	3.88952	0.3507	975	1,140
0.3407	3.7295	11.99329	3.72954	0.3407	996	1,139
0.3330	3.5574	12.59982	3.55735	0.3330	1,022	1,140
0.3260	3.3696	13.45812	3.36963	0.3260	1,055	1,140
0.5650	7.9936	7.18110	7.99363	0.5650	625	1,140
0.5518	6.9690	9.01214	6.96903	0.5518	701	1,139
0.5067	5.8030	10.95761	5.80303	0.5067	799	1,140

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS — Harris Computed

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP
19	0.0	0.725	306	1590	826	1058	0.0435	0.0175	2.484766	0.413	5.196
19	0.0	0.750	342	1678	855	1095	0.0428	0.0176	2.42831	0.401	4.906
19	0.0	0.775	380	1766	883	1131	0.0422	0.0178	2.375712	0.390	4.647
19	0.0	0.800	420	1854	912	1168	0.0416	0.0178	2.330384	0.379	4.414
19	0.0	0.825	465	1941	940	1204	0.0410	0.0180	2.271555	0.367	4.174
19	0.0	0.850	514	2025	969	1241	0.0402	0.0182	2.209825	0.354	3.940
19	0.0	0.875	567	2113	997	1277	0.0396	0.0184	2.150956	0.342	3.727
19	0.0	0.900	628	2222	1026	1313	0.0394	0.0188	2.099777	0.333	3.538
19	0.0	0.925	696	2344	1054	1350	0.0394	0.0192	2.054974	0.325	3.368
21	2.0	0.725	372	2080	826	1058	0.0569	0.0213	2.673808	0.509	5.591
21	2.0	0.750	415	2216	855	1095	0.0565	0.0214	2.642773	0.502	5.340
21	2.0	0.775	461	2358	883	1131	0.0564	0.0216	2.614747	0.496	5.115
21	2.0	0.800	509	2495	912	1168	0.0560	0.0216	2.587735	0.488	4.902
21	2.0	0.825	563	2656	940	1204	0.0561	0.0218	2.567263	0.485	4.718
21	2.0	0.850	617	2780	969	1241	0.0552	0.0219	2.527293	0.474	4.506
21	2.0	0.875	676	2912	997	1277	0.0546	0.0220	2.486335	0.464	4.308
21	2.0	0.900	740	3038	1026	1313	0.0539	0.0221	2.436379	0.451	4.105
21	2.0	0.925	811	3164	1054	1350	0.0531	0.0223	2.380529	0.438	3.901
22	4.0	0.725	465	2705	825	1056	0.0742	0.0267	2.77653	0.604	5.817
22	4.0	0.750	517	2878	853	1093	0.0737	0.0268	2.750075	0.596	5.567
22	4.0	0.775	573	3063	882	1129	0.0735	0.0270	2.727787	0.590	5.346
22	4.0	0.800	632	3254	910	1166	0.0732	0.0270	2.713458	0.586	5.149
22	4.0	0.825	698	3448	939	1202	0.0730	0.0272	2.68374	0.579	4.940
22	4.0	0.850	764	3637	967	1238	0.0726	0.0273	2.663758	0.573	4.760
22	4.0	0.875	830	3786	996	1275	0.0713	0.0271	2.628675	0.560	4.561
22	4.0	0.900	903	3952	1024	1311	0.0704	0.0271	2.593319	0.549	4.377
22	4.0	0.925	988	4156	1053	1348	0.0700	0.0273	2.562906	0.541	4.206
23	6.0	0.725	608	3477	825	1056	0.0954	0.0350	2.729538	0.673	5.719
23	6.0	0.750	675	3699	853	1093	0.0947	0.0350	2.707228	0.665	5.480
23	6.0	0.775	746	3931	882	1129	0.0944	0.0351	2.688947	0.659	5.269
23	6.0	0.800	822	4145	910	1166	0.0933	0.0351	2.657513	0.648	5.043
23	6.0	0.825	905	4418	939	1202	0.0936	0.0353	2.652197	0.647	4.882
23	6.0	0.850	992	4700	967	1238	0.0938	0.0354	2.65113	0.648	4.738
23	6.0	0.875	1076	4940	996	1275	0.0930	0.0351	2.645751	0.644	4.591
23	6.0	0.900	1162	5125	1024	1311	0.0912	0.0349	2.613452	0.630	4.410
23	6.0	0.925	1273	5400	1053	1348	0.0909	0.0352	2.584517	0.622	4.242
24	8.0	0.725	799	4291	822	1053	0.1184	0.0463	2.55602	0.702	5.370
24	8.0	0.750	885	4586	851	1089	0.1183	0.0464	2.550602	0.700	5.182
24	8.0	0.775	976	4884	879	1125	0.1181	0.0464	2.5445	0.698	5.004
24	8.0	0.800	1079	5231	907	1162	0.1185	0.0466	2.546206	0.700	4.848
24	8.0	0.825	1180	5531	936	1198	0.1179	0.0465	2.538064	0.695	4.687
24	8.0	0.850	1288	5826	964	1234	0.1171	0.0464	2.522864	0.689	4.523
24	8.0	0.875	1397	6083	992	1271	0.1152	0.0461	2.501446	0.678	4.354
24	8.0	0.900	1519	6412	1021	1307	0.1148	0.0461	2.49365	0.674	4.221
24	8.0	0.925	1658	6759	1049	1343	0.1147	0.0463	2.47456	0.669	4.077
24	8.0	0.950	1828	7162	1077	1380	0.1151	0.0471	2.443776	0.662	3.918
24	8.0	0.975	2023	7580	1106	1416	0.1157	0.0482	2.398064	0.651	3.747
25	8.2	0.750	870	4564	848	1085	0.1186	0.0461	2.572647	0.707	5.246
25	8.2	0.775	964	4869	876	1122	0.1183	0.0462	2.561414	0.703	5.051
25	8.2	0.800	1061	5192	904	1158	0.1185	0.0463	2.56125	0.703	4.893
25	8.2	0.825	1166	5514	933	1194	0.1183	0.0464	2.552094	0.701	4.729
25	8.2	0.850	1274	5841	961	1230	0.1181	0.0463	2.548866	0.699	4.585
25	8.2	0.875	1387	6177	989	1266	0.1179	0.0463	2.548349	0.698	4.453
26	10.0	0.725	1019	5031	823	1054	0.1386	0.0589	2.352041	0.699	4.937
26	10.0	0.750	1132	5401	851	1090	0.1391	0.0592	2.350598	0.700	4.771
26	10.0	0.775	1253	5790	880	1126	0.1397	0.0594	2.351744	0.702	4.621
26	10.0	0.800	1380	6176	908	1163	0.1397	0.0594	2.352513	0.702	4.475
26	10.0	0.825	1519	6604	936	1199	0.1406	0.0597	2.356094	0.705	4.348
26	10.0	0.850	1667	7031	965	1235	0.1410	0.0599	2.354358	0.706	4.218
26	10.0	0.875	1816	7430	993	1272	0.1405	0.0597	2.352254	0.704	4.091
26	10.0	0.900	1950	7764	1022	1308	0.1389	0.0590	2.353872	0.700	3.982
26	10.0	0.925	2129	8214	1050	1344	0.1391	0.0594	2.343702	0.698	3.858
26	10.0	0.950	2349	8731	1078	1381	0.1401	0.0604	2.320058	0.693	3.717
26	10.0	0.975	2612	9324	1107	1417	0.1421	0.0621	2.286247	0.688	3.570
27	11.9	0.72500	1351.000	6082.000	822.000	1053	0.1678	0.0783	2.142612	0.700	4.502
27	11.9	0.75000	1503.000	6536.000	851.000	1089	0.1686	0.0788	2.14045	0.701	4.349
27	11.9	0.77500	1665.000	7011.000	879.000	1125	0.1695	0.0792	2.141127	0.703	4.211
27	11.9	0.80000	1838.000	7512.000	907.000	1162	0.1702	0.0793	2.146547	0.707	4.087
27	11.9	0.82500	2030.000	8040.000	936.000	1198	0.1714	0.0799	2.144574	0.709	3.961
27	11.9	0.85000	2238.000	8588.000	964.000	1234	0.1726	0.0806	2.140283	0.709	3.837
27	11.9	0.87500	2458.000	9150.000	992.000	1271	0.1733	0.0810	2.138498	0.710	3.723
27	11.9	0.90000	2665.000	9667.000	1021.000	1307	0.1732	0.0808	2.142862	0.712	3.627
27	11.9	0.92500	2913.000	10272.000	1049.000	1343	0.1743	0.0814	2.140497	0.713	3.526
27	11.9	0.95000	3207.000	10935.000	1077.000	1380	0.1757	0.0826	2.126782	0.711	3.410
27	11.9	0.97500	3550.000	11676.000	1106.000	1416	0.1782	0.0846	2.105005	0.709	3.289
28	12.0	0.725	1302	5935	815	1044	0.1666	0.0775	2.15097	0.701	4.558
28	12.0	0.750	1451	6369	843	1083	0.1662	0.0773	2.148604	0.699	4.389
28	12.0	0.775	1611	6824	872	1116	0.1676	0.0785	2.136642	0.698	4.236
28	12.0	0.800	1779	7290	900	1152	0.1681	0.0788	2.133675	0.698	4.098
28	12.0	0.825	1961	7783	928	1188	0.1687	0.0792	2.13113	0.699	3.969
28	12.0	0.850	2156	8328	956	1224	0.1701	0.0796	2.136965	0.703	3.863
28	12.0	0.875	2376	8894	984	1260	0.1714	0.0804	2.131795	0.704	3.743
29	14.0	0.725	1721	7065	821	1051	0.1957	0.1004	1.950106	0.688	4.105
29	14.0	0.750	1922	7599	849	1087	0.1968	0.1013	1.942481	0.688	3.954
29	14.0	0.775	2137	8146	878	1123	0.1976	0.1021	1.934834	0.686	3.812
29	14.0	0.800	2374	8720	906	1160	0.1983	0.1030	1.92583	0.684	3.673
29	14.0	0.825	2636	9348	934	1196	0.2000	0.1043	1.917029	0.684	3.546
29	14.0	0.850	2924	10023	962	1232	0.2021	0.1059	1.908777	0.685	3.428
29	14.0	0.875	3230	10712	991	1268	0.2039	0.1073	1.900691	0.685	3.316
29	14.0	0.900	3566	11403	1019	1305	0.2049	0.1086	1.886133	0.681	3.198
30	16.1	0.725	2154	7758	820	1049	0.2157	0.1263	1.707669	0.633	3.602
30	16.1	0.750	2416	8362	848	1085	0.2173	0.1280	1.697333	0.631	3.461
30	16.1	0.775	2694	9018	876	1122	0.2192	0.1291	1.697578	0.634	3.347
30	16.1	0.800	3015	9698	904	1158	0.2213	0.1314	1.683556	0.632	3.217
30	16.1	0.825	3359	10417	933	1194	0.2236	0.1336	1.673636	0.632	3.101
31	18.0	0.725	2550	8252	821	1051	0.2286	0.1487	1.537255	0.587	3.236
31	18.0	0.750	2860	8886	849	1087	0.2301	0.1507	1.52649	0.584	3.107
31	18.0	0.775	3198	9559	878	1123	0.2319	0.1529	1.517183	0.583	2.989





F. Data Set # 3

DATA SET Number 3

$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}$ $C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798\frac{C_T^{3/2}}{C_P}$

Curtiss (156109A2P3)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	109	15.5	4	16	520.490	0.984

Power weighted solidity = 0.17764
Twist (0.25R -Tip in deg) = 37.0

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

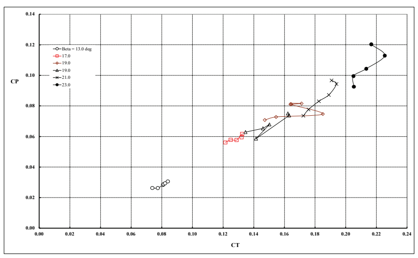
Harris Computed →

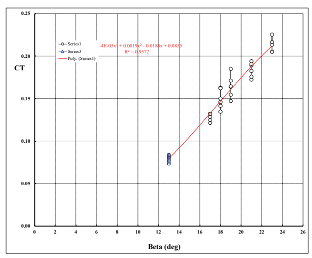
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps Vt	Derived Vsound in fps from M and Vt
34	1	Up	13.0	702	163	1385	0.509	0.07377	0.02633	2.8014	0.6072	8.4969		7.34001	8.49693	0.6072	570	1,119
34	1	Up	13.0	895	337	2362	0.649	0.07740	0.02627	2.9461	0.6540	7.0089		12.51776	7.00890	0.6540	726	1,119
34	1	Up	13.0	1003	511	3096	0.728	0.08078	0.02830	2.8540	0.6473	6.0587		16.40770	6.05871	0.6473	814	1,118
34	1	Up	13.0	1098	681	3727	0.796	0.08114	0.02875	2.8222	0.6415	5.4728		19.75177	5.47283	0.6415	891	1,119
34	1	Up	13.0	1199	907	4501	0.870	0.08218	0.02941	2.7944	0.6393	4.9625		23.85370	4.96251	0.6393	973	1,118
34	1	Up	13.0	1252	1075	5010	0.908	0.08389	0.03061	2.7404	0.6334	4.6605		26.55122	4.66047	0.6334	1,016	1,119
35	1	Up	17.0	911	759	3841	0.661	0.12148	0.05610	2.1652	0.6022	5.0606		20.35593	5.06061	0.6022	739	1,119
35	1	Up	17.0	1006	1053	4817	0.730	0.12493	0.05780	2.1613	0.6096	4.5745		25.52839	4.57455	0.6096	816	1,118
35	1	Up	17.0	1100	1374	5935	0.798	0.12874	0.05769	2.2315	0.6389	4.3195		31.45339	4.31951	0.6389	893	1,119
35	1	Up	17.0	1196	1889	7215	0.868	0.13239	0.06171	2.1454	0.6229	3.8195		38.23693	3.81948	0.6229	971	1,118
35	1	Up	17.0	1226	1963	7561	0.889	0.13203	0.05953	2.2178	0.6431	3.8518		40.07061	3.85176	0.6431	995	1,119
36	3	Up	19.0	703	440	2771	0.515	0.14717	0.07078	2.0793	0.6365	6.2977		14.68531	6.29773	0.6365	571	1,108
36	3	Up	19.0	899	946	4759	0.659	0.15455	0.07277	2.1240	0.6664	5.0307		25.22101	5.03066	0.6664	730	1,107
36	3	Up	19.0	997	1325	7008	0.731	0.18505	0.07472	2.4766	0.8501	5.2891	Problem	37.13991	5.28906	0.8501	809	1,107
36	3	Up	19.0	1098	1921	7530	0.805	0.16394	0.08110	2.0214	0.6531	3.9198		39.90632	3.91983	0.6531	891	1,107
36	3	Up	19.0	1203	2541	9438	0.882	0.17117	0.08157	2.0985	0.6928	3.7143		50.01804	3.71429	0.6928	976	1,107
36	3	Up	19.0	1248	2821	9759	0.915	0.16446	0.08111	2.0276	0.6562	3.4594		51.71923	3.45941	0.6562	1,013	1,107
37	6	Up	18.0	703	391	2534	0.507	0.13458	0.06290	2.1397	0.6264	6.4808		13.42930	6.48082	0.6264	571	1,125
37	6	Up	18.0	896	841	4466	0.647	0.14601	0.06534	2.2346	0.6814	5.3103		23.66821	5.31034	0.6814	727	1,124
37	6	Up	18.0	999	1211	5712	0.721	0.15023	0.06788	2.2130	0.6845	4.7168		30.27157	4.71676	0.6845	811	1,125
37	6	Up	18.0	1163	1650	7290	0.839	0.14147	0.05862	2.4132	0.7243	4.4182	Problem	38.63441	4.41818	0.7243	944	1,125
37	6	Up	18.0	1199	2276	8931	0.865	0.16306	0.07379	2.2096	0.7120	3.9240		47.33112	3.92399	0.7120	973	1,125
37	6	Up	18.0	1250	2626	9658	0.902	0.16224	0.07514	2.1591	0.6940	3.6778		51.18396	3.67784	0.6940	1,014	1,125
38	4	Up	21.0	707	465	3282	0.514	0.17234	0.07354	2.3436	0.7764	7.0581		17.39343	7.05806	0.7764	574	1,116
38	4	Up	21.0	900	1013	5423	0.654	0.17573	0.07766	2.2628	0.7570	5.3534		28.73997	5.35341	0.7570	730	1,117
38	4	Up	21.0	1000	1486	6952	0.727	0.18247	0.08305	2.1972	0.7490	4.6783		36.84313	4.67833	0.7490	812	1,116
38	4	Up	21.0	1097	2060	8665	0.797	0.18899	0.08721	2.1671	0.7518	4.2063		45.92142	4.20631	0.7518	890	1,117
38	4	Up	21.0	1200	2917	10642	0.872	0.19398	0.09434	2.0561	0.7226	3.6483		56.39881	3.64827	0.7226	974	1,117
38	4	Up	21.0	1242	3315	11213	0.903	0.19079	0.09670	1.9730	0.6877	3.3825		59.42491	3.38250	0.6877	1,008	1,116
39	5	Up	23.0	710	593	3942	0.515	0.20525	0.09260	2.2166	0.8014	6.6476		20.89120	6.64755	0.8014	576	1,119
39	5	Up	23.0	910	1342	6468	0.660	0.20501	0.09953	2.0598	0.7443	4.8197		34.27810	4.81967	0.7443	739	1,119
39	5	Up	23.0	995	1839	8049	0.722	0.21339	0.10433	2.0453	0.7540	4.3768		42.65684	4.37684	0.7540	808	1,118
39	5	Up	23.0	1102	2704	10431	0.799	0.22545	0.11292	1.9965	0.7565	3.8576		55.28059	3.85762	0.7565	894	1,119
39	5	Up	23.0	1195	3673	11786	0.867	0.21663	0.12029	1.8009	0.6689	3.2088		62.46161	3.20882	0.6689	970	1,119

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Harris Computed →

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM	Check Vt with RPM	Derived Vsound from M and Vt
34	13.0	0.525	176	1482	587	724	0.0742	0.0259	2.863179	0.622	8.420	7.85	8.42	0.6224	587.58	1118
34	13.0	0.550	199	1644	615	758	0.0751	0.0255	2.940981	0.643	8.261	8.71	8.26	0.6432	615.18	1118
34	13.0	0.575	226	1815	643	793	0.0758	0.0253	2.990995	0.657	8.031	9.62	8.03	0.6569	643.58	1118
34	13.0	0.600	259	1995	671	827	0.0766	0.0256	2.991734	0.661	7.703	10.57	7.70	0.6606	671.18	1118
34	13.0	0.625	297	2185	699	862	0.0772	0.0259	2.978356	0.660	7.357	11.58	7.36	0.6603	699.58	1118
34	13.0	0.650	339	2384	727	896	0.0779	0.0263	2.959299	0.659	7.032	12.63	7.03	0.6593	727.17	1118
34	13.0	0.675	386	2592	755	931	0.0785	0.0267	2.936106	0.656	6.715	13.74	6.72	0.6564	755.58	1119
34	13.0	0.700	438	2810	783	965	0.0792	0.0272	2.907595	0.653	6.416	14.89	6.42	0.6530	783.17	1119
34	13.0	0.725	495	3037	811	999	0.0799	0.0277	2.878587	0.649	6.135	16.10	6.14	0.6492	810.77	1119
34	13.0	0.750	557	3273	839	1034	0.0804	0.0282	2.853551	0.645	5.876	17.35	5.88	0.6455	839.17	1119
34	13.0	0.775	624	3519	867	1069	0.0808	0.0285	2.831305	0.642	5.639	18.65	5.64	0.6423	867.58	1119
34	13.0	0.800	696	3774	895	1103	0.0814	0.0290	2.80894	0.640	5.422	20.00	5.42	0.6396	895.17	1119
34	13.0	0.825	773	4039	923	1137	0.0820	0.0294	2.79016	0.638	5.225	21.41	5.23	0.6376	922.76	1119
34	13.0	0.850	854	4312	951	1172	0.0824	0.0296	2.779219	0.637	5.049	22.85	5.05	0.6366	951.17	1119
34	13.0	0.875	941	4595	979	1206	0.0829	0.0300	2.765779	0.636	4.883	24.35	4.88	0.6356	978.76	1119
34	13.0	0.900	1032	4887	1007	1241	0.0833	0.0302	2.759998	0.636	4.735	25.90	4.74	0.6356	1007.17	1119
35	17.0	0.675	812	4030	755	931	0.1220	0.0562	2.170066	0.605	4.963	21.36	4.96	0.6050	755.58	1119
35	17.0	0.700	912	4387	783	965	0.1237	0.0567	2.18009	0.612	4.810	23.25	4.81	0.6118	783.17	1119
35	17.0	0.725	1022	4760	811	999	0.1252	0.0573	2.185224	0.617	4.658	25.23	4.66	0.6170	810.77	1119
35	17.0	0.750	1142	5148	839	1034	0.1264	0.0577	2.189109	0.621	4.508	27.28	4.51	0.6210	839.17	1119
35	17.0	0.775	1272	5551	867	1068	0.1277	0.0584	2.188919	0.624	4.364	29.42	4.36	0.6243	866.77	1119
35	17.0	0.800	1412	5970	895	1103	0.1288	0.0588	2.190229	0.627	4.228	31.64	4.23	0.6273	895.17	1119
35	17.0	0.825	1562	6404	923	1137	0.1300	0.0594	2.189299	0.630	4.100	33.94	4.10	0.6300	922.76	1119
35	17.0	0.850	1722	6853	951	1172	0.1310	0.0598	2.190532	0.633	3.980	36.32	3.98	0.6326	951.17	1119
35	17.0	0.875	1892	7317	979	1206	0.1320	0.0603	2.190451	0.635	3.867	38.78	3.87	0.6352	978.76	1119
36	19.0	0.525	457	2861	581	716	0.1465	0.0696	2.105179	0.643	6.260	15.16	6.26	0.6430	581.09	1107
36	19.0	0.550	523	3285	609	750	0.1533	0.0693	2.212429	0.691	6.281	17.41	6.28	0.6912	608.68	1107
36	19.0	0.575	602	3712	637	784	0.1585	0.0698	2.270397	0.721	6.166	19.67	6.17	0.7213	636.28	1108
36	19.0	0.600	692	4143	664	819	0.1621	0.0704	2.302858	0.740	5.987	21.96	5.99	0.7399	664.68	1107
36	19.0	0.625	794	4577	692	853	0.1651	0.0715	2.309318	0.749	5.764	24.26	5.76	0.7488	692.28	1107
36	19.0	0.650	908	5015	720	887	0.1673	0.0727	2.300822	0.751	5.523	26.58	5.52	0.7510	719.87	1108
36	19.0	0.675	1034	5457	747	921	0.1689	0.0740	2.282797	0.749	5.278	28.92	5.28	0.7486	747.46	1107
36	19.0	0.700	1171	5902	775	955	0.1699	0.0751	2.260581	0.743	5.040	31.28	5.04	0.7435	775.06	1107
36	19.0	0.725	1321	6351	803	989	0.1704	0.0763	2.233109	0.736	4.808	33.66	4.81	0.7357	802.65	1108
36	19.0	0.750	1482	6804	830	1023	0.1706	0.0774	2.2058	0.727	4.591	36.06	4.59	0.7271	830.24	1107
36	19.0	0.775	1656	7260	858	1057	0.1706	0.0784	2.176334	0.717	4.384	38.48	4.38	0.7172	857.84	1107
36	19.0	0.800	1841	7719	886	1091	0.1702	0.0792	2.148356	0.707	4.193	40.91	4.19	0.7073	885.43	1108
36	19.0	0.825	2038	8183	913	1125	0.1697	0.0800	2.121462	0.697	4.015	43.37	4.02	0.6974	913.03	1107
36	19.0	0.850	2246	8650	941	1160	0.1687	0.0804	2.09816	0.688	3.851	45.84	3.85	0.6878	941.43	1107
36	19.0	0.875	2467	9120	969	1194	0.1679	0.0810	2.073024	0.678	3.697	48.33	3.70	0.6779	969.02	1107
36	19.0	0.900	2699	9594	996	1228	0.1670	0.0815	2.050074	0.669	3.555	50.84	3.55	0.6685	996.62	1107
37	18.0	0.525	448	2781	590	727	0.1381	0.0652	2.119492	0.629	6.208	14.74	6.21	0.6286	590.02	1124
37	18.0	0.550	489	3053	619	762	0.1380	0.0618	2.23433	0.662	6.243	16.18	6.24	0.6624	618.42	1125
37	18.0	0.575	544	3349	647	797	0.1384	0.0601	2.304352	0.684	6.156	17.75	6.16	0.6841	646.83	1125
37	18.0	0.600	613	3670	675	831	0.1395	0.0597	2.336582	0.696	5.987	19.45	5.99	0.6964	674.42	1125
37	18.0	0.625	695	4016	703	866	0.1406	0.0598	2.35018	0.703	5.778	21.28	5.78	0.7031	702.83	1125
37	18.0	0.650	791	4386	731	901	0.1418	0.0604	2.346342	0.705	5.545	23.24	5.54	0.7051	731.23	1125
37	18.0	0.675	900	4781	759	935	0.1435	0.0615	2.332718	0.705	5.312	25.34	5.31	0.7053	758.83	1124
37	18.0	0.700	1023	5200	787	970	0.1451	0.0626	2.315655	0.704	5.083	27.56	5.08	0.7038	787.23	1124
37	18.0	0.725	1160	5645	815	1005	0.1467	0.0639	2.296923	0.702	4.866	29.92	4.87	0.7020	815.64	1124
37	18.0	0.750	1310	6114	843	1039	0.1487	0.0653	2.277425	0.701	4.667	32.40	4.67	0.7007	843.23	1124
37	18.0	0.775	1474	6607	872	1074	0.1503	0.0665	2.260921	0.700	4.482	35.01	4.48	0.6996	871.63	1125
37	18.0	0.800	1652	7125	900	1109	0.1521	0.0677	2.246367	0.699	4.313	37.76	4.31	0.6990	900.04	1125
37	18.0	0.825	1843	7668	928	1143	0.1541	0.0690	2.233456	0.700	4.161	40.64	4.16	0.6995	927.63	1125
37	18.0	0.850	2047	8236	956	1178	0.1558	0.0700	2.225964	0.701	4.023	43.65	4.02	0.7011	956.04	1125
37	18.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	18.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.525	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.550	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.575	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.600	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.625	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.650	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.675	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.700	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	21.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.525	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.550	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.575	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.600	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.625	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.650	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.675	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.700	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	23.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]





G. Data Set # 4

DATA SET Number 4

XC-142A (SK59868-0)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	98	16.600	4	26	538.490	0.944

Power weighted solidity = 0.15972

Twist (0.25R -Tip in deg) = 35.0

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

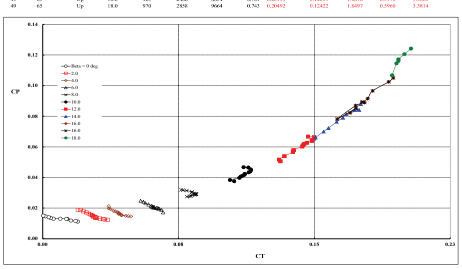
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

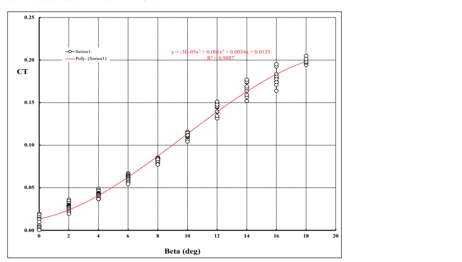
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed →)	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps Vt	Derived Vsound in fps from M and Vt
40	72	Up	0.0	692	94	466	0.529	0.01942	0.01125	1.7255	0.1919	4.9574	2.15318	4.95745	0.1919	601	1,137
40	72	Up	0.0	818	160	615	0.625	0.01834	0.01160	1.5815	0.1709	3.8438	2.84164	3.84375	0.1709	711	1,138
40	72	Up	0.0	929	241	678	0.710	0.01567	0.01192	1.3146	0.1313	2.8133	3.13273	2.81328	0.1313	807	1,137
40	72	Up	0.0	1040	368	742	0.794	0.01369	0.01298	1.0547	0.0985	2.0163	3.42845	2.01630	0.0985	904	1,138
40	72	Up	0.0	1074	405	763	0.820	0.01320	0.01297	1.0177	0.0933	1.8840	3.52548	1.88395	0.0933	933	1,138
40	72	Up	0.0	1100	441	594	0.840	0.00979	0.01314	0.7452	0.0589	1.3469	2.74461	1.34694	0.0589	956	1,138
40	72	Up	0.0	1129	475	382	0.862	0.00598	0.01309	0.4567	0.0282	0.8042	1.76505	0.80421	0.0282	981	1,138
40	72	Up	0.0	1156	528	297	0.883	0.00443	0.01356	0.3271	0.0174	0.5625	1.37230	0.56250	0.0174	1,005	1,138
40	72	Up	0.0	1187	594	233	0.907	0.00330	0.01409	0.2342	0.0107	0.3923	1.07659	0.39226	0.0107	1,032	1,137
40	72	Up	0.0	1215	662	106	0.928	0.00143	0.01464	0.0979	0.0030	0.1601	0.48978	0.16012	0.0030	1,056	1,138
40	72	Up	0.0	1245	735	21	0.951	0.00027	0.01511	0.0179	0.0002	0.0286	0.09703	0.02857	0.0002	1,082	1,138
41	73	Up	2.0	696	105	878	0.535	0.03616	0.01235	2.9273	0.4442	8.3619	4.05685	8.36190	0.4442	605	1,131
41	73	Up	2.0	815	174	1119	0.627	0.03361	0.01275	2.6363	0.3857	6.4310	5.17040	6.43103	0.3857	708	1,130
41	73	Up	2.0	816	174	1151	0.627	0.03449	0.01270	2.7150	0.4024	6.6149	5.31826	6.61494	0.4024	709	1,131
41	73	Up	2.0	930	267	1381	0.715	0.03186	0.01317	2.4194	0.3446	5.1723	6.38098	5.17228	0.3446	808	1,131
41	73	Up	2.0	1043	392	1642	0.802	0.03012	0.01370	2.1975	0.3043	4.1888	7.58695	4.18878	0.3043	907	1,130
41	73	Up	2.0	1069	419	1674	0.822	0.02923	0.01361	2.1482	0.2931	3.9952	7.73481	3.99523	0.2931	929	1,130
41	73	Up	2.0	1103	478	1778	0.848	0.02916	0.01413	2.0636	0.2812	3.7197	8.21534	3.71967	0.2812	959	1,131
41	73	Up	2.0	1132	525	1862	0.870	0.02899	0.01436	2.0194	0.2744	3.5467	8.60347	3.54667	0.2744	984	1,131
41	73	Up	2.0	1155	562	1883	0.888	0.02816	0.01447	1.9465	0.2607	3.3505	8.70050	3.35053	0.2607	1,004	1,131
41	73	Up	2.0	1187	634	1966	0.913	0.02784	0.01504	1.8514	0.2465	3.1009	9.08401	3.10095	0.2465	1,032	1,130
41	73	Up	2.0	1214	692	2029	0.933	0.02747	0.01534	1.7904	0.2368	2.9321	9.37510	2.93208	0.2368	1,055	1,131
41	73	Up	2.0	1244	766	2071	0.957	0.02670	0.01578	1.6917	0.2206	2.7037	9.56916	2.70366	0.2206	1,081	1,130
41	73	Up	2.0	1271	849	2071	0.977	0.02558	0.01640	1.5594	0.1990	2.4393	9.56916	2.43934	0.1990	1,105	1,131
41	73	Up	2.0	1299	950	2050	0.999	0.02424	0.01719	1.4099	0.1752	2.1579	9.47213	2.15789	0.1752	1,129	1,130
41	73	Up	2.0	1329	1058	2008	1.022	0.02268	0.01788	1.2687	0.1525	1.8979	9.27807	1.89792	0.1525	1,155	1,130
41	73	Up	2.0	1358	1182	1946	1.044	0.02105	0.01872	1.1245	0.1302	1.6464	8.99160	1.64636	0.1302	1,180	1,131
41	73	Up	2.0	1392	1282	1904	1.070	0.01961	0.01885	1.0398	0.1162	1.4852	8.79753	1.48518	0.1162	1,210	1,131
42	74	Up	4.0	698	125	1198	0.535	0.04906	0.01458	3.3648	0.5947	9.5840	5.53542	9.58400	0.5947	607	1,134
42	74	Up	4.0	807	195	1555	0.618	0.04764	0.01472	3.2368	0.5638	7.9744	7.18496	7.97436	0.5638	701	1,135
42	74	Up	4.0	924	299	1976	0.708	0.04618	0.01503	3.0714	0.5267	6.6087	9.13021	6.60870	0.5267	803	1,134
42	74	Up	4.0	1042	439	2396	0.799	0.04403	0.01539	2.8605	0.4790	5.4579	11.07084	5.45786	0.4790	906	1,134
42	74	Up	4.0	1072	482	2522	0.822	0.04379	0.01552	2.8213	0.4711	5.2324	11.65303	5.23237	0.4711	932	1,134
42	74	Up	4.0	1097	520	2628	0.841	0.04357	0.01562	2.7886	0.4645	5.0538	12.14281	5.05385	0.4645	953	1,134
42	74	Up	4.0	1130	584	2754	0.866	0.04303	0.01605	2.6803	0.4437	4.7158	12.72500	4.71575	0.4437	982	1,134
42	74	Up	4.0	1162	641	2859	0.89	0.04225	0.01621	2.6068	0.4276	4.4602	13.21016	4.46022	0.4276	1,010	1,135
42	74	Up	4.0	1192	710	3027	0.913	0.04251	0.01663	2.5561	0.4205	4.2634	13.98641	4.26338	0.4205	1,036	1,135
42	74	Up	4.0	1221	782	3153	0.936	0.04220	0.01704	2.4762	0.4059	4.0320	14.56860	4.03197	0.4059	1,061	1,134
42	74	Up	4.0	1246	842	3237	0.955	0.04160	0.01727	2.4093	0.3921	3.8444	14.95673	3.84442	0.3921	1,083	1,134
42	74	Up	4.0	1271	924	3279	0.974	0.04050	0.01785	2.2686	0.3643	3.5487	15.15079	3.54870	0.3643	1,105	1,134
42	74	Up	4.0	1297	1001	3321	0.994	0.03939	0.01820	2.1643	0.3428	3.3177	15.34486	3.31768	0.3428	1,127	1,134
42	74	Up	4.0	1338	1171	3384	1.025	0.03771	0.01939	1.9448	0.3014	2.8898	15.63595	2.88984	0.3014	1,163	1,135
42	74	Up	4.0	1359	1249	3405	1.041	0.03678	0.01974	1.8635	0.2852	2.7262	15.73298	2.72618	0.2852	1,181	1,135
42	74	Up	4.0	1393	1446	3573	1.068	0.03674	0.02122	1.7313	0.2648	2.4710	16.50924	2.47095	0.2648	1,211	1,134
43	62	Up	6.0	700	149	1647	0.53	0.06706	0.01723	3.8918	0.8043	11.0537	7.61005	11.05369	0.8043	608	1,148
43	62	Up	6.0	813	257	2188	0.616	0.06605	0.01897	3.4814	0.7140	8.5136	10.10977	8.51362	0.7140	707	1,147
43	62	Up	6.0	930	392	2795	0.704	0.06448	0.01933	3.3353	0.6758	7.1301	12.91445	7.13010	0.6758	808	1,148
43	62	Up	6.0	1050	582	3575	0.795	0.06470	0.01994	3.2441	0.6585	6.1426	16.51848	6.14261	0.6585	913	1,148
43	62	Up	6.0	1075	627	3707	0.814	0.06400	0.02002	3.1968	0.6454	5.9123	17.12839	5.91228	0.6454	934	1,148
43	62	Up	6.0	1097	671	3813	0.831	0.06322	0.02016	3.1355	0.6291	5.6826	17.61817	5.68256	0.6291	953	1,147
43	62	Up	6.0	1129	734	3943	0.855	0.06172	0.02023	3.0505	0.6048	5.3719	18.21884	5.37193	0.6048	981	1,148
43	62	Up	6.0	1156	807	4140	0.876	0.06181	0.02072	2.9829	0.5918	5.1301	19.12909	5.13011	0.5918	1,005	1,147
43	62	Up	6.0	1189	878	4400	0.901	0.06210	0.02072	2.9970	0.5960	5.0114	20.33043	5.01139	0.5960	1,033	1,147
43	62	Up	6.0	1221	956	4550	0.925	0.06089	0.02083	2.9229	0.5756	4.7594	21.02352	4.75941	0.5756	1,061	1,147
43	62	Up	6.0	1245	1025	4745	0.943	0.06108	0.02107	2.8989	0.5717	4.6293	21.92452	4.62927	0.5717	1,082	1,148
43	62	Up	6.0	1278	1132	4940	0.968	0.06035	0.02151	2.8052	0.5499	4.3640	22.82553	4.36396	0.5499	1,111	1,148
43	62	Up	6.0	1304	1252	5025	0.988	0.05896	0.02240	2.6324	0.5101	4.0136	23.21828	4.01358	0.5101	1,133	1,147
43	62	Up	6.0	1335	1390	5112	1.011	0.05723	0.02317	2.4695	0.4714	3.6777	23.62027	3.67770	0.4714	1,160	1,148
43	62	Up	6.0	1361	1530	5210	1.031	0.05612	0.02407	2.3311	0.4407	3.4052	24.07308	3.40523	0.4407	1,183	1,147
43	62	Up	6.0	1388	1668	5265	1.051	0.05453	0.02474	2.2036	0.4106	3.1565	24.32721	3.15647	0.4106	1,206	1,148
44	66	Up	8.0	697	235	1954	0.532	0.08025	0.02753	2.9150	0.6590	8.3149	9.02856	8.31489	0.6590	606	1,139
44	66	Up	8.0	809	373	2703	0.618	0.08240	0.02794	2.9487	0.6755	7.2466	12.48935	7.24665	0.6755	703	1,138
44	66	Up	8.0	928	560	3527	0.709	0.08171	0.02780	2.9398	0.6706	6.2982	16.29669	6.29821	0.6706	807	1,138
44	66	Up	8.0	1041	808	4520	0.795	0.08322	0.02841	2.9291	0.6743	5.5941	20.88490	5.59406	0.6743	905	1,138
44	66	Up	8.0	1071	889	4858	0.818	0.08450	0.02871	2.9437	0.6829	5.4646	22.44665	5.46457	0.6829	931	1,138
44	66	Up	8.0	1097	959	5155	0.838	0.08547	0.02882	2.9660	0.6919	5.3754	23.81895	5.37539	0.6919	953	1,138
44	66	Up	8.0	1126	1039	5386	0.860	0.08476	0.02887	2.9359	0.6821	5.1838	24.88630	5.18383	0.6821	979	1,138
44	66	Up	8.0	1160	1139	5723	0.886	0.08486	0.02895	2.9316	0.6815	5.0246	26.44342	5.02458	0.6815	1,008	1,138
44	66	Up	8.0	1187	1236	6040	0.907	0.08553	0.02932	2.9176	0.6809	4.8867	27.90814	4.88673	0.6809	1,032	1,137
44	66	Up	8.0	1215	1328	6294	0.928	0.08507	0.02937	2.8964	0.6741	4.7395	29.08176	4.73946	0.6741	1,056	1,138
44	66	Up	8.0	1242	1427	6526	0.949	0.08441	0.02955	2.8569	0.6624	4.5732	30.15373	4.57323	0.6624	1,080	1,138
44	66	Up	8.0	1275	1572	6758	0.974	0.08294	0.03009	2.7569	0.6336	4.2990	31.22570	4.29898	0.6336	1,108	1,138
44	66	Up	8.0	1303	1712	7075	0.995	0.08314	0.03070	2.7084	0.6232	4.1326	32.69041	4.13259	0.6232	1,133	1,138
44	66	Up	8.0	1335	1883	7159	1.020	0.08014	0.03139	2.5529	0.5767	3.8019	33.07854	3.80191	0.5767	1,160	1,138
44	66	Up	8.0	1361	2017	7244	1.040	0.07803	0.03174	2.4586	0.5480	3.5915	33.47128	3.59147	0.5480	1,183	1,137
44	66	Up	8.0	1374	2091	7301	1.049	0.07716	0.03198	2.4130	0.5349	3.4916	33.73466	3.49163	0.5349	1,194	1,138
45	63	Up	10.0	703	329	2640	0.536	0.10658	0.03756	2.8374	0.7392	8.0243	12.19826	8.02432	0.7392	611	1,140
45	63	Up	10.0	814	522	3462	0.621	0.10425	0.03839	2.7154	0.6996	6.6322	15.99635	6.63218	0.6996	708	1,139
45	63	Up	10.0	930	806	4745	0.709	0.10946	0.03975	2.7538	0.7270	5.8871	21.92452	5.88710	0.7270	808	1,140
45	63	Up	10.0	1043	1164	6015	0.795	0.11032	0.04069	2.7109	0.7185	5.1675	27.79263	5.16753	0.7185	907	1,140
45	63	Up	10.0	1070	1268	6370	0.816	0.11101	0.04106	2.7037	0.7188	5.0237	29.43292	5.02366	0.7188	930	1,140
45	63	Up	10.0	1097	1385	6755	0.836	0.11199	0.04162	2.6911	0.7187	4.8773	31.21183	4.87726	0.7187	953	1,141
45	63	Up	10.0	1127	1520	7160	0.859	0.11247	0.04212	2.6702	0.7146	4.7105	33.08316	4.71053	0.7146	980	1,140
45	63	Up	10.0	1158	1660	7555	0.883	0.11241	0.04240	2.6509	0.7092	4.5512	34.90828	4.55120	0.7092	1,007	1,140
45	63	Up	10.0	1186	1825	8080	0.904	0.11461	0.04339	2.6411	0.7135	4.4274	37.33407	4.42740	0.7135	1,031	1,140
45	63	Up	10.0	1213	1973	8510	0.925	0.11540	0.04385	2.6316	0.7134	4.3132	39.32090	4.31323	0.7134	1,054	1,140
45	63	Up	10.0	1246	2179	9015	0.950	0.11585	0.04468	2.5928	0.7043	4.1372	41.65428	4.13722	0.7043	1,083	1,140
45	63	Up	10.0	1274	2362	9415	0.971	0.11573	0.04531	2.5542	0.6934	3.9860	43.50251	3.98603	0.6934	1,107	1,140
45	63	Up	10.0	1299	2570	9680	0.990	0.11446	0.04651	2.4609	0.6644	3.7665	44.72695	3.76654	0.6644	1,129	1,140
45	63	Up	10.0	1328	2760	9880	1.013	0.11177	0.04675	2.3911	0.6379	3.5797	45.65106	3.57971	0.6379	1,154	1,139
46	67	Up	12.0	697	432	3222	0.5310	0.13232	0.05061	2.6147	0.7590	7.4583	14.88742	7.45833	0.7590	606	1,141
46	67	Up	12.0	818	714	4409	0.6240	0.13147	0.05174	2.5407	0.7351	6.1751	20.37202	6.17507	0.7351	711	1,139
46	67	Up	12.0	928	1087	5809	0.7080	0.13458	0.05395	2.4944	0.7302	5.3441	26.84079	5.34407	0.7302	807	1,139
46	67	Up	12.0	1040	1608	7547	0.7930	0.13922	0.05670	2.4551	0.7310	4.6934	34.87131	4.69341	0.7310	904	1,140
46	67	Up	12.0	1073	1804	8056	0.8180	0.13960	0.05793	2.4101	0.7186	4.4656	37.22317	4.46563	0.7186	933	1,140
46	67	Up	12.0	1101	2028	8777	0.8400	0.14446	0.06027	2.3967	0.7269	4.3279	40.55459	4.32791	0.7269	957	1,139
46	67	Up	12.0	1128	2209	9243	0.8600	0.14494	0.06105	2.3740	0.7212	4.1842	42.70777	4.18425	0.7212	980	1,140
46	67	Up	12.0	1158	2450	9879	0.8830	0.14699	0.06258	2.3486	0.7185	4.0322	45.64644	4.03224	0.7185	1,007	1,140
46	67	Up	12.0	1161	2442	9837	0.8850	0.14561	0.06190	2.3523	0.7163	4.0283	45.45238	4.02826	0.7163	1,009	1,140
46	67	Up	12.0	1186	2686	10557	0.9040	0.14974	0.06387	2.3446	0.7240	3.9304	48.77918	3.93038	0.7240	1,031	1,140
46	67	Up	12.0	1214	2916	11087	0.9260	0.15009	0.06465	2.3216	0.7178	3.8021	51.22807	3.80213	0.7178	1,055	1,140
46	67	Up	12.0	1241	3149	11660	0.9460	0.15106	0.06536	2.3113	0.7168	3.7028	53.87565	3.70276	0.7168	1,079	1,140
46	67	Up	12.0	1272	3443	12254	0.9700	0.15111	0.06636	2.2771	0.7064	3.5591	56.62025	3.55911	0.7064	1,106	1,140
46	67	Up	12.0	1300	3698	12508	0.9910	0.14767	0.06677	2.2116	0.6782	3.3824	57.79388	3.38237	0.6782	1,130	1,140
47	64	Up	14.0	699	570	3720	0.534	0.15190	0.06620	2.2945	0.7136	6.5263	17.18846	6.52632	0.7136	608	1,138
47	64	Up	14.0	817	962	5230	0.624	0.15633	0.06997	2.2341	0.7049	5.4366	24.16549	5.43659	0.7049	710	1,138
47	64	Up	14.0	934	1485	6955	0.713	0.15907	0.07230	2.2002	0.7003	4.6835	32.13595	4.68350	0.7003	812	1,139
47	64	Up	14.0	1004	1948	8265	0.767	0.16359	0.07635	2.1426	0.6915	4.2428	38.18887	4.24281	0.6915	873	1,138
47	64	Up	14.0	1040	2241	9058	0.794	0.16709	0.07903	2.1143	0.6897	4.0419	41.85297	4.04195	0.6897	904	1,138
47	64	Up	14.0	1074	2538	9770	0.820	0.16899	0.08127	2.0795	0.6822	3.8495	45.14280	3.84949	0.6822	933	1,138
47	64	Up	14.0	1097	2800	10620	0.838	0.17607	0.08413	2.0928	0.7008	3.7929	49.07027	3.79286	0.7008	953	1,138
47	64	Up	14.0	1106	2870	10650	0.845	0.17371	0.08415	2.0643	0.6866	3.7108	49.20889	3.71080	0.6866	961	1,138
47	64	Up	14.0	1131	3113	11180	0.864	0.17438	0.08535	2.0430	0.6808	3.5914	51.65778	3.59139	0.6808	983	1,138
47	64	Up	14.0	1152	3392	11770	0.880	0.17695	0.08801	2.0106	0.6749	3.4699	54.38391	3.46993	0.6749	1,001	1,138
48	68	Up	16.0	695	696	4142	0.529	0.17109	0.08224	2.0803	0.6867	5.9511	19.13833	5.95115	0.6867	604	1,142
48	68	Up	16.0	756	928	4995	0.575	0.17437	0.08519	2.0467	0.6820	5.3825	23.07966	5.38254	0.6820	657	1,143
48	68	Up	16.0	838	1160	5770	0.615	0.16393	0.07819	2.0966	0.6774	4.9741	26.66059	4.97414	0.6774	728	1,184
48	68	Up	16.0	813	1178	5770	0.619	0.17417	0.08696	2.0030	0.6671	4.8981	26.66059	4.89813	0.6671	707	1,142
48	68	Up	16.0	835	1305	6260	0.636	0.17914	0.08892	2.0147	0.6804	4.7969	28.92466	4.79693	0.6804	726	1,141
48	68	Up	16.0	872	1493	6770	0.664	0.17764	0.08932	1.9888	0.6689	4.5345	31.28114	4.53449	0.6689	758	1,141
48	68	Up	16.0	927	1838	7790	0.706	0.18087	0.09152	1.9762	0.6707	4.2383	35.99411	4.23830	0.6707	806	1,141
48	68	Up	16.0	1001	2442	9220	0.762	0.18359	0.09658	1.9009	0.6500	3.7756	42.60150	3.77559	0.6500	870	1,142
48	68	Up	16.0	1045	2948	10540	0.795	0.19257	0.10247	1.8792	0.6581	3.5753	48.70063	3.57531	0.6581	908	1,142
48	68	Up	16.0	1064	3190	11070	0.810	0.19509	0.10505	1.8572	0.6546	3.4702	51.14952	3.47022	0.6546	925	1,142
49	65	Up	18.0	698	915	4748	0.535	0.19444	0.10673	1.8218	0.6410	5.1891	21.93838	5.18907	0.6410	607	1,134
49	65	Up	18.0	815	1563	6554	0.625	0.19687	0.11453	1.7189	0.6086	4.1932	30.28310	4.19322	0.6086	708	1,133
49	65	Up	18.0	846	1773	7101	0.648	0.19795	0.11615	1.7042	0.6051	4.0051	32.81055	4.00508	0.6051	735	1,135
49	65	Up	18.0	873	1966	7563	0.669	0.19799	0.11721	1.6892	0.5998	3.8469	34.94524	3.84690	0.5998	759	1,134
49	65	Up	18.0	925	2406	8634	0.709	0.20133	0.12059	1.6696	0.5978	3.5885	39.89385	3.58853	0.5978	804	1,134
49	65	Up	18.0	970	2858	9664	0.743	0.20492	0.12422	1.6497	0.5960	3.3814	44.65302	3.38139	0.5960	843	1,135

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed →)	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
40	0.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	0.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	2.0	1.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	4.0	1.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	6.0	1.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	8.0	1.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	10.0	1.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	12.0	0.975	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	14.0	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48	16.0	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48	16.0	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48	16.0	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48	16.0	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
49	18.0	0.725	2614	9109	822	946	0.2031	0.1225	1.658086	0.596	3.485	42.09	3.48	0.5963





H. Data Set # 5

DATA SET Number 5

Curtiss Calibrator	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	90.0	13.00	4	25	536.690	0.951

Power weighted solidity = 0.15972

Twist (0.25R -Tip in deg) = 32.0

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

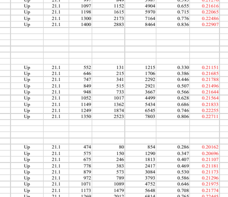
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

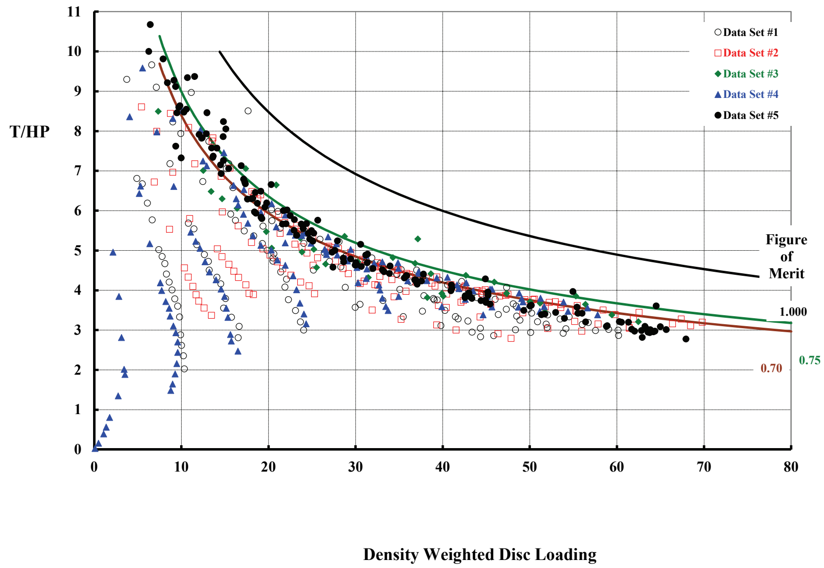
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps Vt	Derived Vsound in fps from M and Vt
52	4	Up	8.5	886	136	1240	0.531	0.08379	0.02633	3.1820	0.7350	9.1176	9.34	9.12	0.7350	603	1,136
52	4	Up	8.5	1045	236	1780	0.626	0.08685	0.02785	3.1186	0.7334	7.5763	13.47	7.58	0.7334	711	1,136
52	4	Up	8.5	1181	345	2301	0.708	0.08759	0.02820	3.1054	0.7334	6.6754	17.35	6.68	0.7334	804	1,135
52	4	Up	8.5	1327	508	2986	0.795	0.08995	0.02928	3.0724	0.7353	5.8780	22.50	5.88	0.7353	903	1,136
52	4	Up	8.5	1335	528	3049	0.800	0.09075	0.02988	3.0366	0.7300	5.7746	22.97	5.77	0.7300	909	1,136
52	4	Up	8.5	1362	557	3155	0.816	0.09022	0.02969	3.0388	0.7284	5.6643	23.77	5.66	0.7284	927	1,136
52	4	Up	8.5	1401	633	3344	0.839	0.09037	0.03012	3.0006	0.7198	5.4374	25.19	5.44	0.7198	954	1,137
52	4	Up	8.5	1442	794	3638	0.864	0.09281	0.03566	2.6025	0.6327	4.5819	27.41	4.58	0.6327	982	1,136
53	5	Up	8.5	834	121	1115	0.500	0.08503	0.02809	3.0272	0.7044	9.2149	8.40	9.21	0.7044	568	1,135
53	5	Up	8.5	902	151	1304	0.540	0.08502	0.02771	3.0683	0.7139	8.6358	9.82	8.64	0.7139	614	1,137
53	5	Up	8.5	991	202	1598	0.594	0.08631	0.02795	3.0881	0.7240	7.9109	12.04	7.91	0.7240	675	1,136
53	5	Up	8.5	1097	270	1933	0.657	0.08529	0.02846	2.9969	0.6984	6.9355	14.58	6.94	0.6984	747	1,137
53	5	Up	8.5	1202	371	2334	0.720	0.08569	0.02877	2.9786	0.6958	6.2911	17.58	6.29	0.6958	818	1,136
53	5	Up	8.5	1308	488	2801	0.784	0.08932	0.02888	3.0924	0.7375	6.0021	21.71	6.00	0.7375	890	1,136
53	5	Up	8.5	1395	600	3260	0.836	0.08886	0.02976	2.9856	0.7102	5.4333	24.56	5.43	0.7102	950	1,136

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

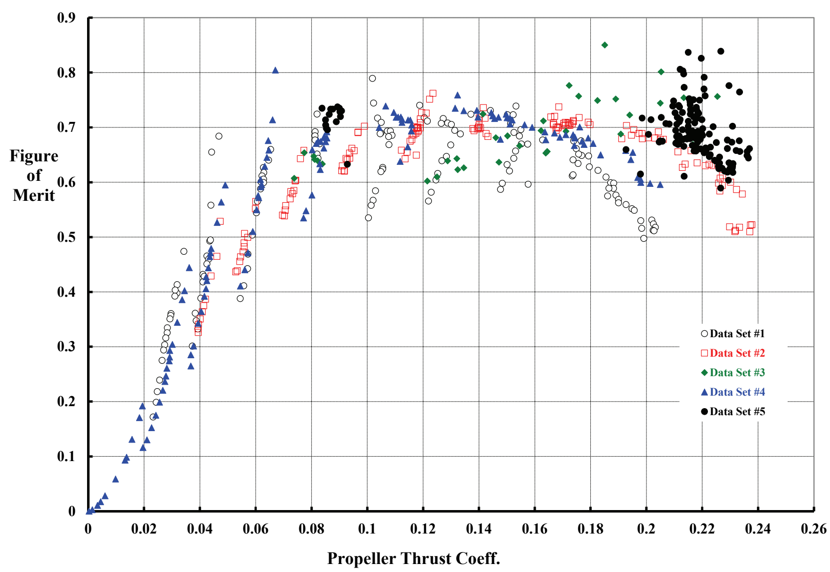
Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
52	8.5	0.550	153	1342	625	918	0.0845	0.0266	3.171683	0.736	8.771	10.11	8.77	0.7356
52	8.5	0.575	175	1476	653	960	0.0850	0.0266	3.189375	0.742	8.434	11.12	8.43	0.7418
52	8.5	0.600	201	1619	682	1001	0.0857	0.0270	3.175929	0.742	8.055	12.20	8.05	0.7420
52	8.5	0.625	230	1769	710	1043	0.0863	0.0273	3.159878	0.741	7.691	13.33	7.69	0.7406
52	8.5	0.650	263	1936	738	1085	0.0872	0.0277	3.146048	0.741	7.361	14.59	7.36	0.7415
52	8.5	0.675	298	2091	767	1127	0.0873	0.0280	3.114926	0.735	7.017	15.75	7.02	0.7346
52	8.5	0.700	337	2264	795	1168	0.0880	0.0285	3.090832	0.732	6.718	17.06	6.72	0.7318
52	8.5	0.725	378	2444	824	1210	0.0885	0.0287	3.081632	0.732	6.466	18.41	6.47	0.7318
52	8.5	0.750	423	2631	852	1252	0.0890	0.0290	3.067403	0.730	6.220	19.82	6.22	0.7304
52	8.5	0.775	471	2828	880	1294	0.0896	0.0293	3.060404	0.731	6.004	21.31	6.00	0.7310
52	8.5	0.800	511	3025	909	1335	0.0900	0.0289	3.112947	0.745	5.920	22.79	5.92	0.7454
52	8.5	0.825	598	3247	937	1377	0.0908	0.0308	2.945107	0.708	5.430	24.46	5.43	0.7083
52	8.5	0.800	704	3481	966	1419	0.0917	0.0332	2.763756	0.668	4.945	26.23	4.94	0.6679
53	8.5	0.525	139	1233	596	876	0.0852	0.0278	3.060824	0.713	8.871	9.29	8.87	0.7131
53	8.5	0.550	160	1346	625	918	0.0847	0.0279	3.041962	0.707	8.413	10.14	8.41	0.7066
53	8.5	0.575	183	1469	653	960	0.0846	0.0279	3.035484	0.704	8.027	11.07	8.03	0.7044
53	8.5	0.600	209	1601	682	1001	0.0848	0.0281	3.020404	0.702	7.660	12.06	7.66	0.7017
53	8.5	0.625	238	1743	710	1043	0.0850	0.0282	3.008782	0.700	7.324	13.13	7.32	0.7000
53	8.5	0.650	269	1894	738	1085	0.0853	0.0284	3.009147	0.701	7.041	14.27	7.04	0.7015
53	8.5	0.675	301	2056	767	1127	0.0859	0.0283	3.032261	0.709	6.831	15.49	6.83	0.7090
53	8.5	0.700	338	2222	795	1168	0.0864	0.0286	3.024518	0.709	6.574	16.74	6.57	0.7094
53	8.5	0.725	379	2397	824	1210	0.0868	0.0288	3.014395	0.709	6.325	18.06	6.32	0.7089



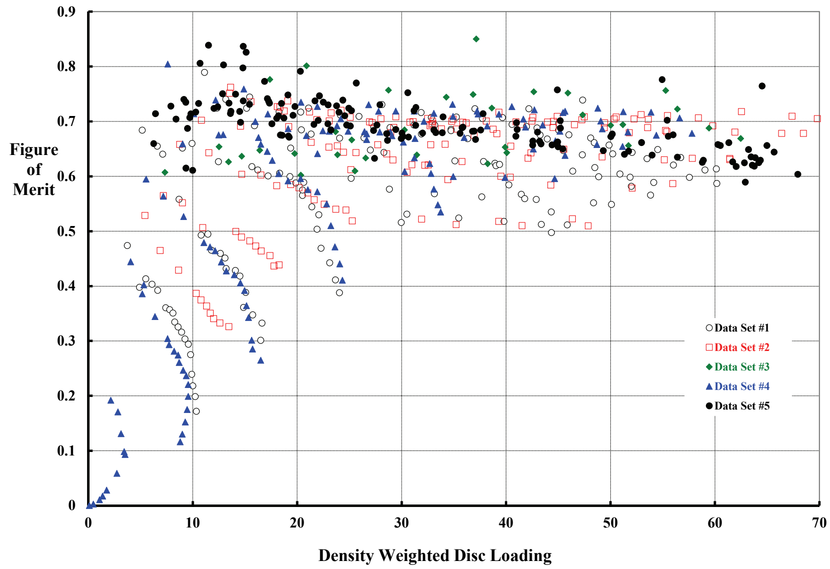
I. T over HP vs DL-Walls Up



J. FM vs CT-Walls Up

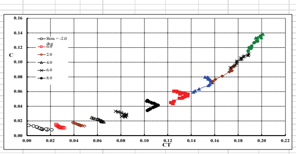


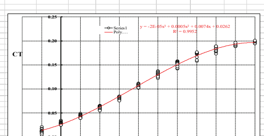
K. FM vs DL-Walls Up



L. Data Set # 6

DATA SET Number 6														
					Nominal	Nominal	Nominal	Power weighted solidity =	0.14016					
XC-142A (2FE16A3-4A)		Activity Factor	Diameter	# Blades	Temp Deg C	Temp Deg R	Density Ratio	Twist (0.25R -Tip in deg) =	29.0					
		86.0	15.625	4	26.2	538.850	0.938							
		Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)												
REDUCED TEST DATA POINTS								Harris Computed						
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		
68	99	Down	-2.00	735	61	448	0.528	0.02108	0.00825	2.5556	0.2961	7.3443		
68	99	Down	-2.00	854	90	490	0.614	0.01708	0.00776	2.2013	0.2296	5.4444		
68	99	Down	-2.00	978	154	661	0.703	0.01757	0.00884	1.9874	0.2102	4.2922		
68	99	Down	-2.00	1049	194	704	0.754	0.01626	0.00902	1.8022	0.1834	3.6289		
68	99	Down	-2.00	1095	211	618	0.787	0.01310	0.00863	1.5184	0.1387	2.9289		
68	99	Down	-2.00	1129	235	661	0.811	0.01318	0.00877	1.5035	0.1377	2.8128		
68	99	Down	-2.00	1161	264	682	0.834	0.01286	0.00906	1.4200	0.1285	2.5833		
68	99	Down	-2.00	1191	285	682	0.856	0.01222	0.00906	1.3493	0.1190	2.3930		
68	99	Down	-2.00	1221	322	704	0.878	0.01200	0.00950	1.2638	0.1105	2.1863		
68	99	Down	-2.00	1252	350	746	0.900	0.01210	0.00957	1.2634	0.1109	2.1314		
68	99	Down	-2.00	1287	397	725	0.925	0.01113	0.01000	1.1127	0.0937	1.8262		
68	99	Down	-2.00	1317	452	704	0.947	0.01032	0.01062	0.9711	0.0787	1.5575		
68	99	Down	-2.00	1356	538	618	0.975	0.00854	0.01158	0.7374	0.0544	1.1487		
68	99	Down	-2.00	1373	588	618	0.987	0.00833	0.01220	0.6832	0.0498	1.0510		
68	99	Down	-2.00	1405	681	448	1.010	0.00577	0.01318	0.4376	0.0265	0.6579		
68	99	Down	-2.00	1441	780	107	1.036	0.00131	0.01399	0.0936	0.0027	0.1372		
69	100	Down	0.00	734	73	725	0.528	0.03420	0.00991	3.4512	0.5093	9.9315		
69	100	Down	0.00	854	120	959	0.614	0.03342	0.01034	3.2312	0.4714	7.9917		
69	100	Down	0.00	976	184	1195	0.701	0.03189	0.01063	3.0010	0.4276	6.4946		
69	100	Down	0.00	1103	275	1473	0.793	0.03077	0.01100	2.7971	0.3916	5.3564		
69	100	Down	0.00	1130	294	1515	0.812	0.03016	0.01094	2.7568	0.3820	5.1531		
69	100	Down	0.00	1159	325	1579	0.832	0.02988	0.01121	2.6659	0.3677	4.8585		
69	100	Down	0.00	1194	353	1620	0.858	0.02888	0.01113	2.5942	0.3518	4.5892		
69	100	Down	0.00	1232	390	1706	0.885	0.02857	0.01120	2.5515	0.3441	4.3744		
69	100	Down	0.00	1255	411	1750	0.902	0.02824	0.01116	2.5299	0.3393	4.2579		
69	100	Down	0.00	1284	452	1835	0.923	0.02829	0.01146	2.4679	0.3312	4.0597		
69	100	Down	0.00	1318	496	1898	0.947	0.02777	0.01163	2.3878	0.3175	3.8266		
69	100	Down	0.00	1343	550	1941	0.969	0.02735	0.01219	2.2439	0.2961	3.5291		
69	100	Down	0.00	1374	616	1963	0.987	0.02643	0.01275	2.0730	0.2689	3.1867		
69	100	Down	0.00	1408	723	2026	1.012	0.02598	0.01391	1.8680	0.2402	2.8022		
69	100	Down	0.00	1436	794	2048	1.032	0.02524	0.01440	1.7536	0.2223	2.5793		
69	100	Down	0.00	1468	908	2111	1.055	0.02490	0.01541	1.6158	0.2035	2.3249		





M. Data Set # 7

DATA SET Number 7

XC-142A (2FE16A3-4A)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
With Tabs	86.0	15.625	4	26.2	538.850	0.938

Power weighted solidity = 0.14016
Twist (0.25R -Tip in deg) = 29.0

$$C_T = 0.1515\frac{(T/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

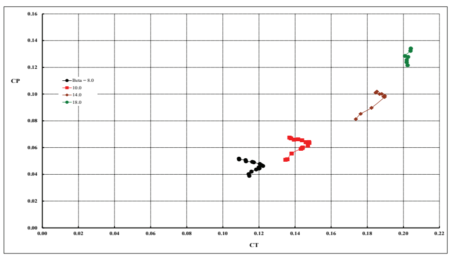
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

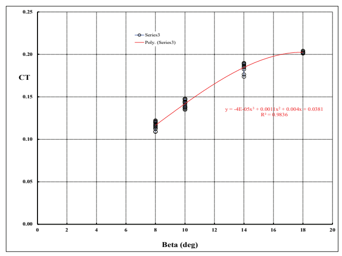
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
80	178	Down	8.00	749	304	2530	0.539	0.11463	0.03884	2.9512	0.7973	8.3224	13.19	8.3224	0.7973	613	1,137
80	178	Down	8.00	855	468	3288	0.616	0.11432	0.04020	2.8439	0.7673	7.0256	17.15	7.0256	0.7673	699	1,136
80	178	Down	8.00	981	739	4385	0.706	0.11581	0.04202	2.7559	0.7484	5.9337	22.87	5.9337	0.7484	803	1,137
80	178	Down	8.00	1101	1085	5649	0.793	0.11845	0.04365	2.7139	0.7453	5.2065	29.46	5.2065	0.7453	901	1,136
80	178	Down	8.00	1134	1204	6071	0.817	0.12000	0.04433	2.7071	0.7483	5.0424	31.66	5.0424	0.7483	928	1,136
80	178	Down	8.00	1160	1295	6366	0.835	0.12025	0.04454	2.6997	0.7471	4.9158	33.20	4.9158	0.7471	949	1,137
80	178	Down	8.00	1192	1427	6703	0.858	0.11991	0.04523	2.6508	0.7325	4.6973	34.96	4.6973	0.7325	975	1,137
80	178	Down	8.00	1219	1561	7146	0.878	0.12223	0.04627	2.6420	0.7371	4.5778	37.27	4.5778	0.7371	997	1,136
80	178	Down	8.00	1253	1716	7504	0.902	0.12149	0.04683	2.5941	0.7215	4.3730	39.13	4.3730	0.7215	1,025	1,136
80	178	Down	8.00	1281	1871	7779	0.922	0.12049	0.04779	2.5215	0.6985	4.1577	40.57	4.1577	0.6985	1,048	1,137
80	178	Down	8.00	1322	2107	8053	0.952	0.11712	0.04896	2.3921	0.6533	3.8220	42.00	3.8220	0.6533	1,082	1,136
80	178	Down	8.00	1344	2233	8263	0.968	0.11627	0.04938	2.3546	0.6407	3.7004	43.09	3.7004	0.6407	1,100	1,136
80	178	Down	8.00	1380	2433	8453	0.994	0.11282	0.04970	2.2699	0.6084	3.4743	44.08	3.4743	0.6084	1,129	1,136
80	178	Down	8.00	1407	2631	8769	1.013	0.11259	0.05071	2.2202	0.5945	3.3330	45.73	3.3330	0.5945	1,151	1,136
80	178	Down	8.00	1447	2887	8980	1.042	0.10901	0.05116	2.1309	0.5614	3.1105	46.83	3.1105	0.5614	1,184	1,136
80	178	Down	8.00	1468	3052	9233	1.057	0.10890	0.05179	2.1026	0.5537	3.0252	48.15	3.0252	0.5537	1,201	1,136
81	179	Down	10.00	738	381	2887	0.532	0.13473	0.05089	2.6475	0.7755	7.5774	15.06	7.5774	0.7755	604	1,135
81	179	Down	10.00	863	613	3975	0.623	0.13566	0.05120	2.6494	0.7787	6.4845	20.73	6.4845	0.7787	706	1,133
81	179	Down	10.00	988	999	5303	0.713	0.13808	0.05561	2.4830	0.7363	5.3083	27.66	5.3083	0.7363	808	1,134
81	179	Down	10.00	1102	1473	6841	0.795	0.14318	0.05909	2.4230	0.7317	4.6443	35.68	4.6443	0.7317	902	1,134
81	179	Down	10.00	1129	1597	7217	0.814	0.14391	0.05958	2.4155	0.7312	4.5191	37.64	4.5191	0.7312	924	1,135
81	179	Down	10.00	1160	1748	7636	0.837	0.14424	0.06012	2.3991	0.7271	4.3684	39.82	4.3684	0.7271	949	1,134
81	179	Down	10.00	1195	1952	8263	0.862	0.14707	0.06141	2.3949	0.7329	4.2331	43.09	4.2331	0.7329	978	1,134
81	179	Down	10.00	1235	2228	8870	0.891	0.14782	0.06350	2.3278	0.7142	3.9811	46.26	3.9811	0.7142	1,010	1,134
81	179	Down	10.00	1237	2261	8888	0.892	0.14764	0.06413	2.3022	0.7059	3.9310	46.35	3.9310	0.7059	1,012	1,135
81	179	Down	10.00	1253	2345	9017	0.904	0.14598	0.06400	2.2810	0.6955	3.8452	47.03	3.8452	0.6955	1,025	1,134
81	179	Down	10.00	1284	2582	9330	0.926	0.14384	0.06548	2.1966	0.6648	3.6135	48.66	3.6135	0.6648	1,050	1,134
81	179	Down	10.00	1320	2838	9707	0.952	0.14160	0.06625	2.1375	0.6419	3.4204	50.62	3.4204	0.6419	1,080	1,134
81	179	Down	10.00	1352	3034	10021	0.975	0.13934	0.06591	2.1141	0.6298	3.3029	52.26	3.3029	0.6298	1,106	1,134
81	179	Down	10.00	1377	3255	10272	0.993	0.13770	0.06693	2.0573	0.6092	3.1558	53.57	3.1558	0.6092	1,127	1,134
81	179	Down	10.00	1406	3492	10648	1.014	0.13691	0.06745	2.0297	0.5993	3.0493	55.53	3.0493	0.5993	1,150	1,134
82	180	Down	14.00	725	577	3591	0.523	0.17365	0.08129	2.1362	0.7104	6.2236	18.73	6.2236	0.7104	593	1,134
82	180	Down	14.00	863	1020	5168	0.623	0.17637	0.08520	2.0701	0.6938	5.0667	26.95	5.0667	0.6938	706	1,133
82	180	Down	14.00	980	1573	6890	0.707	0.18235	0.08973	2.0323	0.6925	4.3802	35.93	4.3802	0.6925	802	1,134
82	180	Down	14.00	1106	2464	9125	0.798	0.18961	0.09778	1.9391	0.6738	3.7033	47.59	3.7033	0.6738	905	1,134
82	180	Down	14.00	1109	2493	9145	0.80	0.18900	0.09813	1.9260	0.6682	3.6683	47.69	3.6683	0.6682	907	1,134
82	180	Down	14.00	1127	2631	9480	0.813	0.18971	0.09868	1.9225	0.6682	3.6032	49.44	3.6032	0.6682	922	1,134
82	180	Down	14.00	1158	2896	9918	0.835	0.18799	0.10013	1.8776	0.6496	3.4247	51.72	3.4247	0.6496	947	1,135
82	180	Down	14.00	1193	3163	10461	0.861	0.18682	0.10001	1.8680	0.6443	3.3073	54.56	3.3073	0.6443	976	1,134
82	180	Down	14.00	1232	3520	11025	0.889	0.18462	0.10106	1.8269	0.6264	3.1321	57.50	3.1321	0.6264	1,008	1,134
82	180	Down	14.00	1239	3609	11192	0.894	0.18531	0.10187	1.8191	0.6249	3.1011	58.37	3.1011	0.6249	1,014	1,134
83	181	Down	18.00	739	914	4347	0.532	0.20232	0.12159	1.6640	0.5973	4.7560	22.67	4.7560	0.5973	605	1,136
83	181	Down	18.00	802	1190	5106	0.577	0.20177	0.12385	1.6292	0.5840	4.2908	26.63	4.2908	0.5840	656	1,137
83	181	Down	18.00	861	1492	5887	0.620	0.20185	0.12550	1.6084	0.5766	3.9457	30.70	3.9457	0.5766	704	1,136
83	181	Down	18.00	926	1891	6836	0.667	0.20263	0.12786	1.5848	0.5693	3.6150	35.65	3.6150	0.5693	758	1,136
83	181	Down	18.00	983	2274	7638	0.708	0.20091	0.12853	1.5632	0.5591	3.3588	39.83	3.3588	0.5591	804	1,136
83	181	Down	18.00	1046	2822	8778	0.753	0.20392	0.13238	1.5404	0.5551	3.1106	45.78	3.1106	0.5551	856	1,136
83	181	Down	18.00	1091	3245	9558	0.785	0.20410	0.13416	1.5214	0.5485	2.9455	49.85	2.9455	0.5485	893	1,137

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed)	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP
80	8.00	0.725	808	4644	824	1007	0.1164	0.0425	2.740141	0.746	5.748	24.22	5.748
80	8.00	0.750	906	5004	852	1041	0.1174	0.0431	2.72209	0.744	5.523	26.10	5.523
80	8.00	0.775	1011	5383	880	1076	0.1182	0.0436	2.712365	0.744	5.324	28.07	5.324
80	8.00	0.800	1122	5772	909	1111	0.1189	0.0439	2.70589	0.744	5.144	30.10	5.144
80	8.00	0.825	1244	6183	937	1146	0.1197	0.0444	2.69666	0.744	4.970	32.25	4.970
80	8.00	0.850	1382	6614	966	1180	0.1207	0.0452	2.673627	0.741	4.786	34.49	4.786
80	8.00	0.875	1534	7043	994	1215	0.1213	0.0459	2.641017	0.734	4.591	36.73	4.591
80	8.00	0.900	1705	7462	1022	1250	0.1214	0.0469	2.590022	0.720	4.377	38.92	4.377
80	8.00	0.925	1894	7791	1051	1285	0.1199	0.0479	2.502528	0.692	4.114	40.63	4.114
80	8.00	0.950	2085	8069	1079	1319	0.1179	0.0488	2.416691	0.662	3.870	42.08	3.870
80	8.00	0.975	2289	8313	1108	1354	0.1153	0.0495	2.328055	0.631	3.632	43.35	3.632
80	8.00	1.000	2499	8568	1136	1389	0.1129	0.0501	2.254645	0.604	3.429	44.68	3.429
81	10.0	0.725	1061	5535	822	1005	0.1393	0.0561	2.482167	0.739	5.217	28.87	5.217
81	10.0	0.750	1197	5973	851	1040	0.1404	0.0571	2.456939	0.735	4.990	31.15	4.990
81	10.0	0.775	1343	6433	879	1074	0.1418	0.0582	2.435592	0.732	4.790	33.55	4.790
81	10.0	0.800	1503	6917	907	1109	0.1430	0.0592	2.416312	0.729	4.602	36.07	4.602
81	10.0	0.825	1671	7435	936	1144	0.1444	0.0599	2.409868	0.731	4.449	38.77	4.449
81	10.0	0.850	1853	7957	964	1178	0.1457	0.0609	2.39487	0.730	4.294	41.50	4.294
81	10.0	0.875	2075	8516	992	1213	0.1471	0.0624	2.356899	0.721	4.104	44.41	4.104
81	10.0	0.900	2321	8984	1021	1248	0.1466	0.0641	2.28703	0.699	3.871	46.85	3.871
81	10.0	0.925	2570	9316	1049	1282	0.1441	0.0655	2.200123	0.666	3.625	48.58	3.625
81	10.0	0.950	2804	9666	1077	1317	0.1416	0.0659	2.1494	0.646	3.447	50.41	3.447
81	10.0	0.975	3059	10023	1106	1352	0.1394	0.0667	2.097286	0.625	3.277	52.27	3.277
81	10.0	1.000	3327	10406	1134	1386	0.1377	0.0671	2.052376	0.608	3.128	54.27	3.128
82	14.00	0.725	1745	7295	822	1005	0.1816	0.0923	1.969109	0.680	4.181	38.04	4.181
82	14.00	0.750	1974	7885	851	1040	0.1833	0.0942	1.966736	0.676	3.994	41.12	3.994
82	14.00	0.775	2221	8505	879	1074	0.1874	0.0963	1.94712	0.673	3.829	44.36	3.829
82	14.00	0.800	2494	9166	907	1109	0.1894	0.0982	1.929646	0.670	3.675	47.80	3.675
82	14.00	0.825	2767	9713	936	1144	0.1886	0.0992	1.901222	0.659	3.510	50.66	3.510
82	14.00	0.850	3050	10239	964	1178	0.1875	0.1002	1.872258	0.647	3.357	53.40	3.357
82	14.00	0.875	3355	10769	992	1213	0.1860	0.1009	1.843344	0.634	3.210	56.16	3.210
83	19.00	0.725	2485	8087	824	1007	0.2027	0.1306	1.551505	0.557	3.254	42.18	3.254
83	19.00	0.750	2782	8679	852	1042	0.2032	0.1320	1.539015	0.554	3.120	45.26	3.120
83	19.00	0.775	3102	9297	881	1077	0.2037	0.1333	1.528197	0.550	2.997	48.49	2.997





N. Data Set # 8

DATA SET Number 8

C-119 (2J17G3-26R)

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
122.0	14.917	4	22.8	512.730	0.958

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

Power weighted solidity = 0.19882
Twist (0.25R -Tip in deg) = 35.2

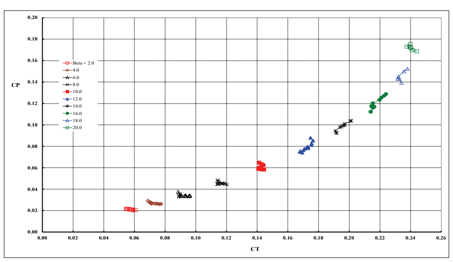
$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_o)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_o)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{1.5}}{C_P}$$

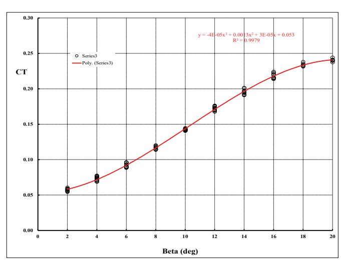
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
84	123	Down	2.0	778	141	1170	0.537	0.05914	0.02027	2.9179	0.5663	8.2979	6.69	8.2979	0.5663	608	1,132
84	123	Down	2.0	892	216	1575	0.616	0.06057	0.02060	2.9398	0.5773	7.2917	9.01	7.2917	0.5773	697	1,131
84	123	Down	2.0	1021	331	2005	0.705	0.05885	0.02105	2.7954	0.5411	6.0574	11.47	6.0574	0.5411	797	1,131
84	123	Down	2.0	1148	475	2506	0.792	0.05818	0.02125	2.7375	0.5269	5.2758	14.34	5.2758	0.5269	897	1,132
84	123	Down	2.0	1178	511	2611	0.813	0.05757	0.02116	2.7205	0.5209	5.1096	14.94	5.1096	0.5209	920	1,132
84	123	Down	2.0	1221	573	2758	0.843	0.05660	0.02131	2.6563	0.5043	4.8133	15.78	4.8133	0.5043	954	1,131
84	123	Down	2.0	1245	608	2861	0.859	0.05648	0.02133	2.6479	0.5022	4.7056	16.37	4.7056	0.5022	972	1,132
84	123	Down	2.0	1277	659	2956	0.881	0.05546	0.02142	2.5890	0.4866	4.4856	16.91	4.4856	0.4866	997	1,132
84	123	Down	2.0	1316	731	3113	0.908	0.05500	0.02171	2.5330	0.4740	4.2585	17.81	4.2585	0.4740	1,028	1,132
84	123	Down	2.0	1346	784	3228	0.929	0.05452	0.02176	2.5049	0.4667	4.1173	18.47	4.1173	0.4667	1,051	1,132
85	125	Down	4.0	772	179	1509	0.533	0.07747	0.02634	2.9416	0.6534	8.4302	8.63	8.4302	0.6534	603	1,131
85	125	Down	4.0	900	279	2019	0.622	0.07627	0.02591	2.9437	0.6487	7.2366	11.55	7.2366	0.6487	703	1,130
85	125	Down	4.0	1022	415	2623	0.706	0.07684	0.02632	2.9196	0.6458	6.3205	15.01	6.3205	0.6458	798	1,131
85	125	Down	4.0	1153	598	3269	0.797	0.07524	0.02641	2.8488	0.6236	5.4666	18.71	5.4666	0.6236	901	1,130
85	125	Down	4.0	1183	648	3414	0.817	0.07464	0.02650	2.8171	0.6142	5.2685	19.53	5.2685	0.6142	924	1,131
85	125	Down	4.0	1214	703	3581	0.839	0.07435	0.02660	2.7951	0.6082	5.0939	20.49	5.0939	0.6082	948	1,130
85	125	Down	4.0	1249	761	3727	0.863	0.07310	0.02644	2.7648	0.5965	4.8975	21.33	4.8975	0.5965	976	1,130
85	125	Down	4.0	1282	832	3914	0.886	0.07287	0.02673	2.7259	0.5872	4.7043	22.40	4.7043	0.5872	1,001	1,130
85	125	Down	4.0	1310	881	3997	0.905	0.07127	0.02653	2.6863	0.5723	4.5369	22.87	4.5369	0.5723	1,023	1,131
85	125	Down	4.0	1346	962	4185	0.930	0.07068	0.02671	2.6466	0.5615	4.3503	23.95	4.3503	0.5615	1,051	1,130
85	125	Down	4.0	1375	1049	4393	0.950	0.07110	0.02732	2.6026	0.5538	4.1878	25.14	4.1878	0.5538	1,074	1,130
85	125	Down	4.0	1412	1162	4580	0.976	0.07029	0.02794	2.5155	0.5322	3.9415	26.21	3.9415	0.5322	1,103	1,130
85	125	Down	4.0	1440	1256	4685	0.995	0.06913	0.02848	2.4278	0.5094	3.7301	26.81	3.7301	0.5094	1,125	1,130
85	125	Down	4.0	1466	1366	4830	1.013	0.06876	0.02935	2.3429	0.4903	3.5359	27.64	3.5359	0.4903	1,145	1,130
86	126	Down	6.00	766	223	1832	0.529	0.09553	0.03359	2.8443	0.7015	8.2152	10.48	8.2152	0.7015	598	1,131
86	126	Down	6.00	902	369	2560	0.623	0.09628	0.03404	2.8284	0.7003	6.9377	14.65	6.9377	0.7003	705	1,131
86	126	Down	6.00	1021	532	3268	0.705	0.09592	0.03384	2.8348	0.7006	6.1429	18.70	6.1429	0.7006	797	1,131
86	126	Down	6.00	1154	764	4060	0.797	0.09328	0.03365	2.7718	0.6756	5.3141	23.23	5.3141	0.6756	901	1,131
86	126	Down	6.00	1181	824	4247	0.816	0.09317	0.03386	2.7512	0.6701	5.1541	24.30	5.1541	0.6701	922	1,130
86	126	Down	6.00	1216	907	4518	0.84	0.09349	0.03415	2.7378	0.6680	4.9813	25.85	4.9813	0.6680	950	1,131
86	126	Down	6.00	1245	967	4705	0.86	0.09288	0.03392	2.7380	0.6659	4.8656	26.92	4.8656	0.6659	972	1,131
86	126	Down	6.00	1278	1033	4830	0.883	0.09048	0.03350	2.7009	0.6483	4.6757	27.64	4.6757	0.6483	998	1,130
86	126	Down	6.00	1314	1129	5101	0.908	0.09040	0.03369	2.6834	0.6438	4.5182	29.19	4.5182	0.6438	1,026	1,130
86	126	Down	6.00	1343	1194	5247	0.928	0.08901	0.03337	2.6675	0.6351	4.3945	30.02	4.3945	0.6351	1,049	1,130
86	126	Down	6.00	1379	1331	5559	0.953	0.08944	0.03436	2.6032	0.6213	4.1766	31.81	4.1766	0.6213	1,077	1,130
86	126	Down	6.00	1413	1476	5892	0.976	0.09030	0.03542	2.5494	0.6113	3.9919	33.71	3.9919	0.6113	1,104	1,131
86	126	Down	6.00	1443	1603	6059	0.997	0.08903	0.03612	2.4652	0.5870	3.7798	34.67	3.7798	0.5870	1,127	1,130
86	126	Down	6.00	1477	1787	6308	1.021	0.08847	0.03754	2.3565	0.5593	3.5299	36.09	3.5299	0.5593	1,154	1,130
87	127	Down	8.00	768	296	2318	0.531	0.12027	0.04424	2.7187	0.7524	7.8322	13.27	7.8322	0.7524	600	1,130
87	127	Down	8.00	897	477	3136	0.620	0.11926	0.04474	2.6655	0.7345	6.5744	17.94	6.5744	0.7345	701	1,130
87	127	Down	8.00	1028	728	4105	0.710	0.11885	0.04536	2.6200	0.7208	5.6387	23.49	5.6387	0.7208	803	1,131
87	127	Down	8.00	1154	1021	5106	0.797	0.11732	0.04497	2.6085	0.7130	5.0010	29.22	5.0010	0.7130	901	1,131
87	127	Down	8.00	1187	1126	5418	0.820	0.11766	0.04558	2.5815	0.7066	4.8117	31.00	4.8117	0.7066	927	1,131
87	127	Down	8.00	1217	1208	5669	0.841	0.11711	0.04537	2.5814	0.7050	4.6929	32.44	4.6929	0.7050	951	1,130
87	127	Down	8.00	1248	1300	5939	0.862	0.11667	0.04528	2.5770	0.7024	4.5685	33.98	4.5685	0.7024	975	1,131
87	127	Down	8.00	1284	1395	6169	0.887	0.11449	0.04461	2.5664	0.6930	4.4222	35.30	4.4222	0.6930	1,003	1,131
87	127	Down	8.00	1313	1489	6419	0.907	0.11393	0.04453	2.5584	0.6891	4.3109	36.73	4.3109	0.6891	1,026	1,131
87	127	Down	8.00	1347	1628	6773	0.931	0.11422	0.04509	2.5329	0.6831	4.1603	38.76	4.1603	0.6831	1,052	1,130
87	127	Down	8.00	1381	1778	7179	0.954	0.11518	0.04570	2.5203	0.6826	4.0377	41.08	4.0377	0.6826	1,079	1,131
87	127	Down	8.00	1410	1939	7461	0.974	0.11483	0.04683	2.4522	0.6631	3.8479	42.69	3.8479	0.6631	1,101	1,131
87	127	Down	8.00	1440	2086	7752	0.995	0.11439	0.04729	2.4187	0.6528	3.7162	44.36	3.7162	0.6528	1,125	1,130
87	127	Down	8.00	1475	2300	8128	1.019	0.11431	0.04852	2.3560	0.6357	3.5339	46.51	3.5339	0.6357	1,152	1,131
88	128	Down	10.00	769	392	2792	0.531	0.14446	0.05835	2.4756	0.7509	7.1224	15.98	7.1224	0.7509	601	1,131
88	128	Down	10.00	896	622	3751	0.619	0.14296	0.05854	2.4422	0.7369	6.0305	21.46	6.0305	0.7369	700	1,131
88	128	Down	10.00	1027	945	4877	0.710	0.14148	0.05906	2.3956	0.7191	5.1608	27.91	5.1608	0.7191	802	1,130
88	128	Down	10.00	1152	1331	6106	0.796	0.14078	0.05894	2.3887	0.7152	4.5875	34.94	4.5875	0.7152	900	1,130
88	128	Down	10.00	1181	1458	6502	0.816	0.14264	0.05992	2.3805	0.7174	4.4595	37.20	4.4595	0.7174	922	1,130
88	128	Down	10.00	1217	1589	6899	0.841	0.14253	0.05968	2.3882	0.7195	4.3417	39.48	4.3417	0.7195	951	1,130
88	128	Down	10.00	1249	1718	7273	0.863	0.14265	0.05969	2.3899	0.7203	4.2334	41.62	4.2334	0.7203	976	1,130
88	128	Down	10.00	1282	1866	7648	0.886	0.14238	0.05995	2.3749	0.7151	4.0986	43.76	4.0986	0.7151	1,001	1,130
88	128	Down	10.00	1316	1998	7982	0.909	0.14102	0.05935	2.3763	0.7121	3.9950	45.67	3.9950	0.7121	1,028	1,131
88	128	Down	10.00	1346	2149	8336	0.930	0.14078	0.05966	2.3599	0.7066	3.8790	47.70	3.8790	0.7066	1,051	1,130
88	128	Down	10.00	1377	2334	8815	0.951	0.14225	0.06051	2.3506	0.7075	3.7768	50.44	3.7768	0.7075	1,076	1,131
88	128	Down	10.00	1410	2586	9357	0.974	0.14401	0.06245	2.3060	0.6983	3.6183	53.54	3.6183	0.6983	1,101	1,131
88	128	Down	10.00	1445	2828	9753	0.998	0.14292	0.06345	2.2524	0.6795	3.4487	55.81	3.4487	0.6795	1,129	1,131
88	128	Down	10.00	1474	3062	10024	1.019	0.14117	0.06473	2.1810	0.6539	3.2737	57.36	3.2737	0.6539	1,151	1,130
89	129	Down	12.00	775	511	3325	0.536	0.16938	0.07432	2.2793	0.7486	6.5068	19.03	6.5068	0.7486	605	1,129
89	129	Down	12.00	896	795	4405	0.620	0.16789	0.07482	2.2439	0.7337	5.5409	25.21	5.5409	0.7337	700	1,129
89	129	Down	12.00	1022	1191	5735	0.707	0.16800	0.07553	2.2243	0.7275	4.8153	32.82	4.8153	0.7275	798	1,129
89	129	Down	12.00	1152	1728	7377	0.797	0.17008	0.07652	2.2229	0.7316	4.2691	42.21	4.2691	0.7316	900	1,129
89	129	Down	12.00	1188	1939	7980	0.822	0.17300	0.07829	2.2099	0.7335	4.1155	45.66	4.1155	0.7335	928	1,129
89	129	Down	12.00	1214	2052	8229	0.840	0.17084	0.07764	2.2005	0.7258	4.0102	47.09	4.0102	0.7258	948	1,129
89	129	Down	12.00	1252	2282	8873	0.866	0.17320	0.07872	2.2003	0.7307	3.8883	50.77	3.8883	0.7307	978	1,129
89	129	Down	12.00	1281	2468	9288	0.886	0.17319	0.07948	2.1790	0.7236	3.7634	53.15	3.7634	0.7236	1,001	1,129
89	129	Down	12.00	1308	2632	9683	0.905	0.17317	0.07962	2.1750	0.7223	3.6790	55.41	3.6790	0.7223	1,022	1,129
89	129	Down	12.00	1343	2834	10161	0.929	0.17237	0.07920	2.1764	0.7211	3.5854	58.14	3.5854	0.7211	1,049	1,129
89	129	Down	12.00	1378	3142	10889	0.953	0.17546	0.08129	2.1585	0.7215	3.4656	62.31	3.4656	0.7215	1,076	1,129
89	129	Down	12.00	1408	3417	11367	0.974	0.17544	0.08287	2.1170	0.7076	3.3266	65.04	3.3266	0.7076	1,100	1,129
89	129	Down	12.00	1446	3817	12052	1.000	0.17636	0.08546	2.0636	0.6916	3.1575	68.96	3.1575	0.6916	1,129	1,129
89	129	Down	12.00	1475	4168	12426	1.020	0.17476	0.08793	1.9876	0.6630	2.9813	71.10	2.9813	0.6630	1,152	1,129
90	130	Down	14.00	768	618	3700	0.529	[illegible]	[illegible]	2.0783	0.7266	5.9871	21.17	5.9871	0.7266	600	1,134
90	130	Down	14.00	899	997	5055	0.619	[illegible]	[illegible]	2.0602	0.7192	5.0702	28.92	5.0702	0.7192	702	1,134
90	130	Down	14.00	1023	1492	6532	0.704	[illegible]	[illegible]	2.0243	0.7059	4.3780	37.38	4.3780	0.7059	799	1,135
90	130	Down	14.00	1157	2237	8480	0.796	[illegible]	[illegible]	1.9824	0.6965	3.7908	48.52	3.7908	0.6965	904	1,135
90	130	Down	14.00	1181	2395	8885	0.813	[illegible]	[illegible]	1.9803	0.6977	3.7098	50.84	3.7098	0.6977	922	1,135
90	130	Down	14.00	1219	2658	9520	0.839	[illegible]	[illegible]	1.9734	0.6972	3.5816	54.47	3.5816	0.6972	952	1,135
90	130	Down	14.00	1249	2872	10049	0.86	[illegible]	[illegible]	1.9753	0.6998	3.4990	57.50	3.4990	0.6998	976	1,134
90	130	Down	14.00	1284	3155	10610	0.884	[illegible]	[illegible]	1.9517	0.6911	3.3629	60.71	3.3629	0.6911	1,003	1,134
90	130	Down	14.00	1321	3524	11450	0.909	[illegible]	[illegible]	1.9400	0.6937	3.2491	65.52	3.2491	0.6937	1,032	1,135
90	130	Down	14.00	1349	3770	11975	0.929	[illegible]	[illegible]	1.9367	0.6935	3.1764	68.52	3.1764	0.6935	1,054	1,134
91	131	Down	16.00	773	766	4178	0.531	[illegible]	[illegible]	1.9057	0.7034	5.4543	23.91	5.4543	0.7034	604	1,137
91	131	Down	16.00	898	1241	5675	0.617	[illegible]	[illegible]	1.8561	0.6873	4.5729	32.47	4.5729	0.6873	701	1,137
91	131	Down	16.00	943	1449	6285	0.648	[illegible]	[illegible]	1.8487	0.6861	4.3375	35.96	4.3375	0.6861	737	1,137
91	131	Down	16.00	1022	1853	7320	0.703	[illegible]	[illegible]	1.8248	0.6743	3.9504	41.88	3.9504	0.6743	798	1,135
91	131	Down	16.00	1095	2330	8438	0.753	[illegible]	[illegible]	1.7923	0.6637	3.6215	48.28	3.6215	0.6637	855	1,136
91	131	Down	16.00	1155	2808	9580	0.794	[illegible]	[illegible]	1.7810	0.6662	3.4117	54.82	3.4117	0.6662	902	1,136
91	131	Down	16.00	1183	3068	10105	0.813	[illegible]	[illegible]	1.7611	0.6606	3.2937	57.82	3.2937	0.6606	924	1,137
91	131	Down	16.00	1216	3380	10760	0.836	[illegible]	[illegible]	1.7497	0.6588	3.1834	61.57	3.1834	0.6588	950	1,136
91	131	Down	16.00	1242	3645	11290	0.854	[illegible]	[illegible]	1.7388	0.6566	3.0974	64.60	3.0974	0.6566	970	1,136
92	132	Down	18.00	769	935	4523	0.529	[illegible]	[illegible]	1.6814	0.6491	4.8374	25.88	4.8374	0.6491	601	1,135
92	132	Down	18.00	900	1539	6162	0.619	[illegible]	[illegible]	1.6287	0.6271	4.0039	35.26	4.0039	0.6271	703	1,136
92	132	Down	18.00	949	1807	6815	0.653	[illegible]	[illegible]	1.6177	0.6212	3.7714	39.00	3.7714	0.6212	741	1,135
92	132	Down	18.00	1025	2309	7970	0.705	[illegible]	[illegible]	1.5991	0.6148	3.4517	45.60	3.4517	0.6148	801	1,136
92	132	Down	18.00	1100	2950	9320	0.757	[illegible]	[illegible]	1.5708	0.6085	3.1593	53.33	3.1593	0.6085	859	1,135
92	132	Down	18.00	1151	3431	10305	0.792	[illegible]	[illegible]	1.5625	0.6083	3.0035	58.97	3.0035	0.6083	899	1,135
93	133	Down	20.00	764	1111	4655	0.527	[illegible]	[illegible]	1.4468	0.5703	4.1899	26.64	4.1899	0.5703	597	1,132
93	133	Down	20.00	846	1518	5640	0.583	[illegible]	[illegible]	1.4207	0.5567	3.7154	32.27	3.7154	0.5567	661	1,133
93	133	Down	20.00	895	1817	6290	0.617	[illegible]	[illegible]	1.4004	0.5478	3.4618	35.99	3.4618	0.5478	699	1,133
93	133	Down	20.00	943	2137	6965	0.650	[illegible]	[illegible]	1.3892	0.5427	3.2592	39.85	3.2592	0.5427	737	1,133
93	133	Down	20.00	1020	2715	8075	0.703	[illegible]	[illegible]	1.3712	0.5332	2.9742	46.21	2.9742	0.5332	797	1,133
93	133	Down	20.00	1064	3127	8870	0.734	[illegible]	[illegible]	1.3641	0.5330	2.8366	50.75	2.8366	0.5330	831	1,132

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed)	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]





O. Data Set # 9

DATA SET Number 9

XC-142A (2FF16A1-4A)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
30,000 ft-lbs Shaft	105.0	15.625	4	7.0	504.290	1.008

Power weighted solidity = 0.17112
Twist (0.25R -Tip in deg) = 35.5

$$C_T = 0.1515 \frac{(T/1,000)}{(\rho/\rho_o)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1,000)}{(\rho/\rho_o)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

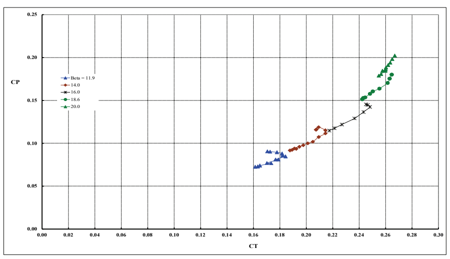
Harris Computed →

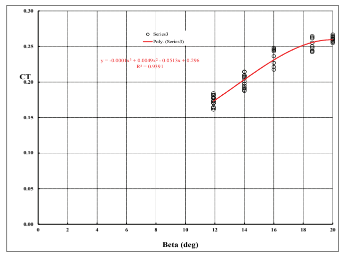
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
94	264	Down	11.90	745	559	3522	0.553	0.16129	0.07258	2.2223	0.7122	6.3005	18.37	6.3005	0.7122	610	1,102
94	264	Down	11.90	870	895	4861	0.646	0.16324	0.07297	2.2371	0.7213	5.4313	25.35	5.4313	0.7213	712	1,102
94	264	Down	11.90	950	1183	5853	0.706	0.16484	0.07408	2.2253	0.7210	4.9476	30.52	4.9476	0.7210	777	1,101
94	264	Down	11.90	1050	1656	7520	0.780	0.17337	0.07680	2.2574	0.7501	4.5411	39.22	4.5411	0.7501	859	1,101
94	264	Down	11.90	1054	1678	7440	0.783	0.17023	0.07694	2.2125	0.7284	4.4338	38.80	4.4338	0.7284	862	1,101
94	264	Down	11.90	1151	2301	9325	0.855	0.17891	0.08101	2.2084	0.7454	4.0526	48.63	4.0526	0.7454	942	1,101
94	264	Down	11.90	1155	2326	9276	0.858	0.17674	0.08105	2.1807	0.7316	3.9880	48.38	3.9880	0.7316	945	1,101
94	264	Down	11.90	1248	3068	11290	0.927	0.18425	0.08474	2.1743	0.7448	3.6799	58.88	3.6799	0.7448	1,021	1,101
94	264	Down	11.90	1254	3149	11260	0.932	0.18200	0.08573	2.1229	0.7227	3.5757	58.72	3.5757	0.7227	1,026	1,101
94	264	Down	11.90	1296	3568	12004	0.963	0.18166	0.08800	2.0643	0.7021	3.3643	62.60	3.3643	0.7021	1,060	1,101
94	264	Down	11.90	1350	4103	12749	1.003	0.17780	0.08953	1.9860	0.6683	3.1072	66.49	3.1072	0.6683	1,104	1,101
94	264	Down	11.90	1407	4680	13442	1.045	0.17259	0.09021	1.9133	0.6343	2.8722	70.10	2.8722	0.6343	1,151	1,102
94	264	Down	11.90	1431	4943	13740	1.063	0.17055	0.09056	1.8832	0.6206	2.7797	71.66	2.7797	0.6206	1,171	1,101
95	274	Down	14.00	751	728	4199	0.563	0.18923	0.09227	2.0508	0.7119	5.7679	21.90	5.7679	0.7119	614	1,091
95	274	Down	14.00	801	877	4736	0.601	0.18762	0.09162	2.0479	0.7079	5.4002	24.70	5.4002	0.7079	655	1,090
95	274	Down	14.00	850	1069	5469	0.638	0.19240	0.09345	2.0588	0.7206	5.1160	28.52	5.1160	0.7206	695	1,090
95	274	Down	14.00	894	1250	6006	0.671	0.19100	0.09392	2.0336	0.7093	4.8048	31.32	4.8048	0.7093	731	1,090
95	274	Down	14.00	948	1522	6885	0.711	0.19472	0.09591	2.0303	0.7149	4.5237	35.91	4.5237	0.7149	776	1,091
95	274	Down	14.00	996	1798	7715	0.747	0.19767	0.09770	2.0233	0.7179	4.2909	40.24	4.2909	0.7179	815	1,091
95	274	Down	14.00	1048	2142	8691	0.786	0.20113	0.09991	2.0131	0.7205	4.0574	45.33	4.0574	0.7205	857	1,091
95	274	Down	14.00	1095	2490	9668	0.822	0.20495	0.10182	2.0129	0.7272	3.8827	50.42	3.8827	0.7272	896	1,090
95	274	Down	14.00	1147	3016	10840	0.861	0.20943	0.10730	1.9517	0.7128	3.5942	56.53	3.5942	0.7128	938	1,090
95	274	Down	14.00	1198	3569	12109	0.899	0.21445	0.11144	1.9243	0.7111	3.3928	63.15	3.3928	0.7111	980	1,090
95	274	Down	14.00	1250	4187	13184	0.938	0.21447	0.11509	1.8634	0.6887	3.1488	68.76	3.1488	0.6887	1,023	1,090
95	274	Down	14.00	1300	4859	13916	0.975	0.20930	0.11874	1.7627	0.6435	2.8640	72.57	2.8640	0.6435	1,064	1,091
95	274	Down	14.00	1320	4961	14209	0.990	0.20728	0.11580	1.7899	0.6503	2.8641	74.10	2.8641	0.6503	1,080	1,091
95	274	Down	14.00	1321	4985	14258	0.991	0.20768	0.11610	1.7888	0.6505	2.8602	74.36	2.8602	0.6505	1,081	1,091
96	265	Down	16.00	755	920	4876	0.562	0.21742	0.11477	1.8945	0.7049	5.3000	25.43	5.3000	0.7049	618	1,099
96	265	Down	16.00	863	1407	6485	0.642	0.22132	0.11753	1.8832	0.7070	4.6091	33.82	4.6091	0.7070	706	1,100
96	265	Down	16.00	952	1959	8094	0.708	0.22700	0.12190	1.8622	0.7080	4.1317	42.21	4.1317	0.7080	779	1,100
96	265	Down	16.00	1052	2798	10297	0.782	0.23649	0.12902	1.8329	0.7113	3.6801	53.70	3.6801	0.7113	861	1,101
96	265	Down	16.00	1100	3382	11584	0.818	0.24334	0.13642	1.7838	0.7022	3.4252	60.41	3.4252	0.7022	900	1,100
96	265	Down	16.00	1147	4001	12847	0.853	0.24820	0.14235	1.7436	0.6932	3.2109	67.00	3.2109	0.6932	938	1,100
96	265	Down	16.00	1201	4668	13985	0.893	0.24644	0.14467	1.7035	0.6748	2.9959	72.93	2.9959	0.6748	983	1,100
96	265	Down	16.00	1220	4917	14356	0.907	0.24516	0.14538	1.6864	0.6663	2.9197	74.87	2.9197	0.6663	998	1,100
97	275	Down	18.60	754	1209	5420	0.566	0.24232	0.15142	1.6003	0.6286	4.4830	28.27	4.4830	0.6286	617	1,090
97	275	Down	18.60	802	1469	6152	0.602	0.24311	0.15289	1.5901	0.6257	4.1879	32.08	4.1879	0.6257	656	1,090
97	275	Down	18.60	849	1750	6934	0.637	0.24451	0.15353	1.5926	0.6284	3.9623	36.16	3.9623	0.6284	695	1,090
97	275	Down	18.60	900	2142	7910	0.675	0.24821	0.15775	1.5735	0.6256	3.6928	41.25	3.6928	0.6256	736	1,091
97	275	Down	18.60	950	2564	8887	0.713	0.25029	0.16055	1.5589	0.6224	3.4661	46.35	3.4661	0.6224	777	1,090
97	275	Down	18.60	1008	3124	10205	0.756	0.25528	0.16376	1.5589	0.6286	3.2666	53.22	3.2666	0.6286	825	1,091
97	275	Down	18.60	1047	3642	11279	0.786	0.26152	0.17036	1.5351	0.6265	3.0969	58.82	3.0969	0.6265	857	1,090
97	275	Down	18.60	1099	4338	12500	0.825	0.26306	0.17546	1.4993	0.6136	2.8815	65.19	2.8815	0.6136	899	1,090
97	275	Down	18.60	1150	5102	13770	0.863	0.26465	0.18010	1.4694	0.6032	2.6989	71.81	2.6989	0.6032	941	1,090
98	266	Down	20.00	650	915	4236	0.485	0.25484	0.17888	1.4247	0.5739	4.6295	22.09	4.6295	0.5739	532	1,096
98	266	Down	20.00	709	1200	5074	0.529	0.25656	0.18076	1.4193	0.5737	4.2283	26.46	4.2283	0.5737	580	1,097
98	266	Down	20.00	751	1456	5764	0.560	0.25976	0.18455	1.4076	0.5725	3.9588	30.06	3.9588	0.5725	614	1,097
98	266	Down	20.00	807	1806	6601	0.602	0.25763	0.18449	1.3965	0.5656	3.6550	34.43	3.6550	0.5656	660	1,097
98	266	Down	20.00	854	2161	7463	0.637	0.26009	0.18627	1.3963	0.5683	3.4535	38.92	3.4535	0.5683	699	1,097
98	266	Down	20.00	899	2550	8276	0.670	0.26028	0.18842	1.3813	0.5624	3.2455	43.16	3.2455	0.5624	735	1,098
98	266	Down	20.00	948	3036	9261	0.707	0.26192	0.19131	1.3691	0.5591	3.0504	48.30	3.0504	0.5591	776	1,097
98	266	Down	20.00	999	3604	10345	0.745	0.26347	0.19407	1.3576	0.5561	2.8704	53.95	2.8704	0.5561	817	1,097
98	266	Down	20.00	1056	4348	11626	0.787	0.26499	0.19823	1.3368	0.5491	2.6739	60.63	2.6739	0.5491	864	1,098
98	266	Down	20.00	1100	5016	12709	0.820	0.26697	0.20232	1.3195	0.5441	2.5337	66.28	2.5337	0.5441	900	1,097

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Harris Computed →

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM
94	11.90	0.725	1294	6260	798	976	0.1670	0.0747	2.235366	0.729	4.838	32.65	4.838	0.7291
94	11.90	0.750	1456	6781	826	1010	0.1690	0.0759	2.22698	0.730	4.657	35.36	4.657	0.7305
94	11.90	0.775	1631	7334	853	1043	0.1714	0.0772	2.220414	0.733	4.497	38.25	4.497	0.7335
94	11.90	0.800	1811	7899	881	1077	0.1731	0.0778	2.223966	0.738	4.362	41.19	4.362	0.7384
94	11.90	0.825	2021	8506	909	1111	0.1752	0.0793	2.213787	0.739	4.209	44.36	4.209	0.7394
94	11.90	0.850	2250	9141	936	1144	0.1775	0.0807	2.200391	0.740	4.063	47.67	4.063	0.7398
94	11.90	0.875	2494	9817	964	1178	0.1798	0.0819	2.195282	0.743	3.936	51.20	3.936	0.7429
94	11.90	0.900	2768	10462	991	1211	0.1813	0.0837	2.166983	0.736	3.780	54.56	3.780	0.7364
94	11.90	0.925	3065	11103	1019	1245	0.1821	0.0853	2.135216	0.727	3.623	57.90	3.623	0.7270
94	11.90	0.950	3363	11737	1046	1279	0.1824	0.0868	2.100817	0.716	3.469	61.21	3.469	0.7159
94	11.90	0.975	3726	12225	1074	1312	0.1805	0.0886	2.037992	0.691	3.281	63.76	3.281	0.6910
94	11.90	1.000	4056	12694	1101	1346	0.1781	0.0893	1.994382	0.672	3.130	66.20	3.130	0.6716
95	14.00	0.725	1622	7179	791	966	0.1953	0.0966	2.024198	0.714	4.426	37.44	4.426	0.7143
95	14.00	0.750	1807	7775	818	1000	0.1976	0.0970	2.037065	0.723	4.303	40.55	4.303	0.7226
95	14.00	0.775	2033	8403	845	1033	0.2002	0.0990	2.021817	0.722	4.134	43.83	4.134	0.7219
95	14.00	0.800	2273	9060	872	1066	0.2026	0.1007	2.011632	0.723	3.986	47.25	3.986	0.7226
95	14.00	0.825	2554	9807	900	1100	0.2060	0.1030	1.999727	0.724	3.840	51.15	3.840	0.7243
95	14.00	0.850	2863	10532	927	1133	0.2085	0.1057	1.97325	0.719	3.679	54.93	3.679	0.7191
95	14.00	0.875	3208	11360	954	1166	0.2124	0.1086	1.954815	0.719	3.541	59.24	3.541	0.7189
95	14.00	0.900	3606	12125	981	1200	0.2140	0.1120	1.910293	0.705	3.362	63.23	3.362	0.7052
95	14.00	0.925	3985	12791	1009	1233	0.2139	0.1141	1.873708	0.691	3.210	66.71	3.210	0.6914
95	14.00	0.950	4385	13446	1036	1266	0.2132	0.1160	1.837892	0.677	3.066	70.12	3.066	0.6773
95	14.00	0.975	4765	13951	1063	1299	0.2101	0.1167	1.800588	0.659	2.928	72.76	2.928	0.6587
96	16.00	0.725	2133	8581	798	975	0.2294	0.1236	1.85703	0.710	4.023	44.75	4.023	0.7098
96	16.00	0.750	2430	9320	825	1009	0.2327	0.1270	1.83236	0.705	3.835	48.61	3.835	0.7053
96	16.00	0.775	2757	10104	853	1042	0.2365	0.1308	1.807952	0.702	3.665	52.69	3.665	0.7017
96	16.00	0.800	3096	10936	880	1076	0.2401	0.1338	1.79942	0.704	3.532	57.03	3.532	0.7036
96	16.00	0.825	3487	11804	908	1110	0.2435	0.1369	1.778946	0.701	3.385	61.56	3.385	0.7005
96	16.00	0.850	3897	12603	935	1143	0.2452	0.1401	1.750058	0.692	3.234	65.73	3.234	0.6915
96	16.00	0.875	4335	13401	963	1177	0.2459	0.1427	1.722611	0.682	3.091	69.89	3.091	0.6816
96	16.00	0.900	4802	14199	990	1210	0.2465	0.1455	1.693884	0.671	2.957	74.05	2.957	0.6711
97	18.60	0.725	2732	9326	791	966	0.2540	0.1627	1.561185	0.628	3.414	48.64	3.414	0.6279
97	18.60	0.750	3085	10084	818	1000	0.2561	0.1656	1.547334	0.625	3.269	52.59	3.269	0.6252
97	18.60	0.775	3468	10897	845	1033	0.2586	0.1689	1.534306	0.625	3.142	56.83	3.142	0.6248
97	18.60	0.800	3889	11698	872	1066	0.2617	0.1728	1.514076	0.620	3.008	61.01	3.008	0.6197
97	18.60	0.825	4345	12515	900	1100	0.2629	0.1753	1.500018	0.614	2.880	65.27	2.880	0.6137
97	18.60	0.850	4837	13349	927	1133	0.2643	0.1785	1.480353	0.607	2.760	69.62	2.760	0.6073
98	20.00	0.725	3296	9764	796	972	0.2627	0.1927	1.363231	0.558	2.962	50.92	2.962	0.5576
98	20.00	0.750	3696	10491	823	1006	0.2635	0.1949	1.351903	0.554	2.838	54.71	2.838	0.5538
98	20.00	0.775	4132	11251	850	1039	0.2649	0.1974	1.341936	0.550	2.723	58.68	2.723	0.5503
98	20.00	0.800	4603	12043	878	1073	0.2659	0.2000	1.329095	0.547	2.616	62.81	2.616	0.5469





P. Data Set # 10

DATA SET Number 10

XC-142A (2FF16A1-4A) — 15,000 ft-lbs Shaft

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
105.0	15.625	4	-2.0	488.090	1.050

Power weighted solidity = 0.17112

Twist (0.25R -Tip in deg) = 35.5

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_o)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_o)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

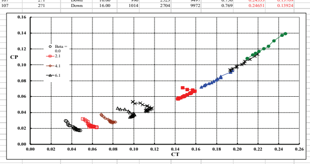
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

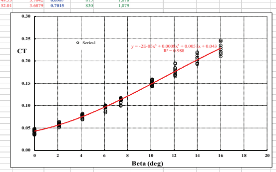
REDUCED TEST DATA POINTS (Harris Computed)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
99	133	Down	0.00	648	87	800	0.489	0.04843	0.01717	2.8210	0.4954	9.1954	4.17	9.1954	0.4954	530	1,084
99	133	Down	0.00	702	112	914	0.530	0.04714	0.01738	2.7122	0.4699	8.1607	4.77	8.1607	0.4699	574	1,084
99	133	Down	0.00	753	144	1038	0.569	0.04653	0.01811	2.5698	0.4423	7.2083	5.41	7.2083	0.4423	616	1,083
99	133	Down	0.00	799	172	1162	0.603	0.04626	0.01810	2.5556	0.4386	6.7558	6.06	6.7558	0.4386	654	1,084
99	133	Down	0.00	850	207	1286	0.642	0.04524	0.01810	2.5001	0.4243	6.2126	6.71	6.2126	0.4243	695	1,083
99	133	Down	0.00	895	244	1410	0.676	0.04474	0.01827	2.4486	0.4133	5.7787	7.35	5.7787	0.4133	732	1,083
99	133	Down	0.00	945	294	1571	0.714	0.04471	0.01870	2.3907	0.4034	5.3435	8.19	5.3435	0.4034	773	1,083
99	133	Down	0.00	997	338	1695	0.753	0.04334	0.01831	2.3671	0.3933	5.0148	8.84	5.0148	0.3933	816	1,083
99	133	Down	0.00	1048	409	1905	0.791	0.04409	0.01908	2.3110	0.3872	4.6577	9.93	4.6577	0.3872	857	1,084
99	133	Down	0.00	1098	483	2086	0.829	0.04398	0.01959	2.2451	0.3757	4.3188	10.88	4.3188	0.3757	898	1,084
99	133	Down	0.00	1147	562	2257	0.866	0.04361	0.01999	2.1808	0.3634	4.0160	11.77	4.0160	0.3634	938	1,084
99	133	Down	0.00	1198	643	2390	0.905	0.04233	0.02008	2.1082	0.3461	3.7170	12.46	3.7170	0.3461	980	1,083
99	133	Down	0.00	1227	707	2486	0.927	0.04197	0.02055	2.0426	0.3339	3.5163	12.96	3.5163	0.3339	1,004	1,083
99	133	Down	0.00	1251	766	2590	0.945	0.04206	0.02101	2.0026	0.3278	3.3812	13.51	3.3812	0.3278	1,023	1,083
99	133	Down	0.00	1304	916	2762	0.985	0.04129	0.02218	1.8615	0.3018	3.0153	14.40	3.0153	0.3018	1,067	1,083
99	133	Down	0.00	1351	1075	2743	1.020	0.03820	0.02341	1.6321	0.2545	2.5516	14.31	2.5516	0.2545	1,105	1,084
99	133	Down	0.00	1359	1116	2705	1.026	0.03723	0.02387	1.5595	0.2401	2.4238	14.11	2.4238	0.2401	1,112	1,084
99	133	Down	0.00	1400	1272	2819	1.057	0.03656	0.02489	1.4689	0.2241	2.2162	14.70	2.2162	0.2241	1,145	1,084
[illegible]																	
106	249	Down	14.00	795	910	4951	0.596	0.19911	0.09723	2.0478	0.7292	5.4407	25.82	5.4407	0.7292	650	1,091
106	249	Down	14.00	854	1139	5721	0.640	0.19938	0.09818	2.0308	0.7236	5.0228	29.84	5.0228	0.7236	699	1,092
106	249	Down	14.00	904	1383	6569	0.678	0.20431	0.10050	2.0329	0.7333	4.7498	34.26	4.7498	0.7333	740	1,091
106	249	Down	14.00	948	1617	7310	0.711	0.20674	0.10190	2.0290	0.7362	4.5207	38.12	4.5207	0.7362	776	1,091
106	249	Down	14.00	1002	1951	8187	0.751	0.20726	0.10412	1.9907	0.7232	4.1963	42.70	4.1963	0.7232	820	1,092
106	249	Down	14.00	1051	2311	9220	0.788	0.21216	0.10687	1.9852	0.7297	3.9896	48.08	3.9896	0.7297	860	1,091
106	249	Down	14.00	1100	2753	10331	0.825	0.21701	0.11104	1.9543	0.7265	3.7526	53.88	3.7526	0.7265	900	1,091
106	249	Down	14.00	1124	3000	10916	0.843	0.21962	0.11342	1.9363	0.7241	3.6387	56.93	3.6387	0.7241	920	1,091
107	2?1	Down	16.00	650	553	3485	0.493	0.20966	0.10811	1.9393	0.7086	6.3020	18.17	6.3020	0.7086	532	1,079
107	2?1	Down	16.00	711	753	4274	0.539	0.21490	0.11248	1.9106	0.7068	5.6760	22.29	5.6760	0.7068	582	1,079
107	2?1	Down	16.00	758	929	4919	0.575	0.21761	0.11452	1.9002	0.7073	5.2949	25.65	5.2949	0.7073	620	1,078
107	2?1	Down	16.00	800	1115	5565	0.607	0.22101	0.11692	1.8904	0.7092	4.9910	29.02	4.9910	0.7092	654	1,078
107	2?1	Down	16.00	859	1419	6553	0.652	0.22573	0.12019	1.8781	0.7120	4.6180	34.18	4.6180	0.7120	703	1,078
107	2?1	Down	16.00	899	1671	7312	0.682	0.22996	0.12347	1.8624	0.7127	4.3758	38.13	4.3758	0.7127	735	1,078
107	2?1	Down	16.00	949	2075	8338	0.720	0.23532	0.13034	1.8054	0.6989	4.0183	43.48	4.0183	0.6989	776	1,078
107	2?1	Down	16.00	996	2523	9497	0.756	0.24333	0.13709	1.7750	0.6987	3.7642	49.53	3.7642	0.6987	815	1,078
107	2?1	Down	16.00	1014	2704	9972	0.769	0.24651	0.13924	1.7704	0.7015	3.6879	52.01	3.6879	0.7015	830	1,079

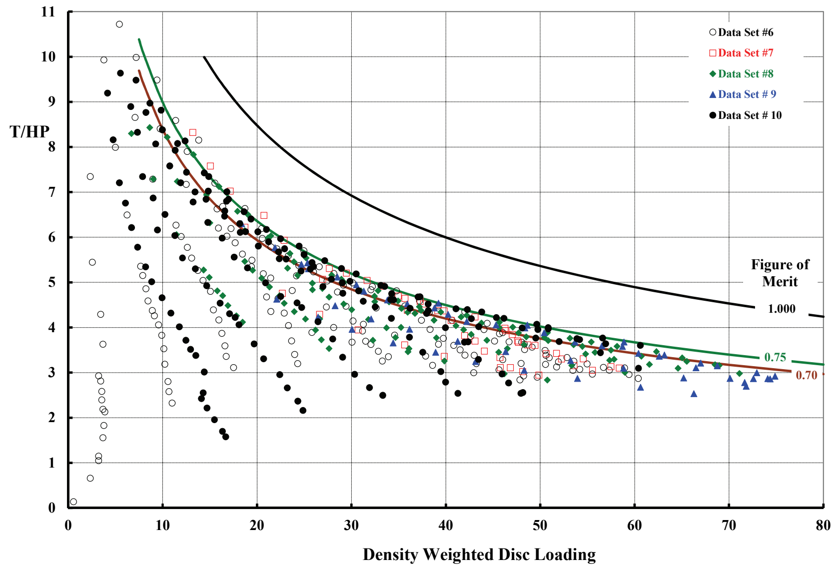
FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
99	0.0	0.725	303	1600	785	960	0.0441	0.0184	2.4	0.402	5.281	8.34	5.281	0.4023
99	0.0	0.750	340	1706	813	993	0.0440	0.0186	2.358913	0.395	5.018	8.90	5.018	0.3947
99	0.0	0.775	379	1819	840	1026	0.0439	0.0188	2.331329	0.390	4.799	9.49	4.799	0.3899
99	0.0	0.800	425	1944	867	1059	0.0441	0.0192	2.293327	0.384	4.574	10.14	4.574	0.3841
99	0.0	0.825	472	2056	894	1093	0.0437	0.0194	2.254052	0.376	4.356	10.72	4.356	0.3762
99	0.0	0.850	526	2182	921	1126	0.0437	0.0198	2.211414	0.369	4.148	11.38	4.148	0.3691
99	0.0	0.875	578	2281	948	1159	0.0432	0.0199	2.165427	0.359	3.946	11.90	3.946	0.3590
99	0.0	0.900	639	2388	975	1192	0.0427	0.0203	2.10898	0.348	3.737	12.45	3.737	0.3478
99	0.0	0.925	705	2490	1002	1225	0.0422	0.0206	2.048373	0.336	3.532	12.99	3.532	0.3357
99	0.0	0.950	783	2631	1029	1258	0.0423	0.0211	2.001255	0.328	3.360	13.72	3.360	0.3283
99	0.0	0.975	877	2710	1056	1291	0.0413	0.0219	1.888681	0.306	3.090	14.13	3.090	0.3064
99	0.0	1.000	984	2734	1083	1324	0.0396	0.0228	1.741623	0.277	2.778	14.26	2.778	0.2767
[illegible]														

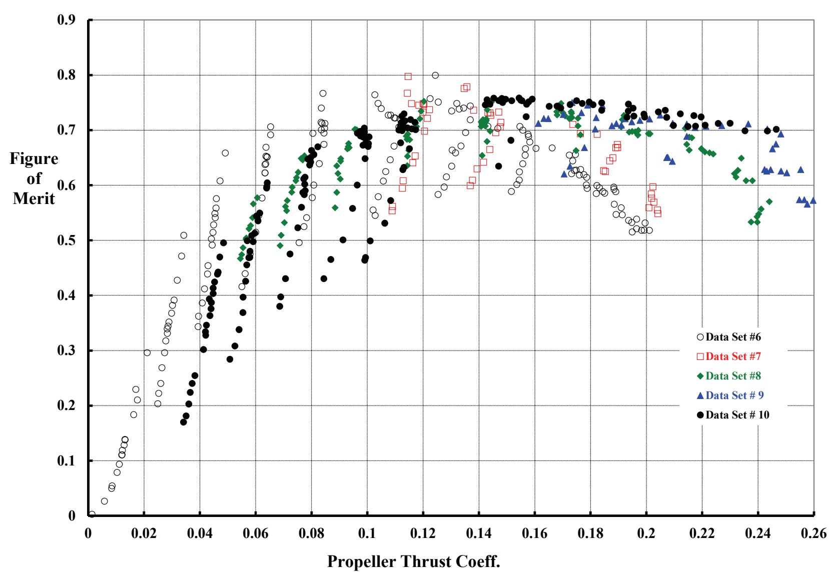




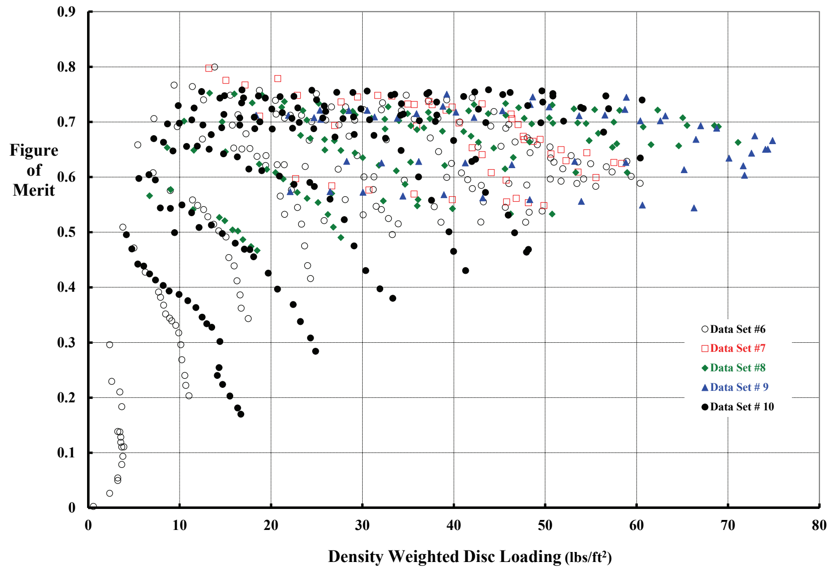
Q. T over HP vs DL-Walls Dn PT 1



R. FM vs CT-Walls Dn PT 1



S. FM vs DL-Walls Dn PT 1



T. Data Set # 11

DATA SET Number 11

XC-142A (SK 59868-0)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
Square Tip	97.8	16.600	4	20.6	528.770	0.957

Power weighted solidity = 0.15938
Twist (0.25R -Tip in deg) = 35.0

$C_T = 0.1515 \frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(D_{ft}/10)^4}$ $C_P = 0.500 \frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(D_{ft}/10)^5}$ $FM = 0.798 \frac{C_T^{1.5}}{C_P}$

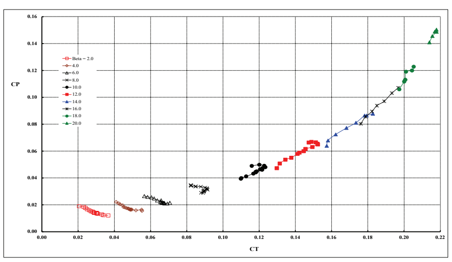
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

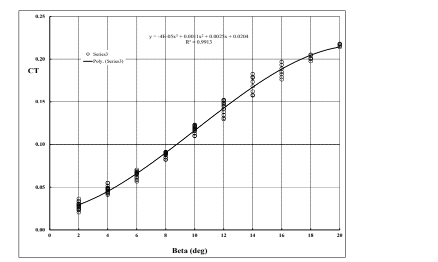
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
108	??	Down	2.00	692	101	878	0.534	0.03658	0.01209	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	821	172	1148	0.633	0.03398	0.01233	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	939	269	1463	0.724	0.03310	0.01289	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1052	392	1713	0.811	0.03088	0.01336	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1077	426	1765	0.833	0.03036	0.01353	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1094	455	1819	0.843	0.03032	0.01378	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1122	498	1900	0.865	0.03011	0.01399	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1159	550	1943	0.893	0.02886	0.01401	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1189	611	2028	0.916	0.02862	0.01442	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1215	676	2070	0.936	0.02798	0.01495	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1242	735	2090	0.957	0.02703	0.01522	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1273	835	2121	0.981	0.02611	0.01606	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1306	939	2131	1.007	0.02493	0.01672	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1331	1052	2131	1.026	0.02400	0.01770	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1358	1165	2131	1.047	0.02305	0.01845	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	??	Down	2.00	1388	1278	1984	1.070	0.02055	0.01896	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	689	128	1315	0.530	0.05527	0.01552	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	807	217	1796	0.621	0.05502	0.01638	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	922	315	2212	0.710	0.05192	0.01594	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1043	467	2661	0.803	0.04880	0.01633	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1073	514	2860	0.826	0.04956	0.01650	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1101	557	2985	0.847	0.04913	0.01655	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1126	601	3090	0.867	0.04863	0.01670	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1156	658	3216	0.890	0.04802	0.01690	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1182	715	3342	0.913	0.04773	0.01717	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1215	792	3465	0.935	0.04683	0.01752	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1252	890	3612	0.964	0.04597	0.01799	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1272	954	3656	0.979	0.04508	0.01839	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1300	1089	3779	1.000	0.04461	0.01966	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1336	1225	3864	1.028	0.04319	0.02038	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1359	1332	3928	1.046	0.04243	0.02105	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
109	??	Down	4.00	1397	1524	4010	1.075	0.04100	0.02217	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	701	187	1740	0.540	0.07065	0.02153	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	805	276	2250	0.620	0.06927	0.02099	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	924	418	2896	0.712	0.06768	0.02102	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1048	622	3708	0.808	0.06736	0.02144	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1072	666	3896	0.826	0.06764	0.02144	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1097	716	4042	0.845	0.06701	0.02151	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1126	774	4219	0.868	0.06639	0.02151	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1154	843	4417	0.889	0.06618	0.02176	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1182	915	4583	0.911	0.06545	0.02198	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1213	1000	4833	0.935	0.06554	0.02223	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1240	1123	5075	0.952	0.06585	0.02336	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1267	1195	5125	0.976	0.06370	0.02331	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1313	1410	5355	1.012	0.06197	0.02471	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1334	1530	5400	1.029	0.06054	0.02557	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1361	1645	5420	1.049	0.05838	0.02588	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
110	111	Down	6.00	1388	1787	5460	1.069	0.05654	0.02651	2.1331	0.4048	3.0554		25.23	3.0554	0.4048	1,206	1,129
111	122	Down	8.00	696	246	2160	0.538	0.08896	0.02894	3.0738	0.7316	8.7805		9.98	8.7805	0.7316	605	1,124
111	122	Down	8.00	810	388	2892	0.626	0.08794	0.02896	3.0367	0.7186	7.4536		13.36	7.4536	0.7186	704	1,125
111	122	Down	8.00	921	584	3802	0.712	0.08943	0.02965	3.0158	0.7197	6.5103		17.57	6.5103	0.7197	801	1,124
111	122	Down	8.00	1050	884	4940	0.812	0.08940	0.03029	2.9513	0.7042	5.5882		22.83	5.5882	0.7042	913	1,124
111	122	Down	8.00	1073	935	5145	0.829	0.08916	0.03002	2.9698	0.7076	5.5027		23.77	5.5027	0.7076	933	1,125
111	122	Down	8.00	1103	1030	5455	0.852	0.08946	0.03045	2.9382	0.7013	5.2961		25.21	5.2961	0.7013	959	1,125
111	122	Down	8.00	1128	1115	5725	0.872	0.08977	0.03082	2.9131	0.6965	5.1345		26.45	5.1345	0.6965	980	1,124
111	122	Down	8.00	1155	1214	6118	0.893	0.09150	0.03125	2.9277	0.7067	5.0395		28.27	5.0395	0.7067	1,004	1,124
111	122	Down	8.00	1185	1325	6404	0.916	0.09099	0.03159	2.8807	0.6934	4.8332		29.59	4.8332	0.6934	1,030	1,124
111	122	Down	8.00	1211	1423	6700	0.936	0.09115	0.03178	2.8679	0.6910	4.7084		30.96	4.7084	0.6910	1,053	1,125
111	122	Down	8.00	1244	1575	7065	0.961	0.09109	0.03245	2.8067	0.6760	4.4857		32.64	4.4857	0.6760	1,081	1,125
111	122	Down	8.00	1269	1686	7275	0.981	0.09013	0.03273	2.7542	0.6598	4.3149		33.61	4.3149	0.6598	1,103	1,124
111	122	Down	8.00	1303	1870	7470	1.007	0.08778	0.03353	2.6180	0.6190	3.9947		34.52	3.9947	0.6190	1,133	1,125
111	122	Down	8.00	1327	1982	7480	1.026	0.08475	0.03364	2.5190	0.5852	3.7740		34.56	3.7740	0.5852	1,153	1,124
111	122	Down	8.00	1332	2010	7560	1.029	0.08501	0.03374	2.5199	0.5863	3.7612		34.93	3.7612	0.5863	1,158	1,125
111	122	Down	8.00	1360	2165	7624	1.051	0.08224	0.03414	2.4089	0.5513	3.5215		35.23	3.5215	0.5513	1,182	1,125
111	122	Down	8.00	1363	2197	7685	1.053	0.08253	0.03442	2.3981	0.5498	3.4980		35.51	3.4980	0.5498	1,185	1,125
111	122	Down	8.00	1372	2259	7751	1.060	0.08215	0.03470	2.3678	0.5416	3.4312		35.81	3.4312	0.5416	1,193	1,125
112	??	Down	10.00	704	347	2729	0.545	0.10986	0.03945	2.7848	0.7366	7.8646		12.61	7.8646	0.7366	612	1,123
112	??	Down	10.00	811	537	3630	0.628	0.11011	0.03993	2.7574	0.7302	6.7598		16.77	6.7598	0.7302	705	1,122
112	??	Down	10.00	927	827	4858	0.718	0.11279	0.04118	2.7389	0.7340	5.8742		22.45	5.8742	0.7340	806	1,122
112	??	Down	10.00	1041	1230	6341	0.806	0.11674	0.04325	2.6993	0.7360	5.1553		29.30	5.1553	0.7360	905	1,123
112	??	Down	10.00	1069	1371	6760	0.829	0.11802	0.04452	2.6512	0.7268	4.9307		31.23	4.9307	0.7268	929	1,121
112	??	Down	10.00	1097	1471	7127	0.850	0.11816	0.04420	2.6733	0.7333	4.8450		32.93	4.8450	0.7333	953	1,122
112	??	Down	10.00	1125	1614	7520	0.872	0.11855	0.04497	2.6364	0.7244	4.6592		34.75	4.6592	0.7244	978	1,121
112	??	Down	10.00	1153	1780	8100	0.893	0.12156	0.04606	2.6390	0.7343	4.5506		37.43	4.5506	0.7343	1,002	1,122
112	??	Down	10.00	1181	1929	8420	0.916	0.12045	0.04645	2.5929	0.7181	4.3650		38.91	4.3650	0.7181	1,026	1,121
112	??	Down	10.00	1218	2159	9060	0.944	0.12185	0.04740	2.5708	0.7161	4.1964		41.86	4.1964	0.7161	1,059	1,121
112	??	Down	10.00	1241	2314	9520	0.961	0.12333	0.04803	2.5680	0.7197	4.1141		43.99	4.1141	0.7197	1,079	1,122
112	??	Down	10.00	1271	2544	9940	0.985	0.12277	0.04915	2.4978	0.6984	3.9072		45.93	3.9072	0.6984	1,105	1,122
112	[illegible]	Down	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.12006	0.04985	2.4084	0.6659	3.6692		47.35	3.6692	0.6659	1,134	1,122
112	[illegible]	Down	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.11587	0.04899	2.3651	0.6425	3.5249		47.75	3.5249	0.6425	1,159	1,122
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.12970	0.04730	2.7422	0.7881	7.8333		14.55	7.8333	0.7881	605	1,127
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.13138	0.05075	2.5889	0.7488	6.3232		20.16	6.3232	0.7488	708	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.13447	0.05361	2.5084	0.7340	5.3741		26.82	5.3741	0.7340	807	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.13770	0.05507	2.5004	0.7404	4.9812		31.76	4.9812	0.7404	867	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14117	0.05796	2.4354	0.7302	4.6423		35.56	4.6423	0.7302	907	1,126
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14221	0.05889	2.4147	0.7267	4.4784		37.85	4.4784	0.7267	932	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14449	0.05989	2.4127	0.7319	4.3648		40.42	4.3648	0.7319	955	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14560	0.06161	2.3634	0.7197	4.1620		42.98	4.1620	0.7197	981	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14933	0.06309	2.3670	0.7299	4.0708		46.21	4.0708	0.7299	1,005	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15234	0.06494	2.3461	0.7307	3.9361		49.54	3.9361	0.7307	1,030	1,124
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15212	0.06547	2.3236	0.7232	3.8053		51.92	3.8053	0.7232	1,055	1,126
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15126	0.06656	2.2726	0.7053	3.6291		54.30	3.6291	0.7053	1,082	1,126
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14882	0.06687	2.2254	0.6851	3.4621		56.29	3.4621	0.6851	1,111	1,125
113	[illegible]	Down	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14739	0.06641	2.2194	0.6799	3.4073		57.24	3.4073	0.6799	1,126	1,126
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15729	0.06388	2.4621	0.7792	7.0634		17.49	7.0634	0.7792	602	1,124
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15803	0.06783	2.3299	0.7391	5.7328		23.89	5.7328	0.7391	702	1,124
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.16224	0.07238	2.2415	0.7205	4.7970		32.43	4.7970	0.7205	807	1,123
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.16819	0.07719	2.1790	0.7131	4.3366		38.87	4.3366	0.7131	868	1,123
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17345	0.08106	2.1397	0.7111	4.0826		43.61	4.0826	0.7111	906	1,124
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17823	0.08647	2.0612	0.6944	3.8587		46.55	3.8587	0.6944	923	1,116
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17933	0.08648	2.0736	0.7007	3.7512		50.16	3.7512	0.7007	955	1,124
114	[illegible]	Down	14.00	[illegible]	[illegible]	[illegible]	[illegible]	0.18277	0.08785	2.0804	0.7097	3.6798		53.47	3.6798	0.7097	977	1,124
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17609	0.08025	2.1943	0.7348	6.2500		19.87	6.2500	0.7348	607	1,123
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17875	0.08546	2.0915	0.7056	5.1336		27.16	5.1336	0.7056	704	1,123
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.18234	0.08955	2.0361	0.6938	4.6106		32.55	4.6106	0.6938	763	1,122
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.18500	0.09381	1.9720	0.6769	4.1977		37.38	4.1977	0.6769	812	1,123
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.18900	0.09705	1.9476	0.6757	4.0418		40.17	4.0418	0.6757	833	1,122
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.19332	0.10315	1.8741	0.6576	3.7187		44.95	3.7187	0.6576	871	1,122
115	[illegible]	Down	16.00	[illegible]	[illegible]	[illegible]	[illegible]	0.19679	0.10712	1.8371	0.6503	3.5704		47.69	3.5704	0.6503	889	1,123
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.19735	0.10592	1.8632	0.6605	5.2993		22.33	5.2993	0.6605	608	1,123
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.20004	0.11174	1.7903	0.6390	4.6166		27.54	4.6166	0.6390	670	1,123
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.20066	0.11311	1.7741	0.6342	4.3491		30.56	4.3491	0.6342	705	1,122
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.20105	0.11906	1.6887	0.6042	3.8458		35.49	3.8458	0.6042	759	1,121
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.20436	0.11997	1.7034	0.6145	3.6651		40.41	3.6651	0.6145	803	1,123
116	[illegible]	Down	18.00	[illegible]	[illegible]	[illegible]	[illegible]	0.20530	0.12282	1.6715	0.6044	3.4582		43.91	3.4582	0.6044	835	1,123
117	[illegible]	Down	20.00	[illegible]	[illegible]	[illegible]	[illegible]	0.21397	0.14088	1.5188	0.5606	4.3199		24.21	4.3199	0.5606	608	1,121
117	[illegible]	Down	20.00	[illegible]	[illegible]	[illegible]	[illegible]	0.21564	0.14563	1.4808	0.5487	3.8334		29.46	3.8334	0.5487	668	1,120
117	[illegible]	Down	20.00	[illegible]	[illegible]	[illegible]	[illegible]	0.21801	0.14871	1.4660	0.5462	3.5806		33.45	3.5806	0.5462	708	1,121
117	[illegible]	Down	20.00	[illegible]	[illegible]	[illegible]	[illegible]	0.21698	0.14881	1.4581	0.5420	3.4066	3.4040	36.39	3.4066	0.5420	740	1,121
117	[illegible]	Down	20.00	[illegible]	[illegible]	[illegible]	[illegible]	0.21786	0.15036	1.4489	0.5397	3.2998		38.45	3.2998	0.5397	759	1,121

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed)	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
108	2.0	0.725	270	1447	818	941	0.0326	0.0129	2.537	0.365	5.359	6.69	5.359	0.3655
108	2.0	0.750	304	1524	846	973	0.0321	0.0131	2.453	0.351	5.013	7.04	5.013	0.3509
108	2.0	0.775	340	1602	874	1005	0.0316	0.0133	2.382	0.338	4.712	7.40	4.712	0.3381
108	2.0	0.800	378	1680	902	1038	0.0311	0.0134	2.320	0.327	4.444	7.76	4.444	0.3266
108	2.0	0.825	420	1765	930	1070	0.0308	0.0136	2.262	0.317	4.202	8.16	4.202	0.3165
108	2.0	0.850	466	1840	959	1102	0.0302	0.0138	2.189	0.304	3.948	8.50	3.948	0.3037
108	2.0	0.875	515	1917	987	1136	0.0296	0.0139	2.127	0.292	3.722	8.86	3.722	0.2922
108	2.0	0.900	571	1981	1015	1168	0.0290	0.0142	2.038	0.277	3.469	9.15	3.469	0.2768
108	2.0	0.925	635	2037	1043	1200	0.0282	0.0146	1.936	0.260	3.208	9.41	3.208	0.2596
108	2.0	0.950	716	2090	1071	1233	0.0274	0.0152	1.810	0.239	2.919	9.66	2.919	0.2392
108	2.0	0.975	806	2114	1099	1265	0.0264	0.0158	1.669	0.216	2.623	9.77	2.623	0.2162
108	2.0	1.000	913	2124	1128	1297	0.0252	0.0166	1.518	0.192	2.326	9.81	2.326	0.1922
109	4.0	0.750	378	2408	847	975	0.0505	0.0162	3.124	0.560	6.370	11.13	6.370	0.5604
109	4.0	0.775	420	2549	875	1007	0.0502	0.0163	3.074	0.549	6.069	11.78	6.069	0.5494
109	4.0	0.800	464	2688	904	1040	0.0496	0.0164	3.030	0.538	5.793	12.42	5.793	0.5385
109	4.0	0.825	512	2840	931	1072	0.0493	0.0165	2.991	0.530	5.547	13.12	5.547	0.5300
109	4.0	0.850	563	2999	959	1104	0.0491	0.0166	2.958	0.523	5.327	13.86	5.327	0.5230
109	4.0	0.875	621	3140	987	1137	0.0485	0.0168	2.892	0.508	5.056	14.51	5.056	0.5080
109	4.0	0.900	687	3280	1015	1169	0.0479	0.0171	2.807	0.490	4.774	15.16	4.774	0.4902
109	4.0	0.925	760	3419	1043	1202	0.0472	0.0174	2.720	0.472	4.499	15.80	4.499	0.4716
109	4.0	0.950	839	3540	1072	1234	0.0464	0.0177	2.619	0.450	4.219	16.36	4.219	0.4501
109	4.0	0.975	946	3656	1101	1267	0.0454	0.0184	2.463	0.419	3.865	16.89	3.865	0.4189
109	4.0	1.000	1069	3763	1129	1299	0.0445	0.0193	2.300	0.387	3.520	17.39	3.520	0.3871
110	6.0	0.725	443	3008	818	941	0.0678	0.0211	3.214	0.668	6.790	13.90	6.790	0.6677
110	6.0	0.750	493	3212	846	973	0.0677	0.0212	3.189	0.662	6.515	14.84	6.515	0.6620
110	6.0	0.775	546	3422	874	1006	0.0675	0.0213	3.171	0.657	6.267	15.81	6.267	0.6573
110	6.0	0.800	603	3640	902	1038	0.0674	0.0214	3.152	0.653	6.036	16.82	6.036	0.6529
110	6.0	0.825	663	3855	931	1071	0.0670	0.0214	3.132	0.647	5.814	17.81	5.814	0.6472
110	6.0	0.850	727	4085	959	1103	0.0670	0.0215	3.117	0.644	5.619	18.87	5.619	0.6439
110	6.0	0.875	798	4282	987	1136	0.0662	0.0216	3.066	0.630	5.366	19.79	5.366	0.6295
110	6.0	0.900	876	4504	1015	1166	0.0661	0.0219	3.015	0.619	5.142	20.81	5.142	0.6186
110	6.0	0.925	966	4737	1043	1201	0.0655	0.0221	2.962	0.605	4.904	21.89	4.904	0.6051
110	6.0	0.950	1066	4953	1072	1233	0.0650	0.0226	2.882	0.586	4.646	22.89	4.646	0.5863
110	6.0	0.975	1189	5146	1100	1265	0.0642	0.0233	2.754	0.557	4.328	23.78	4.328	0.5566
110	6.0	1.000	1335	5288	1128	1298	0.0626	0.0242	2.586	0.516	3.961	24.43	3.961	0.5164
111	8.0	0.725	618	3925	815	938	0.0890	0.0297	2.996	0.713	6.351	18.14	6.351	0.7134
111	8.0	0.750	688	4204	843	970	0.0891	0.0299	2.981	0.710	6.110	19.42	6.110	0.7103
111	8.0	0.775	763	4493	872	1003	0.0891	0.0300	2.971	0.708	5.889	20.76	5.889	0.7077
111	8.0	0.800	843	4793	900	1035	0.0893	0.0302	2.960	0.706	5.686	22.15	5.686	0.7057
111	8.0	0.825	930	5110	928	1067	0.0896	0.0304	2.949	0.704	5.495	23.61	5.495	0.7042
111	8.0	0.850	1023	5437	956	1100	0.0897	0.0305	2.941	0.703	5.315	25.12	5.315	0.7026
111	8.0	0.875	1131	5806	984	1132	0.0904	0.0309	2.923	0.701	5.134	26.83	5.134	0.7013
111	8.0	0.900	1245	6186	1012	1164	0.0911	0.0313	2.909	0.701	4.969	28.58	4.969	0.7006
111	8.0	0.925	1371	6560	1040	1197	0.0913	0.0317	2.881	0.695	4.785	30.31	4.785	0.6948
111	8.0	0.950	1504	6901	1068	1229	0.0912	0.0321	2.836	0.683	4.588	31.89	4.588	0.6834
111	8.0	0.975	1655	7215	1096	1262	0.0904	0.0327	2.767	0.664	4.360	33.34	4.360	0.6639
111	8.0	1.000	1815	7421	1125	1294	0.0884	0.0332	2.661	0.631	4.089	34.29	4.089	0.6315
112	10.0	0.725	857	4961	813	936	0.1130	0.0415	2.725	0.731	5.789	22.92	5.789	0.7310
112	10.0	0.750	963	5350	841	969	0.1137	0.0420	2.708	0.729	5.556	24.72	5.556	0.7285
112	10.0	0.775	1077	5759	869	1000	0.1149	0.0427	2.690	0.728	5.347	26.61	5.347	0.7275
112	10.0	0.800	1200	6189	898	1033	0.1157	0.0432	2.680	0.727	5.158	28.60	5.158	0.7274
112	10.0	0.825	1332	6644	926	1065	0.1169	0.0437	2.672	0.729	4.988	30.70	4.988	0.7289
112	10.0	0.850	1481	7128	954	1097	0.1182	0.0445	2.656	0.729	4.813	32.94	4.813	0.7285
112	10.0	0.875	1636	7630	981	1129	0.1194	0.0451	2.648	0.730	4.664	35.25	4.664	0.7304
112	10.0	0.900	1810	8182	1010	1162	0.1209	0.0458	2.642	0.733	4.520	37.81	4.520	0.7331
112	10.0	0.925	2010	8795	1038	1194	0.1231	0.0468	2.628	0.736	4.376	40.64	4.376	0.7357
112	10.0	0.950	2217	9332	1066	1226	0.1239	0.0477	2.596	0.729	4.209	43.12	4.209	0.7290
112	10.0	0.975	2432	9771	1094	1258	0.1232	0.0485	2.542	0.712	4.018	45.15	4.018	0.7120
112	10.0	1.000	2697	10300	1122	1291	0.1233	0.0497	2.480	0.695	3.819	47.59	3.819	0.6949
113	12.0	0.725	1128	5979	816	939	0.1353	0.0540	2.503	0.735	5.301	27.63	5.301	0.7348
113	12.0	0.750	1276	6474	844	971	0.1370	0.0553	2.478	0.732	5.074	29.91	5.074	0.7319
113	12.0	0.775	1428	6982	872	1004	0.1382	0.0560	2.469	0.732	4.889	32.26	4.889	0.7325
113	12.0	0.800	1608	7546	900	1036	0.1403	0.0574	2.445	0.731	4.693	34.87	4.693	0.7309
113	12.0	0.825	1803	8138	929	1068	0.1423	0.0587	2.425	0.730	4.514	37.60	4.514	0.7300
113	12.0	0.850	2016	8737	957	1101	0.1438	0.0599	2.400	0.726	4.334	40.37	4.334	0.7263
113	12.0	0.875	2263	9449	985	1133	0.1469	0.0617	2.379	0.728	4.175	43.66	4.175	0.7277
113	12.0	0.900	2530	10199	1013	1165	0.1499	0.0635	2.362	0.730	4.031	47.13	4.031	0.7299
113	12.0	0.925	2815	10926	1041	1198	0.1519	0.0649	2.339	0.727	3.881	50.48	3.881	0.7274
113	12.0	0.950	3109	11534	1069	1230	0.1521	0.0663	2.295	0.714	3.710	53.29	3.710	0.7143
113	12.0	0.975	3383	12025	1097	1263	0.1504	0.0666	2.258	0.699	3.555	55.56	3.555	0.6988
113	12.0	1.000	3643	12369	1126	1295	0.1472	0.0665	2.212	0.677	3.395	57.15	3.395	0.6770
114	14.0	0.725	1530	7210	815	937	0.1638	0.0738	2.221	0.717	4.712	33.31	4.712	0.7174
114	14.0	0.750	1752	7843	843	970	0.1663	0.0761	2.184	0.711	4.477	36.24	4.477	0.7108
114	14.0	0.775	1976	8490	871	1002	0.1687	0.0779	2.165	0.710	4.297	39.23	4.297	0.7098
114	14.0	0.800	2255	9227	899	1034	0.1722	0.0809	2.128	0.705	4.092	42.63	4.092	0.7047
114	14.0	0.825	2557	10021	927	1067	0.1756	0.0835	2.103	0.703	3.919	46.30	3.919	0.7034
114	14.0	0.850	2885	10868	955	1099	0.1795	0.0862	2.082	0.704	3.767	50.22	3.767	0.7041
116	16.00	0.725	1958	8184	814	936	0.1864	0.0947	1.968	0.678	4.180	37.81	4.180	0.6779
116	16.00	0.750	2266	8922	842	969	0.1896	0.0988	1.919	0.667	3.937	41.22	3.937	0.6668
116	16.00	0.775	2616	9723	870	1001	0.1936	0.1035	1.871	0.657	3.717	44.93	3.717	0.6571
116	18.0	0.725	2511	8976	814	936	0.2044	0.1215	1.683	0.607	3.575	41.47	3.575	0.6072





U. Data Set # 12

DATA SET Number 12

XC-142A (SK 59868-0R)
Round Tip

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
89.0	15.600	4	20.6	528.770	0.957

Power weighted solidity = 0.14504
Twist (0.25R -Tip in deg) = 35.0

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

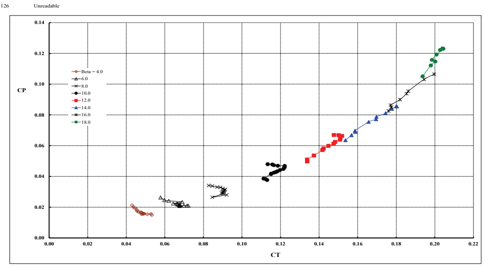
$$C_T = 0.1515\frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

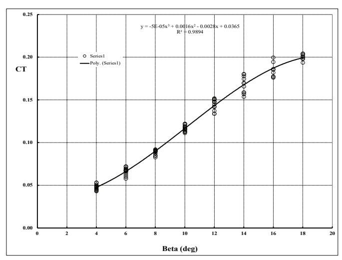
REDUCED TEST DATA POINTS (Harris Computed →)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
118	142	Down	4.00	700	129	1307	0.540	0.05322	0.01492	3.5673	0.6567	10.1318	6.04	10.1318	0.6567	608	1,127
118	142	Down	4.00	816	214	1763	0.630	0.05283	0.01562	3.3813	0.6202	8.2383	8.15	8.2383	0.6202	709	1,126
118	142	Down	4.00	929	312	2198	0.717	0.05081	0.01544	3.2918	0.5921	7.0449	10.16	7.0449	0.5921	807	1,126
118	142	Down	4.00	1041	450	2675	0.803	0.04925	0.01582	3.1125	0.5512	5.9444	12.36	5.9444	0.5512	905	1,127
118	142	Down	4.00	1072	488	2820	0.827	0.04896	0.01571	3.1158	0.5502	5.7787	13.03	5.7787	0.5502	932	1,127
118	142	Down	4.00	1100	528	2945	0.849	0.04856	0.01574	3.0860	0.5427	5.5777	13.61	5.5777	0.5427	956	1,126
118	142	Down	4.00	1130	577	3090	0.872	0.04828	0.01586	3.0438	0.5337	5.3553	14.28	5.3553	0.5337	982	1,126
118	142	Down	4.00	1157	604	3215	0.893	0.04792	0.01547	3.0976	0.5411	5.3228 Problem	14.86	5.3228	0.5411	1,006	1,126
118	142	Down	4.00	1192	701	3422	0.920	0.04805	0.01642	2.9268	0.5120	4.8816	15.81	4.8816	0.5120	1,036	1,126
118	142	Down	4.00	1214	752	3505	0.937	0.04745	0.01667	2.8460	0.4947	4.6609	16.20	4.6609	0.4947	1,055	1,126
118	142	Down	4.00	1242	817	3588	0.958	0.04641	0.01692	2.7435	0.4716	4.3917	16.58	4.3917	0.4716	1,080	1,127
118	142	Down	4.00	1272	907	3692	0.981	0.04553	0.01748	2.6043	0.4434	4.0706	17.06	4.0706	0.4434	1,106	1,127
118	142	Down	4.00	1303	1033	3858	1.005	0.04534	0.01852	2.4477	0.4159	3.7348	17.83	3.7348	0.4159	1,133	1,127
118	142	Down	4.00	1333	1156	3961	1.028	0.04448	0.01936	2.2974	0.3866	3.4265	18.30	3.4265	0.3866	1,159	1,127
118	142	Down	4.00	1358	1268	4044	1.048	0.04375	0.02008	2.1784	0.3636	3.1893	18.69	3.1893	0.3636	1,180	1,126
118	142	Down	4.00	1391	1440	4169	1.073	0.04299	0.02122	2.0256	0.3351	2.8951	19.26	2.8951	0.3351	1,209	1,127
119	141	Down	6.00	700	181	1773	0.540	0.07219	0.02093	3.4489	0.7395	9.7956	8.19	9.7956	0.7395	608	1,127
119	141	Down	6.00	812	284	2364	0.627	0.07153	0.02104	3.3997	0.7256	8.3239	10.92	8.3239	0.7256	706	1,126
119	141	Down	6.00	930	426	3028	0.718	0.06985	0.02101	3.3249	0.7012	7.1080	13.99	7.1080	0.7012	808	1,126
119	141	Down	6.00	1038	585	3650	0.801	0.06759	0.02075	3.2575	0.6758	6.2393	16.87	6.2393	0.6758	902	1,126
119	141	Down	6.00	1071	649	3878	0.826	0.06745	0.02096	3.2189	0.6671	5.9753	17.92	5.9753	0.6671	931	1,127
119	141	Down	6.00	1098	700	4085	0.847	0.06760	0.02098	3.2229	0.6687	5.8357	18.87	5.8357	0.6687	954	1,127
119	141	Down	6.00	1133	785	4376	0.874	0.06801	0.02141	3.1768	0.6611	5.5745	20.22	5.5745	0.6611	985	1,127
119	141	Down	6.00	1161	853	4563	0.896	0.06754	0.02162	3.1238	0.6478	5.3494	21.08	5.3494	0.6478	1,009	1,126
119	141	Down	6.00	1190	921	4749	0.918	0.06691	0.02168	3.0863	0.6371	5.1564	21.94	5.1564	0.6371	1,034	1,127
119	141	Down	6.00	1217	999	4936	0.939	0.06649	0.02198	3.0245	0.6224	4.9409	22.81	4.9409	0.6224	1,058	1,127
119	141	Down	6.00	1245	1085	5144	0.961	0.06621	0.02230	2.9689	0.6096	4.7410	23.77	4.7410	0.6096	1,082	1,126
119	141	Down	6.00	1273	1164	5226	0.982	0.06434	0.02238	2.8747	0.5819	4.4897	24.15	4.4897	0.5819	1,106	1,127
119	141	Down	6.00	1305	1313	5892	1.007	0.06903	0.02343	2.9455	0.6176	4.4874 Problem	27.22	4.4874	0.6176	1,134	1,126
119	141	Down	6.00	1332	1439	5517	1.028	0.06204	0.02415	2.5686	0.5105	3.8339	25.49	3.8339	0.5105	1,158	1,126
119	141	Down	6.00	1360	1561	5538	1.049	0.05974	0.02462	2.4268	0.4733	3.5477	25.59	3.5477	0.4733	1,182	1,127
119	141	Down	6.00	1391	1782	5600	1.073	0.05774	0.02626	2.1987	0.4216	3.1425	25.88	3.1425	0.4216	1,209	1,127
120	??	Down	8.00	694	236	2221	0.535	0.09200	0.02801	3.2851	0.7952	9.4110	10.26	9.4110	0.7952	603	1,127
120	??	Down	8.00	811	356	2789	0.626	0.08460	0.02647	3.1957	0.7418	7.8343 Problem	12.89	7.8343	0.7418	705	1,126
120	??	Down	8.00	926	575	3882	0.714	0.09033	0.02873	3.1445	0.7542	6.7513	17.94	6.7513	0.7542	805	1,127
120	??	Down	8.00	1041	837	4899	0.803	0.09020	0.02943	3.0647	0.7345	5.8530	22.64	5.8530	0.7345	905	1,127
120	??	Down	8.00	1072	908	5148	0.827	0.08938	0.02924	3.0570	0.7293	5.6696	23.79	5.6696	0.7293	932	1,127
120	??	Down	8.00	1101	1007	5460	0.849	0.08987	0.02993	3.0026	0.7183	5.4220	25.23	5.4220	0.7183	957	1,127
120	??	Down	8.00	1130	1099	5792	0.872	0.09050	0.03021	2.9954	0.7191	5.2702	26.76	5.2702	0.7191	982	1,126
120	??	Down	8.00	1159	1192	6083	0.894	0.09035	0.03037	2.9749	0.7136	5.1032	28.11	5.1032	0.7136	1,007	1,127
120	??	Down	8.00	1187	1299	6414	0.916	0.09083	0.03081	2.9480	0.7090	4.9376	29.64	4.9376	0.7090	1,032	1,126
120	??	Down	8.00	1217	1420	6747	0.939	0.09089	0.03125	2.9085	0.6997	4.7514	31.17	4.7514	0.6997	1,058	1,127
120	??	Down	8.00	1244	1532	7079	0.960	0.09127	0.03157	2.8912	0.6970	4.6208	32.71	4.6208	0.6970	1,081	1,126
120	??	Down	8.00	1274	1675	7328	0.983	0.09008	0.03213	2.8034	0.6714	4.3749	33.86	4.3749	0.6714	1,107	1,126
120	??	Down	8.00	1305	1840	7577	1.007	0.08877	0.03284	2.7030	0.6426	4.1179	35.01	4.1179	0.6426	1,134	1,126
120	??	Down	8.00	1330	1961	7723	1.025	0.08711	0.03306	2.6346	0.6205	3.9383	35.68	3.9383	0.6205	1,156	1,128
120	??	Down	8.00	1362	2151	7868	1.051	0.08462	0.03377	2.5058	0.5817	3.6578	36.35	3.6578	0.5817	1,184	1,126
120	??	Down	8.00	1390	2310	8013	1.072	0.08275	0.03412	2.4252	0.5567	3.4688	37.02	3.4688	0.5567	1,208	1,127
121	??	Down	10.00	705	333	2815	0.540	0.11300	0.03770	2.9976	0.8041	8.4535	13.01	8.4535	0.8041	613	1,135
121	??	Down	10.00	806	505	3655	0.617	0.11225	0.03826	2.9341	0.7845	7.2376	16.89	7.2376	0.7845	701	1,135
121	??	Down	10.00	920	758	4718	0.704	0.11121	0.03861	2.8802	0.7665	6.2243	21.80	6.2243	0.7665	800	1,136
121	??	Down	10.00	1037	1168	6200	0.794	0.11503	0.04155	2.7687	0.7494	5.3082	28.65	5.3082	0.7494	901	1,135
121	??	Down	10.00	1071	1295	6620	0.820	0.11515	0.04181	2.7538	0.7457	5.1120	30.59	5.1120	0.7457	931	1,135
121	??	Down	10.00	1101	1429	7080	0.843	0.11653	0.04247	2.7437	0.7474	4.9545	32.71	4.9545	0.7474	957	1,135
121	??	Down	10.00	1128	1553	7500	0.864	0.11760	0.04292	2.7400	0.7498	4.8294	34.65	4.8294	0.7498	980	1,135
121	??	Down	10.00	1156	1688	7923	0.885	0.11829	0.04334	2.7291	0.7490	4.6937	36.61	4.6937	0.7490	1,005	1,135
121	??	Down	10.00	1187	1863	8450	0.909	0.11966	0.04419	2.7080	0.7475	4.5357	39.04	4.5357	0.7475	1,032	1,135
121	??	Down	10.00	1217	2040	9015	0.932	0.12144	0.04489	2.7051	0.7522	4.4191	41.65	4.4191	0.7522	1,058	1,135
121	??	Down	10.00	1242	2220	9435	0.951	0.12203	0.04596	2.6550	0.7401	4.2500	43.59	4.2500	0.7401	1,080	1,135
121	??	Down	10.00	1268	2409	9840	0.971	0.12211	0.04687	2.6051	0.7264	4.0847	45.47	4.0847	0.7264	1,102	1,135
121	??	Down	10.00	1310	2662	10195	1.003	0.11853	0.04697	2.5235	0.6933	3.8298	47.11	3.8298	0.6933	1,139	1,135
121	??	Down	10.00	1336	2845	10420	1.023	0.11648	0.04733	2.4612	0.6703	3.6626	48.15	3.6626	0.6703	1,161	1,135
121	??	Down	10.00	1357	3010	10680	1.039	0.11572	0.04778	2.4218	0.6574	3.5482	49.35	3.5482	0.6574	1,179	1,135
121	??	Down	10.00	1386	3220	10910	1.061	0.11331	0.04797	2.3620	0.6345	3.3882	50.41	3.3882	0.6345	1,205	1,135
122	136	Down	12.00	700	430	3286	0.540	0.13380	0.04973	2.6906	0.7854	7.6419	15.18	7.6419	0.7854	608	1,127
122	136	Down	12.00	811	686	4410	0.625	0.13378	0.05101	2.6223	0.7654	6.4286	20.38	6.4286	0.7654	705	1,128
122	136	Down	12.00	930	1087	5949	0.717	0.13723	0.05361	2.5600	0.7568	5.4729	27.49	5.4729	0.7568	808	1,127
122	136	Down	12.00	1048	1658	7800	0.808	0.14169	0.05714	2.4798	0.7449	4.7045	36.04	4.7045	0.7449	911	1,127
122	136	Down	12.00	1068	1787	8133	0.823	0.14226	0.05819	2.4448	0.7359	4.5512	37.58	4.5512	0.7359	928	1,128
122	136	Down	12.00	1105	2036	8861	0.852	0.14479	0.05986	2.4189	0.7345	4.3522	40.94	4.3522	0.7345	960	1,127
122	136	Down	12.00	1130	2231	9443	0.871	0.14755	0.06133	2.4057	0.7374	4.2326	43.63	4.2326	0.7374	982	1,128
122	136	Down	12.00	1159	2453	9984	0.893	0.14829	0.06250	2.3727	0.7291	4.0701	46.13	4.0701	0.7291	1,007	1,128
122	136	Down	12.00	1187	2694	10649	0.915	0.15080	0.06390	2.3600	0.7313	3.9529	49.20	3.9529	0.7313	1,032	1,128
122	136	Down	12.00	1214	2928	11149	0.936	0.15093	0.06491	2.3251	0.7208	3.8077	51.51	3.8077	0.7208	1,055	1,127
122	136	Down	12.00	1245	3228	11794	0.960	0.15181	0.06635	2.2880	0.7114	3.6537	54.49	3.6537	0.7114	1,082	1,127
122	136	Down	12.00	1275	3493	12230	0.983	0.15010	0.06685	2.2454	0.6942	3.5013	56.51	3.5013	0.6942	1,108	1,127
122	136	Down	12.00	1303	3735	12563	1.004	0.14763	0.06697	2.2044	0.6759	3.3636	58.05	3.3636	0.6759	1,133	1,128
123	??	Down	14.00	695	538	3720	0.534	0.15366	0.06357	2.4171	0.7561	6.9145	17.19	6.9145	0.7561	604	1,131
123	??	Down	14.00	814	909	5207	0.625	0.15679	0.06685	2.3453	0.7411	5.7283	24.06	5.7283	0.7411	708	1,132
123	??	Down	14.00	877	1174	6125	0.673	0.15889	0.06904	2.3014	0.7320	5.2172	28.30	5.2172	0.7320	762	1,133
123	??	Down	14.00	923	1383	6773	0.709	0.15862	0.06977	2.2736	0.7226	4.8973	31.30	4.8973	0.7226	802	1,132
123	??	Down	14.00	995	1873	8220	0.766	0.16566	0.07542	2.1964	0.7134	4.3887	37.98	4.3887	0.7134	865	1,129
123	??	Down	14.00	1040	2190	9190	0.798	0.16952	0.07723	2.1951	0.7212	4.1963	42.46	4.1963	0.7212	904	1,133
123	??	Down	14.00	1070	2433	9740	0.821	0.16974	0.07878	2.1545	0.7083	4.0033	45.00	4.0033	0.7083	930	1,133
123	??	Down	14.00	1100	2721	10580	0.844	0.17445	0.08109	2.1513	0.7170	3.8883	48.89	3.8883	0.7170	956	1,133
123	??	Down	14.00	1131	3061	11395	0.868	0.17773	0.08393	2.1177	0.7124	3.7226	52.65	3.7226	0.7124	983	1,133
123	??	Down	14.00	1156	3329	12080	0.887	0.18036	0.08548	2.1099	0.7150	3.6287	55.82	3.6287	0.7150	1,005	1,133
123	??	Down	14.00	1159	3363	12120	0.890	0.18002	0.08569	2.1009	0.7113	3.6039	56.00	3.6039	0.7113	1,007	1,132
124	??	Down	16.00	700	714	4322	0.540	0.17598	0.08257	2.1313	0.7135	6.0532	19.97	6.0532	0.7135	608	1,127
124	??	Down	16.00	778	1011	5382	0.600	0.17740	0.08516	2.0832	0.7002	5.3234	24.87	5.3234	0.7002	676	1,127
124	??	Down	16.00	814	1174	5881	0.628	0.17709	0.08634	2.0510	0.6887	5.0094	27.17	5.0094	0.6887	708	1,127
124	??	Down	16.00	875	1520	6982	0.675	0.18195	0.09000	2.0216	0.6881	4.5934	32.26	4.5934	0.6881	761	1,127
124	??	Down	16.00	928	1891	8000	0.715	0.18534	0.09386	1.9747	0.6784	4.2306	36.96	4.2306	0.6784	807	1,128
124	??	Down	16.00	960	2129	8603	0.740	0.18625	0.09545	1.9512	0.6720	4.0409	39.75	4.0409	0.6720	834	1,128
124	??	Down	16.00	999	2591	9725	0.770	0.19442	0.10309	1.8860	0.6636	3.7534	44.93	3.7534	0.6636	868	1,128
124	??	Down	16.00	1020	2849	10411	0.786	0.19965	0.10649	1.8748	0.6685	3.6543	48.10	3.6543	0.6685	887	1,128
125	??	Down	18.00	698	901	4729	0.539	0.19366	0.10510	1.8427	0.6471	5.2486	21.85	5.2486	0.6471	607	1,126
125	??	Down	18.00	780	1342	6035	0.602	0.19791	0.11218	1.7643	0.6263	4.4970	27.89	4.4970	0.6263	678	1,126
125	??	Down	18.00	812	1549	6616	0.627	0.20020	0.11477	1.7444	0.6229	4.2711	30.57	4.2711	0.6229	706	1,126
125	??	Down	18.00	871	1929	7549	0.672	0.19853	0.11580	1.7145	0.6096	3.9134	34.88	3.9134	0.6096	757	1,127
125	??	Down	18.00	929	2411	8690	0.717	0.20089	0.11928	1.6842	0.6024	3.6043	40.15	3.6043	0.6024	807	1,126
125	??	Down	18.00	962	2762	9478	0.742	0.20434	0.12306	1.6604	0.5990	3.4316	43.79	3.4316	0.5990	836	1,127
125	??	Down	18.00	965	2792	9519	0.745	0.20395	0.12324	1.6548	0.5964	3.4094	43.98	3.4094	0.5964	839	1,126
125	??	Down	18.00	969	2803	9540	0.748	0.20271	0.12220	1.6588	0.5960	3.4035	44.08	3.4035	0.5960	842	1,126
126	Unreadable																

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed →)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
118	4.0	0.725	327	2250	817.0	940.000	0.0508	0.0156	3.253	0.585	6.881	10.40	6.881	0.5852
118	4.0	0.750	363	2385	845.0	972.000	0.0504	0.0157	3.212	0.575	6.570	11.02	6.570	0.5753
118	4.0	0.775	402	2523	873.0	1004.000	0.0499	0.0158	3.169	0.565	6.276	11.66	6.276	0.5652
118	4.0	0.800	442	2663	901.0	1037.000	0.0494	0.0157	3.143	0.557	6.025	12.30	6.025	0.5574
118	4.0	0.825	485	2804	929.0	1069.000	0.0490	0.0157	3.109	0.549	5.781	12.96	5.781	0.5489
118	4.0	0.850	526	2950	958.0	1102.00	0.0485	0.0156	3.109	0.546	5.608	13.63	5.608	0.5461
118	4.0	0.875	575	3111	986.0	1134.00	0.0483	0.0156	3.086	0.541	5.410	14.37	5.410	0.5410
118	4.0	0.900	638	3283	1014.0	1166.00	0.0482	0.0160	3.018	0.529	5.146	15.17	5.146	0.5286
118	4.0	0.925	710	3437	1042.0	1199.00	0.0477	0.0163	2.919	0.509	4.841	15.88	4.841	0.5088
118	4.0	0.950	793	3561	1070.0	1231.00	0.0469	0.0169	2.780	0.480	4.491	16.45	4.491	0.4804
118	4.0	0.975	884	3675	1098.0	1264.00	0.0459	0.0174	2.643	0.452	4.157	16.98	4.157	0.4518
118	4.0	1.000	1000	3807	1127.0	1296.00	0.0452	0.0182	2.482	0.421	3.807	17.59	3.807	0.4211
119	6.0	0.725	439	3076	817	940	0.0695	0.0210	3.313	0.697	7.007	14.21	7.007	0.6967
119	6.0	0.750	486	3269	845	972	0.0690	0.0210	3.288	0.689	6.726	15.10	6.726	0.6895
119	6.0	0.775	536	3467	873	1004	0.0686	0.0210	3.266	0.683	6.468	16.02	6.468	0.6828
119	6.0	0.800	589	3669	901	1037	0.0681	0.0210	3.249	0.676	6.229	16.95	6.229	0.6765
119	6.0	0.825	648	3886	929	1069	0.0678	0.0210	3.224	0.670	5.997	17.96	5.997	0.6702
119	6.0	0.850	713	4126	958	1102	0.0678	0.0211	3.208	0.666	5.787	19.06	5.787	0.6664
119	6.0	0.875	785	4371	986	1134	0.0678	0.0214	3.176	0.660	5.568	20.20	5.568	0.6600
119	6.0	0.900	864	4597	1014	1166	0.0675	0.0216	3.120	0.647	5.321	21.24	5.321	0.6468
119	6.0	0.925	949	4826	1042	1199	0.0670	0.0218	3.067	0.633	5.085	22.30	5.085	0.6334
119	6.0	0.950	1036	4984	1070	1231	0.0656	0.0220	2.979	0.609	4.811	23.03	4.811	0.6089
119	6.0	0.975	1142	5320	1098	1264	0.0664	0.0224	2.962	0.609	4.658	24.58	4.658	0.6092
119	6.0	1.000	1270	5554	1127	1296	0.0660	0.0231	2.851	0.584	4.373	25.66	4.373	0.5843
120	8.0	0.725	606	3992	817	940	0.0901	0.0289	3.115	0.746	6.587	18.45	6.587	0.7462
120	8.0	0.750	675	4266	845	972	0.0901	0.0292	3.090	0.740	6.320	19.71	6.320	0.7401
120	8.0	0.775	749	4550	873	1004	0.0901	0.0294	3.068	0.735	6.075	21.02	6.075	0.7346
120	8.0	0.800	827	4844	901	1037	0.0899	0.0294	3.055	0.731	5.857	22.38	5.857	0.7309
120	8.0	0.825	912	5166	929	1069	0.0902	0.0296	3.046	0.730	5.664	23.87	5.664	0.7299
120	8.0	0.850	1005	5469	958	1102	0.0899	0.0298	3.016	0.722	5.442	25.27	5.442	0.7215
120	8.0	0.875	1110	5823	986	1134	0.0903	0.0302	2.992	0.718	5.246	26.91	5.246	0.7177
120	8.0	0.900	1222	6177	1014	1166	0.0906	0.0306	2.965	0.712	5.055	28.54	5.055	0.7123
120	8.0	0.925	1344	6553	1042	1199	0.0909	0.0309	2.940	0.708	4.876	30.28	4.876	0.7076
120	8.0	0.950	1478	6921	1070	1231	0.0911	0.0314	2.899	0.698	4.683	31.98	4.683	0.6984
120	8.0	0.975	1627	7245	1098	1264	0.0905	0.0320	2.831	0.680	4.453	33.48	4.453	0.6795
120	8.0	1.000	1786	7514	1127	1295	0.0894	0.0326	2.740	0.654	4.207	34.72	4.207	0.6538
121	10.0	0.725	849	5055	823	947	0.1125	0.0397	2.836	0.759	5.954	23.36	5.954	0.7590
121	10.0	0.750	955	5443	851	979	0.1133	0.0404	2.807	0.754	5.699	25.15	5.699	0.7539
121	10.0	0.775	1070	5852	880	1012	0.1140	0.0410	2.784	0.750	5.469	27.04	5.469	0.7501
121	10.0	0.800	1190	6272	908	1045	0.1146	0.0414	2.770	0.748	5.271	28.98	5.271	0.7484
121	10.0	0.825	1328	6740	936	1077	0.1159	0.0422	2.749	0.747	5.075	31.14	5.075	0.7470
121	10.0	0.850	1467	7209	965	1110	0.1167	0.0425	2.744	0.748	4.914	33.31	4.914	0.7480
121	10.0	0.875	1624	7719	993	1143	0.1179	0.0431	2.733	0.749	4.753	35.67	4.753	0.7487
121	10.0	0.900	1794	8260	1022	1175	0.1194	0.0439	2.721	0.750	4.604	38.17	4.604	0.7502
121	10.0	0.925	1988	8832	1050	1208	0.1208	0.0447	2.699	0.749	4.443	40.81	4.443	0.7485
121	10.0	0.950	2209	9407	1078	1241	0.1219	0.0458	2.658	0.740	4.258	43.47	4.258	0.7405
121	10.0	0.975	2428	9833	1107	1273	0.1211	0.0467	2.593	0.720	4.050	45.43	4.050	0.7200
121	10.0	1.000	2650	10202	1135	1306	0.1193	0.0472	2.529	0.697	3.850	47.14	3.850	0.6971
122	12.0	0.725	1134	6091	817	940	0.1375	0.0542	2.540	0.752	5.371	28.14	5.371	0.7516
122	12.0	0.750	1282	6579	846	973	0.1386	0.0552	2.512	0.746	5.132	30.40	5.132	0.7463
122	12.0	0.775	1444	7093	874	1005	0.1401	0.0564	2.483	0.742	4.912	32.77	4.912	0.7417
122	12.0	0.800	1618	7633	902	1038	0.1413	0.0574	2.463	0.739	4.718	35.27	4.718	0.7389
122	12.0	0.825	1800	8198	930	1070	0.1429	0.0583	2.451	0.739	4.554	37.88	4.554	0.7393
122	12.0	0.850	2021	8826	958	1103	0.1447	0.0597	2.423	0.736	4.367	40.78	4.367	0.7356
122	12.0	0.875	2265	9518	987	1135	0.1474	0.0614	2.399	0.735	4.202	43.98	4.202	0.7350
122	12.0	0.900	2525	10206	1015	1167	0.1495	0.0630	2.373	0.732	4.042	47.16	4.042	0.7321
122	12.0	0.925	2807	10888	1043	1200	0.1509	0.0644	2.341	0.726	3.879	50.31	3.879	0.7256
122	12.0	0.950	3104	11542	1071	1232	0.1517	0.0658	2.304	0.716	3.718	53.33	3.718	0.7162
122	12.0	0.975	3395	12073	1099	1265	0.1505	0.0665	2.263	0.701	3.556	55.78	3.556	0.7005
122	12.0	1.000	3688	12507	1127	1297	0.1483	0.0671	2.212	0.680	3.391	57.79	3.391	0.6800
123	14.00	0.725	1520	7215	821	944	0.1615	0.0717	2.254	0.723	4.747	33.34	4.747	0.7229
123	14.00	0.750	1726	7812	849	977	0.1633	0.0734	2.224	0.717	4.526	36.10	4.526	0.7172
123	14.00	0.775	1949	8450	878	1010	0.1653	0.0750	2.203	0.715	4.336	39.04	4.336	0.7145
123	14.00	0.800	2204	9172	906	1042	0.1685	0.0773	2.181	0.715	4.162	42.38	4.162	0.7145
123	14.00	0.825	2483	9928	934	1075	0.1714	0.0793	2.162	0.714	3.998	45.87	3.998	0.7143
123	14.00	0.850	2798	10733	962	1107	0.1747	0.0818	2.136	0.712	3.836	49.59	3.836	0.7125
123	14.00	0.875	3146	11608	991	1140	0.1782	0.0842	2.116	0.713	3.690	53.64	3.690	0.7127
124	16.00	0.725	1989	8252	817	940	0.1863	0.0950	1.962	0.676	4.149	38.13	4.149	0.6757
124	16.00	0.750	2303	9048	846	973	0.1907	0.0992	1.923	0.670	3.929	41.81	3.929	0.6700
124	16.00	0.775	2660	9926	874	1005	0.1961	0.1039	1.886	0.667	3.732	45.86	3.732	0.6665
125	18.00	0.725	2517	8921	817	940	0.2014	0.1202	1.676	0.600	3.544	41.22	3.544	0.6002





V. Data Set # 13

DATA SET Number 13

XC-142A (SK 59868-12.22)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
Cut Down, Square Tip	109.0	15.625	4	20.6	528.770	0.957

Power weighted solidity = 0.17764
Twist (0.25R - Tip in deg) = 30.0

$C_t = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2(Dia/10)^4}$ $C_p = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3(Dia/10)^5}$ $FM = 0.798 \frac{C_t^{3/2}}{C_p}$

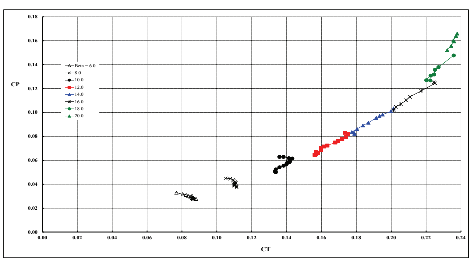
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

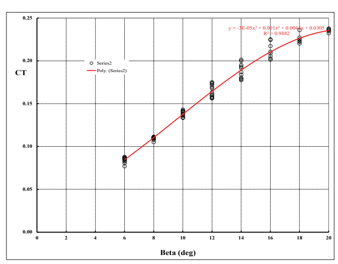
REDUCED TEST DATA POINTS — Harris Computed

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
127	???	Down	4.00	Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
127				Unreadable	Unreadable	Unreadable	Unreadable											
128	144	Down	6.00	727	196	1796	0.528	0.08637	0.02739	3.1539	0.7397	9.1633		9.37	9.1633	0.7397	595	1,126
128	144	Down	6.00	857	326	2544	0.622	0.08804	0.02781	3.1662	0.7497	7.8037		13.27	7.8037	0.7497	701	1,127
128	144	Down	6.00	980	491	3292	0.711	0.08712	0.02801	3.1108	0.7327	6.7047		17.17	6.7047	0.7327	802	1,128
128	144	Down	6.00	1100	702	4112	0.798	0.08638	0.02832	3.0505	0.7154	5.8575		21.44	5.8575	0.7154	900	1,128
128	144	Down	6.00	1125	754	4278	0.816	0.08591	0.02843	3.0219	0.7068	5.6737		22.31	5.6737	0.7068	920	1,128
128	144	Down	6.00	1160	836	4569	0.842	0.08631	0.02875	3.0015	0.7037	5.4653		23.83	5.4653	0.7037	949	1,127
128	144	Down	6.00	1194	911	4818	0.867	0.08590	0.02873	2.9896	0.6992	5.2887		25.13	5.2887	0.6992	977	1,127
128	144	Down	6.00	1230	1006	5088	0.893	0.08548	0.02902	2.9452	0.6872	5.0577		26.53	5.0577	0.6872	1,006	1,127
128	144	Down	6.00	1252	1063	5234	0.909	0.08487	0.02908	2.9186	0.6785	4.9238		27.30	4.9238	0.6785	1,024	1,127
128	144	Down	6.00	1284	1197	5566	0.932	0.08581	0.03036	2.8267	0.6608	4.6500		29.03	4.6500	0.6608	1,050	1,127
128	144	Down	6.00	1316	1289	5691	0.955	0.08352	0.03036	2.7508	0.6344	4.4151		29.68	4.4151	0.6344	1,077	1,127
128	144	Down	6.00	1344	1405	5857	0.976	0.08242	0.03107	2.6525	0.6077	4.1687		30.55	4.1687	0.6077	1,100	1,127
128	144	Down	6.00	1371	1519	5950	0.994	0.08046	0.03165	2.5425	0.5755	3.9171		31.03	3.9171	0.5755	1,122	1,128
128	144	Down	6.00	1416	1743	6064	1.027	0.07687	0.03296	2.3323	0.5160	3.4791		31.62	3.4791	0.5160	1,158	1,128
129	145	Down	8.00	738	280	2386	0.536	0.11135	0.03740	2.9774	0.7928	8.5214		12.44	8.5214	0.7928	604	1,126
129	145	Down	8.00	865	459	3278	0.628	0.11135	0.03807	2.9247	0.7788	7.1416		17.10	7.1416	0.7788	708	1,127
129	145	Down	8.00	979	676	4149	0.711	0.11003	0.03868	2.8447	0.7530	6.1376		21.64	6.1376	0.7530	801	1,127
129	145	Down	8.00	1105	993	5270	0.802	0.10970	0.03951	2.7764	0.7338	5.3072		27.48	5.3072	0.7338	904	1,127
129	145	Down	8.00	1127	1056	5498	0.818	0.11002	0.03961	2.7780	0.7353	5.2064		28.67	5.2064	0.7353	922	1,127
129	145	Down	8.00	1158	1163	5830	0.841	0.11051	0.04021	2.7483	0.7290	5.0129		30.40	5.0129	0.7290	947	1,127
129	145	Down	8.00	1190	1269	6141	0.864	0.11022	0.04043	2.7264	0.7223	4.8392		32.03	4.8392	0.7223	974	1,127
129	145	Down	8.00	1230	1418	6598	0.893	0.11085	0.04091	2.7096	0.7199	4.6530		34.41	4.6530	0.7199	1,006	1,127
129	145	Down	8.00	1253	1514	6846	0.91	0.11083	0.04132	2.6824	0.7126	4.5218		35.70	4.5218	0.7126	1,025	1,126
129	145	Down	8.00	1283	1646	7158	0.932	0.11053	0.04184	2.6415	0.7008	4.3487		37.33	4.3487	0.7008	1,050	1,126
129	145	Down	8.00	1317	1819	7479	0.956	0.10960	0.04275	2.5637	0.6773	4.1116		39.00	4.1116	0.6773	1,077	1,127
129	145	Down	8.00	1346	1980	7780	0.978	0.10915	0.04359	2.5039	0.6601	3.9293		40.57	3.9293	0.6601	1,101	1,126
129	145	Down	8.00	1374	2157	7998	0.998	0.10768	0.04464	2.4120	0.6316	3.7079		41.71	3.7079	0.6316	1,124	1,126
129	145	Down	8.00	1408	2339	8195	1.023	0.10507	0.04499	2.3355	0.6041	3.5036		42.74	3.5036	0.6041	1,152	1,126
130	146	Down	10.00	739	376	2875	0.538	0.13381	0.05002	2.6752	0.7809	7.6463		14.99	7.6463	0.7809	605	1,124
130	146	Down	10.00	854	589	3826	0.621	0.13334	0.05077	2.6263	0.7653	6.4958		19.95	6.4958	0.7653	699	1,125
130	146	Down	10.00	983	928	5088	0.715	0.13384	0.05245	2.5516	0.7449	5.4828		26.53	5.4828	0.7449	804	1,125
130	146	Down	10.00	1102	1352	6496	0.802	0.13596	0.05424	2.5068	0.7376	4.8047		33.88	4.8047	0.7376	902	1,124
130	146	Down	10.00	1160	1615	7322	0.844	0.13831	0.05555	2.4899	0.7389	4.5337		38.19	4.5337	0.7389	949	1,124
130	146	Down	10.00	1193	1795	7837	0.868	0.13996	0.05676	2.4660	0.7362	4.3660		40.87	4.3660	0.7362	976	1,124
130	146	Down	10.00	1233	2026	8397	0.897	0.14039	0.05803	2.4194	0.7234	4.1446		43.79	4.1446	0.7234	1,009	1,125
130	146	Down	10.00	1257	2164	8811	0.914	0.14174	0.05850	2.4231	0.7280	4.0716		45.95	4.0716	0.7280	1,028	1,125
130	146	Down	10.00	1287	2361	9245	0.936	0.14187	0.05946	2.3859	0.7171	3.9157		48.21	3.9157	0.7171	1,053	1,125
130	146	Down	10.00	1319	2628	9804	0.960	0.14323	0.06148	2.3296	0.7036	3.7306		51.13	3.7306	0.7036	1,079	1,124
130	146	Down	10.00	1346	2809	10072	0.979	0.14131	0.06184	2.2849	0.6854	3.5856		52.53	3.5856	0.6854	1,101	1,125
130	146	Down	10.00	1379	3072	10341	1.003	0.13822	0.06289	2.1977	0.6520	3.3662		53.93	3.3662	0.6520	1,128	1,125
130	146	Down	10.00	1410	3285	10631	1.026	0.13592	0.06291	2.1603	0.6356	3.2362		55.44	3.2362	0.6356	1,154	1,124
131	147	Down	12.00	739	486	3354	0.536	0.15610	0.06465	2.4145	0.7613	6.9012		17.49	6.9012	0.7613	605	1,128
131	147	Down	12.00	798	615	3928	0.580	0.15677	0.06497	2.4128	0.7623	6.3864		20.48	6.3864	0.7623	653	1,126
131	147	Down	12.00	862	790	4617	0.627	0.15793	0.06622	2.3851	0.7564	5.8443		24.08	5.8443	0.7564	705	1,125
131	147	Down	12.00	925	988	5280	0.673	0.15685	0.06702	2.3404	0.7396	5.3441		27.54	5.3441	0.7396	757	1,124
131	147	Down	12.00	979	1199	6025	0.712	0.15978	0.06860	2.3291	0.7429	5.0250	5.0250	31.42	5.0250	0.7429	801	1,125
131	147	Down	12.00	1052	1525	6956	0.765	0.15976	0.07032	2.2718	0.7246	4.5613	4.5618	36.28	4.5613	0.7246	861	1,125
131	147	Down	12.00	1102	1785	7718	0.801	0.16154	0.07161	2.2558	0.7235	4.3238	4.3238	40.25	4.3238	0.7235	902	1,126
131	147	Down	12.00	1132	1957	8235	0.823	0.16334	0.07243	2.2552	0.7273	4.2080	4.2080	42.95	4.2080	0.7273	926	1,125
131	147	Down	12.00	1162	2188	8921	0.845	0.16794	0.07487	2.2431	0.7336	4.0774		46.53	4.0774	0.7336	951	1,125
131	147	Down	12.00	1190	2392	9440	0.865	0.16944	0.07621	2.2234	0.7303	3.9465		49.23	3.9465	0.7303	974	1,126
131	147	Down	12.00	1231	2702	10246	0.893	0.17186	0.07776	2.2100	0.7311	3.7921		53.44	3.7921	0.7311	1,007	1,128
131	147	Down	12.00	1255	2933	10787	0.912	0.17408	0.07966	2.1852	0.7276	3.6778		56.26	3.6778	0.7276	1,027	1,126
131	147	Down	12.00	1289	3266	11449	0.937	0.17514	0.08187	2.1393	0.7144	3.5055		59.71	3.5055	0.7144	1,055	1,125
131	147	Down	12.00	1322	3575	11929	0.961	0.17349	0.08307	2.0884	0.6941	3.3367		62.21	3.3367	0.6941	1,082	1,125
132	148	Down	14.00	732	600	3773	0.533	0.17898	0.08213	2.1793	0.7357	6.2883		19.68	6.2883	0.7357	599	1,124
132	148	Down	14.00	796	782	4454	0.580	0.17867	0.08324	2.1464	0.7240	5.6957		23.23	5.6957	0.7240	651	1,123
132	148	Down	14.00	861	995	5175	0.627	0.17743	0.08369	2.1201	0.7126	5.2010		26.99	5.2010	0.7126	704	1,123
132	148	Down	14.00	924	1266	6061	0.673	0.18044	0.08616	2.0943	0.7099	4.7875		31.61	4.7875	0.7099	756	1,123
132	148	Down	14.00	983	1577	6989	0.716	0.18384	0.08913	2.0625	0.7057	4.4318		36.45	4.4318	0.7057	804	1,123
132	148	Down	14.00	1047	1955	8062	0.762	0.18693	0.09145	2.0441	0.7053	4.1238		42.04	4.1238	0.7053	857	1,124
132	148	Down	14.00	1100	2368	9113	0.801	0.19143	0.09552	2.0042	0.6997	3.8484		47.53	3.8484	0.6997	900	1,124
132	148	Down	14.00	1129	2599	9691	0.822	0.19325	0.09696	1.9931	0.6992	3.7287		50.54	3.7287	0.6992	924	1,124
132	148	Down	14.00	1160	2856	10330	0.845	0.19513	0.09823	1.9864	0.7002	3.6169		53.87	3.6169	0.7002	949	1,123
132	148	Down	14.00	1190	3171	11134	0.866	0.19984	0.10102	1.9782	0.7057	3.5112		58.07	3.5112	0.7057	974	1,124
132	148	Down	14.00	1219	3488	11773	0.888	0.20138	0.10338	1.9479	0.6976	3.3753		61.40	3.3753	0.6976	997	1,123
133	149	Down	16.00	729	736	4210	0.531	0.20135	0.10199	1.9742	0.7069	5.7201		21.96	5.7201	0.7069	596	1,123
133	149	Down	16.00	801	1002	5119	0.584	0.20279	0.10467	1.9374	0.6962	5.1088		26.70	5.1088	0.6962	655	1,122
133	149	Down	16.00	850	1224	5841	0.619	0.20549	0.10700	1.9204	0.6947	4.7721		30.46	4.7721	0.6947	695	1,123
133	149	Down	16.00	926	1631	7038	0.675	0.20862	0.11028	1.8918	0.6895	4.3151		36.70	4.3151	0.6895	758	1,123
133	149	Down	16.00	979	1976	7946	0.713	0.21072	0.11306	1.8638	0.6828	4.0213		41.44	4.0213	0.6828	801	1,123
133	149	Down	16.00	1047	2525	9370	0.763	0.21726	0.11811	1.8394	0.6842	3.7109		48.87	3.7109	0.6842	857	1,124
133	149	Down	16.00	1105	3129	10815	0.805	0.22513	0.12451	1.8082	0.6846	3.4564		56.40	3.4564	0.6846	904	1,123
133	149	Down	16.00	1112	3208	10918	0.810	0.22442	0.12525	1.7917	0.6773	3.4034		56.94	3.4034	0.6773	910	1,123
134	150	Down	18.00	735	938	4727	0.535	0.22240	0.12683	1.7536	0.6599	5.0394		24.65	5.0394	0.6599	601	1,124
134	150	Down	18.00	799	1207	5531	0.582	0.22021	0.12704	1.7334	0.6491	4.5824		28.85	4.5824	0.6491	654	1,123
134	150	Down	18.00	856	1528	6419	0.623	0.22267	0.13079	1.7025	0.6411	4.2009		33.48	4.2009	0.6411	700	1,124
134	150	Down	18.00	899	1784	7141	0.655	0.22458	0.13182	1.7037	0.6443	4.0028		37.24	4.0028	0.6443	735	1,123
134	150	Down	18.00	951	2174	8008	0.692	0.22506	0.13570	1.6585	0.6279	3.6835		41.76	3.6835	0.6279	778	1,124
134	150	Down	18.00	979	2411	8566	0.713	0.22717	0.13795	1.6467	0.6263	3.5529		44.67	3.5529	0.6263	801	1,123
134	150	Down	18.00	1023	2946	9711	0.745	0.23586	0.14773	1.5965	0.6187	3.2963		50.64	3.2963	0.6187	837	1,123
135	151	Down	20.00	741	1153	5015	0.540	0.23215	0.15214	1.5259	0.5867	4.3495		26.15	4.3495	0.5867	606	1,123
135	151	Down	20.00	800	1485	5903	0.582	0.23444	0.15571	1.5056	0.5817	3.9751		30.79	3.9751	0.5817	654	1,125
135	151	Down	20.00	855	1856	6791	0.623	0.23612	0.15942	1.4811	0.5743	3.6589		35.42	3.6589	0.5743	699	1,123
135	151	Down	20.00	899	2169	7492	0.655	0.23562	0.16027	1.4701	0.5695	3.4541		39.07	3.4541	0.5695	735	1,123
135	151	Down	20.00	950	2620	8421	0.692	0.23716	0.16406	1.4456	0.5618	3.2141		43.92	3.2141	0.5618	777	1,123
135	151	Down	20.00	967	2796	8751	0.704	0.23787	0.16601	1.4329	0.5577	3.1298		45.64	3.1298	0.5577	791	1,124

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS — Harris Computed

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
127	4.0	0.725	381	2547	817	999	0.0649	0.0205	3.162	0.643	6.685	13.28	6.685	0.6426
127	4.0	0.750	424	2712	845	1033	0.0646	0.0207	3.128	0.634	6.396	14.14	6.396	0.6345
127	4.0	0.775	470	2879	873	1068	0.0642	0.0207	3.097	0.626	6.126	15.01	6.126	0.6260
127	4.0	0.800	518	3050	902	1102	0.0638	0.0208	3.072	0.619	5.888	15.91	5.888	0.6194
127	4.0	0.825	570	3223	930	1137	0.0634	0.0208	3.044	0.611	5.654	16.81	5.654	0.6114
127	4.0	0.850	626	3407	958	1171	0.0632	0.0209	3.017	0.605	5.442	17.77	5.442	0.6051
127	4.0	0.875	686	3590	986	1205	0.0628	0.0210	2.986	0.597	5.233	18.72	5.233	0.5972
127	4.0	0.900	769	3803	1014	1239	0.0630	0.0217	2.901	0.581	4.945	19.83	4.945	0.5809
127	4.0	0.925	842	3955	1043	1274	0.0619	0.0219	2.833	0.563	4.697	20.63	4.697	0.5627
127	4.0	0.950	940	4093	1071	1309	0.0607	0.0225	2.698	0.531	4.354	21.35	4.354	0.5306
127	4.0	0.975	1051	4212	1099	1343	0.0594	0.0233	2.548	0.495	4.008	21.97	4.008	0.4954
127	4.0	1.000	1173	4252	1127	1378	0.0569	0.0241	2.365	0.450	3.625	22.17	3.625	0.4502
128	6.0	0.725	522	3419	817	999	0.0871	0.0281	3.098	0.729	6.550	17.83	6.550	0.7295
128	6.0	0.750	580	3649	845	1033	0.0869	0.0282	3.077	0.724	6.291	19.03	6.291	0.7239
128	6.0	0.775	643	3885	873	1068	0.0866	0.0283	3.055	0.717	6.042	20.26	6.042	0.7173
128	6.0	0.800	707	4121	902	1102	0.0863	0.0284	3.041	0.713	5.829	21.49	5.829	0.7127
128	6.0	0.825	779	4374	930	1137	0.0860	0.0285	3.022	0.707	5.615	22.81	5.615	0.7073
128	6.0	0.850	858	4642	958	1171	0.0860	0.0287	2.999	0.702	5.410	24.21	5.410	0.7021
128	6.0	0.875	937	4896	986	1205	0.0857	0.0288	2.981	0.696	5.225	25.53	5.225	0.6964
128	6.0	0.900	1036	5174	1014	1240	0.0855	0.0292	2.932	0.684	4.994	26.98	4.994	0.6842
128	6.0	0.925	1147	5467	1043	1274	0.0856	0.0298	2.875	0.671	4.766	28.51	4.766	0.6713
128	6.0	0.950	1271	5678	1071	1309	0.0842	0.0304	2.769	0.641	4.467	29.61	4.467	0.6412
128	6.0	0.975	1405	5846	1099	1343	0.0824	0.0311	2.646	0.606	4.161	30.49	4.161	0.6060
128	6.0	1.000	1558	5982	1127	1378	0.0801	0.0320	2.505	0.566	3.840	31.20	3.840	0.5656
129	8.0	0.725	721	4321	817	998	0.1103	0.0389	2.832	0.750	5.993	22.53	5.993	0.7504
129	8.0	0.750	804	4622	845	1033	0.1101	0.0392	2.811	0.744	5.749	24.10	5.749	0.7444
129	8.0	0.775	893	4934	873	1067	0.1102	0.0395	2.791	0.739	5.525	25.73	5.525	0.7392
129	8.0	0.800	987	5257	901	1102	0.1100	0.0396	2.779	0.736	5.326	27.42	5.326	0.7356
129	8.0	0.825	1088	5587	929	1136	0.1100	0.0398	2.762	0.731	5.135	29.14	5.135	0.7311
129	8.0	0.850	1201	5948	958	1170	0.1104	0.0403	2.743	0.728	4.953	31.02	4.953	0.7275
129	8.0	0.875	1324	6319	986	1205	0.1106	0.0406	2.723	0.723	4.773	32.95	4.773	0.7226
129	8.0	0.900	1455	6694	1014	1239	0.1108	0.0411	2.699	0.717	4.601	34.91	4.601	0.7170
129	8.0	0.925	1605	7059	1043	1274	0.1105	0.0417	2.653	0.704	4.398	36.81	4.398	0.7038
129	8.0	0.950	1771	7406	1070	1308	0.1100	0.0425	2.590	0.685	4.182		4.182	0.6858
129	8.0	0.975	1962	7732	1098	1343	0.1090	0.0435	2.506	0.660	3.941	40.32	3.941	0.6600
129	8.0	1.000	2159	8001	1127	1377	0.1073	0.0444	2.416	0.631	3.706	41.73	3.706	0.6314
130	10.0	0.725	970	5238	815	997	0.1339	0.0525	2.549	0.744	5.400	27.32	5.400	0.7444
130	10.0	0.750	1089	5639	843	1031	0.1348	0.0533	2.528	0.741	5.178	29.41	5.178	0.7406
130	10.0	0.775	1218	6061	872	1065	0.1358	0.0541	2.509	0.738	4.976	31.61	4.976	0.7379
130	10.0	0.800	1356	6503	900	1100	0.1366	0.0547	2.498	0.737	4.796	33.91	4.796	0.7366
130	10.0	0.825	1503	6953	928	1134	0.1374	0.0553	2.484	0.735	4.626	36.26	4.626	0.7347
130	10.0	0.850	1663	7439	956	1168	0.1386	0.0560	2.474	0.735	4.473	38.80	4.473	0.7349
130	10.0	0.875	1847	7966	984	1203	0.1399	0.0570	2.456	0.733	4.313	41.54	4.313	0.7332
130	10.0	0.900	2042	8481	1012	1237	0.1409	0.0579	2.432	0.729	4.153	44.23	4.153	0.7285
130	10.0	0.925	2366	9027	1040	1272	0.1418	0.0617	2.298	0.690	3.984	47.08	3.984	0.6904
130	10.0	0.950	2511	9578	1068	1306	0.1427	0.0605	2.358	0.711	3.814	49.95	3.814	0.7110
130	10.0	0.975	2774	10004	1095	1340	0.1416	0.0619	2.288	0.687	3.606	52.17	3.606	0.6870
130	10.0	1.000	3029	10349	1125	1376	0.1389	0.0624	2.226	0.662	3.417	53.97	3.417	0.6620
131	12.0	0.725	1273	6216	816	997	0.1589	0.0690	2.305	0.733	4.883	32.42	4.883	0.7333
131	12.0	0.750	1432	6706	844	1032	0.1600	0.0699	2.288	0.730	4.683	34.97	4.683	0.7304
131	12.0	0.775	1608	7238	872	1066	0.1619	0.0713	2.272	0.729	4.501	37.75	4.501	0.7294
131	12.0	0.800	1795	7783	901	1101	0.1632	0.0722	2.260	0.729	4.336	40.59	4.336	0.7286
131	12.0	0.825	2000	8374	929	1135	0.1652	0.0734	2.250	0.730	4.187	43.67	4.187	0.7298
131	12.0	0.850	2224	8996	956	1169	0.1673	0.0747	2.239	0.731	4.045	46.92	4.045	0.7308
131	12.0	0.875	2483	9695	985	1204	0.1700	0.0764	2.226	0.732	3.905	50.56	3.905	0.7323
131	12.0	0.900	2783	10445	1013	1238	0.1732	0.0787	2.200	0.731	3.753	54.47	3.753	0.7306
131	12.0	0.925	3096	11103	1041	1273	0.1741	0.0806	2.161	0.720	3.586	57.90	3.586	0.7198
131	12.0	0.950	3429	11706	1069	1307	0.1742	0.0825	2.112	0.704	3.414	61.05	3.414	0.7035
132	14.0	0.725	1643	7188	815	996	0.1842	0.0893	2.063	0.706	4.375	37.49	4.375	0.7065
132	14.0	0.750	1859	7783	843	1030	0.1865	0.0913	2.042	0.704	4.187	40.59	4.187	0.7035
132	14.0	0.775	2092	8409	871	1064	0.1888	0.0932	2.025	0.702	4.020	43.85	4.020	0.7021
132	14.0	0.800	2349	9071	899	1099	0.1909	0.0950	2.009	0.701	3.862	47.31	3.862	0.7005
132	14.0	0.825	2630	9784	927	1133	0.1937	0.0971	1.996	0.701	3.720	51.03	3.720	0.7009
132	14.0	0.850	2948	10550	955	1167	0.1969	0.0996	1.977	0.700	3.579	55.02	3.579	0.7001
132	14.0	0.875	3295	11363	983	1202	0.1999	0.1019	1.962	0.700	3.449	59.26	3.449	0.7002
133	16.0	0.725	2097	8278	814	995	0.2125	0.1143	1.860	0.684	3.948	43.17	3.948	0.6841
133	16.0	0.750	2383	8995	842	1029	0.2159	0.1174	1.839	0.682	3.775	46.91	3.775	0.6819
133	16.0	0.775	2700	9766	870	1063	0.2197	0.1207	1.820	0.681	3.617	50.93	3.617	0.6808
133	16.0	0.800	3049	10591	898	1098	0.2233	0.1237	1.806	0.681	3.474	55.23	3.474	0.6809
134	18.0	0.725	2621	9017	815	996	0.2310	0.1424	1.622	0.622	3.440	47.03	3.440	0.6222





W. Data Set # 14

DATA SET Number 14

XC-142A (SK 59868-12.22) Cut Down, Round Tip — Activity Factor 99.0; Diameter 15.625; # Blades 4; Nominal Temp Deg C 20.6; Nominal Temp Deg R 528.770; Nominal Density Ratio 0.957

Power weighted solidity = 0.16134

Twist (0.25R -Tip in deg) = 30.0

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

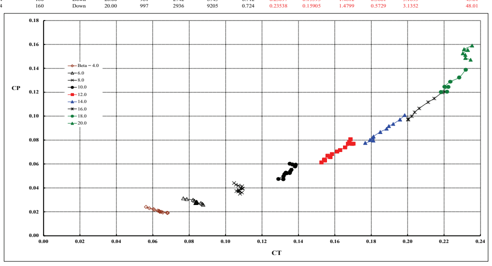
$$C_T = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2(Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3(Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

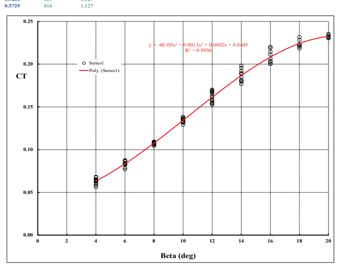
REDUCED TEST DATA POINTS (Harris Computed: CT through Repeat FM)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
136	152	Down	4.00	734	141	1445	0.530	0.06817	0.01914	3.5613	0.7420	10.2482	7.54	10.2482	0.7420	601	1,133
136	152	Down	4.00	800	181	1714	0.578	0.06807	0.01898	3.5866	0.7467	9.4696	8.94	9.4696	0.7467	654	1,132
136	152	Down	4.00	855	224	1951	0.618	0.06784	0.01924	3.5256	0.7328	8.7098	10.17	8.7098	0.7328	699	1,132
136	152	Down	4.00	987	348	2511	0.713	0.06552	0.01943	3.3717	0.6887	7.2155	13.10	7.2155	0.6887	807	1,133
136	152	Down	4.00	1102	498	3059	0.796	0.06402	0.01998	3.2048	0.6471	6.1426	15.95	6.1426	0.6471	902	1,133
136	152	Down	4.00	1129	536	3249	0.816	0.06479	0.02000	3.2400	0.6581	6.0616	16.94	6.0616	0.6581	924	1,132
136	152	Down	4.00	1158	582	3365	0.837	0.06378	0.02012	3.1698	0.6388	5.7818	17.55	5.7818	0.6388	947	1,132
136	152	Down	4.00	1189	635	3544	0.859	0.06372	0.02028	3.1417	0.6328	5.5811	18.48	5.5811	0.6328	973	1,132
136	152	Down	4.00	1231	711	3797	0.889	0.06369	0.02046	3.1124	0.6268	5.3404	19.80	5.3404	0.6268	1,007	1,133
136	152	Down	4.00	1254	765	3924	0.906	0.06343	0.02083	3.0453	0.6120	5.1294	20.46	5.1294	0.6120	1,026	1,132
136	152	Down	4.00	1284	829	4072	0.928	0.06278	0.02102	2.9859	0.5970	4.9119	21.24	4.9119	0.5970	1,050	1,132
136	152	Down	4.00	1322	933	4177	0.955	0.06075	0.02168	2.8021	0.5511	4.4770	21.78	4.4770	0.5511	1,082	1,133
136	152	Down	4.00	1346	1013	4304	0.973	0.06038	0.02230	2.7075	0.5309	4.2488	22.45	4.2488	0.5309	1,101	1,132
136	152	Down	4.00	1372	1105	4304	0.991	0.05812	0.02297	2.5300	0.4867	3.8950	22.45	3.8950	0.4867	1,122	1,132
136	152	Down	4.00	1414	1270	4430	1.022	0.05632	0.02412	2.3351	0.4422	3.4882	23.10	3.4882	0.4422	1,157	1,132
137	153	Down	6.00	744	199	1910	0.538	0.08770	0.02594	3.3808	0.7990	9.5980	9.96	9.5980	0.7990	609	1,131
137	153	Down	6.00	855	311	2508	0.618	0.08720	0.02671	3.2643	0.7692	8.0643	13.08	8.0643	0.7692	699	1,132
137	153	Down	6.00	978	478	3253	0.707	0.08644	0.02743	3.1511	0.7393	6.8054	16.97	6.8054	0.7393	800	1,132
137	153	Down	6.00	1102	681	3987	0.797	0.08345	0.02732	3.0545	0.7041	5.8546	20.79	5.8546	0.7041	902	1,131
137	153	Down	6.00	1126	727	4176	0.814	0.08372	0.02734	3.0622	0.7070	5.7442	21.78	5.7442	0.7070	921	1,132
137	153	Down	6.00	1155	791	4407	0.835	0.08397	0.02756	3.0466	0.7045	5.5714	22.98	5.5714	0.7045	945	1,132
137	153	Down	6.00	1187	865	4659	0.858	0.08405	0.02777	3.0268	0.7003	5.3861	24.30	5.3861	0.7003	971	1,132
137	153	Down	6.00	1226	961	4984	0.886	0.08428	0.02800	3.0103	0.6974	5.1863	25.99	5.1863	0.6974	1,003	1,132
137	153	Down	6.00	1256	1044	5226	0.908	0.08420	0.02829	2.9766	0.6893	5.0057	27.25	5.0057	0.6893	1,028	1,132
137	153	Down	6.00	1286	1125	5456	0.930	0.08385	0.02840	2.9527	0.6823	4.8498	28.45	4.8498	0.6823	1,052	1,131
137	153	Down	6.00	1318	1248	5666	0.953	0.08290	0.02926	2.8330	0.6509	4.5401	29.55	4.5401	0.6509	1,078	1,131
137	153	Down	6.00	1346	1365	5855	0.973	0.08214	0.03005	2.7334	0.6252	4.2894	30.53	4.2894	0.6252	1,101	1,132
137	153	Down	6.00	1384	1514	5929	1.001	0.07868	0.03066	2.5660	0.5744	3.9161	30.92	3.9161	0.5744	1,132	1,131
137	153	Down	6.00	1412	1640	6023	1.021	0.07678	0.03128	2.4551	0.5429	3.6726	31.41	3.6726	0.5429	1,155	1,131
138	154	Down	8.00	730	254	2263	0.528	0.10794	0.03505	3.0792	0.8073	8.9094	11.80	8.9094	0.8073	597	1,131
138	154	Down	8.00	854	419	3126	0.618	0.10894	0.03612	3.0164	0.7945	7.4606	16.30	7.4606	0.7945	699	1,131
138	154	Down	8.00	985	658	4084	0.712	0.10699	0.03696	2.8944	0.7555	6.2067	21.30	6.2067	0.7555	806	1,132
138	154	Down	8.00	1103	939	5137	0.798	0.10732	0.03757	2.8568	0.7468	5.4707	26.79	5.4707	0.7468	902	1,131
138	154	Down	8.00	1129	1001	5316	0.816	0.10601	0.03734	2.8386	0.7375	5.3107	27.72	5.3107	0.7375	924	1,132
138	154	Down	8.00	1160	1098	5684	0.839	0.10737	0.03777	2.8430	0.7434	5.1767	29.64	5.1767	0.7434	949	1,131
138	154	Down	8.00	1189	1196	5979	0.860	0.10750	0.03820	2.8141	0.7363	4.9992	31.18	4.9992	0.7363	973	1,131
138	154	Down	8.00	1227	1352	6474	0.887	0.10930	0.03929	2.7817	0.7339	4.7885	33.76	4.7885	0.7339	1,004	1,132
138	154	Down	8.00	1257	1460	6800	0.909	0.10939	0.03947	2.7717	0.7315	4.6575	35.46	4.6575	0.7315	1,028	1,131
138	154	Down	8.00	1281	1555	6989	0.926	0.10826	0.03971	2.7258	0.7157	4.4945	36.45	4.4945	0.7157	1,048	1,132
138	154	Down	8.00	1318	1763	7453	0.953	0.10905	0.04134	2.6379	0.6951	4.2275	38.87	4.2275	0.6951	1,078	1,131
138	154	Down	8.00	1351	1925	7684	0.977	0.10701	0.04191	2.5531	0.6665	3.9917	40.07	3.9917	0.6665	1,105	1,131
138	154	Down	8.00	1378	2080	7895	0.997	0.10568	0.04268	2.4763	0.6424	3.7957	41.17	3.7957	0.6424	1,127	1,131
138	154	Down	8.00	1406	2280	8137	1.017	0.10462	0.04404	2.3756	0.6132	3.5689	42.44	3.5689	0.6132	1,150	1,131
139	155	Down	10.00	736	351	2806	0.533	0.13166	0.04727	2.7856	0.8066	7.9943	14.63	7.9943	0.8066	602	1,130
139	155	Down	10.00	853	549	3692	0.617	0.12897	0.04749	2.7158	0.7783	6.7250	19.25	6.7250	0.7783	698	1,131
139	155	Down	10.00	981	874	4989	0.710	0.13177	0.04970	2.6511	0.7680	5.7082	26.02	5.7082	0.7680	803	1,130
139	155	Down	10.00	1088	1259	6297	0.787	0.13521	0.05248	2.5763	0.7560	5.0016	32.84	5.0016	0.7560	890	1,131
139	155	Down	10.00	1128	1374	6624	0.816	0.13232	0.05140	2.5746	0.7474	4.8210	34.55	4.8210	0.7474	923	1,131
139	155	Down	10.00	1159	1519	7068	0.839	0.13374	0.05238	2.5532	0.7451	4.6531	36.86	4.6531	0.7451	948	1,130
139	155	Down	10.00	1191	1660	7426	0.862	0.13307	0.05275	2.5224	0.7343	4.4735	38.73	4.4735	0.7343	974	1,130
139	155	Down	10.00	1227	1852	8027	0.888	0.13552	0.05382	2.5178	0.7396	4.3342	41.86	4.3342	0.7396	1,004	1,130
139	155	Down	10.00	1253	2022	8407	0.907	0.13610	0.05518	2.4665	0.7261	4.1578	43.84	4.1578	0.7261	1,025	1,130
139	155	Down	10.00	1288	2365	9040	0.932	0.13851	0.05942	2.3309	0.6922	3.8224	47.15	3.8224	0.6922	1,054	1,131
139	155	Down	10.00	1314	2452	9388	0.951	0.13820	0.05802	2.3818	0.7066	3.8287	48.96	3.8287	0.7066	1,075	1,130
139	155	Down	10.00	1349	2723	9789	0.976	0.13672	0.05955	2.2960	0.6775	3.5949	51.05	3.5949	0.6775	1,104	1,131
139	155	Down	10.00	1376	2926	10074	0.996	0.13524	0.06030	2.2429	0.6582	3.4429	52.54	3.4429	0.6582	1,126	1,130
140	156	Down	12.00	734	452	3235	0.532	0.15262	0.06136	2.4871	0.7754	7.1571	16.87	7.1571	0.7754	601	1,129
140	156	Down	12.00	804	609	3929	0.583	0.15449	0.06291	2.4557	0.7703	6.4516	20.49	6.4516	0.7703	658	1,128
140	156	Down	12.00	857	742	4454	0.621	0.15414	0.06329	2.4355	0.7631	6.0027	23.23	6.0027	0.7631	701	1,129
140	156	Down	12.00	923	934	5168	0.669	0.15419	0.06377	2.4179	0.7577	5.5332	26.95	5.5332	0.7577	755	1,129
140	156	Down	12.00	983	1163	5987	0.713	0.15748	0.06573	2.3958	0.7587	5.1479	31.22	5.1479	0.7587	804	1,128
140	156	Down	12.00	1053	1456	6807	0.763	0.15604	0.06695	2.3307	0.7347	4.6751	35.50	4.6751	0.7347	861	1,129
140	156	Down	12.00	1100	1695	7542	0.798	0.15843	0.06837	2.3172	0.7360	4.4496	39.33	4.4496	0.7360	900	1,128
140	156	Down	12.00	1132	1903	8130	0.821	0.16126	0.07043	2.2896	0.7337	4.2722	42.40	4.2722	0.7337	926	1,128
140	156	Down	12.00	1160	2084	8624	0.841	0.16290	0.07168	2.2726	0.7320	4.1382	44.98	4.1382	0.7320	949	1,128
140	156	Down	12.00	1190	2318	9227	0.863	0.16561	0.07385	2.2426	0.7283	3.9806	48.12	3.9806	0.7283	974	1,128
140	156	Down	12.00	1234	2690	10147	0.895	0.16937	0.07686	2.2038	0.7237	3.7721	52.92	3.7721	0.7237	1,010	1,128
140	156	Down	12.00	1236	2710	10231	0.896	0.17022	0.07705	2.2092	0.7273	3.7753	53.36	3.7753	0.7273	1,011	1,129
140	156	Down	12.00	1256	2842	10378	0.911	0.16721	0.07701	2.1714	0.7086	3.6517	54.12	3.6517	0.7086	1,028	1,128
140	156	Down	12.00	1287	3113	10945	0.933	0.16795	0.07840	2.1423	0.7006	3.5159	57.08	3.5159	0.7006	1,053	1,129
140	156	Down	12.00	1315	3418	11470	0.953	0.16859	0.08070	2.0892	0.6845	3.3558	59.82	3.3558	0.6845		
141	157	Down	14.00	742	591	3828	0.539	0.17672	0.07767	2.2754	0.7633	6.4772	19.96	6.4772	0.7633	607	1,126
141	157	Down	14.00	800	759	4561	0.581	0.18114	0.07959	2.2760	0.7730	6.0092	23.79	6.0092	0.7730	654	1,127
141	157	Down	14.00	854	930	5146	0.620	0.17934	0.08016	2.2372	0.7561	5.5333	26.84	5.5333	0.7561	699	1,127
141	157	Down	14.00	930	1227	6151	0.675	0.18076	0.08190	2.2072	0.7489	5.0130	32.08	5.0130	0.7489	761	1,127
141	157	Down	14.00	981	1460	6862	0.712	0.18124	0.08303	2.1829	0.7416	4.7000	35.79	4.7000	0.7416	803	1,127
141	157	Down	14.00	1048	1860	7992	0.761	0.18495	0.08676	2.1319	0.7316	4.2968	41.68	4.2968	0.7316	857	1,127
141	157	Down	14.00	1099	2212	8954	0.798	0.18843	0.08947	2.1062	0.7296	4.0479	46.70	4.0479	0.7296	899	1,127
141	157	Down	14.00	1132	2477	9561	0.822	0.18965	0.09168	2.0686	0.7189	3.8599	49.86	3.8599	0.7189	926	1,127
141	157	Down	14.00	1160	2718	10167	0.842	0.19205	0.09349	2.0543	0.7184	3.7406	53.02	3.7406	0.7184	949	1,127
141	157	Down	14.00	1193	3074	10962	0.866	0.19577	0.09720	2.0141	0.7112	3.5660	57.17	3.5660	0.7112	976	1,127
141	157	Down	14.00	1234	3529	11883	0.896	0.19835	0.10083	1.9672	0.6991	3.3672	61.97	3.3672	0.6991	1,010	1,127
142	158	Down	16.00	740	732	4314	0.537	0.20024	0.09698	2.0647	0.7373	5.8934	22.50	5.8934	0.7373	605	1,127
142	158	Down	16.00	802	938	5068	0.582	0.20027	0.09762	2.0515	0.7326	5.4030	26.43	5.4030	0.7326	656	1,127
142	158	Down	16.00	860	1184	5885	0.624	0.20225	0.09994	2.0237	0.7263	4.9704	30.69	4.9704	0.7263	704	1,128
142	158	Down	16.00	924	1518	6848	0.670	0.20387	0.10331	1.9735	0.7111	4.5112	35.71	4.5112	0.7111	756	1,128
142	158	Down	16.00	981	1872	7811	0.712	0.20630	0.10646	1.9379	0.7024	4.1725	40.74	4.1725	0.7024	803	1,127
142	158	Down	16.00	1053	2429	9215	0.764	0.21124	0.11169	1.8913	0.6937	3.7937	48.06	3.7937	0.6937	861	1,128
142	158	Down	16.00	1098	2830	10178	0.797	0.21458	0.11478	1.8696	0.6911	3.5965	53.08	3.5965	0.6911	898	1,127
142	158	Down	16.00	1131	3226	11016	0.821	0.21889	0.11971	1.8285	0.6827	3.4148	57.45	3.4148	0.6827	925	1,127
142	158	Down	16.00	1140	3322	11267	0.827	0.22036	0.12038	1.8305	0.6857	3.3916	58.76	3.3916	0.6857	933	1,128
143	159	Down	18.00	738	902	4749	0.536	0.22163	0.12048	1.8396	0.6911	5.2650	24.77	5.2650	0.6911	604	1,126
143	159	Down	18.00	805	1168	5565	0.585	0.21828	0.12021	1.8159	0.6770	4.7646	29.02	4.7646	0.6770	659	1,126
143	159	Down	18.00	857	1459	6423	0.622	0.22228	0.12445	1.7862	0.6720	4.4023	33.50	4.4023	0.6720	701	1,127
143	159	Down	18.00	902	1704	7050	0.655	0.22025	0.12466	1.7668	0.6617	4.1373	36.77	4.1373	0.6617	738	1,127
143	159	Down	18.00	951	2064	7950	0.691	0.22343	0.12884	1.7342	0.6541	3.8517	41.46	3.8517	0.6541	778	1,126
143	159	Down	18.00	982	2334	8661	0.713	0.22829	0.13232	1.7252	0.6578	3.7108	45.17	3.7108	0.6578	803	1,127
143	159	Down	18.00	1026	2794	9603	0.745	0.23187	0.13888	1.6695	0.6415	3.4370	50.08	3.4370	0.6415	839	1,127
144	160	Down	20.00	736	1093	5000	0.535	0.23461	0.14718	1.5940	0.6161	4.5746	26.08	4.5746	0.6161	602	1,125
144	160	Down	20.00	803	1434	5879	0.583	0.23174	0.14869	1.5586	0.5987	4.0997	30.66	4.0997	0.5987	657	1,127
144	160	Down	20.00	857	1773	6695	0.622	0.23170	0.15123	1.5321	0.5885	3.7761	34.92	3.7761	0.5885	701	1,127
144	160	Down	20.00	904	2099	7406	0.657	0.23035	0.15254	1.5101	0.5784	3.5283	38.62	3.5283	0.5784	740	1,126
144	160	Down	20.00	947	2458	8222	0.688	0.23303	0.15538	1.4997	0.5777	3.3450	42.88	3.3450	0.5777	775	1,126
144	160	Down	20.00	981	2742	8745	0.712	0.23097	0.15593	1.4812	0.5681	3.1893	45.61	3.1893	0.5681	803	1,127
144	160	Down	20.00	997	2936	9205	0.724	0.23538	0.15905	1.4799	0.5729	3.1352	48.01	3.1352	0.5729	816	1,127

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
136	4.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
137	6.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
138	8.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
139	10.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
140	12.0	0.725	1222	6135	818	1000	0.1559	0.0656	2.377	0.749	5.020	32.00	5.020	0.7490
140	12.0	0.75	1375	6607	846	1034	0.1571	0.0668	2.352	0.744	4.805	34.46	4.805	0.7439
140	12.0	0.775	1540	7091	875	1069	0.1577	0.0677	2.330	0.739	4.605	36.98	4.605	0.7385
140	12.0	0.800	1721	7602	903	1103	0.1588	0.0689	2.307	0.734	4.417	39.65	4.417	0.7336
140	12.0	0.825	1935	8221	931	1138	0.1614	0.0705	2.289	0.734	4.249	42.87	4.249	0.7337
140	12.0	0.850	2181	8876	959	1172	0.1642	0.0727	2.258	0.730	4.070	46.29	4.070	0.7303
140	12.0	0.875	2458	9599	987	1207	0.1675	0.0750	2.232	0.729	3.905	50.06	3.905	0.7288
140	12.0	0.900	2735	10227	1016	1241	0.1688	0.0768	2.197	0.720	3.739	53.34	3.739	0.7203
140	12.0	0.925	3035	10816	1044	1276	0.1688	0.0784	2.153	0.706	3.564	56.41	3.564	0.7059
140	12.0	0.950	3358	11360	1072	1310	0.1683	0.0802	2.098	0.687	3.383	59.24	3.383	0.6868
141	14.0	0.725	1561	7164	817	999	0.1825	0.0841	2.171	0.740	4.589	37.36	4.589	0.7399
141	14.0	0.750	1766	7736	845	1033	0.1843	0.0860	2.142	0.734	4.381	40.34	4.381	0.7339
141	14.0	0.775	1986	8337	873	1067	0.1861	0.0878	2.121	0.730	4.198	43.48	4.198	0.7301
141	14.0	0.800	2234	8984	901	1102	0.1880	0.0896	2.098	0.726	4.021	46.85	4.021	0.7260
141	14.0	0.825	2513	9681	929	1136	0.1907	0.0920	2.072	0.722	3.852	50.49	3.852	0.7220
141	14.0	0.850	2836	10420	958	1171	0.1931	0.0948	2.037	0.714	3.674	54.34	3.674	0.7144
141	14.0	0.875	3198	11206	986	1205	0.1962	0.0981	1.999	0.707	3.504	58.44	3.504	0.7065
142	16.0	0.725	1996	8141	817	999	0.2073	0.1075	1.929	0.701	4.079	42.46	4.079	0.7010
142	16.0	0.750	2269	8818	846	1033	0.2100	0.1105	1.901	0.695	3.886	45.99	3.886	0.6951
142	16.0	0.775	2562	9531	874	1068	0.2124	0.1129	1.881	0.692	3.720	49.71	3.720	0.6918
142	16.0	0.800	2904	10321	902	1103	0.2156	0.1162	1.856	0.688	3.554	53.83	3.554	0.6877
142	16.0	0.825	3283	11169	930	1137	0.2196	0.1199	1.831	0.685	3.402	58.25	3.402	0.6848
143	18.0	0.725	2501	8979	817	998	0.2291	0.1351	1.696	0.648	3.590	46.83	3.590	0.6480





X. Data Set # 15

DATA SET Number 15

XC-142A (SK 59868-18.22) — Activity Factor 115, Diameter 15.208, # Blades 4, Nominal Temp Deg C 20.6, Nominal Temp Deg R 528.770, Nominal Density Ratio 0.957

Cut Down, Square Tip

Power weighted solidity = 0.18742

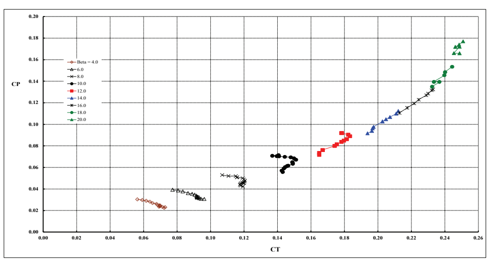
Twist (0.298 - Tip in deg) = 28.3

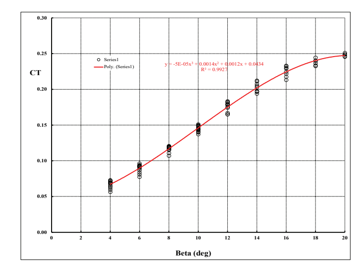
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
145	4.0	0.725	403	2612	811	1019	0.0712	0.0234	3.043	0.648	6.481	14.38	6.481	0.6482
145	4.0	0.750	449	2782	839	1054	0.0709	0.0236	3.009	0.640	6.196	15.32	6.196	0.6395
145	4.0	0.775	499	2956	867	1089	0.0706	0.0237	2.973	0.630	5.924	16.27	5.924	0.6303
145	4.0	0.800	551	3133	895	1125	0.0701	0.0238	2.948	0.623	5.686	17.25	5.686	0.6228
145	4.0	0.825	607	3312	923	1160	0.0697	0.0239	2.917	0.615	5.456	18.23	5.456	0.6145
145	4.0	0.850	668	3503	951	1195	0.0695	0.0241	2.888	0.607	5.244	19.28	5.244	0.6074
145	4.0	0.875	739	3725	979	1230	0.0697	0.0244	2.857	0.602	5.041	20.51	5.041	0.6020
145	4.0	0.900	817	3916	1007	1265	0.0693	0.0248	2.794	0.587	4.793	21.56	4.793	0.5870
145	4.0	0.925	908	4103	1035	1300	0.0688	0.0254	2.707	0.566	4.519	22.59	4.519	0.5664
145	4.0	0.950	1012	4242	1063	1335	0.0674	0.0261	2.579	0.534	4.192	23.35	4.192	0.5343
145	4.0	0.975	1137	4355	1091	1371	0.0656	0.0271	2.420	0.495	3.830	23.97	3.830	0.4947
145	4.0	1.000	1279	4418	1119	1406	0.0633	0.0283	2.238	0.449	3.454	24.32	3.454	0.4493
146	6.0	0.725	539	3405	810	1017	0.0932	0.0315	2.960	0.721	6.317	18.74	6.317	0.7214
146	6.0	0.750	601	3636	838	1053	0.0929	0.0316	2.936	0.714	6.050	20.02	6.050	0.7139
146	6.0	0.775	668	3875	866	1088	0.0927	0.0319	2.908	0.707	5.801	21.33	5.801	0.7067
146	6.0	0.800	739	4123	893	1123	0.0926	0.0321	2.887	0.701	5.579	22.70	5.579	0.7011
146	6.0	0.825	814	4376	921	1158	0.0924	0.0322	2.869	0.696	5.376	24.09	5.376	0.6959
146	6.0	0.850	896	4637	949	1193	0.0923	0.0324	2.845	0.690	5.175	25.53	5.175	0.6896
146	6.0	0.875	985	4914	977	1228	0.0923	0.0327	2.823	0.684	4.989	27.05	4.989	0.6844
146	6.0	0.900	1083	5174	1005	1263	0.0919	0.0330	2.780	0.672	4.777	28.48	4.777	0.6725
146	6.0	0.925	1199	5444	1033	1298	0.0915	0.0337	2.716	0.656	4.540	29.97	4.540	0.6556
146	6.0	0.950	1332	5693	1061	1333	0.0907	0.0346	2.625	0.631	4.274	31.34	4.274	0.6311
146	6.0	0.975	1480	5869	1089	1368	0.0888	0.0355	2.500	0.595	3.966	32.31	3.966	0.5945
146	6.0	1.000	1648	5987	1117	1403	0.0861	0.0367	2.349	0.550	3.633	32.96	3.633	0.5501
147	8.0	0.725	753	4298	810	1017	0.1177	0.0440	2.675	0.732	5.708	23.66	5.708	0.7323
147	8.0	0.750	840	4611	838	1053	0.1178	0.0442	2.664	0.729	5.489	25.38	5.489	0.7294
147	8.0	0.775	934	4939	866	1088	0.1182	0.0446	2.651	0.727	5.288	27.19	5.288	0.7273
147	8.0	0.800	1034	5282	893	1123	0.1186	0.0449	2.643	0.727	5.108	29.08	5.108	0.7265
147	8.0	0.825	1138	5620	921	1158	0.1187	0.0450	2.635	0.725	4.938	30.94	4.938	0.7245
147	8.0	0.850	1255	5981	949	1193	0.1190	0.0454	2.620	0.721	4.766	32.93	4.766	0.7213
147	8.0	0.875	1382	6332	977	1228	0.1189	0.0459	2.593	0.713	4.582	34.86	4.582	0.7135
147	8.0	0.900	1528	6734	1005	1263	0.1196	0.0466	2.565	0.708	4.407	37.07	4.407	0.7077
147	8.0	0.925	1696	7161	1033	1298	0.1204	0.0477	2.525	0.699	4.222	39.42	4.222	0.6992
147	8.0	0.950	1881	7550	1061	1333	0.1203	0.0488	2.465	0.683	4.014	41.56	4.014	0.6825
147	8.0	0.975	2078	7838	1089	1368	0.1186	0.0499	2.378	0.653	3.772	43.15	3.772	0.6535
147	8.0	1.000	2295	8085	1117	1403	0.1163	0.0511	2.278	0.620	3.523	44.51	3.523	0.6199
148	10.0	0.725	1007	5233	809	1017	0.1433	0.0588	2.435	0.736	5.197	28.81	5.197	0.7357
148	10.0	0.750	1126	5617	837	1052	0.1437	0.0594	2.418	0.732	4.988	30.92	4.988	0.7316
148	10.0	0.775	1253	6017	865	1087	0.1442	0.0600	2.405	0.729	4.802	33.12	4.802	0.7290
148	10.0	0.800	1390	6434	893	1122	0.1448	0.0605	2.393	0.727	4.629	35.42	4.629	0.7266
148	10.0	0.825	1536	6873	921	1157	0.1454	0.0610	2.386	0.726	4.475	37.84	4.475	0.7260
148	10.0	0.850	1696	7331	949	1192	0.1461	0.0615	2.374	0.724	4.323	40.36	4.323	0.7243
148	10.0	0.875	1883	7862	976	1227	0.1479	0.0627	2.361	0.724	4.175	43.28	4.175	0.7245
148	10.0	0.900	2081	8366	1004	1262	0.1488	0.0636	2.338	0.720	4.020	46.06	4.020	0.7196
148	10.0	0.925	2309	8897	1032	1297	0.1498	0.0650	2.303	0.711	3.853	48.98	3.853	0.7112
148	10.0	0.950	2561	9402	1060	1332	0.1501	0.0666	2.253	0.697	3.671	51.76	3.671	0.6966
148	10.0	0.975	2840	9914	1088	1367	0.1503	0.0683	2.199	0.680	3.491	54.58	3.491	0.6802
148	10.0	1.000	3114	10265	1116	1402	0.1479	0.0695	2.130	0.654	3.296	56.51	3.296	0.6536
149	12.0	0.725	1299	6104	808	1016	0.1675	0.0761	2.200	0.718	4.699	33.60	4.699	0.7184
149	12.0	0.750	1463	6595	836	1051	0.1691	0.0775	2.183	0.716	4.508	36.31	4.508	0.7164
149	12.0	0.775	1642	7115	864	1086	0.1709	0.0788	2.168	0.715	4.333	39.17	4.333	0.7153
149	12.0	0.800	1835	7664	892	1121	0.1727	0.0801	2.157	0.716	4.177	42.19	4.177	0.7155
149	12.0	0.825	2036	8229	920	1156	0.1744	0.0810	2.153	0.718	4.042	45.30	4.042	0.7175
149	12.0	0.850	2263	8848	948	1191	0.1767	0.0823	2.146	0.720	3.910	48.71	3.910	0.7197
149	12.0	0.875	2521	9489	976	1226	0.1788	0.0841	2.126	0.718	3.764	52.24	3.764	0.7175
149	12.0	0.900	2807	10164	1003	1261	0.1810	0.0860	2.104	0.714	3.621	55.95	3.621	0.7144
149	12.0	0.925	3117	10833	1031	1296	0.1827	0.0880	2.076	0.708	3.475	59.64	3.475	0.7079
149	12.0	0.950	3454	11388	1059	1331	0.1821	0.0900	2.022	0.689	3.297	62.69	3.297	0.6885
149	12.0	0.975	3795	11831	1087	1366	0.1796	0.0915	1.962	0.664	3.118	65.13	3.118	0.6636
150	14.0	0.725	1674	7222	808	1015	0.1985	0.0984	2.018	0.717	4.314	39.76	4.314	0.7175
150	14.0	0.750	1877	7761	835	1050	0.1994	0.0997	2.001	0.713	4.135	42.73	4.135	0.7128
150	14.0	0.775	2111	8366	863	1085	0.2013	0.1016	1.981	0.709	3.963	46.06	3.963	0.7094
150	14.0	0.800	2363	9006	891	1120	0.2033	0.1034	1.967	0.708	3.811	49.58	3.811	0.7078
150	14.0	0.825	2651	9707	919	1155	0.2061	0.1057	1.949	0.706	3.662	53.44	3.662	0.7060
150	14.0	0.850	2971	10432	947	1190	0.2086	0.1084	1.925	0.702	3.511	57.43	3.511	0.7018
150	14.0	0.875	3321	11195	975	1225	0.2113	0.1110	1.903	0.698	3.371	61.63	3.371	0.6980
151	16.0	0.725	2094	8176	808	1016	0.2243	0.1227	1.828	0.691	3.904	45.01	3.904	0.6909
151	16.0	0.750	2358	8837	836	1051	0.2266	0.1248	1.815	0.689	3.748	48.65	3.748	0.6894
151	16.0	0.775	2657	9537	864	1086	0.2290	0.1275	1.796	0.686	3.589	52.50	3.589	0.6860
151	16.0	0.800	2981	10253	892	1121	0.2311	0.1301	1.777	0.682	3.439	56.44	3.439	0.6815
152	18.0	0.725	2543	8779	808	1016	0.2409	0.1490	1.616	0.633	3.452	48.33	3.452	0.6330
152	18.0	0.750	2866	9475	836	1051	0.2429	0.1517	1.601	0.630	3.306	52.16	3.306	0.6298





Y. Data Set # 16

DATA SET Number 16

XC-142A (SK 59868-18.22R)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio	Power weighted solidity = 0.17112
Cut Down, Round Tip	105.0	15.208	4	17.8	523.730	0.972	Twist (0.25R -Tip in deg) = 28.3

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

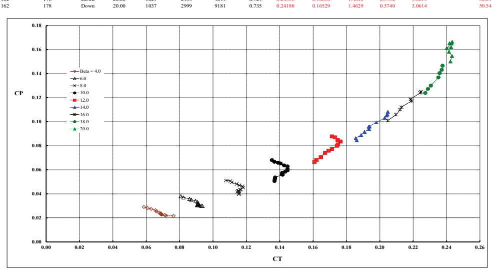
$C_t = 0.1515 \frac{(T/1,000)}{(\rho/\rho_o)(RPM/1,000)^2(Dia/10)^4}$ $C_p = 0.500 \frac{(HP/1,000)}{(\rho/\rho_o)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798 \frac{C_T^{3/2}}{C_P}$

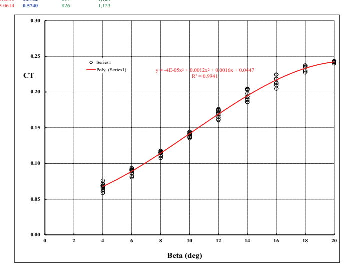
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Viscous M and Vt
								Harris Computed									
154	???	Down	4.00	769	160	1592	0.545	0.07625	0.02162	3.5259	0.7769	9.9500	8.76	9.9500	0.7769	612	1,124
154	???	Down	4.00	892	252	2017	0.633	0.07180	0.02182	3.2899	0.7035	8.0040	11.10	8.0040	0.7035	710	1,122
154	???	Down	4.00	1018	382	2603	0.722	0.07114	0.02226	3.1965	0.6803	6.8141	14.33	6.8141	0.6803	811	1,123
154	???	Down	4.00	1146	553	3210	0.813	0.06922	0.02258	3.0653	0.6436	5.8047	17.67	5.8047	0.6436	913	1,122
154	???	Down	4.00	1173	598	3365	0.832	0.06926	0.02277	3.0416	0.6388	5.6271	18.52	5.6271	0.6388	934	1,123
154	???	Down	4.00	1208	659	3560	0.857	0.06909	0.02298	3.0071	0.6308	5.4021	19.60	5.4021	0.6308	962	1,122
154	???	Down	4.00	1235	706	3704	0.876	0.06878	0.02304	2.9857	0.6249	5.2465	20.39	5.2465	0.6249	983	1,123
154	???	Down	4.00	1264	767	3890	0.896	0.06896	0.02334	2.9540	0.6190	5.0717	21.41	5.0717	0.6190	1,007	1,123
154	???	Down	4.00	1300	849	4095	0.922	0.06863	0.02375	2.8894	0.6040	4.8233	22.54	4.8233	0.6040	1,035	1,123
154	???	Down	4.00	1339	953	4281	0.950	0.06763	0.02440	2.7717	0.5752	4.4921	23.57	4.4921	0.5752	1,066	1,122
154	???	Down	4.00	1366	1052	4353	0.969	0.06607	0.02537	2.6046	0.5343	4.1378	23.96	4.1378	0.5343	1,088	1,123
154	???	Down	4.00	1394	1160	4497	0.989	0.06554	0.02632	2.4902	0.5088	3.8767	24.76	3.8767	0.5088	1,110	1,122
154	???	Down	4.00	1434	1316	4569	1.017	0.06293	0.02743	2.2942	0.4593	3.4719	25.15	3.4719	0.4593	1,142	1,123
154	???	Down	4.00	1461	1421	4579	1.036	0.06076	0.02801	2.1694	0.4267	3.2224	25.21	3.2224	0.4267	1,163	1,123
154	???	Down	4.00	1493	1574	4610	1.059	0.05857	0.02907	2.0150	0.3892	2.9288	25.38	2.9288	0.3892	1,189	1,123
155	171	Down	6.00	772	223	1972	0.547	0.09371	0.02979	3.1458	0.7685	8.8430	10.86	8.8430	0.7685	615	1,124
155	171	Down	6.00	895	350	2629	0.635	0.09295	0.03001	3.0978	0.7537	7.5114	14.47	7.5114	0.7537	713	1,122
155	171	Down	6.00	1016	516	3348	0.721	0.09186	0.03024	3.0377	0.7347	6.4884	18.43	6.4884	0.7347	809	1,122
155	171	Down	6.00	1148	750	4211	0.814	0.09050	0.03047	2.9702	0.7130	5.6147	23.18	5.6147	0.7130	914	1,123
155	171	Down	6.00	1178	815	4437	0.835	0.09056	0.03064	2.9552	0.7097	5.4442	24.43	5.4442	0.7097	938	1,123
155	171	Down	6.00	1206	878	4683	0.855	0.09119	0.03077	2.9641	0.7143	5.3337	25.78	5.3337	0.7143	960	1,123
155	171	Down	6.00	1244	983	4960	0.882	0.09077	0.03138	2.8924	0.6954	5.0458	27.31	5.0458	0.6954	991	1,123
155	171	Down	6.00	1264	1037	5135	0.896	0.09103	0.03156	2.8842	0.6944	4.9518	28.27	4.9518	0.6944	1,007	1,123
155	171	Down	6.00	1307	1170	5494	0.927	0.09109	0.03221	2.8281	0.6811	4.6957	30.25	4.6957	0.6811	1,041	1,123
155	171	Down	6.00	1337	1289	5731	0.948	0.09080	0.03315	2.7392	0.6587	4.4461	31.55	4.4461	0.6587	1,065	1,123
155	171	Down	6.00	1369	1427	5926	0.971	0.08955	0.03418	2.6197	0.6256	4.1528	32.62	4.1528	0.6256	1,090	1,123
155	171	Down	6.00	1404	1578	6059	0.996	0.08705	0.03504	2.4841	0.5849	3.8397	33.36	3.8397	0.5849	1,118	1,122
155	171	Down	6.00	1428	1694	6183	1.013	0.08588	0.03576	2.4018	0.5616	3.6499	34.04	3.6499	0.5616	1,137	1,123
155	171	Down	6.00	1468	1902	6265	1.041	0.08234	0.03695	2.2282	0.5102	3.2939	34.49	3.2939	0.5102	1,169	1,123
155	171	Down	6.00	1495	2065	6367	1.060	0.08068	0.03798	2.1241	0.4815	3.0833	35.05	3.0833	0.4815	1,190	1,123
156	172	Down	8.00	766	290	2393	0.543	0.11551	0.03966	2.9126	0.7899	8.2517	13.17	8.2517	0.7899	610	1,123
156	172	Down	8.00	894	472	3266	0.634	0.11574	0.04060	2.8505	0.7739	6.9195	17.98	6.9195	0.7739	712	1,123
156	172	Down	8.00	1020	717	4211	0.723	0.11463	0.04153	2.7605	0.7458	5.8731	23.18	5.8731	0.7458	812	1,123
156	172	Down	8.00	1147	1041	5361	0.813	0.11541	0.04240	2.7219	0.7379	5.1499	29.51	5.1499	0.7379	913	1,123
156	172	Down	8.00	1177	1124	5628	0.835	0.11506	0.04237	2.7157	0.7351	5.0071	30.98	5.0071	0.7351	937	1,122
156	172	Down	8.00	1205	1212	5916	0.855	0.11539	0.04257	2.7104	0.7347	4.8812	32.57	4.8812	0.7347	960	1,122
156	172	Down	8.00	1238	1340	6285	0.878	0.11614	0.04341	2.6757	0.7277	4.6903	34.60	4.6903	0.7277	986	1,123
156	172	Down	8.00	1261	1424	6552	0.894	0.11670	0.04365	2.6736	0.7288	4.6011	36.07	4.6011	0.7288	1,004	1,123
156	172	Down	8.00	1306	1638	7107	0.926	0.11801	0.04520	2.6111	0.7158	4.3388	39.12	4.3388	0.7158	1,040	1,123
156	172	Down	8.00	1336	1795	7415	0.947	0.11766	0.04627	2.5431	0.6961	4.1309	40.82	4.1309	0.6961	1,064	1,123
156	172	Down	8.00	1369	1967	7661	0.971	0.11577	0.04712	2.4570	0.6671	3.8948	42.17	3.8948	0.6671	1,090	1,123
156	172	Down	8.00	1396	2131	7857	0.990	0.11419	0.04814	2.3718	0.6396	3.6870	43.25	3.6870	0.6396	1,112	1,123
156	172	Down	8.00	1437	2390	8113	1.019	0.11127	0.04950	2.2478	0.5983	3.3946	44.66	3.3946	0.5983	1,144	1,123
156	172	Down	8.00	1465	2591	8370	1.039	0.11045	0.05065	2.1808	0.5784	3.2304	46.08	3.2304	0.5784	1,167	1,123
156	172	Down	8.00	1497	2793	8524	1.062	0.10773	0.05117	2.1053	0.5514	3.0519	46.93	3.0519	0.5514	1,192	1,122
157	173	Down	10.00	766	371	2835	0.543	0.13684	0.05073	2.6973	0.7962	7.6415	15.61	7.6415	0.7962	610	1,123
157	173	Down	10.00	892	604	3851	0.633	0.13708	0.05231	2.6207	0.7743	6.3758	21.20	6.3758	0.7743	710	1,122
157	173	Down	10.00	1015	912	4991	0.720	0.13721	0.05361	2.5596	0.7566	5.4726	27.48	5.4726	0.7566	808	1,123
157	173	Down	10.00	1139	1345	6491	0.808	0.14171	0.05594	2.5330	0.7609	4.8260	35.73	4.8260	0.7609	907	1,122
157	173	Down	10.00	1180	1500	6943	0.837	0.14122	0.05611	2.5168	0.7548	4.6287	38.22	4.6287	0.7548	940	1,123
157	173	Down	10.00	1210	1657	7312	0.858	0.14145	0.05749	2.4604	0.7384	4.4128	40.25	4.4128	0.7384	964	1,123
157	173	Down	10.00	1242	1821	7805	0.881	0.14330	0.05842	2.4530	0.7410	4.2861	42.97	4.2861	0.7410	989	1,123
157	173	Down	10.00	1266	1965	8185	0.898	0.14464	0.05952	2.4300	0.7375	4.1654	45.06	4.1654	0.7375	1,008	1,123
157	173	Down	10.00	1302	2178	8658	0.923	0.14465	0.06065	2.3850	0.7238	3.9752	47.66	3.9752	0.7238	1,037	1,123
157	173	Down	10.00	1338	2452	9140	0.949	0.14460	0.06292	2.2982	0.6974	3.7276	50.32	3.7276	0.6974	1,065	1,123
157	173	Down	10.00	1367	2643	9407	0.969	0.14257	0.06359	2.2420	0.6756	3.5592	51.79	3.5592	0.6756	1,089	1,123
157	173	Down	10.00	1407	2958	9818	0.998	0.14046	0.06527	2.1520	0.6436	3.3191	54.05	3.3191	0.6436	1,120	1,123
157	173	Down	10.00	1434	3164	10085	1.017	0.13890	0.06595	2.1062	0.6264	3.1874	55.52	3.1874	0.6264	1,142	1,123
157	173	Down	10.00	1460	3376	10291	1.035	0.13673	0.06667	2.0508	0.6052	3.0483	56.65	3.0483	0.6052	1,163	1,123
157	173	Down	10.00	1495	3702	10681	1.060	0.13535	0.06810	1.9876	0.5835	2.8852	58.80	2.8852	0.5835	1,190	1,123
158	174	Down	12.00	767	488	3340	0.543	0.16080	0.06647	2.4190	0.7741	6.8443	18.39	6.8443	0.7741	611	1,125
158	174	Down	12.00	895	795	4578	0.633	0.16187	0.06816	2.3749	0.7625	5.7585	25.20	5.7585	0.7625	713	1,126
158	174	Down	12.00	1016	1203	6000	0.719	0.16462	0.07050	2.3350	0.7560	4.9875	33.03	4.9875	0.7560	809	1,125
158	174	Down	12.00	1143	1800	7712	0.809	0.16719	0.07409	2.2566	0.7363	4.2844	42.46	4.2844	0.7363	910	1,125
158	174	Down	12.00	1182	2038	8351	0.836	0.16929	0.07585	2.2319	0.7328	4.0976	45.97	4.0976	0.7328	941	1,126
158	174	Down	12.00	1208	2220	8825	0.855	0.17128	0.07740	2.2128	0.7308	3.9752	48.58	3.9752	0.7308	962	1,125
158	174	Down	12.00	1240	2482	9463	0.878	0.17430	0.08001	2.1785	0.7258	3.8127	52.09	3.8127	0.7258	987	1,125
158	174	Down	12.00	1266	2678	9896	0.896	0.17487	0.08112	2.1557	0.7194	3.6953	54.48	3.6953	0.7194	1,008	1,125
158	174	Down	12.00	1302	2999	10557	0.921	0.17638	0.08351	2.1120	0.7078	3.5202	58.12	3.5202	0.7078	1,037	1,126
158	174	Down	12.00	1336	3293	11011	0.945	0.17472	0.08488	2.0585	0.6866	3.3438	60.62	3.3438	0.6866	1,064	1,126
158	174	Down	12.00	1376	3691	11568	0.974	0.17304	0.08708	1.9872	0.6597	3.1341	63.68	3.1341	0.6597	1,096	1,125
158	174	Down	12.00	1405	3963	11939	0.994	0.17129	0.08782	1.9505	0.6442	3.0126	65.73	3.0126	0.6442	1,119	1,126
159	175	Down	14.00	768	623	3877	0.544	0.18616	0.08453	2.2023	0.7583	6.2231	21.34	6.2231	0.7583	612	1,124
159	175	Down	14.00	894	1003	5237	0.633	0.18558	0.08628	2.1510	0.7394	5.2213	28.83	5.2213	0.7394	712	1,125
159	175	Down	14.00	973	1332	6310	0.689	0.18877	0.08887	2.1240	0.7364	4.7372	34.74	4.7372	0.7364	775	1,125
159	175	Down	14.00	1017	1568	6969	0.720	0.19083	0.09162	2.0829	0.7261	4.4445	38.37	4.4445	0.7261	810	1,125
159	175	Down	14.00	1071	1877	7836	0.758	0.19348	0.09391	2.0603	0.7232	4.1747	43.14	4.1747	0.7232	853	1,125
159	175	Down	14.00	1099	2073	8269	0.778	0.19390	0.09599	2.0201	0.7098	3.9889	45.52	3.9889	0.7098	875	1,125
159	175	Down	14.00	1141	2317	8887	0.807	0.19333	0.09587	2.0166	0.7076	3.8356	48.92	3.8356	0.7076	909	1,126
159	175	Down	14.00	1175	2625	9650	0.832	0.19796	0.09945	1.9904	0.7067	3.6762	53.12	3.6762	0.7067	936	1,125
159	175	Down	14.00	1208	2960	10454	0.855	0.20290	0.10320	1.9659	0.7067	3.5318	57.55	3.5318	0.7067	962	1,125
159	175	Down	14.00	1242	3280	11114	0.879	0.20406	0.10522	1.9392	0.6991	3.3884	61.18	3.3884	0.6991	989	1,125
159	175	Down	14.00	1269	3525	11630	0.898	0.20454	0.10602	1.9293	0.6963	3.2993	64.02	3.2993	0.6963	1,010	1,125
159	175	Down	14.00	1286	3745	11959	0.910	0.20480	0.10823	1.8923	0.6834	3.1933	65.84	3.1933	0.6834	1,024	1,125
160	176	Down	16.00	765	736	4231	0.543	0.20476	0.10104	2.0265	0.7318	5.7486	23.29	5.7486	0.7318	609	1,122
160	176	Down	16.00	894	1231	5916	0.634	0.20964	0.10589	1.9798	0.7234	4.8058	32.57	4.8058	0.7234	712	1,123
160	176	Down	16.00	974	1656	7106	0.690	0.21214	0.11015	1.9259	0.7079	4.2911	39.12	4.2911	0.7079	776	1,124
160	176	Down	16.00	1016	1914	7764	0.720	0.21302	0.11217	1.8991	0.6995	4.0564	42.74	4.0564	0.6995	809	1,124
160	176	Down	16.00	1071	2347	8873	0.759	0.21909	0.11742	1.8658	0.6969	3.7806	48.85	3.7806	0.6969	853	1,124
160	176	Down	16.00	1102	2583	9366	0.781	0.21843	0.11863	1.8413	0.6867	3.6260	51.56	3.6260	0.6867	878	1,124
160	176	Down	16.00	1149	3064	10455	0.815	0.22429	0.12415	1.8066	0.6828	3.4122	57.56	3.4122	0.6828	915	1,123
160	176	Down	16.00	1177	3315	10989	0.834	0.22466	0.12496	1.7979	0.6800	3.3149	60.50	3.3149	0.6800	937	1,124
161	177	Down	18.00	764	899	4683	0.542	0.22723	0.12391	1.8339	0.6976	5.2091	25.78	5.2091	0.6976	608	1,122
161	177	Down	18.00	827	1172	5525	0.586	0.22879	0.12736	1.7965	0.6857	4.7142	30.42	4.7142	0.6857	659	1,124
161	177	Down	18.00	890	1493	6450	0.631	0.23062	0.13017	1.7718	0.6790	4.3202	35.51	4.3202	0.6790	709	1,123
161	177	Down	18.00	976	2071	7908	0.692	0.23512	0.13691	1.7173	0.6645	3.8184	43.53	3.8184	0.6645	777	1,123
161	177	Down	18.00	1019	2418	8647	0.722	0.23585	0.14046	1.6792	0.6508	3.5761	47.60	3.5761	0.6508	811	1,124
161	177	Down	18.00	1060	2776	9407	0.751	0.23712	0.14326	1.6552	0.6432	3.3887	51.79	3.3887	0.6432	844	1,124
161	177	Down	18.00	1091	3099	9982	0.773	0.23752	0.14668	1.6193	0.6298	3.2210	54.95	3.2210	0.6298	869	1,124
162	178	Down	20.00	770	1116	5073	0.546	0.24233	0.15025	1.6129	0.6336	4.5457	27.93	4.5457	0.6336	613	1,123
162	178	Down	20.00	827	1424	5874	0.586	0.24325	0.15474	1.5720	0.6187	4.1250	32.34	4.1250	0.6187	659	1,124
162	178	Down	20.00	893	1833	6799	0.633	0.24147	0.15820	1.5263	0.5985	3.7092	37.43	3.7092	0.5985	711	1,123
162	178	Down	20.00	934	2148	7477	0.662	0.24275	0.16203	1.4981	0.5890	3.4809	41.16	3.4809	0.5890	744	1,123
162	178	Down	20.00	972	2408	8011	0.689	0.24015	0.16116	1.4901	0.5827	3.3268	44.10	3.3268	0.5827	774	1,123
162	178	Down	20.00	1017	2827	8873	0.721	0.24297	0.16519	1.4709	0.5786	3.1387	48.85	3.1387	0.5786	810	1,123
162	178	Down	20.00	1029	2953	9099	0.729	0.24338	0.16658	1.4610	0.5752	3.0813	50.09	3.0813	0.5752	819	1,124
162	178	Down	20.00	1037	2999	9181	0.735	0.24180	0.16529	1.4629	0.5740	3.0614	50.54	3.0614	0.5740	826	1,123

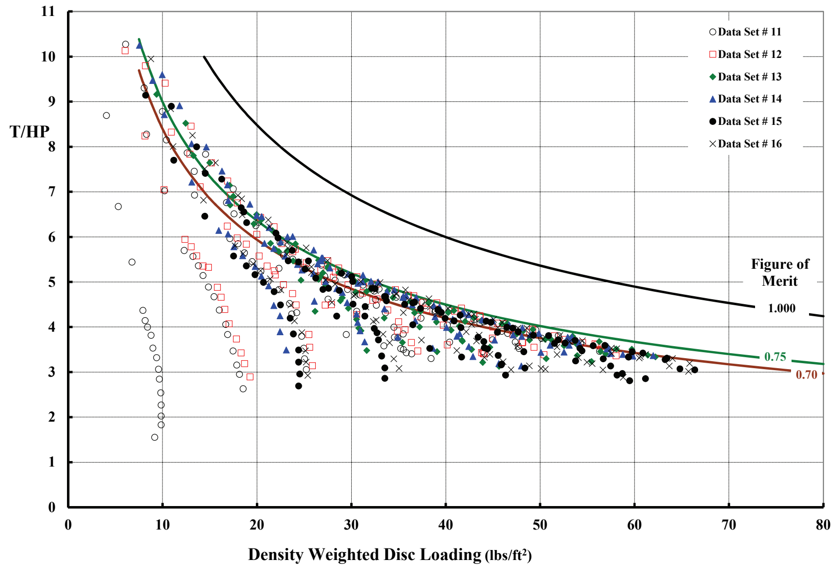
FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
							Harris Computed							
154	4.0	0.725	387	2602	814	1022	0.0706	0.0223	3.166	0.671	6.724	14.32	6.724	0.6712
154	4.0	0.750	431	2770	842	1058	0.0701	0.0224	3.133	0.662	6.427	15.25	6.427	0.6619
154	4.0	0.775	479	2944	870	1093	0.0698	0.0225	3.096	0.653	6.146	16.21	6.146	0.6526
154	4.0	0.800	530	3125	898	1128	0.0696	0.0227	3.065	0.645	5.896	17.20	5.896	0.6450
154	4.0	0.825	583	3316	926	1163	0.0694	0.0228	3.048	0.641	5.688	18.25	5.688	0.6410
154	4.0	0.850	641	3502	954	1199	0.0690	0.0229	3.019	0.633	5.463	19.28	5.463	0.6327
154	4.0	0.875	706	3707	982	1234	0.0689	0.0231	2.986	0.626	5.251	20.41	5.251	0.6256
154	4.0	0.900	774	3925	1010	1269	0.0690	0.0233	2.965	0.622	5.071	21.61	5.071	0.6217
154	4.0	0.925	858	4118	1038	1304	0.0686	0.0238	2.884	0.603	4.800	22.67	4.800	0.6027
154	4.0	0.950	962	4277	1066	1341	0.0674	0.0245	2.747	0.569	4.446	23.55	4.446	0.5690
154	4.0	0.975	1084	4415	1094	1375	0.0661	0.0256	2.581	0.530	4.073	24.31	4.073	0.5296
154	4.0	1.000	1219	4515	1122	1410	0.0643	0.0267	2.407	0.487	3.704	24.86	3.704	0.4870
155	6.0	0.725	526	3383	814	1022	0.0917	0.0303	3.029	0.732	6.432	18.62	6.432	0.7321
155	6.0	0.750	585	3611	842	1058	0.0914	0.0304	3.009	0.726	6.173	19.88	6.173	0.7259
155	6.0	0.775	648	3849	870	1093	0.0912	0.0305	2.992	0.721	5.940	21.19	5.940	0.7212
155	6.0	0.800	714	4092	898	1128	0.0911	0.0306	2.979	0.717	5.731	22.53	5.731	0.7174
155	6.0	0.825	786	4340	926	1163	0.0909	0.0307	2.959	0.712	5.522	23.89	5.522	0.7119
155	6.0	0.850	864	4602	954	1199	0.0907	0.0308	2.943	0.707	5.326	25.33	5.326	0.7071
155	6.0	0.875	953	4892	982	1234	0.0910	0.0312	2.919	0.703	5.133	26.93	5.133	0.7026
155	6.0	0.900	1050	5186	1010	1269	0.0912	0.0316	2.888	0.696	4.939	28.55	4.939	0.6960
155	6.0	0.925	1167	5462	1038	1304	0.0910	0.0323	2.812	0.677	4.680	30.07	4.680	0.6769
155	6.0	0.950	1299	5739	1066	1340	0.0905	0.0332	2.728	0.655	4.418	31.59	4.418	0.6550
155	6.0	0.975	1449	5948	1094	1375	0.0891	0.0343	2.601	0.620	4.105	32.74	4.105	0.6195
155	6.0	1.000	1607	6097	1122	1410	0.0869	0.0352	2.465	0.580	3.794	33.56	3.794	0.5797
156	6.0	0.725	724	4246	814	1022	0.1151	0.0417	2.762	0.748	5.865	23.37	5.865	0.7478
156	6.0	0.750	806	4545	842	1058	0.1150	0.0418	2.749	0.744	5.639	25.02	5.639	0.7440
156	6.0	0.775	894	4855	870	1093	0.1151	0.0421	2.735	0.741	5.431	26.73	5.431	0.7405
156	6.0	0.800	988	5175	898	1128	0.1152	0.0423	2.723	0.737	5.238	28.49	5.238	0.7374
156	6.0	0.825	1089	5506	926	1163	0.1153	0.0425	2.710	0.734	5.056	30.31	5.056	0.7342
156	6.0	0.850	1198	5863	954	1199	0.1155	0.0427	2.704	0.733	4.894	32.28	4.894	0.7333
156	6.0	0.875	1319	6233	982	1234	0.1159	0.0431	2.687	0.730	4.726	34.31	4.726	0.7301
156	6.0	0.900	1467	6678	1010	1269	0.1174	0.0441	2.662	0.728	4.552	36.76	4.552	0.7280
156	6.0	0.925	1630	7064	1038	1304	0.1177	0.0452	2.604	0.713	4.334	38.89	4.334	0.7128
156	6.0	0.950	1810	7430	1066	1340	0.1172	0.0462	2.535	0.692	4.105	40.90	4.105	0.6924
156	6.0	0.975	2004	7698	1094	1375	0.1153	0.0474	2.434	0.660	3.841	42.38	3.841	0.6596
156	6.0	1.000	2221	7986	1122	1410	0.1138	0.0487	2.336	0.629	3.596	43.96	3.596	0.6288
157	10.00	0.725	938	5107	814	1022	0.1385	0.0540	2.564	0.761	5.445	28.11	5.445	0.7614
157	10.00	0.750	1052	5489	842	1058	0.1389	0.0546	2.544	0.756	5.218	30.22	5.218	0.7565
157	10.00	0.775	1174	5888	870	1093	0.1396	0.0553	2.526	0.753	5.015	32.41	5.015	0.7531
157	10.00	0.800	1305	6304	898	1128	0.1403	0.0559	2.511	0.751	4.831	34.70	4.831	0.7506
157	10.00	0.825	1445	6741	926	1163	0.1412	0.0565	2.500	0.750	4.665	37.11	4.665	0.7495
157	10.00	0.850	1601	7211	954	1199	0.1421	0.0571	2.489	0.748	4.504	39.70	4.504	0.7485
157	10.00	0.875	1777	7673	982	1234	0.1427	0.0581	2.455	0.740	4.318	42.24	4.318	0.7402
157	10.00	0.900	1981	8224	1010	1269	0.1446	0.0596	2.428	0.737	4.151	45.27	4.151	0.7367
157	10.00	0.925	2207	8702	1038	1304	0.1449	0.0612	2.369	0.720	3.943	47.91	3.943	0.7198
157	10.00	0.950	2451	9124	1066	1340	0.1439	0.0626	2.299	0.696	3.723	50.23	3.723	0.6958
157	10.00	0.975	2712	9510	1094	1375	0.1425	0.0641	2.222	0.669	3.507	52.35	3.507	0.6692
157	10.00	1.000	2972	9835	1122	1410	0.1401	0.0652	2.150	0.642	3.309	54.14	3.309	0.6422
158	12.00	0.725	1241	6093	815	1024	0.1646	0.0710	2.317	0.750	4.910	33.54	4.910	0.7500
158	12.00	0.750	1398	6564	843	1060	0.1655	0.0721	2.293	0.744	4.695	36.14	4.695	0.7444
158	12.00	0.775	1568	7056	872	1095	0.1667	0.0734	2.271	0.740	4.500	38.84	4.500	0.7397
158	12.00	0.800	1752	7572	900	1130	0.1679	0.0746	2.250	0.736	4.322	41.68	4.322	0.7360
158	12.00	0.825	1951	8118	928	1166	0.1691	0.0756	2.236	0.734	4.161	44.69	4.161	0.7337
158	12.00	0.850	2176	8698	956	1201	0.1708	0.0772	2.212	0.730	3.997	47.88	3.997	0.7295
158	12.00	0.875	2441	9357	984	1236	0.1735	0.0795	2.183	0.726	3.833	51.51	3.833	0.7256
158	12.00	0.900	2732	10024	1012	1272	0.1755	0.0816	2.151	0.719	3.669	55.18	3.669	0.7189
158	12.00	0.925	3038	10597	1040	1307	0.1757	0.0836	2.101	0.703	3.488	58.34	3.488	0.7027
158	12.00	0.950	3359	11123	1068	1342	0.1749	0.0854	2.048	0.683	3.311	61.23	3.311	0.6834
158	12.00	0.975	3697	11598	1096	1378	0.1730	0.0868	1.992	0.661	3.137	63.85	3.137	0.6612
159	14.00	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.850	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.875	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
159	14.00	0.900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
160	16.00	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
160	16.00	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
160	16.00	0.775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
160	16.00	0.800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
160	16.00	0.825	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
161	18.00	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
161	18.00	0.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
162	20.00	0.725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

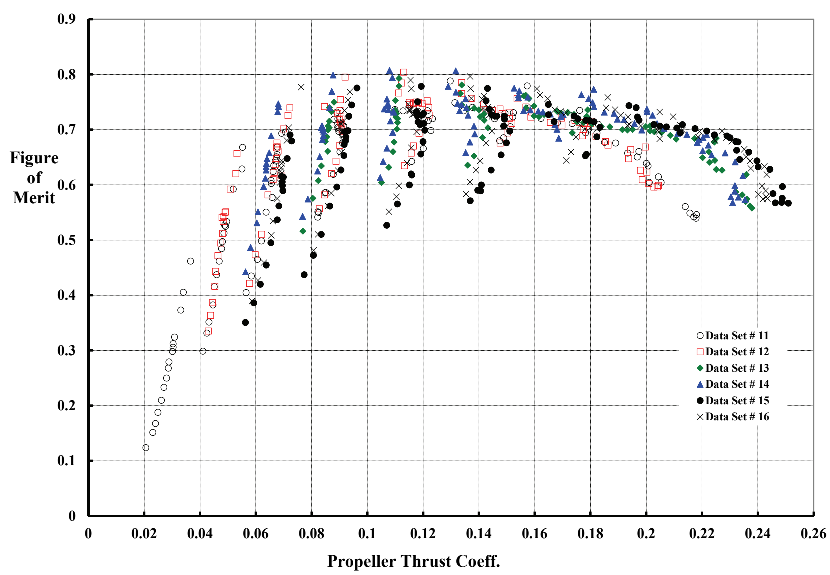




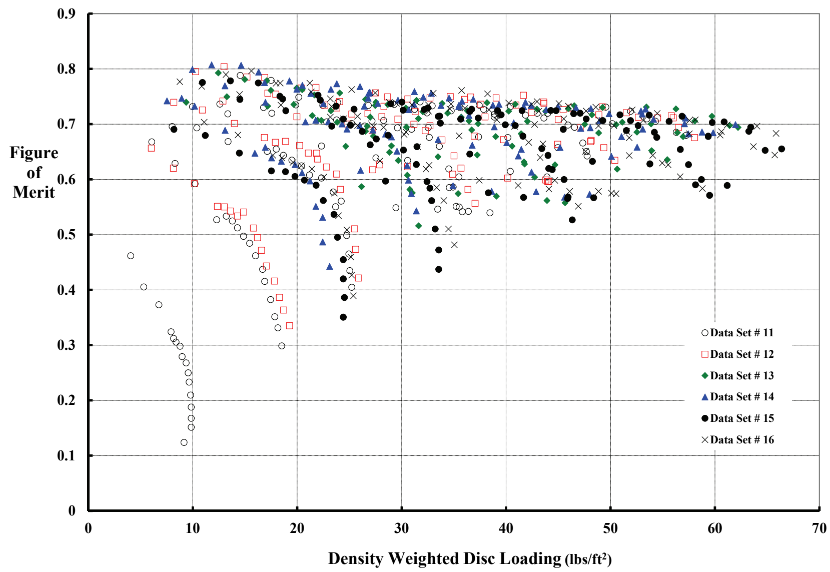
Z. T over HP vs DL-Walls Dn PT 2



AA. FM vs CT-Walls Dn PT 2



AB. FM vs DL-Walls Dn PT 2



AC. Data Set # 17

DATA SET Number 17

Constellation 6903A-0 (34E60 hub 4-way)

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
99.0	15.160	4	17.8	523.730	0.972

Power weighted solidity = 0.16134
Twist (0.25R -Tip in deg) = 33.7

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

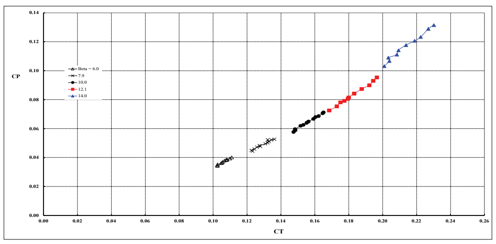
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

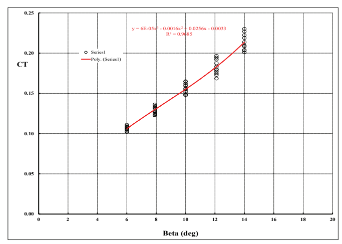
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	Harris Computed CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
163	194	Down	6.00	777	257	2160	0.547	0.10262	0.03421	2.9997	0.7668	8.4047	11.97	8.4047	0.7668	617	1,128
163	194	Down	6.00	827	313	2441	0.582	0.10237	0.03455	2.9626	0.7564	7.7987	13.52	7.7987	0.7564	656	1,128
163	194	Down	6.00	887	394	2816	0.624	0.10266	0.03525	2.9121	0.7446	7.1472	15.60	7.1472	0.7446	704	1,128
163	194	Down	6.00	950	496	3296	0.669	0.10475	0.03612	2.8998	0.7489	6.6452	18.26	6.6452	0.7489	754	1,127
163	194	Down	6.00	983	554	3546	0.692	0.10526	0.03642	2.8902	0.7483	6.4007	19.64	6.4007	0.7483	780	1,128
163	194	Down	6.00	1021	631	3838	0.719	0.10560	0.03702	2.8526	0.7397	6.0824	21.26	6.0824	0.7397	810	1,127
163	194	Down	6.00	1055	712	4141	0.743	0.10671	0.03786	2.8185	0.7347	5.8160	22.94	5.8160	0.7347	837	1,127
163	194	Down	6.00	1104	826	4589	0.777	0.10799	0.03833	2.8174	0.7388	5.5557	25.42	5.5557	0.7388	876	1,128
163	194	Down	6.00	1145	928	4944	0.806	0.10816	0.03860	2.8021	0.7354	5.3276	27.39	5.3276	0.7354	909	1,128
163	194	Down	6.00	1164	971	5090	0.819	0.10775	0.03844	2.8028	0.7342	5.2420	28.20	5.2420	0.7342	924	1,128
163	194	Down	6.00	1201	1092	5528	0.846	0.10993	0.03936	2.7927	0.7389	5.0623	30.63	5.0623	0.7389	953	1,127
163	194	Down	6.00	1233	1204	5883	0.868	0.11099	0.04011	2.7674	0.7357	4.8862	32.59	4.8862	0.7357	979	1,128
164	193	Down	7.90	778	335	2600	0.548	0.12321	0.04442	2.7736	0.7769	7.7612	14.40	7.7612	0.7769	618	1,127
164	193	Down	7.90	834	418	2974	0.588	0.12264	0.04499	2.7257	0.7617	7.1148	16.48	7.1148	0.7617	662	1,126
164	193	Down	7.90	887	513	3411	0.625	0.12435	0.04590	2.7091	0.7624	6.6491	18.90	6.6491	0.7624	704	1,127
164	193	Down	7.90	954	656	3994	0.672	0.12587	0.04718	2.6681	0.7554	6.0884	22.13	6.0884	0.7554	757	1,127
164	193	Down	7.90	978	716	4264	0.689	0.12787	0.04779	2.6754	0.7634	5.9553	23.62	5.9553	0.7634	776	1,127
164	193	Down	7.90	1022	824	4638	0.720	0.12736	0.04820	2.6424	0.7525	5.6286	25.69	5.6286	0.7525	811	1,127
164	193	Down	7.90	1057	936	5096	0.745	0.13083	0.04949	2.6434	0.7630	5.4444	28.23	5.4444	0.7630	839	1,126
164	193	Down	7.90	1098	1063	5554	0.774	0.13213	0.05014	2.6352	0.7644	5.2248	30.77	5.2248	0.7644	872	1,126
164	193	Down	7.90	1142	1247	6011	0.805	0.13220	0.05228	2.5286	0.7337	4.8204	33.30	4.8204	0.7337	906	1,126
164	193	Down	7.90	1170	1311	6344	0.825	0.13293	0.05111	2.6007	0.7566	4.8391	35.15	4.8391	0.7566	929	1,126
164	193	Down	7.90	1201	1447	6760	0.847	0.13442	0.05216	2.5773	0.7541	4.6717	37.45	4.6717	0.7541	953	1,126
164	193	Down	7.90	1226	1553	7134	0.864	0.13613	0.05262	2.5870	0.7617	4.5937	39.52	4.5937	0.7617	973	1,126
165	192	Down	10.00	772	425	3063	0.547	0.14741	0.05768	2.5557	0.7830	7.2071	16.97	7.2071	0.7830	613	1,120
165	192	Down	10.00	829	537	3557	0.587	0.14845	0.05886	2.5224	0.7755	6.6238	19.71	6.6238	0.7755	658	1,121
165	192	Down	10.00	885	662	4050	0.627	0.14831	0.05964	2.4870	0.7643	6.1178	22.44	6.1178	0.7643	702	1,120
165	192	Down	10.00	948	845	4749	0.671	0.15157	0.06193	2.4473	0.7603	5.6201	26.31	5.6201	0.7603	752	1,121
165	192	Down	10.00	977	935	5099	0.692	0.15322	0.06260	2.4474	0.7645	5.4535	28.25	5.4535	0.7645	776	1,121
165	192	Down	10.00	1026	1107	5695	0.726	0.15517	0.06400	2.4246	0.7622	5.1445	31.55	5.1445	0.7622	814	1,122
165	192	Down	10.00	1057	1227	6086	0.748	0.15624	0.06488	2.4083	0.7596	4.9601	33.72	4.9601	0.7596	839	1,122
165	192	Down	10.00	1099	1418	6703	0.778	0.15918	0.06670	2.3863	0.7598	4.7271	37.13	4.7271	0.7598	872	1,121
165	192	Down	10.00	1141	1617	7278	0.808	0.16035	0.06797	2.3590	0.7538	4.5009	40.32	4.5009	0.7538	906	1,121
165	192	Down	10.00	1166	1743	7689	0.826	0.16221	0.06866	2.3627	0.7594	4.4114	42.60	4.4114	0.7594	926	1,121
165	192	Down	10.00	1197	1940	8224	0.847	0.16463	0.07063	2.3309	0.7547	4.2392	45.56	4.2392	0.7547	950	1,122
165	192	Down	10.00	1222	2081	8594	0.865	0.16507	0.07121	2.3181	0.7516	4.1297	47.61	4.1297	0.7516	970	1,121
166	191	Down	12.10	765	520	3437	0.541	0.16845	0.07253	2.3226	0.7607	6.6096	19.04	6.6096	0.7607	607	1,122
166	191	Down	12.10	822	671	4075	0.582	0.17298	0.07544	2.2931	0.7611	6.0730	22.58	6.0730	0.7611	652	1,121
166	191	Down	12.10	892	888	4857	0.631	0.17509	0.07813	2.2411	0.7483	5.4696	26.91	5.4696	0.7483	708	1,122
166	191	Down	12.10	946	1074	5536	0.669	0.17743	0.07921	2.2399	0.7529	5.1546	30.67	5.1546	0.7529	751	1,122
166	191	Down	12.10	975	1195	5948	0.690	0.17946	0.08051	2.2292	0.7536	4.9774	32.95	4.9774	0.7536	774	1,122
166	191	Down	12.10	1018	1378	6502	0.720	0.17996	0.08156	2.2064	0.7469	4.7184	36.02	4.7184	0.7469	808	1,122
166	191	Down	12.10	1053	1574	7080	0.745	0.18314	0.08418	2.1757	0.7430	4.4981	39.22	4.4981	0.7430	836	1,122
166	191	Down	12.10	1098	1852	7882	0.777	0.18752	0.08736	2.1465	0.7418	4.2559	43.67	4.2559	0.7418	872	1,122
166	191	Down	12.10	1144	2157	8767	0.810	0.19214	0.08996	2.1358	0.7471	4.0644	48.57	4.0644	0.7471	908	1,121
166	191	Down	12.10	1165	2355	9199	0.824	0.19440	0.09300	2.0903	0.7355	3.9062	50.96	3.9062	0.7355	925	1,122
166	191	Down	12.10	1197	2618	9817	0.847	0.19652	0.09531	2.0618	0.7294	3.7498	54.39	3.7498	0.7294	950	1,122
167	190	Down	14.00	768	748	4132	0.543	0.20093	0.10311	1.9488	0.6971	5.5241	22.89	5.5241	0.6971	610	1,123
167	190	Down	14.00	836	998	4969	0.591	0.20393	0.10666	1.9120	0.6890	4.9790	27.53	4.9790	0.6890	664	1,123
167	190	Down	14.00	887	1218	5578	0.627	0.20335	0.10898	1.8659	0.6715	4.5796	30.90	4.5796	0.6715	704	1,123
167	190	Down	14.00	945	1501	6487	0.668	0.20835	0.11106	1.8760	0.6833	4.3218	35.94	4.3218	0.6833	750	1,123
167	190	Down	14.00	984	1741	7066	0.695	0.20931	0.11410	1.8345	0.6698	4.0586	39.15	4.0586	0.6698	781	1,124
167	190	Down	14.00	1025	2030	7830	0.724	0.21376	0.11771	1.8161	0.6700	3.8571	43.38	3.8571	0.6700	814	1,124
167	190	Down	14.00	1055	2268	8491	0.745	0.21881	0.12060	1.8143	0.6772	3.7438	47.04	3.7438	0.6772	837	1,124
167	190	Down	14.00	1097	2606	9331	0.775	0.22240	0.12326	1.8043	0.6790	3.5806	51.69	3.5806	0.6790	871	1,124
167	190	Down	14.00	1145	3099	10371	0.809	0.22690	0.12891	1.7601	0.6691	3.3466	57.46	3.3466	0.6691	909	1,123
167	190	Down	14.00	1167	3347	10929	0.824	0.23017	0.13150	1.7504	0.6701	3.2653	60.55	3.2653	0.6701	926	1,124

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	Harris Computed CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
163	6.0	0.725	652	3922	817	1030	0.1060	0.0373	2.846	0.760	6.015	21.73	6.015	0.7395
163	6.0	0.750	734	4232	846	1065	0.1070	0.0379	2.821	0.734	5.766	23.45	5.766	0.7363
163	6.0	0.775	817	4542	874	1101	0.1075	0.0382	2.812	0.734	5.559	25.16	5.559	0.7355
163	6.0	0.800	905	4863	902	1136	0.1081	0.0385	2.804	0.734	5.373	26.94	5.373	0.7356
163	6.0	0.825	1002	5200	930	1172	0.1088	0.0389	2.798	0.734	5.198	28.83	5.198	0.7364
163	6.0	0.850	1114	5588	958	1207	0.1100	0.0396	2.781	0.734	5.016	30.96	5.016	0.7361
164	7.90	0.725	844	4767	816	1029	0.1291	0.0484	2.670	0.766	5.648	26.41	5.648	0.7656
164	7.90	0.750	959	5150	845	1064	0.1305	0.0497	2.625	0.757	5.370	28.53	5.370	0.7566
164	7.90	0.775	1078	5530	873	1099	0.1318	0.0507	2.599	0.753	5.148	30.75	5.148	0.7534
164	7.90	0.800	1201	5961	901	1135	0.1327	0.0513	2.588	0.752	4.963	33.02	4.963	0.7523
164	7.90	0.825	1330	6366	929	1170	0.1334	0.0519	2.572	0.750	4.786	35.27	4.786	0.7497
164	7.90	0.850	1468	6837	957	1206	0.1348	0.0523	2.580	0.756	4.657	37.88	4.657	0.7560
165	10.00	0.725	1102	5672	813	1024	0.1552	0.0641	2.421	0.761	5.147	31.42	5.147	0.7610
165	10.00	0.750	1240	6130	841	1059	0.1568	0.0652	2.405	0.760	4.944	33.96	4.944	0.7598
165	10.00	0.775	1394	6617	869	1095	0.1583	0.0663	2.388	0.758	4.747	36.66	4.747	0.7580
165	10.00	0.800	1563	7130	897	1130	0.1602	0.0676	2.371	0.757	4.568	39.50	4.568	0.7572
165	10.00	0.825	1748	7682	925	1165	0.1623	0.0690	2.352	0.756	4.395	42.56	4.395	0.7562
165	10.00	0.850	1952	8251	953	1201	0.1641	0.0704	2.332	0.754	4.227	45.71	4.227	0.7538
166	12.10	0.725	1420	6620	813	1025	0.1807	0.0823	2.195	0.745	4.662	36.67	4.662	0.7446
166	12.10	0.750	1607	7191	841	1060	0.1836	0.0843	2.179	0.745	4.475	39.84	4.475	0.7449
166	12.10	0.775	1827	7812	869	1095	0.1869	0.0869	2.151	0.742	4.276	43.28	4.276	0.7419
166	12.10	0.800	2075	8503	897	1131	0.1907	0.0896	2.129	0.742	4.098	47.11	4.098	0.7418
166	12.10	0.825	2351	9195	925	1166	0.1940	0.0926	2.095	0.736	3.911	50.94	3.911	0.7363
167	14.00	0.725	2035	7885	813	1026	0.2148	0.1177	1.826	0.675	3.875	43.68	3.875	0.6754
167	14.00	0.750	2311	8595	843	1062	0.2186	0.1203	1.816	0.677	3.719	47.62	3.719	0.6769
167	14.00	0.775	2624	9342	871	1097	0.2227	0.1241	1.794	0.676	3.560	51.75	3.560	0.6755
167	14.00	0.800	2970	10119	899	1132	0.2263	0.1278	1.772	0.673	3.407	56.06	3.407	0.6728





AD. Data Set # 18

DATA SET Number 18

Constellation 6903A-0T (34E60 hub 4-way)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
New Twist	99.0	15.160	4	8.5	506.990	0.995

Power weighted solidity = 0.16134

Twist (0.25R -Tip in deg) = 38.5

$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}$ $C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798\frac{C_T^{3/2}}{C_P}$

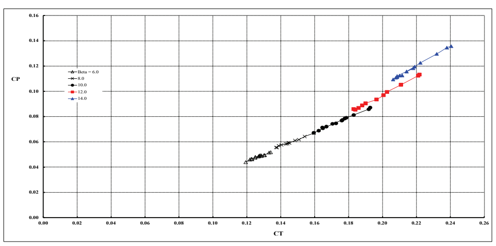
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

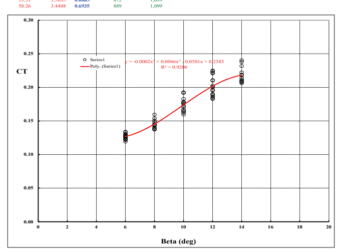
REDUCED TEST DATA POINTS (Harris Computed: CT through Repeat FM)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
168	213	Down	6.00	803	364	2683	0.577	0.11935	0.04390	2.7188	0.7495	7.3709		14.86	7.3709	0.7495	637	1,105
168	213	Down	6.00	851	454	3075	0.612	0.12179	0.04600	2.6477	0.7373	6.7731		17.04	6.7731	0.7373	676	1,104
168	213	Down	6.00	899	541	3457	0.646	0.12269	0.04649	2.6388	0.7376	6.3900		19.15	6.3900	0.7376	714	1,105
168	213	Down	6.00	947	629	3849	0.681	0.12310	0.04625	2.6619	0.7453	6.1192		21.32	6.1192	0.7453	752	1,104
168	213	Down	6.00	1001	761	4362	0.720	0.12486	0.04738	2.6356	0.7432	5.7319		24.17	5.7319	0.7432	795	1,104
168	213	Down	6.00	1050	891	4804	0.755	0.12498	0.04806	2.6005	0.7336	5.3917		26.61	5.3917	0.7336	833	1,104
168	213	Down	6.00	1101	1055	5427	0.791	0.12841	0.04936	2.6016	0.7439	5.1441		30.07	5.1441	0.7439	874	1,105
168	213	Down	6.00	1124	1107	5668	0.808	0.12868	0.04868	2.6436	0.7567	5.1201		31.40	5.1201	0.7567	892	1,104
168	213	Down	6.00	1138	1142	5729	0.818	0.12688	0.04839	2.6224	0.7454	5.0166		31.74	5.0166	0.7454	903	1,104
168	213	Down	6.00	1147	1177	5829	0.825	0.12708	0.04870	2.6093	0.7423	4.9524		32.29	4.9524	0.7423	910	1,104
168	213	Down	6.00	1152	1200	5889	0.828	0.12728	0.04901	2.5969	0.7393	4.9075		32.63	4.9075	0.7393	914	1,104
168	213	Down	6.00	1154	1215	5930	0.830	0.12772	0.04937	2.5872	0.7378	4.8807		32.85	4.8807	0.7378	916	1,104
168	213	Down	6.00	1170	1267	6211	0.841	0.13014	0.04940	2.6346	0.7584	4.9021		34.41	4.9021	0.7584	929	1,104
168	213	Down	6.00	1185	1319	6392	0.852	0.13056	0.04950	2.6379	0.7606	4.8461		35.41	4.8461	0.7606	941	1,104
168	213	Down	6.00	1199	1423	6673	0.862	0.13314	0.05155	2.5827	0.7520	4.6894		36.97	4.6894	0.7520	952	1,104
168	213	Down	6.00	1251	1622	7316	0.899	0.13408	0.05173	2.5919	0.7574	4.5105		40.53	4.5105	0.7574	993	1,105
169	212	Down	8.00	805	464	3100	0.580	0.13721	0.05554	2.4705	0.7303	6.6810		17.17	6.6810	0.7303	639	1,102
169	212	Down	8.00	850	545	3470	0.612	0.13776	0.05541	2.4860	0.7363	6.3670		19.22	6.3670	0.7363	675	1,102
169	212	Down	8.00	903	671	3945	0.650	0.13877	0.05690	2.4387	0.7249	5.8793		21.86	5.8793	0.7249	717	1,103
169	212	Down	8.00	948	786	4400	0.683	0.14043	0.05761	2.4377	0.7290	5.5980		24.38	5.5980	0.7290	752	1,102
169	212	Down	8.00	953	808	4530	0.686	0.14306	0.05829	2.4543	0.7408	5.6064		25.10	5.6064	0.7408	756	1,103
169	212	Down	8.00	998	941	5040	0.719	0.14514	0.05911	2.4553	0.7465	5.3560		27.92	5.3560	0.7465	792	1,102
169	212	Down	8.00	1004	962	5080	0.723	0.14455	0.05935	2.4354	0.7389	5.2807		28.14	5.2807	0.7389	797	1,102
169	212	Down	8.00	1047	1074	5500	0.754	0.14391	0.05843	2.4629	0.7456	5.1210		30.47	5.1210	0.7456	831	1,102
169	212	Down	8.00	1098	1294	6240	0.791	0.14846	0.06104	2.4322	0.7478	4.8223		34.57	4.8223	0.7478	872	1,102
169	212	Down	8.00	1146	1488	6900	0.825	0.15069	0.06173	2.4410	0.7562	4.6371		38.23	4.6371	0.7562	910	1,103
169	212	Down	8.00	1197	1764	7700	0.862	0.15414	0.06422	2.4001	0.7520	4.3651		42.66	4.3651	0.7520	950	1,102
169	212	Down	8.00	1254	2110	8750	0.903	0.15960	0.06681	2.3887	0.7615	4.1469		48.48	4.1469	0.7615	995	1,102
170	211	Down	10.00	751	456	3136	0.546	0.15948	0.06722	2.3724	0.7561	6.8772		17.37	6.8772	0.7561	596	1,092
170	211	Down	10.00	804	573	3659	0.585	0.16236	0.06884	2.3583	0.7583	6.3857		20.27	6.3857	0.7583	638	1,091
170	211	Down	10.00	849	693	4143	0.617	0.16486	0.07071	2.3315	0.7554	5.9784		22.95	5.9784	0.7554	674	1,092
170	211	Down	10.00	900	833	4646	0.655	0.16452	0.07135	2.3058	0.7463	5.5774		25.74	5.5774	0.7463	714	1,091
170	211	Down	10.00	947	980	5218	0.689	0.16689	0.07205	2.3162	0.7551	5.3245		28.91	5.3245	0.7551	752	1,091
170	211	Down	10.00	1002	1203	6040	0.729	0.17255	0.07467	2.3109	0.7660	5.0208	Repeat	33.46	5.0208	0.7660	795	1,091
170	211	Down	10.00	1008	1218	6040	0.733	0.17050	0.07426	2.2961	0.7566	4.9589	Repeat	33.46	4.9589	0.7566	800	1,092
170	211	Down	10.00	1050	1432	6776	0.764	0.17628	0.07724	2.2822	0.7647	4.7318	Repeat	37.54	4.7318	0.7647	833	1,091
170	211	Down	10.00	1051	1428	6776	0.764	0.17595	0.07681	2.2908	0.7668	4.7451	Repeat	37.54	4.7451	0.7668	834	1,092
170	211	Down	10.00	1101	1678	7512	0.801	0.17774	0.07851	2.2641	0.7617	4.4768	Repeat	41.62	4.4768	0.7617	874	1,091
170	211	Down	10.00	1101	1690	7550	0.801	0.17864	0.07907	2.2594	0.7621	4.4675	Repeat	41.83	4.4675	0.7621	874	1,091
170	211	Down	10.00	1149	1974	8422	0.836	0.18297	0.08126	2.2518	0.7686	4.2665		46.66	4.2665	0.7686	912	1,091
170	211	Down	10.00	1197	2356	9583	0.871	0.19184	0.08578	2.2365	0.7817	4.0675		53.09	4.0675	0.7817	950	1,091
170	211	Down	10.00	1230	2597	10164	0.895	0.19269	0.08714	2.2113	0.7746	3.9137		56.31	3.9137	0.7746	976	1,091
171	210	Down	12.00	758	596	3686	0.551	0.18401	0.08545	2.1534	0.7371	6.1846		20.42	6.1846	0.7371	602	1,092
171	210	Down	12.00	805	718	4132	0.585	0.18289	0.08594	2.1280	0.7262	5.7549		22.89	5.7549	0.7262	639	1,092
171	210	Down	12.00	853	864	4714	0.620	0.18583	0.08692	2.1378	0.7354	5.4560		26.12	5.4560	0.7354	677	1,092
171	210	Down	12.00	907	1063	5393	0.660	0.18803	0.08896	2.1137	0.7314	5.0734		29.88	5.0734	0.7314	720	1,091
171	210	Down	12.00	952	1251	6004	0.692	0.19001	0.09054	2.0988	0.7301	4.7994		33.26	4.7994	0.7301	756	1,092
171	210	Down	12.00	1000	1498	6848	0.727	0.19642	0.09354	2.0999	0.7427	4.5714		37.94	4.5714	0.7427	794	1,092
171	210	Down	12.00	1047	1781	7663	0.761	0.20050	0.09689	2.0693	0.7394	4.3026		42.45	4.3026	0.7394	831	1,092
171	210	Down	12.00	1098	2110	8517	0.799	0.20263	0.09953	2.0359	0.7313	4.0365		47.18	4.0365	0.7313	872	1,091
171	210	Down	12.00	1151	2568	9739	0.837	0.21085	0.10516	2.0051	0.7347	3.7924		53.95	3.7924	0.7347	914	1,092
171	210	Down	12.00	1197	3086	11039	0.871	0.22098	0.11235	1.9668	0.7378	3.5771		61.16	3.5771	0.7378	950	1,091
171	210	Down	12.00	1222	3312	11543	0.889	0.22171	0.11333	1.9563	0.7351	3.4852		63.95	3.4852	0.7351	970	1,091
172	214	Down	12.00	804	744	4271	0.580	0.18951	0.08939	2.1201	0.7365	5.7406		23.66	5.7406	0.7365	638	1,100
172	214	Down	12.00	906	1102	5589	0.653	0.19530	0.09253	2.1107	0.7443	5.0717		30.96	5.0717	0.7443	719	1,101
172	214	Down	12.00	1003	1558	7046	0.723	0.20089	0.09641	2.0836	0.7452	4.5225		39.04	4.5225	0.7452	796	1,101
172	214	Down	12.00	1102	2221	8902	0.794	0.21025	0.10363	2.0289	0.7424	4.0081		49.32	4.0081	0.7424	875	1,102
172	214	Down	12.00	1200	3156	11237	0.865	0.22382	0.11404	1.9626	0.7410	3.5605		62.25	3.5605	0.7410	953	1,101
172	214	Down	12.00	1220	3361	11677	0.879	0.22502	0.11557	1.9470	0.7370	3.4743		64.69	3.4743	0.7370	968	1,102
173	215	Down	14.00	762	775	4175	0.550	0.20623	0.10937	1.8856	0.6833	5.3871		23.13	5.3871	0.6833	605	1,100
173	215	Down	14.00	803	919	4672	0.580	0.20782	0.11083	1.8752	0.6822	5.0838		25.88	5.0838	0.6822	637	1,099
173	215	Down	14.00	849	1103	5318	0.613	0.21162	0.11255	1.8803	0.6902	4.8214		29.46	4.8214	0.6902	674	1,099
173	215	Down	14.00	853	1118	5328	0.616	0.21003	0.11248	1.8673	0.6829	4.7657		29.52	4.7657	0.6829	677	1,099
173	215	Down	14.00	898	1289	5865	0.648	0.20861	0.11115	1.8769	0.6841	4.5500		32.49	4.5500	0.6841	713	1,100
173	215	Down	14.00	898	1299	5865	0.648	0.20861	0.11201	1.8624	0.6788	4.5150		32.49	4.5150	0.6788	713	1,100
173	215	Down	14.00	947	1608	6819	0.684	0.21809	0.11823	1.8447	0.6875	4.2407		37.78	4.2407	0.6875	752	1,099
173	215	Down	14.00	950	1588	6739	0.686	0.21417	0.11565	1.8519	0.6839	4.2437		37.33	4.2437	0.6839	754	1,099
173	215	Down	14.00	1000	1914	7634	0.722	0.21896	0.11951	1.8321	0.6841	3.9885		42.29	3.9885	0.6841	794	1,099
173	215	Down	14.00	1049	2265	8529	0.757	0.22231	0.12252	1.8145	0.6827	3.7656		47.25	3.7656	0.6827	833	1,100
173	215	Down	14.00	1075	2578	9344	0.776	0.23192	0.12958	1.7898	0.6878	3.6245		51.77	3.6245	0.6878	853	1,100
173	215	Down	14.00	1099	2860	10020	0.794	0.23795	0.13454	1.7686	0.6885	3.5035		55.51	3.5035	0.6885	872	1,099
173	215	Down	14.00	1120	3053	10517	0.809	0.24048	0.13569	1.7722	0.6935	3.4448		58.26	3.4448	0.6935	889	1,099

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed: CT through Repeat FM)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM
168	6.00	0.725	780	4414	801	1009	0.1244	0.0474	2.623	0.738	5.659	24.45	5.659	0.7381
168	6.00	0.750	873	4767	828	1043	0.1257	0.0480	2.616	0.740	5.460	26.41	5.460	0.7401
168	6.00	0.775	973	5138	856	1078	0.1268	0.0486	2.609	0.742	5.270	28.46	5.270	0.7415
168	6.00	0.800	1078	5508	883	1113	0.1275	0.0488	2.612	0.744	5.109	30.51	5.109	0.7444
168	6.00	0.825	1183	5835	911	1148	0.1270	0.0488	2.601	0.740	4.932	32.33	4.932	0.7397
168	6.00	0.850	1329	6400	939	1182	0.1314	0.0503	2.615	0.756	4.816	35.46	4.816	0.7563
168	6.00	0.875	1478	6899	966	1217	0.1336	0.0512	2.609	0.761	4.668	38.22	4.668	0.7611
169	8.00	0.725	961	5094	799	1007	0.1441	0.0588	2.452	0.743	5.301	28.22	5.301	0.7427
169	8.00	0.750	1074	5492	827	1041	0.1454	0.0594	2.445	0.744	5.114	30.43	5.114	0.7440
169	8.00	0.775	1192	5916	854	1076	0.1466	0.0597	2.453	0.749	4.963	32.77	4.963	0.7494
169	8.00	0.800	1333	6380	882	1111	0.1483	0.0607	2.442	0.751	4.786	35.35	4.786	0.7505
169	8.00	0.825	1493	6890	909	1146	0.1505	0.0619	2.429	0.752	4.615	38.17	4.615	0.7520
169	8.00	0.850	1671	7441	937	1180	0.1533	0.0635	2.414	0.754	4.453	41.22	4.453	0.7541
169	8.00	0.875	1869	8032	964	1215	0.1561	0.0650	2.400	0.757	4.300	44.50	4.300	0.7565
169	8.00	0.900	2082	8663	992	1250	0.1590	0.0666	2.389	0.760	4.161	47.99	4.161	0.7603
170	10.00	0.725	1178	5915	791	997	0.1707	0.0742	2.300	0.758	5.021	32.77	5.021	0.7581
170	10.00	0.750	1333	6457	819	1031	0.1742	0.0760	2.294	0.764	4.844	35.77	4.844	0.7641
170	10.00	0.775	1500	6980	846	1066	0.1762	0.0773	2.279	0.763	4.653	38.67	4.653	0.7632
170	10.00	0.800	1684	7550	873	1100	0.1780	0.0790	2.265	0.765	4.483	41.83	4.483	0.7648
170	10.00	0.825	1888	8166	900	1134	0.1823	0.0806	2.251	0.767	4.325	45.24	4.325	0.7673
170	10.00	0.850	2123	8854	928	1169	0.1858	0.0830	2.239	0.770	4.171	49.05	4.171	0.7704
170	10.00	0.875	2384	9602	955	1203	0.1903	0.0855	2.226	0.775	4.028	53.20	4.028	0.7748
171	12.00	0.725	1483	6764	791	997	0.1952	0.0934	2.089	0.736	4.561	37.47	4.561	0.7364
171	12.00	0.750	1674	7342	819	1031	0.1981	0.0954	2.077	0.738	4.386	40.67	4.386	0.7378
171	12.00	0.775	1883	7938	846	1066	0.2004	0.0971	2.064	0.737	4.216	43.98	4.216	0.7373
171	12.00	0.800	2139	8621	873	1100	0.2044	0.1000	2.036	0.735	4.030	47.76	4.030	0.7346
171	12.00	0.825	2429	9370	900	1134	0.2090	0.1040	2.009	0.733	3.858	51.91	3.858	0.7331
171	12.00	0.850	2754	10192	928	1169	0.2139	0.1076	1.987	0.733	3.701	56.46	3.701	0.7335
171	12.00	0.875	3117	11088	955	1203	0.2198	0.1118	1.966	0.735	3.557	61.43	3.557	0.7354
172	12.00	0.725	1574	7102	798	1006	0.2013	0.0965	2.085	0.746	4.512	39.35	4.512	0.7465
172	12.00	0.750	1798	7733	826	1041	0.2045	0.0995	2.057	0.742	4.301	42.84	4.301	0.7425
172	12.00	0.775	2047	8407	853	1075	0.2087	0.1029	2.028	0.739	4.107	46.57	4.107	0.7393
172	12.00	0.800	2321	9124	881	1110	0.2124	0.1060	2.004	0.737	3.931	50.55	3.931	0.7371
172	12.00	0.825	2619	9886	909	1145	0.2163	0.1089	1.985	0.737	3.775	54.77	3.775	0.7368
172	12.00	0.850	2942	10690	936	1179	0.2206	0.1121	1.968	0.738	3.634	59.22	3.634	0.7375
172	12.00	0.875	3290	11539	964	1214	0.2246	0.1148	1.956	0.740	3.507	63.93	3.507	0.7396
173	14.00	0.725	1915	7639	797	1004	0.2174	0.1182	1.840	0.684	3.989	42.32	3.989	0.6844
173	14.00	0.750	2199	8370	824	1039	0.2224	0.1224	1.817	0.684	3.806	46.37	3.806	0.6836
173	14.00	0.775	2545	9247	852	1073	0.2304	0.1286	1.791	0.686	3.633	51.23	3.633	0.6859
173	14.00	0.800	2929	10205	879	1108	0.2384	0.1345	1.773	0.691	3.484	56.54	3.484	0.6919





AE. Data Set # 19

DATA SET Number 19

Constellation 6903A-0 (43E60 hub 3-way) — Production 3- Bladed Propeller

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
99	15.160	3	1.0	493.490	1.032

Power weighted solidity = 0.12100

Twist (0.25R -Tip in deg) = 33.7

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

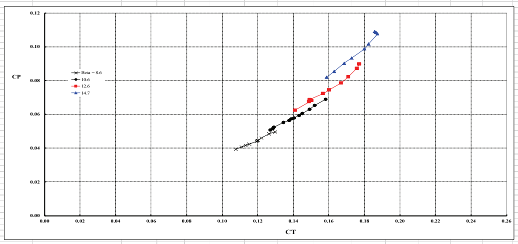
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

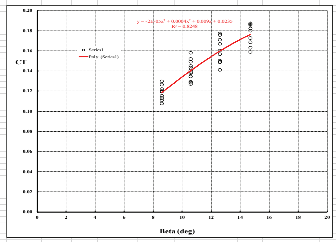
REDUCED TEST DATA POINTS (Harris Computed: CT through Repeat FM)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps Vt	Derived Vsound in fps from M and Vt
174	218	Down	8.60	800	323	2403	0.583	0.10769	0.03939	2.7339	0.7159	7.4396		13.31	7.4396	0.7159	635	1,089
174	218	Down	8.60	897	470	3110	0.654	0.11086	0.04066	2.7264	0.7244	6.6170		17.23	6.6170	0.7244	712	1,089
174	218	Down	8.60	1001	670	3954	0.729	0.11318	0.04171	2.7135	0.7285	5.9015		21.91	5.9015	0.7285	795	1,090
174	218	Down	8.60	1046	777	4399	0.762	0.11532	0.04239	2.7202	0.7372	5.6615		24.37	5.6615	0.7372	830	1,090
174	218	Down	8.60	1100	939	5039	0.801	0.11945	0.04405	2.7115	0.7478	5.3663		27.92	5.3663	0.7478	873	1,090
174	218	Down	8.60	1101	951	5078	0.802	0.12015	0.04449	2.7005	0.7470	5.3396		28.13	5.3396	0.7470	874	1,090
174	218	Down	8.60	1148	1076	5504	0.836	0.11979	0.04441	2.6974	0.7450	5.1152		30.49	5.1152	0.7450	911	1,090
174	218	Down	8.60	1198	1264	6105	0.873	0.12201	0.04590	2.6579	0.7409	4.8299		33.82	4.8299	0.7409	951	1,089
174	218	Down	8.60	1255	1531	6938	0.914	0.12635	0.04836	2.6124	0.7410	4.5317		38.44	4.5317	0.7410	996	1,090
174	218	Down	8.60	1299	1739	7636	0.946	0.12980	0.04954	2.6201	0.7533	4.3910		42.30	4.3910	0.7533	1,031	1,090
175	217	Down	10.60	801	424	2875	0.584	0.12853	0.05152	2.4949	0.7137	6.7807		15.93	6.7807	0.7137	636	1,089
175	217	Down	10.60	804	422	2865	0.586	0.12712	0.05070	2.5073	0.7134	6.7891		15.87	6.7891	0.7134	638	1,089
175	217	Down	10.60	904	620	3678	0.659	0.12909	0.05240	2.4634	0.7063	5.9323		20.38	5.9323	0.7063	718	1,089
175	217	Down	10.60	1004	894	4724	0.732	0.13442	0.05516	2.4370	0.7130	5.2841		26.17	5.2841	0.7130	797	1,089
175	217	Down	10.60	1053	1054	5324	0.767	0.13772	0.05637	2.4432	0.7236	5.0512		29.50	5.0512	0.7236	836	1,090
175	217	Down	10.60	1099	1221	5847	0.801	0.13885	0.05744	2.4174	0.7188	4.7887		32.39	4.7887	0.7188	872	1,089
175	217	Down	10.60	1118	1295	6118	0.815	0.14039	0.05787	2.4262	0.7254	4.7243		33.89	4.7243	0.7254	887	1,089
175	217	Down	10.60	1148	1439	6582	0.836	0.14325	0.05939	2.4120	0.7285	4.5740		36.46	4.5740	0.7285	911	1,090
175	217	Down	10.60	1149	1470	6679	0.837	0.14511	0.06051	2.3980	0.7290	4.5435		37.00	4.5435	0.7290	912	1,090
175	217	Down	10.60	1196	1724	7434	0.871	0.14907	0.06292	2.3690	0.7299	4.3121		41.18	4.3121	0.7299	949	1,090
175	217	Down	10.60	1246	2024	8228	0.908	0.15201	0.06533	2.3267	0.7239	4.0652		45.58	4.0652	0.7239	989	1,089
175	217	Down	10.60	1297	2408	9273	0.945	0.15811	0.06891	2.2943	0.7280	3.8509		51.37	3.8509	0.7280	1,030	1,089
176	219	Down	12.60	799	511	3140	0.582	0.14108	0.06255	2.2553	0.6760	6.1448		17.40	6.1448	0.6760	634	1,090
176	219	Down	12.60	906	813	4302	0.660	0.15032	0.06826	2.2022	0.6813	5.2915	Repeat	23.83	5.2915	0.6813	719	1,090
176	219	Down	12.60	907	807	4264	0.661	0.14867	0.06753	2.2014	0.6773	5.2838	Repeat	23.62	5.2838	0.6773	720	1,089
176	219	Down	12.60	1006	1120	5261	0.733	0.14910	0.06869	2.1707	0.6689	4.6973		29.15	4.6973	0.6689	799	1,089
176	219	Down	12.60	1052	1349	6047	0.767	0.15672	0.07235	2.1661	0.6843	4.4826		33.50	4.4826	0.6843	835	1,089
176	219	Down	12.60	1102	1596	6783	0.803	0.16020	0.07447	2.1514	0.6872	4.2500		37.58	4.2500	0.6872	875	1,089
176	219	Down	12.60	1151	1920	7704	0.839	0.16679	0.07862	2.1214	0.6914	4.0125		42.68	4.0125	0.6914	914	1,089
176	219	Down	12.60	1196	2255	8527	0.871	0.17098	0.08231	2.0774	0.6855	3.7814		47.24	3.7814	0.6855	949	1,090
176	219	Down	12.60	1255	2764	9651	0.916	0.17575	0.08731	2.0129	0.6734	3.4917		53.47	3.4917	0.6734	996	1,088
176	219	Down	12.60	1304	3194	10504	0.950	0.17718	0.08994	1.9699	0.6617	3.2887		58.19	3.2887	0.6617	1,035	1,090
177	220	Down	14.70	805	684	3587	0.582	0.15877	0.08187	1.9392	0.6166	5.2442		19.87	5.2442	0.6166	639	1,098
177	220	Down	14.70	904	1010	4645	0.654	0.16303	0.08537	1.9097	0.6153	4.5990		25.73	4.5990	0.6153	718	1,097
177	220	Down	14.70	1002	1454	5900	0.725	0.16855	0.09025	1.8677	0.6119	4.0578		32.69	4.0578	0.6119	795	1,097
177	220	Down	14.70	1050	1731	6644	0.760	0.17285	0.09337	1.8512	0.6142	3.8382		36.81	3.8382	0.6142	833	1,097
177	220	Down	14.70	1101	2110	7605	0.796	0.17995	0.09872	1.8228	0.6170	3.6043		42.13	3.6043	0.6170	874	1,098
177	220	Down	14.70	1149	2467	8389	0.831	0.18226	0.10155	1.7947	0.6114	3.4005		46.48	3.4005	0.6114	912	1,098
177	220	Down	14.70	1200	2979	9408	0.868	0.18739	0.10765	1.7408	0.6014	3.1581		52.12	3.1581	0.6014	953	1,097
177	220	Down	14.70	1240	3314	9996	0.897	0.18647	0.10853	1.7181	0.5920	3.0163		55.38	3.0163	0.5920	984	1,097
177	220	Down	14.70	1242	3347	9996	0.898	0.18587	0.10908	1.7039	0.5862	2.9866		55.38	2.9866	0.5862	986	1,098

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed: CT through Repeat FM)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM
174	8.6	0.725	659	3915	790	995	0.1134	0.0418	2.715	0.730	5.941	21.69	5.941	0.7297
174	8.6	0.750	743	4238	817	1029	0.1153	0.0426	2.709	0.734	5.731	23.59	5.731	0.7341
174	8.6	0.775	831	4611	844	1064	0.1168	0.0431	2.712	0.740	5.549	25.55	5.549	0.7397
174	8.6	0.800	929	4980	872	1098	0.1183	0.0436	2.708	0.742	5.361	27.59	5.361	0.7426
174	8.6	0.825	1033	5361	899	1132	0.1200	0.0443	2.699	0.746	5.190	29.70	5.190	0.7460
174	8.6	0.850	1148	5723	926	1167	0.1205	0.0451	2.672	0.740	4.985	31.71	4.985	0.7404
174	8.6	0.875	1278	6146	953	1201	0.1222	0.0461	2.653	0.740	4.809	34.05	4.809	0.7401
174	8.6	0.900	1426	6622	980	1235	0.1245	0.0473	2.634	0.742	4.644	36.69	4.644	0.7419
174	8.6	0.925	1590	7150	1008	1269	0.1273	0.0486	2.621	0.746	4.497	39.61	4.497	0.7465
175	10.60	0.725	865	4620	790	995	0.1338	0.0548	2.441	0.713	5.341	25.59	5.341	0.7127
175	10.60	0.750	974	5012	817	1029	0.1358	0.0558	2.432	0.715	5.146	27.77	5.146	0.7152
175	10.60	0.775	1091	5429	844	1064	0.1373	0.0566	2.425	0.720	4.976	30.08	4.976	0.7198
175	10.60	0.800	1222	5870	872	1098	0.1397	0.0576	2.423	0.723	4.804	32.52	4.804	0.7225
175	10.60	0.825	1369	6350	899	1132	0.1421	0.0589	2.412	0.726	4.638	35.18	4.638	0.7256
175	10.60	0.850	1548	6909	926	1167	0.1453	0.0608	2.393	0.728	4.463	38.28	4.463	0.7283
175	10.60	0.875	1747	7485	953	1201	0.1488	0.0630	2.368	0.728	4.284	41.47	4.284	0.7277
175	10.60	0.900	1964	8090	980	1235	0.1521	0.0651	2.337	0.727	4.119	44.82	4.119	0.7273
175	10.60	0.925	2200	8723	1008	1269	0.1554	0.0672	2.312	0.727	3.965	48.33	3.965	0.7270
176	12.60	0.725	1107	5265	790	995	0.1525	0.0702	2.174	0.677	4.756	29.17	4.756	0.6775
176	12.60	0.750	1228	5642	817	1029	0.1528	0.0708	2.158	0.677	4.594	31.26	4.594	0.6775
176	12.60	0.775	1393	6166	844	1064	0.1562	0.0722	2.163	0.682	4.426	34.16	4.426	0.6823
176	12.60	0.800	1584	6718	872	1098	0.1590	0.0747	2.130	0.682	4.241	37.22	4.241	0.6824
176	12.60	0.825	1794	7338	899	1132	0.1647	0.0772	2.135	0.691	4.101	40.66	4.101	0.6907
176	12.60	0.850	2034	7982	926	1167	0.1683	0.0799	2.104	0.688	3.924	44.22	3.924	0.6883
176	12.60	0.875	2292	8601	953	1201	0.1708	0.0826	2.070	0.683	3.753	47.65	3.753	0.6832
176	12.60	0.900	2573	9232	980	1235	0.1736	0.0853	2.035	0.677	3.588	51.15	3.588	0.6768
176	12.60	0.925	2877	9877	1008	1269	0.1759	0.0879	2.001	0.670	3.433	54.72	3.433	0.6698
176	12.60	0.950	3204	10534	1035	1306	0.1773	0.0898	1.972	0.662	3.288	58.36	3.288	0.6624
177	14.70	0.725	1461	5933	796	1002	0.1693	0.0907	1.869	0.614	4.061	32.87	4.061	0.6141
177	14.70	0.750	1665	6461	823	1037	0.1723	0.0932	1.848	0.612	3.880	35.79	3.880	0.6123
177	14.70	0.775	1880	7022	850	1071	0.1754	0.0956	1.836	0.614	3.735	38.90	3.735	0.6144
177	14.70	0.800	2141	7669	878	1106	0.1799	0.0988	1.820	0.616	3.582	42.49	3.582	0.6158
177	14.70	0.825	2416	8274	905	1140	0.1826	0.1018	1.795	0.612	3.425	45.84	3.425	0.6115
177	14.70	0.850	2720	8906	933	1175	0.1850	0.1047	1.767	0.607	3.274	49.34	3.274	0.6066
177	14.70	0.875	3035	9493	960	1210	0.1868	0.1070	1.736	0.598	3.128	52.59	3.128	0.5983





AF. Data Set # 20

DATA SET Number 20

CL-84 (1490A2P3)

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
90.0	14.000	4	13.5	515.990	0.987

Power weighted solidity = 0.14668

Twist (0.25R -Tip in deg) = 39.0

$$C_T = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^2 (Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^3 (Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

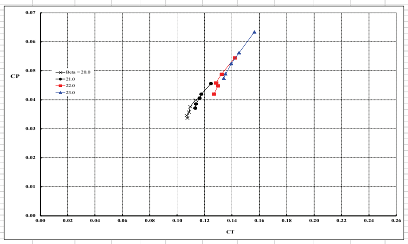
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

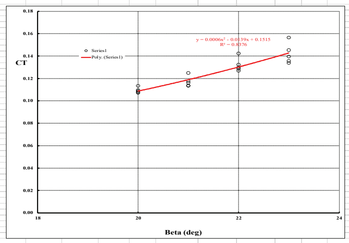
REDUCED TEST DATA POINTS (Harris Computed →)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps Vt	Derived Vsound in fps from M and Vt
178	55	Down	20.00	803	187	1759	0.528	0.10758	0.03358	3.2041	0.8387	9.4064	11.43	9.4064	0.8387	589	1,115
178	55	Down	20.00	901	271	2204	0.593	0.10707	0.03444	3.1084	0.8117	8.1328	14.32	8.1328	0.8117	660	1,114
178	55	Down	20.00	999	383	2750	0.657	0.10867	0.03571	3.0428	0.8004	7.1802	17.86	7.1802	0.8004	732	1,115
178	55	Down	20.00	1102	541	3377	0.725	0.10967	0.03758	2.9180	0.7711	6.2421	21.94	6.2421	0.7711	808	1,114
178	55	Down	20.00	1232	802	4368	0.811	0.11349	0.03987	2.8464	0.7652	5.4464	28.38	5.4464	0.7652	903	1,114
179	56	Down	21.00	801	205	1844	0.527	0.11334	0.03708	3.0564	0.8211	8.9951	11.98	8.9951	0.8211	587	1,114
179	56	Down	21.00	907	309	2371	0.597	0.11366	0.03850	2.9522	0.7943	7.6731	15.40	7.6731	0.7943	665	1,114
179	56	Down	21.00	1012	452	3019	0.666	0.11625	0.04054	2.8673	0.7802	6.6792	19.61	6.6792	0.7802	742	1,114
179	56	Down	21.00	1100	600	3607	0.724	0.11756	0.04191	2.8052	0.7675	6.0117	23.43	6.0117	0.7675	806	1,114
179	56	Down	21.00	1227	904	4762	0.807	0.12474	0.04550	2.7418	0.7728	5.2677	30.93	5.2677	0.7728	899	1,115
180	57	Down	22.00	798	229	2047	0.525	0.12677	0.04189	3.0259	0.8597	8.9389	13.30	8.9389	0.8597	585	1,114
180	57	Down	22.00	905	357	2695	0.596	0.12977	0.04478	2.8981	0.8331	7.5490	17.51	7.5490	0.8331	663	1,113
180	57	Down	22.00	1000	492	3262	0.658	0.12864	0.04574	2.8125	0.8050	6.6301	21.19	6.6301	0.8050	733	1,114
180	57	Down	22.00	1104	705	4093	0.726	0.13244	0.04871	2.7189	0.7896	5.8057	26.59	5.8057	0.7896	809	1,115
180	57	Down	22.00	1234	1100	5491	0.812	0.14221	0.05442	2.6130	0.7863	4.9918	35.67	4.9918	0.7863	905	1,114
181	58	Down	23.00	799	260	2168	0.526	0.13393	0.04739	2.8262	0.8254	8.3385	14.08	8.3385	0.8254	586	1,113
181	58	Down	23.00	899	382	2776	0.592	0.13546	0.04888	2.7713	0.8139	7.2670	18.03	7.2670	0.8139	659	1,113
181	58	Down	23.00	998	561	3526	0.657	0.13961	0.05247	2.6609	0.7934	6.2852	22.91	6.2852	0.7934	732	1,114
181	58	Down	23.00	1105	816	4498	0.727	0.14528	0.05623	2.5838	0.7859	5.5123	29.22	5.5123	0.7859	810	1,114
181	58	Down	23.00	1230	1267	5998	0.809	0.15635	0.06330	2.4700	0.7794	4.7340	38.96	4.7340	0.7794	902	1,115

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed →)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
178	20.00	0.550	211	1900	613	836	0.1072	0.0336	3.193	0.834	9.005	12.34	9.005	0.8344
178	20.00	0.575	242	2072	641	874	0.1070	0.0337	3.174	0.829	8.562	13.46	8.562	0.8285
178	20.00	0.600	279	2258	668	912	0.1071	0.0342	3.131	0.818	8.093	14.67	8.093	0.8175
178	20.00	0.625	321	2458	696	950	0.1074	0.0348	3.086	0.807	7.657	15.97	7.657	0.8070
178	20.00	0.650	368	2671	724	988	0.1079	0.0355	3.042	0.797	7.258	17.35	7.258	0.7974
178	20.00	0.675	421	2897	752	1026	0.1085	0.0362	2.995	0.787	6.881	18.82	6.881	0.7873
178	20.00	0.700	479	3138	780	1064	0.1093	0.0370	2.957	0.780	6.551	20.38	6.551	0.7801
178	20.00	0.725	543	3391	808	1102	0.1101	0.0377	2.919	0.773	6.245	22.03	6.245	0.7731
178	20.00	0.750	611	3658	835	1140	0.1110	0.0383	2.895	0.770	5.987	23.76	5.987	0.7697
178	20.00	0.775	686	3939	863	1178	0.1119	0.0390	2.869	0.766	5.742	25.59	5.742	0.7661
178	20.00	0.800	765	4233	891	1216	0.1129	0.0396	2.854	0.765	5.533	27.50	5.533	0.7653
179	21.00	0.550	234	2003	613	836	0.1130	0.0372	3.036	0.814	8.560	13.01	8.560	0.8144
179	21.00	0.575	268	2184	641	874	0.1128	0.0373	3.021	0.810	8.149	14.19	8.149	0.8096
179	21.00	0.600	309	2384	668	912	0.1130	0.0379	2.985	0.801	7.715	15.49	7.715	0.8008
179	21.00	0.625	357	2602	696	950	0.1137	0.0387	2.937	0.790	7.289	16.90	7.289	0.7903
179	21.00	0.650	411	2838	724	988	0.1147	0.0396	2.894	0.782	6.905	18.44	6.905	0.7820
179	21.00	0.675	471	3093	752	1026	0.1159	0.0405	2.858	0.776	6.567	20.09	6.567	0.7764
179	21.00	0.700	538	3366	780	1064	0.1173	0.0415	2.824	0.772	6.257	21.87	6.257	0.7716
179	21.00	0.725	612	3658	808	1102	0.1188	0.0425	2.794	0.768	5.977	23.76	5.977	0.7685
179	21.00	0.750	692	3968	835	1140	0.1204	0.0434	2.773	0.768	5.734	25.78	5.734	0.7678
179	21.00	0.775	779	4296	863	1178	0.1221	0.0443	2.756	0.768	5.515	27.91	5.515	0.7684
179	21.00	0.800	872	4643	891	1216	0.1238	0.0451	2.747	0.771	5.325	30.16	5.325	0.7713
180	22.00	0.550	266	2252	613	836	0.1271	0.0423	3.002	0.854	8.466	14.63	8.466	0.8541
180	22.00	0.575	304	2449	641	874	0.1264	0.0423	2.987	0.847	8.056	15.91	8.056	0.8475
180	22.00	0.600	350	2670	668	912	0.1266	0.0429	2.951	0.838	7.629	17.34	7.629	0.8380
180	22.00	0.625	406	2914	696	950	0.1273	0.0440	2.892	0.826	7.177	18.93	7.177	0.8236
180	22.00	0.650	470	3181	724	988	0.1285	0.0453	2.837	0.813	6.768	20.66	6.768	0.8115
180	22.00	0.675	542	3471	752	1026	0.1300	0.0467	2.787	0.802	6.404	22.55	6.404	0.8021
180	22.00	0.700	623	3784	780	1064	0.1318	0.0481	2.741	0.794	6.074	24.58	6.074	0.7943
180	22.00	0.725	713	4120	808	1102	0.1338	0.0495	2.701	0.788	5.778	26.76	5.778	0.7885
180	22.00	0.750	812	4479	835	1140	0.1359	0.0510	2.667	0.785	5.516	29.10	5.516	0.7848
180	22.00	0.775	919	4861	863	1178	0.1381	0.0523	2.641	0.784	5.289	31.58	5.289	0.7840
180	22.00	0.800	1035	5266	891	1216	0.1404	0.0535	2.624	0.785	5.088	34.21	5.088	0.7849
181	23.00	0.550	297	2371	613	836	0.1358	0.0475	2.831	0.826	7.983	15.40	7.983	0.8264
181	23.00	0.575	340	2595	641	874	0.1340	0.0473	2.830	0.827	7.632	16.86	7.632	0.8265
181	23.00	0.600	393	2846	668	912	0.1345	0.0482	2.802	0.821	7.242	18.49	7.242	0.8213
181	23.00	0.625	457	3122	696	950	0.1364	0.0496	2.753	0.811	6.832	20.28	6.832	0.8114
181	23.00	0.650	532	3426	724	988	0.1394	0.0513	2.690	0.801	6.440	22.26	6.440	0.8013
181	23.00	0.675	618	3756	752	1026	0.1407	0.0532	2.645	0.792	6.078	24.40	6.078	0.7918
181	23.00	0.700	714	4113	780	1064	0.1433	0.0551	2.600	0.785	5.761	26.72	5.761	0.7854
181	23.00	0.725	821	4496	808	1102	0.1460	0.0570	2.560	0.781	5.476	29.21	5.476	0.7806
181	23.00	0.750	939	4906	835	1140	0.1489	0.0589	2.527	0.778	5.225	31.87	5.225	0.7779
181	23.00	0.775	1067	5342	863	1178	0.1518	0.0607	2.502	0.778	5.007	34.70	5.007	0.7779
181	23.00	0.800	1206	5805	891	1216	0.1548	0.0624	2.483	0.780	4.813	37.71	4.813	0.7796





AG. Data Set # 21

DATA SET Number 21

XC-142A (47 x75) — Twisted SK59868-0

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
98.0	16.602	4	13.5	515.990	0.953

Power weighted solidity = 0.15972

Twist (0.25R -Tip in deg) = 28.4

$$C_T = 0.1515\frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

Looks like an OAT error screwed up Tip Mach number on page 182. I think an OAT of 120.5 C was used. Density ratio looks OK.

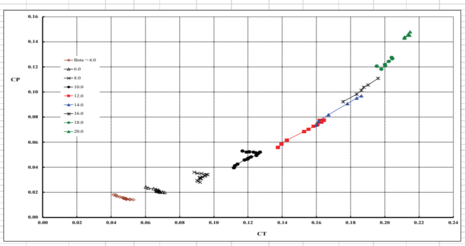
Also the RPM looks OK and so does tip speed. Therefore, I have arbitrarily changed the speed of sound to 1127.34 and recalculated the tip Mach No.

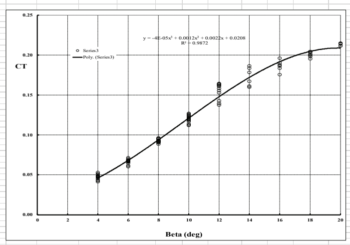
REDUCED TEST DATA POINTS (Harris Computed: CT through Repeat FM)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
182	195	Down	4.00	695	119	1280	0.536	0.05285	0.01405	3.7605	0.6899	10.7563	5.91	10.7563	0.6899	604	1,127
182	195	Down	4.00	809	192	1678	0.624	0.05113	0.01438	3.5567	0.6418	8.7396	7.75	8.7396	0.6418	703	1,127
182	195	Down	4.00	925	287	2182	0.713	0.05086	0.01438	3.5377	0.6366	7.6028	10.08	7.6028	0.6366	804	1,127
182	195	Down	4.00	1039	414	2643	0.801	0.04882	0.01463	3.3367	0.5884	6.3841	12.21	6.3841	0.5884	903	1,127
182	195	Down	4.00	1070	451	2811	0.825	0.04896	0.01459	3.3548	0.5924	6.2328	12.99	6.2328	0.5924	930	1,127
182	195	Down	4.00	1101	494	2979	0.849	0.04901	0.01467	3.3399	0.5900	6.0304	13.76	6.0304	0.5900	957	1,127
182	195	Down	4.00	1131	543	3084	0.872	0.04808	0.01488	3.2313	0.5654	5.6796	14.25	5.6796	0.5654	983	1,127
182	195	Down	4.00	1159	584	3252	0.894	0.04828	0.01487	3.2466	0.5693	5.5685	15.02	5.5685	0.5693	1,007	1,127
182	195	Down	4.00	1183	634	3315	0.912	0.04724	0.01518	3.1116	0.5397	5.2287	15.31	5.2287	0.5397	1,028	1,127
182	195	Down	4.00	1216	704	3525	0.938	0.04754	0.01552	3.0628	0.5329	5.0071	16.28	5.0071	0.5329	1,057	1,127
182	195	Down	4.00	1244	774	3619	0.959	0.04664	0.01594	2.9260	0.5042	4.6757	16.72	4.6757	0.5042	1,081	1,127
182	195	Down	4.00	1275	854	3672	0.983	0.04505	0.01633	2.7578	0.4671	4.2998	16.96	4.2998	0.4671	1,108	1,127
182	195	Down	4.00	1307	955	3692	1.008	0.04310	0.01696	2.5418	0.4211	3.8660	17.05	3.8660	0.4211	1,136	1,127
182	195	Down	4.00	1329	1054	3776	1.025	0.04263	0.01780	2.3951	0.3946	3.5825	17.44	3.5825	0.3946	1,155	1,127
182	195	Down	4.00	1356	1140	3818	1.046	0.04141	0.01813	2.2845	0.3710	3.3491	17.64	3.3491	0.3710	1,179	1,127
183	196	Down	6.00	698	170	1743	0.538	0.07134	0.01982	3.6000	0.7673	10.2529	8.05	10.2529	0.7673	607	1,128
183	196	Down	6.00	807	270	2289	0.622	0.07009	0.02037	3.4416	0.7271	8.4778	10.57	8.4778	0.7271	702	1,128
183	196	Down	6.00	922	397	2919	0.711	0.06848	0.02008	3.4102	0.7121	7.3526	13.48	7.3526	0.7121	801	1,127
183	196	Down	6.00	1043	592	3738	0.804	0.06852	0.02068	3.3129	0.6920	6.3142	17.27	6.3142	0.6920	907	1,128
183	196	Down	6.00	1069	634	3906	0.824	0.06816	0.02057	3.3130	0.6902	6.1609	18.04	6.1609	0.6902	929	1,128
183	196	Down	6.00	1096	690	4074	0.845	0.06763	0.02078	3.2553	0.6756	5.9043	18.82	5.9043	0.6756	953	1,127
183	196	Down	6.00	1126	748	4242	0.868	0.06672	0.02077	3.2123	0.6621	5.6711	19.60	5.6711	0.6621	979	1,128
183	196	Down	6.00	1158	825	4494	0.893	0.06683	0.02106	3.1732	0.6546	5.4473	20.76	5.4473	0.6546	1,007	1,127
183	196	Down	6.00	1189	909	4746	0.917	0.06695	0.02144	3.1228	0.6448	5.2211	21.92	5.2211	0.6448	1,034	1,127
183	196	Down	6.00	1215	986	5019	0.937	0.06780	0.02179	3.1111	0.6465	5.0903	23.18	5.0903	0.6465	1,056	1,127
183	196	Down	6.00	1243	1063	5145	0.959	0.06641	0.02194	3.0264	0.6224	4.8401	23.77	4.8401	0.6224	1,081	1,127
183	196	Down	6.00	1272	1158	5376	0.981	0.06626	0.02231	2.9706	0.6102	4.6425	24.83	4.6425	0.6102	1,106	1,127
183	196	Down	6.00	1304	1286	5523	1.006	0.06477	0.02299	2.8172	0.5722	4.2947	25.51	4.2947	0.5722	1,134	1,127
183	196	Down	6.00	1334	1406	5502	1.029	0.06166	0.02348	2.6260	0.5203	3.9132	25.42	3.9132	0.5203	1,160	1,127
183	196	Down	6.00	1358	1534	5569	1.047	0.06022	0.02428	2.4800	0.4857	3.6304	25.73	3.6304	0.4857	1,180	1,127
																	1,127.34
184	197	Down	8.00	695	238	2226	0.536	0.09190	0.02811	3.2699	0.7910	9.3529	10.28	9.3529	0.7910	604	1,127
184	197	Down	8.00	812	389	3003	0.626	0.09083	0.02880	3.1533	0.7584	7.7198	13.87	7.7198	0.7584	706	1,128
184	197	Down	8.00	927	592	3885	0.715	0.09016	0.02946	3.0602	0.7333	6.5625	17.95	6.5625	0.7333	806	1,127
184	197	Down	8.00	1038	876	4998	0.801	0.09251	0.03105	2.9792	0.7231	5.7055	23.09	5.7055	0.7231	902	1,126
184	197	Down	8.00	1067	953	5250	0.823	0.09196	0.03110	2.9569	0.7155	5.5089	24.25	5.5089	0.7155	928	1,127
184	197	Down	8.00	1097	1050	5565	0.846	0.09222	0.03153	2.9247	0.7088	5.3000	25.71	5.3000	0.7088	954	1,127
184	197	Down	8.00	1129	1151	5859	0.870	0.09167	0.03171	2.8910	0.6985	5.0904	27.07	5.0904	0.6985	981	1,128
184	197	Down	8.00	1154	1251	6237	0.890	0.09340	0.03227	2.8942	0.7058	4.9856	28.81	4.9856	0.7058	1,003	1,127
184	197	Down	8.00	1186	1385	6678	0.915	0.09468	0.03291	2.8766	0.7063	4.8217	30.85	4.8217	0.7063	1,031	1,127
184	197	Down	8.00	1217	1518	7056	0.939	0.09501	0.03339	2.8456	0.6999	4.6482	32.59	4.6482	0.6999	1,058	1,127
184	197	Down	8.00	1244	1655	7476	0.960	0.09634	0.03408	2.8268	0.7002	4.5172	34.53	4.5172	0.7002	1,081	1,126
184	197	Down	8.00	1271	1778	7749	0.980	0.09566	0.03433	2.7865	0.6877	4.3583	35.80	4.3583	0.6877	1,105	1,127
184	197	Down	8.00	1303	1947	7896	1.005	0.09274	0.03489	2.6582	0.6460	4.0555	36.48	4.0555	0.6460	1,133	1,127
184	197	Down	8.00	1333	2103	8043	1.028	0.09027	0.03520	2.5646	0.6149	3.8245	37.15	3.8245	0.6149	1,159	1,127
184	197	Down	8.00	1359	2280	8211	1.048	0.08866	0.03601	2.4620	0.5850	3.6013	37.93	3.6013	0.5850	1,181	1,127
185	198	Down	10.00	695	336	2709	0.536	0.11184	0.03968	2.8188	0.7523	8.0625	12.51	8.0625	0.7523	604	1,127
185	198	Down	10.00	810	552	3696	0.625	0.11234	0.04118	2.7282	0.7297	6.6957	17.07	6.6957	0.7297	704	1,127
185	198	Down	10.00	930	862	4935	0.717	0.11379	0.04248	2.6783	0.7210	5.7251	22.80	5.7251	0.7210	808	1,128
185	198	Down	10.00	1042	1308	6426	0.804	0.11803	0.04583	2.5752	0.7060	4.9128	29.68	4.9128	0.7060	906	1,127
185	198	Down	10.00	1070	1440	6867	0.825	0.11961	0.04660	2.5668	0.7084	4.7688	31.72	4.7688	0.7084	930	1,127
185	198	Down	10.00	1096	1575	7245	0.845	0.12028	0.04743	2.5361	0.7019	4.6000	33.47	4.6000	0.7019	953	1,127
185	198	Down	10.00	1134	1779	7854	0.875	0.12180	0.04836	2.5184	0.7014	4.4148	36.28	4.4148	0.7014	986	1,127
185	198	Down	10.00	1157	1932	8379	0.893	0.12482	0.04945	2.5242	0.7117	4.3370	38.71	4.3370	0.7117	1,006	1,126
185	198	Down	10.00	1183	2124	8841	0.913	0.12598	0.05086	2.4770	0.7016	4.1624	40.84	4.1624	0.7016	1,028	1,126
185	198	Down	10.00	1213	2343	9366	0.940	0.12694	0.05204	2.4392	0.6935	3.9974	43.27	3.9974	0.6935	1,054	1,122
185	198	Down	10.00	1246	2510	9702	0.961	0.12462	0.05144	2.4228	0.6825	3.8653	44.82	3.8653	0.6825	1,083	1,127
185	198	Down	10.00	1272	2700	9996	0.981	0.12320	0.05201	2.3689	0.6635	3.7022	46.18	3.7022	0.6635	1,106	1,127
185	198	Down	10.00	1304	2918	10290	1.006	0.12068	0.05217	2.3132	0.6413	3.5264	47.53	3.5264	0.6413	1,134	1,127
185	198	Down	10.00	1327	3064	10521	1.024	0.11915	0.05198	2.2921	0.6314	3.4337	48.60	3.4337	0.6314	1,154	1,126
185	198	Down	10.00	1357	3335	10773	1.047	0.11667	0.05291	2.2051	0.6010	3.2303	49.77	3.2303	0.6010	1,180	1,127
186	199	Down	12.00	689	460	3269	0.537	0.13732	0.05575	2.4631	0.7284	7.1065	15.10	7.1065	0.7284	599	1,115
186	199	Down	12.00	815	799	4649	0.636	0.13958	0.05851	2.3855	0.7112	5.8185	21.48	5.8185	0.7112	708	1,114
186	199	Down	12.00	923	1220	6090	0.720	0.14256	0.06151	2.3177	0.6983	4.9918	28.13	4.9918	0.6983	802	1,114
186	199	Down	12.00	1046	1975	8384	0.816	0.15281	0.06841	2.2337	0.6968	4.2451	38.73	4.2451	0.6968	909	1,114
186	199	Down	12.00	1068	2157	8891	0.833	0.15545	0.07019	2.2145	0.6967	4.1219	41.07	4.1219	0.6967	928	1,115
186	199	Down	12.00	1099	2432	9582	0.857	0.15821	0.07263	2.1782	0.6914	3.9400	44.26	3.9400	0.6914	955	1,115
186	199	Down	12.00	1127	2671	10231	0.879	0.16064	0.07397	2.1716	0.6945	3.8304	47.26	3.8304	0.6945	980	1,115
186	199	Down	12.00	1154	2945	10881	0.900	0.16294	0.07597	2.1448	0.6909	3.6947	50.26	3.6947	0.6909	1,003	1,115
186	199	Down	12.00	1184	3250	11551	0.923	0.16432	0.07762	2.1169	0.6848	3.5542	53.36	3.5542	0.6848	1,029	1,115
186	199	Down	12.00	1207	3433	11957	0.941	0.16367	0.07740	2.1147	0.6827	3.4830	55.23	3.4830	0.6827	1,049	1,115
186	199	Down	12.00	1214	3486	11957	0.947	0.16179	0.07724	2.0947	0.6724	3.4300	55.23	3.4300	0.6724	1,055	1,114
187	200	Down	14.00	702	641	3951	0.548	0.15988	0.07345	2.1767	0.6945	6.1638	18.25	6.1638	0.6945	610	1,114
187	200	Down	14.00	809	1022	5288	0.631	0.16113	0.07652	2.1057	0.6745	5.1742	24.43	5.1742	0.6745	703	1,114
187	200	Down	14.00	929	1656	7233	0.725	0.16713	0.08188	2.0412	0.6659	4.3678	33.41	4.3678	0.6659	808	1,114
187	200	Down	14.00	1040	2573	9664	0.811	0.17818	0.09068	1.9650	0.6619	3.7559	44.64	3.7559	0.6619	904	1,115
187	200	Down	14.00	1073	2961	10596	0.837	0.18353	0.09502	1.9316	0.6603	3.5785	48.95	3.5785	0.6603	933	1,114
187	200	Down	14.00	1084	3112	10981	0.846	0.18636	0.09685	1.9241	0.6628	3.5286	50.73	3.5286	0.6628	942	1,114
188	201	Down	16.00	696	785	4266	0.543	0.17562	0.09230	1.9027	0.6363	5.4344	19.71	5.4344	0.6363	605	1,114
188	201	Down	16.00	816	1347	6127	0.637	0.18350	0.09828	1.8671	0.6383	4.5486	28.30	4.5486	0.6383	709	1,114
188	201	Down	16.00	878	1728	7198	0.685	0.18621	0.10121	1.8398	0.6335	4.1655	33.25	4.1655	0.6335	763	1,114
188	201	Down	16.00	930	2106	8139	0.726	0.18766	0.10380	1.8080	0.6250	3.8647	37.60	3.8647	0.6250	808	1,114
188	201	Down	16.00	956	2325	8715	0.746	0.19016	0.10549	1.8026	0.6273	3.7484	40.26	3.7484	0.6273	831	1,114
188	201	Down	16.00	1009	2873	10009	0.787	0.19606	0.11087	1.7683	0.6248	3.4838	46.24	3.4838	0.6248	877	1,114
189	202	Down	18.00	704	1061	4853	0.550	0.19527	0.12055	1.6198	0.5712	4.5740	22.42	4.5740	0.5712	612	1,113
189	202	Down	18.00	736	1189	5379	0.575	0.19802	0.11823	1.6749	0.5948	4.5240	24.85	4.5240	0.5948	640	1,113
189	202	Down	18.00	781	1451	6127	0.610	0.20032	0.12075	1.6590	0.5925	4.2226	28.30	4.2226	0.5925	679	1,113
189	202	Down	18.00	812	1646	6612	0.634	0.19998	0.12188	1.6408	0.5855	4.0170	30.54	4.0170	0.5855	706	1,113
189	202	Down	18.00	877	2118	7805	0.685	0.20237	0.12448	1.6257	0.5836	3.6851	36.05	3.6851	0.5836	762	1,113
189	202	Down	18.00	925	2529	8775	0.722	0.20452	0.12668	1.6145	0.5827	3.4698	40.54	3.4698	0.5827	804	1,114
189	202	Down	18.00	941	2680	9059	0.735	0.20402	0.12751	1.6001	0.5767	3.3802	41.85	3.3802	0.5767	818	1,113
190	203	Down	20.00	704	1258	5257	0.550	0.21153	0.14293	1.4799	0.5431	4.1789	24.28	4.1789	0.5431	612	1,113
190	203	Down	20.00	736	1461	5823	0.575	0.21437	0.14527	1.4756	0.5452	3.9856	26.90	3.9856	0.5452	640	1,113
190	203	Down	20.00	780	1720	6450	0.609	0.21142	0.14369	1.4714	0.5399	3.7500	29.80	3.7500	0.5399	678	1,113
190	203	Down	20.00	810	1960	7037	0.633	0.21389	0.14621	1.4629	0.5399	3.5903	32.51	3.5903	0.5399	704	1,112
190	203	Down	20.00	874	2491	8230	0.683	0.21486	0.14791	1.4526	0.5373	3.3039	38.02	3.3039	0.5373	760	1,112

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed: CT through Repeat FM)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
182	4.00	0.725	478	2893	817	940	0.0653	0.0228	2.862	0.584	6.052	13.36	6.052	0.5836
182	4.00	0.750	532	3087	845	973	0.0650	0.0229	2.840	0.578	5.803	14.26	5.803	0.5779
182	4.00	0.775	595	3252	873	1005	0.0642	0.0232	2.763	0.559	5.466	15.02	5.466	0.5587
182	4.00	0.800	671	3442	902	1037	0.0638	0.0239	2.676	0.539	5.130	15.90	5.130	0.5395
182	4.00	0.825	759	3590	930	1070	0.0625	0.0246	2.546	0.508	4.730	16.58	4.730	0.5080
182	4.00	0.850	862	3665	958	1102	0.0602	0.0255	2.357	0.461	4.252	16.93	4.252	0.4614
182	4.00	0.875	985	3737	986	1135	0.0578	0.0267	2.166	0.416	3.794	17.26	3.794	0.4158
182	4.00	0.900	1127	3806	1014	1167	0.0557	0.0281	1.983	0.373	3.377	17.58	3.377	0.3735
183	6.00	0.725	427	3048	817	940	0.0688	0.0204	3.375	0.706	7.138	14.08	7.138	0.7065
183	6.00	0.750	475	3252	845	973	0.0685	0.0204	3.351	0.700	6.846	15.02	6.846	0.6999
183	6.00	0.775	527	3463	873	1005	0.0684	0.0206	3.322	0.693	6.571	16.00	6.571	0.6932
183	6.00	0.800	581	3681	902	1037	0.0683	0.0207	3.305	0.689	6.336	17.00	6.336	0.6891
183	6.00	0.825	639	3907	930	1070	0.0681	0.0207	3.291	0.685	6.114	18.05	6.114	0.6851
183	6.00	0.850	699	4102	958	1102	0.0674	0.0207	3.253	0.674	5.868	18.95	5.868	0.6738
183	6.00	0.875	769	4310	986	1135	0.0667	0.0209	3.200	0.660	5.605	19.91	5.605	0.6596
183	6.00	0.900	850	4580	1014	1167	0.0671	0.0212	3.163	0.654	5.388	21.16	5.388	0.6537
183	6.00	0.925	938	4849	1043	1199	0.0673	0.0216	3.118	0.645	5.170	22.40	5.170	0.6453
183	6.00	0.950	1031	5103	1071	1232	0.0670	0.0219	3.067	0.634	4.950	23.57	4.950	0.6338
183	6.00	0.975	1135	5329	1099	1264	0.0665	0.0223	2.985	0.614	4.695	24.62	4.695	0.6144
183	6.00	1.000	1252	5458	1127	1297	0.0647	0.0227	2.844	0.577	4.359	25.21	4.359	0.5773
184	8.00	0.725	626	4025	817	940	0.0908	0.0299	3.040	0.731	6.430	18.59	6.430	0.7313
184	8.00	0.750	702	4320	845	972	0.0912	0.0303	3.009	0.725	6.154	19.96	6.154	0.7251
184	8.00	0.775	783	4628	873	1005	0.0914	0.0306	2.988	0.721	5.911	21.38	5.911	0.7208
184	8.00	0.800	871	4949	901	1037	0.0918	0.0310	2.964	0.717	5.682	22.86	5.682	0.7166
184	8.00	0.825	964	5285	930	1069	0.0922	0.0313	2.948	0.714	5.482	24.41	5.482	0.7145
184	8.00	0.850	1062	5594	958	1102	0.0919	0.0315	2.920	0.706	5.267	25.84	5.267	0.7062
184	8.00	0.875	1177	5980	986	1134	0.0927	0.0320	2.898	0.704	5.081	27.62	5.081	0.7043
184	8.00	0.900	1301	6388	1014	1167	0.0935	0.0325	2.882	0.703	4.910	29.51	4.910	0.7035
184	8.00	0.925	1442	6852	1042	1199	0.0950	0.0332	2.866	0.705	4.752	31.65	4.752	0.7051
184	8.00	0.950	1589	7294	1070	1231	0.0960	0.0338	2.843	0.703	4.590	33.69	4.590	0.7028
184	8.00	0.975	1746	7649	1099	1264	0.0955	0.0343	2.786	0.687	4.381	35.33	4.381	0.6868
184	8.00	1.000	1909	7899	1127	1296	0.0938	0.0348	2.698	0.659	4.138	36.49	4.138	0.6592
185	10.00	0.725	907	5077	817	940	0.1146	0.0433	2.647	0.715	5.598	23.45	5.598	0.7150
185	10.00	0.750	1025	5484	845	972	0.1158	0.0442	2.616	0.710	5.350	25.33	5.350	0.7103
185	10.00	0.775	1153	5914	873	1005	0.1168	0.0450	2.593	0.707	5.129	27.32	5.129	0.7071
185	10.00	0.800	1291	6366	901	1037	0.1181	0.0459	2.572	0.705	4.931	29.41	4.931	0.7053
185	10.00	0.825	1438	6836	930	1069	0.1193	0.0467	2.556	0.705	4.754	31.58	4.754	0.7046
185	10.00	0.850	1599	7343	958	1102	0.1206	0.0474	2.546	0.705	4.592	33.92	4.592	0.7054
185	10.00	0.875	1793	7933	986	1134	0.1230	0.0487	2.524	0.706	4.424	36.65	4.424	0.7064
185	10.00	0.900	2002	8529	1014	1167	0.1249	0.0499	2.501	0.705	4.260	39.40	4.260	0.7053
185	10.00	0.925	2218	9097	1042	1199	0.1262	0.0510	2.474	0.701	4.101	42.02	4.101	0.7013
185	10.00	0.950	2428	9536	1070	1231	0.1255	0.0516	2.432	0.688	3.928	44.05	3.928	0.6875
185	10.00	0.975	2639	9909	1099	1264	0.1237	0.0518	2.387	0.670	3.755	45.77	3.755	0.6700
185	10.00	1.000	2856	10231	1127	1296	0.1215	0.0520	2.335	0.650	3.582	47.26	3.582	0.6495
186	12.00	0.725	1269	6248	808	930	0.1441	0.0625	2.303	0.698	4.924	28.86	4.924	0.6977
186	12.00	0.750	1447	6797	836	962	0.1465	0.0644	2.273	0.694	4.697	31.40	4.697	0.6942
186	12.00	0.775	1643	7382	864	994	0.1490	0.0663	2.247	0.692	4.493	34.10	4.493	0.6920
186	12.00	0.800	1857	8004	892	1026	0.1516	0.0682	2.225	0.691	4.310	36.97	4.310	0.6913
186	12.00	0.825	2079	8644	919	1058	0.1540	0.0696	2.213	0.693	4.158	39.93	4.158	0.6930
186	12.00	0.850	2341	9366	947	1090	0.1572	0.0717	2.194	0.694	4.001	43.27	4.001	0.6941
186	12.00	0.875	2634	10122	975	1122	0.1603	0.0739	2.169	0.693	3.843	46.76	3.843	0.6931
186	12.00	0.900	2949	10898	1003	1154	0.1632	0.0761	2.145	0.692	3.695	50.34	3.695	0.6916
186	12.00	0.925	3245	11543	1031	1186	0.1637	0.0771	2.122	0.685	3.557	53.32	3.557	0.6851
187	14.00	0.725	1672	7258	808	929	0.1677	0.0827	2.029	0.663	4.341	33.53	4.341	0.6629
187	14.00	0.750	1916	7918	835	961	0.1710	0.0856	1.998	0.659	4.133	36.58	4.133	0.6592
187	14.00	0.775	2184	8627	863	993	0.1745	0.0884	1.973	0.658	3.950	39.85	3.950	0.6577
187	14.00	0.800	2476	9386	891	1025	0.1782	0.0911	1.955	0.658	3.791	43.36	3.791	0.6584
187	14.00	0.825	2794	10193	919	1057	0.1819	0.0938	1.940	0.660	3.648	47.09	3.648	0.6603
188	16.00	0.725	2118	8193	808	929	0.1893	0.1047	1.808	0.628	3.868	37.85	3.868	0.6277
188	16.00	0.750	2395	8874	835	961	0.1916	0.1070	1.791	0.626	3.705	40.99	3.705	0.6257
188	16.00	0.775	2696	9590	863	993	0.1940	0.1092	1.777	0.624	3.557	44.30	3.557	0.6245
189	18.00	0.725	2562	8822	807	929	0.2038	0.1267	1.609	0.580	3.443	40.75	3.443	0.5798





AH. Data Set # 22

DATA SET Number 22

Curtiss Calibrator

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
93.0	13.00	4	27.0	540.290	0.937

Power weighted solidity = 0.15973

Twist (0.25R -Tip in deg) = 32.6

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	THP		Disc Loading	Repeat THP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt	T^1.5
191	87	Down	21.10	700	265	1868	0.418	0.20222	0.10404	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	806	420	2540	0.481	0.20740	0.10802	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	905	619	3245	0.540	0.21016	0.11246	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	1001	857	4034	0.598	0.21355	0.11506	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	1096	1192	4952	0.654	0.21867	0.12193	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	1200	1663	6140	0.717	0.22618	0.12960	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	1294	2207	7260	0.773	0.22999	0.13717	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
191	87	Down	21.10	1402	2930	8580	0.837	0.23154	0.14318	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	698	276	1911	0.419	0.20806	0.10929	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	811	446	2603	0.487	0.20993	0.11260	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	894	615	3211	0.537	0.21311	0.11591	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	1000	882	4072	0.601	0.21600	0.11877	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	1094	1187	4911	0.657	0.21766	0.12208	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	1201	1675	6125	0.721	0.22525	0.13021	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	1294	2200	7220	0.777	0.22872	0.13673	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
192	88	Down	21.10	1399	2988	8585	0.840	0.23267	0.14695	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	702	288	2009	0.420	0.21624	0.11211	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	804	444	2608	0.481	0.21401	0.11505	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	894	616	3183	0.534	0.21125	0.11610	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	1005	866	4038	0.601	0.21207	0.11489	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	1098	1212	4935	0.656	0.21713	0.12330	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	1210	1698	6070	0.723	0.21992	0.12907	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	1302	2250	7285	0.778	0.22795	0.13728	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
193	104	Down	21.10	1400	2982	8505	0.837	0.23017	0.14634	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	700	267	1980	0.422	0.21434	0.10483	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	798	409	2615	0.481	0.21782	0.10838	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	897	591	3208	0.541	0.21149	0.11027	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	1000	847	3961	0.603	0.21011	0.11406	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	1095	1167	4974	0.660	0.22005	0.11970	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	1197	1600	5940	0.721	0.21991	0.12563	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	1294	2182	7210	0.780	0.22841	0.13561	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
194	117	Down	21.10	1403	2958	8565	0.845	0.23081	0.14424	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	727	314	2194	0.436	0.22019	0.11005	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	826	479	2849	0.496	0.22150	0.11446	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	920	666	3482	0.552	0.21822	0.11518	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	1021	937	4304	0.613	0.21901	0.11855	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	1121	1259	5254	0.673	0.22178	0.12035	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	1227	1765	6457	0.736	0.22750	0.12867	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	1320	2305	7554	0.792	0.22997	0.13496	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
195	188	Down	21.10	1371	2663	8145	0.823	0.22986	0.13916	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	706	289	2047	0.424	0.21785	0.11060	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	795	414	2616	0.477	0.21955	0.11096	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	896	609	3249	0.538	0.21467	0.11401	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	995	858	4093	0.597	0.21930	0.11729	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	1091	1142	4916	0.655	0.21908	0.11843	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	1191	1555	5929	0.715	0.22172	0.12395	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	1302	2185	7301	0.781	0.22845	0.13331	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
196	189	Down	21.10	1397	2854	8503	0.838	0.23111	0.14097	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	698	272	1918	0.427	0.20882	0.10771	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	799	424	2538	0.489	0.21088	0.11194	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	907	635	3299	0.555	0.21272	0.11461	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	1003	871	4060	0.613	0.21407	0.11624	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	1098	1195	5034	0.671	0.22149	0.12157	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	1198	1639	6120	0.733	0.22619	0.12837	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	1299	2239	7399	0.794	0.23259	0.13756	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
197	25	Down	21.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
198	28	Down	21.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
199	34	Down	21.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
200	204	Down	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
200	204	Down	25.10	1102	1242	5171	0.689	0.22587	0.12498	1.8073	0.6854	4.1634		38.96	4.1634	0.6854	750	1,089	371,845
200	204	Down	26.10	1201	1705	6288	0.751	0.23124	0.13254	1.7447	0.6695	3.6880		47.37	3.6880	0.6695	817	1,089	498,619
200	204	Down	27.10	1297	2305	7550	0.811	0.23807	0.14227	1.6734	0.6516	3.2755		56.88	3.2755	0.6516	883	1,089	656,025
200	204	Down	28.10	1398	3068	8725	0.874	0.23680	0.15121	1.5660	0.6081	2.8439		65.73	2.8439	0.6081	952	1,089	814,982
201	205	Down	21.10	703	277	1978	0.440	0.21230	0.10737	1.9774	0.7271	7.1408		14.90	7.1408	0.7271	479	1,088	87,971
201	205	Down	21.10	802	415	2582	0.502	0.21293	0.10834	1.9655	0.7238	6.2217		19.45	6.2217	0.7238	546	1,087	131,200
201	205	Down	21.10	906	603	3264	0.567	0.21093	0.10919	1.9317	0.7080	5.4129		24.59	5.4129	0.7080	617	1,088	186,477
201	205	Down	21.10	1003	838	4090	0.628	0.21566	0.11184	1.9283	0.7146	4.8807		30.81	4.8807	0.7146	683	1,087	261,568
201	205	Down	21.10	1105	1181	5146	0.692	0.22356	0.11787	1.8966	0.7156	4.3573		38.77	4.3573	0.7156	752	1,087	369,152
201	205	Down	21.10	1199	1635	6317	0.751	0.23308	0.12774	1.8247	0.7030	3.8636		47.59	3.8636	0.7030	816	1,087	502,072
201	205	Down	21.10	1300	2227	7565	0.814	0.23744	0.13650	1.7395	0.6764	3.3969		56.99	3.3969	0.6764	885	1,087	657,981
201	205	Down	21.10	1398	2965	8717	0.875	0.23659	0.14614	1.6190	0.6284	2.9400		65.67	2.9400	0.6284	952	1,088	813,862
202	206	Down	21.10	709	282	1987	0.444	0.20967	0.10655	1.9678	0.7190	7.0461		14.97	7.0461	0.7190	483	1,087	88,572
202	206	Down	21.10	802	421	2611	0.502	0.21533	0.10990	1.9592	0.7255	6.2019		19.67	6.2019	0.7255	546	1,087	133,417
202	206	Down	21.10	904	608	3322	0.566	0.21563	0.11083	1.9456	0.7209	5.4638		25.03	5.4638	0.7209	615	1,087	191,469
202	206	Down	21.10	1003	867	4186	0.628	0.22072	0.11571	1.9075	0.7151	4.8281		31.54	4.8281	0.7151	683	1,087	270,831
202	206	Down	21.10	1105	1201	5184	0.692	0.22521	0.11987	1.8788	0.7115	4.3164		39.06	4.3164	0.7115	752	1,087	373,248
202	206	Down	21.10	1199	1635	6317	0.751	0.23308	0.12774	1.8247	0.7030	3.8636		47.59	3.8636	0.7030	816	1,087	502,072
202	206	Down	21.10	1300	2232	7584	0.814	0.23804	0.13681	1.7399	0.6774	3.3978		57.14	3.3978	0.6774	885	1,087	660,461
202	206	Down	21.10	1305	2283	7680	0.817	0.23921	0.13833	1.7292	0.6749	3.3640		57.86	3.3640	0.6749	888	1,087	673,041
202	206	Down	21.10	1405	3006	8813	0.879	0.23682	0.14595	1.6225	0.6301	2.9318		66.40	2.9318	0.6301	956	1,088	827,343
203	223	Down	21.10	750	362	2250	0.463	0.21218	0.11555	1.8362	0.6750	6.2155		16.95	6.2155	0.6750	511	1,103	106,727
203	223	Down	21.10	855	546	2923	0.528	0.21210	0.11764	1.8030	0.6626	5.3535		22.02	5.3535	0.6626	582	1,102	158,031
203	223	Down	21.10	949	758	3647	0.586	0.21480	0.11943	1.7985	0.6652	4.8113		27.48	4.8113	0.6652	646	1,102	220,244
203	223	Down	21.10	1050	1056	4529	0.648	0.21790	0.12284	1.7738	0.6608	4.2888		34.12	4.2888	0.6608	715	1,103	304,792
203	223	Down	21.10	1147	1433	5500	0.708	0.22176	0.12788	1.7341	0.6516	3.8381		41.44	3.8381	0.6516	781	1,103	407,891
203	223	Down	21.10	1251	1977	6749	0.773	0.22875	0.13598	1.6822	0.6420	3.4138		50.85	3.4138	0.6420	852	1,102	554,446
203	223	Down	21.10	1353	2678	8047	0.836	0.23317	0.14560	1.6014	0.6171	3.0049		60.63	3.0049	0.6171	921	1,102	721,857
203	223	Down	21.10	1403	3084	8642	0.866	0.23288	0.15038	1.5486	0.5964	2.8022		65.11	2.8022	0.5964	955	1,103	803,381
204	224	Down	21.10	760	366	2349	0.469	0.21572	0.11228	1.9213	0.7121	6.4180		17.70	6.4180	0.7121	517	1,103	113,848
204	224	Down	21.10	857	535	2933	0.529	0.21183	0.11446	1.8507	0.6797	5.4822		22.10	5.4822	0.6797	583	1,103	158,843
204	224	Down	21.10	947	721	3568	0.585	0.21104	0.11432	1.8460	0.6767	4.9487		26.88	4.9487	0.6767	645	1,102	213,126
204	224	Down	21.10	1047	998	4440	0.647	0.21485	0.11710	1.8348	0.6787	4.4489		33.45	4.4489	0.6787	713	1,101	295,852
204	224	Down	21.10	1145	1361	5411	0.707	0.21893	0.12209	1.7931	0.6695	3.9758		40.77	3.9758	0.6695	779	1,102	398,030
204	224	Down	21.10	1256	1938	6798	0.776	0.22858	0.13172	1.7354	0.6621	3.5077		51.22	3.5077	0.6621	855	1,102	560,495
204	224	Down	21.10	1350	2570	8017	0.834	0.23334	0.14066	1.6588	0.6394	3.1195		60.40	3.1195	0.6394	919	1,102	717,824
204	224	Down	21.10	1407	3045	8701	0.869	0.23314	0.14722	1.5837	0.6102	2.8575		65.55	2.8575	0.6102	958	1,102	811,622
205	225	Down	21.10	748	369	2259	0.462	0.21417	0.11873	1.8038	0.6661	6.1220		17.02	6.1220	0.6661	509	1,102	107,368
205	225	Down	21.10	855	543	2933	0.528	0.21282	0.11699	1.8191	0.6697	5.4015		22.10	5.4015	0.6697	582	1,102	158,843
205	225	Down	21.10	950	759	3617	0.587	0.21259	0.11921	1.7833	0.6561	4.7655		27.25	4.7655	0.6561	647	1,102	217,532
205	225	Down	21.10	1046	1032	4479	0.646	0.21715	0.12143	1.7882	0.6650	4.3401		33.74	4.3401	0.6650	712	1,102	299,759
205	225	Down	21.10	1148	1430	5510	0.709	0.22177	0.12728	1.7424	0.6548	3.8531		41.51	3.8531	0.6548	781	1,102	409,004
205	225	Down	21.10	1249	1945	6679	0.771	0.22710	0.13443	1.6894	0.6425	3.4339		50.32	3.4339	0.6425	850	1,103	545,842
205	225	Down	21.10	1348	2658	8047	0.832	0.23491	0.14613	1.6075	0.6217	3.0275		60.63	3.0275	0.6217	918	1,103	721,857
205	225	Down	21.10	1402	3071	8671	0.866	0.23400	0.15007	1.5593	0.6019	2.8235		65.33	2.8235	0.6019	954	1,102	807,428

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed)	CP	CT/CP	FM	TH/HP		Disc Loading	Repeat T/HP	Repeat FM
191	21.1	0.525	546	3032	598	879	0.2082	0.1083	1.923	0.700	5.553		22.84	5.553	0.7000
191	21.1	0.550	645	3360	627	921	0.2101	0.1112	1.890	0.691	5.209	5.212	25.31	5.209	0.6913
191	21.1	0.575	757	3711	655	963	0.2123	0.1141	1.860	0.684	4.902		27.96	4.902	0.6837
191	21.1	0.600	868	4079	684	1005	0.2142	0.1152	1.860	0.687	4.699		30.73	4.699	0.6871
191	21.1	0.625	1009	4471	712	1047	0.2163	0.1184	1.827	0.678	4.431		33.68	4.431	0.6783
191	21.1	0.650	1168	4887	741	1089	0.2186	0.1218	1.795	0.670	4.184		36.82	4.184	0.6696
191	21.1	0.675	1336	5349	769	1130	0.2222	0.1247	1.782	0.670	4.004		40.30	4.004	0.6704
191	21.1	0.700	1529	5802	798	1172	0.2241	0.1279	1.752	0.662	3.795		43.71	3.795	0.6617
191	21.1	0.725	1742	6273	826	1214	0.2258	0.1311	1.722	0.653	3.601		47.26	3.601	0.6529
191	21.1	0.750	1974	6761	855	1256	0.2273	0.1342	1.694	0.645	3.425		50.94	3.425	0.6447
191	21.1	0.775	2225	7268	883	1298	0.2288	0.1370	1.670	0.638	3.267		54.76	3.267	0.6375
191	21.1	0.800	2495	7793	912	1340	0.2302	0.1396	1.649	0.631	3.123		58.71	3.123	0.6312
191	21.1	0.825	2784	8336	940	1382	0.2315	0.1420	1.630	0.626	2.994		62.80	2.994	0.6259
192	21.1	0.525	556	3039	595	874	0.2110	0.1121	1.882	0.690	5.466		22.90	5.466	0.6898
192	21.1	0.550	653	3357	623	916	0.2122	0.1144	1.855	0.682	5.141		25.29	5.141	0.6819
192	21.1	0.575	762	3697	652	957	0.2141	0.1171	1.829	0.675	4.852		27.85	4.852	0.6753
192	21.1	0.600	885	4057	680	999	0.2156	0.1195	1.804	0.668	4.584		30.57	4.584	0.6685
192	21.1	0.625	1003	4429	708	1041	0.2168	0.1197	1.811	0.673	4.416		33.37	4.416	0.6728
192	21.1	0.650	1156	4831	737	1082	0.2189	0.1229	1.781	0.665	4.179		36.40	4.179	0.6650
192	21.1	0.675	1305	5255	765	1124	0.2206	0.1238	1.783	0.668	4.027		39.59	4.027	0.6683
192	21.1	0.700	1497	5699	793	1165	0.2227	0.1275	1.747	0.658	3.807		42.94	3.807	0.6579
192	21.1	0.725	1711	6164	822	1207	0.2244	0.1310	1.713	0.648	3.603		46.44	3.603	0.6475
192	21.1	0.750	1946	6652	850	1249	0.2262	0.1345	1.682	0.638	3.418		50.12	3.418	0.6383
192	21.1	0.775	2202	7161	878	1290	0.2283	0.1381	1.652	0.630	3.252		53.95	3.252	0.6300
192	21.1	0.800	2480	7693	907	1332	0.2300	0.1413	1.628	0.623	3.102		57.96	3.102	0.6229
192	21.1	0.825	2779	8247	935	1373	0.2321	0.1446	1.605	0.617	2.968		62.13	2.968	0.6170
193	21.1	0.525	563	3076	598	878	0.2117	0.1120	1.890	0.694	5.464		23.17	5.464	0.6937
193	21.1	0.550	659	3382	626	920	0.2120	0.1140	1.860	0.683	5.132		25.48	5.132	0.6833
193	21.1	0.575	769	3708	655	962	0.2125	0.1163	1.827	0.672	4.822		27.94	4.822	0.6722
193	21.1	0.600	891	4056	683	1004	0.2134	0.1186	1.800	0.664	4.552		30.56	4.552	0.6637
193	21.1	0.625	1008	4403	712	1046	0.2135	0.1186	1.800	0.664	4.368		33.17	4.368	0.6635
193	21.1	0.650	1163	4802	740	1088	0.2152	0.1216	1.770	0.655	4.129		36.18	4.129	0.6550
193	21.1	0.675	1319	5238	769	1129	0.2180	0.1234	1.766	0.658	3.971		39.46	3.971	0.6580
193	21.1	0.700	1514	5682	797	1171	0.2198	0.1270	1.731	0.648	3.753		42.81	3.753	0.6476
193	21.1	0.725	1732	6151	826	1213	0.2217	0.1307	1.697	0.638	3.551		46.34	3.551	0.6376
193	21.1	0.750	1971	6642	854	1255	0.2237	0.1343	1.666	0.629	3.370		50.04	3.370	0.6287
193	21.1	0.775	2232	7157	883	1297	0.2257	0.1378	1.638	0.621	3.207		53.92	3.207	0.6210
193	21.1	0.800	2515	7696	911	1339	0.2277	0.1411	1.614	0.615	3.060		57.98	3.060	0.6146
193	21.1	0.825	2819	8258	940	1380	0.2300	0.1444	1.592	0.609	2.929		62.22	2.929	0.6094
194	21.1	0.525	528	3020	593	871	0.2112	0.1076	1.962	0.720	5.720		22.75	5.720	0.7196
194	21.1	0.550	621	3317	621	913	0.2111	0.1099	1.921	0.704	5.341		24.99	5.341	0.7043
194	21.1	0.575	726	3636	650	954	0.2119	0.1126	1.882	0.691	5.008		27.39	5.008	0.6914
194	21.1	0.600	844	3975	678	996	0.2125	0.1150	1.848	0.680	4.710		29.95	4.710	0.6798
194	21.1	0.625	956	4298	706	1037	0.2120	0.1154	1.836	0.675	4.496		32.38	4.496	0.6748
194	21.1	0.650	1106	4690	734	1079	0.2137	0.1186	1.802	0.665	4.241		35.33	4.241	0.6648
194	21.1	0.675	1258	5133	762	1120	0.2171	0.1206	1.800	0.669	4.080		38.67	4.080	0.6692
194	21.1	0.700	1446	5572	791	1162	0.2189	0.1241	1.764	0.659	3.853		41.98	3.853	0.6585
194	21.1	0.725	1655	6035	819	1203	0.2212	0.1280	1.728	0.649	3.647		45.47	3.647	0.6485
194	21.1	0.750	1884	6522	847	1245	0.2232	0.1315	1.698	0.640	3.462		49.14	3.462	0.6400
194	21.1	0.775	2135	7033	875	1286	0.2256	0.1352	1.669	0.632	3.294		52.99	3.294	0.6324
194	21.1	0.800	2406	7568	904	1320	0.2304	0.1409	1.635	0.626	3.145		57.02	3.145	0.6264
194	21.1	0.825	2697	8127	932	1369	0.2300	0.1416	1.625	0.622	3.013		61.23	3.013	0.6219
195	21.1	0.525	554	3140	595	875	0.2175	0.1114	1.954	0.727	5.668		23.66	5.668	0.7271
195	21.1	0.550	647	3449	624	916	0.2180	0.1134	1.923	0.717	5.331		25.98	5.331	0.7167
195	21.1	0.575	752	3779	652	958	0.2184	0.1152	1.896	0.707	5.025		28.47	5.025	0.7072
195	21.1	0.600	871	4131	681	1000	0.2191	0.1173	1.868	0.698	4.743		31.12	4.743	0.6979
195	21.1	0.625	984	4494	709	1041	0.2200	0.1175	1.873	0.701	4.567		33.86	4.567	0.7009
195	21.1	0.650	1132	4887	737	1083	0.2210	0.1200	1.842	0.691	4.317		36.82	4.317	0.6909
195	21.1	0.675	1283	5320	766	1125	0.2230	0.1213	1.837	0.692	4.147		40.08	4.147	0.6924
195	21.1	0.700	1466	5755	794	1166	0.2245	0.1245	1.803	0.682	3.926		43.36	3.926	0.6818
195	21.1	0.725	1669	6209	822	1209	0.2253	0.1272	1.772	0.671	3.720		46.78	3.720	0.6711
195	21.1	0.750	1892	6683	851	1250	0.2269	0.1305	1.739	0.661	3.532		50.35	3.532	0.6611
195	21.1	0.775	2134	7177	879	1291	0.2284	0.1336	1.710	0.652	3.363		54.07	3.363	0.6523
195	21.1	0.800	2397	7690	907	1333	0.2296	0.1363	1.685	0.644	3.208		57.94	3.208	0.6441
196	21.1	0.525	556	3128	595	875	0.2167	0.1118	1.939	0.720	5.626		23.57	5.626	0.7203
196	21.1	0.550	649	3437	624	916	0.2173	0.1137	1.911	0.711	5.296		25.89	5.296	0.7108
196	21.1	0.575	753	3765	652	958	0.2176	0.1153	1.887	0.702	5.000		28.37	5.000	0.7024
196	21.1	0.600	848	4086	681	1000	0.2167	0.1142	1.898	0.705	4.818		30.78	4.818	0.7051
196	21.1	0.625	980	4454	709	1041	0.2180	0.1170	1.864	0.694	4.545		33.56	4.545	0.6944
196	21.1	0.650	1128	4845	737	1083	0.2191	0.1196	1.832	0.684	4.295		36.50	4.295	0.6844
196	21.1	0.675	1271	5263	766	1125	0.2206	0.1202	1.835	0.688	4.141		39.65	4.141	0.6877
196	21.1	0.700	1454	5699	794	1166	0.2224	0.1235	1.800	0.677	3.920		42.94	3.920	0.6774
196	21.1	0.725	1659	6165	822	1208	0.2241	0.1267	1.768	0.668	3.716		46.45	3.716	0.6680
196	21.1	0.750	1884	6636	851	1250	0.2253	0.1299	1.734	0.657	3.522		50.00	3.522	0.6569
196	21.1	0.775	2129	7138	879	1291	0.2272	0.1332	1.705	0.648	3.353		53.78	3.353	0.6485
196	21.1	0.800	2395	7662	907	1333	0.2287	0.1362	1.680	0.641	3.199		57.73	3.199	0.6411
196	21.1	0.825	2681	8208	936	1375	0.2303	0.1389	1.658	0.635	3.062		61.84	3.062	0.6350
197	21.1	0.525	515	2922	594	859	0.2101	0.1094	1.920	0.702	5.674		22.01	5.674	0.7021
197	21.1	0.550	604	3227	612	899	0.2118	0.1119	1.892	0.695	5.343		24.31	5.343	0.6948
197	21.1	0.575	706	3554	640	940	0.2134	0.1145	1.864	0.687	5.034		26.78	5.034	0.6870
197	21.1	0.600	819	3904	668	981	0.2152	0.1168	1.842	0.682	4.767		29.41	4.767	0.6819
197	21.1	0.625	925	4263	696	1022	0.2165	0.1167	1.855	0.689	4.609		32.12	4.609	0.6889
197	21.1	0.650	1068	4656	724	1063	0.2186	0.1197	1.825	0.681	4.360		35.08	4.360	0.6810
197	21.1	0.675	1236	5096	751	1104	0.2218	0.1237	1.793	0.674	4.123		38.39	4.123	0.6738
197	21.1	0.700	1407	5531	779	1145	0.2238	0.1262	1.773	0.669	3.931		41.67	3.931	0.6693
197	21.1	0.725	1593	5985	807	1186	0.2257	0.1286	1.755	0.665	3.757		45.09	3.757	0.6654
197	21.1	0.750	1794	6458	835	1227	0.2275	0.1308	1.740	0.662	3.600		48.65	3.600	0.6623
197	21.1	0.775	2010	6951	863	1267	0.2297	0.1331	1.726	0.660	3.458		52.37	3.458	0.6601
197	21.1	0.800	2241	7462	891	1308	0.2314	0.1349	1.716	0.658	3.330		56.22	3.330	0.6585
197	21.1	0.825	2487	7993	918	1349	0.2330	0.1364	1.708	0.658	3.214		60.22	3.214	0.6578
197	21.1	0.850	2748	8543	946	1390	0.2345	0.1378	1.702	0.658	3.109		64.36	3.109	0.6578
198	21.1	0.525	528	2875	583	856	0.2081	0.1134	1.836	0.668	5.445		21.66	5.445	0.6684
198	21.1	0.550	617	3178	611	897	0.2095	0.1151	1.820	0.665	5.151		23.94	5.151	0.6647
198	21.1	0.575	718	3502	638	938	0.2111	0.1172	1.802	0.661	4.877		26.38	4.877	0.6608
198	21.1	0.600	832	3848	666	978	0.2134	0.1198	1.782	0.657	4.625		28.99	4.625	0.6568
198	21.1	0.625	943	4222	694	1019	0.2157	0.1200	1.797	0.666	4.477		31.81	4.477	0.6660
198	21.1	0.650	1085	4610	722	1060	0.2176	0.1227	1.774	0.660	4.249		34.73	4.249	0.6604
198	21.1	0.675	1223	5037	749	1101	0.2204	0.1234	1.786	0.669	4.119		37.95	4.119	0.6692
198	21.1	0.700	1400	5462	777	1142	0.2222	0.1266	1.755	0.660	3.901		41.15	3.901	0.6601
198	21.1	0.725	1596	5904	805	1182	0.2242	0.1301	1.722	0.651	3.699		44.48	3.699	0.6507
198	21.1	0.750	1813	6362	833	1223	0.2256	0.1335	1.690	0.641	3.509		47.93	3.509	0.6408
198	21.1	0.775	2050	6837	860	1264	0.2270	0.1367	1.661	0.631	3.335		51.51	3.335	0.6313
198	21.1	0.800	2308	7328	888	1305	0.2282	0.1398	1.632	0.622	3.175		55.21	3.175	0.6222
198	21.1	0.825	2585	7836	916	1345	0.2298	0.1431	1.606	0.614	3.031		59.04	3.031	0.6143
198	21.1	0.850	2883	8361	944	1386	0.2309	0.1458	1.583	0.607	2.900		62.99	2.900	0.6071
199	21.1	0.525	531	2945	584	858	0.2122	0.1132	1.874	0.689	5.546		22.19	5.546	0.6890
199	21.1	0.550	621	3251	612	899	0.2134	0.1151	1.854	0.683	5.235		24.49	5.235	0.6833
199	21.1	0.575	723	3578	640	940	0.2148	0.1172	1.832	0.678	4.949		26.96	4.949	0.6777
199	21.1	0.600	837	3925	668	981	0.2163	0.1194	1.812	0.673	4.689		29.57	4.689	0.6726
199	21.1	0.625	946	4273	696	1022	0.2170	0.1193	1.818	0.676	4.517		32.19	4.517	0.6760
199	21.1	0.650	1091	4666	723	1063	0.2190	0.1223	1.791	0.669	4.277		35.15	4.277	0.6688
199	21.1	0.675	1233	5099	751	1104	0.2219	0.1234	1.798	0.676	4.135		38.42	4.135	0.6760
199	21.1	0.700	1413	5535	779	1145	0.2239	0.1268	1.767	0.667	3.917		41.70	3.917	0.6672
199	21.1	0.725	1614	5992	807	1185	0.2263	0.1306	1.733	0.658	3.713		45.14	3.713	0.6579
199	21.1	0.750	1835	6470	835	1226	0.2283	0.1341	1.703	0.649	3.526		48.74	3.526	0.6493
199	21.1	0.775	2078	6971	863	1267	0.2303	0.1376	1.674	0.641	3.355		52.52	3.355	0.6412
199	21.1	0.800	2342	7492	890	1308	0.2323	0.1409	1.648	0.634	3.199		56.44	3.199	0.6339
199	21.1	0.825	2626	8036	918	1349	0.2342	0.1440	1.626	0.628	3.060		60.54	3.060	0.6280
199	21.1	0.850	2931	8600	946	1390	0.2361	0.1470	1.607	0.623	2.934		64.79	2.934	0.6229
200	21.1	0.525	481	2850	571	839	0.2148	0.1097	1.958	0.724	5.925		21.47	5.925	0.7242
200	21.1	0.550	563	3141	599	879	0.2156	0.1116	1.932	0.716	5.579		23.66	5.579	0.7158
200	21.1	0.575	658	3455	626	919	0.2170	0.1142	1.901	0.707	5.251		26.03	5.251	0.7066
200	21.1	0.600	765	3790	653	959	0.2186	0.1168	1.871	0.698	4.954		28.55	4.954	0.6982
200	21.1	0.625	886	4148	680	999	0.2205	0.1197	1.842	0.690	4.682		31.25	4.682	0.6903
200	21.1	0.650	1003	4518	707	1039	0.2220	0.1204	1.844	0.693	4.504		34.04	4.504	0.6931
200	21.1	0.675	1157	4922	735	1079	0.2243	0.1240	1.808	0.683	4.254		37.08	4.254	0.6833
200	21.1	0.700	1310	5386	762	1119	0.2282	0.1259	1.812	0.691	4.111		40.58	4.111	0.6908
200	21.1	0.725	1500	5824	789	1159	0.2300	0.1297	1.773	0.678	3.883		43.88	3.883	0.6783
200	21.1	0.750	1711	6279	816	1199	0.2317	0.1337	1.733	0.666	3.670		47.31	3.670	0.6657
200	21.1	0.775	1942	6749	844	1239	0.2332	0.1375	1.696	0.654	3.475		50.85	3.475	0.6536
200	21.1	0.800	2193	7235	871	1279	0.2346	0.1411	1.662	0.642	3.299		54.51	3.299	0.6424
200	21.1	0.825	2465	7737	898	1319	0.2359	0.1447	1.631	0.632	3.139		58.29	3.139	0.6320
200	21.1	0.850	2757	8255	925	1359	0.2371	0.1479	1.603	0.623	2.994		62.19	2.994	0.6228
201	21.1	0.525	452	2770	571	839	0.2087	0.1031	2.025	0.738	6.128		20.87	6.128	0.7384
201	21.1	0.550	528	3054	598	879	0.2097	0.1047	2.003	0.732	5.784		23.01	5.784	0.7318
201	21.1	0.575	617	3365	625	919	0.2113	0.1071	1.974	0.724	5.454		25.35	5.454	0.7243
201	21.1	0.600	720	3702	652	959	0.2135	0.1099	1.942	0.716	5.142		27.89	5.142	0.7162
201	21.1	0.625	836	4066	680	998	0.2165	0.1133	1.912	0.710	4.864		30.63	4.864	0.7100
201	21.1	0.650	946	4455	707	1038	0.2193	0.1139	1.925	0.720	4.709		33.56	4.709	0.7196
201	21.1	0.675	1093	4863	734	1078	0.2220	0.1175	1.889	0.710	4.449		36.64	4.449	0.7103
201	21.1	0.700	1240	5352	761	1118	0.2271	0.1195	1.901	0.723	4.316		40.32	4.316	0.7229
201	21.1	0.725	1423	5798	788	1158	0.2294	0.1234	1.859	0.710	4.074		43.68	4.074	0.7103
201	21.1	0.750	1627	6258	816	1198	0.2313	0.1274	1.815	0.697	3.846		47.15	3.846	0.6966
201	21.1	0.775	1852	6731	843	1238	0.2330	0.1314	1.772	0.683	3.634		50.71	3.634	0.6826
201	21.1	0.800	2097	7219	870	1278	0.2345	0.1353	1.733	0.670	3.443		54.39	3.443	0.6696
201	21.1	0.825	2363	7721	897	1318	0.2358	0.1390	1.696	0.657	3.267		58.17	3.267	0.6573
201	21.1	0.850	2649	8237	924	1359	0.2366	0.1421	1.665	0.646	3.109		62.06	3.109	0.6461
201	21.1	0.875	2956	8766	951	1398	0.2379	0.1457	1.633	0.636	2.965		66.04	2.965	0.6356
202	21.1	0.525	466	2826	571	839	0.2130	0.1063	2.004	0.738	6.064		21.29	6.064	0.7380
202	21.1	0.550	545	3123	598	879	0.2144	0.1081	1.984	0.733	5.730		23.53	5.730	0.7331
202	21.1	0.575	636	3442	625	919	0.2162	0.1103	1.959	0.727	5.412		25.93	5.412	0.7269
202	21.1	0.600	740	3783	652	959	0.2182	0.1130	1.931	0.720	5.112		28.50	5.112	0.7198
202	21.1	0.625	855	4145	680	998	0.2208	0.1158	1.906	0.715	4.848		31.23	4.848	0.7145
202	21.1	0.650	965	4518	707	1038	0.2224	0.1162	1.914	0.720	4.682		34.04	4.682	0.7204
202	21.1	0.675	1111	4922	734	1078	0.2247	0.1194	1.881	0.712	4.430		37.08	4.430	0.7116
202	21.1	0.700	1262	5354	761	1118	0.2272	0.1216	1.868	0.711	4.242		40.34	4.242	0.7107
202	21.1	0.725	1443	5806	788	1158	0.2297	0.1251	1.835	0.702	4.024		43.74	4.024	0.7019
202	21.1	0.750	1643	6282	816	1198	0.2322	0.1287	1.804	0.694	3.823		47.33	3.823	0.6938
202	21.1	0.775	1854	6801	843	1238	0.2354	0.1316	1.789	0.693	3.668		51.24	3.668	0.6926
202	21.1	0.800	2096	7281	870	1278	0.2365	0.1352	1.749	0.679	3.474		54.85	3.474	0.6786
202	21.1	0.825	2359	7769	897	1318	0.2372	0.1388	1.710	0.665	3.293		58.53	3.293	0.6646
202	21.1	0.850	2645	8266	924	1358	0.2378	0.1422	1.672	0.650	3.125		62.28	3.125	0.6505
202	21.1	0.875	2951	8771	951	1398	0.2381	0.1454	1.637	0.637	2.972		66.08	2.972	0.6373
203	21.1	0.525	519	2882	579	850	0.2116	0.1138	1.859	0.682	5.553		21.71	5.553	0.6825
203	21.1	0.550	602	3173	606	891	0.2120	0.1146	1.850	0.680	5.271		23.91	5.271	0.6797
203	21.1	0.575	699	3486	634	931	0.2133	0.1166	1.829	0.674	4.987		26.26	4.987	0.6741
203	21.1	0.600	810	3820	661	972	0.2145	0.1188	1.806	0.667	4.716		28.78	4.716	0.6673
203	21.1	0.625	935	4177	689	1012	0.2163	0.1215	1.781	0.661	4.467		31.47	4.467	0.6610
203	21.1	0.650	1051	4555	716	1053	0.2179	0.1212	1.798	0.670	4.334		34.32	4.334	0.6696
203	21.1	0.675	1207	4954	744	1093	0.2200	0.1245	1.767	0.661	4.104		37.32	4.104	0.6614
203	21.1	0.700	1383	5376	772	1134	0.2218	0.1277	1.736	0.652	3.887		40.50	3.887	0.6525
203	21.1	0.725	1562	5829	799	1174	0.2243	0.1300	1.726	0.652	3.732		43.92	3.732	0.6523
203	21.1	0.750	1777	6288	827	1214	0.2263	0.1337	1.692	0.642	3.539		47.37	3.539	0.6424
203	21.1	0.775	2015	6767	854	1255	0.2279	0.1373	1.660	0.632	3.358		50.98	3.358	0.6325
203	21.1	0.800	2276	7254	882	1295	0.2294	0.1411	1.626	0.621	3.187		54.65	3.187	0.6214
203	21.1	0.825	2558	7782	909	1336	0.2313	0.1445	1.601	0.614	3.042		58.63	3.042	0.6144
203	21.1	0.850	2863	8318	937	1376	0.2330	0.1480	1.575	0.607	2.905		62.67	2.905	0.6066
204	21.1	0.525	500	2870	579	850	0.2107	0.1096	1.922	0.704	5.740		21.62	5.740	0.7040
204	21.1	0.550	577	3140	606	891	0.2098	0.1098	1.910	0.698	5.442		23.66	5.442	0.6981
204	21.1	0.575	667	3437	634	931	0.2103	0.1113	1.890	0.692	5.153		25.89	5.153	0.6916
204	21.1	0.600	772	3761	661	972	0.2112	0.1132	1.865	0.684	4.872		28.34	4.872	0.6840
204	21.1	0.625	892	4111	689	1012	0.2129	0.1159	1.837	0.676	4.609		30.97	4.609	0.6765
204	21.1	0.650	1004	4488	716	1053	0.2147	0.1158	1.854	0.686	4.470		33.81	4.470	0.6856
204	21.1	0.675	1154	4887	744	1093	0.2170	0.1190	1.823	0.678	4.235		36.82	4.235	0.6777
204	21.1	0.700	1324	5313	772	1134	0.2192	0.1223	1.792	0.670	4.013		40.03	4.013	0.6696
204	21.1	0.725	1496	5787	799	1174	0.2227	0.1245	1.789	0.674	3.868		43.60	3.868	0.6737
204	21.1	0.750	1708	6253	827	1214	0.2251	0.1286	1.751	0.663	3.661		47.11	3.661	0.6628
204	21.1	0.775	1943	6740	854	1255	0.2270	0.1324	1.715	0.652	3.469		50.78	3.469	0.6520
204	21.1	0.800	2201	7248	882	1295	0.2293	0.1365	1.680	0.642	3.293		54.61	3.293	0.6418
204	21.1	0.825	2482	7776	909	1336	0.2311	0.1402	1.649	0.632	3.133		58.58	3.133	0.6325
204	21.1	0.850	2786	8324	937	1376	0.2332	0.1440	1.619	0.624	2.988		62.71	2.988	0.6241
205	21.1	0.525	521	2885	579	850	0.2118	0.1142	1.854	0.681	5.537		21.74	5.537	0.6809
205	21.1	0.550	602	3171	606	891	0.2119	0.1146	1.849	0.679	5.267		23.89	5.267	0.6791
205	21.1	0.575	697	3479	634	931	0.2129	0.1163	1.830	0.674	4.991		26.21	4.991	0.6740
205	21.1	0.600	806	3809	661	972	0.2139	0.1182	1.809	0.668	4.726		28.70	4.726	0.6677
205	21.1	0.625	929	4162	689	1012	0.2156	0.1207	1.786	0.662	4.480		31.36	4.480	0.6617
205	21.1	0.650	1039	4523	716	1053	0.2164	0.1198	1.806	0.670	4.353		34.08	4.353	0.6702
205	21.1	0.675	1195	4923	744	1093	0.2186	0.1232	1.774	0.662	4.120		37.09	4.120	0.6617
205	21.1	0.700	1371	5349	772	1134	0.2206	0.1266	1.743	0.653	3.902		40.30	3.902	0.6533

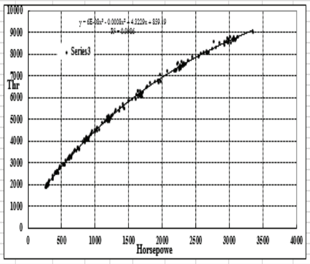
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
206	226	Down	21.10	712	300	2088	0.443	0.21848	0.11193	1.9520	0.7281	6.9600		15.73	6.9600	0.7281	485	1,094	95,410
206	226	Down	21.10	801	438	2667	0.499	0.22049	0.11477	1.9212	0.7199	6.0890		20.09	6.0890	0.7199	545	1,093	137,732
206	226	Down	21.10	906	653	3402	0.564	0.21985	0.11824	1.8592	0.6957	5.2098		25.63	5.2098	0.6957	617	1,093	198,427
206	226	Down	21.10	999	897	4127	0.622	0.21935	0.12116	1.8105	0.6767	4.6009		31.09	4.6009	0.6767	680	1,093	265,126
206	226	Down	21.10	1100	1254	5167	0.685	0.22651	0.12687	1.7853	0.6781	4.1204		38.93	4.1204	0.6781	749	1,093	371,414
206	226	Down	21.10	1195	1682	6157	0.744	0.22870	0.13273	1.7230	0.6576	3.6605		46.39	3.6605	0.6576	813	1,093	483,119
206	226	Down	21.10	1298	2325	7510	0.808	0.23644	0.14317	1.6515	0.6408	3.2301		56.58	3.2301	0.6408	884	1,093	650,819
206	226	Down	21.10	1395	3064	8667	0.868	0.23624	0.15199	1.5543	0.6029	2.8287		65.30	2.8287	0.6029	950	1,094	806,869
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
207	227	Down	21.10	703	285	2045	0.438	0.21949	0.11047	1.9870	0.7429	7.1754		15.41	7.1754	0.7429	479	1,093	92,478
207	227	Down	21.10	803	438	2652	0.500	0.21816	0.11391	1.9151	0.7138	6.0548		19.98	6.0548	0.7138	547	1,093	136,572
207	227	Down	21.10	899	630	3307	0.560	0.21705	0.11677	1.8588	0.6911	5.2492		24.91	5.2492	0.6911	612	1,093	190,174
207	227	Down	21.10	1002	910	4188	0.624	0.22126	0.12181	1.8164	0.6818	4.6022		31.55	4.6022	0.6818	682	1,093	271,025
207	227	Down	21.10	1100	1231	5068	0.685	0.22217	0.12455	1.7838	0.6710	4.1170		38.18	4.1170	0.6710	749	1,093	360,790
207	227	Down	21.10	1197	1713	6262	0.745	0.23183	0.13450	1.7236	0.6622	3.6556		47.18	3.6556	0.6622	815	1,094	495,530
207	227	Down	21.10	1301	2306	7436	0.810	0.23304	0.14102	1.6525	0.6366	3.2246		56.02	3.2246	0.6366	886	1,093	641,223
207	227	Down	21.10	1405	3133	8787	0.875	0.23612	0.15212	1.5522	0.6019	2.8047		66.20	2.8047	0.6019	956	1,093	823,685
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
208	228	Down	21.10	715	301	2094	0.445	0.21727	0.11089	1.9593	0.7288	6.9568		15.78	6.9568	0.7288	487	1,094	95,822
208	228	Down	21.10	798	429	2642	0.497	0.22007	0.11368	1.9358	0.7247	6.1585		19.90	6.1585	0.7247	543	1,093	135,800
208	228	Down	21.10	898	629	3317	0.559	0.21819	0.11697	1.8653	0.6953	5.2734		24.99	5.2734	0.6953	611	1,093	191,037
208	228	Down	21.10	992	871	4070	0.618	0.21939	0.12015	1.8259	0.6825	4.6728		30.66	4.6728	0.6825	675	1,093	259,652
208	228	Down	21.10	1103	1235	5088	0.687	0.22184	0.12393	1.7900	0.6728	4.1198		38.33	4.1198	0.6728	751	1,093	362,928
208	228	Down	21.10	1197	1686	6164	0.745	0.22820	0.13238	1.7238	0.6571	3.6560		46.44	3.6560	0.6571	815	1,094	483,943
208	228	Down	21.10	1306	2346	7564	0.810	0.23524	0.14182	1.6586	0.6420	3.2242		56.99	3.2242	0.6420	889	1,097	657,851
208	228	Down	21.10	1395	3053	8611	0.869	0.23472	0.15145	1.5498	0.5992	2.8205		64.87	2.8205	0.5992	950	1,093	799,062
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
209	249	Down	21.10	715	298	1998	0.447	0.20731	0.10979	1.8883	0.6861	6.7047		15.05	6.7047	0.6861	487	1,089	89,309
209	249	Down	21.10	802	437	2590	0.502	0.21359	0.11408	1.8723	0.6905	5.9268		19.51	5.9268	0.6905	546	1,087	131,810
209	249	Down	21.10	902	640	3307	0.564	0.21561	0.11744	1.8359	0.6803	5.1672		24.91	5.1672	0.6803	614	1,089	190,174
209	249	Down	21.10	998	887	4113	0.624	0.21905	0.12017	1.8229	0.6808	4.6370		30.99	4.6370	0.6808	679	1,089	263,778
209	249	Down	21.10	1100	1233	5082	0.688	0.22279	0.12475	1.7859	0.6727	4.1217		38.29	4.1217	0.6727	749	1,088	362,286
209	249	Down	21.10	1195	1699	6208	0.747	0.23060	0.13407	1.7199	0.6591	3.6539		46.77	3.6539	0.6591	813	1,089	489,134
209	249	Down	21.10	1296	2291	7439	0.811	0.23493	0.14173	1.6576	0.6411	3.2471		56.05	3.2471	0.6411	882	1,088	641,611
209	249	Down	21.10	1399	3092	8681	0.875	0.23527	0.15207	1.5472	0.5989	2.8076		65.40	2.8076	0.5989	952	1,088	808,825

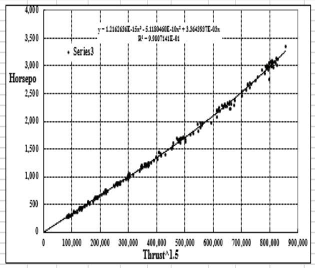
NOTE: I have grayed these Runs 252, 253, and 254 out because the horsepower is so out of line with the other 17 Runs.

215	258	Down	21.10	801	426	2627	0.498	0.21719	0.11163	1.9457	0.7236	6.1667		19.79	6.1667	0.7236	545	1,095	134,645
215	258	Down	21.10	899	611	3314	0.559	0.21751	0.11324	1.9207	0.7148	5.4239		24.97	5.4239	0.7148	612	1,095	190,778
215	258	Down	21.10	1006	869	4157	0.625	0.21788	0.11494	1.8956	0.7061	4.7837		31.32	4.7837	0.7061	685	1,096	268,022
215	258	Down	21.10	1097	1193	5098	0.682	0.22471	0.12170	1.8465	0.6985	4.2733		38.41	4.2733	0.6985	747	1,095	363,999
215	258	Down	21.10	1195	1619	6176	0.743	0.22941	0.12776	1.7956	0.6863	3.8147		46.53	3.8147	0.6863	813	1,095	485,357
215	258	Down	21.10	1313	2318	7608	0.816	0.23409	0.13790	1.6975	0.6554	3.2821		57.32	3.2821	0.6554	894	1,095	663,599
215	258	Down	21.10	1397	2923	8431	0.868	0.22915	0.14438	1.5872	0.6063	2.8844		63.52	2.8844	0.6063	951	1,096	774,138
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
216	259	Down	21.10	830	472	2765	0.515	0.21290	0.11116	1.9152	0.7052	5.8581		20.83	5.8581	0.7052	565	1,097	145,393
216	259	Down	21.10	929	687	3559	0.576	0.21874	0.11539	1.8957	0.7075	5.1805		26.81	5.1805	0.7075	632	1,098	212,321
216	259	Down	21.10	1026	941	4392	0.636	0.22131	0.11733	1.8863	0.7081	4.6674		33.09	4.6674	0.7081	698	1,098	291,067
216	259	Down	21.10	1124	1290	5353	0.697	0.22475	0.12233	1.8372	0.6950	4.1496		40.33	4.1496	0.6950	765	1,098	391,648
216	259	Down	21.10	1223	1776	6549	0.759	0.23225	0.13074	1.7764	0.6832	3.6875		49.34	3.6875	0.6832	832	1,097	529,984
216	259	Down	21.10	1322	2382	7706	0.820	0.23389	0.13884	1.6846	0.6501	3.2351		58.06	3.2351	0.6501	900	1,097	676,462
216	259	Down	21.10	1381	2797	8314	0.857	0.23124	0.14301	1.6170	0.6205	2.9725		62.64	2.9725	0.6205	940	1,097	758,080
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
217	260	Down	21.10	861	535	2990	0.531	0.21395	0.11287	1.8954	0.6996	5.5888		22.53	5.5888	0.6996	586	1,104	163,496
217	260	Down	21.10	951	737	3706	0.587	0.21736	0.11539	1.8837	0.7008	5.0285		27.92	5.0285	0.7008	647	1,103	225,610
217	260	Down	21.10	1047	991	4539	0.646	0.21964	0.11628	1.8889	0.7064	4.5802		34.20	4.5802	0.7064	713	1,103	305,802
217	260	Down	21.10	1146	1374	5569	0.707	0.22493	0.12294	1.8296	0.6924	4.0531		41.96	4.0531	0.6924	780	1,103	415,591
217	260	Down	21.10	1246	1892	6765	0.769	0.23114	0.13171	1.7549	0.6733	3.5756		50.97	3.5756	0.6733	848	1,103	556,419
217	260	Down	21.10	1348	2539	7892	0.832	0.23038	0.13959	1.6504	0.6322	3.1083		59.46	3.1083	0.6322	918	1,103	701,101
217	260	Down	21.10	1409	2979	8529	0.869	0.22788	0.14341	1.5890	0.6053	2.8630		64.26	2.8630	0.6053	959	1,104	787,675
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
218	261	Down	21.10	787	403	2537	0.488	0.21728	0.11134	1.9515	0.7259	6.2953		19.11	6.2953	0.7259	536	1,098	127,785
218	261	Down	21.10	873	556	3147	0.541	0.21903	0.11253	1.9464	0.7269	5.6601		23.71	5.6601	0.7269	594	1,098	176,541
218	261	Down	21.10	981	814	3982	0.608	0.21948	0.11611	1.8903	0.7067	4.8919		30.00	4.8919	0.7067	668	1,098	251,277
218	261	Down	21.10	1078	1104	4877	0.668	0.22262	0.11868	1.8758	0.7063	4.4176		36.74	4.4176	0.7063	734	1,098	340,588
218	261	Down	21.10	1168	1500	5909	0.724	0.22976	0.12677	1.8124	0.6932	3.9393		44.52	3.9393	0.6932	795	1,098	454,225
218	261	Down	21.10	1275	2075	7217	0.790	0.23549	0.13482	1.7468	0.6764	3.4781		54.37	3.4781	0.6764	868	1,099	613,105
218	261	Down	21.10	1376	2743	8260	0.853	0.23141	0.14178	1.6321	0.6265	3.0113		62.23	3.0113	0.6265	937	1,098	750,706
218	261	Down	21.10	1405	2959	8555	0.871	0.22988	0.14367	1.6001	0.6122	2.8912		64.45	2.8912	0.6122	956	1,098	791,280
																			0
																			0
																			0
																			0
																			0
																			0
																			0
																			0
219	278	Down	21.10	702	285	2008	0.439	0.21614	0.11094	1.9482	0.7228	7.0456		15.13	7.0456	0.7228	478	1,088	89,980
219	278	Down	21.10	757	363	2419	0.474	0.22392	0.11269	1.9871	0.7503	6.6639		18.22	6.6639	0.7503	515	1,087	118,974
219	278	Down	21.10	815	440	2615	0.510	0.20883	0.10945	1.9079	0.6958	5.9432		19.70	5.9432	0.6958	555	1,088	133,723
219	278	Down	21.10	851	515	2968	0.533	0.21739	0.11253	1.9318	0.7188	5.7631		22.36	5.7631	0.7188	579	1,087	161,695
219	278	Down	21.10	901	625	3330	0.564	0.21759	0.11507	1.8909	0.7039	5.3280		25.09	5.3280	0.7039	613	1,087	192,161
219	278	Down	21.10	953	738	3722	0.597	0.21739	0.11482	1.8932	0.7044	5.0434		28.04	5.0434	0.7044	649	1,087	227,073
219	278	Down	21.10	999	870	4163	0.625	0.22127	0.11751	1.8829	0.7068	4.7851		31.36	4.7851	0.7068	680	1,088	268,602
219	278	Down	21.10	1050	1032	4662	0.657	0.22430	0.12005	1.8684	0.7061	4.5174		35.12	4.5174	0.7061	715	1,088	318,316
219	278	Down	21.10	1101	1205	5113	0.689	0.22374	0.12158	1.8402	0.6946	4.2432		38.52	4.2432	0.6946	749	1,088	365,606
219	278	Down	21.10	1147	1408	5710	0.718	0.23022	0.12565	1.8322	0.7016	4.0554		43.02	4.0554	0.7016	781	1,087	431,474
219	278	Down	21.10	1197	1665	6327	0.749	0.23423	0.13073	1.7917	0.6920	3.8000		47.67	3.8000	0.6920	815	1,088	503,265
219	278	Down	21.10	1250	1962	7052	0.782	0.23940	0.13528	1.7697	0.6910	3.5943		53.13	3.5943	0.6910	851	1,088	592,200
219	278	Down	21.10	1300	2263	7502	0.814	0.23547	0.13871	1.6975	0.6573	3.3151		56.52	3.3151	0.6573	885	1,087	649,779
219	278	Down	21.10	1347	2615	8110	0.843	0.23710	0.14409	1.6455	0.6394	3.1013		61.10	3.1013	0.6394	917	1,088	730,350
219	278	Down	21.10	1400	3062	8776	0.876	0.23751	0.15027	1.5805	0.6147	2.8661		66.12	2.8661	0.6147	953	1,088	822,138
219	278	Down	21.10	1410	3115	8815	0.883	0.23519	0.14964	1.5717	0.6083	2.8299		66.41	2.8299	0.6083	960	1,087	827,625

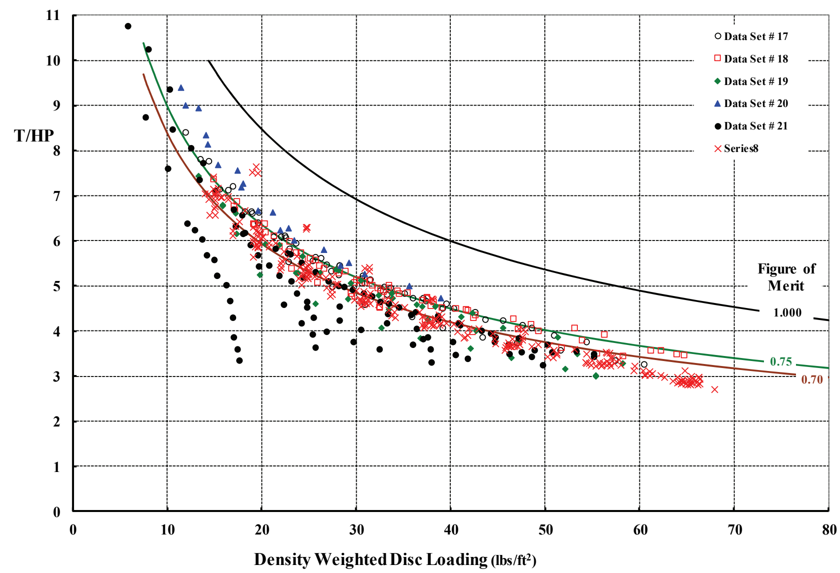
																			0
																			0
220	279	Down	21.10	726	316	2184	0.454	0.21980	0.11121	1.9765	0.7394	6.9114		16.45	6.9114	0.7394	494	1,088	102,065
220	279	Down	21.10	827	464	2762	0.517	0.21422	0.11047	1.9391	0.7162	5.9526		20.81	5.9526	0.7162	563	1,089	145,156
220	279	Down	21.10	929	700	3643	0.580	0.22391	0.11757	1.9044	0.7191	5.2043		27.45	5.2043	0.7191	632	1,090	219,882
220	279	Down	21.10	1027	956	4476	0.642	0.22511	0.11885	1.8940	0.7171	4.6820		33.72	4.6820	0.7171	699	1,089	299,457
220	279	Down	21.10	1121	1310	5465	0.700	0.23068	0.12523	1.8421	0.7060	4.1718		41.17	4.1718	0.7060	763	1,090	404,004
220	279	Down	21.10	1223	1820	6699	0.764	0.23757	0.13398	1.7732	0.6897	3.6808		50.47	3.6808	0.6897	832	1,090	548,296
220	279	Down	21.10	1323	2451	7904	0.827	0.23953	0.14253	1.6805	0.6564	3.2248		59.55	3.2248	0.6564	901	1,089	702,701
220	279	Down	21.10	1394	2987	8678	0.871	0.23688	0.14849	1.5953	0.6196	2.9053		65.38	2.9053	0.6196	949	1,089	808,406

220	21.1	0.525	480	2899	572	840	0.2179	0.1091	1.998	0.744	6.040	6.04	21.84	6.040	0.7445
220	21.1	0.550	560	3198	599	880	0.2191	0.1107	1.980	0.739	5.711	5.709	24.09	5.711	0.7393
220	21.1	0.575	654	3519	626	920	0.2205	0.1131	1.950	0.731	5.381	5.381	26.51	5.381	0.7307
220	21.1	0.600	762	3864	654	960	0.2224	0.1160	1.918	0.722	5.071	5.074	29.11	5.071	0.7216
220	21.1	0.625	883	4231	681	1000	0.2244	0.1189	1.887	0.714	4.792	4.794	31.88	4.792	0.7135
220	21.1	0.650	1001	4643	708	1040	0.2277	0.1198	1.900	0.724	4.638	4.639	34.98	4.638	0.7236
220	21.1	0.675	1152	5051	735	1080	0.2297	0.1232	1.865	0.713	4.385	4.383	38.05	4.385	0.7134
220	21.1	0.700	1321	5478	763	1120	0.2316	0.1266	1.829	0.703	4.147	4.146	41.27	4.147	0.7026
220	21.1	0.725	1490	5938	790	1160	0.2341	0.1285	1.821	0.703	3.985	3.984	44.74	3.985	0.7030
220	21.1	0.750	1696	6386	817	1200	0.2352	0.1322	1.780	0.689	3.765	3.764	48.11	3.765	0.6889
220	21.1	0.775	1923	6847	844	1240	0.2362	0.1358	1.739	0.674	3.561	3.561	51.59	3.561	0.6745
220	21.1	0.800	2170	7320	872	1280	0.2370	0.1393	1.701	0.661	3.373	3.374	55.15	3.373	0.6607
220	21.1	0.825	2437	7807	899	1320	0.2377	0.1427	1.666	0.648	3.204	3.203	58.82	3.204	0.6480
220	21.1	0.850	2726	8306	926	1366	0.2361	0.1440	1.639	0.636	3.047	3.048	62.58	3.047	0.6357

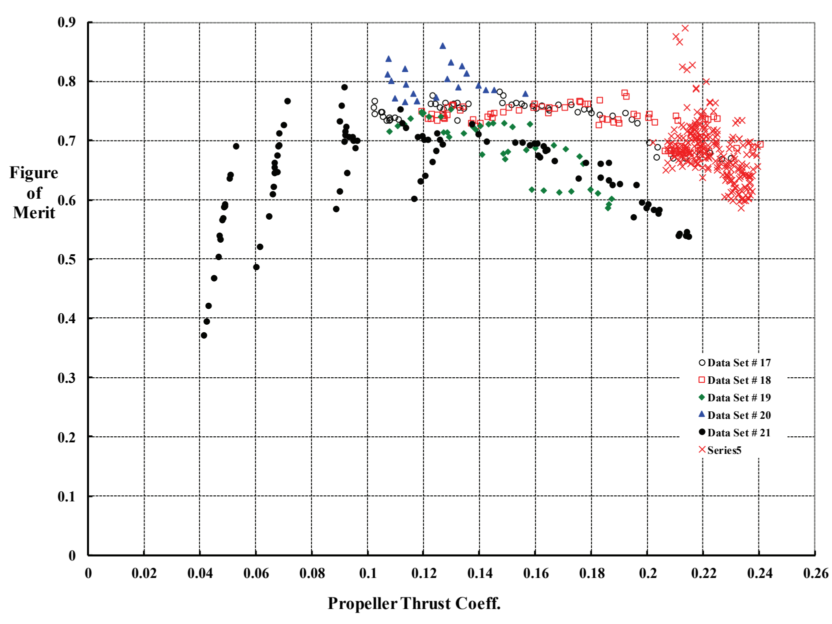




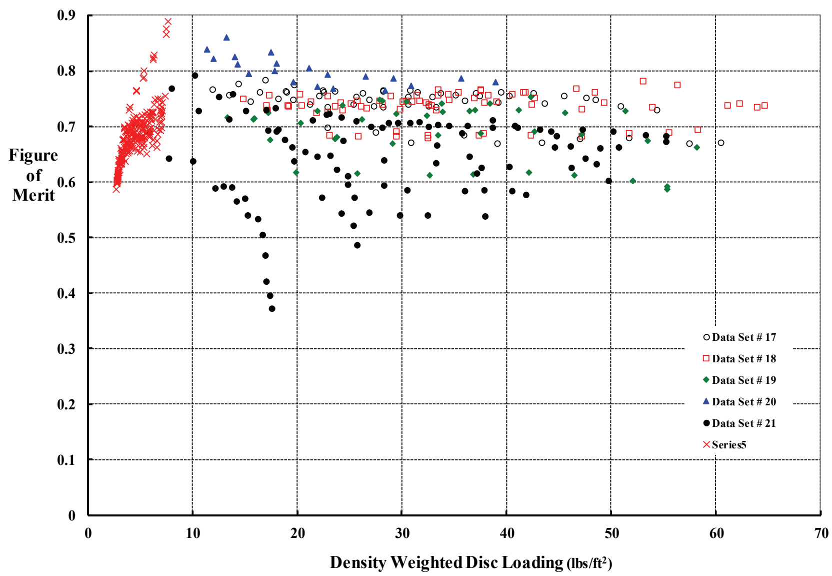
AI. T over HP vs DL-Walls Dn PT 3



AJ. FM vs CT-Walls Dn PT 3



AK. FM vs DL-Walls Dn PT 3



AL. Data Set # 23

DATA SET Number 23

XC-142A (2FF16A1-4A)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	105.0	15.625	4	18.0	534.090	0.977

Power weighted solidity = 0.17112

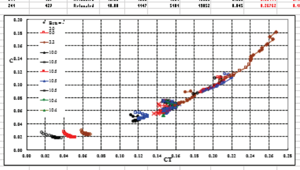
Twist (0.25R -Tip in deg) = 35.5

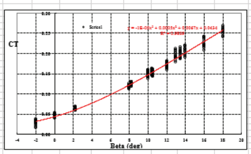
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS — Harris Computed

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP
222	287 Check Run	Relocated	-2.0	706	118	737	0.514	0.03758	0.01800	2.0876	0.3230	6.2458
222	287 Check Run	Relocated	-2.0	750	142	778	0.547	0.03516	0.01807	1.9454	0.2911	5.4789
222	287 Check Run	Relocated	-2.0	799	170	839	0.582	0.03340	0.01789	1.8669	0.2723	4.9353
222	287 Check Run	Relocated	-2.0	851	207	962	0.620	0.03376	0.01803	1.8724	0.2746	4.6473
222	287 Check Run	Relocated	-2.0	899	246	1085	0.655	0.03412	0.01818	1.8772	0.2767	4.4106
222	287 Check Run	Relocated	-2.0	952	296	1126	0.694	0.03158	0.01842	1.7145	0.2431	3.8041
222	287 Check Run	Relocated	-2.0	1001	342	1208	0.729	0.03064	0.01831	1.6739	0.2338	3.5322
222	287 Check Run	Relocated	-2.0	1046	397	1290	0.762	0.02997	0.01862	1.6091	0.2223	3.2494
222	287 Check Run	Relocated	-2.0	1102	470	1433	0.803	0.02999	0.01885	1.5907	0.2198	3.0489
222	287 Check Run	Relocated	-2.0	1145	531	1576	0.834	0.03055	0.01899	1.6089	0.2244	2.9680
222	287 Check Run	Relocated	-2.0	1198	621	1668	0.873	0.02954	0.01939	1.5234	0.2089	2.6860
222	287 Check Run	Relocated	-2.0	1231	676	1679	0.897	0.02816	0.01946	1.4475	0.1938	2.4837
222	287 Check Run	Relocated	-2.0	1251	716	1760	0.912	0.02858	0.01963	1.4559	0.1964	2.4581
222	287 Check Run	Relocated	-2.0	1308	850	1822	0.953	0.02707	0.02039	1.3274	0.1743	2.1435
222	287 Check Run	Relocated	-2.0	1353	983	1781	0.986	0.02473	0.02131	1.1606	0.1456	1.8118
222	287 Check Run	Relocated	-2.0	1399	1158	1658	1.019	0.02153	0.02271	0.9483	0.1110	1.4318
222	287 Check Run	Relocated	-2.0	1448	1378	1474	1.055	0.01787	0.02437	0.7333	0.0782	1.0697
222	287 Check Run	Relocated	-2.0	1497	1635	1412	1.091	0.01601	0.02617	0.6121	0.0618	0.8636
223	288 Check Run	Relocated	0.0	700	122	1002	0.511	0.05198	0.01910	2.7219	0.4952	8.2131
223	288 Check Run	Relocated	0.0	755	155	1145	0.551	0.05106	0.01934	2.6405	0.4761	7.3871
223	288 Check Run	Relocated	0.0	801	189	1268	0.585	0.05023	0.01974	2.5442	0.4550	6.7090
223	288 Check Run	Relocated	0.0	846	218	1370	0.618	0.04865	0.01933	2.5171	0.4431	6.2844
223	288 Check Run	Relocated	0.0	898	266	1534	0.656	0.04835	0.01972	2.4518	0.4302	5.7669
223	288 Check Run	Relocated	0.0	948	316	1677	0.692	0.04743	0.01991	2.3819	0.4139	5.3070
223	288 Check Run	Relocated	0.0	1000	364	1861	0.730	0.04730	0.01954	2.4205	0.4201	5.1126
223	288 Check Run	Relocated	0.0	1049	431	2035	0.766	0.04701	0.02005	2.3449	0.4057	4.7216
223	288 Check Run	Relocated	0.0	1095	500	2229	0.799	0.04725	0.02045	2.3111	0.4009	4.4580
223	288 Check Run	Relocated	0.0	1150	569	2413	0.839	0.04638	0.02009	2.3089	0.3968	4.2408
223	288 Check Run	Relocated	0.0	1200	659	2597	0.876	0.04584	0.02047	2.2389	0.3825	3.9408
223	288 Check Run	Relocated	0.0	1232	714	2679	0.899	0.04486	0.02050	2.1885	0.3699	3.7521
223	288 Check Run	Relocated	0.0	1248	762	2822	0.911	0.04605	0.02105	2.1882	0.3747	3.7034
223	288 Check Run	Relocated	0.0	1303	886	2965	0.951	0.04439	0.02150	2.0644	0.3471	3.3465
223	288 Check Run	Relocated	0.0	1351	1023	3108	0.986	0.04328	0.02227	1.9432	0.3226	3.0381
223	288 Check Run	Relocated	0.0	1407	1219	3252	1.027	0.04175	0.02350	1.7771	0.2898	2.6678
223	288 Check Run	Relocated	0.0	1449	1400	3354	1.058	0.04060	0.02471	1.6435	0.2643	2.3957
223	288 Check Run	Relocated	0.0	1506	1725	3579	1.099	0.04011	0.02711	1.4793	0.2364	2.0748
224	289 Check Run	Relocated	2.2	708	158	1336	0.515	0.06774	0.02390	2.8343	0.5887	8.4557
224	289 Check Run	Relocated	2.2	756	191	1480	0.550	0.06582	0.02373	2.7734	0.5678	7.7487
224	289 Check Run	Relocated	2.2	799	227	1665	0.581	0.06629	0.02389	2.7746	0.5701	7.3348
224	289 Check Run	Relocated	2.2	849	273	1871	0.618	0.06598	0.02395	2.7547	0.5647	6.8535
224	289 Check Run	Relocated	2.2	895	316	2055	0.651	0.06521	0.02366	2.7556	0.5615	6.5032
224	289 Check Run	Relocated	2.2	955	388	2343	0.695	0.06530	0.02392	2.7303	0.5567	6.0387
224	289 Check Run	Relocated	2.2	1003	454	2528	0.730	0.06387	0.02416	2.6441	0.5333	5.5683
224	289 Check Run	Relocated	2.2	1052	525	2795	0.765	0.06419	0.02421	2.6516	0.5361	5.3238
224	289 Check Run	Relocated	2.2	1097	590	3001	0.798	0.06338	0.02399	2.6417	0.5307	5.0864
224	289 Check Run	Relocated	2.2	1150	690	3268	0.837	0.06281	0.02436	2.5787	0.5157	4.7362
224	289 Check Run	Relocated	2.2	1199	793	3597	0.872	0.06360	0.02470	2.5748	0.5182	4.5359
224	289 Check Run	Relocated	2.2	1228	850	3762	0.893	0.06341	0.02464	2.5731	0.5171	4.4259
224	289 Check Run	Relocated	2.2	1249	893	3864	0.909	0.06296	0.02461	2.5586	0.5123	4.3270
224	289 Check Run	Relocated	2.2	1304	1024	4152	0.949	0.06206	0.02479	2.5032	0.4976	4.0547
224	289 Check Run	Relocated	2.2	1346	1151	4337	0.979	0.06085	0.02534	2.4012	0.4727	3.7680
224	289 Check Run	Relocated	2.2	1400	1361	4604	1.018	0.05971	0.02663	2.2422	0.4372	3.3828
224	289 Check Run	Relocated	2.2	1448	1588	4892	1.053	0.05930	0.02808	2.1119	0.4104	3.0806
224	289 Check Run	Relocated	2.2	1503	1895	5180	1.093	0.05828	0.02996	1.9451	0.3747	2.7335
225	303 Calib. Check	Relocated	10.0	705	393	2842	0.509	0.14534	0.06021	2.4137	0.7343	7.2316
225	303 Calib. Check	Relocated	10.0	757	488	3284	0.546	0.14566	0.06040	2.4118	0.7345	6.7295
225	303 Calib. Check	Relocated	10.0	805	602	3832	0.581	0.15030	0.06196	2.4260	0.7505	6.3654
225	303 Calib. Check	Relocated	10.0	852	711	4253	0.615	0.14892	0.06172	2.4128	0.7430	5.9817
225	303 Calib. Check	Relocated	10.0	899	851	4842	0.648	0.15228	0.06288	2.4217	0.7541	5.6898
225	303 Calib. Check	Relocated	10.0	954	1016	5411	0.688	0.15112	0.06282	2.4054	0.7462	5.3258
225	303 Calib. Check	Relocated	10.0	1003	1181	5979	0.723	0.15106	0.06284	2.4040	0.7456	5.0627
225	303 Calib. Check	Relocated	10.0	1054	1367	6568	0.760	0.15027	0.06268	2.3976	0.7417	4.8047
225	303 Calib. Check	Relocated	10.0	1100	1602	7368	0.793	0.15477	0.06462	2.3952	0.7520	4.5993
225	303 Calib. Check	Relocated	10.0	1150	1831	8021	0.830	0.15416	0.06463	2.3851	0.7473	4.3807
225	303 Calib. Check	Relocated	10.0	1197	2126	8884	0.863	0.15760	0.06655	2.3681	0.7502	4.1787
225	303 Calib. Check	Relocated	10.0	1227	2276	9242	0.885	0.15603	0.06615	2.3589	0.7435	4.0606
225	303 Calib. Check	Relocated	10.0	1249	2447	9747	0.901	0.15881	0.06742	2.3554	0.7490	3.9832
225	303 Calib. Check	Relocated	10.0	1303	2856	10653	0.940	0.15948	0.06931	2.3010	0.7333	3.7300
225	303 Calib. Check	Relocated	10.0	1353	3278	11453	0.976	0.15902	0.07105	2.2381	0.7122	3.4939
225	303 Calib. Check	Relocated	10.0	1401	3731	12084	1.011	0.15648	0.07284	2.1483	0.6781	3.2388
225	303 Calib. Check	Relocated	10.0	1450	4175	12316	1.046	0.14889	0.07352	2.0251	0.6236	2.9499
225	303 Calib. Check	Relocated	10.0	1505	4767	13000	1.086	0.14588	0.07508	1.9431	0.5922	2.7271
226	327 Beta Locked	Relocated	10.50	698	372	2803	0.502	0.14623	0.05873	2.4900	0.7598	7.5349
226	327 Beta Locked	Relocated	10.50	744	450	3182	0.535	0.14611	0.05866	2.4907	0.7597	7.0711
226	327 Beta Locked	Relocated	10.50	800	563	3614	0.575	0.14353	0.05903	2.4313	0.7350	6.4192
226	327 Beta Locked	Relocated	10.50	856	698	4204	0.615	0.14583	0.05975	2.4409	0.7438	6.0229
226	327 Beta Locked	Relocated	10.50	897	799	4573	0.645	0.14446	0.05943	2.4306	0.7372	5.7234
226	327 Beta Locked	Relocated	10.50	950	975	5227	0.683	0.14721	0.06105	2.4112	0.7383	5.3610
226	327 Beta Locked	Relocated	10.50	1002	1152	5859	0.720	0.14833	0.06148	2.4127	0.7415	5.0859
226	327 Beta Locked	Relocated	10.50	1047	1325	6428	0.753	0.14904	0.06198	2.4047	0.7408	4.8513
226	327 Beta Locked	Relocated	10.50	1100	1547	7071	0.791	0.14853	0.06240	2.3804	0.7321	4.5708
226	327 Beta Locked	Relocated	10.50	1148	1779	7819	0.825	0.15080	0.06313	2.3888	0.7403	4.3952
226	327 Beta Locked	Relocated	10.50	1200	2076	8704	0.863	0.15363	0.06450	2.3820	0.7450	4.1927
226	327 Beta Locked	Relocated	10.50	1231	2247	9115	0.885	0.15289	0.06467	2.3641	0.7377	4.0565
226	327 Beta Locked	Relocated	10.50	1255	2391	9494	0.902	0.15321	0.06494	2.3593	0.7369	3.9707
226	327 Beta Locked	Relocated	10.50	1307	2784	10411	0.940	0.15491	0.06694	2.3140	0.7268	3.7396
226	327 Beta Locked	Relocated	10.50	1349	3158	11212	0.970	0.15660	0.06906	2.2675	0.7161	3.5503
226	327 Beta Locked	Relocated	10.50	1401	3623	11907	1.007	0.15419	0.07073	2.1799	0.6831	3.2865
226	327 Beta Locked	Relocated	10.50	1447	4042	12476	1.040	0.15145	0.07162	2.1145	0.6567	3.0866
226	327 Beta Locked	Relocated	10.50	1497	4554	13056	1.076	0.14808	0.07288	2.0319	0.6240	2.8669
227	351 Beta Locked	Relocated	10.50	704	372	2860	0.506	0.14667	0.05724	2.5625	0.7831	7.6882
227	351 Beta Locked	Relocated	10.50	754	462	3308	0.542	0.14790	0.05786	2.5560	0.7844	7.1602
227	351 Beta Locked	Relocated	10.50	799	560	3714	0.574	0.14787	0.05894	2.5088	0.7699	6.6321
227	351 Beta Locked	Relocated	10.50	849	677	4226	0.610	0.14902	0.05939	2.5091	0.7729	6.2422
227	351 Beta Locked	Relocated	10.50	904	831	4813	0.649	0.14970	0.06039	2.4788	0.7653	5.7918
227	351 Beta Locked	Relocated	10.50	951	961	5251	0.683	0.14758	0.05999	2.4602	0.7542	5.4641
227	351 Beta Locked	Relocated	10.50	999	1131	5912	0.718	0.15057	0.06090	2.4723	0.7655	5.2272
227	351 Beta Locked	Relocated	10.50	1051	1309	6467	0.755	0.14881	0.06053	2.4583	0.7567	4.9404
227	351 Beta Locked	Relocated	10.50	1100	1544	7193	0.790	0.15110	0.06228	2.4262	0.7526	4.6587
227	351 Beta Locked	Relocated	10.50	1152	1817	8111	0.828	0.15535	0.06381	2.4346	0.7658	4.4640
227	351 Beta Locked	Relocated	10.50	1201	2075	8773	0.863	0.15459	0.06431	2.4040	0.7543	4.2280
227	351 Beta Locked	Relocated	10.50	1230	2264	9349	0.884	0.15707	0.06532	2.4047	0.7605	4.1294
227	351 Beta Locked	Relocated	10.50	1248	2383	9626	0.896	0.15709	0.06582	2.3867	0.7549	4.0394
227	351 Beta Locked	Relocated	10.50	1297	2771	10587	0.932	0.15997	0.06818	2.3461	0.7488	3.8206
227	351 Beta Locked	Relocated	10.50	1348	3136	11291	0.968	0.15794	0.06873	2.2978	0.7287	3.6004
227	351 Beta Locked	Relocated	10.50	1402	3672	12145	1.007	0.15705	0.07154	2.1954	0.6943	3.3075
227	351 Beta Locked	Relocated	10.50	1446	4109	12700	1.040	0.15438	0.07296	2.1159	0.6634	3.0908
227	351 Beta Locked	Relocated	10.50	1505	4760	13234	1.081	0.14851	0.07497	1.9810	0.6092	2.7803
228	352 Beta Locked	Relocated	10.50	702	370	2895	0.503	0.14932	0.05742	2.6004	0.8019	7.8243
228	352 Beta Locked	Relocated	10.50	753	466	3346	0.539	0.14999	0.05860	2.5598	0.7911	7.1803
228	352 Beta Locked	Relocated	10.50	799	563	3796	0.572	0.15114	0.05926	2.5505	0.7912	6.7425
228	352 Beta Locked	Relocated	10.50	850	671	4247	0.609	0.14941	0.05866	2.5471	0.7857	6.3294
228	352 Beta Locked	Relocated	10.50	901	803	4633	0.645	0.14506	0.05894	2.4611	0.7480	5.7696
228	352 Beta Locked	Relocated	10.50	950	953	5298	0.680	0.14921	0.05967	2.5004	0.7707	5.5593
228	352 Beta Locked	Relocated	10.50	1000	1134	5898	0.716	0.14991	0.06088	2.4624	0.7608	5.2011
228	352 Beta Locked	Relocated	10.50	1051	1337	6627	0.752	0.15249	0.06183	2.4663	0.7686	4.9566
228	352 Beta Locked	Relocated	10.50	1101	1517	7056	0.788	0.14795	0.06102	2.4245	0.7442	4.6513
228	352 Beta Locked	Relocated	10.50	1150	1743	7743	0.823	0.14881	0.06153	2.4186	0.7446	4.4423
228	352 Beta Locked	Relocated	10.50	1199	2013	8558	0.858	0.15131	0.06270	2.4133	0.7491	4.2514
228	352 Beta Locked	Relocated	10.50	1232	2288	9437	0.882	0.15803	0.06569	2.4058	0.7632	4.1246
228	352 Beta Locked	Relocated	10.50	1248	2389	9673	0.893	0.15786	0.06598	2.3923	0.7585	4.0490
228	352 Beta Locked	Relocated	10.50	1307	2822	10724	0.936	0.15957	0.06786	2.3515	0.7496	3.8001
228	352 Beta Locked	Relocated	10.50	1349	3187	11410	0.966	0.15937	0.06970	2.2865	0.7284	3.5802
228	352 Beta Locked	Relocated	10.50	1401	3607	12075	1.003	0.15637	0.07042	2.2205	0.7007	3.3477
228	352 Beta Locked	Relocated	10.50	1447	4126	12879	1.036	0.15634	0.07311	2.1384	0.6747	3.1214
229	390	Relocated	10.50	724	420	3014	0.521	0.14615	0.05942	2.4598	0.7504	7.1762
229	390	Relocated	10.50	776	512	3425	0.559	0.14457	0.05882	2.4576	0.7457	6.6895
229	390	Relocated	10.50	830	627	3899	0.598	0.14386	0.05887	2.4436	0.7396	6.2185
229	390	Relocated	10.50	875	738	4362	0.630	0.14481	0.05914	2.4485	0.7435	5.9106
229	390	Relocated	10.50	925	890	4953	0.666	0.14714	0.06037	2.4372	0.7460	5.5652
229	390	Relocated	10.50	974	1062	5543	0.701	0.14851	0.06170	2.4068	0.7402	5.2194
229	390	Relocated	10.50	1024	1247	6196	0.737	0.15019	0.06235	2.4088	0.7450	4.9687
229	390	Relocated	10.50	1075	1455	6891	0.774	0.15156	0.06288	2.4104	0.7488	4.7361
229	390	Relocated	10.50	1120	1686	7608	0.807	0.15416	0.06443	2.3927	0.7497	4.5125
229	390	Relocated	10.50	1174	1956	8409	0.845	0.15507	0.06490	2.3895	0.7509	4.2991
229	390	Relocated	10.50	1220	2207	9083	0.879	0.15511	0.06525	2.3771	0.7471	4.1155
229	390	Relocated	10.50	1273	2619	10158	0.917	0.15933	0.06816	2.3376	0.7446	3.8786
229	390	Relocated	10.50	1329	3085	11212	0.957	0.16135	0.07056	2.2867	0.7330	3.6344
229	390	Relocated	10.50	1375	3478	11760	0.990	0.15810	0.07183	2.2011	0.6984	3.3813
229	390	Relocated	10.50	1423	3919	12329	1.025	0.15476	0.07302	2.1194	0.6653	3.1460
229	390	Relocated	10.50	1480	4538	13045	1.066	0.15137	0.07515	2.0142	0.6254	2.8746
230	400	Relocated	10.40	728	429	3077	0.524	0.14757	0.05969	2.4721	0.7578	7.1725
230	400	Relocated	10.40	772	510	3456	0.556	0.14739	0.05951	2.4768	0.7588	6.7765
230	400	Relocated	10.40	822	608	3857	0.592	0.14509	0.05877	2.4688	0.7504	6.3438
230	400	Relocated	10.40	928	908	5037	0.668	0.14866	0.06100	2.4372	0.7499	5.5474
230	400	Relocated	10.40	975	1055	5522	0.702	0.14765	0.06111	2.4161	0.7408	5.2341
230	400	Relocated	10.40	1029	1253	6217	0.741	0.14924	0.06174	2.4172	0.7452	4.9617
230	400	Relocated	10.40	1073	1418	6723	0.773	0.14842	0.06162	2.4085	0.7405	4.7412
230	400	Relocated	10.40	1122	1653	7439	0.808	0.15020	0.06283	2.3905	0.7393	4.5003
230	400	Relocated	10.40	1176	1949	8325	0.847	0.15300	0.06434	2.3782	0.7423	4.2714
230	400	Relocated	10.40	1229	2273	9189	0.885	0.15463	0.06574	2.3522	0.7381	4.0427
230	400	Relocated	10.40	1275	2592	10074	0.918	0.15751	0.06714	2.3461	0.7430	3.8866
230	400	Relocated	10.40	1323	2955	10917	0.953	0.15853	0.06851	2.3140	0.7352	3.6944
230	400	Relocated	10.40	1374	3398	11697	0.989	0.15748	0.07033	2.2392	0.7091	3.4423
230	400	Relocated	10.40	1423	3861	12223	1.025	0.15343	0.07194	2.1328	0.6667	3.1658
230	400	Relocated	10.40	1481	4458	12919	1.067	0.14971	0.07368	2.0319	0.6274	2.8979
231	401	Relocated	10.40	727	384	3056	0.524	0.14697	0.05365	2.7392	0.8380	7.9583
231	401	Relocated	10.40	778	526	3519	0.560	0.14777	0.05997	2.4642	0.7559	6.6901
231	401	Relocated	10.40	828	632	3983	0.596	0.14767	0.05977	2.4705	0.7576	6.3022
231	401	Relocated	10.40	895	805	4658	0.645	0.14780	0.06028	2.4518	0.7522	5.7863
231	401	Relocated	10.40	924	884	4932	0.665	0.14683	0.06016	2.4406	0.7463	5.5792
231	401	Relocated	10.40	980	1068	5564	0.706	0.14725	0.06092	2.4172	0.7402	5.2097
231	401	Relocated	10.40	1020	1218	6048	0.735	0.14776	0.06162	2.3979	0.7355	4.9655
231	401	Relocated	10.40	1076	1457	6870	0.775	0.15082	0.06279	2.4020	0.7444	4.7152
231	401	Relocated	10.40	1123	1682	7566	0.809	0.15249	0.06376	2.3916	0.7453	4.4982
231	401	Relocated	10.40	1172	1970	8472	0.844	0.15677	0.06570	2.3862	0.7540	4.3005
231	401	Relocated	10.40	1230	2323	9442	0.886	0.15863	0.06702	2.3669	0.7523	4.0646
231	401	Relocated	10.40	1272	2616	10179	0.916	0.15991	0.06824	2.3432	0.7477	3.8911
231	401	Relocated	10.40	1327	3027	11064	0.956	0.15970	0.06955	2.2963	0.7323	3.6551
231	401	Relocated	10.40	1372	3427	11781	0.988	0.15908	0.07124	2.2330	0.7107	3.4377
231	401	Relocated	10.40	1424	3934	12455	1.025	0.15612	0.07314	2.1344	0.6730	3.1660
231	401	Relocated	10.40	1471	4380	12961	1.059	0.15225	0.07388	2.0608	0.6417	2.9591
232	???	Relocated	8.00	698	284	2266	0.508	0.11822	0.04484	2.6367	0.7234	7.9789
232	???	Relocated	8.00	754	348	2620	0.549	0.11714	0.04358	2.6875	0.7340	7.5287
232	???	Relocated	8.00	795	407	2848	0.578	0.11454	0.04349	2.6338	0.7113	6.9975
232	???	Relocated	8.00	804	428	2952	0.585	0.11607	0.04421	2.6254	0.7138	6.8972
232	???	Relocated	8.00	851	510	3347	0.619	0.11747	0.04443	2.6441	0.7232	6.5627
232	???	Relocated	8.00	904	616	3784	0.658	0.11769	0.04477	2.6291	0.7197	6.1429
232	???	Relocated	8.00	956	740	4304	0.695	0.11970	0.04547	2.6325	0.7268	5.8162
232	???	Relocated	8.00	998	828	4584	0.726	0.11698	0.04472	2.6158	0.7140	5.5362
232	???	Relocated	8.00	1002	843	4719	0.729	0.11947	0.04499	2.6555	0.7325	5.5979
232	???	Relocated	8.00	1051	996	5260	0.765	0.12104	0.04606	2.6278	0.7295	5.2811
232	???	Relocated	8.00	1104	1143	5759	0.803	0.12010	0.04560	2.6335	0.7283	5.0385
232	???	Relocated	8.00	1153	1321	6320	0.839	0.12083	0.04627	2.6116	0.7244	4.7843
232	???	Relocated	8.00	1200	1496	6861	0.873	0.12110	0.04648	2.6056	0.7236	4.5862
232	???	Relocated	8.00	1233	1611	7235	0.896	0.12096	0.04614	2.6216	0.7276	4.4910
232	???	Relocated	8.00	1246	1690	7443	0.906	0.12186	0.04690	2.5980	0.7237	4.4041
232	???	Relocated	8.00	1300	1990	8306	0.946	0.12492	0.04863	2.5689	0.7245	4.1739
232	???	Relocated	8.00	1353	2252	8773	0.984	0.12181	0.04881	2.4954	0.6950	3.8956
232	???	Relocated	8.00	1401	2576	9210	1.019	0.11927	0.05029	2.3715	0.6535	3.5753
232	???	Relocated	8.00	1453	2935	9511	1.057	0.11451	0.05137	2.2292	0.6020	3.2405
232	???	Relocated	8.00	1503	3357	9917	1.093	0.11158	0.05308	2.1021	0.5603	2.9541
233	417	Relocated	8.2	697	302	2317	0.504	0.12123	0.04788	2.5317	0.7034	7.6722
233	417	Relocated	8.2	752	372	2672	0.544	0.12010	0.04696	2.5573	0.7072	7.1828
233	417	Relocated	8.2	802	461	3090	0.580	0.12211	0.04798	2.5450	0.7097	6.7028
233	417	Relocated	8.2	851	549	3507	0.616	0.12309	0.04782	2.5737	0.7205	6.3880
233	417	Relocated	8.2	901	649	3873	0.652	0.12126	0.04764	2.5456	0.7074	5.9676
233	417	Relocated	8.2	950	769	4384	0.688	0.12347	0.04815	2.5641	0.7190	5.7009
233	417	Relocated	8.2	1000	905	4885	0.724	0.12416	0.04859	2.5555	0.7186	5.3978
233	417	Relocated	8.2	1049	1049	5449	0.759	0.12586	0.04879	2.5798	0.7304	5.1945
233	417	Relocated	8.2	1103	1234	6044	0.798	0.12627	0.04937	2.5577	0.7253	4.8979
233	417	Relocated	8.2	1151	1433	6743	0.833	0.12937	0.05045	2.5642	0.7360	4.7055
233	417	Relocated	8.2	1198	1626	7265	0.867	0.12866	0.05077	2.5342	0.7254	4.4680
233	417	Relocated	8.2	1232	1777	7745	0.892	0.12970	0.05102	2.5422	0.7306	4.3585
233	417	Relocated	8.2	1252	1855	7954	0.906	0.12898	0.05075	2.5416	0.7284	4.2879
233	417	Relocated	8.2	1302	2126	8643	0.942	0.12959	0.05171	2.5060	0.7199	4.0654
233	417	Relocated	8.2	1352	2442	9186	0.979	0.12773	0.05305	2.4078	0.6867	3.7617
233	417	Relocated	8.2	1398	2781	9614	1.012	0.12503	0.05464	2.2881	0.6456	3.4570
233	417	Relocated	8.2	1450	3212	10063	1.049	0.12165	0.05656	2.1507	0.5986	3.1329
233	417	Relocated	8.2	1500	3603	10376	1.086	0.11721	0.05731	2.0451	0.5587	2.8798
234	423	Relocated	10.00	705	367	2671	0.512	0.13659	0.05623	2.4292	0.7164	7.2779
234	423	Relocated	10.00	748	442	3109	0.543	0.14124	0.05670	2.4909	0.7470	7.0339
234	423	Relocated	10.00	796	526	3505	0.578	0.14060	0.05599	2.5112	0.7514	6.6635
234	423	Relocated	10.00	856	685	4215	0.622	0.14621	0.05863	2.4937	0.7609	6.1533
234	423	Relocated	10.00	902	796	4591	0.655	0.14343	0.05823	2.4630	0.7444	5.7676

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS





AM. Data Set # 24

DATA SET Number 24										
					Nominal	Nominal	Nominal	Power weighted solidity =	0.17112	
47 x 91		Activity Factor	Diameter	# Blades	Temp Deg C	Temp Deg R	Density Ratio	Twist (0.25R -Tip in deg) =	35.5	
0.832 Scale of XC-142A (2FF16A1-4A)		105	13.000	4	26.0	539.490	0.944			
		Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)								

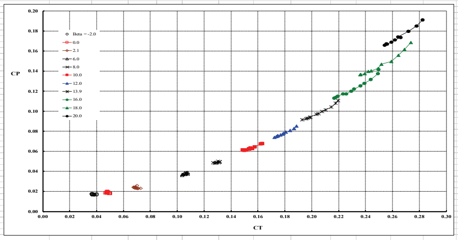
$$C_T = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2(Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3(Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

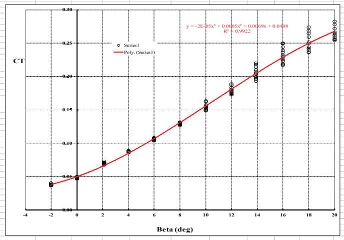
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
242	305	Relocated	-2.00	1011	129	731	0.605	0.03794	0.01681	2.2567	0.3507	5.6667	5.51	5.6667	0.3507	688	1,137
242	305	Relocated	-2.00	1047	150	826	0.627	0.03997	0.01760	2.2710	0.3623	5.5067	6.22	5.5067	0.3623	713	1,137
242	305	Relocated	-2.00	1096	165	869	0.656	0.03837	0.01688	2.2737	0.3554	5.2667	6.55	5.2667	0.3554	746	1,137
242	305	Relocated	-2.00	1151	191	996	0.688	0.03988	0.01687	2.3642	0.3768	5.2147	7.50	5.2147	0.3768	783	1,139
242	305	Relocated	-2.00	1197	217	1028	0.716	0.03806	0.01704	2.2336	0.3477	4.7373	7.74	4.7373	0.3477	815	1,138
242	305	Relocated	-2.00	1251	246	1081	0.748	0.03664	0.01692	2.1654	0.3308	4.3943	8.14	4.3943	0.3308	852	1,138
242	305	Relocated	-2.00	1297	276	1186	0.776	0.03740	0.01704	2.1953	0.3388	4.2971	8.94	4.2971	0.3388	883	1,138
242	305	Relocated	-2.00	1355	320	1292	0.810	0.03733	0.01732	2.1550	0.3322	4.0375	9.73	4.0375	0.3322	922	1,139
242	305	Relocated	-2.00	1392	341	1335	0.836	0.03655	0.01703	2.1466	0.3275	3.9150	10.06	3.9150	0.3275	948	1,133
242	305	Relocated	-2.00	1449	399	1483	0.867	0.03747	0.01766	2.1214	0.3277	3.7168	11.17	3.7168	0.3277	986	1,138
242	305	Relocated	-2.00	1506	451	1568	0.901	0.03667	0.01778	2.0624	0.3152	3.4767	11.81	3.4767	0.3152	1,025	1,138
242	305	Relocated	-2.00	1552	488	1653	0.928	0.03640	0.01758	2.0708	0.3153	3.3873	12.45	3.3873	0.3153	1,056	1,138
243	306	Relocated	0.00	997	133	938	0.601	0.05006	0.01807	2.7697	0.4945	7.0526	7.07	7.0526	0.4945	679	1,129
243	306	Relocated	0.00	1052	157	1032	0.635	0.04946	0.01816	2.7238	0.4834	6.5732	7.78	6.5732	0.4834	716	1,128
243	306	Relocated	0.00	1104	182	1137	0.666	0.04948	0.01821	2.7167	0.4823	6.2473	8.57	6.2473	0.4823	751	1,128
243	306	Relocated	0.00	1149	206	1230	0.693	0.04942	0.01829	2.7024	0.4794	5.9709	9.27	5.9709	0.4794	782	1,129
243	306	Relocated	0.00	1196	233	1283	0.721	0.04758	0.01834	2.5941	0.4515	5.5064	9.67	5.5064	0.4515	814	1,129
243	306	Relocated	0.00	1254	273	1376	0.756	0.04642	0.01864	2.4897	0.4280	5.0403	10.37	5.0403	0.4280	854	1,129
243	306	Relocated	0.00	1299	303	1522	0.784	0.04784	0.01862	2.5702	0.4486	5.0231	11.47	5.0231	0.4486	884	1,128
243	306	Relocated	0.00	1349	345	1616	0.814	0.04710	0.01893	2.4890	0.4311	4.6841	12.17	4.6841	0.4311	918	1,128
243	306	Relocated	0.00	1398	391	1794	0.843	0.04869	0.01927	2.5266	0.4449	4.5882	13.52	4.5882	0.4449	952	1,129
243	306	Relocated	0.00	1452	440	1887	0.876	0.04748	0.01936	2.4529	0.4265	4.2886	14.22	4.2886	0.4265	988	1,128
243	306	Relocated	0.00	1501	490	2044	0.905	0.04812	0.01951	2.4663	0.4318	4.1714	15.40	4.1714	0.4318	1,022	1,129
243	306	Relocated	0.00	1552	555	2179	0.936	0.04799	0.01999	2.4002	0.4196	3.9261	16.42	3.9261	0.4196	1,056	1,129
244	307	Relocated	2.10	1000	173	1337	0.602	0.07092	0.02330	3.0442	0.6469	7.7283	10.07	7.7283	0.6469	681	1,131
244	307	Relocated	2.10	1048	198	1504	0.631	0.07264	0.02317	3.1357	0.6744	7.5960	11.33	7.5960	0.6744	713	1,131
244	307	Relocated	2.10	1099	225	1608	0.662	0.07062	0.02283	3.0938	0.6561	7.1467	12.11	7.1467	0.6561	748	1,130
244	307	Relocated	2.10	1147	260	1734	0.691	0.06991	0.02320	3.0132	0.6358	6.6692	13.06	6.6692	0.6358	781	1,130
244	307	Relocated	2.10	1203	302	1869	0.724	0.06850	0.02336	2.9326	0.6125	6.1887	14.08	6.1887	0.6125	819	1,131
244	307	Relocated	2.10	1251	342	2047	0.753	0.06938	0.02352	2.9494	0.6200	5.9854	15.42	5.9854	0.6200	852	1,131
244	307	Relocated	2.10	1302	397	2193	0.784	0.06862	0.02422	2.8330	0.5922	5.5239	16.52	5.5239	0.5922	886	1,130
244	307	Relocated	2.10	1349	442	2360	0.812	0.06879	0.02425	2.8372	0.5938	5.3394	17.78	5.3394	0.5938	918	1,131
244	307	Relocated	2.10	1398	492	2527	0.842	0.06859	0.02425	2.8284	0.5911	5.1362	19.04	5.1362	0.5911	952	1,130
244	307	Relocated	2.10	1451	544	2684	0.874	0.06762	0.02398	2.8199	0.5852	4.9338	20.22	4.9338	0.5852	988	1,130
244	307	Relocated	2.10	1501	610	2862	0.904	0.06738	0.02429	2.7740	0.5746	4.6918	21.56	4.6918	0.5746	1,022	1,130
244	307	Relocated	2.10	1550	715	3175	0.933	0.07010	0.02586	2.7112	0.5728	4.4406	23.92	4.4406	0.5728	1,055	1,131
245	308	Relocated	4.00	1008	232	1695	0.606	0.08849	0.03050	2.9009	0.6886	7.3060	12.77	7.3060	0.6886	686	1,132
245	308	Relocated	4.00	1050	257	1841	0.632	0.08858	0.02990	2.9628	0.7036	7.1634	13.87	7.1634	0.7036	715	1,131
245	308	Relocated	4.00	1104	297	1987	0.664	0.08648	0.02972	2.9094	0.6827	6.6902	14.97	6.6902	0.6827	751	1,132
245	308	Relocated	4.00	1149	344	2197	0.691	0.08827	0.03054	2.8905	0.6853	6.3866	16.55	6.3866	0.6853	782	1,132
245	308	Relocated	4.00	1200	387	2364	0.722	0.08708	0.03016	2.8874	0.6799	6.1085	17.81	6.1085	0.6799	817	1,131
245	308	Relocated	4.00	1250	432	2573	0.752	0.08735	0.02979	2.9326	0.6916	5.9560	19.38	5.9560	0.6916	851	1,131
245	308	Relocated	4.00	1295	478	2720	0.779	0.08603	0.02964	2.9027	0.6794	5.6904	20.49	5.6904	0.6794	881	1,132
245	308	Relocated	4.00	1352	552	2992	0.813	0.08683	0.03008	2.8866	0.6788	5.4203	22.54	5.4203	0.6788	920	1,132
245	308	Relocated	4.00	1399	615	3201	0.842	0.08675	0.03025	2.8682	0.6742	5.2049	24.12	5.2049	0.6742	952	1,131
245	308	Relocated	4.00	1450	683	3410	0.872	0.08603	0.03017	2.8516	0.6675	4.9927	25.69	4.9927	0.6675	987	1,132
245	308	Relocated	4.00	1498	765	3661	0.901	0.08654	0.03065	2.8238	0.6629	4.7856	27.58	4.7856	0.6629	1,020	1,132
245	308	Relocated	4.00	1550	852	3891	0.933	0.08591	0.03081	2.7883	0.6522	4.5669	29.31	4.5669	0.6522	1,055	1,131
246	309	Relocated	6.00	1004	279	2015	0.604	0.10603	0.03712	2.8562	0.7422	7.2222	15.18	7.2222	0.7422	683	1,131
246	309	Relocated	6.00	1006	288	2036	0.605	0.10671	0.03809	2.8014	0.7303	7.0694	15.34	7.0694	0.7303	685	1,132
246	309	Relocated	6.00	1051	325	2246	0.632	0.10786	0.03770	2.8610	0.7498	6.9108	16.92	6.9108	0.7498	715	1,132
246	309	Relocated	6.00	1053	335	2204	0.633	0.10544	0.03864	2.7289	0.7071	6.5791	16.60	6.5791	0.7071	717	1,132
246	309	Relocated	6.00	1102	376	2434	0.662	0.10632	0.03784	2.8100	0.7311	6.4734	18.34	6.4734	0.7311	750	1,133
246	309	Relocated	6.00	1106	373	2392	0.665	0.10373	0.03713	2.7938	0.7180	6.4129	18.02	6.4129	0.7180	753	1,132
246	309	Relocated	6.00	1149	418	2602	0.691	0.10455	0.03711	2.8173	0.7269	6.2249	19.60	6.2249	0.7269	782	1,132
246	309	Relocated	6.00	1200	465	2812	0.721	0.10358	0.03624	2.8584	0.7341	6.0473	21.19	6.0473	0.7341	817	1,133
246	309	Relocated	6.00	1247	532	3064	0.750	0.10452	0.03695	2.8290	0.7298	5.7594	23.08	5.7594	0.7298	849	1,132
246	309	Relocated	6.00	1299	616	3379	0.781	0.10622	0.03784	2.8067	0.7300	5.4854	25.46	5.4854	0.7300	884	1,132
246	309	Relocated	6.00	1351	704	3673	0.812	0.10675	0.03845	2.7764	0.7239	5.2173	27.67	5.2173	0.7239	920	1,133
246	309	Relocated	6.00	1399	774	3903	0.841	0.10578	0.03807	2.7788	0.7212	5.0426	29.41	5.0426	0.7212	952	1,132
246	309	Relocated	6.00	1447	864	4218	0.870	0.10686	0.03840	2.7826	0.7259	4.8819	31.78	4.8819	0.7259	985	1,132
246	309	Relocated	6.00	1503	986	4596	0.904	0.10792	0.03911	2.7596	0.7234	4.6613	34.63	4.6613	0.7234	1,023	1,132
246	309	Relocated	6.00	1550	1078	4848	0.932	0.10704	0.03898	2.7458	0.7169	4.4972	36.52	4.4972	0.7169	1,055	1,132
247	310	Relocated	8.00	1002	368	2487	0.601	0.13140	0.04926	2.6674	0.7716	6.7582	18.74	6.7582	0.7716	682	1,135
247	310	Relocated	8.00	1050	419	2634	0.630	0.12673	0.04874	2.6000	0.7386	6.2864	19.84	6.2864	0.7386	715	1,134
247	310	Relocated	8.00	1097	473	2898	0.658	0.12774	0.04825	2.6475	0.7551	6.1268	21.83	6.1268	0.7551	747	1,135
247	310	Relocated	8.00	1147	548	3203	0.688	0.12914	0.04890	2.6407	0.7573	5.8449	24.13	5.8449	0.7573	781	1,135
247	310	Relocated	8.00	1200	621	3498	0.720	0.12885	0.04840	2.6625	0.7627	5.6329	26.35	5.6329	0.7627	817	1,134
247	310	Relocated	8.00	1248	705	3804	0.749	0.12955	0.04884	2.6525	0.7619	5.3957	28.66	5.3957	0.7619	849	1,134
247	310	Relocated	8.00	1300	792	4131	0.780	0.12966	0.04855	2.6709	0.7675	5.2159	31.12	5.2159	0.7675	885	1,134
247	310	Relocated	8.00	1349	890	4489	0.809	0.13085	0.04882	2.6801	0.7736	5.0438	33.82	5.0438	0.7736	918	1,135
247	310	Relocated	8.00	1400	991	4752	0.840	0.12861	0.04863	2.6443	0.7567	4.7952	35.80	4.7952	0.7567	953	1,134
247	310	Relocated	8.00	1450	1118	5205	0.870	0.13132	0.04938	2.6591	0.7689	4.6556	39.21	4.6556	0.7689	987	1,134
247	310	Relocated	8.00	1498	1245	5564	0.899	0.13152	0.04988	2.6370	0.7632	4.4691	41.92	4.4691	0.7632	1,020	1,134
247	310	Relocated	8.00	1550	1381	5901	0.930	0.13029	0.04994	2.6089	0.7515	4.2730	44.46	4.2730	0.7515	1,055	1,134
248	311	Relocated	10.00	1002	458	2845	0.605	0.15031	0.06131	2.4517	0.7585	6.2118	21.43	6.2118	0.7585	682	1,127
248	311	Relocated	10.00	1051	530	3094	0.635	0.14858	0.06148	2.4168	0.7434	5.8377	23.31	5.8377	0.7434	715	1,127
248	311	Relocated	10.00	1101	607	3427	0.665	0.14996	0.06125	2.4485	0.7566	5.6458	25.82	5.6458	0.7566	749	1,127
248	311	Relocated	10.00	1148	686	3718	0.694	0.14965	0.06106	2.4508	0.7566	5.4198	28.01	5.4198	0.7566	781	1,126
248	311	Relocated	10.00	1199	801	4154	0.724	0.15327	0.06258	2.4493	0.7652	5.1860	31.30	5.1860	0.7652	816	1,127
248	311	Relocated	10.00	1251	904	4528	0.756	0.15347	0.06218	2.4682	0.7716	5.0088	34.11	5.0088	0.7716	852	1,126
248	311	Relocated	10.00	1299	1000	4818	0.785	0.15146	0.06144	2.4653	0.7656	4.8180	36.30	4.8180	0.7656	884	1,126
248	311	Relocated	10.00	1349	1144	5337	0.815	0.15557	0.06275	2.4790	0.7802	4.6652	40.21	4.6652	0.7802	918	1,127
248	311	Relocated	10.00	1404	1302	5732	0.848	0.15425	0.06335	2.4347	0.7631	4.4025	43.18	4.4025	0.7631	956	1,127
248	311	Relocated	10.00	1449	1457	6231	0.876	0.15742	0.06449	2.4409	0.7728	4.2766	46.94	4.2766	0.7728	986	1,126
248	311	Relocated	10.00	1503	1701	6895	0.908	0.16190	0.06747	2.3998	0.7706	4.0535	51.95	4.0535	0.7706	1,023	1,127
248	311	Relocated	10.00	1549	1874	7373	0.936	0.16300	0.06790	2.4006	0.7734	3.9344	55.55	3.9344	0.7734	1,054	1,126
249	314	Relocated	12.00	1002	553	3264	0.603	0.17245	0.07402	2.3296	0.7720	5.9024	24.59	5.9024	0.7720	682	1,131
249	314	Relocated	12.00	1052	652	3640	0.633	0.17447	0.07541	2.3134	0.7711	5.5828	27.42	5.5828	0.7711	716	1,131
249	314	Relocated	12.00	1102	744	3975	0.663	0.17363	0.07487	2.3192	0.7712	5.3427	29.95	5.3427	0.7712	750	1,131
249	314	Relocated	12.00	1149	852	4351	0.691	0.17482	0.07564	2.3113	0.7712	5.1068	32.78	5.1068	0.7712	782	1,132
249	314	Relocated	12.00	1200	970	4749	0.722	0.17494	0.07559	2.3142	0.7724	4.8959	35.78	4.8959	0.7724	817	1,131
249	314	Relocated	12.00	1248	1102	5188	0.751	0.17669	0.07635	2.3143	0.7763	4.7078	39.09	4.7078	0.7763	849	1,131
249	314	Relocated	12.00	1303	1270	5711	0.784	0.17843	0.07731	2.3080	0.7780	4.4969	43.03	4.4969	0.7780	887	1,131
249	314	Relocated	12.00	1354	1437	6192	0.815	0.17916	0.07796	2.2982	0.7762	4.3090	46.65	4.3090	0.7762	922	1,131
249	314	Relocated	12.00	1401	1615	6684	0.843	0.18063	0.07909	2.2840	0.7746	4.1387	50.36	4.1387	0.7746	954	1,131
249	314	Relocated	12.00	1449	1825	7280	0.872	0.18392	0.08078	2.2768	0.7792	3.9890	54.85	3.9890	0.7792	986	1,131
249	314	Relocated	12.00	1498	2066	7908	0.901	0.18693	0.08277	2.2586	0.7793	3.8277	59.58	3.8277	0.7793	1,020	1,132
249	314	Relocated	12.00	1553	2376	8577	0.934	0.18864	0.08543	2.2082	0.7654	3.6098	64.62	3.6098	0.7654	1,057	1,132
250	312	Relocated	13.90	1001	681	3646	0.603	0.19301	0.09143	2.1110	0.7401	5.3539	27.47	5.3539	0.7401	681	1,130
250	312	Relocated	13.90	1049	797	4083	0.632	0.19682	0.09298	2.1168	0.7494	5.1230	30.76	5.1230	0.7494	714	1,130
250	312	Relocated	13.90	1099	913	4458	0.662	0.19579	0.09263	2.1137	0.7464	4.8828	33.59	4.8828	0.7464	748	1,130
250	312	Relocated	13.90	1148	1052	4938	0.692	0.19875	0.09364	2.1226	0.7551	4.6939	37.20	4.6939	0.7551	781	1,129
250	312	Relocated	13.90	1197	1201	5375	0.721	0.19899	0.09430	2.1102	0.7512	4.4754	40.50	4.4754	0.7512	815	1,130
250	312	Relocated	13.90	1253	1415	6021	0.755	0.20343	0.09686	2.1001	0.7559	4.2551	45.36	4.2551	0.7559	853	1,130
250	312	Relocated	13.90	1301	1593	6542	0.784	0.20502	0.09742	2.1045	0.7604	4.1067	49.29	4.1067	0.7604	886	1,130
250	312	Relocated	13.90	1351	1825	7146	0.814	0.20768	0.09967	2.0837	0.7578	3.9156	53.84	3.9156	0.7578	920	1,130
250	312	Relocated	13.90	1400	2068	7771	0.844	0.21031	0.10149	2.0722	0.7584	3.7577	58.55	3.7577	0.7584	953	1,129
250	312	Relocated	13.90	1450	2359	8500	0.874	0.21445	0.10420	2.0580	0.7605	3.6032	64.04	3.6032	0.7605	987	1,129
250	312	Relocated	13.90	1499	2701	9229	0.903	0.21787	0.10799	2.0175	0.7515	3.4169	69.53	3.4169	0.7515	1,020	1,130
250	312	Relocated	13.90	1551	3064	9958	0.935	0.21958	0.11059	1.9856	0.7425	3.2500	75.02	3.2500	0.7425	1,056	1,129
251	315	Relocated	16.00	1004	850	4118	0.603	0.21670	0.11310	1.9160	0.7117	4.8447	31.02	4.8447	0.7117	683	1,133
251	315	Relocated	16.00	1050	989	4559	0.631	0.21935	0.11505	1.9066	0.7126	4.6097	34.35	4.6097	0.7126	715	1,133
251	315	Relocated	16.00	1103	1136	5000	0.663	0.21800	0.11400	1.9123	0.7125	4.4014	37.67	4.4014	0.7125	751	1,132
251	315	Relocated	16.00	1152	1332	5588	0.692	0.22335	0.11733	1.9037	0.7179	4.1952	42.10	4.1952	0.7179	784	1,133
251	315	Relocated	16.00	1203	1516	6155	0.723	0.22560	0.11726	1.9239	0.7292	4.0600	46.37	4.0600	0.7292	819	1,133
251	315	Relocated	16.00	1251	1745	6765	0.751	0.22929	0.12003	1.9104	0.7300	3.8768	50.97	3.8768	0.7300	852	1,134
251	315	Relocated	16.00	1296	1973	7332	0.778	0.23155	0.12206	1.8971	0.7285	3.7162	55.24	3.7162	0.7285	882	1,134
251	315	Relocated	16.00	1351	2294	8130	0.811	0.23628	0.12528	1.8860	0.7316	3.5440	61.25	3.5440	0.7316	920	1,134
251	315	Relocated	16.00	1399	2599	8824	0.840	0.23915	0.12782	1.8710	0.7301	3.3952	66.48	3.3952	0.7301	952	1,134
251	315	Relocated	16.00	1448	2967	9643	0.870	0.24396	0.13160	1.8537	0.7306	3.2501	72.65	3.2501	0.7306	986	1,133
251	315	Relocated	16.00	1500	3445	10567	0.901	0.24912	0.13746	1.8123	0.7218	3.0673	79.61	3.0673	0.7218	1,021	1,133
251	315	Relocated	16.00	1548	3901	11282	0.930	0.24974	0.14162	1.7635	0.7033	2.8921	85.00	2.8921	0.7033	1,054	1,133
252	313	Relocated	18.00	1000	1014	4458	0.603	0.23647	0.13655	1.7318	0.6720	4.3964	33.59	4.3964	0.6720	681	1,129
252	313	Relocated	18.00	1047	1161	4875	0.631	0.23590	0.13622	1.7317	0.6712	4.1990	36.73	4.1990	0.6712	713	1,129
252	313	Relocated	18.00	1100	1359	5458	0.663	0.23927	0.13750	1.7402	0.6793	4.0162	41.12	4.0162	0.6793	749	1,129
252	313	Relocated	18.00	1149	1573	6021	0.692	0.24192	0.13964	1.7324	0.6800	3.8277	45.36	3.8277	0.6800	782	1,130
252	313	Relocated	18.00	1198	1792	6604	0.722	0.24408	0.14035	1.7390	0.6856	3.6853	49.75	3.6853	0.6856	815	1,129
252	313	Relocated	18.00	1249	2065	7333	0.753	0.24934	0.14272	1.7471	0.6962	3.5511	55.25	3.5511	0.6962	850	1,129
252	313	Relocated	18.00	1300	2396	8021	0.783	0.25176	0.14686	1.7142	0.6864	3.3477	60.43	3.3477	0.6864	885	1,130
252	313	Relocated	18.00	1350	2734	8906	0.814	0.25921	0.14964	1.7322	0.7038	3.2575	67.10	3.2575	0.7038	919	1,129
252	313	Relocated	18.00	1403	3197	9813	0.846	0.26444	0.15589	1.6963	0.6961	3.0694	73.93	3.0694	0.6961	955	1,129
252	313	Relocated	18.00	1452	3676	10688	0.875	0.26891	0.16171	1.6629	0.6881	2.9075	80.52	2.9075	0.6881	988	1,130
252	313	Relocated	18.00	1501	4229	11625	0.905	0.27370	0.16840	1.6253	0.6785	2.7489	87.58	2.7489	0.6785	1,022	1,129
253	316	Relocated	20.00	1000	1231	4792	0.601	0.25419	0.16577	1.5334	0.6169	3.8928	36.10	3.8928	0.6169	681	1,133
253	316	Relocated	20.00	1053	1448	5339	0.632	0.25541	0.16701	1.5293	0.6168	3.6872	40.22	3.6872	0.6168	717	1,134
253	316	Relocated	20.00	1098	1641	5822	0.660	0.25616	0.16694	1.5344	0.6197	3.5478	43.86	3.5478	0.6197	747	1,132
253	316	Relocated	20.00	1151	1912	6474	0.691	0.25922	0.16886	1.5351	0.6237	3.3860	48.77	3.3860	0.6237	783	1,134
253	316	Relocated	20.00	1200	2195	7105	0.721	0.26172	0.17106	1.5300	0.6246	3.2369	53.53	3.2369	0.6246	817	1,133
253	316	Relocated	20.00	1250	2515	7840	0.751	0.26616	0.17340	1.5349	0.6319	3.1173	59.07	3.1173	0.6319	851	1,133
253	316	Relocated	20.00	1304	2864	8471	0.783	0.26425	0.17394	1.5192	0.6232	2.9578	63.82	2.9578	0.6232	888	1,134
253	316	Relocated	20.00	1351	3290	9354	0.811	0.27185	0.17967	1.5130	0.6295	2.8432	70.47	2.8432	0.6295	920	1,134
253	316	Relocated	20.00	1399	3762	10257	0.840	0.27799	0.18502	1.5025	0.6322	2.7265	77.28	2.7265	0.6322	952	1,134
253	316	Relocated	20.00	1441	4246	11056	0.866	0.28243	0.19109	1.4780	0.6268	2.6039	83.30	2.6039	0.6268	981	1,133

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

RIGHTTABLE





AN. Data Set # 25

DATA SET Number 25

47 x 92	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	103	13.00	4	26.0	539.490	0.944

Power weighted solidity = [illegible]
Twist (0.25R - Tip in deg) = [illegible]

$C_T = 0.1515\dfrac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}$ $C_P = 0.500\dfrac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798\dfrac{C_T^{3/2}}{C_P}$

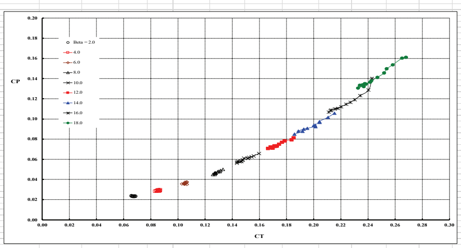
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

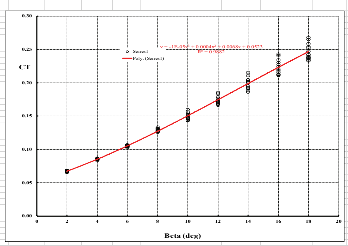
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	Harris Computed CT	CP	CT/CP	FM	TH/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps)	Derived Vsound in fps from M and Vt
254	318	Relocated	2.00	1004	174	1271	0.604	0.06688	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,131
254	318	Relocated	2.00	1050	198	1396	0.631	0.06717	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,133
254	318	Relocated	2.00	1098	233	1542	0.660	0.06785	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1147	260	1688	0.690	0.06806	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1201	300	1865	0.722	0.06859	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1250	341	2000	0.751	0.06790	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,133
254	318	Relocated	2.00	1301	386	2167	0.782	0.06791	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1350	431	2292	0.812	0.06671	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1401	480	2458	0.842	0.06643	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,133
254	318	Relocated	2.00	1450	530	2625	0.872	0.06623	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1502	597	2792	0.903	0.06565	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
254	318	Relocated	2.00	1550	664	2979	0.932	0.06577	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,132
255	319	Relocated	4.00	990	204	1588	0.595	0.08594	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,133
255	319	Relocated	4.00	1050	249	1797	0.630	0.08646	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1105	297	1996	0.664	0.08671	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,133
255	319	Relocated	4.00	1148	325	2121	0.689	0.08537	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1201	378	2330	0.721	0.08569	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1251	422	2550	0.751	0.08643	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1297	468	2717	0.778	0.08567	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
255	319	Relocated	4.00	1299	469	2717	0.780	0.08541	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1351	529	2936	0.811	0.08533	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1352	519	2863	0.811	0.08308	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
255	319	Relocated	4.00	1400	582	3114	0.840	0.08428	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1407	596	3145	0.844	0.08427	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
255	319	Relocated	4.00	1454	673	3386	0.873	0.08496	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1504	743	3636	0.903	0.08526	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,134
255	319	Relocated	4.00	1552	828	3877	0.931	0.08538	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
256	320	Relocated	6.00	1001	262	2015	0.600	0.10667	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1052	305	2183	0.631	0.10463	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
256	320	Relocated	6.00	1097	357	2403	0.657	0.10592	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,137
256	320	Relocated	6.00	1151	410	2623	0.690	0.10502	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
256	320	Relocated	6.00	1199	465	2854	0.718	0.10531	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,137
256	320	Relocated	6.00	1246	511	3012	0.747	0.10291	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,135
256	320	Relocated	6.00	1248	512	3064	0.748	0.10435	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1302	597	3389	0.780	0.10604	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1354	657	3631	0.811	0.10506	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1399	729	3841	0.838	0.10410	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1448	843	4155	0.868	0.10512	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1500	936	4512	0.899	0.10637	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
256	320	Relocated	6.00	1551	1041	4827	0.929	0.10644	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
257	321	Relocated	8.00	1000	335	2396	0.599	0.12709	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
257	321	Relocated	8.00	1048	384	2606	0.627	0.12586	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,138
257	321	Relocated	8.00	1101	456	2901	0.659	0.12694	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,137
257	321	Relocated	8.00	1146	514	3163	0.686	0.12775	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,137
257	321	Relocated	8.00	1197	589	3437	0.717	0.12724	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,136
257	321	Relocated	8.00	1248	673	3741	0.747	0.12741	0.04663	2.7326	0.7784	5.5587		28.18	5.5587	0.7784	849	1,137
257	321	Relocated	8.00	1297	751	4057	0.776	0.12793	0.04635	2.7599	0.7877	5.4021		30.57	5.4021	0.7877	883	1,138
257	321	Relocated	8.00	1350	867	4435	0.808	0.12908	0.04745	2.7202	0.7799	5.1153		33.41	5.1153	0.7799	919	1,137
257	321	Relocated	8.00	1400	977	4792	0.838	0.12969	0.04795	2.7048	0.7773	4.9048		36.10	4.9048	0.7773	953	1,137
257	321	Relocated	8.00	1454	1090	5213	0.870	0.13080	0.04775	2.7391	0.7905	4.7826		39.27	4.7826	0.7905	990	1,138
257	321	Relocated	8.00	1500	1226	5570	0.898	0.13131	0.04892	2.6844	0.7762	4.5432		41.96	4.5432	0.7762	1,021	1,137
257	321	Relocated	8.00	1548	1375	6012	0.927	0.13308	0.04992	2.6661	0.7761	4.3724		45.29	4.3724	0.7761	1,054	1,137
258	322	Relocated	10.00	1001	418	2710	0.602	0.14346	0.05612	2.5563	0.7727	6.4833	Repeat	20.42	6.4833	0.7727	681	1,132
258	322	Relocated	10.00	1002	434	2770	0.603	0.14635	0.05810	2.5191	0.7690	6.3825	Repeat	20.87	6.3825	0.7690	682	1,131
258	322	Relocated	10.00	1048	496	3032	0.631	0.14644	0.05803	2.5235	0.7706	6.1129		22.84	6.1129	0.7706	713	1,131
258	322	Relocated	10.00	1055	499	3011	0.635	0.14350	0.05723	2.5075	0.7580	6.0341		22.68	6.0341	0.7580	718	1,131
258	322	Relocated	10.00	1100	576	3281	0.662	0.14383	0.05828	2.4681	0.7470	5.6962		24.72	5.6962	0.7470	749	1,131
258	322	Relocated	10.00	1104	574	3344	0.664	0.14553	0.05745	2.5334	0.7713	5.8258		25.19	5.8258	0.7713	751	1,132
258	322	Relocated	10.00	1152	656	3676	0.693	0.14693	0.05778	2.5428	0.7778	5.6037		27.69	5.6037	0.7778	784	1,132
258	322	Relocated	10.00	1154	671	3697	0.694	0.14726	0.05880	2.5045	0.7669	5.5097		27.85	5.5097	0.7669	786	1,132
258	322	Relocated	10.00	1202	765	4029	0.723	0.14792	0.05932	2.4936	0.7653	5.2667		30.35	5.2667	0.7653	818	1,132
258	322	Relocated	10.00	1247	881	4361	0.750	0.14876	0.06118	2.4314	0.7484	4.9501		32.86	4.9501	0.7484	849	1,132
258	322	Relocated	10.00	1299	995	4818	0.782	0.15146	0.06113	2.4776	0.7695	4.8422		36.30	4.8422	0.7695	884	1,131
258	322	Relocated	10.00	1351	1114	5213	0.813	0.15150	0.06084	2.4903	0.7735	4.6795		39.27	4.6795	0.7735	920	1,131
258	322	Relocated	10.00	1400	1259	5628	0.842	0.15231	0.06179	2.4651	0.7677	4.4702		42.40	4.4702	0.7677	953	1,132
258	322	Relocated	10.00	1450	1412	6116	0.872	0.15430	0.06237	2.4739	0.7755	4.3314		46.08	4.3314	0.7755	987	1,132
258	322	Relocated	10.00	1502	1593	6625	0.904	0.15577	0.06331	2.4605	0.7749	4.1588		49.91	4.1588	0.7749	1,022	1,131
258	322	Relocated	10.00	1554	1831	7269	0.935	0.15967	0.06570	2.4301	0.7749	3.9700		54.76	3.9700	0.7749	1,058	1,131
259	323	Relocated	12.00	1003	531	3153	0.602	0.16625	0.07087	2.3459	0.7633	5.9379		23.75	5.9379	0.7633	683	1,134
259	323	Relocated	12.00	1050	626	3559	0.631	0.17123	0.07282	2.3514	0.7765	5.6853		26.81	5.6853	0.7765	715	1,133
259	323	Relocated	12.00	1097	697	3850	0.659	0.16970	0.07110	2.3868	0.7846	5.5237		29.01	5.5237	0.7846	747	1,133
259	323	Relocated	12.00	1099	703	3829	0.660	0.16816	0.07132	2.3578	0.7716	5.4467		28.85	5.4467	0.7716	748	1,133
259	323	Relocated	12.00	1135	834	4287	0.694	0.17652	0.07681	2.2981	0.7705	5.1403		32.30	5.1403	0.7705	773	1,113
259	323	Relocated	12.00	1199	922	4558	0.720	0.16818	0.07203	2.3348	0.7641	4.9436		34.34	4.9436	0.7641	816	1,134
259	323	Relocated	12.00	1250	1059	5078	0.751	0.17239	0.07302	2.3610	0.7823	4.7951		38.26	4.7951	0.7823	851	1,133
259	323	Relocated	12.00	1303	1202	5536	0.783	0.17296	0.07317	2.3639	0.7845	4.6057		41.71	4.6057	0.7845	887	1,133
259	323	Relocated	12.00	1356	1357	5932	0.814	0.17113	0.07329	2.3349	0.7708	4.3714		44.69	4.3714	0.7708	923	1,134
259	323	Relocated	12.00	1405	1545	6493	0.844	0.17447	0.07502	2.3258	0.7753	4.2026		48.92	4.2026	0.7753	956	1,133
259	323	Relocated	12.00	1450	1771	7086	0.871	0.17877	0.07823	2.2853	0.7711	4.0011		53.39	4.0011	0.7711	987	1,133
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.905	0.18375	0.07948	2.3118	0.7908	3.8946		59.27	3.8946	0.7908	1,026	1,133
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.929	0.18520	0.08127	2.2789	0.7826	3.7422		62.87	3.7422	0.7826	1,052	1,133
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.598	0.18592	0.08484	2.1915	0.7540	5.5635		26.41	5.5635	0.7540	681	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.628	0.19183	0.08760	2.1899	0.7654	5.2948		30.04	5.2948	0.7654	715	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.658	0.18859	0.08782	2.1475	0.7442	4.9562		32.41	4.9562	0.7442	749	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.688	0.19276	0.08996	2.1428	0.7507	4.7303		36.21	4.7303	0.7507	783	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.718	0.19528	0.09064	2.1544	0.7597	4.5540		40.01	4.5540	0.7597	817	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.748	0.20130	0.09244	2.1775	0.7796	4.4189		44.74	4.4189	0.7796	852	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.777	0.20122	0.09363	2.1491	0.7693	4.2001		48.22	4.2001	0.7693	884	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.809	0.20008	0.09363	2.1370	0.7628	4.0099		52.02	4.0099	0.7628	921	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.835	0.20449	0.09647	2.1197	0.7649	3.8548		56.60	3.8548	0.7649	950	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.867	0.20413	0.09742	2.0953	0.7554	3.6711		60.87	3.6711	0.7554	986	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.897	0.21055	0.10159	2.0725	0.7589	3.5100		67.20	3.5100	0.7589	1,020	1,137
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.928	0.21537	0.10557	2.0400	0.7555	3.3391		73.58	3.3391	0.7555	1,056	1,138
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.597	0.21117	0.10665	1.9799	0.7261	5.0265		29.99	5.0265	0.7261	681	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.631	0.21244	0.10830	1.9616	0.7215	4.7159		33.65	4.7159	0.7215	719	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.657	0.21284	0.10866	1.9587	0.7211	4.5205		36.58	4.5205	0.7211	749	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.686	0.21787	0.11028	1.9756	0.7359	4.3688		40.78	4.3688	0.7359	781	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.717	0.21571	0.10988	1.9631	0.7276	4.1532		44.12	4.1532	0.7276	817	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.746	0.22025	0.11203	1.9660	0.7363	3.9994		48.72	3.9994	0.7363	849	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.776	0.22414	0.11462	1.9555	0.7388	3.8187		53.80	3.8187	0.7388	885	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.807	0.22708	0.11656	1.9482	0.7408	3.6583		58.95	3.6583	0.7408	920	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.840	0.23027	0.11908	1.9338	0.7405	3.4892		64.75	3.4892	0.7405	958	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.867	0.23424	0.12300	1.9044	0.7355	3.3298		70.14	3.3298	0.7355	988	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.895	0.24047	0.12855	1.8706	0.7320	3.1701		76.64	3.1701	0.7320	1,020	1,139
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.926	0.24291	0.14015	1.7332	0.6817	2.8370		82.99	2.8370	0.6817	1,056	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.596	0.23582	0.13371	1.7636	0.6834	4.4863		33.36	4.4863	0.6834	679	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.597	0.23690	0.13211	1.7932	0.6965	4.5525		33.65	4.5525	0.6965	681	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.626	0.23400	0.13349	1.7529	0.6766	4.2463		36.50	4.2463	0.6766	713	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.628	0.23270	0.13059	1.7820	0.6860	4.3003		36.58	4.3003	0.6860	716	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.652	0.24172	0.13630	1.7734	0.6958	4.1229		40.94	4.1229	0.6958	743	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.687	0.23783	0.13494	1.7625	0.6859	3.8874		44.75	3.8874	0.6859	783	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.715	0.23860	0.13458	1.7729	0.6911	3.7602		48.56	3.7602	0.6911	815	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.746	0.24243	0.13783	1.7589	0.6911	3.5723		53.80	3.5723	0.6911	851	1,141
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.777	0.24689	0.14126	1.7477	0.6930	3.4104		59.35	3.4104	0.6930	886	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.809	0.25193	0.14545	1.7321	0.6938	3.2453		65.70	3.2453	0.6938	922	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.838	0.25371	0.14960	1.6959	0.6817	3.0688		70.93	3.0688	0.6817	955	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.866	0.25827	0.15368	1.6806	0.6816	2.9425		77.13	2.9425	0.6816	987	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.895	0.26503	0.16012	1.6552	0.6800	2.8032		84.58	2.8032	0.6800	1,020	1,140
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.911	0.26809	0.16115	1.6637	0.6874	2.7696		88.55	2.7696	0.6874	1,038	1,139

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	Harris Computed CT	CP	CT/CP	FM	TH/HP		Disc Loading	Repeat T/HP	Repeat FM
254	2.00	0.725	304	1876	821	1206	0.0684	0.0233	2.932	0.612	6.171		14.13	6.171	0.6119
254	2.00	0.750	338	2000	849	1248	0.0681	0.0234	2.909	0.606	5.917		15.07	5.917	0.6058
254	2.00	0.775	375	2123	878	1289	0.0678	0.0236	2.874	0.597	5.661		15.99	5.661	0.5972
254	2.00	0.800	413	2242	906	1331	0.0671	0.0236	2.846	0.588	5.429		16.89	5.429	0.5885
254	2.00	0.825	451	2371	934	1372	0.0668	0.0235	2.841	0.586	5.257		17.86	5.257	0.5860
254	2.00	0.850	492	2497	962	1414	0.0662	0.0234	2.827	0.581	5.075		18.81	5.075	0.5806
254	2.00	0.875	539	2635	991	1456	0.0659	0.0235	2.804	0.575	4.889		19.85	4.889	0.5745
254	2.00	0.900	591	2781	1019	1497	0.0658	0.0237	2.775	0.568	4.706		20.95	4.706	0.5681
254	2.00	0.925	647	2934	1047	1539	0.0657	0.0239	2.749	0.562	4.535		22.10	4.535	0.5623
255	4.00	0.725	382	2361	822	1208	0.0858	0.0292	2.941	0.688	6.181		17.79	6.181	0.6875
255	4.00	0.750	421	2525	851	1250	0.0857	0.0290	2.953	0.690	5.998		19.02	5.998	0.6900
255	4.00	0.775	463	2697	879	1291	0.0858	0.0290	2.962	0.693	5.825		20.32	5.825	0.6925
255	4.00	0.800	504	2836	907	1333	0.0847	0.0287	2.955	0.686	5.627		21.37	5.627	0.6860
255	4.00	0.825	551	2997	936	1375	0.0841	0.0285	2.946	0.682	5.439		22.58	5.439	0.6817
255	4.00	0.850	610	3194	964	1416	0.0845	0.0289	2.920	0.677	5.236		24.06	5.236	0.6775
255	4.00	0.875	673	3406	992	1458	0.0850	0.0292	2.907	0.676	5.061		25.66	5.061	0.6762
255	4.00	0.900	740	3616	1021	1500	0.0852	0.0295	2.887	0.673	4.886		27.24	4.886	0.6727
255	4.00	0.925	809	3823	1049	1541	0.0854	0.0298	2.868	0.669	4.726		28.80	4.726	0.6689
256	6.00	0.725	471	2876	824	1210	0.1042	0.0358	2.910	0.750	6.106		21.67	6.106	0.7497
256	6.00	0.750	523	3094	852	1252	0.1047	0.0359	2.917	0.753	5.916		23.31	5.916	0.7533
256	6.00	0.775	576	3307	880	1294	0.1048	0.0358	2.926	0.756	5.741		24.91	5.741	0.7559
256	6.00	0.800	631	3533	909	1335	0.1052	0.0357	2.944	0.762	5.599		26.62	5.599	0.7619
256	6.00	0.825	701	3747	937	1377	0.1048	0.0362	2.899	0.749	5.345		28.23	5.345	0.7491
256	6.00	0.850	774	3977	966	1419	0.1048	0.0365	2.872	0.742	5.138		29.96	5.138	0.7418
256	6.00	0.875	853	4228	994	1460	0.1052	0.0369	2.851	0.738	4.957		31.85	4.957	0.7378
256	6.00	0.900	938	4499	1022	1502	0.1058	0.0373	2.838	0.737	4.796		33.90	4.796	0.7365
256	6.00	0.925	1029	4790	1051	1544	0.1066	0.0376	2.831	0.738	4.655		36.09	4.655	0.7376
257	8.00	0.725	609	3520	824	1211	0.1273	0.0462	2.757	0.785	5.780		26.52	5.780	0.7851
257	8.00	0.750	677	3774	853	1253	0.1275	0.0463	2.751	0.784	5.575		28.43	5.575	0.7840
257	8.00	0.775	753	4043	881	1295	0.1279	0.0467	2.739	0.782	5.369		30.46	5.369	0.7816
257	8.00	0.800	836	4331	910	1336	0.1287	0.0472	2.726	0.781	5.181		32.63	5.181	0.7805
257	8.00	0.825	922	4634	938	1378	0.1294	0.0475	2.728	0.783	5.026		34.91	5.026	0.7833
257	8.00	0.850	1016	4942	966	1420	0.1300	0.0478	2.721	0.783	4.864		37.23	4.864	0.7828
257	8.00	0.875	1123	5271	995	1462	0.1308	0.0484	2.703	0.780	4.694		39.71	4.694	0.7801
257	8.00	0.900	1238	5616	1023	1503	0.1319	0.0491	2.686	0.778	4.536		42.31	4.536	0.7783
257	8.00	0.925	1362	5977	1032	1545	0.1328	0.0497	2.671	0.777	4.388		45.03	4.388	0.7767
258	10.00	0.725	780	4059	820	1205	0.1483	0.0600	2.470	0.759	5.204		30.58	5.204	0.7590
258	10.00	0.750	874	4374	848	1247	0.1492	0.0607	2.458	0.758	5.005		32.95	5.005	0.7577
258	10.00	0.775	967	4703	877	1288	0.1504	0.0609	2.467	0.764	4.863		35.43	4.863	0.7636
258	10.00	0.800	1068	5041	905	1330	0.1512	0.0611	2.473	0.767	4.720		37.98	4.720	0.7672
258	10.00	0.825	1174	5392	933	1371	0.1522	0.0613	2.480	0.772	4.593		40.62	4.593	0.7721
258	10.00	0.850	1289	5742	962	1413	0.1526	0.0615	2.479	0.773	4.455		43.26	4.455	0.7728
258	10.00	0.875	1427	6145	990	1454	0.1542	0.0625	2.466	0.773	4.306		46.30	4.306	0.7728
258	10.00	0.900	1581	6584	1018	1496	0.1561	0.0636	2.454	0.774	4.164		49.60	4.164	0.7736
258	10.00	0.925	1752	7058	1046	1537	0.1585	0.0650	2.439	0.775	4.029		53.17	4.029	0.7748
259	12.00	0.725	949	4692	822	1207	0.1708	0.0727	2.351	0.775	4.944		35.35	4.944	0.7753
259	12.00	0.750	1054	5038	850	1249	0.1713	0.0728	2.352	0.777	4.780		37.96	4.780	0.7767
259	12.00	0.775	1162	5388	878	1290	0.1717	0.0729	2.356	0.779	4.637		40.59	4.637	0.7792
259	12.00	0.800	1284	5763	907	1332	0.1723	0.0732	2.355	0.780	4.488		43.42	4.488	0.7800
259	12.00	0.825	1431	6152	935	1373	0.1731	0.0745	2.325	0.772	4.299		46.35	4.299	0.7720
259	12.00	0.850	1597	6630	963	1415	0.1756	0.0759	2.314	0.774	4.152		49.95	4.152	0.7739
259	12.00	0.875	1780	7136	992	1457	0.1783	0.0775	2.301	0.775	4.009		53.76	4.009	0.7753
259	12.00	0.900	1981	7593	1020	1498	0.1795	0.0794	2.262	0.765	3.833		57.21	3.833	0.7646
259	12.00	0.925	2199	8297	1048	1540	0.1856	0.0811	2.289	0.787	3.773		62.51	3.773	0.7868
260	14.00	0.725	1210	5482	825	1212	0.1980	0.0915	2.163	0.768	4.531		41.30	4.531	0.7679
260	14.00	0.750	1347	5906	853	1254	0.1992	0.0920	2.166	0.771	4.385		44.50	4.385	0.7714
260	14.00	0.775	1504	6358	882	1296	0.2008	0.0930	2.158	0.772	4.227		47.90	4.227	0.7717
260	14.00	0.800	1674	6815	910	1337	0.2022	0.0943	2.144	0.769	4.071		51.34	4.071	0.7694
260	14.00	0.825	1852	7243	939	1379	0.2020	0.0951	2.124	0.762	3.911		54.57	3.911	0.7620
260	14.00	0.850	2059	7761	967	1421	0.2039	0.0966	2.110	0.760	3.769		58.47	3.769	0.7602
260	14.00	0.875	2303	8344	996	1463	0.2068	0.0990	2.088	0.758	3.623		62.86	3.623	0.7577
260	14.00	0.900	2579	8986	1024	1505	0.2104	0.1019	2.066	0.756	3.484		67.70	3.484	0.7561
260	14.00	0.925	2887	9688	1053	1546	0.2150	0.1052	2.044	0.756	3.356		72.99	3.356	0.7562
261	16.00	0.725	1473	6064	826	1214	0.2183	0.1109	1.969	0.734	4.117		45.69	4.117	0.7339
261	16.00	0.750	1652	6557	855	1256	0.2205	0.1123	1.964	0.736	3.969		49.40	3.969	0.7358
261	16.00	0.775	1851	7079	883	1298	0.2229	0.1140	1.955	0.737	3.824		53.33	3.824	0.7366
261	16.00	0.800	2071	7660	912	1340	0.2263	0.1159	1.952	0.741	3.699		57.71	3.699	0.7411
261	16.00	0.825	2309	8232	940	1382	0.2286	0.1178	1.941	0.741	3.565		62.02	3.565	0.7405
261	16.00	0.850	2569	8877	969	1423	0.2325	0.1201	1.937	0.745	3.455		66.88	3.455	0.7453
261	16.00	0.875	2926	9548	997	1465	0.2360	0.1253	1.883	0.730	3.263		71.93	3.263	0.7300
261	16.00	0.900	3348	10260	1027	1507	0.2396	0.1317	1.819	0.711	3.065		77.30	3.065	0.7106
261	16.00	0.925	3834	11012	1054	1549	0.2434	0.1389	1.752	0.690	2.872		82.96	2.872	0.6900
262	18.00	0.725	1806	6667	826	1214	0.2400	0.1359	1.765	0.690	3.692		50.23	3.692	0.6901
262	18.00	0.750	2033	7245	855	1256	0.2436	0.1382	1.763	0.694	3.564		54.58	3.564	0.6944
262	18.00	0.775	2287	7826	883	1298	0.2464	0.1408	1.750	0.693	3.422		58.96	3.422	0.6930
262	18.00	0.800	2573	8449	912	1340	0.2496	0.1440	1.733	0.691	3.284		63.65	3.284	0.6910
262	18.00	0.825	2882	9084	940	1382	0.2523	0.1470	1.716	0.688	3.152		68.44	3.152	0.6877
262	18.00	0.850	3240	9772	969	1423	0.2560	0.1514	1.691	0.683	3.016		73.62	3.016	0.6826
262	18.00	0.875	3633	10542	997	1465	0.2605	0.1556	1.674	0.682	2.902		79.42	2.902	0.6821
262	18.00	0.900	4065	11379	1027	1549	0.2516	0.1473	1.708	0.684	2.799		85.73	2.799	0.6836





AO. Data Set # 26

DATA SET Number 26

47 x 93

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
117.0	13.00	4	26.0	539.490	0.944

Power weighted solidity = [illegible]
Twist (0.25R -Tip in deg) = [illegible]

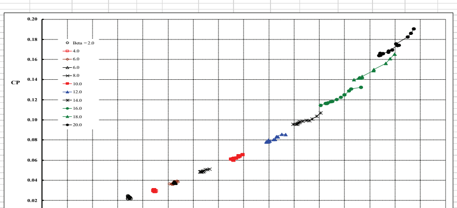
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

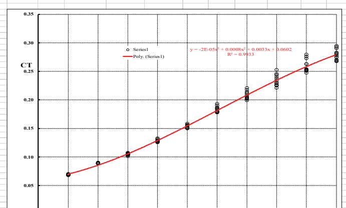
REDUCED TEST DATA POINTS — Harris Computed

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	EHP		Disc Loading	Repeat EHP	Repeat FM	Tip Speed (fps) V1	Derived Vsound in fps from M and V1
263	328	Relocated	2.00	1002	162	1296	0.595	0.06847	0.02169	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1056	191	1478	0.626	0.07030	0.02184	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1099	217	1585	0.652	0.06961	0.02202	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1158	249	1724	0.686	0.06820	0.02159	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1200	289	1884	0.712	0.06940	0.02252	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1252	331	2034	0.743	0.06883	0.02271	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1300	375	2184	0.772	0.06855	0.02299	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1302	375	2227	0.773	0.06968	0.02288	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1350	415	2377	0.801	0.06918	0.02271	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1352	422	2355	0.803	0.06834	0.02300	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1398	470	2527	0.830	0.06859	0.02316	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1402	477	2548	0.832	0.06876	0.02331	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1450	533	2719	0.861	0.06860	0.02354	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1499	600	2891	0.890	0.06825	0.02399	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
263	328	Relocated	2.00	1554	684	3105	0.923	0.06820	0.02454	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1005	224	1683	0.596	0.08839	0.02972	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1049	254	1854	0.622	0.08937	0.02963	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1098	284	2036	0.651	0.08958	0.02889	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1150	334	2251	0.682	0.09029	0.02957	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1201	373	2422	0.712	0.08907	0.02900	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1251	423	2637	0.742	0.08938	0.02910	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1300	481	2851	0.771	0.08948	0.02948	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1349	542	3033	0.800	0.08841	0.02973	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1400	608	3280	0.830	0.08877	0.02984	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1449	675	3516	0.860	0.08883	0.02988	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1498	753	3751	0.889	0.08867	0.03017	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
264	329	Relocated	4.00	1551	848	4030	0.920	0.08886	0.03061	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
265	330	Relocated	6.00	1000	283	1987	0.594	0.10540	0.03811	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
265	330	Relocated	6.00	1055	337	2201	0.627	0.10489	0.03865	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
265	330	Relocated	6.00	1098	373	2393	0.652	0.10529	0.03795	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
265	330	Relocated	6.00	1147	420	2607	0.682	0.10511	0.03748	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
265	330	Relocated	6.00	1198	463	2799	0.712	0.10345	0.03626	2.8528	0.7322	6.0454		21.09	6.0454	0.7322	815	1,145
265	330	Relocated	6.00	1200	464	2831	0.713	0.10428	0.03616	2.8840	0.7432	6.1013		21.33	6.1013	0.7432	817	1,146
265	330	Relocated	6.00	1249	532	3045	0.742	0.10354	0.03677	2.8159	0.7231	5.7237		22.94	5.7237	0.7231	850	1,146
265	330	Relocated	6.00	1250	523	3034	0.743	0.10300	0.03606	2.8563	0.7315	5.8011		22.86	5.8011	0.7315	851	1,145
265	330	Relocated	6.00	1299	617	3333	0.772	0.10477	0.03791	2.7640	0.7140	5.4019		25.11	5.4019	0.7140	884	1,145
265	330	Relocated	6.00	1305	599	3248	0.775	0.10117	0.03630	2.7873	0.7075	5.4224		24.47	5.4224	0.7075	888	1,146
265	330	Relocated	6.00	1326	624	3419	0.788	0.10315	0.03604	2.8618	0.7335	5.4792		25.76	5.4792	0.7335	903	1,145
265	330	Relocated	6.00	1353	696	3654	0.804	0.10588	0.03784	2.7980	0.7265	5.2500		27.53	5.2500	0.7265	921	1,145
265	330	Relocated	6.00	1398	776	3964	0.831	0.10759	0.03825	2.8130	0.7363	5.1082		29.86	5.1082	0.7363	952	1,145
265	330	Relocated	6.00	1451	887	4252	0.862	0.10713	0.03910	2.7398	0.7156	4.7937		32.03	4.7937	0.7156	988	1,146
265	330	Relocated	6.00	1497	963	4444	0.889	0.10519	0.03866	2.7212	0.7043	4.6147		33.48	4.6147	0.7043	1,019	1,146
265	330	Relocated	6.00	1503	961	4476	0.893	0.10510	0.03812	2.7575	0.7134	4.6576		33.72	4.6576	0.7134	1,023	1,146
265	330	Relocated	6.00	1553	1074	4829	0.923	0.10621	0.03861	2.7505	0.7153	4.4963		36.38	4.4963	0.7153	1,057	1,145
266	331	Relocated	6.00	1003	283	2000	0.597	0.10546	0.03777	2.7921	0.7235	7.0671		15.07	7.0671	0.7235	683	1,144
266	331	Relocated	6.00	1047	321	2179	0.622	0.10544	0.03766	2.7995	0.7254	6.7882		16.42	6.7882	0.7254	713	1,146
266	331	Relocated	6.00	1105	375	2415	0.657	0.10491	0.03743	2.8031	0.7245	6.4400		18.19	6.4400	0.7245	752	1,145
266	331	Relocated	6.00	1148	416	2628	0.682	0.10577	0.03703	2.8567	0.7414	6.3173		19.80	6.3173	0.7414	781	1,146
266	331	Relocated	6.00	1206	486	2906	0.717	0.10598	0.03731	2.8405	0.7379	5.9794		21.89	5.9794	0.7379	821	1,145
266	331	Relocated	6.00	1250	543	3077	0.743	0.10446	0.03744	2.7901	0.7196	5.6667		23.18	5.6667	0.7196	851	1,145
266	331	Relocated	6.00	1298	611	3355	0.771	0.10563	0.03762	2.8074	0.7281	5.4910		25.28	5.4910	0.7281	884	1,146
266	331	Relocated	6.00	1347	682	3611	0.800	0.10557	0.03758	2.8093	0.7284	5.2947		27.21	5.2947	0.7284	917	1,146
266	331	Relocated	6.00	1408	787	3902	0.837	0.10440	0.03797	2.7498	0.7090	4.9581		29.40	4.9581	0.7090	958	1,145
266	331	Relocated	6.00	1450	863	4167	0.862	0.10513	0.03812	2.7578	0.7136	4.8285		31.39	4.8285	0.7136	987	1,145
266	331	Relocated	6.00	1500	953	4444	0.891	0.10477	0.03803	2.7552	0.7117	4.6632		33.48	4.6632	0.7117	1,021	1,146
266	331	Relocated	6.00	1553	1068	4765	0.923	0.10480	0.03840	2.7293	0.7051	4.4616		35.90	4.4616	0.7051	1,057	1,145
267	332	Relocated	8.00	997	361	2390	0.594	0.12754	0.04905	2.6000	0.7410	6.6205		18.01	6.6205	0.7410	679	1,142
267	332	Relocated	8.00	1050	418	2660	0.626	0.12798	0.04863	2.6320	0.7514	6.3636		20.04	6.3636	0.7514	715	1,142
267	332	Relocated	8.00	1101	480	2891	0.656	0.12651	0.04843	2.6120	0.7414	6.0229		21.78	6.0229	0.7414	749	1,142
267	332	Relocated	8.00	1103	479	2906	0.658	0.12670	0.04807	2.6359	0.7487	6.0668		21.89	6.0668	0.7487	751	1,141
267	332	Relocated	8.00	1150	544	3139	0.686	0.12590	0.04817	2.6138	0.7401	5.7702		23.65	5.7702	0.7401	783	1,141
267	332	Relocated	8.00	1200	620	3404	0.715	0.12539	0.04832	2.5952	0.7333	5.4903		25.65	5.4903	0.7333	817	1,142
267	332	Relocated	8.00	1251	701	3712	0.746	0.12582	0.04822	2.6094	0.7386	5.2953		27.97	5.2953	0.7386	852	1,141
267	332	Relocated	8.00	1300	791	4072	0.775	0.12781	0.04848	2.6361	0.7520	5.1479		30.68	5.1479	0.7520	885	1,142
267	332	Relocated	8.00	1350	886	4390	0.805	0.12777	0.04849	2.6348	0.7516	4.9549		33.07	4.9549	0.7516	919	1,142
267	332	Relocated	8.00	[illegible]	[illegible]	[illegible]	[illegible]	0.12860	0.04925	2.6111	0.7472	4.7248		35.95	4.7248	0.7472	955	1,142
267	332	Relocated	8.00	[illegible]	[illegible]	[illegible]	[illegible]	0.12986	0.05039	2.5772	0.7411	4.5185		38.67	4.5185	0.7411	986	1,142
267	332	Relocated	8.00	[illegible]	[illegible]	[illegible]	[illegible]	0.13130	0.05055	2.5975	0.7511	4.3845		42.18	4.3845	0.7511	1,024	1,141
267	332	Relocated	8.00	[illegible]	[illegible]	[illegible]	[illegible]	0.13286	0.05104	2.6030	0.7571	4.2688		45.22	4.2688	0.7571	1,054	1,142
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15171	0.05993	2.5316	0.7869	6.4270		21.55	6.4270	0.7869	681	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15088	0.06107	2.4706	0.7658	5.9621		23.72	5.9621	0.7658	716	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.14981	0.06091	2.4594	0.7596	5.6606		25.89	5.6606	0.7596	751	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15153	0.06083	2.4911	0.7738	5.4993		28.46	5.4993	0.7738	783	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15177	0.06118	2.4808	0.7712	5.2484		31.04	5.2484	0.7712	817	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15131	0.06130	2.4682	0.7662	5.0169		33.53	5.0169	0.7662	850	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15231	0.06187	2.4618	0.7667	4.8113		36.50	4.8113	0.7667	884	1,145
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15405	0.06201	2.4842	0.7781	4.6717		39.88	4.6717	0.7781	919	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15674	0.06393	2.4517	0.7746	4.4650		43.26	4.4650	0.7746	949	1,142
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15564	0.06330	2.4588	0.7741	4.3050		46.48	4.3050	0.7741	987	1,145
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15579	0.06419	2.4270	0.7644	4.1048		49.85	4.1048	0.7644	1,022	1,144
268	333	Relocated	10.00	[illegible]	[illegible]	[illegible]	[illegible]	0.15889	0.06545	2.4275	0.7722	3.9708		54.36	3.9708	0.7722	1,056	1,145
269	335	Relocated	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17803	0.07774	2.2902	0.7711	5.8083		25.34	5.8083	0.7711	681	1,137
269	335	Relocated	12.00	[illegible]	[illegible]	[illegible]	[illegible]	0.17778	0.07827	2.2714	0.7642	5.5022		27.73	5.5022	0.7642	713	1,138
269	335	Relocated	12.00	1100	773	4082	0.658	0.17895	0.07821	2.2881	0.7724	5.2807		30.75	5.2807	0.7724	749	1,138
269	335	Relocated	12.00	1154	912	4506	0.690	0.17948	0.07992	2.2459	0.7593	4.9408		33.95	4.9408	0.7593	786	1,138
269	335	Relocated	12.00	1198	1008	4886	0.717	0.18058	0.07895	2.2874	0.7757	4.8472		36.81	4.8472	0.7757	815	1,137
269	335	Relocated	12.00	1254	1145	5331	0.750	0.17983	0.07819	2.2998	0.7782	4.6559		40.16	4.6559	0.7782	854	1,138
269	335	Relocated	12.00	1301	1314	5859	0.778	0.18361	0.08036	2.2850	0.7814	4.4589		44.14	4.4589	0.7814	886	1,138
269	335	Relocated	12.00	1350	1471	6346	0.807	0.18470	0.08051	2.2941	0.7868	4.3141		47.81	4.3141	0.7868	919	1,139
269	335	Relocated	12.00	1411	1736	7023	0.844	0.18711	0.08322	2.2485	0.7761	4.0455		52.91	4.0455	0.7761	960	1,138
269	335	Relocated	12.00	1453	1897	7403	0.869	0.18600	0.08328	2.2335	0.7687	3.9025		55.77	3.9025	0.7687	989	1,138
269	335	Relocated	12.00	1503	2156	8102	0.899	0.19025	0.08551	2.2248	0.7744	3.7579		61.04	3.7579	0.7744	1,023	1,138
269	335	Relocated	12.00	1550	2360	8757	0.927	0.19334	0.08534	2.2655	0.7949	3.7106		65.97	3.7106	0.7949	1,055	1,138
270	336	Relocated	14.00	1000	710	3800	0.597	0.20157	0.09561	2.1082	0.7553	5.3521		28.63	5.3521	0.7553	681	1,140
270	336	Relocated	14.00	1050	821	4140	0.627	0.19919	0.09551	2.0856	0.7428	5.0426		31.19	5.0426	0.7428	715	1,140
270	336	Relocated	14.00	1098	965	4650	0.656	0.20459	0.09817	2.0841	0.7522	4.8187		35.03	4.8187	0.7522	747	1,139
270	336	Relocated	14.00	1150	1093	5053	0.687	0.20267	0.09678	2.0942	0.7523	4.6231		38.07	4.6231	0.7523	783	1,139
270	336	Relocated	14.00	1198	1220	5478	0.715	0.20246	0.09555	2.1189	0.7608	4.4902		41.27	4.4902	0.7608	815	1,140
270	336	Relocated	14.00	1250	1409	6008	0.746	0.20396	0.09715	2.0995	0.7566	4.2640		45.26	4.2640	0.7566	851	1,141
270	336	Relocated	14.00	1310	1646	6688	0.782	0.20672	0.09860	2.0966	0.7607	4.0632		50.39	4.0632	0.7607	892	1,140
270	336	Relocated	14.00	1351	1821	7219	0.807	0.20980	0.09945	2.1096	0.7711	3.9643		54.39	3.9643	0.7711	920	1,140
270	336	Relocated	14.00	1398	2014	7813	0.835	0.21205	0.09926	2.1362	0.7850	3.8793		58.86	3.8793	0.7850	952	1,140
270	336	Relocated	14.00	1452	2291	8514	0.867	0.21421	0.10078	2.1255	0.7850	3.7163		64.14	3.7163	0.7850	988	1,140
270	336	Relocated	14.00	1503	2614	9278	0.898	0.21786	0.10368	2.1013	0.7827	3.5493		69.90	3.5493	0.7827	1,023	1,139
270	336	Relocated	14.00	1541	2904	9894	0.924	0.22101	0.10687	2.0681	0.7758	3.4070		74.54	3.4070	0.7758	1,049	1,135
271	337	Relocated	16.00	999	846	4161	0.597	0.22116	0.11427	1.9354	0.7263	4.9184		31.35	4.9184	0.7263	680	1,139
271	337	Relocated	16.00	1054	1012	4713	0.629	0.22504	0.11639	1.9335	0.7319	4.6571		35.51	4.6571	0.7319	717	1,141
271	337	Relocated	16.00	1099	1152	5159	0.656	0.22657	0.11687	1.9386	0.7364	4.4783		38.87	4.4783	0.7364	748	1,140
271	337	Relocated	16.00	1151	1317	5648	0.687	0.22614	0.11631	1.9443	0.7378	4.2885		42.55	4.2885	0.7378	783	1,140
271	337	Relocated	16.00	1203	1527	6242	0.718	0.22879	0.11811	1.9370	0.7394	4.0878		47.03	4.0878	0.7394	819	1,140
271	337	Relocated	16.00	1249	1710	6773	0.746	0.23030	0.11818	1.9486	0.7462	3.9608		51.03	3.9608	0.7462	850	1,140
271	337	Relocated	16.00	1299	1957	7431	0.776	0.23360	0.12023	1.9429	0.7494	3.7971		55.98	3.7971	0.7494	884	1,139
271	337	Relocated	16.00	1351	2242	8153	0.807	0.23694	0.12244	1.9352	0.7517	3.6365		61.42	3.6365	0.7517	920	1,140
271	337	Relocated	16.00	1404	2568	8916	0.838	0.23992	0.12495	1.9201	0.7505	3.4720		67.17	3.4720	0.7505	956	1,140
271	337	Relocated	16.00	1452	2925	9682	0.867	0.24360	0.12867	1.8932	0.7456	3.3101		72.94	3.3101	0.7456	988	1,140
271	337	Relocated	16.00	1500	3276	10403	0.896	0.24525	0.13071	1.8763	0.7415	3.1755		78.38	3.1755	0.7415	1,021	1,140
271	337	Relocated	16.00	1552	3677	11486	0.927	0.25294	0.13246	1.9096	0.7664	3.1237		86.54	3.1237	0.7664	1,056	1,140
272	338	Relocated	18.00	1005	1055	4712	0.599	0.24746	0.13996	1.7681	0.7019	4.4664		35.50	4.4664	0.7019	684	1,142
272	338	Relocated	18.00	1050	1217	5224	0.625	0.25134	0.14157	1.7754	0.7103	4.2925		39.36	4.2925	0.7103	715	1,144
272	338	Relocated	18.00	1101	1401	5736	0.656	0.25100	0.14136	1.7756	0.7099	4.0942		43.21	4.0942	0.7099	749	1,142
272	338	Relocated	18.00	1152	1614	6311	0.686	0.25225	0.14217	1.7743	0.7111	3.9102		47.55	3.9102	0.7111	784	1,143
272	338	Relocated	18.00	1200	1817	6866	0.715	0.25292	0.14160	1.7861	0.7168	3.7788		51.73	3.7788	0.7168	817	1,142
272	338	Relocated	18.00	1202	1830	6855	0.716	0.25167	0.14190	1.7736	0.7100	3.7459		51.65	3.7459	0.7100	818	1,143
272	338	Relocated	18.00	1247	2049	7441	0.743	0.25383	0.14230	1.7838	0.7172	3.6315		56.06	3.6315	0.7172	849	1,142
272	338	Relocated	18.00	1254	2096	7527	0.747	0.25390	0.14314	1.7738	0.7133	3.5911		56.71	3.5911	0.7133	854	1,143
272	338	Relocated	18.00	1297	2415	8337	0.773	0.26289	0.14906	1.7637	0.7216	3.4522		62.81	3.4522	0.7216	883	1,142
272	338	Relocated	18.00	1350	2743	9041	0.804	0.26314	0.15013	1.7527	0.7175	3.2960		68.11	3.2960	0.7175	919	1,143
272	338	Relocated	18.00	1397	3160	10032	0.833	0.27267	0.15608	1.7470	0.7280	3.1747		75.58	3.1747	0.7280	951	1,142
272	338	Relocated	18.00	1450	3639	10938	0.864	0.27596	0.16074	1.7168	0.7197	3.0058		82.41	3.0058	0.7197	987	1,142
272	338	Relocated	18.00	1502	4160	11898	0.895	0.27975	0.16532	1.6921	0.7142	2.8601		89.64	2.8601	0.7142	1,022	1,142
273	339	Relocated	20.00	1000	1219	5064	0.595	0.26862	0.16416	1.6363	0.6768	4.1542		38.15	4.1542	0.6768	681	1,144
273	339	Relocated	20.00	1050	1425	5620	0.625	0.27039	0.16577	1.6312	0.6769	3.9439		42.34	3.9439	0.6769	715	1,144
273	339	Relocated	20.00	1099	1616	6090	0.654	0.26746	0.16395	1.6314	0.6733	3.7686		45.88	3.7686	0.6733	748	1,144
273	339	Relocated	20.00	1105	1665	6175	0.658	0.26826	0.16618	1.6143	0.6672	3.7087		46.52	3.7087	0.6672	752	1,143
273	339	Relocated	20.00	1151	1892	6859	0.685	0.27463	0.16709	1.6436	0.6874	3.6253		51.68	3.6253	0.6874	783	1,144
273	339	Relocated	20.00	1200	2173	7543	0.714	0.27786	0.16934	1.6408	0.6902	3.4712		56.83	3.4712	0.6902	817	1,144
273	339	Relocated	20.00	1248	2431	8077	0.743	0.27508	0.16842	1.6333	0.6836	3.3225	Repeat	60.85	3.3225	0.6836	849	1,143
273	339	Relocated	20.00	1249	2514	8291	0.743	0.28192	0.17375	1.6225	0.6875	3.2979	Repeat	62.46	3.2979	0.6875	850	1,144
273	339	Relocated	20.00	1297	2821	8974	0.772	0.28297	0.17412	1.6252	0.6899	3.1811		67.61	3.1811	0.6899	883	1,144
273	339	Relocated	20.00	1316	2971	9167	0.783	0.28077	0.17554	1.5994	0.6763	3.0855		69.06	3.0855	0.6763	896	1,144
273	339	Relocated	20.00	1352	3347	10000	0.805	0.29019	0.18238	1.5911	0.6840	2.9878		75.34	2.9878	0.6840	920	1,143
273	339	Relocated	20.00	1403	3816	10855	0.835	0.29252	0.18608	1.5720	0.6785	2.8446		81.78	2.8446	0.6785	955	1,144
273	339	Relocated	20.00	1445	4270	11603	0.860	0.29476	0.19058	1.5467	0.6701	2.7173		87.42	2.7173	0.6701	984	1,144

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	THHP	Disc Loading	Repeat THP	Repeat FM
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]





AP. Data Set # 27

DATA SET Number 27

47 x 94

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
115.0	13.00	4	26.0	539.490	0.944

Power weighted solidity = 0.18742

Twist (0.25R -Tip in deg) = 35.5

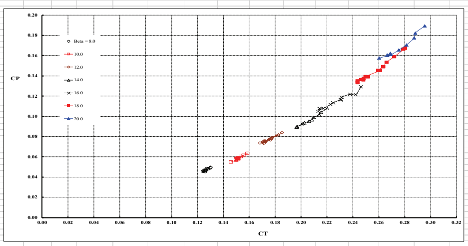
$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}\qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}\qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

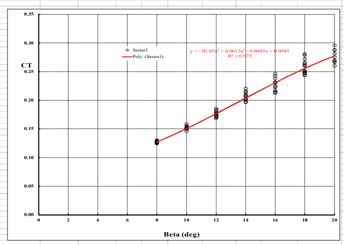
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS — Harris Computed →

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
274	343	Relocated	8.00	999	340	2355	0.594	0.12517	0.04592	2.7256	0.7695	6.9265	17.74	6.9265	0.7695	680	1,145
274	343	Relocated	8.00	1048	399	2612	0.623	0.12615	0.04668	2.7024	0.7659	6.5464	19.68	6.5464	0.7659	713	1,145
274	343	Relocated	8.00	1103	465	2891	0.655	0.12605	0.04666	2.7012	0.7653	6.2172	21.78	6.2172	0.7653	751	1,146
274	343	Relocated	8.00	1150	535	3158	0.683	0.12666	0.04737	2.6739	0.7594	5.9028	23.79	5.9028	0.7594	783	1,146
274	343	Relocated	8.00	1205	605	3415	0.716	0.12475	0.04656	2.6792	0.7552	5.6446	25.73	5.6446	0.7552	820	1,146
274	343	Relocated	8.00	1245	653	3683	0.740	0.12604	0.04557	2.7659	0.7836	5.6401	27.75	5.6401	0.7836	847	1,145
274	343	Relocated	8.00	1254	669	3683	0.745	0.12424	0.04569	2.7193	0.7649	5.5052	27.75	5.5052	0.7649	854	1,146
274	343	Relocated	8.00	1302	768	4047	0.774	0.12663	0.04686	2.7025	0.7674	5.2695	30.49	5.2695	0.7674	886	1,145
274	343	Relocated	8.00	1353	885	4411	0.804	0.12781	0.04812	2.6563	0.7578	4.9842	33.23	4.9842	0.7578	921	1,145
274	343	Relocated	8.00	1402	991	4711	0.833	0.12713	0.04843	2.6253	0.7470	4.7538	35.49	4.7538	0.7470	954	1,146
274	343	Relocated	8.00	1450	1089	5096	0.862	0.12857	0.04810	2.6727	0.7648	4.6795	38.39	4.6795	0.7648	987	1,145
274	343	Relocated	8.00	1503	1233	5525	0.893	0.12973	0.04890	2.6529	0.7625	4.4809	41.63	4.4809	0.7625	1,023	1,146
274	343	Relocated	8.00	1547	1362	5867	0.919	0.13004	0.04954	2.6249	0.7554	4.3076	44.20	4.3076	0.7554	1,053	1,146
275	347	Relocated	10.00	1001	409	2753	0.598	0.14574	0.05491	2.6540	0.8085	6.7311	20.74	6.7311	0.8085	681	1,139
275	347	Relocated	10.00	1051	489	3116	0.628	0.14963	0.05672	2.6380	0.8143	6.3722	23.48	6.3722	0.8143	715	1,139
275	347	Relocated	10.00	1100	565	3436	0.657	0.15063	0.05716	2.6350	0.8161	6.0814	25.89	6.0814	0.8161	749	1,140
275	347	Relocated	10.00	1150	655	3778	0.687	0.15153	0.05800	2.6128	0.8116	5.7679	28.46	5.7679	0.8116	783	1,139
275	347	Relocated	10.00	1198	745	4098	0.715	0.15146	0.05835	2.5957	0.8061	5.5007	30.87	5.5007	0.8061	815	1,140
275	347	Relocated	10.00	1227	792	4248	0.733	0.14967	0.05774	2.5923	0.8003	5.3636	32.00	5.3636	0.8003	835	1,139
275	347	Relocated	10.00	1274	894	4653	0.761	0.15207	0.05822	2.6119	0.8128	5.2047	35.06	5.2047	0.8128	867	1,140
275	347	Relocated	10.00	1305	969	4845	0.779	0.15091	0.05871	2.5702	0.7968	5.0000	36.50	5.0000	0.7968	888	1,140
275	347	Relocated	10.00	1350	1078	5187	0.806	0.15097	0.05900	2.5587	0.7933	4.8117	39.08	4.8117	0.7933	919	1,140
275	347	Relocated	10.00	1399	1202	5592	0.835	0.15156	0.05912	2.5637	0.7964	4.6522	42.13	4.6522	0.7964	952	1,140
275	347	Relocated	10.00	1450	1368	6083	0.866	0.15347	0.06043	2.5397	0.7940	4.4466	45.83	4.4466	0.7940	987	1,140
275	347	Relocated	10.00	1500	1537	6596	0.896	0.15550	0.06133	2.5356	0.7979	4.2915	49.69	4.2915	0.7979	1,021	1,140
275	347	Relocated	10.00	1549	1750	7172	0.925	0.15855	0.06341	2.5006	0.7946	4.0983	54.03	4.0983	0.7946	1,054	1,140
276	344	Relocated	12.00	1002	549	3185	0.599	0.16827	0.07349	2.2898	0.7495	5.8015	24.00	5.8015	0.7495	682	1,139
276	344	Relocated	12.00	1050	643	3588	0.628	0.17263	0.07480	2.3079	0.7652	5.5801	27.03	5.5801	0.7652	715	1,138
276	344	Relocated	12.00	1101	754	3928	0.658	0.17188	0.07608	2.2593	0.7475	5.2095	29.59	5.2095	0.7475	749	1,139
276	344	Relocated	12.00	1126	798	4119	0.673	0.17233	0.07527	2.2894	0.7584	5.1617	31.03	5.1617	0.7584	766	1,139
276	344	Relocated	12.00	1153	854	4278	0.689	0.17070	0.07503	2.2751	0.7501	5.0094	32.23	5.0094	0.7501	785	1,139
276	344	Relocated	12.00	1178	900	4459	0.704	0.17045	0.07414	2.2989	0.7574	4.9544	33.59	4.9544	0.7574	802	1,139
276	344	Relocated	12.00	1199	989	4756	0.717	0.17549	0.07727	2.2712	0.7592	4.8089	35.83	4.8089	0.7592	816	1,138
276	344	Relocated	12.00	1226	1005	4851	0.733	0.17119	0.07344	2.3310	0.7696	4.8269	36.55	4.8269	0.7696	835	1,138
276	344	Relocated	12.00	1247	1103	5159	0.745	0.17598	0.07660	2.2974	0.7691	4.6772	38.87	4.6772	0.7691	849	1,139
276	344	Relocated	12.00	1305	1275	5626	0.78	0.17523	0.07726	2.2682	0.7577	4.4125	42.39	4.4125	0.7577	888	1,139
276	344	Relocated	12.00	1350	1427	6072	0.807	0.17673	0.07810	2.2627	0.7591	4.2551	45.75	4.2551	0.7591	919	1,139
276	344	Relocated	12.00	1403	1613	6561	0.838	0.17680	0.07865	2.2479	0.7543	4.0676	49.43	4.0676	0.7543	955	1,140
276	344	Relocated	12.00	1422	1658	6752	0.85	0.17712	0.07765	2.2810	0.7661	4.0724	50.87	4.0724	0.7661	968	1,139
276	344	Relocated	12.00	1453	1852	7219	0.868	0.18138	0.08130	2.2309	0.7582	3.8979	54.39	3.8979	0.7582	989	1,139
276	344	Relocated	12.00	1476	1893	7304	0.882	0.17784	0.07928	2.2433	0.7549	3.8584	55.03	3.8584	0.7549	1,005	1,139
276	344	Relocated	12.00	1496	2027	7707	0.894	0.18267	0.08153	2.2405	0.7642	3.8022	58.06	3.8022	0.7642	1,018	1,139
276	344	Relocated	12.00	1549	2311	8386	0.926	0.18539	0.08373	2.2141	0.7607	3.6287	63.18	3.6287	0.7607	1,054	1,139
277	348	Relocated	14.00	1004	672	3733	0.602	0.19644	0.08942	2.1969	0.7770	5.5551	28.12	5.5551	0.7770	683	1,135
277	348	Relocated	14.00	1053	776	4115	0.631	0.19686	0.08950	2.1995	0.7788	5.3028	31.00	5.3028	0.7788	717	1,136
277	348	Relocated	14.00	1103	897	4517	0.661	0.19694	0.09002	2.1879	0.7748	5.0357	34.03	5.0357	0.7748	751	1,136
277	348	Relocated	14.00	1150	1036	4995	0.689	0.20035	0.09173	2.1840	0.7801	4.8214	37.63	4.8214	0.7801	783	1,136
277	348	Relocated	14.00	1202	1199	5493	0.72	0.20167	0.09297	2.1691	0.7773	4.5813	41.38	4.5813	0.7773	818	1,136
277	348	Relocated	14.00	1251	1358	5981	0.75	0.20272	0.09341	2.1703	0.7798	4.4043	45.06	4.4043	0.7798	852	1,135
277	348	Relocated	14.00	1301	1554	6575	0.779	0.20605	0.09503	2.1682	0.7854	4.2310	49.54	4.2310	0.7854	886	1,137
277	348	Relocated	14.00	1347	1754	7126	0.807	0.20833	0.09665	2.1556	0.7851	4.0627	53.69	4.0627	0.7851	917	1,136
277	348	Relocated	14.00	1401	2022	7762	0.839	0.20977	0.09902	2.1184	0.7743	3.8388	58.48	3.8388	0.7743	954	1,137
277	348	Relocated	14.00	1450	2297	8484	0.869	0.21404	0.10146	2.1096	0.7788	3.6935	63.92	3.6935	0.7788	987	1,136
277	348	Relocated	14.00	1502	2615	9162	0.9	0.21542	0.10392	2.0729	0.7678	3.5036	69.03	3.5036	0.7678	1,022	1,136
277	348	Relocated	14.00	1551	2981	9989	0.929	0.22026	0.10759	2.0472	0.7667	3.3509	75.26	3.3509	0.7667	1,056	1,136
278	345	Relocated	16.00	1002	784	4034	0.599	0.21313	0.10495	2.0308	0.7482	5.1454	30.39	5.1454	0.7482	682	1,139
278	345	Relocated	16.00	1049	922	4448	0.627	0.21441	0.10756	1.9934	0.7366	4.8243	33.51	4.8243	0.7366	714	1,139
278	345	Relocated	16.00	1098	1058	4873	0.657	0.21440	0.10763	1.9920	0.7361	4.6059	36.71	4.6059	0.7361	747	1,138
278	345	Relocated	16.00	1154	1232	5456	0.69	0.21732	0.10796	2.0131	0.7489	4.4286	41.11	4.4286	0.7489	786	1,138
278	345	Relocated	16.00	1203	1445	6072	0.72	0.22256	0.11177	1.9912	0.7496	4.2021	45.75	4.2021	0.7496	819	1,137
278	345	Relocated	16.00	1248	1638	6603	0.746	0.22488	0.11348	1.9817	0.7499	4.0311	49.75	4.0311	0.7499	849	1,139
278	345	Relocated	16.00	1301	1908	7367	0.778	0.23087	0.11668	1.9787	0.7587	3.8611	55.50	3.8611	0.7587	886	1,138
278	345	Relocated	16.00	1350	2120	7919	0.807	0.23048	0.11603	1.9863	0.7610	3.7354	59.66	3.7354	0.7610	919	1,139
278	345	Relocated	16.00	1404	2443	8599	0.84	0.23139	0.11887	1.9466	0.7472	3.5199	64.78	3.5199	0.7472	956	1,138
278	345	Relocated	16.00	1450	2756	9427	0.867	0.23784	0.12174	1.9537	0.7603	3.4205	71.02	3.4205	0.7603	987	1,138
278	345	Relocated	16.00	1500	3045	10276	0.897	0.24226	0.12150	1.9939	0.7832	3.3747	77.42	3.3747	0.7832	1,021	1,138
278	345	Relocated	16.00	1548	3554	11125	0.926	0.24626	0.12902	1.9087	0.7559	3.1303	83.82	3.1303	0.7559	1,054	1,138
279	349	Relocated	18.00	998	984	4570	0.597	0.24339	0.13331	1.8257	0.7188	4.6443	34.43	4.6443	0.7188	679	1,138
279	349	Relocated	18.00	1000	1002	4591	0.599	0.24353	0.13493	1.8048	0.7107	4.5818	34.59	4.5818	0.7107	681	1,136
279	349	Relocated	18.00	1050	1171	5122	0.629	0.24643	0.13622	1.8091	0.7167	4.3740	38.59	4.3740	0.7167	715	1,136
279	349	Relocated	18.00	1050	1196	5228	0.629	0.25153	0.13913	1.8079	0.7236	4.3712	39.39	4.3712	0.7236	715	1,136
279	349	Relocated	18.00	1099	1354	5654	0.658	0.24831	0.13737	1.8077	0.7188	4.1758	42.60	4.1758	0.7188	748	1,137
279	349	Relocated	18.00	1146	1521	6142	0.686	0.24807	0.13609	1.8229	0.7245	4.0381	46.27	4.0381	0.7245	780	1,137
279	349	Relocated	18.00	1200	1787	6780	0.718	0.24975	0.13926	1.7934	0.7152	3.7941	51.08	3.7941	0.7152	817	1,138
279	349	Relocated	18.00	1250	2108	7694	0.748	0.26120	0.14534	1.7971	0.7329	3.6499	57.97	3.6499	0.7329	851	1,137
279	349	Relocated	18.00	1305	2402	8332	0.781	0.25952	0.14554	1.7831	0.7249	3.4688	62.77	3.4688	0.7249	888	1,137
279	349	Relocated	18.00	1350	2723	9054	0.808	0.26352	0.14904	1.7681	0.7243	3.3250	68.21	3.3250	0.7243	919	1,137
279	349	Relocated	18.00	1401	3132	9841	0.839	0.26595	0.15338	1.7340	0.7136	3.1421	74.14	3.1421	0.7136	954	1,137
279	349	Relocated	18.00	1451	3607	10797	0.869	0.27202	0.15900	1.7108	0.7121	2.9933	81.34	2.9933	0.7121	988	1,137
279	349	Relocated	18.00	1499	4187	11881	0.897	0.28047	0.16740	1.6755	0.7081	2.8376	89.51	2.8376	0.7081	1,020	1,137
279	349	Relocated	18.00	1510	4254	11987	0.904	0.27887	0.16639	1.6760	0.7063	2.8178	90.31	2.8178	0.7063	1,028	1,137
280	346	Relocated	20.00	1002	1178	4925	0.598	0.26020	0.15769	1.6501	0.6717	4.1808	37.10	4.1808	0.6717	682	1,141
280	346	Relocated	20.00	1050	1375	5544	0.627	0.26674	0.15995	1.6676	0.6873	4.0320	41.77	4.0320	0.6873	715	1,140
280	346	Relocated	20.00	1100	1587	6077	0.657	0.26641	0.16057	1.6592	0.6834	3.8292	45.78	3.8292	0.6834	749	1,140
280	346	Relocated	20.00	1151	1837	6716	0.687	0.26891	0.16223	1.6575	0.6859	3.6560	50.60	3.6560	0.6859	783	1,140
280	346	Relocated	20.00	1198	2057	7292	0.715	0.26951	0.16111	1.6728	0.6930	3.5450	54.94	3.5450	0.6930	815	1,140
280	346	Relocated	20.00	1249	2397	8102	0.746	0.27549	0.16567	1.6629	0.6965	3.3801	61.04	3.3801	0.6965	850	1,140
280	346	Relocated	20.00	1299	2778	8955	0.776	0.28151	0.17067	1.6494	0.6984	3.2235	67.47	3.2235	0.6984	884	1,139
280	346	Relocated	20.00	1360	3316	10021	0.812	0.28739	0.17752	1.6189	0.6926	3.0220	75.50	3.0220	0.6926	926	1,140
280	346	Relocated	20.00	1401	3722	10661	0.837	0.28811	0.18227	1.5807	0.6771	2.8643	80.32	2.8643	0.6771	954	1,139
280	346	Relocated	20.00	1444	4234	11620	0.862	0.29560	0.18937	1.5610	0.6773	2.7444	87.54	2.7444	0.6773	983	1,140

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS





AQ. Data Set # 28

DATA SET Number 28

47 x 95

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
105.0	13.00	4	26.0	539.450	0.944

Power weighted solidity = 0.17112

Twist (0.25R - Tip in deg) = 20.5

$C_t = 0.1515 \frac{T/1,000}{(\rho/\rho_0)(RPM/1,000)^2(D_{ft}/10)^4}$ $C_p = 0.500 \frac{HP/1,000}{(\rho/\rho_0)(RPM/1,000)^3(D_{ft}/10)^5}$ $FM = 0.798 \frac{C_t^{1.5}}{C_p}$

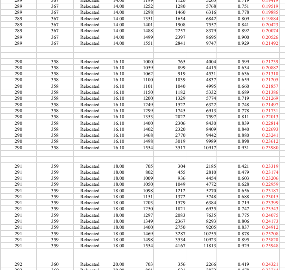
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

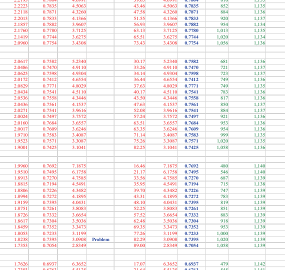
REDUCED TEST DATA POINTS (Harris Computed)

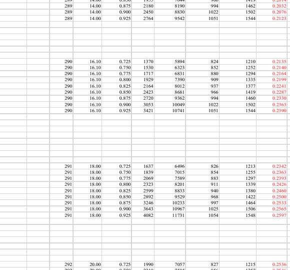
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
282	363	Relocated	0.00	1197	245	1414	0.718	0.05235	0.01924	2.7212	0.4968	5.7714		10.65	5.7714	0.4968	815	1,135
282	363	Relocated	0.00	1250	285	1540	0.750	0.05228	0.01965	2.6606	0.4855	5.4035		11.60	5.4035	0.4855	851	1,134
282	363	Relocated	0.00	1300	333	1688	0.780	0.05298	0.02041	2.5957	0.4768	5.0691		12.72	5.0691	0.4768	885	1,134
282	363	Relocated	0.00	1356	379	1793	0.814	0.05172	0.02047	2.5269	0.4586	4.7309		13.51	4.7309	0.4586	923	1,134
282	363	Relocated	0.00	1399	418	1878	0.840	0.05090	0.02056	2.4758	0.4457	4.4928		14.15	4.4928	0.4457	952	1,134
282	363	Relocated	0.00	1471	503	2110	0.883	0.05172	0.02128	2.4306	0.4411	4.1948		15.90	4.1948	0.4411	1,001	1,134
282	363	Relocated	0.00	1500	543	2173	0.900	0.05123	0.02167	2.3645	0.4271	4.0018		16.37	4.0018	0.4271	1,021	1,134
282	363	Relocated	0.00	1554	612	2310	0.933	0.05074	0.02196	2.3105	0.4153	3.7745		17.40	3.7745	0.4153	1,058	1,134
283	364	Relocated	2.00	699	50	722	0.418	0.07838	0.01971	3.9759	0.8883	14.4400		5.44	14.4400	0.8883	476	1,138
283	364	Relocated	2.00	807	83	934	0.483	0.07607	0.02127	3.5771	0.7873	11.2530		7.04	11.2530	0.7873	549	1,137
283	364	Relocated	2.00	1000	168	1380	0.598	0.07320	0.02262	3.2356	0.6986	8.2143		10.40	8.2143	0.6986	681	1,138
283	364	Relocated	2.00	1053	198	1497	0.630	0.07162	0.02284	3.1360	0.6697	7.5606		11.28	7.5606	0.6697	717	1,138
283	364	Relocated	2.00	1103	229	1624	0.660	0.07081	0.02298	3.0811	0.6543	7.0917		12.24	7.0917	0.6543	751	1,138
283	364	Relocated	2.00	1149	256	1699	0.687	0.06826	0.02273	3.0037	0.6263	6.6367		12.80	6.6367	0.6263	782	1,138
283	364	Relocated	2.00	1150	259	1688	0.688	0.06770	0.02293	2.9523	0.6130	6.5174		12.72	6.5174	0.6130	783	1,138
283	364	Relocated	2.00	1200	306	1911	0.718	0.07039	0.02385	2.9519	0.6250	6.2451		14.40	6.2451	0.6250	817	1,138
283	364	Relocated	2.00	1254	349	2081	0.750	0.07020	0.02383	2.9453	0.6227	5.9628		15.68	5.9628	0.6227	854	1,138
283	364	Relocated	2.00	1297	386	2208	0.776	0.06962	0.02382	2.9224	0.6153	5.7202		16.63	5.7202	0.6153	883	1,138
283	364	Relocated	2.00	1348	428	2335	0.806	0.06816	0.02353	2.8968	0.6035	5.4556		17.59	5.4556	0.6035	918	1,138
283	364	Relocated	2.00	1352	434	2346	0.809	0.06808	0.02365	2.8787	0.5994	5.4055		17.67	5.4055	0.5994	920	1,138
283	364	Relocated	2.00	1400	489	2527	0.837	0.06839	0.02400	2.8498	0.5947	5.1677		19.04	5.1677	0.5947	953	1,139
283	364	Relocated	2.00	1470	577	2792	0.879	0.06854	0.02446	2.8018	0.5853	4.8388		21.03	4.8388	0.5853	1,001	1,138
283	364	Relocated	2.00	1500	620	2909	0.897	0.06858	0.02474	2.7722	0.5793	4.6919		21.92	4.6919	0.5793	1,021	1,138
283	364	Relocated	2.00	1550	689	3057	0.927	0.06749	0.02492	2.7089	0.5616	4.4369		23.03	4.4369	0.5616	1,055	1,138
284	365	Relocated	4.00	711	69	913	0.425	0.09580	0.02585	3.7058	0.9153	13.2319		6.88	13.2319	0.9153	484	1,139
284	365	Relocated	4.00	809	103	1115	0.484	0.09037	0.02620	3.4496	0.8275	10.8252		8.40	10.8252	0.8275	551	1,138
284	365	Relocated	4.00	1010	203	1677	0.604	0.08720	0.02653	3.2866	0.7745	8.2611		12.63	8.2611	0.7745	687	1,138
284	365	Relocated	4.00	1049	235	1805	0.627	0.08701	0.02742	3.1737	0.7471	7.6809		13.60	7.6809	0.7471	714	1,139
284	365	Relocated	4.00	1102	274	1985	0.659	0.08670	0.02757	3.1447	0.7389	7.2445		14.95	7.2445	0.7389	750	1,138
284	365	Relocated	4.00	1146	311	2144	0.685	0.08660	0.02783	3.1120	0.7308	6.8939		16.15	6.8939	0.7308	780	1,139
284	365	Relocated	4.00	1197	348	2272	0.716	0.08411	0.02732	3.0783	0.7124	6.5287		17.12	6.5287	0.7124	815	1,138
284	365	Relocated	4.00	1254	415	2527	0.750	0.08524	0.02834	3.0077	0.7008	6.0892		19.04	6.0892	0.7008	854	1,138
284	365	Relocated	4.00	1302	467	2696	0.779	0.08436	0.02849	2.9607	0.6862	5.7730		20.31	5.7730	0.6862	886	1,138
284	365	Relocated	4.00	1351	516	2887	0.808	0.08390	0.02818	2.9774	0.6882	5.5950		21.75	5.5950	0.6882	920	1,138
284	365	Relocated	4.00	1404	587	3100	0.840	0.08342	0.02856	2.9206	0.6732	5.2811		23.36	5.2811	0.6732	956	1,138
284	365	Relocated	4.00	1471	679	3418	0.880	0.08379	0.02873	2.9168	0.6737	5.0339		25.75	5.0339	0.6737	1,001	1,138
284	365	Relocated	4.00	1503	736	3567	0.899	0.08376	0.02919	2.8693	0.6627	4.8465		26.87	4.8465	0.6627	1,023	1,138
284	365	Relocated	4.00	1550	821	3811	0.927	0.08414	0.02969	2.8341	0.6560	4.6419		28.71	4.6419	0.6560	1,055	1,138
285	353	Relocated	6.00	1000	265	2013	0.598	0.10678	0.03569	2.9922	0.7802	7.5962		15.17	7.5962	0.7802	681	1,138
285	353	Relocated	6.00	1048	311	2203	0.627	0.10640	0.03639	2.9242	0.7611	7.0836		16.60	7.0836	0.7611	713	1,138
285	353	Relocated	6.00	1104	372	2447	0.660	0.10650	0.03723	2.8605	0.7449	6.5780		18.44	6.5780	0.7449	751	1,139
285	353	Relocated	6.00	1149	422	2648	0.687	0.10639	0.03746	2.8400	0.7392	6.2749		19.95	6.2749	0.7392	782	1,138
285	353	Relocated	6.00	1201	480	2881	0.718	0.10595	0.03731	2.8394	0.7375	6.0021		21.71	6.0021	0.7375	817	1,139
285	353	Relocated	6.00	1251	539	3104	0.748	0.10521	0.03707	2.8378	0.7345	5.7588		23.39	5.7588	0.7345	852	1,138
285	353	Relocated	6.00	1299	612	3316	0.777	0.10424	0.03760	2.7724	0.7143	5.4183		24.98	5.4183	0.7143	884	1,138
285	353	Relocated	6.00	1354	702	3602	0.810	0.10422	0.03808	2.7366	0.7050	5.1311		27.14	5.1311	0.7050	922	1,138
285	353	Relocated	6.00	1401	777	3877	0.838	0.10478	0.03805	2.7536	0.7113	4.9897		29.21	4.9897	0.7113	954	1,138
285	353	Relocated	6.00	1452	862	4110	0.869	0.10341	0.03792	2.7270	0.6998	4.7680		30.96	4.7680	0.6998	988	1,137
285	353	Relocated	6.00	1502	965	4428	0.898	0.10411	0.03835	2.7148	0.6990	4.5886		33.36	4.5886	0.6990	1,022	1,139
285	353	Relocated	6.00	1553	1078	4767	0.929	0.10484	0.03876	2.7051	0.6990	4.4221		35.91	4.4221	0.6990	1,057	1,138
286	354	Relocated	8.00	1014	351	2460	0.606	0.12691	0.04534	2.7993	0.7958	7.0085		18.53	7.0085	0.7958	690	1,139
286	354	Relocated	8.00	1050	379	2566	0.627	0.12346	0.04409	2.8002	0.7852	6.7704		19.33	6.7704	0.7852	715	1,140
286	354	Relocated	8.00	1099	450	2863	0.656	0.12574	0.04565	2.7542	0.7793	6.3622		21.57	6.3622	0.7793	748	1,140
286	354	Relocated	8.00	1154	518	3118	0.689	0.12419	0.04539	2.7361	0.7695	6.0193		23.49	6.0193	0.7695	786	1,140
286	354	Relocated	8.00	1200	586	3383	0.717	0.12462	0.04567	2.7288	0.7687	5.7730		25.49	5.7730	0.7687	817	1,139
286	354	Relocated	8.00	1250	660	3648	0.746	0.12384	0.04551	2.7215	0.7643	5.5273		27.48	5.5273	0.7643	851	1,141
286	354	Relocated	8.00	1300	760	3966	0.776	0.12448	0.04658	2.6722	0.7524	5.2184		29.88	5.2184	0.7524	885	1,140
286	354	Relocated	8.00	1351	848	4263	0.807	0.12389	0.04631	2.6752	0.7514	5.0271		32.12	5.0271	0.7514	920	1,140
286	354	Relocated	8.00	1402	965	4655	0.837	0.12562	0.04716	2.6640	0.7535	4.8238		35.07	4.8238	0.7535	954	1,140
286	354	Relocated	8.00	1451	1074	5005	0.866	0.12610	0.04734	2.6635	0.7548	4.6601		37.71	4.6601	0.7548	988	1,140
286	354	Relocated	8.00	1501	1207	5408	0.896	0.12733	0.04806	2.6491	0.7543	4.4805		40.74	4.4805	0.7543	1,022	1,140
286	354	Relocated	8.00	1555	1344	5811	0.929	0.12748	0.04814	2.6483	0.7545	4.3237		43.78	4.3237	0.7545	1,058	1,139
287	355	Relocated	10.00	1002	403	2694	0.598	0.14233	0.05395	2.6384	0.7943	6.6849		20.30	6.6849	0.7943	682	1,141
287	355	Relocated	10.00	1052	469	2948	0.628	0.14130	0.05425	2.6047	0.7813	6.2857		22.21	6.2857	0.7813	716	1,140
287	355	Relocated	10.00	1098	538	3213	0.656	0.14137	0.05473	2.5830	0.7750	5.9721		24.21	5.9721	0.7750	747	1,139
287	355	Relocated	10.00	1149	618	3542	0.686	0.14231	0.05486	2.5940	0.7809	5.7314		26.69	5.7314	0.7809	782	1,140
287	355	Relocated	10.00	1201	713	3902	0.717	0.14350	0.05543	2.5890	0.7826	5.4727		29.40	5.4727	0.7826	817	1,140
287	355	Relocated	10.00	1258	827	4305	0.751	0.14429	0.05594	2.5795	0.7819	5.2056		32.43	5.2056	0.7819	856	1,140
287	355	Relocated	10.00	1299	927	4687	0.776	0.14734	0.05695	2.5871	0.7924	5.0561		35.31	5.0561	0.7924	884	1,139
287	355	Relocated	10.00	1349	1059	5069	0.806	0.14775	0.05809	2.5435	0.7802	4.7866		38.19	4.7866	0.7802	918	1,139
287	355	Relocated	10.00	1398	1171	5387	0.835	0.14621	0.05771	2.5333	0.7730	4.6003		40.59	4.6003	0.7730	952	1,140
288	356	Relocated	12.00	1199	903	4570	0.715	0.16862	0.07055	2.3902	0.7832	5.0609		34.43	5.0609	0.7832	816	1,141
288	356	Relocated	12.00	1253	1049	5101	0.747	0.17234	0.07181	2.4000	0.7951	4.8627		38.43	4.8627	0.7951	853	1,142
288	356	Relocated	12.00	1300	1161	5441	0.775	0.17078	0.07116	2.3998	0.7914	4.6865		40.99	4.6865	0.7914	885	1,142
288	356	Relocated	12.00	1353	1333	5930	0.807	0.17183	0.07248	2.3709	0.7843	4.4486		44.68	4.4486	0.7843	921	1,141
288	356	Relocated	12.00	1399	1474	6376	0.834	0.17280	0.07249	2.3837	0.7907	4.3256		48.04	4.3256	0.7907	952	1,142
288	356	Relocated	12.00	1451	1692	6993	0.865	0.17618	0.07458	2.3622	0.7912	4.1330		52.68	4.1330	0.7912	988	1,142
288	356	Relocated	12.00	1500	1901	7503	0.895	0.17689	0.07585	2.3320	0.7827	3.9469		56.53	3.9469	0.7827	1,021	1,141
288	356	Relocated	12.00	1550	2120	8087	0.925	0.17855	0.07666	2.3290	0.7853	3.8146		60.93	3.8146	0.7853	1,055	1,141
289	367	Relocated	14.00	1001	611	3450	0.600	0.18264	0.08203	2.2264	0.7593	5.6465		25.99	5.6465	0.7593	681	1,136
289	367	Relocated	14.00	1054	750	3989	0.631	0.19047	0.08626	2.2082	0.7690	5.3187		30.05	5.3187	0.7690	717	1,137
289	367	Relocated	14.00	1103	856	4340	0.660	0.18922	0.08590	2.2028	0.7647	5.0701		32.70	5.0701	0.7647	751	1,138
289	367	Relocated	14.00	1151	928	4737	0.690	0.18967	0.08195	2.3143	0.8043	5.1045		35.69	5.1045	0.8043	783	1,135
289	367	Relocated	14.00	1164	1004	4842	0.697	0.18956	0.08573	2.2112	0.7683	4.8227		36.48	4.8227	0.7683	792	1,137
289	367	Relocated	14.00	1199	1120	5263	0.719	0.19419	0.08750	2.2193	0.7804	4.6991		39.65	4.6991	0.7804	816	1,135
289	367	Relocated	14.00	1252	1280	5768	0.751	0.19519	0.08783	2.2223	0.7835	4.5063		43.46	4.5063	0.7835	852	1,135
289	367	Relocated	14.00	1298	1460	6316	0.778	0.19885	0.08990	2.2118	0.7871	4.3260		47.58	4.3260	0.7871	884	1,136
289	367	Relocated	14.00	1351	1654	6842	0.809	0.19884	0.09033	2.2013	0.7833	4.1366		51.55	4.1366	0.7833	920	1,137
289	367	Relocated	14.00	1401	1908	7557	0.841	0.20423	0.09344	2.1857	0.7882	3.9607		56.93	3.9607	0.7882	954	1,134
289	367	Relocated	14.00	1488	2257	8379	0.892	0.20074	0.09225	2.1760	0.7780	3.7125		63.13	3.7125	0.7780	1,013	1,135
289	367	Relocated	14.00	1499	2397	8695	0.900	0.20526	0.09583	2.1419	0.7744	3.6275		65.51	3.6275	0.7744	1,020	1,134
289	367	Relocated	14.00	1551	2841	9747	0.929	0.21492	0.10254	2.0960	0.7754	3.4308		73.43	3.4308	0.7754	1,056	1,136
290	358	Relocated	16.10	1000	765	4004	0.599	0.21239	0.10302	2.0617	0.7582	5.2340		30.17	5.2340	0.7582	681	1,136
290	358	Relocated	16.10	1059	899	4415	0.634	0.20882	0.10194	2.0486	0.7470	4.9110		33.26	4.9110	0.7470	721	1,137
290	358	Relocated	16.10	1062	919	4531	0.636	0.21310	0.10332	2.0625	0.7598	4.9304		34.14	4.9304	0.7598	723	1,137
290	358	Relocated	16.10	1100	1039	4837	0.659	0.21205	0.10512	2.0172	0.7412	4.6554		36.44	4.6554	0.7412	749	1,136
290	358	Relocated	16.10	1101	1040	4995	0.660	0.21857	0.10494	2.0829	0.7771	4.8029		37.63	4.8029	0.7771	749	1,135
290	358	Relocated	16.10	1150	1182	5332	0.689	0.21386	0.10466	2.0434	0.7541	4.5110		40.17	4.5110	0.7541	783	1,136
290	358	Relocated	16.10	1200	1329	5774	0.719	0.21269	0.10357	2.0536	0.7558	4.3446		43.50	4.3446	0.7558	817	1,136
290	358	Relocated	16.10	1249	1522	6322	0.748	0.21497	0.10519	2.0436	0.7561	4.1537		47.63	4.1537	0.7561	850	1,137
290	358	Relocated	16.10	1299	1745	6913	0.778	0.21731	0.10721	2.0271	0.7541	3.9616		52.08	3.9616	0.7541	884	1,137
290	358	Relocated	16.10	1353	2022	7597	0.811	0.22013	0.10994	2.0024	0.7497	3.7572		57.24	3.7572	0.7497	921	1,136
290	358	Relocated	16.10	1400	2306	8430	0.839	0.22814	0.11317	2.0160	0.7684	3.6557		63.51	3.6557	0.7684	953	1,136
290	358	Relocated	16.10	1402	2320	8409	0.840	0.22693	0.11337	2.0017	0.7609	3.6246		63.35	3.6246	0.7609	954	1,136
290	358	Relocated	16.10	1468	2770	9442	0.880	0.23241	0.11791	1.9710	0.7583	3.4087		71.14	3.4087	0.7583	999	1,135
290	358	Relocated	16.10	1498	3019	9989	0.898	0.23612	0.12094	1.9523	0.7571	3.3087		75.26	3.3087	0.7571	1,020	1,135
290	358	Relocated	16.10	1554	3517	10917	0.931	0.23980	0.12620	1.9001	0.7425	3.1041		82.25	3.1041	0.7425	1,058	1,136
291	359	Relocated	18.00	705	304	2185	0.421	0.23319	0.11683	1.9960	0.7692	7.1875		16.46	7.1875	0.7692	480	1,140
291	359	Relocated	18.00	802	455	2810	0.479	0.23174	0.11878	1.9510	0.7495	6.1758		21.17	6.1758	0.7495	546	1,140
291	359	Relocated	18.00	1009	936	4454	0.603	0.23206	0.12270	1.8913	0.7270	4.7585		33.56	4.7585	0.7270	687	1,139
291	359	Relocated	18.00	1050	1049	4772	0.628	0.22959	0.12203	1.8815	0.7194	4.5491		35.95	4.5491	0.7194	715	1,138
291	359	Relocated	18.00	1098	1212	5270	0.656	0.23187	0.12330	1.8806	0.7226	4.3482		39.70	4.3482	0.7226	747	1,139
291	359	Relocated	18.00	1151	1372	5748	0.688	0.23015	0.12117	1.8994	0.7272	4.1895		43.31	4.1895	0.7272	783	1,139
291	359	Relocated	18.00	1203	1579	6384	0.719	0.23399	0.12213	1.9159	0.7395	4.0431		48.10	4.0431	0.7395	819	1,139
291	359	Relocated	18.00	1250	1821	6935	0.747	0.23543	0.12555	1.8751	0.7261	3.8083		52.25	3.8083	0.7261	851	1,139
291	359	Relocated	18.00	1297	2083	7635	0.775	0.24075	0.12856	1.8726	0.7332	3.6654		57.52	3.6654	0.7332	883	1,139
291	359	Relocated	18.00	1349	2367	8293	0.806	0.24173	0.12984	1.8617	0.7304	3.5036		62.48	3.5036	0.7304	918	1,139
291	359	Relocated	18.00	1400	2750	9205	0.837	0.24912	0.13496	1.8459	0.7352	3.3473		69.35	3.3473	0.7352	953	1,139
291	359	Relocated	18.00	1469	3287	10255	0.878	0.25208	0.13963	1.8053	0.7233	3.1199		77.26	3.1199	0.7233	1,000	1,139
291	359	Relocated	18.00	1498	3534	10923	0.895	0.25820	0.14157	1.8238	0.7395	3.0908	Problem	82.29	3.0908	0.7395	1,020	1,139
291	359	Relocated	18.00	1554	4167	11813	0.929	0.25948	0.14953	1.7353	0.7054	2.8349		89.00	2.8349	0.7054	1,058	1,139
292	360	Relocated	20.00	703	356	2266	0.419	0.24321	0.13799	1.7626	0.6937	6.3652		17.07	6.3652	0.6937	479	1,142
292	360	Relocated	20.00	801	521	2872	0.478	0.23744	0.13652	1.7393	0.6763	5.5125		21.64	5.5125	0.6763	545	1,141
292	360	Relocated	20.00	997	1073	4596	0.595	0.24526	0.14580	1.6821	0.6648	4.2833		34.63	4.2833	0.6648	679	1,141
292	360	Relocated	20.00	1053	1273	5191	0.628	0.24833	0.14682	1.6914	0.6726	4.0778		39.11	4.0778	0.6726	717	1,141
292	360	Relocated	20.00	1101	1469	5723	0.657	0.25043	0.14822	1.6896	0.6747	3.8958		43.12	3.8958	0.6747	749	1,141
292	360	Relocated	20.00	1101	1478	5745	0.657	0.25139	0.14913	1.6857	0.6745	3.8870		43.28	3.8870	0.6745	749	1,141
292	360	Relocated	20.00	1149	1653	6149	0.686	0.24706	0.14675	1.6836	0.6678	3.7199		46.33	3.7199	0.6678	782	1,140
292	360	Relocated	20.00	1173	1782	6596	0.700	0.25429	0.14868	1.7102	0.6882	3.7015		49.69	3.7015	0.6882	798	1,141
292	360	Relocated	20.00	1176	1768	6521	0.702	0.25011	0.14639	1.7085	0.6819	3.6883		49.13	3.6883	0.6819	800	1,140
292	360	Relocated	20.00	1197	1877	6745	0.714	0.24971	0.14738	1.6943	0.6756	3.5935		50.82	3.5935	0.6756	815	1,141
292	360	Relocated	20.00	1204	1937	6957	0.718	0.25457	0.14945	1.7034	0.6858	3.5916		52.41	3.5916	0.6858	820	1,141
292	360	Relocated	20.00	1206	1930	6915	0.720	0.25220	0.14817	1.7020	0.6821	3.5829		52.10	3.5829	0.6821	821	1,140
292	360	Relocated	20.00	1221	2043	7213	0.729	0.25664	0.15114	1.6980	0.6865	3.5306		54.34	3.5306	0.6865	831	1,140
292	360	Relocated	20.00	1223	2007	7053	0.730	0.25013	0.14775	1.6929	0.6757	3.5142		53.14	3.5142	0.6757	832	1,140
292	360	Relocated	20.00	1248	2137	7394	0.745	0.25182	0.14805	1.7009	0.6811	3.4600		55.71	3.4600	0.6811	849	1,140
292	360	Relocated	20.00	1250	2176	7511	0.746	0.25499	0.15003	1.6996	0.6849	3.4517		56.59	3.4517	0.6849	851	1,141
292	360	Relocated	20.00	1276	2371	7915	0.761	0.25786	0.15369	1.6779	0.6799	3.3383		59.63	3.3383	0.6799	869	1,141
292	360	Relocated	20.00	1303	2527	8298	0.777	0.25925	0.15382	1.6854	0.6848	3.2837		62.52	3.2837	0.6848	887	1,141
292	360	Relocated	20.00	1325	2709	8702	0.791	0.26292	0.15682	1.6765	0.6860	3.2123		65.56	3.2123	0.6860	902	1,140
292	360	Relocated	20.00	1346	2838	8968	0.803	0.26257	0.15672	1.6754	0.6851	3.1600		67.56	3.1600	0.6851	916	1,141
292	360	Relocated	20.00	1399	3324	10021	0.835	0.27159	0.16348	1.6613	0.6909	3.0147		75.50	3.0147	0.6909	952	1,140
292	360	Relocated	20.00	1473	4142	11319	0.879	0.27672	0.17452	1.5856	0.6656	2.7327		85.28	2.7327	0.6656	1,003	1,141

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP
281	-2.00	0.725	243	1041	829	1218	0.0372	0.0181	2.055	0.316	4.284	7.84	4.284
281	-2.00	0.750	273	1115	858	1260	0.0373	0.0184	2.027	0.312	4.084	8.40	4.084
281	-2.00	0.775	304	1176	886	1302	0.0368	0.0185	1.984	0.304	3.868	8.86	3.868
281	-2.00	0.800	338	1242	915	1344	0.0365	0.0187	1.945	0.296	3.675	9.36	3.675
281	-2.00	0.825	373	1293	944	1386	0.0357	0.0189	1.893	0.285	3.466	9.74	3.466
281	-2.00	0.850	411	1343	972	1428	0.0349	0.0190	1.838	0.274	3.268	10.12	3.268
281	-2.00	0.875	459	1415	1001	1470	0.0347	0.0195	1.785	0.265	3.083	10.66	3.083
281	-2.00	0.900	513	1499	1029	1512	0.0348	0.0200	1.740	0.259	2.922	11.29	2.922
282	0.00	0.725	255	1446	822	1208	0.0526	0.0195	2.698	0.494	5.671	10.89	5.671
282	0.00	0.750	286	1542	851	1250	0.0523	0.0197	2.655	0.485	5.392	11.62	5.392
282	0.00	0.775	322	1651	879	1291	0.0525	0.0202	2.607	0.477	5.127	12.44	5.127
282	0.00	0.800	358	1740	907	1333	0.0519	0.0204	2.552	0.464	4.860	13.11	4.860
282	0.00	0.825	397	1840	936	1375	0.0516	0.0206	2.510	0.455	4.635	13.86	4.635
282	0.00	0.850	439	1944	964	1416	0.0514	0.0208	2.470	0.447	4.428	14.65	4.428
282	0.00	0.875	487	2051	992	1458	0.0512	0.0212	2.419	0.437	4.211	15.45	4.211
282	0.00	0.900	539	2164	1021	1500	0.0510	0.0215	2.372	0.428	4.015	16.30	4.015
282	0.00	0.925	596	2284	1049	1541	0.0510	0.0219	2.326	0.419	3.832	17.21	3.832
283	2.00	0.725	314	1945	825	1212	0.0702	0.0238	2.957	0.625	6.194	14.65	6.194
283	2.00	0.750	350	2086	853	1254	0.0704	0.0239	2.944	0.623	5.960	15.72	5.960
283	2.00	0.775	385	2209	882	1296	0.0698	0.0238	2.929	0.617	5.738	16.64	5.738
283	2.00	0.800	421	2317	910	1337	0.0688	0.0237	2.898	0.606	5.504	17.46	5.504
283	2.00	0.825	463	2444	939	1379	0.0682	0.0238	2.867	0.597	5.279	18.41	5.279
283	2.00	0.850	515	2616	967	1421	0.0687	0.0242	2.843	0.595	5.080	19.71	5.080
283	2.00	0.875	569	2768	996	1463	0.0686	0.0245	2.803	0.586	4.865	20.85	4.865
283	2.00	0.900	625	2914	1024	1505	0.0682	0.0247	2.764	0.576	4.662	21.95	4.662
283	2.00	0.925	684	3051	1053	1546	0.0677	0.0249	2.716	0.564	4.461	22.99	4.461
284	4.00	0.725	370	2355	825	1212	0.0850	0.0280	3.039	0.707	6.365	17.74	6.365
284	4.00	0.750	411	2508	853	1254	0.0846	0.0281	3.014	0.700	6.102	18.90	6.102
284	4.00	0.775	456	2668	882	1296	0.0843	0.0282	2.987	0.692	5.851	20.10	5.851
284	4.00	0.800	505	2837	910	1337	0.0842	0.0285	2.959	0.685	5.618	21.37	5.618
284	4.00	0.825	553	3000	939	1379	0.0837	0.0284	2.947	0.680	5.425	22.60	5.425
284	4.00	0.850	607	3181	967	1421	0.0836	0.0285	2.933	0.677	5.241	23.97	5.241
284	4.00	0.875	669	3373	996	1463	0.0836	0.0288	2.905	0.670	5.042	25.41	5.042
284	4.00	0.900	738	3577	1024	1505	0.0838	0.0292	2.873	0.664	4.847	26.95	4.847
284	4.00	0.925	814	3793	1053	1546	0.0842	0.0297	2.838	0.657	4.660	28.58	4.660
285	6.00	0.725	492	2925	825	1212	0.1056	0.0372	2.838	0.736	5.945	22.04	5.945
285	6.00	0.750	547	3109	853	1254	0.1049	0.0374	2.807	0.726	5.684	23.42	5.684
285	6.00	0.775	606	3310	882	1296	0.1045	0.0375	2.788	0.719	5.462	24.94	5.462
285	6.00	0.800	672	3522	910	1337	0.1045	0.0379	2.760	0.712	5.241	26.53	5.241
285	6.00	0.825	740	3736	939	1379	0.1042	0.0380	2.742	0.706	5.049	28.15	5.049
285	6.00	0.850	810	3960	967	1421	0.1040	0.0380	2.736	0.704	4.889	29.83	4.889
285	6.00	0.875	888	4200	996	1463	0.1041	0.0382	2.726	0.702	4.730	31.64	4.730
285	6.00	0.900	972	4452	1024	1505	0.1043	0.0384	2.715	0.700	4.580	33.54	4.580
285	6.00	0.925	1061	4715	1053	1546	0.1046	0.0387	2.706	0.699	4.444	35.52	4.444
286	8.00	0.725	607	3453	826	1214	0.1243	0.0457	2.720	0.765	5.689	26.01	5.689
286	8.00	0.750	674	3686	855	1256	0.1239	0.0458	2.706	0.760	5.469	27.77	5.469
286	8.00	0.775	749	3942	883	1298	0.1241	0.0461	2.691	0.756	5.263	29.70	5.263
286	8.00	0.800	830	4207	912	1340	0.1243	0.0465	2.675	0.753	5.069	31.70	5.069
286	8.00	0.825	918	4495	940	1382	0.1248	0.0468	2.666	0.752	4.897	33.87	4.897
286	8.00	0.850	1011	4803	969	1423	0.1258	0.0472	2.663	0.754	4.751	36.19	4.751
286	8.00	0.875	1111	5115	997	1465	0.1264	0.0476	2.657	0.754	4.604	38.54	4.604







AR. Data Set # 29

DATA SET Number 29

47 x 96

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
103	11.00	4	26.0	539.490	0.944

Power weighted solidity = 0.1696

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

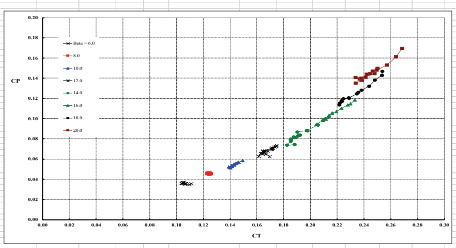
$C_T = 0.1515 \frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}$ $C_P = 0.500 \frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798 \frac{C_T^{3/2}}{C_P}$

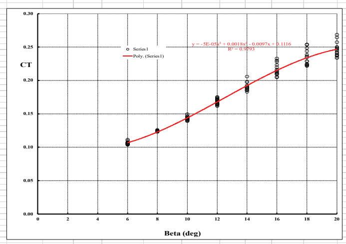
REDUCED TEST DATA POINTS

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps M and Vt
296	376	Relocated	12.00	1499	1772	7279	0.895	0.17183	0.07085	2.4255	0.8023	4.1078		54.84	4.1078	0.8023	1,020	1,140
296	376	Relocated	12.00	1500	1774	7258	0.896	0.17111	0.07078	2.4174	0.7980	4.0913		54.68	4.0913	0.7980	1,021	1,140
296	376	Relocated	12.00	1551	2009	7896	0.926	0.17411	0.07251	2.4012	0.7995	3.9303	Repeat	59.49	3.9303	0.7995	1,056	1,140
296	376	Relocated	12.00	1553	2024	7970	0.927	0.17529	0.07277	2.4088	0.8048	3.9377	Repeat	60.05	3.9377	0.8048	1,057	1,140
297	377	Relocated	14.00	702	191	1750	0.418	0.18837	0.07435	2.5335	0.8775	9.1623		13.18	9.1623	0.8775	478	1,143
297	377	Relocated	14.00	801	281	2209	0.478	0.18263	0.07363	2.4803	0.8459	7.8612		16.64	7.8612	0.8459	545	1,141
297	377	Relocated	14.00	1007	588	3543	0.600	0.18533	0.07754	2.3901	0.8211	6.0255		26.69	6.0255	0.8211	685	1,142
297	377	Relocated	14.00	1051	681	3863	0.627	0.18551	0.07899	2.3484	0.8071	5.6725		29.10	5.6725	0.8071	715	1,141
297	377	Relocated	14.00	1100	784	4226	0.656	0.18526	0.07932	2.3356	0.8022	5.3903		31.84	5.3903	0.8022	749	1,141
297	377	Relocated	14.00	1151	903	4632	0.686	0.18546	0.07975	2.3256	0.7992	5.1296		34.90	5.1296	0.7992	783	1,142
297	377	Relocated	14.00	1205	1058	5176	0.718	0.18909	0.08143	2.3221	0.8058	4.8922		39.00	4.8922	0.8058	820	1,142
297	377	Relocated	14.00	1248	1180	5507	0.744	0.18755	0.08175	2.2942	0.7929	4.6669		41.49	4.6669	0.7929	849	1,142
297	377	Relocated	14.00	1298	1344	6062	0.774	0.19086	0.08276	2.3061	0.8040	4.5104		45.67	4.5104	0.8040	884	1,141
297	377	Relocated	14.00	1349	1527	6596	0.804	0.19226	0.08376	2.2953	0.8031	4.3196		49.69	4.3196	0.8031	918	1,142
297	377	Relocated	14.00	1402	1775	7044	0.836	0.19009	0.08674	2.1916	0.7625	3.9685		53.07	3.9685	0.7625	954	1,142
297	377	Relocated	14.00	1472	2083	8079	0.878	0.19778	0.08795	2.2489	0.7981	3.8785		60.87	3.8785	0.7981	1,002	1,141
297	377	Relocated	14.00	1499	2206	8356	0.894	0.19726	0.08820	2.2366	0.7927	3.7879		62.95	3.7879	0.7927	1,020	1,141
297	377	Relocated	14.00	1549	2581	9306	0.923	0.20573	0.09352	2.1999	0.7963	3.6056		70.11	3.6056	0.7963	1,054	1,142
298	378	Relocated	16.00	701	242	1902	0.419	0.20531	0.09461	2.1702	0.7847	7.8595		14.33	7.8595	0.7847	477	1,139
298	378	Relocated	16.00	809	370	2521	0.483	0.20432	0.09410	2.1712	0.7832	6.8135		18.99	6.8135	0.7832	551	1,140
298	378	Relocated	16.00	1006	743	3996	0.601	0.20944	0.09828	2.1312	0.7783	5.3782		30.11	5.3782	0.7783	685	1,139
298	378	Relocated	16.00	1051	857	4359	0.628	0.20932	0.09941	2.1057	0.7688	5.0863		32.84	5.0863	0.7688	715	1,139
298	378	Relocated	16.00	1098	980	4808	0.656	0.21154	0.09969	2.1219	0.7788	4.9061		36.22	4.9061	0.7788	747	1,139
298	378	Relocated	16.00	1152	1139	5278	0.688	0.21096	0.10033	2.1027	0.7707	4.6339		39.76	4.6339	0.7707	784	1,140
298	378	Relocated	16.00	1199	1307	5791	0.717	0.21368	0.10211	2.0926	0.7719	4.4308		43.63	4.4308	0.7719	816	1,138
298	378	Relocated	16.00	1250	1499	6303	0.747	0.21398	0.10335	2.0703	0.7642	4.2048		47.49	4.2048	0.7642	851	1,139
298	378	Relocated	16.00	1299	1716	6880	0.776	0.21628	0.10542	2.0515	0.7613	4.0093		51.83	4.0093	0.7613	884	1,139
298	378	Relocated	16.00	1348	1944	7521	0.806	0.21955	0.10688	2.0543	0.7681	3.8688		56.66	3.8688	0.7681	918	1,138
298	378	Relocated	16.00	1400	2247	8248	0.837	0.22322	0.11027	2.0242	0.7632	3.6707		62.14	3.6707	0.7632	953	1,139
298	378	Relocated	16.00	1471	2682	9295	0.879	0.22786	0.11347	2.0081	0.7649	3.4657		70.03	3.4657	0.7649	1,001	1,139
298	378	Relocated	16.00	1499	2868	9744	0.896	0.23002	0.11466	2.0061	0.7678	3.3975		73.41	3.3975	0.7678	1,020	1,139
298	378	Relocated	16.00	1550	3279	10556	0.926	0.23306	0.11858	1.9655	0.7572	3.2193		79.53	3.2193	0.7572	1,055	1,139
299	379	Relocated	18.00	698	287	2034	0.417	0.22145	0.11365	1.9485	0.7317	7.0871		15.32	7.0871	0.7317	475	1,139
299	379	Relocated	18.00	806	449	2719	0.481	0.22201	0.11548	1.9226	0.7229	6.0557		20.48	6.0557	0.7229	549	1,141
299	379	Relocated	18.00	1006	889	4261	0.601	0.22333	0.11759	1.8993	0.7163	4.7930		32.10	4.7930	0.7163	685	1,139
299	379	Relocated	18.00	1050	1008	4647	0.627	0.22358	0.11726	1.9067	0.7195	4.6101		35.01	4.6101	0.7195	715	1,140
299	379	Relocated	18.00	1099	1180	5118	0.656	0.22477	0.11971	1.8776	0.7104	4.3373		38.56	4.3373	0.7104	748	1,140
299	379	Relocated	18.00	1149	1354	5696	0.686	0.22886	0.12020	1.9040	0.7268	4.2068		42.91	4.2068	0.7268	782	1,140
299	379	Relocated	18.00	1200	1546	6210	0.717	0.22875	0.12048	1.8987	0.7247	4.0168		46.79	4.0168	0.7247	817	1,139
299	379	Relocated	18.00	1250	1808	6916	0.746	0.23479	0.12466	1.8834	0.7283	3.8252		52.10	3.8252	0.7283	851	1,141
299	379	Relocated	18.00	1306	2086	7580	0.780	0.23573	0.12611	1.8693	0.7243	3.6337		57.11	3.6337	0.7243	889	1,140
299	379	Relocated	18.00	1355	2367	8244	0.809	0.23818	0.12812	1.8589	0.7240	3.4829		62.11	3.4829	0.7240	922	1,140
299	379	Relocated	18.00	1400	2691	9015	0.836	0.24398	0.13206	1.8474	0.7282	3.3501		67.92	3.3501	0.7282	953	1,140
299	379	Relocated	18.00	1471	3264	10128	0.878	0.24828	0.13809	1.7979	0.7149	3.1029		76.30	3.1029	0.7149	1,001	1,140
299	379	Relocated	18.00	1497	3559	10707	0.894	0.25343	0.14286	1.7740	0.7127	3.0084		80.67	3.0084	0.7127	1,019	1,140
299	379	Relocated	18.00	1552	4075	11520	0.927	0.25369	0.14679	1.7282	0.6946	2.8270		86.79	2.8270	0.6946	1,056	1,140
300	380	Relocated	20.00	701	346	2167	0.418	0.23392	0.13526	1.7294	0.6675	6.2630		16.33	6.2630	0.6675	477	1,142
300	380	Relocated	20.00	800	524	2876	0.477	0.23837	0.13782	1.7296	0.6738	5.4885		21.67	5.4885	0.6738	545	1,142
300	380	Relocated	20.00	1004	1057	4442	0.599	0.23375	0.14065	1.6620	0.6412	4.2025		33.47	4.2025	0.6412	683	1,141
300	380	Relocated	20.00	1047	1187	4893	0.625	0.23677	0.13927	1.7000	0.6601	4.1222		36.86	4.1222	0.6601	713	1,140
300	380	Relocated	20.00	1099	1425	5644	0.656	0.24787	0.14457	1.7146	0.6812	3.9607		42.52	3.9607	0.6812	748	1,140
300	380	Relocated	20.00	1101	1428	5536	0.657	0.24225	0.14409	1.6813	0.6604	3.8768		41.71	3.8768	0.6604	749	1,141
300	380	Relocated	20.00	1150	1593	6009	0.686	0.24102	0.14105	1.7087	0.6694	3.7721		45.27	3.7721	0.6694	783	1,141
300	380	Relocated	20.00	1151	1585	5944	0.687	0.23799	0.13998	1.7002	0.6619	3.7502		44.78	3.7502	0.6619	783	1,140
300	380	Relocated	20.00	1201	1860	6652	0.717	0.24463	0.14459	1.6919	0.6678	3.5763		50.12	3.5763	0.6678	817	1,140
300	380	Relocated	20.00	1249	2127	7253	0.745	0.24662	0.14701	1.6776	0.6648	3.4100		54.64	3.4100	0.6648	850	1,141
300	380	Relocated	20.00	1298	2433	7940	0.774	0.24998	0.14982	1.6685	0.6657	3.2635		59.82	3.2635	0.6657	884	1,141
300	380	Relocated	20.00	1299	2413	7940	0.775	0.24960	0.14825	1.6837	0.6712	3.2905		59.82	3.2905	0.6712	884	1,141
300	380	Relocated	20.00	1349	2792	8820	0.805	0.25709	0.15316	1.6786	0.6792	3.1590		66.45	3.1590	0.6792	918	1,141
300	380	Relocated	20.00	1405	3321	9828	0.838	0.26409	0.16125	1.6378	0.6716	2.9593		74.04	2.9593	0.6716	956	1,141
300	380	Relocated	20.00	1473	4022	10987	0.879	0.26860	0.16947	1.5850	0.6555	2.7317		82.78	2.7317	0.6555	1,003	1,141

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
293	6.00	0.725	484	2956	830	1219	0.1055	0.0360	2.933	0.760	6.107	22.27	6.107	0.7602
293	6.00	0.750	535	3136	858	1261	0.1046	0.0359	2.912	0.751	5.862	23.63	5.862	0.7515
293	6.00	0.775	592	3338	887	1303	0.1043	0.0360	2.894	0.746	5.639	25.15	5.639	0.7458
293	6.00	0.800	652	3547	916	1345	0.1040	0.0361	2.882	0.742	5.440	26.72	5.440	0.7417
293	6.00	0.825	719	3782	944	1387	0.1043	0.0363	2.874	0.741	5.260	28.49	5.260	0.7406
293	6.00	0.850	795	4035	973	1429	0.1048	0.0367	2.857	0.738	5.075	30.40	5.075	0.7381
293	6.00	0.875	870	4278	1002	1471	0.1049	0.0368	2.849	0.736	4.917	32.23	4.917	0.7363
293	6.00	0.900	948	4523	1030	1513	0.1048	0.0369	2.843	0.735	4.771	34.08	4.771	0.7346
294	8.00	0.725	609	3415	825	1212	0.1233	0.0461	2.677	0.750	5.608	25.73	5.608	0.7502
294	8.00	0.750	672	3664	853	1254	0.1236	0.0459	2.693	0.756	5.452	27.60	5.452	0.7556
294	8.00	0.775	739	3927	882	1296	0.1240	0.0457	2.713	0.762	5.314	29.59	5.314	0.7624
294	8.00	0.800	806	4194	910	1337	0.1245	0.0454	2.740	0.771	5.203	31.60	5.203	0.7715
294	8.00	0.825	884	4467	939	1379	0.1246	0.0454	2.745	0.773	5.053	33.65	5.053	0.7732
294	8.00	0.850	969	4743	967	1421	0.1246	0.0455	2.740	0.772	4.895	35.73	4.895	0.7717
294	8.00	0.875	1058	5039	996	1463	0.1249	0.0455	2.745	0.774	4.763	37.96	4.763	0.7740
294	8.00	0.900	1151	5348	1024	1505	0.1252	0.0455	2.754	0.778	4.646	40.29	4.646	0.7779
294	8.00	0.925	1248	5670	1053	1546	0.1258	0.0455	2.767	0.783	4.543	42.72	4.543	0.7832
295	10.00	0.725	708	3919	825	1212	0.1415	0.0536	2.643	0.793	5.535	29.53	5.535	0.7933
295	10.00	0.750	792	4226	853	1254	0.1426	0.0541	2.636	0.794	5.336	31.84	5.336	0.7941
295	10.00	0.775	882	4536	882	1296	0.1433	0.0546	2.625	0.793	5.143	34.17	5.143	0.7930
295	10.00	0.800	976	4846	910	1337	0.1438	0.0550	2.615	0.791	4.965	36.51	4.965	0.7913
295	10.00	0.825	1079	5167	939	1379	0.1441	0.0554	2.601	0.788	4.789	38.93	4.789	0.7880
295	10.00	0.850	1189	5503	967	1421	0.1446	0.0558	2.591	0.786	4.628	41.46	4.628	0.7860
295	10.00	0.875	1315	5878	996	1463	0.1457	0.0566	2.576	0.785	4.470	44.28	4.470	0.7846
295	10.00	0.900	1452	6281	1024	1505	0.1471	0.0574	2.564	0.785	4.326	47.32	4.326	0.7848
295	10.00	0.925	1600	6712	1053	1546	0.1490	0.0583	2.555	0.787	4.195	50.57	4.195	0.7868
296	12.00	0.725	890	4589	826	1214	0.1652	0.0670	2.466	0.800	5.156	34.57	5.156	0.7996
296	12.00	0.750	989	4950	855	1256	0.1664	0.0672	2.476	0.806	5.005	37.29	5.005	0.8062
296	12.00	0.775	1096	5284	883	1298	0.1664	0.0675	2.465	0.802	4.821	39.81	4.821	0.8023
296	12.00	0.800	1219	5653	912	1340	0.1670	0.0682	2.448	0.798	4.637	42.59	4.637	0.7982
296	12.00	0.825	1349	6083	940	1382	0.1689	0.0688	2.455	0.805	4.509	45.83	4.509	0.8051
296	12.00	0.850	1507	6581	969	1423	0.1724	0.0704	2.448	0.811	4.367	49.58	4.367	0.8110
296	12.00	0.875	1658	6995	997	1465	0.1729	0.0710	2.435	0.808	4.219	52.70	4.219	0.8078
296	12.00	0.900	1800	7342	1026	1507	0.1715	0.0708	2.421	0.800	4.079	55.31	4.079	0.8001
296	12.00	0.925	2000	7887	1054	1549	0.1744	0.0725	2.406	0.802	3.944	59.42	3.944	0.8018
297	14.00	0.725	1085	5239	828	1216	0.1879	0.0813	2.313	0.800	4.829	39.47	4.829	0.8001
297	14.00	0.750	1209	5665	856	1258	0.1899	0.0818	2.322	0.807	4.686	42.68	4.686	0.8074
297	14.00	0.775	1353	6030	885	1300	0.1893	0.0829	2.282	0.792	4.457	45.43	4.457	0.7923
297	14.00	0.800	1509	6465	913	1342	0.1904	0.0841	2.265	0.789	4.284	48.71	4.284	0.7886
297	14.00	0.825	1683	6938	942	1384	0.1921	0.0855	2.247	0.786	4.122	52.27	4.122	0.7861
297	14.00	0.850	1854	7384	971	1426	0.1926	0.0861	2.237	0.783	3.983	55.63	3.983	0.7835
297	14.00	0.875	2069	7958	999	1468	0.1959	0.0881	2.224	0.786	3.846	59.96	3.846	0.7855
297	14.00	0.900	2309	8605	1028	1510	0.2002	0.0903	2.217	0.791	3.727	64.83	3.727	0.7914
298	16.00	0.725	1357	5909	826	1213	0.2130	0.1024	2.081	0.766	4.354	44.52	4.354	0.7663
298	16.00	0.750	1518	6368	854	1255	0.2145	0.1034	2.074	0.766	4.195	47.98	4.195	0.7664
298	16.00	0.775	1703	6865	883	1297	0.2165	0.1051	2.059	0.765	4.031	51.72	4.031	0.7646
298	16.00	0.800	1905	7390	911	1339	0.2186	0.1069	2.046	0.763	3.879	55.68	3.879	0.7634
298	16.00	0.825	2129	7964	940	1380	0.2218	0.1091	2.033	0.764	3.741	60.00	3.741	0.7642
298	16.00	0.850	2366	8569	968	1422	0.2248	0.1108	2.029	0.768	3.622	64.56	3.622	0.7675
298	16.00	0.875	2637	9194	997	1464	0.2275	0.1132	2.011	0.765	3.487	69.27	3.487	0.7653
298	16.00	0.900	2932	9845	1025	1506	0.2303	0.1156	1.992	0.763	3.358	74.17	3.358	0.7627
298	16.00	0.925	3253	10522	1054	1548	0.2329	0.1181	1.972	0.760	3.235	79.27	3.235	0.7596
299	18.00	0.725	1624	6433	826	1214	0.2315	0.1222	1.894	0.727	3.961	48.47	3.961	0.7273
299	18.00	0.750	1819	6926	855	1256	0.2329	0.1236	1.884	0.725	3.808	52.18	3.808	0.7254
299	18.00	0.775	2042	7478	883	1298	0.2354	0.1257	1.872	0.725	3.662	56.34	3.662	0.7250
299	18.00	0.800	2285	8073	912	1340	0.2385	0.1279	1.865	0.727	3.533	60.82	3.533	0.7267
299	18.00	0.825	2551	8669	940	1382	0.2408	0.1301	1.850	0.724	3.398	65.31	3.398	0.7244
299	18.00	0.850	2876	9388	969	1423	0.2459	0.1344	1.830	0.724	3.264	70.73	3.264	0.7241
299	18.00	0.875	3231	10076	997	1465	0.2490	0.1384	1.800	0.717	3.119	75.91	3.119	0.7166
299	18.00	0.900	3624	10783	1026	1507	0.2519	0.1426	1.766	0.707	2.975	81.24	2.975	0.7073
299	18.00	0.925	4055	11506	1054	1549	0.2544	0.1469	1.731	0.697	2.837	86.69	2.837	0.6968
300	20.00	0.725	1936	6820	827	1215	0.2451	0.1454	1.686	0.666	3.523	51.38	3.523	0.6660
300	20.00	0.750	2170	7358	856	1257	0.2470	0.1471	1.679	0.666	3.391	55.43	3.391	0.6659
300	20.00	0.775	2426	7962	884	1299	0.2503	0.1490	1.679	0.670	3.282	59.99	3.282	0.6704
300	20.00	0.800	2737	8672	913	1341	0.2558	0.1528	1.674	0.675	3.168	65.33	3.168	0.6755
300	20.00	0.825	3095	9384	941	1383	0.2602	0.1576	1.652	0.672	3.032	70.70	3.032	0.6724
300	20.00	0.850	3500	10123	970	1425	0.2644	0.1629	1.623	0.666	2.892	76.27	2.892	0.6662
300	20.00	0.875	3953	10891	998	1467	0.2684	0.1686	1.592	0.658	2.755	82.05	2.755	0.6582





AS. Data Set # 30

DATA SET Number 30

47 x 97

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
155.0	13.00	4	26.0	539.490	0.944

Power weighted solidity = 0.10742

Tmax (0.25R - Tip in deg) = 35.5

$C_T = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^2(Dia/10)^4}$ $C_P = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_0)(RPM/1{,}000)^3(Dia/10)^5}$ $FM = 0.798 \frac{C_T^{3/2}}{C_P}$

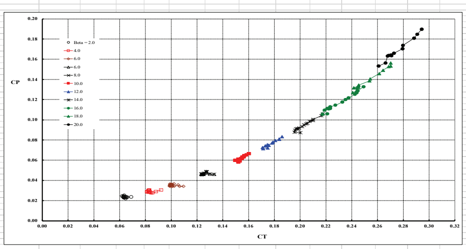
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

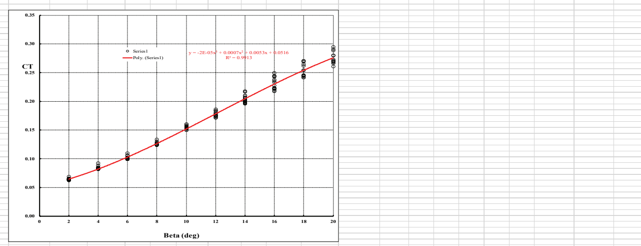
REDUCED TEST DATA POINTS (Harris Computed: CT through Repeat FM)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
301	394	Relocated	2.00	704	61	645	0.425	0.06903	0.02354	2.9322	0.6148	10.5738	4.86	10.5738	0.6148	479	1,128
301	394	Relocated	2.00	808	91	812	0.488	0.06597	0.02323	2.8400	0.5821	8.9231	6.12	8.9231	0.5821	550	1,127
301	394	Relocated	2.00	1003	165	1228	0.606	0.06475	0.02202	2.9404	0.5971	7.4424	9.25	7.4424	0.5971	683	1,127
301	394	Relocated	2.00	1049	197	1353	0.633	0.06522	0.02298	2.8379	0.5783	6.8680	10.19	6.8680	0.5783	714	1,128
301	394	Relocated	2.00	1097	232	1488	0.662	0.06559	0.02367	2.7715	0.5664	6.4138	11.21	6.4138	0.5664	747	1,128
301	394	Relocated	2.00	1147	259	1602	0.692	0.06459	0.02311	2.7946	0.5668	6.1853	12.07	6.1853	0.5668	781	1,128
301	394	Relocated	2.00	1200	295	1727	0.724	0.06362	0.02299	2.7672	0.5570	5.8542	13.01	5.8542	0.5570	817	1,128
301	394	Relocated	2.00	1249	330	1863	0.754	0.06335	0.02281	2.7775	0.5578	5.6455	14.04	5.6455	0.5578	850	1,128
301	394	Relocated	2.00	1300	375	2019	0.785	0.06337	0.02299	2.7570	0.5538	5.3840	15.21	5.3840	0.5538	885	1,127
301	394	Relocated	2.00	1353	437	2227	0.817	0.06453	0.02376	2.7160	0.5506	5.0961	16.78	5.0961	0.5506	921	1,127
301	394	Relocated	2.00	1403	481	2352	0.847	0.06338	0.02345	2.7023	0.5429	4.8898	17.72	4.8898	0.5429	955	1,127
301	394	Relocated	2.00	1449	552	2497	0.875	0.06308	0.02443	2.5819	0.5175	4.5236	18.81	4.5236	0.5175	986	1,127
301	394	Relocated	2.00	1470	572	2570	0.887	0.06309	0.02425	2.6016	0.5214	4.4930	19.36	4.4930	0.5214	1,001	1,128
301	394	Relocated	2.00	1498	607	2622	0.904	0.06198	0.02432	2.5488	0.5064	4.3196	19.75	4.3196	0.5064	1,020	1,128
301	394	Relocated	2.00	1501	596	2664	0.906	0.06272	0.02373	2.6427	0.5282	4.4698	20.07	4.4698	0.5282	1,022	1,128
301	394	Relocated	2.00	1548	699	2872	0.935	0.06357	0.02538	2.5053	0.5041	4.1087	21.64	4.1087	0.5041	1,054	1,127
302	395	Relocated	4.00	709	81	874	0.428	0.09223	0.03061	3.0134	0.7303	10.7901	6.58	10.7901	0.7303	483	1,128
302	395	Relocated	4.00	799	109	1061	0.482	0.08816	0.02878	3.0635	0.7259	9.7339	7.99	9.7339	0.7259	544	1,128
302	395	Relocated	4.00	997	204	1602	0.602	0.08549	0.02772	3.0840	0.7196	7.8529	12.07	7.8529	0.7196	679	1,127
302	395	Relocated	4.00	1053	248	1748	0.636	0.08362	0.02860	2.9235	0.6746	7.0484	13.17	7.0484	0.6746	717	1,127
302	395	Relocated	4.00	1102	277	1935	0.665	0.08452	0.02787	3.0323	0.7035	6.9856	14.58	6.9856	0.7035	750	1,128
302	395	Relocated	4.00	1152	325	2081	0.695	0.08318	0.02863	2.9055	0.6687	6.4031	15.68	6.4031	0.6687	784	1,128
302	395	Relocated	4.00	1199	366	2227	0.725	0.08217	0.02859	2.8737	0.6574	6.0847	16.78	6.0847	0.6574	816	1,126
302	395	Relocated	4.00	1246	408	2414	0.752	0.08248	0.02840	2.9039	0.6655	5.9167	18.19	5.9167	0.6655	848	1,128
302	395	Relocated	4.00	1301	468	2601	0.785	0.08151	0.02862	2.8481	0.6489	5.5577	19.60	5.5577	0.6489	886	1,128
302	395	Relocated	4.00	1352	528	2810	0.816	0.08154	0.02877	2.8342	0.6459	5.3220	21.17	5.3220	0.6459	920	1,128
302	395	Relocated	4.00	1404	615	3080	0.848	0.08288	0.02992	2.7697	0.6363	5.0081	23.20	5.0081	0.6363	956	1,127
302	395	Relocated	4.00	1455	682	3299	0.878	0.08266	0.02982	2.7723	0.6361	4.8372	24.85	4.8372	0.6361	990	1,128
302	395	Relocated	4.00	1469	711	3382	0.887	0.08313	0.03020	2.7524	0.6333	4.7567	25.48	4.7567	0.6333	1,000	1,127
302	395	Relocated	4.00	1498	749	3496	0.904	0.08264	0.03001	2.7541	0.6318	4.6676	26.34	4.6676	0.6318	1,020	1,128
302	395	Relocated	4.00	1553	849	3777	0.938	0.08307	0.03052	2.7214	0.6259	4.4488	28.46	4.4488	0.6259	1,057	1,127
303	396	Relocated	6.00	697	86	1004	0.42	0.10962	0.03420	3.2052	0.8469	11.6744	7.56	11.6744	0.8469	474	1,130
303	396	Relocated	6.00	797	128	1276	0.48	0.10655	0.03405	3.1296	0.8152	9.9688	9.61	9.9688	0.8152	543	1,130
303	396	Relocated	6.00	801	135	1276	0.482	0.10549	0.03537	2.9822	0.7729	9.4519	9.61	9.4519	0.7729	545	1,131
303	396	Relocated	6.00	998	253	1925	0.601	0.10252	0.03428	2.9911	0.7642	7.6087	14.50	7.6087	0.7642	679	1,130
303	396	Relocated	6.00	1052	295	2113	0.633	0.10128	0.03412	2.9681	0.7538	7.1627	15.92	7.1627	0.7538	716	1,131
303	396	Relocated	6.00	1099	339	2291	0.662	0.10062	0.03439	2.9256	0.7405	6.7581	17.26	6.7581	0.7405	748	1,130
303	396	Relocated	6.00	1151	390	2469	0.693	0.09886	0.03444	2.8702	0.7202	6.3308	18.60	6.3308	0.7202	783	1,131
303	396	Relocated	6.00	1205	447	2720	0.726	0.09937	0.03440	2.8882	0.7265	6.0850	20.49	6.0850	0.7265	820	1,130
303	396	Relocated	6.00	1247	500	2908	0.751	0.09920	0.03472	2.8568	0.7180	5.8160	21.91	5.8160	0.7180	849	1,130
303	396	Relocated	6.00	1255	514	2939	0.756	0.09898	0.03502	2.8266	0.7097	5.7179	22.14	5.7179	0.7097	854	1,130
303	396	Relocated	6.00	1298	572	3180	0.782	0.10012	0.03522	2.8424	0.7177	5.5594	23.96	5.5594	0.7177	884	1,130
303	396	Relocated	6.00	1307	566	3222	0.787	0.10005	0.03414	2.9307	0.7397	5.6926	24.27	5.6926	0.7397	890	1,130
303	396	Relocated	6.00	1350	637	3431	0.813	0.09986	0.03487	2.8642	0.7223	5.3862	25.85	5.3862	0.7223	919	1,130
303	396	Relocated	6.00	1351	648	3452	0.814	0.10032	0.03539	2.8349	0.7165	5.3272	26.01	5.3272	0.7165	920	1,130
303	396	Relocated	6.00	1399	727	3703	0.842	0.10036	0.03575	2.8069	0.7096	5.0935	27.90	5.0935	0.7096	952	1,131
303	396	Relocated	6.00	1404	741	3703	0.845	0.09965	0.03606	2.7637	0.6962	4.9973	27.90	4.9973	0.6962	956	1,131
303	396	Relocated	6.00	1450	827	4059	0.873	0.10241	0.03653	2.8033	0.7159	4.9081	30.58	4.9081	0.7159	987	1,131
303	396	Relocated	6.00	1454	818	3996	0.876	0.10026	0.03584	2.7978	0.7070	4.8851	30.11	4.8851	0.7070	990	1,130
303	396	Relocated	6.00	1469	844	4079	0.885	0.10026	0.03585	2.7965	0.7066	4.8329	30.73	4.8329	0.7066	1,000	1,130
303	396	Relocated	6.00	1497	907	4247	0.901	0.10053	0.03641	2.7611	0.6986	4.6825	32.00	4.6825	0.6986	1,019	1,131
303	396	Relocated	6.00	1501	898	4226	0.904	0.09950	0.03576	2.7824	0.7004	4.7060	31.84	4.7060	0.7004	1,022	1,130
303	396	Relocated	6.00	1551	1007	4498	0.934	0.09918	0.03635	2.7289	0.6858	4.4667	33.89	4.4667	0.6858	1,056	1,130
304	397	Relocated	8.00	707	121	1258	0.425	0.13350	0.04611	2.8953	0.8442	10.3967	9.48	10.3967	0.8442	481	1,132
304	397	Relocated	8.00	811	183	1614	0.488	0.13017	0.04620	2.8175	0.8112	8.8197	12.16	8.8197	0.8112	552	1,131
304	397	Relocated	8.00	1002	342	2348	0.603	0.12405	0.04578	2.7097	0.7616	6.8655	17.69	6.8655	0.7616	682	1,131
304	397	Relocated	8.00	1051	396	2600	0.632	0.12486	0.04593	2.7181	0.7664	6.5657	19.59	6.5657	0.7664	715	1,132
304	397	Relocated	8.00	1099	454	2830	0.661	0.12429	0.04606	2.6984	0.7592	6.2335	21.32	6.2335	0.7592	748	1,132
304	397	Relocated	8.00	1150	519	3124	0.692	0.12530	0.04595	2.7266	0.7702	6.0193	23.54	6.0193	0.7702	783	1,131
304	397	Relocated	8.00	1200	589	3396	0.722	0.12510	0.04590	2.7253	0.7692	5.7657	25.59	5.7657	0.7692	817	1,131
304	397	Relocated	8.00	1253	674	3669	0.754	0.12396	0.04614	2.6867	0.7549	5.4436	27.64	5.4436	0.7549	853	1,131
304	397	Relocated	8.00	1298	745	3941	0.781	0.12408	0.04588	2.7046	0.7603	5.2899	29.69	5.2899	0.7603	884	1,131
304	397	Relocated	8.00	1353	851	4256	0.814	0.12332	0.04627	2.6654	0.7469	5.0012	32.06	5.0012	0.7469	921	1,131
304	397	Relocated	8.00	1401	964	4644	0.843	0.12550	0.04721	2.6585	0.7516	4.8174	34.99	4.8174	0.7516	954	1,131
304	397	Relocated	8.00	1454	1098	5084	0.875	0.12756	0.04810	2.6519	0.7558	4.6302	38.30	4.6302	0.7558	990	1,131
304	397	Relocated	8.00	1468	1138	5178	0.883	0.12745	0.04844	2.6311	0.7496	4.5501	39.01	4.5501	0.7496	999	1,132
304	397	Relocated	8.00	1502	1212	5430	0.904	0.12767	0.04817	2.6507	0.7558	4.4802	40.91	4.4802	0.7558	1,022	1,131
304	397	Relocated	8.00	1550	1349	5765	0.933	0.12728	0.04878	2.6092	0.7428	4.2735	43.43	4.2735	0.7428	1,055	1,131
305	383	Relocated	10.00	701	149	1412	0.419	0.15242	0.05825	2.6167	0.8152	9.4765	10.64	9.4765	0.8152	477	1,139
305	383	Relocated	10.00	801	226	1855	0.479	0.15336	0.05922	2.5897	0.8093	8.2080	13.98	8.2080	0.8093	545	1,138
305	383	Relocated	10.00	1001	444	2866	0.598	0.15172	0.05961	2.5451	0.7911	6.4550	21.59	6.4550	0.7911	681	1,139
305	383	Relocated	10.00	1052	517	3119	0.629	0.14949	0.05980	2.4999	0.7713	6.0329	23.50	6.0329	0.7713	716	1,138
305	383	Relocated	10.00	1100	602	3477	0.657	0.15243	0.06091	2.5026	0.7797	5.7757	26.20	5.7757	0.7797	749	1,140
305	383	Relocated	10.00	1152	680	3751	0.688	0.14993	0.05990	2.5031	0.7734	5.5162	28.26	5.5162	0.7734	784	1,140
305	383	Relocated	10.00	1201	795	4215	0.718	0.15501	0.06180	2.5082	0.7880	5.3019	31.76	5.3019	0.7880	817	1,139
305	383	Relocated	10.00	1251	897	4552	0.748	0.15429	0.06170	2.5007	0.7838	5.0747	34.29	5.0747	0.7838	852	1,138
305	383	Relocated	10.00	1301	1027	4953	0.778	0.15522	0.06280	2.4715	0.7770	4.8228	37.32	4.8228	0.7770	886	1,138
305	383	Relocated	10.00	1355	1166	5374	0.81	0.15526	0.06312	2.4599	0.7735	4.6089	40.49	4.6089	0.7735	922	1,139
305	383	Relocated	10.00	1401	1295	5785	0.837	0.15634	0.06342	2.4652	0.7778	4.4672	43.58	4.4672	0.7778	954	1,139
305	383	Relocated	10.00	1469	1516	6386	0.878	0.15697	0.06440	2.4375	0.7706	4.2124	48.11	4.2124	0.7706	1,000	1,139
305	383	Relocated	10.00	1502	1641	6744	0.898	0.15857	0.06522	2.4314	0.7726	4.1097	50.81	4.1097	0.7726	1,022	1,139
305	383	Relocated	10.00	1553	1845	7292	0.928	0.16038	0.06633	2.4177	0.7726	3.9523	54.94	3.9523	0.7726	1,057	1,139
306	384	Relocated	12.00	697	181	1602	0.417	0.17492	0.07198	2.4300	0.8110	8.8508	12.07	8.8508	0.8110	474	1,138
306	384	Relocated	12.00	799	271	2065	0.478	0.17158	0.07155	2.3982	0.7927	7.6199	15.56	7.6199	0.7927	544	1,138
306	384	Relocated	12.00	1002	541	3235	0.599	0.17091	0.07242	2.3601	0.7786	5.9797	24.37	5.9797	0.7786	682	1,139
306	384	Relocated	12.00	1051	639	3604	0.628	0.17307	0.07412	2.3349	0.7751	5.6401	27.15	5.6401	0.7751	715	1,139
306	384	Relocated	12.00	1097	737	3962	0.656	0.17464	0.07518	2.3229	0.7747	5.3758	29.85	5.3758	0.7747	747	1,138
306	384	Relocated	12.00	1148	839	4362	0.686	0.17557	0.07468	2.3510	0.7861	5.1990	32.86	5.1990	0.7861	781	1,139
306	384	Relocated	12.00	1199	958	4763	0.717	0.17574	0.07484	2.3481	0.7855	4.9718	35.88	4.9718	0.7855	816	1,138
306	384	Relocated	12.00	1248	1075	5121	0.746	0.17441	0.07448	2.3418	0.7804	4.7637	38.58	4.7637	0.7804	849	1,139
306	384	Relocated	12.00	1304	1265	5711	0.779	0.17815	0.07683	2.3189	0.7811	4.5146	43.03	4.5146	0.7811	888	1,139
306	384	Relocated	12.00	1350	1422	6154	0.807	0.17911	0.07783	2.3013	0.7772	4.3277	46.36	4.3277	0.7772	919	1,139
306	384	Relocated	12.00	1399	1614	6681	0.836	0.18107	0.07938	2.2811	0.7746	4.1394	50.33	4.1394	0.7746	952	1,139
306	384	Relocated	12.00	1477	1933	7566	0.883	0.18397	0.08079	2.2772	0.7794	3.9141	57.00	3.9141	0.7794	1,005	1,139
306	384	Relocated	12.00	1499	2022	7787	0.896	0.18383	0.08084	2.2739	0.7780	3.8511	58.67	3.8511	0.7780	1,020	1,139
306	384	Relocated	12.00	1550	2301	8430	0.926	0.18612	0.08321	2.2368	0.7701	3.6636	63.51	3.6636	0.7701	1,055	1,139
307	385	Relocated	14.00	702	224	1862	0.418	0.20042	0.08719	2.2986	0.8212	8.3125	14.03	8.3125	0.8212	478	1,143
307	385	Relocated	14.00	807	342	2404	0.48	0.19581	0.08763	2.2344	0.7890	7.0292	18.11	7.0292	0.7890	549	1,144
307	385	Relocated	14.00	998	661	3681	0.594	0.19604	0.08955	2.1892	0.7735	5.5688	27.73	5.5688	0.7735	679	1,144
307	385	Relocated	14.00	1053	791	4141	0.627	0.19810	0.09123	2.1714	0.7712	5.2351	31.20	5.2351	0.7712	717	1,143
307	385	Relocated	14.00	1100	898	4521	0.655	0.19819	0.09086	2.1814	0.7750	5.0345	34.06	5.0345	0.7750	749	1,143
307	385	Relocated	14.00	1151	1040	4979	0.685	0.19936	0.09185	2.1706	0.7734	4.7875	37.51	4.7875	0.7734	783	1,144
307	385	Relocated	14.00	1202	1174	5362	0.715	0.19686	0.09103	2.1625	0.7657	4.5673	40.40	4.5673	0.7657	818	1,144
307	385	Relocated	14.00	1247	1342	5915	0.742	0.20177	0.09320	2.1650	0.7760	4.4076	44.56	4.4076	0.7760	849	1,144
307	385	Relocated	14.00	1302	1555	6489	0.775	0.20305	0.09487	2.1402	0.7696	4.1730	48.89	4.1730	0.7696	886	1,144
307	385	Relocated	14.00	1350	1753	7043	0.803	0.20499	0.09595	2.1365	0.7719	4.0177	53.06	4.0177	0.7719	919	1,144
307	385	Relocated	14.00	1399	1963	7596	0.833	0.20587	0.09654	2.1324	0.7721	3.8696	57.23	3.8696	0.7721	952	1,143
307	385	Relocated	14.00	1453	2262	8362	0.865	0.21010	0.09930	2.1158	0.7739	3.6967	63.00	3.6967	0.7739	989	1,143
307	385	Relocated	14.00	1470	2324	8447	0.875	0.20735	0.09852	2.1046	0.7648	3.6347	63.64	3.6347	0.7648	1,001	1,144
307	385	Relocated	14.00	1501	2519	8926	0.893	0.21015	0.10031	2.0951	0.7664	3.5435	67.25	3.5435	0.7664	1,022	1,144
307	385	Relocated	14.00	1550	2876	9809	0.923	0.21657	0.10400	2.0823	0.7733	3.4106	73.90	3.4106	0.7733	1,055	1,143
307	385	Relocated	14.00	1550	2926	9862	0.923	0.21774	0.10581	2.0578	0.7663	3.3705	74.30	3.3705	0.7663	1,055	1,143
308	386	Relocated	16.00	707	278	2085	0.421	0.22126	0.10594	2.0887	0.7840	7.5000	15.71	7.5000	0.7840	481	1,143
308	386	Relocated	16.00	802	404	2638	0.477	0.21755	0.10547	2.0628	0.7678	6.5297	19.87	6.5297	0.7678	546	1,144
308	386	Relocated	16.00	1000	813	4128	0.595	0.21897	0.10948	2.0000	0.7468	5.0775	31.10	5.0775	0.7468	681	1,144
308	386	Relocated	16.00	1052	961	4660	0.626	0.22335	0.11116	2.0094	0.7578	4.8491	35.11	4.8491	0.7578	716	1,144
308	386	Relocated	16.00	1104	1107	5106	0.657	0.22222	0.11079	2.0058	0.7545	4.6125	38.47	4.6125	0.7545	751	1,144
308	386	Relocated	16.00	1156	1274	5574	0.688	0.22125	0.11106	1.9922	0.7478	4.3752	41.99	4.3752	0.7478	787	1,144
308	386	Relocated	16.00	1198	1441	6043	0.713	0.22335	0.11286	1.9789	0.7463	4.1936	45.53	4.1936	0.7463	815	1,144
308	386	Relocated	16.00	1248	1652	6681	0.743	0.22754	0.11445	1.9881	0.7568	4.0442	50.33	4.0442	0.7568	849	1,143
308	386	Relocated	16.00	1297	1906	7383	0.772	0.23280	0.11764	1.9790	0.7620	3.8736	55.62	3.8736	0.7620	883	1,144
308	386	Relocated	16.00	1349	2189	8074	0.803	0.23534	0.12008	1.9599	0.7587	3.6884	60.83	3.6884	0.7587	918	1,144
308	386	Relocated	16.00	1399	2473	8766	0.833	0.23758	0.12163	1.9534	0.7598	3.5447	66.04	3.5447	0.7598	952	1,143
308	386	Relocated	16.00	1450	2833	9617	0.863	0.24263	0.12514	1.9389	0.7621	3.3946	72.45	3.3946	0.7621	987	1,144
308	386	Relocated	16.00	1467	2972	9894	0.873	0.24387	0.12677	1.9237	0.7581	3.3291	74.54	3.3291	0.7581	999	1,144
308	386	Relocated	16.00	1500	3222	10383	0.893	0.24478	0.12856	1.9040	0.7517	3.2225	78.23	3.2225	0.7517	1,021	1,143
308	386	Relocated	16.00	1549	3664	11277	0.922	0.24930	0.13276	1.8779	0.7482	3.0778	84.96	3.0778	0.7482	1,054	1,144
309	387	Relocated	18.00	710	337	2290	0.422	0.24097	0.12680	1.9004	0.7444	6.7953	17.25	6.7953	0.7444	483	1,145
309	387	Relocated	18.00	800	488	2939	0.476	0.24359	0.12835	1.8978	0.7475	6.0225	22.14	6.0225	0.7475	545	1,144
309	387	Relocated	18.00	1002	988	4643	0.596	0.24530	0.13225	1.8548	0.7331	4.6994	34.98	4.6994	0.7331	682	1,144
309	387	Relocated	18.00	1054	1144	5112	0.627	0.24409	0.13157	1.8552	0.7314	4.4685	38.51	4.4685	0.7314	717	1,144
309	387	Relocated	18.00	1100	1300	5517	0.654	0.24186	0.13153	1.8388	0.7216	4.2438	41.56	4.2438	0.7216	749	1,145
309	387	Relocated	18.00	1150	1507	6113	0.684	0.24519	0.13344	1.8375	0.7261	4.0564	46.06	4.0564	0.7261	783	1,144
309	387	Relocated	18.00	1204	1743	6709	0.716	0.24550	0.13448	1.8255	0.7218	3.8491	50.55	3.8491	0.7218	820	1,145
309	387	Relocated	18.00	1250	2011	7476	0.743	0.25380	0.13865	1.8304	0.7359	3.7176	56.32	3.7176	0.7359	851	1,145
309	387	Relocated	18.00	1306	2324	8179	0.777	0.25436	0.14049	1.8105	0.7287	3.5194	61.62	3.5194	0.7287	889	1,144
309	387	Relocated	18.00	1350	2663	8988	0.803	0.26160	0.14575	1.7948	0.7325	3.3751	67.72	3.3751	0.7325	919	1,144
309	387	Relocated	18.00	1400	3034	9776	0.833	0.26457	0.14890	1.7769	0.7293	3.2221	73.65	3.2221	0.7293	953	1,144
309	387	Relocated	18.00	1451	3465	10671	0.863	0.26885	0.15274	1.7602	0.7283	3.0797	80.39	3.0797	0.7283	988	1,144
309	387	Relocated	18.00	1470	3614	11012	0.874	0.27032	0.15321	1.7643	0.7320	3.0470	82.96	3.0470	0.7320	1,001	1,145
309	387	Relocated	18.00	1505	3956	11544	0.895	0.27035	0.15628	1.7299	0.7178	2.9181	86.97	2.9181	0.7178	1,024	1,145
310	388	Relocated	20.00	706	400	2451	0.422	0.26084	0.15307	1.7040	0.6945	6.1275	18.47	6.1275	0.6945	481	1,139
310	388	Relocated	20.00	800	594	3212	0.479	0.26622	0.15623	1.7040	0.7016	5.4074	24.20	5.4074	0.7016	545	1,137
310	388	Relocated	20.00	1004	1226	5092	0.601	0.26795	0.16313	1.6425	0.6785	4.1533	38.36	4.1533	0.6785	683	1,137
310	388	Relocated	20.00	1057	1435	5663	0.632	0.26887	0.16364	1.6431	0.6799	3.9463	42.66	3.9463	0.6799	719	1,138
310	388	Relocated	20.00	1098	1614	6149	0.657	0.27054	0.16419	1.6477	0.6839	3.8098	46.33	3.8098	0.6839	747	1,138
310	388	Relocated	20.00	1153	1861	6793	0.69	0.27105	0.16350	1.6578	0.6887	3.6502	51.18	3.6502	0.6887	785	1,137
310	388	Relocated	20.00	1200	2129	7406	0.718	0.27281	0.16591	1.6443	0.6853	3.4786	55.80	3.4786	0.6853	817	1,138
310	388	Relocated	20.00	1249	2466	8220	0.747	0.27950	0.17044	1.6399	0.6919	3.3333	61.93	3.3333	0.6919	850	1,138
310	388	Relocated	20.00	1299	2826	8906	0.777	0.27996	0.17362	1.6125	0.6809	3.1515	67.10	3.1515	0.6809	884	1,138
310	388	Relocated	20.00	1350	3305	9910	0.807	0.28843	0.18089	1.5945	0.6834	2.9985	74.66	2.9985	0.6834	919	1,139
310	388	Relocated	20.00	1400	3765	10755	0.837	0.29107	0.18477	1.5753	0.6782	2.8566	81.03	2.8566	0.6782	953	1,139
310	388	Relocated	20.00	1440	4208	11516	0.861	0.29459	0.18978	1.5523	0.6723	2.7367	86.76	2.7367	0.6723	980	1,138

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed: CT through Repeat FM)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
301	2.00	0.725	293	1727	817	1201	0.0635	0.0228	2.788	0.561	5.894	13.01	5.894	0.5608
301	2.00	0.750	325	1844	846	1242	0.0634	0.0228	2.776	0.558	5.674	13.89	5.674	0.5578
301	2.00	0.775	363	1975	874	1284	0.0635	0.0231	2.752	0.554	5.441	14.88	5.441	0.5535
301	2.00	0.800	401	2113	902	1325	0.0638	0.0232	2.750	0.555	5.269	15.92	5.269	0.5545
301	2.00	0.825	446	2249	930	1367	0.0638	0.0235	2.715	0.547	5.043	16.94	5.043	0.5475
301	2.00	0.850	495	2384	958	1408	0.0638	0.0239	2.671	0.538	4.816	17.96	4.816	0.5383
301	2.00	0.875	545	2496	987	1449	0.0631	0.0241	2.614	0.524	4.580	18.80	4.580	0.5238
301	2.00	0.900	597	2626	1015	1491	0.0627	0.0243	2.583	0.516	4.399	19.78	4.399	0.5160
301	2.00	0.925	665	2793	1043	1532	0.0631	0.0249	2.535	0.508	4.200	21.04	4.200	0.5082
302	4.00	0.725	366	2243	817	1201	0.0825	0.0285	2.899	0.664	6.128	16.90	6.128	0.6645
302	4.00	0.750	407	2387	846	1242	0.0821	0.0286	2.869	0.656	5.865	17.98	5.865	0.6560
302	4.00	0.775	447	2538	874	1284	0.0817	0.0284	2.872	0.655	5.678	19.12	5.678	0.6548
302	4.00	0.800	498	2709	902	1325	0.0818	0.0288	2.839	0.648	5.440	20.41	5.440	0.6482
302	4.00	0.825	553	2884	930	1367	0.0819	0.0292	2.808	0.641	5.215	21.73	5.215	0.6412
302	4.00	0.850	615	3087	958	1408	0.0826	0.0297	2.784	0.638	5.020	23.26	5.020	0.6385
302	4.00	0.875	677	3278	987	1449	0.0828	0.0300	2.764	0.635	4.842	24.70	4.842	0.6346
302	4.00	0.900	743	3477	1015	1491	0.0830	0.0302	2.748	0.632	4.680	26.20	4.680	0.6317
302	4.00	0.925	811	3673	1043	1532	0.0830	0.0304	2.733	0.628	4.529	27.67	4.529	0.6284
303	6.00	0.725	448	2702	820	1204	0.0989	0.0346	2.860	0.718	6.031	20.36	6.031	0.7177
303	6.00	0.750	499	2900	848	1245	0.0992	0.0348	2.850	0.716	5.812	21.85	5.812	0.7165
303	6.00	0.775	551	3112	876	1287	0.0997	0.0348	2.863	0.721	5.648	23.45	5.648	0.7213
303	6.00	0.800	607	3332	904	1329	0.1001	0.0348	2.874	0.725	5.489	25.10	5.489	0.7254
303	6.00	0.825	677	3531	933	1370	0.0998	0.0355	2.815	0.710	5.216	26.60	5.216	0.7095
303	6.00	0.850	753	3772	961	1412	0.1004	0.0360	2.786	0.704	5.009	28.42	5.009	0.7043
303	6.00	0.875	822	4021	989	1453	0.1010	0.0361	2.800	0.710	4.892	30.29	4.892	0.7101
303	6.00	0.900	892	4208	1017	1495	0.0999	0.0359	2.778	0.701	4.717	31.70	4.717	0.7006
303	6.00	0.925	975	4417	1046	1536	0.0993	0.0362	2.741	0.689	4.530	33.28	4.530	0.6893
304	8.00	0.725	597	3417	820	1205	0.1248	0.0459	2.717	0.766	5.724	25.74	5.724	0.7660
304	8.00	0.750	661	3648	848	1247	0.1244	0.0459	2.711	0.763	5.519	27.48	5.519	0.7631
304	8.00	0.775	730	3873	877	1288	0.1238	0.0460	2.692	0.756	5.305	29.18	5.305	0.7559
304	8.00	0.800	806	4123	905	1330	0.1236	0.0461	2.680	0.752	5.115	31.06	5.115	0.7520
304	8.00	0.825	892	4409	933	1371	0.1244	0.0466	2.669	0.751	4.943	33.22	4.943	0.7514
304	8.00	0.850	994	4731	962	1413	0.1257	0.0474	2.649	0.749	4.760	35.64	4.760	0.7495
304	8.00	0.875	1097	5076	990	1454	0.1274	0.0481	2.650	0.755	4.627	38.24	4.627	0.7547
304	8.00	0.900	1204	5386	1018	1496	0.1277	0.0484	2.636	0.752	4.473	40.58	4.473	0.7516
304	8.00	0.925	1313	5689	1046	1537	0.1277	0.0487	2.623	0.748	4.333	42.86	4.333	0.7482
305	10.00	0.725	814	4265	826	1213	0.1538	0.0614	2.503	0.783	5.240	32.13	5.240	0.7834
305	10.00	0.750	912	4594	854	1255	0.1547	0.0621	2.490	0.782	5.037	34.61	5.037	0.7816
305	10.00	0.775	1015	4928	883	1297	0.1554	0.0626	2.480	0.780	4.855	37.13	4.855	0.7803
305	10.00	0.800	1120	5246	911	1339	0.1552	0.0628	2.470	0.777	4.684	39.52	4.684	0.7767
305	10.00	0.825	1237	5597	940	1380	0.1559	0.0634	2.460	0.775	4.525	42.17	4.525	0.7749
305	10.00	0.850	1361	5960	968	1422	0.1563	0.0637	2.453	0.774	4.379	44.90	4.379	0.7740
305	10.00	0.875	1502	6357	997	1464	0.1573	0.0645	2.441	0.773	4.232	47.89	4.232	0.7725
305	10.00	0.900	1655	6781	1025	1506	0.1586	0.0652	2.431	0.772	4.097	51.09	4.097	0.7724
305	10.00	0.925	1822	7230	1054	1548	0.1600	0.0661	2.420	0.772	3.968	54.47	3.968	0.7724
306	12.00	0.725	989	4862	826	1213	0.1753	0.0746	2.349	0.785	4.916	36.63	4.916	0.7848
306	12.00	0.750	1104	5223	854	1255	0.1759	0.0752	2.339	0.783	4.731	39.35	4.731	0.7827
306	12.00	0.775	1235	5612	883	1297	0.1770	0.0762	2.322	0.779	4.544	42.28	4.544	0.7793
306	12.00	0.800	1381	6035	911	1339	0.1785	0.0775	2.305	0.777	4.370	45.47	4.370	0.7772
306	12.00	0.825	1541	6489	940	1380	0.1807	0.0790	2.289	0.777	4.211	48.89	4.211	0.7766
306	12.00	0.850	1696	6929	968	1422	0.1818	0.0794	2.288	0.779	4.085	52.20	4.085	0.7786
306	12.00	0.875	1876	7399	997	1464	0.1831	0.0805	2.274	0.777	3.944	55.74	3.944	0.7767
306	12.00	0.900	2071	7889	1025	1506	0.1845	0.0817	2.260	0.775	3.809	59.44	3.809	0.7746
306	12.00	0.925	2281	8399	1054	1548	0.1859	0.0828	2.245	0.773	3.682	63.28	3.682	0.7725
307	14.00	0.725	1239	5582	829	1218	0.1996	0.0923	2.161	0.771	4.505	42.05	4.505	0.7706
307	14.00	0.750	1389	6026	858	1260	0.2013	0.0935	2.153	0.771	4.338	45.40	4.338	0.7710
307	14.00	0.775	1548	6484	886	1302	0.2029	0.0944	2.148	0.772	4.189	48.85	4.189	0.7722
307	14.00	0.800	1726	6974	915	1344	0.2048	0.0957	2.139	0.772	4.041	52.54	4.041	0.7725
307	14.00	0.825	1914	7464	944	1386	0.2061	0.0968	2.129	0.771	3.900	56.23	3.900	0.7713
307	14.00	0.850	2115	7979	972	1428	0.2076	0.0978	2.122	0.771	3.773	60.11	3.773	0.7715
307	14.00	0.875	2336	8502	1001	1470	0.2087	0.0990	2.107	0.768	3.640	64.05	3.640	0.7683
307	14.00	0.900	2612	9155	1029	1512	0.2124	0.1018	2.087	0.768	3.505	68.97	3.505	0.7678
308	16.00	0.725	1523	6303	829	1218	0.2254	0.1135	1.986	0.752	4.139	47.49	4.139	0.7522
308	16.00	0.750	1719	6862	858	1260	0.2293	0.1157	1.981	0.757	3.992	51.70	3.992	0.7570
308	16.00	0.775	1925	7416	886	1302	0.2321	0.1174	1.976	0.760	3.852	55.87	3.852	0.7595
308	16.00	0.800	2156	8007	915	1344	0.2351	0.1196	1.966	0.761	3.714	60.32	3.714	0.7608
308	16.00	0.825	2407	8614	944	1386	0.2379	0.1217	1.954	0.760	3.579	64.90	3.579	0.7604
308	16.00	0.850	2679	9246	972	1428	0.2405	0.1239	1.941	0.760	3.451	69.66	3.451	0.7597
308	16.00	0.875	2986	9920	1001	1470	0.2435	0.1266	1.924	0.758	3.322	74.74	3.322	0.7575
308	16.00	0.900	3332	10626	1029	1512	0.2466	0.1298	1.899	0.753	3.189	80.06	3.189	0.7526
309	18.00	0.725	1827	6967	830	1219	0.2487	0.1358	1.831	0.729	3.813	52.49	3.813	0.7287
309	18.00	0.750	2062	7566	858	1261	0.2524	0.1385	1.823	0.731	3.669	57.00	3.669	0.7307
309	18.00	0.775	2324	8195	887	1303	0.2560	0.1415	1.810	0.731	3.526	61.74	3.526	0.7308
309	18.00	0.800	2617	8877	916	1345	0.2603	0.1448	1.797	0.732	3.392	66.88	3.392	0.7317
309	18.00	0.825	2931	9551	944	1387	0.2634	0.1479	1.780	0.729	3.259	71.96	3.259	0.7291
309	18.00	0.850	3278	10309	973	1429	0.2678	0.1513	1.770	0.731	3.145	77.67	3.145	0.7310
309	18.00	0.875	3642	11007	1002	1471	0.2698	0.1541	1.751	0.726	3.022	82.93	3.022	0.7259
310	20.00	0.7250	2203	7598	825	1212	0.2744	0.1666	1.647	0.688	3.449	57.24	3.449	0.6882
310	20.00	0.7500	2495	8246	853	1254	0.2782	0.1704	1.633	0.687	3.305	62.13	3.305	0.6871
310	20.00	0.7750	2817	8919	882	1296	0.2817	0.1743	1.616	0.685	3.166	67.20	3.166	0.6845
310	20.00	0.8000	3173	9640	910	1337	0.2861	0.1788	1.600	0.683	3.038	72.63	3.038	0.6829
310	20.00	0.8250	3567	10383	939	1379	0.2896	0.1832	1.581	0.679	2.911	78.23	2.911	0.6790
310	20.00	0.8500	3998	11158	967	1421	0.2931	0.1876	1.562	0.675	2.791	84.06	2.791	0.6749





AT. Data Set # 31

DATA SET Number 31

47 x 121	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	117.0	13.00	4	26.0	539.490	0.944

Power weighted solidity = 0.19068

Twist (0.25R -Tip in deg) = 35.5

$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_o)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_o)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

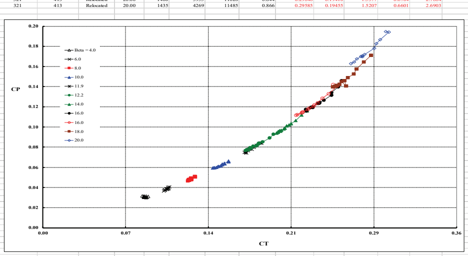
Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

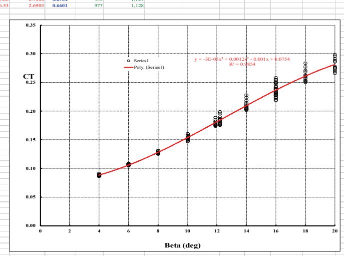
REDUCED TEST DATA POINTS (Harris Computed →)

Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
311	414	Relocated	4.00	906	172	1406	0.547	0.09086	0.03115	2.9172	0.7017	8.1744	10.59	8.1744	0.7017	617	1,127
311	414	Relocated	4.00	951	194	1510	0.575	0.08856	0.03037	2.9157	0.6924	7.7835	11.38	7.7835	0.6924	647	1,126
311	414	Relocated	4.00	1005	228	1706	0.607	0.08960	0.03025	2.9621	0.7075	7.4825	12.85	7.4825	0.7075	684	1,127
311	414	Relocated	4.00	1059	265	1882	0.640	0.08902	0.03005	2.9625	0.7053	7.1019	14.18	7.1019	0.7053	721	1,126
311	414	Relocated	4.00	1100	301	1986	0.665	0.08706	0.03045	2.8589	0.6731	6.5980	14.96	6.5980	0.6731	749	1,126
311	414	Relocated	4.00	1148	339	2172	0.694	0.08742	0.03017	2.8973	0.6836	6.4071	16.36	6.4071	0.6836	781	1,126
311	414	Relocated	4.00	1200	392	2389	0.725	0.08800	0.03055	2.8807	0.6819	6.0944	18.00	6.0944	0.6819	817	1,127
311	414	Relocated	4.00	1251	457	2627	0.756	0.08904	0.03143	2.8326	0.6745	5.7484	19.79	5.7484	0.6745	852	1,126
311	414	Relocated	4.00	1298	494	2771	0.784	0.08724	0.03042	2.8679	0.6760	5.6093	20.88	5.6093	0.6760	884	1,127
311	414	Relocated	4.00	1353	560	3040	0.818	0.08809	0.03045	2.8931	0.6852	5.4286	22.90	5.4286	0.6852	921	1,126
311	414	Relocated	4.00	1401	642	3226	0.847	0.08718	0.03144	2.7730	0.6534	5.0249	24.30	5.0249	0.6534	954	1,126
311	414	Relocated	4.00	1449	709	3454	0.876	0.08726	0.03138	2.7805	0.6555	4.8717	26.02	4.8717	0.6555	986	1,126
311	414	Relocated	4.00	1500	781	3681	0.906	0.08678	0.03116	2.7848	0.6546	4.7132	27.73	4.7132	0.6546	1,021	1,127
311	414	Relocated	4.00	1554	881	3909	0.939	0.08586	0.03161	2.7160	0.6351	4.4370	29.45	4.4370	0.6351	1,058	1,126
312	415	Relocated	6.00	903	210	1651	0.546	0.10740	0.03841	2.7964	0.7313	7.8619	12.44	7.8619	0.7313	615	1,126
312	415	Relocated	6.00	950	245	1837	0.575	0.10797	0.03848	2.8058	0.7357	7.4980	13.84	7.4980	0.7357	647	1,125
312	415	Relocated	6.00	1008	292	2043	0.610	0.10666	0.03839	2.7780	0.7240	6.9966	15.39	6.9966	0.7240	686	1,125
312	415	Relocated	6.00	1049	311	2167	0.634	0.10446	0.03628	2.8791	0.7426	6.9678	16.33	6.9678	0.7426	714	1,126
312	415	Relocated	6.00	1100	369	2394	0.665	0.10495	0.03733	2.8111	0.7267	6.4878	18.04	6.4878	0.7267	749	1,126
312	415	Relocated	6.00	1148	420	2621	0.694	0.10549	0.03738	2.8219	0.7314	6.2405	19.75	6.2405	0.7314	781	1,126
312	415	Relocated	6.00	1202	487	2869	0.727	0.10533	0.03776	2.7893	0.7224	5.8912	21.61	5.8912	0.7224	818	1,125
312	415	Relocated	6.00	1249	558	3179	0.755	0.10809	0.03857	2.8029	0.7354	5.6971	23.95	5.6971	0.7354	850	1,126
312	415	Relocated	6.00	1301	622	3406	0.787	0.10674	0.03804	2.8062	0.7316	5.4759	25.66	5.4759	0.7316	886	1,125
312	415	Relocated	6.00	1355	716	3695	0.819	0.10675	0.03876	2.7544	0.7182	5.1606	27.84	5.1606	0.7182	922	1,126
312	415	Relocated	6.00	1403	796	4004	0.848	0.10790	0.03881	2.7799	0.7287	5.0302	30.17	5.0302	0.7287	955	1,126
312	415	Relocated	6.00	1452	897	4314	0.878	0.10854	0.03946	2.7507	0.7232	4.8094	32.50	4.8094	0.7232	988	1,126
312	415	Relocated	6.00	1507	1020	4623	0.911	0.10798	0.04013	2.6904	0.7055	4.5324	34.83	4.5324	0.7055	1,026	1,126
312	415	Relocated	6.00	1552	1122	4954	0.939	0.10910	0.04042	2.6992	0.7115	4.4153	37.32	4.4153	0.7115	1,056	1,125
313	416	Relocated	8.00	903	262	1935	0.547	0.12588	0.04792	2.6270	0.7438	7.3855	14.58	7.3855	0.7438	615	1,124
313	416	Relocated	8.00	951	305	2182	0.576	0.12798	0.04775	2.6799	0.7651	7.1541	16.44	7.1541	0.7651	647	1,124
313	416	Relocated	8.00	1002	348	2367	0.607	0.12506	0.04658	2.6846	0.7576	6.8017	17.83	6.8017	0.7576	682	1,124
313	416	Relocated	8.00	1055	412	2635	0.639	0.12558	0.04725	2.6578	0.7516	6.3956	19.85	6.3956	0.7516	718	1,124
313	416	Relocated	8.00	1101	468	2882	0.667	0.12611	0.04722	2.6707	0.7568	6.1581	21.71	6.1581	0.7568	749	1,124
313	416	Relocated	8.00	1149	536	3150	0.696	0.12656	0.04758	2.6598	0.7551	5.8769	23.73	5.8769	0.7551	782	1,124
313	416	Relocated	8.00	1198	606	3397	0.726	0.12555	0.04746	2.6452	0.7480	5.6056	25.59	5.6056	0.7480	815	1,123
313	416	Relocated	8.00	1247	693	3747	0.755	0.12782	0.04813	2.6558	0.7577	5.4069	28.23	5.4069	0.7577	849	1,124
313	416	Relocated	8.00	1304	796	4076	0.790	0.12715	0.04834	2.6302	0.7484	5.1206	30.71	5.1206	0.7484	888	1,124
313	416	Relocated	8.00	1360	909	4467	0.824	0.12811	0.04866	2.6326	0.7519	4.9142	33.65	4.9142	0.7519	926	1,123
313	416	Relocated	8.00	1400	1001	4735	0.848	0.12815	0.04913	2.6086	0.7452	4.7303	35.67	4.7303	0.7452	953	1,124
313	416	Relocated	8.00	1450	1110	5085	0.878	0.12829	0.04903	2.6165	0.7479	4.5811	38.31	4.5811	0.7479	987	1,124
313	416	Relocated	8.00	1450	1115	5064	0.878	0.12776	0.04925	2.5940	0.7399	4.5417	38.15	4.5417	0.7399	987	1,124
313	416	Relocated	8.00	1498	1258	5558	0.907	0.13138	0.05040	2.6070	0.7541	4.4181	41.87	4.4181	0.7541	1,020	1,124
313	416	Relocated	8.00	1549	1409	5929	0.938	0.13107	0.05105	2.5675	0.7418	4.2079	44.67	4.2079	0.7418	1,054	1,124
314	408	Relocated	10.00	906	327	2271	0.543	0.14676	0.05921	2.4785	0.7577	6.9450	17.11	6.9450	0.7577	617	1,136
314	408	Relocated	10.00	956	386	2545	0.573	0.14771	0.05949	2.4828	0.7615	6.5933	19.17	6.5933	0.7615	651	1,136
314	408	Relocated	10.00	1004	449	2818	0.602	0.14829	0.05974	2.4821	0.7627	6.2762	21.23	6.2762	0.7627	683	1,135
314	408	Relocated	10.00	1050	515	3113	0.629	0.14978	0.05991	2.5000	0.7721	6.0447	23.45	6.0447	0.7721	715	1,136
314	408	Relocated	10.00	1101	601	3449	0.660	0.15092	0.06064	2.4888	0.7716	5.7388	25.98	5.7388	0.7716	749	1,135
314	408	Relocated	10.00	1150	696	3828	0.689	0.15354	0.06163	2.4914	0.7790	5.5000	28.84	5.5000	0.7790	783	1,136
314	408	Relocated	10.00	1200	783	4122	0.719	0.15184	0.06102	2.4884	0.7738	5.2644	31.05	5.2644	0.7738	817	1,136
314	408	Relocated	10.00	1253	917	4585	0.751	0.15491	0.06277	2.4678	0.7751	5.0000	34.54	5.0000	0.7751	853	1,136
314	408	Relocated	10.00	1302	1036	4942	0.780	0.15464	0.06321	2.4465	0.7677	4.7703	37.23	4.7703	0.7677	886	1,136
314	408	Relocated	10.00	1349	1158	5384	0.808	0.15694	0.06352	2.4706	0.7810	4.6494	40.56	4.6494	0.7810	918	1,136
314	408	Relocated	10.00	1404	1318	5815	0.841	0.15648	0.06413	2.4400	0.7702	4.4120	43.81	4.4120	0.7702	956	1,136
314	408	Relocated	10.00	1450	1488	6351	0.869	0.16023	0.06573	2.4378	0.7787	4.2681	47.85	4.2681	0.7787	987	1,136
314	408	Relocated	10.00	1502	1649	6814	0.900	0.16021	0.06553	2.4448	0.7809	4.1322	51.34	4.1322	0.7809	1,022	1,136
314	408	Relocated	10.00	1552	1840	7277	0.930	0.16025	0.06628	2.4178	0.7724	3.9549	54.82	3.9549	0.7724	1,056	1,136
315	409	Relocated	11.90	900	404	2674	0.539	0.17511	0.07463	2.3464	0.7836	6.6188	20.15	6.6188	0.7836	613	1,137
315	409	Relocated	11.90	947	469	2968	0.567	0.17555	0.07437	2.3606	0.7893	6.3284	22.36	6.3284	0.7893	645	1,137
315	409	Relocated	11.90	1004	562	3305	0.601	0.17392	0.07478	2.3257	0.7740	5.8808	24.90	5.8808	0.7740	683	1,137
315	409	Relocated	11.90	1054	657	3663	0.631	0.17490	0.07556	2.3147	0.7725	5.5753	27.60	5.5753	0.7725	717	1,137
315	409	Relocated	11.90	1103	762	4063	0.660	0.17715	0.07647	2.3166	0.7781	5.3320	30.61	5.3320	0.7781	751	1,138
315	409	Relocated	11.90	1152	855	4379	0.690	0.17503	0.07531	2.3241	0.7759	5.1216	32.99	5.1216	0.7759	784	1,136
315	409	Relocated	11.90	1200	991	4800	0.718	0.17681	0.07723	2.2895	0.7682	4.8436	36.16	4.8436	0.7682	817	1,138
315	409	Relocated	11.90	1248	1124	5295	0.747	0.18033	0.07787	2.3158	0.7848	4.7109	39.89	4.7109	0.7848	849	1,137
315	409	Relocated	11.90	1303	1283	5705	0.780	0.17824	0.07810	2.2822	0.7689	4.4466	42.98	4.4466	0.7689	887	1,137
315	409	Relocated	11.90	1350	1458	6253	0.808	0.18200	0.07980	2.2806	0.7764	4.2888	47.11	4.2888	0.7764	919	1,137
315	409	Relocated	11.90	1402	1655	6747	0.839	0.18208	0.08087	2.2514	0.7666	4.0767	50.83	4.0767	0.7666	954	1,137
315	409	Relocated	11.90	1453	1865	7347	0.870	0.18459	0.08187	2.2547	0.7730	3.9394	55.35	3.9394	0.7730	989	1,137
315	409	Relocated	11.90	1503	2116	8042	0.900	0.18884	0.08393	2.2501	0.7803	3.8006	60.59	3.8006	0.7803	1,023	1,137
315	409	Relocated	11.90	1550	2330	8526	0.928	0.18824	0.08426	2.2341	0.7735	3.6592	64.23	3.6592	0.7735	1,055	1,137
316	433	Relocated	12.20	906	430	2748	0.555	0.17758	0.07786	2.2807	0.7669	6.3907	20.70	6.3907	0.7669	617	1,111
316	433	Relocated	12.20	949	492	2989	0.581	0.17605	0.07752	2.2710	0.7604	6.0752	22.52	6.0752	0.7604	646	1,112
316	433	Relocated	12.20	998	570	3330	0.611	0.17735	0.07722	2.2966	0.7718	5.8421	25.09	5.8421	0.7718	679	1,112
316	433	Relocated	12.20	1049	659	3631	0.643	0.17503	0.07688	2.2767	0.7601	5.5099	27.36	5.5099	0.7601	714	1,110
316	433	Relocated	12.20	1102	789	4092	0.675	0.17874	0.07939	2.2513	0.7595	5.1863	30.83	5.1863	0.7595	750	1,111
316	433	Relocated	12.20	1152	898	4493	0.706	0.17959	0.07910	2.2704	0.7678	5.0033	33.85	5.0033	0.7678	784	1,111
316	433	Relocated	12.20	1201	1041	4935	0.736	0.18148	0.08092	2.2427	0.7624	4.7406	37.18	4.7406	0.7624	817	1,111
316	433	Relocated	12.20	1248	1171	5396	0.765	0.18377	0.08113	2.2652	0.7749	4.6080	40.65	4.6080	0.7749	849	1,110
316	433	Relocated	12.20	1300	1344	5898	0.796	0.18512	0.08238	2.2472	0.7716	4.3884	44.44	4.3884	0.7716	885	1,112
316	433	Relocated	12.20	1347	1515	6379	0.825	0.18649	0.08348	2.2341	0.7699	4.2106	48.06	4.2106	0.7699	917	1,111
316	433	Relocated	12.20	1400	1713	6881	0.858	0.18622	0.08407	2.2152	0.7628	4.0169	51.84	4.0169	0.7628	953	1,111
316	433	Relocated	12.20	1449	1927	7503	0.888	0.18956	0.08530	2.2223	0.7721	3.8936	56.53	3.8936	0.7721	986	1,111
316	433	Relocated	12.20	1497	2220	8265	0.917	0.19563	0.08911	2.1953	0.7749	3.7230	62.27	3.7230	0.7749	1,019	1,111
316	433	Relocated	12.20	1551	2571	9017	0.950	0.19883	0.09279	2.1427	0.7624	3.5072	67.93	3.5072	0.7624	1,056	1,111
317	410	Relocated	14.00	905	517	3113	0.547	0.20161	0.09393	2.1465	0.7691	6.0213	23.45	6.0213	0.7691	616	1,126
317	410	Relocated	14.00	950	608	3454	0.574	0.20301	0.09550	2.1258	0.7643	5.6809	26.02	5.6809	0.7643	647	1,127
317	410	Relocated	14.00	1000	703	3826	0.604	0.20295	0.09467	2.1438	0.7707	5.4424	28.82	5.4424	0.7707	681	1,127
317	410	Relocated	14.00	1050	825	4261	0.634	0.20501	0.09597	2.1362	0.7718	5.1648	32.10	5.1648	0.7718	715	1,127
317	410	Relocated	14.00	1099	950	4654	0.664	0.20439	0.09638	2.1207	0.7651	4.8989	35.06	4.8989	0.7651	748	1,127
317	410	Relocated	14.00	1150	1092	5129	0.695	0.20572	0.09669	2.1276	0.7701	4.6969	38.64	4.6969	0.7701	783	1,126
317	410	Relocated	14.00	1202	1264	5667	0.726	0.20806	0.09801	2.1227	0.7727	4.4834	42.69	4.4834	0.7727	818	1,127
317	410	Relocated	14.00	1249	1430	6143	0.755	0.20888	0.09883	2.1135	0.7708	4.2958	46.28	4.2958	0.7708	850	1,126
317	410	Relocated	14.00	1302	1655	6722	0.787	0.21034	0.10098	2.0830	0.7624	4.0616	50.64	4.0616	0.7624	886	1,126
317	410	Relocated	14.00	1350	1863	7301	0.816	0.21250	0.10197	2.0840	0.7666	3.9189	55.01	3.9189	0.7666	919	1,126
317	410	Relocated	14.00	1402	2112	7942	0.847	0.21433	0.10321	2.0767	0.7672	3.7604	59.83	3.7604	0.7672	954	1,127
317	410	Relocated	14.00	1450	2411	8645	0.876	0.21811	0.10650	2.0480	0.7632	3.5856	65.13	3.5856	0.7632	987	1,127
317	410	Relocated	14.00	1508	2852	9576	0.911	0.22337	0.11200	1.9944	0.7522	3.3576	72.15	3.3576	0.7522	1,026	1,127
317	410	Relocated	14.00	1551	3213	10341	0.937	0.22802	0.11597	1.9663	0.7493	3.2185	77.91	3.2185	0.7493	1,056	1,127
318	411	Relocated	16.00	900	627	3472	0.542	0.22737	0.11582	1.9631	0.7470	5.5375	26.16	5.5375	0.7470	613	1,130
318	411	Relocated	16.00	957	757	3929	0.577	0.22756	0.11631	1.9565	0.7448	5.1902	29.60	5.1902	0.7448	651	1,129
318	411	Relocated	16.00	1003	880	4304	0.604	0.22694	0.11744	1.9323	0.7346	4.8909	32.43	4.8909	0.7346	683	1,130
318	411	Relocated	16.00	1055	1042	4886	0.636	0.23286	0.11950	1.9486	0.7504	4.6891	36.81	4.6891	0.7504	718	1,129
318	411	Relocated	16.00	1097	1170	5239	0.661	0.23093	0.11935	1.9349	0.7420	4.4778	39.47	4.4778	0.7420	747	1,130
318	411	Relocated	16.00	1149	1351	5780	0.692	0.23223	0.11994	1.9363	0.7446	4.2783	43.55	4.2783	0.7446	782	1,130
318	411	Relocated	16.00	1204	1597	6486	0.726	0.23734	0.12322	1.9261	0.7488	4.0614	48.87	4.0614	0.7488	820	1,129
318	411	Relocated	16.00	1252	1798	7048	0.755	0.23850	0.12338	1.9332	0.7534	3.9199	53.10	3.9199	0.7534	852	1,129
318	411	Relocated	16.00	1298	2018	7588	0.782	0.23890	0.12427	1.9225	0.7499	3.7602	57.17	3.7602	0.7499	884	1,130
318	411	Relocated	16.00	1352	2325	8358	0.815	0.24254	0.12669	1.9144	0.7524	3.5948	62.97	3.5948	0.7524	920	1,129
318	411	Relocated	16.00	1396	2655	9148	0.841	0.24900	0.13142	1.8947	0.7545	3.4456	68.92	3.4456	0.7545	950	1,130
318	411	Relocated	16.00	1450	3032	9875	0.874	0.24914	0.13393	1.8602	0.7409	3.2569	74.40	3.2569	0.7409	987	1,129
318	411	Relocated	16.00	1505	3540	10873	0.907	0.25463	0.13985	1.8208	0.7332	3.0715	81.92	3.0715	0.7332	1,024	1,129
318	411	Relocated	16.00	1553	4058	11726	0.936	0.25790	0.14590	1.7676	0.7163	2.8896	88.34	2.8896	0.7163	1,057	1,129
319	434	Relocated	16.00	903	623	3430	0.553	0.22313	0.11394	1.9583	0.7382	5.5056	25.84	5.5056	0.7382	615	1,111
319	434	Relocated	16.00	949	709	3711	0.581	0.21857	0.11171	1.9566	0.7300	5.2341	27.96	5.2341	0.7300	646	1,112
319	434	Relocated	16.00	1006	848	4193	0.616	0.21977	0.11216	1.9594	0.7330	4.9446	31.59	4.9446	0.7330	685	1,112
319	434	Relocated	16.00	1053	996	4694	0.645	0.22456	0.11488	1.9548	0.7392	4.7129	35.36	4.7129	0.7392	717	1,111
319	434	Relocated	16.00	1097	1125	5075	0.672	0.22370	0.11476	1.9493	0.7357	4.5111	38.23	4.5111	0.7357	747	1,111
319	434	Relocated	16.00	1148	1320	5677	0.703	0.22849	0.11749	1.9448	0.7418	4.3008	42.77	4.3008	0.7418	781	1,112
319	434	Relocated	16.00	1199	1516	6229	0.735	0.22984	0.11844	1.9405	0.7424	4.1088	46.93	4.1088	0.7424	816	1,110
319	434	Relocated	16.00	1258	1782	6961	0.771	0.23332	0.12054	1.9357	0.7461	3.9063	52.44	3.9063	0.7461	856	1,111
319	434	Relocated	16.00	1300	1990	7462	0.796	0.23421	0.12198	1.9201	0.7415	3.7497	56.22	3.7497	0.7415	885	1,112
319	434	Relocated	16.00	1350	2261	8144	0.827	0.23703	0.12375	1.9154	0.7442	3.6019	61.36	3.6019	0.7442	919	1,111
319	434	Relocated	16.00	1399	2610	8907	0.857	0.24140	0.12836	1.8806	0.7373	3.4126	67.10	3.4126	0.7373	952	1,111
319	434	Relocated	16.00	1454	3034	9829	0.891	0.24662	0.13292	1.8554	0.7353	3.2396	74.05	3.2396	0.7353	990	1,111
319	434	Relocated	16.00	1506	3568	10873	0.923	0.25430	0.14067	1.8077	0.7275	3.0474	81.92	3.0474	0.7275	1,025	1,111
319	434	Relocated	16.00	1549	3917	11334	0.949	0.25056	0.14192	1.7655	0.7052	2.8935	85.39	2.8935	0.7052	1,054	1,111
320	412	Relocated	18.00	903	765	3846	0.544	0.25019	0.13991	1.7882	0.7138	5.0275	28.98	5.0275	0.7138	615	1,130
320	412	Relocated	18.00	951	902	4324	0.573	0.25361	0.14123	1.7957	0.7217	4.7938	32.58	4.7938	0.7217	647	1,130
320	412	Relocated	18.00	1000	1043	4761	0.603	0.25254	0.14046	1.7980	0.7211	4.5647	35.87	4.5647	0.7211	681	1,129
320	412	Relocated	18.00	1048	1201	5218	0.632	0.25201	0.14051	1.7935	0.7185	4.3447	39.31	4.3447	0.7185	713	1,129
320	412	Relocated	18.00	1100	1408	5842	0.663	0.25610	0.14246	1.7978	0.7260	4.1491	44.01	4.1491	0.7260	749	1,129
320	412	Relocated	18.00	1155	1660	6486	0.696	0.25790	0.14508	1.7776	0.7204	3.9072	48.87	3.9072	0.7204	786	1,130
320	412	Relocated	18.00	1199	1800	7089	0.723	0.26157	0.14063	1.8600	0.7591	3.9383	53.41	3.9383	0.7591	816	1,129
320	412	Relocated	18.00	1252	2125	7692	0.755	0.26030	0.14581	1.7851	0.7268	3.6198	57.95	3.6198	0.7268	852	1,129
320	412	Relocated	18.00	1301	2434	8399	0.784	0.26322	0.14885	1.7684	0.7240	3.4507	63.28	3.4507	0.7240	886	1,130
320	412	Relocated	18.00	1348	2777	9189	0.812	0.26824	0.15267	1.7570	0.7262	3.3090	69.23	3.3090	0.7262	918	1,130
320	412	Relocated	18.00	1399	3203	9990	0.843	0.27075	0.15753	1.7187	0.7137	3.1190	75.26	3.1190	0.7137	952	1,130
320	412	Relocated	18.00	1450	3721	10977	0.874	0.27694	0.16436	1.6849	0.7076	2.9500	82.70	2.9500	0.7076	987	1,129
320	412	Relocated	18.00	1487	4180	11809	0.896	0.28329	0.17120	1.6548	0.7028	2.8251	88.97	2.8251	0.7028	1,012	1,130
321	413	Relocated	20.00	901	884	4071	0.543	0.26601	0.16275	1.6344	0.6727	4.6052	30.67	4.6052	0.6727	613	1,129
321	413	Relocated	20.00	952	1053	4590	0.574	0.26864	0.16435	1.6346	0.6761	4.3590	34.58	4.3590	0.6761	648	1,129
321	413	Relocated	20.00	1002	1251	5130	0.604	0.27103	0.16746	1.6185	0.6724	4.1007	38.65	4.1007	0.6724	682	1,129
321	413	Relocated	20.00	1048	1457	5711	0.632	0.27582	0.17046	1.6181	0.6781	3.9197	43.03	3.9197	0.6781	713	1,129
321	413	Relocated	20.00	1099	1675	6251	0.663	0.27453	0.16993	1.6155	0.6755	3.7319	47.09	3.7319	0.6755	748	1,128
321	413	Relocated	20.00	1149	1913	6864	0.693	0.27579	0.16983	1.6239	0.6805	3.5881	51.71	3.5881	0.6805	782	1,129
321	413	Relocated	20.00	1200	2207	7539	0.724	0.27771	0.17199	1.6147	0.6790	3.4159	56.80	3.4159	0.6790	817	1,128
321	413	Relocated	20.00	1255	2614	8494	0.757	0.28606	0.17809	1.6063	0.6856	3.2494	63.99	3.2494	0.6856	854	1,128
321	413	Relocated	20.00	1301	2988	9180	0.785	0.28769	0.18273	1.5744	0.6739	3.0723	69.16	3.0723	0.6739	886	1,128
321	413	Relocated	20.00	1352	3424	10031	0.816	0.29109	0.18658	1.5602	0.6717	2.9296	75.57	2.9296	0.6717	920	1,128
321	413	Relocated	20.00	1400	3955	11028	0.844	0.29846	0.19410	1.5377	0.6704	2.7884	83.08	2.7884	0.6704	953	1,129
321	413	Relocated	20.00	1435	4269	11485	0.866	0.29585	0.19455	1.5207	0.6601	2.6903	86.53	2.6903	0.6601	977	1,128

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed →)

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
311	4.00	0.725	394	2385	817	1200	0.0879	0.0307	2.861	0.677	6.053	17.97	6.053	0.6768
311	4.00	0.750	438	2561	845	1241	0.0882	0.0309	2.858	0.677	5.847	19.29	5.847	0.6774
311	4.00	0.775	482	2736	873	1283	0.0882	0.0307	2.869	0.680	5.676	20.61	5.676	0.6797
311	4.00	0.800	530	2904	901	1324	0.0879	0.0308	2.858	0.676	5.479	21.88	5.479	0.6760
311	4.00	0.825	584	3076	929	1365	0.0876	0.0309	2.832	0.669	5.267	23.17	5.267	0.6688
311	4.00	0.850	643	3266	958	1407	0.0875	0.0311	2.815	0.665	5.079	24.61	5.079	0.6645
311	4.00	0.875	706	3449	986	1448	0.0873	0.0313	2.786	0.657	4.885	25.98	4.885	0.6568
311	4.00	0.900	771	3631	1014	1489	0.0869	0.0315	2.762	0.650	4.709	27.36	4.709	0.6497
311	4.00	0.925	839	3811	1042	1531	0.0862	0.0315	2.739	0.642	4.542	28.71	4.542	0.6420
312	6.00	0.725	486	2877	816	1199	0.1062	0.0380	2.796	0.727	5.920	21.68	5.920	0.7269
312	6.00	0.750	539	3096	844	1240	0.1068	0.0381	2.806	0.732	5.744	23.33	5.744	0.7317
312	6.00	0.775	599	3311	872	1282	0.1069	0.0383	2.791	0.728	5.528	24.94	5.528	0.7281
312	6.00	0.800	661	3535	900	1323	0.1071	0.0384	2.787	0.728	5.348	26.63	5.348	0.7279
312	6.00	0.825	727	3767	929	1364	0.1074	0.0386	2.784	0.728	5.182	28.38	5.182	0.7281
312	6.00	0.850	805	4011	957	1406	0.1076	0.0390	2.759	0.722	4.983	30.22	4.983	0.7224
312	6.00	0.875	887	4265	985	1447	0.1080	0.0394	2.741	0.719	4.808	32.13	4.808	0.7189
312	6.00	0.900	975	4526	1013	1488	0.1084	0.0399	2.721	0.715	4.642	34.10	4.642	0.7150
312	6.00	0.925	1070	4795	1041	1530	0.1087	0.0402	2.701	0.710	4.481	36.13	4.481	0.7104
313	8.00	0.725	607	3418	815	1197	0.1265	0.0477	2.655	0.754	5.631	25.75	5.631	0.7537
313	8.00	0.750	676	3665	843	1238	0.1268	0.0480	2.644	0.751	5.422	27.61	5.422	0.7514
313	8.00	0.775	749	3927	871	1279	0.1273	0.0482	2.641	0.752	5.243	29.59	5.243	0.7522
313	8.00	0.800	830	4202	899	1321	0.1277	0.0485	2.634	0.751	5.063	31.66	5.063	0.7513
313	8.00	0.825	915	4470	927	1362	0.1278	0.0488	2.621	0.748	4.885	33.68	4.885	0.7477
313	8.00	0.850	1002	4737	955	1403	0.1277	0.0489	2.613	0.745	4.728	35.69	4.728	0.7449
313	8.00	0.875	1104	5061	983	1444	0.1287	0.0494	2.607	0.747	4.584	38.13	4.584	0.7466
313	8.00	0.900	1215	5390	1011	1486	0.1295	0.0499	2.597	0.746	4.436	40.61	4.436	0.7456
313	8.00	0.925	1339	5749	1039	1527	0.1308	0.0506	2.582	0.745	4.294	43.31	4.294	0.7453
314	10.00	0.725	814	4229	824	1210	0.1532	0.0619	2.476	0.773	5.195	31.86	5.195	0.7735
314	10.00	0.750	909	4553	852	1252	0.1541	0.0624	2.470	0.774	5.009	34.30	5.009	0.7737
314	10.00	0.775	1012	4888	880	1294	0.1548	0.0629	2.462	0.773	4.830	36.83	4.830	0.7731
314	10.00	0.800	1122	5240	909	1335	0.1560	0.0635	2.456	0.774	4.670	39.48	4.670	0.7739
314	10.00	0.825	1243	5609	937	1377	0.1569	0.0641	2.448	0.774	4.512	42.26	4.512	0.7737
314	10.00	0.850	1372	6013	966	1419	0.1584	0.0647	2.450	0.778	4.383	45.30	4.383	0.7780
314	10.00	0.875	1509	6407	994	1460	0.1594	0.0653	2.442	0.778	4.246	48.27	4.246	0.7780
314	10.00	0.900	1655	6806	1022	1502	0.1600	0.0658	2.433	0.777	4.112	51.28	4.112	0.7767
314	10.00	0.925	1809	7210	1051	1544	0.1604	0.0662	2.424	0.775	3.986	54.32	3.986	0.7748
315	11.90	0.725	1014	4902	824	1211	0.1773	0.0769	2.306	0.775	4.834	36.93	4.834	0.7749
315	11.90	0.750	1134	5292	853	1253	0.1788	0.0776	2.303	0.777	4.667	39.87	4.667	0.7772
315	11.90	0.775	1266	5686	881	1295	0.1798	0.0785	2.291	0.775	4.491	42.84	4.491	0.7753
315	11.90	0.800	1405	6084	910	1336	0.1808	0.0793	2.279	0.773	4.330	45.84	4.330	0.7732
315	11.90	0.825	1557	6493	938	1378	0.1814	0.0801	2.264	0.769	4.170	48.92	4.170	0.7693
315	11.90	0.850	1731	6992	966	1420	0.1839	0.0814	2.259	0.773	4.039	52.68	4.039	0.7732
315	11.90	0.875	1913	7477	995	1462	0.1856	0.0824	2.251	0.774	3.909	56.33	3.909	0.7737
315	11.90	0.900	2106	7978	1023	1503	0.1873	0.0835	2.243	0.775	3.788	60.11	3.788	0.7746
315	11.90	0.925	2310	8495	1052	1545	0.1888	0.0843	2.238	0.776	3.677	64.00	3.677	0.7760
316	12.20	0.725	988	4784	806	1183	0.1813	0.0804	2.256	0.767	4.842	36.04	4.842	0.7667
316	12.20	0.750	1101	5156	833	1224	0.1826	0.0809	2.258	0.770	4.683	38.85	4.683	0.7698
316	12.20	0.775	1230	5561	861	1265	0.1843	0.0818	2.253	0.772	4.521	41.90	4.521	0.7718
316	12.20	0.800	1363	5945	889	1306	0.1849	0.0824	2.244	0.770	4.362	44.79	4.362	0.7699
316	12.20	0.825	1509	6362	917	1347	0.1860	0.0831	2.237	0.770	4.216	47.93	4.216	0.7699
316	12.20	0.850	1664	6776	944	1387	0.1868	0.0840	2.225	0.767	4.072	51.05	4.072	0.7674
316	12.20	0.875	1839	7263	972	1428	0.1889	0.0850	2.222	0.771	3.949	54.72	3.949	0.7705
316	12.20	0.900	2053	7802	1000	1469	0.1918	0.0872	2.199	0.768	3.800	58.78	3.800	0.7685
316	12.20	0.925	2295	8393	1028	1510	0.1953	0.0898	2.175	0.767	3.657	63.23	3.657	0.7670
316	12.20	0.950	2566	9036	1055	1551	0.1992	0.0926	2.151	0.766	3.521	68.08	3.521	0.7663
317	14.00	0.725	1255	5628	817	1200	0.2073	0.0978	2.120	0.770	4.484	42.40	4.484	0.7702
317	14.00	0.750	1405	6063	845	1241	0.2088	0.0990	2.109	0.769	4.315	45.68	4.315	0.7692
317	14.00	0.775	1569	6514	873	1283	0.2099	0.1000	2.098	0.767	4.152	49.08	4.152	0.7671
317	14.00	0.800	1741	6976	901	1324	0.2111	0.1010	2.090	0.766	4.007	52.56	4.007	0.7662
317	14.00	0.825	1927	7475	929	1365	0.2128	0.1020	2.086	0.768	3.879	56.32	3.879	0.7678
317	14.00	0.850	2145	8018	958	1407	0.2148	0.1037	2.072	0.766	3.738	60.41	3.738	0.7663
317	14.00	0.875	2404	8618	986	1448	0.2180	0.1066	2.045	0.762	3.585	64.93	3.585	0.7619
317	14.00	0.900	2701	9271	1014	1489	0.2218	0.1102	2.013	0.757	3.432	69.85	3.432	0.7566
317	14.00	0.925	3037	9975	1042	1531	0.2257	0.1140	1.981	0.751	3.284	75.15	3.284	0.7510
318	16.00	0.725	1580	6431	819	1203	0.2357	0.1222	1.929	0.747	4.070	48.45	4.070	0.7473
318	16.00	0.750	1765	6944	847	1244	0.2380	0.1235	1.928	0.751	3.934	52.32	3.934	0.7505
318	16.00	0.775	1963	7463	875	1286	0.2394	0.1243	1.926	0.752	3.802	56.23	3.802	0.7519
318	16.00	0.800	2188	8036	904	1327	0.2421	0.1261	1.920	0.754	3.673	60.54	3.673	0.7537
318	16.00	0.825	2444	8642	932	1369	0.2446	0.1283	1.907	0.753	3.536	65.11	3.536	0.7525
318	16.00	0.850	2732	9294	960	1410	0.2480	0.1312	1.889	0.751	3.402	70.02	3.402	0.7508
318	16.00	0.875	3066	9968	988	1452	0.2508	0.1349	1.859	0.743	3.251	75.10	3.251	0.7431
318	16.00	0.900	3440	10667	1016	1493	0.2538	0.1392	1.824	0.733	3.101	80.36	3.101	0.7332
318	16.00	0.925	3853	11391	1045	1535	0.2564	0.1435	1.788	0.722	2.956	85.82	2.956	0.7224
319	16.00	0.725	1453	6054	806	1183	0.2295	0.1182	1.942	0.742	4.167	45.61	4.167	0.7422
319	16.00	0.750	1628	6541	833	1224	0.2316	0.1196	1.937	0.744	4.018	49.28	4.018	0.7439
319	16.00	0.775	1807	7021	861	1265	0.2327	0.1202	1.936	0.745	3.885	52.90	3.885	0.7453
319	16.00	0.800	2015	7543	889	1306	0.2346	0.1218	1.926	0.744	3.743	56.83	3.743	0.7443
319	16.00	0.825	2256	8115	917	1347	0.2372	0.1243	1.909	0.742	3.597	61.14	3.597	0.7418
319	16.00	0.850	2515	8709	944	1387	0.2401	0.1269	1.892	0.740	3.463	65.61	3.463	0.7398
319	16.00	0.875	2839	9428	972	1428	0.2452	0.1313	1.868	0.738	3.321	71.03	3.321	0.7382
319	16.00	0.900	3180	10093	1000	1469	0.2481	0.1351	1.837	0.730	3.174	76.04	3.174	0.7300
319	16.00	0.925	3554	10770	1028	1510	0.2506	0.1390	1.802	0.720	3.030	81.14	3.030	0.7200
320	18.00	0.725	1849	7077	819	1203	0.2594	0.1430	1.814	0.737	3.827	53.32	3.827	0.7371
320	18.00	0.750	2076	7628	847	1244	0.2615	0.1452	1.800	0.735	3.674	57.47	3.674	0.7347
320	18.00	0.775	2325	8204	875	1286	0.2631	0.1472	1.787	0.732	3.529	61.81	3.529	0.7317
320	18.00	0.800	2623	8810	904	1327	0.2654	0.1512	1.756	0.722	3.359	66.37	3.359	0.7217
320	18.00	0.825	2940	9490	932	1369	0.2686	0.1543	1.741	0.720	3.228	71.50	3.228	0.7199
320	18.00	0.850	3323	10238	960	1410	0.2732	0.1596	1.711	0.714	3.081	77.13	3.081	0.7137
320	18.00	0.875	3758	11047	988	1452	0.2779	0.1653	1.681	0.707	2.940	83.23	2.940	0.7073
321	20.00	0.725	2233	7624	818	1202	0.2799	0.1732	1.617	0.682	3.414	57.44	3.414	0.6825
321	20.00	0.750	2520	8248	846	1243	0.2832	0.1767	1.603	0.681	3.273	62.14	3.273	0.6805
321	20.00	0.775	2841	8912	875	1285	0.2863	0.1803	1.588	0.678	3.137	67.14	3.137	0.6780
321	20.00	0.800	3210	9646	903	1326	0.2910	0.1854	1.570	0.676	3.005	72.67	3.005	0.6757
321	20.00	0.825	3597	10357	931	1368	0.2936	0.1892	1.552	0.671	2.879	78.03	2.879	0.6708
321	20.00	0.850	4012	11080	959	1409	0.2960	0.1931	1.533	0.666	2.762	83.48	2.762	0.6655





AU. Data Set # 32

DATA SET Number 32

47 x 138

Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
103.0	13.00	4	26.0	539.490	0.948

Power weighted solidity = 0.14786

$C_T = 0.1515 \cdot \frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4}$ $C_P = 0.500 \cdot \frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5}$ $FM = 0.798 \frac{C_T^{3/2}}{C_P}$

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS — Harris Computed

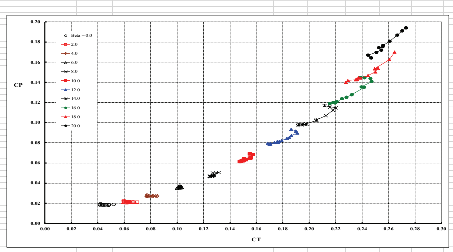
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
322	448	Relocated	0.00	899	102	793	0.554	0.05205	0.01890	2.7531	0.5012	7.7745	5.97	7.7745	0.5012	612	1,105
322	448	Relocated	0.00	951	121	833	0.586	0.04886	0.01895	2.5789	0.4549	6.8843	6.28	6.8843	0.4549	647	1,105
322	448	Relocated	0.00	1005	139	922	0.619	0.04842	0.01844	2.6258	0.4611	6.6331	6.95	6.6331	0.4611	684	1,105
322	448	Relocated	0.00	1048	156	1001	0.645	0.04834	0.01825	2.6488	0.4648	6.4167	7.54	6.4167	0.4648	713	1,106
322	448	Relocated	0.00	1097	175	1051	0.676	0.04633	0.01785	2.5951	0.4457	6.0057	7.92	6.0057	0.4457	747	1,105
322	448	Relocated	0.00	1156	214	1169	0.712	0.04640	0.01865	2.4874	0.4276	5.4626	8.81	5.4626	0.4276	787	1,105
322	448	Relocated	0.00	1200	240	1239	0.739	0.04564	0.01870	2.4402	0.4160	5.1625	9.33	5.1625	0.4160	817	1,105
322	448	Relocated	0.00	1252	268	1308	0.771	0.04426	0.01839	2.4069	0.4041	4.8806	9.85	4.8806	0.4041	852	1,105
322	448	Relocated	0.00	1301	303	1437	0.801	0.04503	0.01853	2.4304	0.4116	4.7426	10.83	4.7426	0.4116	886	1,106
322	448	Relocated	0.00	1352	339	1487	0.833	0.04315	0.01847	2.3360	0.3872	4.3864	11.20	4.3864	0.3872	920	1,105
322	448	Relocated	0.00	1400	383	1606	0.862	0.04346	0.01880	2.3124	0.3847	4.1932	12.10	4.1932	0.3847	953	1,106
322	448	Relocated	0.00	1454	418	1655	0.896	0.04152	0.01831	2.2676	0.3687	3.9593	12.47	3.9593	0.3687	990	1,105
322	448	Relocated	0.00	1501	477	1754	0.924	0.04130	0.01899	2.1741	0.3526	3.6771	13.21	3.6771	0.3526	1,022	1,106
322	448	Relocated	0.00	1547	537	1893	0.953	0.04196	0.01953	2.1481	0.3511	3.5251	14.26	3.5251	0.3511	1,053	1,105
323	449	Relocated	2.00	902	116	1068	0.562	0.06963	0.02129	3.2712	0.6888	9.2069	8.05	9.2069	0.6888	614	1,092
323	449	Relocated	2.00	955	136	1147	0.595	0.06671	0.02103	3.1726	0.6539	8.4338	8.64	8.4338	0.6539	650	1,093
323	449	Relocated	2.00	999	156	1246	0.622	0.06623	0.02107	3.1430	0.6454	7.9872	9.39	7.9872	0.6454	680	1,093
323	449	Relocated	2.00	1047	179	1365	0.652	0.06605	0.02100	3.1449	0.6450	7.6257	10.28	7.6257	0.6450	713	1,093
323	449	Relocated	2.00	1104	214	1464	0.688	0.06372	0.02142	2.9750	0.5992	6.8411	11.03	6.8411	0.5992	751	1,092
323	449	Relocated	2.00	1149	238	1583	0.716	0.06360	0.02113	3.0103	0.6058	6.6513	11.93	6.6513	0.6058	782	1,092
323	449	Relocated	2.00	1200	267	1711	0.747	0.06303	0.02081	3.0290	0.6068	6.4082	12.89	6.4082	0.6068	817	1,093
323	449	Relocated	2.00	1249	300	1820	0.778	0.06189	0.02073	2.9847	0.5925	6.0667	13.71	6.0667	0.5925	850	1,093
323	449	Relocated	2.00	1299	351	1978	0.809	0.06218	0.02156	2.8835	0.5738	5.6353	14.90	5.6353	0.5738	884	1,093
323	449	Relocated	2.00	1350	394	2117	0.841	0.06162	0.02156	2.8572	0.5660	5.3731	15.95	5.3731	0.5660	919	1,093
323	449	Relocated	2.00	1399	445	2315	0.871	0.06274	0.02189	2.8668	0.5730	5.2022	17.44	5.2022	0.5730	952	1,093
323	449	Relocated	2.00	1450	482	2334	0.903	0.05888	0.02129	2.7657	0.5356	4.8423	17.58	4.8423	0.5356	987	1,093
323	449	Relocated	2.00	1450	493	2374	0.903	0.05989	0.02178	2.7503	0.5371	4.8154	17.89	4.8154	0.5371	987	1,093
323	449	Relocated	2.00	1507	569	2552	0.939	0.05961	0.02239	2.6624	0.5187	4.4851	19.23	4.4851	0.5187	1,026	1,092
323	449	Relocated	2.00	1551	631	2671	0.966	0.05890	0.02277	2.5861	0.5008	4.2330	20.12	4.2330	0.5008	1,056	1,093
324	450	Relocated	4.00	902	150	1304	0.563	0.08502	0.02752	3.0887	0.7187	8.6933	9.82	8.6933	0.7187	614	1,091
324	450	Relocated	4.00	950	171	1443	0.593	0.08481	0.02686	3.1578	0.7339	8.4386	10.87	8.4386	0.7339	647	1,090
324	450	Relocated	4.00	1005	203	1561	0.627	0.08198	0.02693	3.0441	0.6955	7.6897	11.76	7.6897	0.6955	684	1,091
324	450	Relocated	4.00	1050	235	1739	0.655	0.08367	0.02734	3.0606	0.7065	7.4000	13.10	7.4000	0.7065	715	1,091
324	450	Relocated	4.00	1102	271	1858	0.688	0.08116	0.02727	2.9761	0.6766	6.8561	14.00	6.8561	0.6766	750	1,090
324	450	Relocated	4.00	1147	298	1996	0.716	0.08048	0.02659	3.0262	0.6851	6.6980	15.04	6.6980	0.6851	781	1,090
324	450	Relocated	4.00	1198	356	2213	0.748	0.08179	0.02788	2.9334	0.6695	6.2163	16.67	6.2163	0.6695	815	1,090
324	450	Relocated	4.00	1252	390	2273	0.781	0.07692	0.02676	2.8743	0.6361	5.8282	17.12	5.8282	0.6361	852	1,091
324	450	Relocated	4.00	1276	416	2391	0.796	0.07790	0.02696	2.8888	0.6434	5.7476	18.01	5.7476	0.6434	869	1,091
324	450	Relocated	4.00	1299	443	2510	0.811	0.07890	0.02722	2.8991	0.6499	5.6659	18.91	5.6659	0.6499	884	1,090
324	450	Relocated	4.00	1326	462	2569	0.827	0.07750	0.02668	2.9044	0.6452	5.5606	19.35	5.5606	0.6452	903	1,091
324	450	Relocated	4.00	1356	503	2699	0.846	0.07786	0.02717	2.8660	0.6382	5.3658	20.33	5.3658	0.6382	923	1,091
324	450	Relocated	4.00	1398	560	2885	0.872	0.07830	0.02760	2.8369	0.6335	5.1518	21.74	5.1518	0.6335	952	1,091
324	450	Relocated	4.00	1448	617	3034	0.904	0.07676	0.02737	2.8047	0.6201	4.9173	22.86	4.9173	0.6201	986	1,090
324	450	Relocated	4.00	1501	702	3300	0.937	0.07769	0.02795	2.7794	0.6182	4.7009	24.86	4.7009	0.6182	1,022	1,090
324	450	Relocated	4.00	1547	780	3478	0.965	0.07709	0.02837	2.7171	0.6020	4.4590	26.20	4.4590	0.6020	1,053	1,091
325	??	Relocated	6.00	900	197	1566	0.562	0.10255	0.03639	2.8181	0.7202	7.9492	11.80	7.9492	0.7202	613	1,090
325	??	Relocated	6.00	953	226	1744	0.595	0.10186	0.03516	2.8968	0.7378	7.7168	13.14	7.7168	0.7378	649	1,090
325	??	Relocated	6.00	1002	267	1962	0.626	0.10366	0.03574	2.9003	0.7452	7.3483	14.78	7.3483	0.7452	682	1,090
325	??	Relocated	6.00	1054	308	2161	0.659	0.10318	0.03542	2.9129	0.7467	7.0162	16.28	7.0162	0.7467	717	1,089
325	??	Relocated	6.00	1100	359	2349	0.687	0.10298	0.03632	2.8351	0.7260	6.5432	17.70	6.5432	0.7260	749	1,090
325	??	Relocated	6.00	1153	405	2557	0.720	0.10203	0.03558	2.8674	0.7309	6.3136	19.26	6.3136	0.7309	785	1,090
325	??	Relocated	6.00	1201	449	2716	0.750	0.09988	0.03490	2.8616	0.7217	6.0490	20.46	6.0490	0.7217	817	1,090
325	??	Relocated	6.00	1250	518	3003	0.781	0.10195	0.03572	2.8544	0.7273	5.7973	22.62	5.7973	0.7273	851	1,089
325	??	Relocated	6.00	1298	577	3211	0.811	0.10110	0.03553	2.8453	0.7219	5.5650	24.19	5.5650	0.7219	884	1,089
325	??	Relocated	6.00	1354	657	3489	0.846	0.10095	0.03564	2.8323	0.7181	5.3105	26.29	5.3105	0.7181	922	1,089
325	??	Relocated	6.00	1400	731	3707	0.875	0.10032	0.03587	2.7965	0.7068	5.0711	27.93	5.0711	0.7068	953	1,089
325	??	Relocated	6.00	1452	834	4103	0.907	0.10323	0.03669	2.8138	0.7214	4.9197	30.91	4.9197	0.7214	988	1,090
325	??	Relocated	6.00	1511	942	4361	0.944	0.10132	0.03677	2.7554	0.6999	4.6295	32.86	4.6295	0.6999	1,029	1,090
325	??	Relocated	6.00	1550	1053	4618	0.968	0.10196	0.03808	2.6776	0.6823	4.3856	34.79	4.3856	0.6823	1,055	1,090
326	452	Relocated	8.00	911	263	1948	0.568	0.12451	0.04684	2.6579	0.7484	7.4068	14.68	7.4068	0.7484	620	1,092
326	452	Relocated	8.00	955	303	2177	0.596	0.12662	0.04685	2.7027	0.7675	7.1848	16.40	7.1848	0.7675	650	1,091
326	452	Relocated	8.00	1001	351	2406	0.624	0.12737	0.04713	2.7028	0.7697	6.8547	18.13	6.8547	0.7697	681	1,092
326	452	Relocated	8.00	1048	399	2624	0.654	0.12673	0.04668	2.7148	0.7712	6.5764	19.77	6.5764	0.7712	713	1,091
326	452	Relocated	8.00	1106	471	2883	0.690	0.12502	0.04688	2.6666	0.7524	6.1210	21.72	6.1210	0.7524	753	1,091
326	452	Relocated	8.00	1148	527	3101	0.717	0.12481	0.04691	2.6608	0.7502	5.8843	23.36	5.8843	0.7502	781	1,090
326	452	Relocated	8.00	1200	609	3479	0.748	0.12815	0.04746	2.7003	0.7714	5.7126	26.21	5.7126	0.7714	817	1,092
326	452	Relocated	8.00	1252	677	3698	0.781	0.12514	0.04645	2.6938	0.7604	5.4623	27.86	5.4623	0.7604	852	1,091
326	452	Relocated	8.00	1303	783	4076	0.813	0.12735	0.04766	2.6718	0.7608	5.2056	30.71	5.2056	0.7608	887	1,091
326	452	Relocated	8.00	1352	872	4374	0.843	0.12693	0.04752	2.6713	0.7595	5.0161	32.95	5.0161	0.7595	920	1,092
326	452	Relocated	8.00	1404	980	4712	0.876	0.12680	0.04768	2.6591	0.7556	4.8082	35.50	4.8082	0.7556	956	1,091
326	452	Relocated	8.00	1455	1114	5109	0.907	0.12801	0.04870	2.6284	0.7505	4.5862	38.49	4.5862	0.7505	990	1,092
326	452	Relocated	8.00	1498	1260	5567	0.934	0.13159	0.05048	2.6070	0.7547	4.4183	41.94	4.4183	0.7547	1,020	1,092
326	452	Relocated	8.00	1549	1384	5746	0.966	0.12703	0.05015	2.5332	0.7205	4.1517	43.29	4.1517	0.7205	1,054	1,091
327	453	Relocated	10.00	908	349	2330	0.568	0.14991	0.06278	2.3878	0.7378	6.6762	17.55	6.6762	0.7378	618	1,088
327	453	Relocated	10.00	935	389	2488	0.585	0.15096	0.06409	2.3556	0.7304	6.3959	18.74	6.3959	0.7304	636	1,088
327	453	Relocated	10.00	999	460	2823	0.625	0.15004	0.06213	2.4149	0.7465	6.1370	21.27	6.1370	0.7465	680	1,088
327	453	Relocated	10.00	1053	532	3080	0.658	0.14734	0.06136	2.4013	0.7356	5.7895	23.20	5.7895	0.7356	717	1,089
327	453	Relocated	10.00	1100	610	3376	0.688	0.14800	0.06172	2.3980	0.7362	5.5344	25.43	5.5344	0.7362	749	1,088
327	453	Relocated	10.00	1151	693	3692	0.720	0.14783	0.06120	2.4154	0.7411	5.3276	27.82	5.3276	0.7411	783	1,088
327	453	Relocated	10.00	1198	797	4067	0.749	0.15031	0.06242	2.4080	0.7450	5.1029	30.64	5.1029	0.7450	815	1,089
327	453	Relocated	10.00	1248	896	4373	0.781	0.14893	0.06208	2.3992	0.7389	4.8806	32.95	4.8806	0.7389	849	1,088
327	453	Relocated	10.00	1296	1022	4817	0.811	0.15213	0.06323	2.4061	0.7489	4.7133	36.29	4.7133	0.7489	882	1,088
327	453	Relocated	10.00	1354	1199	5390	0.847	0.15595	0.06505	2.3976	0.7556	4.4954	40.61	4.4954	0.7556	922	1,088
327	453	Relocated	10.00	1408	1343	5785	0.881	0.15479	0.06479	2.3890	0.7500	4.3075	43.58	4.3075	0.7500	958	1,088
327	453	Relocated	10.00	1447	1481	6160	0.905	0.15606	0.06583	2.3707	0.7474	4.1594	46.41	4.1594	0.7474	985	1,088
327	453	Relocated	10.00	1506	1734	6732	0.942	0.15745	0.06836	2.3031	0.7292	3.8824	50.72	3.8824	0.7292	1,025	1,088
327	453	Relocated	10.00	1547	1896	6989	0.968	0.15491	0.06896	2.2462	0.7055	3.6862	52.65	3.6862	0.7055	1,053	1,088
328	454	Relocated	12.00	902	434	2586	0.564	0.16860	0.07964	2.1171	0.6937	5.9585	19.48	5.9585	0.6937	614	1,089
328	454	Relocated	12.00	960	519	2962	0.601	0.17048	0.07900	2.1581	0.7111	5.7071	22.32	5.7071	0.7111	653	1,087
328	454	Relocated	12.00	1010	602	3268	0.632	0.16993	0.07868	2.1597	0.7105	5.4286	24.62	5.4286	0.7105	687	1,088
328	454	Relocated	12.00	1051	693	3613	0.658	0.17350	0.08039	2.1584	0.7174	5.2136	27.22	5.2136	0.7174	715	1,087
328	454	Relocated	12.00	1097	773	3870	0.686	0.17058	0.07885	2.1633	0.7130	5.0065	29.16	5.0065	0.7130	747	1,088
328	454	Relocated	12.00	1098	790	4008	0.687	0.17634	0.08037	2.1943	0.7353	5.0734	30.20	5.0734	0.7353	747	1,088
328	454	Relocated	12.00	1148	911	4363	0.718	0.17561	0.08109	2.1657	0.7242	4.7892	32.87	4.7892	0.7242	781	1,088
328	454	Relocated	12.00	1198	1040	4798	0.749	0.17733	0.08145	2.1771	0.7316	4.6135	36.15	4.6135	0.7316	815	1,089
328	454	Relocated	12.00	1252	1199	5291	0.783	0.17905	0.08227	2.1763	0.7348	4.4128	39.86	4.4128	0.7348	852	1,088
328	454	Relocated	12.00	1300	1377	5834	0.813	0.18311	0.08440	2.1695	0.7408	4.2367	43.95	4.2367	0.7408	885	1,088
328	454	Relocated	12.00	1352	1568	6377	0.846	0.18506	0.08544	2.1659	0.7435	4.0670	48.04	4.0670	0.7435	920	1,088
328	454	Relocated	12.00	1402	1784	6910	0.877	0.18648	0.08718	2.1390	0.7371	3.8733	52.06	3.8733	0.7371	954	1,088
328	454	Relocated	12.00	1449	2027	7562	0.907	0.19105	0.08972	2.1293	0.7427	3.7306	56.97	3.7306	0.7427	986	1,087
328	454	Relocated	12.00	1498	2287	8036	0.937	0.18996	0.09162	2.0733	0.7211	3.5138	60.54	3.5138	0.7211	1,020	1,088
328	454	Relocated	12.00	1549	2574	8430	0.969	0.18636	0.09326	1.9983	0.6884	3.2751	63.51	3.2751	0.6884	1,054	1,088
329	455	Relocated	14.00	903	536	2949	0.565	0.19184	0.09803	1.9570	0.6840	5.5019	22.22	5.5019	0.6840	615	1,088
329	455	Relocated	14.00	951	620	3264	0.595	0.19144	0.09707	1.9721	0.6886	5.2645	24.59	5.2645	0.6886	647	1,088
329	455	Relocated	14.00	999	726	3649	0.625	0.19395	0.09806	1.9778	0.6951	5.0262	27.49	5.0262	0.6951	680	1,088
329	455	Relocated	14.00	1049	841	4083	0.656	0.19682	0.09811	2.0061	0.7102	4.8549	30.76	4.8549	0.7102	714	1,088
329	455	Relocated	14.00	1098	962	4418	0.687	0.19438	0.09786	1.9863	0.6988	4.5925	33.29	4.5925	0.6988	747	1,088
329	455	Relocated	14.00	1149	1109	4931	0.719	0.19812	0.09845	2.0124	0.7148	4.4463	37.15	4.4463	0.7148	782	1,088
329	455	Relocated	14.00	1198	1264	5345	0.749	0.19755	0.09900	1.9955	0.7078	4.2286	40.27	4.2286	0.7078	815	1,089
329	455	Relocated	14.00	1253	1491	6075	0.784	0.20525	0.10207	2.0110	0.7270	4.0744	45.77	4.0744	0.7270	853	1,088
329	455	Relocated	14.00	1298	1671	6529	0.812	0.20556	0.10290	1.9977	0.7228	3.9072	49.19	3.9072	0.7228	884	1,088
329	455	Relocated	14.00	1355	1977	7357	0.848	0.21255	0.10701	1.9862	0.7307	3.7213	55.43	3.7213	0.7307	922	1,088
329	455	Relocated	14.00	1401	2296	8067	0.876	0.21801	0.11244	1.9389	0.7224	3.5135	60.78	3.5135	0.7224	954	1,089
329	455	Relocated	14.00	1450	2593	8718	0.907	0.21995	0.11454	1.9203	0.7187	3.3621	65.68	3.3621	0.7187	987	1,088
329	455	Relocated	14.00	1500	2896	9152	0.938	0.21576	0.11555	1.8672	0.6921	3.1602	68.95	3.1602	0.6921	1,021	1,089
329	455	Relocated	14.00	1552	3241	9606	0.971	0.21154	0.11675	1.8119	0.6650	2.9639	72.37	2.9639	0.6650	1,056	1,088
330	456	Relocated	16.00	898	639	3275	0.561	0.21543	0.11883	1.8129	0.6715	5.1252	24.67	5.1252	0.6715	611	1,090
330	456	Relocated	16.00	953	770	3733	0.596	0.21803	0.11980	1.8199	0.6781	4.8481	28.12	4.8481	0.6781	649	1,088
330	456	Relocated	16.00	999	888	4113	0.625	0.21861	0.11994	1.8226	0.6800	4.6318	30.99	4.6318	0.6800	680	1,088
330	456	Relocated	16.00	1057	1050	4620	0.661	0.21935	0.11973	1.8320	0.6847	4.4000	34.81	4.4000	0.6847	719	1,088
330	456	Relocated	16.00	1099	1189	5029	0.687	0.22086	0.12063	1.8310	0.6867	4.2296	37.89	4.2296	0.6867	748	1,089
330	456	Relocated	16.00	1153	1408	5634	0.721	0.22480	0.12370	1.8173	0.6876	4.0014	42.45	4.0014	0.6876	785	1,089
330	456	Relocated	16.00	1197	1595	6160	0.748	0.22805	0.12524	1.8210	0.6939	3.8621	46.41	3.8621	0.6939	815	1,089
330	456	Relocated	16.00	1249	1849	6823	0.781	0.23200	0.12779	1.8155	0.6978	3.6901	51.40	3.6901	0.6978	850	1,089
330	456	Relocated	16.00	1352	2481	8324	0.845	0.24156	0.13519	1.7868	0.7008	3.3551	62.71	3.3551	0.7008	920	1,089
330	456	Relocated	16.00	1353	2493	8265	0.846	0.23949	0.13554	1.7669	0.6900	3.3153	62.27	3.3153	0.6900	921	1,089
330	456	Relocated	16.00	1402	2885	9162	0.876	0.24725	0.14098	1.7538	0.6959	3.1757	69.03	3.1757	0.6959	954	1,089
330	456	Relocated	16.00	1450	3252	9766	0.906	0.24639	0.14365	1.7152	0.6794	3.0031	73.58	3.0031	0.6794	987	1,089
330	456	Relocated	16.00	1501	3633	10273	0.938	0.24187	0.14467	1.6719	0.6561	2.8277	77.40	2.8277	0.6561	1,022	1,089
330	456	Relocated	16.00	1530	3850	10546	0.956	0.23897	0.14476	1.6508	0.6440	2.7392	79.45	2.7392	0.6440	1,041	1,089
331	457	Relocated	18.00	905	770	3514	0.564	0.22759	0.13989	1.6268	0.6193	4.5636	26.47	4.5636	0.6193	616	1,092
331	457	Relocated	18.00	952	908	3916	0.594	0.22920	0.14172	1.6173	0.6179	4.3128	29.50	4.3128	0.6179	648	1,091
331	457	Relocated	18.00	1001	1062	4444	0.624	0.23526	0.14259	1.6499	0.6386	4.1846	33.48	4.1846	0.6386	681	1,092
331	457	Relocated	18.00	1055	1249	4953	0.658	0.23605	0.14324	1.6480	0.6389	3.9656	37.32	3.9656	0.6389	718	1,091
331	457	Relocated	18.00	1101	1434	5423	0.687	0.23730	0.14469	1.6401	0.6376	3.7817	40.86	3.7817	0.6376	749	1,091
331	457	Relocated	18.00	1147	1617	5913	0.715	0.23841	0.14430	1.6521	0.6437	3.6568	44.55	3.6568	0.6437	781	1,092
331	457	Relocated	18.00	1200	1883	6637	0.748	0.24448	0.14674	1.6661	0.6574	3.5247	50.00	3.5247	0.6574	817	1,092
331	457	Relocated	18.00	1248	2171	7342	0.778	0.25005	0.15041	1.6625	0.6634	3.3819	55.31	3.3819	0.6634	849	1,092
331	457	Relocated	18.00	1302	2527	8047	0.812	0.25180	0.15418	1.6331	0.6540	3.1844	60.63	3.1844	0.6540	886	1,091
331	457	Relocated	18.00	1354	2828	8623	0.844	0.24949	0.15342	1.6262	0.6482	3.0492	64.97	3.0492	0.6482	922	1,092
331	457	Relocated	18.00	1398	3296	9604	0.872	0.26066	0.16245	1.6046	0.6537	2.9138	72.36	2.9138	0.6537	952	1,091
331	457	Relocated	18.00	1462	3945	10661	0.912	0.26457	0.17000	1.5563	0.6388	2.7024	80.32	2.7024	0.6388	995	1,091
332	458	Relocated	20.00	894.2	871	3720	0.558	0.24678	0.16405	1.5043	0.5964	4.2710	28.03	4.2710	0.5964	609	1,091
332	458	Relocated	20.00	933	1007	4014	0.582	0.24460	0.16697	1.4649	0.5782	3.9861	30.24	3.9861	0.5782	635	1,091
332	458	Relocated	20.00	993	1234	4662	0.620	0.25079	0.16972	1.4777	0.5905	3.7780	35.12	3.7780	0.5905	676	1,090
332	458	Relocated	20.00	1050	1479	5290	0.653	0.25452	0.17205				39.85	3.5767	0.5956	715	1,095
332	458	Relocated	20.00	1097	1711	5731	0.683	0.25261	0.17454				43.18	3.3495	0.5805	747	1,093
332	458	Relocated	20.00	1147	1963	6340	0.714	0.25562	0.17518				47.77	3.2298	0.5887	781	1,093
332	458	Relocated	20.00	1200	2265	6948	0.747	0.25594	0.17651				52.35	3.0675	0.5854	817	1,093
332	458	Relocated	20.00	1249	2617	7674	0.777	0.26094	0.18087	1.4427	0.5881	2.9324	57.82	2.9324	0.5881	850	1,094
332	458	Relocated	20.00	1300	3048	8499	0.810	0.26676	0.18683	1.4278	0.5885	2.7884	64.03	2.7884	0.5885	885	1,092
332	458	Relocated	20.00	1351	3500	9300	0.842	0.27028	0.19114	1.4140	0.5866	2.6571	70.07	2.6571	0.5866	920	1,092
332	458	Relocated	20.00	1394	3906	10010	0.867	0.27324	0.19418	1.4072	0.5870	2.5627	75.41	2.5627	0.5870	949	1,094

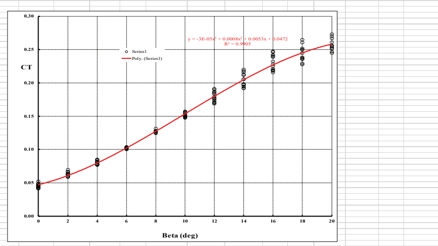
Page 332 unreadable,
But we took our best shot.

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS — Harris Computed

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM
322	0.00	0.725	224	1191	801	1177	0.0456	0.0185	2.465	0.420	5.317	8.97	5.317	0.4201
322	0.00	0.750	249	1271	829	1219	0.0454	0.0185	2.451	0.417	5.104	9.58	5.104	0.4166
322	0.00	0.775	273	1335	857	1258	0.0447	0.0185	2.423	0.409	4.890	10.06	4.890	0.4090
322	0.00	0.800	301	1407	884	1299	0.0442	0.0185	2.392	0.401	4.674	10.60	4.674	0.4014
322	0.00	0.825	331	1485	912	1340	0.0439	0.0185	2.368	0.396	4.486	11.19	4.486	0.3958
322	0.00	0.850	362	1556	939	1380	0.0433	0.0185	2.337	0.388	4.298	11.72	4.298	0.3882
322	0.00	0.875	394	1608	967	1421	0.0422	0.0185	2.284	0.375	4.081	12.11	4.081	0.3747
322	0.00	0.900	434	1685	995	1461	0.0419	0.0187	2.234	0.365	3.882	12.69	3.882	0.3649
322	0.00	0.925	479	1772	1022	1502	0.0417	0.0190	2.189	0.357	3.699	13.35	3.699	0.3565
322	0.00	0.950	529	1870	1050	1542	0.0417	0.0194	2.147	0.350	3.535	14.09	3.535	0.3500
323	2.00	0.725	245	1612	792	1164	0.0631	0.0209	3.017	0.605	6.580	12.14	6.580	0.6048
323	2.00	0.750	271	1716	820	1204	0.0628	0.0209	3.003	0.601	6.332	12.93	6.332	0.6005
323	2.00	0.775	300	1822	847	1244	0.0625	0.0210	2.976	0.593	6.073	13.73	6.073	0.5935
323	2.00	0.800	333	1926	874	1285	0.0619	0.0211	2.928	0.581	5.784	14.51	5.784	0.5811
323	2.00	0.825	373	2063	902	1325	0.0623	0.0216	2.887	0.575	5.531	15.54	5.531	0.5751
323	2.00	0.850	411	2185	929	1365	0.0622	0.0218	2.858	0.569	5.316	16.46	5.316	0.5689
323	2.00	0.875	444	2271	956	1405	0.0610	0.0216	2.831	0.558	5.115	17.11	5.115	0.5580
323	2.00	0.900	487	2375	984	1445	0.0603	0.0217	2.776	0.544	4.877	17.89	4.877	0.5441
323	2.00	0.925	535	2477	1011	1485	0.0596	0.0220	2.708	0.528	4.630	18.66	4.630	0.5275
323	2.00	0.950	592	2592	1038	1525	0.0591	0.0225	2.630	0.510	4.378	19.53	4.378	0.5103
324	4.00	0.725	317	2056	791	1162	0.0808	0.0272	2.969	0.673	6.486	15.49	6.486	0.6733
324	4.00	0.750	350	2173	818	1202	0.0798	0.0271	2.940	0.663	6.209	16.37	6.209	0.6626
324	4.00	0.775	386	2298	845	1242	0.0790	0.0271	2.913	0.653	5.953	17.31	5.953	0.6534
324	4.00	0.800	421	2408	873	1282	0.0777	0.0269	2.888	0.643	5.720	18.14	5.720	0.6426
324	4.00	0.825	462	2573	900	1322	0.0781	0.0269	2.900	0.647	5.569	19.38	5.569	0.6467
324	4.00	0.850	510	2720	927	1362	0.0778	0.0272	2.861	0.637	5.333	20.49	5.333	0.6368
324	4.00	0.875	558	2870	954	1403	0.0773	0.0272	2.842	0.631	5.143	21.62	5.143	0.6308
324	4.00	0.900	615	3042	982	1442	0.0776	0.0276	2.810	0.625	4.946	22.92	4.946	0.6246
324	4.00	0.925	674	3207	1009	1482	0.0775	0.0279	2.778	0.617	4.758	24.16	4.758	0.6169
324	4.00	0.950	737	3376	1036	1522	0.0773	0.0281	2.746	0.609	4.581	25.43	4.581	0.6093
325	6.00	0.725	412	2576	790	1160	0.1015	0.0355	2.857	0.726	6.252	19.41	6.252	0.7265
325	6.00	0.750	456	2749	817	1200	0.1013	0.0355	2.850	0.724	6.029	20.71	6.029	0.7236
325	6.00	0.775	501	2929	844	1240	0.1010	0.0354	2.856	0.724	5.846	22.07	5.846	0.7244
325	6.00	0.800	553	3126	872	1280	0.1012	0.0355	2.850	0.724	5.653	23.55	5.653	0.7235
325	6.00	0.825	608	3313	898	1320	0.1009	0.0356	2.833	0.718	5.449	24.96	5.449	0.7180
325	6.00	0.850	669	3531	926	1360	0.1013	0.0358	2.827	0.718	5.278	26.60	5.278	0.7180
325	6.00	0.875	732	3751	953	1400	0.1015	0.0359	2.826	0.718	5.124	28.26	5.124	0.7185
325	6.00	0.900	805	3976	980	1440	0.1017	0.0363	2.802	0.713	4.939	29.96	4.939	0.7130
325	6.00	0.925	887	4205	1008	1480	0.1018	0.0368	2.764	0.704	4.741	31.68	4.741	0.7038
325	6.00	0.950	976	4440	1035	1520	0.1019	0.0374	2.724	0.694	4.549	33.45	4.549	0.6940
326	8.00	0.725	546	3201	791	1162	0.1258	0.0469	2.683	0.759	5.863	24.12	5.863	0.7594
326	8.00	0.750	606	3443	819	1203	0.1262	0.0469	2.692	0.763	5.682	25.94	5.682	0.7632
326	8.00	0.775	671	3686	846	1243	0.1265	0.0471	2.690	0.764	5.493	27.77	5.493	0.7635
326	8.00	0.800	740	3936	873	1283	0.1268	0.0472	2.688	0.764	5.319	29.65	5.319	0.7639
326	8.00	0.825	812	4172	900	1323	0.1264	0.0472	2.678	0.760	5.138	31.43	5.138	0.7597
326	8.00	0.850	891	4431	928	1363	0.1265	0.0474	2.670	0.758	4.973	33.38	4.973	0.7579
326	8.00	0.875	985	4730	955	1403	0.1275	0.0480	2.654	0.756	4.802	35.64	4.802	0.7561
326	8.00	0.900	1087	5044	982	1443	0.1285	0.0487	2.638	0.754	4.640	38.00	4.640	0.7545
326	8.00	0.925	1196	5332	1010	1483	0.1286	0.0494	2.604	0.745	4.458	40.17	4.458	0.7453
326	8.00	0.950	1314	5622	1037	1523	0.1286	0.0501	2.567	0.734	4.279	42.36	4.279	0.7344
327	10.00	0.725	712	3755	789	1159	0.1483	0.0616	2.408	0.740	5.274	28.29	5.274	0.7398
327	10.00	0.750	788	4024	816	1199	0.1485	0.0616	2.412	0.742	5.107	30.32	5.107	0.7416
327	10.00	0.775	878	4332	843	1238	0.1499	0.0623	2.406	0.743	4.934	32.64	4.934	0.7434
327	10.00	0.800	981	4678	870	1379	0.1305	0.0504	2.590	0.747	4.769	35.24	4.769	0.7467
327	10.00	0.825	1085	5017	898	1319	0.1530	0.0637	2.402	0.750	4.624	37.80	4.624	0.7498
327	10.00	0.850	1194	5377	925	1358	0.1547	0.0642	2.409	0.756	4.503	40.51	4.503	0.7560
327	10.00	0.875	1322	5738	962	1399	0.1555	0.0650	2.392	0.753	4.340	43.23	4.340	0.7527
327	10.00	0.900	1458	6096	979	1439	0.1562	0.0659	2.370	0.747	4.181	45.93	4.181	0.7473
327	10.00	0.925	1610	6440	1006	1479	0.1562	0.0670	2.330	0.735	4.000	48.52	4.000	0.7349
327	10.00	0.950	1775	6770	1034	1519	0.1556	0.0682	2.282	0.718	3.814	51.00	3.814	0.7184
328	12.00	0.725	932	4442	789	1159	0.1754	0.0806	2.176	0.727	4.766	33.47	4.766	0.7272
328	12.00	0.750	1043	4804	816	1199	0.1773	0.0815	2.175	0.731	4.606	36.19	4.606	0.7309
328	12.00	0.775	1163	5176	843	1238	0.1791	0.0825	2.170	0.733	4.451	39.00	4.451	0.7330
328	12.00	0.800	1294	5590	870	1279	0.1813	0.0833	2.176	0.739	4.320	42.11	4.320	0.7394
328	12.00	0.825	1437	6000	898	1319	0.1829	0.0843	2.169	0.740	4.175	45.20	4.175	0.7404
328	12.00	0.850	1598	6466	925	1358	0.1860	0.0859	2.164	0.745	4.046	48.71	4.046	0.7449
328	12.00	0.875	1776	6915	952	1399	0.1874	0.0873	2.146	0.741	3.894	52.10	3.894	0.7412
328	12.00	0.900	1967	7381	979	1439	0.1891	0.0889	2.127	0.738	3.752	55.61	3.752	0.7380
328	12.00	0.925	2174	7793	1006	1478	0.1892	0.0907	2.087	0.724	3.585	58.71	3.585	0.7244
328	12.00	0.950	2398	8196	1034	1519	0.1884	0.0921	2.045	0.708	3.418	61.75	3.418	0.7084
329	14.00	0.725	1139	4998	789	1159	0.1974	0.0985	2.003	0.710	4.388	37.65	4.388	0.7102
329	14.00	0.750	1270	5403	816	1199	0.1994	0.0992	2.009	0.716	4.254	40.71	4.254	0.7159
329	14.00	0.775	1423	5850	843	1238	0.2025	0.1010	2.005	0.720	4.111	44.07	4.111	0.7198
329	14.00	0.800	1588	6320	870	1279	0.2049	0.1022	2.005	0.724	3.980	47.61	3.980	0.7243
329	14.00	0.825	1790	6869	898	1319	0.2094	0.1050	1.994	0.728	3.837	51.75	3.837	0.7281
329	14.00	0.850	2021	7460	925	1358	0.2146	0.1087	1.975	0.730	3.691	56.20	3.691	0.7299
329	14.00	0.875	2255	7980	952	1399	0.2163	0.1109	1.950	0.724	3.539	60.12	3.539	0.7237
329	14.00	0.900	2514	8531	979	1439	0.2185	0.1136	1.923	0.718	3.393	64.27	3.393	0.7175
329	14.00	0.925	2766	8967	1006	1478	0.2177	0.1154	1.887	0.703	3.242	67.56	3.242	0.7028
329	14.00	0.950	3022	9343	1034	1519	0.2148	0.1161	1.850	0.684	3.092	70.39	3.092	0.6841
330	16.00	0.725	1427	5707	789	1160	0.2250	0.1231	1.827	0.692	3.999	43.00	3.999	0.6917
330	16.00	0.750	1606	6183	817	1200	0.2278	0.1252	1.820	0.693	3.850	46.58	3.850	0.6930
330	16.00	0.775	1807	6703	844	1240	0.2312	0.1276	1.812	0.695	3.709	50.50	3.709	0.6953
330	16.00	0.800	2015	7222	871	1280	0.2338	0.1294	1.807	0.697	3.584	54.41	3.584	0.6973
330	16.00	0.825	2266	7805	898	1320	0.2376	0.1327	1.791	0.697	3.444	58.80	3.444	0.6966
330	16.00	0.850	2555	8470	925	1360	0.2429	0.1368	1.776	0.698	3.315	63.81	3.315	0.6985
330	16.00	0.875	2844	9028	953	1400	0.2443	0.1396	1.751	0.691	3.174	68.02	3.174	0.6905
330	16.00	0.900	3174	9649	980	1440	0.2468	0.1431	1.724	0.684	3.040	72.70	3.040	0.6836
330	16.00	0.925	3477	10102	1007	1480	0.2446	0.1444	1.694	0.669	2.905	76.11	2.905	0.6685
330	16.00	0.950	3772	10451	1034	1520	0.2399	0.1446	1.659	0.648	2.771	78.74	2.771	0.6484
331	18.00	0.725	1694	6150	791	1162	0.2416	0.1454	1.662	0.652	3.630	46.33	3.630	0.6518
331	18.00	0.750	1897	6663	819	1203	0.2442	0.1467	1.664	0.656	3.512	50.20	3.512	0.6564
331	18.00	0.775	2132	7217	846	1243	0.2478	0.1495	1.657	0.658	3.385	54.37	3.385	0.6583
331	18.00	0.800	2397	7817	873	1283	0.2519	0.1528	1.648	0.660	3.261	58.89	3.261	0.6601
331	18.00	0.825	2681	8420	900	1323	0.2552	0.1559	1.637	0.660	3.141	63.44	3.141	0.6598
331	18.00	0.850	3004	9043	928	1363	0.2582	0.1598	1.616	0.655	3.010	68.13	3.010	0.6554
331	18.00	0.875	3359	9688	955	1403	0.2611	0.1638	1.594	0.650	2.884	72.99	2.884	0.6499
331	18.00	0.900	3747	10353	982	1443	0.2637	0.1679	1.570	0.644	2.763	78.00	2.763	0.6436
332	20.00	0.725	2056	6520	792	1165	0.2548	0.1751	1.455	0.586	3.171	49.12	3.171	0.5862
332	20.00	0.75				1205	0.2575	0.1786	1.442	0.584	3.038	53.11	3.038	0.5840
332	20.00	0.77				1245	0.2608	0.1809	1.442	0.588	2.940	57.42	2.940	0.5876
332	20.00	0.80				1286	0.2623	0.1827	1.435	0.587	2.834	61.61	2.834	0.5867
332	20.00	0.82				1326	0.2656	0.1864	1.425	0.586	2.728	66.34	2.728	0.5860
332	20.00	0.850	3604	9474	930	1366	0.2693	0.1904	1.414	0.586	2.629	71.38	2.629	0.5858

Page 332 unreadable,
But we took our best shot.





AV. Data Set # 33

DATA SET Number 33

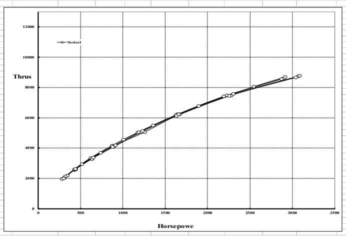
					Nominal	Nominal	Nominal		
Curtiss Calibrator		Activity Factor	Diameter	# Blades	Temp Deg C	Temp Deg R	Density Ratio	Power weighted solidity =	0.15972
	30,000 ft-lb Shaft	98.0	13.00	4	25	536.690	0.951	Twist (0.25R -Tip in deg) =	32.0

$$C_T = 0.1515 \frac{(T/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^2 (Dia/10)^4} \qquad C_P = 0.500 \frac{(HP/1{,}000)}{(\rho/\rho_o)(RPM/1{,}000)^3 (Dia/10)^5} \qquad FM = 0.798 \frac{C_T^{3/2}}{C_P}$$

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

REDUCED TEST DATA POINTS

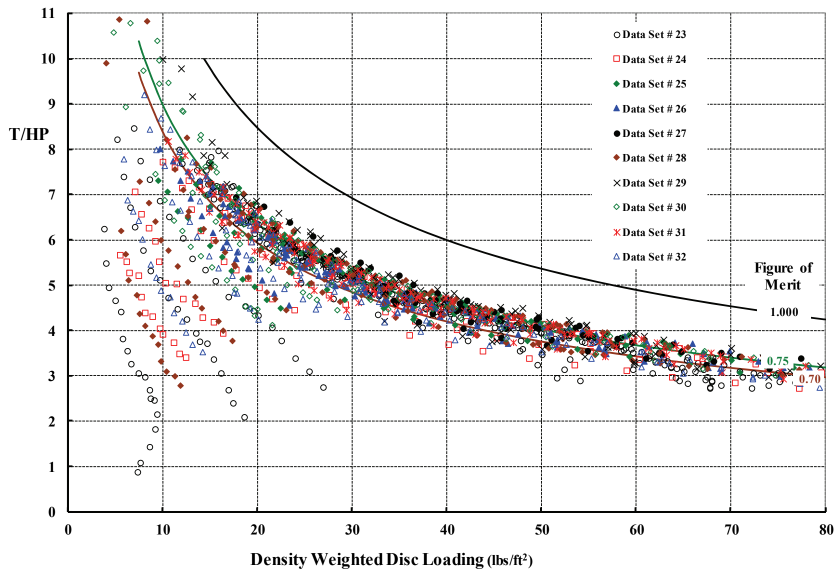
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT (Harris Computed)	CP	CT/CP	FM	T/HP		Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
333	??	Relocated	21.1	715	305	2035	0.433	0.21115	0.11237	1.8791	0.6891	6.6721		15.33	6.67	0.6891	487	1,124
333	??	Relocated	21.1	802	425	2549	0.485	0.21021	0.11095	1.8947	0.6932	5.9976		19.20	6.00	0.6932	546	1,126
333	??	Relocated	21.1	900	620	3299	0.545	0.21604	0.11453	1.8863	0.6997	5.3210		24.85	5.32	0.6997	613	1,124
333	??	Relocated	21.1	1003	878	4152	0.607	0.21892	0.11718	1.8683	0.6976	4.7289		31.28	4.73	0.6976	683	1,125
333	??	Relocated	21.1	1099	1176	5015	0.665	0.22025	0.11931	1.8461	0.6914	4.2645		37.78	4.26	0.6914	748	1,125
333	??	Relocated	21.1	1205	1646	6228	0.729	0.22752	0.12668	1.7959	0.6836	3.7837		46.92	3.78	0.6836	820	1,125
333	??	Relocated	21.1	1301	2193	7410	0.787	0.23222	0.13411	1.7316	0.6659	3.3789		55.83	3.38	0.6659	886	1,125
333	??	Relocated	21.1	1399	2893	8613	0.847	0.23343	0.14228	1.6406	0.6325	2.9772		64.89	2.98	0.6325	952	1,124
334	??	Relocated	21.1	701	282	1953	0.424	0.21082	0.11024	1.9123	0.7007	6.9255		14.71	6.93	0.7007	477	1,125
334	??	Relocated	21.1	800	427	2590	0.484	0.21466	0.11231	1.9114	0.7067	6.0656		19.51	6.07	0.7067	545	1,125
334	??	Relocated	21.1	899	620	3350	0.544	0.21987	0.11491	1.9134	0.7160	5.4032		25.24	5.40	0.7160	612	1,125
334	??	Relocated	21.1	1010	872	4152	0.611	0.21590	0.11397	1.8943	0.7024	4.7615		31.28	4.76	0.7024	687	1,125
334	??	Relocated	21.1	1102	1188	5057	0.667	0.22089	0.11954	1.8478	0.6930	4.2567		38.10	4.26	0.6930	750	1,125
334	??	Relocated	21.1	1200	1630	6187	0.726	0.22791	0.12703	1.7942	0.6835	3.7957		46.61	3.80	0.6835	817	1,125
334	??	Relocated	21.1	1303	2227	7482	0.789	0.23376	0.13556	1.7244	0.6653	3.3597		56.37	3.36	0.6653	887	1,124
334	??	Relocated	21.1	1399	2871	8551	0.847	0.23175	0.14120	1.6413	0.6305	2.9784		64.42	2.98	0.6305	952	1,124
335	??	Relocated	21.1	756	345	2179	0.438	0.20223	0.10752	1.8808	0.6750	6.3159		16.42	6.32	0.6750	515	1,124
335	??	Relocated	21.1	856	517	2939	0.518	0.21276	0.11100	1.9168	0.7055	5.6847		22.14	5.68	0.7055	583	1,125
335	??	Relocated	21.1	955	735	3700	0.578	0.21520	0.11504	1.8937	0.7010	5.0340		27.88	5.03	0.7010	650	1,125
335	??	Relocated	21.1	1051	1010	4563	0.636	0.21912	0.11716	1.8703	0.6987	4.5178		34.38	4.52	0.6987	715	1,125
335	??	Relocated	21.1	1150	1355	5488	0.696	0.22012	0.11990	1.8347	0.6869	4.0502		41.35	4.05	0.6869	783	1,125
335	??	Relocated	21.1	1254	1893	6783	0.759	0.22881	0.12927	1.7699	0.6756	3.5832		51.10	3.58	0.6756	854	1,125
335	??	Relocated	21.1	1354	2546	8058	0.820	0.23315	0.13812	1.6880	0.6504	3.1650		60.71	3.16	0.6504	922	1,125
335	??	Relocated	21.1	1400	2917	8695	0.847	0.23532	0.14315	1.6438	0.6363	2.9808		65.51	2.98	0.6363	953	1,125
336	??	Relocated	21.1	719	321	2124	0.449	0.21794	0.11630	1.8740	0.6981	6.6168		16.00	6.62	0.6981	489	1,090
336	??	Relocated	21.1	800	443	2604	0.499	0.21582	0.11652	1.8523	0.6867	5.8781		19.62	5.88	0.6867	545	1,091
336	??	Relocated	21.1	902	637	3294	0.563	0.21476	0.11689	1.8373	0.6794	5.1711		24.82	5.17	0.6794	614	1,091
336	??	Relocated	21.1	1002	894	4083	0.625	0.21572	0.11967	1.8026	0.6681	4.5671		30.76	4.57	0.6681	682	1,091
336	??	Relocated	21.1	1102	1223	5049	0.688	0.22056	0.12307	1.7920	0.6716	4.1284		38.04	4.13	0.6716	750	1,090
336	??	Relocated	21.1	1199	1635	6114	0.748	0.22559	0.12758	1.7683	0.6702	3.7440		46.06	3.74	0.6702	816	1,091
336	??	Relocated	21.1	1299	2277	7475	0.811	0.23498	0.13989	1.6797	0.6498	3.2828		56.32	3.28	0.6498	884	1,090
336	??	Relocated	21.1	1403	3069	8734	0.876	0.23536	0.14963	1.5728	0.6089	2.8459		65.80	2.85	0.6089	955	1,090
337	??	Relocated	21.1	710	307	2012	0.443	0.21171	0.11551	1.8329	0.6730	6.5537		15.16	6.55	0.6730	483	1,091
337	??	Relocated	21.1	799	439	2594	0.499	0.21555	0.11590	1.8597	0.6890	5.9089		19.54	5.91	0.6890	544	1,090
337	??	Relocated	21.1	902	637	3294	0.563	0.21476	0.11689	1.8373	0.6794	5.1711		24.82	5.17	0.6794	614	1,091
337	??	Relocated	21.1	1010	913	4191	0.630	0.21793	0.11933	1.8262	0.6803	4.5904		31.57	4.59	0.6803	687	1,091
337	??	Relocated	21.1	1109	1256	5049	0.692	0.21736	0.12401	1.7560	0.6539	4.0199		38.04	4.02	0.6539	755	1,091
337	??	Relocated	21.1	1201	1671	6233	0.750	0.22922	0.13005	1.7625	0.6734	3.7301		46.96	3.73	0.6734	817	1,091
337	??	Relocated	21.1	1299	2306	7574	0.811	0.23609	0.14167	1.6666	0.6544	3.2845		57.06	3.28	0.6544	884	1,090
337	??	Relocated	21.1	1407	3088	8778	0.878	0.23521	0.14930	1.5754	0.6097	2.8426		66.13	2.84	0.6097	958	1,091
338	??	Relocated	21.1	707	300	2002	0.441	0.21249	0.11432	1.8584	0.6856	6.6733		15.08	6.67	0.6856	481	1,091
338	??	Relocated	21.1	798	439	2623	0.498	0.21840	0.11633	1.8781	0.7006	5.9749		19.76	5.97	0.7006	543	1,091
338	??	Relocated	21.1	898	615	3373	0.561	0.22187	0.12106	1.8327	0.6890	5.1813		25.41	5.18	0.6890	611	1,090
338	??	Relocated	21.1	1004	861	4083	0.627	0.21460	0.12135	1.8328	0.6780	4.6165		30.76	4.62	0.6780	683	1,090
338	??	Relocated	21.1	1100	1233	5128	0.687	0.22480	0.12473	1.8020	0.6818	4.1590		38.63	4.16	0.6818	749	1,090
338	??	Relocated	21.1	1201	1660	6233	0.750	0.22922	0.12904	1.7763	0.6787	3.7548		46.96	3.75	0.6787	817	1,090
338	??	Relocated	21.1	1299	2257	7456	0.811	0.23438	0.13866	1.6903	0.6530	3.3035		56.17	3.30	0.6530	884	1,090
338	??	Relocated	21.1	1404	3040	8659	0.876	0.23503	0.14792	1.5752	0.6068	2.8484		65.24	2.85	0.6068	956	1,091



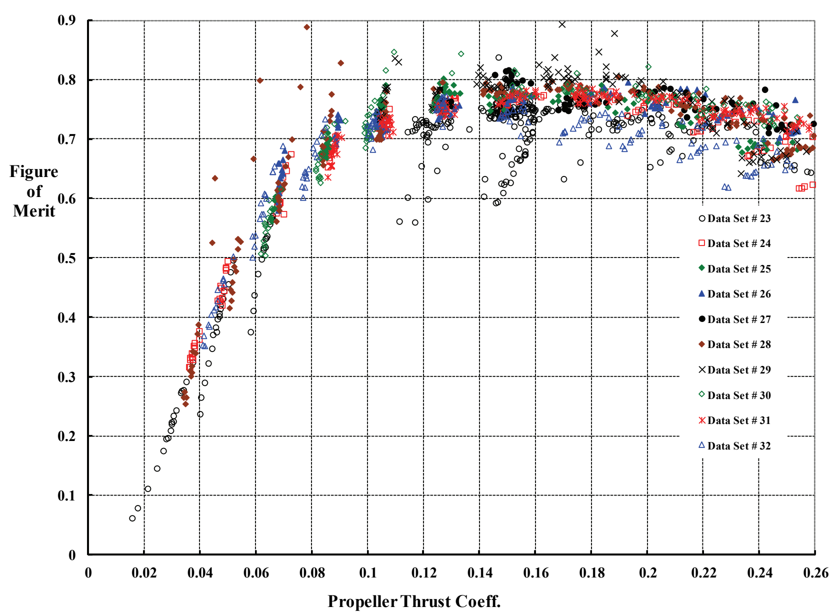
FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS

Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT (Harris Computed)	CP	CT/CP	FM	TH/HP		Disc Loading	Repeat T/HP	Repeat FM
333	21.1	0.525	537	3023	590	867	0.2133	0.1110	1.922511	0.709	5.629	3023	22.78	5.63	0.7086
333	21.1	0.550	626	3339	619	909	0.2144	0.1122	1.909818	0.706	5.334	3339	25.16	5.33	0.7056
333	21.1	0.575	728	3676	647	950	0.2161	0.1143	1.88953	0.701	5.049	3676	27.69	5.05	0.7009
333	21.1	0.600	843	4033	675	991	0.2178	0.1166	1.867499	0.696	4.784	4033	30.38	4.78	0.6955
333	21.1	0.625	955	4405	703	1033	0.2190	0.1167	1.876847	0.701	4.613	4405	33.19	4.61	0.7008
333	21.1	0.650	1100	4806	731	1074	0.2210	0.1196	1.848338	0.693	4.369	4806	36.21	4.37	0.6934
333	21.1	0.675	1239	5234	759	1115	0.2233	0.1204	1.855339	0.700	4.224	5234	39.43	4.22	0.6997
333	21.1	0.700	1419	5671	787	1157	0.2247	0.1234	1.821363	0.689	3.996	5671	42.73	4.00	0.6890
333	21.1	0.725	1618	6128	815	1198	0.2265	0.1267	1.787241	0.679	3.787	6128	46.17	3.79	0.6787
333	21.1	0.750	1838	6606	843	1239	0.2283	0.1301	1.754084	0.669	3.594	6606	49.77	3.59	0.6688
333	21.1	0.775	2079	7103	872	1280	0.2300	0.1335	1.722595	0.659	3.417	7103	53.51	3.42	0.6592
333	21.1	0.800	2340	7621	900	1322	0.2313	0.1364	1.695952	0.651	3.257	7621	57.42	3.26	0.6509
333	21.1	0.825	2621	8159	928	1363	0.2330	0.1394	1.67129	0.644	3.113	8159	61.47	3.11	0.6437
334	21.1	0.525	529	3040	590	867	0.2145	0.1093	1.96256	0.725	5.747	3040	22.90	5.75	0.7254
334	21.1	0.550	619	3354	619	909	0.2153	0.1110	1.940092	0.718	5.418	3354	25.27	5.42	0.7184
334	21.1	0.575	722	3689	647	950	0.2168	0.1134	1.91197	0.710	5.109	3689	27.79	5.11	0.7105
334	21.1	0.600	837	4044	675	991	0.2184	0.1158	1.886016	0.703	4.832	4044	30.47	4.83	0.7034
334	21.1	0.625	944	4394	703	1033	0.2184	0.1153	1.893976	0.706	4.655	4394	33.10	4.65	0.7064
334	21.1	0.650	1090	4794	731	1074	0.2205	0.1185	1.860638	0.697	4.398	4794	36.12	4.40	0.6972
334	21.1	0.675	1243	5241	759	1115	0.2236	0.1208	1.851842	0.699	4.216	5241	39.49	4.22	0.6988
334	21.1	0.700	1423	5675	787	1157	0.2249	0.1237	1.817525	0.688	3.988	5675	42.76	3.99	0.6878
334	21.1	0.725	1623	6129	815	1198	0.2265	0.1271	1.782025	0.677	3.776	6129	46.18	3.78	0.6768
334	21.1	0.750	1842	6602	843	1239	0.2281	0.1304	1.749215	0.667	3.584	6602	49.74	3.58	0.6667
334	21.1	0.775	2080	7095	872	1280	0.2297	0.1336	1.719828	0.658	3.411	7095	53.45	3.41	0.6578
334	21.1	0.800	2339	7639	900	1322	0.2319	0.1363	1.700684	0.653	3.266	7639	57.55	3.27	0.6535
334	21.1	0.825	2617	8142	928	1363	0.2325	0.1392	1.670357	0.643	3.111	8142	61.34	3.11	0.6427
335	21.1	0.525	522	2980	590	867	0.2103	0.1079	1.949624	0.713	5.709	2980	22.45	5.71	0.7134
335	21.1	0.550	618	3361	619	909	0.2158	0.1108	1.947287	0.722	5.439	3361	25.32	5.44	0.7218
335	21.1	0.575	708	3642	647	950	0.2141	0.1112	1.924936	0.711	5.144	3642	27.44	5.14	0.7107
335	21.1	0.600	822	4002	675	991	0.2162	0.1137	1.900487	0.705	4.869	4002	30.15	4.87	0.7051
335	21.1	0.625	950	4381	703	1033	0.2178	0.1161	1.876445	0.699	4.612	4381	33.01	4.61	0.6988
335	21.1	0.650	1069	4756	731	1074	0.2187	0.1162	1.882151	0.702	4.449	4756	35.83	4.45	0.7024
335	21.1	0.675	1230	5173	759	1115	0.2207	0.1195	1.847133	0.692	4.206	5173	38.97	4.21	0.6925
335	21.1	0.700	1391	5611	787	1157	0.2223	0.1209	1.838368	0.692	4.034	5611	42.27	4.03	0.6917
335	21.1	0.725	1591	6175	815	1198	0.2282	0.1246	1.831511	0.698	3.881	6175	46.52	3.88	0.6982
335	21.1	0.750	1814	6564	843	1239	0.2268	0.1284	1.765991	0.671	3.619	6564	49.45	3.62	0.6712
335	21.1	0.775	2061	7078	872	1280	0.2292	0.1323	1.731524	0.661	3.434	7078	53.33	3.43	0.6614
335	21.1	0.800	2330	7615	900	1322	0.2311	0.1358	1.70189	0.653	3.268	7615	57.37	3.27	0.6529
335	21.1	0.825	2623	8180	928	1363	0.2336	0.1395	1.674314	0.646	3.119	8180	61.63	3.12	0.6457
336	21.1	0.525	504	2842	572	841	0.2131	0.1141	1.867994	0.688	5.639	2842	21.41	5.64	0.6882
336	21.1	0.550	585	3125	600	881	0.2136	0.1152	1.853771	0.684	5.342	3125	23.54	5.34	0.6836
336	21.1	0.575	677	3428	627	921	0.2144	0.1167	1.836952	0.679	5.064	3428	25.83	5.06	0.6787
336	21.1	0.600	780	3753	654	961	0.2156	0.1184	1.82135	0.675	4.812	3753	28.27	4.81	0.6748
336	21.1	0.625	895	4098	681	1001	0.2169	0.1202	1.805381	0.671	4.579	4098	30.87	4.58	0.6710
336	21.1	0.650	1000	4440	709	1041	0.2173	0.1194	1.820622	0.677	4.440	4440	33.45	4.44	0.6773
336	21.1	0.675	1148	4836	736	1081	0.2195	0.1224	1.793726	0.671	4.213	4836	36.43	4.21	0.6707
336	21.1	0.700	1290	5284	763	1121	0.2230	0.1233	1.808692	0.682	4.096	5284	39.81	4.10	0.6817
336	21.1	0.725	1476	5719	791	1161	0.2251	0.1270	1.771952	0.671	3.875	5719	43.09	3.87	0.6708
336	21.1	0.750	1686	6175	818	1201	0.2271	0.1311	1.73264	0.659	3.663	6175	46.52	3.66	0.6589
336	21.1	0.775	1913	6652	845	1241	0.2291	0.1348	1.699789	0.649	3.477	6652	50.12	3.48	0.6493
336	21.1	0.800	2164	7149	872	1282	0.2307	0.1383	1.668254	0.639	3.304	7149	53.86	3.30	0.6395
336	21.1	0.825	2437	7668	900	1322	0.2327	0.1420	1.638491	0.631	3.146	7668	57.77	3.15	0.6308
336	21.1	0.850	2732	8206	927	1362	0.2346	0.1456	1.611439	0.623	3.004	8206	61.82	3.00	0.6229
336	21.1	0.875	3048	8766	954	1402	0.2366	0.1489	1.588256	0.616	2.876	8766	66.04	2.88	0.6164
337	21.1	0.525	498	2826	572	841	0.2119	0.1127	1.879857	0.691	5.675	2826	21.29	5.67	0.6906
337	21.1	0.550	579	3111	600	881	0.2126	0.1140	1.86459	0.686	5.373	3111	23.44	5.37	0.6861
337	21.1	0.575	672	3418	627	921	0.2137	0.1158	1.845221	0.681	5.086	3418	25.75	5.09	0.6808
337	21.1	0.600	777	3747	654	961	0.2152	0.1179	1.825459	0.676	4.822	3747	28.23	4.82	0.6758
337	21.1	0.625	895	4099	681	1001	0.2170	0.1202	1.805822	0.671	4.580	4099	30.88	4.58	0.6713
337	21.1	0.650	1031	4433	709	1041	0.2170	0.1231	1.763095	0.655	4.300	4433	33.40	4.30	0.6554
337	21.1	0.675	1153	4837	736	1081	0.2196	0.1229	1.786317	0.668	4.195	4837	36.44	4.20	0.6679
337	21.1	0.700	1306	5316	763	1121	0.2244	0.1248	1.797353	0.679	4.070	5316	40.05	4.07	0.6794
337	21.1	0.725	1493	5755	791	1161	0.2265	0.1285	1.762803	0.669	3.855	5755	43.36	3.85	0.6694
337	21.1	0.750	1701	6213	818	1201	0.2285	0.1322	1.72793	0.659	3.653	6213	46.81	3.65	0.6591
337	21.1	0.775	1929	6690	845	1241	0.2304	0.1359	1.69532	0.649	3.468	6690	50.40	3.47	0.6494
337	21.1	0.800	2178	7186	872	1282	0.2319	0.1392	1.666109	0.640	3.299	7186	54.14	3.30	0.6403
337	21.1	0.825	2447	7702	900	1322	0.2338	0.1426	1.63903	0.632	3.148	7702	58.03	3.15	0.6324
337	21.1	0.850	2736	8237	927	1362	0.2355	0.1458	1.615162	0.626	3.011	8237	62.06	3.01	0.6255
337	21.1	0.875	3046	8791	954	1402	0.2372	0.1488	1.593831	0.619	2.886	8791	66.23	2.89	0.6195
338	21.1	0.525	505	2876	572	841	0.2157	0.1143	1.886598	0.699	5.695	2876	21.67	5.70	0.6992
338	21.1	0.550	587	3168	600	881	0.2165	0.1156	1.872876	0.695	5.397	3168	23.87	5.40	0.6954
338	21.1	0.575	680	3481	627	921	0.2177	0.1172	1.857123	0.691	5.119	3481	26.23	5.12	0.6914
338	21.1	0.600	785	3813	656	961	0.2190	0.1191	1.838682	0.687	4.857	3813	28.73	4.86	0.6867
338	21.1	0.625	902	4164	681	1001	0.2204	0.1211	1.820222	0.682	4.616	4164	31.37	4.62	0.6820
338	21.1	0.650	1009	4511	709	1041	0.2208	0.1204	1.833236	0.687	4.471	4511	33.99	4.47	0.6874
338	21.1	0.675	1156	4904	736	1081	0.2226	0.1232	1.80636	0.680	4.242	4904	36.95	4.24	0.6801
338	21.1	0.700	1296	5348	763	1121	0.2257	0.1239	1.822124	0.691	4.127	5348	40.29	4.13	0.6909
338	21.1	0.725	1479	5773	791	1161	0.2272	0.1273	1.785055	0.679	3.903	5773	43.49	3.90	0.6790
338	21.1	0.750	1683	6215	818	1201	0.2286	0.1308	1.746972	0.666	3.693	6215	46.82	3.69	0.6665
338	21.1	0.775	1907	6676	845	1241	0.2299	0.1344	1.711289	0.655	3.501	6676	50.30	3.50	0.6548
338	21.1	0.800	2152	7151	872	1282	0.2308	0.1375	1.678025	0.643	3.323	7151	53.88	3.32	0.6433
338	21.1	0.825	2418	7646	900	1322	0.2321	0.1409	1.646628	0.633	3.162	7646	57.60	3.16	0.6330
338	21.1	0.850	2705	8158	927	1362	0.2333	0.1442	1.618004	0.624	3.016	8158	61.46	3.02	0.6236
338	21.1	0.875	3013	8688	954	1402	0.2345	0.1472	1.592409	0.615	2.884	8688	65.46	2.88	0.6153

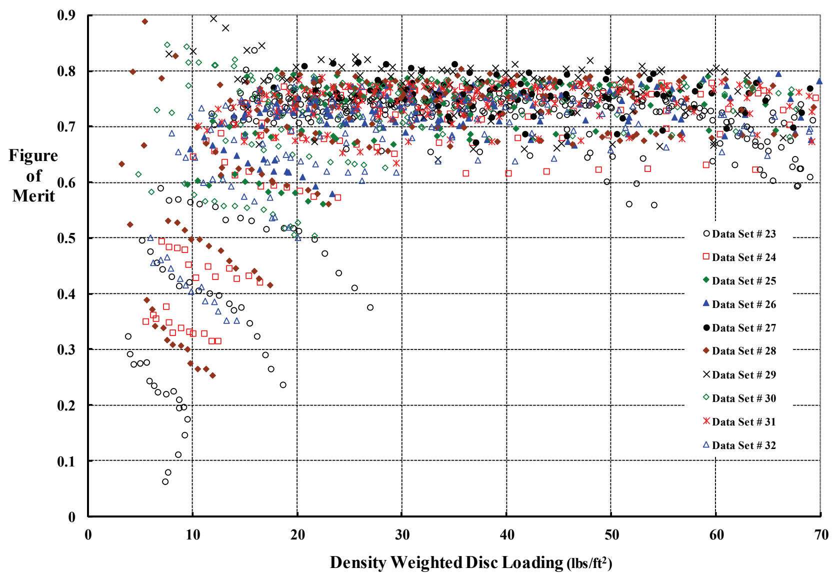
AW. T over HP vs DL-Walls Relocated



AX. FM vs CT-Walls Relocated



AY. FM vs DL-Walls Relocated



AZ. Data Set # 34

DATA SET Number 34

Curtiss X-19 (13166A10P3)	Activity Factor	Diameter	# Blades	Nominal Temp Deg C	Nominal Temp Deg R	Nominal Density Ratio
	166.0	13.0	3	26.0	539.490	0.944

Power weighted solidity = 0.16786

Twist (0.25R -Tip in deg) = 30.3

Note: Test data is already corrected to sea level standard day (i.e., density ratio = 1.0)

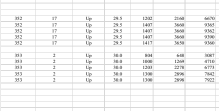
$$C_T = 0.1515\frac{(T/1,000)}{(\rho/\rho_0)(RPM/1,000)^2(Dia/10)^4} \qquad C_P = 0.500\frac{(HP/1,000)}{(\rho/\rho_0)(RPM/1,000)^3(Dia/10)^5} \qquad FM = 0.798\frac{C_T^{3/2}}{C_P}$$

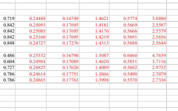
REDUCED TEST DATA POINTS (Harris Computed: CT through T/HP)

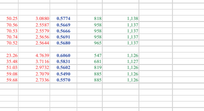
Page	Run #	Walls	BETA (deg)	RPM	HP	Thrust (lbs)	Tip Mach No.	CT	CP	CT/CP	FM	T/HP	Disc Loading	Repeat T/HP	Repeat FM	Tip Speed (fps) Vt	Derived Vsound in fps from M and Vt
340	5	Up	10.0	800	92	498	0.482	0.04128	0.02420	1.7058	0.2765	5.4130	3.75	5.4130	0.2765	545	1,130
340	5	Up	10.0	1000	160	731	0.602	0.03878	0.02155	1.7996	0.2828	4.5688	5.51	4.5688	0.2828	681	1,131
340	5	Up	10.0	1201	255	1007	0.723	0.03703	0.01982	1.8682	0.2869	3.9490	7.59	3.9490	0.2869	817	1,131
340	5	Up	10.0	1300	319	1177	0.783	0.03694	0.01955	1.8894	0.2898	3.6897	8.87	3.6897	0.2898	885	1,130
340	5	Up	10.0	1403	386	1293	0.845	0.03484	0.01882	1.8512	0.2758	3.3497	9.74	3.3497	0.2758	955	1,130
341	6	Up	14.0	800	129	851	0.479	0.07053	0.03393	2.0788	0.4406	6.5969	6.41	6.5969	0.4406	545	1,137
341	6	Up	14.0	999	222	1288	0.599	0.06846	0.02999	2.2830	0.4767	5.8018	9.70	5.8018	0.4767	680	1,135
341	6	Up	14.0	1199	350	1811	0.718	0.06682	0.02734	2.4437	0.5041	5.1743	13.64	5.1743	0.5041	816	1,137
341	6	Up	14.0	1300	434	2077	0.779	0.06519	0.02660	2.4506	0.4993	4.7857	15.65	4.7857	0.4993	885	1,136

FITTED CURVE DATA FOR CONSTANT MACH NUMBER INCREMENTS (Harris Computed: CT through TH/HP)

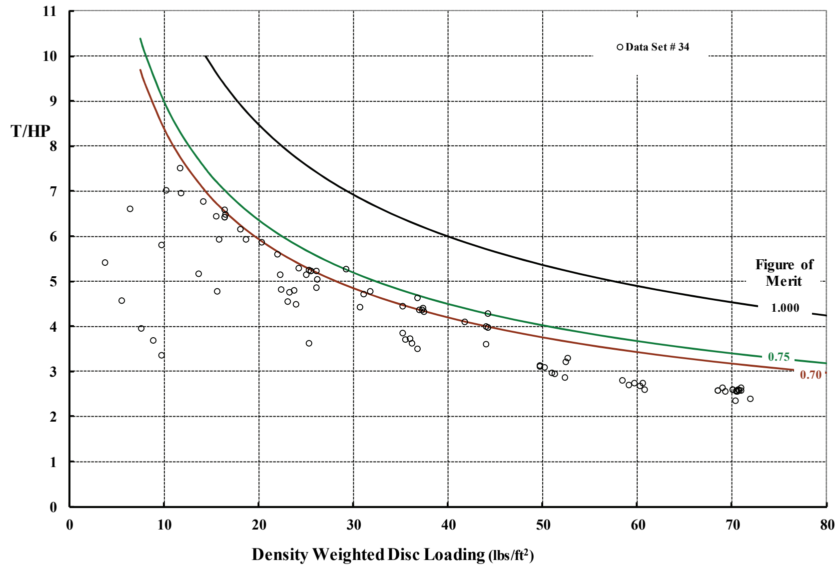
Page	BETA (deg)	MACH	HP	Thrust (lbs)	Tip Speed (fps)	RPM	CT	CP	CT/CP	FM	TH/HP	Disc Loading	Repeat T/HP	Repeat FM
340	10.0	0.525	113	580	593	872	0.0405	0.0229	1.763	0.283	5.133	4.37	5.133	0.2830
340	10.0	0.550	126	631	622	913	0.0402	0.0223	1.801	0.288	5.008	4.75	5.008	0.2880
340	10.0	0.575	141	683	650	955	0.0397	0.0218	1.822	0.290	4.844	5.15	4.844	0.2898
340	10.0	0.600	158	737	678	996	0.0394	0.0215	1.830	0.290	4.665	5.55	4.665	0.2899
340	10.0	0.625	175	791	706	1038	0.0389	0.0211	1.848	0.291	4.520	5.96	4.520	0.2910
340	10.0	0.650	194	846	735	1079	0.0385	0.0208	1.853	0.290	4.361	6.37	4.361	0.2904
340	10.0	0.675	214	901	763	1121	0.0380	0.0205	1.859	0.289	4.210	6.79	4.210	0.2893
340	10.0	0.700	236	958	791	1162	0.0376	0.0203	1.858	0.288	4.059	7.22	4.059	0.2876
340	10.0	0.725	259	1016	820	1204	0.0372	0.0200	1.860	0.286	3.923	7.65	3.923	0.2863
340	10.0	0.750	283	1075	848	1245	0.0368	0.0197	1.863	0.285	3.799	8.10	3.799	0.2851
340	10.0	0.775	309	1134	876	1287	0.0363	0.0195	1.860	0.283	3.670	8.54	3.670	0.2829
340	10.0	0.800	335	1195	904	1329	0.0359	0.0192	1.867	0.282	3.567	9.00	3.567	0.2823
340	10.0	0.825	363	1256	933	1370	0.0355	0.0190	1.867	0.281	3.460	9.46	3.460	0.2807
341	14.0	0.525	160	1012	593	872	0.0706	0.0325	2.173	0.461	6.325	7.62	6.325	0.4606
341	14.0	0.550	179	1106	622	913	0.0704	0.0317	2.222	0.470	6.179	8.33	6.179	0.4704
341	14.0	0.575	200	1201	650	955	0.0699	0.0309	2.259	0.476	6.005	9.05	6.005	0.4764
341	14.0	0.600	222	1300	678	996	0.0695	0.0303	2.297	0.483	5.856	9.79	5.856	0.4834
341	14.0	0.625	246	1401	706	1038	0.0690	0.0296	2.329	0.488	5.695	10.56	5.695	0.4880
341	14.0	0.650	272	1505	735	1079	0.0686	0.0292	2.352	0.491	5.533	11.34	5.533	0.4914
341	14.0	0.675	300	1611	763	1121	0.0680	0.0287	2.371	0.493	5.370	12.14	5.370	0.4934
341	14.0	0.700	329	1720	791	1162	0.0676	0.0282	2.393	0.496	5.228	12.96	5.228	0.4964
341	14.0	0.725	360	1832	820	1204	0.0670	0.0278	2.413	0.499	5.089	13.80	5.089	0.4986
341	14.0	0.750	393	1946	848	1245	0.0666	0.0274	2.428	0.500	4.952	14.66	4.952	0.5001



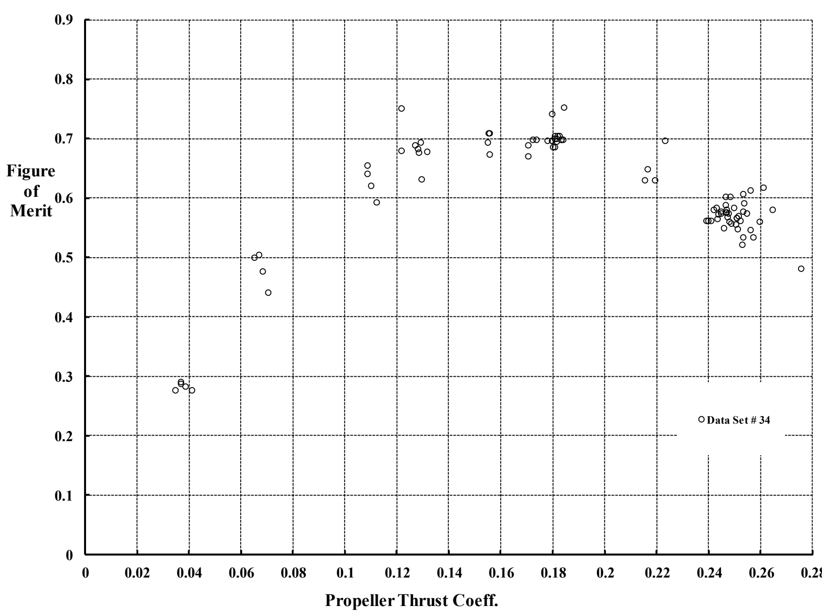




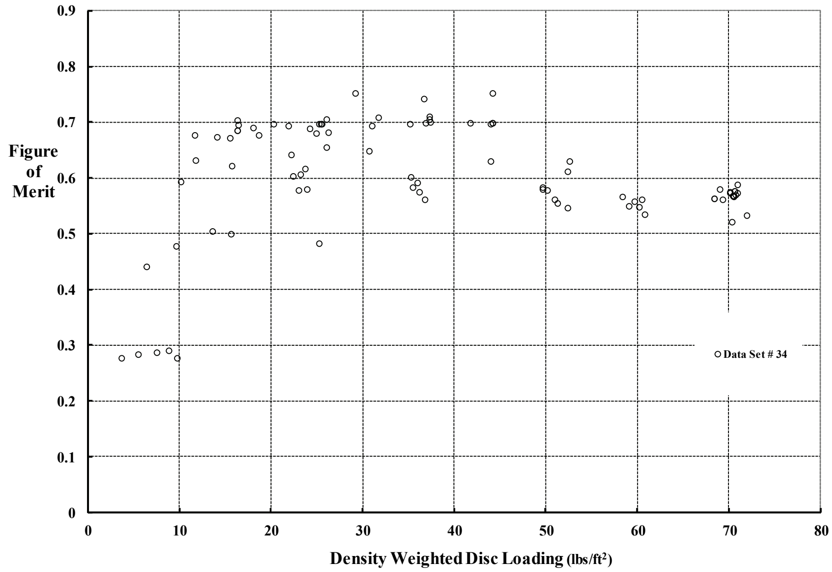
BA. T over HP vs DL-Walls Up Rig. 1



BB. FM vs CT-Walls Up Rig. 1



BC. FM vs DL-Walls Up Rig. 1



BD. Mike Scully’s ATM Calculator

Accel Gravity	9.80665	m / sec^2	32.174049	ft / sec^2	UPDATED
Units Conversion	0.3048	m / ft	3.2808399	ft / m	
Units Conversion	0.45359237	kg / lb	2.2046226	lb / kg	
Units Conversion	4.4482216	newton / lb	0.2248089	lb / newton	
Units Conversion	1.0	n-m / joule	0.7375621	ft-lb / joule	
Units Conversion	1.8	deg (R / K)	6076.115	ft / nm	
Temp (absolute zero)	-273.15	deg C	-459.67	deg F	
Temperature (SLS)	15.0	deg C	59.0	deg F	
Temperature (SLS)	288.15	deg K	518.67	deg R	
Lapse Rate	-6.50	(deg K) / km	-3.566160	(deg F) / k	
Lapse Rate	-1.9812	(deg C) / k			
Mean Molecular Wt	28.9644				
Universal Gas Const	8314.32	joule / K-mol	1545.32	ft-lb / R-mol	
Gas Constant for Air	287.0531	joule / K-kg	53.3524	ft-lb / R-lb	
Pressure Exponent	5.255876				
Altitude Factor	-0.02255770	(1 / km)	-0.00687559	(1 / k)	
Pressure (SLS)	101325	newton / m^2	2116.2166	lb / ft^2	
Ratio Specific Heat	1.40				
Density Factor	352.983507	(kg / m^3) / K	1.2328219	(slug / ft^3) / R	
Speed of Sound Factor	401.8743	(m / sec)^2 / K	2403.1883	(ft / sec)^2 / R	
Speed of Sound (SLS)	340.2941	m / sec	1116.4505	ft / sec	
Speed of Sound (SLS)	661.4789	kt			
Viscosity Factor	1.458E-06	kg / (m-sec-K	2.270E-08	slug / (ft-sec-F^0.5)	
Sutherland's Constant	110.40	deg K	198.72	deg R	
Altitude, 1000 ft	0.0	25.0		0.682	
Temperature, deg F	59.0	-30.154		75.2	
Std Temperature, deg F	59.000	-30.154		56.566	
Temperature, deg R	518.67	429.52		534.89	
Theta (absolute temp ratio)	1.0000	0.8281		1.0313	
Delta (absolute press ratio)	1.0000	0.3711		0.9756	
Delta*sqrt(Theta)	1.0000	0.3377		0.9907	
Density Ratio	1.0000	0.4481		0.9460	
Pressure (psi)	14.6960	5.4536		14.3372	
Density, slug / cuft	0.0023769	0.0010651		0.0022485	
Viscosity, slug / (ft-sec)	3.737E-07	3.216E-07		3.827E-07	
Kinematic Viscosity, ft^2 / se	1.5723E-04	3.0193E-04		1.7021E-04	
Speed of Sound, kt	661.48	601.95		671.74	
Speed of Sound, ft / sec	1116.45	1015.98		1133.77	
Density, kg / m^3	1.2250	0.5489		1.1588	
Speed of Sound, m / sec	340.29	309.67		345.57	

REFERENCE: U. S. Standard Atmosphere, 1962

BE. T over HP vs DL Calculs

$$\frac{T}{RHP} = \frac{550\sqrt{2\rho_o}\,(FM)}{\sqrt{\frac{T}{(\rho/\rho_o)A}}} = 37.921\frac{FM}{\sqrt{\frac{T}{\sigma A}}}$$

Std. day Density =	0.002376891
Constant =	37.9212217

Density Weighted Disc Loading	FM 1	FM 0.7	0.75
2	26.814	18.770	20.111
4	18.961	13.272	14.220
7.5	13.847	9.693	10.385
8	13.407	9.385	10.055
10	11.992	8.394	8.994
12	10.947	7.663	8.210
14.4	9.993	6.995	7.495
16	9.480	6.636	7.110
18	8.938	6.257	6.704
20	8.479	5.936	6.360
22	8.085	5.659	6.064
24	7.741	5.418	5.805
26	7.437	5.206	5.578
28	7.166	5.017	5.375
30	6.923	4.846	5.193
32	6.704	4.693	5.028
34	6.503	4.552	4.878
36	6.320	4.424	4.740
38	6.152	4.306	4.614
40	5.996	4.197	4.497
42	5.851	4.096	4.389
44	5.717	4.002	4.288
46	5.591	3.914	4.193
48	5.473	3.831	4.105
50	5.363	3.754	4.022
52	5.259	3.681	3.944
54	5.160	3.612	3.870
56	5.067	3.547	3.801
58	4.979	3.486	3.734
60	4.896	3.427	3.672
62	4.816	3.371	3.612
64	4.740	3.318	3.555
66	4.668	3.267	3.501
68	4.599	3.219	3.449
70	4.532	3.173	3.399
72	4.469	3.128	3.352
74	4.408	3.086	3.306
76	4.350	3.045	3.262
78	4.294	3.006	3.220
80	4.240	2.968	3.180