Dynamic stall database
R & D 1570-AM-01: Final Report

Dr. R.B. Green and Dr. M. Giuni
Aerospace Sciences Division
School of Engineering
University of Glasgow

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This project is to retrieve, verify and make useable data from 2-D dynamic stall tests conducted by the Department of Aerospace Engineering, University of Glasgow, Glasgow, UK, in the 1980s and 1990s. 6510 data files were retrieved in total from tests on 14 aerofoil sections including the NACA 23012 and related sections, symmetrical NACA 4-digit sections from 15% to 30% thickness, and some other sections for wind turbine and helicopter applications. The nominal Reynolds and Mach numbers are 1.5 million and 0.12. Dynamic stall tests include sinusoidal oscillatory motions and constant pitch rate ramp motion. Any user of the database should read and understand this report thoroughly before trying to access and process the data.

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1   Introduction

The University of Glasgow has an extensive database of 2-D, low speed dynamic stall data from tests performed on a wide range of aerofoil sections and pitching motion profiles. The database consists predominantly of unsteady pressure data sampled from high resolution, surface mounted pressure transducers, with sufficient spatial resolution to compute aerofoil normal force, pitching moment and thrust coefficient time responses to high accuracy. The data are also suitable for fundamental investigations of dynamic stall and unsteady reattachment, development of correlations for unsteady aerodynamics models, and as a validation database for CFD. The wind tunnel test conditions are a nominal free stream Mach number $M_\infty = 0.12$ and Reynolds number 1.5 million, and test conditions are appropriate for dynamic stall for helicopter and wind turbine applications. While a significant amount of effort to date has been made in data analysis, and many journal and conference papers have been generated, the data themselves still form an important and useful resource for researchers interested in gaining access to actual wind tunnel test data. This project was to retrieve the data and provide a guide to its use. The list of model shapes tested is given in table 1, and this also contains the number of tests run on each model. This report presents a summary of the experimental methodology, and a review of the tests performed. A guide to the database is presented, with information on the data format and retrieval methodology

2   Overview of original experimental methodology

All the tests were conducted in the University of Glasgow 5' × 7' working section low-speed, closed-return wind tunnel. All but one of the 2-D dynamic stall models was built with a chord length of $c = 0.55$m, and they spanned the shorter dimension of the tunnel. One NACA 0015 model was manufactured with a chord of 0.275m. Model construction was of a fibre glass skin bonded to a steel or aluminium spar. A hydraulically actuated crank and pitch link mechanism was used to pitch each aerofoil model about its quarter chord, with pitch angle feedback provided by a rotational displacement transducer. Each model was instrumented with high performance Kulite or Entran surface mounted pressure transducers at the model centre-span; models for 2-D dynamic stall contained at least $n_{tr} = 30$ transducers arranged in a chordwise manner on the aerofoil upper and lower surfaces. The number of pressure transducers on the models was $n_{tr} = 30$ with the exception of model 15, the Sikorsky SSC-A09 which had $n_{tr} = 35$. The pressure transducer locations are given in tables 8 to 13. Pressure transducer signals were anti-aliased filtered and amplified before simultaneous sampling across all the transducers on the model. For dynamic stall tests the wind tunnel was run usually at a nominal free stream speed of $U_\infty = 42\text{ms}^{-1}$ giving a chord Reynolds number of 1.5 million for a 0.55m chord.

During the earlier tests (table 1, models 1-11) data acquisition used a DEC MINC limited to a sampling rate of around 550 samples per second per channel for 256 samples, while later tests used more sophisticated data loggers capable of over 50ksamples per second per channel over much longer record lengths. Therefore the details of the spatial and temporal variation of the aerofoil pressure distribution could be recorded in just one test. As part of the standard testing protocol sinusoidal oscillatory tests were sampled over ten pitch cycle oscillations after five previous cycles had been completed, and transient ramp tests were averaged over five hold-ramp-hold cycles, with sufficient hold time for the wind tunnel to reach a steady state. Accurate sampling triggering ensured that an averaging calculation across the sampling cycles could be performed without loss of the details of the time varying aerodynamic transients.

2.1 Overview of tests

The models were tested over a range of test and motion types, listed in table 2 and 3, and the notional range of test parameters is indicated in table 4, 5 and 6 for each motion type. Sinusoidal tests were performed at a range of mean angles and amplitudes over a range of reduced frequencies $k = \frac{\omega c}{2U_\infty}$, where $\omega = 2\pi f$ and f is the oscillation frequency in Hz. Comprehensive tests with mean incidence up to 25°, amplitude up to 33° and reduced frequency up to $k = 0.5$ were performed for the aerofoils in a variety of permutations. For ramp tests the reduced pitch rate $r = \frac{\dot{\alpha} c}{2U_\infty}$ is the important non-dimensional pitch rate, where $\dot{\alpha}$ is the linear pitch rate in radians per second. Ramp up and ramp down tests were performed at up to $r = 0.2$ with typical ramp up tests starting at low incidence and finishing at 40°, and typical ramp down tests starting at 40° and finishing at low incidence. Intermediate start and finish angles were also investigated for the ramp tests. For unsteady static tests the model was held at fixed angle of attack and the unsteady pressure data sampled. VAWT motions were a specific aerofoil pitching profile to match aerodynamic angle of attack changes encountered by Vertical Axis Wind Turbines. Detailed lists of the actual runs performed are contained in the clearly named text files in the disc with this report and in tables 21 to 98, and these outline the important test conditions.

3 Review of cases retrieved

- 6510 data files were recovered from dynamic stall tests on 14 aerofoil sections. The complete list of aerofoil sections is shown in table 1 with the number of tests per model. Models 13 and 14 are aerofoil shapes for wind turbine applications.

- A list of experiment type is shown in table 2. Most of the tests are performed with unsteady pressure data sampled from an array of surface mounted pressure transducers with the aerofoil in a clean configuration, and this is the "orthodox" test indicated on the table. Other test configurations are shown on the table. Some entries show no tests; these were planned but the tests were in fact not executed. Of particular interest is test type 8, the roughness transition strip. This strip was in fact a fairly long spanwise sand strip covering the first 3.6% of chord of the upper and lower surfaces of the leading edge of the model. The tests were done to investigate the possible dynamic stall response of a degraded aerofoil (for example due to sand erosion), but were only conducted on aerofoil models 12, 13 and 14.

- A breakdown of the tests by model motion type is shown in table 3. The VAWT motion profiles are representative of aerodynamic conditions encountered by vertical axis wind turbines.

- Ranges of test parameters for ramp and sinusoidal oscillatory motions are shown in tables 4, 5, 6. The tables only indicate the ranges of parameters, and are not a suggestion of the combinations of test parameters.

- Detailed test conditions are listed in tables 21 to 98. Mach number is not given on these tables because it is always low.

4 Guide to database

This section provides a guide to the data provided with the report. The test data are returned as text files, which can be accessed using a variety of contemporary utilities. Efficient analysis is best done using a programming environment such as matlab, but it is possible to look at data using excel or any other tool. Each file contains a series of physical parameters describing the test parameters (the Run

Information Block (RIB)), and the data themselves then follow. The test data are time dependent samples of wind tunnel dynamic pressure data q in units Pa, aerofoil model surface pressure expressed as a pressure coefficient $C_p = \frac{p - p_\infty}{q}$, and aerofoil angle of attack α in degrees. Further details follow.

4.1 File naming

Files are named such that the user can identify the model number, test type, motion type and test reference number at a glance. The file name format is:
abcdefgh.dat
where: *'ab'* is the model number; *'c'* is the test type; *'d'* is the motion type; *'efg'* is the test number; *'h'* is the attempt number at this test. For example with reference to tables 1, 2, 3 test '04027841' is: '04' for NACA 23012C; '0' for an orthodox experiment; '2' for a ramp-up test; '784' for test number 784 and then '1' for attempt 1 at this test.

4.2 Lists of data files

Lists of data files by model number and motion type are contained as the clearly named text files in the disc with this report and in tables 21 to 98.

4.3 Data file contents

Each data file contains the RIB and the actual test data as follows.

4.3.1 Run information block (RIB)

The run information block (RIB) comprises the first $n_{tr} + 2$ elements of each data file, where n_{tr} is the number of pressure transducers on the model; ($n_{tr} = 30$ for all models except model 15 which has $n_{tr} = 35$). The RIB values are described in table 7. RIB data list the basic test conditions, test description, number of samples. Note: row 11 is n_{sweeps}, the number of samples per channel, and row 12 is n_{sampss}, the total number of samples recorded, so $n_{samps} = n_{sweeps} \times (n_{tr} + 2)$.

4.3.2 Test data

The measurements were taken from n_{tr} pressure transducers positioned over the upper and lower surfaces of the aerofoil, $n_{tr} = 30$ for with the exception of the experiments on model 15, the *SSC-A09*, for which $n_{tr} = 35$ pressure transducers were used. After the RIB data the remainder of each data file contains the time sequence of rows of data at time t, where each row is as follows: dynamic pressure data $q(t)$, n_{tr} values of pressure coefficient ordered from the first to the last transducer (see transducer location tables) $C_p(t, j = 1 : n_{tr})$, angle of attack $\alpha(t)$. The pressure coefficients are averaged according to the number of cycles during the test.

4.4 Pressure transducer and aerofoil coordinates

Chordwise positions of pressure transducers by pressure transducer number are all given in tables 8 to 13. They are also included in the text file "TransducerLocations.dat" on the data disc with this report, with each row being the x/c coordinates of a given model, row 1 for model 1, row 15 for model 15. The transducers are numbered 1 to n_{tr}, with transducer 1 on the upper surface trailing edge and transducer n_{tr} on the lower surface trailing edge, as indicated in the tables 8 to 13. Model surface coordinates for all the aerofoils except for the NACA 00 series models are given in tables 14 to 20. Aerofoil surface coordinates (x,y) for the NACA 00 series models are given by the equation

$$y = \pm 5t\Big(0.29690\sqrt{x} - 0.12600x - 0.35160x^2 + 0.28430x^3 - 0.10150x^4\Big),$$

where (x, y) are expressed as fraction of the chord length and t is the thickness to chord ratio. Aerofoil coordinates are included in the excel file "AerofoilCoordinates.xlsx" with this report.

4.5 Sample matlab code to read data

Data can be read in to matlab workspace using the matlab "importdata" function, which loads all the data into a single workspace variable, for example as follows:

>>data=importdata(*filename*);

and then the workspace variable 'data' is a matrix of size $(n_{sweeps} + 1, n_{tr} + 2)$. The RIB is the first row of the workspace variable in this case.

Alternatively, consider loading in the data into distinct variable names as follows:

```
% open filename
fid=fopen(filename);
%read in first 32 elements of RIB
RIB=fscanf(fid,'%g',32);
%establish model number: for model 15 read in 5 additional points
mn=RIB(30); % model number
if mn==15
nt=35; %model number 15 has 35 transducers
dum=fscanf(fid,'%g',5); %read in rest of RIB data for model 15
else nt=30; %other models have 30 transducers
endif
%Number of samples per channel...
ns=RIB(11);
%Read in data points...
for i=1:ns
q(i)=fscanf(fid,'%g',1); % dynamic pressure
cp(i,:)=fscanf(fid,'%g',nt); %pressure coefficient
alpha(i)=fscanf(fid,'%g',1); %angle of attack
end
```

4.6   Matlab graphical user interface

To use the graphical user interface the matlab code and data must be saved to a hard disc, as the code needs to create files and save them to disc. The files "TransducerLocations.dat", "AerofoilCoordinates.xlsx" "RIBS_info.mat" need to be in the top level directory as presented on the disc. If the "RIBs_info.mat" file is missing then it should be created using the procedure outlined in this section. A diagram of the directory, file and code structure is given in figure 1.

A graphical user interface named 'DSplot' has been supplied with the data, and this will run on matlab R2013a for Macintosh OSX and PC. The GUI, shown in figure 2 allows the user to browse through the various runs, read in data, plot results and export force coefficient files. A guide to the user interface follows:

- The top panel "DATA FOLDER" is for selecting where the data are on the computer or disc. The user should browse using the "Select data folder" button. The warning indicators on the right hand side of the pane advise the user if the "TransducerLocations.dat", "AerofoilCoordinates.xlsx" and "RIBS_info.mat" files have been found. If the "RIBs_info.mat" file is not present (look in the directory where the files "TransducerLocations.dat" and "AerofoilCoordinates.xlsx" reside) then press the "Create RIBs file" at the bottom right of the pane, and this goes through all the data files, creates a summary file of the RIB data and saves the "RIBS_info.mat" file to disc.

- The bottom panel "DATA COUNTER" allows the user to select a particular aerofoil, test type and motion type. The user selects the aerofoil and type of test of interest, presses the "Select data file from selected tests" button in the "Data selection" sub-panel , and the user is presented with a summary of the test conditions for each run of that particular test series. The user should select a file of interest, and the test case is echoed back onto the main panel.

- The middle panel "DATA ANALYSIS" allows the user to look at the data in more detail. If a case was selected from the procedure outlined above, the test information is presented in the middle sub-panel "Test information". Alternatively from the "Select" window the user may specify a run number or use the "Select data file" button to choose a file. Once a file has been selected the user may plot data from the options presented in the "Plots" sub-window. Computed coefficients may be exported to a text file using the "Force coefficients" button in the "Export" sub-window, which creates a text file named with the data file appended with '_coeffs.dat', e.g. '04038031_coeffs.dat'.

4.7   Other methods of accessing the data

The data files are readable using a utility such as MS Excel, or codes can be written in any computing language for data analysis. They can even be opened using a simple text editor.

4.8   Sample data plots

Sample plots from a test case are shown in figures 3, 4, 5, and 6. These plots show the aerofoil shape and pressure tapping positions, the ramp-up motion profile as a function of time, the development of the upper surface pressure distribution as a function of time, and the aerodynamic coefficients as a function of time and angle of attack. The data are from test number 04027841, which is model '04'

(NACA 23012C), test type '0', motion type '2', and then run '784' and attempt ''1 at this test. The reduced pitch rate of this test is 0.0318.

4.9   Files provided with report

A set of files is provided on a disc with the report. Everything is in the directory "GU_dynamic_stall", with files and subdirectories as follows.

- Dynamic stall data files ending in ".dat" are in the directory "CorrectedFiles". They are all text files.

- Matlab codes are in the directory "MatlabR2013a". The code "DSplot.m" and "DSplot.fig" run the matlab GUI and the code calls the matlab scripts "aerofoil_taps.m" and "SelectedFiles.m". The ".fig" files associated with any of the filenames are the matlab figures corresponding to the graphical user interfaces.

- The files "AerofoilCoordinates.xlsx" (excel file), "TransducerLocations.dat" (text file) and "RIBs_info.mat" (a matlab file) are in the directory "GU_dynamic_stall".

- The text files ending ".dat" contain the test case details and are in the directory "ListOfRuns".

5   Project management

The $50k awarded to University of Glasgow was used to leverage additional resource to set up a one-year long research-teaching post, the idea being that a 12 month post would more likely attract a committed candidate than a shorter duration one. Data retrieval was executed quickly with the aid of the old paper reports and data on legacy media. Test cases were verified against the existing paper reports, and any inaccuracies or misleading information were checked and corrected. The PI showed sample data to the US Army and rotorcraft group at NASA Ames, CA, in July 2013.

6   Conclusions

The dynamic stall data have been retrieved and archived onto modern digital media. A user interface for matlab R2013a has been provided that gives efficient access to the data, but utilities like MS Excel can also be used to upload and analyse data. A complete list of the runs has been provided to give a self-contained guide to the data.

7   Acknowledgements

The original experimental and data analysis work was conducted under the leadership of Professor Roddy Galbraith of the University of Glasgow. He was responsible for organising the funding and developing the design, test, data acquisition and data analysis concepts. Funding was obtained from a

8 Figures

Figure 1: Dynamic stall data disc directory and file structure.

Figure 2: Matlab graphical user interface for accessing the dynamic stall database
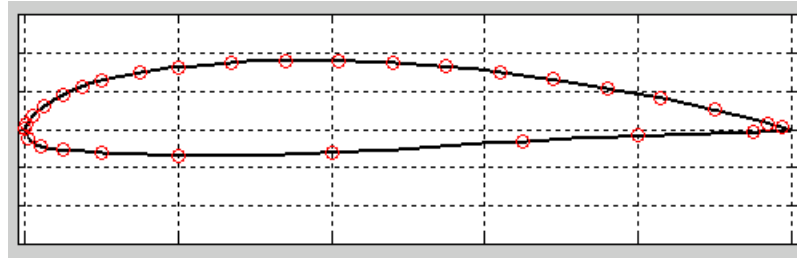
Figure 3: Aerofoil shape and pressure tapping positions for model 4, NACA 23012C.
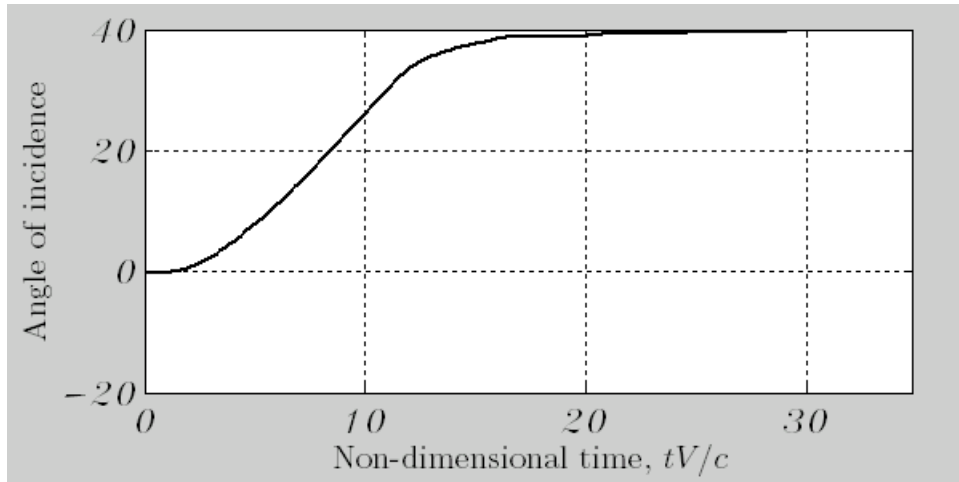
Figure 4: Angle of attack as function of non-dimensional time, model 4 NACA 23012C, run number 040207841 (ramp-up, dynamic stall).
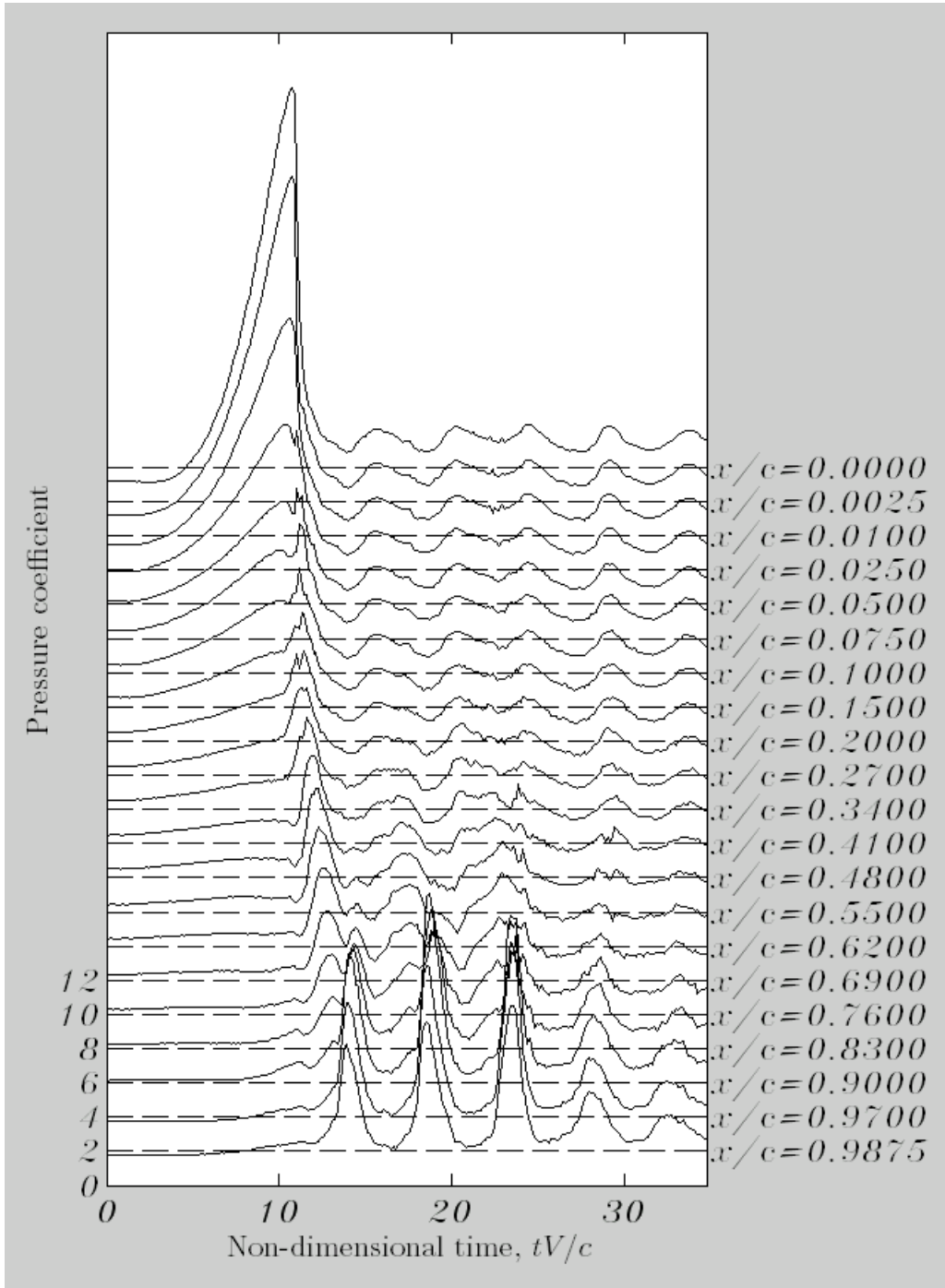
Figure 5: Pressure coefficients from the tappings on the suction surface as function of non-dimensional time, model 4 NACA 23012C, run number 040207841 (ramp-up, dynamic stall).
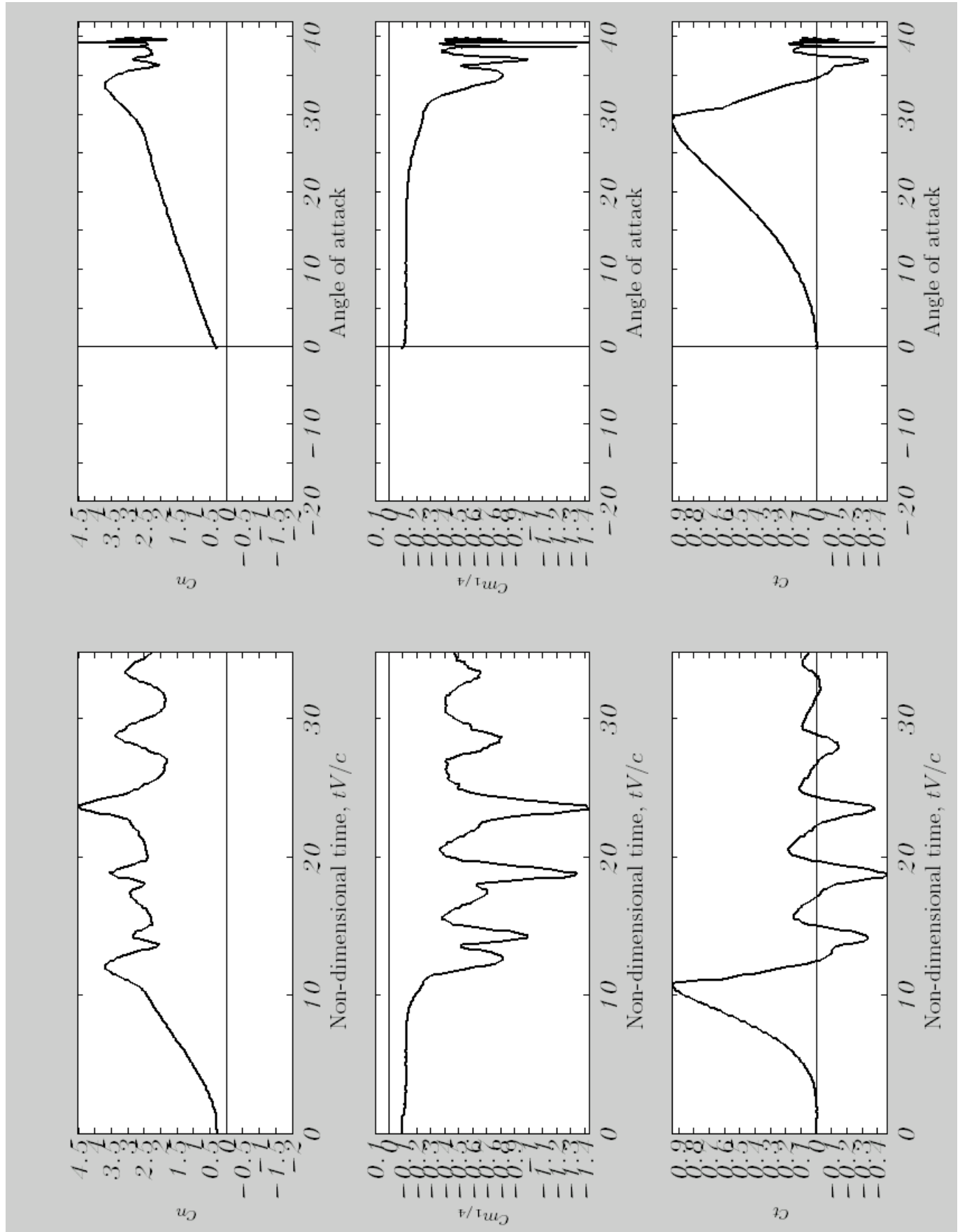
Figure 6: Normal force, tangential force and moment as function of non-dimensional time and angle of attack, model 4 NACA 23012C, run number 040207841 (ramp-up, dynamic stall).

9 Tables

Code	Aerofoil Section	Number of tests
1	NACA 23012	622
2	NACA 23012A	123
3	NACA 23012B	605
4	NACA 23012C	393
5	NACA 0015	534
6	NACA 0018	540
7	NACA 0021	606
8	NACA 0025	556
9	NACA 0030	578
11	NACA 0012	414
12	NACA 0015 (shortened chord)	239
13	AHAVAW	606
14	GUVA10	620
15	SSC-A09	74

Table 1: Aerofoils tested.

Code	Type of Experiment	Number of tests
0	Orthodox Experiment	6022
1	Trip wire Attached	65
2	Hot Films Attached	0
3	Trip Wire and Hot Films	0
4	Model Reversed in Tunnel	108
5	End Plates Attached	37
6	Model Inverted in Tunnel	47
7	Model Reversed and Inverted	0
8	Roughness Transition Strips	231

Table 2: Type of experiment.

Code	Type of Motion	Number of tests
0	Static	291
1	Sinusoidal Oscillation	3397
2	Ramp Up	1008
3	Ramp Down	719
4	Unsteady Static	584
5	Single-Streamtube VAWT	464
6	Ship Function	0
7	Multiple-Streamtube VAWT	47
8	Any Other Motion Type	0

Table 3: Type of motion.

Starting Incidence [°]	-6	19
Ramp Arc [∘]	4	43
Pitch Rate [°/s]	0.6	535
Reduced Pitch Rate [ ]	0.0001	0.1925
Reynolds Number [·10^{-6}]	0.4	2.5

Table 4: Range of test parameters for ramp up motion

Starting Incidence [°]	41	4
Ramp Arc [°]	-5	-51
Pitch Rate [°/s]	-0.6	-662
Reduced Pitch Rate [ ]	-0.0001	-0.0714
Reynolds Number [·10^{-6}]	0.55	2

Table 5: Range of test parameters for ramp down motion

Mean Incidence [°]	0	25
Amplitude [°]	2	32.8
Oscillation Frequency [Hz]	0.155	12.5
Reduced Frequency [ ]	0.010	0.530
Reynolds Number [·10^{-6}]	0.76	2

Table 6: Range of test parameters for sinusoidal oscillation motion

No.	STATIC	UNSTEADY STATIC	SINUSOIDAL, VAWT	RAMP UP, RAMP DOWN	VAWT (MSDD)
1	Run number				
2	Date of Test: Day				
3	Date of Test: Month				
4	Date of Test: Year				
5	Temperature (°C)				
6	Barometric Pressure (mm Hg)				
7	Motion Type 0	Motion Type 4	Motion Type 1/5	Motion Type 2/3	Motion Type 7
8	Starting Incidence (°)	Nominal Angle of Attack (°)	Mean Incidence (°)	Starting Incidence (°)	Mean Incidence (°)
9	Arc (°)	Averaged Angle of Attack (°)	Amplitude (°)	Ramp Arc (°)	Tip Speed Ratio
10	*Empty*	*Empty*	Oscillation Frequency (Hz)	Linear Pitch-Rate (°s^{-1})	Oscillation Frequency (Hz)
11	Number of Sweeps per Cycle				
12	Number of Values per Cycle				
13	Number of Cycles				
14	*Empty*				
15	*Empty*				
16	*Empty*				
17	*Empty*				
18	Sampling Frequency (Hz)				
19	Dynamic Pressure (Nm^{-2})				
20	Reynolds Number				
21	Mach Number				
22	*Empty*	*Empty*	Reduced Frequency	Reduced Pitch-Rate	Reduced Frequency
23	Wind Velocity (ms^{-1})				
24	*Empty*				
25	*Empty*				
26	Averaged (1) or Unaveraged (0)				
27	*Empty*				
28	*Empty*				
29	*Empty*				
30	Model Number				
31	*Empty*				
32	*Empty*				
33..37	*Empty*				

Table 7: Contents of data files' run information block (RIB). The RIB has 32 elements for all aerofoils except model 15, for which there are 37.

transducer #	surface	x/c, model 1
1	upper	0.97
2	upper	0.9
3	upper	0.83
4	upper	0.76
5	upper	0.69
6	upper	0.62
7	upper	0.55
8	upper	0.48
9	upper	0.41
10	upper	0.34
11	upper	0.27
12	upper	0.2
13	upper	0.15
14	upper	0.1
15	upper	0.075
16	upper	0.05
17	upper	0.025
18	upper	0.01
19	upper	0.005
20	upper	0.0005
21	upper	0
22	lower	0
23	lower	0.01
24	lower	0.02
25	lower	0.05
26	lower	0.1
27	lower	0.2
28	lower	0.4
29	lower	0.65
30	lower	0.95

Table 8: Transducer chordwise positions for model 1, NACA 23012

transducer #	surface	x/c, model 2
1	upper	0.97
2	upper	0.9
3	upper	0.83
4	upper	0.76
5	upper	0.69
6	upper	0.62
7	upper	0.55
8	upper	0.48
9	upper	0.41
10	upper	0.34
11	upper	0.27
12	upper	0.2
13	upper	0.15
14	upper	0.1
15	upper	0.075
16	upper	0.05
17	upper	0.025
18	upper	0.01
19	upper	0.005
20	upper	0.0005
21	upper	0
22	lower	0
23	lower	0.01
24	lower	0.02
25	lower	0.05
26	lower	0.1
27	lower	0.2
28	lower	0.4
29	lower	0.65
30	lower	0.95

Table 9: Transducer chordwise positions for model 2, NACA 23012A

transducer #	surface	x/c, model 3
1	upper	0.97
2	upper	0.9
3	upper	0.82
4	upper	0.74
5	upper	0.66
6	upper	0.58
7	upper	0.5
8	upper	0.42
9	upper	0.34
10	upper	0.27
11	upper	0.2
12	upper	0.14
13	upper	0.1
14	upper	0.075
15	upper	0.05
16	upper	0.025
17	upper	0.01
18	upper	0.003
19	upper	0.001
20	upper	0
21	lower	0.001
22	lower	0.007
23	lower	0.02
24	lower	0.05
25	lower	0.1
26	lower	0.2
27	lower	0.4
28	lower	0.65
29	lower	0.8
30	lower	0.95

Table 10: Transducer chordwise positions for model 3, NACA 23012B

transducer #	surface	x/c, model 4
1	upper	0.9875
2	upper	0.97
3	upper	0.9
4	upper	0.83
5	upper	0.76
6	upper	0.69
7	upper	0.62
8	upper	0.55
9	upper	0.48
10	upper	0.41
11	upper	0.34
12	upper	0.27
13	upper	0.2
14	upper	0.15
15	upper	0.1
16	upper	0.075
17	upper	0.05
18	upper	0.025
19	upper	0.01
20	upper	0.0025
21	upper	0
22	lower	0.004
23	lower	0.02
24	lower	0.05
25	lower	0.1
26	lower	0.2
27	lower	0.4
28	lower	0.65
29	lower	0.8
30	lower	0.95

Table 11: Transducer chordwise positions for model 4, NACA 23012C

transducer #	surface	x/c
1	upper	0.98
2	upper	0.95
3	upper	0.83
4	upper	0.7
5	upper	0.59
6	upper	0.5
7	upper	0.37
8	upper	0.26
9	upper	0.17
10	upper	0.1
11	upper	0.05
12	upper	0.025
13	upper	0.01
14	upper	0.0025
15	upper	0.00025
16	lower	0.00025
17	lower	0.0025
18	lower	0.01
19	lower	0.025
20	lower	0.05
21	lower	0.1
22	lower	0.17
23	lower	0.26
24	lower	0.37
25	lower	0.5
26	lower	0.59
27	lower	0.7
28	lower	0.83
29	lower	0.95
30	lower	0.98

Table 12: Transducer chordwise positions for models 5,6,7,8,9,11,12,13,14: NACA 0015, NACA 0018, NACA 0021, NACA 0025, NACA 0030, NACA 0012, NACA 0015 (short chord), AHAVAW and GUVA10

transducer #	surface	model 15
1	upper	0.984
2	upper	0.944
3	upper	0.875
4	upper	0.784
5	upper	0.678
6	upper	0.567
7	upper	0.4613
8	upper	0.3698
9	upper	0.301
10	upper	0.26
11	upper	0.191
12	upper	0.1482
13	upper	0.102
14	upper	0.0594
15	upper	0.025
16	upper	0.01
17	upper	0.005
18	upper	0.0025
19	upper	0.0012
20	lower	0.005
21	lower	0.025
22	lower	0.0594
23	lower	0.102
24	lower	0.1482
25	lower	0.191
26	lower	0.26
27	lower	0.301
28	lower	0.3698
29	lower	0.4613
30	lower	0.567
31	lower	0.678
32	lower	0.784
33	lower	0.875
34	lower	0.944
35	lower	0.984

Table 13: Transducer chordwise positions for model 15, Sikorsky SSC-A09

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.05	0.663	0.324	-0.58
0.195	1.389	0.901	-1.064
0.747	2.169	1.715	-1.465
1.615	2.984	2.755	-1.799
2.806	3.809	4.009	-2.084
4.317	4.612	5.471	-2.338
6.143	5.361	7.141	-2.578
8.268	6.023	9.023	-2.819
10.669	6.573	11.129	-3.072
13.318	6.994	13.477	-3.34
16.18	7.287	16.086	-3.62
19.218	7.467	18.979	-3.895
22.415	7.566	22.156	-4.133
25.817	7.597	25.554	-4.315
29.422	7.561	29.157	-4.438
33.219	7.457	32.955	-4.502
37.198	7.287	36.938	-4.507
41.349	7.052	41.094	-4.456
45.659	6.754	45.414	-4.349
50.117	6.397	49.883	-4.189
54.711	5.983	54.491	-3.978
59.428	5.515	59.224	-3.719
64.256	4.998	64.07	-3.415
69.181	4.433	69.015	-3.068
74.19	3.822	74.046	-2.679
79.269	3.169	79.149	-2.251
84.404	2.473	84.31	-1.782
89.58	1.734	89.514	-1.273
94.785	0.953	94.748	-0.722
100.003	0.126	99.997	-0.126

Table 14: Aerofoil coordinates for NACA 23012

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.044	0.802	0.436	-0.681
0.337	1.694	1.229	-1.226
1.166	2.657	2.354	-1.658
2.454	3.651	3.791	-2.008
4.207	4.626	5.529	-2.308
6.413	5.523	7.564	-2.588
9.048	6.286	9.91	-2.874
12.069	6.876	12.588	-3.18
15.421	7.276	15.631	-3.508
19.042	7.503	19.077	-3.838
22.902	7.603	22.925	-4.123
27.06	7.597	27.083	-4.333
31.507	7.479	31.53	-4.471
36.224	7.241	36.247	-4.54
41.195	6.872	41.216	-4.547
46.399	6.365	46.418	-4.498
51.816	5.725	51.831	-4.401
57.424	4.964	57.436	-4.264
63.202	4.103	63.209	-4.077
69.125	3.169	69.128	-3.843
75.169	2.202	75.169	-3.544
81.31	1.257	81.306	-3.147
87.521	0.422	87.515	-2.587
93.773	-0.125	93.768	-1.705
100.031	0.051	100.027	-0.05

Table 15: Aerofoil coordinates for NACA 23012A

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.11	0.943	0.035	-0.597
0.833	2.795	0.299	-1.697
1.8	4.043	1.221	-3.132
4.138	5.637	2.341	-4.089
5.371	6.22	3.728	-4.784
9.164	7.461	5.403	-5.333
12.135	8.052	7.455	-5.755
13.822	8.282	9.941	-6.111
17.151	8.568	12.811	-6.4
23.186	8.731	16.044	-6.651
25.174	8.724	19.622	-6.874
29.942	8.618	23.495	-7.059
32.324	8.524	27.634	-7.215
37.88	8.213	31.998	-7.324
40.656	8.016	36.54	-7.385
46.998	7.481	41.21	-7.406
50.168	7.175	45.989	-7.36
53.732	6.803	50.807	-7.264
60.859	5.986	55.625	-7.119
64.421	5.544	60.395	-6.925
68.378	5.03	65.076	-6.661
76.29	3.935	69.62	-6.309
80.245	3.356	73.987	-5.847
84.198	2.755	78.129	-5.287
92.103	1.488	85.588	-3.915
96.055	0.819	91.7	-2.459
99.5	0.135	96.256	-1.185
100	0	100	0

Table 16: Aerofoil coordinates for NACA 23012B

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.341	0.917	0.658	-1.454
1.125	1.933	1.473	-1.949
2.366	3.01	2.615	-2.31
4.071	4.097	4.064	-2.569
6.233	5.137	5.811	-2.757
8.827	6.073	7.855	-2.906
11.814	6.863	10.207	-3.038
15.14	7.489	12.892	-3.167
18.741	7.966	15.943	-3.291
22.585	8.34	19.394	-3.386
24.873	8.53	23.244	-3.402
29.023	8.783	29.525	-3.346
33.468	8.943	33.97	-3.246
38.185	8.986	38.682	-3.063
43.157	8.914	43.641	-2.83
48.363	8.702	48.829	-2.516
53.783	8.335	54.22	-2.187
59.395	7.804	59.803	-1.857
65.178	7.106	65.546	-1.534
71.108	6.243	71.429	-1.224
77.163	5.222	77.43	-0.931
83.317	4.046	83.524	-0.658
89.547	2.684	89.686	-0.419
95.83	1.137	95.892	-0.341
100	0	100	-0.289

Table 17: Aerofoil coordinates for NACA 23012C

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.081	0.643	0.081	-0.643
0.324	1.27	0.324	-1.27
0.729	1.868	0.729	-1.868
1.295	2.458	1.295	-2.458
2.021	3.074	2.021	-3.074
2.906	3.713	2.906	-3.713
3.948	4.366	3.948	-4.366
5.146	5.027	5.146	-5.027
6.498	5.685	6.498	-5.685
8.002	6.333	8.002	-6.333
9.655	6.962	9.655	-6.962
11.454	7.565	11.454	-7.565
13.398	8.132	13.398	-8.132
15.481	8.656	15.481	-8.656
17.702	9.128	17.702	-9.128
20.056	9.539	20.056	-9.539
22.539	9.882	22.539	-9.882
25.149	10.153	25.149	-10.153
27.88	10.348	27.88	-10.348
30.728	10.464	30.728	-10.464
33.688	10.5	33.688	-10.5
36.756	10.454	36.756	-10.454
39.926	10.33	39.926	-10.33
43.194	10.132	43.194	-10.132
46.553	9.863	46.553	-9.863
50	9.528	50	-9.528
53.528	9.129	53.528	-9.129
57.131	8.669	57.131	-8.669
60.803	8.15	60.803	-8.15
64.539	7.577	64.539	-7.577
68.333	6.952	68.333	-6.952
72.178	6.277	72.178	-6.277
76.068	5.554	76.068	-5.554
79.997	4.783	79.997	-4.783
83.959	3.967	83.959	-3.967
87.946	3.104	87.946	-3.104
91.953	2.193	91.953	-2.193
95.973	1.232	95.973	-1.232
100	0.22	100	-0.22

Table 18: Aerofoil coordinates for AHAVAW aerofoil

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.12	0.567	0.12	-0.567
0.482	1.131	0.482	-1.131
1.082	1.75	1.082	-1.75
1.921	2.416	1.921	-2.416
2.997	3.112	2.997	-3.112
4.306	3.823	4.306	-3.823
5.846	4.537	5.846	-4.537
7.612	5.243	7.612	-5.243
9.601	5.928	9.601	-5.928
11.808	6.582	11.808	-6.582
14.227	7.193	14.227	-7.193
16.853	7.748	16.853	-7.748
19.679	8.232	19.679	-8.232
22.699	8.624	22.699	-8.624
25.905	8.887	25.905	-8.887
29.289	8.997	29.289	-8.997
32.844	8.986	32.844	-8.986
36.561	8.868	36.561	-8.868
40.43	8.68	40.43	-8.68
44.443	8.413	44.443	-8.413
48.59	8.071	48.59	-8.071
52.86	7.657	52.86	-7.657
57.244	7.175	57.244	-7.175
61.732	6.628	61.732	-6.628
66.311	6.02	66.311	-6.02
70.972	5.353	70.972	-5.353
75.702	4.63	75.702	-4.63
80.491	3.853	80.491	-3.853
85.327	3.021	85.327	-3.021
90.198	2.134	90.198	-2.134
95.093	1.191	95.093	-1.191
100	0.189	100	-0.189

Table 19: Aerofoil coordinates for GUVA10 aerofoil

Table 20: Aerofoil coordinates for Sikorsky SSC-A09 aerofoil

x/c % upper	y/c % upper	x/c % lower	y/c % lower
0	0	0	0
0.0199	0.2	0.2	-0.1454
0.0798	0.3946	0.3946	-0.2869
0.1994	0.6482	0.6482	-0.4573
0.2991	0.8029	0.8029	-0.5446
0.4487	0.9868	0.9868	-0.6445
0.6979	1.2392	1.2392	-0.7703
0.997	1.4921	1.4921	-0.8877
1.5952	1.9076	1.9076	-1.0704
2.1934	2.25	2.25	-1.2175
2.7916	2.5445	2.5445	-1.3447
3.3898	2.8039	2.8039	-1.4588
3.9881	3.0369	3.0369	-1.5631
4.5863	3.2494	3.2494	-1.6594
5.1845	3.4449	3.4449	-1.7487
5.7827	3.6249	3.6249	-1.8314
6.7797	3.8903	3.8903	-1.9568
7.7767	4.1143	4.1143	-2.0691
8.7737	4.3016	4.3016	-2.1706
9.7707	4.4593	4.4593	-2.2638
11.2663	4.6504	4.6504	-2.391
12.7618	4.8054	4.8054	-2.5064
14.2573	4.9345	4.9345	-2.6124
15.7529	5.0444	5.0444	-2.7104
17.2485	5.1385	5.1385	-2.8013
18.744	5.2184	5.2184	-2.8853
20.2395	5.286	5.286	-2.9628
21.735	5.3427	5.3427	-3.0339
23.2305	5.3911	5.3911	-3.0988
24.7261	5.4322	5.4322	-3.1579
27.7171	5.4958	5.4958	-3.2594
30.7082	5.5369	5.5369	-3.3402
33.6992	5.5564	5.5564	-3.4007
37.6873	5.5494	5.5494	-3.4506
41.6754	5.5039	5.5039	-3.4637
43.6694	5.4663	5.4663	-3.4558
45.6635	5.54182	5.54182	-3.4376
47.6575	5.3595	5.3595	-3.4087
49.6515	5.2899	5.2899	-3.3683
51.6456	5.2093	5.2093	-3.3165
53.6935	5.1176	5.1176	-3.2532
55.6336	5.0149	5.0149	-3.179
57.6277	4.9009	4.9009	-3.0949
59.6217	4.7755	4.7755	-3.0018
61.6157	4.6381	4.6381	-2.9002
63.6097	4.4875	4.4875	-2.7904
65.6039	4.322	4.322	-2.672
67.5979	4.1391	4.1391	-2.5448

69.5919	3.9368	3.9368	-2.4088
71.586	3.714	3.714	-2.2642
73.58	3.4719	3.4719	-2.1121
75.574	3.2138	3.2138	-1.954
77.568	2.9445	2.9445	-1.7918
79.5621	2.6681	2.6681	-1.6272
81.5561	2.3871	2.3871	-1.4617
83.5501	2.1012	2.1012	-1.2957
85.5442	1.8089	1.8089	-1.1289
87.5382	1.5093	1.5093	-0.9598
89.5323	1.2051	1.2051	-0.7863
91.5264	0.9046	0.9046	-0.6081
93.5204	0.6229	0.6229	-0.429
95.5144	0.3849	0.3849	-0.261
97.5084	0.2288	0.2288	-0.1325
98.5055	0.1987	0.1987	-0.0992
99.5025	0.2135	0.2135	-0.0863
100	0.2408	0.2408	-0.0803

Aerofoil coordinates for Sikorsky SSC-A09 aerofoil

Table 21: Static test cases for model 1, NACA 23012

File name	Start AoA [deg]	Arc [deg]	Re
01000011	-3	31	1004600
01000021	-3	31	984960
01000031	-3	30	977050
01000041	-3	31	991280
01000051	-3	31	989390
01000061	-3	31	999830
01000071	-3	30	1487100
01000081	-3	30	1493400
01000091	-3	30	1483700
01000101	-3	30	1474000
01000111	-3	30	1429500
01000121	-4	30	1495200
01000131	-4	30	1482000
01000141	-2	30	1470500
01000151	-3	31	1477400
01000161	-2	30	784720
01000171	-2	30	985280
01000181	-2	30	1182200
01000191	-2	30	1386900
01000201	-2	30	1473800
01000211	-2	30	1575200
01000221	-2	30	1758200
01000231	-2	30	1931400
01000241	-3	30	1462100
01000261	-2	30	1442200
01000271	-2	30	1433800
01000281	-2	30	1426500
01000291	-2	30	1423500
01000301	-2	30	937510
01000311	-2	30	945330
01000321	-2	30	1903100
01000331	-2	30	1458400
01000341	-2	31	1010000
01000351	-2	30	1503600
01000361	-2	30	1917000
01000371	-2	30	960590
01000391	-2	30	1908500
01000401	-2	30	965340
01000411	-2	30	1457600
01000421	-2	30	1930200
01000431	-3	30	1543200
01000502	-2	30	1499300
01000512	-3	31	1473800
01000522	-3	30	1471400
01000532	-2	31	1473300
01000592	0	31	1463900
01000602	-1	31	1441400
01000612	-2	31	1454900

Table continued on next page...

Static test cases for model 1, NACA 23012

01000622	-2	31	1441600
01000632	-2	31	1446500
01000642	-2	30	1457900
01000981	-2	30	1464000
01001001	-2	31	1490600
01001011	-2	31	1446800
01001031	-2	31	1452200
01001041	-2	31	1469000

Static test cases for model 1, NACA 23012

Table 22: Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01010011	6	2	0.155	979240	0.0099862
01010021	6	4	0.155	982130	0.0099568
01010031	6	6	0.155	973900	0.010011
01010041	6	8	0.155	972450	0.0099955
01010051	6	10	0.155	972880	0.0099911
01010061	8	2	0.155	965320	0.010039
01010071	8	4	0.155	965900	0.010033
01010081	8	6	0.155	964930	0.010013
01010091	8	8	0.155	969290	0.009968
01010101	8	10	0.155	959120	0.010074
01010111	10	2	0.155	938560	0.010294
01010121	10	4	0.155	958640	0.010079
01010131	10	6	0.155	966570	0.009996
01010141	10	8	0.155	972540	0.0099347
01010151	10	10	0.155	970310	0.0099575
01010161	12	2	0.155	965380	0.010008
01010171	12	4	0.155	968500	0.0099762
01010181	12	6	0.155	962740	0.010036
01010191	12	8	0.155	970160	0.0099591
01010201	12	10	0.155	964190	0.010021
01010211	13	2	0.155	973430	0.010055
01010221	13	4	0.155	978850	0.0099997
01010231	13	6	0.155	970460	0.010056
01010241	13	8	0.155	966430	0.010067
01010251	13	10	0.155	968620	0.010014
01010261	14	2	0.155	963140	0.010071
01010271	14	4	0.155	963970	0.010063
01010281	14	6	0.155	967800	0.010023
01010291	14	8	0.155	974220	0.009957
01010301	14	10	0.155	972830	0.0099712
01010311	15	2	0.155	968750	0.010013
01010321	15	4	0.155	981970	0.0098783
01010331	15	6	0.155	971520	0.0099846
01010341	15	8	0.155	972250	0.0099771
01010351	15	10	0.155	978540	0.0099129
01010361	16	2	0.155	965010	0.010022
01010371	16	4	0.155	965840	0.010013
01010381	16	6	0.155	970440	0.0099658
01010391	16	8	0.155	964200	0.01003
01010401	16	10	0.155	975790	0.0099111
01010411	18	2	0.155	968110	0.0099898
01010421	18	4	0.155	976620	0.0099028
01010431	18	6	0.155	961270	0.010061
01010441	18	8	0.155	964850	0.010024
01010451	18	10	0.155	968450	0.0099863
01010461	20	2	0.155	960060	0.010043
01010471	20	4	0.155	983850	0.0098006
01010481	20	6	0.155	967880	0.0099326

Table continued on next page...

Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01010491	20	8	0.155	959430	0.01002
01010501	20	10	0.155	945770	0.010165
01010511	6	2	0.776	969430	0.050404
01010521	6	4	0.776	974960	0.050118
01010531	6	6	0.776	975520	0.050089
01010541	6	8	0.776	971640	0.050289
01010551	6	10	0.776	976850	0.050021
01010561	8	2	0.776	968300	0.050311
01010571	8	4	0.776	973240	0.050056
01010581	8	6	0.776	979640	0.049729
01010591	8	8	0.776	966100	0.050426
01010601	8	10	0.776	969400	0.050104
01010611	10	2	0.776	965390	0.050311
01010621	10	4	0.776	973510	0.049892
01010631	10	6	0.776	971780	0.049981
01010641	10	8	0.776	962410	0.050467
01010651	10	10	0.776	963540	0.050408
01010661	12	2	0.776	948680	0.050892
01010671	12	4	0.776	959760	0.050304
01010681	12	6	0.776	964740	0.050045
01010691	12	8	0.776	963300	0.05012
01010701	12	10	0.776	960000	0.050292
01010711	13	2	0.776	960380	0.050122
01010721	13	4	0.776	964630	0.049901
01010731	13	6	0.776	970160	0.049469
01010741	13	8	0.776	959500	0.050019
01010751	13	10	0.776	962500	0.049863
01010761	14	2	0.776	955840	0.05021
01010771	14	4	0.776	958990	0.050045
01010781	14	6	0.776	956420	0.05018
01010791	14	8	0.776	972040	0.049967
01010801	14	10	0.776	984020	0.049359
01010811	15	2	0.776	955930	0.050809
01010821	15	4	0.776	969810	0.050082
01010831	15	6	0.776	970000	0.050072
01010841	15	8	0.776	967930	0.050179
01010851	15	10	0.776	974030	0.049865
01010861	16	2	0.776	963180	0.050427
01010871	16	4	0.776	973680	0.049883
01010881	16	6	0.776	980690	0.049527
01010891	16	8	0.776	962800	0.050447
01010901	16	10	0.776	970370	0.050053
01010911	18	2	0.776	961960	0.050491
01010921	18	4	0.776	968310	0.05016
01010931	18	6	0.776	974040	0.049865
01010941	18	8	0.776	967630	0.050195
01010951	18	10	0.776	964360	0.050365
01010961	20	2	0.782	984100	0.050063

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01010971	20	4	0.782	996600	0.049286
01010981	20	6	0.782	987530	0.049739
01010991	20	8	0.782	982340	0.049852
01011001	20	10	0.782	984610	0.049737
01011011	6	2	1.565	981860	0.10084
01011021	6	4	1.565	992880	0.10033
01011031	6	6	1.565	989120	0.1001
01011041	6	8	1.565	990350	0.099976
01011051	6	10	1.565	995290	0.099481
01011061	8	2	1.565	980350	0.10069
01011071	8	4	1.565	990820	0.099629
01011081	8	6	1.565	994790	0.098934
01011091	8	8	1.565	999760	0.098442
01011101	8	10	1.565	1000400	0.098382
01011111	10	2	1.565	976670	0.10077
01011121	10	4	1.565	978730	0.10056
01011131	10	6	1.565	985100	0.099907
01011141	10	8	1.565	989750	0.099438
01011151	10	10	1.565	989980	0.099414
01011161	12	2	1.565	979970	0.10043
01011171	12	4	1.565	990130	0.0994
01011181	12	6	1.565	988620	0.098957
01011191	12	8	1.565	989660	0.098854
01011201	12	10	1.565	996350	0.09819
01011211	14	2	1.565	975370	0.1003
01011221	14	4	1.565	984870	0.099334
01011231	14	6	1.565	987720	0.099048
01011241	14	8	1.565	983210	0.099502
01011251	14	10	1.545	984400	0.098112
01011261	13	2	1.565	980070	0.10042
01011271	13	4	1.565	989420	0.099471
01011281	13	6	1.565	991860	0.099227
01011291	13	8	1.565	995470	0.098866
01011301	13	10	1.565	1001900	0.098228
01011311	15	2	1.565	980210	0.10041
01011321	15	4	1.565	993060	0.099107
01011331	15	6	1.565	989850	0.099428
01011341	15	8	1.565	993820	0.099031
01011351	15	10	1.565	994070	0.099005
01011361	16	2	1.565	984150	0.1
01011371	16	4	1.565	988380	0.099576
01011381	16	6	1.565	988030	0.099611
01011391	16	8	1.565	995690	0.098844
01011401	16	10	1.565	992620	0.09915
01011411	18	2	1.565	959420	0.10258
01011421	18	4	1.565	972730	0.10118
01011431	18	6	1.565	981330	0.10029
01011441	18	8	1.565	985980	0.099818

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01011451	18	10	1.565	989720	0.099441
01011461	20	2	1.565	985120	0.099905
01011471	20	4	1.565	987770	0.099637
01011481	20	6	1.565	993370	0.099076
01011491	20	8	1.565	998900	0.098527
01011501	20	10	1.565	1004300	0.097996
01011511	6	2	2.348	987750	0.15098
01011521	6	4	2.348	992910	0.1502
01011531	6	6	2.348	992900	0.1502
01011541	6	8	2.348	996490	0.14966
01011551	6	10	2.348	1003100	0.14867
01011561	8	2	2.348	985560	0.15132
01011571	8	4	2.348	988530	0.15086
01011581	8	6	2.348	991870	0.15035
01011591	8	8	2.348	997170	0.14955
01011601	8	10	2.348	996090	0.14972
01011611	10	2	2.348	989040	0.15078
01011621	10	4	2.348	989480	0.14982
01011631	10	6	2.348	994280	0.14909
01011641	10	8	2.348	1001100	0.14808
01011651	10	10	2.348	1001600	0.14801
01011661	12	2	2.348	990970	0.15093
01011671	12	4	2.348	999240	0.14968
01011681	12	6	2.348	1000500	0.14949
01011691	12	8	2.348	1003200	0.1491
01011701	12	10	2.348	1007100	0.14851
01011711	13	2	2.348	990540	0.15009
01011721	13	4	2.348	1003300	0.14818
01011731	13	6	2.348	1005300	0.14788
01011741	13	8	2.348	1009600	0.14725
01011751	13	10	2.348	1014000	0.14661
01011761	14	2	2.348	987710	0.14961
01011771	14	4	2.348	997500	0.14815
01011781	14	6	2.348	1001600	0.14753
01011791	14	8	2.348	1003000	0.14734
01011801	14	10	2.348	1009400	0.1464
01011811	15	2	2.348	976460	0.15043
01011821	15	4	2.348	982570	0.1495
01011831	15	6	2.348	986810	0.14886
01011841	15	8	2.348	990930	0.14824
01011851	15	10	2.348	985560	0.14816
01011861	16	2	2.348	970420	0.15047
01011871	16	4	2.348	978860	0.14917
01011881	16	6	2.348	977800	0.14934
01011891	16	8	2.348	980550	0.14892
01011901	16	10	2.348	983980	0.1484
01011911	18	2	2.348	970070	0.14963
01011921	18	4	2.348	964600	0.15048

Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01011931	18	6	2.348	973830	0.14906
01011941	18	8	2.348	976720	0.14861
01011951	18	10	2.348	974500	0.14895
01011961	20	2	2.348	961470	0.15052
01011971	20	4	2.348	972710	0.14879
01011981	20	6	2.348	977950	0.14799
01011991	20	8	2.348	975220	0.1484
01012001	20	10	2.348	999800	0.14433
01012011	6	2	3.131	1001100	0.19965
01012021	6	4	3.131	1007000	0.19847
01012031	6	6	3.131	1008700	0.19814
01012041	6	8	3.131	1014300	0.19705
01012051	6	10	3.131	986460	0.20139
01012061	8	2	3.131	984570	0.20177
01012071	8	4	3.131	991950	0.20027
01012081	8	6	3.131	992140	0.20023
01012091	8	8	3.131	995170	0.19962
01012101	8	10	3.131	999740	0.19811
01012111	10	2	3.131	985940	0.20028
01012121	10	4	3.131	986590	0.20015
01012131	10	6	3.131	990120	0.19943
01012141	10	8	3.131	993160	0.19882
01012151	10	10	3.131	997810	0.1979
01012161	12	2	3.131	986320	0.199
01012171	12	4	3.131	987520	0.19876
01012181	12	6	3.131	985880	0.19909
01012191	12	8	3.131	992920	0.19768
01012201	12	10	3.131	995640	0.19714
01012211	13	2	3.131	979810	0.20032
01012221	13	4	3.131	985980	0.19907
01012231	13	6	3.131	987760	0.19871
01012241	13	8	3.131	992920	0.19768
01012251	13	10	3.131	997880	0.1967
01012261	14	2	3.131	973030	0.20172
01012271	14	4	3.131	989880	0.19829
01012281	14	6	3.131	992240	0.19782
01012291	14	8	3.131	992480	0.19777
01012301	14	10	3.131	997160	0.19684
01012311	15	2	3.131	983670	0.19954
01012321	15	4	3.131	989140	0.19843
01012331	15	6	3.131	997510	0.19677
01012341	15	8	3.131	1001100	0.19606
01012351	15	10	3.131	1003200	0.19565
01012361	16	2	3.131	980350	0.19902
01012371	16	4	3.131	985520	0.19798
01012381	16	6	3.131	995380	0.19602
01012391	16	8	3.131	995910	0.19591
01012401	16	10	3.131	991060	0.19687

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01012411	18	2	3.131	971940	0.20074
01012421	18	4	3.131	981940	0.1987
01012431	18	6	3.131	980840	0.19814
01012441	18	8	3.131	987380	0.19682
01012451	18	10	3.131	990200	0.19626
01012461	20	2	3.131	974950	0.19933
01012471	20	4	3.131	1000100	0.19433
01012481	20	6	3.131	982000	0.1979
01012491	20	8	3.131	1001000	0.19414
01012501	20	10	3.131	1005600	0.19326
01012511	6	2	0.235	1479100	0.010025
01012521	6	4	0.235	1467700	0.0099826
01012531	6	6	0.235	1454000	0.010017
01012541	6	8	0.235	1465400	0.0099096
01012551	6	10	0.235	1466500	0.0098725
01012561	8	2	0.235	1453200	0.0099039
01012571	8	4	0.235	1450100	0.0099255
01012581	8	6	0.235	1451300	0.0098881
01012591	8	8	0.235	1435300	0.0099392
01012601	8	10	0.235	1447300	0.0098571
01012611	10	2	0.235	1430400	0.0098865
01012621	10	4	0.235	1455300	0.0097743
01012631	10	6	0.235	1437200	0.0098393
01012641	10	8	0.235	1413800	0.0099438
01012651	10	10	0.235	1432100	0.0098172
01012661	12	2	0.235	1432600	0.0098713
01012671	12	4	0.235	1444500	0.0097896
01012681	12	6	0.235	1429800	0.0098328
01012691	12	8	0.235	1446300	0.0096924
01012701	12	10	0.235	1449100	0.009646
01012711	13	2	0.235	1425200	0.0099222
01012721	13	4	0.235	1441900	0.0098075
01012731	13	6	0.235	1443800	0.0097378
01012741	13	8	0.235	1413800	0.0098866
01012751	13	10	0.235	1426500	0.0098271
01012761	14	2	0.235	1418400	0.0098541
01012771	14	4	0.235	1428100	0.0097873
01012781	14	6	0.235	1426400	0.0097423
01012791	14	8	0.235	1407100	0.0098711
01012801	14	10	0.235	1421100	0.0097792
01012811	15	2	0.235	1469400	0.010038
01012821	15	4	0.235	1457500	0.010001
01012831	15	6	0.235	1457700	0.0099411
01012841	15	8	0.235	1456000	0.009923
01012851	15	10	0.235	1451300	0.0099263
01012861	16	2	0.235	1433400	0.01005
01012871	16	4	0.235	1436100	0.0099728
01012881	16	6	0.235	1446300	0.0098733

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01012891	16	8	0.235	1430600	0.009953
01012901	16	10	0.235	1439200	0.009836
01012911	18	2	0.235	1417200	0.0099884
01012921	18	4	0.235	1429200	0.0098762
01012931	18	6	0.235	1426000	0.009841
01012941	18	8	0.235	1427200	0.0098047
01012951	18	10	0.235	1419100	0.0098324
01012961	20	2	0.235	1393400	0.0099851
01012971	20	4	0.235	1422900	0.0097496
01012981	20	6	0.235	1432800	0.0096827
01012991	20	8	0.235	1421900	0.0097291
01013001	20	10	0.235	1430700	0.0096691
01013011	6	2	1.175	1439900	0.049733
01013021	6	4	1.175	1456400	0.04917
01013031	6	6	1.175	1453200	0.048991
01013041	6	8	1.175	1424800	0.049822
01013051	6	10	1.175	1430300	0.049485
01013061	8	2	1.175	1421800	0.049781
01013071	8	4	1.175	1433000	0.049391
01013081	8	6	1.175	1433400	0.049236
01013091	8	8	1.175	1425600	0.049363
01013101	8	10	1.175	1436600	0.048983
01013111	10	2	1.175	1406500	0.049744
01013121	10	4	1.175	1415800	0.049417
01013131	10	6	1.175	1417700	0.04907
01013141	10	8	1.175	1405100	0.049508
01013151	10	10	1.175	1412900	0.048952
01013161	12	2	1.175	1382500	0.050462
01013171	12	4	1.175	1414800	0.049171
01013181	12	6	1.175	1423500	0.048867
01013191	12	8	1.175	1431500	0.048594
01013201	12	10	1.175	1419600	0.049001
01013211	13	2	1.175	1485500	0.049705
01013221	13	4	1.175	1492000	0.049195
01013231	13	6	1.175	1457900	0.050048
01013241	13	8	1.175	1460200	0.049971
01013251	13	10	1.175	1467700	0.049569
01013261	14	2	1.175	1445200	0.050193
01013271	14	4	1.175	1453300	0.049912
01013281	14	6	1.175	1455700	0.049686
01013291	14	8	1.175	1434600	0.050269
01013301	14	10	1.175	1447500	0.049818
01013311	15	2	1.175	1437300	0.050026
01013321	15	4	1.175	1453300	0.049476
01013331	15	6	1.175	1457100	0.049203
01013341	15	8	1.175	1432000	0.049918
01013351	15	10	1.175	1448000	0.049368
01013361	16	2	1.175	1429900	0.049992

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01013371	16	4	1.175	1445900	0.049439
01013381	16	6	1.175	1452300	0.049076
01013391	16	8	1.175	1458200	0.048736
01013401	16	10	1.175	1449700	0.048882
01013411	18	2	1.175	1410100	0.050253
01013421	18	4	1.175	1424000	0.049761
01013431	18	6	1.175	1431500	0.04936
01013441	18	8	1.175	1426100	0.049404
01013451	18	10	1.175	1427200	0.049364
01013461	20	2	1.175	1410400	0.049951
01013471	20	4	1.175	1448700	0.048631
01013481	20	6	1.175	1453900	0.048319
01013491	20	8	1.175	1455200	0.048135
01013501	20	10	1.175	1431500	0.048932
01013511	6	2	2.348	1446300	0.099638
01013521	6	4	2.348	1455800	0.098988
01013531	6	6	2.348	1454000	0.098818
01013541	6	8	2.348	1451100	0.09844
01013551	6	10	2.348	1446700	0.097879
01013561	8	2	2.348	1461800	0.10034
01013571	8	4	2.348	1445100	0.098558
01013581	8	6	2.348	1449700	0.097964
01013591	8	8	2.348	1453500	0.09742
01013601	8	10	2.348	1447200	0.097845
01013611	10	2	2.348	1423300	0.099488
01013621	10	4	2.348	1444500	0.09803
01013631	10	6	2.348	1447400	0.097835
01013641	10	8	2.348	1451600	0.096989
01013651	10	10	2.348	1437000	0.097973
01013661	12	2	2.348	1414200	0.099551
01013671	12	4	2.348	1419600	0.099171
01013681	12	6	2.348	1422000	0.098717
01013691	12	8	2.348	1416000	0.098854
01013701	12	10	2.348	1420500	0.098541
01013711	13	2	2.348	1466200	0.10017
01013721	13	4	2.348	1471200	0.099236
01013731	13	6	2.348	1468000	0.099456
01013741	13	8	2.348	1452500	0.099923
01013751	13	10	2.348	1453400	0.099864
01013761	14	2	2.348	1444200	0.1005
01013771	14	4	2.348	1443700	0.10024
01013781	14	6	2.348	1451500	0.099405
01013791	14	8	2.348	1439600	0.099935
01013801	14	10	2.348	1444700	0.099583
01013811	15	2	2.348	1440400	0.099591
01013821	15	4	2.348	1448300	0.099048
01013831	15	6	2.348	1450200	0.098631
01013841	15	8	2.348	1434100	0.099442

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Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01013851	15	10	2.348	1453900	0.098088
01013861	16	2	2.348	1439900	0.099044
01013871	16	4	2.348	1437700	0.099197
01013881	16	6	2.348	1441300	0.098372
01013891	16	8	2.348	1444800	0.098138
01013901	16	10	2.348	1430200	0.098851
01013911	18	2	2.348	1436300	0.10046
01013921	18	4	2.348	1446900	0.099431
01013932	18	6	2.348	1429300	0.099782
01013941	18	8	2.348	1438400	0.099144
01013951	18	10	2.348	1441000	0.098397
01013961	20	2	2.348	1422500	0.099675
01013971	20	4	2.348	1416000	0.099842
01013981	20	6	2.348	1409200	0.10003
01013991	20	8	2.348	1418800	0.09936
01014001	20	10	2.348	1427200	0.098489
01014061	8	2	3.526	1423300	0.14874
01014071	8	4	3.526	1432600	0.14734
01014081	8	6	3.526	1421800	0.14803
01014091	8	8	3.526	1414200	0.14883
01014101	8	10	3.526	1421500	0.14806
01014111	10	2	3.526	1417400	0.1485
01014121	10	4	3.526	1403200	0.14956
01014131	10	6	3.526	1405900	0.14885
01014141	10	8	3.526	1409800	0.14844
01014151	10	10	3.526	1411300	0.14828
01014161	12	2	3.526	1459800	0.15148
01014171	12	4	3.526	1464600	0.15052
01014181	12	6	3.526	1463600	0.14975
01014191	12	8	3.526	1450400	0.15111
01014201	12	10	3.526	1455600	0.14968
01014211	13	2	3.526	1437400	0.15157
01014221	13	4	3.526	1447400	0.15009
01014231	13	6	3.526	1445300	0.14986
01014241	13	8	3.526	1451100	0.14883
01014251	13	10	3.526	1442600	0.14927
01014261	14	2	3.526	1462500	0.14898
01014271	14	4	3.526	1466700	0.14811
01014281	14	6	3.526	1465400	0.14781
01014291	14	8	3.526	1445700	0.14894
01014301	14	10	3.526	1454700	0.14802
01014311	15	2	3.526	1448500	0.1478
01014321	15	4	3.526	1445500	0.1481
01014331	15	6	3.526	1451200	0.14752
01014341	15	8	3.526	1447200	0.14707
01014351	15	10	3.526	1450300	0.14633
01014361	16	2	3.526	1433500	0.14848
01014371	16	4	3.526	1441100	0.14684

Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01014381	16	6	3.526	1452400	0.1457
01014391	16	8	3.526	1446200	0.1459
01014401	16	10	3.526	1439000	0.14621
01014411	18	2	3.526	1420500	0.14811
01014421	18	4	3.526	1431000	0.14702
01014431	18	6	3.526	1422100	0.1471
01014441	18	8	3.526	1400200	0.14854
01014451	18	10	3.526	1408800	0.14806
01014461	20	2	3.526	1408000	0.14814
01014471	20	4	3.526	1422200	0.14666
01014481	20	6	3.526	1418500	0.14663
01014491	20	8	3.526	1411800	0.14732
01014501	20	10	2.517	1444000	0.1065
01014511	6	2	4.705	1457900	0.20039
01014521	6	4	4.705	1461500	0.19929
01014531	6	6	4.705	1467900	0.19785
01014541	6	8	4.705	1449900	0.19971
01014551	6	10	4.705	1452200	0.1994
01014561	8	2	4.705	1446900	0.20012
01014571	8	4	4.705	1459600	0.19779
01014581	8	6	4.705	1465000	0.19707
01014591	8	8	4.705	1465700	0.1964
01014601	8	10	4.705	1464300	0.19544
01014611	10	2	4.705	1441600	0.19851
01014621	10	4	4.705	1449900	0.19738
01014631	10	6	4.705	1444700	0.19694
01014641	10	8	4.705	1446000	0.19676
01014651	10	10	4.705	1451200	0.19606
01014661	12	2	4.705	1421100	0.20021
01014671	12	4	4.705	1437200	0.19797
01014681	12	6	4.705	1434200	0.1978
01014691	12	8	4.705	1432200	0.1975
01014701	12	10	4.705	1436100	0.19696
01014711	13	2	4.705	1420400	0.19914
01014721	13	4	4.705	1429500	0.19788
01014731	13	6	4.705	1430600	0.19772
01014741	13	8	4.705	1430500	0.19717
01014751	13	10	4.705	1432000	0.19639
01014761	14	2	4.705	1464000	0.19927
01014771	14	4	4.705	1474400	0.19728
01014781	14	6	4.705	1473300	0.19686
01014791	14	8	4.705	1450600	0.19875
01014801	14	10	4.705	1455200	0.19812
01014811	15	2	4.705	1441600	0.2
01014821	15	4	4.705	1437500	0.19997
01014831	15	6	4.705	1442700	0.19867
01014841	15	8	4.705	1441800	0.19821
01014851	15	10	4.705	1440000	0.19788

Table continued on next page...

Sinusoidal test cases for model 1, NACA 23012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
01014861	16	2	4.705	1420600	0.20059
01014871	16	4	4.705	1434400	0.19866
01014881	16	6	4.705	1438900	0.19804
01014891	16	8	4.705	1441300	0.19713
01014901	16	10	4.705	1434700	0.19745
01014911	18	2	4.705	1419900	0.19952
01014921	18	4	4.705	1428600	0.1983
01014931	18	6	4.705	1440400	0.19667
01014941	18	8	4.705	1446700	0.19525
01014951	18	10	4.705	1435100	0.19683
01014961	20	2	4.705	1417600	0.19869
01014971	20	4	4.705	1431400	0.19677
01014981	20	6	4.705	1432700	0.19658
01014991	20	8	4.705	1433400	0.19593
01015001	20	10	4.705	1421800	0.19695

Sinusoidal oscillatory cases for model 1, NACA 23012

Table 23: Ramp-up test cases for model 1, NACA 23012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
01020341	1	29	0.58811	1443500	6.9015e-05
01020351	1	38	7.6738	1456700	0.00089233
01020362	2	38	15.041	1413500	0.0017519
01020372	2	38	30.649	1418300	0.0035475
01020382	2	38	44.982	1434500	0.0051477
01020392	2	38	59.77	1417600	0.0069421
01020402	2	37	76.633	1436900	0.0090635
01020412	2	37	87.714	1431700	0.01035
01020422	2	37	103.5	1436200	0.012175
01020432	2	37	119.36	1433500	0.013985
01020442	2	37	132.87	1436000	0.01554
01020452	2	37	148.67	1423000	0.017546
01020462	2	37	162.99	1432300	0.019112
01020472	2	37	176.58	1433900	0.020621
01020482	2	38	189.55	1434500	0.022127
01020492	2	38	202.35	1425000	0.023709
01020902	2	38	222.6	1454200	0.026066
01020912	2	38	228.13	1463700	0.026541
01020922	2	38	247.34	1467100	0.028624
01020931	1	38	261.22	1446100	0.030689
01020942	2	38	270.78	1451400	0.031583
01020952	2	38	274.61	1444300	0.032186
01020962	2	38	284.68	1449000	0.033159
01020972	2	38	295.67	1449500	0.034327
01020982	2	38	303.99	1439100	0.035548
01020992	2	38	319.46	1437900	0.037388
01021001	1	38	333.7	1438100	0.038961
01024011	2	39	161.76	1453400	0.018917
01024021	6	34	156.47	1349700	0.019704
01024031	10	31	141.54	1252700	0.019091
01024041	12	29	131.47	1156100	0.019215
01024051	14	27	120.17	1056000	0.019227
01024061	15	26	109.04	976170	0.018874
01024071	16	25	102.89	865990	0.020075
01024081	16	25	86.02	768650	0.018909
01024091	16	25	77.395	674670	0.019383
01024101	17	24	68.907	570450	0.02041
01024111	19	23	56.262	479020	0.019845

Ramp-up cases for model 1, NACA 23012

Table 24: Ramp-down test cases for model 1, NACA 23012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
01030301	28	-29	-4.5773	1195200	-0.000653
01030311	28	-29	-3.5627	1194500	-0.00050403
01030321	28	-29	-2.3509	1193000	-0.00033203
01030331	28	-29	-1.1827	1189500	-0.00016703
01030341	28	-29	-0.57863	1181000	-8.1582e-05
01030351	28	-29	-5.657	1170000	-0.0008003
01030361	28	-29	-11.732	1168500	-0.0016669
01030371	28	-29	-22.956	1174000	-0.0032366
01030381	28	-29	-34.191	1170400	-0.0048356
01030391	28	-29	-45.35	1189100	-0.0063128
01030401	28	-29	-56.001	1174000	-0.0078723
01030411	28	-29	-65.841	1166000	-0.0093194
01030421	28	-29	-76.746	1184300	-0.010695
01030431	28	-29	-85.651	1182300	-0.011957
01030441	28	-29	-95.346	1181600	-0.013317
01030751	28	-31	-79.688	1431800	-0.0094076
01030761	29	-32	-91.229	1448600	-0.010645
01030771	29	-31	-104.27	1435600	-0.012241
01030781	29	-31	-113.46	1426900	-0.013322
01030791	29	-31	-120.99	1422700	-0.014207
01030801	28	-31	-127.34	1423100	-0.014948
01030811	28	-30	-139.29	1441700	-0.01614
01030821	28	-30	-146.63	1434200	-0.01703
01031011	30	-32	-154.94	1452900	-0.018301
01031021	30	-32	-163.72	1468100	-0.019139
01031031	30	-31	-176.09	1458600	-0.020595
01031051	29	-30	-191.97	1444100	-0.022679
01031061	30	-31	-200.67	1457400	-0.023489
01031071	29	-30	-203.16	1459200	-0.023752
01031081	29	-30	-203.89	1458900	-0.023772
01031091	29	-30	-214.12	1456100	-0.024938
01031101	29	-31	-223.07	1442600	-0.026301
01031111	29	-30	-228.67	1454000	-0.026751

Ramp-down cases for model 1, NACA 23012

Table 25: Static test cases for model 2, NACA 23012A

File name	Start AoA [deg]	Arc [deg]	Re
02000101	-1	31	1444800

Static test cases for model 2, NACA 23012A

Table 26: Sinusoidal test cases for model 2, NACA 23012A

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
02010011	10	4	0.235	1352300	0.010236
02010021	10	4	0.587	1415300	0.02443
02010031	10	4	1.174	1408300	0.049105
02010041	10	4	1.761	1378400	0.077288
02010051	10	4	2.348	1424400	0.099725
02010061	10	4	2.935	1438400	0.12345
02010071	10	4	3.523	1428500	0.1492
02010081	10	4	4.243	1439500	0.17832
02010111	10	6	0.587	1419800	0.025012
02010121	10	6	1.174	1433000	0.049565
02010131	10	6	1.761	1428200	0.074596
02010141	10	6	2.348	1436300	0.098901
02010151	10	6	2.935	1421700	0.12489
02010161	10	6	3.523	1420600	0.15003
02010171	10	6	4.11	1426000	0.17436
02010191	10	8	0.235	1417300	0.010031
02010201	10	8	0.587	1426200	0.024899
02010211	10	8	1.174	1421500	0.049963
02010221	10	8	1.761	1435300	0.074223
02010231	10	8	2.348	1429900	0.099339
02010241	10	8	2.935	1439600	0.12334
02010251	10	8	3.523	1414300	0.1507
02010261	10	8	4.11	1422300	0.17482
02010291	10	10	0.587	1429800	0.024674
02010301	10	10	1.174	1432600	0.049252
02010311	10	10	1.761	1425500	0.074245
02010331	10	10	2.935	1437600	0.1227
02010341	10	10	3.523	1415900	0.14954
02010351	10	10	4.11	1419600	0.174
02010361	4	10	0.235	1422900	0.0099261
02010371	4	10	0.587	1411900	0.024986
02010381	4	10	1.174	1427400	0.049431
02010391	4	10	1.761	1439000	0.073548
02010401	4	10	2.348	1420600	0.099332
02010411	4	10	2.935	1434900	0.12293
02010421	4	10	3.523	1419600	0.14915
02010431	4	10	4.11	1422100	0.17369
02010451	6	10	0.587	1410900	0.024839
02010461	6	10	1.174	1402200	0.049985
02010471	6	10	1.761	1415800	0.074257
02010481	6	10	2.348	1413900	0.099144
02010491	6	10	2.935	1397300	0.1254
02010501	6	10	3.523	1410800	0.14908
02010511	6	10	4.11	1417500	0.17311
02010521	8	10	0.235	1429400	0.0098805
02010531	8	10	0.587	1392200	0.025173
02010561	8	10	2.348	1399000	0.1002
02010571	8	10	2.935	1417100	0.12365

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Sinusoidal test cases for model 2, NACA 23012A

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
02010581	8	10	3.523	1392800	0.15101
02010591	8	10	4.11	1396500	0.17571
02010601	15	10	0.235	1400100	0.010088
02010611	15	10	0.587	1392300	0.02517
02010621	15	10	1.174	1398700	0.050112
02010631	15	10	1.761	1415100	0.074296
02010641	15	10	2.348	1397100	0.10034
02010651	15	10	2.935	1414100	0.12391
02010661	15	10	3.523	1391900	0.15111
02010671	15	10	4.11	1403200	0.17487
02010681	20	10	0.235	1392800	0.010073
02010691	20	10	0.587	1391400	0.025187
02010701	20	10	1.174	1394100	0.050277
02010711	20	10	1.761	1401400	0.07502
02010721	20	10	2.348	1395000	0.10049
02010731	20	10	2.935	1401700	0.12501
02010741	20	10	3.523	1391700	0.15113
02010751	20	10	4.11	1406300	0.17448
02010761	10	10	0.235	1408600	0.010093
02010771	10	10	0.587	1433000	0.024782
02010781	10	10	1.174	1412000	0.0503
02010791	10	10	1.761	1423000	0.074864
02010801	10	10	2.348	1417900	0.10018
02010811	10	10	2.935	1414600	0.12552
02010821	10	10	3.523	1414000	0.15073
02010831	10	10	4.11	1420500	0.17504
02010841	20	10	0.482	1407400	0.02072
02010851	20	10	0.722	1415500	0.030858
02010861	20	10	0.962	1405500	0.041406
02010871	20	10	1.207	1413000	0.051679
02010881	4	8	2.348	1447100	0.10051
02010891	6	8	2.348	1438800	0.10109
02010901	8	8	2.348	1435900	0.10129
02010911	10	8	2.348	1480900	0.098216
02010921	12	8	2.348	1466100	0.099209
02010931	17	8	2.348	1465500	0.099244

Sinusoidal oscillatory cases for model 2, NACA 23012A

Table 27: Ramp-up test cases for model 2, NACA 23012A

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
02020031	1	39	2.91	1435000	0.00034526
02020041	1	39	4.39	1428600	0.00052319
02020051	1	39	5.97	1435500	0.00070807
02020061	1	39	7.41	1443500	0.00087399
02020071	1	39	14.87	1456600	0.0017381
02020081	1	39	30.01	1440400	0.0035474
02020091	1	39	44.99	1456000	0.0052609
02020101	1	39	60.01	1440000	0.0070952
02020111	1	39	75.29	1456000	0.0088044
02020121	1	39	89.95	1439500	0.010639
02020131	1	39	102.53	1458000	0.011973
02020141	1	39	115.12	1444200	0.013572
02020151	1	39	129.59	1464200	0.015069
02020161	1	39	146.43	1444700	0.017256
02020171	1	39	159.64	1461100	0.018603
02020181	1	39	173.63	1440700	0.02052
02020191	1	39	189.52	1458900	0.022118
02020201	1	39	199.78	1461000	0.023281
02020221	1	39	229.07	1451200	0.026875
02020231	1	39	242.61	1411500	0.027935
02020241	1	39	258.52	1414600	0.029702
02020251	1	39	263.63	1408100	0.030428
02020261	1	39	276.83	1407000	0.031976
02020271	1	39	286.6	1411200	0.033007
02020281	1	39	298.51	1418600	0.034197
02020291	1	39	315.94	1395300	0.036799
02020301	1	39	324.9	1410900	0.037425
02020311	1	39	337.21	1398400	0.039191

Ramp-up cases for model 2, NACA 23012A

Table 28: Ramp-down test cases for model 2, NACA 23012A

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
02030321	37	-38	-325.18	1400800	-0.038497
02030331	37	-38	-233.91	1426400	-0.027194
02030341	37	-38	-148.57	1393300	-0.017684
02030351	37	-38	-84.128	1395500	-0.0099973
02030361	37	-38	-71.148	1409000	-0.0083739
02030371	37	-38	-57.572	1391900	-0.0068594
02030381	37	-38	-43.465	1409000	-0.0051156
02030392	37	-38	-29.105	1398300	-0.0034518
02030402	37	-38	-14.613	1398700	-0.0017326
02030411	37	-38	-4.4777	1388000	-0.000535

Ramp-down cases for model 2, NACA 23012A

Table 29: Static test cases for model 3, NACA 23012B

File name	Start AoA [deg]	Arc [deg]	Re
03000801	-6	31	1562700
03000811	-5	30	1507300
03000821	-5	30	1525700
03000921	-5	35	1494700
03000931	-5	30	1495600
03000932	-5	25	1485800
03001181	-5	35	1494800
03001411	-5	30	806170
03001421	-5	30	1007700
03001431	-5	30	1513800
03001801	-5	30	1469700
03001811	-5	30	1487500
03002911	-5	30	1523000
03002921	-5	30	1932400
03003341	-5	35	1486800
03003351	-5	40	1480600
03003363	-5	40	1486800
03003371	-10	40	1482200
03003381	26	-30	1488300
03003391	11	10	1484500
03003743	-5	40	1475700
03003991	-5	40	1509000
03004271	-5	40	1467000
03004281	-5	40	1703500
03004291	-5	40	1929700
03004301	-10	45	1502700
03004302	-5	40	1510900
03005211	-5	40	1450300
03005221	-5	40	1445300
03005231	5	-20	1430700
03005241	5	12	1461700
03005251	5	-21	1462900
03005261	-17	51	1466500
03005271	0	-17	1467300
03005281	-5	40	1885500
03005282	-5	40	1858900
03005361	-5	40	1447500
03005371	25	0	1461100
03007001	-21	39	1420200
03007011	19	-39	1422800
03007021	-21	39	1411600
03105381	-5	40	1450400
03105391	25	0	1443200
03105421	-5	40	1436900
03105431	-5	40	1464100
03105441	-5	40	1451500
03105451	23	10	1454200
03105461	5	-21	1435000

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03105791	-5	40	1458000
03105801	5	-21	1457800
03105811	-5	40	1459900
03105821	5	-21	1452300
03105831	-5	40	1488200
03105841	5	-21	1480600
03105941	-5	40	1496900
03105951	5	-21	1510000

Static test cases for model 3, NACA 23012B

Table 30: Unsteady static test cases for model 3, NACA 23012B

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
03040011	-10	-9.74	1492900
03040021	-8	-8.29	1486500
03040031	-8	-7.84	1485300
03040041	-6	-6.02	1484600
03040051	-4	-3.65	1484000
03040061	-3	-2.41	1484000
03040071	-2	-2.07	1482800
03040081	-2	-1.67	1482800
03040091	1	0.86	1482100
03040101	2	2.64	1481500
03040111	3	3.36	1480900
03040121	3	3.62	1480900
03040131	5	5.01	1480300
03040141	7	6.56	1480300
03040151	7	7.54	1479600
03040161	10	9.6	1479600
03040171	11	12.4	1490300
03040181	12	12.41	1487200
03040191	13	12.95	1485900
03040201	13	13.56	1485300
03040211	14	14.15	1485300
03040221	15	14.91	1484600
03040231	16	16.16	1484000
03040241	17	16.65	1484000
03040251	17	17.36	1484000
03040261	18	18.04	1484000
03040271	18	18.27	1483400
03040281	20	20.59	1483400
03040291	22	22.11	1482800
03040301	24	24.23	1482100
03040311	26	26.39	1482100
03040321	28	28.4	1480900
03040331	30	30.19	1481500
03040341	32	32.07	1480900

Unsteady static test cases for model 3, NACA 23012B

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
03040351	34	34.04	1480300
03040361	37	37.15	1479700
03040371	38	37.98	1487200
03040501	0	-0.37	1476100
03040511	2	2.11	1471000
03040521	4	4.25	1469800
03040531	6	6.35	1468600
03040541	8	8.56	1467900
03040551	10	10.32	1467300
03040561	12	12.44	1466700
03040571	13	13.68	1466100
03040581	14	14.38	1464800
03040591	15	15.44	1464200
03040601	16	16.38	1464800
03040611	18	18.7	1464200
03040621	20	20.52	1463000
03040631	24	24.91	1462300
03040641	30	30.77	1461700
03040651	0	0.19	1491600
03040671	4	4.34	1485800
03040681	6	6.32	1485200
03040691	8	8.73	1484600
03040701	10	10.21	1483300
03040711	12	12.56	1482700
03040721	13	13.41	1482700
03040731	14	14.54	1482000
03040741	15	15.13	1482000
03040751	16	16.28	1481400
03040761	18	18.51	1482000
03040771	20	20.52	1482000
03040781	24	24.56	1482000
03040791	30	30.95	1480800
03045341	26	25.97	1450800
03045351	27	26.58	1448300
03145401	26	26.24	1439500
03145411	27	26.89	1437000
03145471	-5	-5.24	1456100
03145481	0	0.1	1453000
03145491	5	5.1	1452400
03145501	10	10.14	1452400
03145511	15	15.08	1452400
03145521	20	19.99	1422200
03145531	25	25.38	1417500
03145541	28	28.19	1417500
03145551	30	30.41	1416300
03145561	35	35.06	1416300
03145851	-6	-5.62	1476000
03145861	0	0.18	1474100

Table continued on next page...

Unsteady static test cases for model 3, NACA 23012B

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
03145871	5	5.03	1474100
03145881	10	10.3	1475400
03145891	15	14.95	1472900
03145901	20	20.13	1472900
03145911	25	25.21	1472900
03145921	30	30.08	1472200
03145931	35	35.25	1471000

Unsteady Static test cases for model 3, NACA 23012B

Table 31: Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03010831	4	10	0.28	1481400	0.011643
03010841	6	10	0.245	1474500	0.010169
03010851	8	10	0.245	1470700	0.010159
03010861	10	10	0.245	1468300	0.010152
03010871	10	10	0.245	1473200	0.010226
03010872	10	10	0.228	1492600	0.0096055
03010881	4	10	0.612	1482800	0.025289
03010891	6	10	0.612	1477100	0.025251
03010901	8	10	0.612	1474000	0.02523
03010911	10	10	0.612	1472800	0.025222
03010912	10	10	0.571	1488900	0.024088
03010941	4	10	1.209	1465200	0.051856
03010951	6	10	1.209	1457200	0.051744
03010961	8	10	1.209	1455900	0.051727
03010971	10	10	1.209	1455300	0.051718
03010972	10	10	1.209	1478400	0.051363
03010981	4	10	1.813	1503500	0.075649
03010991	6	10	1.813	1497800	0.075536
03011001	8	10	1.813	1496500	0.075511
03011011	10	10	1.813	1495200	0.075486
03011012	10	10	1.813	1499600	0.075652
03011021	4	10	2.417	1491500	0.10125
03011031	6	10	2.417	1489600	0.1012
03011041	8	10	2.417	1488300	0.10116
03011051	10	10	2.417	1487100	0.10113
03011052	10	10	2.417	1493100	0.10123
03011061	4	10	3.021	1499200	0.12626
03011071	6	10	3.021	1493500	0.12607
03011081	8	10	3.021	1492900	0.12605
03011091	10	10	3.021	1491600	0.12601
03011092	10	10	3.021	1500200	0.12653
03011101	4	10	3.625	1501500	0.15101
03011111	6	10	3.625	1497700	0.15086
03011121	8	10	3.625	1496400	0.15081
03011131	10	10	3.625	1495100	0.15076
03011132	10	10	3.625	1491600	0.15234
03011141	4	10	4.23	1497200	0.17682
03011151	6	10	4.23	1493400	0.17665
03011161	8	10	4.23	1492800	0.17662
03011171	10	10	4.23	1492200	0.17659
03011172	10	10	4.23	1497900	0.17681
03011191	4	10	4.834	1499700	0.20281
03011201	6	10	4.834	1494000	0.2025
03011211	8	10	4.834	1492700	0.20244
03011221	10	10	4.834	1491500	0.20237
03011222	10	10	4.834	1498000	0.20228
03011231	15	10	0.228	1489500	0.0095975
03011241	20	10	0.228	1487600	0.0095927

Table continued on next page...

Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03011251	15	10	0.571	1484400	0.02406
03011261	20	10	0.571	1483200	0.024052
03011271	15	10	1.209	1474000	0.051303
03011281	20	10	1.209	1472800	0.051286
03011291	15	10	1.813	1493300	0.075527
03011301	20	10	1.813	1492000	0.075502
03011311	15	10	2.417	1487400	0.10108
03011321	20	10	2.417	1486200	0.10105
03011331	15	10	3.021	1495100	0.12636
03011341	20	10	3.021	1494400	0.12634
03011351	15	10	3.625	1489100	0.15224
03011361	20	10	3.625	1487800	0.15219
03011381	20	10	4.23	1495300	0.17669
03011391	15	10	4.834	1495400	0.20215
03011392	15	10	4.878	1449900	0.20299
03011401	20	10	4.834	1494200	0.20208
03011441	10	4	0.242	1489300	0.010123
03011451	10	6	0.242	1484300	0.01011
03011461	10	8	0.242	1482400	0.010105
03011471	10	12	0.242	1481200	0.010101
03011481	10	4	0.604	1495900	0.025169
03011491	10	6	0.604	1489000	0.025123
03011501	10	8	0.604	1487700	0.025115
03011511	10	12	0.604	1487700	0.025115
03011521	10	4	1.208	1487700	0.050557
03011531	10	6	1.208	1483300	0.050499
03011541	10	8	1.208	1482700	0.05049
03011551	10	12	1.208	1482000	0.050482
03011561	10	4	1.812	1488400	0.075845
03011571	10	6	1.812	1483300	0.075744
03011581	10	8	1.812	1482700	0.075732
03011591	10	12	1.812	1482700	0.075732
03011601	10	4	2.417	1486100	0.10132
03011611	10	6	2.417	1483000	0.10124
03011621	10	8	2.417	1482300	0.10122
03011631	10	12	2.417	1481700	0.10121
03011641	10	4	3.021	1496400	0.12637
03011651	10	6	3.021	1490000	0.12616
03011661	10	8	3.021	1490000	0.12616
03011671	10	12	3.021	1489400	0.12614
03011681	10	4	3.625	1493200	0.15151
03011691	10	6	3.625	1490000	0.15138
03011701	10	8	3.625	1490000	0.15138
03011711	10	12	3.625	1489400	0.15136
03011721	10	4	4.23	1491900	0.17726
03011731	10	6	4.23	1487500	0.17705
03011741	10	8	4.23	1487500	0.17705
03011751	10	12	4.23	1486900	0.17702

Table continued on next page...

Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03011761	10	4	4.834	1491800	0.20307
03011771	10	6	4.834	1486700	0.2028
03011781	10	8	4.834	1485400	0.20273
03011791	10	12	4.834	1485400	0.20273
03011821	5	8	0.244	1475100	0.010098
03011831	6	8	0.244	1468900	0.010081
03011841	7	8	0.244	1467000	0.010076
03011851	8	8	0.244	1465200	0.010071
03011861	9	8	0.244	1463300	0.010066
03011871	10	8	0.244	1461500	0.010061
03011881	11	8	0.244	1459600	0.010104
03011891	12	8	0.244	1455300	0.010092
03011901	13	8	0.244	1454100	0.010089
03011911	14	8	0.244	1452300	0.010084
03011921	15	8	0.244	1451100	0.010081
03011931	16	8	0.244	1449900	0.010077
03011941	5	8	0.611	1481100	0.025282
03011951	6	8	0.611	1476000	0.025248
03011961	7	8	0.611	1474800	0.02524
03011971	8	8	0.611	1474800	0.02524
03011981	9	8	0.611	1474200	0.025236
03011991	10	8	0.611	1474200	0.025236
03012001	11	8	0.611	1474100	0.025461
03012011	12	8	0.611	1470400	0.025435
03012021	13	8	0.611	1469800	0.025431
03012031	14	8	0.611	1469100	0.025427
03012041	15	8	0.611	1468500	0.025423
03012051	16	8	0.611	1467900	0.025418
03012061	5	8	1.222	1471600	0.051007
03012071	6	8	1.222	1467900	0.050956
03012081	7	8	1.222	1467300	0.050948
03012091	8	8	1.222	1466700	0.050939
03012101	9	8	1.222	1466700	0.050939
03012111	10	8	1.222	1466700	0.050939
03012121	11	8	1.222	1471200	0.051082
03012131	12	8	1.222	1467500	0.051032
03012141	13	8	1.222	1466200	0.051015
03012151	14	8	1.222	1466200	0.051015
03012161	15	8	1.222	1465600	0.051006
03012171	16	8	1.222	1465600	0.051006
03012181	5	8	1.832	1482900	0.076203
03012191	6	8	1.832	1477200	0.076089
03012201	7	8	1.832	1476600	0.076077
03012211	8	8	1.832	1476000	0.076064
03012221	9	8	1.832	1476000	0.076064
03012231	10	8	1.832	1475400	0.076051
03012241	11	8	1.832	1478000	0.076276
03012251	12	8	1.832	1474200	0.0762

Table continued on next page...

Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03012261	13	8	1.832	1474200	0.0762
03012271	14	8	1.832	1473600	0.076188
03012281	15	8	1.832	1473600	0.076188
03012291	16	8	1.832	1473600	0.076188
03012301	5	8	2.443	1472800	0.10201
03012311	6	8	2.443	1470900	0.10196
03012321	7	8	2.443	1470900	0.10196
03012331	8	8	2.443	1470300	0.10194
03012341	9	8	2.443	1470300	0.10194
03012351	10	8	2.443	1469700	0.10193
03012361	11	8	2.443	1473200	0.10204
03012371	12	8	2.443	1471400	0.10199
03012381	13	8	2.443	1471400	0.10199
03012391	14	8	2.443	1470700	0.10198
03012401	15	8	2.443	1470100	0.10196
03012411	16	8	2.443	1470100	0.10196
03012431	6	8	3.054	1478000	0.12723
03012441	7	8	3.054	1478000	0.12723
03012451	8	8	3.054	1477400	0.12721
03012461	9	8	3.054	1477400	0.12721
03012471	10	8	3.054	1476800	0.12718
03012481	11	8	3.054	1477700	0.12763
03012491	12	8	3.054	1475200	0.12754
03012501	13	8	3.054	1475200	0.12754
03012511	14	8	3.054	1475200	0.12754
03012521	15	8	3.054	1474600	0.12752
03012531	16	8	3.054	1474600	0.12752
03012541	5	8	3.664	1489900	0.15251
03012551	6	8	3.664	1484800	0.1523
03012561	7	8	3.664	1484200	0.15228
03012571	8	8	3.664	1483500	0.15225
03012581	9	8	3.664	1483500	0.15225
03012591	10	8	3.664	1483500	0.15225
03012601	11	8	3.664	1487200	0.15251
03012611	12	8	3.664	1484100	0.15238
03012621	13	8	3.664	1484100	0.15238
03012631	14	8	3.664	1484100	0.15238
03012641	15	8	3.664	1484100	0.15238
03012651	16	8	3.664	1484100	0.15238
03012661	5	8	4.276	1486900	0.17802
03012671	6	8	4.276	1483700	0.17788
03012681	7	8	4.276	1483700	0.17788
03012691	8	8	4.276	1483700	0.17788
03012701	9	8	4.276	1483700	0.17788
03012711	10	8	4.276	1483100	0.17785
03012721	11	8	4.276	1488000	0.1781
03012731	12	8	4.276	1484800	0.17795
03012741	13	8	4.276	1484800	0.17795

Table continued on next page...

Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03012751	14	8	4.276	1484200	0.17792
03012761	15	8	4.276	1484200	0.17792
03012771	16	8	4.276	1484200	0.17792
03012801	7	8	4.886	1482800	0.20361
03012891	15	8	4.886	1487000	0.2034
03013752	0	2	0.995	1497400	0.04127
03013762	4	2	1	1492900	0.041429
03013772	4	4	0.995	1492300	0.041215
03013782	0	4	1	1491700	0.041416
03013792	0	2	2.488	1487900	0.10392
03013802	4	2	2.488	1484700	0.10383
03013812	4	4	2.488	1482800	0.10378
03013822	0	4	2.488	1482800	0.10378
03013832	0	2	4.999	1490900	0.208
03013842	4	2	4.952	1488400	0.2059
03013852	4	4	4.952	1487800	0.20587
03013862	0	4	4.952	1487800	0.20587
03013872	0	2	7.393	1465000	0.31287
03013882	4	2	7.393	1461900	0.31261
03013892	4	4	7.393	1461300	0.31256
03013902	0	4	7.393	1461300	0.31256
03013912	0	2	9.721	1499100	0.40132
03013922	4	2	9.904	1495900	0.40854
03013932	4	4	9.904	1495200	0.40847
03013942	0	4	9.904	1494600	0.4084
03013952	0	2	12.208	1504300	0.50313
03013962	4	2	12.208	1499200	0.50247
03013972	4	4	12.208	1498600	0.50238
03013982	0	4	12.208	1497300	0.50222
03014001	0	8	0.244	1494000	0.010035
03014011	20	8	0.244	1488300	0.01002
03014021	25	8	0.244	1485100	0.010012
03014031	0	8	0.61	1460500	0.025512
03014041	20	8	0.61	1455600	0.025478
03014051	25	8	0.61	1455000	0.025474
03014061	0	8	1.219	1461100	0.050813
03014071	20	8	1.219	1458000	0.050771
03014081	25	8	1.219	1457400	0.050763
03014091	0	8	1.829	1463200	0.076131
03014101	20	8	1.829	1460100	0.076068
03014111	25	8	1.829	1459500	0.076055
03014121	0	8	2.439	1456300	0.10182
03014131	20	8	2.439	1455000	0.10179
03014141	25	8	2.439	1453800	0.10176
03014151	0	8	3.048	1457100	0.12717
03014161	20	8	3.048	1455300	0.12711
03014171	25	8	3.048	1455300	0.12711
03014181	0	8	3.658	1454200	0.15284

Table continued on next page...

Sinusoidal test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03014191	20	8	3.658	1453000	0.15279
03014201	25	8	3.658	1452400	0.15277
03014211	0	8	4.269	1455100	0.17827
03014221	20	8	4.269	1453800	0.17821
03014231	25	8	4.269	1453200	0.17818
03015961	5	8	2.448	994490	0.14997
03015971	6	8	2.448	994490	0.14997
03015981	7	8	2.448	994490	0.14997
03015991	8	8	2.448	994070	0.14995
03016001	9	8	2.448	994490	0.14997
03016011	10	8	2.448	994490	0.14997
03016031	12	8	2.448	1002100	0.1491
03016041	13	8	2.448	1002100	0.1491
03016051	14	8	2.448	1002100	0.1491
03016061	15	8	2.448	1002100	0.1491
03016071	16	8	2.448	1002100	0.1491
03115571	5	8	2.471	1438100	0.10373
03115581	6	8	2.471	1429700	0.10349
03115591	7	8	2.471	1429700	0.10349
03115601	8	8	2.471	1429700	0.10349
03115611	9	8	2.471	1429100	0.10347
03115621	10	8	2.472	1429100	0.10352
03115631	11	8	2.471	1430000	0.10377
03115641	12	8	2.471	1427600	0.1037
03115651	13	8	2.471	1426400	0.10367
03115661	14	8	2.471	1426400	0.10367
03115671	15	8	2.471	1425800	0.10365
03115681	16	8	2.472	1425800	0.1037

Sinusoidal oscillatory cases for model 3, NACA 23012B

Table 32: Ramp-up test cases for model 3, NACA 23012B

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
03023001	-6	40	0.7441	1503700	8.5679e-05
03023011	-5	40	1.4979	1491900	0.0001724
03023021	-6	40	2.971	1485500	0.0003434
03023031	-5	40	4.4094	1490700	0.00050607
03023041	-6	40	5.9542	1471700	0.00069717
03023051	-6	41	7.4721	1465400	0.00087344
03023061	-6	40	14.802	1461800	0.0017417
03023071	-6	40	29.174	1457500	0.0034288
03023081	-6	40	44.729	1457500	0.005257
03023091	-5	40	58.659	1462800	0.0068936
03023101	-5	40	74.267	1459700	0.0087206
03023111	-5	40	91.46	1457800	0.010734
03023121	-5	40	100.59	1478000	0.011706
03023131	-5	40	114.26	1474300	0.013284
03023141	-5	40	127.78	1473600	0.014853
03023151	-5	40	143.76	1496800	0.01657
03023161	-5	40	157.69	1489700	0.018143
03023171	-5	40	173.13	1489700	0.019919
03023181	-5	39	185.88	1487200	0.021524
03023191	-5	39	197.63	1482800	0.022858
03023201	-5	39	211.8	1482800	0.024497
03023211	-5	39	223.85	1480900	0.025877
03023221	-5	40	240.18	1504400	0.027625
03023231	-5	40	253.13	1500600	0.029085
03023241	-5	40	263.49	1499300	0.030266
03023251	-5	40	280.69	1498000	0.032231
03023261	-5	40	286.52	1492000	0.03323
03023271	-5	40	299.44	1486900	0.034682
03023281	-5	39	317.58	1486900	0.036783
03023291	-5	39	328.11	1485000	0.037984
03023301	-5	40	332.95	1496000	0.038489
03023311	-5	40	366.47	1490200	0.0423
03023321	-5	40	397.74	1488900	0.045894
03023331	-5	40	423.53	1488900	0.04887
03024311	0	5	58.079	1493700	0.0066971
03024321	0	4	112.58	1489800	0.012969
03024331	0	4	145.2	1488600	0.016721
03024411	0	8	47.839	1445800	0.0055369
03024421	0	8	108.16	1444600	0.012514
03024431	0	8	193.83	1443300	0.022419
03024441	0	8	210.21	1442700	0.02431
03024451	0	8	212.91	1442100	0.024618
03024511	0	12	51.753	1457000	0.0059683
03024521	0	12	94	1453900	0.010831
03024531	0	12	195.82	1452700	0.022556
03024541	0	12	259.63	1452100	0.029901
03024551	0	12	271.55	1451500	0.031269
03024561	0	12	276.03	1451500	0.031898

Table continued on next page...

Ramp-up test cases for model 3, NACA 23012B

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
03024571	0	12	274.52	1449600	0.031707
03024581	0	12	292.46	1448400	0.033768
03024591	0	12	299.01	1447800	0.034519
03024601	0	12	304.41	1446600	0.035131
03024611	1	20	49.353	1484200	0.0056774
03024621	0	20	97.909	1481600	0.011256
03024631	0	20	219.84	1479700	0.02526
03024641	1	19	301.62	1478500	0.034645
03024651	1	20	327.01	1477200	0.037549
03024661	1	19	344.92	1471500	0.039831
03024671	0	20	350.52	1468900	0.040451
03024681	0	20	374.03	1467700	0.04315
03024691	0	20	363.95	1466400	0.041973
03024701	0	20	372.91	1465800	0.042999
03024711	0	30	49.504	1470100	0.0056748
03024721	0	30	100.2	1466400	0.011475
03024731	0	30	200.35	1464500	0.022933
03024741	0	30	325.26	1463900	0.037224
03024751	0	30	375.93	1463300	0.043016
03024761	0	30	395.61	1449400	0.045807
03024771	0	30	422.48	1447000	0.048886
03024781	0	30	430.56	1446400	0.049812
03024791	0	30	443.6	1445200	0.051304
03024801	0	30	455.47	1443300	0.052651
03024861	0	12	286.49	399910	0.12319
03024871	0	20	361.71	400430	0.15561
03024881	0	30	447.53	400430	0.19253
03024891	0	4	147.44	400770	0.063452
03024901	0	8	237.94	400770	0.1024
03024911	0	4	154.12	617730	0.043032
03024921	0	8	241.55	617990	0.067454
03024931	0	12	290.09	617990	0.081009
03024941	0	20	377.56	618260	0.10545
03024951	0	30	442.17	617990	0.12348
03024961	0	4	158.64	693880	0.039572
03024971	0	8	232.56	694190	0.058021
03024981	0	12	281.12	694190	0.070137
03024991	0	20	357.24	694490	0.089143
03025001	0	30	438.6	694490	0.10944
03025011	0	4	120.63	852850	0.024526
03025021	0	8	245.13	852850	0.04984
03025031	0	12	288.27	852850	0.058611
03025041	0	20	368.61	852850	0.074945
03025051	0	30	439.59	853220	0.089392
03025061	0	4	131.8	963890	0.023739
03025071	0	8	254.09	963480	0.045757
03025081	0	12	291.86	963480	0.052559
03025091	0	20	364.77	963480	0.065689

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Ramp-up test cases for model 3, NACA 23012B

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
03025101	0	30	448.51	963060	0.080755
03025111	0	4	107.23	1191400	0.015625
03025121	0	8	246.02	1189900	0.035831
03025131	0	12	290.06	1189400	0.042238
03025141	0	20	370.67	1188900	0.053967
03025151	0	30	452.49	1188300	0.065868
03025161	0	4	137.59	1315400	0.018008
03025171	0	8	232.6	1315400	0.030443
03025181	0	12	293.64	1314200	0.038419
03025191	0	20	371.17	1313700	0.048554
03025201	0	30	452.48	1313100	0.059181
03026081	-5	40	49.523	975910	0.0086236
03026091	-5	41	98.888	975490	0.017217
03026101	-5	39	198.28	975490	0.034522
03026111	-5	39	287.49	975490	0.050053
03026121	-5	40	366.54	975490	0.063816
03026131	-5	40	427.04	975490	0.07435
03125691	-5	40	49.642	1449000	0.0056511
03125701	-5	40	98.878	1444800	0.011243
03125711	-5	40	198.58	1442300	0.022565
03125721	-5	40	291.41	1441100	0.033102
03125731	-5	39	367.11	1439900	0.041688

Ramp-up cases for model 3, NACA 23012B

Table 33: Ramp-down test cases for model 3, NACA 23012B

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
03033401	34	-41	-0.72525	1490400	-8.3424e-05
03033411	34	-41	-1.4794	1503200	-0.00017034
03033421	34	-41	-2.9265	1475000	-0.00034198
03033431	34	-41	-4.4136	1480600	-0.00051471
03033441	34	-41	-5.9909	1482400	-0.00069491
03033451	34	-41	-7.2286	1476900	-0.00084362
03033461	34	-41	-14.991	1479100	-0.0017396
03033471	34	-41	-29.119	1476600	-0.0033769
03033481	34	-41	-43.863	1475400	-0.005085
03033491	34	-41	-58.366	1476500	-0.0067734
03033501	34	-41	-70.984	1474000	-0.0082323
03033511	34	-41	-85.767	1472100	-0.0099418
03033521	34	-40	-94.681	1472500	-0.010991
03033531	34	-40	-107.04	1471300	-0.012422
03033541	34	-40	-120.73	1469400	-0.014004
03033551	34	-40	-135.56	1474900	-0.015693
03033561	34	-40	-148.67	1472400	-0.017199
03033571	34	-40	-159.5	1471200	-0.018446
03033581	34	-40	-172.39	1474900	-0.019957
03033591	34	-40	-181.55	1470500	-0.020993
03033601	34	-40	-195.17	1469900	-0.022564
03033611	34	-40	-205.71	1468700	-0.023774
03033621	34	-40	-217.69	1464700	-0.025271
03033631	34	-40	-226.11	1462900	-0.026236
03033641	34	-40	-243.8	1461600	-0.028279
03033651	34	-40	-255.32	1461000	-0.02961
03033661	34	-40	-262.7	1460700	-0.03051
03033671	34	-40	-273.81	1459400	-0.03179
03033681	34	-40	-288.05	1458200	-0.033432
03033691	34	-40	-302.67	1457600	-0.035123
03033701	34	-40	-302.75	1455100	-0.035254
03033711	34	-40	-347.73	1453300	-0.040471
03033721	34	-40	-384.69	1452100	-0.044758
03033731	34	-40	-412.09	1451500	-0.047938
03036141	35	-40	-48.162	1001000	-0.0082738
03036151	35	-41	-95.431	999730	-0.016386
03036161	35	-41	-182.83	999730	-0.031393
03036171	34	-40	-263.95	999730	-0.045322
03036181	34	-40	-357.69	999310	-0.061407
03036191	34	-40	-415.84	999310	-0.07139
03135741	34	-40	-48.4	1454200	-0.0054677
03135751	34	-40	-94.681	1449900	-0.010684
03135761	34	-40	-179.43	1448100	-0.020237
03135771	34	-40	-265.85	1446300	-0.029969
03135781	34	-40	-351.08	1445700	-0.03957

Ramp-down cases for model 3, NACA 23012B

Table 34: VAWT motion test cases for model 3, NACA 23012B

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
03056701	0	5.35	1.224	1437200	0.050836
03056711	0	9.94	1.224	1433600	0.050786
03056721	0	12.24	1.224	1433000	0.050777
03056731	0	13.76	1.224	1431800	0.050761
03056741	0	17.42	1.224	1430600	0.050744
03056751	0	22.57	1.224	1430000	0.050736
03056761	0	5.35	0.979	1439300	0.040414
03056771	0	9.94	0.979	1437500	0.040394
03056781	0	12.24	0.979	1436300	0.040381
03056791	0	13.76	0.979	1435100	0.040367
03056801	0	17.42	0.979	1433900	0.040354
03056811	0	22.57	0.979	1432700	0.040341
03056821	0	5.35	1.469	1430800	0.060821
03056831	0	9.94	1.469	1429100	0.060791
03056841	0	12.24	1.469	1427300	0.060761
03056851	0	13.76	1.469	1426700	0.060752
03056861	0	17.42	1.469	1426100	0.060742
03056881	0	5.35	1.224	1486300	0.050531
03056891	0	9.94	1.224	1484400	0.050506
03056901	0	12.24	1.224	1482500	0.050481
03056911	0	13.76	1.224	1480600	0.050456
03056921	0	17.42	1.224	1479300	0.050439
03056931	0	22.57	1.224	1478700	0.050431
03056941	-6	13.76	1.224	1493600	0.050614
03056951	-4	13.76	1.224	1489700	0.050564
03056961	-2	13.76	1.224	1489100	0.050555
03056971	2	13.76	1.224	1487800	0.050538
03056981	4	13.76	1.224	1487200	0.05053
03056991	6	13.76	1.224	1486600	0.050521

VAWT motion cases for model 3, NACA 23012B

Table 35: Static test cases for model 4, NACA 23012C

File name	Start AoA [deg]	Arc [deg]	Re
04005011	-2	32	1516800
04005341	-2	32	1494800
04005351	-2	32	1002900
04005361	-2	32	1970100
04006611	-2	32	1505500
04007911	-5	35	1517300

Static test cases for model 4, NACA 23012C

Table 36: Unsteady static test cases for model 4, NACA 23012C

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
04047221	-8	-7.57	1490200
04047231	-4	-3.37	1485100
04047241	0	0.33	1483200
04047251	2	1.31	1482600
04047261	4	4.36	1481900
04047271	6	6.88	1481900
04047281	8	9.11	1481300
04047291	9	10.06	1480700
04047301	10	11	1480700
04047311	11	11.92	1480100
04047321	12	12.95	1488100
04047331	13	13.89	1485500
04047341	14	14.88	1484900
04047351	15	15.71	1484300
04047361	16	16.65	1484300
04047371	17	17.57	1484900
04047381	18	18.57	1484300
04047391	19	19.41	1484300
04047401	20	20.26	1483700
04047411	21	21.27	1483700
04047421	22	22.24	1483000
04047431	23	23.07	1482400
04047441	24	24.01	1482400
04047451	26	25.84	1481100
04047461	32	32.17	1481100

Unsteady Static test cases for model 4, NACA 23012C

Table 37: Sinusoidal test cases for model 4, NACA 23012C

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
04015021	10	4	0.241	1497800	0.010178
04015031	10	6	0.241	1492000	0.010163
04015041	10	8	0.241	1489500	0.010156
04015051	10	10	0.241	1488200	0.010153
04015061	10	4	0.603	1489400	0.025459
04015071	10	6	0.603	1485600	0.025433
04015081	10	8	0.603	1484900	0.025429
04015091	10	10	0.603	1484300	0.025425
04015101	10	4	1.206	1492900	0.050799
04015111	10	6	1.206	1487800	0.050731
04015121	10	8	1.206	1486500	0.050714
04015131	10	10	1.206	1485900	0.050706
04015141	10	4	1.809	1492400	0.076174
04015151	10	6	1.809	1487300	0.076073
04015161	10	8	1.809	1486700	0.07606
04015171	10	10	1.809	1485400	0.076035
04015181	10	4	2.412	1498700	0.1012
04015191	10	6	2.412	1492900	0.10105
04015201	10	8	2.412	1492300	0.10103
04015211	10	10	2.412	1491700	0.10102
04015221	10	4	3.019	1498800	0.12651
04015231	10	6	3.019	1494300	0.12636
04015241	10	8	3.019	1493700	0.12634
04015251	10	10	3.019	1493700	0.12634
04015261	10	4	3.624	1491700	0.1524
04015271	10	6	3.624	1487300	0.15223
04015281	10	8	3.624	1486600	0.1522
04015291	10	10	3.624	1486600	0.1522
04015301	10	4	4.228	1494800	0.17786
04015311	10	6	4.228	1489000	0.1776
04015321	10	8	4.228	1487800	0.17754
04015331	10	10	4.228	1487800	0.17754
04015371	4	10	0.241	1488800	0.010119
04015381	6	10	0.241	1479900	0.010095
04015391	8	10	0.241	1478000	0.01009
04015401	15	10	0.241	1476200	0.010085
04015411	20	10	0.241	1473700	0.010079
04015421	4	10	0.603	1479600	0.025325
04015431	6	10	0.603	1471500	0.025271
04015441	8	10	0.603	1470200	0.025262
04015451	15	10	0.603	1469600	0.025258
04015461	20	10	0.603	1469000	0.025254
04015471	4	10	1.206	1479200	0.050423
04015481	6	10	1.206	1474300	0.050356
04015491	8	10	1.206	1473600	0.050348
04015501	15	10	1.206	1473000	0.05034
04015511	20	10	1.206	1473000	0.05034
04015521	4	10	1.81	1477900	0.075833

Sinusoidal test cases for model 4, NACA 23012C

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
04015531	6	10	1.81	1472900	0.075732
04015541	8	10	1.81	1471700	0.075707
04015551	15	10	1.81	1471700	0.075707
04015561	20	10	1.81	1471100	0.075695
04015571	4	10	2.414	1474700	0.10118
04015581	6	10	2.414	1471000	0.10108
04015591	8	10	2.414	1470400	0.10106
04015601	15	10	2.414	1469800	0.10104
04015611	20	10	2.414	1469100	0.10103
04015621	4	10	3.019	1476000	0.12635
04015631	6	10	3.019	1472300	0.12623
04015641	8	10	3.019	1472300	0.12623
04015651	15	10	3.019	1471700	0.12621
04015661	20	10	3.019	1471000	0.12618
04015671	4	10	3.624	1474600	0.15181
04015681	6	10	3.624	1470300	0.15164
04015691	8	10	3.624	1469700	0.15161
04015701	15	10	3.624	1469000	0.15159
04015711	20	10	3.624	1469000	0.15159
04015721	4	10	4.228	1476300	0.17661
04015731	6	10	4.228	1473800	0.17649
04015741	8	10	4.228	1473200	0.17646
04015751	15	10	4.228	1472500	0.17643
04015761	20	10	4.228	1472500	0.17643
04015771	3	8	0.241	1490000	0.010122
04015781	4	8	0.241	1483100	0.010104
04015791	5	8	0.241	1480600	0.010097
04015801	6	8	0.241	1479300	0.010094
04015811	7	8	0.241	1478000	0.010133
04015821	8	8	0.241	1471700	0.010116
04015831	9	8	0.241	1469800	0.010111
04015841	11	8	0.241	1468600	0.010108
04015851	12	8	0.241	1477500	0.010124
04015861	13	8	0.241	1468800	0.0101
04015871	14	8	0.241	1466300	0.010094
04015881	15	8	0.241	1475700	0.010136
04015891	16	8	0.241	1467000	0.010113
04015901	17	8	0.241	1465100	0.010108
04015911	20	8	0.241	1463200	0.010103
04015921	3	8	0.603	1473400	0.025341
04015931	4	8	0.603	1467800	0.025304
04015941	5	8	0.603	1466600	0.025295
04015951	6	8	0.603	1465300	0.025287
04015961	7	8	0.603	1465500	0.025478
04015971	8	8	0.603	1458700	0.025431
04015981	9	8	0.603	1457500	0.025423
04015991	11	8	0.603	1456300	0.025415
04016001	12	8	0.603	1476400	0.025274

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Sinusoidal test cases for model 4, NACA 23012C

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
04016011	13	8	0.603	1471400	0.025241
04016021	14	8	0.603	1469600	0.025228
04016031	15	8	0.603	1469000	0.025224
04016041	16	8	0.603	1473700	0.025292
04016051	17	8	0.603	1468700	0.025259
04016061	20	8	0.603	1467400	0.025251
04016071	3	8	1.609	997750	0.099738
04016081	4	8	1.609	998590	0.099771
04016091	5	8	1.609	998170	0.099754
04016101	6	8	1.609	998170	0.099754
04016111	7	8	1.609	998170	0.099754
04016121	8	8	1.609	998170	0.099754
04016131	9	8	1.609	998170	0.099754
04016142	10	8	1.609	995430	0.10144
04016152	11	8	1.609	995430	0.10144
04016162	12	8	1.609	995860	0.10146
04016172	13	8	1.609	995860	0.10146
04016182	14	8	1.609	997440	0.10112
04016192	15	8	1.609	997440	0.10112
04016202	16	8	1.609	997860	0.10114
04016212	17	8	1.609	997860	0.10114
04016221	3	8	1.206	1494600	0.050648
04016231	4	8	1.206	1485100	0.050522
04016241	5	8	1.206	1484500	0.050513
04016251	6	8	1.206	1483200	0.050497
04016261	7	8	1.206	1482600	0.050488
04016271	8	8	1.206	1481300	0.050471
04016281	9	8	1.206	1480700	0.050463
04016291	11	8	1.206	1480100	0.050455
04016301	12	8	1.206	1479400	0.050446
04016311	13	8	1.206	1485800	0.050438
04016321	14	8	1.206	1481400	0.050379
04016331	15	8	1.206	1480800	0.050371
04016341	16	8	1.206	1480200	0.050363
04016351	17	8	1.206	1479500	0.050354
04016361	20	8	1.206	1477600	0.050329
04016371	3	8	1.81	1481000	0.075899
04016381	4	8	1.81	1476000	0.075799
04016391	5	8	1.81	1475400	0.075786
04016401	6	8	1.81	1474700	0.075774
04016411	7	8	1.81	1473500	0.075748
04016421	8	8	1.81	1472900	0.075736
04016431	9	8	1.81	1472300	0.075723
04016441	11	8	1.81	1471600	0.075711
04016451	12	8	1.81	1471600	0.075711
04016461	13	8	1.81	1476800	0.075889
04016471	14	8	1.81	1471900	0.075788
04016481	15	8	1.81	1471200	0.075776

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Sinusoidal test cases for model 4, NACA 23012C

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
04016491	16	8	1.81	1470600	0.075763
04016501	17	8	1.81	1470000	0.075751
04016511	20	8	1.81	1469400	0.075738
04016521	3	8	3.223	1934000	0.10199
04016531	4	8	3.223	1929900	0.1019
04016541	5	8	3.223	1928300	0.10187
04016551	6	8	3.223	1926700	0.10184
04016561	7	8	3.223	1925000	0.1018
04016571	8	8	3.223	1924200	0.10179
04016581	9	8	3.223	1922600	0.10175
04016591	10	8	3.223	1921000	0.10172
04016601	11	8	3.223	1919400	0.10169
04016621	3	8	2.414	1499400	0.10132
04016631	4	8	2.414	1494900	0.1012
04016641	5	8	2.414	1494900	0.1012
04016651	6	8	2.414	1494900	0.1012
04016661	7	8	2.414	1493600	0.10116
04016671	8	8	2.414	1493600	0.10116
04016681	9	8	2.414	1493000	0.10115
04016691	11	8	2.414	1493000	0.10115
04016701	12	8	2.414	1491700	0.10111
04016711	13	8	2.414	1490400	0.10168
04016721	14	8	2.414	1486600	0.10158
04016731	15	8	2.414	1486000	0.10157
04016741	16	8	2.414	1486000	0.10157
04016751	17	8	2.414	1484700	0.10153
04016761	20	8	2.414	1484700	0.10153
04016771	3	8	3.019	1493400	0.12699
04016781	4	8	3.019	1489600	0.12686
04016791	5	8	3.019	1488900	0.12684
04016801	6	8	3.019	1488300	0.12682
04016811	7	8	3.019	1487700	0.1268
04016821	8	8	3.019	1487700	0.1268
04016831	9	8	3.019	1487000	0.12678
04016841	11	8	3.019	1487000	0.12678
04016851	12	8	3.019	1486400	0.12676
04016861	13	8	3.019	1485800	0.12673
04016871	14	8	3.019	1485100	0.12671
04016881	15	8	3.019	1485100	0.12671
04016891	16	8	3.019	1484500	0.12669
04016901	17	8	3.019	1484500	0.12669
04016911	20	8	3.019	1483900	0.12667
04016921	3	8	3.624	1497000	0.15162
04016931	4	8	3.624	1493200	0.15147
04016941	5	8	3.624	1493200	0.15147
04016951	6	8	3.624	1492500	0.15144
04016961	7	8	3.624	1491900	0.15142
04016971	8	8	3.624	1491300	0.15139

Table continued on next page...

Sinusoidal test cases for model 4, NACA 23012C

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
04016981	9	8	3.624	1490600	0.15137
04016991	11	8	3.624	1490600	0.15137
04017001	12	8	3.624	1490600	0.15137
04017011	13	8	3.624	1490000	0.15134
04017021	14	8	3.624	1489400	0.15132
04017031	15	8	3.624	1489400	0.15132
04017041	16	8	3.624	1489400	0.15132
04017051	17	8	3.624	1489400	0.15132
04017061	20	8	3.624	1488700	0.15129
04017071	3	8	4.228	1498700	0.17774
04017081	4	8	4.228	1493600	0.17751
04017091	5	8	4.228	1492900	0.17748
04017101	6	8	4.228	1492300	0.17745
04017111	7	8	4.228	1491600	0.17742
04017121	8	8	4.228	1491600	0.17742
04017131	9	8	4.228	1491000	0.17739
04017141	11	8	4.228	1490400	0.17736
04017151	12	8	4.228	1490400	0.17736
04017161	13	8	4.228	1489700	0.17733
04017171	14	8	4.228	1489700	0.17733
04017181	15	8	4.228	1489700	0.17733
04017191	16	8	4.228	1489700	0.17733
04017201	17	8	4.228	1489100	0.1773
04017211	20	8	4.228	1489100	0.1773
04017471	12	8	3.223	1944800	0.10227
04017481	13	8	3.223	1941500	0.10221
04017491	14	8	3.223	1939900	0.10217
04017501	15	8	3.223	1937400	0.10212
04017511	16	8	3.223	1935800	0.10209
04017521	17	8	3.223	1935000	0.10207

Sinusoidal oscillatory cases for model 4, NACA 23012C

Table 38: Ramp-up test cases for model 4, NACA 23012C

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
04027531	0	40	29.515	998880	0.0051682
04027541	0	40	99.639	1002400	0.017344
04027551	0	40	190.33	1002400	0.033131
04027561	0	40	271.86	1002400	0.047323
04027571	0	40	0.74269	1495600	8.6649e-05
04027581	0	40	1.4731	1478300	0.00017203
04027591	0	40	2.9717	1470800	0.00034635
04027601	0	40	4.413	1467400	0.00051586
04027611	0	40	5.9652	1462400	0.00069638
04027621	0	40	7.2757	1461200	0.00084909
04027631	0	40	14.801	1481200	0.001721
04027641	0	40	29.423	1473700	0.0034144
04027651	0	40	44.276	1471300	0.0051347
04027661	0	40	59.542	1462700	0.0069577
04027671	0	40	74.361	1460800	0.0086851
04027681	0	40	89.704	1459000	0.010472
04027691	0	40	99.816	1457800	0.011649
04027701	0	40	113.24	1456600	0.013211
04027711	0	40	128.52	1478600	0.014926
04027721	0	40	141.76	1473000	0.01644
04027731	0	40	156.5	1471100	0.01814
04027741	0	40	167.12	1469300	0.019361
04027751	0	40	180.42	1472700	0.021038
04027761	0	40	189.09	1466500	0.022013
04027771	0	40	203.24	1465300	0.023652
04027781	0	40	214.7	1464000	0.024978
04027791	0	40	228.98	1472900	0.026713
04027801	0	40	241.15	1467900	0.028096
04027811	0	40	247.76	1465400	0.028847
04027821	0	40	260.29	1464200	0.030296
04027831	0	40	267.2	1475000	0.031146
04027841	0	40	273.07	1468800	0.031778
04027851	0	40	286.43	1466300	0.033311
04027861	0	40	292.95	1464400	0.034052
04027871	0	40	29.512	1932700	0.0025993
04027881	0	40	97.986	1923700	0.0086148
04027891	0	39	185.33	1916500	0.01627
04027901	0	39	257.9	1910100	0.022611
04028611	0	40	99.891	1514700	0.011456
04529351	-1	39	89.936	1474800	0.010452
04529361	-1	39	261.59	1468500	0.030349

Ramp-up cases for model 4, NACA 23012C

Table 39: Ramp-down test cases for model 4, NACA 23012C

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
04037921	41	-41	-0.71768	1509900	-8.3701e-05
04037931	40	-40	-1.432	1494300	-0.00016776
04037941	40	-40	-2.8749	1483500	-0.00033585
04037951	40	-40	-4.3092	1484000	-0.00050532
04037961	40	-40	-5.773	1477700	-0.00067585
04037971	40	-40	-7.2033	1474600	-0.0008426
04037981	40	-40	-14.272	1482600	-0.0016702
04037991	40	-40	-28.324	1476300	-0.0033092
04038001	40	-40	-43	1475100	-0.0050222
04038011	40	-40	-56.02	1477000	-0.0065613
04038021	40	-40	-69.216	1472700	-0.0080974
04038031	40	-40	-81.851	1472000	-0.009574
04038041	40	-40	-91.419	1470200	-0.010688
04038051	40	-40	-104.65	1468900	-0.012231
04038061	40	-40	-116.63	1488900	-0.013688
04038071	40	-40	-128.17	1483900	-0.015022
04038081	40	-40	-141.18	1481400	-0.016536
04038091	40	-40	-153.5	1479500	-0.01797
04038101	40	-40	-167.41	1481800	-0.019626
04038111	40	-40	-175.67	1478000	-0.020573
04038121	40	-40	-187.31	1476800	-0.021929
04038131	40	-40	-198.8	1474900	-0.023263
04038141	40	-40	-209.46	1489800	-0.024394
04038151	40	-40	-217.73	1484100	-0.02532
04038161	40	-40	-226.61	1481600	-0.026335
04038171	40	-40	-235.86	1479700	-0.027396
04038181	40	-40	-240.93	1485300	-0.027995
04038191	40	-40	-256.17	1480900	-0.029732
04038201	40	-40	-262.52	1479700	-0.030459
04038211	40	-40	-270.69	1477200	-0.031386
04038221	34	-38	-278.07	1506600	-0.032405
04038231	34	-38	-155.99	1500200	-0.018148
04038241	30	-34	-279.45	1497700	-0.03249
04038251	30	-34	-161.52	1495700	-0.01877
04038261	27	-32	-279.85	1497200	-0.032624
04038271	27	-32	-160.51	1491500	-0.018684
04038281	25	-29	-278	1488300	-0.032333
04038291	25	-29	-161.06	1487000	-0.018726
04038301	23	-27	-275.1	1492800	-0.032163
04038311	21	-25	-269	1483400	-0.031372
04038321	19	-23	-263.89	1481500	-0.030761
04038331	17	-21	-253.4	1479600	-0.029523
04038341	15	-19	-248.58	1478300	-0.028952
04038351	30	-39	-282.01	1484700	-0.032956
04038361	30	-39	-162.26	1477800	-0.018927
04038371	30	-39	-48.761	1476600	-0.005686
04038381	30	-30	-273.78	1473300	-0.03209
04038391	30	-30	-157.6	1469600	-0.018454

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Ramp-down test cases for model 4, NACA 23012C

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
04038401	30	-30	-48.506	1467700	-0.005677
04038411	30	-25	-269.87	1478800	-0.031514
04038421	30	-25	-150.71	1473800	-0.017576
04038431	30	-25	-48.222	1472000	-0.0056209
04038441	30	-20	-264.1	1474400	-0.030896
04038451	30	-20	-150.03	1470100	-0.017531
04038461	30	-20	-46.894	1468200	-0.0054769
04038471	29	-14	-238.05	1472100	-0.027893
04038481	29	-14	-137.43	1467700	-0.016084
04038491	29	-14	-45.854	1465900	-0.005364
04038501	30	-10	-193.59	1471200	-0.022698
04038511	30	-10	-143.55	1465600	-0.016806
04038521	30	-10	-47.864	1465000	-0.0056026
04038531	30	-5	-120.17	1470000	-0.014084
04038541	30	-5	-95.827	1465000	-0.011216
04038551	30	-5	-42.899	1463800	-0.0050196
04539001	31	-40	-303.27	1478600	-0.035504
04539011	31	-40	-159.11	1472300	-0.018596
04539021	30	-40	-48.915	1472300	-0.0057169
04539031	31	-31	-272.12	1490600	-0.031227
04539041	31	-31	-174.28	1487400	-0.019983
04539051	31	-31	-45.73	1484200	-0.005239
04539061	29	-25	-243.39	1470200	-0.028066
04539071	29	-25	-179.62	1470200	-0.020713
04539081	29	-25	-47.537	1467100	-0.0054771
04539091	30	-20	-222.04	1543600	-0.025713
04539101	30	-20	-180.72	1543600	-0.020928
04539111	30	-20	-48.213	1536800	-0.0055737
04539121	30	-15	-192.54	1529600	-0.022229
04539131	30	-15	-163.55	1529600	-0.018882
04539141	30	-15	-47.221	1529600	-0.0054518
04539151	31	-11	-167.46	1518400	-0.019359
04539161	31	-11	-151.93	1518400	-0.017564
04539171	31	-11	-42.166	1518400	-0.0048746
04539181	31	-6	-98.934	1510100	-0.011431
04539191	31	-6	-96.077	1510100	-0.011101
04539201	31	-6	-55.633	1510100	-0.0064281
04539211	34	-40	-306.45	1505300	-0.035521
04539221	34	-40	-161.66	1505300	-0.018738
04539231	34	-20	-46.707	1498800	-0.0054048
04539241	25	-31	-269	1500000	-0.031104
04539251	26	-31	-181.66	1500000	-0.021005
04539261	26	-21	-49.469	1493600	-0.0057104
04539271	19	-24	-242.75	1495300	-0.027989
04539281	19	-24	-179.34	1495300	-0.020678
04539291	19	-20	-49.931	1495300	-0.005757
04539301	15	-20	-217.22	1486000	-0.025054
04539311	15	-20	-175.98	1486000	-0.020297

Table continued on next page...

Ramp-down test cases for model 4, NACA 23012C

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
04539321	15	-19	-50.448	1486000	-0.0058186
04539501	33	-37	-46.973	1530500	-0.0054839
04539511	33	-38	-285.26	1517200	-0.03319

Ramp-down cases for model 4, NACA 23012C

Table 40: Static test cases for model 5, NACA 0015

File name	Start AoA [deg]	Arc [deg]	Re
05000011	0	25	823450
05000021	0	-25	821480
05000031	0	25	1110300
05000041	0	-25	1097300
05000051	0	25	1514100
05000061	0	-25	1500400
05000071	0	25	1973000
05000081	0	-25	1937000
05400091	180	25	785100
05400101	180	-25	800450
05400111	180	25	1114300
05400121	180	-25	1106800
05400131	180	25	1479000
05400141	180	-25	1480300
05400151	180	25	1895900
05400161	180	-25	1897500

Static test cases for model 5, NACA 0015

Table 41: Unsteady static test cases for model 5, NACA 0015

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
05040171	0	0.16	1504500
05040181	1	1.12	1498700
05040191	2	1.9	1498000
05040201	3	2.9	1497400
05040211	4	3.94	1497400
05040221	5	4.9	1496100
05040231	6	5.74	1496100
05040241	7	6.71	1494800
05040251	8	7.8	1494800
05040261	9	9.02	1494200
05040271	10	9.98	1493500
05040281	11	10.85	1493500
05040291	12	11.7	1492900
05040301	13	12.68	1492300
05040311	14	13.65	1490600
05040321	15	15	1486800
05040331	16	16.06	1486800
05040341	17	17.04	1486800
05040351	18	18.15	1486200
05040361	19	19.14	1486200
05040371	20	20.22	1485500
05040381	21	21.35	1484900
05040391	22	22.34	1484200
05040401	23	23.5	1483600
05040411	24	24.37	1483000
05040421	25	25.49	1483000
05040431	26	26.28	1482300
05040441	27	27.45	1481700
05040451	28	28.34	1489000
05040461	29	29.21	1485100
05040471	30	30	1484500
05040481	31	31.06	1483900
05040491	32	32.01	1482600
05040501	33	33	1482600
05040511	34	34.26	1482000
05040521	35	35.16	1481400
05040531	0	0	1482900
05040541	1	1.17	1477800
05040551	2	2.03	1476500
05040561	3	3.12	1475900
05040571	4	4.01	1475900
05040581	5	5	1475300
05040591	6	5.85	1474700
05040601	7	6.74	1474700
05040611	8	7.86	1474700
05040621	9	8.73	1474700
05040631	10	9.87	1474000
05040641	11	10.91	1474000

Table continued on next page...

Unsteady static test cases for model 5, NACA 0015

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
05040651	12	11.86	1474000
05040661	13	12.77	1473400
05040671	14	13.72	1491700
05040681	15	15.14	1486600
05040691	16	16.17	1485900
05040701	17	17.18	1485900
05040711	18	18.24	1486600
05040721	19	19.35	1486600
05040731	20	20.22	1486600
05040741	21	21.36	1485900
05040751	22	22.2	1485900
05040761	23	23.31	1485300
05040771	24	24.46	1484700
05040781	25	25.52	1484700
05040791	26	26.37	1484000
05040801	27	27.48	1484000
05040811	28	28.24	1491300
05040821	29	29.37	1485600
05040831	30	30.14	1484900
05040841	31	30.95	1484300
05040851	32	31.89	1484300
05040861	33	33.01	1483700
05040871	34	33.92	1483700
05040881	35	35.08	1483000

Unsteady Static test cases for model 5, NACA 0015

Table 42: Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05011001	0	5.4	0.651	797990	0.050136
05011021	0	10	0.651	797990	0.050136
05011041	0	12.2	0.651	798330	0.050144
05011061	0	13.8	0.651	799510	0.050159
05011081	0	17.4	0.651	799170	0.05015
05011101	0	5.4	0.894	1092500	0.05059
05011121	0	10	0.894	1090200	0.050549
05011141	0	12.2	0.894	1089200	0.050532
05011161	0	13.8	0.894	1095000	0.050353
05011181	0	17.4	0.894	1093200	0.05032
05011201	0	5.4	0.975	1493800	0.040711
05011221	0	10	0.975	1484900	0.040616
05011241	0	12.2	0.975	1481100	0.040576
05011261	0	13.8	0.975	1473700	0.040828
05011281	0	17.4	0.975	1466900	0.040754
05011301	0	5.4	1.219	1466900	0.051011
05011321	0	10	1.219	1460200	0.050918
05011341	0	12.2	1.219	1457700	0.050884
05011361	0	13.8	1.219	1469100	0.050668
05011381	0	17.4	1.219	1462900	0.050585
05011401	0	5.4	1.463	1506200	0.061446
05011421	0	10	1.463	1497800	0.061312
05011441	0	12.2	1.463	1495200	0.061271
05011461	0	13.8	1.463	1500800	0.061335
05011481	0	17.4	1.463	1493700	0.061222
05011501	0	5.4	1.63	1976600	0.051732
05011521	0	10	1.63	1949000	0.051448
05011541	0	12.2	1.63	1940700	0.051363
05011561	0	13.8	1.63	1949900	0.051696
05011581	0	17.4	1.63	1925300	0.05144
05012001	10	4	0.245	1491000	0.010599
05012011	10	6	0.245	1482500	0.010576
05012021	10	8	0.245	1479300	0.010567
05012031	10	10	0.245	1477400	0.010562
05012041	10	4	0.612	1487300	0.026414
05012051	10	6	0.612	1478300	0.026351
05012061	10	8	0.612	1476400	0.026338
05012071	10	10	0.612	1475100	0.026329
05012081	10	4	1.224	1486500	0.052507
05012091	10	6	1.224	1480100	0.052418
05012101	10	8	1.224	1479400	0.05241
05012111	10	10	1.224	1478100	0.052392
05012121	10	4	1.836	1492100	0.078323
05012131	10	6	1.836	1485600	0.078191
05012141	10	8	1.836	1484400	0.078164
05012151	10	10	1.836	1483700	0.078151
05012161	10	4	2.448	1481800	0.10415
05012171	10	6	2.448	1481200	0.10413

Table continued on next page...

Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05012181	10	8	2.448	1480500	0.10411
05012191	10	10	2.448	1480500	0.10411
05012201	10	4	3.06	1484700	0.1304
05012211	10	6	3.06	1480200	0.13025
05012221	10	8	3.06	1480200	0.13025
05012231	10	10	3.06	1479000	0.1302
05012241	10	4	3.673	1477700	0.15624
05012251	10	6	3.673	1477100	0.15621
05012261	10	8	3.673	1476400	0.15618
05012271	10	10	3.673	1476400	0.15618
05012281	10	4	4.286	1475100	0.18219
05012291	10	6	4.286	1474500	0.18216
05012301	10	8	4.286	1474500	0.18216
05012311	10	10	4.286	1473900	0.18213
05012371	3	8	0.245	1485600	0.01051
05012381	4	8	0.245	1476600	0.010485
05012391	5	8	0.245	1473400	0.010476
05012401	6	8	0.245	1470900	0.010469
05012411	7	8	0.245	1468400	0.010462
05012421	8	8	0.245	1480800	0.010393
05012431	9	8	0.245	1480800	0.010393
05012441	11	8	0.245	1472600	0.01037
05012451	12	8	0.245	1470100	0.010363
05012461	13	8	0.245	1468200	0.010358
05012471	14	8	0.245	1482700	0.010257
05012481	15	8	0.245	1479000	0.010258
05012491	17	8	0.245	1476500	0.010252
05012501	20	8	0.245	1476400	0.01024
05012511	3	8	0.612	1480200	0.025896
05012521	4	8	0.612	1473200	0.025848
05012531	5	8	0.612	1471300	0.025835
05012541	6	8	0.612	1470700	0.025831
05012551	7	8	0.612	1469500	0.025822
05012561	8	8	0.612	1482600	0.025669
05012571	9	8	0.612	1478200	0.025639
05012581	11	8	0.612	1477000	0.02563
05012591	12	8	0.612	1475700	0.025622
05012601	13	8	0.612	1474400	0.025613
05012621	15	8	0.612	1483900	0.02542
05012631	17	8	0.612	1482600	0.025412
05012641	20	8	0.612	1482000	0.025408
05012651	3	8	1.224	1481900	0.051001
05012661	4	8	1.224	1477500	0.050941
05012671	5	8	1.224	1476800	0.050933
05012681	6	8	1.224	1476200	0.050925
05012691	7	8	1.224	1475600	0.050916
05012701	8	8	1.224	1477000	0.051109
05012711	9	8	1.224	1472000	0.051042

Table continued on next page...

Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05012721	11	8	1.224	1472000	0.051042
05012731	12	8	1.224	1471300	0.051033
05012741	13	8	1.224	1470700	0.051025
05012761	15	8	1.224	1477700	0.050785
05012771	17	8	1.224	1477100	0.050776
05012781	20	8	1.224	1476400	0.050768
05012791	3	8	1.836	1498200	0.077029
05012801	4	8	1.836	1493000	0.076925
05012811	5	8	1.836	1492400	0.076913
05012821	6	8	1.836	1491800	0.0769
05012831	7	8	1.836	1490500	0.076874
05012841	8	8	1.836	1478900	0.077845
05012851	9	8	1.836	1473900	0.077741
05012861	11	8	1.836	1472600	0.077715
05012871	12	8	1.836	1472600	0.077715
05012881	13	8	1.836	1472000	0.077702
05012891	14	8	1.836	1471300	0.077689
05012901	15	8	1.836	1470700	0.077676
05012911	17	8	1.836	1470100	0.077663
05012921	20	8	1.836	1469500	0.07765
05012931	3	8	2.448	1480900	0.1028
05012941	4	8	2.448	1480200	0.10278
05012951	5	8	2.448	1480200	0.10278
05012961	6	8	2.448	1479600	0.10276
05012971	7	8	2.448	1479000	0.10275
05012981	8	8	2.448	1484900	0.10246
05012991	9	8	2.448	1483600	0.10243
05013001	11	8	2.448	1483000	0.10241
05013011	12	8	2.448	1482300	0.10239
05013021	13	8	2.448	1481700	0.10237
05013031	14	8	2.448	1486600	0.1024
05013041	15	8	2.448	1483400	0.10232
05013051	17	8	2.448	1482200	0.10228
05013061	20	8	2.448	1481500	0.10227
05013071	3	8	3.06	1479900	0.12851
05013081	4	8	3.06	1475500	0.12836
05013091	5	8	3.06	1475500	0.12836
05013101	6	8	3.06	1474800	0.12834
05013111	7	8	3.06	1474200	0.12832
05013121	8	8	3.06	1474200	0.12832
05013131	9	8	3.06	1473600	0.12829
05013141	11	8	3.06	1487300	0.12772
05013151	12	8	3.06	1482200	0.12755
05013161	13	8	3.06	1481600	0.12753
05013171	14	8	3.06	1481600	0.12753
05013181	15	8	3.06	1481600	0.12753
05013191	17	8	3.06	1480900	0.12751
05013201	20	8	3.06	1480300	0.12748

Table continued on next page...

Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05013211	3	8	3.673	1481200	0.1568
05013221	4	8	3.673	1474200	0.15651
05013231	5	8	3.673	1474200	0.15651
05013241	6	8	3.673	1473600	0.15649
05013251	7	8	3.673	1472900	0.15646
05013261	8	8	3.673	1472300	0.15643
05013271	9	8	3.673	1471700	0.15641
05013281	11	8	3.673	1492900	0.15455
05013291	12	8	3.673	1489700	0.15443
05013301	13	8	3.673	1489000	0.1544
05013311	14	8	3.673	1488400	0.15437
05013321	15	8	3.673	1488400	0.15437
05013331	17	8	3.673	1487800	0.15435
05013341	20	8	3.673	1487100	0.15432
05013351	3	8	4.286	1485700	0.17992
05013361	4	8	4.286	1487600	0.18001
05013371	5	8	4.286	1486400	0.17995
05013381	6	8	4.286	1486400	0.17995
05013391	7	8	4.286	1485700	0.17992
05013401	8	8	4.286	1485100	0.17989
05013411	9	8	4.286	1485100	0.17989
05013421	11	8	4.286	1484500	0.17986
05013431	12	8	4.286	1483800	0.17983
05013441	13	8	4.286	1483800	0.17983
05013451	14	8	4.286	1483800	0.17983
05013461	15	8	4.286	1483200	0.1798
05013471	17	8	4.286	1483200	0.1798
05013481	20	8	4.286	1482600	0.17977
05013631	7	8	1.632	1010300	0.10214
05013641	8	8	1.632	1009400	0.10211
05013651	9	8	1.632	1009000	0.10209
05013661	10	8	1.632	1009000	0.10209
05013671	11	8	1.632	1008500	0.10208
05013681	12	8	1.632	1008500	0.10208
05013691	13	8	1.632	1008500	0.10208
05013701	14	8	1.632	1008500	0.10208
05013711	15	8	1.632	1008100	0.10206
05013721	17	8	1.632	1008100	0.10206
05013731	20	8	1.632	1008100	0.10206
05013741	7	8	3.265	1965100	0.10387
05013751	8	8	3.265	1945100	0.10346
05013761	9	8	3.265	1943500	0.10342
05013771	10	8	3.265	1942700	0.10341
05013781	11	8	3.265	1941000	0.10337
05013791	12	8	3.265	1939400	0.10334
05013811	13	8	3.257	1936900	0.10304
05013821	14	8	3.265	1936100	0.10327
05013831	15	8	3.265	1934500	0.10324

Table continued on next page...

Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05013841	17	8	3.265	1933600	0.10322
05013851	20	8	3.265	1932800	0.1032
05013871	4	10	0.245	1480200	0.010535
05013881	6	10	0.245	1470600	0.010509
05013891	8	10	0.245	1467500	0.0105
05013901	15	10	0.245	1464300	0.010491
05013911	20	10	0.245	1461800	0.010484
05013921	4	10	0.612	1488700	0.025762
05013931	6	10	0.612	1483700	0.025727
05013941	8	10	0.612	1481100	0.02571
05013951	15	10	0.612	1479900	0.025702
05013961	20	10	0.612	1478600	0.025693
05013971	4	10	1.224	1488000	0.051273
05013981	6	10	1.224	1483600	0.051213
05013991	8	10	1.224	1483000	0.051204
05014001	15	10	1.224	1482300	0.051196
05014011	20	10	1.224	1481700	0.051187
05014021	4	10	1.836	1485600	0.076854
05014031	6	10	1.836	1481800	0.076777
05014041	8	10	1.836	1481100	0.076765
05014051	15	10	1.836	1480500	0.076752
05014061	20	10	1.836	1480500	0.076752
05014071	4	10	2.448	1484300	0.10244
05014081	6	10	2.448	1480500	0.10234
05014091	8	10	2.448	1479900	0.10232
05014101	15	10	2.448	1479900	0.10232
05014111	20	10	2.448	1479300	0.1023
05014121	4	10	3.06	1488500	0.12753
05014131	6	10	3.06	1485400	0.12743
05014141	8	10	3.06	1484100	0.12738
05014151	15	10	3.06	1484100	0.12738
05014161	20	10	3.06	1484100	0.12738
05014171	4	10	3.673	1485300	0.15333
05014181	6	10	3.673	1481500	0.15317
05014191	8	10	3.673	1480800	0.15315
05014201	15	10	3.673	1480800	0.15315
05014211	20	10	3.673	1480800	0.15315
05014221	4	10	4.286	1484200	0.17905
05014231	6	10	4.286	1479100	0.17881
05014241	8	10	4.286	1479100	0.17881
05014251	15	10	4.286	1478500	0.17878
05014261	20	10	4.286	1479100	0.17881
05019001	0	22.6	0.651	797910	0.050319
05019021	0	32.8	0.651	797570	0.050311
05019041	0	22.6	0.894	1098300	0.050205
05019061	0	32.8	0.894	1095900	0.050164
05019081	0	22.6	0.975	1475100	0.040597
05019101	0	32.8	0.975	1469500	0.040537

Table continued on next page...

Sinusoidal test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05019121	0	22.6	1.219	1467600	0.050569
05019141	0	32.8	1.219	1462700	0.050503
05019161	0	22.6	1.463	1495000	0.061133
05019181	0	32.8	1.463	1492500	0.061092
05019201	0	22.6	1.63	1918100	0.051364
05019301	0	5.4	1.875	1465300	0.078252
05019321	0	10	1.875	1459800	0.078136
05019341	0	12.2	1.875	1457900	0.078097
05019361	0	13.8	1.875	1456700	0.078071
05019381	0	17.4	1.875	1454900	0.078033
05019401	0	22.6	1.875	1454300	0.07802
05019441	0	5.4	0.488	1488300	0.020447
05019461	0	10	0.488	1480700	0.020406
05019481	0	12.2	0.488	1489900	0.02028
05019501	0	13.8	0.488	1479900	0.020369
05019521	0	17.4	0.488	1473000	0.020332
05019541	0	22.6	0.488	1475300	0.0203
05019561	0	32.8	0.488	1469700	0.02027
05411601	180	0.4	1.306	1463900	0.05485
05411611	180	6	1.306	1459600	0.054787
05411621	180	8	1.306	1458400	0.054769
05411631	180	10	1.306	1457700	0.05476
05411661	180	0.4	1.633	1488200	0.067666
05411671	180	6	1.633	1478700	0.067498
05411681	180	8	1.633	1478100	0.067487
05411691	180	10	1.633	1477500	0.067476
05411721	180	0.4	1.959	1482300	0.081066
05411731	180	6	1.959	1477900	0.080972
05411741	180	8	1.959	1477300	0.080958
05411751	180	10	1.959	1476000	0.080932

Sinusoidal oscillatory cases for model 5, NACA 0015

Table 43: Ramp-up test cases for model 5, NACA 0015

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
05025001	0	4	44.856	1498600	0.0053631
05025011	0	4	77.205	1493400	0.0092183
05025021	0	4	78.352	1491400	0.0093505
05025031	0	4	80.02	1490800	0.009548
05025091	0	8	45.194	1498000	0.0053861
05025101	0	8	80.394	1492800	0.0095682
05025111	0	8	138.53	1490800	0.016479
05025121	0	7	148.32	1489500	0.017638
05025141	0	7	149.59	1487100	0.017818
05025151	0	7	153.2	1481200	0.018309
05025161	0	7	155.69	1478700	0.018594
05025171	2	5	141.42	1478000	0.016887
05025181	0	7	148.41	1477400	0.017718
05025201	0	12	81.095	1480600	0.0096261
05025211	0	12	158.76	1478700	0.018835
05025221	0	12	203.13	1477400	0.024091
05025241	0	12	197.67	1482300	0.023338
05025251	0	12	204.07	1480400	0.024082
05025261	0	11	201.76	1479200	0.023801
05025271	0	11	195.45	1477900	0.023049
05025281	0	30	49.513	1488800	0.0058274
05025291	0	30	98.82	1482400	0.011611
05025301	0	30	184.82	1480500	0.021705
05025311	0	30	254.1	1478600	0.029826
05025321	0	30	281.33	1477300	0.033011
05025331	-1	41	0.74452	1489600	8.7949e-05
05025341	-1	41	1.4927	1487600	0.00017426
05025351	-1	41	2.9479	1477500	0.00034322
05025361	-1	40	4.4416	1484300	0.00051476
05025371	-1	41	6.0225	1479300	0.00069705
05025381	-1	41	7.5218	1476700	0.00087001
05025391	-1	41	15.032	1477600	0.0017407
05025401	-1	41	29.748	1474500	0.003442
05025411	-1	41	44.173	1472600	0.0051086
05025421	-1	41	59.461	1478100	0.0068795
05025431	-1	41	74.985	1473700	0.0086655
05025441	-1	41	90.423	1471800	0.010444
05025451	-1	41	100.88	1470000	0.011646
05025461	-1	41	115.18	1468700	0.013293
05025471	-1	41	129.54	1482900	0.015252
05025481	-1	41	146.19	1474000	0.017172
05025491	-1	41	159.01	1472100	0.018669
05025501	-1	41	173.02	1469600	0.0203
05025511	-1	41	184.72	1471000	0.02173
05025521	-1	41	195.39	1466000	0.022955
05025531	-1	41	205.8	1464100	0.024166
05025541	-1	41	225.11	1461600	0.026415
05025551	-1	41	234.45	1472900	0.027414

Table continued on next page...

Ramp-up test cases for model 5, NACA 0015

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
05025561	-1	41	245.87	1467900	0.028712
05025571	-1	41	259.15	1465400	0.030242
05025581	-1	41	267.66	1463500	0.03122
05025591	-1	41	276.54	1475900	0.032117
05025601	-1	41	289.51	1470300	0.033574
05025611	-1	41	300.94	1469100	0.034888
05025621	-1	41	305.17	1467200	0.035361
05025631	-1	41	29.64	988490	0.005226
05025641	-1	41	101.03	988490	0.017813
05025651	-1	41	194.78	988490	0.034343
05025661	-1	41	276.45	988490	0.048742
05025671	-1	41	29.61	1905700	0.0026648
05025681	-1	41	100.61	1882600	0.0090115
05025691	-1	41	190.56	1877000	0.017049
05025701	-1	41	277	1872300	0.024758
05025711	0	4	103.84	1168800	0.015208
05025721	0	8	181.93	1166800	0.026626
05025731	0	11	217.12	1166300	0.031771
05025741	0	4	82.057	1009600	0.014071
05025751	0	7	158.53	1009200	0.02718
05025761	0	11	214.61	1008800	0.036788
05025771	0	4	93.992	635570	0.025603
05025781	0	7	164.91	635840	0.044929
05025791	0	11	212.39	635840	0.057864
05025801	0	4	82.057	503430	0.028287
05025811	0	7	174.5	503430	0.060154
05025821	0	11	212.05	503650	0.073111

Ramp-up cases for model 5, NACA 0015

Table 44: Ramp-down test cases for model 5, NACA 0015

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
05036331	40	-41	-0.72164	1488100	-8.332e-05
05036341	40	-41	-1.457	1476800	-0.00016792
05036351	40	-41	-2.9603	1469400	-0.0003405
05036361	40	-41	-4.405	1469500	-0.0005087
05036371	40	-41	-5.908	1462700	-0.00068104
05036381	40	-41	-7.2283	1460900	-0.00083283
05036391	40	-41	-14.434	1471000	-0.0016594
05036401	40	-41	-28.741	1460000	-0.0032944
05036411	40	-41	-43.923	1464800	-0.0050412
05036421	40	-41	-56.847	1477100	-0.0065044
05036431	40	-41	-71.002	1472200	-0.0081133
05036441	40	-41	-85.99	1470300	-0.0098211
05036451	40	-41	-93.008	1469700	-0.010621
05036461	40	-41	-104.62	1467900	-0.011941
05036471	40	-41	-118.05	1465200	-0.013593
05036481	40	-41	-132.11	1460300	-0.015192
05036491	40	-41	-145.28	1457900	-0.016695
05036501	40	-41	-156.52	1456100	-0.017978
05036511	40	-41	-169.34	1476200	-0.019309
05036521	40	-41	-179	1471300	-0.020383
05036531	40	-41	-187.96	1470100	-0.021397
05036541	40	-41	-197.87	1468200	-0.022514
05036551	40	-41	-210.67	1471000	-0.024051
05036561	40	-41	-218.37	1466700	-0.024901
05036571	40	-41	-233.56	1464800	-0.02662
05036581	40	-41	-242.87	1463600	-0.027672
05036591	40	-41	-250.79	1479600	-0.028531
05036601	40	-41	-260.51	1475200	-0.029603
05036611	40	-41	-279.43	1473400	-0.031737
05036621	40	-41	-289.26	1471500	-0.032838
05036631	40	-41	-28.851	985500	-0.0051483
05036641	40	-41	-93.024	984220	-0.016591
05036651	40	-41	-178.01	983800	-0.031743
05036661	40	-41	-261.36	983800	-0.046607
05036901	11	-12	-221.71	1486300	-0.026022

Ramp-down cases for model 5, NACA 0015

Table 45: VAWT motion test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05051011	0	5.4	0.651	797990	0.050136
05051031	0	10	0.651	798330	0.050144
05051051	0	12.2	0.651	798330	0.050144
05051071	0	13.8	0.651	799170	0.05015
05051091	0	17.4	0.651	799170	0.05015
05051111	0	5.4	0.894	1091100	0.050565
05051131	0	10	0.894	1089700	0.05054
05051151	0	12.2	0.894	1089200	0.050532
05051171	0	13.8	0.894	1093600	0.050328
05051191	0	17.4	0.894	1092700	0.050312
05051211	0	5.4	0.975	1486800	0.040636
05051231	0	10	0.975	1482400	0.040589
05051251	0	12.2	0.975	1479300	0.040556
05051271	0	13.8	0.975	1468700	0.040774
05051291	0	17.4	0.975	1465600	0.040741
05051311	0	5.4	1.219	1462000	0.050943
05051331	0	10	1.219	1458900	0.050901
05051351	0	12.2	1.219	1457100	0.050876
05051371	0	13.8	1.219	1464700	0.05061
05051391	0	17.4	1.219	1462300	0.050577
05051411	0	5.4	1.463	1499700	0.061342
05051431	0	10	1.463	1496500	0.061291
05051451	0	12.2	1.463	1494600	0.06126
05051471	0	13.8	1.463	1495700	0.061252
05051491	0	17.4	1.463	1500200	0.061215
05051511	0	5.4	1.63	1953100	0.05149
05051531	0	10	1.63	1944800	0.051405
05051551	0	12.2	1.63	1937500	0.051329
05051571	0	13.8	1.63	1930200	0.051491
05051591	0	17.4	1.63	1922100	0.051406
05059011	0	22.6	0.651	797910	0.050319
05059031	0	32.8	0.651	797570	0.050311
05059051	0	22.6	0.894	1096400	0.050172
05059071	0	32.8	0.894	1095500	0.050155
05059091	0	22.6	0.975	1470200	0.040544
05059111	0	32.8	0.975	1467700	0.040517
05059131	0	22.6	1.219	1464600	0.050528
05059151	0	32.8	1.219	1462100	0.050495
05059171	0	22.6	1.463	1493700	0.061113
05059191	0	32.8	1.463	1491200	0.061072
05059211	0	22.6	1.63	1916500	0.051347
05059311	0	5.4	1.875	1461000	0.078161
05059331	0	10	1.875	1459200	0.078123
05059351	0	12.2	1.875	1457300	0.078084
05059371	0	13.8	1.875	1456100	0.078059
05059391	0	17.4	1.875	1454900	0.078033
05059411	0	22.6	1.875	1454300	0.07802
05059451	0	5.4	0.488	1482600	0.020416

Table continued on next page...

VAWT motion test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
05059471	0	10	0.488	1478200	0.020392
05059491	0	12.2	0.488	1484800	0.020253
05059511	0	13.8	0.488	1474900	0.020342
05059531	0	17.4	0.488	1471100	0.020322
05059551	0	22.6	0.488	1472200	0.020283
05059571	0	32.8	0.488	1467800	0.02026

VAWT motion cases for model 5, NACA 0015

Table 46: Mulitiple streamtube VAWT motion test cases for model 5, NACA 0015

File name	Mean AoA [deg]	Tip Speed Ratio	Osc. Freq. [Hz]	Re	k
05071781	0	6	0.975	1525900	0.040844
05071791	0	4	0.975	1519300	0.040775
05071801	0	3.5	0.975	1516600	0.040747
05071811	0	3.25	0.975	1514000	0.04072
05071821	0	6	1.218	1487000	0.051856
05071831	0	4	1.218	1482500	0.051795
05071841	0	3.5	1.218	1480600	0.051769
05071851	0	3.25	1.218	1479300	0.051751
05071861	0	6	1.462	1481100	0.062157
05071871	0	4	1.462	1477200	0.062095
05071881	0	3.5	1.462	1475300	0.062064
05071891	0	3.25	1.462	1473500	0.062033

Mulitiple streamtube VAWT motion cases for model 5, NACA 0015

Table 47: Static test cases for model 6, NACA 0018

File name	Start AoA [deg]	Arc [deg]	Re
06000011	0	30	806970
06000021	0	-24	809700
06000031	0	30	1076500
06000041	0	-24	1092800
06000051	0	30	1528700
06000061	0	-25	1480700
06000071	0	30	1961100
06000081	0	-24	1908300
06400091	180	25	823890
06400101	180	-25	822440
06400111	180	25	1085500
06400121	180	-25	1092800
06400131	180	25	1450800
06400141	180	-25	1442800
06400151	180	25	1943300
06400161	180	-25	1915600

Static test cases for model 6, NACA 0018

Table continued on next page...

Table 48: Unsteady static test cases for model 6, NACA 0018

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
06040171	0	0.03	1517300
06040181	1	1.01	1510000
06040191	2	1.65	1508700
06040201	3	2.82	1508100
06040211	4	3.97	1507400
06040221	5	5	1506700
06040231	6	5.92	1506100
06040241	7	6.99	1505400
06040251	8	8.25	1504800
06040261	9	9.38	1504800
06040271	10	10.39	1504100
06040281	11	11.43	1503500
06040291	12	12.57	1502800
06040301	13	13.62	1502200
06040311	14	14.26	1507100
06040321	15	15.54	1501200
06040331	16	16.59	1501200
06040341	17	17.77	1501900
06040351	18	19.01	1501200
06040361	19	20.16	1500600
06040371	20	21.06	1499900
06040381	21	22.07	1499900
06040391	22	23	1499900

Table continued on next page...

Unsteady static test cases for model 6, NACA 0018

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
06040401	23	24.31	1499300
06040411	24	25.38	1498600
06040421	25	26.37	1498600
06040431	26	27.37	1498000
06040441	27	28.4	1496700
06040451	28	29.09	1499800
06040461	29	30.2	1495900
06040471	30	31.26	1494600
06040481	31	32.19	1494600
06040491	32	33.03	1494000
06040501	33	34.12	1493300
06040511	34	34.98	1492700
06040521	35	36.04	1492100
06040531	0	-0.2	1492700
06040541	1	0.6	1489500
06040551	2	1.4	1488900
06040561	3	2.28	1488200
06040571	4	3.83	1487600
06040581	5	4.79	1487000
06040591	6	5.84	1487000
06040601	7	6.95	1486300
06040611	8	7.91	1486300
06040621	9	9.06	1485700
06040631	10	10.17	1485000
06040641	11	11.32	1485000
06040651	12	12.37	1485000
06040661	13	13.31	1484400
06040671	14	14.26	1483200
06040681	15	15.55	1477400
06040691	16	16.36	1477400
06040701	17	17.78	1477400
06040711	18	18.88	1477400
06040721	19	19.83	1476800
06040731	20	20.85	1476100
06040741	21	22.08	1476100
06040751	22	23.08	1476100
06040761	23	24.23	1474900
06040771	24	25.18	1474900
06040781	25	26.02	1474900
06040791	26	26.95	1474200
06040801	27	28.17	1473600
06040811	28	29.05	1484800
06040821	29	30.2	1479700
06040831	30	31.34	1479000
06040841	31	32.45	1478400
06040851	32	33.3	1477700
06040861	33	34.17	1477700
06040871	34	35.01	1477100

Table continued on next page...

Unsteady static test cases for model 6, NACA 0018

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
06040881	35	35.97	1477100

Unsteady Static test cases for model 6, NACA 0018

Table 49: Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06011001	0	5.4	0.664	766560	0.053352
06011021	0	10	0.664	766890	0.053361
06011041	0	12.2	0.664	766890	0.053361
06011061	0	13.8	0.664	758940	0.054082
06011081	0	17.4	0.664	758290	0.054064
06011101	0	5.4	0.892	1158600	0.047761
06011121	0	10	0.892	1155100	0.047705
06011141	0	12.2	0.892	1154100	0.047689
06011161	0	13.8	0.892	1150500	0.047928
06011181	0	17.4	0.892	1147500	0.047879
06011201	0	5.4	0.996	1483400	0.041428
06011221	0	10	0.996	1474500	0.041331
06011241	0	12.2	0.996	1470800	0.04129
06011261	0	13.8	0.996	1459600	0.041706
06011281	0	17.4	0.996	1453900	0.041643
06011301	0	5.4	1.245	1470900	0.051729
06011321	0	10	1.245	1460900	0.051591
06011341	0	12.2	1.245	1458400	0.051557
06011361	0	13.8	1.245	1455100	0.051857
06011381	0	17.4	1.245	1449600	0.05178
06011401	0	5.4	1.494	1453300	0.062125
06011421	0	10	1.494	1447100	0.062022
06011441	0	12.2	1.494	1444000	0.06197
06011461	0	13.8	1.494	1445800	0.062152
06011481	0	17.4	1.494	1440300	0.062059
06011501	0	5.4	1.662	1850200	0.054059
06011521	0	10	1.662	1830000	0.053828
06011541	0	12.2	1.662	1824600	0.053766
06011561	0	13.8	1.662	1830500	0.053907
06011581	0	17.4	1.662	1814500	0.053722
06012001	10	4	0.245	1496300	0.010249
06012011	10	6	0.245	1485300	0.01022
06012021	10	8	0.245	1482800	0.010213
06012031	10	10	0.245	1480300	0.010206
06012041	10	4	0.612	1482600	0.025468
06012051	10	6	0.612	1475100	0.025417
06012061	10	8	0.612	1473800	0.025409
06012071	10	10	0.612	1473200	0.025405
06012081	10	4	1.224	1481200	0.050896
06012091	10	6	1.224	1473600	0.050794
06012101	10	8	1.224	1472400	0.050778
06012111	10	10	1.224	1472400	0.050778
06012121	10	4	1.836	1460100	0.077124
06012131	10	6	1.836	1454500	0.077008
06012141	10	8	1.836	1453900	0.076996
06012151	10	10	1.836	1452700	0.07697
06012161	10	4	2.448	1468000	0.10204
06012171	10	6	2.448	1464200	0.10194

Table continued on next page...

Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06012181	10	8	2.448	1463600	0.10192
06012191	10	10	2.448	1463000	0.1019
06012201	10	4	3.06	1461400	0.12828
06012211	10	6	3.06	1455800	0.12809
06012221	10	8	3.06	1455200	0.12806
06012231	10	10	3.06	1455200	0.12806
06012241	10	4	3.673	1459700	0.1536
06012251	10	6	3.673	1456600	0.15348
06012261	10	8	3.673	1456000	0.15345
06012271	10	10	3.673	1456600	0.15348
06012281	10	4	4.286	1463000	0.17884
06012291	10	6	4.286	1458700	0.17863
06012301	10	8	4.286	1458700	0.17863
06012311	10	10	4.286	1458000	0.1786
06012371	3	8	0.245	1486400	0.010206
06012381	4	8	0.245	1475600	0.010177
06012391	5	8	0.245	1473100	0.010171
06012401	6	8	0.245	1471200	0.010166
06012411	7	8	0.245	1469300	0.010161
06012421	8	8	0.245	1478000	0.010228
06012431	9	8	0.245	1468000	0.0102
06012441	11	8	0.245	1466100	0.010195
06012451	12	8	0.245	1464200	0.01019
06012461	13	8	0.245	1461700	0.010183
06012471	14	8	0.245	1462800	0.010218
06012481	15	8	0.245	1456600	0.010201
06012491	17	8	0.245	1454800	0.010196
06012501	20	8	0.245	1454200	0.010194
06012511	3	8	0.612	1435800	0.025882
06012521	4	8	0.612	1431600	0.025852
06012531	5	8	0.612	1430400	0.025843
06012541	6	8	0.612	1429800	0.025839
06012551	7	8	0.612	1429200	0.025835
06012561	8	8	0.612	1448700	0.025652
06012571	9	8	0.612	1447500	0.025643
06012581	11	8	0.612	1441300	0.025601
06012591	12	8	0.612	1440700	0.025597
06012601	13	8	0.612	1440100	0.025592
06012621	15	8	0.612	1438800	0.025617
06012631	17	8	0.612	1438200	0.025613
06012641	20	8	0.612	1438200	0.025613
06012651	3	8	1.224	1479100	0.050785
06012661	4	8	1.224	1473500	0.050709
06012671	5	8	1.224	1472800	0.050701
06012681	6	8	1.224	1472200	0.050692
06012691	7	8	1.224	1449900	0.050692
06012701	8	8	1.224	1450800	0.05087
06012711	9	8	1.224	1447100	0.050819

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Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06012721	11	8	1.224	1446500	0.050811
06012731	12	8	1.224	1446500	0.050811
06012741	13	8	1.224	1445900	0.050803
06012751	14	8	1.224	1450400	0.051001
06012761	15	8	1.224	1444900	0.050926
06012771	17	8	1.224	1444300	0.050917
06012781	20	8	1.224	1443100	0.050901
06012791	3	8	1.836	1479800	0.07678
06012801	4	8	1.836	1471000	0.076601
06012811	5	8	1.836	1469700	0.076575
06012821	6	8	1.836	1468500	0.07655
06012831	7	8	1.836	1467800	0.076537
06012841	8	8	1.836	1478700	0.076379
06012851	9	8	1.836	1473100	0.076264
06012861	11	8	1.836	1471800	0.076239
06012871	12	8	1.836	1471200	0.076226
06012881	13	8	1.836	1470600	0.076214
06012891	14	8	1.836	1474700	0.076454
06012901	15	8	1.836	1467800	0.076314
06012911	17	8	1.836	1467800	0.076314
06012921	20	8	1.836	1467100	0.076302
06012931	3	8	2.448	1462500	0.10236
06012941	4	8	2.448	1459400	0.10228
06012951	5	8	2.448	1458700	0.10226
06012961	6	8	2.448	1457500	0.10223
06012971	7	8	2.448	1456900	0.10221
06012981	8	8	2.448	1460100	0.10247
06012991	9	8	2.448	1455200	0.10233
06013001	11	8	2.448	1455200	0.10233
06013011	12	8	2.448	1454500	0.10231
06013021	13	8	2.448	1453300	0.10228
06013031	14	8	2.448	1461400	0.10214
06013041	15	8	2.448	1457100	0.10202
06013051	17	8	2.448	1457100	0.10202
06013061	20	8	2.448	1456400	0.102
06013071	3	8	3.06	1453800	0.12819
06013081	4	8	3.06	1450100	0.12806
06013091	5	8	3.06	1450100	0.12806
06013101	6	8	3.06	1449500	0.12804
06013111	7	8	3.06	1448200	0.128
06013121	8	8	3.06	1448200	0.128
06013131	9	8	3.06	1448200	0.128
06013141	11	8	3.06	1447900	0.1284
06013151	12	8	3.06	1445500	0.12831
06013161	13	8	3.06	1444900	0.12829
06013171	14	8	3.06	1444900	0.12829
06013181	15	8	3.06	1443700	0.12825
06013191	17	8	3.06	1443700	0.12825

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Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06013201	20	8	3.06	1443100	0.12823
06013211	3	8	3.673	1460400	0.15417
06013221	4	8	3.673	1454800	0.15394
06013231	5	8	3.673	1454200	0.15391
06013241	6	8	3.673	1453600	0.15389
06013251	7	8	3.673	1453000	0.15386
06013261	8	8	3.673	1453000	0.15386
06013271	9	8	3.673	1452400	0.15383
06013281	11	8	3.673	1468100	0.15264
06013291	12	8	3.673	1464900	0.15251
06013301	13	8	3.673	1464900	0.15251
06013311	14	8	3.673	1463100	0.15244
06013321	15	8	3.673	1463100	0.15244
06013331	17	8	3.673	1463100	0.15244
06013341	20	8	3.673	1462500	0.15241
06013351	3	8	4.286	1468000	0.17771
06013361	4	8	4.286	1464800	0.17756
06013371	5	8	4.286	1464200	0.17753
06013381	6	8	4.286	1464200	0.17753
06013391	7	8	4.286	1463600	0.1775
06013401	8	8	4.286	1463600	0.1775
06013411	9	8	4.286	1463000	0.17747
06013421	11	8	4.286	1472400	0.17696
06013431	12	8	4.286	1469300	0.17681
06013441	13	8	4.286	1468700	0.17678
06013451	14	8	4.286	1468700	0.17678
06013461	15	8	4.286	1468100	0.17675
06013471	17	8	4.286	1467400	0.17672
06013481	20	8	4.286	1467400	0.17672
06013631	7	8	1.632	986710	0.10187
06013641	8	8	1.632	985450	0.10182
06013651	9	8	1.632	985450	0.10182
06013661	10	8	1.632	985030	0.1018
06013671	11	8	1.632	984610	0.10178
06013681	12	8	1.632	984610	0.10178
06013691	13	8	1.632	987230	0.10163
06013701	14	8	1.632	986810	0.10162
06013711	15	8	1.632	986810	0.10162
06013721	17	8	1.632	986390	0.1016
06013731	20	8	1.632	986810	0.10162
06013741	7	8	3.265	1848200	0.1074
06013751	8	8	3.265	1834200	0.10708
06013761	9	8	3.265	1832600	0.10704
06013771	10	8	3.265	1831800	0.10703
06013781	11	8	3.265	1830300	0.10699
06013791	12	8	3.265	1829500	0.10697
06013811	13	8	3.257	1845200	0.10662
06013821	14	8	3.265	1832800	0.1066

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Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06013831	15	8	3.265	1831200	0.10656
06013841	17	8	3.265	1829700	0.10653
06013851	20	8	3.265	1828900	0.10651
06013871	4	10	0.245	1465500	0.010291
06013881	6	10	0.245	1457400	0.010268
06013891	8	10	0.245	1454900	0.010261
06013901	15	10	0.245	1453100	0.010256
06013911	20	10	0.245	1451200	0.010251
06013921	4	10	0.612	1461300	0.02549
06013931	6	10	0.612	1456400	0.025456
06013941	8	10	0.612	1455200	0.025447
06013951	15	10	0.612	1454600	0.025443
06013961	20	10	0.612	1453900	0.025439
06013971	4	10	1.224	1461800	0.050782
06013981	6	10	1.224	1457500	0.050723
06013991	8	10	1.224	1456900	0.050715
06014001	15	10	1.224	1456300	0.050706
06014011	20	10	1.224	1456300	0.050706
06014021	4	10	1.836	1457600	0.076213
06014031	6	10	1.836	1453900	0.076138
06014041	8	10	1.836	1453900	0.076138
06014051	15	10	1.836	1452700	0.076112
06014061	20	10	1.836	1453300	0.076125
06014071	4	10	2.448	1454800	0.10193
06014081	6	10	2.448	1449900	0.1018
06014091	8	10	2.448	1449300	0.10178
06014101	15	10	2.448	1449300	0.10178
06014111	20	10	2.448	1448700	0.10177
06014121	4	10	3.06	1457300	0.12879
06014131	6	10	3.06	1451700	0.1286
06014141	8	10	3.06	1451100	0.12858
06014151	15	10	3.06	1451100	0.12858
06014161	20	10	3.06	1449800	0.12853
06014171	4	10	3.673	1470200	0.15251
06014181	6	10	3.673	1467100	0.15238
06014191	8	10	3.673	1466500	0.15235
06014201	15	10	3.673	1465800	0.15233
06014211	20	10	3.673	1465800	0.15233
06014221	4	10	4.286	1457400	0.17953
06014231	6	10	4.286	1452400	0.17929
06014241	8	10	4.286	1451800	0.17926
06014251	15	10	4.286	1452400	0.17929
06014261	20	10	4.286	1451800	0.17926
06014272	0	2	1	1506300	0.041844
06014282	4	2	1	1499100	0.041766
06014292	4	4	1	1497100	0.041745
06014302	0	4	1	1495800	0.041731
06014312	0	2	2.5	1497100	0.10461

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Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06014322	4	2	2.5	1492000	0.10447
06014332	4	4	2.5	1491300	0.10446
06014342	0	4	2.5	1490700	0.10444
06014352	0	2	4.955	1483600	0.20886
06014372	4	4	4.955	1477800	0.20854
06014382	0	4	4.955	1477200	0.20851
06014391	0	2	7.433	1495600	0.31098
06014401	4	2	7.334	1487200	0.30617
06014411	4	4	7.433	1487200	0.3103
06014421	0	4	7.433	1486000	0.3102
06014432	0	2	9.822	1492700	0.41074
06014442	4	2	9.822	1486900	0.41011
06014452	4	4	9.822	1486300	0.41005
06014462	0	4	9.822	1485700	0.40998
06019001	0	22.6	0.664	763930	0.053891
06019021	0	32.8	0.664	763600	0.053882
06019041	0	22.6	0.892	1161900	0.047399
06019061	0	32.8	0.892	1159400	0.047359
06019081	0	22.6	0.996	1463600	0.041492
06019101	0	32.8	0.996	1457300	0.041423
06019121	0	22.6	1.245	1450800	0.051921
06019141	0	32.8	1.245	1444600	0.051835
06019161	0	22.6	1.494	1445600	0.062085
06019181	0	32.8	1.494	1440700	0.062003
06019201	0	22.6	1.662	1819100	0.053993
06019221	0	32.8	1.662	1801700	0.05379
06019301	0	5.4	1.875	1439700	0.078331
06019321	0	10	1.875	1432400	0.078175
06019341	0	12.2	1.875	1430600	0.078136
06019361	0	13.8	1.875	1437500	0.078084
06019381	0	17.4	1.875	1432000	0.077968
06019401	0	22.6	1.875	1430200	0.077929
06019421	0	32.8	1.875	1429600	0.077916
06019441	0	5.4	0.488	1456200	0.020482
06019461	0	10	0.488	1446900	0.02043
06019481	0	12.2	0.488	1443200	0.02041
06019501	0	13.8	0.488	1443800	0.02045
06019521	0	17.4	0.488	1436400	0.020409
06019541	0	22.6	0.488	1433400	0.020392
06019561	0	32.8	0.488	1431600	0.020382
06411601	180	0.4	1.306	1449500	0.054674
06411611	180	6	1.306	1441500	0.054556
06411621	180	8	1.306	1440900	0.054547
06411631	180	10	1.306	1440300	0.054538
06411661	180	0.4	1.633	1437800	0.068796
06411671	180	6	1.633	1432300	0.068693
06411681	180	8	1.633	1431700	0.068682
06411691	180	10	1.633	1431100	0.068671

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Sinusoidal test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06411721	180	0.4	1.959	1451800	0.081836
06411731	180	6	1.959	1445600	0.0817
06411741	180	8	1.959	1445000	0.081686
06411751	180	10	1.959	1444400	0.081672

Sinusoidal oscillatory cases for model 6, NACA 0018

Table 50: Ramp-up test cases for model 6, NACA 0018

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
06025001	0	4	33.144	1491900	0.0038781
06025011	0	4	47.71	1486000	0.0055739
06025021	0	4	50.864	1484100	0.0059394
06025031	0	4	48.08	1482800	0.0056124
06025091	0	8	46.096	1493200	0.0053628
06025101	0	8	74.347	1487400	0.0086364
06025111	0	7	98.977	1486100	0.011494
06025121	0	7	101.81	1484200	0.011817
06025141	0	7	100.94	1494900	0.011674
06025151	0	7	101.86	1489700	0.011764
06025161	0	7	113.28	1488400	0.013079
06025171	0	7	99.228	1487200	0.011452
06025181	0	7	107.09	1485200	0.012354
06025191	0	13	46.697	1492500	0.0053896
06025201	0	13	82.915	1486700	0.0095554
06025211	0	13	130.4	1484800	0.01502
06025221	0	13	152.27	1482900	0.01753
06025231	0	12	157.99	1485600	0.018242
06025241	0	12	159.66	1479900	0.018407
06025251	0	12	155.19	1478600	0.017886
06025261	0	12	163.12	1478000	0.018797
06025271	0	12	155.23	1476100	0.017878
06025281	0	30	49.526	1475200	0.0057415
06025291	0	30	95.96	1468900	0.011106
06025301	0	30	171.06	1467000	0.019788
06025311	0	30	227.59	1465200	0.026314
06025321	0	30	249.32	1465200	0.028826
06025331	-1	38	0.74375	1461300	8.6577e-05
06025341	-1	38	1.4877	1468600	0.0001711
06025351	-1	38	2.9502	1461100	0.00033862
06025361	-1	38	4.4098	1456100	0.00050877
06025371	-1	38	5.9341	1450600	0.00068362
06025381	-1	38	7.44	1449400	0.00085681
06025391	-1	38	14.719	1467600	0.0017204
06025401	-1	38	29.503	1459400	0.0034408
06025411	-1	38	45.016	1456900	0.0052465
06025421	-1	38	59.634	1470300	0.0069077
06025431	-1	38	73.789	1464000	0.008533
06025441	-1	38	89.916	1462100	0.010393
06025451	-1	38	99.677	1460300	0.011515
06025461	-1	38	113.15	1459600	0.013069
06025471	-1	38	126.06	1470700	0.01452
06025481	-1	38	140.76	1462600	0.016178
06025491	-1	38	155.89	1461300	0.017911
06025501	-1	38	165.37	1459500	0.018991
06025511	-1	38	179.25	1461900	0.020672
06025521	-1	38	187.3	1456300	0.021569
06025531	-1	38	199.66	1454500	0.02298

Ramp-up test cases for model 6, NACA 0018

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
06025541	-1	38	213.74	1452600	0.024589
06025551	-1	38	225.74	1451900	0.026106
06025561	-1	38	237.99	1446300	0.027481
06025571	-1	38	245.24	1444500	0.028305
06025581	-1	38	256.92	1443300	0.029643
06025591	-1	38	263.62	1446200	0.030534
06025601	-1	37	281.17	1441300	0.032524
06025611	-1	37	287.47	1439400	0.033236
06025621	-1	38	294.84	1437600	0.034071
06025631	-1	31	50.15	995390	0.0084243
06025641	-1	31	98.284	995390	0.01651
06025651	-1	31	183.89	994970	0.030885
06025691	-1	31	182.73	1859200	0.016157
06025701	-1	30	244.62	1854600	0.021607

Ramp-up cases for model 6, NACA 0018

Table 51: Ramp-down test cases for model 6, NACA 0018

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
06036331	37	-38	-0.7096	1497700	-8.2527e-05
06036341	37	-38	-1.4461	1488500	-0.0001677
06036351	37	-38	-2.9114	1479000	-0.00033678
06036361	37	-38	-4.3436	1482700	-0.00050239
06036371	37	-38	-5.7068	1478300	-0.00065929
06036381	37	-38	-7.2938	1475100	-0.00084193
06036391	37	-38	-14.311	1479300	-0.001658
06036401	37	-38	-28.451	1471800	-0.0032896
06036411	37	-38	-41.817	1471200	-0.0048342
06036421	37	-38	-55.233	1473500	-0.0063939
06036431	37	-38	-69.449	1471000	-0.0080343
06036441	37	-38	-81.918	1469100	-0.009472
06036451	37	-38	-93.37	1467800	-0.010793
06036461	37	-38	-103.99	1466000	-0.012014
06036471	37	-38	-117.39	1460400	-0.013663
06036481	37	-38	-128.5	1456600	-0.014941
06036491	37	-38	-141.82	1454200	-0.016479
06036501	37	-38	-152.25	1452900	-0.017685
06036511	37	-38	-164.28	1454800	-0.019137
06036521	37	-38	-172.36	1452300	-0.020065
06036531	37	-38	-181.04	1450500	-0.021065
06036541	37	-38	-189.78	1449300	-0.022074
06036551	37	-38	-201.03	1461700	-0.023266
06036561	37	-38	-211.12	1458600	-0.024414
06036571	37	-38	-221.47	1456100	-0.025594
06036581	37	-38	-231.52	1454300	-0.026742
06036591	37	-38	-258.88	1458000	-0.029984
06036601	37	-38	-265.65	1453700	-0.030733
06036611	37	-38	-283.11	1452500	-0.032742
06036621	37	-38	-296.62	1451200	-0.034293

Ramp-down cases for model 6, NACA 0018

Table 52: VAWT motion test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06051011	0	5.4	0.664	766890	0.053361
06051031	0	10	0.664	766890	0.053361
06051051	0	12.2	0.664	767220	0.05337
06051071	0	13.8	0.664	758610	0.054073
06051091	0	17.4	0.664	758610	0.054073
06051111	0	5.4	0.892	1156100	0.047721
06051131	0	10	0.892	1154600	0.047697
06051151	0	12.2	0.892	1153600	0.047681
06051171	0	13.8	0.892	1148500	0.047896
06051191	0	17.4	0.892	1147500	0.047879
06051211	0	5.4	0.996	1476400	0.041352
06051231	0	10	0.996	1472600	0.041311
06051251	0	12.2	0.996	1469500	0.041276
06051271	0	13.8	0.996	1455200	0.041657
06051291	0	17.4	0.996	1452700	0.041629
06051311	0	5.4	1.245	1462200	0.051608
06051331	0	10	1.245	1459700	0.051574
06051351	0	12.2	1.245	1457800	0.051548
06051371	0	13.8	1.245	1450800	0.051797
06051391	0	17.4	1.245	1448300	0.051763
06051411	0	5.4	1.494	1448300	0.062042
06051431	0	10	1.494	1445900	0.062001
06051451	0	12.2	1.494	1443400	0.06196
06051471	0	13.8	1.494	1442100	0.06209
06051491	0	17.4	1.494	1439700	0.062049
06051511	0	5.4	1.662	1833900	0.053872
06051531	0	10	1.662	1826900	0.053792
06051551	0	12.2	1.662	1822300	0.053739
06051571	0	13.8	1.662	1817500	0.053757
06051591	0	17.4	1.662	1812200	0.053696
06059011	0	22.6	0.664	763930	0.053891
06059031	0	32.8	0.664	763600	0.053882
06059051	0	22.6	0.892	1159900	0.047367
06059071	0	32.8	0.892	1159400	0.047359
06059091	0	22.6	0.996	1458600	0.041437
06059111	0	32.8	0.996	1456100	0.041409
06059131	0	22.6	1.245	1446400	0.051861
06059151	0	32.8	1.245	1442800	0.051809
06059171	0	22.6	1.494	1442600	0.062034
06059191	0	32.8	1.494	1439500	0.061983
06059211	0	22.6	1.662	1803200	0.053808
06059231	0	32.8	1.662	1799400	0.053764
06059311	0	5.4	1.875	1433600	0.078201
06059331	0	10	1.875	1431200	0.078149
06059351	0	12.2	1.875	1429400	0.078111
06059371	0	13.8	1.875	1433800	0.078006
06059391	0	17.4	1.875	1431400	0.077955
06059411	0	22.6	1.875	1430200	0.077929

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VAWT motion test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
06059431	0	32.8	1.875	1429000	0.077903
06059451	0	5.4	0.488	1449300	0.020444
06059471	0	10	0.488	1445000	0.02042
06059491	0	12.2	0.488	1441900	0.020403
06059511	0	13.8	0.488	1438900	0.020423
06059531	0	17.4	0.488	1435200	0.020403
06059551	0	22.6	0.488	1432800	0.020389
06059571	0	32.8	0.488	1430400	0.020376

VAWT motion cases for model 6, NACA 0018

Table 53: Mulitiple streamtube VAWT motion test cases for model 6, NACA 0018

File name	Mean AoA [deg]	Tip Speed Ratio	Osc. Freq. [Hz]	Re	k
06071781	0	6	0.996	1525100	0.041538
06071791	0	4	0.996	1516500	0.041446
06071801	0	3.5	0.996	1514500	0.041425
06071811	0	3.25	0.996	1512500	0.041404
06071821	0	6	1.245	1511200	0.051893
06071831	0	4	1.245	1507300	0.05184
06071841	0	3.5	1.245	1505300	0.051814
06071851	0	3.25	1.245	1503400	0.051788
06071861	0	6	1.494	1507100	0.062179
06071871	0	4	1.494	1502500	0.062106
06071881	0	3.5	1.494	1501200	0.062085
06071891	0	3.25	1.494	1499900	0.062064

Mulitiple streamtube VAWT motion cases for model 6, NACA 0018

Table 54: Static test cases for model 7, NACA 0021

File name	Start AoA [deg]	Arc [deg]	Re
07000011	0	25	789070
07000021	0	-26	791460
07000031	0	25	1071300
07000041	0	-26	1065600
07000051	0	25	1450500
07000061	0	-26	1455100
07000071	0	25	1935600
07000081	0	-26	1915300
07400091	180	25	793940
07400101	180	-25	826610
07400111	180	25	1104400
07400121	180	-25	1087300
07400131	180	25	1491400
07400141	185	-29	1489000
07400151	175	30	1981800
07400161	185	-30	1952000

Static test cases for model 7, NACA 0021

Table 55: Unsteady static test cases for model 7, NACA 0021

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
07040171	0	0.12	1441300
07040181	1	1.25	1435200
07040191	2	2.29	1434600
07040201	3	2.82	1434000
07040211	4	4.1	1434000
07040221	5	5.37	1433400
07040231	6	6.27	1433400
07040241	7	7.29	1432800
07040251	8	8.55	1432800
07040261	9	9.5	1432200
07040271	10	10.38	1431500
07040281	11	11.51	1431500
07040291	12	12.47	1431500
07040301	13	13.31	1430900
07040311	14	14.33	1435100
07040321	15	15.61	1429000
07040331	16	16.39	1429000
07040341	17	17.37	1428400
07040351	18	18.54	1428400
07040361	19	19.27	1428400
07040371	20	20.33	1428100
07040381	21	21.39	1427200
07040391	22	22.52	1427200
07040401	23	23.59	1426600
07040411	24	24.61	1426600

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Unsteady static test cases for model 7, NACA 0021

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
07040421	25	25.76	1426600
07040431	26	26.77	1426600
07040441	27	27.95	1426000
07040451	28	28.06	1477900
07040461	29	28.93	1471600
07040471	30	29.9	1471000
07040481	31	30.78	1470300
07040491	32	31.62	1469100
07040501	33	32.43	1468400
07040511	34	33.17	1467800
07040521	35	34.04	1467200
07040531	0	-0.17	1470300
07040541	1	0.77	1467100
07040551	2	1.72	1466500
07040561	3	2.67	1465900
07040571	4	3.62	1465900
07040581	5	4.83	1465300
07040591	6	5.98	1464600
07040601	7	7.09	1464600
07040611	8	8.04	1464000
07040621	9	9.03	1463400
07040631	10	10.18	1463400
07040641	11	11.14	1463400
07040651	12	12.07	1462800
07040661	13	12.96	1462100
07040671	19	18.96	1464600
07040681	15	14.32	1459600
07040691	16	15.09	1458400
07040701	17	16.16	1458400
07040711	18	17.15	1457800
07040721	19	18.22	1457800
07040731	20	19.27	1457800
07040741	21	20.14	1457200
07040751	22	21.22	1456500
07040761	23	22.02	1456500
07040771	24	23.3	1455900
07040781	25	24.26	1455900
07040791	26	25.17	1455900
07040801	27	26.25	1455900
07040811	28	26.82	1467200
07040821	30	28.36	1462200
07040831	31	29.45	1461600
07040841	32	30.4	1461000
07040851	33	31.46	1421200
07040861	34	32.46	1459700
07040871	35	33.43	1458500

Unsteady Static test cases for model 7, NACA 0021

Table 56: Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07011001	0	5.4	0.664	777850	0.053011
07011002	0	5.4	0.664	805670	0.051477
07011021	0	10	0.664	778190	0.05302
07011022	0	10	0.664	804970	0.05146
07011041	0	12.2	0.664	778530	0.053029
07011042	0	12.2	0.664	805670	0.051477
07011061	0	13.8	0.664	775610	0.053357
07011062	0	13.8	0.664	796250	0.051866
07011081	0	17.4	0.664	775270	0.053348
07011082	0	17.4	0.664	797290	0.051893
07011101	0	5.4	0.892	1110500	0.050001
07011102	0	5.4	0.892	998990	0.055535
07011121	0	10	0.892	1108100	0.049959
07011122	0	10	0.892	997690	0.055507
07011141	0	12.2	0.892	1107200	0.049942
07011142	0	12.2	0.892	997260	0.055498
07011161	0	13.8	0.892	1078500	0.051332
07011162	0	13.8	0.892	999900	0.055452
07011181	0	17.4	0.892	1076600	0.051297
07011182	0	17.4	0.892	998590	0.055424
07011201	0	5.4	0.996	1464500	0.041532
07011202	0	5.4	0.996	1507300	0.041097
07011221	0	10	0.996	1456300	0.041442
07011222	0	10	0.996	1494300	0.040959
07011241	0	12.2	0.996	1453200	0.041408
07011242	0	12.2	0.996	1490500	0.040917
07011261	0	13.8	0.996	1451000	0.041594
07011262	0	13.8	0.996	1480500	0.041243
07011281	0	17.4	0.996	1444800	0.041525
07011282	0	17.4	0.996	1474800	0.041181
07011301	0	5.4	1.245	1463400	0.051892
07011302	0	5.4	1.245	1471200	0.051601
07011321	0	10	1.245	1456500	0.051797
07011322	0	10	1.245	1463600	0.051498
07011341	0	12.2	1.245	1452800	0.051745
07011342	0	12.2	1.245	1460500	0.051455
07011361	0	13.8	1.245	1460800	0.051522
07011362	0	13.8	1.245	1470400	0.051199
07011381	0	17.4	1.245	1455800	0.051454
07011382	0	17.4	1.245	1465400	0.051131
07011401	0	5.4	1.494	1447800	0.062232
07011402	0	5.4	1.494	1480100	0.062286
07011421	0	10	1.494	1440500	0.062109
07011422	0	10	1.494	1471300	0.06214
07011441	0	12.2	1.494	1438000	0.062068
07011442	0	12.2	1.494	1468700	0.062098
07011461	0	13.8	1.494	1447200	0.061819
07011462	0	13.8	1.494	1470000	0.062119

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07011481	0	17.4	1.494	1442300	0.061738
07011482	0	17.4	1.494	1463700	0.062015
07011501	0	5.4	1.662	1927700	0.052245
07011521	0	10	1.662	1903300	0.051985
07011541	0	12.2	1.662	1894500	0.051891
07011561	0	13.8	1.662	1897600	0.052141
07011581	0	17.4	1.662	1877000	0.051918
07012001	10	4	0.245	1402000	0.010454
07012011	10	6	0.245	1393700	0.01043
07012021	10	8	0.245	1391400	0.010423
07012031	10	10	0.245	1389600	0.010418
07012041	10	4	0.612	1386500	0.026205
07012051	10	6	0.612	1382400	0.026175
07012061	10	8	0.612	1380600	0.026162
07012071	10	10	0.612	1379500	0.026153
07012081	10	4	1.224	1388300	0.052188
07012091	10	6	1.224	1384800	0.052136
07012101	10	8	1.224	1383600	0.052119
07012111	10	10	1.224	1382500	0.052102
07012121	10	4	1.836	1398100	0.078472
07012131	10	6	1.836	1393300	0.078367
07012141	10	8	1.836	1391600	0.078328
07012151	10	10	1.836	1390400	0.078303
07012161	10	4	2.448	1390100	0.10479
07012171	10	6	2.448	1386000	0.10467
07012181	10	8	2.448	1385400	0.10466
07012191	10	10	2.448	1384200	0.10462
07012201	10	4	3.06	1394300	0.13021
07012211	10	6	3.06	1391400	0.1301
07012221	10	8	3.06	1390800	0.13008
07012231	10	10	3.06	1389600	0.13004
07012241	10	4	3.673	1393500	0.15639
07012251	10	6	3.673	1389400	0.15621
07012261	10	8	3.673	1388800	0.15619
07012271	10	10	3.673	1388200	0.15616
07012281	10	4	4.286	1386100	0.18324
07012291	10	6	4.286	1383200	0.18309
07012301	10	8	4.286	1382000	0.18303
07012311	10	10	4.286	1381500	0.183
07012371	3	8	0.245	1466600	0.010101
07012381	4	8	0.245	1458500	0.010079
07012391	5	8	0.245	1455400	0.010071
07012401	6	8	0.245	1453500	0.010066
07012411	7	8	0.245	1451100	0.010059
07012421	8	8	0.245	1442400	0.010155
07012431	9	8	0.245	1436300	0.010139
07012441	11	8	0.245	1434500	0.010134
07012451	12	8	0.245	1432100	0.010127

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07012461	13	8	0.245	1430300	0.010122
07012471	14	8	0.245	1431700	0.010153
07012481	15	8	0.245	1425700	0.010136
07012491	17	8	0.245	1423900	0.010131
07012501	20	8	0.245	1422100	0.010126
07012511	3	8	0.612	1425300	0.025327
07012521	4	8	0.612	1421100	0.025298
07012531	5	8	0.612	1420500	0.025294
07012541	6	8	0.612	1419300	0.025286
07012551	7	8	0.612	1418700	0.025281
07012561	8	8	0.612	1419000	0.025381
07012571	9	8	0.612	1414800	0.025352
07012581	11	8	0.612	1414200	0.025347
07012591	12	8	0.612	1413000	0.025339
07012601	13	8	0.612	1412400	0.025335
07012611	14	8	0.612	1407500	0.025543
07012621	15	8	0.612	1403300	0.025514
07012631	17	8	0.612	1402700	0.02551
07012641	20	8	0.612	1402200	0.025505
07012651	3	8	1.224	1447200	0.050869
07012661	4	8	1.224	1439200	0.050759
07012671	5	8	1.224	1438000	0.050742
07012681	6	8	1.224	1436800	0.050725
07012691	7	8	1.224	1436200	0.050717
07012701	8	8	1.224	1432500	0.051028
07012711	9	8	1.224	1428800	0.050977
07012721	11	8	1.224	1427600	0.05096
07012731	12	8	1.224	1427000	0.050951
07012741	13	8	1.224	1426400	0.050943
07012751	14	8	1.224	1423500	0.051198
07012761	15	8	1.224	1419900	0.051147
07012771	17	8	1.224	1419300	0.051139
07012781	20	8	1.224	1418100	0.051122
07012791	3	8	1.836	1417700	0.077067
07012801	4	8	1.836	1413500	0.076978
07012811	5	8	1.836	1412900	0.076965
07012821	6	8	1.836	1412300	0.076952
07012831	7	8	1.836	1411700	0.07694
07012841	8	8	1.836	1424200	0.076579
07012851	9	8	1.836	1420600	0.076503
07012861	11	8	1.836	1420000	0.07649
07012871	12	8	1.836	1419400	0.076478
07012881	13	8	1.836	1418800	0.076465
07012891	14	8	1.836	1426100	0.076341
07012901	15	8	1.836	1422500	0.076265
07012911	17	8	1.836	1422500	0.076265
07012921	20	8	1.836	1421300	0.07624
07012931	3	8	2.448	1471700	0.10046

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07012941	4	8	2.448	1468000	0.10036
07012951	5	8	2.448	1466700	0.10033
07012961	6	8	2.448	1466700	0.10033
07012971	7	8	2.448	1466100	0.10031
07012981	8	8	2.448	1462500	0.10091
07012991	9	8	2.448	1459400	0.10083
07013001	11	8	2.448	1458700	0.10081
07013011	12	8	2.448	1457500	0.10078
07013021	13	8	2.448	1457500	0.10078
07013031	14	8	2.448	1461200	0.10088
07013041	15	8	2.448	1457500	0.10078
07013051	17	8	2.448	1456900	0.10076
07013061	20	8	2.448	1456200	0.10075
07013071	3	8	3.06	1466000	0.12554
07013081	4	8	3.06	1462800	0.12544
07013091	5	8	3.06	1462200	0.12542
07013101	6	8	3.06	1461000	0.12538
07013111	7	8	3.06	1461000	0.12538
07013121	8	8	3.06	1460400	0.12536
07013131	9	8	3.06	1459700	0.12534
07013141	11	8	3.06	1460100	0.12598
07013151	12	8	3.06	1455700	0.12583
07013161	13	8	3.06	1455100	0.12581
07013171	14	8	3.06	1454500	0.12579
07013181	15	8	3.06	1453900	0.12577
07013191	17	8	3.06	1453900	0.12577
07013201	20	8	3.06	1453200	0.12575
07013211	3	8	3.673	1506900	0.14704
07013221	4	8	3.673	1500400	0.1468
07013231	5	8	3.673	1459600	0.15082
07013241	6	8	3.673	1499200	0.14675
07013251	7	8	3.673	1458900	0.15079
07013261	8	8	3.673	1458300	0.15077
07013271	9	8	3.673	1497900	0.1467
07013281	11	8	3.673	1494900	0.14778
07013291	12	8	3.673	1489800	0.14758
07013301	13	8	3.673	1489800	0.14758
07013311	14	8	3.673	1489200	0.14755
07013321	15	8	3.673	1487900	0.14751
07013331	17	8	3.673	1467800	0.14953
07013341	20	8	3.673	1487900	0.14751
07013351	3	8	4.286	1485100	0.17514
07013361	4	8	4.286	1478700	0.17484
07013371	5	8	4.286	1478100	0.17481
07013381	6	8	4.286	1477500	0.17479
07013391	7	8	4.286	1476800	0.17476
07013401	8	8	4.286	1476200	0.17473
07013411	9	8	4.286	1475600	0.1747

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07013421	11	8	4.286	1470900	0.17599
07013431	12	8	4.286	1466500	0.17578
07013441	13	8	4.286	1465800	0.17575
07013451	14	8	4.286	1465200	0.17573
07013461	15	8	4.286	1465200	0.17573
07013471	17	8	4.286	1464600	0.1757
07013481	20	8	4.286	1464000	0.17567
07013631	7	8	1.632	991930	0.10038
07013641	8	8	1.632	990230	0.10031
07013651	9	8	1.632	990230	0.10031
07013661	10	8	1.632	989800	0.1003
07013671	11	8	1.632	989800	0.1003
07013681	12	8	1.632	989800	0.1003
07013691	13	8	1.632	988040	0.10066
07013701	14	8	1.632	987190	0.10062
07013711	15	8	1.632	987190	0.10062
07013721	17	8	1.632	987190	0.10062
07013731	20	8	1.632	987190	0.10062
07013741	7	8	3.265	1942200	0.10251
07013751	8	8	3.265	1922300	0.1021
07013761	9	8	3.265	1920600	0.10206
07013771	10	8	3.265	1918200	0.10201
07013781	11	8	3.265	1915700	0.10196
07013791	12	8	3.265	1914100	0.10193
07013811	13	8	3.257	1928100	0.10166
07013821	14	8	3.265	1911800	0.10157
07013831	15	8	3.265	1910200	0.10153
07013841	17	8	3.265	1908600	0.1015
07013851	20	8	3.265	1907800	0.10148
07013871	4	10	0.245	1471700	0.010076
07013881	6	10	0.245	1463500	0.010054
07013891	8	10	0.245	1461100	0.010048
07013901	15	10	0.245	1460400	0.010046
07013911	20	10	0.245	1458000	0.010039
07013921	4	10	0.612	1461500	0.025225
07013931	6	10	0.612	1454100	0.025175
07013941	8	10	0.612	1452800	0.025167
07013951	15	10	0.612	1451600	0.025158
07013961	20	10	0.612	1451000	0.025154
07013971	4	10	1.224	1462800	0.050168
07013981	6	10	1.224	1458400	0.05011
07013991	8	10	1.224	1457800	0.050102
07014001	15	10	1.224	1456600	0.050085
07014011	20	10	1.224	1456600	0.050085
07014021	4	10	1.836	1466500	0.075058
07014031	6	10	1.836	1462200	0.074971
07014041	8	10	1.836	1461000	0.074946
07014051	15	10	1.836	1460400	0.074934

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07014061	20	10	1.836	1460400	0.074934
07014071	4	10	2.448	1479400	0.10075
07014081	6	10	2.448	1473700	0.1006
07014091	8	10	2.448	1472500	0.10056
07014101	15	10	2.448	1471900	0.10055
07014111	20	10	2.448	1470600	0.10051
07014121	4	10	3.06	1476200	0.12554
07014131	6	10	3.06	1473700	0.12545
07014141	8	10	3.06	1472400	0.12541
07014151	15	10	3.06	1472400	0.12541
07014161	20	10	3.06	1471200	0.12537
07014171	4	10	3.673	1474200	0.15062
07014181	6	10	3.673	1471000	0.1505
07014191	8	10	3.673	1470400	0.15047
07014201	15	10	3.673	1469800	0.15045
07014211	20	10	3.673	1469800	0.15045
07014221	4	10	4.286	1469900	0.17596
07014231	6	10	4.286	1467400	0.17584
07014241	8	10	4.286	1466200	0.17578
07014251	15	10	4.286	1465500	0.17575
07014261	20	10	4.286	1465500	0.17575
07014271	0	2	1	1452900	0.041662
07014281	4	2	1	1446700	0.041592
07014291	4	4	1	1444800	0.041571
07014301	0	4	1	1443600	0.041557
07014311	0	2	2.5	1450600	0.10364
07014321	4	2	2.5	1446900	0.10353
07014331	4	4	2.5	1446300	0.10351
07014341	0	4	2.5	1445700	0.1035
07014351	0	2	4.911	1442800	0.20481
07014361	4	2	4.955	1437900	0.20637
07014371	4	4	4.955	1437300	0.20633
07014381	0	4	4.911	1436700	0.20447
07017031	15	8	1.836	1452400	0.075791
07019001	0	22.6	0.664	780900	0.05306
07019002	0	22.6	0.664	797610	0.051998
07019021	0	32.8	0.664	780560	0.053051
07019022	0	32.8	0.664	797610	0.051998
07019041	0	22.6	0.892	1080900	0.051184
07019042	0	22.6	0.892	988110	0.056113
07019061	0	32.8	0.892	1079100	0.051149
07019062	0	32.8	0.892	986820	0.056085
07019081	0	22.6	0.996	1472000	0.041516
07019082	0	22.6	0.996	1473100	0.041276
07019101	0	32.8	0.996	1463800	0.041426
07019102	0	32.8	0.996	1466800	0.041207
07019121	0	22.6	1.245	1448800	0.051794
07019122	0	22.6	1.245	1462600	0.051261

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Sinusoidal test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07019141	0	32.8	1.245	1443300	0.051717
07019142	0	32.8	1.245	1458900	0.05121
07019161	0	22.6	1.494	1445900	0.061694
07019162	0	22.6	1.494	1466800	0.061959
07019181	0	32.8	1.494	1441600	0.061623
07019182	0	32.8	1.494	1461200	0.061866
07019201	0	22.6	1.662	1872500	0.05244
07019221	0	32.8	1.662	1852200	0.052217
07019302	0	5.4	1.857	1470400	0.076596
07019322	0	10	1.857	1464800	0.076482
07019342	0	12.2	1.857	1462300	0.076431
07019362	0	13.8	1.857	1463900	0.076438
07019382	0	17.4	1.857	1460200	0.076362
07019402	0	22.6	1.857	1460400	0.076533
07019422	0	32.8	1.857	1455400	0.076431
07117011	5	8	1.836	1454900	0.075842
07117021	10	8	1.836	1453700	0.075816
07117031	15	8	1.836	1452400	0.075791
07411601	180	0.4	1.306	1477900	0.054562
07411611	180	6	1.306	1471000	0.054462
07411621	180	8	1.306	1470400	0.054453
07411631	180	10	1.306	1469100	0.054435
07411661	180	0.4	1.633	1474400	0.068145
07411681	180	8	1.633	1469300	0.068054
07411691	180	10	1.633	1468700	0.068043
07411721	180	4	1.959	1469300	0.081887
07411731	180	6	1.959	1465500	0.081805
07411741	180	8	1.959	1464900	0.081792
07411751	180	10	1.959	1464300	0.081778

Sinusoidal oscillatory cases for model 7, NACA 0021

Table 57: Ramp-up test cases for model 7, NACA 0021

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
07025001	0	4	60.058	1475200	0.0069018
07025011	0	4	104.62	1470800	0.012009
07025021	0	4	122.03	1468900	0.014
07025031	0	4	154.04	1467600	0.017667
07025041	0	4	124.21	1464100	0.014297
07025051	0	4	116.83	1461000	0.013436
07025061	0	4	128.57	1459100	0.014779
07025071	0	4	132.52	1457900	0.015228
07025081	0	4	122.04	1456600	0.014019
07025091	0	8	47.635	1449100	0.0054873
07025101	0	8	86.984	1444800	0.010009
07025111	0	8	165.24	1443000	0.019003
07025121	0	8	181.11	1441800	0.020822
07025141	0	8	173.82	1445500	0.019979
07025151	0	8	175.21	1443000	0.020126
07025161	0	8	172.34	1441800	0.019789
07025171	0	8	187.53	1440000	0.021523
07025181	0	8	170.87	1439400	0.019608
07025191	0	12	48.543	1449800	0.0055565
07025201	0	12	88.069	1444300	0.010066
07025211	0	12	188.83	1443100	0.021575
07025221	0	12	221.38	1442500	0.02529
07025231	0	12	237.91	1449200	0.027213
07025241	0	11	225.07	1443700	0.025706
07025251	0	11	228.89	1442400	0.026133
07025261	0	11	235.19	1441200	0.026844
07025271	0	11	236.58	1440000	0.026994
07025281	0	30	50.111	1486100	0.0057235
07025291	0	29	99.908	1479700	0.011392
07025301	0	29	195.49	1477200	0.022276
07025311	0	29	276.07	1474700	0.031437
07025321	0	29	313.16	1472800	0.035643
07025331	-1	40	0.73739	1465800	8.4528e-05
07025341	-1	39	1.4681	1448800	0.00016856
07025351	-1	39	2.9938	1441500	0.00034305
07025361	-1	39	4.4714	1450300	0.00050985
07025371	-1	40	5.9005	1445400	0.00067191
07025381	-1	39	7.3537	1443600	0.00083698
07025391	-1	39	15.119	1441800	0.001726
07025401	-1	39	29.271	1438700	0.0033389
07025411	-1	39	44.51	1437500	0.0050755
07025421	-1	39	59.832	1443900	0.0068325
07025431	-1	39	74.035	1437800	0.0084405
07025441	-1	39	89.124	1436600	0.010157
07025451	-1	39	99.349	1434800	0.011317
07025471	-1	39	130.66	1462900	0.015416
07025481	-1	39	143.94	1456600	0.016954
07025491	-1	39	160.49	1455400	0.018897

Table continued on next page...

Ramp-up test cases for model 7, NACA 0021

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
07025501	-1	39	175.42	1454100	0.020648
07025511	-1	39	185.9	1472400	0.021688
07025521	-1	39	199.22	1468600	0.023219
07025531	-1	39	214.57	1466700	0.024995
07025541	-1	39	230.21	1466100	0.026813
07025551	-1	39	240.98	1467700	0.028203
07025561	2	31	255.6	1462700	0.029874
07025571	-1	39	273.57	1457200	0.032
07025581	-1	39	284.29	1456000	0.033243
07025591	-1	39	295.51	1453300	0.034887
07025601	-1	39	305.95	1446500	0.036053
07025611	-1	39	315.07	1444600	0.037109
07025621	-1	39	330.79	1443400	0.038948
07025631	-1	40	29.366	994280	0.0050794
07025641	-1	39	101.26	994280	0.017515
07025651	-1	39	199.22	980850	0.034931
07025661	-1	39	293.17	1007900	0.050025
07025671	-1	39	29.128	1944800	0.002556
07025681	-1	39	99.682	1875000	0.0089554
07025691	-1	39	199.67	1920200	0.017434
07025701	-1	8	-0.34448	1864700	-3.0881e-05
07025711	0	4	107.27	1200900	0.015466
07025721	0	8	187.61	1199900	0.02704
07025731	0	11	239.67	1198800	0.034532
07025741	0	4	112.64	975190	0.020036
07025751	0	8	186.13	974770	0.033103
07025761	0	11	231.98	974350	0.04125
07025771	0	4	101.31	717950	0.024507
07025781	0	8	181.65	718570	0.043957
07025791	0	12	240.9	718570	0.058294
07025801	0	4	116.21	509300	0.0397
07025811	0	8	189.09	509530	0.064608
07025821	0	12	242.35	509750	0.08282
07127051	-1	25	98.928	1460200	0.011425
07127061	-1	24	266.87	1454000	0.03077
07429241	180	12	30.092	1439000	0.0035738
07429251	180	12	91.158	1433500	0.01081
07429261	180	12	165.43	1432300	0.019611

Ramp-up cases for model 7, NACA 0021

Table 58: Ramp-down test cases for model 7, NACA 0021

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
07036331	39	-40	-0.73186	1459700	-8.5969e-05
07036341	39	-40	-1.4643	1401700	-0.00017743
07036351	39	-40	-2.9058	1432400	-0.00034191
07036361	39	-40	-4.4314	1435400	-0.00052281
07036371	39	-40	-5.8393	1427500	-0.00068743
07036381	39	-40	-7.3831	1425700	-0.00086875
07036391	39	-40	-14.649	1426400	-0.0017269
07036401	39	-40	-28.977	1422200	-0.003412
07036411	39	-40	-42.947	1421000	-0.0050553
07036421	39	-40	-57.522	1422600	-0.0067828
07036431	39	-40	-70.49	1419000	-0.0083038
07036441	39	-40	-86.976	1417800	-0.010242
07036451	39	-40	-95.372	1417200	-0.011229
07036461	39	-40	-105.64	1425300	-0.012419
07036471	39	-40	-119.43	1420500	-0.014021
07036481	39	-40	-137.11	1418700	-0.016089
07036491	39	-40	-149.52	1418700	-0.017545
07036501	39	-40	-161.09	1417500	-0.018897
07036511	39	-40	-171.95	1441800	-0.019902
07036521	39	-40	-181.09	1438100	-0.020939
07036531	39	-40	-194.69	1437500	-0.022508
07036541	39	-40	-207.46	1435700	-0.023972
07036551	39	-40	-220.57	1441300	-0.025507
07036561	39	-40	-231.5	1398500	-0.027477
07036571	39	-40	-249.39	1435900	-0.028797
07036581	39	-40	-266.33	1434700	-0.030743
07036591	39	-40	-275.32	1436900	-0.031842
07036601	39	-40	-296.25	1433900	-0.034234
07036611	39	-40	-310.8	1432100	-0.035898
07036621	39	-40	-328.35	1431500	-0.037919
07137071	24	-25	-92.972	1451500	-0.010751
07137081	24	-26	-265.5	1445900	-0.030655

Ramp-down cases for model 7, NACA 0021

Table 59: VAWT motion test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07051011	0	5.4	0.664	778190	0.05302
07051012	0	5.4	0.664	804970	0.05146
07051031	0	10	0.664	778190	0.05302
07051032	0	10	0.664	805320	0.051469
07051051	0	12.2	0.664	778530	0.053029
07051052	0	12.2	0.664	805670	0.051477
07051071	0	13.8	0.664	774940	0.053339
07051072	0	13.8	0.664	797290	0.051893
07051091	0	17.4	0.664	775270	0.053348
07051092	0	17.4	0.664	797640	0.051901
07051111	0	5.4	0.892	1109100	0.049976
07051112	0	5.4	0.892	997690	0.055507
07051131	0	10	0.892	1107600	0.049951
07051132	0	10	0.892	997260	0.055498
07051151	0	12.2	0.892	1106700	0.049934
07051152	0	12.2	0.892	997260	0.055498
07051171	0	13.8	0.892	1077100	0.051306
07051172	0	13.8	0.892	999030	0.055433
07051191	0	17.4	0.892	1076600	0.051297
07051192	0	17.4	0.892	998590	0.055424
07051211	0	5.4	0.996	1458200	0.041463
07051212	0	5.4	0.996	1496900	0.040986
07051231	0	10	0.996	1454500	0.041422
07051232	0	10	0.996	1492400	0.040938
07051251	0	12.2	0.96	1452000	0.039898
07051252	0	12.2	0.996	1489200	0.040904
07051271	0	13.8	0.996	1446100	0.041539
07051272	0	13.8	0.996	1476000	0.041195
07051291	0	17.4	0.996	1443000	0.041504
07051292	0	17.4	0.996	1472900	0.04116
07051311	0	5.4	1.245	1458400	0.051822
07051312	0	5.4	1.245	1464900	0.051515
07051331	0	10	1.245	1454600	0.051771
07051332	0	10	1.245	1461800	0.051472
07051351	0	12.2	1.245	1452200	0.051736
07051352	0	12.2	1.245	1459300	0.051438
07051371	0	13.8	1.245	1457700	0.051479
07051372	0	13.8	1.245	1466000	0.05114
07051391	0	17.4	1.245	1454000	0.051428
07051392	0	17.4	1.245	1463500	0.051106
07051411	0	5.4	1.494	1442300	0.06214
07051412	0	5.4	1.494	1473100	0.062171
07051431	0	10	1.494	1439300	0.062088
07051432	0	10	1.494	1470000	0.062119
07051451	0	12.2	1.494	1436800	0.062047
07051452	0	12.2	1.494	1467500	0.062077
07051471	0	13.8	1.494	1444200	0.061768
07051472	0	13.8	1.494	1465600	0.062046

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VAWT motion test cases for model 7, NACA 0021

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
07051491	0	17.4	1.494	1441100	0.061717
07051492	0	17.4	1.494	1462500	0.061995
07051511	0	5.4	1.662	1908900	0.052046
07051531	0	10	1.662	1899300	0.051943
07051551	0	12.2	1.662	1890500	0.051849
07051571	0	13.8	1.662	1880900	0.051961
07051591	0	17.4	1.662	1872300	0.051868
07059011	0	22.6	0.664	780560	0.053051
07059012	0	22.6	0.664	797610	0.051998
07059031	0	32.8	0.664	780220	0.053042
07059032	0	32.8	0.664	797610	0.051998
07059051	0	22.6	0.892	1079500	0.051158
07059052	0	22.6	0.892	986820	0.056085
07059071	0	32.8	0.892	1078600	0.051141
07059072	0	32.8	0.892	986390	0.056075
07059091	0	22.6	0.996	1466400	0.041454
07059092	0	22.6	0.996	1469900	0.041242
07059111	0	32.8	0.996	1462000	0.041405
07059112	0	32.8	0.996	1464900	0.041187
07059131	0	22.6	1.245	1444500	0.051734
07059132	0	22.6	1.245	1459500	0.051218
07059151	0	32.8	1.245	1441500	0.051691
07059152	0	32.8	1.245	1457000	0.051184
07059171	0	22.6	1.494	1442800	0.061643
07059172	0	22.6	1.494	1463000	0.061897
07059191	0	32.8	1.494	1440400	0.061603
07059192	0	32.8	1.494	1459300	0.061835
07059211	0	22.6	1.662	1856100	0.05226
07059231	0	32.8	1.662	1849200	0.052183
07059312	0	5.4	1.857	1466700	0.07652
07059332	0	10	1.857	1463500	0.076456
07059352	0	12.2	1.857	1461100	0.076406
07059372	0	13.8	1.857	1461400	0.076387
07059392	0	17.4	1.857	1458900	0.076336
07059412	0	22.6	1.857	1457300	0.076469
07059432	0	32.8	1.857	1454800	0.076419

VAWT motion cases for model 7, NACA 0021

Table 60: Static test cases for model 8, NACA 0025

File name	Start AoA [deg]	Arc [deg]	Re
08000011	0	25	821720
08000021	0	-25	821980
08000031	0	25	1120500
08000041	0	-25	1122600
08000051	0	25	1506600
08000061	0	-25	1508100
08000071	0	25	2005400
08000081	0	-25	1970200
08400091	180	23	798770
08400101	180	-23	799970
08400111	180	23	1088800
08400121	180	-23	1093300
08400131	180	23	1486300
08400141	180	-24	1475200
08400151	180	24	1892500
08400161	180	-24	1865100

Static test cases for model 8, NACA 0025

Table 61: Unsteady static test cases for model 8, NACA 0025

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
08040171	0	-0.5	1541200
08040181	1	0.22	1533800
08040191	2	1.38	1533100
08040201	3	2.61	1532400
08040211	4	3.78	1531800
08040221	5	5	1531100
08040231	6	5.89	1530400
08040241	7	6.8	1529800
08040251	8	7.7	1529800
08040261	9	9.11	1529100
08040271	10	10.28	1528400
08040281	11	11.17	1527800
08040291	12	12.34	1527800
08040301	13	13.46	1527100
08040311	14	14.52	1528100
08040321	15	15.55	1521400
08040331	16	16.4	1520800
08040341	17	17.53	1520800
08040351	18	18.48	1520800
08040361	19	19.67	1520100
08040371	20	20.6	1519500
08040381	21	21.83	1519500
08040391	22	22.82	1518800
08040401	23	23.93	1518800
08040411	24	24.82	1518100
08040421	25	25.95	1518100
08040431	26	27.39	1518100
08040441	27	28.14	1517500
08040451	28	29.12	1522900
08040461	29	30.12	1517600
08040471	30	31.24	1517000
08040481	31	32.18	1516300
08040491	32	33.21	1515600
08040501	33	34.15	1515600
08040511	34	35.02	1515000
08040521	35	36.1	1515000
08040531	0	-0.59	1520300
08040541	1	0.25	1514300
08040551	2	1.13	1513700
08040561	3	2.21	1513700
08040571	4	3.36	1513700
08040581	5	4.41	1513000
08040591	6	5.3	1513000
08040601	7	6.86	1512400
08040611	8	7.88	1512400
08040621	9	8.66	1512400
08040631	10	9.62	1511700
08040641	11	10.87	1511700

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Unsteady static test cases for model 8, NACA 0025

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
08040651	12	11.95	1511100
08040661	13	13.39	1511100
08040671	14	14.48	1512800
08040681	15	15.58	1508900
08040691	16	16.56	1508900
08040701	17	17.59	1508900
08040711	18	18.61	1508900
08040721	19	19.64	1508300
08040731	20	20.58	1508300
08040741	21	21.6	1508300
08040751	22	22.82	1507600
08040761	23	24	1507600
08040771	24	25.12	1506900
08040781	25	26.24	1506900
08040791	26	27.28	1506900
08040801	27	28.43	1506300
08040811	28	29.03	1510100
08040821	29	30.13	1506200
08040831	30	31.4	1506200
08040841	31	32.65	1505600
08040851	32	33.44	1505600
08040861	33	34.19	1504900
08040871	34	35.05	1504900
08040881	35	36.44	1504300

Unsteady Static test cases for model 8, NACA 0025

Table 62: Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08011001	0	5.4	0.657	805960	0.050116
08011021	0	10	0.657	805960	0.050116
08011041	0	12.2	0.657	805960	0.050116
08011061	0	13.8	0.657	806230	0.050189
08011081	0	17.4	0.657	805890	0.05018
08011101	0	5.4	0.896	1095600	0.050518
08011121	0	10	0.896	1093700	0.050484
08011141	0	12.2	0.896	1092300	0.050459
08011161	0	13.8	0.896	1094500	0.050418
08011181	0	17.4	0.896	1092600	0.050385
08011201	0	5.4	0.996	1470000	0.041358
08011221	0	10	0.996	1461200	0.041262
08011241	0	12.2	0.996	1458100	0.041227
08011261	0	13.8	0.996	1470700	0.040923
08011281	0	17.4	0.996	1465100	0.040862
08011301	0	5.4	1.245	1451900	0.051539
08011321	0	10	1.245	1444600	0.051436
08011341	0	12.2	1.245	1442800	0.051411
08011361	0	13.8	1.245	1444900	0.051547
08011381	0	17.4	1.245	1438800	0.051462
08011401	0	5.4	1.494	1445200	0.061806
08011421	0	10	1.494	1440300	0.061725
08011441	0	12.2	1.494	1437900	0.061684
08011461	0	13.8	1.494	1445200	0.061479
08011481	0	17.4	1.494	1441600	0.061418
08011501	0	5.4	1.662	1943500	0.051566
08011521	0	10	1.662	1922200	0.051345
08011541	0	12.2	1.662	1914100	0.05126
08011561	0	13.8	1.662	1918500	0.051444
08011581	0	17.4	1.662	1902400	0.051275
08012001	10	4	0.245	1554700	0.010322
08012011	10	6	0.245	1543800	0.010293
08012021	10	8	0.245	1539700	0.010283
08012031	10	10	0.245	1536400	0.010274
08012041	10	4	0.612	1529200	0.025847
08012051	10	6	0.612	1522600	0.025803
08012061	10	8	0.612	1519900	0.025785
08012071	10	10	0.612	1518000	0.025772
08012081	10	4	1.224	1524500	0.051511
08012091	10	6	1.224	1518500	0.051432
08012101	10	8	1.224	1517200	0.051415
08012111	10	10	1.224	1515900	0.051398
08012121	10	4	1.836	1516500	0.077113
08012131	10	6	1.836	1509900	0.076984
08012141	10	8	1.836	1509300	0.076971
08012151	10	10	1.836	1508600	0.076958
08012161	10	4	2.448	1514100	0.10323
08012171	10	6	2.448	1508900	0.10309

Table continued on next page...

Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08012181	10	8	2.448	1507600	0.10305
08012191	10	10	2.448	1507600	0.10305
08012201	10	4	3.06	1504400	0.12901
08012211	10	6	3.06	1498600	0.12881
08012221	10	8	3.06	1498000	0.12879
08012231	10	10	3.06	1498000	0.12879
08012241	10	4	3.673	1491100	0.15567
08012251	10	6	3.673	1487300	0.15551
08012261	10	8	3.673	1486700	0.15549
08012271	10	10	3.673	1486000	0.15546
08012281	10	4	4.286	1489100	0.18158
08012291	10	6	4.286	1484600	0.18136
08012301	10	8	4.286	1484000	0.18133
08012311	10	10	4.286	1483300	0.1813
08012371	3	8	0.245	1495900	0.010369
08012381	4	8	0.245	1489500	0.010352
08012391	5	8	0.245	1486300	0.010343
08012401	6	8	0.245	1483800	0.010336
08012411	7	8	0.245	1481200	0.010329
08012421	8	8	0.245	1483400	0.010332
08012431	9	8	0.245	1476500	0.010313
08012441	11	8	0.245	1474600	0.010308
08012461	13	8	0.245	1470200	0.010296
08012471	14	8	0.245	1469500	0.010325
08012481	15	8	0.245	1463300	0.010308
08012491	17	8	0.245	1461500	0.010303
08012501	20	8	0.245	1460200	0.010299
08012511	3	8	0.612	1559200	0.025962
08012521	4	8	0.612	1548900	0.025896
08012531	5	8	0.612	1547500	0.025887
08012541	6	8	0.612	1546100	0.025878
08012551	7	8	0.612	1544800	0.025869
08012561	8	8	0.612	1542600	0.026065
08012571	9	8	0.612	1533100	0.026002
08012581	11	8	0.612	1531800	0.025993
08012591	12	8	0.612	1530400	0.025984
08012601	13	8	0.612	1528400	0.025971
08012621	15	8	0.612	1535400	0.025774
08012631	17	8	0.612	1534000	0.025766
08012641	20	8	0.612	1532700	0.025757
08012651	3	8	1.224	1542700	0.051648
08012661	4	8	1.224	1535300	0.051551
08012671	5	8	1.224	1534000	0.051534
08012681	6	8	1.224	1532600	0.051516
08012691	7	8	1.224	1531300	0.051499
08012701	8	8	1.224	1522300	0.051961
08012711	9	8	1.224	1515600	0.051873
08012721	11	8	1.224	1514300	0.051856

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Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08012731	12	8	1.224	1513700	0.051847
08012741	13	8	1.224	1513000	0.051838
08012751	14	8	1.224	1532600	0.051269
08012761	15	8	1.224	1528600	0.051217
08012771	17	8	1.224	1527900	0.051208
08012781	20	8	1.224	1526600	0.051191
08012791	3	8	1.836	1536200	0.077004
08012801	4	8	1.836	1529500	0.076873
08012811	5	8	1.836	1528800	0.07686
08012821	6	8	1.836	1528200	0.076847
08012831	7	8	1.836	1527500	0.076834
08012841	8	8	1.836	1523500	0.077174
08012851	9	8	1.836	1519600	0.077096
08012861	11	8	1.836	1518200	0.07707
08012871	12	8	1.836	1517600	0.077057
08012881	13	8	1.836	1516900	0.077044
08012891	14	8	1.836	1521500	0.077088
08012901	15	8	1.836	1516300	0.076984
08012911	17	8	1.836	1515600	0.076971
08012921	20	8	1.836	1515000	0.076958
08012931	3	8	2.448	1515400	0.1032
08012941	4	8	2.448	1510200	0.10306
08012951	5	8	2.448	1508900	0.10302
08012961	6	8	2.448	1508900	0.10302
08012971	7	8	2.448	1507600	0.10299
08012981	8	8	2.448	1503700	0.10356
08012991	9	8	2.448	1499200	0.10344
08013001	11	8	2.448	1497900	0.10341
08013011	12	8	2.448	1497300	0.10339
08013021	13	8	2.448	1496600	0.10337
08013031	14	8	2.448	1501800	0.10339
08013041	15	8	2.448	1497200	0.10327
08013051	17	8	2.448	1496600	0.10325
08013061	20	8	2.448	1495900	0.10323
08013071	3	8	3.06	1514800	0.12929
08013081	4	8	3.06	1508900	0.12909
08013091	5	8	3.06	1508200	0.12907
08013101	6	8	3.06	1508200	0.12907
08013111	7	8	3.06	1506900	0.12903
08013121	8	8	3.06	1506300	0.129
08013131	9	8	3.06	1505600	0.12898
08013141	11	8	3.06	1517200	0.1283
08013151	12	8	3.06	1513300	0.12817
08013161	13	8	3.06	1512700	0.12815
08013171	14	8	3.06	1512000	0.12813
08013181	15	8	3.06	1510700	0.12809
08013191	17	8	3.06	1510700	0.12809
08013201	20	8	3.06	1510700	0.12809

Table continued on next page...

Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08013211	3	8	3.673	1502800	0.15548
08013221	4	8	3.673	1498300	0.1553
08013231	5	8	3.673	1497700	0.15527
08013241	6	8	3.673	1497000	0.15525
08013251	7	8	3.673	1497000	0.15525
08013261	8	8	3.673	1495700	0.15519
08013271	9	8	3.673	1495700	0.15519
08013281	11	8	3.673	1505400	0.15466
08013291	12	8	3.673	1500200	0.15445
08013301	13	8	3.673	1499500	0.15443
08013311	14	8	3.673	1499500	0.15443
08013321	15	8	3.673	1498900	0.1544
08013331	17	8	3.673	1498900	0.1544
08013341	20	8	3.673	1498200	0.15438
08013351	3	8	4.286	1502000	0.18023
08013361	4	8	4.286	1498100	0.18005
08013371	5	8	4.286	1498100	0.18005
08013381	6	8	4.286	1497500	0.18002
08013391	7	8	4.286	1497500	0.18002
08013401	8	8	4.286	1496800	0.17999
08013411	9	8	4.286	1496200	0.17996
08013421	11	8	4.286	1499900	0.18016
08013431	12	8	4.286	1496000	0.17998
08013441	13	8	4.286	1495400	0.17995
08013451	14	8	4.286	1494800	0.17992
08013461	15	8	4.286	1495400	0.17995
08013471	17	8	4.286	1494800	0.17992
08013481	20	8	4.286	1494100	0.17988
08013631	7	8	1.632	1051500	0.1026
08013641	8	8	1.632	1052400	0.10263
08013651	9	8	1.632	1052000	0.10261
08013661	10	8	1.632	1052000	0.10261
08013671	11	8	1.632	1051500	0.1026
08013681	12	8	1.632	1051500	0.1026
08013691	13	8	1.632	1056800	0.10239
08013701	14	8	1.632	1054500	0.10231
08013711	15	8	1.632	1054500	0.10231
08013721	17	8	1.632	1049400	0.10287
08013731	20	8	1.632	1048400	0.10283
08013741	7	8	3.265	1979400	0.10395
08013751	8	8	3.265	1960000	0.10356
08013761	9	8	3.265	1958400	0.10352
08013771	10	8	3.265	1956700	0.10349
08013781	11	8	3.265	1955000	0.10345
08013791	12	8	3.265	1953400	0.10342
08013811	13	8	3.257	1960000	0.10336
08013821	14	8	3.265	1945900	0.10333
08013831	15	8	3.265	1944300	0.10329

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Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08013841	17	8	3.265	1943500	0.10327
08013851	20	8	3.265	1942700	0.10326
08013871	4	10	0.245	1483400	0.010328
08013881	6	10	0.245	1475900	0.010308
08013891	8	10	0.245	1473400	0.010301
08013901	15	10	0.245	1471500	0.010296
08013911	20	10	0.245	1470200	0.010292
08013921	4	10	0.612	1472900	0.025724
08013931	6	10	0.612	1469100	0.025699
08013941	8	10	0.612	1467900	0.02569
08013951	15	10	0.612	1467300	0.025686
08013961	20	10	0.612	1466700	0.025682
08013971	4	10	1.224	1469300	0.051424
08013981	6	10	1.224	1466100	0.051381
08013991	8	10	1.224	1465500	0.051373
08014001	15	10	1.224	1464900	0.051364
08014011	20	10	1.224	1464300	0.051356
08014021	4	10	1.836	1473700	0.076721
08014031	6	10	1.836	1471200	0.076671
08014041	8	10	1.836	1470600	0.076658
08014051	15	10	1.836	1470000	0.076645
08014061	20	10	1.836	1470000	0.076645
08014071	4	10	2.448	1471300	0.1024
08014081	6	10	2.448	1469400	0.10235
08014091	8	10	2.448	1468800	0.10234
08014101	15	10	2.448	1468200	0.10232
08014111	20	10	2.448	1467500	0.1023
08014121	4	10	3.06	1478300	0.12732
08014131	6	10	3.06	1475900	0.12723
08014141	8	10	3.06	1475200	0.12721
08014151	15	10	3.06	1475200	0.12721
08014161	20	10	3.06	1475200	0.12721
08014171	4	10	3.673	1474100	0.15309
08014181	6	10	3.673	1472200	0.15301
08014191	8	10	3.673	1471600	0.15299
08014201	15	10	3.673	1471600	0.15299
08014211	20	10	3.673	1471600	0.15299
08014221	4	10	4.286	1479100	0.17845
08014231	6	10	4.286	1474100	0.17821
08014241	8	10	4.286	1473500	0.17818
08014251	15	10	4.286	1473500	0.17818
08014261	20	10	4.286	1474100	0.17821
08014272	0	2	1	1474200	0.042071
08014282	4	2	1	1469200	0.042015
08014292	4	4	1	1467900	0.042001
08014302	0	4	1	1466700	0.041987
08014312	0	2	2.5	1472700	0.10479
08014322	4	2	2.5	1469000	0.10468

Table continued on next page...

Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08014332	4	4	2.5	1468300	0.10466
08014342	0	4	2.5	1467700	0.10465
08014352	0	2	4.955	1475800	0.207
08014372	4	4	4.955	1472100	0.2068
08014382	0	4	4.955	1472100	0.2068
08014391	0	2	7.433	1478900	0.30952
08014401	4	2	7.433	1476400	0.30932
08014411	4	4	7.433	1475700	0.30926
08014421	0	4	7.433	1475100	0.30921
08014432	0	2	9.822	1479900	0.4092
08014442	4	2	9.822	1477400	0.40893
08014452	4	4	9.822	1476800	0.40886
08014462	0	4	9.65	1476200	0.40163
08019001	0	22.6	0.657	806460	0.050235
08019021	0	32.8	0.657	806110	0.050226
08019041	0	22.6	0.896	1093300	0.050415
08019061	0	32.8	0.896	1091900	0.050389
08019081	0	22.6	0.996	1458800	0.041135
08019101	0	32.8	0.996	1452000	0.04106
08019121	0	22.6	1.245	1441800	0.051627
08019141	0	32.8	1.245	1436300	0.05155
08019161	0	22.6	1.494	1445800	0.061348
08019181	0	32.8	1.494	1442100	0.061288
08019201	0	22.6	1.662	1909600	0.051532
08019221	0	32.8	1.662	1889700	0.051321
08019301	0	5.4	1.875	1471200	0.077355
08019321	0	10	1.875	1465500	0.077239
08019341	0	12.2	1.875	1463700	0.077201
08019361	0	13.8	1.875	1459100	0.07758
08019381	0	17.4	1.875	1456600	0.077529
08019401	0	22.6	1.875	1454700	0.07749
08019421	0	32.8	1.875	1453500	0.077464
08019441	0	5.4	0.488	1488200	0.020184
08019461	0	10	0.488	1478600	0.020133
08019481	0	12.2	0.488	1474200	0.020109
08019501	0	13.8	0.488	1468000	0.020218
08019521	0	17.4	0.488	1461100	0.020181
08019541	0	22.6	0.488	1462700	0.020183
08019561	0	32.8	0.488	1457200	0.020153
08411601	180	0.4	1.306	1462900	0.054025
08411611	180	6	1.306	1454800	0.053908
08411621	180	8	1.306	1453600	0.05389
08411631	180	10	1.306	1452300	0.053872
08411661	180	0.4	1.633	1456100	0.067466
08411671	180	6	1.633	1451200	0.067377
08411681	180	8	1.633	1449900	0.067354
08411691	180	10	1.633	1448700	0.067332
08411721	180	0.4	1.959	1447600	0.081167

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Sinusoidal test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08411731	180	6	1.959	1444000	0.081086
08411741	180	8	1.959	1442700	0.081059
08411751	180	10	1.959	1442100	0.081046
08412451	12	8	0.245	1472100	0.010301

Sinusoidal oscillatory cases for model 8, NACA 0025

Table 63: Ramp-up test cases for model 8, NACA 0025

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
08025001	0	4	38.529	1518100	0.0044839
08025011	0	4	70.727	1512200	0.0082185
08025021	0	4	75.105	1510200	0.0087228
08025031	0	4	71.785	1508300	0.008333
08025091	0	8	49.675	1511100	0.0057833
08025101	0	8	79.966	1505200	0.0092957
08025111	0	8	138.84	1503300	0.016131
08025121	0	7	149.75	1502000	0.017393
08025141	0	7	137.04	1507400	0.015898
08025151	0	7	143.25	1502200	0.016596
08025161	0	7	139.62	1500200	0.016167
08025171	0	7	145.47	1499000	0.016839
08025181	0	7	141.03	1497700	0.01632
08025191	0	12	49.217	1493700	0.0057583
08025201	0	12	90.202	1488000	0.010538
08025211	0	11	163.31	1486700	0.019072
08025221	0	11	196.26	1484800	0.022908
08025232	0	11	204.09	1561600	0.024027
08025242	0	11	198.44	1554700	0.023322
08025252	0	11	206.44	1553300	0.024254
08025262	0	11	198.48	1552000	0.02331
08025272	0	11	198.82	1549900	0.023338
08025281	0	30	51.429	1551700	0.0060483
08025291	0	30	100.6	1545600	0.011813
08025301	0	30	192.36	1543600	0.022576
08025311	0	30	260.59	1541500	0.030568
08025321	0	30	289.93	1539500	0.033992
08025331	-1	40	0.74722	1485400	8.6507e-05
08025341	-1	40	1.5093	1474900	0.00017472
08025351	-1	40	3.0242	1467400	0.0003494
08025361	-1	40	4.524	1472500	0.0005218
08025371	-1	40	6.0634	1466900	0.00069831
08025381	-1	40	7.56	1465700	0.00087038
08025391	-1	40	14.958	1465800	0.0017281
08025401	-1	40	30.144	1460200	0.0034773
08025411	-1	40	45.749	1458300	0.0052749
08025421	-1	40	60.715	1459800	0.0070304
08025431	-1	40	75.504	1454300	0.0087299
08025441	-1	40	91.37	1453100	0.010561
08025451	-1	40	101.01	1451200	0.011669
08025461	-1	40	115.62	1450000	0.013353
08025471	-1	40	130.12	1446300	0.015083
08025481	-1	40	144.11	1442700	0.016689
08025491	-1	40	158.82	1440900	0.018383
08025501	-1	40	171.71	1439000	0.019865
08025511	-1	40	185.87	1453700	0.021651
08025521	-1	40	194.65	1447600	0.022637
08025531	-1	40	208.4	1445700	0.024224

Table continued on next page...

Ramp-up test cases for model 8, NACA 0025

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
08025541	-1	40	222.57	1443900	0.025858
08025551	-1	40	235.93	1578500	0.028012
08025561	-1	40	248.13	1567900	0.029383
08025571	-1	40	260.65	1565800	0.03085
08025581	-1	40	271.43	1562400	0.032098
08025591	-1	40	277.73	1569500	0.032774
08025601	-1	40	291.2	1562600	0.034304
08025611	-1	39	301.09	1559800	0.035445
08025621	-1	39	307.59	1556300	0.036179
08025631	-1	40	30.048	1086900	0.0051909
08025641	-1	40	101.33	1085000	0.017493
08025651	-1	40	198.06	1084500	0.034186
08025661	-1	40	279.98	1084500	0.048325
08025671	-1	40	49.792	2064500	0.0043827
08025681	-1	40	101.01	2034000	0.0088395
08025691	-1	40	194.62	2025100	0.017003
08025701	-1	40	273.49	2019000	0.023865

Ramp-up cases for model 8, NACA 0025

Table 64: Ramp-down test cases for model 8, NACA 0025

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
08036331	39	-40	-0.72904	1456200	-8.5128e-05
08036341	39	-40	-1.4678	1448300	-0.00017081
08036351	39	-40	-2.9404	1441000	-0.0003415
08036361	39	-40	-4.4066	1442400	-0.0005125
08036371	39	-40	-5.8333	1437500	-0.00067754
08036381	39	-40	-7.319	1435700	-0.00084969
08036391	39	-40	-14.507	1463800	-0.0016852
08036401	39	-40	-29.14	1452000	-0.0033744
08036411	39	-40	-43.644	1449000	-0.0050498
08036421	39	-40	-57.212	1455500	-0.0066134
08036431	39	-40	-71.25	1451200	-0.0082266
08036441	39	-40	-83.575	1450000	-0.0096465
08036451	39	-40	-93.384	1448800	-0.010775
08036461	39	-40	-106.02	1446900	-0.012227
08036471	39	-40	-120.65	1460100	-0.014025
08036481	39	-40	-133.44	1454600	-0.015489
08036491	39	-40	-143.84	1452100	-0.016685
08036501	39	-40	-156.47	1450900	-0.018144
08036511	39	-40	-165.45	1463400	-0.019066
08036521	39	-40	-172.85	1459700	-0.019899
08036531	39	-40	-180.87	1457900	-0.020812
08036541	39	-40	-197.13	1456700	-0.022675
08036551	39	-40	-208.73	1455800	-0.024237
08036561	39	-40	-221.45	1450200	-0.025676
08036571	39	-40	-234.09	1449000	-0.027132
08036581	39	-40	-248.5	1447800	-0.028793
08036591	39	-40	-258.7	1454300	-0.029911
08036601	39	-40	-273.71	1450600	-0.031615
08036611	39	-40	-285.14	1448800	-0.032919
08036621	39	-40	-303.03	1447600	-0.034973
08036831	34	-39	-303.82	1518900	-0.035624
08036841	29	-34	-295.16	1514300	-0.034568
08036851	27	-32	-291.65	1510400	-0.034122
08036861	26	-31	-289.39	1516400	-0.033682
08036871	24	-29	-283.08	1580600	-0.033483
08036881	21	-26	-275.83	1511900	-0.032066
08036891	19	-24	-269.76	1509300	-0.031339
08036901	17	-22	-255.14	1506700	-0.029621
08036911	14	-19	-249.57	1505400	-0.028965
08036921	34	-39	-157.61	1528200	-0.018525
08036931	29	-34	-160.02	1516300	-0.01875
08036941	27	-32	-162.65	1512400	-0.019039
08036951	26	-31	-160.35	1521700	-0.018688

Ramp-down cases for model 8, NACA 0025

Table 65: VAWT motion test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08051011	0	5.4	0.657	806310	0.050124
08051031	0	10	0.657	805960	0.050116
08051051	0	12.2	0.657	806310	0.050124
08051071	0	13.8	0.657	805890	0.05018
08051091	0	17.4	0.657	805890	0.05018
08051111	0	5.4	0.896	1094200	0.050493
08051131	0	10	0.896	1092800	0.050467
08051151	0	12.2	0.896	1091900	0.05045
08051171	0	13.8	0.896	1093100	0.050393
08051191	0	17.4	0.896	1092200	0.050376
08051211	0	5.4	0.996	1463100	0.041282
08051231	0	10	0.996	1459300	0.041241
08051251	0	12.2	0.996	1456200	0.041207
08051271	0	13.8	0.996	1466300	0.040876
08051291	0	17.4	0.996	1463800	0.040848
08051311	0	5.4	1.245	1446400	0.051462
08051331	0	10	1.245	1443400	0.051419
08051351	0	12.2	1.245	1440900	0.051385
08051371	0	13.8	1.245	1440600	0.051488
08051391	0	17.4	1.245	1438200	0.051454
08051411	0	5.4	1.494	1441500	0.061745
08051431	0	10	1.494	1439100	0.061705
08051451	0	12.2	1.494	1436700	0.061664
08051471	0	13.8	1.494	1442800	0.061438
08051491	0	17.4	1.494	1441000	0.061408
08051511	0	5.4	1.662	1927100	0.051396
08051531	0	10	1.662	1918100	0.051302
08051551	0	12.2	1.662	1910900	0.051227
08051571	0	13.8	1.662	1906400	0.051317
08051591	0	17.4	1.662	1899200	0.051242
08059011	0	22.6	0.657	806110	0.050226
08059031	0	32.8	0.657	806110	0.050226
08059051	0	22.6	0.896	1092300	0.050398
08059071	0	32.8	0.896	1091400	0.050381
08059091	0	22.6	0.996	1453800	0.041081
08059111	0	32.8	0.996	1450700	0.041047
08059131	0	22.6	1.245	1438200	0.051576
08059151	0	32.8	1.245	1435100	0.051533
08059171	0	22.6	1.494	1443900	0.061318
08059191	0	32.8	1.494	1441500	0.061278
08059211	0	22.6	1.662	1895200	0.05138
08059231	0	32.8	1.662	1888100	0.051305
08059311	0	5.4	1.875	1466800	0.077265
08059331	0	10	1.875	1464300	0.077214
08059351	0	12.2	1.875	1463000	0.077188
08059371	0	13.8	1.875	1457800	0.077554
08059391	0	17.4	1.875	1456000	0.077516
08059411	0	22.6	1.875	1454100	0.077477

Table continued on next page...

VAWT motion test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
08059431	0	32.8	1.875	1452900	0.077451
08059451	0	5.4	0.488	1481200	0.020146
08059471	0	10	0.488	1476100	0.020119
08059491	0	12.2	0.488	1472300	0.020099
08059511	0	13.8	0.488	1468000	0.020218
08059531	0	17.4	0.488	1459300	0.020171
08059551	0	22.6	0.488	1459000	0.020163
08059571	0	32.8	0.488	1455300	0.020143

VAWT motion cases for model 8, NACA 0025

Table 66: Mulitiple streamtube VAWT motion test cases for model 8, NACA 0025

File name	Mean AoA [deg]	Tip Speed Ratio	Osc. Freq. [Hz]	Re	k
08071781	0	6	0.996	1470700	0.041227
08071791	0	4	0.996	1465000	0.041165
08071801	0	3.5	0.996	1462500	0.041138
08071811	0	3.25	0.996	1460700	0.041117
08071821	0	6	1.245	1467300	0.051346
08071831	0	4	1.245	1459800	0.051244
08071841	0	3.5	1.245	1459200	0.051235
08071851	0	3.25	1.245	1458000	0.051218
08071861	0	6	1.494	1458000	0.061569
08071871	0	4	1.494	1456200	0.061538
08071881	0	3.5	1.494	1454900	0.061518
08071891	0	3.25	1.494	1453700	0.061497

Mulitiple streamtube VAWT motion cases for model 8, NACA 0025

Table 67: Static test cases for model 9, NACA 0030

File name	Start AoA [deg]	Arc [deg]	Re
09000011	0	25	837390
09000012	0	24	805020
09000021	0	-24	839860
09000022	0	-24	807090
09000031	0	25	1144400
09000032	0	24	1092800
09000041	0	-24	1140900
09000042	0	-24	1088600
09000051	0	24	1546700
09000052	0	25	1516600
09000061	0	-24	1529800
09000062	0	-24	1504900
09000071	0	24	2036900
09000081	0	-24	2006300
09000091	180	25	790550
09400101	182	-26	788150
09400111	178	27	1122900
09400121	185	-30	1124400
09400131	175	30	1517900
09400141	185	-30	1504900
09400151	174	31	1922600

Static test cases for model 9, NACA 0030

Table 68: Unsteady static test cases for model 9, NACA 0030

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
09040171	0	-0.21	1473700
09040181	1	0.85	1468000
09040191	2	1.72	1467400
09040201	3	2.71	1466800
09040211	4	3.83	1466800
09040221	5	4.9	1466100
09040231	6	5.87	1465500
09040241	7	6.99	1464900
09040251	8	8.45	1464900
09040261	9	8.96	1464300
09040271	10	10.33	1463700
09040281	11	11.4	1463000
09040291	12	12.33	1463000
09040301	13	13.5	1462400
09040311	14	14.94	1464500
09040321	15	15.6	1462000
09040331	16	16.91	1461400
09040341	17	17.74	1460800
09040351	18	18.63	1460800
09040361	19	19.99	1459500

Table continued on next page...

Unsteady static test cases for model 9, NACA 0030

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
09040371	20	21.08	1459500
09040381	21	22.19	1458900
09040391	22	23.14	1458300
09040401	23	24.14	1457700
09040411	24	25.03	1457700
09040421	25	26.13	1457700
09040431	26	27.38	1457000
09040441	27	28.3	1457700
09040451	28	28.97	1466300
09040461	29	30.3	1461900
09040471	30	31.15	1461300
09040481	31	32.4	1460700
09040491	32	33.1	1460700
09040501	33	34.03	1460100
09040511	34	34.93	1459500
09040521	35	36.16	1458800
09040531	0	-0.13	1460300
09040541	1	0.52	1456000
09040551	2	1.38	1456000
09040561	3	2.5	1455300
09040571	4	3.46	1454700
09040581	5	4.6	1454700
09040591	6	5.58	1454100
09040601	7	6.76	1454100
09040611	8	7.78	1453500
09040621	9	9.33	1453500
09040631	10	10.3	1452900
09040641	11	11.4	1452300
09040651	12	12.44	1452300
09040661	13	13.43	1451700
09040671	14	14.64	1459000
09040681	15	15.55	1456500
09040691	16	16.71	1456500
09040701	17	17.76	1455300
09040711	18	18.81	1455300
09040721	19	19.99	1454700
09040731	20	21.2	1454700
09040741	21	22.37	1454000
09040751	22	23.37	1453400
09040761	23	24.16	1453400
09040771	24	25.23	1452800
09040781	25	26.23	1452800
09040791	26	27.51	1452800
09040801	27	28.4	1452800
09040811	28	28.99	1461700
09040821	29	30.03	1458000
09040831	30	31.14	1456700
09040841	31	32.23	1456700

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Unsteady static test cases for model 9, NACA 0030

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
09040851	32	33.14	1456100
09040861	33	34.24	1455500
09040871	34	35.02	1455500
09040881	35	36.07	1455500

Unsteady Static test cases for model 9, NACA 0030

Table 69: Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09011001	0	5.4	0.607	806700	0.049674
09011021	0	10	0.607	804890	0.049631
09011041	0	12.2	0.607	804170	0.049614
09011061	0	13.8	0.607	800410	0.049785
09011081	0	17.4	0.607	799690	0.049768
09011101	0	5.4	0.842	1095000	0.050259
09011121	0	10	0.842	1092100	0.050207
09011141	0	12.2	0.842	1090200	0.050172
09011161	0	13.8	0.842	1091200	0.050124
09011181	0	17.4	0.842	1088300	0.050073
09011201	0	5.4	0.97	1477600	0.040763
09011221	0	10	0.97	1469400	0.040674
09011241	0	12.2	0.97	1466200	0.04064
09011261	0	13.8	0.97	1466000	0.040671
09011281	0	17.4	0.97	1461000	0.040616
09011301	0	5.4	1.229	1480500	0.050721
09011321	0	10	1.229	1474800	0.050645
09011341	0	12.2	1.229	1472300	0.050611
09011361	0	13.8	1.229	1469300	0.050806
09011381	0	17.4	1.229	1464300	0.050739
09011401	0	5.4	1.494	1483600	0.061935
09011421	0	10	1.494	1476600	0.061822
09011441	0	12.2	1.494	1473500	0.06177
09011461	0	13.8	1.494	1477300	0.061681
09011481	0	17.4	1.494	1471700	0.061589
09011501	0	5.4	1.662	1902100	0.052761
09011521	0	10	1.662	1877400	0.052491
09011541	0	12.2	1.662	1871100	0.052423
09011561	0	13.8	1.662	1871800	0.052739
09011581	0	17.4	1.662	1854700	0.05255
09012001	10	4	0.245	1560400	0.01033
09012011	10	6	0.245	1542400	0.010284
09012021	10	8	0.245	1538300	0.010274
09012031	10	10	0.245	1535600	0.010267
09012041	10	4	0.612	1536700	0.025659
09012051	10	6	0.612	1530600	0.02562
09012061	10	8	0.612	1529200	0.025611
09012071	10	10	0.612	1527200	0.025598
09012081	10	4	1.224	1531300	0.051246
09012091	10	6	1.224	1525300	0.051167
09012101	10	8	1.224	1524000	0.051149
09012111	10	10	1.224	1522600	0.051132
09012121	10	4	1.836	1521300	0.076907
09012131	10	6	1.836	1516600	0.076815
09012141	10	8	1.836	1516000	0.076802
09012151	10	10	1.836	1514600	0.076776
09012161	10	4	2.448	1517900	0.10252
09012171	10	6	2.448	1513200	0.1024

Table continued on next page...

Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09012181	10	8	2.448	1513200	0.1024
09012191	10	10	2.448	1511900	0.10237
09012201	10	4	3.06	1519500	0.12771
09012211	10	6	3.06	1515500	0.12758
09012221	10	8	3.06	1514200	0.12754
09012231	10	10	3.06	1513500	0.12751
09012241	10	4	3.673	1518500	0.15302
09012251	10	6	3.673	1514600	0.15286
09012261	10	8	3.673	1513900	0.15283
09012271	10	10	3.673	1513200	0.15281
09012281	10	4	4.286	1517400	0.17836
09012291	10	6	4.286	1513500	0.17818
09012301	10	8	4.286	1512800	0.17815
09012311	10	10	4.286	1512800	0.17815
09012371	3	8	0.245	1510200	0.010281
09012381	4	8	0.245	1499700	0.010253
09012391	5	8	0.245	1497800	0.010248
09012401	6	8	0.245	1495200	0.010241
09012411	7	8	0.245	1493300	0.010236
09012421	8	8	0.245	1495400	0.010234
09012431	9	8	0.245	1490300	0.01022
09012441	11	8	0.245	1488400	0.010215
09012451	12	8	0.245	1486400	0.01021
09012461	13	8	0.245	1484500	0.010204
09012471	14	8	0.245	1487200	0.010216
09012481	15	8	0.245	1481500	0.010201
09012491	17	8	0.245	1479600	0.010196
09012501	20	8	0.245	1477700	0.010191
09012511	3	8	0.612	1480400	0.02547
09012521	4	8	0.612	1477200	0.025448
09012531	5	8	0.612	1476600	0.025444
09012541	6	8	0.612	1475400	0.025436
09012551	7	8	0.612	1474700	0.025431
09012561	8	8	0.612	1478900	0.025419
09012571	9	8	0.612	1475800	0.025398
09012581	11	8	0.612	1474500	0.02539
09012591	12	8	0.612	1473900	0.025386
09012601	13	8	0.612	1472600	0.025377
09012621	15	8	0.612	1468100	0.025455
09012631	17	8	0.612	1467500	0.025451
09012641	20	8	0.612	1466200	0.025442
09012651	3	8	1.224	1499600	0.050863
09012661	4	8	1.224	1491200	0.050752
09012671	5	8	1.224	1490500	0.050744
09012681	6	8	1.224	1489300	0.050727
09012691	7	8	1.224	1488000	0.05071
09012701	8	8	1.224	1487400	0.050882
09012711	9	8	1.224	1483600	0.050831

Table continued on next page...

Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09012721	11	8	1.224	1482300	0.050814
09012731	12	8	1.224	1481700	0.050806
09012741	13	8	1.224	1480400	0.050789
09012751	14	8	1.224	1479300	0.051008
09012761	15	8	1.224	1476100	0.050966
09012771	17	8	1.224	1474900	0.050949
09012781	20	8	1.224	1474200	0.05094
09012791	3	8	1.836	1483900	0.076232
09012801	4	8	1.836	1480000	0.076155
09012811	5	8	1.836	1479400	0.076143
09012821	6	8	1.836	1478800	0.07613
09012831	7	8	1.836	1478100	0.076117
09012841	8	8	1.836	1485000	0.076036
09012851	9	8	1.836	1481200	0.07596
09012861	11	8	1.836	1480600	0.075948
09012871	12	8	1.836	1479900	0.075935
09012881	13	8	1.836	1478700	0.07591
09012891	14	8	1.836	1483800	0.075919
09012901	15	8	1.836	1480000	0.075843
09012911	17	8	1.836	1479300	0.07583
09012921	20	8	1.836	1478700	0.075818
09012931	3	8	2.448	1483100	0.10109
09012941	4	8	2.448	1480600	0.10102
09012951	5	8	2.448	1479900	0.10101
09012961	6	8	2.448	1479900	0.10101
09012971	7	8	2.448	1479300	0.10099
09012981	8	8	2.448	1479900	0.10125
09012991	9	8	2.448	1477400	0.10118
09013001	11	8	2.448	1476800	0.10116
09013011	12	8	2.448	1476200	0.10115
09013021	13	8	2.448	1475500	0.10113
09013031	14	8	2.448	1474500	0.1015
09013041	15	8	2.448	1471400	0.10141
09013051	17	8	2.448	1471400	0.10141
09013061	20	8	2.448	1470800	0.1014
09013071	3	8	3.06	1475300	0.12741
09013081	4	8	3.06	1472800	0.12733
09013091	5	8	3.06	1472100	0.12731
09013101	6	8	3.06	1471500	0.12728
09013111	7	8	3.06	1471500	0.12728
09013121	8	8	3.06	1470900	0.12726
09013131	9	8	3.06	1470200	0.12724
09013141	11	8	3.06	1474300	0.12727
09013151	12	8	3.06	1471800	0.12718
09013161	13	8	3.06	1471800	0.12718
09013171	14	8	3.06	1470600	0.12714
09013181	15	8	3.06	1469900	0.12712
09013191	17	8	3.06	1469900	0.12712

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Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09013201	20	8	3.06	1469300	0.1271
09013211	3	8	3.673	1478600	0.1535
09013221	4	8	3.673	1473500	0.1533
09013231	5	8	3.673	1473500	0.1533
09013241	6	8	3.673	1472900	0.15327
09013251	7	8	3.673	1472900	0.15327
09013261	8	8	3.673	1472300	0.15325
09013271	9	8	3.673	1472300	0.15325
09013281	11	8	3.673	1482900	0.1526
09013291	12	8	3.673	1479100	0.15245
09013301	13	8	3.673	1478500	0.15242
09013311	14	8	3.673	1478500	0.15242
09013321	15	8	3.673	1477800	0.1524
09013331	17	8	3.673	1477200	0.15237
09013341	20	8	3.673	1477200	0.15237
09013351	3	8	4.286	1486000	0.17962
09013361	4	8	4.286	1477100	0.1792
09013371	5	8	4.286	1476400	0.17917
09013381	6	8	4.286	1475800	0.17914
09013391	7	8	4.286	1475800	0.17914
09013401	8	8	4.286	1475200	0.17911
09013411	9	8	4.286	1474500	0.17908
09013421	11	8	4.286	1477200	0.17929
09013431	12	8	4.286	1473400	0.17911
09013441	13	8	4.286	1472800	0.17908
09013451	14	8	4.286	1472100	0.17905
09013461	15	8	4.286	1472100	0.17905
09013471	17	8	4.286	1472100	0.17905
09013481	20	8	4.286	1471500	0.17902
09013631	7	8	1.632	1012800	0.10218
09013641	8	8	1.632	1011900	0.10215
09013651	9	8	1.632	1011900	0.10215
09013661	10	8	1.632	1011500	0.10213
09013671	11	8	1.632	1011500	0.10213
09013681	12	8	1.632	1011500	0.10213
09013691	13	8	1.632	1010800	0.10226
09013701	14	8	1.632	1010800	0.10226
09013711	15	8	1.632	1010800	0.10226
09013721	17	8	1.632	1010400	0.10224
09013731	20	8	1.632	1010400	0.10224
09013741	7	8	3.265	1949500	0.10178
09013751	8	8	3.265	1929800	0.10138
09013761	9	8	3.265	1929000	0.10136
09013771	10	8	3.265	1927400	0.10133
09013781	11	8	3.265	1925800	0.1013
09013791	12	8	3.265	1925000	0.10128
09013811	13	8	3.257	1915000	0.10228
09013821	14	8	3.265	1899800	0.10221

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Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09013831	15	8	3.265	1899800	0.10221
09013841	17	8	3.265	1898200	0.10217
09013851	20	8	3.265	1896600	0.10214
09013871	4	10	0.245	1468600	0.010181
09013881	6	10	0.245	1463000	0.010166
09013891	8	10	0.245	1461100	0.010161
09013901	15	10	0.245	1459300	0.010156
09013911	20	10	0.245	1458000	0.010152
09013921	4	10	0.612	1464900	0.025391
09013931	6	10	0.612	1458700	0.025349
09013941	8	10	0.612	1458100	0.025345
09013951	15	10	0.612	1456800	0.025336
09013961	20	10	0.612	1456200	0.025332
09013971	4	10	1.224	1474800	0.05086
09013981	6	10	1.224	1470400	0.050801
09013991	8	10	1.224	1469800	0.050792
09014001	15	10	1.224	1468500	0.050776
09014011	20	10	1.224	1467900	0.050767
09014021	4	10	1.836	1471100	0.076257
09014031	6	10	1.836	1467900	0.076193
09014041	8	10	1.836	1467300	0.076181
09014051	15	10	1.836	1466100	0.076155
09014061	20	10	1.836	1466100	0.076155
09014071	4	10	2.448	1482500	0.10149
09014081	6	10	2.448	1479300	0.10141
09014091	8	10	2.448	1478700	0.10139
09014101	15	10	2.448	1478100	0.10138
09014111	20	10	2.448	1477400	0.10136
09014121	4	10	3.06	1481900	0.12646
09014131	6	10	3.06	1479400	0.12638
09014141	8	10	3.06	1479400	0.12638
09014151	15	10	3.06	1478800	0.12636
09014161	20	10	3.06	1478800	0.12636
09014171	4	10	3.673	1484200	0.1521
09014181	6	10	3.673	1481700	0.152
09014191	8	10	3.673	1482300	0.15203
09014201	15	10	3.673	1481700	0.152
09014211	20	10	3.673	1481100	0.15198
09014221	4	10	4.286	1486800	0.17803
09014231	6	10	4.286	1482300	0.17782
09014241	8	10	4.286	1482300	0.17782
09014251	15	10	4.286	1481700	0.17779
09014261	20	10	4.286	1481700	0.17779
09014272	0	2	1	1464000	0.04176
09014282	4	2	1	1458400	0.041698
09014292	4	4	1	1457800	0.041691
09014302	0	4	1	1458400	0.041698
09014312	0	2	2.5	1463400	0.10407

Table continued on next page...

Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09014322	4	2	2.5	1460300	0.10399
09014332	4	4	2.5	1459600	0.10397
09014342	0	4	2.5	1458400	0.10394
09014352	0	2	4.955	1465700	0.20582
09014372	4	4	4.955	1461400	0.20558
09014382	0	4	4.955	1460800	0.20555
09014391	0	2	7.433	1467000	0.3083
09014401	4	2	7.433	1463300	0.308
09014411	4	4	7.433	1463300	0.308
09014421	0	4	7.433	1462000	0.30789
09014432	0	2	9.822	1472400	0.40566
09014442	4	2	9.822	1468600	0.40526
09014452	4	4	9.822	1468600	0.40526
09014462	0	4	9.822	1467400	0.40513
09019001	0	22.6	0.607	793250	0.050109
09019021	0	32.8	0.607	792540	0.050092
09019041	0	22.6	0.842	1091000	0.04998
09019061	0	32.8	0.842	1087100	0.049911
09019081	0	22.6	0.97	1466800	0.040503
09019101	0	32.8	0.97	1461800	0.040449
09019121	0	22.6	1.229	1465200	0.050828
09019141	0	32.8	1.229	1459600	0.050752
09019161	0	22.6	1.494	1471100	0.061648
09019181	0	32.8	1.494	1466100	0.061566
09019201	0	22.6	1.662	1861200	0.05273
09019221	0	32.8	1.662	1844300	0.052541
09019301	0	5.4	1.875	1466500	0.077385
09019321	0	10	1.875	1462100	0.077295
09019341	0	12.2	1.875	1459700	0.077244
09019361	0	13.8	1.875	1462900	0.077253
09019381	0	17.4	1.875	1458000	0.077151
09019401	0	22.6	1.875	1457400	0.077409
09019421	0	32.8	1.875	1453100	0.07732
09019441	0	5.4	0.488	1484200	0.02059
09019461	0	10	0.488	1476500	0.020549
09019481	0	12.2	0.488	1472600	0.020528
09019501	0	13.8	0.488	1476700	0.020483
09019521	0	17.4	0.488	1470400	0.020449
09019541	0	22.6	0.488	1468300	0.02049
09019561	0	32.8	0.488	1462700	0.020459
09411601	180	0.4	1.306	1483200	0.055101
09411611	180	6	1.306	1478700	0.055036
09411621	180	8	1.306	1477400	0.055018
09411631	180	10	1.306	1476200	0.054999
09411641	180	12	1.306	1475500	0.05499
09411651	180	14	1.306	1474300	0.054971
09411661	180	0.4	1.633	1480600	0.068647
09411671	180	6	1.633	1476800	0.068578

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Sinusoidal test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09411681	180	8	1.633	1475500	0.068555
09411691	180	10	1.633	1474900	0.068543
09411701	180	12	1.633	1474200	0.068532
09411711	180	14	1.633	1473600	0.06852
09411721	180	0.4	1.959	1488800	0.081601
09411731	180	6	1.959	1485000	0.081519
09411741	180	8	1.959	1483700	0.081492
09411751	180	10	1.959	1483100	0.081478
09411761	180	12	1.959	1482400	0.081465
09411771	180	14	1.959	1482400	0.081465

Sinusoidal oscillatory cases for model 9, NACA 0030

Table 70: Ramp-up test cases for model 9, NACA 0030

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
09025001	0	4	42.526	1462100	0.0048671
09025011	0	4	73.314	1459000	0.0083839
09025021	0	4	85.92	1457100	0.0098207
09025031	0	4	95.985	1455900	0.010967
09025041	0	4	38.093	1462400	0.0043742
09025051	0	4	81.245	1456200	0.009314
09025091	0	8	49.268	1459800	0.0056376
09025101	0	8	82.215	1455500	0.0093969
09025111	0	8	140.54	1454300	0.016058
09025121	0	7	149.06	1453000	0.017026
09025141	0	7	159.09	1452500	0.018231
09025151	0	7	152.94	1449500	0.017512
09025161	0	7	154.16	1448300	0.017646
09025171	0	7	157.99	1447000	0.018078
09025181	0	7	160.58	1446400	0.018372
09025191	0	12	49.207	1464100	0.0056671
09025201	0	12	90.435	1461000	0.010407
09025211	0	11	157.48	1459800	0.018116
09025221	0	11	194.65	1458600	0.022384
09025231	0	12	201.5	1459800	0.023194
09025241	0	11	199.19	1456100	0.022905
09025251	0	11	205.84	1454800	0.023662
09025261	0	11	204.59	1453600	0.02351
09025271	0	11	203.64	1452400	0.023394
09025281	0	30	49.892	1454800	0.0057387
09025291	0	30	100.75	1451100	0.011577
09025301	0	30	189.54	1448700	0.021766
09025311	0	30	264.62	1448100	0.030382
09025321	0	30	289.42	1446200	0.033213
09025331	-1	40	0.74343	1530800	8.5943e-05
09025341	-1	40	1.4932	1500300	0.00017366
09025351	-1	40	2.9788	1490300	0.00034666
09025361	-1	40	4.486	1517500	0.00051583
09025371	-1	40	5.9824	1506300	0.0006859
09025381	-1	40	7.4825	1502300	0.00085702
09025391	-1	40	14.923	1510500	0.001701
09025401	-1	40	29.935	1504000	0.0034064
09025411	-1	40	44.717	1501400	0.005085
09025421	-1	40	60.009	1506100	0.0069185
09025431	-1	40	75.213	1498300	0.0086537
09025441	-1	40	91.018	1495000	0.010463
09025451	-1	40	100.79	1492400	0.011579
09025461	-1	40	115.74	1489800	0.013287
09025471	-1	40	129.65	1453300	0.014688
09025481	-1	40	143.96	1450800	0.016299
09025491	-1	40	158.74	1449000	0.017963
09025501	-1	39	170.81	1447800	0.019323
09025511	-1	39	185.36	1447900	0.021041

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Ramp-up test cases for model 9, NACA 0030

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
09025521	-1	39	192.98	1444200	0.021885
09025531	-1	39	206.95	1443000	0.023461
09025541	-1	39	220.35	1441800	0.024972
09025551	-1	39	235.74	1436100	0.026901
09025561	-1	39	247.2	1433700	0.02819
09025571	-1	39	259.66	1432500	0.029601
09025581	-1	39	272.86	1430600	0.031091
09025591	-1	39	280.63	1439700	0.031868
09025601	-1	40	290.52	1436700	0.032964
09025611	-1	39	303	1435500	0.034369
09025621	-1	39	311.35	1434300	0.035304
09025631	-1	40	29.979	966230	0.0050667
09025641	-1	40	99.995	967450	0.016908
09025651	-1	40	192.97	967860	0.032635
09025661	-1	40	279.22	967860	0.047222
09025671	-1	40	29.986	1896000	0.002607
09025681	-1	40	99.877	1873000	0.0086421
09025691	-1	39	194.53	1866000	0.016808
09025701	-1	39	283.31	1861300	0.024454

Ramp-up cases for model 9, NACA 0030

Table 71: Ramp-down test cases for model 9, NACA 0030

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
09036331	39	-40	-0.72405	1491300	-8.3194e-05
09036341	39	-40	-1.4342	1490700	-0.00016318
09036351	39	-40	-2.8805	1480500	-0.00032685
09036361	39	-40	-4.3414	1469600	-0.00049685
09036371	39	-40	-5.727	1464000	-0.00065444
09036381	39	-40	-7.186	1461500	-0.00082062
09036391	39	-40	-14.388	1457200	-0.0016528
09036401	39	-40	-28.68	1452300	-0.0032901
09036411	39	-40	-42.536	1451000	-0.004878
09036421	39	-40	-56.29	1453400	-0.0064523
09036431	39	-40	-69.678	1450300	-0.0079803
09036441	39	-40	-83.434	1448500	-0.0095511
09036451	39	-40	-91.975	1447300	-0.010525
09036461	39	-40	-102.64	1446000	-0.011742
09036471	39	-40	-117.65	1458000	-0.013531
09036481	39	-40	-132.68	1452400	-0.015237
09036491	39	-40	-144.79	1450600	-0.01662
09036501	39	-40	-155.6	1448700	-0.017852
09036511	39	-40	-167.78	1462200	-0.019117
09036521	39	-40	-172.6	1457200	-0.01964
09036531	39	-40	-183.65	1455900	-0.020891
09036541	39	-40	-193.66	1454700	-0.022022
09036551	39	-40	-207.26	1444700	-0.023761
09036561	39	-40	-217.75	1442800	-0.024951
09036571	39	-40	-233.67	1441000	-0.026762
09036581	39	-40	-250.46	1439200	-0.028671
09036591	39	-40	-257.65	1455800	-0.029226
09036601	39	-40	-268.4	1453300	-0.030425
09036611	39	-40	-288.36	1451500	-0.032671
09036621	39	-40	-298.46	1450300	-0.033804
09036631	39	-40	-28.537	968480	-0.00484
09036651	39	-40	-170.59	969710	-0.028947
09036661	39	-40	-264.05	969300	-0.044799
09036861	29	-39	-301.15	1443500	-0.034523
09036871	29	-39	-164.34	1436800	-0.018805
09036881	29	-39	-49.357	1435600	-0.005646
09036891	29	-29	-281.63	1447800	-0.032021
09036901	29	-29	-157.4	1445300	-0.017884
09036911	29	-29	-49.28	1443500	-0.0055966
09036921	29	-25	-272.48	1440500	-0.030919
09036931	29	-25	-151.64	1439300	-0.017201
09036941	29	-25	-48.022	1438000	-0.0054456
09036951	30	-20	-261.35	1436800	-0.029627
09036961	30	-20	-145.79	1436200	-0.016524
09036971	30	-20	-48.438	1435600	-0.0054892
09036981	30	-15	-241.53	1439700	-0.027422
09036991	30	-15	-146.05	1436700	-0.016568
09037001	30	-15	-46.784	1434900	-0.0053046

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Ramp-down test cases for model 9, NACA 0030

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
09037011	31	-11	-210.06	1434300	-0.023814
09037021	31	-11	-154.72	1432500	-0.017532
09037031	31	-11	-47.397	1431300	-0.0053689
09037041	30	-5	-127.83	1431300	-0.01448
09037051	30	-5	-110.85	1430100	-0.012552
09037061	30	-5	-40.593	1429500	-0.0045959

Ramp-down cases for model 9, NACA 0030

Table 72: VAWT motion test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09051011	0	5.4	0.607	805250	0.04964
09051031	0	10	0.607	804530	0.049622
09051051	0	12.2	0.607	803810	0.049605
09051071	0	13.8	0.607	800050	0.049776
09051091	0	17.4	0.607	799330	0.049759
09051111	0	5.4	0.842	1092600	0.050216
09051131	0	10	0.842	1091100	0.05019
09051151	0	12.2	0.842	1089700	0.050164
09051171	0	13.8	0.842	1089300	0.05009
09051211	0	5.4	0.97	1471300	0.040695
09051231	0	10	0.97	1467500	0.040654
09051251	0	12.2	0.97	1464300	0.04062
09051271	0	13.8	0.97	1462900	0.040637
09051291	0	17.4	0.97	1459700	0.040603
09051311	0	5.4	1.229	1476700	0.05067
09051331	0	10	1.229	1473600	0.050628
09051351	0	12.2	1.229	1471100	0.050595
09051371	0	13.8	1.229	1466200	0.050764
09051391	0	17.4	1.229	1463100	0.050722
09051411	0	5.4	1.494	1477900	0.061842
09051431	0	10	1.494	1474700	0.061791
09051451	0	12.2	1.494	1471600	0.061739
09051471	0	13.8	1.494	1472900	0.06161
09051491	0	17.4	1.494	1470400	0.061569
09051511	0	5.4	1.662	1881300	0.052535
09051531	0	10	1.662	1874200	0.052457
09051551	0	12.2	1.662	1868000	0.052388
09051571	0	13.8	1.662	1858500	0.052593
09051591	0	17.4	1.662	1852400	0.052524
09059011	0	22.6	0.607	792900	0.050101
09059031	0	32.8	0.607	792190	0.050083
09059051	0	22.6	0.842	1088600	0.049937
09059071	0	32.8	0.842	1086600	0.049903
09059091	0	22.6	0.97	1463000	0.040462
09059111	0	32.8	0.97	1459900	0.040429
09059131	0	22.6	1.229	1461500	0.050777
09059151	0	32.8	1.229	1459000	0.050743
09059171	0	22.6	1.494	1468000	0.061596
09059191	0	32.8	1.494	1465500	0.061556
09059211	0	22.6	1.662	1848100	0.052584
09059231	0	32.8	1.662	1841200	0.052507
09059311	0	5.4	1.875	1463400	0.077321
09059331	0	10	1.875	1460900	0.077269
09059351	0	12.2	1.875	1459000	0.077231
09059371	0	13.8	1.875	1459800	0.077189
09059391	0	17.4	1.875	1457400	0.077138
09059411	0	22.6	1.875	1453700	0.077332
09059431	0	32.8	1.875	1451900	0.077294

VAWT motion test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
09059451	0	5.4	0.488	1479000	0.020563
09059471	0	10	0.488	1474500	0.020538
09059491	0	12.2	0.488	1470700	0.020518
09059511	0	13.8	0.488	1472300	0.020459
09059531	0	17.4	0.488	1468500	0.020439
09059551	0	22.6	0.488	1464500	0.020469
09059571	0	32.8	0.488	1460800	0.020449

VAWT motion cases for model 9, NACA 0030

Table 73: Mulitiple streamtube VAWT motion test cases for model 9, NACA 0030

File name	Mean AoA [deg]	Tip Speed Ratio	Osc. Freq. [Hz]	Re	k
09071801	0	3.5	0.996	1444000	0.04085
09071811	0	3.25	0.996	1442800	0.040837
09071821	0	6	1.245	1442100	0.051219
09071831	0	4	1.245	1439100	0.051177
09071841	0	3.5	1.245	1437900	0.051161
09071851	0	3.25	1.245	1436700	0.051144
09071861	0	6	1.494	1440100	0.061439
09071871	0	4	1.494	1437100	0.061389
09071881	0	3.5	1.494	1435900	0.061369
09071891	0	3.25	1.494	1434700	0.061349
09471781	0	6	0.996	1451900	0.040938

Mulitiple streamtube VAWT motion cases for model 9, NACA 0030

Table 74: Static test cases for model 11, NACA 0012

File name	Start AoA [deg]	Arc [deg]	Re
11000011	-5	30	1525000
11000021	-5	30	1530900
11000031	-5	30	993410
11000041	-5	30	2050000
11000051	-5	30	1515200
11000061	-2	30	1505100
11000071	-2	30	1509700
11000221	-2	28	1551300
11000851	-2	28	1472100
11000861	-27	28	1522300
11001341	-27	28	1423800
11001351	-5	28	1536900
11001731	-5	30	1519000
11001741	-5	30	1461200
11001751	-5	30	1973000
11001761	-5	30	1569700
11001851	-5	30	1510100
11001861	-5	30	1008100
11001951	-5	30	1502100
11002871	-5	30	1500400
11002881	-5	30	1528100
11002971	-5	30	1475800
11003201	-5	30	1450400
11003361	-5	30	1460500
11003751	-5	30	1466600
11004131	-5	30	979960
11004301	-5	30	1892100
11004471	-5	30	1428800

Static test cases for model 11, NACA 0012

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Table 75: Sinusoidal test cases for model 11, NACA 0012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
11011962	10	4	0.233	1488300	0.0097753
11011972	10	6	0.233	1483900	0.0097638
11011982	10	8	0.233	1478800	0.0097507
11011992	10	10	0.233	1476900	0.0097458
11012002	10	4	0.582	1449200	0.024632
11012012	10	6	0.582	1447300	0.02462
11012022	10	8	0.582	1447300	0.02462
11012032	10	10	0.582	1446100	0.024612
11012052	10	4	1.165	1422400	0.050386
11012062	10	6	1.165	1417500	0.050319
11012072	10	8	1.165	1415700	0.050294
11012082	10	10	1.165	1414500	0.050277
11012092	10	4	1.747	1455600	0.073263
11012102	10	6	1.747	1453800	0.073227
11012112	10	8	1.747	1452500	0.073202
11012122	10	10	1.747	1451300	0.073178
11012132	10	4	2.33	1433700	0.099031
11012142	10	6	2.33	1432500	0.098998
11012152	10	8	2.33	1431300	0.098965
11012162	10	10	2.33	1430100	0.098932
11012172	10	4	2.912	1435700	0.12382
11012182	10	6	2.912	1432600	0.12371
11012192	10	8	2.912	1431400	0.12367
11012202	10	10	2.912	1430200	0.12363
11012212	10	4	3.496	1431700	0.14888
11012222	10	6	3.496	1431100	0.14886
11012232	10	8	3.496	1429900	0.14881
11012242	10	10	3.496	1429300	0.14878
11012252	10	4	4.077	1431000	0.17412
11012262	10	6	4.077	1428600	0.17401
11012272	10	8	4.077	1427400	0.17395
11012282	10	10	4.077	1426200	0.17389
11012302	4	10	0.233	1429000	0.0099713
11012312	6	10	0.233	1424100	0.009958
11012322	8	10	0.233	1421700	0.0099514
11012332	15	10	0.233	1419300	0.0099448
11012342	20	10	0.233	1417500	0.0099399
11012352	4	10	0.582	1486000	0.02476
11012362	6	10	0.582	1483400	0.024744
11012372	8	10	0.582	1482800	0.024739
11012382	15	10	0.582	1481500	0.024731
11012392	20	10	0.582	1479600	0.024719
11012402	4	10	1.165	1476100	0.049715
11012412	6	10	1.165	1473600	0.049682
11012422	8	10	1.165	1472300	0.049665
11012432	15	10	1.165	1471000	0.049648
11012442	20	10	1.165	1469700	0.049632
11012622	4	10	1.747	1463500	0.07524

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Sinusoidal test cases for model 11, NACA 0012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
11012632	6	10	1.747	1462200	0.075215
11012642	8	10	1.747	1460900	0.075189
11012652	15	10	1.747	1458400	0.075139
11012662	20	10	1.747	1457200	0.075113
11012672	4	10	2.33	1460000	0.10065
11012682	6	10	2.33	1456800	0.10057
11012692	8	10	2.33	1454900	0.10052
11012702	15	10	2.33	1453700	0.10048
11012712	20	10	2.33	1452400	0.10045
11012722	4	10	2.912	1467500	0.12447
11012732	6	10	2.912	1465000	0.12439
11012742	8	10	2.912	1463700	0.12435
11012752	15	10	2.912	1462400	0.1243
11012762	20	10	2.912	1460600	0.12424
11012772	4	10	3.496	1449000	0.1517
11012782	6	10	3.496	1445900	0.15157
11012792	8	10	3.496	1444000	0.1515
11012802	15	10	3.496	1442800	0.15145
11012812	20	10	3.496	1442200	0.15142
11012822	4	10	4.077	1468300	0.17344
11012832	6	10	4.077	1465800	0.17332
11012842	8	10	4.077	1465200	0.17329
11012852	15	10	4.077	1463300	0.17321
11012862	20	10	4.077	1462700	0.17318
11012891	3	8	0.233	1453700	0.010036
11012901	4	8	0.233	1450500	0.010028
11012911	5	8	0.233	1448100	0.010021
11012921	6	8	0.233	1442500	0.010006
11012931	7	8	0.233	1441200	0.010002
11012941	8	8	0.233	1439400	0.0099974
11012951	9	8	0.233	1438200	0.0099941
11012961	11	8	0.233	1436300	0.0099891
11012981	12	8	0.233	1448500	0.010016
11012991	13	8	0.233	1443500	0.010002
11013001	14	8	0.233	1440400	0.0099936
11013011	15	8	0.233	1438600	0.0099886
11013021	16	8	0.233	1436100	0.0099819
11013031	17	8	0.233	1434300	0.0099769
11013041	20	8	0.233	1432400	0.0099719
11013051	3	8	0.582	1423800	0.02519
11013061	4	8	0.582	1421400	0.025173
11013071	5	8	0.582	1419000	0.025157
11013081	6	8	0.582	1418300	0.025152
11013091	7	8	0.582	1417100	0.025144
11013101	8	8	0.582	1416500	0.02514
11013111	9	8	0.582	1415900	0.025136
11013121	11	8	0.582	1414700	0.025127
11013131	12	8	0.582	1428600	0.024986

Table continued on next page...

Sinusoidal test cases for model 11, NACA 0012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
11013141	13	8	0.582	1426200	0.02497
11013151	14	8	0.582	1424300	0.024957
11013161	15	8	0.582	1422500	0.024945
11013171	16	8	0.582	1421900	0.024941
11013181	17	8	0.582	1421300	0.024937
11013191	20	8	0.582	1420100	0.024928
11013211	3	8	1.165	1450200	0.049494
11013221	4	8	1.165	1445200	0.049427
11013231	5	8	1.165	1442700	0.049394
11013241	6	8	1.165	1442100	0.049386
11013251	7	8	1.165	1440800	0.049369
11013261	8	8	1.165	1440200	0.049361
11013271	9	8	1.165	1439000	0.049344
11013281	11	8	1.165	1438400	0.049336
11013291	12	8	1.165	1405600	0.050605
11013301	13	8	1.165	1402600	0.050563
11013311	14	8	1.165	1401400	0.050546
11013321	15	8	1.165	1400200	0.050529
11013331	16	8	1.165	1399000	0.050512
11013341	17	8	1.165	1397800	0.050495
11013351	20	8	1.165	1397200	0.050487
11013371	3	8	1.747	1456500	0.074176
11013381	4	8	1.747	1453900	0.074126
11013391	5	8	1.747	1452100	0.074088
11013401	6	8	1.747	1450800	0.074063
11013411	7	8	1.747	1449600	0.074038
11013421	8	8	1.747	1448900	0.074026
11013431	9	8	1.747	1447700	0.074001
11013441	11	8	1.747	1446400	0.073976
11013451	12	8	1.747	1407200	0.076173
11013461	13	8	1.747	1404800	0.076122
11013471	15	8	1.747	1401800	0.076059
11013491	16	8	1.747	1400600	0.076033
11013501	17	8	1.747	1399400	0.076008
11013511	20	8	1.747	1398800	0.075995
11013521	3	8	2.33	1420100	0.10068
11013531	4	8	2.33	1417000	0.10059
11013541	5	8	2.33	1415800	0.10056
11013551	6	8	2.33	1414600	0.10053
11013561	7	8	2.33	1414000	0.10051
11013571	8	8	2.33	1412800	0.10047
11013581	9	8	2.33	1412200	0.10046
11013591	11	8	2.33	1410900	0.10042
11013601	12	8	2.33	1415100	0.10025
11013611	13	8	2.33	1413300	0.1002
11013621	14	8	2.33	1412100	0.10016
11013631	15	8	2.33	1411500	0.10015
11013641	16	8	2.33	1410300	0.10011

Table continued on next page...

Sinusoidal test cases for model 11, NACA 0012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
11013651	17	8	2.33	1409700	0.1001
11013661	20	8	2.33	1408500	0.10006
11013671	3	8	2.33	1406100	0.10113
11013681	4	8	2.912	1403100	0.12628
11013691	5	8	2.912	1402500	0.12626
11013701	6	8	2.912	1401300	0.12622
11013711	7	8	2.912	1399500	0.12616
11013721	8	8	2.912	1397700	0.1261
11013731	9	8	2.912	1397700	0.1261
11013741	11	8	2.912	1397100	0.12607
11013761	12	8	2.912	1458400	0.12461
11013771	13	8	2.912	1455200	0.12451
11013781	14	8	2.912	1454000	0.12447
11013791	15	8	2.912	1453300	0.12445
11013801	16	8	2.912	1451400	0.12438
11013811	17	8	2.912	1450800	0.12436
11013821	20	8	2.912	1450200	0.12434
11013831	3	8	3.496	1456700	0.15078
11013841	4	8	3.496	1454800	0.1507
11013851	5	8	3.496	1453500	0.15065
11013861	6	8	3.496	1452900	0.15063
11013871	7	8	3.496	1451000	0.15055
11013881	8	8	3.496	1450400	0.15053
11013891	9	8	3.496	1449100	0.15047
11013901	11	8	3.496	1447800	0.15042
11013911	12	8	3.496	1462800	0.14915
11013921	13	8	3.496	1460300	0.14905
11013931	14	8	3.496	1459000	0.149
11013941	15	8	3.496	1457100	0.14892
11013951	16	8	3.496	1456500	0.1489
11013961	17	8	3.496	1455200	0.14885
11013971	20	8	3.496	1454600	0.14882
11013981	3	8	4.077	1449100	0.17495
11013991	4	8	4.077	1447200	0.17486
11014001	5	8	4.077	1446000	0.1748
11014011	6	8	4.077	1444700	0.17474
11014021	7	8	4.077	1443500	0.17468
11014031	8	8	4.077	1442900	0.17465
11014041	9	8	4.077	1442200	0.17462
11014051	11	8	4.077	1441000	0.17457
11014061	12	8	4.077	1445500	0.17402
11014071	13	8	4.077	1444200	0.17396
11014081	14	8	4.077	1443000	0.17391
11014091	15	8	4.077	1441800	0.17385
11014101	16	8	4.077	1441100	0.17382
11014111	17	8	4.077	1439900	0.17376
11014121	20	8	4.077	1438700	0.1737
11014141	3	8	1.557	974020	0.10013

Table continued on next page...

Sinusoidal test cases for model 11, NACA 0012

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
11014151	4	8	1.557	973590	0.10011
11014161	5	8	1.557	973170	0.10009
11014171	6	8	1.577	973170	0.10138
11014181	7	8	1.557	972190	0.09965
11014191	8	8	1.557	972750	0.10008
11014201	9	8	1.557	972320	0.10006
11014211	10	8	1.557	971900	0.10004
11014221	11	8	1.557	971540	0.10008
11014231	12	8	1.557	970690	0.10004
11014241	13	8	1.557	970690	0.10004
11014251	14	8	1.577	970270	0.10131
11014261	15	8	1.557	970270	0.10003
11014271	16	8	1.557	969850	0.10001
11014281	17	8	1.557	969850	0.10001
11014291	20	8	1.557	969430	0.099994
11014311	3	8	3.103	1873600	0.099662
11014321	4	8	3.103	1868800	0.099563
11014331	5	8	3.103	1866500	0.099514
11014341	6	8	3.103	1864900	0.099481
11014351	7	8	3.103	1862500	0.099432
11014361	8	8	3.103	1860200	0.099383
11014371	9	8	3.103	1857800	0.099333
11014381	10	8	3.103	1855500	0.099284
11014391	11	8	3.103	1837500	0.10067
11014401	12	8	3.103	1832800	0.10057
11014411	13	8	3.103	1830500	0.10052
11014421	14	8	3.103	1827500	0.10045
11014431	15	8	3.103	1825900	0.10042
11014441	16	8	3.103	1823600	0.10037
11014451	17	8	3.103	1822100	0.10034
11014461	20	8	3.103	1819800	0.10029

Sinusoidal oscillatory cases for model 11, NACA 0012

Table 76: Ramp-up test cases for model 11, NACA 0012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
11020082	-1	40	356.95	1502800	0.041488
11020092	-1	40	327.98	1495000	0.038044
11020102	-1	40	339.76	1491700	0.039377
11020112	-1	40	301.08	1490500	0.034882
11020122	-1	40	311.22	1487900	0.036033
11020132	-1	40	276.05	1484100	0.031929
11020142	-1	40	278.45	1465100	0.032858
11020152	-1	40	244.31	1459500	0.028786
11020162	-1	40	241.39	1457000	0.028422
11020172	-1	40	212.07	1453200	0.024945
11020182	-1	40	210.54	1486300	0.02452
11020192	-1	40	189.24	1481200	0.022009
11020202	-1	41	183.9	1478600	0.021374
11020212	-1	40	159.61	1476700	0.018542
11020232	-1	41	153.77	1464400	0.018046
11020242	-1	40	132.81	1461900	0.015575
11020252	-1	40	124.18	1457500	0.014546
11020262	-1	40	99.015	1455600	0.011593
11020272	-1	40	94.496	1485900	0.011027
11020282	-1	40	77.816	1478900	0.0090636
11020292	-1	40	58.21	1476400	0.0067755
11020302	-1	40	45.333	1473800	0.0052731
11020312	-1	40	27.994	1471600	0.0032728
11020322	-1	40	14.678	1465300	0.0017132
11020332	-1	40	6.9339	1462800	0.00080876
11020342	0	40	5.8937	1458500	0.00068663
11020352	-1	41	4.3336	1524400	0.00051385
11020362	-1	41	2.8986	1519800	0.00034329
11020372	-1	41	1.3806	1514500	0.00016329
11021361	-1	23	312.14	1527300	0.03634
11021371	-1	25	326.16	1520700	0.037908
11021381	-1	27	345	1520000	0.040091
11021391	-1	29	326.43	1516700	0.037901
11021401	-1	31	352.68	1458000	0.041616
11021411	-1	33	355.93	1454900	0.041965
11021421	-1	23	318.73	1504100	0.037498
11021431	-1	27	312.02	1496900	0.036641
11021441	-1	29	331.37	1495000	0.038893
11021451	-1	31	331.86	1492400	0.038925
11021461	-1	33	314.65	1490500	0.036887
11021471	-1	23	279.98	1488200	0.03315
11021481	-1	25	281.14	1484400	0.033253
11021491	-1	27	292.58	1481200	0.034577
11021501	-1	29	277.28	1479900	0.032758
11021511	-1	31	298.78	1476700	0.035269
11021521	-1	23	249.13	1486600	0.029299
11021531	-1	25	239.01	1484700	0.028095
11021541	-1	27	226.66	1482100	0.026625

Table continued on next page...

Ramp-up test cases for model 11, NACA 0012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
11021551	-1	29	248.61	1480900	0.029194
11021561	-1	31	228.01	1479000	0.026761
11021571	-1	23	186.09	1482900	0.021875
11021581	-1	25	186.67	1479700	0.021925
11021591	-1	26	194.66	1477100	0.022848
11021601	-1	27	251.9	1476500	0.029562
11021611	-1	29	184.17	1475200	0.021606
11021621	-1	23	137.31	1464700	0.016263
11021631	-1	24	137.59	1462800	0.016288
11021641	-1	25	147.46	1461600	0.017451
11021651	-1	26	140.55	1459700	0.016625
11021661	-1	27	146.11	1457800	0.017274
11021671	-1	22	117.27	1464900	0.013838
11021681	-1	23	118.51	1463600	0.01398
11021691	-1	24	112.26	1461800	0.013236
11021701	-1	25	119.33	1461100	0.014067
11021711	-1	26	114.41	1458600	0.013478
11021721	-1	25	311.54	1459800	0.03678
11021771	-1	41	281.54	1018700	0.0493
11021781	-1	41	199.56	1016900	0.034921
11021791	-1	41	107.72	1016900	0.01885
11021801	-1	41	27.076	1016900	0.0047381
11021811	-1	41	292.69	1961100	0.026228
11021821	-1	41	195.48	1944500	0.017459
11021831	-1	41	107.69	1938000	0.0096053
11021841	-1	41	28.037	1929800	0.0024966
11022461	-1	15	166.11	1529700	0.019659
11022471	-1	16	163.73	1525000	0.019354
11022481	-1	17	171.4	1522400	0.020247
11022491	-1	18	162.96	1521000	0.019243
11022501	-1	19	161.89	1473300	0.019235
11022511	-1	20	164.06	1516400	0.01935
11022521	-1	21	176.25	1514400	0.020778
11022531	-1	22	165.92	1511800	0.019547
11022541	-1	15	136.44	1485300	0.016262
11022551	-1	16	126.85	1483400	0.015112
11022561	-1	17	134.42	1482100	0.016008
11022571	-1	18	125.11	1480200	0.014892
11022581	-1	19	134.29	1478300	0.015977
11022591	-1	20	129.82	1477000	0.01544
11022601	-1	22	134.76	1473900	0.016014
11024521	11	28	69.364	1384600	0.0083678
11024531	10	30	74.082	1381000	0.008928
11621051	1	-41	-337.8	1470600	-0.039946
11621061	1	-41	-344.81	1466800	-0.040734
11621071	1	-41	-318.56	1464300	-0.037608
11621081	1	-41	-318.63	1471700	-0.037452
11621091	1	-41	-294.76	1467900	-0.034611

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Ramp-up test cases for model 11, NACA 0012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
11621101	1	-41	-297.4	1466600	-0.03491
11621111	1	-41	-261.02	1460700	-0.030782
11621121	1	-41	-261.77	1457600	-0.030844
11621131	1	-41	-232.03	1455800	-0.027327
11621141	1	-41	-232.03	1454500	-0.027318
11621151	1	-41	-204.06	1459700	-0.023925
11621161	1	-41	-203.9	1457800	-0.023895
11621171	1	-41	-175.16	1456600	-0.02052
11621181	1	-41	-169.61	1453500	-0.019853
11621191	1	-41	-146.61	1449600	-0.017351
11621201	1	-41	-139.6	1442200	-0.016488
11621211	1	-41	-116.24	1440400	-0.013722
11621221	1	-41	-106.84	1439200	-0.012608
11621231	1	-41	-90.429	1446600	-0.010648
11621241	1	-41	-79.527	1442900	-0.0093553
11621251	1	-41	-57.582	1441100	-0.0067704
11621261	1	-41	-44.876	1440500	-0.0052756
11621271	1	-41	-28.563	1431800	-0.0033821
11621281	1	-41	-14.798	1430000	-0.0017513
11621291	1	-41	-7.0517	1423300	-0.00084001
11621301	1	-41	-5.9495	1420900	-0.00070824
11621311	1	-41	-4.2317	1430800	-0.00050114
11621321	1	-41	-2.9644	1429000	-0.00035088
11621331	1	-41	-1.3852	1427200	-0.00016388

Ramp-up cases for model 11, NACA 0012

Table 77: Ramp-down test cases for model 11, NACA 0012

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
11030671	29	-40	-340.06	1526600	-0.039969
11030681	29	-40	-242.35	1519900	-0.028436
11030691	29	-40	-193.3	1514600	-0.02265
11030701	30	-41	-139.91	1504700	-0.016552
11030711	30	-41	-100.44	1496900	-0.011858
11030721	30	-41	-42.26	1492400	-0.0049834
11030731	30	-41	-1.0857	1489100	-0.00012792
11030741	24	-35	-324.07	1484100	-0.038199
11030751	22	-33	-336.82	1479600	-0.039655
11030761	20	-31	-317.48	1478400	-0.037365
11030771	18	-29	-332.55	1476500	-0.039119
11030781	16	-27	-307.68	1482700	-0.036019
11030791	12	-23	-296.16	1477700	-0.034624
11030801	10	-21	-301.38	1476400	-0.035223
11030811	8	-19	-293.18	1465700	-0.034513
11030821	6	-17	-276.56	1465100	-0.032551
11030831	4	-15	-246.26	1463200	-0.028971
11031871	40	-41	-252.74	1004300	-0.044567
11031881	40	-41	-173.7	1003900	-0.030624
11031891	40	-41	-96.715	1004300	-0.017054
11031901	40	-41	-27.458	1003900	-0.004841
11031911	40	-41	-258.06	1968600	-0.023215
11031921	40	-41	-178.1	1945100	-0.015947
11031931	40	-41	-96.31	1936900	-0.0086094
11031941	40	-41	-27.588	1928700	-0.0024621
11630871	-30	40	352.78	1492900	0.041893
11630881	-30	40	241.67	1489000	0.028669
11630891	-30	40	193.7	1486400	0.022963
11630901	-30	40	142.13	1494700	0.016756
11630911	-30	40	100.21	1490200	0.0118
11630921	-30	40	42.744	1487600	0.0050299
11630931	-30	40	1.0915	1483100	0.00012829
11630941	-24	34	325.83	1471100	0.038519
11630951	-22	32	344.92	1469800	0.040762
11630961	-20	30	324.75	1466700	0.038347
11630971	-18	28	328.8	1465400	0.038812
11630981	-16	26	308	1470100	0.036263
11630991	-14	24	313.45	1467600	0.03688
11631001	-12	22	300.29	1467600	0.035331
11631011	-10	20	293.87	1465700	0.034559
11631021	-8	18	268.17	1468200	0.031538
11631031	-6	16	270.94	1465700	0.031842
11631041	-4	14	252.75	1464500	0.029694

Ramp-down cases for model 11, NACA 0012

Table 78: Static test cases for model 12, NACA 0015 (short chord)

File name	Start AoA [deg]	Arc [deg]	Re
12000411	-2	30	1037800
12000421	-2	30	1008100
12000431	-2	29	979300
12000441	28	-30	942880
12000451	-1	-30	1008300
12000461	-2	30	779830
12000471	-2	30	771130
12000481	-2	30	771260
12000491	-2	30	1055900
12000511	-2	30	950260
12000531	-2	30	852930
12000551	-2	30	763520
12000571	-2	30	661390
12000591	-2	30	547390
12000611	-2	30	826540
12000781	-2	30	830700
12000831	-2	30	1076600
12001111	-2	30	1075900
12001211	-2	30	846940
12001251	-2	30	791350
12001381	-2	31	791560
12001661	-2	29	786850
12001721	-2	30	1066500
12801971	-2	30	1097700
12801981	-2	30	884910

Static test cases for model 12, NACA 0015 (short chord)

Table 79: Unsteady static test cases for model 12, NACA 0015 (short chord)

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
12040841	0	-0.02	1061700
12040851	1	1.19	1055400
12040861	2	1.92	1047400
12040871	3	3.05	1044400
12040881	4	3.9	1042200
12040891	5	5.07	1040900
12040901	6	6.09	1039600
12040911	7	6.96	1038300
12040921	8	7.96	1036100
12040931	9	8.96	1034800
12040941	10	9.95	1033100
12040951	11	10.97	1032300
12040971	13	12.88	1029700
12040981	14	14.08	1039500
12040991	15	14.78	1032600
12041001	16	15.96	1030500

Table continued on next page...

Unsteady static test cases for model 12, NACA 0015 (short chord)

12041011	17	16.87	1037000
12041021	18	17.83	1032700
12041031	19	18.88	1030500
12041041	20	19.86	1029200
12041051	21	20.85	1028000
12041061	22	21.93	1025900
12041071	23	22.73	1024600
12041081	24	23.71	1022500
12041091	25	24.69	1021600
12041101	26	25.62	1020400
12041121	27	26.64	1059600
12041131	28	27.67	1055100
12041141	29	28.74	1051500
12041151	30	29.72	1049800
12041161	31	30.64	1047100
12041171	32	31.68	1045800
12041181	33	32.54	1044000
12041191	34	33.68	1041800

Unsteady Static test cases for model 12, NACA 0015 (short chord)

Table 80: Sinusoidal test cases for model 12, NACA 0015 (short chord)

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
12010702	4	10	8.731	828480	0.16827
12010712	6	10	8.731	825610	0.16804
12010722	8	10	8.595	824530	0.16534
12010732	15	10	8.595	823820	0.16528
12010742	16	10	8.595	823110	0.16522
12010752	17	10	8.595	822040	0.16514
12010762	18	10	8.595	821330	0.16509
12010772	20	10	8.595	820620	0.16503

Sinusoidal oscillatory cases for model 12, NACA 0015 (short chord)

Table 81: Ramp-up test cases for model 12, NACA 0015 (short chord)

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
12020023	-1	41	1.8624	776790	0.00010414
12020033	-1	41	3.774	776380	0.00020876
12020043	-1	41	7.6899	771940	0.00042807
12020053	-1	41	11.858	768330	0.00065888
12020063	-1	41	15.976	769040	0.00088898
12020073	-1	41	20.361	766100	0.0011313
12020083	-1	41	37.605	763830	0.002087
12020093	-1	41	79.827	762540	0.0044272
12020103	-1	41	123.43	762780	0.0068756
12020113	-1	41	168.28	760200	0.0093615
12020123	-1	41	197.94	758590	0.011002
12020133	-1	41	252.49	757310	0.014025
12020143	-1	40	284.21	765970	0.01588
12020153	-1	40	320.08	763690	0.017864
12020163	-1	40	355.17	762070	0.019806
12020173	-1	41	366.32	760780	0.020414
12020183	-1	42	444.8	759440	0.02489
12020194	-1	42	442.32	757190	0.024722
12021221	1	38	463.92	798830	0.025701
12021231	1	38	501.36	800570	0.027782
12021241	1	38	534.54	796360	0.029688
12021261	1	38	16.613	802900	0.0009361
12021271	1	38	20.46	798720	0.0011491
12021281	1	38	29.214	790430	0.0016499
12021291	1	38	40.748	794250	0.0022834
12021301	1	38	57.785	795430	0.0032274
12021311	1	38	80.634	794820	0.0044989
12021321	1	38	98.273	799580	0.0054341
12021331	1	38	124.21	797780	0.0068631
12021341	1	38	151.79	805480	0.008287
12021351	1	38	183.52	802540	0.010026
12021361	1	37	213.11	795950	0.011711
12021371	1	37	242.49	801060	0.013193
12021391	1	38	274.4	788520	0.015605
12021401	1	38	309.22	791180	0.017485
12021411	1	38	334.34	791710	0.018824
12021421	1	38	366.46	794390	0.020538
12021431	1	38	398.78	787950	0.022518
12021441	1	39	434.27	795530	0.024216
12021731	1	38	181.57	1056700	0.0073622
12021741	1	38	211.32	1051500	0.0086107
12021751	1	38	242.71	1043300	0.0098252
12021761	1	38	272.23	1038100	0.011002
12021771	1	38	304.45	1034500	0.012267
12021781	1	38	335.35	1036300	0.013418
12021791	1	38	368.74	1007400	0.015105
12021801	1	38	399.55	1016800	0.016157
12021811	1	38	432.22	1003200	0.017664

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Ramp-up test cases for model 12, NACA 0015 (short chord)

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
12021821	1	38	469.89	998630	0.019212
12021831	1	38	498.75	997330	0.020371
12021841	1	38	529.36	999290	0.021503
12821991	1	38	181.38	880910	0.0092122
12822001	1	38	213.03	875680	0.010817
12822011	1	38	241.72	871350	0.012282
12822021	1	38	271.38	867240	0.013803
12822031	1	38	306.81	867310	0.015537
12822041	1	38	336.73	867160	0.017014
12822051	1	38	368.06	863560	0.018618
12822061	1	38	399.13	862880	0.020131
12822071	1	38	436.07	856200	0.022126
12822081	1	38	474	860990	0.023859
12822091	1	38	500.61	854410	0.025331
12822101	1	38	534.82	853230	0.02705
12822231	1	38	181.2	1100300	0.0075005
12822241	1	38	211.34	1094300	0.0086775
12822251	1	38	241.74	1087400	0.0098981
12822261	1	38	272.13	1083700	0.011078
12822281	1	38	335.21	1051900	0.01375
12822291	1	38	368.16	1050600	0.015047
12822301	1	38	398.91	1043500	0.016309
12822311	1	38	433	1044900	0.017585
12822321	1	38	470.65	1045800	0.018997
12822331	1	38	496.65	1032400	0.020151
12822341	1	38	530.42	1035200	0.021476

Ramp-up cases for model 12, NACA 0015 (short chord)

Table 82: Ramp-down test cases for model 12, NACA 0015 (short chord)

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
12030223	39	-41	-1.8047	760190	-0.00010065
12030233	39	-41	-4.0378	756980	-0.00022482
12030243	39	-41	-7.2784	759570	-0.00040411
12030253	39	-41	-11.534	757010	-0.00063954
12030263	39	-41	-15.643	757550	-0.00087084
12030273	39	-41	-19.547	755310	-0.0010869
12030283	39	-41	-39.082	754040	-0.0021717
12030293	39	-41	-76.561	752460	-0.0042509
12030303	40	-41	-120.24	780020	-0.0067482
12030313	40	-41	-158.96	777320	-0.0089092
12030323	40	-41	-200.2	775310	-0.011209
12030333	40	-41	-230.62	772970	-0.012897
12030343	40	-41	-255.88	773220	-0.014331
12030353	40	-41	-288.58	770230	-0.016138
12030363	40	-41	-326.85	768570	-0.018263
12030373	40	-41	-367.76	766930	-0.020531
12030383	40	-41	-404.43	754810	-0.023037
12030394	40	-41	-438.06	751900	-0.024915
12030501	40	-41	-544.98	1048900	-0.022393
12030521	40	-41	-490.28	949270	-0.021829
12030541	40	-40	-445.02	849520	-0.022011
12030561	40	-41	-382.85	756400	-0.021893
12030581	40	-41	-323.56	652920	-0.021346
12030601	40	-41	-261.95	545960	-0.020691
12030621	40	-51	-541.27	820020	-0.028759
12030631	35	-46	-408.58	816480	-0.021673
12030641	30	-41	-430.29	814720	-0.022805
12030651	28	-39	-425.25	812960	-0.022519
12030661	26	-37	-433.32	809060	-0.023112
12030671	24	-35	-448.33	806270	-0.023881
12030681	22	-33	-445.18	804540	-0.023693
12030691	20	-31	-453.7	803170	-0.02413
12030791	18	-29	-445.46	822490	-0.023846
12030801	17	-27	-430.85	819650	-0.023033
12030811	15	-25	-426.35	816270	-0.022764
12030821	13	-23	-410.65	816130	-0.021916
12031451	30	-40	-21.735	706900	-0.0013854
12031461	30	-40	-26.713	717210	-0.0016774
12031471	30	-40	-38.038	707360	-0.0024011
12031481	30	-40	-53.006	699240	-0.0033706
12031491	30	-40	-75.581	716960	-0.0046704
12031501	30	-40	-103.72	704720	-0.006501
12031511	30	-40	-123.93	706030	-0.0077302
12031521	30	-40	-153.71	707760	-0.0095414
12031531	30	-40	-186.09	702580	-0.011602
12031541	30	-40	-230.37	717180	-0.014028
12031551	30	-40	-276.53	691120	-0.017443
12031561	30	-41	-302.06	696330	-0.018922

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Ramp-down test cases for model 12, NACA 0015 (short chord)

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
12031571	30	-40	-342.53	696470	-0.021389
12031581	30	-40	-379.51	667820	-0.02596
12031591	30	-39	-409.71	669150	-0.027833
12031601	30	-39	-447.87	663420	-0.030577
12031611	30	-40	-476.76	668070	-0.032205
12031621	30	-39	-507.61	670540	-0.03408
12031631	30	-39	-549.47	671380	-0.036732
12031641	30	-40	-595.04	674850	-0.039431
12031651	30	-39	-645.41	666540	-0.043198
12031851	30	-40	-231.44	914130	-0.010834
12031861	30	-40	-272.22	912430	-0.012607
12031871	30	-40	-311.35	895140	-0.014576
12031881	30	-40	-344.62	882850	-0.016232
12031891	30	-40	-379.18	872560	-0.017975
12031901	30	-40	-411.28	881980	-0.019175
12031911	30	-40	-419.95	864070	-0.019891
12031921	30	-40	-478.08	878360	-0.022508
12031931	30	-40	-510.49	889280	-0.023516
12031941	30	-40	-558.83	868980	-0.02619
12031951	30	-40	-607.65	877770	-0.028095
12031961	30	-40	-654.93	865040	-0.030584
12832111	30	-40	-232.79	749830	-0.013438
12832121	30	-40	-273.41	765600	-0.015402
12832131	30	-40	-309.15	755470	-0.017606
12832141	30	-40	-341.85	744480	-0.019696
12832151	30	-40	-377.17	752420	-0.02145
12832161	30	-40	-412.35	735190	-0.023957
12832171	30	-40	-440.53	746270	-0.025154
12832181	30	-40	-473.23	740150	-0.027212
12832191	30	-40	-506.67	757610	-0.028429
12832201	30	-40	-559.16	738860	-0.032094
12832211	30	-40	-606.39	732290	-0.035075
12832221	30	-40	-658.91	738300	-0.037712
12832351	30	-40	-229.89	895180	-0.01078
12832361	30	-41	-273.28	891410	-0.012801
12832371	30	-41	-312.83	874470	-0.014867
12832381	30	-41	-345.07	886510	-0.01612
12832391	30	-41	-346.17	882750	-0.016212
12832401	30	-40	-394.76	882170	-0.018436
12832411	30	-40	-444.96	880330	-0.020763
12832421	30	-40	-477.92	879180	-0.022253
12832431	30	-40	-509.29	864390	-0.024008
12832441	30	-40	-562.18	891190	-0.02566
12832451	30	-40	-613.98	869940	-0.028643
12832461	30	-40	-661.89	867820	-0.030847

Ramp-down cases for model 12, NACA 0015 (short chord)

Table 83: VAWT motion test cases for model 12, NACA 0015 (short chord)

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
12051671	0	1.75	3.571	789390	0.072532
12051681	0	1.75	2.9	787370	0.058983
12051691	0	1.75	2.38	785250	0.048421
12051701	0	1.75	1.87	789100	0.037996
12051711	0	1.75	1.587	789630	0.031993

VAWT motion cases for model 12, NACA 0015 (short chord)

Table 84: Static test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Re
13000011	-2	30	1599700
13000491	-2	30	1535500
13000751	-2	30	1040100
13000801	-2	30	2057700
13001681	-2	29	1527800
13003541	-2	29	1100100
13003711	-2	29	1588300
13003961	-2	28	2023100
13004131	-2	28	867140
13004211	-2	29	1214000
13004291	-2	28	1632000
13004371	-2	28	2083500
13004801	-2	29	860710
13004881	-2	28	1200600
13005031	-2	29	2087100
13005181	-2	29	1661100
13805541	-2	29	1567600
13805741	-2	30	1530800

Static test cases for model 13, AHAVAW

Table 85: Unsteady static test cases for model 13, AHAVAW

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
13040021	-4	-3.88	1571700
13040031	-2	-1.89	1568900
13040041	0	0.12	1568200
13040121	13	13.07	1556600
13040131	14	14.05	1488200
13040141	15	15.03	1482900
13040151	16	16.02	1481700
13040161	18	18.14	1481000
13040171	20	20.14	1477100
13040181	22	22.11	1476500
13040191	24	24.12	1473900
13040201	26	26.08	1472600
13040211	28	28.04	1470100
13040221	30	29.98	1468800
13040231	-4	-3.86	1473900
13040241	-2	-1.83	1472600
13040251	0	0.15	1471400
13040261	2	2.13	1470100
13040271	4	4.11	1469400
13040281	6	6.1	1468100
13040291	8	8.12	1467500
13040301	10	10.13	1466900
13040311	11	11.09	1466200

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Unsteady static test cases for model 13, AHAVAW

13040321	12	12.07	1464900
13040331	13	13.04	1464300
13040341	14	14.13	1473400
13040351	15	15.11	1470200
13040361	16	16.09	1468900
13040371	18	18.21	1466400
13040381	20	20.2	1464500
13040391	22	22.21	1463800
13040401	24	24.17	1463200
13040411	26	26.14	1461300
13040421	28	28.09	1459400
13040431	30	30.03	1262800

Unsteady Static test cases for model 13, AHAVAW

Table 86: Sinusoidal test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13011691	10	4	0.233	1510000	0.009732
13011701	10	6	0.233	1504100	0.0097171
13011711	10	8	0.233	1500800	0.0097089
13011721	10	10	0.233	1497600	0.0097007
13011731	10	4	0.582	1468300	0.024699
13011741	10	6	0.582	1466400	0.024686
13011751	10	8	0.582	1464500	0.024674
13011761	10	10	0.582	1463200	0.024665
13011771	10	4	1.165	1458000	0.049434
13011781	10	6	1.165	1455400	0.0494
13011791	10	8	1.165	1454200	0.049384
13011801	10	10	1.165	1452900	0.049367
13011811	10	4	1.747	1451400	0.074552
13011821	10	6	1.747	1448900	0.074502
13011831	10	8	1.747	1447100	0.074464
13011841	10	10	1.747	1445800	0.074439
13011851	10	4	2.33	1477800	0.097247
13011861	10	6	2.33	1475900	0.097198
13011871	10	8	2.33	1474600	0.097165
13011881	10	10	2.33	1474000	0.097149
13011891	10	4	2.912	1472700	0.12167
13011901	10	6	2.912	1470800	0.12161
13011911	10	8	2.912	1468900	0.12155
13011921	10	10	2.912	1468300	0.12153
13011931	10	4	3.496	1474600	0.14554
13011941	10	6	3.496	1472700	0.14546
13011951	10	8	3.496	1470800	0.14539
13011961	10	10	3.496	1472200	0.1449
13011971	10	4	4.077	1467800	0.16977
13011981	10	6	4.077	1467200	0.16974
13011991	10	8	4.077	1465900	0.16968
13012001	10	10	4.077	1465300	0.16965
13012011	3	8	0.233	1404900	0.010005
13012021	4	8	0.233	1402500	0.0099981
13012031	5	8	0.233	1400700	0.0099931
13012041	6	8	0.233	1399000	0.0099881
13012051	7	8	0.233	1398400	0.0099865
13012061	8	8	0.233	1416300	0.0098778
13012071	9	8	0.233	1413300	0.0098696
13012081	11	8	0.233	1411500	0.0098647
13012091	12	8	0.233	1409700	0.0098598
13012101	13	8	0.233	1408500	0.0098565
13012111	14	8	0.233	1404400	0.0099197
13012121	15	8	0.233	1400900	0.0099099
13012131	17	8	0.233	1399700	0.0099066
13012141	20	8	0.233	1398500	0.0099034
13012151	3	8	0.582	1406500	0.024684
13012161	4	8	0.582	1405300	0.024676

Table continued on next page...

Sinusoidal test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13012171	5	8	0.582	1403500	0.024664
13012181	6	8	0.582	1402300	0.024656
13012191	7	8	0.582	1401700	0.024652
13012201	8	8	0.582	1406400	0.024657
13012211	9	8	0.582	1404600	0.024645
13012221	11	8	0.582	1403400	0.024637
13012231	12	8	0.582	1402800	0.024633
13012241	13	8	0.582	1401600	0.024625
13012251	14	8	0.582	1404800	0.024655
13012261	15	8	0.582	1402500	0.024639
13012271	17	8	0.582	1401300	0.024631
13012281	20	8	0.582	1400700	0.024627
13012291	3	8	1.165	1401900	0.049631
13012301	4	8	1.165	1400100	0.049607
13012311	5	8	1.165	1398900	0.04959
13012321	6	8	1.165	1398300	0.049582
13012331	7	8	1.165	1397100	0.049566
13012341	8	8	1.165	1407200	0.049445
13012351	9	8	1.165	1405400	0.04942
13012361	11	8	1.165	1404200	0.049404
13012371	12	8	1.165	1418200	0.050373
13012381	13	8	1.165	1415200	0.050331
13012391	14	8	1.165	1425100	0.05007
13012401	15	8	1.165	1423300	0.050045
13012411	17	8	1.165	1422100	0.050028
13012421	20	8	1.165	1420200	0.050003
13012431	3	8	1.747	1425800	0.075048
13012441	4	8	1.747	1424000	0.07501
13012451	5	8	1.747	1423300	0.074997
13012461	6	8	1.747	1422100	0.074972
13012471	7	8	1.747	1420900	0.074947
13012481	8	8	1.747	1419700	0.075235
13012491	9	8	1.747	1417900	0.075197
13012501	11	8	1.747	1416700	0.075172
13012511	12	8	1.747	1415400	0.075147
13012521	13	8	1.747	1414200	0.075122
13012531	14	8	1.747	1417900	0.075149
13012541	15	8	1.747	1416100	0.075112
13012551	17	8	1.747	1414900	0.075087
13012561	20	8	1.747	1413700	0.075062
13012571	3	8	2.33	1413600	0.10035
13012581	4	8	2.33	1413000	0.10034
13012591	5	8	2.33	1411800	0.1003
13012601	6	8	2.33	1411200	0.10029
13012611	7	8	2.33	1410600	0.10027
13012621	8	8	2.33	1416800	0.10019
13012631	9	8	2.33	1415000	0.10014
13012641	11	8	2.33	1414400	0.10012

Table continued on next page...

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13012651	12	8	2.33	1413200	0.10009
13012661	13	8	2.33	1412000	0.10005
13012671	14	8	2.33	1410400	0.10058
13012681	15	8	2.33	1408600	0.10053
13012691	17	8	2.33	1407400	0.1005
13012701	20	8	2.33	1406800	0.10048
13012711	3	8	2.912	1431200	0.12388
13012721	4	8	2.912	1430000	0.12384
13012731	5	8	2.912	1429400	0.12382
13012741	6	8	2.912	1428700	0.1238
13012751	7	8	2.912	1428100	0.12378
13012761	8	8	2.912	1426900	0.12374
13012771	9	8	2.912	1426900	0.12374
13013141	4	10	0.233	1507900	0.0097008
13013151	6	10	0.233	1502000	0.009686
13013161	8	10	0.233	1498800	0.0096779
13013171	15	10	0.233	1495600	0.0096697
13013181	20	10	0.233	1493000	0.0096632
13013191	4	10	0.582	1460300	0.024722
13013201	6	10	0.582	1456500	0.024697
13013211	8	10	0.582	1454600	0.024684
13013221	15	10	0.582	1453400	0.024676
13013231	20	10	0.582	1452100	0.024668
13013241	4	10	1.165	1451400	0.049492
13013251	6	10	1.165	1450100	0.049476
13013261	8	10	1.165	1448900	0.049459
13013271	15	10	1.165	1447000	0.049434
13013281	20	10	1.165	1445800	0.049418
13013291	4	10	2.33	1443000	0.099324
13013301	6	10	2.33	1442400	0.099307
13013311	8	10	2.33	1441100	0.099274
13013321	15	10	2.33	1439900	0.099241
13013331	20	10	2.33	1449200	0.098838
13013341	4	10	2.912	1446200	0.12393
13013351	6	10	2.912	1445000	0.12389
13013361	8	10	2.912	1443700	0.12385
13013371	15	10	2.912	1442500	0.12381
13013381	20	10	2.912	1441300	0.12377
13013391	4	10	3.496	1440100	0.14915
13013401	6	10	3.496	1438800	0.1491
13013411	8	10	3.496	1438200	0.14908
13013421	15	10	3.496	1437000	0.14903
13013431	20	10	3.496	1435800	0.14898
13013441	4	10	4.077	1443000	0.17327
13013451	6	10	4.077	1442400	0.17324
13013461	8	10	4.077	1441200	0.17319
13013471	15	10	4.077	1441200	0.17319
13013481	20	10	4.077	1439300	0.1731

Table continued on next page...

Sinusoidal test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13013491	4	10	1.747	1560900	0.074172
13013501	6	10	1.747	1558100	0.074121
13013511	8	10	1.747	1556700	0.074095
13013521	15	10	1.747	1555300	0.074069
13013531	20	10	1.747	1554600	0.074056
13013551	3	8	1.557	1097600	0.095247
13013561	4	8	1.557	1097100	0.09523
13013571	5	8	1.557	1096600	0.095213
13013581	6	8	1.557	1096100	0.095196
13013591	7	8	1.557	1095600	0.09518
13013601	8	8	1.557	1095600	0.09518
13013611	9	8	1.557	1095100	0.095163
13013621	10	8	1.557	1095100	0.095163
13013631	11	8	1.557	1082900	0.096358
13013641	12	8	1.557	1081900	0.096325
13013651	13	8	1.557	1081400	0.096308
13013661	14	8	1.557	1080900	0.096291
13013671	15	8	1.557	1080900	0.096291
13013681	16	8	1.557	1080400	0.096274
13013691	17	8	1.557	1079900	0.096257
13013701	20	8	1.557	1079400	0.09624
13013721	0	2	1	1559100	0.042256
13013731	0	2	2.5	1555600	0.10555
13013742	0	2	5	1475700	0.2041
13013752	0	2	7.433	1474500	0.30331
13013762	0	2	9.822	1472600	0.40059
13013772	0	2	12.501	1471900	0.50977
13013781	2	2	1	1548900	0.042351
13013791	2	2	2.5	1545400	0.10579
13013802	2	2	5	1471200	0.20436
13013812	2	2	7.433	1468000	0.30355
13013822	2	2	9.822	1467400	0.40105
13013832	2	2	12.223	1466200	0.49892
13013851	2	4	2.5	1539700	0.10584
13013862	2	4	5	1473600	0.2033
13013872	2	4	7.433	1472400	0.30212
13013882	2	4	9.822	1471100	0.39909
13013892	2	4	12.501	1470500	0.50786
13013901	0	4	1	1529000	0.042423
13013911	0	4	2.5	1527600	0.10602
13013922	0	4	4.955	1476300	0.20428
13013932	0	4	7.433	1475000	0.30634
13013942	0	4	9.822	1473700	0.40466
13013952	0	4	12.501	1473100	0.51495
13013971	3	8	3.103	1990200	0.098258
13013981	4	8	3.103	1985900	0.098175
13013991	5	8	3.103	1974700	0.097959
13014001	6	8	3.103	1972100	0.097909

Table continued on next page...

Sinusoidal test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13014011	7	8	3.103	1969500	0.097859
13014021	8	8	3.103	1967000	0.09781
13014031	9	8	3.103	1963600	0.097744
13014041	10	8	3.103	1962700	0.097728
13014051	11	8	3.103	1926100	0.10006
13014061	12	8	3.103	1919500	0.09993
13014071	13	8	3.103	1917800	0.099896
13014081	14	8	3.103	1913700	0.099812
13014091	15	8	3.103	1911200	0.099762
13014101	16	8	3.103	1908700	0.099712
13014111	17	8	3.103	1905500	0.099645
13014121	20	8	3.103	1903000	0.099595
13014141	0	5.4	0.65	869340	0.047149
13014151	0	10	0.65	868960	0.047141
13014161	0	12.2	0.65	868960	0.047141
13014171	0	13.8	0.65	868580	0.047133
13014181	0	17.4	0.65	868580	0.047133
13014191	0	22.6	0.65	868580	0.047133
13014201	0	32.8	0.65	868200	0.047125
13014221	0	5.4	0.894	1204200	0.046616
13014231	0	10	0.894	1202100	0.046585
13014241	0	12.2	0.894	1201600	0.046577
13014251	0	13.8	0.894	1201100	0.046569
13014261	0	17.4	0.894	1200500	0.046561
13014271	0	22.6	0.894	1200000	0.046553
13014281	0	32	0.894	1199500	0.046545
13014301	0	5.4	1.218	1603700	0.047202
13014311	0	10	1.218	1601000	0.04717
13014321	0	12.2	1.218	1599600	0.047154
13014331	0	13.8	1.218	1597500	0.04713
13014341	0	17.4	1.218	1594700	0.047099
13014351	0	22.6	1.218	1594100	0.047091
13014361	0	32	1.218	1592000	0.047067
13014381	0	5.4	1.626	2067100	0.048948
13014391	0	10	1.626	2058100	0.048865
13014401	0	12.2	1.626	2052700	0.048816
13014411	0	13.8	1.626	2048200	0.048774
13014421	0	17.4	1.626	2044700	0.048741
13014431	0	22.6	1.626	2040300	0.0487
13014442	0	32	1.626	1978600	0.0491
13014451	0	5.4	0.487	1579000	0.018914
13014461	0	10	0.487	1575600	0.018898
13014471	0	12.2	0.487	1572900	0.018885
13014481	0	13.8	0.487	1570800	0.018876
13014491	0	17.4	0.487	1568100	0.018863
13014501	0	22.6	0.487	1566800	0.018857
13014511	0	32	0.487	1564700	0.018847
13014521	0	5.4	0.975	1563200	0.037906

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File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13014531	0	10	0.975	1558500	0.037861
13014541	0	12.2	0.975	1557900	0.037855
13014551	0	13.8	0.975	1556500	0.037842
13014561	0	17.4	0.975	1555200	0.037829
13014571	0	22.6	0.975	1554500	0.037823
13014581	0	32	0.975	1553200	0.03781
13014591	0	5.4	1.218	1558800	0.047265
13014601	0	10	1.218	1556800	0.047241
13014611	0	12.2	1.218	1554800	0.047217
13014621	0	13.8	1.218	1553500	0.047201
13014631	0	17.4	1.218	1552200	0.047186
13014641	0	22.6	1.218	1550800	0.04717
13014651	0	32	1.218	1550200	0.047162
13014661	0	5.4	1.462	1554700	0.056681
13014671	0	10	1.462	1552700	0.056653
13014681	0	12.2	1.462	1551400	0.056634
13014691	0	13.8	1.462	1550000	0.056615
13014701	0	17.4	1.462	1549400	0.056605
13014711	0	22.6	1.462	1548000	0.056587
13014721	0	32	1.462	1546700	0.056568
13014731	0	5.4	1.827	1547000	0.071013
13014741	0	10	1.827	1545100	0.070977
13014751	0	12.2	1.827	1543700	0.070953
13014761	0	13.8	1.827	1542400	0.07093
13014771	0	17.4	1.827	1541800	0.070918
13014781	0	22.6	1.827	1540400	0.070894
13014791	0	32	1.827	1539100	0.070871
13815551	10	4	0.582	1500100	0.024831
13815561	10	6	0.582	1496800	0.02481
13815571	10	8	0.582	1495500	0.024801
13815581	10	10	0.582	1493600	0.024789
13815591	10	4	2.33	1483400	0.1001
13815601	10	6	2.33	1480200	0.10001
13815611	10	8	2.33	1478900	0.099979
13815621	10	10	2.33	1478300	0.099962
13815631	10	4	4.077	1476100	0.17571
13815641	10	6	4.077	1473500	0.17559
13815651	10	8	4.077	1473600	0.17484
13815661	10	10	4.077	1471600	0.1755
13815671	0	5.4	1.827	1486100	0.078015
13815681	0	10	1.827	1484200	0.077976
13815691	0	12.2	1.827	1482900	0.077949
13815701	0	13.8	1.827	1482200	0.077936
13815711	0	17.4	1.827	1481000	0.07791
13815721	0	22.6	1.827	1479000	0.07787
13815731	0	32	1.827	1477800	0.077844

Sinusoidal oscillatory cases for model 13, AHAVAW

Table 87: Ramp-up test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
13020441	-1	40	0.7573	1467700	8.9705e-05
13020451	-1	40	1.5127	1463300	0.00017875
13020461	-1	40	2.9364	1454400	0.00034616
13020471	-1	40	4.358	1445700	0.00051934
13020481	-1	40	5.9748	1438200	0.00071058
13020501	-1	40	7.3035	1522400	0.00084821
13020511	-1	40	14.61	1514400	0.0016933
13020521	-1	40	29.186	1510500	0.0033793
13020531	-1	40	43.873	1506600	0.0050746
13020541	-1	40	57.171	1504000	0.0066083
13020551	-1	40	72.942	1495900	0.0085075
13020561	-1	40	87.512	1489400	0.01019
13020571	-1	40	98.423	1486200	0.01145
13020581	-1	40	116.13	1483700	0.013501
13020591	-1	40	129.38	1480500	0.015029
13020601	-1	40	144.68	1480300	0.016858
13020611	-1	40	159.22	1474000	0.018522
13020621	-1	40	177.63	1471500	0.020649
13020631	-1	40	196.36	1469000	0.022812
13020641	-1	40	206.3	1466500	0.02395
13020651	-1	40	224.32	1471800	0.026088
13020661	-1	40	243.99	1466700	0.028338
13020671	-1	40	260.07	1464200	0.030185
13020681	-1	40	282.66	1462400	0.032791
13020691	-1	40	290.24	1460500	0.033653
13020701	-1	40	310.95	1467800	0.036088
13020711	-1	40	319.43	1460400	0.036998
13020721	-1	40	330.86	1459100	0.038309
13020731	-1	40	342.26	1457300	0.03961
13020741	-1	40	351.57	1456000	0.040674
13020761	-1	40	29.43	1037200	0.0052121
13020771	-1	40	99.545	1035300	0.017617
13020781	-1	41	204.37	1034400	0.036157
13020791	-1	40	320.15	1033400	0.056621
13020811	-1	40	29.157	2023500	0.0025602
13020821	-1	40	97.486	2007600	0.0085339
13020831	-1	40	204.26	1997200	0.017845
13020841	-1	40	312.46	1986800	0.027242
13020851	0	4	48.248	1504200	0.0056304
13020861	0	4	92.954	1500200	0.010837
13020871	0	4	116.97	1498300	0.013629
13020881	0	4	111.61	1497000	0.013
13020891	0	4	120.25	1495700	0.014002
13020901	0	4	141.6	1461800	0.016911
13020911	0	4	130.81	1458600	0.015609
13020921	0	4	128.03	1442800	0.015089
13020931	0	5	132.85	1455500	0.015839
13020941	0	8	46.997	1490400	0.005472

Ramp-up test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
13020951	0	8	114.91	1487200	0.013368
13020961	0	8	171.06	1485900	0.019894
13020971	0	8	177.95	1484000	0.020685
13020981	0	8	180.14	1483300	0.020936
13020991	0	8	205.22	1453800	0.024379
13021001	0	8	210.08	1450700	0.024935
13021011	0	8	203.02	1449400	0.024089
13021021	0	8	203.07	1448200	0.024087
13021031	0	12	53.276	1449600	0.006332
13021041	0	12	102.21	1445900	0.012136
13021051	0	12	198.54	1444600	0.023565
13021061	0	12	217.96	1443400	0.025862
13021071	0	12	235.49	1440900	0.027923
13021081	0	12	255.45	1442000	0.030358
13021091	0	12	243.52	1438900	0.028916
13021101	0	13	249.44	1437000	0.029604
13021111	0	12	255.45	1435200	0.030302
13825751	-1	40	0.74644	1522400	8.8617e-05
13825761	-1	40	1.4989	1502300	0.00017825
13825771	-1	40	2.9779	1493800	0.00035335
13825781	-1	40	4.4249	1479500	0.0005295
13825791	-1	40	5.9057	1473700	0.00070562
13825801	-1	40	7.3593	1465800	0.00088509
13825811	-1	40	14.712	1459500	0.0017664
13825821	-1	40	29.236	1456300	0.0035073
13825831	-1	40	43.368	1453800	0.0051991
13825841	-1	40	57.954	1452000	0.0069442
13825851	-1	40	72.694	1451000	0.0087847
13825861	-1	40	87.439	1443500	0.010545
13825871	-1	40	98.387	1442200	0.011862
13825881	-1	40	115.31	1439700	0.013893
13825891	-1	40	132.35	1437300	0.015935
13825901	-1	40	145.43	1461700	0.01731
13825911	-1	40	160.45	1455400	0.019066
13825921	-1	40	176.87	1453600	0.021006
13825931	-1	40	190.8	1451700	0.022649
13825941	-1	40	200.1	1449800	0.023741
13825951	-1	40	215.99	1445600	0.025824
13825952	-1	40	215.46	1487300	0.02559
13825961	-1	40	230.55	1440700	0.027528
13825962	-1	40	233.92	1483400	0.027754
13825971	-1	40	246.59	1438200	0.029423
13825972	-1	40	247.18	1478800	0.029292
13825981	-1	40	260.18	1437000	0.031034
13825982	-1	40	263.48	1476900	0.031208
13825991	-1	40	276.65	1435200	0.032982
13825992	-1	40	279.42	1473700	0.033068
13826001	-1	40	302.76	1457600	0.036355

Table continued on next page...

Ramp-up test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
13826002	-1	40	294.86	1462100	0.035193
13826011	-1	40	307.39	1431200	0.036792
13826012	-1	40	306.49	1458300	0.036544
13826021	-1	40	321.36	1428200	0.038432
13826022	-1	40	321.36	1454500	0.038278
13826031	-1	40	337.66	1451900	0.040484
13826032	-1	40	336.84	1453200	0.040108
13826041	-1	40	348.27	1424600	0.041609
13826042	-1	40	346.62	1451400	0.041252

Ramp-up cases for model 13, AHAVAW

Table 88: Ramp-down test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
13031121	39	-40	-0.72942	1438600	-8.6578e-05
13031131	39	-40	-1.456	1431000	-0.00017261
13031141	39	-40	-2.9051	1425500	-0.00034389
13031151	39	-40	-4.3423	1424900	-0.00051516
13031161	39	-40	-5.719	1456000	-0.00067489
13031171	39	-40	-7.2476	1447500	-0.00085825
13031181	39	-40	-14.14	1441900	-0.0016719
13031191	39	-40	-28.448	1439500	-0.0033614
13031201	39	-40	-41.672	1435800	-0.0049191
13031211	39	-40	-55.016	1434500	-0.0064921
13031221	39	-40	-70.102	1430000	-0.0083282
13031231	39	-40	-81.839	1423900	-0.0097064
13031241	39	-40	-93.476	1422100	-0.011081
13031251	39	-40	-111.24	1419700	-0.013178
13031261	39	-40	-123.69	1418500	-0.014648
13031271	39	-40	-137.15	1415900	-0.016338
13031281	39	-40	-147.07	1410500	-0.017494
13031291	39	-40	-155.79	1408700	-0.018522
13031301	39	-40	-167.9	1407000	-0.019952
13031311	39	-40	-178.91	1405800	-0.021253
13031321	39	-40	-195.29	1432600	-0.022859
13031331	39	-40	-218.63	1426500	-0.025549
13031341	39	-40	-244.55	1425900	-0.028573
13031351	39	-40	-267.98	1425300	-0.031305
13031361	39	-40	-283.45	1424100	-0.033101
13031371	39	-40	-300.44	1422000	-0.035242
13031381	39	-40	-318.74	1417800	-0.037346
13031391	39	-40	-333.25	1416000	-0.039026
13031401	39	-40	-354.19	1416000	-0.041479
13031411	39	-40	-360.23	1413000	-0.042151
13031421	39	-40	-28.172	986250	-0.0047545
13031431	39	-40	-95.154	986250	-0.016059
13031441	39	-40	-183.6	985840	-0.030981
13031451	39	-40	-328.35	985840	-0.055406
13031461	39	-40	-28.316	1862300	-0.0025323
13031471	39	-40	-90.955	1850500	-0.0081142
13031481	39	-40	-174.89	1844300	-0.015582
13031491	39	-40	-306.21	1839000	-0.02725
13031501	30	-40	-0.99791	1419800	-0.0001155
13031511	30	-40	-42.785	1417400	-0.0049486
13031521	30	-40	-96.97	1395200	-0.011427
13031531	30	-40	-141.68	1392300	-0.016682
13031541	30	-40	-189.21	1391100	-0.022272
13031551	30	-40	-273.83	1391100	-0.032232
13031561	30	-40	-347.27	1390000	-0.040863
13031571	24	-34	-331.84	1449700	-0.038931
13031581	22	-32	-327.21	1446000	-0.038349
13031591	20	-30	-321.33	1444100	-0.037641

Table continued on next page...

Ramp-down test cases for model 13, AHAVAW

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
13031601	18	-28	-322.18	1441700	-0.037716
13031611	16	-26	-321.83	1440400	-0.037662
13031621	14	-24	-297.44	1439200	-0.034796
13031631	12	-22	-287.42	1431400	-0.033868
13031641	10	-20	-298.14	1428300	-0.035102
13031651	8	-18	-275.84	1427100	-0.032466
13031661	6	-16	-274.62	1425900	-0.032312
13031671	4	-14	-244.83	1425300	-0.028802
13836051	39	-40	-0.75243	1401900	-9.0817e-05
13836061	39	-40	-2.9616	1442000	-0.00035058
13836071	39	-40	-5.8504	1433300	-0.0006955
13836081	39	-40	-14.398	1439800	-0.001708
13836091	39	-41	-42.201	1433700	-0.0049979
13836101	39	-40	-70.177	1444500	-0.0083322
13836111	39	-40	-94.705	1437800	-0.011224
13836121	39	-40	-124.87	1436600	-0.014794
13836131	39	-40	-151.16	1443800	-0.017882
13836141	39	-40	-170.83	1438300	-0.020178
13836151	39	-40	-177.73	1451200	-0.020844
13836161	40	-41	-191.84	1455500	-0.022974
13836171	39	-41	-206.5	1449900	-0.024692
13836181	39	-40	-223.07	1448000	-0.02666
13836191	40	-41	-250.78	1445500	-0.029952
13836701	39	-40	-267.59	1442400	-0.031933
13836711	39	-40	-289.89	1447600	-0.034552
13836721	39	-40	-291.33	1442000	-0.034672
13836731	39	-40	-322.16	1440200	-0.038322
13836741	39	-40	-339.2	1439000	-0.040335
13836751	39	-40	-355.53	1436500	-0.042249
13836761	30	-40	-43.343	1431900	-0.005198
13836771	30	-40	-142.14	1431900	-0.017067
13836781	30	-40	-250.24	1428300	-0.030016
13836791	30	-40	-338.01	1425800	-0.040517
13836801	24	-34	-333.97	1436600	-0.039756
13836811	22	-32	-325.95	1433500	-0.038769
13836821	20	-30	-316.86	1432300	-0.037676
13836831	18	-28	-311.19	1431100	-0.036989
13836841	16	-26	-319.66	1429900	-0.037983
13836851	14	-24	-307.93	1429300	-0.036584
13836861	12	-22	-296.95	1415800	-0.035614
13836871	10	-20	-301.9	1414600	-0.036196
13836881	8	-18	-294.31	1413400	-0.035274
13836891	6	-16	-278.15	1412800	-0.033332
13836901	4	-14	-262.23	1411700	-0.031414

Ramp-down cases for model 13, AHAVAW

Table 89: VAWT motion test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13054811	0	5.4	1.189	863200	0.085732
13054821	0	10	1.124	862820	0.081032
13054831	0	12.2	1.109	862060	0.079923
13054841	0	13.8	1.109	862060	0.079923
13054851	0	17.4	1.109	861680	0.079909
13054861	0	22.6	1.095	861680	0.0789
13054871	0	32	1.095	860920	0.078874
13054891	0	5.4	1.612	1197500	0.082689
13054901	0	10	1.526	1195900	0.078238
13054911	0	12.2	1.526	1194900	0.078212
13054921	0	13.8	1.506	1193900	0.07716
13054931	0	17.4	1.506	1192300	0.077121
13054941	0	22.6	1.486	1191800	0.076084
13054951	0	32.8	1.486	1191300	0.076071
13054961	0	5.4	1.218	1601500	0.046129
13054971	0	10	1.218	1598000	0.046091
13054981	0	12.2	1.218	1595300	0.04606
13054991	0	13.8	1.218	1589800	0.045998
13055001	0	17.4	1.218	1588500	0.045983
13055011	0	22.6	1.218	1585100	0.045944
13055021	0	32.8	1.218	1583000	0.045921
13055041	0	5.4	1.626	2073100	0.045657
13055051	0	10	1.626	2066200	0.045596
13055061	0	12.2	1.626	2060100	0.045544
13055071	0	13.8	1.626	2054100	0.045492
13055081	0	17.4	1.626	2049800	0.045455
13055091	0	32.8	1.626	2041300	0.045381
13055102	0	32	1.626	1971100	0.049027
13055111	0	5.4	0.878	1566800	0.03262
13055121	0	10	0.842	1565500	0.031273
13055131	0	12.2	0.831	1564200	0.030854
13055141	0	13.8	0.82	1563500	0.030441
13055151	0	17.4	0.82	1562200	0.030431
13055161	0	22.6	0.81	1560900	0.03005
13055171	0	32	0.81	1559600	0.03004
13055191	0	5.4	1.809	1644600	0.068451
13055201	0	10	1.71	1641700	0.064661
13055211	0	12.2	1.686	1640300	0.063732
13055221	0	13.8	1.686	1638100	0.063699
13055231	0	17.4	1.664	1636700	0.062847
13055241	0	22.6	1.664	1634600	0.062815
13055251	0	32	1.664	1631700	0.062772
13055261	0	5.4	1.218	1639600	0.045836
13055271	0	10	1.218	1636100	0.045797
13055281	0	12.2	1.218	1631800	0.045751
13055291	0	13.8	1.218	1629000	0.04572
13055301	0	17.4	1.218	1626200	0.045689
13055311	0	22.6	1.218	1623400	0.045658

Table continued on next page...

VAWT motion test cases for model 13, AHAVAW

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
13055321	0	32	1.218	1620600	0.045627
13055331	0	5.4	1.462	1611700	0.055267
13055341	0	10	1.462	1608300	0.055221
13055351	0	12.2	1.462	1605500	0.055184
13055361	0	13.8	1.462	1602700	0.055146
13055371	0	17.4	1.462	1600000	0.05511
13055381	0	22.6	1.462	1597900	0.055082
13055391	0	32	1.462	1596600	0.055063
13055401	0	5.4	1.827	1609900	0.068935
13055411	0	10	1.827	1606500	0.068878
13055421	0	12.2	1.827	1604400	0.068843
13055431	0	13.8	1.827	1602300	0.068808
13055441	0	17.4	1.827	1600900	0.068785
13055451	0	22.6	1.827	1598200	0.068739
13055461	0	32	1.827	1597500	0.068728
13055481	0	12	0.682	1948000	0.022731
13055482	0	12	1.36	2002200	0.045318
13055492	0	12	1.36	1989000	0.045479
13055502	0	20	1.36	1976700	0.045341
13055512	0	20	1.36	1973900	0.045126
13055521	0	30	1.36	1959000	0.046003
13055531	0	30	1.36	1944100	0.046073

VAWT motion cases for model 13, AHAVAW

Table 90: Static test cases for model 14, GUVA10

File name	Start AoA [deg]	Arc [deg]	Re
14000011	-2	30	1510300
14000741	-2	30	1040600
14000831	-2	30	2068400
14000921	-2	30	1427700
14001681	-2	30	1536200
14002311	-2	30	1559400
14003471	-2	30	1555500
14003871	-2	30	988350
14004041	-2	30	1934300
14004211	-2	30	1991300
14004361	-2	30	1077100
14004511	-2	30	780270
14004661	-2	30	1519600
14805371	-2	30	1531100
14805571	-2	31	1554200
14806131	-2	31	1537300

Static test cases for model 14, GUVA10

Table 91: Unsteady static test cases for model 14, GUVA10

File name	Nominal AoA [deg]	Mean AoA [deg]	Re
14040021	-4	-3.93	1505000
14040031	-2	-1.95	1500400
14040041	0	0.02	1499700
14040051	2	2.01	1498400
14040061	4	3.99	1497100
14040071	6	6.01	1497100
14040081	8	8.03	1495100
14040091	10	10.06	1494500
14040101	11	11.06	1493200
14040111	12	12.13	1491800
14040121	13	13.15	1491200
14040131	14	14.09	1490200
14040141	15	15.13	1486900
14040151	16	16.18	1486300
14040161	18	18.22	1483700
14040171	20	20.22	1482400
14040181	22	22.27	1480400
14040191	24	24.23	1478500
14040201	26	26.17	1477200
14040211	28	28.11	1476000
14040221	30	30.08	1474000
14040231	-4	-3.95	1478900
14040241	-2	-1.96	1477000
14040251	0	-0.05	1475700
14040261	2	1.91	1475000

Table continued on next page...

14040271	4	3.94	1473700
14040281	6	5.95	1472500
14040291	8	7.99	1472500
14040301	10	10.04	1471200
14040311	11	11.03	1471200
14040321	12	12.1	1469300
14040331	13	13.12	1468600
14040341	14	14.19	1471500
14040351	15	15.2	1468900
14040361	16	16.19	1467700
14040371	18	18.23	1466400
14040381	20	20.25	1465800
14040391	22	22.22	1464500
14040401	24	24.19	1462000
14040411	26	26.24	1460100
14040421	28	28.17	1459400
14040431	30	30.05	1457500

Unsteady Static test cases for model 14, GUVA10

Table 92: Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14011691	10	4	0.233	1522200	0.010086
14011701	10	6	0.233	1516900	0.010072
14011711	10	8	0.233	1514200	0.010065
14011721	10	10	0.233	1511500	0.010058
14011731	10	4	0.582	1503300	0.025263
14011741	10	6	0.582	1500600	0.025245
14011751	10	8	0.582	1498600	0.025233
14011761	10	10	0.582	1496000	0.025215
14011771	10	4	1.165	1510400	0.050085
14011781	10	6	1.165	1507700	0.05005
14011791	10	8	1.165	1506400	0.050033
14011801	10	10	1.165	1504500	0.050008
14011811	10	4	1.747	1502400	0.075276
14011821	10	6	1.747	1499800	0.075225
14011831	10	8	1.747	1497800	0.075186
14011841	10	10	1.747	1495800	0.075148
14011851	10	4	2.33	1499800	0.10008
14011861	10	6	2.33	1497200	0.10001
14011871	10	8	2.33	1495900	0.09998
14011881	10	10	2.33	1494600	0.099946
14011891	10	4	2.912	1514800	0.12458
14011901	10	6	2.912	1512100	0.1245
14011911	10	8	2.912	1510800	0.12446
14011921	10	10	2.912	1508800	0.12439
14011931	10	4	3.496	1497100	0.1506
14011941	10	6	3.496	1494400	0.1505
14011951	10	8	3.496	1493100	0.15045
14011961	10	10	3.496	1491800	0.1504
14011971	10	4	4.077	1485000	0.17653
14011981	10	6	4.077	1483000	0.17644
14011991	10	8	4.077	1481100	0.17635
14012001	10	10	4.077	1480400	0.17632
14012011	3	8	0.233	1478600	0.010126
14012021	4	8	0.233	1474100	0.010114
14012031	5	8	0.233	1471500	0.010107
14012041	6	8	0.233	1469000	0.0101
14012051	7	8	0.233	1467100	0.010095
14012061	8	8	0.233	1473500	0.010081
14012071	9	8	0.233	1469700	0.010071
14012081	11	8	0.233	1467100	0.010064
14012091	12	8	0.233	1465200	0.010059
14012101	13	8	0.233	1463300	0.010054
14012111	14	8	0.233	1466900	0.010053
14012121	15	8	0.233	1463100	0.010043
14012131	16	8	0.233	1461300	0.010038
14012141	17	8	0.233	1458700	0.010031
14012151	20	8	0.233	1456900	0.010026
14012161	3	8	0.582	1452600	0.025286

Table continued on next page...

Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14012171	4	8	0.582	1449400	0.025264
14012181	5	8	0.582	1448200	0.025256
14012191	6	8	0.582	1447000	0.025247
14012201	7	8	0.582	1446300	0.025243
14012211	8	8	0.582	1469900	0.025017
14012221	9	8	0.582	1463000	0.024971
14012231	11	8	0.582	1461700	0.024963
14012241	12	8	0.582	1460500	0.024954
14012251	13	8	0.582	1459200	0.024946
14012261	14	8	0.582	1480000	0.024892
14012271	15	8	0.582	1477400	0.024875
14012281	16	8	0.582	1475500	0.024863
14012291	17	8	0.582	1473600	0.02485
14012301	20	8	0.582	1472300	0.024842
14012321	3	8	1.165	1559200	0.049819
14012331	4	8	1.165	1555100	0.049767
14012341	5	8	1.165	1553000	0.049741
14012351	6	8	1.165	1551600	0.049724
14012361	7	8	1.165	1550200	0.049707
14012371	8	8	1.165	1544200	0.049899
14012381	9	8	1.165	1541500	0.049864
14012391	11	8	1.165	1539400	0.049838
14012401	12	8	1.165	1538000	0.049821
14012411	13	8	1.165	1536000	0.049795
14012421	14	8	1.165	1525700	0.050255
14012431	15	8	1.165	1522300	0.050211
14012441	16	8	1.165	1520300	0.050185
14012451	17	8	1.165	1518200	0.050159
14012461	20	8	1.165	1516900	0.050142
14012471	3	8	1.747	1515000	0.075518
14012481	4	8	1.747	1512300	0.075466
14012491	5	8	1.747	1511000	0.07544
14012501	6	8	1.747	1509600	0.075414
14012511	7	8	1.747	1509000	0.075401
14012521	8	8	1.747	1515200	0.075413
14012531	9	8	1.747	1512600	0.075362
14012541	11	8	1.747	1511200	0.075336
14012551	12	8	1.747	1509200	0.075297
14012561	13	8	1.747	1507900	0.075271
14012571	14	8	1.747	1509800	0.075312
14012581	15	8	1.747	1507200	0.07526
14012591	16	8	1.747	1505800	0.075234
14012601	17	8	1.747	1503800	0.075195
14012611	20	8	1.747	1502500	0.07517
14012621	3	8	2.33	1500600	0.10069
14012631	4	8	2.33	1498600	0.10064
14012641	5	8	2.33	1497300	0.1006
14012651	6	8	2.33	1496000	0.10057

Table continued on next page...

Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14012661	7	8	2.33	1494700	0.10054
14012671	8	8	2.33	1505400	0.10038
14012681	9	8	2.33	1503400	0.10033
14012691	11	8	2.33	1502100	0.10029
14012701	12	8	2.33	1500100	0.10024
14012711	13	8	2.33	1498800	0.10021
14012721	14	8	2.33	1493700	0.10055
14012731	15	8	2.33	1491800	0.10049
14012741	16	8	2.33	1490500	0.10046
14012751	17	8	2.33	1489200	0.10043
14012761	20	8	2.33	1487900	0.10039
14012771	3	8	2.912	1496800	0.12472
14012781	4	8	2.912	1495500	0.12467
14012791	5	8	2.912	1494900	0.12465
14012801	6	8	2.912	1493600	0.12461
14012811	7	8	2.912	1492900	0.12459
14012821	8	8	2.912	1491600	0.12455
14012831	9	8	2.912	1491000	0.12452
14012841	11	8	2.912	1490700	0.125
14012851	12	8	2.912	1488100	0.12491
14012861	13	8	2.912	1486800	0.12487
14012871	14	8	2.912	1485500	0.12483
14012881	15	8	2.912	1484200	0.12479
14012891	16	8	2.912	1482900	0.12474
14012901	17	8	2.912	1482300	0.12472
14012911	20	8	2.912	1481000	0.12468
14012921	3	8	3.496	1478300	0.15087
14012931	4	8	3.496	1476400	0.15079
14012941	5	8	3.496	1475100	0.15074
14012951	6	8	3.496	1474500	0.15071
14012961	7	8	3.496	1473200	0.15066
14012971	8	8	3.496	1472500	0.15064
14012981	9	8	3.496	1471900	0.15061
14012991	11	8	3.496	1478600	0.14965
14013001	12	8	3.496	1477400	0.1496
14013011	13	8	3.496	1476700	0.14958
14013021	14	8	3.496	1475400	0.14953
14013031	15	8	3.496	1474800	0.1495
14013041	16	8	3.496	1474200	0.14948
14013051	17	8	3.496	1473500	0.14945
14013061	20	8	3.496	1472900	0.14942
14013071	3	8	4.077	1490800	0.17543
14013081	4	8	4.077	1488800	0.17534
14013091	5	8	4.077	1488200	0.17531
14013101	6	8	4.077	1486900	0.17525
14013111	7	8	4.077	1485600	0.17519
14013121	8	8	4.077	1484900	0.17516
14013131	9	8	4.077	1483600	0.1751

Table continued on next page...

Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14013141	11	8	4.077	1484600	0.1753
14013151	12	8	4.077	1482700	0.17521
14013161	13	8	4.077	1482000	0.17518
14013171	14	8	4.077	1480700	0.17512
14013181	15	8	4.077	1479400	0.17506
14013191	16	8	4.077	1478800	0.17503
14013201	17	8	4.077	1477500	0.17497
14013211	20	8	4.077	1476900	0.17495
14013221	4	10	0.233	1476100	0.010034
14013231	6	10	0.233	1472200	0.010024
14013241	8	10	0.233	1469700	0.010017
14013251	15	10	0.233	1467100	0.01001
14013261	20	10	0.233	1465200	0.010005
14013271	4	10	0.582	1464200	0.025098
14013281	6	10	0.582	1461700	0.025081
14013291	8	10	0.582	1459800	0.025069
14013301	15	10	0.582	1458500	0.02506
14013311	20	10	0.582	1456600	0.025048
14013321	4	10	1.165	1453100	0.05044
14013331	6	10	1.165	1451900	0.050423
14013341	8	10	1.165	1450600	0.050406
14013351	15	10	1.165	1449400	0.050389
14013361	20	10	1.165	1448100	0.050373
14013371	4	10	1.747	1446100	0.075918
14013381	6	10	1.747	1444200	0.075879
14013391	8	10	1.747	1442900	0.075854
14013401	15	10	1.747	1441700	0.075828
14013411	20	10	1.747	1436700	0.075727
14013421	4	10	2.33	1455900	0.10003
14013431	6	10	2.33	1455300	0.10001
14013441	8	10	2.33	1454000	0.099977
14013451	15	10	2.33	1453400	0.09996
14013461	20	10	2.33	1452100	0.099926
14013481	4	10	2.912	1527100	0.12475
14013491	6	10	2.912	1525800	0.1247
14013501	8	10	2.912	1524400	0.12466
14013511	15	10	2.912	1523100	0.12462
14013521	20	10	2.912	1521700	0.12458
14013531	4	10	3.496	1502100	0.15161
14013541	6	10	3.496	1500100	0.15153
14013551	8	10	3.496	1498800	0.15148
14013561	15	10	3.496	1498100	0.15145
14013571	20	10	3.496	1496100	0.15137
14013581	4	10	4.077	1513700	0.17512
14013591	6	10	4.077	1511100	0.175
14013601	8	10	4.077	1509100	0.17491
14013611	15	10	4.077	1508400	0.17488
14013621	20	10	4.077	1506400	0.17479

Table continued on next page...

Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14013631	0	2	1	1496300	0.042951
14013641	0	2	2.5	1495000	0.10734
14013651	0	2	5	1477600	0.21668
14013661	0	2	7.535	1475100	0.32631
14013671	0	2	9.822	1474400	0.42528
14013681	0	2	12.223	1473100	0.52906
14013691	2	2	1	1491100	0.043077
14013701	2	2	2.5	1487100	0.10758
14013711	2	2	5.046	1473900	0.21843
14013721	2	2	7.433	1472600	0.32165
14013731	2	2	10.001	1471300	0.43263
14013741	2	2	12.223	1470700	0.52866
14013751	0	4	1	1464100	0.043426
14013761	0	4	2.5	1461600	0.10849
14013771	0	4	4.955	1468800	0.21446
14013781	0	4	7.433	1466300	0.32149
14013791	0	4	9.822	1465000	0.42467
14013801	0	4	12.223	1464300	0.52839
14013811	2	4	1	1460300	0.043382
14013821	2	4	2.5	1468700	0.10757
14013831	2	4	5	1469500	0.21709
14013841	2	4	7.433	1466300	0.32246
14013851	2	4	9.822	1465000	0.42595
14013861	2	4	12.223	1464300	0.52999
14013881	3	8	1.557	1011600	0.098518
14013891	4	8	1.557	1011200	0.098501
14013901	5	8	1.557	1010700	0.098485
14013911	6	8	1.557	1010700	0.098485
14013921	7	8	1.557	1010700	0.098485
14013931	8	8	1.557	1010300	0.098468
14013941	9	8	1.557	1009800	0.098451
14013951	10	8	1.557	1009800	0.098451
14013961	11	8	1.557	988770	0.10055
14013971	12	8	1.557	988340	0.10053
14013981	13	8	1.557	987910	0.10052
14013991	14	8	1.557	987480	0.1005
14014001	15	8	1.557	987480	0.1005
14014011	16	8	1.557	987050	0.10048
14014021	17	8	1.557	987050	0.10048
14014031	20	8	1.557	986620	0.10046
14014051	3	8	3.103	1933100	0.099412
14014061	4	8	3.103	1929000	0.099329
14014071	5	8	3.103	1927300	0.099296
14014081	6	8	3.103	1924900	0.099247
14014091	7	8	3.103	1921600	0.099181
14014101	8	8	3.103	1920000	0.099148
14014111	9	8	3.103	1916700	0.099082
14014121	10	8	3.103	1915100	0.099049

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Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14014131	11	8	3.103	1923600	0.099137
14014141	12	8	3.103	1917100	0.099005
14014151	13	8	3.103	1914600	0.098956
14014161	14	8	3.103	1911400	0.098891
14014171	15	8	3.103	1910600	0.098874
14014181	16	8	3.103	1907400	0.098809
14014191	17	8	3.103	1904100	0.098744
14014201	20	8	3.103	1902500	0.098711
14014221	0	5.4	1.63	1907100	0.052489
14014231	0	10	1.63	1903000	0.052445
14014241	0	12.2	1.63	1900600	0.052419
14014251	0	13.8	1.63	1896600	0.052376
14014261	0	17.4	1.63	1894200	0.05235
14014271	0	22.6	1.63	1891800	0.052324
14014281	0	30	1.63	1888600	0.052289
14014441	0	5.4	0.894	1084600	0.052343
14014451	0	10	0.894	1084200	0.052334
14014461	0	12.2	0.894	1083700	0.052325
14014471	0	13.8	0.894	1083200	0.052316
14014481	0	17.4	0.894	1083200	0.052316
14014491	0	22.6	0.894	1083200	0.052316
14014501	0	30	0.894	1082700	0.052307
14014521	0	5.4	0.651	784100	0.052852
14014531	0	10	0.651	784100	0.052852
14014541	0	12.2	0.651	784100	0.052852
14014551	0	13.8	0.651	784100	0.052852
14014561	0	17.4	0.651	784100	0.052852
14014571	0	22.6	0.651	784100	0.052852
14014581	0	30	0.651	784100	0.052852
14014671	0	5.4	1.219	1505400	0.052736
14014681	0	10	1.219	1502100	0.052691
14014691	0	12.2	1.219	1500100	0.052664
14014701	0	13.8	1.219	1498800	0.052646
14014711	0	17.4	1.219	1497500	0.052628
14014721	0	22.6	1.219	1496100	0.05261
14014731	0	32.8	1.219	1494200	0.052583
14014881	0	5.4	0.488	1484200	0.021024
14014891	0	10	0.488	1481600	0.02101
14014901	0	12.2	0.488	1480300	0.021003
14014911	0	13.8	0.488	1479100	0.020996
14014921	0	17.4	0.488	1477100	0.020985
14014931	0	22.6	0.488	1475800	0.020978
14014941	0	30	0.488	1474500	0.020971
14014951	0	5.4	0.975	1477900	0.041982
14014961	0	10	0.975	1468300	0.041875
14014971	0	12.2	0.975	1467000	0.041861
14014981	0	13.8	0.975	1466300	0.041854
14014991	0	17.4	0.975	1465700	0.041847

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Sinusoidal test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14015001	0	22.6	0.975	1465100	0.04184
14015011	0	30	0.975	1463800	0.041826
14015161	0	5.4	1.463	1470800	0.062627
14015171	0	10	1.463	1470200	0.062617
14015181	0	12.2	1.463	1468900	0.062596
14015191	0	13.8	1.463	1468300	0.062585
14015201	0	17.4	1.463	1467000	0.062564
14015211	0	22.6	1.463	1465700	0.062543
14015221	0	30	1.463	1465100	0.062532
14015231	0	5.4	1.875	1462000	0.080157
14015241	0	10	1.875	1460700	0.08013
14015251	0	12.2	1.875	1460100	0.080117
14015261	0	13.8	1.875	1459500	0.080103
14015271	0	17.4	1.875	1458900	0.08009
14015281	0	22.6	1.875	1458200	0.080076
14015291	0	30	1.875	1457000	0.080049
14815381	10	4	0.582	1510000	0.025234
14815391	10	6	0.582	1506000	0.025208
14815401	10	8	0.582	1503400	0.025191
14815411	10	10	0.582	1502000	0.025182
14815421	10	4	2.33	1522900	0.099313
14815431	10	6	2.33	1520900	0.099262
14815441	10	8	2.33	1520200	0.099245
14815451	10	10	2.33	1518900	0.099211
14815461	10	4	4.077	1506900	0.1753
14815471	10	6	4.077	1504900	0.17521
14815481	10	8	4.077	1504300	0.17518
14815491	10	10	4.077	1502900	0.17512
14815501	0	5.4	1.875	1506900	0.080668
14815511	0	10	1.875	1504900	0.080627
14815521	0	12.2	1.875	1503600	0.080599
14815531	0	13.8	1.875	1502300	0.080572
14815541	0	17.4	1.875	1501000	0.080544
14815551	0	22.6	1.875	1499700	0.080517
14815561	0	30	1.875	1498300	0.080489

Sinusoidal oscillatory cases for model 14, GUVA10

Table 93: Ramp-up test cases for model 14, GUVA10

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
14020441	-1	39	0.74963	1465000	9.0241e-05
14020451	-1	39	1.5223	1469100	0.00018131
14020461	-1	39	3.0112	1460900	0.00035786
14020471	-1	39	4.4656	1455500	0.00053427
14020481	-1	39	5.9454	1447400	0.00070977
14020491	-1	39	7.4079	1442500	0.00089213
14020501	-1	39	14.882	1435100	0.0017886
14020511	-1	39	29.397	1432600	0.0035308
14020521	-1	39	44.2	1432600	0.0053087
14020531	-1	39	57.628	1430800	0.0069181
14020541	-1	39	73.371	1465600	0.0086448
14020551	-1	39	90.166	1459400	0.010606
14020561	-1	39	101.72	1458100	0.011961
14020571	-1	39	114.88	1455600	0.013499
14020581	-1	39	132.24	1454400	0.015534
14020591	-1	39	150.42	1442000	0.017971
14020601	-1	39	163.89	1434600	0.019541
14020611	-1	39	181.18	1434600	0.021602
14020621	-1	39	192.93	1430300	0.022976
14020631	-1	39	203.15	1430300	0.024193
14020641	-1	39	221.72	1438500	0.026411
14020651	-1	39	237.3	1434200	0.028234
14020661	-1	39	247	1431200	0.029364
14020671	-1	39	262.65	1427500	0.031193
14020681	-1	39	278.48	1426900	0.033068
14020691	-1	39	294.44	1431600	0.035158
14020701	-1	39	298.87	1428000	0.035651
14020711	-1	39	312.48	1425000	0.037244
14020721	-1	39	327.38	1424400	0.039013
14020731	-1	39	340.22	1424400	0.040543
14020751	-1	39	29.054	1041800	0.0051003
14020761	-1	39	100.05	1039000	0.017545
14020771	-1	39	206.28	1038100	0.036161
14020781	-1	39	284.64	1037100	0.049881
14020881	-1	39	29.654	1950400	0.0026178
14020891	-1	39	99.99	1935400	0.0088004
14020901	-1	39	206.77	1928800	0.018174
14020911	-1	39	290.14	1920600	0.02546
14020931	0	4	55.371	1428800	0.0066421
14020941	0	4	99.23	1426300	0.011895
14020951	0	4	107.98	1425700	0.012942
14020961	0	4	124.66	1423900	0.014934
14020971	0	4	121.82	1423300	0.014591
14020981	0	4	122.31	1423300	0.014719
14020991	0	4	116.27	1420900	0.013983
14021001	0	4	113.57	1419700	0.013653
14021011	0	4	110.79	1419100	0.013317
14021021	0	8	53.673	1431900	0.0064165

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Ramp-up test cases for model 14, GUVA10

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
14021031	0	8	96.268	1429500	0.011501
14021041	0	8	178.93	1428300	0.021369
14021051	0	8	173.99	1427100	0.020772
14021061	0	8	192.55	1425800	0.02298
14021071	0	8	192.42	1434500	0.022881
14021081	0	8	190.24	1432000	0.022606
14021091	0	8	206.56	1431400	0.024542
14021101	0	8	185.52	1430200	0.022035
14021111	0	12	52.81	1432700	0.006295
14021121	0	12	93.357	1429000	0.011117
14021131	0	12	185.81	1427800	0.022119
14021141	0	12	230.48	1427200	0.027432
14021151	0	12	243.59	1476200	0.028799
14021161	0	12	227.53	1467900	0.027004
14021171	0	12	237.44	1464700	0.028157
14021181	0	12	249.51	1462800	0.029573
14021191	0	12	237.38	1460900	0.028121
14825581	-1	40	0.78366	1533400	9.319e-05
14825601	-1	40	1.5307	1516300	0.00018249
14825611	-1	40	4.622	1500100	0.00055224
14825621	-1	40	5.8408	1494100	0.00069679
14825631	-1	40	7.517	1500000	0.0008949
14825641	-1	41	14.909	1494000	0.0017722
14825651	-1	41	29.534	1490100	0.003507
14825661	-1	41	44.4	1488800	0.0052705
14825671	-1	41	59.775	1487500	0.0070931
14825681	-1	40	75.205	1487500	0.008973
14825691	-1	40	93.135	1482300	0.011097
14825701	-1	40	103.74	1479700	0.012352
14825711	-1	40	118.07	1477100	0.014049
14825721	-1	40	135.54	1476500	0.016125
14825731	-1	40	150.78	1477900	0.017986
14825741	-1	40	166.45	1472800	0.019828
14825751	-1	40	181.1	1470900	0.021562
14825761	-1	40	197.38	1468300	0.023485
14825771	-1	40	207.45	1465800	0.024666
14825791	-1	40	238.44	1486100	0.028229
14825801	-1	41	252.57	1482800	0.029876
14825811	-1	41	266.4	1480900	0.031496
14825821	-1	41	279.69	1478300	0.033045
14825831	-1	41	288.42	1473100	0.034404
14825841	-1	41	303.42	1468000	0.036145
14825851	-1	41	322.7	1464800	0.038409
14825861	-1	41	334.09	1462900	0.039744
14825871	-1	41	348.34	1460400	0.041412

Ramp-up cases for model 14, GUVA10

Table 94: Ramp-down test cases for model 14, GUVA10

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
14030791	39	-40	-28.008	1004600	-0.0050674
14030801	39	-40	-91.687	1002800	-0.016577
14030811	38	-40	-178.62	1001900	-0.032284
14030821	39	-40	-275.47	1001000	-0.049771
14030841	39	-40	-27.798	2027100	-0.0024114
14030851	39	-40	-92.408	2012100	-0.0079931
14030861	39	-40	-179.79	2001700	-0.01552
14030871	38	-39	-259.14	1992300	-0.022328
14031201	39	-40	-0.72982	1453500	-8.7056e-05
14031211	39	-40	-1.4315	1429100	-0.00017264
14031221	39	-40	-2.8786	1422300	-0.00034652
14031231	39	-40	-4.3799	1418100	-0.00052978
14031241	39	-40	-5.7547	1413200	-0.00069515
14031251	39	-40	-7.1102	1426500	-0.00085344
14031261	39	-40	-14.008	1421000	-0.0016789
14031271	39	-40	-28.419	1419800	-0.0034049
14031281	39	-40	-41.679	1416200	-0.0049886
14031291	39	-40	-54.632	1415000	-0.0065368
14031301	38	-40	-68.319	1428300	-0.0081028
14031311	39	-40	-83.075	1425300	-0.0098448
14031321	39	-40	-92.813	1424100	-0.010995
14031331	39	-40	-102.95	1424100	-0.012196
14031341	39	-40	-120.93	1422300	-0.014319
14031351	39	-40	-136.02	1400800	-0.016401
14031361	39	-40	-148.51	1396100	-0.017883
14031371	39	-40	-157.56	1396100	-0.018973
14031381	39	-40	-171.09	1394900	-0.020595
14031391	39	-40	-183.1	1393700	-0.022034
14031401	39	-40	-187.03	1450400	-0.022083
14031411	39	-40	-201.34	1446100	-0.023745
14031421	39	-40	-213.7	1443600	-0.025186
14031431	39	-40	-223.11	1441100	-0.026278
14031441	39	-40	-236	1439300	-0.027782
14031451	39	-40	-256.54	1420900	-0.0307
14031461	39	-40	-258.52	1416700	-0.030901
14031471	39	-40	-277.94	1414900	-0.033206
14031481	39	-40	-295.07	1413700	-0.035241
14031491	39	-40	-313.39	1412500	-0.037416
14031501	30	-40	-1.0163	1512300	-0.00012136
14031511	30	-40	-43.27	1497600	-0.0051474
14031521	30	-40	-96.658	1492900	-0.011499
14031531	30	-40	-144.11	1488300	-0.017124
14031541	30	-40	-189.97	1485100	-0.022554
14031551	30	-40	-237.82	1482500	-0.028216
14031561	30	-40	-303.41	1479900	-0.035973
14031571	24	-34	-305.48	1480100	-0.036554
14031581	22	-32	-305.27	1475000	-0.03648
14031591	20	-30	-294.81	1471800	-0.0352

Table continued on next page...

Ramp-down test cases for model 14, GUVA10

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
14031601	18	-28	-298.75	1469800	-0.035652
14031611	16	-26	-292.83	1467300	-0.034922
14031621	14	-24	-286.27	1465400	-0.034122
14031631	12	-22	-295.13	1463300	-0.035291
14031641	10	-20	-285.42	1460200	-0.034101
14031651	8	-18	-289.55	1458300	-0.034577
14031661	6	-16	-263.87	1456400	-0.031494
14031671	4	-14	-255.73	1454500	-0.030507
14835881	40	-41	-0.75802	1465900	-9.0208e-05
14835901	40	-41	-5.8398	1457800	-0.00069049
14835911	40	-41	-14.423	1448400	-0.0017206
14835921	40	-41	-42.953	1444600	-0.005119
14835931	40	-41	-71.714	1442100	-0.0085408
14835941	40	-41	-94.149	1440300	-0.011207
14835951	40	-41	-130.01	1437800	-0.015466
14835961	40	-41	-152.73	1434400	-0.018354
14835971	40	-41	-171.94	1429400	-0.020635
14835981	40	-41	-178.84	1427000	-0.021448
14835991	40	-41	-191.6	1447000	-0.02277
14836001	40	-41	-205.88	1442000	-0.024434
14836011	40	-41	-219.51	1440200	-0.026039
14836021	40	-41	-235.36	1438300	-0.027905
14836031	40	-41	-256.49	1437700	-0.030405
14836041	40	-41	-270.02	1428100	-0.03234
14836051	40	-41	-283.26	1424400	-0.033892
14836061	40	-41	-311.71	1422000	-0.037271
14836071	40	-41	-321.97	1421400	-0.038492
14836081	40	-41	-349.73	1419500	-0.04179
14836091	31	-41	-44.484	1425200	-0.0053417
14836101	31	-41	-145.52	1422100	-0.01746
14836111	31	-41	-247.9	1419700	-0.029724
14836121	31	-41	-329.75	1419100	-0.039531
14836141	24	-35	-318.76	1511800	-0.038018
14836151	22	-33	-307.56	1508500	-0.036651
14836161	20	-30	-308.46	1505800	-0.036733
14836171	18	-28	-301.45	1503200	-0.035874
14836181	16	-26	-307.08	1501900	-0.036531
14836191	14	-24	-299.51	1499200	-0.035606
14836201	12	-22	-302.49	1494300	-0.036122
14836211	10	-20	-296.47	1490400	-0.035367
14836221	8	-18	-289.21	1488500	-0.034484
14836231	6	-16	-290.92	1486500	-0.03467
14836241	4	-14	-272.37	1485200	-0.032448

Ramp-down cases for model 14, GUVA10

Table 95: VAWT motion test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14054291	0	5.4	1.63	1965600	0.051689
14054301	0	10	1.63	1960500	0.051637
14054311	0	12.2	1.63	1956300	0.051594
14054321	0	13.8	1.63	1953000	0.051559
14054331	0	17.4	1.63	1948000	0.051508
14054341	0	22.6	1.63	1944700	0.051474
14054351	0	30	1.63	1940600	0.051431
14054371	0	5.4	1.568	1084900	0.091779
14054381	0	10	1.526	1084500	0.089305
14054391	0	12.2	1.526	1084000	0.08929
14054401	0	13.8	1.526	1084000	0.08929
14054411	0	17.4	1.506	1083500	0.088105
14054421	0	22.6	1.506	1083500	0.088105
14054431	0	30	1.489	1085900	0.086871
14054591	0	5.4	1.141	787970	0.092345
14054601	0	10	1.111	787970	0.089917
14054611	0	12.2	1.096	787970	0.088703
14054621	0	13.8	1.096	787970	0.088703
14054631	0	17.4	1.096	823060	0.08813
14054641	0	22.6	1.096	822690	0.088114
14054651	0	30	1.096	822690	0.088114
14054741	0	5.4	1.219	1513400	0.052136
14054751	0	10	1.219	1509400	0.052083
14054761	0	12.2	1.219	1507400	0.052056
14054771	0	13.8	1.219	1505500	0.052029
14054781	0	17.4	1.219	1505500	0.052029
14054791	0	22.6	1.219	1502200	0.051985
14054801	0	30	1.219	1500900	0.051967
14054811	0	5.4	0.856	1498900	0.036719
14054821	0	10	0.833	1497600	0.03572
14054831	0	12.2	0.833	1496300	0.035708
14054841	0	13.8	0.833	1494300	0.035689
14054851	0	17.4	0.833	1493000	0.035677
14054861	0	22.6	0.822	1491700	0.035194
14054871	0	30	0.822	1491000	0.035188
14055021	0	5.4	1.733	1491800	0.074123
14055031	0	10	1.686	1490500	0.072089
14055041	0	12.2	1.686	1489200	0.072064
14055051	0	13.8	1.686	1487900	0.072039
14055061	0	17.4	1.664	1486600	0.071075
14055071	0	22.6	1.664	1485300	0.071051
14055091	0	5.4	1.463	1461500	0.063293
14055101	0	10	1.463	1459600	0.063261
14055111	0	12.2	1.463	1458400	0.063239
14055121	0	13.8	1.463	1456500	0.063207
14055131	0	17.4	1.463	1455200	0.063186
14055141	0	22.6	1.463	1454600	0.063175
14055151	0	30	1.463	1453300	0.063154

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VAWT motion test cases for model 14, GUVA10

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
14055301	0	5.4	1.875	1447400	0.081013
14055311	0	10	1.875	1444900	0.080959
14055321	0	12.2	1.875	1443100	0.080918
14055331	0	13.8	1.875	1441800	0.080891
14055341	0	17.4	1.875	1441200	0.080877
14055351	0	22.6	1.875	1439900	0.08085
14055361	0	30	1.875	1439300	0.080836

VAWT motion cases for model 14, GUVA10

Table 96: Sinusoidal test cases for model 15, Sikorsky SSC-A09

File name	Mean AoA [deg]	Amplitude [deg]	Osc. Freq. [Hz]	Re	k
15010561	10	10	1.49	1488800	0.062866
15010571	10	10	2.98	1507100	0.12421
15010581	10	10	4.48	1516300	0.1856
15010591	10	10	5.97	1519500	0.2468
15010601	15	10	1.49	1475100	0.063451
15010611	15	10	2.98	1506600	0.12424
15010621	15	10	4.48	1510400	0.18632
15010631	15	10	5.97	1520700	0.24661
15010641	10	15	0.99	1468400	0.042352
15010651	10	15	1.99	1495600	0.083583
15010661	10	15	2.98	1505900	0.12431
15010671	10	15	3.98	1510100	0.16555
15010681	15	15	0.99	1410200	0.042789
15010691	15	15	1.99	1431700	0.084715
15010701	15	15	2.98	1448200	0.12542
15010711	5	10	4.48	1437100	0.19001
15010721	20	10	4.48	1432500	0.19061
15010731	25	10	4.48	1407600	0.19399
15010741	15	15	3.98	1446300	0.17286

Sinusoidal oscillatory cases for model 15, Sikorsky SSC-A09

Table 97: Ramp-up test cases for model 15, Sikorsky SSC-A09

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
15020011	-1	40	373.21	1560500	0.043946
15020021	-1	40	350.98	1566700	0.04091
15020031	-1	40	329.16	1548000	0.038592
15020041	-1	40	311.84	1556300	0.036368
15020051	-1	40	292.88	1542600	0.03446
15020061	-1	40	273.85	1556400	0.03174
15020071	-1	40	259.14	1537800	0.030397
15020081	-1	40	243.38	1527500	0.028568
15020091	-1	40	229.72	1528900	0.026939
15020101	-1	41	214.17	1535100	0.025013
15020111	-1	40	195.62	1508100	0.022701
15020121	-1	40	175.45	1508800	0.020351
15020131	-1	40	157.37	1483900	0.018449
15020141	-1	40	138.56	1500000	0.01607
15020151	-1	40	115.12	1496500	0.013382
15020161	0	39	95.174	1483400	0.011029
15020171	-1	40	74.992	1507800	0.0086521
15020181	0	40	55.017	1506000	0.0062799
15020191	-1	40	37.263	1495600	0.004283
15020201	0	39	18.753	1496300	0.0021418
15020211	0	39	9.3751	1495400	0.001065
15020411	-1	35	95.377	1539700	0.010818
15020421	-1	36	75.637	1541500	0.008481
15020431	-1	36	55.865	1538100	0.0062288
15020441	-1	37	37.089	1537800	0.0041189
15020451	-1	38	18.996	1538400	0.0021049
15020461	-1	39	380.99	2502700	0.026666
15020471	-1	41	127.36	2484700	0.0089247
15020481	-3	43	60.966	2481800	0.0042515
15020491	-1	36	29.056	2476000	0.0020189
15020501	-1	40	240.34	2204900	0.018979
15020511	-1	41	125.99	2183700	0.0098086
15020521	-1	41	55.779	2167900	0.0043482
15020531	-1	40	27.808	2136100	0.0021743
15020541	-1	41	204.39	2137100	0.015974
15020551	-1	41	90.193	2144300	0.006984

Ramp-up cases for model 15, Sikorsky SSC-A09

Table 98: Ramp-down test cases for model 15, Sikorsky SSC-A09

File name	Start AoA [deg]	Arc [deg]	Pitch-Rate [deg/s]	Re	r
15030221	40	-41	-379.01	1343600	-0.051139
15030231	40	-41	-350.49	1337300	-0.047515
15030241	40	-41	-318.62	1331700	-0.04311
15030251	40	-41	-299.93	1328300	-0.040437
15030261	40	-41	-277.79	1307200	-0.037825
15030271	40	-41	-273.02	1306800	-0.037186
15030281	40	-41	-234.75	1307200	-0.031771
15030291	40	-41	-221.13	1298400	-0.029947
15030301	40	-41	-210.35	1290800	-0.028484
15030311	40	-41	-195.17	1286000	-0.026525
15030321	40	-41	-185.22	1294300	-0.025013
15030331	40	-41	-169.91	1288600	-0.022908
15030341	40	-41	-150.94	1289000	-0.020344
15030351	40	-41	-137.5	1285000	-0.018479
15030361	40	-41	-111.33	1265100	-0.015108
15030371	40	-41	-91.948	1276100	-0.01237
15030381	40	-41	-75.127	1277000	-0.010099
15030391	40	-41	-54.946	1278200	-0.0073797
15030401	40	-41	-36.792	1291500	-0.0048907

Ramp-down cases for model 15, Sikorsky SSC-A09