

# **Potential Flow Forces and Moments from Selected Ship Flow Codes in a Set of Numerical Experiments**

## **Appendix I — Time History Plots for 2-DOF Wave Contouring Motion of Model 5613**

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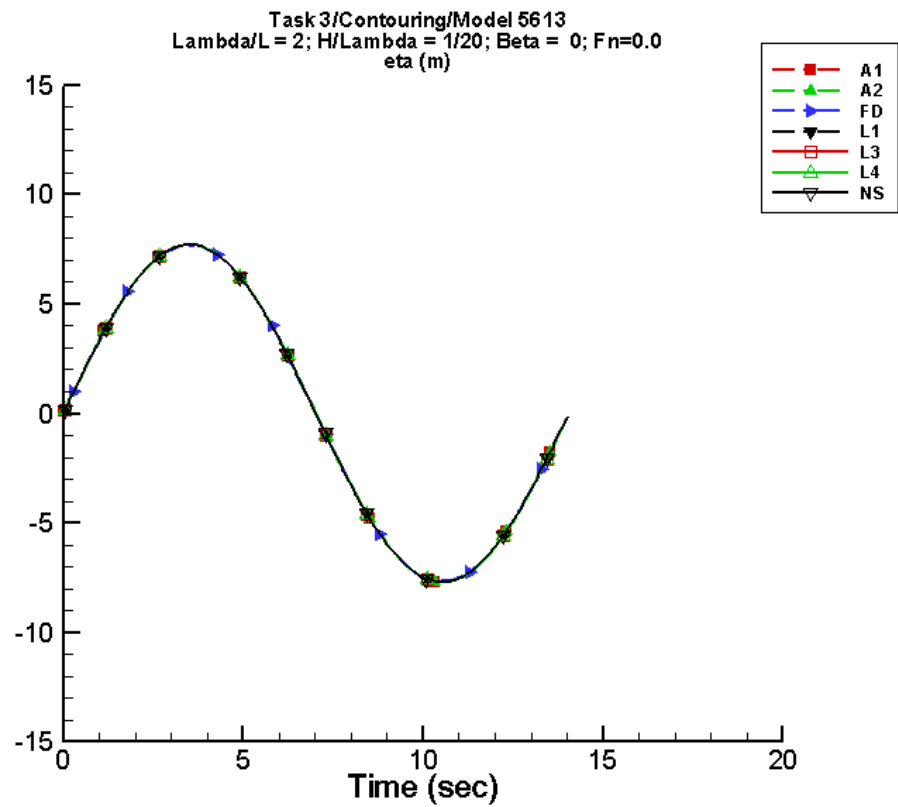
### Introduction

This appendix contains all the plots and tables for the simulations of task 3 involving 2-DOF nominal wave contouring of Model 5613 scaled to the length 154 m. It presents results for wave contouring in both beam and following seas. In either case the vertical position of the center of gravity is always at the water surface. For condition 1, where the ship undergoes prescribed heave and pitch motions in regular following seas, the wavelength and wave steepness are given by the equations  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . The longitudinal slope of the hull matches the slope of the waves at CG. For condition 2, where the ship undergoes prescribed heave and roll motions in regular beam seas, the wavelength and wave steepness are given by the equations  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Here the transverse slope of the hull matches the slope of the waves at CG. Results for Froude numbers 0.0 and 0.3 are included.

Each of Figures I-1 through I-102 contains time-history plots of the results from all codes for each variable during one period of motion. If the code runner did not supply the data, the data vanish identically, or the data are insufficient for a single period, there is no curve for that code. As necessary, the time that appears on the horizontal axis has been shifted so that the heave displacement (equal to the wave height at CG) is of the form  $\eta = \eta_a \sin \omega t$  for some amplitude  $\eta_a$  and some amplitude  $\omega$ . Further, the time  $t$  has been replaced by  $t \bmod T_e$  where  $T_e$  is the period of the motion. For beam seas, the data from AEGIR were modified before plotting so that the results correspond to waves coming from the starboard side of the hull.

Tables I-1 through I-204 contain information related to the results found in the figures. Two tables follow each figure. The first table gives estimates of the mean value and the amplitudes and phases of the first and second harmonics obtained by Fourier analysis. The second table gives the minimum and maximum of the variable plotted in the figure. The minimum and maximum of both the filtered and unfiltered variable are provided although the plot itself was obtained from unfiltered data.

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-1. Time history of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

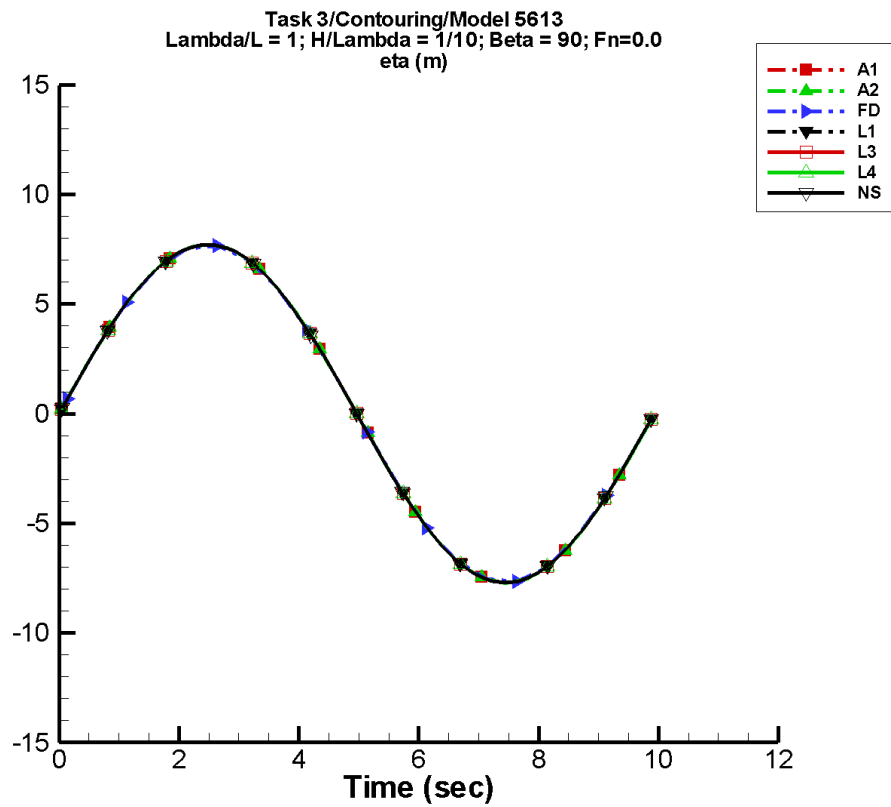
Table I-1. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (m)	$a_1$ (m)	$\Phi_1$ (deg)	$a_2$ (m)	$\Phi_2$ (deg)
A1	7.10E-04	7.71	1	1.08E-03	164
A2	7.10E-04	7.71	1	1.08E-03	164
FD	1.40E-05	7.70	8	8.13E-03	-165
L1	8.93E-04	7.70	1	1.38E-03	156
L3	8.93E-04	7.70	1	1.38E-03	156
L4	8.93E-04	7.70	1	1.38E-03	156
NF	—	—	—	—	—
NS	3.22E-03	7.70	1	4.80E-03	163

Table I-2. Minimum and maximum of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (m)	Maximum (m)	Minimum (m)	Maximum (m)
A1	-7.71	7.71	-7.67	7.67
A2	-7.71	7.71	-7.67	7.67
FD	-7.66	7.67	-6.67	6.67
L1	-7.70	7.70	-7.69	7.69
L3	-7.70	7.70	-7.69	7.69
L4	-7.70	7.70	-7.69	7.69
NF	—	—	—	—
NS	-7.70	7.70	-7.68	7.72

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-2. Time history of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-3. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

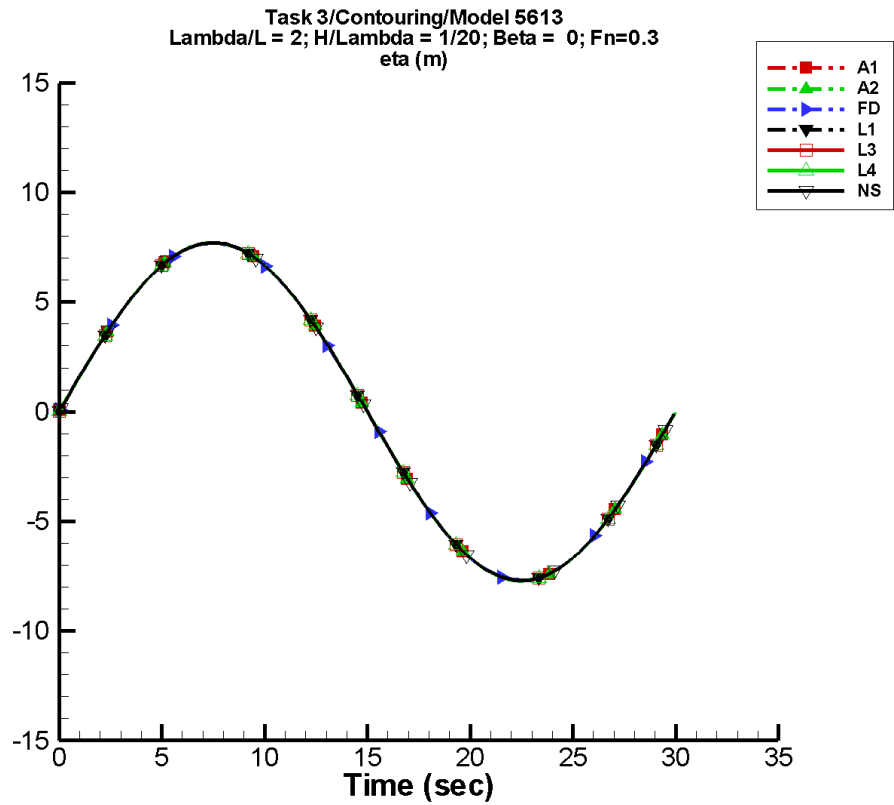
Code	$a_0$ (m)	$a_1$ (m)	$\Phi_1$ (deg)	$a_2$ (m)	$\Phi_2$ (deg)
A1	-4.01E-03	7.71	-4	6.03E-03	-24
A2	-4.01E-03	7.71	-4	6.03E-03	-24
FD	2.34E-03	7.70	-18	3.58E-03	3
L1	-3.18E-03	7.70	-4	5.06E-03	-37
L3	-3.18E-03	7.70	-4	5.06E-03	-37
L4	-3.18E-03	7.70	-4	5.06E-03	-37
NF	—	—	—	—	—
NS	-1.73E-03	7.70	0	2.55E-03	-18

Table I-4. Minimum and maximum of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (m)	Maximum (m)	Minimum (m)	Maximum (m)
A1	-7.71	7.71	-7.63	7.63
A2	-7.71	7.71	-7.63	7.63
FD	-7.65	7.66	-7.23	5.65
L1	-7.70	7.70	-7.67	7.67
L3	-7.70	7.70	-7.67	7.67
L4	-7.70	7.70	-7.67	7.67
NF	—	—	—	—
NS	-7.70	7.70	-7.68	7.71



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-3. Time history of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

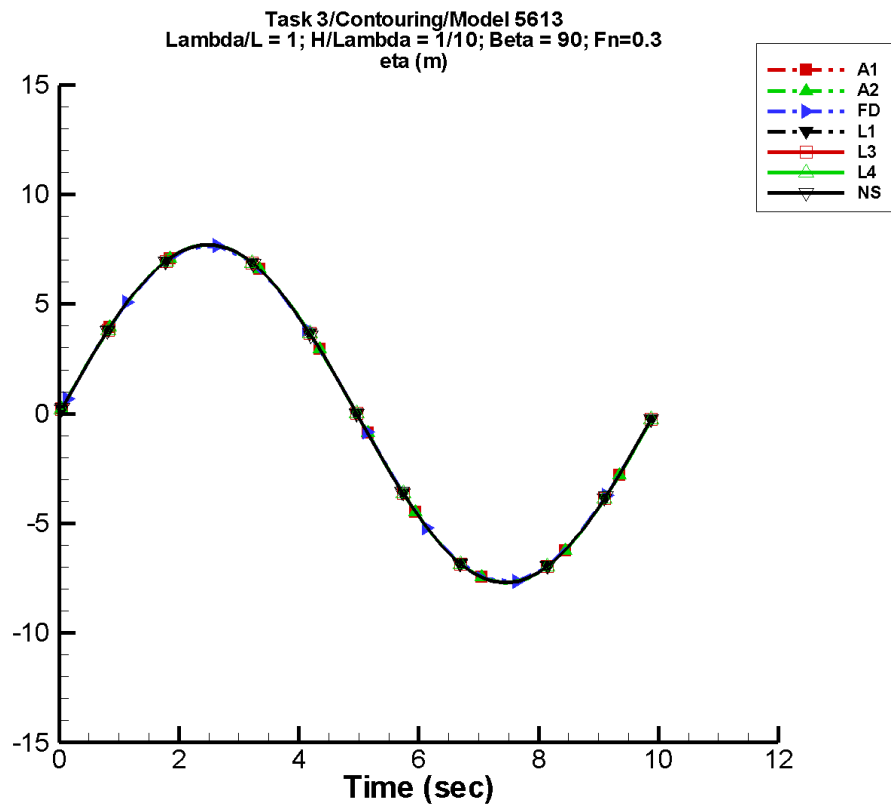
Table I-5. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (m)	$a_1$ (m)	$\Phi_1$ (deg)	$a_2$ (m)	$\Phi_2$ (deg)
A1	6.95E-03	7.71	6	1.04E-02	174
A2	6.95E-03	7.71	6	1.04E-02	174
FD	-8.12E-03	7.70	10	1.66E-02	-125
L1	-7.24E-03	7.70	4	1.06E-02	-137
L3	-7.24E-03	7.70	4	1.06E-02	-137
L4	-7.24E-03	7.70	4	1.06E-02	-137
NF	—	—	—	—	—
NS	7.52E-03	7.70	1	1.12E-02	164

Table I-6. Minimum and maximum of  $\eta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (m)	Maximum (m)	Minimum (m)	Maximum (m)
A1	-7.71	7.71	-7.70	7.72
A2	-7.71	7.71	-7.70	7.72
FD	-7.70	7.70	-7.49	7.49
L1	-7.70	7.70	-7.70	7.70
L3	-7.70	7.70	-7.70	7.70
L4	-7.70	7.70	-7.70	7.70
NF	—	—	—	—
NS	-7.70	7.70	-7.68	7.72

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-4. Time history of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

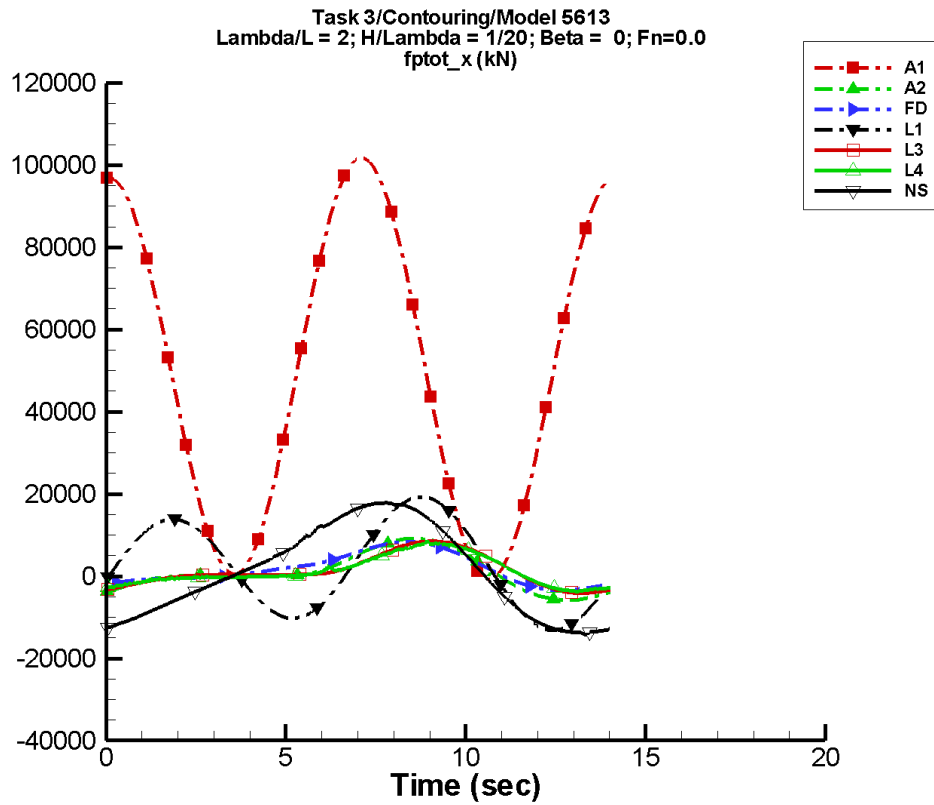
Table I-7. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (m)	$a_1$ (m)	$\Phi_1$ (deg)	$a_2$ (m)	$\Phi_2$ (deg)
A1	-4.01E-03	7.71	-4	6.03E-03	-24
A2	-4.01E-03	7.71	-4	6.03E-03	-24
FD	2.34E-03	7.70	-18	3.58E-03	3
L1	-3.18E-03	7.70	-4	5.06E-03	-37
L3	-3.18E-03	7.70	-4	5.06E-03	-37
L4	-3.18E-03	7.70	-4	5.06E-03	-37
NF	—	—	—	—	—
NS	-1.73E-03	7.70	0	2.55E-03	-19

Table I-8. Minimum and maximum of  $\eta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (m)	Maximum (m)	Minimum (m)	Maximum (m)
A1	-7.71	7.71	-7.63	7.63
A2	-7.71	7.71	-7.63	7.63
FD	-7.65	7.66	-7.23	5.65
L1	-7.70	7.70	-7.67	7.67
L3	-7.70	7.70	-7.67	7.67
L4	-7.70	7.70	-7.67	7.67
NF	—	—	—	—
NS	-7.70	7.70	-7.68	7.71

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-5. Time history of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

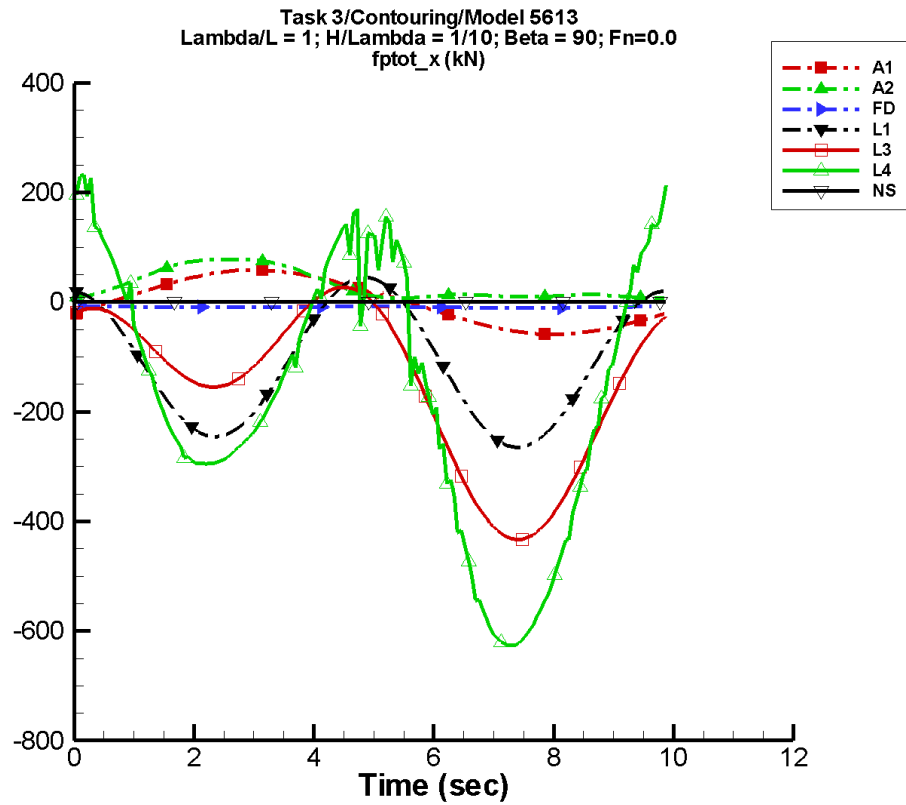
Table I-9. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	4.97E+04	2.51E+03	-78	4.97E+04	87
A2	902.	5.04E+03	-103	3.49E+03	-2
FD	1.60E+03	4.62E+03	-96	2.21E+03	25
L1	2.44E+03	3.06E+03	-107	1.41E+04	0
L3	1.31E+03	4.25E+03	-120	2.89E+03	-26
L4	1.20E+03	4.08E+03	-123	2.48E+03	-22
NF	—	—	—	—	—
NS	938.	1.47E+04	-91	3.40E+03	17

Table I-10. Minimum and maximum of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-764.	1.02E+05	251.	1.01E+05
A2	-5.84E+03	9.09E+03	-5.75E+03	9.02E+03
FD	-3.48E+03	8.41E+03	-2.82E+03	6.47E+03
L1	-1.32E+04	1.92E+04	-1.30E+04	1.91E+04
L3	-4.12E+03	8.48E+03	-4.09E+03	8.45E+03
L4	-3.70E+03	8.72E+03	-3.61E+03	7.95E+03
NF	—	—	—	—
NS	-1.42E+04	1.78E+04	-1.38E+04	1.77E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-6. Time history of  $F_x^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-11. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

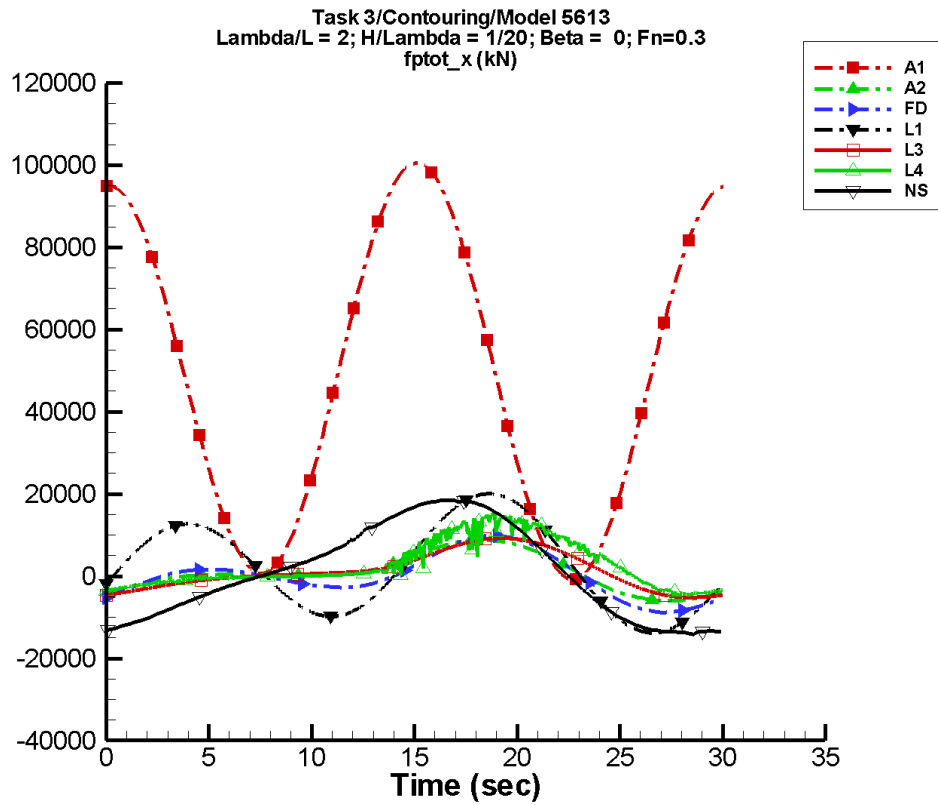
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-0.290	57.0	-24	0.142	-107
A2	30.3	32.1	-8	18.2	-104
FD	-9.17	0.580	-10	1.10	47
L1	-111.	15.7	-53	144.	88
L3	-152.	141.	-9	142.	88
L4	-166.	146.	3	306.	89
NF	—	—	—	—	—
NS	-1.17E-05	1.93E-03	-94	5.29E-04	-4

Table I-12. Minimum and maximum of  $F_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-58.9	58.5	-58.2	57.8
A2	6.86	78.2	7.82	77.8
FD	-11.1	-7.56	-10.6	-8.04
L1	-265.	44.7	-263.	42.5
L3	-434.	27.1	-431.	25.0
L4	-627.	233.	-622.	207.
NF	—	—	—	—
NS	-1.99E-03	2.27E-03	-1.99E-03	2.26E-03



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-7. Time history of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

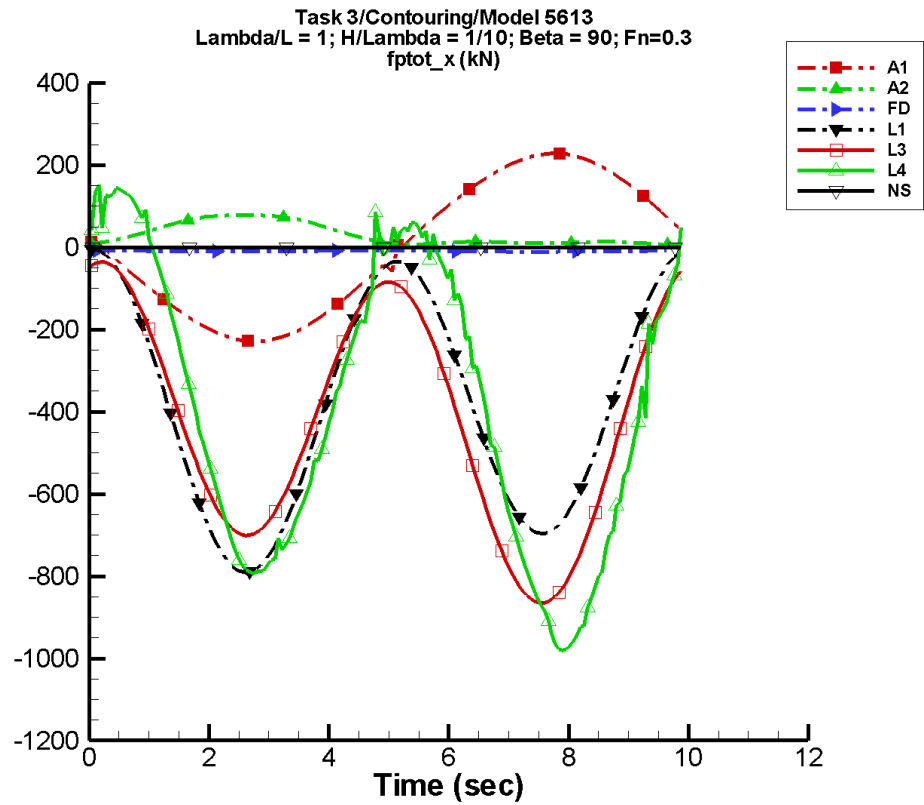
Table I-13. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	4.89E+04	2.79E+03	-72	4.89E+04	99
A2	831.	4.95E+03	-96	3.46E+03	7
FD	-85.9	4.66E+03	-94	5.68E+03	6
L1	2.31E+03	4.19E+03	-102	1.40E+04	8
L3	1.22E+03	5.36E+03	-113	2.93E+03	-22
L4	2.67E+03	6.78E+03	-127	3.85E+03	-18
NF	—	—	—	—	—
NS	862.	1.50E+04	-91	3.77E+03	15

Table I-14. Minimum and maximum of  $F_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-832.	1.01E+05	-614.	1.00E+05
A2	-6.03E+03	8.83E+03	-6.01E+03	8.80E+03
FD	-8.85E+03	9.87E+03	-8.08E+03	9.04E+03
L1	-1.38E+04	2.00E+04	-1.38E+04	2.00E+04
L3	-5.16E+03	9.26E+03	-5.16E+03	9.25E+03
L4	-4.94E+03	1.63E+04	-4.36E+03	1.45E+04
NF	—	—	—	—
NS	-1.41E+04	1.85E+04	-1.37E+04	1.84E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-8. Time history of  $F_x^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

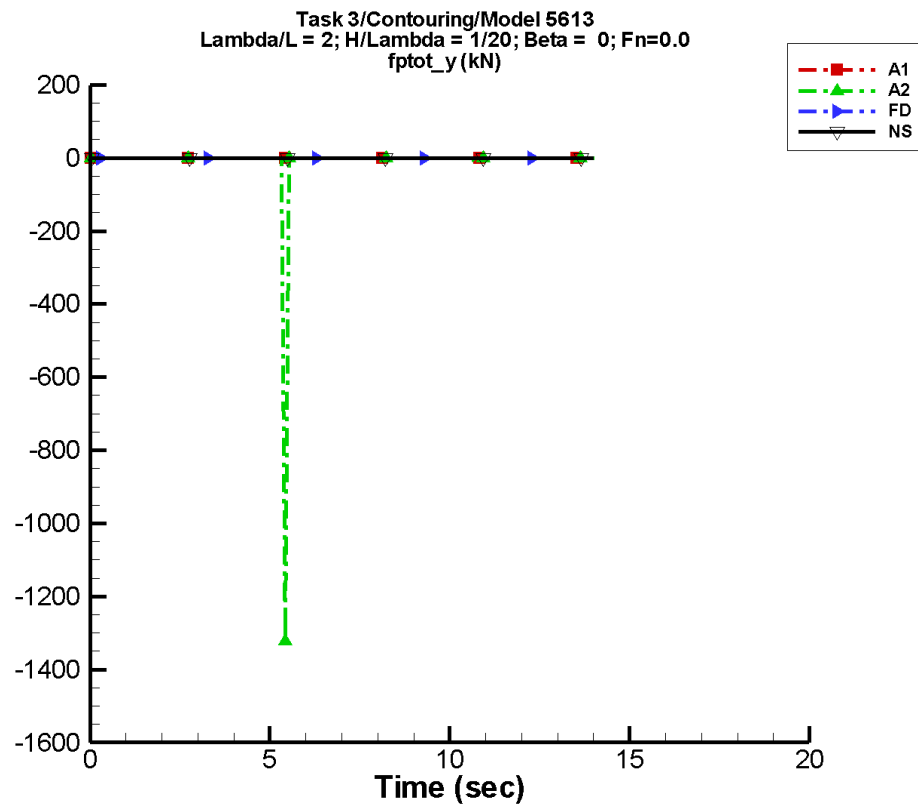
Table I-15. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	9.19E-02	224.	167	0.534	-84
A2	30.3	32.1	-8	18.2	-104
FD	-9.17	0.582	-11	1.10	47
L1	-383.	48.9	155	361.	73
L3	-423.	86.0	8	360.	73
L4	-384.	71.8	-6	486.	50
NF	—	—	—	—	—
NS	-1.53E-05	1.93E-03	-95	5.33E-04	-4

Table I-16. Minimum and maximum of  $F_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-229.	228.	-226.	226.
A2	6.86	78.2	7.82	77.8
FD	-11.1	-7.57	-10.6	-8.05
L1	-792.	-6.22	-786.	-4.94
L3	-865.	-36.1	-860.	-38.6
L4	-981.	195.	-962.	137.
NF	—	—	—	—
NS	-1.98E-03	2.31E-03	-1.98E-03	2.30E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-9. Time history of  $F_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

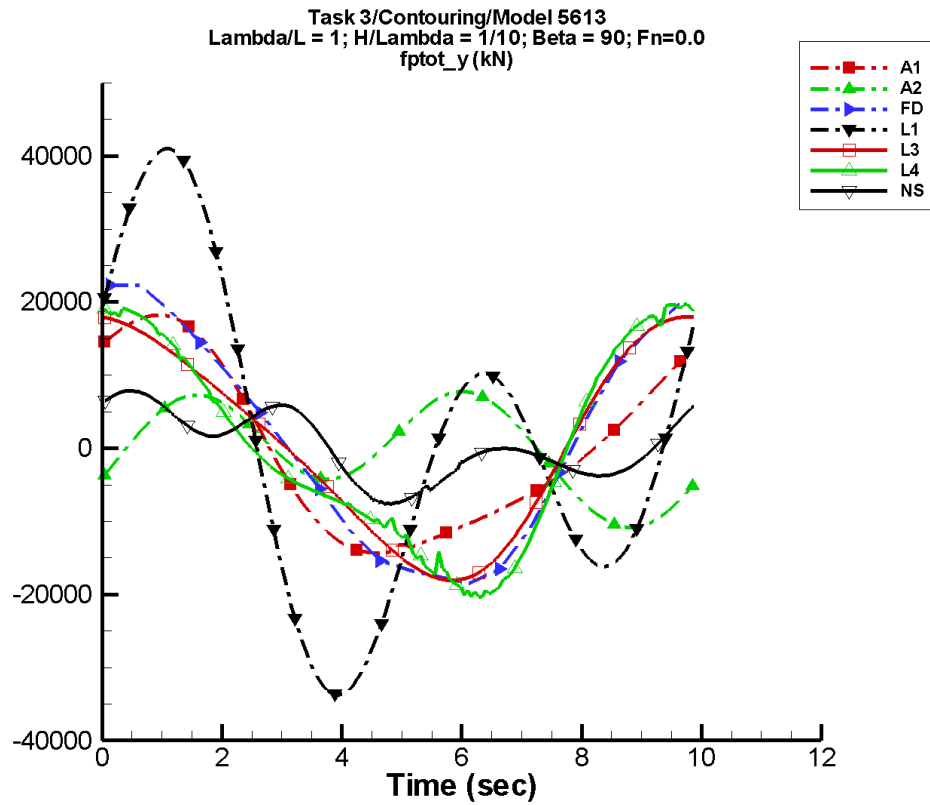
Table I-17. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	5.60E-05	9.75E-02	-112	4.12E-04	104
A2	-10.2	18.2	136	17.7	-10
FD	-2.08E-05	2.90E-05	-26	1.09E-05	24
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-3.32E-04	2.02E-04	-42	1.66E-04	4

Table I-18. Minimum and maximum of  $F_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-9.88E-02	0.105	-9.81E-02	0.104
A2	-1.32E+03	6.74E-04	-176.	15.1
FD	-1.90E-04	1.36E-04	-9.00E-05	1.15E-05
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-4.19E-02	2.83E-02	-5.84E-03	3.93E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-10. Time history of  $F_y^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-19. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

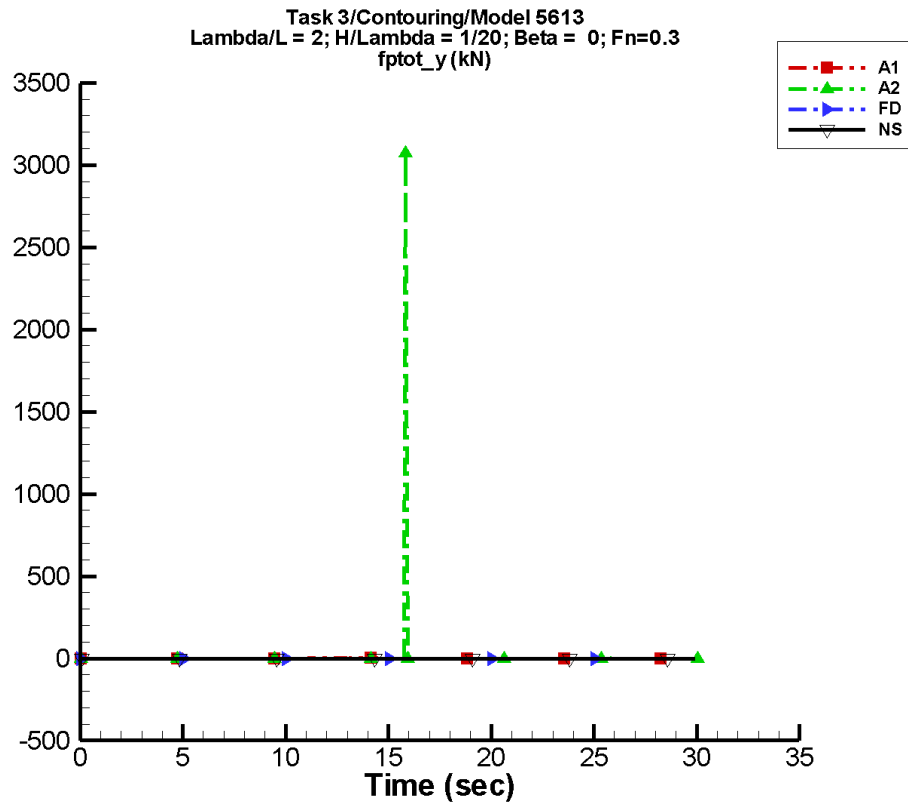
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	56.6	1.52E+04	69	3.85E+03	-7
A2	-229.	3.79E+03	-56	7.29E+03	-13
FD	1.31E+03	2.03E+04	54	1.91E+03	96
L1	747.	1.80E+04	72	2.44E+04	-6
L3	733.	1.72E+04	71	3.17E+03	158
L4	325.	1.80E+04	74	4.74E+03	127
NF	—	—	—	—	—
NS	176.	4.65E+03	55	1.10E+03	-16

Table I-20. Minimum and maximum of  $F_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.43E+04	1.82E+04	-1.41E+04	1.80E+04
A2	-1.08E+04	7.75E+03	-1.05E+04	7.43E+03
FD	-1.85E+04	2.25E+04	-1.37E+04	2.08E+04
L1	-3.37E+04	4.10E+04	-3.34E+04	4.06E+04
L3	-1.81E+04	1.80E+04	-1.80E+04	1.79E+04
L4	-2.04E+04	1.97E+04	-2.00E+04	1.93E+04
NF	—	—	—	—
NS	-7.59E+03	7.86E+03	-7.49E+03	7.75E+03



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-11. Time history of  $F_y^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

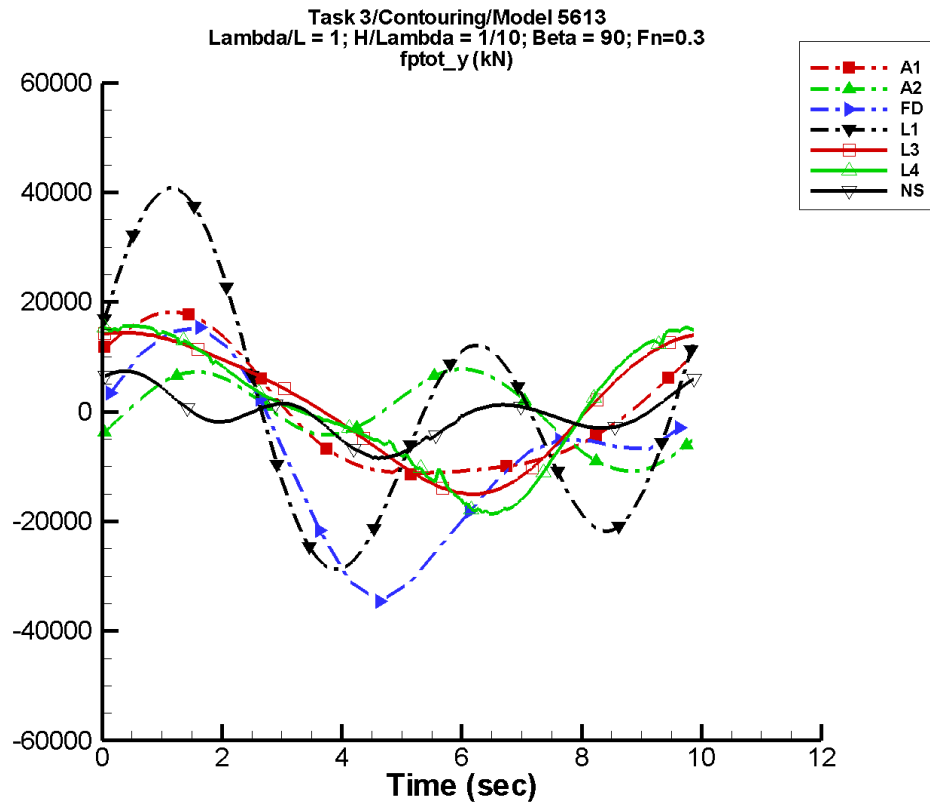
Table I-21. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.37E-04	0.117	-61	1.70E-03	-168
A2	10.2	21.1	-91	18.3	79
FD	3.65E-06	3.92E-06	111	7.50E-06	-179
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-4.50E-04	7.33E-04	80	5.34E-04	-111

Table I-22. Minimum and maximum of  $F_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-0.121	0.125	-0.118	0.123
A2	-8.56	3.07E+03	-35.1	410.
FD	-1.65E-04	2.16E-04	-3.56E-05	3.67E-05
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.72E-02	1.15E-02	-5.12E-03	2.92E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-12. Time history of  $F_y^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

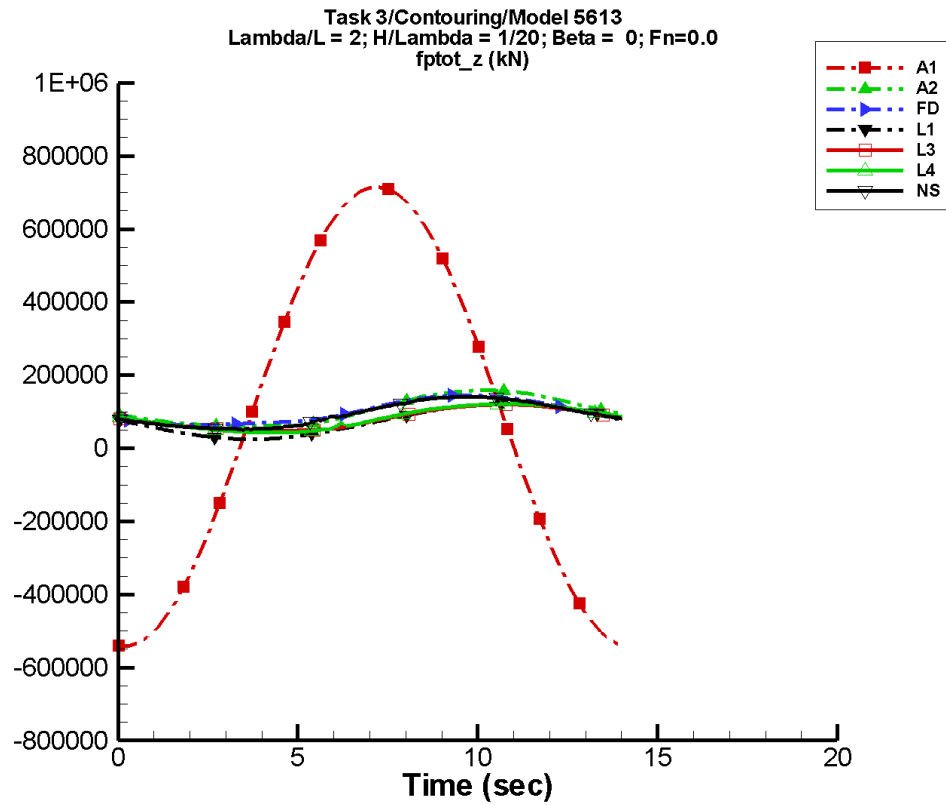
Table I-23. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	1.93	1.42E+04	51	3.84E+03	-8
A2	-229.	3.79E+03	-56	7.29E+03	-13
FD	-8.00E+03	1.81E+04	54	1.07E+04	-83
L1	1.10E+03	1.49E+04	56	2.53E+04	-5
L3	1.09E+03	1.41E+04	55	2.50E+03	144
L4	697.	1.49E+04	57	4.12E+03	122
NF	—	—	—	—	—
NS	-694.	4.05E+03	90	1.61E+03	17

Table I-24. Minimum and maximum of  $F_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.15E+04	1.82E+04	-1.10E+04	1.79E+04
A2	-1.08E+04	7.75E+03	-1.05E+04	7.43E+03
FD	-3.45E+04	1.54E+04	-2.16E+04	8.15E+03
L1	-2.88E+04	4.08E+04	-2.84E+04	4.04E+04
L3	-1.50E+04	1.45E+04	-1.50E+04	1.44E+04
L4	-1.86E+04	1.57E+04	-1.83E+04	1.55E+04
NF	—	—	—	—
NS	-8.56E+03	7.42E+03	-8.33E+03	7.30E+03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-13. Time history of  $F_z^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

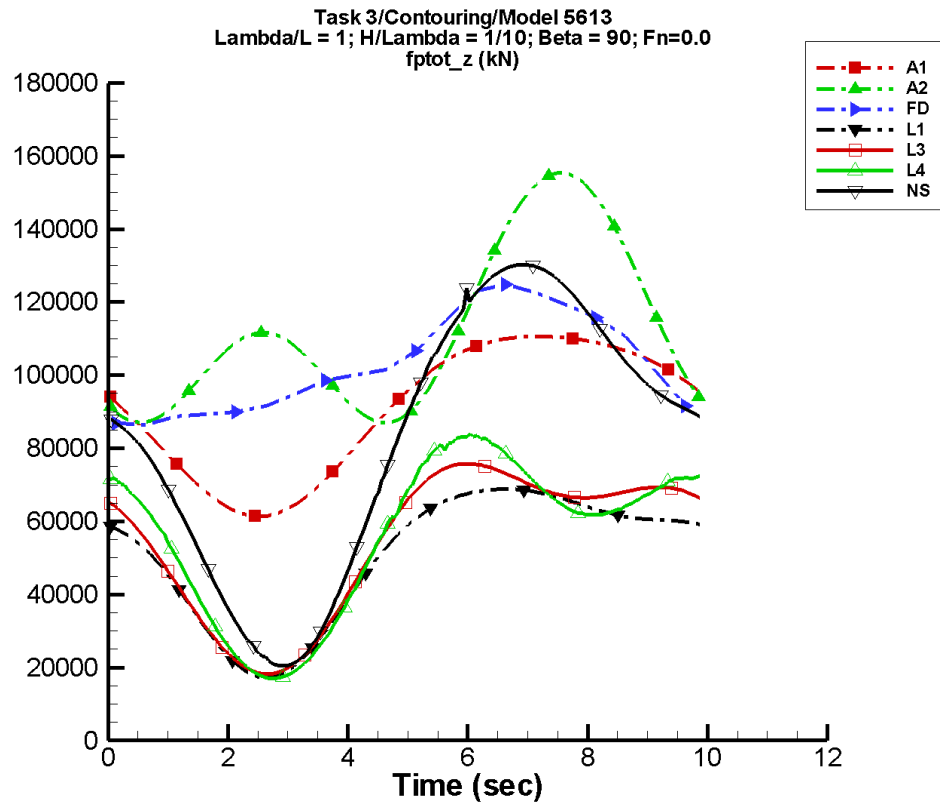
Table I-25. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.61E+04	6.30E+05	-94	661.	93
A2	1.04E+05	4.97E+04	-173	6.97E+03	-52
FD	9.93E+04	4.11E+04	-153	6.13E+03	-35
L1	7.31E+04	4.81E+04	176	58.4	101
L3	8.09E+04	3.60E+04	172	4.14E+03	-60
L4	8.19E+04	3.92E+04	172	2.42E+03	-27
NF	—	—	—	—	—
NS	9.38E+04	4.40E+04	-164	4.23E+03	-13

Table I-26. Minimum and maximum of  $F_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-5.42E+05	7.15E+05	-5.43E+05	7.12E+05
A2	6.11E+04	1.59E+05	6.15E+04	1.58E+05
FD	6.46E+04	1.45E+05	6.65E+04	1.38E+05
L1	2.46E+04	1.22E+05	2.47E+04	1.22E+05
L3	4.80E+04	1.20E+05	4.79E+04	1.19E+05
L4	4.30E+04	1.21E+05	4.29E+04	1.21E+05
NF	—	—	—	—
NS	4.97E+04	1.41E+05	5.22E+04	1.41E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-14. Time history of  $F_z^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-27. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

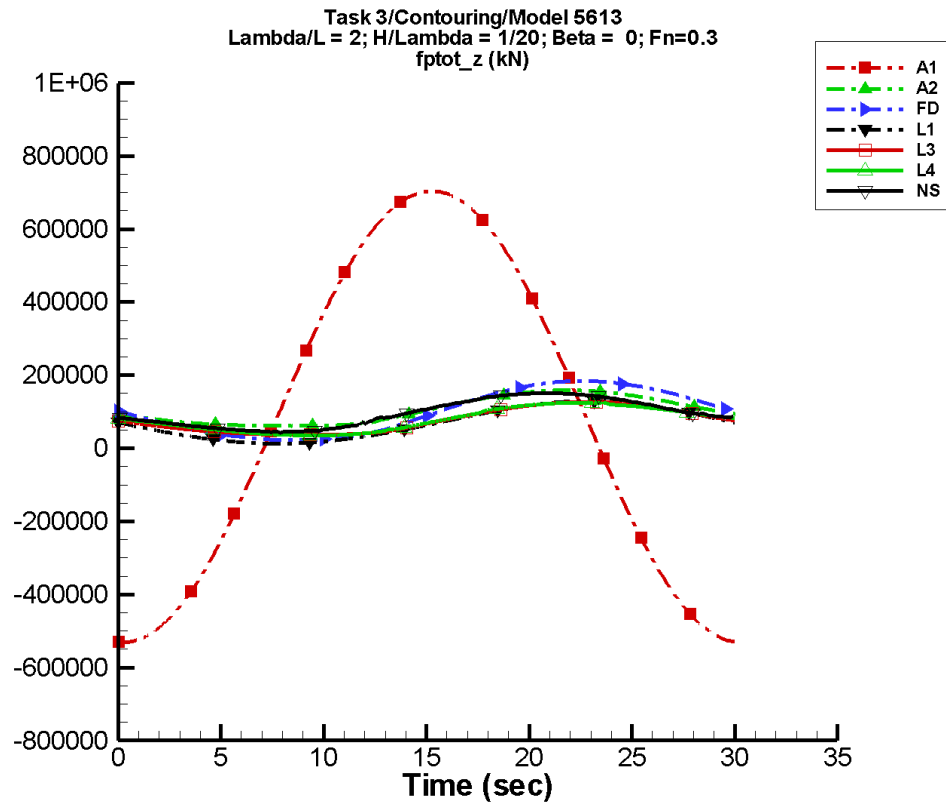
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	9.05E+04	2.42E+04	177	4.57E+03	74
A2	1.12E+05	2.28E+04	173	2.16E+04	-104
FD	1.03E+05	1.75E+04	-169	4.84E+03	-112
L1	5.04E+04	2.26E+04	175	9.44E+03	57
L3	5.42E+04	2.47E+04	176	1.17E+04	64
L4	5.62E+04	2.43E+04	174	1.63E+04	50
NF	—	—	—	—	—
NS	8.15E+04	4.85E+04	178	1.37E+04	28

Table I-28. Minimum and maximum of  $F_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	6.14E+04	1.11E+05	6.18E+04	1.10E+05
A2	8.70E+04	1.55E+05	8.79E+04	1.54E+05
FD	8.64E+04	1.25E+05	8.66E+04	1.21E+05
L1	1.72E+04	6.88E+04	1.75E+04	6.88E+04
L3	1.82E+04	7.58E+04	1.85E+04	7.56E+04
L4	1.70E+04	8.40E+04	1.73E+04	8.31E+04
NF	—	—	—	—
NS	2.05E+04	1.30E+05	2.08E+04	1.30E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-15. Time history of  $F_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

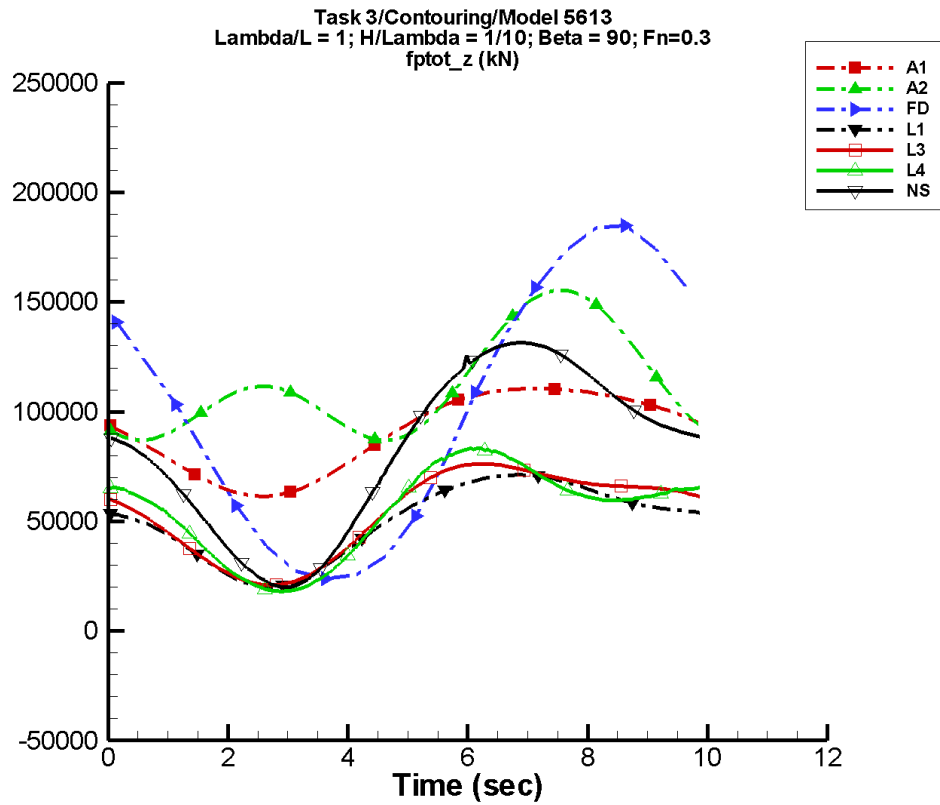
Table I-29. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.57E+04	6.19E+05	-87	963.	67
A2	1.04E+05	4.96E+04	-169	7.08E+03	-44
FD	9.93E+04	8.13E+04	-175	6.20E+03	-29
L1	6.89E+04	5.77E+04	-179	2.08E+03	-93
L3	7.67E+04	4.56E+04	178	5.87E+03	-62
L4	7.81E+04	4.37E+04	176	6.03E+03	-23
NF	—	—	—	—	—
NS	9.54E+04	5.04E+04	-166	7.87E+03	-1

Table I-30. Minimum and maximum of  $F_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-5.31E+05	7.04E+05	-5.32E+05	7.03E+05
A2	6.11E+04	1.59E+05	6.12E+04	1.59E+05
FD	2.25E+04	1.84E+05	2.40E+04	1.82E+05
L1	1.28E+04	1.29E+05	1.28E+04	1.29E+05
L3	3.64E+04	1.27E+05	3.64E+04	1.27E+05
L4	3.53E+04	1.25E+05	3.54E+04	1.25E+05
NF	—	—	—	—
NS	4.21E+04	1.51E+05	4.48E+04	1.51E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-16. Time history of  $F_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

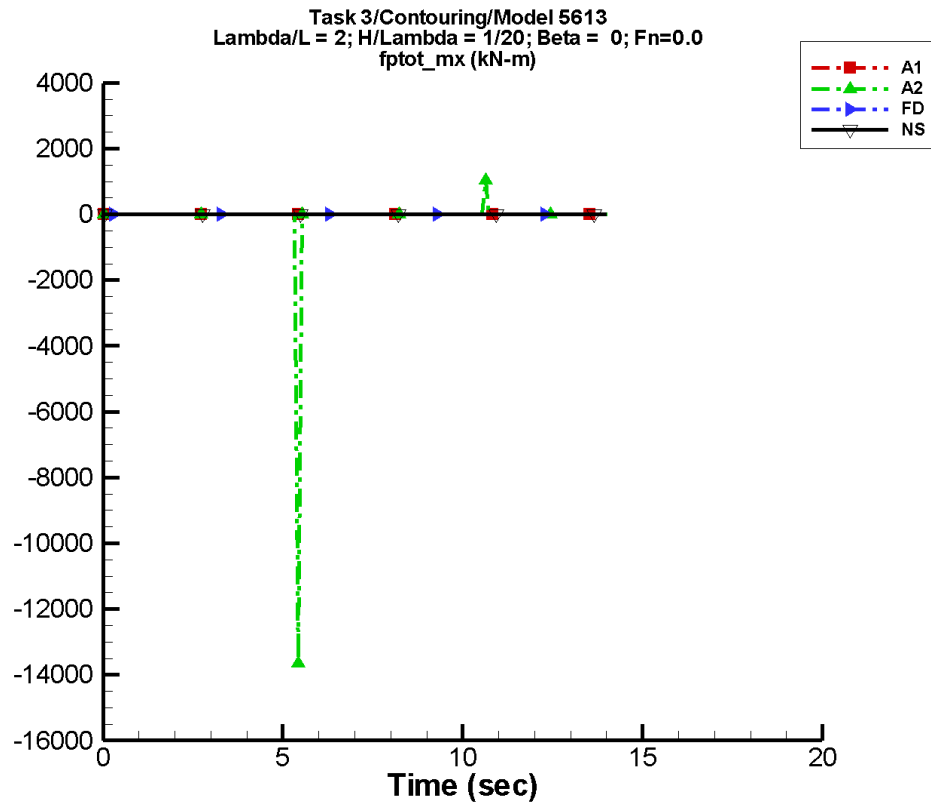
Table I-31. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	9.00E+04	2.40E+04	176	4.26E+03	65
A2	1.12E+05	2.28E+04	173	2.16E+04	-104
FD	1.03E+05	8.01E+04	122	5.01E+03	-115
L1	4.97E+04	2.24E+04	177	7.11E+03	39
L3	5.36E+04	2.45E+04	178	8.98E+03	51
L4	5.44E+04	2.37E+04	177	1.49E+04	37
NF	—	—	—	—	—
NS	8.17E+04	4.87E+04	178	1.46E+04	24

Table I-32. Minimum and maximum of  $F_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	6.14E+04	1.11E+05	6.19E+04	1.10E+05
A2	8.70E+04	1.55E+05	8.79E+04	1.54E+05
FD	2.40E+04	1.85E+05	4.34E+04	1.63E+05
L1	1.99E+04	7.12E+04	2.01E+04	7.11E+04
L3	2.09E+04	7.62E+04	2.11E+04	7.60E+04
L4	1.80E+04	8.35E+04	1.83E+04	8.29E+04
NF	—	—	—	—
NS	2.00E+04	1.31E+05	2.03E+04	1.31E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-17. Time history of  $M_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

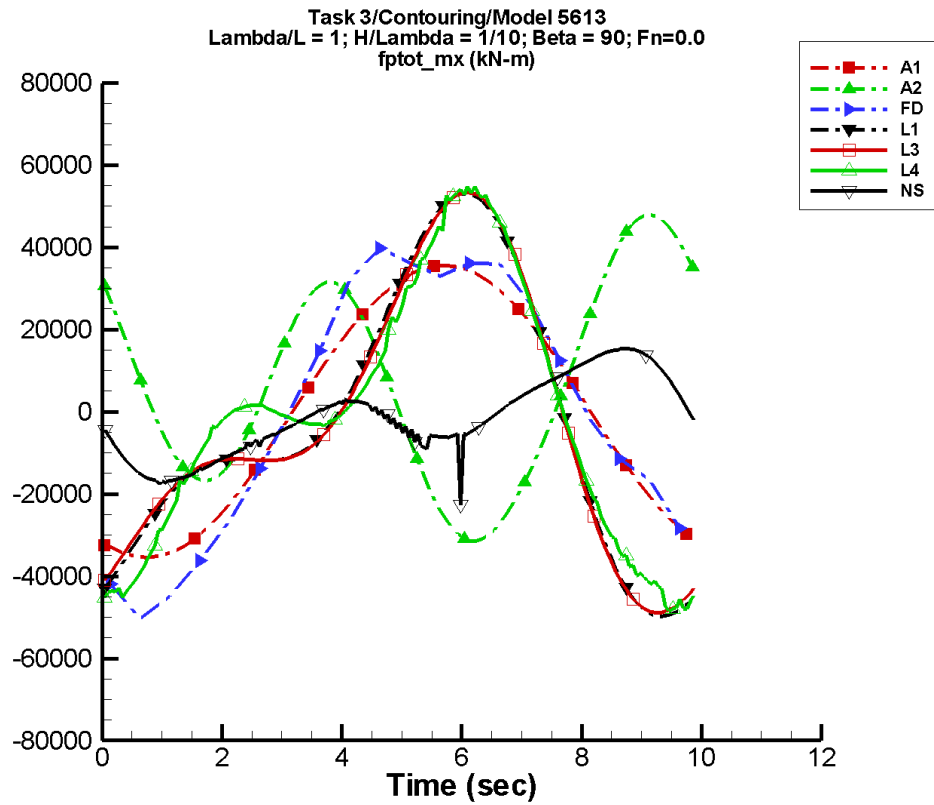
Table I-33. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	2.29E-04	0.283	-20	1.05E-03	107
A2	-96.7	200.	138	185.	-15
FD	-7.89E-06	6.93E-05	-119	2.11E-04	27
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-2.00E-03	1.00E-03	-71	2.86E-03	-30

Table I-34. Minimum and maximum of  $M_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.300	0.383	-0.270	0.300
A2	-1.36E+04	1.03E+03	-1.82E+03	156.
FD	-8.54E-04	9.30E-04	-1.76E-04	1.94E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-0.252	0.287	-2.32E-02	1.39E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-18. Time history of  $M_x^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-35. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

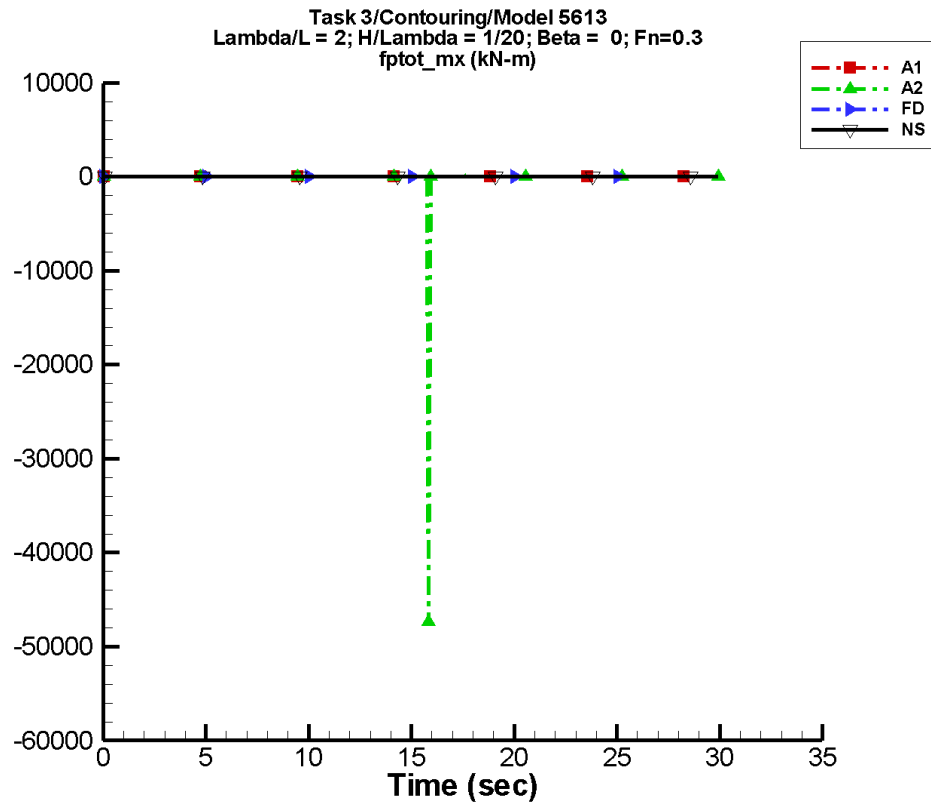
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	22.1	3.55E+04	-119	39.1	151
A2	6.98E+03	1.39E+04	80	3.07E+04	154
FD	-74.2	4.26E+04	-133	4.42E+03	151
L1	-2.97E+03	3.97E+04	-112	2.03E+04	-17
L3	-2.96E+03	3.88E+04	-112	2.08E+04	-17
L4	-1.84E+03	3.84E+04	-109	1.94E+04	-38
NF	—	—	—	—	—
NS	-1.59E+03	8.34E+03	178	9.68E+03	-169

Table I-36. Minimum and maximum of  $M_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-3.55E+04	3.55E+04	-3.51E+04	3.52E+04
A2	-3.14E+04	4.78E+04	-3.01E+04	4.64E+04
FD	-5.03E+04	3.98E+04	-4.33E+04	3.12E+04
L1	-4.98E+04	5.30E+04	-4.95E+04	5.26E+04
L3	-4.89E+04	5.33E+04	-4.86E+04	5.29E+04
L4	-4.84E+04	5.49E+04	-4.70E+04	5.37E+04
NF	—	—	—	—
NS	-2.26E+04	1.54E+04	-1.69E+04	1.52E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-19. Time history of  $M_x^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

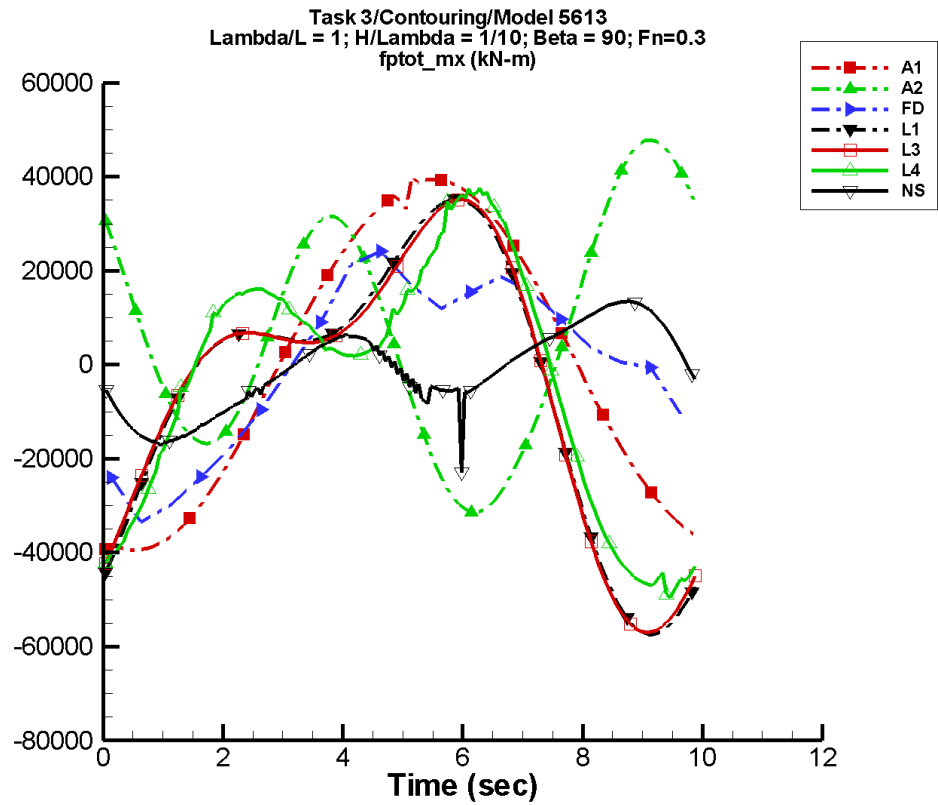
Table I-37. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	2.92E-03	0.415	-8	5.39E-03	171
A2	-158.	325.	89	282.	-101
FD	-8.71E-06	5.00E-05	-27	5.51E-05	86
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-9.28E-04	1.02E-03	-123	3.96E-03	113

Table I-38. Minimum and maximum of  $M_x^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.444	0.447	-0.419	0.427
A2	-4.73E+04	213.	-6.31E+03	540.
FD	-9.04E-04	6.93E-04	-4.26E-04	1.72E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-6.23E-02	5.42E-02	-1.44E-02	1.15E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-20. Time history of  $M_x^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

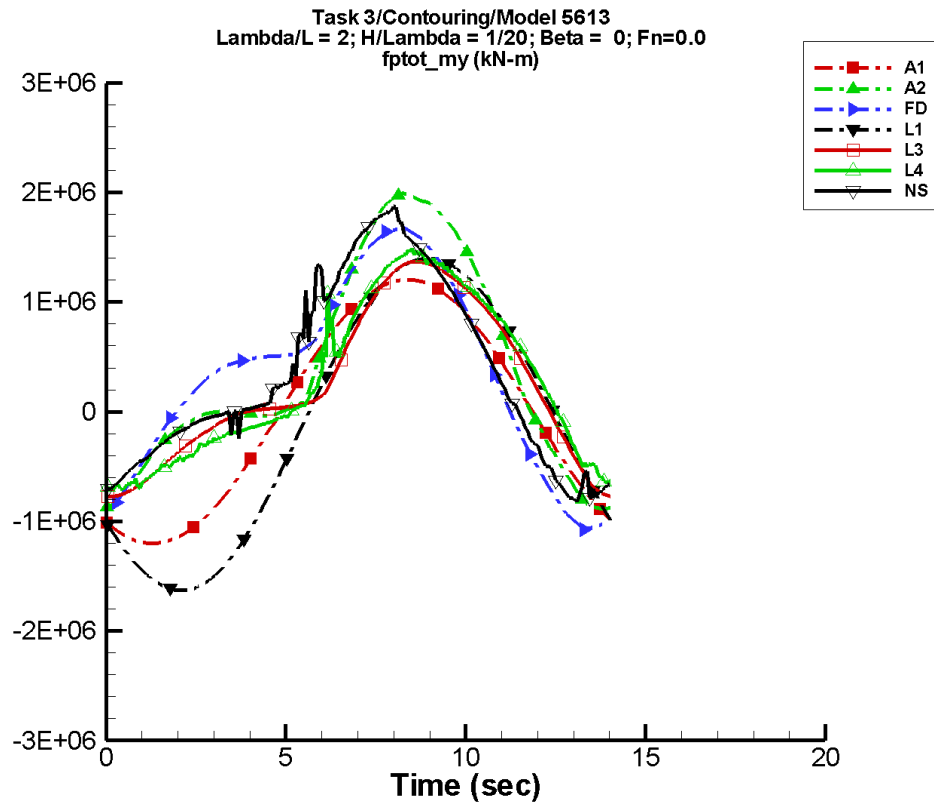
Table I-39. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-19.9	3.93E+04	-111	87.6	-179
A2	6.98E+03	1.39E+04	80	3.07E+04	154
FD	-117.	2.36E+04	-139	7.27E+03	148
L1	-5.17E+03	3.56E+04	-84	1.91E+04	-25
L3	-5.16E+03	3.47E+04	-83	1.96E+04	-24
L4	-3.34E+03	3.09E+04	-86	2.01E+04	-47
NF	—	—	—	—	—
NS	-1.17E+03	6.38E+03	-169	9.97E+03	-171

Table I-40. Minimum and maximum of  $M_x^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-4.06E+04	4.01E+04	-3.93E+04	3.89E+04
A2	-3.14E+04	4.78E+04	-3.01E+04	4.64E+04
FD	-3.36E+04	2.42E+04	-2.64E+04	1.67E+04
L1	-5.74E+04	3.52E+04	-5.70E+04	3.49E+04
L3	-5.70E+04	3.52E+04	-5.66E+04	3.48E+04
L4	-4.96E+04	3.77E+04	-4.70E+04	3.65E+04
NF	—	—	—	—
NS	-2.29E+04	1.35E+04	-1.65E+04	1.33E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-21. Time history of  $M_y^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

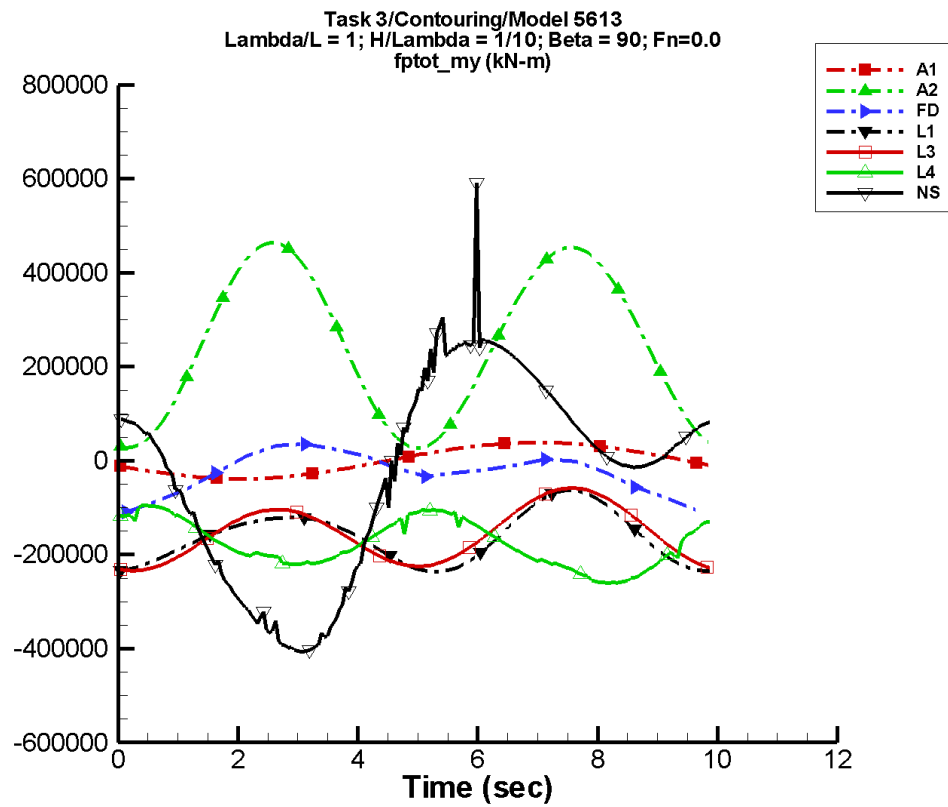
Table I-41. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-140.	1.21E+06	-123	534.	-95
A2	3.95E+05	1.19E+06	-119	5.13E+05	-14
FD	3.42E+05	1.10E+06	-88	4.39E+05	-4
L1	-9.90E+04	1.51E+06	-141	3.46E+04	110
L3	2.36E+05	9.06E+05	-127	3.21E+05	-46
L4	2.78E+05	9.77E+05	-131	2.31E+05	-35
NF	—	—	—	—	—
NS	3.42E+05	1.10E+06	-104	3.33E+05	16

Table I-42. Minimum and maximum of  $M_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.21E+06	1.20E+06	-1.20E+06	1.20E+06
A2	-8.84E+05	2.00E+06	-8.77E+05	1.97E+06
FD	-1.08E+06	1.68E+06	-9.48E+05	1.35E+06
L1	-1.63E+06	1.40E+06	-1.63E+06	1.39E+06
L3	-7.74E+05	1.37E+06	-7.76E+05	1.37E+06
L4	-7.14E+05	1.49E+06	-6.93E+05	1.45E+06
NF	—	—	—	—
NS	-8.23E+05	1.88E+06	-7.49E+05	1.81E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-22. Time history of  $M_y^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-43. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

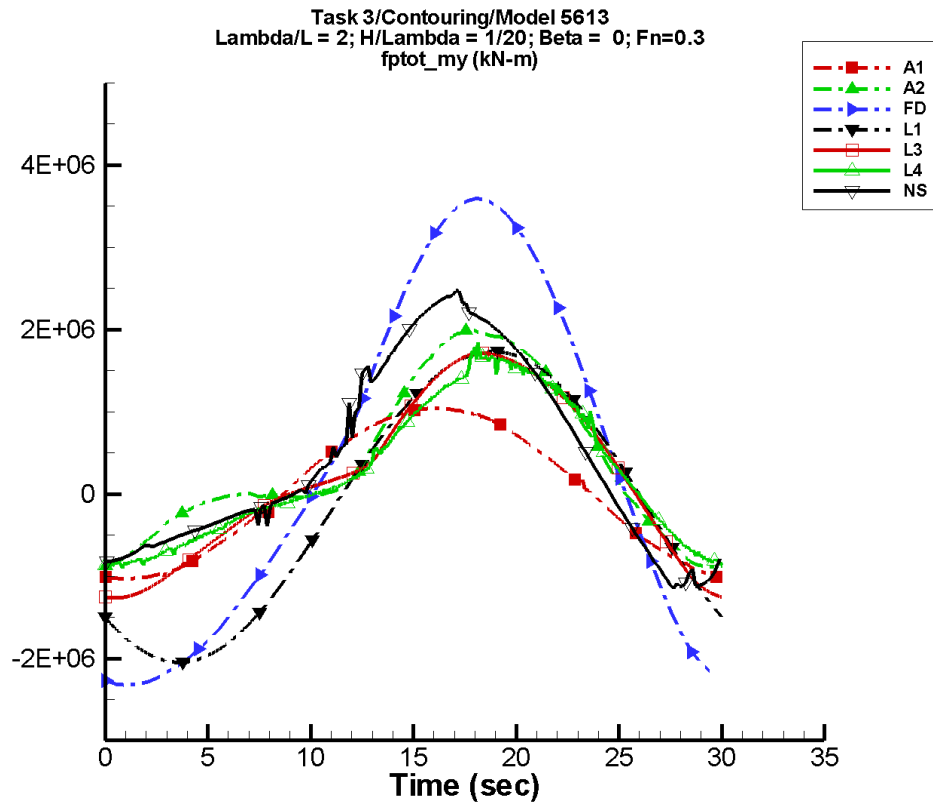
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	13.5	3.86E+04	-167	16.2	48
A2	2.44E+05	5.91E+03	-180	2.17E+05	-105
FD	-2.64E+04	4.28E+04	-88	4.07E+04	-140
L1	-1.63E+05	1.38E+04	179	6.66E+04	-108
L3	-1.55E+05	2.25E+04	-177	7.36E+04	-109
L4	-1.76E+05	1.82E+04	-23	6.49E+04	47
NF	—	—	—	—	—
NS	-2.78E+04	2.40E+05	-174	1.67E+05	45

Table I-44. Minimum and maximum of  $M_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-3.87E+04	3.86E+04	-3.85E+04	3.82E+04
A2	2.73E+04	4.64E+05	2.67E+04	4.55E+05
FD	-1.09E+05	3.57E+04	-8.15E+04	4.55E+03
L1	-2.37E+05	-6.33E+04	-2.35E+05	-6.48E+04
L3	-2.34E+05	-5.85E+04	-2.33E+05	-5.97E+04
L4	-2.61E+05	-9.43E+04	-2.59E+05	-9.91E+04
NF	—	—	—	—
NS	-4.07E+05	5.91E+05	-4.04E+05	2.96E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-23. Time history of  $M_y^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

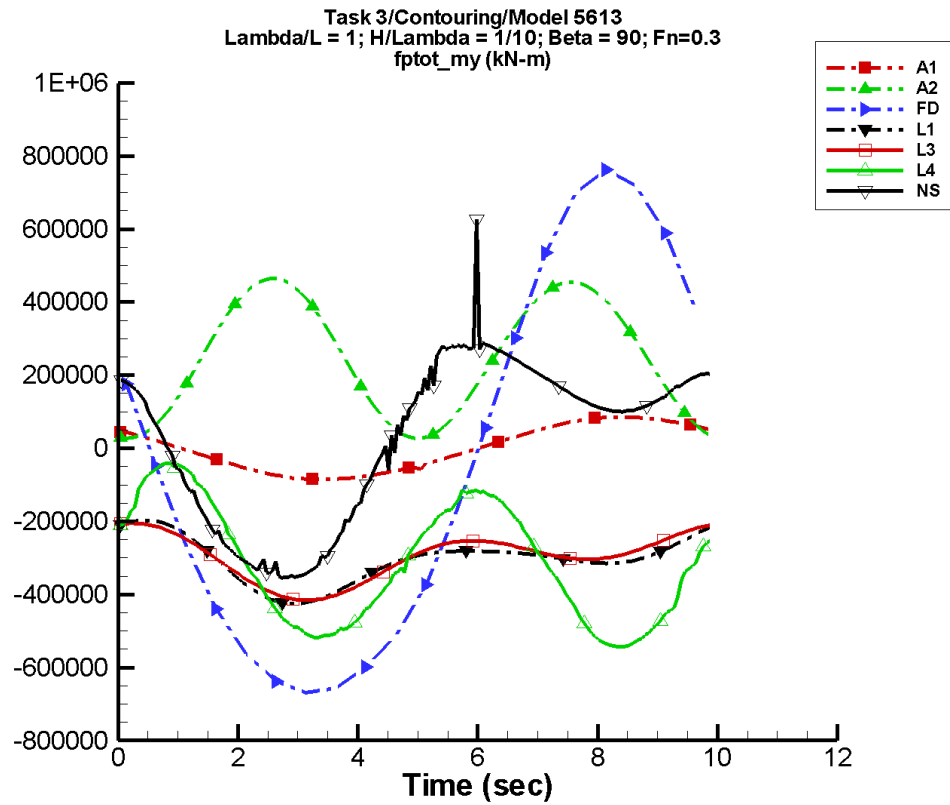
Table I-45. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-951.	1.04E+06	-98	2.37E+03	-29
A2	3.94E+05	1.19E+06	-115	5.14E+05	-7
FD	3.38E+05	2.87E+06	-112	4.41E+05	2
L1	-1.36E+05	1.89E+06	-131	3.39E+04	-122
L3	1.91E+05	1.31E+06	-118	3.54E+05	-41
L4	2.47E+05	1.12E+06	-124	3.28E+05	-30
NF	—	—	—	—	—
NS	4.28E+05	1.50E+06	-108	4.63E+05	18

Table I-46. Minimum and maximum of  $M_y^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.05E+06	1.04E+06	-1.05E+06	1.04E+06
A2	-8.83E+05	2.02E+06	-8.82E+05	1.99E+06
FD	-2.33E+06	3.59E+06	-2.31E+06	3.46E+06
L1	-2.05E+06	1.73E+06	-2.05E+06	1.73E+06
L3	-1.27E+06	1.71E+06	-1.26E+06	1.71E+06
L4	-9.02E+05	1.88E+06	-8.68E+05	1.74E+06
NF	—	—	—	—
NS	-1.15E+06	2.48E+06	-1.08E+06	2.40E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-24. Time history of  $M_y^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

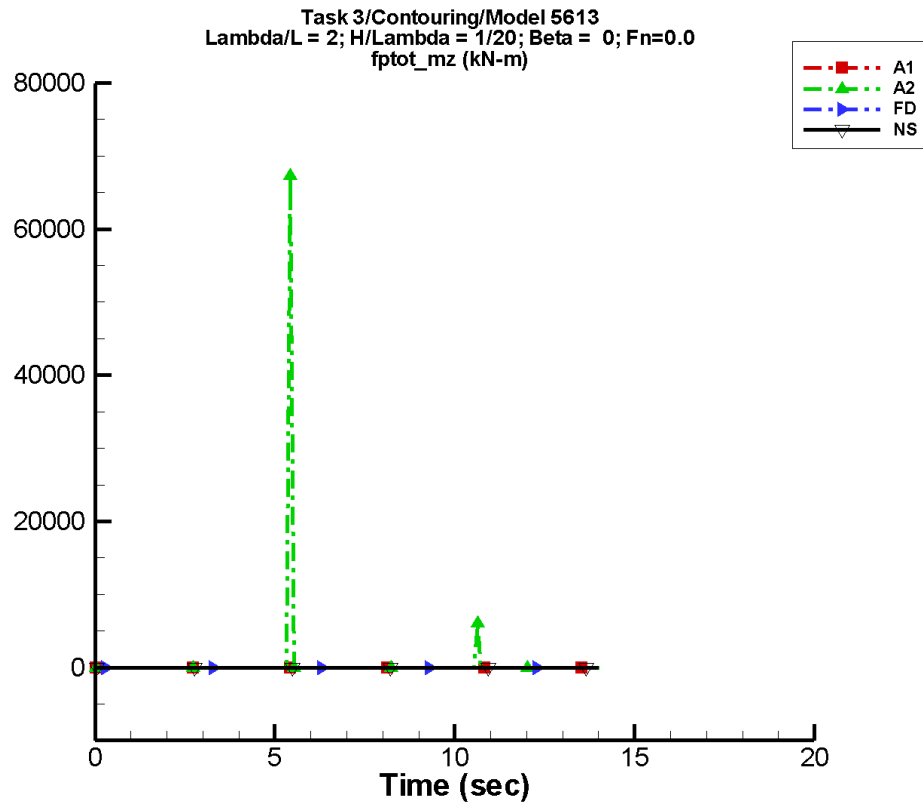
Table I-47. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-11.6	8.42E+04	139	176.	-59
A2	2.44E+05	5.91E+03	-180	2.17E+05	-105
FD	-3.83E+04	7.12E+05	133	8.65E+04	179
L1	-3.05E+05	5.59E+04	126	6.84E+04	44
L3	-2.97E+05	6.04E+04	133	6.20E+04	42
L4	-3.15E+05	2.20E+04	55	2.24E+05	15
NF	—	—	—	—	—
NS	2.49E+04	2.60E+05	180	1.50E+05	61

Table I-48. Minimum and maximum of  $M_y^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-8.53E+04	8.56E+04	-8.44E+04	8.46E+04
A2	2.73E+04	4.64E+05	2.67E+04	4.55E+05
FD	-6.70E+05	7.62E+05	-5.60E+05	5.25E+05
L1	-4.26E+05	-1.97E+05	-4.24E+05	-1.99E+05
L3	-4.16E+05	-2.05E+05	-4.16E+05	-2.06E+05
L4	-5.43E+05	-4.08E+04	-5.40E+05	-4.65E+04
NF	—	—	—	—
NS	-3.55E+05	6.27E+05	-3.51E+05	3.24E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-25. Time history of  $M_z^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

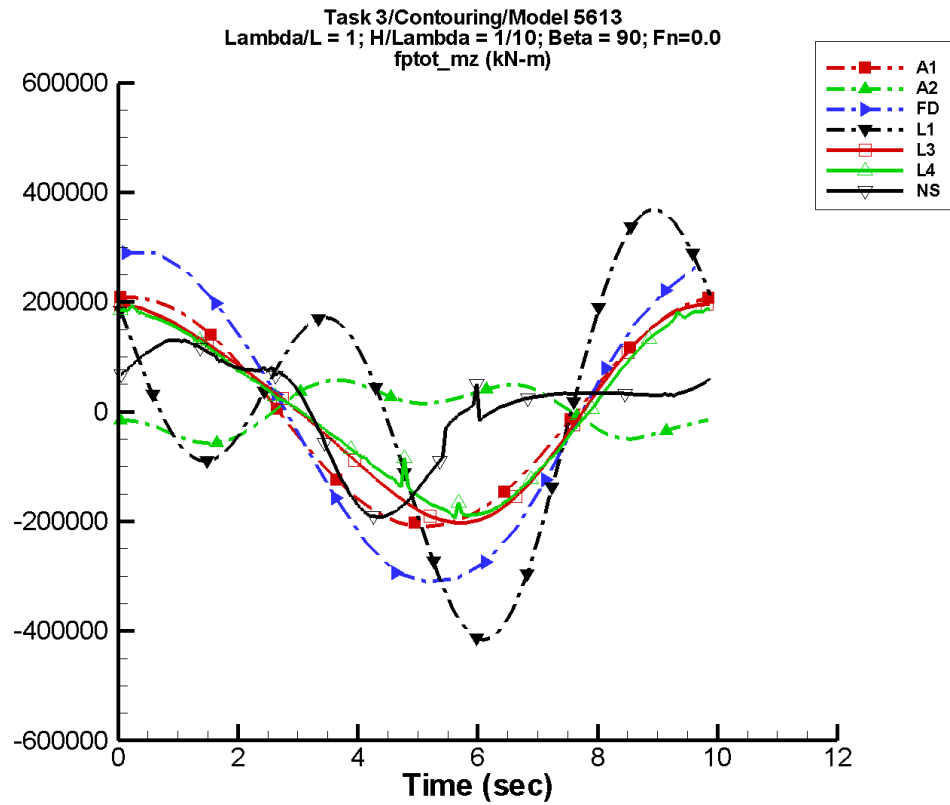
Table I-49. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.90E-03	5.77	-103	3.26E-02	103
A2	561.	864.	-48	892.	175
FD	1.49E-04	4.36E-04	-167	4.36E-04	-88
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-2.84E-02	6.32E-02	-68	8.53E-02	-17

Table I-50. Minimum and maximum of  $M_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-5.63	6.44	-5.59	6.36
A2	-6.49E-02	6.73E+04	-769.	8.98E+03
FD	-4.42E-03	5.77E-03	-1.75E-03	1.43E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.62	2.07	-0.368	0.258

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-26. Time history of  $M_z^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-51. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

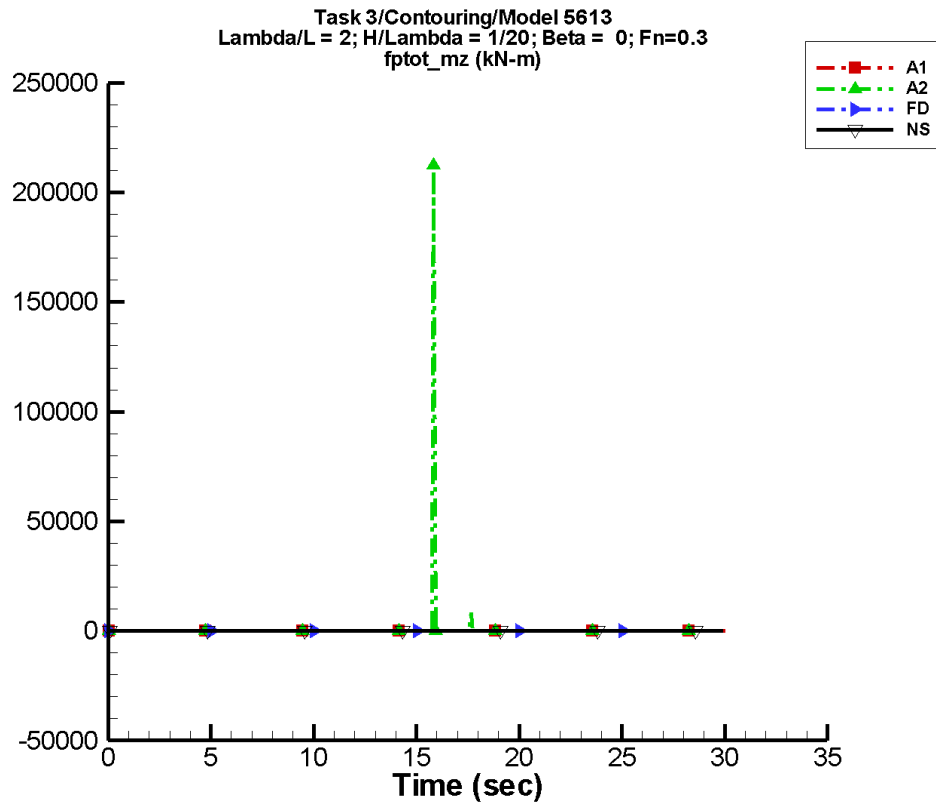
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-162.	2.11E+05	79	431.	-86
A2	-349.	4.25E+04	-101	8.15E+03	135
FD	-6.39E+03	3.06E+05	60	6.25E+03	-156
L1	4.20E+03	1.92E+05	72	2.52E+05	171
L3	4.28E+03	1.93E+05	72	2.83E+04	161
L4	4.81E+03	1.77E+05	69	2.85E+04	145
NF	—	—	—	—	—
NS	8.88E+03	9.66E+04	89	6.69E+04	-39

Table I-52. Minimum and maximum of  $M_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-2.10E+05	2.10E+05	-2.06E+05	2.09E+05
A2	-5.77E+04	5.77E+04	-5.46E+04	5.47E+04
FD	-3.11E+05	2.93E+05	-2.32E+05	2.74E+05
L1	-4.16E+05	3.68E+05	-4.12E+05	3.65E+05
L3	-2.03E+05	1.96E+05	-2.02E+05	1.96E+05
L4	-1.94E+05	1.94E+05	-1.86E+05	1.87E+05
NF	—	—	—	—
NS	-1.92E+05	1.31E+05	-1.90E+05	1.30E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-27. Time history of  $M_z^{ptot}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

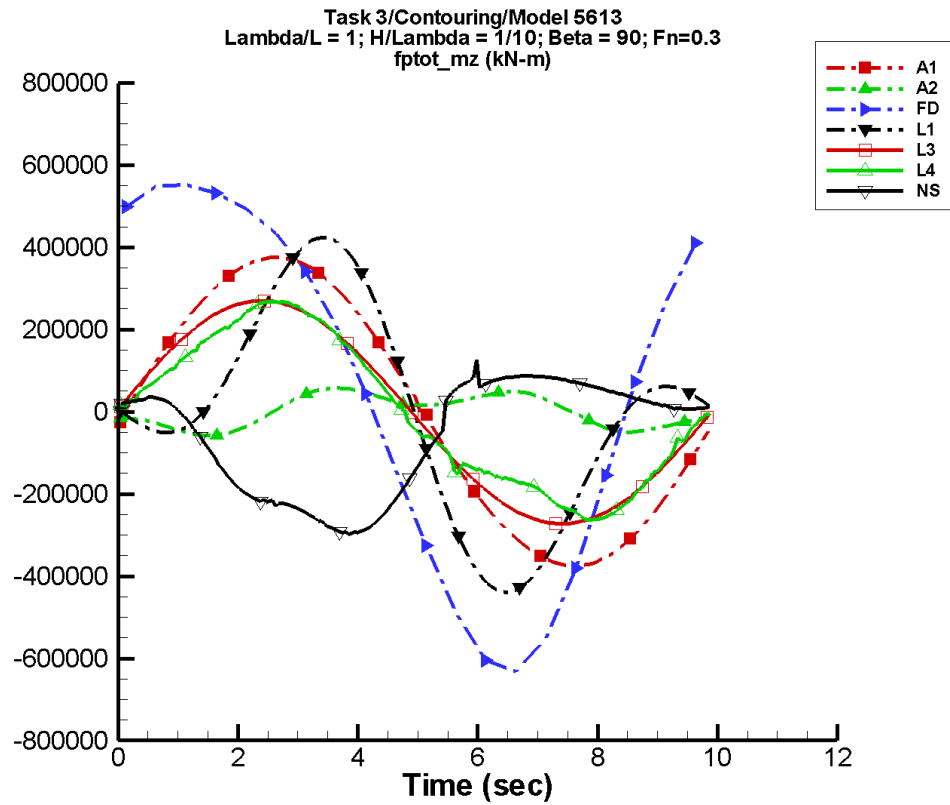
Table I-53. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.28E-02	7.86	31	7.35E-02	-159
A2	736.	1.52E+03	-92	1.31E+03	78
FD	3.00E-04	7.74E-04	-156	9.00E-04	-40
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	2.71E-03	5.00E-02	-83	1.90E-02	80

Table I-54. Minimum and maximum of  $M_z^{\text{ptot}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-9.95	10.1	-8.03	8.12
A2	-7.74	2.12E+05	-2.52E+03	2.83E+04
FD	-5.75E-03	1.45E-02	-9.78E-04	3.96E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.15	0.921	-0.162	0.206

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-28. Time history of  $M_z^{ptot}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

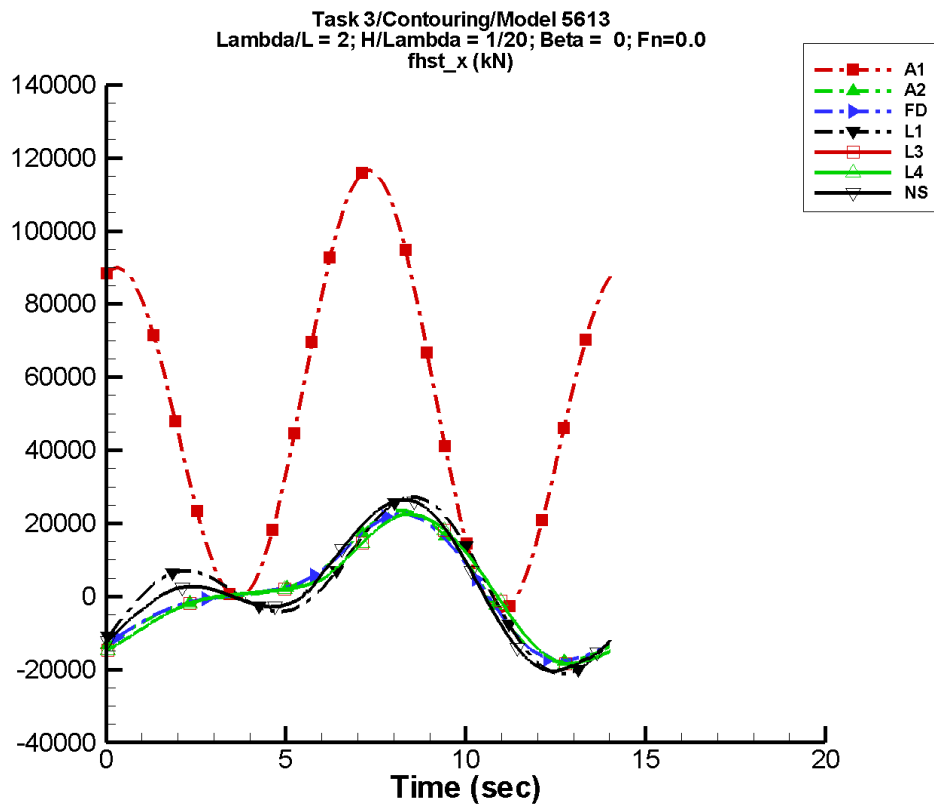
Table I-55. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-324.	3.75E+05	-8	266.	3
A2	-349.	4.25E+04	-101	8.15E+03	135
FD	5.25E+04	5.85E+05	22	9.93E+04	111
L1	-2.87E+03	2.71E+05	-2	2.22E+05	172
L3	-2.79E+03	2.71E+05	-2	2.44E+03	-38
L4	-3.26E+03	2.41E+05	-5	1.48E+04	-102
NF	—	—	—	—	—
NS	-5.99E+04	1.71E+05	155	7.68E+04	9

Table I-56. Minimum and maximum of  $M_z^{\text{ptot}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-3.75E+05	3.76E+05	-3.71E+05	3.72E+05
A2	-5.77E+04	5.77E+04	-5.46E+04	5.47E+04
FD	-6.31E+05	5.52E+05	-4.75E+05	5.46E+05
L1	-4.39E+05	4.24E+05	-4.35E+05	4.20E+05
L3	-2.73E+05	2.70E+05	-2.72E+05	2.69E+05
L4	-2.63E+05	2.68E+05	-2.59E+05	2.67E+05
NF	—	—	—	—
NS	-2.97E+05	1.26E+05	-2.94E+05	8.68E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-29. Time history of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

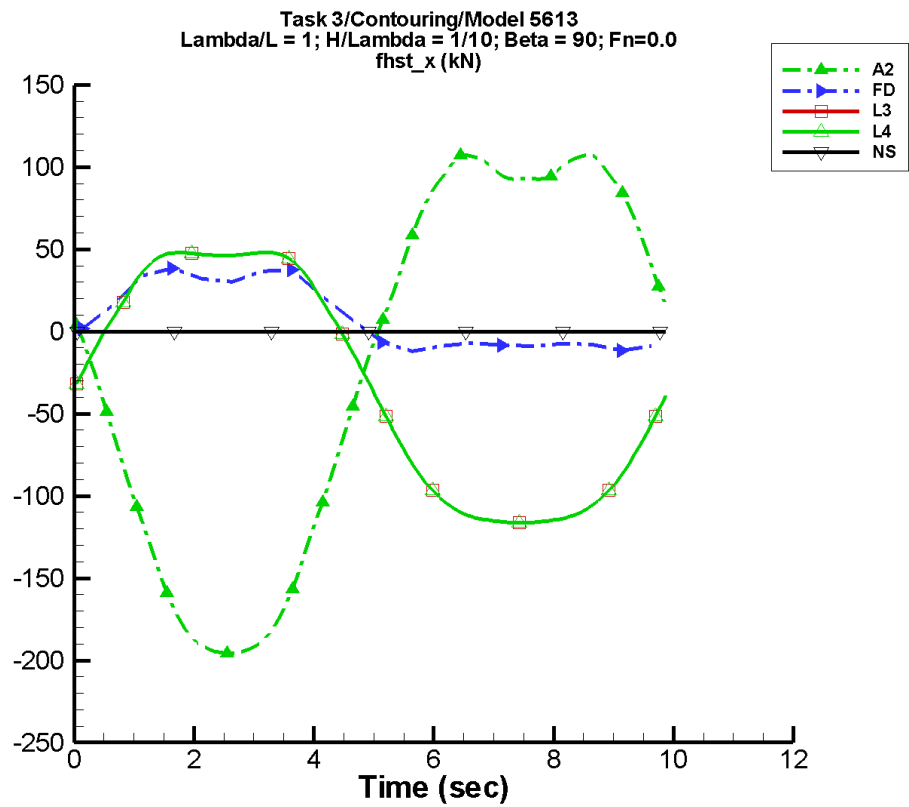
Table I-57. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	5.07E+04	1.34E+04	-89	5.26E+04	76
A2	1.12E+03	1.57E+04	-94	7.99E+03	5
FD	1.11E+03	1.52E+04	-86	8.01E+03	19
L1	2.33E+03	1.34E+04	-95	1.41E+04	-1
L3	928.	1.53E+04	-99	7.93E+03	-11
L4	928.	1.53E+04	-99	7.93E+03	-11
NF	—	—	—	—	—
NS	1.40E+03	1.54E+04	-92	1.18E+04	8

Table I-58. Minimum and maximum of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.04E+03	1.17E+05	-2.97E+03	1.15E+05
A2	-1.79E+04	2.35E+04	-1.76E+04	2.31E+04
FD	-1.77E+04	2.30E+04	-1.57E+04	1.66E+04
L1	-2.12E+04	2.72E+04	-2.11E+04	2.70E+04
L3	-1.84E+04	2.25E+04	-1.83E+04	2.24E+04
L4	-1.84E+04	2.25E+04	-1.83E+04	2.24E+04
NF	—	—	—	—
NS	-2.04E+04	2.64E+04	-2.03E+04	2.63E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1 and NFA.

Figure I-30. Time history of  $F_x^{hst}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-59. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

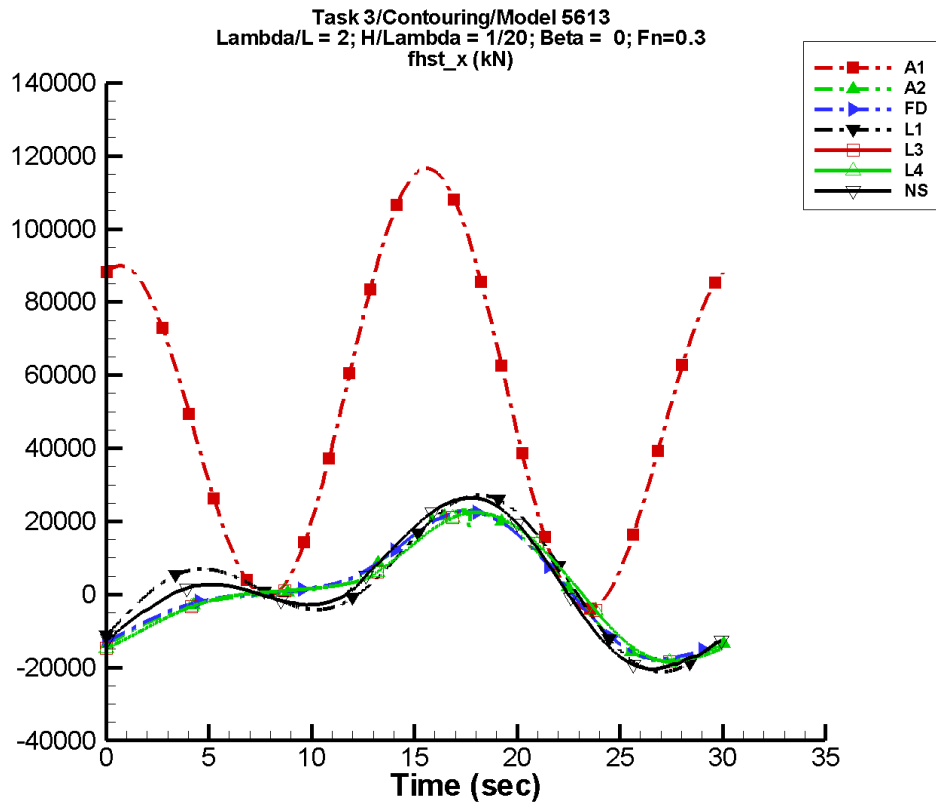
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-22.9	158.	173	26.1	77
FD	8.59	25.2	-17	7.05	-127
L1	—	—	—	—	—
L3	-34.1	90.6	-3	1.58	31
L4	-34.1	90.6	-3	1.58	31
NF	—	—	—	—	—
NS	5.33E-07	2.06E-03	-90	2.01E-03	-1

Table I-60. Minimum and maximum of  $F_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	-196.	107.	-195.	104.
FD	-12.1	38.2	-10.0	27.6
L1	—	—	—	—
L3	-116.	48.0	-116.	48.2
L4	-116.	48.0	-116.	48.2
NF	—	—	—	—
NS	-3.58E-03	3.58E-03	-3.56E-03	3.56E-03



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-31. Time history of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

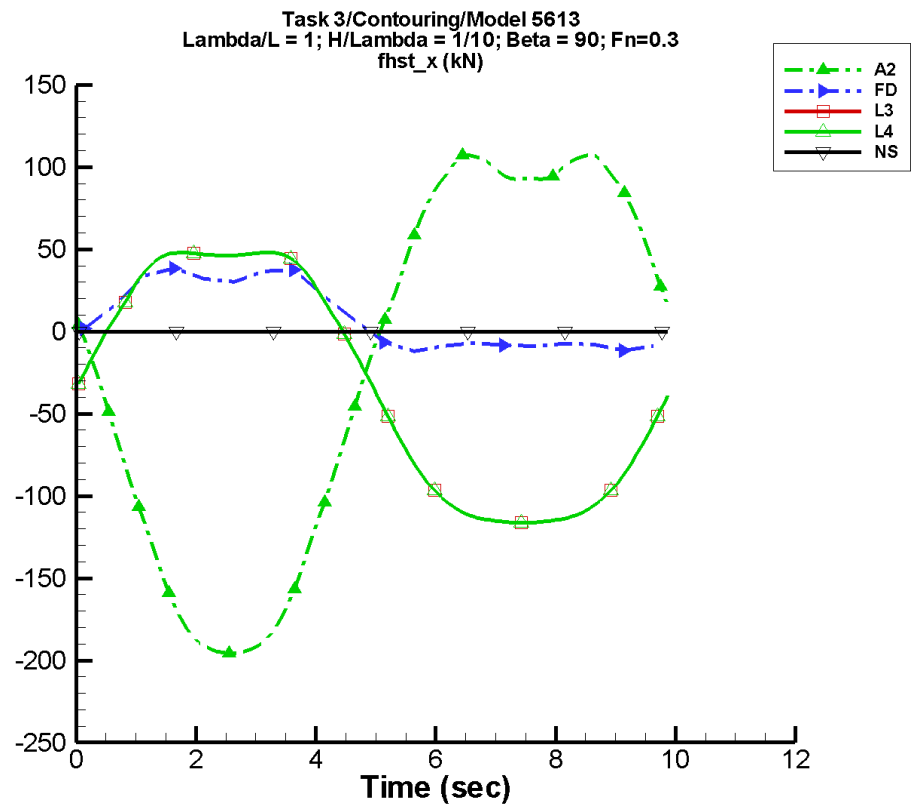
Table I-61. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	5.07E+04	1.33E+04	-85	5.26E+04	86
A2	868.	1.56E+04	-89	7.96E+03	15
FD	1.03E+03	1.54E+04	-84	8.05E+03	23
L1	2.31E+03	1.34E+04	-91	1.40E+04	8
L3	917.	1.53E+04	-94	8.05E+03	-2
L4	917.	1.53E+04	-94	8.05E+03	-2
NF	—	—	—	—	—
NS	1.38E+03	1.54E+04	-92	1.18E+04	9

Table I-62. Minimum and maximum of  $F_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.09E+03	1.17E+05	-3.86E+03	1.16E+05
A2	-1.82E+04	2.32E+04	-1.81E+04	2.26E+04
FD	-1.78E+04	2.29E+04	-1.67E+04	2.14E+04
L1	-2.12E+04	2.72E+04	-2.12E+04	2.71E+04
L3	-1.85E+04	2.25E+04	-1.84E+04	2.25E+04
L4	-1.85E+04	2.25E+04	-1.84E+04	2.25E+04
NF	—	—	—	—
NS	-2.04E+04	2.64E+04	-2.03E+04	2.63E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1 and NFA.

Figure I-32. Time history of  $F_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

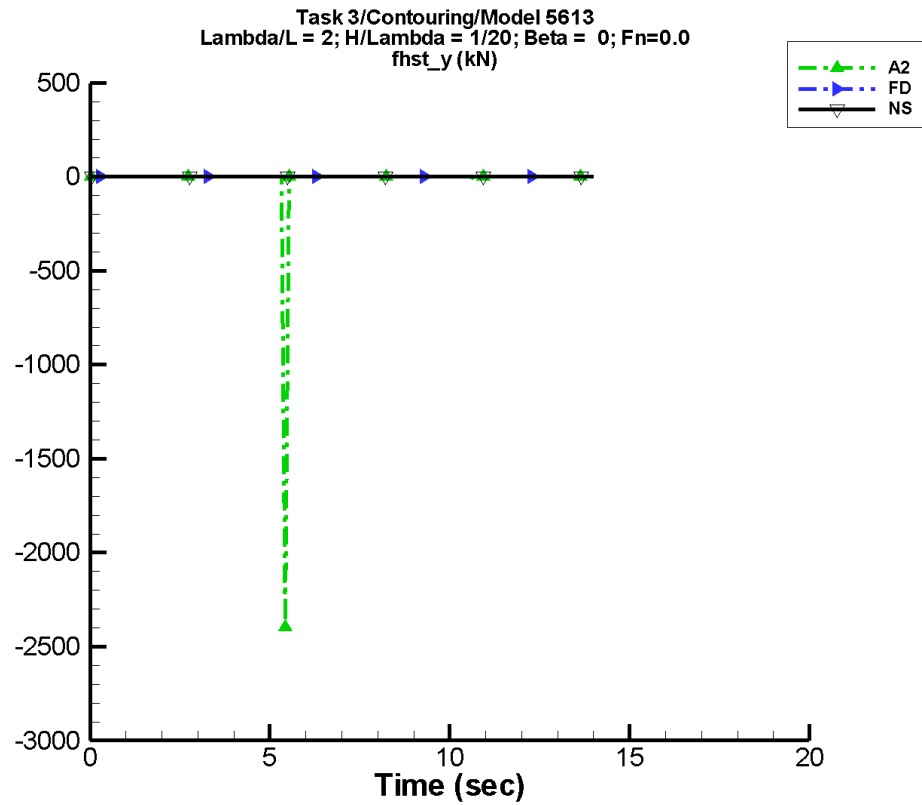
Table I-63. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-22.9	158.	173	26.1	77
FD	8.59	25.2	-17	7.05	-127
L1	—	—	—	—	—
L3	-34.1	90.6	-3	1.58	31
L4	-34.1	90.6	-3	1.58	31
NF	—	—	—	—	—
NS	5.34E-07	2.06E-03	-90	2.01E-03	-1

Table I-64. Minimum and maximum of  $F_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	-196.	107.	-195.	104.
FD	-12.1	38.2	-10.0	27.6
L1	—	—	—	—
L3	-116.	48.0	-116.	48.2
L4	-116.	48.0	-116.	48.2
NF	—	—	—	—
NS	-3.58E-03	3.58E-03	-3.56E-03	3.56E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-33. Time history of  $F_y^{hst}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

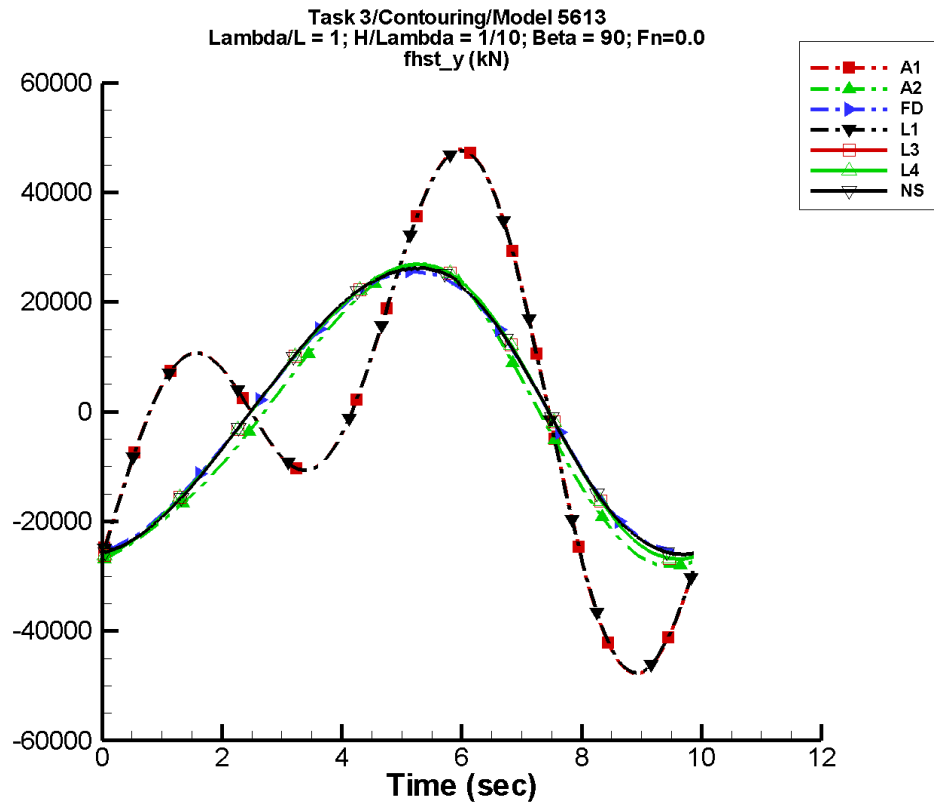
Table I-65. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-18.4	33.0	136	32.0	-10
FD	-8.83E-06	1.82E-05	-44	7.55E-06	156
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-3.60E-04	2.04E-03	127	9.40E-04	177

Table I-66. Minimum and maximum of  $F_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	-2.39E+03	6.29E-03	-319.	27.3
FD	-3.05E-04	2.22E-04	-1.23E-04	5.04E-05
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-8.27E-03	1.62E-02	-5.15E-03	6.23E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-34. Time history of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-67. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

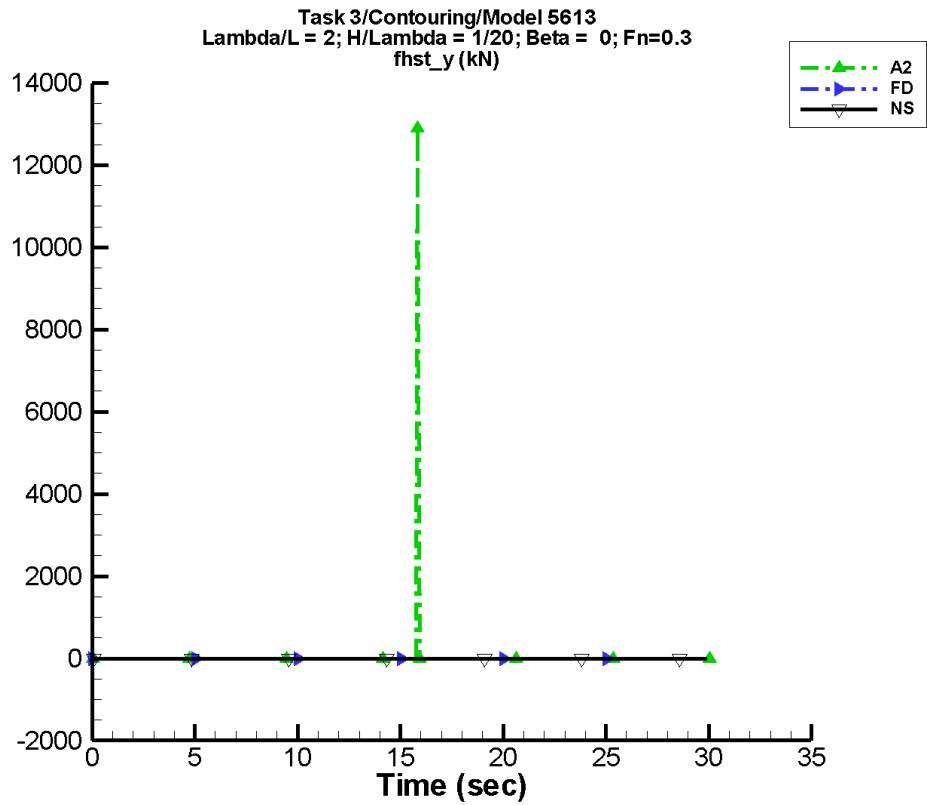
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	14.0	2.67E+04	-94	2.76E+04	-7
A2	-1.75E+03	2.68E+04	-93	3.33E+03	19
FD	18.0	2.58E+04	-108	2.20E+03	-38
L1	18.0	2.66E+04	-94	2.75E+04	-8
L3	13.7	2.65E+04	-94	2.49E+03	-8
L4	13.7	2.65E+04	-94	2.49E+03	-8
NF	—	—	—	—	—
NS	36.4	2.61E+04	-90	2.01E+03	1

Table I-68. Minimum and maximum of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.78E+04	4.78E+04	-4.65E+04	4.65E+04
A2	-2.82E+04	2.69E+04	-2.79E+04	2.66E+04
FD	-2.57E+04	2.57E+04	-2.14E+04	1.91E+04
L1	-4.76E+04	4.76E+04	-4.72E+04	4.72E+04
L3	-2.69E+04	2.69E+04	-2.68E+04	2.68E+04
L4	-2.69E+04	2.69E+04	-2.68E+04	2.68E+04
NF	—	—	—	—
NS	-2.60E+04	2.62E+04	-2.59E+04	2.61E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-35. Time history of  $F_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

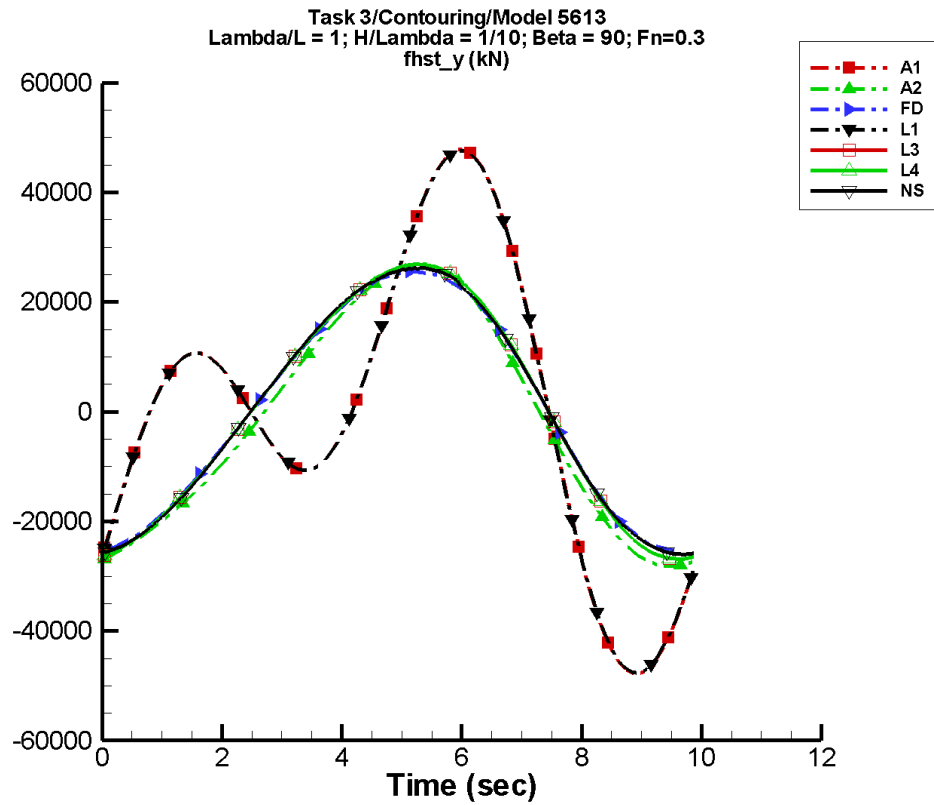
Table I-69. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	43.1	88.7	-91	76.9	79
FD	-1.11E-05	1.97E-05	-23	1.77E-05	60
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-1.73E-04	2.04E-03	134	9.15E-04	165

Table I-70. Minimum and maximum of  $F_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	-15.9	1.29E+04	-147.	1.72E+03
FD	-4.87E-04	3.58E-04	-1.04E-04	5.88E-05
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.34E-02	1.09E-02	-4.38E-03	6.10E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-36. Time history of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

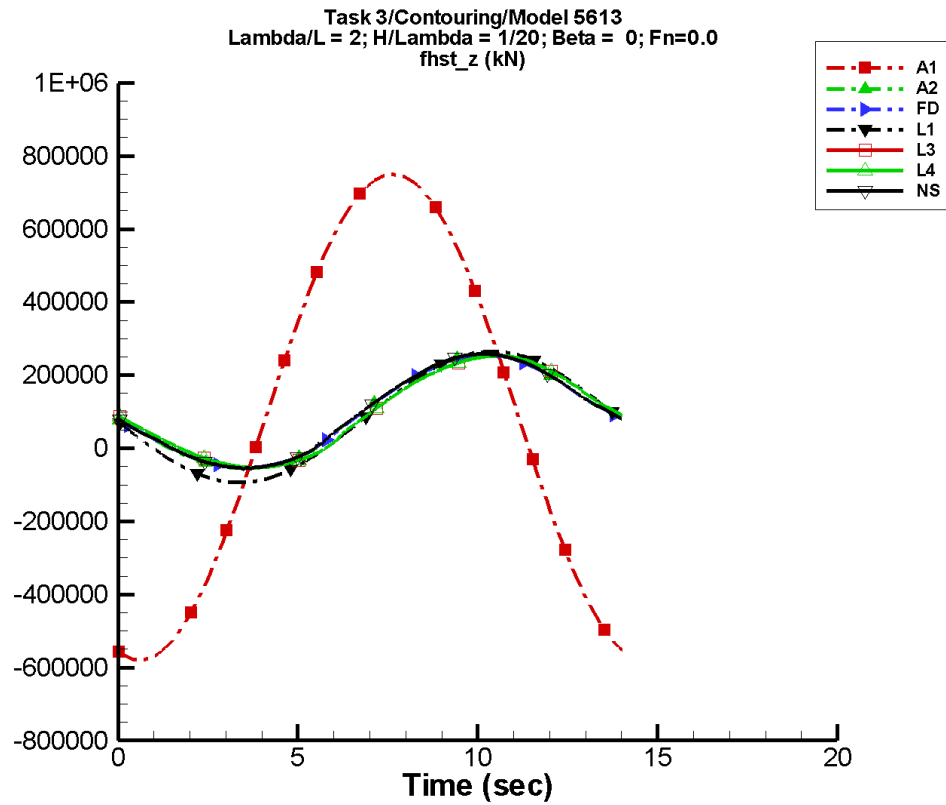
Table I-71. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	14.0	2.67E+04	-94	2.76E+04	-7
A2	-1.75E+03	2.68E+04	-93	3.33E+03	19
FD	18.0	2.58E+04	-108	2.20E+03	-38
L1	18.0	2.66E+04	-94	2.75E+04	-8
L3	13.7	2.65E+04	-94	2.49E+03	-8
L4	13.7	2.65E+04	-94	2.49E+03	-8
NF	—	—	—	—	—
NS	36.4	2.61E+04	-90	2.01E+03	1

Table I-72. Minimum and maximum of  $F_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.78E+04	4.78E+04	-4.65E+04	4.65E+04
A2	-2.82E+04	2.69E+04	-2.79E+04	2.66E+04
FD	-2.57E+04	2.57E+04	-2.14E+04	1.91E+04
L1	-4.76E+04	4.76E+04	-4.72E+04	4.72E+04
L3	-2.69E+04	2.69E+04	-2.68E+04	2.68E+04
L4	-2.69E+04	2.69E+04	-2.68E+04	2.68E+04
NF	—	—	—	—
NS	-2.60E+04	2.62E+04	-2.59E+04	2.61E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-37. Time history of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

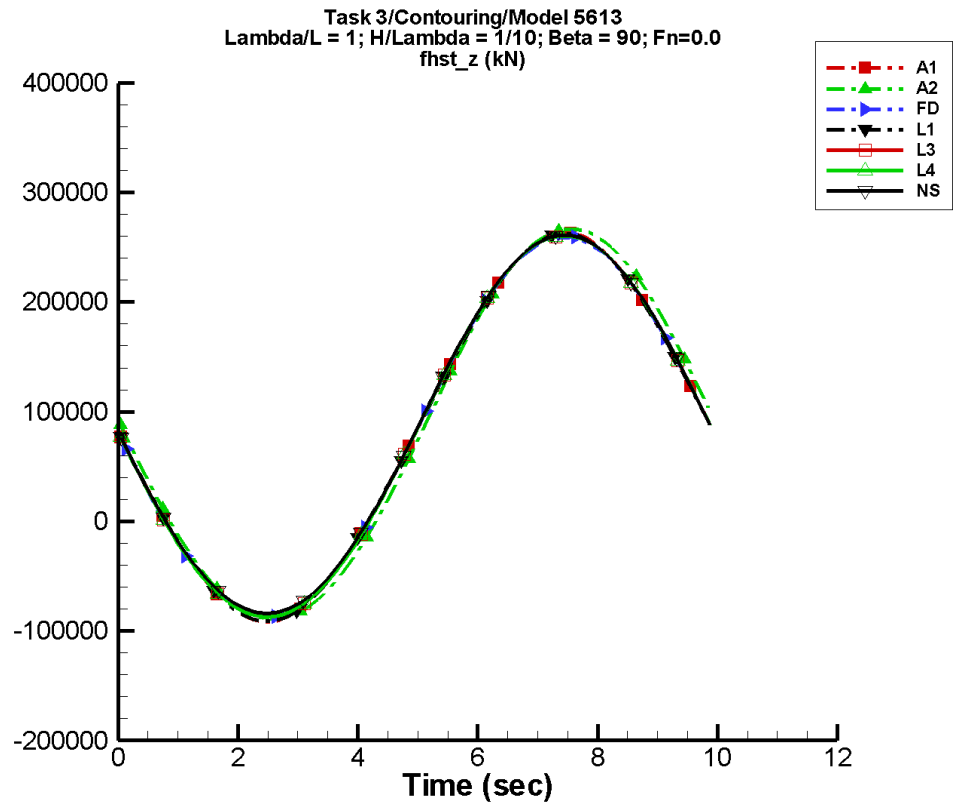
Table I-73. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.53E+04	6.66E+05	-105	143.	-93
A2	9.71E+04	1.54E+05	-173	9.98E+03	-8
FD	9.63E+04	1.53E+05	-166	9.86E+03	2
L1	8.50E+04	1.79E+05	-176	437.	-90
L3	9.57E+04	1.51E+05	-179	9.81E+03	-24
L4	9.57E+04	1.51E+05	-179	9.81E+03	-24
NF	—	—	—	—	—
NS	9.79E+04	1.54E+05	-173	1.05E+04	-6

Table I-74. Minimum and maximum of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-5.79E+05	7.49E+05	-5.76E+05	7.46E+05
A2	-5.53E+04	2.58E+05	-5.40E+04	2.57E+05
FD	-5.30E+04	2.55E+05	-3.49E+04	2.32E+05
L1	-9.37E+04	2.65E+05	-9.34E+04	2.64E+05
L3	-5.30E+04	2.53E+05	-5.27E+04	2.53E+05
L4	-5.30E+04	2.53E+05	-5.27E+04	2.53E+05
NF	—	—	—	—
NS	-5.68E+04	2.58E+05	-5.46E+04	2.57E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-38. Time history of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-75. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

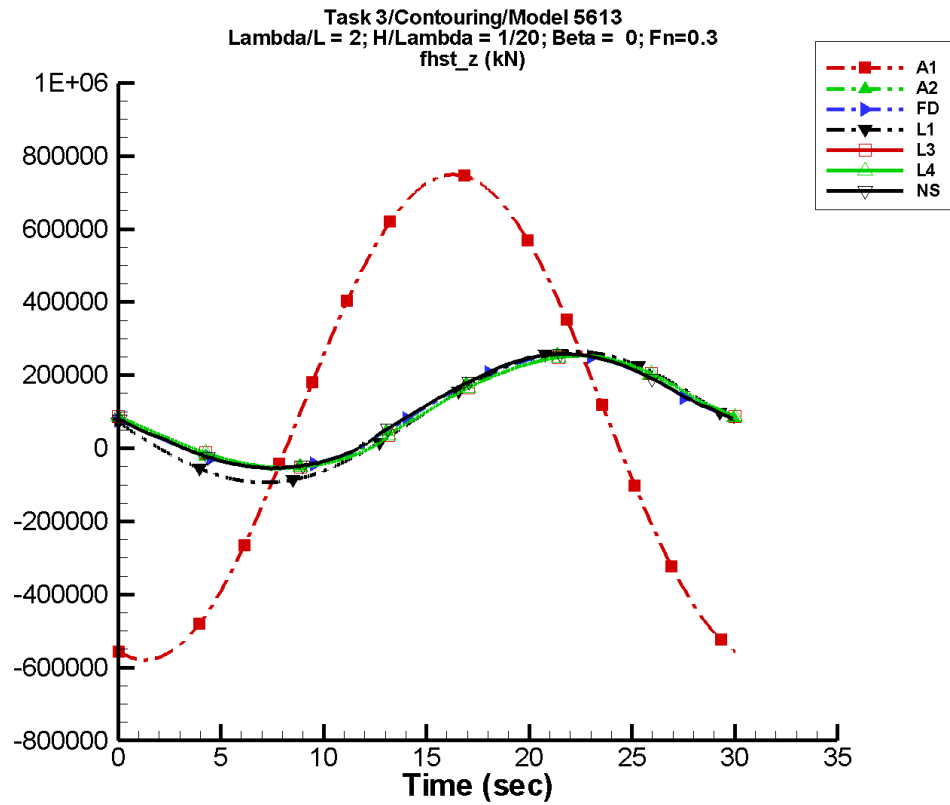
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.40E+04	1.75E+05	176	1.85E+03	-96
A2	8.57E+04	1.78E+05	173	3.35E+03	-103
FD	8.39E+04	1.75E+05	162	2.72E+03	-127
L1	8.35E+04	1.75E+05	176	1.65E+03	-93
L3	8.41E+04	1.74E+05	176	2.63E+03	-101
L4	8.41E+04	1.74E+05	176	2.63E+03	-101
NF	—	—	—	—	—
NS	8.54E+04	1.73E+05	180	3.33E+03	-92

Table I-76. Minimum and maximum of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-9.15E+04	2.63E+05	-8.96E+04	2.61E+05
A2	-8.90E+04	2.67E+05	-8.73E+04	2.65E+05
FD	-8.66E+04	2.59E+05	-4.38E+04	2.49E+05
L1	-9.12E+04	2.62E+05	-9.06E+04	2.62E+05
L3	-8.72E+04	2.60E+05	-8.67E+04	2.60E+05
L4	-8.72E+04	2.60E+05	-8.67E+04	2.60E+05
NF	—	—	—	—
NS	-8.38E+04	2.61E+05	-8.40E+04	2.60E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-39. Time history of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

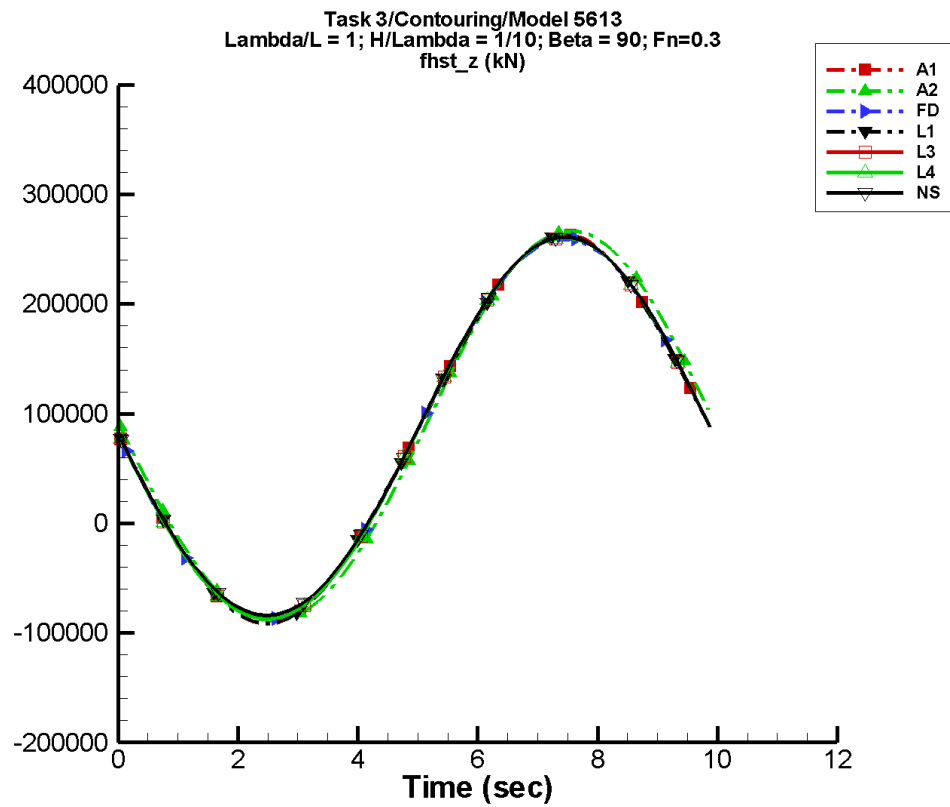
Table I-77. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.46E+04	6.66E+05	-100	914.	13
A2	9.70E+04	1.54E+05	-169	1.02E+04	0
FD	9.67E+04	1.53E+05	-164	9.39E+03	9
L1	8.52E+04	1.79E+05	-171	310.	-73
L3	9.56E+04	1.51E+05	-175	9.46E+03	-10
L4	9.56E+04	1.51E+05	-175	9.46E+03	-10
NF	—	—	—	—	—
NS	9.78E+04	1.54E+05	-172	1.06E+04	-4

Table I-78. Minimum and maximum of  $F_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-5.79E+05	7.49E+05	-5.78E+05	7.48E+05
A2	-5.54E+04	2.58E+05	-5.53E+04	2.57E+05
FD	-5.36E+04	2.55E+05	-5.00E+04	2.50E+05
L1	-9.37E+04	2.65E+05	-9.36E+04	2.65E+05
L3	-5.30E+04	2.53E+05	-5.30E+04	2.53E+05
L4	-5.30E+04	2.53E+05	-5.30E+04	2.53E+05
NF	—	—	—	—
NS	-5.69E+04	2.58E+05	-5.46E+04	2.57E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-40. Time history of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

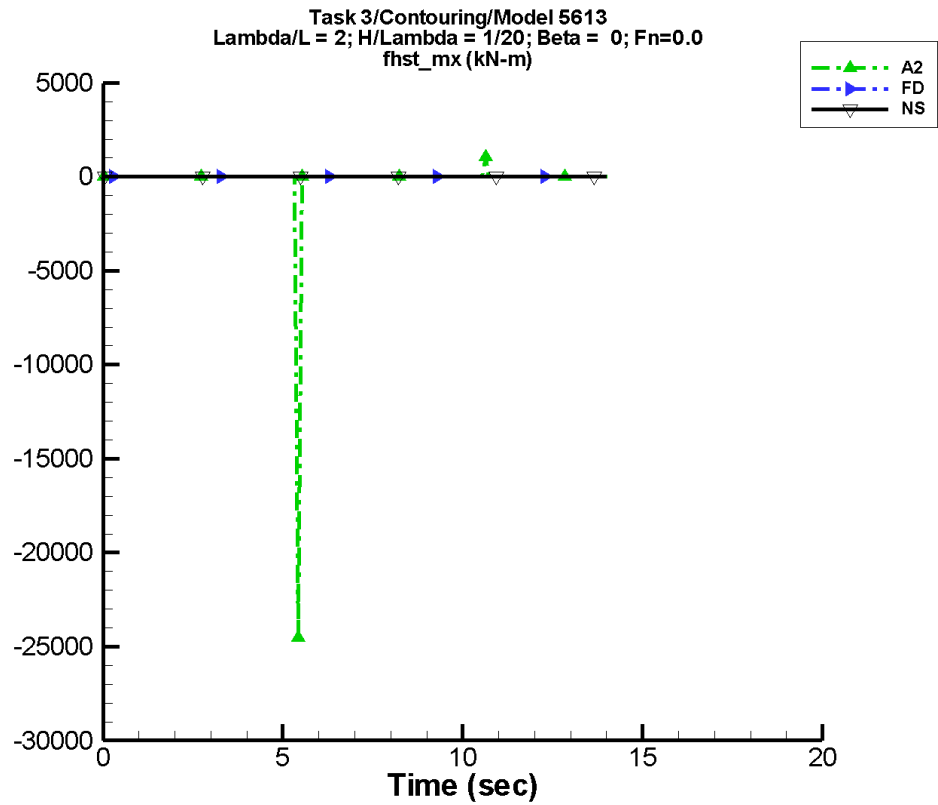
Table I-79. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	8.40E+04	1.75E+05	176	1.85E+03	-96
A2	8.57E+04	1.78E+05	173	3.35E+03	-103
FD	8.39E+04	1.75E+05	162	2.72E+03	-127
L1	8.35E+04	1.75E+05	176	1.65E+03	-93
L3	8.41E+04	1.74E+05	176	2.63E+03	-101
L4	8.41E+04	1.74E+05	176	2.63E+03	-101
NF	—	—	—	—	—
NS	8.54E+04	1.73E+05	180	3.33E+03	-92

Table I-80. Minimum and maximum of  $F_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-9.15E+04	2.63E+05	-8.96E+04	2.61E+05
A2	-8.90E+04	2.67E+05	-8.73E+04	2.65E+05
FD	-8.66E+04	2.59E+05	-4.38E+04	2.49E+05
L1	-9.12E+04	2.62E+05	-9.06E+04	2.62E+05
L3	-8.72E+04	2.60E+05	-8.67E+04	2.60E+05
L4	-8.72E+04	2.60E+05	-8.67E+04	2.60E+05
NF	—	—	—	—
NS	-8.38E+04	2.61E+05	-8.40E+04	2.60E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-41. Time history of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

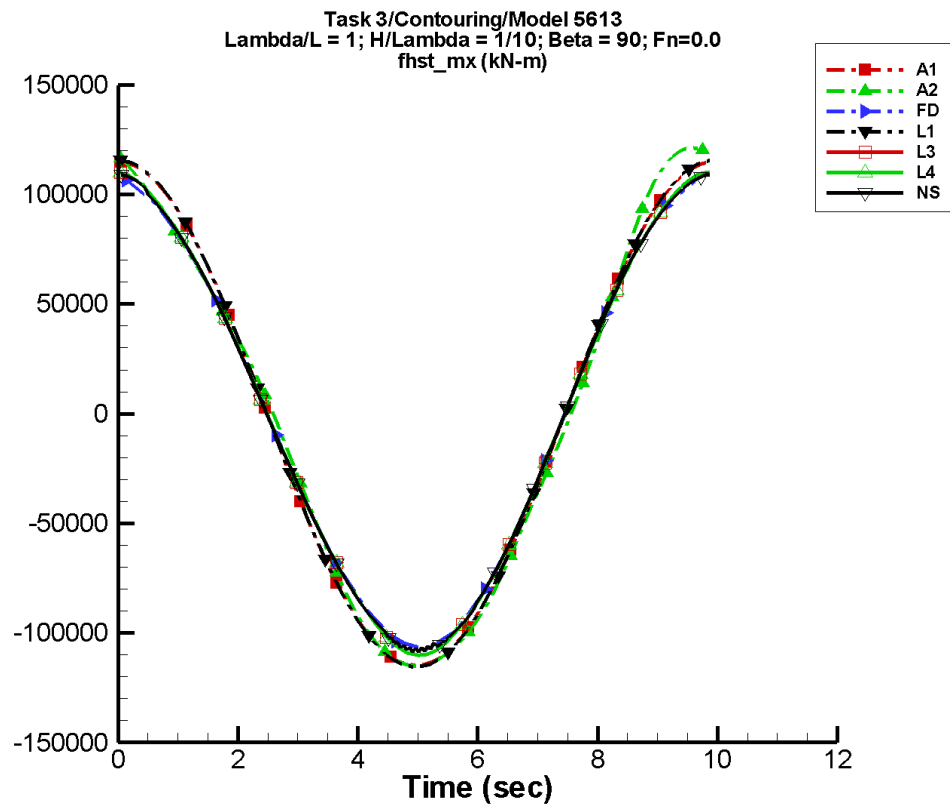
Table I-81. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-180.	351.	137	330.	-13
FD	2.30E-05	1.01E-04	84	2.40E-05	173
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-1.50E-03	9.12E-03	-35	6.34E-03	-18

Table I-82. Minimum and maximum of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-2.45E+04	1.07E+03	-3.27E+03	280.
FD	-1.78E-03	1.78E-03	-4.16E-04	4.18E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-9.46E-02	5.63E-02	-3.89E-02	3.11E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-42. Time history of  $M_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-83. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

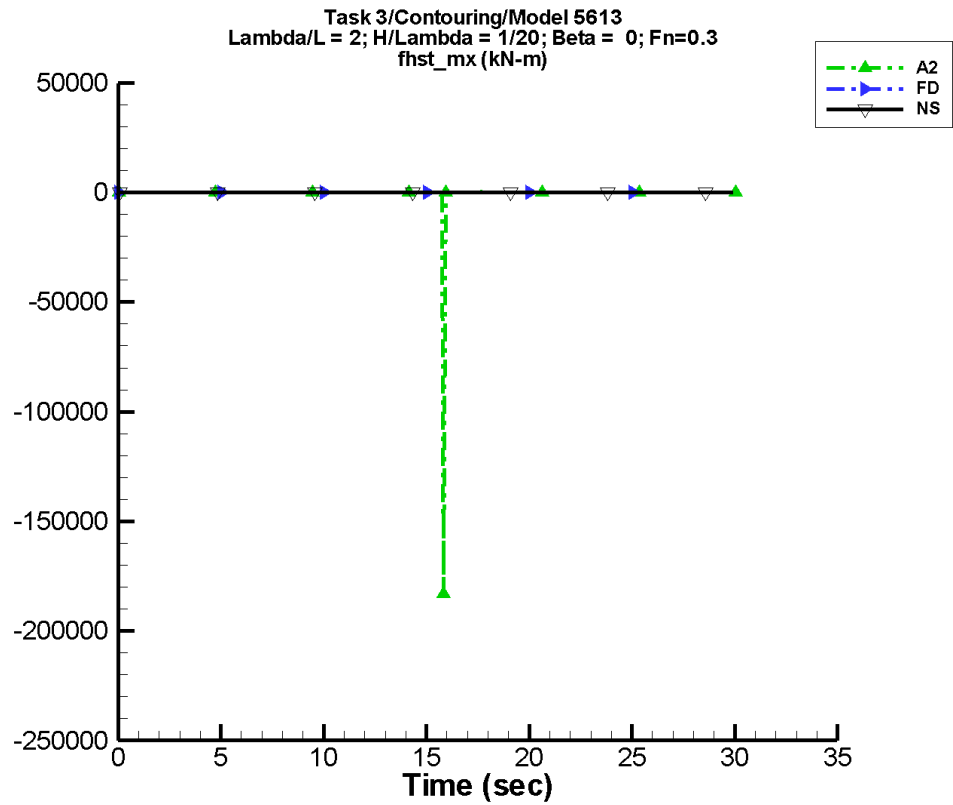
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-73.4	1.15E+05	86	103.	25
A2	-328.	1.14E+05	86	6.70E+03	170
FD	-4.45	1.06E+05	72	2.57E+03	144
L1	-23.5	1.15E+05	86	11.1	19
L3	-19.6	1.07E+05	86	2.35E+03	169
L4	-19.6	1.07E+05	86	2.35E+03	169
NF	—	—	—	—	—
NS	14.6	1.06E+05	90	2.27E+03	172

Table I-84. Minimum and maximum of  $M_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.15E+05	1.15E+05	-1.14E+05	1.15E+05
A2	-1.15E+05	1.21E+05	-1.14E+05	1.19E+05
FD	-1.07E+05	1.07E+05	-7.85E+04	9.20E+04
L1	-1.15E+05	1.15E+05	-1.15E+05	1.16E+05
L3	-1.10E+05	1.10E+05	-1.10E+05	1.10E+05
L4	-1.10E+05	1.10E+05	-1.10E+05	1.10E+05
NF	—	—	—	—
NS	-1.09E+05	1.09E+05	-1.07E+05	1.09E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-43. Time history of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

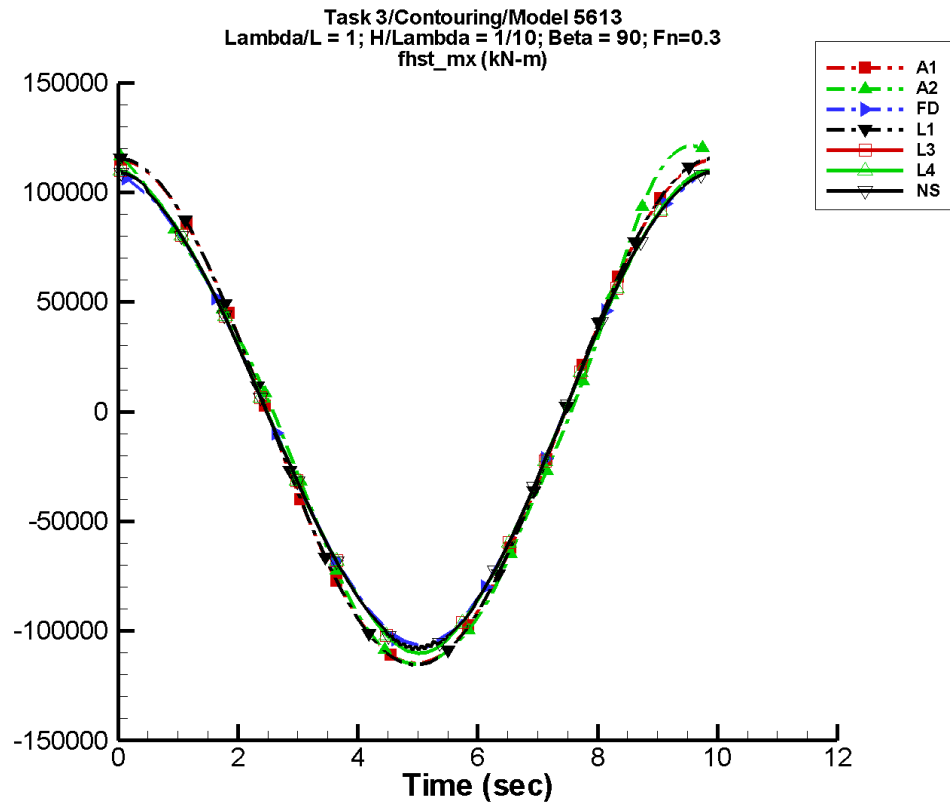
Table I-85. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-611.	1.26E+03	89	1.09E+03	-101
FD	1.23E-05	8.04E-05	-6	1.14E-04	97
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-9.39E-04	5.78E-03	-28	4.56E-03	-90

Table I-86. Minimum and maximum of  $M_x^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-1.83E+05	459.	-2.44E+04	2.09E+03
FD	-1.55E-03	1.36E-03	-2.80E-04	3.13E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-0.184	0.109	-5.09E-02	1.57E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-44. Time history of  $M_x^{hst}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

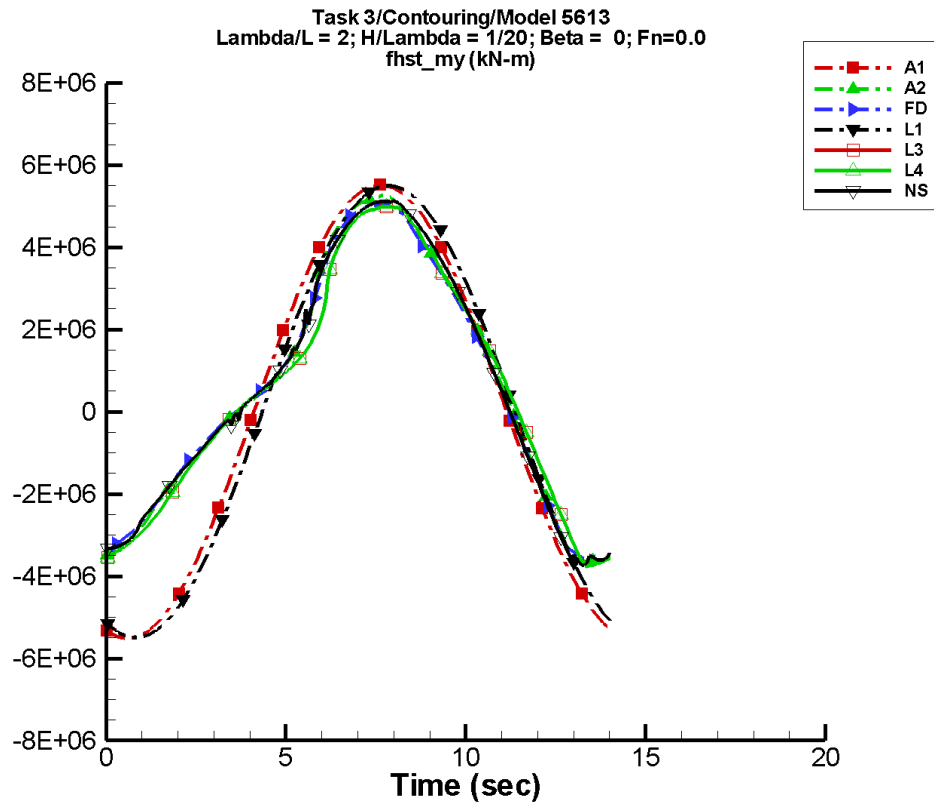
Table I-87. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-73.4	1.15E+05	86	103.	25
A2	-328.	1.14E+05	86	6.70E+03	170
FD	-4.46	1.06E+05	72	2.57E+03	144
L1	-23.5	1.15E+05	86	11.1	19
L3	-19.6	1.07E+05	86	2.35E+03	169
L4	-19.6	1.07E+05	86	2.35E+03	169
NF	—	—	—	—	—
NS	14.5	1.06E+05	90	2.27E+03	172

Table I-88. Minimum and maximum of  $M_x^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.15E+05	1.15E+05	-1.14E+05	1.15E+05
A2	-1.15E+05	1.21E+05	-1.14E+05	1.19E+05
FD	-1.07E+05	1.07E+05	-7.85E+04	9.20E+04
L1	-1.15E+05	1.15E+05	-1.15E+05	1.16E+05
L3	-1.10E+05	1.10E+05	-1.10E+05	1.10E+05
L4	-1.10E+05	1.10E+05	-1.10E+05	1.10E+05
NF	—	—	—	—
NS	-1.09E+05	1.09E+05	-1.07E+05	1.09E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-45. Time history of  $M_y^{hst}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

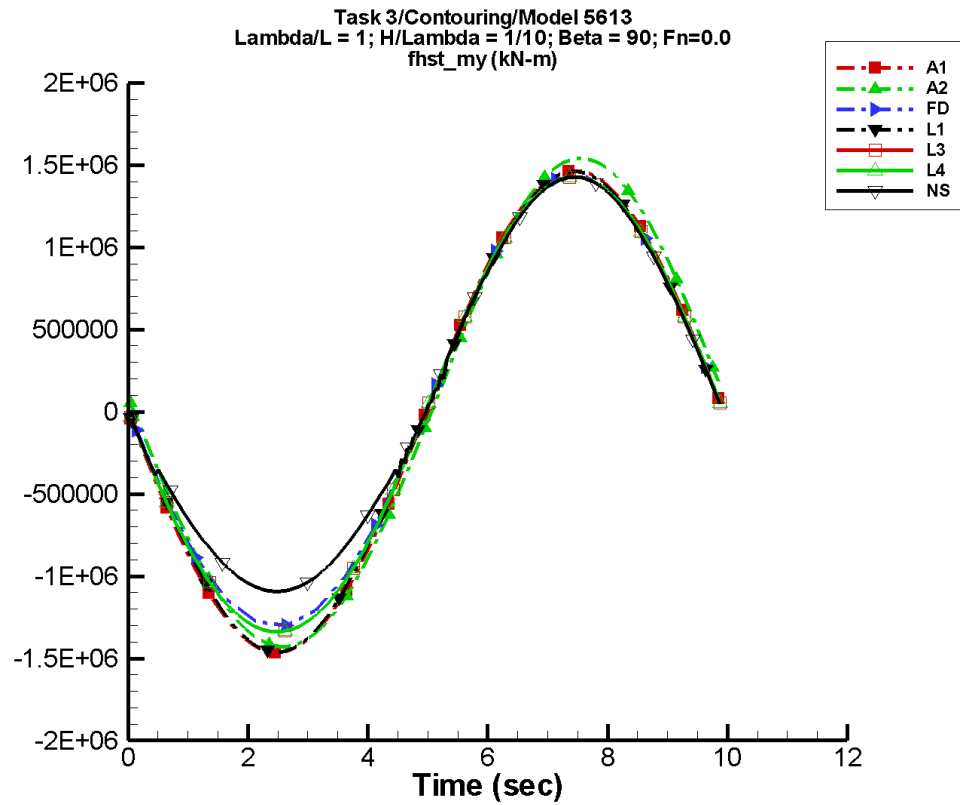
Table I-89. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-749.	5.51E+06	-105	1.00E+03	25
A2	6.01E+05	4.03E+06	-100	7.47E+05	1
FD	5.64E+05	3.93E+06	-93	7.33E+05	19
L1	-524.	5.50E+06	-111	1.01E+03	-14
L3	5.31E+05	3.87E+06	-104	7.20E+05	-14
L4	5.31E+05	3.87E+06	-104	7.20E+05	-14
NF	—	—	—	—	—
NS	5.93E+05	4.01E+06	-101	8.26E+05	-1

Table I-90. Minimum and maximum of  $M_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-5.51E+06	5.51E+06	-5.48E+06	5.48E+06
A2	-3.66E+06	5.28E+06	-3.64E+06	5.21E+06
FD	-3.60E+06	5.07E+06	-3.14E+06	4.20E+06
L1	-5.50E+06	5.50E+06	-5.49E+06	5.49E+06
L3	-3.76E+06	5.00E+06	-3.73E+06	4.99E+06
L4	-3.76E+06	5.00E+06	-3.73E+06	4.99E+06
NF	—	—	—	—
NS	-3.73E+06	5.13E+06	-3.63E+06	5.11E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-46. Time history of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-91. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

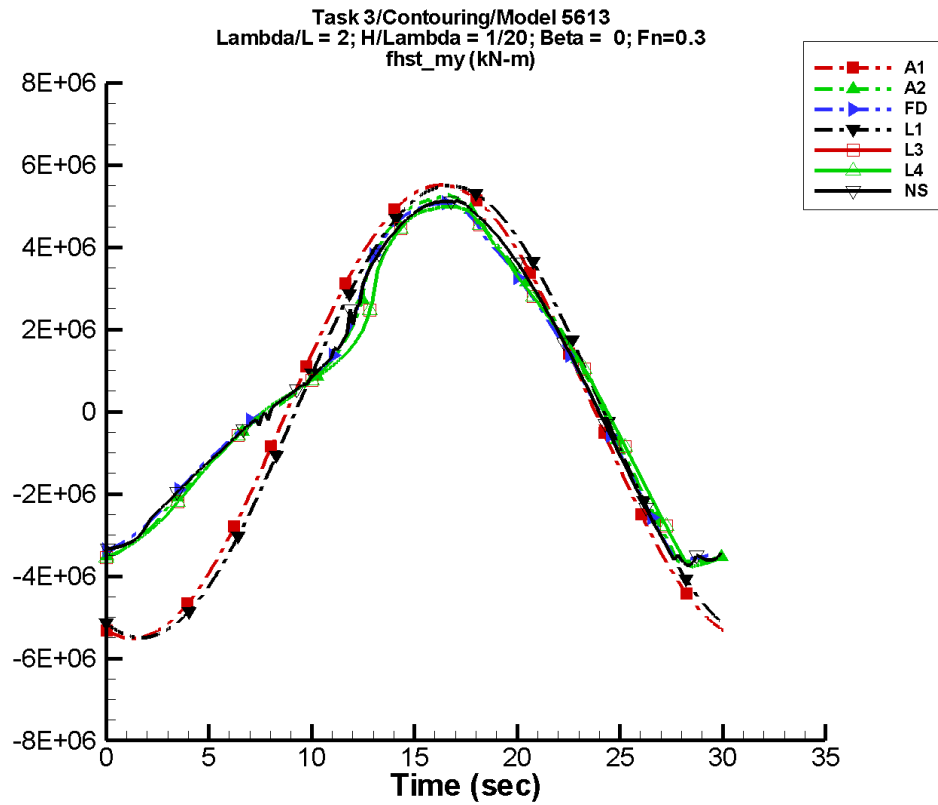
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	761.	1.46E+06	176	1.15E+03	156
A2	3.41E+04	1.48E+06	173	2.19E+04	-106
FD	3.50E+04	1.38E+06	162	3.02E+04	-124
L1	409.	1.44E+06	176	3.91E+03	65
L3	2.37E+04	1.39E+06	176	2.29E+04	-103
L4	2.37E+04	1.39E+06	176	2.29E+04	-103
NF	—	—	—	—	—
NS	9.69E+04	1.26E+06	180	8.08E+04	-90

Table I-92. Minimum and maximum of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.46E+06	1.46E+06	-1.45E+06	1.45E+06
A2	-1.43E+06	1.54E+06	-1.41E+06	1.52E+06
FD	-1.30E+06	1.43E+06	-9.77E+05	1.35E+06
L1	-1.46E+06	1.46E+06	-1.46E+06	1.46E+06
L3	-1.34E+06	1.43E+06	-1.33E+06	1.42E+06
L4	-1.34E+06	1.43E+06	-1.33E+06	1.42E+06
NF	—	—	—	—
NS	-1.09E+06	1.43E+06	-1.09E+06	1.42E+06



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-47. Time history of  $M_y^{hst}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

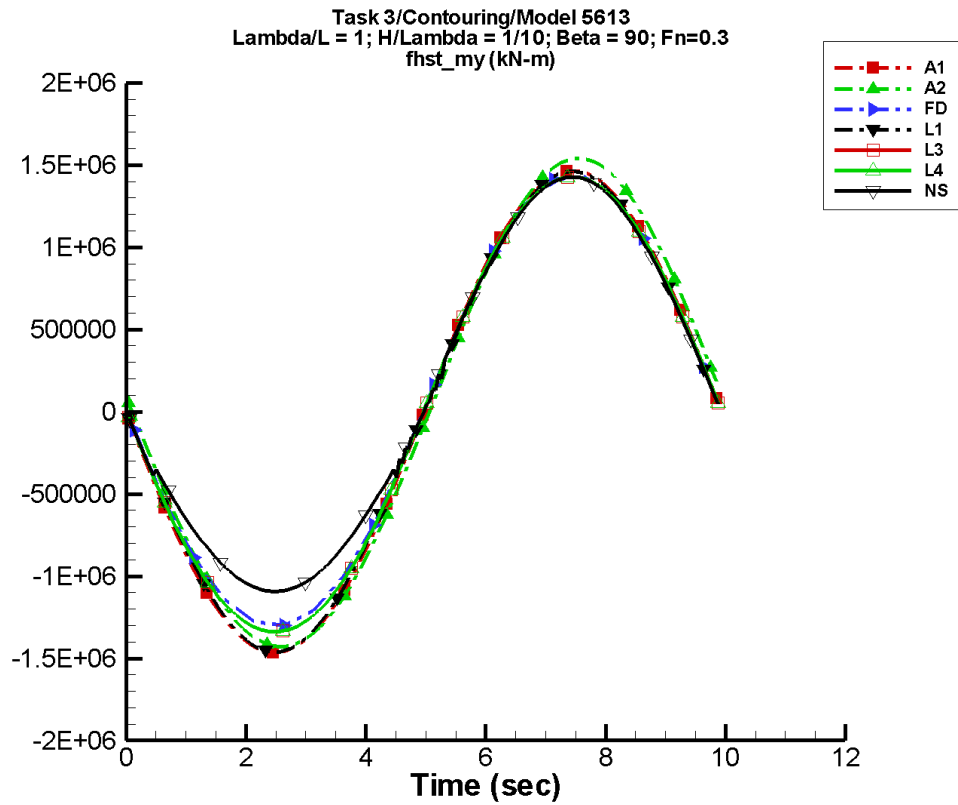
Table I-93. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-6.04E+03	5.51E+06	-100	8.72E+03	22
A2	5.99E+05	4.03E+06	-96	7.53E+05	9
FD	5.74E+05	3.91E+06	-91	7.13E+05	26
L1	-3.36E+03	5.50E+06	-106	6.88E+03	129
L3	4.97E+05	3.87E+06	-99	7.23E+05	3
L4	4.97E+05	3.87E+06	-99	7.23E+05	3
NF	—	—	—	—	—
NS	5.90E+05	4.00E+06	-100	8.30E+05	1

Table I-94. Minimum and maximum of  $M_y^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-5.51E+06	5.51E+06	-5.51E+06	5.51E+06
A2	-3.66E+06	5.28E+06	-3.66E+06	5.25E+06
FD	-3.62E+06	5.07E+06	-3.43E+06	4.93E+06
L1	-5.50E+06	5.50E+06	-5.49E+06	5.49E+06
L3	-3.77E+06	5.00E+06	-3.75E+06	4.99E+06
L4	-3.77E+06	5.00E+06	-3.75E+06	4.99E+06
NF	—	—	—	—
NS	-3.73E+06	5.13E+06	-3.63E+06	5.11E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-48. Time history of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

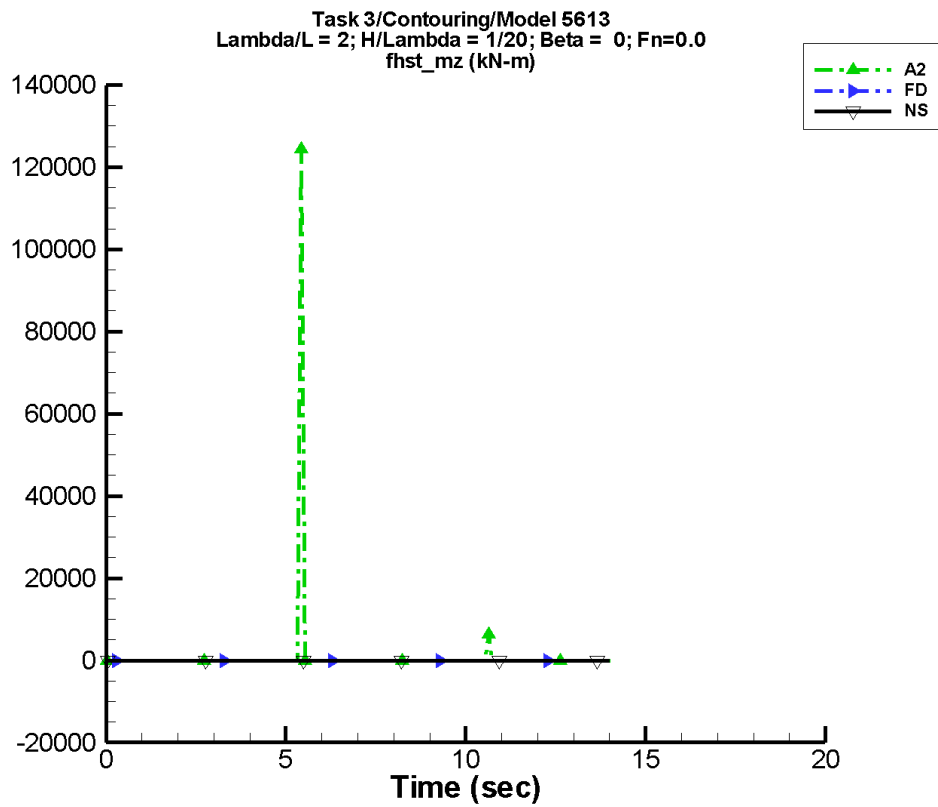
Table I-95. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	761.	1.46E+06	176	1.15E+03	156
A2	3.41E+04	1.48E+06	173	2.19E+04	-106
FD	3.50E+04	1.38E+06	162	3.02E+04	-124
L1	409.	1.44E+06	176	3.91E+03	65
L3	2.37E+04	1.39E+06	176	2.29E+04	-103
L4	2.37E+04	1.39E+06	176	2.29E+04	-103
NF	—	—	—	—	—
NS	9.69E+04	1.26E+06	180	8.08E+04	-90

Table I-96. Minimum and maximum of  $M_y^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.46E+06	1.46E+06	-1.45E+06	1.45E+06
A2	-1.43E+06	1.54E+06	-1.41E+06	1.52E+06
FD	-1.30E+06	1.43E+06	-9.77E+05	1.35E+06
L1	-1.46E+06	1.46E+06	-1.46E+06	1.46E+06
L3	-1.34E+06	1.43E+06	-1.33E+06	1.42E+06
L4	-1.34E+06	1.43E+06	-1.33E+06	1.42E+06
NF	—	—	—	—
NS	-1.09E+06	1.43E+06	-1.09E+06	1.42E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-49. Time history of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

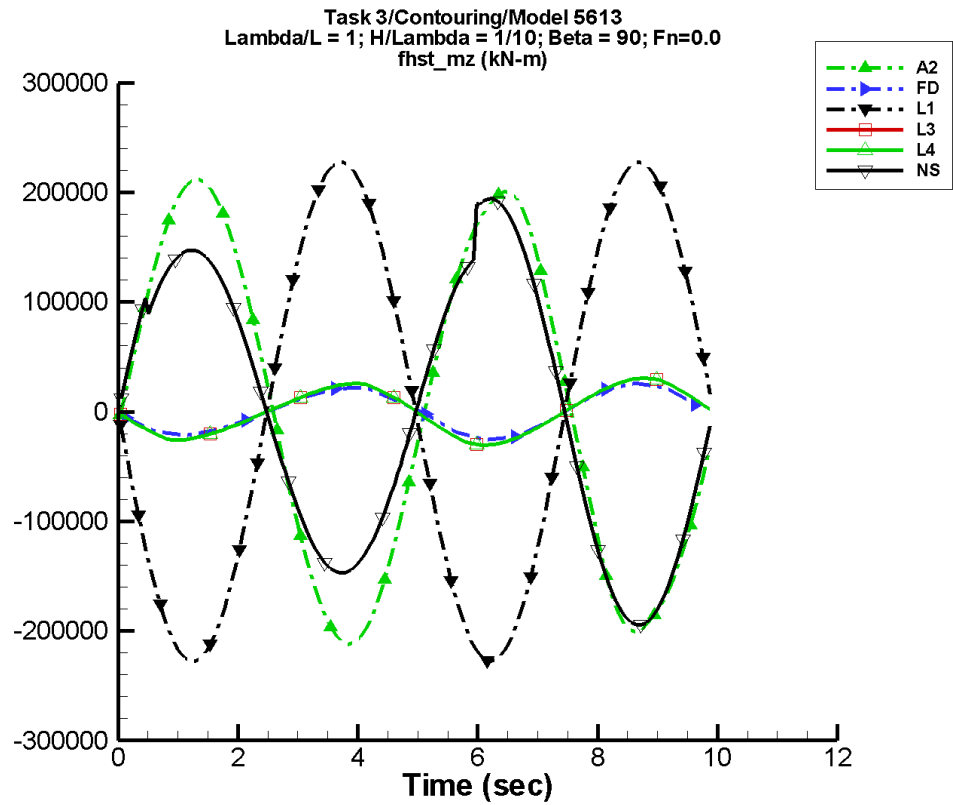
Table I-97. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	1.00E+03	1.65E+03	-46	1.65E+03	172
FD	2.60E-04	1.87E-03	-98	6.81E-04	6
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	2.25E-02	8.12E-02	-14	9.59E-02	-29

Table I-98. Minimum and maximum of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-4.89E-02	1.24E+05	-1.42E+03	1.66E+04
FD	-1.13E-02	1.41E-02	-4.85E-03	4.50E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.03	1.43	-0.445	0.974

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1 and NFA.

Figure I-50. Time history of  $M_z^{hst}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-99. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

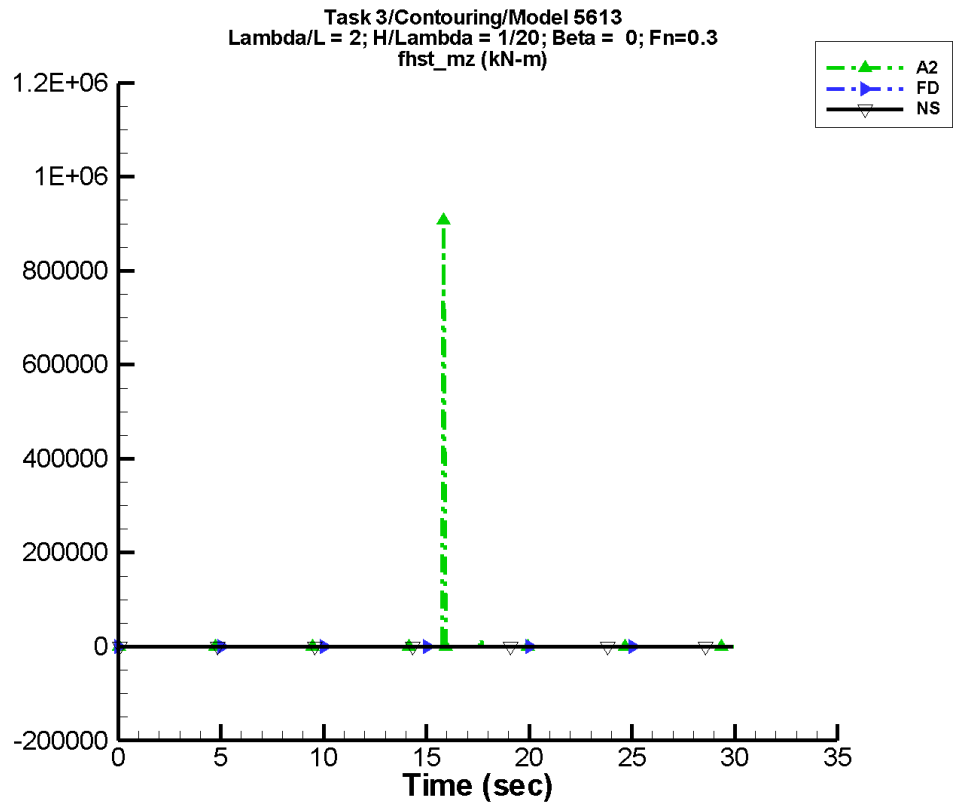
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-161.	9.66E+03	85	2.05E+05	-14
FD	-112.	547.	46	2.35E+04	143
L1	-83.0	148.	100	2.28E+05	172
L3	-127.	1.70E+03	85	2.68E+04	173
L4	-127.	1.70E+03	85	2.68E+04	173
NF	—	—	—	—	—
NS	-1.98E+03	1.34E+04	-87	1.67E+05	0

Table I-100. Minimum and maximum of  $M_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-2.12E+05	2.12E+05	-2.03E+05	2.03E+05
FD	-2.61E+04	2.62E+04	-1.03E+04	2.01E+03
L1	-2.28E+05	2.28E+05	-2.24E+05	2.24E+05
L3	-3.05E+04	3.05E+04	-3.00E+04	3.00E+04
L4	-3.05E+04	3.05E+04	-3.00E+04	3.00E+04
NF	—	—	—	—
NS	-1.95E+05	1.94E+05	-1.93E+05	1.93E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-51. Time history of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

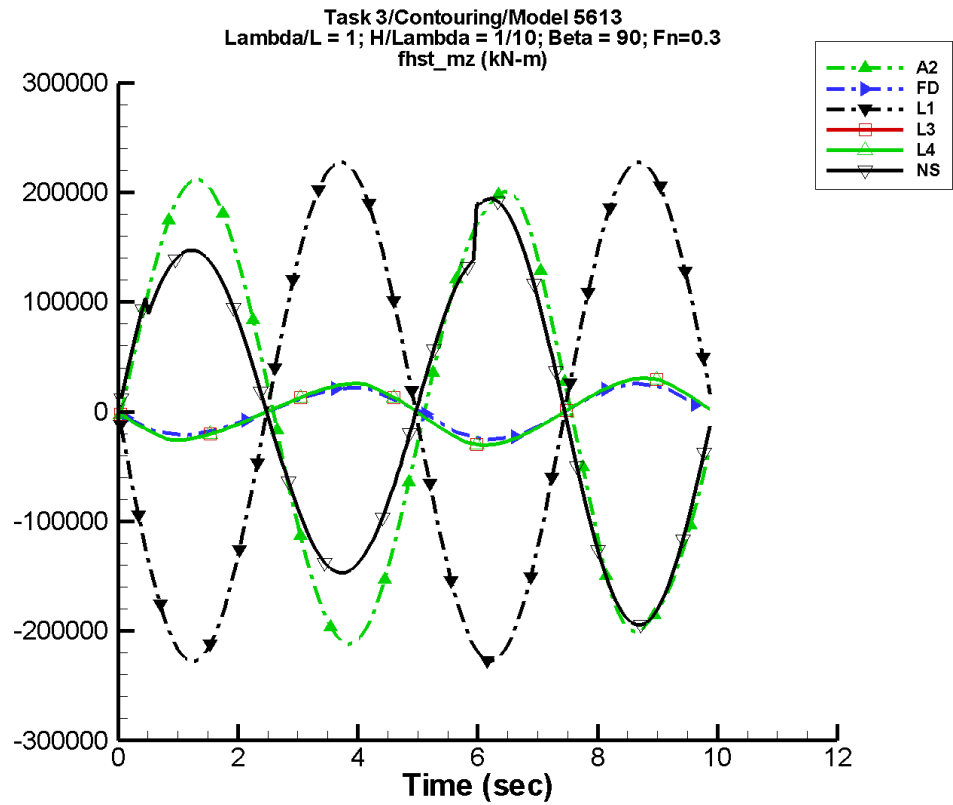
Table I-101. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	3.09E+03	6.36E+03	-92	5.50E+03	78
FD	-6.94E-04	7.92E-04	6	7.09E-04	53
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-1.33E-02	6.71E-02	-19	8.74E-02	-12

Table I-102. Minimum and maximum of  $M_z^{\text{hst}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-20.1	9.08E+05	-1.06E+04	1.21E+05
FD	-1.81E-02	1.48E-02	-5.89E-03	1.87E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.26	1.39	-0.358	0.412

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1 and NFA.

Figure I-52. Time history of  $M_z^{hst}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

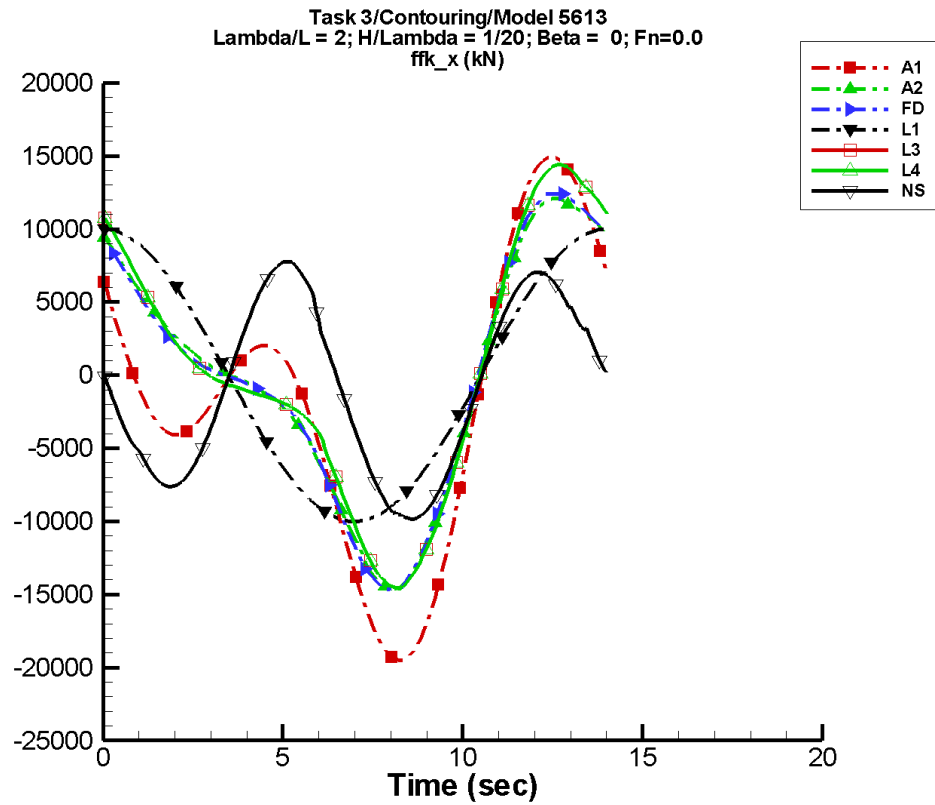
Table I-103. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	-161.	9.66E+03	85	2.05E+05	-14
FD	-112.	547.	46	2.35E+04	143
L1	-83.0	148.	100	2.28E+05	172
L3	-127.	1.70E+03	85	2.68E+04	173
L4	-127.	1.70E+03	85	2.68E+04	173
NF	—	—	—	—	—
NS	-1.98E+03	1.34E+04	-87	1.67E+05	0

Table I-104. Minimum and maximum of  $M_z^{\text{hst}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	—	—	—	—
A2	-2.12E+05	2.12E+05	-2.03E+05	2.03E+05
FD	-2.61E+04	2.62E+04	-1.03E+04	2.01E+03
L1	-2.28E+05	2.28E+05	-2.24E+05	2.24E+05
L3	-3.05E+04	3.05E+04	-3.00E+04	3.00E+04
L4	-3.05E+04	3.05E+04	-3.00E+04	3.00E+04
NF	—	—	—	—
NS	-1.95E+05	1.94E+05	-1.93E+05	1.93E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-53. Time history of  $F_x^{fk}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

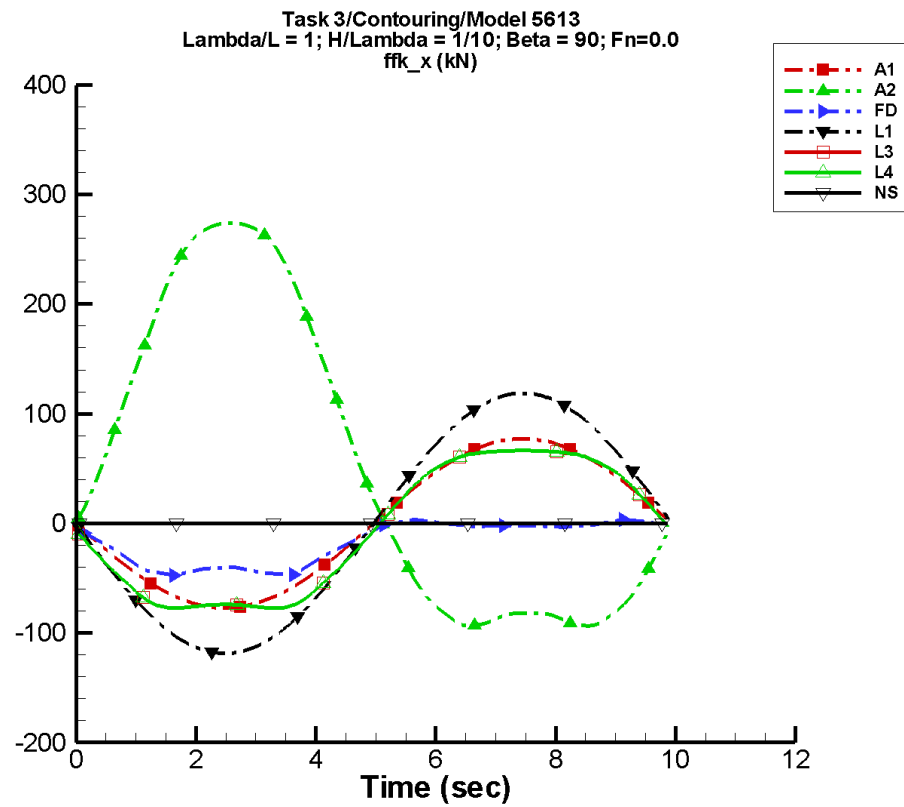
Table I-105. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-1.78E+03	1.02E+04	91	9.43E+03	-168
A2	-215.	1.07E+04	90	4.55E+03	-170
FD	-231.	1.07E+04	99	4.97E+03	-155
L1	0.784	1.00E+04	92	1.26	172
L3	273.	1.11E+04	92	5.24E+03	179
L4	273.	1.11E+04	92	5.24E+03	179
NF	—	—	—	—	—
NS	-889.	1.35E+03	73	7.86E+03	-173

Table I-106. Minimum and maximum of  $F_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.95E+04	1.49E+04	-1.93E+04	1.47E+04
A2	-1.46E+04	1.21E+04	-1.44E+04	1.19E+04
FD	-1.47E+04	1.25E+04	-1.08E+04	1.13E+04
L1	-1.00E+04	1.00E+04	-9.99E+03	1.00E+04
L3	-1.46E+04	1.44E+04	-1.45E+04	1.43E+04
L4	-1.46E+04	1.44E+04	-1.45E+04	1.43E+04
NF	—	—	—	—
NS	-9.84E+03	7.78E+03	-9.75E+03	7.63E+03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-54. Time history of  $F_x^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-107. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

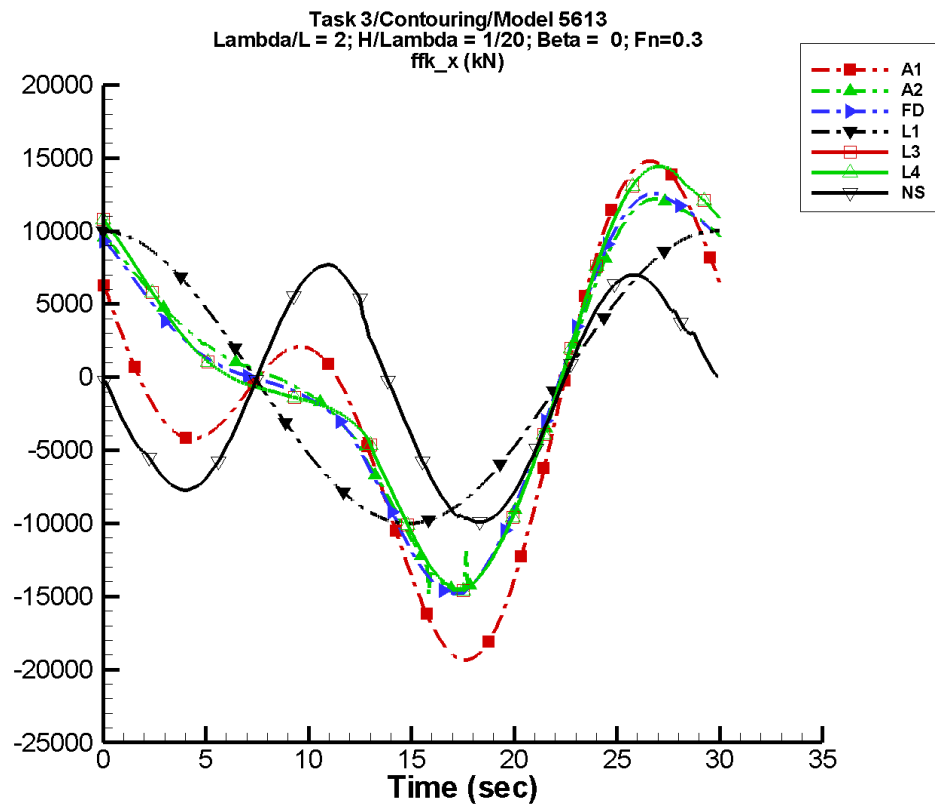
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	4.01E-02	77.2	176	6.04E-02	156
A2	53.2	190.	-7	44.4	-103
FD	-17.8	24.6	163	8.15	52
L1	4.91E-02	119.	176	7.80E-02	143
L3	-6.02	79.4	177	2.61	-125
L4	-6.02	79.4	177	2.61	-125
NF	—	—	—	—	—
NS	2.14E-05	2.23E-04	93	1.60E-03	177

Table I-108. Minimum and maximum of  $F_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-77.2	77.2	-76.4	76.4
A2	-93.4	274.	-90.8	272.
FD	-47.4	3.56	-36.4	0.401
L1	-119.	119.	-118.	118.
L3	-77.4	66.4	-77.1	66.4
L4	-77.4	66.4	-77.1	66.4
NF	—	—	—	—
NS	-1.59E-03	1.66E-03	-1.58E-03	1.63E-03



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-55. Time history of  $F_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

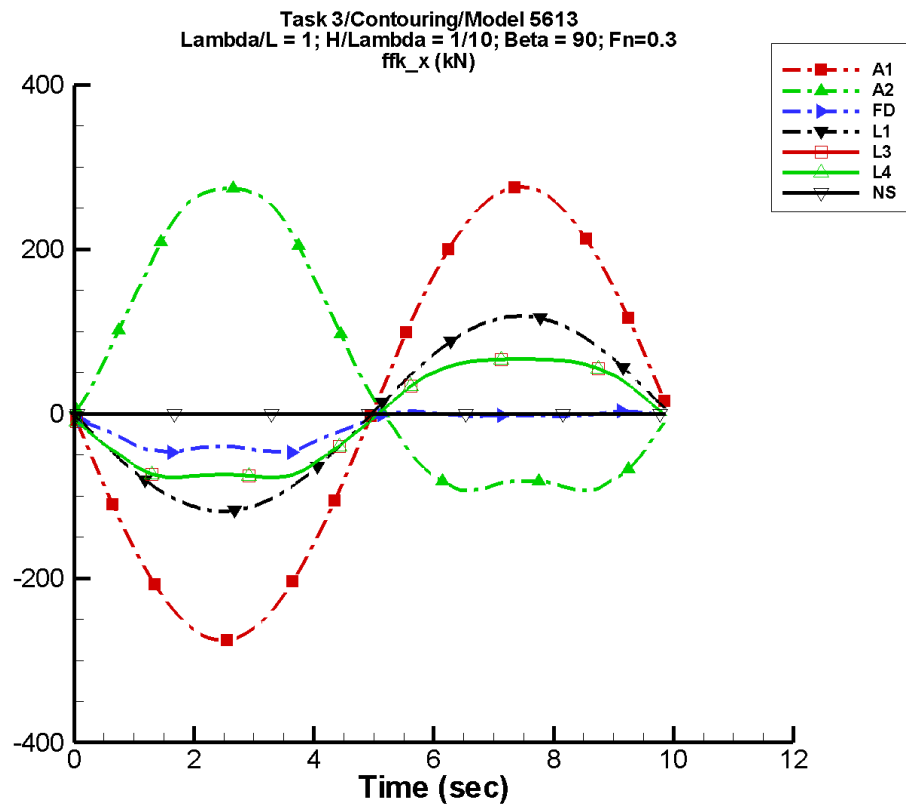
Table I-109. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-1.78E+03	1.00E+04	97	9.43E+03	-157
A2	-36.8	1.07E+04	94	4.55E+03	-160
FD	-169.	1.08E+04	101	5.00E+03	-151
L1	10.5	1.00E+04	96	14.2	-28
L3	314.	1.11E+04	97	5.35E+03	-172
L4	314.	1.11E+04	97	5.35E+03	-172
NF	—	—	—	—	—
NS	-963.	1.34E+03	74	7.86E+03	-171

Table I-110. Minimum and maximum of  $F_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.94E+04	1.48E+04	-1.93E+04	1.47E+04
A2	-1.49E+04	1.22E+04	-1.44E+04	1.22E+04
FD	-1.48E+04	1.26E+04	-1.39E+04	1.19E+04
L1	-1.00E+04	1.00E+04	-1.00E+04	1.00E+04
L3	-1.46E+04	1.44E+04	-1.46E+04	1.44E+04
L4	-1.46E+04	1.44E+04	-1.46E+04	1.44E+04
NF	—	—	—	—
NS	-9.91E+03	7.70E+03	-9.82E+03	7.56E+03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-56. Time history of  $F_x^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

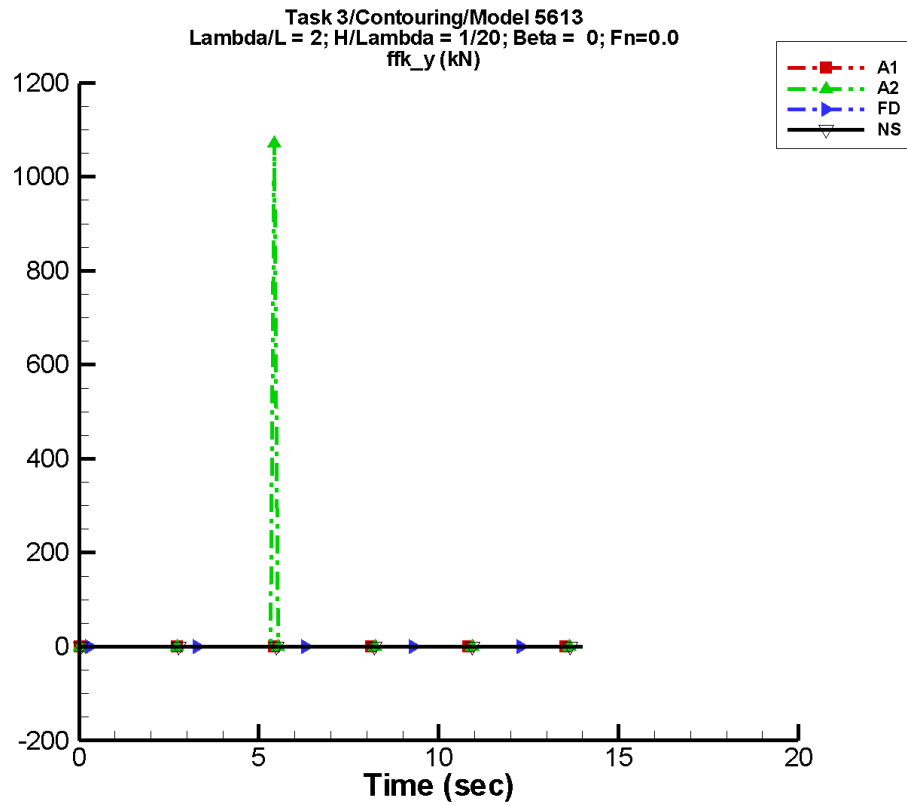
Table I-111. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	0.143	276.	176	0.216	156
A2	53.2	190.	-7	44.4	-103
FD	-17.8	24.6	163	8.15	52
L1	4.91E-02	119.	176	7.81E-02	143
L3	-6.02	79.4	177	2.61	-125
L4	-6.02	79.4	177	2.61	-125
NF	—	—	—	—	—
NS	2.14E-05	2.23E-04	93	1.60E-03	177

Table I-112. Minimum and maximum of  $F_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-276.	276.	-273.	273.
A2	-93.4	274.	-90.8	272.
FD	-47.4	3.56	-36.4	0.402
L1	-119.	119.	-118.	118.
L3	-77.4	66.4	-77.1	66.4
L4	-77.4	66.4	-77.1	66.4
NF	—	—	—	—
NS	-1.59E-03	1.66E-03	-1.58E-03	1.63E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-57. Time history of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

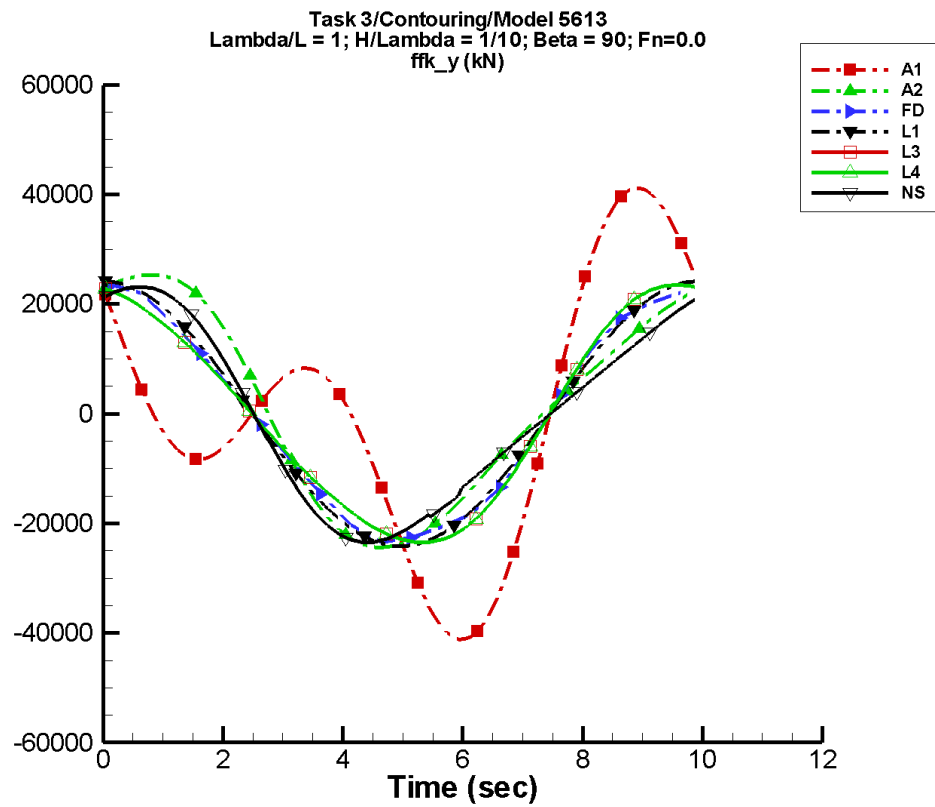
Table I-113. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-3.64E-06	3.66E-02	-176	5.36E-06	-13
A2	8.21	14.8	-44	14.3	170
FD	-1.20E-05	1.31E-05	0	1.69E-05	5
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	2.59E-05	2.33E-03	-48	7.18E-04	-1

Table I-114. Minimum and maximum of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-3.66E-02	3.66E-02	-3.64E-02	3.64E-02
A2	-7.34E-03	1.07E+03	-12.2	143.
FD	-2.21E-04	1.72E-04	-8.87E-05	3.28E-05
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.85E-02	1.32E-02	-5.26E-03	5.50E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-58. Time history of  $F_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-115. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

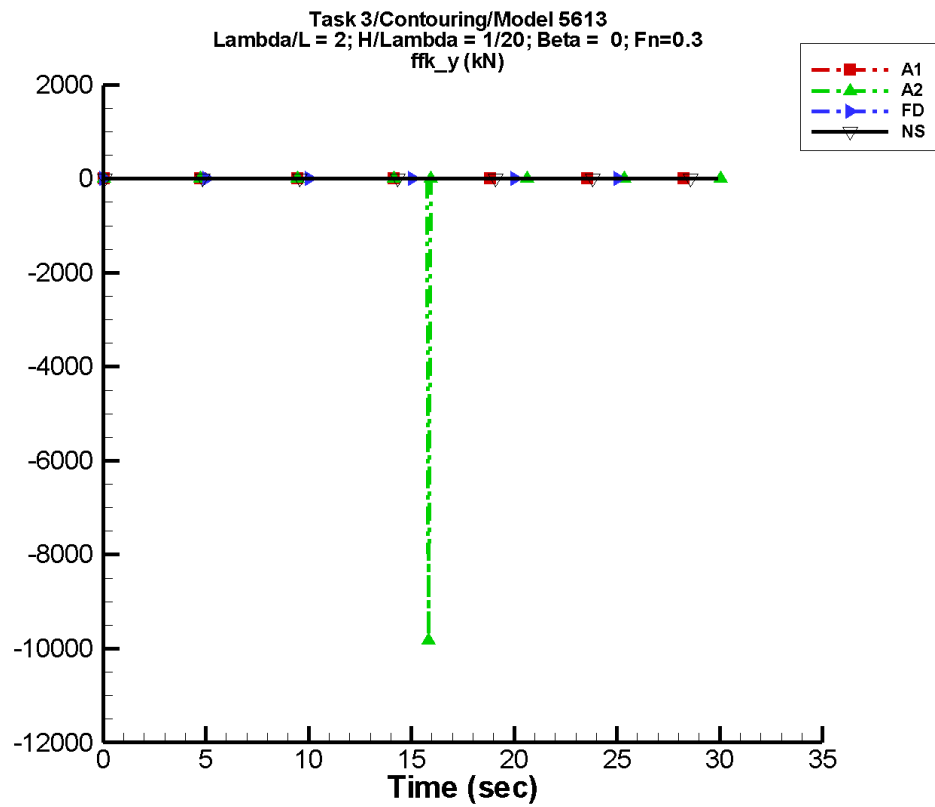
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-8.03	2.34E+04	86	2.33E+04	173
A2	1.53E+03	2.39E+04	81	4.79E+03	-35
FD	7.16	2.35E+04	72	802.	134
L1	-6.14	2.41E+04	86	9.79	-29
L3	-15.3	2.33E+04	86	2.44E+03	173
L4	-15.3	2.33E+04	86	2.44E+03	173
NF	—	—	—	—	—
NS	-62.2	2.19E+04	89	4.54E+03	-5

Table I-116. Minimum and maximum of  $F_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.12E+04	4.12E+04	-4.01E+04	4.01E+04
A2	-2.44E+04	2.54E+04	-2.41E+04	2.51E+04
FD	-2.36E+04	2.36E+04	-1.73E+04	2.03E+04
L1	-2.41E+04	2.41E+04	-2.41E+04	2.42E+04
L3	-2.35E+04	2.35E+04	-2.34E+04	2.34E+04
L4	-2.35E+04	2.35E+04	-2.34E+04	2.34E+04
NF	—	—	—	—
NS	-2.35E+04	2.31E+04	-2.34E+04	2.31E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-59. Time history of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

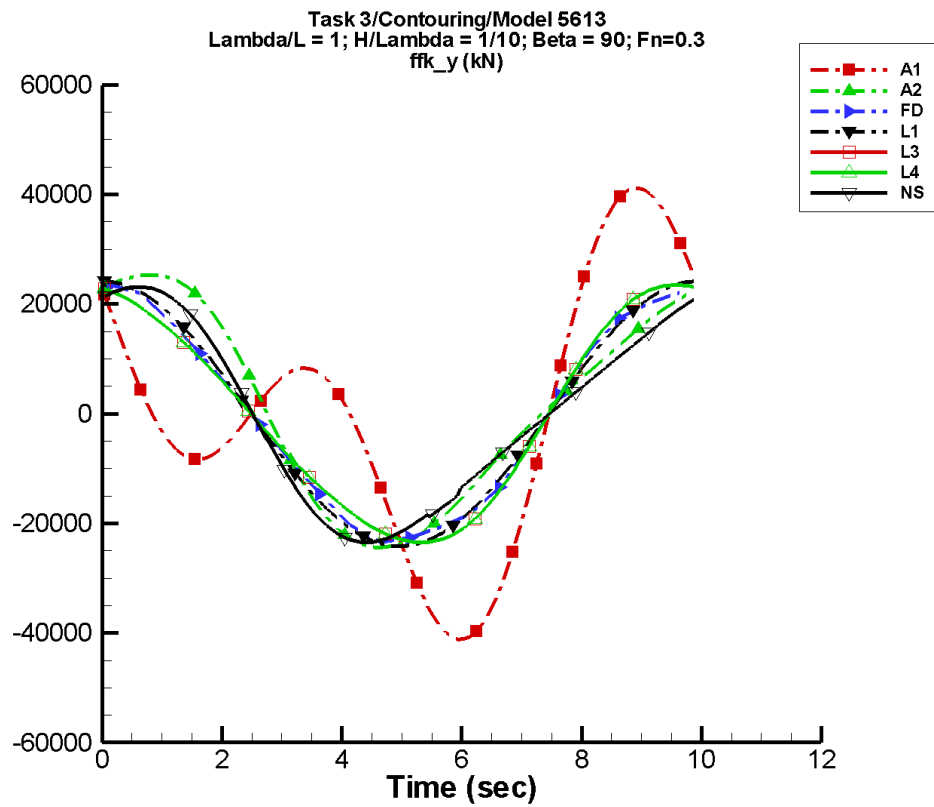
Table I-117. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-3.51E-05	3.66E-02	-170	5.17E-05	-4
A2	-32.8	67.6	89	58.6	-101
FD	1.47E-05	2.26E-05	150	2.24E-05	-136
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-3.15E-05	2.30E-03	-40	7.53E-04	-13

Table I-118. Minimum and maximum of  $F_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-3.66E-02	3.66E-02	-3.66E-02	3.65E-02
A2	-9.82E+03	7.34	-1.31E+03	112.
FD	-4.56E-04	5.41E-04	-6.15E-05	1.23E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.42E-02	1.17E-02	-5.74E-03	4.59E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-60. Time history of  $F_y^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

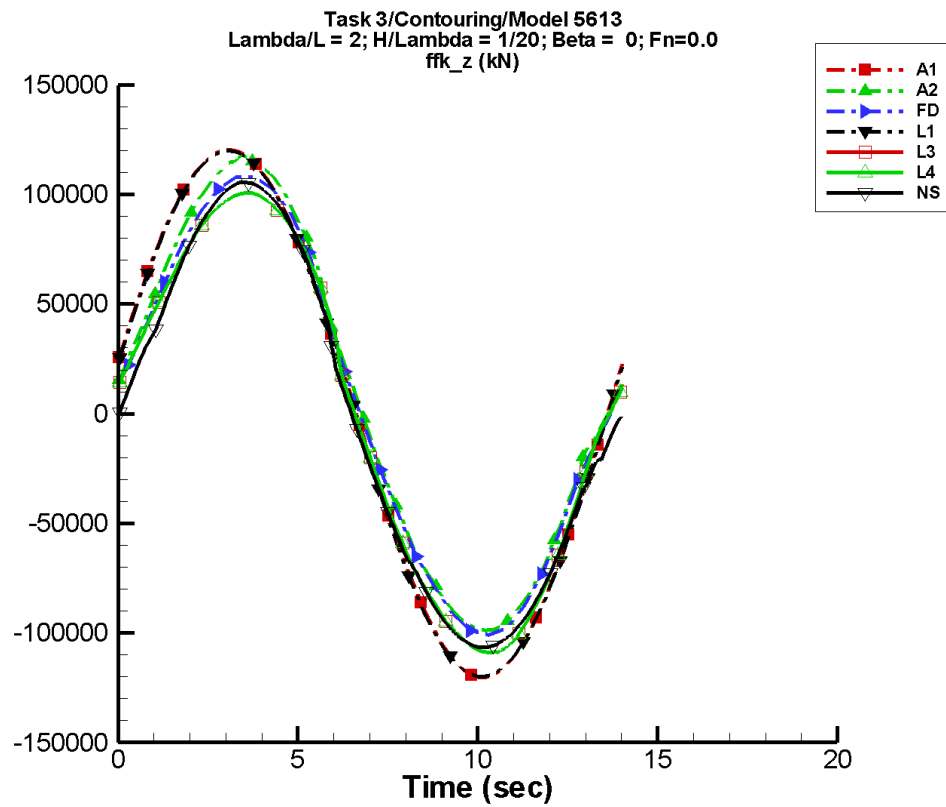
Table I-119. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-8.03	2.34E+04	86	2.33E+04	173
A2	1.53E+03	2.39E+04	81	4.79E+03	-35
FD	7.16	2.35E+04	72	802.	134
L1	-6.14	2.41E+04	86	9.79	-29
L3	-15.3	2.33E+04	86	2.44E+03	173
L4	-15.3	2.33E+04	86	2.44E+03	173
NF	—	—	—	—	—
NS	-62.2	2.19E+04	89	4.54E+03	-5

Table I-120. Minimum and maximum of  $F_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-4.12E+04	4.12E+04	-4.01E+04	4.01E+04
A2	-2.44E+04	2.54E+04	-2.41E+04	2.51E+04
FD	-2.36E+04	2.36E+04	-1.73E+04	2.03E+04
L1	-2.41E+04	2.41E+04	-2.41E+04	2.42E+04
L3	-2.35E+04	2.35E+04	-2.34E+04	2.34E+04
L4	-2.35E+04	2.35E+04	-2.34E+04	2.34E+04
NF	—	—	—	—
NS	-2.35E+04	2.31E+04	-2.34E+04	2.31E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-61. Time history of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

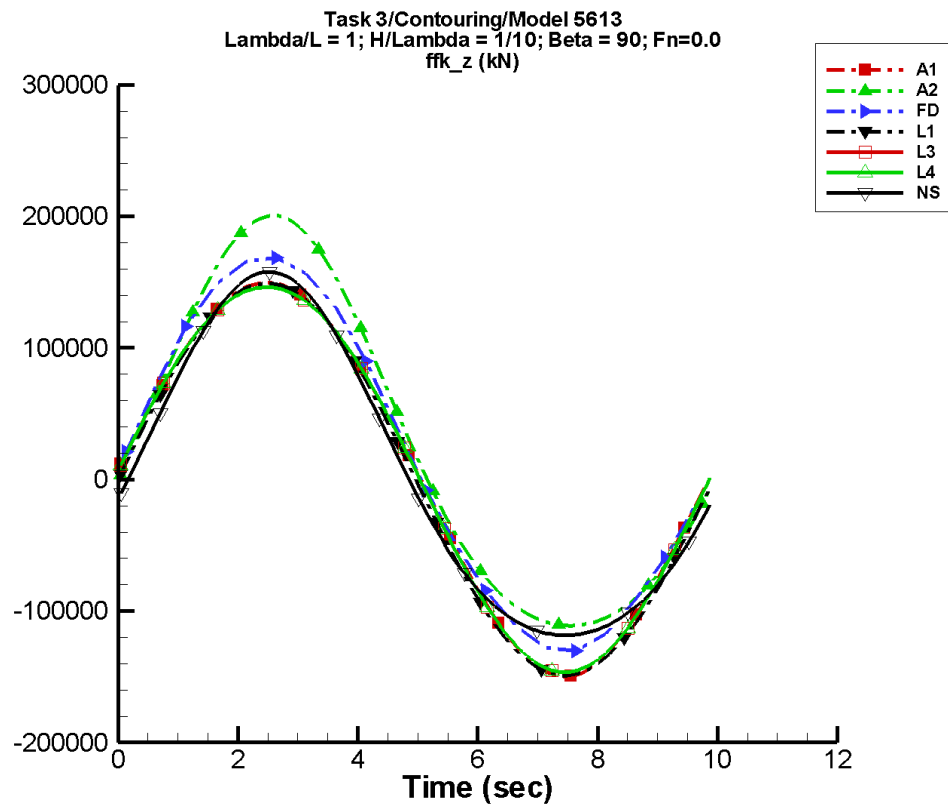
Table I-121. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	808.	1.20E+05	11	768.	95
A2	6.48E+03	1.05E+05	7	6.99E+03	-144
FD	3.01E+03	1.03E+05	14	6.23E+03	-141
L1	15.5	1.20E+05	12	23.9	158
L3	-2.79E+03	1.04E+05	8	6.92E+03	-179
L4	-2.79E+03	1.04E+05	8	6.92E+03	-179
NF	—	—	—	—	—
NS	-4.83E+03	1.03E+05	7	9.07E+03	-135

Table I-122. Minimum and maximum of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.20E+05	1.20E+05	-1.20E+05	1.20E+05
A2	-9.88E+04	1.18E+05	-9.82E+04	1.16E+05
FD	-1.01E+05	1.08E+05	-8.58E+04	9.30E+04
L1	-1.20E+05	1.20E+05	-1.20E+05	1.20E+05
L3	-1.09E+05	1.01E+05	-1.09E+05	1.01E+05
L4	-1.09E+05	1.01E+05	-1.09E+05	1.01E+05
NF	—	—	—	—
NS	-1.07E+05	1.06E+05	-1.06E+05	1.06E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-62. Time history of  $F_z^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-123. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

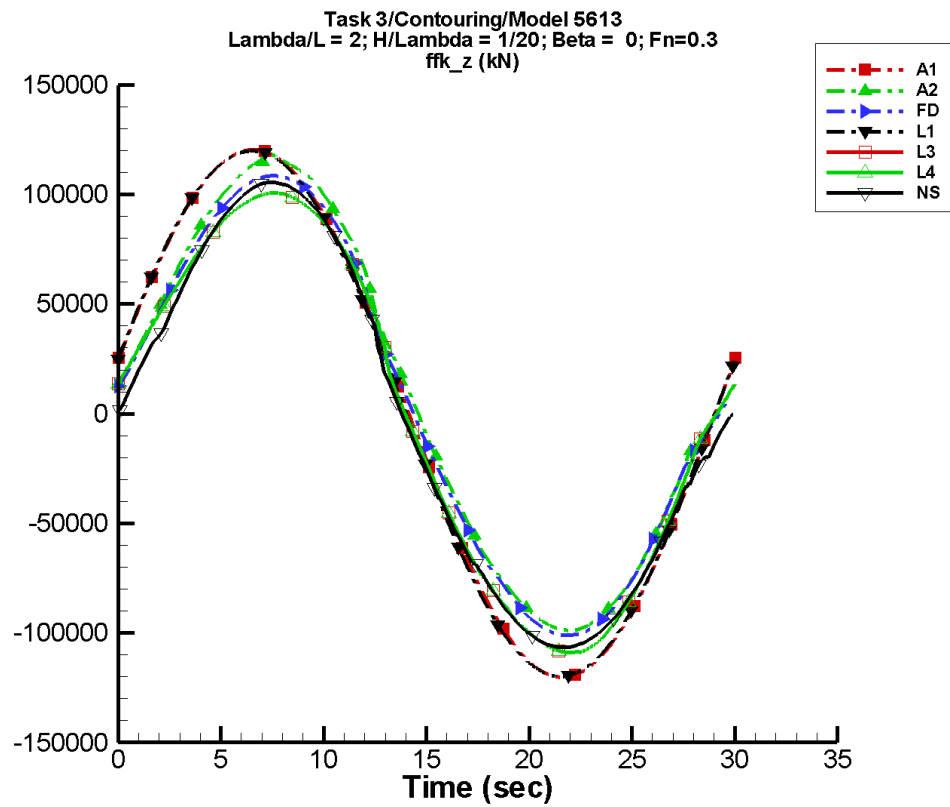
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	3.62E+03	1.48E+05	-4	3.54E+03	84
A2	2.64E+04	1.56E+05	-7	1.82E+04	-105
FD	1.56E+04	1.50E+05	-18	5.30E+03	-124
L1	-61.6	1.49E+05	-4	98.0	-37
L3	3.24E+03	1.46E+05	-4	3.46E+03	80
L4	3.24E+03	1.46E+05	-4	3.46E+03	80
NF	—	—	—	—	—
NS	3.59E+03	1.38E+05	-1	1.60E+04	-93

Table I-124. Minimum and maximum of  $F_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.50E+05	1.50E+05	-1.48E+05	1.48E+05
A2	-1.11E+05	2.01E+05	-1.10E+05	1.98E+05
FD	-1.30E+05	1.69E+05	-1.23E+05	1.26E+05
L1	-1.49E+05	1.49E+05	-1.48E+05	1.49E+05
L3	-1.46E+05	1.46E+05	-1.46E+05	1.46E+05
L4	-1.46E+05	1.46E+05	-1.46E+05	1.46E+05
NF	—	—	—	—
NS	-1.18E+05	1.58E+05	-1.18E+05	1.58E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-63. Time history of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

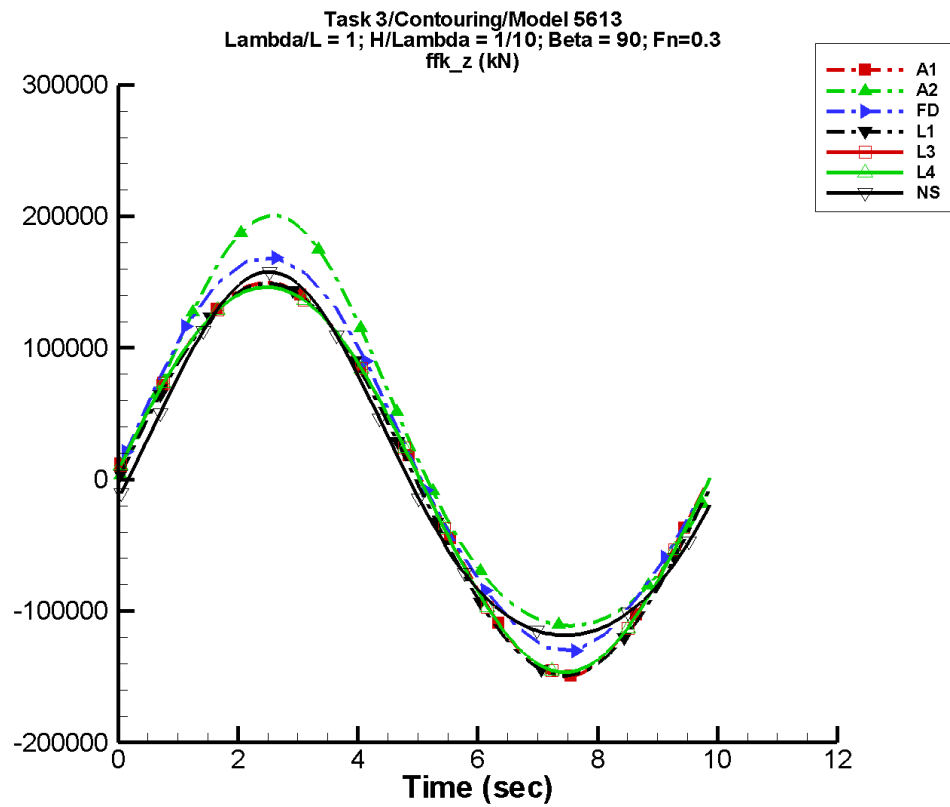
Table I-125. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	913.	1.20E+05	17	798.	117
A2	6.62E+03	1.05E+05	12	7.14E+03	-136
FD	2.55E+03	1.03E+05	16	6.02E+03	-130
L1	-87.6	1.20E+05	16	155.	-124
L3	-2.74E+03	1.03E+05	12	6.74E+03	-164
L4	-2.74E+03	1.03E+05	12	6.74E+03	-164
NF	—	—	—	—	—
NS	-4.70E+03	1.03E+05	8	9.07E+03	-134

Table I-126. Minimum and maximum of  $F_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.20E+05	1.20E+05	-1.20E+05	1.20E+05
A2	-9.88E+04	1.18E+05	-9.87E+04	1.17E+05
FD	-1.01E+05	1.09E+05	-9.79E+04	1.06E+05
L1	-1.20E+05	1.20E+05	-1.20E+05	1.20E+05
L3	-1.09E+05	1.01E+05	-1.09E+05	1.01E+05
L4	-1.09E+05	1.01E+05	-1.09E+05	1.01E+05
NF	—	—	—	—
NS	-1.07E+05	1.06E+05	-1.06E+05	1.06E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-64. Time history of  $F_z^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

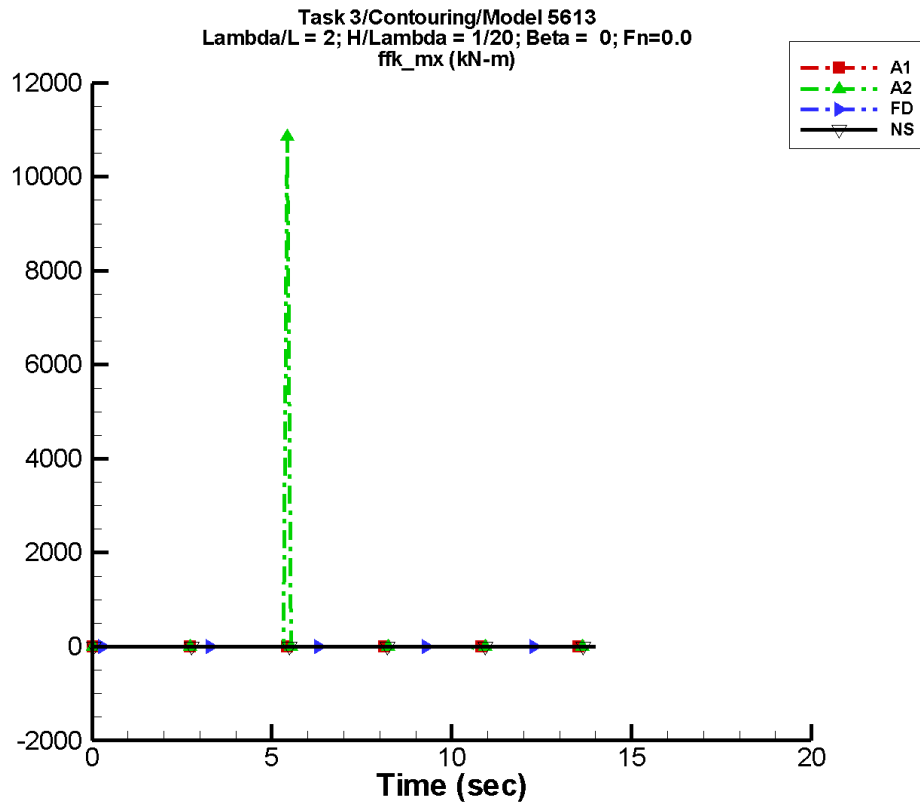
Table I-127. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	3.62E+03	1.48E+05	-4	3.54E+03	84
A2	2.64E+04	1.56E+05	-7	1.82E+04	-105
FD	1.56E+04	1.50E+05	-18	5.30E+03	-124
L1	-61.6	1.49E+05	-4	98.0	-37
L3	3.24E+03	1.46E+05	-4	3.46E+03	80
L4	3.24E+03	1.46E+05	-4	3.46E+03	80
NF	—	—	—	—	—
NS	3.59E+03	1.38E+05	-1	1.60E+04	-93

Table I-128. Minimum and maximum of  $F_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.50E+05	1.50E+05	-1.48E+05	1.48E+05
A2	-1.11E+05	2.01E+05	-1.10E+05	1.98E+05
FD	-1.30E+05	1.69E+05	-1.23E+05	1.26E+05
L1	-1.49E+05	1.49E+05	-1.48E+05	1.49E+05
L3	-1.46E+05	1.46E+05	-1.46E+05	1.46E+05
L4	-1.46E+05	1.46E+05	-1.46E+05	1.46E+05
NF	—	—	—	—
NS	-1.18E+05	1.58E+05	-1.18E+05	1.58E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-65. Time history of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

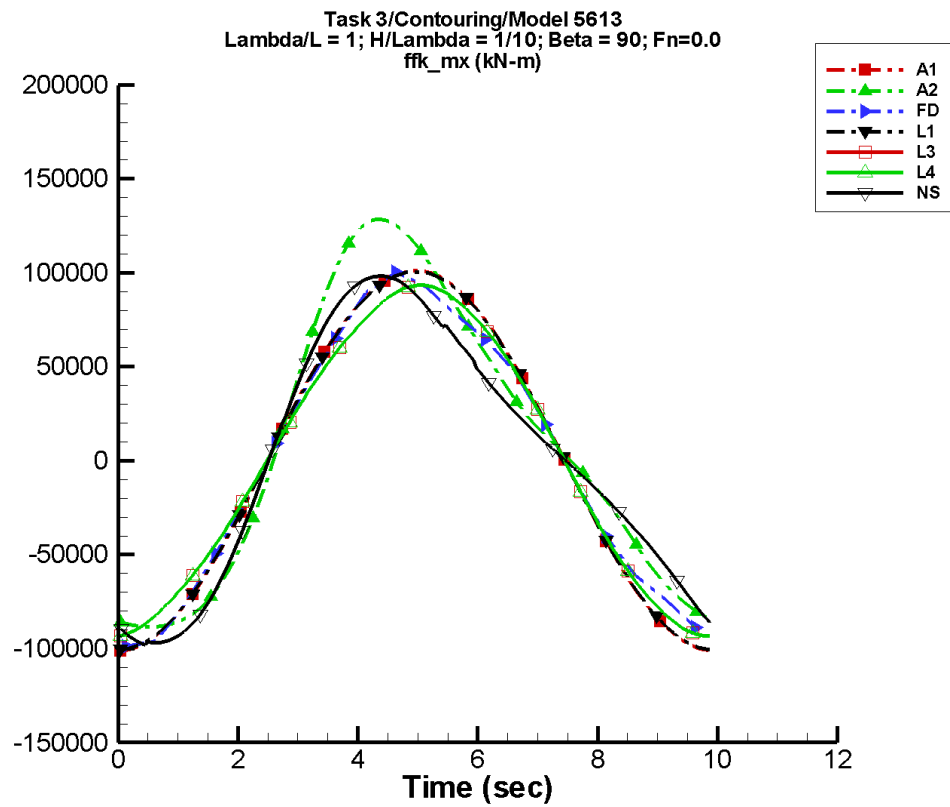
Table I-129. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	3.00E-05	0.263	13	4.21E-05	173
A2	82.9	151.	-44	145.	169
FD	-3.09E-05	1.67E-04	-105	2.31E-04	24
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-1.24E-03	8.17E-03	145	3.23E-03	130

Table I-130. Minimum and maximum of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.263	0.263	-0.261	0.263
A2	-41.0	1.09E+04	-124.	1.45E+03
FD	-1.86E-03	1.56E-03	-5.72E-04	5.69E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-7.13E-02	8.14E-02	-3.06E-02	3.50E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-66. Time history of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-131. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

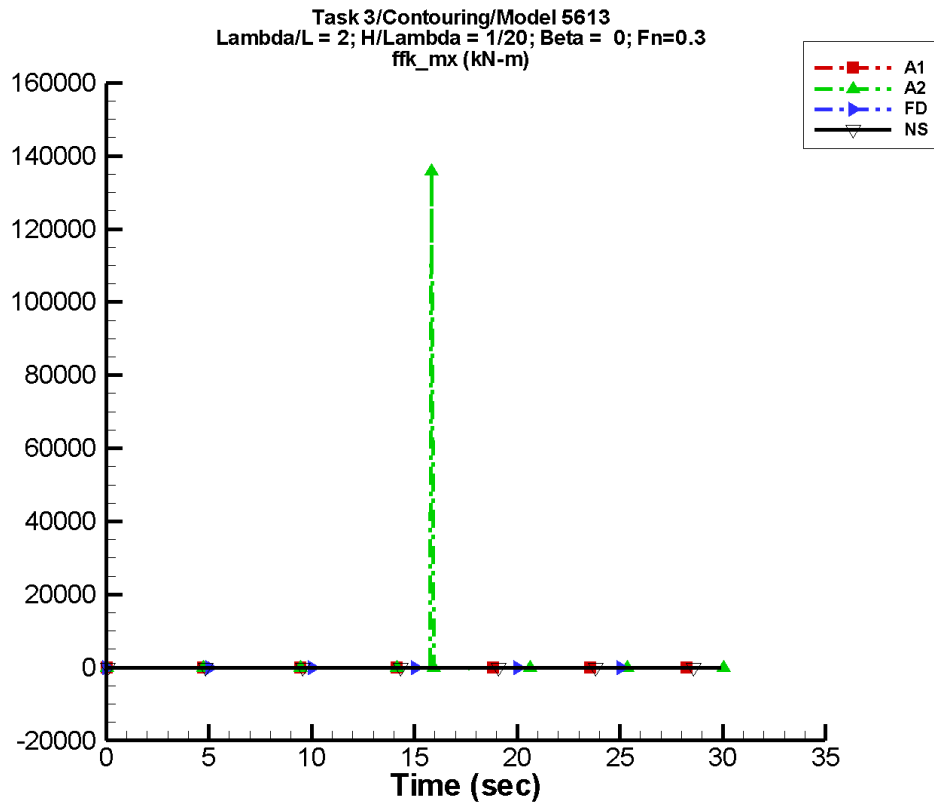
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	64.6	1.01E+05	-94	90.6	-155
A2	7.31E+03	1.00E+05	-93	2.43E+04	149
FD	-121.	9.54E+04	-108	4.71E+03	149
L1	25.5	1.01E+05	-94	40.7	151
L3	29.1	9.17E+04	-94	2.85E+03	-9
L4	29.1	9.17E+04	-94	2.85E+03	-9
NF	—	—	—	—	—
NS	-106.	8.85E+04	-91	2.32E+04	177

Table I-132. Minimum and maximum of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.01E+05	1.01E+05	-1.01E+05	1.00E+05
A2	-8.83E+04	1.28E+05	-8.78E+04	1.26E+05
FD	-9.96E+04	1.00E+05	-8.67E+04	7.02E+04
L1	-1.01E+05	1.01E+05	-1.01E+05	1.00E+05
L3	-9.33E+04	9.33E+04	-9.31E+04	9.29E+04
L4	-9.33E+04	9.33E+04	-9.31E+04	9.29E+04
NF	—	—	—	—
NS	-9.80E+04	9.82E+04	-9.71E+04	9.78E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-67. Time history of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

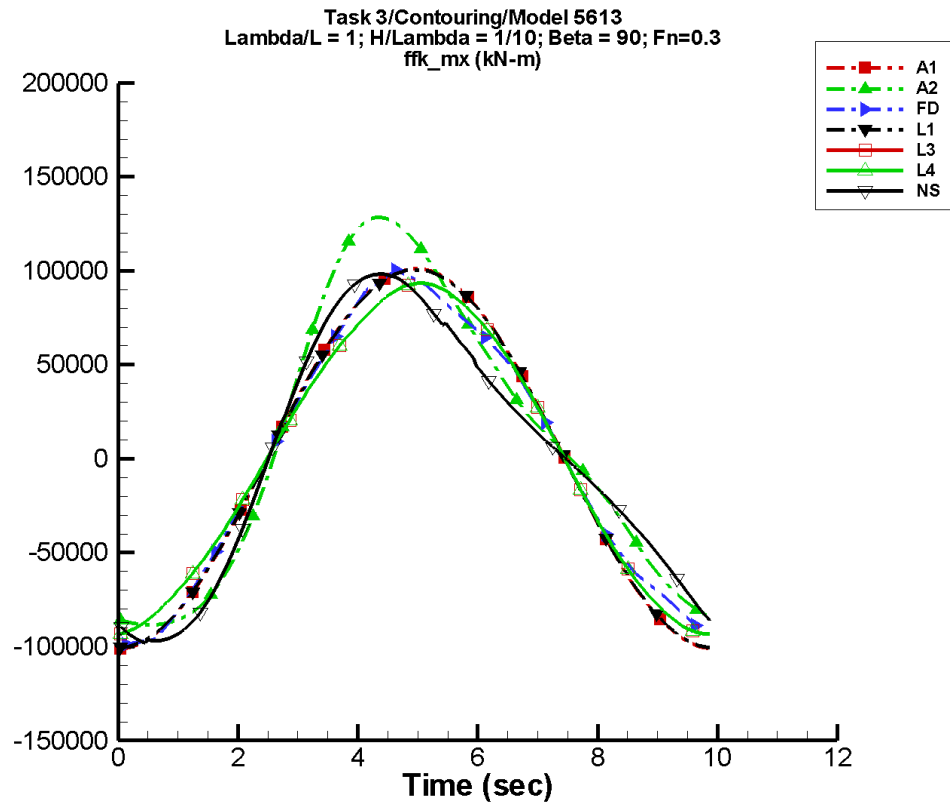
Table I-133. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	2.81E-04	0.263	18	4.08E-04	-180
A2	454.	935.	-91	810.	79
FD	-2.10E-05	3.82E-05	-158	6.07E-05	-74
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-9.36E-04	5.40E-03	150	5.61E-03	85

Table I-134. Minimum and maximum of  $M_x^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.263	0.263	-0.263	0.263
A2	-246.	1.36E+05	-1.55E+03	1.81E+04
FD	-1.81E-03	1.67E-03	-2.98E-04	3.70E-04
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-8.65E-02	0.188	-1.87E-02	4.78E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-68. Time history of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

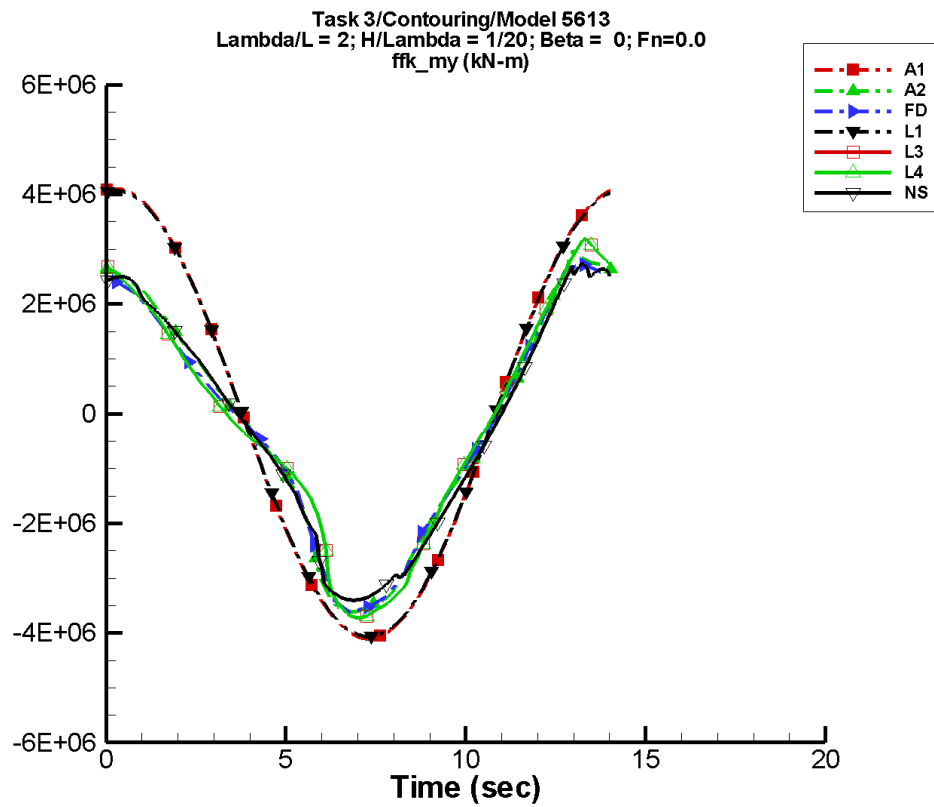
Table I-135. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	64.6	1.01E+05	-94	90.6	-155
A2	7.31E+03	1.00E+05	-93	2.43E+04	149
FD	-121.	9.54E+04	-108	4.71E+03	149
L1	25.6	1.01E+05	-94	40.8	151
L3	29.2	9.17E+04	-94	2.85E+03	-9
L4	29.2	9.17E+04	-94	2.85E+03	-9
NF	—	—	—	—	—
NS	-106.	8.85E+04	-91	2.32E+04	177

Table I-136. Minimum and maximum of  $M_x^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.01E+05	1.01E+05	-1.01E+05	1.00E+05
A2	-8.83E+04	1.28E+05	-8.78E+04	1.26E+05
FD	-9.96E+04	1.00E+05	-8.67E+04	7.02E+04
L1	-1.01E+05	1.01E+05	-1.01E+05	1.00E+05
L3	-9.33E+04	9.33E+04	-9.31E+04	9.29E+04
L4	-9.33E+04	9.33E+04	-9.31E+04	9.29E+04
NF	—	—	—	—
NS	-9.80E+04	9.82E+04	-9.71E+04	9.78E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-69. Time history of  $M_{y, \text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

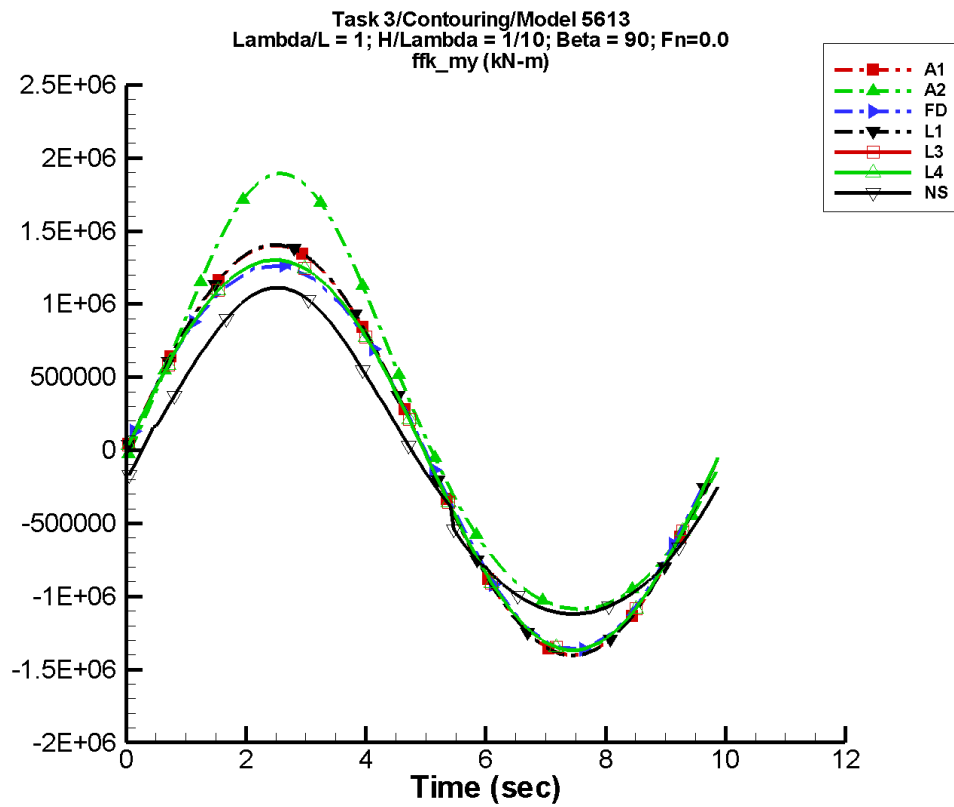
Table I-137. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	517.	4.10E+06	84	705.	-150
A2	-2.06E+05	2.93E+06	87	2.88E+05	-150
FD	-2.22E+05	2.84E+06	95	3.68E+05	-134
L1	381.	4.07E+06	84	604.	169
L3	-1.96E+05	2.89E+06	89	4.73E+05	-169
L4	-1.96E+05	2.89E+06	89	4.73E+05	-169
NF	—	—	—	—	—
NS	-2.40E+05	2.84E+06	85	2.61E+05	-160

Table I-138. Minimum and maximum of  $M_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-4.10E+06	4.10E+06	-4.08E+06	4.10E+06
A2	-3.61E+06	2.97E+06	-3.58E+06	2.83E+06
FD	-3.62E+06	2.74E+06	-2.83E+06	2.41E+06
L1	-4.07E+06	4.07E+06	-4.06E+06	4.07E+06
L3	-3.73E+06	3.20E+06	-3.71E+06	3.11E+06
L4	-3.73E+06	3.20E+06	-3.71E+06	3.11E+06
NF	—	—	—	—
NS	-3.40E+06	2.74E+06	-3.39E+06	2.64E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-70. Time history of  $M_y^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-139. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

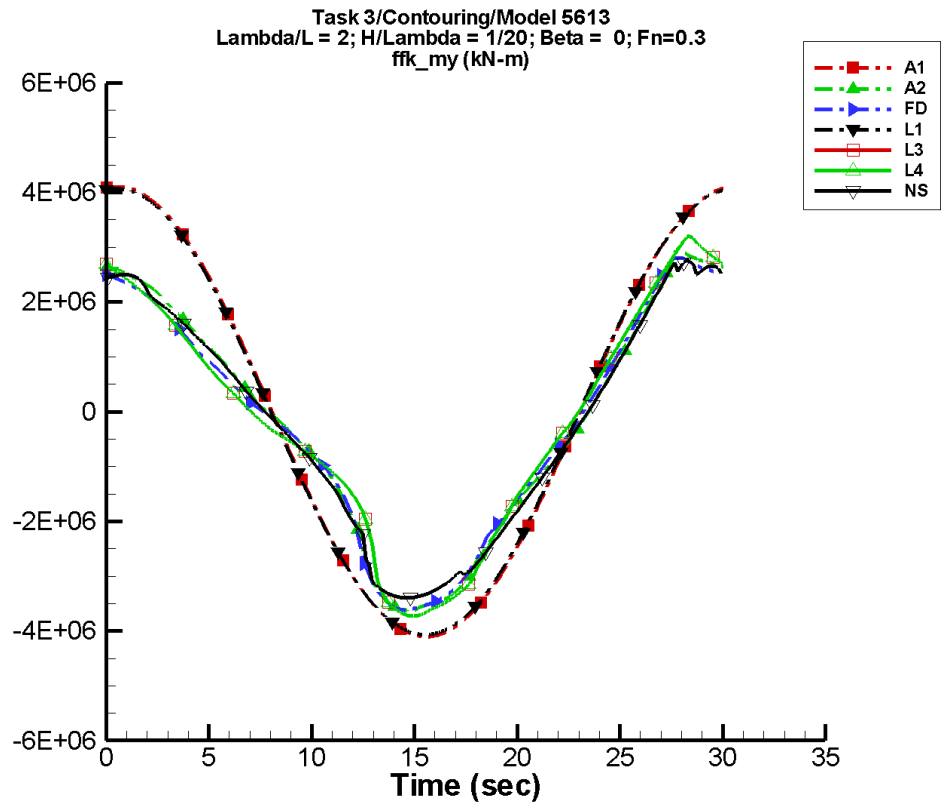
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-729.	1.40E+06	-4	1.10E+03	-24
A2	2.10E+05	1.48E+06	-7	1.95E+05	-104
FD	-1.40E+04	1.33E+06	-18	3.78E+04	55
L1	-581.	1.41E+06	-4	924.	-37
L3	-1.59E+04	1.34E+06	-4	1.94E+04	76
L4	-1.59E+04	1.34E+06	-4	1.94E+04	76
NF	—	—	—	—	—
NS	-9.90E+04	1.12E+06	-1	8.62E+04	-94

Table I-140. Minimum and maximum of  $M_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.40E+06	1.40E+06	-1.39E+06	1.39E+06
A2	-1.09E+06	1.89E+06	-1.08E+06	1.87E+06
FD	-1.36E+06	1.26E+06	-1.28E+06	9.59E+05
L1	-1.40E+06	1.40E+06	-1.40E+06	1.40E+06
L3	-1.37E+06	1.30E+06	-1.36E+06	1.30E+06
L4	-1.37E+06	1.30E+06	-1.36E+06	1.30E+06
NF	—	—	—	—
NS	-1.12E+06	1.11E+06	-1.12E+06	1.11E+06



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-71. Time history of  $M_y^{fk}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

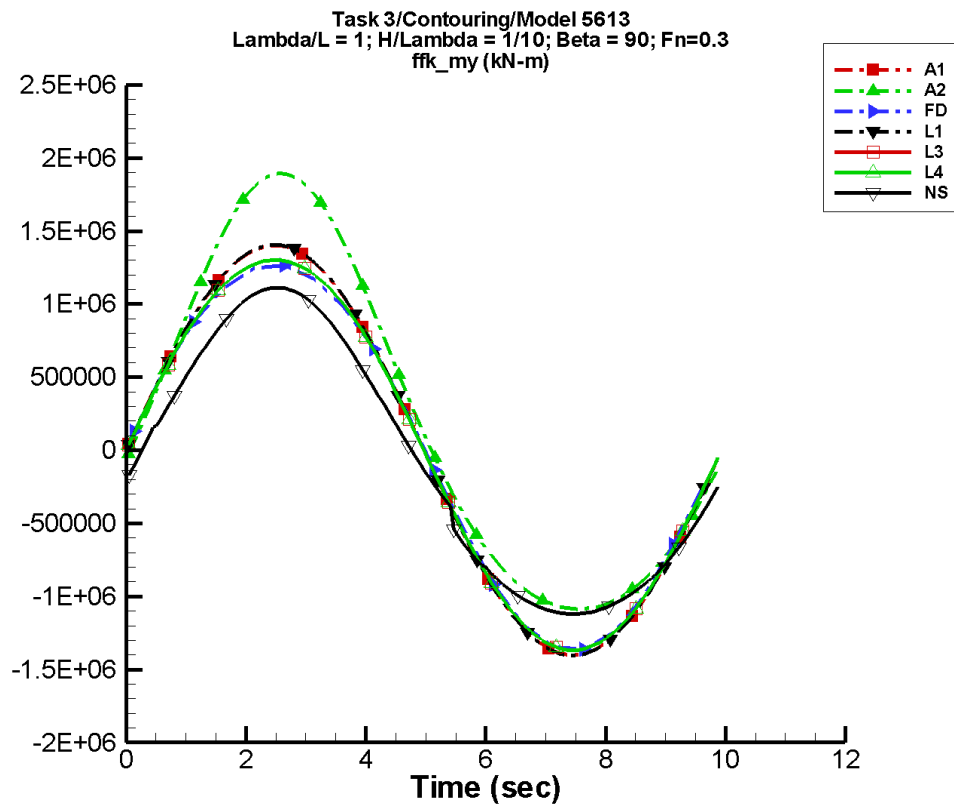
Table I-141. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.13E+03	4.10E+06	89	6.04E+03	-154
A2	-2.05E+05	2.93E+06	91	2.91E+05	-143
FD	-2.35E+05	2.82E+06	97	3.60E+05	-124
L1	3.70E+03	4.07E+06	88	5.53E+03	-36
L3	-1.70E+05	2.89E+06	94	5.01E+05	-151
L4	-1.70E+05	2.89E+06	94	5.01E+05	-151
NF	—	—	—	—	—
NS	-2.34E+05	2.84E+06	86	2.64E+05	-160

Table I-142. Minimum and maximum of  $M_y^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-4.10E+06	4.10E+06	-4.10E+06	4.10E+06
A2	-3.63E+06	2.98E+06	-3.61E+06	2.91E+06
FD	-3.62E+06	2.80E+06	-3.48E+06	2.60E+06
L1	-4.07E+06	4.07E+06	-4.07E+06	4.07E+06
L3	-3.73E+06	3.20E+06	-3.73E+06	3.17E+06
L4	-3.73E+06	3.20E+06	-3.73E+06	3.17E+06
NF	—	—	—	—
NS	-3.40E+06	2.76E+06	-3.38E+06	2.67E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-72. Time history of  $M_y^{fk}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

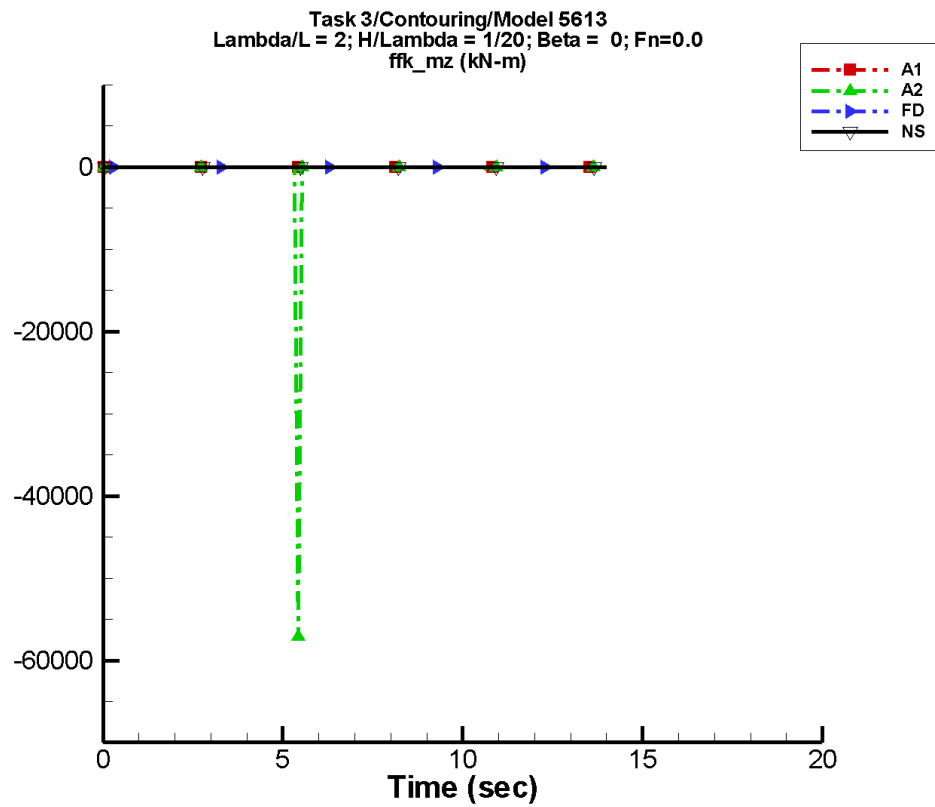
Table I-143. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-729.	1.40E+06	-4	1.10E+03	-24
A2	2.10E+05	1.48E+06	-7	1.95E+05	-104
FD	-1.40E+04	1.33E+06	-18	3.78E+04	55
L1	-581.	1.41E+06	-4	924.	-37
L3	-1.59E+04	1.34E+06	-4	1.94E+04	76
L4	-1.59E+04	1.34E+06	-4	1.94E+04	76
NF	—	—	—	—	—
NS	-9.90E+04	1.12E+06	-1	8.62E+04	-94

Table I-144. Minimum and maximum of  $M_y^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-1.40E+06	1.40E+06	-1.39E+06	1.39E+06
A2	-1.09E+06	1.89E+06	-1.08E+06	1.87E+06
FD	-1.36E+06	1.26E+06	-1.28E+06	9.59E+05
L1	-1.40E+06	1.40E+06	-1.40E+06	1.40E+06
L3	-1.37E+06	1.30E+06	-1.36E+06	1.30E+06
L4	-1.37E+06	1.30E+06	-1.36E+06	1.30E+06
NF	—	—	—	—
NS	-1.12E+06	1.11E+06	-1.12E+06	1.11E+06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-73. Time history of  $M_z^{fk}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

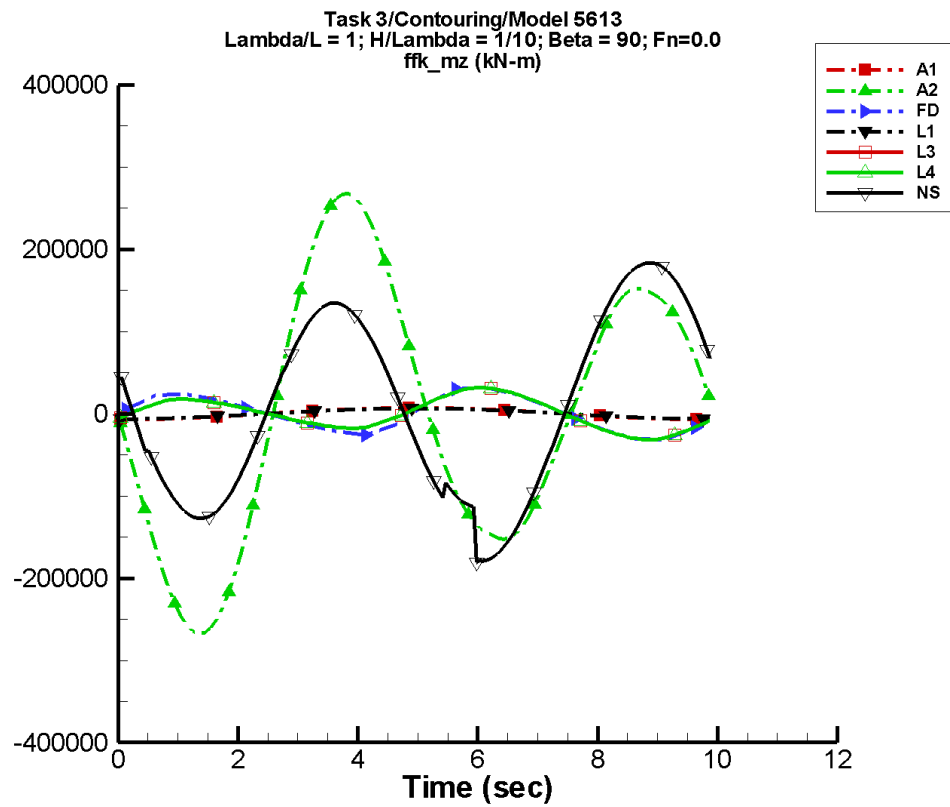
Table I-145. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	7.11E-05	0.514	73	9.46E-05	-156
A2	-439.	787.	136	764.	-10
FD	-1.11E-04	1.76E-03	95	8.32E-04	-143
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-4.34E-02	5.16E-02	-167	7.86E-02	131

Table I-146. Minimum and maximum of  $M_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.514	0.514	-0.511	0.511
A2	-5.71E+04	0.108	-7.62E+03	651.
FD	-1.85E-02	1.19E-02	-4.93E-03	3.99E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.50	0.966	-1.03	0.453

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-74. Time history of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-147. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

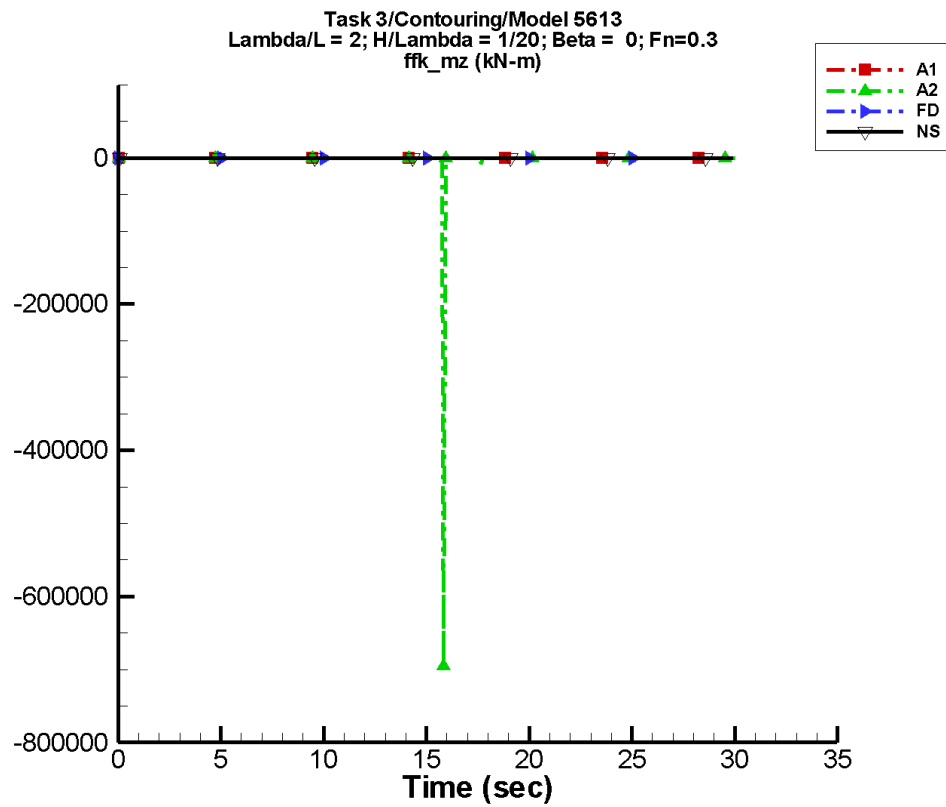
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.51	7.06E+03	-94	6.32	-155
A2	-188.	5.21E+04	-100	2.12E+05	165
FD	206.	3.61E+03	-110	2.77E+04	-36
L1	1.64	6.43E+03	-94	2.57	151
L3	119.	7.82E+03	-94	2.34E+04	-7
L4	119.	7.82E+03	-94	2.34E+04	-7
NF	—	—	—	—	—
NS	6.56E+03	3.46E+04	94	1.50E+05	176

Table I-148. Minimum and maximum of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-7.06E+03	7.06E+03	-7.05E+03	6.99E+03
A2	-2.68E+05	2.67E+05	-2.56E+05	2.56E+05
FD	-3.19E+04	3.19E+04	-4.04E+03	1.02E+04
L1	-6.43E+03	6.43E+03	-6.45E+03	6.41E+03
L3	-3.15E+04	3.15E+04	-3.10E+04	3.10E+04
L4	-3.15E+04	3.15E+04	-3.10E+04	3.10E+04
NF	—	—	—	—
NS	-1.81E+05	1.84E+05	-1.74E+05	1.82E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-75. Time history of  $M_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

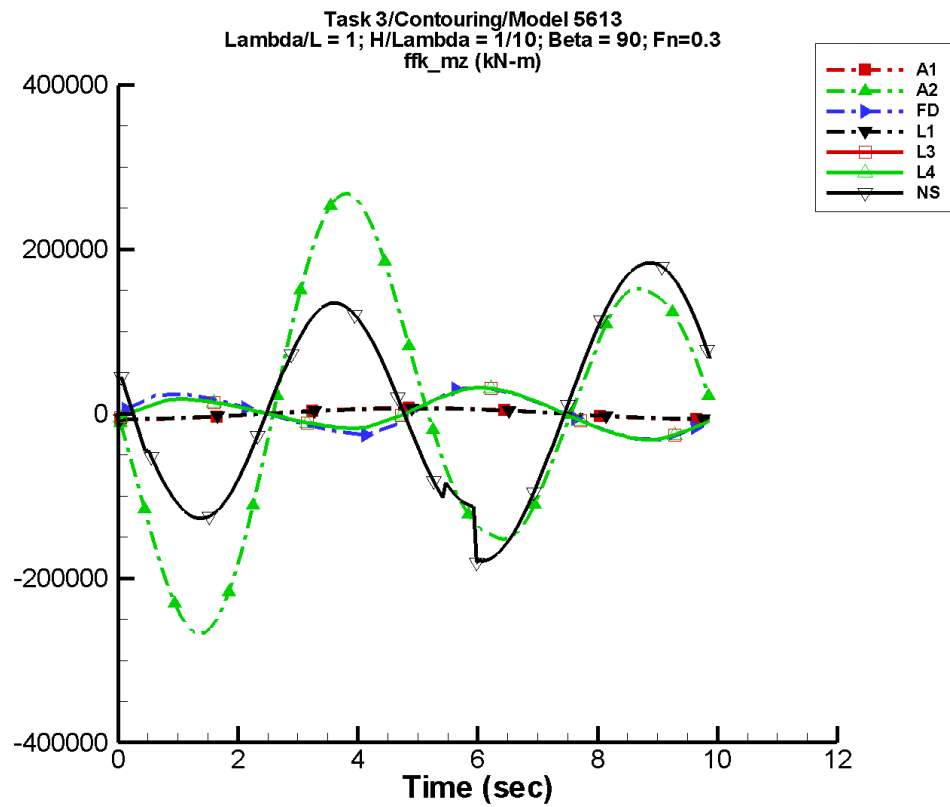
Table I-149. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	8.26E-04	0.765	83	1.20E-03	-157
A2	-2.35E+03	4.85E+03	88	4.19E+03	-101
FD	9.94E-04	1.55E-03	-165	1.17E-03	-77
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	8.66E-03	6.05E-02	162	8.78E-02	161

Table I-150. Minimum and maximum of  $M_z^{\text{fk}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.765	0.765	-0.765	0.765
A2	-6.95E+05	37.1	-9.27E+04	8.04E+03
FD	-1.53E-02	2.31E-02	-1.10E-03	6.73E-03
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.42	1.07	-0.426	0.327

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-76. Time history of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

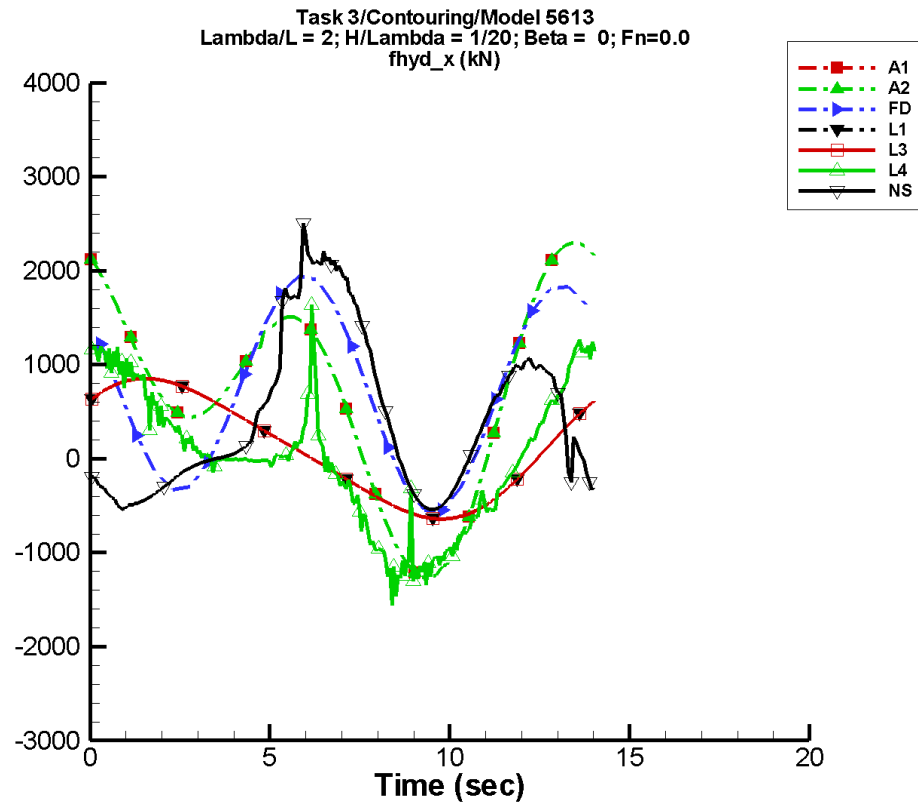
Table I-151. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.56	7.14E+03	-94	6.39	-155
A2	-188.	5.21E+04	-100	2.12E+05	165
FD	205.	3.61E+03	-110	2.77E+04	-36
L1	1.57	6.43E+03	-94	2.59	152
L3	119.	7.82E+03	-94	2.34E+04	-7
L4	119.	7.82E+03	-94	2.34E+04	-7
NF	—	—	—	—	—
NS	6.56E+03	3.46E+04	94	1.50E+05	176

Table I-152. Minimum and maximum of  $M_z^{\text{fk}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-7.14E+03	7.14E+03	-7.13E+03	7.06E+03
A2	-2.68E+05	2.67E+05	-2.56E+05	2.56E+05
FD	-3.19E+04	3.19E+04	-4.04E+03	1.02E+04
L1	-6.43E+03	6.43E+03	-6.45E+03	6.41E+03
L3	-3.15E+04	3.15E+04	-3.10E+04	3.10E+04
L4	-3.15E+04	3.15E+04	-3.10E+04	3.10E+04
NF	—	—	—	—
NS	-1.81E+05	1.84E+05	-1.74E+05	1.82E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-77. Time history of  $F_x^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

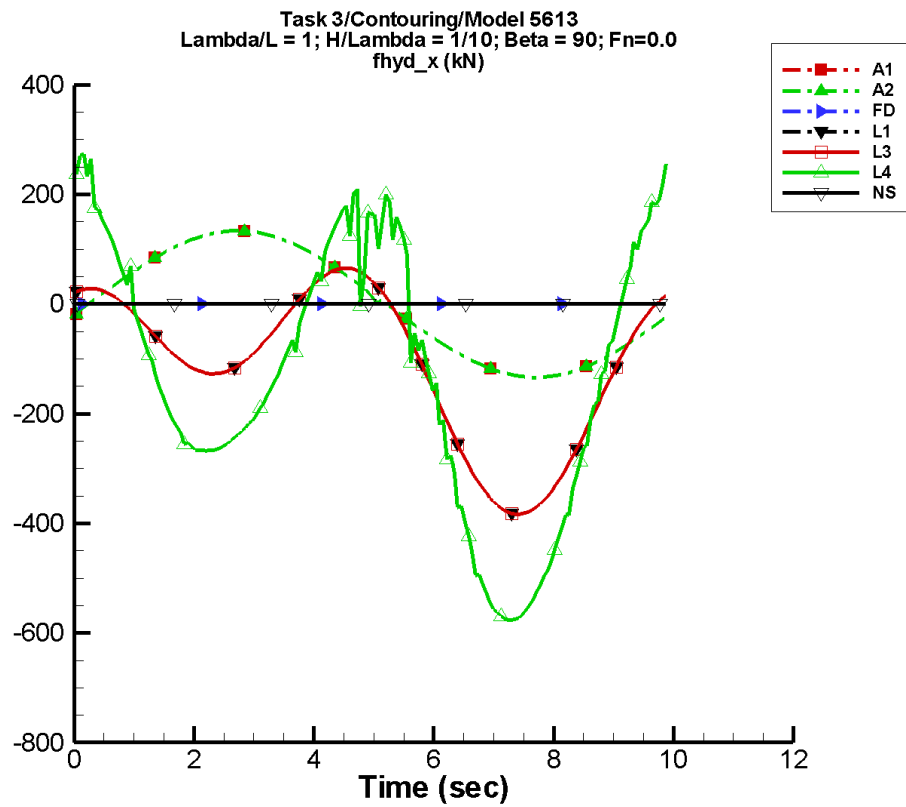
Table I-153. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	703.	962.	52	1.10E+03	142
A2	703.	962.	52	1.10E+03	142
FD	728.	127.	11	1.18E+03	157
L1	109.	716.	35	111.	73
L3	109.	716.	35	111.	73
L4	2.18	829.	55	517.	120
NF	—	—	—	—	—
NS	432.	632.	-86	747.	149

Table I-154. Minimum and maximum of  $F_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.27E+03	2.30E+03	-1.24E+03	2.27E+03
A2	-1.27E+03	2.30E+03	-1.24E+03	2.27E+03
FD	-556.	1.94E+03	54.3	1.66E+03
L1	-642.	852.	-640.	851.
L3	-642.	852.	-640.	851.
L4	-1.56E+03	1.64E+03	-1.27E+03	1.18E+03
NF	—	—	—	—
NS	-547.	2.50E+03	-525.	2.15E+03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-78. Time history of  $F_x^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-155. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

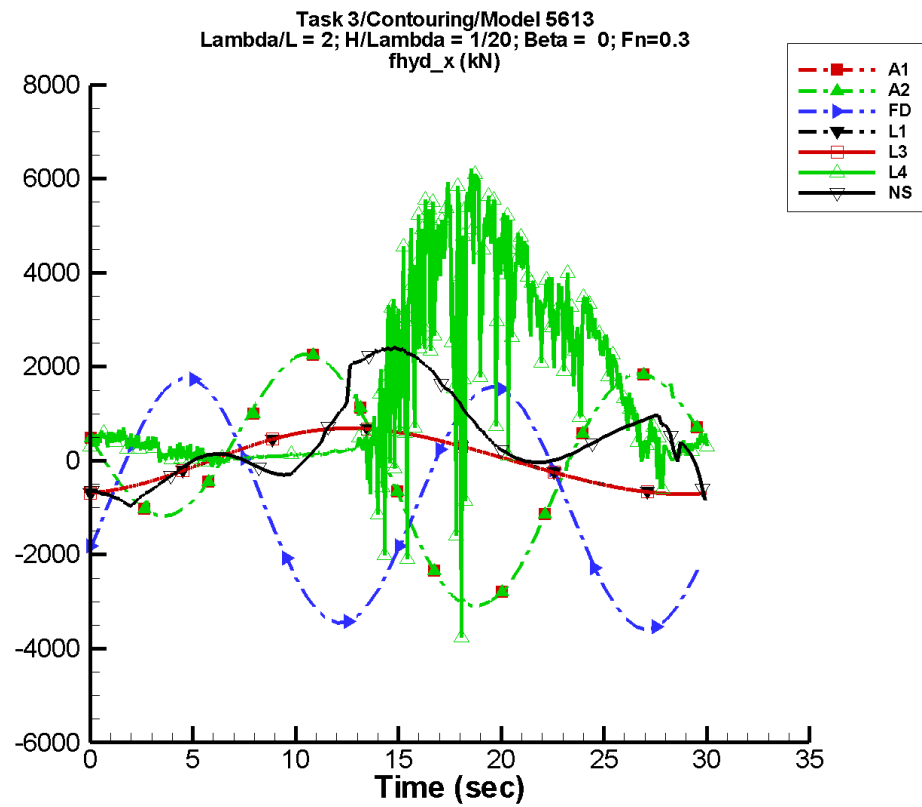
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-0.330	132.	-12	0.161	-85
A2	-0.330	132.	-12	0.161	-85
FD	-7.12E-09	2.12E-05	157	9.83E-09	178
L1	-112.	130.	-9	144.	88
L3	-112.	130.	-9	144.	88
L4	-126.	135.	4	307.	89
NF	—	—	—	—	—
NS	-3.37E-05	1.39E-04	-142	1.49E-04	-40

Table I-156. Minimum and maximum of  $F_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-134.	134.	-132.	132.
A2	-134.	134.	-132.	132.
FD	-2.12E-05	2.12E-05	-1.57E-05	1.96E-05
L1	-384.	65.1	-381.	63.0
L3	-384.	65.1	-381.	63.0
L4	-577.	273.	-572.	248.
NF	—	—	—	—
NS	-5.49E-04	3.35E-04	-5.37E-04	3.32E-04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-79. Time history of  $F_x^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

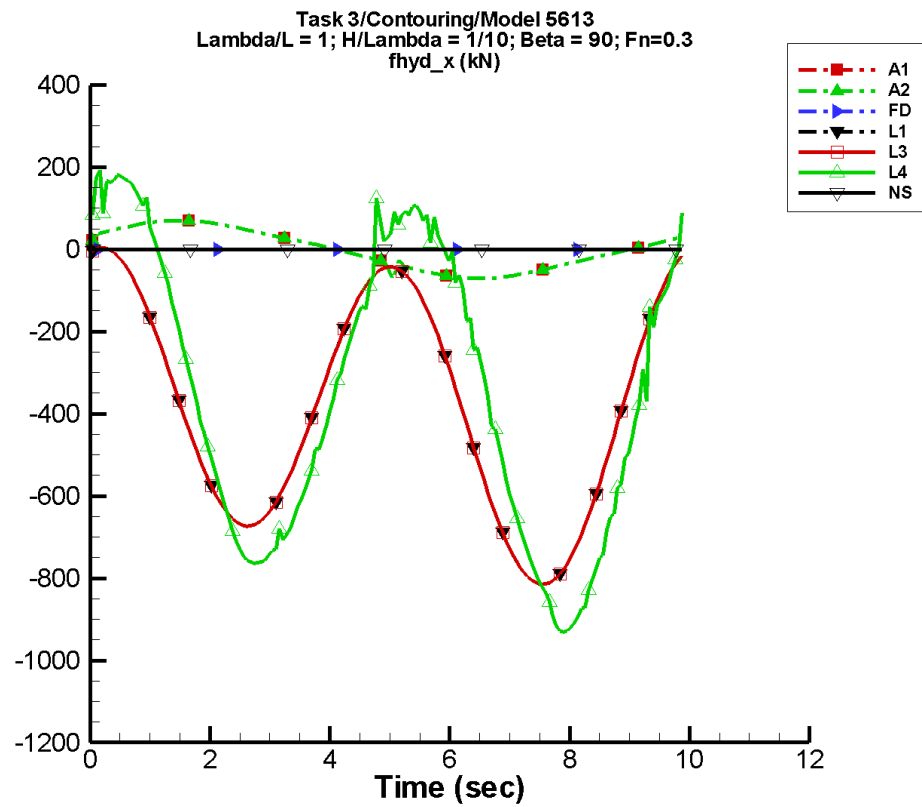
Table I-157. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-73.8	989.	41	2.06E+03	-166
A2	-73.8	989.	41	2.06E+03	-166
FD	-946.	126.	4	2.60E+03	-2
L1	-15.7	693.	-64	46.9	-136
L3	-15.9	695.	-64	46.8	-136
L4	1.44E+03	2.00E+03	-146	928.	-7
NF	—	—	—	—	—
NS	441.	973.	-101	435.	127

Table I-158. Minimum and maximum of  $F_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-3.09E+03	2.27E+03	-3.08E+03	2.26E+03
A2	-3.09E+03	2.27E+03	-3.08E+03	2.26E+03
FD	-3.59E+03	1.76E+03	-3.31E+03	1.47E+03
L1	-709.	690.	-709.	689.
L3	-711.	691.	-710.	691.
L4	-3.77E+03	7.28E+03	-10.5	5.58E+03
NF	—	—	—	—
NS	-1.20E+03	2.40E+03	-1.09E+03	2.37E+03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-80. Time history of  $F_x^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

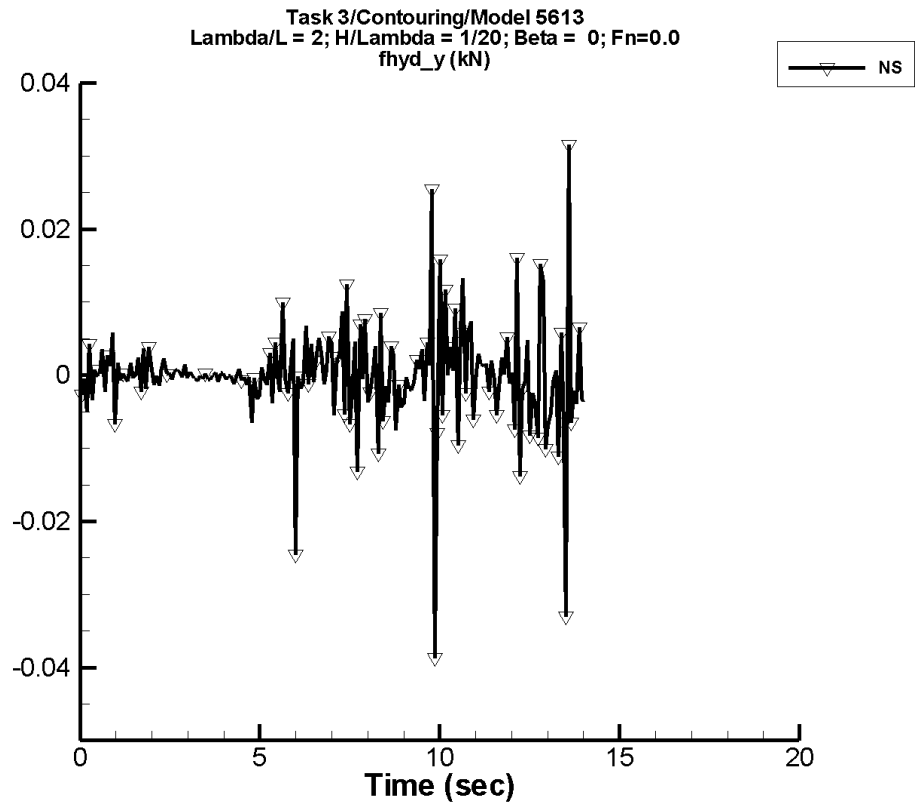
Table I-159. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	-5.16E-02	66.7	31	0.669	-68
A2	-5.16E-02	66.7	31	0.669	-68
FD	6.15E-06	1.36E-02	-94	6.17E-06	-76
L1	-383.	75.0	9	361.	73
L3	-383.	75.0	9	361.	73
L4	-344.	60.5	-6	487.	51
NF	—	—	—	—	—
NS	-3.73E-05	1.56E-04	-145	1.53E-04	-40

Table I-160. Minimum and maximum of  $F_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-73.3	79.2	-69.9	70.6
A2	-73.3	79.2	-69.9	70.6
FD	-1.35E-02	1.36E-02	-1.02E-02	1.01E-02
L1	-815.	3.82	-810.	2.23
L3	-815.	3.85	-810.	2.20
L4	-931.	234.	-913.	175.
NF	—	—	—	—
NS	-5.76E-04	3.69E-04	-5.64E-04	3.48E-04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2, FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-81. Time history of  $F_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

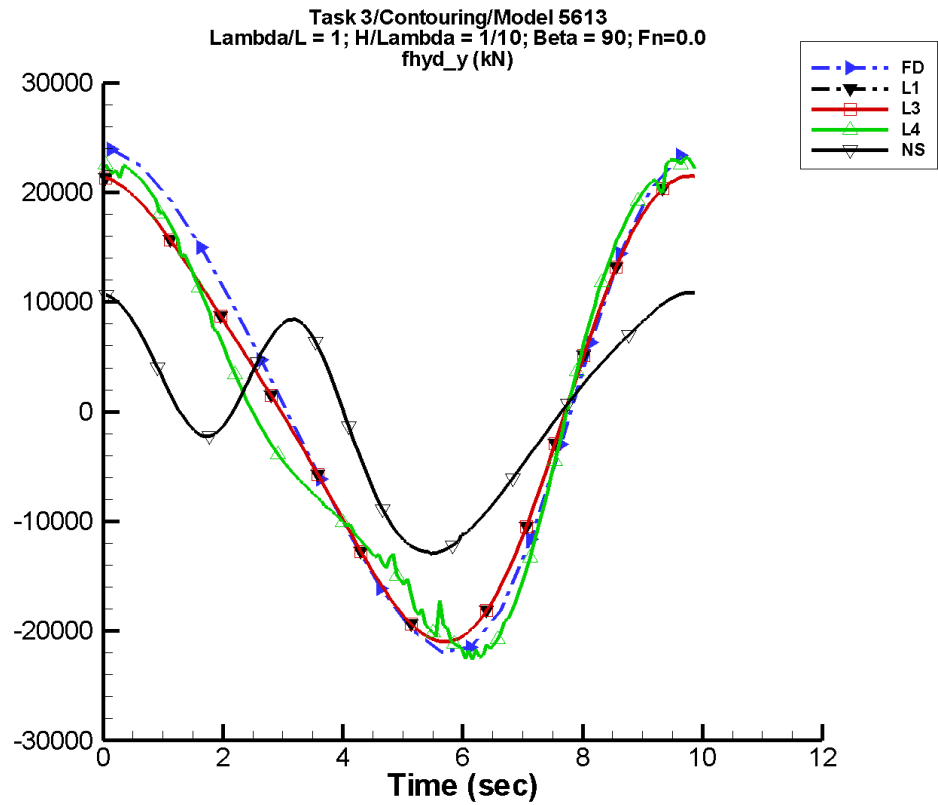
Table I-161. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	2.48E-06	1.93E-04	-168	3.87E-04	-4

Table I-162. Minimum and maximum of  $F_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	—	—	—	—
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-3.87E-02	3.15E-02	-3.71E-03	3.72E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2 and NFA.

Figure I-82. Time history of  $F_y^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-163. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

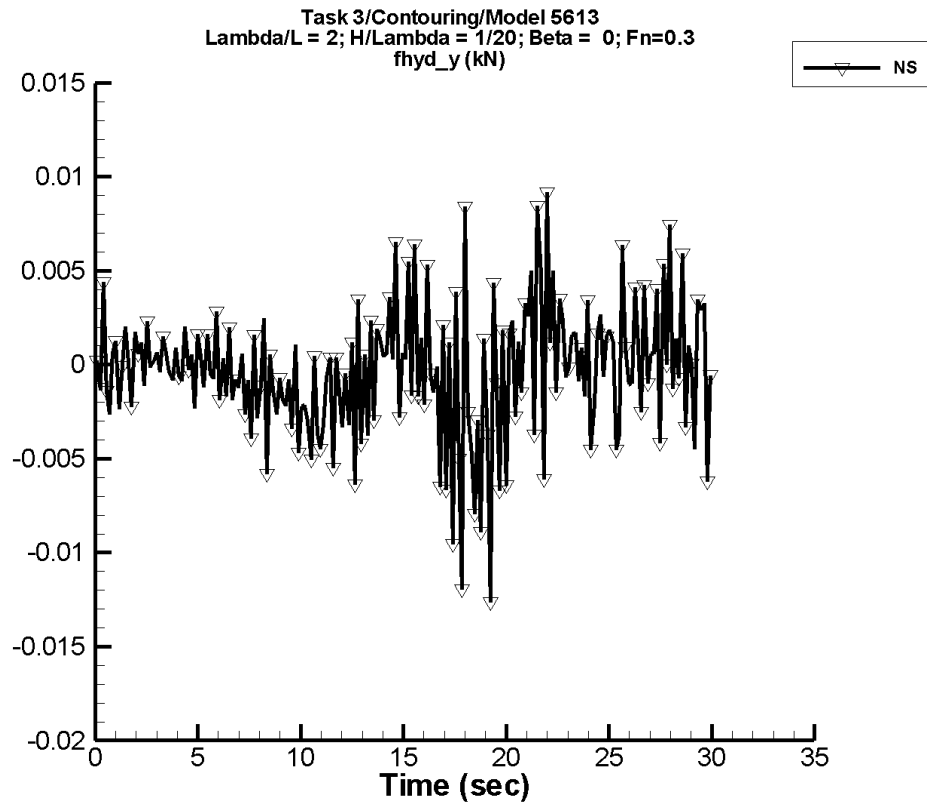
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	1.28E+03	2.25E+04	56	3.00E+03	117
L1	735.	2.03E+04	74	3.22E+03	157
L3	735.	2.03E+04	74	3.22E+03	157
L4	327.	2.12E+04	76	4.78E+03	127
NF	—	—	—	—	—
NS	201.	8.33E+03	74	5.48E+03	179

Table I-164. Minimum and maximum of  $F_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	—	—	—	—
FD	-2.20E+04	2.39E+04	-1.53E+04	2.20E+04
L1	-2.10E+04	2.15E+04	-2.09E+04	2.14E+04
L3	-2.10E+04	2.15E+04	-2.09E+04	2.14E+04
L4	-2.26E+04	2.32E+04	-2.21E+04	2.28E+04
NF	—	—	—	—
NS	-1.29E+04	1.09E+04	-1.28E+04	1.08E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2, FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-83. Time history of  $F_y^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

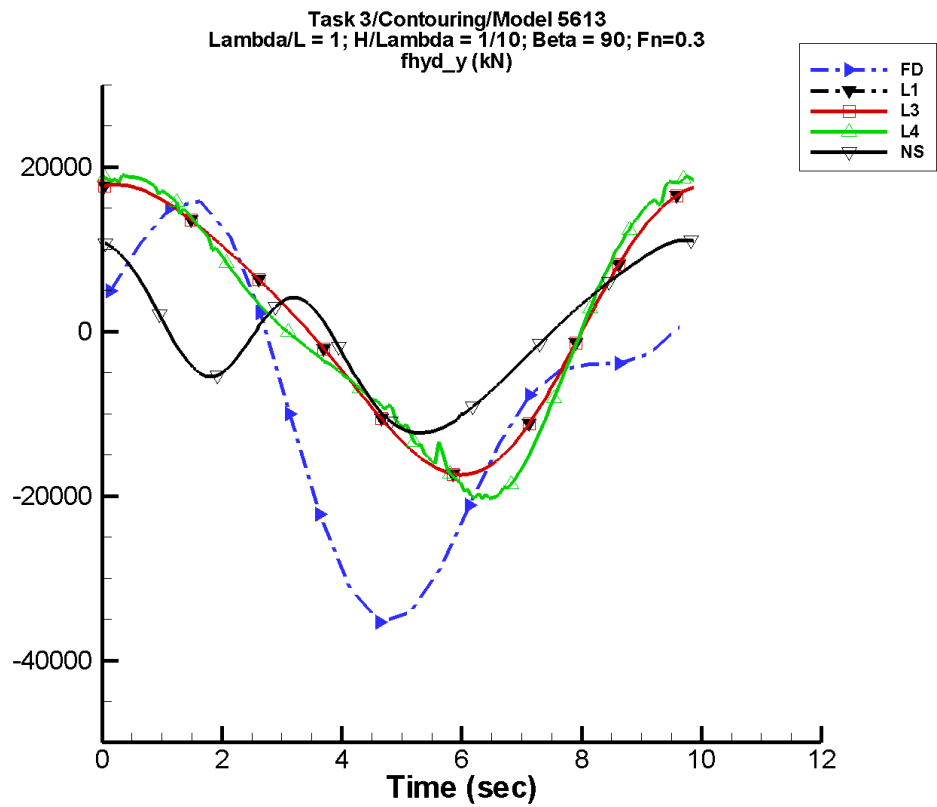
Table I-165. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-2.45E-04	7.61E-04	106	5.65E-04	-94

Table I-166. Minimum and maximum of  $F_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	—	—	—	—
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.26E-02	9.18E-03	-4.12E-03	2.73E-03

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2 and NFA.

Figure I-84. Time history of  $F_y^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

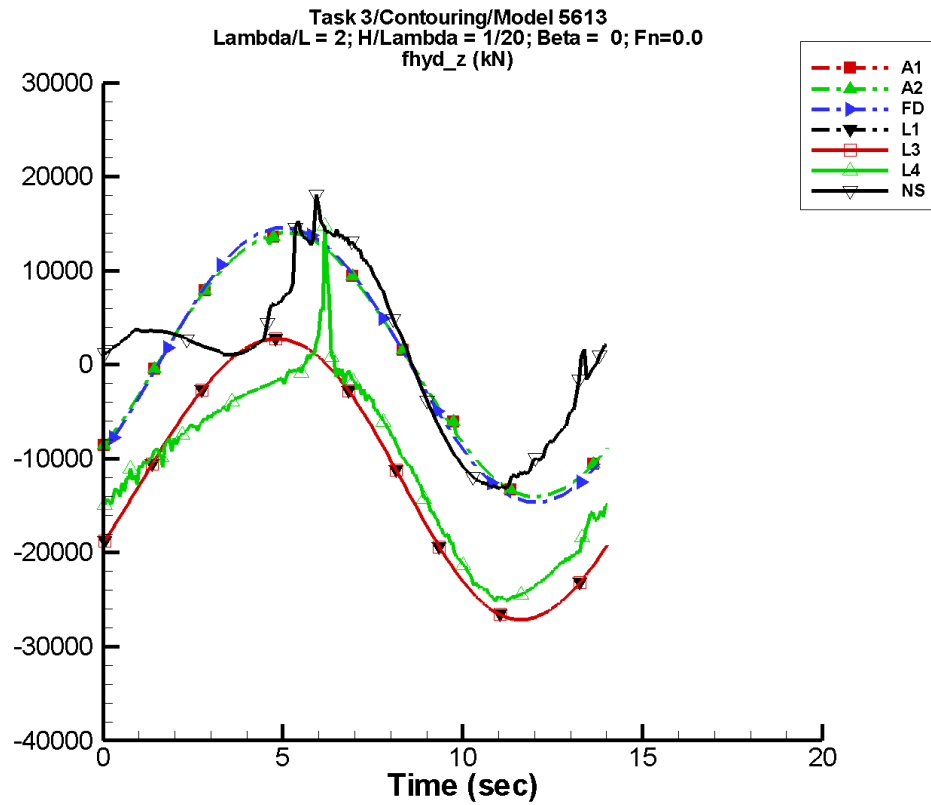
Table I-167. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	-8.03E+03	2.03E+04	56	9.85E+03	-90
L1	1.09E+03	1.70E+04	60	2.55E+03	144
L3	1.09E+03	1.70E+04	60	2.55E+03	144
L4	698.	1.79E+04	62	4.16E+03	122
NF	—	—	—	—	—
NS	-669.	8.25E+03	92	5.07E+03	170

Table I-168. Minimum and maximum of  $F_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	—	—	—	—
A2	—	—	—	—
FD	-3.55E+04	1.58E+04	-2.33E+04	9.28E+03
L1	-1.74E+04	1.79E+04	-1.73E+04	1.78E+04
L3	-1.74E+04	1.79E+04	-1.73E+04	1.78E+04
L4	-2.04E+04	1.90E+04	-2.01E+04	1.87E+04
NF	—	—	—	—
NS	-1.23E+04	1.11E+04	-1.23E+04	1.10E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-85. Time history of  $F_z^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

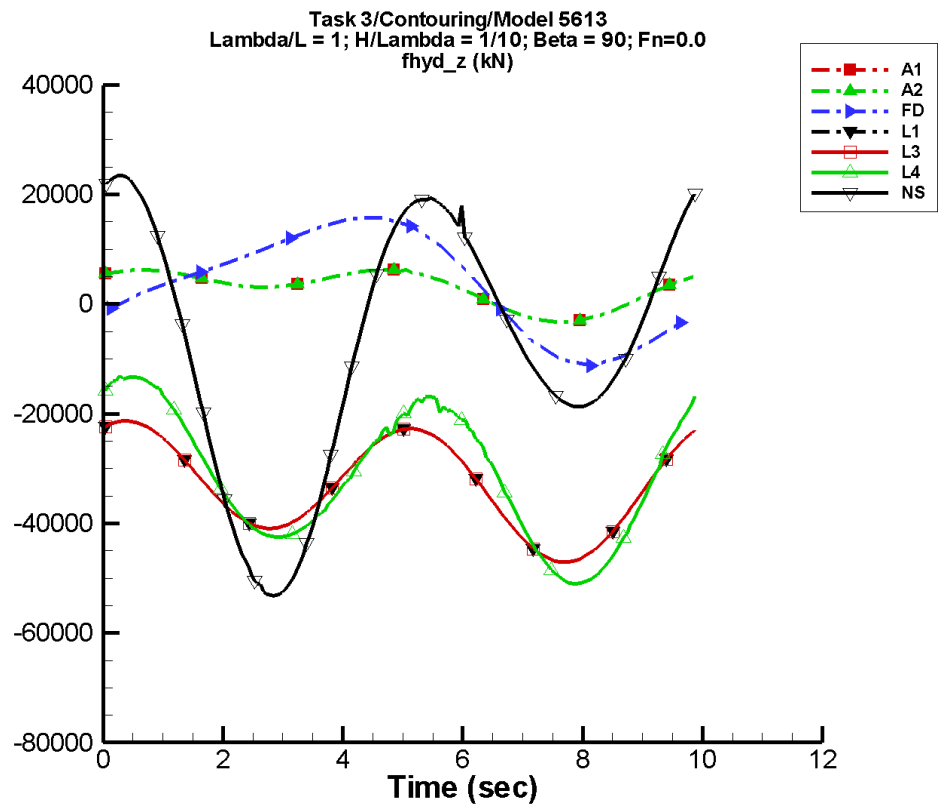
Table I-169. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	65.9	1.40E+04	-39	58.0	42
A2	65.9	1.40E+04	-39	58.0	42
FD	-6.73	1.47E+04	-31	5.99	128
L1	-1.19E+04	1.49E+04	-30	486.	89
L3	-1.19E+04	1.49E+04	-30	486.	89
L4	-1.10E+04	1.19E+04	-35	2.99E+03	88
NF	—	—	—	—	—
NS	750.	9.38E+03	-34	6.45E+03	89

Table I-170. Minimum and maximum of  $F_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-1.40E+04	1.41E+04	-1.40E+04	1.40E+04
A2	-1.40E+04	1.41E+04	-1.40E+04	1.40E+04
FD	-1.46E+04	1.46E+04	-1.29E+04	1.28E+04
L1	-2.71E+04	2.75E+03	-2.71E+04	2.72E+03
L3	-2.71E+04	2.75E+03	-2.71E+04	2.72E+03
L4	-2.52E+04	1.48E+04	-2.49E+04	6.14E+03
NF	—	—	—	—
NS	-1.32E+04	1.81E+04	-1.30E+04	1.49E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-86. Time history of  $F_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-171. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

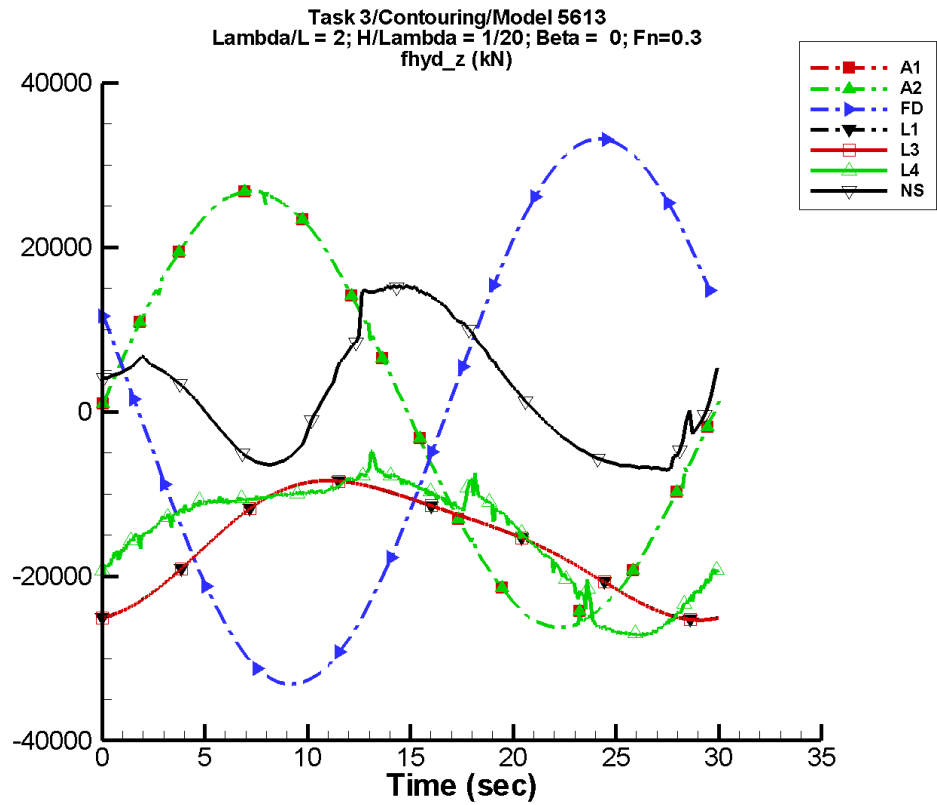
Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	2.86E+03	3.20E+03	-10	2.91E+03	68
A2	2.86E+03	3.20E+03	-10	2.91E+03	68
FD	3.38E+03	1.22E+04	-62	3.47E+03	37
L1	-3.31E+04	3.16E+03	-1	1.09E+04	62
L3	-3.31E+04	3.16E+03	-1	1.09E+04	62
L4	-3.12E+04	3.62E+03	6	1.57E+04	49
NF	—	—	—	—	—
NS	-7.54E+03	1.42E+04	165	2.89E+04	63

Table I-172. Minimum and maximum of  $F_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-3.26E+03	6.24E+03	-3.11E+03	6.11E+03
A2	-3.26E+03	6.24E+03	-3.11E+03	6.11E+03
FD	-1.12E+04	1.58E+04	-5.76E+03	1.23E+04
L1	-4.70E+04	-2.13E+04	-4.69E+04	-2.15E+04
L3	-4.70E+04	-2.13E+04	-4.69E+04	-2.15E+04
L4	-5.10E+04	-1.30E+04	-5.08E+04	-1.34E+04
NF	—	—	—	—
NS	-5.32E+04	2.35E+04	-5.28E+04	2.30E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-87. Time history of  $F_z^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

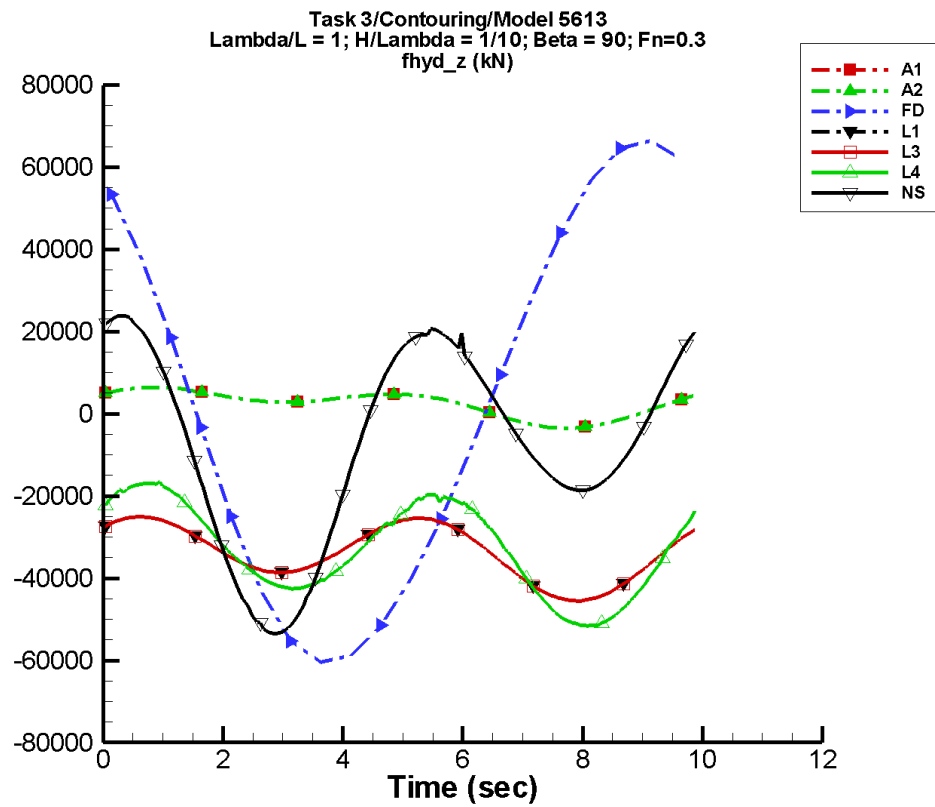
Table I-173. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	170.	2.63E+04	8	151.	-167
A2	170.	2.63E+04	8	151.	-167
FD	65.4	3.32E+04	169	60.6	44
L1	-1.62E+04	7.96E+03	-61	1.66E+03	-94
L3	-1.62E+04	7.98E+03	-61	1.66E+03	-94
L4	-1.47E+04	8.07E+03	-43	2.90E+03	23
NF	—	—	—	—	—
NS	2.36E+03	5.38E+03	-79	8.10E+03	64

Table I-174. Minimum and maximum of  $F_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-2.62E+04	2.68E+04	-2.62E+04	2.68E+04
A2	-2.62E+04	2.68E+04	-2.62E+04	2.68E+04
FD	-3.32E+04	3.32E+04	-3.23E+04	3.30E+04
L1	-2.53E+04	-8.39E+03	-2.53E+04	-8.39E+03
L3	-2.53E+04	-8.37E+03	-2.53E+04	-8.37E+03
L4	-2.73E+04	-4.68E+03	-2.71E+04	-6.01E+03
NF	—	—	—	—
NS	-7.09E+03	1.53E+04	-6.97E+03	1.51E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-88. Time history of  $F_z^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

TASK 3/WAVE CONTOURING/MODEL 5613

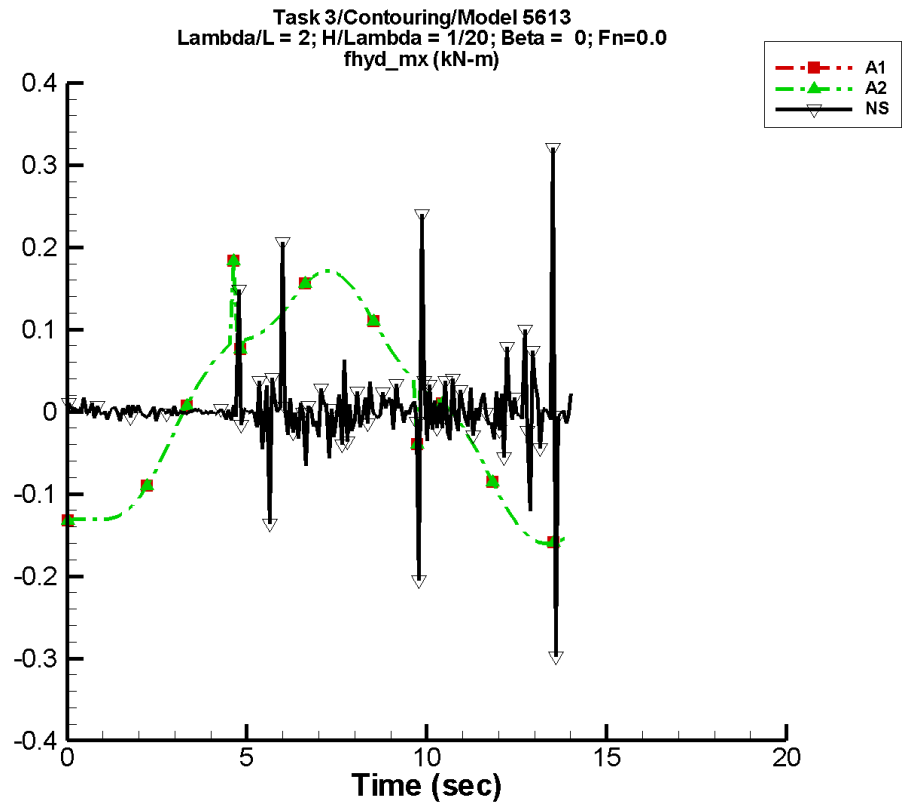
Table I-175. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $F_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN)	$a_1$ (kN)	$\Phi_1$ (deg)	$a_2$ (kN)	$\Phi_2$ (deg)
A1	2.38E+03	3.30E+03	-3	2.70E+03	54
A2	2.38E+03	3.30E+03	-3	2.70E+03	54
FD	3.05E+03	6.35E+04	108	3.21E+03	39
L1	-3.38E+04	3.47E+03	-18	8.30E+03	48
L3	-3.38E+04	3.47E+03	-18	8.30E+03	48
L4	-3.29E+04	4.10E+03	-8	1.43E+04	34
NF	—	—	—	—	—
NS	-7.27E+03	1.44E+04	165	2.92E+04	60

Table I-176. Minimum and maximum of  $F_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN)	Maximum (kN)	Minimum (kN)	Maximum (kN)
A1	-3.52E+03	6.43E+03	-3.38E+03	6.31E+03
A2	-3.52E+03	6.43E+03	-3.38E+03	6.31E+03
FD	-6.06E+04	6.64E+04	-4.36E+04	5.03E+04
L1	-4.55E+04	-2.51E+04	-4.54E+04	-2.52E+04
L3	-4.55E+04	-2.51E+04	-4.54E+04	-2.52E+04
L4	-5.16E+04	-1.65E+04	-5.14E+04	-1.71E+04
NF	—	—	—	—
NS	-5.35E+04	2.39E+04	-5.31E+04	2.33E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-89. Time history of  $M_x^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

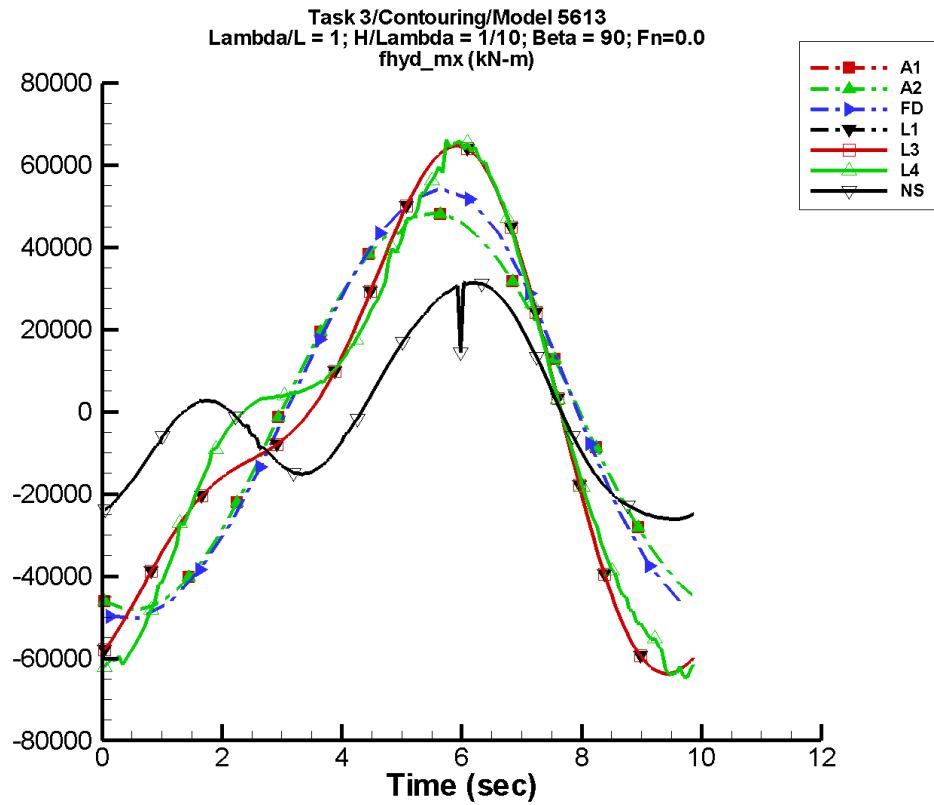
Table I-177. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	1.99E-04	0.152	-86	1.03E-03	104
A2	1.99E-04	0.152	-86	1.03E-03	104
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	7.43E-04	5.58E-04	-139	2.45E-03	-127

Table I-178. Minimum and maximum of  $M_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.160	0.183	-0.159	0.169
A2	-0.160	0.183	-0.159	0.169
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-0.298	0.321	-1.53E-02	2.49E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-90. Time history of  $M_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-179. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

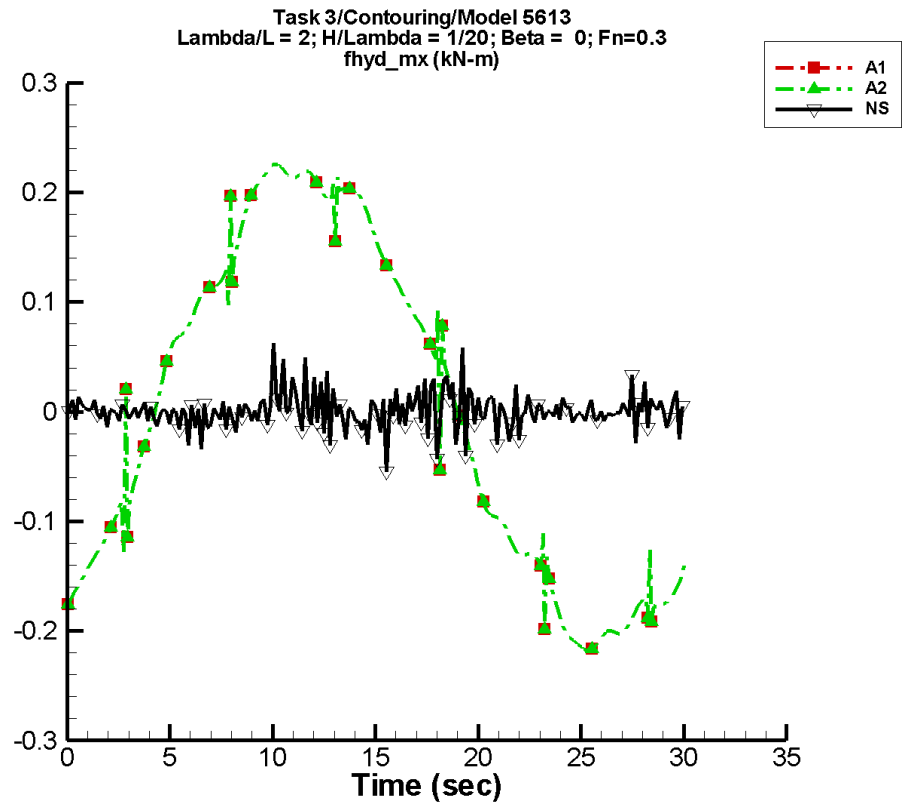
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	30.9	4.82E+04	-112	47.4	163
A2	30.9	4.82E+04	-112	47.4	163
FD	51.3	5.27E+04	-128	2.87E+03	-37
L1	-2.97E+03	5.39E+04	-107	2.03E+04	-17
L3	-2.97E+03	5.39E+04	-107	2.03E+04	-17
L4	-1.85E+03	5.36E+04	-105	1.91E+04	-39
NF	—	—	—	—	—
NS	-1.50E+03	1.89E+04	-111	1.63E+04	-12

Table I-180. Minimum and maximum of  $M_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-4.82E+04	4.81E+04	-4.75E+04	4.76E+04
A2	-4.82E+04	4.81E+04	-4.75E+04	4.76E+04
FD	-5.02E+04	5.43E+04	-4.86E+04	3.92E+04
L1	-6.37E+04	6.47E+04	-6.33E+04	6.42E+04
L3	-6.37E+04	6.47E+04	-6.33E+04	6.42E+04
L4	-6.46E+04	6.61E+04	-6.33E+04	6.47E+04
NF	—	—	—	—
NS	-2.61E+04	3.14E+04	-2.60E+04	3.08E+04



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-91. Time history of  $M_x^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

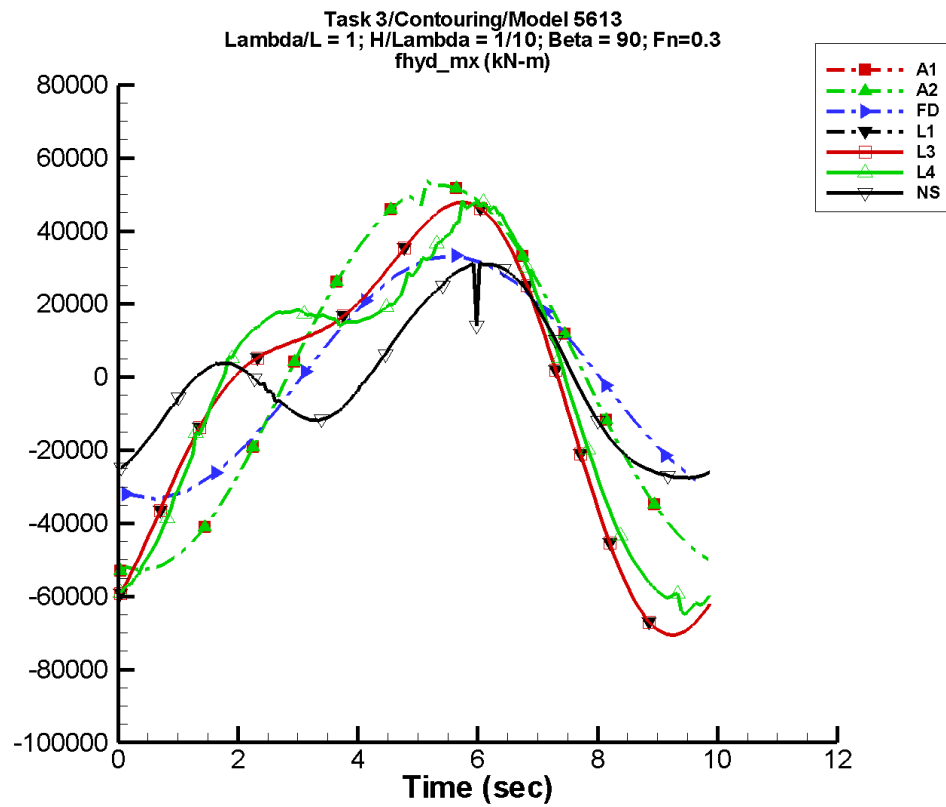
Table I-181. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	2.64E-03	0.213	-41	4.98E-03	170
A2	2.64E-03	0.213	-41	4.98E-03	170
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	9.48E-04	1.25E-03	-140	3.32E-03	128

Table I-182. Minimum and maximum of  $M_x^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-0.218	0.226	-0.216	0.224
A2	-0.218	0.226	-0.216	0.224
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-5.43E-02	6.27E-02	-1.14E-02	1.75E-02

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-92. Time history of  $M_x^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

TASK 3/WAVE CONTOURING/MODEL 5613

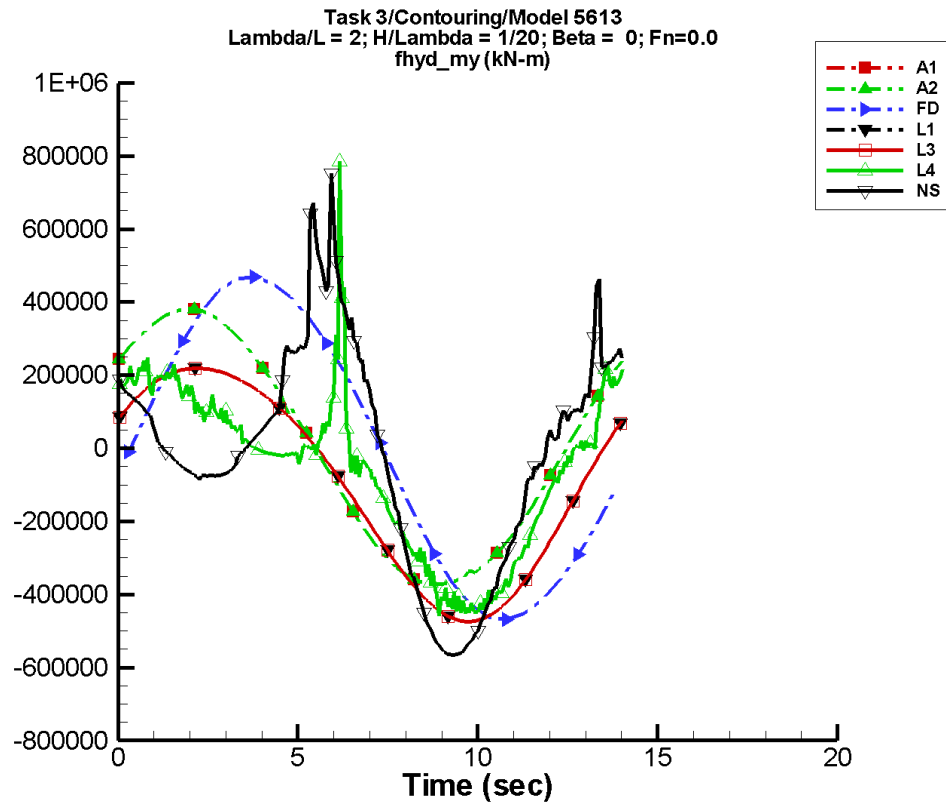
Table I-183. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-11.1	5.26E+04	-107	98.9	-176
A2	-11.1	5.26E+04	-107	98.9	-176
FD	8.47	3.33E+04	-129	15.7	-111
L1	-5.17E+03	5.02E+04	-87	1.91E+04	-25
L3	-5.17E+03	5.02E+04	-87	1.91E+04	-25
L4	-3.35E+03	4.65E+04	-89	1.97E+04	-48
NF	—	—	—	—	—
NS	-1.08E+03	1.98E+04	-104	1.59E+04	-12

Table I-184. Minimum and maximum of  $M_x^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-5.41E+04	5.37E+04	-5.30E+04	5.17E+04
A2	-5.41E+04	5.37E+04	-5.30E+04	5.17E+04
FD	-3.33E+04	3.33E+04	-3.17E+04	2.47E+04
L1	-7.05E+04	4.78E+04	-7.01E+04	4.75E+04
L3	-7.05E+04	4.78E+04	-7.01E+04	4.75E+04
L4	-6.51E+04	4.83E+04	-6.25E+04	4.71E+04
NF	—	—	—	—
NS	-2.76E+04	3.12E+04	-2.75E+04	3.01E+04

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-93. Time history of  $M_y^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

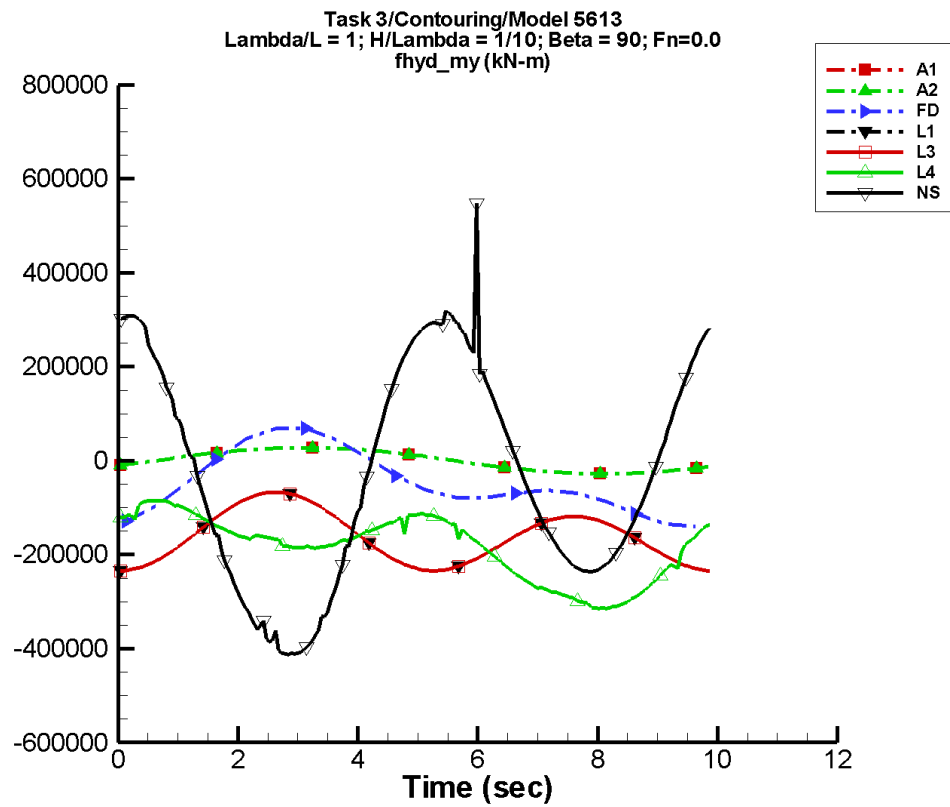
Table I-185. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	92.4	3.75E+05	41	699.	-120
A2	92.4	3.75E+05	41	699.	-120
FD	-20.1	4.67E+05	0	506.	-174
L1	-9.89E+04	3.44E+05	26	3.49E+04	110
L3	-9.89E+04	3.44E+05	26	3.49E+04	110
L4	-5.72E+04	2.57E+05	30	1.38E+05	110
NF	—	—	—	—	—
NS	-1.03E+04	2.34E+05	10	3.22E+05	144

Table I-186. Minimum and maximum of  $M_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-3.72E+05	3.81E+05	-3.71E+05	3.79E+05
A2	-3.72E+05	3.81E+05	-3.71E+05	3.79E+05
FD	-4.69E+05	4.69E+05	-4.07E+05	4.06E+05
L1	-4.75E+05	2.19E+05	-4.74E+05	2.18E+05
L3	-4.75E+05	2.19E+05	-4.74E+05	2.18E+05
L4	-4.59E+05	7.85E+05	-4.41E+05	3.04E+05
NF	—	—	—	—
NS	-5.65E+05	7.51E+05	-5.61E+05	5.49E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-94. Time history of  $M_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

Table I-187. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

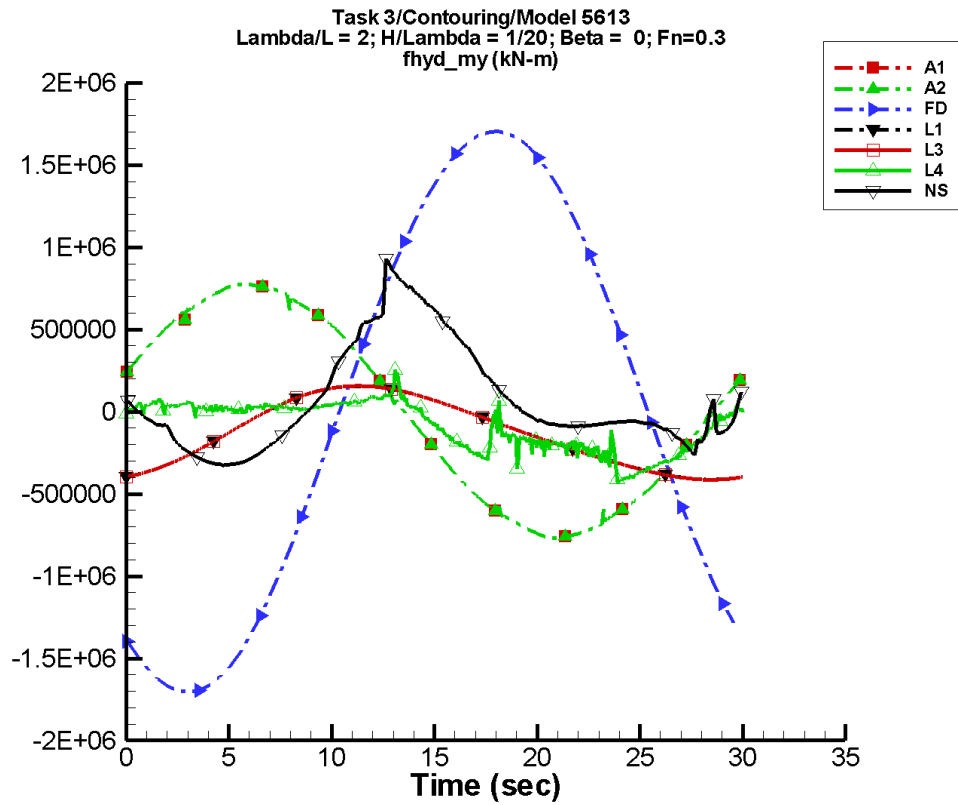
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-19.1	2.79E+04	-27	56.1	-8
A2	-19.1	2.79E+04	-27	56.1	-8
FD	-4.74E+04	7.77E+04	-49	4.81E+04	-138
L1	-1.63E+05	2.58E+04	-10	7.02E+04	-109
L3	-1.63E+05	2.58E+04	-10	7.02E+04	-109
L4	-1.84E+05	6.55E+04	-9	6.77E+04	49
NF	—	—	—	—	—
NS	-2.57E+04	9.61E+04	-179	3.11E+05	67

Table I-188. Minimum and maximum of  $M_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-2.77E+04	2.76E+04	-2.75E+04	2.74E+04
A2	-2.77E+04	2.76E+04	-2.75E+04	2.74E+04
FD	-1.40E+05	7.08E+04	-1.04E+05	1.32E+04
L1	-2.35E+05	-6.70E+04	-2.35E+05	-6.80E+04
L3	-2.35E+05	-6.70E+04	-2.35E+05	-6.80E+04
L4	-3.14E+05	-8.47E+04	-3.12E+05	-8.64E+04
NF	—	—	—	—
NS	-4.12E+05	5.47E+05	-4.09E+05	3.07E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-95. Time history of  $M_y^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

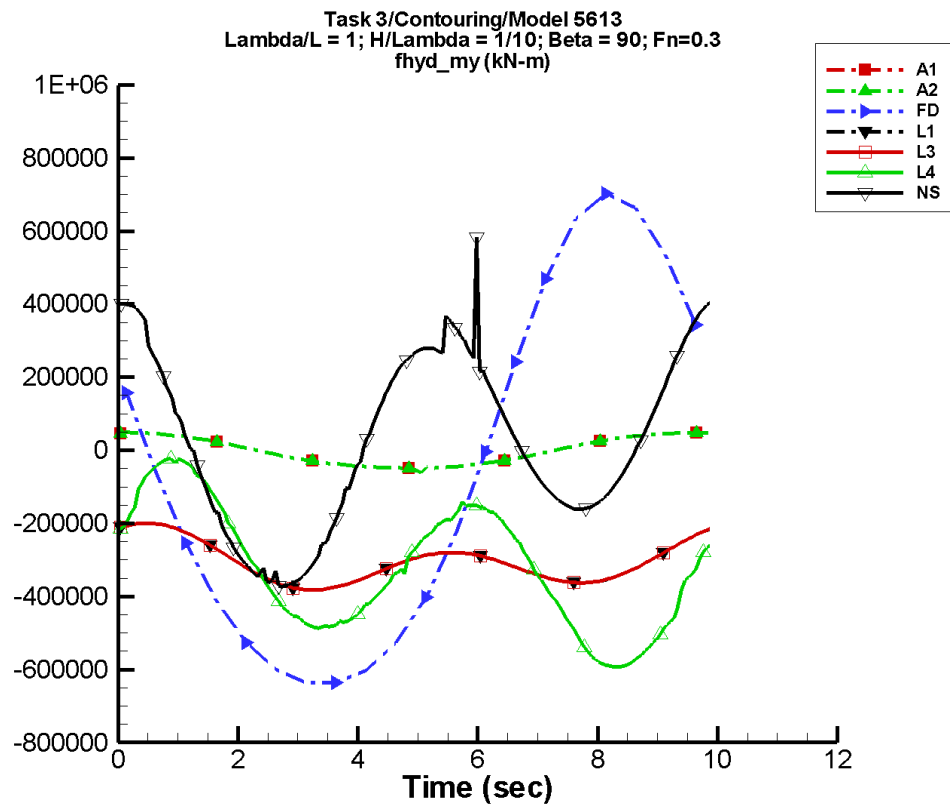
Table I-189. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	961.	7.57E+05	23	1.87E+03	-107
A2	961.	7.57E+05	23	1.87E+03	-107
FD	-1.57E+03	1.70E+06	-115	3.19E+03	102
L1	-1.37E+05	2.76E+05	-53	3.58E+04	-121
L3	-1.37E+05	2.77E+05	-53	3.58E+04	-121
L4	-8.03E+04	1.66E+05	2	4.03E+04	90
NF	—	—	—	—	—
NS	7.17E+04	3.20E+05	-83	2.65E+05	122

Table I-190. Minimum and maximum of  $M_y^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-7.67E+05	7.75E+05	-7.65E+05	7.74E+05
A2	-7.67E+05	7.75E+05	-7.65E+05	7.74E+05
FD	-1.71E+06	1.71E+06	-1.66E+06	1.66E+06
L1	-4.13E+05	1.56E+05	-4.13E+05	1.56E+05
L3	-4.13E+05	1.57E+05	-4.13E+05	1.57E+05
L4	-4.33E+05	2.59E+05	-4.16E+05	1.74E+05
NF	—	—	—	—
NS	-3.25E+05	9.30E+05	-3.21E+05	8.12E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-96. Time history of  $M_y^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

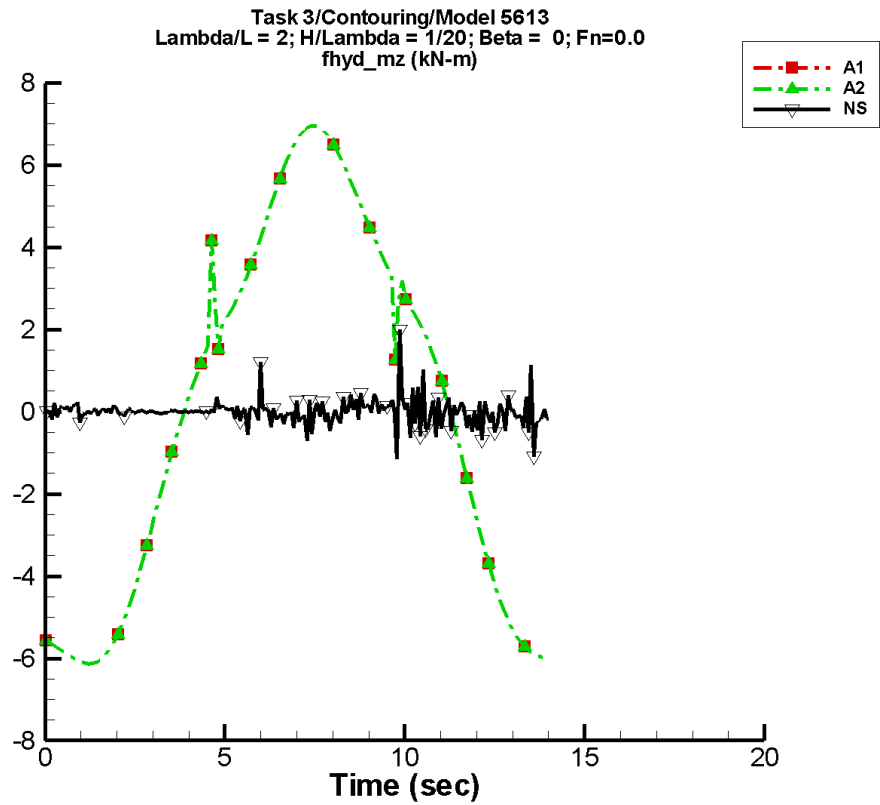
Table I-191. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-44.1	5.12E+04	91	218.	-52
A2	-44.1	5.12E+04	91	218.	-52
FD	-5.93E+04	6.67E+05	131	9.13E+04	-177
L1	-3.05E+05	4.12E+04	81	6.46E+04	44
L3	-3.05E+05	4.12E+04	81	6.46E+04	44
L4	-3.23E+05	6.21E+04	14	2.26E+05	15
NF	—	—	—	—	—
NS	2.70E+04	1.20E+05	168	3.09E+05	75

Table I-192. Minimum and maximum of  $M_y^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-6.09E+04	6.06E+04	-5.02E+04	4.99E+04
A2	-6.09E+04	6.06E+04	-5.02E+04	4.99E+04
FD	-6.38E+05	7.01E+05	-5.47E+05	4.59E+05
L1	-3.82E+05	-2.00E+05	-3.82E+05	-2.01E+05
L3	-3.82E+05	-2.00E+05	-3.82E+05	-2.01E+05
L4	-5.93E+05	-2.23E+04	-5.90E+05	-2.84E+04
NF	—	—	—	—
NS	-3.73E+05	5.83E+05	-3.63E+05	4.12E+05

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-97. Time history of  $M_z^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

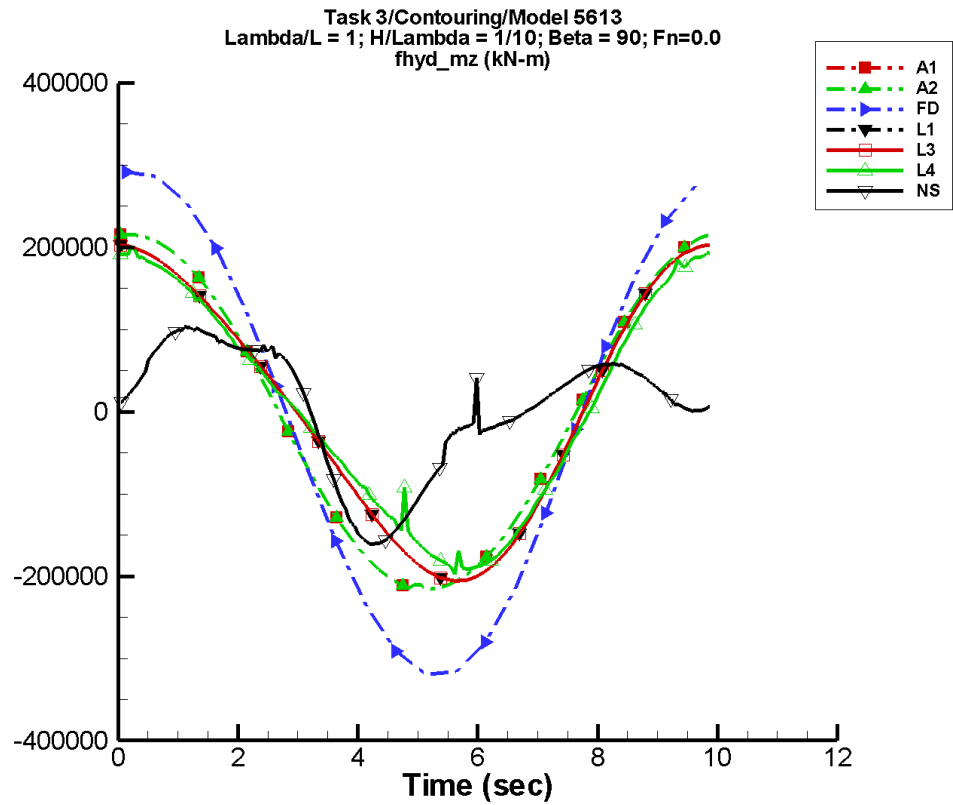
Table I-193. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.82E-03	6.28	-103	3.26E-02	102
A2	4.82E-03	6.28	-103	3.26E-02	102
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-7.43E-03	2.76E-02	-100	6.24E-02	-38

Table I-194. Minimum and maximum of  $M_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-6.13	6.95	-6.08	6.87
A2	-6.13	6.95	-6.08	6.87
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.14	2.00	-0.176	0.203

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-98. Time history of  $M_z^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-195. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

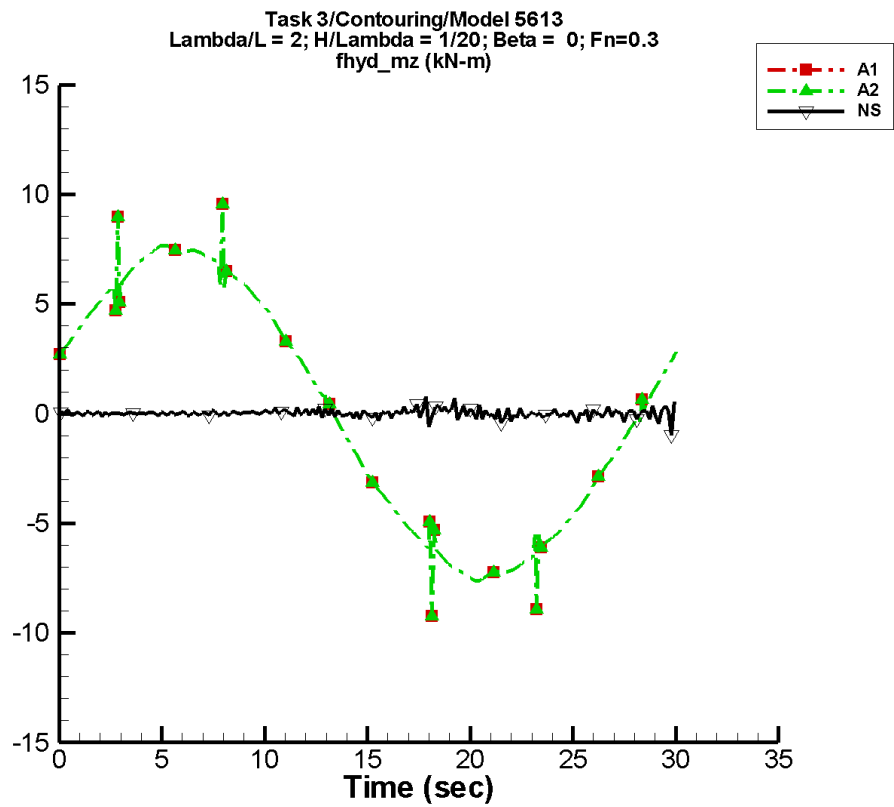
Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-166.	2.18E+05	80	429.	-85
A2	-166.	2.18E+05	80	429.	-85
FD	-6.49E+03	3.09E+05	61	9.42E+03	-177
L1	4.28E+03	1.99E+05	72	2.50E+04	160
L3	4.28E+03	1.99E+05	72	2.50E+04	160
L4	4.82E+03	1.83E+05	70	2.56E+04	142
NF	—	—	—	—	—
NS	4.30E+03	7.56E+04	87	6.11E+04	-55

Table I-196. Minimum and maximum of  $M_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-2.17E+05	2.17E+05	-2.13E+05	2.16E+05
A2	-2.17E+05	2.17E+05	-2.13E+05	2.16E+05
FD	-3.21E+05	2.92E+05	-2.35E+05	2.74E+05
L1	-2.06E+05	2.03E+05	-2.05E+05	2.03E+05
L3	-2.06E+05	2.03E+05	-2.05E+05	2.03E+05
L4	-1.98E+05	2.01E+05	-1.88E+05	1.94E+05
NF	—	—	—	—
NS	-1.61E+05	1.04E+05	-1.59E+05	1.01E+05



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-99. Time history of  $M_z^{hyd}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

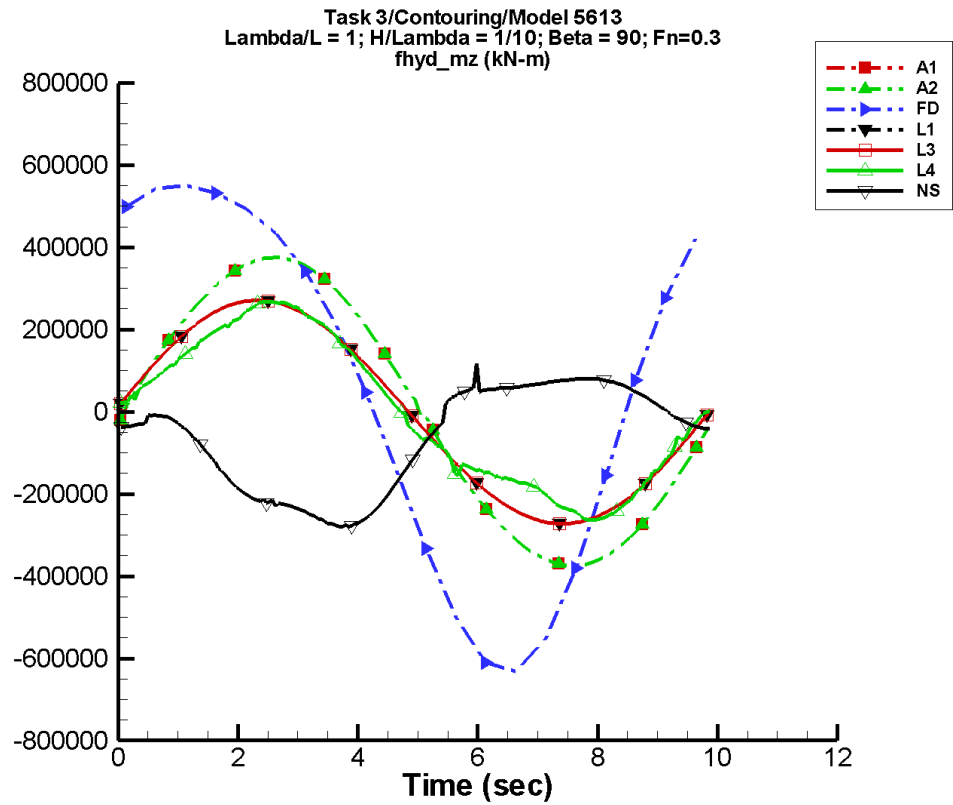
Table I-197. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	4.20E-02	7.41	27	7.23E-02	-159
A2	4.20E-02	7.41	27	7.23E-02	-159
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	7.40E-03	4.57E-02	-90	8.43E-03	84

Table I-198. Minimum and maximum of  $M_z^{\text{hyd}}$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-9.25	9.56	-7.55	7.62
A2	-9.25	9.56	-7.55	7.62
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-0.965	0.767	-0.112	0.191

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-100. Time history of  $M_z^{hyd}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-199. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $M_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (kN-m)	$a_1$ (kN-m)	$\Phi_1$ (deg)	$a_2$ (kN-m)	$\Phi_2$ (deg)
A1	-329.	3.75E+05	-7	272.	3
A2	-329.	3.75E+05	-7	272.	3
FD	5.24E+04	5.87E+05	22	1.03E+05	113
L1	-2.79E+03	2.72E+05	-1	5.63E+03	-20
L3	-2.79E+03	2.72E+05	-1	5.62E+03	-20
L4	-3.25E+03	2.41E+05	-4	1.49E+04	-89
NF	—	—	—	—	—
NS	-6.44E+04	1.61E+05	161	5.89E+04	4

Table I-200. Minimum and maximum of  $M_z^{\text{hyd}}$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

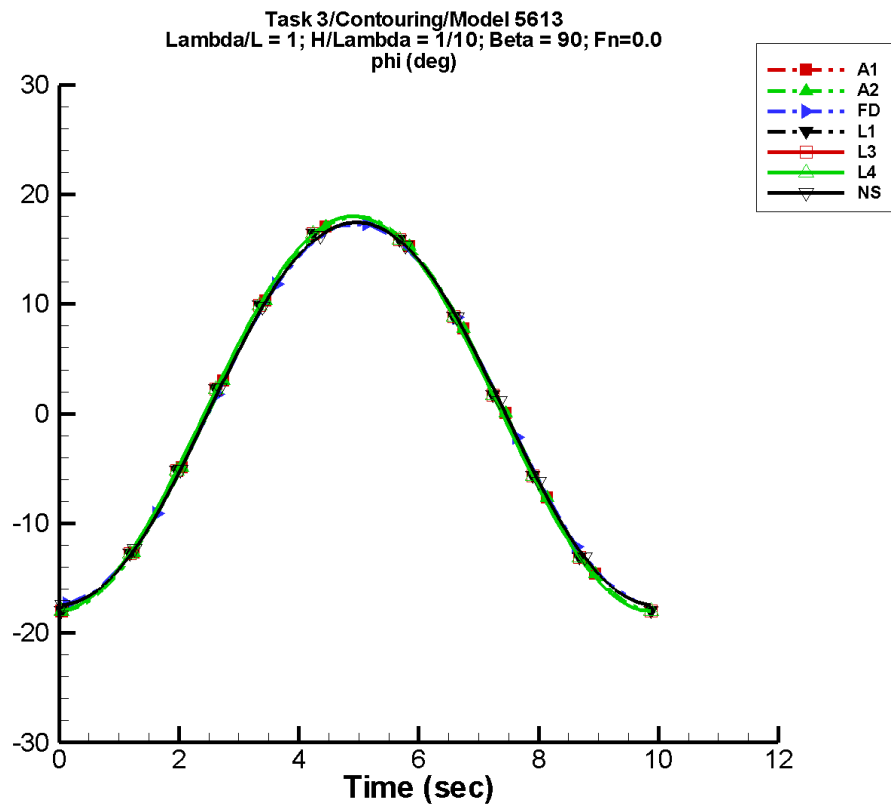
Code	Unfiltered		Filtered	
	Minimum (kN-m)	Maximum (kN-m)	Minimum (kN-m)	Maximum (kN-m)
A1	-3.74E+05	3.75E+05	-3.71E+05	3.71E+05
A2	-3.74E+05	3.75E+05	-3.71E+05	3.71E+05
FD	-6.32E+05	5.50E+05	-4.77E+05	5.46E+05
L1	-2.73E+05	2.71E+05	-2.72E+05	2.70E+05
L3	-2.73E+05	2.71E+05	-2.72E+05	2.70E+05
L4	-2.64E+05	2.68E+05	-2.60E+05	2.66E+05
NF	—	—	—	—
NS	-2.79E+05	1.17E+05	-2.77E+05	8.00E+04

### TASK 3/WAVE CONTOURING/MODEL 5613

Time history of  $\phi$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

Data identically zero or nonexistent for all codes.

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-101. Time history of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-201. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	1.15E-02	18.0	-94	1.61E-02	-155
A2	1.15E-02	18.0	-94	1.61E-02	-155
FD	1.18E-02	17.6	-108	1.67E-02	-148
L1	3.96E-03	18.0	-92	6.85E-03	151
L3	3.96E-03	18.0	-92	6.85E-03	151
L4	3.96E-03	18.0	-92	6.85E-03	151
NF	—	—	—	—	—
NS	5.93E-04	17.6	-90	2.43E-02	133

Table I-202. Minimum and maximum of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	-18.0	18.0	-18.0	17.8
A2	-18.0	18.0	-18.0	17.8
FD	-17.4	17.3	-15.2	13.0
L1	-18.0	18.0	-18.0	17.9
L3	-18.0	18.0	-18.0	17.9
L4	-18.0	18.0	-18.0	17.9
NF	—	—	—	—
NS	-17.4	17.4	-17.5	17.4

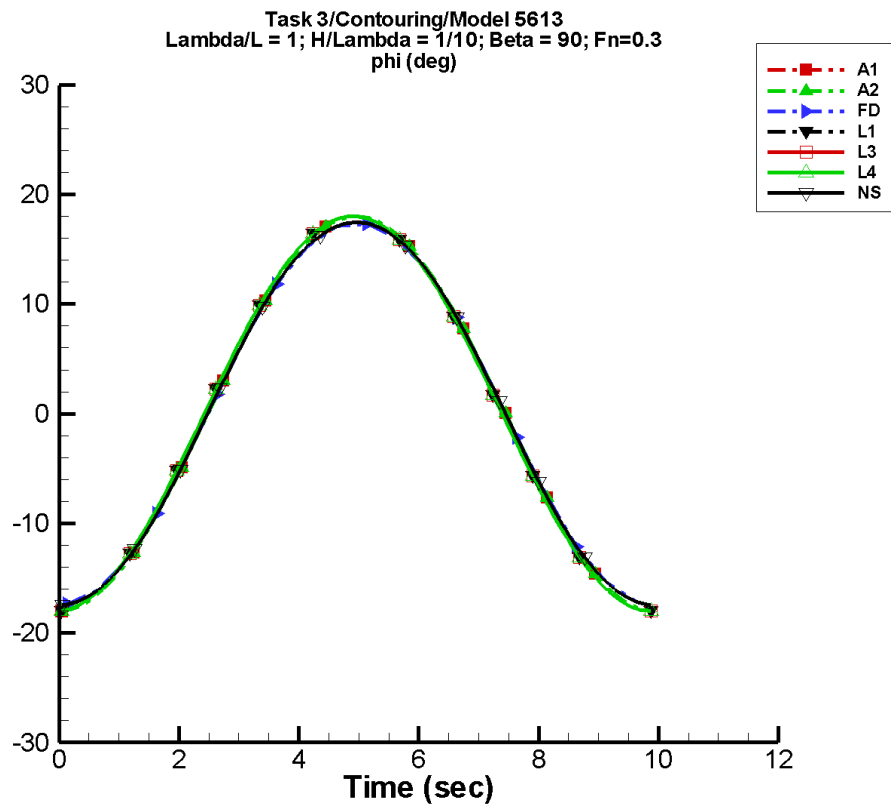
### TASK 3/WAVE CONTOURING/MODEL 5613

Time history of  $\phi$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

Data identically zero or nonexistent for all codes.



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-102. Time history of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

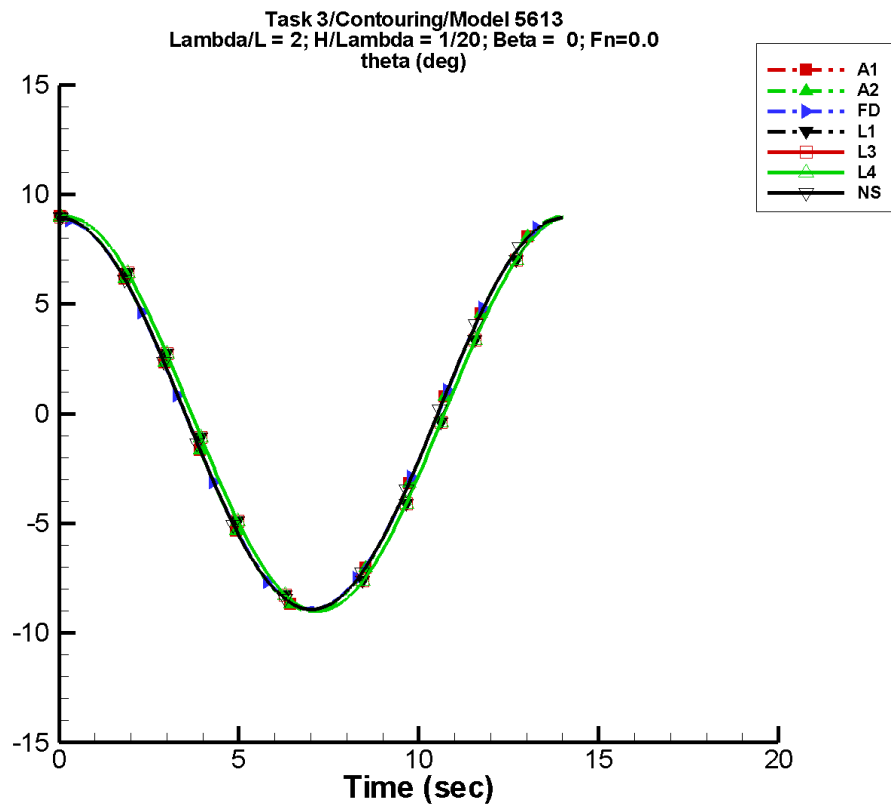
Table I-203. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	1.15E-02	18.0	-94	1.61E-02	-155
A2	1.15E-02	18.0	-94	1.61E-02	-155
FD	1.18E-02	17.6	-108	1.67E-02	-148
L1	3.96E-03	18.0	-92	6.85E-03	151
L3	3.96E-03	18.0	-92	6.85E-03	151
L4	3.96E-03	18.0	-92	6.85E-03	151
NF	—	—	—	—	—
NS	5.95E-04	17.6	-90	2.43E-02	133

Table I-204. Minimum and maximum of  $\phi$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	-18.0	18.0	-18.0	17.8
A2	-18.0	18.0	-18.0	17.8
FD	-17.4	17.3	-15.2	13.0
L1	-18.0	18.0	-18.0	17.9
L3	-18.0	18.0	-18.0	17.9
L4	-18.0	18.0	-18.0	17.9
NF	—	—	—	—
NS	-17.4	17.4	-17.5	17.4

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-103. Time history of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to  $L = 154$  m.

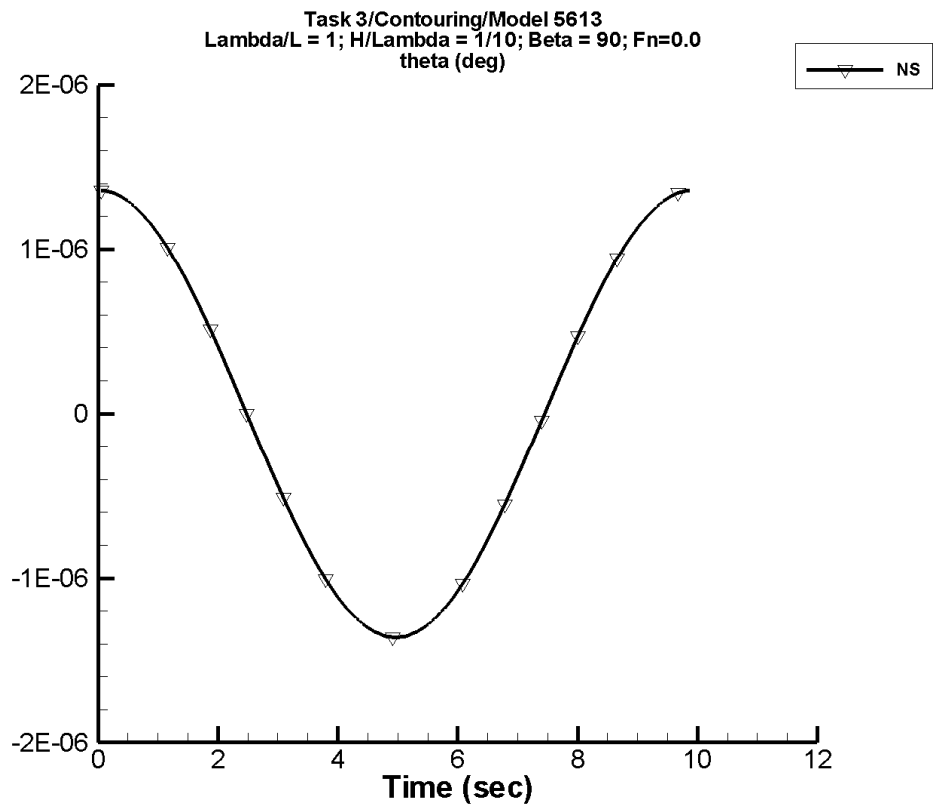
Table I-205. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	1.04E-03	9.00	91	1.46E-03	-145
A2	1.04E-03	9.00	91	1.46E-03	-145
FD	7.13E-03	8.95	98	4.52E-03	-75
L1	7.51E-04	9.00	86	1.27E-03	170
L3	7.51E-04	9.00	86	1.27E-03	170
L4	7.51E-04	9.00	86	1.27E-03	170
NF	—	—	—	—	—
NS	3.97E-03	8.95	91	5.35E-03	-132

Table I-206. Minimum and maximum of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.0$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 14.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	-9.00	9.00	-8.95	9.01
A2	-9.00	9.00	-8.95	9.01
FD	-8.88	8.87	-7.78	8.05
L1	-9.00	9.00	-8.98	9.03
L3	-9.00	9.00	-8.98	9.03
L4	-9.00	9.00	-8.98	9.03
NF	—	—	—	—
NS	-8.93	8.93	-8.91	8.95

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2, FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-104. Time history of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

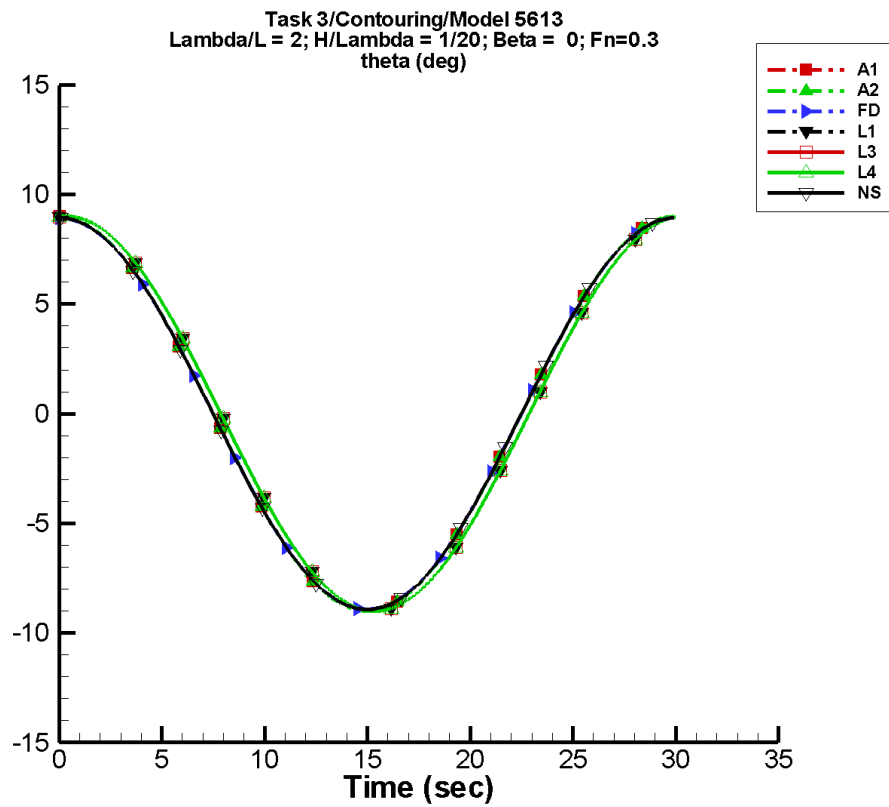
Table I-207. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-3.05E-10	1.36E-06	90	4.50E-10	17

Table I-208. Minimum and maximum of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.0$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	—	—	—	—
A2	—	—	—	—
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.36E-06	1.36E-06	-1.36E-06	1.36E-06

# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from NFA.

Figure I-105. Time history of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-209. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

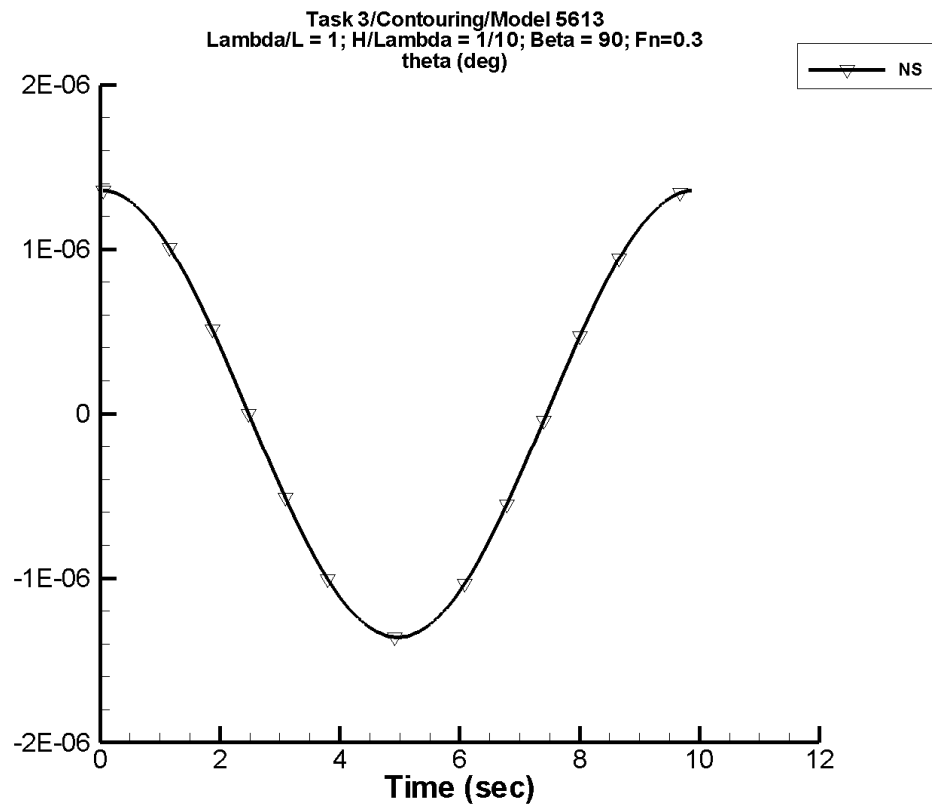
Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	8.02E-03	9.00	96	1.20E-02	-150
A2	8.02E-03	9.00	96	1.20E-02	-150
FD	1.70E-02	8.95	100	1.60E-02	-46
L1	8.44E-03	9.00	90	1.23E-02	-34
L3	8.44E-03	9.00	90	1.23E-02	-34
L4	8.44E-03	9.00	90	1.23E-02	-34
NF	—	—	—	—	—
NS	8.76E-03	8.95	91	1.21E-02	-149

Table I-210. Minimum and maximum of  $\theta$  for wave contouring in following seas with heave and pitch at  $F_n = 0.3$ . Waves with  $\lambda/L = 2$  and  $H/\lambda = 1/20$ . Encounter period = 30.06 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	-9.00	9.00	-8.99	9.02
A2	-9.00	9.00	-8.99	9.02
FD	-8.93	8.93	-8.69	8.83
L1	-9.00	9.00	-9.00	9.00
L3	-9.00	9.00	-9.00	9.00
L4	-9.00	9.00	-9.00	9.00
NF	—	—	—	—
NS	-8.93	8.93	-8.91	8.95



# TASK 3/WAVE CONTOURING/MODEL 5613



Data identically zero, insufficient, or not available from AEGIR-1, AEGIR-2, FREDYN, LAMP-1, LAMP-3, LAMP-4 and NFA.

Figure I-106. Time history of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to  $L = 154$  m.

# TASK 3/WAVE CONTOURING/MODEL 5613

Table I-211. Coefficients of the Fourier fit  $a_0 + a_1 \sin(\omega t + \Phi_1) + a_2 \sin(2\omega t + \Phi_2) + \dots$  of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	$a_0$ (deg)	$a_1$ (deg)	$\Phi_1$ (deg)	$a_2$ (deg)	$\Phi_2$ (deg)
A1	—	—	—	—	—
A2	—	—	—	—	—
FD	—	—	—	—	—
L1	—	—	—	—	—
L3	—	—	—	—	—
L4	—	—	—	—	—
NF	—	—	—	—	—
NS	-3.05E-10	1.36E-06	90	4.50E-10	17

Table I-212. Minimum and maximum of  $\theta$  for wave contouring in beam seas with heave and roll at  $F_n = 0.3$ . Waves with  $\lambda/L = 1$  and  $H/\lambda = 1/10$ . Period = 9.93 sec. Model 5613 scaled to L = 154 m.

Code	Unfiltered		Filtered	
	Minimum (deg)	Maximum (deg)	Minimum (deg)	Maximum (deg)
A1	—	—	—	—
A2	—	—	—	—
FD	—	—	—	—
L1	—	—	—	—
L3	—	—	—	—
L4	—	—	—	—
NF	—	—	—	—
NS	-1.36E-06	1.36E-06	-1.36E-06	1.36E-06