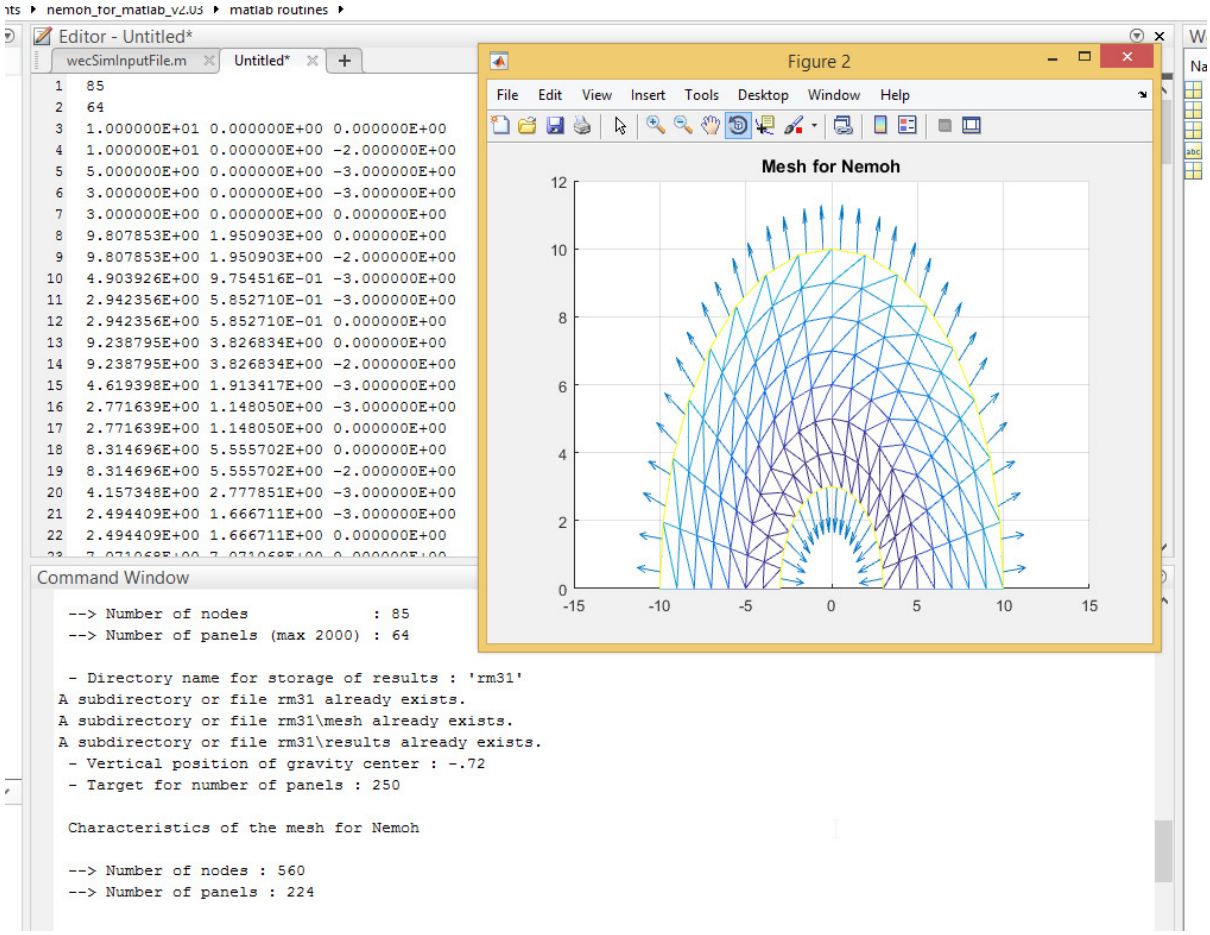
Below are images of the generated mesh using the aximesh MATLAB routine for the RM3 float to be used in NEMOH.



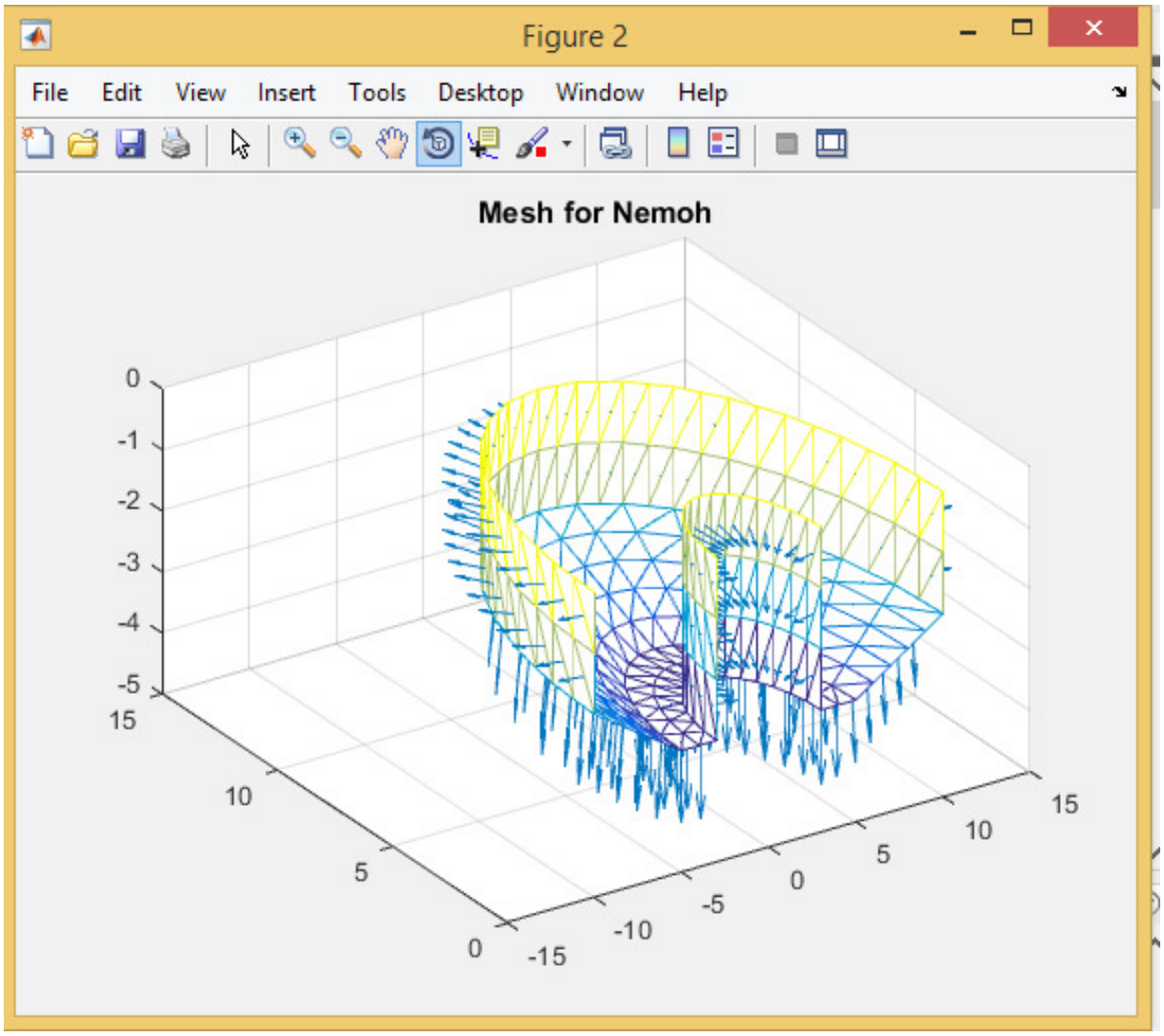
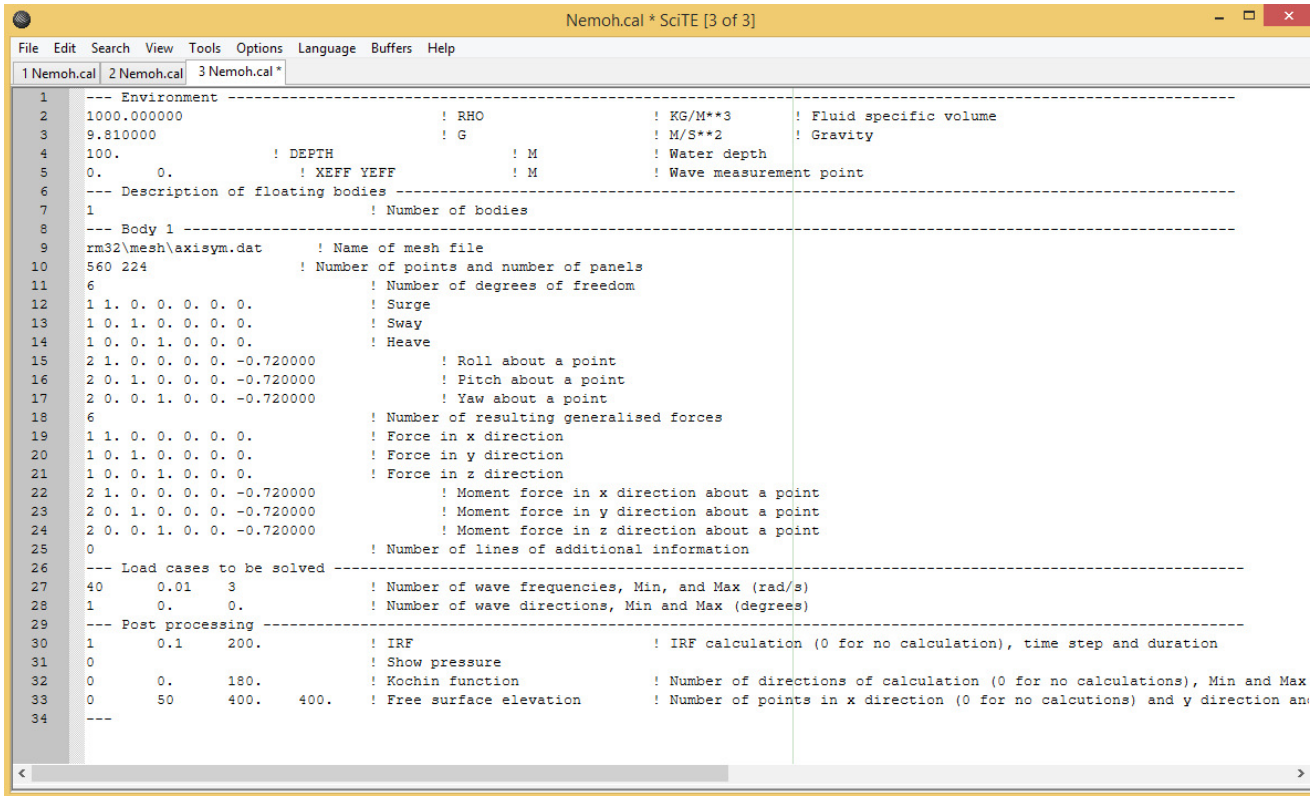
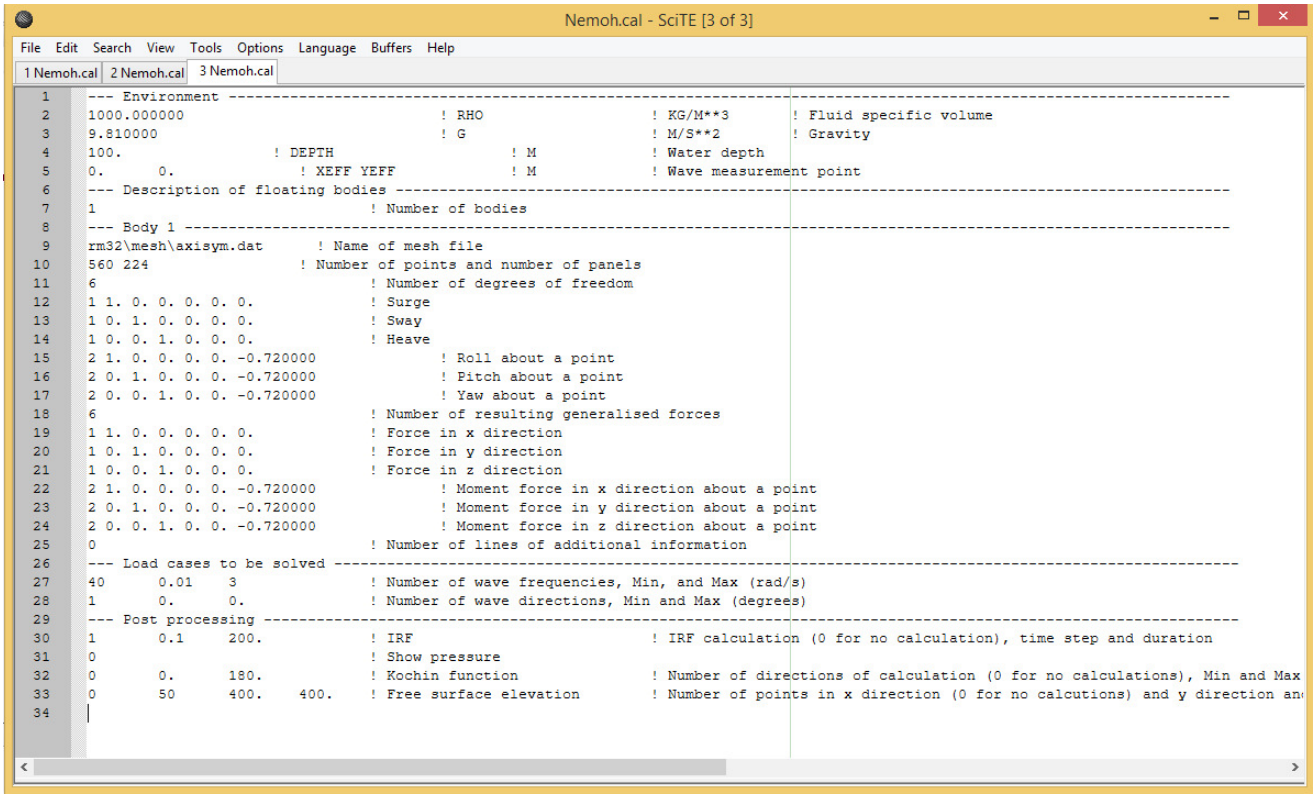


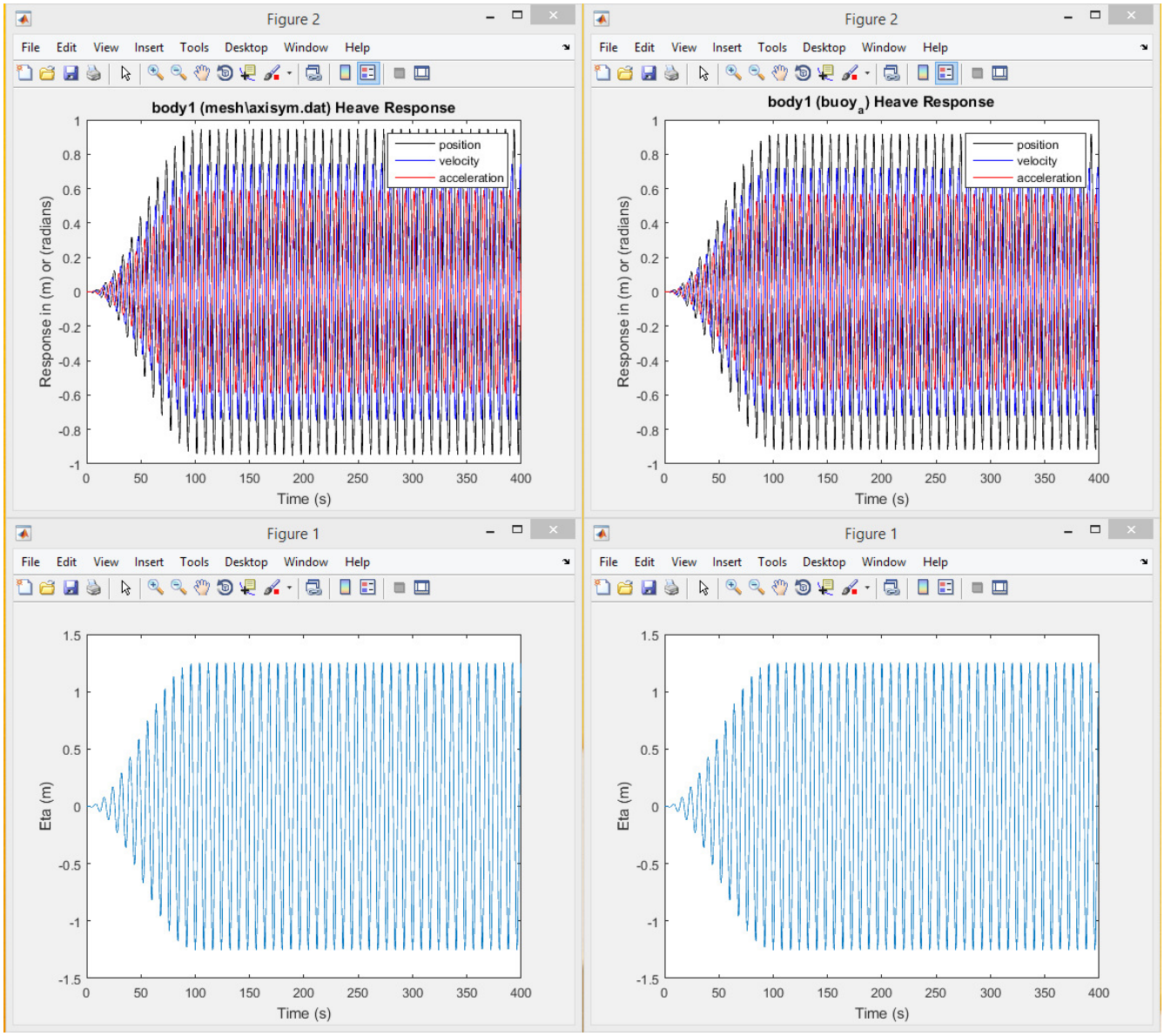
Figure 2
File Edit View Insert Tools Desktop Window Help
Mesh for Nemoh
0
-1
-2
-3
-4
-5
15
10
5
0
-15
-10
-5
0
5
10
15



After running NEMOH, the nemoh.cal file has three dashes at the end shown above that need to be removed to run in BEMIO and ensure there are only 34 lines after removing the dashes, modification shown below



Below are output comparisons of WECSIM using NEMOH generated files on the left and the RM3 WAMIT based tutorial file for buoy “A” (the float of the RM3 device). As far as I could tell they looked the same for the damping value used. I did not graph the outputs to compare on the same graph at this time.



```
WEC-Sim Pre-processing ...
Warning: Invalid water depth given. waves.waterDepth set to 200m for
vizualisation.
> In waveClass/setWaveProps (line 196)
  In waveClass/waveSetup (line 77)
  In wecSim (line 78)
Elapsed time is 0.041778 seconds.

WEC-Sim Simulation Settings:
    Time Marching Solver                  = Fourth-Order Runge-Kutta Formula
    Start Time                    (sec) = 0
    End Time                      (sec) = 400
    Time Step Size                (sec) = 0.1
    Ramp Function Time            (sec) = 100
    Convolution Integral Interval (sec) = 60
    Total Number of Time Step             = 4000

Wave Environment:
    Wave Type                             = Regular Waves (Convolution Integral Calculation)
    Wave Height H (m)                     = 2.5
    Wave Period T (sec)                   = 8

List of Body: Number of Bodies = 1

    ***** Body Number 0, Name: buoy_a *****
    Body CG                            (m) = [0,0,-0.72]
    Body Mass                         (kg) = 728897
    Body Diagonal MOI                (kgm2)= [2.09073E+07,2.13061E+07,3.70855E+07]

List of PTO(s): Number of PTOs = 1

    ***** PTO Name: PTO1 *****
    PTO Stiffness            (N/m;Nm/rad) = 0
    PTO Damping             (Ns/m;Nsm/rad) = 1.2E+06

List of Constraint(s): Number of Constraints = 1

    ***** Constraint Name: Constraint1 *****
```

Above shows some WECSIM outputs using the WAMIT generated files at the top, showing an equilibrium body mass of 728897 KG. Below shows some WECSIM outputs using the NEMOH generated files, showing an equilibrium body mass of 722094KG. I am thinking the differences here could be in how fine the mesh is in either program.

```
WEC-Sim Read Input File ...
Elapsed time is 3.829178 seconds.

WEC-Sim Pre-processing ...
Elapsed time is 0.025312 seconds.

WEC-Sim Simulation Settings:
    Time Marching Solver                 = Fourth-Order Runge-Kutta Formula
    Start Time                    (sec) = 0
    End Time                      (sec) = 400
    Time Step Size                (sec) = 0.1
    Ramp Function Time            (sec) = 100
    Convolution Integral Interval (sec) = 60
    Total Number of Time Step            = 4000

Wave Environment:
    Wave Type                            = Regular Waves (Convolution Integral Calculation)
    Wave Height H (m)                    = 2.5
    Wave Period T (sec)                  = 8

List of Body: Number of Bodies = 1

    ***** Body Number 0, Name: mesh\axisym.dat *****
    Body CG                         (m) = [0,0,-0.72]
    Body Mass                      (kg) = 722094
    Body Diagonal MOI             (kgm2)= [2.09073E+07,2.13061E+07,3.70855E+07]

List of PTO(s): Number of PTOs = 1

    ***** PTO Name: PTO1 *****
    PTO Stiffness           (N/m;Nm/rad) = 0
    PTO Damping            (Ns/m;Nsm/rad) = 1.2E+06

List of Constraint(s): Number of Constraints = 1

    ***** Constraint Name: Constraint1 *****
```

Nemoh.cal - SciTE

File Edit Search View Tools Options Language Buffers Help

1 Nemoh.cal

```
--- Environment ------------------------------------------------------------------------------------------------------------------------
1000.000000                             ! RHO                   ! KG/M**3       ! Fluid specific volume
9.810000                                ! G                     ! M/S**2        ! Gravity
100.                ! DEPTH                     ! M             ! Water depth
0.      0.              ! XEFF YEFF             ! M             ! Wave measurement point
--- Description of floating bodies -----------------------------------------------------------------------------------------------------
1                               ! Number of bodies
--- Body 1 -----------------------------------------------------------------------------------------------------------------------------
mesh\axisym.dat      ! Name of mesh file
560 224                 ! Number of points and number of panels
6                               ! Number of degrees of freedom
1 1. 0. 0. 0. 0. 0.             ! Surge
1 0. 1. 0. 0. 0. 0.             ! Sway
1 0. 0. 1. 0. 0. 0.             ! Heave
2 1. 0. 0. 0. 0. -0.720000              ! Roll about a point
2 0. 1. 0. 0. 0. -0.720000              ! Pitch about a point
2 0. 0. 1. 0. 0. -0.720000              ! Yaw about a point
6                               ! Number of resulting generalised forces
1 1. 0. 0. 0. 0. 0.             ! Force in x direction
1 0. 1. 0. 0. 0. 0.             ! Force in y direction
1 0. 0. 1. 0. 0. 0.             ! Force in z direction
2 1. 0. 0. 0. 0. -0.720000              ! Moment force in x direction about a point
2 0. 1. 0. 0. 0. -0.720000              ! Moment force in y direction about a point
2 0. 0. 1. 0. 0. -0.720000              ! Moment force in z direction about a point
0                               ! Number of lines of additional information
--- Load cases to be solved ------------------------------------------------------------------------------------------------------------
40      0.01    3               ! Number of wave frequencies, Min, and Max (rad/s)
1       0.      0.              ! Number of wave directions, Min and Max (degrees)
--- Post processing --------------------------------------------------------------------------------------------------------------------
1       0.1     10.             ! IRF                           ! IRF calculation (0 for no calculation), time step and duration
0                               ! Show pressure
0       0.      180.            ! Kochin function               ! Number of directions of calculation (0 for no calculations), Min and Max
0       50      400.    400.    ! Free surface elevation        ! Number of points in x direction (0 for no calcutions) and y direction an
```

Above is an example NEMOH file I ran of one of our device's files when I was trying to generate issues in WEC-SIM. The resulting error in WECSIM is below, with the IRF time being to short. Default CIC time is 60 seconds, and the above nemoh.cal file only has a duration of 10 seconds with a 0.1 second time step.

Command Window

```
WEC-Sim Read Input File ...
Elapsed time is 3.676121 seconds.

WEC-Sim Pre-processing ...
Error using wecSim (line 109)
simu.CITime is larger than the length of the IRF
```