MATLAB® Test Report

Timestamp: 03-Feb-2025 16:55:19
Host: fv-az1921-14
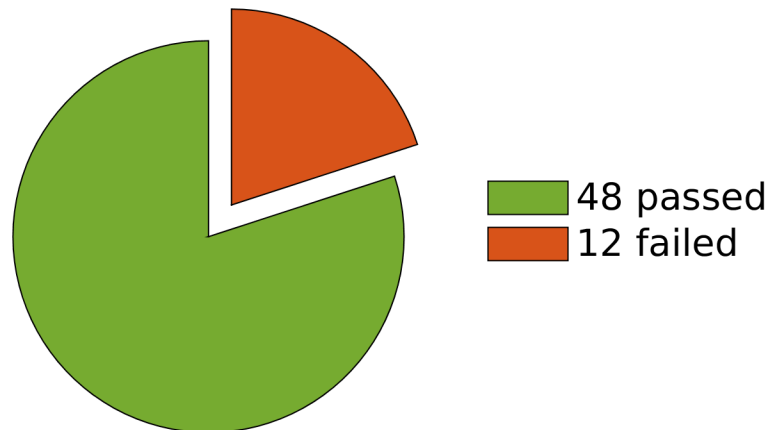Platform: glnxa64
MATLAB Version: 24.2.0.2833386 (R2024b) Update 4

Number of Tests: 60
Testing Time: 21025.6959 seconds

Overall Result: FAILED

- 48 passed
- 12 failed

Failure Summary

12 tests failed.

Name of Failing Test	Failure Reasons	
test/validateNominalReportFeasible	Failed by verification.	(Details)
test/validateNominalWecsimFeasible	Failed by verification.	(Details)
test/validateNominalHydroCoeffs	Failed by verification.	(Details)
test/allFiguresRun(which_figs=none7,which_tabs=Tab_22_OptimalDVsFor4Loca tions)	Errored.	(Details)
test/validateNominalReport(field_report=LCOE,rel_tol_report=0.25_2)	Failed by verification.	(Details)
test/validateNominalReport(field_report=power_avg,rel_tol_report=0.1_6)	Failed by verification.	(Details)
test/validateNominalReport(field_report=force_heave,rel_tol_report=0.1_8)	Failed by verification.	(Details)
test/validateNominalReport(field_report=FOS_spar,rel_tol_report=0.1_9)	Failed by verification.	(Details)
test/validateNominalWecsim(field_wecsim=power_avg,rel_tol_wecsim=0.1)	Failed by verification.	(Details)
test/validateNominalWecsim(field_wecsim=LCOE,rel_tol_wecsim=0.1_1)	Failed by verification.	(Details)
test/validateNominalWecsim(field_wecsim=J_capex_design,rel_tol_wec sim=0.1_2)	Failed by verification.	(Details)
test/validateNominalWecsim(field_wecsim=c_v,rel_tol_wecsim=0.1_3)	Failed by verification.	(Details)

Overview

/home/runner/work/MDOcean/MDOcean/MDOcean/tests/

test	21025.6959 sec onds

⊗⊗⊗✓✓ ✓✓✓✓✓ ✓✓✓✓✓ ✓✓✓✓✓ ✓✓✓✓✓ ✓✓✓✓✓ ✓✓✓⊗✓ ✓✓✓✓✓ ✓✓⊗✓✓ ⊗⊗⊗✓✓
✓✓✓✓✓ ✓⊗✓⊗⊗

Details

/home/runner/work/MDOcean/MDOcean/MDOcean/tests/

test

⊗ validateNominalReportFeasible

The test failed.
Duration: 21.7270 seconds

Event:
Verification failed.
Framework Diagnostic:
verifyTrue failed.
--> The value must evaluate to "true".

Actual Value:
logical

0
Additional Diagnostic:
Nominal design violates these constraints: , linear_theory
Event Location: test/validateNominalReportFeasible
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReportFeasible) at 187

⊗ validateNominalWecsimFeasible

The test failed.
Duration: 0.2442 seconds

Event:
Verification failed.
Framework Diagnostic:
verifyTrue failed.
--> The value must evaluate to "true".

Actual Value:
  logical

    0
Additional Diagnostic:
  Nominal design violates these constraints: , linear_theory
Event Location: test/validateNominalWecsimFeasible
Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsimFeasible) at 192

⊗ validateNominalHydroCoeffs

The test failed.
Duration: 8.1555 seconds

Event:
Verification failed.
Framework Diagnostic:
verifyLessThanOrEqual failed.
--> Each element must be less than or equal to the maximum value.

    Failing Indices:
      1   2   3   4

Actual Value:
  0.204482267456327 0.887336280522300 0.208933730234385 0.813333333333333
Maximum Value (Inclusive):
  0.100000000000000
Event Location: test/validateNominalHydroCoeffs
Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalHydroCoeffs) at 197

⊘ hydrodynamicLimitObeyed

The test passed.
Duration: 109.3220 seconds

Event:
Verification passed.
Framework Diagnostic:
verifyLessThanOrEqual passed.

Actual Value:
  Columns 1 through 14

  0.720881409656996 0.826638471890924 0.882989991349675 0.865997057957246 0.746464169147402 0.535812748292972 0.359198893143713
  0.235272767110334 0.154665433339348 0.103188955882980 0.070169654140847 0.048690632235891 0.034465510155556 0.024861866371357
  0.710795148493793 0.816122882558874 0.872409591591702 0.857195595419487 0.741826559167012 0.534684393376031 0.359217103048482
  0.235507534612320 0.154887408750686 0.103360118589063 0.070294792575109 0.048781047142536 0.034531043937535 0.024909802720431
  0.700827704597230 0.805753974380493 0.861996724098889 0.848499561291817 0.737173376027478 0.533521248200810 0.359221552719162
  0.235737322450823 0.155107288477735 0.103530242513739 0.070419350663752 0.048871111246327 0.034596354211756 0.024957591221953
  0.690981573710347 0.795531046306217 0.851748478553713 0.839909260002725 0.732507885731220 0.532324026308229 0.359212303612524
  0.235962151706901 0.155325086281902 0.103699335281772 0.070543332054620 0.048960826028961 0.034661441386461 0.025005231793914
  0.681258867053421 0.785453226275517 0.841661866758474 0.831424591863395 0.727833029604636 0.531093356150758 0.359189378343167
  0.236182024870481 0.155540806215022 0.103867398983318 0.070666737045816 0.049050190858191 0.034726304492113 0.025052723431809
  0.671661336135682 0.775519487226632 0.831733841307701 0.823045102811283 0.723151437558049 0.529829780396268 0.359152760123957

```
0.236396925660370  0.155754442563898  0.104034430148028  0.070789562568129  0.049139202974382  0.034790941170983  0.025100064200646
0.662190396893352  0.765728662247632  0.821961312210158  0.814770029842782  0.718465442178661  0.528533755566601  0.359102392199927
0.236606818813001  0.155965979774983  0.104200419707511  0.070911802160417  0.049227857472620  0.034855347663838  0.025147251225001
0.652847153057664  0.756079458865205  0.812341161666758  0.806598342463953  0.713777093498947  0.527205651992783  0.359038177267692
0.236811649836238  0.156175392357767  0.104365352945579  0.071033445937666  0.049316147280223  0.034919518793624  0.025194280677053
0.643632418678036  0.746570472476550  0.802870257185488  0.798528780463732  0.709088174294150  0.525845754068977  0.358959976872778
0.237011344724729  0.156382644765566  0.104529209435760  0.071154480551522  0.049404063129563  0.034983447946113  0.025241147762579
0.634546739744441  0.737200198937149  0.793545463192997  0.790559888288989  0.704400215772207  0.524454260787602  0.358867610777727
0.237205809633521  0.156587691252541  0.104691962965673  0.071274889143128  0.049491593526120  0.035047127047449  0.025287848238932
0.625590414869509  0.727967046323171  0.784363651284184  0.782690046276224  0.699714513527618  0.523031286538499  0.358760856294425
0.237394930506874  0.156790475705881  0.104853581447910  0.071394651288130  0.049578725940052  0.035110556997968  0.025334389501978
0.616763515005114  0.718869345891977  0.775321709235524  0.774917498971305  0.695032143637937  0.521576862155760  0.358639447574737
0.237578572659448  0.156990931452248  0.105014026817149  0.071513752798751  0.049665478222641  0.035173751869066  0.025380776058159
0.608065902180472  0.709905362267860  0.766416548894464  0.767240380746964  0.690353978787898  0.520090936196574  0.358503074854322
0.237756580307273  0.157188981037666  0.105173286827899  0.071632239299097  0.049751867470290  0.035227829580363  0.025398171915977
0.599497247259184  0.701073302882913  0.757645113045731  0.759656738908065  0.685680704312068  0.518573376437451  0.358351383645290
0.237928776046176  0.157384601982249  0.105331454070780  0.071750159738367  0.049803208249437  0.035220254217588  0.025358680782929


    Column 15

   0.018253111191964
   0.018288580616315
   0.018323949388265
   0.018359217228469
   0.018394383225226
   0.018429445828386
   0.018464402841906
   0.018499251415016
   0.018533988031981
   0.018568613101837
   0.018603131226803
   0.018631989018118
   0.018624115072867
   0.018569677987828
Maximum Value (Inclusive):
    1
```

Event Location: test/hydrodynamicLimitObeyed

Stack:

In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.hydrodynamicLimitObeyed) at 202

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_1_RM3Image, which_tabs=none1

The test passed.
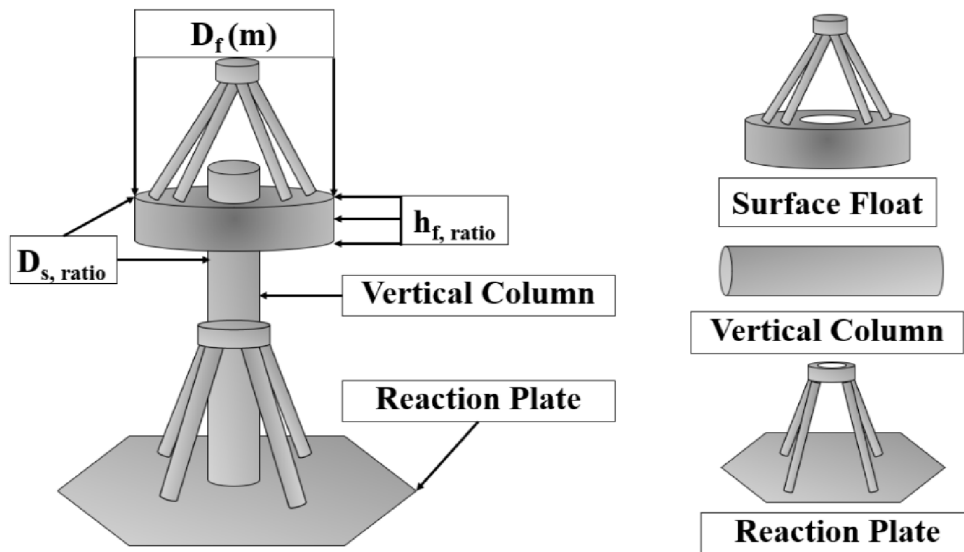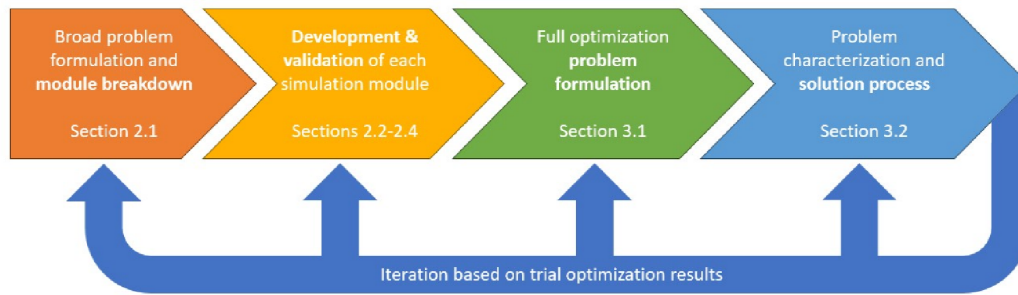Duration: 5.4629 seconds

Event:
   Verification passed.
      Test Diagnostic:
      Figure saved to:
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_1_c300b9f8-5120-4569-ac8f-7b3a5ae2a7ce.fig
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_1_c300b9f8-5120-4569-ac8f-7b3a5ae2a7ce.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_1_RM3Image,which_tabs=none1)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_2_MethodologyOverview, which_tabs=none2

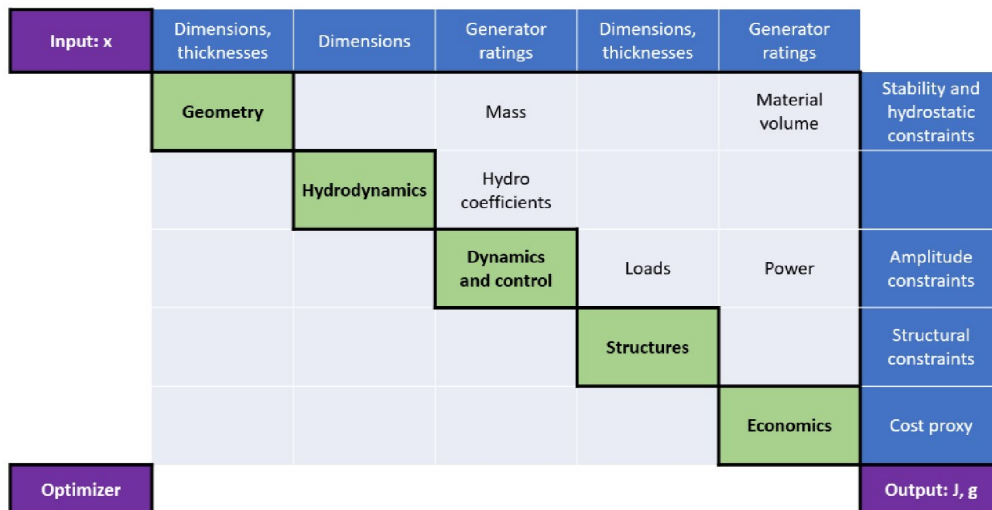The test passed.
Duration: 4.1708 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_2_996495c5-b366-4f1c-a877-556e3227bec1.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_2_996495c5-b366-4f1c-a877-556e3227bec1.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_2_MethodologyOverview,which_tabs=none2)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_3_N2Diagram, which_tabs=none3

The test passed.
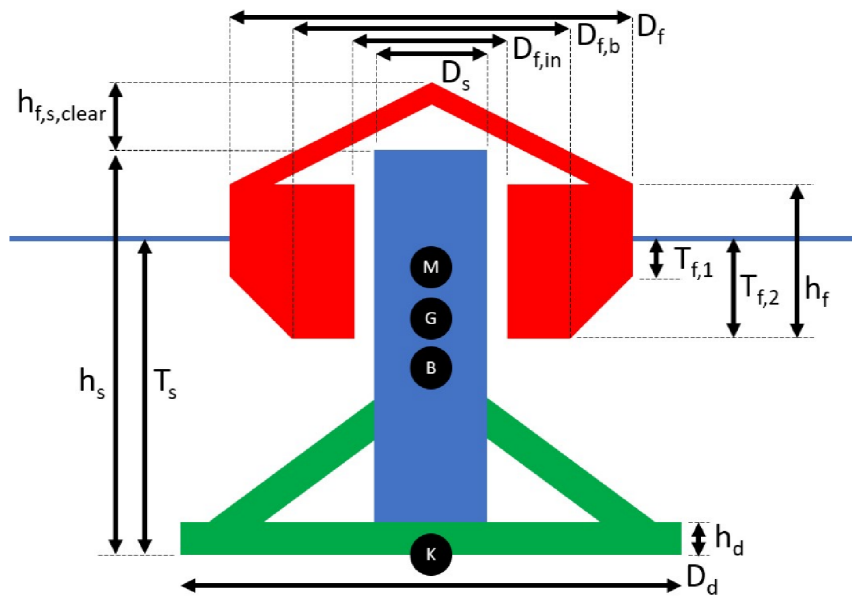Duration: 3.5353 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_3_bdd444cb-fb46-49c5-b251-b56415eae96f.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_3_bdd444cb-fb46-49c5-b251-b56415eae96f.png

Input: x	Dimensions, thicknesses	Dimensions	Generator ratings	Dimensions, thicknesses	Generator ratings	
	Geometry		Mass		Material volume	Stability and hydrostatic constraints
		Hydrodynamics	Hydro coefficients			
			Dynamics and control	Loads	Power	Amplitude constraints
				Structures		Structural constraints
					Economics	Cost proxy
Optimizer						Output: J, g

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_3_N2Diagram,which_tabs=none3)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_4_Dimensions, which_tabs=none4
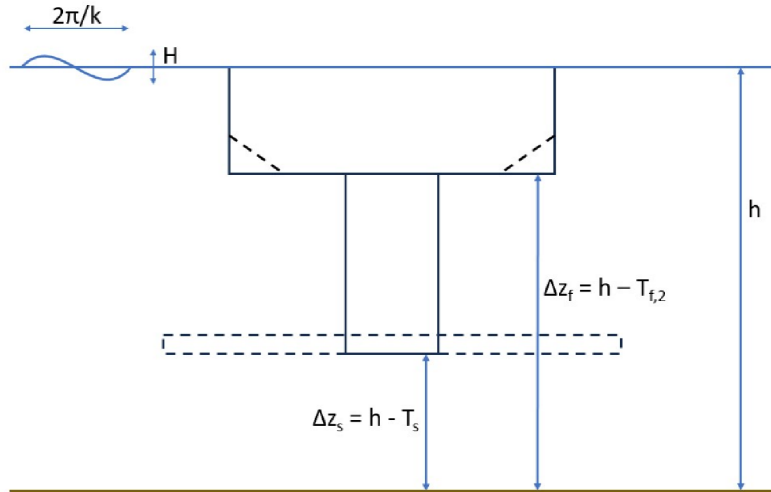
The test passed.
Duration: 3.1358 seconds

Event:
Verification passed.

Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_4_636d4449-ab55-494c-9ce0-04e2068682ec.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_4_636d4449-ab55-494c-9ce0-04e2068682ec.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_4_Dimensions,which_tabs=none4)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
   Test Parameters: which_figs=Fig_5_MEEMGeometry, which_tabs=none5

The test passed.
Duration: 3.2387 seconds

Event:
   Verification passed.
      Test Diagnostic:
      Figure saved to:
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_5_5d4fb83c-8927-4219-8e0d-b86c3cbbc70a.fig
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_5_5d4fb83c-8927-4219-8e0d-b86c3cbbc70a.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=Fig_5_MEEMGeometry,which_tabs=none5)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
   Test Parameters: which_figs=Fig_6_HydroCoeffsVsFreq, which_tabs=none6

The test passed.
Duration: 3.8334 seconds
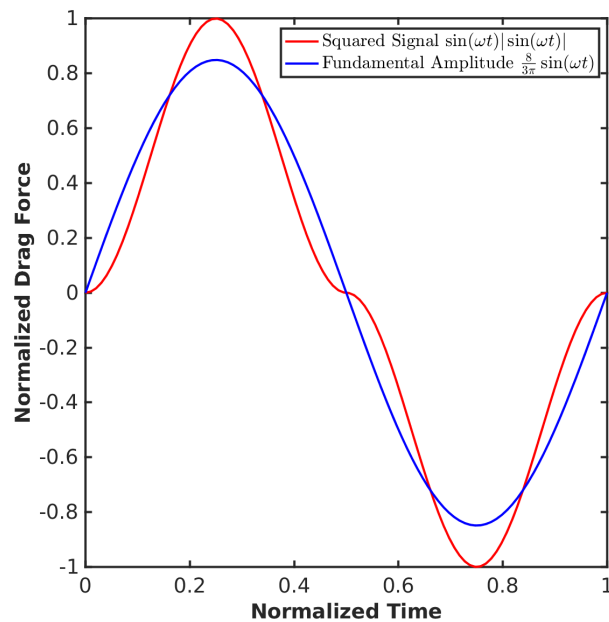
Event:
   Verification passed.
      Test Diagnostic:
      Figure saved to:
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_6_b2d2ca44-d52c-45e1-ba91-5100bde81312.fig
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_6_b2d2ca44-d52c-45e1-ba91-5100bde81312.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_6_HydroCoeffsVsFreq,which_tabs=none6)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

([Overview](#))

⊘ allFiguresRun
Test Parameters: which_figs=Fig_7_DragDescribingFunction, which_tabs=none7

The test passed.
Duration: 1.6120 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_7_f8c5ba34-1a10-4c7e-ade6-3e25e05a0cab.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_7_f8c5ba34-1a10-4c7e-ade6-3e25e05a0cab.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_7_DragDescribingFunction,which_tabs=none7)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_8_ForceSaturationTimeSignal, which_tabs=none8
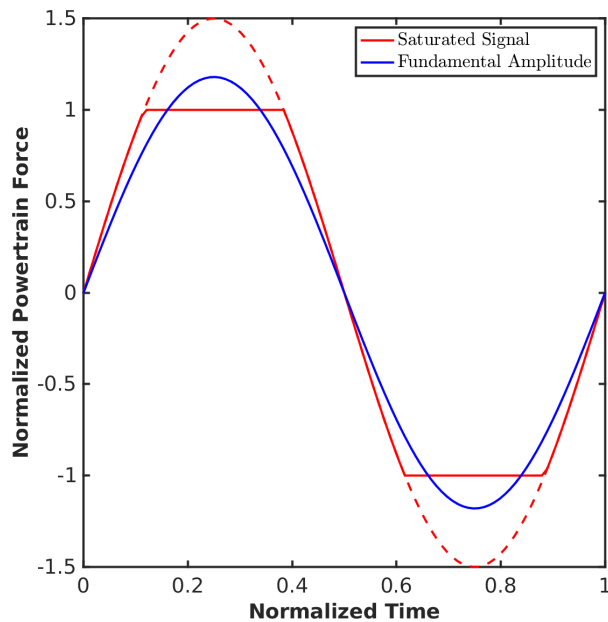
The test passed.
Duration: 24.6569 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_8_5eda34e8-31dd-454b-a5da-8d2307531918.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_8_5eda34e8-31dd-454b-a5da-8d2307531918.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_8_ForceSaturationTimeSignal,which_tabs=none8)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

- -

⊘ allFiguresRun
    Test Parameters: which_figs=Fig_9_JPDMultiplication, which_tabs=none9

The test passed.
Duration: 7.6823 seconds

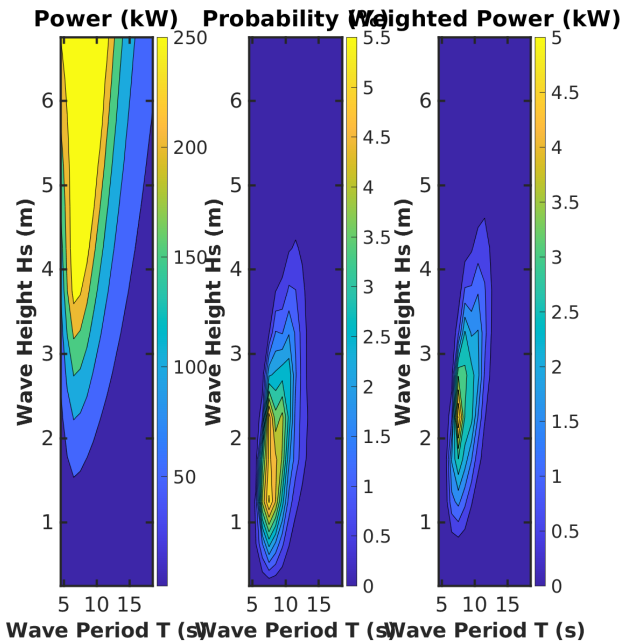Event:
    Verification passed.
        Test Diagnostic:
        Figure saved to:
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_9_bb03e2fa-
        eae5-46fb-9ea5-404aebfa5fc0.fig
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_9_bb03e2fa-
        eae5-46fb-9ea5-404aebfa5fc0.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_9_JPDMultiplication,which_tabs=none9)
Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_10_WECSimErrorBreakdown, which_tabs=none10

The test passed.
Duration: 3.1300 seconds

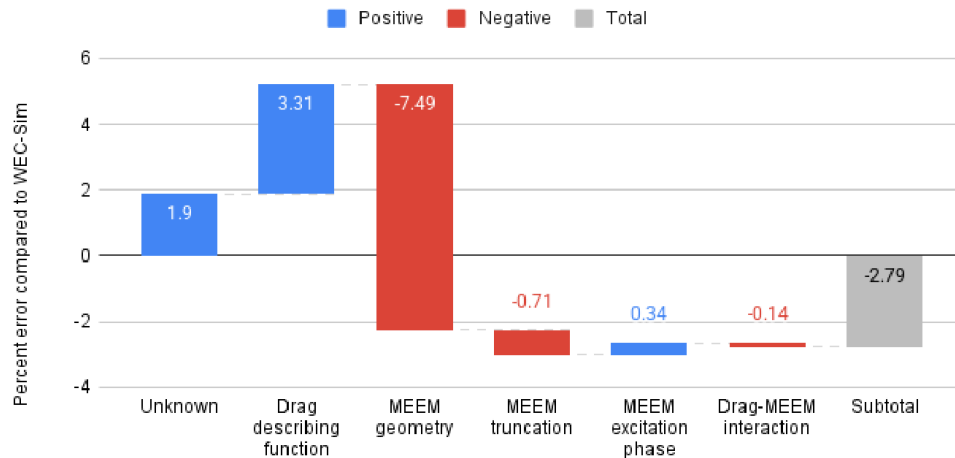**Event:**
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_10_0674ecd0-28fb-4287-852f-9b9a905e4f06.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_10_0674ecd0-28fb-4287-852f-9b9a905e4f06.png

Error Accumulation: Annual Energy Production

Framework Diagnostic:

verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_10_WECSimErrorBreakdown,which_tabs=none10)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_11_FBD, which_tabs=none11

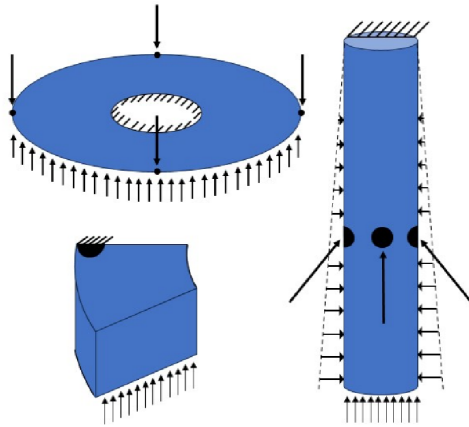The test passed.
Duration: 4.0570 seconds

Event:
Verification passed.

Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_11_6d1d854d-bf85-41c1-9404-bb52cbd85e5b.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_11_6d1d854d-bf85-41c1-9404-bb52cbd85e5b.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_11_FBD,which_tabs=none11)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_12_CostVsNWEC, which_tabs=none12

The test passed.
Duration: 0.7662 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_12_deaa90ab-c39a-4afc-99fd-205cf15bdf3a.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_12_deaa90ab-c39a-4afc-99fd-205cf15bdf3a.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_12_CostVsNWEC,which_tabs=none12)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_13_SimRuntime, which_tabs=none13

The test passed.
Duration: 4.4762 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_13_b11f2278-f59c-46f4-817a-8777ae624580.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_13_b11f2278-f59c-46f4-817a-8777ae624580.png

Simulation Time Breakdown

Legend: ■ Dynamics & controls ■ MEEM hydrodynamics ■ Structures ■ Geometry, econ, other

- MEEM hydrodynamics
  - Bessel functions, 30.6%
  - Other MEEM, 23.0%
  - Dispersion, 20.1%
  - Linear solve, 2.8%
- Dynamics & controls
  - Other dynamics, 13.5%
  - Force saturation, 2.0%
  - Spar, 1.5%
  - Drag, 0.9%
  - Transfer function, 0.8%
- Structures, 2.6%
- Geometry, econ, other, 2.3%

Framework Diagnostic:

verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_13_SimRuntime,which_tabs=none13)

Stack:

In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_14_OptimizationFlowchart, which_tabs=none14

The test passed.
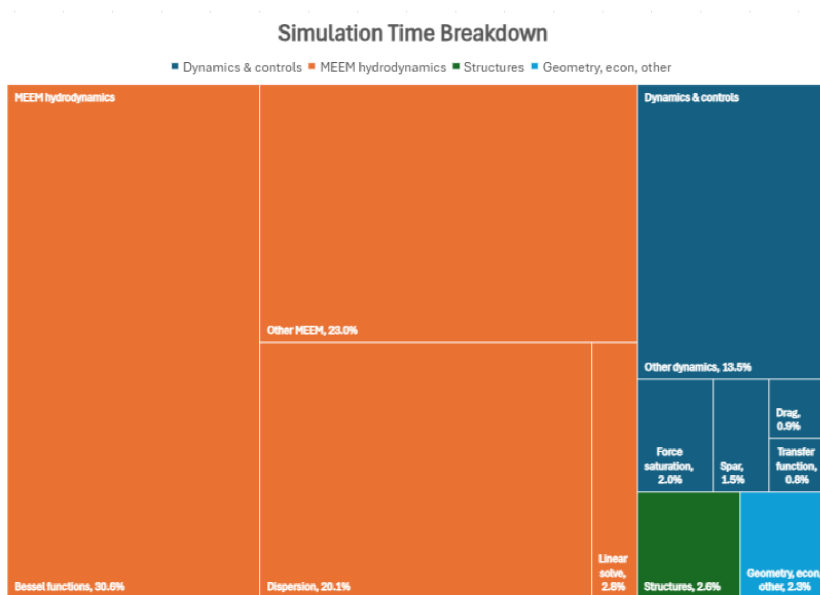Duration: 4.3659 seconds

Event:
Verification passed.

Test Diagnostic:

Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_14_d8ca9e09-5476-41e4-89cc-d0646a7b1eef.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_14_d8ca9e09-5476-41e4-89cc-d0646a7b1eef.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=Fig_14_OptimizationFlowchart,which_tabs=none14)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
   Test Parameters: which_figs=Fig_15_DesignSpaceExploration, which_tabs=none15

The test passed.
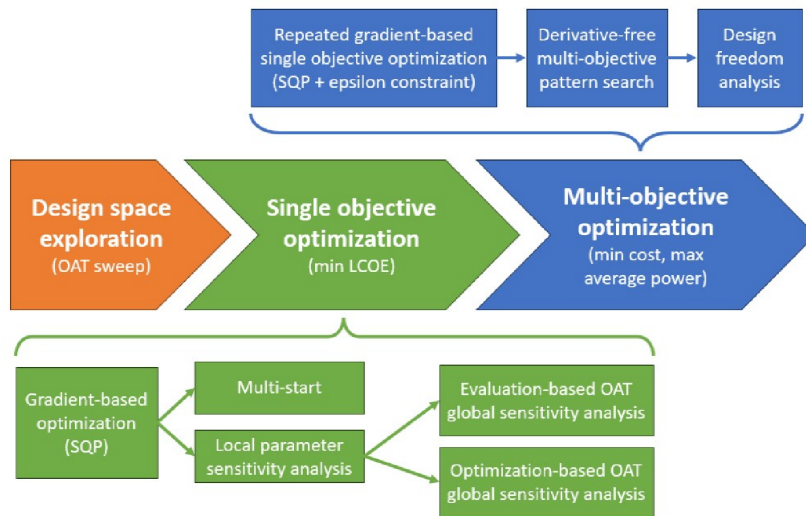Duration: 0.3982 seconds

Event:
   Verification passed.
      Test Diagnostic:
      Figure saved to:
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_15_e725c065-e301-43ce-8467-1ffc951efc20.fig
      --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_15_e725c065-e301-43ce-8467-1ffc951efc20.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_15_DesignSpaceExploration,which_tabs=none15)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
    Test Parameters: which_figs=Fig_22_ParetoFrontWithDesignImages, which_tabs=none16

The test passed.
Duration: 3465.3724 seconds

Event:
    Verification passed.
        Test Diagnostic:
        Figure saved to:
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_22_f5105514-0ca6-4c48-a3de-5303ebd043e7.fig
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_22_f5105514-0ca6-4c48-a3de-5303ebd043e7.png

Pareto Front

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_22_ParetoFrontWithDesignImages,which_tabs=none16)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_23_DesignHeuristics, which_tabs=none17

The test passed.
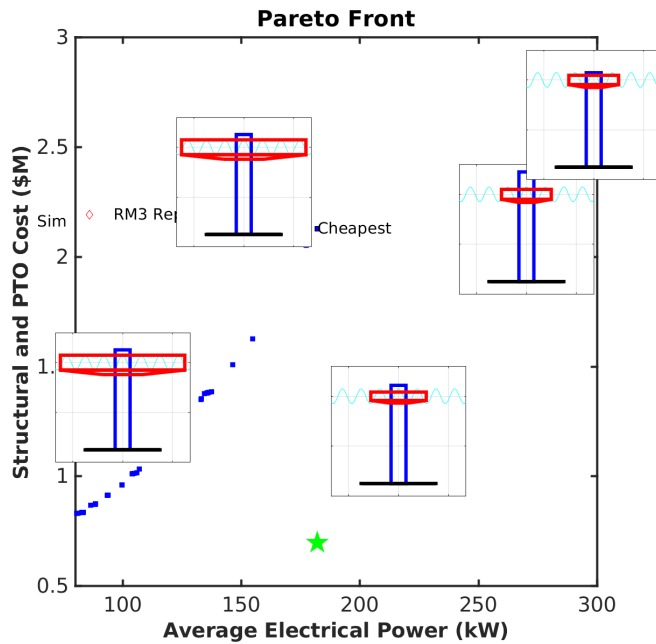Duration: 3545.6047 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_23_392f9ccf-c554-4624-a59a-2b5e26744bd0.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_23_392f9ccf-c554-4624-a59a-2b5e26744bd0.png

Design Heuristics

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=Fig_23_DesignHeuristics,which_tabs=none17)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_24_ObjectiveHeuristics, which_tabs=none18

The test passed.
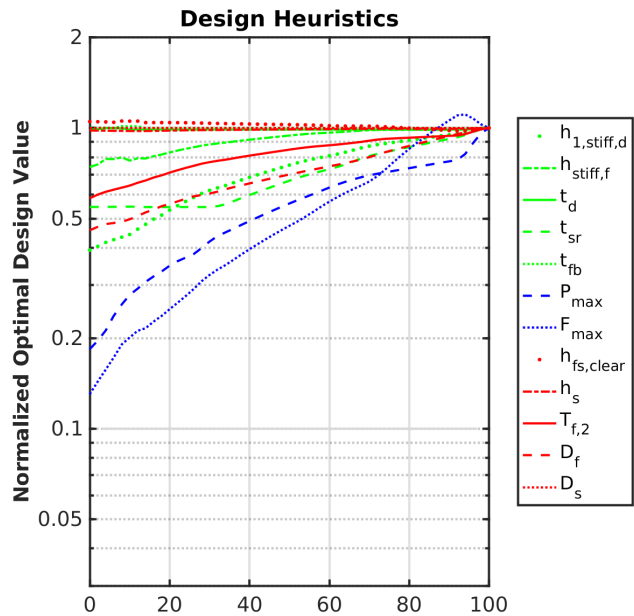Duration: 3529.3942 seconds

Event:
   Verification passed.
   Test Diagnostic:
   Figure saved to:
   --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_24_b7805167-3b85-41d1-95cb-34045647e368.fig
   --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_24_b7805167-3b85-41d1-95cb-34045647e368.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_24_ObjectiveHeuristics,which_tabs=none18)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
    Test Parameters: which_figs=Fig_25_ParetoFrontWithLCOEContours, which_tabs=none19

The test passed.
Duration: 3572.1352 seconds
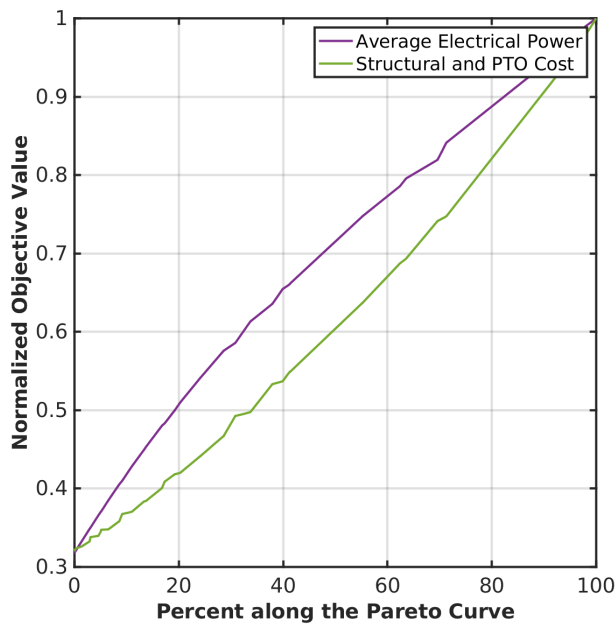
Event:
    Verification passed.
        Test Diagnostic:
        Figure saved to:
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_25_7b6a381e-d617-44d6-aec8-69d277354f3a.fig
        --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_25_7b6a381e-d617-44d6-aec8-69d277354f3a.png

Pareto Front

Structural and PTO Cost ($M) vs Average Electrical Power (kW)

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_25_ParetoFrontWithLCOEContours,which_tabs=none19)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=Fig_26_ConstraintActivity, which_tabs=none20

The test passed.
Duration: 3521.8482 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_26_75835e19-c8fb-4694-8ddd-6279e4f771c1.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_26_75835e19-c8fb-4694-8ddd-6279e4f771c1.png

Framework Diagnostic:

verifyGreaterThan passed.

Actual Value:
 1
Minimum Value (Exclusive):
 0

Event Location: test/allFiguresRun(which_figs=Fig_26_ConstraintActivity,which_tabs=none20)

Stack:

In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_27_OverlaidGeometry, which_tabs=none21

The test passed.
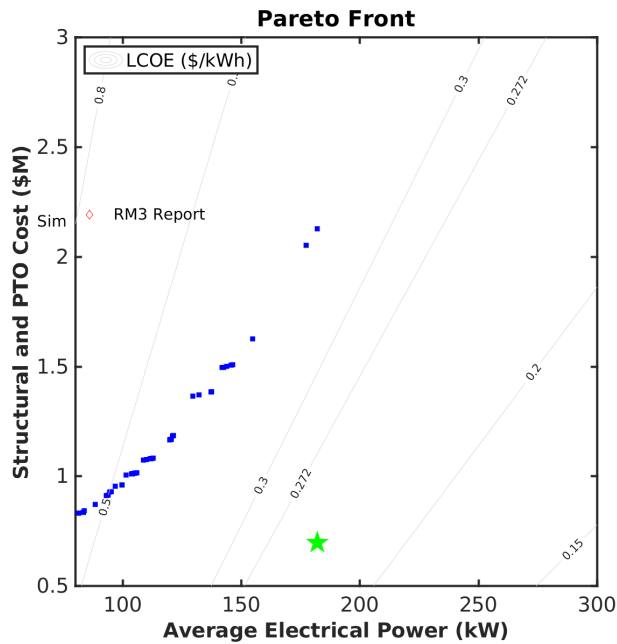Duration: 512.4117 seconds

Event:

Verification passed.

Test Diagnostic:

Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_27_640a8fff-3c14-47e5-908a-152edf46f82c.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_27_640a8fff-3c14-47e5-908a-152edf46f82c.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
 1
Minimum Value (Exclusive):
 0

Event Location: test/allFiguresRun(which_figs=Fig_27_OverlaidGeometry,which_tabs=none21)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_28_OverlaidHydroCoeffs, which_tabs=none22

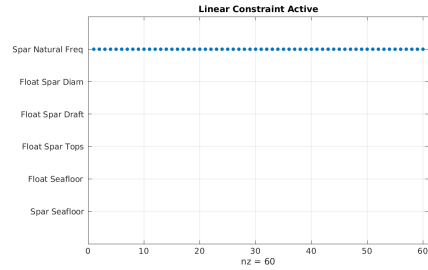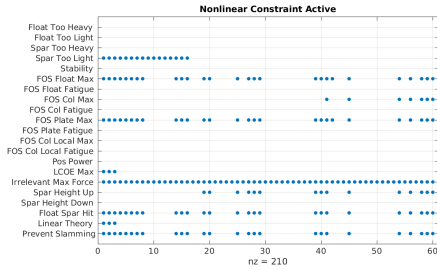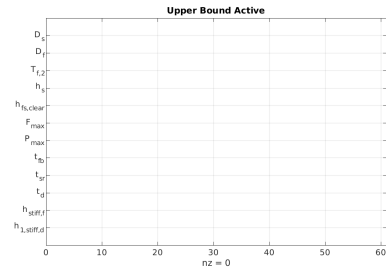The test passed.
Duration: 512.4088 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_28_8c0808be-20a0-4f0c-881c-905d327bfd67.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_28_8c0808be-20a0-4f0c-881c-905d327bfd67.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_28_OverlaidHydroCoeffs,which_tabs=none22)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=Fig_29_ProbabilityCDF, which_tabs=none23
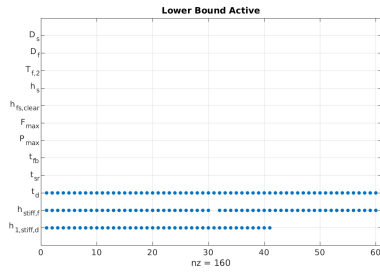
The test passed.
Duration: 525.6635 seconds
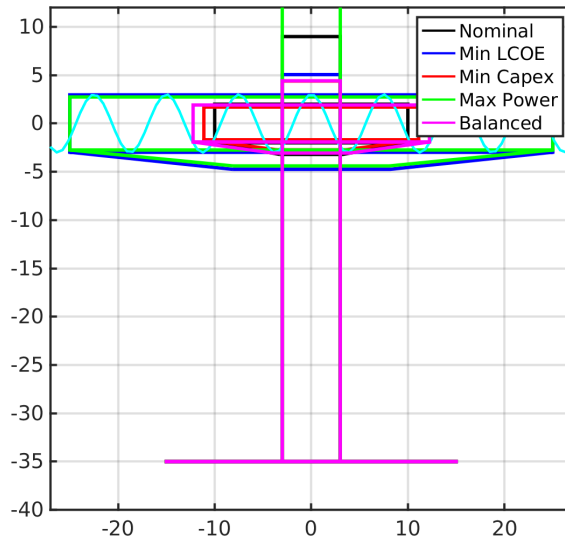
Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_29_585966d6-e4e9-4383-a938-6aa9891400fd.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/Figure_29_585966d6-e4e9-4383-a938-6aa9891400fd.png
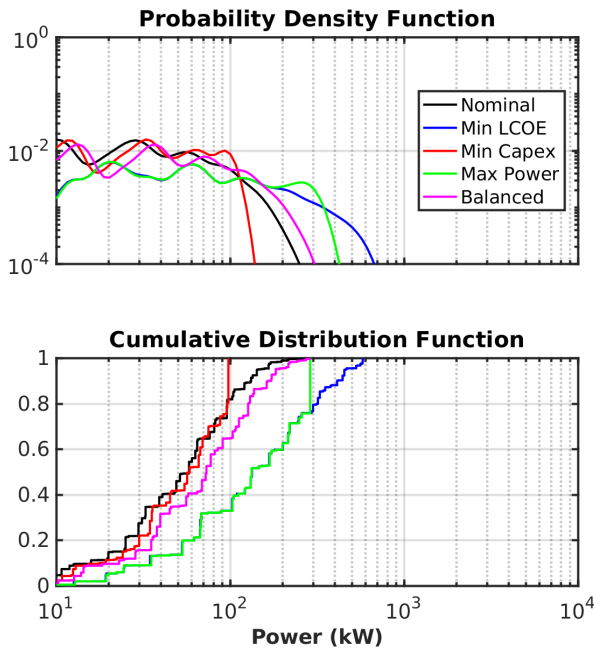
Probability Density Function

Cumulative Distribution Function

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_29_ProbabilityCDF,which_tabs=none23)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

⊘ allFiguresRun
Test Parameters: which_figs=none1, which_tabs=Tab_12_ValidationAgainstNominal

The test passed.
Duration: 10.6964 seconds

Event:
Verification passed.
Test Diagnostic:
6x20 table

	mass_f	mass_vc	mass_rp	mass_tot		capex			ca
capex_design			J_capex_design		capex_struct			
pex_PTO		opex		LCOE		power_avg	power_max	
force_heave	FOS_spar	c_v	vol_f	vol_s	CB_f	CG_f			

Simulation report	213194.320182753	205408.059115694	252005.301209178	670607.680507624	17434970.6551637	60683447.5100857			
208778538.377998	381892374.595067	3514970.65516374	2526270.89061223	2237044.92099481	2160978.63090965	3.51497065516374			
2.52627089061223	2.23704492099481	2.16097863090965	2879610.85516374	2023325.96311695	1795663.7235719	1740435.51633469	635359.8		
502944.927495288	441381.197422914	420543.114574968	1193000	3310857.15420777	6757621.24586648	9188411.64758487	6.08074143434549		
1.95468040801618	1.1668618191567	1.00621064050621	63740.0403883711	286000	3597910.51596318	27.3861998392741	70.2734549433461		
701.9103386283	1006.83771981544	NaN	NaN						
RM3 actual report	208000	224000	245000	680000	17000000	61000000	207000000	390000000	
3560000	2561000	2264600	2192100	3.56	2.561	2.2646	2.1921	2940000	2067000	1831000
1779300	620000	494000	433600	412800	1200000	3300000	6600000	9400000	4.48	1.45
0.85	0.76	85900	286000	8500000	11.1	71.0526622304404	701.9	1008	NaN	NaN
Error report	0.0249726931863126	0.0829997360906534	0.0285930661599089	0.0138122345476112	0.025586509127279	0.00518938508056239			
0.00859197284056844	0.0207887830895716	0.012648692369735	0.0135607611822595	0.0121677466242106	0.0141970572010153	0.012648692369735			

0.0135607611822594 0.0121677466242108 0.0141970572010153 0.0205405254545091 0.0211291905578399 0.0192988948269258 0.0218425693617232
0.024773870967742 0.0181071406787213 0.0179455660122548 0.0187575449975008 0.00583333333333333 0.00329004672962608 0.0238820069494671
0.0225093991930989 0.35730835588069 0.348055453804263 0.372778610772586 0.323961369087116 0.257973918645273 0 0.576716409886684
1.46722521074541 0.0109666163467202

<SNIP... Output has been truncated due to excessive length>

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=none1,which_tabs=Tab_12_ValidationAgainstNominal)
Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=none2, which_tabs=Tab_15_Constraints

The test passed.
Duration: 2.5832 seconds

Event:
Verification passed.
Test Diagnostic:
237x1 cell array

```
{'float_too_heavy'    }
{'float_too_light'    }
{'spar_too_heavy'     }
{'spar_too_light'     }
{'stability'          }
{'FOS_float_max'      }
{'FOS_float_fatigue'  }
{'FOS_col_max'        }
{'FOS_col_fatigue'    }
{'FOS_plate_max'      }
{'FOS_plate_fatigue'  }
{'FOS_col_local_max'  }
{'FOS_col_local_fatigue'}
{'pos_power'          }
{'LCOE_max'           }
{'irrelevant_max_force' }
{'spar_height_up'     }
{'spar_height_down'   }
{'float_spar_hit'     }
{'linear_theory'      }
{'prevent_slamming1'  }
{'prevent_slamming2'  }
{'prevent_slamming3'  }
{'prevent_slamming4'  }
{'prevent_slamming5'  }
{'prevent_slamming6'  }
{'prevent_slamming7'  }
{'prevent_slamming8'  }
{'prevent_slamming9'  }
{'prevent_slamming10' }
{'prevent_slamming11' }
{'prevent_slamming12' }
{'prevent_slamming13' }
{'prevent_slamming14' }
{'prevent_slamming15' }
{'prevent_slamming16' }
{'prevent_slamming17' }
{'prevent_slamming18' }
{'prevent_slamming19' }
{'prevent_slamming20' }
{'prevent_slamming21' }
{'prevent_slamming22' }
{'prevent_slamming23' }
{'prevent_slamming24' }
{'prevent_slamming25' }
{'prevent_slamming26' }
{'prevent_slamming27' }
{'prevent_slamming28' }
{'prevent_slamming29' }
{'prevent_slamming30' }
{'prevent_slamming31' }
{'prevent_slamming32' }
{'prevent_slamming33' }
```

{'prevent_slamming34' }
{'prevent_slamming35' }
{'prevent_slamming36' }
{'prevent_slamming37' }
{'prevent_slamming38' }
{'prevent_slamming39' }
{'prevent_slamming40' }
{'prevent_slamming41' }
{'prevent_slamming42' }
{'prevent_slamming43' }
{'prevent_slamming44' }
{'prevent_slamming45' }
{'prevent_slamming46' }
{'prevent_slamming47' }
{'prevent_slamming48' }
{'prevent_slamming49' }
{'prevent_slamming50' }
{'prevent_slamming51' }
{'prevent_slamming52' }
{'prevent_slamming53' }
{'prevent_slamming54' }
{'prevent_slamming55' }
{'prevent_slamming56' }
{'prevent_slamming57' }
{'prevent_slamming58' }
{'prevent_slamming59' }
{'prevent_slamming60' }
{'prevent_slamming61' }
{'prevent_slamming62' }
{'prevent_slamming63' }
{'prevent_slamming64' }
{'prevent_slamming65' }
{'prevent_slamming66' }
{'prevent_slamming67' }
{'prevent_slamming68' }
{'prevent_slamming69' }
{'prevent_slamming70' }
{'prevent_slamming71' }
{'prevent_slamming72' }
{'prevent_slamming73' }
{'prevent_slamming74' }
{'prevent_slamming75' }
{'prevent_slamming76' }
{'prevent_slamming77' }
{'prevent_slamming78' }
{'prevent_slamming79' }
{'prevent_slamming80' }
{'prevent_slamming81' }
{'prevent_slamming82' }
{'prevent_slamming83' }
{'prevent_slamming84' }
{'prevent_slamming85' }
{'prevent_slamming86' }
{'prevent_slamming87' }
{'prevent_slamming88' }
{'prevent_slamming89' }
{'prevent_slamming90' }
{'prevent_slamming91' }
{'prevent_slamming92' }
{'prevent_slamming93' }
{'prevent_slamming94' }
{'prevent_slamming95' }
{'prevent_slamming96' }
{'prevent_slamming97' }
{'prevent_slamming98' }
{'prevent_slamming99' }
{'prevent_slamming100' }
{'prevent_slamming101' }
{'prevent_slamming102' }
{'prevent_slamming103' }
{'prevent_slamming104' }
{'prevent_slamming105' }
{'prevent_slamming106' }
{'prevent_slamming107' }
{'prevent_slamming108' }
{'prevent_slamming109' }
{'prevent_slamming110' }
{'prevent_slamming111' }
{'prevent_slamming112' }
{'prevent_slamming113' }
{'prevent_slamming114' }
{'prevent_slamming115' }
{'prevent_slamming116' }
{'prevent_slamming117' }
{'prevent_slamming118' }
{'prevent_slamming119' }
{'prevent_slamming120' }
{'prevent_slamming121' }
{'prevent_slamming122' }
{'prevent_slamming123' }
{'prevent_slamming124' }

{'prevent_slamming125' }
{'prevent_slamming126' }
{'prevent_slamming127' }
{'prevent_slamming128' }
{'prevent_slamming129' }
{'prev

<SNIP... Output has been truncated due to excessive length>

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=none2,which_tabs=Tab_15_Constraints)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

([Overview](#))

⊘ allFiguresRun
Test Parameters: which_figs=none3, which_tabs=Tab_16_DesignVariables

The test passed.
Duration: 2.0048 seconds

Event:
Verification passed.
Test Diagnostic:

```
12x3 table

            Mins   Noms    Maxs
            ____   _____  ____

    D_s       0      6      30
    D_f       1     20      50
    T_f_2    0.5    3.2     100
    h_s       5     44      100
    h_fs_clear 0.01   4      10
    F_max    0.01    1      100
    P_max     1     286    2000
    t_fb     1.27  14.224  25.4
    t_sr     5.08   25.4   50.8
    t_d      1.27   25.4   50.8
    h_stiff_f  0   0.4064   2
    h1_stiff_d 0   0.5588   2
```

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=none3,which_tabs=Tab_16_DesignVariables)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

([Overview](#))

⊘ allFiguresRun
Test Parameters: which_figs=none4, which_tabs=Tab_17_Parameters

The test passed.
Duration: 1.8685 seconds

Event:
Verification passed.
Test Diagnostic:

```
61x6 table

        name            name_pretty                                        value
    _____  _____                      _____

    _____  _____  _____
```

"rho_w"   "\rho_w"   {[1000]
"g"   "g"   {[9.80000000000000
"h"   "h"   {[45]} "site'
"JPD"   "JPD"   {14x15 double
"Hs"   "H_s"   {14x1 double   }
"T"   "T"   {[4.500000000000000 5.500000000000000 6.500000000000000 7.500000000000000 8.500000000000000 9.500000000000000 10.500000000000000 1
18.500000000000000]} "site"   true   "wave energy period (s)"
  "Hs_struct"   "H_{s,struct}"   {[13.435028842544403 18.809040379562163 24.183051916579924
(m)"
  "T_struct"   "T_{struct}"   {[5.570000000000000 8.760000000000000 12.180000000000000 17.

<SNIP... Output has been truncated due to excessive length>

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=none4,which_tabs=Tab_17_Parameters)
Stack:
   In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=none5, which_tabs=Tab_19_OptimalDVsForVariousDesigns

The test passed.
Duration: 510.7193 seconds

Event:
   Verification passed.
   Test Diagnostic:
   13x5 table

	Nominal	Min LCOE	Min Capex	Max Power	Balanced
D_s	6	6	6	6	6
D_f	20	50	22.2393535985865	50	24.4697270586525
T_{f,2}	3.2	4.74871739686998	2.71735950554913	4.38812391276345	3.06305205126248
h_s	44	40.0639930357826	39.3955257303789	49.5388442867458	39.4236810678179
h_{fs,clear}	4	2.09604547239461	2.22393535985859	4	3.64043664197043
F_{max}	1	5.12242168243393	0.568902034141799	18.624052792478	1.01241584864483
P_{max}	286	577.645796755533	97.3994754739138	287.872117838704	285.935109446083
t_{fb}	14.224	1.27	1.27	14.224	10.1447255593513
t_{sr}	25.4	9.26500996566469	5.08	25.4	23.8347432539245
t_d	25.4	1.27	1.27	25.4007333991901	23.9085728192269
h_{stiff,f}	0.4064	0.26151403465785	0.19200406902317	0.406400000000008	0.190750104223164
h_{1,stiff,d}	0.5588	1.12788113415819	0.433541700844116	2	0.394523376754126
M	1	1	1	1	1

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=none5,which_tabs=Tab_19_OptimalDVsForVariousDesigns)
Stack:
   In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊘ allFiguresRun
Test Parameters: which_figs=none6, which_tabs=Tab_20_OptimalOutputsForVariousDesigns

The test passed.
Duration: 539.3352 seconds

Event:
   Verification passed.
   Test Diagnostic:
   21x5 table

	Nominal	MinLCOE	MinCapex	MaxPower	Balanced
mass_f	213194.320182753	121903.806682525	33725.8086154914	953289.455927881	189240.470964552
mass_vc	205408.059115694	84860.5503002611	57151.9154170484	228210.110592284	176632.588660995
mass_rp	252005.301209178	216307.342912119	90272.5613693739	680714.879013676	224696.064386503
mass_tot	670607.680507624	423071.699840904	181150.285401914	1862214.44553384	590569.12401205
capex	381892374.595067	381885086.054359	235532710.53063	866452296.189811	361238094.244617
capex_design	2160978.63090965	2160905.74550257	697381.990265281	7006577.8468571	1954435.82740515
J_capex_design	2.16097863090965	2.16090574550257	0.697381990265281	7.0065778468571	1.95443582740515
capex_struct	1740435.51633469	1098002.65305913	470141.33549589	4833025.70824307	1532710.56708327
capex_PTO	420543.114574968	1062903.09244345	227240.654769391	2173552.13861403	421725.260321882
opex	9188411.64758487	9188411.64758487	9188411.64758487	9188411.64758487	9188411.64758487
LCOE	1.00621064050621	0.348797413703204	0.749999999477533	0.837528399893094	0.730744600178038
power_avg	63740.0403883711	183874.349886672	58494.4123655961	156685.471538064	83854.3256327142
power_max	286000	577645.796755533	97399.4754739138	287872.117838704	285935.109446083
force_heave	3597910.51596318	21379971.6301953	3468471.91922532	19803069.8267451	4268753.0781689
force_ptrain	1000000	5122421.68243393	568902.034141799	18624052.792478	1012415.84864483
FOS_spar	27.3861998392741	1.50006640531068	3.85042009508015	5.08369610072497	21.9722459493344
c_v	70.2734549433461	78.8622622160772	50.4445274427387	61.6487191818517	67.2308519367387
CB_f	1.27099697885196	1.94117415364351	1.08715447050066	1.79377124611711	1.23166210293686
CG_f	0.261241610738256	0.4393964978227	0.229159764097823	0.406030959128287	0.264120365119333
vol_f	701.9103386283	7337.38457293019	758.315305948588	6780.22084928424	1056.24426415894
vol_s	1006.83771981544	1006.83771981544	1006.83771981544	1006.83771981544	1006.83771981544

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=none6,which_tabs=Tab_20_OptimalOutputsForVariousDesigns)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

⊗ allFiguresRun
Test Parameters: which_figs=none7, which_tabs=Tab_22_OptimalDVsFor4Locations

The test failed and did not run to completion.
Duration: 531.7335 seconds

Event:
Error occurred. As a result, the test did not run to completion.

Error Identifier: MATLAB:invalidConversion
Error Report:
Conversion to cell from char is not possible.

Error in location_sensitivity>fix_constraints (line 114)
    b.constraint_names(end+1 : end+desired_length-len) = 'slamming';

Error in location_sensitivity (line 32)
    b = fix_constraints(p,b);

Error in all_figures (line 309)
    tab8 = location_sensitivity(filename_uuid);

Error in test/allFiguresRun (line 135)
        [success_criterion,fig_out,tab_out, num_figs] = all_figures(which_figs,which_tabs,testCase.uuid.Value);

Event Location: test/allFiguresRun(which_figs=none7,which_tabs=Tab_22_OptimalDVsFor4Locations)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/mdocean/optimization/sensitivities/location_sensitivity.m (fix_constraints) at 114
In /home/runner/work/MDOcean/MDOcean/MDOcean/mdocean/optimization/sensitivities/location_sensitivity.m (location_sensitivity) at 32
In /home/runner/work/MDOcean/MDOcean/MDOcean/mdocean/plots/all_figures.m (all_figures) at 309
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 135

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=mass_f, rel_tol_report=0.1

The test passed.
Duration: 0.4916 seconds

Event:
Verification passed.

Framework Diagnostic:
verifyEqual passed.
--> The error was within relative tolerance.

Actual Value:
  2.131943201827530e+05
Expected Value:
  208000

Event Location: test/validateNominalReport(field_report=mass_f,rel_tol_report=0.1)

Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=mass_vc, rel_tol_report=0.1_1

The test passed.
Duration: 0.0684 seconds

Event:
  Verification passed.
    Framework Diagnostic:
    verifyEqual passed.
    --> The error was within relative tolerance.

    Actual Value:
      2.054080591156936e+05
    Expected Value:
      224000

  Event Location: test/validateNominalReport(field_report=mass_vc,rel_tol_report=0.1_1)

  Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=mass_rp, rel_tol_report=0.1_2

The test passed.
Duration: 0.0581 seconds

Event:
  Verification passed.
    Framework Diagnostic:
    verifyEqual passed.
    --> The error was within relative tolerance.

    Actual Value:
      2.520053012091777e+05
    Expected Value:
      245000

  Event Location: test/validateNominalReport(field_report=mass_rp,rel_tol_report=0.1_2)

  Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=mass_tot, rel_tol_report=0.1_3

The test passed.
Duration: 0.0424 seconds

Event:
  Verification passed.
    Framework Diagnostic:
    verifyEqual passed.
    --> The error was within relative tolerance.

Actual Value:
    6.706076805076244e+05
Expected Value:
    680000

Event Location: test/validateNominalReport(field_report=mass_tot,rel_tol_report=0.1_3)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=vol_f, rel_tol_report=0.01

The test passed.
Duration: 0.0877 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            7.019103386282995e+02
        Expected Value:
            7.019000000000000e+02

Event Location: test/validateNominalReport(field_report=vol_f,rel_tol_report=0.01)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=vol_s, rel_tol_report=0.01_1

The test passed.
Duration: 0.0447 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            1.006837719815440e+03
        Expected Value:
            1008

Event Location: test/validateNominalReport(field_report=vol_s,rel_tol_report=0.01_1)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=capex, rel_tol_report=0.25

The test passed.
Duration: 0.1096 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            1.0e+08 *

```
    0.174349706551637   0.606834475100857   2.087785383779976   3.818923745950671
Expected Value:
    17000000   61000000   207000000   390000000
```

Event Location: test/validateNominalReport(field_report=capex,rel_tol_report=0.25)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=opex, rel_tol_report=0.25_1

The test passed.
Duration: 0.1539 seconds

Event:
Verification passed.
Framework Diagnostic:
```
verifyEqual passed.
--> The error was within relative tolerance.

Actual Value:
  1.0e+06 *

  1.193000000000000   3.310857154207766   6.757621245866483   9.188411647584870
Expected Value:
    1200000   3300000   6600000   9400000
```

Event Location: test/validateNominalReport(field_report=opex,rel_tol_report=0.25_1)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊗ validateNominalReport
Test Parameters: field_report=LCOE, rel_tol_report=0.25_2

The test failed.
Duration: 14.0429 seconds

Event:
Verification failed.
Test Diagnostic:
```
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/econ_validation_report259f8890-
c1e3-4f53-8bf0-4934dfba97c9.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/econ_validation_report259f8890-
c1e3-4f53-8bf0-4934dfba97c9.png
```
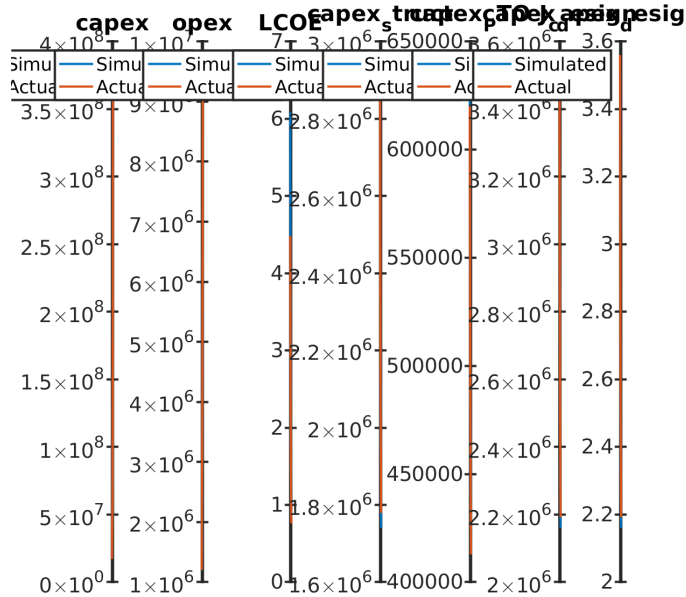
Framework Diagnostic:
```
verifyEqual failed.
--> The numeric values are not equal using "isequaln".
--> The error was not within relative tolerance.
--> Failure table:
    Index      Actual          Expected       Error            RelativeError       RelativeTolerance

    _____   _____   _____   _____   _____   _____

      1     6.08074143434549     4.48     1.60074143434549   0.35730835588069         0.25
      2     1.95468040801618     1.45     0.504680408016182  0.348055453804263        0.25
      3     1.1668618191567      0.85     0.316861819156698  0.372778610772586        0.25
      4     1.00621064050621     0.76     0.246210640506208  0.323961369087116        0.25

Actual Value:
   6.080741434345494  1.954680408016181  1.166861819156698  1.006210640506208
Expected Value:
   4.480000000000000  1.450000000000000  0.850000000000000  0.760000000000000
```

Event Location: test/validateNominalReport(field_report=LCOE,rel_tol_report=0.25_2)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=capex_struct, rel_tol_report=0.1_4

The test passed.
Duration: 0.0699 seconds

Event:
Verification passed.

Framework Diagnostic:
```
verifyEqual passed.
--> The error was within relative tolerance.

Actual Value:
   1.0e+06 *

   2.879610855163743  2.023325963116945  1.795663723571899  1.740435516334686
Expected Value:
     2940000   2067000   1831000   1779300
```

Event Location: test/validateNominalReport(field_report=capex_struct,rel_tol_report=0.1_4)

Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
Test Parameters: field_report=capex_PTO, rel_tol_report=0.1_5

The test passed.
Duration: 0.0392 seconds

Event:
  Verification passed.
    Framework Diagnostic:
    ```
    verifyEqual passed.
    --> The error was within relative tolerance.

    Actual Value:
      1.0e+05 *

      6.353598000000001   5.029449274952883   4.413811974229136   4.205431145749683
    Expected Value:
        620000    494000    433600    412800
    ```
    Event Location: test/validateNominalReport(field_report=capex_PTO,rel_tol_report=0.1_5)
    Stack:
      In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊗ validateNominalReport
Test Parameters: field_report=power_avg, rel_tol_report=0.1_6

The test failed.
Duration: 0.2276 seconds

Event:
  Verification failed.
    Framework Diagnostic:
    ```
    verifyEqual failed.
    --> The numeric values are not equal using "isequaln".
    --> The error was not within relative tolerance.
    --> Failure table:
        Actual         Expected      Error              RelativeError        RelativeTolerance
        _____  _____  _____  _____  _____

        63740.0403883711   85900    -22159.9596116289  -0.257973918645273       0.1

    Actual Value:
      6.374004038837105e+04
    Expected Value:
        85900
    ```
    Event Location: test/validateNominalReport(field_report=power_avg,rel_tol_report=0.1_6)
    Stack:
      In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=power_max, rel_tol_report=0.1_7

The test passed.
Duration: 0.0536 seconds

Event:
  Verification passed.
    Framework Diagnostic:
    ```
    verifyEqual passed.
    --> The numeric values are equal using "isequaln".

    Actual Value:
      286000
    Expected Value:
      286000
    ```
    Event Location: test/validateNominalReport(field_report=power_max,rel_tol_report=0.1_7)

⊗ validateNominalReport
　　Test Parameters: field_report=force_heave, rel_tol_report=0.1_8

The test failed.
Duration: 0.1425 seconds

Event:
　Verification failed.
　　Framework Diagnostic:
　　verifyEqual failed.
　　--> The numeric values are not equal using "isequaln".
　　--> The error was not within relative tolerance.
　　--> Failure table:
　　　Actual　　　Expected　　Error　　　　RelativeError　　RelativeTolerance
　　　_____　_____　_____　_____　_____

　　　3597910.51596318　8500000　-4902089.48403682　-0.576716409886684　　　0.1

　　Actual Value:
　　　3.597910515963181e+06
　　Expected Value:
　　　8500000
　Event Location: test/validateNominalReport(field_report=force_heave,rel_tol_report=0.1_8)
　Stack:
　　In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊗ validateNominalReport
　　Test Parameters: field_report=FOS_spar, rel_tol_report=0.1_9

The test failed.
Duration: 0.1152 seconds

Event:
　Verification failed.
　　Framework Diagnostic:
　　verifyEqual failed.
　　--> The numeric values are not equal using "isequaln".
　　--> The error was not within relative tolerance.
　　--> Failure table:
　　　Actual　　　Expected　　Error　　　　RelativeError　　RelativeTolerance
　　　_____　_____　_____　_____　_____

　　　27.3861998392741　11.1　16.2861998392741　1.46722521074541　　　0.1

　　Actual Value:
　　　27.386199839274067
　　Expected Value:
　　　11.100000000000000
　Event Location: test/validateNominalReport(field_report=FOS_spar,rel_tol_report=0.1_9)
　Stack:
　　In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

(Overview)

⊘ validateNominalReport
　　Test Parameters: field_report=c_v, rel_tol_report=0.1_10

The test passed.
Duration: 0.0380 seconds

Event:
　Verification passed.
　　Framework Diagnostic:

verifyEqual passed.
--> The error was within relative tolerance.

Actual Value:
  70.273454943346110
Expected Value:
  71.052662230440447

Event Location: test/validateNominalReport(field_report=c_v,rel_tol_report=0.1_10)

Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=capex_design, rel_tol_report=0.1_11

The test passed.
Duration: 0.0314 seconds

Event:
  Verification passed.
    Framework Diagnostic:
      verifyEqual passed.
      --> The error was within relative tolerance.

      Actual Value:
        1.0e+06 *

        3.514970655163744 2.526270890612234 2.237044920994812 2.160978630909654
      Expected Value:
        3560000 2561000 2264600 2192100

Event Location: test/validateNominalReport(field_report=capex_design,rel_tol_report=0.1_11)

Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalReport
Test Parameters: field_report=J_capex_design, rel_tol_report=0.1_12

The test passed.
Duration: 0.0495 seconds

Event:
  Verification passed.
    Framework Diagnostic:
      verifyEqual passed.
      --> The error was within relative tolerance.

      Actual Value:
        3.514970655163744 2.526270890612234 2.237044920994812 2.160978630909654
      Expected Value:
        3.560000000000000 2.561000000000000 2.264600000000000 2.192100000000000

Event Location: test/validateNominalReport(field_report=J_capex_design,rel_tol_report=0.1_12)

Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

⊘ validateNominalWecsim
Test Parameters: field_wecsim=vol_f, rel_tol_wecsim=0.01

The test passed.
Duration: 10.7640 seconds

Event:
  Verification passed.
    Framework Diagnostic:
      verifyEqual passed.
      --> The error was within relative tolerance.

Actual Value:
    7.267551005304388e+02
Expected Value:
    7.258330000000000e+02

Event Location: test/validateNominalWecsim(field_wecsim=vol_f,rel_tol_wecsim=0.01)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊘ validateNominalWecsim
Test Parameters: field_wecsim=vol_s, rel_tol_wecsim=0.01_1

The test passed.
Duration: 0.0381 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            8.878140839044755e+02
        Expected Value:
            8.866870000000000e+02

Event Location: test/validateNominalWecsim(field_wecsim=vol_s,rel_tol_wecsim=0.01_1)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊘ validateNominalWecsim
Test Parameters: field_wecsim=CB_f, rel_tol_wecsim=0.01_2

The test passed.
Duration: 0.0448 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            1.292867435158501
        Expected Value:
            1.292900000000000

Event Location: test/validateNominalWecsim(field_wecsim=CB_f,rel_tol_wecsim=0.01_2)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊘ validateNominalWecsim
Test Parameters: field_wecsim=CG_f, rel_tol_wecsim=0.01_3

The test passed.
Duration: 0.0377 seconds

Event:
    Verification passed.
        Framework Diagnostic:
        verifyEqual passed.
        --> The error was within relative tolerance.

        Actual Value:
            0.283266129032258

Expected Value:
    0.283300000000000

Event Location: test/validateNominalWecsim(field_wecsim=CG_f,rel_tol_wecsim=0.01_3)
Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊗ validateNominalWecsim
Test Parameters: field_wecsim=power_avg, rel_tol_wecsim=0.1

The test failed.
Duration: 0.1393 seconds

Event:
Verification failed.
Framework Diagnostic:
verifyEqual failed.
--> The numeric values are not equal using "isequaln".
--> The error was not within relative tolerance.
--> Failure table:
        Actual   Expected   Error   RelativeError   RelativeTolerance
    _____   _____   _____   _____   _____

    64704.0928329027   NaN   NaN   NaN   0.1

Actual Value:
    6.470409283290269e+04
Expected Value:
    NaN

Event Location: test/validateNominalWecsim(field_wecsim=power_avg,rel_tol_wecsim=0.1)
Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊗ validateNominalWecsim
Test Parameters: field_wecsim=LCOE, rel_tol_wecsim=0.1_1

The test failed.
Duration: 0.8615 seconds

Event:
Verification failed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/econ_validation_wecsimef2cb514-23ba-4d98-a993-c93ef9a617bf.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2025-02-03_13.58.12/367499a9-c051-4505-bf48-a7841c88743d/econ_validation_wecsimef2cb514-23ba-4d98-a993-c93ef9a617bf.png
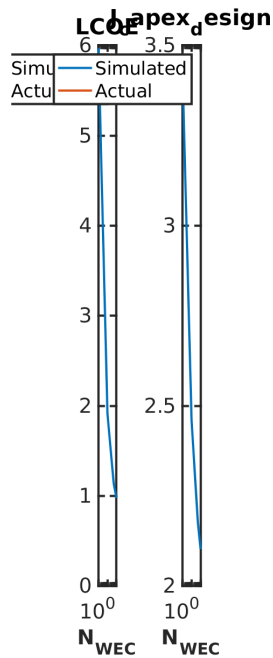
Framework Diagnostic:

```
verifyEqual failed.
--> The numeric values are not equal using "isequaln".
--> The error was not within relative tolerance.
--> Failure table:
    Index        Actual        Expected  Error  RelativeError  RelativeTolerance
    _____   _____  _____  _____  _____  _____

      1    5.96935264540558     NaN      NaN      NaN             0.1
      2    1.91094942340496     NaN      NaN      NaN             0.1
      3    1.13651247083194     NaN      NaN      NaN             0.1
      4    0.978653619344388    NaN      NaN      NaN             0.1

Actual Value:
  5.969352645405584   1.910949423404962   1.136512470831944   0.978653619344388
Expected Value:
  NaN  NaN  NaN  NaN
```

Event Location: test/validateNominalWecsim(field_wecsim=LCOE,rel_tol_wecsim=0.1_1)

Stack:

In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

⊗ validateNominalWecsim
Test Parameters: field_wecsim=J_capex_design, rel_tol_wecsim=0.1_2

The test failed.
Duration: 0.0876 seconds

Event:

Verification failed.

Framework Diagnostic:

```
verifyEqual failed.
--> The numeric values are not equal using "isequaln".
--> The error was not within relative tolerance.
--> Failure table:
    Index        Actual        Expected  Error  RelativeError  RelativeTolerance
    _____   _____  _____  _____  _____  _____

      1    3.41782001959506     NaN      NaN      NaN             0.1
      2    2.45800909651358     NaN      NaN      NaN             0.1
      3    2.17646386307172     NaN      NaN      NaN             0.1
      4    2.10226083010854     NaN      NaN      NaN             0.1

Actual Value:
  3.417820019595060   2.458009096513582   2.176463863071721   2.102260830108542
Expected Value:
  NaN  NaN  NaN  NaN
```

Event Location: test/validateNominalWecsim(field_wecsim=J_capex_design,rel_tol_wecsim=0.1_2)

Stack:
    In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

(Overview)

⊗ validateNominalWecsim
        Test Parameters: field_wecsim=c_v, rel_tol_wecsim=0.1_3

The test failed.
Duration: 0.1067 seconds

Event:
    Verification failed.
        Framework Diagnostic:
        verifyEqual failed.
        --> The numeric values are not equal using "isequaln".
        --> The error was not within relative tolerance.
        --> Failure table:
            Actual   Expected   Error   RelativeError   RelativeTolerance
            _____   _____   _____   _____   _____

            70.2660189114545   NaN   NaN   NaN   0.1

        Actual Value:
          70.266018911454509
        Expected Value:
          NaN

    Event Location: test/validateNominalWecsim(field_wecsim=c_v,rel_tol_wecsim=0.1_3)

    Stack:
        In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsim) at 178

(Overview)