# MATLAB® Test Report

Timestamp:   19-Dec-2024 02:49:33
Host:   fv-az1109-610
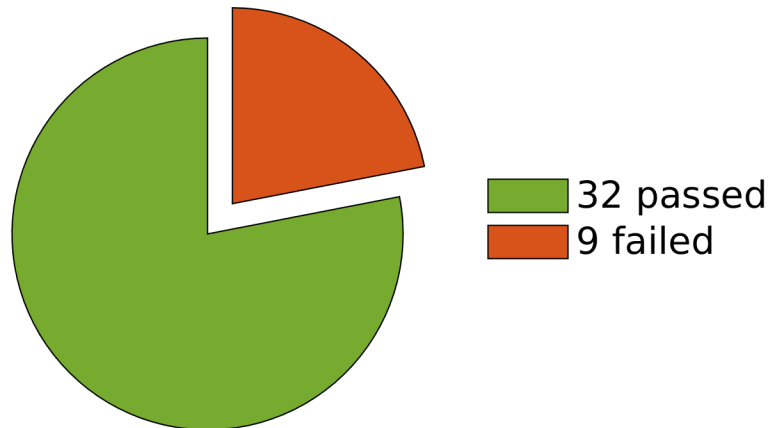Platform:   glnxa64
MATLAB Version:   24.2.0.2806996 (R2024b) Update 3

Number of Tests:   41
Testing Time:   2542.9208 seconds

Overall Result:   FAILED



- 32 passed
- 9 failed

# Failure Summary

9 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/validateNominalReport(field_report=mass_vc,rel_tol_report=0.1_1) | Failed by verification. | (Details) |
| test/validateNominalReport(field_report=capex,rel_tol_report=0.25) | Failed by verification. | (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_4) | Failed by verification. | (Details) |
| test/validateNominalWecsim(field_wecsim=LCOE,rel_tol_wecsim=0.1) | Failed by verification. | (Details) |
| test/validateNominalWecsim(field_wecsim=c_v,rel_tol_wecsim=0.1_1) | Failed by verification. | (Details) |

# Overview

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

| test | 2542.9208 seconds |
|---|---|
| ⊗⊗⊗⊘⊘ ⊘⊘⊘⊘⊘ ⊘⊘⊘⊘⊘ ⊘⊘⊘⊘⊘ ⊘⊘⊗⊘⊘⊘ ⊘⊘⊗⊘⊗ ⊗⊘⊘⊘⊘⊘ ⊘⊘⊘⊘⊘⊗ ⊗ | |

# Details

test

## ⊗ validateNominalReportFeasible

The test failed.
Duration: 20.1681 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: , irrelevant_max_force
Event Location: test/validateNominalReportFeasible
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReportFeasible) at 187

(Overview)

## ⊗ validateNominalWecsimFeasible

The test failed.
Duration: 0.2186 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: , irrelevant_max_force
Event Location: test/validateNominalWecsimFeasible
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalWecsimFeasible) at 192

(Overview)

## ⊗ validateNominalHydroCoeffs

The test failed.
Duration: 8.2915 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

(Overview)

## ⊘ hydrodynamicLimitObeyed

The test passed.
Duration: 26.1199 seconds

Event:
Verification passed.
Framework Diagnostic:
verifyLessThanOrEqual passed.

Actual Value:
1.0e-04 *

Columns 1 through 14

0.056047932437478   0.090958293687910   0.108391198966429   0.099717126776258   0.082012128114077   0.065884949922298   0.052966641248684
0.042805883407602   0.034801724923347   0.028485299091204   0.023503431617933   0.019577184324883   0.016479046908245   0.014023990536246
0.018682644145826   0.030319431229303   0.036130399655476   0.033239042258753   0.027337376038026   0.021961649974099   0.017655547082895
0.014268627802534   0.011600574974449   0.009495099697068   0.007834477205978   0.006525728108294   0.005493015636082   0.004674663512082
0.011209586487496   0.018191658737582   0.021678239793286   0.019943425355252   0.016402425622815   0.013176989984460   0.010593328249737
0.008561176681520   0.006960344984669   0.005697059818241   0.004700686323587   0.003917374560422   0.003330659465677   0.002870294747077
0.008006847491068   0.012994041955416   0.015484456995204   0.014245303825180   0.011716018302011   0.009412135703185   0.007566663035526
0.006115126201086   0.005112221859297   0.004306082196460   0.003632724067142   0.003079335965143   0.002629764718312   0.002266078392300
0.006227548048609   0.010106477076434   0.012043466551825   0.011079680752918   0.009112458679342   0.007320549991366   0.006114478046532
0.005186746905770   0.004351414901783   0.003640139904122   0.003052364863570   0.002574871144084   0.002190277993398   0.001881081178497
0.005095266585225   0.008268935789810   0.009853745360584   0.009065193343296   0.007455648010371   0.006428768567189   0.005473265286562
0.004568745940804   0.003794546130873   0.003153205390809   0.002631358716488   0.002211501995784   0.001875529604154   0.001606672826961
0.004311379418268   0.006996791822147   0.008337784535879   0.007670548213558   0.006881733026711   0.005942488759599   0.004935864962005
0.004073140846104   0.003359886656597   0.002778866086315   0.002310761766672   0.001936610389240   0.001638603139538   0.001400948029231
0.003736528829165   0.006063886245861   0.007226079931095   0.006991816386243   0.006642844369823   0.005473463800783   0.004480241494640

```
 0.003669583785179  0.003012328011797  0.002482572553870  0.002058683073067  0.001721507150917  0.001453909417329  0.001241085546251
 0.003296937202205  0.005350487863995  0.006375952880378  0.008111826086097  0.006271758855066  0.005048764161790  0.004095119541909
 0.003336452766705  0.002728739835807  0.002242509377373  0.001855438836259  0.001548718704154  0.001305995582531  0.001113386974487
 0.002949891180920  0.004787278615153  0.005748576186800  0.007954391447310  0.005881443503341  0.004674213568646  0.003767904712567
 0.003057591303555  0.002493253092956  0.002044207654870  0.001688193690305  0.001406963280292  0.001184949691463  0.001009108076762
 0.002668949163689  0.004331347318472  0.006163318953119  0.007555023435261  0.005511377379794  0.004346037121412  0.003487569289133
 0.002821095041020  0.002294734156339  0.001877728211175  0.001548229020089  0.001288630627990  0.001084118081138  0.000922401355363
 0.002436866627716  0.003954708421213  0.006200000605096  0.007116989074656  0.005172685402972  0.004058128701183  0.003245230503056
 0.002618163979447  0.002125190910542  0.001736033913838  0.001429420006689  0.001188402096309  0.000998868479865  0.000849208540902
 0.002241917297499  0.003666299952943  0.006051481529271  0.006695060997609  0.004866602839450  0.003804460374751  0.003033910269940
 0.002442215732251  0.001978757729735  0.001614009401538  0.001327340364045  0.001102449664627  0.000925877467921  0.000786625817037
 0.002075849349536  0.003517516276224  0.005836325140863  0.006304832454203  0.004590978478658  0.003579756005926  0.002848146224891
 0.002288254267244  0.001851040766094  0.001507850076565  0.001238713134058  0.001027948873314  0.000862699576093  0.000732521462671

   Column 15

   0.012064738083852
   0.004021579361284
   0.002500794333599
   0.001971377358587
   0.001631675816657
   0.001390554824621
   0.001210415450836
   0.001070823266100
   0.000959569688710
   0.000868891867452
   0.000793615271350
   0.000730158490188
   0.000675964995830
   0.000629161939193
 Maximum Value (Inclusive):
     1
```

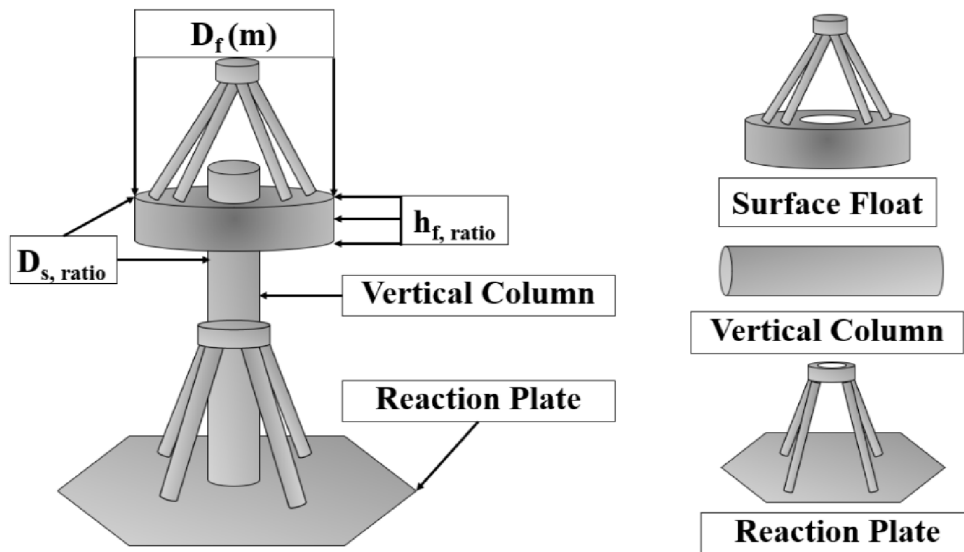Event Location: test/hydrodynamicLimitObeyed

Stack:

(Overview)

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

The test passed.
Duration: 6.2586 seconds

Event:
Verification passed.
Test Diagnostic:
```
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_1_ea79beb9-421c-46b3-95db-d98778cc2adf.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_1_ea79beb9-421c-46b3-95db-d98778cc2adf.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

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### ⊘ allFiguresRun
Test Parameters: which_figs=Fig_2_N2Diagram, which_tabs=none2

The test passed.
Duration: 7.1701 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_2_0b06aa8e-e5f4-443c-bc1f-6c7e363f617a.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_2_0b06aa8e-e5f4-443c-bc1f-6c7e363f617a.png

| Input: (x, p) | x: $D_f$, $D_{s_{ratio}}$, $h_{f_{ratio}}$, $T_{s_{ratio}}$ p: $t_{ft}$, $t_{fr}$, $t_{fc}$, $t_{fb}$, $t_{sr}$, $D_{d_{min}}$, $\rho_m$, $D_{d/D_s}$, $T_{s/D_s}$, $h_{d/D_s}$, $T_{f/h_f}$ | x: $D_{int}$, $D_f$, $\omega_n$, $F_{max}$ p: T, Hs, JPD, $T_{struct}$, $Hs_{struct}$, $\rho_w$, g | p: $\rho_w$, g, $\sigma_y$, E, $h_{/D_s}$ | p: $cost_m$, FCR | |
|---|---|---|---|---|---|
| | Geometry | Surface float mass, WEC displaced volume, Submerged float geometry | WEC displaced volume, WEC mass, Vertical column length, WEC cross-sectional area, WEC submerged lateral area, WEC second moment of inertia, Float height | WEC mass, WEC material volume | B, GM, $V_{f_{pct}}$, $V_{s_{pct}}$, $D_d$ |
| | | Dynamics | Heave, Surge, and Powertrain Forces | Generated Power (Electricity) | $C_v$, $h_{s_{extra}}$, $\mu$, $F_{p,max}/F_{max}$ |
| | | | Structures | | Yield FOS, Buckling FOS |
| | | | | Economics | LCOE |
| | | | | | Output: J(x, p), g(x, p) |

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_2_N2Diagram,which_tabs=none2)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155
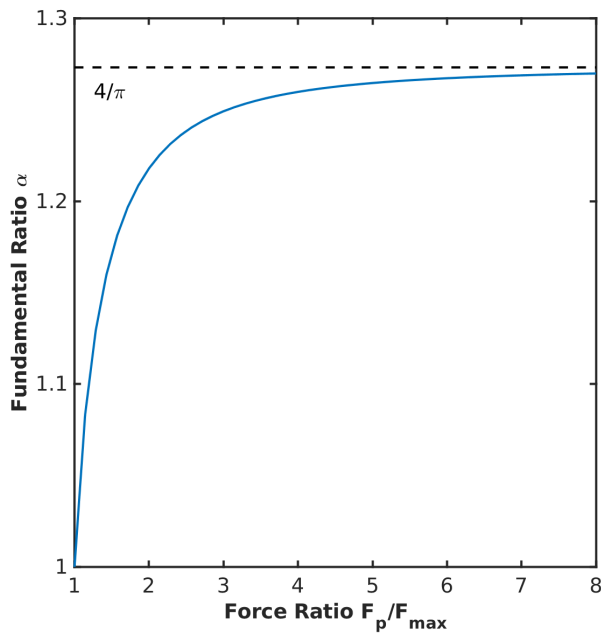
([Overview])

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## ⊘ allFiguresRun
### Test Parameters: which_figs=Fig_3_SaturationTimeSignal, which_tabs=none3

The test passed.
Duration: 2.2623 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_3_04048df5-0a5d-4efc-be63-4b62ce77d3cd.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_3_04048df5-0a5d-4efc-be63-4b62ce77d3cd.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
    1
Minimum Value (Exclusive):
    0

Event Location: test/allFiguresRun(which_figs=Fig_3_SaturationTimeSignal,which_tabs=none3)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

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## ⊘ allFiguresRun
### Test Parameters: which_figs=Fig_4_SaturationAlpha, which_tabs=none4
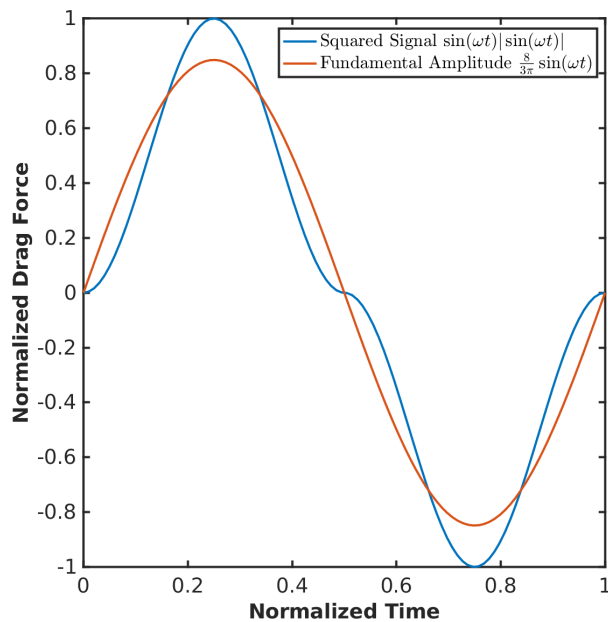
The test passed.
Duration: 1.5018 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_4_b4ab41e9-5d73-46f6-bfb9-d976f2671cfd.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_4_b4ab41e9-5d73-46f6-bfb9-d976f2671cfd.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_4_SaturationAlpha,which_tabs=none4)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

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⊘ allFiguresRun
  Test Parameters: which_figs=Fig_5_JPDMultiplication, which_tabs=none5

The test passed.
Duration: 28.0230 seconds

Event:
  Verification passed.
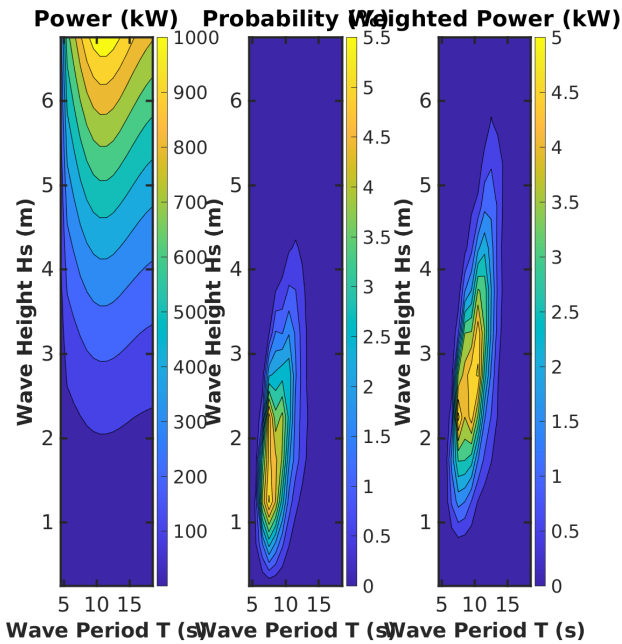    Test Diagnostic:
    Figure saved to:
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_5_0950b032-373f-4620-b105-499d4a9d72c2.fig
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_5_0950b032-373f-4620-b105-499d4a9d72c2.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_5_JPDMultiplication,which_tabs=none5)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

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## ⊘ allFiguresRun
### Test Parameters: which_figs=Fig_6_ParetoFront, which_tabs=none6

The test passed.
Duration: 315.3361 seconds

Event:
### Verification passed.

Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_6_132e66eb-fa82-4229-931e-b9a7b3d3e3ba.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_6_132e66eb-fa82-4229-931e-b9a7b3d3e3ba.png

**Pareto Front**

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_6_ParetoFront,which_tabs=none6)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

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## ⊘ allFiguresRun
### Test Parameters: which_figs=Fig_7_DesignHeuristics, which_tabs=none7
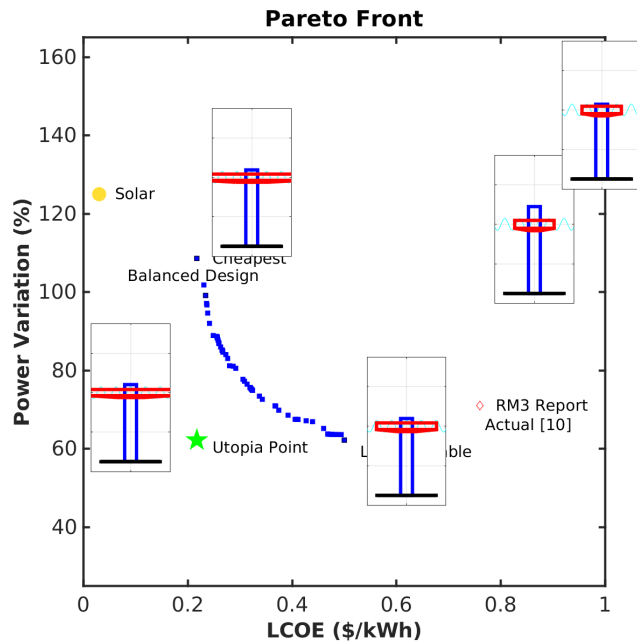
The test passed.
Duration: 269.7973 seconds

Event:
Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_7_e72a23fd-5494-455c-8159-29ba462f91b6.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_7_e72a23fd-5494-455c-8159-29ba462f91b6.png

**Design Heuristics**

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_7_DesignHeuristics,which_tabs=none7)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

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✓ allFiguresRun
  Test Parameters: which_figs=Fig_8_ParameterSensitivities, which_tabs=none8

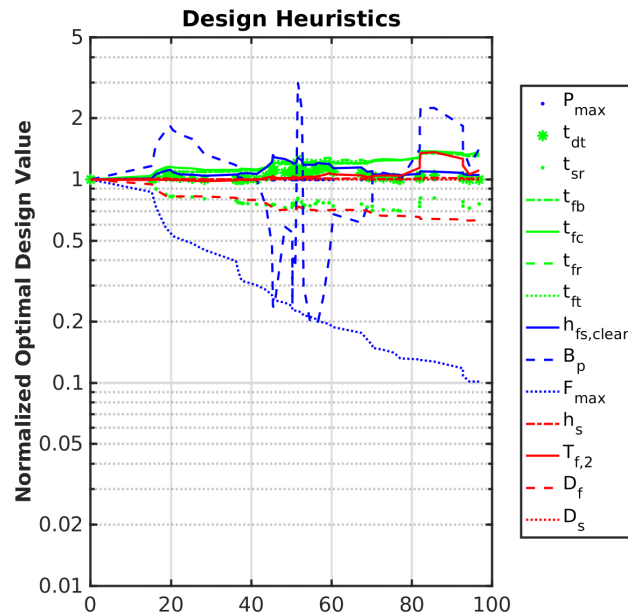The test passed.
Duration: 1402.3406 seconds

Event:
  Verification passed.
    Test Diagnostic:
    Figure saved to:
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_8_a889c63d-95ee-44fb-b684-d0c400b03723.fig
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_8_a889c63d-95ee-44fb-b684-d0c400b03723.png

**Sensitivities**

Legend: $P_{var}$, LCOE

**Framework Diagnostic:**
verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=Fig_8_ParameterSensitivities,which_tabs=none8)
Stack:
  In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

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## ⊘ allFiguresRun
### Test Parameters: which_figs=Fig_9_OverlaidGeometry, which_tabs=none9

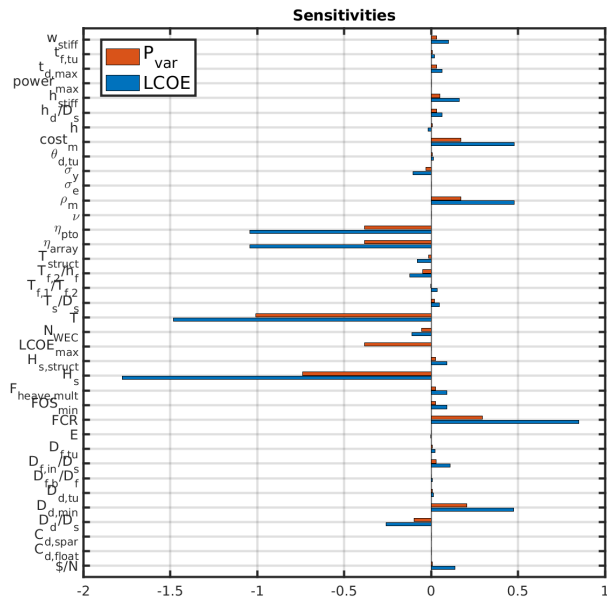The test passed.
Duration: 47.2174 seconds

Event:
  Verification passed.
    Test Diagnostic:
    Figure saved to:
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_9_2b1dd5f0-92ca-47e4-995d-dddaf3ca7a4d.fig
    --> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_9_2b1dd5f0-92ca-47e4-995d-dddaf3ca7a4d.png

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
1
Minimum Value (Exclusive):
0

Event Location: test/allFiguresRun(which_figs=Fig_9_OverlaidGeometry,which_tabs=none9)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

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### ⊘ allFiguresRun
Test Parameters: which_figs=Fig_10_ProbabilityCDF, which_tabs=none10

The test passed.
Duration: 43.5499 seconds

Event:
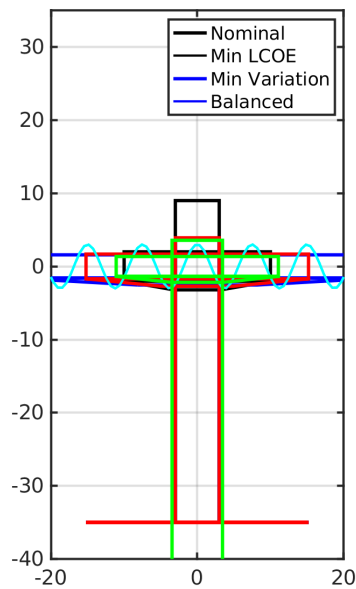Verification passed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_10_079263e9-a2cf-4026-b1df-cb78a8b881ba.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/Figure_10_079263e9-a2cf-4026-b1df-cb78a8b881ba.png
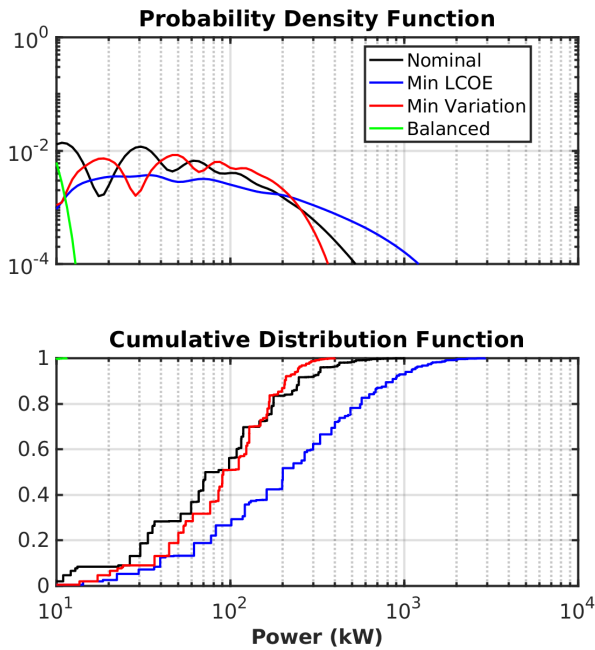
**Probability Density Function**

**Cumulative Distribution Function**

Power (kW)

Framework Diagnostic:
> verifyGreaterThan passed.
>
> Actual Value:
>   1
> Minimum Value (Exclusive):
>   0

Event Location: test/allFiguresRun(which_figs=Fig_10_ProbabilityCDF,which_tabs=none10)

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

(Overview)

---

### ⊘ allFiguresRun
### Test Parameters: which_figs=none1, which_tabs=Tab_1_DesignVariables

The test passed.
Duration: 2.0464 seconds

Event:
Verification passed.
Test Diagnostic:
> 14x3 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 |
> | F_max | 0.01 | 99.01 | 100 |
> | B_p | 0.1 | 10 | 50 |
> | h_fs_clear | 0.01 | 4 | 10 |
> | t_ft | 2.54 | 12.7 | 25.4 |
> | t_fr | 2.54 | 11.176 | 25.4 |
> | t_fc | 2.54 | 11.176 | 25.4 |
> | t_fb | 2.54 | 14.224 | 25.4 |
> | t_sr | 5.08 | 25.4 | 50.8 |
> | t_dt | 5.08 | 25.4 | 50.8 |
> | P_max | 50 | 286 | 1000 |

Framework Diagnostic:
> verifyGreaterThan passed.
>
> Actual Value:
>   1
> Minimum Value (Exclusive):
>   0

Event Location: test/allFiguresRun(which_figs=none1,which_tabs=Tab_1_DesignVariables)

## ⊘ allFiguresRun
### Test Parameters: which_figs=none2, which_tabs=Tab_2_Constraints

The test passed.
Duration: 11.8603 seconds

Event:
Verification passed.
Test Diagnostic:
```
232x1 cell array

    {'float_too_heavy'    }
    {'float_too_light'    }
    {'spar_too_heavy'     }
    {'spar_too_light'     }
    {'stability'          }
    {'FOS_float_max'      }
    {'FOS_float_fatigue'  }
    {'float_top_ratio'    }
    {'float_radial_ratio' }
    {'float_circ_ratio'   }
    {'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'   }
    {'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' }
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    {'prevent_slamming37' }
    {'prevent_slamming38' }
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    {'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' }
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{'prevent_slamming59' }
{'prevent_slamming60' }
{'prevent_slamming61' }
{'prevent_slamming62' }
{'prevent_slamming63' }
{'prevent_slamming64' }
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{'prevent_slamming66' }
{'prevent_slamming67' }
{'prevent_slamming68' }
{'prevent_slamming69' }
{'prevent_slamming70' }
{'prevent_slamming71' }
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{'prevent_slamming73' }
{'prevent_slamming74' }
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{'prevent_slamming103' }
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{'prevent_slamming105' }
{'prevent_slamming106' }
{'prevent_slamming107' }
{'prevent_slamming108' }
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{'prevent_slamming110' }
{'prevent_slamming111' }
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{'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' }
{'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_2_Constraints)

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

---

### ⊘ allFiguresRun
### Test Parameters: which_figs=none3, which_tabs=Tab_3_Parameters

The test passed.
Duration: 1.9084 seconds

Event:
Verification passed.
Test Diagnostic:

52x6 table

| name | name_pretty | | | value | |
|------|-------------|--|--|-------|--|
| "rho_w" | "\rho_w" | {[ | | | 1000] |
| "g" | "g" | {[ | | 9.8000000000000 | |
| "h" | "h" | {[ | | | 100]} "site |
| "JPD" | "JPD" | {14x15 double | | | |
| "Hs" | "H_s" | {14x1 double | | | |
| "T" | "T" | {[4.5000000000000000 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=none3,which_tabs=Tab_3_Parameters)

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

---

### ⊘ allFiguresRun
### Test Parameters: which_figs=none4, which_tabs=Tab_4_ValidationAgainstNominal

The test passed.
Duration: 9.7507 seconds

Event:
Verification passed.
Test Diagnostic:

6x16 table

| | mass_f | mass_vc | mass_rp | mass_tot | | capex | | | | | |
|--|--------|---------|---------|----------|--|-------|--|--|--|--|--|
| opex | | | LCOE | | power_avg | power_max | force_heave | FOS_spar | c_v | vol_f | |
| vol_s | CB_f | CG_f | | | | | | | | | |
| Simulation report | 202364.380552353 | 181032.547757644 | 230872.551404017 | 614269.479714014 | 33571129.373176 | 215129293.73176 | | | | | |
| 1022054468.6588 | 2030710937.3176 | 1193000 | 3310857.15420777 | 6757621.24586648 | 9188411.64758487 | 5.62722136664838 | 3.1169219180893 | | | | |
| 2.75913511643992 | 2.69322264504681 | 108581.02885327 | 286000 | 8496902.21000641 | 11.8944985210461 | 76.6828326983729 | 701.9103386283 | | | | |
| 1006.83771981544 | NaN | NaN | | | | | | | | | |
| RM3 actual report | 208000 | 224000 | 245000 | 680000 | 17000000 | 61000000 | 207000000 | 390000000 | | | |
| 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 | 0.0270943242675333 | 0.191818983224805 | 0.0576630554938069 | 0.0966625298323322 | 0.974772316069175 | 2.52670973330754 | | | | | |
| 3.93746120125024 | 4.20695112132717 | 0.00583333333333333 | 0.00329004672962622 | 0.0238820069494671 | 0.0225093991930991 | 0.256076197912584 | | | | | |

```
1.14960132282021   2.24604131345873   2.54371400664054   0.264039916801749      0   0.000364445881598355   0.071576443337485   0.0792394020321506
1.47294889579204e-05   0.00115305573865092          NaN          NaN
   Simulation wecsim         NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN
NaN          NaN   5.52516166015582   3.05487422692458   2.70279023933586   2.63792835607764          NaN          NaN          NaN          NaN
75.8945110267842   726.755100530439   887.814083904476   1.2928674351585   0.283266129032258
   RM3 actual wecsim         NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN
NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN   725.833
886.687       1.2929       0.2833
   Error wecsim         NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN
NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN          NaN      NaN   0.00127040315119152
0.00127111811098563   2.51874402
```

&lt;SNIP... Output has been truncated due to excessive length&gt;

**Framework Diagnostic:**

verifyGreaterThan passed.

Actual Value:
  1
Minimum Value (Exclusive):
  0

Event Location: test/allFiguresRun(which_figs=none4,which_tabs=Tab_4_ValidationAgainstNominal)

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_5_OptimalDVsFor4Designs

The test passed.
Duration: 52.9908 seconds

Event:
Verification passed.

Test Diagnostic:

15x4 table

| | Nominal | Min LCOE | Min Variation | Balanced |
|---|---|---|---|---|
| D_s | 6 | 6 | 6 | 6.89575595517443 |
| D_f | 20 | 50 | 30.4226737232139 | 22.1753950873539 |
| T_f_2 | 3.2 | 2.53670863099893 | 2.69975820805368 | 2.17167779581722 |
| h_s | 44 | 38.698263344268 | 38.9165061590993 | 43.8010834948317 |
| F_max | 99.01 | 4.45414877973033 | 0.404639018171156 | 0.01 |
| B_p | 10 | 0.49999999999979 | 0.499999999999088 | 0.499999999999957 |
| h_fs_clear | 4 | 2.11282044983688 | 2.22915727906623 | 3.80716160910793 |
| t_ft | 12.7 | 6.52191749800937 | 8.66692936710985 | 12.6603222553417 |
| t_fr | 11.176 | 5.73928739824825 | 7.62689784305643 | 11.1293478441663 |
| t_fc | 11.176 | 5.73928739824825 | 7.62689784305836 | 11.1359924706839 |
| t_fb | 14.224 | 7.3045475977705 | 9.70696089116519 | 14.1646245290031 |
| t_sr | 25.4 | 8.19370611077398 | 5.75330223328034 | 26.1953019737378 |
| t_dt | 25.4 | 5.08 | 5.08 | 25.143496147955 |
| P_max | 286 | 286 | 286 | 286 |
| M | 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_5_OptimalDVsFor4Designs)

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_6_OptimalDVsFor4Locations

The test passed.
Duration: 100.1597 seconds

Event:
Verification passed.

Test Diagnostic:
```
17x4 table

              Humboldt, CA     PacWave North, OR   PacWave South, OR    WETS, Hawaii
           _____    _____   _____    _____

 D_s              6                  6                  6                  6
 D_f              50                 50                 50            40.688828876008
 T_f_2     2.72594965598752   3.65981008438342   3.65812687882426   3.55600179035423
 h_s       39.02712643817     40.510286585375    40.502221084317    40.4779949017572
 F_max     4.4639390933877    5.05952983740413   5.25825305994098   2.37252030598363
 B_p       0.499999999994157  0.499999999999963  0.499999999997478  0.499999999999927
 h_fs_clear 2.32340790317772  3.22290528261519   3.21589178505184   3.25549378278719
 t_ft      6.63608767307375   7.23577542408594   7.23462955733474   7.71849763940306
 t_fr      5.8397571523049    6.36748237319609   6.36647401045457   6.7922779226747
 t_fc      5.8397571523049    6.36748237319609   6.36647401045457   6.7922779226747
 t_fb      7.4324181938426    8.10406847497721   8.10278510421491   8.64471735613132
 t_sr      8.70383733232204   11.4122907074669   11.4069509081894   8.31974266810901
 t_dt             5.08               5.08               5.08               5.08
 P_max            286                286          285.999999999998          286
 M                1                  1                  1                  1
 LCOE      0.220777707331589  0.185947129107981  0.168701098588102  0.490444331722877
 flag             1                  1                  1                  1
```

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1   1   1   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=none6,which_tabs=Tab_6_OptimalDVsFor4Locations)
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_7_ConvergenceForDifferentX0s

The test passed.
Duration: 154.0268 seconds

Event:
   Verification passed.
Test Diagnostic:
```
3x30 table

  D_s   D_s_opt   D_f  D_f_opt   T_f_2  T_f_2_opt   h_s  h_s_opt    F_max  F_max_opt   B_p   B_p_opt   h_fs_clear  h_fs_clear_opt  t_ft  t_ft_opt
 t_fr  t_fr_opt  t_fc  t_fc_opt  t_fb  t_fb_opt  t_sr  t_sr_opt  t_dt  t_dt_opt  P_max  P_max_opt    Objs     Flag
  ___  _____  ____  _____  _____  _____  ____  _____  _____  _____  ____  _____  _____  _____  ____  _____
 ____  _____  ____  _____  ____  _____  ____  _____  ____  _____  _____  _____  _____  _____  _____

  0.3   7.4      6    22.7    50   30.4    62.4   2.5    2.7    98.1  62.5   38.9   48.4    8     0.4       2      2        2     1.5        2    2.2       3    7.2   8.7     20   6.4   7.6     8    6.4   7.6
 19.1   8.1    9.7   22.5    8.2   5.8   12.1   5.1    5.1   460.1  460.1  460.1   26.4  62.2    2     1
   6     6      6    20    50    30.4     3    2.5    2.7   37.9  38.7   38.9    5    4.5    0.4   0.5    0.5   0.5        4    2.1   2.2    12.7  6.5   8.7   11.2   5.7   7.6    11.2   5.7   7.6
 14.2   7.3    9.7   25.4    8.2   5.8   25.4   5.1    5.1   286    286    286   21.7  62.2    1    1
   4     8.4   10.2   34    50    50    93    26.7   53.3   55.7  70.4   98.9   11.5   7.9     0    32.7    32.7   32.7     2.6        10   10     24.5  2.5   2.5   23.1   2.5   2.5   9.8   2.5
  2.5  10.3    2.5    2.5   35.2   50.8   47.8   49    5.1   50.8  247.7  247.7  247.7   61   378.6   -2   -2
```

Framework Diagnostic:
verifyGreaterThan passed.

Actual Value:
   1
Minimum Value (Exclusive):
   0

Event Location: test/allFiguresRun(which_figs=none7,which_tabs=Tab_7_ConvergenceForDifferentX0s)
Stack:
   In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.allFiguresRun) at 155

(Overview)

---

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

The test passed.
Duration: 0.4991 seconds

Event:
    Verification passed.
      Framework Diagnostic:

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

        Actual Value:
          2.023643805523531e+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 failed.
Duration: 10.0424 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 |
|---|---|---|---|---|
| 181032.547757644 | 224000 | -42967.4522423563 | -0.191818983224805 | 0.1 |

        Actual Value:
          1.810325477576437e+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: 0.0900 seconds

Event:
    Verification passed.
      Framework Diagnostic:

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

        Actual Value:
          2.308725514040173e+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: 0.0434 seconds

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

            Actual Value:
                6.142694797140141e+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

(Overview)

------------------------------------------------------------------------------------

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

The test passed.
Duration: 0.0761 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

(Overview)

------------------------------------------------------------------------------------

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

The test passed.
Duration: 0.0350 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

(Overview)

------------------------------------------------------------------------------------

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

The test failed.
Duration: 0.2159 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 | 33571129.373176 | 17000000 | 16571129.373176 | 0.974772316069175 | 0.25 |
| 2 | 215129293.73176 | 61000000 | 154129293.73176 | 2.52670973330754 | 0.25 |
| 3 | 1022054468.6588 | 207000000 | 815054468.658799 | 3.93746120125024 | 0.25 |
| 4 | 2030710937.3176 | 390000000 | 1640710937.3176 | 4.20695112132717 | 0.25 |

Actual Value:
  1.0e+09 *

  0.033571129373176  0.215129293731760  1.022054468658799  2.030710937317598
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

([Overview](#))

---

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

The test passed.
Duration: 0.0517 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  9.188411647584868
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

([Overview](#))

---

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

The test failed.
Duration: 10.4899 seconds

Event:
Verification failed.
Test Diagnostic:
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/econ_validation_reportbb6e01d5-eda0-4a78-9e50-60ab3e0bcbf8.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/econ_validation_reportbb6e01d5-eda0-4a78-9e50-60ab3e0bcbf8.png
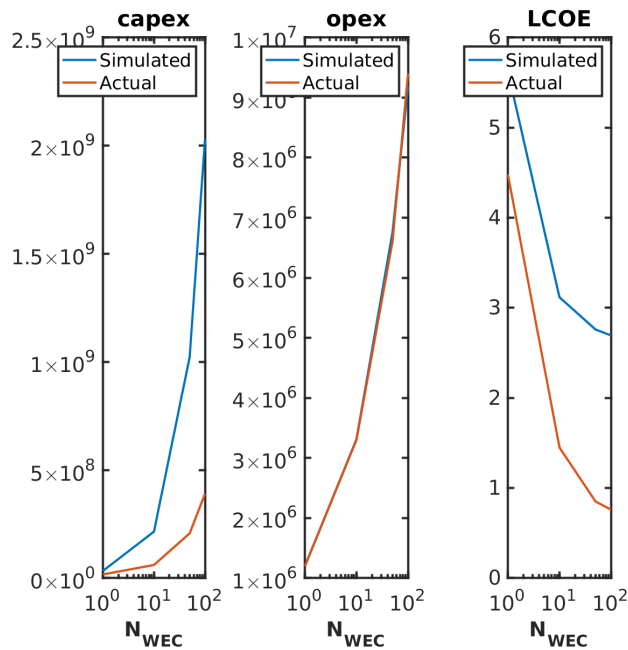
Framework Diagnostic:

```
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      5.62722136664838    4.48      1.14722136664838  0.256076197912584        0.25
      2      3.1169219180893     1.45      1.6669219180893   1.14960132282021         0.25
      3      2.75913511643992    0.85      1.90913511643992  2.24604131345873         0.25
      4      2.69322264504681    0.76      1.93322264504681  2.54371400664054         0.25

Actual Value:
  5.627221366648378  3.116921918089299  2.759135116439924  2.693222645046814
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=power_avg, rel_tol_report=0.1_4

The test failed.
Duration: 0.1134 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

    _____  _____    _____  _____    _____

    108581.02885327    85900     22681.0288532702  0.264039916801749        0.1

Actual Value:
  1.085810288532702e+05
Expected Value:
     85900
```

Event Location: test/validateNominalReport(field_report=power_avg,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=power_max, rel_tol_report=0.1_5

The test passed.
Duration: 0.0361 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_5)

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

([Overview](#))

---

## ⊘ validateNominalReport
### Test Parameters: field_report=force_heave, rel_tol_report=0.1_6

The test passed.
Duration: 0.0421 seconds

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

Actual Value:
8.496902210006414e+06
Expected Value:
8500000

Event Location: test/validateNominalReport(field_report=force_heave,rel_tol_report=0.1_6)

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_7

The test passed.
Duration: 0.0355 seconds

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

Actual Value:
11.894498521046083
Expected Value:
11.100000000000000

Event Location: test/validateNominalReport(field_report=FOS_spar,rel_tol_report=0.1_7)

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_8

The test passed.
Duration: 0.0401 seconds

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

Actual Value:
  76.682832698372920
Expected Value:
  71.052662230440447

Event Location: test/validateNominalReport(field_report=c_v,rel_tol_report=0.1_8)
Stack:
In /home/runner/work/MDOcean/MDOcean/MDOcean/tests/test.m (test.validateNominalReport) at 167

([Overview](#))

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

The test passed.
Duration: 0.0498 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

([Overview](#))

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

The test passed.
Duration: 9.2526 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

([Overview](#))

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

The test passed.
Duration: 0.0308 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

([Overview](#))

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

The test passed.
Duration: 0.0288 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

([Overview](#))

---

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

The test failed.
Duration: 0.6603 seconds

Event:
### Verification failed.
#### Test Diagnostic:
```
Figure saved to:
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/econ_validation_wecsimd556566a-
a62a-45cd-9692-039725c5de93.fig
--> /home/runner/work/MDOcean/MDOcean/MDOcean/test-results/2024-12-19_02.13.55/54f8ba00-49c1-4883-b509-04bb6bd35a3b/econ_validation_wecsimd556566a-
a62a-45cd-9692-039725c5de93.png
```
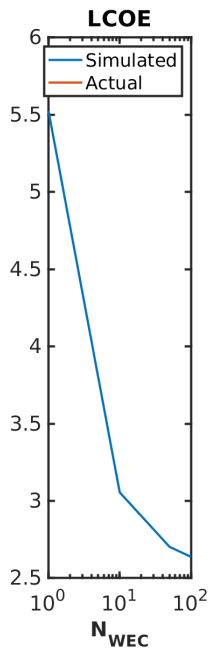
**LCOE**

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     5.52516166015582    NaN      NaN       NaN              0.1
      2     3.05487422692458    NaN      NaN       NaN              0.1
      3     2.70279023933586    NaN      NaN       NaN              0.1
      4     2.63792835607764    NaN      NaN       NaN              0.1

Actual Value:
  5.525161660155824  3.054874226924582  2.702790239335858  2.637928356077639
Expected Value:
  NaN  NaN  NaN  NaN
```

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

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_1

The test failed.
Duration: 0.0894 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
    _____   _____   _____   _____   _____

    75.8945110267842    NaN      NaN       NaN              0.1

Actual Value:
  75.894511026784187
Expected Value:
  NaN
```

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

Stack:

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

(Overview)