

DeepStar Theme Structures Model Tests

**REVIEW OF TLP MOORING TESTS**

MARIN Test No.	Description	Environment
<b>Tests in Hurricane set-up</b>		
501001 to 004	Surge static load displacement	-
501006	Surge decay	Calm water
501008	Heave decay	Calm water
501011 to 012	Natural frequency of tendon 1 and 9	Calm water
501013	Natural frequency of riser 12	Calm water
502001	Wind only (one-hour mean)	Hurricane (1 hour)
502004	Current only	Hurricane (1 hour)
501009	Surge decay in current	Hurricane
502005	Current + Wind (one-hour mean)	Hurricane (1 hour)
502008	Waves + Current + Wind - Seed 1	Hurricane (3 hours)
503002	Waves + Current + Wind - Seed 2	Hurricane (3 hours)
504001	Waves + Current + Wind - Seed 3	Hurricane (3 hours)
505001	Waves only - Seed 1	Hurricane (3 hours)
506001	Waves only - Seed 2	Hurricane (3 hours)
507001	Waves only - Seed 3	Hurricane (3 hours)
<b>Tests in Loop-Current set-up</b>		
501027 to 030	Surge static load displacement	-
501034	Surge decay	Calm water
501038	Heave decay	Calm water
501035	Roll decay	Calm water
501036	Pitch decay	Calm water
501037	Yaw decay	Calm water
508002	Wind only (one-hour mean)	Loop-Current (1 hour)
508003	Current only	Loop-Current (1 hour)
501033	Surge decay in current	Loop-Current
508004	Current + Wind (one-hour mean)	Loop-Current (1 hour)
508005	Waves + Current + Wind - Seed 1	Loop-Current (3 hours)
509001	Waves + Current + Wind - Seed 2	Loop-Current (3 hours)
510001	Waves + Current + Wind - Seed 3	Loop-Current (3 hours)

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DeepStar Theme Structures Model Tests

**REVIEW OF PRESENTATION OF RESULTS TLP MOORING TESTS**

**Loop-Current Condition (part A)**

**Test No. 508002 : Wind only (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 508003 : Current only (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 508004 : Wind and Current (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 508005 : Waves, Wind and Current – Seed 1 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (20)

Spectra of tendon forces (26)

Spectra of riser forces (12)

**Test No. 509001 : Waves, Wind and Current – Seed 2 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Test No. 510001 : Waves, Wind and Current – Seed 3 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

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DeepStar Theme Structures Model Tests

**REVIEW OF PRESENTATION OF RESULTS TLP MOORING TESTS**

**Loop-Current Condition** (continued)

**Comparison of the results of the three different wave trains (Seed 1, 2 and 3)**

Response functions:

Six d.o.f. motions (6)

Tendon forces (13)

Weibull distributions:

X COG – positive values (1)

Y COG – positive values (1)

Z COG – negative values (1)

YAW TLP – negative values (1)

Tendon forces – positive values (13)

Riser forces – positive values (12)

Rayleigh distributions:

Relative wave elevations – crests and troughs (5)

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DeepStar Theme Structures Model Tests

**REVIEW OF PRESENTATION OF RESULTS TLP MOORING TESTS**

**Hurricane Condition (part B)**

**Test No. 502001 : Wind only (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 502004 : Current only (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 502005 : Wind and Current (1 hour)**

TLP position plot: top view (1)

Statistical analysis (1)

**Test No. 502008 : Waves, Wind and Current – Seed 1 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Test No. 503002 : Waves, Wind and Current – Seed 2 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Test No. 504001 : Waves, Wind and Current – Seed 3 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

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DeepStar Theme Structures Model Tests

**REVIEW OF PRESENTATION OF RESULTS TLP MOORING TESTS**

**Hurricane Condition** (continued)

**Comparison of the results of the three different wave trains (Seed 1, 2 and 3)**

Response functions:

Six d.o.f. motions (6)

Tendon forces (13)

Weibull distributions:

X COG – negative values (1)

Y COG – negative values (1)

Z COG – negative values (1)

YAW TLP – positive and negative values (2)

Tendon forces – positive values (13)

Riser forces – positive values (12)

Rayleigh distributions:

Relative wave elevations – crests and troughs (5)

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DeepStar Theme Structures Model Tests

**REVIEW OF PRESENTATION OF RESULTS TLP MOORING TESTS**

**Hurricane Condition, Waves only (part C)**

**Test No. 505001 : Waves only – Seed 1 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Test No. 506001 : Waves only – Seed 2 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Test No. 507001 : Waves only – Seed 3 (3 hours)**

TLP position plot: top view (1)

Statistical analysis (5)

Time traces (18)

Spectra of tendon forces (13)

Spectra of riser forces (12)

**Comparison of the results of the three different wave trains (Seed 1, 2 and 3)**

Response functions:

Six d.o.f. motions (6)

Tendon forces (13)

Weibull distributions:

X COG – negative values (1)

Y COG – negative values (1)

Z COG – negative values (1)

YAW TLP – positive and negative values (2)

Tendon forces – positive values (13)

Riser forces – positive values (12)

Rayleigh distributions:

Relative wave elevations – crests and troughs (5)