

# WLNG FST Engineering Completion

## WLNG FST Extreme Weather Analysis

FST and Jackets

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2025-02-01

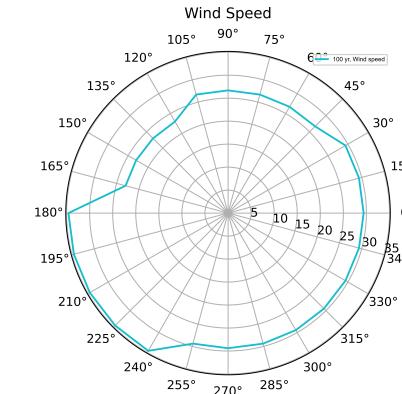
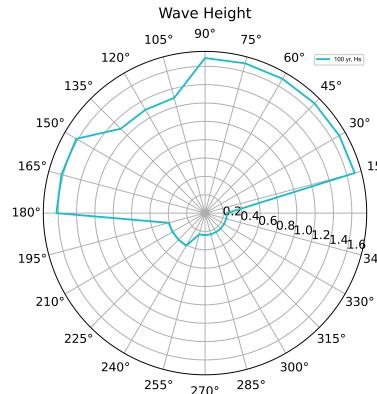
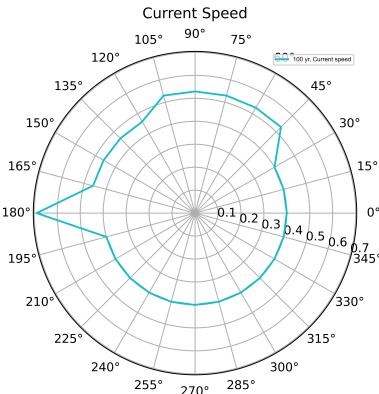
# Introduction

- FST analysis for WLNG

**Design Data**

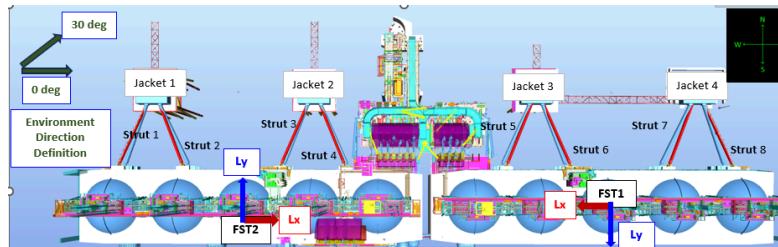
**Analysis Methodology**

# Design Data - Environment



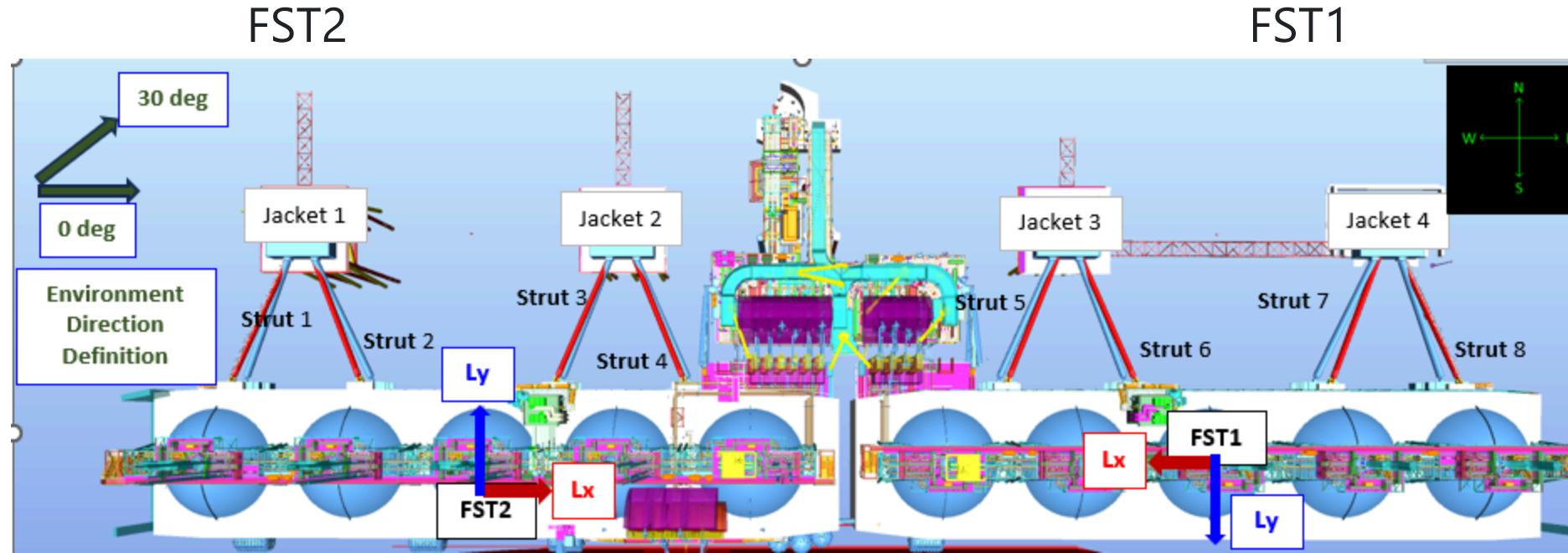
FST2

FST1



- Radial plots axis is based on environment direction

# FSTs Only, General Arrangement



- strut, jacket and FST numbering shown
- FST local axes shown

# Methodology

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# Methodology - Analysis

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# Methodology - Result Interpretation

- Timetrace plots are actual values (not statistical)
  - Strut positive tension is tension and negative tension is compression i.e. axes independent values
  - Jacket forces are in global X and Y direction
  - FST forces are in FST local axes
- Radial/rose plots - ONLY positive values used
  - Objective:
    - For understanding value change with direction.
    - The increase/decrease help determine the max force directions.
  - Static values: absolute values
  - Dynamic values: absolute maximum i.e. max (abs(max), abs(min))

- Applicable details will be added to each slide

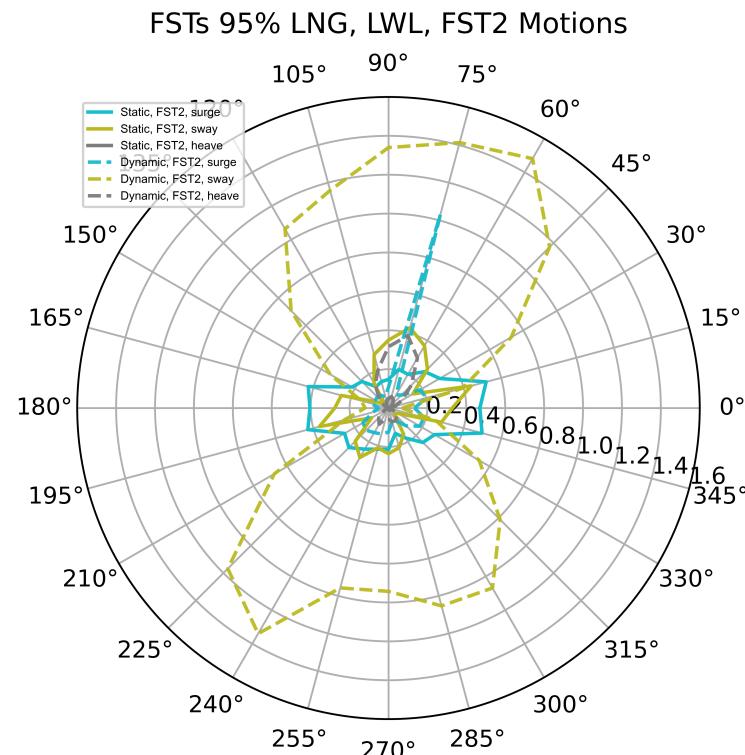
# **100 year Analysis Results**

# FST Motion Response

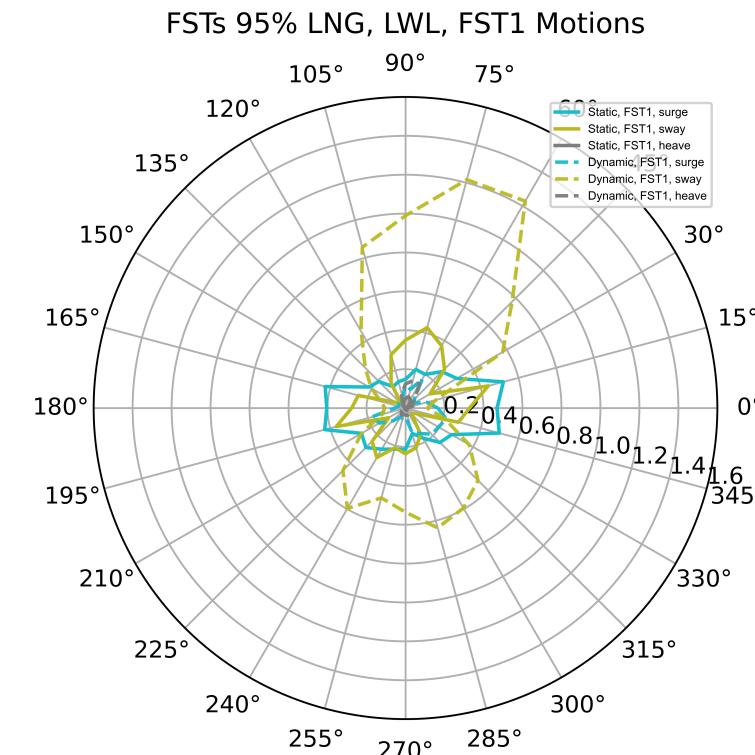
# FSTs 95% LNG, 100yr, LWL - FST Surge and Sway

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FST2



FST1

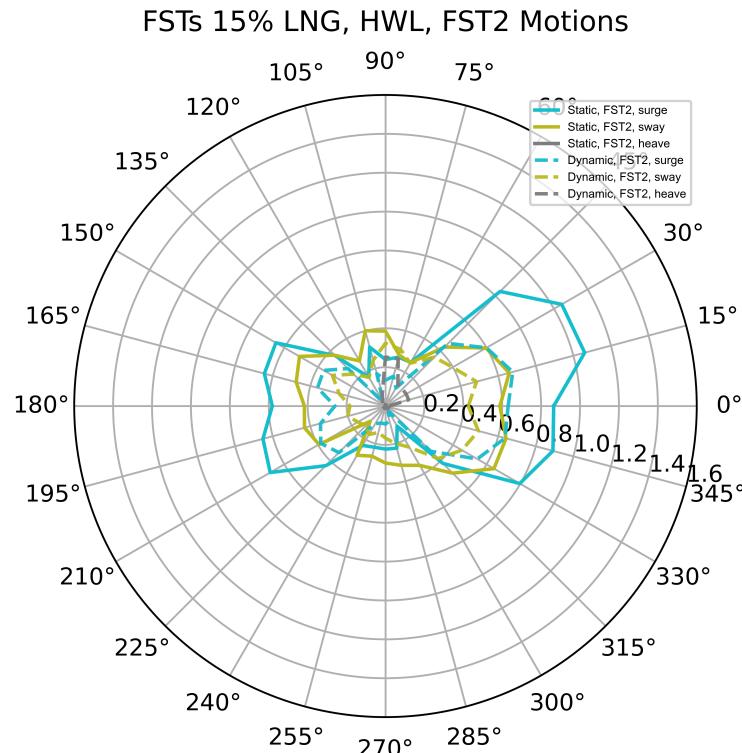


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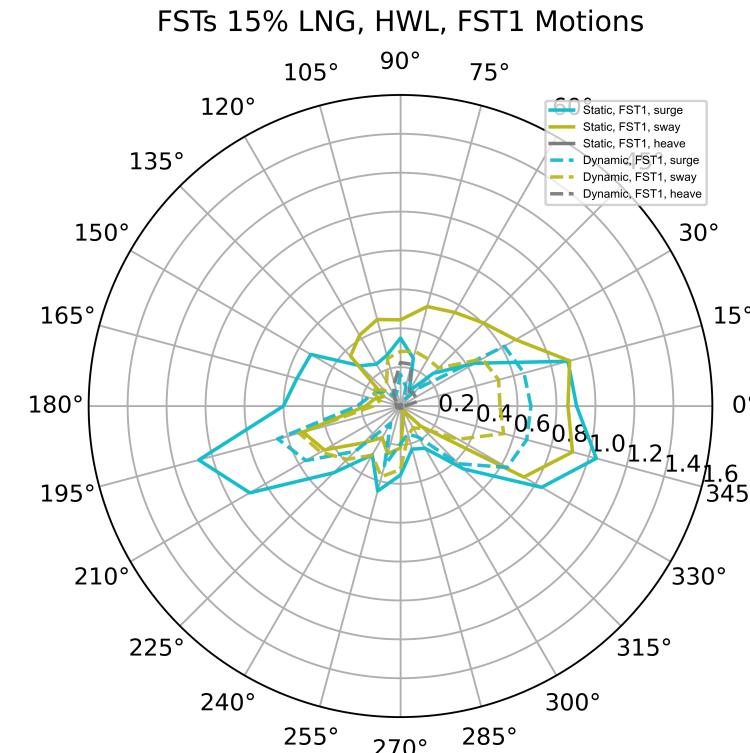
# FSTs 15% LNG, 100yr, HWL - FST Surge and Sway

- TBA

FST2



FST1

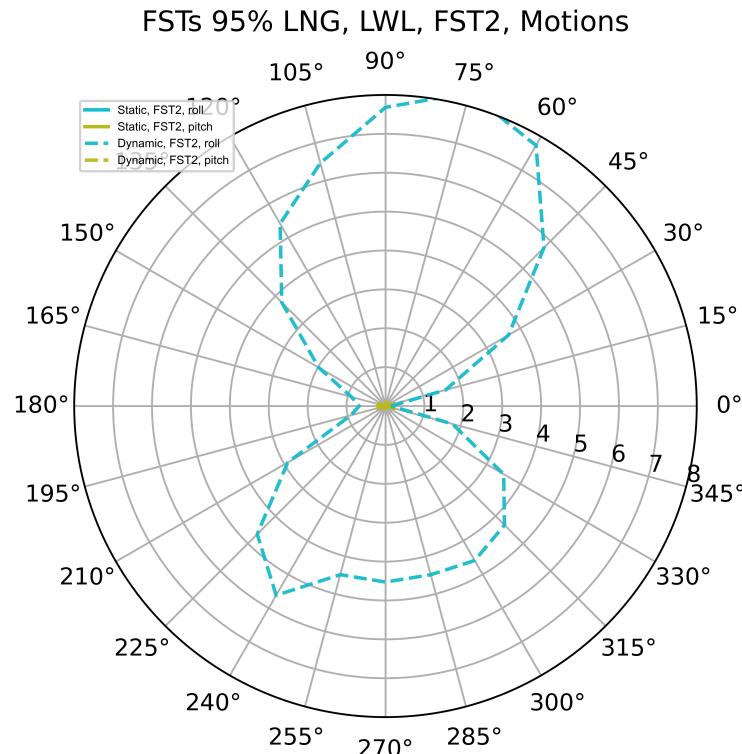


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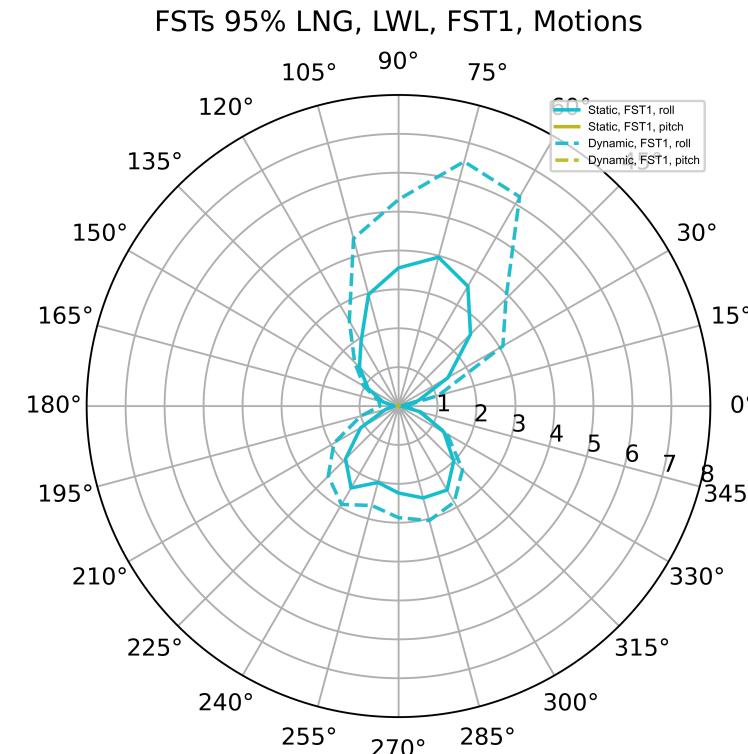
# FSTs 95% LNG, 100yr, LWL - FST Rotations

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FST2



FST1

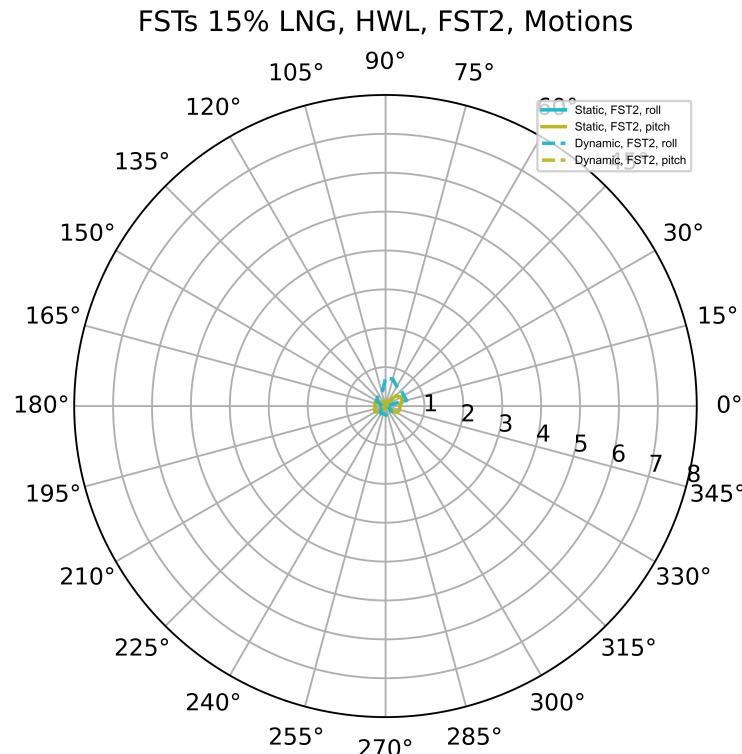


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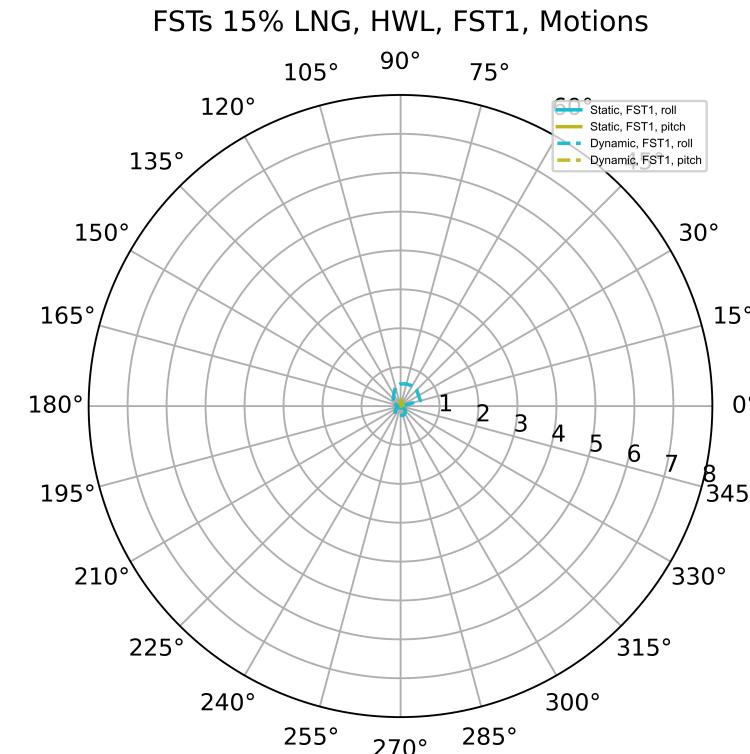
# FSTs 15% LNG, 100yr, HWL - FST Rotations

- TBA

FST2



FST1



- TBA

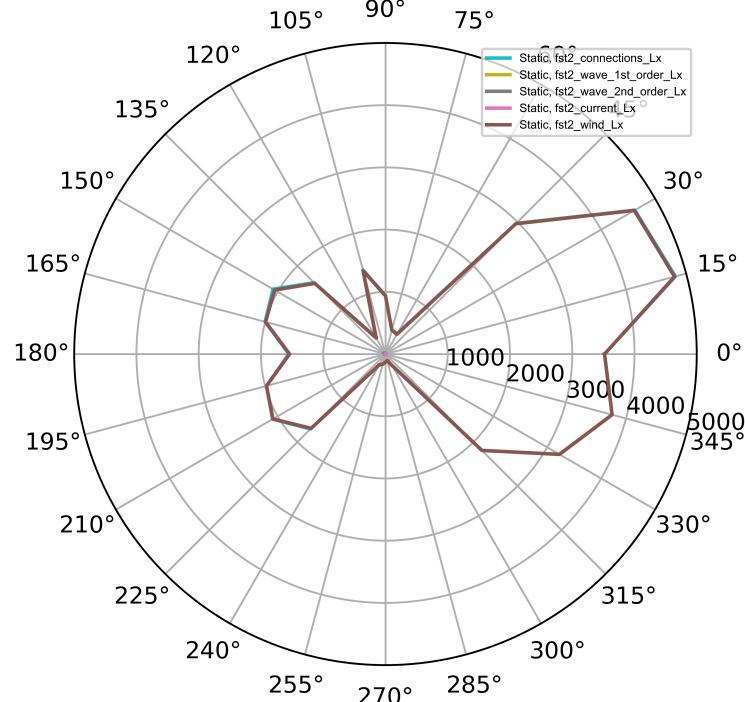
**FST Load Response, Static**

# FSTs 95% LNG, 100yr, HWL, FST Forces, X Direction

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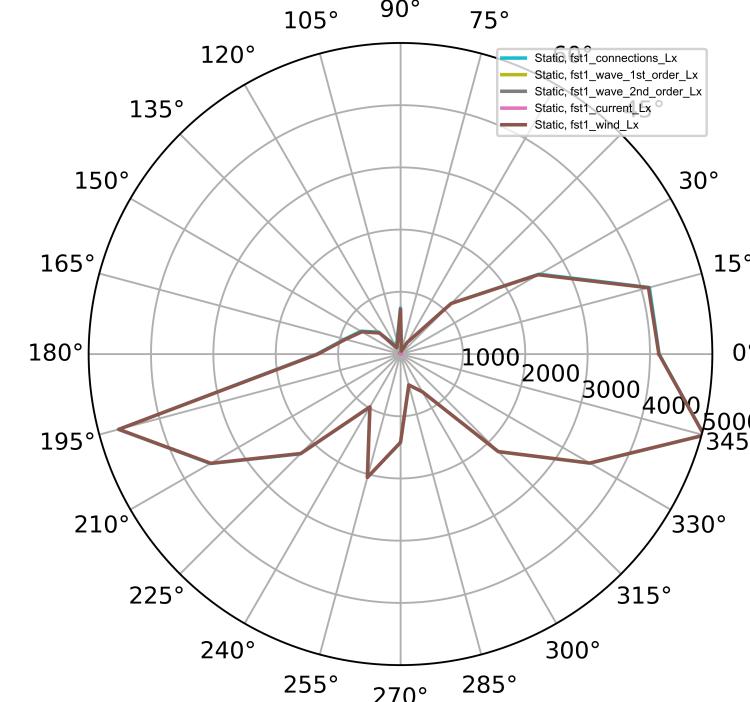
FST2

FSTs 95% LNG, HWL, FST2, Loads, Lx direction



FST1

FSTs 95% LNG, HWL, FST1, Loads, Lx direction



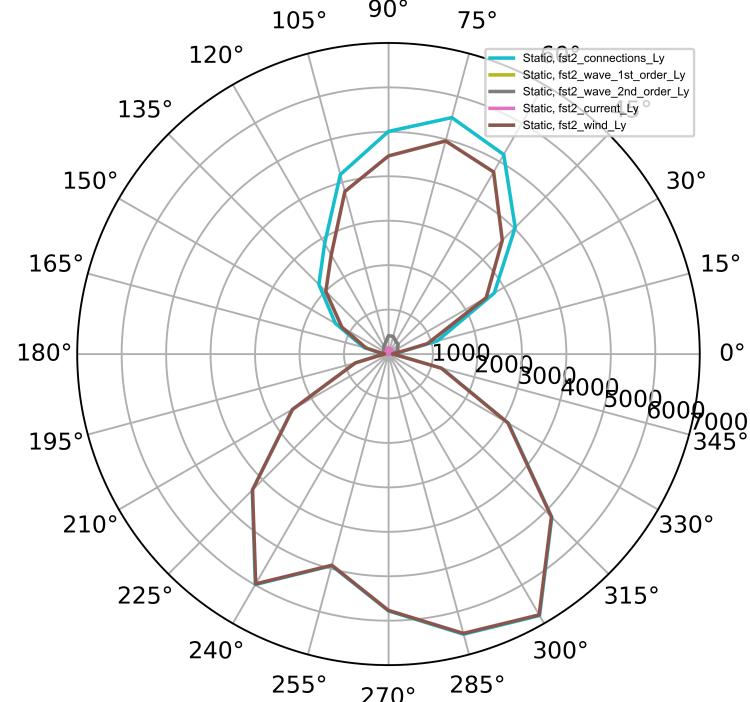
- Wind loads dominate the FST forces

# FSTs 95% LNG, 100yr, HWL, FST Forces, Y Direction

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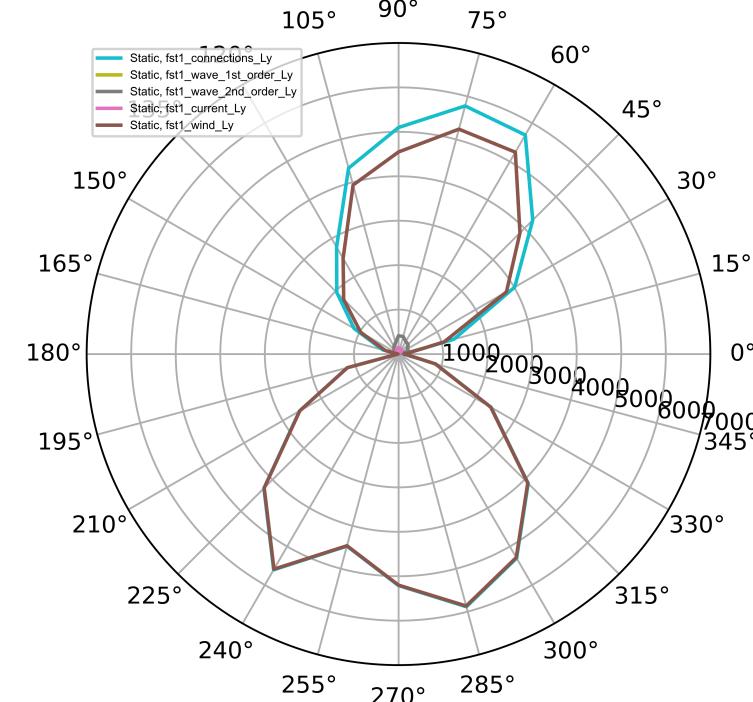
FST2

FSTs 95% LNG, HWL, FST2, Loads, Ly direction



FST1

FSTs 95% LNG, HWL, FST1, Loads, Ly direction



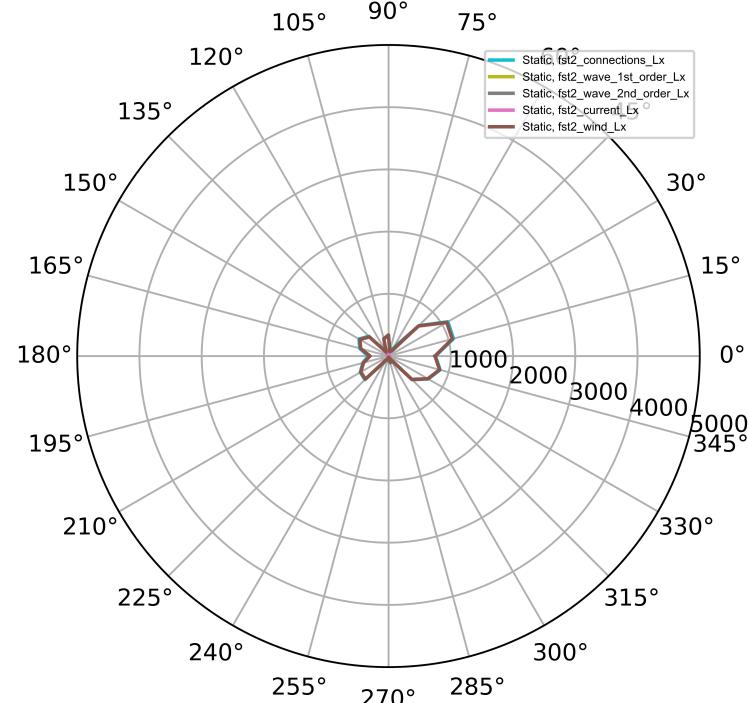
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# FSTs 15% LNG, 100yr, LWL, FST Forces, X Direction

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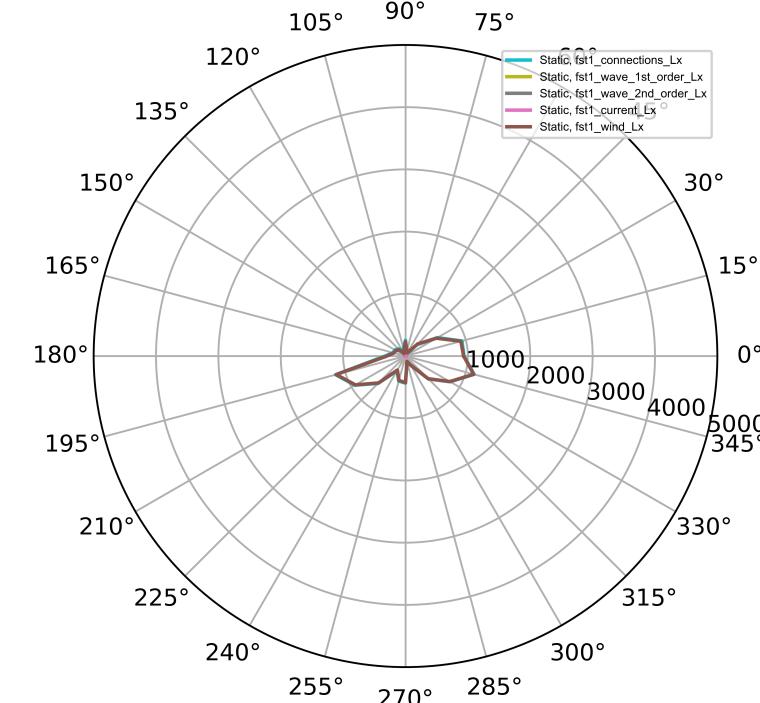
FST2

FSTs 95% LNG, LWL, FST2, Loads, Lx direction



FST1

FSTs 95% LNG, LWL, FST1, Loads, Lx direction



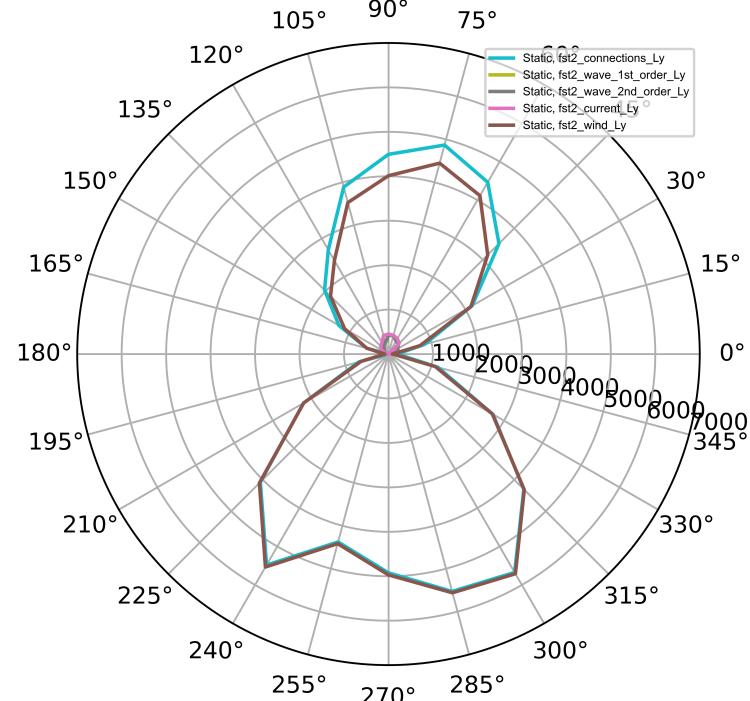
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# FSTs 15% LNG, 100yr, LWL, FST Forces, Y Direction

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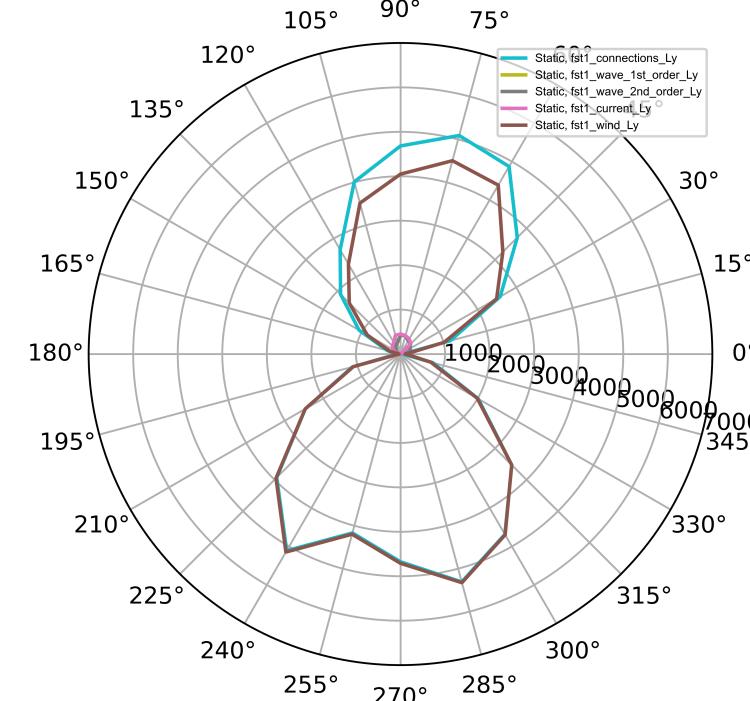
FST2

FSTs 95% LNG, LWL, FST2, Loads, Ly direction



FST1

FSTs 95% LNG, LWL, FST1, Loads, Ly direction



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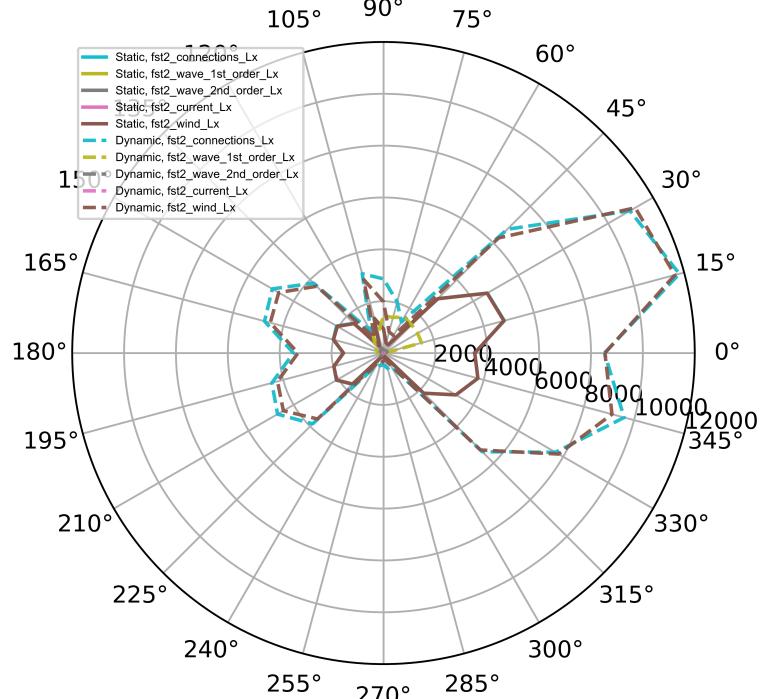
**FST Load Response, Dynamic**

# FSTs 95% LNG, 100yr, HWL, FST Forces, X Direction

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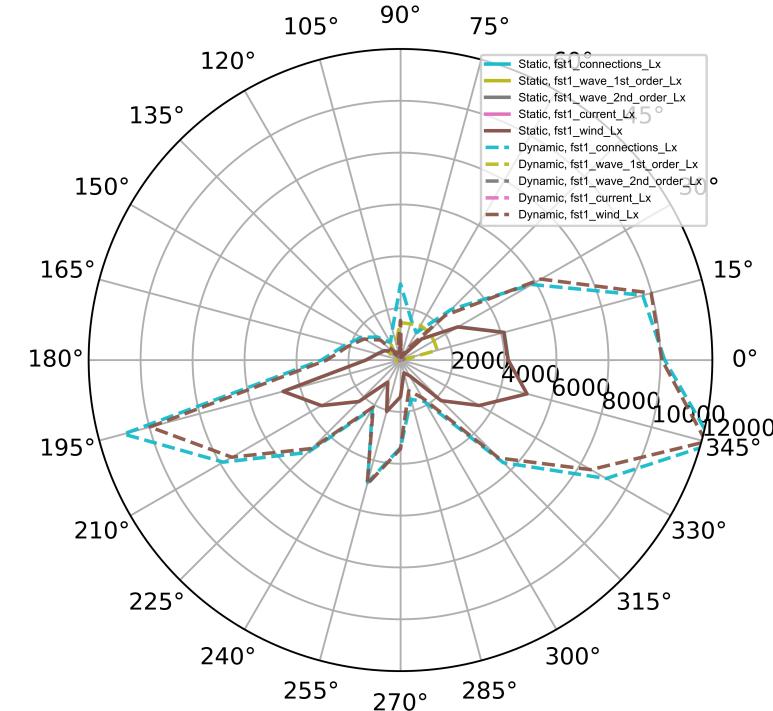
FST2

FSTs 95% LNG, HWL, FST2, Loads, Lx direction



FST1

FSTs 95% LNG, HWL, FST1, Loads, Lx direction



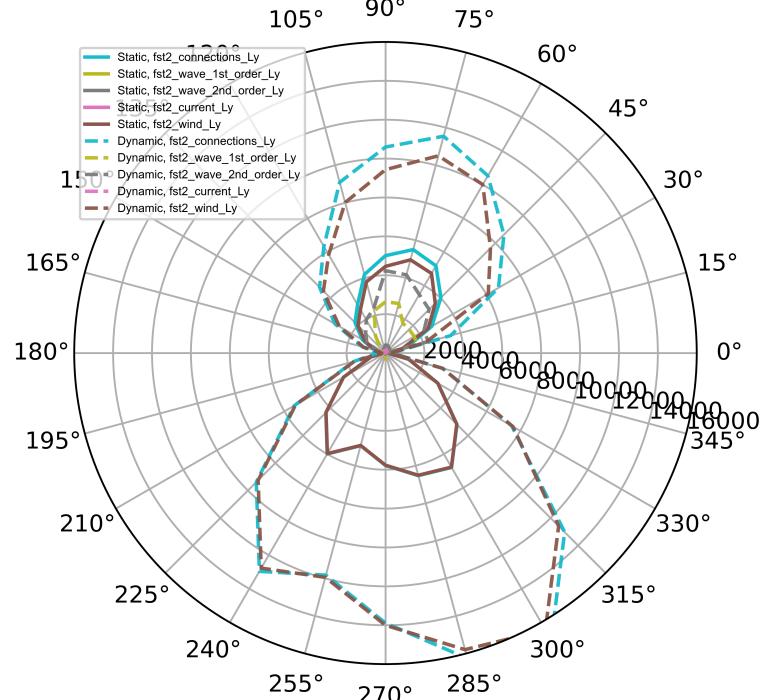
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# FSTs 95% LNG, 100yr, HWL, FST Forces, Y Direction

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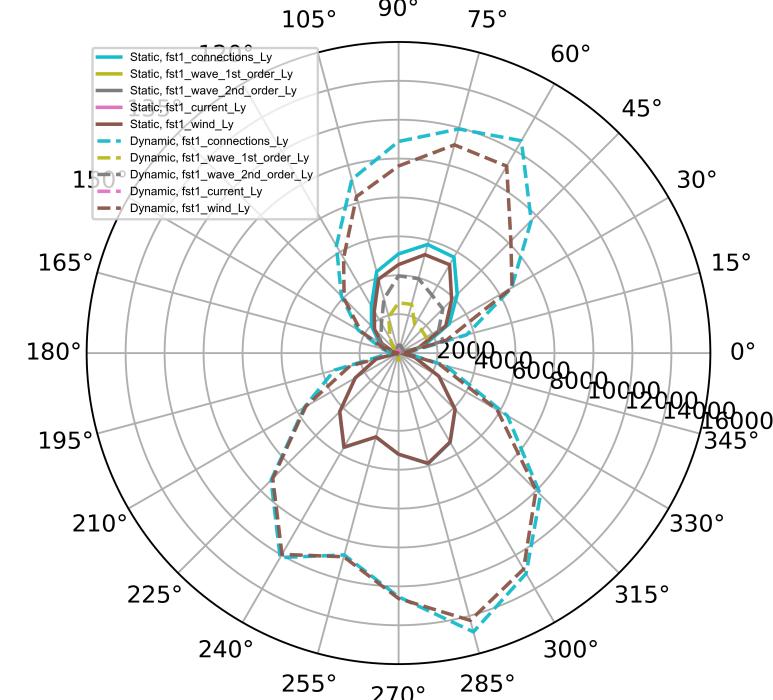
FST2

FSTs 95% LNG, HWL, FST2, Loads, Ly direction



FST1

FSTs 95% LNG, HWL, FST1, Loads, Ly direction



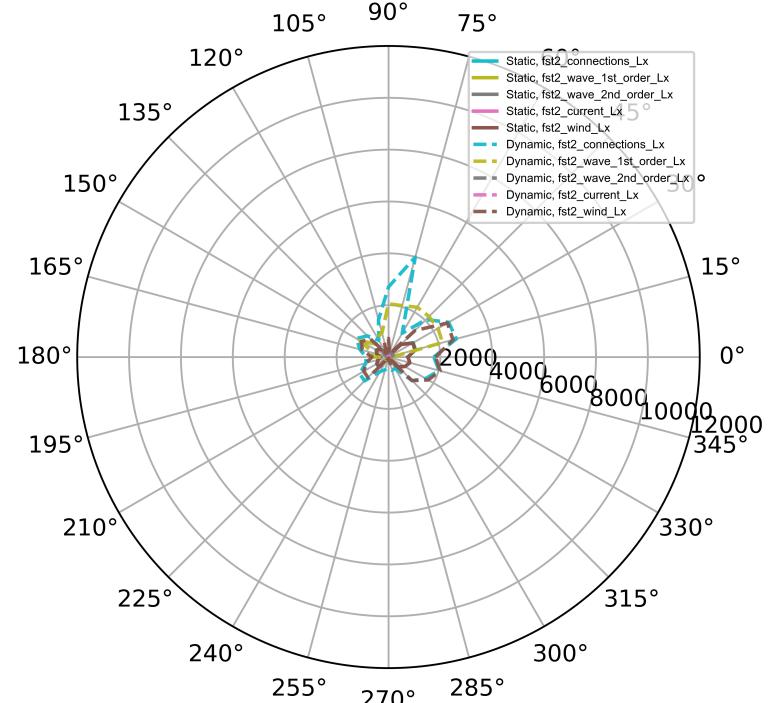
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# FSTs 15% LNG, 100yr, LWL, FST Forces, X Direction

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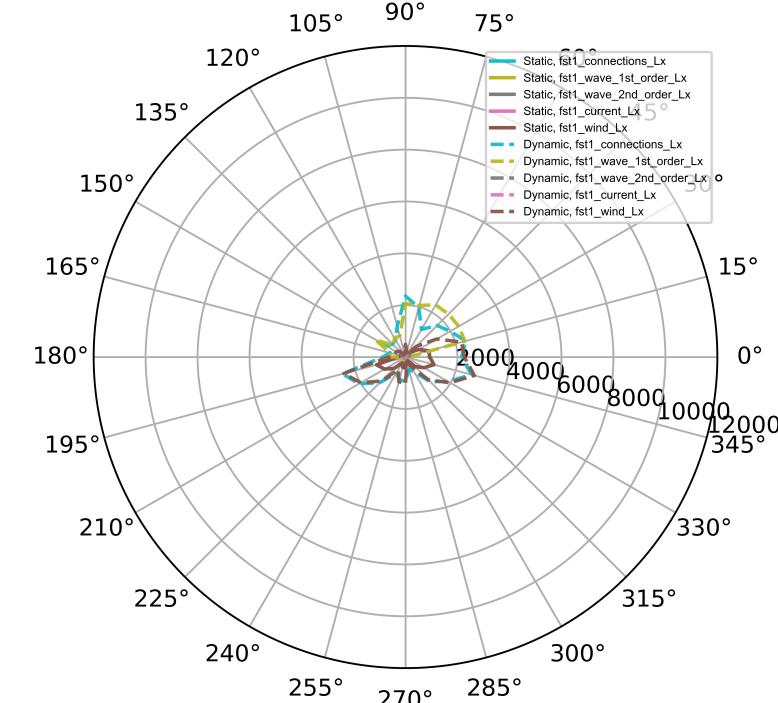
FST2

FSTs 95% LNG, LWL, FST2, Loads, Lx direction



FST1

FSTs 95% LNG, LWL, FST1, Loads, Lx direction



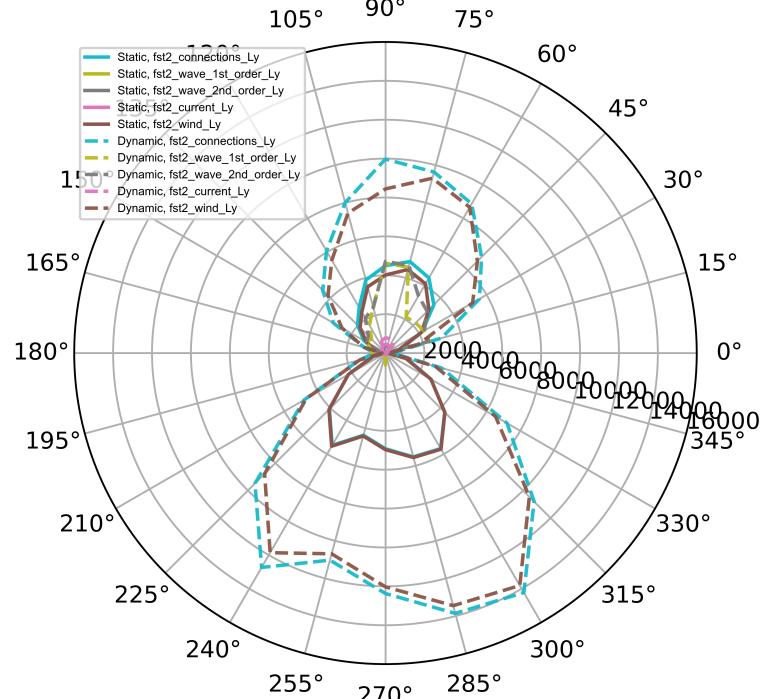
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# FSTs 15% LNG, 100yr, LWL, FST Forces, Y Direction

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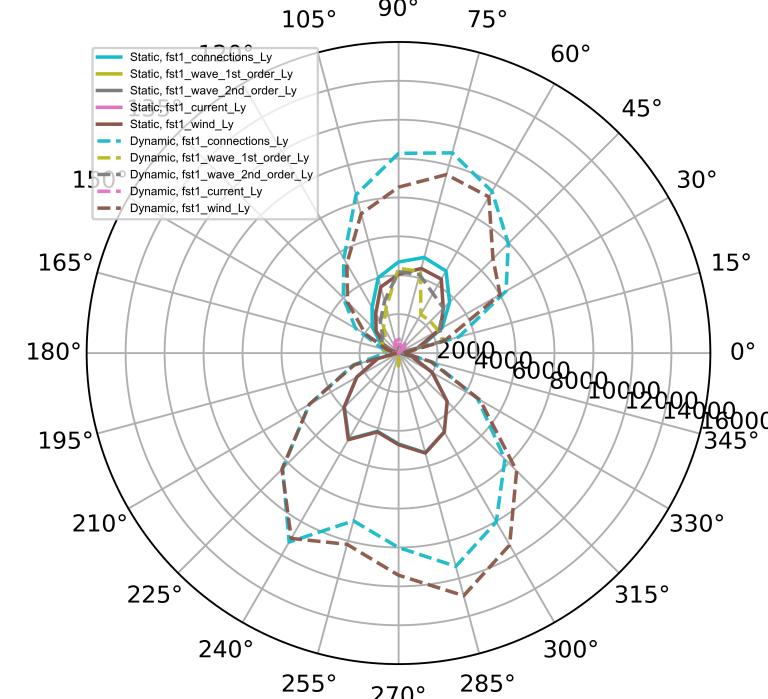
FST2

FSTs 95% LNG, LWL, FST2, Loads, Ly direction



FST1

FSTs 95% LNG, LWL, FST1, Loads, Ly direction



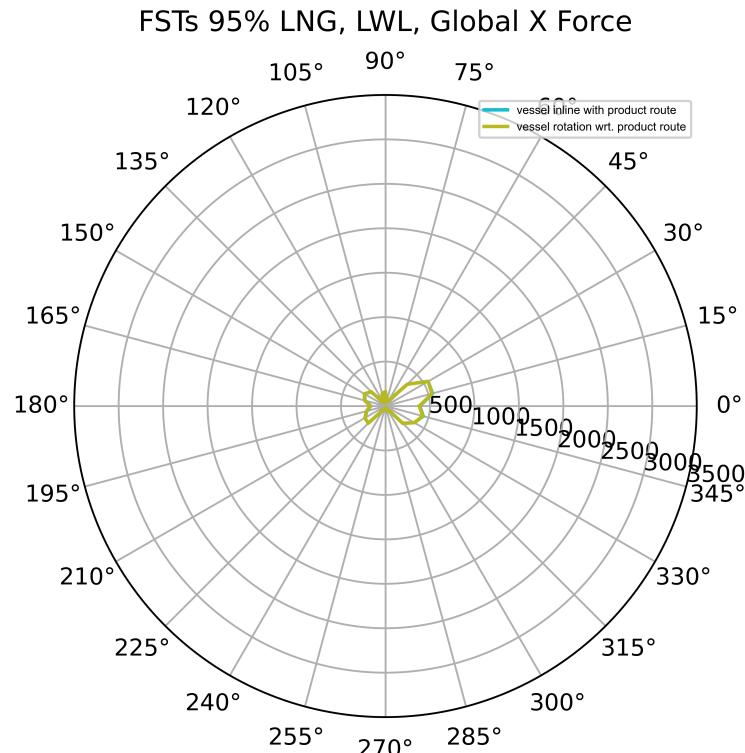
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## **Jacket Loads, Static**

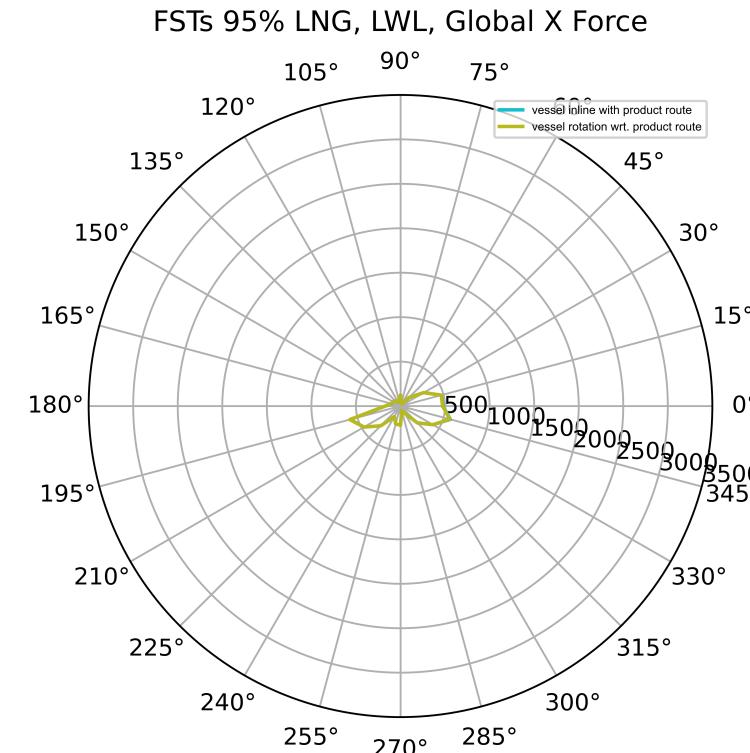
# Max Jacket Loads, FSTs 95% LNG, 100yr, LWL, Fx

- Two (2) struts contribute to each jacket global force

FST2



FST1

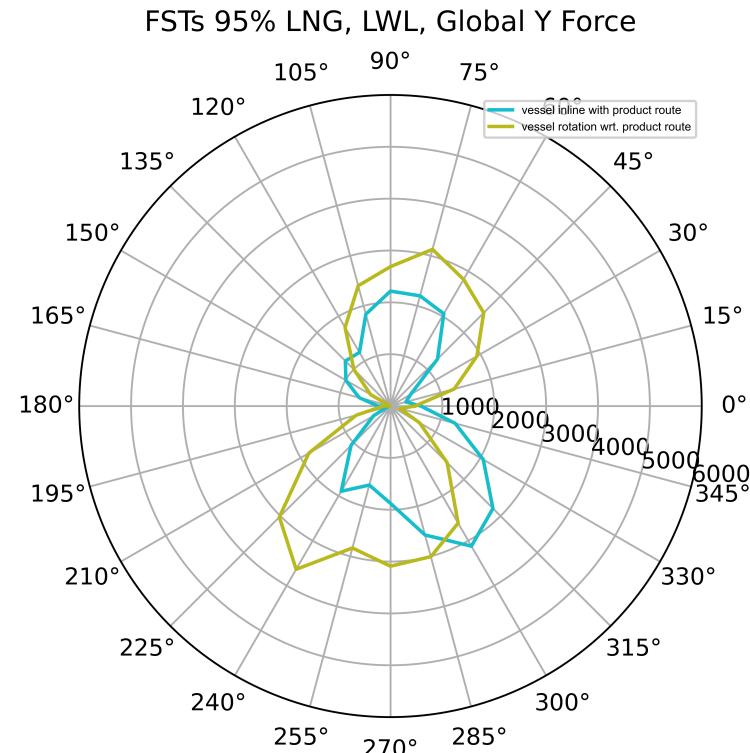


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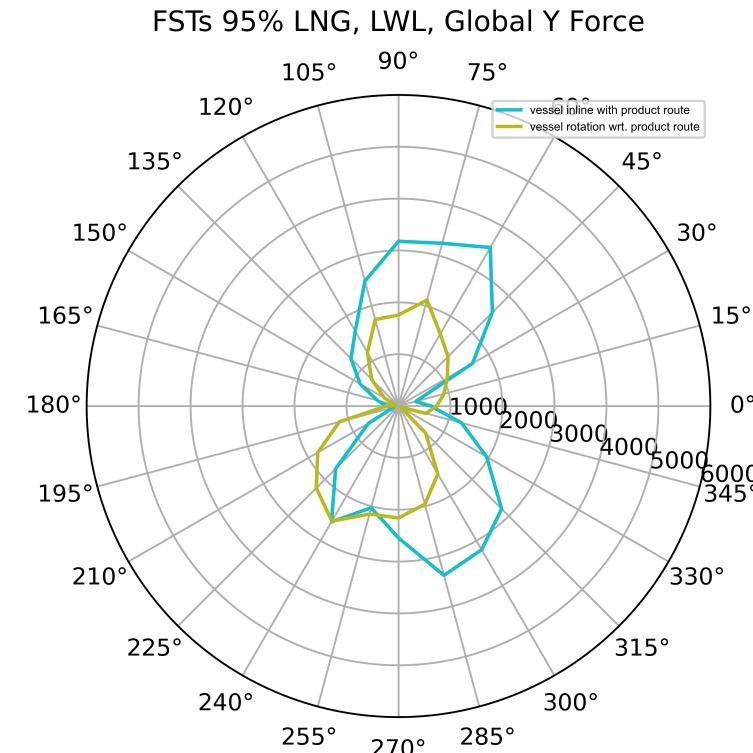
# Max Jacket Loads, FSTs 95% LNG, 100yr, LWL, Fy

- Two (2) struts contribute to each jacket global force

FST2



FST1

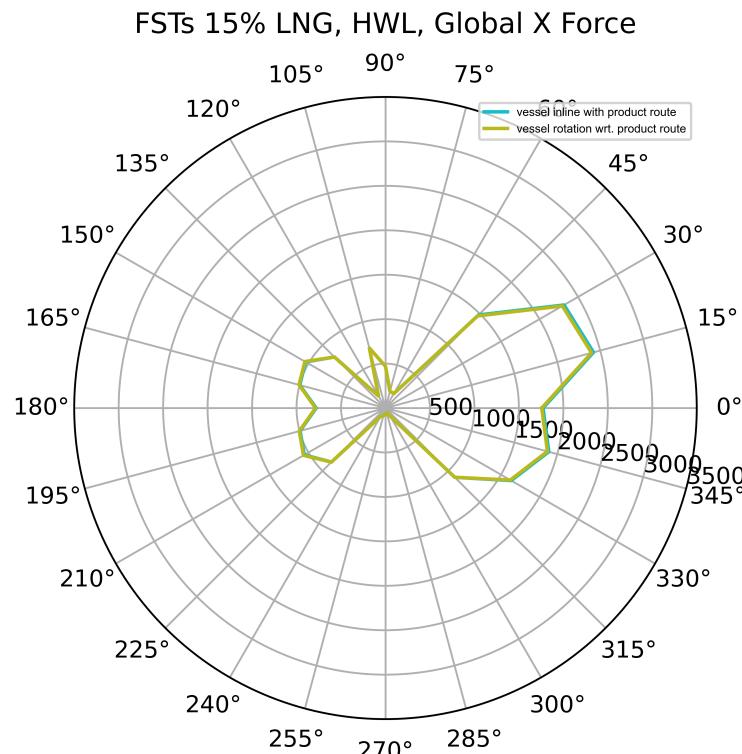


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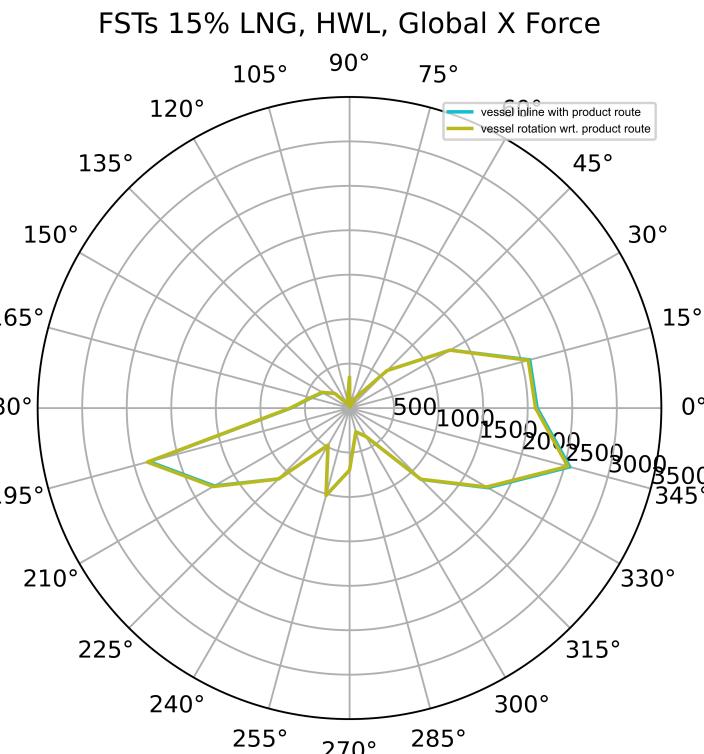
# Max Jacket Loads, FSTs 95% LNG, 100yr, HWL, Fx

- Two (2) struts contribute to each jacket global force

FST2



FST1

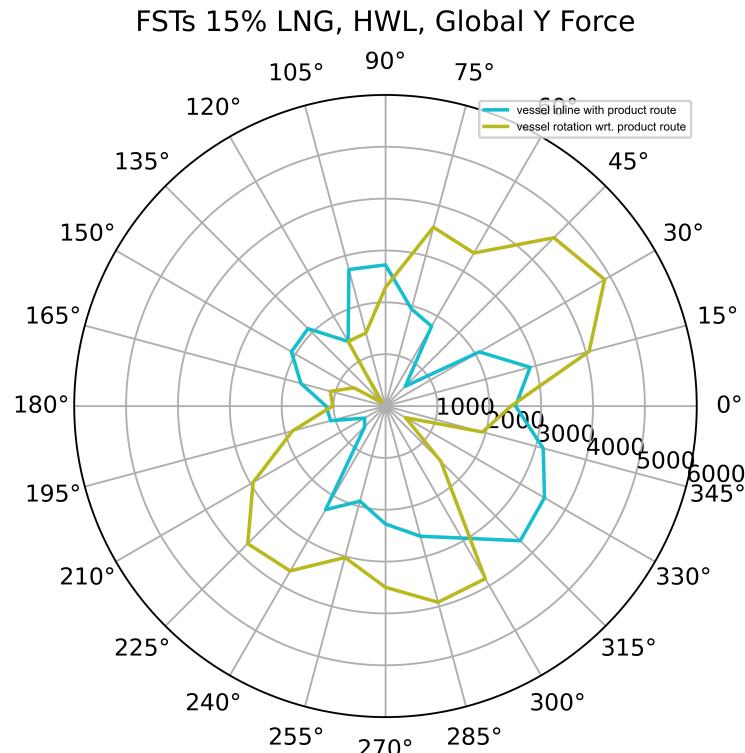


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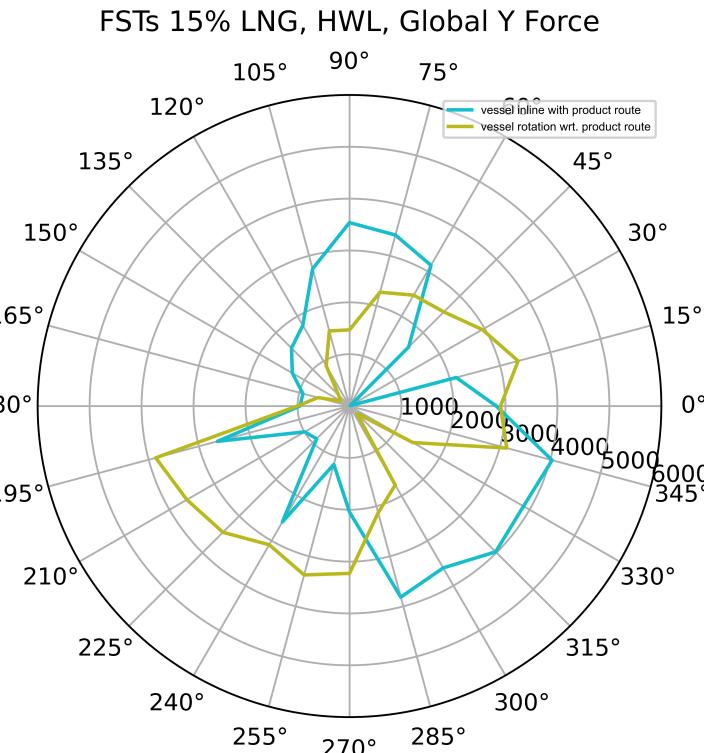
# Max Jacket Loads, FSTs 95% LNG, 100yr, HWL, Fy

- Two (2) struts contribute to each jacket global force

FST2



FST1

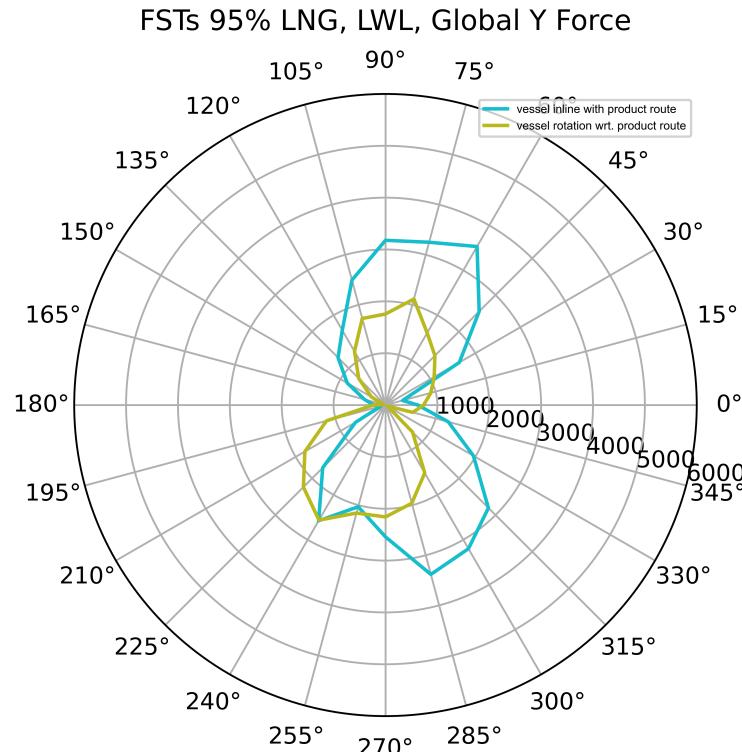


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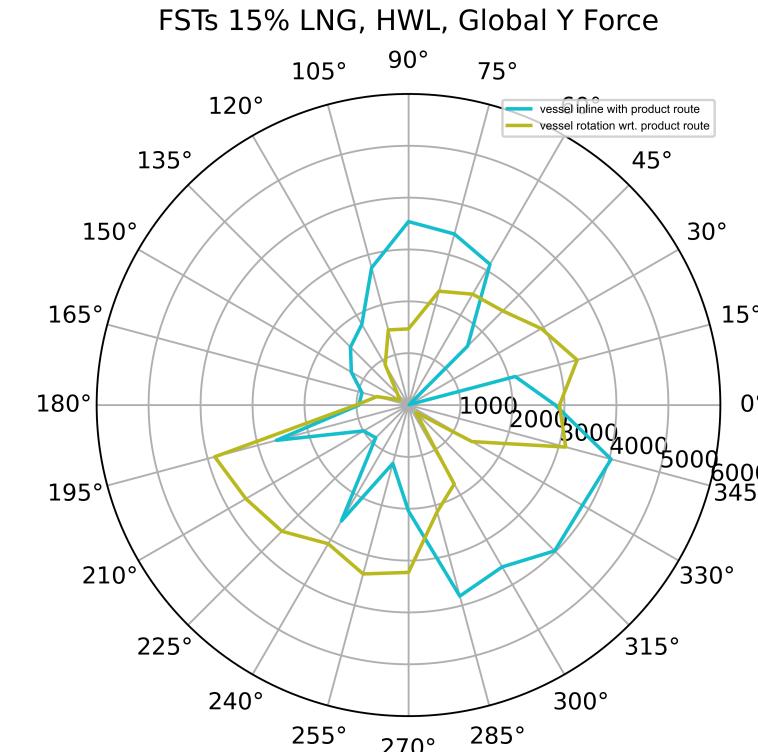
# Max Jacket Loads, FST1, Fy

- Two (2) struts contribute to each jacket global force

FSTs 95% LNG, 100yr, LWL



FSTs 15% LNG, 100yr, HWL

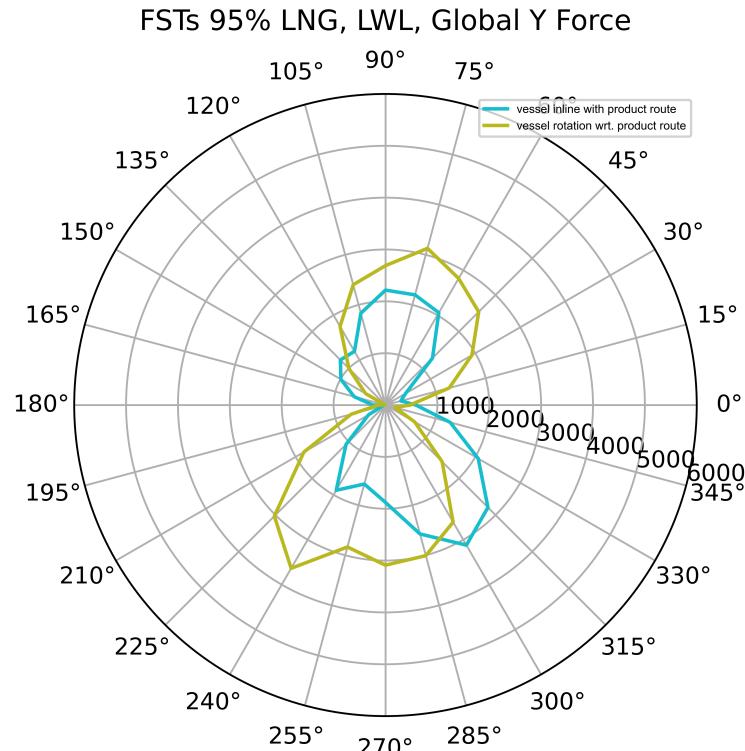


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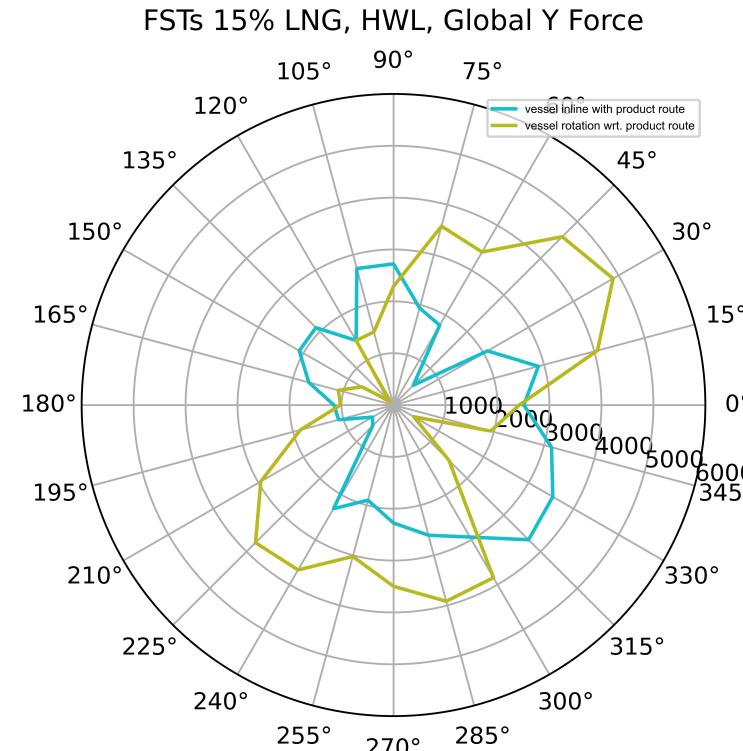
# Max Jacket Loads, FST2, Fy

- Two (2) struts contribute to each jacket global force

FSTs 95% LNG, 100yr, LWL



FSTs 15% LNG, 100yr, HWL



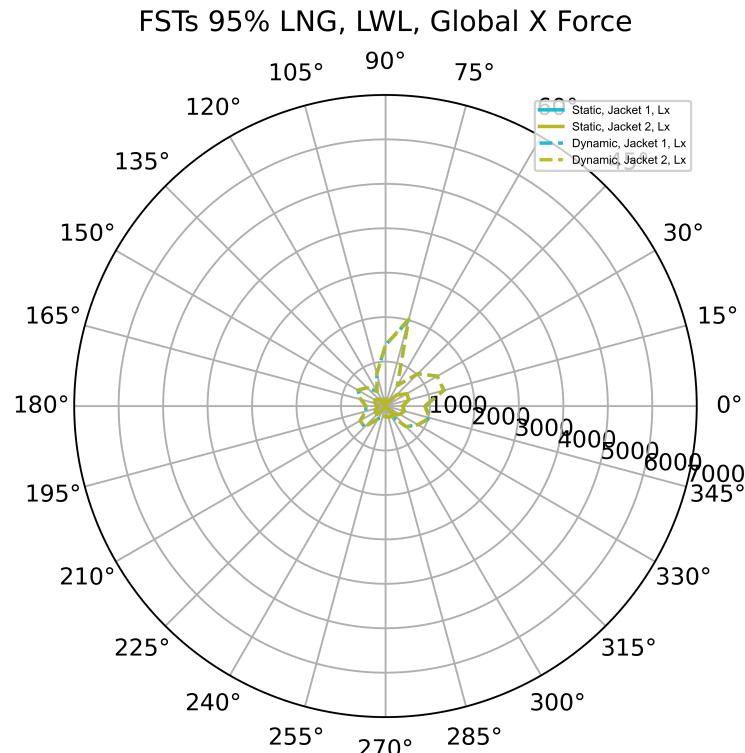
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## **Jacket Loads, Dynamic**

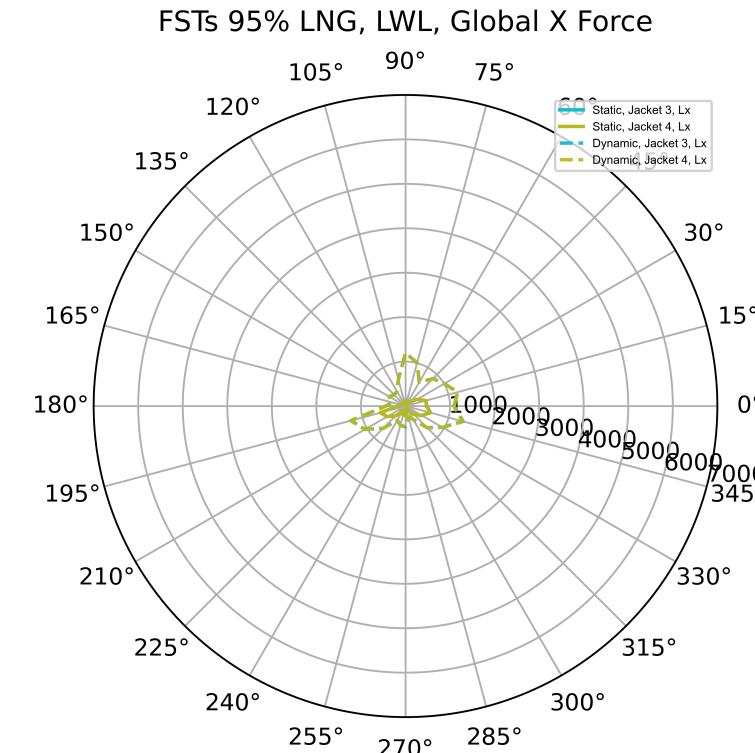
# Max Jacket Loads, FSTs 95% LNG, 100yr, LWL, Fx

- Two (2) struts contribute to each jacket global force

FST2



FST1

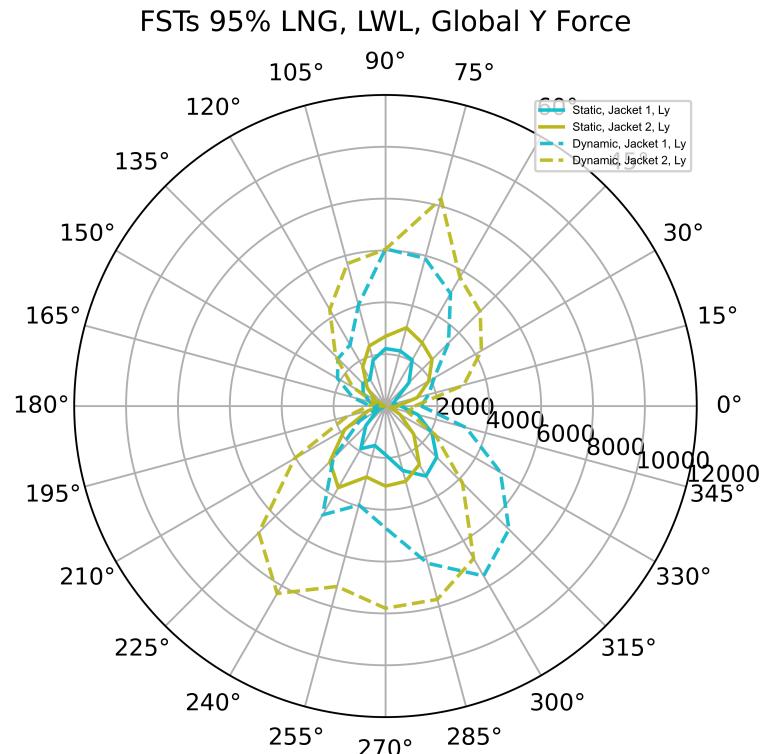


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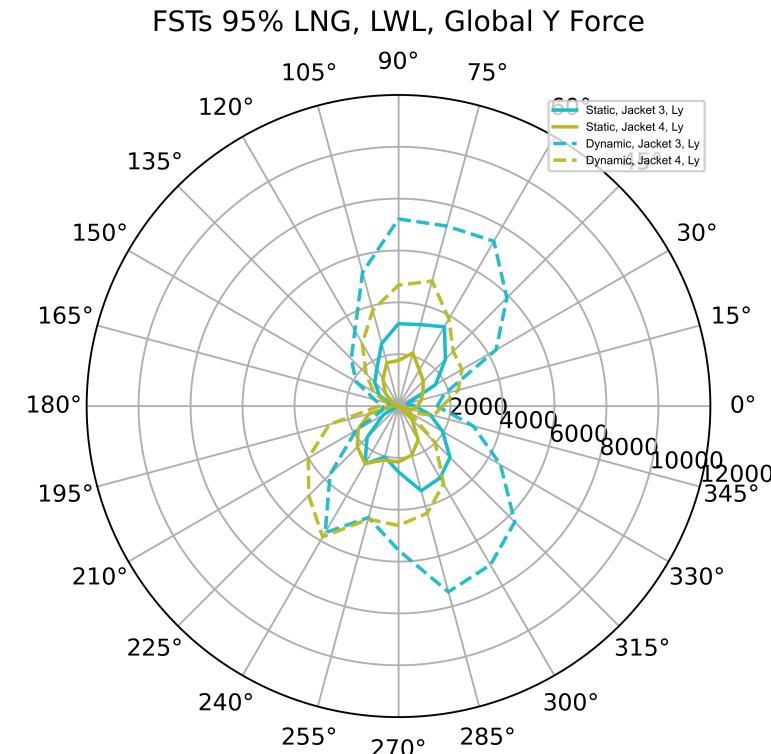
# Max Jacket Loads, FSTs 95% LNG, 100yr, LWL, Fy

- Two (2) struts contribute to each jacket global force

FST2



FST1

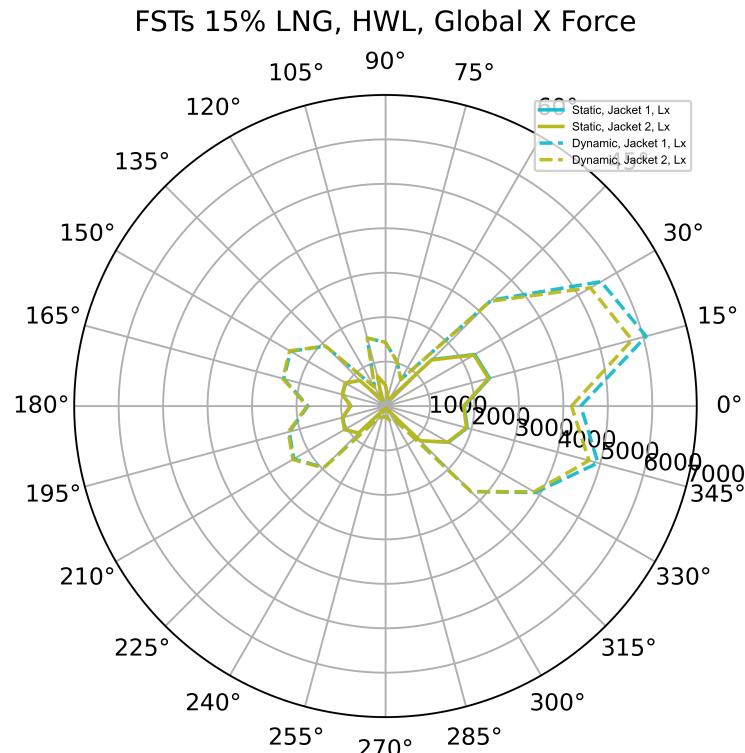


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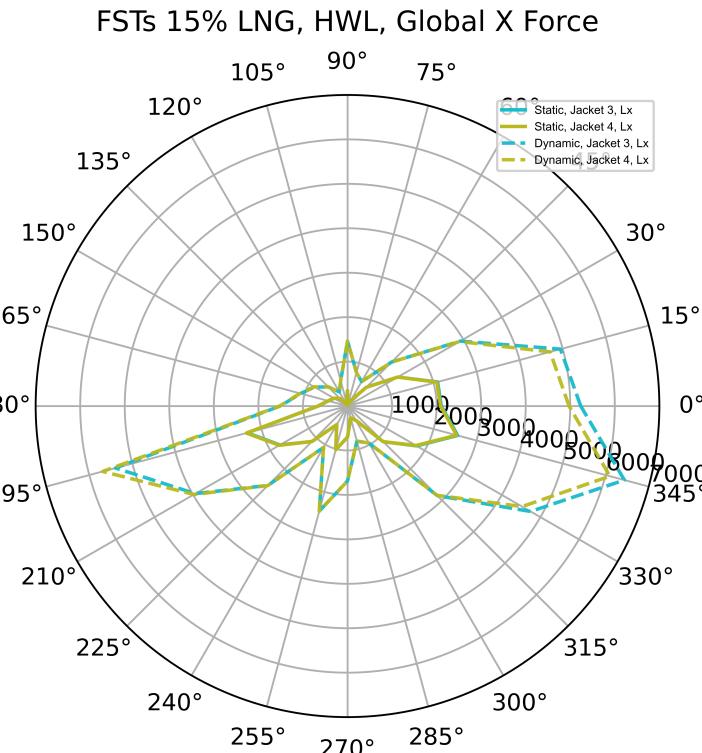
# Max Jacket Loads, FSTs 95% LNG, 100yr, HWL, Fx

- Two (2) struts contribute to each jacket global force

FST2



FST1

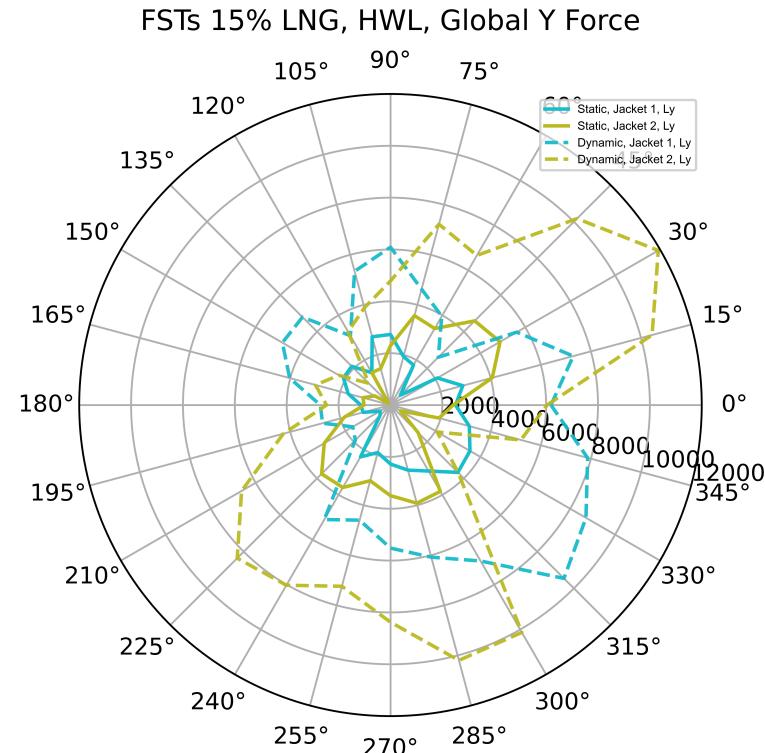


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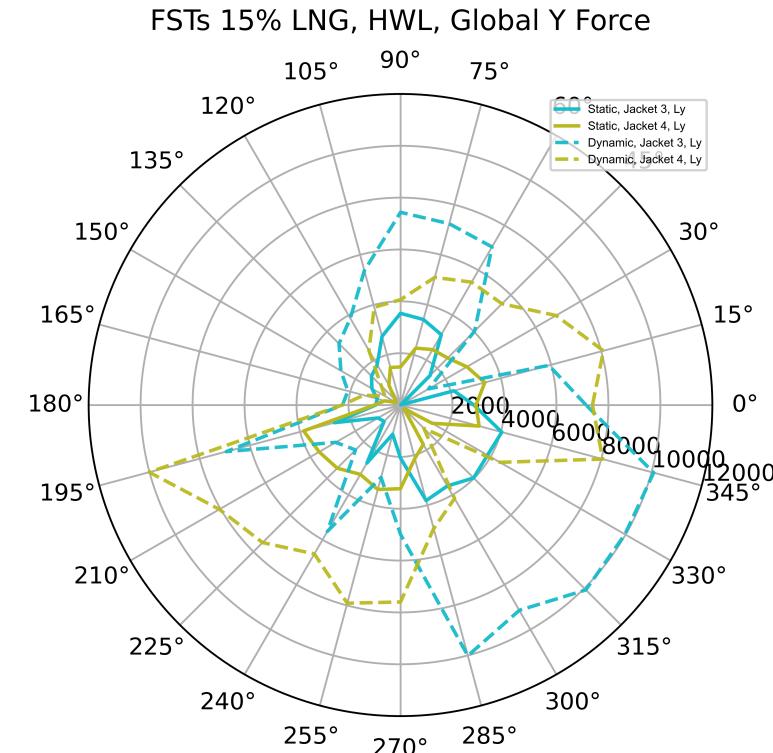
# Max Jacket Loads, FSTs 95% LNG, 100yr, HWL, Fy

- Two (2) struts contribute to each jacket global force

FSTs 95% LNG, 100yr, LWL



FSTs 15% LNG, 100yr, HWL

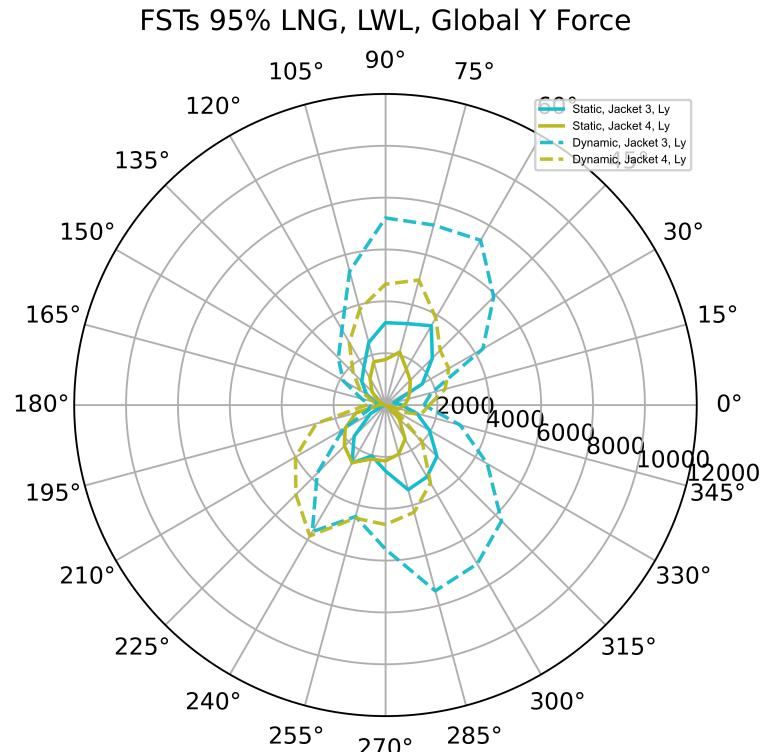


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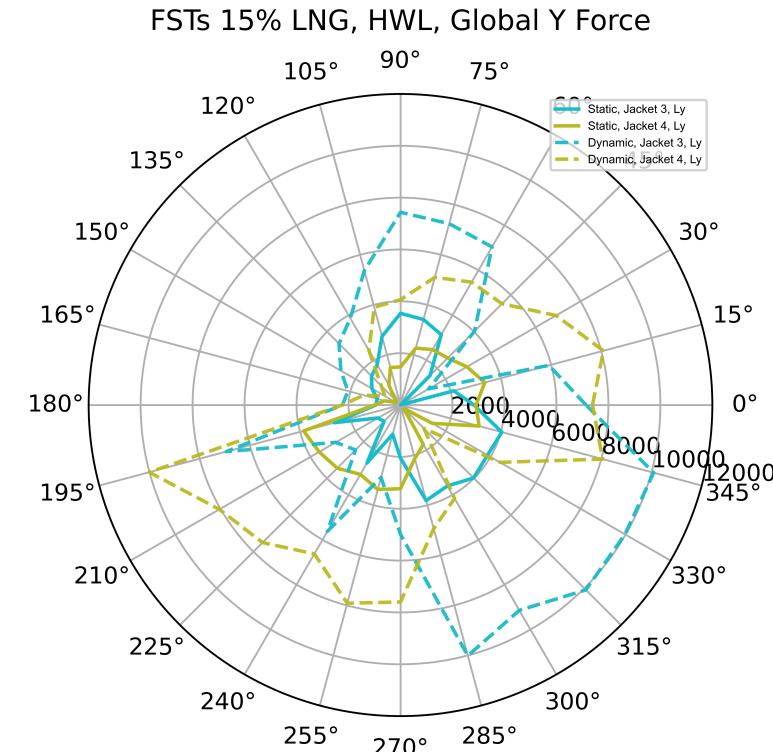
# Max Jacket Loads, FST1, Fy

- Two (2) struts contribute to each jacket global force

FSTs 95% LNG, 100yr, LWL



FSTs 15% LNG, 100yr, HWL

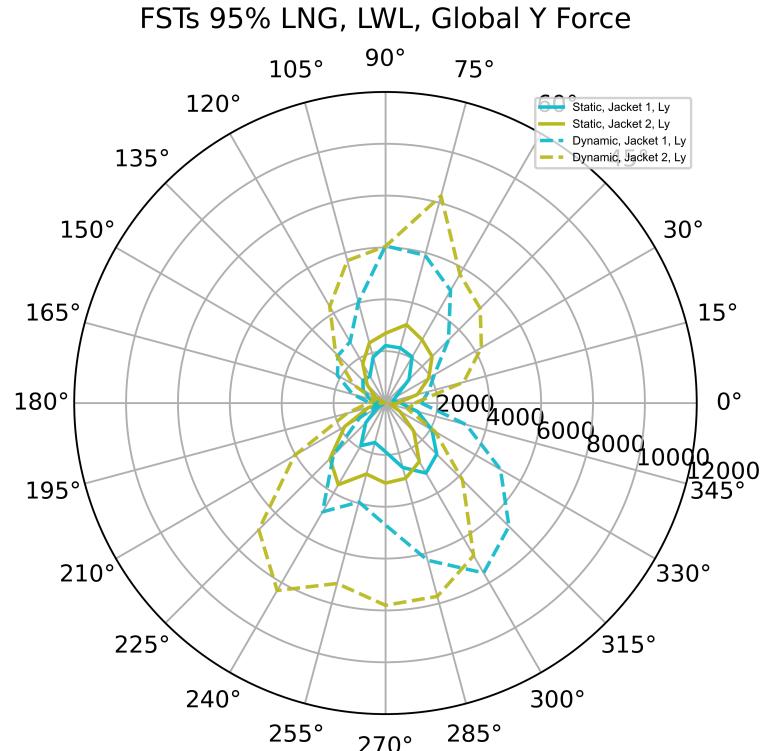


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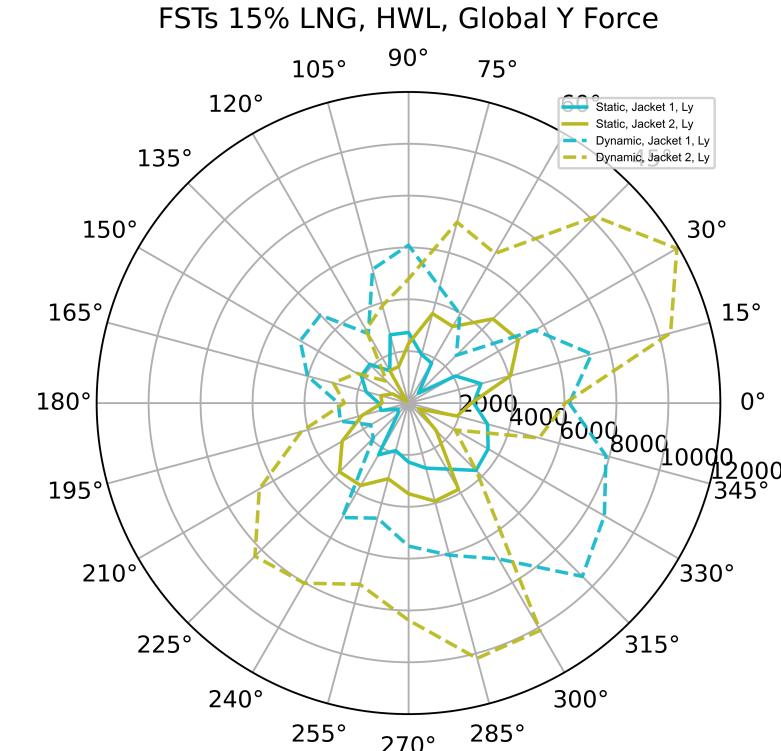
# Max Jacket Loads, FST2, Fy

- Two (2) struts contribute to each jacket global force

FSTs 95% LNG, 100yr, LWL



FSTs 15% LNG, 100yr, HWL



- TBA