



Hydrographic

and Marine Consultants BV

Fatigue in heavy transport

22 September 2010



Hydrographic and Marine Consultants BV
Operetteweg 4 – 1323 VA Almere-Stad
The Netherlands



Contents

- Introduction



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FLOAT ON AND FLOAT OFF



ROLL ON AND ROLL OFF



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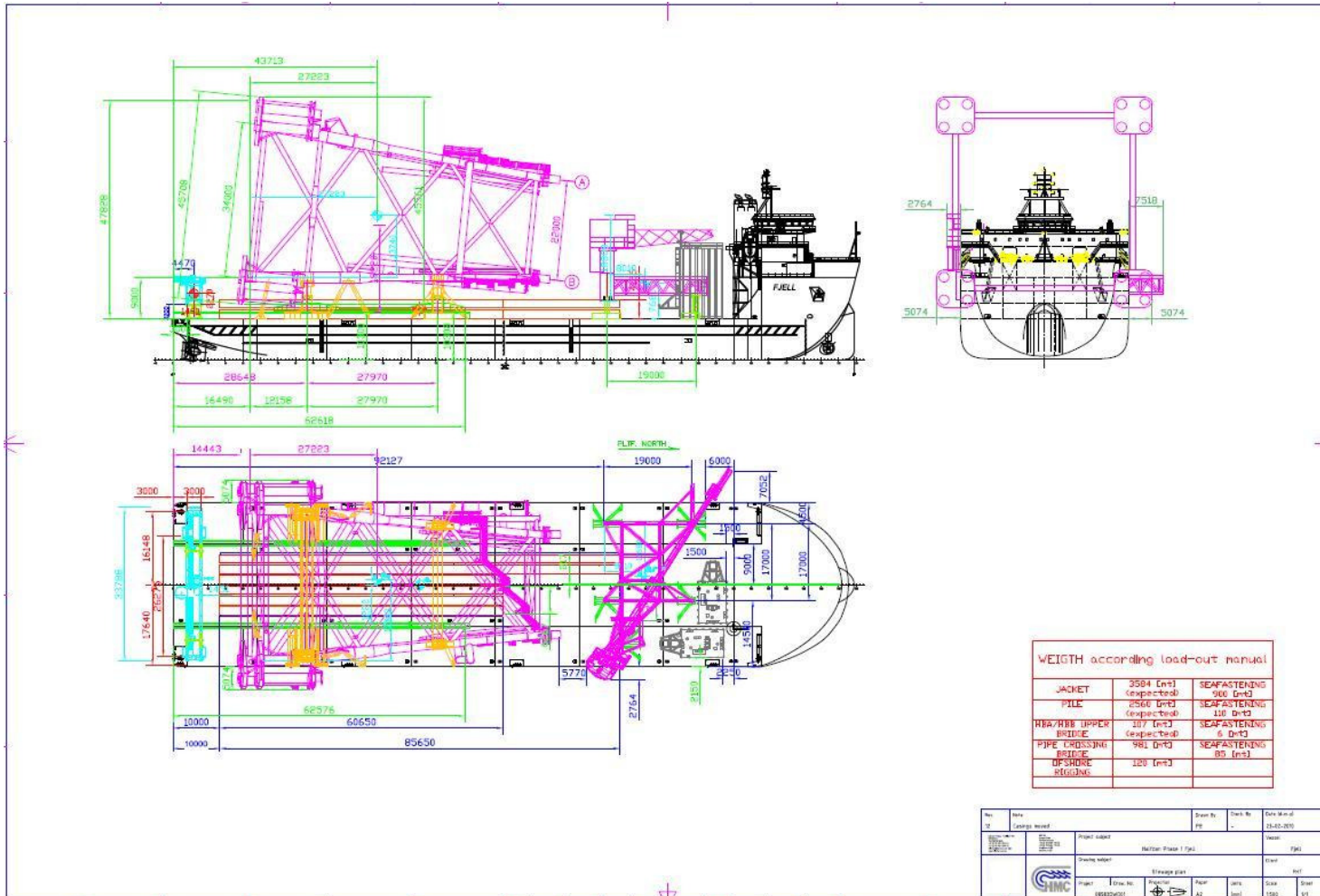


SKID ON AND LIFT-OFF



SKID ON AND LIFT OFF

Stowage plan



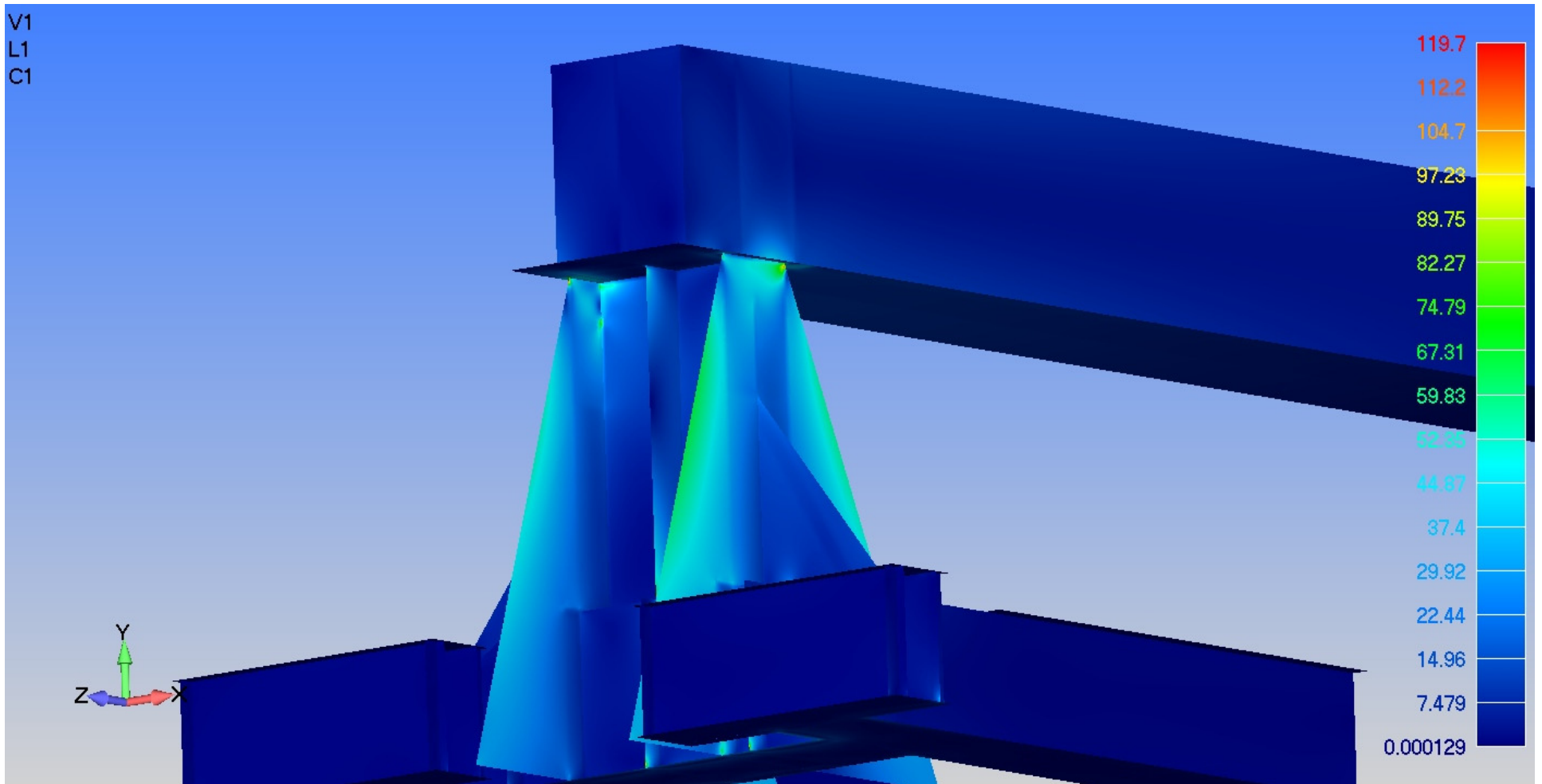
TRANSPORT

Engineering

- MS-TOOL ballast plan calculations
- Ballast plan tidal compensation
- Ballast steps increments/volumes summary skid on
- MS-TOOL calculations for motions
- Mooring analysis
- Finite element calculations for seafastening

SKID ON AND LIFT OFF

Finite element calculations seafastening



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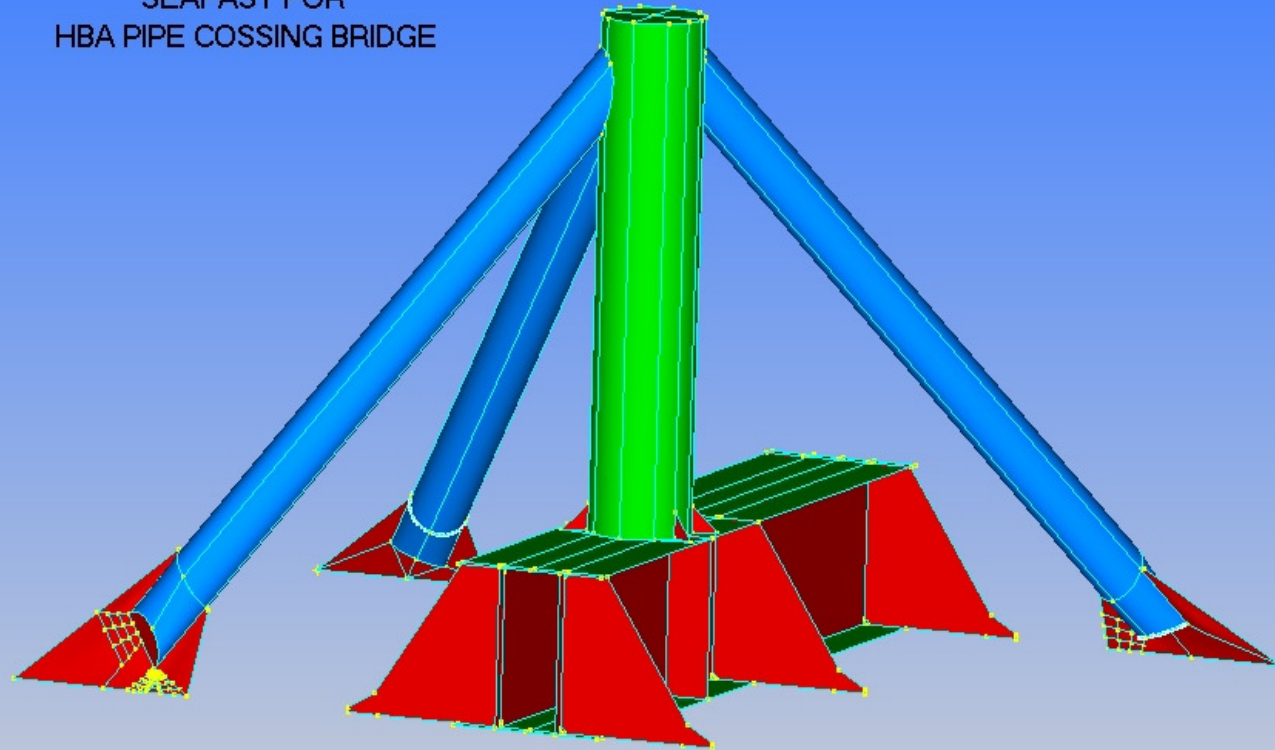


SKID ON AND LIFT OFF

Finite element calculations seafastening

V1
L1
C1

SEAFAST FOR
HBA PIPE CROSSING BRIDGE



Output Set: NX NASTRAN Case 1
Deformed(0.665): Total Translation

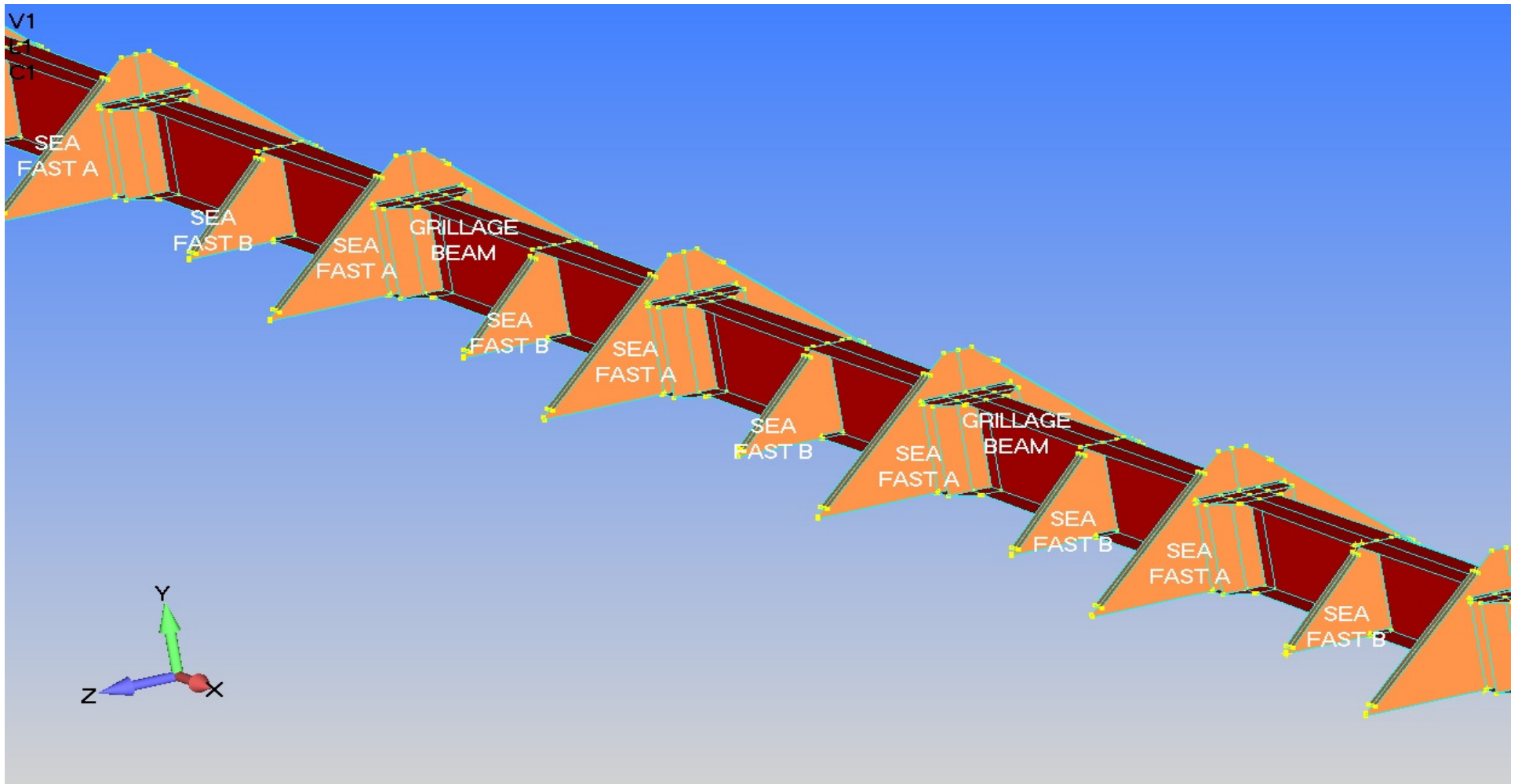


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ROLL ON AND ROLL OFF

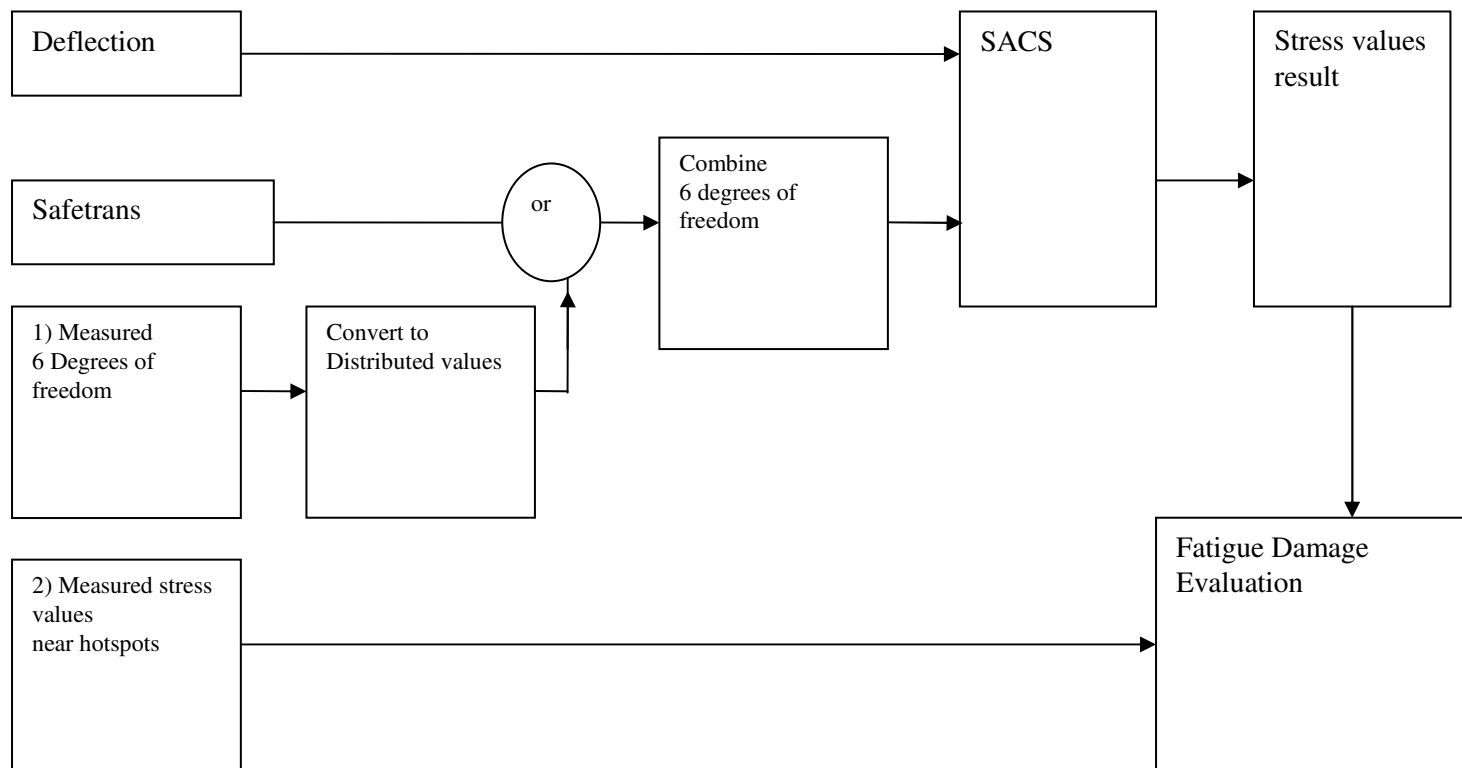
Finite element calculations seafastening



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MOG Methodology



Present methodology in use by plant designers

- 6 degrees of freedom input in SACS for load combinations find the worse case
- Deflection in hogging and sagging for a standard wave
- Maximum values combined.

TOO CONSERVATIVE



Proposed methodology

- SafeTrans for transport simulation and number of oscillations
- Using combined motions
- In the beginning of sailing with self propelled heavy lift ships similar discussion was negotiated for seafastening that combined loads should be used. In fact same counts for fatigue.



Questions



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