

# HOW WE USE TENSION LOG FILES

LOGS → ANALYSES → DECISION → INSPECTION

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## DNV-RU-OU-0300 & DNV-CP-0632

- DNV rules updated latest years with regards to tension monitoring and tension logging
  - Require AHV tension logging of all tension operations
  - Log files to be shared with equipment owners for analyses
  - Max. tension value checked towards the equipment's MBL (Min. Breaking Load)
  - Number of operations logged and checked towards triggers

### DNV Key Tension Triggers

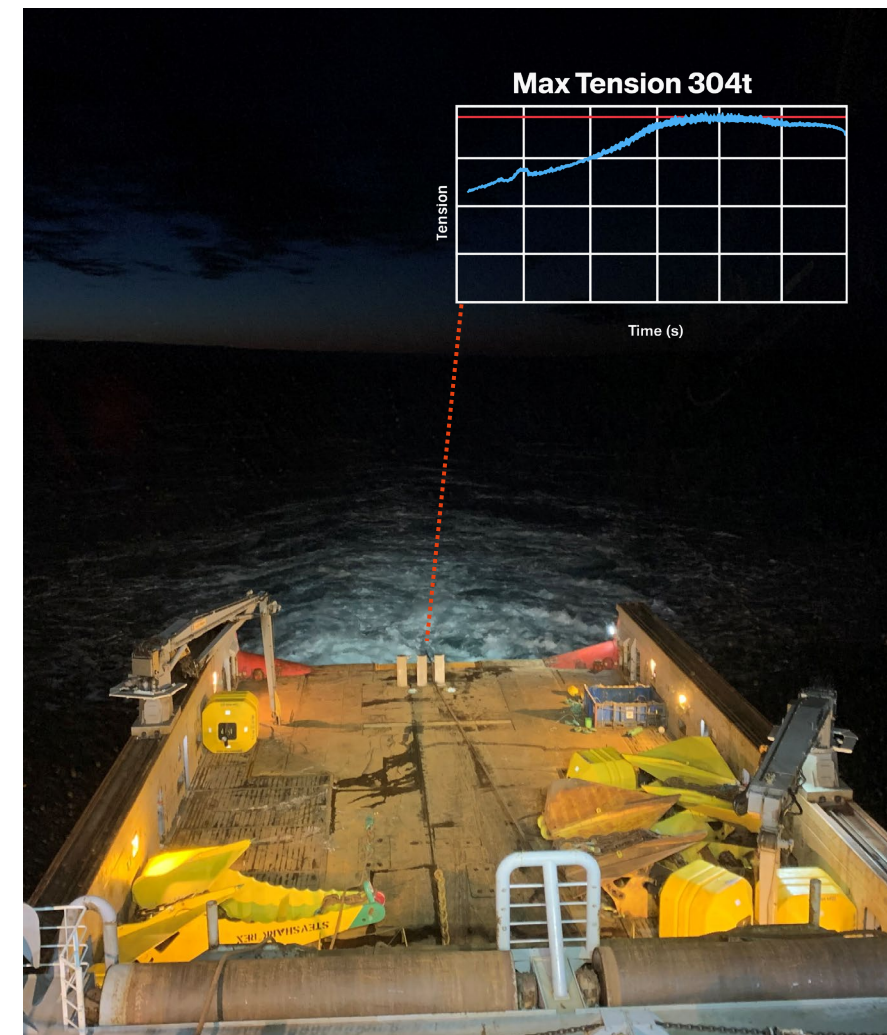
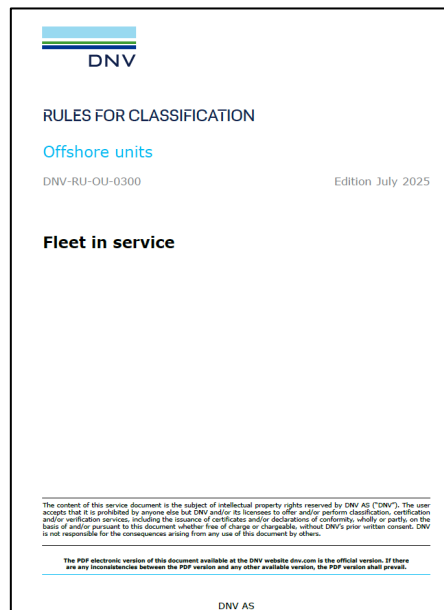
≥ 30% MBL with chain on stern roller → **Inspection**

≥ 50% MBL → **Count (≥15)** → **Inspection**

≥ 65% MBL → **Inspection**

≥ 20 recoveries → **Inspection**

	MBL [t]	30 %	50 %	65 %
76mm R4	612	183	306	397
84mm R5	858	257	429	557
120mm R3S	1257	377	628	817



## AHV TENSION LOGS

- Perform logging of each tension operation at AHV bridge
- Monitor actual tension live towards the maximum load defined in SOW
- Share log files with Delmar for onshore analyses



Log filer og Demoblister

VB

Follow up. Completed on tirsdag 14. oktober 2025.

Line #4 Log.txt	108 KB	Line #8 Log.txt
Line #2 Log.txt	108 KB	Line #3 Log.txt
Line #6 Log.txt	97 KB	Line #7 Log.txt

[Phish Alert](#)

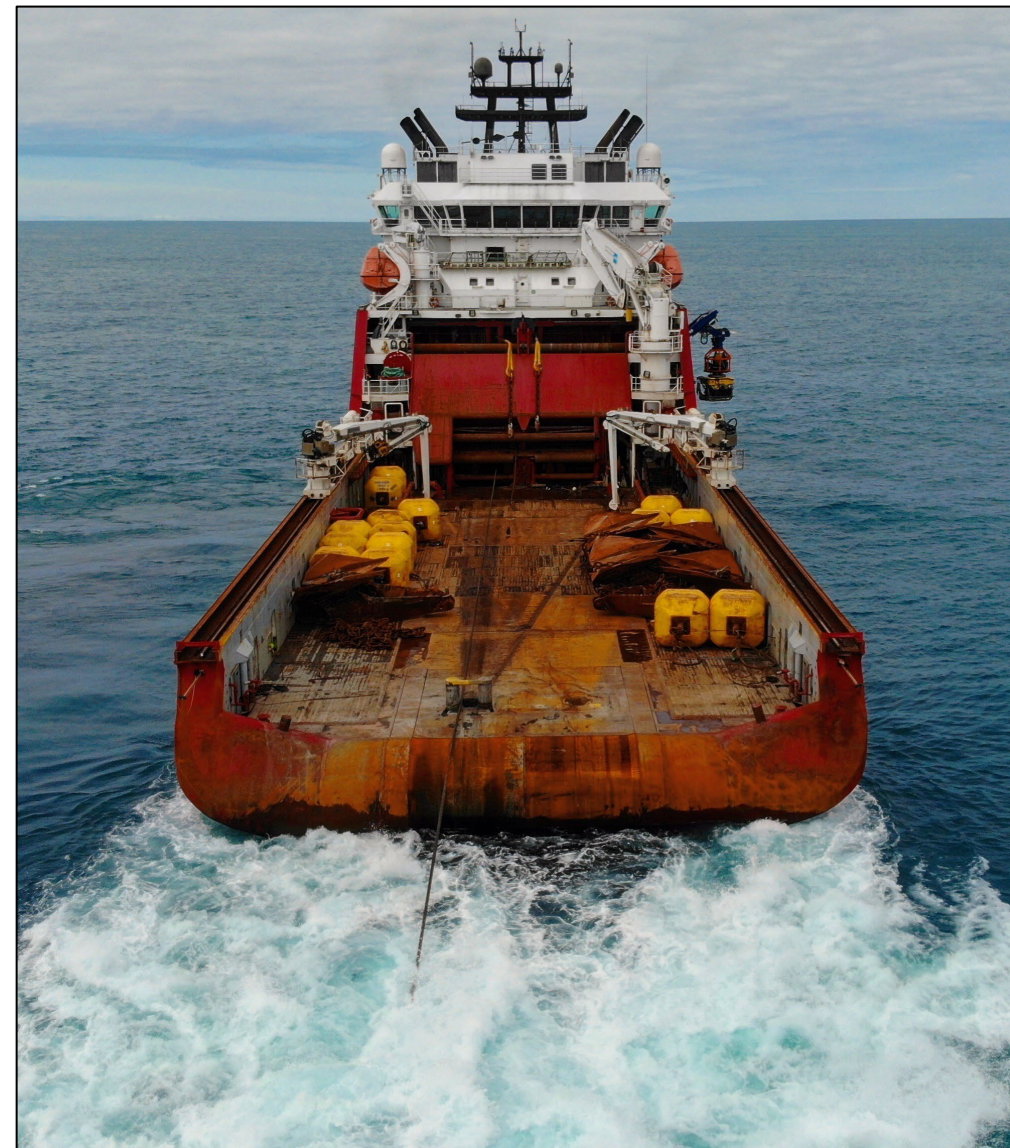
Hei,

Legger ved Logfiler og demoblister

Logg:

12.10.25  
 #8 = 07:36-07:51  
 #7 = 11:23-11:38  
 #6 = 15:04-15:19  
 #5 = 18:47-19:02  
 #4 = 21:28-21:43

COMMENT: TowconRT  
 COMMENT: Userlog  
 COMMENT: Time; Cond; Winch ;M;Ton;Bar\_0;Bar\_1;Rpm;M/min;Brake;Coupling  
 10/13/25 11:31:47; USER; Tow Prt;160;85;0;0;0;1;0

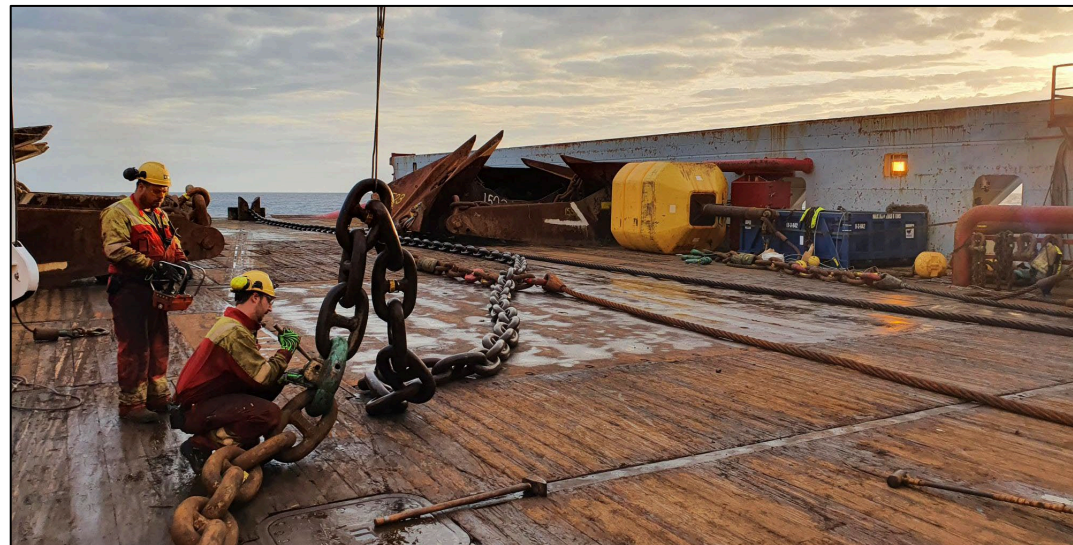


## LINE DRAWINGS

- Ensure certified equipment used with sufficient MBL for the job
- Document **all** ID numbers connected in each line before tensioning
- One pre-lay operation may involve **200+ individually tracked components**, each with unique load history



All components have their unique usage/tension history



### Test Tension Prelay at Othello South

Test tension during prelay

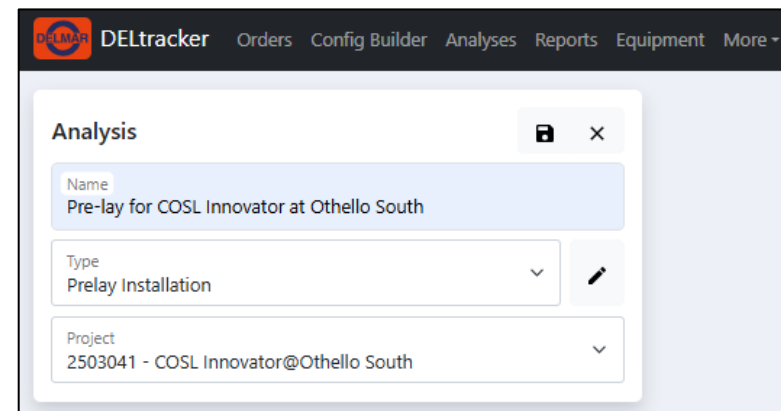
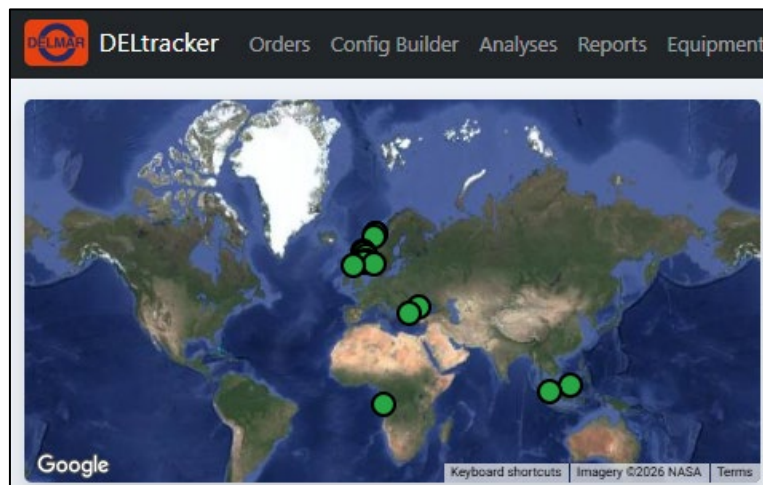
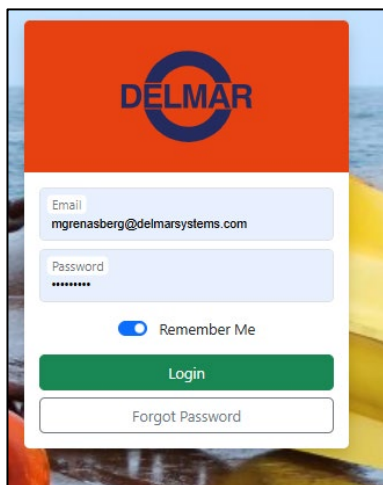
General Pick List All Equipment Line 1 23 Line 2 27 Line 3 27 Line 4 25 Line 5 29 Line 6 27 Line 7 27 Line 8 27

Configuration Summary Historical Active Installed

Type	Seq	Tag Description (Group)
DETACHABLE LINK	1	DSM-KFLR5-841625 SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5 (800271)
CHAIN TAILS	2	DSM-AC5R5-8459 CHAINTAIL, 84MM, R5, STUDLINK, 5-LINKS (800253)
DETACHABLE LINK	3	IKMSK841209 SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5 (800271)

## DELTRACKER – TENSION ANALYSES

- Software developed by Delmar
- Line drawings + Tension logs → DNV check → Inspection jobs
- Automatically checks all DNV requirements and generates inspection jobs and usage restrictions





## STEP 1 - IMPORT LINE DRAWINGS

Activity	Prelay Test Tension			Order No			
Vessel Name	Skandi Vega			Exported 2025-Oct-14 07:11:09 UTC			
Line	Line 1						
Winch/Reel Name	Tow Prt	Winch Drum	Type				
Start Date	2025-okt-13	Time	11:30				
End Date	2025-okt-13	Time	12:05				
<i>Form Date 2024-Mar-12</i>							
Line 1							
Order	Type	Tag	Description	Included in Activity	Used for Anchor Recovery Between Anchor and Winch	Chain (DNV)	
						In Contact with Stern Roller During Anchor Breakout or Installation	Estimated Link In Contact with Stern During Anchor Breakout or Installation (ex. 10m from end A)
1	DETACHABLE LINK	DSM-KFLR5-841625	SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5	Yes	No		
2	CHAINTAILS	DSM-AC5R5-8459	CHAINTAIL, 84MM, R5, STUDLINK, 5-LINKS	Yes	No		
3	DETACHABLE LINK	IKMSK841209	SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5	Yes	No		
4	SWIVEL	IKMMOSWR584006	SWIVEL, TYPE 231-M5, MBL 858MT SLIDE BEARING, MOORLINK	Yes	No		
5	DETACHABLE LINK	IKMSK841008	SHACKLE, KENTER, FAST LOCK 84MM, SLIM LINE, NVR5	Yes	No		
6	ADAPTERS	DSM-CA5R5-8475	CHAINTAIL, 5-LINK, 84MM, NVR5 GRADE, 2 X STUD LINK, ENLARGED LINK	Yes	No		
7	SHACKLE	DSM-DS858-286	SAFETY PIN D-SHACKLE, MBL 858T	Yes	No		
8	THIMBLE	DSM-RT858-118	ROLL THIMBLES 610 X 400 X 258 (FOR D-SHACKLE MBL 858T)	Yes	No		
9	FIBER ROPE	DEL-FRT5-01	FIBER ROPE FOR TENSION TESTING	Yes	No		
10	THIMBLE	DSM-RT858-202	ROLL THIMBLES 610 X 400 X 258 (FOR D-SHACKLE MBL 858T)	Yes	No		
11	SHACKLE	DSM-DS858-101	SAFETY PIN D-SHACKLE, MBL 858T	Yes	No		
12	ADAPTERS	DSM-CA5R5-8445	CHAINTAIL, 5-LINK, 84MM, NVR5 GRADE, 2 X STUD LINK, ENLARGED LINK	Yes	No		
13	DETACHABLE LINK	DSM-KFLR5-76270	SHACKLE, KENTER, FAST LOCK 76MM, SLIM LINE, NVR5	Yes	No		
14	CHAIN	DSM-ACR5-7622	ANCHOR CHAIN, 76MM, NVR5 GRADE, STUDLINK, 750M LENGTH	Yes	No	No	
15	DETACHABLE LINK	DSM-KFLR5-76318	SHACKLE, KENTER, FAST LOCK 76MM, SLIM LINE, NVR5	Yes	No		
16	CHAIN	DSM-ACR5-7652	ANCHOR CHAIN, 76MM, NVR5 GRADE, STUDLINK, 250M LENGTH	Yes	No	No	
17	DETACHABLE LINK	DSM-KFLR5-76110	SHACKLE, KENTER, FAST LOCK 76MM, SLIM LINE, NVR5	Yes	No		
18	CHAIN	DSM-ACR5-7651	ANCHOR CHAIN, 76MM, NVR5 GRADE, STUDLINK, 250M LENGTH	Yes	No	No	
19	DETACHABLE LINK	DSM-KFLR5-76172	SHACKLE, KENTER, FAST LOCK 76MM, SLIM LINE, NVR5	Yes	No		
20	SWIVEL	IKMMOSWR576047	SWIVEL, TYPE 177-M5, MBL 735MT SLIDE BEARING, MOORLINK	Yes	No		
21	DETACHABLE LINK	DSM-KFLR5-76358	SHACKLE, KENTER, FAST LOCK 76MM, SLIM LINE, NVR5	Yes	No		
22	ADAPTERS	DSM-CA5R5-84143	CHAINTAIL, 5-LINK, 84MM, NVR5 GRADE, 2 X STUD LINK, ENLARGED LINK	Yes	No		
23	ANCHOR	DSM-MK6-1511	ANCHOR, STEVPRIS, MK6, 15MT	Yes	No		

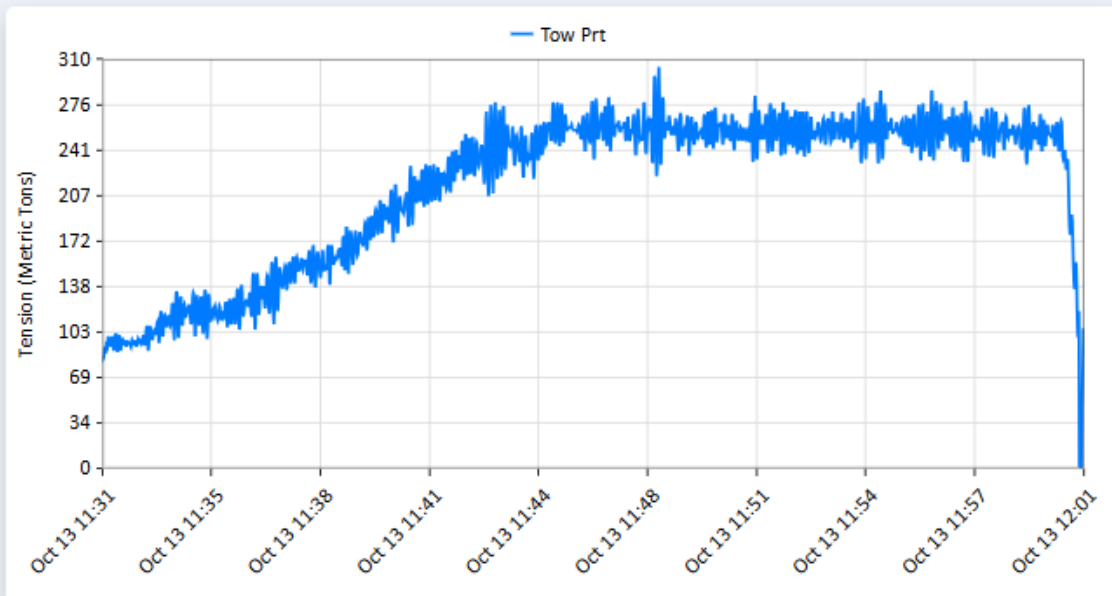
## STEP 2 – UPLOAD AND PROCESS LOG FILES

Tension Data Files						
Name	Winch / Reel	Vessel	Timeframe	Max Tension (mt)	Status	
Line #1 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-13 11:31 - 2025-Oct-13 12:01	304	Processed	
Line #2 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-13 07:36 - 2025-Oct-13 08:09	306	Processed	
Line #3 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-13 03:14 - 2025-Oct-13 03:39	281	Processed	
Line #4 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-12 23:07 - 2025-Oct-12 23:39	290	Processed	
Line #5 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-12 19:21 - 2025-Oct-12 19:59	289	Processed	
Line #6 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-12 15:45 - 2025-Oct-12 16:15	285	Processed	
Line #7 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-12 12:04 - 2025-Oct-12 12:34	291	Processed	
Line #8 Log.txt	Tow Prt (Winch Drum)	Skandi Vega	2025-Oct-12 08:12 - 2025-Oct-12 08:47	306	Processed	

**76mm R4 Equipment: 306t / 612t MBL = 50%**

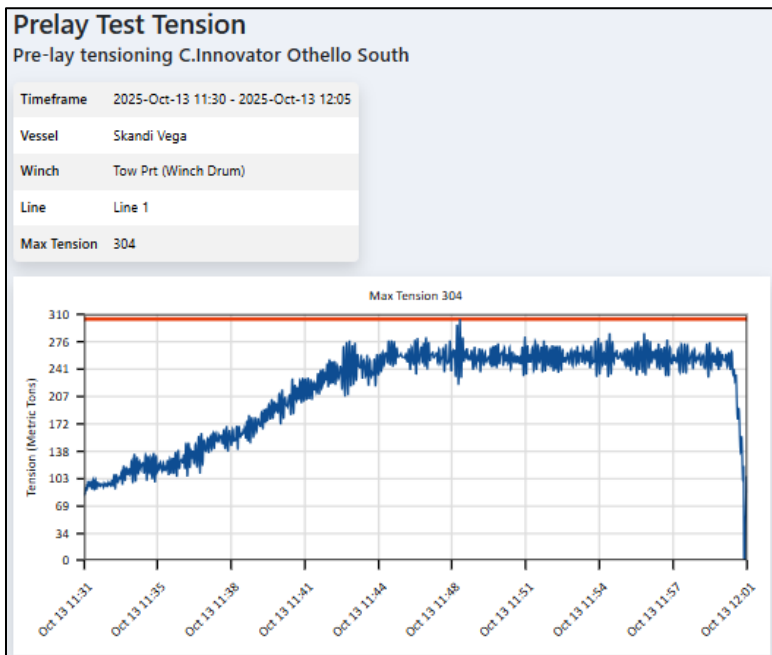
### Line #1 Log.txt Tension File

Pre-lay tensioning C.Innovator Othello South



## STEP 3 – RUN ANALYSES

- Tension data analysed against DNV triggers
- Each individual mooring component checked based on its specific MBL and usage/tension history
- Inspection jobs generated automatically



Type	Tag Description	MBL (MT)	Tension >65% MBL	Used for Anchor Recovery	Contact with Stern Roller During Recovery (>30% MBL) DNV Chain Requirement
DETACHABLE LINK	DSM-KFLR5-841625 SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5	858	No	No	No
CHAIN TAILS	DSM-AC5R5-8459 CHAIN TAIL, 84MM, R5, STUDLINK, 5-LINKS	858	No	No	No
DETACHABLE LINK	IKMSK841209 SHACKLE, KENTER, NDUR-LINK FAST LOCK 84MM, SLIM LINE, R5	858	No	No	No
SWIVEL	IKMMOSWR584006 SWIVEL, TYPE 231-M5, MBL 858MT SLIDE BEARING, MOORLINK	858	No	No	No
DETACHABLE LINK	IKMSK841008 SHACKLE, KENTER, FAST LOCK 84MM, SLIM LINE, NVR5	858	No	No	No
ADAPTERS	DSM-CA5R5-8475 CHAIN TAIL, 5-LINK, 84MM, NVR5 GRADE, 2 X STUD LINK, ENLARGED LINK	858	No	No	No
SHACKLE	DSM-DS858-286 SAFETY PIN D-SHACKLE, MBL 858T	858	No	No	No
THIMBLE	DSM-RT858-118 ROLL THIMBLES 610 X 400 X 258 (FOR D-SHACKLE MBL 858T)	858	No	No	No
FIBER ROPE	DEL-FRT5-01 FIBER ROPE FOR TENSION TESTING	850	No	No	No

### Example: Tension history for one component

Activity	End	Tension, metric ton	Used for anchor Recovery	Stern roller contact	Tension, MBL %	Installation	Vessel Name
Recovery	27.02.2025	81	<input checked="" type="checkbox"/>	<input type="checkbox"/>	13.24%	COSL PIONEER	Siem Pearl
Test Tension Prelay Kokopelli	21.12.2024	304	<input type="checkbox"/>	<input type="checkbox"/>	49.67%	COSL PIONEER	Aurora Saltfjord
Anchor Recovery	20.02.2024	155	<input checked="" type="checkbox"/>	<input type="checkbox"/>	25.33%	COSL PROMOTER	Normand Ferking
Prelay Statfjord M	19.05.2023	326	<input type="checkbox"/>	<input type="checkbox"/>	53.27%	COSL PROMOTER	Skandi Vega

### Example: Inspection job generated

Job name	Due date	Unit name	Job description
TENSION, PARTIAL INSPECTION	13.01.2026	ANCHOR CHAIN, 84MM, NVR5 GRADE, STUDLINK, 250M LENGTH	Reason for work: Chain in contact with stern roller during recovery @ >30% MBL

## SUMMARY

- **What we do**
  - Collect complete **tension logs from AHVs** for all pre-installation and recovery operations
  - Document **full line configuration** with unique IDs for every component
  - Maintain **lifetime tension history** per component
- **How we do it**
  - Vessel tension logs and line drawings are imported into **Deltracker**
  - Data is automatically analysed against **DNV Rules**
  - All DNV triggers and counters are continuously tracked
- **What it ensures**
  - Inspection jobs generated when limits are exceeded
  - Non-compliant equipment locked until inspection is completed
  - Full traceability for owners, operators, class and auditors
  - **Full DNV compliance and component traceability through automated tension log analysis**



THANK YOU  
FOR YOUR  
ATTENTION