

[REDACTED] **Project**

Survey Reference: [REDACTED]

7th – 10th December 2020

LOADING REPORT

CLIENT: [REDACTED] S.A.
EXPORTER: [REDACTED] Group / [REDACTED] Group
RECEIVER: [REDACTED] Norway AS, [REDACTED], Norway
FREIGHT FORWARDER: [REDACTED], Bremen, Germany
STEVEDORING: [REDACTED]
AGENT: [REDACTED] GmbH
CARRIER: [REDACTED] Shipping [REDACTED]
VESSEL: mv ' [REDACTED]
VOYAGE: [REDACTED]
DEPARTURE PORT: [REDACTED] Germany – ETD 10th Dec
DELIVERY PORT: [REDACTED], Norway – ETA 14th Dec
SPECIFIED CARGO: [REDACTED] 10" CS Water Injection Linepipe – Qty 1693
[REDACTED] 4" CS Gas Lift Linepipe – Qty 2121
1 Loose Pipe: 17 --> 17
2 Pipes Bundle: 11 --> 22
3 Pipes Bundle: 13 --> 39
4 Pipes Bundle: 18 --> 72
5 Pipes Bundle: 13 --> 65
6 Pipes Bundle: 9 --> 54
7 Pipes Bundle: 267 --> 1869
[REDACTED] Production Line Pipe – Qty 2160
[REDACTED] Crate Protected Pipes – Qty 84
41 Double Packed + 2 Single Packed
WEIGHTS: [REDACTED] 10" – 1040kg/pipe
(kg's) [REDACTED] 4" – 263kg/pipe (7 pipe bundle avg – 1767kg)
[REDACTED] - 1000kg/pipe
DIMENSIONS: [REDACTED] 10" – 273.1mm x 11.9-12.5m (Ø12.7mm)
(ØxL (Wall Thickness)) [REDACTED] 4" – 114.3mm x 11.9-12.5m (8.6mm)
[REDACTED] - 219.1mm x (12.7mm)
BILL OF LADING No: [REDACTED] 01
DATE & PLACE OF SURVEY(S): 7th -10th Dec 2020 – [REDACTED], Germany
VALUE: [REDACTED]

EXECUTIVE SUMMARY

We attended [REDACTED] to conduct a survey of the pre-loading condition, loading, stowage, securing and final condition of [REDACTED] and [REDACTED] steel pipes. The pipes were to be loaded to the vessel mv '[REDACTED]' and shipped to [REDACTED], Norway for delivery to [REDACTED].

On initial pre-loading inspection the overall condition of the pipes was satisfactory with no damage, deformation or contamination found to critical items. Minor damage was found to end caps, however, these were repaired or replaced and all units were deemed ready for shipment. The vessel and its cargo hold were found in good condition and ready to receive the cargo. Vessel documentation and stability were all in order.

All intended lifting gear, accessories and operators certification was inspected and equipment was visually checked, all found satisfactory.

The preparation and loading proceeded as planned and initially in good order with safe working practises. At 09:21 on 07th Dec 20 a pipe was accidentally lifted while recovering the hooks from the cargo hold, raising one [1] pipe to around 2.5m before it fell, impacting another pipe (see section 2.8) The incident was due to a pipe hook being removed but not sufficiently cleared from the pipe end and subsequently caught the lip of the pipe on being recovered. No one was injured and the cargo only had a very minor abrasion mark. Work was stopped and the incident was discussed locally and with shore based stakeholders. Mitigations were agreed and delivered in a toolbox talk to all involved parties. These mitigations were reminded and followed throughout with no further incidents. The two [2] pipes involved were clearly marked and it is recommended that a further inspection is made by [REDACTED] on delivery (see comment .vii).

During the collection of pipes from the storage stack ashore, a fork lift attempted to pick up pipes from a 5th tier and as it did so, the wooden dunnage support broke and three [3] pipes rolled loose. The pipes were stopped by the fork lift and after assessment, the remaining pipes in the stack were secured using wedges and ratchet straps. These were then released in stages as the fork lift collected the pipes. All other dunnage in the remaining stacks was checked for signs of damaged or potential for failure. None were found and no further issues were experienced (see section 2.10).

The remainder of loading operations ran smoothly with no further incidents. Adherence with the mitigations and general high safety standards were strictly followed and well policed.

All the cargo was stowed securely, with the Stowage Plan revised to best suit the actual conditions found. All revisions were approved and deemed to be in the best interests of the most secure stowage. Safety nets were installed to a very high standard with all measures necessary to complete their proper fixing taken. Their delivery of a trusted secondary safety barrier is believed to be sound.

Securing of all the cargoes was to a high standard and in line with the plans and accepted best practises.

All stowage and securings were fully inspected, found in good order and believed to be sufficient to meet the rigours which can be reasonably expected on transit.

THIS IS TO CERTIFY that at the request and on behalf of Underwriters, we confirm having attended at the premises of [REDACTED] Bremen, in order to establish communications with the nominated representatives to advise of our involvement. To attend at the place of survey to confirm sound condition of the Critical items. To confirm adequacy of the completed stowage and securing arrangements of the Critical items to vessel, in respect of the intended transit to [REDACTED], Norway onboard mv '[REDACTED]'.

1. BACKGROUND

1.1. Surveyors:

Tom Schofield attended on behalf of Schofield International Ltd.

[REDACTED], Project Engineer, [REDACTED]
[REDACTED], on behalf of [REDACTED] & [REDACTED]*
[REDACTED], on behalf of [REDACTED] & [REDACTED]*
[REDACTED], on behalf of [REDACTED] & [REDACTED]*

*Attended independently in shifts

1.2. Instructions Received:

Instructions were received on 19th November 2020 via Schofield International on behalf of [REDACTED], to conduct a survey of the pre-loading condition, loading, stowage, securing and final condition of specialist [REDACTED] PR Bubi and [REDACTED] WI FL & GL FL steel pipes

Shipment was scheduled from [REDACTED], Germany to [REDACTED], Norway, onboard mv [REDACTED]. Contact details were supplied for the freight forwarder, [REDACTED] Bremen.

Services to be supplied within the scope of Survey:

- Establishment of communications with all relevant concerned parties.
- Review; method statement, logistics plan, lifting diagrams, stowage plans, securing plans, securing calculations and make recommendations for improvements as necessary.
- Attend and confirm the sound condition of Critical Items prior to loading.
- Attend and monitor; loading, stowage and securing of the Critical Items to ocean vessel including validation of the adequacy of the completed stowage and securing arrangements in respect of the intended transit to discharge port.
- Confirm the sound condition of the Critical Items on completion of loading operations.

1.3. Discussions:

Upon instruction, initial communications were established with the freight forwarder representative, [REDACTED] on 19th Nov 20. An introductory telephone conversation was followed up with email correspondence requesting the method statement and vessel information. No response was received.

[REDACTED] Project Logistics and Materials Coordinator, was contacted on 20th Nov 20, copying further interested parties, to solicit cargo, project and shipping information. [REDACTED] provided a full method statement and current folio of concerning information.

A call was held on 27th Nov 20, with [REDACTED], Project Transit Lead, in which a full project introduction and update on the current situation was given. The principle's primary concerns and focus areas were established.

Attendance was made for a further call, 30th Nov 20, related to the discharge arrangements by [REDACTED] in [REDACTED], Norway. Within the call, [REDACTED] raised the issue of secondary protection for stevedores, working on top of the cargo, in the form of nets installed between stacks on loading. Planning documentation specifically outlined that no netting was planned to be installed. Narrowing the planned voids to 0.5m was discussed as an alternative to secondary protection and parties agreed to investigate the most suitable arrangement and revert. Both proposals would affect the loading

requirements. Later, agreement was reached that safety nets would be installed at intervals of 2m and the Stowage Plan was altered accordingly.

A call was held on 02nd Dec 20 with [REDACTED] to arrange final survey details and working hours. Arrangements were agreed that helped to ensure surveyor presence for all cargo movements and securing.

1.4. Stowage & Securing Plan & Calculation Review

Revision one [1] of the loading plan, bedding plan, deck framing plan and predicted departure stability was provided, via email, on 26th Nov 20.

No cargo weights or deck loading were detailed and these were requested along with the following questions, via email, to [REDACTED], [REDACTED] on 30th Nov 20:

- Can you confirm the [REDACTED]'s Max Deck Loading (t/m2)?
- Can I confirm that no wires will be used in pre-bundled lashings or slings?
- Are tidal predictions, quay height and vessel freeboard info available?
- Does HoT affect cargo loading?
- Can you send a copy of the [REDACTED] Risk Assessment?
- Will the cargo be accessible for pre-loading inspection in the storage area?

A limited response was received via email on 3rd Dec 20. Outstanding questions were redirected to the shipowner and agent.

The plans and information available were reviewed in full; no concerns were raised and the plans deemed satisfactory.

1.5. Health & Safety Planning

A full review and discussions were held regarding the health and safety arrangements, practises and standards employed during all operations. Clear safety procedures and mitigations were outlined by [REDACTED]. Experienced in pipe loading operations, they had well defined procedures and claimed to strictly enforce compliance at all times.

A Risk Assessment was requested and provided via email on 03rd Dec 20. This was reviewed and hazards and mitigations noted for inspection during survey.

A specific limitation was defined for the allowable distance to the stack edge during loading as; no closer than 2.5m. This limitation was to be marked on the bulkheads and it was requested by [REDACTED] that Olympic straps were placed 2.5m from pipe ends to further help mark the limitation. It was agreed that this would be discussed with [REDACTED] Bremen prior to loading.

It was requested by [REDACTED] that particular focus be given to the following safety items:

- Dedicated & skilled staff doing the carpentry,
- Special PPE = helmet with ear & eye protections, trousers with anti-cuts, etc
- Confirm how they protect pipes from chainsaw works
- How they move the equipt from shore to and in the hold (stack to stack)
- Management of gas for chain saw
- Permit to work

All were addressed during the survey and are detailed below.

2. SURVEY ONE [1] – 07th Dec to 10th Dec 2020

We attended [REDACTED] Cargo Log, [REDACTED] from 7th – 10th December 2020 to survey the pre-loading condition, loading, stowage, securing and final condition of the [REDACTED] Project pipe cargo.

Also in attendance were the surveyors detailed above.

2.1. Pre-loading Condition Inspection

All grades of pipes were stowed on the quay side, uncovered, in an open air location. The pipes were stowed in banks of nine [9] rows and up to six [6] tiers. Storage was accommodated by timber frames, with pipes secured within them using wooden wedges.

The cargo was inspected to the best that the access in the stowed position allowed. All pipes were further checked by the stevedores on loading and any abnormalities raised.

The overall condition of all the grades of pipes inspected was satisfactory with no damage, deformation or contamination found to critical items. All units were deemed safe and ready for shipment.

Below are individual unit specific observations;

[REDACTED] 10' CS Water Injection Linepipe

Both pipe ends were protected with plastic end caps, housing externally 300mm over the ends of the pipes. End caps were secured by the friction of their fitted dimensions only. Each had five [5] small ventilation holes. Pipes were fitted with two rubber spacers (500mm x 25mm, LxØ), installed around 30cm from pipe ends.

Pipes displayed the following markings:

- NDT MPE marking
- Pipe Identification print marking
- Manufacturers ID and logo
- Unit type, diameter, length, weight, Unit ID, Tally Number, Destination Project, accreditor accreditation and country of manufacture
- Unit ID# hard stamped into end wall
- End Cap displayed unit diameter and thickness

The following observations were made on the cargoes condition:

1. Very light surface rust was observed on all units. No pitting or concerning oxidation was seen.
2. Some pipe end caps were damaged, with splits, cracks or punctures. All pipes found with damaged end caps were checked for damage to the steel below, none was found. Pipe end caps found damaged were repaired or replaced.
3. Two pipes were found missing rubber spacers. One spacer was found and replaced the other was replaced with 20mm polypropylene rope tied around the pipe.



Figure 1.1 Figure 1.2 Figure 1.3
Pipe Markings – Spacers, End Caps & Test Marking – Damage to end cap



Figure 1.4 Figure 1.5 Figure 1.6
Damage to end caps – pipe join and steel condition

4" CS Gas Lift Linepipe

The pipes were prepared for shipping in two [2], three [3], four [4], five [5], six [6] and seven [7] pipe pre-slung bundles, with seventeen [17] additional loose pipes. Bundles were secured using four [4] 30mm (wide) doubled steel bands. Bundles were then pre-slung using new (unused) 4.5m webbing slings, WLL 2t.

Pipes displayed the following markings:

- Unit information card pinned to the end cap
- Pipe Identification print marking
- Unit type, diameter, length, weight, Unit ID, Tally Number, accreditor & accreditation and country of manufacture
- Unit ID# hard stamped into end wall
- End Cap displayed unit diameter

The following observations were made on the cargoes condition:

1. Very light surface rust, externally and internally, was observed on all units. No pitting or concerning oxidation was seen.
2. Some pipe end caps were missing, these were replaced.
3. Many 114.3mm pipes were found with 101.6mm pipe end caps, leaving the pipe end edges exposed
4. Steel securing bands all found in position and in good order
5. Fibre webbing lifting slings all found present and in good order



Figure 2.1 Figure 2.2 Figure 2.3
Bundle straps – Steel condition, light oxidation



Internal condition – 101.6mm end caps fitted to 114.3mm pipes – Missing end caps

Production Line Pipe

The pipes were fitted with plastic end caps at each end that housed internally and externally over the end of the pipe. End caps were secured using waterproof tape. End caps had a small ventilation hole. Each pipe was fitted with two [2] 20mm polypropylene lines wrapped around the circumference of the pipe and secured with a simple splice to provide protection and spacing.

Pipes displayed the following markings:

- Pipe Identification print marking
- Unit type, diameter, thickness, length, weight, Unit ID, Tally Number, Project owner, Destination Project, accreditor & accreditation, Pipe No, Heat No. P.O. No, P.O.Item No and manufacturer
- Unit ID hand written on unit body
- Unit ID# hard stamped onto unit end wall
- End Cap displayed unit identification information and QR code

The following observations were made on the cargoes condition:

1. Light surface rust was observed on all units. No pitting or concerning oxidation was seen.
2. Some pipe end caps were damaged, with splits, cracks or punctures. Many pipes with such damage had been previously repaired with waterproof tape. All remaining pipes found with damaged end caps were checked for damage to the steel below, none was found. Pipe end caps found damaged were repaired.



Pipe steel condition – Rope spacers



End caps with repairs – Damage to end caps and tape

BuBi Crated Pipes

The pipes were packaged for shipping in either single pipe or double pipe stows. Crates were made using 20mmx120mm (HxW) dunnage, with ISPM 15 stamps for international transit. Six [6] securing crates, each lashed with 30mm plastic straps were built around the pipe(s). An additional three [3] 20mm plastic lashing straps around the cargo, secured the double pipes together.

Pipes and crates displayed the following markings:

- Pipe Identification Number
- Unit type, diameter, thickness, length, weight, Unit ID, HU No, Project Owner, date of manufacture, accreditor & accreditation, manufacturer and QR Code
- Centre of Gravity
- DIN 55 402 'Sling Here' marking Lifting Point
- DIN 55 402 'Top' markings
- Unit ID# hard stamped onto unit end wall
- Manufacturers Logo
- ISPM 15 stamps for international transit
- End Cap displayed unit diameter

The following observations were made on the cargoes condition:

1. Light surface rust was observed on all units. No pitting or concerning oxidation was seen.
2. Some crating was found with light damage or broken away, this was not believed to compromise protection to the cargo and was repaired where possible.
3. Some crating was found loose with securing straps loose. All crating was resecured.
4. Small amounts of moisture was observed below the pipe end caps. This was not believed to be detrimental to the cargo as no markings indicated vulnerability.



Figure 4.1



Figure 4.2



Figure 4.3

Pipe Crating – Securing straps – Shipping and product Information



Figure 4.4



Figure 4.5



Figure 4.6

Moisture below end cap – Minor damage to crating

2.2. Vessel

Upon arrival the vessel's was found in a well maintained condition and clearly operated under competent management and with professional seamanship. The ship's documentation was inspected to ensure currency and compliance, no issues were found. The vessel had no defects or deficiencies and was clear of any conditions of class.

Arrival and predicted departure stability conditions were reviewed and found satisfactory, with a departure Fluid GM of 0.882m, predicted roll period of 13 sec and sheer forces and bending moments remaining within limitations. In discussions with the Chief Mate, the vessel would be kept upright and a trim limitation of 0.75m was agreed to be maintained during loading.

Planned stowage locations were inspected and found to be in good order ready to receive the cargo. The structural frame locations had been marked with spray paint by the Chief Mate to ensure the correct positioning of footing dunnage. The maximum deck loading for the tank top was confirmed as 15t/m². The hold breadth was measured and confirmed at 12m.

2.3. Operational Organisation / Pre-Loading Discussions

All interested parties were introduced and a discussion held as to the intended plan and responsibilities. The contracted stevedores, [REDACTED] GmbH & Co.KG, gave a brief introduction to their working methods, routine and schedule. Health and Safety limitations were agreed (see section 2.13).

The loading would be conducted by two teams split into two shifts, working the following hours;

Shift 1:	Shift 2:
0600-09:45 / 10:15-14:00	14:00-17:45 / 18:15-22:00

The loading order was discussed so that it would best aid vessel stability and loading efficiency. Stacks were to be loaded from aft to forward with each stack loaded to a height of 2m before moving onto the next. This would then allow safety nets to be installed while loading continued.

2.4. Preparation

The hold was prepared by the stevedores in line with the Bedding Installation Plan. Softwood timber 50mm x 200mm (HxW) dunnage was laid. The alignment was altered fractionally from the plan in order to align with the structural frame location. Each stack would be footed by six [6] rows of dunnage footing, made up of three [3] overlapping lengths. Side protection was formed by the same timber dunnage in matching rows against the bulkheads.



Dunnage Preparation – Pre-marked frame locations – Dunnage Bedding

2.5. Cargo Transfer & Checks

Cargo movements from the storage area to the loading area was performed by two [2] Hyster 20-12 Heavy Duty Fork Lift Truck, Load Capacity 20000kg. The lift teeth were fitted with webbing straps to protect the cargoes from metal on metal contact.



Figure 6.1



Figure 6.2



Figure 6.3

Kocks Gantry Crane – Hyster 20-12 Heavy Duty Fork Lift – Protection fitted to fork lift teeth



Figure 6.4



Figure 6.5



Figure 6.6

Pipe pre-loading stow and checks – tape repairs to [redacted] and [redacted] Pipes

All certification of equipment and all equipment operators was inspected and found satisfactory. Certification is attached. The operation of all loading equipment was seen to be professional with a high degree of competence.

All the cargo storage areas were all located within 250m of the loading area and access was clear of obstructions. The quayside was level and smooth offering no hazard to the cargo movement.

Once moved from the storage area the pipes were rested on steel temporary storage beds beneath the gantry crane. The storage beds were inclined steel girders protected with dunnage. Here the stevedores visually checked each pipe for any damage, missing end caps or missing spacers. The securing of end caps was ensured with each cap being checked and housed with rubber hammers. Missing end caps were replaced and broken caps were repaired with tape.

2.6. Lifts

All lifting operations during the loading was completed using a Kocks GmbH 1978 Schwergutverladebrücke 7 32 36 Gantry Crane, SWL 80t at 23.5m (60t at 35m).

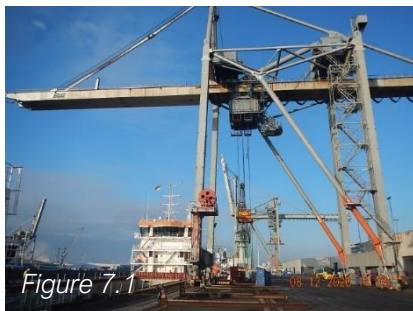


Figure 7.1



Figure 7.2



Figure 7.3

Gantry Crane – Capacity – Example lift

The crane operators license was checked and found in good order (attached)

The cargoes were lifted with the following methods and accessories:

10' & BuBi Pipes:

Gantry Crane connected a rectangular Heavy Cargo Schwerlaststrahlen 538 spreader frame, SWL 40t. Up to eleven [11] pipes were connected to the spreader, each connected using:

- Two [2] steel bow type, eye bolt, shackles, WLL 3.25t
- Two [2] Fibre Webbing Straps, 7.5m, WLL 2t
- Two [2] Thiele pipe hooks, with polyurethane covers, WLL 2t



Figure 7.4



Figure 7.5



Figure 7.6

Spreader Frame - Pipe hook with polyurethane cover – Lifting method

4' Pipe Bundles & BuBi Single & Double Crated Pipes:

The gantry crane was connected to a Vulkan Kocks 73 246/2 container loader connecting two [2] securing bars, SWL 40t. Five [5] pipe connections made, each using:

- Two [2] steel bow type, eye bolt, shackles, WLL 3.25t
- Two [2] Single leg, thimble eye wire rope slings, 2.5m, WLL 650kg
- Two [2] safety latch lifting hooks, WLL unknown.
- For crated pipes: two [2] fibre webbing slings, 3.5m, WLL 3t

The bundles were pre-fitted with the lifting slings detailed in section 2.1.

The crated pipes lifting positions marked were not used. It was believed the sling compression force would damage the crating unnecessarily. It was agreed by all, the pipes would be slung directly around the pipe surface, immediately on the inner section next to

the lifting points marked. A test lift was performed satisfactorily and the pipe lifts were continued safely without issue.



Container lifter fitted with securing bars – Slung bundles – Slung crated pipes

Equipment, Dunnage and Personnel Basket Lifts

Lifts of stacks of timber dunnage and equipment, loaded in plastic crates, were slung using two [2] fibre webbing slings, 3.5m, WLL 3t. Timber was attached in a ‘basket’ sling lift.

Personnel were transferred in a dedicated cage. The cage was inspected and found in good order with indication marking of recent inspection (09/20). The cage was slung using two [2] single leg chains, SWL 1.5t. The lifting basket was never lifted with more than four [4] persons and the entrance gate closed and secured. The basket was always fully grounded before entry or exit.



Personnel Cage – Cage Lift – Transfer of Dunnage and Tools

2.7. Loading

Loading commenced at 06:40 on 7th Dec 20. Sunrise was around 08:30 and sunset 16:30 with a significant amount of the loading being carried out in the hours of darkness. However, the cargo hold and quay were well lit with high powered spotlights in the cargo hold, on the gantry crane and on the quay.

The weather during loading operations was largely favourable with only light winds and light rain showers that didn’t hinder operations at any point.

During first tier loading four [4] stevedores and one [1] banksman were present in the cargo hold. Two [2] stevedores unhooked the lifts on instruction from the banksman and two [2] prepared the dunnage footings.

Daily loading totals (at 22:00):

	10' Pipes	4' Budles	+ Crated
Day 1 – 07 th Dec	1152	175	0
Day 2 – 08 th Dec	1693	331 + 17 single	519
Day 3 – 09 th Dec	1693	331 + 17 single	2160
Day 4 – 10 th Dec	1693	331 + 17 single	2160 + 43 crates

10' Pipe

The 10' pipe was the first cargoes to be loaded. Pipes were loaded in lifts of nine [9] units at a time. Once landed, the first tier pipes were secured using wedges. Rows were formed of thirty-eight [38] pipes which gave a 200mm void to the bulkhead, this represented greater than a half pipe diameter. A second layer of 50mmx200mm dunnage was installed on one [1] bulkhead to reduce the void to 150mm, a half pipe diameter. The additional batten was installed on the starboard side on stack 4, port side stack 3 and starboard side stack 2. 38/38 pipe tiers were maintained for stacks 2, 3 & 4. The 2m stack levels were formed of eight [8] tiers.

The Stowage Plan was revised and the pipes stacked up until the level of the tween deck on stacks 3 & 4, forming eighteen [18] tiers (see comment .vi). The top of the eighteenth [18th] row aligned 10mm above the increase of the beam at the tween deck level. Stack 2 was formed of eight [8] complete tiers and a partial row of twenty-one [21] pipes.

Total 10' Pipes loaded was 1693 units.



Stow of 10' Pipe, Stacks 2, 3 & 4

4' Bundled Pipes

The pre-slung bundles were all loaded to stack 1. Dunnage footings and bulkhead protection was formed of six [6] single layer 50mmx200mm dunnage. The majority of bundles were formed of seven [7] pipe bundles and formed an average of thirty-four [34] bundles per row. The bundles generally formed tight stows, however, on several occasions re-lift and re-stow was requested to eliminate voids formed. Each bundle tier was separated with 100mmx100mm (WxH) softwood dunnage laid in five [5] unbroken rows

across the cargo length. The last top row was a part stow of six [6], seven [7] pipe bundles on the starboard side of the cargo hold.

Total [REDACTED] Bundles loaded was 331 + 17 loose pipes. Total 2121 pipes

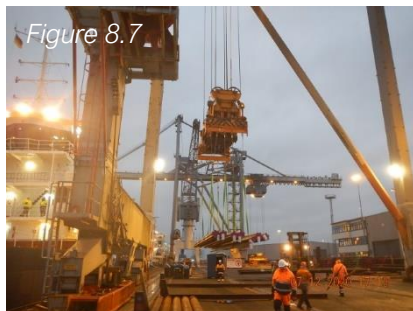


Figure 8.7



Figure 8.8

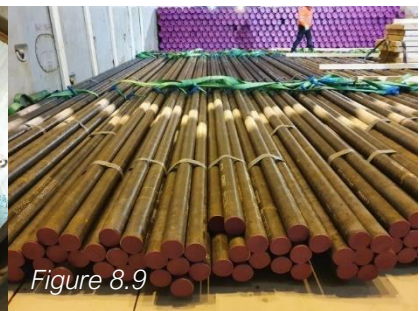


Figure 8.9

Lift of pre-slung bundles – Initial stow, first row

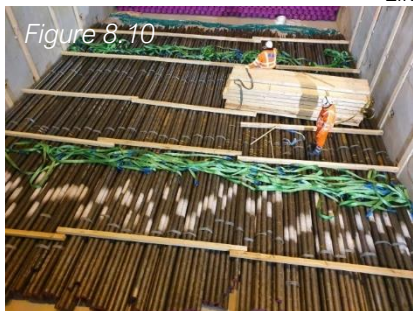


Figure 8.10



Figure 8.11



Figure 8.12

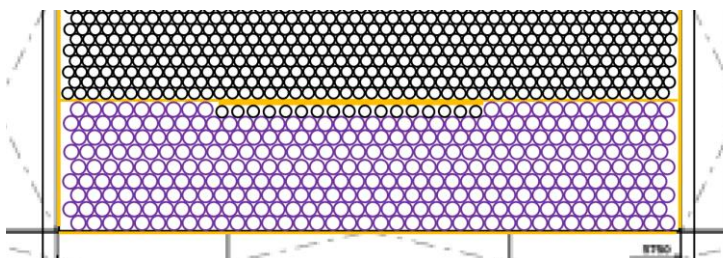
5 rows of separating dunnage - Stow of pipes – Top layer part row of 6 bundles

[REDACTED] BuBi Pipes

On completion of loading of the [REDACTED] 10' pipes, the individual [REDACTED] Bubi pipes were loaded with the first loads to complete the part stow on the ninth row of stack 2. Seventeen [17] pipes were stowed in the centre of the stack. Stacks 2, 3 & 4 were topped with five [5] rows of 50mmx200mm softwood timber dunnage on completion of the loading of [REDACTED] 10' pipes, as footings for the [REDACTED] pipes. Stack 2 was loaded forty-eight [48] pipes per row below the tween deck level for ten [10] rows and then 50/51 pipes per row above the tween deck for twelve [12] rows. Stack 3 was loaded 50/51 pipes per row, for nine [9] rows. Stack 4 was loaded 50/50 pipes per row for twelve [12] rows.

The Total number of [REDACTED] Pipes loaded was 2160 single units, 41 double crated units and 2 single crated units.

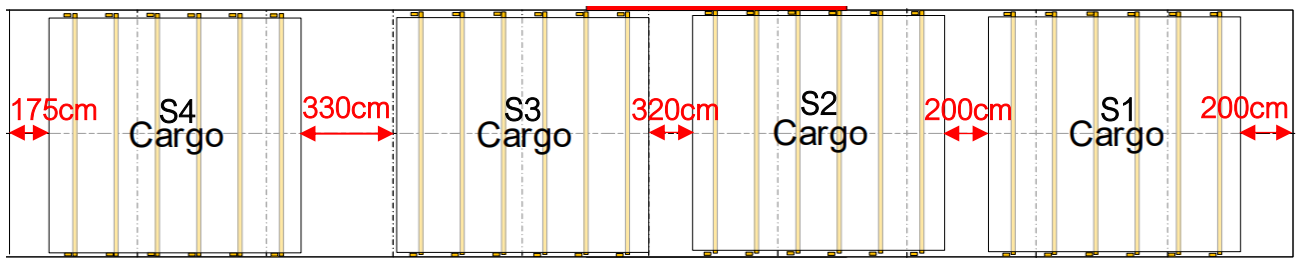
The 9th row of stack 2 was made up of 21 [REDACTED] 10' pipes and 17 [REDACTED] pipes. This left a void measured at 50mm. The void was filled with six [6] rows of 50mmx200mm timber dunnage



Stowage Plan Rev.07, Stack 2 – Dunnage layout row 9, stack 2

The loading lifts were initially made in sets of nine [9] pipes, later changed to ten [10] pipes, see comment .vii.

The voids between stacks were measured and the average distances given below:



2.8. Pipe Drop Incident – 09:21 07th Dec 20



Immediately on sighting the issue, the stevedore at the hooked end shouted ‘STOP’. The banksman immediately relayed the order to the crane operator via radio, however, in the time taken for the crane operator to receive and carry out the order, the pipe was lifted to the stated height. On falling, the pipe impacted one [1] other pipe before settling on the dunnage. All men were well clear of the pipes at the time, with the two hook stevedores moving well clear on the first warning call ‘STOP’. No persons were contacted by the cargo and none injured.

Following a stop to all operations a discussion was held to fully understand the event and the following actions and mitigations required. The two concerned pipes were discharged and set aside for full inspection.

The operation was paused for a scheduled break, during which we advised [REDACTED] of the incident. An ‘All Stop’ was called to operations while further mitigations were discussed with Subsea7.

At 10:45 a toolbox talk held with all those involved in the loading operation. The following mitigations were detailed and acknowledged by all;

1. Hooks to be removed and placed past the 2.5m marker, from the pipe end.
2. The correct removal of the hooks and clearance from the pipe ends would be verified by a second independent person.
3. The crane operator would recover the hooks at slow speed until clear of the cargo before then increasing the rate of recovery.

Attached are all toolbox talk signing sheets.



Figure 9.1



Figure 9.2

Shot taken just prior to incident – Shot taken immediately following incident

Inspection of Pipes Involved

The dropped pipe; 10463/81518165 and the impacted pipe; 104648/81518165, were fully inspected for damage. The only mark found to 10463/81518165 was a 20mm minor graze on the end of the pipe. The pipes were measured and checked for any deformation with none found. Both pipes were straight and true, as per their pre-loading condition.



Figure 9.3



Figure 9.4



Figure 9.5

No deformation – mark to 10463/81518165 – measured at 20mm

██████████ were consulted by their attending surveyor and they approved continued shipping of the pipes.

The pipes were clearly marked using checked green/white tape and were stowed for easy identification and early removal on; Stack 3 – 8th & 9th pipes from the port side. All parties involved with the discharge of the cargo will be advised of the location. **It is recommended that the pipes are fully inspected and further checked by ██████████ on delivery.**

2.9. Safety Netting

Safety netting was installed at 2m intervals between stacks. Nets were secured using new 14mm polypropylene rope. Lines were made fast to adjoining cargo stack ends, ship securing points or dedicated securing chains. Latticed lashings were made to chains or straps run along the forward and aft bulkheads to provide continuous securing across the cargo hold breadth.

A total of thirteen [13] nets were installed and all securings were inspected and found satisfactory. Checks were made for gaps with none found giving comprehensive coverage.

Two [2] Large (6.5x15m) & four [4] x Small (5x10m) nets were unused and will remain at ██████████. ██████████, confirmed that an invoice will only be issued for those nets used.



Installation of safety nets

2.10. Pipe Transfer Event – 06:45 – 08th Dec 20

At 06:45, a fork lift attempted to pick up a set of nine [9] [REDACTED] 10' pipes. As the fork lift teeth were being positioned below the fifth [5th] stack, the dunnage framing and attached securing wedges holding the pipes broke. Three [3] pipes subsequently broke loose and rolled free from the framing, onto the teeth of the forklift. It is estimated that the pipes rolled 2-3m before bracing against the fork lift.

All men were well clear at the time, as is standard when the fork lift is retrieving pipes. Once the pipes had settled the fork lift retreated, moving the teeth clear of the stack. The operation was halted and everyone kept clear while the situation was assessed and best remedial action discussed. The remaining pipes on the stow were then additionally braced from the side using wedges and ratchet straps. The fork lift remained in position until the remainder of the pipes were secured before then the loose pipes were lowered onto dunnage footings for inspection.

Once deemed safe to do so, the remaining pipes in the stow were released layer by layer onto forklift teeth in controlled manner by positioning the fork lift teeth below the intended row and then releasing the ratchet straps and wedges. All pipes in the concerning stack were transferred without issue.

All the remaining [REDACTED] 10' pipe stows ashore were checked for any sign of dunnage damage or potential for failure, none was found. No further issues experienced during loading.

The three[3] pipes concerned were fully inspected with no signs of damage. None was expected, given the relatively minor impact.



Picture taken on arrival at the site, 1 min after event – Broken dunnage frame



Ratchet Straps and wedges installed – Side profile of stow



Tier by tier removal of remaining pipes

2.11. Final Securing

All single pipe cargoes on Stacks 2 & 3 were secured with the following:

- Double layer of rubber friction matting was installed beneath the top three [3] tiers
- Top three [3] tiers were secured with Olympic lashings:
 - Three [3] rows of twenty [20] pipes per lashings at the sides, three [3] rows of eighteen [18] pipes per lashing in the centre
 - Three [3] lashings along the length of the pipes
 - Four [4] pipe lashing overlap
 - Lashing were made with new & unused Cordlash 200, B/S 8,500 daN & 25kn Ratchet straps
 - All ratchets were footed with rubber matting to protect the cargo
- Wedges were fixed between each pipe in the top tier



Stack 2 securing



Stack 4 Securing

The [REDACTED] 4' bundles on Stack 1 were secured with the following:

- Double layer of rubber friction matting was installed beneath the top two [2] tiers
- Top two [2] tiers secured with Olympic lashings:
 - Two [2] rows of fourteen [14] bundles per lashing.
 - Three [3] lashings along the length of the pipes
 - Four [4] bundle lashing overlap
 - Lashing were made with new & unused Cordlash 200, B/S 8,500 daN & 25kn Ratchet straps
 - All ratchets were footed with rubber matting to protect the cargo
- Wedges were fixed in any voids
- The six [6] part stow was secured with three [3] Olympic lashings and 100mmx100mm dunnage bracing nailed to the 100mmx100mm footing dunnage



Stack 1 Securing

The [REDACTED] Crated Pipes on Stack 3 were secured with the following:

- The two [2] tiers secured with Olympic lashings:
 - Two [2] rows of eight [8] double crates per lashing at the sides and eight [8] double + one [1] single crate in the centre
 - Three [3] lashings along the length of the pipes
 - Two [2] double crate lashing overlap
 - Lashing were made with new & unused Cordlash 200, B/S 8,500 daN & 25kn Ratchet straps
 - All ratchets were footed with rubber matting to protect the cargo
- The centre void of 100mm was braced with three[3] sets of 100mmx100mm dunnage and wedges. These were in turn secured using 50mmx200mm planks.
- The port side part stow crates were 'loop lashed' using Cordlash and secured to the below stow



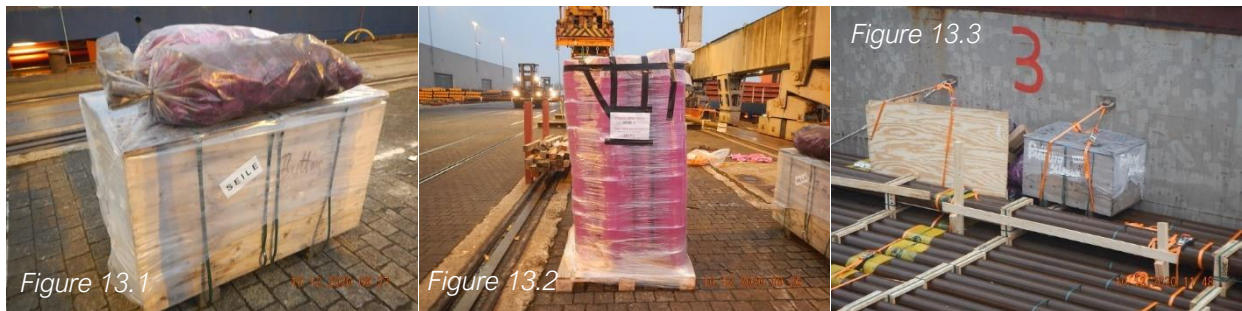
Stack 3 Securing

2.12. Spare End Caps and Slings

The following additional cargo was loaded using two [2] fibre webbing slings, 3.5m, WLL 3t:

- One [1] crate (150cmx90cmx90cm LxWxH, est weight <200kg) containing spare slings, -
- One [1] pallet (110cmx100cmx190cm LxWxH, est weight <150kg) containing spare [REDACTED] 10' end caps
- Two [2] bags of spare [REDACTED] 4' end caps loaded (each bag = 50x50x100 cm's LxWxH, est weight <50kg) containing [REDACTED] 4' end caps, were loaded using.

These were secured on stack 3, port side, using Cordlash 200, B/S 8,500 daN & 25kn Ratchet straps.



Spare end caps and crated slings – Spare V10' end caps – Securing of cargoes on Stack 3

After final inspection of the cargo and agreement from all parties on the sound securing, the crew secured the hatch covers for sea.



Final Cargo arrangement and securing of hatch covers

All stowage and securings were fully inspected, found in good order and believed to be sufficient to meet the rigours which can be reasonably expected on transit.

2.13. Health & Safety

All of the mitigations identified in the operational risk assessment (attached) were followed throughout. Each shift commenced with a tool box talk and briefing of operations and responsibilities. All participants signed an acknowledgement of attendance and understanding (attached).

No Permit to work was required by [REDACTED] or [REDACTED] for working at heights. The precautions and limitations were discussed and the required 2.5m 'no-go' zone from the stack edge understood by all. For those required to enter this area to unhook lifts, a single point safety harness attached to the spreader mounted fall arrestor was required.

The foreman of each shift were observed making inspections of the main lifting gear prior to the commencement of each shift's operations. It was also noted that the [REDACTED] office based management team frequently attended on site to inspect operations and safety standards.

PPE was inspected (safety harnesses, fall arrestors, chain saw protection, etc) and found sufficient and in good order. PPE was correctly used throughout.

The use of a chainsaw and stowage of the gasoline was monitored throughout. Stevedores were skilled in its use, wore protective anti-cut coveralls and always refilled the petrol tank with protection below and using a funnel.

Communications (German and English) were clear, precise and well disciplined throughout, especially via radio.

General good housekeeping was noted with the quay clear of debris and tools properly stowed at the conclusion of work. The hold was left clear of rubbish and only off-cuts of wood remained.

The mitigations agreed and imparted following the incident, day 1, were followed throughout and did not 'tail off'. The incident was recapped and discussed during the next days toolbox talk, with all mitigations reminded.

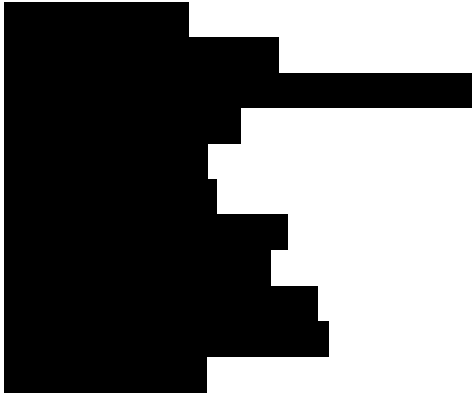
Only on two occasions were prompts required to correct potential breaches of established limitations and these were well received and promptly actioned.

It was noted on several occasions that stevedores corrected their colleagues when potentially breaching agreed mitigations (examples; nearing a working at height limitation, about to walk beneath a lift, going to board a lift basket before grounded). This was without knowledge of the surveyors presence and was not believed to be 'angle' behaviour but represented a genuine safety culture.

It was requested to use ladders to access the stacks in the hold when at a height of around 5m from the top. The request was rejected as there were no suitable harness securings. Baskets were to be used throughout.

3. VESSEL:

3.1. Ship's Particulars:



3.2. Voyage Schedule:



The passage plan (attached) was for direct transit through the North Sea before then paralleling the West coast of Norway, following the Traffic Separation Schemes.

The latest weather forecast reviewed before leaving the vessel (11:00 – 10th Dec 20) was fair with; winds SE F5, seas 3m (following, stbd quarter). The Captain expected a comfortable voyage and had no concerns.

4. REMARKS/COMMENTS/DISCUSSIONS:

- i. [REDACTED] stipulated a minimum distance of 2.5m from stack edges for stevedores working on top of the cargo stacks. This was agreed, marked and strictly adhered to by the stevedores during loading.
- ii. It was observed that no protective dunnage was installed on the temporary pipe beds beneath the crane. Upon request dunnage was immediately installed.
- iii. The 50mmx200mm dunnage used for bedding and stowage had no ISPM 15 stamps for international transit. This was advised by [REDACTED] as not required due to shipment with the EU.
- iv. One additional layer of 50mmx200mm dunnage was installed on one side of the hold to reduce the void formed by the row of [REDACTED] 10' pipes to less than half pipe diameter (150mm) before loading the next tier. The side (port or starboard) of the extra batten was altered between stacks.
- v. The stowing of the bundles generally formed tight stows, however, on several occasions re-lift and re-stow was requested to eliminate voids formed. One void could not be closed and so 100mmx100mm dunnage was installed to ensure safe stowage.
- vi. On 8th Dec 20, additional [REDACTED] 10' pipes began to be unexpectedly loaded to stack 4. The loading of extra pipes was immediately questioned. An intended revision to the loading plan was explained. Further information on intentions was requested and discussed between all parties. Confirmation was sought that all parties agreed with the revised plan. The revision was accepted on the basis that it offered better stowage and securing of cargo given the pipes per tier. It was requested that an official revision of the Cargo Stowage Plan be sent out.
- vii. Initially, [REDACTED] Pipes were lifted nine [9] pipes per lift. This was increased to eleven [11] pipes per lift on request, to give sufficient spread, wider than crane spreader

- width. The spreader could otherwise potentially impact the cargo hold bulkheads when stowing cargoes at the sides.
- viii. On the evening of the 7th Dec the vessel was shifted 200m South to accommodate other operations. This was welcomed as it aided loading by relocating the vessel closer to the [REDACTED] cargo stacks.
 - ix. The crated pipes lifting positions marked were not used as it was believed this would damage the crating unnecessarily. It was agreed by all the pipes would be slung directly around the pipe surface immediately on the inner section, next to the lifting points marked. A test lift was performed satisfactorily and the pipe lifts were continued safely without issue.
 - x. The two [2] pipes involved in the incident 09:21 on 7th Dec 20, were loaded Stack 3 – 8th & 9th pipes from the port side. **It is recommended that the pipes are fully inspected and further checked by [REDACTED] on delivery.**

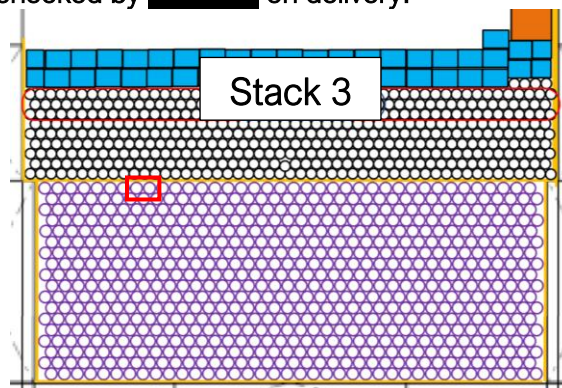


Figure 14.0

- xi. It was requested to use ladders to access the stacks in the hold when at a height of around 5m from the top. The request was rejected as there were no suitable harness securings. Baskets were to be used throughout. [REDACTED] indicated their intension to challenge this and request the use of ladders on future loads.

5. REFERENCES:

- a) Code of Safe Practice for Cargo Stowage and Securing (CSS Code)
- b) LEEA Code of Practice for the Safe Use of Lifting Equipment Edition 9

6. PHOTOGRAPHS:

Photographs were taken throughout to document all aspects of the survey and are available upon request to supplement this report.

The above report is offered for consideration and issued without prejudice to liability of Underwriters or any interested parties.

Tom Schofield
 Marine Surveyor
 SCHOFIELD INTERNATIONAL LTD



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