SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

www.shibata-asia.com

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

Review of Marine Fender Performance

- Surveyed fenders at 778 Berths in Japan
- Survey ran from 2000 to 2010
- Visual inspection of fenders
- Condition of individual components recorded
- Vessel and berth type also recorded

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

SCALE OF DETERIORATION

Grade	Level of Deterioration	Expected Performance
1	No signs of damage or corrosion	Fender will be able to function adequately
2	Minor deterioration, non critical	
3	Small amount of damage, wear of fenders, corrosion of components	Fender able to function, but performance compromised
4	Moderate amount of damage, small cracks, damaged components	
5	Significantly damaged fenders, moderate cracks, damaged components	
6	Severely damaged fenders, large cracks, broken or missing components	Fender unable to function

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

EXAMPLE 1

GRADE 4
Damage to Fender
Compromised
Performance

EXAMPLE 2

GRADE 5
Damage to Fender
Compromised
Performance

EXAMPLE 3

GRADE 6
Extensive Damage to Fender
Limited Performance

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

Analysis of Data

- The reported rate of damage of fenders was collated, and analysed based on type of vessel, berth usage and vessel size and location

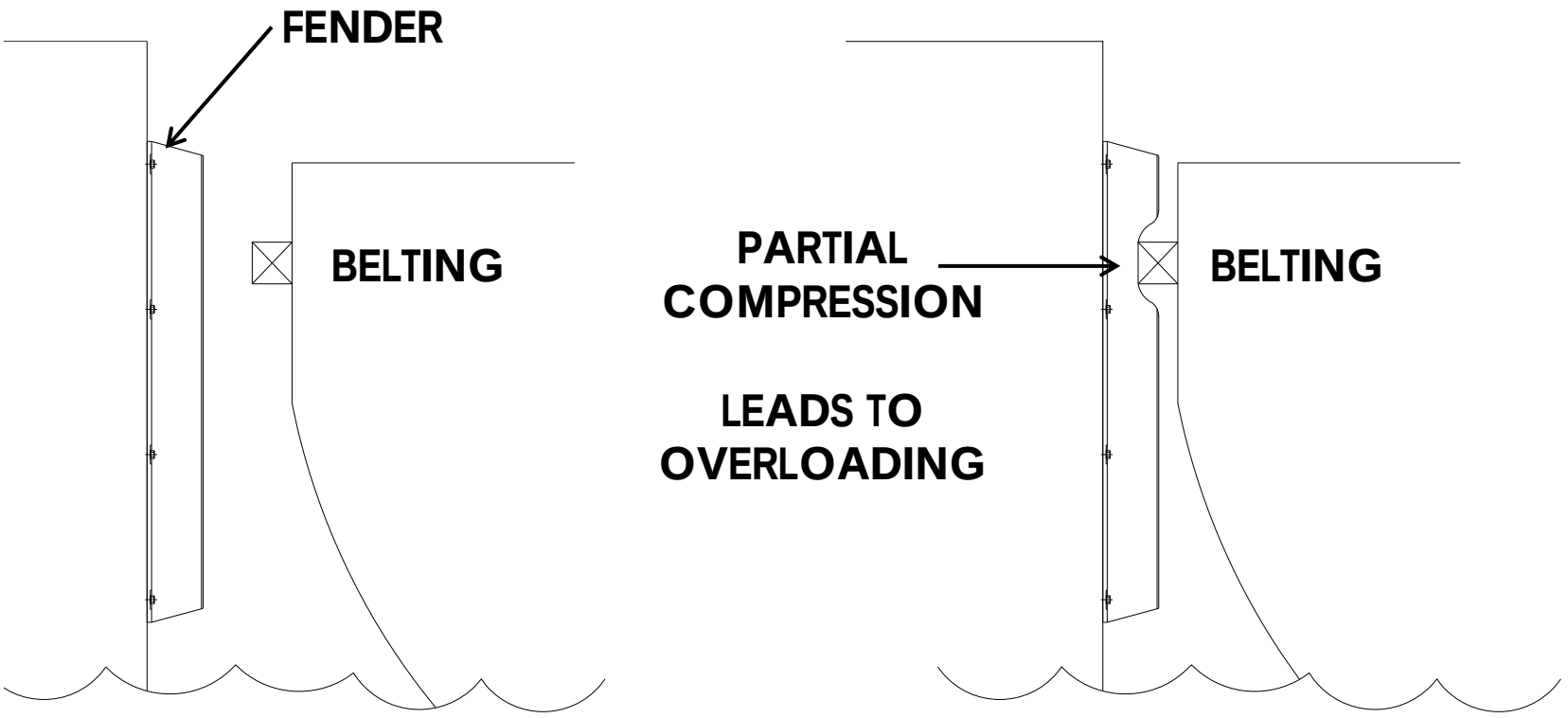
Report Findings

- Ports with smaller draft had a higher rate of damaged fenders
- Berths catering to General Cargo and Workboats had a higher rate of damaged fenders

Conclusion

- The rate of damage of fenders at berths with smaller draft (ie smaller vessels) and workboats is due to the partial compression of small fenders by vessel rubbing strakes and beltings, which overloads the fenders

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

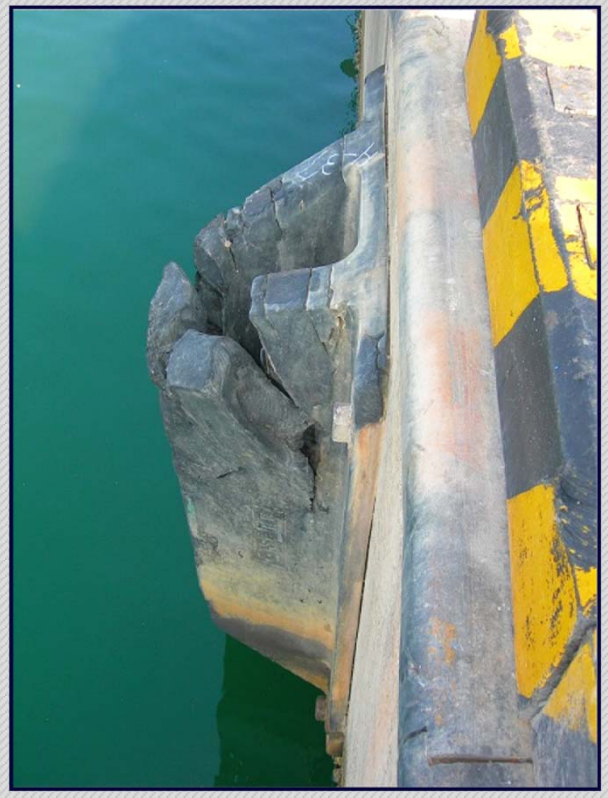


SHIBATA

Marine Fenders Since 1961

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

Damage to the top of fenders is a clear indicator that fenders are being over-compressed



RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

Recommendations

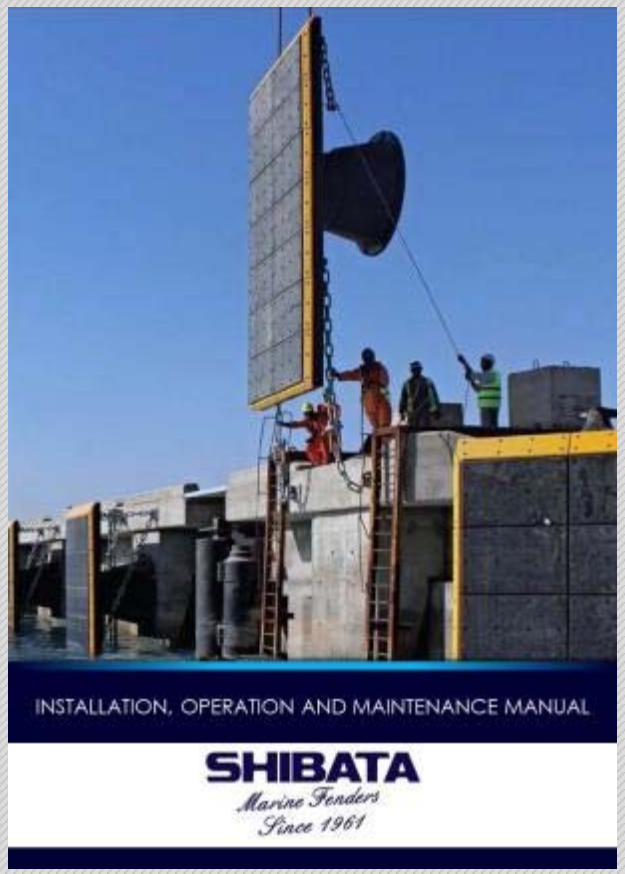
- To ensure that operations continue efficiently and safely, ports should develop a suitable maintenance management system that includes regular inspection and grading of fenders.
- Based on the grading and evaluated functionality of the fenders, appropriate measures should be established to repair or replace fenders and components as required

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS



Installation, Operation and Maintenance Manual

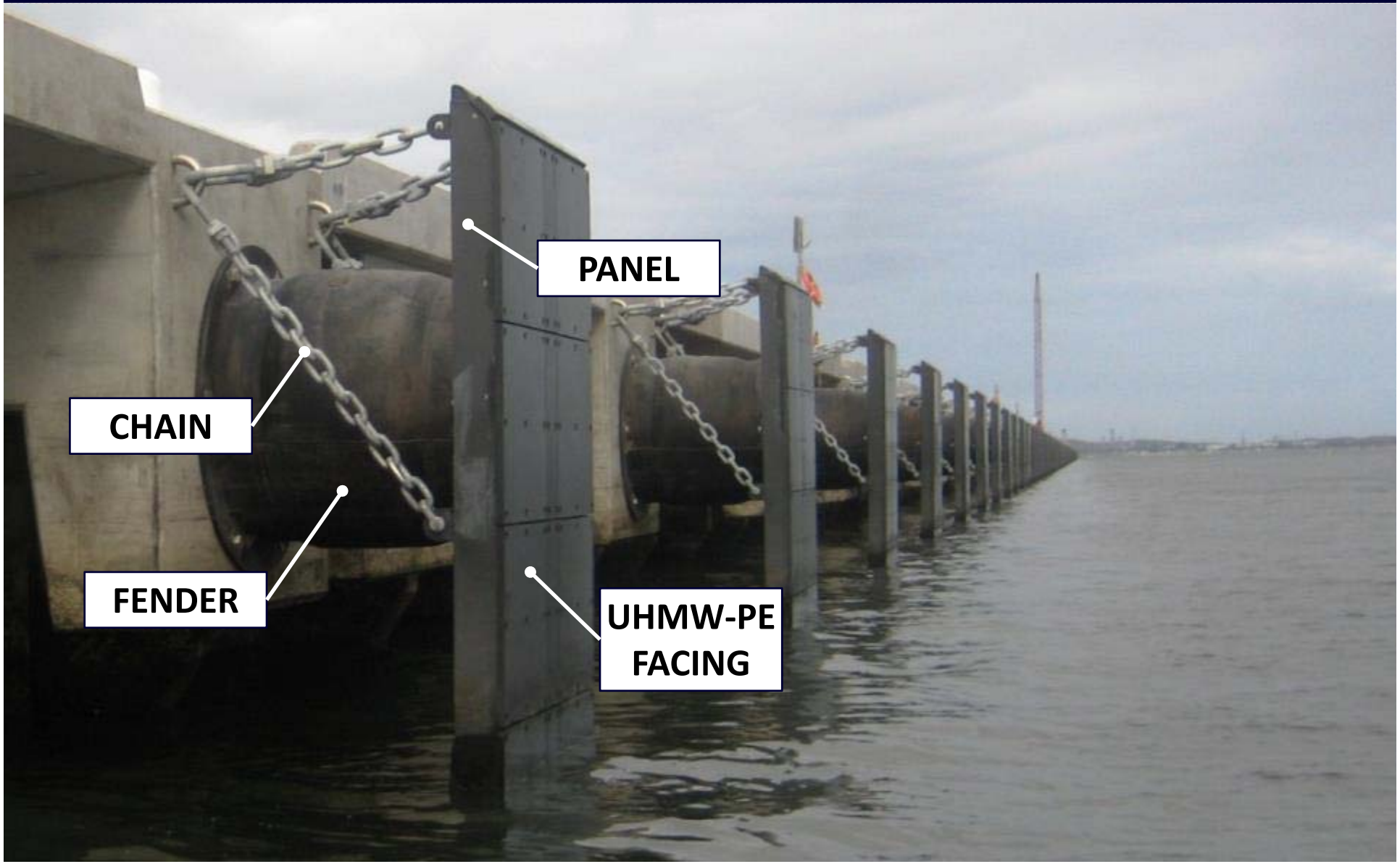
- Complete guidance for installation and operation of fenders
- Recommended practices for fender maintenance, including:
  - Inspection Periods
  - Inspection Checklists
  - Documentation and Reporting

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS



SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

INSPECTION AND MAINTENANCE PROGRAM	Level 1 close visual inspection	Level 2 Interim maintenance	Level 3 Major maintenance or overhaul
Rubber fenders	Every year	4–6 years	15–25 years
Steel panels (frames)	Every year	4–6 years	15–25 years
UHMW-PE face pads	Every year	4–6 years	15–25 years
Anchors & bolts	Every year	4–6 years	15–25 years
Chain Systems	Every year	2–4 years	5–10 years

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

COMPONENT	Vulnerability	Maintenance Required
Fender	Overloading Long term strain Corrosion (Steel Plates)	Repair minor cracks and exposed plates Maintain support chains Replacement if necessary
Steel Panel	Corrosion	Repair paint systems Replaces anodes Overhaul (re-blast and paint)
Chain Systems	Corrosion	Tighten adjusters Replacement of components
Facing Pad	Wear	Replace damages and worn parts

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

Recommended Operating Spares

- Complete Systems (operate during overhaul)
- Components
  - UHMW-PE Pads (especially corner pads)
  - UHMW-PE bolts and washers
  - Chain Systems

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

MAINTENANCE WILL MAKE A DIFFERENCE

SHIBATA

Marine Fenders Since 1961

13th ASEAN Ports and Shipping 2015

RECOMMENDED PROCEDURES FOR THE MAINTENANCE OF MARINE FENDERS

FOR COPIES OF EITHER DOCUMENTS:

REVIEW OF MARINE FENDER PERFORMANCE

or

SHIBATA INSTALLATION, OPERATION AND MAINTENANCE MANUAL

CONTACT SHIBATA ASIA

info@shibata-asia.com

+60 3 3291 4866