

Test Report

Verification of mooring bollards at

Port of XXXX XXXXX, France

SAMPLE VERSION



Contents

1.0 General Information	2
2.0 Executive summary	2
3.0 Existing Mooring Equipment-Layout	3
3.1 Other equipment on quay	3
3.2 Map with bollard numbers	3
3.3 General Conditions	3
4.0 Summary of Results	4
5.0 Observations & action(s)	4
5.1 Observations	4
5.2 Advised Immediate Action	4
6.0 Certification	5
7.0 Test Results & Observations	6
7.1 Bollard 01	6
7.2 Bollard 02	7
7.3 Bollard 03	8
7.4 Bollard 04	9
7.5 Bollard 05	10
7.6 Bollard 06	11
7.7 Bollard 07	12
7.8 Bollard 08	13
7.9 Bollard 09	14
7.10 Bollard 10	15
8.0 Conditions of Assurance	17
9.0 Mooring Information form	17
10.0 Bollard maintenance schedule	18

1.0 General Information

Operation:	Infield testing and data acquisition for analysis and reporting
Date:	February 2025
Contract / PO Number:	XXXXX XXXXXXXX
Client:	XXXXX XXXXXXXX
Contact	Mr XXXXX XXXXXXXX
Bollard Scan:	Mr Willem van Hoorn
Agent:	Nicolas Holm Bonvalet, BollardScan France
Berths Inspected	XXXXX XXXXXXXX
Report Number:	XXXXX XXXXXXXX

2.0 Executive summary

The Bollardscan non-destructive integrity test method was used to test 10 off T Head bollards and on the XXXXX XXXXXXXX at the Port of XXXXX XXXXXXXX with the following results:

Out of the 10 bollards tested:

- 9 bollards (Nos. 1, 2, 3, 5, 6, 7, 8, 9, and 10) received a “PASS” rating, confirming their eligibility for insurance certification, provided a maintenance plan is established and followed.
- 1 bollard (No. 4) was rated “PENDING”, due to concerns over its mounting system—specifically, a lack of clear anchorage to the quay wall. While it can be used with caution, further inspection and possible remedial actions are recommended.

Insurance

- The insurance will be valid if the terms and conditions of the BollardScan Insurance & maintenance are met, see section 8.0 – 10.0 of this report and advised actions are carried out.

3.0 Existing Mooring Equipment-Layout

3.1 Other equipment on quay

Not interfering with the BollardScan operations.

3.2 Map with bollard numbers

Map supplied by Port of XXXXX XXXXXXXX

MAP

Bollard numbers corresponding with the Alpha numerical letters

1 not assigned, 2 (D), 3 (C), 4 (B), 5 (A), 6 (H) 7 (G), 8 (F), 9 (E), 10 not assigned.

3.3 General Conditions

Met conditions: Favourable for bollard testing.

4.0 Summary of Results

Bollard	Type	Rated SWL Tons	Advised SWL Tons	Result	BollardScan Insurance Certifies	Actions
1	T Head	UNK	75 T	PASS	Insurance	Set up a maintenance plan
2D	T Head	UNK	75 T	PASS	Insurance	Set up a maintenance plan
3C	T Head	UNK	75 T	PASS	Insurance	Set up a maintenance plan
4B	T Head	UNK	35 T	PENDING	Inspection	Use with caution
5 A	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan
6 H	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan
7G	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan
8F	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan
9E	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan
10	T Head	UNK	100 T	PASS	Insurance	Set up a maintenance plan

Test Criteria Result Explanation

Pass: Based on the visual and / or vibration analysis criteria of BollardScan™- The mooring bollard /QRH will receive a “Certificate of Insurance” of up to 3 years.

Pass R Based on the visual and vibration analysis criteria of BollardScan™ The mooring bollard /QRH will be given an advised SWL (Safe Working Load) but will not be insured .

Pending: Based on either visual and/or vibration analysis criteria BollardScan™- The Bollard/QRH does not meet the BollardScan test criteria however if the listed recommendations are implemented the bollard/QRH maybe restored back to the manufactures original SWL (**PASS**) or up to a **PASS R** level. BollardScan™ recommends a SWL until retest is carried out.

Fail: Based on either visual and/or vibration analysis criteria for safety reasons BollardScan™ This bollard /QRH is judged to be beyond repair and for safety reasons the bollard should be removed from service.

5.0 Observations & action(s)

5.1 Observations

The 10 bollards tested are of the same type, T Heads, with a variety of anchor systems which heavily influence the maximum safe working load.

The bollards are deemed fit for the planned operation with the exemption of bollard 4. This bollard is mounted on a steel plate which has no obvious connection to the quay wall.

5.2 Advised Immediate Action

For the purpose of the operations these bollards will be used for, we see no need for any immediate action.

6.0 Certification

The BollardScan test method has been certified by Vienna Consulting Engineers and Lloyds Register. BollardScan will if required provide certifications of all Bollards tested, either an Inspection Certificate or an Insurance Certificate for the Safe Working Load ascertained by the results of their process and to the satisfaction of their technical staff, provided the terms and conditions are met by the equipment users/owners.



BollardScan™

CERTIFICATE OF INSPECTION

This certificate is to confirm that the mooring bollard/bollards listed below was/were inspected and tested at site by BollardScan qualified operators. The mooring equipment listed below meets the criteria for passing test processes as endorsed by VCE and approved for certification by Lloyds Register. The insurance policy listed below is valid for the time period stated, provided that the terms and conditions are met.

Project	DSA Terminal Las Salinas, GRAN CANARIA
Equipment owner	DSA
Owner reference	PV210101-PV210096 DSA
Equipment inspected & tested	8 Mooring Bollards Numbered 1-8
Rated capacity	45 Tonnes
Scope of inspection & test	Full integrity inspection of bollard and anchor system
Report reference	Pro/DS 002
Verified capacity	45 Tonnes
Conclusion	Successful repairs have been executed resulting in a positive improvement of the bollards
Conditions	Favourable
Recommendations	Maintain and use in line with the recommendations as stated in our report
Place of inspection	Las Palmas, Gran Canaria
Date of inspection	23 September 2021
Insurance policy number	UCMD 5812523
A copy of the current BollardScan insurance policy can be supplied on request.	
Inspected by	Mr W J van Hoorn assisted by Mr Ajan Acharya
BOLL- DIS-001/2021	23 September 2021
CERTIFICATE NUMBER	DATE

Sample report

With the conditions stated in our findings and the required actions carried out BollardScan is happy to provide assurance certificates for Bollards which have **PASSED** the BollardScan criteria as shown in section 4.0 Summary of Results of this report, assured for a period of 1 years from final date of testing 12 June 2025 if the terms and conditions of Assurance and Maintenance sections 8.0 & 10.0 of this report are implemented.

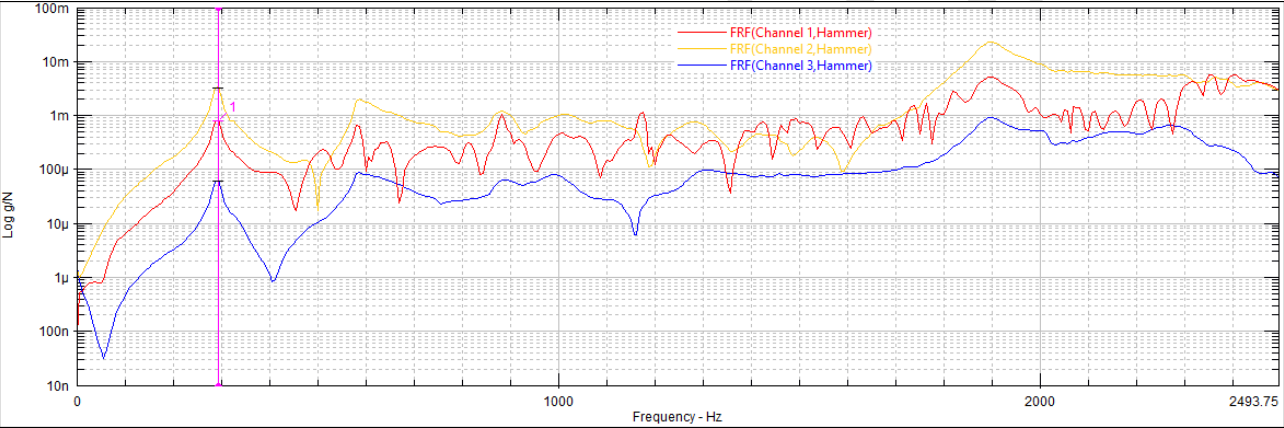
7.0 Test Results & Observations

7.1 Bollard 01

7.1.1 Photos



7.1.2 Graph



7.1.3 Data

ASA Brest								Stiffness	Acc1	Acc2	Acc3
Bollard No.	Bollard Style	Rated SWL (T)	Advised SWL (T)	Berth	Degree	Force K/N	Frequency	Damping %	N/m	Pk-Pk Displacement (um)	
G											
1	T Head	UNK	100		0	10	293.8	2.2	7.4	5.1	29.9
					90	11.3	231.3	16.4	22.1	7.3	33.2
					270	9.8	325	1.9	10.9	11	40.6
13.5											

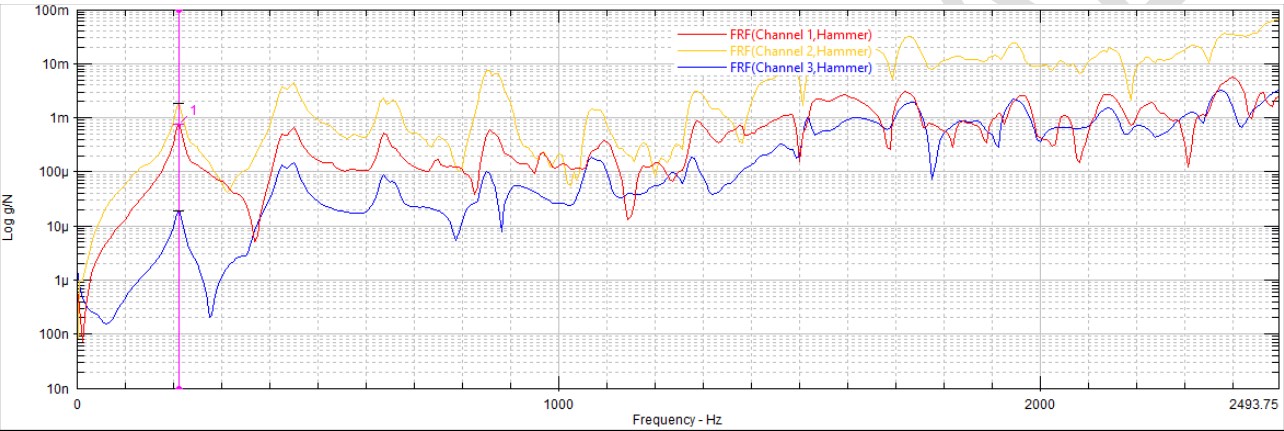
PASS

7.2 Bollard 02

7.2.1 Photos



7.2.2 Graph



7.2.3 Data

ASA Brest								Stiffness	Acc1	Acc2	Acc3	
Bollard No.	Bollard Style	Rated SWL (T)	Advised SWL (T)	Berth	Degree	Force K/N	Frequency	Damping %	N/m	Pk-Pk Displacement (um)		
G												
2	T Head	UNK	75		0	10.3	212.5	2.6	3.1	10.2	27.4	16.8
					90	11.8	237.5	2.2	9	9.3	18.1	17.8
					270	12.6	231.3	2.1	4.7	4.9	53.2	17.5
									5.6			

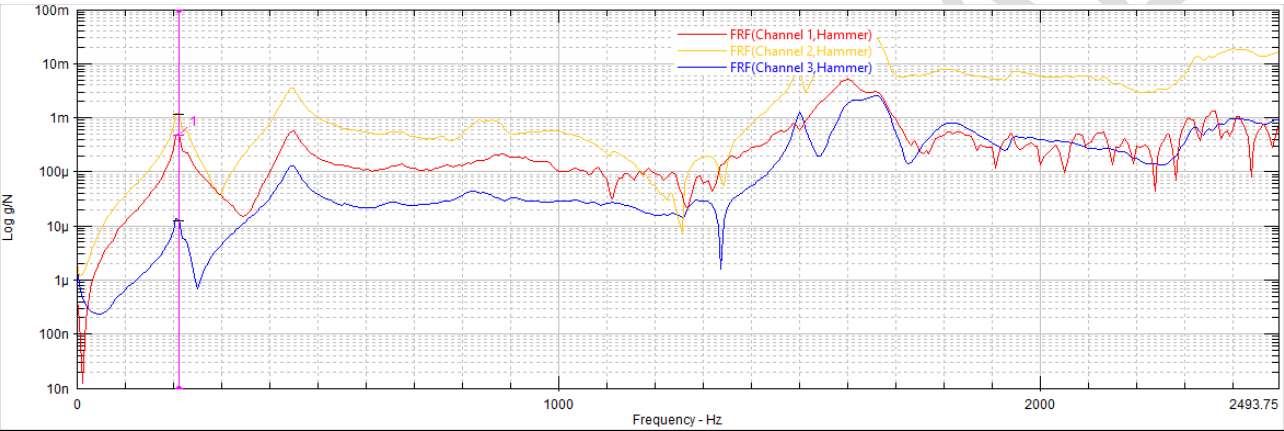
PASS

7.3 Bollard 03

7.3.1 Photos



7.3.2 Graph



7.3.3 Data

ASA Brest								Stiffness	Acc1	Acc2	Acc3	
Bollard No.	Bollard Style	Rated SWL (T)	Advised SWL (T)	Berth	Degree	Force K/N	Frequency	Damping %	N/m	Pk-Pk Displacement (um)		
G												
3	T Head	UNK	75		0	10.6	212.5	3.5	3.8	8.6	32.9	16.4
					90	9.1	225	2.7	6.5	6.3	11.3	15.1
					270	12.6	225	2.9	5.4	7.8	17.7	14.7
									5.2			

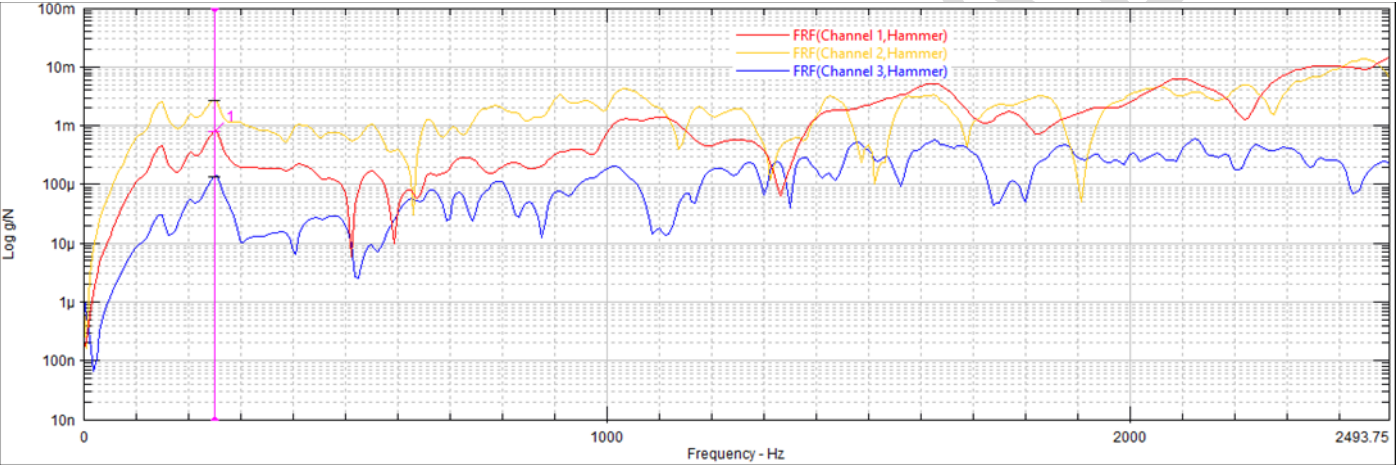
PASS

7.4 Bollard 04

7.4.1 Photos



7.4.2 Graph



7.4.3 Data

ASA Brest									Stiffness	Acc1	Acc2	Acc3
Bollard No.	Bollard Style	Rated SWL (T)	Advised SWL (T)	Berth	Degree	Force K/N	Frequency	Damping %	N/m	Pk-Pk Displacement (um)		
									G			
4	T Head	UNK	35		0	11.7	250	5.4	0.5	22.1	113.6	15.2
					90	10.4	200	6.7	1	13.5	105.6	17.6
					270	10.4	200	6.7	1	13.5	105.6	17.6
									0.8			

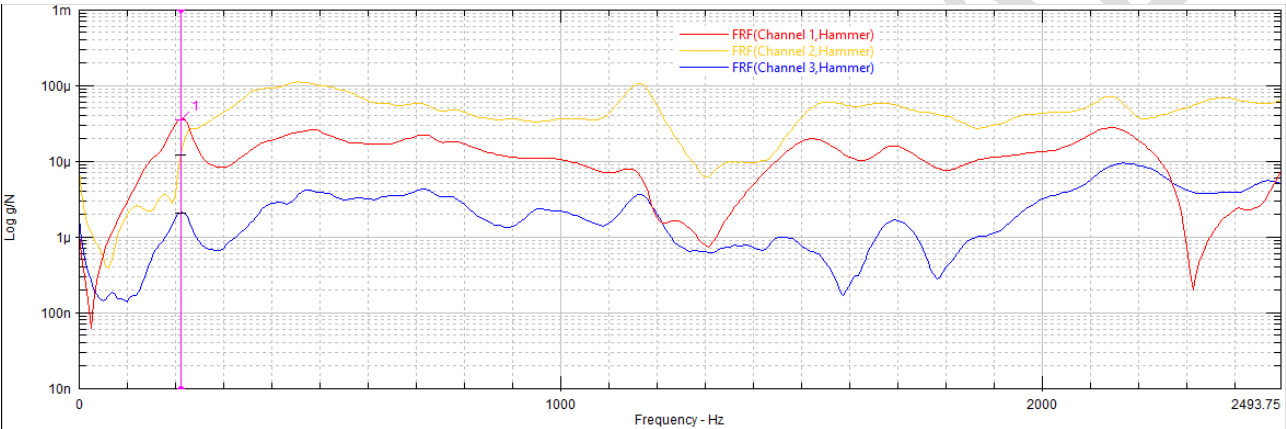
PENDING

7.10 Bollard 10

7.10.1 Photos



7.10.2 Graph



7.10.3 Data

ASA Brest								Stiffness	Acc1	Acc2	Acc3	
Bollard No.	Bollard Style	Rated SWL (T)	Advised SWL (T)	Berth	Degree	Force K/N	Frequency	Damping %	N/m	Pk-Pk Displacement (um)		
G												
10	T Head	UNK	100		0	11	212.5	10.8	15.9	13.2	98.5	20.6
					90	11.3	231.3	16.4	22.1	7.3	33.2	17.2
					270	11.4	218.8	12.3	24.6	10.2	75.7	15.4
									20.9			

PASS

8.0 Conditions of Assurance

All bollards which receive a **PASS** result (see section 4.0 of this report) will be insured by BollardScan for a period of between 1 – 3 years if the following conditions are met:

- Bollard not to be overloaded (Number of lines determined by using the 40% of the mooring line MBL (Minimum Breaking Load) rule.
- Do not hang fenders from bollards also no steel mooring lines directly onto bollard.
- Mooring plan can be submitted on request indicating the mooring lines MBL
- A berthing history can be produced as shown in section 9.0
- BollardScan in “country representation” to be alerted in case of an incident.
- Bollards to be clearly numbered along with SWL (safe working load) as described in section 4.0.
- Bollards to be maintained as shown in section 10.0

9.0 Mooring Information form

Bollard / mooring information request form

Date and time arrival

Vessel name

Captain / Chief officer

Port

Berthing Quay nr

Berthing quay length

Nr of bollards

Age of the bollards

Type of bollards

Agreed mooring plan

Boat man in attendance

Type of mooring lines

SWL mooring lines

Number of mooring lines (Fore, breast, aft and springs)

Mooring line angles (upward and outward)

Tugboat details

10.0 Bollard maintenance schedule

Frequency	Pre-Berth	6 months	1 year	3 years
Visual (Port staff)	X			
Nuts & Bolts			x	
Bollard SWL & Number / markings		x		
Bollard support structure			x	
Bollard surface wear / damage		x		
Bollard clear of product/ foliage		x		
Integrity test (External agency / BollardScan)				x

The table above outlines the recommended schedule for the inspection and maintenance of bollards installed on quays. This program aims to ensure the safety and reliability of mooring operations by combining regular inspections carried out by port personnel with in-depth technical assessments conducted by independent agencies.

The items covered include general visual condition, nuts and bolts, Safe Working Load (SWL) markings, the support structure, as well as any surface wear or damage. Structural integrity inspections, which are more comprehensive, are also scheduled at defined intervals.

It is important to note that the frequency of these inspections may vary depending on several operational factors, including:

- **The level of quay activity** (daily, weekly, or monthly traffic);
- **The type of vessels** accommodated (passenger ships, cargo vessels, tugboats, etc.) and their mooring loads;
- **The nature of port operations** (intensive loading/unloading, prolonged berthing, etc.);
- **Environmental conditions** (marine corrosion exposure, wave action, storm, etc.).

Therefore, the recommended intervals should be adjusted based on local conditions, relying on a risk-based assessment and the mechanical stresses applied to the bollards. This approach ensures optimal safety levels while maintaining the long-term durability of the equipment.

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