

INTERMODAL MATERIÉL
AND
NAUTICAL/NUCLEAR ANALYSIS
IMANNA
LABORATORY INC.

CERTIFICATION TEST REPORT

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CERTIFICATION TEST REPORT
21434-1
PRESSURE AND FLOW RATE TEST
ON
SEA STRAINERS
FOR
MARINE HARDWARE

CUSTOMER:

Marine Hardware Inc.
14560 N.E. 91st Street
Redmond, WA 98052

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**MANUFACTURER
OF TEST ARTICLE:** Marine Hardware

REPORT NO.: 21434-1
IMANNA JOB NO.: 21434
CUSTOMER P.O. NO.: PO38282
CONTRACT: N/A
PAGES IN REPORT: 6

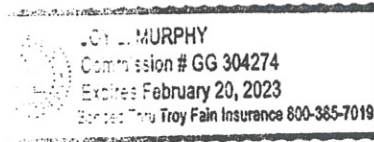
DATE: September 25, 2019

STATE OF FLORIDA
COUNTY OF BREVARD

ROBERT L. WHITE, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted tests and is to the best of his knowledge true and correct in all respects.

Robert L. White

SUBSCRIBED and sworn to before me this 25th day of September, 2019



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IMANNA LABORATORY, Inc.

TEST BY

Robert L. White
PROJ. MANAGER

1. TEST ARTICLE

Representative samples of sea strainers were received from Marine Hardware for test. The sea strainer is designed to filter water intake on a vessel.

2. PART NUMBER

SEASUM0 0.750 - 0.75" Sea Strainer

SEASUM 1.000 - 1.00" Sea Strainer

SEASUM 1.250 - 1.25" Sea Strainer

SEASUM 1.500 - 1.50" Sea Strainer

SEASUM 2.000-SM - 2.00" Sea Strainer



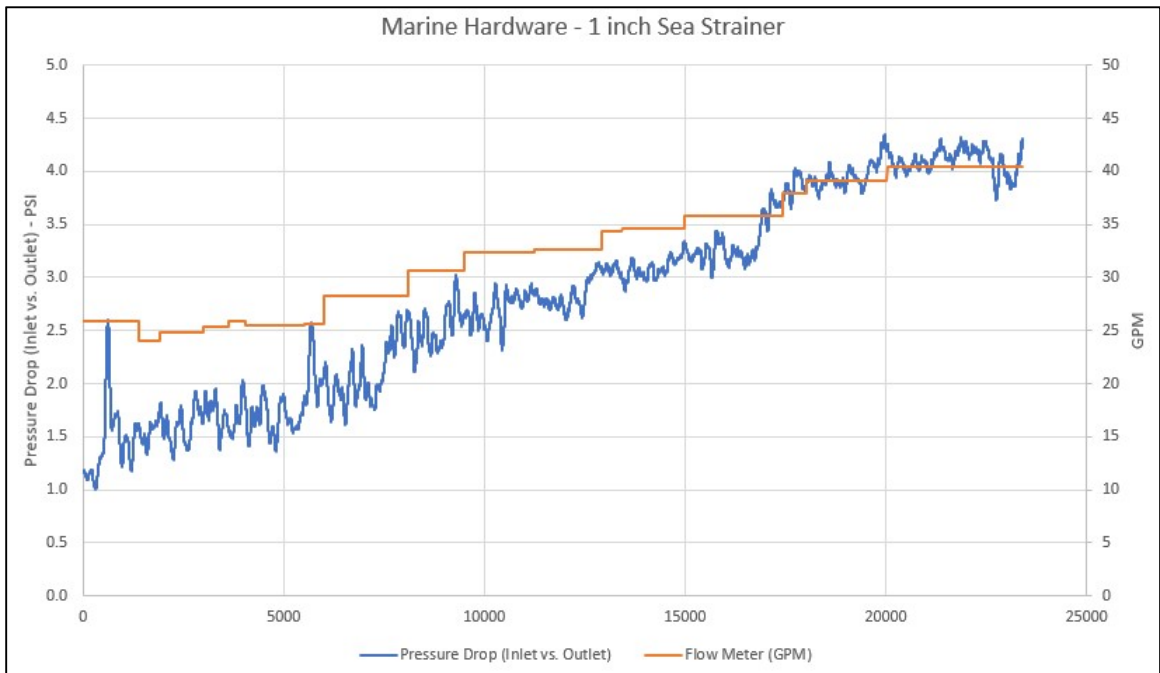
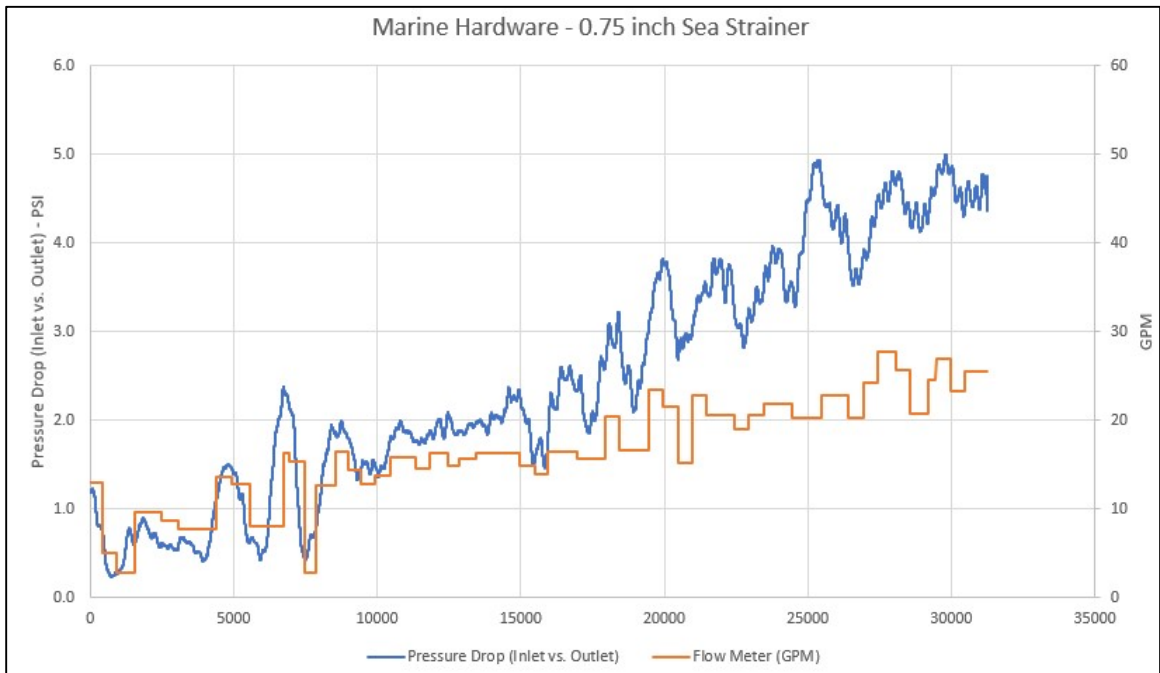
Figure 1: typical view of tested sample

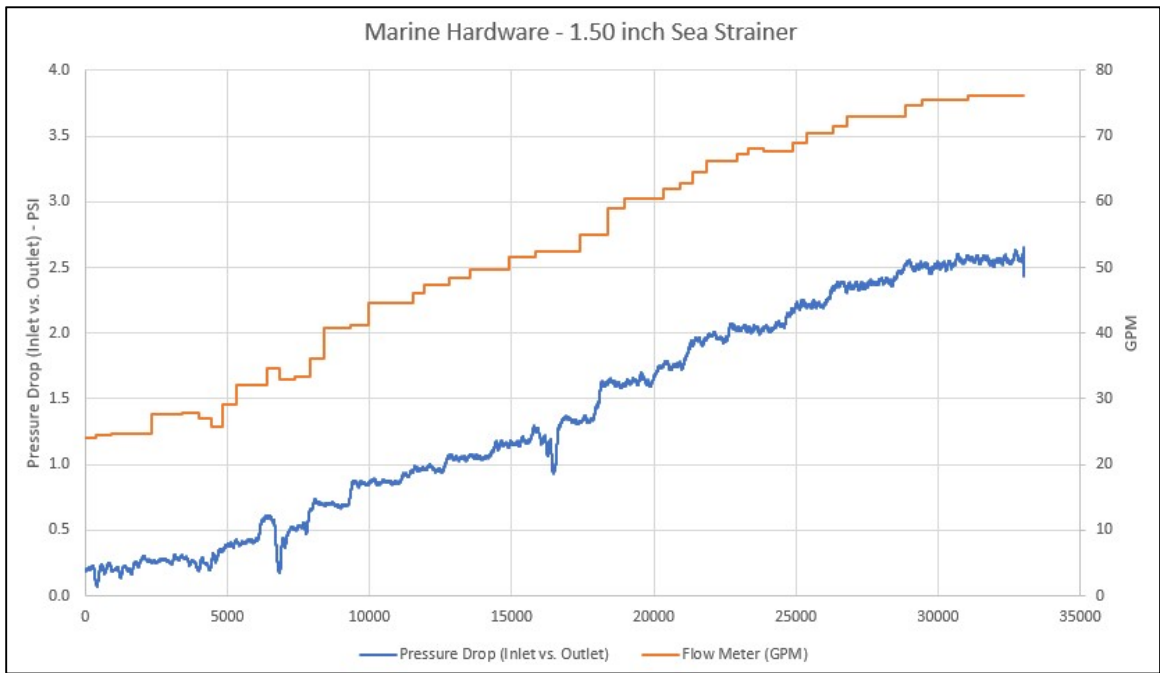
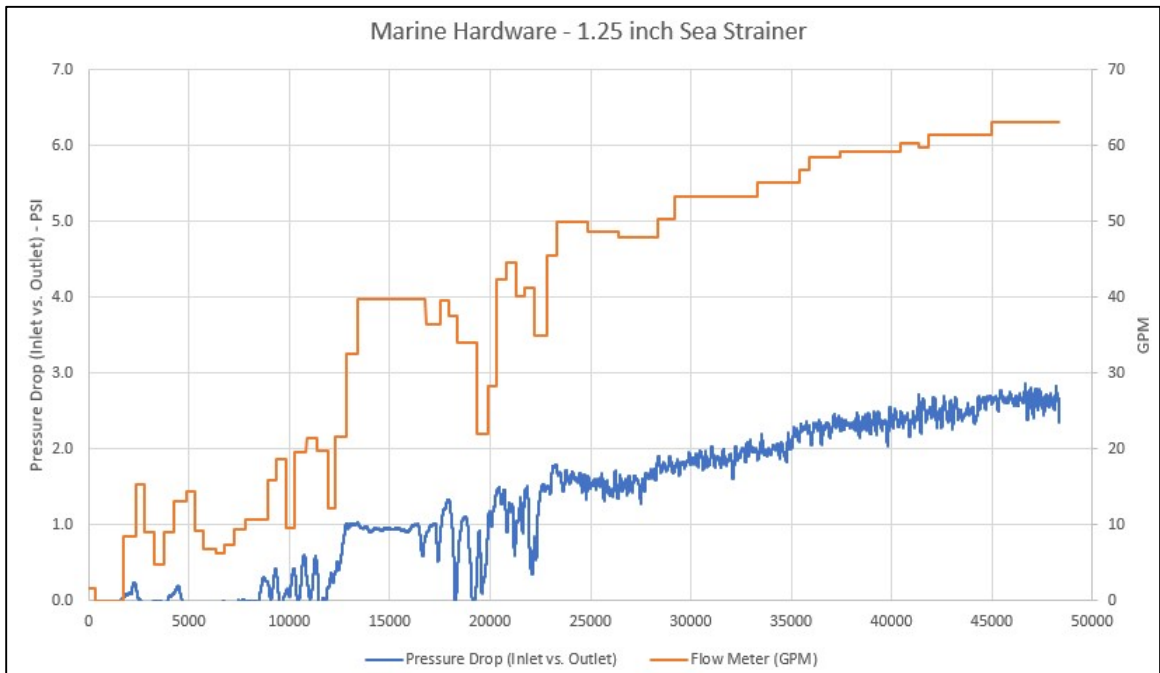
3. REQUIREMENTS

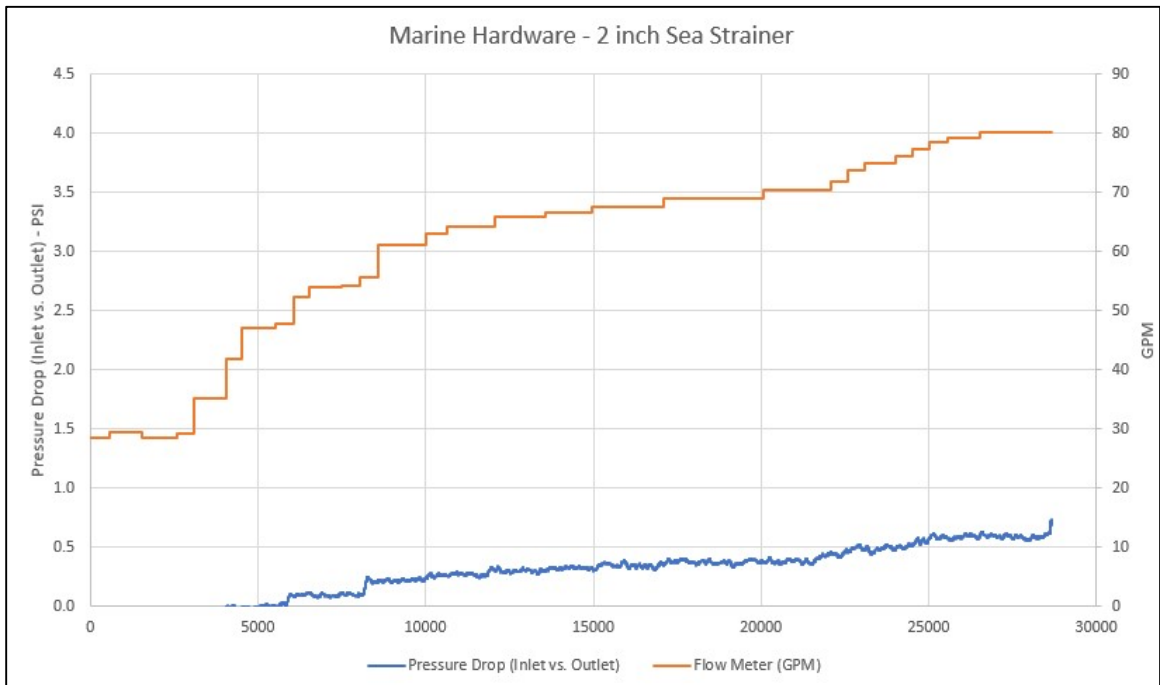
The requirements for this effort are to test the pressure drop between the inlet and the outlet of the sea strainer at various flow rates.

4. PROCEDURE AND RESULTS

Each sea strainer was setup in a 2" pipe system on the suction side of a water pump. A pressure transducer was installed on either side of the sea strainer. The flow meter was installed downstream of the sea strainer with 20' of pipe on either side of the flow meter to ensure an accurate reading. The difference between the inlet and outlet pressure was recorded along with the flow rate for each size sea strainer tested. The performance graphs are displayed below.







5. COMMENTS AND OBSERVATIONS

The results presented herein apply only to the test article as prepared and as tested on the date reported. All equipment used in the performance of these tests was calibrated to standards traceable to the N.I.S.T and/or verified at the time of the test using internationally recognized methods to validate the accuracy and repeatability of the values recorded or collected during the tests.

Project Instrumentation Log



INSTRUMENTATION EQUIPMENT LIST

PROJECT/JOB NUMBER	21434	DATE:	September 24th, 2019
COMPANY/CUSTOMER	Marine Hardware	TECHNICIAN	White
		TEST AREA	Pressure Test Cell

Sea Strainer

TEST ITEM DESCRIPTION

INSTRUMENT	MFG'R	MODEL	ILI or SERIAL NUMBER	RANGE	ACCURACY	MEASUREMENT UNCERTAINTY	CAL DATE	CAL DUE	NOTES
Pressure Transducer	Omega Engineering	PX209-060A5V	80427	0-60PSIA	0.25% FS	Ratio of 4:1	11/12/2018	11/12/2019	
Pressure Transducer	Omega Engineering	PX209-060A5V	80074	0-60PSIA	0.25% FS	Ratio of 4:1	11/12/2018	11/12/2019	
Flow Meter	Omega Engineering	FTB795		20-200GPM	±1%	Ratio of 4:1	Each Use	Each Use	

INSTRUMENT EQUIPMENT VERI: Robert White

19-21434-1-RPT-F-ADM-Project Instrument Log
 Revision 1.0
 Approved By: *[Signature]*

Marine Hardware Sea Strainer Performance Test Summary - Job 21434

