

12



INTERNATIONAL TWELVE METRE CLASS

Yacht's Name Defender

National letters and Sail Number US 33 Club New York Yacht Club

Designer Pedrick Yacht Design

Builder Newport Offshore Ltd. Building Year 1983

Owner USMMA Sailing Foundation

Owner's Address USA

Lloyds R class certificate (Number or Date) _____

RATING CERTIFICATE

This yacht has been measured by measurer(s) appointed by the International Twelve Metre Association and has been found to rate not more than 12.000 metres.

This certificate is dated: June 25, 2019

Measurer Kershaw/Williams Signature *Anders*

Valid until June 25, 2021

Supersedes _____

Is this an **Appendix E** Certificate? Y / N **Yes**

Was **Appendix F** used for Measurement? Y / N **No**

Signature _____
ITMA Technical Director

Stamp of Authority of the
International Twelve Metre Association

RATING CALCULATION

OVERALL LENGTH

19.497

Overhang Forward to FGS

2.035

Overhang Aft to AGS

2.051

Total Overhang (Subtract)

4.086

MEASURED LENGTH (L_{BG})

15.411

Girth at Bow

1.579

Twice vertical Height at Bow (Subtract)

1.200

Girth Difference at FGS

0.379

Add 1.5 x Girth Difference at FGS (min 0.540 m)

0.569

Girth at Stern

3.551

Twice vertical Height at Stern (Subtract)

1.866

Girth Difference at AGS

1.685

Add 1/3 Girth Difference at AGS (min 0.400 m)

0.562

Add any penalty (Beam or Displacement)

Sum of Length and Girth Corrections

16.541

Age/Design Correction Factor (ADCF)(see page 3)

0.9900

LENGTH (L)

16.376

Skin IM to d1 Port

3.330

Chain IM to d1 Port

3.302

d Port

0.028

Skin IM to d1 Starboard

3.325

Chain IM to d1 Starboard

3.294

d Starboard

0.031

Add d

0.059

Add GIRTH 2 d

0.118

Mean Freeboard Bow

Mean Freeboard Midship

Mean Freeboard Stern

Sum of Freeboards

Datum Sta.	Actual Sta.	Rating FB
	1.392	1.392
	1.136	1.136
	1.113	1.113
		3.641

Limit used

1.210

Subtract FREEBOARD, F**Add SAIL AREAS (Square root)**

13.155

TOTAL OF MEASUREMENTS

28.439

PENALTY (Draft or Tumblehome)

0.000

0

RATING

12.000

Date and Place of Measurement

25-Jun-19

Measurer's Name(s)

Kershaw/Williams

Signature



Yacht's name : Defender		Date	25-Jun-19
Range Measurement (Yes or No)	no	Date:	

PENALTIES

Overhang Forward to MWL	2.690		
Overhang Aft to MWL	3.182		
Subtract from overall length	5.872		
Difference of immersion from salt to fresh water	Meas. Density		0.000
WATERLINE LENGTH (LWL)			13.625
Minimum Displacement for Zero Penalty [m3]	23.764		
Minimum Weight for Zero Penalty [ton] (Water of sg 1.025)	24.358		
WEIGHT [tonne] Actual weight			24.400
Equivalent LWL (for Displ. < min.)	13.633		
Difference			
DISPLACEMENT PENALTY (add to L)			0.000
Displacement Determination Method	Hull Scan		
DRAFT (actual)	2.676		
Max. Draft for Zero Penalty	2.680		
Difference (if positive)			
DRAFT PENALTY (add to Rating)	Appendix E		0.000
BEAM (Min)	3.639		
Max Beam at 1/3 of Midship Freeboard			
Difference (if positive)	0.000		
BEAM PENALTY (add to L)			0.000
Tumblehome Max. (2 x 2% of Extr. Beam)	0.000		
Extreme Beam	3.639		
Beam at deck	3.639		
Difference (if positive)	0.000		
TUMBLEHOME PENALTY (add to Rating)			0.000

Date and Place of Measurement	25-Jun-19	
Measurer's Name(s)	Kershaw/Williams	Signature <i>Ander</i>

Design/Age Correction Factor Calculation		
Age Date	1983	
ADCF (Table E-2)	0.9900	
Hull Alteration Scope and Date		
Appendage Change Scope and Date		
Change/Alteration Correction ADCF		
Accommodation Deficiency Ballast		

Yacht's name : Defender

Date

25-Jun-19

SAIL PLAN

Max Height of Sail Plan =	<input type="text" value="25.000"/>	J=	<input type="text" value="7.467"/>	I =	<input type="text" value="18.750"/>
Boom above Mast Datum =	<input type="text" value="1.550"/>	P=	<input type="text" value="23.450"/>	E=	<input type="text" value="9.685"/>
Rated Mainsail Area	<input type="text" value="113.557"/>	Spi boom=	<input type="text" value="7.467"/>	√S=	<input type="text" value="13.155"/>
J used for Rating			<input type="text" value="7.467"/>		
Rated Foretriangle Area	<input type="text" value="59.503"/>	Propeller allowance			<input type="text" value="1.000"/>
TOTAL RATED SAIL AREA (S)	<input type="text" value="173.059"/>	Corrected sail area			<input type="text" value="173.059"/>

SAIL LIMITS

Mainsail max girth:	1/2 height (68% of E)	<input type="text" value="6.586"/>	3/4 height (41% of E)	<input type="text" value="3.971"/>
Genoa:	max. foot length (J + 4.8m)	<input type="text" value="12.267"/>		
Spinnaker:	1/2 foot max breadth (125% J)	<input type="text" value="9.334"/>	max. luff length=	<input type="text" value="18.646"/>

Spar Measurement

MAST (material)	<input type="text" value="Aluminium"/>	Mast Weight	<input type="text" value="454"/>	CG pos.	<input type="text" value="9.520"/>
	Deck	Half-Height	Jib-Halyard	Head	
Mast dimensions [mm]	<input type="text" value="358x 250"/>	<input type="text" value="358 x 250"/>	<input type="text" value="292 x 197"/>	<input type="text" value="168 x 128"/>	
Sections area [cm ²]	<input type="text" value="703"/>	<input type="text" value="703"/>	<input type="text" value="452"/>	<input type="text" value="169"/>	
Mast CG Correction (if applicable) Wt & CG	<input type="text" value="@"/>		Mk ⁴	<input type="text"/>	

Engine/Propeller Installation

Engine and propeller weight	<input type="text" value="NA"/>	Propeller diameter =	<input type="text"/>
Minimum boat speed with engine	<input type="text"/>	Propeller position =	<input type="text"/>
Propeller Type (folding feathering fixed pitch etc.), no of blades	<input type="text"/>		<input type="text"/>
Propeller Skew	<input type="text"/>		<input type="text"/>

Flotation

Internal Ballast	Amount	Location aft of bow

Measurer's Notes

1	Anchor	Frame	15-16
2	Chain		15-16
3	Rode		15
4	Batteries x2		14-15
5			
6			
7			
8			

Date and Place of Measurement

25-Jun-19

Measurer's Name(s)

Kershaw/Williams

Signature

Ander