INTERNATIONAL TWELVE METRE CLASS

Yacht's Name	***Challenge 12***		
National letters and Sail Number	***KA 10***	**Club**	***New York Yacht Club***
Designer	**Ben Lexcen**		
Builder	**S E Ward and Co**	**Building Year**	1982
Owner	**Jack LeFort**		
Owner's Address	**Challenge 12 LLC** ***Walcott Ave, Jamestown, RI 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:	**6-Sep-18**		
Measurer	**A Williams**	Signature	
Valid until	**5-Sep-20**		
Supersedes	**7-Jul-08**		
Is this an **Appendix E** Certificate?	**Y / N**	**Yes**	
Was **Appendix F** used for Measurement?	**Y / N**	**Yes**	Scanned Hull

Signature _____
ITMA Technical Director

Stamp of Authority of the
International Twelve Metre Association

Yacht's name : Challenge 12	Date	6-Sep-18

RATING CALCULATION

OVERALL LENGTH				**19.301**
Overhang Forward to FGS			1.666	
Overhang Aft to AGS			2.421	
Total Overhang (Subtract)			4.087	
MEASURED LENGTH (LBG)				**15.214**
Girth at Bow			1.539	
Twice vertical Height at Bow (Subtract)			1.200	
Girth Difference at FGS			0.339	
Add 1.5 x Girth Difference at FGS (min 0.540 m)			**0.540**	
Girth at Stern			3.302	
Twice vertical Height at Stern (Subtract)			1.638	
Girth Difference at AGS			1.664	
Add 1/3 Girth Difference at AGS (min 0.400 m)			**0.555**	
Add any penalty (Beam or Displacement)				
Sum of Length and Girth Corrections				**16.309**
Age/Design Correction Factor (ADCF)(see page 3)		0.9890		
LENGTH (L)				**16.129**
Skin IM to d1 Port			2.147	
Chain IM to d1 Port			2.086	
d Port			0.061	
Skin IM to d1 Starboard			2.148	
Chain IM to d1 Starboard			2.083	
d Starboard			0.065	
Add d			0.126	
Add GIRTH 2 d				**0.252**
	Datum Sta.	Actual Sta.	Rating FB	
Mean Freeboard Bow		1.220	1.241	
Mean Freeboard Midship		1.034	1.034	
Mean Freeboard Stern		0.999	0.999	
Sum of Freeboards			3.274	
Subtract FREEBOARD, F				**1.037**
Add SAIL AREAS (Square root)				**13.097**
TOTAL OF MEASUREMENTS				**28.441**
PENALTY (Draft or Tumblehome)			0.000	0
RATING				**12.000**

Date and Place of Measurement	**6-Sep-18**		
Measurer's Name(s)	**A Williams**	**Signature**	Ander

Yacht's name : Challenge 12		Date	6-Sep-18
Range Measurement (Yes or No)	Yes	Date:	April 2017

PENALTIES

Overhang Forward to **MWL**		2.421	
Overhang Aft to **MWL**		3.277	
Subtract from overall length		5.698	
Difference of immersion from salt to fresh water	Meas. Density		0.000
WATERLINE LENGTH (LWL)			**13.603**
Minimum Displacement for Zero Penalty [m3]		23.655	
Minimum Weight for Zero Penalty [ton] (Water of sg 1.025)		24.246	
WEIGHT [tonne] Actual weight			**24.321**
Equivalent LWL (for Displ. < min.)		13.618	
Difference		0.015	
DISPLACEMENT PENALTY (add to L)			**0.000**
Displacement Determination Method		Hull Scan	
DRAFT (actual)		2.648	
Max. Draft for Zero Penalty		2.676	
Difference (if positive)			
DRAFT PENALTY (add to Rating)		Appendix E	**0.000**
BEAM (Min)		3.645	
Max Beam at 1/3 of Midship Freeboard		0.000	
Difference (if positive)		0.000	
BEAM PENALTY (add to L)			**0.000**
Tumblehome Max. (2 x 2% of Extr. Beam)		0.000	
Extreme Beam		3.720	
Beam at deck		3.720	
Difference (if positive)		0.000	
TUMBLEHOME PENALTY (add to Rating)			**0.000**

Date and Place of Measurement	**6-Sep-18**		
Measurer's Name(s)	**A Williams**	**Signature**	

Design/Age Correction Factor Calculation

Age Date	1982		
ADCF (Table E-2)	0.9890		
Hull Alteration Scope and Date			
Appendage Change Scope and Date			
Change/Alteration Correction ADCF			
Accommodation Deficiency Ballast			

Yacht's name : Challenge 12	Date	6-Sep-18

SAIL PLAN

Max Height of Sail Plan =	25.000	**J=**	7.435	**I =**	18.750
Boom above Mast Datum =	1.440	**P=**	23.560	**E=**	9.531
Rated Mainsail Area	112.275	Spi boom=	7.435	**√S=**	**13.097**
J used for Rating			7.435		
Rated Foretriangle Area	59.248		Propeller allowance		1.000
TOTAL RATED SAIL AREA (**S**)	171.523		Corrected sail area		171.523

SAIL LIMITS

Mainsail max girth:	1/2 height (68% of E)	6.481	3/4 height (41% of E)	3.908
Genoa:	max. foot length (J + 4.8m)	12.235		
Spinnaker:	1/2 foot max breadth (125% J)	9.294	max. luff length=	18.636

Spar Measurement

MAST (material)	Aluminium	Mast Weight	455	CG pos.	9.503
	Deck	Half-Height	Jib-Halyard	Head	
Mast dimensions [mm]	352 x 246	350 x 246	282 x 204	166 x 126	
Sections area [cm^2]	608	676	452	166	
Mast CG Correction (if applicable) Wt & CG	@		Mk²		

Engine/Propeller Installation

Engine and propeller weight	NA	Propeller diameter =	
Minimum boat speed with engine		Propeller position =	
Propeller Type (folding feathering fixed pitch etc.), no of blades			
Propeller Skew			

Flotation

Internal Ballast	Amount	Location aft of bow
10 lead pigs, @ 26 kg	262 kg	4.84m
7 lead pigs, 26 kg	182 kg	5.24m

Measurer's Notes

1	Hull data from a Range Measurement, Portsmouth RI, April 2017.
2	Ground tackle at 8.00 m aft of stem.
3	Batteries at 6.1m aft of stem.
4	Mast weighed in Portsmouth RI in June 2017.
5	Boat not weighed, Displacment from 3D model
6	Mast moved aft 2018
7	
8	

Date and Place of Measurement	**6-Sep-18**		
Measurer's Name(s)	**A Williams**	**Signature**	