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Our Time and Experience
is our Stock in Trades

December 14, 2024
File No.: 13717-24

Mr. Neil Emmott
Email: Neil@superyachtsac.com

RE: "SAPPHIRE", 2009,
50.44 Meter TRINITY Motor Yacht

Note: In addition to this text, there are 22 pages of recommendations and photos which are an integral part of the report and should be read in conjunction with this text.

To Whom it may concern.

As requested by Mr. Neil Emmott of Super Yacht Sales, these undersigned independent marine surveyors have inspected the 2009, 50.44 meter Trinity motor yacht named "SAPPHIRE" while she was dockside at the Safe Harbor Marina Rybovich in West Palm Beach, Florida.

Date of Inspection:	December 9,10,11,12,13, 2024
Scope of Inspections:	Pre-purchase
Trial Run:	Atlantic Ocean off Palm Beach FL
Hauled Out:	600Ton Marine Travel Lift @ Rybovich

Attending Surveyors: Walter Richardson – Patton Marine Surveyors
Chris Smith – Patton Marine Surveyors
Clint Keato – Patton Marine Surveyors
Robert Riley – Patton Marine Surveyors
Engines & Generators: RPM Diesel Inc

This is a pre-purchase survey only and is not to be used for other purposes. The following is a report of those findings.

LIMITATION OF SCOPE OF SURVEY:

The survey of this yacht is based solely on a careful visual and non-destructive inspection of easily accessible portions of its structure and available equipment. Complete inspection can be made only by removal of flats, soles, decking, head liners, ceiling or hull lining, tanks, gas freeing and joiner work removals. This would be damaging in nature and prohibitively time-consuming and as we do not want to be held responsible, it was not done.

The information contained in this report, concerning sizes, accuracy of build, hull or superstructure geometry, ratings, capacities, speeds, etc., was ascertained from maker's plates, logs, documents, plans and certificates on board together with statements of the instructing entity. Unless specifically noted otherwise, none of the information was ascertained by direct measurement or calculation and, although all the information contained is believed to be correct, the accuracy thereof is in no way guaranteed.

Complete inspection of machinery, auxiliaries, piping, tanks, systems, electrical wiring, electrical and electronic equipment can be made only by continuous operation or by disassembly. This has not been done. It is recommended and understood that the engines and electrical systems are to be surveyed and tested under load by a qualified marine engineer and/or marine electrician to further determine the condition of the engines, gears and pumps, heat exchangers, coolers, or electrical systems etc..

Further, no determination of stability characteristics or inherent structural integrity has been made, but some opinion maybe expressed with respect thereto. It implies no guarantee against faulty design, hidden or latent defects. This report represents the condition of the yacht on the survey report date(s), and is the unbiased opinion of the undersigned, but it is not to be considered a warranty either specified or implied.

No warranty is made regarding the classification or regulatory status of the yacht. While the details reported are believed correct, the regulatory status of the yacht can only be confirmed directly by the certifying authorities.

This report carries no warranty regarding ownership or any warranty regarding outstanding mortgage, charges, liens or other debt there may be on the yacht.

This report is submitted for the exclusive use of the instructing client and no liability will be accepted to any third party who may subsequently read or hold a copy of this report or any of its contents. Copyright remains with the instructing client who has paid for the survey and the surveyor or surveyors. The survey is not to be given out indiscriminately. The instructing client only has the right to disperse this survey at his/or her discretion. The scope of the examinations was (further) limited by:

GENERAL:

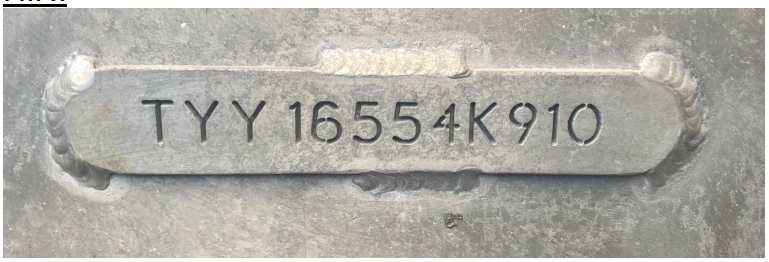
"SAPPHIRE" is a custom built 165' Aluminum tri-deck motor yacht designed by Trinity Yachts with interior design by James McFarland and is Trinity hull No. 054, built by Trinity Yachts LLC in New Orleans LA USA in 2009.

She has a raked stem, cockpit transom stern, semi keel, and foil rudders. The decks are of teak overlay she is of all electrically welded Aluminum and is a tri-deck design. She is twin diesel engine powered.

Her Identifying numbers and principal dimensions as listed in the Trinity Owner's Manual are as follows:

-HIN:	TTY16554K910	
-IMO No.:	9563194	
-MMSI No.:	538070969	
-INMARSAT No.:	45389984	
-Length Overall:	50.44M	(165.50')
-Length between perpendiculars:	44.64M	(146.47')
-Beam:	8.16M	(28.0')
-Approximate Air Draft:	15.34M	(50.33')
-Load line Draft:	2.59M	(8.5')
-Designed Draft:	4.19M	(13.75')
-Light Ship Displacement:	287.35 Tons	
-Load line Displacement:	422.00 Tons	
-Displacement 10% Load:	291.69 Tons	
-Dead weight:	134.65 tons	
-Max Speed:	25.0 kts	
-Cruise Speed:	21.0 kts	

HIN:



Carving Marker:

Certificate of Registry:

She is Registered in The Republic of The Marshall Islands; the Certificate of MI Registry number 55-14-PY was sighted and states:

-Name:	"SAPPHIRE"
-Official No.:	70969
-Call Letters:	V7BD5
-Service:	Private Yacht
-Home Port:	Bikini
-Name Of Owner:	SAPPHIRE Marine Partners LTD
-Residence:	Majuro MI
-Citizenship:	MI
-Proportion:	100%
-Former Name	"RED SAPPHIRE"
-Year Built:	2009
-Built By:	Trinity Yachts LLC (Gulf Coast Shipyard Group, Inc.)
-Place Built:	New Orleans LA USA
-Class Society:	ABS
-Gross Tons:	478GT
-Net Tonnage:	143 NT
-Engine Mfg.:	MTU
-Type:	2 x 16V4000M90
-Power Kw:	5440Kw
-No. of Masts & Decks:	One
-Hull Material:	Aluminum
-Length:	43.86M
-Breadth:	8.59M
-Depth:	4.19M
-Height:	15.57M
-Dated:	12 March 2014

Class And Flag State Certificates:

All certificates are found to be in-date unless otherwise noted in the Recommendation section of the survey report.

Authority	Certificate	Date Issued	Date Expires
ABS	Cert#09197469 ✠A1, Yachting Service, AMS	16 Aug 2024	10 July 2029
ABS	International Load Line	16 Aug. 2024	10 July 2029
ABS	International Tonnage (1969)	15 Jan 2014	NA
ABS	Suez Canal Tonnage Cert.	15 Jan 2014	NA
ABS	IOPP Cert.	16 Aug. 2024	10 July 2029
ABS	ISPP Cert.	16 Aug. 2024	
ABS	IAPP Cert.	16 Aug. 2024	
ABS	Garbage Statement	05 June 2011	NA
ABS Mains	EIAPP Pt 527104598, Stbd. 527104599	11 Dec 2013	NA
ABS/RINA	Generators EIAPP Pt.PE6068J004056 Stbd PE6068J004077	14 May 2020	
ABS	IEEC	16 Aug 2024	
ABS	SOPEP		
ABS	Record of Approved GMDSS Radio		
ABS	Anti-Fouling System Trilux 33 YBA067	16 Aug 2024	
ABS	Ballast Water Mgt Statement of Non-applicability	21 Feb 2018	NA
ABS	Survey After Construction Report	11 May 2023	10 July 2024
ABS	Lifting Gear load Tests, Crane	26 Aug 2022	
ABS	Lightweight Survey procedure		
ABS	Incline Test Murray Asso. Submitted		

Other Documents Sighted:

Authority	Certificate	Date Issued	Date Expires
MI/HS C	Cert of Deposit of Registration	08 Nov 2024	NA
MI	Declaration of Private use Ltd Charter	11 Dec 2023	
MI	PY Limited Charter Compliance	13 Feb 2024	21 Nov 2028
MI	Auxiliary Vessel Record	3 Nov 2022	
MI	Tonnage Tax Receipt	19 Nov 2024	Annual
MI	Carving and Marking for CI Ships		
MI	Minimum Safe Manning	16 Jan. 2024	
MI	Yacht Record of Safety Equip	25 Jan 2024	
MI	Cert of Compliance for LYC		
MI	Radio Station License	19 May 2022	18 May 2026

Authority	Certificate	Date Issued	Date Expires
	Record of Equipment L Com. Yacht		
	IOPP		
	SOPEP		
USCG	National Pollution Fund COFR876853		
OfReg	Ship Radio Station License		
	Cargo Ship Safety Radio Cert		
	Cargo Ship Safety Radio Checklist		
	Record of GMDSS Radio Equip		
	Pole Star Conformance Test	15 Nov 2023	
Radio Holland	GMDSS Shore Based Maintenance Coverage	31 July 2024	30 July 2025
NOAA	SARSAT Beacon Registration		
	Wreck Removal Insurance		
	MLC Inspection Report		
	Fire & Safety Plan Approval		

HULL CONSTRUCTION:

The yacht is of all welded aluminum construction using 5086 – H111 aluminum alloy plate and 6061-T6 aluminum alloy extrusions; both are considered marine grade alloys of aluminum.

The yacht is longitudinally framed which means the longitudinals going fore and aft are continuous and the frames are notched out and considered over the longitudinals and welded to the hull and in many instances the longitudinals themselves.

The longitudinal framing system provides additional support to the fore and aft structure. The downside of longitudinal framing is to assure that there are enough weep holes so that all of the water that gets captured on the uphill side of the longitudinal can drain to the centerline of the yacht. The bilges of “SAPPHIRE” were mostly dry unless otherwise noted in the recommendations and painted at the time of this inspection.

No. of Frames:	(49) frames with Frame (-4) at bow, Frame 0 at waterline, and Frame 45 at swim platform
Typical Frame:	Aluminum T 5/16 plate by various heights with 3” x ½” top flange
Frame Spacing:	Typical 3’6
Centerline structure & skeg shoe:	1” thick aluminum plate
Typical Longitudinal:	Hull bottom aluminum T 4” x 2” x 1/4” thick
Bottom Plating:	Frame 31 ½ to transom 3/4” thick aluminum plate Frame 29 to 31 ½ ½” thick aluminum plate Forward of Frame 29 5/16” thick aluminum plate

Hull Sides:	Typical aluminum plate 5/16” thick
Plating In Aluminum Tunnel:	Aluminum plate 3/4” and ½” thick plating
Keel Sides:	Aluminum plate 3/4” thick
Superstructure:	Aluminum plate 3/16 1/4” and 1/8” aluminum plate

The yacht is fitted with six (6) full height watertight bulkheads in the following frame locations:

Frame 3:	Collision Bulkhead
Frame 14:	Aft crew’s forward guest bulkhead
Frame 28:	Forward engine room bulkhead
Frame 37:	Aft engine room bulkhead
Frame 41:	Sliding door lazarette

For identification purposes, the following bilge locations are noted:

Frame 4-5:	Bow thruster
Frame 11-12 Port:	Crew’s black water tank 161 U.S. Gallons(690L)
Frame 11-12 STB:	Crew’s gray water tank 161 U.S. Gallons (690L)
Frame 14-16 Port:	Port freshwater tank 1,338 U.S. Gallons (5064L)
Frame 14-16 STB:	Starboard freshwater tank 1,338 U.S. Gallons(5064L)
Frame 16-17:	Black water tank treatment system
Frame 17-23 Port:	Port fuel tank forward 3,737 U.S. Gallons (14,145L)
Frame 17-23 STB:	STBD. fuel tank forward 3,737 U.S. Gallons(14,145L)
Frame 23-28 Port:	Aft port fuel tank 3,241 U.S. Gallons (12,267L)
Frame 23-28 STB:	Aft starboard fuel tank 3,241 U.S. Gallons(12,267L)
Frame 24-25 Port:	Guest gray water tank 1,390 U.S. Gallons (5,261L)
Frame 24-25:	Stabilizers
Frame 28-30 Centerline:	Fuel day tank 3,031 U.S. Gallons (11,472L)
Frame 30-31:	Port and starboard sea chest
Frame 32-33 Port:	Dirty oil tank 265 U.S. Gallons (1,003L)
Frame 29-30 STB:	Lube oil tank 250 U.S. Gallons (946L)
Frame 39-40 Port:	Port Eng. Cabin black water tank 58 U.S. Gal. (220L)
Frame 31-34:	Hydraulic Oil Tank 115 U.S. Gallons (435L)
Frame 40-41 Port:	Eng. Cabin gray water tank 58 U.S. Gallons (220L)
Frame 42-48:	Steering Gear

Hull Bottom Inserts:

Port Side	**Starboard Side**
16” x 16” Forepeak	13” x 12” forepeak
55” x 72” Freshwater Tank	24” x 24” forward of stabilizer
24” x 24” Gray water Tank	38” x 17”
147” x 28” Fuel Tank	17” x 20”

Port Side	Starboard Side
45” x 32” Fuel Tank	45” x 12”
44” x 32” Bilge access	18” x 18” fwd. of shaft log
48” x 12” Dirty Oil Tank	
18” x 18” Fwd of shaft log	

HAULOUT and BOTTOM INSPECTION:

Haul Out: Rybovich Palm Beach South Yard – 600ton Marine trave Lift
Weight: Scale not operational
Draft @: Keel & prop tips – 7’

Bottom Description:

- Fine V entry, hard shines, wedge keel cut away at the shaft logs, deep tunnels over the shaft line to reduce the draft.

Antifouling coatings:

- Well adhered Interlux – Trilux Last applied Aug. 2024

Rudders:
Dimensions: Height 34” x width top 39”
Type: Stainless-steel foil
Position: Outboard of the Shaft Line

- No damage and no movement in the bearings

Propellers:

Type:	Veem, Skewed tips, NiBrAl
Diameter:	64" x Pitch 73"
Propeller Tip clearance to Hull:	Port 10.5", Starboard 10.75"

The propellers have PropSpeed coating in good condition. No damage sighted on the propellers.

Shafts:

Diameter:	6"
Material:	AQ22 – non-magnetic
Support:	Forward P and aft V strut
Shaft overhang:	Port $^{7}/_{8}$"
	Starboard ¾" from installed Line guards
Bearings:	Forward & aft Duramax show no wear – good condition

Stabilizers:

Manufacturer:	Quantum Marine
Fins:	Stainless-steel Foils
Dimensions:	Length – 98.5" x Height – 44"

- Lifting eyes fore & aft of fins
- No Damage sighted.

Bow Thruster:

Manufacturer:	Quantum Marine
Model:	QT-120
Tunnel Dia:	24" with 5 bar grates
Motor:	Hydraulic with dual 4 blade props, PropSpeed coatings intact.

ZINCS:

It is important to maintain the proper zinc level on any yacht, particularly aluminum or steel vessels. It is important that proper zincs of a known composition be used. There are two grades of zincs that are specific for bottom applications. They are, military spec #A-18001H, the other is an ASTM No. B-418-67. Either specified zinc is the proper zinc to be used for underwater protection on aluminum or steel hulled yachts.

The vessel is fitted with hull mounted sacrificial zinc anodes fitted; each anode is mounted onto studs, which are fixed to mounting brackets on the vessel's hull.

2 X collar zincs port and starboard propeller shafts	10-15% spent
7 X bar zincs port and starboard hull sides	15-20% spent
1X thruster tip zincs port and starboard	15-20% spent
1 X round zincs each stabilizer fin	10-15% spent
4 X bar zincs transom	15-20% spent
1 X bar zincs port and starboard sea chests	15-20% spent

TRIAL RUN:

The following gauge readings were taken during the trial run. Noise readings were also taken and they will follow. Note: Temperature is in °F and pressure is in PSI.

Duration of trials:	Approximately 4 hours
Persons onboard:	Eleven (11)

Weather Condition:

Air temperature:	74 °F
Barometric Pressure:	30.03InHg
Humidity:	64%
Wind:	SE13kts
Seas:	3’
Sea temperature:	79°F

Consumables Onboard:

Fuel:	56,850 Liters
Potable Water:	5,350 Liters
Black & Grey Water:	1,344 Liters

- Main tender and two (2) personal watercraft on boat deck and Rescue tender on foredeck.

	Port	**Stbd.**
M/Eng. Hr. Start	1899	1894
M/Eng. Hr. Stop	1901 Hrs.	1898 Hrs.
Gen Hr. Start	6605 Hrs.	6227 Hrs.
Gen Hr. Stop	n/s	n/s

During the trial run, the following systems were test operated and/or monitored.

- Main engine gauge readings
- Exhaust temperatures monitored

- Controls tested at all stations
- Bow thruster test performed
- Steering by autopilot
- Anchor windlass test operated
- Noise level readings taken
- Gear temperatures monitored
- Main engine remote starts and stops
- Stabilizers test operated underway and stationary
- Electronics and navigation equipment turned on and monitored
- Water makers test operated
- Hull potential readings taken
- Generator load testing conducted on return to dock

RPM	Speed Kts	Eng. Load %	Liters Per HR	Eng Temp ^{0}C	Eng Oil kpa	Gear Temp ^{0}C
550	6.8	33 – 31	19 – 18	74 – 73	248 – 252	34 – 34
1000	11.3	30 – 29	65 – 69	77 – 75	549 - 504	36 – 36
1200	13.7	39 – 38	103 – 104	79 – 78	586 – 555	39 – 37
1400	14.5	55 – 54	187 – 183	79 – 80	614 – 576	41 – 40
1600	17.8	76 – 75	352 – 365	83 – 83	638 – 621	44 – 42
1800	18.6	80 – 81	462 – 472	86 – 86	645 – 624	45 – 43
2000	20.0	90 – 94	654 – 651	88 – 87	615 – 645	45 – 43
Max	21.5					
P2082		100	727	89	673	46
S2074		100	727	88	624	44

Shaft Seal temperatures at full power.

Port Shaft: 78°F
Starboard Shaft: 80°F

- Anchors dropped 1shot and retrieved in 2min 45sec
- Bow thruster 180^0 turn to Port and Stbd. 3min 30sec

Db Noise Levels:

The yacht doors were closed. Readings were taken in the center of each room, approx. 1.5 meters above the deck level.

As noted above, all readings shown below are expressed in **DBA**, which reflects instantaneous audible noise levels.

Location	Underway @ 1400 RPM	At Anchor ("0-Speed)
Wheelhouse	52.4	51.9
Capt. Cabin	48.0	47.1
Bridge Deck Guest	48.9	47.9
Master Stateroom	54.3	46.8
Main Deck Lounge VIP	51.4	50.7
Main Deck Port Fwd Guest	52.2	50.7
Main Deck Stbd Fwd Guest	50.9	48.2
Dining Salon	58.6	55.1
Main Salon	59.6	52.9
Lower Port Fwd Guest	54.3	51.4
Lower Stbd. Fwd Guest	54.4	51.4
Lower Port Aft Guest	57.2 (Stabilizer Open)	49.7
Lower Stbd. Aft Guest	56.1 (Stabilizer Open)	49.4
Galley	58.7	52.4
Crew Mess	56.1	49.4

TANKS:

All onboard liquid contents tanks were visually examined, externally on, reports with photos and invoices of the tank cleaning and coating were provided. Unless otherwise mentioned in the "RECOMMENDATIONS" section of this report, no external signs of leaks or damage were found during these examinations. It is to be noted that the tanks are not totally accessible or visible on all sides. For a complete evaluation of tank tightness, they should be hydro-tested.

No. of tanks: Five (5)

Tank Name	Location	Reported Capacity
Forward port	Frame 23 to 29	3737 US gallons (14,145L)
Forward starboard	Frame 23 to 29	3737 US gallons (14,145L)
Aft port	Frame 18 to 23	3241 US gallons (12,267L)
Aft starboard	Frame 18 to 23	3241 US gallons (12,267L)
Day tank	Frame 34 to 40	3031 US gallons (11,472L)
Total capacity		16,987 US gallons (64.296L)

Tank construction: Welded aluminum integral
Tank fill: Port and starboard main side decks
Tank vents: Tanks vent into a common vent header and then to the day tank and main deck goose neck
Tank inspection: Bolted manhole covers
Tank monitoring: "EMI" monitors in the engine room, engineers' cabin, crew mess, and wheelhouse, levels

Manifold:
Location: Starboard forward engine room

- Stainless steel flanges with pneumatic valves
- Pneumatic solenoid valve actuators at each tank for suction and return
- Digital Servo Watch ANCS System LCD touch controls

FUEL SYSTEM

Number of tanks: Five (5)
Tank Construction: Aluminum Integral to the hull
Tank Filling: Bunker Line Port/Starboard MD Lockers. Pneumatic control valves fitted to each tank.
Tank Vent: Main Deck Bunker Lockers with overflow to Waste/Sludge
Tank Monitoring: Tank top digital transducers Servowatch system, local control panel at fuel transfer station
Tank Inspection: Tank top access bolted lids

Fuel Transfer System:

Transfer Pumps (2)
Location: Starboard forward Engine Room
Manufacturer: Leeson Gear
Model: Gear Pump
Capacity: 12.18m³/hr. 3217Gallons/Hr.

Hand Operated Pump:
Location: Starboard Engine Room
Manufacturer: Blackmer

Fuel Centrifuge:
Location: Starboard forward Engine Room
Manufacturer: Alfa Laval Sweden
Model: Mab 104B-14/24
Tested Capacity: 1.02m³/hr. 269 Gallons/Hr.

Satisfactorily test operated transfer from Port Aft tank to Port Forward tank.

The Main Engine and Generator individual quick closing valves (QCV) were tested satisfactorily during the survey.

Primary Fuel Filters:

Main Engines:	Duplex filter/ water separator type with sensors
Manufacturer:	Separ
Model:	
Generators:	Duplex/ Filter, water separator type with sensors
Manufacturer:	Racor
Model:	75/1000 MAV

Fuel system Plumbing and Piping:

- Stainless steel seamless tube welded stainless steel piping, flexible hose.

FRESH WATER SYSTEM:

Number of Tanks:	Two (2)
Tank Construction:	Aluminum integral crossover
Tank Fill:	Swim Platform
Tank Vent:	Main Deck inboard vents
Tank Monitoring:	Sight Glass, Servo watch tank sensors.
Tank Inspection:	Tank Top Bolted Tank Lids
Tank Coating:	Recently Done. ABS 15 Classification society survey.

Fresh Water Bunkering System:

Manufacturer:	HEM Hydro Electrique Marine
Model:	Kinetico
Filtration:	Dock Mounted pre filters 20/10 micron

Fresh water pressure pumps: (2)

Location:	Aft Crew Bilge
Manufacturer:	Headhunter
Model:	SubPac Submersible Tank Pumps
Operating Pressure	Cut in 64 psi Cut out 78 psi.
Accumulator Tanks:	Two (2) Headhunter AVF-6

Hot Water Heaters (2)

Location:	Galley Cupboard/ Port Fwd. Guest Cabin Void
Maker:	Rheem
Model:	n/s
Capacity:	Approx. 80 gallons
Elements: x watts each.	N/s
Accumulator	

Circulating Pumps (2)

Location:	One pump per water heater circuit (Total 2)
Maker:	Grundfos
Model:	UP26
Capacity:	52 Gal/Min
Accumulator:	Grocco PST-2

Fresh Water system Plumbing and Piping:

Copper Press fit connections.

WATERMAKERS: (2)

Location:	Port Forward Engine Room
Manufacturer:	FCI USA
Model:	Neptune NM55263+APC
FWD Unit Hours:	4030 Hrs. 14654 Gallons produced.
AFT Unit Hours:	3991.41 Hrs. 161052 gallons produced.
Rated Capacity:	5500 Gallons/Day
Description:	Modular Unit
No. of Membranes:	2 membranes per unit

PARAMETERS	UNIT 1 FORWARD	UNIT 2 AFT
Feed Pressure	36 Psi	35 Psi
Operating Pressure	749 Psi	760 Psi
Brine Flow	8.2 Gallons/Min	8.6 Gallons/Min
Product Flow	3.8 Gallons/Min	3.6 Gallons/Min
Total Dissolves Solids/Salinity TDS	462 PPM (Parts/Million)	537 PPM (Parts/Million)
Water Temperature	79.2°F	79.7°F

Comments:
The watermakers were tested successfully during the sea trial. Please see "RECOMMENDATIONS"

GRAY WATER SYSTEM:

Number of Tanks:	Three (3)
Total Capacity:	5825L / 1538 Gallons
Tank Construction:	Aluminum Integral to the Hull, Standalone
Tank Fill:	Gravity Fed/ Transfer Pumps to Main storage tank.
Tank Vent:	To waterline with vent loop.
Tank Monitoring:	Headhunter Tank Sentry System
Tank Inspection:	Tank top Bolted Access Lids
Tank Coating:	New October 2024 Atlas Marine Group Crew Tank, Main Storage Tank

Description:
Gravity Feed to three (3) tanks (Crew, Guest, Aft tank). Transfer pumps to main tank. Main tank pumped overboard.

Gray Water Pump(s):

Location:	Port Engine Room, Crew bilge aft
Manufacturer:	MP Pumps
Model:	Flomax
Type:	Centrifugal

Satisfactorily test operated.

All Sinks, showers and bathtubs were filled and allowed to drain.

FOOD TRAP:

Two food traps, located in the galley and stew service sink, there are collection tanks fitted to the sink drains. These collection tanks are fitted with mesh screens to collect food residue.

BLACK WATER SYSTEM:

Number of Tanks:	Three (3)
Tank Capacity:	1050 Liters, 277 Gallons
Tank Construction:	Aluminum Standalone
Tank Fill:	Heads, Hospital, Type
Tank Vent:	To waterline with vent loop
Tank Monitoring:	Headhunter Tank Sentry
Tank Inspection:	Tank top bolted access lids
Number of Toilets:	Seventeen (17)
Manufacturer:	Headhunter

Black Water Pump/s:

Location:	Aft Control Room, Crew Bilge
Manufacturer:	MP Pumps
Model:	Flomax
Description Of System:	Water pressure/gravity system.

Waste from the toilets is sent to pre-treatment collection tanks. The contents are then pumped to the Sewage Treatment System, where it is processed, aerated, and sanitized before being discharged overboard, according to local regulations.

SEWAGE TREATMENT PLANT/MARINE SANITATION DEVICE

Location:	Guest Bilge
Manufacturer:	Headhunter
Model:	Tidalwave TW-330B
Type:	Type II
Certification:	USCG 159

Waste is treated by a multistage process of media separation, aeration, and chlorination, it is then discharged according to local regulations.

Waste System Plumbing & Piping:

- CPVC/PVC Sanitary Hose

LUBE OIL TANKS & SYSTEM:

Number of Tanks/Designation:	Three (3) Clean Oil, Waste Oil, Hydraulic Oil.
Tank Capacities:	Clean- 1000 L/ 264 Gallons Waste- 1000L/ 264 Gallons Hydraulic- 435L/ 114 Gallons
Tank Construction:	Clean/Waste- Aluminum/ Integral to Hull Hydraulic- Stand Alone Aluminum

Lube Oil Pumps (1)

Location:	Center Engine Room Bilge
Manufacturer:	Baldor
Model:	Gear Pump

Dirty Oil/Waste Oil Pumps: (1)

Location:	Center Engine Room Bilge
Manufacturer:	Baldor
Model:	Gear Pump

There Is an oil catch all fitted over the starboard gearbox for filter draining.

Pumps were momentarily run to prove operation. No oil was actually transferred.

Hydraulic Oil Pump: (1)

Location:	Starboard Side Engine Room
Manufacturer:	Baldor
Model:	Gear Pump

THROUGH-HULLS:

As an annual maintenance project or at each haul out, it is recommended that all of the seacocks and sea strainers be disassembled, cleaned, inspected, and lubricated.

Main sea water intakes;	Two (2) 13” Cylindrical Main Intakes One (1) 3” Port Side Fire/Bilge
Main sea chests:	Stainless Steel Cone Strainers
Crossover pipe:	13”
All supply valves:	Butterfly Type

Seawater is drawn in from two (2) 13” round through-hulls located either side of centerline. A stainless-steel cone type mesh strainer is fitted in each sea chest. A 13” crossover pipe is fitted between both intakes with isolation valves. The crossover pipe is fitted with butterfly isolation valves for each seawater consumer. Sonihull ultrasonic transducers are fitted to the crossover pipe for antifouling control of piping.

The yacht has recently completed its 15-year special survey with ABS, including testing and replacement of a majority of seawater valves.

STEERING:

HPU Location:	Centerline lazarette
Hydraulic oil capacity:	180liters
Manufacturer:	EMI (Engine Monitor Inc.)
P/N:	50150-4
Serial No.:	23551
2 x Pumps:	Rexroth AA10V80
2 x Motors:	Worldwide – 18W64F 5Hp
2 x Hydraulic Rams:	Parker Model 03.2 16.000, 2500psi

The system was operated and observed in hard over turns underway with no unusual movement sighted. The system is in good condition.

Emergency Steering

The system was tested dockside the day following the trial run. The station is in the port aft engine room on the bulkhead and is comprised of:

- EMI rudder angle indicator
- Ritchie magnetic compass
- Bridge-to-station comm
- 2.5 foot/90 cm stainless-steel spoked steering wheel.

For the testing, the hydraulic diverter valves were changed over on the manifold in the steering/crash pump room in the cockpit bilge. Communication was made between the bridge and the helmsman via the ship intercom system. Hard over-to-hard over was done 35-36º. All functioned satisfactorily as engineered.

BILGE and FIRE SYSTEM:

Galley: Kidde model- WHDR400S– 4gal wet chem. Inspected 29/04/2024
Engine Room: Kidde model – Marine Eng. 4 x 260lbs of CO^2 Inspected 29/04/2024

- 2 x Pumps: ER
- 1 x Emergency Diesel Pump
- 4 x 1.5” fire Hydrants with 50’ hoses (1 Spare)
- SCBA and Bunker Gear

Bilge and Fire pumps do have crossover capability. Either one can be used for either purpose.

Bilge Pumps: (1)
Location: Center Engine Room Bilge
Type: Vertical Centrifugal
Manufacturer: Grundfos
Model: CRT
Manifold: Port Forward Engine Room.
Plumbing & piping: CuNi Piping. Pneumatically operated Manifold Valves

Fire Pumps (1)
Location: Center Engine Room Bilge
Type: Vertical Centrifugal
Manufacturer: Grundfos
Model: CRT
Plumbing & piping: CuNi

COMPRESSED AIR SYSTEM:

Location:	Port Aft Engine Room
No. of Compressors:	Two (2)
Manufacturer:	Jenny Products
Model:	Reciprocating
Receiver Tank, Size and Year:	One tank 40 Gallons (approx.) Steering Flat One tank 20 Gallons Pilothouse Ceiling Void
Operating Pressure:	140 Psi 9.5 Bar
Cut in psi:	100 Psi 7 Bar
Cut out psi:	140 Psi 9.5 Bar

Compressed air systems:

- Horn,
- MSD,
- Fuel control valves,
- Bilge control valves,
- Service outlets

Both air compressors were tested during the survey.

OIL WATER SEPARATOR:

Location:	Portside Engine Room
Manufacturer:	N/s
Oil Monitor:	BilgMon 488
Serial No.	1b-1776
Overboard valve lock:	Seen
15ppm valve test:	Performed
Calibration Certificate:	Seen

PLUMBING and PIPING:

Fuel System:	Stainless Steel/Aluminum/ Reinforced hose
Fresh Water System:	Copper/ Press fit.
Sea Water System:	CuNi/ Aluminum
Grey Water System:	CPVC/PVC/ Sanitary Hose
Black Water System:	CPVC/PVC/Sanitary Hose
Air Conditioning System:	Copper
Hydraulic Systems:	Stainless Steel, Reinforced hose
Lube Oil System:	Stainless- Steel
Color coded flow direction arrows:	Seen

AIR CONDITIONING:

Location:	Engine Room Centerline
Type:	Chilled water circulation system.
Manufacturer:	Heinen- Hopman:
No. of compressors:	Two (2)
Condensers:	Shell & Tube
Type of Refrigerant:	R- 407C
Sea water pump:	Two (2) Azcue MN 32-200
Chilled water pump:	Two (2) SPX- Flow CB 40C-125
No. of Air handlers/ Fan Coils:	50
Chiller Operation Hours:	Compressor #1 18503 Hrs.
	Compressor #2 18 849 Hrs.

Refrigerated water from the chiller plant is circulated around the vessel to supply the room fan coils, make up air handlers and walk-in refrigeration units to supply cooling. Heating of the yacht is achieved by heater elements fitted to the can coil heat exchanger matrix. The system was in good condition, fan coil units have been systematically replaced and regularly cleaned.

The vessel chiller plant was replaced in 2019. The original five (5) chiller Cruisair unit, was replaced with a two (2) chiller Heinen Hopman unit of larger capacity. The system is operated as a staged unit, it is reported that one of the two units can accommodate the vessels requirements, except on very hot days.

VENTILATION:

MAKE UP AIR UNITS:

The yacht is fitted with five (5) make up air units to provide fresh air exchange inside the vessel.

These units are Cruisair chilled water fan coil units with heater elements in the heat exchanger matrix.

Make up Air locations:

- Aft lower deck/Engineers' Cabin make-up unit – Aft Deck Seating
- Guest Cabins/Salons Units- Starboard Main Deck Walkway, under stairs.
- Crew Cabins- Starboard Side Portuguese Bride locker
- Owner's Cabin- Sundeck Starboard side forward.

GALLEY EXTRACTION:

The galley is fitted with a dedicated extraction fan, fitted in the port side Portuguese bridge locker. A pair of Dometic in-line fans with solid state variable speed controllers and dampers ventilates the galley range hood. Both fans are located in the Portuguese bridge lockers. Ducting to and from the galley is installed in the main deck headliners.

The galley hood exhaust fan is on port and the galley fresh air intake is on starboard.

Each fan is fitted with a spring return electrically actuated damper powered with the fan breaker. Both the galley and ducts were professionally cleaned in June of 2023.

When the galley fire extinguishing system is activated the fans stop and dampers close. There was an issue with the galley supply ventilation blower.

See RECOMMENDATIONS.

The Galley range hood is equipped with a Kidde Fire Protection Wet Chemical Fire Suppression System.

ENGINE ROOM/ TECHNICAL VENTILATION

The Engine Room is ventilated by two (2) 27” axial fans located on starboard side Main Deck. Air is drawn in through grille intakes in the house sides on Owner’s deck level. Air is filtered through mist eliminators and discharged into the Engine Room through diffuser plates. Fan control is through a Heinen Hopman control panel, which can be operated in manual or automatic modes, using temperature and air pressure readings to control the fan speed.

Hot engine room air is removed through a single 27” axial fan located in the portside engine room fiddly access trunking and discharged to atmosphere through grilles on the Owner’s Deck level.

The flow of air is normally from the starboard side to the port side. This can be reversed due to rough weather.

The ventilation system, including shutdowns was tested successfully.

Miscellaneous Ventilation.

- Bilge ventilation is provided by Jabsco blowers
- The head ventilation fans are Ultra-quiet Panasonic blowers
- The laundry ventilation is controlled by FanTech FR11 Boosters
- The Galley ventilation is controlled by FanTech Booster with VFD and dampers.

REFRIGERATION:

Number of Cool Rooms:	Two (2)
Location of Cool Rooms:	Galley
Location of Reefer Equipment:	Starboard Bosuns Locker
Number of Units:	Three (3) Fridge, Freezer, Garbage locker
Manufacturer:	Copeland

The refrigeration units are fitted with air- and water-cooled condensers. The system is cooled normally by the chilled water circuit but can be air cooled during times that the chilled water unit is not operational.

MAIN ENGINES:

For full engine details and performance please refer to the separate engine survey performed by Eric Johnson of RPM Diesel Inc.

The yacht is powered by a pair of 16-Cylinder high speed, turbocharged and intercooled diesel engines by MTU. They are fitted on resilient mounts by Rubber design and coupled to a reduction gearbox through Rubber Design Flexible flange couplers. The engines were removed from the vessel in 2019 for a complete rebuild by an authorized manufacturer facility. The engines were zeroed out and warrantee renewed.

Manufacturer:	MTU
Model:	16V4000 M90
Power Rated:	3650bhp (2720kW)
Port Serial No.:	527104599
Starboard Serial No.:	527104598

Transmission Gears:

Manufacturer:	ZF
Model:	ZF7640
Gear ratio:	3.826 :1A.
Port Serial No.:	50024180
Starboard Serial No.:	50024179

GENERATOR:

Manufacturer:	Northern Lights with John Deere Turbo Diesel engines
Power Rated:	Kva:181, Kw:145, Volts:120/208, 50Hz, Amps: 503
Model:	431PSL6254
Port SN.:	WA5612671007
Eng Serial No.:	PE6068J004056
Hours:	6,602
STBD SN.	WA5612661007
Eng Serial No.:	PE6068J004077
Engine hours:	6,227

EXHAUST SYSTEM:

Main Engine Exhausts:

Manufacturer:	DeAngelo Marine Exhaust
Discharge:	Underwater 20” with cowl deflector
	Bypass 8” waterline at transom

Exhaust from the main engine turbochargers is directed through 6” compensator joints into a “Y-Type” 20” collector exhaust pipe, which is supported by ceiling supports fitted with resilient mounts. The exhaust is directed outboard to a seawater cooled spray ring, where it is directed to the aft bypass discharge, which is fitted with a composite SoundDown Silencer. Or discharged directly overboard to the underwater discharge relative to engine speed.

Generators:

Manufacturer:	Sound Down
Discharge:	Shipside

Exhaust from the turbocharger is cooled by a seawater fed spray ring, discharged into a Sound Down silencer gas/water separator. The exhaust gas is separated and discharged through a 6” outlet at waterline level, with the cooling water discharged below the waterline. Please see “RECOMMENDATIONS”.

ELECTRICAL SYSTEMS:

Onboard electrical generation and distribution system.

Alternating Current System	120/208/ Volt 60 Hz three-phase
	230/400 Volt 50 Hz single phase
Direct Current System	24Volt

The yacht is provided with generation and distribution system for the voltages of 120 / 208V at 60Hz and 24 VDC system supplied by several battery banks

AC System:

The ships AC system comprises of:

- 1 x Main Atlas Modular Enclosed Switchboard
- 2 x 145 kW Northern Lights Generators
- 2 x 75 kVA Asea shore power converters
- 1 x 15kVA Atlas 60-50 Hz frequency converter.

General Description:
The ship has two (2) main generators which are star wound to produce 120 / 208 volts at 60 cycles three phase. This is supplied to the main switchboard buss via Merlin Gerin breakers and then distributed to the 120 /208 V distribution boards. Most large current consumers are rated at 208V three phase.

The main switchboard has been configured as a TN-S system which means the neutral and the neutral cables are separated and grounded at one point only in the main switchboard shore power section.

When the yacht is alongside the yacht can take on shore power through the 2 75kVA Asea shore power frequency converter. This is placed onto the main bus with a "Seamless Transfer"
Each generator and shore power are fitted with over current protection breakers and protection modules mounted in the respective sections of the main switchboard. Parallel and synchronization is provided by Woodward load sharing and synchronizing modules. The system was demonstrated with no faults noted.

Main Switchboard:
The main switchboard is a modular unit designed for 120/208 volts, three phases, 60Hz with a neutral buss, conforming to classification society requirements built by Atlas Marine systems and is installed in the control room aft of the engine room. The main switchboard is operated as a single buss system, provisions are provided to split buss in the event of the power management system failure by the use of a 630 amp buss tie breaker. The main switchboard is fitted with all necessary meters and controls.

The main switchboard is arranged with supply to the main buss from either of the main generators, or the shore power. The switchboard is divided into four (4) sections and is arranged as follows:

- Section1, Port generator section
- Section 2, Shore power section
- Section 3, Starboard generator and manual parallel section
- Section 4, Consumer distribution section

The main switchboard has (4) three copper busses one for each phase and one for neutral, and each buss is adequately separated with adequate space for arch prevention. The switchboard section doors can fully open allowing adequate access to internal components consistent with class requirements.

The system arranged for seamless automatic start/ parallel between generators, standby start of a generator during black out and standby generator start upon generator excessive load.

The main switchboard is designed to be operated in two modes, automatic and manual. In automatic mode the system is controlled by the power management system including generator auto /start / stop, paralleling and load sharing. In the manual mode operation is completely manual and controlled by the operator.

The switchboard was operated several times, each service was applied to the buss individually and in parallel, during parallel the generators share the load evenly, the system was test operated for dead buss auto start, auto load and unload of generators, and preferential trip operations, the main switchboard operations operated as designed with no faults noted.

A Flir thermal imaging camera was used to test for overheating on components and associate cables, minor items are noted in the recommendations.

Shore Power:

The vessel is fitted with a shore power inlets starboard aft steering flats. The inputs are over current protected with individual over current protection using Sace 200 and 100 amp three phase breakers. The shore power is conditioned through the master and slave 75 kVA Asea frequency converters, the converters interfaces electrical power between shore power supplies and the vessel's distribution systems. The converter converts the shore power characteristics to a clean signal before going to the vessel's distribution system, the converters output is then direct to the main switchboard mounted over current protection breaker. The shore power converter complies with the IEC and EN standards and CE directives.

Asea master converter

Make	Asea
PN	AC75LC-3
SN	616-00159-75
Input volts	170-520
Input Hz	45-65
Output volts	120/208
Output Hz	60
Kva	75
Kw	63.8
Output amps	208
Run hours	30,587.

Asea slave converter

Make	Asea
PN	AC75LC-3
SN	616-00160-75
Input volts	170-520
Input Hz	45-65
Output volts	120/208
Output Hz	60
Kva	75
Kw	63.8
Output amps	208
Run hours	33,220.

Generators:
The vessels 145 kW Northern lights generators are six point resilient mounted and are located in individual sound shields in the engine room. Each generator is arranged with Merlin Gerin NS 630 three phase over current protection breakers with electronic trip modules located in the respective sections of the main switchboard. The generators micrologic 2.3 trip module are set to trip at 567 Amps. Both generators are fitted with 24VDC starters with separate starting banks and a single battery charger with charge divider.

Number of sets:2,	Two (2) Three phase 120/208 Volt, +N,60 Hz, 145 kW.
Make:	Northern lights

Generator Port

Make:	Northern Lights
Model:	431PSL6254
SN.	WA5612671007
Kva:	181
Kw:	145
PF	0.8
Amps:	503
Volts:	120/208
Hz:	60
Run hours	29,479 (prior to sea trial)

Port generator engine

Make:	John Deere
Fuel	Diesel
Aspiration	Turbocharged
RPM	1800

Generator Starboard

Make:	Northern Lights
Model:	431PSL6254
SN.	WA5612661007
Kva:	181
Kw:	145
PF	0.8
Amps:	503
Volts:	120/208
Hz:	60
Run hours	30,036 (prior to sea trial)

Starboard generator engine

Make:	John Deere
Fuel	Diesel
Aspiration	Turbocharged
RPM	1800

The generators comply with NEMA, IEEE, and ANSI standards for temperature rise. The generators were individually operated several times, during run operations the generators ran well and during heavy applied load the generators frequencies and voltage remained steady, and the recovery time for transient variations was less than 1.2 seconds. The generators automatic functions were operated and operated correctly. The generators water temperatures and oil pressures were consistently within required values. The system is fitted with reverse power protection, this system was not test operated and mentioned in the electrical recommendations.

Generator Load Tests:

Port 145 kW generator

Amps	Volts	Frequency
50	207	59.06
73	209	59.01
130	209	59.06

Starboard 145 kW generator

Amps	Volts	Frequency
50	208	60.06
73	207	59.88
129	208	59.73

Distribution.

The vessel distribution panels provided are sufficient for consumer requirements. Each distribution panel is supplied either from the main switchboard 120/208-Volt three phase consumer breakers.

24VDC is supplied to electronics and emergency lights.

Each supply is fitted with over-current protection at the source. Distribution to consumers is then individually protected via individual consumer protection breakers. The consumer over current breaker protection and connected conductors appear to be correctly sized and the circuit breakers trip curve appears to correct for the loads protected.

Distribution panels include:

- Engine room distribution panel 1
- Engine room distribution panel 2
- Galley panel 1
- Galley panel 2
- Crew panel
- Main deck 50 Hz distribution panel
- Lower deck panel
- Ventilation panel
- Emergency light panel
- 24 VDC electronics panels 1&2
- Navigation light panel
- GMDSS panel
- 24 VDC engine room panel

Enclosure I.P Ratings:

Electrical enclosures pump and motor starter panels, Local operator panels, machinery space boxes have been provided conforming to required I.P ratings.

Electrical enclosures pump and motor starter panels, Local operator panels have been installed in readily accessible locations

Motors and Pumps:

The 120/208-volt pumps, motors and fans are supplied from individual over current protection breakers.

Contactors and overload relays were labeled well. Machinery that was reviewed indicated the overload protection was set to the correct trip settings.

Pump and motor starter panels, and local operator panels have been installed in accessible locations; locations are well illuminated and ventilated.

Pumps, motors and fans installed onboard are individually over current protected, each system is start protected using motor soft starters, frequency drives or start contactors. Each system is provided with marine grade constructed enclosures with clearly labeled operator switches and indicator lights.

Cable:

The vessels cable system is constructed in compliance with industry requirements. Cable trays and cable raceways are installed with adequate supports and chafe protection, although faults have been noted in the electrical recommendations. Cables installed appear to be the correct gauge required for connected loads, each circuit has been protected with over current protection breakers at the source; breaker tip rating and trip curve appear to be correct for the loads protected. Cable runs were seen are run conforming to classification bend radius minimums.

Emergency Lights:

The vessel is fitted with an automatic 24 VDC emergency light system, the system automatically operated during loss of ships VAC power and can be operated by a test switch located on several distribution panels through the vessel.

Alarm and Monitoring System:

The vessel is fitted with an enhanced Servowatch alarm and monitoring system (AMS), the system is fitted with Winmon work stations with LCD monitors in the bridge and control room providing high resolution graphics, the vessels alarm is connected to data accusation units (DAU) B101s, the system is also fitted with a gateways for each engine. The DAU accept discrete analog and switches signals. The system is interconnected using a redundant duel Arcnet system using RG62 coaxial cable, alarm points are monitored by the system, when an alarm is initiated a corresponding led will flash on the alarm panels in the control room, and the alarm will be shown on the alarm banner on the wheelhouse and control room LCD displays.

Load Shedding System:
The vessel is fitted with a three stage preferential trip system. The trip of Non-Essential Load (NEL) groups is carried out in order to protect the Buss bar against an imminent blackout situation due to either a high load/current or overload on a generator set or a low bus bar frequency.

The system was test operated and operated as designed.

Stage 1. Air conditioning circuit 1
Stage 2. Air conditioning circuit 2
Stage 3. Galley

Grounding:

The vessels distribution panels and equipment are grounded with individual conductors from the source or local grounding links connected directly to the hull. Insulation resistance between components was good at less than 1ΩOhms.

The vessel's grounding system is a TN-S grounded neutral system requiring a single ground to neutral point only, this connection is within the main switchboard.

The vessels VDC system is floating system that is no intentional negative connection to earth, battery banks are arranged with positive and negative ground fault test switches and indicator light, and the system has negative ground fault(s) and noted in the electrical recommendations.

The main engine propeller shafts are fitted with individual grounding brush gear, the grounding brush gears resistance to earth was good at <1Ω Ohms.

The vessel is fitted with a Cathelco C-Shield propeller shaft earthing system, with ground brushes are in contact with the propeller shaft slip rings, and hull mounted reference cells, the system is arranged with an engine room monitoring unit , the system was not operating and mentioned in the recommendations.

DC Systems:
The yacht is provided with local 24V direct current power systems, typically for instrumentation and control. The generators and main engines are 24 VDC starting, the navigation electronics, as well as the GMDSS communication system also utilize 24 VDC sources, 24 VDC power is provided by various rectifiers and battery banks located throughout the vessel.

The vessels 24 VDC systems are floating systems, fitted with ground fault monitoring on the VDC panels.

Main Engine Start Batteries:

Location:	Outboard of each engine
Number of Batteries:	Two (2) 12V 225 AH 8D for each bank
Wired:	Series to produce 24 Volts
Charger location:	Starboard aft engine room
Charger:	Mastervolt 24Volt, 50 amp with charge divider.

The battery banks are fitted means to isolate or parallel to the opposing bank by use of local isolation switch and parallel switches located next to each engine. Additional charging is provided from the engine mounted 120 amp alternators. The banks are monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

Generator Start Batteries:

Location:	Aft of each generator
Number of Batteries:	Two (2) 12V 225 AH 8D for each bank
Wired:	Series to produce 24 Volts
Charger location:	Starboard aft engine room
Charger:	Mastervolt 24Volt, 50 amp with charge divider.

The battery banks are fitted means to select the opposing bank in the event of bank low volt conditions. Additional charging is provided from the engine mounted 75 amp alternators. The banks are monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

Service Batteries:

Location:	Aft of port generator
Number of Batteries:	Two (2) 12V 225 AH 8D
Wired:	Series to produce 24 Volts
Charger location:	Starboard aft engine room
Charger:	Mastervolt 24Volt, 100 amp.
Over current protection;	150 Amp ANL fuse

The battery banks is fitted means to select the starboard generator starting bank in the event of bank low volt conditions. The bank is monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

GMDSS Batteries:

Location:	Sundeck starboard outboard locker
Number of Batteries:	Two (2) 12V Northstar
Wired:	Series to produce 24 Volts
Charger location:	Next to battery bank
Charger:	Mastervolt 24Volt, 50 amp.
Over current protection;	100 Amp ANL fuse

The bank is monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

Emergency light Batteries:

Location:	Sundeck starboard outboard locker
Number of Batteries:	Two (2) 12V Northstar
Wired:	Series to produce 24 Volts
Charger location:	Next to battery bank
Charger:	Mastervolt 24Volt, 50 amp.
Over current protection;	100 Amp ANL fuse

The bank is monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

Electronics Batteries:

Location:	Sundeck starboard outboard locker
Number of Batteries:	Two (2) 12V Northstar
Wired:	Series to produce 24 Volts
Charger location:	Next to battery bank
Charger:	Mastervolt 24Volt, 100 amp.
Over current protection;	150 Amp ANL fuse

The battery banks is fitted means to select the port generator starting bank in the event of bank low volt conditions. The bank is fitted with a volt and amp meter on the wheelhouse panel. The bank is monitored for low voltage conditions on the vessels alarm and monitoring system and are arranged with exclusive ground fault testing switches and indicator lights.

Emergency fire pump

Location:	Lazarette
Number of Batteries:	one 12V lead acid
Charger location:	Lazarette
Charger:	Mastervolt 12 Volt, 6 amps.

Load Bank:

The vessel is fitted with an ISO compliant sea water cooled LSMC series SEPHCO 60kW load bank to help is keeping the generators operation to optimal performance. The load bank was test operated without fault.

Make:	SEPHCO
Model:	LSMC-1-60-208
S.N.:	51526
kW:	60
Volt:	208
Hz:	60

Anti-fouling Systems:

Manufacturer:	Cathelco
Main system S.N.	CA36204/C
Backup system S.N.	CA36204/C
No. of Anodes:	2 Copper (MG) for each system
Control panel 1 and 2:	Engine room.

One copper anode is fitted to the port and starboard main sea chests and one copper anode port and starboard main sea chest air conditioning back-up sea water supply line. (The back -up supply line is not used).

The copper helps to reduce marine growth based on the fact that the main fouling organisms can be inhibited from growing by the introduction of very small quantities of copper into the water. The required dosage per liter is only a few parts per billion. This principle is known as copper ion generation, or CIG. Sea water is a good electrolyte, and a low DC voltage is sufficient to provide the necessary current.

Power Quality:
The vessels electrical system was connected to a Fluke 435 quality power analyzer; this test was performed with focus on the vessels power quality regarding harmonic distortion.

Test results indicate that the vessels electrical system has a THD (Total harmonic distortion) peaking to approximately 8.1 %, which is above the classification maximum level of 8%.

A separate power quality report has been provided.

Power Quality Report:

All marine classification bodies are concerned about harmonic voltage distortion and the possible consequences should some critical item of equipment malfunction or fail. Often viewed as a potential SOLAS (Safety of Life at Sea) issue, classification bodies have imposed strict limitations on the magnitude of harmonic voltage distortion permitted on vessels classed under their voltage distortion limits (8% for ABS, BV, GL, DNV, Rina and Lloyds Register).

Harmonic currents are caused by nonlinear loads connected to the distribution system. A load is nonlinear when the current it draws does not have the same wave shape as the supply voltage, the flow of harmonic currents through the system impedances in turn causes voltage distortion in the distribution system. Harmonic currents increase the RMS current in electrical systems and deteriorate the supply voltage quality and stress the electrical network and potentially damage the equipment and can disrupt normal operation of devices.

Electronic equipment such as computers, PLC modules, and microprocessor-based equipment, and lighting system failure has been linked to harmonic distortion. Harmonic distortion is the corruption of the fundamental sine wave at frequencies that are multiples of the fundamental. The major impact of voltage and current harmonics but not limited too is the increase in machine heating caused by increased iron losses, and copper losses, both frequency dependent, high harmonic distortion changes a normal sinusoidal waveform to a complex waveform, which can contribute to electronic equipment failure, light flicker, motor, and transformer premature failure due to overheating, communication errors, circuit breaker tripping and loss of synchronization. When harmonic distortion is present false readings can occur on the vessels instrumentation, alarm, and monitoring systems, and can cause problems with voltage regulation on generators.

Test Results:

The vessels electrical system was connected to a Fluke 435 quality power analyzer; this test was performed with focus on the vessels power quality regarding harmonic distortion. During this test, the hotel 120/208 volt supply was provided from port 145 Kw generator during sea trial, during sea trials.

Test results indicate that the vessels electrical system has a THD (Total harmonic distortion) peaking to approximately 8.1 %, which is slightly the 8% classification acceptable level, the average load during this test was approximately 110 kW.

The harmonics present may not indicate immediate adverse effects; however as harmonic levels increase; the likelihood of experiencing problems also increases.

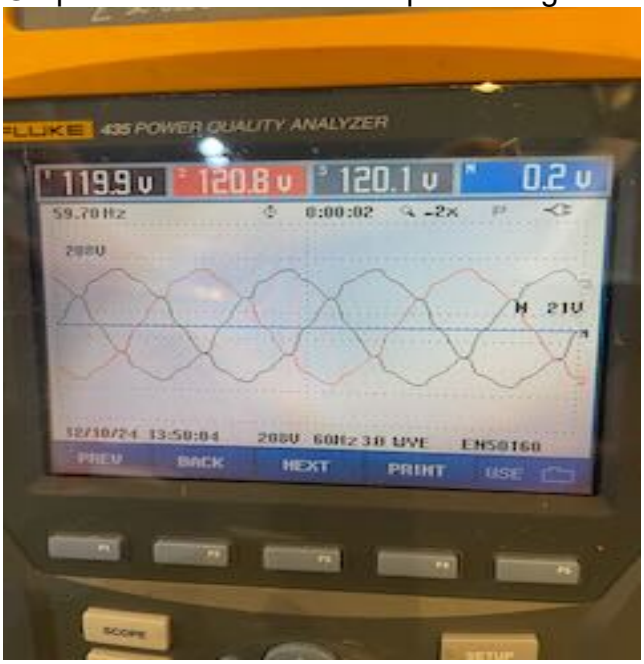
The total harmonic voltage distortion (THD) should not exceed 8%, as measured at any point of common coupling (PCC), with any individual harmonic voltage distortion not exceeding 3% of the fundamental voltage value, the harmonic distortion on the 5th harmonic (230Hz) was captured at 6.0%, the harmonic distortion on the 11th harmonic (660Hz) was captured at 4.2%, the THD at this point was captured at 8.1%. and voltage wave form showed corruption, in additional the PST (perspective short term) which is light flicker not picked up by the naked eye up from the acceptable level of 1.00 to 1.71, at this point the voltage crest factor was captured at 1.50 bringing the voltage crest factor up from 294 volts to 312 volts.

Screen shots

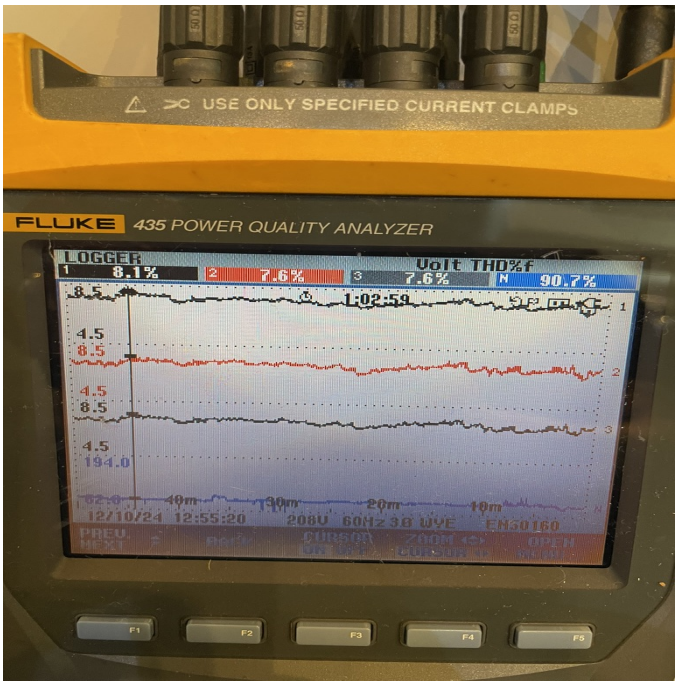
The screen shots below support the findings mentioned in this report. Screen shots were taken directly from the attached Fluke 435 quality power analyzer.

Graph below shows the sinusoidal voltage waveform with the generator running but off line.

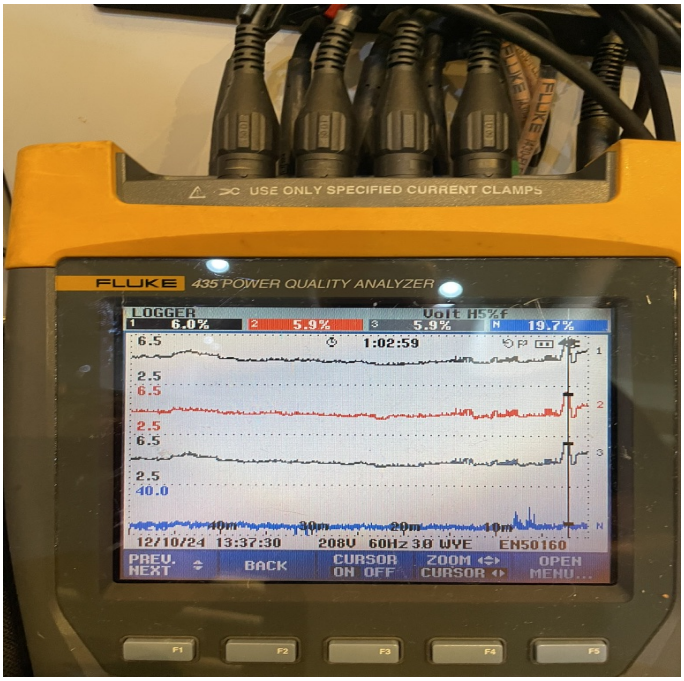
Graph below shows the complex voltage waveform.



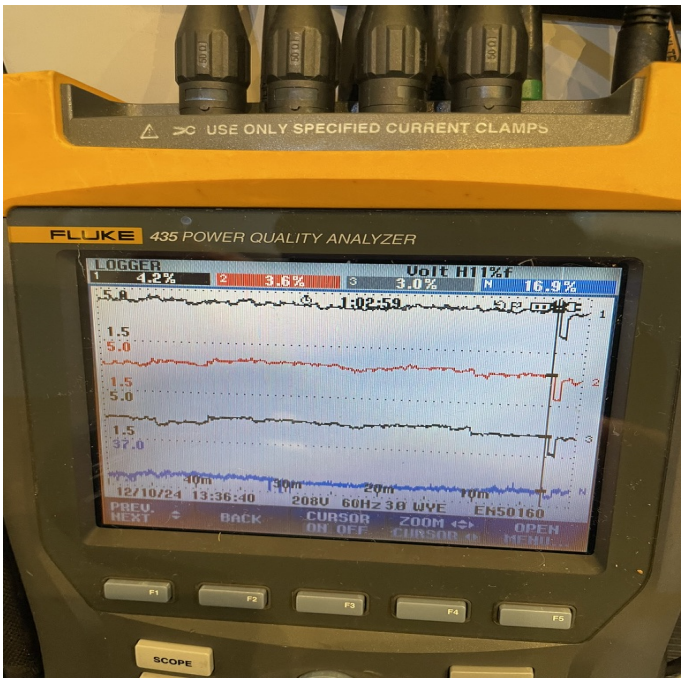
Graph below shows the THD at 8.1%



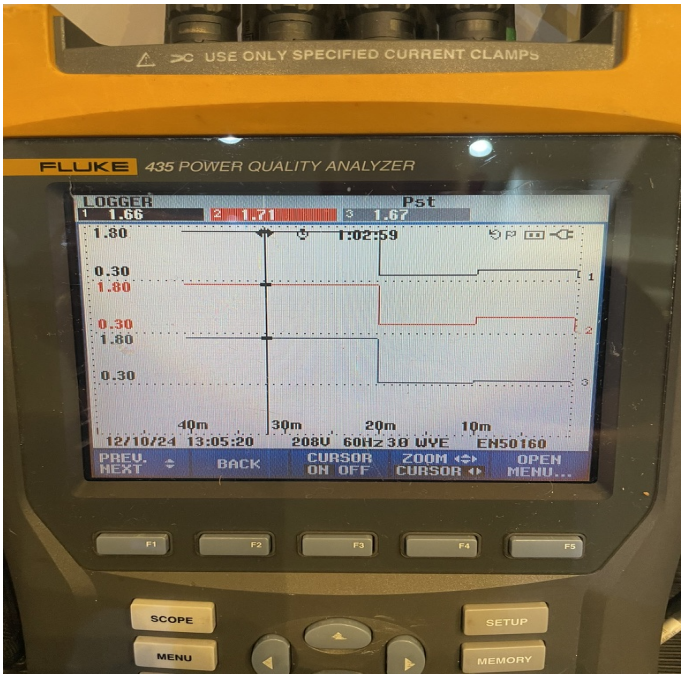
Graph below shows the 5th harmonic (300Hz) over 3.0 % to 6.0%



Graph below shows the 11th harmonic (660Hz) over 3% to 4.2%



Graph below shows the PST (Perspective Short Term) up at 1.50



Conclusion

The majority of harmonic distortion is caused by onboard non-linear loads including frequency drives, the THD was captured at 8.1%, which just above the classifications acceptable level of 8%, and in addition the 5th and 11th individual harmonics above the acceptable level of 3%.

It is suggested the majority of the vessels harmonic distortion is coming from the Air conditioning compressors frequency drives and the engine room fan frequency drives.

The use of passive filters is a pre-requisite to the use of active filters and the first step in harmonics reduction.

It is expected a line reactor or DC choke can reduce the loads harmonic level by 60-70%, however, should passive line reactors show insufficient reduction the next step is to install an active filter. Active filters monitor the line or load current and determines the amount and nature of harmonics current, then injects the equal amount of current in the opposite phase illuminating harmonic distortion.

Adjusting the frequency drives carrier frequency could smooth the wave from but increasing the IGBT(insulated Gate Bipolar Transistor) switching speed could cause overheating in the drive and therefore not recommended.

Additionally, the PST (Perspective short term) light flicker not picked up by the naked eye was up from the acceptable level of 1.00 to 1.49, reducing the harmonic distortion will decrease the PST and voltage crest factor to acceptable levels.

HULL POTENTIAL READINGS:

Hull potential readings were taken with a portable Fluke voltmeter and a Silver, Silver Chloride reference cell. Readings are in mV DC. The protected range for the following is:

Steel Hull	-.800 to -1.050 mV DC
Aluminum Hull	-.900 to -1.100 mV DC
Wood Hull	-.550 to -.600 mV DC
Fiberglass Hull	550 to 900 mV DC

Forward	**-1.0mV**
Midships	**-1.0mV**
Aft	**-1.0mV**

The readings are found within acceptable range. Please see RECOMMENDATIONS.

GROUND TACKLE:

Windless: Muir
Model: VC5, Vertical Capstan, Gypsy, SS break, Chain Stopper, & Devils claw
Anchor: Galvanized approx. 450lbs
Chain: 5 shackles of 19mm galvanized stud-link

The anchors were walked to the waterline and allowed to freefall 1 shackle and retrieved in 2min 40sec

ELECTRONICS, COMMUNICATION, and NAVIGATION EQUIPMENT:

The following electronics, communication, and navigation equipment were seen aboard the yacht. All was tested and proven to be operational unless otherwise noted in "RECOMMENDATIONS".

- Five (5) x 27" Hatteland LCD displays on center
- Port console-Raymarine Hybrid Touch Screen LCD GPS and plotter
- One (1) Furuno Doppler speed log
- Two (2) RD-30 Anemometers
- One (1) Furuno FAR 3005 series X Band radar
- One (1) Furuno FAR 2328 series X Band radar
- Two (2) SATC MF/HF transceivers with repeaters
- Panasonic Intercom KX T7636 w/ 17 stations
- Phone Tech Intercom to engine room
- Fifteen (15) Handheld VHFs
- Alhua CCTV system with seven (7) cameras (new 2020)
- Furuno FE 700 depth sounder and transducer
- Furuno FSV 25/25 Mark 2 Sonar
- One (1) ACR RCL 600 searchlight
- One (1) ACR RCL 100 searchlight
- One (1) Yacht Beam 8 mm searchlight (new 2019)
- FLIR M 232 camera system
- C Plath (Sperry) L1000 Autopilot system
- C Plath Navigat Gyro Compass (refit 2018)
- C Plath Rudder angle indicator (also emergency steering)
- Servo Watch Ship system interface monitor
- Two (2) Furuno GPS GP-170
- Furuno FA 150 Universal AIS
- Furuno BR-510 BNWAS Bridge watch
- Furuno DS-80 Doppler Speed Log
- Ritchie Magnetic w/deviation card

- TRANSAS Navi Sailor NS 3000 chart system
- Speish Windshield wiper controller
- Quantum Bow thruster controller
- Quantum ARC 3001 MK2 Stabilizer controller
- Kahlenberg Q3A/ N511A whistle controller
- Edson printer
- Clock and barometer
- Brother fax machine

ENTERTAINMENT EQUIPMENT:
The following entertainment equipment were seen aboard the yacht. All was tested and proven to be operational unless otherwise noted in "RECOMMENDATIONS".

The yacht underwent an upgrading and retrofit 2018 in Perth Australia by a firm named "Surround Sound". Some of the following is a basic description. All audio video and sound systems were working without apparent problems.

It is comprised of three server and distribution racks in designated zones, the largest being in the wheelhouse.

- Refitted SONOS audio/video system
- Local Crestron controls each zone/cabin/deck
- Apple TV
- Blu Ray in selected rooms and cabins
- Large movie database
- 2 x Starlink network distribution
- The entire yacht is fitted with LG HDTV's (2015/2016) in all zones and cabins with Bright TV in the main aft deck overhead. All were demonstrated.

Wheelhouse Rack
- Bond Tecnologia server (2017)
- Master Crestron
- 5 x Directv receivers
- IDEA server
- SONOS wireless speaker system
- Sony amplifier
- Sea Tel VSAT (also communication)
- Transas Navigation server
- Omni access routers
- Starlink routers
- Iridium servers
- NMEA interface

Master Stateroom Rack

- Local Crestron server for that zone
- SONOS router
- Apple TV
- Blu Ray

VIP Lounge Rack

- Crestron Server
- Apple TV
- Playstation 4 (note there are two (2) televisions mounted in this room.)
- SONOS router

All captain, crew and engineer cabins are fit with Alpine stereos and Denon receivers. Most of the overhead speakers in the interior were upgraded, including all on the decks with Sonance product.

APPLIANCES:

The following appliances were seen aboard the yacht. All was tested and proven to be operational unless otherwise noted in "RECOMMENDATIONS".

Main Galley

- Gaggenau 5-element induction hob
- Vulcan salamander
- 2 x Gaggenau conventional ovens
- Gaggenau wok
- KitchenAid microwave
- KitchenAid trash compactor
- Twin Delfield units, 1 fridge, 1 freezer (two other units with sea water compressors are noted in the Refrigeration category
- Hobart dishwasher
- Hoshizaki ice machine
- Vitamix blender
- Huron food processor
- Nutribullet processor
- Marvel under counter fridge
- WMF coffee machine

Main Salon Bar

- Marvel under counter fridge
- Hoshizaki ice machine

Main Deck Foyer

- Sub Zero 75 bottle wine chiller

Crew Area

- Marvel Under Counter Fridge
- Skedling meat slicer
- Miele Dishwasher
- Dualit toaster
- 2 x rice cookers
- KitchenAid microwave
- Breville toasting machine
- 2 x soda streamers
- Dupray steamer
- KitchenAid mixer
- Paco Jet ice cream machine
- Inofix dehumidifier
- California food dehydrator

Laundry

- 2 x Miele PW6068 clothes washing machines
- 2 x Miele PT7138 clothes dryers (all dryers are integrated into vent ducting with fans discharging to the atmosphere. All were found clean)

Sun Deck

- Marvel under counter fridge
- Hoshizaki Ice machine
- Galley Mate 2000 LPG grill

Engineer Control Room

- Miele Touchtimer W3035 clothes washing machine
- Miele T8005 clothes dryer
- Manitowec crushed ice machine

Master Stateroom

- Norcold mini fridge

Lower Deck Guest Cabins

- Each of the cabins is outfitted with a Marvel under counter fridge

There are 2 x Protex strongboxes installed in the master stateroom and one in the ECR.

TEAK DECK:
The sun deck, bridge deck forward and aft, main deck, side decks and foredeck are all overlaid in teak. The decks were examined and found to have raised calk seams and have become thin from sanding over the years for the age they are sound but will need the usual re-seaming and sanding.

TENDERS:

Manufacturer:	Novurania
Model:	RIB Launch 650 6.5M jet tender
HIN:	US_PKD27365L516
Engine:	Yanmar
Model:	220 9replaced 2020)
Engine Hours:	480
Drive:	Hamilton Water Jet

Features:

- Bilge pump,
- Navigation Lights,
- Garmin GPS,
- Garmin 11 VHF Radio,
- Searchlight.

Rescue Boat:

Manufacturer:	Neumatics DE Vigo
Model:	RIB Rescue boat RR40
HIN:	ES-NVS127RRG515
Engine:	Tohatsu
Model:	30Hp
Serial No.:	0126088B

PERSONAL WATERCRAFT:
The yacht is fitted with twin 3-seat 2020 personal watercrafts chocked on the sun deck forward of the guest tender. Port unit is color blue and the starboard silver.

Manufacturer:	SeaDoo
2 x Model:	GTXLTD 230
Port #1 HIN:	YDV128481920
Starboard #2 HIN;	YDV219451920
#1 Operating Hours:	84
#2 Operating Hours:	77

Each unit was briefly turned over. The batteries were recently replaced. Both are in very good condition.

TENDER LIFT:

Location:	Port side Sun Deck
Manufacturer:	Nautical Structures
Model:	EZ5000-EX
SWL:	5000lbs.
Boom length:	6.96M

The crane was proven lifting and deploying the tender.

PASSARELLE:

The electro-hydraulic gangway box with hermetic power pack is located in the starboard engineer room overhead.

Manufacturer:	Marquipt
Length:	6.10 meters (approx. 20 feet) from transom stowage cover
Width:	56 cm (22”)
Elevation:	+/- 20º
Slew:	=/- 30º
Surface:	100% teak wood

Actuation is through the hydraulic folding stairwell. The gangway motions from the swivel platform on the aft end of ramp structure.

The unit was satisfactorily tested with the wireless remote pendant only. Slewing, raise and lower were well proven. Rails are stowed in the engine room fiddley. No problems were noted but the plug-in cable was not presented. See RECOMMENDATIONS.

DECK ARRANGEMENT:

The vessel is built with five (5) structural decks. Following is a basic descriptive:

- Tank Deck (Engine Room and interior)
- Foredeck
- Main Deck
- Bridge (01) Deck
- Sun Deck

Foredeck

- Forepeak hatch beneath Rescue Tender
- Rescue Crane to port
- 2 x double horned mooring bitts port and starboard
- 2 x Muir Anchor windlasses
- Curved access stairs on center

Forward House Deck

- Non-skid surface
- Port and starboard dual stacked kayaks
- Half moon lounge area with circular table

Bridge Deck

- Semicircular pilothouse windows
- Forward brow with GPS antennae
- Twin Starlink antennae
- FLIR camera
- 2 X ACR searchlights
- Side port and starboard wing stations
- Stairs down to main deck each side

Aft Bridge 01 Deck

- Access via port stairway from main aft deck
- Access via master stateroom electric sliding glass doors
- 50% covered by hard top
- Protection-boxed bulwarks and stainless-steel safety rails
- Engine room vent trunk structure port and starboard
- Vented lockers port and starboard
- Side Lexan wind screens
- Large center area with lounge furniture
- Full width sun lounge aft

Sun Deck

- Access via port side stairway
- Forward 180º Plexi acrylic glass windscreen
- Hot tub port forward
- Starboard easy lounge
- U-shape wet bar with 3 seats to starboard
- Hard top cover center section with mast and nav/comm antennae atop
- Large lounge sun bed to port
- U-shape lunch lounge and table starboard
- Day head to port
- Storage lockers and counter surface starboard with propane grill
- Twin Sea Doo watercraft on aft center
- Tender crane port aft
- Main guest tender chocked aft over portable locker and gasoline jugs
- Area protected by bulwarks and hoop rails

Main Aft Deck

- Access via sliding glass main salon doors
- Access via side decks
- Access via port and starboard transom stairwells +starboard side passarelle
- Fully covered by bridge deck
- Overhead LCD lighting
- Large dining table with seating for 14
- Full width lounge aft between gates
- Support columns port and starboard
- Port and starboard access stairs to cockpit deck
- Port and starboard 2 x each mooring bollards with warping capstans

Side Decks

- Access via service door port forward + engine room fiddly watertight door
- Access via main foyer entry and port and starboard side doors
- Access port and starboard via stairwells from bridge deck
- Access from aft with wing wind doors
- Protection boxed bulwarks and cap rails
- Bulwark gates 2 x each forward and aft port and starboard
- 2 x each side double stainless-steel horned spring cleats

Cockpit Deck

- Access via port and starboard transom stairs
- Port aft bulwark gate from swim deck
- Boxed bulwarks and vertical transom structure with center watertight door
- Stainless hanging rail on transom bulwarks
- Deck access hatch on center to steering room
- Natural teak cap
- 2 x stainless horned mooring cleats
- Starboard side shore power cable passages
- Storage lockers aft with swim shower
- Carbon fiber poles with sunshade

All decks with the exception of the fore and forward house decks are fully teak overlaid. Main aft, side and Portuguese bridge decks are teak capped with main deck rails on stanchions. Wood is varnished and sealed and found in very good condition.

There are some findings regarding windows and acrylic screens. See RECOMMENDATIONS.

EXTERIOR FINISH:

The hull and superstructure are fully painted white. Reported coatings are Awlgrip on superstructure and Awl Craft acrylic on the hull. Superstructure is white with black mask at the bridge house. The white hull was painted in 2019 and house, 2020/21. Overall condition is good but horizontal surfaces are in need of waxing.

CANVAS and COVERINGS:

All exterior seating and tables are provided with marine quality covers that are in good condition.

INTERIOR:

The yacht guest areas are seen with a wood veneer, dark stained high gloss, highlight white upholstered wall panels, overhead synthetic leather panels. Stones are a variety of granite and marble floor and counter surfaces, and overhead lighting is an LED layout with dimming function. Guest areas are wall-to-wall carpeted. For the survey, all were protected with a beige canvas runner.

Galley and crew areas are durable deck and working design.

Following is a basic descriptive/layout.

Lower Deck/Port Forward Guest

- 2 x double berths
- Desk outboard
- Pullman berth inboard
- Hanging locker inboard
- Full bath twin sinks, sit down bath/shower, bidet & toilet
- Brown marble counters and floors with beige stone trim
- Silver hardware w gold trim

Lower Deck/Starboard Forward Guest

- 2 x twin berths
- Desk outboard
- Hanging locker inboard
- Shelf with fridge under
- Full bath twin sinks, sit down bath/shower, bidet & toilet
- Brown marble counters and floors with beige stone trim
- Silver hardware w gold trim

Lower Guest Foyer

- Circular stair entry from main deck
- Forward twin alcoves with lighted vases
- Storage shelves beneath
- Beige stone floors

Lower Deck/Port Aft Guest

- King and double berths with Pullman
- Desk inboard
- Fridge under TV inboard
- Desk inboard
- Bath with twin sinks, tub/shower, bidet & toilet
- Ample drawer and cabinet storage

Lower Deck/Starboard Aft Guest

- King and double berths
- Double hanging locker inboard
- Under counter fridge inboard
- Bath/tub, shower twin sinks, toilet bidet

Main Deck Foyer and Cabins

- Access via starboard weathertight side deck door
- Stone deck
- Curved stairway to Bridge Deck
- Wine cellar inboard with storage lockers
- Twin chairs and game table outboard
- Day head with triple sinks gold fixtures
- Port guest cabin with king berth, head and shower
- Starboard guest cabin with twin bunks and head
- Galley to port

Forward VIP Lounge

- Lockers to port
- Large U-sofa starboard with coffee table
- Easy chairs starboard
- Port and starboard shelves with storage outboard
- Twin TV’s hung fore and aft

Bridge Deck

- Master cabin aft
- Full walk-in hanging locker port aft
- King berth
- Double his/hers heads with hot tub
- Upholstered and mirrored ceilings
- Port master office
- Starboard full length counter with desk aft and wall sconces
- Master foyer with housekeeping locker inboard
- Port bridge deck king berth cabin
- Captain's cabin starboard forward with office and head
- Wheelhouse entry starboard forward with radio desk aft, helm forward
- Electronics locker port aft
- Day head starboard aft in wheelhouse

Dining Salon

- Entry from starboard main deck foyer and port service entrance
- Dining table with twelve gray leather chairs with mirror and lacquered panel overheads
- Service buffets port and starboard

Main salon

- Pop-up TV on center with decorative columns
- Port and starboard storage cabinets with full height windows
- Center port and starboard 6.5 feet long sofas flank center entertainment area
- 2 x coffee tables
- 2 x easy chairs
- 2 x ottomans
- Desk starboard aft
- Sofas flanked by tables and lamps
- Port aft L-shaped wet bar with sink and appliances with overhead mirrors and accent sconces
- Electric sliding glass door entry from deck

The galley is a commercial space port midship main deck. The stairwell port leads to the crew mess and accommodations. There are three (3) double berth cabins with full heads down below and a 12-seat L-shaped mess table with sofa, appliances and AV equipment.

On the tank deck, there are two (2) engineer cabins just aft of the engine room watertight door that are fully outfitted and have double berths.

The interior is overall seen in good condition, especially given the yacht's age.

SAFETY EQUIPMENT:
The following safety equipment was noted aboard. Those items not operational are noted in the "RECOMMENDATIONS."

Fire Detection
The yacht is fitted with a Consilium smoke and heat detection system with main panel beneath the wheelhouse port console with remotes in the crew mess and engineer/electric room. On the bridge it can be interfaced and controlled via the Servo Watch system on the center LCD display.

Sensors for smoke are located in every zone and cabin of the interior. Smoke/heat detectors are installed in the engine room, galley and lazarette electrical room.

Both smoke and heat sensors were accurately reading from a tester in several locations. One call point was also proven. The crew maintains a testing log for all sensors and this is carried out every ninety (90) days.

Fire Dampers
Both engine room and galley dampers were tested manually with air shut down and damper actuation. The fuel shut-off levers and agent release are located on the port aft side deck at the engine room fiddley escape door and were certified professionally in Spring 2024. There was a minor issue with the galley ventilation duct sensor. See RECOMMENDATIONS.

Fire Suppression Equipment:
- 1 x Vac Grundfos fire/bilge pump center engine room
- 1 x Vac Grundfos bilge/fire pump center engine room
- 1 x Yanmar diesel motor crash pump steering bilge

Hydrant testing was done from bow and stern stations. Fittings are 1.5" with 50' hoses and steel nozzles. Pump Pressures:

- Fire/Bilge—3.8 bar
- Bilge/Fire—4.2 bar
- Crash Pump—2.5 bar

Hydrant Locations:
- Bosun Locker
- Engineer Room
- 01 Deck (Owner's) aft
- Main Deck Starboard

- Spare hose and nozzle in SCBA locker on Portuguese Bridge deck
- 2 x SCBA's with spare bottle
- 2 x fire axes

Engine Room:

- Kidde CO_2 manual fire system with actuator point port main side deck aft

The Engine Room is fitted with a four (4) bottle CO2 Fixed Fire Suppression System. It is activated locally at the CO2 compartment in the Engine Room and remotely on the portside Main Deck with pull handles. The system was serviced/Inspected in April 2024 by Aqua Marine Fire Safety.

Galley:

- Kidde wet/chem auto/manual system with actuator port service entry

Portable Extinguishers:

- 2 x 5kg CO2
- 6 x 6kg ABC
- 8 x 9kg ABC
- 9 x 5-liter Foam
- 11 x 10lb. ABC

Equipment certificates were verified as inspected in April/May,2024. The tenders and grab bag are fitted with required fire and lifesaving equipment.

Lifesaving:

- 4 x RFD Surviva MK IV TO 25-person inflatable case rafts (certified June, 2024)
- Hydro static releases expire 2026
- 42 x Adult, 8 x Child non-inflatable Type I life jackets (certified June, 2024)
- 10 x inflatable life jackets
- 14 x Immersion suits
- GMDSS Radio equipment
- 2 x 406 MHZ EPIRBS ACR RBL38 Hydro Release HRU-100
- SART 9 GHZ Jotron TronSart 20
- LRIT transmission system
- 2 x throw life ring buoys with lines and lights—Main deck
- 2 x throw life ring buoys with lines and lights+ MOB ---Bridge deck

Miscellaneous:

- Safety Plans posted x 6 (including gangway)

There is a Class 3 watertight door in the stations of the center lower guest foyer that was satisfactorily tested with the manual electric function.

All safety apparatus and systems were found duly certified as per Class and Flag mandatory intervals.

COMMENTS:

"SAPPHIRE" is a well-designed and well-built yacht. She is in ABOVE AVERAGE yacht condition.

STATEMENT OF OVERALL VESSEL RATING OF CONDITION:
It is the surveyor's experience that develops and opinion of overall vessel rating of condition after a survey has been completed and the findings have been organized.

The grading system accepted in the marine industry for a vessel at the time of survey determines the adjustment to the base range of values for a similar vessel sold within a given time period as a consideration to determine the Market Value.

The following is an accepted marine grading system of condition

EXCELLENT CONDITION:
Yacht has been maintained in mint or "Bristol" fashion – usually better than factory new and loaded with extras – a rarity

ABOVE AVERAGE CONDITION:
Yacht has had above average care and is equipped with extra electrical, mechanical, electronic or interior outfitting

AVERAGE CONDITION:
Yacht is ready for sale requiring little or no additional work and normally equipped for her size

FAIR CONDITION:
Yacht requires usual maintenance to prepare for a sale

POOR CONDITION:
Yacht requires substantial yard repairs and does not have 'extras'

RESTORABLE CONDITION*:*
Yacht is currently unusable but has enough of hull and engines remaining to restore yacht to a usable condition.

As a result of the examinations carried out and reported above, and by virtue of my experience, my opinion is that the
OVERALL VESSEL RATING of CONDITION for the subject vessel is:

"ABOVE AVERAGE"

VALUE:

Fair Market Value

The "FAIR MARKET VALUE" is the most probable price in terms of money which a yacht should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus.

Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under condition whereby:

- Buyer and seller are typically motivated.
- Both parties are well informed or well advised, and each acting in what they consider their own best interest.
- A reasonable time is allowed for exposure in the open market.
- Payment is made in terms of cash in US dollars or equivalent thereof; and
- The price represents a normal consideration for the yacht sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Therefore, after consideration of the reliability of the data, the extent of the necessary adjustments and condition of the vessel, it is the undersigned surveyor's opinion that the "FAIR MARKET VALUE" of the subject vessel, as seen and equipped, is in the region of:

$18,500,000.00 US
Eighteen Million Five Hundred Thousand US Dollars

Reproduction (Replacement) Cost

The replacement cost of a similarly built yacht as "SAPPHIRE", completed, duly certificated and ready for use in the intended service (large pleasure yacht) is approximately

$50,000,000.00 US
Fifty Million US Dollars

Note: The values appearing in this report are subjective and are based on comparable yachts and the yacht resale market at the time of the survey. The values are based on an average selling price of a yacht of this type and size similarly equipped, considering all extras and accessories onboard. The values are intended for insurance and financial evaluation only but are not intended to influence the purchase or non-purchase of the yacht.

SURVEYOR'S CERTIFICATION

The undersigned surveyors certify that to the best of their knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are personal, unbiased professional analyses, opinions, and conclusions.
- The undersigned surveyors have no present or prospective interest in the vessel that is the subject of this report, and no personal interest or bias with respect to the parties involved.
- Our compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the instructing client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
- We have made a personal examination of the yacht/vessel that is the subject of this report.

SUMMARY:

"SAPPHIRE" is a good yacht with good gear and equipment. Once her few safety and asterisked "RECOMMENDATIONS" have been complied with, is a well-designed and well-constructed yacht in full compliance with flag state, MCA and ABS Class. Once her "asterisked/starred" recommendations have been complied with, she will be considered a good marine risk for offshore cruising. Any extended limits should be left up the discretion of the underwriters.

GENERAL NOTES:

Note: This survey report is issued by the undersigned, who has exercised reasonable care in conducting a visual inspection of the accessible areas, in connection with the examination, of the subject vessel. All details and particulars in this report are believed to be true, but are not guaranteed accurate. All judgements, conclusions, and recommendations are expression of opinion of the undersigned, based on his skill, training, and experience, after a routine visual examination of the vessel's systems, and after discussions with owners, crew, and others familiar with the vessel.

Unless otherwise stated, no actual measurements or calculations were made by the surveyor at the time of this examination. Reported measurements and capacities were obtained from the vessel's/yacht's papers/documentation and/or from other published sources.

No part of this report is issued as an expressed or implied warranty of the condition, life expectancy, seaworthiness, or value of the vessel/yacht or its systems, machinery, or equipment.

The undersigned has conducted his visual examinations and issued this report for the sole use of the specified requesting party for an agreed fee based upon the intended use of the report and legal liability of the undersigned. Accordingly, others are not to use this report, and not to rely upon the contents of this report, without payment to the undersigned of an additional agreed fee, based upon re-evaluation and examination of the same factors.

Further, the undersigned shall have no liability for consequential, no liability for personal injury damages, no liability for property loss damages, and no liability for punitive damages, all of which shall be deemed to have knowingly and voluntarily waived upon receipt and use of this report. Further, in no event shall the legal liability for the undersigned of this report, or Patton Marine Surveyors and Consultants, Inc. ever exceed the fee, less expenses, paid by the requesting party for the issuance of this report, regardless of the number of claims, or suits, and regardless of whether under theory of tort, contract, warranty, outrage, or otherwise.

This survey is prepared for Mr. Neil Emmott, and as aforesaid does not expressly or impliedly warrant or any way guarantee the condition, seaworthiness, or value of the vessel. It is further agreed by the aforesaid Mr. Neil Emmott that Patton Marine Surveyors and Consultants, Inc. and Mr. Walter Richardson of Cutter Marine Inc., Mr. Christopher Smith of Safety Off Shore Inc, Mr. Clint Keato of MIH Marine Survey Limited and Mr. Robert E. Riley of RER Marine Inc. shall not be held liable under any circumstances whatsoever or responsible in any way for any error in judgment, default or negligence nor for any inaccuracy, omissions, oversights, misrepresentation or misstatement in this report and that the use of this report shall be construed to be an acceptance of the foregoing conditions.

The above report has been prepared and submitted without prejudice to the rights or obligations of any party.

PATTON MARINE SURVEYORS
AND CONSULTANTS, INC.

Walter Richardson
Marine Surveyor

Chris Smith
Marine Electrical
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Marine Surveyor

Robert Riely
Marine Surveyor

WR:CS:CK:RER:isa:ms

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