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Our Time and Experience
is our Stock in Trade

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**October 10, 2026
File No.: 14048-26
Page 1 of 21**

**RE: "WELL DONE", 2000,
84', Burger Flybridge Motor Yacht**

RECOMMENDATIONS

Notes:

- A. The items marked with a star (★) should be taken care of for safe operation and/or insurability.
- B. Many of the following items describe systems that are either not operational or not functioning properly.
- C. Most of the other items are considered to be issues of general maintenance.
- D. In addition to this recommendation list, there are 35 pages of survey text which is an integral part of the report and should be read in conjunction with these recommendations.

GENERAL:

- 1. It is recommended that the buyer or buyers' agent be provided with a written affidavit from the seller stating that the yacht "WELL DONE" is free and clear of any liens, fines or debts.

SAFETY EQUIPMENT:

- 1. ★Swing the compass and provide a deviation card.
- 2. ★A layout drawing with instructions and safety equipment should be posted in the galley, each stateroom, crews' quarters, the pilothouse, main salon, public locations, etc.
- 3. ★File a waste management plan onboard as per US Coastguard regulation.

HULL BOTTOM:

- 1. The current anti-fouling Sea Hawk BioCop TF2001 coatings are well adhered with no osmotic blistering in the barrier of paint coatings. The underwater bottom anti-fouling coatings are worn thin from cleaning from diver. A new owner should anticipate having the bottom mechanically sanded and repainted.

TANKS:

1. All onboard liquid contents tanks were visually examined, externally only. 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.

THROUGH-HULLS:

1. As an annual maintenance project, it is recommended that all of the seacocks and sea strainers be disassembled, cleaned, inspected, and lubricated.

WATERMAKER:

1. The watermaker membranes were last replaced on July 8, 2022, and current product water measured 369 ppm total dissolved solids (TDS). Recommend servicing the watermaker and verifying product water quality and output against the manufacturer's specifications. Membrane replacement should be based on performance and water quality rather than age alone.

PLUMBING and PIPING:

1. The plumbing and piping was inspected, however, not all of the plumbing and piping is visible or accessible. Due to the age of the yacht, it is possible that some of the plumbing and piping, especially the raw water piping, will develop leaks. Recommend that the plumbing and piping be monitored and changed out as necessary.

ELECTRICAL:

Foreword:

The vessels electrical system was reviewed during this visit; the installed system(s) have used quality components and have been connected in a professional manner consistent with vessels of this pedigree and have been maintained to a high standard.

Although there are numerous electrical recommendations it is this surveyor's opinion that the recommendations are minor in nature and are not detrimental to the overall electrical system, the electrical system in this surveyor opinion is in very good condition.

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Notes:

Note 1: The ★ symbol indicates a recommendation for priority repair, as a hazard to personnel or equipment may exist.

Note 2: Various onboard electrical systems were not viewed during this visit, unless mentioned below.

Shore Power:

1. The aft 100-amp square D shore power input breakers running temperature was captured at 47.0°C/ 116.6°F. Verify the associated electrical connections are clean and tight.



2. The aft 100 amp shore power cable was in use, during this time the majority of the associated shore power cable remained in the storage bin, the temperature of the cable was captured at 46.2°C/ 115.15°F. Flake out shore power cord(s) when in use to reduce the risk over overheating the cables.



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3. The vessels shore power arrangement includes a retractable cable and telephone connection system which is no longer used. Remove the retractable reel and associated cable.
4. The Staco voltage regulator manufacture suggests the carbon brush gear be inspected yearly and the internal components be cleaned every 3-6 months. Perform manufacture suggest maintenance.
5. The Staco manufacture states that the voltage regulators alters the voltage magnitude without chopping the wave form, during harmonics review this was not the case, as during operation with the air conditioning compressors off the system still caused a flat topping wave form and a harmonic distortion of approximately 5.6%. Further review this condition, verify all manufacture service has been completed and that the shore power arrangement is connected correctly and in good condition.



Main Switchboard:

1. The main switchboard mounted analog shore power voltmeter was not operating. Further review this condition and rectify.
2. The main switchboard shore power “on” lamp did not illuminate during shore power operations. Rectify this condition.
3. All main switchboard connections should be checked for proper torque as per fastener design and construction. Re-tighten all switchboard connections. This procedure to be performed annually within the main switchboard and all distribution boards to aid in reducing excessive heat caused by loose connections.

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Generators:

1. The Onan 23 Kw generators sea water cooling supply hoses are secured using a single hose clamp. Install a second (back-up) hose clamp.
2. The Onan generators engine room water temperature gauge was not operating. Rectify this condition.

Batteries

1. The vessels battery banks were not load tested. Load test all battery banks regardless of age.
2. The vessels engine and generator battery banks are not secured against vertical movement. Provide means to secure all onboard batteries against vertical movement.
3. The vessels battery banks are not stored in battery boxes which are resistant to spilled battery electrolyte. Install purposed made type battery boxes for all onboard battery banks or at minimum coat the inner linings of the existing boxes with an electrolyte resistant material.



4. The vessels battery banks are not identified. Label all battery banks.

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5. The aft generators starter and slave solenoid connections are exposed. Install suitable “boot” type protection covers.



Grounding

1. No means to suppress the effects of a lightning strike. Provide means to suppress the effects of a lightning strike or at minimum install OBO type surge suppressors.
2. The propeller shafts are grounded using exclusive ground brush gear, the resistance from the shafts to the hull was captured at 2.7 Ω Ohms, although the resistance from the shaft brush gear holder to ground was captured good at less than $< 1 \Omega$ Ohms,

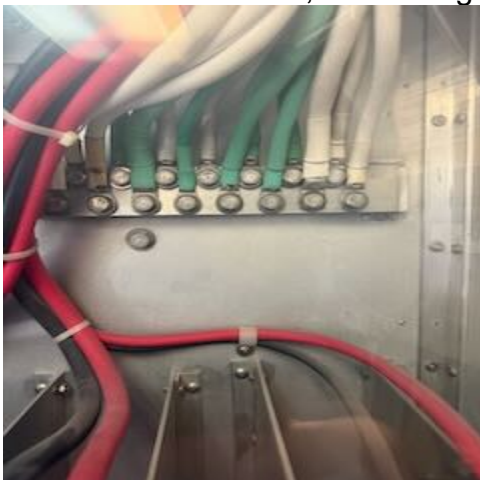
Further review this condition, anticipate brush gear and shaft cleaning, further ensure the resistance from the propeller shafts to the vessels ground system is less than $< 1 \Omega$ Ohms.

3. No purpose ground links were sighted for the gear boxes. Provide purposed ground links for each gear box.
4. The rudder stocks are not fitted with purpose ground links. Install ground links connected directly to the rudder stocks.

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5. The vessels ground and neutrals are connected to a common collector buss in the main switchboard, this arrangement will not allow for ground fault monitoring.



It is suggested safety could be improved by the following recommendation.

Re-configure the vessels grounding system as a T-NS system, that meaning a separate protective earth (PE) and neutral (N) with a single neutral to ground connection on the main switchboard, this configuration will allow for ground fault monitoring.

General

1. Multiple control and switch enclosure and distribution panel cable entries throughout the vessel's machinery spaces are not sealed reducing the enclosures required I.P. rating. It is understood this condition is the yacht builder's standard however it is suggested safety could be improved by the following recommendation. Seal all openings and/or install cable glands for protection against moisture intrusion and to prevent the spread of fire/ smoke/ gas.



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2. Evidence of water intrusion can be seen under the wheelhouse console; contamination can be seen on the stabilizer control enclosure. Further review cause of the intrusion and rectify.



3. The machinery space distribution panels are not fitted with internal voltage plaques. Provide distribution panel internal voltage labels.
4. The through deck cable glands are not sealed, this is common practice throughout the vessel. It is understood this condition is the yacht builder's standard however it is suggested safety could be improved by the following recommendation. Seal all openings to for protection against moisture intrusion and to prevent the spread of fire/ smoke/ gas and to contain electromagnetic interference (EMI).



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5. The cable entries into the vessels distribution panes and machinery associated control boxes are run through metallic cable glads without cable chafe protection, several energized conductors are resting hard against such cable glads. Further review all electrical services cable entries and ensure adequate cable chafe protection has been provided.



6. Multiple deck foot lights show slight contamination and in addition the connections are not fully encapsulated. Further review the deck foot lights and ensure are all sealed to the respective openings and they connections are fully encapsulated.



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7. The wheelhouse 12 VDC distribution panels positive connection block has separated from the backing plate. Re-secured this connection block.



8. The steering flats mounted black water pump is an open would type not suitable for machinery space use. Replace this motor with a T.E.F.C. (Totally Enclosed Fan Cooled) type motor.

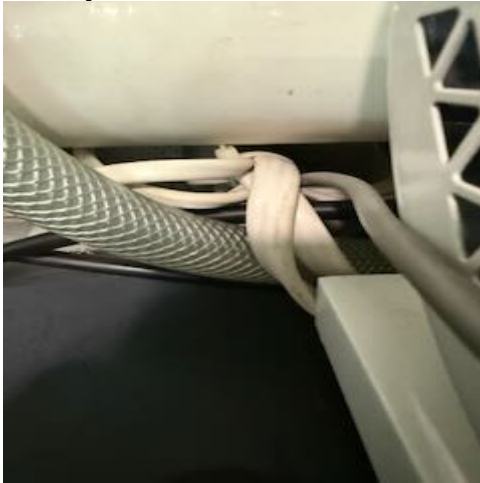


9. The aft generators cooling pump motor has been removed, the associated cable is still in place. Remove this cable.
10. The water makers back up 24 VDC Jabsco pumps permanently energized supply connection block is exposed. Re-connect this connection is a marine approved connection enclosure.

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11. Water maker associated cables lack adequate support and chafe protection. Rectify these conditions.



12. The navigation light system is arranged with a mimic panel on the wheelhouse upper console, during navigation light operations the respective LED lights on the mimic panel did not illuminate. Further review this condition and rectify, in addition verify all LED indicator lights on this mimic panel for bilges, pumps, doors and fire alarms are operational.



13. Neutral and ground conductors are connected to the respective connection blocks within the distribution panels without the use of pins or ferrules, the securing screws bears down directly on to the copper conductors. Re-connect ground and neutral conductors using pins or ferrules to reduce the risk of damage to the copper conductors.

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14. The phase and neutral supply cables connected to the machinery space 120/240 VAC distribution panels without the use of pins or ferrules, the securing screws bears down directly to the copper conductors. Re-connect supply phase and neutral cables with pins or ferrules to reduce the risk of damage to the copper conductors.



15. ★The smoke sensors located in the port guest twin cabin, and forward guest cabin are not operational, in addition the sensor in the starboard guest cabin is pushed back in to the backing box, in addition it was not verify type of test canned smoke is compatible with this type of sensor, therefore the fire alarm system was not demonstrated. Further ensure all sensors are correctly secured and operational then test provide the entire system operational including audio annunciation and helm mimic panel indication.



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16. Cables lack support and protection inboard of the wheelhouse distribution panels; in addition the rear of this panel is wide open to under the console. Provide additional cable support and protection and seal this enclosures cable entry.



17. An unidentified rocker switch is free swinging under the wheelhouse console. Identify this switch and re-secure.



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18. Several hull mounted zinc and sea chest pencil zincs are reaching the end of these usable life; in addition, multiple zinc are showing signs of passivation which occurs when the anode becomes coated with a barrier of oxide or corrosion that prevents it from working. Anticipate full anode replacements.



Steering

1. The starboard steering hydraulic ram shows discoloration, cause of which was not determined, this condition can be caused by many factors such as oxidation, contamination, worn seals and overheating. These issues can lead to significant wear on internal components, indicating potential system failures that require immediate attention. Further reviewing this condition, anticipate hydraulic ram service.



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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 is Life s Sea) issue, classification bodies have imposed strict limitations on the magnitude of harmonic voltage distortion permitted on vessels classed under their voltage distortion limits.

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 120/240 volt supply was provided from the port 38 Kw generator and shore power supply.

Test results indicate that the vessels electrical system has a THD (Total harmonic distortion) peaking to approximately 9.1%.

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.

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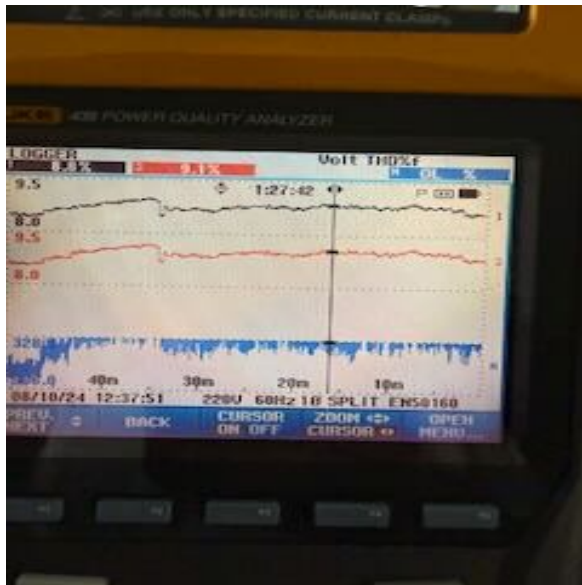
The harmonic distortion on the 3rd harmonic (180Hz) was captured at 8.3 %, the harmonic distortion on the 5th harmonic (300Hz) was captured at 3.1 %, the THD at this point was captured at 9.1%. and voltage wave form showed heavy corruption, causing flat topping of the waveform. in additional the PST (perspective short term) which is light flicker not picked up by the naked eye up from the acceptable level of 1.00 to 1.12.

During this test the air conditioning compressors frequency drive were turned off, at this point the harmonics dropped to 5.6% which is below the maximum harmonic level but the voltage wave form still showed flat topping, the test was then performed with both the air conditioning system and shore power off and using the aft 38Kw generator for supply power, during this the harmonic distortion dropped to 1.9 % and the voltage wave form was sinusoidal, it became obvious the shore power and air conditioning systems were the primary cause of the harmonic distortion.

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.

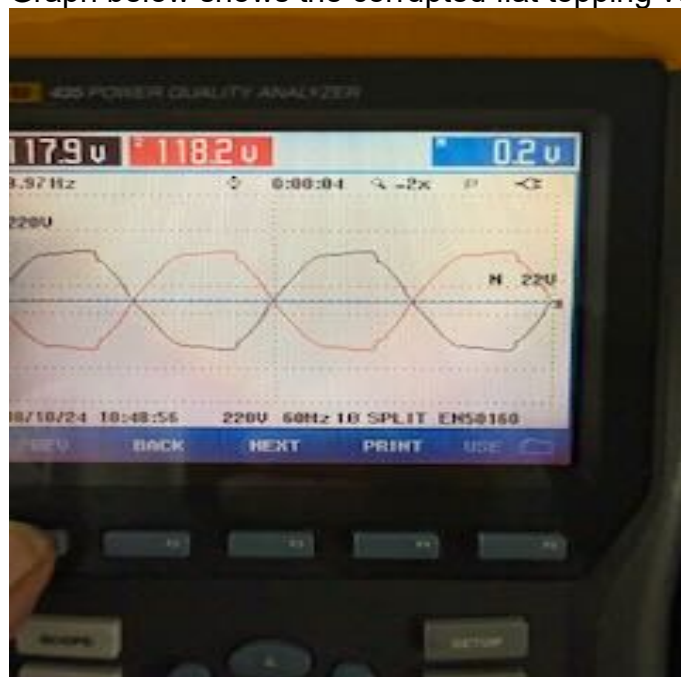
Graph below shows the total harmonic distortion above the acceptable level of 8% to 9.1%.



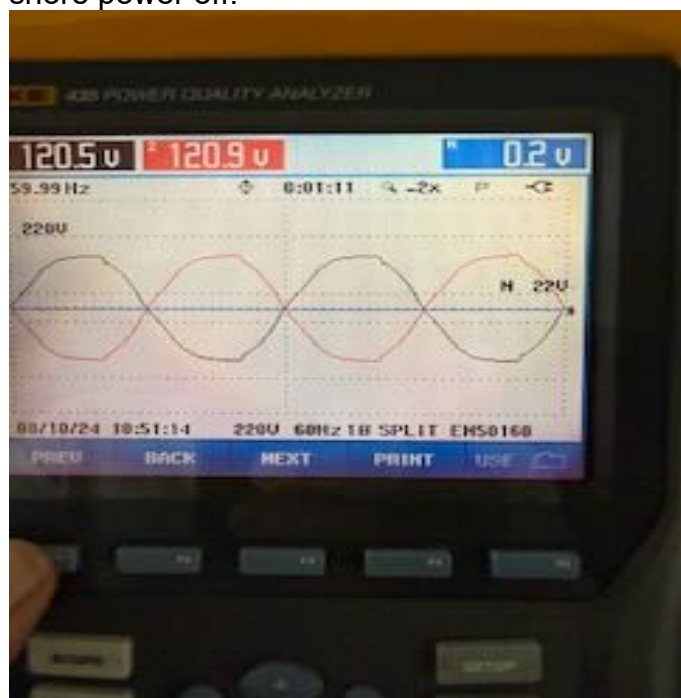
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Graph below shows the corrupted flat topping voltage wave form.



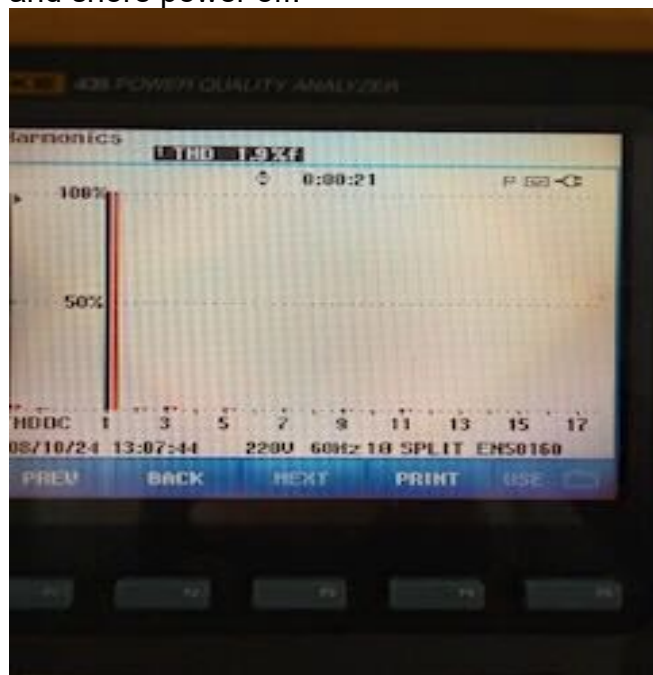
Graph below shows the sinusoidal voltage wave form with the air conditioning and shore power off.



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Graph below shows the total harmonic distortion good to 1.9% with the air conditioning and shore power off.



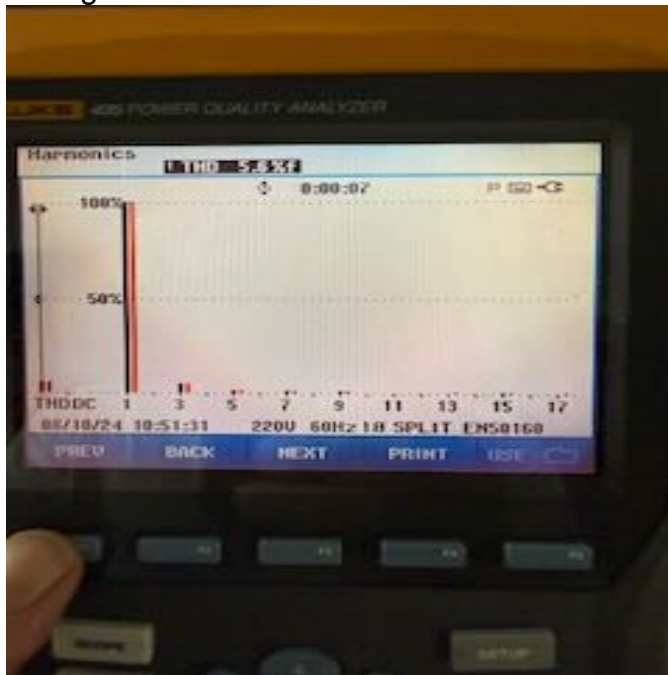
Graph below shows the PST (Perspective Short term) light flicker up from the acceptable level of 1 to 1.12.



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Graph below shows the total harmonic distortion dropping from 9.1 % to 5.6% after turning off the air conditioning, the harmonics was being caused by the shore power arrangement.



Graph below shows the 5th harmonic (300Hz) above the recommended level of 3% to 3.1%.

405 POWER QUALITY ANALYZER

HARMONICS TABLE

0:31:26

Volt	L1	L2	N
THD%	8.7	8.9	329.0
H3%	7.8	8.0	198.9
H5%	3.1	2.9	104.3
H7%	1.1	1.3	130.4
Amp	L1	L2	N
H3%	17.5	10.7	27.2
H5%	10.5	5.0	16.5
H7%	7.3	3.1	10.8

08/18/24 11:24:14 220V 60Hz 1Ø SPLIT EH50160

U A M HARMONIC TREND HOLD

USE GRAPH

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Graph below shows the 3rd harmonic (180Hz) above the recommended level of 3% to 8.3%.



Conclusion

The majority of harmonic distortion is caused by onboard non-linear loads including the air conditioning compressors frequency drives, and the shore power Staco voltage regulator, the THD was captured at 9.1%, and in addition the 3rd and 5th harmonic were each above the acceptable level of 3%, in addition the PST (perspective short term) which is light flicker not picked up by the naked eye was captured up from the acceptable level of 1.00 to 1.12, the harmonic distortion in this case is causing heavy voltage corruption with wave form flat topping.

Flat topped waveforms reduce the peak voltage, leading to energy starvation for connected devices, which can impair their performance, sensitive electronic components may suffer damage due to the distorted voltage waveform affecting their longevity and reliability, the voltage distortion can degrade overall power quality, impacting multiple devices connected to the system, in addition flat topping can prevent electronics capacitors to fully recharge which can lead to electronic equipment failures.

The use of passive filters (line reactors) 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.

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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.

Recommendation

It is recommended that a full harmonic analysis be conducted during full load conditions especially when all three air conditioning compressors are operational to identify equipment producing harmonics and to decide what equipment should be filtered and if passive line reactors are sufficient to reduce the harmonic levels or if an active filter is required.

Failure to address the harmonic distortion issues could lead to premature equipment and electronics failures, and a multitude of related issues.

Before any onboard systems failures can be correctly diagnosed, the vessels power system is to be a “clean system,” failure to address the vessels THD, the likelihood of experiencing problems will continue to increase.

SUGGESTIONS ONLY:

Note: All of the following items are considered to be improvements and upgrades that an owner and/or his captain and crew may want to consider. The yacht has run fine without any of the following.

1. The air conditioning systems control circuit is from the compressor #1 supply circuit, should the compressor #1 over current breaker be out of use the air conditioning plant would not run. It is suggested that an independent control circuit over current protection breaker be provided, room for this is available in the air conditioning breaker panel.
2. The aft and center generators are not fitted with condensation heaters to aid in preventing damage to the rotating rectifies ad associated connections. Suggestion is to install generator electrical end anti-condensation heaters.
3. Affix a proper size emergency wooden plug near each through-hull.

Note: In addition to this recommendation list, there are 35 pages of survey text which is an integral part of the report and should be read in conjunction with these recommendations.

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