

CONDITION SURVEY

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| YACHT | Dark Star. |
| INSPECTED | Under cover, ashore, Port Napoleon, 28 th & 29 th October, 2019. |
| CLIENT | - |
| CLASS | Trehard 90ft. cutter. |
| BUILDER | Trehard, France. |
| AGE | Built 1982. |
| LOA | 90ft. |

1 SCOPE

- 1.1 The purpose of the survey was to establish the general condition of the structure of the vessel and a limited amount of her installed equipment.
- 1.2 At the time of survey, the batteries on board were discharged and there was no shore supply connection available. There was, therefore, no means of testing any of the electrical equipment.
- 1.3 The survey is intended as a general guide, regarding the condition of the main aspects of the vessel, to a potential purchaser. It should be noted, however, that a detailed survey is recommended before completing the purchase.
- 1.4 Photographs taken during the survey are retained on file.

2 GENERAL DESCRIPTION

- 2.1 Dark Star is a welded aluminium, cutter rigged, ocean cruising yacht. She has guest en-suite accommodation arranged in five sleeping cabins and a saloon. There is also a further cabin for the crew and galley. She is installed with a main propulsion diesel engine on a conventional shaft and propeller.

3 HULL STRUCTURE

- 3.1 It is understood that the hull topsides were repainted approximately three years ago. The dark blue paint on the hull topsides has been spray applied to a good standard and was all found to be in a good condition.
- 3.2 There were no scores or abrasions found in the paintwork, nor any dull areas from the use of fenders. There were also no signs found of the paint lifting over areas of corrosion.
- 3.3 The painted surface of the topsides was found to be fair in shape and finished to a good yacht standard.
- 3.4 The hull below the waterline was found to be finished with black antifouling. Whereas the hull topsides have been filled and faired to a smooth and even profile, the hull below the waterline has not been filled and faired, therefore there are slight undulations in the shape of the hull surface. On a comparative basis, there was very little distortion or undulation found in the hull plating below the waterline. This is an indication that the yacht has been built and welded to a high standard, with the plates accurately rolled to shape. It is also an indication that there has been no significant distortion through the action of wear and tear in the hull plating, thus indicating considerable stiffness in the hull structure.
- 3.5 A Cygnus ultrasound thickness measurement meter was used during the survey on the external surfaces of the hull below the waterline. Fifty thickness measurements were taken on each side of the hull at regular intervals along the length and around the circumference of the hull.
- 3.6 Below the turn of the bilge, thickness readings of 7.5mm and 7.9mm were recorded. In the bows, these readings extended up to the waterline.
- 3.7 Aft of the bows and above the turn of the bilge, the thickness readings recorded were between 5.8mm and 6.2mm.

- 3.8 It is evident that the hull was built using bottom plating of approximately 7.7mm thickness and in the bow sections the same thickness plate was used, at least up to the waterline. Further aft and above the turn of the bilge, the hull has been built with aluminium plate of approximately 6mm thickness.
- 3.9 The variation in the thicknesses measured in the plate is consistent with variations to be expected when rolling aluminium plate to form the hull shape. None of the readings recorded indicate any diminution of the hull plating through the action of corrosion.
- 3.10 Five thickness readings were taken on each side of the keel, and thickness of between 9.9mm and 10.5mm were recorded.
- 3.11 Four thickness readings were taken on each side of the rudder and skeg, and readings of between 5.9mm and 6.1mm were recorded.
- 3.12 In all the areas where the thickness of the hull plating, keel plating and rudder and skeg plating were measured, the readings showed no sign of any diminution of the plating through the action of corrosion.
- 3.13 It may be noted that the probe for the Cygnus ultrasound meter was set for measuring the thickness in steel. The readings were, therefore, all factored by multiplying by 1.068, in order to convert the ultrasound readings to aluminium. The chalk marks left on the hull represent the readings obtained for steel and are, therefore, slightly thinner than the thickness in locations of the aluminium.
- 3.14 Upon examining the external surface of the hull plating, no areas of any significant corrosion were found. There were also no signs found of any cracks in the plating, or other structural defects.
- 3.15 All the cabin sole boards and galley sole boards were lifted. The two sole boards in the saloon on the centreline and just to starboard of the centreline were also lifted.
- 3.16 The bow compartment and forepeak were entered, and also the engine room and transom compartment. An inspection was made of all accessible surfaces of the hull and the hull structure within these spaces, and there were no areas found of any significant corrosion. The welds were inspected and no signs of any cracks in the welds were found. The welds were seen to be made to a good standard.
- 3.17 While inspecting these spaces, it was noted that within the bow compartment and transom compartment the hull plating and structure is painted. Elsewhere, the aluminium has been left bare, to gain a surface oxidation.
- 3.18 While inspecting within the spaces, it was noted that the surfaces of the aluminium hull plating and internal structure are fairly dirty and that there is verdigris left in the bottom of

the hull from refit and servicing processes. Amongst some items, there were stainless steel and other metal fasteners and items found in the bilge, and these may set up galvanic corrosion with the aluminium and cause significant damage to the hull plating and structure. For this reason, it is always recommended that the internal surfaces of an aluminium hull should be maintained in a clean condition and free of any metals other than aluminium.

- 3.19 In the transom compartment, there was also quite a lot of dark exhaust residue found on all surfaces. It is evident that the exhaust from the generator which had been installed in the transom compartment had leaked.
- 3.20 While inspecting surfaces in the bow compartment, it was noted that the chain locker is empty and the exposed surfaces are fairly dirty and a lot of verdigris was found lying in the bottom of the locker, thus preventing a close inspection of the aluminium hull plating. It may be noted that it is established good practice to protect the inside surfaces of a metal chain locker with plywood or other material, so that impact and galvanic action from the anchor chain will not cause damage.
- 3.21 It was noted also that, in the bow compartment, the stringers are comparatively very closely spaced, thus significantly reducing the possibility of any distortion in the hull plating in the bows.
- 3.22 It should be noted that there was a considerable amount of stowed equipment, including sails, in the bow compartment, therefore the hull surfaces could not be fully accessed for inspection.
- 3.23 There is a hinged centreboard within the keel, and the top access plate from the keel trunking had been removed prior to the survey. Upon viewing inside the keel trunking, no signs of any undue corrosion were seen on the bare aluminium plating.
- 3.24 It should be noted that the keel trunking access plate should be closed and sealed shut before launching the vessel, as well as other hull apertures which were found open during the survey.

3.25 Recommendation:

3.25.1 It is recommended that all surfaces of the hull plating and structure below the cabin sole boards are thoroughly cleaned and cleared of all verdigris, and in particular cleared of loose pieces of metal.

3.25.2 It is recommended that all surfaces in the transom compartment are similarly cleaned, and also cleaned to remove the exhaust residue.

3.25.3 It is recommended that the bilge surfaces in the engine room and the bow compartment are similarly cleaned.

3.25.4 It is recommended that the centreboard trunking is sealed securely closed before launching.

3.26 There are six watertight compartments within the hull, as follows:

Forepeak.

Bow compartment.

Sleeping cabins and saloon.

Engine room.

Galley and crew cabin.

Transom compartment.

3.27 There is no watertight door fitted in the watertight bulkhead between the sleeping accommodation and bow compartment, nor between the crew accommodation/galley and the transom compartment.

3.28 Watertight doors are fitted in the following locations, and were found to be in a serviceable condition:

Watertight door in the forepeak bulkhead.

Watertight hatch under the companionway steps into the engine room.

Watertight door between the saloon and galley.

Watertight door between the crew cabin and the engine room.

3.29 There was also a watertight door frame found in the bulkhead between the saloon and the forward sleeping cabins, and it is evident that, during a past modification of the accommodation, this watertight door was removed.

3.30 It may be noted that the internal surface of the hull and structure was not accessed for inspection within the accommodation spaces, where it is lined with an insulation material with a foil surface, which is covered over with plywood linings to the lockers and cabin sides.

4 DECKS AND SUPERSTRUCTURE

4.1 There is an aluminium flush deck structure which is welded to the hull and includes a crew cockpit and the helmsman's cockpit aft. Both cockpits are self draining and have shallow coamings above the flush deck.

4.2 The underside of the aluminium deck was not accessed for inspection within the accommodation spaces, as there are headlinings fitted and also a foil faced heat insulation fitted to the underside of the deck plating.

- 4.3 The underside of the deck structure was accessed for inspection in the bow compartment, forepeak and transom compartment, and no significant defects were seen in these areas.
- 4.4 It was noted that fore and aft internal structure has been added along the centreline of the deck, on its underside, within the bow compartment. The work could be seen to have been completed to a good standard. The purpose of this additional structure was not known at the time of the survey.
- 4.5 There is a bonded teak laid deck fitted directly onto the aluminium plating of the deck. The deck was viewed and could be seen to have a fair and even surface, having been accurately and well lofted at the time of building.
- 4.6 The teak laid deck was inspected and found to be in a generally serviceable condition. However, upon tapping the planks with a hammer during the inspection, it was found that approximately 10% of the area of the planking is not fully bonded to the aluminium deck. These areas were found, in particular, at plank ends where they butt to hatches, coamings and other items. The covering board was also found to be in a similar condition in a number of areas.
- 4.7 It is thought probable that the teak laid deck was re-made during an extensive refit in 2000, and that at this time insufficient bonding was applied between the planking and the aluminium deck. However, this does not appear to have caused a severe problem with the teak laid deck and, at worst, it may cause areas of the teak to dry more slowly than others after water lands on the deck.
- 4.8 Steps may be taken, at the present time while the vessel is undercover and the planking dry, to inject epoxy resin between the aluminium deck and the teak planking where it is not fully bonded, in order to improve the bond.
- 4.9 The black seams were inspected between the planks, and they were seen to be at the start of degrading through weathering, and to be separating from the plank edges. At some time during the next few years, it will be necessary to remove the black seams and to apply new sealant.
- 4.10 There are margin boards which are loose around the perimeter of the aft deck, which require fixing and bonding to the aluminium deck.
- 4.11 The teak laid deck was probed with a small spike through the black seams in a number of areas, in order to determine the thickness of the teak planking. A foot switch was also unfastened and lifted from the teak planking adjacent to the aft hydraulic winch on the port side, in order to examine the cut edge of the planking, to determine its thickness.

- 4.12 It was found that the thickness of the teak laid deck planking is between approximately 14mm and 17mm. This is adequate thickness to provide many more years of service.
- 4.13 It may be noted that the thickness of the teak laid deck margin boards around the hatches is showing only 5mm at the edges, and it is thought probable that the edge of the margin boards is rebated over the lip of the aluminium hatch coaming, thus giving the impression that the planking is only 5mm thick.
- 4.14 It may be noted that examinations indicate that the teak laid deck planking is of a single thickness and bonded directly to the aluminium deck plating, and that there is no intermediate membrane of plywood or other material.
- 4.15 By inspecting around the perimeter of deck fittings that are fastened to the teak planking, it could be seen that there is approximately 2-3mm of wear in the surface of the teak planking. It is thought probable, therefore, that the planking was originally 17-18mm thick.
- 4.16 Upon inspecting the teak planking, it was seen to be generally of good quality and quarter sawn. Just a few crown sawn planks were found.
- 4.17 The surface of the teak laid deck was found to be fairly even, without any significant uneven wear.
- 4.18 While inspecting within the bow compartment, it could be seen that there are rows of fastener holes through the deck plating, where the fasteners have been removed and sealant remains. This is an indication that the original teak laid deck was held down with regularly spaced fasteners through the planking and into the aluminium deck.
- 4.19 While inspecting the deck, a screwdriver was used as a lever under the edge of a few planks, in order to test the bond to the deck. The bond was found to be very good and the planks could not be prised off the aluminium. This is further evidence that, where the planks are not fully bonded, it is due to insufficient bonding sealant rather than a failure in the bonding sealant.

4.20 Recommendation:

4.20.1 It is recommended that the black seams in the teak laid deck are raked out and replaced at some time during the next two years.

4.20.2 It is recommended that holes are drilled down through the seams in order to enable epoxy resin to be injected in areas where the teak planking is not fully bonded.

4.20.3 This should be done on a trial basis in just one area, in order to determine whether the surfaces are suitable for bonding with epoxy resin, between the underside of the teak planking and the aluminium deck.

4.20.4 It is recommended that the loose margin boards around the aft deck are refitted and secured, and their black seams reinstated.

- 4.21 The white painted surface of the cockpit coamings was found to have an orange peel finish, similar to that obtained with a paint roller. In a number of areas it was found that the paint is lifting from the aluminium coamings and, for cosmetic purposes, the coamings should be suitably prepared and repainted.
- 4.22 The aluminium deck is exposed and painted dark blue between the teak margin board and the painted aluminium toe rail. It was found that the paint is lifting in many areas and this is most probably due to a galvanic reaction between the stainless steel deck rail stanchions and their fasteners and the aluminium deck. This is a cosmetic defect at the present time, however it should receive attention in order to prevent further corrosion from developing.
- 4.23 The hinges on the port aft deck locker were found to be missing.

4.24 Recommendation:

4.24.1 It is recommended that, when the teak margin boards around the aft deck are refitted, the hinges for the port aft deck locker lid are also replaced.

4.24.2 It is recommended that, within the next 12 months, the cockpit coamings are suitably prepared and all traces of corrosion removed, and that they are repainted. It is recommended that the paint is spray applied.

4.24.3 It is recommended that all deck rail stanchions are lifted from the deck.

4.24.4 It is recommended that the blue painted aluminium deck between the teak margin boards and the toe rail is prepared by removing all areas of loose paint and corrosion so that it may be repainted.

4.24.5 It is recommended that the stanchions are refitted on insulating gaskets and insulating sealant around the fasteners.

- 4.25 There are aluminium steps built into the transom, leading from the aft deck down to a transom platform. The hinged cover that fits over the steps had been removed at the time of the survey, and was found in the container designated for boat storage. The container is numbered 14, and the padlock key is on the companionway hatch keyring.
- 4.26 There is an additional cover that fits over the platform built into the transom, which may be hinged outboard to form a bathing platform. This cover is understood to be in the boatyard but its location was not identified and it was not found near the vessel.

- 4.27 There is an electric winch installed within the transom compartment and its purpose was not confirmed but it may be installed to raise and lower the bathing platform. The rope on the winch was found to be in poor condition.

4.28 Recommendation:

4.28.1 It is recommended that the cover that fits over the transom steps is refitted.

4.28.2 It is recommended that the bathing platform cover for the transom is refitted.

4.28.3 It is recommended that the bathing platform cover for the transom is located and reinstalled.

4.28.4 It is recommended that a new rope is fitted to the electric winch within the transom compartment.

5 KEEL AND BALLAST

- 5.1 The comparatively shallow, fixed keel is made from welded aluminium plate and contains lead ballast.
- 5.2 It is understood that there has been galvanic corrosion found in the aluminium keel during recent years. It is further understood that approximately three years ago, the lead ballast was removed from the keel and the aluminium plating on the keel received welded repairs. The lead ballast was then replaced and cast in situ with epoxy resin. It is understood that the lead ballast is electrically insulated from the aluminium keel.
- 5.3 Upon inspecting the external surfaces of the keel, no signs of any corrosion were found, apart from two local areas on the starboard side. These may receive a local repair with epoxy fillers.
- 5.4 As previously stated, the ultrasound thickness measurement of the keel plating showed no significant variation in thickness.
- 5.5 The hinged centreboard was not accessed for inspection. However, the top edge was viewed through the access plate in the keel trunking, and it could be seen that it is raised and lowered on a strap. The strap passes up through an aluminium tube which is welded between the hull structure and the deck structure, and then it passes aft above the cabin headlinings to a winch. The winch was not accessed for inspection. It is assumed that the winch is hydraulically driven.
- 5.6 The hinge pin for the lifting keel is located near the bottom and forward end of the fixed keel.

5.7 Recommendation:

5.7.1 *It is recommended that the two areas of corrosion on the starboard side of the keel are cleaned back to bare metal, suitably prepared and then applied with epoxy resin and fillers.*

6 STERN GEAR

- 6.1 There is a feathering, bronze propeller fitted to the shaft and it was found to be in a sound condition, with no significant weakening from galvanic corrosion. The folding mechanism of the blades was found to be in a good working condition. It was noted, however, that there is a small amount of wear at the roots of the propeller blades.
- 6.2 The propeller was found to be securely fitted to the shaft.
- 6.3 There is a stainless steel propeller shaft installed, and coupled to the engine. No sign of any significant corrosion or distortion was found on the shaft when making a visual inspection. It should be noted, however, that the shaft was not withdrawn for inspection, and its condition within the cutlass bearing and stern tube was not established.
- 6.4 The shaft was found to turn freely, thus indicating that there is no significant distortion and that it is satisfactorily aligned within the shaft bearings and onto the gearbox output flange.
- 6.5 The cutlass bearing was found to be a close fit on the shaft, where it is fitted in the aluminium P bracket.
- 6.6 The cutlass bearing was found to be a close fit on the shaft, where it is fitted in the stern tube.
- 6.7 There is a flexible seal fitted to the inboard end of the stern tube and it appeared to be in a satisfactory condition. The seal was not dismantled for close inspection, therefore its condition was not fully established.

7 STEERING

- 7.1 There is a fabricated, aluminium rudder hung on a skeg and an aluminium stock. As previously stated, ultrasound readings on the rudder blade indicated no diminution of the aluminium plate due to corrosion.
- 7.2 The rudder was found to be securely installed and showed no sign of any structural defects.

- 7.3 Steering is controlled with a single wheel in the cockpit, driving a cable system onto an aluminium quadrant. The assembly was found to be in a sound condition and secure.
- 7.4 There is an automatic pilot installation with an electric, hydraulic pump installed in the transom compartment, which powers a hydraulic ram, which is connected to the quadrant. No defects were seen in the hydraulic assembly.
- 7.5 There is an aluminium emergency tiller which is stowed in the space below the helmsman's sole board in the cockpit, and it was found to be in a well painted condition and showing no sign of significant corrosion or structural defects.
- 7.6 There is a retractable bow thruster installed which, at the time of survey, was partly extended. The mechanism could not be operated, as there was no power on board. The compartment for the bow thruster was not opened for inspection of the equipment, therefore its condition was not established.
- 7.7 The bow thruster is powered from a hydraulic pump mounted on the main engine gearbox. The hydraulic tank for the system is installed in the forward end of the engine room. Upon viewing the hydraulic system, no signs of any significant hydraulic leaks were found.

8 SPARS AND RIGGING

- 8.1 There is an aluminium, keel stepped mast which is rigged with three sets of spreaders. The mast was inspected while lying in a mast rack, outside in the boatyard.
- 8.2 The mast has been filled and faired, with fillers applied around welded fittings. The welds and adjacent aluminium section are, therefore, not accessible for inspection for cracks.
- 8.3 The mast is painted white and the paint was found to be in a generally weathered and poor condition. The paint is lifting on many of the fittings, in particular at the lower end of the mast. This is an indication of some galvanic corrosion under the paint and fillers.
- 8.4 It would appear that fillers and paint have been applied over an aluminium doubling section that has been fixed to the mast where it passes through the deck.
- 8.5 The condition of the aluminium mast section and welded attachments could not be established, owing to the presence of the fillers and paint, however defects in the surface of the paint indicate that there may be the start of structural defects in the mast, which should be further investigated. This will require complete removal of the paint and fillers from the mast.

- 8.6 The mast has been stowed in the rack complete with its standing rigging and running rigging, and electric cables have been left exposed to the weather, coiled on the end of the mast.
- 8.7 The halyards and electric cables were found to be in a weathered condition.
- 8.8 The condition of the standing rigging was not fully established, although no stranding was found. There may, however, be defects in the standing rigging which have developed through the action of wear and tear and which are not evident.
- 8.9 Recommendation:**
- 8.9.1 *It is recommended that all paint and fillers are removed from the aluminium mast section and fittings, in order to enable a close inspection to take place. Remedial action may then be taken as may be found necessary, before repainting the mast.***
- 8.9.2 *It is recommended that steps are taken immediately, to prevent further weathering to the electric cables and running rigging. This may be done either by covering over the mast in the rack or by stowing the cables within a weatherproof bag and removing the running rigging.***
- 8.9.3 *It is recommended that an experienced rigger further inspects the standing rigging and advises regarding outstanding service work, or its replacement if necessary.***
- 8.10 There is a carbon fibre boom which is stored within the shed, and was found to be in a sound condition.
- 8.11 There are two composite spinnaker poles stowed on deck, which were found to be in a sound condition. There is also a composite whisker pole, which was also found to be in a sound condition.
- 8.12 The spinnaker poles, whisker pole and boom are painted white and the paint was found to be in a satisfactory condition.
- 8.13 There is a Reckman hydraulic furling system installed on the outer and inner forestays. The foils remain on the forestays on the mast rack and are currently supported along their length with halyard rope that is wrapped around the mast. No significant distortion was seen in the foils. The condition of the hydraulic furling motors was not established.
- 8.14 It was noted that the hydraulic hose ends for the furling system on deck and the connections on the hydraulic motors on the foils are not wrapped and protected in order to prevent dust from contaminating the connections and systems.
- 8.15 There was some surface corrosion found at the lower end of the outer headsail furling foil. At the present time, this does not represent a structural defect.

8.16 Recommendation:

8.16.1 It is recommended that the hydraulic connections for the headsail furling system are wrapped, to protect them from dust contamination.

8.16.2 It is recommended that the area of corrosion at the lower end of the outer headsail foil is suitably prepared, primed and painted, to protect against further corrosion.

9 SAILS

9.1 The mainsail, genoa and staysail were seen in the vessel's storage container in the boatyard, where they have been placed after folding. By viewing the surfaces of the folded sails, it is apparent that they are due for cleaning and servicing.

9.2 There are also sails in the bow compartment, but these were not viewed as they are tightly stowed within their bags.

9.3 There are various covers on board, which were generally found to be in a weathered and dirty condition.

9.4 Recommendation:

9.4.1 It is recommended that the sails are taken to a sailmaker for general servicing and cleaning.

9.4.2 It is recommended that consideration is given to making new covers.

10 DECK FITTINGS

10.1 The chain plates are made with welded aluminium plate as an integral part of the hull and deck structure. Exposed surfaces were inspected and no signs of any cracks or other structural defects were found.

10.2 The deck cleats and fairleads were inspected and found to be in a sound condition and securely attached.

10.3 The bow roller fitting on the stem was found to be in a sound condition.

- 10.4 There is a Lofrans electric anchor windlass installed within a locker on deck, and it was found to be in a dismantled condition.
- 10.5 There are three manual winches installed in the helmsman's cockpit and four by the mast. The forward starboard winch by the mast was found to have lost its ratchet, and requires attention. The other manual winches were found to be in good condition.
- 10.6 There are four hydraulic winches on deck, which are powered from a Lewmar electrically driven, hydraulic pack that is installed in the engine room. As there was no power on board, the hydraulic winches could not be tested.
- 10.7 Upon testing the hydraulic winches on deck, no defects were seen.
- 10.8 All winches were found to turn freely.
- 10.9 The genoa tracks were found to be in a sound condition and securely fastened. The lead cars were found to be in a sound condition, with no sign of any excessive wear.
- 10.10 The staysail tracks were also found to be securely installed and in a sound condition, and their lead cars were also found to be in a good condition.
- 10.11 The mainsail track was found to be in a sound condition and securely fastened. The traveller and leads were found to be in a sound condition.
- 10.12 The wheels in the genoa and staysail sheet cheek blocks were found to be stiff to turn, and require freeing. Other blocks on deck were found to be in a good condition.
- 10.13 Guard wires are fitted through stainless steel stanchions bolted to the deck, which were found to be in a sound condition. However, as previously stated, the stainless steel is reacting with the aluminium deck and the stanchions should be refitted with insulating gaskets and insulating sealant on the fasteners.
- 10.14 The bow and stern rails were found to be in a sound condition.
- 10.15 There is an aluminium pole standing on the aft deck, which carries the satellite phone antenna. The pole was found to be secure and in a well painted condition.

10.16 Recommendation:

10.16.1 It is recommended that the anchor windlass is reassembled and returned to good working order.

10.16.2 It is recommended that the ratchet in the forward starboard winch by the mast is returned to good working order.

11 GROUND TACKLE

- 11.1 The main anchor and anchor chain were not found on board or in the container.
- 11.2 It is estimated that the vessel should carry a main anchor of approximately 50kg weight.
- 11.3 In the container there were two Delta anchors found, of 20kg and 24kg weight. There was also a short length of anchor chain found.

12 WINDOWS AND HATCHES

- 12.1 There are fixed, toughened glass portholes fitted in the hull topsides and no defects were found.
- 12.2 There are flush Perspex hatches fitted in the flush deck and they were found to be in a generally serviceable condition. It was noted, however, that the Perspex has some moderate crazing and that a few of the gas struts require replacing.
- 12.3 The companionway hatch leading from the saloon and the other from the crew cabin were found to be in a serviceable condition.

13 GAS INSTALLATION

- 13.1 There are two gas bottle lockers recessed into the aft decks, which drain overboard.
- 13.2 The gas installation was not inspected.

14 TANKS

- 14.1 There are two aluminium fuel tanks built into the hull under the saloon, which have bolted access hatches. The tanks were not opened during the survey for internal inspection. No signs of any leaks from the fuel tanks were found.

- 14.2 There are two aluminium fresh water tanks built into the hull forward of the saloon and they also have bolted access hatches. The hatches were not opened during the survey. No signs of any water leaks were found from the tanks.
- 14.3 There are moulded plastic holding tanks installed under the accommodation sole boards. No signs of any leaks from the holding tanks were found.
- 14.4 There is a fuel transfer pump system installed and managed from the engine room but it was not tested.

15 PROPULSION MACHINERY

- 15.1 There is a Luggier six cylinder, turbocharged, diesel engine installed in the engine room. There is a twin disc 5090-A gearbox fitted to the engine, and coupled to the propeller shaft.
- 15.2 The engine was not started and run during the survey, nor was it dismantled, therefore its condition was not established.
- 15.3 On viewing external surfaces of the engine, it was seen to be fairly dirty but there were no signs found of any significant corrosion, nor any signs of leaks from the heat exchanger gaskets.
- 15.4 The engine oil was dipped and seen to be in a clean condition.
- 15.5 The gearbox oil was dipped and seen to be in a clean condition.
- 15.6 There is lagging on the engine exhaust outlet which is in poor condition, and which may be asbestos based and should be replaced. In other respects, the exhaust system was seen to be in a good condition.

15.7 Recommendation:

15.7.1 It is recommended that the exhaust lagging on the engine outlet is replaced.

15.7.2 It is recommended that the engine is generally cleaned.

16 DC ELECTRICAL SYSTEMS

- 16.1 There are twelve sealed batteries, each of 2.26 volts, installed under the forward end of the saloon and they are connected to provide 24 volts to the auxiliary circuits. At the time of

survey, the batteries were discharged. It is understood that the batteries are approximately two years old and it is probable that they are damaged, having been left in a discharged condition.

- 16.2 There are additional batteries installed for starting the generators and main engine.
- 16.3 The batteries are isolated with single pole switches.
- 16.4 There was a folder found on board, with a complete and comprehensive set of electrical wiring diagrams dated 2000, and drawn by Camper and Nicholson. It would appear that the vessel was completely rewired on the DC and AC circuits at that time.
- 16.5 The DC circuits are isolated and selected from twin pole circuit breakers mounted on two distribution boards in the engine room. There is a further distribution board in the forward end of the saloon.
- 16.6 There is also a circuit breaker panel at the navigator's table.
- 16.7 There is a switch panel in the aft end of the galley for the deck and navigation lights.
- 16.8 There is also a digital control panel in the aft end of the galley compartment, where the 24 volt supply may be monitored, as well as the 12 volt supply for electronics. This panel is shared with the AC monitoring and switch panel.
- 16.9 In the same compartment, there is also a digital multi control panel for monitoring the inverter and batteries, as well as the mains supply.
- 16.10 In the same compartment, there is also a supply switch panel for the refrigerators and freezer.
- 16.11 Upon partial inspection of the DC electrical system, it was found to be made to a good standard and it is expected to be in good working condition once the batteries have either been replaced or restored to full charge.

16.12 Recommendation:

16.12.1 It is recommended that the batteries are all charged and then tested for their condition, and replaced as may be found necessary.

16.12.2 It is recommended that all DC circuits are then tested.

17 AC ELECTRICAL SYSTEMS

- 17.1 There is a 60 amp shore supply socket in the aft cockpit, but it could not be connected during the survey, therefore the AC circuits could not be tested.
- 17.2 Within the transom compartment there is a residual current device for the shore supply, to provide protection to the crew against the dangers of electric shock.
- 17.3 There is also an SCKN isolation transformer installed in the transom compartment. This unit has the appearance of being an original piece of the vessel's equipment and unfortunately its identification plate is no longer readable, therefore its capacity is unknown.
- 17.4 As well as the shore supply, 220 volts is also supplied from a main generator installed in the engine room, a night generator installed in the transom compartment and an inverter. The 220 volt supplies are selected on the monitoring and switch panel installed in the aft end of the galley compartment. Upon opening the face of the 220 volt monitoring panel, to gain access to the switch gear behind, a small area was found of smoke stains, indicating that there has been some arcing at a connection or some other similar heat source within the switch gear. No other signs of burning or heat damage were found.
- 17.5 The main generator installed in the engine room was viewed and seen to be in a fairly dirty condition, requiring general cleaning and servicing. No ID plate was found on the generator, however it is manufactured by Kohler.
- 17.6 The night generator, which is installed in the transom compartment, was found to have been removed and is in storage in the container. Upon viewing the night generator, it was found to be of 8kw capacity and manufactured by Kohler.
- 17.7 The night generator was found to be in a dirty and corroded condition and it is understood not to be in a working condition.
- 17.8 It is understood that during a general refit, the large capacity batteries and inverter were installed, in order to provide nighttime power so that the night generator could be removed. It is also understood that the transom steps were cut open in order to enable the night generator to be removed, and then the steps were re-fabricated.
- 17.9 It is evident that there was a significant exhaust leak on the night generator, as exhaust residue was found within the transom compartment.
- 17.10 The inverter was not found during the survey.
- 17.11 The AC circuits are isolated and protected from banks of circuit breakers on a distribution board in the engine room.

- 17.12 The distribution board was opened for viewing the electrical switch gear behind, which was seen to be made to a good standard and with no sign of any heat damage.
- 17.13 In summary, the AC electrical installation was found to be well documented and made to a good standard.

17.14 Recommendation:

17.14.1 It is recommended that, upon re-connecting to the shore supply, all AC circuits on board are tested.

17.14.2 It is recommended that, behind the monitoring and switch panel at the aft end of the galley compartment, the switch gear is examined in order to determine the source of the small amount of smoke staining within the switch gear cabinet.

17.14.3 It is recommended that the condition of the main generator is further assessed and action taken as may be found necessary to ensure that it is in good working order.

18 HYDRAULIC SYSTEM

- 18.1 As previously stated, the hydraulically powered bow thruster receives power from a hydraulic pump mounted on the gearbox, drawing hydraulic oil from a tank installed in the engine room.
- 18.2 The hydraulic hoses and connections were seen to be in a generally good condition but the system was not tested during the survey.
- 18.3 There is also a Lewmar hydraulic pack installed, with two electrically driven, hydraulic pumps. This hydraulic installation is used to power the hydraulic winches on deck and also the hydraulic headsail furling gear. The system was not tested.
- 18.4 There is also a Navtec manual hydraulic system installed for the backstay tensioner and boom vang.

19 NAVIGATION AIDS

- 19.1 The installed Lewmar navigation equipment was not tested during the survey.
- 19.2 Upon inspecting the mast, the casing for the radar scanner was found to have split open, allowing the weather to invade the internal electronics. Most probably, the radar scanner is beyond economic repair.

19.3 Recommendation:

19.3.1 It is recommended that the radar scanner is further inspected, to establish its condition, and action taken as may be found necessary.

20 BILGE SYSTEM

- 20.1 As previously stated, the bilge surfaces were all found to be in a dirty condition and require thorough cleaning.
- 20.2 In the transom compartment, there was clean oil found lying deep in the bilge. This may be hydraulic oil that has leaked from the automatic pilot hydraulic system, or it could be clean oil that has been spilt while servicing the night generator.

20.3 Recommendation:

20.3.1 It is recommended that all bilge surfaces throughout the vessel are thoroughly cleaned.

20.3.2 It is recommended that the source of the oil in the transom compartment is investigated, and action taken as may be found necessary.

21 SEA COCKS

- 21.1 The sea cocks fitted below the waterline were found to be made of both plastic and metal. Upon examining the aluminium hull in the location of the metal skin fittings, no signs of undue corrosion were found.
- 21.2 It was noted that the two main salt water inlets in the engine room for the salt water manifold have been left open.

21.3 There was an open pipe found in the transom compartment, that is connected to a hull valve below the waterline, and this would cause the compartment to flood upon launching, unless it is sealed off.

21.4 Recommendation:

21.4.1 *It is recommended that a full inspection is made of all the sea cocks below the waterline, and their connections, in order to ensure that all circuits are fully closed and will not allow water to flood into the hull upon launching.*

21.4.2 *It is recommended that all sea valves are serviced before launching.*

22 DOMESTIC EQUIPMENT

22.1 The galley was found to be well equipped and suitable for providing a high level of catering for extended cruising.

22.2 There are electric toilets installed, that serve each sleeping cabin.

22.3 The heating and ventilation systems were not inspected.

22.4 None of the domestic equipment was tested during the survey.

23 INTERNAL FURNISHINGS

23.1 The internal furniture is constructed of cherry faced plywood and hardwood to a good standard and was found generally to be in a very good condition.

23.2 There are vinyl linings fitted throughout the accommodation and they were found mostly to have become detached from the surfaces onto which they are bonded, which has caused them to become unsightly. In some places, the linings have been replaced.

23.3 The mirrors were found to be in generally poor condition.

23.4 Some of the blinds were found to be in need of replacement.

23.5 The door and locker furniture was found to be in good condition.

23.6 The cherry faced sole boards were found to be in good condition.

23.7 The carpets were found to be a little down at heel.

23.8 Recommendation:

23.8.1 *It is recommended that the vinyl linings are all replaced where they have become detached.*

23.8.2 *It is recommended that new mirrors are fitted.*

23.8.3 *It is recommended that the blinds fitted under the hatches are replaced where they are damaged.*

23.8.4 *It is recommended that carpets are replaced.*

24 SUMMARY

- 24.1 Dark Star was found to be a very substantially built, aluminium ocean cruising yacht that is in a sound structural condition. It was found, however, that the mast is in a poor cosmetic condition and that paint and fillers may hide structural defects. The mast is, therefore requiring a major overhaul and repaint.
- 24.2 There is currently no power on the vessel and this needs to be restored on both the AC and DC systems, in order that all equipment may be tested and further inspected.
- 24.3 The vessel appears to have lacked maintenance and attention during recent years, and she will require much of her equipment to be serviced when she is recommissioned.
- 24.4 After power has been restored to Dark Star, her condition may be further assessed, and in more detail, as a continuation of this survey.

Jim Pritchard