

DESCRIÇÃO DA EMBARCAÇÃO / Ship Description	
Nome da Unidade / Ship's name:	AHTS SUVARNA
Armador / Operador / Shipowner:	VARUN SHIPPING COMPANY LIMITED
Tipo / Type:	ANCHOR HANDLING TUG SUPPLY / TO
Bandeira / Flag:	INDIA
Ano de Construção / Year of Built:	2002
Classificação / Class:	DNV, IRS

CERTIFICADO / Certificates	VALIDADE / Expire date
Certificado IOPP	06/07/2012
Certificado IAPP	06/07/2012
Certificado de Equipamentos de Segurança / Safety Equipments Certificate	06/07/2012
Certificado de Prevenção da Poluição por Esgoto / Certificate of Prevention of Sewage Pollution	06/07/2012
Declaração de Conformidade da Marinha / Statement of Compliance from Navy	01/09/2013

ESTRUTURA / CARACTERÍSTICAS GERAIS / Ship's particulars	
Comprimento Total / LOA	81.00 Mtrs
Largura (Boca) / BEAM	20.00 Mtrs
Calado Máximo / Maximum Draught	7.60 Mtrs
Velocidade Máxima / Maximum speed	11.0 kts
Deslocamento Carregado / Displacement with ship laden	8138.334 MT

FUNÇÃO DO NAVIO / CAPACIDADE / FUNCTION OF SHIP / CAPACITY
<p>The vessel is equipped and fitted for the following contingency services:</p> <ul style="list-style-type: none"> <li>➤ Mooring operations</li> <li>➤ Supply duties</li> <li>➤ Fire Fighting</li> <li>➤ ROV Operations</li> <li>➤ TO operations for Hose handling/maintenance</li> </ul>

CAPACIDADE DOS TANQUES / Tanks Capacity	Quantidade / Quantity	Volume Total
Tanques de lastro / Ballast tanks	9	1507.2 m <sup>3</sup>
Tanque de água potável p/ consumo / Potable FW tank	6	855.3 m <sup>3</sup>
Tanques de óleo lubrificante / Lub oil tanks	10	85.550 m <sup>3</sup>
Tanques de óleo diesel p/consumo / fuel diesel tanks	14	1470 m <sup>3</sup>
Tanque séptico (sewage)	1	26 m <sup>3</sup>
Tanque de borra (sludge)	1	20.9 m <sup>3</sup>
Tanque de óleo sujo (dirty oil)	2	20.9 m <sup>3</sup>
Tanque de água oleosa (bilge)	1	32.2 m <sup>3</sup>

ALOJAMENTO / ACCOMMODATION	
Capacidade máxima / Maximum capacity	45 pessoas / people

HELIPONTO / HELIDECK
NO

GERAÇÃO DE ENERGIA / Power generation			
Item	Equipamento / Equipment	Potência / Power	Quantidade / Quantity
Geradores Principais / Main generators	Fabr / Maker: Caterpillar 36/E Tipo / Type: Shaft generators	8160 BHP 6000 kW	2 nos
Geradores auxiliares / Auxiliary generators	Fabr / Maker: Caterpillar 3512 & 3508 Tipo / Type: Diesel Engine	3512 @ 1424 kW 3508 @ 968 kW	2 nos
Geradores de emergência / Emergency generators	Fabr / Maker: MAND 2866 Tipo / Type: Diesel Engine	215 kW	1 no.
Sistema de alimentação de emergência / Emergency FEEDING system	Baterias/Batt: 24 VDC Tipo / Type:	MF 200	

CONTROLE DA PROPULSÃO / Propulsion control		
Equipamento / Equipment	Quantidade / Quantity	Características / Characteristics
Propulsão principal / Main propulsion	Fabr / Maker: Tipo / Type:	2 x Caterpillar 3616 x 6000 KW 2 x Ulstein Kort Nozzles x 4000mm propellers
Stern Thruster(s)	Fabr / Maker: Tipo / Type:	1 x Brunvoll x 884 KW TUNNEL

Bow Thruster(s)	Fabr / <b>Maker</b> : Tipo / <b>Type</b> :	1 x Brunvoll x 1425 KW TUNNEL
Bow Thruster(s)	Fabr / <b>Maker</b> : Tipo / <b>Type</b> :	1 x Brunvoll x 887 KW AZIMUTH

<b>POSICIONAMENTO DINÂMICO / DP</b>
<p>Vessel type equipped with Dynamic Positioning according to class notation Dynpos AUT (DP 1) Type Kongsberg / Simrad and incorporating the referential systems and sensors as described below:</p> <p><b>Sensores / Sensors</b>  2 x <b>Agulha giroscópica / Gyro</b>  2 x <b>Sensor de vento / Wind sensor</b>  1 x <b>VRU</b></p> <p><b>Sistemas de Referência / Referential systems</b>  1 x <b>FUGRO 9200GS DGNSS</b>  1 x <b>Kongsberg Seatex DPS 116</b>  1 x <b>Fanbeam (MDL)</b></p>

<b>SISTEMAS DE DETECÇÃO DE VAZAMENTOS E DISPOSITIVOS PARA CONTENÇÃO E BLOQUEIO / Systems to detect leakages and devices of contention</b>			
Reservatório / <b>Tanks</b>	Alarme de nível alto (S/N) – <b>Alarm of high level (Yes or No)</b>	Disposição / <b>Location</b>	Características / <b>Characteristics</b>
Praça de Máquinas BB / <b>Main Engine Port Side</b>	Yes	<b>Dentro dos pocetos / Inside overflow tank</b>	<b>Bóias de nível / float gauge</b>
Tanque de sedimentação – óleo diesel / <b>Sedimentation tank – diesel</b>	No		
Tanques de serviço – óleo diesel / <b>Service tanks – diesel</b>	Connected to O'flow tank		
Tanques de armazenamento - óleo diesel / <b>Storage tank - diesel</b>	Yes	<b>Dentro dos tanques / Ditto</b>	<b>Sensor eletrônico de carga (indicação na sala de controle) Ditto</b>
Tanques de Overflow / <b>Overflow tanks</b>	yes	<b>Dentro do tanque / Ditto</b>	<b>Bóias de nível / float gauge</b>
Tanque de lastro / <b>Ballast tank</b>	no		
Praça de Máquinas BE / <b>Main Engine Starboard side</b>	Yes	<b>Dentro dos pocetos / Inside overflow tank</b>	<b>Bóias de nível / float gauge</b>

Proa / Bow	yes	Dentro dos pocetos Ditto	Bóias de nível / ditto
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### **VESSEL SPECIFICATION**

Any leakage that may occur in the Engine Room is drained to the existing Engine room bilges (space located below the level of pallets in the engine room), where indicators are positioned level with alarm.

The engines comply with board requirements of SOLAS - Chapter II on the protection of networks of high pressure diesel fuel near the exposed surfaces and heated at high temperatures.

The compartments of the engine room are fitted with alarms and have leak-tight doors to lock.

The hydraulic plant of Winches installed in the area outside the Eng Room and located above the main deck level, with individual trays have a capacity each, to contain possible oil leaks. If leakage occurs, the oil contained in the tray is drained by gravity to the collecting tank located on the main deck level, through hoses connected to the plugs from the tray, and then is discarded as waste oils for the land by the firm licensed to so.

The control of oil residues generated on board is described in the Oil Record Book (ORB), under the responsibility of the Chief Engineer of the vessel and in accordance with MARPOL 73/78, Annex I, Rule 20.

According to the MARPOL Convention, Annex I, the boat has an Emergency Plan for Oil Pollution on Board - SMPEP, indicating the actions to be taken in case of contingency, as well as the regular training that must be performed on board.

A kit SOPEP is available on board to effectively combat a spill of oil on board according to the checklist below:

### **VESSEL LIST**

ITEM	MATERIAL INCLUÍDO NO OIL SPILL KIT	UNIDADE	QTDE
01	CORDÃO ABSORVENTE, DIMENSÕES 04" (10cm) X 10' (300cm), Oil absorbant Booms 10 cm x 300 cm	PCT	03 nos
02	Oil Spill Dispersant	Ltrs	100
03	Cotton Rags/Waste	Kg	50
04	Sawdust,	Kg	75
05	Plastic Buckets	Pcs	04
06	Hand Shovels	Pcs	02
07	Deck Brushes (synthetic bristles)	Pcs	06
08	Deck brooms (long handle, coir)	Pcs	04
09	Plastic drums (200 ltrs)	Pcs	03
10	Rubber squeegee	Pcs	04
11	OSD sprayer	Pcs	01
12	Wilden Pump A4	Pcs	01
13	LUVA DE SEGURANÇA E BOTA DE CANO LONGO EM PVC Chemical resistant Gloves, Boots,	CJ	02

Qualquer operação de transferência de óleo seja ela transferência de óleo combustível entre porto x embarcação, Unidade Marítima x embarcação e embarcação x embarcação; transferência de óleo lubrificante entre porto x embarcação; transferência de óleo sujo residual para facilidades receptoras em terra; são realizadas de acordo com o procedimento SMPEP.

Any transfer operation of oil either oil transfer fuel between port & vessel, the Maritim e Unit & vessel, lube oil transfer between port & vessel; dirty oil transfer facilities for discharging waste ashore are conducted in accordance with the procedure in the SMPEP.

## SISTEMAS DE MANUTENÇÃO

### VESSEL SPECIFICATION

A embarcação possui um sistema de gerenciamento informatizado denominado AMOS Business Suite que controla a manutenção dos equipamentos de bordo (propulsão, geração elétrica, salvatagem, segurança e controle ambiental como o separador de água e óleo e as plantas de tratamento biológico). Isso permite que as manutenções preventivas e preditivas sejam programadas e também que as corretivas, que por ventura ocorram, possam ser devidamente registradas. No histórico do evento fica registrada a hora de funcionamento do equipamento, a data do serviço, os sobressalentes utilizados, bem como uma descrição da atividade realizada.

As manutenções de rotina, realizadas a bordo, tem o intuito de preservar os equipamentos bem como os manter operacionais, dentro dos parâmetros de funcionalidade definidos no manual do fabricante. Mas, vale ressaltar que as maiores intervenções são programadas para os períodos de docagem da embarcação.

O Chefe de Máquinas são responsáveis pela gestão do sistema de manutenção, bem como pelo controle dos sobressalentes dos equipamentos críticos de bordo.

### SYSTEMS MAINTENANCE

The ship has a computerized management system called AMOS Business Suite that controls the maintenance of on-board equipment (propulsion, power generation, rescue, safety and environmental control such as oil and water separator and biological treatment plants). This allows preventive and predictive maintenance to be scheduled and that the corrective, which occur by chance, can be properly recorded. In the history of the event is recorded the operating time of equipment, the date of service, parts used and a description of the activity performed.

The routine maintenance carried out on board, aims to preserve the equipment and keep them operating within the parameters of functionality defined in the manufacturer's manual. But it is noteworthy that the major interventions are planned for periods of docking the vessel.

The Chief Engineer is responsible for managing the maintenance system, as well as for control of critical spare equipment on board.

## GUINCHOS, GUINDASTES E EQUIPAMENTOS DE MANUSEIO DE CARGA / WINCHES, CRANES AND EQUIPMENT FOR CARGO HANDLING ( FILL IN VESSEL DETAILS)

Item	Quantidade / Localização
<p>Guincho, para lançamento / recolhimento de <i>transponders</i>, perfilador de velocidade de som e correntômetro, até 3.000 m de profundidade</p> <p>Anchor Handling drum – 500 T, Dia 2800mm, Length 4600 + 900mm with dividing flange (300mm opening) on Port side. Electro-Hydraulic operated.</p>	<p>01 a bombordo em nível acima do convés principal</p> <p>01 located above main deck, aft of accomodation.</p>
<p>Towing drum – 500 T, Dia 1500mm, Length 4600 + 900mm with dividing flange (300mm opening) on Port side. Electro-Hydraulic operated.</p>	<p>01 ao centro em nível acima do convés principal</p> <p>01 located above main deck, aft of accomodation</p>
<p>Spare drums – 500 T, Dia 1500mm, Length 4600 + 900mm with dividing flange (300mm opening) on Port side. Electro-Hydraulic operated</p>	<p>02 ao centro em nível acima do convés principal</p> <p>02 located above main deck, aft of accomodation</p>
<p>Shark Jaws, Type Karm Fork, Dia 500mm, Hydraulic operated for wire / chain with MBL up to 750 T</p>	<p>02 sets at stern, main deck.</p>
<p>Towing Pins, type Karm form, dia 350mm, hydraulic operated for bollard pull upto 240 T</p>	<p>02 sets of 2 each, at stern, main deck.</p>
<p>Stern Roller, Length 4000 + 4000 mm Split type, Dia 4000mm.</p>	<p>01 set at stern.</p>

Tugger winches, 15 T pull	02 nos at main deck midship.
Capstans, 15 T pull	02 nos at main deck aft.
Deck cranes, Hydraulift, TTS, 10 T SWL	01 on Port side aft & 01 on Stbd side Midship.

<b>SISTEMA DE MEDIÇÃO E MONITORAMENTO / Monitoring &amp; measuring system</b>				
<i>Tanque / Equipamento</i>	<i>Alarme Yes/No</i>	<i>Tipo de alarme</i>	<i>Sistema de Monitoramento Monitoring system</i>	<i>Disposição (Local) Location</i>
Sludge	Sim	Nível	Sondagens periódicas Periodic sounding	Interior dos tanques Inside tanks
Bilge	Sim	Nível	Sondagens periódicas Periodic sounding	Interior dos tanques Inside tanks
Sedimentação Settling	Sim	Nível	Sondagens periódicas Periodic sounding	Interior dos tanques Inside tanks
Serviço Service	Sim	Nível	Sondagens periódicas Periodic sounding	Interior dos tanques Inside tanks
Separador de água e óleo OWS	Sim	Mistura	Indicação local da 'ppm' de óleo PPM Indicator	Na linha de descarga do separador

In the case of receiving oil, there are high-level alarms on tanks and an overflow tank, where the excess can be directed. These arrangements seek to eliminate or mitigate the most of any possibility of leakage of oil on board, especially on the supply operations.

The boat has an electronic control system of tank level, indicating number and percentage bars, allowing you to monitor the existing volume at any time the process of supply of fuel oil. The control of supply is also done by the flow through the pump Flowmeter / Counter. The other control variables, where applicable, is performed by the installation supplier.

The monitoring of the effluent to be discharged by the water separator and oil is made using a digital sensor (Jona93) that continuously measures the level of residual concentration of oil in the treated effluent, preventing the discharge thereof into the sea when a higher concentration than 15 ppm oil occurs.

The main document of the board to record transactions involving waste oil and fuel oils is the Oil Record Book (ORB). This book is updated when there is some waste disposal, in addition to receiving regular inspections, to monitor the evolution of records and compliance with requirements of MARPOL.

<b>SISTEMA DE TRATAMENTO DE EFLUENTES – ESGOTOS E ÁGUAS RESIDUAIS / SEWAGE TREATMENT SYSTEM - SEWER AND WASTEWATER</b>
<b>VESSEL SPECIFICATION</b>
The vessel has a Sewage Retention tank of 26 CuM capacity in which sewage generated by the Vacuum toilet system is collected.
The contents of the tank are disposed at open sea always more than 12 nautical miles off land and the vessel with speed over 3 knots.
The sea disposal valve is locked against inadvertant opening and the key is in possession with the Ch. Officer.

**SISTEMA DE TRATAMENTO DE EFLUENTES – DRENAGEM DE ÁGUAS PLUVIAIS /**  
stormwater drainage

A água de chuva captada no convés da embarcação é drenada para embornais e escoada para o costado. / Rainwater captured on deck drains and scuppers drained to the side.

**SISTEMA DE TRATAMENTO DE EFLUENTES – ÁGUAS OLEOSAS / - OILY WATER**

**VESSEL SPECIFICATION**

**OILY WATER**

The oil from the engine room collected in the bilges is pumped to the Bilge Holding tank with a capacity of 32.2 m<sup>3</sup>.

The oil water in the Bilge Holding tank is directed overboard passing through a oily Water separator and PPM sensor/monitor with an automatic valve closing arrangement ensuring that the water discharged overboard has a Oil content of less than 15 PPM.

The Oily water separator (OWS), Make: JOWA, Model: M-93, Serial No.: MJM 6367 with a capacity of 2.5 m<sup>3</sup> / hr., which is in accordance with IMO regulations, MEPC 60 (33).

The equipment consists of 3 stages in connected in series. The first is an Oil & water settling / gravity tank. The second and third stages are filters with internal absorption elements that are responsible for the retention of hydrocarbons and emulsions of oil still present in the flow from the first stage. The final output from the equipment ensures that the oil content of the water is well below 15 PPM. On the discharge line there is a digital sensor, which continuously measures the level of residual concentration of oil in the treated effluent, and automatically closes the discharge valve preventing the discharge into the sea any water at a concentration greater than 15 ppm oil.

The residual oil is transferred to the sludge tank, and later disposed to a support facility pumped into a tanker truck during the stay in port. Such disposal is recorded in the Oil Record Book as required by MARPOL, under the responsibility of the Chief Engineer and supervision of the Master.

**CARACTERIZAÇÃO E DISPOSIÇÃO DE RESÍDUOS SÓLIDOS/ CHARACTERIZATION OF SOLID WASTE DISPOSAL**

**VESSEL SPECIFICATION**

The management and segregation of solid waste board follow the recommendations of the relevant legislation, describing the whole process of selective collection, identification of materials, proper storage and disposal on land (licensed companies for this service).

The solid waste generated is temporarily stored on board in specific areas in colour coded receptacles with protective lid. No type of solid waste is disposed into the sea, except for food scraps that are ground up and passed through a 25 mm mesh disposed at a distance of more than 03 NM from nearest land according to the regulation of Marpol Annex V.

The selective collection of waste is implemented on board, where, for the segregation of the waste, the vessel has collectors strategically installed at certain points. These collectors have specific colors for each type of waste.

All crew participate in ongoing training on proper segregation of waste and environmental awareness.

**CARACTERIZAÇÃO DO INCINERADOR / INCINERATOR**

NO INCINERATOR

**PROCEDIMENTO PARA TRANSFERÊNCIA DE DIESEL / PROCEDURE FOR TRANSFER OF DIESEL**

**VESSEL SPECIFICATION**

#### PROCEDURE FOR TRANSFER OF DIESEL

Like most offshore support vessels, the vessel can receive and supply diesel fuel at sea or in port, but this maneuver usually occurs in the port.

The ship has 12 storage tanks for fuel consumption, as follows:

Tk 21 – 47 m<sup>3</sup>

Tk 22 – 47 m<sup>3</sup>

Tk 27 – 26 m<sup>3</sup>

Tk 201 – 111 m<sup>3</sup>

Tk 301 – 200 m<sup>3</sup>

Tk 303 – 144 m<sup>3</sup>

Tk 305 – 459 m<sup>3</sup>

Tk 302 – 197 m<sup>3</sup>

Tk 306 – 159 m<sup>3</sup>

Settling tank (213) – 19.84 m<sup>3</sup>

Service tank (214/215) – 46.9 m<sup>3</sup>/46.9 m<sup>3</sup>

If any of these tanks overflow, excess oil flows into "Overflow" tank, 307 – 136 m<sup>3</sup> and 202 – 127 m<sup>3</sup>

Fuel manifolds (diameter of 4 ") located at port & starboard, aft of the superstructure amidships and stern of the vessel.

♣ The transfer system has 02 transfer pump of 250 m<sup>3</sup>/hr capacity.

The control of the supply process is done by calculating the volume pumped versus time, the flow of FLOWMETER (counter) and volume of the tanks.

For every Fuel transfer operation Oil spill cleaning material needed to combat a potential spill (absorbent mats, absorbent barriers, etc.) is kept ready for use.

In case of an Emergency, communication procedures are established with the supply to stop transfer.

Emergency drill to contain oil spill are conducted to train the crew in contingency situations involving spillage of oil on board.

### SISTEMA DE SEGURANÇA E SALVATAGEM / LIFE SAVING APPLIANCES & SYSTEM

#### VESSEL SPECIFICATION

The SHIP complies with all national and international (SOLAS) regulations for Life Saving Appliances.

All training defined by Rule 19 of Chapter III Safety of Life at Sea (SOLAS) are fulfilled within the stipulated period and recorded. Eg. fire, abandon ship, man overboard, etc..

The vessel has the following safety equipment provided for 43 persons:

- ♣ 01 Fast rescue boat;
- ♣ 04 liferafts with capacity for 25 people each;
- ♣ 09 buoys with heaving line. Of these 02 have light signal and 02 have Man Over Board signal
- ♣ 12 smoke rockets type parachutes with red star;
- ♣ 50 life jackets;
- ♣ 47 Immersion suits
- ♣ 04 line-throwing apparatus;
- ♣ 01 SVDR
- ♣ 01 EPIRB (communication tool for emergency situations)
- ♣ 02 radar transponders;
- ♣ 03 emergency VHF radios, waterproof (bridge);

Note: Periodic checks and inspections are carried out weekly, monthly as required by SOLAS

### SISTEMA DE INCÊNDIO / FIRE FIGHTING SYSTEMS



### **VESSEL SPECIFICATION**

The ship complies with all required Fire Fighting as per national and International SOLAS requirements.

All fire fighting equipment are identified in the Fire Fighting Plan of the vessel. This plan shows the physical location of all equipment used for on-board.

The fire fighting equipment on board include:

1. Portable Fire Extinguishers, foam, CO2 and dry chemical
2. Fire Hoses and Nozzles
3. Breathing apparatus sets
4. Firemans outfits
5. Emergency Escape Breathing devices.
6. Fixed CO2 extinguishing system for Machinery space.
7. Main fire pump
8. Emergency fire pump
9. International Shore Connection
10. Watertight doors in machinery spaces.

All Fire fighting equipment on board are inspected and tested regularly , in accordance with National and International regulations.

The fire detection system has two types of detectors (heat and smoke detection) and covers all the different compartments of the ship, and they are divided into areas so as to make it easier and faster to identify where the location of any fire.