M/V ARTEMIS MACHINERY DESCRIPTION

ENGINE CONTROL ROOM

The ship's machinery is operated from the Control Room located on deck one. This air conditioned room satisfies the requirements of Lloyds' Register automation class "UMS", however the Control Room is manned at all times by at least one Engineer Officer of the Watch. The propulsion and generation are controlled by an ABB Power Management System, which replaced the original ASEA MASTER system to give greater operating and control efficiency.

This system includes Complete Power Restoration, FAMP Bridge Control, GENA generator synchronising, DEGO electronic diesel engine governing and KaMeWa propeller pitch control. Monitoring of the function of the engine room equipment, including the air conditioning in all parts of the ship, the thirty refrigerated store rooms and the chemical and temperature control of the swimming pools and spas is carried out by a NORCONTROL DATA-CHIEF 20 system, using over 620 analogue transducers and 375 on/off alarm functions.

ARTEMIS Engine Control Room

PROPULSION MACHINERY

The machinery consists of four WARTSILA-S.E.M.T-PIELSTICK 6PC4.2L-turbo charged and intercooler, medium speed, four stroke, non-reversible, trunk piston engines with direct fuel injection. The 6 cylinder engines are arranged in pairs, with each cylinder having a bore of 570mm and a stroke of 620mm, producing 7290kW (9770 hp) at 400 rpm. Each pair connects to a double input DE SCHELDE gearbox, with double helical toothed gear wheels. The gearboxes each have three outputs, one to its respective propeller shaft and two power take offs to the main alternators.

ELECTRICAL POWER SUPPLY

The four STROMBERG main alternators are star-connected, three phase brushless, synchronous type. Each of the alternators has an output rating of 7500 kVA, power factor of 0.8 at 60 Hz. 440 Volts which are powered by WARTSILA VASA 6R22, turbo-charged and intercooler, four-stroke, non-reversible, trunk-piston engines running at 1200 rpm.

EMERGENCY DIESEL ALTERNATOR

Located Deck 7 Aft, this four-stroke, turbo charged and radiator cooled CUMMINS V12 diesel engine connects to a brush less, three-phase synchronous alternator with an output of 500kW at 60Hz 440 Volts at 1800 rpm.

PROPELLERS

There are two, KaWeMa four bladed controllable-pitch propellers made of Nickel-Aluminium Bronze. The blades have a skew back form and rotate inwards at 125 rpm. Each propeller has a 5.2m diameter, and weigh 17.7 tonnes, with individual blades weighing 2 tonnes.

STEERING MACHINERY

Two mechanically independent WARTSILA 63/35 electro-hydraulic steering gears control the ships semi-spade rudders. Each has an effective area of 16.5 square metres.

BOW THRUSTERS

These two transverse controllable-pitch thrusters are effectively forward steering propellers, each with four stainless steel blades of KaWeMa design. Each thruster is driven by one 750kW 6.6kV (1000hp) electric motor. The 2m diameter propellers each weigh 1.2 tonnes and can produce a combined thrust of 20 tonnes when required for slow speed manoeuvring.

STABILISERS

One pair of SPERRY forward folding, gyro-controlled fin type stabilisers each with an effective area of 9.25 square metres are fitted. These will reduce the rolling of the ship by about 80% at 18 knots, by providing a maximum correcting force of 80 tonnes. The stabilisers protrude 5.5metres from the ships side when extended.

STEAM BOILERS

Two vertical, cylindrical boilers are fitted of SUNROD water tube type with SAACKE rotary cup, modulating burners. The boilers have a steam capacity of 6.6 tons/hr at a pressure of 7Bar (120psi). These are supplemented by four exhaust gas boilers, each with a steam capacity of 1.9 tons/hr with its engine at 84% Maximum Continuous Rating (M.C.R.). Boiler water condition is continuously monitored and controlled by an AQUANET computerized monitoring system.

FRESH WATER PRODUCTION

Fresh water is produced by two CLARK, single pass, six stage flash type evaporating units, which use recovered heat from the main engine jacket cooling circuits. Each has a rated production of 300 tonnes per day at a purity of less than 10 parts per million (p.p.m.) total dissolved solids. This system is complimented by a Reverse Osmosis plant which uses Osmosis and Ionic Repulsion to produce 200 tonnes of water per day with purity better than 500mg/litre from raw water of up to 42660mg/litre.

AIR CONDITIONING AND REFRIGERATION

The FLAKT air conditioning is designed for 100% fresh air supply. For energy saving purposes the cabin and public spaces have a heat recovery system, and passenger and crew cabins are supplied by dual-duct high-velocity units with individual controls. Public areas are supplied by a low-velocity, variable air volume control system. Four STAL screw compressor units provide cooling units provide cooling for the air conditioning system each with twin helically cut rotors and a refrigeration capacity of 1925kW. Four STAL reciprocating compressors are provided for cooling the 30 provision rooms and two further compressors are provided for cooling the engine control room and electrical switchboard rooms.

FUEL MANAGEMENT

Bunkered fuel of up to 600 cST (2400 Redwood), is treated by an ALFA LAVAL Alcap system and S.I.T. CD92 homogenisers. The fuel combustion is controlled by ALFA LAVAL Visco Chief equipment used to control the fuel viscosity at 14 cST (63 Redwood) by heating the fuel at up to 135 degrees Celsius (240 degrees Fahrenheit). Main engine, boiler and incinerator exhausts are treated by an INFRAFONE Intonating soot removal system, which operates at a pressure of 7 Bar.

ARTEMIS MAIN ENGINE ROOM, SHOWING ENGINES 2,3 and 4

TOTA L CONSUMPTION AT SEA PER 24 HOURS (average)

@ 22 knots (4 main engines in use) 114 tonnes.
@ 18 knots (3 main engines in use) 88 tonnes.
@ 15 knots (2 main engines in use) 58 tonnes.

Artemis travels about 8.3 metres per litre of fuel at 22 knots.

WASTE MANAGEMENT

The sewage system is divided into two separate parts. Grey water coming from baths, showers and washbasins is collected and Chlorinated before discharge. The black water from the EVAC vacuum toilet system, which is connected to the W.C.s and urinals is treated in two HAMWORTHY Super Trident biological treatment units each with a capacity to treat up to 60,000 litres/day and then chlorinated before discharge. **Artemis** has the capacity to hold up to 614,000 litres of treated black and grey water, and is only discharged in areas specified by MARPOL regulations.
Garbage disposal equipment includes two HAMWORTHY incinerators for solid waste, seven SOMAT waste pulpers linked to a water press for wet waste. In addition, for dry waste processing there is a cardboard shredder, glass smasher, can crusher and a compactor for plastics. All the waste management

equipment exceed IMO, USCG and MARPOL regulations, to ensure **Artemis** is as environmentally friendly possible.

MANNING

The Chief Technical Officer leads a staff of 17 officers and 42 crew, and has the overall control of all Technical procedures.

OFFICERS (Departmental Stripe Colour Purple to represent Engineering)

Staff Engineer Officer	1
First Engineer Officer	1
Second Engineer Officer	4
Third Engineer Officer	4
Ventilation Officer	1
Cadet Technical Officers	2 (maximum)

Staff Electrical-Technical Officer	1
First Electro-Technical Officer	1
Second Electro-Technical Officer	1
Third Electro-Technical Officer	1
First Electronics Officer	1
Second Electronics Officer	1

CREW

Technical Clerk	1
Communications Assistant	1
Engine Fitters	6
Hotel/Deck Fitters	4
Electrical Fitters	3
Refrigeration Fitters	2
Plumbers	2
Carpenters	3
Joiner	2
Engine Crew Supervisor	1

Technical Storekeeper	1
Audio Visual Operator	1
Motormen	4
Wipers	7
Waste Disposal Supervisor	1
Waste Disposal Operators	3