

Eoet em2



**ASSIGN  
BUSTER**

Admin AEL-list tools repair locker APL-equipment fixed to the hull/vessel

Mica: \* (management information configuration allowances) tailored to a specific individual unit or unit class \* Parts of mica: 1. Section a- equipment nomenclature sequence- list of apl/ael-sorted by equipment 2. Section b- hsc description sequence- list of apl/ael-sorted by structure coed 3. Section c- hsc code sequence- list of apl/ael-sorted by HSC 4. Section d-apl/ael number sequence- list of apl/ael-sorted by apl/ael number

FED log: \* Made up in two files . Interactive query coast guard only uses this one used as information resource 2. Batch file \* Wild card is the ability to search characters or numbers \* Data view bar provides quick links to different screens in fed log \* Icon (magnifyingglass) Characteristics data response- provides description information \* Icon (man) Management Data response- provides the service/agency

CMPLUS: \* Supports unit supply mission \* Take material from inventory you must do an initial request \* Inventory \* Initial requests \* Initial requests \* Orders Receipts \* Suppliers allowances \* Group inventory

OPFAC- identifies each Coast Guard unit

Surflog: \* Fill out a surlog: 1. Department coed 2. Opfac 3. Cog code 4. Stock number 5. Unit of issue 6. Nomenclature and supplier 7. Quantity needed 8. Cost \* federal supply system \* keep track of how much money you have expended \* identify what is ordered and what has been received \* if you are copying information from old surg log confirm info in fedlog.

Procurement request- form dot f 4200. 1. 2 cg- commercial suppliers MPC- PMS detail instruction card E. - A-M-3356(A= auxiliary M= monthly 3356= identification number) M-main propulsion machinery A- auxiliary E-electrical R-damage control NEM- m9000. 6 ELC website -submit a change Engineering dept shall maintain single tag-out log Tag out- comdtinst 9077. 1 \* Check and audits once every two weeks by cognizant dept \* Tag

numbers shall start over OCT 1 \* Size of the vessel determines the number of tag-out logs required \* Replacing a missing tag- next sequential number on tag out sheet \* Check correctly installed visual compare- tag out record sheet and tag audit Recommend change in PMS procedures must: In written form \* Given to the PSM coordinator FPD( financial and procurement) provides acquisitions and accounting First quarter- is oct-dec Take material from inventory you must do an initial request TACHOMETER Tachometer- is an instrument that generates, transmits, and indicates info that is converted into a measurement of rotation speed Verify reading against info found on nameplate data 4 types of Tachometer: 1. Chronometric Tachometer, accessible shaft, press and release start button, displays after 5sec 2. Centrifugal tachometer, continuous reading of rpm's on accessible shaft 3. Resonant tachometer, vibrating, when shaft is not accessible 4. Photo-electric tachometer, battery operated, non-contact(place reflective tape on shaft Calibration done- 12 to 18 months, sticker has last calibration and due date Frequency = number of cycles in a given time  $F$  (Hertz) = number of poles X rpm/120  $Rpm = 120 \times f / \text{no of poles}$  Transducers Pressures Transducers- convert pressure into an electrical output signal that is proportionate to the input pressure.

Always obtain permission prior to troubleshooting, isolate from the pressurized system Replace with same type or a higher grade King nutronics- 2250 psi Uses 4-20ma so it travel longer distances Don't zero and p to compensate reading Easily manipulated Prone to interference Troubleshooting- verify transducer is the problem Resistance Temp Detector RTD (resistance temp detector) temp sensor whose electrical resistance

changes linearly with change in temp RTD is connected to wheatherstone bridge Two elements with separate temp gauge 1.

Nickel: -40 to 1000 degree for all configurations 2. Platinum: -40 to 1000 degree for thermowell, bare bulb and embedded configuration Two wire sensing element: red and white \* needs compensation circuit Three wire sensing elements: 2whites and red\* no need compensation Three types of RTD configurations: 1. 5sec. embedded( oil film temp in machinery bearing) 2. 8sec. Thermowell ( high pressure) 3. 15sec. Bare Bulb directly immersed in high pressure gas Thermocouple Thermocouple is device to measure temp as temp changes a electrical potential in MV is generated Used in pyrometer

Air temp change in a cold junction will cause erroneous reading Cleaning: approved solvent, checking loose or dirty connection, calibrations UAW tech manual by manufactures Two dissimilar metals that is referred as HOT JUNCTION(thermocouple sensor) Two dissimilar metals become similar is Cold junction (reference junction) Two type of therocouples 1. Type K, chromel(+yellow) Alumel (-Red) 2. Type J, Iron (+white) constantan (-Red) Synchro Two types of damping methods: 1. Electrical 2. Mechanical

Highest value of effective voltage induced in one stator coil is 52v Rapid and accurate transmission Electromagnetic induction Two general classifications: 1. Troque -moves light loads like dials 2. Control -heavy loads gun directors Two common synchro rotors or windings: 1. Salient pole rotor 2. Drum or wound rotor Synchro resembles small electrical motor operates like a variable transformer NEVER connect 400hz synchro to 60hz voltage Operating voltage and frequency is mark on name plate Military standard

and navy prestandard synchros- 115 vac or 26vac Load dictates the type of synchro and system

By reversing s1 and s3 both synchro motors turn the same amount, in opposite directions Change S2 causes 120 degree error - it reverses the direction Oscillation and spinning of the pointer: 1. Stator winding are shorted 2. Defective damper Reversal R1 and R2 180 degree error - rotation remains the same Damping circuit prevents gear train oscillations or spinning Common zeroing methods: 1. AC Voltmeter method( most accurate) 2. Electrical-lock( fastest) Rotor gets voltage by primary winding " excitation" Stator gets voltage from the Rotor by magnetic coupling GYRO Heading, roll and pitch

Transmits info to weapons control, sonar radar, depth control, dead reckoning Gyrocompass has two basic properties: 1. Rigidity in space(rigid, no force) 2. Precession(right angle, applied force) MK27: 1. Consists of master compass, electronic control unit and power converter 2. Seeks true north 3. ECU-operating control-> servo Amplifier-> alarm Circuitry-> power supply-> latitude control circuitry 4. S-1 switches- Slew, Start, Run- manual or auto 5. E- core pickoff- generates signal from proportional to gyro from null 6. J3 test points- master compass 7.

Full wave bridge rectifier -rectifies AC to DC 8. Choke input filter-> creates smooth DC voltage Anemometer Wind direction(HD) and speed(HE) indicator relative to ships heading and speed Wind speed indicator- visual indication of wind speed and direction(single phase 115vac) Voltmeter is used with anemometer Wind speed indicator(HE) transmits signal voltmeter(magneto)

Capacitor prevents RF interference or reduces stator currents Set emits RF interference: defective capacitor at rear, replace for magneto Remove 2300 ohm resistor from both sides when using to indicators Salinity

Fresh water contaminated excess of 0.25 grains of sea salt per gallon alarm will go off (audio&visual) After the solenoid is de-energized it must be manually reset Dumper valve solenoid de-energized when impurities reach alarm proportions diverting water overboard Cell test resistor- small portable unit with contact fingers System test & cell inspection-> monthly Inspection-> bi-monthly Thermistor-> temp sensitive resistor which limits current flow across the gap between the plates Salinity Module test/installation-> 23 vac across tp1- tp2 gaps shorted cell/wiring circuit VLA) Visual Landing Aids Helo deckarea marker- Lighting-Approach aids Wave off lights- cue to pilot landing is unacceptable Wave-off light will not extinguish when wave-off switch is secured command is being sent from remote panel Homing beacon -> white lamp-> main mast-> flashes 90x per min Lamp circuit- wired: step down transformer(115/32 volts) to variable dimming circuit Line-up- lights-20 lights-white and flash in sequence- uni or bi-directional VLA power requirements lighting system 120v/60hz WIPER

Window wipers- DC voltage, taking 115vac single-phase using full-wave bridge rectifier Oil to external oil cup lubs the brushes Replace every 3000 hours or two times a year Life p is one year Drive mechanism- converts the rotation of the motor to go back and forth Pendulum window wiper-wiper switch to park (to place wiper out of view) Steering To determine rudder rate a HARD-OVER- TO HARD -OVER command is given while ship is moving in max speed. Overtravel-is a steering position on rudder beyond the order

angle and remains at that position Overshoot- few degrees beyond the order angle but returns to the order angle

Three modes of operation of steering system: 1. Follow up 2. Auto pilot 3.

Non follow up Four components: 1. Hydraulic system-hydraulic power units and rudder actuators 2. Emergency equipment 3. Rudder position feedback system 4. Steering controls Control circuit- generates an electrical signal to move the rudder Hydraulic power unit(HPU) ports hydraulic fluid to the actuator Actuator turns hydraulic power into mechanical motion Steering force of water acting on the rudder Solenoid valve- controls hydraulic fluid to the actuators-> to move rudder

Uses hydraulics to control rudder because of the high torque -to-weight ratio

Maximum error allowed on rudder angle is + or -2 Battery Normal temp-80f degrees Initial: a low-rate charge given to a new battery Normal: Routine charge IAW nameplate data Emergency: a fast or boost charge Equalizing: extended normal charge given at a specific gravity Floating: voltage maintained within the limits of 2. 13 to 2. 17 volts per cell Polarization index test Determines condition of windings through a chart Brushes \* Never mix brushes-rapid brushes wear could happen when mismatched \* Replace if worn 1/8 inch Seat brushes in brush holder with 80grit sandpaper \* Brush holders are the same distance from the commucator- no more then 1/8 no less than 1/16 unless said by manufacturer Air Gaps \* distance thousands of inch between stator and rotor \* measured with machinist tapered feeler gauge \* reading within 10% Bearings \* never use a naked flame to heat a shaft bearing or housing \* two methods to remove bearings 1. arbor press 2. puller method \* three method to install bearing 1. arbor press 2. puller

method 3. hammer with an appropriately size tube lubricated and sealed at the factory \* antifriction bearings 1. radial 2. angular contact 3. thrust \* heated in oven, furnace, or oil-> at 203+/- 10degrees to expand the inner ring for assembly \* hot alignment- operating temp \* cold alignment-room temp \* Alignment check are required under the following conditions a. Upon installation b. Base or foundation is repaired c. Any action done to bearings or motor d. When specified by PMS \* Preferred pump shaft alignment is the indicator reverse method \* Dial indicator shows . 04 or more movement and soft foot exists \* Soft foot condition has not improved after two corrections a bent foot exist \* Four approved alignment methods 1. Rim and face 2. Indicator reverse 3. Close-couple pump 4. Straight edge/ feeler gauge

POWER Breakers: \* AQB breaker for generator switchboards \* ACB (air circuit breakers) commonly installed in cutter switchboards \* NLB have no automatic tripping device, it uses on/off switch \* NQB have no automatic tripping device, it uses circuit isolation and manual transfer applications. Selective tripping of breakers is normally accomplished with a short time-delay feature \* No authorized changes should be made to trip settings on a breaker \* Purpose of switchboard circuit breakers are: 1. Circuit protection 2. Circuit isolation 3. The normal switching operation of an electrical circuit For silver or silver alloys contacts maintenance: 1. Fine file or sandpaper NO. 00 fine sandpaper is used to clean For copper contacts 2. Never use emery cloth Decrease contact forces may cause Overheating of the contact trips( loud humming or chattering is the warning)

Power factor = kw/kva \* Kva-apparent power \* Kw-true power-> the power actually used (uses a wattmeter) Reverse power relay-reverse current rating



setting 5% for 10seconds Voltage regulator senses output voltage To obtain 100% power factor circuit must be purely resistive Uninterruptible power supply (ups) protects system from low voltage brown outs Motor generator (MG) is electrical motor that turns a generator (supplies regulated type111 electrical power to system) Motor generator output-120v, three phase, 400hz

INDICATOR LIGHTS \* White mg power is available \* Blue generator circuit breaker is closed \* Yellow mg is in use on the other circuit \* Clear ground in the system/synchronizing \* Red danger \* Green normal Hysteresis loss, caused by friction develop between magnetic particles as they rotated though each cycle The primary windings of a current transformer should be connected in the line carrying the current to be measured One terminal of the secondary should be grounded

Logarithmic negative temp coefficient- an increase in temp but decrease in resistance Positive temperature coefficient- an increase in temp and increase in resistance Negative temperature coefficient- an decrease in temp and decrease in resistance Only 450m 3phase 3 wire system ungrounded shore power source is acceptable for supplying electrical power. D'arsonval effect- through coil-> magnetic field-> repel or retract from coil magnetism

Selective tripping- time delay source breakers 2301= 4 to 9 terminal MK 27 GYRO COMPASS IS A DIRECT READING COMPASS.

SEEKS AND CONTINUOUSLY INDICATES THE MERIDIAN OR TRUE NORTH TWO BASIC PARTS OF THE MASTER COMPASS IS THE BINNACLE AND THE BASE ELECTRICAL CONTROL UNIT (ECU) OF THE MK 27 HOUSES OPERATING CONTROLS, FOLLOW UP SERVO AMPLIFIER, ALARM CIRCUIT, POWER SUPPLY,

AND LATITUDE CONTROL WHAT CIRCUIT DESIGNATION FOR AN AIR FLOW ALARM HF COMPONENTS OF AN ALARM INDICATOR SYSTEM ARE SUPERVISORY CIRCUIT, ALARM CIRCUIT, ALARM DEVICES DRIVE UNIT CONVERTS ROTARY MOTION OF THE DRIVE MOTOR INTO A BACK AND FORTH MOTION IN A WINDOW WIPING SYSTEM PENDULUM POWER REQ 115 VOLTS, SINGLE PHASE AC SYNCNCHRO CAPSITORS MAINTAINS ACCURACY IN SYNCNCHRO SYSTEMS.

ALSO REDUCES STATOR CURRENTS M. I. C. A DESIGNATED TO A SPECIFIC UNIT FPD PROGRAM PROVIDES SIMPLIFIED ACQUISITION AND ACCOUNTING FUNCTIONS FOR LARGE UNITS OF THE COAST GUARD PRIMARY POWER FOR COAST GUARD 450 VOLT, THREE PHASE, 60HZ SECONDARY POWER FOR COAST GUARD 120 VOLT, THREE PHASE, 60HZ, TWO WIRE GROUND DETECTOR CANNOT DETECT GROUNDS THROUGH A TRANSFORMER POSITIVE TEMPERATURE COEFFICIENT THE RESISTANCE INCREASES WITH TEMPERATURE WATER INSIDE TRANSDUCER IS FROM... EITHER FROM HUMIDIDTY OR FLUID FROM THE SYSTEM LEAKING BY THE DIAPHRAGM ADVANTAGE FOR USING A 4-20MA SIGNAL IN A TRANSDUCER

IT CAN BE TRANSMITTED WITH LITTLE TO NO INTERFERENCE THREE LEAD RTD DOES NOT REQUIRE A ... COMPENSATION CIRCUIT REED SWITCH USED IN FLOODING ALARM SYSTEM BEARINGS DISASSEMBLING PRELIMINARIES BEFORE DISASSEMBLING, MATCH MARK ALL ADJACENT PARTS INCLUDING END BELLS, STATOR FEET, CARTRIDGE COVERS, END CAPS, AND COUPLING HALVES, SO THATTHEY ARE REMOUNTED IN THEIR EXACT ORIGINAL POSITION DUMP VALVE MUST BE RESET MANUALLY FUNCTION OF THERMISTOR ON THE SALINITY CELL A TEMPERATURE SENSITIVE RESISTOR

WHICH LIMITS THE CURRENT FLOW ACROSS THE GP BETWEEN THE PLATES  
PREVENTATIVE MAINTENANCE FOR SALINITY SYSTEM

METER CHECK (DAILY), ALARM TRIP LEVELS (WEEKLY), SYSTEM TEST  
(MONTHLY), CELL INSPECTION (MONTHLY), CELL VALVE INSPECTION  
(YEARLY), SYSTEM INSPECTION (BI- MONTHLY) POWER REQ FOR ANEOMETER  
115 VAC, 60 HZ Term First Both Sides TROUBLE SHOOTING SYNCHRO  
SYSTEM OVERLOAD INDICATOR LIGHTS, UNITS HUM AT ALL TX SETTINGS,  
ONE UNIT OVERHEATS, TR FOLLOWS SMOOTHLY BUT READS WRONG  
(ROTOR CIRCUIT OPEN OR SHORTED), OVERLOAD INDICATOR LIGHTS, UNITS  
HUM ON TWO OPPOSITE TX SETTINGS, BOTH UNITS GET WARM, TR TURNS  
SMOOTHLY IN ONE DIRECTION, THE REVERSES (STATOR CIRCUIT OPEN)|  
preventive maintenance comdtinst m9000. , scheduled mpc serial numbers are  
first component is system it belongs to and 2nd is the frequency adding oil to  
the external cup lubricates... the bushings components of the steering  
system are: steering controls, hydraulic system, rudder feedback system,  
emergency system primary mode for the steering system is hydraulic and  
electric Pressure sensing element converts gas or liquid energy into  
psychal(mechanical) displacement Pressure snubber is a pressure  
transmitting device that restricts the rate of fluid flowing to a pressure  
sensing instrument and as the result, the rate f pressure changes