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**MIP CONTROL NUMBER:** 59A3/1A1-16**Date:** January 2016

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**SHIP SYSTEM, SYSTEM, SUBSYSTEM, OR EQUIPMENT**

40-Foot Maritime Pre-Position Force Utility Boat (MPFUB)

59A31

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**REFERENCE PUBLICATIONS**

Commercial Off the Shelf Manuals provided with each boat.

40-Foot Marine Pre-positioning Force (MPF) Utility Landing Craft Technical Manual Volume 1 through 3 provided with each boat or as provided from Kvichak.

40-Foot MPF Technical Drawings provided with boat.

Boat Information Book (BIB) for the contract or U.S. Navy Hull Registry Number.

Applicable U.S. Navy Technical Manuals and publications that support the systems and subsystems.

NSTM Chapter 220 Volume 3 Corrosion and Contamination Control for Diesel Engine Cooling Water Systems (S9086-GX-STM-030).

NSTM Chapter 233 Diesel Engines (S9086-HB-STM-010).

NSTM Chapter 262 Lubricating Oils, Greases, Specialty Lubricants, and Lubrication Systems (S9086-H7-STM-010).

NSTM Chapter 300 Electrical Plant, General (S9086-KC-STM-010).

NSTM Chapter 583 Boats and Small Craft (S9086-TX-STM-010).

NSTM Chapter 631 Preservation of Ships in Service (S9086-VD-STM-010).

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**CONFIGURATION**

40-Foot Aluminum Hull Numbers 40WB0501 - 40WB0510; Mfr: Kvichak Marine Industries Inc., w/ Cummins QSM11 Diesel Engine; APL: 72A050197.

40-Foot Aluminum Hull Numbers 40WB0701 - 40WB0704; Mfr: Kvichak Marine Industries Inc., w/ Cummins QSM11 Diesel Engine; APL: 72A080009.

40-Foot Aluminum Hull Numbers 40WB0801 - 40WB0807; Mfr: Kvichak Marine Industries Inc., w/ Cummins QSM11 Diesel Engine; APL: 72A090081.

40-Foot Aluminum Hull Numbers 40WB0901 - 40WB0905; Mfr: Kvichak Marine Industries Inc., w/ Cummins QSM11 Diesel Engine; APL: 72A100077.

40-Foot Aluminum Hull Numbers 40WB1001 - 40WB1007; Mfr: Kvichak Marine Industries Inc., w/ Cummins QSM11 Diesel Engine; APL: 72A110102.

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**SCHEDULING AIDS**

1. When submitting TFBR for changes to MIP or MRCs include the boat hull number (example: 40WB0506), APL number (example: 72A050197) for the hull or lower assemblies, technical documentation numbers and titles referenced to identify problem and solution. This information will assist with the prompt resolution.
2. MRCs W-2R (9UPQ) and S-11 (9UQS) are for Sea-Fire model FG and FD extinguishing systems only.
3. MRCs M-3R (9UPT) and 18M-1 (9XTH) are applicable to craft equipped with boat slings.
4. MRCs M-9R (9UQH), M-10R (2FB0) and M-11R (2FB1) are applicable to craft immersed in salt water.
5. MRCs Q-13R (2FB3), Q-14R (2FB4) and Q-15R (2FB5) are applicable to craft immersed in fresh water.
6. MRC S-2R (2FT6) applies to boats equipped with FS1009 Fuel/Water Separators.
7. MRC S-6R (9UQM) applies to boats equipped with FS2000 Lubricity Filters.
8. MRC S-9R (9UQQ) applies to boats equipped with Engine Spin-on Fuel Filters.
9. Accomplish MRC S-13R (9URV) to inspect Generator V-Belt after the first 50 and 100 Hours of Operation. Thereafter follow MRC periodicities.

# Mandatory scheduling required.

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OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	73 9UPP Y	1. Inspect and Clean Generator Sea Water Strainer.	W-1R	FN	0.5	None

**NOTE:** Accomplish this maintenance requirement when any of the following periodicities or situations occur.

- a. Weekly.
- b. Prior to getting underway.

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	95 9UPQ N	1. Inspect Automatic Fire Extinguisher. (Sea-Fire Model FG and FD).	W-2R	2FN	0.2	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Weekly. b. Prior to getting underway.				
	73 1UW4 Y	1. Clean and Inspect Engine Duplex Sea Water Strainer.	W-3R	FN	0.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Weekly. b. Prior to getting underway.				
	73 9UPS N	1. Inspect Portable 15 LB CO <sub>2</sub> Fire Extinguisher.	M-2	SN	0.8	None
		<b>NOTE:</b> Perform inspection of 15 LB CO <sub>2</sub> Fire Extinguisher upon receipt.				
	73 9UPT N	1. Inspect Lifting Sling.	M-3R	SN	2.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Monthly. b. Prior to each use. <b>NOTE:</b> Work Center Supervisor review Maintenance Requirement and provide fill in data. <b>NOTE:</b> Maintenance requirement must be accomplished in a clean dry environment where the sling can be placed flat.				
	73 9UPU N	1. Clean and Inspect Pressurized Dry Chemical Fire Extinguisher.	M-4	FN	0.3	None
	73 9UPV N	1. Inspect Steering Components; Lubricate Reverse Cylinder; Lubricate Steering Cylinder and Steering Crank.	M-5R	FN	1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Monthly. b. Every 100 ± 10 hours of operation.				
	C3 9UPW N	1. Lubricate Fittings that have Moving or Working Components.	M-6	FN	1.0	None
	C5 9UQZ N	1. Inspect Coolant System Hoses and Test Cooling System Coolant.	M-7R	EN3	1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		when any of the following periodicities or situations occur. a. Monthly. b. Every 100 ± 10 hours of operation. <b>NOTE:</b> Also accomplish this maintenance requirement within 24 hours after adding water/coolant to the cooling system.				
	B4 9UQH N	1. Clean and Inspect Engine Zinc Anodes.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Monthly. b. Every 100 hours ± 10 hours of engine operation. <b>NOTE:</b> This MRC only applies to seawater immersed craft.	M-9R	FN	1.0	U-2
	A3 2FB0 N	1. Inspect Marine Gear Oil Cooler Anodes.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Monthly. b. Every 100 ± 10 Engine Hours. c. Prior to removal from support ship. <b>NOTE:</b> This MRC is applicable to seawater immersed craft only.	M-10R	FN	0.5	U-3
	A3 2FB1 N	1. Inspect Fuel Oil Cooler Zinc Anodes.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Monthly. b. Every 100 ± 10 hours of operation. c. Prior to removal from support ship. <b>NOTE:</b> This MRC is applicable to seawater immersed craft only.	M-11R	FN	0.5	U-4
	24 9UPY N	1. Clean, Inspect, and Service Batteries and Cables.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Quarterly. b. Prior to removal from support ship.	Q-2R	EM	1.0	None
	64 9UPZ N	1. Test Marine Gear Neutral Safety Switch.	Q-3	FN	1.0	None
	73 9UQA N	1. Inspect and Lubricate Wiper Assembly.	Q-4	EM	0.2	None
	73 9UQB N	1. Clean, Inspect, and Lubricate Spot Light.	Q-5	FN	0.3	None
	85 9UQC N	1. Inspect Bow Door and Components, Lubricate Door Hinges, Dogging Devices, Pins, Pivot Points, and Shackles; Inspect and Clean Deck Cover.	Q-6R	SN	6.0	None

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Prior to start of stowage.</p>				
	73 9UQD N	1. Inspect 40 Foot Maritime Pre-Position Force Utility Boat (MPFUB) for damage, corrosion and loose or missing component(s).	Q-7R	FN SN	2.5 2.5	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Prior to start of stowage.</p>				
	73 9UQE N	1. Inspect Passenger and Crew Seats.	Q-8R	SN	1.5	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Prior to stowage.</p>				
	73 9UQF N	1. Talk Test all Sound Powered Phone System.	Q-9	2SN	0.2	None
	C5 1LR9 N	1. Provide Lubricating Oil Sample for Spectrographic, Physical, and Chemical Analysis.	Q-11R	EN3	0.5	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Every 100 ± 10 hours of operation.</p>				
	A3 2FB2 N	1. Inspect Waterjet Zinc Anodes.	Q-12R	FN	1.5	U-1
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Every 300 ± 30 hours of operation.</p> <p>c. Prior to removal from support ship.</p>				
	73 2FB3 N	1. Clean and Inspect Engine Zinc Anodes.	Q-13R	FN	1.0	U-2
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Quarterly.</p> <p>b. Every 100 ± 10 hours of operation.</p>				
		<b>NOTE:</b> This MRC is applicable to freshwater immersed craft only.				
	73 2FB4 N	1. Inspect Marine Gear Oil Cooler Zinc Anodes.	Q-14R	FN	0.5	U-3
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		situations occur. a. Quarterly. b. Every 100 ± 10 hours of operation. c. Prior to removal from support ship. <b>NOTE:</b> This MRC is applicable to freshwater immersed craft only.				
A3 2FB5 N		1. Inspect Fuel Cooler Anodes.	Q-15R	FN	0.5	U-4
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Quarterly. b. Every 100 ± 10 hours of operation. c. Prior to removal from support ship. <b>NOTE:</b> This MRC is applicable to freshwater immersed craft only.				
A3 9UQG N		1. Inspect Electrical System.	S-1	EMFN	3.0	None
73 2FT6 Y		1. Replace Engine Fuel Water Separator filter.	S-2R	FN	1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of engine operation.				
44 9UQJ N		1. Inspect Alternator Drive Belt.	S-3	FN	0.5	None
73 2PD8 Y		1. Replace Engine Coolant Filter.	S-4R	FN	0.6	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of engine operation.				
95 9UQL Y		1. Change Generator Engine Oil and Oil Filter, Fuel/Water Separator Filter and Fuel Filter and Inspect and Clean Generator Air Filter.	S-5R	FN	1.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of operation.				
73 9UQM Y		1. Replace Fuel Lubricity Filter.	S-6R	FN	1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of engine operation.				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	95 9UQN N	1. Clean and Inspect Hull and Hull Bottom.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Prior to installing on host ship. <b>NOTE:</b> Commands not having boat hoisting facilities may have cleaning and inspection of hull bottoms accomplished by divers.	S-7R	2FN	4.0	U-5
	24 9UQP Y	1. Change Engine Lube Oil and Filter.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of engine operation.	S-8R	2FN	3.0	None
	25 9UQQ Y	1. Replace Engine Spin On Fuel Oil Filter.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 250 ± 25 hours of engine operation.	S-9R	FN	0.6	None
	73 9UQR N	1. Clean and Inspect Tow Line.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Prior to each use. c. After each use. d. Prior to removal from support ship.	S-10R	2SN	5.0	None
	73 9UQS N	1. Clean, Inspect, and Weigh Automatic Fire Extinguisher. (Sea-Fire Model FG and FD).	S-11	EN3 EM3	3.0 0.5	None
	16 9UQT N	1. Lubricate Drive Shaft Assembly.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually. b. Every 500 ± 50 hours of operation.	S-12R	EN3	0.5	None
	94 9URV N	1. Inspect Generator V-Belt.  <b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Semiannually.	S-13R	EN	1.0	None

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		b. Every 250 ± 25 hours of operation.				
	44 9UQU Y	1. Accomplish Diesel Engine Tune Up.	A-1R	EN2 EN3	3.0 3.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,500 ± 150 hours of engine operation.				
	73 9UQW N	1. Inspect and Adjust Snubber Mounts.	A-3	EN	1.0	None
	B3 9UQX N	1. Inspect Generator Exhaust System Components.	A-4R	EN	0.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 500 ± 50 hours of operation.				
	B5 9UQY Y	1. Replace Engine Air Filter; Replace Engine Crankcase Ventilation Filter.	A-5R	FN	1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,500 ± 150 hours of engine operation.				
	54 9URA Y	1. Inspect and Clean Heat Exchanger and Flush Generator Coolant System; Change Generator Raw Water Pump Impeller.	A-7R	EM EN	1.0 1.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,000 ± 100 hours of operation.				
	95 9URB N	1. Clean and Inspect Bilges.	A-8R	FN SN	6.0 6.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Prior to installing on host ship for stowage.				
	73 9URC N	1. Adjust Valve Clearance on Generator.	A-9R	EN	2.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 500 ± 50 hours of operation.				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	C4 9URD N	1. Flush Engine Seawater System.	A-10R	EN3 FN	6.0 6.0	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,500 ± 150 hours of operation.				
	73 9URE N	1. Inspect Control Cables, Extensions, Linkages, and Neutral Safety Switch; Clean, Inspect, and Lubricate Remote Controlled Fuel Shut-Off Cable and Linkages; Lubricate Controls, Cables, Extensions, and Linkages.	A-11	EN3	0.8	None
		<b>NOTE:</b> Work Center Supervisor ensure that all components are inspected and lubricated at the console in the engine space and additional spaces as required.				
	24 9URF N	1. Clean, Inspect, and Lubricate Control Head and Inspect Control Processor.	A-12	EN3 EM3	1.5 1.5	None
	73 9URG N	1. Inspect Lines, Hoses, Pipes, Tubing, Fittings, and Supports, Inspect Flexible Hoses, and Inspect Sea Chest Connection(s).	A-13	EN3	1.0	None
	73 9URK N	1. Inspect Heating System Components.	A-15	FN	1.0	None
	73 9URL N	1. Inspect Boat Equipage.	A-16R	SN	1.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Prior to installation on support ship.				
		<b>NOTE:</b> Boat equipage may vary from one boat to another. Work Center Supervisor will provide latest version of the Boat Equipage List.				
	73 9URM N	1. Change Waterjet Bearing Oil.	A-17R	EN3	1.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,000 ± 100 hours of operation.				
	C5 9URN N	1. Inspect Exhaust System.	A-18R	FN	0.3	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 400 ± 40 hours of engine operation.				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	73 9URP Y	1. Replace Fuel Water Separator Element.	A-19R	FN	0.3	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 500 ± 50 hours of engine operation.				
	95 9URQ N	1. Change Marine Gear Lube Oil.	A-20R	EN	1.2	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 500 ± 50 hours of operation.				
	73 9YLK N	1. Clean and Inspect Air Conditioner Exterior Components.	A-21	FN	0.5	None
	73 2FH4 Y	1. Change Jet Hydraulic Power Unit Oil and Filter.	A-22R	EN3	1.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Annually. b. Every 1,000 ± 100 hours of operation.				
	73 9XTH N	1. Request Repair Activity to Test Boat Slings at Double Work Load.	18M-1	P02	0.1	None
		<b>NOTE:</b> Perform 18-months after last test date indicated on sling. <b>NOTE:</b> This maintenance requirement should also be performed if sling fails monthly/before use inspection.				
	73 9XTJ N	1. Schedule Diesel Engine Inspection.	18M-2R	P02	0.1	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Every 18 months. b. Directed by TYCOM.				
	25 9URR N	1. Service Cooling System.	24M-1R	EN3 FN	6.5 6.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Every 24 months. b. Every 6,000 ± 600 hours of engine operation.				
	73 9XTK N	1. Request Repair Activity Test and Inspect Fuel System and Tanks.	60M-1R	P02	0.1	None

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Every 60 months.</p> <p>b. Directed by TYCOM.</p>				
	73 9URS Y	1. Inspect Sea Water Pump Impeller.	R-1	EN3	0.6	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Every 750 ± 75 hours of engine operation.</p>				
	73 9URT N	1. Test Navigation Lights.	R-2	SN	0.2	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Prior to getting underway.</p>				
	73 9URU N	1. Inspect and Clean Mooring Lines.	R-3	SN	0.5	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. After each use.</p>				
	73 9XTL N	1. Request Repair Activity to Test Permanently Attached Hoisting Pads, Rods, and Shackles; Request Repair Activity to Test Detachable Shackles, Rods, Pins, Chains and Rings.	R-4	P02	0.1	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Directed by TYCOM.</p>				
	73 9XTM N	1. Schedule Waterjet Inspection.	R-5	P02	0.1	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Every 1,500 ± 150 hours of operation.</p> <p>b. Directed by TYCOM.</p>				
	73 9URW N	1. Inspect Shore Power Cable and Connectors.	R-7	EM3	1.0	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur.</p> <p>a. Prior to each use.</p>				
	73 9URX N	1. Adjust Magnetic Compass and Record Deviation.	R-8	EM3 BM3 SN	4.0 4.0 4.0	None
		<p><b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or</p>				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
		situations occur. a. After removal from support ship. b. After the end of TYCOM Availability.				
	73 9URY N	1. Inspect Cradle and Components.	R-9	BM3	0.7	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Prior to installation on support ship. b. After removal from support ship. c. Prior to last retrieval of equipment during each operation. d. Prior to each use. <b>NOTE:</b> 40-foot Utility Boat should be removed from cradle to perform inspection.				
	73 9YLL N	1. Clean and Inspect Air Conditioner Filters.	R-10	EN	0.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Every 100 ± 10 hours of operation.				
	C5 1LS0 N	1. Perform Daily Test & Inspection on Engine and Generator.	R-11	FN	0.5	S-5R S-8R A-5R
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. Prior to each days use.				
	73 9YLM N	1. Conduct Operational Test of Air Conditioner.	R-12	FN	0.5	None
		<b>NOTE:</b> Accomplish this maintenance requirement when any of the following periodicities or situations occur. a. While not in use accomplish monthly.				
<b>UNSCHEDULED MAINTENANCE</b>						
	93 2FB6 U	1. Replace Waterjet Zinc Anodes.	U-1	EN2 FN	16.0 16.0	None
		<b>NOTE:</b> Perform on failure of MRC Q-12R (2FB2).				
	73 2FB7 U	1. Replace Engine Zinc Anodes.	U-2	FN	1.0	None
		<b>NOTE:</b> Perform on failure of MRC M-9R (9UQH) or Q-13R (2FB3).				
	A3 2FB8 U	1. Replace Marine Gear Oil Cooler Anodes.	U-3	FN	1.0	None
		<b>NOTE:</b> Perform on failure of MRC M-10R (2FB0) or Q-14R (2FB4).				

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HRS	RELATED MAINT
	A3 2FB9 U	1. Replace Fuel Oil Cooler Anodes.  <b>NOTE:</b> Perform on failure of MRC M-11R (2FB1) or Q-15R (2FB5).	U-4	FN	1.0	None
	44 3AV0 U	1. Replace Exterior Hull Anodes.  <b>NOTE:</b> Perform on failure of MRC S-7R (9UQN).	U-5	FN	1.0	None

### INACTIVE EQUIPMENT MAINTENANCE

The following requirements will be scheduled when equipment is inactivated for periods of prolonged idleness.

#### Lay-Up Maintenance

25 9URZ Y	1. Prepare Engine for Inactivity.  <b>NOTE:</b> Accomplish this maintenance requirement when engine will not be in use for 1 to 6 months.	LU-1	EN2 2EN3	2.0 4.0	None
44 9USA Y	1. Place Generator in Lay-Up.  <b>NOTE:</b> Accomplish this maintenance requirement prior to placing generator in stowage.	LU-2	2EM EM2 EN3	6.0 2.0 2.0	None
73 9USB Y	1. Fill Marine Gear with Preservative Oil.  <b>NOTE:</b> Accomplish this maintenance requirement when equipment will not be in use for periods greater than 90 days but less than 1 year.	LU-3	EN	1.2	None

#### Periodic Maintenance

73 9USC N	1. Bar Engine Over 1-1/4 Turns.  <b>NOTE:</b> Accomplish this Maintenance Requirement monthly when engine is inactive for less than 6 months as described on MRC LU-1 (9URZ).	PM-1	FN	0.3	None
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#### Start-Up Maintenance

24 9USD Y	1. Prepare Engine for Operation.  <b>NOTE:</b> Accomplish this Maintenance requirement when engine has been inactivated as described in LU-1 (9URZ).	SU-1	EN1 EN3 FN EM3	1.5 3.0 3.0 0.2	None
73 9USE Y	1. Prepare Generator for Operation.  <b>NOTE:</b> Accomplish this maintenance requirement when removing generator from storage.	SU-2	2EM EM2 EN3	6.0 2.0 2.0	W-1R#
73 9USF Y	1. Remove Marine Gear from Lay-Up.	SU-3	FN	1.2	None

OTHER	MRC NO.	MAINTENANCE REQUIREMENT DESCRIPTION	PERIO- DICITY CODE	RATES	MAN HRS	RELATED MAINT
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**NOTE:** Accomplish this maintenance requirement when removing marine gear from lay-up.

**Operational Test**

None



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**DISTRIBUTION STATEMENT D:**

Distribution authorized to DOD components and DOD contractors only; Critical Technology; February 2015. Other requests for this document shall be referred to Naval Sea Systems Command (SEA 04RM). Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

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**Date:** February 2015      **MIP** 59A3      **MRC:** 25 9URZ Y      **Periodicity:** LU-1  
**Series:**

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**Location:**

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**Ship System:** Special Purpose Systems 59000  
**System:** SEALIFT Support 59A00  
**SubSystem:** SEALIFT Support, Personnel Transport 59A30  
**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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Rates	Man-Hours	Rates	Man-Hours	Rates	Man-Hours
EN2	2.0	2EN3	4.0		
<b>Total Man-Hours:</b>	6.0	<b>Elapsed Time:</b>	2.0		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Prepare Engine for Inactivity.
- 

**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
  3. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
  4. To prevent personnel injury. Tag-Out procedures shall be in accordance with the Tag-Out Users Manual (TUM) and/or local tag-out instruction.
  5. Do not discharge treated cooling water into inland waters and harbors.
- 

**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00053] Antifreeze, A-A-52624  
Hazardous Material User's Guide (HMUG) Group 16
2. [00262] Clamp, hose, MIL-C-6985 (2)
3. [00307] Container (all types), No NSN -- W/C provide (4)
4. [00454] Funnel
5. [00794] Lubricating oil, engine, MIL-L-21260, SYM PE 30-1  
Hazardous Material User's Guide (HMUG) Group 11
6. [00831] Lubricating oil, general purpose, MIL-PRF-32033  
Hazardous Material User's Guide (HMUG) Group 11
7. [00866] Marker, tube type, black
8. [01102] Rag, wiping
9. [01144] Tag, safety
10. [01347] Tag, stock marking
11. [01361] Tape, pressure sensitive adhesive, PPP-T-60
12. [01646] Diesel fuel, marine, No NSN -- W/C provide  
Hazardous Material User's Guide (HMUG) Group 10
13. [02376] Water, fresh, No NSN -- W/C provide
14. [09764] Corrosion preventive compound, ASTM D-877  
Hazardous Material User's Guide (HMUG) Group 15

**PARTS**

1. [18807] Filter lubrication, special
2. [21863] O-ring
3. [21864] O-ring

**TOOLS**

1. [00599] Wrench, strap
2. [01171] Screwdriver, cross tip, 4", P2
3. [01181] Screwdriver, flat tip, 10", general purpose
4. [01238] Shears, straight trimmers, 7", household/industrial
5. [01445] Wrench set, combination box and open end, 5/16" to 1", 12 PC

6. [01752] Wrench, torque, 1/2" sq drive, 0 to 150 FT-LB
7. [12601] Wrench set, combination box and open end, 12 point, sizes 6mm-18mm

#### MISCELLANEOUS

1. [00419] Faceshield, industrial
2. [00652] Hose, water, No NSN -- W/C provide
3. [00658] Hose assembly, fuel oil service, No NSN -- W/C provide (2)
4. [02996] Apron, utility
5. [03500] Cleaner, vacuum, electric, Floor mod, vert tank, wet or dry pick-up
6. [10636] Plug, protective, dust and moisture
7. [10949] Spectacles, industrial
8. [11690] Paper, postal card, 21" X 28", white
9. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
10. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL
11. [17934] Gloves, disposable, nitrile, 4 mil

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

#### HAZARDOUS MATERIALS CONTROL STATEMENT(U)

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMNCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

#### PROCEDURE

**NOTE 1 :** Accomplish this maintenance requirement when engine will not be in use for 1 to 6 months.

##### Preliminary

- a. Double mooring lines to ensure boat is securely docked, if applicable.

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

- b. Put on eye protection and gloves.

#### 1. Prepare Engine for Inactivity.

**CAUTION:** Failure to provide engine with cooling water while in operation will cause overheating and damage to engine.

- a. Align engine fresh water cooling in accordance with local operating instructions.
- b. Perform all engine pre-operational procedures in accordance with local operating instructions.

**CAUTION:** Engine oil pressure must be indicated on the oil pressure gauge within 15 seconds after the engine is started. Minimum oil pressure at idle is 10 psi, normal operating pressure is  $47.5 \pm 17.5$  psi. If oil pressure does not register within 15 seconds secure the engine to avoid possible damage. Confirm correct oil level is shown on the dipstick.

**CAUTION:** For each attempt to start engine do not engage the starter for more than 30 seconds. Allow starter to cool for 2 minutes after each attempt to start.

- c. Start engine, operate at idle until jacket water temperature reaches 160°F (71°C).
- d. Secure engine.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- e. Attach safety tag in accordance with the Tag-out Users Manual (TUM) and/or local tag-out instruction.
- f. Fill engine lube oil sump with preservative oil:

- (1) Clean area around lube oil fill cap.
- (2) Remove lube oil fill cap.

**NOTE 2 :** If craft is not equipped with the FLOCS system proceed to step 1.f.(3). If craft is equipped with the FLOCS system omit steps 1.f.(3) through 1.f.(7) and proceed to step 1.f.(8).

- (3) Clean area around engine oil drain plug.
- (4) Place drain pan directly beneath engine oil drain plug.
- (5) Remove engine oil drain plug. Allow oil to drain completely; inspect for metallic particles.
- (6) Reinstall lube oil fill cap.
- (7) Clean/reinstall and tighten engine oil drain plug to  $65 \pm 6$  ft.-lbs.
- (8) Align Fast Lube Oil Change System (FLOCS) to drain engine lube oil sump, in accordance with local operating procedures.
- (9) Use clean dry rags to remove dirt and debris from engine lube oil fill cap.
- (10) Remove engine lube oil fill cap.
- (11) Use FLOCS to drain engine lube oil.
- (12) Once lube oil sump is drained, secure FLOCS in accordance with local operating procedures.

**CAUTION:** Strap wrench may damage filter if excessive force is applied making removal difficult. Use strap wrench as last resort to remove seized filter.

- g. Reposition drain pan directly beneath lube oil filter.
- h. Remove engine lube oil filter.
- i. Use marker to make the following entries on new filter:
  - (1) Today's date (YY/MM/DD)
  - (2) Current engine operating hours
  - (3) Initials of maintenance person installing filter.
- j. Apply a medium coat of fresh lubricating oil [00794] to contact surface of filter head and gasket.

**CAUTION:** Do not use strap wrench or any other tool to tighten filter, damage to filter and filter head will occur. Do not over tighten filter because damage to seal may result causing oil to spray.

- k. Install lube oil filter onto filter head. Once filter gasket contacts filter head sealing surface, tighten filter by hand  $1/2$  to  $3/4$  of a turn.
- l. Fill engine sump to HIGH mark indicated on dipstick with lubricating oil [00794].
- m. Replace engine lube oil fill cap.
- n. Remove and empty drain pan.
- o. Fill engine fuel oil system with preservative oil:
  - (1) Place drain pan directly beneath fuel supply hose at fuel filter.
  - (2) Place drain pan directly beneath fuel injector return hose.
  - (3) Disconnect fuel supply hose at filter and fuel injector return hose.
  - (4) Install protective plug [10636] onto fuel supply and return hoses and secure in place with tape.
  - (5) Connect temporary hoses to fuel supply and fuel injector return fittings.
  - (6) Fill one container with approximately 1 gallon of clean diesel fuel.
  - (7) Fill one container with approximately 2 quarts of clean lubricating oil [00831].
  - (8) Place temporary fuel suction and return hoses into container with diesel fuel.
  - (9) Remove safety tag.
  - (10) Open fresh water supply valve.
  - (11) Put on apron and faceshield.
  - (12) Start engine.
  - (13) Once engine is operating smoothly transfer fuel supply line into container of lubricating oil [00831].
  - (14) Operate engine until lubricating oil [00831] flows out injector return hose.
  - (15) Stop engine.

**WARNING:** To prevent personnel injury. Tag-Out procedures shall be in accordance with the Tag-Out Users Manual (TUM) and/or local tag-out instruction.

- (16) Attach safety tag in accordance with the Tag-out Users Manual (TUM) and/or local tag-out instruction.
- (17) Remove and empty drain pans.
- (18) Remove faceshield and apron.

- p. Secure cooling water alignment:
  - (1) Close fresh water supply valve.
  - (2) Close fresh water inlet valve.
  - (3) Close sea water outlet valve.
  - (4) Remove fresh water hose.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- q. Attach safety tag in accordance with the Tag-out Users Manual (TUM) and/or local tag-out instruction.

**NOTE 3 :** For craft "Out of the water only" Open sea water valves to remove residual raw water.

- r. Disconnect temporary fuel hoses.
- s. Remove protective plug [10636] from fuel hoses and reinstall onto fuel supply and injector return fittings.
- t. Drain engine lube oil sump of preservative oil:
  - (1) Remove lube oil fill cap.
  - (2) Clean area around engine oil drain plug.
  - (3) Place drain pan directly beneath engine oil drain plug.
  - (4) Remove engine oil drain plug. Allow oil to drain completely; inspect for metallic particles.
  - (5) Reinstall lube oil fill cap.
  - (6) Clean/reinstall and tighten engine oil drain plug to  $65 \pm 6$  ft-lbs.
  - (7) Align FLOCS to drain engine lube oil sump in accordance with local operating procedures.
  - (8) Remove lube oil fill cap.
  - (9) Use FLOCS to drain engine lube oil.
  - (10) Reinstall lube oil fill cap.
  - (11) Secure FLOCS alignment in accordance with local operating procedures.
- u. Preserve intake manifold:
  - (1) Loosen air cleaner assembly clamp [00262].
  - (2) Remove air cleaner assembly from turbocharger.
  - (3) Apply corrosion preventive compound [09764] to turbocharger intake port.
  - (4) Reinstall air cleaner assembly onto turbocharger.
  - (5) Tighten air cleaner assembly clamp [00262].

**NOTE 4 :** Omit steps 1.v. through 1.v.(6) and proceed to step 1.w if antifreeze with rust inhibitor [00053] is used in engine or if engine is installed on marine vessel.

- v. Drain engine coolant:

**NOTE 5 :** Inhibited antifreeze is hazardous. Skin or eye contact with inhibited antifreeze shall be avoided. When handling concentrated antifreeze or when sampling an antifreeze treated cooling system, wear faceshield, rubber gloves, and apron. In case of skin or eye contact, Flush with cold, potable water immediately; then wash skin with soap and water. Seek immediate medical attention if eye contact or ingestion occurs.

- (1) Place drain pan directly beneath low point drain.

**CAUTION:** When engine is hot the coolant is under pressure. To avoid personnel injury due to coolant spray do not open coolant reservoir cap until engine has been shut down for two hours or coolant reservoir is cool to touch, whichever is longer.

- (2) Remove coolant reservoir fill cap.

**WARNING:** Do not discharge treated cooling water into inland waters and harbors.

- (3) Open coolant low point drain valve, allow coolant to completely drain into drain pan.
- (4) Close low point drain valve.
- (5) Reinstall coolant reservoir fill cap.
- (6) Remove and empty drain pan.

- w. Drain engine raw water system:
  - (1) Place drain pan directly beneath heat exchanger drain plug.
  - (2) Remove heat exchanger drain plug and allow raw water to drain into container.

- (3) Reinstall heat exchanger drain plug.
- (4) Reposition drain pan directly beneath raw water strainer suitable to contain drained raw water.
- (5) Remove raw water strainer drain plug and allow raw water to drain into drain pan.
- (6) Reinstall raw water strainer drain plug.
- (7) Remove and empty drain pan.

**NOTE 6 :** Extreme Freeze Environments and Prolonged Periods of Ambient Temps below 32° F pose a risk of damaging the jacket water heat exchanger by freezing residual water unless that water is mechanically removed.

- (8) Remove raw water inlet pipe to heat exchanger by removing two bolts on the heat exchanger and two bolts holding the clamp on the turbo charger air cooler.
  - (9) Vacuum residual water from inside of heat exchanger.
  - (10) Replace o-ring [21863] on turbo charger air cooler side.
  - (11) Replace o-ring [21864] on jacket water cooler side.
  - (12) Reinstall raw water inlet pipe.
- x. Seal all engine openings with paper and secure paper in place with tape.
- y. Take off gloves and then eye protection.
- z. Place labels on engine with the following entries:
- (1) Engine placed in lay-up (DD/MM/YY) in accordance with MRC LU-1 (9URZ).
  - (2) Engine lube oil removed, do not operate engine.
  - (3) Engine coolant removed, do not operate engine (if applicable).
- aa. Report discrepancies to Work Center Supervisor.



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**DISTRIBUTION STATEMENT D:**

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**Date:** April 2014                      **MIP** 59A3                      **MRC:** 44 9USA Y                      **Periodicity:** LU-2  
**Series:**

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**Location:**

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**Ship System:** Special Purpose Systems 59000  
**System:** SEALIFT Support 59A00  
**SubSystem:** SEALIFT Support, Personnel Transport 59A30  
**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>
2EM	6.0	EM2	2.0	EN3	2.0
<b>Total Man-Hours:</b>	10.0	<b>Elapsed Time:</b>	3.0		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Place Generator in Lay-Up.
- 

**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
  3. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
- 

**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00292] Cloth, abrasive, 0000 grit
2. [00307] Container (all types), No NSN -- W/C provide
3. [00973] Paper, kraft, treated
4. [01102] Rag, wiping
5. [01144] Tag, safety
6. [01186] Plastic sheet, MIL-P-22241TY2
7. [01297] Sodium bicarbonate, technical, O-S-576  
Hazardous Material User's Guide (HMUG) Group 2
8. [01347] Tag, stock marking
9. [01361] Tape, pressure sensitive adhesive, PPP-T-60
10. [02171] Distilled water
11. [02376] Water, fresh, No NSN -- W/C provide
12. [02385] Wire, nonelectrical, 0.063"
13. [02407] Cleaning solvent, approved safety, No NSN -- W/C provide - Use GNP cleaner only  
Hazardous Material User's Guide (HMUG) Group 6
14. [09220] Lubricating oil, engine, 15W-40, MIL-PRF-2104  
Hazardous Material User's Guide (HMUG) Group 11
15. [09764] Corrosion preventive compound, ASTM D-877  
Hazardous Material User's Guide (HMUG) Group 15
16. [10273] Brushes, nylon
17. [19150] Enamel, black  
Hazardous Material User's Guide (HMUG) Group 8

**PARTS**

1. [10842] Knife, cutter
2. [19129] Filter, fluid

**TOOLS**

1. [00192] Brush, wire, battery, Battery post
2. [01269] Wrench set, socket, 1/2" sq drive, 7/16" to 1-1/4", 20 PC
3. [02271] Flashlight, Type 3, style 1, explosive proof
4. [03840] Screwdriver set, flat tip
5. [09162] Screwdriver set, cross tip

**MISCELLANEOUS**

1. [00652] Hose, water, No NSN -- W/C provide
2. [02826] Gloves, disposable, nitrile, 8 mil
3. [03707] Goggles, industrial, non-vented
4. [09217] Respirator, particulate
5. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
6. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

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### HAZARDOUS MATERIALS CONTROL STATEMENT(U)

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMINCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

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### PROCEDURE

**NOTE 1 :** Accomplish this maintenance requirement prior to placing generator in stowage.

#### Preliminary

- a. Ensure that boat is secure in cradle.

**CAUTION:** Failure to provide engine with cooling water while in operation will cause overheating and damage to engine.

- b. Provide source of water to generator if applicable to prevent overheating.
- c. Start the engine in accordance with current operating instructions and allow to idle for approximately 3 to 5 minutes.
- d. Secure the engine in accordance with current operating instruction.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- e. Deactivate/de-energize starting circuit/system and tag "Out of Service."
- f. Align valves as applicable and tag "Closed."

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

- g. Put on goggles and gloves.

#### 1. Place Generator in Lay-Up.

- a. Place drain pan directly beneath the generator oil drain.
- b. Remove plug end of oil drain hose. Align valves and remove oil drain plug. Allow oil to drain into container.
- c. Inspect oil drain cap fitting for damage or deformation. Notify Work Center Supervisor if plug is damaged and correct as directed.
- d. Remove dipstick. Do not allow any contaminants or debris to enter system during oil change.
- e. Allow oil to drain. Dispose of oil in accordance with HAZMAT instructions.
- f. Reinstall drain cap and tighten until snug.

**CAUTION:** Use care when removing filter with strap wrench as damage can occur making removal difficult.

- g. Reposition drain pan directly beneath filter and use strap wrench to remove old filter. Dispose of filter and gasket in accordance with HAZMAT instructions.
- h. Clean filter head with rag. Ensure old gasket is removed.
- i. Use marker and on the filter record:
  - (1) Initials of person performing oil change
  - (2) Date/Month/Year (DD/MM/YR)

**CAUTION:** If filter is overtightened it will damage the gasket and the filter causing oil to leak or spray. This will make

removal difficult.

- j. Spread a thin coat of fresh oil onto the filter gasket and then hand tighten until the gasket meets the sealing surface; and then continue to tighten an additional 1/2 turn.
- k. Fill engine with approximately 3.3 quarts (3.1 liters). Allow approximately 3 to 5 minutes to allow engine oil to reach sump.
- l. Remove and empty drain pan.
- m. Loosen the alternator belt.
- n. Disconnect batteries and clean connections and cables with solution of sodium bicarbonate and water. Use brush to remove hard deposits.
- o. Mix a solution of detergent and water in container.
- p. Use rags dampened in solution to remove excess contaminants and grease.
- q. Use rags dampened in clean freshwater to rinse generator set and allow to dry.
- r. Put on air filtering mask.
- s. Inspect and identify scratches, dents, and corroded areas. Remove corrosion using sandpaper. Cover scratches and areas as required with paint.
- t. Remove gloves, goggles and air filtering.
- u. Drain all water supply lines into acceptable container and dispose of properly.
- v. Loosen seawater pump cover and allow pump to drain. Retighten screws when completely drained.
- w. Use plastic or paper and tape to cover:
  - (1) Air cleaner inlet
  - (2) Exhaust
  - (3) Crankcase breather
  - (4) Fuel tank vent, if applicable.
  - (5) Control box
  - (6) Control panels
- x. Tag starting circuit "Out of Service" and "Do Not Start."
- y. Tag valves "Out of Service."
- z. Report discrepancies to Work Center Supervisor.



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**DISTRIBUTION STATEMENT D:**

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**Date:** July 2013**MIP** 59A3  
**Series:****MRC:** 73 9USB Y**Periodicity:** LU-3

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**Location:****Ship System:** Special Purpose Systems 59000**System:** SEALIFT Support 59A00**SubSystem:** SEALIFT Support, Personnel Transport 59A30**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>
EN	1.2				
<b>Total Man-Hours:</b>	1.2	<b>Elapsed Time:</b>	1.2		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Fill Marine Gear with Preservative Oil.
- 

**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
  3. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
  4. Avoid inhalation of, ingestion of, skin contact with, and eye contact with hazardous materials. Avoid use near heat or open flame and provide adequate ventilation. Consult work center supervisor if unsure whether ventilation is adequate and if respiratory protection is necessary.
  5. Exercise extreme caution when working around moving machinery.
- 

**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00096] Pen, ball-point, black
2. [00307] Container (all types), No NSN -- W/C provide
3. [00794] Lubricating oil, engine, MIL-L-21260, SYM PE 30-1  
Hazardous Material User's Guide (HMUG) Group 11
4. [01102] Rag, wiping
5. [01144] Tag, safety
6. [01347] Tag, stock marking
7. [01393] Toothbrush, H-T-560 TY 1, ST B
8. [01646] Diesel fuel, marine, No NSN -- W/C provide  
Hazardous Material User's Guide (HMUG) Group 10
9. [10034] Corrosion preventive compound  
Hazardous Material User's Guide (HMUG) Group 15
10. [12241] Marker, tube type
11. [18481] Filter element, fluid

**TOOLS**

1. [12601] Wrench set, combination box and open end, 12 point, sizes 6mm-18mm

**MISCELLANEOUS**

1. [02826] Gloves, disposable, nitrile, 8 mil
2. [02828] Funnel, filling
3. [03707] Goggles, industrial, non-vented
4. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
5. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

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**HAZARDOUS MATERIALS CONTROL STATEMENT(U)**

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the

OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMINCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

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## PROCEDURE

**NOTE 1 :** Accomplish this maintenance requirement when equipment will not be in use for periods greater than 90 days but less than 1 year.

### Preliminary

**CAUTION:** Failure to provide a source of cooling water will cause damage to engine

- a. Start engine in accordance with current operating instructions; connect external cooling water to systems, if applicable. Allow system to operate for a period of 5 minutes.
- b. Secure system in accordance with current operating instructions; remove external cooling water to system, if applicable.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- c. De-energize/deactivate starting circuit/system and tag "Out of Service."

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

- d. Don goggles and gloves.

### 1. Fill Marine Gear with Preservative Oil.

**NOTE 2 :** If equipment is equipped with FLOCS system omit step 1.a through step 1.e and proceed to step 1.f.

**WARNING:** Avoid inhalation of, ingestion of, skin contact with, and eye contact with hazardous materials. Avoid use near heat or open flame and provide adequate ventilation. Consult work center supervisor if unsure whether ventilation is adequate and if respiratory protection is necessary.

- a. Clean area around marine gear drain plug.

**NOTE 3 :** Marine gear holds approximately 6 to 6.9 quarts of oil.

- b. Place drain pan directly beneath marine gear oil drain plug.
- c. Remove marine gear drain plug. Allow oil to fully drain; inspect for metallic particles.
- d. Clean, reinstall and tighten marine gear oil drain plug.
- e. Remove and empty drain pan.
- f. Connect Fast Lube Oil Change System (FLOCS) pump coupling half to marine gear sump half or position valve to marine gear side, as applicable.
- g. Operate FLOCS pump and remove all oil from marine gear into an appropriate container; properly dispose of used oil.
- h. Disconnect FLOCS pump coupling half or close valve as applicable.
- i. Use rag to remove excess oil and contaminants from marine gear.
- j. Remove and inspect marine gear oil filler plug and sealing washer. If any component is damaged notify Work Center Supervisor and correct as directed. If no damage is found proceed to step 1.k.
- k. Remove screen.
- l. Clean screen and plug with small amount of diesel fuel, brush, and lint-free rag as applicable. Remove excess fuel and contaminants with a lint-free rag.
- m. Reassemble and reinstall filler plug and screen.
- n. To remove filter if applicable.

**CAUTION:** Use of strap wrench can damage filter making removal difficult. Use care when removing filter.

- (1) Reposition drain pan directly beneath marine gear oil filter.

- (2) Place rags around the filter and filter head. Remove filter using strap wrench if necessary; properly dispose of used filter.
- (3) Use a rag to clean filter head. Ensure that old gasket/O-ring is removed.

**CAUTION:** Use of strap wrench or other mechanical devices to install filter can damage filter causing oil to spray which could result in injury or damage to individual and marine gear.

- (4) Use marker to place initials of person performing the MR and the month/date/year filter is installed.
  - (5) Use a light coat of fresh oil to coat gasket and then reinstall filter head. Hand tighten until filter contacts head and then tighten an addition 1/4 to 1/2 turn.
- o. Remove dipstick, clean, and set aside for reinstallation.

**NOTE 4 :** Marine gear holds approximately 6 to 6.9 quarts of oil.

- p. Place funnel in position to fill marine gear with oil. Fill marine gear with oil.
- q. Remove funnel and reinstall dipstick. Remove dipstick and inspect level of oil, level should be at the upper fill mark on the dipstick. Add or remove oil as necessary.
- r. Remove and empty drain pan.
- s. Remove safety tags and energize/activate starting circuit/system.

**CAUTION:** Failure to provide a source of cooling water will cause damage to engine.

- t. Ensure marine gear is in **NEUTRAL**.

**WARNING:** Exercise extreme caution when working around moving machinery.

- u. Start engine in accordance with current operating instruction; allow to run for approximately 5 minutes in idle and inspect marine gear for leaks.
- v. Check the oil level on the dipstick. Fill if required.
- w. Secure engine in accordance with local operating instructions.
- x. Disconnect external water supply, if applicable.

**WARNING:** Avoid inhalation of, ingestion of, skin contact with, and eye contact with hazardous materials. Avoid use near heat or open flame and provide adequate ventilation. Consult work center supervisor if unsure whether ventilation is adequate and if respiratory protection is necessary.

- y. Apply corrosion preventive compound to all external bright components of the marine gear.
- z. Apply a light coat of grease to protruding shaft sections of marine gear.
- aa. Remove gloves and then goggles.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- ab. De-energize/deactivate starting circuit and tag "Out of Service."
- ac. Place tag on dipstick that states "PRESERVATION OIL ADDED" and the date MR was completed.
- ad. Comply with own ship/station procedures for handling the disposal of hazardous material/waste, including contaminated towels, absorbents, containers, and clothing.
- ae. Report discrepancies to Work Center Supervisor.



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**DISTRIBUTION STATEMENT D:**

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**Date:** February 2014      **MIP** 59A3      **MRC:** 24 9USD Y      **Periodicity:** SU-1  
**Series:**

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**Location:**

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**Ship System:** Special Purpose Systems 59000  
**System:** SEALIFT Support 59A00  
**SubSystem:** SEALIFT Support, Personnel Transport 59A30  
**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>
EN1	1.5	EN3	3.0	FN	3.0
EM3	0.2				
<b>Total Man-Hours:</b>	<b>7.7</b>	<b>Elapsed Time:</b>	<b>3.0</b>		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Prepare Engine for Operation.
- 

**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
  3. Fuel water separator housing will contain fuel. Slowly install new filter element to prevent fuel from splashing out of housing.
  4. Inhibited antifreeze is hazardous. Skin or eye contact with inhibited antifreeze shall be avoided. When handling concentrated antifreeze or when sampling an antifreeze treated cooling system, wear faceshield, chemical protective gloves, and apron. In case of skin or eye contact, Flush with cold, potable water immediately; then wash skin with soap and water. Seek immediate medical attention if eye contact or ingestion occurs.
  5. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
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**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00053] Antifreeze, A-A-52624  
Hazardous Material User's Guide (HMUG) Group 16
2. [00307] Container (all types), No NSN -- W/C provide
3. [00454] Funnel
4. [01102] Rag, wiping
5. [01144] Tag, safety
6. [01701] Distilled-deionized water
7. [09220] Lubricating oil, engine, 15W-40, MIL-PRF-2104  
Hazardous Material User's Guide (HMUG) Group 11
8. [15483] Lubricating oil, engine  
Hazardous Material User's Guide (HMUG) Group 11
9. [20215] Diesel fuel, motor vehicle  
Hazardous Material User's Guide (HMUG) Group 10

**PARTS**

1. [13465] Filter element, fluid Oil, Mfr: Cummins, Part # 3101869 -- W/C provide
2. [13620] Filter element, fluid
3. [17493] Filter element, fluid
4. [19788] Filter element, fluid

**TOOLS**

1. [00599] Wrench, strap
2. [01027] Pliers, slip joint, 6", regular nose, style A
3. [01171] Screwdriver, cross tip, 4", P2
4. [01181] Screwdriver, flat tip, 10", general purpose
5. [01445] Wrench set, combination box and open end, 5/16" to 1", 12 PC
6. [02271] Flashlight, Type 3, style 1, explosive proof
7. [12601] Wrench set, combination box and open end, 12 point, sizes 6mm-18mm

## MISCELLANEOUS

1. [00419] Faceshield, industrial
2. [02826] Gloves, disposable, nitrile, 8 mil
3. [02996] Apron, utility
4. [03707] Goggles, industrial, non-vented
5. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
6. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

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## HAZARDOUS MATERIALS CONTROL STATEMENT(U)

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMINCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

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## PROCEDURE

**NOTE 1 :** Accomplish this Maintenance requirement when engine has been inactivated as described in LU-1 (9URZ).

### Preliminary

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

- a. Put on goggles and disposable gloves.

### 1. Prepare Engine for Operation.

- a. Remove plastic wrap from engine.
- b. Remove paper seals
- c. Fill engine lube oil sump:
  - (1) Place drain pan under lube oil filter.

**CAUTION:** Strap wrench may damage filter if excessive force is applied. This can make removal difficult. Use strap wrench as last resort to remove seized filter.

- (2) Remove engine lube oil filter.
- (3) Remove replacement filter from packaging and then use indelible marker to make to following entries onto new fuel filter:
  - (a) Today's date (MM/DD/YY)
  - (b) Current engine operating hours
  - (c) Initials of maintenance person installing filter
- (4) Fill new lube oil filter with clean lubricating oil.
- (5) Apply medium coat of fresh lubricating oil to contact surface of lube oil filter head and filter gasket.
- (6) Install filter onto filter head until the gasket contacts the filter head surface. Once the gasket contacts the filter head surface hand tighten an additional 1/2 to 3/4 of a turn.
- (7) Use clean dry rags to remove contaminants from engine lube oil fill cap.
- (8) Remove engine lube oil fill cap.
- (9) Fill engine sump to **HIGH** mark as indicated on dipstick with lubricating oil.
- (10) Replace lube oil fill cap.
- (11) Use clean dry rags to remove excess lube oil.
- d. Replace fuel filter:
  - (1) Place container below fuel filter.

**CAUTION:** Strap wrench may damage filter if excessive force is applied. This can make removal difficult. Use strap wrench as last resort to remove seized filter.

- (2) Remove fuel filter.
- (3) Remove replacement filter from packaging and then use indelible marker to make to following entries onto new fuel filter:

- (a) Today's date (MM/DD/YY)
- (b) Current engine operating hours
- (c) Initials of maintenance person installing filter
- (4) Fill new fuel filter with fresh diesel fuel.
- (5) Apply coat of fresh fuel to contact surface of fuel filter head and filter gasket.
- (6) Install filter onto filter head until the gasket contacts the filter head surface. Once the gasket contacts the filter head surface hand tighten an additional 1/2 to 3/4 of a turn.

- e. Replace fuel water separator element:
  - (1) Place container under fuel water separator.
  - (2) Use clean rags to remove contaminants from fuel water separator and surrounding area.
  - (3) Drain collection bowl to remove water and contaminants as applicable.
  - (4) Unscrew T-handle on top of fuel water separator by hand and then remove cover.
  - (5) Remove filter element (pulling upward and using a twisting motion) from filter housing and then allow filter to drain into container.
  - (6) Remove and discard filter cap and T-handle O-rings.
  - (7) Coat new T-handle O-ring and lid gasket with clean diesel fuel and reinstall.
  - (8) Use clean dry rags to remove contaminants from:
    - (a) Sealing surface of filter housing
    - (b) O-ring grooves in filter cap
    - (c) T-handle

**WARNING:** Fuel water separator housing will contain fuel. Slowly install new filter element to prevent fuel from splashing out of housing.

- (9) Slowly install new filter into filter housing.
- (10) Fill fuel water separator with fresh fuel.

**CAUTION:** Do not over tighten T-handle when reinstalling cover because damage to O-rings could occur which will result in fuel spray.

- (11) Reinstall filter cap onto filter housing and then tighten the T-handle by hand until it is snug.
- (12) Use clean dry rags to remove excess fuel.
- (13) Remove container under fuel water separator.

- f. Fill engine coolant system:
  - (1) Put on apron and faceshield.

**WARNING:** Inhibited antifreeze is hazardous. Skin or eye contact with inhibited antifreeze shall be avoided. When handling concentrated antifreeze or when sampling an antifreeze treated cooling system, wear faceshield, chemical protective gloves, and apron. In case of skin or eye contact, Flush with cold, potable water immediately; then wash skin with soap and water. Seek immediate medical attention if eye contact or ingestion occurs.

- (2) Remove coolant reservoir fill cap.
- (3) Slowly fill cooling system to bottom of filler neck with mixture of 50 percent antifreeze and 50 percent distilled water.
- (4) Reinstall coolant reservoir cap.
- (5) Remove gloves, faceshield, and apron and then goggles.

- g. Disconnect electrical wiring from fuel pump.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- h. Remove safety tags and lock wire.
- i. If boat is out of the water provide external cooling water, as applicable.
- j. Align starting circuit, raw water cooling and fuel systems in accordance with local operating procedures.
- k. Perform all engine pre-operational procedures.

**NOTE 2 :** Engine will not start with wiring removed from fuel pump.

- l. Cycle engine by the starting motor until 10 psi oil pressure appears on oil pressure gage.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- m. De-energize starting circuit and attach safety tag.
- n. Reconnect electrical wiring to fuel pump.
- o. Remove safety tags from starting circuit, energize starting circuit.

**CAUTION:** Engine oil pressure must be indicated on the oil pressure gauge within 15 seconds after the engine is started. Minimum oil pressure at idle is 10 psi, normal operating pressure is  $47.5 \pm 17.5$  psi. If oil pressure does not register within 15 seconds secure the engine to avoid possible damage. Confirm correct oil level is shown on the dipstick.

**CAUTION:** For each attempt to start engine do not engage the starter for more than 30 seconds. Allow starter to cool for 2 minutes after each attempt to start.

- p. Start engine in accordance with current operating instructions and then inspect for leaks.
- q. Operate at idle until jacket water temperature is 160°F (71°C).
- r. Secure engine in accordance with current operating instructions.
- s. Inspect engine lube oil sump level, replenish as required
- t. Return equipment to readiness condition.
- u. Comply with own ship/station procedures for handling and disposal of hazardous material/waste, including contaminated towels, absorbents, containers, and clothing.
- v. Report discrepancies to Work Center Supervisor.

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**DISTRIBUTION STATEMENT D:**

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**Date:** July 2013      **MIP** 59A3      **MRC:** 73 9USE Y      **Periodicity:** SU-2  
**Series:**

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**Location:**

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**Ship System:** Special Purpose Systems 59000  
**System:** SEALIFT Support 59A00  
**SubSystem:** SEALIFT Support, Personnel Transport 59A30  
**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>
2EM	6.0	EM2	2.0	EN3	2.0
<b>Total Man-Hours:</b>	10.0	<b>Elapsed Time:</b>	3.0		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Prepare Generator for Operation.
- 

**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
  3. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
  4. Do not discharge treated cooling water into inland waters and harbors.
- 

**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00053] Antifreeze, A-A-52624  
Hazardous Material User's Guide (HMUG) Group 16
2. [00307] Container (all types), No NSN -- W/C provide
3. [01102] Rag, wiping
4. [01144] Tag, safety
5. [01297] Sodium bicarbonate, technical, O-S-576  
Hazardous Material User's Guide (HMUG) Group 2
6. [02171] Distilled water
7. [02407] Cleaning solvent, approved safety, No NSN -- W/C provide - Use GNP cleaner only  
Hazardous Material User's Guide (HMUG) Group 6
8. [09220] Lubricating oil, engine, 15W-40, MIL-PRF-2104  
Hazardous Material User's Guide (HMUG) Group 11
9. [10034] Corrosion preventive compound  
Hazardous Material User's Guide (HMUG) Group 15

**PARTS**

1. [19129] Filter, fluid

**TOOLS**

1. [00192] Brush, wire, battery, Battery post
2. [01269] Wrench set, socket, 1/2" sq drive, 7/16" to 1-1/4", 20 PC
3. [02271] Flashlight, Type 3, style 1, explosive proof
4. [03840] Screwdriver set, flat tip
5. [09162] Screwdriver set, cross tip
6. [10842] Knife, cutter

**MISCELLANEOUS**

1. [00652] Hose, water, No NSN -- W/C provide
2. [02000] Mandatory Related Maintenance MRC (W-1R (9UPP))
3. [02826] Gloves, disposable, nitrile, 8 mil
4. [03707] Goggles, industrial, non-vented
5. [10273] Brushes, nylon
6. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
7. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

## HAZARDOUS MATERIALS CONTROL STATEMENT(U)

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMINCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

## PROCEDURE

**NOTE 1 :** Accomplish this maintenance requirement when removing generator from storage.

### Preliminary

- a. Ensure that boat is secure in cradle.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- b. Attach safety tag.

**CAUTION:** Failure to provide engine with cooling water while in operation will cause overheating and damage to engine.

- c. Provide source of cooling water to generator if applicable to prevent overheating.

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

### 1. Prepare Generator for Operation.

- a. Remove plastic or paper from:
  - (1) Air cleaner Inlet
  - (2) Exhaust
  - (3) Crankcase breather
  - (4) Fuel tank vent, if applicable.
  - (5) Control box
  - (6) Control panels
- b. Put on goggles and gloves.

**NOTE 2 :** The coolant system reservoir contains approximately 1 gallon of coolant.

**NOTE 3 :** Ensure that the water that is removed is placed into the correct container and properly disposed of.

- c. Place container underneath coolant drain valve on the starboard side of engine block right above the dipstick.
- d. Remove coolant fill pressure cap and open coolant drain valve. Drain expansion tank and heat exchanger.

**WARNING:** Do not discharge treated cooling water into inland waters and harbors.

- e. Allow coolant to drain completely.
- f. Remove expansion tank cap and open drains as applicable.
- g. Pour clean distilled water into the expansion tank and allow to drain. Repeat this step until the water that drains is free of discoloration and contaminants.
- h. Close coolant drain valve.
- i. Visually inspect all hoses for:
  - (1) Abrasions
  - (2) Burnt/worn through areas
  - (3) Crushing

- (4) Kinking
- (5) Hoses are secure at attachment points
- (6) Retaining devices are present and do not show signs of corrosion, damage, deformity, or loose/missing hardware
- j. Mix a solution of 50 percent antifreeze and 50 percent distilled water if applicable or fill with premixed extended life coolant provided. Fill system until coolant level is approximately 1-inch (2.5cm) below the cap sealing surface when the engine is cold.
- k. Install coolant fill pressure cap.
- l. Remove pump end cover and retain for reinstallation of cover.

**CAUTION:** Do not damage pump housing during removal of impeller.

- m. Remove impeller. Ensure that all pieces of the impeller are removed.
- n. Once the impeller is removed clean and inspect the housing to ensure that no debris remains.
- o. Ensure that the sealing washers are in the outer end of the impeller center and then press the new impeller into the housing.
- p. Replace the gasket or O-ring on the cover and then reinstall the cover and tighten screws.
- q. Perform MRC W-1R (9UPP).
- r. Remove oil drain plug.

**NOTE 4 :** If craft is equipped with FLOCS system proceed to step 1.s. If craft is not equipped with FLOCS system omit steps 1.s. through 1.w. and proceed to step 1.x.

- s. Align valves in accordance with current operating instructions and attach FLOCS.
- t. Remove engine oil dipstick. Do not allow contaminants and debris to enter system.
- u. Remove oil from system.
- v. When engine oil has been removed, align valves and remove FLOCS.
- w. Omit steps 1.x through 1.aa and proceed to step 1.ab.
- x. Place drain pan under the generator oil drain.
- y. Align valves and remove oil as applicable. Allow oil to drain into drain pan.
- z. Inspect oil drain plug and gasket for damage or deformation.
- aa. Remove dipstick. Do not allow any contaminants or debris to enter system during oil change.
- ab. Reinstall drain plug and tighten until snug.

**CAUTION:** Use care when removing filter with strap wrench as damage can occur making removal difficult.

- ac. Place drain pan directly beneath filter and use strap wrench to remove old filter.
- ad. Clean filter head with rag. Ensure old gasket is removed.
- ae. Use marker and record on the filter:
  - (1) Initials of person performing oil change
  - (2) Date/Month/Year (DD/MM/YR)

**CAUTION:** If filter is overtightened it will damage the gasket and the filter causing oil to leak or spray. This will make removal difficult.

- af. Spread a thin coat of new oil onto the filter gasket and then hand tighten until the gasket meets the sealing surface; and then continue to tighten an additional 1/2 turn.
- ag. Fill engine with approximately 3.3 quarts (3.1 liters). Allow approximately 3 to 5 minutes to allow engine oil to reach sump and inspect oil level on dipstick.
- ah. Tighten the alternator belt.
- ai. Clean battery connections and cables with solution of sodium bicarbonate and water. Use brush to remove hard deposits. Apply corrosion preventive compound to battery connections and cable. Connect batteries.
- aj. Remove gloves and then goggles.
- ak. Remove all safety tags on the fresh and raw water systems. Align all valves and activate starting circuits and system in accordance with current operating instructions.

**NOTE 5 :** Excessive cranking of the starter on marine sets equipped with a water lift muffler can cause engine damage. If the engine does not start after three 20-second cranks, remove the impeller from the raw water pump. This will prevent the muffler from filling with water and back filling the exhaust line and engine. Once the engine starts, shut it off immediately and reinstall the impeller. Re-start the engine and check the exhaust overboard outlet for gushes of water.

**NOTE 6 :** Oil pressure must be above 15 psi. The D.C. voltmeter should read  $13 \pm 2$  volts at  $80^\circ\text{F}$  ( $25^\circ\text{C}$ ). Allow system to run until coolant temperature gauge reaches between  $180 \pm 15^\circ\text{F}$  ( $82.5 \pm 7.5^\circ\text{C}$ ).

**CAUTION:** Engine oil gauge should show  $40 \pm 20$  psi within a few seconds of starting. If engine oil pressure does not register secure engine immediately.

- al. Start the generator and inspect for leaks. If leaks are found secure the generator immediately.
- am. Secure engine in accordance with current operating instructions.
- an. Return equipment to readiness condition.
- ao. Comply with own ship/station procedures for handling and disposal of hazardous material/waste, including contaminated towels, absorbents, containers, and clothing.
- ap. Report discrepancies to Work Center Supervisor.

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**DISTRIBUTION STATEMENT D:**

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**Date:** July 2013      **MIP** 59A3      **MRC:** 73 9USF Y      **Periodicity:** SU-3  
**Series:**

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**Location:**

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**Ship System:** Special Purpose Systems 59000  
**System:** SEALIFT Support 59A00  
**SubSystem:** SEALIFT Support, Personnel Transport 59A30  
**Equipment:** 40-Foot Maritime Pre-Position Force Utility Boat (MPFUB) 59A31

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<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>	<b>Rates</b>	<b>Man-Hours</b>
FN	1.2				
<b>Total Man-Hours:</b>	1.2	<b>Elapsed Time:</b>	1.2		

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**MAINTENANCE REQUIREMENT DESCRIPTION**

1. Remove Marine Gear from Lay-Up.
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**SAFETY PRECAUTIONS**

1. Forces afloat comply with Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series; shore activities comply with SOH Program Manual, OPNAVINST 5100.23 series.
  2. To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.
  3. Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.
  4. Avoid inhalation of, ingestion of, skin contact with, and eye contact with hazardous materials. Avoid use near heat or open flame and provide adequate ventilation. Consult work center supervisor if unsure whether ventilation is adequate and if respiratory protection is necessary.
  5. Exercise extreme caution when working around moving machinery.
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**TOOLS, PARTS, MATERIALS, TEST EQUIPMENT****MATERIALS**

1. [00307] Container (all types), No NSN -- W/C provide
2. [01102] Rag, wiping
3. [01144] Tag, safety
4. [01393] Toothbrush, H-T-560 TY 1, ST B
5. [01646] Diesel fuel, marine, No NSN -- W/C provide  
Hazardous Material User's Guide (HMUG) Group 10
6. [02666] Lubricating oil, engine, 5W-30, A-A-52039  
Hazardous Material User's Guide (HMUG) Group 11
7. [12241] Marker, tube type
8. [18481] Filter element, fluid

**TOOLS**

1. [02832] Wrench set, socket, Metric, 9-19mm

**MISCELLANEOUS**

1. [02826] Gloves, disposable, nitrile, 8 mil
2. [02828] Funnel, filling
3. [03707] Goggles, industrial, non-vented
4. [11922] Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM 670 Vol II
5. [15244] S0400-AD-URM-010/TUM; TAG OUT USER'S MANUAL

**NOTE:** Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for identification.

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**HAZARDOUS MATERIALS CONTROL STATEMENT(U)**

For Forces Afloat, the Hazardous Material Users Guide (HMUG), S9086-WK-STM-020, NSTM Chapter 670 Volume II provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test, Equipment block. For other forces (expeditionary, shore based units, units based at a host nation facility), the OPNAVINST 5100.23 (series) provides guidance for Hazardous Material Control and Management (HMC&M) and directs the use of Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) to determine additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block. Maintenance personnel shall determine if additional PPE is necessary to accomplish the MRC and take appropriate action to obtain and wear such PPE to

ensure the safety of maintenance personnel. Final disposition of all HAZMAT, both shipboard and ashore, shall be IAW local HAZMINCEN/CHRIMP guidance as required by OPNAVINST 5090.1 series Table 35-4. Report any deficiencies via PMS feedback report.

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## PROCEDURE

**NOTE 1 :** Accomplish this maintenance requirement when removing marine gear from lay-up.

### Preliminary

**NOTE 2 :** Work Center Supervisor review MRC and provide parts fill-in data.

- a. Ensure that mooring lines are doubled and boat is securely docked/moored if boat is in the water.
- b. Ensure marine gear is in **NEUTRAL**.
- c. Remove safety tags as required.

**CAUTION:** Failure to provide a source of cooling water will cause damage to engine.

- d. Connect external cooling water to engine and subsystems, if applicable.
- e. Start engine in accordance with current operating instructions and allow to idle for approximately 5 minutes.
- f. Secure engine in accordance with current operating instructions.

**WARNING:** To prevent personnel injury, Tag-Out procedures shall be in accordance with the Tag-out Users Manual (TUM), and/or local tag-out instruction.

- g. Deenergize/deactivate starting circuit/system and tag "Out of Service."

**WARNING:** Avoid repeated/prolonged skin contact with hazardous materials. Wash affected areas with soap and water upon completion of task or prior to eating, drinking, smoking, or applying cosmetics.

- h. Don goggles and gloves.

## 1. Remove Marine Gear from Lay-Up.

**NOTE 3 :** If equipment is equipped with FLOCS system omit step 1.a through step 1.e and proceed to step 1.f.

**WARNING:** Avoid inhalation of, ingestion of, skin contact with, and eye contact with hazardous materials. Avoid use near heat or open flame and provide adequate ventilation. Consult work center supervisor if unsure whether ventilation is adequate and if respiratory protection is necessary.

- a. Clean area around marine gear drain plug.

**NOTE 4 :** Marine gear holds approximately 6 to 6.9 quarts of oil.

- b. Place drain pan directly beneath marine gear oil drain plug.
- c. Remove marine gear drain plug. Allow oil to fully drain; inspect for metallic particles.
- d. Clean, reinstall and tighten marine gear oil drain plug.
- e. Remove and empty drain pan.
- f. Connect Fast Lube Oil Change System (FLOCS) pump coupling half to marine gear sump half or position valve to marine gear side, as applicable.
- g. Operate FLOCS pump and remove all oil from marine gear into an appropriate container; properly dispose of used oil.
- h. Disconnect FLOCS pump coupling half or close valve, as applicable.
- i. Use rag to remove excess oil and contaminants from marine gear.
- j. Remove and inspect marine gear oil filler plug and sealing washer.
- k. Reinstall filler plug and sealing washer.
- l. To remove filter if applicable.

**CAUTION:** Use of strap wrench can damage filter making removal difficult. Use care when removing filter.

- (1) Place rags around the filter and filter head. Remove filter using strap wrench if necessary; properly dispose of used filter.
- (2) Use a rag to clean filter head. Ensure that old gasket/O-ring is removed.

**CAUTION:** Use of strap wrench or other mechanical devices to install filter can damage filter causing oil to spray which could result in injury or damage to individual and marine gear.

- (3) Use marker to place initials of person performing the MR and the month/date/year filter is installed.
- (4) Use a light coat of fresh oil to coat gasket and then reinstall filter head. Hand tighten until filter contacts head and then tighten an addition 1/4 to 1/2 turn.
- m. Remove dipstick, clean, and set aside for reinstallation.

**NOTE 5 :** Marine gear holds approximately 6 to 6.9 quarts of oil.

- n. Place funnel in position to fill marine gear with oil. Fill marine gear with oil.
- o. Remove funnel and reinstall dipstick. Remove dipstick and inspect level of oil. Add or remove oil as necessary.
- p. Remove gloves and then goggles.
- q. Remove safety tags and energize/activate starting circuit/system.

**CAUTION:** Failure to provide a source of cooling water will cause damage to engine.

- r. Ensure marine gear is in **NEUTRAL**.

**WARNING:** Exercise extreme caution when working around moving machinery.

- s. Ensure that the jet area is free of debris.
- t. Start engine in accordance with current operating instruction and inspect marine gear for leaks.
- u. Check the oil level on the dipstick. Fill if required.
- v. Secure engine in accordance with local operating instructions.
- w. Disconnect external water supply, if applicable.
- x. Return equipment to readiness condition.
- y. Comply with own ship/station procedures for handling the disposal of hazardous material/waste, including contaminated towels, absorbents, containers, and clothing.
- z. Report discrepancies to Work Center Supervisor.

