TECHNICAL MANUAL

UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

LANDING CRAFT, UTILITY (LCU)

NSN 1905-01-154-1191

BASIC CRAFT (PART II)

INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS	3-1
INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	4-1
APPENDIXES	A-1
ALPHABETICAL INDEX	INDEX 1

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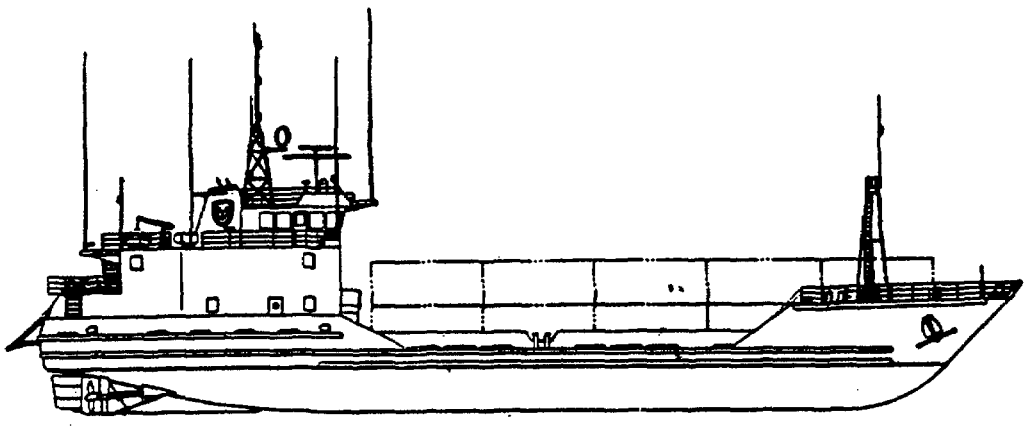

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UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR THE LANDING CRAFT, UTILITY (LCU) BASIC CRAFT (PART II) NSN: 1905-01-154-1191

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TABLE OF CONTENTS – CONT.

		PAGE
PART 1		
CHAPTER 3	INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS	3-1
Section I	Repair Parts, Special Tools; Test Measurement and Diagnostic Equipment (TMDE); and Support Equipment	3-1
Section II	Service Upon Receipt	3-1
Section III	Intermediate Direct Support Preventive Maintenance Checks and Services (PMCS)	3-2
Section IV	Intermediate Direct Support Troubleshooting	3-18
Section V	Intermediate Direct Support Maintenance Procedures	3-41
Section VI	Preparation for Storage or Shipment	3-750
CHAPTER 4	INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS	4-1
Section I	Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE)	4-1
Section II	Service Upon Receipt	4-1
Section III	Intermediate General Support Preventive Maintenance Checks and Services (PMCS)	4-2
Section IV	Intermediate General Support Troubleshooting Procedures	4-2
Section V	Intermediate General Support Maintenance Procedures	4-4
Section VI	Preparation for Storage or Shipment	4-62

TABLE OF CONTENTS - CONT

		PAGE
APPENDIX A	REFERENCES	A-1
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1
APPENDIX C	EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	C-1
APPENDIX D	TORQUE VALUES	D-1
GLOSSARY	ABBREVIATIONS AND DEFINITIONS	Glossary 1
ALPHABETICAL INDEX	.....	Index 1
FOLDOUTS	.....	FP – 1

CHAPTER 3

INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

		Page
Section I.	Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	3-1
Section II.	Service Upon Receipt	3-1
Section III.	Intermediate Direct Support Preventive Maintenance Checks and Services (PMCS)	3-2
Section IV.	Intermediate Direct Support Troubleshooting Procedures.....	3-18
Section V.	Intermediate Direct Support Maintenance Procedure	3-41
Section VI.	Preparation for Storage or Shipment.....	3-753/(3-754blank)

SECTION I. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

3-1. Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your organization.

3-2. Special Tools; TMDE, and Support Equipment. For special tools, test, measurement, and diagnostic equipment; and support equipment requirements are listed and illustrated in the Repair Parts and Special Tools list (RPSTL), TM 55-1905-223-24P. These items are also listed in the Maintenance Allocation Chart (MAC), Appendix B of this manual.

3-3. Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL) TM 55-1905-223-24P.

SECTION II. SERVICE UPON RECEIPT

3-4. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage in accordance with the instructions of DA Pam 738-750.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Check to see whether the equipment has been modified.

d. Remove protective caps, plugs, inserts, wrappings, and tape when inspection/inventory is completed. Inspect piping openings for damage. Wipe off dirt, grease, or protective films at time of installation.

e. Remove chocks from resilient mounted components.

3-5. Initial Setup Procedure. Includes operational checks and inspections that are not performed for a routing startup. Direct support maintenance personnel will perform initial setup in accordance with the operator's manual, TM 55-1905-223-10.

3-6. Startup and Shutdown. For normal startup, and usual or unusual shutdown procedures, refer to the operator's manual, TM 55-1905-223-10.

SECTION III. INTERMEDIATE DIRECT SUPPORT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-7. Explanation of PMCS Table. PMCS is designed to keep the equipment in good working condition. This is accomplished by performing certain tests, inspections, and services. Table 3-1 lists items to be serviced and the procedures needed to accomplish the PMCS. The Interval listed at the top of the page tells you when to perform a check or service. If needed, PMCS may be performed more frequently than the indicated interval. The "Procedures" column tells you how to perform the required checks and services. If your equipment does not perform as required, see Table 3-2, Troubleshooting. Report any malfunctions or failures on DA Form 2404. In the Item Number column on DA Form 2404, record the appropriate Item Number from the PMCS table.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M -Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Intervals						Items To Be Inspected/Serviced	Procedures
	D	W	M	Q	S	A		
								HALON SYSTEM
1						•	Halon Tanks	Inspect and service specified in paragraph 3-11.
2						•	Carbon Dioxide Cylinders	Inspect and service specified in paragraph 3-11.
								SOUND POWERED TELEPHONES
3	•						Sound Powered Telephones	a. Test the two way voice capability of sound powered telephones. Select other stations and conduct two-way conversations. b. Check that transmissions and receptions are clear, undistorted and easily understood. c. Test audible and light indicators. On models SELR and SELR the light indicators should light along with the calling signal.
								TANK LEVEL INDICATOR SYSTEM
4			•				Tank Level Indicator System Receiver Modules	Inspect for loose electrical connections and breakage. Tighten loose connections. Replace defective modules as specified in paragraphs 3-44, 3-45, or 3-46.
5			•				Tank Level Indicator System Meters and Alarm Lights	Inspect for fogging, cracks, large scratches and breakage. Replace defective meters and alarm lights as specified in paragraphs 3-41 or 3-42.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M -Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Intervals						Items To Be Inspected/Serviced	Procedures
	D	W	M	Q	S	A		
6			•				Tank Level Indicator System Switches	Check switches for proper operation. Replace defective switches as specified in paragraph 3-43.
7			•				Tank Level Indicator System Receptacles	Inspect for tightness, cracks, and breakage. Replace defective receptacles as specified in paragraphs 3-41 through 3-46.
								TANK LEVEL INDICATOR SYSTEM - CONT
8			•				Level Sight Indicators	Inspect for tightness, leaks, and breakage. Replace defective sight level indicators as specified in paragraphs 3-41 and 3-42.
9					•		Tank Level Indicator System Receiver Module Gasket	**WARNING** Electrocution, serious injury, or equipment damage can result from contact with electricity. Before beginning interior inspection of tank level indicator system, turn electrical power OFF at Panel L102 and lock out or tag to prevent turn-on during inspection. Open cover and inspect gasket for breakage and hardness. If broken or hard, replace as specified in paragraphs 3-41 or 3-42.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M -Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Intervals						Items To Be Inspected/Serviced	Procedures
	D	W	M	Q	S	A		
9					•		Tank Level Indicator System Receiver	**TANK LEVEL INDICATOR SYSTEM - CONT**
	-						CONT	NOTE Module Gasket DO NOT secure cover at this time.
10					•		Tank Level Indicator System Terminal Blocks	Inspect for tightness and evidence of burning. Replace defective blocks as specified in paragraph 3-41 or 3-42.
11					•		Tank Level Indicator System Printed Circuit Models and Connectors	Inspect for tightness, cracks, and breakage. Replace defective modules and connectors as specified in paragraphs 3-44 and 3-45, or 3-46.
12					•		Tank Level Indicator System Capacitors	Inspect for tightness, cracks, and blisters. Replace defective capacitors as specified in paragraph 3-44 or 3-45, or 3-46.
13					•		Tank Level Indicator System Transformers	Inspect for evidence or burning or swelling and tightness. Replace defective transformers as specified in paragraph 3-44 or 3-45, or 3-46.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M -Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Intervals						Items To Be Inspected/Serviced	Procedures
	D	W	M	Q	S	A		
14					•		Tank Level Indicator System Potenti-ometers	**TANK LEVEL INDICATOR SYSTEM - CONT** Inspect for corrosion, tightness, and evidence of burning. Replace defective potentiometers as specified in paragraphs 3-41 and 3-42. **NAVIGATION SIGNALS AND SEARCHLIGHTS**
15						•	XENON Searchlight Elapsed Time Indicator	Check reading. Lamp should be replaced every 1500-1600 hours. See paragraph 3-46. **CONTROLS SYSTEMS** **NOTE: DONE PRIOR TO GETTING UNDERWAY**
16							Steering Control System	NOTE These tests and adjustments should be done prior to getting underway and in the order listed. a. Visual Wiring Check. Check wiring and component mounting for possible causes of damage from vibration, chafing, strain, overheating, and short circuits from loose wires. b. Power Source Check. Check power leads for correct polarity and voltage using a voltmeter. c. Gyrocompass Alignment and Calibration. d. Alignment. After the gyrocompass is restarted, adjust the gyro interface course reference dial to align with

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
								CONTROLS SYSTEMS - CONT
16							Steering Control System-CONT	the main gyrocompass heading. The course reference dial is located inside the gyro interface cabinet. It is adjusted by turning the small knurled brass knob located on the main gear housing. (1) Adjust synchro in the Gyro Interface Unit until the course repeater dial on the autopilot aligns with the course indicator dial in the gyro interface unit. (2) Manually rotate the course indicator dial in the Gyro Interface Unit by turning the knurled brass knob on the end of the worm gear shaft to ensure that the autopilot repeater dial turns in the correct direction. (3) If the direction of rotation is incorrect, reverse wires at connections (S1 and S2) on the terminal strip labelled AUTOPILOT in the Gyro Interface Assembly. (4) The gyro must now be started and manually slewed. (5) Observe the direction of rotation of the course indicator dial in the gyro interface unit to ensure that it turns in the same direction as the gyro. If the direction of rotation is incorrect, proceed as follows: (a) For synchro type inputs reverse connections (S1 and S2) on the terminal strip labelled GYRO TRANSMISSION UNIT in the Gyro Interface Unit.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
16							Steering Control System - CONT	**CONTROLS SYSTEMS - CONT** (b) For stepper motor type inputs reverse connections 1 and 2 on the terminal strip labelled GYRO TRANSMISSION UNIT in the Gyro Interface Unit. (c) Adjust the gyro interface course indicator dial (by rotating the small knurled brass knob) until it aligns with the master gyrocompass heading. (d) The Autopilot course repeater dial should now indicate the gyrocompass heading. (6) Now calibrate the Gyrocompass input. e. Calibration Procedure for Gyro Input. (1) The compass repeater function should be checked first. (2) Turn the power ON and select NFU. (3) When the repeater dial aligns with the gyro compass, switch to AUTOPILOT mode. (4) Rotate the repeater dial 20 degrees clockwise by hand. (5) Measure the voltage on pin 1 of U9 using +4 volt reference on printed circuit board (PCB) pin 2.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
16							Steering Control System - CONT	**CONTROLS SYSTEMS - CONT** (6) Adjust voltage regulator (RV1) to obtain 2 volts ± 0.1V. (7) Rotate the dial 40 degrees counterclockwise and check the output. (8) No adjustments should be made to voltage regulator (RV2). This adjustment for magnetic compass input only. f. Solenoid Polarity. (1) Manually press the Left NFU pushbutton. (2) The rudder should move to Left. (3) Press the Left or Right NFU pushbuttons. (4) If the rudder moves in the wrong direction, reverse wires at terminals 12 and 14 to the #2 Local Control Unit. g. Rudder Angle Indicator (Local Control Unit). (1) Operate the steering gear and observe the rudder angle indicator. (2) If the indicator reads the wrong direction, reverse wires at terminals 18 & 20 to the Local Control Unit.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
16							Steering Control System-CONT	**CONTROLS SYSTEMS - CONT** (3) Adjust the trimpot at the back of the Rudder Angle Indicator for proper indication of rudder angle. h. Local Control Unit Full-Follow-Up Amplifier. (1) Refer to Full-Follow-Up Amplifier for parts location. (2) Recheck that the supply voltage is connected to the correct amplifier terminals and that the correct jumper wires have been connected. (3) Center the rudder and all controllers. (4) Turn on the power to the amplifier. (5) Turn on the hydraulic pumpset or start the engine if any engine driven pumping set is being used. (6) The rudder should stay at midships and may hunt back and forth at the midships position. NOTE If the rudder moves to a hardover position, shut off the power to the amplifier and reverse connections 14 and 16 at the amplifier terminals, then turn on power.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
16							Steering Control System-CONT	**CONTROLS SYSTEMS - CONT** (7) Move the controller approximately 20 degrees to port. The rudder should move about half way to port and remain there. If the rudder moves to starboard, reverse the connections at amplifier terminals 7 and 9. (8) Move the controller to center position and adjust the GAIN control found on the amplifier circuit board in a counterclockwise direction until the rudder begins hunting back and forth (if not already doing so). (9) Slowly adjust the GAIN control clockwise until the hunting motion stops. This setting will be the maximum useable gain for the system. This adjustment may require repeating after a few hours of operation since rudder speed may change as the oil heats up or air is expelled for the hydraulic system. (10) Move the controller to center position and confirm that the rudder is centered. If not, adjust the rudder follow-up linkage rod length to correct. i. Full Follow-Up. (1) Select FFU on the Steering Control Panel MODE selector switch and turn the steering wheel.

Table 3-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Inspected/ Serviced	Procedures
	D	W	M	Q	S	A		
16							Steering Control System-CONT	**CONTROLS SYSTEMS - CONT** (2) Check for correct direction. j. External Rudder Indicators. (1) If any external rudder angle indicators move in the wrong direction, reverse the two meter wires at the appropriate station. k. Autopilot Trim and Counter Rudder Setting. (1) Use Autopilot (Trim Switch Setting) to locate the Automatic Trim DP (Dual In-line Pin) switches 1, 3, 4 and 5 - Counter Rudder switch 2 (SW2) and pot control voltage regulator (RV5). (2) Other controls on the board are factory preset and should not be touched. (3) The information in the table below can be used as a starting point for setting the trim and counter rudder time constants. (4) 'C' indicates that the rocker switches are closed when depressed on the numbered side. (5) '0' indicates that the rocker switches are open when depressed on the blankd side of the switch. (6) The 'Normal' setting, as shown, on the table, should be used when uncertain if the rudder response is normal or slow.