Mesa Ocean Currents Measurement System

6. Maintenance And Failure Reporting Subsystem

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Office of Marine Technology
Engineering Development Laboratory


NOAA
U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Ocean Currents Measurement System

This documentation package explains the theory and operation of the Ocean Currents Measurement System developed for the MESA Program by the National Ocean Survey's Engineering Development Laboratory. The documentation is divided into seven subsystem manuals (listed below). This modularity provides the flexibility to change or make additions to a particular subsystem manual without replacing the entire package. It also allows two or more people to read different sections of the documentation at the same time.

Ocean Currents Measurement System Manuals

1. System Description
2. Peopleware Subsystem
3. A. Mooring Subsystem
   B. Recording Current Meter
4. Data Conversion and Processing Subsystem
5. Data Quality Control Subsystem
6. Maintenance and Failure Reporting Subsystem
7. Support Documentation Subsystem
   a. Aanderaa Compass Checkout Fixture
   b. Aanderaa Current Meter Test and Evaluation
   c. AMF Acoustic Release/Pinger
   d. SB-510 Seabeacon Surface Buoy
   e. Coast Guard 155 mm Lantern
   f. Aanderaa Current Meter In Situ Monitoring Group Manual
   g. Time Counter Module For The Aanderaa Current Meter

The FAILOG Program was produced in its entirety by the National Oceanographic Instrumentation Center (NOIC) and has been adopted as a failure reporting subsystem by the National Ocean Survey.

6. MAINTENANCE AND FAILURE REPORTING SUBSYSTEM

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6.1 INTRODUCTION

6.1.1 BACKGROUND

Due to the increased utilization of the oceans, the direction and applications of oceanographic research have changed dramatically over the past several years. This in turn has been reflected in the field of oceanographic instrumentation because users of such equipment are demanding an ever increasing and more complex array of instruments to assist them in measuring the oceans' variables. This dynamic situation has necessitated the establishment of a focal point for testing, evaluation, and calibration of sensing systems for ocean use to better serve the National oceanographic community and to anticipate future trends in ocean utilization.

The President's National Council on Marine Resources and Engineering Development recognized this need, and approved a recommendation of the Interagency Committee on Marine Research, Education, and Facilities (ICMREF) to establish such a focal point on November 27, 1968. This action was endorsed by Congressional, industrial, and academic leaders. On February 13, 1969, the Office of the Secretary of the Navy issued SECNAV Notice 5450 which established the National Oceanographic Instrumentation Center (NOIC) as this focal point.

The NOIC charter provides for the testing, evaluation, and calibration of ocean instruments and the dissemination of operational test results and reliability and maintainability data to the National oceanographic community.

6.1.2 REQUIREMENTS FOR QUALITY ASSURANCE

The success of an oceanographic operation is dependent upon highly reliabile and easily maintainable equipment. These desired equipment features are the

result of complete planning, application of good engineering practices during design, manufacturing, and testing, and rapid information feedback from the field. Reliability management and quality control programs advance the levels of reliability and provide historical information for reliability improvements.

6.1.3 PROGRAM TASK ORGANIZATION

The National Oceanographic Instrumentation Center's FAILog Program has been carefully designed to systematically accomplish the program tasks outlined in Figure 1. These tasks are continuously monitored as to their respective contribution to the program requirements.

6.1.4 RELATIONSHIP OF FAILURE REPORTING ANALYSIS TO RELIABILITY

The FAILog Program is a vital link in the chain of NOIC's total reliability program. It serves to coordinate failure reporting, analysis, and feedback of data. NOIC's reliability program includes:

1. Reliability Training
2. Design Reviews
3. Production Control and Monitoring
4. Subcontractor and Vendor Reliability Control
5. Reliability Development Test Program
6. Reliability Analysis
7. Failure Reporting, Analysis, and Feedback
8. Reliability Monitoring
9. Handbooks and Procedures
10. Specification Origination and Improvement

FAILOG PROGRAM TASK ORGANIZATION CHART

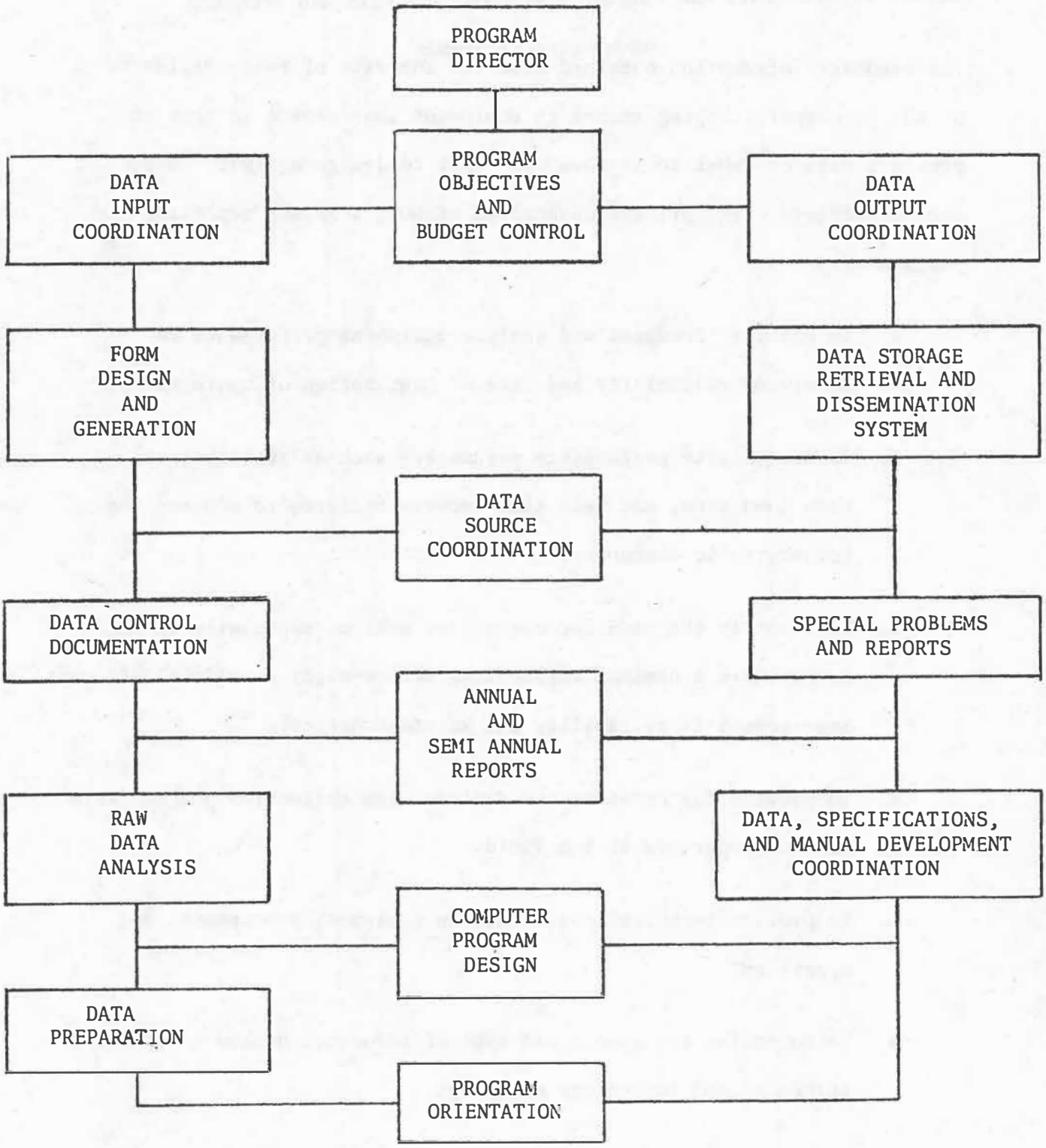


Figure 1.

6.2 PROGRAM OBJECTIVES AND OVERVIEW

6.2.1 REQUIREMENTS FOR FAILURE REPORTING ANALYSIS AND FEEDBACK

The feedback information obtained from the analysis of failures is one of the principal stepping stones in equipment improvement in that it provides data of "what to improve" or "what to design against" in subsequent efforts. The primary objectives of NOIC's FAILog reporting program are:

1. To monitor, document and analyze equipment performance to determine reliability and rate of consumption of spare parts.

2. To disseminate performance parameters such as availability, mean down time, and mean time between failures to NOS and the oceanographic community.

3. To identify the need for corrective action, especially in those areas where a nominal engineering effort might provide significant improvement in reliability and maintainability.

4. To provide for an effective failure data collection program with minimum paperwork in the field.

5. To provide technical assistance in equipment procurement and operation.

6. To determine the amount and type of resources needed to maintain shipboard and laboratory equipment.

7. To provide shipboard personnel and other individuals responsible for completing the FAILog forms with assistance in troubleshooting and correcting equipment problems.

6.2.2 STATEMENT OF PROBLEM

The National Oceanographic Instrumentation Center's FAILog Program was specifically set up to satisfy the requirement to collect, centrally record, interpret, and disseminate oceanographic instrumentation reliability/maintainability data.

Today, the oceanographer-scientist has more reliable information on the suitability of the weather in the survey area than on the reliability of his survey instrumentation. Reliability of instrument systems will be increased when the FAILog Program is fully operational. Through the dissemination of FAILog data better oceanographic instrumentation decisions can be made, such as, matching the best instruments for each particular application, and better estimation of probable maintenance requirements. Maintenance information aids management and the scientist in scheduling survey times for best efficiency and utilization of instrumentation.

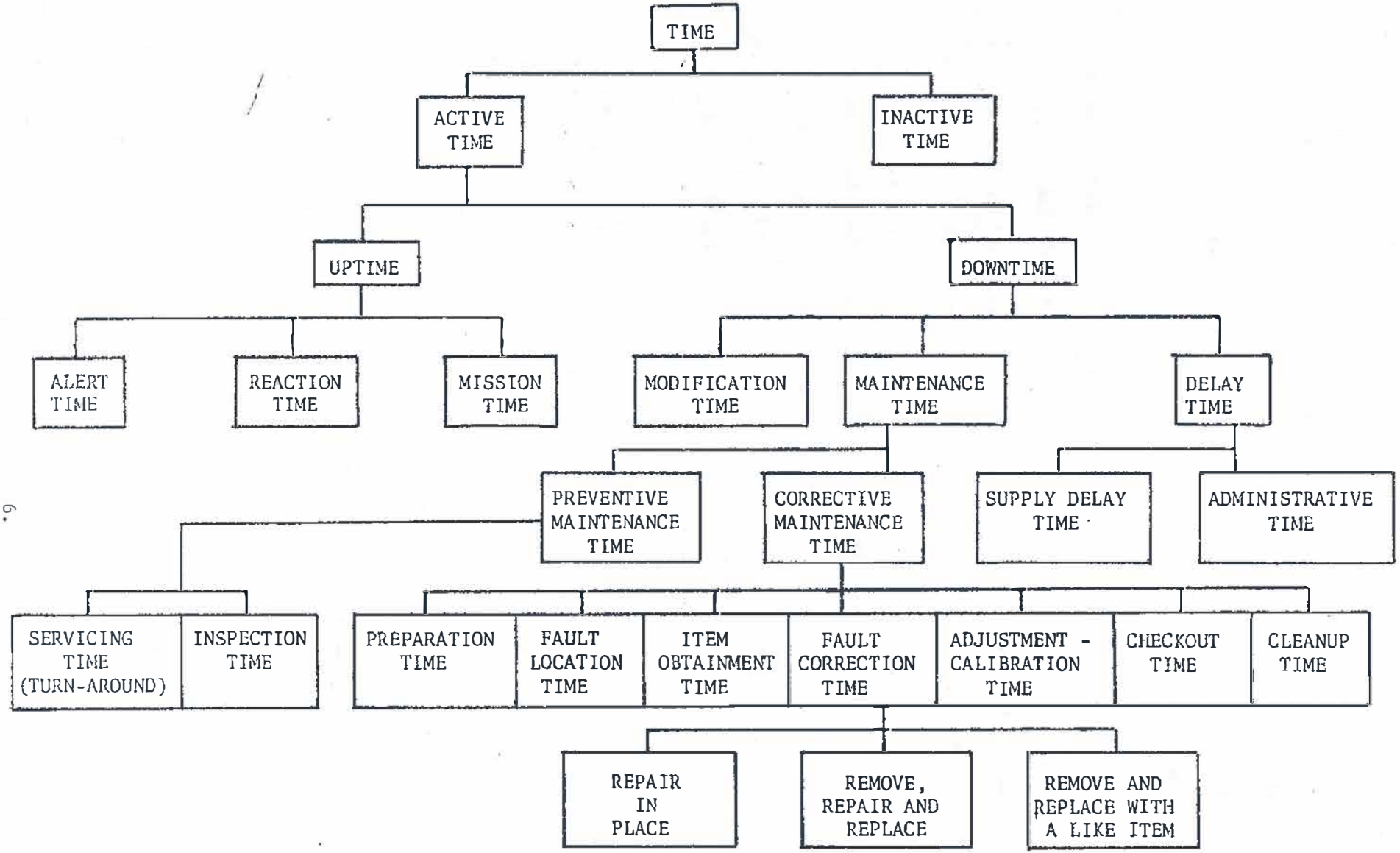


Figure 2. TIME RELATIONSHIPS

6.3 PROGRAM PLAN

6.3.1 FAILURE DATA REQUIREMENTS

A failure data collection program should provide information that assists in the evaluation of achieved reliability and enables detection and correction of reliability problems through observation, recording, and analysis of all failures/malfunctions and operating circumstances. An efficient failure reporting system is required to accurately diagnose failures and to support a successful corrective action program. Data should be recorded on failure reporting forms for all failures caused by equipment failure, and human error in designing, manufacturing, handling, transporting, storing, maintaining, and operating the equipment. Time indicators or their equivalents should be used to report accumulated operating time or cycles for major system components.

Maintainability data collection requirements should be integrated as much as possible with similar data collection requirements, such as reliability.

Maintainability data elements consist of: (See Figure 2)

1. Downtime is the total time during which the system is not in acceptable operating condition. Downtime can, in turn, be subdivided into a number of categories such as active repair time, logistic time, and administrative time.

2. Active repair time is that portion of downtime during which one or more technicians are working on the system to effect a repair. This time includes preparation time, fault-location time, fault-correction time, and final check-out time for the system, and perhaps other subdivisions as required in special cases.

3. Logistic time is that portion of downtime during which repair is delayed solely because of the necessity for waiting for a replacement part or other subdivision of the system.

4. Administrative time is that portion of downtime not included under active repair time and logistic time.

Prior to developing an effective data collection program, it is necessary to define the types of analysis that are to be performed, and to identify the types and characteristics of data required as inputs to the analysis.

A formalized system for recording and analyzing all failures should be established. Analysis should be fed back to engineering, management, and production activities on a timely basis. A completed report should provide chronological data on operating times, on-off cycling, adjustments, replacements, and repairs related to each system, subsystem, component, and "critical" part. Equipment to be included in the data collection program must be reviewed for usefulness and applicability of the data to be collected to development of advanced systems or modification of existing equipment and systems. Complete, accurate, and detailed descriptions of all equipment included in the data collection program must be obtained or developed. These descriptions must include the physical characteristics of the equipment, and functional and environmental conditions.

The usefulness of each data item to be included in the data collection form must be subjected to a critical review since the inclusion of trivial data items decreases the usefulness of the system through loss

a. Strip 1/2" of insulation off both ends of three lengths of wire and crimp the solderless connectors onto these ends.

b. Connect the color coded terminals of the two units with these wires.

c. Attach the sun switch to the "S" terminals and point the switch upward.

d. Install six bulbs, 12V - 1.5 amp. in the lamp changer. Align the large holes in lamp pre-focus ring with the lamp holding studs. The notch in the pre-focus ring is located as shown in Figure 4B. Press the ring down slightly, rotate the lamp clockwise to locking position and release. Check to be sure that all locking holes are properly engated with the corresponding studs. Insertion or removal of the lamps may be facilitated by rotating the lamp turret so that the lamp is installed or removed in the upper or operating position. Do not attempt to adjust the lamp holding studs. The turret should be rotated until the red position is on the top.

CAUTION: The turret will readily turn in the proper winding direction up to the mechanical stop at No. 1 (red) position. Do not attempt to force the turret past this point or to rotate it in a counter-clockwise direction except by manual or electrical operation of the solenoid as described below. Application of a rotating force of more than 10 pounds at the surface of the turret may damage the lamp changer.

LAMPCHANGER

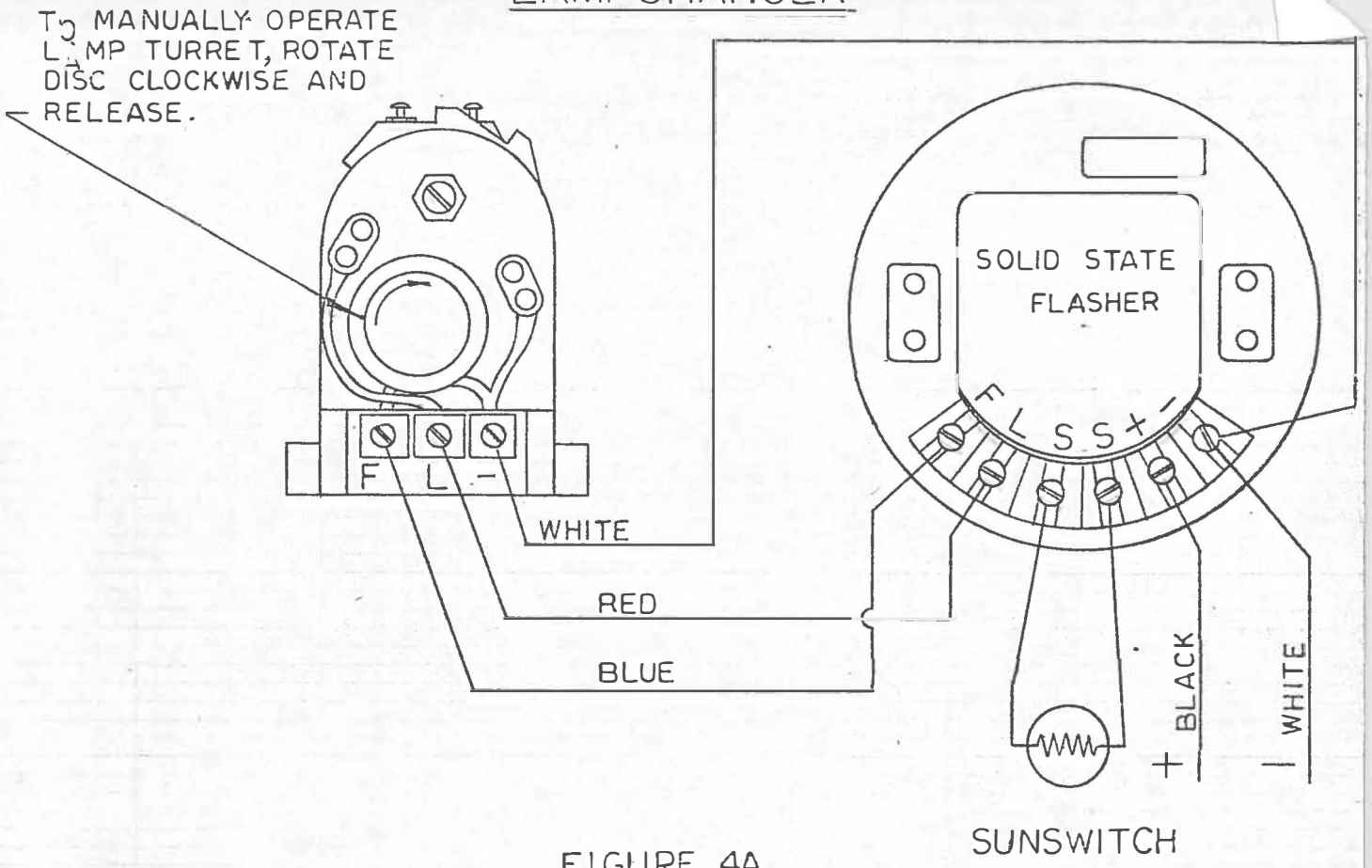
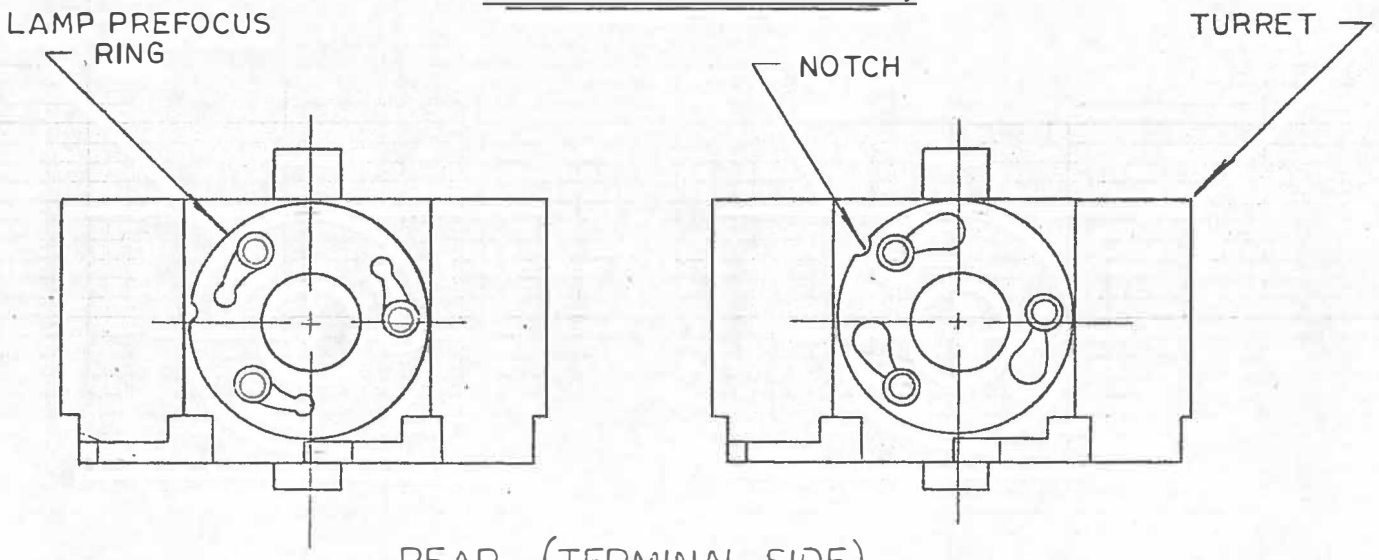


FIGURE 4A

FRONT (LABLE SIDE)



REAR (TERMINAL SIDE)

UNLOCKED POSITION

LOCKED POSITION

NOTE:

POSITION OF NOTCH ON LAMP PREFOCUS RING

FIGURE 4B

The turret may be released to check the lamps by rotating the dish on the rear of the solenoid.

NOTES - Do not use oil on any part of lamp changer

- Do not file turret contacts
- Do not use solvents on any part of lamp changer mechanism.
- Do not attempt to perform any adjustment on lamp changer or flasher.
- Power to change lamps is stored in a spring by winding up turret.
- Lamps can be caused to move into the next operating position only by a signal from the "F" terminal of the flasher or by manual activation (to test lamps)
- The lamp changer is a non-repairable item.
- The last position on the turret contains a 40 ohm resistor in parallel with the lamp. If the lamp in position six fails, this resistor will inhibit the "F" signal from the flasher, and, therefore, keep the lamp changer's turret from attempting to advance.
- When a lamp is operating in the sixth position, the parallel combination of the lamp and the 40 ohm resostor will continue to draw .3 amps of current from the "T" terminal on the flasher.
- The rating for lamp changer and flasher is 10-14 VDC, 4 amps maximum load.

3. Lantern Check Out

When the lamp changer-bracket-flasher assembly has been complete, connect a 12 volt supply tothe respective terminals on the flasher unit. The following check out procedure must be completed before operational use:

a. Cover daylight control with a strip of black tape, not finger. If the light comes on remove the operating lamp. This should cause the next lamp to come into the operating position. This is the only practical method of checking the lamp changer and flasher to determine if lamp out circuitry is working properly. If lamp changer does not ratchet, go to Step (e). Remove any burned out lamps then put new lamps in all empty sockets and place the lamp changer in the No. 1 position.

b. Check the characteristic using a stop watch. Clean the lens using fresh water with mild soap (not detergent). Check focus (and leveling for shore aids). This completes minimum routine checking.

c. If light doesn't come on, disconnect one leg of daylight control.

- If light comes on, replace the daylight control and return to Step (a).
- If light does not come on, check for burned out lamps, then go to Step (d).

d. If light does not come on, disconnect wire from + on the flasher and touch it to the "L" terminal on the flasher.

- if the lamp comes on replace flasher.*
- If the lamp does not come on, replace lamp changer.*
- Return to Step (a).

e. If lamp changer does not ratchet, disconnect the + wire from the flasher and touch it to the "F" terminal on the flasher.

- If the lamp changer does not ratchet, replace it with a new lamp changer.*
- If the lamp changer ratchets, the flasher is defective and must be replaced.*
- return to Step (a).

4. Align Assembly into Housing

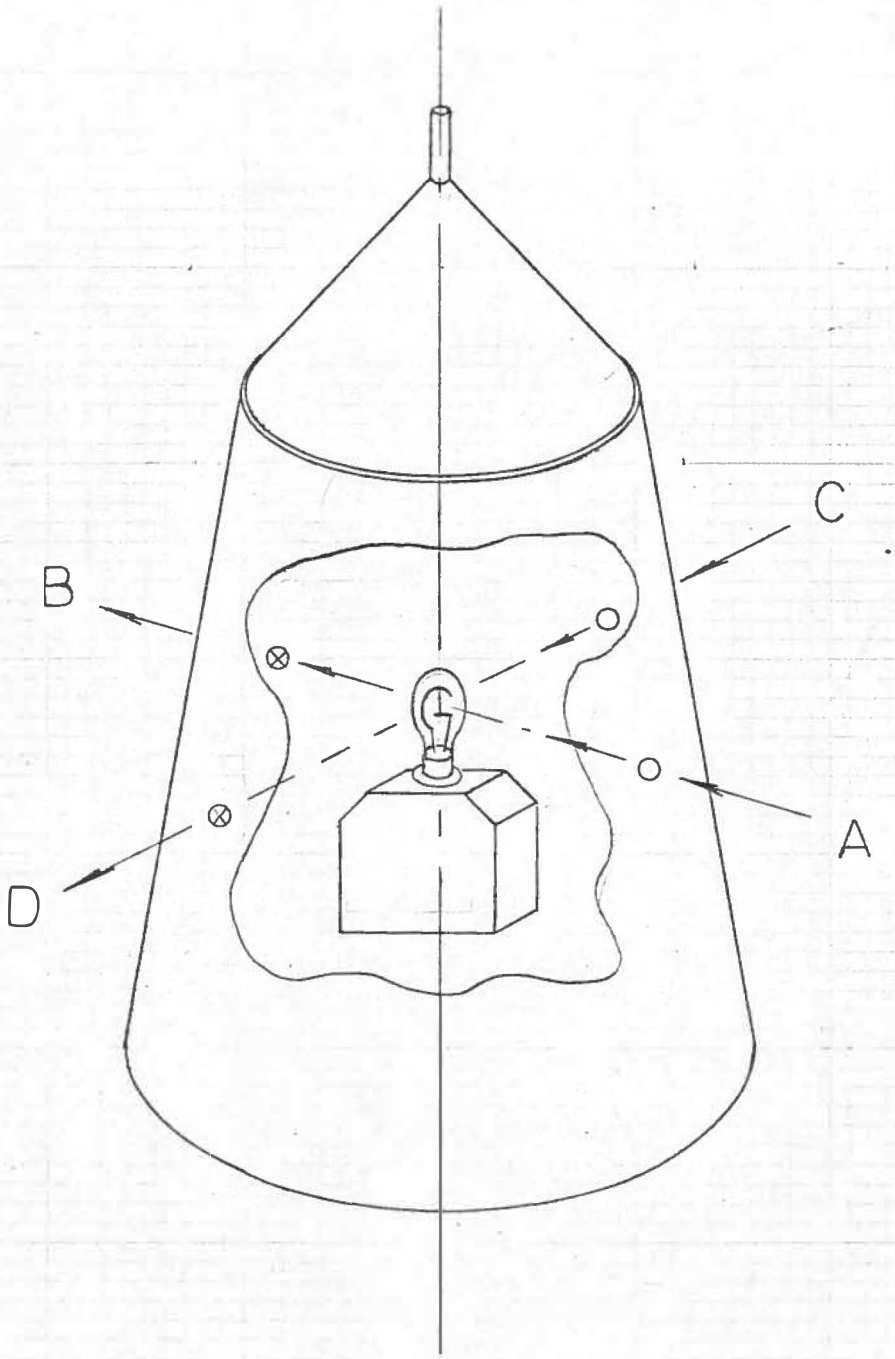
The proper focusing of the bulb in the lens is important. If the filament is too high or too low in the focal plane of the lens, the output intensity of the lantern is greatly reduced in the horizontal plane.

Methods of attaching bracket to housing:

a. The mounting bracket that is located between the flasher and lamp changer has a slot on each of the protruding ends. The screws on the inside shoulder of the lower housing fit into these slots. The star washers should be located on top of the bracket.

b. When both screws are at the end of the slots in the bracket, tighten the screws. (See Figure 5 for a cutaway view of the assembled lantern).

* When replacing flasher or lamp changer replace all connecting wires.



FOCUSING MUST BE DONE IN TWO DIRECTIONS, FROM A TO B AND FROM C TO D.

FIGURE 5

To check alignment of the bulb:

(c) Swing top of housing to closed position and tighten forward bolts.

(d) As shown in Figure 5, sight from A to B and C to D.

(e) The filament should appear as illustrated in Figure 6.

(f) If the filament is not aligned, adjust the lampchanger by loosening the tie down bolts to flasher and/or to the housing and adjust assembly.

(g) If the filament is not shown or is too high, the bracket is not installed correctly, it is ready for installation on the superstructure.

(5) To install the lantern on the buoy superstructure:

(a) Bolt the lantern to the superstructure mounting plate.

(b) Remove the cap and grommet in the stuffing gland at the rear of the housing.

(c) Insert the cap and grommet over the power cord.

(d) Insert the power cord in the stuffing gland hole.

(e) Retrieve the leads on the inside and connect them to the terminals on the flasher unit. (See Figure 3)

(f) Screw the top part of the lantern housing to the bottom part after applying a generous coating of silicon grease to the "O" ring.

(g) Pull the excess power cord back through the stuffing gland.

(h) Repeat the lantern checkout procedures.

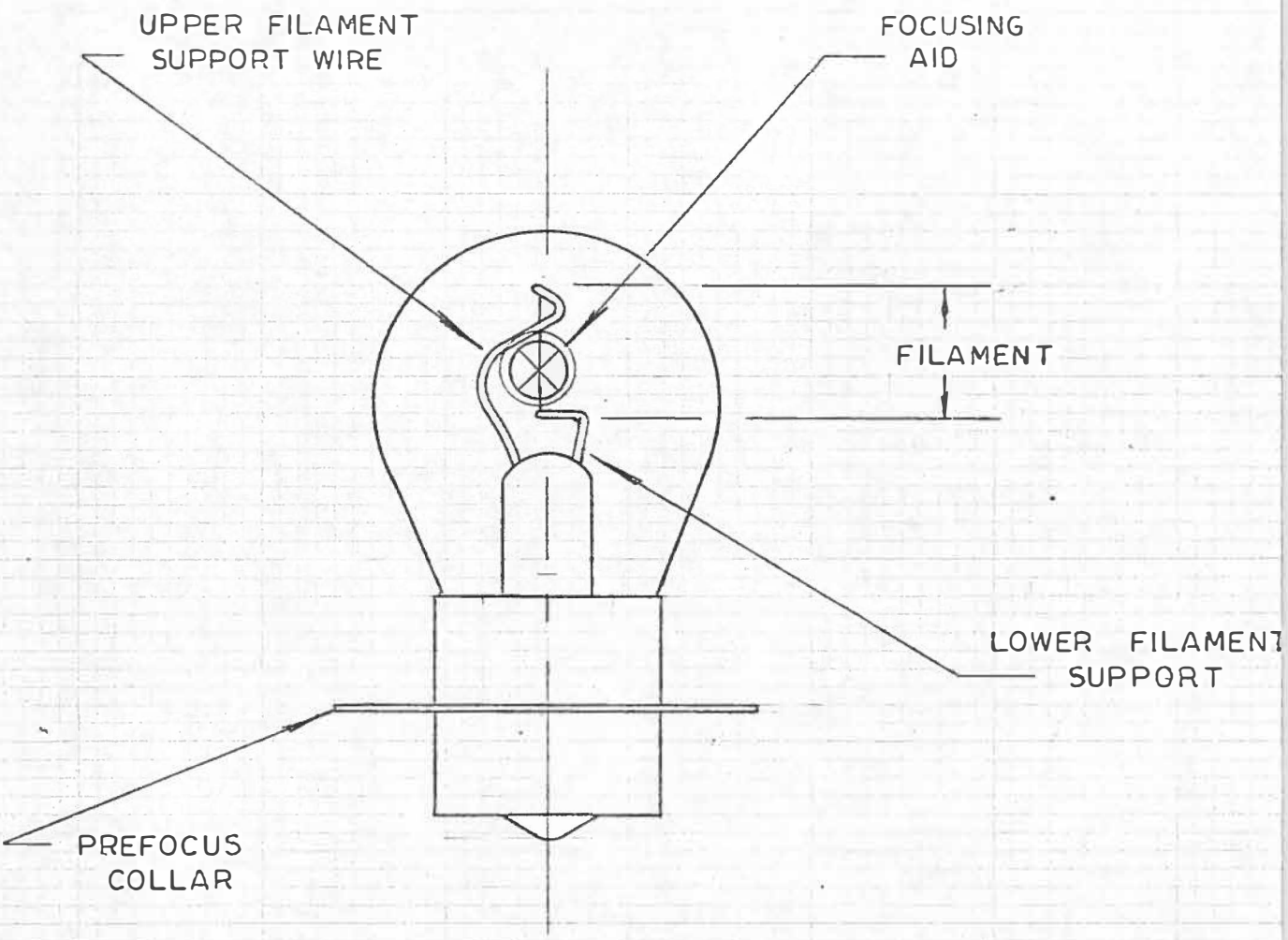
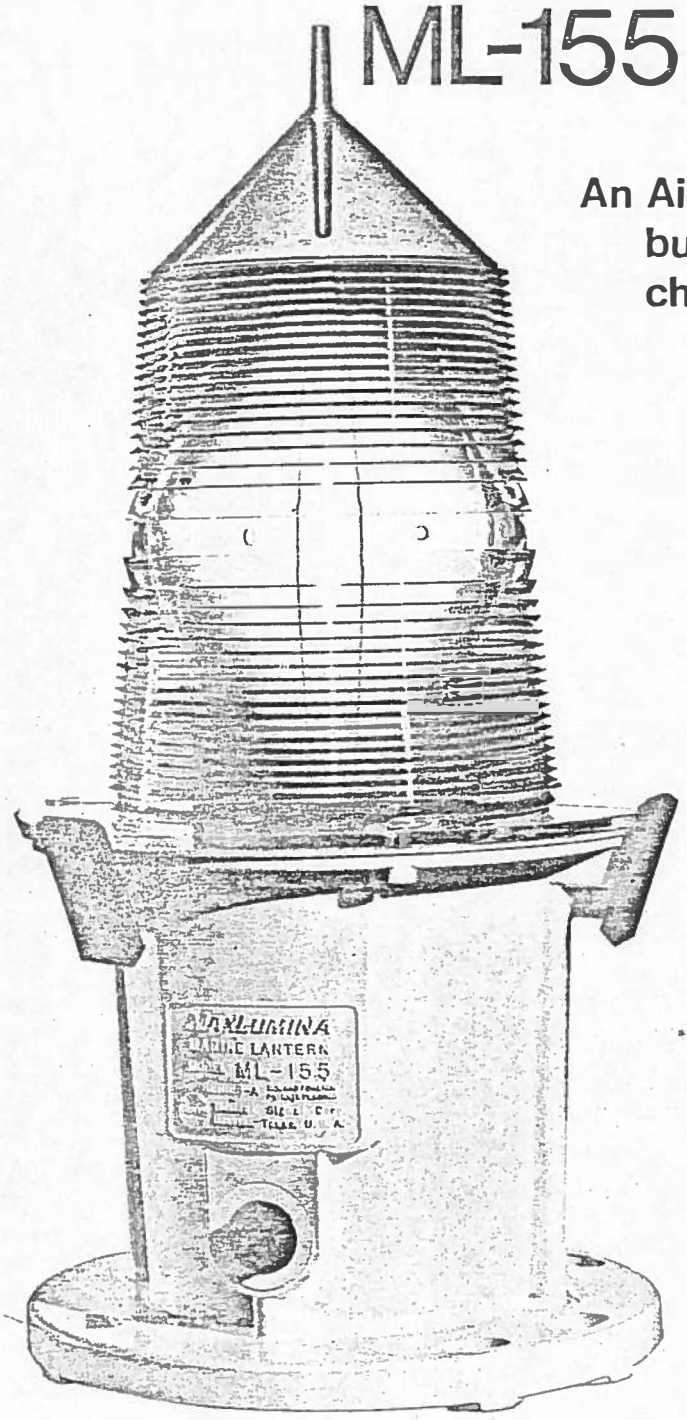


FIGURE 6

THE STANDARD LAMP FOR MINOR LIGHTS SHOWN WHEN PROPERLY FOCUSED BY SIGHTING FROM A TO B AND C TO D

APPENDIX

ML-155 MaxLumina®



An Aid to Navigation designed for buoys, offshore structures, channel markers, barges, docks

The ML-155 MaxLumina's 155mm acrylic Fresnel lens transmits more light in the horizontal plane—and throughout the 360-degree azimuth—than a 200mm pressed glass lens. This performance advantage, plus the simplicity of design and the lantern's precision manufacture from corrosion-proof materials, recommend the ML-155 as an aid to navigation wherever long service with minimum maintenance and low operational cost is desired.

The ML-155 lens is injection-molded as a single piece under extreme pressure in a four-ton, optically polished, stainless and chrome-plated tool steel mold. Exact reproduction of the 38 individual optical elements enables the lens to achieve its high lens-to-lamp ratio.

The superiority of the acrylic formulation for the ML-155 lens is verified by its use in camera lenses, aircraft glazing, automobile taillights and illuminated outdoor signs. It is dimensionally stable, will not discolor with age and is reliable for service beyond 20 years.

The ML-155 base is designed for strength. It is compression-molded from fiberglass-reinforced polyester resin plastic. The glass reinforces the resin and prevents fatigue failures. This produces the strongest plastic structure possible for long term marine use. The same material has proved its resistance to weather and aging over the past two decades in boat hulls and similar applications.

U. S. and Foreign Patents Pending

AVAILABLE WITH CLEAR, RED OR GREEN LENS

CORROSION-PROOF DRAW CATCHES SECURE LENS, PROVIDE FAST ACCESS

Choice of 3 or 6-Point Fasteners

Three unique draw catches secure the ML-155 lens directly to the base. These catches are molded from a weather-stabilized plastic to function for more than 100,000 openings and closings. They function positively and reliably to seal the lens interior and lamp against weather intrusion, yet they operate quickly and simply when entry is desired.

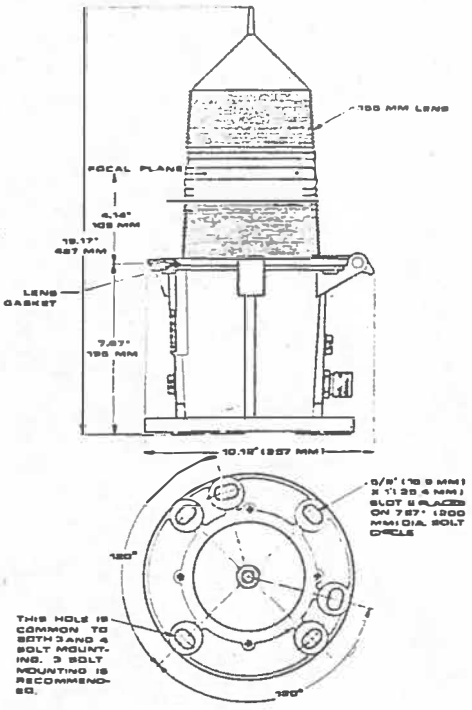
The lens can be additionally secured to the base with three optional acetal plastic, screw-type fasteners spaced between the draw catches. This gives equidistant six-point lens attachment.

Installation of the ML-155 lantern base on its mounting plate or stanchion is accomplished with three or four equally spaced bolts through holes provided in the base flange.

EFFECTIVE BEAM LUMINOUS INTENSITY FOR ML-155 MAXLUMINA

LAMP SIZE		HORIZONTAL BEAM In Candelas (Fixed Beam)
Volts	Amps	
6.2	.25	32
6.2	.46	89
6.2	.70	116
6.2	.92	131
6.2	1.40	231
6.2	1.84	294
12.0	.55	137
12.0	.77	185
12.0	1.15	324
12.0	2.03	516
12.0	3.05	735

TIDELAND 155 MM MARINE SIGNAL LANTERN MODEL ML-155

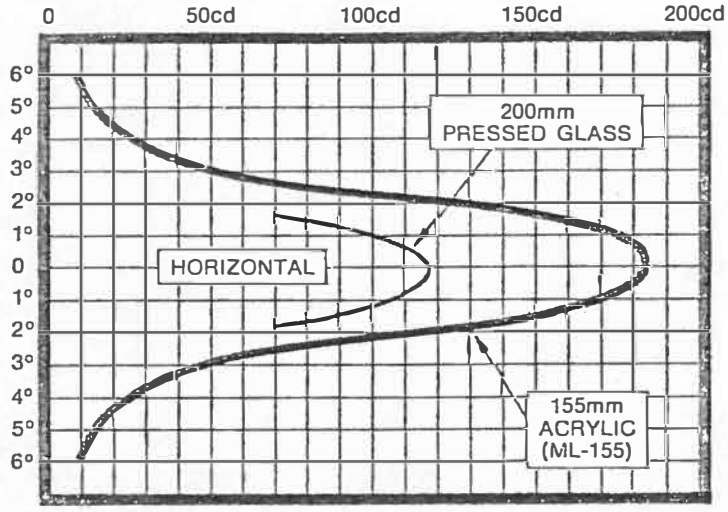


TF-3 LAMPCHANGER-FLASHER GIVES FAIL-SAFE, LOW COST OPERATION

The Tideland TF-3 Lampchanger and Flasher is recommended for the ML-155 lantern. This lamp unit is a six-place, motor driven, automatic lamp changer with solid state electronic flasher. A built-in sunswitch turns the lantern off at sunrise and on again at sunset. A lamp-out sensing circuit rapidly rotates the changer to the next serviceable lamp but does not continue to search for lamps following use of the sixth lamp.

The flasher can be preprogrammed for simple flash of the duration desired or a choice of codes without the use of relays. Morse code letter flash characteristics are available from stock. The circuitry uses solid state components which have been pre-tested for certification as well as temperature cycled. Six or 12-volt nominal power operates the lantern, and power drain by the electronics is minimal.

BEAM LUMINOUS INTENSITY CURVES IN CANDELAS



*From distributors' published literature

Curves shown are for 12-volt, .77-amp. lamp

ML-155 MAXLUMINA SPECIFICATIONS

LENS—155mm acrylic, single-piece Fresnel. Vertical divergence exceeds 4 degrees at 50% Intensity (See graph above). Clear, red or green.
BASE—White fiberglass-reinforced polyester resin plastic. Captive gasket for watertight lens-to-base seal. Three ¾" N.P.T. electrical conductor access to interior. Removable drain plug or permanent drain holes. Mounting flange provides 3 or 4-bolt equally spaced bolt holes.
LENS FASTENING—Directly to base, using three plastic draw catches and/or three plastic screw-type fasteners.
LAMPCHANGER/FLASHER MOUNTING—Unit is installed with self-locking screws on two embossments inside base. Two additional embossments provide for focusing and vibration-isolating mechanism.
IDENTIFICATION—Manufacturer, product name, model and series are permanently embossed on outside of lantern base.
WEIGHT—7 lbs.
SHIPPING CONTAINER—A molded styrofoam shipping container provides an inner cavity to secure and protect the ML-155 during shipment.

TIDELAND

Aids to Navigation

Tideland Signal Corporation

P.O. Box 52430, HOUSTON, TEXAS 77052 • (713) 681-6101 • CABLE: TICOR

FA-249 155mm Marine Lantern

The FA-249 marine lantern is a rugged, compact, lightweight signal lantern for buoys, fixed platforms, barges, low-powered aviation warning lights and other uses.

An outstanding feature is the highly-efficient fresnel-type acrylic optical system. The candlepower output of this lens exceeds that of conventional 200mm pressed glass lenses. The unusual efficiency stems from the extreme accuracy of the lens mold and the ability of the acrylic to reproduce the mold faithfully.

Acrylic also has better optical characteristics and higher transmission. Years of exposure have proven this to be a stable lens material. Acrylic lenses for the FA-249 are available in clear, red, green, or amber.

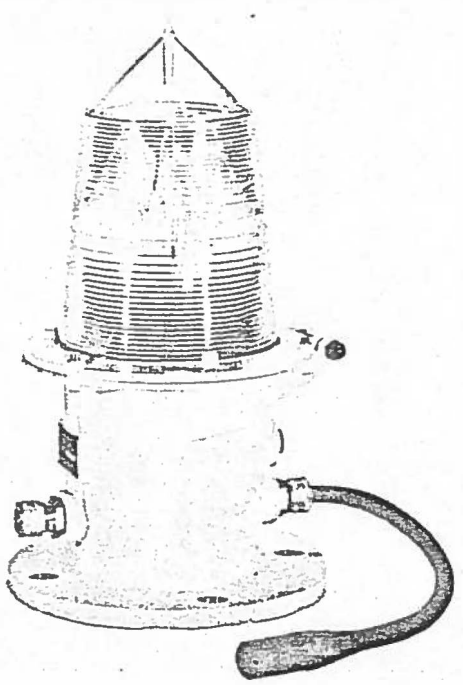
A bird spike is part of the molded lens. A catadioptric lens mounted in the top of the primary lens serves to concentrate light in a horizontal beam while remaining visible from above.

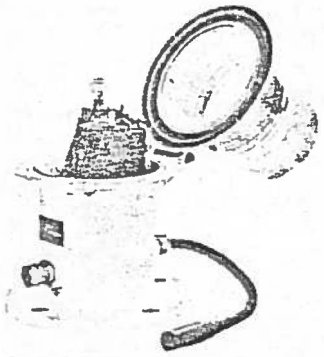
The polycarbonate plastic base is virtually unbreakable. It houses the flasher and/or other mechanisms. A bracket on which the flasher and lampchanger are mounted is secured to the inside of the base section. Two ¾" threaded taps in the base provide outlets for the electrical connection and the sun switch. The lampchanger, with lamps, projects into the upper section which supports the 360° acrylic lens.

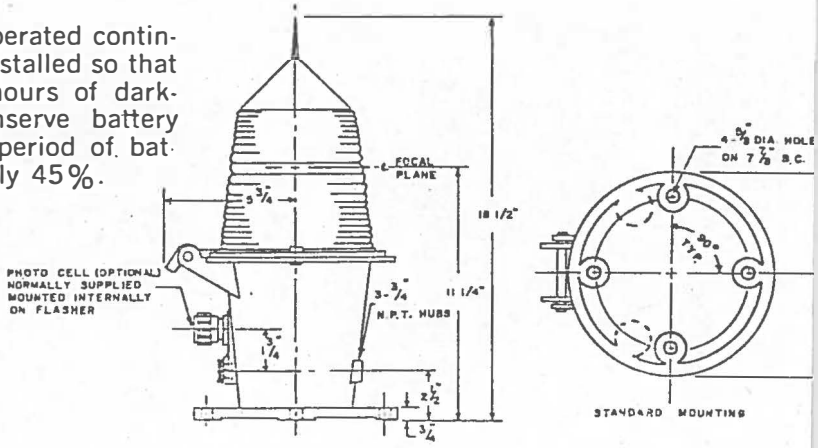
Automatic power lampchangers available with the FA-249 provide unfailing light during long unattended service periods. The lampchanger automatically places a new lamp at the focal center of the lens when the operating lamp burns out. It operates on AC or DC voltages. Lampchangers can be easily serviced without disconnecting internal wiring.

Automatic power timers will provide coded flash characteristics as required.

The FA-249 lantern may be operated continuously, or a sun switch may be installed so that the light operates only during hours of darkness. The sun switch will conserve battery energy and extend the service period of batteries and lamps by approximately 45%.

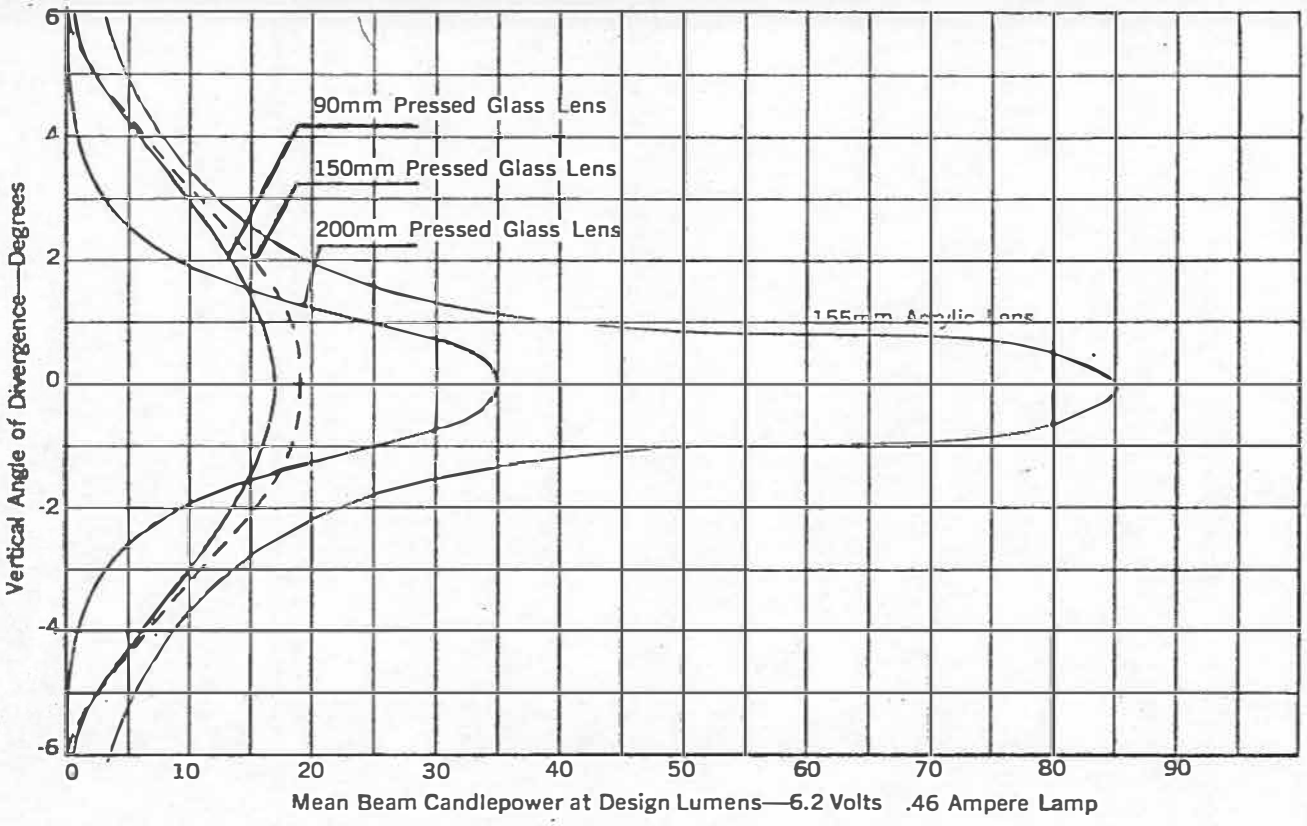






PENNWALT
AUTOMATIC POWER
213 Hutcheson St. Houston, Texas 77003 A.C. 713 228-5208 Telex: 077295

COMPARATIVE CANDLEPOWER CURVES



BEAM CANDLEPOWER TABLE

Lamp Number	Design Rating		Horizontal Beam Candlepower*	Lamp Number	Design Rating		Horizontal Beam Candlepower*
	Volts	Amperes			Volts	Amperes	
FP-2246	6.2	.25	30	FP-1619	12.0	.55	110
FP-1612	6.2	.46	85	FP-1620	12.0	.77	140
FP-1613	6.2	.70	110	FP-1621	12.0	1.15	240
FP-1614	6.2	.92	125	FP-1595	12.0	1.35	300
FP-1615	6.2	1.40	220	FP-1596	12.0	2.03	560
FP-1616	6.2	1.84	280	FP-1597	12.0	3.05	680
FP-1617	6.2	2.80	480				

To determine candlepower when using colored lenses, multiply by 0.35 for red, 0.55 for green.

TECHNICAL DATA

Lens	155mm, 360° acrylic Fresnel lens designed for wide vertical divergence. Available in clear, red, green or amber.
Flasher	5-7 volts DC or 10-14 volts DC solid state timer with any regular recurring characteristic. Timers have built-in short circuit protection. Code accuracy is held to within 3% over ambient temperature range of −20° to +130°, and through input voltage variations of 5-7 volts for the 6-volt model and 10-14 volts for the 12-volt model. AC synchronous motor flashers and step-down transformers are also available.
Lampchanger	6-16 volts DC or AC/DC motor driven 4-place or 6-place lampchanger.
Lamps	Prefocused, S-8 or S-11 envelope and C-8 filament.
Materials	Acrylic plastic lens, Lexan® plastic housing, stainless-steel fittings, silicone-rubber gasket.
Finish	White, unless other color is specified.
Weight	5 pounds
Shipping Weight	12 pounds

NOAA FORM 41-5
2-74

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FORM APPROVED:
OMB NO. 041-R2563
EXPIRES: 12-79

INSTRUMENT FAILURE ANALYSIS INITIATION LOG
(FAILog)

1. DATE LOG COMPLETED: 2/15/75

(Please Type or Print all Information)

2. REPORTING ACTIVITY (Name of organization making failure report): DISCOVERER

3. REPORTING PERSONNEL (Person responsible for generating failure report; Enter last name and first and middle initials): A. B. SMITH

4. EQUIPMENT (Ref. NOS Electronic Equipment Inventory): GITAL INTERFACE — ID CODE: 3 3 2

5. MANUFACTURER (Equipment maker; common acronyms are acceptable): TEXAS INSTR.

6. MODEL NO. OF FAILED EQUIP.: 999

7. SERIAL NO. OF FAILED EQUIP.: 123

STAGE OF OPERATION AT FAILURE (Check all applicable boxes)

1. [X] IN USE
[ ] DURING ACCEPTANCE
[ ] DURING CALIBRATION
4. [ ] DURING MAINTENANCE
5. [ ] UNDER WARRANTY
6. [ ] OTHER

Enter date instrument deemed failed in Military time (24-hr. clock)

9. DATES	TIME	MONTH	DAY	YEAR
FAILURE DATE	0800	02	15	75
DATE RESTORED TO SERV.	1200	02	15	75

10. FAILURE CAUSE (Check all applicable boxes)

1. [X] ELECTRICAL
[ ] SOFT WARE
3. [ ] ORGANIC GROWTH
4. [X] MECHANICAL
[ ] DOCUMENTATION
6. [ ] OUT OF ADJUST
7. [ ] HUMAN ERROR
8. [ ] CORROSION
9. [ ] WEAR
10. [ ] UNKNOWN
11. [ ] OTHER
12. [ ]
13. [ ]
14. [ ]
15. [ ]

11. – 1. [X] ELAPSED TIME METER READING OR 13568 HRS.
2. [ ] OPERATION TIME SINCE LAST FAIL

12. ACTUAL TIME TO MAKE REPAIR: 4 HRS.

13. FINAL DISPOSITION OF EQUIPMENT (Check only one)
1. [X] FIELD REPAIR
2. [ ] MARINE CENTER ACTION
3. [ ] VENDOR REPAIR
4. [ ] NON-REPAIRABLE

14. REPLACED PARTS

QUANTITY	DESCRIPTION OF PARTS REPLACED	IDENTIFICATION NO.	SPARES USED YES	SPARES USED NO
1	2N1308 LEVEL CONVERTER -28 TO 5 V	2N1308	X	

. FAILURE DESCRIPTION AND/OR ADDITIONAL INFORMATION

MAGNETOMETER DATA TO DAS SYSTEM WAS DROPPING ODD BITS. REPLACED LEVEL CONVERTER AND BROKEN INTERFACE WIRE

16. MARINE CENTER ACTION

1 [ ] MARINE CENT. REPAIR
2 [ ] VEN OR REPAIR
3 [ ] NON-REPAIRABLE
4. [ ] DISPOSAL
5. [ ] OTHER

EVIEWER: DATE:

17. HEADQUARTERS

a. MFR. CODE	b. ACTIVITY CODE	c. ACTION CODE	d. ID CODE
TEL	D10	1	33-3

REVIEWER: CO DATE: 3/30/75

EXAMPLE NO. 1

Failog Reporting Form Examples

Example 1. - Illustrates a ship-board failure which was repaired by personnel on board the vessel.

Example 2. - Illustrates a failure that required the assistance of a manufacturer's representative to correct the problem.

Example 3. - A failure which occured in a depth sounder belonging to a high-speed launch. The equipment was returned to AMC for repair. The Failog form should accompany the instrument and the failure description should be completed by Marine Center electronic personnel. NOTE: "the failure date" should be filled out by the launch. When the instrument is restored to service that date as well as block 1 (date log completed) should be completed by the Marine Center. Both the field and Marine Center activity and reporting personnel appear on the form. In block 10 the ship checked item 10 and AMC item 1.

Example 4. - A report submitted for a field change and the installation of an elapsed time meter.

Example 5. - An instrument transferred from one vessel to another.

NOAA FORM 42-0
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FORM APPROVED
OMB NO. 041-22503
EXPIRES: 12-79

INSTRUMENT FAILURE ANALYSIS INITIATION LOG
(FAILog)

1. DATE LOG COMPLETED: 2/1/75

(Please Type or Print all Information)

2. REPORTING ACTIVITY (Name of organization making failure report): LAUNCH 1257

3. REPORTING PERSONNEL (Person responsible for generating failure report; Enter last name and first and middle initials): LCDR J. ROLLAND

4. EQUIPMENT (Ref. NOS Electronic Equipment Inventory): COMPUTER — ID CODE: 4 0 0

5. MANUFACTURER (Equipment maker; common acronyms are acceptable): DEC

6. MODEL NO. OF FAILED EQUIP.: PDP-8I

7. SERIAL NO. OF FAILED EQUIP.: 1395

STAGE OF OPERATION AT FAILURE (Check all applicable boxes)
1. [X] IN USE
[ ] DURING ACCEPTANCE
[ ] DURING CALIBRATION
4. [ ] DURING MAINTENANCE
5. [X] UNDER WARRANTY
6. [ ] OTHER

Enter date instrument deemed failed in Military time (24-hr. clock)

9. DATES	TIME	MONTH	DAY	YEAR
FAILURE DATE	1400	01	30	75
DATE RESTORED TO SERV.	0800	02	01	75

10. FAILURE CAUSE (Check all applicable boxes)
1. [ ] ELECTRICAL
2. [ ] SOFT WARE
3. [ ] ORGANIC GROWTH
4. [ ] MECHANICAL
5. [ ] DOCUMENTATION
6. [ ] OUT OF ADJUST
7. [ ] HUMAN ERROR
8. [ ] CORROSION
9. [ ] WEAR
10. [X] UNKNOWN
11. [ ] OTHER
12. [ ]
13. [ ]
14. [ ]
15. [ ]

11. – 1. [X] ELAPSED TIME METER READING OR 1095 HRS.
2. [ ] OPERATION TIME SINCE LAST FAIL

12. ACTUAL TIME TO MAKE REPAIR: 6 HRS.

13. FINAL DISPOSITION OF EQUIPMENT (Check only one)
1. [ ] FIELD REPAIR
2. [ ] MARINE CENTER ACTION
3. [X] VENDOR REPAIR
4. [ ] NON-REPAIRABLE

14. REPLACED PARTS

QUANTITY	DESCRIPTION OF PARTS REPLACED	IDENTIFICATION NO.	SPARES USED YES	SPARES USED NO
1	IC 7400	19-5575	X	
1	IC 7420	19-5686	X	

15. FAILURE DESCRIPTION AND/OR ADDITIONAL INFORMATION

REAL TIME CLOCK FAILED. INSTRUCTIONS SUCH AS "SKIP ON NON ZERO LINK" AND "READ INSTRUCTION FIELD" FAILED. DEC REPRESENTATIVE REPAIRED 4 CIRCUIT BOARD MODULES

MODULE	LOCATION
M113	E14
M113	F21
M113	A11
M708	H30

16. MARINE CENTER ACTION
1. [ ] MARINE CENT. REPAIR
2. [ ] VENDOR REPAIR
3. [ ] NON-REPAIRABLE
4. [ ] DISPOSAL
5. [ ] OTHER

17. HEADQUARTERS

a. MFR. CODE	b. ACTIVITY CODE	c. ACTION CODE	d. ID CODE
DIR	HS57	01	400A

REVIEWER	DATE	REVIEWER	DATE
		CDR	3/5/75

EXAMPLE NO. 2

INSTRUMENT FAILURE ANALYSIS INITIATION LOG
(FAILog)

EXPIRES: 12-77

1. DATE LOG COMPLETED: 3/1/75

(Please Type or Print all Information)

2. REPORTING ACTIVITY (Name of organization making failure report): LAUNCH 1260 AMC/EED

3. REPORTING PERSONNEL (Person responsible for generating failure report; Enter last name and first and middle initials): F. WILLIAMS L. CRAIN

4. EQUIPMENT (Ref. NOS Electronic Equipment Inventory)	ID CODE	5. MANUFACTURER (Equipment maker; common acronyms are acceptable)	6. MODEL NO. OF FAILED EQUIP.	7. SERIAL NO. OF FAILED EQUIP.
TRACKER P/C BOARD	2099	RAYTHEON	723-D	145

8. STAGE OF OPERATION AT FAILURE (Check all applicable boxes)
1. [X] IN USE
2. [ ] DURING ACCEPTANCE
3. [ ] DURING CALIBRATION
4. [ ] DURING MAINTENANCE
5. [ ] UNDER WARRANTY
6. [ ] OTHER

Enter date instrument deemed failed in Military time (24-hr. clock)

9. DATES	TIME	MONTH	DAY	YEAR
FAILURE DATE	1600	02	15	75
DATE RESTORED TO SERV.	1200	03	01	75

10. FAILURE CAUSE (Check all applicable boxes)
1. [X] ELECTRICAL
2. [ ] SOFT WARE
3. [ ] ORGANIC GROWTH
4. [ ] MECHANICAL
5. [ ] DOCUMENTATION
6. [ ] OUT OF ADJUST
7. [ ] HUMAN ERROR
8. [ ] CORROSION
9. [ ] WEAR
10. [X] UNKNOWN
11. [ ] OTHER
12. [ ]
13. [ ]
14. [ ]
15. [ ]

11. – 1. [X] ELAPSED TIME METER READING OR 629 HRS.
2. [ ] OPERATION TIME SINCE LAST FAIL

12. ACTUAL TIME TO MAKE REPAIR: 3 HRS.

13. FINAL DISPOSITION OF EQUIPMENT (Check only one)
1. [ ] FIELD REPAIR
2. [X] MARINE CENTER ACTION
3. [ ] VENDOR REPAIR
4. [ ] NON-REPAIRABLE

14. REPLACED PARTS

QUANTITY	DESCRIPTION OF PARTS REPLACED	IDENTIFICATION NO.	SPARES USED YES	SPARES USED NO
1	IC 603	7490	X	
1	IC 611	SP659A	X	

15. FAILURE DESCRIPTION AND/OR ADDITIONAL INFORMATION

UNIT RECEIVED FROM LAUNCH 1260 FOR REPAIR
NO READOUT ON DIGITAL DEPTH MONITOR. REPLACED
IC 603 AND IC 611

16. MARINE CENTER ACTION
1. [X] MARINE CENT. REPAIR
2. [ ] VENDOR REPAIR
3. [ ] NON-REPAIRABLE
4. [ ] DISPOSAL
5. [ ] OTHER

REVIEWER: [signature] DATE: 3/10/75

17. HEADQUARTERS

a. MFR. CODE	b. ACTIVITY CODE	c. ACTION CODE	d. ID CODE
RAK	HS60	01	209A

REVIEWER: [signature] DATE: 3/10/75

EXAMPLE NO. 3