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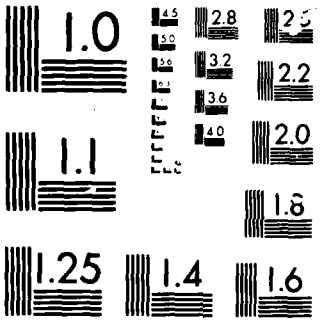

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NAVAL SUPPORT ACTIVITY NAPLES, ITALY (GAETA) FLEET MOORING UNDERWATER INSPECTION PLAN

JULY 1983

OCEAN ENGINEERING
AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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As part of COMNAVFACENGCOM's Fleet Mooring Maintenance (FFM) Program, CHESNAVFACENGCOM has been assigned the responsibility to conduct the underwater inspections of fleet moorings worldwide. This plan provides guidelines for the underwater inspection of the fleet mooring operated (Con't)

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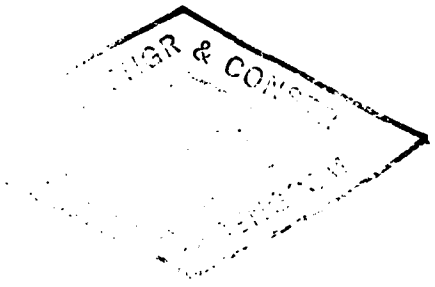
and maintained by the Naval Support Activity, Naples, Italy. The inspection is scheduled to take place in September 1983.

CHESNAVFACENGCOM has designated and Engineer-in-Charge (EIC) to provide on-site technical guidance to Underwater Construction Team One (UCT ONE) who will perform the underwater portion of the inspection. In addition, the EIC will prepare the post inspection report which will include the results of the inspection and recommendations for required maintenance actions.

FLEET MOORING INSPECTION PLAN

NSA NAPLES ITALY



JULY 1983

OCEAN ENGINEERING AND CONSTRUCTION
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CHESAPEAKE DIVISION
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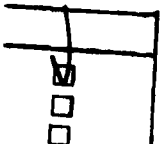
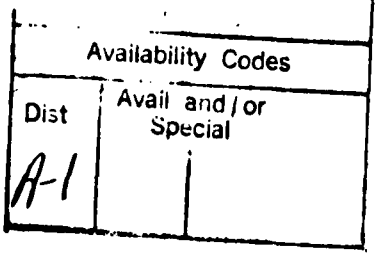




NAVSUPPACT NAPLES
UNDERWATER INSPECTION PLAN
(GAETA FLEET MOORING)

1.0 BACKGROUND

As part of COMNAVFACENGCOM's Fleet Mooring Maintenance (FMM) Program, CHESNAV-FACENGCOM has been assigned the responsibility to conduct the underwater inspections of fleet moorings worldwide. This plan provides guidelines for the underwater inspection of the fleet mooring operated and maintained by the Naval Support Activity, Naples, Italy. This inspection is scheduled to take place in September 1983.

CHESNAVFACENGCOM has designated an Engineer-in-Charge (EIC) to provide on-site technical guidance to Underwater Construction Team One (UCT ONE) who will perform the underwater portion of the inspection. In addition, the EIC will prepare the post inspection report which will include the results of the inspection and recommendations for required maintenance actions.

2.0 PROJECT RESPONSIBILITIES

CHESNAVFACENGCOM will develop the FM underwater inspection plan, provide technical assistance to the dive team, prepare the required inspection forms, evaluate the observed inspection data, and report the results of the inspection to interested activities.

UCT ONE will provide sufficient divers to accomplish the inspection within the allotted time frame, gather and accurately report all required data, and ensure that the required amount of diving support material/equipment is available. In addition, UCT ONE divers will perform the underwater inspection in accordance with this plan and collect the data specified in paragraph 4.0.

NAVSUPPACT NAPLES will provide logistics support as required by the EIC and the UCT dive team.

3.0 GENERAL MOORING HISTORY

For many years, the fleet mooring located at Gaeta, Italy, has been used to moor the flagship of the Commander, Sixth Fleet. This mooring consists of bow and stern buoy dolphins which are used by the

ship to maintain its position when breasted alongside two finger piers attached to the main pier. The geographic locations of Gaeta, its main pier, and the fleet mooring are shown in Figures 1 through 3.

During 1978, the bow buoy system was dragged during heavy weather resulting in significant ship-caused damage to the pier and its fendering system. A replacement bow buoy dolphin system, using two propellant embedment anchors (PEAs), was installed during November 1978. This system consists of a buoy, underneath which is suspended a chain equalizer through which 80 feet of chain is centered. Attached to each end of this chain is 100 feet of 1 3/4-inch wire rope anchor pendant leading to a 100K propellant embedment mud fluke-type anchor. The chain equalizer, which is cathodically protected by attached zinc anodes, is capable of handling 2 1/4-inch chain. However, the chain currently used is 1 3/4-inch chain that was salvaged from the previous bow mooring installation. The two PEAs are buried about 40 feet below the mud line. Figure 4 is a schematic drawing of the currently installed bow buoy dolphin system while Figure 5 is a drawing of the designed configuration of the stern buoy dolphin system. The Gaeta fleet mooring is installed in about 35 feet of water.

4.0 INSPECTION PROCEDURES

4.1 Inspection Objectives. The purpose of the mooring inspection is to determine the general physical condition of buoys, chain assemblies, and PEA anchor pendants and, when possible, to verify or update existing as-built and maintenance records. Divers inspect only a portion of the submerged buoy hull and chain assemblies, and the entire visible length of anchor pendants, in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this inspection provides a good indication of the mooring's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expedient and relatively inexpensive supplement to accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving recovery of the mooring and the measurement and evaluation of each component.

Two important parameters used to evaluate the condition of a mooring are chain wire diameter and the overall condition of the anchor pendants. After the chain is cleaned to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware is taken in order to determine the amount of deterioration due to corrosion and wear. "Single link" measurements are taken where chain is slack, and detect only corrosion loss. "Double link" measurements, taken where two links connect under tension, detect the combined effects of corrosion and wear. Chain links and other components which measure 90 percent or greater of original wire diameter are considered to be in "good" condition; measurement between 80 and 90 percent of original diameter is considered "fair" condition and is cause for the mooring to be downgraded in classification; any measurement less than 80 percent is considered "poor"

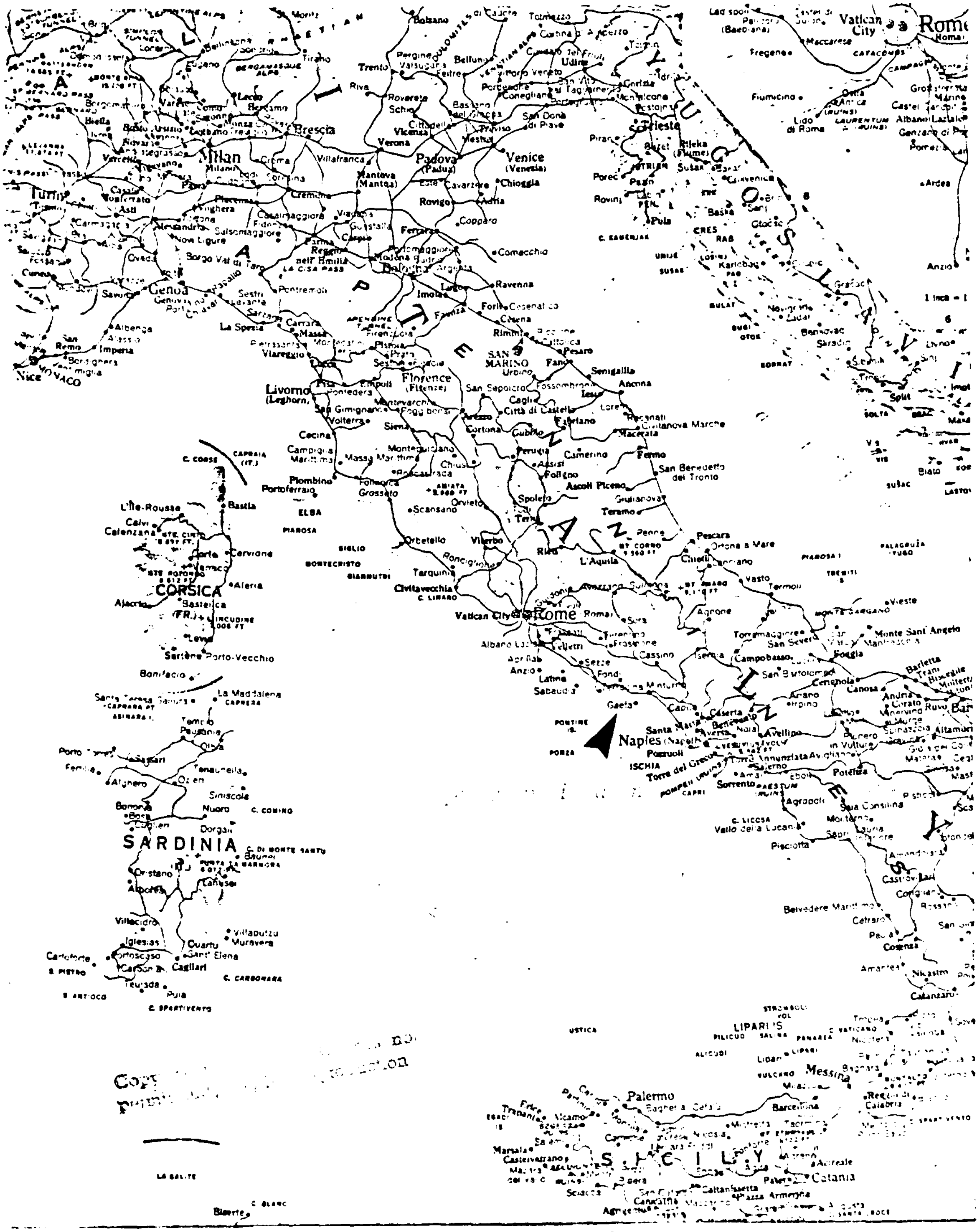


Figure 1. Geographic Location of Gaeta

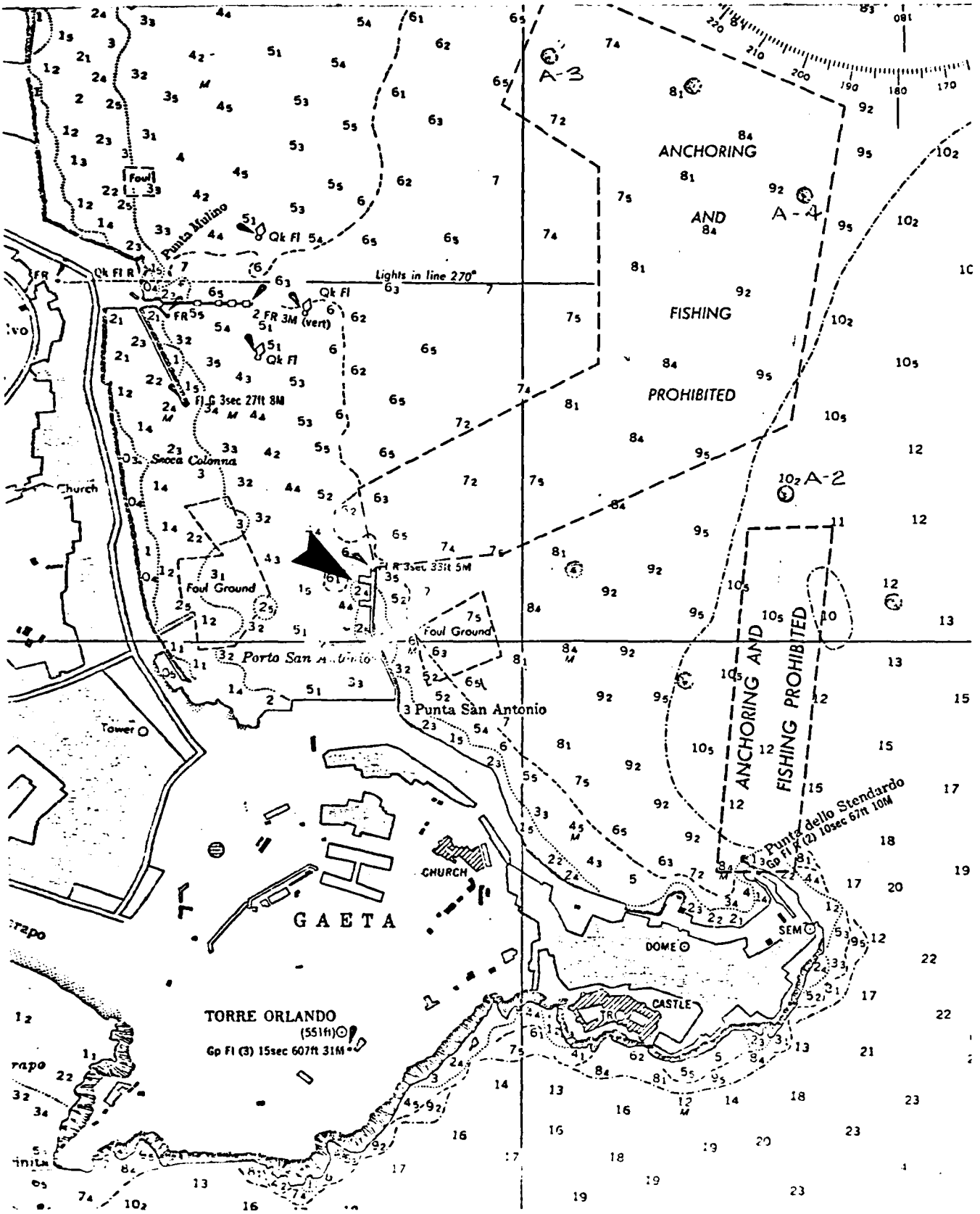


Figure 2. Gaeta Pier Location

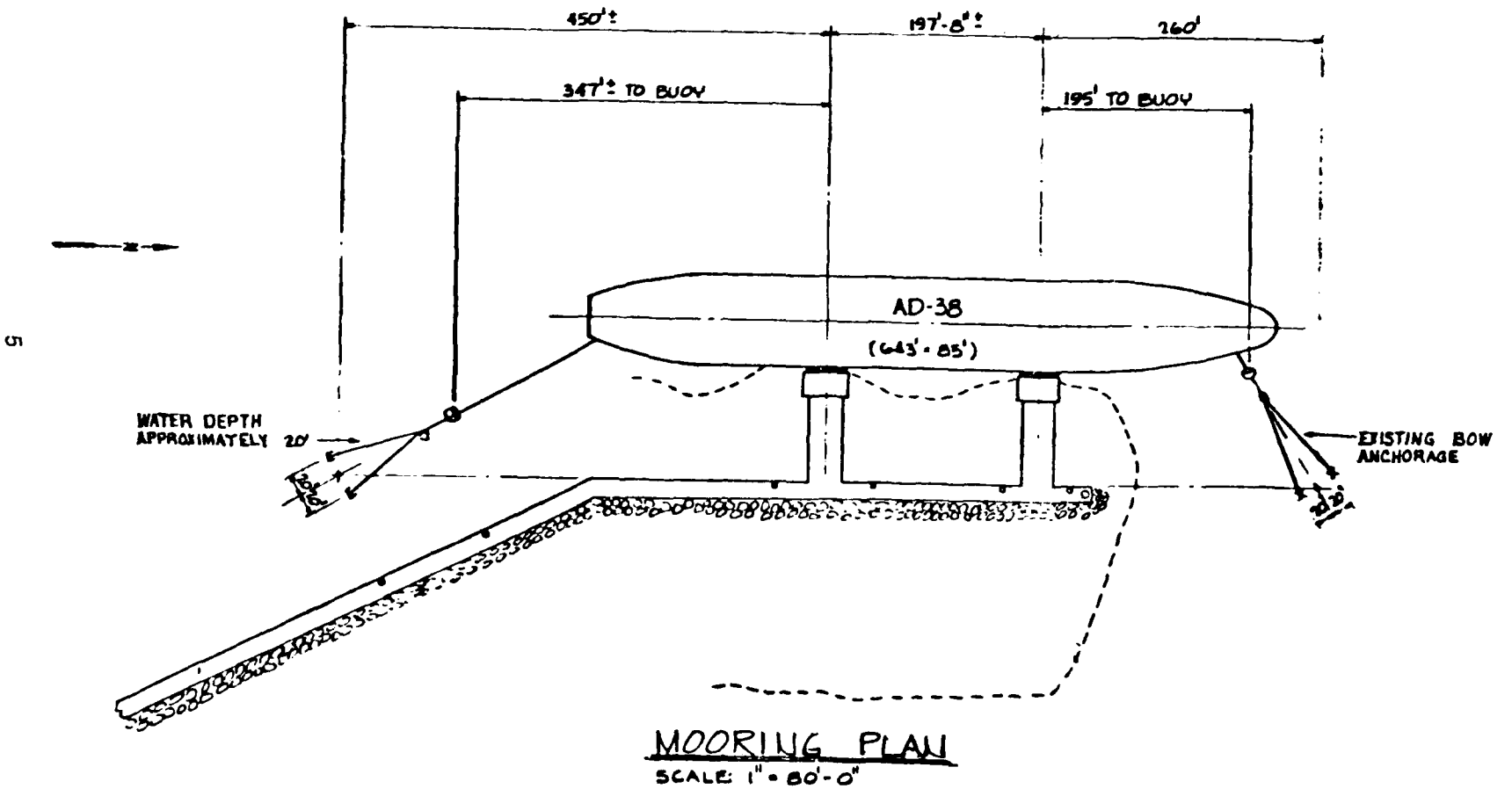


Figure 3. Gaeta Two Point Dolphin Mooring System

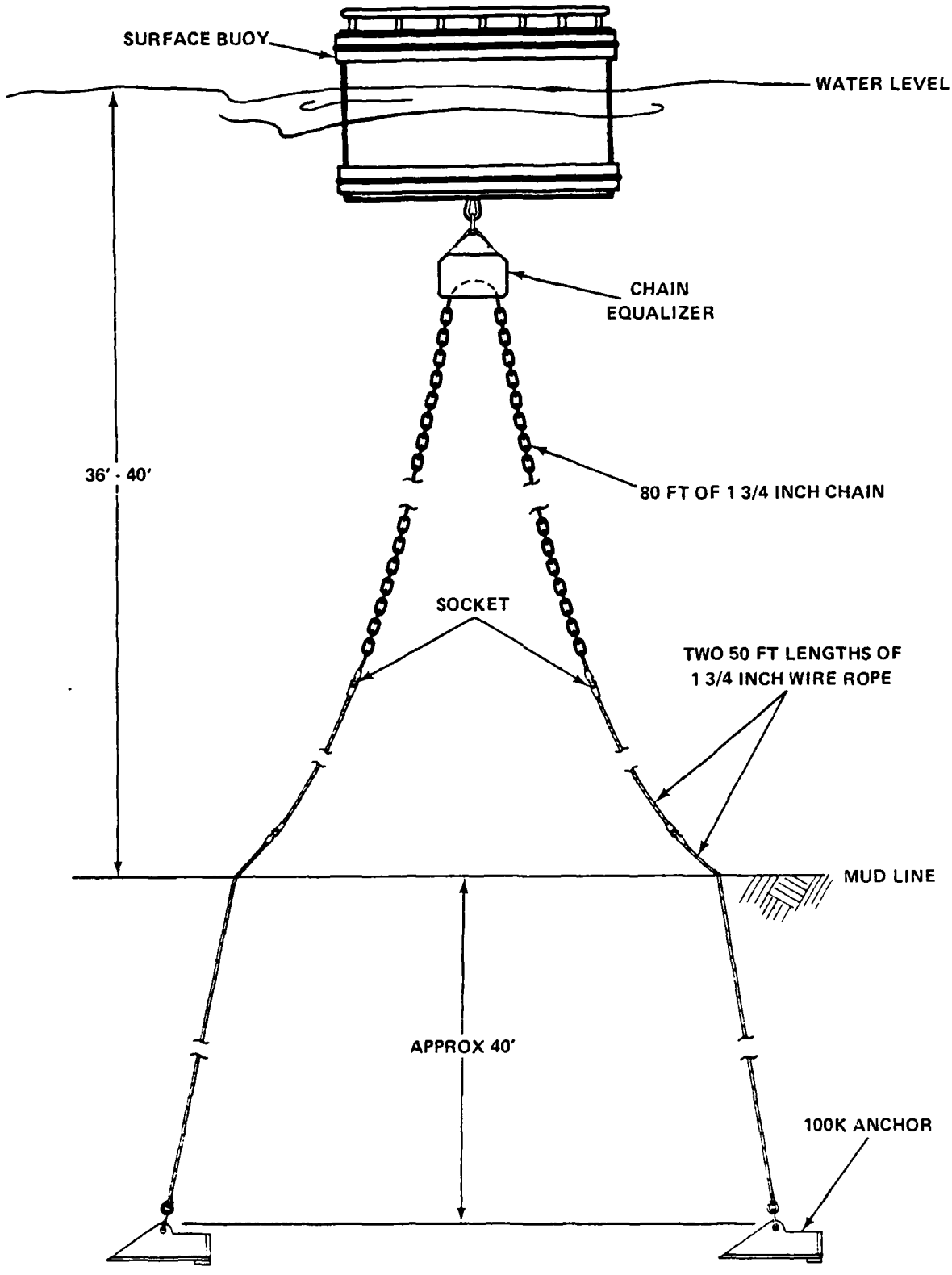


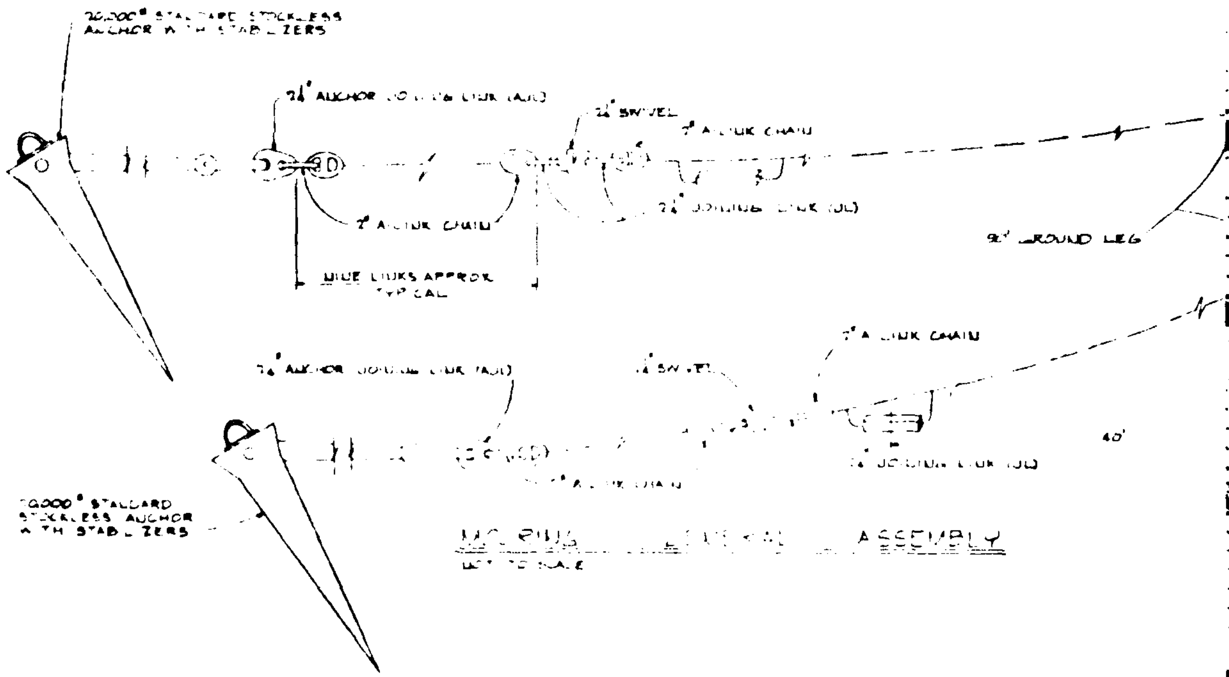
FIGURE 4. GAETA BOW MOORING

BILL OF MATERIALS

DESCRIPTION	QTY	FED STOCK NO.	LOCATION OF AVAILABILITY	PROCUREMENT TYPE
[illegible],000 LB STANDARD STOCKLESS ANCHOR WITH STABILIZERS INSTALLED	2	[illegible]	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
9'6" x 9' BAR RISER CHAIN BUOY	1	[illegible] 715 5665	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
2¼" ANCHOR JOINING LINK (AJL)	[illegible]	4010 00 39[illegible] 0654	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
[illegible] A LINK CHAIN	750	[illegible]	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
2¼" JOINING LINK (JL)	6 ●	4010-00 39[illegible] 0654	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
[illegible] TON CONCRETE SINKER	1		GAETA BAY, ITALY	ON HAND AT SITE *
2¼" TYPE F BENDING SHACKLE W/ [illegible]		4030-00-25[illegible]	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
2¼" END LINK	1	4010 00 798 [illegible]	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
2¼" GROUND RING	1	[illegible]040 00 734 [illegible]	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
2¼" SWIVEL	3	4030 00 577 6564	CBC, GULFPORT, MS	GOVERNMENT SURPLUS
SPECIAL [illegible] ANCHOR 500 LB	4		NAPLES, ITALY	GOVERNMENT SURPLUS
STAINLESS STEEL HOSE CLAMPS	[illegible]		NORFOLK, VA	COMMERCIAL
[illegible] GALV. STEEL WIRE ROPE	220		NORFOLK, VA	COMMERCIAL

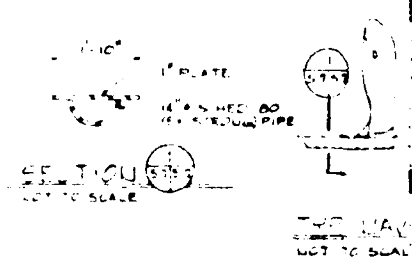
● 2 EXTRA TO INSURE ADEQUATE CONNECTIONS

* TO BE SALVAGED FROM EXISTING STERN MOORING



MOORING [illegible] ASSEMBLY

NOT TO SCALE



SECTION

NOT TO SCALE

This Figure was the only stern mooring design information available to CHESNAVFACENGCOM at the time this plan was prepared

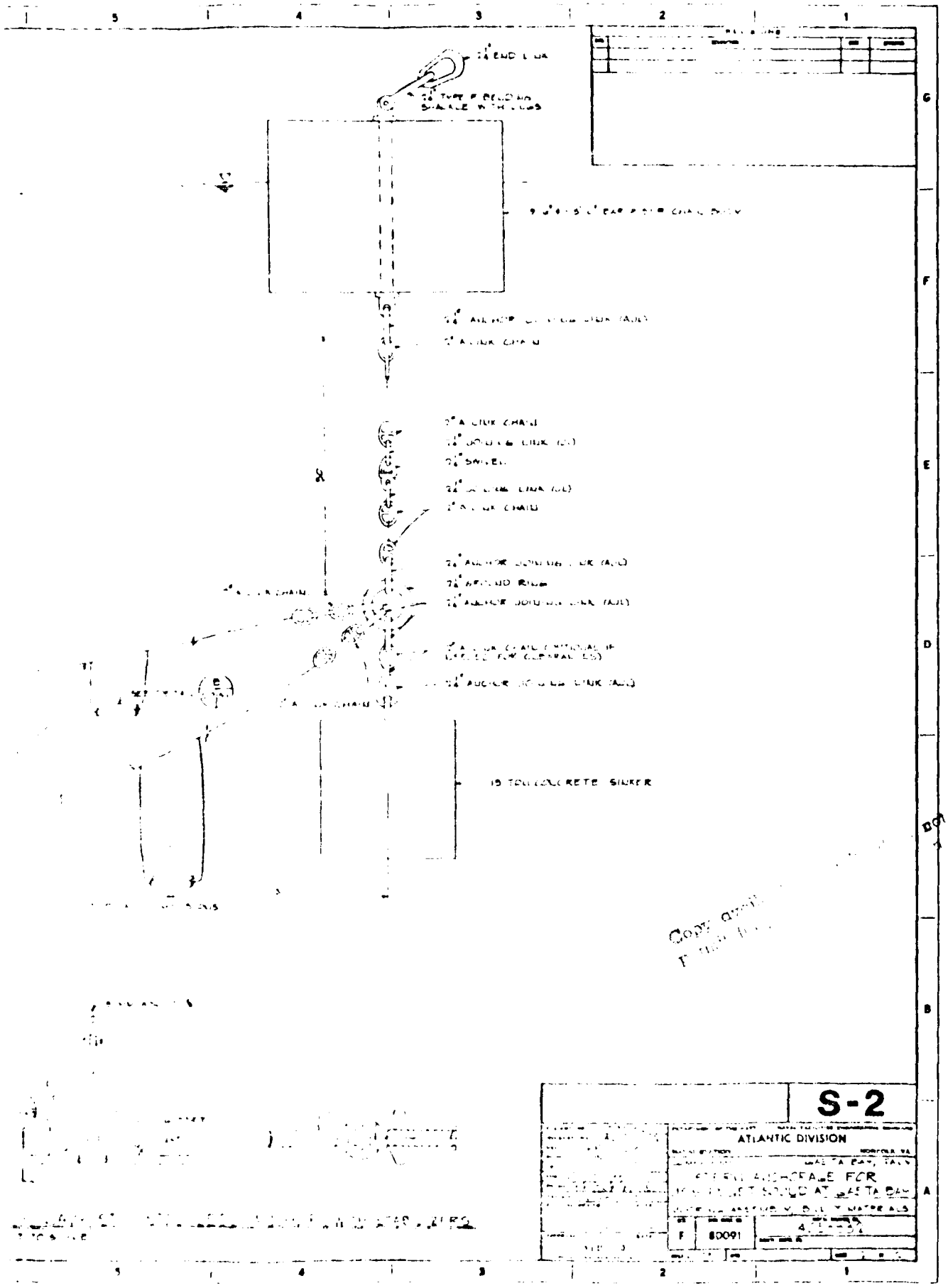


FIGURE 5. GAETA STERN MOORING DESIGN

and is cause for the mooring to be declared unsatisfactory for fleet use. Figure A-1 in Annex A depicts the proper method of taking both single and double link measurements.

PEA pendants will be checked for kinks, broken strands, unravelling ("birdcaging"), excessive wear, or other damage. The anchor pendant fittings will be inspected for overall condition and measured to determine the effects of wear and corrosion.

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which is buried. Ground legs and risers are observed only to the point at which they become buried; no attempt is made to locate and inspect anchors or other mooring materials which are not readily visible.

The following paragraphs contain the general inspection procedures that will be followed:

4.2 Bow and Stern Buoys

4.2.1 Buoy Location. The geographic position of each buoy will be verified. In order to accomplish this, a transit will be used to sight each buoy from known positions ashore.

4.2.2 Buoy Upper Portion. The buoy shall be observed to determine its general condition. The size of the buoy (diameter and height) should be recorded along with its freeboard. Physical damage such as holes, dents, or listing shall be described. If the buoy is fiberglass coated, then the fiberglass should be inspected for cracks, wear, peeling, or rust-bleeding. A check will be made to see if the hatches have been fiberglassed over. If the buoy has not been fiberglassed, then the paint will be checked for cracking, chipping, and peeling. Hatches, openings, and penetrations will be examined and broken parts and rust will be reported. Inspection check lists are contained in Annex B.

The buoy fenders and rubbing rails shall be checked for integrity and secure connection to the buoy.

Buoy top jewelry shall be identified and measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size. Methods for presetting calipers are contained in Annex A.

4.2.3 Buoy Lower Portion. Divers shall thoroughly inspect the buoy below the waterline. The thickness of marine growth shall be recorded, three one-foot-square areas shall be selected and cleared of growth without damaging the paint or fiberglass, and the condition of the paint or fiberglass will be noted. If the

buoy is cathodically protected, the condition, dimensions, and connection of anodes are to be noted. Then, electrical potential readings are to be taken with an underwater voltmeter at three locations on the buoy bottom.

4.2.4 **Bottom Jewelry.** On each mooring, the jewelry connecting the buoy to the riser or to the equalizer shall be identified and measured with calipers. As with the topside jewelry, the overall dimensions and the smallest wire size of each type of detachable link or shackle will be recorded.

4.3 Bow Anchor Legs

4.3.1 **Chain Equalizer.** The chain equalizer is cathodically protected by two to four attached zinc anodes. Using an underwater voltmeter, divers shall probe each face of the equalizer in at least two locations and record the potentials. The equalizer shall be checked for overall condition and wear, and photographs will be taken of it and any wear points on the chain passing through it.

4.3.2 **Chain.** Three double link measurements on each side of the chain passing through the equalizer should be taken just below the equalizer, at the end of the chain, and halfway in between. In addition, the chain should be probed with an underwater voltmeter at these same locations in order to determine whether electric potential is being supplied to the chain from the equalizer anodes.

4.3.3 **Chain/Anchor Pendant Connection.** Identify the type fitting/socket connecting the bitter ends of the chain to the anchor pendants (swage fitting, mechanical fitting, etc.) Measure the wire diameter of these fittings, visually inspect them for wear, and take photographs of these connections.

4.3.4 **Anchor Pendant.** The divers shall swim down the wire rope pendant checking for kinks, unravelling, broken strands, and other damage to the wire until the point that it dissappears into the bottom. An underwater voltmeter should be used to probe the pendant just below its connection to the chain, at the mud line, and halfway in between to determine the presence of any electric potential being supplied from the equalizer anodes.

4.4 Stern Riser and Ground Legs

4.4.1 **Riser.** Three consecutive double link measurements using pre-cut go/no-go gauges will be made at both ends and near the center of the riser. Procedures for the use of pre-cut gauges are contained in Annex A. The swivel and detachable links contained within the riser assembly shall be visually inspected

and measured. As the divers swim down the riser, all chain links and other mooring hardware will be visually observed. Material suspected to be in worn or damaged condition will be investigated and photographed.

4.4.2 **Ground Ring.** The ground ring shall be examined for general and localized wear. Caliper measurements shall be made of both the wire size in the region of most severe wear and across the inner diameter. The anchor joining links connecting the riser, two ground legs, and concrete clump to the ground ring shall be inspected and their wire diameters measured with calipers.

4.4.3 **Concrete Sinker.** The 15-ton sinker's hairpin shall be inspected for wear and caliper measurements of its wire diameter taken. The general condition and dimensions of the sinker should be recorded.

4.4.4 **Chain Legs.** Three consecutive double link measurements of each leg shall be taken every 20 feet. In those cases where the leg chain is slack, three single link measurements shall be taken of each selected link as shown in Figure A-1 (Annex A). All connecting hardware including detachable links, anchor joining links, pear links, end links, swivels and shackles shall be identified and measured with calipers. Worn hardware and unusual chain joining practices shall be recorded and photographed.

4.4.5 **Cathodic Protection System.** As shown in Figure 5, each of the stern legs has two 500-pound zinc anodes located about 30 and 70 feet below the ground ring. In addition, a 3/8-inch continuity wire is woven through each chain leg. Figure 6 provides details of the cathodic protection system.

The divers shall swim down each ground leg and check the integrity and security of the continuity cable. Each anode shall be inspected for condition, even erosion, and proper connection to the chain leg. The dimensions of each anode shall be recorded, and potential readings of the chain taken every five-to-ten feet between the ground ring and the point where the chain enters the bottom.

4.4.6 **Anchors.** If an anchor is located, a pop float shall be attached to it so that the relative positions of the anchor from the mooring buoy can be observed from the surface. The anchor's position shall be recorded. The hardware connecting an anchor to its ground leg will be measured by calipers and the wire diameters recorded.

4.5 **Photography.**

4.5.1 **Topside.** Topside photography and ashore photographs are the responsibility of the EIC. Film for standard size slide transparencies should be used.

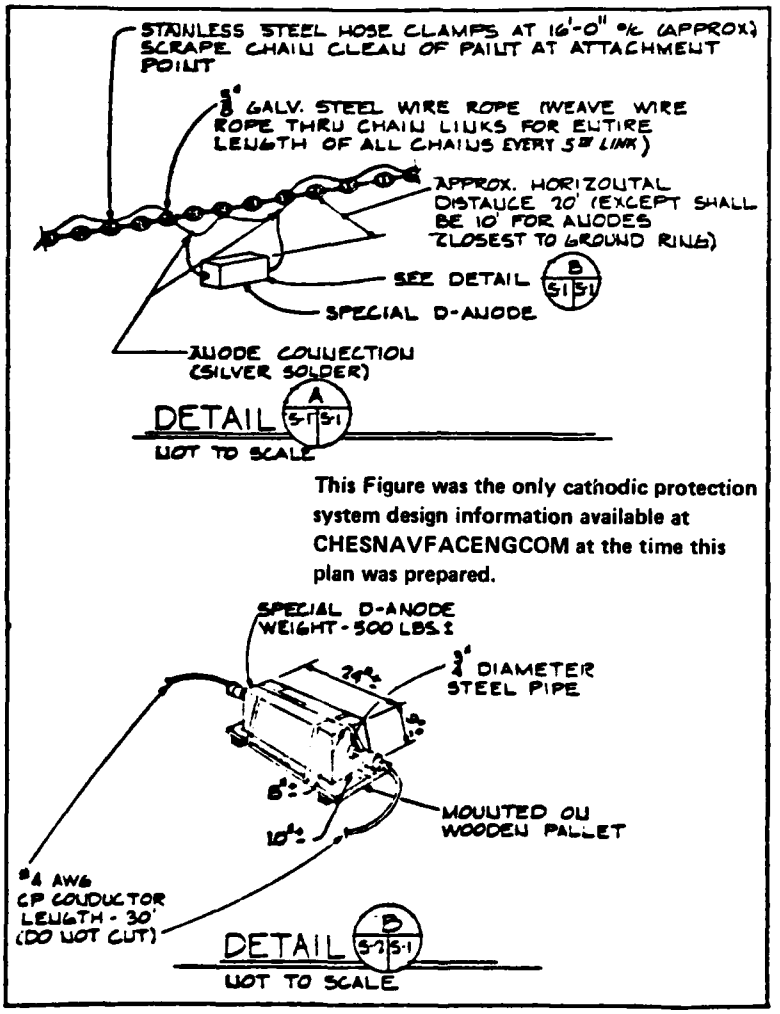


Figure 6. Cathodic Protection System Details

Photographs will be taken of each buoy showing its general condition. Photographs of the topside jewelry and damaged buoy components will be taken as deemed appropriate by the EIC.

Photographs will be taken of ashore spare mooring material inventories and construction equipment as deemed necessary.

4.5.2 **Underwater.** Underwater photography shall be the responsibility of the dive team. Buoy bottoms, bottom jewelry, worn links, swivels, ground rings, and other hardware shall be photographed wherever required to support material conditions and when environmentally feasible. Photographs shall include clear annotation as to the location of the hardware being photographed. High speed film (i.e., ASA 400) for standard size slide transparencies should be used. Because silt and other particles suspended in the water tend to reduce picture quality when illuminated, the flash should be used only when absolutely necessary to provide adequate light levels.

5.0 DOCUMENTATION

The EIC will document the inspection procedures used and record the data obtained by the dive team. He may require additional or alternative inspection procedures as deemed necessary during the course of the inspection. He will maintain a time log of events occurring during the inspection, and the master inspection form. In addition, the EIC must be prepared to debrief each diver, upon his return to the surface, in order to gain immediate knowledge of what the diver observed. The information obtained from the divers will be recorded, and this data will subsequently be the basis for the development of the moorings as-built configuration and for the preparation of the Fleet Mooring Inspection Report, which will contain the results of the inspection and recommendations for corrective maintenance actions.

While on site, the EIC will investigate the availability and cost of local mooring maintenance support. In addition he will conduct a cursory inspection of any on-shore Fleet Mooring Inventory (FMI) used for maintenance and repair or ready reserve. The type, size, quantity and general condition of the inventory shall be reported.

6.0 MEETINGS/BRIEFINGS

Upon arrival on site, the EIC will conduct a pre-dive briefing to familiarize diving personnel with the mooring inspection procedures and to advise them of possible modifications to this inspection plan. In addition, after approval by CHESDIV, the EIC will give a post-inspection debriefing to advise station personnel of the preliminary inspection findings.

7.0 LOGISTICS

7.1 UCT ONE. All arrangements for messing, berthing, and transportation of diver personnel, and the acquisition of a suitable dive platform/boat, will be the responsibility of UCT ONE. In addition, the following equipment will be provided by the divers in support of this inspection:

- All diving support equipment
- Measuring aids
  - 100-foot tape measures for use underwater
  - 1-, 2-, and 3-foot scales with large numbers suitable for underwater photo documentation
  - Accurate depth gauges
  - Marker tags to relocate or mark chain links or accessories
  - Calipers (24-inch minimum)
  - Go/no-go gauges
  - White slates (2) w/marker pens for underwater use
- Survey equipment
  - Compass (diver's)
  - Survey buoys with line (pop floats)
  - Surveying transits for establishing mooring buoy locations
- Underwater voltmeters
- Two Underwater still cameras (35mm) with film (color and B & W) and flash with spare batteries
- Cleaning equipment – Hand tools including wire brushes, chipping hammers, and sharp chisels.

7.2 CHESNAVFACENGCOM. The CHESNAVFACENGCOM EIC will provide the following:

- Inspection plan
- Data sheets and forms
- 35mm surface camera and film
- Drafting supplies, graph paper, scales
- Calculator
- Pre-dive briefing data
- DM-26

ANNEX A

MEASURING DEVICES AND THEIR USE

ANNEX A

1.0 MEASURING DEVICES AND THEIR USE

Tables A-1 and A-2 outline the 80 and 90 percent measurements for mooring components. These tables are based on the standard sizes of mooring material listed in DM-26 and can be used to preset calipers before measuring various items. For example, a class BB riser type mooring will require calipers set to 3.15 inches (90 percent) and 2.8 inches (80 percent) for single link measurements on the riser. These values are then doubled obtaining 6.3 inches (90 percent) and 5.6 inches (80 percent) for double link measurements on the riser. Similarly, for the ground legs, single link measurements of 2.25 inches (90 percent) and 2.0 inches (80 percent) are obtained from Table A-1. These values are also doubled to obtain 4.5 inches and 4.0 inches for double link measurements. For the ground ring the single link measurements are determined to be 5.85 inches and 5.2 inches.

The preferred measuring devices, however, are back-to-back 80 and 90 percent "go-no go" gauges. These gauges simplify the diver's job in that, unlike calipers, they have to be damaged to be knocked out of adjustment. The locations for measuring chain links are shown in Figure A-1. Figure A-2 contains the drawings and data required to fabricate these gauges. Although these gauges provide a simpler way of sampling the wire size of chain links and some jewelry, the divers still have to carry calipers to measure ground rings and chain connecting links.

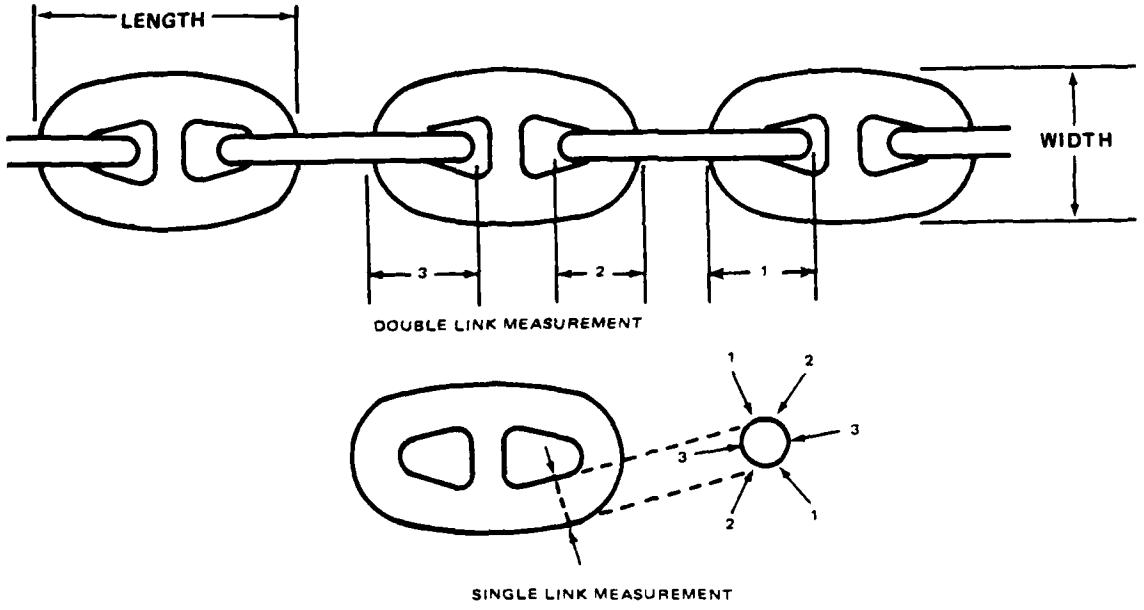


FIGURE A-1. LOCATIONS FOR TAKING CHAIN LINK MEASUREMENTS

TABLE A-1. SINGLE LINK MEASUREMENTS FOR COMPONENTS OF RISER-TYPE MOORINGS (DOUBLE LINK MEASUREMENTS ARE OBTAINED BY MULTIPLYING SINGLE LINK MEASUREMENTS BY TWO)

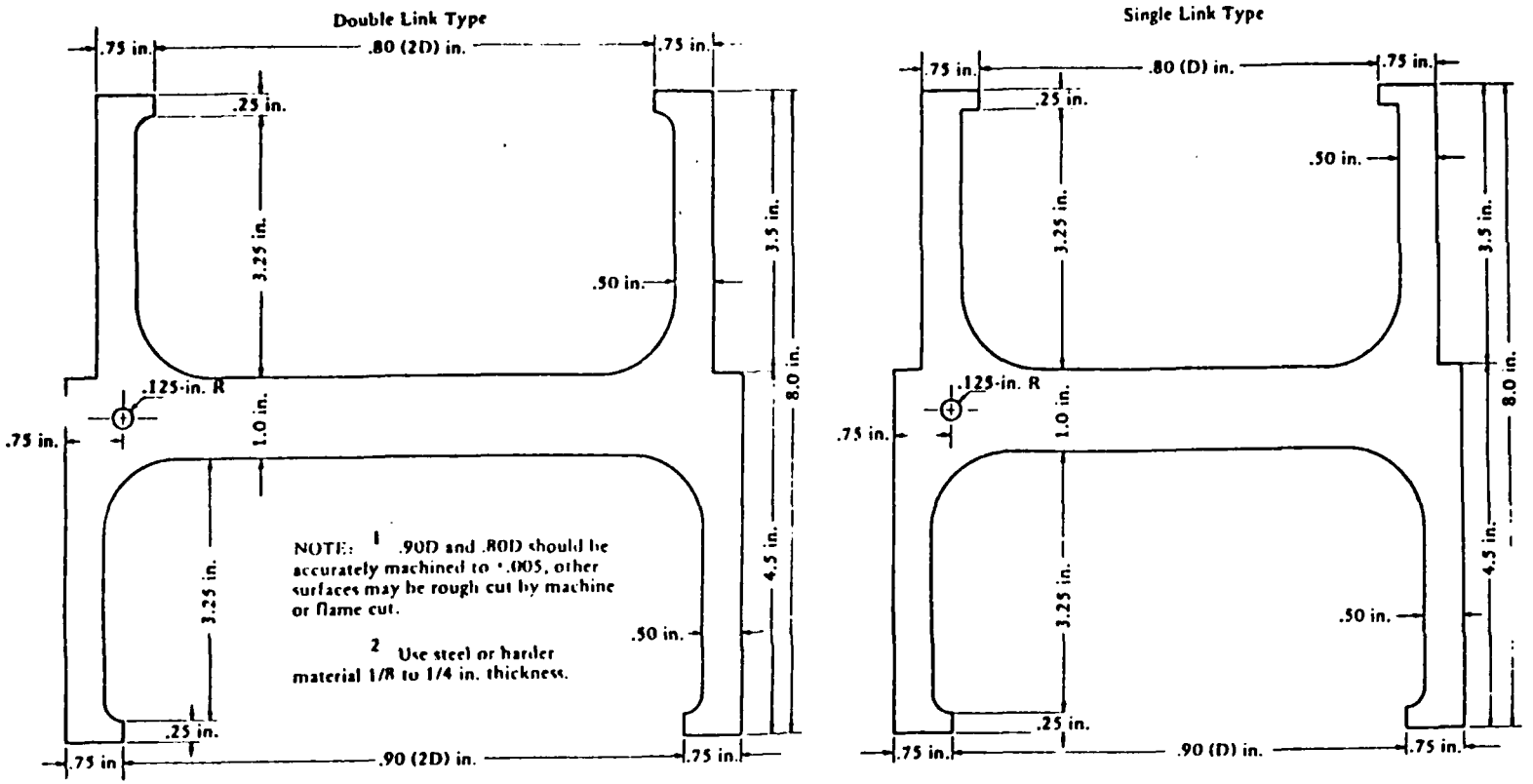
Class Mooring	Percent Remaining	Top of Buoy			Riser	Ground Ring			Ground Tackle		Anchor[2]	
		F-Shackle	End Link	AJL[1]	Chain	AJL[1]	Ring	Spider	Chain	AJL[1]	Stockless w/Stabilizer	LWT
A-A	100	5 3/8	4½	4"	4	4"	6½	4 3	2 3/4	2 3/4"		
	90	4.838	3.285	type	3.6	type	5.85	3.6 2.7	2.475	type	25,000	-
	80	4.3	2.92		3.2		5.2	3.2 2.4	2.2			
B-B	100	4 15/16	3 15/16	3½"	3½	3½"	6½	4 3	2½	2½"		
	90	4.44	3.544	type	3.15	type	5.85	3.6 2.7	2.25	type	20,000	13,000
	80	3.75	3.15		2.8		5.2	3.2 2.4	2.0			
C-C	100	4 15/16	3 15/16	3½"	3½	3½"	6½	4 3	2¼	2¼"		
	90	4.44	3.544	type	3.15	type	5.85	3.6 2.7	2.025	type	18,000	10,000
	80	3.95	3.15		2.8		5.2	3.2 2.4	1.8			
D-D	100	4 3/16	3 3/4	3"	3	3"	6		3	3"		
	90	3.769	3.375	type	2.7	type	5.4	-	2.7	type	30,000	-
	80	3.35	3		2.4		4.8		2.4			
A	100	3 7/8	3 3/8	2 3/4"	2 3/4	2 3/4"	5½		2 3/4	2 3/4"		
	90	3.488	3.038	type	2.475	type	4.95	-	2.475	type	25,000	-
	80	3.1	2.7		2.2		4.4		2.2			
B	100	3½	3 1/8	2½"	2½	2½"	4 3/4		2½	2½"		
	90	3.15	2.813	type	2.25	type	4.275	-	2.25	type	20,000	13,000
	80	2.8	2.5		2.0		3.8					
C	100	3 1/8	2 3/4	2¼"	2¼	2¼"	4½		2¼	2¼"		
	90	2.813	2.813	type	2.025	type	4.05	-	2.025	type	10,000	10,000
	80	2.5	2.5		1.8		3.6	-	1.8			
D	100	2 13/16	2½	2"	2	2"	4		2	2"		
	90	2.531	2.25	type	1.8	type	3.6		1.8	type	13,000	6,000
	80	2.25	2.0		1.6		3.2		1.6			
E	100	2 7/16	2¼	1 3/4"	1 3/4	1 3/4"	3½		1 3/4	1 3/4"		
	90	2.174	2.025	type	1.575	type	3 15	-	1.575	type	9,000	4,000
	80	1.95	1.8		1.4		2.8		1.4			
F	100	1 3/4	1 3/4	1½"	1¼	1½"	2 3/4		1¼	1½"		
	90	1.575	1.575	type	1.125	type	2.813	-	1.125	type	5,000	2,000
	80	1.4	1.4		1.0		2.5		1.0			
G	100	1 1/16	.1	3/4"	3/4	3/4"	1 7/8		3/4	1"		
	90	.956	.9	type	.675	type	1.688	-	.675	type	3,000	300
	80	.85	.8		.6		1.5		.6			

1. AJL measurement vary according to manufacturer, see DM-26
2. Assumes firm sand bottom
3. Assumes cast steel chain

TABLE A-2. SINGLE LINK MEASUREMENTS FOR COMPONENTS OF TELEPHONE-TYPE MOORINGS (DOUBLE LINK MEASUREMENTS ARE OBTAINED BY MULTIPLYING SINGLE LINK MEASUREMENTS BY TWO)

Class Mooring	Percent Remaining	Top of Buoy		Buoy-to-Ground Tackle				Ground Tackle		Anchor [2]	
		End Link	Adj [1]	D/F-Shackle	Adj [1]	Spider		Adj [1]	Chain	Stockless/Stabilizer	LWT
A-A	100	4½	4"	4 11/16	4"	4	3	2 3/4"	2 3/4		
	90	3.285	type	4.219	type	3.6	2.7	type	2.475	25,000	-
	80	2.92		3.75		3.2	2.4		2.2		
B-B	100	4½	4"	4 11/16	3½"	4	3	2½"	2½		
	90	3.285	type	4.219	type	3.6	2.7	type	2.25	20,000	13,000
	80	2.92		3.75		3.2	2.4		2.0		
C-C	100	4½	4"	4 11/16	3½"	4	3	2½"	2½		
	90	3.285	type	4.219	type	3.6	2.7	type	2.025	18,000	10,000
	80	2.92		3.75		3.2	2.4		1.8		
D-D	100	4½	4"	4 11/16	3"			3"	3		
	90	3.285	type	4.219	type			type	2.7	30,000	-
	80	2.92		3.75					2.4		
A	100	3 3/8	3½"	3 7/8	2 3/4"			2 3/4"	2 3/4		
	90	3.038	type	3.486	type			type	2.475	25,000	-
	80	2.7		3.1					2.2		
B	100	3 3/8	3½"	3½	2½"			2½"	2½		
	90	3.038	type	3.15	type			type	2.25	20,000	13,000
	80	2.7		2.8					2.0		
C	100	3 3/8	3½"	3 1/8	2½"			2½"	2½		
	90	3.038	type	2.813	type			type	2.025	18,000	10,000
	80	2.7		2.5					1.8		
D	100	3 3/8	3½"	2 13/16	2"			2"	2		
	90	3.038	type	2.531	type			type	1.8	13,000	6,000
	80	2.7		2.25					1.6		

1. All measurements vary according to manufacturer, see DM-26
2. Assumes firm sand bottom
3. Assumes cast steel chain



D"	Single Link		Double Link		D"	Single Link		Double Link		D"	Single Link		Double Link	
	.90D	.80D	.90(2D)	.80(2D)		.90D	.80D	.90(2D)	.80(2D)		.90D	.80D	.90(2D)	.80(2D)
6-1/2	① 5.85	5.20	–	–	3-1/2	⑥ 3.15	2.80	⑪ 6.30	5.60	2	⑯ 1.80	1.60	㉑ 3.60	3.20
6	② 5.40	4.80	–	–	3	⑦ 2.70	2.40	⑫ 5.40	4.80	1-7/8	⑰ 1.69	1.50		
5-1/2	③ 4.95	4.40	–	–	2-3/4	⑧ 2.48	2.20	⑬ 4.96	4.40	1-3/4	⑱ 1.58	1.40	㉒ 3.06	2.80
4-1/2	④ 4.05	3.60	–	–	2-1/2	⑨ 2.25	2.00	⑳ 4.50	4.00	1-1/2	⑲ 1.35	1.20	㉓ 2.70	2.40
4	⑤ 3.60	3.20	⑯ 7.20	6.40	2-1/4	⑩ 2.03	1.80	㉑ 4.06	3.60	1-1/4	⑮ 1.125	1.00		

FIGURE A-2. 80/90 PERCENT "GO-NO-GO" GAUGES

ANNEX B

SAMPLE INSPECTION FORMS

Figures B-1 and B-2 are two forms the EIC and divers may use to record measurements and as-built summations.

FIGURE B-1

MOORING NO.: _____ CLASS: _____ LOCATION: _____ LAT: _____ LONG: _____

WATER DEPTH: _____ ANCHOR SIZE/TYPE: _____ BUOY TYPE: _____

BOTTOM TYPE: ☐ SAND ☐ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility _____ D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION								COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
				90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											
RISER	NEAR BUOY										
	MIDDLE										
	NEAR GRD RG										
GROUND RING											
GROUND LEG NO. A	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. B	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. D	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										

DATE: _____ ENGINEER-IN-CHARGE: _____ DIVERS: _____

FIGURE B-2

MOORING DATA SUMMARY FOR PREPARATION OF AS-BUILTS

MOORING# _____ CLASS _____ LOCATION _____ DATE _____

BOTTOM TYPE _____ WATER DEPTH _____ MOORING CONDITION _____

ENGINEER-IN-CHARGE _____ DIVERS _____

BUOY TYPE
- DIMENSIONS _____
- CONDITION _____
- TOP HARDWARE _____
- BOTTOM HARDWARE _____

RISER LENGTH
- TYPE CHAIN _____
- LINK WIDTH _____
- WIRE DIAM. _____

GROUND RING LOC.
- OUTER DIAM. _____
- WIRE DIAM. _____
- CONDITION _____

LEG A LENGTH
- EXPOSED LENGTH _____
- TYPE CHAIN _____
- LINK WIDTH _____
- WIRE DIAM. _____

LEG B LENGTH
- EXPOSED LENGTH _____
- TYPE CHAIN _____
- LINK WIDTH _____
- WIRE DIAM. _____

LEG C LENGTH
- EXPOSED LENGTH _____
- TYPE CHAIN _____
- LINK WIDTH _____
- WIRE DIAM. _____

LEG D LENGTH
- EXPOSED LENGTH _____
- TYPE CHAIN _____
- LINK WIDTH _____
- WIRE DIAM. _____

RISER CONNECTIONS _____

LEG CONNECTIONS _____

OTHER _____

ANNEX C

REFERENCES

JOINT MESSAGEFORM

PAGE	DTG RELEASER TIME: DATE TIME	MONTH	YR	PRECEDENCE: ACT	INFO	CLASS	SPECAT	LMF	CIC	ORIG. MSG. IDENT
01 of 02				RR		UUUU				1461815

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: CHESNAVFACENGCOM WASHINGTON DC

TO: NAVSUPPACT NAPLES IT

INFO CINCUSNAVEUR LONDON UK

COMFAIRMED NAPLES IT

COMNAVFACENGCOM ALEXANDRIA VA

CINCLANTFLT NORFOLK VA

COMCBLANT NORFOLK VA

LANTNAVFACENGCOM NORFOLK VA

LANTNAVFACENGCOMBRO NAPLES IT

NAVSUPPACT NAPLES DET GAETA IT

UCT ONE

UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTION OF GAETA, ITALY

1. AS PART OF THE COMNAVFACENGCOM FLEET MOORING MAINTENANCE (FMM) PROGRAM, CHESNAVFACENGCOM, WITH DIVER SUPPORT FROM UCT ONE, PLANS TO CONDUCT AN UNDERWATER INSPECTION OF THE ONE FLEET MOORING AT GAETA, ITALY.

2. AVAILABLE DATA INDICATES A TWO-POINT DOLPHIN MOORING SYSTEM FOR CGN/AD CLASS SHIPS. OUR RECORDS INCLUDE LANTNAVFACENGCOM DRAWINGS

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE: James E. McLaughlin (signature)
JAMES E. MCLAUGHLIN, FPO-1C7
433-3881 26 MAY 1983

SPECIAL INSTRUCTIONS: COPY TO: 09..00..FPO-1C..FPO-1C7..
FPO-10P2..DAILY..0161..FPO-1PM

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: H. S. STEVENSON, CDR, CEC, USN

SIGNATURE: (signature)

SECURITY CLASSIFICATION

DATE TIME GROUP: 261937Z MAY 83

DD FORM 1 MAR 79 173/2 (OCR) PREVIOUS EDITION IS OBSOLETE S/N 0102-LF-000 1735 * U.S. GPO 1981-336-081

JOINT MESSAGEFORM

PAGE	DTG RELEASER TIME			PRECEDENCE		CLASS	SPECAT	CMS	CIC	ORIG MSG IDENT
	DATE TIME	MONTH	YR	ACT	INFO					
02 OF 02				RR		UUUU				1461845

FOOR	MESSAGE HANDLING INSTRUCTIONS

NUMBERS -S1:4053831 AND S2:4053832 OF 17 JANUARY 1980 AND A REPORT ON THE EMBEDMENT ANCHORS USED ON THE BOW MOORING, OF DECEMBER 1978.

3. REQUEST ADDITIONAL OR UPDATED DATA ON MAINTENANCE HISTORY, RECORD OF OVERHAULS, SHIP UTILIZATION OR ANTICIPATED SHIP USAGE DURING INSPECTION PERIOD. NO CLASSIFIED MATERIAL REQUIRED. AREA AND FACILITY MAPS WITH SPECIFIC MOORING LOCATIONS ARE REQUESTED.

4. INSPECTION SCHEDULE IS 10-17 SEPTEMBER 1983. POINT OF CONTACT AT CHESNAVFACENGCOM IS J. MCLAUGHLIN, AUTOVON 288-3881 OR (202) 433-3881.

6 5 4 3 2 1 0

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE	SPECIAL INSTRUCTIONS	
RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE		
SIGNATURE	SECURITY CLASSIFICATION	DATE TIME GROUP

DD FORM 1 MAR 79 173/2 (OCR) PREVIOUS EDITION IS OBSOLETE S/N 0102-LF-000-1735 * U.S. GPO 1981-346-081 E 2193 321

END

FILMED

6-86

DTIC