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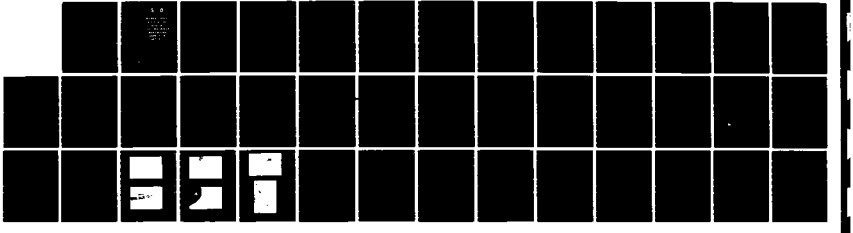

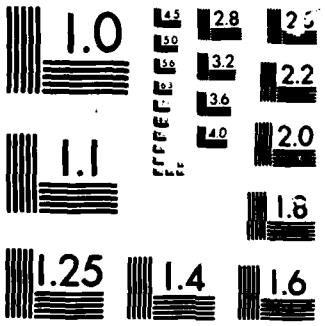

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MARINE CORPS AIR STATION IWAKUNI FLEET MOORINGS UNDERWATER INSPECTION REPORT

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SEPTEMBER 1983

OCEAN ENGINEERING
AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C. 20374

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This report contains the results of the inspection of the fleet moorings located near the Marine Corps Air Station, Iwakuni, Japan. A CHESNAVFACENGCOM assigned Engineer-in-Charge and divers from Underwater Construction Team Two conducted the inspection from 7-10 May 1983. (Con't)

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Of the five moorings inspected, one was considered to be in good condition and satisfactory for continued use. Two were found to be in fair condition and still satisfactory for continued use. One was found to be in poor condition, and was out of service. Specific comments concerning the current condition of each of the moorings and recommendations for corrective actions are contained herein.

Abstract

This report contains the results of the inspection of the fleet moorings located near the Marine Corps Air Station, Iwakuni, Japan. A CHESNAVFACENGCOM-assigned Engineer-in-Charge and divers from Underwater Construction Team Two conducted the inspection from 7-10 May 1983.

Of the five moorings inspected, one was considered to be in good condition and satisfactory for continued use. Two were found to be in fair condition and still satisfactory for continued use. One was found to be in poor condition, and one was out of service. Specific comments concerning the current condition of each of the moorings and recommendations for corrective actions are contained herein.

TABLE OF CONTENTS

MCAS IWAKUNI FLEET MOORING INSPECTION REPORT

1.0 INTRODUCTION

1.1 **Background.** Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan and conduct periodic diver inspections of all fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-in-Charge (EIC) to provide inspection planning and onsite technical direction for the underwater inspection of fleet moorings located at the Marine Corps Air Station Iwakuni, Japan. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT-2). The inspection was conducted 7-10 May 1983.

1.2 **General Mooring History.** MCAS Iwakuni normally operates and maintains five F-class fleet moorings. One of these moorings, however, is currently out of service. Buoy B-1 and part of its riser chain have been disconnected from the remainder of the riser and the mooring ground tackle and are temporarily positioned in the inner harbor pending the completion of dredging operations. The geographical location of Iwakuni and its fleet moorings are shown in Figures 1 and 2.

The remaining four moorings are utilized as fuel tanker moorings. Each is of Japanese design and consists of an 8-foot-diameter drum-type buoy, a riser chain, a 15,000-pound concrete sinker at the base of the riser, three ground legs, and three 10,000-pound anchors. Figure 2 is a schematic drawing which indicates the general composition of this type of mooring. All four of the operational moorings are in relatively shallow (25-50 feet) water.

A POL pier is scheduled for construction with an estimated completion date in early FY 86. At that time, MCAS Iwakuni plans to remove all operational fleet moorings from service.

2.0 INSPECTION PROCEDURES

2.1 **Inspection Objectives.** The purpose of the mooring inspections was to determine the general physical condition of the buoys and chain assemblies and, when

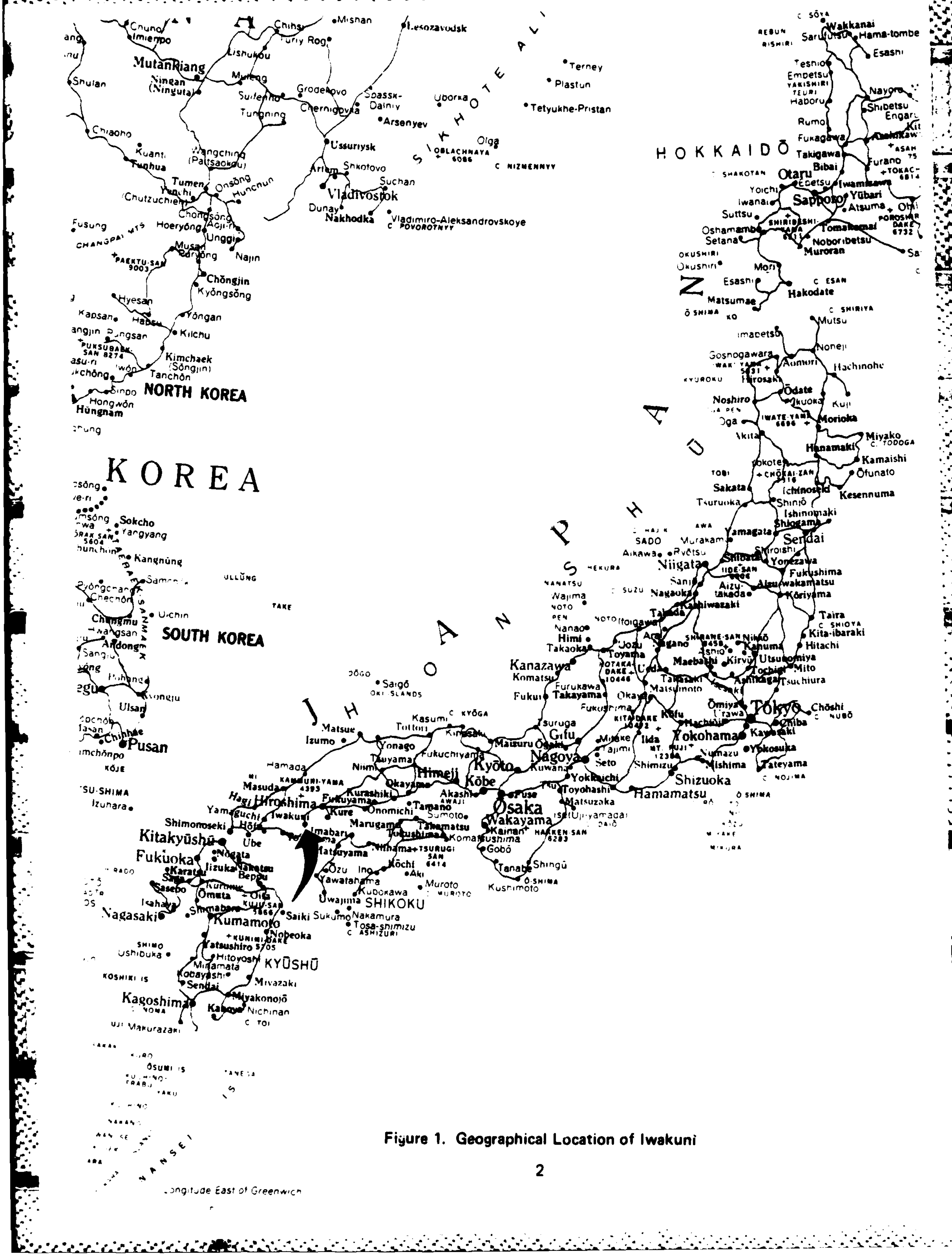


Figure 1. Geographical Location of Iwakuni

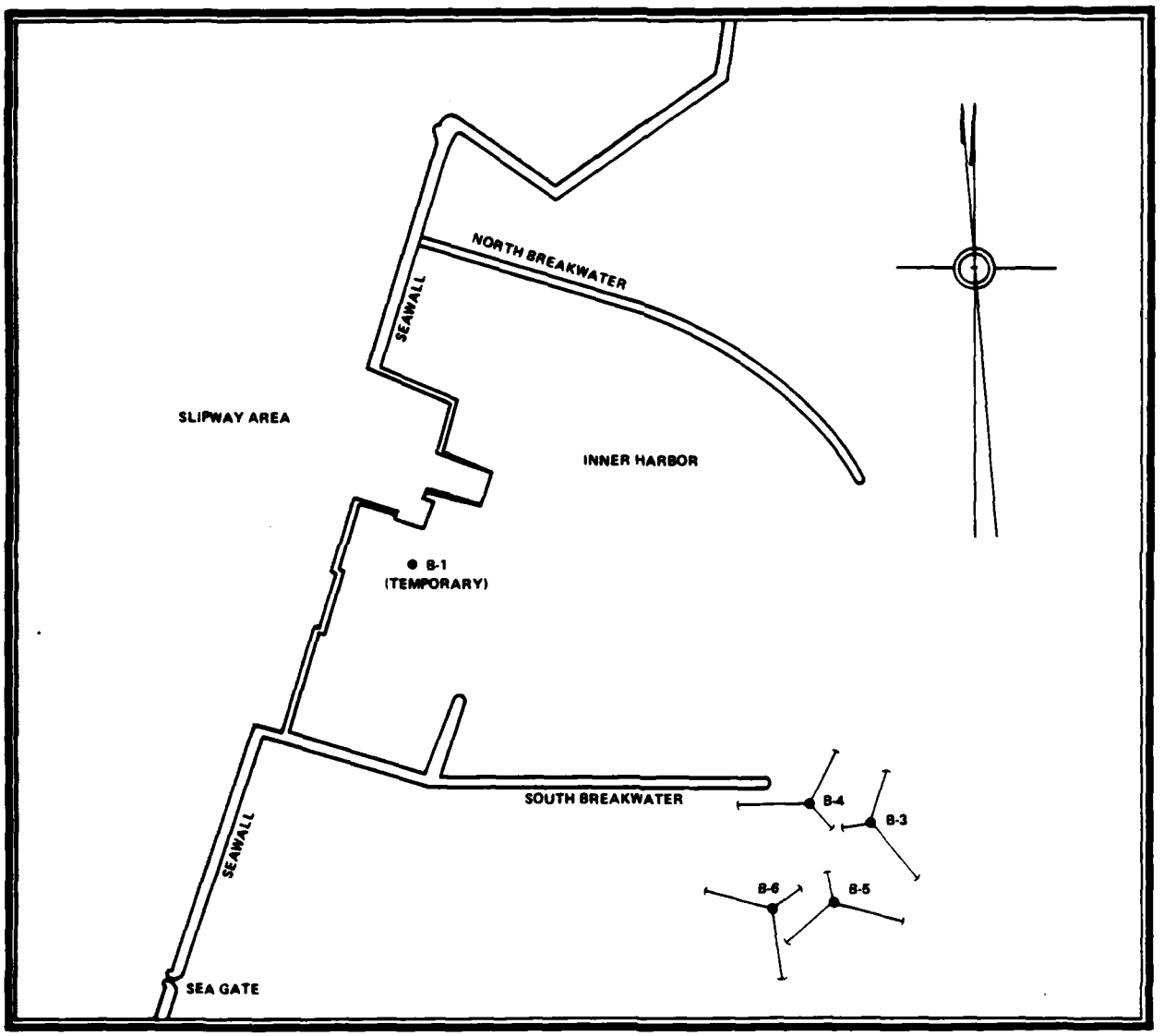


FIGURE 2. GEOGRAPHIC LOCATIONS OF MCAS IWAKUNI FLEET MOORINGS

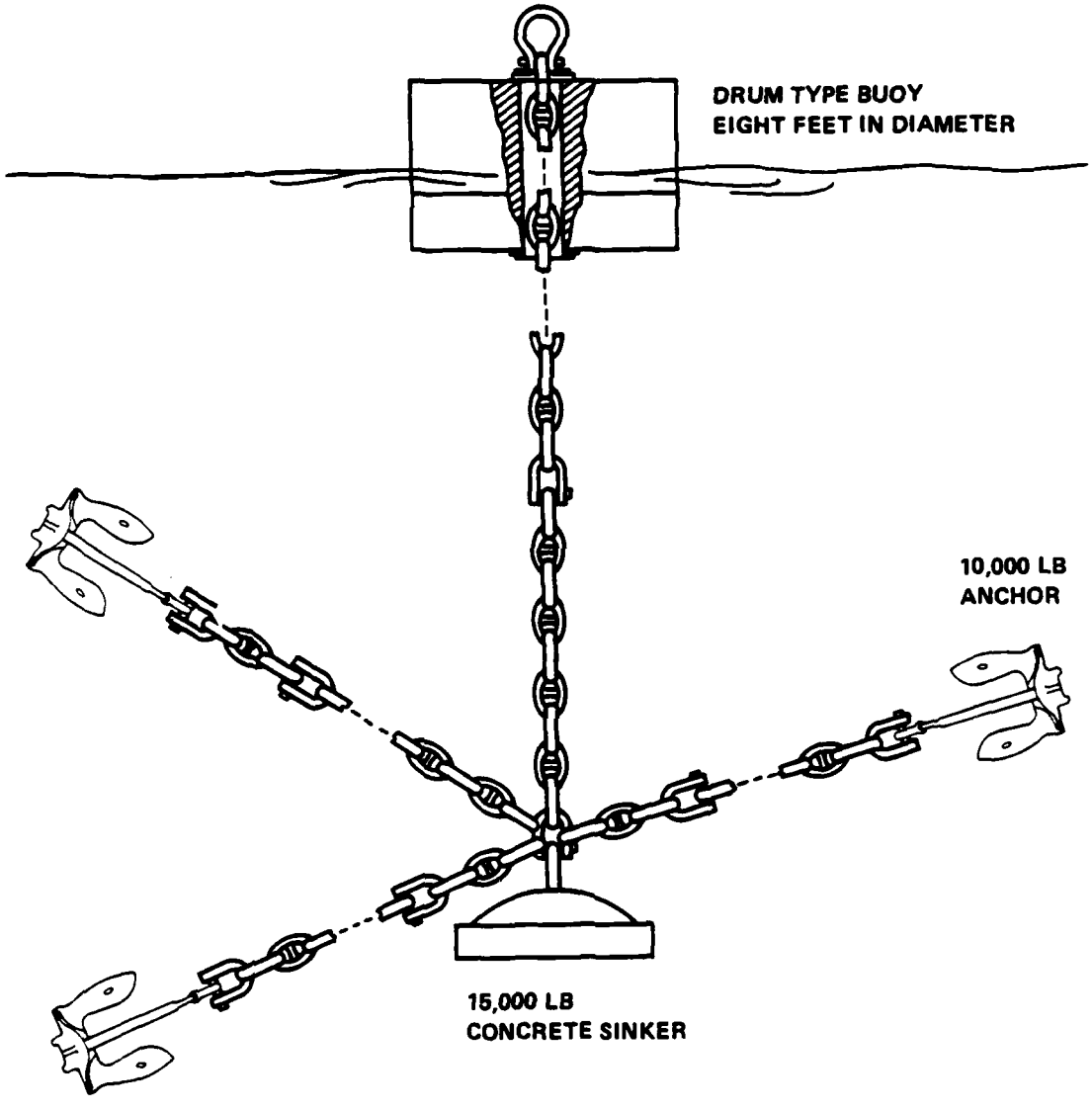


FIGURE 3. SCHEMATIC DRAWING OF A TYPICAL MCAS IWAKUNI MOORING

possible, to verify or update existing as-built and maintenance records. Divers inspected only a portion of the submerged buoy hull and chain assemblies 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.

Chain wire diameter measurements are used to evaluate the condition of a mooring. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware was taken in order to determine the amount of deterioration due to corrosion and wear. "Single link" measurements were taken where chain was slack, to detect corrosion loss. "Double link" measurements were taken where two links connect under tension to detect the combined effects of corrosion and wear. Chain links and other components which measured 90 percent or greater of original wire diameter are considered to be in "good" condition; measurement between 80 percent 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" and is cause for the mooring to be declared unsatisfactory for fleet use. When a mooring is constructed from oversized chain, a measurement between 80 and 90 percent of the original wire size results in a mooring being considered in "fair condition" but no downgrading is required if the worn chain is still larger than required.

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

2.2 Buoy.

2.2.1 Buoy Topside. The buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. The diameter and freeboard of the buoy were recorded. Physical damage such as holes, dents, or listing were noted. The fiberglass coatings were inspected for cracks, wear, peeling, or rust-bleeding.

The buoy fenders and chafing rails were checked for integrity and secure connection to the buoy. Buoy top jewelry was measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size.

2.2.2 **Buoy Lower Portion.** Divers inspected the buoy below the waterline. The thickness of marine growth was recorded, two 1-foot-square areas were selected and cleared of growth without damaging the fiberglass, and the condition of the fiberglass was noted.

2.3 **Riser.** To determine chain wear, each riser chain was inspected by taking three consecutive double link measurements, using calipers, at both ends and at the center of the riser. To determine original chain size, divers measured the length of a chain link and took single link caliper measurements of its wire diameter.

2.4 **Ground Legs.** Except for Mooring B-6, where a short section of each of its three ground legs was observed, all ground legs were buried in the bottom. The exposed sections of these legs were visually inspected, and single link caliper measurements of their wire diameter were taken.

2.5 **Sinker.** When visible, the hairpin of each sinker was inspected for wear and measured with calipers. The concrete around the hairpin was checked for spalling.

2.6 **Anchors.** No anchors were sighted during the course of the inspection.

3.0 INSPECTION SUMMARY

An in-depth discussion of the inspection results is presented in Annex A. Annex B contains photographs, and Annex C contains a copy of the preliminary report of the results of the inspection.

The data gathered during the inspection indicates the following:

- Considering their rating and use as F-class moorings, all of these moorings consist of oversized chain and accessories.
- None of the MCAS Iwakuni fleet moorings are cathodically protected.

- The buoy and 12 feet of riser chain of Mooring B-1 have been disconnected from the remainder of this mooring's riser and its ground tackle. This mooring is not in service.

- Mooring B-3's buoy rides very low in the water and has a list of about 20 degrees. In addition, the overall exterior of the buoy is in relatively poor condition.

- Buoy B-4 has a very low freeboard with its top fender partially submerged. The buoy has a 15-20 degree list. The buoy's fiberglass coating is peeling off and the hull is badly rusted.

- The swivel in the riser of mooring B-6 is worn to approximately 60 percent of its original 2-inch wire diameter.

Table 1 summarizes the inspected condition of each mooring.

4.0 MOORING INSPECTION COMMENTS AND RECOMMENDATIONS

As a result of an analysis of the inspection data, the following comments/recommendations are considered pertinent:

- To reduce corrosion and wear, buoy B-1 and its attached section of riser chain should be removed from the water and stored ashore pending a decision on its future use as an operational fleet mooring.

- Buoys B-3 and B-4 should be removed from the water at the earliest practical time and the cause of their lists determined and repaired. In addition, the exteriors of both buoys should be refurbished.

- Mooring B-5 is in satisfactory condition for continued use as a class F mooring.

- The swivel in the riser of mooring B-6 should be replaced as soon as possible. Until this can be accomplished, this mooring is unsatisfactory for fleet use as an F-class mooring.

TABLE 1

INSPECTION SUMMARY

MOORING NUMBER	REPORTED CLASS	CONDITION			REMARKS	CURRENT STATUS
		GOOD	FAIR	POOR		
1	F			✓	Out of service. Recommend recovery and storage ashore.	UNSAT
3	F		✓		Recommend repair buoy at earliest practical time. Worn riser still satisfactory for class F	SAT
4	F		✓		Recommend repair buoy at earliest practical time. Still satisfactory for class F mooring.	SAT
5	F	✓			Satisfactory for continued use as a class F mooring.	SAT
6	F			✓	Swivel worn to 60%. Recommend overhaul	UNSAT

ANNEX A

MOORING INSPECTION RESULTS

INSPECTION RESULTS
MOORING B-1

General

This mooring is not in service. The buoy and part of the riser chain were moved from the mooring's normal location (east-southeast of the south breakwater) to a position close to the Surface Division's Boat House in the inner harbor. This geographical position is temporary pending completion of dredging operations in the outer harbor.

Buoy

This is a drum-type buoy with a 10-foot diameter and a hawsepipe. The buoy top and the topside jewelry are in good condition. The buoy side plating is striped with orange paint. The buoy is maintained in place by a wire rope attached to it and a small concrete clump lying on the bottom.

Riser

Only 12 feet of riser chain is attached to the buoy. A double link measurement of the lower two links and a single link measurement of the bottom link were both greater than 90 percent of the required 1 1/4-inch diameter for a class F mooring. Location of the remainder of the riser and the ground legs is not known.

Ground Legs/Sinker/Anchors

Not visible for inspection.

Recommendation

The mooring buoy and its 12 feet of riser chain should be removed from the water and placed ashore for storage until the remainder of the mooring components can be recovered from the bottom, and the entire mooring either overhauled or permanently removed from service.

MOORING NO.: B-1 CLASS: F LOCATION: MCAS IWAKUNI LAT: 34°-08'-13" N LONG: 132°-15'-29" E

WATER DEPTH: 28' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAUSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☒ CLAY ☐ CORAL ☐ ROCK Visibility 5-10' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION							D	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %				
			EST	90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											TEN FOOT DIAMETER BUOY. BUOY
2" END LINK											PAINTED WITH ORANGE STRIPES.
1 3/4" SHACKLE											
3 1/4" SHACKLE											
RISER	NEAR BUOY										ONLY 12' OF RISER ATTACHED TO
	MIDDLE		2 1/4"	√√√			√√√				BUOY BOTTOM. REST OF RISER,
	NEAR GRD RG										GROUND LEGS, SINKER, ANCHORS
GROUND RING											MISSING AND PROBABLY BURIED.
GROUND LEG NO. A	UPPER END			4 1/16"	D.L. LAST TWO LINKS					12'	THREE MEASUREMENTS EACH LINK.
	MIDDLE			1 7/8"	S.L. LAST LINK						BUOY HELD IN PLACE BY WIRE
	ENTERS BOTTOM										ROPE TO SMALL CONCRETE CLUMP.
GROUND LEG NO. B	UPPER END										CLUMP LOCATION MARKED WITH
	MIDDLE	MISSING									RED FLAG
	ENTERS BOTTOM										
GROUND LEG NO. C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. D	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										

DATE: 7 MAY 83 ENGINEER IN CHARGE: JONES DIVERS: MILLER / SAKO

INSPECTION RESULTS
MOORING B-3

Buoy

This is a Japanese-built 8-foot diameter buoy with a hawsepipe. The buoy rides low in the water (little freeboard) and has about a 20-degree list. Due to this list, part of the fender is underwater. Most of the paint has been chipped off the galvanized pipe chafing rail, its connections are badly rusted, and the pipe contains numerous dents. The top hardware is rusted and scaling. The buoy is fiberglass coated, but beneath this coating the side plating is badly rusted. The rubbing casting appears to be in satisfactory condition. The bottom of the buoy is heavily encrusted with marine growth.

Riser

The original size of the riser chain (2 1/2 inches) is oversized for a class F mooring, which only requires 1 1/4-inch-diameter chain. All caliper double link measurements revealed that the riser chain is 80 percent or larger than its original wire size. The chain is covered with a heavy marine growth from the bottom of the buoy to a depth of about 45 feet. Between that depth and the bottom (52 feet), the chain is free of marine growth but is covered with rust.

Ground Legs/Sinker/Anchors

Not visible for inspection.

Recommendations

A measurement between 80 and 90 percent of any mooring component is normally cause for a mooring to be downgraded to the next lower class of mooring. However, in the case of mooring B-3, the double link measurements of even the more badly worn chain links (4 1/4 inches) are almost 2 inches larger than the 2 1/2-inch double link measurement of the 1 1/4-inch-diameter chain required for an F-class mooring. Therefore, this mooring should still be capable of withstanding F-class mooring loads.

Due to low freeboard and list, it would appear that Buoy B-3 may be leaking and taking on water. In addition, the overall external condition of the buoy is poor. The buoy should be recovered at the earliest possible time, the cause of its low freeboard and list determined and repaired, and the buoy refurbished as required.

MOORING NO.: B-3 CLASS: F LOCATION: MCAS IWAKUNI LAT: 34°-08'-02" N LONG: 132°-15'-06" E

WATER DEPTH: 52' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAUSE PIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☒ CLAY ☐ CORAL ☐ ROCK Visibility 10' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION								COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
				90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											BUOY HAS 20° LIST. PART OF TOP FENDER
3 1/4" SHACKLE											IN WATER DUE LOW FREEBOARD. PIPE CHAFING
RISER CHAIN											RAIL DENTED. HARDWARE RUSTED AND
											SCALING. HEAVY GROWTH ON BOTTOM. ABOUT 8'
				D.L.	MEASUREMENT						DIAMETER BUOY. RUBBING CASTING OK.
RISER	NEAR BUOY		2 1/2"	4 7/16"	4 9/16"	4 1/2"	✓✓	✓		<10'	OVERSIZED CHAIN FOR CLASS F MOORING.
	MIDDLE			4 9/16"	4 1/4"	4 1/4"		✓✓✓		20'	EXTREMELY HEAVY GROWTH.
	NEAR GRD RG			4 9/16"	4 3/8"	4 3/8"		✓✓✓		45'	CHAIN CLEAN BUT RUSTY BELOW 45'
~~GROUND RING~~ RISER				4 7/8"	4 7/8"	4 13/16"	✓✓✓			52'	RISER ENTERS BOTTOM
GROUND LEG NO. A	UPPER END										
	MIDDLE				ALL MEASUREMENTS MADE						
	ENTERS BOTTOM				WITH CALIPERS						GROUND LEGS/SINKER/ANCHORS BURIED
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: 9 MAY 83 ENGINEER IN CHARGE: JONES DIVERS: MILLER/SAKO/COTTELLESSA

CHESNAVFACENGCOM REPORT FPO-1-83(26), "MCAS IWAKUNI FLEET MOORINGS INSPECTION REPORT"

INSPECTION RESULTS
MOORING B-4

Buoy

This is an 8 foot-diameter Japanese-built drum buoy with a hawsepipe. The buoy is riding extremely low in the water and has a 15-20 degree list. The fender is partially submerged. The topside hardware, galvanized pipe chafing rail, and hawsepipe are all severly rusted. The fiberglass coating is badly chipped and is peeling from the buoy. The bottom of the buoy has a heavy coating of marine growth.

Riser

The length of a riser link was measured to be 13 inches, which would indicate that the original wire size of the chain was 2 1/8 inches. Double link measurements of the riser were all greater than 90 percent of the estimated original wire size. In addition, this chain is oversized for an F-class mooring (1 1/4-inch). The riser is covered with an extremely heavy marine growth. The last link of the riser is attached to a half-buried swivel by a detachable link. About 15 feet from the swivel, the divers observed and measured 2 1/8-inch-diameter chain links emerging from the mud, running on the surface for about 5 feet and then reentering the mud. It is not known whether this is a portion of the riser or ground leg chain.

Ground Legs/Sinker/Anchors

Not visible for inspection.

Recommendations

The inspected portions of this mooring are in satisfactory condition and there is no reason why this mooring cannot continue to be used as a class F mooring. However, due to low freeboard and list, it would appear that Buoy B-4 may be taking on water. In addition, the overall external condition of the buoy is poor. The buoy should be recovered at the earliest possible time, the cause of its low freeboard and list determined and repaired, and the buoy refurbished as required.

MOORING NO.: B-4 CLASS: F LOCATION: MCAS IWAKUNI LAT: 34°-08'-03"N LONG: 132°-15'-02"E

WATER DEPTH: 35' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 5-10' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION								COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
			EST.	90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											ABOUT AN 8' DIAMETER BUOY RIDING
3 1/4" SHACKLE											LOW IN WATER. FENDER PARTIALLY
RISER											SUBMERGED DUE 15-20° LIST. SEVERLY
											RUSTED HARDWARE, CHAFING RAIL, AND
				D.L MEASUREMENT							HAWSEPIPE. FIBERGLASS PEELING. HEAVY
RISER	NEAR BUOY		2 1/8"	4 3/8"	4 1/8"	4 1/8"	✓✓✓			8'	GROWTH ON BOTTOM OF BUOY.
	MIDDLE		↓								HEAVY GROWTH ON CHAIN. 13" LINKS.
	NEAR GRD RG			4"	4"	4"	✓✓✓			35'	LAST RISER LINK ATTACHED TO SWIVEL
GROUND RING											(HALF BURIED IN MUD) BY A
GROUND LEG NO. A	UPPER END	↓									DETACHABLE LINK
	MIDDLE										
	ENTERS BOTTOM										ABOUT 5' OF 2 1/8" CHAIN OBSERVED
GROUND LEG NO. B	UPPER END										OUT OF MUD ABOUT 15' FROM SWIVEL,
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. D	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									

DATE: 9 MAY 83 ENGINEER IN CHARGE: JONES DIVERS: MILLER/SAKO/COTTELLESSA

CHESNAVFACENGCOM REPORT FPO-1-83(26), "MCAS IWAKUNI FLEET MOORINGS INSPECTION REPORT"

INSPECTION RESULTS
MOORING B-5

Buoy

This is an 8-foot-diameter Japanese-built drum-type buoy with a hawsepipe. The buoy is fiberglass coated, has a galvanized pipe chafing rail and a fender near the top of the buoy. There is a light coating of rust on the top of the buoy while the buoy hardware is moderately rusted.

Riser

The length of a riser link was measured to be 13 1/2 inches which would indicate that the original wire size of the chain was 2 1/4 inches. Double link measurements of the riser were all greater than 90 percent of the estimated original wire size. This chain is oversized for a class-F mooring (1 1/4-inch). The riser is covered with an extremely heavy coating of marine growth between the buoy bottom and a depth of 38 feet. From this point to the bottom (46 feet) the chain is free of growth but rusted. About 20 feet of riser chain is visible on the bottom before it enters the mud.

Chain Legs/Sinker/Anchors

Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class F mooring.

MOORING NO.: B-5 CLASS: F LOCATION: MCAS IWAKUNI LAT: 34°-07'-59" N LONG: 132°-15'-04" E

WATER DEPTH: 46' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☒ CLAY ☐ CORAL ☐ ROCK Visibility 10' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION NEW EST.	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											ABOUT 8' DIAMETER BUOY. FIBERGLASS
1 1/2" SHACKLE											OK. PIPECHAFING RAIL / FENDER OK.
3 1/4" SHACKLE											SOME RUST ON TOP. HARDWARE
RISER											RUSTY
				D.L. MEASUREMENT							
RISER	NEAR BUOY		2 1/4"	4 3/8"	4 3/8"	4 5/16"	√√√			<10'	EXTREMELY HEAVY GROWTH BOTTOM
	MIDDLE		↓	4 5/16"	4 5/16"	4 3/16"	√√√			20'	OF BUOY TO 38' DEPTH. CHAIN CLEAN BUT
	NEAR GRD RG		↓	4 3/16"	4 3/16"	4 1/16"	√√√			46'	RUSTY FROM THERE TO BOTTOM.
GROUND RING											TWENTY FEET OF RISER ON BOTTOM
GROUND LEG NO. A	UPPER END										BEFORE CHAIN ENTERS MUD. 13 1/2"
	MIDDLE										LINK LENGTHS.
	ENTERS BOTTOM										
GROUND LEG NO. B	UPPER END										LEGS / SINKER / ANCHORS BURIED
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO. D	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									

DATE: 7 MAY 83 ENGINEER IN CHARGE: JONES DIVERS: MILLER / SAKO

REPORT EPO-1-83(26), "MCAS IWAKUNI FLEET MOORINGS INSPECTION REPORT"

INSPECTION RESULTS
MOORING B-6

Buoy

This is a Japanese-built drum-type buoy with a hawsepipe. It is fiberglass coated and has a galvanized pipe chafing rail. This rail and the buoy's top deck have no rust. A fender is located at the very top of the buoy. The buoy has about a 10-degree list and its hull, below the waterline, shows some signs of rust bleeding. Overall, the buoy is in good condition.

Riser

About 20 feet down the riser chain from the buoy, the divers noted a swivel. This swivel was measured and found to be about 60 percent of its original 2-inch wire diameter. The length of a riser link above the swivel was measured to be 13 1/2 inches, which indicated that the upper portion of the riser was originally 2 1/4-inch chain. The length of a link in the 5 feet of riser in the water column below the swivel measured 12 3/4 inches, indicating that the lower portion of the riser was originally 2 1/8 inches in diameter. Both portions of the riser chain in the water column are oversized for an F class mooring (1 1/4-inch), and both sections measured 80 percent or larger of their original estimated wire diameters.

The riser reaches the bottom at a depth of 25 feet and about 75 feet of it rests on the bottom before its last link is attached with a shackle to the hairpin of a sinker. As depicted in Figure A-1, the on-bottom segment of the riser chain is comprised of three different wire sizes of chain.

Sinker

The 15,000-pound concrete sinker is partially buried in the bottom. Five 2 1/2-inch shackles are attached to its hairpin. One attaches the riser, three attach ground legs, and the fifth is a spare.

CHESNAVFACENGCOM REPORT FPO-1-83(26),

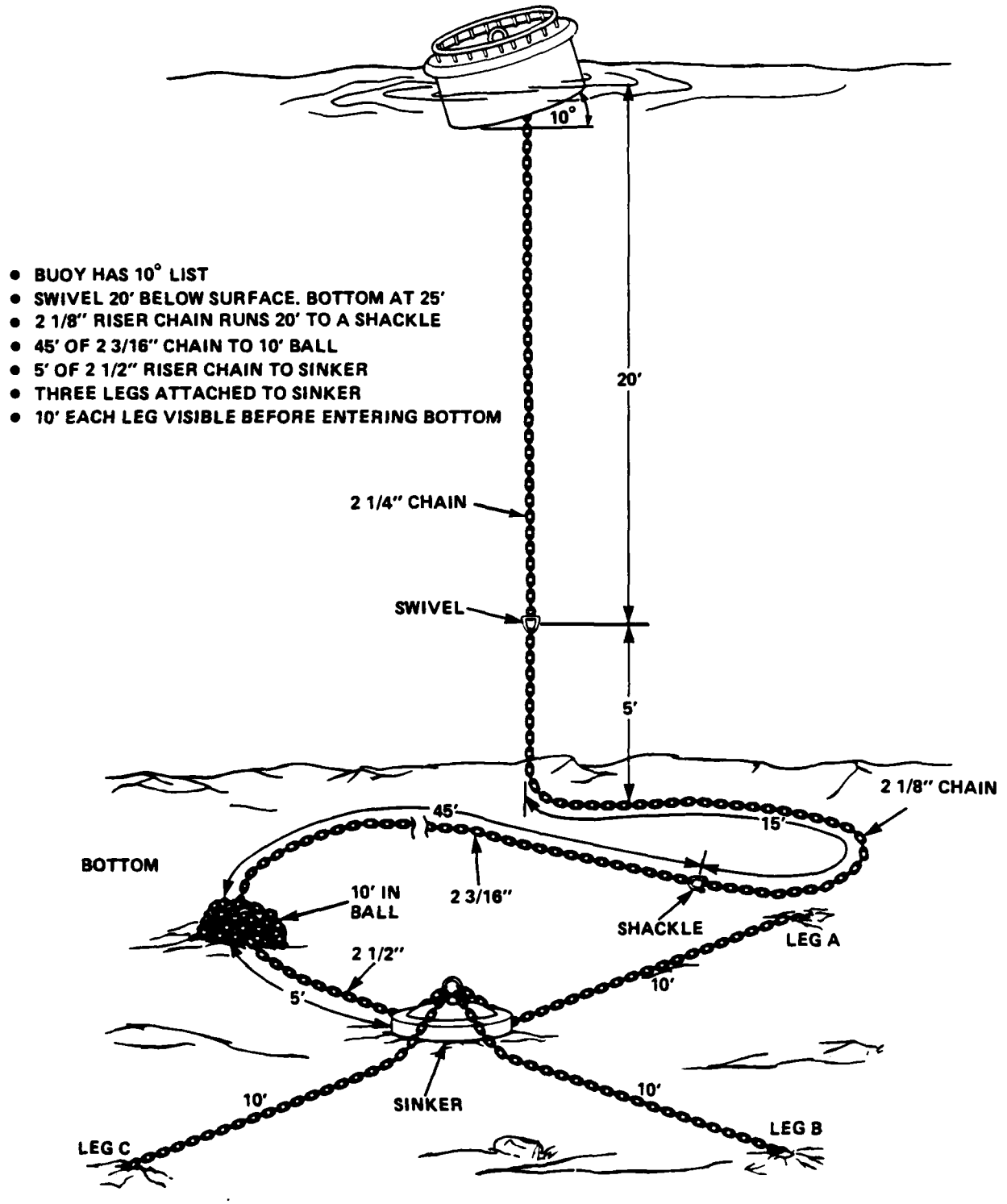


FIGURE A-1. SCHEMATIC DRAWING OF MOORING B-6

Ground Legs

The upper 10 feet of the three ground legs was visible before the legs entered the bottom. The observed portions of these legs appeared to be in satisfactory condition.

Anchors

Not visible for inspection.

Recommendation

The weakest component in this mooring is the riser swivel which measures about 60 percent of its original 2-inch wire diameter. Although the diameter of the remaining steel in this swivel is satisfactory for use in a class F mooring, the number of cyclical loads this swivel has been subjected to and the condition of the internal structure of the steel remaining in its wear zones is unknown. Recommend that this swivel be replaced at the earliest possible time. In the interim, this mooring should not be used

MOORING NO.: B-6 CLASS: F LOCATION: MCAS IWAKUNI LAT: 34°-07'-57"N LONG: 132°-15'-00"E

WATER DEPTH: 25' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 10' D = depth NI = not inspected, inaccessible

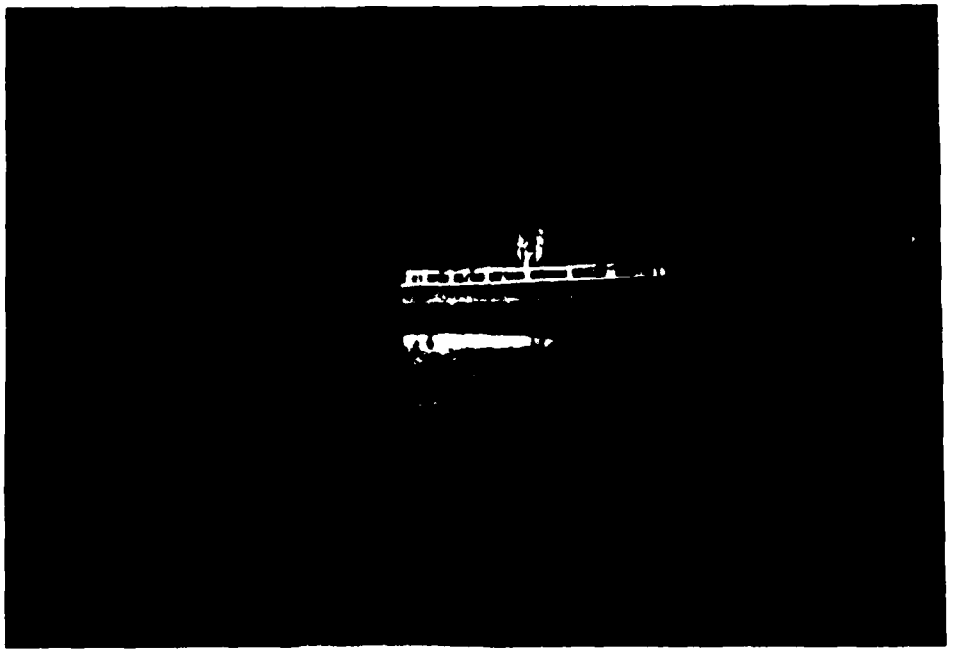
COMPONENTS		NI	CONDITION								COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
			EST	90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											FENDER AT THE VERY TOP OF THE
1½" SHACKLE											BUOY. FIBERGLASS COATED. PIPE
3¾" SHACKLE											CHAFING RAIL/TOP DECK CLEAN-NO
RISER											RUST. BUOY HAS ± 10° LIST. SOME RUST
				D.L. MEASUREMENT							BLEEDING BELOW WATERLINE
RISER	NEAR BUOY		2¼"	4⅛"	4⅛"	4 3/16"	✓✓✓			<10'	
	MIDDLE		↓	3⅞"	4"	4⅛"	✓✓	✓		20'	SWIVEL AT 20' WORN TO ABOUT 60% OF
	NEAR GRD RG		2⅛"	3⅞"	3¾"	3¾"	✓	✓✓		20'	ORIGINAL 2" SIZE
~~GROUND RING~~			↓	3 9/16"	3½"	3½"		✓✓✓		25'	RISER RUNS ON BOTTOM ± 75'
GROUND LEG NO. A	UPPER END										1ST 15' 2" SIZE CHAIN
	MIDDLE										2ND 45' 2 3/16" SIZE CHAIN
	ENTERS BOTTOM										3RD 10' IN BALL
GROUND LEG NO. B	UPPER END										4TH 5' 2½" SIZE CHAIN
	MIDDLE										THEN SHACKLED TO CLUMP. FOUR
	ENTERS BOTTOM										ADDITIONAL SHACKLES ATTACHED TO
GROUND LEG NO. C	UPPER END										CLUMP. THREE ATTACHED TO LEGS-
	MIDDLE										ONE SPARE.
	ENTERS BOTTOM										ABOUT TEN FEET EACH LEG VISIBLE
GROUND LEG NO. D	UPPER END										BEFORE CHAIN ENTERS BOTTOM
	MIDDLE										
	ENTERS BOTTOM										

DATE: 9 MAY 83 ENGINEER IN CHARGE: JONES DIVERS: MILLER/COTTELESSA

REFERENCE: NAVFAC REPORT EPO-1 83(26), "MCAS IWAKUNI FLEET MOORINGS INSPECTION REPORT"

ANNEX B

PHOTOGRAPHS



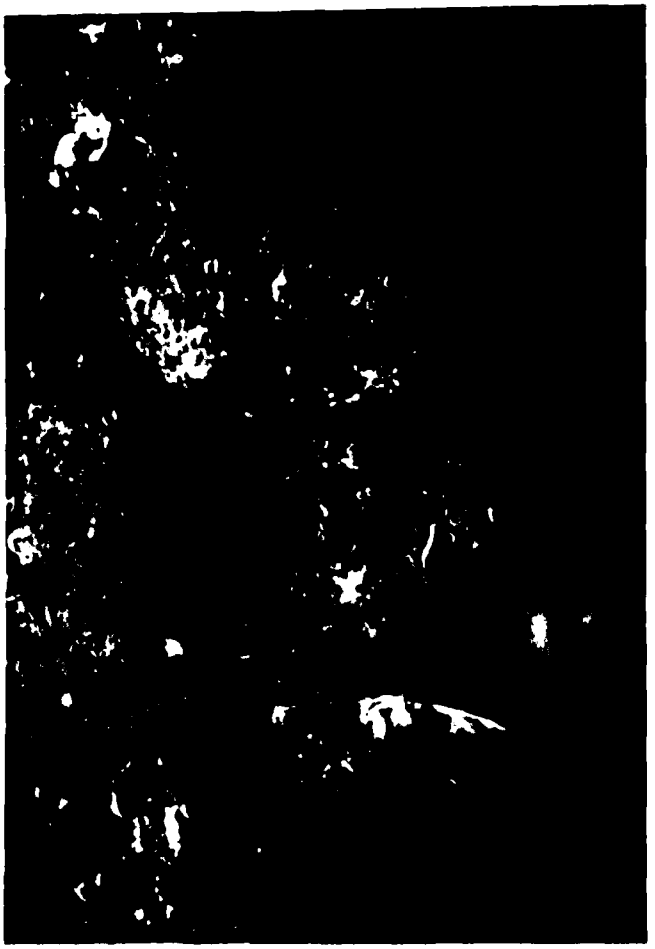
Buoy B-1 in its Temporary Location

Buoy B-3. Note Chafing Rail/Upper Hawse Pipe Rust, Heavy Marine Growth, and Low Freeboard

Mooring B-3. Rust on Riser Chain Near the Mud Line

Extremely Low Freeboard of Buoy B-4

Buoy B-4. Note Rusted Chafing Rail and Upper Hawse Pipe



Mooring B-6. Worn Swivel and End Link in Riser Chain

ANNEX C

REFERENCES

JOINT MESSAGEFORM

PAGE	DTG/RELEASER TIME: DATE TIME	MONTH	YR	PRECEDENCE: ACT	PRECEDENCE: INFO	CLASS	SPECAT	LMF	CIC	ORIG MSG IDENT
01 OF 02				RR		UUUU				1711430

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: CHESNAVFACENGCOM WASHINGTON DC

TO: MCAS IWAKUNI JA

INFO COMNAVFACENGCOM ALEXANDRIA VA

PACNAVFACENGCOM PEARL HARBOR HI

UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTION

1. AS DISCUSSED IN A MEETING BETWEEN MR. HIRAO {IWAKUNI} AND MR. T. JONES {CHESNAVFACENGCOM} ON 10 MAY 1983, A CHESNAVFACENGCOM/ UCT TWO UNDERWATER INSPECTION OF THE FIVE MOORINGS AT IWAKUNI WAS CONDUCTED DURING THE PERIOD 8-10 MAY 1983. THIS IS A PRELIMINARY REPORT OF THE INSPECTION RESULTS TO PROVIDE AN ALERT TO SEVERAL SIGNIFICANT FINDINGS:

A. MOORING B-5: OVERSIZED CHAIN FOUND TO BE WORN TO BETWEEN 80 AND 90 PERCENT OF ORIGINAL SIZE. FAIR CONDITION, NO ACTION NECESSARY.

B. MOORING B-4: BUOY HEAVILY RUSTED, FIBERGLASS PEELING. BUOY LOW IN WATER WITH A LIST. CHAIN IN GOOD CONDITION. RECOMMEND REPLACE OR REFURBISH BUOY.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE

T. JONES, FPO-1C{PDC}, 21 JUNE 1983

433-3881

SPECIAL INSTRUCTIONS

COPY TO: 09..00..FPO-1C..FPO-1/1A

FPO-1C{PDC}..DAILY..0161

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

H. S. STEVENSON, CDR, CEC, USN

SIGNATURE

SECURITY CLASSIFICATION

DATE TIME GROUP

DD FORM 1 MAR 79 173/2 (OCR) PREVIOUS EDITION IS OBSOLETE

JOINT MESSAGEFORM

PAGE	DTG/RELEASER TIME			PRECEDENCE		CLASS	SPECAT	LMF	CIC	ORIG MSG IDENT
	DATE TIME	MONTH	YR	ACT	INFO					
02 OF 02				RR		UUUU				1711430

SUGA — MESSAGE HANDLING INSTRUCTIONS

C. MOORING B-3: BUOY VERY LOW IN WATER. LISTING 25 DEGREES. CHAIN IN FAIR CONDITION. RECOMMEND REPLACE OR REFURBISH BUOY.

D. MOORING B-6: SWIVEL IN RISER WORN TO APPROXIMATELY 60 PERCENT OR ORIGINAL SIZE. RECOMMEND OVERHAUL.

E. MOORING B-1: RISER CHAIN DISCONNECTED FROM GROUND CHAIN AT 12-FOOT DEPTH, APPARENTLY BY CONSTRUCTION/DREDGING CONTRACTOR WORKING IN AREA. ASSUME LOCATION OF GROUND LEGS IS KNOWN. RECOMMEND RECOVERING MOORING TO BE REINSTALLED AFTER DREDGING IS COMPLETE IF STILL NEEDED.

2. ANTICIPATE DISTRIBUTION OF DETAILED INSPECTION REPORT IN AUGUST 1983.

3. CHESNAVFACENGCOM POINT OF CONTACT IS MR. T. JONES AT (202) 433-3881 OR AUTOVON 288-3881.

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		
RELEASER — 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 - 336-081 E 2193 321

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ROUTINE

R 132055Z MAR 83

FM CHESNAVFACENGCOM WASHINGTON DC

TO MCAS IWAKUNI JA

INFO COMNAVFACENGCOM ALEXANDRIA VA
COMCRPAC PEARL HARBOR HI
COM THREE ONE NCR PORT HUENEME CA
PACNAVFACENGCOM PEARL HARBOR HI
COM THREE ZERO NCR GUAM
UCT TWO

BT
UNCLAS //N11000//

1. AS PART OF THE COMNAVFACENGCOM FLEET MOORING MAINTENANCE (FMM) PROGRAM, CHESNAVFACENGCOM, WITH DIVER SUPPORT FOR UCT TWO, PLANS TO CONDUCT AN UNDERWATER INSPECTION OF THE 5 MOORINGS AT MCAS, IWAKUNI DURING MAY 83. AVAILABLE DATA INDICATES 1 CLASS E MOORING, WATER DEPTH UNKNOWN, AND 4 CLASS F MOORINGS IN 22-40 FEET OF WATER. INSPECTION WILL RESULT IN SPECIFIC CONDITION ANALYSES AND RECOMMENDATIONS BY MOORING AND WILL ENHANCE PROGRAMING OF FUNDS FOR FLEET MOORING MATERIAL SUPPORT.

2. THE FLEET MOORING INSPECTION TEAM WILL CONSIST OF A CHESDIV ENGINEER-IN-CHARGE (EIC) AND A DET FROM UCT TWO.' IN ORDER TO PREPARE A DETAILED INSPECTION PLAN, THE FOLLOWING INFORMATION IS REQUIRED PER MOORING:

A. MAINTENANCE HISTORY - WHEN INSTALLED, WHEN INSPECTED, WHEN OVERHAULED, LAST REPORTED CONDITION, ETC.

B. COPIES OF MOORING DESIGN CALCULATIONS AND DRAWINGS.

C. COPIES OF "AS-BUILT" MATERIALS LIST.

D. FACILITY MAP SHOWING LOCATION OF ALL MOORINGS WITH SPECIFIC LOCATIONS FOR THOSE CURRENTLY IN USE.

E. ANTICIPATED MOORING USAGE DURING THE INSPECTION PERIOD - TYPES OF SHIPS.

F. PLANNED REPAIRS AND OVERHAULS - PARTICULARLY THOSE BEFORE THIS INSPECTION.

G. TYPES AND CLASSES OF SHIPS USING MOORING.

H. WHETHER CATHODIC PROTECTION SYSTEMS ARE INSTALLED AND TYPE OF MATERIALS UTILIZED.

3. REQUEST MCAS, IWAKUNI MAIL ABOVE INFORMATION AS SOON AS POSSIBLE

DLVR:CHESNAVFACENGCOM WASHINGTON DC(9)...ORIG

RTD:000-000/COPIES:0009

593498/103 1 OF 2 M1 0448 103/23:28Z 132055Z MAR 83
CSN:RXOY00491 CHESNAVFACENGCOM WASHINGTON DC

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TO CHESNAVFACENGCOM (CODE FPO-1C7), BLDG. 212, WASHINGTON NAVY YARD, WASHINGTON, DC 20374.

4. ADDITIONALLY, REQUEST MCAS, IWAKUNI REPLY BY MESSAGE WITH THE ABOVE INFORMATION EXCEPT FOR DRAWINGS AND MAPS BY 21 APRIL 1983. REGRET LATENESS OF THIS REQUEST. MCAS EFFORT TO PREPARE INFO WILL BE BE GREATLY APPRECIATED AND WILL SIGNIFICANTLY ENHANCE THE ACCURATE DOCUMENTATION OF CURRENT MOORING CONDITIONS AS WELL AS THE PROCUREMEN OF NEW FLEET MOORING MATERIALS.

5. CHESNAVFACENGCOM POINT OF CONTACT IS MR. JAMES MCLAUGLIN AT AUTOVON 288-3881 OR (202) 433-3881.
BT

593498/103 2 OF 2 M1 0448 103/23:28Z 132055Z MAR 83
CSN:RXOY00491 CHESNAVFACENGCOM WASHINGTON DC

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ROUTINE

R 210331Z AUG 82

FM CINCPACFLT PEARL HARBOR HI

TO CINCPAC PEARL HARBOR HI

INFO CHNAVMAT WASHINGTON DC
COMNAVAIRSYSCOM WASHINGTON DC
COMNAVFACENGCOM ALEXANDRIA VA
COMNAVTELCOM WASHINGTON DC
COMNAVSURFPAC SAN DIEGO CA
COMNAVAIRPAC SAN DIEGO CA
CG FMFPAC
COMOCEANSYSPAC PEARL HARBOR HI
COMNAVMARIANAS GUAM
COMPACMISTESTCEN PT MUGU CA
WESTNAVFACENGCOM SAN BRUNO CA
OICC MIDPAC PEARL HARBOR HI
OICC GUAM
OICC DIEGO GARCIA HOUSTON TX
PWC GUAM
PWC YOKOSUKA JA
PWC SAN FRANCISCO CA
COMTHREE ZERO NCR GUAM
NAVFAC LENTERVILLE BEACH CA
NAVSTA SEAL BEACH CA
NAVSHIPREPFAC SUBIC BAY RP
NF AITSUGI JA
COMSHIPYD PUGET SOUND WA
SUBASE SAN DIEGO CA
COMTHREEFAC BANGOR WA
NCT GUAM
NAVSUPPFAC DIEGO GARCIA
NAVSTA LONG BEACH CA
NSC PEARL HARBOR HI
NAVSHIPYD MARE ISLAND CA
PACMISRANFAC HAWAREA BARKING SANDS HI
COMNAVSEASYSCOM WASHINGTON DC
COMNAVELEXSYSCOM WASHINGTON DC
CNR ARLINGTON VA
COMNAVLOGPAC PEARL HARBOR HI
COMSUBPAC PEARL HARBOR HI
COMTHIRDFLT
COMMARCORBASESPAC CAMP H M SMITH HI
COMNAVFORJAPAN YOKOSUKA JA
COMUSNAVPHIL SUBIC BAY RP
PACNAVFACENGCOM PEARL HARBOR HI
CHESNAVFACENGCOM WASHINGTON DC
OICC SUWESTPAC MANILA RP
OICC FAR EAST YOKOSUKA JA
PWC PEARL HARBOR HI
PWC SUBIC BAY RP
PWC SAN DIEGO CA
COM THREE ONE NCR PORT HUENEME CA
UCT TWO
NAVOCEANSYSCEN SAN DIEGO CA
NSD SUBIC BAY RP
MCAS IWAKUNI JA
NAVUSEAWARENGSTA KEYPORT WA
NAVMAG LUALUALEI HI
SUBASE BANGOR WA
NAVPHIBASE CORONADO SAN DIEGO CA
NAVSHIPREPFAC GUAM
NAVSTA SAN DIEGO CA
NAVSHIPYD PEARL HARBOR HI
SUBASE PEARL HARBOR HI

BT
UNCLAS //N11000//

SUBJ: UCT TWO FY83 EMPLOYMENT TASKING

RLYR:CHESNAVFACENGCOM WASHINGTON DC(9)...INFO

RTD:000-000/COPIES:0009

114776/235 1 OF 3 M1 0308 235/23:21Z 2103312 AUG 82
CSN:RXDY00304 CINCPACFLT PEARL HARBOR HI

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U U N C L A S S I F I E D U
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A. CINCPACFLT PEARL HARBOR HI 260654Z JUN 82

1. REF A REQUESTED NOMINATIONS OF PROJECTS FOR UCT TWO ACCOMPLISHMENT FY83-85. FROM THE RESPONSES TO REF A THE FOLLOWING PROJECTS ARE TASKED FOR ACCOMPLISHMENT IN FY83:
   A. CENTERVILLE BEACH (CLASSIFIED)
   B. ARCTIC WEST (CLASSIFIED)
   C. BARKING SANDS, HI, CABLE LANDING AND REPAIRS
   D. WPNSTA SEAL BEACH, DEMOLISH ANAHEIM BAY BRIDGE
   E. NSD SUBIC, PILE REPAIR POL PIER
   F. NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE I (REPAIR ALL SEVERE AND MAJOR DAMAGE)
   G. NAVSHIPREPFAC SUBIC, INSPECT ALAVA WHARF
   H. FLEET MOORING INSPECTION - PACIFIC DATA BASE (PEARL HARBOR HI, GUAM, YOKOSUKA, IWAKUNI, SASEBO, INDIAN ISLAND WA, BREMERTON WA)
   I. NAVMAG LUALUALEI, INSPECT AMMO PIERS W1-5
   J. UNDERWATER INSPECTION PROGRAM (NSC SAN DIEGO)
   K. SUBASE, BANGOR WA, UNDERWATER INSPECTION
   L. TRIREFFAC BANGOR WA, UNDERWATER MSF RANGE REPAIR
   M. DEGAUSSING RANGE SURVEY, SAN FRANCISCO CA
   N. NAVPHIBASE CORONADO SAN DIEGO CA, PIER INSPECTIONS

2. THE FOLLOWING PROJECTS ARE TASKED AS FILL IN WORK FOR FY83:
   A. UNDERWATER INSPECTION PROGRAM (NAVSTA PEARL HARBOR)
   B. NAVUSEAWARENGSTA KEYPORT WA, INDIAN IS PHASE TWO MOORING
   C. NSD GUAM, REPAIRS TO SIERRA WHARF GUAM. REQUIRES COORDINATION WITH ON SITE NMCB FOR ACCOMPLISHMENT.

   THE FOLLOWING PROJECTS ARE TENTATIVELY TASKED FOR ACCOMPLISHMENT AS INDICATED:
   A. FY-84
      (1) ARCTIC WEST (CLASSIFIED)
      (2) NAVSHIPREPFAC GUAM, REPAIRS TO LIMA WHARF
      (3) FLEET MOORING INSPECTION - PACIFIC DATA BASE 9SUBIC BAY, NSF DIEGO GARCIA, PWC SAN DIEGO, NAVSTA SAN DIEGO, WPNGTA SEAL BEACH, NAVSTA LONG BEACH)
      (4) NSD SUBIC, WATERFRONT FACILITIES INSPECTION
      (5) NSD SUBIC, MONOBUOY FUEL LINE REPAIRS
      (6) DEGAUSSING RANGE SAN FRANCISCO, RANGE INSTALLATION
      (7) UNDERWATER INSPECTION PROGRAM CNAVSHIPY PEARL HARBOR, NSC PEARL HARBOR, SUBASE PEARL HARBOR)
      (8) SCARF REPAIR/INSPECTION
      (9) BARKING SANDS, UNDERWATER RANGE REPAIRS
      (10) NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE 2

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(REPAIRS TO MODERATE AND MINOR DAMAGE)

B. FY-85

(1) ARCTIC WEST (CLASSIFIED)

(2) BARKING SANDS - UNDERWATER RANGE WORK

(3) FLEET MOORING INSPECTION - PACIFIC DATA BASE (PEARL HARBOR HI, GUAM, JAPAN, PUGET SOUND WA)

(4) UNDERWATER INSPECTION PROGRAM (MARE ISLAND CA)

(5) SUBASE PEARL, MCON P-088, REPAIR AND EXTEND SEAWALL THIS PROJECT WILL REQUIRE SEPARATE TASKING OF AN RNMCB, CBU OR OTHER ORGANIZATION AS "PRIME CONTRACTOR" FOR PILE DRIVING AND TOPSIDE ZONE, WITH NCT ACCOMPLISHING WATER SUPPORT.

END

FILMED

6-86

DTIC