HOLY LOCH
FLEET MOORINGS
INSPECTION REPORT

FP0-1-82(22)

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HOLY LOCH
FLEET MOORINGS
INSPECTION REPORT

15 OCTOBER 1982

OCEAN ENGINEERING AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, DC 20374

FPO-1-82(22)
This report contains results of the inspection of selected Fleet Moorings and Navigation Buoys at the Naval Activity, Holy Loch, Scotland. Divers from UCT-1 and an engineer from the Ocean Engineering & Construction Project Office of CHESNAVFACENGCOM conducted the inspections from 17-25 June 1982. (Con't)
Results of the inspection indicate that a majority of the ground legs in the AFDB-7 mooring may be in need of overhaul, and that a number of legs should be repositioned in order to improve the catenary of the mooring chains. The condition of the two Sixth Class moorings and the two Navigation Buoys is satisfactory. Comments concerning the condition of specific components and any recommendations for remedial action are included.
Abstract

This report contains results of the inspection of selected Fleet Moorings and Navigation Buoys at the Naval Activity Detachment, Holy Loch, Scotland. Divers from UCT-1 and an engineer from the Ocean Engineering and Construction Project Office of CHESNAVFACENGCOM conducted the inspections from 17 - 25 June 1982.

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1.0 INTRODUCTION

1.1 Background. In November 1981, CINCUSNAVEUR requested that COMCBLANT provide UCT-1 divers to inspect six legs of the AFDB-7 mooring, the Number 2 and Number 3 Sixth Class moorings, and the Port and Starboard Navigation Buoys at Holy Loch (Ref. A, Annex F); in May 1982 this request was expanded to include all 22 ground legs of AFDB-7 (Ref. B). In turn, on 26 March 1982, COMCBLANT stated that CHESNAVFACENGCOM would provide funding and technical support for the inspection (Ref. C). The funding for UCT-1 participation was provided by CHESNAVFACENGCOM from the NAVFACENGCOM (Code 10) - sponsored Fleet Mooring Maintenance Program. References D and E provide additional background information. Technical support included inspection planning, development of diver inspection procedures, on-site engineering support, recording of the raw data gathered by divers, data analysis, and preparation of the inspection report. Inspections were conducted from 18 - 24 June; local debriefings were conducted on 25 and 28 June. Preliminary results of the inspection and initial recommendations for corrective action were reported by message on July 29 (Ref. F). Annex E contains a chronology of significant events.

1.2 General Description and Historical Information. Holy Loch is located on the west coast of Scotland about 35 miles west-northwest of Glasgow. Access to Holy Loch from the Atlantic Ocean is via the Irish Sea and the Firth of Clyde. There are 10 moorings located in the northwest end of the Loch; Figure 1 shows the position of each mooring.

1.2.1 AFDB-7. The AFDB-7 mooring is a Special Floating Dry Dock mooring consisting of four dock cells which are connected together and moored in place by 22 ground legs and anchors. The dock is 513 feet long and 241 feet wide. Each leg of three-inch diameter studlink chain runs from a padeye on deck to a 30,000 pound anchor (stockless without stabilizer type). AFDB-7 was originally installed in 1961 at a position to the southeast of its present location; movement of the dock to the current location was completed on 5 August 1971.

The dry dock is routinely used by fleet ballistic missile (FBM) submarines. Because of the strategic importance of this facility and the possibility of severe winter weather, the material condition of the mooring is a continuing concern. Between 1973 and 1981, 19 of the 22 ground legs were inspected by the British Ministry of Defense (M.O.D.). During this period, only one of the ground legs was determined to contain a chain link which has worn to less than 80% of the original wire diameter; the length which contained this link was replaced in 1981. In April 1982, divers from USS HUNLEY (AS-31) visually inspected 21 of the 22 ground legs. All chain was reported to be in good condition, although some legs were observed to have little or no catenary.

A schematic diagram of the AFDB-7 mooring is shown in Figure 2.
Figure 2. Schematic of AFDB-7 Mooring, Showing Ground Leg Numbers
1.2.2 **Sixth Class Moorings.** "Sixth Class" is the British designation for the single-anchor/single riser type of mooring illustrated in Figure 3. A row of such moorings is located along the northwest margin of the Loch (see Figure 1). Records indicated that six moorings were in place; Numbers 2 and 3 were to be inspected. Upon arrival the inspection team learned that buoys Number 1 and 4 had been removed. The remaining moorings are regularly used by small barges and maintenance vessels.

1.2.3 **Navigation Buoys.** These special purpose Navigation Buoys (Figure 3) are used by maintenance vessels and FBM submarines as they transit to or from the Holy Loch dry dock. Buoy positions are shown in Figure 1.

2.0 **INSPECTION PROCEDURES**

The purpose of the inspection was to determine the general physical condition of the moorings and buoys, and, when possible, to verify or update existing installation and maintenance records. The underwater inspections performed by divers sampled only a small portion of the submerged chain links and jewelry in order to compile a general description of the installation's condition. If accurate records of original material and configuration (such as wire diameter) or subsequent maintenance (e.g., replacement of chain links) are not available, then the measurements made by divers may not reveal components which have badly deteriorated or are sub-standard. Conversely, the existence of fairly consistent measurements during a "selective sampling"-type inspection is a good indication of the installation's overall condition. It should be kept in mind that underwater inspections are intended as a relatively quick and inexpensive supplement to, and augmentation of, accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving removal of the mooring from the water, and the measurement and evaluation of each component.

The most important parameter used to evaluate the condition of a mooring is chain wire diameter. After cleaning 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 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. Figure 4 shows how these measurements are made. Chain links and other components which measure greater than 90% (+90%) of original wire diameter are considered satisfactory; measurement between 80% and 90% (+80%) of original diameter is cause for the mooring classification to be downgraded; any measurement of less than 80% (-80%) causes the mooring to be considered unsatisfactory for fleet use.
Figure 3. Schematics of Navigation Buoy and Sixth Class Mooring
Inclinometer

Catenary Data
L = Lateral Distance
A = Inclinometer Angle
DC = Depth Where Chain Enters Mud
DB = Depth Below Dock Edge

Figure 4. Chain Wire Diameter Measurements and Ground Leg Catenary Observations
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 become buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible.

2.1 AFDB-7

2.1.1 Physical Condition of Ground Legs. For inspection purposes, sections of each of the 22 ground legs were defined as follows:

Section I: On-deck, from padeye to chock
Section II: Splash zone, from chock to waterline
Section III: From waterline to mudline

Inspection of Section I involved selective sampling of double link measurements, a visual check of the general condition of all links, and a visual check for wear at the padeye and pelican hook. A "Go/No-Go" technique was used for measurements in this section: by using a pre-cut gauge, each connection point was graded as +90%, +80%, or -80% without requiring a caliper measurement.

Section II was inspected by taking double link caliper measurements of all links and noting their general condition.

For Section III the inspection included a visual check of the chain from surface to the mud line and "Go/No-Go" double link measurements every 20 feet of water depth. Single link measurements were made on short sections of Legs #15 and #19 which were lifted from the mud. (Note: lifts were made using cranes aboard AFDB-7; not more than 6 - 8 links were lifted in order to avoid disturbing the anchor.)

2.1.2 Cathodic Protection. None of the ground legs is equipped with a cathodic protection system per se. However, voltmeter readings were taken concurrent with the double link measurements in Section III of Legs #1 and 13-22 in order to determine to what degree, if any, the impressed current systems of nearby vessels may be providing cathodic protection for the ground legs. Voltmeter readings are consolidated in Table 2.

2.1.3 Catenary Profile. Several observations were made in order to determine the catenary of each leg. The parameters involved are illustrated in Figure 4. The inclinometer readings were taken where the chain enters the water; depth readings were taken directly below the deck edge and where the chain enters the
mud; the lateral distance is the horizontal distance from the deck edge to the pop float installed above the position where the chain enters the mud. Two inclinometer readings were taken on several legs: the first under relatively calm conditions (winds less than 10 KTS), and a second during strong winds (to 40 KTS) in order to compare the effect on the catenary.

2.1.4 **Ground Leg Relative Bearing.** The orientation of each leg relative to the dock was observed by using a hand-held compass to determine the bearing of the chain as it enters the water. For some legs, a second bearing was taken on a pop float above the point where the chain entered the bottom mud. Comparison of observed vs. designed orientation may indicate which ground legs, if any, should be repositioned.

2.1.5 **Motion of AFDB-7.** From known positions ashore, transit readings to prominent features on the dry dock were recorded under various wind conditions in order to determine the extent of movement of the dock. A schematic diagram of the surveying arrangement is shown in Annex A.

The results of these inspections are presented in Annex A.

2.2 **Sixth Class Moorings.** Two moorings of this type were inspected by divers. The inspection of each mooring included checking the overall physical condition of the buoy itself, observing the thickness of marine growth, and inspecting the condition of the paint under the growth. Go/No-Go double link measurements of the riser chain wire diameter were made at three points along its length.

Results are presented in Annex B.

2.3 **Navigation Buoys.** Inspection of the Navigation Buoys was similar to that of the Sixth Class moorings. In addition, transit readings were taken from shore to verify the location of each buoy.

Annex C contains the results of these inspections.

3.0 **INSPECTION SUMMARY**

This summary provides a brief analysis of the results of the inspection and provides recommendations for corrective action if needed. A more detailed presentation of data can be found in the appropriate annex.
3.1 AFDB-7-Summary

3.1.1 Findings. A summary of inspection data is presented in Table 1. Analysis of the observations and measurements made by the inspection team yielded the following results:

- No broken links or hardware were found; 27% (6 of 22) legs were +90% of original 3" chain wire diameter over the entire inspected length (to mudline); 68% (15 of 22) were +80% at some point along their length; one leg (#22) was –80% in Section II. All but one of the +80% or lower measurements occurred in Section II, the splash zone (see Figure 5). Leg #18 had no on-deck stopper (pelican hook).

- No anchors or sinkers were located; all legs were buried in bottom mud a relatively short distance from the floating dock.

- Three legs were noted to have slack chain resting on the bottom; 36% (8 of 22) of the legs had surface chain angles of greater than 85° from the horizontal; 41% (9 of 22) had angles of 75° - 85°; 32% (7 of 22) of the lateral distances were less than 18'; average lateral distance was 45' (see Figure 6).

- Voltmeter readings are typical of unprotected steel in seawater, indicating that no cathodic protection is being provided via impressed current from vessels in the vicinity (see Table 2).

- Analysis of transit readings indicates that wind-induced movement of AFDB-7 is not extreme. For steady winds of 30 KTS with gusts to 40 KTS, the dock experienced a net lateral displacement of approximately 32' from its position in light winds (<10 KTS) from approximately the same direction; maximum displacement was 37' at the bow during a yaw of about 2° to port; maximum yaw was about 3° to starboard.

- Because of inherent inaccuracies in the observation system, no firm conclusions can be drawn regarding the relative bearing of the ground legs.

3.1.2 Proposed Corrective Action

- The chain in Section II of Leg #22 which measured less than 80% of original wire diameter must be replaced as soon as possible.

- An engineering analysis of AFDB-7 mooring design should be conducted in order to define the optimum catenary of each leg; pending results of such an analysis, a number of legs should be repositioned to tighten the catenary prior to the 82 - 83 winter season.
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Note 1: DB = Depth at dock edge; DC = Depth where chain enters mud; Obs. = actual measurement; MLWS = Depth at Mean Low Water Springs

Note 2: Second and third angles measured during different weather conditions; see text.

Note 3: First observation taken along chain as it enters water; second observation, if recorded, was from deck edge to pop float above point where chain enters mud.

Note 4: Unable to measure Leg #1 due to proximity of other vessels; values in parentheses are from inspection performed in April 1982 by divers from USS HUNLEY.

Table 1. Summary of AFDB-7 Inspection Data
# Mooring Inspection Report

<table>
<thead>
<tr>
<th>Facility</th>
<th>Mooring No</th>
<th>Type/Class</th>
<th>Lat: Lon:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAVACTDET HOLY LOCH UK</td>
<td>AFDB-7</td>
<td>SPECIAL DRY DOCK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Date</th>
<th>Divers</th>
<th>Water Depth</th>
<th>Engineer</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. INSPECTION</td>
<td>18-24JUN82</td>
<td></td>
<td></td>
<td>M. M. WALTER</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VOLTOMETER READINGS</th>
<th>00'</th>
<th>20'</th>
<th>40'</th>
<th>60'</th>
<th>80'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deg #1</td>
<td>1</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Measurements in m

Table 2: AFDB-7 Voltmeter Readings
Sixth Class Moorings — Summary

3.2.1 Findings. The two moorings inspected are in generally good-to-excellent condition. Inspection of the buoys revealed no holes, dents, or pitting, and only medium marine growth was observed. The riser chain was in good condition, with all measurements +90%. Neither of the two anchors was observed. The riser of mooring #2 contained two swivels, while there was no swivel observed in the riser of mooring #3.

3.2.2 Proposed Corrective Action. A swivel should be inserted in the riser of #3 mooring.

3.3 Navigation Buoys

3.3.1 Findings. The condition of these buoys is generally good-to-excellent. The topside portion of each of the buoys is in good condition; minimal pitting was observed below the waterline. The bridles and risers are in good condition; all double link measurements were +90%. The anchors of both buoys were located and there was no evidence of dragging. The only notable observations were the existence of a box swivel in place of a standard swivel in one of the risers, and a 4 - 5' length of riser chain wrapped around the clump anchor, both in the Starboard buoy.

3.3.2 Proposed Corrective Action. None.

4.0 MOORING INSPECTION COMMENTS/RECOMMENDATIONS

4.1 AFDB-7. The fact that over 70% of the ground legs had measurements of less than 90% of original wire diameter at some point along their length indicates that the mooring may be in need of overhaul. It is recommended that at least the first two shots of chain in each leg be replaced with new chain, unless a thorough engineering analysis indicates that fewer legs are required. Some legs may require additional new chain depending on the specific location and extent of the wear zone. A cost estimate for new chain and associated hardware is presented in Annex D. Pending results of the analysis to specify the mooring requirements of AFDB-7, it is recommended that only the segment of Leg #22 previously identified be replaced immediately.

Consideration should be given to the possibility of providing cathodic protection for the mooring, especially in the event any of the legs are replaced during overhaul.

Maintenance of proper ground leg catenary is important in order to dampen dock motion and minimize the movement of the dock relative to nearby vessels of much smaller sail area. In view of the fact
that the catenary of many of the legs apparently should be tightened, it is recommended that action be
taken prior to completion of the analysis previously mentioned.

Pending the next overhaul, it is recommended that the annual inspection of at least two of the
legs by British M.O.D. be continued. Results of these inspections should be forwarded to CHESNAVFAC-
ENGCOM for inclusion in mooring maintenance files.

4.2 Sixth Class Moorings. Records and conversations with British M.O.D. in Holy Loch confirmed that
regular routine inspections, maintenance, and overhauls are performed on these moorings.

It is recommended that any change in the location, type, or number of these moorings be reported
to the appropriate activities (including CHESNAVFACENGCOM) so that an accurate inventory of mooring
facilities may be maintained.

4.3 Navigation Buoys. These buoys should remain in excellent condition under the current program of
inspection and maintenance administered by the British Navy.
ANNEX A

AFDB-7 MOORING INSPECTION REPORTS

INSPECTION REPORT FOR EACH LEG

TRANSIT FIXES
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section I</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Not Inspected ; Note 3</strong></td>
</tr>
<tr>
<td><strong>Section II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*1</td>
<td>5½'D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*2</td>
<td>5½'D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Section III</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20'</td>
<td>VD</td>
<td></td>
<td>602</td>
<td></td>
</tr>
<tr>
<td>40'</td>
<td>VD</td>
<td></td>
<td>607</td>
<td><strong>Growth Stops At 50' Depth</strong></td>
</tr>
<tr>
<td>60'</td>
<td>VD</td>
<td></td>
<td>649</td>
<td></td>
</tr>
<tr>
<td>80'</td>
<td>VD</td>
<td></td>
<td>664</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double link measurement, S = Single link measurement

**Note 3:** Unable to reach this portion of leg - under deck overhang
MOORING INSPECTION REPORT

1. FACILITY: DAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS: MOORING: Special Dry Dock
4. LEG NUMBER: 1

5. INSPECTION: DATE: 18-24 June
   DIVERS: Pronia
   WATER DEPTH: M.M. Walter
   INITIALS: M.M. Walter

Catenary Data:

A = 80°
L = ___ ft UNABLE TO MEASURE
D_B = 84.6 ft
D_C = 81.6 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

    Not Observed

OTHER DATA:

Relative Bearing: 000° at deck edge
N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
### Component Details

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td>W15</td>
<td>√D</td>
<td></td>
<td>All chain in Section I is coated - Good condition</td>
</tr>
<tr>
<td></td>
<td>H20/Z1</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section II</td>
<td># 24</td>
<td>5% Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 25</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 26</td>
<td>5% Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 27</td>
<td>5% Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 28</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section III</td>
<td>20'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>√D</td>
<td></td>
<td>Silty/muddy bottom - Diver could put hand in 1/2 - 2'</td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY
NAVACTDET, HOLY LOCH, UK

2. MOORING NO
AFDB-7

3. TYPE/CLASS MOORING
Special Dry Dock

4. LEG NUMBER: 2

5. INSPECTION
DATE 18-21 Jan 82
DIVERS PLONIA
WATER DEPTH
ENGINEER
INITIALS

MOORING NO. 13.
TYPE/CLASS 1400 RING 4 LEG

NAVACTDET, HOLY LOCH, UK AFDB-7
Special Dry Dock

DATE
DIVERS
WATER DEPTH
ENGINEER
INITIALS

100% AVAILABILITY,
HOLY LOCH, UK AFDB-7 Special Dry Dock

DATE
DIVERS
WATER DEPTH
ENGINEER
INITIALS

CATENARY DATA:

\[ A = 59^\circ \quad A' = 62^\circ \]
\[ L = 90 \text{ ft (USS Henley Divers, Apr 82)} \]
\[ D_b = 94.8 \text{ ft} \]
\[ D_c = 96.8 \text{ ft} \]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less
A' recorded in winds 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE + ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 2 LINKS
TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 010° at deck edge

\footnotesize{\textit{Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.}}
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td>#16/17</td>
<td>JD</td>
<td></td>
<td>Chain Slightly Pittet, All Links in Section I are Coated</td>
</tr>
<tr>
<td></td>
<td>#22/23</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section II</td>
<td># 24</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 25</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 26</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 27</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 28</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section III</td>
<td>20'</td>
<td>JD</td>
<td></td>
<td>Slack Chain on Bottom</td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS: MOORING Special Dry Dock
4. LEG NUMBER: 3
5. INSPECTION DATE: 18-24 June

DIVERS: PRONIA
WATER DEPTH: M. M. WALTER

CATENARY DATA:

\[
\begin{align*}
A &= 78^\circ, A' = 71^\circ \\
L &= 60 \text{ ft} \text{ (USS Hunley Divers Apr. 82)} \\
D_B &= 99.3 \text{ ft} \\
D_C &= 98.3 \text{ ft}
\end{align*}
\]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less
A' recorded in winds 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

Pad Eye - Anchor Joining Link + 6 Links + Detachable Link + 11 Links
To Stopper + 5 Links To Chock + 5 Links To Waterline

OTHER DATA:

Relative Bearing: \( 061^\circ \) at deck edge
M/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td>Not recorded</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section II</td>
<td># 25 5% 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 26 5% 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 27 5% 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 28 5% 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># 29 5% 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section III</td>
<td>20' √D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40' √D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60' √D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80' √D</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NACHTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS: Special Dry Dock
4. LEG NUMBER: 4

S. INSPECTION DATE: 19-24 JUN 82
DIVERS: COOPER
WATER DEPTH: M.M. WALTER
ENGINEER: INITIALS

CATENARY DATA:

A = 87°  A' = 77°
L = 45 ft
D_B = 100.6 ft
D_C = 97.6 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less
A' recorded in winds 30 - 40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 4 LINKS TO CHOCK + 5 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 030° at deck edge
N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#15/16</td>
<td>J0</td>
<td></td>
<td><strong>All links in Section I coated</strong></td>
</tr>
<tr>
<td></td>
<td>#19/20</td>
<td>J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#24</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>S&quot;,D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>S/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>S/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>S/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20'</td>
<td>J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>J0</td>
<td></td>
<td><strong>Harder bottom: 4&quot;-5&quot; penetration</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9&quot; links loose on bottom**</td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is J0; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement.
MOORING INSPECTION REPORT

Date: 18/25 January
Divers: Cooper
Water depth: A.M. Walter

CATENARY DATA:

\[ \begin{align*}
A &= 89^\circ, A' = 86^\circ \\
L &= 3 \text{ ft} \quad \text{(USS Hunley Divers Apr 82)} \\
D_B &= 102.1 \text{ ft} \\
D_C &= 102.1 \text{ ft}
\end{align*} \]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less
"A'" recorded in winds 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

\[ \text{Pad Eye - Anchor Linking Link + 10 Links To Stopper + 6 Links To Chock + 6 Links To Waterline} \]

OTHER DATA:

Relative Bearing: 100^\circ at deck edge

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

### COMPONENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td>#14/15</td>
<td>JD</td>
<td></td>
<td><strong>ALL LINKS IN SECTION I COATED</strong></td>
</tr>
<tr>
<td></td>
<td>#22/23</td>
<td>JD</td>
<td></td>
<td><strong>GOOD CONDITION</strong></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td>#26</td>
<td>5% d</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>5% d</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>5% d</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#29</td>
<td>5% d</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#30</td>
<td>5% d</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td>20'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NACVDDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 6

5. INSPECTION:
   - DATE: 18-24 W 92
   - DIVERS: Cooper
   - WATER DEPTH: M.M. Walter

---

**Catenary Data:**

\[ A = 82^\circ \text{ A' = 65}^\circ \]

\[ L = 54 \text{ ft} \]

\[ D_B = 104.4 \text{ ft} \]

\[ D_C = 102.4 \text{ ft} \]

**Notes:** Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' recorded in winds 30-40 KTS

**Comments:**

**Configuration, Pad Eye-To-Waterline:**

Pad Eye - Anchor Joining Link + 20 Links To Stopper + 5 Links To Chock + 5 Links To Waterline

**Other Data:**

Relative Bearing: \(070^\circ\) at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
### MOORING INSPECTION REPORT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter Reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section I</strong></td>
<td>#10/11</td>
<td>✓D</td>
<td></td>
<td>Partially Coated</td>
</tr>
<tr>
<td></td>
<td>#19/20</td>
<td>✓D</td>
<td></td>
<td>Lightly Rusted</td>
</tr>
<tr>
<td><strong>Section II</strong></td>
<td>#24</td>
<td>5/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>5/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>5/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>5/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>5/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Section III</strong></td>
<td>20'</td>
<td>✓D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>✓D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>✓D</td>
<td></td>
<td>Good Visibility, Solid Bottom - Kneeling on It</td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>✓D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 7

5. INSPECTION DATE: 18/24/96
DIVERS: PRINIA
WATER DEPTH: N/A
ENGINEER: M. M. WALTER
INITIALS: 

Catenary Data:

\[
A = 77^\circ \quad A' = 55^\circ \\
L = 60 \text{ ft (USS Hornet, March 1962)} \\
D_B = 89.3 \text{ ft} \\
D_C = 89.3 \text{ ft}
\]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less
\[A' \text{ recorded in winds 20-40 KTS}\]

COMMENTS:

Configuration, Pad Eye-To-Waterline:

Pad Eye - Anchor Joining Link + 18 Links To Stopper + 5 Links
To Chock + 5 Links To Waterline

Other Data:

Relative Bearing: 070° at deck edge
\[\text{N/A}\] deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

A-15
# MOORING INSPECTION REPORT

<table>
<thead>
<tr>
<th>1. FACILITY</th>
<th>2. MOORING NO</th>
<th>3. TYPE/CLASS MOORING</th>
<th>4. LEG NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAVACTDET, HOLY LOCH, UK</td>
<td>AFDB-7</td>
<td>Special Dry Dock</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. INSPECTION</th>
<th>DIVERS</th>
<th>WATER DEPTH</th>
<th>ENGINEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24 JUNE</td>
<td>PILONIA</td>
<td></td>
<td>M.M. WALTER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION</th>
<th>COMPONENT</th>
<th>CONDITION</th>
<th>VOLTMETER READING, mV</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Link # 1/2</td>
<td>JD</td>
<td>+90/20/80</td>
<td>Medium Rust</td>
</tr>
<tr>
<td></td>
<td>Link # 26</td>
<td>JD</td>
<td>+90/20/80</td>
<td>NEW CHAIN</td>
</tr>
<tr>
<td>II</td>
<td>Link # 27</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link # 28</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link # 29</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link # 30</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Link # 40</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link # 60</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link # 80</td>
<td>JD</td>
<td>+90/20/80</td>
<td></td>
</tr>
</tbody>
</table>

Note: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement.
MOORING INSPECTION REPORT

FACILITY
HOLY LOCH, UK

2. MOORING NO
AFDB-7

3. TYPE/CLASS
Special Dry Dock

4. LEG NUMBER
8

5. INSPECTION
DATE
1/24/86

DIVERS
I. CONIA

WATER DEPTH

ENGINEER
M.M. WALTER

INITIALS

Catenary Data:

\[
A = 60^\circ, A' = 33^\circ
\]

\[
L = 120 \text{ ft}
\]

\[
D_B = 83 \text{ ft}
\]

\[
D_C = 87 \text{ ft}
\]

Notes:
Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

A' recorded in winds 30-40 KTS

Comments:

Configuration, Pad Eye-To-Waterline:

Pad Eye-Anchor Joining Links + 17 Links To Stopper + 2 Links +
Detachable Link + 3 Links To Check + 7 Links To Waterline

Other Data:

Relative Bearing: \(280^\circ\) at deck edge

A/A deck edge-to-pop float

Note:
Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

1. FACILITY: NAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. SPECIAL DRY DOCK: Promia
4. LEG NUMBER: 9

### COMPONENT

<table>
<thead>
<tr>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td></td>
<td></td>
<td><strong>Medium Rust / Flaky</strong></td>
</tr>
<tr>
<td>#12/13</td>
<td>+90%</td>
<td>+80%</td>
<td></td>
</tr>
<tr>
<td>#19/20</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#24</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#25</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#26</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#27</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#28</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#29</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20'</td>
<td>+90%</td>
<td></td>
<td><strong>Leg Drops Vertically At Surface</strong></td>
</tr>
<tr>
<td>40'</td>
<td>+90%</td>
<td></td>
<td><strong>But Tends Out At A Much Greater Slope</strong></td>
</tr>
<tr>
<td>60'</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80'</td>
<td>+90%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS: MOORING SPECIAL DRY DOCK
4. LEG NUMBER: 9

5. INSPECTION DATE: 18-21 June

FACILITY: NAVACTDET, HOLY LOCH, UK
DATE: 18-21 June

CATENARY DATA:

- \( A = 85^\circ \)
- \( L = 57 \text{ ft} \)
- \( D_B = 84.4 \text{ ft} \)
- \( D_C = 87.4 \text{ ft} \)

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 1 LINK + DETACHABLE LINK + 3 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 090° at deck edge
170° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

### 1. FACILITY
NAVACTDET, HOLY LOCH, UK

### 2. MOORING NO
AFDB-7

### 3. TYPE/CLASS MOORING
Special Dry Dock

### 4. LEG NUMBER
10

### 5. INSPECTION
<table>
<thead>
<tr>
<th>DATE</th>
<th>DIVERS</th>
<th>WATER DEPTH</th>
<th>ENGINEER</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-21 June 22</td>
<td>PLONIA</td>
<td></td>
<td></td>
<td>M.M. WALT</td>
</tr>
</tbody>
</table>

### COMPONENT

#### SECTION I
- Link #1: 11/8, 1D, 5/10, 5/40
- Link #2: 23, 5/40, 5/10
- Link #3: 25, 5/40, 5/10
- Link #4: 26, 5/10, 5/40
- Link #5: 27, 5/40
- Link #6: 28, 5/40
- Link #7: 20, 1D, 5/40
- Link #8: 40, 1D
- Link #9: 60, 1D
- Link #10: 80, 1D

#### SECTION II
- Link #11: 1D
- Link #12: 5/40

#### SECTION III
- Link #13: 1D
- Link #14: 5/40

### Comments
- All coated to clock.
- Ballast rusted, and flaked.
- 1/4" rust product; at second detail link, study almost grade.
- Good catenary; maintains same angle for a long way.

### Note
- First link after anchor joining link is M; all links including detachables are counted (see configuration page).
- D = Double link measurement; S = Single link measurement.
MOORING INSPECTION REPORT

1. FACILITY
HAVAKDET, HOLY LOCH, UK

2. MOORING NO.
AFDB-7

3. TYPE/CLASS/MOORING
Special Dry Dock

4. LEG NUMBER: 10

5. INSPECTION DATE
18-24 juin 82

DIVERS:
RONIA

WATER DEPTH
M. M. WALTER

ENGINEER

INITIALS

CATENARY DATA:

\[ A = 76^\circ \]

\[ L = 54 \text{ ft} \]

\[ D_B = 81.6 \text{ ft} \]

\[ D_C = 81.6 \text{ ft} \]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

CONTENT:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 8 LINKS + DETACHABLE LINK +
9 LINKS TO STOPPER + DETACHABLE LINK + 3 LINKS TO
CHASE + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: \[ 120^\circ \] at deck edge

\[ 160^\circ \] deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td>6/7</td>
<td>√D</td>
<td></td>
<td><strong>Some Flaking:</strong></td>
</tr>
<tr>
<td></td>
<td>22/23</td>
<td>√D</td>
<td></td>
<td><strong>Medium Rust</strong></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td>21</td>
<td>S/2&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>S/1/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>S/1/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>S/1/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>S/1/4&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>S/2&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td>20'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY
   NAVACIDDET, HOLY LOCH, UK

2. MOORING NO
   Facility 11

3. TYPE/CLASS MOORING
   Special Dry Dock

4. LEG NUMBER

5. INSPECTION REPORT
   DATE: 18-21 May 1962
   DIVERS: PRONIA / COOPER
   WATER DEPTH: 32 ft
   ENGINEER: M. M. WALTER
   INITIALS: M. M. WALTER

Catenary Data:

\[ A = 59^\circ, A' = 43^\circ, 61^\circ \]
\[ L = 86 \text{ ft} \]
\[ D_B = 78.9 \text{ ft} \]
\[ D_C = 82.9 \text{ ft} \]

Notes: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less
A' and A" recorded in winds 30-40 KTS

Comments:

Configuration, Pad Eye-To-Waterline:

Pad Eye - Anchor Joining Link + 18 Links To Stopper + 4 Links To Chock + 7 Links To Waterline

Other Data:

Relative Bearing: 180° at deck edge

\[ \frac{N}{A} \text{ deck edge-to-pop float} \]

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td></td>
<td></td>
<td></td>
<td>Not Inspected; Note 3</td>
</tr>
<tr>
<td>Section II</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section III</td>
<td>20'</td>
<td>VD</td>
<td></td>
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<tr>
<td></td>
<td>40'</td>
<td>VD</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>60'</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

Note 3: Unable to Reach This Portion of Leg - Under Deck Overhang
MOORING INSPECTION REPORT

1. FACILITY: NAVACET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 12

5. INSPECTION
   DATE: 18-21 Jun 82
   DIVERS: Prania/Cooper
   WATER DEPTH
   ENGINEER: M.M. Walter
   INITIALS

Catenary Data:

\[ A = 75^\circ \]
\[ L = 60 \text{ ft} \]
\[ D_B = 77.5 \text{ ft} \]
\[ D_C = 77.5 \text{ ft} \]

Notes: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

Comments:

Configuration, Pad Eye-To-Waterline:

Not Observed

Other Data:

Relative Bearing: 180° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
### MOORING INSPECTION REPORT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td>4/1/2</td>
<td>√D</td>
<td></td>
<td>SLIGHTLY RUSTED</td>
</tr>
<tr>
<td></td>
<td>4/6/1</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/18/19</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/21/22</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td>4/25</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/26</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/27</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/28</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/29</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td>20'</td>
<td>√D</td>
<td>668</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>√D</td>
<td>670</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>√D</td>
<td>667</td>
<td>CLEAN, DULL CHAIN;</td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>√D</td>
<td>663</td>
<td>VISIBILITY AT BOTTOM 2';</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SILTY - SANDY BOTTOM</td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement
# Mooring Inspection Report

**Facility:**
- Name: Holy Loch, UK
- Navigability: 2.

**Mooring No:**
- AFDB-7

**Type/Class Mooring:**
- Special Dry Dock

**Leg Number:**
- 13

**Inspection Details:**
- Date: 18-24 June 19
- Divers: DHH/Ailsworth
- Water Depth: 5.0 ft
- Engineer: M.M. Walter

## Catenary Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A )</td>
<td>79°</td>
</tr>
<tr>
<td>( L )</td>
<td>39 ft</td>
</tr>
<tr>
<td>( D_B )</td>
<td>80.3 ft</td>
</tr>
<tr>
<td>( D_C )</td>
<td>86.3 ft</td>
</tr>
</tbody>
</table>

**Notes:**
- Depths at Mean Low Water Springs
- "A" recorded in winds 10 KTS or less

## Comments:

**Configuration, Pad Eye-To-Waterline:**

- Pad Eye - Anchor Joining Link + 15 Links + Detachable Link + 4 Links To Stopper + 3 Links To Chock + 6 Links To Waterline

## Other Data:

**Relative Bearing:**
- 175° at deck edge
- 170° deck edge-to-pop float

**Note:** Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td>1/2</td>
<td>+90%</td>
<td>1/0</td>
<td><strong>SECTION II</strong></td>
</tr>
<tr>
<td>9/10</td>
<td>+80%</td>
<td>1/0</td>
<td><strong>SECTION III</strong></td>
<td>28</td>
</tr>
<tr>
<td>24</td>
<td>+90%</td>
<td>1/0</td>
<td><strong>SECTION III</strong></td>
<td>27</td>
</tr>
<tr>
<td>25</td>
<td>+80%</td>
<td>5/4</td>
<td><strong>SECTION III</strong></td>
<td>28</td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NAVACTDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 14
5. INSPECTION DATE: 19-24 JUNE

DIVERS: DAHL / AYSWORTH
WATER DEPTH: M.M. WALTER

CATENARY DATA:

A = 74°
L = 54 ft
D_B = 80 ft
D_C = 80 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 17 LINKS TO STOPPER + 1 LINK
+ DETACHABLE LINK + 3 LINKS TO CHOCK +
6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 220° at deck edge
235° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I</td>
<td>20' /11</td>
<td>VD</td>
<td>-90%</td>
<td>MEDIUM RUST</td>
</tr>
<tr>
<td></td>
<td>17/18</td>
<td>VD</td>
<td>+80%</td>
<td></td>
</tr>
<tr>
<td>SECTION II</td>
<td>2.4</td>
<td>5'2&quot; D</td>
<td>-80%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>5'2&quot; D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.6</td>
<td>5'2&quot; D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.7</td>
<td>5'2&quot; D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.8</td>
<td>5'2&quot; D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECTION III</td>
<td>20'</td>
<td>VD</td>
<td>718</td>
<td>CHAIN TENDS STRAIGHT DOWN, HITS BOTTOM AND RUNS OUT</td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>VD</td>
<td>699</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>VD</td>
<td>689</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>VD</td>
<td>681</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Below Mudline</td>
<td>V5</td>
<td></td>
<td>4 LINKS LIFTED FROM MUD</td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: RAVENDET, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 15

5. INSPECTION
   DATE: 18-24 June 1
   DIVERS: DAUL/AYLWORTH
   WATER DEPTH: 31 ft
   ENGINEER: M.M. WALTER
   INITIALS: 

CATENARY DATA:

\[ A = 91^\circ \]
\[ L = 3 \text{ ft} \]
\[ D_B = 79.2 \text{ ft} \]
\[ D_C = 79.2 \text{ ft} \]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 18 LINKS + DETACHABLE LINK
+ 1 LINK TO STOPPER + 3 LINKS TO CHECK +
5 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 230° at deck edge

A/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

**FACILITY**
- MALACHT, HOLY LOCK, UK
- AFDB-7 Special dry dock

**DATE**
- 16/04/74

**DIVING/ASWATH DETAILED**
- 16/04/74

### COMPONENT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+10/11</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+19/20</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+20/21</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+23</td>
<td>✓</td>
<td></td>
<td>MOST LINKS BADLY RUSTED; FLAKES EASILY.</td>
</tr>
<tr>
<td></td>
<td>+24</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+25</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+26</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+27</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>✓</td>
<td>672</td>
<td>GROWTH STOP AT 40' DEPTH</td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>✓</td>
<td>684</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>✓</td>
<td>681</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2:** D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

FACILITY: NAVACTDET, HOLY LOCH, UK
MOORING NO: AFDB-7
TYPE/CLASS: Special Dry Dock
LEG NUMBER: 16

INSPECTION DATE: 18-24 May
DIVERS: DAHL / AYLSWORTH
WATER DEPTH: M.M. WALTER

CATENARY DATA:

A = 84'
L = 33 ft
D_B = 74.7 ft
D_C = 74.7 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR TO WTING LINK + 14 LINKS + DETACHABLE LINK + 3
LINKS TO STOPPER + 4 LINKS TO CHOCK + 5 LINKS
TO WATERLINE

OTHER DATA:

Relative Bearing: 195° at deck edge
225° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I</td>
<td>#12/13</td>
<td>√D</td>
<td></td>
<td>MEDIUM-TO-AVERAGE RUST</td>
</tr>
<tr>
<td>SECTION II</td>
<td>#24</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>√D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#29</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#30</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#31</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECTION III</td>
<td>20'</td>
<td>√D</td>
<td></td>
<td>677</td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>√D</td>
<td></td>
<td>668</td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>√D</td>
<td></td>
<td>676</td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>√D</td>
<td></td>
<td>675</td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NAVACIDENT, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS MOORING: Special Dry Dock
4. LEG NUMBER: 17

5. INSPECTION
   DATE: 18-24 June
   DIVERS: SUTTON / JELLO
   WATER DEPTH: M.M. WALTER

Catenary Data:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>83°</td>
</tr>
<tr>
<td>L</td>
<td>39 ft</td>
</tr>
<tr>
<td>D_b</td>
<td>75.6 ft</td>
</tr>
<tr>
<td>D_c</td>
<td>78.6 ft</td>
</tr>
</tbody>
</table>

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

Comments:

Configuration, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 16 LINKS + DETACHABLE LINK
+ 6 LINKS TO STOPPER + 3 LINKS TO CHOCK
+ 5 LINKS TO WATERLINE

Other Data:

Relative Bearing: 185° at deck edge
220° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note 2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SECTION I</strong></td>
<td>#19/20</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#23/24</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION II</strong></td>
<td>#24</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>5/8&quot;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SECTION III</strong></td>
<td>20'</td>
<td>JD</td>
<td>660</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>JD</td>
<td>675</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>JD</td>
<td>675</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>JD</td>
<td>675</td>
<td>\textit{Chain looks good;}</td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY
NAVACTDET, HOLY LOCH, UK

2. MOORING NO
AFDB-7

3. TYPE/CLASS MOORING
Special Dry Dock

4. LEG NUMBER
18

5. INSPECTION
DATE 18.2.1982
DIvers SUTTON/SELLO
WATER DEPTH
ENGINEER M.M. WALTER
INITIALS

CATENARY DATA:

\[
\begin{align*}
A &= 87^\circ \\
L &= 18 \text{ ft} \\
D_B &= 77.4 \text{ ft} \\
D_C &= 77.4 \text{ ft}
\end{align*}
\]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

\[
\text{Pad Eye - Anchor Joining Link} + 23 \text{ Links to Cleat} + 5 \text{ Links to Waterline}
\]

- No Stopper

OTHER DATA:

Relative Bearing: \[205^\circ\] at deck edge
\[220^\circ\] deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I</td>
<td>#10/11</td>
<td>JD</td>
<td></td>
<td>RUSTED AND FLAKY; POOR CONDITION</td>
</tr>
<tr>
<td></td>
<td>#19/20</td>
<td>JD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECTION II</td>
<td>#24</td>
<td>5/8'D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>5/8'D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>5/8'D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#27</td>
<td>5/8'D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#28</td>
<td>5/8'D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECTION III</td>
<td>20'</td>
<td>JD</td>
<td>651</td>
<td>CHAIN TENDS STRAIGHT DOWN WITH APproximately 10 LINKS SACKED ON BOTTOM</td>
</tr>
<tr>
<td></td>
<td>40'</td>
<td>JD</td>
<td>666</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60'</td>
<td>JD</td>
<td>679</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80'</td>
<td>JD</td>
<td>682</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Below Mudline</td>
<td>2½'S</td>
<td></td>
<td>CHAIN PULLED OUT OF MUD</td>
</tr>
</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: NARACDF, HOLY LOCH, UK
2. MOORING NO: AFDB-7
3. TYPE/CLASS: MOORING Special Dry Dock
4. LEG NUMBER: 19

5. INSPECTION
   DATE: 18-24 June
   DIVERS: Sutton/Sello
   WATER DEPTH: M.M. WALTER

CATENARY DATA:

\[ A = 88^\circ \]
\[ L = 0 \text{ ft} \]
\[ D_B = 76.5 \text{ ft} \]
\[ D_C = 78.5 \text{ ft} \]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

Pad Eye - Anchor Joining Link + 10 Links to Stopper +
6 Links to Chock + 6 Links to Waterline

OTHER DATA:

Relative Bearing: \(285^\circ\) at deck edge
\(N/A\) deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## MOORING INSPECTION REPORT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>SECTION I</th>
<th>SECTION II</th>
<th>SECTION III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link # &amp; Depth, ft (chain)</td>
<td>#1/13 22/24</td>
<td>#28 29</td>
<td>#30 31 32 20 40 60 80</td>
</tr>
<tr>
<td>Volumeter reading, mV</td>
<td>JD JD</td>
<td>JD JD JD JD</td>
<td>JD JD JD JD</td>
</tr>
<tr>
<td>Comments</td>
<td>Extremly Bally Rust, Much Debris Lying On Chain</td>
<td>643</td>
<td>663</td>
</tr>
</tbody>
</table>

**Note:**
1. First link after anchor jointing link is #1; all links including decahedral are counted (see configuration, next page).
2. D = Double link measurement; S = Single link measurement.
**MOORING INSPECTION REPORT**

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>MOORING NO</th>
<th>TYPE/CLASS</th>
<th>MOORING NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAVACDET, HOLY LOCH, UK</td>
<td>AFDB-7</td>
<td>Special Dry Dock</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATE</th>
<th>DIVERS</th>
<th>WATER DEPTH</th>
<th>ENGINEER</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-24-80</td>
<td>SUTTON/JELO</td>
<td></td>
<td>M.M. WALTER</td>
<td></td>
</tr>
</tbody>
</table>

**CATENARY DATA:**

- **A** = 92°
- **L** = 12 ft
- **D_B** = 76.3 ft
- **D_C** = 82.3 ft

**NOTES:** Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

**COMMENTS:**

**CONFIGURATION, Pad Eye-To-Waterline:**

- Pad Eye - Anchor Joining Link + 17 Links + Detachable Link + 4 Links to Stopper + 4 Links to Chock + 6 Links to Waterline

**OTHER DATA:**

- Relative Bearing: **285°** at deck edge
- **305°** deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>SECTION I</th>
<th>SECTION II</th>
<th>SECTION III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link # or Depth, ft (chain)</td>
<td>22.3</td>
<td>24</td>
<td>27.8</td>
</tr>
<tr>
<td>VOLTMETER (Note 2)</td>
<td>JD</td>
<td>JD</td>
<td>JD</td>
</tr>
<tr>
<td>CONDITION (Note 2)</td>
<td>+90°</td>
<td>+90°</td>
<td>+90°</td>
</tr>
<tr>
<td>Comments</td>
<td>Heavy Rust, Algae Debris Around Chain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>DIVERS</th>
<th>WATER DEPTH</th>
<th>ENGINEER</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>18/4/95</td>
<td>Sutton/Jello</td>
<td>645</td>
<td>M.M. Walter</td>
<td></td>
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</table>

| CONTENT | NAVACTDET, HOLY LOCH, UK | AFDB-7 | Special Dry Dock | 21 |

Note 1: First link after anchor joining link is VI; all links including detachables are counted (see configuration, next page).
Note 2: D = Double link measurement, S = Single link measurement
MOORING INSPECTION REPORT

1. FACILITY
SALTERDET, HOLY LOCH, UK

2. MOORING NO
AFDB-7

3. TYPE/CLASS MOORING
Special Dry Dock

4. LEG NUMBER
21

S. INSPECTION
DATE
16/24/5 RV

DIVERS
SUTTON/ TULLO

WATER DEPTH

ENGINEER
M.M. WALTER

INITIALS

CATENARY DATA:

\[
\begin{align*}
A &= 85^\circ \\
L &= 3 \text{ ft} \\
D_B &= 79.3 \text{ ft} \\
D_C &= 79.3 \text{ ft}
\end{align*}
\]

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

Pad Eye-Anchor Joining Link +16 Links to Stopper + 6 Links
To Chock + 6 Links to Waterline

OTHER DATA:

Relative Bearing: 290\(^\circ\) at deck edge

300\(^\circ\) deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Link # or Depth, ft (Note 1)</th>
<th>CONDITION (Note2)</th>
<th>Voltmeter reading, mV</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I</td>
<td>Not Recorded</td>
<td>+90%</td>
<td>+80%</td>
<td>-80%</td>
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<td>SECTION II</td>
<td>#1</td>
<td>5% D</td>
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<tr>
<td></td>
<td>#2</td>
<td>5% D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#3</td>
<td>1% D</td>
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<td>#4</td>
<td>5% D</td>
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<td></td>
<td>#5</td>
<td>5% D</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>#6</td>
<td>5% D</td>
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<tr>
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<td>VD</td>
<td>640</td>
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<tr>
<td></td>
<td>40'</td>
<td>VD</td>
<td>665</td>
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<tr>
<td></td>
<td>60'</td>
<td>VD</td>
<td>670</td>
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<tr>
<td></td>
<td>80'</td>
<td>VD</td>
<td>663</td>
<td>Silty Bottom Approx. 1' Deep</td>
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</tbody>
</table>

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement
MOORING INSPECTION REPORT

1. FACILITY: Naval Det, Holy Loch, UK
2. MOORING NO: AFD-7
3. TYPE/CLASS: MOORING Special Dry Dock
4. LEG NUMBER: 22

5. INSPECTION
   DATE: 18-24 May 5622
   DIVERS: Sutton/Jello
   WATER DEPTH: 77 ft
   ENGINEER: M.M. Walter
   INITIALS: 

CATENARY DATA:

A = 650
L = 57 ft
D_B = 79.6 ft
D_C = 79.6 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS or less

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

Not Observed

OTHER DATA:

Relative Bearing: 000° at deck edge
352° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.
## Mooring Inspection Report

### Facility:
NAVACTDET HOLY LOCH, UK

### Mooring No:
Ar~d 4

### Type/Class Mooring:
Linel

### Place:
NAVACTDET HOLY LOCH, UK

### Date:
19 June 1982

### Water Depth:
30.160'

### Divers Initials:
NAVACTDET HOLY LOCH, UK

### Engineer Initials:
NAVACTDET HOLY LOCH, UK

### Table 3. AFDB-7 Transit Readings

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<thead>
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<th>LEG#</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>A</th>
<th>B</th>
<th>E</th>
<th>Time</th>
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</thead>
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<td>85°59'20&quot;</td>
<td>51°39'40&quot;</td>
<td>44°51'40&quot;</td>
<td>39.77389°</td>
<td>32.77389°</td>
<td>1734.00</td>
<td>2063.37</td>
<td>2131.35</td>
<td>3081.60'</td>
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<tr>
<td>2</td>
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<td>51°39'40&quot;</td>
<td>44°51'40&quot;</td>
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<tr>
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<td>32.77389°</td>
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</tbody>
</table>

### Date:
19 June 1982

### Winds:
**Easterly 5-10 KTS**

### Notes:
- All values calculated for leg 1 to 11.

---

**Table 3. AFDB-7 Transit Readings**
## MOORING INSPECTION REPORT

1. **FACILITY**
   
   NAVACTDET HOLY LOCH, UK

2. **MOORING NO**
   
   AFDB-7

3. **TYPE/CLASS**
   
   SPECIAL DRY DOCK

4. **LAT/ LON:**
   
   [Coordinates]

5. **INSPECTION**

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<tr>
<th>DIVERS</th>
<th>DATE</th>
<th>WATER DEPTH</th>
<th>ENGINEER</th>
<th>INITIALS</th>
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<td>21 JUN 2</td>
<td>110</td>
<td>M.M. WALTER</td>
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### LEGS

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<th>c</th>
<th>d</th>
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<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
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</tbody>
</table>

**Date:** 21st June 1982

**Wind:** EAST-NORTHEASTERNLY 5-10 KTS

**Observe:** All other values calculated

---

Table 3: AFDB-7 Transit Readings (Con't.)
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<thead>
<tr>
<th>Time</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>a'</th>
<th>b'</th>
<th>e'</th>
<th>f'</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
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<td>78.50917°</td>
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<td>71.56926°</td>
<td>78.13130°</td>
<td>39.60225°</td>
<td>32.76218°</td>
<td>174.972°</td>
<td>2059.64°</td>
<td>1355.09°</td>
<td>3064.26°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DATE:** 22 June 1982

**WINDS:** Easterly 35 KtS. a, b, c, e, f OBSERVED; All OTHER VALUES CALCULATED

Table 3. AFDB-7 Transit Readings (Con't.)
ANNEX B

SIXTH CLASS MOORING INSPECTION REPORTS
<table>
<thead>
<tr>
<th>ITEM</th>
<th>SIZE</th>
<th>LOCATION OF MEASUREMENT</th>
<th>CONDITION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buoy, Cylindrical, 3rd Class</td>
<td>10' long</td>
<td>-</td>
<td>- - -</td>
<td>British 3rd class buoy; excellent condition: no holes, dents, or pitting; medium marine growth(1/4&quot;&quot;)</td>
</tr>
<tr>
<td>Mooring Ring</td>
<td>UNK.</td>
<td>not measured</td>
<td>XXX</td>
<td>Divers unable to reach buoy topside; condition assumed sat.</td>
</tr>
<tr>
<td>Buoy Shackle</td>
<td>Unk.</td>
<td>not measured</td>
<td>XXX</td>
<td>Inside buoy - divers unable to measure</td>
</tr>
<tr>
<td>Riser Chain, studlink</td>
<td>2 1/2&quot;</td>
<td>20' depth</td>
<td>XX D</td>
<td>Located at 20' depth; condition assumed satisfactory</td>
</tr>
<tr>
<td>Swivel</td>
<td>UNK.</td>
<td>not measured</td>
<td>- - -</td>
<td>Located at 60' depth; condition assumed satisfactory</td>
</tr>
<tr>
<td>Riser Chain, studlink</td>
<td>2 1/2&quot;</td>
<td>60' depth</td>
<td>XX D</td>
<td>Located at 60' depth; condition assumed satisfactory</td>
</tr>
<tr>
<td>Riser chain, studlink</td>
<td>3 1/4&quot;</td>
<td>72' depth</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td>Anchor swivel and Anchor</td>
<td>UNK</td>
<td>-</td>
<td>- XXX</td>
<td>Not located - chain buried</td>
</tr>
</tbody>
</table>

**SUMMARY:** Mooring is in good-to-excellent condition.

**Note 1:** S = Single Link Measurement; D = Double Link Measurement
Figure 8. Sixth Class Mooring #2, Schematic

SIXTH CLASS MOORING BUOY #2

20' 2 1/2" STUD LINK

SWIVEL

40' 2 1/2'' STUD LINK

SWIVEL

TO BOTTOM 3 1/4'' STUD LINK

CHAIN BURIED IN MUD – NO ANCHOR OR CLUMP FOUND
## MOORING INSPECTION REPORT

**FACILITY:**
- **NAVACTDET HOLY LOCH, UK**
- **No. 3**

**TYPE/CLASS:**
- Sixth Class

**LAT:**
- 54° 00' 00"

**LON:**
- 54° 00' 00"

**DATE:**
- 23 JUN 82

**DIVERS:**
- Aylsworth/Jello

**WATER DEPTH:**
- 54' M.M.

**ENGINEER:**
- Walter

**INITIALS:**
- Aylsworth/Jello

### Summary:

Mooring is in good-to-excellent condition.

### Table:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SIZE</th>
<th>LOCATION OF MEASUREMENT</th>
<th>CONDITION(note)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buoy, Cylindrical, 3rd Class</td>
<td>10' long 5' diam.</td>
<td>---</td>
<td>---</td>
<td>British 3rd Class Buoy; excellent condition - no holes, dents, or pitting</td>
</tr>
<tr>
<td>Mooring Ring</td>
<td>UNK</td>
<td>not measured</td>
<td>---</td>
<td>Divers unable to reach buoy topside</td>
</tr>
<tr>
<td>Buoy Shackle</td>
<td>UNK</td>
<td>not measured</td>
<td>---</td>
<td>Inside buoy - divers unable to measure</td>
</tr>
<tr>
<td>Riser Chain, stud/link</td>
<td>3&quot;</td>
<td>5' depth</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3&quot;</td>
<td>35' depth</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3&quot;</td>
<td>65' depth</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td>Swivel</td>
<td>UNK</td>
<td>not measured</td>
<td>---</td>
<td>XXX Not located</td>
</tr>
<tr>
<td>Anchor Shackle and Anchor</td>
<td>UNK</td>
<td>---</td>
<td>XXX</td>
<td>Not located - chain buried</td>
</tr>
</tbody>
</table>

**Note 1:** S = Single Link Measurement; D = Double Link Measurement
Figure 9. Sixth Class Mooring #3, Schematic
ANNEX C

NAVIGATION BUOY INSPECTION REPORTS
<table>
<thead>
<tr>
<th>ITEM</th>
<th>SIZE</th>
<th>LOCATION OF MEASUREMENT</th>
<th>CONDITION (note)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker Buoy</td>
<td>UNK.</td>
<td>---</td>
<td>---</td>
<td>Excellent condition top and bottom; minimal pitting on bottom</td>
</tr>
<tr>
<td>Buoys Shackles (2)</td>
<td>2(\frac{1}{4})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connect bridle to buoys</td>
</tr>
<tr>
<td>Bridle Chain, studlink</td>
<td>2&quot;</td>
<td>10' depth</td>
<td>XX D</td>
<td>Two legs of 12.5' each</td>
</tr>
<tr>
<td>Bridle shackles (2)</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connect bridle to pear link</td>
</tr>
<tr>
<td>Pear Link</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td></td>
</tr>
<tr>
<td>Shackle</td>
<td>2(\frac{1}{4})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connects riser to pear link</td>
</tr>
<tr>
<td>Riser Chain, studlink</td>
<td>1 7/8&quot;</td>
<td>45', 60' depths</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td>Box Swivel</td>
<td>UNK.</td>
<td>not measured</td>
<td>-</td>
<td>Condition is assumed to be satisfactory</td>
</tr>
<tr>
<td>Anchor Shackle</td>
<td>2(\frac{1}{4})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td></td>
</tr>
<tr>
<td>Anchor, Clump Type</td>
<td>6'x6'x6'</td>
<td>---</td>
<td>-</td>
<td>Anchor in satisfactory condition; 4-5' of chain wrapped around anchor</td>
</tr>
</tbody>
</table>

**SUMMARY:**
Buoy is in good-to-excellent condition. No design drawings were available for comparison with inspection data; "+90%" is based on information supplied by NAVACTDET and M.O.D.

**Note 1:** S = Single Link Measurement; D = Double Link Measurement
BUOY: EXCELLENT CONDITION; MINIMAL PITTING ON BOTTOM

BRIDLE:
2 1/4" SHACKLES
2" CHAIN

3 2 1/4" SHACKLES
2 1/4" PEAR LINK

57' WATER DEPTH RISER:
1 7/8" CHAIN

BOX SWIVEL

4-5' OF CHAIN WRAPPED AROUND CLUMP

6' X 6' X 6'
CLUMP

2 1/4" SHACKLE

MUD BOTTOM

Figure 10. Starboard (Green) Navigation Buoy, Schematic
<table>
<thead>
<tr>
<th>ITEM</th>
<th>SIZE</th>
<th>LOCATION OF MEASUREMENT</th>
<th>CONDITION (note)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker Buoy</td>
<td>UNK.</td>
<td>--</td>
<td>-</td>
<td>Excellent condition top and bottom; minimal pitting on bottom</td>
</tr>
<tr>
<td>Buoy Shackles (2)</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connect bridle to buoy</td>
</tr>
<tr>
<td>Bridle Chain, studlink</td>
<td>2&quot;</td>
<td>10' depth</td>
<td>XX X</td>
<td>Two legs of 12.5' each</td>
</tr>
<tr>
<td>Bridle Shackles (2)</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connect bridle to pear link</td>
</tr>
<tr>
<td>Pear Link</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td></td>
</tr>
<tr>
<td>Shackle</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td>Connects riser to pear link</td>
</tr>
<tr>
<td>Riser Chain, studlink</td>
<td>1(\frac{7}{8})&quot;</td>
<td>40', 55' depths</td>
<td>XX D</td>
<td></td>
</tr>
<tr>
<td>Swivel</td>
<td>UNK.</td>
<td>not measured</td>
<td>-</td>
<td>Condition is assumed to be satisfactory</td>
</tr>
<tr>
<td>Anchor Shackle</td>
<td>2(\frac{1}{2})&quot;</td>
<td>see drawing</td>
<td>XXX</td>
<td></td>
</tr>
<tr>
<td>Anchor, Clump Type</td>
<td>6'x6'x6'</td>
<td>--</td>
<td>-</td>
<td>Anchor in satisfactory condition.</td>
</tr>
</tbody>
</table>

**SUMMARY:** Buoy is in good-to-excellent condition. No design drawings were available for comparison with inspection data; "+90%" is based on information supplied by NAVACTION and M.O.D.

Note 1: S = Single Link Measurement; D = Double Link Measurement
BUOY: EXCELLENT CONDITION;
MINIMAL PITTING ON BOTTOM

BRIDLE:
12.5' 2 1/4" SACRELLIES
2" CHAIN

3 2 1/4" SACRELLIES 2 1/4" PEAR LINK

RISER: 1 7/8" CHAIN

49' WATER DEPTH

6' x 6' x 6' CLUMP 2 1/4" SACRELLIE

MUD BOTTOM

Figure 11. Port (Red) Navigation Buoy, Schematic
Figure 12. Schematic of Surveying Set-Up
<table>
<thead>
<tr>
<th>Baseline</th>
<th>To Red NAV. Buoy</th>
<th>To Green NAV. Buoy</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1-2</td>
<td>0°</td>
<td>148°20'00&quot; 110°33'00&quot;</td>
<td>1200</td>
</tr>
<tr>
<td>A2-1</td>
<td>0°</td>
<td>16°25'20&quot; 38°35'20&quot;</td>
<td>1215</td>
</tr>
<tr>
<td>A3-2</td>
<td>0°</td>
<td>17°26'40&quot;  Not Visible</td>
<td>1230</td>
</tr>
</tbody>
</table>

**DATE**

WINDS: EASTERLY 5-10 KTS
ANNEX D

COSTS OF REPLACEMENT PARTS
Costs of Replacement Parts

As a result of the analysis of inspection data, it was determined that the upper two shots of chain on each leg of the AFDB-7 mooring required replacement. In addition, it was decided that 2 1/2 inch chain would be utilized pending a mooring redesign:

<table>
<thead>
<tr>
<th>Item</th>
<th>Size (in.)</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain (90’ shot)</td>
<td>2 1/2</td>
<td>44</td>
<td>$6,003</td>
<td>$264,132</td>
</tr>
<tr>
<td>Link, Detachable</td>
<td>2 1/2</td>
<td>49*</td>
<td>392</td>
<td>19,208</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$283,340</strong></td>
</tr>
</tbody>
</table>

*Includes five spares
Chronology of Significant Events

20 NOV 81 CINCUSNAVEUR requests assignment of UCT-1 for underwater inspection of Holy Loch moorings

26 MAR 82 COMCBLANT states CHESNAVFACENGCOM to provide funding and technical support for inspection

13 MAY 82 CINCUSNAVEUR expands inspection to include all 22 legs of AFDB-7 mooring

17 JUN 82 Divers and Engineer arrive on site

18 JUN 82 Set up transits; caliper measurements Section II all legs; contact with station personnel

19 JUN 82 Transit measurements; catenary data and bearing legs 12 - 22

21 JUN 82 Transit measurements; catenary data and bearing legs 1 - 11

22 JUN 82 Transit measurements; Go/No-Go and voltmeter readings on Section III all legs

23 JUN 82 Inspection of Navigation Buoys and Sixth Class moorings

24 JUN 82 Partial lift of legs #15 and #19; Go/No-Go on Section I of all legs

25 JUN 82 Debrief CO and XO of AFDB-7, and CO and PWO NAVACTDET Holy Loch

28 JUN 82 Debrief Commodore SUBRON 14 and M.O.D Representatives

8 JUL 82 Debrief NAVFACENGCOM Code PC-2

19 JUL 82 Debrief LANTNAVFACENGCOM Code 10
ANNEX F

REFERENCES

Ref. A – CINCUSNAVEUR LONDON UK 201642Z NOV 81

Ref. B – CINCUSNAVEUR LONDON UK 130752Z MAY 82

Ref. C – COMCBLANT NORFOLK VA 261833Z MAR 82

Ref. D – CHESNAVFACENGCOM WASHINGTON DC 151407Z JUN 82

Ref. E – CHESNAVFACENGCOM WASHINGTON DC 021944Z JUN 82

Ref. F – CHESNAVFACENGCOM WASHINGTON DC 291403Z JUL 82
Routine

FM CINCUSNAVEUR LONDON UK,

TO CINCCLANTFLT NORFOLK VA

INFO CONNAVFACENGCOM ALEXANDRIA VA
copyfiled NAPLES IT
CONCLAINT NORFOLK VA
CONSPOCON FOURTEEN
NAVSUPPAC LA MADDALENA IT
UCT ONE

BT
UNCLAS //\4070\//

SUBJ: UNDERWATER CONSTRUCTION TEAM (UTC) FY82 WORKLOAD PLANNING FOR INSPECTION OF FLEET MOURINGS IN EUROPEAN AREA

A. CINCUSNAVEUR LONDON UK 231723Z FEB 81

1. REF DISCUSSED CINCUSNAVEUR FLEET MOURING INSPECTION REQUIREMENTS IN LA MADDALENA IT, HOLY LOCH UK, CARTAGENA SP, AND ROTA SP, AND REQUESTED UCT ONE INVOLVEMENT TO REDUCE COSTS AND MAXIMIZE INSPECTION EFFORTS. RESPONSE TO LA MADDALENA REQUIREMENTS WAS COMPLETED DURING FY81 UCT ONE DEPLOYMENT, AND IS APPRECIATED. CARTAGENA REQUIREMENTS ARE PROGRAMMED FOR FUNDING BY CONNAVFACENGCOM FOR ACCOMPLISHMENT BY SPANISH NAVY IN FY82, AND LANTNAVFACENGCOM WILL SEEK FURTHER FUNDING FOR ACCOMPLISHMENT OF ROTA REQUIREMENTS BY CONTRACT. ACCORDingly, NAVACTDET HOLY LOCH FY81 INSPECTIONS IDENTIFIED IN REF A REMAIN THE ONLY UCT WORKLOAD REQUIREMENTS IN NAVar AREA FOR FY82.

2. LANTNAVFACENGCOM HAS ADVISED RESOURCES WILL BE AVAILABLE FOR HOLY LOCH INSPECTIONS, AND LANTNAVFACENGCOM WILL COORDINATE WITH CONNAVFACENGCOM AND UCT ONE REGARDING DETAILLOGISTICS. DUE TO LIMITED WEATHER WINDOW PREFER INSPECTION BE SCHEDULED FOR APPROX THREE WEEK PERIOD MAY - JULY. DECISION ON UCT ONE ASSIGNMENT IS DESIRED SOONEST IN ORDER THAT MINISTRY OF DEFENSE UK CAN BE INFORMED OF INSPECTION WORK APPROVED FOR ACCOMPLISHMENT BY U.S. NAVY FORCES, AND THAT LIMIT AND PLANNED

DLVR: CONNAVFACENGCOM WASHINGTON DC(B)...INFO

RE: 000-060/COPIES 0008

409542/324 201642Z NOV 61
CINCUSNAVEUR LONDON UK

F-2
PARTICIPATION TO CHANGING/MAINTAINING MOORING/BUYS. IF UCT ONE ASSIGNMENTS ARE NOT APPROVED, INSPECTIONS WOULD HAVE TO BE INCLUDED (AT INCREASED COST) IN REQUEST TO MOD UK.

3. REQUEST APPROVAL FOR UCT ONE ASSIGNMENT FOR HULY LOCK MOORING INSPECTION.
SUBJ: FLEET MoORING MAINTENANCE AND UNDERWATER CONSTRUCTION
TEAM (UCT) WORKLOAD PLANNING

1. In Ref A, LANTNAVFACENGCOM provided technical recommendation to
modify scope of UCT workload at Holy Loch, which was submitted in
Ref B and scheduled for May/June 82 in Ref C, to inspect all 22
mooring legs for AFOR 7 (floating dry dock). This scope
request was requested in order to check and assure that condition
and length of catenary of the mooring legs are satisfactory.
It has estimated that this additional work scope will require UCT one
scheduling for three to four weeks, vice two weeks
originally planned.

2. Request that this revised workload be included in the
tasking of UCT one, and that the duration of UCT one
visit to Holy Loch be extended, accordingly, as required.

RTD: 000-000/COPIES:0008

#54794/133
1 OF 1 M1 0193 133/07:51Z 130752Z MAY 82
CINCUSNAVEUR LONDON UK
UNCLASSIFIED

ROUTINE

R 261833Z MAR 82
FN COMCBLANT NORFOLK VA
TG CINCUSNAVFLEUR LONDON UK
INFO CINCUSNAVFLEUR NORFOLK VA
NAVACDET HULY LOCH UK
CHESNAVFACENGCOM WASHINGTON DC
UCT ONE

BT
UNCLAS ///M11000\///

SUBJ: FLEET MOORING MAINTENANCE AND UNDERWATER CONSTRUCTION TEAM (UCT) WORKLOAD PLANNING

A. CINCUSNAVFLEUR LONDON UK 261722Z FEB 82
B. FUCOM BETWEEN LCDR WAGNER (UCT ONE) AND LCDR BERRY (NSO LA MADDALENA) OF 25 MAR 82

1. UCT ONE IS PRESENTLY SCHEDULED TO PERFORM FLEET YOICING INSPECTION AT NADET HULY LOCH UK IN MAY/JUN 1982 TIMEFRAME AS REQUESTED PER REF A. FUNDING AND TECHNICAL DIRECTION TO BE PROVIDED BY CHESNAVFACENGCOM (FPN-1) OCEAN ENGINEERING AND CONSTRUCTION PROJECT OFFICE.

2. CONFIRMING REF B, THE PIER PORTION OF PROJECT C7-81 (CONSTRUCT MARINA PIER) AT NAVSUPPO LA MADDALENA, ITALY, ALSO REQUESTED BY REF A CAN BE INITIALLY SCHEDULED FOR UCT ONE ACCOMPLISHMENT IN FY 83 PENDING COMPLETED DESIGN AND FUNDING AVAILABILITY. REGRET EARLIER START NOT PRACTICAL DUE TO OTHER COMMITMENTS. REU ADVISE ACCEPTABILITY OF THIS TIMING.

BT

OLVR: CHESNAVFACENGCOM WASHINGTON DC(B). . . INFO

RTD: 000-000/COPIES 0008
151473/036 1 OF 1 M1 0811 086/GO539Z 261833Z MAR 82
CC: RADY00004

COMCBLANT NORFOLK VA
SUBJ: HOly LocH fleET moORing inSPECTION

A. CirCus:AVEur LonDon, UK 261722Z FEB 82
B. CONRAXT NOrFOLK VA 241833Z MAR 82
C. CirCus:AVEur LonDon, UK 150757Z MAY 82 TOTAL
D. CONRAXT NOrFOLK VA 141723Z MAY 82 TOTAL
E. LEnT:AVEceNGCOM NOrFOLK VA 101740Z MAY 82

1. REf A IDENTIFIED REQUIREMENTS TO INSPECT CERTAIN FLEET MOORINGS AT HOly LocH, SCOTLAND. REf E REQUESTED ChesNAvFAce:GCOM TO PROVIDE FUNDING AND TECHNICAL ASSISTANCE TO UCT ONE FOR THE INSPECTION. ChesNAvFAce:GCOM FUNDING TO BE PROVIDED UNDER NAvFAC SPONSORED FLEET MOORING MAINTENANCE (FMM) PROGRAM. REFS C AND D EXTENDED THE INSPECTION TO INCLUDE ALL 22 MOORING LEGS OF AFOB 7. REf E FURTHER REQUESTED ChesNAvFAce:GCOM TO TAKE FOR ACTION THE FUNDING OF THE EXPANDED INSPECTION EFFORT.

2. AS REQUESTED AND IAF REQUIREMENTS PROVIDED BY UCT ONE AND CRITERIA FOR USE OF FMM FUNDING PROVIDED BY CONNavyFAce:GCOM COE 10, THE FOLLOWING PLAN OF ACTION HAS BEEN DEVELOPED FOR INSPECTING THE MOORINGS OF AFOB 7:
   A. FUNDING HAS BEEN PROVIDED TO UCT ONE FROM THE NAVFAC
4.  A project execution plan has been completed and forwarded to DCM for approval and execution.

C. A Chesapeake/Cecil engineer will accompany DCM personnel to Holy Loch to assist in taking and recording data and to provide technical assistance.

D. Houring legs to be inspected are as follows:
   1. All 22 legs of the AFDS-7 DRUCKHOURING
   2. No. 2 and No. 3 6th class hourings
   3. Port and starboard navigation hourings

E. There will be no attempt to inspect houring legs below the mud line. As any attempt to raise chattell/anchor will dislodge the existing houring configuration, future maintenance work should incorporate raising and visual inspection of these portions of the houring legs.

F. The project is commenceing in July 82 and will require 3-4 weeks for completion.

G. Review and/or analyses of the existing or future AFDS-7 upright design is not within the funding available or scope of this project.

H. An inspection report will be mailed to ALCUN approximately 2 weeks after completion of the inspection.

3. Chesapeake/Cecil POC regarding this project is Mr. A. Kurtz at AV 285-3A81.
ROUTINE
R 0219447 JUN 82
FM CHESNAVFACENGCOM WASHINGTON, DC
TO COMCUMBANT NORFULK VA
INF UCI UNE
BT UNCLAS //407300//

SUBJ: NAVCUMT FORM 2275, NO.N62477-12-AR-02675

1. IAW MIG 917 NAII AND KURTZ (CHESDIV) AND LCDR BRANDENBURG (ULT-1)
OF 25 MAY 1982, NAVCUMT 2275, HOOK REQUEST DOCUMENT N6247732
DTN02675 IS HEREBY ISSUED IN THE AMT OF $30,000 FOR THE FLEET MUDING
INSPECTION OF THE AFDB-7, AN 6TH CLASS MUDING, AND TWO NAVIGATION
MUDING IN HOLY LOCH. ACCOUNTING DATA IS AA 1721804,77/000/H6247732
062477/20/000000/B220CF.'F69,6275. FUND S EXPIRE 30 SEP 82. MAXIMUM
AUTHORIZED IS $30,000.

2. IMMEDIATE OBLIGATION AUTHORIZED. CONFIRMING DOCUMENT FOLLOWS.
REQUEST MSG ACCEPTANCE.

3. PUC CHESDIV IS M.M. WALTER FPU-1(F)(PUC), AUTOVON 286-3801.
BY

DLVR: CHESNAVFACENGCOM WASHINGTON DC (LOP...ORIG

RID:000-000/CPIES:000

587015/113
1 OF 1 R1 0441 153/21:55Z 021944Z JUN 82
CS: R4206/4456

CHE NAVFACENGCOM WASHINGTON DC

U UNCLASSIFIED U
FROM CHESNAVFACENGCOM WASHINGTON DC
TO CINCUSNAVEUR LONDON UK
INFO LANTNAVFACENGCOM NORFOLK VA
COMNAVFACENGCOM ALEXANDRIA VA
NAVACTDET HOLY LOCH UK
UCT ONE
CIVENGRLAB PORT HUENEME CA
USS HUNLEY

UNCLASS //N11000//

SUBJ: HOLY LOCH FLEET MOORING INSPECTION

A. COMCBLANT NORFOLK VA 2616332 MAR 62
B. CHESNAVFACENGCOM WASHINGTON DC 1514072 JUN 62
C. M7G ETWN LANTNAVFACENGCOM AND CHESNAVFACENGCOM 19 JUL 62

1. IAW REF {A}, CHESNAVFACENGCOM PROVIDED FUNDING AND TECHNICAL
ASSISTANCE TO UCT ONE FOR THE UNDERWATER INSPECTION OF SELECTED
MOORINGS AT HOLY LOCH, SCOTLAND. REF {B} PROVIDED A PLAN OF ACTION
FOR INSPECTING THESE MOORINGS. THIS IS A PRELIMINARY REPORT OF THE
INSPECTION FINDINGS.

2. THE INSPECTION WAS CONDUCTED DURING 17-25 JUN 62. SIGNIFICANT
FININGS CONCERNING EACH MOORING ARE AS FOLLOWS:

A. STBDONAV BUOY AND PORT NAV BUOY: BUOYS, RISER CHAIN AND ANCHOR CLUMPS APPEAR TO BE IN GOOD CONDITION.

B. TWO 6TH CLASS MOORINGS: BUOYS AND RISER CHAIN APPEAR TO BE IN GOOD CONDITION; ANCHORS BURIED IN MUD.

C. AFDB-7: ALL 22 LEGS INSPECTED.
   (1) ON LEG NO. 22, LESS THAN 80 PER CENT ORIGINAL WIRE DIAMETER REMAINING.
   (2) NO BROKEN CHAIN LINKS OBSERVED.
   (3) ALL ANCHORS APPEAR TO BE BURIED IN MUD.
   (4) LEGS NOS. 3, 5, AND 19 OBSERVED WITH SLACK CHAIN ON BOTTOM.
   (5) SIXTY FOUR PER CENT OF LEGS HAVE READINGS OF 80-90 PER CENT ORIGINAL WIRE DIAMETER REMAINING.
   (6) THIRTY SIX PER CENT OF LEGS APPEAR TO HAVE LITTLE OR NO CATERNARY.

3. AS DISCUSSED DURING REF (C), CEL IS PROVIDING INPUT TO LANTNAV-FACENGCOM CONCERNING CATERNARY ADJUSTMENTS. THIS REPORT SHOULD BE COMPLETED IN APPROXIMATELY SIX WEEKS. ALSO DISCUSSED DURING REF (C), CHESDIV RECOMMENDS THE FOLLOWING ACTIONS:
A. AS ONE SPRING ACTION BEFORE THE WINTER SEASON:
   1. REPLACEMENT OF WORN PORTION OF LEG NO. 22.
   2. ADJUSTMENT OF MOORING LEGS TO TIGHTEN CATENARIES WITH
      INPUT FROM CEL.

B. AS LONG TERM ACTION, OVERHAUL COMPLETE MOORING INCLUDING:
   1. REPLACEMENT OF ALL CHAIN WITH MEASUREMENTS OF LESS THAN
      90 PER CENT ORIGINAL WIRE DIAMETER REMAINING.
   2. INSTALLATION OF EACH LEG TO RESTORE ITS PROPER CATENARY.

4. AN INSPECTION REPORT WILL BE FORWARDED TO INTERESTED COMMANDS
   IN APPROXIMATELY SIX WEEKS.
View of AFDB-7 and U.S.S. HUNLEY, looking north from White Farlane Point.

On-deck arrangement of anchor leg, showing pad-eye, anchor joining link (red), and stud-link chain.
Using inclinometer to measure angle of anchor leg.

Double-link wire diameter measurement, using pre-cut "Go/No-Go" gauge.
Chain in Section II of Leg 21; although this chain is rusty and flaking, the double-link measurement was over 90% throughout.

Chain in very good condition, showing light rusting and some marine growth near the waterline.
Divers from UCT-1 after conducting underwater inspection.
END

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