



CSA Z275.4-97 Standard



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# **SOUTH COAST DIVING LTD.**

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*SETTING THE STANDARD FOR EXCELLENCE  
IN UNDERWATER SERVICE*

825 Admirals Road  
Victoria, BC  
V9A 2P1

Tel: 250-361-1556

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[scdl@telus.net](mailto:scdl@telus.net)

[www.southcoastdiving.com](http://www.southcoastdiving.com)

SNC Lavalin Inc., Environment Division (SLE)  
**D-Jetty Perimeter and Old Fuel Float Reconnaissance**  
In-Water Field Survey Report  
February 10, 2016

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Patrick R. Thompson  
President/General Manager





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February 10, 2016

SNC Lavalin Inc.  
c/o Klohn Crippen Berger Ltd.  
3440 Douglas street  
Victoria, B.C.  
V8Z 3L5

Attention: Doug McMillan

## **RE: DIVE RECONNAISSANCE INSPECTION, MARINE RAILWAY**

Date(s): January 21, 2016  
Time(s): 08:00/13:00 hrs  
Location: CFB Colwood, D-Jetty/Old Fuel Float  
Item(s): Perimeter substrate, structure and rock outcropping coordinates  
Methodology: Visual recording c/w DVD-R video and digital still  
photographs of general conditions.  
Dive Supervisor: Ian Swan  
Dive Tech(s): Grsydon Tait  
Dave Dalzell  
David Littlejohn

### **WORK PROCEDURE:**

Two (2) crew support trucks, trailer and crew support vessel with a CAN/CSA certified four(4) man diving/inspection crew was deployed to D-Jetty and the old fuel float at CFB Colwood equipped with diver to surface air/communications, CCTV video system with surface mounted television monitor, digital camera equipment and supplies to conduct in water inspection requirements of the perimeter seabed, gather a general overview of the structures where possible and complete an additional survey of the old fuel float for a general assessment.

### **WORK SPECIFICATIONS:**

A dive reconnaissance inspection was requested by the Defence Construction Canada (DCC). This particular survey had no written specifications and it was established at the initial site safety briefing between SNC Lavalin(SNC), Klohn Crippen Berger(KCB) and ourselves(SCDL) that we would provide a base line overview that would incorporate the most important aspect being the perimeter of the jetty for dredging purposes below water along with elevation transects. Additional photographs of general conditions were also taken.





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## INSPECTION NOTES/OBSERVATIONS:

D-Jetty is comprised of a main concrete pier extending out into the Esquimalt harbour from the Naval property at Colwood. It is a large structure used for berthing and mooring equipment storage. The jetty is comprised of numerous octagonal concrete piles in specific close proximity bent lines observed along the easterly side and north to northwest. Riprap rock armouring is evident immediately on the easterly side of the jetty commencing at the very beginning of the octagonal piles. The easterly side of the jetty is completely armoured up underneath right to the concrete back wall. The distance is relatively short to the back wall at +/- 10 or 15 meters. The exception is the length of the jetty along the northerly side in which the back wall is located further in at +/- 30 or 35 meters. The concrete on the octagonal piles was observed in *fair/good* condition overall with minimal spalling or fracturing observed in the concrete considering the amount of marine growth encountered on these and all other structures. Footings into the seabed were observed either surrounded in riprap or otherwise properly embedded.

The overall perimeter composition of the seabed consisted of primarily riprap rock, cobblestone rock, shell hash and sediments commencing at the toe of the riprap moving out from underneath the jetty along the outer perimeter.

The jetty is also protected by way of timber fender piles that have seen a fair share of wear from active berthing and prevailing weather from the mouth of the harbour. The fender pile system acts as a sacrificial barrier. Replaced and damaged timbers and cross bracing was evident throughout the jetty and on the seabed.

The back wall and concrete pile cap construction observed under the jetty did show some signs of lower concrete erosion due to weather and wave action. However, there does appear to be enough armouring in order to mitigate and slow this process down on the easterly or prevailing side.

Upon completion of the perimeter survey on D-Jetty, the crew proceeded to complete a further evaluation of what is now considered the old fuel float located between F-Jetty and G-Jetty. The old fuel float consisted of an approach/gangway with a concrete footing poured over a rock outcropping inshore, an additional timber pile footing at the head of the gangway, then onto a float secured by driven timber round piles in place as locator piles on either side of the inshore end of the float and a locator dolphin at the offshore end of the float. The float is primarily used for very light duty and the overall integrity of the piles and cross bracing are showing evidence of decay and pile rot. There was very good example photographs demonstrating how a purposely installed drift pin or lag bolt creates a hole in the main pile that allows for infestation and rot to commence and work throughout the life span of the pile.





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The bottom composition from the rock outcropping under the approach was primarily soft silt, gravel and shell hash as you move offshore under the float. Evidence of construction debris and creosote cross bracing from previous repairs or normal rot over the years was observed scattered on the bottom. The locator dolphin piles and related footings into the seabed appeared in fair condition with proper embedment overall. The concrete footing at the start of the approach showed some erosion around the lower footing. This damage is localized to the offshore or prevailing side.

## **GPS READINGS TAKEN OF THE OUTER PERIMETER (TOE) OF THE INSHORE ROCK OUTCROPPING:**

10U0466671/UTM5365613  
10U0466673/UTM5365609  
10U0466673/UTM5365606  
10U0466674/UTM5365604  
10U0466673/UTM5365600  
10U0466672/UTM5365595  
10U0466672/UTM5365594  
10U0466673/UTM5365589  
10U0466670/UTM5365588  
10U0466665/UTM5365576  
10U0466659/UTM5365575

These coordinates depict the offshore end or toe section of the surrounding rock outcropping at the abutment of the old fuel float.

Formal live video recording along with recorded audio conversations were completed at this and all other related facilities in order to gather visual documentations and a general scope of the structures and related seabed compositions as directed by field personnel.



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## **CONCLUSION:**

D-Jetty Perimeter and Old Fuel Float Reconnaissance inspections were completed as per specification requirements established upon commencement of operations. Although every effort was made to complete a baseline overview as accurately as possible in the time allowed, please be advised that some oversights and approximations may be encountered.

Please reference the DVD-R copies and still photographs supplied for a visual documentation of the structures as viewed in order to provide an indication of the present condition mentioned herein.

I trust this information meets your requirements.

If I can be of further service or assistance, please do not hesitate to call me.

Sincerely yours,

Patrick R. Thompson  
President/General Manager



## Policy Schedule

BINDER AGREEMENT REFERENCE:	B6012BEAZPLLIAB15
UMR:	W0035615PNVE
TYPE:	Marine Liability PI/Logistics
BROKER:	Aon Reed Stenhouse Inc. 401 West Georgia Street, Suite 1200 PO Box 3228 Vancouver Canada V6B 3X8
INSURED:	South Coast Diving Ltd
ADDRESS:	825 Admirals Road Victoria V9A 2P1 Canada
PERIOD:	Effective from: 30 November 2015 To: 29 November 2016  Both days inclusive, Local Standard Time at the domicile of the (Re) Insured being CANADA
INTEREST:	To indemnify the Insured against their legal liability, costs or expenses arising out of the Insured's services:  <b>Marine Surveyor</b> <b>Marine Consultant</b> <b>Ship Inspector</b> <b>Pipeline Inspector</b>
TRADING AREA:	Worldwide (please see policy wording and sanctions limitation clause for territorial exclusions)
LIMIT OF LIABILITY COVER SECTION 1:	CAD 1,000,000.00 Each occurrence and in total for the policy period
GENERAL DEDUCTIBLE COVER SECTION 1:	CAD 5,000.00 Each Occurrence



D-JETTY IN COLWOOD

OLD FUEL FLOAT IN COLWOOD





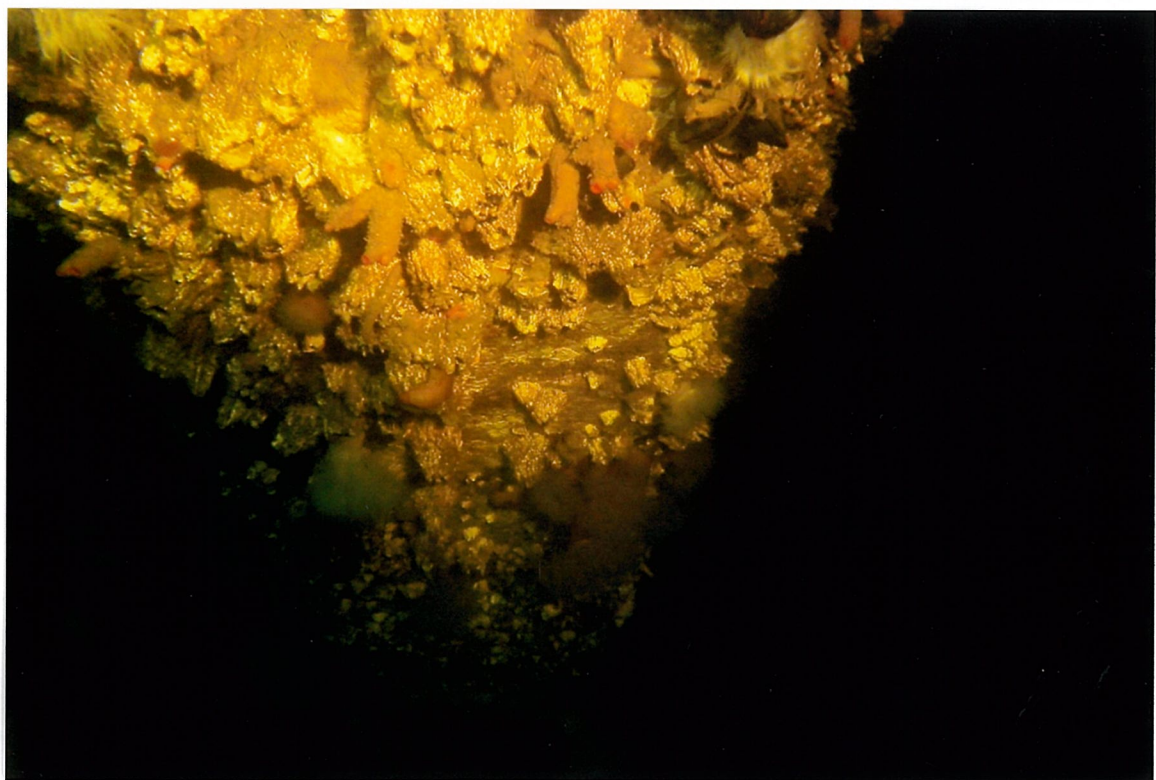


VIEWS BETWEEN OCTAGONAL CONCRETE PILE BENTS UP UNDERNEATH  
THE EXISTING JETTY ALONG WITH BACK WALL AND CONCRETE CAP  
CONDITIONS

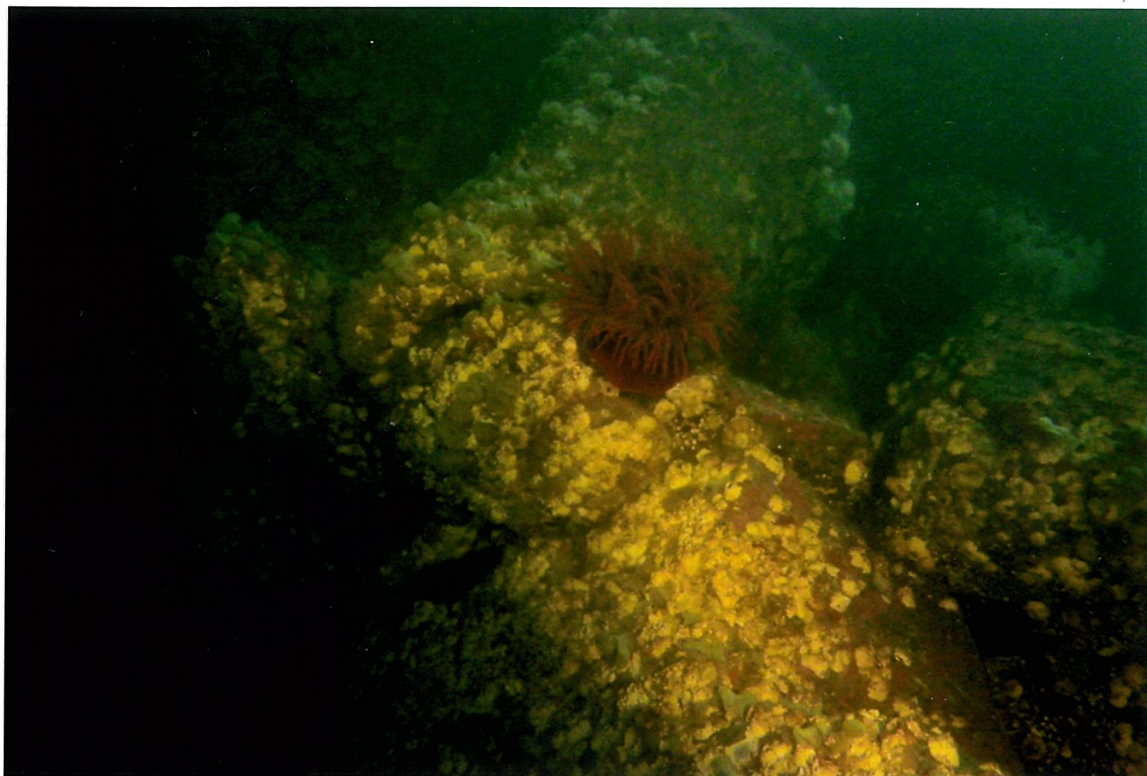




GENERAL EXTENT OF MARINE  
GROWTH AND CONDITION VIEW  
OF CONCRETE OCTAGONAL  
PILES



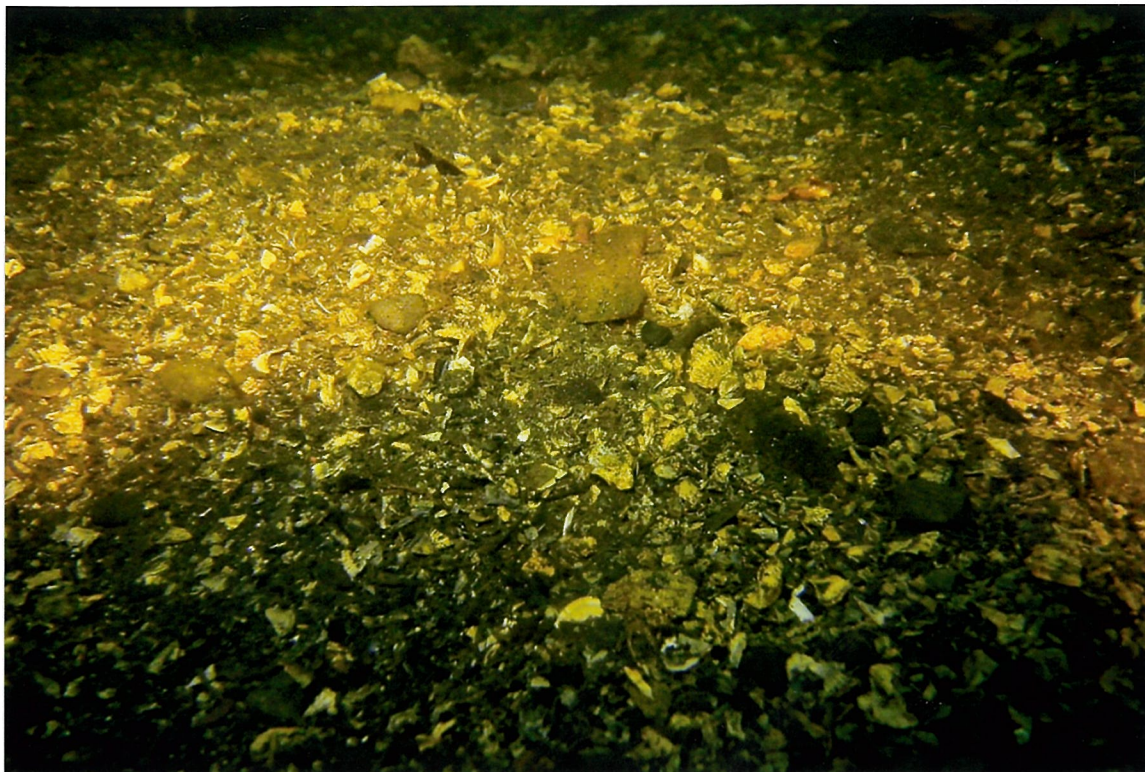




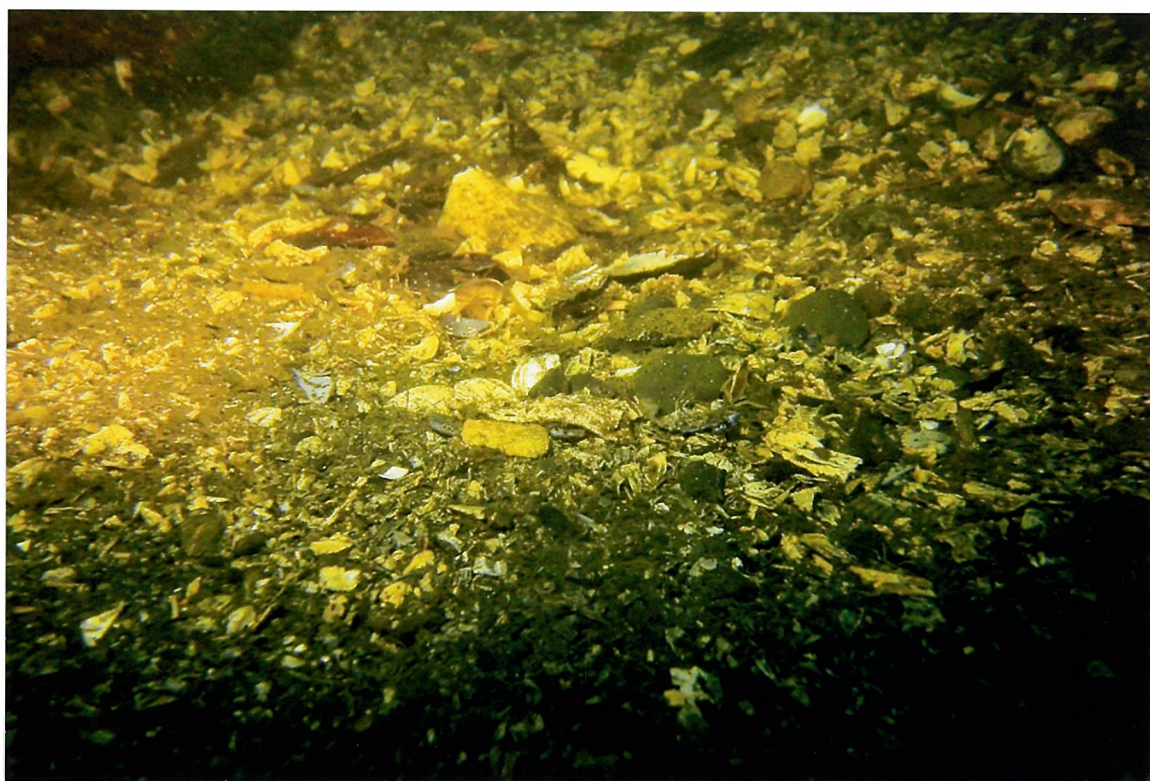
RIPRAP ARMOURING OBSERVED IMMEDIATELY COMMENCING ALONG THE  
OUTER ROW (BENT LINE) OF OCTAGONAL CONCRETE PILES







COBBLESTONE, SEDIMENTS AND SHELL HASH OBSERVED ALONG THE  
TOE OF THE RIRAP ALONG THE ENTIRE PERIMETER OF THE JETTY



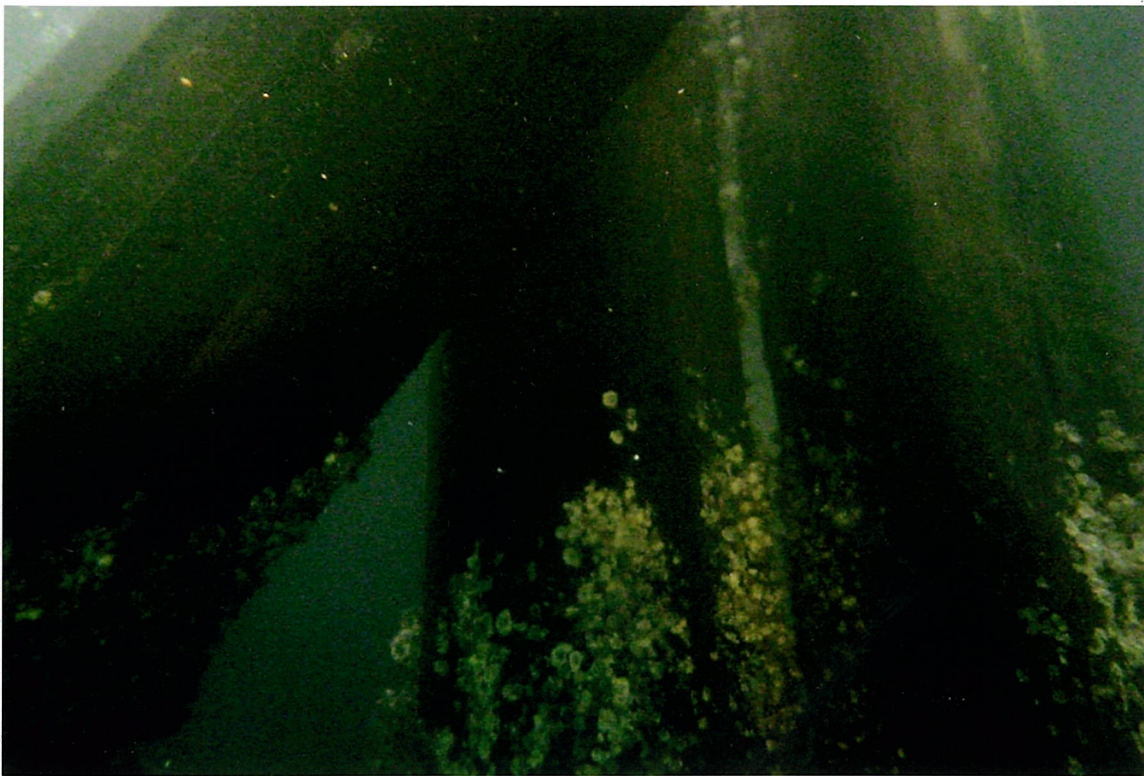




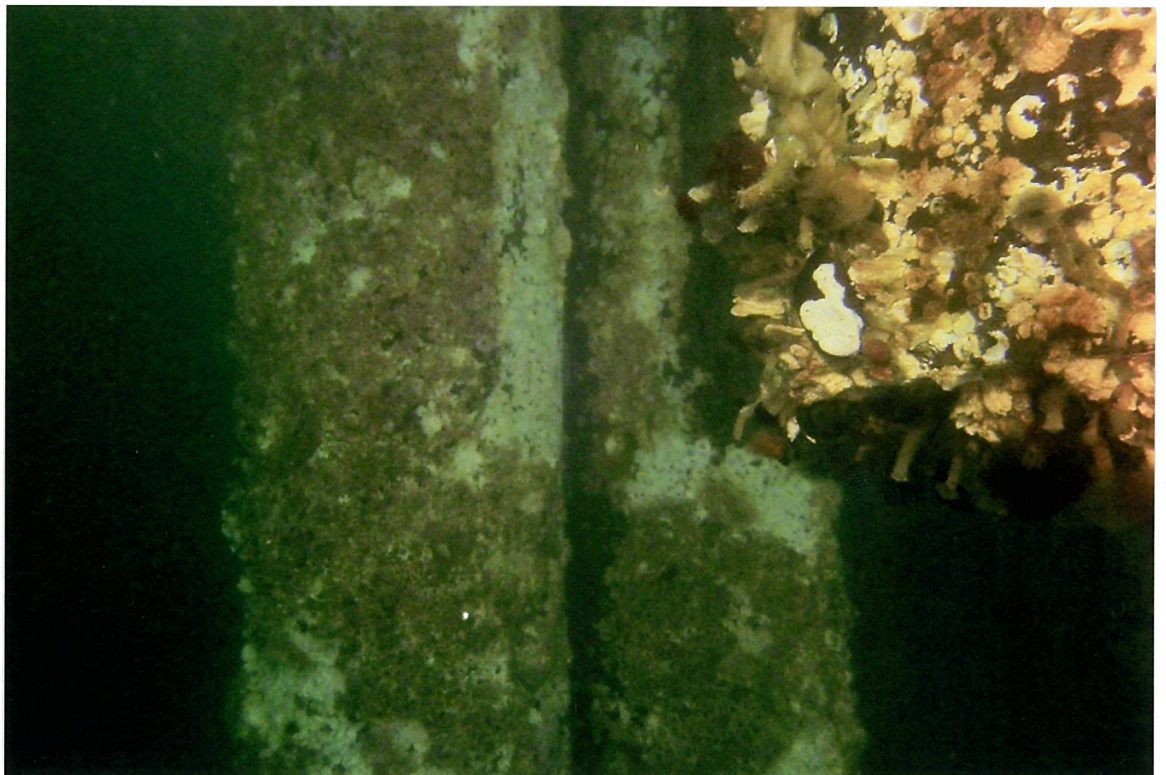
EXTENSIVE RUB WEAR OBSERVED  
ON THE OUTER TIMBER PILE  
FENDERS FOR THE JETTY



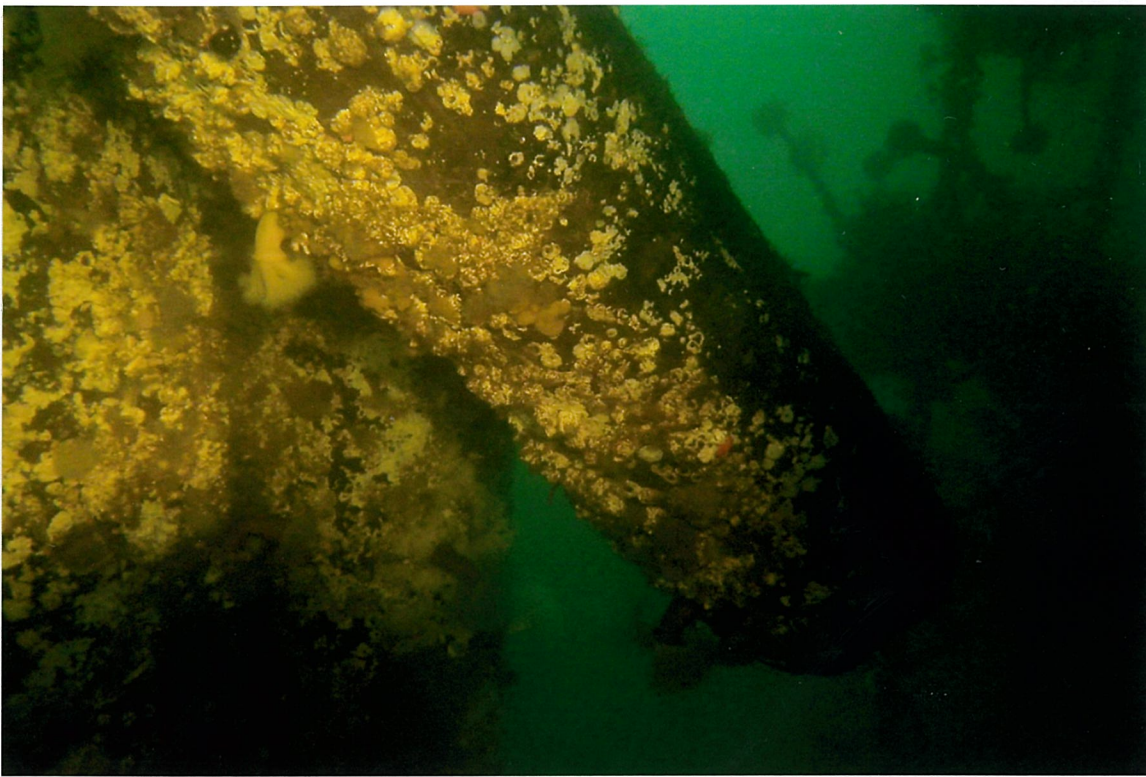




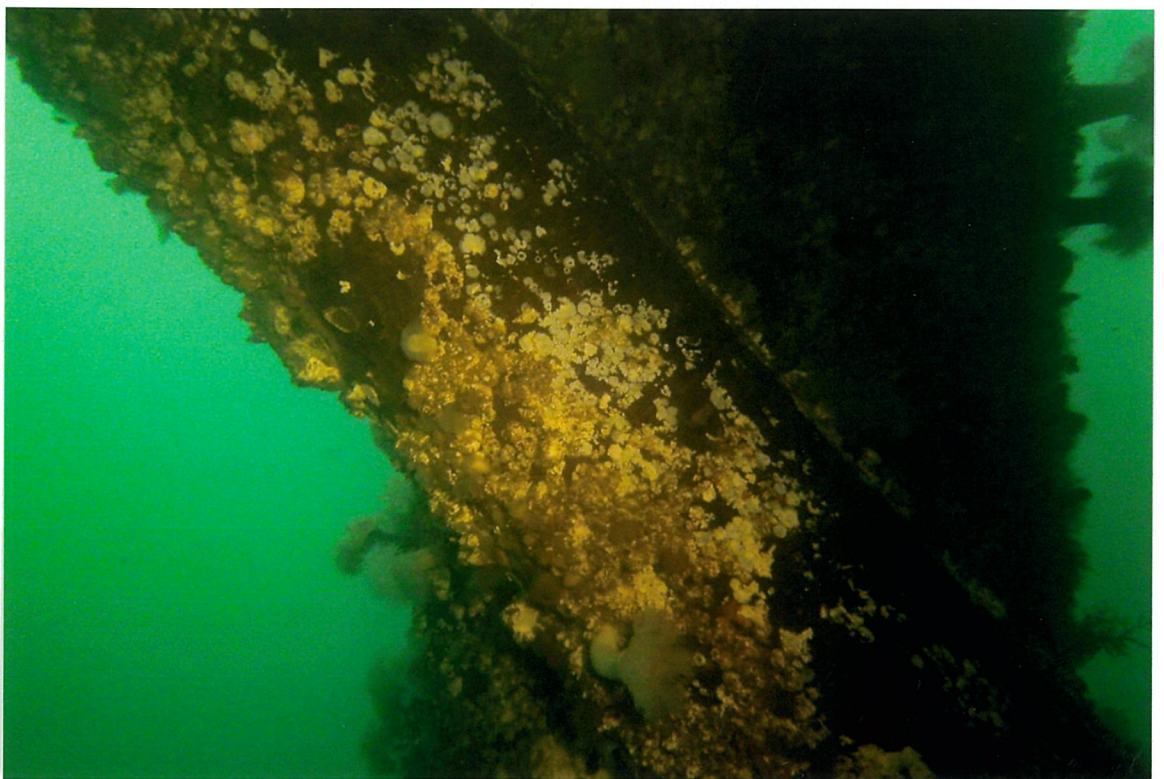
GENERAL CONDITION VIEWS OF FENDER PILES







OVERALL CONDITION VIEWS OF PILE CROSS BRACING



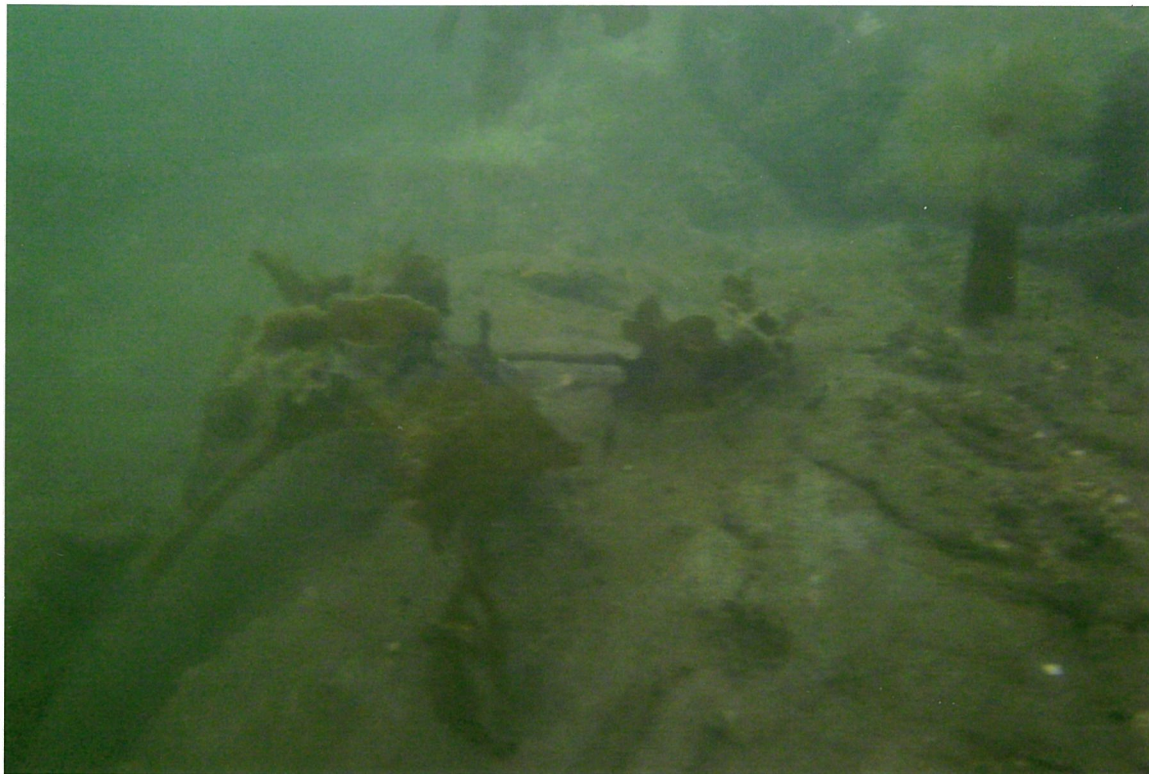




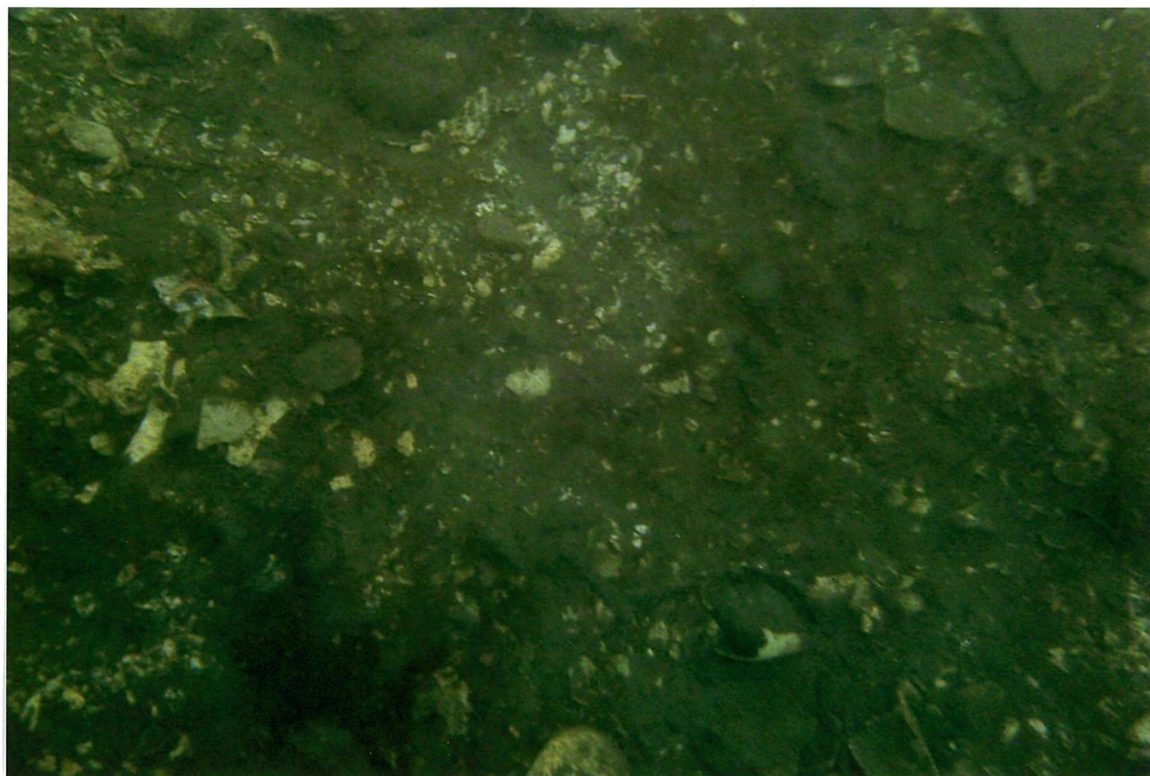
VIEWS OF INITIAL CONCRETE  
FOOTING POURED ONTO ROCK  
OUTCROPPING FOR THE  
APPROACH OF THE OLD FUEL  
FLOAT







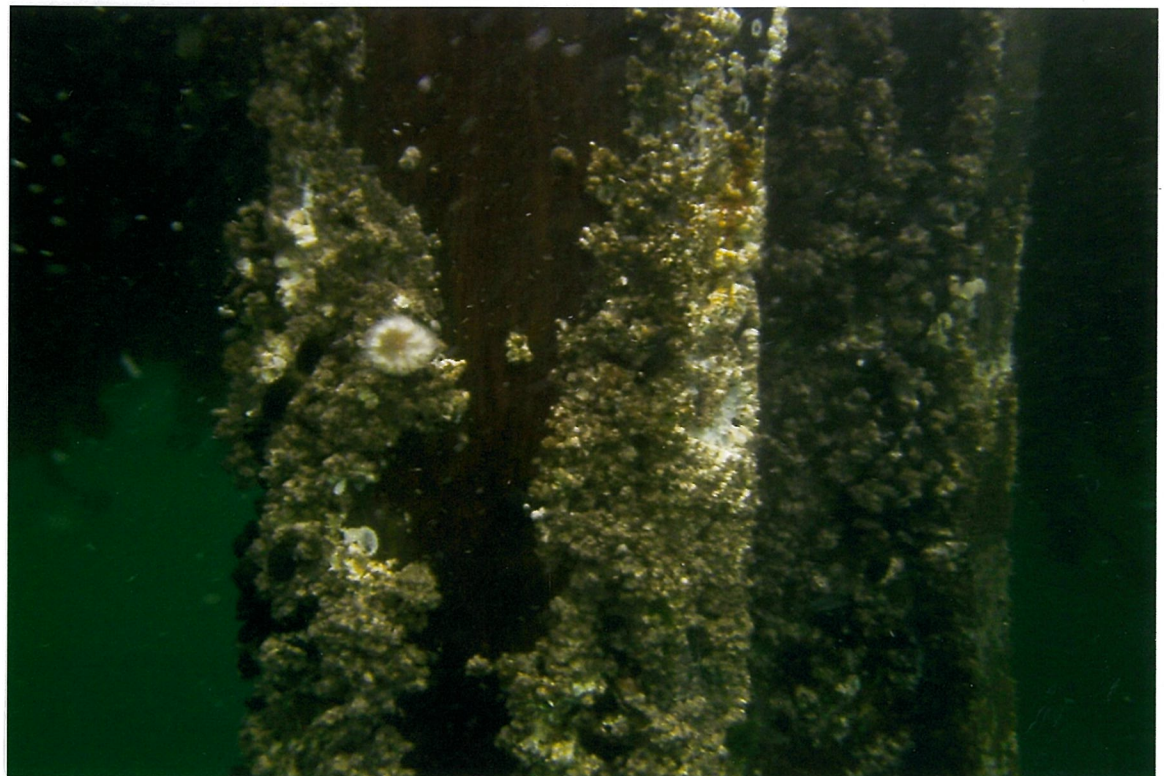
ROCK OUTCROPPING OBSERVED ON SHORE AT THE APPROACH FOR  
THE OLD FUEL FLOAT AND BOTTOM COMPOSITION AT THE TOE  
OF THE ROCK OUTCROPPING







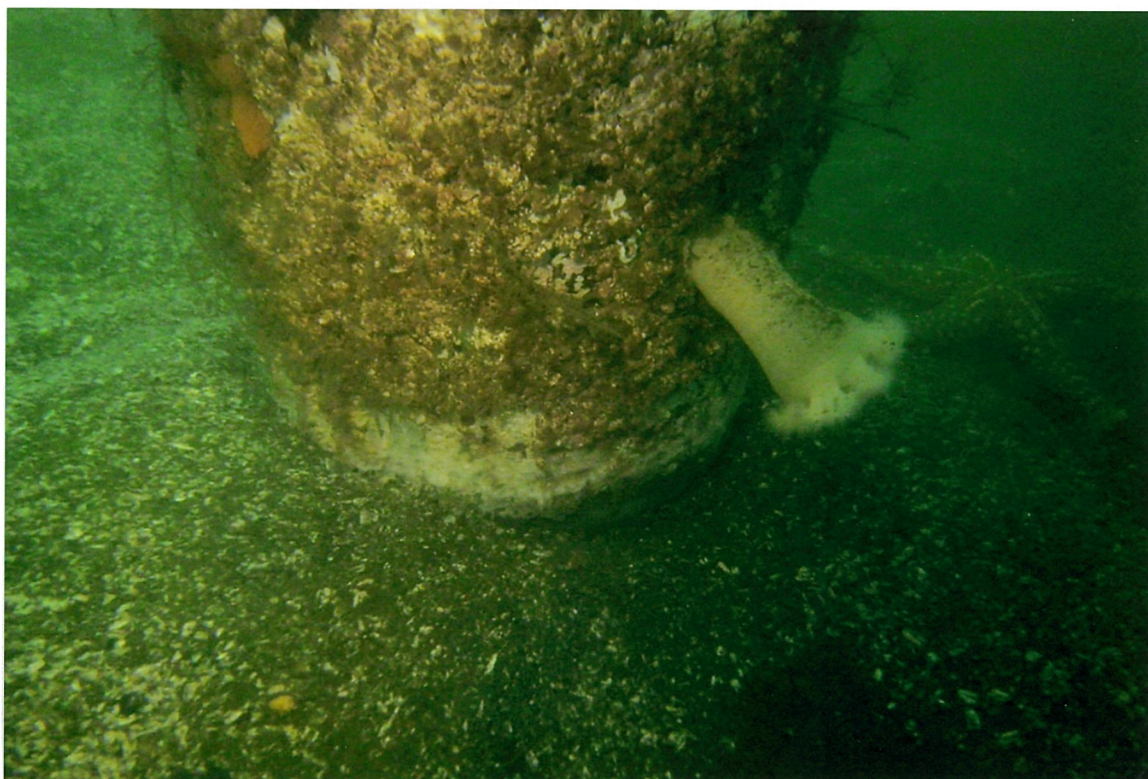
GENERAL VIEWS OF THE TIMBER  
PILE CONDITIONS OBSERVED FOR  
THE LOCATOR PILES FOR THE  
OLD FUEL FLOAT



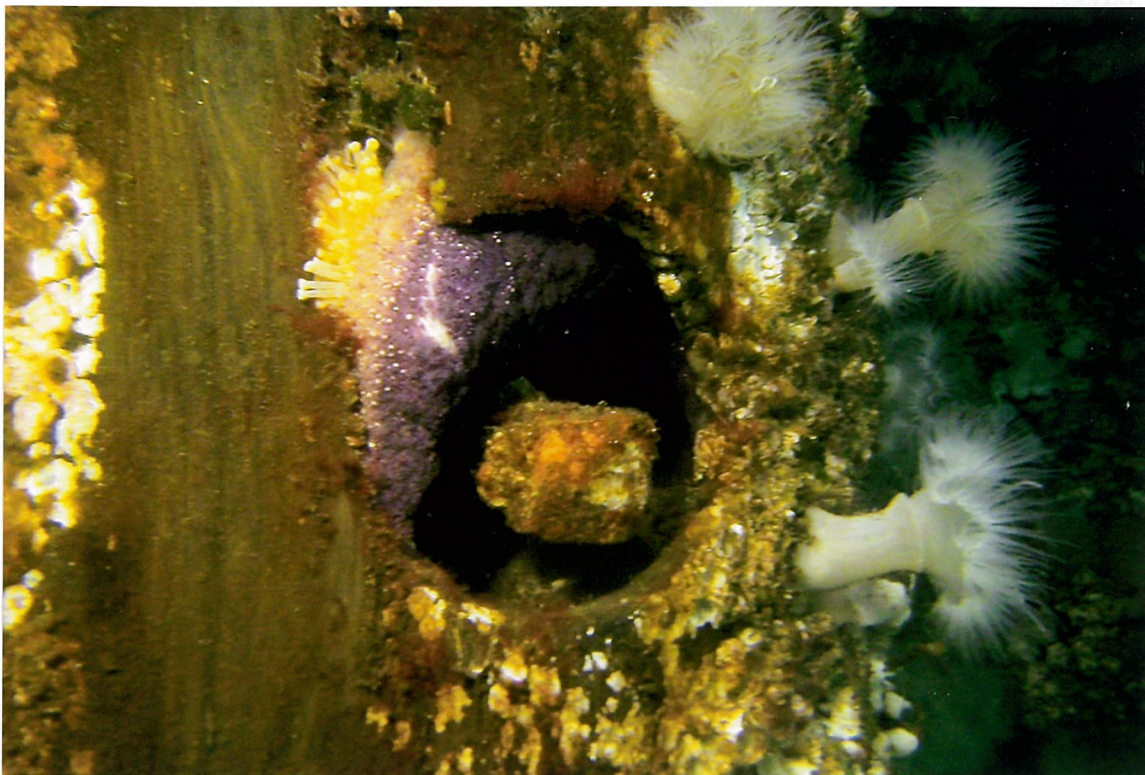




OBSERVATIONS OF THE OVERALL CONDITION OF THE TIMBER PILE  
FOOTINGS AT THE SEABED AND GENERAL COMPOSITION OF THE  
SEABED UNDER THE OLD FUEL FLOAT







PILE ROT AND DECAY FORMED FROM PURPOSELY INSTALLED STEEL  
DRIFT PINS OR LAG BOLTS IN ORDER TO SECURE TIMBER BRACING  
THAT HAS SINCE FALLEN OFF THE MAIN PILES AT THE OLD  
FUEL FLOAT







TIMBER CROSS BRACING DECAY  
AND ROT OBSERVED AT THE OLD  
FUEL FLOAT







EXTENT OF MARINE GROWTH OBSERVED ON THE UNDERSIDE OF THE  
OLD FUEL FLOAT

