Monitoring and Recording the Scheduled Hulk Number 3 on Ynyslas Beach, Ceredigion (June 2015)

Members of DAT recording individual timbers on the site

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Date: **June 2015**

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Report Ref: **MADU – Ynyslas – 2015**

1.0 Introduction

Following on from the work carried out on the site during 2014 by the Dyfed Archaeological Trust (DAT) and the Nautical Archaeology Society/Malvern Archaeological Diving Unit (NAS/MADU) (Cundy 2014; Meek 2015), at the beginning of 2015 DAT put forward a project proposal to Cadw to carry out further recording and investigative work on Hulk 3 at Ynyslas on the Dovey Estuary, Ceredigion, Mid Wales. This wreck is one of three that forms part of the Maritime Scheduled Ancient Monument that lie in the intertidal zone on (and beneath) Ynyslas beach.

The aims of the proposal put forward by DAT were:

1. *to make a record of the eroding Ynyslas hulk before it disappears*
2. *to disseminate the record to a wider audience*

And the objectives of the DAT proposal were:

1. *to create a record of the presently exposed timbers of the wreck to assist with monitoring its erosion and to assist in determining its construction and original shape*
2. *to undertake further excavation across the top of the surviving wreck in order to expose, record and remove any artefacts before they are lost through erosion, and find out more about its function and purpose*
3. *to provide an opportunity for the local community and visitors to observe the wreck, learn more about it and perhaps assist in its longer term monitoring*
4. *to disseminate the results of the project to a wide audience.*

With an additional objective:

1. *to produce detailed drawings of the hulk and from these a scale model suitable for display*

The above site work was to be carried out in two phases, the first being the recording of exposed timbers in late Spring / early Summer 2015 and the second involving excavation to take place in late Summer 2015.

The DAT proposal also recommended that, as it was in 2014, the project again be a joint venture with the Nautical Archaeology Society with input from NAS/MADU being provided on site during both phases to assist DAT in the work. The NAS subsequently submitted their proposals to Cadw to provide the appropriate assistance to DAT's 2015 investigations.

The perceived history and background behind the three wrecks on Ynyslas beach has been well documented (Groom 2011; Cundy & Turner 2012), and since the remains of Hulk 3 located on the eroding bank of the Afon Leri were first bought to the attention of the Malvern Archaeological Diving Unit in 2012, they have been monitoring and recording the rate of erosion of the bank of the Afon Leri.

As the Welsh regional coordinators for NAS, the author from MADU agreed to attend and assist with the seasons work and to provide advice and support as appropriate. The NAS/MADU aims during the first phase of the 2015 work on site (to which this report refers) would be:

1. to assist DAT with their recording and monitoring of the immerging Hulk 3
2. to provide advice and assistance regarding the general constructional details associated with commercial wooden vessels
3. to continue with the recording of the bank of the Afon Leri to confirm the on-going rate of erosion of the bank adjacent to the emerging Hulk 3

The work being carried out by DAT and NAS/MADU during 2015 on Hulk 3 at Ynyslas is being funded by Cadw and supported by Natural Resources Wales.

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All photographs were taken by MADU except where otherwise attributed.

Abbreviations

Cadw	Welsh Government's Historic Environment Service
DAT	Dyfed Archaeological Trust
MADU	Malvern Archaeological Diving Unit
NAS	Nautical Archaeology Society
NRW	Natural Resources Wales
RCAHMW	Royal Commission on the Ancient and Historical Monuments of Wales

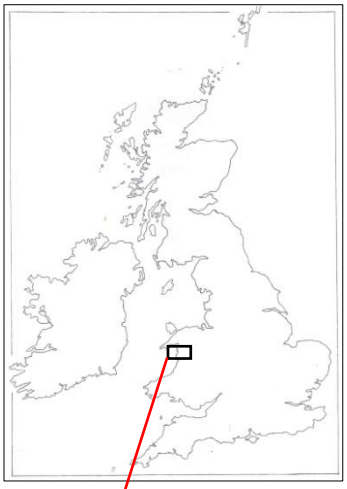
Participants

DAT	James Meek (Project Supervisor) Hubert Wilson Felicity Sage Alice Day
MADU	Ian Cundy (NAS Regional Co-ordinator for Wales)
NAS	Mark Beattie-Edwards (Programme Director)
QinetiQ	Anthony Clark

3.0 Site Details

3.1 Location

Ynyslas Beach, Ceredigion, Mid. Wales.



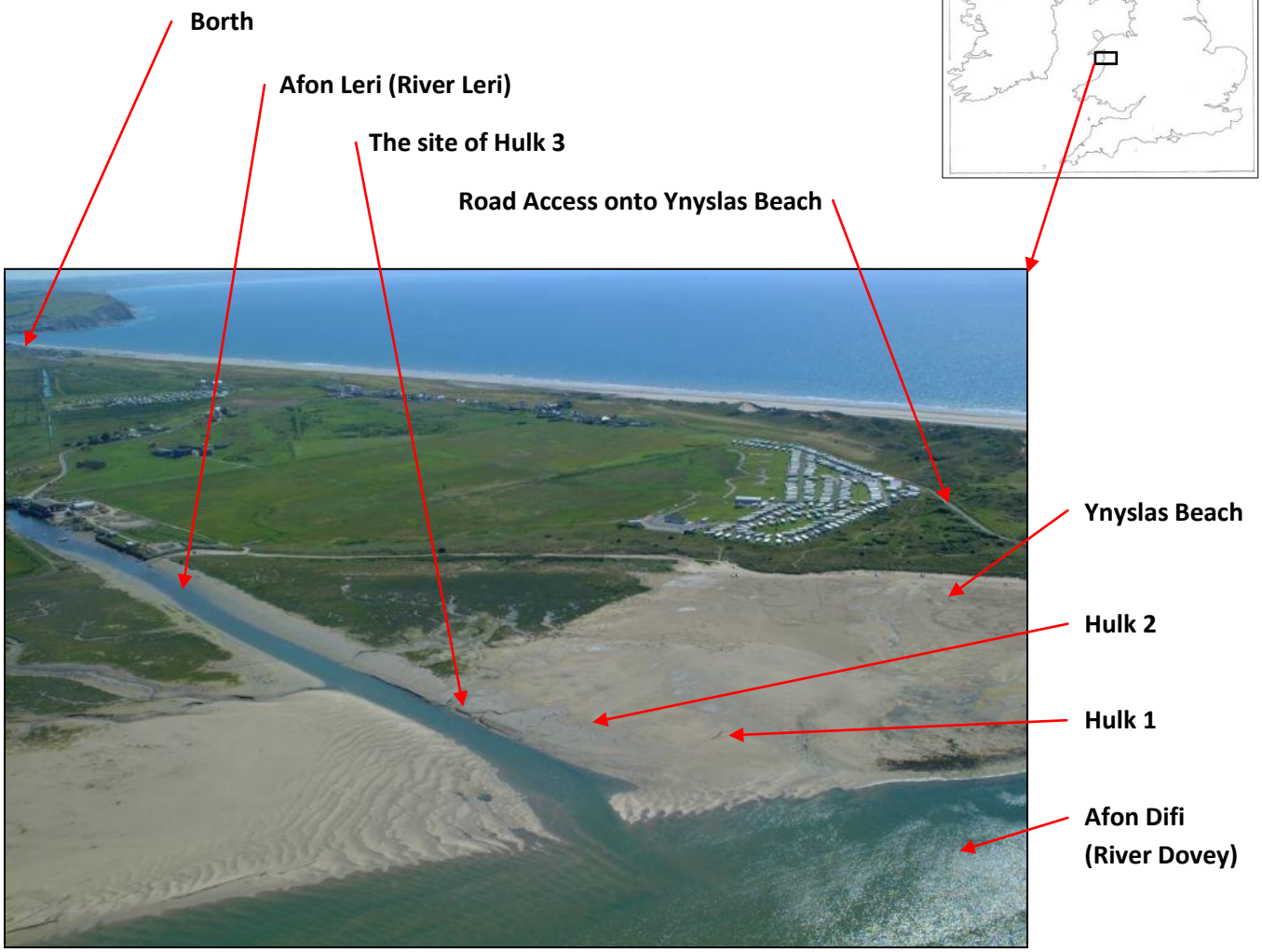


Figure 1. Aerial view of the wreck site looking south west.

Description:	~575m, east of the road entry onto Ynyslas Beach (see Figure 2)	
Co-ordinates:	Hulk 3	(NPRN 506769)
Latitude	52 deg 31’ 32.54” N	(52.525706)
Longitude	04 deg 02’ 28.04” W	(-04.041123)
Grid Ref.	SN 61624 93940	
X (Easting)	261624	
Y (Northing)	293940	

3.2 Site Description

Ynyslas Beach lies on the south side of the Afon Dyfi (River Dovey) at the entrance to the Dovey Estuary, opposite the town of Aberdyfi (Aberdovey) (see Figure 1). Access to the beach is via a lane approximately two miles north of the town of Borth, the road terminating at the beach where car parking is possible on the firm sand at all but extreme high tides (see Figure 2). The beach is sheltered from the south and west by high sand dunes, and gives way to the large expanse of Traeth Maelgwyn salt marsh to the east with Cors Fochno salt marsh further to the south.

Figure 2. Road access onto Ynyslas Beach.

The Afon Leri (River Leri) is a tidal canalised waterway which runs north/south, parallel with the coast to the east of the town of Borth, discharging into the Afon Dyfi at the eastern end of Ynyslas beach and it is on the west bank of the Leri that the three abandoned hulks that make up the Maritime Scheduled Ancient Monument can be found. From Ynyslas beach, Hulk 3 can be viewed from around 1.5 hours after high tide on the edge of the receding Afon Leri, and accessed from around 2.5 hours after high tide. The wreck however can only be approached by leaving the firm sand and proceeding east toward the Afon Leri, across increasingly difficult terrain comprising deep gullies and muddy alluvial deposition of overburden bought onto the site at high tide from the rivers (see Figure 3).

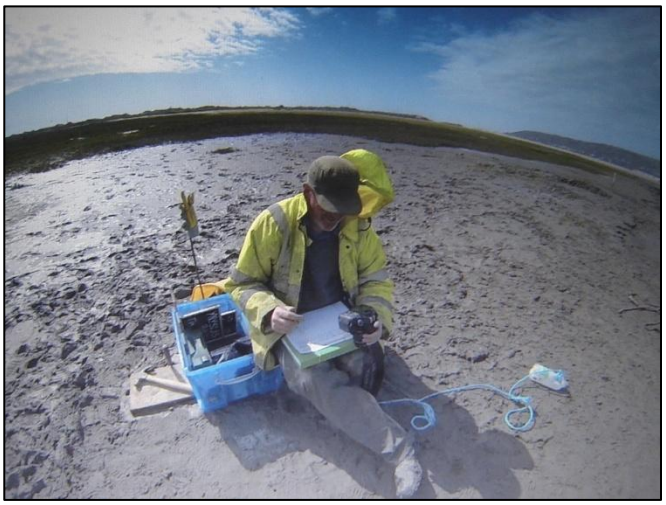


Figure 3. The muddy access to the site looking back toward Ynyslas beach.

3.3 Site Conditions

The area around Hulk 3 is fairly exposed, and in bad weather, working in estuarine silt, on the edge of a muddy river bank, with strong currents below when the river is running in or out, can be problematic and potentially hazardous. On Monday 1st and Tuesday 2nd June 2015 the weather on Ynyslas beach was absolutely appalling, with horizontal rain being driven across the site by gusting 70 mph westerly winds, however from Wednesday onwards the weather improved considerably, bringing in bright and sunny days with only a gentle breeze (see Figure 4).

Monday Evening (1st June)

Tuesday Evening (2nd June)

Wednesday Morning (3rd June)

Figure 4. Improving weather & sea states at Borth during the week on site.

The tidal window on the site allows for around a seven hour working day, and the week chosen for the site work lead up to spring tides beginning on Wednesday 3rd. This should have provide the maximum exposure of the wreck, however due to the times for low water, access to the site was not possible until around midday on Monday and then became progressively later by around 40minutes on each successive day (see Appendix I). This was not ideal as towards the end of the week the site would not become accessible until mid afternoon.

4.0 Hulk 3 Details

Hulk 3 (NPRN 506769) is described on the RCAHMW Coflein web site as follows:

The stern and part of the starboard side of the vessel can be seen eroding out of the steep bank of the Aber Leri. Some 1-1.5m of sediment has accumulated over the hulk and the deck has collapsed under the weight. A lone roofing slate can be seen protruding from the interior of the hull. Timbers from the overhanging stern remain only partially attached. The external planking measures 230mm deep and 40mm wide and is fastened with treenails 30mm in diameter. (RCAHMW October 2010)

Since this description was recorded in October 2010, Hulk 3 has changed considerably (see Appendix II). The bank of the Afon Leri has continued to erode, with the top edge of the bank having moved west by around 4m since June 2010 (see Appendix V). This has resulted in approximately 80-90% of the starboard side (including cant frames leading in towards the bow) and 30-40% of the port side of the wreck having become exposed.

There are no longer any signs of the overhanging stern timbers reported in Coflein, and the continual drying out, followed by repeated submersion of the wreck at high tide, has resulted in almost all the exposed outer planking together with the intermediate filling frames on the starboard side to have fallen away. As the vessels main timbers and planking have become disarticulated, they have become mobile as subsequent tides cover the site, eventually floating away and disappearing altogether.

In addition to the above, numerous artefacts have become exposed including a wooden stave bucket the remains of which were removed from the site by DAT in September 2014, and what is thought to be the vessels cooking stove complete with a ceramic cooking pot still in the oven (see Figure 5).

Figure 5. Possibly the galley stove with a cooking vessel still in the oven.

5.0 Methodology

The NAS/MADU aims for the first phase of the 2015 site work associated with Hulk 3 are set out in the Introduction, and include the monitoring of the eroding bank of the Afon Leri, the recording and evaluation of the wrecks timbers together with assisting DAT in their endeavours and understanding of the site.

5.1 Offset Survey of the Bank of the Afon Leri Adjacent to Hulk 3

The first contemporary reporting of Hulk 3 was included in the RCAHMW report *Remains of the Derwenlas Fleet at Ynyslas* (Groom 2010) following a survey of the wreck which was carried out in June 2010. Since the wreck was bought to their attention in October 2012, MADU have been recording the location of the top edge of the receding bank of the Afon Leri adjacent to Hulk 3. Repeating this exercise during this season's June 2015 site visit would therefore provide a comprehensive 5 year overview of the rate of erosion of the bank and the resultant emergence of the wreck.

In October 2012, two semi-permanent survey datum pegs were placed in the beach 38m apart above the wreck and set back from the edge of the bank of the Afon Leri. This enables a survey tape to be run out between the two pegs approximately parallel to the river and used as a base line datum from which offset measurements can be recorded at 1m intervals. This simple method for surveying the bank has worked well enabling comparison rates of erosion to be viewed following each subsequent visit (see Figure 6).

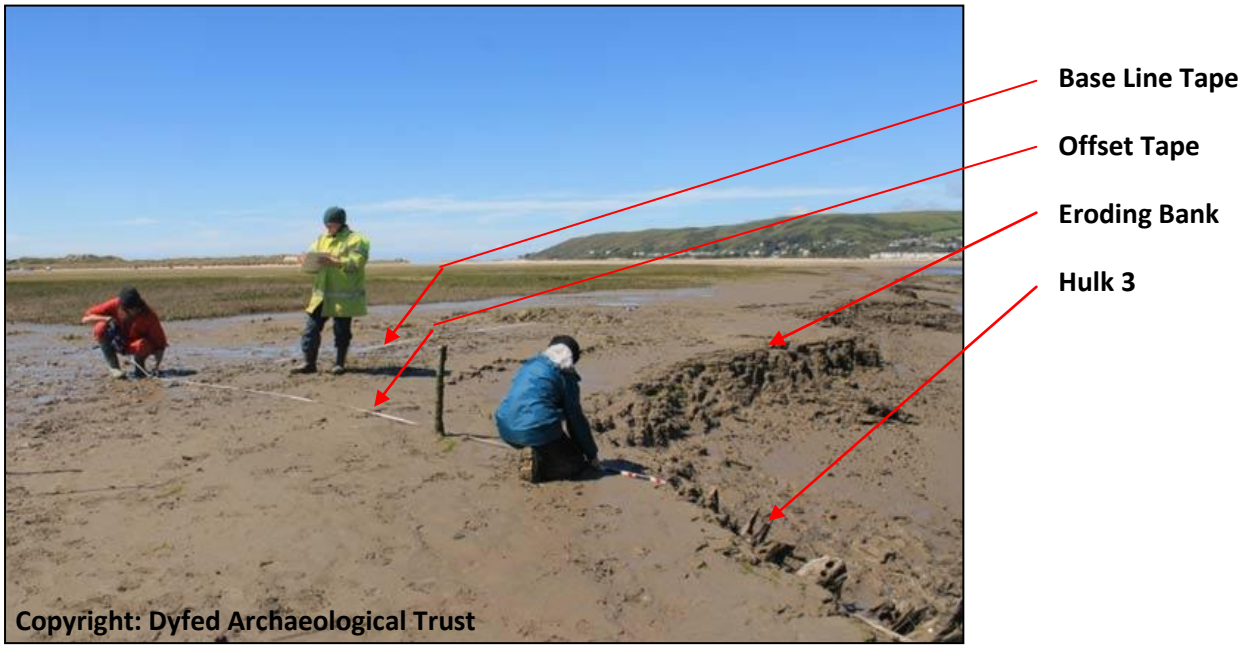


Figure 6. Carrying out an Offset Survey of the Afon Leri's eroding bank (DAT).

5.2 Wreck Recording

DAT had set up a methodology for recording the individual exposed timbers on the site to provide an "as is" record of the wreck at the date of recording. The method to be employed consisted of attaching an individually numbered embossed metal tag to each of the timbers to be recorded, providing a photographic record of each timber, and completing a DAT Timber Recording Form (see Appendix III).

The DAT proforma provides for recording timbers including:

- Type / Name
- Species Identification
- Location on Site
- Size & Dimensions
- Condition
- Markings
- Fixings & Fittings
- Found in Relationship with
- Thoughts, Impressions, Interpretation
- Dimensional Sketch

5.3 Understanding the Site

As mentioned in 3.3 (Site Conditions) above, due to the tides the site was not accessible until midday on Monday and then progressively later by around 40 minutes on each subsequent day. The mornings were therefore ideal for planning the day, catching up on reporting, analysing the previous day's work, etc. It was also an ideal time for providing the DAT team with a few words of wisdom on wooden ship and boat construction including the identification of timbers, maritime and boat building terminology, the recognition of fixtures & fittings, etc.

6.0 Results

The following diary outlines the work carried out, and results achieved, day by day, during the first phase of the 2015 site work.

6.1 Thursday 28th May 2015

Prior to working on the site in September 2014 it had been known that during World War II, Ynyslas beach had been used as a testing range for missiles and ordnance. It was known that unexploded material had, in the past, been found on the site and that participants should be on the lookout for suspect items. Following on from the subsequent work carried out at Ynyslas during 2014 (Cundy 2014; Meek 2015) where ordnance had been found and eventually dealt with by the Royal Navy Bomb Disposal Unit, it was felt prudent that, before any further work was carried out on the site, all personnel likely to be involved should attend an Unexploded Ordnance Recognition Course.

A course was therefore organised and run for the team by Anthony Clark (the Welsh Explosives Manager from QinetiQ) at the DAT offices in Llandeilo, which proved to be extremely informative.

6.2 Monday 1st June 2015

James, Hubert and Felicity had arrived on Saturday 30th May and over the course of the weekend they had cleared most of the seaweed from the wreck and cleaned the exposed timbers. They had also made a start recording the frames on the north (starboard) side of the site that remain integral with, and attached to, the wreck. As described above, the exposed timbers were labelled using individually numbered embossed metal tags (see Figure 7) and recorded using DAT Timber Recording Forms.

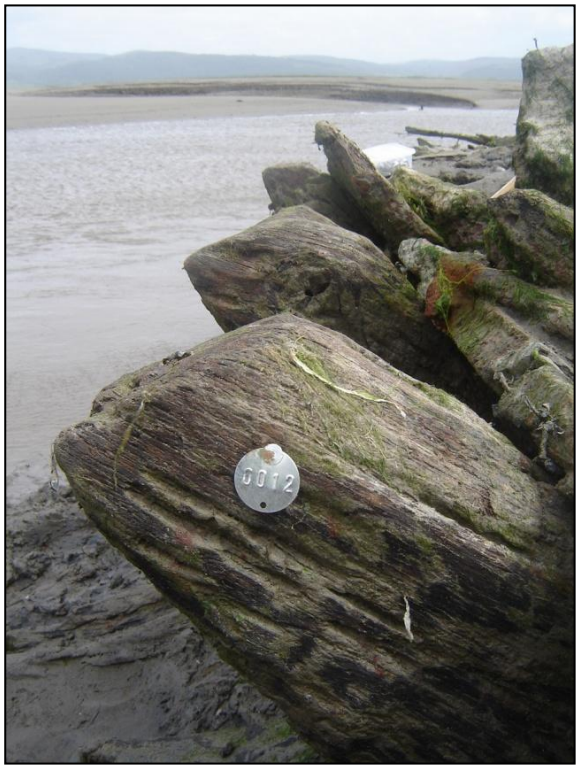


Figure 7. A starboard frame showing it's associated embossed label.

Although the weather over the weekend had been relatively benign, by Monday the conditions had worsened dramatically making it extremely difficult and potentially dangerous to work on the site with winds gusting up to 70mph and horizontal driving rain, so after around 3 hours the work was called off on safety grounds.

Despite this, DAT members had managed to label and recorded several more starboard frames and the author had re-located and exposed the two semi-permanent survey datum's that had been left on the site from previous visits.

As the site is only visited periodically, the semi-permanent survey datum's are sometimes difficult to locate. When initially placed on the site in October 2012 they were left flush with the beach so as not to cause an obstruction, however over time the deposition of silt on the site has buried the pegs, and they are now several cm below the surface of the beach. The details and transits shown in Appendix IV will hopefully assist in locating the two datum's during future visits to the site.

6.3 Tuesday 2nd June 2015

By Tuesday the rain had thankfully let up, however the winds remained as strong, and as added safety measures ropes were run down both sides of the wreck attached to posts on top of the bank to help access the beaches to the north and south of the site and to tie on to when working close to the water's edge (see Figure 8).

During the day Alice arrived and while Hubert and Felicity continued recording the vessels main frames on the north (starboard side) of the site, Alice and the author commenced recorded those on the south (port side) of the site.

James worked ahead of both groups attaching the number embossed metal tags to the exposed timbers and commenced photographing the individual timbers.

Figure 8. Hubert & Felicity working close to the water with safety ropes.

6.4 Wednesday 3rd June 2015

As low water on Wednesday was predicted to be around 16:22 (see Appendix I), access to the wreck was not possible until around 13:00 so during the morning the author provided the group with a general presentation showing how wooden ships are constructed, and introduced the team to some of the most common terminology associated with maritime vessels and in particular 19th century wooden sailing ships.

When access to the site was eventually possible, the weather had significantly improved, and progress on site noticeably picked up. As the wind had dropped to a gentle breeze, for the first time it was possible to lay out a base line tape between the two permanent site survey datum's and an offset survey of the eroding bank was carried out. The results of this exercise, together with those from previous exercises dating back to October 2012 can be seen in Appendix V.

During the day the recording of all the exposed vessel's frames on the port side was completed as well as all the frames on the starboard side that remain attached to the vessel leaving the intermediate filling frames that have fallen out and become disarticulated to be recorded later.

The exposed timbers on top of the wreck were then cleaned, labelled with the permanent embossed numbered metal tags, and recording began to provide a permanent record of the observable site timbers that lie on top of the wreck (see Figure 9).

Figure 9. Alice sketching individual timbers on top of the wreck.

DAT also continued with photographing each individual timber (see Figure 10), and the author also replicated the exercise, the results of which can be seen in Appendix VI (Starboard Frames / 001 to 024), Appendix VII (Port Frames / 100 to 116) and Appendix VIII (Top Timbers / 200 to 220).

Figure 10. James photographing individual starboard frames.

As mentioned above (Section 3.3 - Site Conditions), Wednesday was the first day when spring tides were predicted, however the Afon Leri failed to reach the low levels anticipated and the wreck consequently did not become as exposed as the team had hoped for. The reason for this we believe was due to the fallout from the previous two days of storms. Although the winds had dropped, the sea state remained rough with large rollers running into the Afon Difi backing up the out flowing Afon Leri.

6.5 Thursday 4th June 2015

Again with low water advancing by around 40 minutes, access to the wreck was not possible until well into the afternoon, so the morning was spent processing data and bringing aspects of the weeks recording up to date. The author was also able to provide a second follow-up presentation outlining some of the non-timber features that can be found on wooden ships together with other miscellaneous fixtures and fittings that the team may come across.

By now the weather had significantly improved since the beginning of the week, and at last it was safe to bring out the total station, and by the time the author reluctantly departed for home, DAT were well on their way to recording the exact locations of each of the labelled and recorded timbers.

Figure 11. The total station ready for action.

7.0 Conclusions & Recommendations

7.1 General Comments:

As set out in the Introduction, the main purpose of this site visit, from the NAS/MADU perspective, was to continue monitoring and recording the remains of Hulk 3 on Ynyslas Beach, and to assist DAT with their stated aims & objectives.

The rate at which the bank of the Afon Leri is continuing to erode adjacent to Hulk 3 remains both significant and alarming (see Appendix V). With measured and recorded figures now established dating back to October 2012, together with additional estimates dating back to June 2010, we can now see the trend for a full five years, and can confidently confirm that the bank is eroding at an average rate of approximately 0.8m per year. The effect of this is that the timbers of Hulk 3 are continuing to become exposed and significantly affected by the continual cycle of drying out and becoming completely submerged twice a day by the incoming tide. This destabilises the structural integrity of the vessel, the timbers become detached, fall away, and are eventually lost (see Appendix II). In addition, artefacts and other potentially significant features that could provide important information about the vessel, and the period in which it operated are similarly disappearing.

At the current rate of exposure, we anticipate that within 2 years the wreck is likely to be exposed from bow to stern on the starboard side, and the entire vessel will eventually be lost forever.

Finding a week to work on this site which coincides with both spring tides and low water around midday is always going to be difficult to achieve. This week was no exception, with access to the wreck not being possible until the afternoon. In addition, at the beginning of the week, we were faced with particularly inclement weather conditions necessitating the introduction of safety lines when working close to the water's edge and to aid access and exiting from the beaches (see Section 6.3 above). These safety lines were made up by the author while the Project Supervisor went to obtain materials suitable for constructing an emergency throw line. This was for use should anyone fall into the Afon Leri which at times can be running at a pace that would be difficult, if not impossible to swim in, particularly when fully clothed.

Previous assessments of the site have correctly concluded that reluctantly the conditions underfoot preclude the assistance on the site from volunteers. The additional weather conditions experienced during the early part of this recent site visit bought home the importance of having stringent safety measures in hand for all personnel working on the site. In this respect, for future visits we strongly recommend having lifejackets, buoyancy aids, a throw line, fixed safety ropes and a lifering available on site and ready for use at all times.

7.2 Summary:

Hulk 3 is obviously of major concern; it is now well beyond being in imminent danger as it is being allowed to be irreparably lost piece by piece. We believe that in time we will rue the fact that more effort was not made to protect this wreck.

Having said that, we believe that lessons should be learnt and that serious investigations into Hulk 2 should be commenced with immediate effect to both investigate and protect this wreck before it is allowed to succumb to the same fate as Hulk 3.

On a positive note however, this second period of working on the site with DAT has proved to have been both productive and enjoyable (despite the weather), and the bringing together of different interested parties has shown to have been both a beneficial and worthwhile collaboration. It is hoped that this partnership can continue, both in association with this and other sites, and potentially be expanded to encompass similar interested organisations including the other three terrestrial archaeological trusts in Wales.

8.0 References

8.1 Publications

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8.2 Web Sites

Cadw
http://cadw.wales.gov.uk/splash?orig=/

Coflein (Hulk 1)
http://map.coflein.gov.uk/index.php?action=do_details&cache_name=ZXh0ZW50dHlwZSxCT1hfbWlueCwyNjE1MDZfbWlueSwyOTM4OTFfbWF4eSwyOTQxNjJfbWF4eCwyNjE2ODhfc2VhcmNodHlwZSxhZHZhbmNlZF9vcmE=&numlink=407989#tabs-4

Coflein (Hulk 2)
http://map.coflein.gov.uk/index.php?action=do_advanced&extenttype=BOX&minx=261540&miny=293976&maxy=294054&maxx=261628

Coflein (Hulk 3)
http://map.coflein.gov.uk/index.php?action=do_details&cache_name=ZXh0ZW50dHlwZSxCT1hfbWlueCwyNjE1MDZfbWlueSwyOTM4OTFfbWF4eSwyOTQxNjJfbWF4eCwyNjE2ODhfc2VhcmNodHlwZSxhZHZhbmNlZF9vcmE=&numlink=506769#tabs-4

Dyfed Archaeological Trust
http://www.dyfedarchaeology.org.uk

Malvern Archaeological Diving Unit
http://www.madu.org.uk

Nautical Archaeology Society
http://www.nauticalarchaeologysociety.org/

Royal Commission on the Ancient and Historical Monuments of Wales
http://www.rcahmw.gov.uk/

UK Grid Reference Finder
http://gridreferencefinder.com/#

Appendix I – Tide Timetable

Taken from the 2015 Aberystwyth Tide Tables:

Date	High Water	Height	Low Water	Height
01 June			02:35	1.2
(Monday)	07:52	4.3	14:57	1.0
	20:14	4.5		
02 June			03:14	1.0
(Tuesday)	08:26	4.6	15:34	0.9
	20:47	4.7		
03 June			**03:52**	**0.8**
(Wednesday)	**09:03**	**4.7**	**16:11**	**0.8**
	21:24	**4.9**		
04 June			**04:33**	**0.7**
(Thursday)	**09:42**	**4.8**	**16:51**	**0.8**
	22:04	**5.0**		

Notes:

1. For Ynyslas add 11 minutes to the above times.

2. Heavy red type indicates Spring Tides.

Appendix II – Hulk 3 (2010 - 2015)

30th June 2010

15th January 2013

8th September 2014

2nd June 2015

Appendix III – DAT Timber Recording Form

TIMBER RECORDING FORM

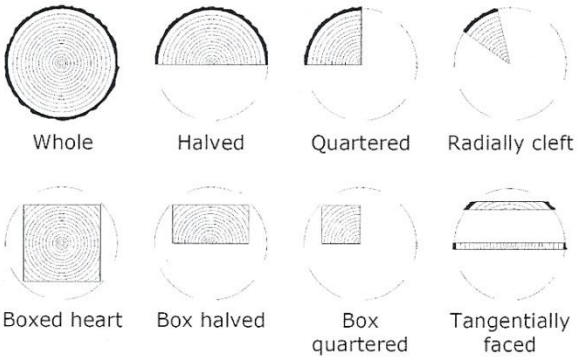
DAT Archaeological Services

Site Name	Project Code/Year	Timber No
Simple Name / form	Species	Area

Co-ordinates	E	N	E	N
Length	Width		Thickness	Diameter

Condition

Ancient or recent damage? **Reused?** Yes No Unsure



Bark	Yes	No
Sapwood	Yes	No
Knotty	Yes	No
Straight grained	Yes	No

Conversion (see above)

Woodworking technology

Tool marks

Joints

Fixings and Fittings

Intentional Marks

Surface Treatment

Other

Structural element / timber name

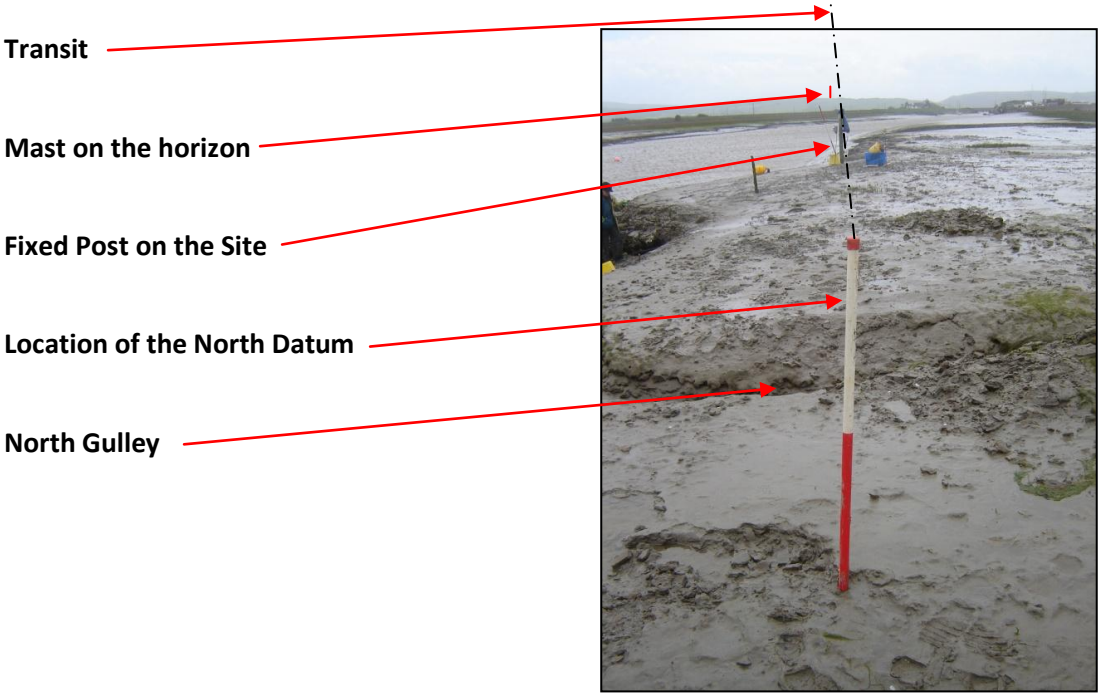
EXCAVATION DETAILS

Recorded by/date	Checked by/date
Drawing Nos	
Photo Nos	

Site Name	Project Code	Context No
PHYSICAL RELATIONSHIPS		
Jointed to		
Joint type		
Cut by		
Butted by		
Butts		
Bonded with		
INTERPRETATION		
Preliminary Phase	Preliminary Date	
Associated Contexts		
Part of		
Interpretation / Comments		
SKETCH Plan/elevation/section/profile with annotation (circle as appropriate)		

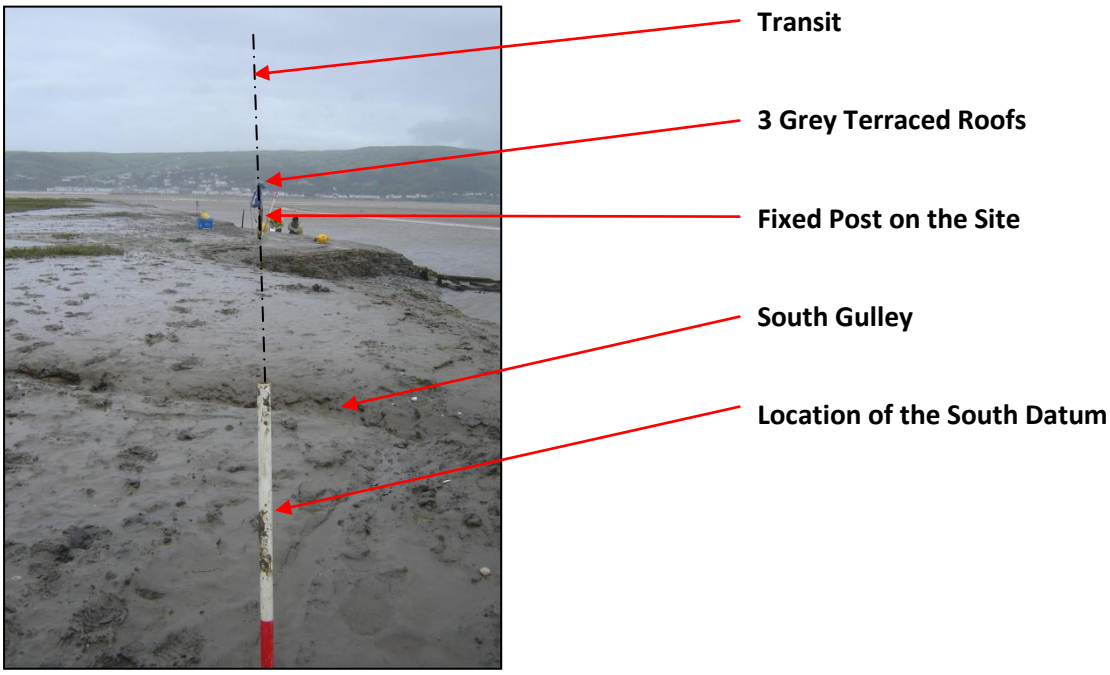
Appendix IV – Location of the Site Survey Datum's

The two datum's are 38m apart with the North Datum located ~2.5m to the north of the centre of the gulley that lies to the north of the site, and transiting the fixed post on the site that used to display a warning notice, with a mast on the horizon that lies just to the left of the transit (see below).



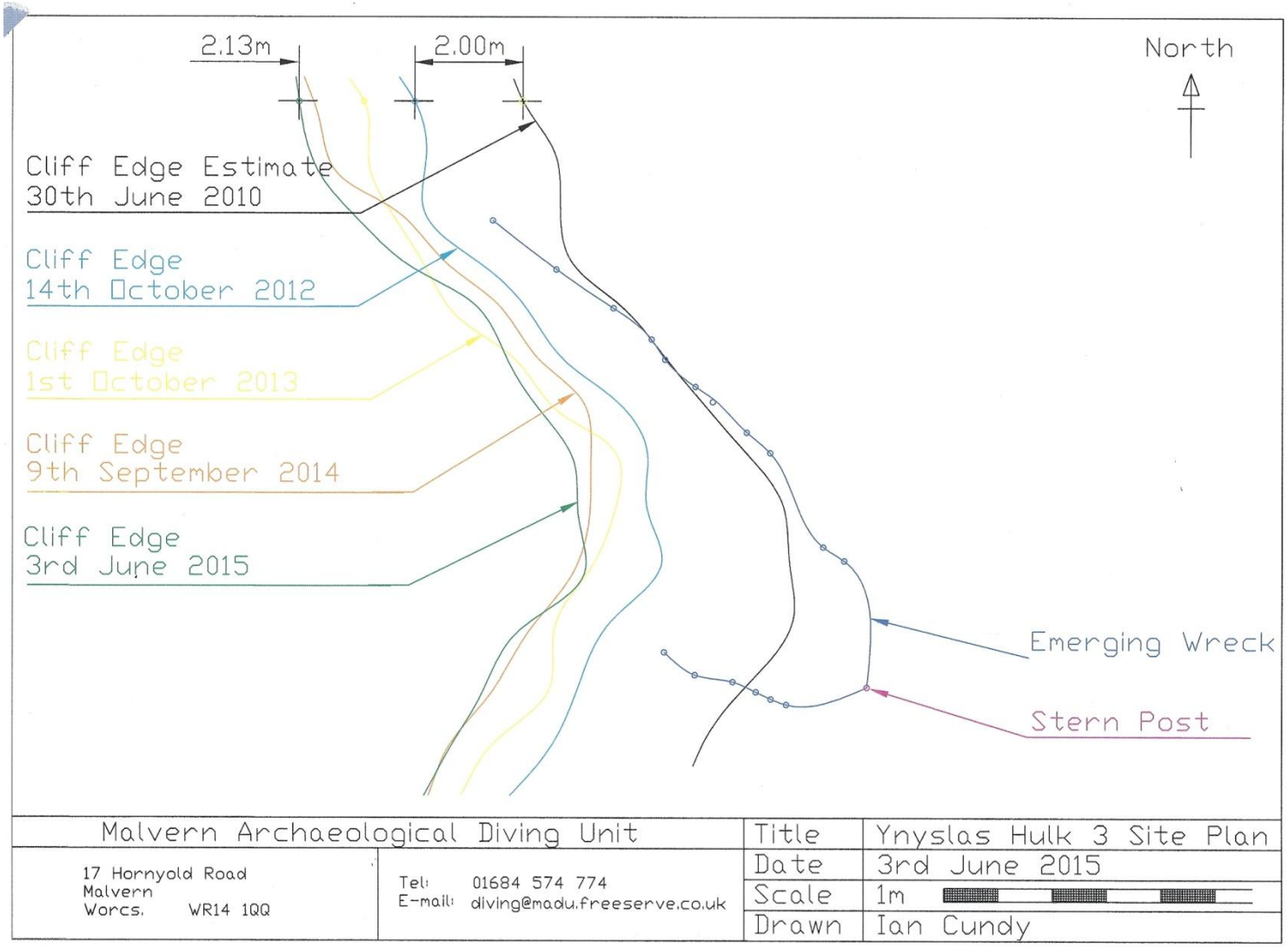
View looking South down the Afon Leri

The South Datum is located ~3.0m to the south of the centre of the gulley that lies to the south of the site, and transits the fixed post on the site that used to display a warning notice, with the centre roof of 3 grey terraced roofs 1/3 of the way to the horizon to the east of Aberdovey (see below).

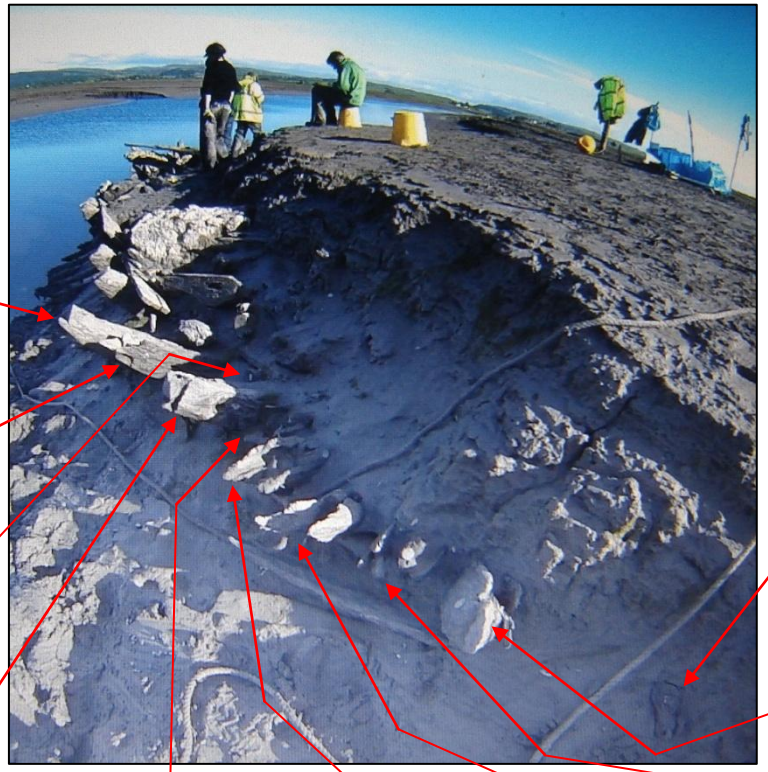


View looking North across the Afon Difi

Appendix V – Afon Leri Bank Erosion (2010 to 2015)



Appendix VI - Starboard Frames (001 to 024)



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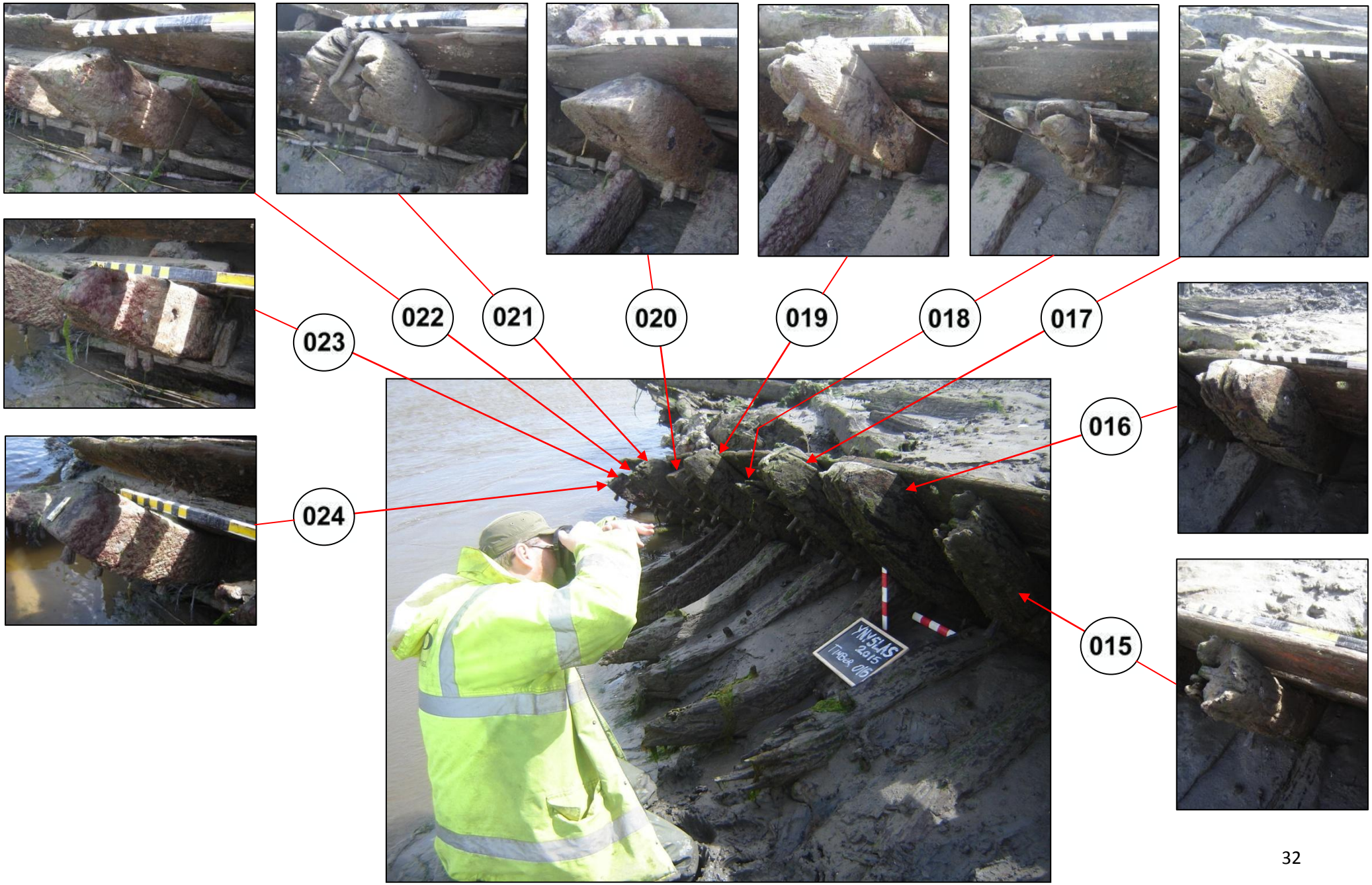
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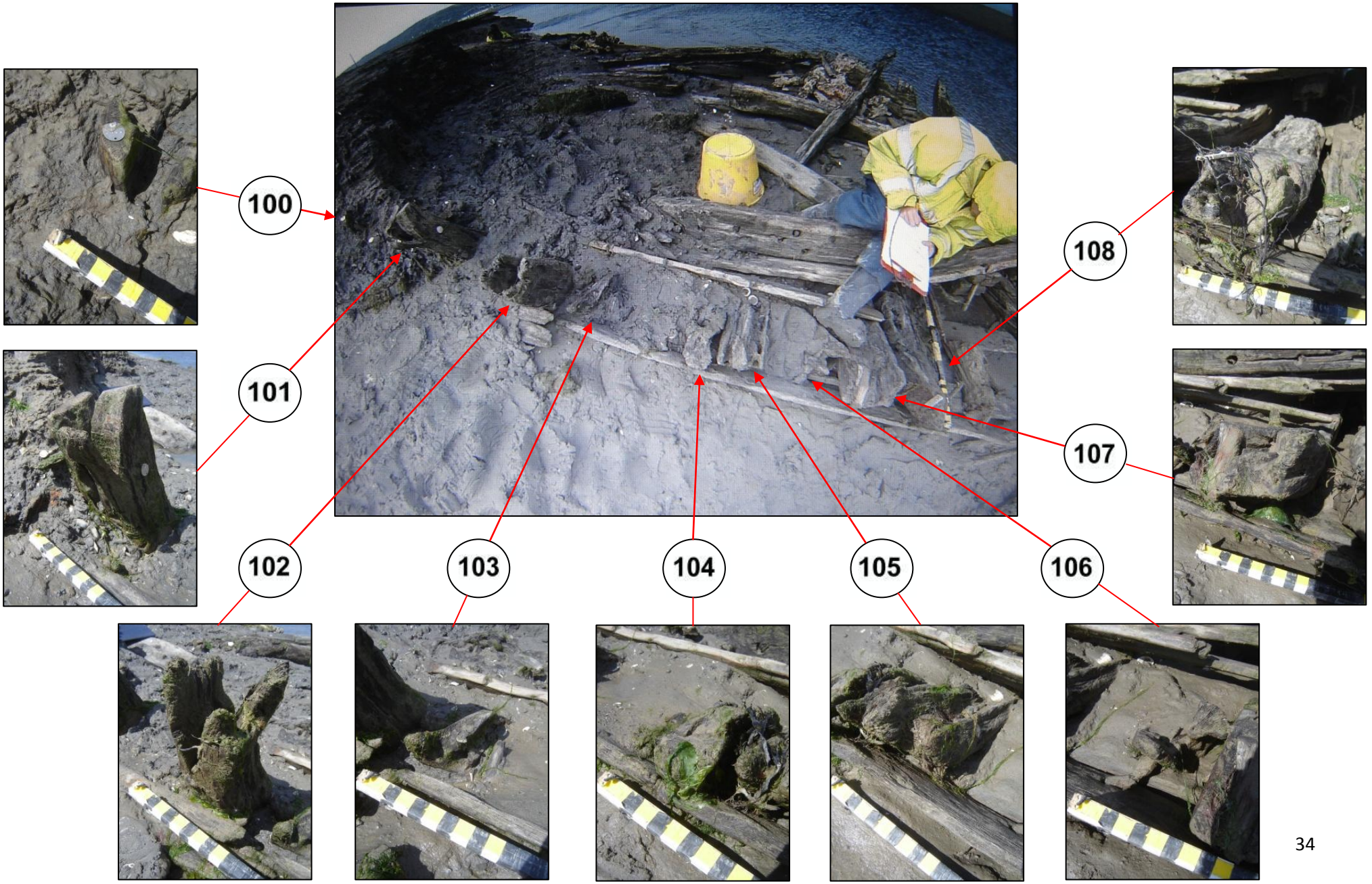
Appendix VII - Port Frames (100 to 116)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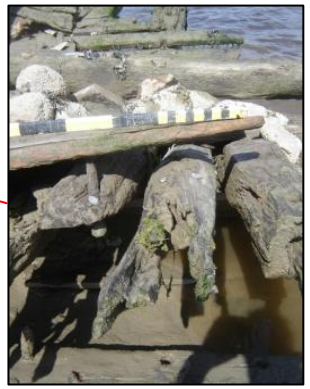

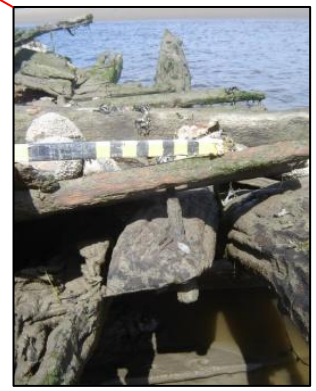

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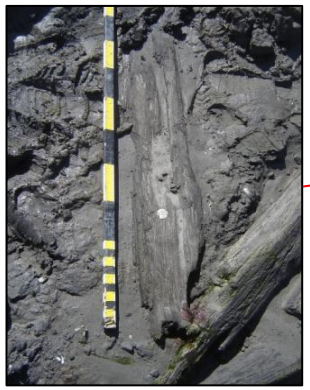
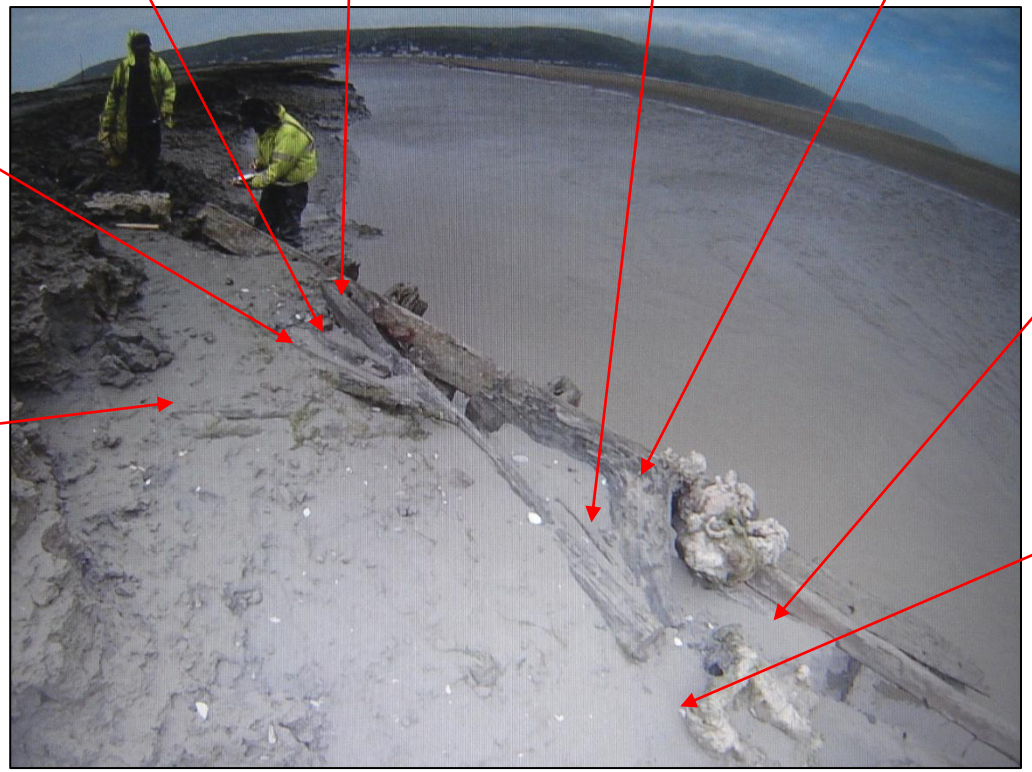
Appendix VIII - Top Timbers (200 to 220)





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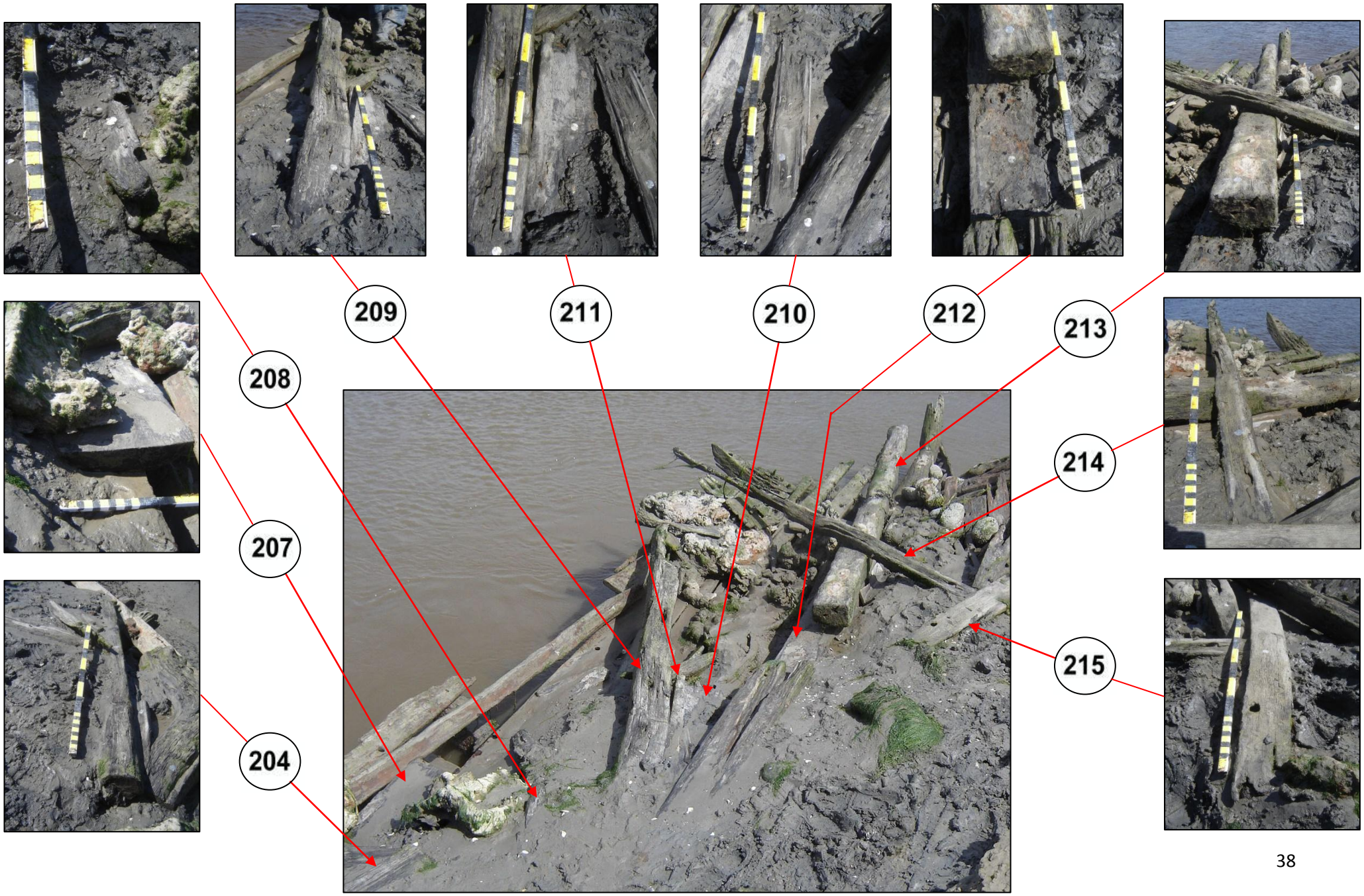
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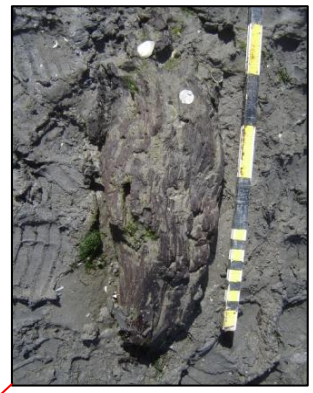




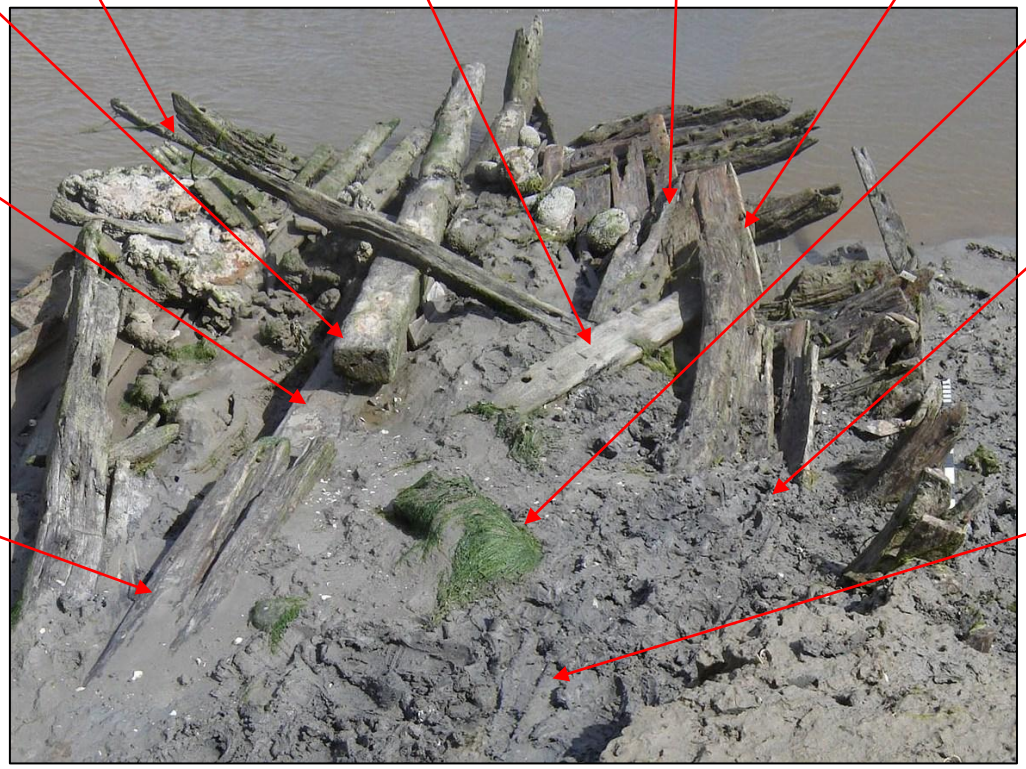

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