

**The Maritime Archaeology of a Modern Conflict:**

**Comparing the Archaeology of German Submarine Wrecks to the Historical Text**

**Volume One**

**Innes McCartney**

**PhD by Thesis**

**Bournemouth University**

**October 2013**

*This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with its author and due acknowledgement must always be made of the use of any material contained in, or derived from, this thesis.*

## **Abstract**

### **The Maritime Archaeology of a Modern Conflict:**

#### **Comparing the Archaeology of German Submarine Wrecks to the Historical Text**

**Innes McCartney BA(hons), MA, MA**

Over the last 30 years UK Hydrographic Office marine surveys in the English Channel (the thesis Study Area) have helped uncover the wrecks of 63 German submarines (U-boats) sunk in both world wars. The author began to systematically dive on and record the wrecks in 1997, when it became clear that the distribution and numbers of the wrecks often conflicted with published histories of U-boat losses.

This thesis sets out to test whether firstly; the U-boat wrecks themselves can be accurately identified from detailed examinations of their archaeological remains. If this could be achieved with a high degree of accuracy then secondly; a much clearer appreciation of U-boat losses in the Channel could be derived. This could then be used to thirdly; assess the accuracy of the original historical texts of 1919 and 1946 and reveal when and why the assessors at the time succeeded and failed in establishing the real fates of the U-boats.

The U-boat wrecks themselves are either where the historic record says they should be, or they are located in positions where they reside outside of current historical knowledge. These latter cases, termed the mystery sites, are the key to understanding how, when and why inaccuracies appear in the historical texts and they were therefore accorded the highest priority during the research and were the most challenging cases to identify.

Of the 63 U-boat wrecks in the Channel, it emerged during the fieldwork that 26 of them (41%) were actually mystery sites. Their impact on the accuracy of the historical texts is profound. Only 48% of the fates of U-boats recorded in 1919 are correct. The list of 1946 is 81% correct from D-day until December 1944, then only 36% correct thereafter.

The accuracy of the historical record was found to be closely related to the volume of accurate intelligence on U-boat movements available at any given time and the quality of the staff work used to interpret and exploit it. Consequently the impact of Special Intelligence is keenly felt in 1944. Conversely during WW1 and in 1945 U-boat movements were not clearly understood and in both of these cases minefields emerge as the most successful weapon deployed against them accounting for over a third of the losses.

# List of Contents

## Volume One

Abstract .....	3
List of Contents .....	4
Volume One .....	4
Volume Two .....	13
List of Illustrations .....	16
Volume One .....	16
Volume Two .....	20
List of Tables .....	21
Volume One .....	21
Volume Two .....	21
List of Accompanying Material .....	22
Acknowledgements .....	23
Definitions .....	24
Part One: Introduction.....	25
Chapter One: Introduction to the Thesis .....	26
1.1: Introduction.....	26
The English Channel and the war against the U-boats 1914-1918 .....	26
The English Channel and the war against the U-boats 1939-1945 .....	27
The confluence of the historical text and the archaeology of the U-boat wrecks .....	28
Study Area .....	30
1.2: Why is this Study Relevant and Important?.....	31
Relevance .....	31
Importance .....	32
1.3: Aims and Objectives .....	33
Objectives: .....	33
Measurable outcomes and methodologies .....	34

1.4: Impact of the Research.....	35
1.5: Overall Approach.....	35
Changing the historic record.....	36
Part Two: The U-Boat Wrecks of World War One.....	37
Chapter Two: Introduction to the World War One U-Boat Wrecks .....	38
2.1: Introduction.....	38
2.2: The Historical texts for World War One U-Boat Losses .....	38
The development of Room 40 and the British Naval Staff sections during World War One .....	38
The Key Historical texts used for this study .....	41
The ASD classification, assessment and final tallying up of U-boat losses .....	44
2.3: The U-Boat Archaeology of World War One.....	45
2.4: Key Methodologies Employing the Historical texts to Research the U-Boat Wreck Sites .....	47
Methodology using the historical texts on known wreck sites .....	47
Methodology using the historical text on mystery U-boat wreck sites .....	48
2.5: Methodology Employed During the Fieldwork to Record and Identify the U-Boat Wreck Sites.....	50
2.6: Specific Aims and Research Questions of the U-boat Wreck Surveys.....	53
Outcomes to be addressed.....	54
Chapter Three: The Dover Patrol and its U-Boat Wrecks .....	56
3.1: Introduction: The Dover Patrol and the First U-boat War 1914-1918.....	56
A brief history of the Dover Barrages.....	56
3.2: The U-Boat Wrecks Which Match the 1919 List .....	59
The wreck of <i>U8</i> .....	60
The wreck of <i>UC46</i> .....	63
The wreck of <i>UC26</i> .....	66
The wreck of <i>UB56</i> .....	67
The wreck of <i>UB35</i> .....	68
The wreck of <i>UB38</i> .....	69

The wreck of <i>UB58</i> .....	73
The wreck of <i>UB33</i> .....	77
The wreck of <i>UB55</i> .....	78
The Wreck of <i>UC64</i> .....	80
The wreck of <i>UB109</i> .....	81
3.3: Official Losses as Mystery Sites: U-Boat Wrecks with Possible Connections to the 1919 List.....	84
The wreck of ( <i>UB31</i> ).....	84
3.4: Mystery Sites: U-Boat Wrecks with no Connection to the 1919 List.....	88
The three identified mystery U-boat wreck sites in the Kent area.....	89
<i>UB78</i> .....	89
( <i>UC79</i> ).....	94
<i>U37</i> .....	97
Unidentified mystery U-boat wreck sites in the Kent area.....	99
( <i>UC</i> ).....	100
( <i>UB/UCII</i> ).....	102
( <i>Submarine</i> ).....	102
3.5: Conclusions.....	104
Chapter 4: The English Channel and its First World War U-Boat Wrecks.....	107
4.1: Introduction: The Channel and the First U-Boat War 1914-1918.....	107
4.2: U-Boat Wrecks Which Match the 1919 List.....	108
The wreck of <i>UB19</i> .....	109
The wreck of <i>UB37</i> .....	111
The wreck of <i>UC65</i> .....	113
The wreck of <i>UB81</i> .....	115
The wreck of <i>UI03</i> .....	119
The wreck of <i>UB72</i> .....	122
The wreck of <i>UB74</i> .....	124
4.3: Official Losses as Mystery sites: U-Boat Wrecks in the Channel with Possible Connections to the 1919 List.....	126

3.1 The wreck of <i>UC51</i> .....	126
3.2 The wreck of ( <i>U95</i> ).....	130
3.3 The wreck of ( <i>UC49</i> ).....	134
4.4: Mystery Sites: U-Boat Wrecks in the Channel with no Connection to the 1919 List....	137
4.1 The wreck of ( <i>UC66</i> ).....	137
4.2 The wreck of ( <i>U93</i> ).....	140
4.3 The wreck of <i>UB65</i> .....	144
Unidentified mystery U-boat wreck sites in the Channel .....	149
4.4 The wreck of ( <i>WW1 U-boat</i> ).....	149
4.5: Conclusions.....	150
Chapter Five: Conclusions: Bringing World War One U-Boat Losses into Focus.....	152
5.1: Introduction.....	152
5.2: The Archaeology Compared to the Historical text .....	152
Where archaeology and historical text converge – The wrecks correctly listed in 1919..	152
Where archaeology and historical text conflict – The wrecks incorrectly listed in 1919 .	154
Where archaeology and historical text diverge – The twelve mystery U-boat wrecks unknown in 1919.....	156
The overall picture of U-boat losses in the Study Area in World War One .....	158
The incorrect ASD Assessments reviewed .....	158
The overall accuracy of the 1919 List as known in 2013 .....	161
Differences between the results in the Channel and Dover areas .....	162
The accuracy of the Letter Grading system used by ASD in World War One .....	163
5.3: The 32 Known U-Boat Wrecks Viewed Collectively.....	167
Identification of the wrecks.....	167
The unique specifics of WW1 U-boat archaeology .....	168
5.4: The Results of the GIS Database Approach to Matching the Historical text to Extant Archaeology.....	170
5.5: The Impact of the Research on History .....	171
Tracking and Intelligence.....	171
How the U-boats were destroyed .....	173

5.6: In Summary.....	175
Part Three: The U-Boat Wrecks of World War Two.....	176
Chapter Six: Introduction to the WW2 U-Boat Wrecks .....	177
6.1: Introduction – The Objectives and Outcomes of the Research.....	177
6.2: The Historical text of World War Two.....	177
The Historical text of the Inshore Campaign.....	179
6.3: The U-Boat Archaeology of World War Two to be Surveyed and Researched .....	182
6.4: Key Methodologies Employing the Historical text to Research the U-Boat Wreck Sites .....	184
Key methodologies utilising the historical text on known wreck sites.....	184
Key methodology using the historical text on mystery U-boat wreck sites.....	185
6.5: Key Methodologies Employed during the Fieldwork to Record the U-Boat Wreck Sites .....	187
6.6: Specific Aims and Outcomes of the U-Boat Wreck Surveys and Research .....	190
Outcomes to be addressed.....	190
Chapter Seven: The Known U-Boat Losses Subjected to Survey .....	192
7.1: Introduction.....	192
7.2: The Destruction, Identification and Wreck of <i>U767</i> .....	192
7.3: The Destruction, Identification and Wreck of <i>U678</i> .....	194
7.4: The Destruction, Identification and Wreck of <i>U212</i> .....	197
7.5: The Destruction, Identification and Wreck of <i>U214</i> .....	199
7.6: The Destruction, Identification and Wreck of <i>U671</i> .....	202
7.7: The Destruction, Identification and Wreck of <i>U741</i> .....	204
7.8: The Destruction, Identification and Wreck of <i>U413</i> .....	208
7.9: The Destruction, Identification and Wreck of <i>U1195</i> .....	210
7.10: Conclusions.....	212
Chapter Eight: Other U-Boat Losses graded “A” Known Sunk .....	214
8.1: Introduction.....	214
8.2: Known U-Boat Losses Which Have Been Located .....	214
<i>U40</i> .....	214

<i>U390</i> .....	215
<i>U247</i> .....	215
<i>U1199</i> .....	216
<i>U1018</i> .....	216
<i>U275</i> .....	217
<i>U399</i> .....	218
<i>U1063</i> .....	219
8.3: Known Losses Still to be Located .....	219
<i>U12</i> .....	219
<i>U16</i> .....	219
<i>U971</i> .....	220
<i>U672</i> .....	221
<i>U1209</i> .....	221
8.4: Conclusions.....	222
Chapter Nine: Official U-Boat Losses as Mystery Sites: <i>U269</i> and <i>U1191</i> .....	223
9.1: Introduction.....	223
9.2: The Losses of <i>U269</i> and <i>U1191</i> .....	223
The reassessment of the loss of <i>U1191</i> .....	225
9.3: The Wreck of <i>U1191</i> .....	226
The identification of <i>U1191</i> .....	229
9.4: The Wreck of <i>U269</i> .....	230
The identification of <i>U269</i> .....	232
9.5: Conclusions.....	233
Chapter Ten: Mystery U-Boat Case Study: ( <i>U984</i> ), ( <i>U988</i> ) and ( <i>U441</i> ) .....	235
10.1: Introduction.....	235
10.2: The Wreck of ( <i>U984</i> ).....	236
The identification of ( <i>U984</i> ).....	238
10.3: The Wreck of ( <i>U988</i> ).....	242
The identification of ( <i>U988</i> ).....	245

10.4: The Wreck of ( <i>U441</i> ).....	246
The identification of ( <i>U441</i> ) .....	249
10.5: Summary and Conclusions – What this Case Study Reveals .....	252
The Archaeology of the U-boat Wrecks .....	253
The Historical text.....	254
Chapter Eleven: Mystery U-Boat Case Study: <i>U480</i> and ( <i>U1208</i> ) .....	256
11.1: Introduction.....	256
11.2: The Identification of <i>U480</i> .....	256
Alberich identifies <i>U480</i> .....	259
11.3: The Sinking of <i>U480</i> and its Historical Context.....	261
The destruction of <i>U480</i> .....	261
The Allied estimation of the destruction of <i>U480</i> .....	263
11.4: The Wreck of ( <i>U1208</i> ).....	266
The identification of ( <i>U1208</i> ) .....	269
11.5: Summary and Conclusions – What this Case Study Reveals .....	271
The archaeology of the U-boat wrecks: .....	271
The historical context:.....	272
Chapter Twelve: Mystery U-Boat Case Study: ( <i>U1021</i> ), ( <i>U400</i> ) and ( <i>U683</i> ) .....	274
12.1: Introduction.....	274
12.2: Details of Destruction .....	274
12.3: The Wreck of ( <i>U1021</i> ).....	276
The identification of ( <i>U1021</i> ) .....	278
12.4: The Wreck of ( <i>U400</i> ).....	282
The identification of ( <i>U400</i> ) .....	284
12.5: The Wreck of ( <i>U683</i> ).....	286
The identification of ( <i>U683</i> ) .....	288
12.6: Summary and Conclusions – What this Case Study Reveals .....	293
The archaeology of the U-boat wrecks: .....	293
The historical text: .....	294

Chapter Thirteen: Mystery U-Boat Case Study: ( <i>U1279</i> ), ( <i>U325</i> ) and ( <i>U650</i> ).....	296
13.1: Introduction.....	296
13.2: The Wreck of ( <i>U1279</i> ).....	296
The identification of ( <i>U1279</i> ).....	298
13.3: The Wreck of ( <i>U325</i> ).....	299
The history of reassessments of the loss of ( <i>U325</i> ) .....	302
The current identification of ( <i>U325</i> ).....	304
13.4: The Wreck of ( <i>U650</i> ).....	307
The loss of ( <i>U650</i> ) .....	308
The identification of ( <i>U650</i> ) .....	309
13.5: Conclusions.....	310
The Archaeology of the U-boat Wrecks .....	311
The Historical text.....	311
Chapter Fourteen: Mystery U-Boat Case Study: ( <i>U322</i> ) and ( <i>U772</i> ).....	312
14.1: Introduction.....	312
14.2: The Wreck of ( <i>U322</i> ).....	312
The destruction of the Portland U-boat.....	316
The identification of the Portland U-boat as ( <i>U322</i> ) .....	318
14.3: The Wreck of ( <i>U772</i> ).....	319
The identification of ( <i>U772</i> ) .....	321
The HMS <i>Nyasaland</i> incident re-examined.....	324
14.4: Conclusions.....	326
The Archaeology of the U-boat Wrecks .....	326
The Historical text.....	327
Chapter Fifteen: Conclusions: Bringing the Inshore Campaign U-Boat Losses into Focus .....	328
15.1: Introduction.....	328
15.2: The Archaeology Compared to the Historical text .....	328
Where archaeology and historical text converge – The wrecks correctly listed in 1946..	328
Where archaeology and historical text conflict – The wrecks incorrectly listed in 1946.	330

Where archaeology and historical text diverge– the 10 mystery U-boat wrecks unknown in 1946 .....	332
The final overall picture of U-boats lost in the Study Area in World War Two.....	334
15.3: The 31 U-Boat Wrecks Viewed Collectively .....	337
Similarities between the wrecks.....	338
15.4: The Results of the GIS Database Approach to Matching the Historical text to Extant Archaeology .....	338
15.5: The Impact of the Research on History .....	340
Tracking and intelligence.....	340
Detection Technology and Killing Weapons .....	343
15.6: The Impact of the Thesis Outside of the Study Area .....	346
15.7: In Summary.....	348
Part Four: Overall Conclusions and Comparisons of the Results from both World Wars.....	349
Chapter Sixteen: Overall Results, Comparisons between the Two World Wars and Concluding Remarks .....	350
16.1: Introduction.....	350
An overall measure of the success of the research.....	350
An overall view of the results .....	350
16.2: Studying the Archaeology of the U-Boat Wrecks .....	351
16.3: The Means of Destruction in both World Wars.....	352
16.4: Comparing the Relative Performances of ASD and AUD in the Light of the Research .....	355
ASD, Room 40 and WW1 U-boat Loss Assessments.....	356
AUD, OIC and WW2 U-boat Loss Assessments.....	358
16.5: Concluding Remarks.....	359

## Volume Two

References.....	8
Primary Sources.....	8
Official Published Histories.....	37
Biographies and Autobiographies.....	38
Journal Articles and Papers.....	39
Secondary Sources.....	41
Bibliography.....	45
Primary Sources.....	45
Official Published Histories.....	66
Biographies and Autobiographies.....	67
Journal Articles and Papers.....	68
Secondary Sources.....	71
Appendices.....	77
Appendix 1.1 World War One U-Boats Which Might Have Been Lost in the Study Area.....	78
UC19.....	78
UB29.....	78
UC18.....	78
UC68.....	78
UB36.....	79
UB32.....	79
UC72.....	79
UC21.....	79
UB18.....	79
U109.....	79
UC50.....	80
UB54.....	80
UC78.....	80

UC77 .....	80
UB103 .....	80
Appendix 1.2 The 1919 List of the 37 U-Boat Losses in the Study Area During World War One (with corrections due to typographic errors).....	81
Appendix 1.3 The Identity and Location of World War One U-Boat Wrecks as Known When Initially Researched .....	83
Appendix 1.4 The List of 35 World War One U-Boat Losses in the Study Area as Revised in 2013 as Result of Research Carried Out For This Thesis .....	84
Appendix 1.5 ASW Attacks During World War One in the Study Area as Derived From ASD and Admiralty Sources (as listed) .....	85
Appendix 1.6 The Means of Destruction of U-Boats as Understood in 1919 and 2013.....	98
Appendix 1.7 UC69 and the Salvaged U-boats .....	99
UB26.....	99
UC61 .....	99
UC69 .....	99
Appendix 2.1 World War Two U-Boats Which Might Have Been Lost in the Study Area .....	100
U740.....	100
U927.....	100
U1055.....	100
U246/U1169.....	100
Appendix 2.2 The 1946 List of the 31 U-Boat Losses in the Study Area During World War Two (with corrections due to typographic errors).....	101
Appendix 2.3 The Identity and Location of World War Two U-Boat Wrecks as Known When Initially Researched .....	104
Appendix 2.4 The List of World War Two U-Boat Losses in the Study Area as Revised in 2012 as Result of Research Carried Out For This Thesis .....	105
Appendix 2.5 ASW Attacks During the Inshore Campaign in the Study Area as Derived From AUD and Admiralty Sources (as listed) .....	106
AUD Assessments (132 records) .....	106
AUD Incidents (283 records).....	110
ASW Incidents in the Daily Admiralty Diary (418 records) .....	120

Appendix 2.6 U-Boats Being Tracked by OIC on the Patrol on Which They Were Sunk .....	132
Appendix 2.7 The Circumstances of U-Boat Losses as Known in 1946 and 2012 .....	133
Appendix 2.8 The Means of Detection and Destruction of U-Boat Losses as Known in 1946 and 2012 .....	134
Glossary .....	135

## List of Illustrations

### Volume One

Figure 1.1. Map of the Study Area borders with the locations of the U-boat wrecks.....	29
Figure 1.2. Map showing the U-boats cited as destroyed in the 1919 List .....	38
Figure 1.3. Map of the 32 WW1 U-boat wrecks as initially researched .....	45
Figure 1.4. Map of the 32 U-boat wrecks and 270 ASW incidents of 1914-18.....	48
Figure 1.5. Map of the Dover mine nets and barrages as completed in August 1918 .....	57
Figure 1.6. Map of the known and mystery U-boat wrecks in the Dover area .....	58
Figure 1.7. Diagram of the wreck of <i>U8</i> .....	61
Figure 1.8. Diagram of the wreck of <i>UC46</i> .....	64
Figure 1.9. Sketch of the wreck of <i>UB56</i> .....	67
Figure 1.10. Diagram of the wreck of <i>UB38</i> .....	70
Figure 1.11. Photo of the shipyard stamps on a propellor recovered from <i>UB38</i> .....	72
Figure 1.12. Diagram of the wreck of <i>UB58</i> .....	75
Figure 1.13. Diagram of the wreck of <i>UB55</i> .....	78
Figure 1.14. Diagram of the wreck of <i>UB109</i> .....	82
Figure 1.15. Map showing the location of <i>UB31</i> and nearby incidents .....	84
Figure 1.16. Diagram of the wreck of <i>UB31</i> .....	86
Figure 1.17. Modern Chart showing the six mystery U-boat wrecks off Dover.....	88
Figure 1.18. Photos of a propellor recovered from <i>UB78</i> .....	89
Figure 1.19. Diagram of the wreck of <i>UB78</i> .....	90
Figure 1.20. Map showing the location of <i>UB78</i> and nearby incidents .....	91
Figure 1.21. Sketch of the wreck of ( <i>UC79</i> ).....	93
Figure 1.22. Map showing the location of ( <i>UC79</i> ) and nearby incidents .....	94
Figure 1.23. Sketch of the wreck of <i>U37</i> .....	96
Figure 1.24. Map showing the location of <i>U37</i> and nearby minefields .....	97
Figure 1.25. Map showing the locations of ( <i>UC</i> ) and ( <i>UB/UCII</i> ) and incidents .....	99

Figure 1.26. Map showing the location of ( <i>Submarine</i> ) and nearby incidents .....	102
Figure 1.27. Map showing the locations of the WW1 U-boat wrecks in the Channel.....	107
Figure 1.28. Diagram of the wreck of <i>UB19</i> .....	109
Figure 1.29. Diagram of the wreck of <i>UB37</i> .....	111
Figure 1.30. Diagram of the wreck of <i>UC65</i> .....	113
Figure 1.31. Map showing the location of <i>UB81</i> and nearby minefields.....	115
Figure 1.32. Diagram of the wreck of <i>UB81</i> .....	117
Figure 1.33. Diagram of the wreck of <i>UI03</i> .....	119
Figure 1.34. Diagram of the wreck of <i>UB72</i> .....	122
Figure 1.35. Diagram of the wreck of <i>UB74</i> .....	124
Figure 1.36. Map showing the location of <i>UC51</i> and nearby minefields .....	126
Figure 1.37. Diagram of the wreck of <i>UC51</i> .....	127
Figure 1.38. Diagram of the wreck of ( <i>U95</i> ) .....	131
Figure 1.39. Map showing the location of ( <i>U95</i> ) and nearby incidents.....	132
Figure 1.40. Diagram of the wreck of <i>UC49</i> .....	135
Figure 1.41. Map showing the location of ( <i>UC66</i> ) and related incidents .....	137
Figure 1.42. Sketch of the wreck of ( <i>U93</i> ) .....	140
Figure 1.43. Photo of the shipyard stamp on the port propellor of ( <i>U93</i> ).....	141
Figure 1.44. Map showing the Admiralty demarcation of patrol areas.....	142
Figure 1.45. Diagram of the wreck of <i>UB65</i> .....	145
Figure 1.46. Photos of the shipyard stamps on the propellers of <i>UB65</i> .....	147
Figure 1.47. Map showing the location of <i>UB65</i> and nearby incidents .....	148
Figure 1.48. Map showing the location of ( <i>WW1 U-boat</i> ) with nearby incidents .....	149
Figure 1.49. Map of the 1919 List of losses confirmed as correct.....	153
Figure 1.50. Map of the 1919 List of losses considered incorrect .....	155
Figure 1.51. Map of the 12 mystery U-boats with no connection to the 1919 List .....	157
Figure 1.52. Map showing the overall findings of the research of WW1 .....	159
Figure 1.53. Photos of the various U-boat guns of WW1 .....	169
Figure 1.54. Pie charts showing the means of destruction of the U-boat wrecks .....	173

Figure 1.55. Pie chart showing the means of destruction across all WW1 U-boats .....	174
Figure 1.56. Map showing the U-boats listed in 1946 as lost in the Study Area .....	178
Figure 1.57. Map of the 31 WW2 U-boat wrecks as initially researched .....	183
Figure 1.58. Map of the 31 WW2 wrecks and the ASW incidents 1944-45.....	186
Figure 1.59. Map showing the surveyed WW2 known U-boat losses .....	192
Figure 1.60. Diagram of the wreck of <i>U767</i> .....	193
Figure 1.61. Photo of a scrap of paper from <i>U678</i> .....	195
Figure 1.62. Diagram of the wreck of <i>U678</i> .....	196
Figure 1.63. Diagram of the wreck of <i>U212</i> .....	198
Figure 1.64. Diagram of the wreck of <i>U214</i> .....	200
Figure 1.65. Diagram of the wreck of <i>U671</i> .....	203
Figure 1.66. Diagram of the wreck of <i>U741</i> .....	206
Figure 1.67. Diagram of the wreck of <i>U413</i> .....	209
Figure 1.68. Diagram of the wreck of <i>U1195</i> .....	211
Figure 1.69. Map showing the WW2 known losses not surveyed .....	214
Figure 1.70. Map showing the location of <i>U275</i> and the nearby minefield.....	218
Figure 1.71. Map showing the locations of <i>U269</i> and <i>U1191</i> .....	223
Figure 1.72. Map showing the location of <i>U269</i> and <i>U1191</i> and nearby incidents.....	224
Figure 1.73. Photo of non-standard equipment on <i>U228</i> .....	227
Figure 1.74. Diagram of the wreck of <i>U1191</i> .....	228
Figure 1.75. Diagram of the drainage slots on the wreck of <i>U1191</i> .....	229
Figure 1.76. Diagram of the wreck of <i>U269</i> .....	231
Figure 1.77. Map showing the locations of the wrecks of ( <i>U984</i> ), ( <i>U988</i> ) and ( <i>U441</i> ).....	235
Figure 1.78. Diagram of the wreck of ( <i>U984</i> ) .....	237
Figure 1.79. Map of the locations of ( <i>U988</i> ) and ( <i>U984</i> ) and nearby incidents .....	239
Figure 1.80. Photos of key identifying features on late WW2 U-boats .....	241
Figure 1.81. Diagram of the wreck of ( <i>U988</i> ) .....	244
Figure 1.82. Diagram of the wreck of ( <i>U441</i> ) .....	248
Figure 1.83. Commissioning photo of <i>U441</i> .....	249

Figure 1.84. Map showing the location of <i>U441</i> and related incidents .....	250
Figure 1.85. Map showing the locations of <i>U480</i> and ( <i>U1208</i> ).....	256
Figure 1.86. Diagram of the wreck of <i>U480</i> .....	257
Figure 1.87. Side scan sonar trace of the wreck of <i>U480</i> .....	259
Figure 1.88. Photo of <i>U480</i> returning from patrol .....	260
Figure 1.89. The location of <i>U480</i> and nearby minefields .....	263
Figure 1.90. Diagram of the wreck of ( <i>U1208</i> ) .....	267
Figure 1.91. Photo of surrendered U-boats showing key features .....	269
Figure 1.92. Map showing the location of ( <i>U400</i> ), ( <i>U1021</i> ) and ( <i>U683</i> ).....	274
Figure 1.93. Map of ( <i>U400</i> ), ( <i>U1021</i> ) and ( <i>U683</i> ) and associated minefields .....	275
Figure 1.94. Diagram of the wreck of ( <i>U1021</i> ) .....	277
Figure 1.95. Side scan sonar images of ( <i>U021</i> ) showing mine damage .....	279
Figure 1.96. Photos of key identifying features on ( <i>U400</i> ), ( <i>U1021</i> ) and ( <i>U683</i> ).....	280
Figure .1.97. Diagram of the wreck of ( <i>U400</i> ) .....	283
Figure 1.98. Diagram of the wreck of ( <i>U683</i> ) .....	287
Figure 1.99. Map of the location of ( <i>U683</i> ) and nearby incidents.....	290
Figure 1.100. Map showing the location of ( <i>U1279</i> ), ( <i>U325</i> ) and ( <i>U650</i> ).....	296
Figure 1.101. Photo of the GHG balcony on ( <i>U1279</i> ) and <i>U1105</i> .....	297
Figure 1.102. Photo of a life raft recovered from the wreckage of ( <i>U1279</i> ) .....	299
Figure 1.103. Diagram of the wreck of ( <i>U325</i> ) .....	301
Figure 1.104. Map of the post-war meanderings of <i>U325</i> by varying assessments.....	303
Figure 1.105. Photos of key features of Blohm & Voss built U-boats .....	305
Figure 1.106. Map of ( <i>U325</i> ) and ( <i>U650</i> ) with nearby minefields and incidents.....	306
Figure 1.107. Map showing the location of ( <i>U322</i> ) and ( <i>U772</i> ) .....	312
Figure 1.108. Diagram of the wreck of ( <i>U322</i> ) .....	314
Figure 1.109. Photos of the bow features on late-war U-boats.....	315
Figure 1.110. Map showing the location of ( <i>U322</i> ) and related incidents.....	317
Figure 1.111. Diagram of the wreck of ( <i>U772</i> ) .....	320
Figure 1.112. Map showing the location of ( <i>U772</i> ) and nearby incidents.....	322

Figure 1.113. Map showing the possible paths of <i>U772</i> into the Western Approaches .....	325
Figure 1.114. Map showing the 1946 List U-boat losses considered correct .....	329
Figure 1.115. Map showing the 1946 List U-boat losses considered incorrect .....	331
Figure 1.116. Map showing the locations of the 10 mystery WW2 U-boat wrecks .....	333
Figure 1.117. Map showing the overall results of the WW2 research .....	335
Figure 1.118. Pie charts showing the extent of accurate tracking of U-boats in WW2 .....	340
Figure 1.119. Pie charts of the accuracy of assessments during the Inshore Campaign .....	341
Figure 1.120. Pie charts of U-boats lost in transit and combat in WW2.....	343
Figure 1.121. Pie charts showing the circumstances of U-boat destruction in WW2.....	344
Figure 1.122. Pie charts showing the killing weapons of U-boats in WW2 .....	345
Figure 1.123. Pie charts of destruction in WW1 and second phase Inshore Campaign.....	353

## **Volume Two**

Figure 2.1. Map showing the positions of the 31 U-boats listed sunk in the study area in 1946, with typographical errors corrected by the author in 2012 .....	102
--	-----

## **List of Tables**

### **Volume One**

Table 1.1. The overall list of accurate and inaccurate U-boat losses in the 1919 List.....	162
Table 1.2. Accurate and inaccurate WW1 losses split by Channel and Dover areas.....	163
Table 1.3. Original letter grades from the 1919 List of the wrecks in Table 1. ....	165
Table 1.4. The overall list of accurate and inaccurate U-boat losses in the 1946 List.....	336
Table 1.5. Matches between the mystery wrecks and the GIS database for WW2.....	339
Table 1.6. The net increase in U-boat losses in the Study Area over the 1946 List .....	347

### **Volume Two**

Table 2.1. The 1919 List from the final edition of the “Submarines Losses Return” .....	81
Table 2.2. The location of WW1 U-boat wrecks as known when initially researched .....	83
Table 2.3. The list of 35 WW1 U-boat losses in the study area as revised in 2013 .....	84
Table 2.4. ASD Assessments as listed in CB01292 and cumulative editions .....	85
Table 2.5. Dover Patrol Records as listed in the Dover Packs.....	92
Table 2.6. The Dover Patrol and ASD Records which could not be plotted in GIS.....	94
Table 2.7. The Means of Destruction of U-boats as known in 1919 and 2013 .....	98
Table 2.8. The positions of the 31 U-boats in the 1946 List with corrections.....	103
Table 2.9. The WW2 U-boat wrecks as known when originally researched.....	104
Table 2.10. The list of WW2 U-boat losses in the Study Area as revised in 2012 .....	105
Table 2.11. AUD Assessments in the Study Area during the Inshore Campaign 1944-45 .....	106
Table 2.12. AUD Incidents in the Study Area during the Inshore Campaign 1944-45 .....	110
Table 2.13. ASW Incidents in the Admiralty Daily Diary in the Study Area 1944-45 .....	120
Table 2.14. U-boats being tracked by OIC on the patrol on which they were sunk .....	132
Table 2.15. The circumstances of U-boat losses as known in 1946 and 2012 .....	133
Table 2.16. The means of detection and destruction as known in 1946 and 2012.....	134

## **List of Accompanying Material**

A3 Foldout Map 1. Map of the Dover Patrol Area showing wrecks and incidents

## Acknowledgements

The author gratefully thanks and acknowledges the following people who have helped me during the long journey which has become this thesis.

Patricia McCartney, for years of encouragement and for proofreading the entire manuscript. Professor Mark Brisbane and Dave Parham, my ever patient supervisors. Dr. Mike Williams for his belief in this project and encouraging me to see it through. Nelson McEachan of the UK Hydrographic Office for his professional expertise and welcome exchanges of data. Axel Niestlé, Michael Lowrey, Robert M. Grant, Malcolm Llewellyn-Jones, Jock Gardner, Hans Koerver and Pamela Armstrong, fellow historians and researchers for their assistance and inspiration over many years of learning and research. Jenny Wraight and Kate Brett for finding the time to locate many documents perused during the course of my research at NHB over the last 15 years. Greg Stemm, Neil Dobson, Kevin Pickering and Richard Wood, for sharing wreck data and video with me. Dave Batchelor, Gerry Dowd, Jef Coulon, Alain Richard, Paul Oliver, Bob Peacock, Gifford Pound, Mike Etheridge, Graham Knott, Ivan Warren, Tim Bonetto and Alan Murray, fellow divers who have provided me with a myriad of forms of assistance too lengthy to list. Chris Underwood, latterly of the Nautical Archaeology Society, who originally encouraged me to start writing up my U-boat discoveries. Horst Bredow and his staff at the Uboot Archiv. All of the unbelievably helpful staff at the National Archives, Kew. And finally, thanks to all those I have invariably omitted to list above.

## Definitions

<i>Historical Text</i>	Term is used in this thesis to refer to all contemporary Admiralty archival sources, including official lists and staff histories which are used in comparison to the data derived from archaeological surveys of the U-boat wrecks. The two key historical texts are the Admiralty 1919 and 1946 lists of U-boat losses as described in the thesis.
<i>U480</i>	Where stated in the text in this format, the identity of the U-boat is considered to be established with absolute certainty and should be treated in the same way as a WW2 “A” Grade assessment with known U-boat identity.
<i>(U1208)</i>	Where U-boat numbers or other descriptions appear in the text in brackets, the identity of the U-boat is considered to be the best possible estimate based all available evidence, but without absolute verification.
<i>(Submarine)</i>	Where a brief description in brackets appears in the text it is considered to be a shortened but unique reference to a specific wreck site based on the most up to date information available. This affects only the WW1 data.

## **Part One: Introduction**

# Chapter One: Introduction to the Thesis

## 1.1: Introduction

If there is one big question this study sets out to answer, it is simply this: To what extent can the archaeology of twentieth century military shipwrecks extend our knowledge of events beyond what is written in the relevant historical text? In this particular instance, the archaeology is the sunken extant remains of 63 German submarines (U-boats) on the seabed of the English Channel. The historical text is the official lists of U-boats destroyed produced by the Allies in 1919 and in 1946 and the supportive archival sources as described in the thesis.

It should be noted at the outset that submarine wrecks of other nationalities and from other historical periods play no part in this study. It looks specifically at the archaeology of the two wars against German submarines.

It is important to note at the outset that the archaeological survey of modern naval shipwrecks carries an important ethical element. Inside nearly every one of the 63 U-boats featuring in this thesis, there lie the human remains of their crews. All of the survey work undertaken during the fieldwork was carried in a non-intrusive way which insured that no undue disturbance of the wrecks was made. In all cases the wrecks were not entered and only filmed from the outside. Interior shots were only made by filming into open hatchways and other damage holes in the wrecks from an external position. No human remains were either seen or filmed during this process. It was necessary occasionally to scrape away marine growth some external features to help in identifying wrecks. Where this occurred it is described in the text.

### **The English Channel and the war against the U-boats 1914-1918**

The English Channel was both a transit area and a theatre of operations for U-boats during WW1. As a result, 32 U-boat wrecks lie in the Study Area, representing 18% of the 178 U-boats lost in action during the war (Gibson & Prendergast 1931, 370). The number of actual wrecks is probably higher, as some certain losses still await discovery.

At the outset of the war antisubmarine technology was largely non-existent and submarine design was primitive by the standards of 1918. For example *U8*, the first U-boat sunk in the Study Area in March 1915, was equipped with a paraffin-fuelled engine which trailed a cloud of white smoke behind it as it cruised on the surface. The original mines laid in the Dover area to stop U-boats transiting from their bases in Flanders and Germany to the Western Approaches were so ineffective as to be dubbed “caviar on toast” (Grant 1938b, 1275) by the Germans.

As the war progressed U-boat design, capability and numbers increased sharply, as did Allied antisubmarine technology. By 1918, the U-boats were able to patrol off the United States in the

same manner in which they did in WW2, but conversely the British H2 mine effectively closed the Dover Straits to U-boats after a spate of losses. A similarly effective minefield was laid in the same area in 1939.

Perhaps the greatest issue of the war at sea was the question of whether U-boats should sink enemy merchant shipping without warning and also attack the ships of neutral countries, especially if they were supplying the enemy. To do so was against international law but afforded the U-boats the major advantage of a higher degree of safety and an opportunity to starve Britain out of the war, as much of her foodstuffs and essential supplies came from her colonies. Attempts to introduce what was termed “unrestricted submarine warfare” in 1915 sparked a diplomatic crisis with the United States from which Germany backed down. After the Battle of Jutland in 1916, pressure grew from the German navy and the Kaiser to reintroduce unrestricted submarine warfare, but this was resisted by the German government.

By 1917 though, setbacks on land and the effect of the British blockade of Germany forced Germany into more drastic measures and the U-boats were unleashed to their maximum ferocity against the British and neutral countries merchant shipping. This was in the full knowledge that it meant war with the United States. Germany gambled that Britain could be starved into surrender before the American army arrived in Europe.

The reason this gamble did not pay off was due to a combination of factors including the belated adoption of the convoy system, (Hezlett 1967, 104). The devastating results of this endgame in 1917-18 are attested to by the fact that 73% of U-boat losses and 67% of British merchant ship tonnage sunk by U-boat occurred during this period (Gibson & Prendergast 1931, 370-381).

### **The English Channel and the war against the U-boats 1939-1945**

Unlike WW1, the English Channel was largely devoid of U-boat activity until D-day in 1944. In 1939, three U-boats were lost in the Dover area; after which the remaining 28 losses occurred after D-day. The 31 wrecks represent around 5% of the 648 U-boats lost on front line service during WW2 (Niestlé 1998, 4). It remains possible that one or two still unexplained U-boat losses may appear in the Channel in the future.

The second war against the U-boats, lasted from the first to the last day of the war. From the outset, ships were sunk without warning. From mid 1940 the campaign can be loosely characterised by wolf-packs of U-boats based in France operating against convoys and being controlled by radio by the BdU (U-boat operation headquarters). Ships sailing unescorted also continued to suffer heavy losses, especially in early 1942 off the American coast.

From mid 1942 to May 1943 most of the fighting took place around convoys. In early 1943 attacks on convoys increased to crisis point. But in May 1943, the U-boats were dealt a severe blow by a conjunction of several differing aspects of a raft of antisubmarine measures coming together at that time. These included increased numbers of long-range aircraft and escorts, combined with convoy-based radio direction finding, centimetric radar and much improved signals intelligence. With the wolf-packs largely driven from the Atlantic the build-up to D-day could begin.

Although it had suffered a severe blow, the U-boat arm of the Kriegsmarine was not a spent force and it prepared for intervention in the English Channel when the inevitable invasion was to begin. The destruction of these submarines was of the highest strategic importance to the Allies because they were considered to pose the most formidable opposition to the D-day landings (Blair 1999, 574). The eleven months from D-day to the end of hostilities marked a different and unique final period of the campaign against the U-boat, generally referred to as the Inshore Campaign.

The Inshore Campaign in the Study Area can be generally characterised by U-boats operating independently, the use of the snorkel (a device which allowed the U-boat's diesel engines to be run while it was submerged, mitigating the need to surface), the judicious use of radio by BdU and U-boat commanders and the employment by both sides of increasingly sophisticated technologies. In reality, the Inshore Campaign can be segmented into two distinct phases. The first phase ends with the capture or encirclement of the U-boat bases in western France in September 1944. This leads to the beginning of the second phase where the U-boats which entered the Channel did so having sailed from bases in Norway.

Permanently submerged, the U-boats travelled slowly but were difficult to detect. The generally limited radio traffic to and from the U-boats made tracking their progress by anything more than estimation, difficult. In the Study Area however, once detected the U-boat stood little chance of survival because of the sheer numbers of ASW (antisubmarine warfare) ships and aircraft patrolling the area.

### **The confluence of the historical text and the archaeology of the U-boat wrecks**

The English Channel can be viewed as a theatre within the broader battlefield upon which Britain and her allies fought and won two wars against the U-boat. The sinking reports can be mapped alongside the archaeology and in spatial terms at least, conclusions can be drawn about what it all means. For instance, the cluster of U-boat wrecks in the Dover Straits broadly corresponds to the published losses in this strategically critical area in WW1. In this sense, there

are similarities to battlefield archaeology studies such as Banks (2007) and Pollard (2009). While such approaches are helpful, there is a far more subtle element to this study.

The reality of antisubmarine warfare means each attack on a U-boat is in itself, its own specific battle with its own specific historical text. Where an attack took place, there were only two possible outcomes, the U-boat escaped or it was destroyed. So conversely, each specific U-boat wreck sunk in a reported attack is an archaeological record of that specific battle and an extant witness to that event. In these instances, the archaeology of the wrecks can be scrutinised against reports of the battles, and as a minimum, be used as a yardstick upon which to measure the accuracy of the historical text. For instance, can the wreck be identified? If it can, is it the one the attackers claimed they destroyed?

However, what happens when a U-boat wreck is located in a position where there is no documented attack? Or conversely, what happened when there is a successful documented attack and yet no U-boat wreck is present? In these instances, one side of the story is missing entirely and therefore the other side must be interrogated intensively to see whether it may shed light on what really happened. For instance, what sort of damage has the U-boat wreck suffered? Or did the reported attack bring any physical remains to the surface?

This study is only possible because of the detail available in both the historical texts and in the location of so many U-boat wrecks in the Study Area. U-boats were built to withstand the underwater world and experience shows that the wrecks survive better than any other craft from long term immersion in the sea. Their hulls withstand environmental impacts such as tide and corrosion very well. Moreover the tubular nature of their structures also affords them a high degree of protection from collision with trawl nets and scallop dragging equipment. Consequently, their archaeological potential is still exceptionally strong.

Moreover, detailed primary and secondary sources of the U-boat wars describe events as well as can be expected of twentieth century military history. And unlike the battlefields of Flanders, North Africa or Russia, the remains of the sunken U-boats have not been recovered nor been subject to land reuse. Both strands of this research are therefore extensive and robust and allow for outcomes based as much on empiricism as on interpretation.

As Gould (2000, 26-7) has pointed out, one problem with comparing the remains of shipwrecks to historical text is the pitfall of the “fallacy of affirming the consequent”, or in other words, to accept historical documents at face value and to simply see the archaeology in mainly corroborative terms. This perception of archaeology being history’s handmaiden is deeply rooted within Historical Archaeology (Moreland 2001, 11-13). The archaeology of the wrecks

in this study will speak for themselves and will play a far less passive role in the interrogation of the historical record.

By comparison, in the study of modern battlefields, there are examples where a lack of detail in the historical text has meant that the results of the fieldwork lack a substantial comparative basis (Banks, 2007; Campillo, 2008), so that interpretation of the data has had to stand relatively alone. The presence of U-boat wrecks in the Study Area for which there was not any specific historical record means that a methodology to identify the wrecks in question has had to be developed.

### Study Area

The geographic area in which this study could be carried out had to:

- 1) Offer a detailed historical record of events;
- 2) Be well covered by modern hydrographic survey data;
- 3) Be in depths where examination of the sites by diving was feasible.

With this in mind, the boundaries of the Study Area were set broadly as the English Channel. The actual boundaries were defined as 6 deg 22 min West, 1 deg 55 min East, 49 deg 0 min South, 51 deg 15 min North (see Figure 1.1). These are broadly the boundaries of Chart No. 2675 (Hydrographics Department of the Admiralty, 1999), truncated in the deep waters inaccessible to diving in the far south and west, but with the North Cornwall coast added. These borders therefore constitute an area where all three of the criteria above are satisfactorily met. Over the last decade, the waters along the North Cornwall coast have been surveyed for the first time since the nineteenth century and are included in this study because of the surprising discovery of four U-boat wrecks in an area thought to have no U-boat losses in either war.



Figure 1.1. The boundaries of the Study Area of this thesis also showing the distribution of the known U-boat wrecks as of July 2013 (Innes McCartney).

## **1.2: Why is this Study Relevant and Important?**

### **Relevance**

This project is timely and relevant primarily because the pace at which modern shipwrecks are being located around the world is increasing sharply. As Parham and Williams have shown (2011, 5), deep salvage capability can now reach any depth in our oceans and consequently deep wrecks are being located in increasing numbers. Also the increased depth capability of recreational diving has “opened up a new era in shipwreck exploration”, with many unexplored wrecks being identified and researched for the first time. Perhaps ironically, it is this increased depth capability which has partly made this study possible, because of the findings of the author and others by diving in the Study Area. The author was among the first Trimix (helium based breathing gas) qualified divers in the UK and therefore the first to dive on many of the deep wrecks in the Channel, including several of the U-boats in this thesis.

It should also be noted that during the last two decades marine geophysical technology has increased in capability, not only to reach any water depth, but also in its visual resolution. This means that modern side scan sonar and multibeam can allow for detailed study of shipwrecks remotely, from the command room on a survey ship. In reality this means that numerous sites can be explored within a few hours, as opposed to several days or even weeks in the past when sites had to be individually explored by divers to get the same quality of data. This ability is also contributing to the rapidly increasing the number of known wrecks.

The sheer scale of the losses during both world wars points to the potential numbers of wrecks which will increasingly emerge in the years to come. For instance, there were 6,927 British, Allied and neutral merchant ships (Lloyd’s of London 1989, v) and 1,355 Allied warships and auxiliaries (Newbolt 1928c, 431) lost in WW1. In WW2, the losses were 5,411 merchant ships (Lloyd’s of London 1989, v) and 492 warships (Brown 1990, 228). The Axis and neutral countries also lost wrecks counted in the thousands.

But even still, the number of shipwrecks is not unlimited. At some point the majority of wrecks around the UK will be found. But as Firth (2011, 15-18) has already shown, 2,220 out of the 2,840 (78%) of the known shipwrecks in UK territorial waters, come from the period 1914-1950, broadly the same as the study period of this project. Moreover, as he points out, this percentage is not likely to change as a result of more shipwrecks being located and identified in the years to come.

## **Importance**

A study of a sample of this 78% (the U-boats lost between 1914 and 1945) has a role to play in our understanding of this large and growing tranche of our underwater heritage. In particular, the emphasis in this study on the contributory (as opposed to merely corroborative) nature of the archaeological data to written history has implications which relate to any shipwreck lost in conflict and can point to a newer and broader historical significance behind all of these new discoveries.

The scope of this study, involving 63 broadly similar shipwrecks spread across one underwater battle zone, makes this study unique and important. This is not only because it is the first time such a project has been undertaken in the field of nautical archaeology but because of its potential to open up a new field of study. Some recent excellent and truly groundbreaking work has been carried out on modern shipwrecks, their archaeological remains and the consequent impact they have had on the historical record, (for example Mearns, 2009).

Small clusters of similar wrecks have been examined (Niestlé, 2011). However, in neither of these cases can there have been inferences drawn on the overall impact of the findings on contemporary histories or on the broader intelligence record of the time, because the sample pool has been too small to make anything more than site-specific adjustments. It is the ambition of this study to offer a contribution to historical data at the battlefield level in the form of collated empirical data. In this regard, this work is the first attempt to study an underwater battlefield through archaeology.

As a study into the archaeology of sunken submarines, and what they can contribute to the historical record this research is, to the author's knowledge, the most extensive so far undertaken. While there are guides to some of the shipwrecks in the Study Area (McCartney, 2002a; Young & Armstrong, 2009), the depictions of the archaeology, where they exist, have been brief and merely descriptive.

There have been studies carried out on specific submarine wrecks and how they have been identified (Smith, 1999; Chatterton, Kohler & Yurga, 1998). However, this study develops a holistic methodology which will codify the various ways in which U-boats can be identified. This will be based on the means of gathering the archaeology from the wrecks, from comparisons to the historical record and, importantly from the lessons learned from each case examined.

Moreover, as far as the author is currently aware, this is a very rare doctoral-level study of modern shipwrecks and in this regard, it is also well situated to make an important contribution

to the discipline of nautical archaeology in an area generally lacking in fieldwork and consequent comparisons to primary historical data-based research.

### **1.3: Aims and Objectives**

At its core, this study is made up of only two distinct datasets, archive history and shipwreck archaeology. The basic aim underpinning all that follows is to compare each dataset against the other. This is firstly in order to test the degree to which archive history (Allied records of the U-boats they claimed to have destroyed) matches the dispersed pattern of extant discovered archaeology, and to investigate how and why the two datasets may or may not coalesce. Secondly and conversely, it is to test whether the archaeology of destroyed U-boats can be interpreted in a robust enough manner to offer accurate solutions when the two datasets do not match. Before attempting to pursue these aims, the following objectives need to be met.

#### **Objectives:**

- 1) Research and develop a coherent history of U-boat losses in the English Channel during both world wars;
- 2) Develop a historiography of the development and refinement of U-boat loss registers through the decades following both world wars;
- 3) Use desktop research of hydrographic data and anecdotal sources of information to critically evaluate what was actually known about the U-boat wrecks in the Study Area;
- 4) Locate any representative case studies both within and outside of the Study Area involving sunken submarines from which to inform the process of interpretation;
- 5) Develop a target list of sites to survey by diving, focusing on the sites about which: a) the least was known and b) those which didn't appear to have an historical sinking position near their locations;
- 6) Dive as many of the sites on the target list as possible, so as to learn about the specific archaeology of U-boat wrecks and build up a unique body of data and experience about them;
- 7) Use this experience to develop means by which the U-boat wrecks themselves could be satisfactorily identified;
- 8) Test these means of identification on the U-boats wrecks which were unidentified
- 9) Test each archaeological site against the historical record and where possible, match the sinking reports from archive to known U-boat wrecks;
- 10) Analyse these results to derive a measure of the accuracy of the historical texts when compared to the archaeology. Assess the accuracy of naval intelligence in the presence of differing scales of evidence;

### **Measurable outcomes and methodologies**

The outcomes below will be derived from the successful execution of the objectives listed above. They will be presented in three distinct sections:

- 1) WW1
- 2) WW2
- 3) Both U-boat wars seen collectively

Part Two (WW1) and Part Three (WW2) will present the outcomes and methodologies in the following way. First an introduction will present the relevant outcomes of the following. Some outcomes will be presented in later chapters (see below):

- 1) A database of all wartime U-boat losses 1914-1945 in the Study Area with a known history of how the losses were reported and recorded (objectives 1-3) coupled with a review of the relevant archival texts. The positions will be incorporated into a GIS spatial database;
- 2) A database of known U-boat wreck sites in the Study Area, what is known of them at the time the author first began to research each case and the expertise on how to investigate them (objectives 4-6). The positions will be incorporated into a GIS spatial database;
- 3) A methodology for identifying U-boat sites in the presence and absence of written historical evidence (objectives 7-9);
- 4) A methodology for recording and presenting the data from the sites investigated by diving and recorded on video tape. The tapes form part of the author's archive and are available for inspection by third parties (objective 7);

Secondly, each shipwreck will be examined individually in a series of chapters and case studies, which will utilise and test the methodologies listed above and will derive a definitive list of all of the known U-boat wrecks in the Study Area and present the following outcomes and methodologies;

- 5) A critical assessment of each known wreck site against its specific sinking event to build a more comprehensive version of events in each case (objectives 10-11);
- 6) A critical evaluation of the strengths and weaknesses in the historical record in the case of each U-boat wreck (objectives 7-10);
- 7) A critical assessment of the efficiency of the processes used by naval intelligence to track, evaluate and catalogue each U-boat wreck (objectives 9-11);

- 8) A full critical analysis of each mystery U-boat wreck and the best possible attempt at deriving an identity for the wreck based on the methodologies presented in the introduction to that part of the thesis (objectives 6-10);

Thirdly, a conclusion chapter at the end of Parts Two and Three will draw together the lessons of each wreck into a full list which will be used to compare it against the historical text.

- 9) A measure of the degree to which the historical texts of each period actually represents the reality of the archaeology of U-boat wreck sites in 2012 (WW2) and 2013 (WW1) (objectives 9-11);
- 10) Explanations why certain approaches to antisubmarine warfare were more effective than others, seen in the light of what the wrecks tell us (objectives 9-11);
- 11) A critical evaluation of the strengths and weaknesses in the historical record in each of the wars (objectives 7-10);
- 12) A critical assessment of the efficiency of the processes used by naval intelligence to track, evaluate and catalogue U-boat losses in the two world wars (objectives 9-11);

Part Four will be an overarching conclusion looking at the study as a whole in order to address further questions and the impact of the research. It will also look at differences between the conclusions of both sections One and Two in the light of what they reveal. It will also draw similarities between each war where they have been found and wrap up the overall findings of the research.

#### **1.4: Impact of the Research**

The methodology has been built up over 14 years and has been field tested on the wreck sites in this thesis. The ultimate outcome of this research will be a study which could have significant impact in the following areas:

- 1) Become an important text in the study of the archaeology of modern shipwrecks and their impact on the historical record
- 2) Become a definitive text on the identification of wrecked submarines and their impact on intelligence and historical data
- 3) Demonstrate that a wide-area battlefield approach to the study of many sites together can offer historical meaning.

#### **1.5: Overall Approach**

Broadly, the research methodology encompassing this project has been to first, fully understand the historical context under which the fieldwork was to be undertaken. This was achieved by researching the relevant primary and secondary data covering U-boat losses and intelligence

between 1914 and 1945. Second, settle on a Study Area and research what was known about possible U-boat wrecks in that area. Third, draw up a target list of sites to survey and develop a means of recording and identifying the wrecks. This was very much an iterative process. Fourth, compare the archaeological data with the researched historical record and see how the two compare. Finally, synthesise a series of conclusions as to how sites can be identified and what the archaeology tells us about the accuracy of the historical record which is mostly taken for granted as being correct.

### **Changing the historical record**

It is important to state that only in cases where the evidence from archaeology has derived an exact identity for a mystery U-boat wreck which meets the exacting criteria of “A” Known Sunk as defined by AUD (such as the cases of *UB65* and *U480*) has the historical record been changed. In these cases there is no doubt about the identity of the wrecks and they therefore can be referred to in their new historical contexts with confidence.

Where the identities of mystery U-boats have not been established with absolute certainty a bracket has been placed around the U-boat name (such as (*U683*)). This signifies that the identity is considered to be the best that can be made from all of the currently available evidence, as described in detail in each case; but that it does not constitute absolute fact. This system has been adopted in part to avoid the mistakes of the past which has seen a number of U-boat fates “reassessed” by NHB and other historians on several occasions (notably the case of *U325* which now has five different fates previously ascribed to it).

In the mystery cases in this thesis, the certain presence of the wrecks shows that the historical record definitely requires amendment. However where absolute proof from archaeology and historical research cannot be guaranteed to derive a certain identity, the brackets are intended to show that that is the case.

## **Part Two: The U-Boat Wrecks of World War One**

## **Chapter Two: Introduction to the World War One U-Boat Wrecks**

### **2.1: Introduction**

At the outset of the fieldwork, it was important to attempt as far as possible to identify each wreck in the Study Area. When each case was examined, at least 11 of the 32 known wrecks were unidentified and in five of these cases they were not known to be German, or known to be WW1 war losses. As described in the thesis introduction, the purpose of this chapter is to describe the research methodologies used to derive the most accurate identities as possible for each site.

### **2.2: The Historical Texts for World War One U-Boat Losses**

The primary historical text used in this thesis is the one against which the results of the archaeological surveys will be tested. This document (to be referred to as the 1919 List) is the final compilation of the British estimates of U-boat losses as published by the Admiralty in January 1919. The list is contained within the Controlled Book C.B.01292G O.X.O., the final issue of “Losses of Enemy Submarines with Summary of Cases” and is bound into book form within NA ADM239/26. Figure 1.2 shows the 37 U-boats listed in the 1919 List as being considered sunk in the Study Area during WW1. As will be shown not all 37 cases correspond to the 32 known wrecks.

#### **The development of Room 40 and the British Naval Staff sections during World War One**

This section will introduce the main historical texts which have been consulted as part of the analysis into each U-boat loss and each wreck site investigated. Unlike the WW2 wrecks which broadly fall into only the last year of the war, the wrecks of WW1 took place in all but the first year of the conflict, i.e. from 1915 to 1918. This means that it has been necessary to identify archival sources of U-boat tracking and intelligence throughout the duration of the war. This proved to be a complex process because of the constant development of the relevant divisions within the Admiralty War Staff (until May 1917, then the Naval Staff) during the war and the incomplete nature of much of the archival record now surviving.



In strategic and intelligence terms, the Admiralty's response to the threat posed by German submarines in WW1 steadily developed as the war progressed. The Admiralty was able to decrypt most German naval radio traffic from November 1914 onwards, in what has been called "an overwhelming intelligence defeat for the Germans" (Beesly 1982, 7). From 1914 onwards the cryptographic unit of the Naval Staff, generally referred to as Room 40 (after the room in the Admiralty Old Building in London where they were originally housed) provided a constant stream of decrypts to the Chiefs of the Naval Staff, Intelligence and Operations Divisions.

Working independently of Room 40 was the radio direction finding (DF) and tracking sections, both of which grew in size throughout the war. From early on, Cmdr. Herbert Hope drafted daily intelligence reports based on the data from these sections combined with the Room 40 decrypts. These too were fed into the Naval Staff, Intelligence and Operations Divisions. According to Beesly (1982, 20), Hope was the first true intelligence officer and the de facto head of Room 40 until his departure for a sea command in 1917.

Brief unpublished histories of Room 40 by Hope and the cryptologist W. F Clarke can be found in NA HW3/3. A selection of Hope's memos and notes relating to U-boat activity can be found in the National Archives in NA ADM137/4128, 4170, 4171 and 4689. Room 40 decrypts relating to specific U-boats covering the time up to its incorporation into NID (see below) can be found in NA ADM137/4071.

Originally only Hope had access to information from this variety of intelligence sources. Closer ties to the Naval Intelligence Division (NID) slowly developed, including from December 1916 the provision of intelligence appreciations in the form of a daily War Diary. This coincided with Admiral Jellicoe's appointment as First Sea Lord in November 1916. He also started the Antisubmarine Division (ASD), under the command of Rear-Admiral Duff in December 1916, whose role was to coordinate all efforts to overcome the now dangerous threat to Britain's survival caused by the U-boat attack on shipping of January 1917. In a precursor to the close relationship between AUD and OIC in WW2, Duff was given access to the Room 40 daily War Diary (Beesly 1982, 177).

However, it was not until May 1917 that major reforms within the entire Naval Staff were instituted. While these lie primarily outside of the scope of this research, it is worth noting that the Naval Staff has been the focus of much criticism by historians, such as Marder (1970, 314-315). Full details of the changes made can be found in the Naval Staff Monograph of the history of the Naval Staff in NA ADM 234/434. The monograph is also surprisingly critical of the Naval Staff's performance during much of the war. More recent histories, notably Black (2009), have looked more favourably on the Naval Staff suggesting that under-manning and the challenges of developing new doctrines and technologies lie at the heart of the problems it

experienced and the blunders it made during the war. As will be seen in later chapters some of the obvious mistakes made by ASD when assessing U-boat losses raises questions about the performance of the Staff.

The May 1917 reforms affecting Room 40 (now to be called ID25) led to it being brought within NID and allowed for limited integration of the DF, Convoy and Tracking sections into an Intelligence Centre, more along the lines of the OIC of WW2 (Beesly 1982, 173-7). The reforms also led to the appointment of a new Director of Statistics in May 1917 which allowed for what Beesly (1982, 263) termed “accurate and sensible figures about shipping” to be compiled for the first time.

### **The Key Historical Texts used for this study**

The reports and digests published by the Naval Staff, NID and ASD from mid 1917 onwards represent some of the most chronologically consistent and comprehensive British sources available on the fight against the U-boats written during the war and up to 1920. It is clear in several instances that the data compiled in the years prior to 1917 was reviewed and reworked into a consistent format. Not least this is evidenced in the 1919 List.

This is also seen in the ASD assessments of reported attacks on U-boats. This series of reports covers the entire war and has been (as much as was possible using historical data) collated to a consistent format. Alongside the 1919 List it offers the most comprehensively consistent view of ASD’s appreciation of when and how the U-boats were destroyed. Some of the original assessments can be found in NA ADM137/4142-4150. Equally consistent is the Admiralty Controlled Book C.B. 01486 O.X.O. which details the actions between Special Service (or “Q”) Ships and U-boats throughout the war (NA ADM186/430).

The consistent and informative ASD’s Monthly Antisubmarine Reports (a precursor to similar reports in WW2) only began in December 1916 but can be found at the National Archives in NA ADM186/394 and 408. The Technical History Section of the Admiralty (THSA) (1919d, 6) produced a history of ASD which details its development. The same section (1919c) also produced C.B.1515(1) which details all actions of Allied submarines against U-boats.

Samples of the logs of the Tracking Section covering portions of August to October 1917 can be found in NA ADM137/4133-4134. However the Tracking Section also compiled history sheets for each specific U-boat detailing what was known of its movements. These can be found in NA ADM137/4151-4155. A further series of history sheets relating specifically to each U-boat can be found in NA ADM 137/3912-3918. These proved to be of great value as they summarise what was known of the movement of each U-boat.

These history sheets seem to be the most likely source of the NID “Proceedings of Enemy Submarines” series (NA ADM275/1) which covers 1915-1918 in a consistent format and is useful because it shows what was known of the details of U-boat cruises. However this series does not represent the complete picture and in common with other NID publications, such as NA ADM186/629, “Mining Operations by German Submarines around the British Isles 1915-1918” was produced to be educative about the types of U-boat operations what may occur in the future. So although they give a flavour of the types of U-boat activity, they are not comprehensive and should not be regarded as a reliable reference source.

The original NID records of intelligence gathered relating to specific U-boats can be found in NA ADM137/3899-3903. These files take the form of scrapbooks and contain information from a wide range of sources. Various NID records of the interrogation of survivors from the U-boats sunk in the Study Area will be referenced in the text where appropriate. The reports are seemingly randomly filed across the ADM catalogue and it is unnecessary to list them all here.

During the war and especially from 1917 onwards a diving unit from the Salvage Section of the Admiralty was detailed to intelligence work, salvaging both entire submarines and intelligence material from wrecks. The papers of the Salvage Section detailing this work on U-boat wrecks can be found in the National Archives in NA ADM116 1504, 1506, 1513, 1589, 1595, 1632, 1634, 1642, 1643, 1851 and 1853.

After the war, the Admiralty slowly produced historical Staff Monographs covering the conflict. The series is incomplete, ending in July 1917; the final volume being published in August 1939. The Home Waters monographs can be found at the National Archives in NA ADM186/619-624, 628 and ADM275/13-14. This is one of the most useful general sources available and it is regrettable that WW2 prevented its completion.

In the years following WW1, the Historical Section of the Committee of Imperial Defence (HS) of the Admiralty compiled and indexed a vast library of Admiralty documentation. A full index of what this library once contained can be found in NA ADM137/4837. The Historical Section had been charged with compiling sources which were to be used to compile the official history of WW1 (Corbett 1920a, 1920b, 1923a, 1923b, 1929 and Newbolt 1928a, 1928b, 1928c, 1931).

Of particular relevance to this thesis is the collected HS records made of U-boat activity at sea in the Southwest Approaches and English Channel command areas. The records available are vast and are scattered seemingly at random throughout NA ADM137. They have been consulted where relevant. The Dover Command Operations Packs (which differ from the HS records above because they have been filed collectively and represent all of the Dover Command’s

activities) referring to the mine barrage and to U-boat activity can be found in the National Archives in NA ADM137/2096, 2097 and 2103.

Two important unpublished histories written after the war are retained at NHB. The first, a three volume history of the German Navy during the war based on ID25 and NID records by Birch & Clarke (1922a, 1992c, 1922c) summarises the British understanding of the overall German U-boat command and operations. The second, two volumes by Captain Lockhart Leith (1920a, 1920b), is effectively the official British history of its naval minefields 1914-1918. The third accompanying folio of maps was found at NHB and has been most useful. It is a more accurate source than the minefield maps compiled in the HS records in ADM137/863.

The official German five volume history of U-boat operations in WW1 by Admiral Spindler (1933, 1934, 1935, 1941 and 1966) provides a very detailed account of the German side of the war, based on the German naval archive. Its capture intact by the Allies in 1945 greatly restricted his access to this crucial source when he was writing the final volume covering 1918. At NHB is a confidential note from 1960 (NHB FDS 206/60) which states that Spindler's access to the captured German records was to be restricted. Moreover he was not allowed access to his own thousands of pages of notes relating to 1918 which were also captured (along with Spindler himself) at Tambach in 1945. It is important therefore to bear in mind that Spindler's final 1965 volume was probably produced without full access to all data and should therefore be treated with caution.

This 1919 List became the starting point which was used by the first historians to study the U-boat losses in WW1 and was reproduced with minor amendments by Gibson & Prendergast (1931) and Grant (1938a), both of whom had access to the original list, which at the time was still technically a controlled publication. However, the first minor amendments, handwritten onto the 1919 List were made by Cmdr. A. C. Dewar of the Historical Section of the Admiralty in the years after the war. This document cannot now be traced by NHB but its contents are partially referenced in Grant (1938a) who had access to it in the 1930s.

However, important published works which specifically relate to the research in this thesis are uncommon. Still of great utility is Gibson & Prendergast (1931) which gives a useful overview of the U-boat war from the British side and is sufficiently detailed to capture most of the important events. Most books examining U-boat losses of this period, such as Kemp (1997) who reuses the 1919 List or Messimer (2002) who reuses Spindler, with selected changes, do not take account of the recent discoveries of U-boat wrecks and their effect on the loss register.

Importantly, the scholar and historian Professor R. M. Grant has made by far the most useful contemporary published contributions to the study of U-boat losses during WW1. He began

correcting obvious errors in the 1919 List in *Proceedings* (1938a, 1938b) and subsequently published three books (1964, 1969, 2003) which in each case made use of newly released historical texts and continued to reassess and correct the list of war losses. In conjunction with Spindler, these form the most comprehensive published records available.

### **The ASD classification, assessment and final tallying up of U-boat losses**

Before we leave the review of historical sources it should be noted that the ASD and its precursor, the Submarine Committee, developed a categorisation system which they used when assessing the possibility of an ASW event actually causing the loss of a U-boat. This system was selected again by AUD in WW2 in a more modified form (see Chapter Six).

The Submarine Committee's definitions were; "A" Known, "B" Probable, "C" Possible and "D" Improbable, to which they also added "Not Classified". From 1 July 1917, the ASD changed the scheme to: "A" Known, "B" Probably Sunk, "C" Probably Seriously Damaged, "D" Possibly Slightly Damaged and they retained "Not Classified". The changes, in effect, meant nothing, as the definitions did not themselves change (NA ADM239/26, 94). In the technical history of ASD it was acknowledged that the scheme was viewed in the fleet as "unduly pessimistic" and in its defence ASD added the following:

"The classification of the result of any engagement other than a "Certainty" was extremely difficult, and conclusions were only definitely arrived at after a studied survey of each case, taking into consideration former and subsequent enemy movements in the vicinity, in conjunction with the knowledge possessed of the numbers and disposition of the submarines out at the time. For instance, a most hopeful case was discountenanced by the fact that trustworthy intelligence gave one submarine only in the vicinity, and yet enemy activity continued after the attack in the same area. It was well known, too, that the enemy put into practice various ruses – such as discharging oil into the water – to mislead and upset the calculations of the attacking vessel" (THSA 1919b, 6).

This paragraph is revealing because it shows how some of the assessment process worked in practice. First, it is clear that anything other than a certain kill was impossible to judge with accuracy. Second, it shows that the assessors had access to Room 40's intelligence summaries on the movements of U-boats and used these, as much as the reports of the ASW incidents themselves to judge and assess all but the most obvious of cases.

From January 1918 onwards ASD also compiled an "Explosion List" of those witnessed in minefields which was added as an addendum to the lists of assessed attacks (NA ADM239/26).

Although not given a grade, they have been listed as “EL” for the purposes of identifying them amongst the database of assessed attacks which is discussed later in this chapter.

A final important point to make about the 1919 List is that it does not necessarily always agree with the lists of ASW events recorded as assessments in earlier editions of the same Admiralty publication. The final edition, “G” of C.B.01292, of the 1919 List, (NA ADM239/26 173-190) states that in the final analysis “Official German Sources” were used to draw up a complete list of losses and that the descriptions given in the previous assessments themselves had not been amended and would not be reissued.

Very revealingly, it is acknowledged that previously non allotted losses were attributed to attacks which had been previously been graded as “B” Probably Sunk or “C” Probably Seriously Damaged. Furthermore any losses that could not be matched to previously assessed incidents were classified as “unknown”. This shows that the final tallying up of U-boats destroyed did not constitute a scientific review of all the facts known from decryption, DF, tracking and assessments, but was actually simply a paperwork exercise based on earlier versions of C.B.01292.

The fact that only six of the 178 U-boats lost were actually categorised as “unknown” seems to show a degree of confidence in the list of assessments which, by its own admission above the assessors had found “extremely difficult” to make. The process of simply matching previously recorded incidents to vague information from the Germans about where they thought their U-boats had sunk was repeated at the end of WW2 (See Part Three).

### **2.3: The U-Boat Archaeology of World War One**

This section describes the initial outcome of the research into the location of every known WW1 era U-boat wreck in the Study Area. As such it is a representation of what was known of each wreck when the author began to research its history and survey its remains. The data was compiled from a range of sources and is represented in map form in Figure 1.3 and in tabular form in Appendix 1.3.

The main sources of information were the UK Hydrographic Office, archaeologist Bob Peacock, historian Michael Lowrey, divers Gifford Pound, Gerry Dowd and Paul Oliver, charter boat skippers Tim Bonetto, Dave Batchelor and Pat Dean. The Hydrographic Office wrecks database held records of 24 of the 32 wrecks. The other eight wrecks are all in the Dover area and have been located by local divers and fishermen, sometimes in incidents now lost to time.

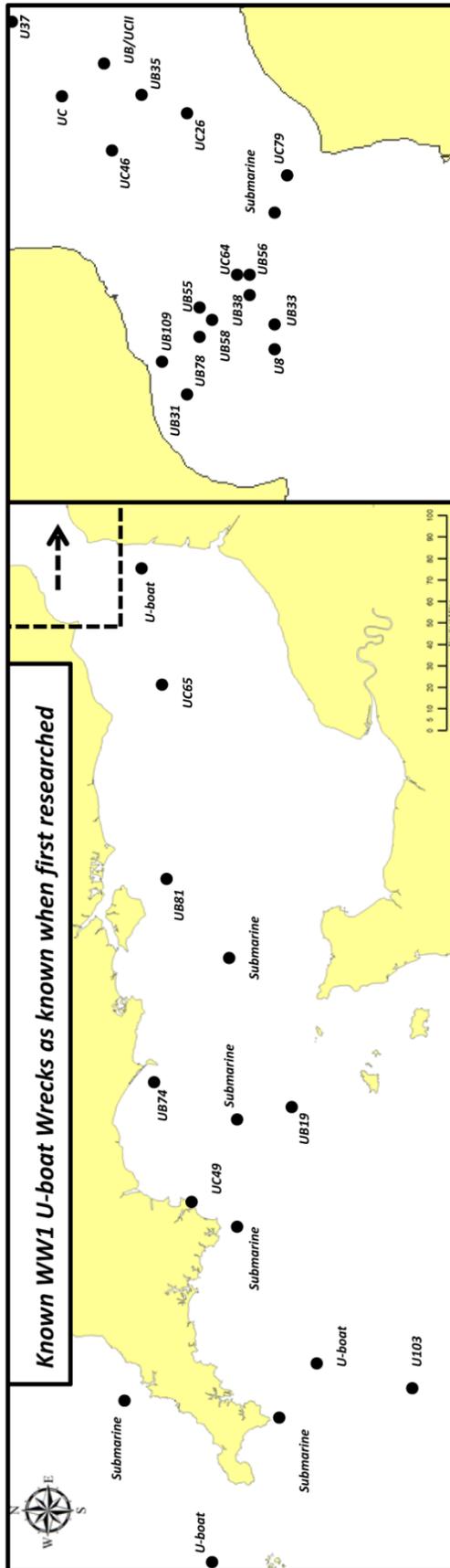


Figure 1.3. The 32 known U-boat wrecks of WW1 in the Study Area with identities of each site as known when initially researched by the author. These form the basis of the archaeology examined in Part Two, WW1 (Innes McCartney GIS base map).

By comparing Figures 1.2 and 1.3 it becomes apparent that there are discrepancies between the two sets of data. There are five fewer wrecks than the 37 listed in 1919. Moreover the pattern of dispersal is different. For instance Figure 1.2 does not show any U-boats lost in the Bristol Channel and Scilly Isles, but Figure 1.3 shows there are known WW1 losses in those areas. It will be noted that Figure 1.2 shows two U-boats sunk very close to the French shore; *UB26* and *UC61*. These were salvaged during the war and therefore are not present on Figure 1.3.

As Figure 1.3 shows, the identities of 11 of the wrecks were not known when initially researched. Some were only vaguely described as a “submarine”, while some at least had been described as being U-boats. The map only shows submarines which after initial survey by the author or others turned out to be WW1 era U-boats. Those from WW2 can be seen in Figure 1.57 in Chapter Six. One of the primary tasks of the research was to attempt to identify each of the 11 unknown sites and establish how many of the other identities stood up to close analysis.

It was important to validate that the other sites were in fact correctly identified and not simply known by a U-boat number which had been attributed in a way which was not consistent with what the wreck actually represented. It was therefore important to develop methodologies for examining the archaeology of each wreck site to both corroborate the historical record and also to identify those sites which bore no known relevant historical text. The approaches used are described in the next section.

## **2.4: Key Methodologies Employing the Historical Texts to Research the U-Boat Wreck Sites**

The important primary historical texts have been described above. At the outset of the investigation of each site, desk-based research drawing on primary and published sources was used to see if there was archival documentation which could possibly be matched to the wreck. The main focus has been on the sites which do concur with the 1919 List. But as mentioned above there was a need to verify that the identities of known sites were, in fact, correct too.

### **Methodology using the historical texts on known wreck sites**

The historical texts have been extensively photographed, running over an estimated 60,000 pages and the most commonly consulted have been printed and bound for ease of use. The relevant texts were consulted in the case of each wreck investigated.

As can be seen by comparing Figures 1.2 and 1.3 there are definite matches between the present archaeology and the 1919 List (for example *UC65* off Sussex). It was clear from early on that the “A” Known Sunk U-boats of the 1919 List closely matched the wrecks. From the historical

texts described earlier in this chapter a full picture of how they were destroyed could be built up. This could then be used to cross check the results of the diving surveys on these sites.

By diving and recording some of the known sites, such as *UC65* and *UB81* (see Figure 1.3) some experience and expertise was accumulated which proved useful when investigating the more problematic cases where the wreck was not represented in the historical text. These so called mystery sites became the ones given the highest priority, whether in fact they had been previously identified or not. This is because the divergence of the archaeological record and the 1919 List lies at the heart of this study.

### **Methodology using the historical text on mystery U-boat wreck sites**

When a wreck presented itself to be outside of the 1919 List of sinkings (NA ADM239/26); a methodology was developed which could be used to match the 291 existing ASW incidents (attacks on U-boats) in the Study Area assessed by ASD during WW1 to the wrecks. This was important because it mitigated the chances of an attack which actually destroyed a U-boat being overlooked.

The NID assessed attacks are bound in the same file as the 1919 List and cover the entire war. The approach taken was to compare all of these records against the extant archaeology to build a geospatial database in ArcGIS. As described earlier in this chapter the final plot also contains incidents from the 1918 explosion list. Initially all of the incidents which took place in the Study Area were entered into the Navmaster software package. This system has the benefit of having a chartpoint entry window which mitigates against data entry errors. The database was exported and converted in Excel and then imported into ArcGIS.

The positional data given in the original assessments fell into four distinct formats; a) latitude/longitude, b) range and bearing in degrees from a known point (either in miles or minutes), c) range and bearing given as degrees east/west of a defined line (for example 15 miles S. 45deg W. of Trevoise Head) or d) simply “off” a place (for example “Off Newhaven”). In the first three cases a position could be derived. In the last case the original assessments in NA ADM137/4142-4150 were checked for positional data and this was used if found. The 21 incidents which ended up not being able to be plotted with an actual position are listed in Appendix 1.5.



The initial results of this approach are shown in Figure 1.4 and are listed in Appendix 1.5. A total of 270 records were added to the database and they have been segmented into each of the four years (1915-1918) that they cover. Positional accuracy in the age of dead reckoning navigation notwithstanding, it can be seen that in most cases there are incidents which can be related to each wreck and subsequently evaluated, accepted as the cause of the U-boat's destruction, or discounted as irrelevant.

## **2.5: Methodology Employed During the Fieldwork to Record and Identify the U-Boat Wreck Sites**

The wreck sites were all recorded during the fieldwork on video using a housed Sony VX-1000 digital video camera and two arc lights. Dives varied in length depending on depth and conditions, but experience showed that most key identifying features could be recorded on a dive of around 20 minutes minimum. The author developed a methodology for diving and recording U-boat wrecks which has specific techniques that can be employed if the wreck turned out to be a U-boat from WW1.

When investigating a new site for the first time it was important to establish as quickly as possible the type of submarine being observed because then certain important features could be checked and the recording plan adapted accordingly. Flexibility was the keyword during dives, to ensure that time was spent recording features which gave the best chance of identification.

Unlike the U-boat wrecks of WW2 in the Study Area, which are of one specific class, the wrecks of WW1 are made of several distinct types which fall broadly into three categories:

- 1) U-boats, which tend to be the largest of the wrecks. This class of U-boat grew increasingly in size as the war wore on and was deployed mainly from German bases to operate in the shipping lanes in the Western Approaches. These can primarily be instantly recognised by their sheer size. There are few examples of this type of U-boat in the Study Area;
- 2) UB-boats, which were designed for coastal work, forming the largest category of WW1 U-boat losses in the Study Area. There are two very distinct types; the smaller UBII-Class initially ordered in 1915 and the larger UBIII-Class ordered from 1916 onwards. The UBIII was a successful and versatile design which in adapted form, became the Type VII of the WW2 era. As wrecks they are quite similar and it takes experience to tell them apart;

3) UC-boats were custom designed as minelayers with mine chutes fitted through the pressure hulls. Several examples exist in the Study Area. The chutes clearly differentiate them from other types and readily identify them as most likely German and from WW1;

For each dive on a WW1 era U-boat, the following were the key items which were sought and where present were recorded. They fall broadly into two categories, a) structure and design features and b) evidence of combat activity and damage while on patrol. The 10 main key features to examine and record were:

1) The number and distribution of the torpedo tubes. Torpedo tubes were fitted forward and aft in a number of combinations. They were of two types. The most common were fitted inside the U-boat and projected through the pressure hull at its terminations at either end. However, the UC-boats were fitted with external tubes mounted on top of the pressure hull. It was important to count the number of all tubes present and their configuration. For instance, one way of identifying a UBII-Class U-boat is the fact that the two forward tubes are mounted one over the other and they were not fitted with stern torpedo tubes. It should also be remembered that torpedo tubes have doors and it was useful to record whether they were opened or shut;

2) The number and distribution of the periscopes. The periscopes of WW1 era U-boats were usually fitted in a double housing projecting through the top of the conning tower. The types of lenses changed throughout the war. Occasionally other periscopes were fitted. For example, one way of confirming the identity of the early *U8* was by its third periscope, which rose out of the pressure hull in a fairwater (streamlining feature) in front of the conning tower;

3) The number and distribution and type of hatches. U-boats were fitted with loading hatches for the torpedoes. So where there are torpedo rooms, there will be torpedo loading hatches. These are generally angled slightly to the deck to allow for the torpedoes to be slipped inside the U-boat's hull. Very early designs incorporated a larger flattened hatch for torpedoes (as seen on *U8*), so it was important to record which type was present. Also present can be deck hatches and all types have a conning tower hatch. Noting whether the hatches were shut or opened can prove to be useful in regards to whether the crew attempted escape;

4) The presence of mine chutes fitted forward of the conning tower denotes the U-boat as a UC type. It was important to distinguish whether the "chutes" were actually mine chutes and not open hatches, which can look similar to the untrained eye. Mine chutes

are larger and penetrate vertically straight through the submarine. They can be difficult to spot, if the original grate across the top of the chute is in place and now sufficiently corroded to look like the deck;

5) The number, type and distribution of the deck guns. The use of the deck gun was the most efficient means of dispatching merchant ships because much ammunition could be carried, whereas only a few torpedoes. If no deck gun is present then it is likely it has been removed or been trawled off. However it is important to note that the earliest U-boats (such as *U8*) were not so fitted. Among the wrecks in the Study Area there are two types of deck gun commonly present, an 88mm short calibre weapon and a 105mm gun. It is important to record and note which type is present. This is because the either can be used to date the period in which the U-boat was sunk. 105mm guns were not commonly seen on the smaller U-boats until late in the war;

6) The presence of propellers and their condition. U-boat wrecks of WW1 consistently have propellers made of bronze. On the hub is usually a shipyard stamp which will give information about the U-boat, including its identity! Therefore the propellers represent the best (and sometimes only) chance of correctly establishing the identity of the U-boat. However to clean away the marine growth and a century's worth of concretion from a propeller whilst underwater on dives of limited duration is extremely difficult and not undertaken lightly. On first dives on new sites the key task is to note whether the propellers are present (sadly many have been cut off now), not buried in the seabed and can actually be cleaned;

7) The presence and amount of ready-use ammunition containers stored on deck. Deck guns were serviced by ammunition stored inside and outside the submarine pressure hull. Each round of the ammunition stored outside was cased in a pressure proof container. Noting how many (if any) are present can indicate if a U-boat was newly sailed or had been at work for a while, or in fact is one lost on tow or dumped after the war;

8) The presence of mines in the chutes. Similarly, the presence of mines shows that the UC-boat had not completed its mission;

9) Obvious signs of battle damage. Because of the relative ineffectiveness of the British depth-charge it is usually not possible to discern if this has been used to destroy the U-boat. Also the wrecks may have been depth-charged during WW2, as will be shown. However other distinct forms of damage can be seen. Torpedoed U-boats tend to be blown in half. Also mine damage can be equally catastrophic;

10) Odd or unusual features. While the British intelligence records of the design and construction of WW1 U-boats are good, as is much of the later published material, there is much which is not readily known. Any feature which seems unusual should be recorded. Instances where this has proven useful include the discovery that timber was used on the hydroplanes of some U-boats, as a filler and perhaps also to save weight.

The methodology of recording the key features described above provides for the best opportunity of comparing the results against whatever relevant historical text can be found. There is also a photographic record of some of the U-boats lost in the Study Area against which certain features can be compared. However the photographic record is not extensive and quite often the few photographs which exist are not especially helpful. The author has assembled an extensive collection of relevant photographs of the Study Area losses which have been gathered during research in the Uboot Archiv, Cuxhaven, Germany.

It should be noted that the more shallow depths of many of the WW1 U-boats in the Study Area makes them easy to reach. Consequently this means that some have regularly been dived by both recreational divers and salvors. It was regularly noticed that items have been removed from the wrecks. It is outside the scope of this thesis to make moral, legal or ethical judgements about the removal of items from the wrecks. However in the instances where those items that have been removed and could help in the identification of some of the WW1 U-boats (namely the propellers), the author considers them to be of high archaeological value and for that reason they will be referenced in the text, while tacitly recognising the sensitivities associated with artefact recovery from wrecks which in most cases are technically graves.

## **2.6: Specific Aims and Research Questions of the U-boat Wreck Surveys**

Due to the unique nature of the Dover area and its mine barrage, Part Two is segmented into a chapter on the Dover area and a chapter covering the rest of the Study Area. Historically correct (i.e. validated against the 1919 List) and mystery sites abound in both areas but the techniques which worked in either area are slightly different, due to the minefield and the geographic nature of the Dover Straits.

The importance of recording as many of the wrecks as possible, especially the mystery sites, is to derive their correct identities. The research presented in the following chapters will begin with examinations of sites which match the historical text. These were useful in testing the recording methodology and establishing which key identifying features could be found on the wrecks.

They will be used to introduce the archaeology of U-boat wrecks and the employment of the historical text to examine how WW1 era U-boats can be identified. The evaluation of the mystery sites will follow and, where the evidence allows, they will be given identities derived from what has been researched and what has been learned from inspecting the sites which are an exact match to the 1919 List.

### **Outcomes to be addressed**

So from fieldwork and research, each wreck will be identified with as much accuracy as is possible. Finally, Chapter Five will look at the results of both the research and the fieldwork collectively and compare it to the 1919 List to derive a measure of its accuracy. The key questions to be addressed will be:

- 1) Could key identifying features be found on the wrecks and be satisfactorily recorded in enough detail to help yield U-boat identities?
- 2) To what extent does the remaining archaeology allow for identities to be derived?
- 3) What does the archaeology of all of the U-boat wrecks as a whole collectively reveal?
- 4) Do the U-boat wrecks degrade in similar ways?
- 5) Was the database approach to reconciling ASW attacks to wreck sites successful in identifying any of the mystery sites?
- 6) How accurate was the ASD letter grading system in establishing the losses of non “A” Known Sunk sites?
- 7) Were any of the mystery sites represented by an ASD letter grade?
- 8) How many of the 37 listed losses in the 1919 List are actually represented as known wrecks?
- 9) How many are not and why?
- 10) What percentage of the real losses did the Allies actually know about in 1919?
- 11) What are the differences between 1919 and 2013 in our understanding of which weapons successfully destroyed U-boats?
- 12) What are the differences between 1919 and 2013 in our understanding of what approaches successfully detected U-boats at sea?
- 13) What impact will this study have on U-boat losses outside of the geographic Study Area?
- 14) How are the numbers of losses recorded in 1919 in the Study Area different from what we now know?
- 15) How many of the U-boats were being accurately tracked by Room 40? Did the DF and tracking procedures really mean that ASD knew where the U-boats were when at sea?

Answering these questions will allow for an accurate picture of the U-boat losses during WW1 in the Study Area to emerge. It will establish when the U-boats were sunk and correctly identified, and will provide explanations for when and how others were missed. Overall it is hoped that a far more accurate picture of events on a battlefield scale will lead to new understandings of the ways and means of successfully and unsuccessfully tracking and destroying the U-boats.

## **Chapter Three: The Dover Patrol and its U-Boat Wrecks**

### **3.1: Introduction: The Dover Patrol and the First U-boat War 1914-1918**

From a strategic standpoint the Dover area's proximity to the enemy's coast and its situation as the gateway between the Channel and the North Sea made it an area of special importance from very early in the war. The Dover Patrol was actually constituted as an independent command, responsible directly to the Admiralty in October 1914. Its first commander was Rear-Admiral Sir Horace Hood (Marder 1965, 5).

The passage of the U-boats from the fleet bases in Heligoland and Germany (and from 1916, the UC and UB-boats of the Flanders Flotilla) to the shipping lanes of the Channel, Irish Sea and Western Approaches naturally took them past Dover. Closing the Straits meant the U-boats had to make the 1,400 mile round trip via Scotland to reach the Irish Sea and even further to gain access to the Channel and its approaches. This took at least a week out of a patrol, significantly reducing the U-boat threat to the shipping lanes by reducing the time the U-boats could spend there (Marder 1965, 352).

Of key importance to the research in the area is the Dover mine barrage. It is because of this feature that the Dover wrecks have been segmented into their own specific chapter. All of the positional data gathered from the various sources cited in the text have been compiled into the broader GIS base map with underpins the research. A3 Foldout Map 1 accompanying the thesis shows the relationship between the main Dover Barrage of 1917-18 to all the related losses, wrecks and incidents and is a useful accompaniment to the text in this chapter where it should be used in conjunction with the text.

#### **A brief history of the Dover Barrages**

From the outset it should be noted that the Dover Patrol's responsibilities were various and many; of which denuding the passage of U-boats through the Straits was only one. Nevertheless as the war progressed it became an increasingly important function within its overall remit and it is the only aspect of the Dover Patrol's responsibilities to feature in this research. The process of barring the Straits of Dover to U-boats was to use routine patrolling mostly by drifters and other auxiliary craft, in conjunction with barrages of nets and mines.

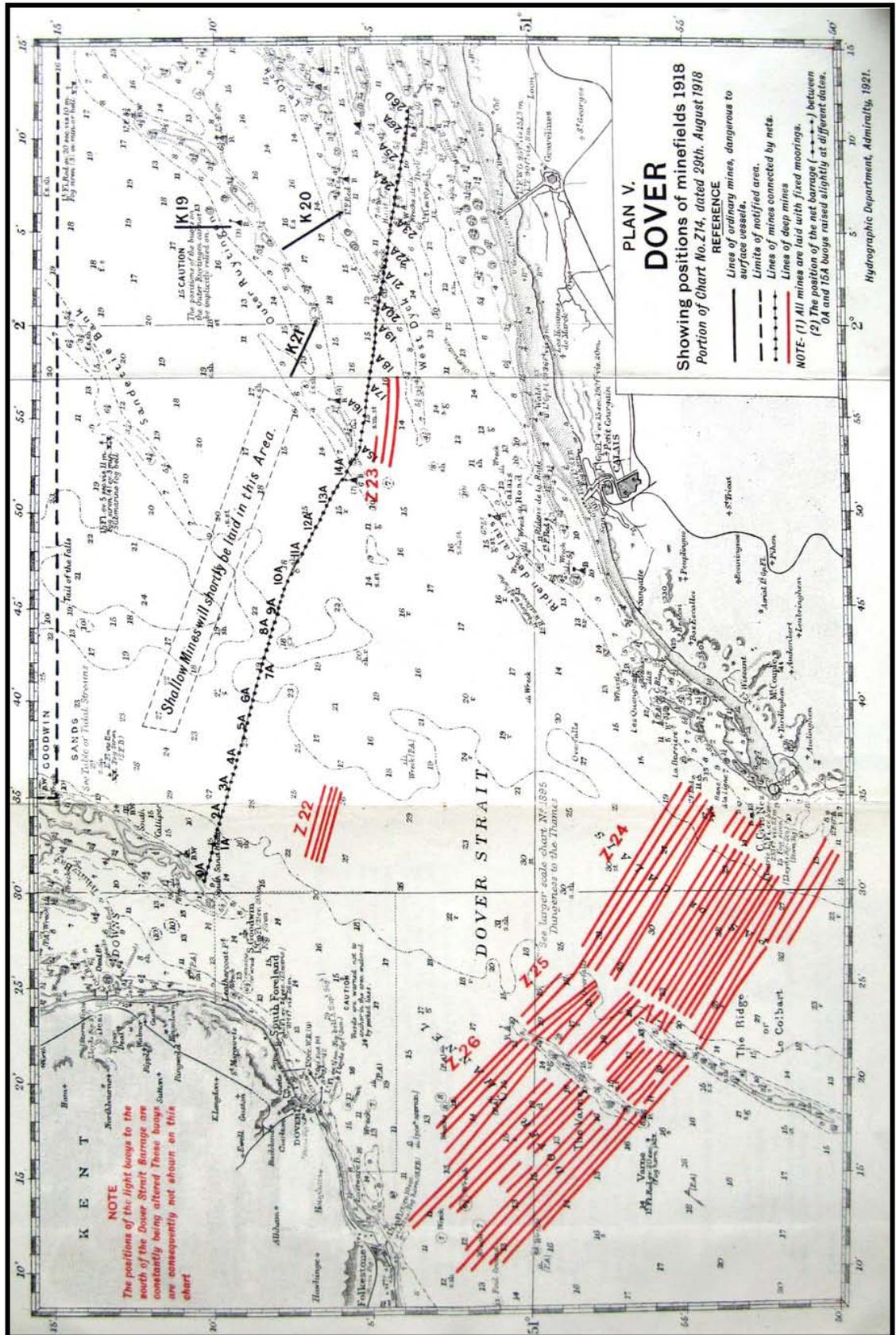
Minelaying took place along the Belgian coast, southern North Sea as well as the Straits, but only the Straits reside within the Study Area and concern us here. The Dover Staff Monograph (NA ADM186/613, 126) conveniently divides the development of the Dover Barrage into three distinct phases:

1) The 1915 Indicator net barrage, which was in effect a drifting fishing net designed to catch U-boats. 300ft sections attached between pairs of drifters formed a theoretical drifting obstacle to U-boats. If a U-boat snagged the nets, an indicator buoy would deploy, alerting ASW patrols to its presence. The drifter's only success came with the dubious association with the sinking of *U8* (see below). The perceived failure of this system led to Hood's removal and replacement in April 1915 by Vice-Admiral Reginald Bacon. In fact the nets did have a limiting effect on U-boat traffic through the Straits until around August 1915 (Beesly 1982, 96);

2) The 1916 mine net barrage (from September; completed in December) was a fixed line of indicator nets fitted with mines, backed up with a line of deep mines half a mile to the west which ran from the South Goodwins to Ruytingen (see Figure 1.5). The system was illuminated at night but only lightly patrolled. The entire system had to be relaid after May 1917 (because the deep mines drifted into the nets), was difficult to maintain, especially in winter (when due to adverse weather conditions damaging nets and dragging mines, it was considered only ever to be 25% efficient) and was largely perceived at the time as an abject failure (NA ADM186/613, 131). The Admiralty Channel Barrage Committee, established in November 1917, reported that the year 1917 saw 253 successful U-boat passages of the Straits (Marder 1969, 318). Nevertheless the mine nets remained in place until the Straits were finally closed to U-boats in 1918;

3) The 1917-18 deep mine barrage from Folkestone to Gris-Nez, which began to be laid in November 1917, finally shut the Straits to the U-boats in September of the following year. This deep mine barrage was made possible by the introduction of the reliable H2 mine in 1917 (Ministry of Defence BR1736(56)(1), 15). It featured lines of mines laid at depths from 30 to 100 feet right across the Straits. Its completion in August 1918 and the full implementation of ancillary illumination (from shore and also later from static barges) and intensive day and night patrolling (in order to force the U-boats to dive into the minefield) was overseen by Rear-Admiral Sir Roger Keyes, who took over command from Bacon in January 1918 (see Figure 1.5). Not shown on Figure 1.5 are the "indicator loop" controlled minefields off Gris-Nez and Folkestone which featured hydrophones and detonation controls on shore.

Another feature of the Keyes period was the use of divers from the Salvage Section of the Admiralty to extract intelligence material from the wrecks. By doing so they inevitably corroborated certain ASW incidents, with mixed results, as will be shown later.



The struggle to close the Straits took almost the entire length of the war to achieve. This was primarily because Britain had practically no experience with deep mining in open water in 1914 and it took three years of trial and error to develop a working, reliable deep mine and to settle on an effective doctrine for its use. However, by September 1918 this had been achieved and the lessons learned would later lead to the immediate closure of the Straits by mines in October 1939 (Cowie 1949, 122).

### 3.2: The U-Boat Wrecks Which Match the 1919 List

In total eighteen of the U-boat wrecks of WW1 lie in the Dover portion of the Study Area. Of these, eleven accurately match the 1919 List. The following section will examine these wrecks in chronological order and explore and assess both the archaeology and their relationship to the historical texts. The wrecks in this area span from 1915 to 1918 and their losses can be related to the various attempts to shut the Straits during the war, as discussed above. Figure 1.6 shows the distribution of all the wrecks, the salvaged “Known Sunk” *UC61* (described in Appendix 1.7 and featuring no further in this thesis) and the locations of the two main mine systems in the area. The wrecks matching the 1919 List are shown in black.

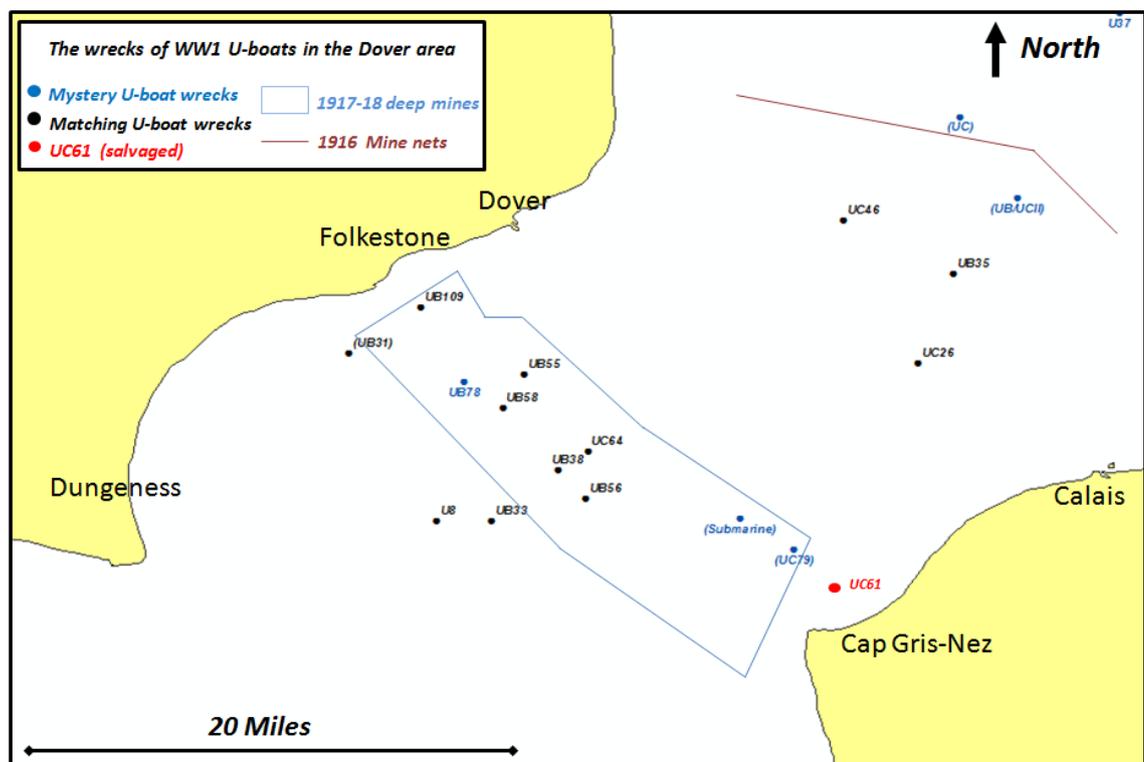


Figure 1.6. The mystery and matching U-boat wrecks in the Dover area and the location of the salvaged *UC61* (see Appendix 1.7) shown in relation to the minefields (Innes McCartney GIS base map).

## **The wreck of U8**

*Hydrographic Record No. 21102*

*Position: 50 56.033; 001 15.385E*

*Depth: 35m*

Destroyed on 4 March 1915, *U8* was only the eighth U-boat sunk during WW1 (Grant 2003, 136) and was the first to be sunk in the entire Study Area. It is the only example where the drifting indicator nets were credited with a role in the detection of a U-boat. Moreover, its destruction by the use of an ASW weapon known as the “Modified Sweep” is the only example, as far as the author’s research has found, of this weapon actually working in the field. In fact, so rare and fortuitous a success was the sinking of *U8* that it was not until February 1917 that another U-boat was sunk in the Study Area by the Dover Patrol.

*U8* left Ostend early on 4 March 1915 for a patrol in the English Channel. According to the commander, Klt. Alfred Stoss, the boat was detected on the surface by a destroyer near South Foreland as fog suddenly lifted around him. *U8* dived and attempted to navigate the Straits submerged. The periscope, when used gave away his position until finally, four hours after initially being spotted, an explosion forced him to surface the boat and scuttle as the crew evacuated and were taken prisoner (NHB Spindler Vol. 1, 26-29). From the Room 40 history sheet for *U8* (NA ADM137/3912), it is shown that it was not known to the British that this U-boat had left for patrol.

The British version of events as described by various witnesses in the Dover Packs (ADM 137/2096, 176-240) corroborates the visual sighting (by HMS *Viking*) and the detonation four hours later of an explosive sweep by HMS *Ghurkha* which brought *U8* to the surface. Revealingly, Rear Admiral Hood stated in his report that he could not prove the nets were involved in the sinking but wished to pay the drifters the customary £500 reward to keep them motivated in the face of the “apparent want of success” of the drifter fleet.

As the official historian noted (Corbett 1929, 276) this was a great success to the Dover Patrol but no deterrent at all to the Germans. In the hope of making it so, Stoss and his crew were ordered by the Admiralty to be treated as criminals and to be charged (and then presumably hanged) as pirates. Immediate German reprisals on British POW officers soon reversed this policy for the rest of the war.

In fact after several incidents with nets, the Germans abandoned the Straits passage in April 1915 (NHB Spindler Vol. 2, 78-79). The arrival in theatre of the smaller UB and UC boats at this time led to the formation of the Flanders Flotilla. But it was not until the UCII and UBII Classes arrived a year later that a more aggressive attitude to the Straits passage began to become routine. The UB-boats had actually started passing the Straits from February 1916,

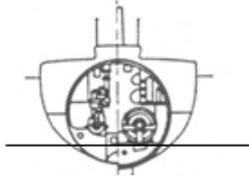
starting with *UB18* (Gibson & Prendergast 1931, 84). However, the larger “U”s of the Germany-based fleet stayed out of the Straits until the end of 1916 (Halpern 1994, 296-7).

The wreck of *U8* is a rare example of an early U-boat. It is by that measure, one of the most archaeologically important submarine wrecks in this thesis. The key features of the wreck are shown in Figure 1.7. *U8* was the last of a batch of three U-boats (*U5-U8*) ordered from the Germania yard, Kiel in 1908. All U-boats up to *U19* were fitted with paraffin engines, due in part to the problems Krupp experienced with the development of diesel propulsion (Weir 1992, 108). Nevertheless this batch of U-boats represented the most powerful submarines in the world at that time (Rössler 1989, 23), although by the standards of 1915 it was on its way to obsolescence. This was primarily because of its limited carrying capacity of six torpedoes and its less than state of the art engines.

According to the Hydrographic Office database (record No. 21102) the wreck was located by survey in 1977. It has long been known to sports divers (McCartney 2003, 149). The author first surveyed the wreck on 10 April 2007 and has visited it in subsequent years. There has never been any doubt about its identity. Figure 1.7 describes its key features:

- Image A: This is a glass forward looking viewing window in the conning tower, a feature of WW1-era U-boats. The riveted hulls limited diving depth to a British intelligence estimate of 60m (NA ADM186/497, 37), so the provision of small glass windows was probably not on their own, the limiting factor to diving depth;
- Image B: Like all the U-boats in this thesis, the anchor is stowed externally on the starboard side of the bows;
- Image C: *U8* was fitted with three periscopes. The image shows two in the double stand on the top of the conning tower. A third, thinner scope was fitted in the fairwater, just forward of the conning tower. Later U-boats generally only had the two periscopes on the tower;
- Images D & E: One of the more unique features of the very early U-boats is the absence of a torpedo loading hatch; a hatch angled to the deck to allow for ease of torpedo loading. Instead they had oversized hatches which once opened could be partially removed to gain access to the hull. They are seen here, shut on the wreck. This means that all of the crew made their escapes through the conning tower hatch;

**Name: U8 Posn: 50 56.033;001 15.385E Depth: 35m**  
**Date of Loss: 4 March 1915 How Sunk: Explosive Sweep**  
**Date of Survey: 10 April 2007**



Wreck is upright

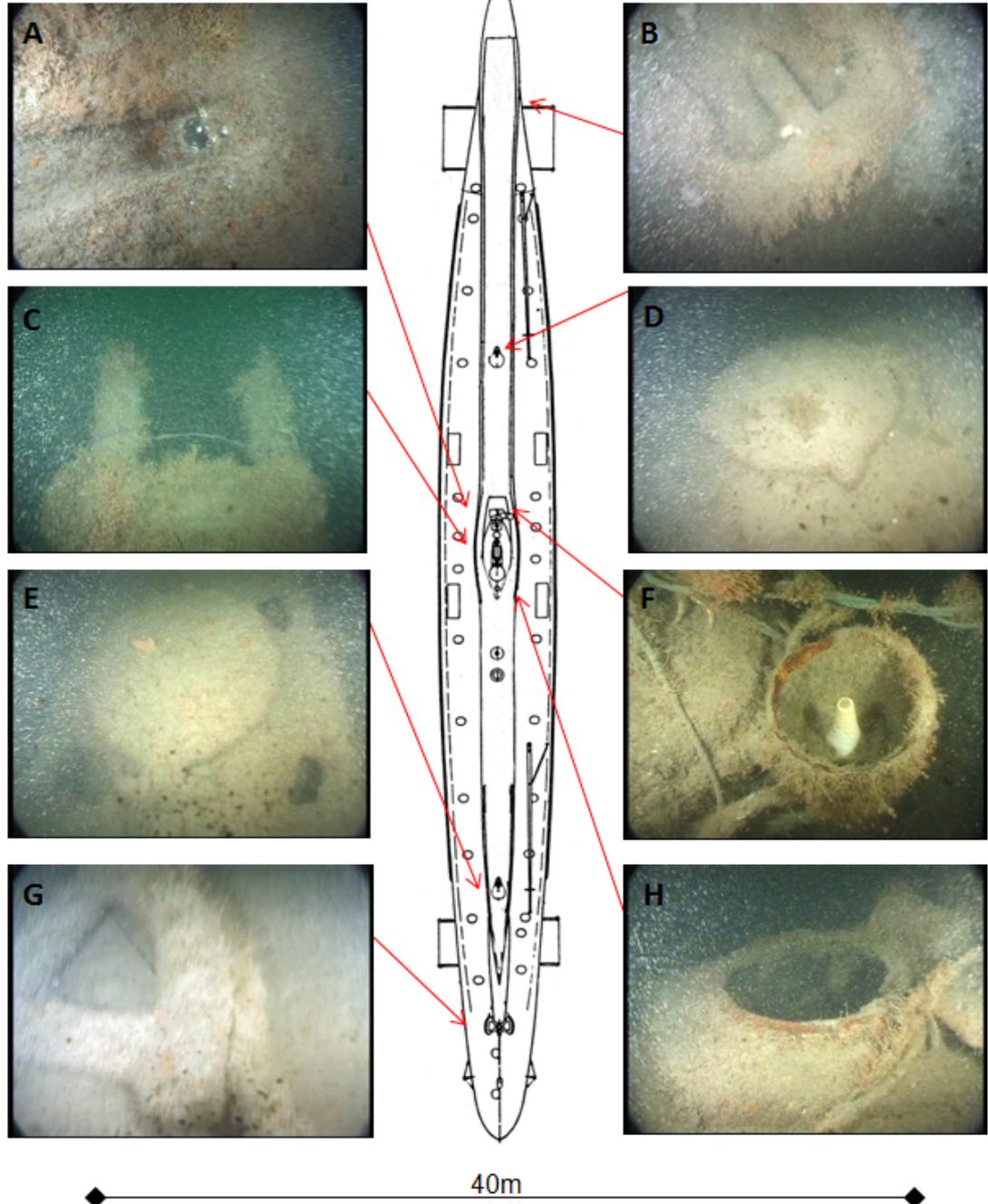


Figure 1.7. Diagram of the wreck of U8 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 23).

- Image F: This conical-shaped insulator forms part of the redundant communications system on the boat. It was connected to the jumping wires which ran fore and aft of the conning tower and could be used as an auxiliary aerial. On the schematic it can be seen that *U8* (all WW1 era U-boats had similar) was also fitted with two collapsible communications masts which were connected by a wire at the top when elevated. This conical feature appears to be part of a different or redundant system using the jumping wires instead of the radio masts;
- Image G: Along with some of the larger U-boats, *U8* was fitted with a rudder above, as well as below the hull at the stern. The steering system lay on the aft deck and can be seen on the wreck today, although the rudder has rotted away;
- Image H: The opened conning tower hatch shows where the crew escaped. The hatch cover itself has fallen off.

Due to the nature of its destruction, *U8* was listed as “A” Known Sunk and there was never any doubt about where it was situated. The position given in the 1919 List (ADM 239/26) matches the location of the wreck. According to Grant (2003, 42-3) no attempt was made to salvage the wreck, because the intelligence material had been thrown overboard by the evacuating crew. Archaeologically there is no evidence that a forced entrance has been made on the wreck.

### **The wreck of *UC46***

*Hydrographic Record No. 13626*      *Position: 51 06.860; 001 37.150E*      *Depth: 41m*

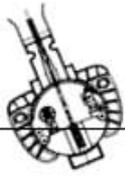
*UC46* of the Flanders Flotilla had left for patrol in the English Channel on 25 January 1917 and was destroyed while attempting to cross the South Goodwins to Ruytingen mine net barrage on 8 February, on its return passage (Bendert 2001, 136). For the British, the destruction of this U-boat was never in doubt. It was seen by the destroyer HMS *Liberty* whilst surfacing in bright moonlight and was peremptorily rammed at high speed. The bows became deeply embedded in the submarine, arresting its 24 knot speed. The U-boat was still awash (attempting to dive) when HMS *Liberty* hit it just forward of the conning tower, causing much damage to her stem and under plates (NA ADM 137/2097, 529-531). While no survivors were seen, the attack was considered to have been an “A” Known Sunk from the outset and is listed as such in the 1919 List (NA ADM 239/26). The Room 40 history sheet for *UC46* reveals that this was a chance encounter because nothing was known of this U-boat’s movements (NA ADM137/3918).

The location of the wreck (which was reported to the author by local diver Dave Batchelor as being *UC46*) was listed in the Hydrographic office database (Record No. 13626) as a torpedo boat (now corrected after being reported as *UC46* by the author). The orientation of the wreck shows that it is pointing in the direction of the mine nets it would have been surfacing in order to traverse. The author surveyed this site on 24 April 2011 and as Figure 1.8 clearly

demonstrates, the wreck is that of a WW1 UCII-Class minelayer U-boat, with all of its key features being totally consistent with it being *UC46*. The main features of interest on the wreck are shown in Figure 1.8 as:

- Image A: This shows a mine in the bottom of chute two. The other chutes are netted, but appeared empty, but the author was able to drop the video camera into this chute and see a mine in the bottom. Each chute would have carried three mines when full. They were released through the bottom of the submarine. *UC46* clearly laid mines on its last patrol and this mine probably failed to release. Its presence still on board may even have been unknown to the crew;
- Image B: The top of mine chute four showing that the chutes were open at the top and covered with a grate which has now rotted away. Some of the large trawl net covering much of the starboard side of the wreck (shown in green on the schematic) can also be seen;
- Image C: The breech of a smaller type 88mm deck gun with one recoil cylinder, surrounded by the trawl net. *UC46* was known to be fitted with an 88m gun 30 calibre gun (Gröner 1991, 31) (see Chapter Five);
- Image D: Under the net at the base of the gun are several spent 88mm shell cases. In the author's experience it is common to find used shell cases loosely stowed on deck on WW1 era U-boats. The photographic record attests to the unloading of spent ammunition which was presumably refilled. As *UC46* was returning from patrol, during which it is credited with sinking several vessels (Bendert 2001, 136), it would be expected to find used ammunition on board. Along with the mines it is an encouraging sign that the wreck is *UC46*, which was known to be returning from patrol when sunk;
- Image E: The pressure hull portion of the conning tower with the hatch shut. The outer skin has rotted away as happens in most cases. The shut hatch is as would be expected for a U-boat which was seen to be submerging;
- Image F: More interestingly, the engine room hatch is open, revealing the inside of the submarine to be filled with sand. Assuming because there were no survivors, escape was not attempted, the only two explanations for why this hatch would be open are that it was forced open by the pressure build-up as the boat flooded, or that the hatch has sprung open as the lock mechanism corroded.;
- Image G: The stern torpedo tube is now partially buried in the seabed. The wreck has settled deep into a scour which has buried the port side propeller;

Name: UC46 Posn: 51 06.860;01 37.150E Depth: 41m  
Date of Loss: 8 February 1917 How Sunk: Rammed  
Date of Survey: 24 April 2011



Wreck leans 15 deg to port

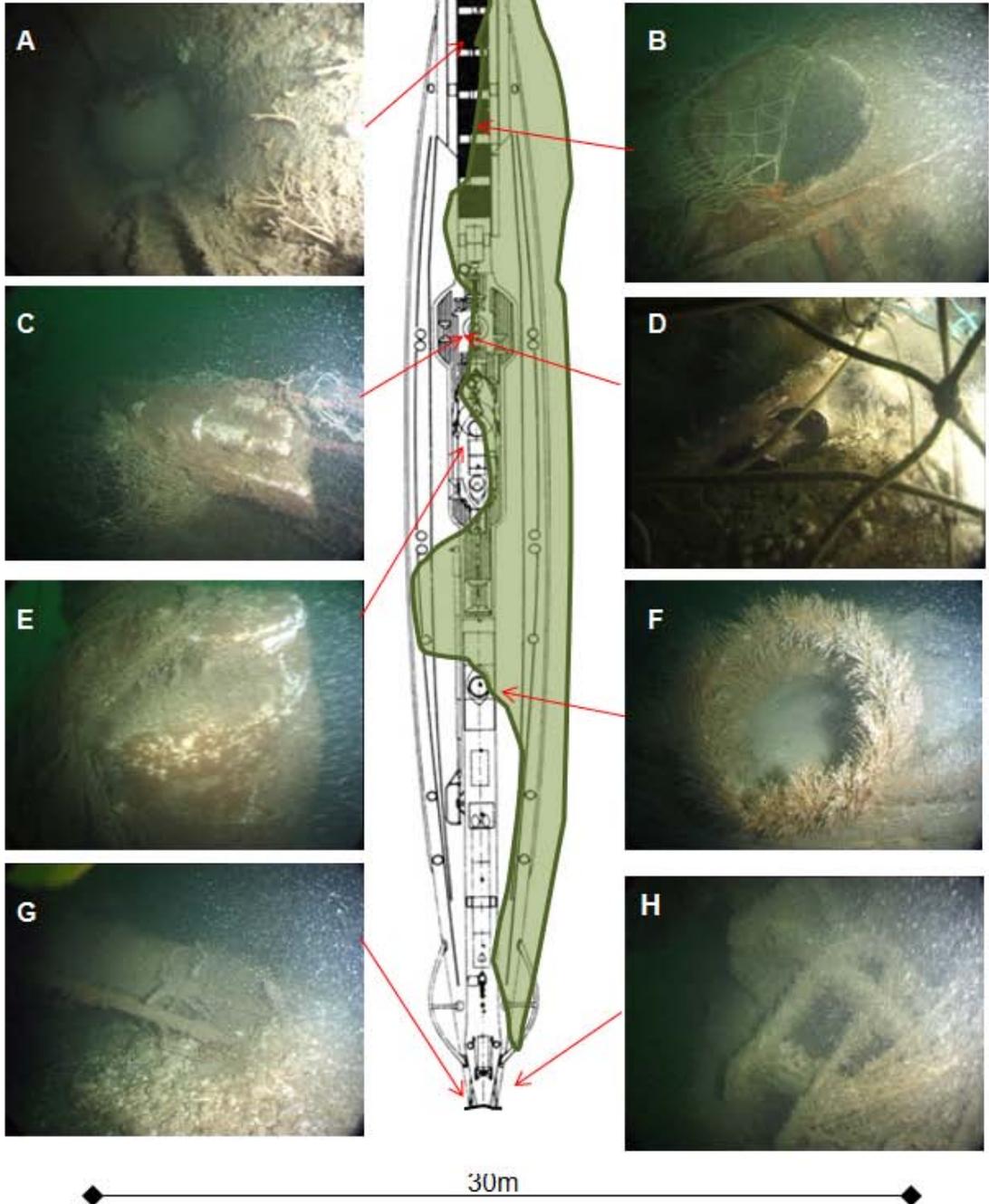


Figure 1.8. Diagram of the wreck of UC46 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 52).

- Image H: The frames of the rudder can be seen in this image. The author's experience of other wrecks and by inspecting the museum exhibit of *UI* in Munich is that the fins of the U-boats of this period appear to have been made of a steel frame filled with timber and covered in a light metal. They generally seem to corrode in this way.

The position given in HMS *Liberty's* report (NA ADM 137/2097, 529-530) plots within 1.4 nautical miles of the wreck of *UC46*. This is a reasonable margin of error in the era of dead reckoning navigation at night. Archaeologically there is no reason to doubt that the wreck is in fact *UC46*. However, absolute proof by means of identifying marks, has not, to the author's knowledge, been made. As a stated policy of the thesis, it is not a role of this research to revise the 1919 List without sufficient evidence to prove it wrong. There is currently no reason to assume that the wreck is anything other than *UC46*. A clinching piece of evidence would have been the presence of a ramming hole, but it would have been on the starboard side and that portion of the wreck is very heavily netted and little can be seen.

### **The wreck of *UC26***

*Hydrographic Record No. 13473*

*Position: 51 01.740; 01 41.217E*

*Depth: 34m*

*UC26* was returning from patrol on the night of 9 May 1917 when it was spotted on the surface by the British destroyer HMS *Milne*, which rammed and sank the U-boat. Two survivors were plucked from the sea, revealing the identity of the victim (Messimer 2002, 262-3). Unsurprisingly, the U-boat was listed as "A" Known Sunk in the 1919 List (NA ADM 239/26). This was a chance encounter because the Room 40 history sheet for this boat shows that nothing known of its movements after January 1917 (NA ADM137/3918).

According to the Hydrographic database (Record No. 13473), the wreck was first shown on French charts in 1976. The wreck is on the French side of the Channel. In 2003 it was reported that the wreck had been identified as *UC26* by Jeff Coulon (a diver from Belgium).

However a description given by Alain Richard (2007, 143) describes the propeller as being stamped "U26". This must be an error, because the diameter of the propellers on the large *U26* would have been 1.6m (as opposed to 1.3m on a UCII-Class U-boat) and would not have fitted correctly. The propeller was from the Vulcan yard where *UC26* was built (Gröner 1991, 6). *U26* was built in the Germania yard (Gröner 1991, 31-32) and sunk in the Baltic (Messimer 2002, 45). Under the circumstances it seems fair to assume that the propeller was more likely to be for *UC26*. A ramming hole in the side of the wreck adds further evidence that the wreck must be *UC26*.

The wreck lies 1.5 nautical miles from the reported sinking position, which as in the case of *UC46*, is an acceptable difference allowing for dead reckoning navigation at night. Therefore from the data available, this wreck is considered to accord with the 1919 List.

### **The wreck of *UB56***

*Hydrographic Record No. 21121*

*Position: 50 56.810; 01 23.100E*

*Depth: 37m*

*UB56* left Zeebrugge on 19 December 1917 for its final patrol. Later that evening a powerful explosion was noticed by the destroyer HMS *Gypsy*. Shortly thereafter, a survivor was pulled from the sea. He shortly expired, but his clothing identified him as Machinist Mate Max Bleek of the crew of *UB56* (Messimer 2002, 177). Room 40 did not know this U-boat had left for patrol (NA ADM137/3916).

Although this case seems certain, ASD only graded the loss of *UB56* as “B” Probably Sunk. Moreover the loss of *UB56* does not appear in the submarine losses return until the March quarterly was published. Equally ambiguous is the position listed in the return, which plots 1.8 nautical miles from the wreck. In a buoyed area, this seems like a wide margin of error. It should be noted that the position in the final 1919 List has a typographic error in it placing the wreck at 01 28E. This is clearly a mistake (there were not even any lines of mines at that location in 1917) and has been ignored. Similar happened in the case of *UB109* (see below) (NA ADM 239/26).

Equally interesting is the fact that the action itself is not listed in the indices of ASW actions by the Dover Patrol up to the end of 1917, but had to be extracted from the files for another incident on the same night (NA ADM 137/2096). A review of the HMS *Gypsy*'s actual report of the incident reveals that the survivor was picked up from a position (fixed while the ship's boat was being hauled in) which plots only 0.8 of a nautical mile from the wreck site. This is a more credible position.

On a purely historical note, this incident is almost certainly the “*U59*” Keyes refers to in his autobiography as being the event which “sealed Admiral Bacon's fate” and led to his dismissal (Keyes 1935, 143). On the day before, a reluctant Bacon had been ordered to illuminate and night patrol the deep minefield. He had feared to do so because of the risk of bringing on a German destroyer attack on the drifters, and through this the Germans would become aware of the entire minefield and would seek to clear it. The immediate success of the illumination and patrolling (seen as forcing U-boats to dive into the mines) was enough to see Bacon sacked (Marder 1969, 321-322). It is possible that the change in command at this time led to the short term bureaucratic muddle which saw the reports misfiled.

The wreck of *UB56* appears to be the one investigated by the Admiralty Salvage Section divers under the command of Cmdr. Damant on 12 August 1918. The position of the wreck had been buoyed earlier in the day after an attack by HMS *P49* on an oil slick (NA ADM 137/2097, 648-9). Undoubtedly looking for fresh intelligence, the divers reported surveying the site and finding a “UB” “which appeared to have been sunk several months” with “no means of identifying her” The stern was blown in and full of sand and considered “too old” for their purposes (NA ADM 116/1581).

The site of the wreck has been visited by divers from Britain and France in recent years. It is in an area of shifting sands and similar to *UB33*, (see below) covers and uncovers. By reports from Dave Batchelor (McCartney 2003, 152) and Alain Richard (2010, 170), when uncovered it is well preserved. From the descriptions given and from Richard’s drawing (see Figure 1.9), the wreck is clearly of the UBIII-Class, featuring the correct hatch distribution and periscopes. The gun is of the 88mm type which would be correct for a 1917 loss and is exactly the same as the one seen on *UB81* (see Chapter Four). Some UBIIIs are known to have been upgraded to 105mm guns in 1918 (e.g. see the wreck of *UB72* in Chapter Four).

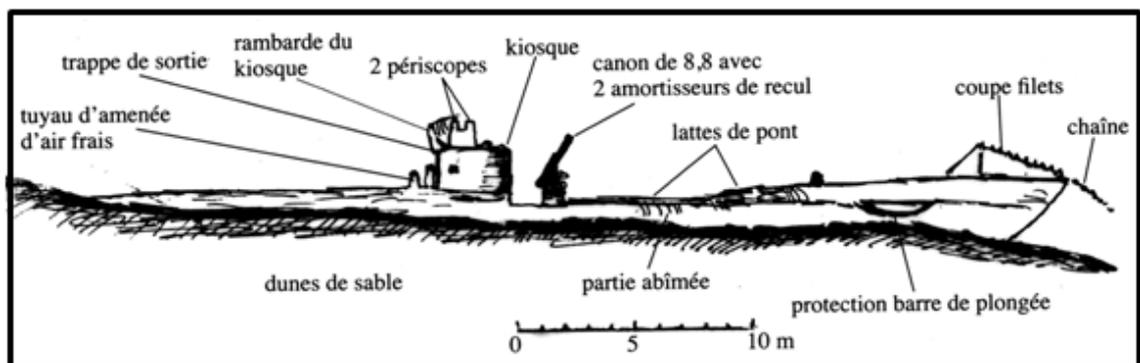


Figure 1.9. Sketch of the wreck of *UB56* showing its key features as seen by Alain Richard (Richard & Lugiez 2010, 169).

Reports that a propeller from this site has been raised (Armstrong & Young 2006, 326) are wrong. The propeller in question came from the mystery site of *UB78* (see below). In fact all reports state that the wreck is filled with sand, the stern is always buried and the propellers are not visible. This corresponds with the 1918 diving report that the stern was the damaged portion of the wreck. While there is no hard proof that this is definitely the wreck of *UB56*, all evidence supports that conclusion.

### The wreck of *UB35*

Hydrographic Record No. 13575

Position: 51 04.963;01 43.153E

Depth: 35m

According to the Dover Packs record, the destroyer HMS *Leven* was on the mail run to Dunkirk on the morning of 26 January 1918 when it sighted a periscope and made a depth-charge attack

on a U-boat as it dived. The result was bodies seen in the water and one survivor being picked up who subsequently died. His personal effects were sent to the Admiralty, but it is not stated whether they were enough to positively identify the submarine (NA ADM 137/2097, 17-19).

The first quarter submarine losses return lists the incident as “A” Known Sunk and states that it was *UB35* that was destroyed, so ASD had some reason to believe this was the case (NA ADM 239/26). The reason why they were so certain is that during its last patrol, two of *UB35*’s crew had been left aboard a ship which was being set with explosives when *UB35* had to dive to escape an attack. They became prisoners of war and provided a list of the crew. A hat and a letter sent to London by HMS *Leven* matched this list (NA ADM 137/3060, C.B. 01414 O.X.O.). This is almost certainly the reason why the Room 40 history sheet for this boat contains details of its movements up to 25 January (NA ADM137/3916). However there is no evidence that HMS *Leven* was on the lookout for it as it made its return.

The wreck of *UB35* was identified from the propeller markings by the Belgian diver Jef Coulon. I am grateful to the historian Michael Lowrey for this information received in conversation on 21 April 2011. In positional terms the wreck lies 2.5 nautical miles from the position given by HMS *Leven* which is an acceptable margin of error for a passage by dead reckoning at that time. This recent identification corrects the assertion made by Termote (1999, 123-6) that *UB35* had been found off the Belgian coast. This position being many miles from HMS *Leven*’s reported attack was problematic, especially so in light of a positive identity of the sunk U-boat made in 1918.

### **The wreck of *UB38***

*Hydrographic Record No. 21138*      *Position: 50 57.850; 001 23.630E*      *Depth: 30m*

*UB38* of the Flanders Flotilla left Zeebrugge for the English Channel on 29 January 1918 on its final patrol. By 8 February it was returning to base when it exchanged recognition signals with the outbound *UB33* to the west of the Folkestone-Gris Nez mine barrage. Ten hours later the U-boat was spotted in the minefield by the drifter HMS *Gowan II* and forced to dive (Messimer 2002, 160). The inevitable explosions followed and the U-boat, known to the British as having not returned to base, from the testament of survivors of *UB55* (see below) (NA ADM137/3916) was listed as “A” Known Sunk in June and later in the 1919 List (NA ADM239/26). From the Room 40 history sheet of this boat it is known that nothing was known of this boat’s movements on its final patrol (NA ADM137/3916).

As will be shown, this version of events seems correct, but the official listing in 1919 is problematic because the position listed (50 56; 01 25E) is actually 2.8 nautical miles to the southeast of where the wreck is actually situated (see above for position). In the well-buoyed

and confined area of the barrage, such a margin of error needs to be questioned. Within the Dover Packs (NA ADM 137/2097, 58-82) the reports of 8 February show that the drifter *Ocean Roamer* appeared on the scene shortly after the explosion and located a large patch of oil streaming to the surface for several hours and buoyed the position as 50 58.45;01 22E. This position is 0.9 of a nautical mile north the wreck and therefore is more credible. The official position first appears in the record in June 1918 and seems to be roughly where the U-boat was sighted before it dived. Moreover there are no incidents in the area of the wreck prior to 8 February (which could account for the oil patch seen that night). *UB56* (see below) was sunk nearby, but it was a UBIII-Class and clearly not this wreck, which is UBII-Class.

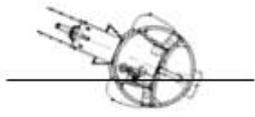
This difference in positions may seem trivial at first sight, but it is not. As is shown in Figure 1.6 and A3 Foldout Map 1, there is a very high concentration of U-boat wrecks in the area. As will be shown, this led to errors in the attributions of events to wrecks and sinkings both during the war and by later historians. An example of how this can occur is shown by the fact that this wreck was actually located and dived by Admiralty Salvage Section divers on 16 July 1918 who reported a small UB which from its condition had been sunk for some months (NA ADM116/1581).

The Admiralty divers were detailed primarily to gather intelligence from freshly sunk U-boats. They were led to the site because it was buoyed as being the location of a sinking reported to have occurred not on 8 February, but 27 June! On that date an explosion in the minefield led to the patch of oil previously buoyed in February being buoyed again and being attributed by the Dover Command to the loss of another U-boat (NA ADM137/2097, 568-71).

This sequence of events is revealing, because it shows that neither ASD (compiling the 1919 List) nor the Dover Patrol (responsible for the efficiency of the barrage) were in any way attempting to scientifically catalogue ASW incidents. If they had been, then certainly the Dover Command should have recognised that the oil patch of 27 June was in fact from an older wreck. Even more problematic is the fact that even after the wreck was located by divers it was not attributed to any specific ASW event when the final 1919 List was compiled.

Even with the benefit of hindsight it seems incredible that when presented with the physical evidence of the presence of a U-boat wreck, this fact was not in some way assimilated into the Dover Patrol records or the official list of U-boats sunk during the war. As stated above, *Gowan II* had been credited with the sinking of *UB38* one month before the wreck was found by divers. Although the divers did not specifically identify the wreck, it seems no association was made between the two events, nor even attempted. As we shall see, this is not the only case where the presence of a known U-boat wreck has been ignored or possibly simply overlooked when compiling the 1919 List.

**Name: UB38 Posn: 50 57.850; 001 21.630E Depth: 30m**  
**Date of Loss: 8 February 1918 How Sunk: Mined**  
**Date of Survey: 10 April 2007**



Wreck leans 75 deg to port

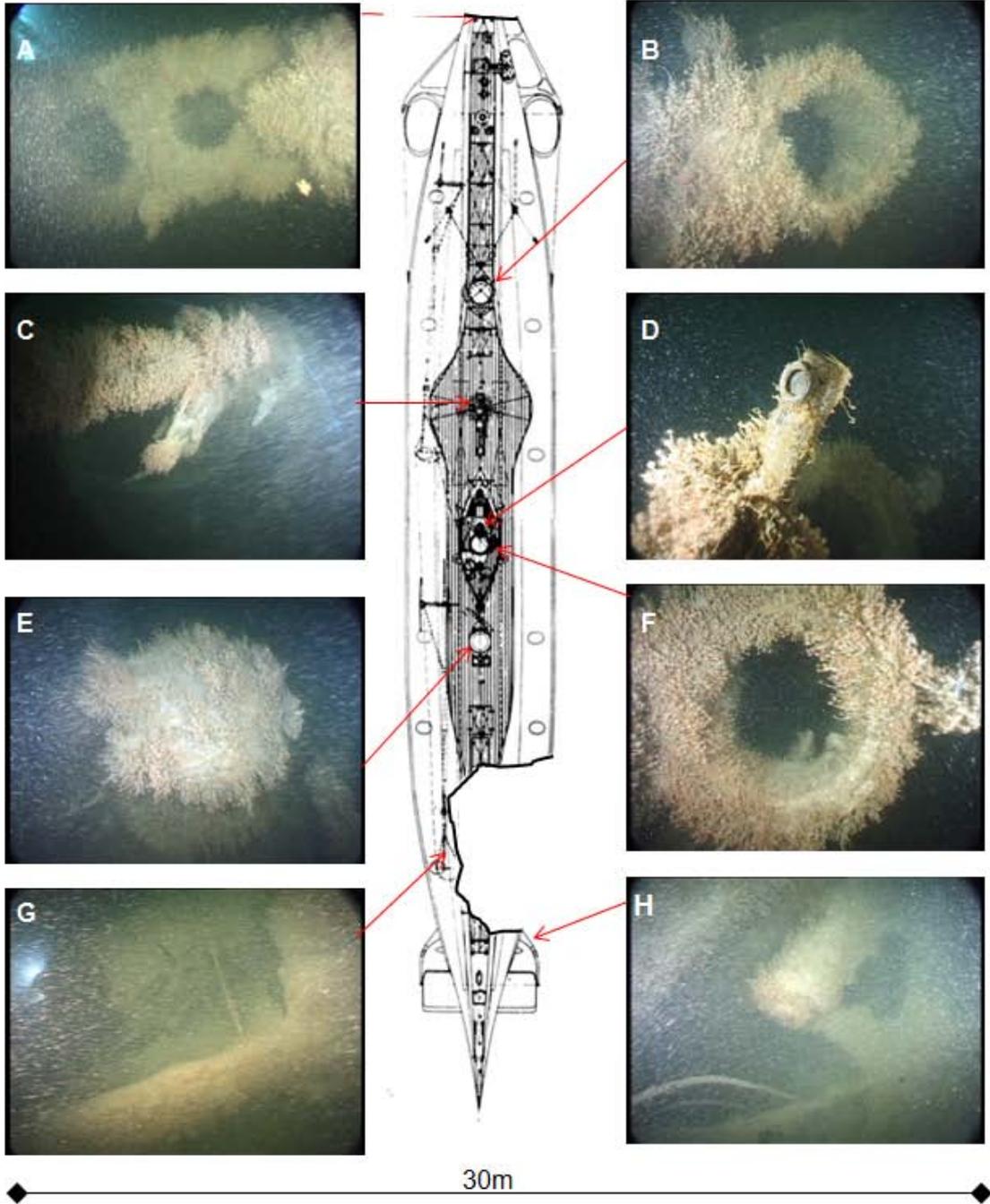


Figure 1.10. Diagram of the wreck of UB38 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 51).

In archaeological terms and in the light of the above, questions about the possible identity of the wreck itself need to be asked. Although the obvious positional question about the 2.8 mile gap between the location of the wreck and the position in the 1919 List seems to have been satisfactorily addressed, the question remains as to whether the wreck is actually *UB38*. The site was surveyed by the author in its original sinking position on 10 April 2007. It should be noted that the wreck was moved mechanically in 2009 to 50 57.891; 001 23.118E (Hydrographic Record No. 21138) because it was potentially obstructing a shipping channel. The key features present are shown in Figure 1.10 and described below:

- Image A: One of the key identifying features of the UBII-Class is the fact that the two forward torpedo tubes were internal to the boat and fitted one over the other. This image shows both tubes as they are today. The bows have rotted away and the outer torpedo doors are not present. The extreme angle at which the U-boat lies can also be seen in the image;
- Image B: The forward hatch is where one would expect to find it. In this instance it is open, probably as a result of corrosion, or possibly it was forced open by the mine explosion;
- Image C: The smaller type deck gun with one recoil cylinder is present on the wreck (see Chapter Five);
- Image D: The UBII-Class was fitted with one periscope which came out through the top of the conning tower (one further aft). This can be seen in this image, once the author had scraped away the marine growth;
- Image E: Unlike the forward hatch, the engine room hatch is shut;
- Image F: The conning tower hatch is open and the cover has fallen away. This was most likely caused by corrosion;
- Image G: This shows the area of damage caused by the mine explosion, seen from the deck looking downwards (if the submarine was upright). It shows that the blast almost completely removed the stern as the divers light is actually under where the keel would be;
- Image H: The starboard prop shaft has been cut to remove the propeller.

As Figure 1.10 shows, the wreck is of the UBII-Class, which matches design of *UB38*. However nothing present on the site can allow for certain identification to be made. However the diver and charter boat skipper Dave Batchelor, who recovered a propeller from this wreck allowed the author to photograph it in 2011.

Figure 1.11 shows the shipyard stamp on the propeller's hub. Strangely, this particular example does not have the specific U-boat number stamped onto it. A possible interpretation is that it

must be a spare, similar to the case of *UB65* (See Chapter Four). However the “B&V” letters at the top show that it was made by Blohm & Voss; as was *UB38* (Gröner 1991, 24). This in itself is not confirmation, but in the absence of any certain evidence to directly challenge the 1919 List and the stated policy of not changing the historical text without proof, this site can be considered to be *UB38*.

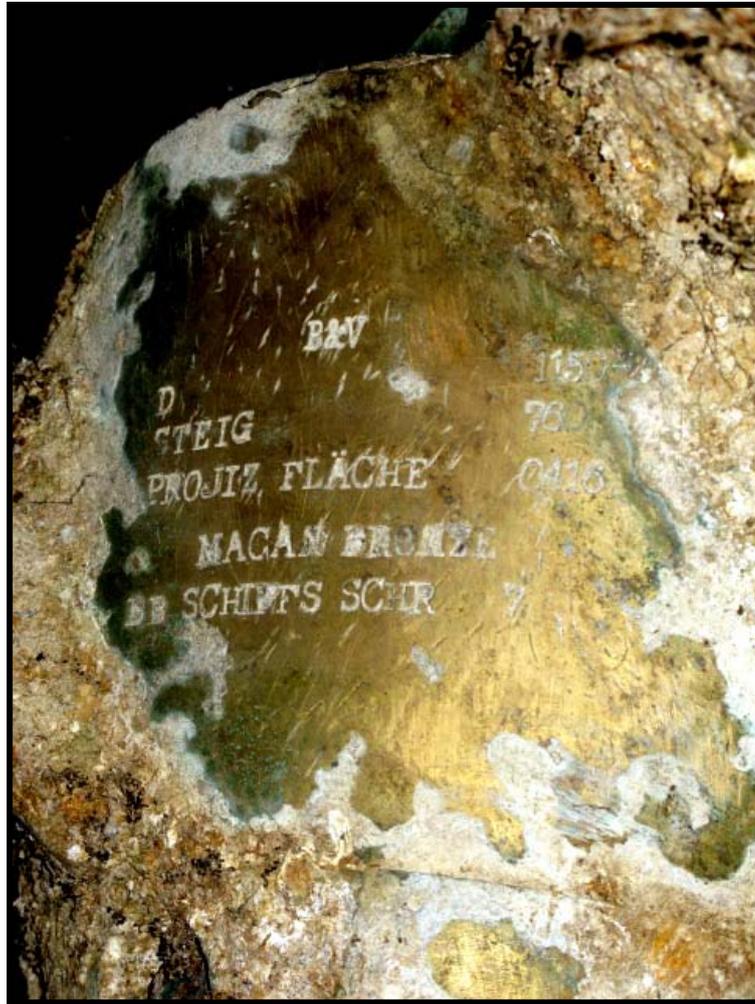


Figure 1.11. The manufacturers' marks on the hub of a propeller recovered from the wreck of *UB38*, clearly denoting the B&V mark of the Blohm & Voss shipyard, Hamburg (Innes McCartney).

### **The wreck of *UB58***

Hydrographic Record No. 13407

Position: 51 00.110;001 18.890E

Depth: 25m

*UB58* left Zeebrugge on 9 March 1918 to operate in the English Channel. It was destroyed early in the morning of the following day in the Folkestone-Gris Nez mine barrage. HMS *P24*, patrolling the area heard three explosions and later recovered items of wreckage from an oil patch. These identified that it was *UB58* that had been the victim (Messimer 2002, 179). Its presence at sea was unknown to Room 40 (NA ADM137/3916).

In fact, according to the 1919 List (NA ADM239/26) the battery log and details of trials of *UB58* were recovered. In the Dover Packs it is recorded that, HMS *P24* was able to identify that it was *UB58* that was destroyed by the items it picked up at the time (ADM 137/1097, 115). The other drifters present that night all reported hearing the explosion in roughly a position further north. The fact that it was foggy meant that visual navigation would have been difficult and nothing was actually seen. However, as in the case of *UB38* above, there is the question as to why the position given in the 1919 List (50 58N; 01 14E) is actually 3.6 nautical miles southwest of the wreck? In fact the position does not even plot in the mined area and it should therefore have been obvious to ASD and the Dover Patrol that something was not right, see A3 Foldout Map 1.

Similar to the case of *UB38*, the wreck of *UB58* was actually located (but not identified) by Admiralty Salvage Section divers. This occurred on 9 August 1918, although the reasons why this location was investigated are not stated in the Salvage Section Records (NA ADM 116/1581). However the reason was most likely that oil had periodically been noticed to have been rising from this position for several months. Underwater explosions are listed in the 1919 List on 22 April, 25 May and 23 June (NA ADM239/26). In each case oil was reported to have been rising from positions which plot within half a mile of where the wreck of *UB58* is situated.

The April, May and June explosions seen in the 1919 List are also recorded in the Dover Packs (respectively NA ADM 137/2097, 415 and 562). Inevitably this was probably the reason why divers checked the site in August. However, what the divers claimed to have found has now been proved to be only half correct. Cmdr. Damant of the Admiralty Salvage Section worked extensively in the Dover area from May to September 1918, examining U-boat wrecks to find cases where intelligence papers could be found.

As mentioned above, on 9 August his divers investigated the site of the wreck of *UB58* (as known now) and actually claimed to have found two U-boat wrecks. One was “very old” and “blown to pieces”, the other fresher with the bows blown off. The fresher case was investigated further for two days, during which time divers penetrated the bows, right up to the control room bulkhead. By which time it was realised that the mattresses and clothing on the fragments of rotting bodies “fell to pieces when handled” which meant that the possibility of finding intelligence papers was remote. On 12 August the fresher site too was abandoned after the 105mm deck gun had been recovered from it (NA ADM 116/1581).

The presence of two U-boat wrecks at this position (now completely disproven, see below) led to Rear Admiral Keyes to pay out prize fees for the destruction of two U-boats seemingly attributed to it. On a memo of 25 August he paid £1000 each for the destruction of a U-boat on 22 April (oil was actually reported on that day in two positions, one of which was where *UB55*

had just sunk, see below) and for the destruction of another on 19 March. It will be recalled that *UB58* actually sunk on 10 March.

This memo is particularly revealing, because it is clear from it and from Keyes correspondence with Captain Bird of the Drifter Patrol (NA ADM137/2097, 530) that the finding of submarine wrecks was to be matched with explosions for which there was no explanation. Presumably, because *UB58* was already Known Sunk it either did not occur to Keyes or Bird that the wreck could be *UB58*, or more likely they were more interested in showing off how effective the patrol was being (and distributing award cash) than actually working toward a truer picture of events.

Such an allegation is not unsubstantiated. In the Dover Pack files for the 22 April is a report by Lt. Cromartie RNR of drifter *E.E.S*, dated 24 April which states he was present during the 10 March explosion and that the oil patch (where the wreck of *UB58* lies) had actually been present since 10 March. Cryptically, an unidentifiable handwritten note states “I think this must refer to *UB58* sunk 10 March”. This was clearly overlooked or ignored (NA ADM 137/2097, 268-272).

Equally revealing is the fact that the 19 March explosion is not mentioned in the ASD 1919 List and the 22 April explosion at this position is unattributed, even though Keyes had paid out for the destruction of two U-boats. ASD must have estimated that only one U-boat was present on the night of 22 April, and none was present on 19 March. This is simply one case in many where ASD and the local commanders differed about the number and circumstances of the destruction of U-boats. But in this instance, it is clear that local knowledge from the drifter commander on the spot strongly suspected where *UB58* was actually sunk and when.

The Hydrographic Office record (No. 13407) for the site of the wreck of *UB58* shows that it was located by survey in 1978. It was subsequently identified by the diver and charter boat skipper Dave Batchelor, by the shipyard stamp of *UB58* being on each propeller (McCartney 2003, 151-2). The site was surveyed by the author on 25 April 2011 and the main features of it are shown in Figure 1.12:

- Image A: The lead plates of one *UB58*'s batteries inside the blasted forward section of the wreck. From the damage that has been done to this portion of the U-boat it seems that the mine detonation set off the torpedoes, completely destroying the front end of the submarine. Outward bound, *UB58* would have been fully armed. There are scattered hull portions on the seabed in all directions around the bows;
- Image B: The reinforced section on the pressure hull forward of the conning tower, which is where the deck gun was mounted. As described above, the 105mm gun was removed by the Admiralty divers on 12 August 1918 and therefore its absence on the wreck helps confirm that this is the second, fresher wreck they dived;

**Name: UB58 Posn: 51 00.110;001 18.890E Depth: 25m**  
**Date of Loss: 9 March 1918 How Sunken: Mined**  
**Date of Survey: 25 April 2011**



Wreck leans 5 degrees to starboard

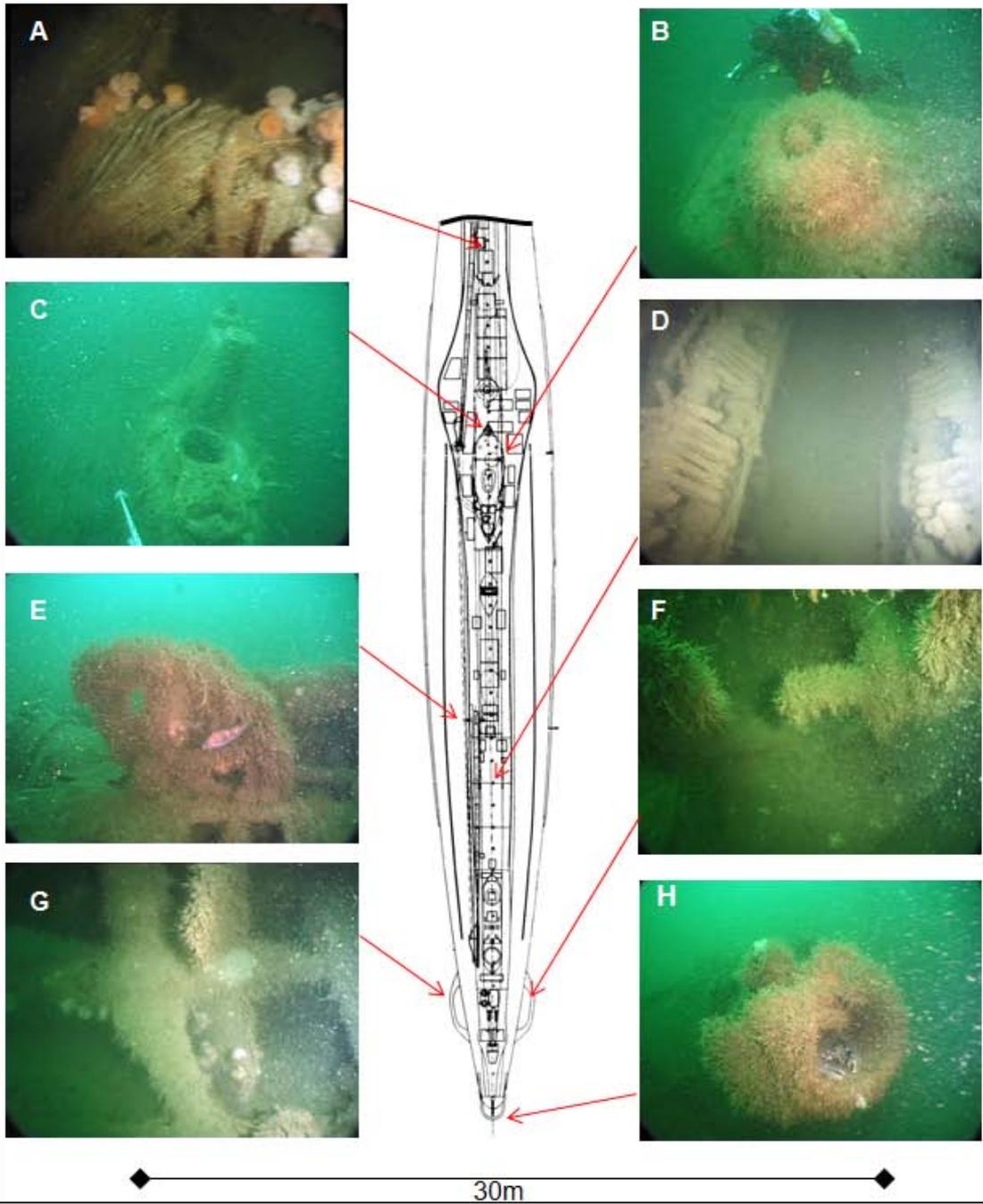


Figure 1.12. Diagram of the wreck of UB58 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

- Image C: The conning tower as seen when ascending from the wreck. The double periscope stand is of the type fitted to the UBIII-Class of U-boat. The conning tower hatch is fully opened, probably as a result of the explosion forward;
- Image D: The aft torpedo hatch is open, which allowed the author to lower a camera inside and film the two diesel engines in that compartment;
- Image E: The elevator for the aft radio mast. Like most U-boats of the period the UBIII-Class had two masts with a wire which ran between them. The other mast was on the foredeck;
- Image F: The prop shaft on the starboard side which shows that the propeller has been removed;
- Image G: The propeller on the port side is still in place. The pale area on the boss has just been scraped by the author to show where the shipyard stamp is usually located. There was not enough time nor a reason to clean this propeller further, as it has already yielded the U-boat's identity;
- Image H: The single stern tube of the U-boat is still in place, although a lobster now lives where the external door would have been situated.

By diving the site both the author and many other divers have looked for and not found any remains of a further U-boat at this position. Neither have the Admiralty surveys located nearby wreckage. If such a wreck existed it would have been located by divers or geophysics by now. The only explanation for what Cmdr. Damant's divers claimed they saw is the extensive blasted remains of the bows of *UB58* scattered over the seabed. Although the Admiralty divers did not identify the wreck, its presence at this position was known to the Dover Patrol (as shown above) and has now been confirmed by divers.

### **The wreck of *UB33***

*Hydrographic Record No. 58842*

*Position: 50 56.030; 01 17.980E*

*Depth: 22m*

On 11 April 1918, *UB33* was returning early from a patrol in the Channel when it dived ahead of the Folkestone to Gris Nez minefield and detonated a mine, destroying the boat (Messimer 2002, 155). The explosion was witnessed by the drifter *Ocean Roamer* and the oil patch was buoyed (NA ADM239/26). Room 40 did not know that this U-boat was operational at the time (NA ADM137/3916).

The identity of this wreck site has not been in doubt, because from an intelligence perspective, it was one of the most productive U-boat wrecks visited by Admiralty Salvage Section divers. Cmdr. Damant's dive team began a run of U-boat wreck dives in the Dover area with the salvage of much material from *UB33* from 21 to 30 May 1918. Initially recovery of the entire submarine was planned, but this made way instead for the use of explosives (NA

ADM116/1634). According to the Dover Patrol weekly diary, on 29 May a steel box full of code and signal books was recovered (NA ADM 137/2100).

The wreck has been located by divers and is reported to be partially buried, with the conning tower removed (McCartney 2003, 150). This is in accordance with the Hydrographic Office record (No. 58842) for the site, which states that it is difficult to locate with anything but a magnetometer. The most intriguing question about this site is the fact that it does not actually sit within the confines of the minefield, but a little to the south. Mines were known to shift in the field drift and break away (Keyes 1935, 143).

### **The wreck of *UB55***

*Hydrographic Record No. 13460*

*Position: 51 01.316; 01 19.769E*

*Depth: 30m*

According to the survivor's interrogation report, *UB55* departed Zeebrugge on the evening of 21 April 1918 for its final patrol. This had not been detected by Room 40 (NA ADM137/3916). Keeping on the surface until it approached the minefield, it dived at around 4am on 22 April and was adjusting trim when the sound of cables scraping along the hull was heard. This was shortly followed by an explosion which rapidly flooded the after section of the boat and forced it to the bottom. As the water rose at least 20 of the crew escaped from the forward and conning tower hatches (NA ADM 137/3060, CB. 01437 O.X.O.).

The 1919 List reports that the explosion was heard by the drifter *Shipmates*, which by searching uptide found and buoyed a large patch of oil. As day broke drifters picked up six survivors and a corpse. There was no doubt a U-boat was destroyed and the survivors confirmed it was *UB55*. The position given in the 1919 List plots very close (0.3 of a nautical mile) from the position of the wreck (NA ADM 239/26). The position buoyed was in this case exactly where *UB55* had been sunk, consequently the 1919 List correctly represents where the loss occurred. However it will be recalled from the case of *UB58* above that the site of that wreck was also buoyed on the night *UB55* sunk and later attributed to the destruction of another U-boat on the same night that *UB55* sunk.

On 14 August, two days after Cmdr. Damant's dive team had raised the 105mm gun from *UB58*, they found and dived the wreck of *UB55*. They were present on site, interspersed with periods of bad weather until the 22 August. During this time the divers affected entrance into the wreck by blowing out the forward hatch with explosives. The resultant explosion detonated the torpedoes which made the job of entering the submarine a little easier. On 20 August the 88mm deck gun was recovered and the following day "some material" was sent to London. By that time, the wreck had become considered "too old" to offer further valuable material and operations reverted to searching for another wreck (ADM 116/1581).

Name: UB55 Posn: 51 01.316; 01 19.769E Depth: 30m  
 Date of Loss: 22 April 1918 How Sunk: Mined  
 Date of Survey: 23 April 2011



Wreck leans 10 degrees to starboard

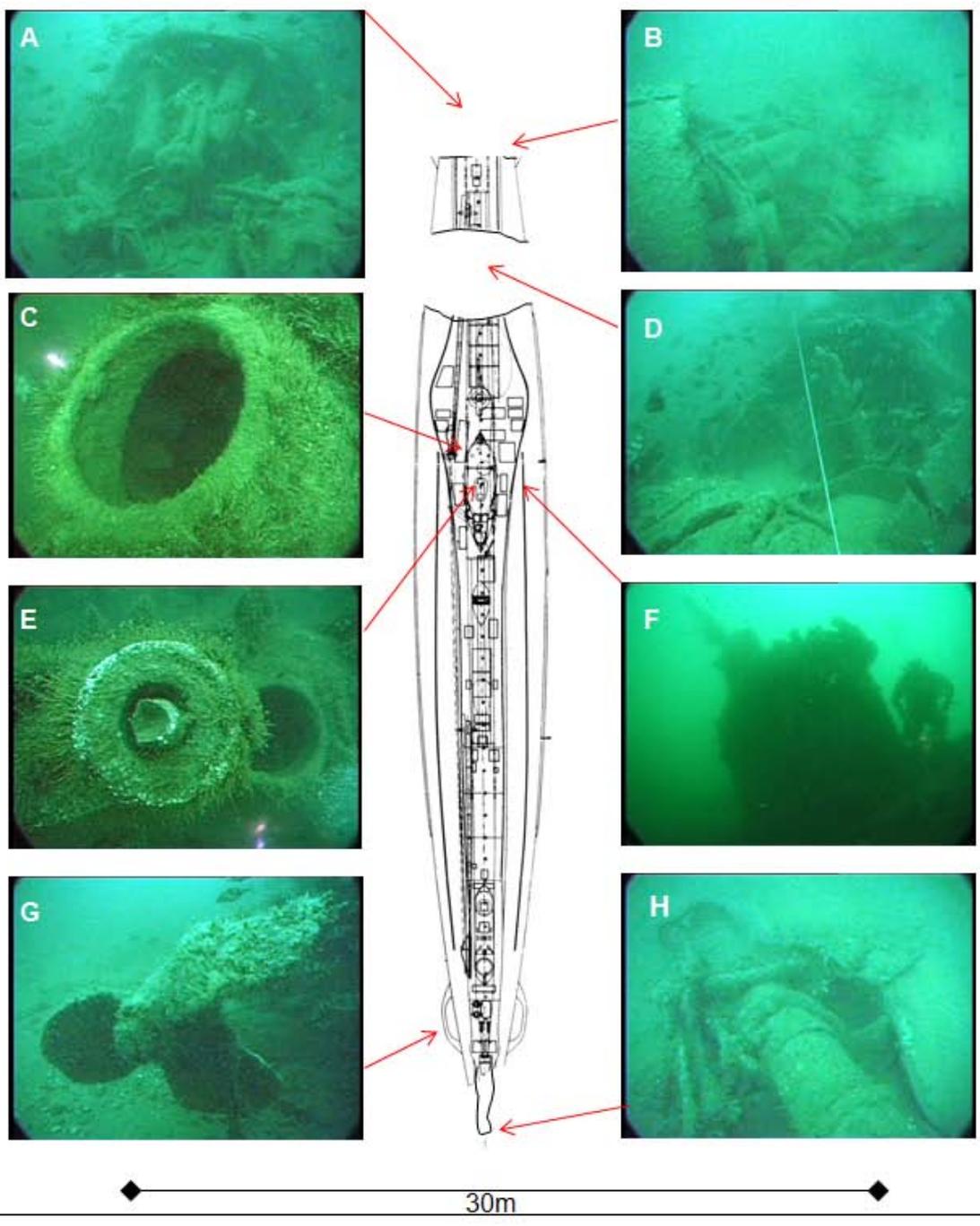


Figure 1.13. Diagram of the wreck of UB55 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

It is not known what the “material” sent to London consisted of, but in any event, the identity of wreck was known because of the survivors. In Keyes’ memo of 25 August referred to in the case of *UB58* above, it is acknowledged that *UB55* had been found and in this case the Dover Patrol record of U-boats sunk matches that of the 1919 List (NA ADM 239/16). According to the Hydrographic Office record (No. 13460) the wreck was located by Admiralty survey in 1977.

The site was surveyed by the author on 23 April 2011. The results of which are shown in Figure 1.13 and are described below:

- Image A: The downline is in the remains of the bows. This shot shows the remains of the torpedo tubes, looking towards the wreck. The bows were destroyed by the use of explosives in 1918;
- Image B: The same area shot from the side, showing that the damage has completely destroyed the torpedo tubes external of the pressure hull, which can be seen on the left;
- Image C: The open conning tower hatch from which the commander escaped;
- Image D: This shows the area of the foredeck that was destroyed by the use of explosives to widen the torpedo hatch. The area of damage suggests the divers somewhat overestimated the amount to use;
- Image E: The explosion was probably responsible for shattering the lens in the wide angle periscope seen from above in this shot;
- Image F: The conning tower, with diver on the right for scale, is intact. This shot shows that one periscope is extended, and that the wreck is close to upright;
- Image G: The port side periscope is clear of the seabed. The damage to it may have been caused by the mine, which is known to have detonated aft. No obvious mine damage was visible during the survey and was probably underneath and now buried in the seabed;
- Image H: The stern tube has collapsed and the outer door rests in the seabed. This shot is taken from above.

The results of the survey dive strongly suggest that the wreck must be *UB55*. The damage to the site matches what the Admiralty divers did to it in 1918. Also the absence of the deck gun accords with the description that it was removed.

### **The Wreck of *UC64***

*Hydrographic Record No. 21141*

*Position: 50 58.533; 01 23.212E*

*Depth: 40m*

According to the 1919 List, in the early morning of 20 June 1918, the drifter *Ocean Roamer* was patrolling the minefield when an explosion led it to a nearby large oil patch. Depth-charges were

dropped and oil continued to rise freely into the next morning (NA ADM 239/26). *Ocean Roamer* dropped a buoy where oil was rising and the position plots almost were the wreck of *UC64* lies.

The buoy had gone by the time Cmdr. Damant came to dive the wreck. It took two days to locate, but on 5 July the wreck was found. The site was worked periodically until 2 August. During this time it was found that it was crushed internally and entrance to the control room was made by cutting off the conning tower then using explosives to blast the hull open. Diving was abandoned because the submarine was considered too crushed to offer much intelligence material, although “identification material was recovered” (NA ADM 116/1581). The identity of this boat may have been surprising to Room 40 because they knew nothing of its movements after 18 June 1918 (NA ADM 137/3918).

According to the Hydrographic Office database (Record No. 21141) the wreck site was located in 1985. The site is reported by diver and charter boat skipper Dave Batchelor to be open centrally, with the conning tower dragged off (McCartney, 2003, 153). This is in accordance with the historical record.

### **The wreck of *UB109***

*Hydrographic Record No. 13533*

*Position: 51 03.733; 01 14.133E*

*Depth: 22m*

In the early morning of 29 August 1918, *UB109* was destroyed attempting to pass inside the Folkestone gate area (a shipping control area outside Folkestone for controlling shipping entering and leaving the Channel) whilst on the return leg of its last patrol. The area was covered by an indicator loop controlled minefield. A line of mines was detonated from shore and *UB109* was destroyed. Eight survivors were picked by a patrol boat sent to the scene, revealing the identity of the victim (Messimer 2002, 220-221). The identity of this U-boat would have come as no surprise to Room 40 who had tracked its movements up the Channel as it returned from patrol during 24 to 27 August and must have known it was homeward bound (NA ADM137/3917). This was the last U-boat loss in the Kent area which can be matched to the 1919 List.

The indicator loop controlled minefield was a series of lines of mines, each surrounded by an electrical loop which could detect the passage of metal hulls over it. A detector system ashore allowed the vessel to be tracked and the relevant line of mines detonated as the vessel passed over them (Cowie 1949, 103-105). The Folkestone loops were installed in June 1918. Only two U-boats were known by the British to be destroyed by their use, which became extensive around harbours and headlands during WW1. The other case came the following month, when *UB116*

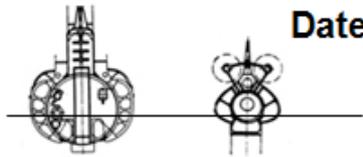
was blown up outside Scapa Flow (Leith 1920a, 362-4). Within sight of shore both cases were easily located and successfully examined by Admiralty Salvage Section divers.

The divers were actually on the site within a few hours. Cmdr. Damant's reports show that the stern was blown away 25 feet aft of the conning tower and allowed access to the interior. They cleared the wreck of bodies and by early September had stripped it of a "very large quantity of valuable material", after which they focused on recovering ammunition (NA ADM116/1581), possibly because little intelligence was known about the 105mm gun, hence the recovery of the ones from *UB58*, *UB55* (see above) and *UB74* (see next chapter) Alongside *UB33* (see above) this wreck yielded the greatest haul of intelligence data recovered in the Kent area. But as Grant (2003, 82) has observed, its role by this point of the war was mainly an historical one.

According to the Hydrographic Office database (Record No. 13533) the wreck of *UB109* was located in 1978. Both propellers have been recovered. One read *UB109*, the other *UB104* (McCartney 2003, 155). The *UB104* propeller does not affect the identity of the wreck which is not in doubt, but it does show the propellers do not always match the actual identity of the U-boat and in service propellers can get switched as part of the overhauls process. The site was surveyed by the author on 26 April 2011 and the results are shown in Figure 1.14:

- Image A: The extreme point of the bow has lost its tip, which lies on the seabed and, from the overall condition of the wreck can only have fallen of recently;
- Image B: The forward torpedo hatch is open. It is known that some of the survivors escaped through this hatch (Messimer 2002, 220). Looking down, it can be seen that the entire submarine at this point is full of sand;
- Image C: The gun is in place on the foredeck and looks, from the single recoil cylinder above the barrel to be a of the late 88mm type (see Chapter Five);
- Image D: The attack periscope is partially extended and remarkably still intact. It may well have been being used to negotiate the Straits at the time the U-boat was sunk;
- Image E: With the aft section blown off in front of the engine room, it is possible to swim over the crushed bottom of the hull and into the officer's space beyond, following the path taken by the Admiralty divers in 1918. The image shows the doorway into this area. The engines are upright on the seabed and have been drawn in on the diagram;

**Name: UB109 Posn: 51 03.733; 01 14.133E Depth: 22m**  
**Date of Loss: 29 August 1918 How Sunk: Mined**  
**Date of Survey: 26 April 2011**



Forward section upright. Stern section upside down

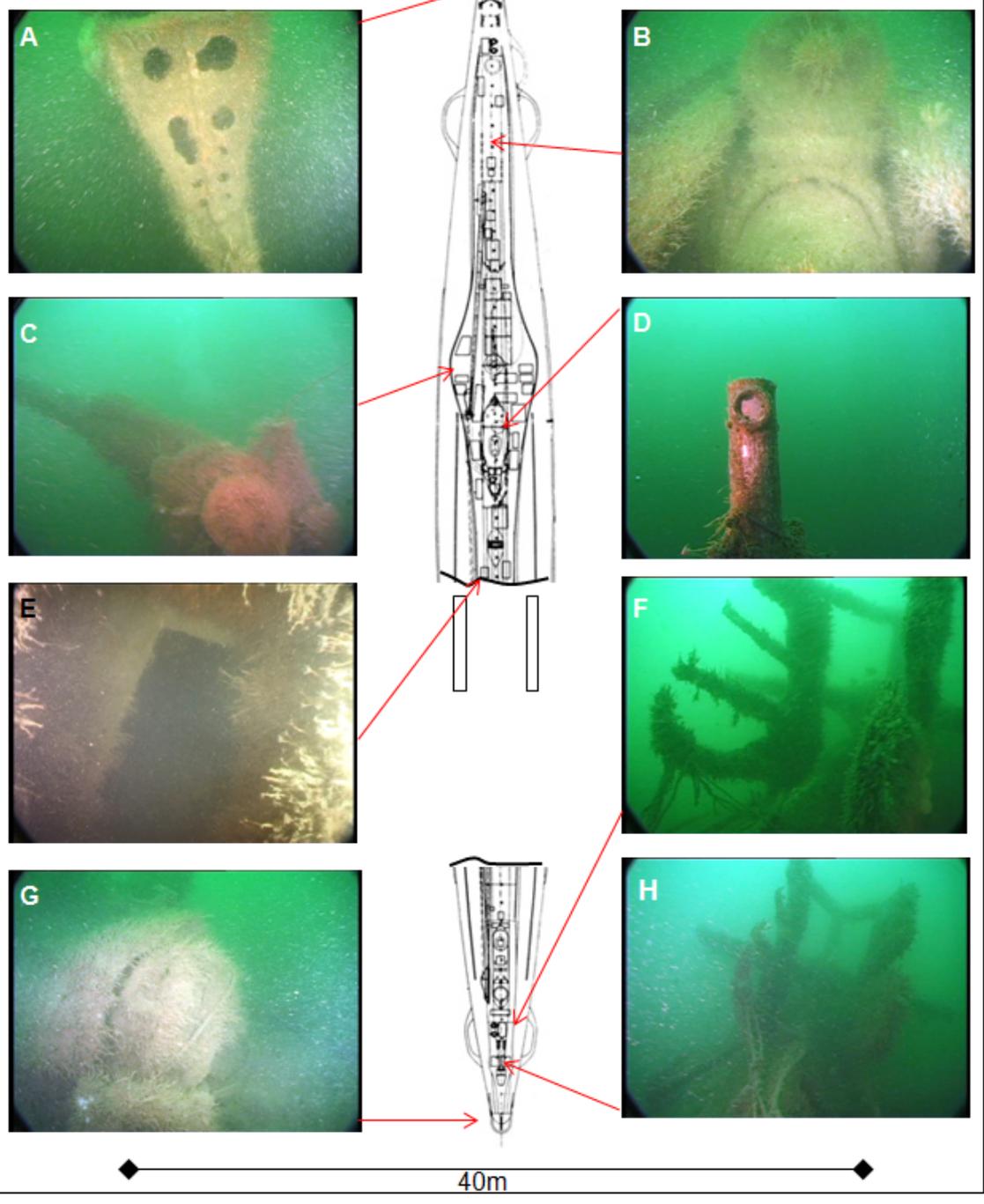
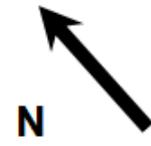


Figure 1.14. Diagram of the wreck of UB109 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

- Image F: The stern portion of the wreck lies at least 10 metres away from the forward part. Remarkably it is completely upside down. The force of the explosion which blew it off have to have been very heavy and very close to have blown it off completely, so that it capsized in a different way from the forward section. The image shows the twin rudders of the U-boat, now facing upwards. As with similar hydroplanes and rudders of WW1 era U-boats, only the steel frame remains. The thinner skin and wood liner have rotted away;
- Image G: The aft torpedo door is shut, showing that the mine did not detonate the tube;
- Image H: Taken from abaft the wreck, the upside down nature of the stern section can be seen in this image, with both rudders and hydroplanes still in position. Neither propellers are present.

The wreck is in very good condition for one so close to shore and in such shallow water. All of the features reported by the divers in 1918 conform to what is present on site and as an “A” Known Sunk loss, it accords with the 1919 List.

### **3.3: Official Losses as Mystery Sites: U-Boat Wrecks with Possible Connections to the 1919 List**

Currently one wreck lies in this category, which is defined as U-boat wrecks which have some resemblance to the historical record and consequently are not mystery sites. Conversely, there are questions over the relationship of the wreck to the historical record which mean it cannot be listed as matching the 1919 List either.

#### **The wreck of (*UB31*)**

*Hydrographic Record No. 13482*

*Position: 51 02.067; 02 10.217E*

*Depth: 27m*

*UB31* departed for its last patrol in the Channel on 16 April 1918. This was unknown to Room 40 (NA ADM137/3916). The 1919 List states that *UB31* was destroyed on 2 May 1918 at 51 01.20 01 16.10E (seconds) (ADM 239/26). This position is 3.8 nautical miles from the wreck (see Figure 1.15). So close to land in a routinely patrolled area this is a questionable discrepancy, especially so because the site of the oil rising from the action was buoyed and then most probably fixed. The action itself resulted in two drifters, *Ocean Roamer* and *Lord Leitrim* sighting a periscope, dropping a depth-charge and then being guided to a patch of oil by an airship. Another depth-charge was dropped and the site buoyed (NA ADM 137/2097, 312-24). The buoyed position is actually almost right on top of the wreck of *UB78*, which was sunk on 19 April (see below). This seems to rule out this attack sinking (*UB31*). It was, in fact an attack on a dead U-boat (see Figure 1.15).

Moreover, claims by later historians (notably Grant 2003, 73) that Cmdr. Damant’s diving team surveyed this wreck on 15 July 1918 cannot be correct. The divers examined a case which was thought sunk on 10 July. The buoyed position of that date they most likely dived is six miles from the wreck of (UB31) (NA ADM 137/2097, 582) (see Figure 1.15). Moreover, the divers reported a submarine much damaged aft (NA ADM 137/2100) which was considered “too old” to be worth further investigation (NA ADM 116/1581). As is shown below, (UB31) is actually damaged under the forward gun, with no battle damage aft.

The reality is that the 10 July position plots very close to the wreck of UB55 (described earlier); a U-boat which was mined aft and would have displayed only damage in that area at the time. It will be recalled that UB55 is first reported being visited by Admiralty divers on 12 August 1918 (see Figure 1.15). Clearly the divers actually first visited this site a month earlier. There is nothing in the records to show that they knew this and it must be surmised that in fact, they did not realise it at the time. If different divers made each dive it is quite plausible. If anything this at least shows poor record keeping.

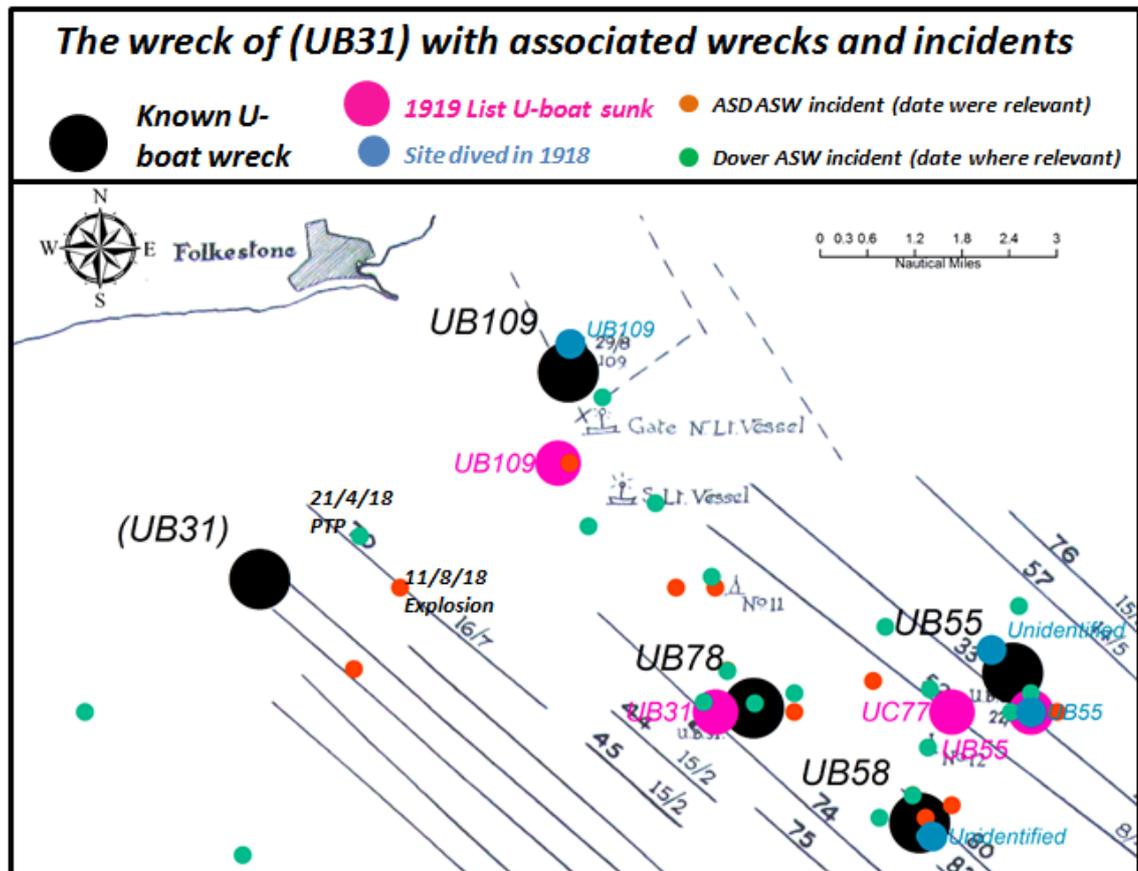


Figure 1.15. Diagram showing the location of the wreck of (UB31) and associated wrecks and incidents as described in the text (Innes McCartney GIS base map data overlaid on Chart No XV of Leith, 1920).

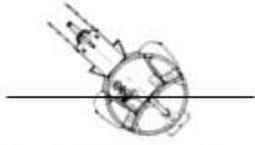
However, this oversight may have had deeper ramifications. Although not explicitly stated, this is probably the main reason why ASD incorrectly attributed the incident of 10 July to the loss of

*UC77* (NA ADM 239/26) in a location very close to where the dive took place (see Figure 1.15). In fact *UC77* did not sail until the following day (Messimer 2002, 314). The absence of another U-boat wreck in this well-surveyed area meant that *UC77* most likely had to be somewhere else. I am grateful to the historian Michael Lowrey for informing me in conversation on 7 May 2013 that *UC77* has most likely been located by divers off the Belgian coast, in an area mined during WW1.

Before examining the possible fate of (*UB31*), it is useful now to examine its archaeological remains. With the previous attribution for its destruction now proven to be most likely incorrect, an understanding of the damage done to the U-boat and any other relevant data is useful. According to the Hydrographic Office database (Record No. 13482), the wreck has been charted since 1926, was swept to 55ft depth in 1961 and was surveyed for the first time in 1977. Regularly dived for many years, anecdotally, at least one of the propellers is reported to have been stamped *UB31* (McCartney 2003, 157). The author surveyed the site on 25 April 2011 and the results are shown in Figure 1.16:

- Image A: The wreck leans over at around 45 degrees to the port side. This image shows the forward torpedo tubes in the “over under” configuration of the UBII-Class (compare this image to a similar one of *UB38*). The outer casing has rotted away revealing the outer torpedo doors with the inward facing hinges;
- Image B: The starboard side pressure hull just aft of the hydroplane is very heavily crumpled from underneath. The ripples in the hull are clearly visible in this shot and show that the U-boat was subject to a violent explosion from underneath;
- Image C: The explosive damage hole is mainly confined to the starboard side. But this image taken from the port side shows that the submarine has been actually split almost completely in half;
- Image D: This image shows that the conning tower hatch is shut (this was also checked from above) and that the single periscope mount is of the type associated with the UBII-Class;
- Image E: the muzzle of the deck gun now points skyward. It is of the type with one recoil cylinder (see Chapter Five);
- Image F: The engine room hatch is also shut and in the right location for the UBII-Class;

**Name: (UB31) Posn: 51 02.067;02 10.217E Depth: 27m**  
**Date of Loss: 2 May 1918 How Sunk: Mined**  
**Date of Survey: 25 April 2011**



Wreck leans 45 deg to port

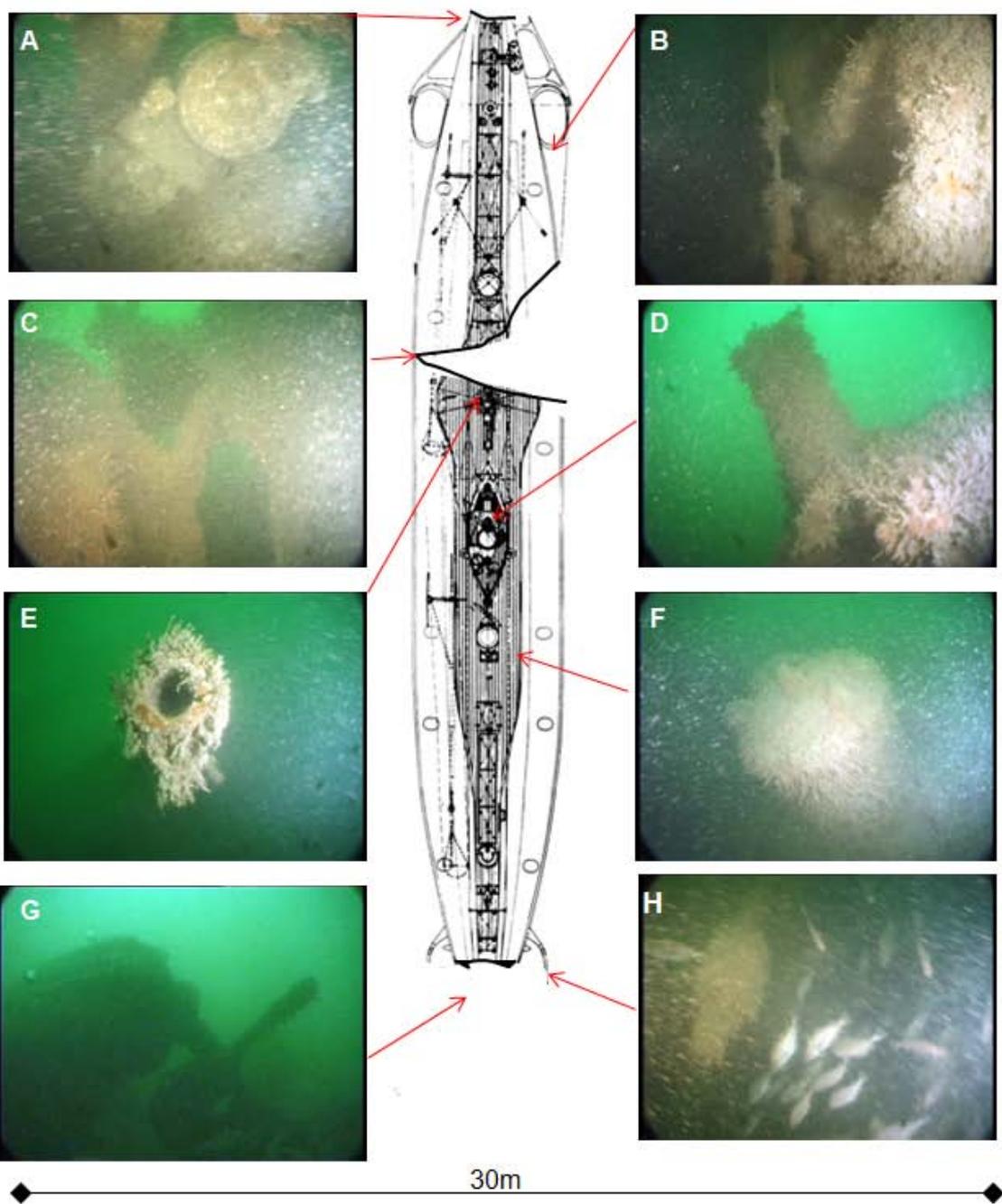


Figure 1.16. Diagram of the wreck of (UB31) showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 51).

- Image G: Taken from the seabed aft of the wreck, this image shows that the outer skin of the stern has fallen off. This looks most likely to have been caused by recent corrosion more than incident damage;
- Image H: The propeller shafts reveal that the propellers have been removed from the wreck.

With the damage almost certainly caused by a mine, we have to look at incidents which took place while the Folkestone to Gris Nez barrage was in place. The ASW incidents from both ASD and the Dover Patrol which took place near the wreck of (*UB31*) during this time are plotted and dated in Figure 1.15. There are two incidents which plot close to the wreck and are worthy of further investigation.

The mine explosion of 11 August 1918, reported in the 1919 List (NA ADM 239/26) can be discounted as destroying this wreck, because after the loss of *UB31* in April 1918, the Germans only lost one more UBII-Class, *UB30* and that has been found off Whitby (Grant 2003, 144). More interesting are the incidents of 21 April also plotted on Figure 1.15. The point represents a series of reports of mine explosions around 15:00 to the south west of the Folkestone gate. The most detailed position given by HMS *PTP* for these explosions is the one shown (NA ADM137/2097, 831).

It will be recalled that *UB31* was at sea on her last patrol on 21 April and so could have been making an early return. This was uncommon, but not unknown if a boat had mechanical problems, or similar. However, Spindler (1966, 114) credits *UB31* with sinking the sailing ship *Joseph* off Cherbourg on 25 April. This incident looked suspicious in the light of the possible destruction of this boat on 21 April. However the reports from the survivors of the *Joseph* (NA ADM137/4015) clearly describe a small U-boat for which *UB31* is the only candidate. This would seem to rule out the 21 April explosion being responsible for the loss of the U-boat.

The author has been unable to ascertain where the propellers recovered from this wreck are now. This is a pity because they could shed light on the U-boat's identity. No firm evidence from the historical record can be matched to the sinking of a U-boat at its position. Only circumstantial evidence points to it being *UB31*, but in the absence of any hard evidence to the contrary, this wreck's identity should be considered to be (*UB31*).

### **3.4: Mystery Sites: U-Boat Wrecks with no Connection to the 1919 List**

We now turn our attention to the U-boat wreck sites which do not match the 1919 List. Since the thesis research began, a total of six such sites have come to the author's attention (see Figure

1.17). In three cases, propeller markings in conjunction with archival research have identified the U-boats in question. The other three cases are problematic and the identities of the wrecks remain obscure. In one instance this is because the propellers await examination. In the other two instances it is because of a diving ban introduced by Gris Nez Control in 2010, which does not permit any diving in the easterly bound shipping lane through the straits. This has effectively curtailed the possibility of fieldwork on two of the sites. The only firsthand diving information gleaned about these sites is vague (see Figure 1.17 below).

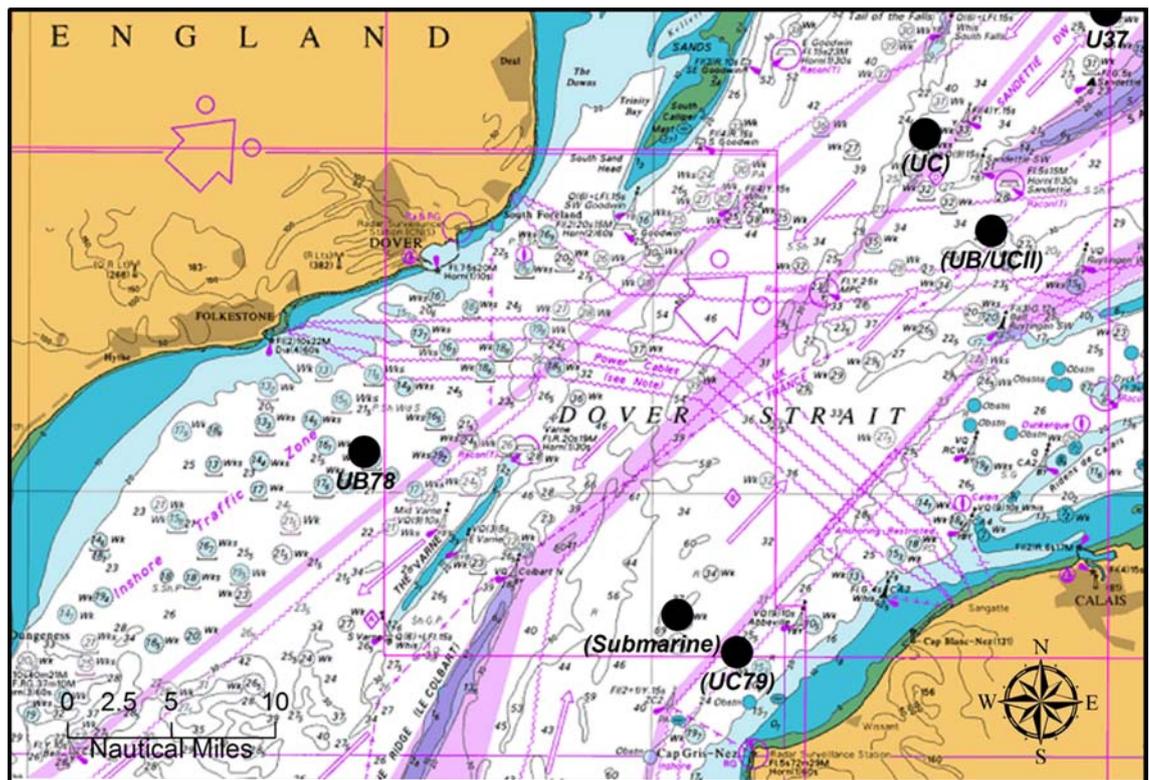


Figure 1.17. The six mystery U-boat wreck sites of the Kent area showing their positions in relation to the modern day shipping lanes. A current French diving ban in the eastbound lane excludes the possibility of any further fieldwork on the sites of (UB/UCII) and (Submarine) (Innes McCartney GIS base map overlaid on a portion of Admiralty Chart 1406).

### The three identified mystery U-boat wreck sites in the Kent area

#### UB78

Hydrographic Record No. 13449      Position: 51 01.033;001 16.483E      Depth: 22m

According to the Hydrographic Office record above, the wreck was located by survey in 1977 and confirmed to be a submarine by divers in 1982. Like many of the other U-boats in the shallow waters off Dover, the propellers were removed by divers at some time after its discovery and one of them has now been donated to a museum in Germany. They both revealed that the U-boat was UB78 (see Figure 1.18). This was a surprise because it was listed as being sunk by ramming off Cherbourg on 9 May 1918 (McCartney 2003, 155). We know from the

Room 40 history sheet for *UB78* that it was estimated to be in the mid-Channel area on 7 May because it had been seen on 6 May and attacked on the following day; which is why it was associated with the Cherbourg incident (NA ADM137/3719).

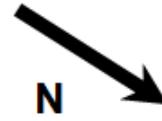
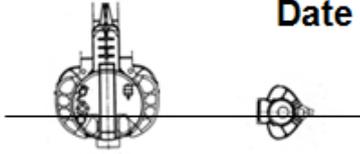


Figure 1.18. One of *UB78*'s propellers prior to being donated to a museum in Germany. The Blohm & Voss shipyard stamp and identity of the U-boat can be clearly seen on the boss (photos: Paul Oliver).

In order to verify that the wreck in question matched the description given by divers and to insure that wreck and the circumstances of its sinking could not simply be matched to the historical record as a known loss, the site was surveyed by diving by the author on 24 April 2011. A diagram of the wreck and its key features is shown in Figure 1.19 and are described below.

- Image A: This shows a feature which in the author's experience is unique to UBIII-Class submarines. It is a bronze reinforced platform which is situated between the upper and lower pairs of torpedo tubes. Its exact purpose is unclear, but it seems to be part of the hinging mechanism for opening the forward torpedo doors;
- Image B: This shows the Krupp C14 30 calibre 88mm gun on the C16 mount as fitted to the UBIII-Class in 1916-17. It is known that this type of gun was fitted to *UB78* (Gröner 1991, 26);
- Image C: The aft loading hatch is open and the hatch door can be seen to be still attached at the top of the hatchway. Internally, the compartment below is full of sand. The conning tower hatch was also seen to be open, but the forward hatch was shut;
- Image D: The stern of the submarine is completely blown off. Looking up into the break the doorway at the forward end of the aft torpedo room can be seen. The door has fallen off its hinges towards the break;
- Image E: This shot shows the termination at the stern end of the main portion of the wreck. The diver in the shot is situated between the two propeller shafts which remarkably stayed in place when all of the structure above them was blown off;

**Name: UB78 Posn: 51 01.033;001 16.483E Depth: 22m**  
**Date of Loss: 19 April 1918 How Sunk: Mined**  
**Date of Survey: 24 April 2011**



Forward section is upright. Aft section lies on its port side.

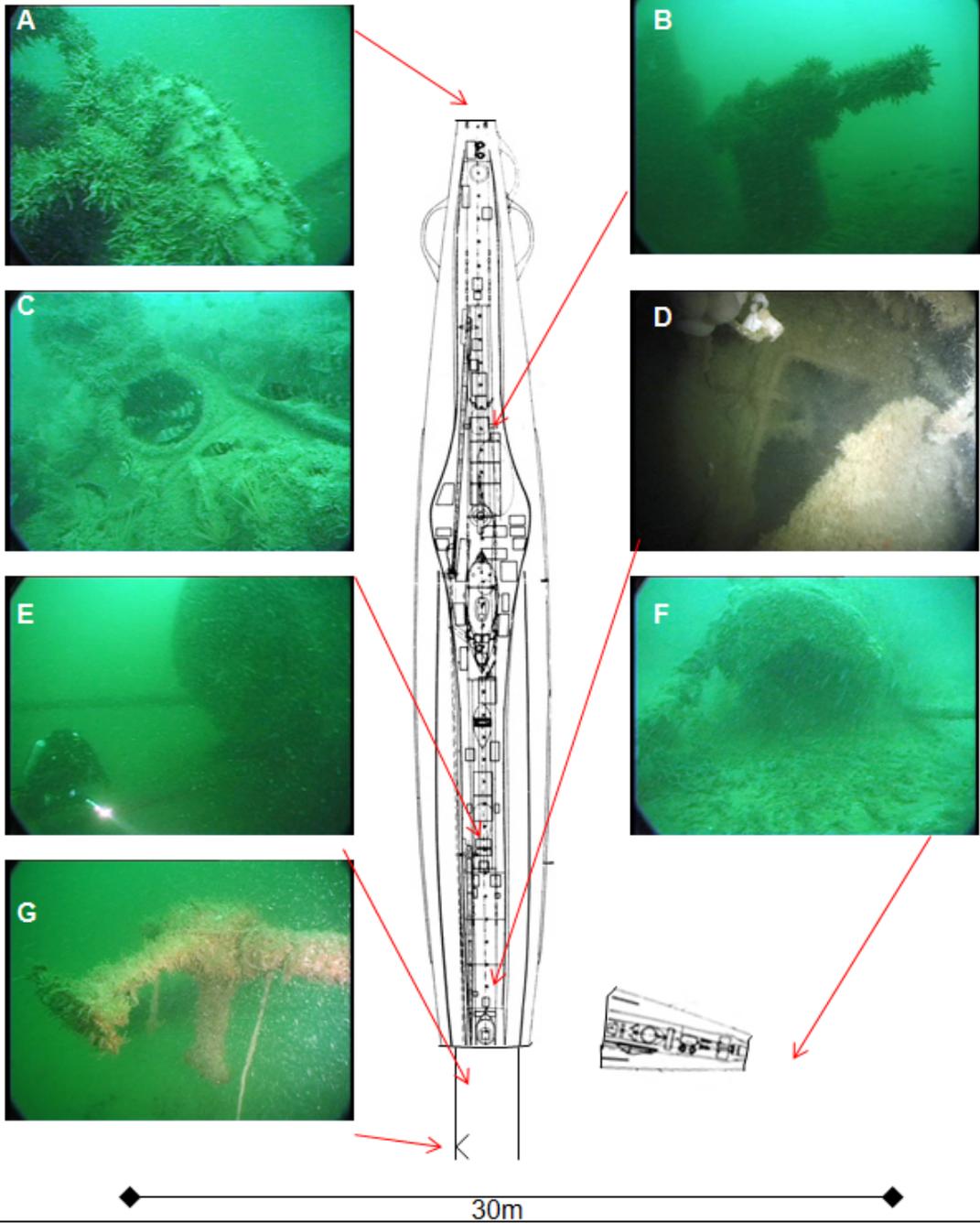


Figure 1.19. Diagram of the wreck of UB78 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

- Image F: The after section of the wreck which represents most of the aft torpedo room has been blown off and pushed to the starboard side. The image shows the end of the pressure hull. The torpedo tube appears to have been removed and is not present on the wreck site;
- Image G: This shows one of the “A” brackets which were attached to the hull at the point where the propellers were mounted onto the shafts. It is now detached, the hull was blown off, as can be seen in Image E. The propeller has been removed.

There is no doubt that this U-boat was mined. The mine blew off the aft portion of the U-boat and the blast was probably responsible for opening the aft and conning tower hatches. There would have been no survivors. Both propellers and possibly aft torpedo tube have been removed from the site.

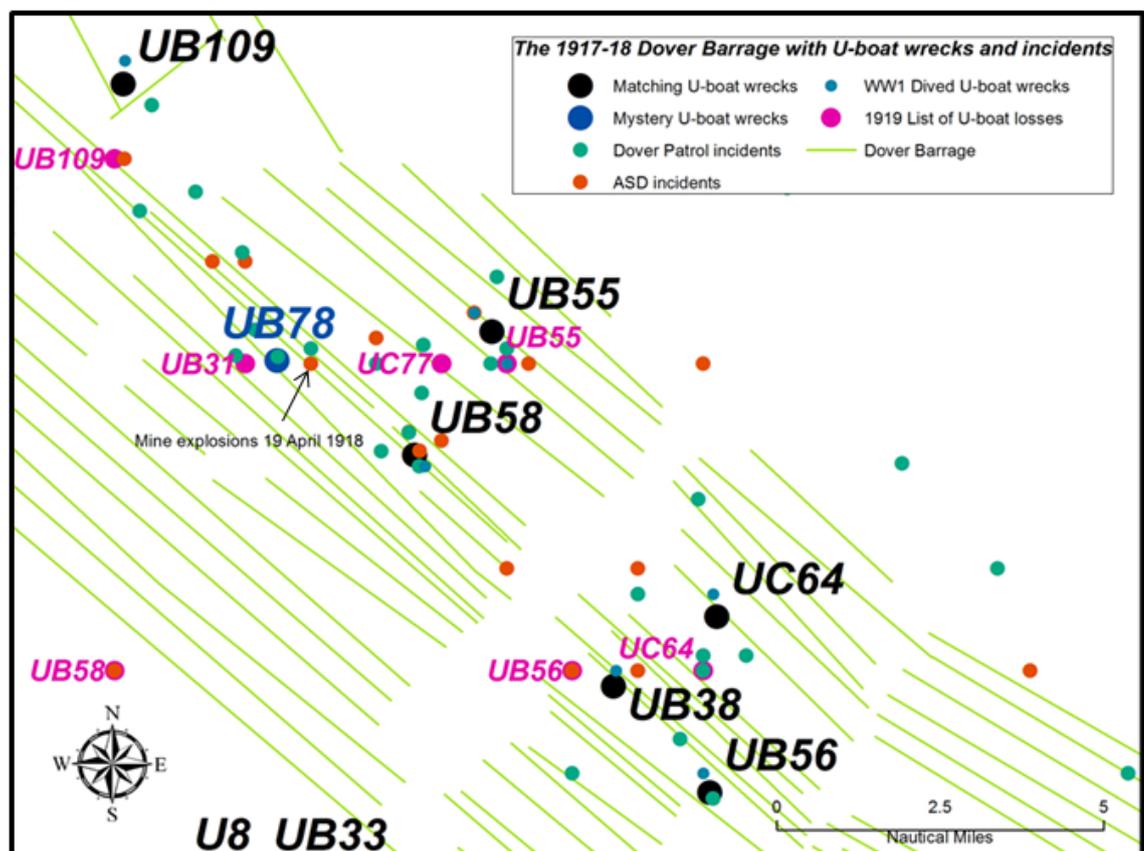


Figure 1.20. Map showing the location of the wreck of UB78 in the Dover Barrage and the related mining incidents which sunk it (Innes McCartney GIS base map).

The wreck of UB78 points to the southwest, suggesting that it was outward bound when lost. On her last patrol it left Zeebrugge on 18 April 1918 (Messimer 2002, 199), and so would have reached the minefield probably on the evening on 18 to 19 April. According to the Dover Packs a mine explosion took place almost exactly where the wreck is at 00:30 on 19 April (see Figure 1.20). A memo from Keyes states that there was no doubt a U-boat had been destroyed at that

location, but that sweeping or diving near it was impossible due to mines (NA ADM 137/2097, 231). This incident clearly accounted for the loss of the U-boat. From a research standpoint it is an excellent example of some of the challenges faced when examining mystery U-boat sites of WW1.

As mentioned in the introduction to WW1 a clear tension existed between the ASD assessors and the commanders of the fleet as to where the U-boats were destroyed. In this instance, the memo mentioned above shows Keyes was certain a U-boat was destroyed on 19 April. This assertion was repeated in his autobiography (1935, 260), where he claimed it was in fact *UC79* (see later in this chapter) which was sunk in the explosion. However, the 1919 List does not show a U-boat destroyed at that location. The explosion is listed in the “Explosion List” for the second quarter of 1918 (NA ADM 239/26) and graded “probably sunk” but this was not sufficient for it to be an incident to which the actual destruction of a U-boat was appended when the 1919 List was finalised. In this case Keyes was right, but as shown in this chapter (for instance in the case of *UB58*) this was far from being the case all the time.

Equally challenging is the prospect that even “A” Known Sunk losses listed in 1919 are in actual fact wrong. In instances where there were no survivors or human remains, caution is advisable. This is the case with *UB78*, which is listed as Known Sunk by ramming off Cherbourg by HM Transport *Queen Alexandra* on 9 May 1918 (NA ADM 239/26). While collision with something seems likely from the description, there was no physical evidence to confirm the submarine was destroyed. This attribution was accepted by Spindler (1965, 78) even though it assumes that *UB78* was on operations in the Channel for three weeks without sinking any targets (Spindler lists none) which seems equally improbable. In addition, the assumed patrol length is at the extreme for a Flanders boat.

Ultimately this case reminds the researcher to use extreme caution with both British and German official sources. Contrary to WW2, where it will be shown that “A” Known Sunk means exactly that, the author’s experience shows that even seemingly certain cases of U-boat destruction cannot be trusted unless a wreck has subsequently been found and identified by divers, or a number of survivors were picked up when it sunk. As will be shown, this is not the only incident where seemingly certain U-boat losses were recorded incorrectly.

As described in the introduction to WW1, no scientific analysis of the results of the first attack on shipping were carried out by the Admiralty. Moreover, Spindler did not have access to all the British records (for instance, the Dover Packs were not released until 1967, two years after Spindler’s last volume was published). The case of *UB78* serves as an example of the challenges faced when examining the mystery U-boat wreck sites of WW1 and should be borne in mind when addressing the other mystery cases in this thesis.

**(UC79)**

Hydrographic Record No. 67498

Position: 50 54.983; 01 34.419E

Depth: 36m

In 2000 on a tip-off from a local fisherman, French divers located the wreck of a U-boat off Gris-Nez. During subsequent dives it was found to be of the UCII-Class and both of its propellers were scraped in an attempt to reveal the identity of the wreck (Richard 2007, 156-161). Figure 1.21 shows a drawing of the wreck the divers made and photographs of the markings of both propellers. The mine chutes were found to be empty, suggesting the U-boat was homeward bound.

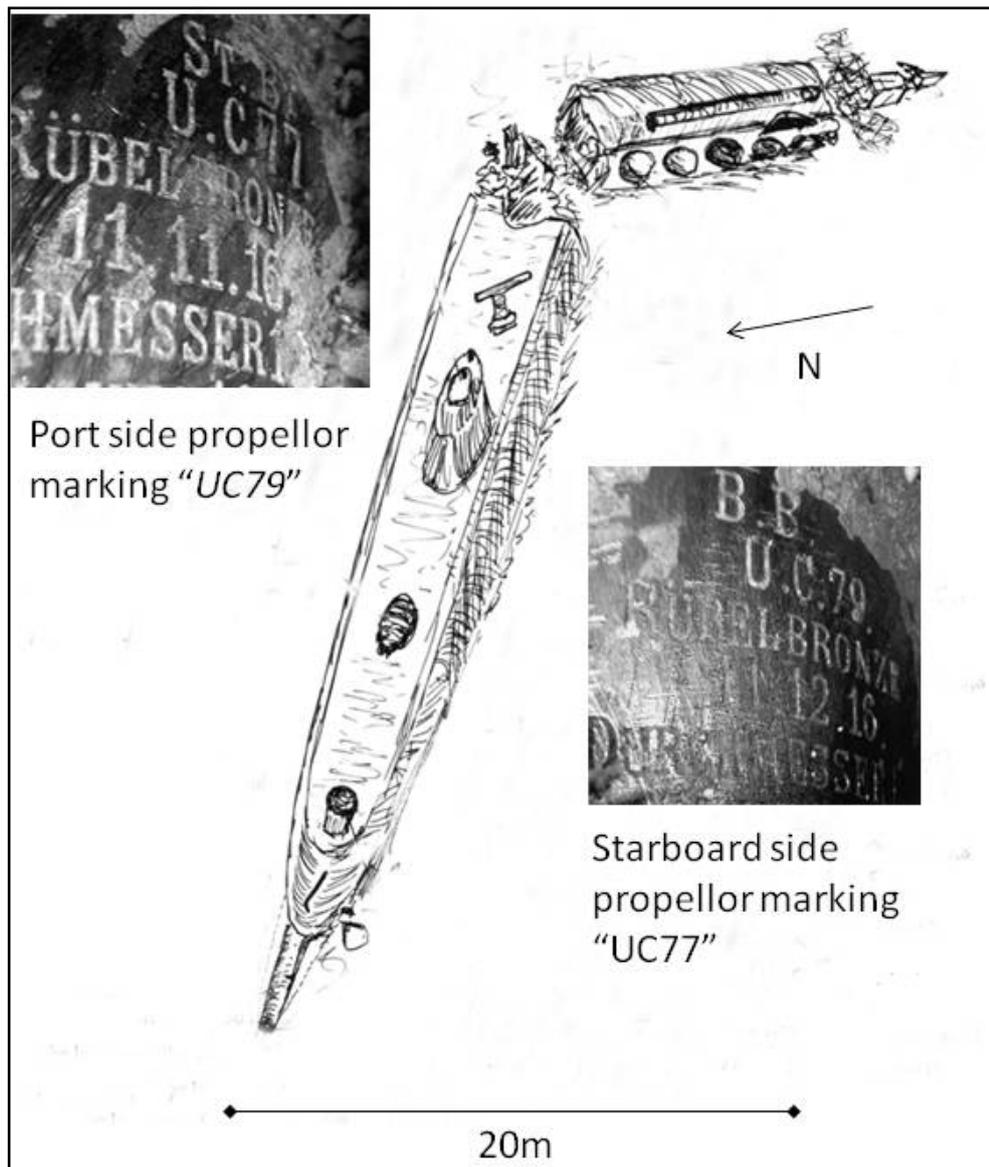


Figure 1.21. Drawing of the wreck of (UC79) with photos of the propeller markings taken from the wreck site (Images from Richard 2007, 157-161).

Richard’s analysis of the dates on the propellers and the launch dates of both UC77 and UC79 led him in part to believe the U-boat had to be UC79. This is because UC77 was launched on 2

December 1916, prior to the manufacturing date of the starboard propellor marked *UC79* (Richard 2007, 161). In reality though, either (or even both) propellers could be ones removed for repair and then fitted to another U-boat which needed them. Since *UC77* (from July 1917), *UC79* (from August 1917) and *UC78* (from January 1918) all served with the Flanders Flotilla (Birch & Clarke 1922b, 452-455), this evidence alone does not constitute absolute proof of identity and deeper analysis is needed.

*UC79* was built as part of a six boat order (*UC74-UC79*) built by the Vulcan yard, Hamburg. *UC74*, *UC75* and *UC76* can be excluded as possibilities because they have historical attributions which place them well away from the Dover area (Gröner 1991, 32-34). However *UC77*, *UC78* and *UC79* were all sunk between late March and late July 1918 and in each case, U-boats were ordered to lay mines after passing through the Dover barrage (Messimer 2002, 314-6).

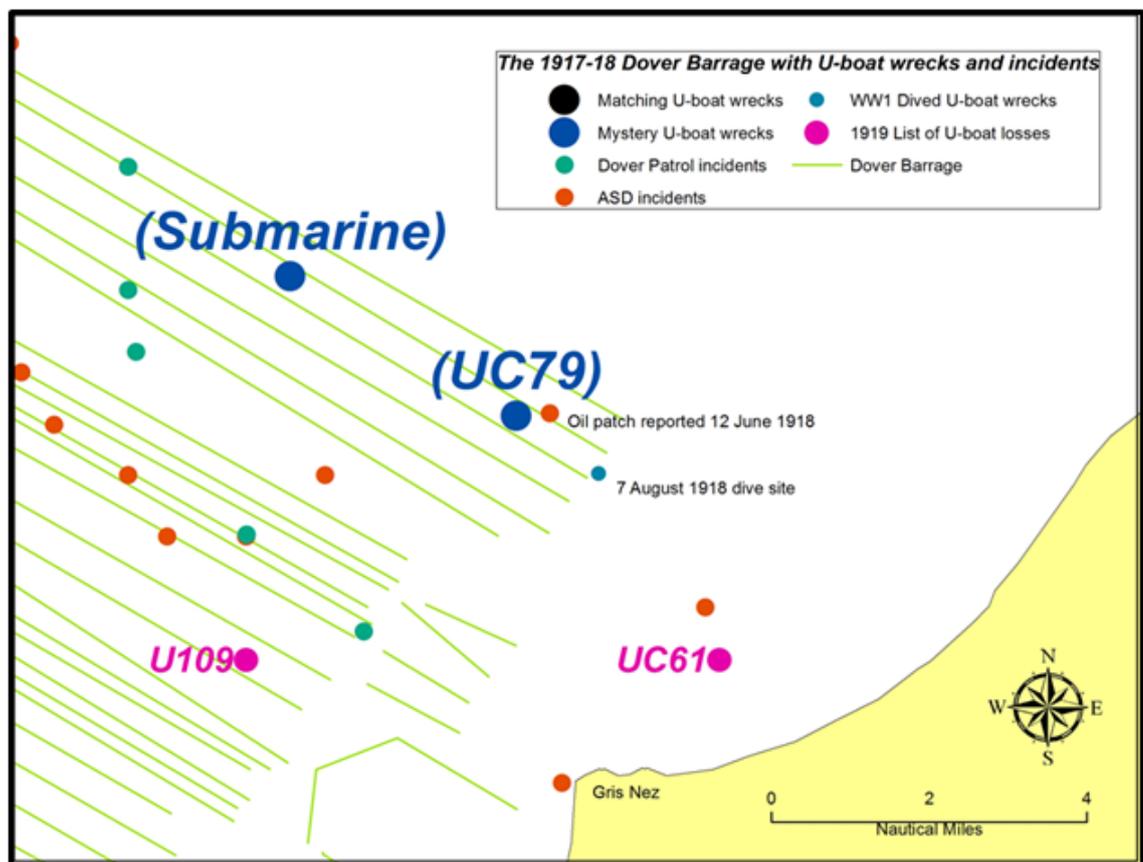


Figure 1.22. Map showing the location of the wreck of *UC79* in the Dover Barrage and the related oil patch and 1918 diving site related to it (Innes McCartney GIS base map).

From the compilation of ASD and Dover Patrol incidents into the GIS map, one particular incident seems to definitely be related to the wreck of (*UC79*). On 12 June an airship spotted oil rising from the position of the wreck (NA ADM 239/26). This led to depth-charges being dropped and subsequently the site was seen to be giving off oil for several days afterwards (see

Figure 1.22). Since *UC77* sailed for its last patrol on 11 July 1918 (Messimer 2002, 314), it can be satisfactorily ruled out as a possible identity for this incident, because the supposition is made that a dead U-boat already existed at that location. However, *UC79* left for its last patrol on 20 March (Messimer 2002, 316), predating the 12 June incident.

*UC78* was listed in 1919 as being lost in the barrage on 2 May 1918 (NA ADM 239/26). It was outward bound that day having sailed on its last patrol (Messimer 2002, 315). In fact *UC78* sailed from Ostend only 3 and a half hours earlier and therefore cannot have been there (Spindler 1965, 88-89). The Room 40 history sheet for this boat reveals that it was confused about the boat's movements and did not know it was at sea at this time (NA ADM137/3918). There is no wreck present near the location given. Moreover it was ordered to lay mines off Newhaven and it is known from the minesweeping records that this field was located and swept on 7 May (NA ADM 116/1517). I am grateful to Michael Lowrey for providing this archival lead by email on 19 March 2013.

The loss of *UC78* remains unexplained; if *Queen Alexandra* did sink a U-boat on 9 May (see *UB78* above), then *UC78* is the only candidate, because it was the only U-boat known to be in the area. If this is not the explanation (and no wreck has yet been found), then it could be elsewhere. Its return date would have been late May so its loss would predate the oil patch seen on 12 June and therefore it cannot be excluded as a possible identity for this wreck. This of course would mean both propellers had been changed.

Figure 1.22 also reveals that this site was visited by divers on 7 August 1918. On that day Cmdr. Damant reported that his divers had located "UC12" (an attribution with no logical explanation as *UC12* operated in the Mediterranean and which may possibly have been a coded reference) at the position shown. The description matches Alain Richard's drawing (see Figure 1.21) well, with Damant stating that the wreck was "much damaged by mine explosion under gun crushed and folded in neighbourhood of Officers quarters" (sic) (NA ADM116/1581).

The most remarkable aspect of the site being dived in 1918 is that this was completely overlooked when compiling the 1919 List. It seems incredible that the physical evidence of a U-boat wreck could simply have been omitted. This is all the more remarkable because of the trouble Keyes went to, to date the time of loss. A small piece of barnacle covered "tin" was recovered from the wreck and sent to the Natural History Museum so that the age of the barnacles could be dated. The results were inconclusive, but good enough to rule out 12 June as a sinking date (NA ADM137/1560, 435-448). A reading of the analysis places the loss some months before the 7 August dive date and therefore closer to a time around late March when *UC79* disappeared.

Revealingly, the 1919 List states that *UC79* had been destroyed by the submarine HMS *E45* in October 1917 (NA ADM239/26). So at the actual time of its destruction, it was not considered to be operational and therefore would not have been considered as a loss at this time. This clearly shows the problems faced by ASD when trying to identify where the Flanders boats were. But confusingly the Room 40 history sheet for *UC79* shows they knew it to be operational from radio intercepts and prisoner interrogations up to April 1918. It is therefore surprising that this was overlooked by ASD in favour of an attribution it knew must have been incorrect.

In conclusion the evidence comprehensively leans in favour of this being the wreck of (*UC79*). Conclusive proof will come when *UC78* is found. Because of this the U-boat's identity must remain in brackets. The absence of this wreck from the 1919 List, even after it had been identified as a UCII-Class, mined in 1918 does little to inspire confidence in the list itself, nor of the Admiralty processes which saw it overlooked.

### *U37*

Hydrographic Record No. 13769

Position: 51 14.322; 01 52.177E

Depth: 38m

According to the Hydrographic Record above, the site of this U-boat wreck was first dived on in 1968. Descriptions of the site, notably from Termote (1999, 95-6) and Richard (2010, 57-62) all state that the wreck is of the large ocean-going U-Class. There is heavy damage to the bows, commensurate with mining, and the wreck does not carry a deck gun, as shown in Richard's (2010, 59) drawing of the wreck site (see Figure 1.23). I am grateful to the Belgian diver Jef Coulon who knows the site well for describing in conversation on 21 March 2013, that the wreck sits in an area of shifting sand and portions have covered and uncovered over the years. The propellers are still on the wreck, but at his last visit they were covered by the sand. However this has not always been the case as Figure 1.23 shows.

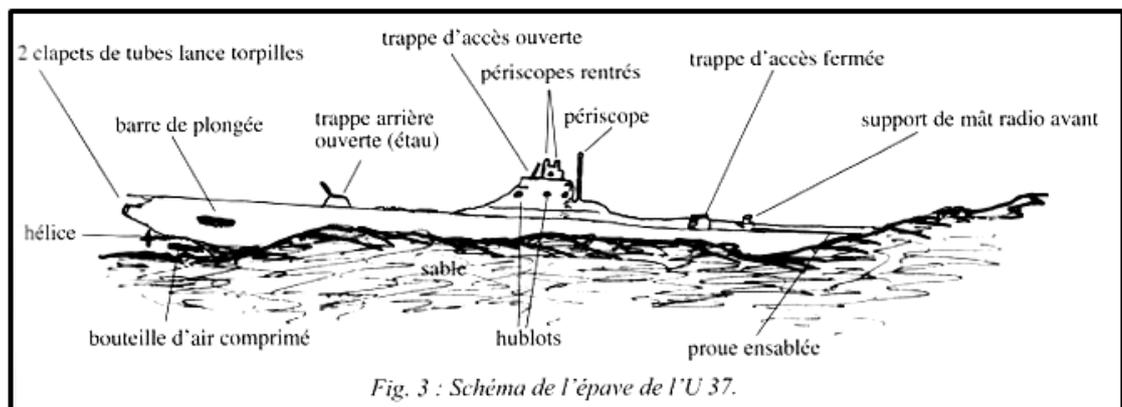


Figure 1.23. Alain Richard's drawing of the wreck of U37 showing its key features. (Richard 2010, 59).



However Spindler (1934, 61-2) shows that the loss of at least two steamships to torpedo in the Channel in late March 1915 cannot be attributed to any other U-boat except *U37*. He concluded that in the absence of any attack report to claim the sinking, that *U37* must have been mined whilst homeward bound in the Dover Straits area sometime after 1 April. This remains the accepted attribution for the loss of *U37* and no evidence has emerged since to bring it into question.

In fact, research in 2013 by the author using the unpublished British history of WW1 minefields (Leith 1920a and 1920b) which resides at NHB conclusively shows that in fact the wreck intersects a line of mines laid on 10 February 1915, as shown in Figure 1.24. This matches the conclusion made by Richard (2010, 58).

The two lines of mines laid on that day were part of a much larger field which covered the Sandettie and Ruytingen banks and environs. Field 119 (which intersects the wreck) was made up of 300 general service mines laid six feet below the surface (Leith 1920a, 99-102). With the loss of *U37* post dating the placing of the field, this seems to confirm how *U37* was destroyed. Since there were no other large non gun-equipped U-boats lost in 1915 which cannot be satisfactorily accounted for elsewhere, by a process of elimination this must be *U37*. The loss of *U37* at this location also matches Spindler's (1934, 61-2) analysis in the official German history and no evidence has emerged to change this attribution.

### **Unidentified mystery U-boat wreck sites in the Kent area**

Three sites remain unidentified in the Kent area. This is primarily because the historical texts do not provide a high degree of certainty and the propellers have not been cleaned and recorded. Propeller cleaning, which is essential in some cases, is often a difficult and time consuming process and is of a lower priority than recording a wreck site on video on the first dive(s) to identify its class, age and circumstances of destruction.

In the next chapter, it will be shown that the depth of some of the wrecks makes the cleaning of propellers impractical without major and prohibitively expensive logistical support. But in the case of the Kent sites the diving ban (see above) prevents further work by the author or any individuals or agencies on two of the sites. Only (*UC*) (see below) could potentially be identified in this way. Two attempts to do so in 2007 and 2011 were thwarted by bad weather and frustratingly it remains the only mystery wreck site in entire thesis in which the propellers could be relatively easily cleaned, yielding its identity.

(UC)

Hydrographic Record No. 13715

Position: 51 10.600; 001 43.470E

Depth: 41m

The archaeologist Bob Peacock first dived and identified this site as a UC-Class U-boat in 2000 (McCartney 2003, 162). Sadly his boat log was lost in a break-in and the details of what was seen are understandably vague. However, I am grateful to another local diver, Gerry Dowd who reported in conversation on 27 March 2013, that the wreck sits proud of a sandy seabed and although netted the entire wreck is intact and all of it can be seen. The location of the wreck of (UC) and its potentially related historical features are shown in Figure 1.25 below.

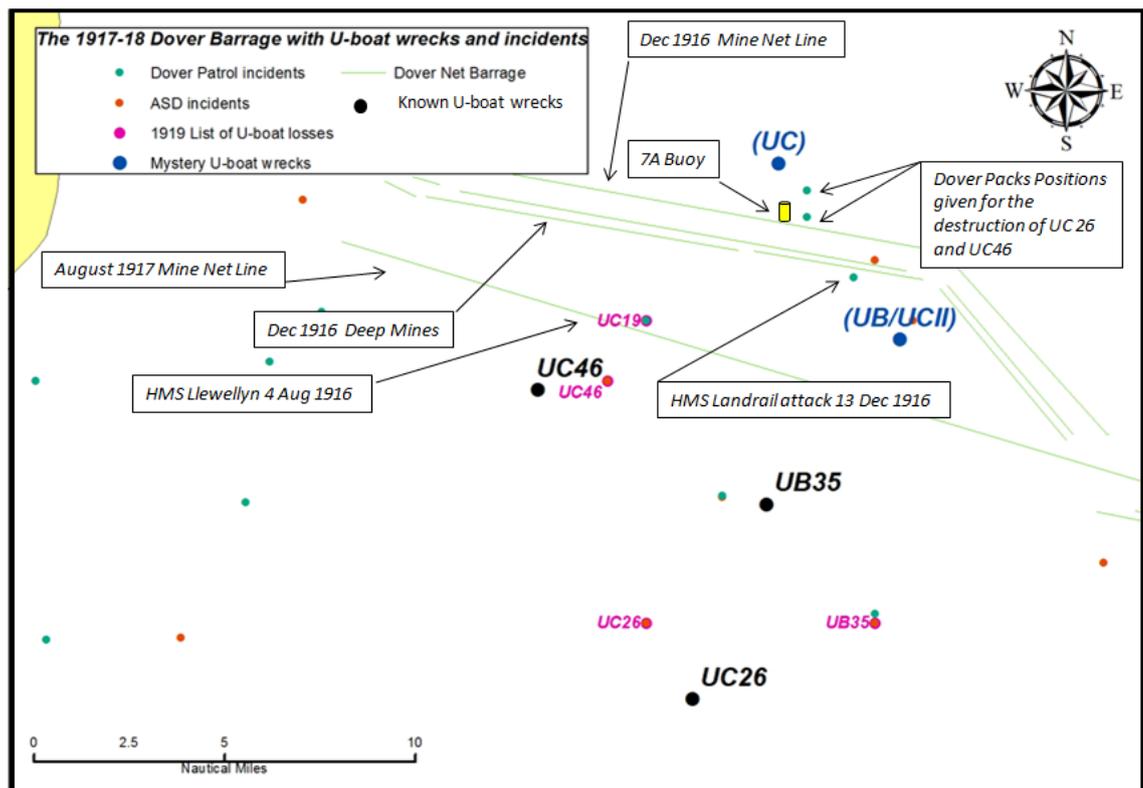


Figure 1.25. The location of the mystery wrecks (UC) and (UB/UCII) shown with the related minefields and incidents in the area. (Innes McCartney GIS base map).

It will be noted that the wreck itself lies just north of the mine net barrage which was completed in December 1916. The proximity of the wreck and two Dover Patrol incidents to the 7A buoy is significant. The buoyage scheme for the entire barrage is described in the Dover Packs (NA ADM137/2101). There was a buoy placed every 500 yards along the net barrage. Significantly 7A buoy was one of only three which flashed at night (two flashes every 10 seconds) and it was the only buoy along the entire net barrage to have a second buoy staged 2.5 cables (500m approximately) to the southwest of it which also flashed at the same rate. The patrol patterns shown by Keyes (1935, 380) ran reciprocating lines from northeast to southwest, with the net barrage at their most northerly point. So alignment of the buoys assisted in navigation.

Figure 1.25 shows the positions quoted in the Dover Packs for the sinkings of both *UC46* and *UC26* (NA ADM137/2096) where in each case the attacking vessel simply stated it was on patrol by the 7A buoy. For ASD's assessment purposes (and for our own) the position given was not accurate enough. In the case of *UC26* there is a note in the ASD ledger of destroyed submarines that the actual position of the attack on *UC26* was obtained by phone call (NA ADM137/4145). Something similar may have occurred in the case of *UC46* as both positions given in the 1919 List are much closer to where the wrecks were found.

Aside from the very inaccurate positional element of these reports, the incidents reveal the significance of the 7A buoy as a navigational mark in the middle of the Straits. The two Dover Patrol incidents seemingly near the wreck were in fact, miles away. We are left with no clear ASW incident within 4 miles of the wreck. However, Gayer (1926, 636-7), stated that the Flanders-based U-boats were adept at using the British navigational buoys to find their way through the minefields which obstructed their passage through the Straits. So it seems possible that in this instance the U-boat was probably mined while using the 7A buoy as a navigational mark. As described in the introduction to this chapter, it is known that the entire system drifted north, closing the distance between it and the wreck. It had to be lifted and re-laid from May 1917 onwards on the southerly line shown on Figure 1.25.

From an historical perspective we are left with few strong hypotheses to work on. In fact the wreck could be any of the UC-boats listed in Appendix 1.1: *UC19*, *UC18*, *UC68*, *UC72*, *UC21*, *UC50*, *UC78* and *UC77*. The 1919 List shows that ASD believed *UC19* was destroyed nearby in a somewhat implausible "A" Known Sunk incident in which it was depth-charged by HMS *Llewellyn* on 4 December 1916 (see Figure 1.25). It is now known that his attack was actually directed against *UB18* which survived (NA ADM275/13, 40). This is an example of one of the six cases of ASD attributed "A" Known Sunk incidents in the Study Area which have proven to be false.

A similar implausible depth-charge attack by HMS *Landrail* on 13 December 1916 is also noted on Figure 1.25 as another possible sinking event for *UC19* (this time homeward bound, if not sunk earlier). The unreliability of the 1919 List means that there will inevitably be other candidates. I am grateful to Michael Lowrey for pointing out in conversation on 7 May 2013, that both *UC68* and *UC66* were also listed as lost to unlikely causes in the timeframe mentioned and could too be possibilities. However, the author has established that the wreck of (*UC66*) probably lies off the Scilly Isles (see the next chapter).

*Footnote: Subsequent to the submission of this thesis for examination the author was able to survey this site. Only one propellor was clear of the seabed and was stamped "UC72", indicating the possible identity of the wreck.*

**(UB/UCII)**

Hydrographic Record No. 14917

Position: 51 07.691; 001 46.640E

Depth: 40m

Belgian diver and wreck researcher Jef Coulon advised the author in a conversation of 21 March 2013 that this site had been found by colleagues in August 2007. Due to their late arrival on site, the tide meant that the divers (who were experienced with U-boats) were only able to say that it was most likely either a UBII or UCII-Class U-boat. Since then the diving ban, which came into force in 2010 has prevented any further investigations of the wreck site.

As with the case above, the relative proximity of the mine nets and the 7A buoy should be noted (see Figure 1.25). In this instance the wreck lies between the December 1916 and May 1917 mine nets and may be associated with either feature. The ASD incident very close to the wreck can be discounted because it occurred at a time (January 1916) of no U-boat losses.

The same incidents which could relate to (UC) could equally relate to this case. However if the site is a UB-Class, then a possible candidate would be *UB29* which sailed on 27 November 1916, the same day as *UC19* (Messimer 2002, 256) and whose loss too has also been called into question since 1919 by historians, notably Messimer (2002, 150) and Grant (1964, 39). It should be noted that Grant attributed the attack by HMS *Landrail* (see Figure 1.25) to the destruction of *UB29*. Like *UC19* it too would have been homeward bound at the time.

**(Submarine)**

Hydrographic Record No. 21238

Position: 50 56.113; 001 31.552E

Depth: 45m

In a conversation of 13 February 2013, British contact Gerry Dowd informed the author that divers from Dover had visited this wreck site some years prior to the dive ban and reported a submarine lying on its side. This was later confirmed by Belgian contact Jef Coulon who had heard that divers from Boulogne had reported similar. While the evidence is not certain and the possibility of confusion with (*UC79*) exists (see Figure 1.26), this is the sort of evidence which under normal circumstances would lead the author to conduct a survey dive of the site. The diving ban currently precludes this.

As Figure 1.26 shows, there is no specific incident in the Dover or ASD records which plots within two miles of the wreck site. The incidents surrounding it are from a range of dates covering the history of the 1917-19 mine barrage as depicted. Nevertheless the most plausible cases should at least be examined. The two dated Dover incidents relate to attributions of the destruction of U-boats on the dates in June 1918, as shown. The problem is that no U-boats went missing or are even cited in the 1919 List as being destroyed anywhere at this time. The

other incidents mainly either predate the minefield or relate to explosions to which no attribution was made.

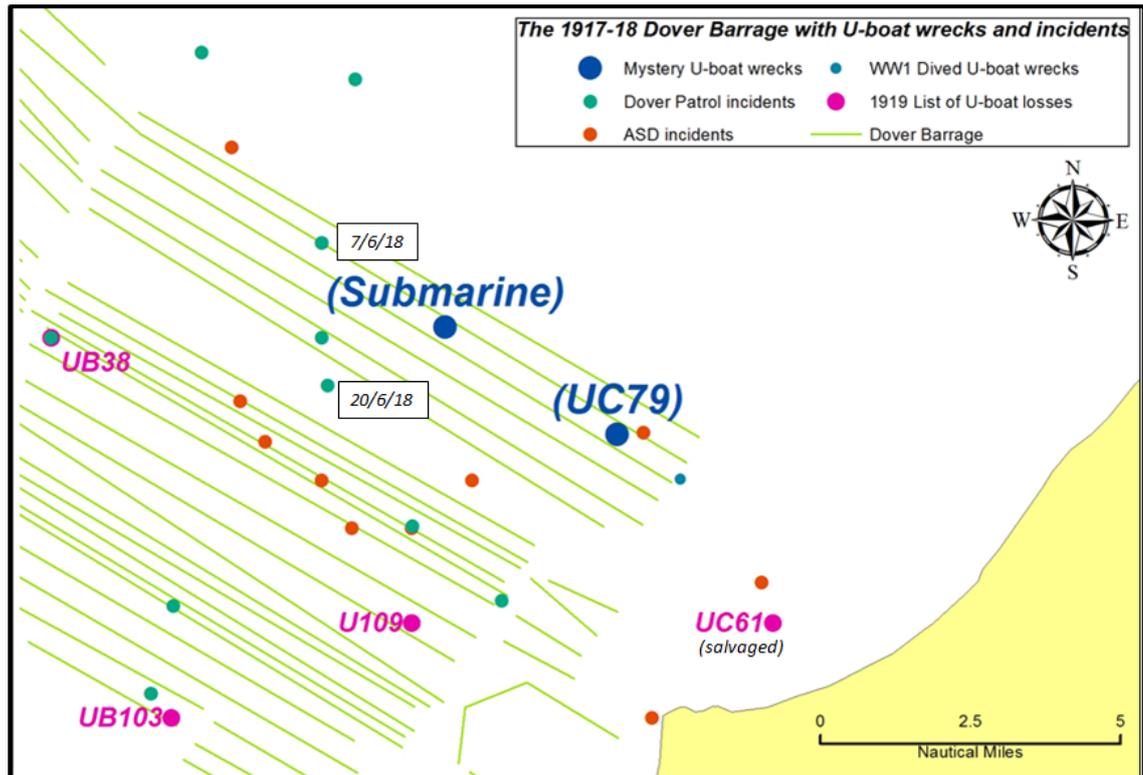


Figure 1.26. The location of the mystery wrecks (UC79) and (Submarine) shown with the related minefields and incidents in the area. (Innes McCartney GIS base map).

The actual lines of mines between which the wreck lies were laid on 1 January (south) and 28 May 1918 (north). This effectively means that the wreck could be any U-boat not identified elsewhere which passed through the Straits after 14 January 1918. Not surprisingly there are a number of candidates. However Figure 1.26 also shows that the 1919 List states that *U109* sunk in the minefield. *U109* went missing in January 1918, along with the very similar *U95* and *U93*. Although the 1919 List gives attributions to *U109* and *U93* (listing *U95* as an unknown loss), these have long been questioned by historians, notably Grant (1969, 80) and Messimer (2002, 109-120) because the cases are far from certain. It is possible that this wreck could represent any of these three, as well as potentially others with seemingly strong attributions.

The case of *U109*, *U95* and *U93* will be examined again in the next chapter in relation to two other mystery sites; but it is worth noting here that their losses led to the High Seas Fleet U-boats abandoning the Straits for the rest of the war.

*UB103* is also cited in the 1919 List with being destroyed in the area (see Figure 1.26). It went missing after sailing on 14 August 1918 (Messimer 2002, 214). Grant (2002, 89) has shown that this cannot be correct. But in this case the wreck of *UB103* is more likely to be one of two

mystery UBIII-Class wrecks found off the Belgian coast by Termote (1999, 139-144). Both fit the description of *UB103* and they lie in a freshly laid minefield. I am grateful to Michael Lowrey for bringing this to my attention in conversation on 8 May 2013.

### **3.5: Conclusions**

While a full analysis of the differences between the extant archaeology of the U-boat wrecks and the 1919 List follows in the chapter concluding WW1, a number of features highlighted by the research into the Dover area U-boat losses are worth encapsulating at this point. The unique nature of the Dover area in this thesis is caused primarily by first, the high importance of the mine barrages, second the density of the U-boat losses and wrecks in a confined body of water, and third the role of Admiralty Salvage Section divers working the wrecks during the war.

In order to derive an accurate picture of events, it was important to incorporate the operational and positional data from the Salvage Section records, the Dover Packs and the ASD records from the 1919 List into the GIS base map. By using all three sources, a detailed representation of what those records constitute in positional terms has been developed and incorporated with the positions of the wrecks and minefields (see A3 Map 1). Although extremely time consuming, it was absolutely necessary to correctly unravel the relationship between so many incidents and data points.

Approaching historical and archaeological research in this way can reveal insights into the actions of the time which would otherwise simply be lost in the huge volumes of text which constitute much of the records and would be impossible to reconcile in any other way. Some examples from this chapter include:

- ASD overlooked the presence of two confirmed wrecked U-boats (*UB38* and *UC79*) when compiling the 1919 List, creating unnecessary errors when they were actually in possession of the best evidence for destruction available;
- The seemingly random relationship between incidents, patches of oil, the reports of the divers and the payment of rewards for the destruction of U-boats clearly shows that the Dover Command did not keep track of these events, nor reconcile them in any scientific way. A more accurate plotting of these types of incidents would in practical terms at the time at least have saved the Salvage Section much effort in diving supposedly fresh U-boat losses, only to find older, less useful U-boat wrecks, as in the cases of *UC79* and *UB38*;

- It is now known that Salvage Section divers did not inspect the wreck of (*UB31*), but actually examined the wreck of *UB55* on two different occasions, without noticing they had done so. This demonstrates poor record keeping at least.

Furthermore, the utilisation of both local command and ASD records in this chapter serves as a good opportunity to examine the expressed tensions which existed between Fleet Commands and ASD in the attribution of U-boat losses, e.g., the criticism faced by ASD that they were “unduly pessimistic” when assessing losses (THSA 1919b, 6). However, in reality it seems that both parties made correct and incorrect attributions. For instance, Keyes was certain that a U-boat was sunk where the wreck of *UB78* now lies, but ASD did not list a U-boat destroyed at that position in the 1919 List. Conversely, Figure 1.26 revealed two incidents where Keyes listed U-boats destroyed when in fact they were not and ASD correctly did not list them as such in 1919.

The ASD records compared to the positions of attacks and known U-boat wrecks shows a peculiarly inconsistent approach to accurately recording where ASW incidents took place. For example, the assessors went to the trouble of telephoning the Felixstowe Command to acquire an accurate position for the destruction of *UC26*, presumably because they recognised the one they were given by the Dover Command referenced the 7A buoy, not the incident. But conversely they plotted the position of the losses of other U-boats in obviously incorrect places, such as the known mined *UB58* in a position some miles from the wreck and outside of the minefield (see A3 Map 1). Typographic errors in the recording of the losses of *UB56* and *UB109* should also be noted here.

Through the eyes of contemporary research and GIS, the records of Dover Command, ASD and the Salvage Section are revealed as datasets to be treated with caution as they all contain inaccuracies. One is left with the conclusion that significantly less scrutiny and rigour were applied to their compilation than one sees in much of the records of the AUD of WW2, as will be shown later. The conclusion which could be drawn is that ASD was still searching for processes and definitions which would have assisted it in taking a more consistent line with each case examined.

Finally, looking at the Room 40 history sheets for all of the 15 U-boats which have an identity derived for them reveals that in 12 cases nothing at all was known of the movements of the U-boats. In the other three cases, *UB78* had been tracked incorrectly, *UB35's* movements were only known because of the two crewmembers it left on a ship when it escaped a surprise attack and only in the case of *UB109* were its movements briefly understood during its last days

inward bound. It will be recalled that *UB109* was the last sunk in the area and one of the last losses of the war. The issue of tracking will be returned to in the conclusions to Part Two.

## **Chapter 4: The English Channel and its First World War U-Boat Wrecks**

### **4.1: Introduction: The Channel and the First U-Boat War 1914-1918**

From a strategic standpoint, the English Channel was an important theatre of operations for U-boats during WW1. From February 1915 when Germany first deployed its U-boats against trade, the important targets were the troop, supply and coal shipping going across the Channel to and from France and the merchant shipping arriving at and departing from its major ports to all corners of the world. A notable Royal Navy casualty prior to this date, was the pre-dreadnought HMS *Formidable*, sunk on New Year's Day 1915 with heavy loss of life (Gibson & Prendergast 1931, 19).

Nearly all of the U-boat patrols carried out in the Channel during the war were done so by the UC and UB-Class U-boats of the Flanders Flotilla. It was constituted in March 1915 and began operations in the Channel in July and minelaying in August using the small, coastal UBI and UCI type U-boats. Due to the limited endurance of these small submarines, operations were limited to the eastern Channel until the larger UCII and UBII U-boats arrived in early 1916.

Incursions into the Channel usually took place after a passage through the Dover Straits, for which the Flanders Flotilla became adept (Gayer 1926, 636). Flanders Flotilla patrol lengths in the Channel were short and hardly ever extended to more than a few days over two weeks. Importantly from the outset, the location of the Flanders Flotilla on enemy soil necessitated secrecy which led to strict restrictions in the use of radio and the consequent difficulties experienced by Room 40 in tracking its activities (Birch & Clarke 1922a, 316-317). The occasional U-boat from the fleet did operate in the Channel. In those instances patrol lengths were longer and radio communications did occur, as this chapter will describe.

The German curtailment of the first attack on merchant shipping in September 1915, following diplomatic pressure did not stop the minelayers, which continued to operate in the Channel area throughout the war. Anti-shipping operations in the Channel resumed in February 1916 with a spate of attacks without warning which ended in April after the passenger ship *Sussex* was torpedoed (Gayer 1926, 640) creating further diplomatic pressure on Germany to rein in indiscriminate attacks. Limited U-boat operations according to the "Prize Rules" continued; gaining in strength throughout the year and increasingly focusing on the Western Approaches where enemy patrols were at their weakest. Fully unrestricted submarine attacks throughout the Channel resumed in February 1917 and continued unabated until the autumn of 1918, when the

final closure of the Dover Straits heralded a decline in U-boat operations in the area (Gayer 1926, 646-659).

Until 1917, the British response to the U-boat threat in the Channel fell mainly upon the Auxiliary Patrol, whose small vessels were meant to provide a continuous protective screen around Britain. This huge effort yielded few successes for the resources employed (Tarrant 1989, 17). The Channel area also witnessed the deployment of aircraft, airships, minefields, Q-ships and submarines in the anti-U-boat role, with mixed results (see below).

One of the earliest instances of the adoption of the convoy system (which finally began to reduce shipping losses) came in January 1917 when coal shipments to France were so protected. France was heavily reliant on British coal. In the last two months of 1916, the predations of the Flanders U-boats had effectively reduced the volume of coal shipped to France by 40%. The immediate success of the scheme was startling from the outset and it was extended throughout the Channel. By the end of the war only 0.13% of convoyed coal sailings had been lost to U-boats (Halpern 1994, 351-2). Clearly, where possible, the U-boats would seek out less protected targets.

#### 4.2: U-Boat Wrecks Which Match the 1919 List

There are 14 known U-boat wrecks thought to have been sunk during WW1 in the Channel Area (see Figure 1.27). A fifteenth (*UB26*, see Appendix 1.7) was immediately salvaged and will play no further part in this thesis. The wrecks were all sunk in an eighteen month period from November 1916 to May 1918 and their losses relate to the wide range of differing means adopted to tackle the U-boat menace. Of the 14 wrecks, seven exactly match the 1919 List and their cases will be examined in chronological order in this section.

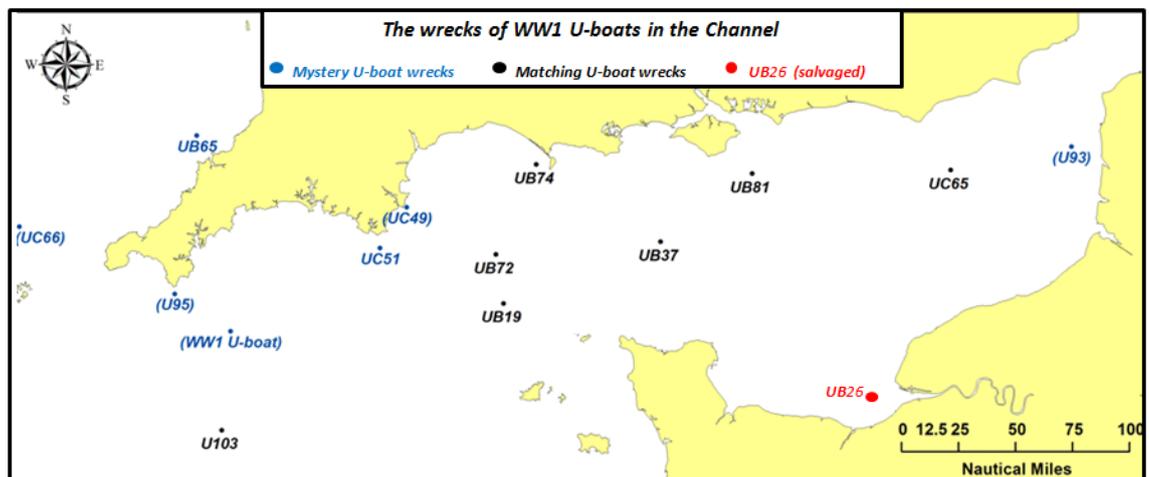


Figure 1.27. The mystery and matching U-boat wrecks in the Channel outside of the Dover area and the location of the salvaged UB26 (see Appendix 1.7) (Innes McCartney GIS base map).

## The wreck of *UB19*

Hydrographic Record No. 23355

Position: 49 52.752; 002 47.382W

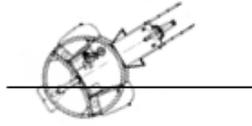
Depth: 65m

*UB19* was sunk on 30 November 1916 in the first of two known successful Q-ship (Royal Navy ASW ship disguised as a merchant ship) actions in the Study Area. In both instances the Q-ship in question was the successful “Q7”, or HMS *Penshurst*. In this case the U-boat attacked with its gun and was tricked into thinking its target had surrendered when the “panic party” abandoned ship. The U-boat closed on the lifeboats and was at 250 yards range when the *Penshurst* opened fire, destroying the U-boat. It subsequently picked up 16 survivors. The incident was graded “A” Known Sunk by ASD and therefore there has never been any doubt that the wreck of *UB19* would be found at some time (NA ADM 239/26). It should be noted that this incident was purely a coincidental encounter. The Room 40 history sheet for *UB19* reveals that its presence on patrol was unknown to the British (NA ADM137/3916).

The wreck of *UB19* lies 3.9 nautical miles to the southwest of the ASD position given in the 1919 List (NA ADM 239/26). According to the Hydrographic office wrecks database (No.23355), it was first located by survey in 1990 and was described as an upside down sailing ship. The wreck was discovered to be a submarine by recreational divers from Weymouth in 2004 when the site was dived for the first time. The author surveyed the wreck on 1 July 2006 and the main features are shown in Figure 1.28 and described below as:

- Image A: This shows the forward port side hydroplane and guard of a type consistent with the UBII-Class submarine;
- Image B: The twin bow torpedo tubes in the “over under” configuration of the UBII-Class submarine. The door of the upper tube is partially opened. Compare this with a similar image of *UB37* in Figure 1.29;
- Image C: Only the mount of *UB19*'s gun remains. The gun itself was not seen on the tape of the survey dive and may well have been blown off when *Penshurst* opened fire on the U-boat. It is known that over 80 rounds were fired at *UB19* before it sunk (Chatterton 1922, 116);
- Image D: The bridge compass has fallen off the conning tower and lies on the seabed;
- Images E & H: The compressed air cylinders have fallen off the wreck. Most of the upper works above the pressure are greatly deteriorated;
- Image F: The open conning tower hatch is consistent with the fact that most of the crew escaped;
- Image G: The attack periscope is housed in the retracted position;

**Name: UB19 Posn: 49 52.752; 002 47.382W Depth: 65m**  
**Date of Loss: 30 Nov 1916 How Sunk: Q-ship**  
**Date of Survey: 1 July 2006**



Wreck leans 55 deg to starboard

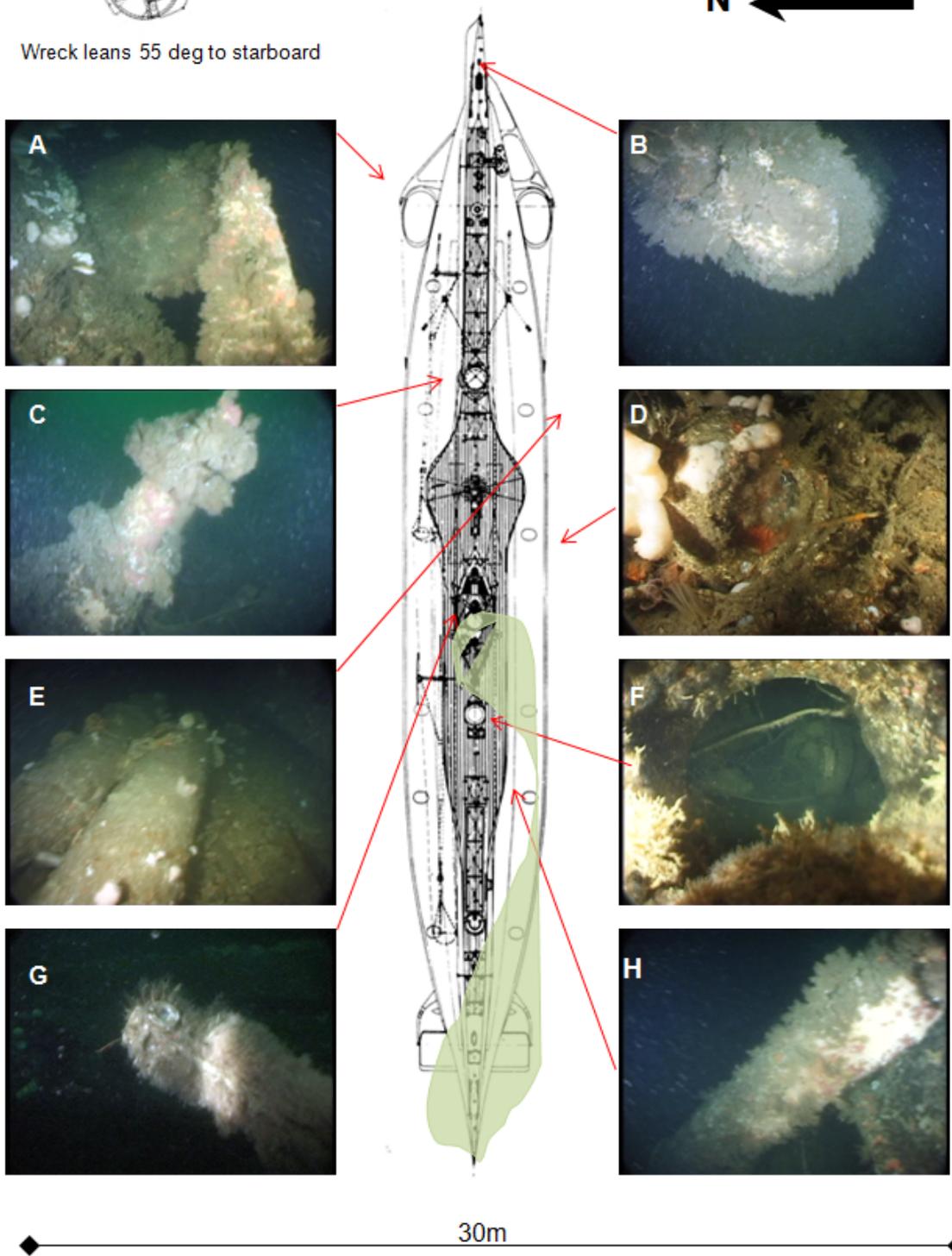


Figure 1.28. Diagram of the wreck of UB19 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 51).

There is currently no reason to assume that this wreck could be anything other than *UB19*. The position is close enough to the one given in the 1919 List to be within the margin of error for dead reckoning navigation. Moreover, all of the features are consistent with a UBII-Class submarine and the open hatches are what would be expected of a submarine which had been abandoned.

### **The wreck of *UB37***

*Hydrographic Record No. 18865*      *Position: 50 10.243; 001 38.442W*      *Depth: 58m*

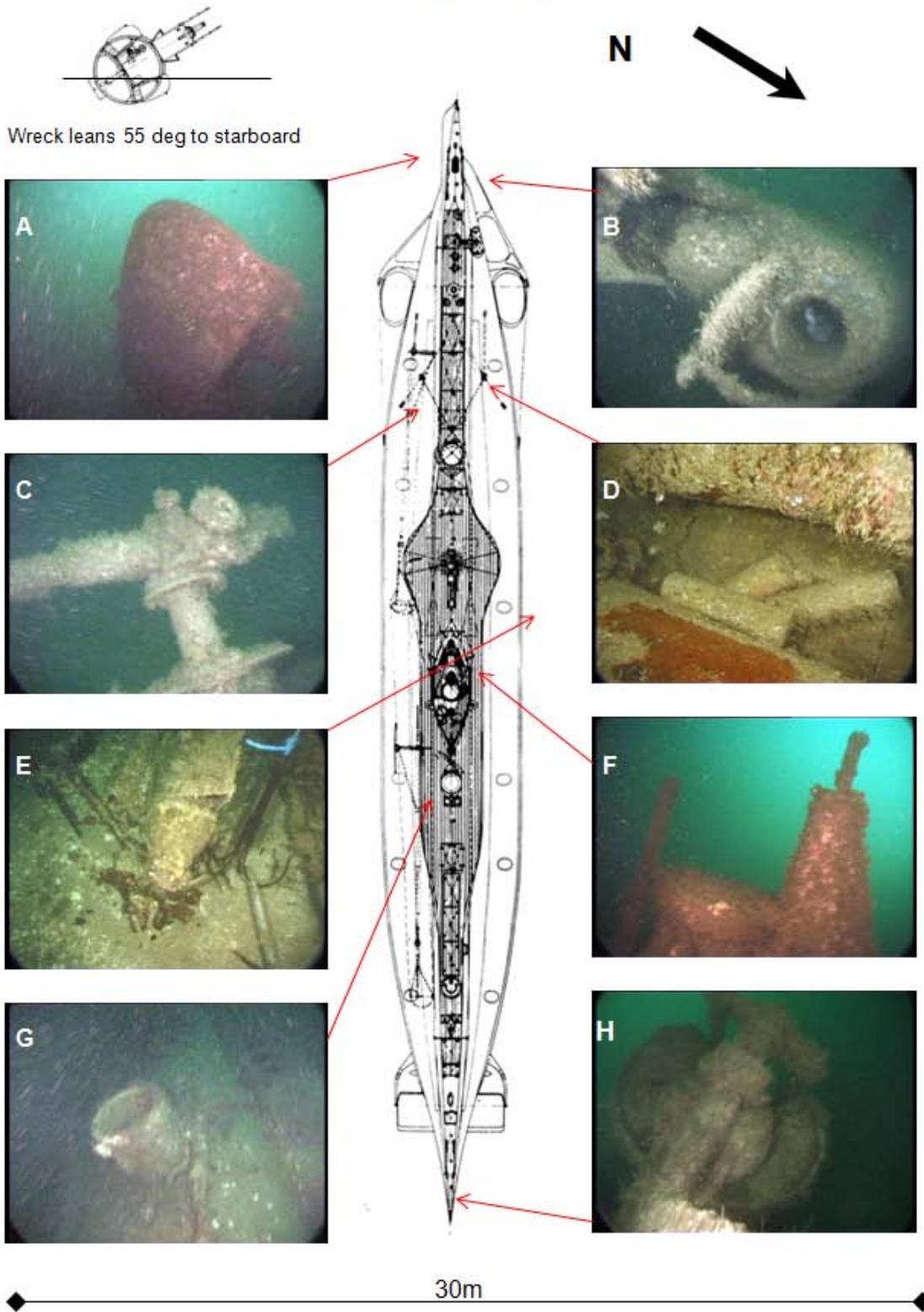
A little over a month after sinking *UB19*, HMS *Penshurst* sank *UB37* in slightly differing circumstances. This incident occurred on 14 January 1917. The U-boat fired a warning shot, to which *Penshurst* then exercised “abandon ship”. This led the U-boat to close to 700 yards and open rapid fire. *Penshurst* immediately replied, hitting the submarine at least six times before it sunk by the stern. Depth-charges followed and no survivors were seen in the oil patch which resulted. Consequently the incident was listed as “A” Known Sunk and associated with *UB37* only post-war in 1919 when the final list was compiled (NA ADM 239/26). From the Room 40 history sheets (NA ADM137/3916) it can be seen that it was unaware this U-boat was at sea at the time it was sunk, as in the case of *UB19* above.

There are other Q-ship incidents which were similarly attributed to U-boat losses, in which it is now known that the U-boat escaped. For example HMS *Stonecrop* claimed *U88* on 17 September 1917 in a very similar incident (NA AD239/26), but it was proven by Grant (1969, 74) that the target had been *U151*, which had escaped. Certainly the case of *UB37* was far from certain; despite its optimistic “A” Known Sunk attribution. The fact that *UB37* did not return from patrol suggested this may have been a successful action, but it was not until the wreck was discovered that the case could be closed.

According to the Hydrographic Office wrecks database (No. 18865), a wreck was located at the location given above in 1991. In 1999, the charter boat skipper Grahame Knott heard that this site was considered to be a submarine and the author surveyed the site on 2 August of the same year, confirming the wreck to be *UB37* (McCartney 2003, 105). The key features of the wreck are as follows and as shown in Figure 1.29 below:

- Image A: The bows of the submarine are in very good condition with no impact damage. This is commensurate with the report that the submarine sank by the stern;

**Name: UB37 Posn: 50 10.243; 001 38.442W Depth: 58m**  
**Date of Loss: 14 Jan 1917 How Sunk: Q-ship**  
**Date of Survey: 2 August 1999**



Wreck leans 55 deg to starboard

Figure 1.29. Diagram of the wreck of UB37 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 51).

- Image B: The “over under” torpedo tubes of the UBII-Class (as seen also on *UB19* above) are intact as fitted. Interestingly, the lower tube is open and empty. This strongly suggests that *UB37* fired a torpedo at HMS *Penshurst*. This evidence, when coupled with the U-boat’s sudden rapid fire, suggests that *UB37* may have realised too late that its target was a Q-ship;
- Image C: *UB37*’s deck gun. In this case it appears that the single upper recoil cylinder has fallen away. The mount is of the same type seen on *UB19* (see above).
- Image D: Human agency is not always easy to detect on shipwrecks, but in this case, the image shows the expended ammunition cases which had been used by *UB37* whilst firing on HMS *Penshurst* and left in a recess in the hull beside the gun;
- Image E: The down-line to wreck was hooked into the bridge compass binnacle, which now lies on the seabed, having fallen off due to corrosion;
- Image F: The main bridge hatch is shut, which could point to the U-boat attempting to dive when it was attacked;
- Image G: However, the aft hatch is open, suggesting that the submarine foundered before all hatches were shut;
- Image H: The point of the stern has broken away, but the rudder is still in place, suggesting a soft impact with the seabed.

The position of the wreck lies 6.4 nautical miles to the northeast of the position listed in 1919. Out of sight of land and due to dead reckoning navigation and the results of combat, this is close enough to be accepted as the wreck. The evidence on site suggests that *UB37* may have been attempting to dive when it was sunk. The evidence also shows that a torpedo was also possibly fired.

### **The wreck of *UC65***

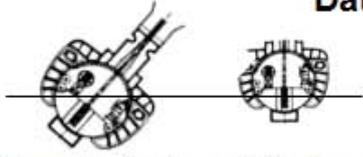
*Hydrographic Record No. 20713*

*Position: 50 30.392; 000 28.808E*

*Depth: 41m*

Alongside the two Q-ship incidents described above, British submarines were also known to have sunk two U-boats in the Channel. The first of which was *UC65* which was sunk by HMS *C15* on 3 November 1917. Both submarines were on the surface when *C15* sighted *UC65*, dived and attacked, striking the U-boat with one torpedo (having fired two) and sinking it immediately. Six survivors including the commander were picked up (NA ADM239/26). From the interrogations of the survivors (NA ADM 137/3060) it is known that *UC65* was returning to Flanders and had depleted its torpedoes. It had sighted HMS *C15* but was confident it could outmanoeuvre a torpedo. The commander (Klt. Lafrenz) considered it a lucky shot which hit him. All the survivors were in the bridge when the torpedo struck.

**Name:** UC65 **Posn:** 50 30.392; 000 28.808E **Depth:** 41m  
**Date of Loss:** 3 Nov 1917 **How Sunk:** Submarine  
**Date of Survey:** 2 Sept 1999



Forward section leans 40 deg to port. Stern section is upright

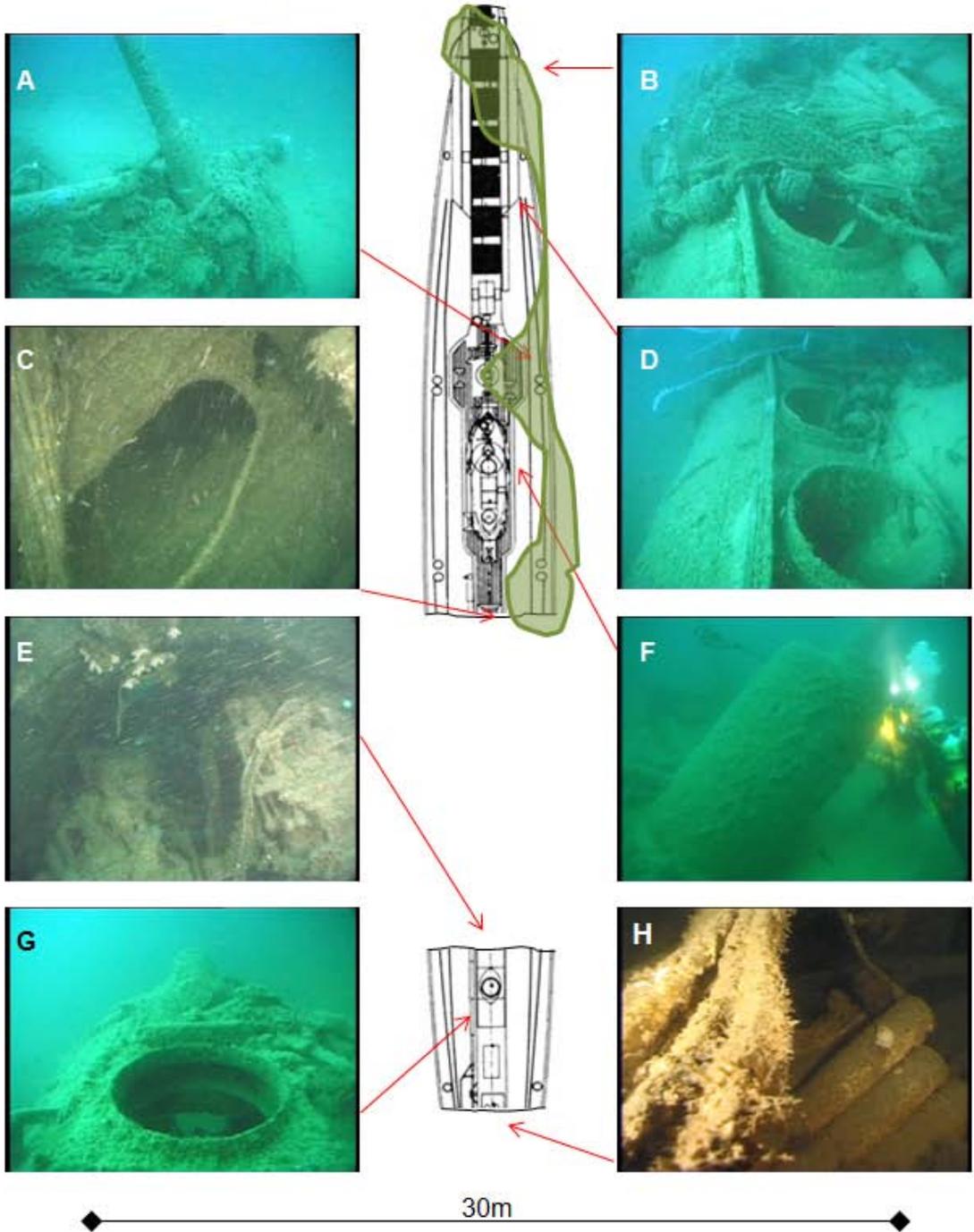


Figure 1.30. Diagram of the wreck of UC65 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 52).

The Room 40 history sheet for this boat (NA ADM137/3918) shows that its progress at sea was being tracked and it seems likely that HMS *C15* was vectored to intercept this U-boat. This is because its last radio transmission was on the morning of its destruction and was accurately fixed by DF.

The Hydrographic Office record (No. 20713) makes no reference to when the wreck was first detected, but states it was dived first in 1993 and identified as *UC65*. The author has surveyed this site on three occasions. The last was on 2 September 1999, from which the images in Figure 1.30 are derived:

- Image A: The 88mm gun has been caught by a trawl and forced into the vertical position. The gun appears to be of the 30 calibre type with two recoil cylinders, which have fallen off;
- Image B & D: The mine chutes are partially covered with net and full of sand, but they clearly denote that the wreck is a UCII-Class minelayer;
- Image C: The break aft of the conning tower reveals the doorway which leads into the control room;
- Image E: The two diesel engines can be seen at the forward point of the aft section of the wreck;
- Image F: The divers give scale to the remains of the conning tower. The hatch is open as would be expected for a U-boat sunk whilst on the surface;
- Image G: The engine room hatch, looking towards the forward section of the wreck. It is open, probably caused by the sinking;
- Image H: 88mm ammunition stored in the aft torpedo room. The sternmost portion of the wreck could not be seen and appears not to be present on the wreck site.

The loss of *UC65* was a clear cut case of “A” Known Sunk and therefore the wreck is not in a surprising location. It lies 7.7 miles eastward of the position given in the 1919 List. But from surveying the wreck site, there can be no doubt the wreck is *UC65*. The key identifying feature is the fact that the submarine has broken in two. Evidence shows that this occurs when submarines are torpedoed. See the case of *UB72* later in this chapter.

### **The wreck of *UB81***

*Hydrographic Record No. 19882*

*Position: 50 29.442; 00 58.351W*

*Depth: 27m*

Among the losses correctly listed in 1919 which are confirmed by the presence of U-boats, *UB81* is the only example outside of the Dover area which was mined. The event took place on 2 December 1917. Due to the presence of survivors, the incident was listed as “A” Known Sunk in 1919 (NA ADM 239/26) and there has never been any doubt that *UB81* was destroyed.

The U-boat detonated a mine which flooded the aft torpedo room, anchoring the U-boat to the bottom. By blowing ballast, the bows were made to reach the surface due to the shallow waters. At an acute angle six crewmembers were able to scramble up through a torpedo tube and stand on the casing. Their flares attracted a patrol boat which collided with the submarine as it rescued the crew outside, sinking it and drowning those remaining inside the hull (McCartney 2003, 113). From the Room 40 history sheet for *UB81* it is known that from 30 December the U-boat was known to be in the area.

However, the position of the wreck and its condition raise questions about the circumstances of the sinking and the treatment of the wreck post war (see Figures 1.31 and 1.32 below). The wreck and the historical position from the 1919 List (NA ADM 239/26) both plot around 15 miles southwest of the C&D minefields (positions from Leith 1920a 68-9 & appendices) which, according to the interrogation of the survivors (NA ADM137/3060) was where *UB81* had bottomed during the night of 1 December. It is clear from the description of the sinking that the U-boat could not have moved far after the mine explosion.

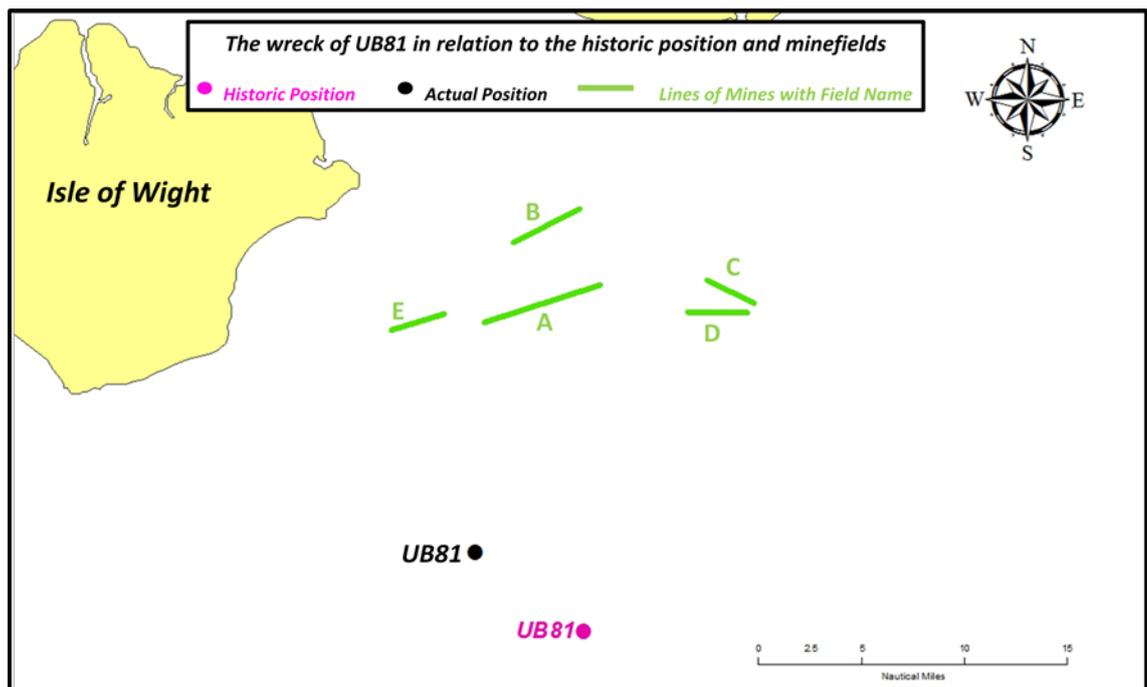


Figure 1.31. Map of the location of the wreck of *UB81*, the historic position given in 1919 and the mines it is attributed with striking (Innes McCartney GIS base map).

However, the interrogation also reveals that during the previous night, *UB81* had anchored to the bottom and in the morning when attempting to retrieve the anchor, had lost it and around 50m of its chain. All of the following day up to the time of the mine explosion the U-boat was steering badly which led the survivors to think that they were dragging something which must have caught a mine mooring (NA ADM 137/3060). The explosion itself was slight, so it is

certain that contact with the mine was not made but that the explosion was close-by. This would seemingly explain why the wreck is so far from the minefield.

With *UB81* definitely known sunk close to shore it was a natural target for the Admiralty Salvage Section. It is clear from the Salvage Section records that the site was quickly located and that it was decided to recover the submarine whole. With this in mind 9-inch cables were laid under it but the winter weather continually thwarted attempts to lift the wreck. By January, patience had run out and the salvors were sent to another job (NA ADM116/1632). Cmdr. Damant's record of sites examined shows that the wreck was not revisited (NA ADM116/1581) and neither does the wreck appear in the immediate post-war records of the Salvage Section (NA ADM116/2009-2013). It can be concluded therefore that the submarine was intact at the time it was abandoned.

According to the Hydrographic Office record (No19882) the wreck has been known about since 1961 with diving activity taking place since in 1974. The author first dived the site in 1997 and returned on 24 July 1999 with video. Figure 1.32 depicts the wreck as seen and it is described as:

- Image A: The anchor point for the gun mount, now without the gun. The gun was still attached to the wreck in 1990 (Hydrographic Office record No. 19882) but had fallen off by the time the author first visited in 1997;
- Image B: The bows have been heavily damaged and only one of the four torpedo tubes now remains;
- Image C: This shows the gun and its mounting (on the right) with the muzzle now buried in the seabed. The gun is of the C14 Krupp 88mm 30 calibre type on the C16 U-boat gun mount. As described above this came away from the wreck in 1990s;
- Images D&E: The conning tower has been removed from the wreck and lies on its port side. The two periscope shafts are still connected and are bent around the top of the pressure hull;
- Images F&H: The aft torpedo loading hatch and the engine room hatch are open;
- Image G: This shows the doorway into the engine room and marks the last portion of the wreck to be intact. The aft torpedo room has been heavily salvaged and none of the features aft of this door are easily recognisable.

Name: *UB81* Posn: 50 29.442; 00 58.351W Depth: 27m  
 Date of Loss: 2 December 1917 How Sunk: Mine  
 Date of Survey: 24 July 1999

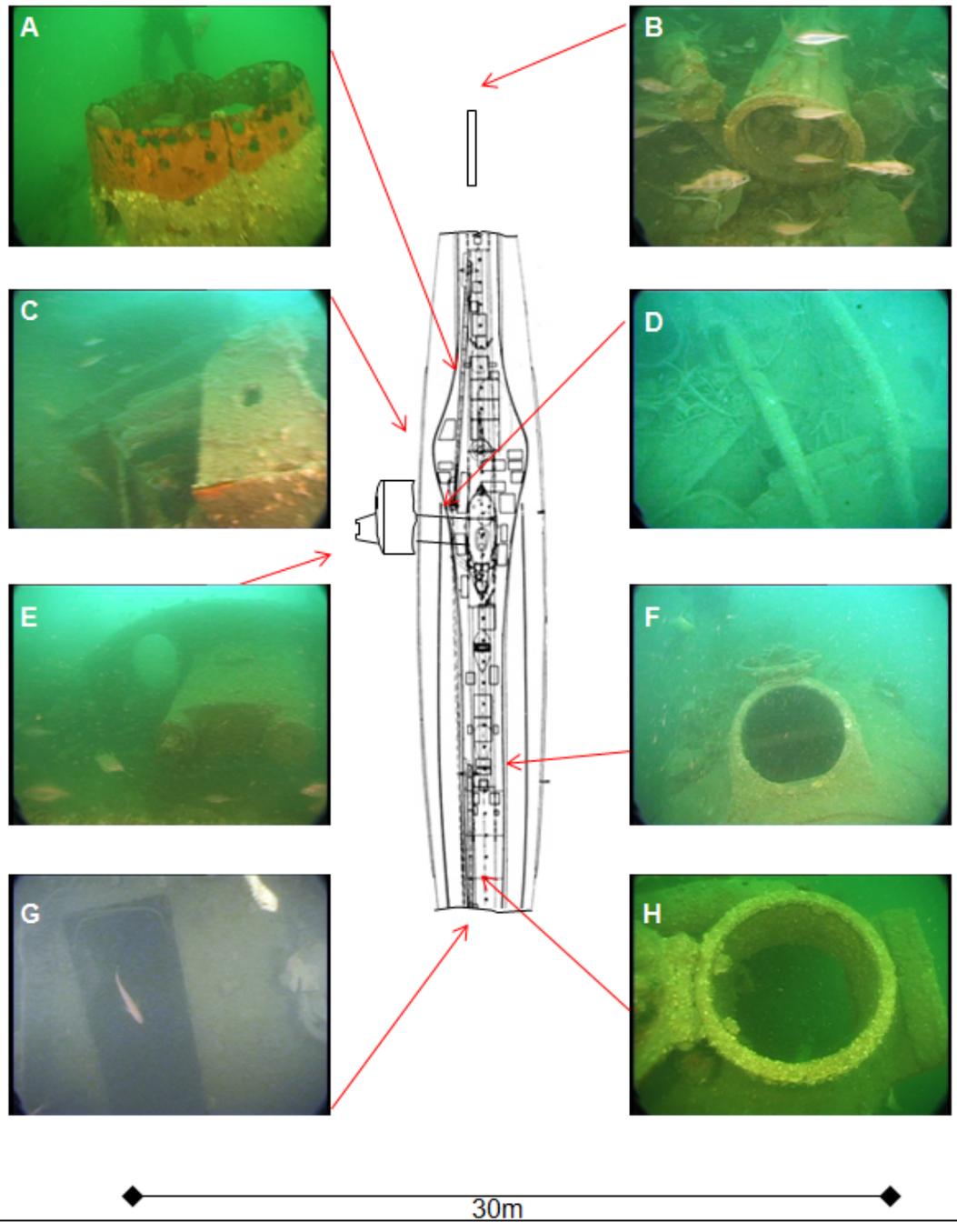
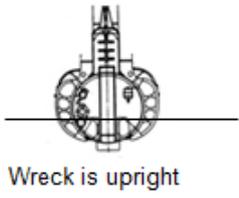


Figure 1.32. Diagram of the wreck of *UB81* showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

When surveyed, it was revealed that the wreck had been heavily damaged and that up to five of the torpedo tubes had been salvaged. It cannot be absolutely known how or when this occurred, but it is known from the GIS base map based on the AUD Incident Reports (NA ADM199/2056 No. 10374) covering the 1944-1945 Inshore Campaign that the wreck was attacked with depth-charges by an MTB in February 1945.

However, the damage seems to have been slight because the Hydrographic Office record (No.19882) shows that the wreck was reported to only have some slight damage to the bow in 1975. But revealingly it then states that an application to purchase the wreck “from Admiralty” had been made by Spithead Marine Salvage Ltd. in the same year and that by 1993 the wreck was in broadly the condition seen now. In 2006 the Ministry of Defence instituted a complete diving ban on the site under the Protection of Military Remains Act 1986. But for the purposes of this study, the wreck is consistent with the 1919 List (NA ADM 239/26) and the damage to the site can be satisfactorily explained.

### **The wreck of *U103***

*Hydrographic Record No. 22758*      *Position: 49 15.480; 004 51.404W*      *Depth: 105m*

*U103* and the following case, *UB72*, were both sunk on 12 May 1918 and appear to have been participants in a German operation which concentrated against convoys coming into the Channel from the southwest (Grant 1969, 44). *U103* was sighted on the surface by the liner *SS Olympic* whose captain later wrote that he immediately turned to ram the U-boat. The glancing blow caught the submarine on the port side and fatally holed it. Before it disappeared into the night behind the liner, it was seen to be sinking by the stern (Hayes 1925, 230). It was shortly found in this condition by the escorting destroyer *USS Davis* which lowered boats and picked up 31 survivors, including the captain, who were clinging to the sinking submarine. Simultaneously crew on the *Davis* witnessed the U-boat plunge stern first to the bottom (Chatterton 1934, 340-345). From the Room 40 history sheet for *U103* (NA ADM137/3914), it can be seen that the U-boat’s presence in the western entrance to the Channel was known to the British.

**Name: U103 Posn: 49 15.480; 004 51.404W Depth: 105m  
Date of Loss: 12 May 1918 How Sunk: Rammed  
Date of Survey: 2008**

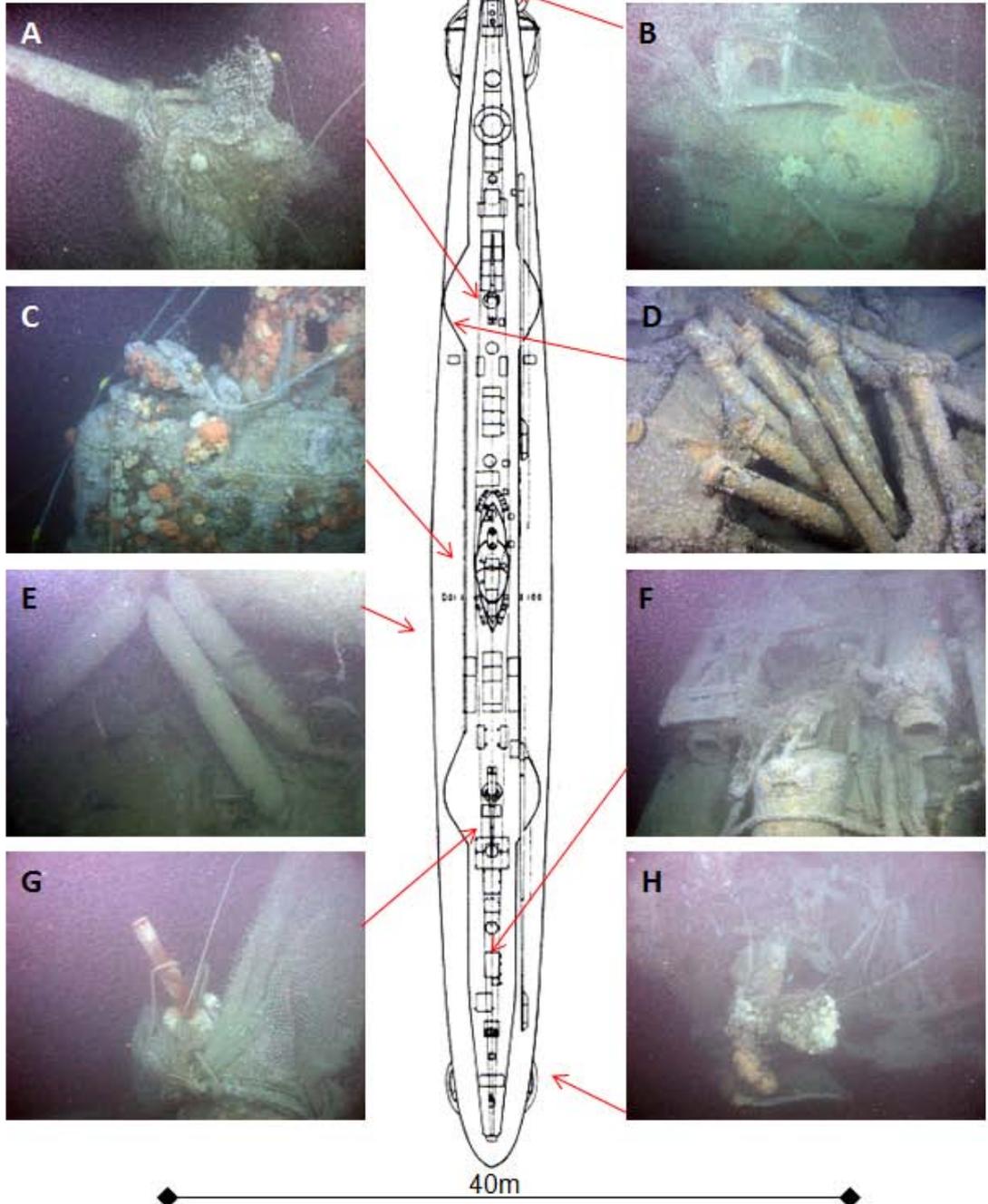
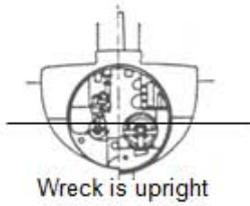


Figure 1.33. Diagram of the wreck of U103 showing its key features as surveyed and described in the text (Innes McCartney, with images courtesy of Odyssey Marine Exploration and line diagram adapted from Rössler 1997, 191).

There was never any doubt that *U103* had been destroyed. Consequently it was listed as “A” Known Sunk in the 1919 List (NA ADM239/26). Its only recent discovery is due primarily to its remote location in the centre of the widest part of the Channel (see Figure 1.27) which due to depth and distance from shore is largely inaccessible to divers. According to the Hydrographic Office wrecks database (No.22758) the wreck first appeared on French charts (it is on the French side of the mid-Channel separation zone) in 1980. However the actual identity of the wreck was not known until it was surveyed by ROV by Odyssey Marine Exploration in 2008. I am grateful to Greg Stemm for allowing me access to the ROV footage of the survey, from which Figure 1.33 is derived and is described as:

- Image A: The forward gun is of the 105mm UTOF type, manufactured by RMM of Dusseldorf and is consistent with the type Gröner (1991, 12) lists as being fitted to *U103*;
- Image B: The pair of forward torpedo tubes as seen from the starboard side. *U103* was fitted with only two forward torpedo tubes (Gröner 1991, 12). This is consistent with what is seen on the wreck;
- Image C: The conning tower hatch seen from the port side. It is open which is consistent with the crew escaping from the submarine;
- Image D: A large quantity of ready-use ammunition in watertight containers is seen stored around the forward gun;
- Image E: The main area of damage is on the port side just aft of the conning tower, where the ballast tanks have corroded and the compressed air cylinders have fallen out onto the seabed. This partially obscures the damage to the pressure hull most likely caused at this point;
- Image F: Looking forward, the aft torpedo loading hatch is shut. Both exhaust systems for the diesels can be seen in place on the deck;
- Image G: The aft Krupp 88mm 30 calibre gun of the 1914 type as fitted to *U103* (Gröner 1991, 12) has been caught in a trawl and pulled upright. The muzzle and twin recoil cylinders can be seen shrouded by net;
- Image H: The starboard propellor is distorted by impact with the seabed. As described above the U-boat sunk by the stern. There is further damage on the port side (not shown) which is consistent with a seabed impact. A crack in the hull which may have been caused by one of *Olympic*'s propellers is also visible.

Overall this wreck is in exceptionally good condition. There is no doubt that it is *U103*. The wreck lies very close to the position given in the 1919 List (NA ADM 239/26).

## The wreck of *UB72*

Hydrographic Record No. 18437

Position: 50 06.615; 002 50.666W

Depth: 62m

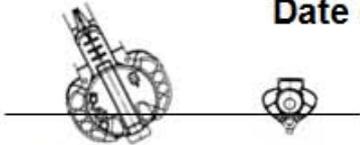
Similar to the case of *UC65* above, *UB72* was sunk by a British submarine. According to Grant (1964, 118) unofficial British sources indicated to him that *UB72* was sunk due to intelligence work which estimated it would attempt to intercept the *Olympic* as it closed on Southampton. At the time of writing, Grant did not have access to certain Room 40 documents which were still secret. Among them is the radio DF log for 12 May 1918 (NA ADM 137/4541) which shows that *UB72* was accurately fixed in the Channel at 02:41 hours. This is recorded in Room 40's U-boat history sheet for *UB72* (NA ADM137/3916) and is very similar to the case of *UC65* above. The difference being that *UB72*, (like *U103* above) was a Germany-based fleet boat which, unlike the Flanders-based U-boats, would routinely send radio signals.

The British submarine HMS *D4*, on patrol in the Channel was ordered to intercept the U-boat. This it duly did. According to *D4*'s log; at 05:30 hours whilst submerged it sighted *UB72* on the surface and fired two torpedoes, surfaced and picked up the only three survivors seen (NA ADM173/1069). From their later interrogations (NA ADM 137/3060) it is known that the U-boat was hit in the engine room by one torpedo and sunk by the stern. Similar to the case of *UC65*, the survivors were on the bridge at the time.

In this instance there was no doubt that the U-boat was destroyed and consequently it was listed as "A" Known Sunk in the 1919 List (NA ADM239/26). According to the Hydrographic Office wrecks database (No. 18437) the wreck was charted in 1980. It was discovered by recreational divers to be a submarine in 1983 but was not identified. The author first identified the wreck in 1997 as being *UB72* and recorded it on video on 25 June 2000. The wreck is shown in Figure 1.34 and described below:

- Images A & H: The wide angle periscope (Image A) fitted forward and the attack periscope (Image H) fitted aft in the double periscope stand of the UBIII-Class submarine;
- Image B: The four forward torpedo tubes are exposed and have broken down due to corrosion. The UBIII-Class was so fitted;
- Image C: The compressed air cylinders of the ballast system have fallen off the wreck and lie on the seabed on the port side;
- Images D & F: The deck gun is of the 105mm RMM-made UTOF type. It faces backward with its muzzle now resting against the conning tower. The gun mount is of the C17 type;
- Image E: The helm wheel from the bridge was found lying on the seabed aft of the conning tower;

**Name:** UB72 **Posn:** 50 06.615; 002 50.666W **Depth:** 62m  
**Date of Loss:** 12 May 1918 **How Sunk:** Submarine  
**Date of Survey:** 25 June 2000



Forward section leans 20 deg to port.  
 Aft section lean uncertain

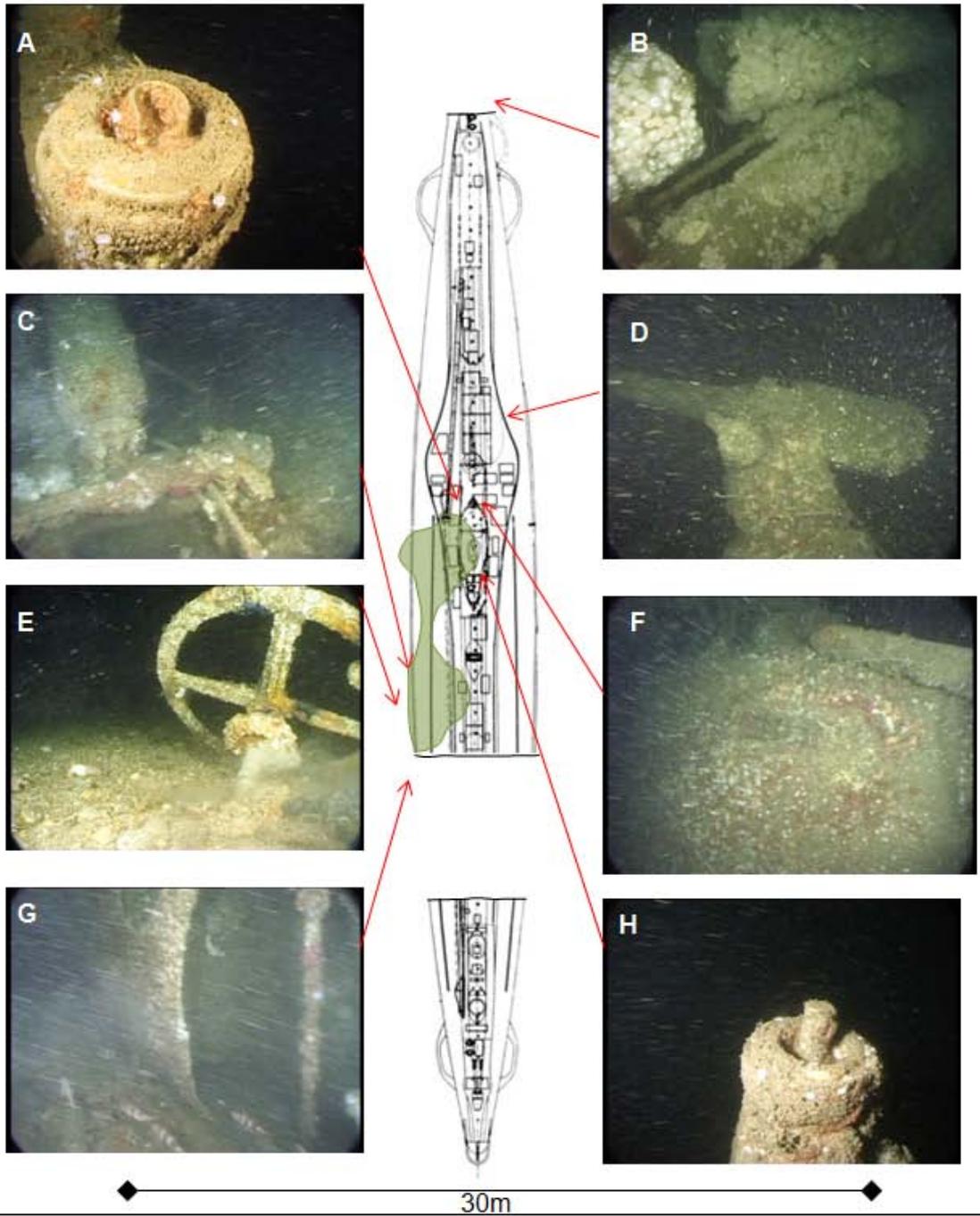


Figure 1.34. Diagram of the wreck of UB72 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

- Image G: The break in the hull occurs at the forward end of the engine room. The stern portion of the wreck can be seen around 5 metres further aft;

The wreck lies 6.4 nautical miles west of the position given in the 1919 List (NA ADM239/26) which is not problematic. The wreck itself shows evidence consistent with a torpedo hit in the engine room and all features match what would be expected of *UB72*.

### **The wreck of *UB74***

*Hydrographic Record No. 18613*      *Position: 50 32.026;002 33.132W*      *Depth: 33m*

According to the 1919 List, (NA ADM 239/26) the steam yacht *Lorna* was on patrol in Lyme Bay on 26 May 1918 when it sighted a periscope, turned to ram and dropped two depth-charges as it passed over the U-boat. Four survivors were seen struggling amidst a large oil patch and air bubble. Another depth-charge was dropped killing three of the survivors and fatally wounding the fourth, who expired shortly after being dragged on board *Lorna*. Because of the circumstances of the sinking, the incident was listed as “A” Known Sunk. The Room 40 History Sheet for *UB74* shows that it was thought to be in the eastern Channel at the time (NA ADM137/3917), seemingly mistaken for *UB57* which was in that area.

According to the Hydrographics Office wrecks database (No. 18613) the position of the wreck is first recorded in 1932. In fact its position was known to the Admiralty from 1918 because Salvage Section divers worked the wreck shortly after it sunk (see below). The author surveyed the site on 30 July 1999 and the details are shown in Figure 1.35 below. The underwater conditions were poor and whilst the overall condition of the wreck was ascertained, the accuracy and size of the holes shown may be slightly different. The conning tower has been removed and lies some way off the wreck. Very few key identifying features remain, but the overall impression is that this is the wreck of a UBIII-Class German submarine. The details of what was recorded are described as:

- Image A: The mount for the deck gun, revealing that it has been removed;
- Image B: The bow torpedo tubes have been removed, heavily damaging the forward section of the wreck which is now open to the sea;
- Images C& D: The ribs of the pressure hull can be seen by entering the large hole in front of the conning tower. The diver is illuminating its position;
- Image E: Some compressed air cylinders are still in place on the aft deck;
- Image F: The aft torpedo loading hatch is shut;
- Image G: The engine room hatch is open;

Name: *UB74* Posn: 50 32.026;002 33.132W Depth: 33m  
Date of Loss: 26 May 1918 How Sunk: Depth Charge  
Date of Survey: 30 July 1999

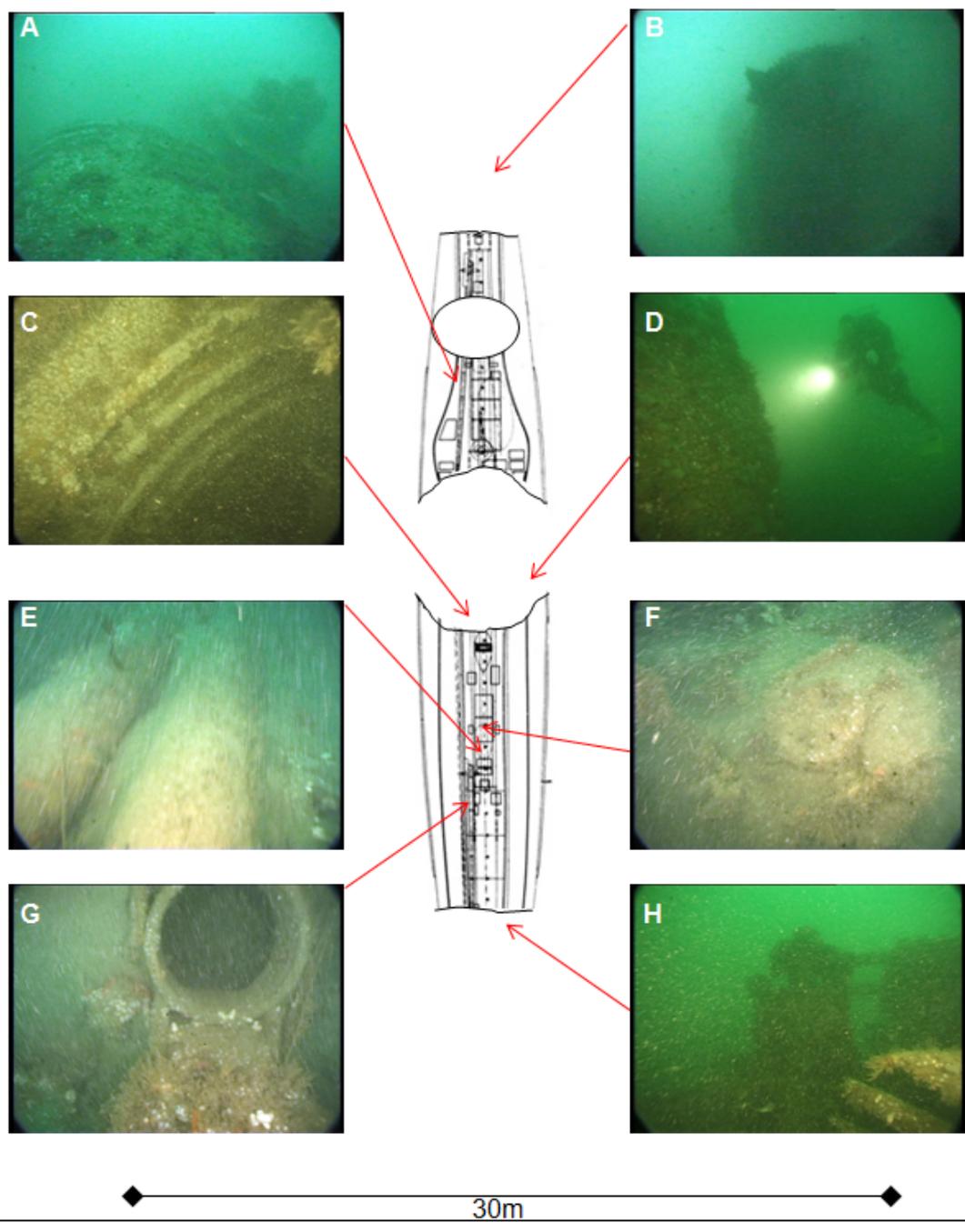
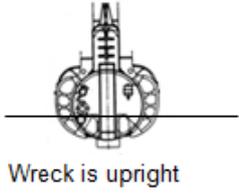


Figure 1.35. Diagram of the wreck of *UB74* showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1989, 56-57).

- Image H: The stern section too has been opened up to remove the torpedo tube. The image taken from the port side shows the two control rods (at the top) which operated the rudder.

The wreck lies 0.7 of a nautical mile from the position given in the 1919 List (NA ADM 239/26) and from what remains there can be no doubt that this is the wreck of *UB74*. The questions raised by the survey relate to its current heavily disturbed state. Overall, the wreck is in a similar condition to *UB81* (see above) and shows signs of being commercially salvaged.

This appears to have taken place in two distinct phases. The first involved the Admiralty. The Salvage Section records (NA ADM 116/1634) describe how the divers were on site from June to September 1918. During this time explosives were used to open the forward hatch to affect entrance into the submarine. Later the conning tower was removed. Items recovered from the site included intelligence papers and the deck gun. Anecdotally, the second phase took place in the 1970s when the torpedo tubes were recovered by divers with the use of explosives (McCartney 2003, 64-65).

### **4.3: Official Losses as Mystery sites: U-Boat Wrecks in the Channel with Possible Connections to the 1919 List**

Three wrecks in the Channel currently fall into this category, which is defined as U-boat wrecks which have some resemblance to the historical record and consequently are not mystery sites. However, either questions remain over their possible identities, so they cannot be classified as known sites; or they were misidentified by the ASD assessors in the 1919 List. This section contains examples of both cases.

#### **3.1 The wreck of *UC51***

*Hydrographic Record No. 18023*      *Position: 50 08.403; 003 41.533W*      *Depth: 66m*

According to the 1919 List (NA ADM239/26), on 17 November 1917 HMT *Lois* witnessed a violent explosion 100 yards east of 50 08.20; 03 42 30W (see Figure 1.36). A U-boat was seen to break surface then roll over and sink. The sea was covered in wreckage, including human remains and a boot with the name “Meezger” on it. Such evidence of destruction immediately led to the incident being listed “A” Known Sunk and attributed to the loss of *UC48*, with the explanation that the U-boat had hit a mine.

This is how it remained until the final 1919 List was published, when the incident was reattributed to *UB18*. The *UC48* attribution was an easy oversight to correct, because by that time the British knew that *UC48* had been interned in Spain since March 1918 (Messimer 2002,

287). However the attribution to *UB18* is a little more difficult to understand. From German records it is now known that *UB18* was in Flanders at the time, having returned from the North Sea (Bendert 2000, 72). The Room 40 plot of U-boat movements for the last quarter of 1917 shows that the British thought *UB18* had sailed for the Channel on 17 November (NA ADM 137/4133). Despite the seeming impossibility of transiting the Straits and arriving off Start Point on the same day, this was the attribution ASD settled on. Unknown to Room 40 was the fact that *UB18* made one final patrol into the Channel in December 1917 from which it did not return and its loss remains unexplained as no wreck has yet been located (McCartney 2003, 24-25). The absence of any knowledge of this final patrol can clearly be seen by looking at the Room 40 history sheet for *UB18* (NA 137/3918).

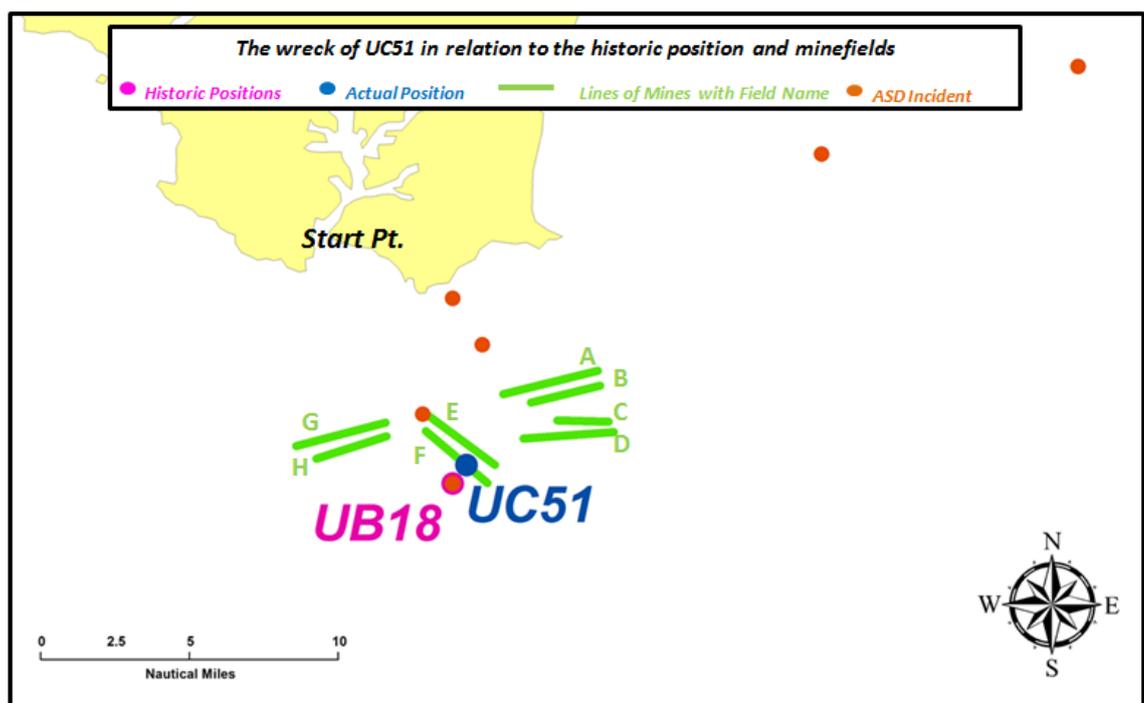
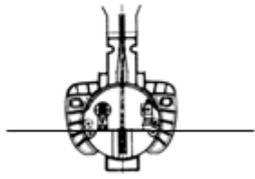


Figure 1.36. Map of the location of the wreck of *UC51*, the historic position given in 1919 (incorrectly for *UB18*) and nearby incidents and minefields (Innes McCartney GIS base map).

With access to the German records, Spindler (1941, 440-1) corrected the attribution to *UB18*, because it was obvious this was incorrect. Spindler (1941, 458-9) also was able to ascertain from German records that the name “Meezger” was part of the crew of *UC51*, finally attributing the incident to the most likely U-boat to have been destroyed.

According to the Hydrographic Office wrecks database (No. 18023) a wreck was first located by survey at the position of *UC51* in 1981. In July 2000, the site was discovered to be a submarine by diver Bill Reid and it was surveyed by the author with Reid on 16 August of the same year, revealing a very well preserved UCII-Class minelayer. The survey results are shown in Figure 1.37 and described as:

**Name:** UC51 **Posn:** 50 08.403; 003 41.533W **Depth:** 66m  
**Date of Loss:** 17 Nov 1917 **How Sunken:** Mined  
**Date of Survey:** 16 August 2000



Wreck is upright

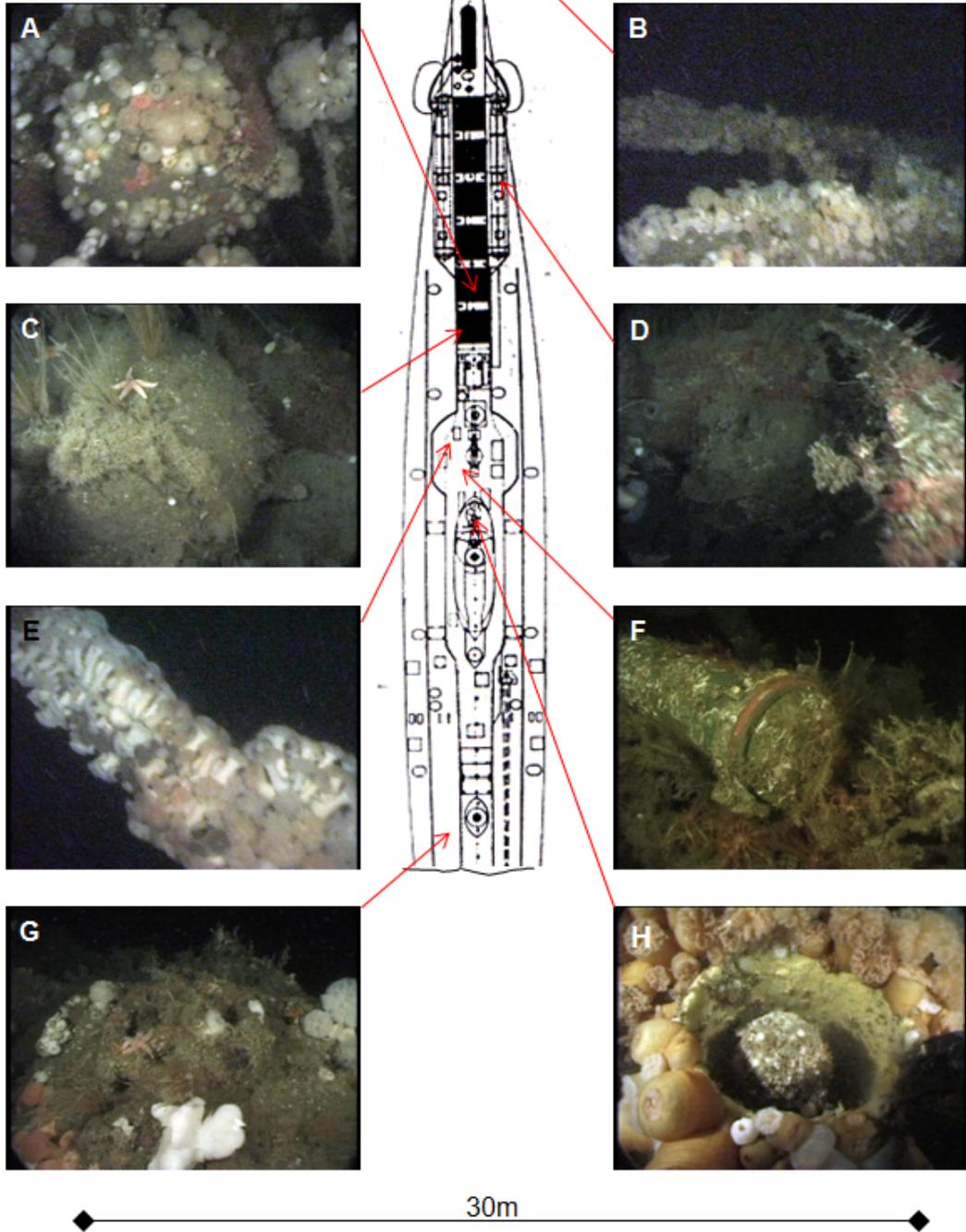


Figure 1.37. Diagram of the wreck of UC51 showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1997, 225).

- Images A & C: The wreck is fully loaded with mines. The chutes are full, suggesting the submarine had not completed its mission;
- Image B: The net cutter on the bow is still in place. This remains the only time that the author has ever seen this feature intact on a WW1-era U-boat. It was a very surprising find;
- Image D: This shows the loading hatch and protective guard for the starboard side external torpedo tube. This is a feature of the UCII-Class U-boat;
- Image E: The wreck (dived in midsummer) was characterised by being covered in marine growth. This image shows the gun barrel and recoil cylinder, which points upwards. The gun appears to be of the type with one recoil cylinder on a small mount (also see Chapter Five);
- Image F: Alongside the gun were the usual pressure proof ammunition containers. The orange rubber seal is clearly visible in this shot;
- Image G: The aft hatch was shut. Beyond this point the submarine seemed broken, but there was not time to investigate this in detail. The impression was that the stern was damaged;
- Image H: The periscope which is situated forward of the conning tower (a feature of the UCII-Class) was well preserved on this wreck.

From the survey dive it was proved conclusively that the wreck was of a UCII-Class minelayer which had not laid its mines. This matches Spindler's (1941, 458-9) assertion that the U-boat destroyed at this location was *UC51* and this is now considered to be the correct identity.

Research for this thesis shows that from the Room 40 plot of U-boat movements (NA ADM137/4133) the British did not know *UC51* was on patrol at the time of the incident and therefore could not have associated it with the 17 November incident. However *UC51* left Zeebrugge on 15 November 1917 to lay mines off Plymouth and attack shipping further west (Messimer 2002, 291) and therefore it would have been in the Start Point area on the day of the sinking and would have still been equipped with its mines (as is the wreck).

The unpublished history of British Minefields in WW1 (Leith 1920a, 74-76) details the minefield laid in the area, which was termed the Prawle Point Field (as shown in Figure 1.36). The deep minefield was laid in early November 1917. Line F, which destroyed *UC51* had been laid just six days before. This was the last minefield laid in the Channel outside of Dover.

### 3.2 The wreck of (*U95*)

Hydrographic Record No. 22507

Position: 49 55.482; 005 11.701W

Depth: 72m

According to the 1919 List, (NA ADM239/26) at 04:15 hours of 7 January 1918, the steamship SS *Braeneil*, south of the Lizard peninsula (see Figure 1.39) heading to Falmouth sighted a surfaced U-boat ahead, and rammed it amidships. The force was so strong that engines had to be reversed to back away from the stricken submarine, which was soon lost in the darkness amid “cries of distress in a foreign language” and the strong smell of fuel. Once in Falmouth the ship was inspected and it was found that the stem, forward plates and frames all showed damage commensurate with a collision. As a consequence of this, the ASD listed this incident as “A” Known Sunk and attributed it to the destruction of *U93*.

This assertion was not challenged until 1965 when Spindler’s 1918 volume was published. He asserted (Spindler 1965, 43-45) that in fact it was *U95* which was most likely lost in this incident. This was primarily because *U93*’s patrol area was in the southern English Channel between the Channel Islands and Penmarch (Brittany), whereas *U95* had been ordered to patrol in the Western Approaches. Subsequent historians (notably Grant 1969 & 2003) have accepted this sensible adjustment. Both U-boats departed Ems between 27 December 1917 (*U95*) and 29 December 1917 (*U93*), passed through the Straits and would have been active on 7 January.

Some of the losses of January 1918 are confusing, not least because *U84*, *UC50*, *U93* and *U95* were all cited as being lost in the 1919 List (NA ADM239/26) through circumstances which have been open to challenge. Moreover, the activities whilst at sea of *U84*, *UC50* and *U93* could overlap because they had orders to operate around or transit through the Brittany coast (Messimer 2002, 103, 290 & 109). This makes it difficult to know which ships were sunk by each U-boat and therefore what in reality actually happened to them. The challenges which faced the ASD assessors of 1919 are still with us today, even though we have the benefit of being able to access German records.

Added to this is the possible loss of *UI09*, (a U-boat which archaeologically is largely identical to *U93* and *U95*) in the Channel the following month (see (*Submarine*) in the previous chapter); and the supposed identification of *U95* as a wreck off Hardelot (Richard 2007, 119-136) which will be addressed later in this chapter. However, what was unknown to Richard (until the author informed him in 2013) is that in 2004 a U-boat wreck was discovered off the Lizard in a position which plots within 0.7 of a nautical mile of the *Braeneil* incident related above (see Figure 1.39 below).

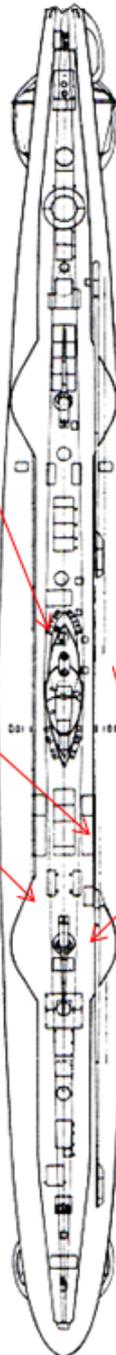
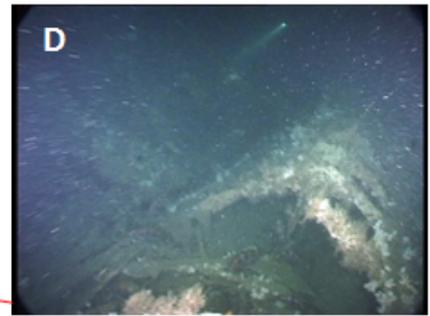
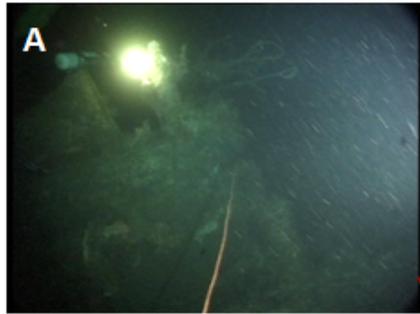
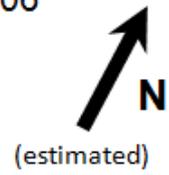
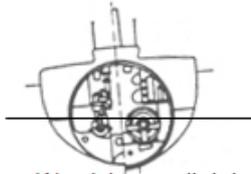
According to the Hydrographic Office wrecks database (No.22507), a wreck resembling a submarine was found by an Admiralty survey at the position given above in 2004. In 2006 the

wreck came to the author's attention after local diver Gifford Pound had confirmed it was a U-boat. The author surveyed the wreck on 16 September in the same year with Pound and the results are shown below. The dive proved challenging, in part because of a faulty batch of tapes (which also affected the survey of *UC49*, described below) that means that the record is viewable but occasionally pixelated until late in the dive. Nevertheless the results confirmed without doubt that the wreck was a large U-Class WW1-era U-boat. I am grateful to Michael Lowrey for retaining a copy of the email describing this survey which I had sent him on the day of the survey dive, which augments the data from the tape. The main features seen are shown in Figure 1.38 and described alongside the email observations made as:

- Image A: The diver is illuminating the forward end of the large conning tower and shining his torch on the steering position in the bridge. The conning tower is of a shape, size and configuration which matches the U-Class submarine types which could be *U93*, *U95* or *U109*;
- Image B&D: The ballast and fuel tanks along the port side are heavily corroded. It is known from the description of the ramming that *Braeneil* struck the U-boat on the port side amidships (NA ADM239/26). This is where these images were filmed. As in the case of *U103* (see above) the actual point of penetration was not seen. This may have been due to the accumulated debris caused by corrosion, or because it was missed on the dive;
- Image C: This shows the ready-use ammunition locker just forward of the aft gun. It can be seen that the U-boat was still fully armed with plenty of ammunition in pressure proof containers (see *U103* above for another example). The wreck has four forward and two aft torpedo tubes. The forward tubes are damaged in a way consistent with a heavy impact with the seabed;
- Images E & F: These show the aft gun to be of the 88mm 30 calibre type with only one recoil cylinder on the top. The forward gun is of the Krupp TK 105mm type.

Under more straightforward circumstances the discovery of a U-boat wreck which seemingly matches an "A" Known Sunk incident would simply confirm one U-boat loss to be correct, similar to the examples described earlier in this chapter. However there are reasons to be cautious. From the survey of the site, there is no doubt that the wreck is of a type which could be *U93*, *U95* or *U109*. *U84* had only two forward torpedo tubes and can be eliminated as a possibility.

**Name: (U95) Posn: 49 55.482; 005 11.701W Depth: 72m**  
**Date of Loss: 7 Jan 1918 How Sunk: Rammed**  
**Date of Survey: 16 September 2006**



40m

Figure 1.38. Diagram of the wreck of (U95) showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1997, 189).

The close proximity of the deep Lizard minefield, laid in September to October 1917 (Leith 1920a, 72) (shown in Figure 1.39 below) is also worthy of note. Although no obvious mine damage was seen on the survey, it does not mean it is not present, unseen or underneath the wreck. If the wreck was in fact mined, then the possible date range for losses opens up to include *U109*.

The “A” Known Sunk attribution itself is also questionable because although *Braeneil* was undoubtedly damaged and we have no evidence to suggest it did not ram a U-boat, the absence of survivors or similar being picked up opens the possibility that the U-boat survived and later sank somewhere else. From the examples in this thesis from WW2, it would seem unlikely that the AUD of the Inshore Campaign would have classified this as “A” Known Sunk from the evidence available, even though as shown in the Introduction to WW1, their criteria were effectively the same.

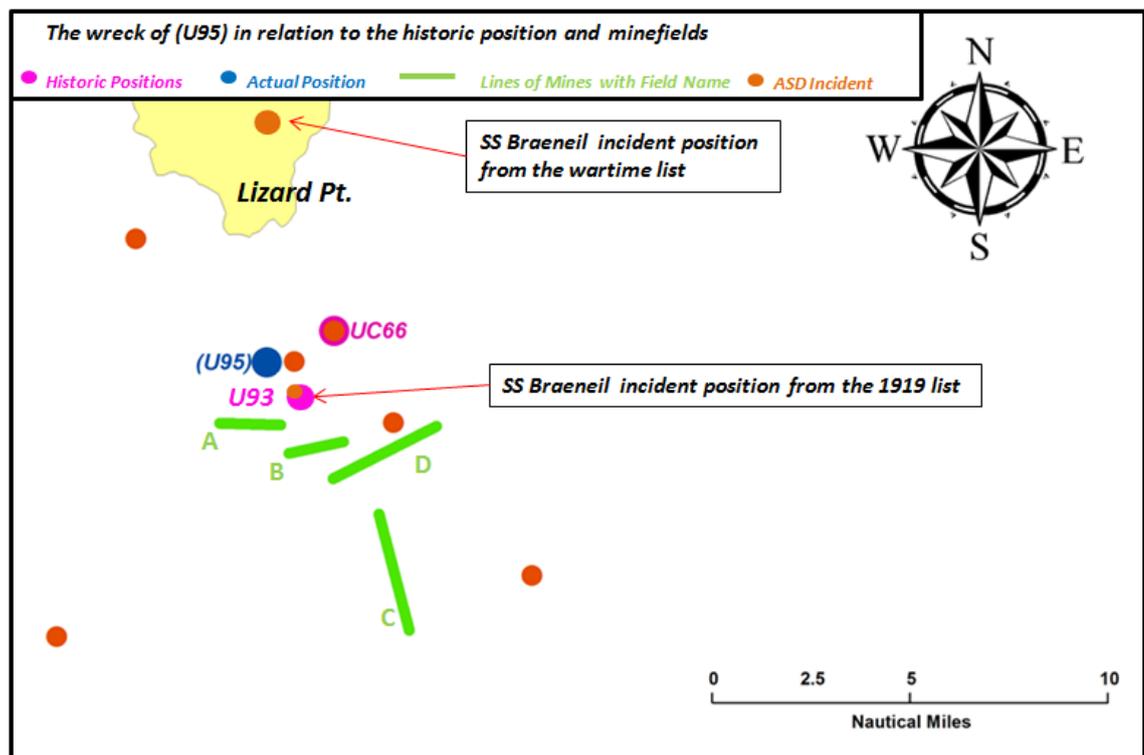


Figure 1.39. Map of the location of the wreck of (U95), the historic position given in 1919 and nearby incidents and minefields (Innes McCartney GIS base map).

Finally the wreck of (*U93*) (see below), which Richard (2007, 119-136) asserted is *U95* is in all respects archaeologically similar to this wreck site. That wreck is a mystery site with no relevant known historical text to match it to. Neither was any evidence found on the site to positively identify the wreck (see below). The stated policy of not revising accepted historical precedents without definitive evidence means that this site should be considered to be (*U95*). The brackets

indicate that in the author's view this is probably correct, but that other possibilities certainly cannot be discounted at this time. For a discussion of the fate of (*U93*), see later in this chapter.

The other ASD incidents from the 1919 List (NA ADM 239/26) shown on Figure 1.39, all relate to 1917 (see (*UC66*) below) and therefore are not relevant. However it should be noted that whilst the final 1919 List (upon which the archaeology in this thesis is being compared) places the *Braeneil* incident at sea at the location shown (this position was also found in the Room 40 U-boat history sheet for *U93* (NA ADM137/3914) and can be considered correct), whereas the earlier wartime iterations of the "Submarine Losses Return" (NA ADM239/26) actually plot the incident on land (a typographical error; 49 59N, instead of 49 55N) and this error was repeated by Spindler (1965) and Grant (1969 and 2003). First, this reveals that during the compilation of the final 1919 List, some validation of the data available must have been made. This is also seen in the case of *UC26* in the previous chapter. Secondly, it reveals that neither Spindler nor Grant may have realised that the final 1919 List is qualitatively different than the previous cumulative editions of the Losses Return.

### 3.3 The wreck of (*UC49*)

*Hydrographic Record No. 18145*

*Position: 50 19.952; 003 29.972W*

*Depth: 48m*

According to the 1919 List, *UC49* was destroyed in the North Sea on 31 May 1918 (NA ADM239/26). However, within weeks of the list being promulgated, the Admiralty Intelligence Division realised this had been a mistake and on 12 January 1920 relisted *UC49* as being destroyed by depth-charges off Dartmouth on 8 August 1918 (NA ADM137/3918). From the text in the Room 40 history sheet of the U-boat it seems that when *UC49* changed its call sign in May 1918, the new one was not identified as being *UC49*. This meant that Room 40 thought it had been sunk in May and attributed it to the most viable incident it knew of at the time in the North Sea. This makes the case of *UC49* possibly the earliest known reassessment of a U-boat loss carried out by the Admiralty of losses cited in the 1919 List and as a consequence, by the definitions used in this thesis, the first mystery case.

The case of the loss of *UC49* is also noteworthy as being the last U-boat to be destroyed in the Channel in WW1; and even more importantly, the first U-boat to be detected and sunk in an incident prompted by the use of hydrophones (Young & Armstrong 2009, 206). Up to this point all the U-boats known to have been destroyed were sunk by mine, ramming, gunfire and torpedo. Where depth-charges had been used it was on a target that had been detected visually.

The version of events in the 1919 (NA ADM239/26) states that HMS *Opossum* witnessed an underwater explosion at 08:17 hours and began a hydrophone sweep which ultimately detected a U-boat at 1520. A depth-charge attack was made which led to the U-boat to hide on the

bottom until it thought it was safe to surface. But the British were waiting and a combination of gunfire and depth-charges destroyed the U-boat. The following day the wreck was located by sweep in an area covered by oil. This timeline cannot be correct.

The initial underwater explosion at 08:17 hours, sometimes ascribed to *UC49* fouling one the mines it was laying (Grant 1964, 120) must have had another cause. Because at 1140 the steamer *Portwood* was torpedoed nearby in an incident only *UC49* could have been responsible for (NA ADM137/4019), making it unlikely that *UC49* caused the earlier explosion by minelaying. *UC49* probably blundered into the area being searched by HMS *Opossum* purely by accident, with fatal consequences. I am grateful to Michael Lowrey for highlighting this inconsistency in the British version of events in a conversation on 17 April 2013.

According to the Hydrographics Office wrecks database (No. 18145), the wreck of this U-boat has been charted as a non-dangerous wreck since 1928. It was first dived in 1989 and described as a submarine. The author surveyed this site with divers from Totnes on 2 June 2006, on a day of extremely poor visibility. The video film was difficult to interpret due to a faulty tape and the poor conditions. However, a diagram has been attempted, and although its results should be treated as tentative and there was some disagreement among the divers of what was seen, there is little doubt the wreck is of a UCII-Class U-boat:

- Image A: From its readily identifiable shape, this image seems to show the port side forward hydroplane;
- Image B: This image shows the top of one of the U-boat's Kingston valves on the starboard side of the conning tower;
- Image C: The U-boat is very broken aft with a large hole where the shot line entered the wreck. The area aft of this point was not explored and is not understood. The Hydrographic Office wrecks database (No.18145) reports that a single stern torpedo tube has been observed by divers;
- Images D & F: The orientation and design of the conning tower was a key feature in establishing that the wreck was probably of a UCII-Class minelaying U-boat. The tower was circular in plan and very small with a single periscope stand at the forward point;
- Image E: The plating of the hull smashed inwards in the area of the break.

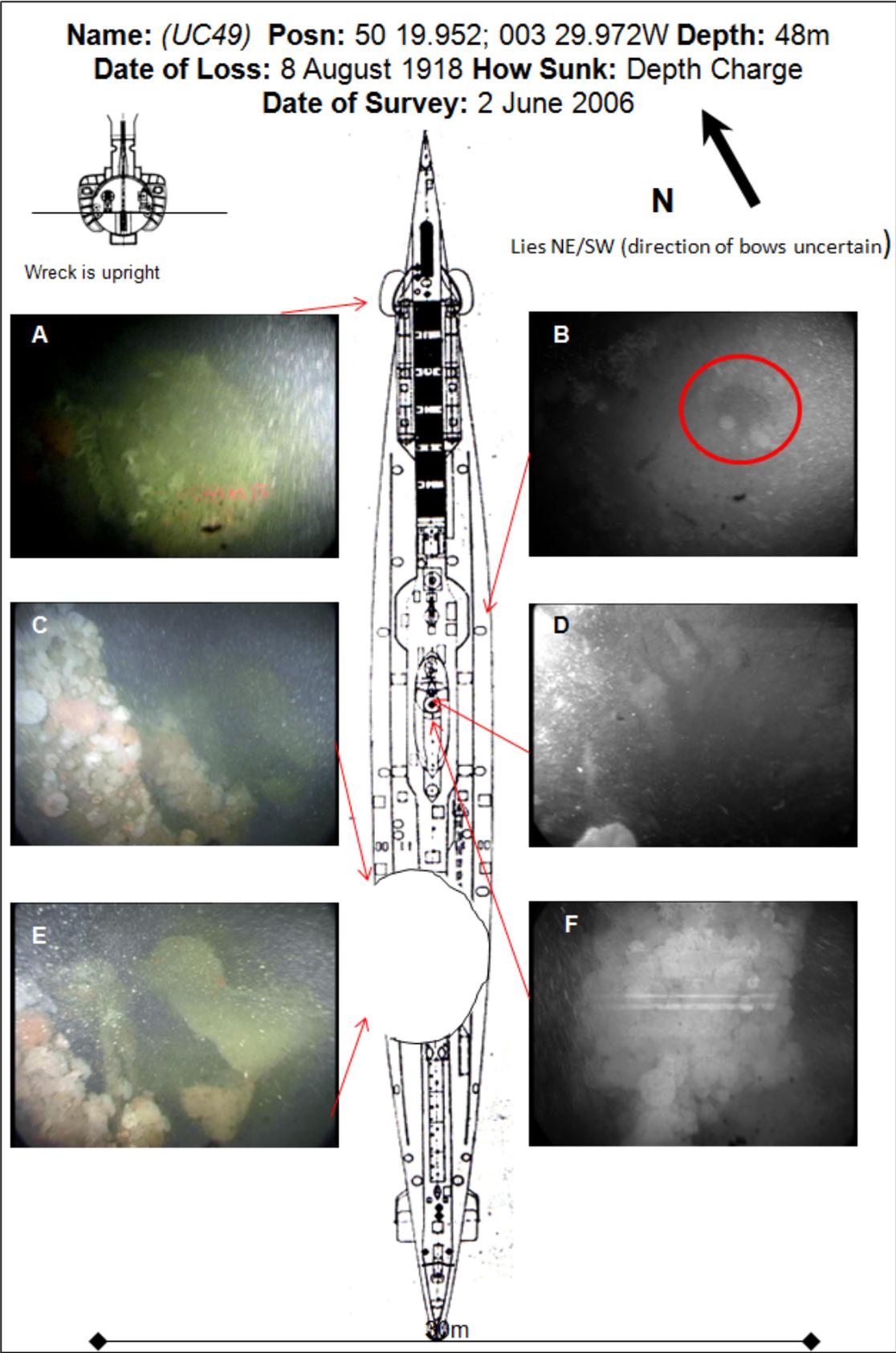


Figure 1.40. Diagram of the wreck of (UC49) showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1997, 225).

The position reported for where the supposed wreck of the sunken U-boat was located by sweep plots two miles to the east of the wreck of (*UC49*) (NA ADM239/26). The wreck located by the sweep is a charted wreck (Hydrographics Office No. 18143) and the description given makes it unlikely that this too is a U-boat. This seems to indicate that the U-boat was in fact not located at the time it was listed as sunk. The possibility is that it could be another U-boat wreck which has no relation to the 1919 List. However, the evidence from the wreck and from the historical text seems to suggest that it was (*UC49*) that was destroyed at this location. A further survey of this wreck in better conditions would help. Until such time as more data about this site emerges, its identity must be considered unconfirmed.

#### **4.4: Mystery Sites: U-Boat Wrecks in the Channel with no Connection to the 1919 List**

This section looks at the U-boat wreck sites which have no connection to the 1919 List. During the research, a total of four such sites have come to the author's attention. They are shown in blue in Figure 1.27 alongside the wrecks described in the previous section. The much increased depth and remote nature of these sites (with the exception of (*U93*)) has consequently greatly limited diving activity on them. To reveal their identities by cleaning the propellers is impractical because it normally requires significant financial and logistical investment. Because of this, only *UB65* has been identified in this way and that took a week-long fully-funded media project to achieve (see below). The wreck of (*U93*) lies in shallow water, but its propeller markings have not helped to conclusively identify it.

Tentative identification of one further site, (*UC66*) has been made by tying what is known of the wreck to historical sources. In the last case, the historical sources cannot offer any insight and there is only limited data available about the wreck. In this instance not enough information exists to do more than recognise the presence of a mystery U-boat wreck site.

##### **4.1 The wreck of (*UC66*)**

*Hydrographic Record No. 16154*

*Position: 50 14.517; 006 19.888W*

*Depth: 95m*

According to the 1919 List, at 11:30 on 12 June 1917 HMT *Sea King* sighted a surfacing U-boat just south of the Lizard (see Figure 1.41). As the trawler turned to ram, the U-boat submerged completely. The trawler dropped a depth-charge "right on top of her". A series of explosions followed, resulting in an oil patch (NA ADM239/26). At the time this incident was considered to be "B" Probable and was only associated with *UC66* when the final 1919 List was compiled (NA ADM239/26). With no certain evidence of destruction this case is problematic. Nevertheless it had become the accepted fate of *UC66* which later historians, notably Spindler

(1941) and Grant (1964, 1969 and 2003) have accepted, but there are other reasons to be cautious.

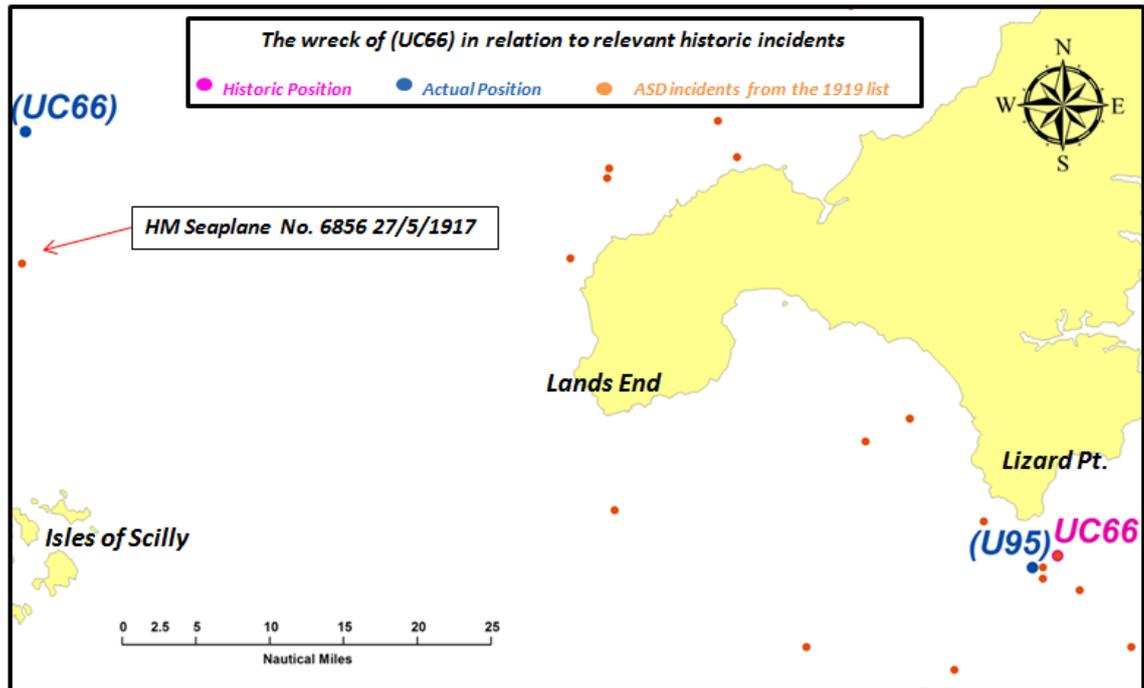


Figure 1.41. Map of the location of the wreck of (UC66), the historic position given in 1919 and nearby incidents. The wreck of (UC66) lies on the westerly edge of the Study Area. There are no other nearby incidents outside the Study Area boundary (Innes McCartney GIS base map).

UC66 left Zeebrugge on 22 May 1917. It was under orders to lay mines in the Bristol Channel and thence attack shipping along the southern coast of Ireland (Messimer 2002, 305). Under the normal circumstances, the length of patrols of this type hardly ever extended to more than two weeks and UC66 would therefore have returned to base during the first week of June. The attributed sinking event took place on June 12, which would mean the U-boat was running well over a week late and would have been at the maximum end of its endurance. I am grateful to Michael Lowrey for pointing out in conversation on 2 April 2013, that the longest known Flanders Flotilla UCII-Class patrol via Dover is only 20 days. By 12 June UC66 would have been at sea for 21 days and still 2-3 days from base.

However we know this was unknown to ASD in 1919 because the Room 40 history sheet for UC66 (NA ADM 137/3918) shows that it knew very little about the movements of this U-boat. In fact it only became aware that it was "lost in June" through the interrogations of survivors from UC65 (also sunk in the Channel, see above). So, excessive patrol length would not have been a consideration for the ASD assessors of 1919, perhaps explaining why ASD associated the loss of the U-boat with the 12 June incident.

During research into this thesis the author has uncovered a more plausible sinking attribution which benefits from having the physical evidence of a destroyed U-boat to support the claim. According to the Hydrographic Office wrecks database (No. 16154), a wreck north of the Isles of Scilly (see Figure 1.41) was located by survey in 1990. This was confirmed to be the wreck of a WW1-era U-boat by divers from Cornwall in 2009 (the last U-boat discovery made in the entire Study Area in both world wars). Both crockery and ammunition seen were of Kaiserliche Marine type with a shell case stamped 1905. The wreck was described as being broken in front of the conning tower. I am grateful to Mike Etheridge who was one of the divers (and has dived many U-boat wrecks with me) for further describing in conversation on 3 April 2013, that the break was forward of the only deck gun and that the wreck was of “medium” size.

With a now known WW1-era U-boat war loss at the position shown on Figure 1.41 as (*UC66*), the GIS database was able to provide a good match for the circumstances of its possible destruction. The incident is described in the 1919 List as taking place on 27 May 1917. On that day, reacting to an inconclusive action with a U-boat by HMS *Acton*, HM seaplane No. 8656 sighted a U-boat north of Scilly and under a hail of machine-gun fire from the submarine, dived to attack. The plane dropped four 100-lb bombs, two of which “appeared to be direct hits before the conning tower”. The submarine was then seen to sink by the bow, with the stern rising to an angle of 60 degrees. Bubbles, foam and “considerable quantities of oil followed”.

A fuller description of the attack is given in the Historical Section records of the Southwest Approach (NA ADM 137/1314, 146-157). The pilot’s report states that the U-boat had a “high focsle”. (the UCII-Class minelayers had a high forward section where the mine chutes were located), and also states that the plane was hit by several bullets. One penetrated the starboard side radiator and the leak was only staunches by CPO Tadman climbing out onto the wing and holding a towel over the hole until the plane landed. All four of the crew received medals with the pilot and bomb aimer receiving DSCs. Tadman received the CGM.

The aircraft had been ordered to patrol 10 miles north of Scilly (at the position shown on Figure 1.41). This plots 5.7 nautical miles away from the location of the wreck (also due north, so on the same line the plane had been ordered to fly) which under the circumstances is perfectly acceptable. The description of the attack with the bombs hitting forward, matches the fact that the wreck was seen to have been broken in half forward of the deck gun. In terms of descriptions of the attack and the wreck, there seems to be a match. The date of 27 May 1917 corresponds with the time in which *UC66* would have been passing through the area on the way lay mines in the Bristol Channel and thence to attack shipping along the south Irish coast (Messimer 2002, 305).

However, at least five other U-boats (*UC45 UC50, UC55, UC62 and UC70*) could have been passing the area at that time and any one of them could have escaped the attack. I am grateful to Michael Lowrey for confirming in conversation on 19 April 2013, that the war diaries of these five U-boats do not mention such an incident. Because it is not the sort of action which is likely to have been omitted from a patrol report, the conclusion is that *UC66* remains the only U-boat which could have been present. To have eliminated the presence of any other U-boats was a major advance in establishing the possible identity of the wreck.

It leaves us with the strong working theory that the wreck must be (*UC66*), however other possibilities including accidental losses cannot currently be ruled out. The depth of the wreck makes propellor scraping prohibitive and its remote location limits the chances to dive the site. However a visual record of this wreck would do much to confirm or refute the current analysis of its identity. If correct, this would be a very early aircraft success against a submarine and of noteworthy historical importance.

#### **4.2 The wreck of (*U93*)**

*Hydrographic Record No. 20895*

*Position: 50 36.970; 001 21.800E*

*Depth: 20m*

According to the Hydrographic Office wrecks database (above) a wreck has been known about at this position since 1960 (see Figure 1.27 for its location off Hardelot, France). It is first reported to be an unidentified WW1-era U-boat in 2003. The site has been thoroughly investigated, surveyed and published by Alain Richard (2005 & 2007).

It will be recalled from the cases of the wrecks of (*U95*) above and (*Submarine*) from the previous chapter that the fates of three U-Class submarines (*U95, U93 and U109*) which passed through Dover in January 1918 have been open to question since the 1919 List (ADM 239/26) was first promulgated. Figure 1.42 is a drawing of the wreck site made by Richard and it shows that the submarine is of the large U-Class of the German navy of WW1. Its features are similar to those seen on the wreck of (*U95*) (see Figure 1.38 above) and initially in all respects it was also similar to *U109*, both of which were lost in the Channel in January 1918 alongside *U93*.

Close to shore and at the very shallow depth of 20 metres Richard was able to examine this site in detail. While all of the features recorded seemed to show that they could be from any of the three January 1918 losses, the propellers yielded a clue that the wreck was probably not *U109*. Figure 1.43 shows a photograph taken of the port side propellor. It shows that it was made by Krupp for Germaniawerft and that it was specifically made for the batch of U-boats it was building to the same standard, *U93-U98*.

Both propellers also show a serial number and a date of manufacture. The port side propellor was made on 10 January 1917 (see Figure 1.43) and the starboard one was stamped with a

manufacture date of 29 December 1916 (Richard 2007, 128). By comparing the launch dates of *U93* (15 December 1916) and *U95* (20 January 1917) Richard concluded with certainty that the wreck must be *U95* because both propellers manufacture date post-dated the launch of *U93* (Richard 2007, 127- 136). However, there are reasons to be cautious about such an attribution.

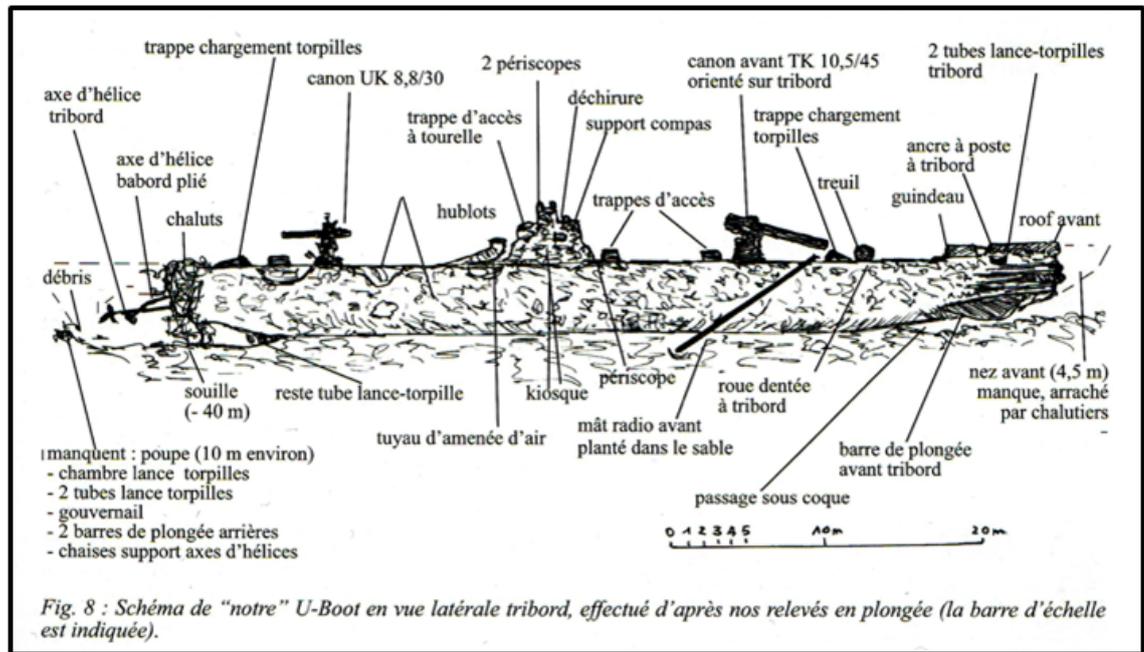


Figure 1.42. Alain Richard's drawing of the wreck of (*U93*) as seen from the starboard side. The features shown clearly denote this wreck site to be of a U-Class submarine of WW1 origin, similar in all features to the three contentious losses of January 1918, *U93*, *U95* and *U109* (Richard 2007, 124).

Firstly, the detail stamped on the propeller in Figure 1.43 also displays a three digit number above the manufacturing date; in this instance it is 273. On the starboard propeller it is 274 (Richard 2007, 128). I am grateful to Axel Niestlé for pointing out to me in conversation on 18 April 2013 that these numbers refer to the matched pair of propellers made for each specific U-boat. We would logically expect that the three digit number would be the same on each propeller. Although we can now never know why they are not matched in this case, here we have evidence which suggests that at some time the propellers have been substituted to produce a pair which could be run smoothly together. This seems to suggest that the dates on the propellers should not be used as a means of dating the launch of the U-boat and thence to derive its identity.



Figure 1.43. Richard's photo of the port side propeller on the wreck of (U93). Manufactured for the Germaniawerft shipyard, it is one of a batch made specifically for the U93-U98 Class of U-boats (Richard 2007, 128).

Secondly, unknown to Richard but as described previously in this chapter, (U95) was identified by the author off the Lizard in 2006 in a position of a misattributed but nevertheless “A” Known Sunk event. As Spindler (1965, 43-45) has shown, the 1919 List attribution to U93 (NA ADM239/26) was probably wrong and that it was U95 (in its allotted patrol area) which would have been present. Of all of the evidence which has emerged since 1919, Spindler’s sensible analysis of where both U93 and U95 were operating (1965, 43-45) seems to offer the most clarity.

U93 departed from Ems on 29 December 1917, transited the Straits en route to its allotted patrol area between the Channel Islands and Penmarch (Brittany) (Messimer 2002, 109). Spindler (1965, 43) shows that on 5 January, U93 exchanged recognition signals with UC17 about 30 miles west of Penmarch. This clearly places it in its operational area and there is seemingly no reason for it then to have appeared two days later off the Lizard to have been rammed and sunk by SS *Braeneil*. As Spindler concluded U95 must have been sunk at that time (1965, 45). The presence of (U95) at that position seems to confirm this.

Shipping losses continued off Penmarch after the 7th and Spindler (1965, 43) attributed those up to 15 January to being sunk by U93, UC50 or U84, but not U95. Spindler could not offer any firm solution as to why U93 did not return from patrol. Interestingly the Room 40 history sheet for U95 notes a sighting report of this U-boat on 17 January in 48 35; 05 13W, which plots to the west of Brest (NA 4835/0513W). This is clearly wrong because as already established it is

outside of *U95*'s patrol area. But because *U93* and *U95* are visually similar and because it was thought *U93* was already sunk, the sighting must have been thought to be *U95*. We know now that it was most probably *U93*.

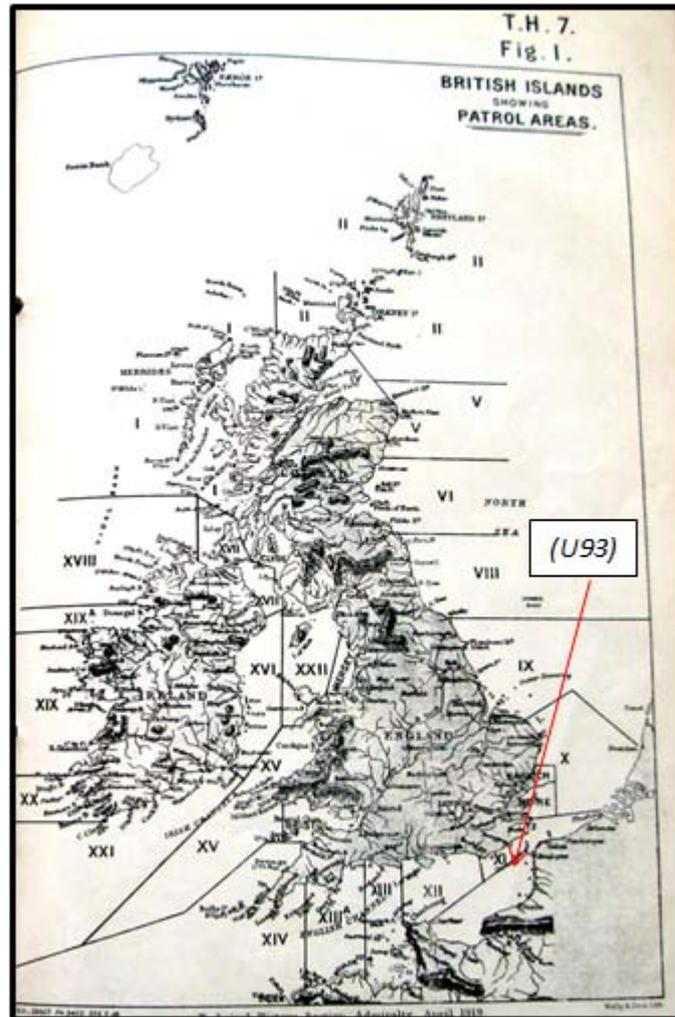


Figure 1.44. The Admiralty 1919 map showing the demarcation of Auxiliary Patrol areas around the British Isles. It shows that the area marked by a line between Boulogne and Barfleur was not patrolled by British forces. (*U93*) lies in this area (THSA 1919d, 11).

The evidence now seems to suggest that the wreck located off Hardelot is most probably (*U93*). The question that remains is what actually happened to it? Richard's drawings of the wreck (see Figure 1.42) show that it is damaged aft to such an extent that the pressure hull in the area of the aft torpedo room has seemingly been opened up or blown off. Such critical damage is likely to have led to its immediate loss at the position where the wreck lies. All hatches are shut, so this incident would have occurred whilst the submarine was submerged and therefore was most likely to be a strike with a drifting mine or a collision. Unfortunately there are no ASD recorded incidents in the thesis GIS plot anywhere near where the wreck is located.

The possible reason for this is that the wreck lies in an area of the Channel which was not patrolled by the British Auxiliary Patrol (see Figure 1.44). While it is clear from the 1919 List (ADM 239/26) and the Historical Section records of the Channel and Southwest Approach that major ASW events in the French sector were readily shared with the British, it is less clear whether all of the routine patrol reports were also made available. Certainly the author has not been able to identify any such material in the National Archives. So it is possible that French records of an explosion or unexplained collision may hold the answer, with such an event appearing to be too trivial to pass on to the Admiralty.

The Technical History of the ASD (THSA 1919d, 28-31) states that an indicator loop based on Hardelet and extending to mid Channel went live in January 1918. It did not include a controlled minefield (as was the case with the destruction of *UB109* in the previous chapter) but was supposed to work in conjunction with the local French patrol who would react to the loop's detections. However, it took months to calibrate effectively and no U-boat detections are credited to it. Its proximity to the wreck of (*U93*) must therefore be considered coincidental and the answer to what actually happened to this U-boat remains to be identified.

### **4.3 The wreck of *UB65***

*Hydrographic Record No. 60256*

*Position: 50 40.107; 005 02.123W*

*Depth: 59m*

According to the Hydrographic Office wrecks database above a wreck was first located by survey at the position shown in 2001. In 2002 the wreck was confirmed to be a submarine by local diver Gifford Pound and was surveyed by the author with Pound on 28 August in the same year. As there were no U-boats listed as destroyed off the north coast of Cornwall in the 1919 List (NA ADM239/26), from the outset this wreck was considered to be a mystery site (alongside three others which turned out to be from WW2, see Chapter Six) and therefore a high priority target. The results of the survey are shown in Figure 1.45 and described below as:

- Image A: The extreme point of the bow has corroded away revealing the outer doors of the four torpedo tubes. This is common on UBIII-Class wrecks. The two heavy horizontal features are similar to those seen on UBIII-Class wrecks. As described in the case of *UB78* (see previous chapter) they appear to be a part of the hinge mechanism for the outer torpedo doors;
- Image B: The forward torpedo tubes are now fully exposed all the way back to the point where they enter the pressure hull. The feature in the top portion of the image is the drive shaft for the anchor windlass and it is rare to see it still in position when the bow section has been so corroded;

Name: *UB65* Posn: 50 40.107; 05 02.123W Depth: 59m  
Date of Loss: July 1918 How Sunk: uncertain  
Date of Survey: 28 August 2002



Wreck is upright

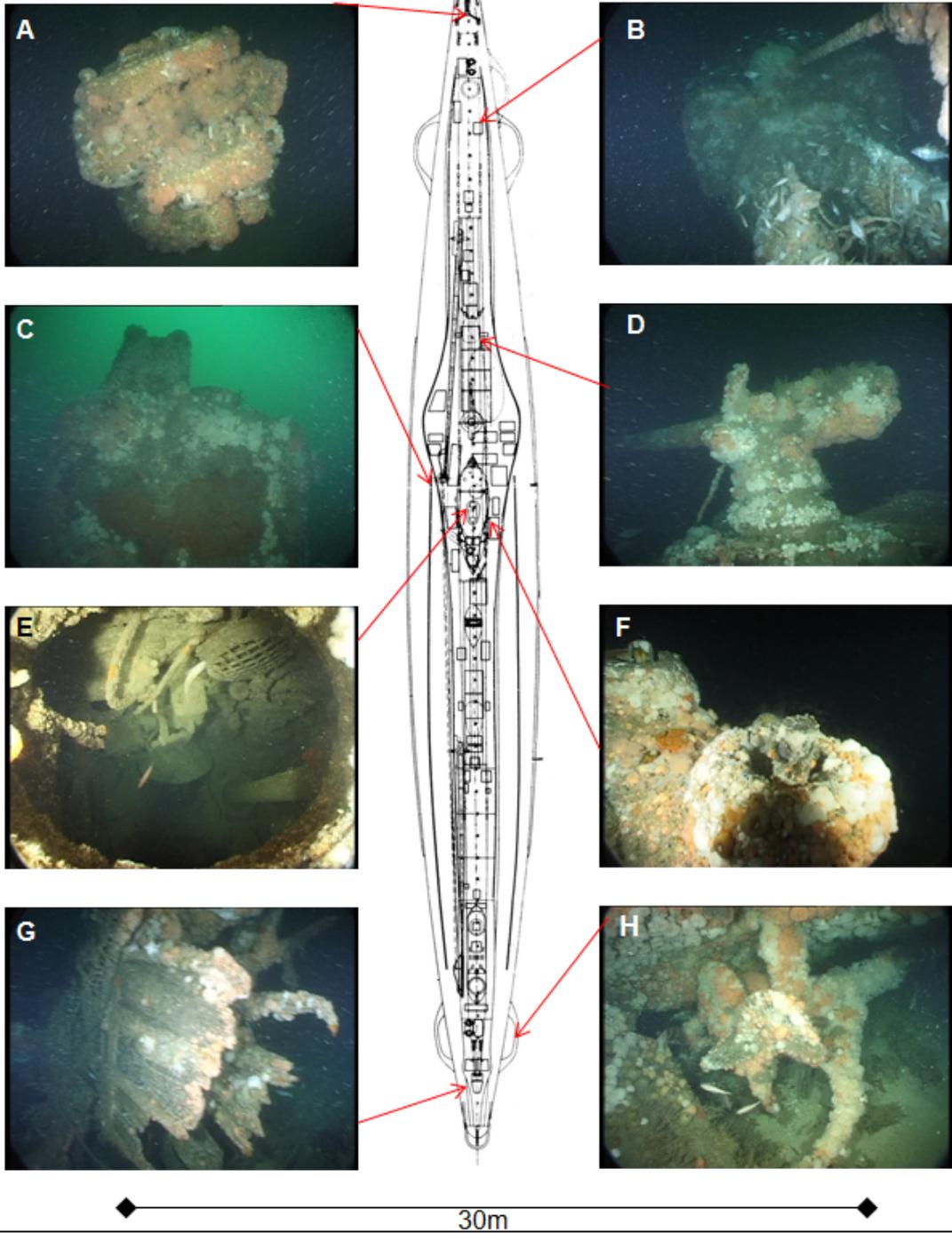


Figure 1.45. Diagram of the wreck of *UB65* showing its key features as surveyed and described in the text (Innes McCartney, line diagram adapted from Rössler 1997, 215).

- Images C & E: The conning tower is of the typical UBIII-Class type, with the double periscope stand situated aft of the hatch which is open, alongside all of the hatches, except the forward one. The upper and lower hatches on the conning tower are open. This is suggestive of an attempt to escape from the submarine whilst submerged. If the U-boat had been sunk while running on the surface, only the conning tower hatch is likely to have been open. The fact that the aft hatches are also fully open is suggestive of an attempt to escape from the bottomed submarine;
- Image D: The deck gun is of the RMM-made UTOF 105mm type, as seen also on the wreck of *UB72* (see above). The gun was manufactured from 1917 (Mehl 2002, 116) and in this instance is housed in the C17 type gun mount;
- Image F: The periscopes are both intact, which suggests the wreck was not subject to underwater attack. Experience shows that where this has occurred the lenses are broken;
- Image G: As a rule of thumb, deeper wrecks tend to be offer better preservation. In this instance the timber construction of the rudders can clearly be seen. It seems that wood was used as filler inside the rudders. On shallower examples (notably *UB109* in the previous chapter) only the frames remain;
- Image H: the starboard propellor is clear of the seabed and free of net. The port side propellor was also free of the seabed, but was tangled in rope and net.

The survey clearly showed that the wreck was a UBIII-Class U-boat which due to its armament was possibly a loss which occurred from late 1917 onwards. Because of the absence of any U-boats listed in 1919 as being lost in the area, there was no easy way to derive an identity for the wreck. Its location off north Cornwall meant that it could be any UBIII-Class lost in uncertain circumstances which passed through the Straits or around Scotland.

The best possibility to identify it lay in cleaning the propellers. But the depth (which limits dive time on the wreck) meant that such an undertaking was likely to require several dives to do, especially because the port side propellor had to be cleared of net. With limited self-funded resources it was thought better to survey other sites than to repeatedly dive this one. However, in 2003 RDF Media, the producers of the television series “Wreck Detectives” contacted the author about possibly making a U-boat episode. The identification this wreck was the project settled upon and the full resources of a commercial diving company and a survey barge for one week were placed at the author’s disposal.



Figure 1.46. Diagram showing the propellor markings on the wreck of UB65. The starboard propellor was specifically manufactured for UB65 and the port was a spare (Innes McCartney/RDF Media).

Figure 1.46 shows the results of the dives, with the images being captured by the author using a small lipstick camera which was connected to the survey ship. The port side propellor was made as a spare for the U-boats which were built to the same specifications, *UB60-UB65* and *UB72*. The U-boats were built by the Vulcan shipyard, Hamburg (Gröner 1991, 26). Interestingly *UB60-65* were of one order and *UB72-74* were of another. The propellor markings seem to suggest a design or process change during manufacture of the second order. Clearly it did not offer a specific identity on its own. However the starboard side propellor was specifically made for *UB65*, and this clearly identified the U-boat.

*UB65* of the High Sea Fleet sailed from Heligoland for operations in the Bristol Channel on 2 July 1918 (Messimer 2002, 188). It took the route around Scotland and according to the Room 40 original history sheet for the boat (NA ADM137/3916) was missed by torpedoes from a British submarine in the North Sea on 4 July. Grant (1964, 114) established the submarine was HMS *E45* which reported this incident. This was the last certain record of *UB65*'s movements.

Unaware that *UB65* was to operate in the Bristol Channel, ASD attributed its loss to an explosion seen by the US Submarine *AL2* off Fastnet Rock on July 10. This attribution was made post-war with the initial assessment being "B" Probably Sunk (NA ADM239/26). In the absence of any other plausible sinking incident, both Spindler (1965, 297) and Grant (1964, 114 and 1969, 165-166) also accepted this fate as the most plausible.

The wreck of *UB65* was therefore found and conclusively identified within its allotted patrol area of the Bristol Channel, and it is now possible to examine the activities of submarines in that area to see if it could shed light on how the U-boat came to sink there. As Figure 1.47 reveals,

there were no ASW incidents known to ASD to have taken place in the area of the wreck during July 1918.

However, Auxiliary Patrol records for the Falmouth area (NA ADM137/949) show that in the Padstow area on 14 July 1918, the steamship SS *Trevisa* was missed by two torpedoes and in the early evening a U-boat sunk the Portuguese schooner *Maria Jose* with explosives. The U-boat was described as having a “large gun forward”. With no other U-boats ordered to operate specifically in this area, *UB65* seems to be the culprit, especially since it is now a nearby wreck. So it seems that *UB65* sunk sometime after 14 July 1918.

The circumstances of the loss of *UB65* remain mysterious. On board the survey ship was a ROV and the author spent several hours inspecting the wreck in great detail for any evidence about how this U-boat had sunk. Nothing was found and therefore the conclusion reached was that it must have foundered in a diving accident.

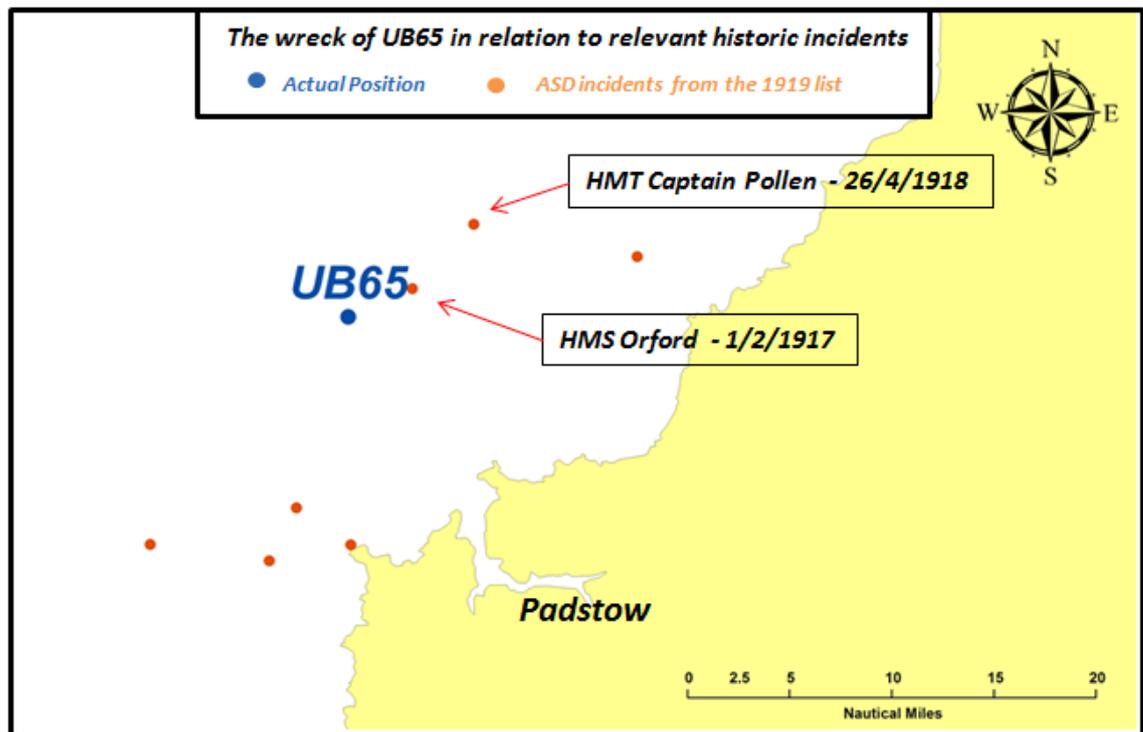


Figure 1.47. Map of the location of the wreck of *UB65* and nearby incidents from the 1919 List. None of the incidents shown on this map occurred in July 1918 when *UB65* was patrolling the area (Innes McCartney GIS base map).

The seaworthiness of the late war U-boats has been the source of criticism. For instance, Werner Fürbringer (1999, 112-113), the commander of *UB58* and *UB110* stated in his autobiography that *UB58* (see the previous chapter) had been ordered out on its final patrol in a worn out state, with none of its list of repairs having been attended to. I am grateful to Axel Niestlé for informing me in conversation on 18 April 2013, that from his own research he has concluded that the heavy UTOF gun, a 1918 retrofit, also caused handling problems. With this in mind, it is

interesting to note that the only shut hatch on the wreck is the forward one (under the gun). This tends to suggest that if flooding had occurred, it started in the forward section of the boat.

## Unidentified mystery U-boat wreck sites in the Channel

### 4.4 The wreck of (WW1 U-boat)

Hydrographic Record No. 22956      Position: 49 44.777; 004 47.262W      Depth: 82m

In the Channel area only one WW1-era U-boat wreck is known from which no identity can currently be drawn. In this instance there is no correlation between what is known of the wreck and the records of the ASD contained within the 1919 List (NA ADM239/26). According to the Hydrographics Office wrecks database details above, the wreck at the position shown was located by survey in 1991 and was dived for the first time in 2006 when it was confirmed to be a WW1-era U-boat. I am grateful to Mike Etheridge, who dived the wreck and has examined many submarines for also reporting to the author in conversation on 22 April 2013, that it was of the smaller type and definitely of WW1 vintage; the presence of a deck gun being a key identifying feature.

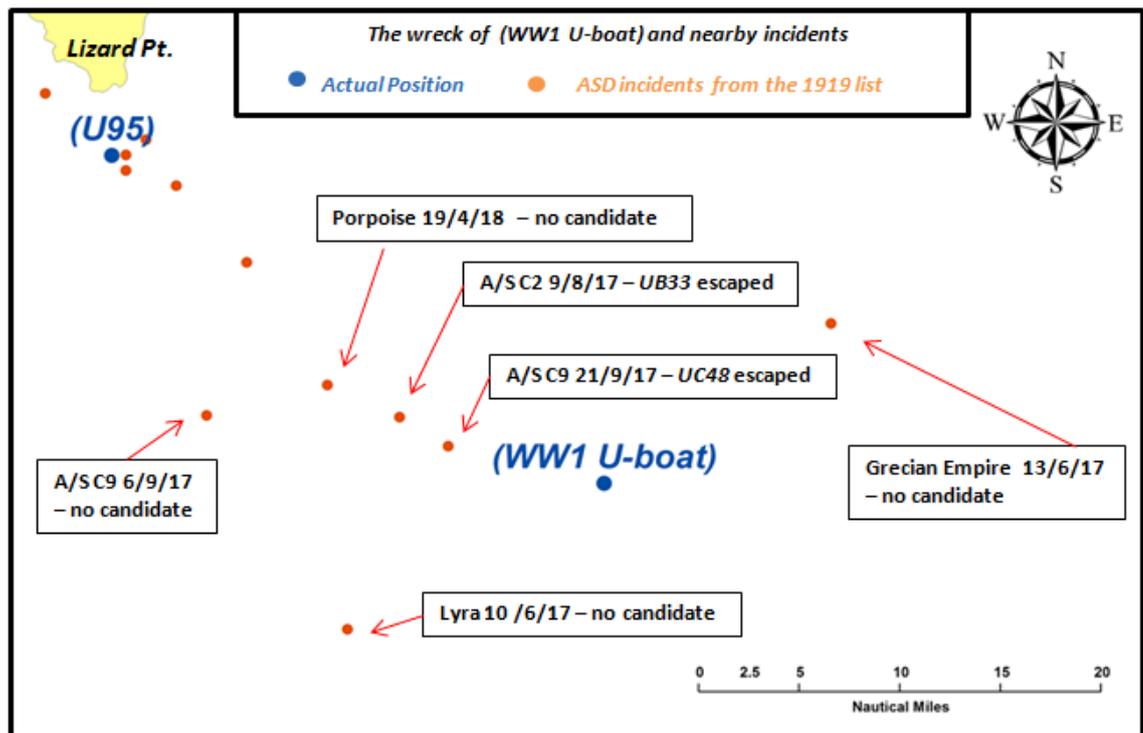


Figure 1.48. Map of the nearest ASD listed incidents to the location of the wreck of (WW1 U-boat). All of the ASD listed incidents within 15 miles of the wreck either occurred at a time of no U-boat losses or are known to have affected other U-boats which escaped (Innes McCartney GIS base map).

With a WW1-era U-boat now known at that location, the GIS database was consulted to see whether the position could be closely matched to any known ASW incidents from WW1. The results are shown in Figure 1.48. While there are a number of incidents around the wreck site, none could be matched to the wreck. The closest two cases involved airships based at Mullion on the Lizard. Abbatiello (2006, 119) has shown that the incident involving the airship *C2* on 9 August 1917 was directed against *UC33* which escaped. Similarly the incident involving *C9* on 21 September 1917 was directed against *UC48*. I am grateful to Michael Lowrey for confirming in conversation on 8 April 2013, that *UC48* was present at that time.

With the absence of a matching historical incident, little more can be done to advance what is known of this wreck. A further recorded survey would at least be able to identify the class of U-boat. There is a number of war losses it could be, including *UC68*, *UC91*, *UB29*, *UC72*, *UC21*, *UB32* and *UC50*. Moreover there is a possibility that it could be a submarine lost on tow after the war.

#### **4.5: Conclusions**

Conclusions covering all of the WW1 wrecks follow in the next chapter. However some observations relating specifically to the Channel should be made at this time. In contrast to the Dover area, the Channel U-boat wrecks are spread out over a wide body of water and the means by which they were destroyed are varied. Of note is the fact that it was not until November 1916, when *UB19* was sunk, that the British were actually able to destroy a U-boat in open water in the Channel.

Of the 14 U-boats lost in the Channel and now represented as wrecks, the means of destruction of eleven of the cases is now either known or at least estimated based on the best available evidence. Three further cases (*U93*, *UB65* and *(WW1 U-boat)*) cannot currently be matched to ASD records and inspection of two of these wrecks cannot alone establish what happened to them. Of the eleven known cases of destruction, mines were responsible for two (*UB81* and *UC51*), a further eight (*UB19*, *UB37*, *UC65*, *U103*, *UB72*, *UB74*, *U95*) and *UC66*) were destroyed after being visually sighted whilst on the surface. The last sinking, that of (*UC49*) in August 1918, occurred after hydrophones detected the U-boat whilst it was submerged, in a forerunner of the Inshore Campaign of 1944-45.

The extremely limited use of the radio by the Flanders Flotilla U-boats and the few High Seas Fleet boats (*U95*, *U93*, and *UB65*) which were sunk in the Channel is shown by examining the Room 40 history sheets for each U-boat sunk and now a wreck. In only two instances (*UC65*

and *UB72*) can it be shown that the U-boats were most likely destroyed, in part by the use of radio intelligence. It is interesting to note that these instances involved Royal Navy submarines, which suggests a conscious decision to only use radio intelligence to kill U-boats when its use resided within the confines of the professional navy as opposed to the auxiliaries.

Aside from radio intelligence, U-boats of this period could be tracked by the trail of sunken ships they left in their wakes. In two cases (*UB81* and *U103*), the Room 40 history sheets reveal that the presence in a given area of these U-boats was known. There is no evidence to show that this knowledge was used at a command level to vector forces to destroy them.

In the remaining 10 cases (fully two thirds of the total), the Room 40 history sheets reveal that nothing of any accuracy was known of the U-boats movements up to the point they were destroyed. It is not surprising therefore that in the absence of a strong "A" Known Sunk incident involving survivors, ASD struggled to identify the U-boat which was destroyed. This in part explains why seven (half) of the U-boat wrecks in the Channel are mystery sites.

Finally, it should be noted that in the case of (*U95*) it is shown that during the process of compiling the final 1919 List (NA ADM239/26) some validation of the original incident details did take place. We know this because up to that time, the attack position cited in the cumulative "Submarines Losses Return" (NA ADM239/26) plots on land. It is also clear from the case of (*UC49*) that after 1919 cases were reassessed and corrected by NID when better evidence of destruction emerged.

## **Chapter Five: Conclusions: Bringing World War One U-Boat Losses into Focus**

### **5.1: Introduction**

In the previous two chapters, each U-boat wreck of the WW1 era has been subjected to either or both survey and evaluation. From these data it is now possible to draw up an accurate, up to date list of wrecks as understood in 2013 (the 2013 List). This can then be used to make insightful comparisons with the original 1919 List (NA ADM239/26). As described in the introductory chapter to WW1 there are questions which it was anticipated this research could answer. This chapter will address the research questions as we attempt to draw together a more accurate picture of the U-boats destroyed in WW1 in the Study Area.

### **5.2: The Archaeology Compared to the Historical Text**

Of the 32 known wrecks in the Study Area, the author carried out fieldwork on 18 of the sites. Data relating to the other 14 sites came from a combination of sources primarily being Termote (1999), Richard (2007 & 2010), Odyssey Marine Exploration, Hydrographic Office wrecks database and McCartney (2003). What emerges from the research is a complex relationship between the wrecks and the 1919 List which is shown in tabular form in Appendix 1.4. To simplify what the results mean they have been broken down into a series of four datasets which are represented in a series of maps below. They are presented in a way which can be built up to give a final overall picture of the research.

#### **Where archaeology and historical text converge – The wrecks correctly listed in 1919**

The first dataset is shown in Figure 1.49. This represents the cases which accurately match the 1919 List (NA ADM239/26). There are in total 19 cases where the wrecks have been found and have been confirmed as being consistent with the list. Additional to the known wrecks is the case of *UC69* which was in an accidental collision with *U96* off Barfleur on 6 December 1917 in which *UC69* was sunk and survivors were rescued. This is considered to be an “A” Known Sunk case in which there is no doubt as to whether the U-boat was lost and the wreck awaits discovery. Shown too are the two cases in which sunk U-boats were salvaged; *UB26* and *UC61*. The circumstances of all three of these incidents are described in Appendix 1.7.



So Figure 1.49 represents an initial measure of the accuracy of the historical text. All of the 22 cases are either confirmed by archaeological survey or cannot realistically be anywhere else. In the introduction to WW1 (Chapter Two), it was shown that the 1919 List (NA ADM239/26) actually states that 37 U-boats were lost in the Channel. So the research shows that as measured against its own list, ASD was 59% accurate in assessing the correct incidents and identities of the U-boats lost in the Study Area in WW1. The fifteen cases which are considered incorrect are addressed next.

### **Where archaeology and historical text conflict – The wrecks incorrectly listed in 1919**

The second and third datasets are shown in Figure 1.50 which depicts the fifteen cases where the archaeology (in 2 instances) or its absence (in thirteen instances) is in conflict with the U-boat losses cited in the 1919 List (NA ADM239/26). These cases when added to the 22 shown in Figure 1.49 make up all of the 37 U-boat losses cited in 1919.

There are two incidents (shown in blue) where wrecks are actually present and have been surveyed by the author. They have been identified as (*U95*) and *UC51*, whereas as described in Chapter Four, the 1919 List (NA ADM239/26) cited them as being *U93* and *UB18* respectively. The full reasons why these cases were incorrectly attributed in 1919 is fully described in the aforementioned chapter and does not need to be revisited here.

The thirteen cases in red shown in Figure 1.50 are not known to correspond to any known wreck site. It should be noted that in two cases (*UC66* and *UB78*) the wrecks have been identified elsewhere in the Study Area. The status of the remaining 11 incidents will be addressed later in this chapter as we draw together a final picture of the overall results of the research.

When assessing the accuracy the work of the ASD in 1919 it should be noted that the actual identity of the sunken U-boat was probably of secondary importance over knowing that one was actually confirmed as destroyed. Taking this into consideration, the cases of both (*U95*) and *UC51* could be added to the 22 cases shown in Figure 1.49, making a total of 24 U-boats correctly estimated as being sunk, out of the 37 shown in the 1919 List (NA ADM 239/26). This increases the accuracy of the ASD's assessments to 65%. Nevertheless this is still far from being a true picture of events, because so far the ASD's performance has only been measured against its own list. The presence of the mystery sites changes the overall picture considerably and it is those that will be addressed next.

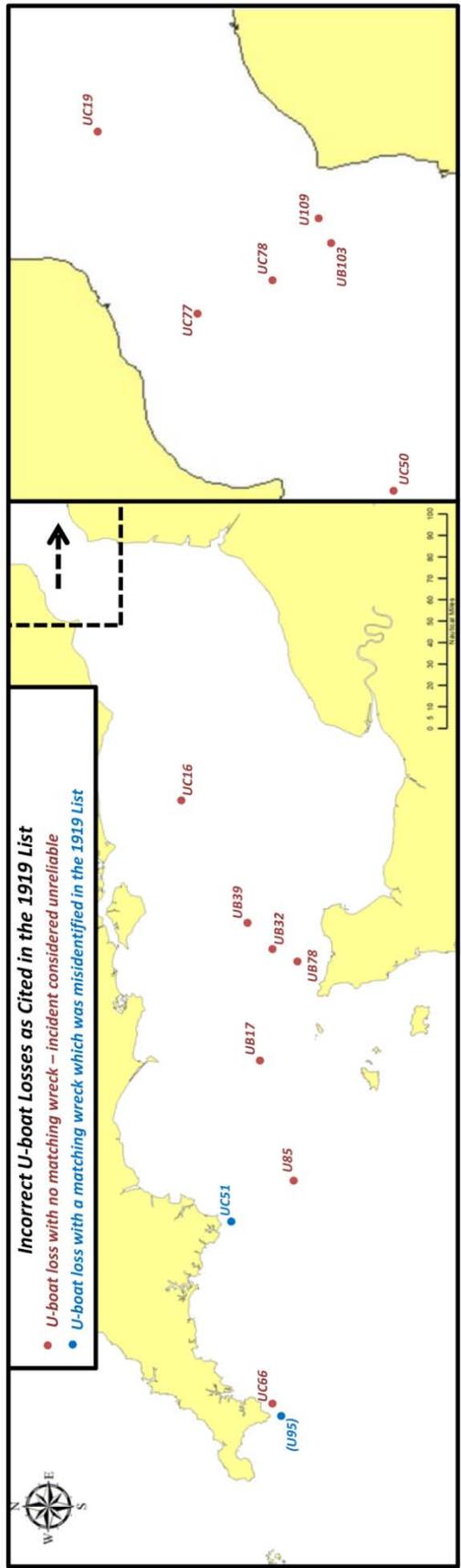


Figure 1.50. U-boat losses listed in 1919 which are now considered to be incorrect (red) or misidentified at the time (blue) (Innes McCartney).

### **Where archaeology and historical text diverge – The eleven mystery U-boat wrecks unknown in 1919.**

Undoubtedly the most remarkable aspect of the research into the U-boat losses in the Study Area in both world wars has been the presence of so many mystery U-boat wreck sites. In the case of the WW1 wrecks this is represented by 11 U-boat wrecks confirmed by survey to be present in the Study Area which currently cannot be reconciled with the 1919 List (NA ADM239/26).

In terms of the overall number of sites, it is now known that alongside the 24 known wrecks and other incidents shown on Figures 1.49 and 1.50, the 11 sites shown in Figure 1.51 brings the total number of confirmed losses to 35 (32 wrecks plus the cases of *UC69*, *UB26* and *UC61* as described earlier in the chapter). This represents a net loss of two sites over the 37 incidents shown in 1919 List in the Study Area.

While the overall numbers have turned out to be similar, it should be pointed out that only two of the mystery U-boat wrecks (*UC66*) and *UB78*) were cited in the 1919 List (NA ADM239/26) as being lost in the Study Area. Those attributions are considered incorrect and the wrecks are actually located in different areas and are now known to have sunk under different circumstances, as described in Chapters Three for *UB78* and Four for (*UC66*).

Where possible, the 11 sites shown in Figure 1.51 (the fourth dataset) have been subjected to the highest degree of scrutiny of the wrecks in this part of the thesis. However, either due to the remote location and extreme depth or the French diving ban, the identities of four sites cannot be currently derived to any degree of satisfaction from the available data, which sadly remains too vague to make any serious attempt at identification. Of the 63 known wrecks examined throughout the entire thesis, these four remain the only unidentified sites.

Of the remaining seven wrecks, three (*U37*, *UB78* and (*UC79*)) were mined, (*UC66*) was sunk by an aircraft, (*UC49*) by depth-charges and in two cases (*UB65* and (*U93*)) the circumstances of destruction are not currently known. It is worthy of note that the Admiralty records contained details relating to three of the wrecks (*UB78*, (*UC79*) in Chapter Three and (*UC66*) in Chapter Four), which greatly assisted in determining what happened to them and when they sunk. The accuracy of the ASD Assessment process will be explored further later in this chapter.

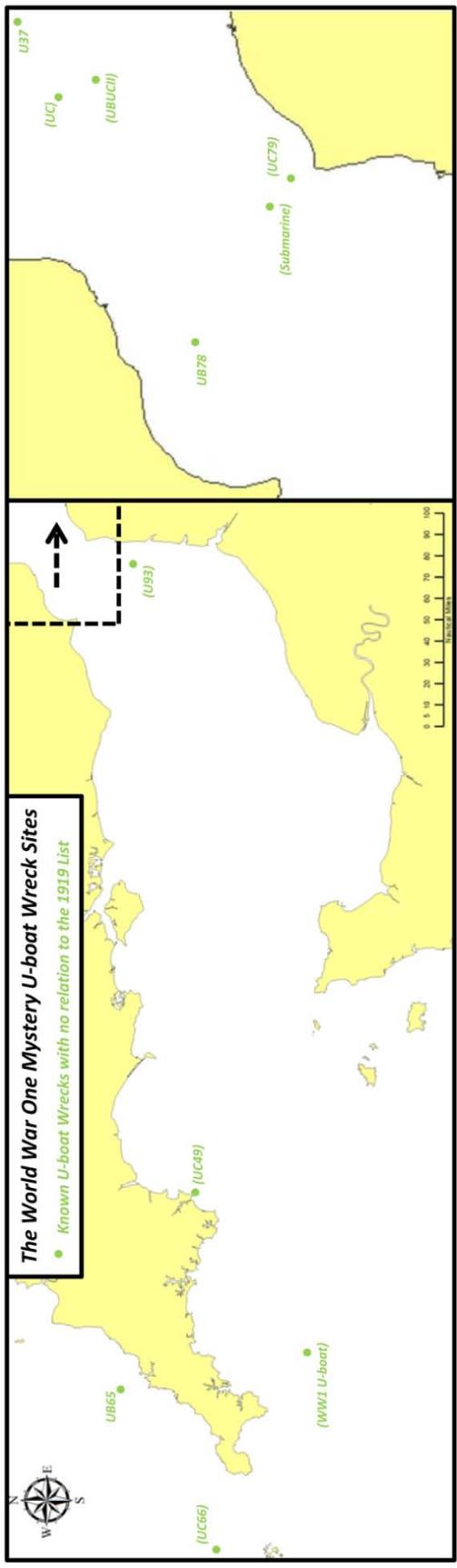


Figure 1.51. The eleven mystery U-boat wreck sites of WW1 which bear no relation to the 1919 List (Innes McCartney).

### **The overall picture of U-boat losses in the Study Area in World War One**

Drawing together the data from Figures 1.49, 1.50 and 1.51 into one final map, Figure 1.52 represents the overarching view of what has been achieved during the research into Part Two of the thesis. The full dataset is represented in tabular form in Appendix 1.4. For ease of use the colours have been kept the same except in the case of the data in Figure 1.49 which is now all represented in black. There are a total of 48 data points on Figure 1.52. They are made up of the 32 known wrecks, *UC69*, *UB26*, *UC61* (as shown on Figure 1.49) and 13 incorrect assessments in the 1919 List (NA ADM239/26) as shown in red. It should be noted that both *UC66* and *UB78* show up twice; as incorrect assessments and as mystery wrecks.

Ultimately this section will address the degree of accuracy of the 1919 List. With all of the data now represented in Figure 1.52 and in Appendix 1.4, the question to be answered is what proportion of the overall picture did the Admiralty correctly assess in 1919? Conversely, how much did they get wrong and why? In other words to what extent can the official history of U-boat losses, as promulgated in 1919, be trusted?

### **The incorrect ASD Assessments reviewed**

The first question to be asked is why were there 13 incorrect U-boat assessments (the red points in Figure 1.52) in the Study Area on the 1919 List? This is a high number compared to WW2, where the number of inaccurate assessments is five, (See Chapter 15), based on 41 data points on the 1946 List. The answer lies in the performance of Room 40 of tracking the movements (and therefore the likely fates) of the U-boats and the somewhat overoptimistic view taken from the evidence available to it. It is now obvious that the 1919 List contained some glaring inaccuracies and inconsistencies. A review of the 13 “red” cases reveals that nine of these incidents can now be discounted as completely erroneous for the reasons described below.

- *UC19*: The attribution of the destruction of this U-boat on 4 December 1916 (NA ADM239/26) was corrected by the Admiralty when the Naval Staff Monograph Vol. 18 (NA ADM275/13, 40) for Home waters covering December 1916 was published in 1933. By then it was known that the attack made by HMS *Llewellyn* was against *UB18* which survived to return to base. Nevertheless *UC19* could still be found in the Channel (see Appendix 1.1);

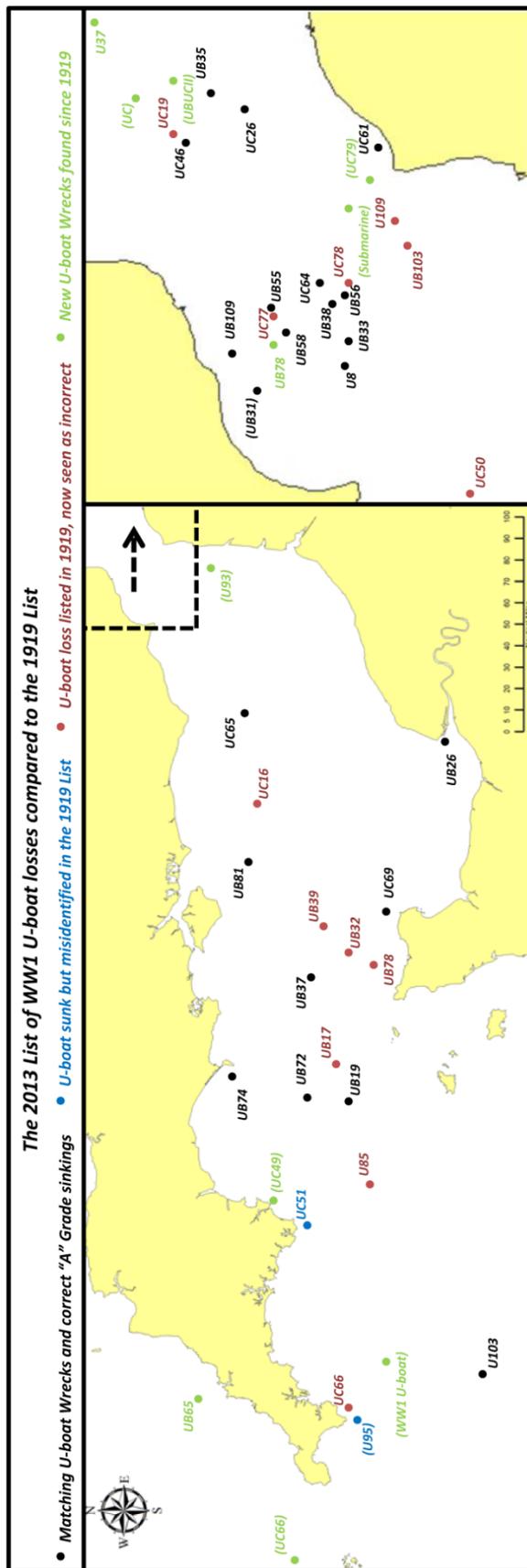


Figure 1.52. Overall findings of the research (the 2013 List), showing all known and mystery wreck sites and the correct and incorrect assessment of losses as published in 1919 (Innes McCartney).

- *U85*: As Lowrey (2009, 257-258) has shown it is probable that *U85* did not enter the Channel due to a serious mechanical defect. Unknown to Room 40 it is more likely that *U85* simply foundered somewhere on the northabout route. The incident which is cited in the 1919 List (NA ADM239/26) involving the Q-ship *Privet* off the Eddystone Light on 12 March 1917 may have involved *UC68* which was lost on a Channel patrol, position unknown during that time. However the absence of a U-boat wreck in the well surveyed area around the Eddystone means it is likely that *UC68* survived and foundered or was mined elsewhere (see Appendix 1.1);
- *UB39*: This U-boat was recently identified by the Belgian Diver Jef Coulon on the Sandettie Bank at the location of the wreck Termote (1999, 123-126) found and assumed to be *UB35*. It will be recalled from Chapter Three that *UB35* is an identified wreck in the Study Area. *UB39* was mined inward bound in May 1917;
- *UC66*: The wreck has most likely been identified north of the Scilly Isles (see Chapter Four) and Figure 1.52;
- *UB32*: The 1919 List states that this U-boat was sunk by a seaplane off Cherbourg on 18 August 1917 (NA ADM239/26). *UB32* did not leave for its final patrol until 10 September 1917 (Messimer 2002, 154);
- *UC16*: The body of the watch officer of *UC16* washed ashore at Norwik, Holland in October 1917. This led the Germans to conclude the U-boat was mined inbound or outbound off Flanders in October 1917 (Messimer 2002, 254). The British assessment of this loss to a surface attack on 23 October 1917 was initially graded “B” Probably Seriously Damaged and was upgraded to “A” only in the 1919 List (NA ADM239/26);
- *UB17*: From German records it is known that on its final patrol *UB17* was ordered to operate in the Hoofden (S. North Sea) not in the Channel (Messimer 2002, 136). It sailed on 11 March 1918. The Room 40 history sheet for *UB17* (NA ADM137/3916) shows that nothing of its movements was known to them at the time. Similar to the case above, the British assessment promulgated in the 1919 List was an upgraded “B” Probably Sunk in an attack off Portland on 25 February 1918 when *UB17* was in harbour;
- *UB78*: This wreck has been positively identified as mined in the Dover Barrage (see Chapter Three) and Figure 1.52
- *UC77*: The 1919 List states that this U-boat was sunk on 10 July 1918 in the southern North Sea (NA ADM239/26). *UC77* left for patrol the following day and nothing is known of its movements (Messimer 2002, 314);

The remaining four inaccurate cases, (*U109*, *UC50*, *UC78* and *UB103*) are almost certainly wrong assessments, but because the wrecks have not been found anywhere they cannot be

entirely disproved. A description of each case is given in Appendix 1.1, which looks at all 15 cases where U-boats may have been lost in the Channel and have not yet been definitely located elsewhere. It should be noted that of the nine incorrect assessments described above, the possibility still exists that three of them (*UC19*, *UB32* and *UC77*) could be found as mystery sites in the Study Area in the future (see Appendix 1.1)

It is very likely that the identities of the four unidentified U-boat wrecks in the Study Area (shown on Figure 1.52) will be found to be among the 15 U-boats listed in Appendix 1.1. If this turned out to be the case, then there would be a balance of 11 U-boats which may possibly be located in the Channel in the future. But equally they could be where the minefields lay off Flanders or in the southern North Sea. Strong candidates for two of these cases (*UC77* and *UB103*) lie on the Sandettie Bank awaiting positive identification by divers (see Appendix 1.1). What is certain is that the majority of them will be mystery cases, potentially increasing the inaccuracy of the 1919 List in the Study Area.

### **The overall accuracy of the 1919 List as known in 2013**

As mentioned above and as shown in Figures 1.49 and 1.50, ASD correctly identified the loss of 22 U-boats out of its original 1919 List of 37 cases for an overall of accuracy of 59%. The next question to be addressed is on how many occasions did they get it wrong? To answer this as accurately as possible, it is important not to double count fates which are wrong. The cases of *UC66* and *UB78* discussed above should only represent two incorrect instances, even though they are represented as four data points on Figure 1.52. Using this method, the overall results are shown in Table 1.1. It shows the 22 correct cases, the 11 mystery sites, the two sites where U-boats were sunk but misidentified and the 11 incorrect cases (avoiding the double counting of *UC66* and *UB78*). With the double counting removed the total number of points is now 46.

The overall conclusion therefore is that in 22 of 46 cases ASD correctly attributed the identity of a lost U-boat to its correct fate. This represents an overall accuracy of only 48%. What this means is that in over half of the cases (52%) now known the Official list of U-boat losses promulgated in 1919 in NA ADM239/26, ASD was incorrect in attributing the correct fate to the U-boats destroyed. Clearly any study of U-boat losses in this period which relies solely on the British version of events will not yield anything close to the true picture of events.

The hard numbers represented in Table 1.1 are based on the research carried out in this thesis and will be treated as the most empirically-based dataset available. Nevertheless, we are left with the possibility that some of the four unidentified U-boat wrecks could possibly tally with up to four of the 13 incorrect losses in Figure 1.52 which have not been completely discounted yet, because their wrecks have not been found anywhere. However, it should be pointed out that as discussed above, due to the 15 cases in Appendix 1.1 which when found would most likely

be mystery sites, the long term prognosis for the accuracy rating of the 1919 List in the Study Area is for it to become less accurate in the future.

Whole Study Area			
	Accurate U-boat losses	Inaccurate U-boat losses	Total
	U8	UC19	
	UB26	U85	
	UB19	UB39	
	UB37	(UC66)	
	UC46	UB32	
	UC26	UC16	
	UC61	UC51	
	UC65	(U95)	
	UB81	U109	
	UC69	UC50	
	UB56	UB17	
	UB35	UB78	
	UB38	UC78	
	UB58	UC77	
	UB33	UB103	
	UB55	U37	
	(UB31)	(U93)	
	U103	(UC79)	
	UB72	UB65	
	UB74	(UC49)	
	UC64	(WW1 U-boat)	
	UB109	(UC)	
		(UB/UCII)	
		(Submarine)	
<b>Totals</b>	<b>22</b>	<b>24</b>	<b>46</b>

Table 1.1. The overall assessment of accurate and inaccurate U-boat loss assessments of 1919 compared to the results of the research in this thesis. The colours match those used in Figure 1.52 (Innes McCartney).

### Differences between the results in the Channel and Dover areas

Segmenting Table 1.1 into the two separate areas of Dover (Chapter Three) and the Channel (Chapter Four) shows a difference in accuracy in each area, as depicted in Table 1.2.

Over half (13 of 25, or 52%) of the cases in the Dover area are considered correct, as opposed to only 43% (9 out of 21) being correct in the Channel area. There is one obvious explanation for why the two areas would manifest differing degrees of accuracy. That is the impact of the Admiralty Salvage Section divers.

Dover Area			Channel Area			
	Accurate U-boat losses	Inaccurate U-boat losses	Total	Accurate U-boat losses	Inaccurate U-boat losses	Total
	U8	UC19		UB26	U85	
	UC46	U109		UB19	UB39	
	UC26	UC50		UB37	(UC66)	
	UC61	UB78		UC65	UB32	
	UB56	UC78		UB81	UC16	
	UB35	UC77		UC69	UC51	
	UB38	UB103		U103	(U95)	
	UB58	U37		UB72	UB17	
	UB33	(UC79)		UB74	(U93)	
	UB55	(UC)			UB65	
	(UB31)	(UB/UCII)			(UC49)	
	UC64	(Submarine)			(WW1 U-boat)	
	UB109					
<b>Totals</b>	<b>13</b>	<b>12</b>	<b>25</b>	<b>9</b>	<b>12</b>	<b>21</b>

Table 1.2. The overall assessment of accurate and inaccurate U-boat loss assessments of 1919 compared to the results of the research in this thesis segmented into the Dover and Channel areas. The colours match those used in Figure 1.52 (Innes McCartney).

It will be recalled from Chapter Three that Salvage Section divers visited at least nine of the U-boat wrecks in the Dover area. In two cases (UB33 and UC64) it was solely by material recovered by diving that the wrecks were correctly identified. Assuming that they would otherwise have been missed entirely on the 1919 List, or wrongly attributed this would lead the Dover accuracy to change to only 11 correct (out of 25), or 44%. This figure is much closer to the Channel accuracy of 43%, where the impact of diving was not felt. This more consistent accuracy rate between both areas is reassuring to see, because based on radio intelligence and the interrogations of survivors (the two key intelligence sources) the overall accuracy rate between both areas would be expected to be broadly similar.

### **The accuracy of the Letter Grading system used by ASD in World War One**

Unlike the 1946 List (NA ADM199/1789) where the letter grading assessment of each case was retained in the final list of losses; in the 1919 final list (NA ADM239/26) all of the losses listed with a sinking attribution were considered to be “A” Known Sunk and adjusted accordingly. The sheer folly of adopting such an approach has been mentioned in relation to several cases in previous chapters where the original 1919 attribution is now known to have been wrong and we can now look at these cases as a whole.

However, the cumulative quarterly editions of the “Submarine Losses Return” (CB01292 in NA ADM239/26) which as described in the introduction to WW1, culminates in the final 1919 List does show the original grade attributed to each incident when it was first assessed. Table 1.3 shows the original assessment grade attributed to each of the 47 U-boat losses and incidents as discussed in this section, with the colour scheme retained.

Looking firstly at the cases where ASD correctly identified the loss of a U-boat; in 17 of the 22 cases the incident was graded “A” Known Sunk. The loss of *UC69* was not graded, presumably because it was an accident not caused by enemy action. It is the original “B” Probably Sunk assessments which are the most revealing:

- *UB56*: As described in Chapter Three, a survivor was pulled from the sea, identifying the U-boat. Under the circumstances it is somewhat surprising this was not immediately listed as “A” Known Sunk. One possible explanation must be that the details of what was recovered were not made available to ASD until later in the war. The *Prize* and *U93* incident related below, may also have had some bearing on this case;
- *UB38*: As described in Chapter Three, the presence of a U-boat wreck found by divers was never explicitly associated with this wreck. Since there were no survivors, it remained a “B” Probably Sunk case, even though the evidence of its destruction had been conclusively found;
- (*UB31*): As described in Chapter Three, there were no survivors from this incident and as this thesis has shown, neither was the site visited by divers. Under the circumstances from the evidence available at the time the “B” Probably Sunk grade seems appropriate. Nevertheless, as described there is little evidence to support even a “B” grade from the evidence available today;
- *UC64*: As described in Chapter Three, there were no survivors from *UC64*. It was later identified by divers from material recovered and so consequently relisted in 1919 as “A” Known Sunk.

The importance placed on the presence of survivors in the water after a seemingly successful ASW incident can be seen in the fact that 13 of the 17 “A” Known Sunk cases had survivors. However the incident of 30 April 1917 when the Q-ship *Prize* pulled three survivors (including the captain) of *U93* from the sea after a seemingly successful gun action; only to later discover that the U-boat had survived heavily damaged to return home (Chatterton 1922, 145-151) must have weighed on the minds of the assessors. This may be the reason why the sole survivor of *UB56* did not immediately lead to an “A” Known Sunk being attributed to that incident.

Entire Study Area					
Accurate U-boat losses	Letter Grade	Survivors?	Inaccurate U-boat losses	Letter Grade	Survivors?
U8	A	Yes	UC19	B	No
UB26	A	Yes	U85	B	No
UB19	A	Yes	UB39	B	No
UB37	A	No	(UC66)	B	No
UC46	A	No	UB32	B	No
UC26	A	Yes	UC16	B	No
UC61	A	Yes	UC51	A	No
UC65	A	Yes	(U95)	A	No
UB81	A	Yes	U109	A	No
UC69	not listed	Yes	UC50	B	No
UB56	B	Yes	UB17	B	No
UB35	A	Yes	UB78	A	No
UB38	B	No	UC78	B	No
UB58	A	No	UC77	A	No
UB33	A	No	UB103	Unclassified	No
UB55	A	Yes	U37	not listed	No
(UB31)	B	No	(U93)	not listed	No
U103	A	Yes	(UC79)	A	No
UB72	A	Yes	UB65	B	No
UB74	A	Yes	(UC49)	B	No
UC64	B	No	(WW1 U-boat)	not listed	No
UB109	A	Yes	(UC)	not listed	No
			(UB/UCII)	not listed	No
			(Submarine)	not listed	No

Table 1.3. The original letter grade assessments made by ASD during WW1 in the 46 cases listed in Table 1.1. The colours match those used in Figure 1.52 (Innes McCartney).

Of the seven cases with no survivors, three incidents were absolutely proved; evidence recovered from the sea identified *UB58* and divers identified *UB33* and *UC64*. While there may have been strong anecdotal evidence that *UB37* (see Chapter Four), *UC46* and *UB38* (see Chapter Three) had been sunk in the reported actions, this did not constitute absolute proof. In fact based on the evidence available, it seems equally plausible that the submarine could have escaped. In these instances it is hard not to conclude that ASD was lucky in getting them right. Furthermore, as described in Chapter Three the case of (*UB31*) remains problematic and it may turn out to be pure luck that ASD correctly assessed the loss of this U-boat if it can ever be positively identified.

Turning now to the grading of the incorrect losses, it is a unique feature of WW1, not repeated in WW2, that incorrect assessments in the Study Area were graded as “A” Known Sunk. Six of the 17 cases graded were listed this way. As discussed previously in this chapter and examined in detail in Chapter Four, in the two incidents in blue (*UC51* and (*U95*)), U-boats were actually destroyed but were wrongly attributed to being *UB18* and *U93* respectively. It should be noted that there are three “blue” incidents in WW2 and all were graded “B” Probably Sunk (see Chapter 15).

Surface evidence seems to have been the reliable component to correct grading. It will be recalled from the Technical History of ASD cited in Chapter Two, that ASD defined the “A” grade as cases where the target was considered “definitely sunk” (THSA 1919b, 6). So somewhat surprisingly, in the four other cases where the “A” Known Sunk was applied, the only evidence on the surface was oil in three cases and an “upheaval of water” in the case of *UC79* (NA ADM239/26). This hardly constitutes definite evidence.

Furthermore, the Technical History goes on to state that the enemy used ruses like discharging oil “to mislead and upset the calculations of the attacking vessel” (THSA 1919b, 6). The question needs to be asked how the assessors could possibly tell the difference from the evidence (in the form of reports) which was presented to them of whether a “ruse” was being employed or an attack was successful, if a patch of oil was the only surface evidence?

Finally, the Technical History of ASD also states that “trustworthy intelligence” was another component used in establishing the “certainty” of U-boat kills (THSA 1919b, 6). Revealingly, the intelligence in all six cases was vague or completely absent. We have seen above that ASD misidentified the U-boats sunk in the “blue” cases: *UB18* was claimed when it was *UC51* which was actually sunk and *U93* was claimed when (*U95*) was the victim (see Chapter Four for the full details). The other four cases are equally educative:

- *UB78*: The assertion that it was sunk on 9 May 1918 by ramming off Cherbourg (NA ADM239/26) was made based on interrogations from survivors of other U-boats which stated *UB78* had not returned from a patrol (NA ADM137/3917). So in fact all that was known from “trustworthy intelligence” was that the U-boat disappeared somewhere. It is inexplicable how this could be translated into an “A” Known Sunk incident;
- *UC77*: The assertion that this U-boat was destroyed on 10 July 1918 by depth-charges (NA ADM239/26), was, according to the Room 40 History Sheet for the boat (NA ADM137/3918) based on no intelligence whatsoever. Nothing of the U-boat’s movements was known at the time. In fact *UC77* was in harbour and only sailed the following day (Messimer 2002, 314);

- *UC79*: The attack by the submarine HMS *E45* on 19 October 1917, credited with sinking this U-boat (NA ADM239/26) took place when the Room 40 History Sheet (NA ADM137/3918) shows that nothing was known of its movements. There is an undated comment stating that the U-boat was still operational in February 1918!
- *U109*: This U-boat was listed as mined in the Dover Barrage on 26 January 1918 (NA ADM239/26). There was no evidence aside from the fact that a U-boat was seen on the surface and oil was seen after an explosion to support this claim.

The intention here is not to be critical after the event but to show that by its own definitions, ASD was not taking a consistent approach to assessments. There is no possibility that in any of these cases ASD could have assumed that it was in possession of “trustworthy intelligence” which was later found to be false. The evidence available at the time appears unequivocal.

Another interesting question arises in the case of *UC79*. It was listed “A” Known Sunk at the time of the event in October 1917, but as is shown above, it operated for several months afterwards. The attribution was never rescinded. Was this because once it was “Known Sunk” it could hardly be resurrected?

### **5.3: The 32 Known U-Boat Wrecks Viewed Collectively**

Of the 32 known wrecks 18 have been surveyed by the author, four published surveys by Alain Richard (2007 & 2010) have been consulted and in one final case, ROV footage was made available to the author by Odyssey Marine Exploration. In total therefore, detailed survey data is available in 23 of the cases. This represents 72% of the total and is a viable proportion to insure that the wrecks have been correctly recorded, analysed, understood and identified.

#### **Identification of the wrecks**

The fieldwork has shown that the U-boats of WW1 have survived very well in the underwater environment for nearly a century. Their durability is comparable if not superior to their counterparts from WW2. The pressure hulls of the wrecks were always found to have retained their integrity and in most cases the outer hulls remain visible on large sections of the wrecks. This is encouraging because it has meant that the identifying features which are important in distinguishing the different classes of WW1 U-boat were present in all cases examined. It would have been very challenging indeed for this research if the wrecks had presented themselves as rotted down hulls, indistinguishable from each other.

Fieldwork was an essential component of this thesis because as shown in Figure 1.3 of Chapter Two and listed in Appendix 1.3, 11 of the wreck sites were unidentified. Also it was important

to verify the identities of other sites where the data available was only anecdotal and unpublished. Seven of the unidentified sites were satisfactorily identified by fieldwork. The establishment of the class of submarine wreck examined during the fieldwork was the key component in being able to link *UB37*, *UB72 (U95)* and *UC51* to the historical record. Propellor markings provided the key to identifying *UB65* and (*U93*) and detailed research coupled with the GIS database revealed the likely identity of (*UC66*).

### **The unique specifics of WW1 U-boat archaeology**

Unique to WW1 is the chance that the shipyard marks on the propellers of the U-boats can yield (or strongly point to) the identity of the wreck. Three U-boats were identified, at least in part by this method. The author used this approach to identify *UB65* (see Chapter Four) and Richard (2007, 156-166) was successful in identifying (*UC79*) in the same way. Propellor markings also helped Richard (2007, 119-136) come close to identifying (*U93*). It should also be noted that research has also shown that recreational divers have used propellor markings in the past to identify at least *UB38*, *UB78*, *UB35*, *UC26*, *UB58* and (*UB31*), although not all cases can be fully verified. In these instances, the identities of the wrecks were known to the author at the start of the research.

One particularly surprising discovery made on some of the wrecks, notably *UB65*, *UC46* and *UB109* was the use of timber in the construction of the rudders and hydroplanes. This seems to have been used as filler which was then clad in sheet steel and held in a frame, probably to save weight.

Unlike their WW2 counterparts in the Study Area, all of the U-boats (except the early *U8* and *U37*) were fitted with deck guns. The variety of types of guns fitted to WW1-era U-boats has not been comprehensively published or researched, and similar to WW2 specific records relating to the way U-boats were actually equipped in the field, do not appear to have survived the war in any comprehensive format.

Friedman (2011, 144-147) states that there were up to nine different guns of 50mm, 88mm and 105mm which were manufactured for smaller naval vessels. The two manufacturers were Krupp and RMM. The records Friedman primarily used for his research were those of British intelligence, which by their very nature are unlikely to be fully accurate. Mehl (2002, 115-116) gives details of three types of U-boat specific guns from the period (from examples which exist in museums) but this is not a comprehensive list. He did however, describe the specific types of mounts designed for U-boat use, but again it is far from certain whether this list is comprehensive. Figure 1.53 shows existing examples of some of the guns.



Figure 1.53. Surviving examples of WW1-era U-boat guns: (images A & C Innes McCartney, B Dave Batchelor, D Al Wright, E retrieved from [http://www.flickr.com/photos/carlos\\_seo/121041782/](http://www.flickr.com/photos/carlos_seo/121041782/) on 15/5/2013).

From an archaeological standpoint, without detailed inspection and measurement, several types of guns cannot readily be told apart. However, where they can be seen on dive footage or by visual examination they can be broadly classified into four distinct groups:

- a) Shorter, smaller guns with one upper recoil cylinder, mounted on a short mount (for instance see *UB37* in Chapter Four). Guns of this type could be either the two types of Krupp 50mm guns, for example as seen in Image B of Figure 1.53, as salvaged from the wreck of *UA*; or the light 88mm 30 calibre types manufactured by Krupp and RMM. A RMM example is shown in Image A of Figure 1.53 as salvaged from the wreck of *U20* and seen today in the Strandingsmuseum, Torsminde, Denmark. This gun is known to have been mounted as per Image B as well, and it is in this format is likely to be seen on the UBs and UCs of the Flanders U-boats. The foldaway mount seen in Image A seems to be a fitting for larger U-Class boats;
- b) The 88mm 30 calibre gun with the twin over and under recoil cylinders on a heavy mount. This is solely the 1914 Krupp model which was used from 1916 on a specially made C1916 U-boat mount. This is the most readily identifiable deck gun of the period and is seen on several of the wrecks in this thesis, e.g. *UB81*. An example of this gun and mount in seen in Image C of Figure 1.53 as salvaged from *U51* and as it exists in the Bremerhaven Ship Museum;
- c) The RMM 105mm UTOF gun is also of a type which is distinguishable from any other type of gun by its shape. Examples are seen on the wrecks of *UB72* and *UB65*. An example of this gun exists in the Imperial War Museum, as seen in Image E of Figure 1.53;
- d) Krupp also manufactured a 105mm gun of 45 calibre which is seen on the wreck of (*U95*). They also made an 88mm 45 calibre gun, which would be very difficult to

distinguish visually from the 105mm type. An example of the 105mm type can be seen in a public park in Bangor, Northern Ireland as seen in Image D of Figure 1.53.

Knowing that the guns and mounts can be broadly categorised and by looking at the circumstances and dates of sinking of the identified wrecks in this thesis, the types of gun fitted emerge as a potentially useful dating source for unidentified U-boat wrecks which could appear in the future. This is because it is known primarily from Gröner (1991) that U-boat guns were upgraded from time to time.

For example, the UBIII-Class was originally fitted with the 88mm 30 calibre gun. Gröner (1991, 26) is not specific about the type, but we see the readily identifiable type b) above on *UB81*, sunk in December 1917. Gröner (1991, 26) goes on to say that in 1918, UBIII-Class boats were upgraded to the 105mm UTOF type c) above and this is the type of gun we see on *UB72*, sunk in May 1918. Furthermore I am grateful to Axel Niestlé for informing me in conversation on 18 April 2013, that from German records it seems that right at the end of the war the UTOF was being removed in favour of the 88mm gun. Interestingly there is evidence of this in the case of *UB109* sunk in September 1918, which is fitted with a small gun of type a) above (see Chapter Three).

While the results seen are preliminary and somewhat tentative, they offer the possibility for further study across all of the recorded U-boat wrecks of WW1 with the anticipation that a form of typology could emerge. Similar would also be possible with an assemblage of photographs of propeller shipyard markings. Such an exercise lies outside the scope, aims and objectives of this thesis but could be considered for further research.

#### **5.4: The Results of the GIS Database Approach to Matching the Historical text to Extant Archaeology**

One of the methodologies adopted for tying the historical text to wreck sites was to develop a GIS database which incorporated the positions of the wrecks and the positions of all archival ASW incidents residing in the ASD cumulative list of U-boat incidents (NA ADM239/26), the Dover Packs (primarily in NA ADM137/2096 & 2097), the records of the Admiralty Salvage Section (primarily in NA ADM116/1581 and 1632) and the locations of all minefields (Leith 1920a and 1920b). It was anticipated that this approach would help achieve two specific objectives. First, to clarify the relationship between the varying records relating to the U-boat wrecks in the Dover Straits in order to establish a sharper picture of events. Second, to offer

historical ASW incidents which could be matched to mystery U-boat wrecks in order to assist in identifying them. The results of this approach have been mixed.

In the Dover Straits area the results are presented in Foldout A3 Map 1. As described in the conclusions to Chapter Three this process was absolutely necessary to unravel the relationship between so many differing sources of data in a confined body of water. The GIS was successful in doing this and was able to produce some interesting results. For example, it can now be shown that salvage section divers did not in fact inspect the wreck of (*UB31*) as has been described by historians (notably Grant, 2003, 73) but dived *UB55* twice, without realising. Also of particular note is that it can be shown that divers visited the wreck of (*UC79*) and that the very presence of a destroyed U-boat (the finest evidence available of destruction for an “A” Known Sunk assessment) was, incredibly, overlooked by ASD when drawing up the 1919 List.

However, the GIS approach was only successful in providing ASW incidents which could be tallied to mystery U-boat wreck sites in three cases. In the case of the destruction of *UB78*, a mine explosion on 19 April 1918 was found to match the exact location of the wreck. It detonated at the time the U-boat was traversing the Straits and certainly was the cause of its destruction. As shown in Chapter Three, Keyes thought a U-boat was destroyed at the time but ASD did not agree and the incident was not cited in the 1919 List. The presence of an explosion where the mystery *UB78* resides ends the debate about who was right in this instance. The second successful case is in matching the air attack of 27 May 1917 to the possible destruction of (*UC66*). Although the case is not proved for certain it offers a strong thesis. Thirdly the *Braeneil* incident relating to the destruction of (*U95*) was a good match to the wreck.

In WW1 due to dead reckoning navigation, exact positional matches were not anticipated because navigational accuracy could not realistically be expected out of sight of land and few were seen. As will be shown in the WW2 section, the use of GEE means that ASW incidents during the Inshore Campaign do coalesce with the positions of wrecks much more closely.

## **5.5: The Impact of the Research on History**

This section will examine the question of how the results of the research affect the understanding of the history of the first U-boat war in the Study Area. Two specific areas will be addressed tracking and intelligence and the means of destruction.

### **Tracking and Intelligence**

Intelligence relating to U-boats during WW1 was gathered in a number of ways. This thesis has shown the role divers played in gathering intelligence from wrecks. We have also seen the

evidence of the valuable intelligence gathered from prisoners of war. To have an overall view of the enemy's order of battle and his day to day operational processes is undoubtedly of great value but as Grant (1969, 9) has pointed out, there was a time limit on the value of U-boat intelligence during WW1. Results were required in the immediate future if intelligence was to be used to track and destroy U-boats. For Room 40, the major source of near to real-time intelligence was gathered from listening to the enemy's radio traffic.

Looking specifically at each of the 35 known wrecks and confirmed incidents in this thesis, the role signals intelligence played in ASD's appreciation of the U-boats movements has been examined in each case using the Room 40 history sheet for each U-boat. It is possible that information was added to these sheets "after the event" so caution in interpreting the data they enclose needs to be exercised.

Nevertheless, what emerges is the reality that in probably only five cases (*UC65*, *UB81*, *U103*, *UB72*, and *UB109*) does it seem Room 40 had an up to date and accurate picture of the U-boat's movements within the 24 hours before they were destroyed. *UB81* and *UB109* were mined and we now cannot be certain whether *SS Olympic* had been forewarned and was on the lookout for *U103*. Carrying US troops to Britain, it is more likely that the *Olympic* would have been re-routed away from danger if any thought had been given to the risk it was shortly to face.

We are left then, with only two incidents where it can be shown that radio intelligence led directly to the destruction of U-boats. In both cases, British submarines were employed to destroy *UB72* and *UC65* (see Chapter Four), having been vectored to the location of the U-boat once it had been calculated using DF. This does look like successful targeted killing of U-boats, especially when it is considered that from the Technical History of Submarine v Submarine (THSA 1919, 14-16), we know that the regular routine patrols by submarine were not successful in sinking U-boats. It is shown that British submarines made 39 contacts with U-boats in the Channel in 1917-18. They hit four U-boats, but only sunk the two mentioned here; where it seems intelligence was the key to vectoring the submarine to its target.

What this seems to show is that in the Study Area, the possession of the ability to read German Naval codes during the war was of extremely limited use. The reason for this has been shown to be primarily because the Flanders-based U-boats did not use the radio, as was well-known to Room 40 (Birch & Clarke 1922a, 316-317). Freer use of the radio by Fleet U-boats did allow for their movements to occasionally be better understood, but they were never in the Channel in the same numbers as the Flanders boats. Revealingly, of the five U-boats being tracked when sunk, *UB72* and *U103* were Fleet U-boats.

As will be shown in Part Three, during the Inshore Campaign the enemy’s judicious use of the radio makes interpreting his movements increasingly impossible over time. So inevitably this must have been a source of frustration in London, especially in relation to the Flanders Flotilla and it may well have played a larger part in the Admiralty pressure on the Army to capture Ostend and Zeebrugge (in what became the Battle of Third Ypres in 1917) than historians have recognised in the past.

Writing in RUSI in 1959, Roskill (1959, 440-442) was critical of Jellicoe for pushing for this offensive. Among his criticisms was the view that if the ports had been taken the Flanders U-boats would have simply been absorbed by the Fleet into their bases in Germany. Because the Room 40 files were still secret he may not have realised that dislodging the secretive Flanders Flotilla (which as Roskill shows, was at the time responsible for a third of merchant shipping losses) may have changed the intelligence picture at the Admiralty considerably because as has been shown, the movements of the Flanders Flotilla were an intelligence blind spot. A similar case could also be made for the Zeebrugge raid of 1918 and even for the laying of the Dover mine barrage.

### How the U-boats were destroyed

A further question to be addressed is to what extent does the way in which the U-boats were understood to have been destroyed vary between the 1919 List of U-boat losses (NA ADM239/26) and the results of the research (the 2013 List)? The means of destruction as described in both lists is shown in the pie charts seen in Figure 1.54 and Appendix 1.6.

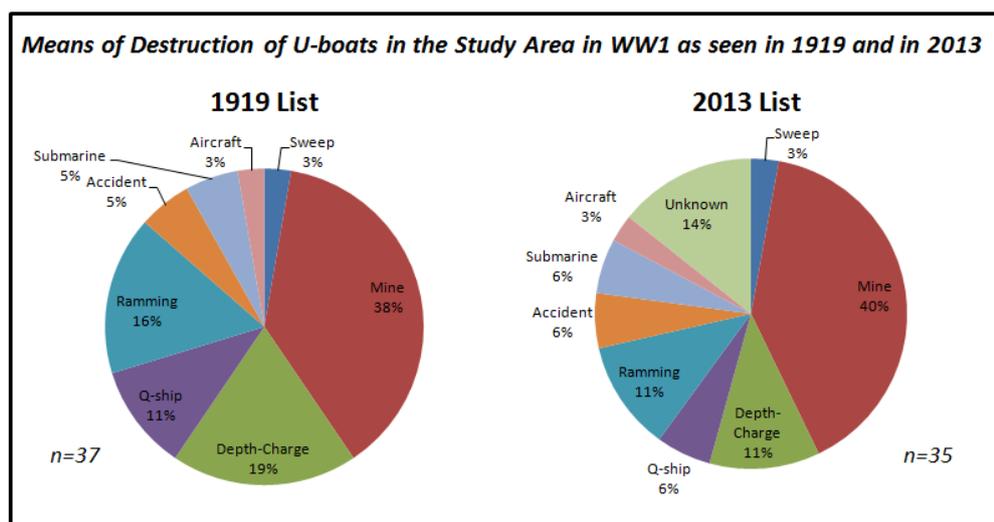


Figure 1.54. The means of destruction of the U-boats sunk in the Study Area as seen in 1919 and in 2013 (Innes McCartney).

Immediately noticeable is the proportion destroyed by mines. Most of these incidents were verified by divers during WW1 so the proportions would not be expected to differ much

between both datasets. This is the first but not the last instance in this thesis where the role of mines as a successful anti-U-boat weapon in shallow waters will be clearly demonstrated.

The primary difference between 1919 and 2013 is the fact that the circumstances of the loss of five of the mystery sites cannot currently be explained. But equally revealing is the decline in the proportion of U-boats sunk by the other three major U-boat killers, ramming, Q-ships and depth-charges. If anything, this reveals the fundamental weakness in the compilation of the 1919 List, which was simply to assume that the ASW reports it was in possession of, in fact represented all possible options for the loss of the U-boats, and that by matching up the most plausible attacks to the U-boats it could not account for during the war would reveal a true picture of events. As will be shown in Part Three, even with a more detailed record of ASW actions during WW2, AUD also succumbed to the temptation to do the same in 1946.

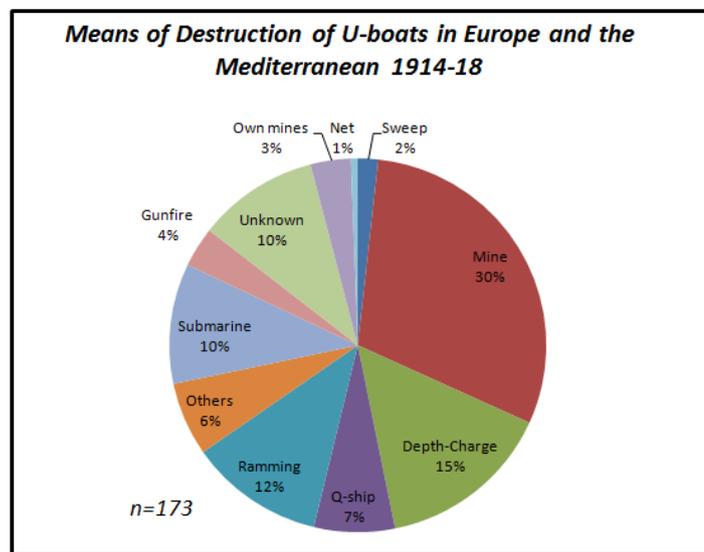


Figure 1.55. The means of destruction of all the U-boats destroyed in Europe and the Mediterranean during WW1 (Innes McCartney with data from Ministry of Defence, Director of Naval Warfare 1973, 41).

The final point to be made is that in terms of the destruction of U-boats, the Study Area is atypical as a theatre of U-boat operations in WW1. This is because of the presence of the Dover minefield and the number of U-boats destroyed there. Figure 1.55 shows the Royal Navy appreciation of U-boat losses in Europe and the Mediterranean during WW1 as known in 1973 (Ministry of Defence BR1736(56)(1), 41). Even allowing for the fact that this picture has inevitably changed as wrecks have been found, the sample size is large enough to not greatly affect the overall numbers. The proportion due to mining is smaller than in the Study Area but still twice as effective as anything else. The broadly similar proportions to 2013 for ramming, Q-ships and depth-charges are also interesting to note.

## 5.6: In Summary

The conclusions drawn in this chapter are extensive. The key findings are summarised as:

- 1) As measured against its own list, ASD was 59% accurate in assessing the correct incidents and identities of the U-boats lost in the Study Area in WW1;
- 2) As measured against the research in this thesis (the 2013 List), the accuracy of the 1919 List is seen to be only 48% correct. So, in less than half of incidents in the Study Area did ASD correctly assess the fate of the U-boats sunk;
- 3) Despite developing a grading system for lost U-boats based on strict criteria, ASD credited “A” Known Sunk to the losses of six U-boats in the Study Area which have now been proved to be wrong;
- 4) From survey of the wrecks, the types of guns fitted to U-boats can be broken down in to four broad groups. The upgrading to 105mm gun on some U-boats in 1918 offers the potential for dating evidence on future mystery sites;
- 5) If data is available from both propellers, shipyard stamps offer a good chance of identifying specific U-boats;
- 6) The GIS was an essential tool used to reconcile the Dover Command and ASD records in the Dover area. The GIS was useful in highlighting a number of errors in the historical text and in providing the probable fates of (*UC66*), *UB78* and (*U95*);
- 7) In the Study Area, the limited use of the radio by the Flanders Flotilla is clearly shown by the fact that the movements of 30 of the 35 U-boats sunk were unknown to Room 40.
- 8) The mine was by far the most successful ASW weapon employed in the Study Area; being even more effective than seen collectively across the European and Mediterranean theatres.

## **Part Three: The U-Boat Wrecks of World War Two**

## **Chapter Six: Introduction to the WW2 U-Boat Wrecks**

### **6.1: Introduction – The Objectives and Outcomes of the Research**

The most crucial element of this thesis has been to accurately identify each wreck in the Study Area. As far as is known 20 of the 31 WW2 wrecks were completely unidentified at the outset of this study. Therefore it was of immediate importance to identify these sites and ensure the other identities were correct. Once this had been achieved and a definitive list of the extant archaeology was known, meaningful comparisons to the historical texts could be drawn in the conclusions at the end. The primary aim of this chapter is as described in the introduction to the thesis; it focuses on the research methodologies used to identify each site.

This chapter will then firstly, present the findings of the initial research into U-boat losses (the historical text) and wrecks (the archaeology) in the Study Area as it was known before a full analysis of each site had been carried out. Secondly it will outline the objectives and methodologies to be used in examining each specific U-boat wreck in the chapters to follow. Ultimately, after each wreck had been examined, the findings were drawn together into a comprehensive list which was compared against the historical text in the conclusion chapter ending this part of the thesis.

### **6.2: The Historical Text of World War Two**

The section below will show the outcomes of the research into the key primary sources available (the historical texts) and their utility in studying the wrecks. Most important is the official list of U-boat losses as promulgated by the Admiralty in 1946 (NA ADM199/1789). It lists the Allies' appreciation of where they thought they had sunk all of the lost U-boats of WW2 and was the culmination, not only of work carried out during the war, but of a cursory comparison made with captured German records in the months after the war ended. Figure 1.56 shows the U-boats which the Allies considered sunk in the Study Area during WW2.

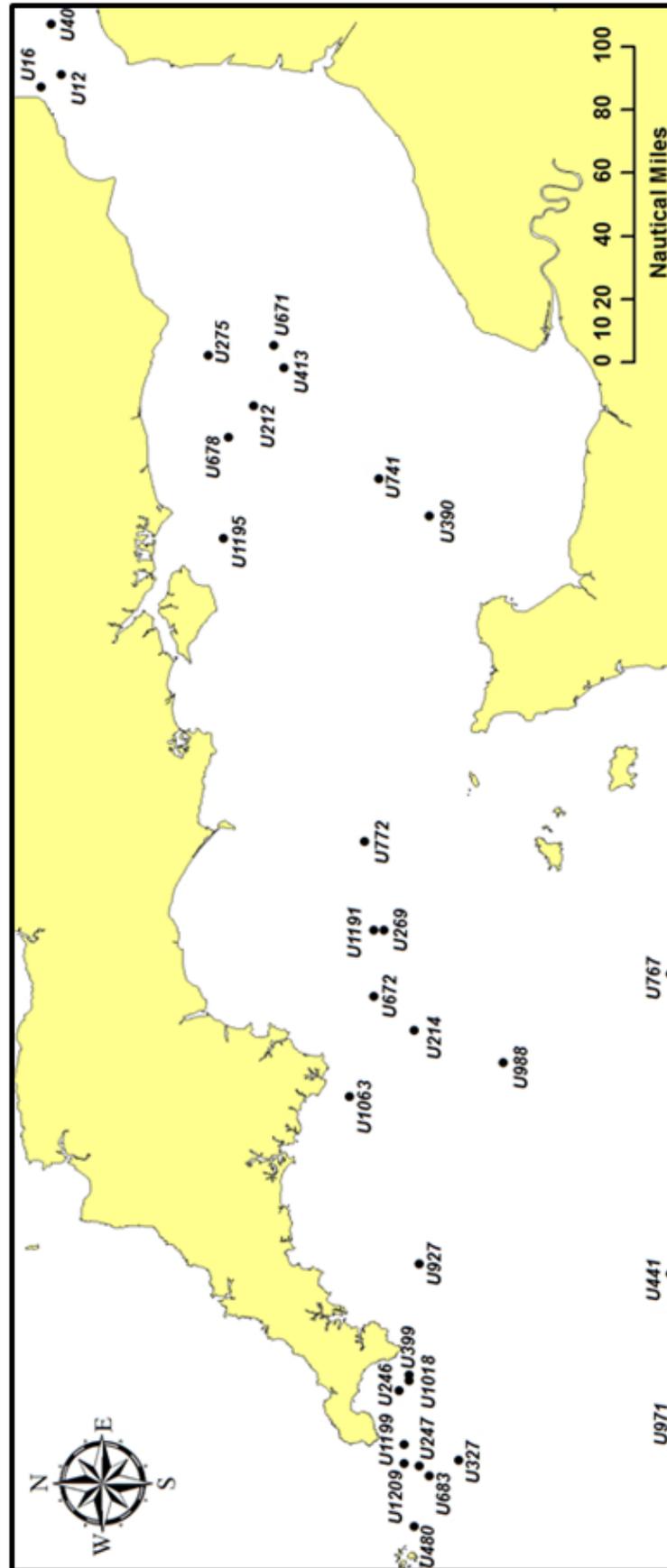


Figure 1.56. The 31 U-boat losses of WW2 in the Study Area, as published by the Allies in 1946, with typographic errors corrected. All of them, except U12, U16 and U40 (off Dover) were sunk during the Inshore Campaign June 1944 to May 1945 (Innes McCartney).

This list forms the starting point of the research on the U-boats in the Study Area. As will be seen later in this chapter and throughout this section, the map which is Figure 1.56 underpins the relationship between the wrecks and the historical text and forms the basis upon which the spatial relationships between each site is represented. Ultimately this map will form part of the final analysis into each wreck examining how and if the historical text actually matches or contradicts the extant archaeology as seen on the seabed during the fieldwork. This list is shown in tabular form in Appendix 2.2. This also shows corrections made by the author to this list to eliminate typographic errors so that it illustrates the location of the wrecks in the way it was originally intended to.

Three U-boats were lost off Dover in 1939; *U12*, *U16* and *U40* (see Figure 1.56). Whilst they lie in the Study Area, they are of only passing interest. Although they will be examined in full, the main area of research relates to the Inshore Campaign from June 1944 to May 1945, as it has been described in the introduction to the thesis.

### **The Historical Text of the Inshore Campaign**

Aside from identifying and mapping the official list of losses; it was necessary, as described in the introduction to the thesis, to identify historical texts which would be consulted as part of the analysis of each wreck site. Therefore the following section introduces the main historical sources the author has identified as representing the key historical texts of the WW2 part of the thesis. The most important documentation covering the compilation of ASW incidents, attack reports and the authoring of the post-war loss register were produced by divisions within the Admiralty, as described below.

The strategic response to the Inshore Campaign was coordinated by the Admiralty in London based on intelligence which was provided by the Operational Intelligence Centre (OIC). The OIC can be seen as a fully evolved version of the Room 40 of 1918 (see Part Two). It processed intelligence from a myriad of sources, not least the Special Intelligence (sometimes incorrectly referred to as ULTRA) being provided by Station “X” at Bletchley Park, and provided strategic, tactical, technical and situational briefings to front line commands.

Within the OIC was the Tracking Room which kept an up to date plot on the positions of all of the U-boats at sea, primarily based on visual sightings, contacts with the enemy, radio direction finding (DF) and Special Intelligence. OIC briefings, sometimes released in specific “series” promulgated positional information regarding U-boats at sea, alongside much other data. The “H” Series (referring to “Home” commands, found at NA ADM 223/195-208 and NA ADM 223/300-309 for the Inshore Campaign) remains one of the most important sources of tracking material and the broader intelligence picture still available from this period, because much of OIC’s “out” signals and its entire war diary were deliberately burned at the end of the war

(Beesly 2000, 261-2). For security purposes each U-boat was given its own two letter (Bigram) code identity.

It is a specific feature of the Inshore Campaign that due in part to an increasing abandonment of radio transmissions to and from U-boats at sea (Beesly 2000, 248); the data provided by the Tracking Room became increasingly poorly informed. The use of the snorkel (all of the wrecks are snorkel-equipped) also deprived the Tracking Room of a vital stream of visual sightings. This loss of valuable tracking data has a major impact on how the archaeology of the mystery U-boats of this period can be fully assessed, interpreted and ultimately identified, as in many cases there is very scant supporting historical text.

Decrypted radio traffic sent from Bletchley Park to OIC, which formed much of the basis of the Tracking Room's analysis can be found in the National Archives (DEFE 3/730-744 for the Inshore Campaign). The same records were conveniently also collated by U-boat (NA HW18/354-427) but sadly these volumes are poorly catalogued and incomplete. In both cases the radio transmissions which formed the Tracking Room's opinions can often be found within these volumes. Finally, the OIC also maintained a daily diary of naval events, held in the National Archives (ADM 223/831-834 for the Inshore Campaign). This is useful for occasionally seeing other events being fed into the working of the Tracking Room. It is also useful to compare against the other war diaries listed below.

On a much more encouraging note is the prevalence of data relating to attacks on U-boats. The value lies primarily in two aspects; firstly the escort ships of this period were fitted with QH (referred to as GEE by the RAF and as Loran by the Americans). For the first time in this thesis, positional data (from ships so equipped) from the historical text can be considered to be reliable enough to be matched to modern GPS positions of the U-boat wrecks with enough certitude to know that a recorded attack actually took place in the close vicinity of where the wreck lies today.

Secondly, attacks on targets thought to be U-boats were collated by the Anti-U-boat Division (AUD), which worked closely with the Tracking Room and OIC, into a daily log of Incident Reports (NA ADM 199/2053-2056 covers the Inshore Campaign) listing each attack which became known to AUD. Importantly the most promising of these incidents were officially assessed by the Assessment Committee of the AUD. These assessments were written up in a common format, describing the date, the events and whether the committee considered the attack to have been successful (NA ADM 199/1786 for the Inshore Campaign). The results were graded by letter, in a similar but more evolved version seen in the Monthly Antisubmarine Reports of 1917-18 and the 1919 List as seen in Part Two.

The assessment lettering is as follows (NA ADM199/1789, Sec2 Part A, 36):

A: (Known Sunk) was attributed only when conclusive evidence was available that a target was destroyed.

B: (Probably Sunk) was attributed when the committee believed the attack sunk the target, but they did not have enough evidence to give an A;

C: (Probably Damaged) promising attacks which could be A or B but do not have enough supportive evidence;

D: (Probably Damaged) enough to return the submarine to base;

E: (Probably Slightly Damaged);

F: (Insufficient Evidence of Damage);

G: (U-boat Present, No Damage);

H: (Insufficient Evidence of the Presence of a U-boat);

I: (Target Attacked Not a Submarine).

The files of assessed reports of this time are complete until April 1945. After that date only A and B reports were written up “due to pressure of work” (NA ADM199/1786, Part 4, 133). In reality this meant that the OIC and AUD were rapidly run down in April 1945 and much of the work carried out to produce the completed list of lost U-boats was cursory and incomplete, leading to errors in the historical text of losses as published in 1946. This means that the loss register for the Inshore Campaign must be treated with caution.

With hindsight, it seems to have been folly to do this, because as a consequence, the Naval Historical Branch (NHB) spent the decades after the war reassessing many of the losses in response to inquiries from historians, members of the public and latterly, divers and archaeologists, including the author (see Chapter 11). This is still ongoing on an ad hoc basis. The German historian, Axel Niestlé has also been extremely active in this area and has corrected many errors in the 1946 List of losses. He is also interested in U-boat wrecks although neither an archaeologist, nor a diver.

Beyond the work of AUD and OIC, there are many other sources to which one can turn to find dating and positional information for ASW activity during this period. These include the command diaries held in the National Archives for the Portsmouth (ADM 199/1443), Plymouth (ADM 199/1393, 1394 and 1442), Portland (ADM 199/1395 and 1443), Dover and The Nore

(ADM 199/1050 and 1440) Commands. To varying extents they cover ASW actions involving convoys and Escort Groups (EGs) and occasionally detail activity not covered in the AUD Incident Reports. The Admiralty Daily Diary also features a daily list of U-boat activity, which is particularly useful because the Portsmouth diary for the last half of 1944 appears to have been lost (NA ADM 199/2296-2300 covers the first phase of the Inshore Campaign).

The most informative German source for the Inshore Campaign is the BdU war diary (KTB) which gave a daily appreciation of where it thought all the U-boats at sea were (NARA, Microfilm Roll No T1022/4066). However in the experience of the author its accuracy is as questionable as the Tracking Room data and moreover it does not survive past 15 January 1945, (having probably been destroyed in the last days of the war) when in the absence of any other evidence, it would have been a useful source. The Air Historical Branch (AHB) in conjunction with the NHB drafted a reconstruction of the BdU KTB in 1957 which covered the period from 15 January to the end of the war (Naval Historical Branch 1957). While a useful starting off point, it is by the admission of the authors to be treated with caution as it requires a complete revision.

The primary sources described above are ones most commonly referred to in the text of Part Three. Alongside these are secondary works which tend to be either research papers or other reference sources, consulted as needed. The historian Axel Niestlé's (1998) study of U-boat losses stands apart as the most important and groundbreaking of the published material. The revised list of U-boat losses in Grove (ed) (1997) is also worthy of note.

### **6.3: The U-Boat Archaeology of World War Two to be Surveyed and Researched**

The section below shows the initial outcome of the research into the location of every known WW2 era U-boat wreck in the Study Area. It represents what was known of each site when it first came to the attention of the author. This list was compiled from a number of different sources over the period from 1998 to 2012 and is represented in map form in Figure 1.57 and in tabular form in Appendix 2.3. The main sources of information were the UK Hydrographic Office, archaeologist Bob Peacock, historian Axel Niestlé, charter boat skippers Ivan Warren, Graham Knott and Tim Bonetto and Odyssey Marine Exploration.

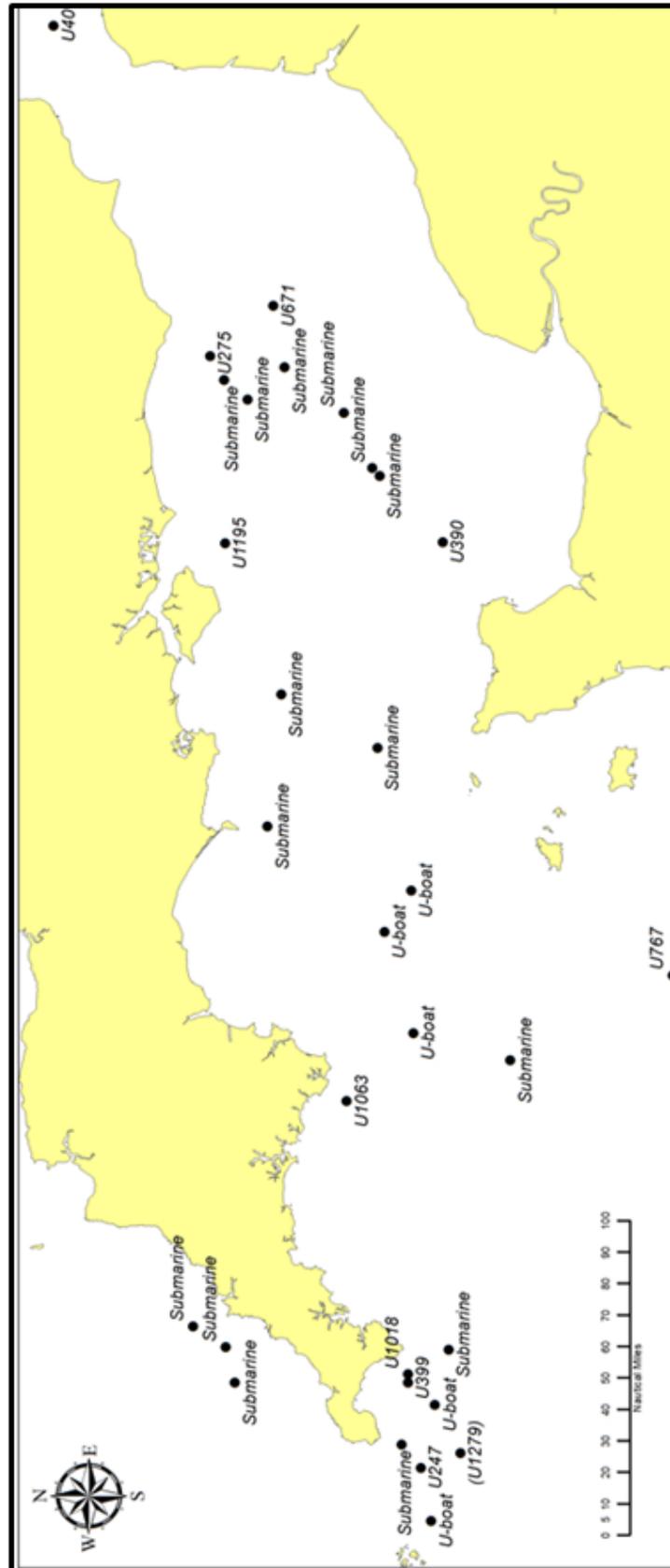


Figure 1.57. The 31 known U-boat wrecks of WW2 in the Study Area with identities, as known at the time when each specific site was initially researched by the author. These form the basis of the archaeology examined in Part Three, WW2 (Innes McCartney).

The most important source of information has been the Hydrographic Office wrecks database which gives details of every known wreck location shown on Admiralty charts. Even in the cases where little was known of the wreck, the wreck record often contained important survey data and a history of when and how the wreck was first discovered. Without doubt this database represents one of the most valuable archaeological resources available to the nautical archaeologist. It will be noted in Appendix 2.3 and throughout the following chapters that 30 of the 31 wrecks were represented in some form in the Hydrographic Office database.

Figure 1.57 shows the location of each wreck as originally researched. It represents the starting point of further investigations into each wreck and clearly shows that the main initial area of research which was needed was to correctly identify each site, so that it could be placed in an accurate historical and archaeological context. At the time of reporting, the identities of the sites were either completely unknown or needed to be examined and checked. The correct identity of each site became known as they were surveyed, recorded and researched by the author using the methodologies described in the next section.

It is interesting to note that the historical text lists the same number of losses as the number of wrecks which are known. This is nothing more than coincidence. By comparing Figures 1.56 and 1.57 it quickly becomes apparent that some sites seem to fit, especially some of the more documented U-boat losses, such as *U247*. Others do not fit at all, for instance the three wrecks off North Cornwall do not have matches in the historical text. When developing methodologies to research the sites it was important to recognise that a significant number were likely to have little representation in the historical text and would require very detailed analysis of the wrecks and their features. These are described in the next section.

#### **6.4: Key Methodologies Employing the Historical Text to Research the U-Boat Wreck Sites**

The important historical texts have been described above. As described in the introduction to the thesis, the key methodologies to be employed while researching and recording the wrecks will now be described. Initially desk-based research using all of the available primary historical texts and published sources was used to see what (if anything) was known about the wreck to be investigated. The focus of fieldwork was on the sites which did not match well with this historical text. The methodologies are described below.

##### **Key methodologies utilising the historical text on known wreck sites**

The historical texts have been extensively photographed and converted into pdf documents which run to more 30,000 pages. The most commonly consulted have been printed and bound

for easy access. Clearly in the case of each wreck they were consulted to see what relevant information they may hold.

It quickly became apparent that the sites listed as “A” Known Sunk in the 1946 List (NA ADM199/1789) were clearly represented in most cases in the archaeology. So as an initial desk-based exercise it was possible to derive an initial identity for the sites described in Chapters Seven and Eight. The fullest picture of events leading to the destruction of these sites was built up using the AUD Assessments and OIC records. This provided key information which could be checked when the sites were surveyed. Where it was clearly obvious that the wreck matched the historical text, the sites were of a lower priority than those where there was no representation of the archaeology in the official list of losses. These are the so called mystery sites and it was the identification of these sites which was of the highest priority. The use of the historical text to assist in their identification is described next.

#### **Key methodology using the historical text on mystery U-boat wreck sites**

When a wreck presented itself to be outside of the 1946 List of sinkings (NA ADM199/1789) a methodology had to be developed which would allow for the many hundreds of ASW events in the historical text to be efficiently cross checked against the wreck’s position, because otherwise there was the risk that the actual event which may have sunk the submarine might be overlooked. The methodology developed to do this is described below.

During the Inshore Campaign there were literally thousands of recorded ASW incidents, of which a significant proportion took place within the Study Area. As mentioned above there are a number of sources which list ASW activity, from OIC, AUD, Admiralty and the various command headquarters with a role in operations in the Channel area. Clearly there are overlaps between each diary or list of events and in fact, none of the lists cited can be considered to be entirely comprehensive.

Nevertheless, in order to make sense of so many incidents and to reconcile them against the known remains of the 31 U-boats, it became obvious early on in this project that a spatial database was required to match attacks to the wrecks. There was no other way to be certain that all events relating to each of the wrecks could be located and tagged to that site simply by browsing lists and diaries.

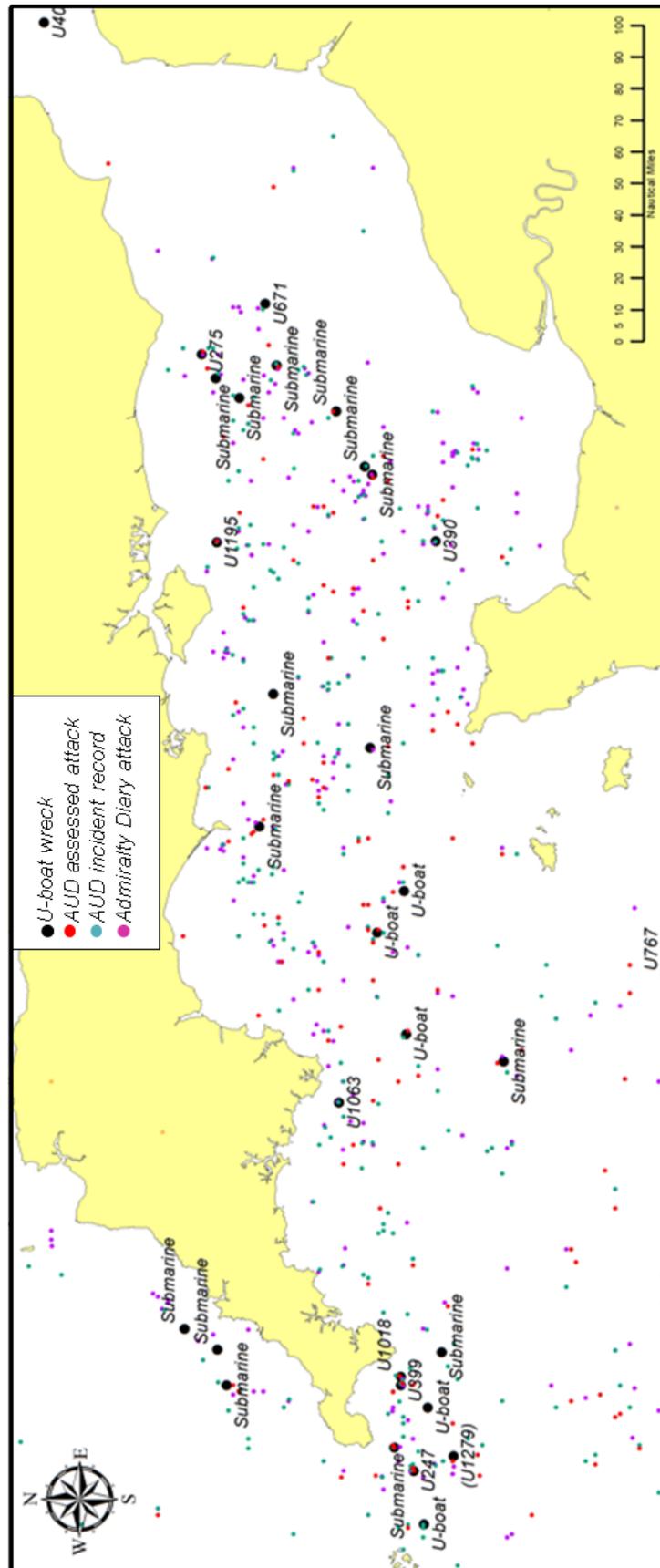


Figure 1.58. The U-boat wrecks of WW2 with their initial identities, plotted against the positional data of ASW attacks in the records of the Anti-U-boat Division and Admiralty Daily Diary, June 1944 to May 1945 (Innes McCartney).

After evaluating all of the records available, it was decided that the two sources of information which are the most comprehensive and offer the most consistent lists of positional data in latitude/longitude format (as opposed to a vaguer reference to a stretch of water, for instance) were the AUD Incident Reports (NA ADM 199/2053-2056) and the AUD Assessed ASW attacks (NA ADM199/1786). For this project these two sets of records were systematically entered into a database in a navigational software package (Navmaster) and then recoded and added to ArcGIS in order to map the data and compare it against the wreck positions.

During this process it was noticed that a number of positions given in the Incident Reports were given as range and bearing from a navigational buoy. After some difficulty data on these buoys, the locations of all of the navigational buoys used during the Inshore Campaign were found in the archive at the UK Hydrographic Office, Taunton. These positions were then added to the database. Subsequently, with some sites still not having ASW matches, all of the ASW incidents listed in the Daily Admiralty Diary June 1944 to May 1945 (NA ADM199/2396-2317) were also added to the database.

The initial results of this approach are shown in their rawest form in Figure 1.58 and in Appendices 2.3 and 2.5. In all, 833 records were added to the database. It should be noted that outside of the two datasets used, the command diaries and other lists could be consulted as needed. What Figure 1.58 shows is that only a small proportion of the AUD Incident Reports were ever actually fully assessed by its Assessment Committee. It also reveals that nearly every site has some record near or right on top of it, giving a useful starting point for further research and fieldwork. Few sites generated no 'hits' at all, but the ones that did, could be examined in other ways (for example, see (*U650*) in Chapter 13).

## **6.5: Key Methodologies Employed during the Fieldwork to Record the U-Boat Wreck Sites**

In cases where the U-boat wrecks were surveyed by diving, the author developed a methodology in which the most important identifying features could be recorded. The sites were all recorded using a housed Sony VX-1000 digital video camera. In two instances the author has relied on video tapes supplied by other parties. But in those cases the methodology is the same, where the key features are visible.

The key task of identifying each site was at its most problematic when the sites did not correlate with the historical text; the so called mystery sites. But in all cases satisfactory identification came with confirming and recording specific key features present on the wrecks. However this is not as simple a task as swimming around with camera turned on.

The U-boat wrecks of the Inshore Campaign in the Study Area are a challenge to differentiate, primarily because they are all (with one exception – see *U214* in the next chapter) of the same Class, the Type VIIC. So at first sight they look very similar as wrecks. Nevertheless it is possible by studying the technical histories of the class and by looking at photos of the boats during the war to see some minor differences. These can be crucial in identifying the boats. However, due to the loss of much of the construction records relating to U-boats during the war, there are gaps in what is known of U-boat development.

These differences feature a broad range of differing equipment which was either built into the class as it evolved, or were retrofits added while the U-boat was in service. From the outset of this project it was important to develop an understanding of what these were and to look to record them on videotape whilst carrying out the survey dives. Broadly, these features fit into fourteen categories that, where they have proven to be insightful will, be explained in detail in the case studies and other text, but in general terms they are:

- 1) Two types of snorkel mast. Type One had a flange join to piping which ran alongside the port side of the conning tower. Type Two utilised a later neater solution with the piping laid under the deck with a connection in the heel of the mast.
- 2) Two types of snorkel head. The original ball-float design and a later ring-float design;
- 3) Two types of anti radar coating seen snorkel on masts and heads called “Wesch” and the later “Jaumann”;
- 4) Two types of snorkel mast elevator systems. The pulley wheel type initially fitted to a limited number of boats and the more commonly seen later, hydraulic piston type;
- 5) There are two types of bow built into the U-boat when made, normal and Atlantic. Either can be fitted with an underwater refuelling slot, but in both cases a towing eye is always present;
- 6) The presence of the refuelling slot meant that the fixing point for the forward jumping wire had to be moved. There are currently at least two known locations for this feature which can be traced to different building yards;
- 7) GHG Balcony is an active/passive sonar array carried on only some U-boats and mounted under the bow. This is present on some late war boats;
- 8) Rod antenna was an aerial which could be extended to send and receive signals whilst submerged. It was only fitted to some boats;
- 9) Life raft containers on the bow. These were fitted to some U-boats in the later phase of the Inshore Campaign only. U-boats sailing from the French bases were not so equipped, neither were U-boats based in Norway which were completed before these containers were fitted as standard equipment. Only boats which were in Germany seem to have been retrofitted with these;

- 10) Deck gun mounting. This was built into some U-boats at a time when it was expected that a deck gun would be used. In the Inshore campaign no U-boats had a deck gun, but the mounting once fitted was retained and was covered with a blanking plate. While the order to remove deck guns was made in late 1942, it seems from archaeology and photos that U-boats were still being launched with the mounting for the gun well into 1943;
- 11) Marcks life raft container. This feature was initially fitted to all boats forward and aft of the conning tower. The extended flak arrangements and snorkels of the Inshore Campaign boats fouled the locations where the Marcks containers were originally fitted. None are seen aft on these boats. However the forward container is seen on some boats from the Inshore Campaign in a new location. From archaeology and photographs it seems that some boats were built with the Marcks container in the place where the deck gun mount had previously been fitted. This also seems to have been a retro fit location when snorkels were added to existing boats and the forward Marcks container had to be moved. The author is grateful to Axel Niestlé for sharing his knowledge of this feature during our meeting of 30 March 2012. Little of this feature exists in English language sources;
- 12) Marcks container grate. A specially shaped grate to cover the hole left in the deck when the container was removed can be seen on photographs and on at least on wreck in the Study Area;
- 13) Additional compressed air cylinders forward of the conning tower. Fitted to some boats during the second phase of the Inshore Campaign;
- 14) Mounting for the 37mm AA gun came in two differing types, the M42 Kriegsmarine design and the later M43 Luftwaffe model. These can, with careful examination, be differentiated underwater;

These features can give an indication as to the period in which a U-boat was not only launched but occasionally when it last sailed. For instance the presence of bow life raft containers indicates a boat based in Norway or Germany which would not have received this modification before late 1944. Also the bow type can give an indication of when the U-boat was constructed. However, the records as to which U-boat was fitted with which pieces of equipment do not survive. So in many cases, where the lost U-boats have left little or no photographic or other evidence about their last equipment set-up, it can be nearly impossible to place them back in the historical record. Occasionally specific pieces of equipment fitted to some U-boats can be detected in the historical text, where they have become known from radio intelligence. For example it is known that *U325* was fitted with the ring-float snorkel from radio decrypts (see Chapter 13)

Outside of the features listed above, other methodologies were developed where the wreck offered potential which was not known until after the wreck was surveyed. For example *U480* (see Chapter 11) was uniquely coated in rubber. *U1191* (see Chapter Nine) was sufficiently intact to be able to record the drain hole sequence during the dive and to identify the boat by the Lennart Lindberg typology, which had been designed to identify U-boats from photographs.

## **6.6: Specific Aims and Outcomes of the U-Boat Wreck Surveys and Research**

The key aim of the research into each wreck is to yield its correct identity. The research presented in the following chapters begins with examinations of sites which match the historical text (Chapters Seven and Eight). These sites are used to introduce the archaeology of U-boat wrecks and usage of the historical text and to test whether both can be accurately matched.

Chapter Nine looks at two cases where the historical text and the archaeology needed to be properly matched to each other. So while the sites were not entire mysteries they did need to be satisfactorily differentiated and matched to the historical text.

Finally, Chapters 10 to 14 form a series of five case studies which examine in detail the mystery sites which were encountered in the Study Area. In these case studies, all of the methodologies described above and tested in the previous chapters are used to identify each site with as much accuracy as possible.

### **Outcomes to be addressed**

With each site examined and identified in Chapters Seven to 14, a definitive list of the identities of the actual U-boat wrecks present in the Study Area will be addressed collectively and critically compared to the historical text in Chapter 15. This chapter draws together the results of the fieldwork and addresses the following questions:

1. Could key identifying features be found on the wrecks and be satisfactorily recorded in enough detail to help yield U-boat identities?
2. What does the archaeology of all of the U-boat wrecks collectively reveal?
3. Have the sites degraded in noticeably similar ways?
4. Was the database approach to reconciling ASW attacks to wreck sites successful in identifying mystery sites?
5. How accurate was the AUD letter grading system when it is compared to the actual wrecks?
6. Were any of the mystery sites represented by an AUD letter grade?

7. How many of the 31 listed losses in the official 1946 List are actually represented as known wrecks?
8. How many are not and why?
9. What percentage of the real losses did the Allies actually know about in 1946?
10. What are the differences between 1946 and 2012 in our understanding of which weapons successfully killed U-boats?
11. What are the differences between 1946 and 2012 in our understanding of which technologies successfully detected U-boats at sea?
12. What impact has this study had on U-boat losses outside of the Study Area?
13. Are the numbers of losses recorded in 1946 in the Study Area different from what we now know?
14. How many of the U-boats were being accurately tracked by OIC?
15. Is there a noticeable difference the circumstances of U-boat losses in either phase of the Inshore Campaign?
16. Can any examples of intelligence directly leading to specific U-boat kills be found in the historical text and matched to the actual wrecks?

Answering these questions will allow for an accurate picture of the U-boat losses during the Inshore Campaign to emerge for the first time. It will show when and how the Allies killed and correctly identified losses and will provide explanations for when and how the Allies missed discovering they had destroyed others. It will also demonstrate and explain why the Allies thought they had killed U-boats, when in actual fact they had not. Overall it is hoped that a far more accurate picture of events will have emerged that has been known previously.

## Chapter Seven: The Known U-Boat Losses Subjected to Survey

### 7.1: Introduction

Later in this section, five case studies will look at U-boat wreck sites which do not fit into the list of losses compiled by AUD in 1945 (NA ADM199/1789). But initially we will look at the U-boat wrecks which seemingly match this list and examine if and then, why these sites are correct and what their archaeology can offer by means of confirmation of the historical text, or otherwise. Figure 1.59 shows the distribution of these eight sites within the Study Area. All but one of these wrecks was sunk during the first phase of the Inshore Campaign and the cases will be examined chronologically.

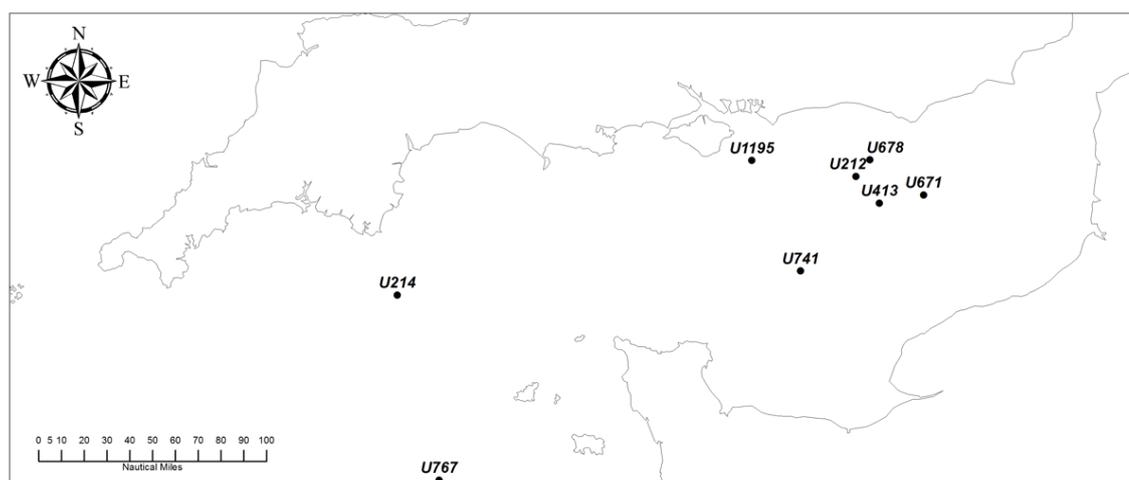


Figure 1.59. The distribution of U-boats sunk with known identities which have been surveyed as part of this thesis (Innes McCartney).

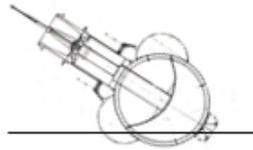
### 7.2: The Destruction, Identification and Wreck of U767

Hydrographic Record No. 22970      Position: 49 02.402; 003 13.542W      Depth: 62m

As in the cases of *U988* and *U1191*, *U767* had sailed from Norway for the Atlantic in May and was diverted to the Channel after D-day (Wynn 1997b, 160). OIC was aware of the anticipated movements of this U-boat and subsequently tracked its movements towards the Channel. But interestingly on the day the U-boat was destroyed, the position given for *U767* (Bigram code “IL”) was 180 miles to the west of where it was sunk (NA ADM223/197 181356B).

On 18 June 1944, *U767* was detected on Asdic by elements of 14EG whilst on an ASW sweep and destroyed in a hedgehog attack by HMS *Fame*. HMS *Fame* had been vectored to the locale by Admiralty direction-finding of a U-boat radio transmission, a rare surviving example of the direct destruction of a U-boat from intelligence sources.

Name: U767 Posn: 49 02.402;003 13.542W Depth: 65m  
Date of loss: 18 June 1944 How Sunk: Hedgehog  
Date of Survey: 2002



Wreck leans 50° to port



(Uncertain)

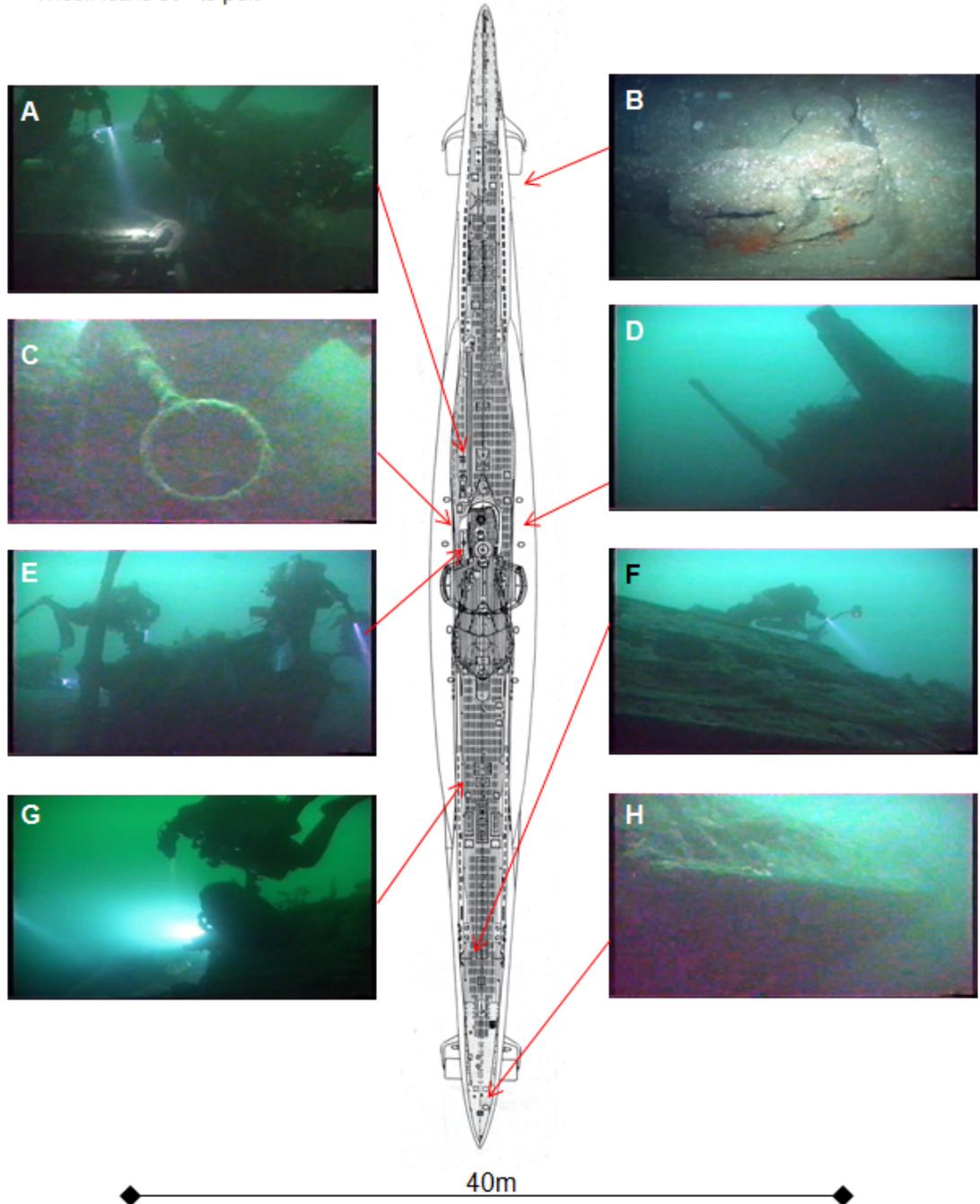


Figure 1.60. Diagram of the wreck of U767 and its key features as surveyed and described in the text. (Innes McCartney, with all underwater images Kevin Pickering and line diagram, adapted from Köhl & Niestlé, 1994, 59).

After this attack, a survivor was plucked from the sea. He was a stoker called Walter Schmietenknop who claimed to have been ejected in an air bubble (Blair 1999, 589-590). The wreck was subsequently depth-charged. The presence of a survivor meant that immediately AUD classified this loss as “A”, Known Sunk (NA ADM 199/1786 AUD 1154/44).

The wreck was dived by a group of British divers in 2002, of which Kevin Pickering kindly sent the author a copy of the tape. This forms the basis of the wreck diagram (Figure 1.60) and observations listed below. It should be noted that the dive was filmed, not the archaeology of the wreck, but nevertheless many features were observed which confirm it is the wreck of *U767*. Also, the wreck’s orientation is unknown.

- Image A: The diver’s torch is illuminating the familiar horseshoe loop on the top of the hydraulic piston of the snorkel. The presence of this type of elevator is to be expected, because the boat had sailed from Norway and only France-based boats have so far been found to have the alternative type (see *U441*, *U984* and *U269*);
- Image B: The anchor of a typical Type VII in situ;
- Image C: The HF loop has fallen down from the conning tower, and it can be seen that it is not equipped with the rod antenna;
- Image D: The conning tower seen from astern. Both periscope housings are all that remain attached and in situ;
- Image E: The conning tower hatch is shut;
- Image F: The timber of the after deck is in exceptional condition;
- Image G: The galley hatch is seen to be open, illuminated by the diver’s torch behind. This is probably the location from which the survivor escaped;
- Image H: The stern of the wreck is intact.

The location of the wreck matches the position given for the destruction of *U767*. This fact, coupled with archaeology present and the opened galley hatch all point to this wreck being *U767*.

### **7.3: The Destruction, Identification and Wreck of *U678***

*Hydrographic Record No. 19916*      *Position: 50 33.570; 000 04.476W*      *Depth: 66m*

*U678* was sailed from Norway for the Channel on 8 June 1944 as a direct response to the D-day landings (Wynn 1997b, 124). Its progress was tracked by OIC under the Bigram code “IZ” but interestingly on the date the U-boat was destroyed, OIC had determined that it was in Brest harbour. This was later explained through the “H” Series, by OIC having reacted to a decrypted

radio message to *U678* ordering it to Brest (and consequently tracking it so); but it was clearly an order the U-boat did not receive (NA ADM223/198 051408B, 071356B).

*U678* was detected after attacking a convoy and destroyed on 7 July by Canadian escorts of EG11, with the killing attack delivered by HMCS *Statice*, by hedgehog. After the U-boat was bottomed the wreck was attacked with depth-charges, including towing one into the side of the hull of the U-boat before detonating it.

The remains which came to the surface identified the destroyed U-boat and AUD graded this attack “A” Known Sunk (NA ADM199/1786 AUD 1230/44 and AUD 1352/44). The author found a copy of the piece of paper which identified the wreck in the Uboot Archiv in 2000 (see Figure 1.61).

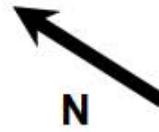
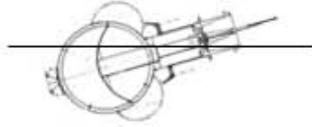


Figure 1.61. A portion of the scrap of paper which identified *U678* (Uboot Archiv).

The wreck was discovered by the author on 14 May 2000 and surveyed by video (see Figure 1.62). The main features which could be identified among the remains of a not unsurprisingly smashed and partially buried U-boat wreck are:

- Image A: Looking forward from the bows the frames of the outer torpedo doors can be seen;
- Image B: The forward end of the port side central ballast tank is the highest point of the wreck. Its stern disappears into a sandbank;
- Images C & E: Moving aft from Image A, one of the inner torpedo doors can be seen. In Image E the runners upon which it opened can be seen. A rare opportunity to see how the torpedo doors on the Type VIIC operated;
- Image D: A hatch surrounded by fishing net and wreckage. This is probably the conning tower hatch, or possibly the galley hatch. Surrounded by a sandbank and much indiscernible debris it is difficult to be certain;
- Image F: The Type 42 37mm AA gun mount lies on the seabed;

Name: U678 Posn: 50 33.570;000 04.476W Depth: 66m  
Date of loss: 7 July 1944 How Sunk: Hedgehog  
Date of Survey: 14 May 2000



Wreck leans 70° to starboard

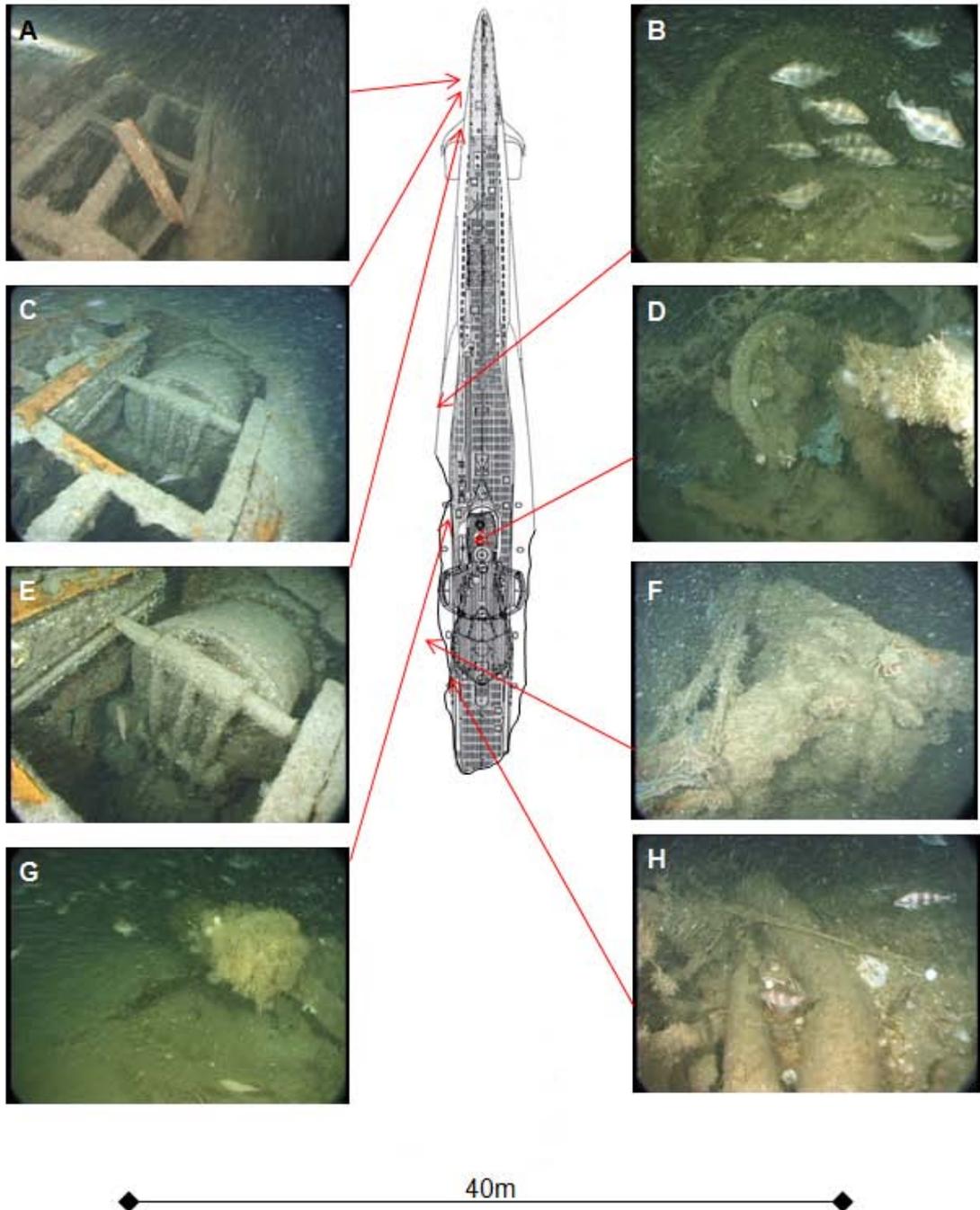


Figure 1.62. Diagram of the wreck of U678 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image G: The after end of the hydraulic piston of the snorkel elevator pokes out of the sand;
- Image H: Engine room trunking, just above the level of the seabed.

The position of the wreck is close to where the attacks took place, with the closest reported position being in the Admiralty Diary of 7 July (NA ADM 199/2297) which is 2.5 miles to the west. It seems that the position of the wreck was not fixed accurately when destroyed. Nevertheless from the damage this wreck has sustained and the fact that all other known losses in this area are accounted for means that this could only be *U678*.

#### **7.4: The Destruction, Identification and Wreck of *U212***

*Hydrographic Record No. 19870*      *Position: 50 28.904; 000 10.626W*      *Depth: 57m*

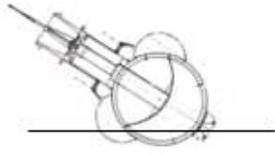
The veteran *U212*, a survivor of 13 previous operational patrols left Brest on 5 July 1944 to operate in the Channel, where it was subsequently destroyed on 21 July (Wynn 1997a, 155-156). Its progress was tracked by OIC under the Bigram code “RH” into the area where it was later considered destroyed and then it was tracked back down the Channel towards La Pallice. Initially the attack of 21 July was ascribed to *U309* (NA ADM223/199 231344B). However on 2 August 1944 when *U309* was ascertained to still be operational, the attack was provisionally appended to *U212* (NA ADM223/200 021325B). This was formally confirmed by AUD with the release of the post war U-boat losses register in 1946 (NA ADM199/1789 No. 531).

The attack which AUD considered had destroyed *U212* was delivered by a depth-charge attack by the convoy escort HMS *Curzon* as part of a series of attacks (which also included HMS *Ekins*) on a radar and Asdic contact (NA ADM199/1786 1369/44). The U-boat was detected by radar at night, probably while snorkelling. The only surface evidence was an oil patch, with no other evidence collected. However when *U212* could not be accounted for, AUD graded this attack “B” Probably Sunk, probably because it was the most plausible attack it had to explain what happened to it.

The wreck of *U212* was discovered and recorded by the author on 9 May 1999. Due to camera problems, the tape images were slightly blurred, but the main features of the wreck can easily be seen and are depicted in Figure 1.63 and are described as:

- Image A: Intact bow with what looks to be the towing eye;
- Image B: The forward torpedo loading hatch, with hatch now fallen away. This may be caused by corrosion or by the depth-charges dropped on the wreck;
- Image C: The crack which cuts right across the forward section of the wreck;

**Name:** U212 **Posn:** 50 28.904;000 10.626W **Depth:** 57m  
**Date of Loss:** 21 July 1944 **How Sunk:** D/Cs  
**Date of Survey:** 9 May 1999



Wreck leans 50° to port

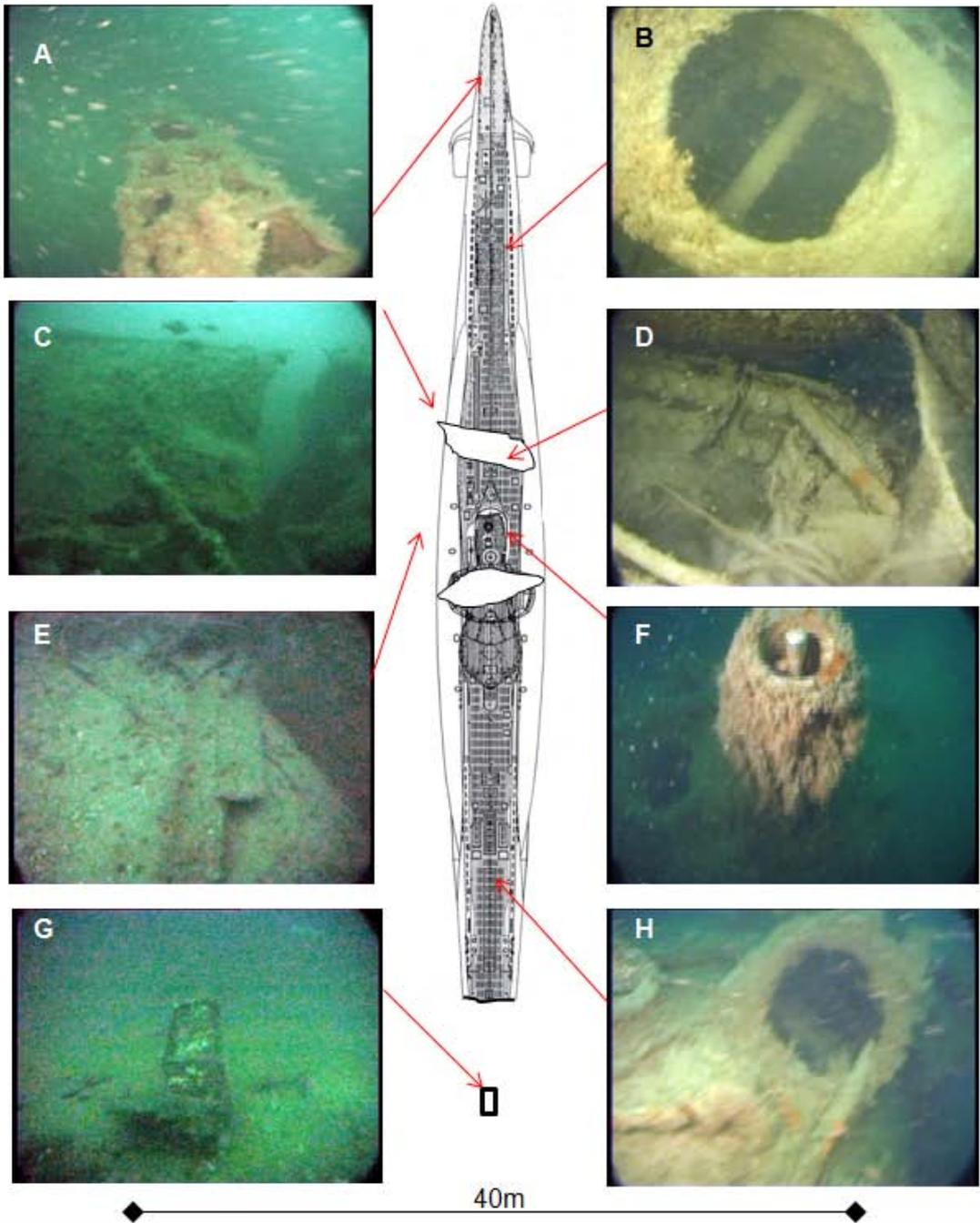


Figure 1.63. Diagram of the wreck of U212 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image D: Inside the break the batteries which were housed under the main deck inside the submarine are exposed;
- Image E: A portion of the snorkel mast on the seabed;
- Image F: The intact periscope housing;
- Image G: The aft portion of the wreck is completely destroyed. This image shows the remains of the stern torpedo tube lying on the seabed behind the wreck;
- Image H: Like the forward torpedo loading hatch, the after hatch has lost its cover. Similarly, this was possibly caused by the destruction of the wreck by depth-charges.

Although AUD graded this loss as “B” it has not subsequently fallen under suspicion. In positional terms, the wreck is within 2 miles of the position listed on the AUD Assessment (NA ADM199/1786 AUD 1369/44). *U212* was fitted with a snorkel in La Pallice between May and June 1944 (Nietzel 1991, 220) and would, like *U269*, *U441* and *U984* be expected to have the pulley elevator. Unfortunately the wreck is damaged where this feature would normally be and nothing which could be the pulley can be seen. However the absence of any remains of the much more robust piston type is worthy of note, because if fitted is anticipated that it would probably survive.

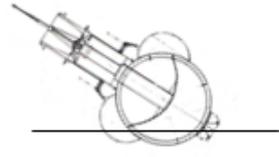
The lack physical evidence needed to denote the attack which sunk this U-boat as an “A” grade, or to provide a definite identity to the target is problematic. In fact, there is a case for denoting this wreck as (*U212*). However to do this, and not simply confuse issues unnecessarily, it would be necessary to have evidence to prove that the original analysis was actually incorrect. All of the current evidence suggests that AUD got the identity correct in 1945.

## **7.5: The Destruction, Identification and Wreck of *U214***

*Hydrographic Record No. 23071*      *Position: 49 55.435; 003 31.850W*      *Depth: 70m*

The veteran *U214*, a survivor of eight previous operational patrols left Brest for a minelaying mission in the Channel on 22 July 1944. Four days later it was destroyed by the frigate HMS *Cooke* off Start Point with all hands (Wynn 1997a, 157-158). Its progress was tracked by OIC under the Bigram “MZ” and the details were promulgated through the “H” series (NA ADM 223/200). This shows that OIC were uncertain which U-boat had actually sailed on 22 July and knew nothing of the boat’s intentions. In fact, on the day *U214* was destroyed, OIC stated its intention to remove “MZ” from the daily plot if no evidence from radio intelligence confirmed that it had actually sailed (NA ADM223/200 261359B).

**Name: U214 Posn: 49 55.435; 003 31.850W Depth: 70m**  
**Date of Loss: 26 July 1944 How Sunk: D/Cs**  
**Date of Survey: 7 July 2006**



Wreck leans 50° to port

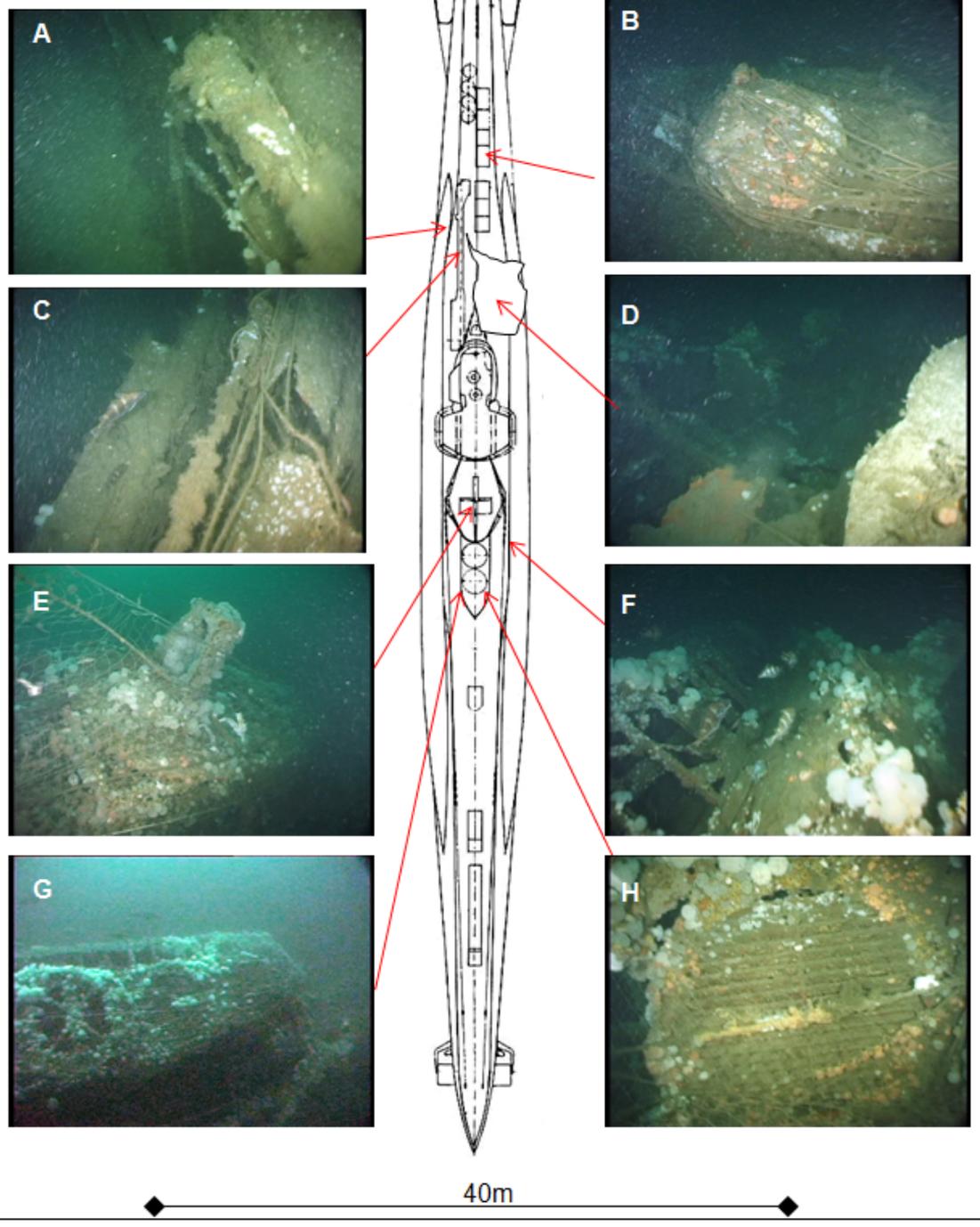


Figure 1.64. Diagram of the wreck of U214 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Rössler 1975, 190-191).

The attack which destroyed *U214* came about when HMS *Cooke*, part of an ASW patrol passed over the U-boat and detected it by Asdic and rapidly attacked it with depth-charges which bottomed and subsequently sunk the target (NA ADM199/1786 AUD1325/44). Wreckage of fresh German origin and oil was collected from the sea and AUD graded the attack “B” Probably Sunk, although the evidence seemed to be very good that the attack was successful. The association of *U214* with this incident was made in the immediate post-war period (NA ADM 199/1786, Annex Part B).

This wreck is unique among the Inshore Campaign losses in the Study Area, insofar as it is actually the rare Type VIID minelaying variant of the Type VII U-boat. One of the reasons for searching for and discovering this U-boat was to confirm that it was actually *U214* which was destroyed. Archaeologically, this could be proven by the presence of mine chutes on the wreck. The author discovered this U-boat on 7 July 2006 and its key features are shown in Figure 1.64 and described as:

- Image A: The snorkel head has fallen off the end of the snorkel mast;
- Image B: The forward torpedo loading hatch is shut and covered in net. The surrounding deck frames have corroded away;
- Image C: The crack passing across the wreck stops just to the starboard of the snorkel mast;
- Image D: The major damage seen on this wreck is the blast hole in the starboard side just forward of the conning tower;
- Image E: A Type 42 gun mount has been fitted over the top of the mine chutes when the wintergarden on this class of U-boat was extended;
- Image F: The Type 42 gun mount can also be seen in this image, which also shows that the mine chutes extended above the normal level of the deck;
- Image G: The after three mine chutes looking towards the stern. These chutes easily identified this wreck as a the Type VIID minelayer, *U214*;
- Image H: The tops of the chutes are covered with a circular grate which is very similar to that seen on some U-boats when used as a blank over the 88mm gun mount or Marcks container recess.

Unlike the case of *U212*, (see above) the identity of this wreck can now be confirmed to reach grade “A” status, because the unique archaeology of the wreck matches the historical text. In positional terms the location of the wreck and HMS *Cooke*’s given position for the attack match exactly. Interestingly, the OIC plot for “MZ” on the day it was destroyed is 166 miles to the west, confirming that as it stated in the “H” Series it knew nothing of the U-boat’s intentions (ADM 223/199 23144B).

## 7.6: The Destruction, Identification and Wreck of *U671*

Hydrographic Record No. 20310

Position: 50 23.690; 000 19.093E

Depth: 44m

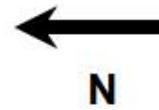
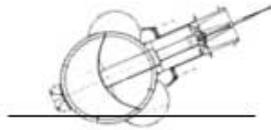
Similar to *U767* and *U678* (see above), *U671* had sailed from Norway for the Atlantic in May and was diverted to the Channel after D-day. On 30 June the U-boat was attacked off Beachy Head and forced into Boulogne for repairs. It sailed again on 26 July and was destroyed on 4 August off Beachy Head (Wynn 1997b, 121).

The movements of this U-boat (Bigram “IN”) from the time it left Boulogne were unknown to OIC, but it correctly estimated that on 3 August “IN” was in the Spout, north of 50 10 degrees of latitude (NA ADM223/200 031230B). The U-boat was detected on Asdic by HMS *Stayner* whilst in company with coastal forces on an anti-E-boat sweep. Initially damaged by hedgehog and finished off by depth-charges from HMS *Wensleydale*, six survivors were plucked from the sea, revealing the U-boat’s identity. Consequently AUD assessed the attack “A” Known Sunk (NA ADM199/1786 M08929/44). The survivors stated they had escaped through the conning tower hatch (Blair 1999, 605).

The wreck was dived, identified and recorded on video by the author on 10 July 1999, just after it had been discovered by local divers. Its key features are shown in Figure 1.65 and are described as:

- Image A: Bronze torpedo tubes rarely feature the U-boat wrecks in this study. This is curiously at odds with the presence of steel propellers on all of the wrecks. It could be concluded that the German navy had built up a large stock of these items before supply problems forced the use of steel for items usually made of bronze. *U671* was laid down in 1941 (Wynn 1997b, 121) when supplies of torpedo tubes must have still been plentiful. Compare this image to the obviously steel tubes in *U1195* (below), one of the last Type VIIC U-boats to be built;
- Image B: This feature (circled) was a surprise when the tape of this dive was reviewed for this thesis. It is a circular grate. The item has fallen to its current location and is not attached to the deck framework. The question is – where did it come from? Since the wreck has a Marcks container (see Image E) at the old gun mount position, it could not have come from there. Also the presence of a snorkel means that it was not a replacement for the forward Marcks container seen on some pre-snorkel U-boats. It must have been fitted an alternative and probably unique location on the foredeck of the U-boat. If anything it demonstrates that non-standard features are not uncommon on U-boats of this period (see the circular hatch on *U1191* in Chapter Nine). Despite a search at the Uboot Archiv in 2012, no photo of the U-boat from this time has been found by the author to establish where this feature was actually located;

**Name: U671 Posn: 50 23.690;000 19.093E Depth: 44m**  
**Date of loss: 5 Aug 1944 How Sunk: D/Cs and HHs**  
**Date of Survey: 10 July 1999**



Wreck leans 60° to starboard

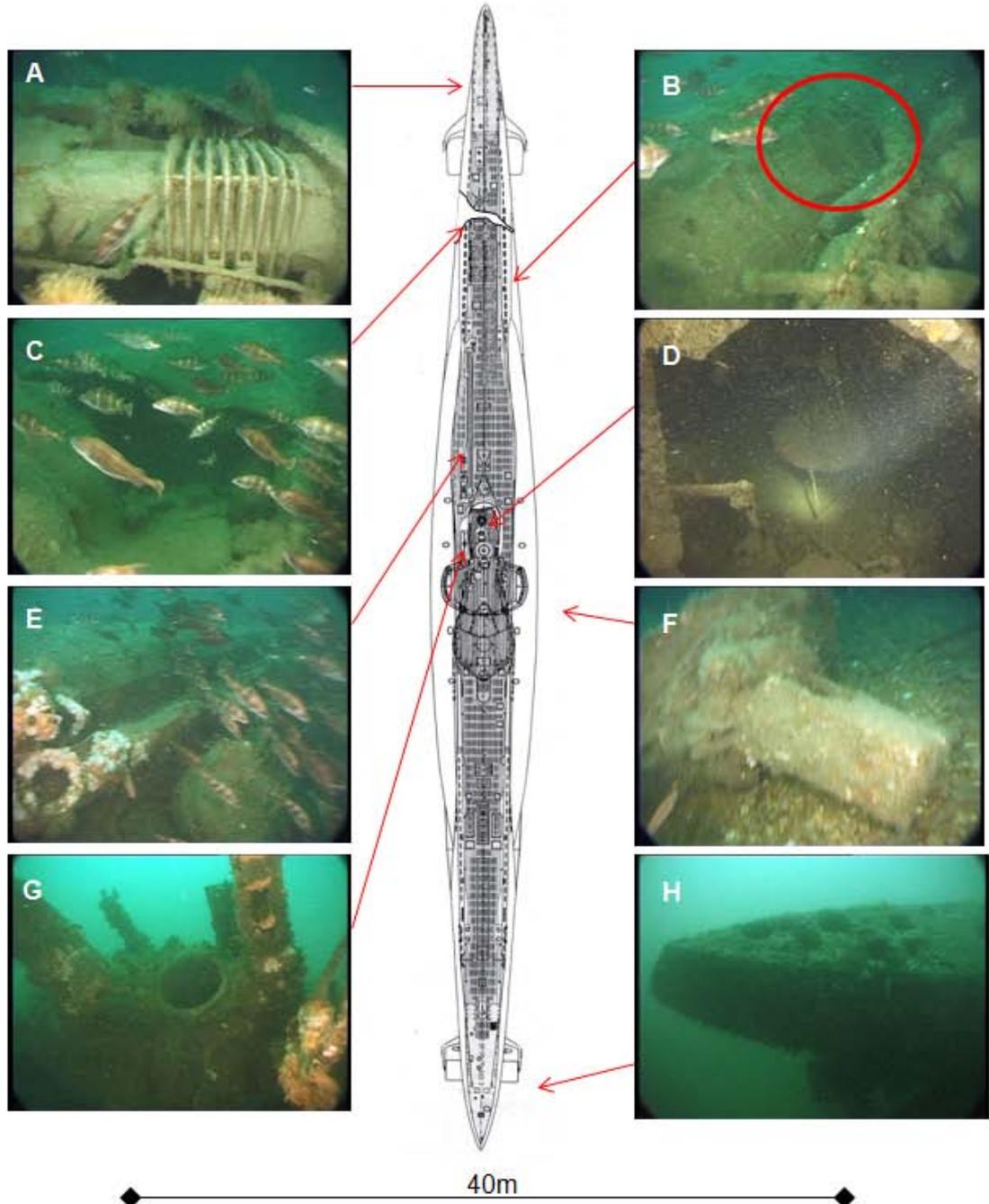


Figure 1.65. Diagram of the wreck of U671 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image C shows damage consistent with a nearby depth-charge explosion on the port side aft of the hydroplane;
- Image D: Looking down the conning tower hatch, the lower hatch above the control room can be seen to be open. This confirms the survivor's testimony that this was their escape route;
- Image E: shows the Type 1 snorkel mast with flange fitting (left) and a Marcks container (right) at the position where the U-boat would have originally been fitted with a gun mount. *U671* was launched in December 1942 and therefore would certainly have been equipped with one at that time (Wynn 1997b, 121);
- Image F: A Type 42 gun mount lying on the seabed;
- Image G: The conning tower is in excellent condition, showing the key features still in situ;
- Image H: This image shows that the stern is intact.

In positional terms the latitude matches the position of the wreck. The longitude given is some seven miles to the west of the wreck. It can only be presumed that the wreck was not fixed once destroyed and that the position given marks the point at which the attacks began. The positions given in the Admiralty Diary (ADM 199/2299) are given as a range and bearing from Beachy Head. The possibility remains that HMS *Stayner* was not equipped with QH at that time.

## **7.7: The Destruction, Identification and Wreck of *U741***

*Hydrographic Record No. 20257*      *Position: 50 02.273N; 000 34.957W*      *Depth: 49m*

The last movements of *U741* (and the other U-boats in this Case Study) were known to the Allies through radio intelligence and can be traced through the "H" Series, with the U-boat having been given the Bigram Code "CI" (NA ADM 223/199-202).

After attempting an aborted supply run to Cherbourg, *U741* left Brest on 5 July to operate in the Baie de Seine. Damaged twice by enemy contact; the latter involving collision with the gear of a minesweeper whilst snorkelling, *U741* put into Le Havre on 15 July for repairs, where it was monitored by photo reconnaissance aircraft as reported in the "H" Series (NA ADM 223/ 201). *U741* finally entered its allotted patrol area on 9 August. The U-boat was destroyed by the convoy escort HMS *Orchis* on 15 August. What details of *U741*'s final patrol not known to the Allies, were furnished after the sinking by the only survivor.

On the day of its destruction, *U741* attacked supply convoy FTM 68 and struck a LST (Landing Ship Tank) with at least one torpedo. It was HMS *Orchis*, the escort of the neighbouring

convoy, FTC 68 which made initial contact with the U-boat and within one hour had sunk it. *Orchis*' narrative of the attack describes that it consisted of two depth-charge and three hedgehog attacks, the last of which resulted in two men being seen "struggling in the centre of the oil patch" (NA ADM199/498). It was noted that the target did not move after the second depth-charge attack.

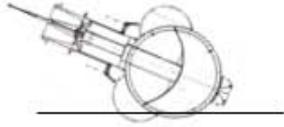
One man was picked up alive and under initial interrogation revealed the identity of the U-boat. The site was marked by HMS *Orchis* with a buoy and its position was accurately fixed. The destruction of *U741* was promulgated through the "H" Series and the Admiralty Diary the following day. AUD formally assessed this attack on 11 September and it was unsurprisingly graded "A" Known Sunk (NA199/1786 M.09124/44).

The survivor was a petty officer of the engineering branch. He revealed that he and his comrade had got out through the escape hatch (for an engineer this would most likely be either the galley or stern torpedo hatch, both of which are situated aft of the control room bulkhead door, which as a matter of course would have been shut during enemy action) and that the boat was flooded and no more survivors could be expected. One element of the investigation of the wreck of *U741* was to see if the area of major damage could be found and if it was likely that anyone could have escaped from the stern end of the submarine.

This wreck lies on the French side of the English Channel and is therefore not in area covered by undersea surveys coordinated by the UK Hydrographic Office. The survey data available through the Hydrographic Office wrecks database for wrecks of this type varies greatly in reliability. The details of this wreck (Hydrographic Office record No. 20257) show that although marked as a wreck in 1944, French wreck records did not confirm the presence of a wreck at this position until 1990. The identity of this wreck was finally established by the author when he dived and surveyed the site in 2000. Due to a lack of accurate hydrographic survey, it will be noted in Figure 1.66 that the compass orientation of the wreck on the seabed is yet to be accurately established.

Figure 1.66 depicts the results of the survey carried out on 30 June 2000. The tidal conditions and visibility presented a challenge during this dive, but enough of the site was recorded to confirm the identity of the wreck. The key features are described below:

Name: U741 Posn: 50 02.273;000 34.957W Depth: 49m  
Date of Loss: 15 Aug 1944 How Sunk: Hedgehog  
Date of Survey: 30 June 2000



Wreck leans 80° to port



N (uncertain)

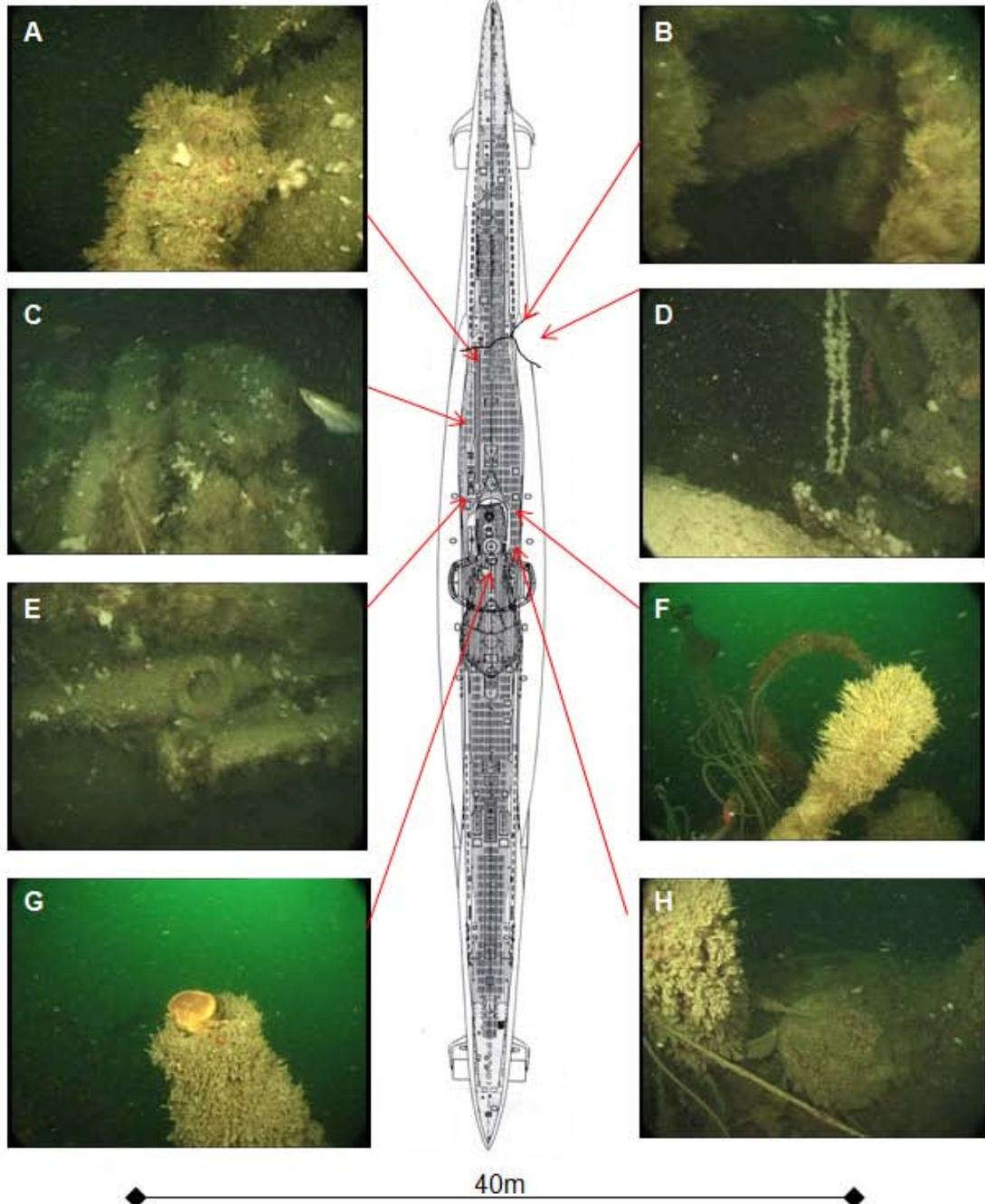


Figure 1.66. Diagram of the wreck of U741 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image A: shows the forward end of the snorkel mast, as it lies on the foredeck. The float head has fallen off. Just forward of the end of the mast a crack can be seen in the pressure hull;
- Image B: shows how the crack described above has widened as it crosses across the wreck to the starboard side. It reaches an estimated width of over one metre;
- Image C: shows a circular feature (with fish about to swim over it) which is the Marcks life raft container. This has fallen off its mount and has slipped down to rest against the snorkel mast. To the left of the Marcks container, the end of a high-pressure air cylinder can be seen. These were fitted to some U-boats during the Inshore Campaign;
- Image D: was taken by entering the blast hole in the starboard side of the wreck. It shows wiring hanging down from the ceiling and also the ribs of the internal side of the pressure hull. This type of damage could only have been afflicted by a depth-charge going off very close to the U-boat and is almost certainly the result of the second depth-charge attack by HMS *Orchis*;
- Image E: depicts the snorkel mast and its hydraulic elevator piston as seen from above. The circular feature is the flange joint which is associated with Type One snorkel masts of this period. The varying types of snorkel technology are discussed in more detail below and in Chapters 11 and 12;
- Image F: shows the HF loop and sky observation periscope seen in the bridge of the wreck. The topside areas of this wreck, in common with most of the others in the Study Area have become traps for fishing gear and other debris in the water column;
- Image G: shows the top of the attack periscope housing. The periscope has been retracted (under the crab) and is evidence that this U-boat was in evasive mode at the time of its destruction;
- Image H: shows the conning tower hatch, as seen from above. It is shut, but has popped open slightly. This is probably caused by corrosion, as it is a feature seen on several of the U-boats in the Study Area. If the hatch was fully open, it may indicate that an escape was made from here.

While the survey dive did not record features aft of the conning tower, due to conditions, enough of this wreck has recorded to be satisfied as to its identity. All of the features seen are consistent with a first phase Inshore Campaign Type VIIC U-boat. Moreover the damage sustained fits with the description of the attack. The forward hatches were shut, so if the survivor did escape as he described, it would be expected that one of the two hatches aft of the conning tower would be open. The fatal damage to the U-boat was clearly the depth-charge hole seen on the starboard side in line with the forward torpedo hatch. Such rapid flooding would undoubtedly explain why there were no survivors from the forward section of the U-boat.

In this instance the survey of the wreck site was important, because until it was carried out, the actual position of this known U-boat kill was not accurately fixed. By examining the site, the survey confirmed that the wreck was *U741* and the Hydrographic Office database has been amended to reflect this. The presence of a mystery U-boat nearby, (*U984*), (see Chapter 10) made it important to eliminate this site as the known loss.

## **7.8: The Destruction, Identification and Wreck of *U413***

*Hydrographic Record No. 19845*      *Position: 50 21.423; 000 00.407W*      *Depth: 50m*

The veteran of seven successful Atlantic patrols, *U413* left Brest under a new commander on 2 August to operate in the Spout. On 20 August the U-boat was destroyed by the escorts HMSs *Vidette*, *Forester* and *Wensleydale*, south of Brighton (Wynn 1997a 274-276).

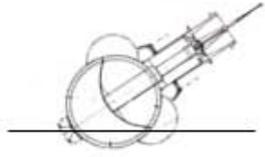
The OIC tracked this U-boat (Bigram “IV”) into the central Channel and thence into the northern Spout, via a decrypted radio order of 11 August ordering it there (NA HW18/392). Without any further specific intelligence, OIC estimated that it had begun its passage to Norway on 16 August (NA ADM 223/202 161342B). In fact, *U413* was ordered to begin its return on 25 August (NA HW18/392), but by then OIC knew it had been destroyed.

Alerted by the sinking of a freighter the previous day, HMS *Forester* had searched downtime and at 0607 on 20 August located a contact by Asdic. Within the hour HMS *Vidette* had sunk the U-boat with a hedgehog attack. As the attacks continued, one survivor was pulled from the sea, revealing the identity of the target (NA ADM199/1786 1454/44).

The wreck was discovered by chance in 2000 whilst the author was on a dive with friends and recorded on video on 15 June of the same year. The details of its main features are shown in Figure 1.67 and are described as:

- Image A: The base of the sky periscope forward of the conning tower is just in front of a large hole which has nearly split the wreck in two;
- Image B: The bows are intact, seemingly fitted with a towing eye;
- Image C: The sky periscope has been shattered, probably as a result of the explosion which occurred just in front;
- Image D: In the break the circular bulkhead door leading into the control room is open, affording a view of the interior;
- Image E: Looking down the conning tower, the lower hatch can be seen to be partially open;
- Image F: The conning tower hatch has fallen away;
- Image G: The after torpedo loading hatch is open, with the hatch fallen away;

Name: U413 Posn: 50 21.423;000 00.407W Depth: 50m  
Date of loss: 20 Aug 1944 How Sunk: Hedgehog  
Date of Survey: 15 June 2000



Wreck leans 50° to starboard

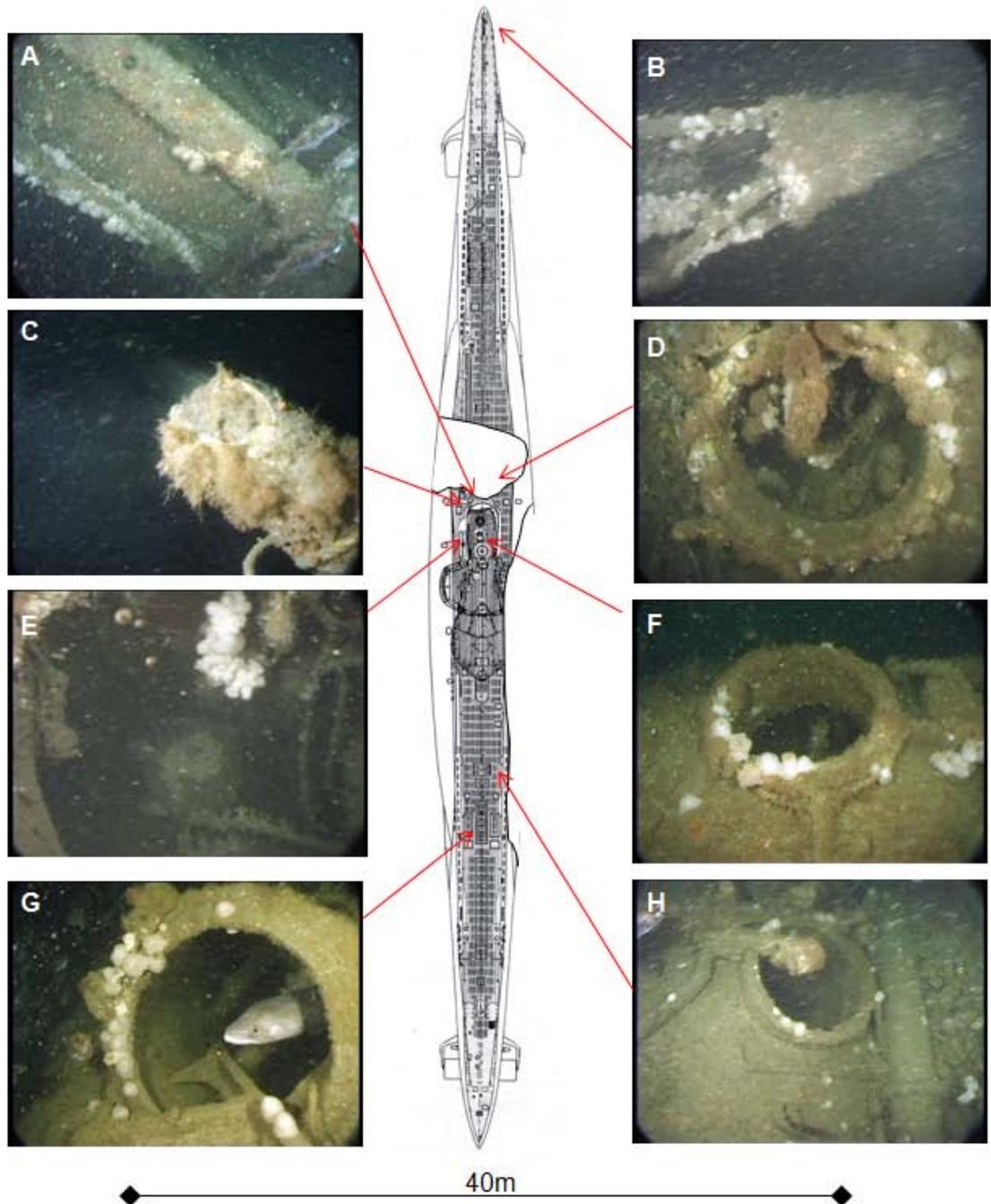


Figure 1.67. Diagram of the wreck of U413 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image H: A large sandbank has built up along the starboard side of the wreck (right) and is close to swallowing the last of the engine room trunking and the open galley hatch.

In the positional terms the location reported in the AUD Assessment (NA ADM199/1786 1454/44) is exactly where the wreck is located. Therefore it is likely that the position of the wreck was fixed by QH after the attack.

## **7.9: The Destruction, Identification and Wreck of *U1195***

*Hydrographic Record No. 19919*      *Position: 50 30.383; 000 56.302W*      *Depth: 26m*

*U1195* left Norway for its first operational patrol on 25 February 1945. Ordered to the Channel, the U-boat arrived in its allotted patrol area in late March. On 4 April it torpedoed and sunk the liner *Cuba* off the Isle of Wight and was subsequently destroyed by the escort, HMS *Watchman*, with 18 survivors being picked out of the sea (Wynn 1997b, 231).

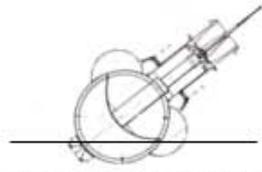
OIC were only able to trace this U-boat's movements (under Bigram "VQ") from two radio transmissions. One of 11 March from *U1195* sent as a routine passage report, and the second, an order from BdU ordering the commander to go to his old operating area (NA HW18/394, NA ADM223/306). The commander, Klt. E. Cordes had accidentally entered Spithead when in command of *U763* on 8 June 1944.

HMS *Watchman's* attack was delivered by hedgehog and the site buoyed. Later, survivors were found clinging to the buoy. AUD unsurprisingly classified the attack "A" Known Sunk (NA ADM199/1786 742/45). In a shallow 26 metres of water, it is known that Admiralty divers were operating on the wreck in 1945, presumably looking for intelligence material (as was the case with several U-boat wrecks in WW1, see Chapter Three), although no records of this activity can be found by the author (Wynn 1997b, 231).

The heavily salvaged remains of this wreck were recorded by the author on video on 25 July 1999 and are depicted in Figure 1.68 and described as:

- Image A: The marine growth clinging to the torpedo tube in this shot clearly denotes that it is made of steel. Laid down in February 1943, *U1195* was one of the last Type VIIC U-boats. By that time in the war, supply problems meant that even key components were made of steel, instead of bronze;
- Image B: The forward torpedo hatch has fallen off;
- Image C: The frames of the pressure hull can be seen inside the huge hole blasted into the foredeck;

**Name:** U1195 **Posn:** 50 30.383;000 56.302W **Depth:** 26m  
**Date of Loss:** 7 April 1945 **How Sunk:** Hedgehog  
**Date of Survey:** 25 July 1999



Wreck leans 50° to starboard

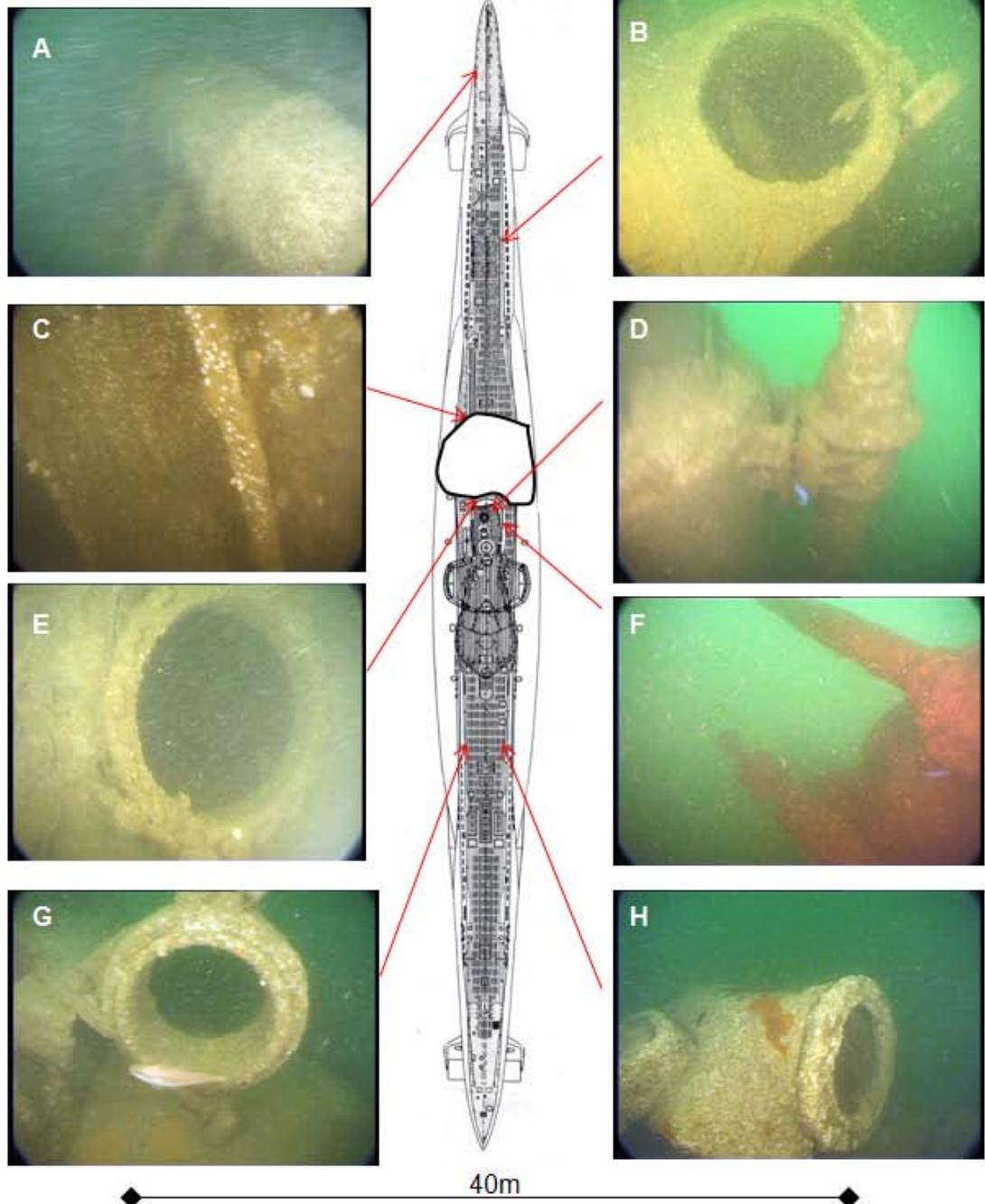


Figure 1.68. Diagram of the wreck of U1195 and its key features as surveyed and described in the text. (Innes McCartney, line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image D: The sky observation periscope fitting to the forward end of the conning tower can be seen in this shot;
- Image E: Similarly to *U413* (above) the circular bulkhead door into the control room can be seen from inside the blast hole. This hole is most likely associated with post war salvage by the Admiralty or commercial operations;
- Image F: Only the bases of the sky periscope and HF mast remain attached to the conning tower;
- Images G & H: The only remains of the engine trunking which ran under the after deck and these two pipe fittings.

The location of the wreck is exactly as reported by HMS *Watchman* and its identity has never been in doubt.

## 7.10: Conclusions

Of the eight U-boat wrecks examined in this section, six were graded as “A” losses and two as “B”. Interestingly survivors accounted for the attribution of an “A” in five cases, with debris denoting the identity of *U678*. The identities of all of the sites have never fallen under suspicion and with the positive identification by the author of *U214*, only *U212* remains, in theoretical terms at least, a “B”.

In archaeological terms, the remains of *U212*, *U678* and *U1195* in particular render them practically useless for comparison with other sites, because they have been largely destroyed. The other five sites do offer the opportunity to be used to compare their remains with mystery sites to see if similarities between shipyard construction, for instance, can be found.

The known identities of these wrecks permit an assessment of the accuracy of OIC’s tracking in each instance. In only three of the eight cases did OIC accurately estimate the U-boat to be in the area where it was destroyed (*U1195*, *U741* and *U671*). In two cases, OIC had tracked the U-boat to the area where it was destroyed, but had then prematurely tracked them back towards their operating bases (*U212* and *U413*). In two cases, the whereabouts of the U-boats were unknown (*U214* and *U767*) and in the case of *U678* OIC was completely wrong, assuming the boat to be in port.

This is not a criticism of OIC, but merely a statement which shows the relative difficulty in the task it faced. Moreover the accuracy of tracking shown here should be taken into consideration when relying on these data when attempting to assess the identities of mystery losses.

Finally the circumstances of the destruction of these U-boats shows that five of the sinkings were the direct result of the U-boat giving its position away, either by attacking a ship (*U678*, *U741*, *U413* and *U1195*) or after using the radio and its transmission point being determined by direction finding (*U767*). Only three encounters began randomly (*U212*, *U214* and *U671*). In seven of the cases, initial detection was by Asdic. Only *U212* was detected by radar. The hedgehog was responsible for the destruction of six of the U-boats, with depth-charges only accounting for *U212* and *U214*. This analysis will be repeated when looking at known kills which have not been surveyed in the next chapter.

## Chapter Eight: Other U-Boat Losses graded “A” Known Sunk

### 8.1: Introduction

This chapter will briefly describe the U-boats which were graded “A” Known Sunk by AUD but which have not been surveyed by the author. Of the 13 U-boats in question, five have yet to be located and eight have been found and inspected by divers. The distribution of these sites is shown in Figure 1.69 below.

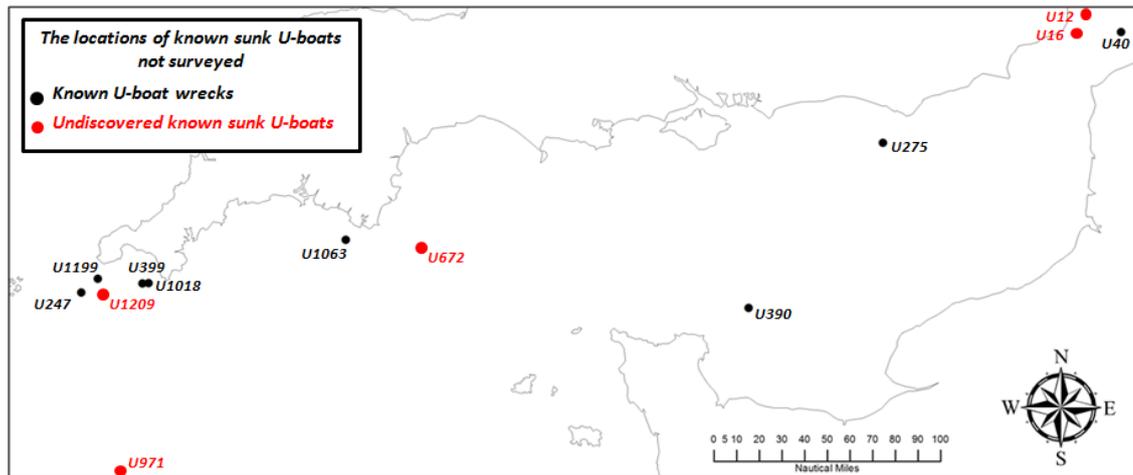


Figure 1.69. The distribution of U-boats sunk with known identities which have not been surveyed as part of this thesis (Innes McCartney).

It should be noted that AUD also listed other U-boats as possibly lost in the Study Area as grade “B” or “lost to unknown cause”. Where these U-boats have been found, they have been surveyed by the author and are described in the thesis. The incidents graded “B” or less which have not been located in the Study Area are listed in Appendix 2.1. Because there is no confirmed evidence they actually exist, no further analysis is currently required.

### 8.2: Known U-Boat Losses Which Have Been Located

#### *U40*

Hydrographic Record No. Not recorded Position: 51 07.467; 001 48.010E Depth: 50m

The Type IXA *U40* sailed from Wilhelmshaven on its second patrol on 10 October 1939 to join the first pack-operation of the war off Portugal. As its departure had been delayed, it was ordered through the Dover Straits to catch up. On 13 October it struck a mine off Calais. There were only three survivors (Wynn 1997a, 28).

The U-boat tracking processes and assessment systems in place during the Inshore Campaign, seen throughout this thesis, were not in place in 1939. The report of the recovery of three

survivors by HMSs *Brazen* and *Boreas* (NA ADM199/1790, M013047/39) states that it was clear the submarine had been destroyed. At the end of the war *U40* was graded accordingly in the 1946 List of losses (NA ADM199/1789, No.4). With no Special Intelligence available to the Allies from September 1939 to January 1941 (Syrett 2002, 29), the Tracking Room did nothing more than promulgate events (Beesly 2000, 36). It is safe to say, therefore, that nothing was known of the movements of this U-boat.

The wreck of this U-boat does not appear in the Hydrographic Office database, but has been located, dived and identified by local archaeologist Robert Peacock at the position given above.

### ***U390***

*Hydrographic Record No. 24224*      *Position: 49 49.475; 000 56.026W*      *Depth: 47m*

*U390* left Brest for its third combat patrol on 26 June 1944 and was ordered into the English Channel. On 5 July the U-boat attacked a convoy off Barfleur, hitting two ships. Shortly thereafter it was detected and sunk by HMSs *Wanderer* and *Tavy*. One survivor, the chief engineer, was plucked from the sea (Wynn 1997a, 260 & Blair 1999, 588).

OIC accurately tracked the U-boat (Bigram “CR”) up the Channel by estimated rate of progress, and were certain that it had attacked the convoy off Barfleur on 5 July (NA ADM223/198, 051408B). Moreover they were unconcerned by reports that the prisoner was uncooperative and would not reveal the U-boat’s identity and removed “CR” from the plot on 6 July (NA ADM223/198 061426B).

The AUD Assessment shows that it was HMS *Tavy*, on escort duty, which detected the U-boat by Asdic and sunk it almost immediately with hedgehog. With a survivor on board, AUD had no reservations as classifying the attack “A” Known Sunk (NA 199/1786, AUD1183/44).

The wreck of *U390* is actually five miles westward of the position given in the assessment, presumably because either it was not fixed after destruction or the position reported was where the attack began.

### ***U247***

*Hydrographic Record No. 22440*      *Position: 49 53.970; 005 49.974W*      *Depth: 74m*

On 26 August 1944, *U247* left Brest for the English Channel. Whilst making for the English coast it was detected on 1 September off Wolf Rock and destroyed by HMCSs *Swansea* and *St John* and lost with all hands (Wynn 1997a, 175).

Llewellyn-Jones’s (unpublished) detailed study of the destruction of this U-boat demonstrates that OIC were aware of the U-boat’s movements before it sailed. Moreover he shows that

intelligence was promulgated through the “H” Series which allowed a coordinated hunt for the boat to be developed. Tracking was accurate, as on the day of its destruction OIC stated that *U247* (Bigram “MY”) was off Land’s End (NA ADM223/204, 011422B).

The AUD Assessment of the attack shows *U247* was detected by Asdic (under notably difficult conditions), but was not able to determine when during the attack U-boat was actually destroyed. This was because of a lack of records (NA ADM199/1786, AUD1561/44). Therefore it is not known whether the killing blow came in the form of depth-charge or hedgehog, as both weapons were used. Although there were no survivors, similar to the case of *U678*, a scrap of paper (an engine log) revealed the identity of the U-boat. However such was the accuracy of intelligence, its identity would have been correctly surmised. The wreck lies less than half a mile for the position given in the assessment.

### ***U1199***

*Hydrographic Record No. 22609*      *Position: 49 57.852; 005 42.604W*      *Depth: 68m*

*U1199* sailed for the Channel from Norway on 1 January 1945. On 21 January it attacked a convoy off Land’s End and hit the Liberty Ship *George Hawley*. The escorts HMSs *Mignonette* and *Icarus* subsequently detected and destroyed the U-boat, pulling one survivor from the sea (Blair 1999, 664-665).

OIC promulgated the preliminary steering position, west of Ireland for *U1199* (Bigram “PQ”) through the “H” Series on 11 January (NA ADM223/302 111312A). No further tracking details for this boat are mentioned.

The AUD Assessment (NA ADM199/1786 AUD117/45) shows that the U-boat was first successfully attacked by HMS *Mignonette* by hedgehog a mere 17 minutes after SS *George Hawley* had been hit. Damaged and bottomed, it was finished off with depth-charges within two hours with the killing blow being delivered by HMS *Icarus*, after which a survivor was picked up, clearly denoting an “A” grade sinking. The position given in the assessment exactly matches the location of the wreck.

### ***U1018***

*Hydrographic Record No. 22560*      *Position: 49 56.571; 005 20.247W*      *Depth: 53m*

*U1018* left Norway of the Channel on 21 January 1945. On 27 February it attacked a convoy south of the Lizard and sunk the SS *Corvus*. The U-boat was destroyed in an immediate counterattack by HMS *Loch Fada*, with two survivors being rescued (Wynn 1997b, 217).

*U1018*’s movements after it left port were not well understood by OIC. Under the Bigram “TJ” the U-boat is mentioned heading for west of Ireland on 4 February (NA ADM223/304

041314A) and was presumed to be operating in the Western Approaches to the Channel (NA ADM223/305 171733A). In fact on 15 February *U1018* was ordered to operate in Cardigan Bay (NA HW18/398). It clearly did not receive this message and it seems that it was not decrypted before the U-boat was destroyed, because no mention of it is made in the “H” Series, where such an important intelligence clue would certainly have been distributed.

The AUD Assessment notes that it took less than 90 minutes for HMS *Loch Fada* to locate the U-boat and destroy it with squid. Two survivors were picked up and wreck was buoyed and its position was later fixed at the position where the wreck is now known to lie (NA ADM199/1786 AUD627/45).

### ***U275***

*Hydrographic Record No. 20384      Position: 50 36.336; 000 03.123E      Depth: 56m*

After receiving emergency repairs to its snorkel at St Nazaire, *U275* left for the Channel on 25 February 1945. It struck a mine off Brighton on 10 March and was lost with all hands (Wynn 1997a, 194).

There is no evidence from radio traffic referring to this U-boat (NA HW18/392), nor through the “H” Series, that OIC learned that *U275* it had sailed from St. Nazaire on 25 February. Therefore its presence in the Channel appears to have been unknown until it was destroyed. Even then, the identity of the dead U-boat was not known for certain.

There is an AUD Assessment (NA ADM199/1986 550/45) which relates how the destruction of a U-boat by mining came to be known. The explosion was heard from the shore and *RWL 513* was sent to investigate. It located oil and *EG10* then took over and located the wreck and attacked it to bring evidence to the surface. The items recovered showed that a U-boat had been destroyed there. Consequently the assessment was graded “A” although the identity of the U-boat could not be ascertained. The position given by *10EG* matches the location of a WW2 era U-boat located and dived by the author’s dive team in 2000. Due to illness the author was not able to dive and record the site. The location of the wreck matches the known location of the *Brazier* “E” minefield (BR 1736 (56) (1) and (2)), (see Figure 1.70). It will be seen in Chapter 11 that the *Brazier* “D” minefield claimed *U480*. Its specific strategic aim is described there.

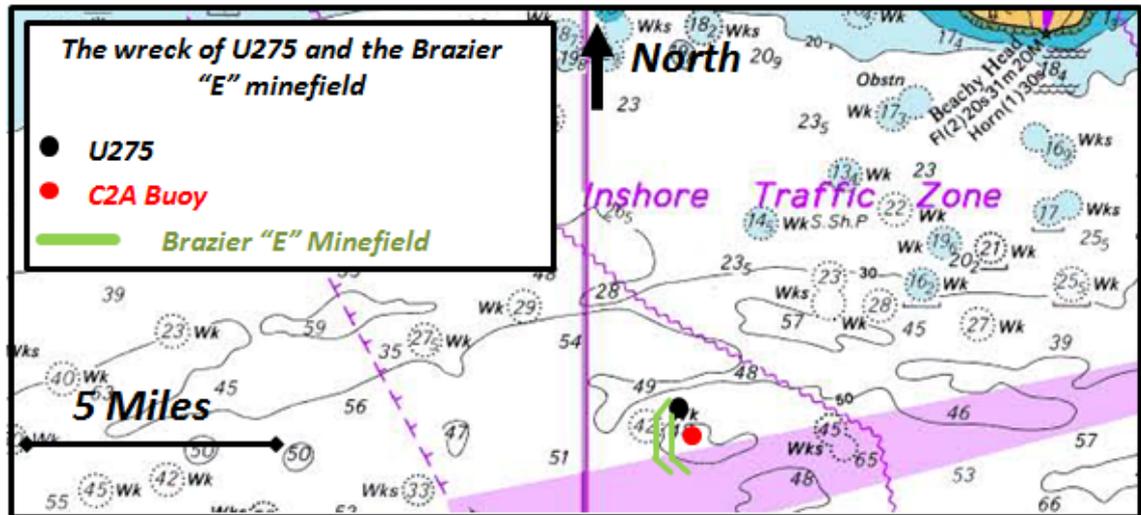


Figure 1.70. The wreck of U275 and its location in the Brazier “E” minefield (Innes McCartney, based on Admiralty Chart No. 2656).

The attribution to *U275* seems to have been made after the war, although it is not listed as such in the annex of post war reassessments by AUD made in 1945 (NA ADM 199/1786, Annex). The NHB BdU reconstruction (NHB 1957) notes that the identity is considered uncertain. So in this instance it appears the “A” grade was given because a U-boat was known sunk, but not positively identified. However, as in the case of the “B” grade *U212* in the previous chapter, the identity of this wreck has not fallen under suspicion and unless a more plausible explanation for its identity emerges in the future, the original attribution should stand.

### *U399*

Hydrographic Record No. 22545

Position: 49 56.526; 005 22.929W

Depth: 57m

*U399* left Norway for its first operational patrol on 6 February 1945. On 26 March it attacked a convoy off the Lizard and was immediately sunk by the frigate HMS *Duckworth* (Wynn 1997a, 262).

From radio decryption OIC knew *U399* (Bigram “VJ”) was headed for the Western Approaches (NA ADM223/305, 271412A). No other intelligence is mentioned in the “H” Series and no other radio traffic relating to its movements was decrypted, although it was ordered to make a passage report and did not respond (NA HW 18/422), so its ultimate patrol area was unknown.

The AUD Assessment of its loss shows that *U399* attacked a convoy off the Lizard from the landward side and hit MV *Pacific*. HMS *Duckworth*, which was trailing the convoy, sunk the U-boat within seventeen minutes of the torpedo strike with a hedgehog attack. One survivor was picked up, identifying the U-boat and simplifying the task of AUD in attributing an “A” Known Sunk classification to this incident. The position given exactly matches the location of the wreck.

### ***U1063***

*Hydrographic Record No. 18022*

*Position: 50 08.944; 003 53.468W*

*Depth: 58m*

*U1063* left Norway on its first patrol on 11 March 1945. While attempting to take a positional fix off Plymouth, the U-boat was detected and promptly destroyed by the frigate HMS *Loch Killin* (Blair 1999, 671).

On 1 April 1945, from radio decryption, OIC promulgated through the “H” Series that *U1063* (Bigram “QF”) had been allocated a patrol area centred on 49 45; 09 25W, south of Ireland (NA ADM223/307, 011602A). Subsequent to its destruction, OIC reiterated in the “H” Series that this U-boat had been ordered to operate south of Ireland, but owing to the latitude of operation given to commanders at the time a shift of patrol areas could be expected (NA ADM223/308 161153B).

The AUD Assessment of the U-boat’s destruction shows that it was caught while snorkelling and detected simultaneously on radar and Asdic. The killing attack was delivered by HMS *Loch Killin*’s third squid attack, with the boat rising to the surface and 18 survivors being picked up, clearly denoting an “A” grade attack (NA ADM199/1786, AUD 925/45). The position reported by HMS *Loch Killin* plots within half a mile of the wreck.

### **8.3: Known Losses Still to be Located**

#### ***U12***

*Hydrographic Record No. N/A*

*Historic Position: Dover barrage*

*Depth: unknown*

The Type IIB *U12* left Kiel for its second patrol on 23 September 1939. On 8 October it is presumed to have struck a mine in the Dover Straits and was lost with all hands (Wynn 1997a, 8). The commander’s body was washed ashore at Dunkirk on 29 October (Niestlé 1998, 222).

With the intelligence picture as described in the case of *U40* above, no tracking of this submarine’s movements seems to have taken place. However the loss of the boat and the presence of the commander’s body at Dunkirk led AUD to list this loss as “A” in the Straits of Dover (NA ADM199/1789 No.3).

#### ***U16***

*Hydrographic Record No. N/A*

*Historic Position: 51 09; 01 28E*

*Depth: unknown*

The Type IIB *U16* left Kiel on 18 October 1939 and laid mines off Dungeness on 22 October (Wynn 1997a, 10). On its return, on 24 October, *U16* was detected on Asdic by the sloop HMS

*Puffin* and attacked with depth-charges by her and the trawler HMS *Caton Wyke*. Oil was later seen in the water (Young & Armstrong 2006, 271).

The U-boat reported by radio that it was going to scuttle on 25 October. Naval divers supposedly located the wreck on the same day and recovered up to 19 bodies (Niestlé 1998, 22). In the 1946 List, AUD attributed this known loss to the attacks mentioned above (NA ADM199/1789, No.6).

The wreck the Admiralty divers located has not been found since. Moreover it is not clear how a U-boat can radio its intention to scuttle and then be found the same day with all its crew dead, unless it struck a mine in the meantime. In any case, its loss in the Dover Straits is not in doubt.

### ***U971***

*Hydrographic Record No. N/A*

*Historic Position: 49 01;05 35W*

*Depth: unknown*

*U971* left Norway for the Channel on 8 June 1944. During the transit south the U-boat endured no more than four air attacks which cumulatively damaged the U-boat. Making for Brest on 24 June to repair, *U971* was finally fatally damaged by a combined air and sea attack by a Czech B-24 and HMS *Eskimo* and HMCS *Haida*. The boat surfaced and scuttled with all but one of the crew being rescued (Blair 1999, 590).

From signals intelligence and sightings, OIC accurately tracked the progress of this U-boat southward and thence towards Brest. On the day of its destruction, the “H” Series makes note of a radio transmission from *U971* (Bigram “KR”) which gives a position (derived from direction finding) of 48 45; 05 50W and states that the boat is probably making for Brest with defects (NA ADM223/197, 241325). The following day the “H” Series reports its destruction by HMCS *Haida* (NA ADM223/197, 251338B). The position reported is only 19 nautical miles from where the U-boat was sunk, so it is difficult not to conclude that the air patrol which located *U971* was not aware of its possible presence.

The AUD Assessment of the attacks which sunk *U971* show that initial detection by air led the ships (who witnessed the attack) to locate the U-boat on Asdic and attack it with depth-charges on nine occasions; only the last, by HMS *Eskimo* caused any damage. Slow flooding via the stern glands forced the abandonment of the U-boat NA ADM 199/1786, AUD 1128/44, AUD 1186/44 and AUD 1227/44). Laying in French waters the wreck is in an area not surveyed by the Hydrographic Office and its presence has yet to be reported, if it has been located.

## ***U672***

*Hydrographic Record No. N/A*

*Historic Position: 50 03; 02 30W*

*Depth: unknown*

*U672* left St. Nazaire for the Channel on 6 July 1944. In the afternoon of 18 July while lying on the bottom the U-boat was detected by HMS *Balfour* and hit by hedgehog. The boat slowly flooded and in the evening, in a hopeless situation, the U-boat was scuttled and the crew took to life rafts. They were all successfully rescued the following day after being spotted by aircraft (Blair 1999, 603).

OIC tracked the daily progress of *U672* (Bigram “CB”) up the Channel and on the day it was sunk estimated its position, in this instance helped by the sighting of a U-boat by aircraft, to be “50 20; 01 45W, or within 30 miles SW of this position” (NA ADM223/199, 181346B). The OIC tracking in this case is incorrect, as the U-boat was actually 60 miles to the west, see below.

The attack attributed with sinking *U672* was assessed to have been carried out by HMS *Balfour* at the position given in the heading above (NA AUD199/1786 AUD1329/44). The U-boat was detected by Asdic attacked by hedgehog. Problematically the commander of *U672* gave the scuttling position as 50 03; 03 25W and the survivors were picked up around 50 02; 03 20W (NHB NID.1/PW/REP/6/44). The only explanation is that an accidental number reversal has taken place on HMS *Balfour*’s position report. There are no other reported incidents in the area to explain the attack. To date this wreck has not been located by Hydrographic Office surveys.

## ***U1209***

*Hydrographic Record No. N/A*

*Historic Position: off Wolf Rock*

*Depth: unknown*

*U1209* left Norway for its first operational patrol on 26 November 1944. On 18 December it struck Wolf Rock whilst submerged and 10 crew were killed or subsequently drowned, with the rest being rescued (Wynn 1997b, 234).

OIC were aware of *U1209*’s (Bigram “TB”) routing west of Ireland and promulgated this through the “H” Series (NA ADM223/300, 071732A). On the day “TB” foundered, OIC also learned that it had been ordered to operate off Cherbourg (NA ADM223/301, 191245A). *U1209*’s accidental loss mitigated any opportunity to target this U-boat specifically.

AUD did not formally assess this sinking. However, a description of the discovery of the survivors and the subsequent depth charging of the wreck is found among the proceedings of EG26 (NA ADM 199/503). The position given for the location of the wreck is 145 degrees Wolf Rock 1.5 miles. To date this wreck has not been located by Hydrographic Office surveys.

## 8.4: Conclusions

All of the 13 wrecks in this chapter are classified as “A” Known Sunk. It will be noted that in all of the cases except *U275*, sufficient evidence was collected to attribute the identity of the lost U-boats. Of these twelve cases, there were survivors from nine of them.

Placing *U12*, *U16* and *U40* aside, (because they were sunk in 1939, before the Tracking Room was operating in a meaningful way, see above) the other 10 known kills have known identities and fates. This permits an assessment of the accuracy of OIC’s tracking in each instance.

In three cases, *U390*, *U247* and *U971*, tracking was very accurate, to within a few miles of where the U-boat was sunk. The location of six U-boats, *U1199*, *U1018*, *U275*, *U399*, *U1063* and *U1209* was not known with any accuracy. In the case of *U672*, the position confidently promulgated by OIC turned out to be wrong. It is noteworthy that the accurate tracking took place during the first phase of the Inshore Campaign and the six unknowns fall into the second phase.

Four of the U-boats were known to have been mined. Of the other nine, the destruction of four came about when they gave away their presence by attacking a convoy (*U390*, *U1199*, *U1018*, and *U399*); four were detected in transit (*U247*, *U1063*, *U971*, and *U672*) and one was sunk in an accident (*U1209*).

Of the eight U-boats sunk in combat, seven were detected by Asdic and one (*U1063*) by Asdic and radar. Four (*U390*, *U1199*, *U399*, and *U672*) were sunk by hedgehog, two by squid (*U1018* and *U1063*), one (*U971*) by depth-charge and one by an unknown combination of hedgehog and depth-charges (*U247*).

It is noteworthy that five known losses have not been located. Their presence is certain, because of the circumstances of their destruction. It would not be surprising therefore, if further mystery sites were also found in the future. They could well be some of the ones listed in Appendix 2.1, assuming the identities of the mystery sites analysed in this thesis is correct in each case.

## Chapter Nine: Official U-Boat Losses as Mystery Sites: *U269* and *U1191*

### 9.1: Introduction

A unique set of circumstances in the Study Area surrounds the losses of *U269* and *U1191* in the central English Channel within a few hours of each other on 25 June 1944. Due to reasons which cannot now be known there is some positional confusion within the historical text. This led to the official explanation of the loss of *U1191*, published in 1946 later falling under suspicion and actually being officially reassessed as being sunk elsewhere.



Figure 1.71. Map showing the locations of the wrecks of (*U269*) and (*U1191*) (Innes McCartney).

It was not until both sites were surveyed and identified by the author that the errors in the historical text came to be understood and the correct loss attribution to both sites could be made. In this instance, the analysis carried out by AUD into the loss of *U1191* in the immediate post-war period turned out to be correct. This case is a salutary reminder of the pitfalls in reassessing losses in the historical register without additional hard evidence. The positions of both wrecks in the Study Area are shown in Figure 1.71.

### 9.2: The Losses of *U269* and *U1191*

The destruction of *U269* represents an example of an “A” Known Sunk grade loss in the Study Area. In this instance such a classification has never been in doubt because as the AUD Assessment states, there were forty-two survivors from the U-boat picked up (NA ADM199/1786, AUD 1326/44). The sinking took place at 03:58 hours on the morning of 25 June 1944. The assessment describes how the attack by HMS *Bickerton* of the 5<sup>th</sup> Escort Group

(5EG) developed after it dropped astern of the group as it made a sweep up Channel, to investigate a contact. This was regained by radar and sonar and a 10-pattern of depth-charges was dropped. A U-boat was seen to surface as the last depth-charge exploded. HMS *Bickerton* opened fire until it was clear the crew were surrendering and picked up the survivors, who identified the U-boat as *U269*. From the interrogation of survivors (NHB NID.1/PW/REP/6/44) it is known that the U-boat was bottomed when 5EG passed over it. Assuming it had remained undetected; *U269* rose to begin snorkelling (as was normally carried out at night) and was taken completely by surprise by HMS *Bickerton*'s attack (Macintyre 1956, 161-162). The position reported for this incident is 50 01N; 02 59W and it is shown on Figure 1.72.

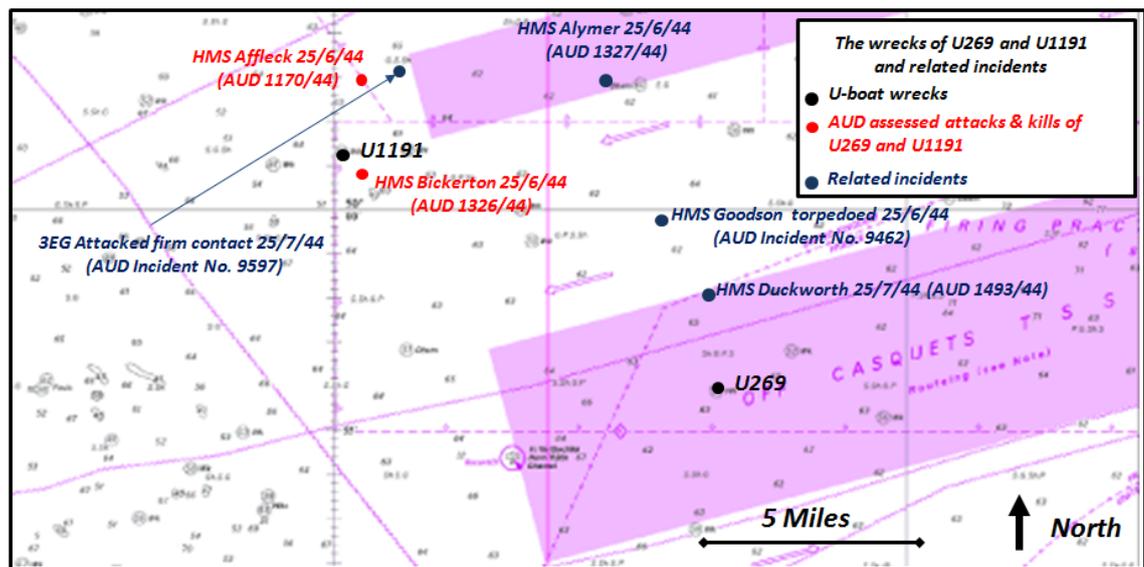


Figure 1.72. Map showing the locations of the wrecks of (*U269*) and (*U1191*) and associated attacks and incidents (Innes McCartney based on Chart No. 2454).

Nearly 10 hours later at 13:19 hours, HMS *Goodson*, also of 5EG was torpedoed at the position shown on Figure 1.72. This attack was thought to be caused by a “Gnat” (German acoustic-homing torpedo designed to home-in on the screws of warships) (NA ADM199/2053 No. 9462). The immediate counterattack at 14:05 hours by HMSs *Alymer*, *Bligh* and *Keats* of *Bickerton*'s 5EG was unsuccessful. Although assessed, it is clear from the report that if a U-boat was detected it was not damaged in the attack (NA ADM199/1786, AUD1327/44) (see Figure 1.72). In fact the attacks were aimed at a U-boat; *U984* which it is known from its patrol log had attacked HMS *Goodson*, made good its escape (NHB FDS475/97), only to be sunk on its next patrol (see Chapter 10).

However, HMSs *Affleck* and *Balfour* of the 1<sup>st</sup> Escort Group (1EG) were also nearby and working on a periscope sighting by aircraft, searched to the west of where HMS *Goodson* had been torpedoed and at 1929 attacked a contact with hedgehog, which over the next hour was seen to be giving off a large diesel oil slick. These attacks were distinctly heard by *U984* as it

retired eastward and were not directed at it (NHB FDS475/97). The U-boat was considered destroyed by 01:00 on 26 June. The assessment made of this attack by AUD was graded “B” Probably Sunk (NA ADM199/1786, AUD1170/44). In this assessment, it is explicitly stated that HMS *Balfour* stayed on site and carefully ensured (partly by communicating with HMS *Bickerton*), that two “corpses” had been sunk close by in the same area and that two distinct oil slicks existed. This cross-check undoubtedly played an important role in AUD considering this a separate attack, not directed on the wreck of *U269*. In fact it is known from the Admiralty Daily Diary of 26 June that 1EG was explicitly ordered by Plymouth Command (where OIC had a permanent resident at that time) to check that their contact was a “new one” (ADM199/2296).

The identity of the second U-boat was unknown at the time. After hostilities ceased, in the period from June to November 1945 when it reconciled German records of losses to known ASW incidents, AUD attributed this attack to the sinking of *U1191* (NA ADM199/1786, Part V) (see Figure 1.72) and it was added to this official list of U-boat losses (NA ADM199/1789 No. 512).

Looking at Figure 1.72 in the light of the positions of two known U-boat wrecks, it is immediately obvious that one of the two attack positions written on the AUD Assessment Reports cannot be right and must be a bureaucratic error. On both reports the longitude is given as 02 59W, which possibly seems too much of a coincidence to be correct. In the light of all other evidence it must be considered a typographic error of unknown origin.

The fact that two U-boats were sunk at that time is partly confirmed by the possible detection of both wrecks by the 3<sup>rd</sup> Escort Group (3EG), which included HMS *Duckworth* one month later, on the 25 July 1944 (see Figure 1.72). These incidents are recorded in the AUD Incident Record (NA ADM199/2054 No.9597) and one case (an attack by HMS *Duckworth*) was assessed as being directed against the wreck of the U-boat sunk by HMS *Affleck* on 25 June (NA ADM/1786, AUD1493/44). The presence of a dead U-boat at this position must have helped confirm AUD’s view that HMS *Affleck*’s attack was on a distinct target and was successful. The proximity of this attack to the wreck of *U269* should be noted.

### **The reassessment of the loss of *U1191***

In 1997 the Naval Historical Branch re-examined the loss of *U1191* alongside some others in the area and concluded that AUD had been incorrect in its assessment of its loss and that *U1191* was sunk on the 18 June to an air attack (NHB FDS475/97) (for the position of this attack, see Figure 1.84 in Chapter 10). The NHB and later Niestlé (1998, 234) both concluded that the attack by HMS *Affleck* had been directed against the wreck of *U269*.

In 1997 when NHB arrived at this conclusion, it did so by stating that only one U-boat wreck was known in the area (NHB FDS475/97), when in fact by 1990 both sites seen on Figure 1.72 were known to be submarine wrecks (Hydrographic Office wrecks database records No. 18443 and 23376). Besides the probable duplication of the longitudes given in both attack reports of 25 June, the position of the HMS *Duckworth* attack of 25 July should have at least alerted NHB to a probable positional error in the AUD records.

It should be noted that Niestlé (1998, 234) was unconvinced by the evidence of the air attack of 18 June (NA ADM199/1786 AUD1079/44) and concluded that there was no explanation for the loss of *U1191* (see Chapter 10). It was not until the sites were investigated by the author in 1999 that the reassessment of the loss of *U1191* needed to be re-examined and corrected. With the wrecks likely to be *U269* and *U1191*, the challenge was to tell them apart.

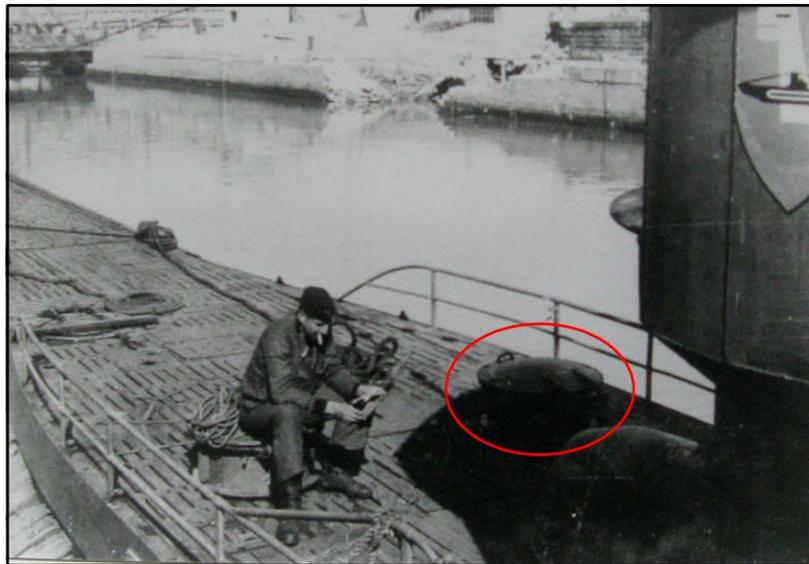
### **9.3: The Wreck of *U1191***

*Hydrographic Record No. 18443      Position: 50 01.317N; 002 59.750W      Depth: 65m*

The Hydrographic Office wrecks database record of this site (No. 18443) states that in 1960 it was known to be a German submarine, although the authority stating this is not recorded. In 1999, it came to the attention of the author and the site was surveyed by video camera on 1 September of the same year. This turned out to be one of the most intact Type VIIC U-boats the author has ever recorded around the entire British Isles. It was in fact, the intact nature of this wreck which allowed it to be positively confirmed as *U1191*. The details of the survey are shown in Figure 1.74 and described below:

- Image A shows the hydraulic piston of the snorkel elevator (circled). This is the most common type. It was fitted to U-boats which were based in either Germany or Norway in 1944, as *U1191* was;
- Image B depicts the fully intact set of flooding hole slots along the starboard side of the wreck. The entire series was carefully filmed during the survey because it was recognised that this could help with the identification of the site. In fact it proved to be a crucial breakthrough (see below);
- Image C shows the “Aphrodite” cylinders in place under the bandstand aft of the conning tower. In nearly all cases of this type of U-boat wreck, this feature has fallen off and is found on the seabed;
- Image D shows a circular feature on the foredeck of the wreck, off the centreline to the starboard side. There is currently no known explanation for what this feature may be, as its location is unique in the author’s experience. This was discussed in a meeting with

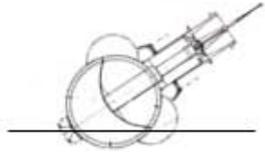
Axel Niestlé on 30 March 2012, but its actual purpose remains obscure. A possible explanation is that it is a Marcks container fitted in a non-standard position. In support of this is the fact that the hinges face forward, as would be expected. However, there is one Marcks container in the old gun mount position, the edge of which is just visible at the top of Image D. During research in the Uboot Archive in March 2012, the author found a photograph of *U228* which seems to have also been fitted with another non-standard hatch at this location (see Figure 1.73). Its purpose too is unknown, but serves to illustrate a degree of personalised customisation of U-boats which took place at the discretion of the commanding officer. Buchheim (1978, pages unnumbered) also shows a similar feature on *U309*, during the rescue of the crew of *U981*;



*Figure 1.73. A mysterious non-standard hatched container seen on the foredeck of U228. A similar type feature is seen on the wreck of U1191 (see Figure 76, Image D) and is unexplained. Note the Marcks container on the foredeck behind the crewmember. This would have to be moved or scrapped when the snorkel was fitted, as it lay in a slot cut through the deck on the port side (Uboot Archiv).*

- Image E shows the perfectly preserved after deck, with the outer cover still in place over the location of the galley hatch, which can be seen underneath;
- Image F is a picture taken looking down into the conning tower. It shows that the lower hatch into the control room is also open and certainly indicates that an attempt was made to escape from this U-boat at some point during its destruction. This could lead to the mistaken conclusion that the wreck is actually *U269*, but that wreck too has the same open hatches. If any crew did get out of this U-boat they did not survive;
- Images G & H show the aft flak platform still to be in position on the wreck, which completely unique among U-boats of this type recorded by the author. In both images, the pressure-proof ready-use ammunition bins can be seen. The flak guns have fallen off, which usually takes the platform with them, but in this instance it has not;

**Name:** U1191 **Posn:** 50 01.317;002 59.750W **Depth:** 65m  
**Date of loss:** 25 June 1944 **How Sunk:** Hedgehog & D/Cs  
**Date of Survey:** 1 September 1999



Wreck leans 50° to starboard

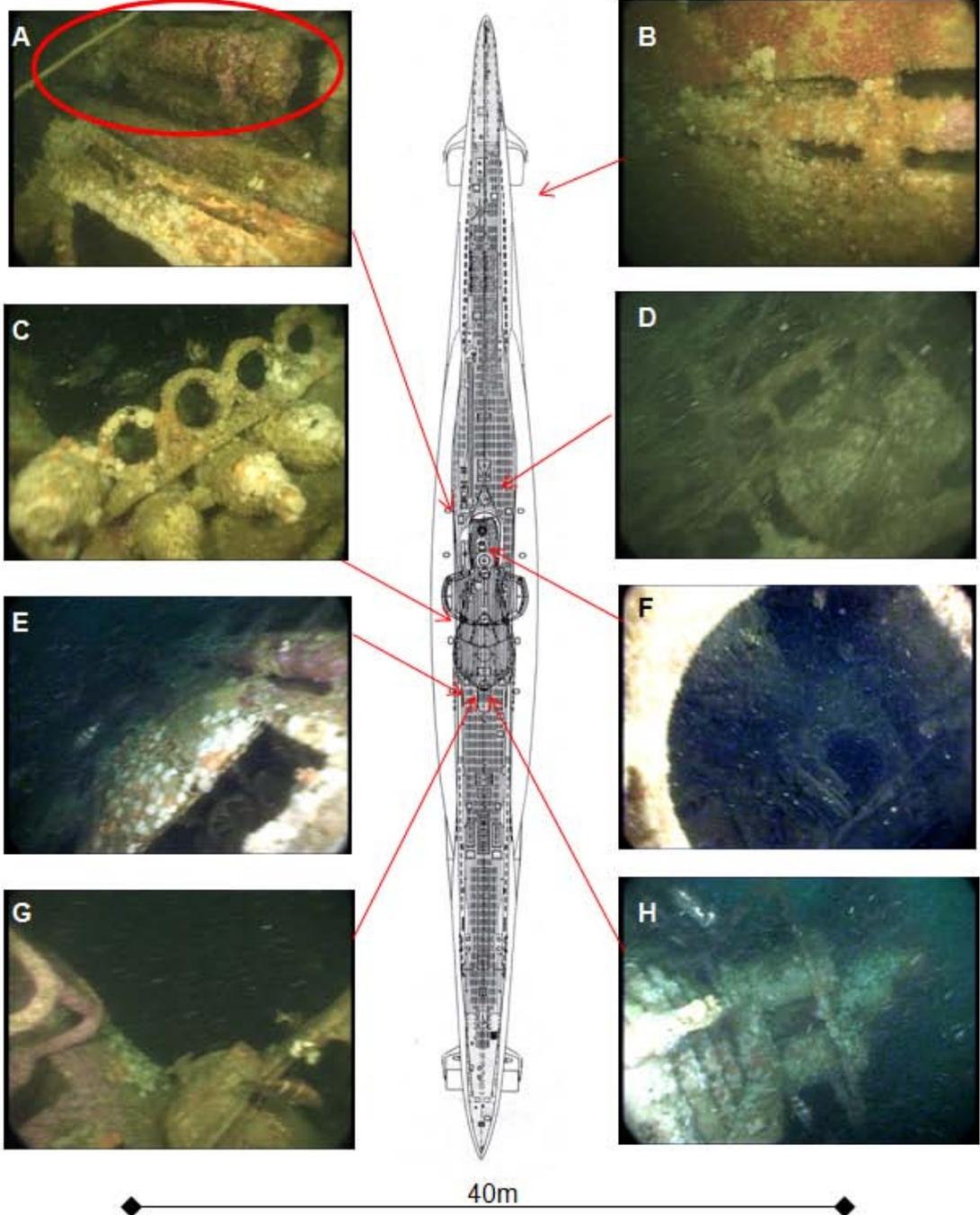


Figure 1.74. Diagram of the wreck of (U1191) and its key features as surveyed and described in the text. (All images Innes McCartney except line diagram, adapted from Köhl & Niestlé, 1994, 59).

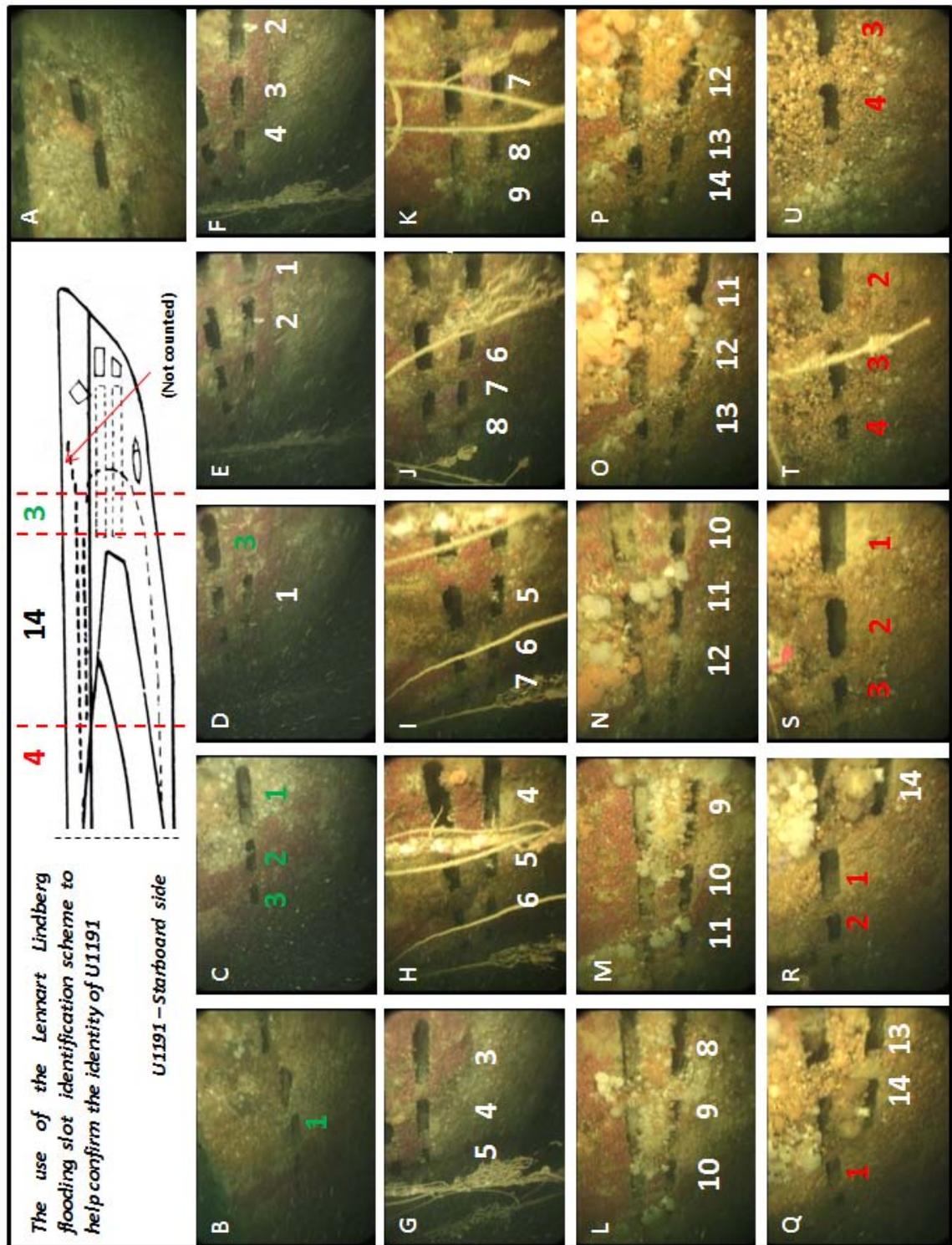


Figure 1.75. The use of the Lennart Lindberg flooding hole scheme to confirm the identity of the wreck of U1191 using video film recorded on the wreck site and counting the slots from bow to stern. (Innes McCartney, with diagram adapted from Gröner, 43).

### The identification of U1191

Initially in 1999, this site was not considered a priority target to survey, because the author considered that it was the known wreck of the “A” grade sunk *U269*, as Niestlé (1998, 234) and

NHB (FDS475/97) had at the time recently suggested. However, the discovery that the other nearby submarine wreck was in fact *U269* (the author expected it to be *UB19*, see Chapter Four) meant it was necessary to confirm that this wreck was in fact *U1191*. This was achieved by using the intact run of flooding slots down the starboard side of the wreck and comparing it against the Lennart Lindberg scheme for flooding slot identification as published in Gröner (1991, 50-51).

In the bow area, the scheme looks at the row of slots which begin at the bow, where the diagonal run of four slots ends (see Figure 1.75) and then counts the single, double and then single rows of slots which follow. In the case of *U1191* the starboard run of slots is noted by Lindberg as three in a single row, then 14 in a double row, then four slots in a single row (3/14/4). This is as exactly recorded on the wreck, effectively confirming that it is as AUD stated in 1946; the wreck of *U1191* (see Figure 1.75). The slot scheme for *U269* is recorded by Lindberg as being 3/14/1, ruling it out as being this wreck. At present, no other features on the wreck conflict with this identification.

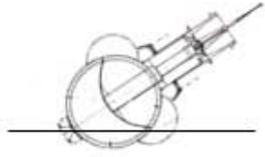
#### **9.4: The Wreck of *U269***

*Hydrographic Record No. 23376*      *Position: 49 55.893N; 002 46.660W*      *Depth: 65m*

The Hydrographic Office wrecks database record for this site (No. 23376) states that the wreck was first recorded in 1951 and surveyed by side scan sonar in 1990 when it was first noted as being the wreck of a submarine. Its proximity to the location where *UB19* was recorded sunk in 1916 (see Chapter Four) led the author to conclude that when the site was to be dived, it would be *UB19*. Therefore it was somewhat surprising to discover it to be *U269* when it was dived on 23 July 1999. It led directly to initiating the survey and attempts to confirm the identity of the wreck of *U1191* (see above). By comparison to the wreck of *U1191*, this site is heavily damaged, a feature which aided in its final identification. The key features recorded are shown in Figure 1.76 and described as follows:

- Images A & B show the forward torpedo tubes of the wreck now lying exposed on the seabed, where they have broken away from the pressure hull. This seems to have been caused by the site being accurately depth-charged;
- Image C shows a blast hole in the top of the wreck forward of the conning tower. Such damage is consistent with the very near detonation of a depth-charge;

**Name:** U269 **Posn:** 49 55.893;002 46.660W **Depth:** 65m  
**Date of Loss:** 26 June 1944 **How Sunk:** Depth Charges  
**Date of Survey:** 23 July 1999



Wreck leans 50° to starboard

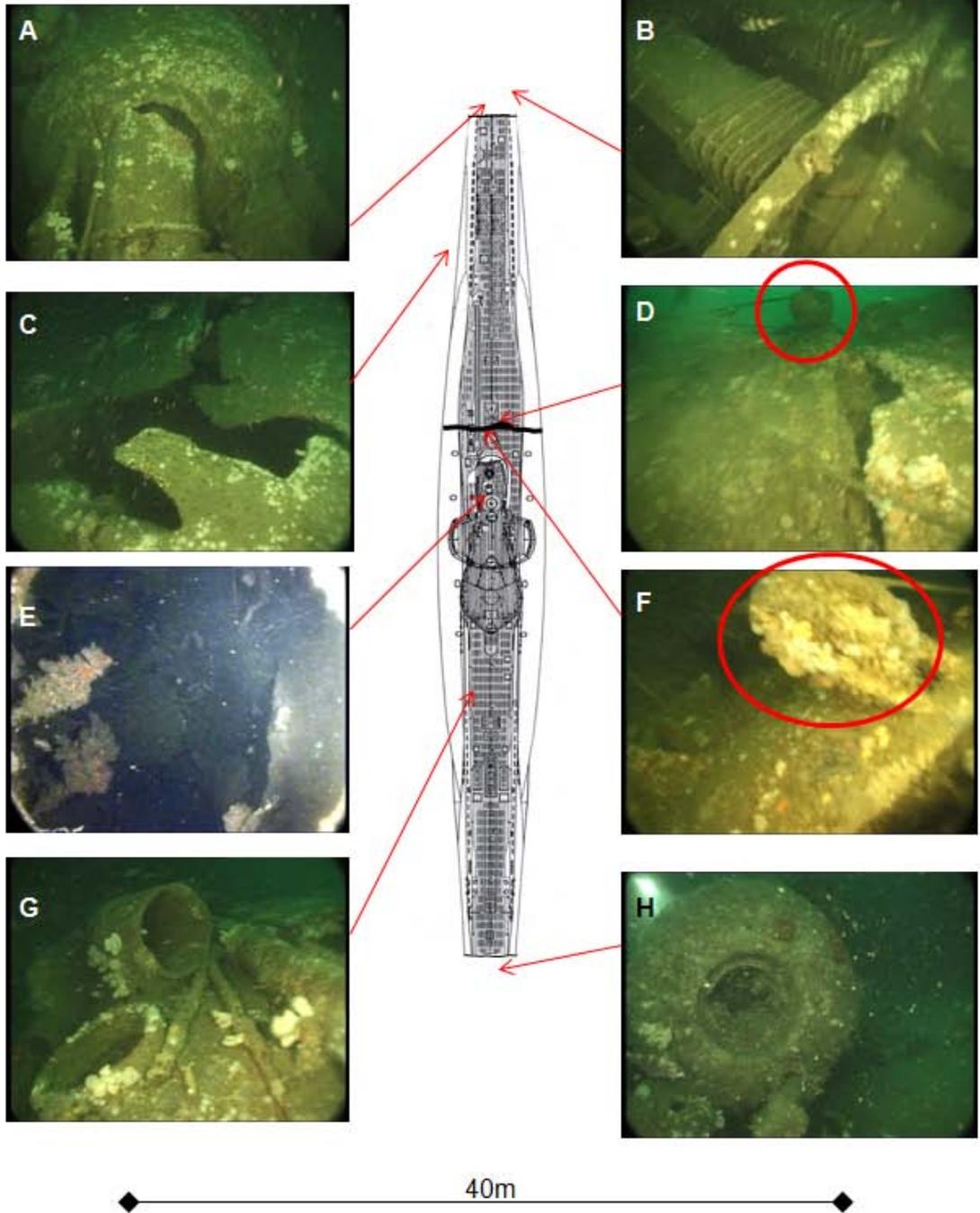


Figure 1.76. Diagram of the wreck of (U269) and its key features as surveyed and described in the text. (All images Innes McCartney except line diagram, adapted from Kóhl & Niestlé, 1994, 59).

- Images D & F show two features. First a crack right across the wreck forward of the conning tower. Again, this is consistent with a site which has been accurately attacked with depth-charges. Second, circled in red in both images is the pulley wheel for the snorkel elevator. This is an especially rare feature only seen on this site and the wrecks of (*U984*) and (*U441*) (see Chapter 10).
- Image E shows the view down through the open conning tower hatch, showing the opened hatch below, into the control room. The fact that both of these hatches is open is to be expected because escapes by the crew were made from here;
- Image G shows the open galley hatch behind the conning tower, with the partial remains of the engine intake trunk behind it;
- Image H shows that the stern torpedo tube too has been blown off the wreck; again, this has probably been caused by sustained depth charging.

The overall impression of this site is a wreck which has undergone a sustained and accurate depth-charge attack, which was probably carried out in what was known as “tin-opening”; attempts to bring items to the surface which would identify the kill. This is not uncommon in the Study Area; for example, see the case of *U678* in Chapter Seven.

### **The identification of *U269***

Features which, in 1999 pointed to this being the wreck of *U269* included the bronze torpedo tubes, which are far more likely to be seen in U-boats built early in the war, before copper shortages forced the German Navy to increasingly use steel. *U269* was laid down in 1941 (Sharpe 1998, 73) and therefore is most likely to have been equipped with bronze torpedo tubes.

Another feature pointing to this being *U269* was both the hatches in the conning tower being open. It is known that incredibly, two of the crew of *U269* actually escaped from the tower once the submarine had actually sunk (Blair 1999, 585). They both made the swim to the surface unaided in a remarkable, but not unique (see *U767* in Chapter Seven) case of escape from a bottomed U-boat in the Study Area.

The sustained damage on the site is not consistent with the accounts of how the U-boat was sunk. However they do probably confirm that this was the wreck which was subject to an attack by hedgehog and depth-charge HMS *Duckworth* on 25 July 1944 (see Figure 1.72 above). In this attack, which was carried out right on top of the wreck, several items, including an accordion were recovered, showing that the pressure hull had been ruptured (NA ADM/1786, AUD1493/44).

However, by far the most compelling evidence showing this is *U269* is the pulley wheel for the snorkel elevator. This is a rare item was only fitted to the earliest of U-boats to be converted to

carry the snorkel in the bases in France (see Chapter 10 for archive photos of this installation and more details). *U269* was one of the earliest conversions to take place in the entire U-boat force. It was fitted with the snorkel between 16 December 1943 and 16 March 1944 (Neitzel 1991, 220) and would have been so-equipped when the boat was sunk. As an “A” grade sinking loss in this area, this final piece of evidence confirms that this wreck is *U269*. The author is grateful to Axel Niestlé for providing details of this feature during our meeting of 30 March 2012. It will be noted that the wreck of *U1191* displays the standard hydraulic piston snorkel elevator (see Figure 1.74, Image A). *U1191* left Norway (having never been based in France) for the Atlantic prior to D-day and as in the case of (*U988*) was diverted to the Channel. The wreck of (*U988*) also carries a piston elevator (see Chapter 10).

## 9.5: Conclusions

Although technically not mystery sites, both wrecks had the potential to be misinterpreted because of seeming errors in the historical text and subsequent historical reinterpretations aimed at correcting the supposed errors. Because of this, it has been necessary to carefully examine the archaeology present on both sites and treat them as if they were in fact, mystery losses. This process has been successful, not least because fortunately sufficient archaeology remained, to enable the differentiation of the two sites and strongly confirm the identity of each.

In trying to establish where the error crept into the historical text, it is clear that it is the HMS *Bickerton* attack which had been recorded at the wrong position (see Figure 1.72), because that wreck is *U1191* and according to AUD it was not present when *U269* was sunk. In the Admiralty Diary the position of the sinking of *U269* is recorded as vaguely 50N 03W (almost identical to 50 01N 02 59W in the AUD report (NA ADM199/1786, AUD 1326/44)) and it is possible that the position is inaccurate because it was recorded by dead reckoning navigation and not by using QH, although HMS *Bickerton* is known to have been so equipped (Macintyre 1956, 158). The possibility that the stricken wreck of *U269* drifted some distance from the attack position cannot be discounted either, although it was seen to sink stern-first by HMS *Bickerton's* commander, while the survivors were being picked up (Macintyre 1956, 161).

It is simply a matter of unfortunate coincidence that another wreck (*U1191*) turned up at the recorded sinking position so soon thereafter. This coincidence is at the heart of the reason why NHB and Niestlé discounted the immediate post-war AUD Assessment of the loss of *U1191*. It is difficult to be too critical of this decision, because AUD had made the mistake of assessing U-boats as sunk, when, in fact known previous losses had been depth-charged. In the Study Area, the known wreck of *U247* was later depth-charged and assessed as also being the place of

destruction of *U683* (Niestlé 1998, 232) (see Chapter 12), so the notion that AUD placed more than one U-boat loss to a known wreck had at least one precedent at the time.

In the meantime it can be established with the certitude of the AUD of 1945 that both the wrecks of *U1191* and *U269* are now placed correctly in the records and on the map. It is not within the scope of this thesis to predict if AUD was actually correct about its analysis of U-boat losses. However it should be noted that *U1191*, was graded as “B” Probably Sunk (see above) by AUD and therefore there is the theoretical chance, albeit remote, that this could be another U-boat altogether. Archive photos of *U1191* will either show the unique feature seen in Image D of Figure 1.74 and confirm the identification or begin the process of re-examination all over again. Except in this instance, additional physical evidence would actually justify so doing. Currently none have come to light.

## Chapter Ten: Mystery U-Boat Case Study: (U984), (U988) and (U441)

### 10.1: Introduction

This, the first of five case studies which cover the Inshore Campaign, focuses on the first phase, which was the immediate response by BdU to the Allied landings in Normandy in June 1944. Two of the wrecks to be examined were lost in the Baie de Seine, attempting to interdict Allied supply convoys heading to the landing and supply areas. The third is intrinsically related to this activity.

The cases of these U-boat losses have had to be completely reassessed as part of this thesis in the light of the discovery of the two mystery sites in the Baie de Seine, and (U441) in the western Channel. Figure 1.77 shows the locations of all three wrecks within the Study Area.



Figure 1.77. Map showing the locations of the wrecks of (U984) (U988) and (U441) (Innes McCartney).

Planning for the imminent invasion of Europe, BdU had placed the 50 Type VIIC U-boats based in the Bay of Biscay U-boat bases, on six-hour readiness since 1 April 1944. During this time they were to be snorkel-equipped and upgraded as needed and were to form the first line of defence against invasion. Supply problems, mainly caused by Allied bombing severely curtailed this process so that by D-Day, only 15 of the U-boats had been snorkel equipped (Blair 1999, 570-589).

One paradoxical element of the intelligence picture which developed for the Allies during the first phase of the Inshore Campaign was the continued steady decline in radio transmissions from U-boats at sea, which continued until the end of the war (Syrett 2002, 18). Against this, however, was the trebling of the volume of radio traffic from the shore installations of the German Navy, in response to the damage to telephone communications caused by Allied

bombing. Through this process the inner workings of the U-boat command processes and structure became known in detail (Blair 1999, 581). This remained the case until the first phase of the Inshore Campaign ended in August 1944, when the U-boats retreated to their northern bases in Germany and Norway.

## 10.2: The Wreck of (*U984*)

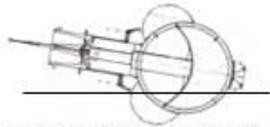
*Hydrographic Record No. 19756*      *Position: 50 03.732N; 000 32.398W*      *Depth: 47m*

From the Hydrographic Office database record of this site (No. 19756), it is not clear when it was first recorded as a wreck. The first entry is in 1974 when it appeared on a French chart of the area. In 1999 the author learned from Tim Bonetto, a commercial dive boat skipper that this site had been dived and was considered a submarine. After survey by the author in 2000, the site was recorded on the Hydrographic database as a Type VIIC U-boat.

Figure 1.78 shows the details of the wreck of (*U984*) as surveyed on 2 July 2000. The onsite visibility was excellent and the entire wreck was recorded on video tape during the dive. The forward section of wreck was covered with a trawl net, as depicted in green. The key features are described as below:

- Image A shows the attack periscope housing (left) and the antenna shaft (right) as seen from aft of the conning tower. The antenna shaft's telescopic appearance suggests it is of the standard loop type most commonly seen on U-boats of this period, but with the loop itself carried away, probably by the trawl which covers the bow section of the wreck;
- Image B shows the circular steel blanking plate which seems to cover the disused 88mm gun mount. Because of the differences between U-boats, this is a good identifying feature, if photos of the U-boat exist. In the case of (*U984*), there is photo of the U-boat fitted with this plate (see Image D Figure 1.80). There is also a photo of *U970*; a U-boat of the same batch built in the same yard as *U984* (Blohm & Voss, Hamburg) being constructed with the same feature (see Image C Figure 1.80). The green netting which is tightly wrapped around the forward section of the wreck, can be seen where it starts, just covering the circular plate;

**Name:** (U984) **Posn:** 50 03.732;000 32.398W **Depth:** 47m  
**Date of Loss:** August 1944 **How Sunk:** Unknown  
**Date of Survey:** 2 July 2000



Wreck leans 85° to port



**N (uncertain)**

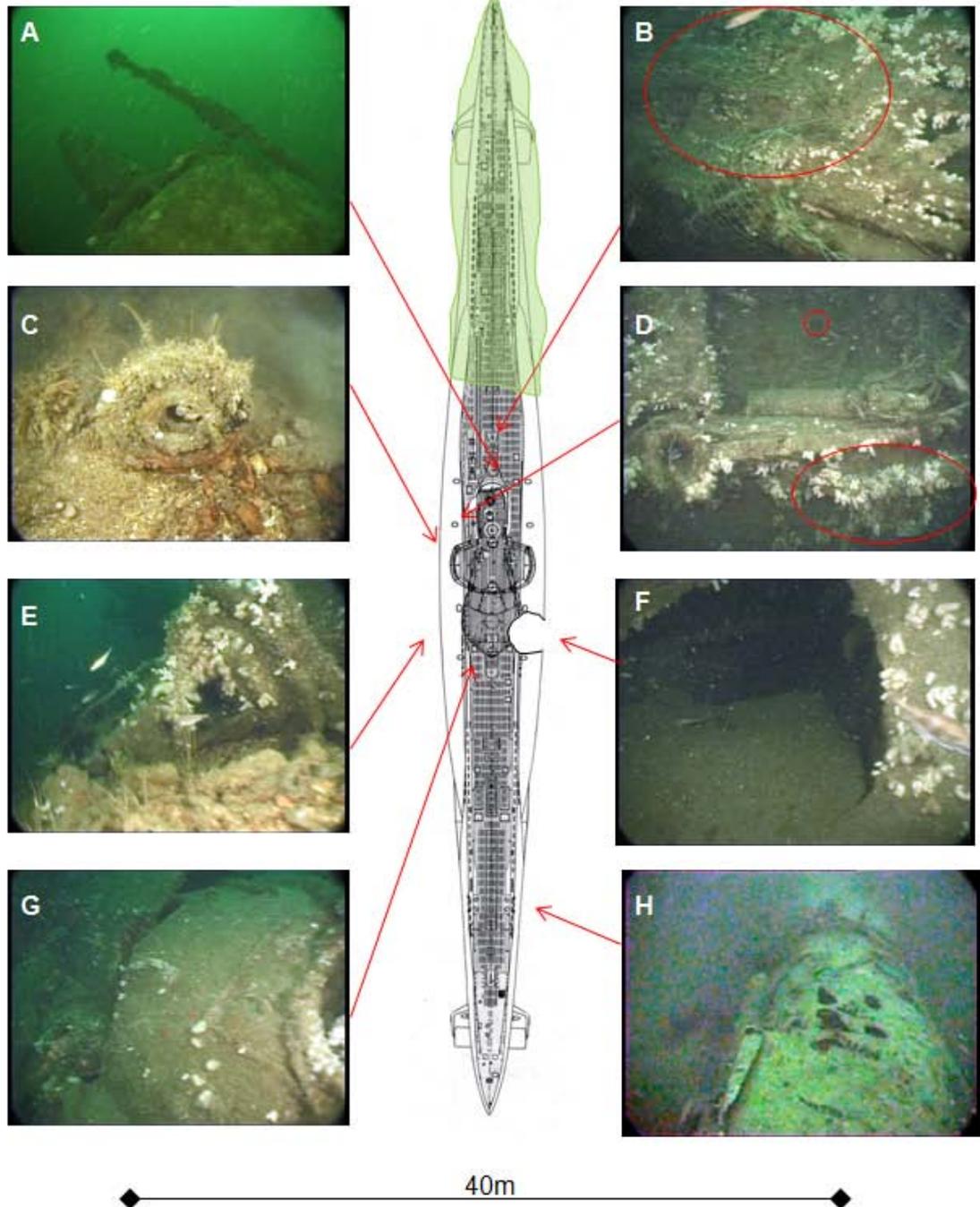


Figure 1.78. Diagram of the wreck of (U984) and its key features as surveyed and described in the text below. (All images Innes McCartney except line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image C shows the bronze bridge compass which has fallen into the debris pile which accumulates under the conning tower on the side to which these wrecks lean. Its presence is a good indication that at the time of the survey this site had not been visited by many groups of divers, otherwise this item would most likely have gone;
- Image D depicts the snorkel mast with flange as seen from above. Importantly, the item circled at the bottom of the photo does not resemble the standard hydraulic piston which is usually associated with this type of snorkel. Instead, it resembles the holder for the very rare pulley type of snorkel elevator (as can be seen in Images A and B in Figure 1.80). This is a feature which is only ever associated with the very first U-boats to have been snorkel equipped in the French bases. Its presence on this wreck is indicative that it is one of the earliest snorkel boats, fitted in France with this rare feature. Resting on the snorkel mast lies the repeater binnacle housing, which has fallen away from its recess, which is marked with the smaller red circle at the top of the image;
- Image E depicts the 1942 type gun mount (known as the M42) now lying on the seabed where it would be expected to be found;
- Image F shows the large blast hole which was found in the starboard side of the wreck, aft of the conning tower. This could possibly be what sunk the U-boat, or could be associated with a later attack on the site (see Figure 1.79);
- Image G shows that the blast hole actually cuts right across the wreck, with the crack clearly visible on the starboard side of the hull just forward of the open galley hatch;
- Image H shows the starboard side of the stern section of the wreck. It shows that the U-boat lies right over on its port side. The upper portion of the wreck is actually the starboard side. It has been swept clean, probably by fishing gear, some of which has wrapped itself tightly around the forward section.

The survey of the wreck site yielded some important clues as to the age of this U-boat. This was especially so in the case of the pulley snorkel elevator, which signified a very early snorkel boat. There were no features on the wreck to suggest it had come from either Germany or Norway during the second phase of the Inshore Campaign. The challenge was to see if it could be identified in the historical record.

#### **The identification of (U984)**

The process of mapping every recorded ASW incident and attack found within the AUD records and Admiralty Diary was in part carried out to assist in the identification of mystery sites, such as this one. When the data was consulted, a very promising attack (in green) was found which matched very closely to the position of the wreck (see Figure 1.79).

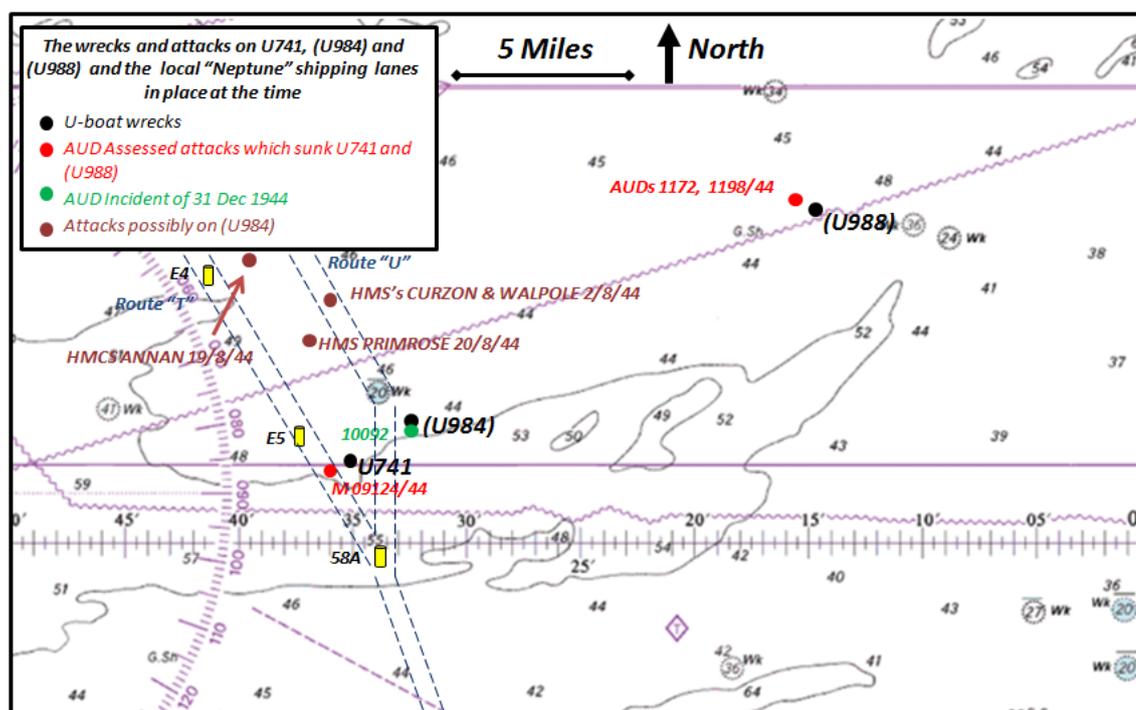


Figure 1.79. Map depicting the locations of the wrecks of (U984), (U988) and U741 (see Chapter Seven) also showing related attacks and the Operation Neptune shipping lanes and buoys in the area. (Innes McCartney based on Admiralty Chart No. 2656 with historic navigation channels added from Overlord Passage Chartlet No. F1055b).

In fact, there can be little doubt that AUD Incident No. 10092 (NA ADM 199/2055) was targeted on the wreck on 31 December 1944 by the 10<sup>th</sup> Escort Group, which reported attacking a bottomed contact. No other detail is given and the attack was not assessed, nor does it appear in the Admiralty Diary. Nevertheless, its proximity to the wreck would normally make it a strong candidate for the attack which sunk the U-boat. However this attack must be discounted entirely because of the date. This is because the pulley type snorkel elevator means that as an early snorkel boat it is much more likely to be (U984).

So, with no other obvious attack to link to this site, the historical and intelligence background behind the German response to Operation Neptune and what the Allies knew of it had to be examined in detail to see if any other candidates could emerge. Encouragingly, the list of possible candidates is small, because so few U-boats based in France were converted to carry the snorkel as described in the introduction above. There was no possibility of the non-snorkel boats operating in this area and none were ordered to do so.

The historian Axel Niestlé has researched a full list of all U-boats equipped with the snorkel right up to the time the French bases were abandoned, which was first published in Neitzel (1991, p220). A detailed analysis of this list, eliminating all the boats which that are later documented in Norway, were destroyed (and Graded as “A” losses), or are known not to have

been ordered into the Channel leaves just three possible candidates for this wreck; which are *U212*, *U441* and *U984*. *U212* was graded as a “B” loss and has been identified by the author at the location where it was thought to have been destroyed (see Chapter Seven). Therefore the wreck can only be either *U441* or *U984*.

The case of the wreck of (*U441*) will be examined in more detail later on in this chapter. In short, *U441* was among the first group of U-boats to leave France in early June. Although the BdU KTB traces *U441* all the way into the Baie de Seine and lists it as operating in this area from 12 to 25 June (NARA Microfilmed Records Roll No. 4065 PG30348 – 30350), there are neither attacks nor incidents listed in the Admiralty diary or AUD records during this period which are anywhere near this wreck site. There is also evidence to suggest *U441* was destroyed further west.

*U984* had already successfully operated in the Channel when it left for its final patrol on 26 July 1944. On 25 June, under the command of the aggressive Olzs. Hans Sieder, *U984* had torpedoed four freighters off Cherbourg, which was an audacious and lucky feat for the time and won him the Knight’s Cross. While, from an operational standpoint, there was nothing out of the ordinary about *U984*’s last patrol, there was some confusion at OIC as to its purpose, with suspicions being raised that it was on a minelaying mission to the Spithead area. This led to confusion as to exactly when *U984* left port.

While the BdU diary tracks *U984*’s progress up the Channel and into the Baie de Seine by 3 August (NARA Microfilmed Records Roll No. 4066 PG30351 – 30353), the OIC’s tracking was lagging some days behind, because of its suspicion of a minelaying mission. Under the Bigram Code “EA”, it can be seen in the “H” Series that OIC was unsure whether *U984* had left port until it confirmed this on 5 August and stated that the minelaying was “apparently never put into execution” (NA ADM 223/200 051530B/August). Still unsure when *U984* departed base, OIC was uncertain where the U-boat actually was and surmised it was still in the western Channel.

This “H” Series message was certainly a reaction to the BdU transmission of 4 August confirming *U984*’s attack zone as the Baie de Seine, south of 50 10N (NA DEFE 3/733 ZIP/ZTPGU/28921). As shown above, the BdU daily track already had *U984* in its operational area on 3 August. Both OIC and BdU tracked *U984* into the Baie de Seine and then back towards France. With no hard evidence to suggest why it never returned to base, BdU removed it from its daily plot on 26 August, (NARA Microfilmed Records Roll No. 4066 PG30353) and OIC ceased to record its movements after 22 August (NA ADM 223/202).

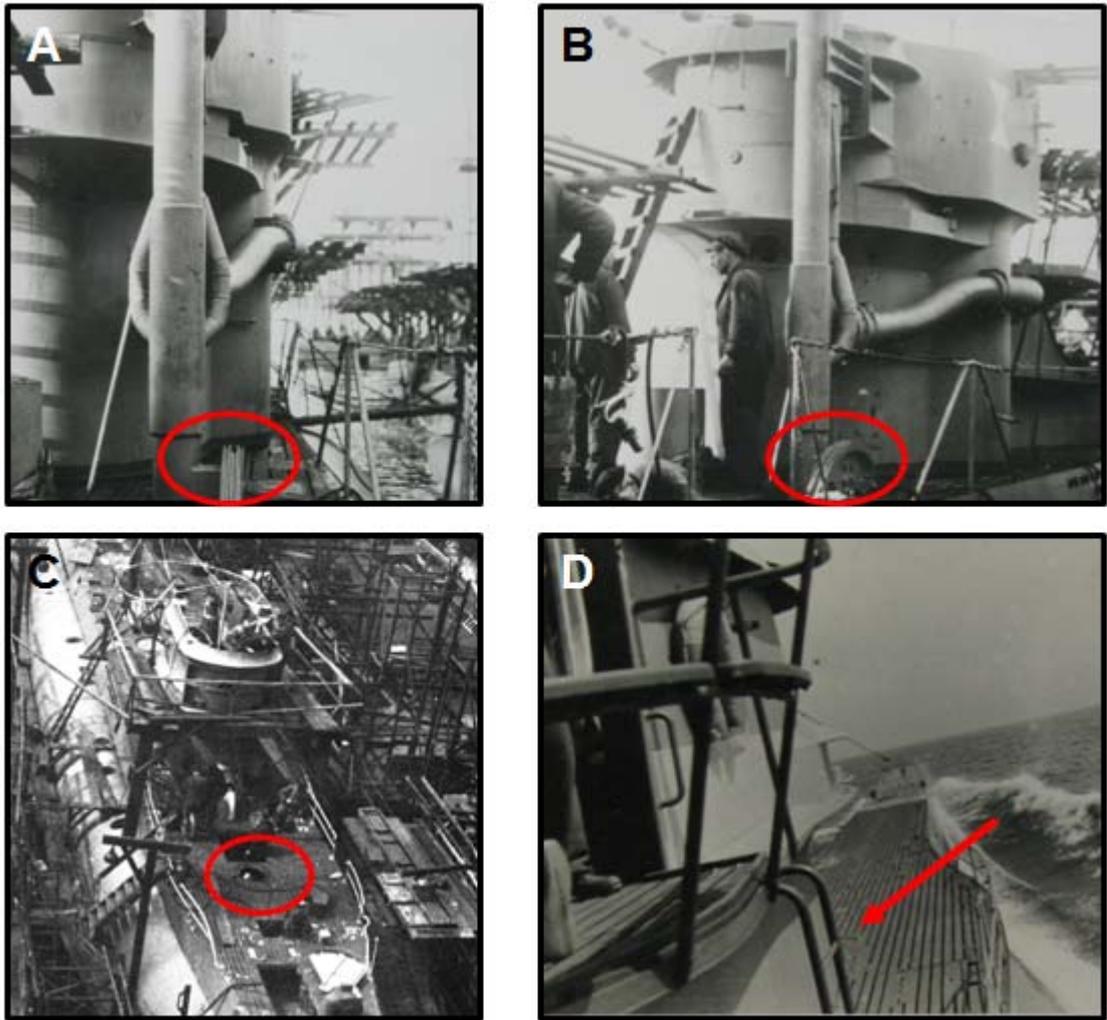


Figure 1.80. Photographs showing the early pulley type snorkel elevator as seen on U235 (Images A&B) the circular plate on U970 (Image C- circled) and the circular plate on the foredeck of U984 interpreted to be the top of the 88mm gun mount (Image D) (Images A&B from Axel Niestlé collection, Image C Rössler (1989, 135) & D from the Uboot Archiv).

In the presence of no other evidence, the AUD Assessment Committee, post-war attributed the loss of *U984* to an attack by Canadian forces off Brest on 20 August (NA ADM 199/1786 Assessment No. 1465/44). At the time this assessment was graded “H”, insufficient evidence of the presence of a U-boat and it was changed to “B” Probably Sunk post war (NA ADM199/1789 No.559). This attribution must be considered to be unreliable, falling into the period when AUD was being run down after the war. So there is a strong possibility that *U984* is located elsewhere among the mystery U-boat wrecks in the Study Area.

Knowing from German records that *U984* possibly reached the Baie de Seine as early as 3 August, the AUD records and the Admiralty Diary records of ASW attacks were consulted to find a candidate attack near the suspected wreck of (*U984*), which could account for its destruction. The dates had to be roughly within the two week period that *U984* could be expected to be in its operational area.

Interestingly, there are no attacks close to the wreck, (aside from the 15 August attack by HMS *Orchis* which sunk *U741*, see Chapter Seven), and the only ones within 10 miles between 2 and 20 August are shown on Figure 1.79. The 2 August attack on the convoy FTM56 which damaged the transport *Ocean Vigour* and led to a counter attack by the escorts HMS's *Curzon* and *Walpole* (NA 199/2054 Incident Nos. 9634 and 9637) was most likely directed against *U621* which vacated the area the following day and reported this incident on return to base. A short report of this attack appears in the BdU KTB on 12 August (NARA Microfilmed Records Roll No. 4066 PG30352).

The attack by HMCS *Annan* on the 19<sup>th</sup> (NA 199/2054 Incident No. 9722) provided no additional detail as to the results. The attack by HMS *Primrose* on 20 August (NA 199/2054 Incident No. 9753) was more positive, because a quantity of oil was observed after the target had been "heavily engaged". However, neither of these incidents can in any way be considered satisfactory evidence of how *U984* was destroyed, even though *U984* would have been the only U-boat in the area at the time. Neither can the somewhat outlandish idea that HMS *Orchis* destroyed two U-boats when it attacked *U741* be ruled out.

During a research visit to the Uboot Archiv in 2012 an additional piece of evidence which supports the theory that this wreck is (*U984*) was found in the photographic record held on this U-boat. A photograph album of *U984* contained images of the U-boat in 1943-44, before it was snorkel-equipped. Image D in Figure 1.80 comes from this album and the arrow points to the circular plate on the foredeck. This matches what is seen on the wreck and is interpreted as being the 88mm gun mount. Guns were removed in 1943, but the mounts stayed in place. We know from Image C in Figure 1.80 that is the type fitted at Blohm & Voss at the time *U984* was built. This is not conclusive proof, but alongside the very limited number of candidates for the identity of this wreck, it is strongly suggestive that it is (*U984*).

### **10.3: The Wreck of (*U988*)**

*Hydrographic Record No. 19788*      *Position: 50 09.515N; 000 14.865W*      *Depth: 47m*

The wreck of (*U988*) is first recorded as a non-dangerous wreck in 1944 and was accurately fixed in the French wreck records in 1989. But similar to the case of (*U984*) the details of what the wreckage actually was remained unreported until surveyed by the author in 1999. Again, Tim Bonetto had found out that this site had been dived and was considered a submarine. It was the first of the three Type VIICs in this area to come to light and therefore it was naturally assumed to be *U741*, the only U-boat officially recorded as sunk in the area (see Figure 1.79).

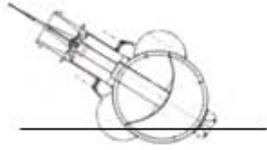
With the author hearing that two other submarine wrecks had been found further south, this had to be re-evaluated once the other two sites had been surveyed.

Figure 1.81 depicts the wreck as it was surveyed on 24 June 1999. The onsite visibility was excellent, but a strong current was running over the wreck for most of the dive. Nevertheless, the key identifying features of an Inshore Campaign Type VIIC U-boat were captured on video tape as detailed below:

- Image A depicts the bow of the wreck, forward of the end of the pressure hull. It is intact, with the extreme point now buried in the seabed;
- Image B shows the Marcks life raft container in situ on the foredeck, forward of the conning tower, where it would be expected to be located, if fitted;
- Image C shows the M42 type gun mount lying on the seabed somewhat forward of where it would normally be expected to be found. This is probably the result of it being trawled into. There are portions of fishing net all over the wreck;
- Image D shows the forward end of the retracted snorkel mast, and shows that the float head has become detached from the mast;
- Image E shows one of the diesel engine exhaust cylinders still in situ on top of the pressure hull, under where the wooden decking would have been. It is very rare for this feature to survive in such a way;
- Image F shows the HF radio loop now covered in twisted netting. It can be seen to be a loop only, and not to have been fitted with an integrated rod antenna, which if present would be seen bisecting the centre of the loop;
- Image G shows the extreme stern of the wreck, which has twisted slightly and now lies partially buried in the seabed. It is the stern of the wreck which shows the most discernible amount of damage;
- Image H shows the hydraulic piston which elevated the snorkel mast. This is of the most common type, but not is present on the wreck of (*U984*) or (*U441*). This type snorkel elevator and is characterised by the horseshoe hoop which can be seen at the stern end, close to the conning tower.

The survey of this site revealed no features which would date it to the second phase of the Inshore Campaign, although this did not necessarily mean it was not of that period. The features on the wreck were standard to a mid to late 1944 U-boat from either France or Norway. In fact there are no material differences between this wreck and the nearby “A” grade wreck of *U741* (see Chapter Seven). The key to identifying which U-boat it may be lay in being able to ascertain exactly when it was destroyed and then examining the historical text to see which U-boats may have been present in the area at this time.

**Name:** (U988) **Posn:** 50 09.515;000 14.865W **Depth:** 47m  
**Date of Loss:** 3 July 1944 **How Sunk:** ASW Escort Group  
**Date of Survey:** 24 June 1999



Wreck leans 50° to port



**N (uncertain)**

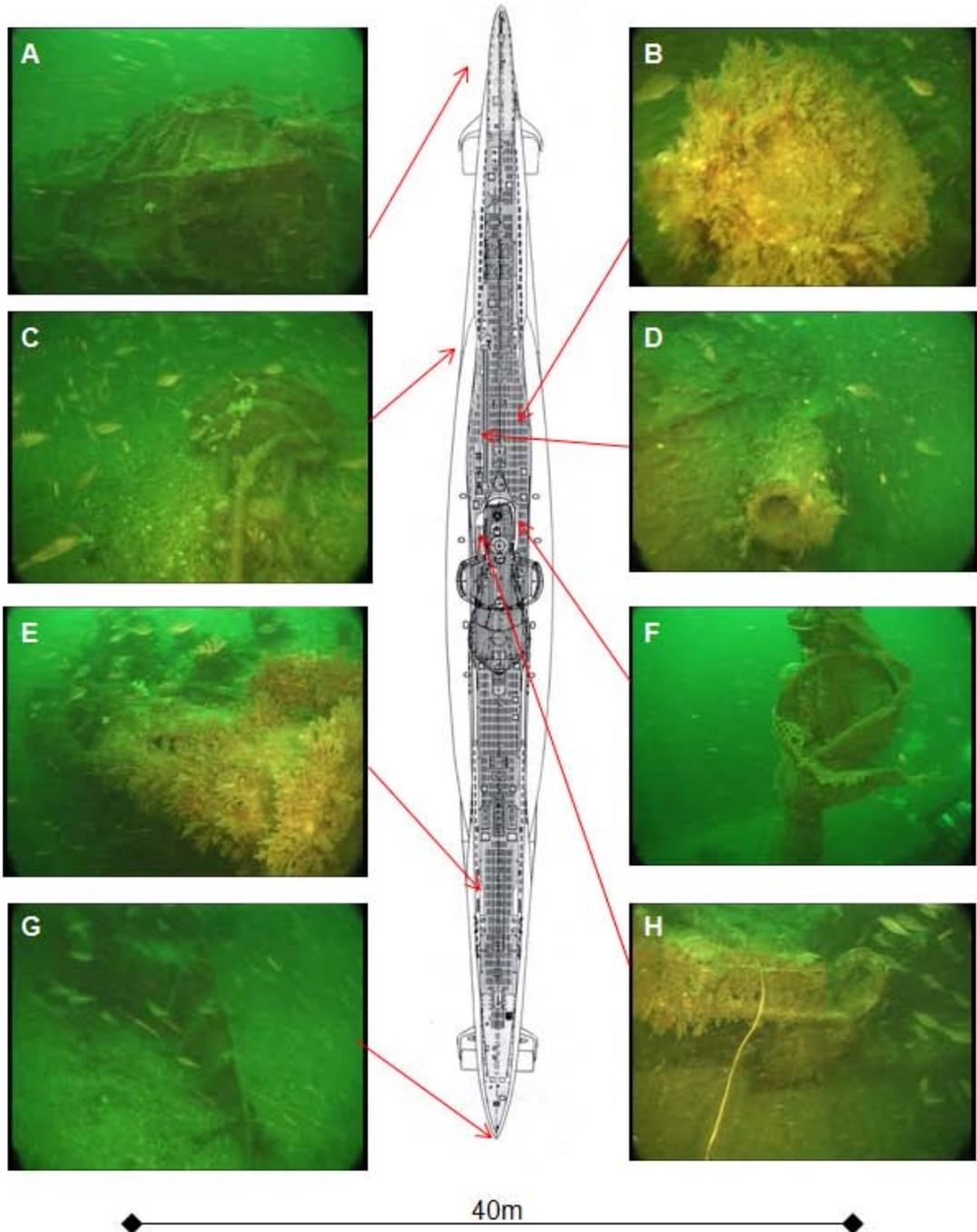


Figure 1.81. Diagram of the wreck of (U988) and its key features as surveyed and described in the text above. (All images Innes McCartney except line diagram, adapted from Köhl & Niestlé, 1994, 59).

### **The identification of (U988)**

Unlike the case of (U984), in this instance the attack which destroyed this U-boat stands out clearly in the records of AUD. In Figure 1.79, the close location of these attacks to the wreck of (U988) can clearly be seen. The historical text reveals some interesting details about the rigour shown by the AUD Assessment Committee when looking at and grading promising ASW reports. Moreover it shows a case where the GIS database built during the research found an attack in the records which was clearly related to this wreck.

The attacks which destroyed (U988) are recorded in the proceedings of the AUD Assessment Committee (NA ADM 199/1786, Record Nos. M.07743/44, AUD 1172/44 and AUD 1198/44). More detailed descriptions of the various attacks on the wreck site over a four day period from 3 to 7 July 1944 can also be found in the National Archives (NA ADM 199/1460 and ADM 1/57989). The detailed description shows that while on an ASW sweep, HMSs *Onslaught*, *Oribi* and *Brissenden* located the U-boat and attacked it with depth-charges over several hours. An oil slick developed before night fell in. Over the next three days, the attacks continued, with HMSs *Talybont* and *Wensleydale* taking over.

The continued attacks were made in order to bring evidence of destruction to the surface. Finally, on the 7<sup>th</sup>, white painted timber and two diesel oil impregnated “diving suits” were recovered from the sea. The Assessment Committee reviewed all of the evidence and concluded that the sample of diesel was of the type which came from submarines. It was, however unconvinced by the timber and diving suits and went to the measure of having them shown to “U-boat survivors” who refuted the possibility that they came from a German submarine.

The Assessment Committee also looked at the sonar paper traces supplied and concluded that the wreck, standing only 15 feet clear of the seabed was not sufficiently large to be a U-boat. Ultimately the attacks were graded “I, target attacked not a submarine”, with the Committee suggesting the attacks had been on the wreck of an E-boat, or similar. In the light of any other evidence it is not difficult to see why the Committee reached this conclusion. The evidence presented was not definitive, but in this case a U-boat was definitely destroyed.

The question then is, which U-boat is actually at that location? From the date of the attack, one can trace where BdU and OIC thought the U-boats at sea were operating. The BdU KTB for 3 July 1944 (NARA Microfilmed Records Roll No. 4065 PG30350) lists seven U-boats which could plausibly have been in the area. By eliminating known losses and boats which are documented as surviving later into the war, only two remain, *U984* (see above) and *U988*. With the loss of *U984* now probably correctly associated with the other mystery wreck in this area, the only candidate for this wreck is (*U988*). No features on the wreck challenge the assumption that this is most likely the case.

On its final patrol *U988* departed Norway for the North Atlantic on 22 May. However on 6 June (D-day) it was ordered to make for western France at high speed and on 25 June was ordered into the Baie de Seine (NA HW 18/365). The OIC had tracked this U-boat accurately and on 3 July through the “H” Series placed it close to where we now know it was destroyed, at 50 05N between 00 01 and 01 20W (NA ADM 223/198 031418B/July). However in the presence of no evidence that the U-boat was actually destroyed both BdU and OIC tracked this U-boat back to near Lorient, with OIC ceasing to list it in the “H” Series after 14 July and BdU finally removing from its daily plot on 17 July (NARA Microfilmed Records Roll No. 4066 30351) when it did not enter base.

During the reconciliation of U-boat losses to plausible ASW incidents which took place from June to November 1945, an explanation for the loss of *U988* needed to be found. AUD concluded that the U-boat had been sunk on 30 June west of Guernsey while penetrating the Channel (NA ADM 199/1789 Index, 11). The assessed attacks which were credited with *U988*'s destruction (NA ADM 199/1786 AUD 1180/44 and 1302/44) had been graded “B” Probably Sunk. As we shall see in the next section, the attacks did claim a U-boat; (*U441*), but this could not be confirmed until the discovery of a U-boat wreck at that location in 2005 (see Figures 1.77 and 1.84).

#### **10.4: The Wreck of (*U441*)**

*Hydrographic Record No. 23021*      *Position: 49 35.721N; 003 40.496W*      *Depth: 78m*

According to the Hydrographic Office wrecks database (No.23021), a wreck at the position shown above has been known about since August 1944. However it was not until 2005 that it was inspected and confirmed to be a U-boat. The inspection was carried by Odyssey Marine Exploration using a Remotely Operated Vehicle (ROV). The footage of three dives on the site (one in 2005 and two in 2008) have been made available to the author and forms the basis for the interpretation of the archaeology given below.

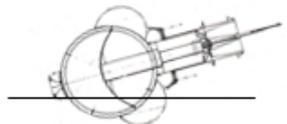
This wreck site is characterised by being very smashed. This is almost certainly a result of the circumstances of its sinking. Both the bow and stern have collapsed completely, revealing bronze torpedo tubes at each end. Also, the upper portion of the deck and pressure hull over the officers' quarters, galley and engine room has been blown off, revealing a chasm inside the wreck and exposing the two diesel engines. Figure 1.82 shows the key features of the wreck as:

- Image A shows how two of the bow torpedo tubes have broken away from the end of the pressure hull and have themselves broken in half. Their pale colour and the lack of marine growth on them shows that they are made of bronze. This is an indicator that

they are more likely to have come from a U-boat built early in the war, before material shortages affected the use of copper-rich alloys in U-boat construction;

- Image B shows the extreme point of the bow, now broken and on the seabed. Nevertheless, it can be seen that the bow has been fitted with the oldest design of towing eye. Figure 1.83 clearly shows that this feature was built into *U441* and is additional evidence that the wreck could be this U-boat;
- Images C & E show the most important feature for identification of this site. Circled in red is the base of the snorkel mast, with the pulley-wheel snorkel elevator present (see Figure 1.81). As discussed in the case of (*U984*) this feature ensures that the wreck is one of the U-boats first fitted with the snorkel and based in France. Image C also reveals that the snorkel mast was in the elevated position when it broke off. Also the base of the attack periscope can be seen, showing that it is extended. The ROV footage confirms that it is actually fully extended. The attack periscope was used when snorkelling, so it confirms that the U-boat was attacked and sunk whilst using its snorkel;
- Image D shows the forward torpedo loading hatch, with the hatch cover now gone. The deck frames are also absent in this area. A large Conger eel now lives in this part of the wreck;
- Image F shows the base of the HF loop, with the loop now gone. This is unfortunate, because if present one would expect to also see a rod antenna. It is known from radio intercepts that *U441* was fitted with one;
- Image G shows the remains of the snorkel mast lying on the seabed on the starboard side under the extended periscope. Circled in red is the collar which was attached to the conning tower. It has come away from the tower still attached to the mast. It is interesting to note that the base of the mast is at the bottom of the shot and therefore further away from the hull of the wreck than the float head. This is the reverse of what would normally be expected. This is interpreted as meaning that the mast has fallen in this position, having been physically blown off its base and spun through 180 degrees. To the right of the image the base of one of the U-boat's 20mm AA guns can be seen, with the training wheel clearly visible;
- Image H shows the rockers on the top of the starboard side engine, clearly showing that the entire upper portion of the U-boat's pressure hull is missing in this area.

**Name: (U441) Posn: 49 35.721; 003 40.496W Depth: 78m**  
**Date of Loss: 30 June 1944 How Sunk: Depth Charges**  
**Date of Surveys: 2005 & 2008**



Wreck leans 85° to starboard

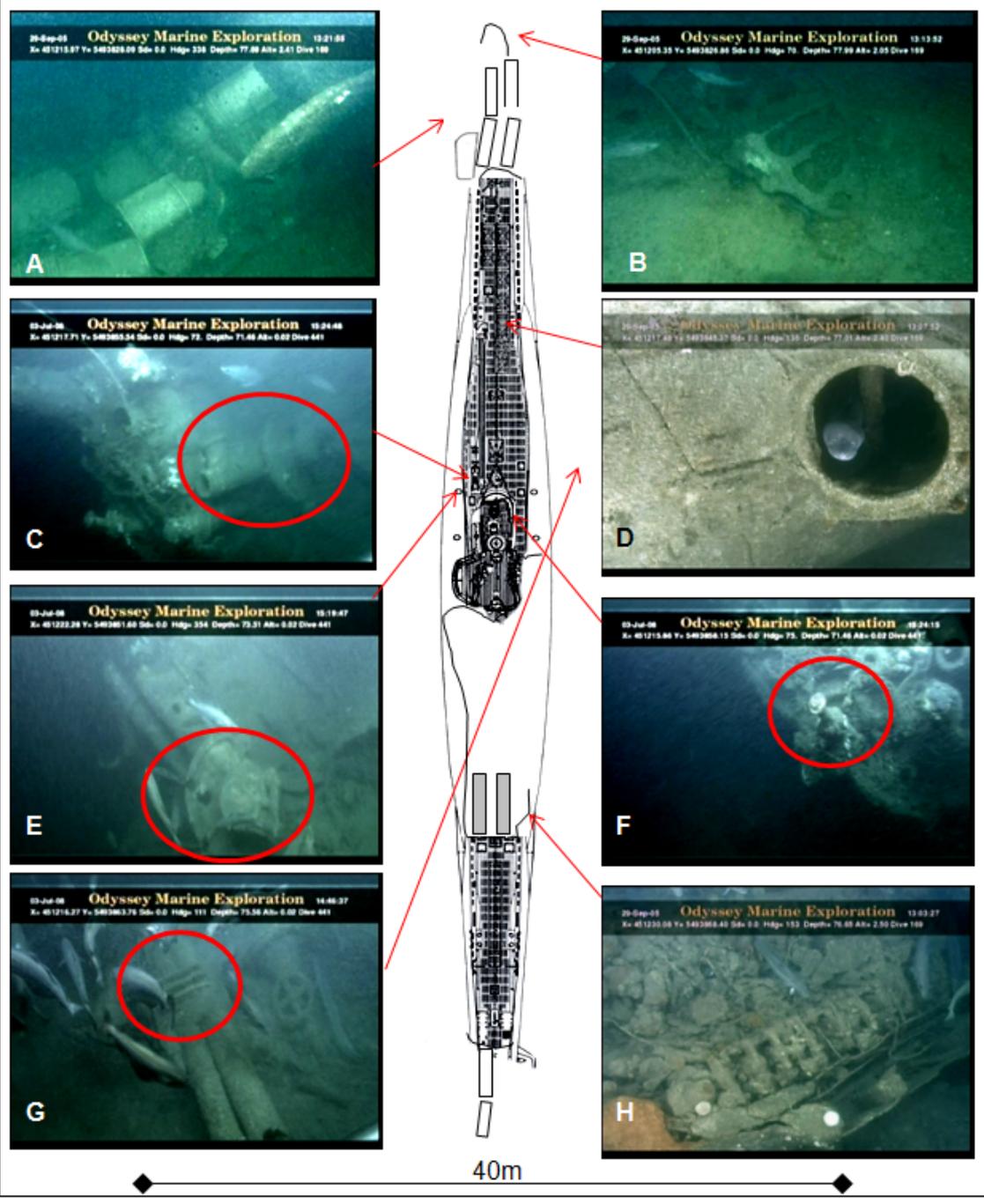
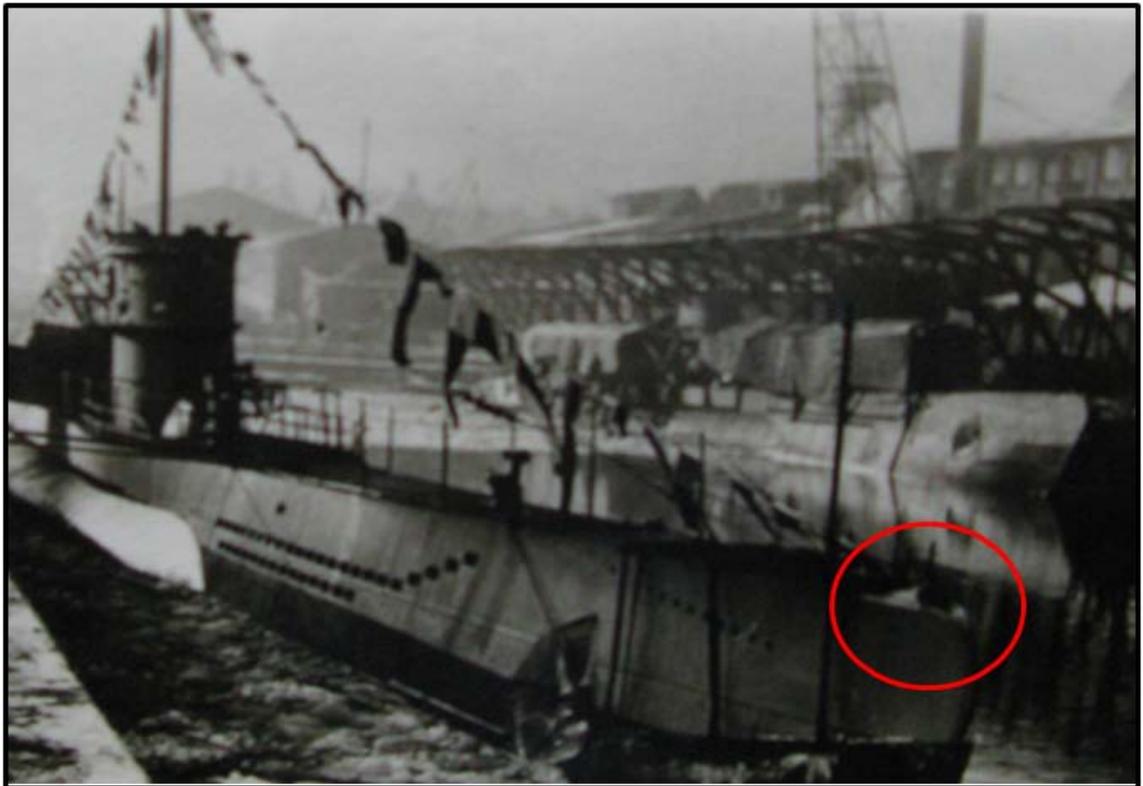


Figure 1.82. Diagram of the wreck of (U441) and its key features as surveyed and described in the text above. (All images from Odyssey International ROV tapes, except line diagram, adapted from Köhl & Niestlé, 1994, 59).

### **The identification of (*U441*)**

As shown in the cases of (*U984*) and (*U988*), there are few candidates for U-boats which operated in the English Channel during the first phase of the Inshore Campaign which did not return and have not either been identified elsewhere or been accredited as “A” grade losses. Assuming the above cases are correct, then by a process of elimination this site cannot be any other than (*U441*). Nevertheless this assertion has been rigorously checked to ensure that all of the known details of *U441*'s last movements coalesce with the attack on this site and that archaeologically the wreck does not throw up any surprises.



*Figure 1.83. Commissioning photo of U441 showing the U-boat was built with the early design of towing eye. (Uboot Archiv).*

Through radio intelligence it was known to the allies that *U441* left base for operations in the English Channel on 6 June 1944(NA HW18/396). From four radio messages sent to the U-boat, OIC tracked *U441* under the Bigram code “WV” into its operational area, north of the Baie de Seine and presumed it had arrived there around 14 June (NA ADM223/196, 141351B). Since there were no radio transmissions from *U441* after it left base, it was as difficult for BdU and OIC to know what really happened to this boat as it is for historians today.

Three radio messages transmitted by BdU on the 21 June reveal that *U441* was fitted with a rod antenna (for submerged radio transmissions) along with *U621*. Both boats were ordered to use this equipment to send situation reports from their operational areas, as was the conventionally-

equipped *U764*. Neither *U764* nor *U441* did send reports. Because of this, OIC stated through the “H” Series that both U-boats having “failed to report as ordered will not be mentioned until they comply” (NA ADM223/196, 221346B). In fact OIC later noted that *U764* had returned from patrol (NA ADM223/196, 231347B), no further mention of *U441* is made and it must have been presumed destroyed. BdU tracked *U441* beginning its return from its operational area on 19 June and when it failed to arrive, removed it from the plot on 8 July (NARA Microfilmed Records Roll No. 4065 PG30349 – 30350).

From an intelligence standpoint, what this means is that there is no hard positional evidence at all pointing to *U441* whilst it was at sea. Therefore it could have been sunk on any day from 6 June onwards into early July, although it was expected to return in the last week of June and was ordered into Brest as a return base (NA HW18/396). But as is seen in the case of *U764*, just because it did not respond to an order to transmit a situation report, does not automatically mean it was already destroyed. This lack of intelligence evidence naturally made the actual loss of *U441* difficult to assess during the war and as a weak case, it has not surprisingly been subject to reassessment subsequently, but again, based on conjecture, not proof.

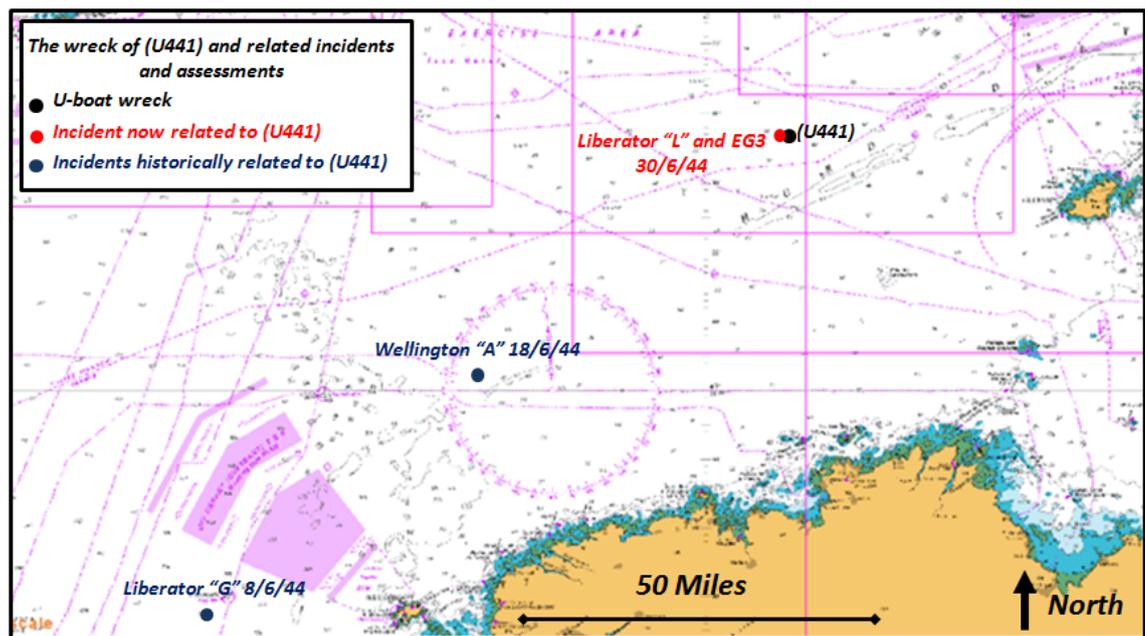


Figure 1.84. Map depicting the locations of the wreck of (*U441*) also showing related attacks and historic assessments. (Innes McCartney based on Admiralty Chart No. 2675).

Figure 1.84 shows the assessed attacks which have become associated with the loss of *U441*. During the war and in the immediate post-war period the AUD concluded that the attack by Wellington “A” 304 Squadron (Polish) had destroyed *U441* while it was on its return passage from the Channel (NA ADM199/1789 No. 508). This attack was graded “B” Probably Sunk and the assessment reads as a plausible attack (NA ADM199/1786, AUD 1079/44), although NHB

later noted that it contained “certain inconsistencies and some dubious observations” (NHB FDS 475/97).

However, in 1997 the NHB and Axel Niestlé erroneously reassessed the loss of *U1191* in the Channel (NHB FDS475/97, Niestlé 1998, 98), challenging a “B” grade attack which proved to be correct when the wreck was identified by the author in 1999 (see Chapter Nine). While Niestlé could find no plausible explanation for its loss, NHB concluded that Wellington “A” had sunk *U1191*, not *U441*. However Niestlé had looked at this attack and concluded it was directed against a non-sub target, possibly a whale (Niestlé 1998, 65).

As a result, in 1997, the 18 June attack was no longer thought to have sunk *U441*. Both the NHB and Niestlé then concluded that *U441* had been sunk on 8 June 1944 by Liberator “G” of 224 Squadron (NHB FDS 475/97, Niestlé 1998, 65) in an attack which had been assessed by AUD as “B” and originally appended to the loss of *U629* (NA ADM199/1789 No.496). In this very detailed attack assessment the aircraft witnessed the U-boat actually sinking and exchanged gunfire with it (NA ADM199/1786, AUD1033/44) (see Figure 1.84 for the location of this attack).

In fact the NHB had come to realise from German records that it seemed likely *U629* had been sunk a day previously, leaving the very viable 8 June attack without a candidate (NHB FDS475/97). *U441* was a very plausible choice to fill the gap bearing in mind nothing is known of its movements after 6 June. This is where contemporary thinking has recorded *U441* being thought lost until the Odyssey International ROV tapes were reviewed by the author in the summer of 2012 as a part of the research into this thesis.

Figure 1.84 shows the location where (*U441*) lies. The GIS database shows that the attack of 30 June, next to the wreck is almost an exact match and there can be no doubt that it was responsible for the sinking of the U-boat. The incident which claimed the U-boat was actually a combination of air and surface attacks (NA ADM199/1786, AUD 1180/44 & AUD 1302/44). Liberator “L” of 224 Squadron initially detected the contact at 01:15 hours by radar. It made a visual check and attacked a snorkel and periscope by eye, releasing seven depth-charges. The U-boat was seen to be heading 220 degrees, towards Brest. The immediate result was air bubbles and a spreading oil slick.

The Third Escort Group of specialist ASW ships, HMSs *Essington*, *Dommett*, *Duckworth* and *Cooke* were vectored to the oil slick and depth-charged a contact on the bottom. The contact was almost certainly the U-boat affecting repairs as hammering was heard coming from it. The subsequent depth-charge attacks led to the target being considered destroyed by 15:42 hours with samples of oil, chocolate and dried egg tins recovered from the sea. In the absence of

definite proof of destruction, this action was classified “B” by AUD and was appended to the destruction of *U988* (NA ADM199/1789 No. 516).

It seems therefore that *U441* did actually carry out a full operational patrol, probably in its allocated area. For reasons which are not known, but probably related to equipment failure it did not respond to its orders to send a situation report. This is not unusual because as we have seen, neither did *U764*. Although not uncommon, it is more difficult to explain why the U-boat was late in returning. As shown above, BdU began to track its return from the Baie de Seine on the 19<sup>th</sup> and expected it to enter port around the 24<sup>th</sup>. It is likely we will never know why this was the case.

In archaeological terms, *U984* and *U441* were the first two U-boats in the base of Brest to be fitted with the snorkel. The installation on *U441* was fitted between 15 March and 20 April 1944 (Neitzel 1991, 220). These dates show that it was one of the earliest installations. Like *U984*, *U441* would have been fitted with the early pulley-wheel elevator. This is clearly represented on the wreck, finally eliminating any possibility that this could be the wreck of *U988*, which as a fresh boat from Germany would have received the piston elevator. As seen above, a piston elevator is clearly visible on the wreck of (*U988*). The presence of a towing eye in the photographic record and on the wreck is also worthy of note in making a case for identity of this wreck (see the feature circled in Figure 1.83 and on the wreck in Image B of Figure 1.82).

It is not within the scope of this thesis to reassess historical U-boat losses which do not specifically relate to the archaeology under discussion. Nevertheless it should be noted that subsequent to a telephone conversation with Axel Niestlé on 4 June 2012 the attack of the 8 June 1944, which was thought to have claimed *U441* could equally have claimed *U740*; a U-boat loss with an equally mysterious provenance to *U441*. This was considered a possibility as early as 1998 (Niestlé 1998, 232-233) but in the light of the identification of (*U441*), now seems more likely.

## **10.5: Summary and Conclusions – What this Case Study Reveals**

This Case Study has looked exclusively at the mystery losses in the Study Area during the first phase of the Inshore Campaign. This historical period can be differentiated from the second phase primarily due to bombing in France leading to the higher degree of radio traffic to and from BdU which led to a far more accurate intelligence picture of U-boat movements than that available in the second phase, during which radio traffic was kept to a minimum.

Aside from messages from *U988* (NA HW18/365), no messages were transmitted from any of the three U-boats while at sea. Nevertheless OIC was able to track each case with surprising accuracy, only losing sight of *U441* when it failed to respond to orders. The reason for this is the volume of radio traffic being transmitted by BdU in form of orders to U-boats and in general situation reports. To see how a decline in radio traffic directly impacts the ability to assess U-boat movements and losses, compare this chapter with the following covering 1945 where the challenge of understanding U-boat movements should not be underestimated.

The extent to which OIC was familiar with the U-boat operations of this period is best evidenced in the case of (*U988*). It will be recalled that OIC tracked the U-boat to the position where it was destroyed. In the “H” Series U-boat estimate of 3 July 1944 where this was reported, OIC added the comment that “the U-boat is behaving in a very strange manner and was well outside his operating area” (NA ADM 223/198 031418B/July). Figure 1.79 shows that the U-boat was nowhere near the shipping lanes. But this assertive comment coming from OIC is clearly based on much experience of tracking U-boat movements and behaviours during this period and displays the type of confidence which only comes with truly knowing the purposes of the enemy. By October 1944 such comments no longer appear in the pages of the “H” Series as the U-boats’ movements have become much more mysterious as the intelligence picture became increasingly more difficult to read.

The main findings and concepts investigated in this Case Study are detailed as follows:

### **The Archaeology of the U-boat Wrecks**

1. All three of the sites investigated were able to yield vital evidence which was crucial to determining the identity of each wreck. Importantly in two of the three cases, the archaeology present, in the form of the pulley-wheel snorkel elevator clearly denotes them as having been U-boats based in France when they were sunk. In the case of (*U984*) this evidence alone has been strong enough to identify the wreck in the absence of a viable attack report at the wreck’s position;
2. As with the other mystery cases under investigation in this thesis, this Case Study shows that it is the recording in detail of the features of the outfits of each boat which are so important to being able to identify them. In this case, survey by video camera equipped diver or ROV has been essential;
3. Although none of the three sites has been identified for absolute certain, these three U-boat wrecks represent just about as close as it is possible to get to an accurate outcome using the archaeology of the sites in combination with the historical text. In each case, the scenarios which have been developed are far more robust than what existed prior to the wrecks being investigated and interpreted by the author;

4. The archaeology on all three sites points to the wrecks having been depth-charged. In two instances this has been corroborated by the historical text;
5. The photographic record of *U984* reveals that the U-boat had a circular plate forward of the conning tower. This feature can clearly be seen on the wreck of (*U984*), which adds to the evidence supporting the case made in this thesis. Similarly the photographic record also shows a towing eye on *U441*, which is seen archaeologically on the wreck of (*U441*);

### **The Historical text**

1. As mentioned above the historical text is no richer in this entire thesis than in this Case Study. The example of the comments about *U988*'s seemingly erratic behaviour serve to illustrate this point;
2. While the U-boats in this Case Study were on their last patrols, the Allies decrypted five messages to or about *U441*, (six to or about *U988* and four to or about *U984*) which included data regarding where the U-boat was operating, making the tracking of these boats comparatively easy (NA HW18/396, HW18/365. HW18/362). Compare this to the single transmissions to each boat in Chapter 12;
3. Despite such a rich intelligence picture, the losses of each of these U-boats were not correctly established during the war nor at any time afterwards, until the wrecks were surveyed;
4. The historical text which forms the GIS database of ASW attacks used in this thesis did provide two exact matches to the location of two of the wrecks, (*U988*) and (*U441*). In these two instances the historical text was able provide dating evidence to the attacks which helped in deriving their probable identities. One (*U441*) had been graded "B" Probably Sunk, while the attack which sunk (*U988*) was graded "I – target not a submarine". There appears to be no surviving historical text to explain how (*U984*) was destroyed;
5. The reassessments of the loss of *U441* which took place after the war reveal that unless there is good new evidence to carry out a reassessment, the results cannot really be justified. In all three of these cases, new evidence in the shape of the wrecks being located has been essential in advancing our knowledge of U-boat losses beyond what the historical text alone is capable of delivering;
6. The records of U-boat losses have been reshuffled as a result of the discovery of these wrecks. It remains to be seen whether, outside the three cases in this Case Study, the ripple effect will have enhanced the accuracy of other records. Clearly in the case of (*U988*), which has been replaced by (*U441*), the loop has been shut. As seen above the original attack attributed to *U984* was probably not a U-boat. But most intriguingly it

would be interesting to know whether the wreck of *U740* may one day be located at the 8 June attack site shown in Figure 1.84

7. Finally, it should be noted that the orientation on the seabed of the wrecks of (*U984*) and (*U988*) is not currently known. This is because they lie on the French side of the English Channel, where the wrecks are not currently surveyed to same standard as on the British side. The orientation of the wreck of (*U441*) known from the Hydrographic wrecks database record (No. 23021) exactly matches the direction the U-boat was seen heading in when it was attacked. This is important because it confirms the U-boat was homeward bound. The value of good survey data should never be underestimated in these cases.

## Chapter Eleven: Mystery U-Boat Case Study: *U480* and (*U1208*)

### 11.1: Introduction

This Case Study examines two U-boat wrecks which lie over 200 nautical miles apart, but are historically connected because of the ways and circumstances in which they were sunk in February 1945. *U480* was listed post-war as being destroyed where (*U1208*) is actually situated. The author identified *U480* in 1998 at the location shown below and returned in 2008 whilst making a television documentary in which it was featured. The site of (*U1208*) was surveyed by the author in August in 2004. Both wrecks are of the very common Type VIIC design, but *U480* had unique characteristics which (*U1208*) does not, making the latter more difficult to ascribe a definite identity to. Figure 1.85 shows the positions of both wrecks within the Study Area.

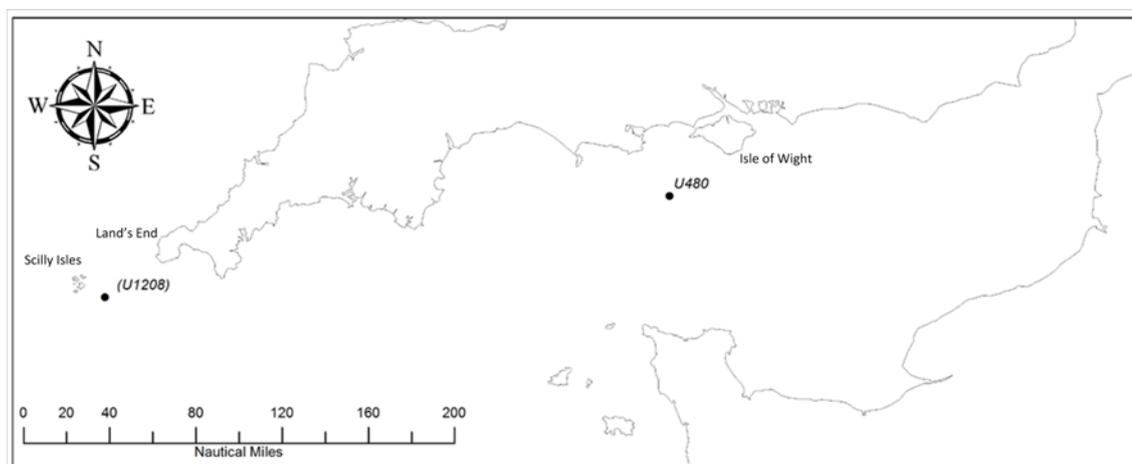


Figure 1.85. Map showing the locations of the wrecks of *U480* and (*U1208*) (Innes McCartney).

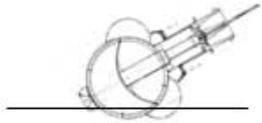
### 11.2: The Identification of *U480*

Hydrographic Record No. 19656      Position: 50 22.139N;001 44.243W      Depth: 60m

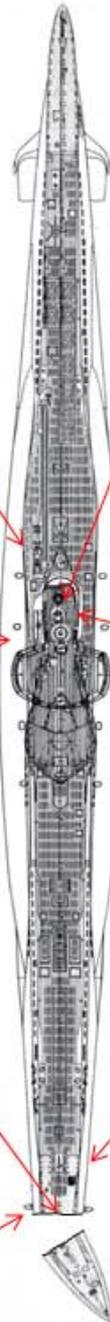
The wreck site now called *U480* was found in the early 1990s and although it had been visited by divers, its identity, if known, was not in the public domain (Hydrographic Record No. 19656). In June 1998 it was surveyed by the author and immediately, became a key target of study because the wreck lay in a location where there were no listed U-boat losses from either world war.

Figure 1.86 depicts the main features wreck of *U480* as it lies on the seabed. In this particular instance the U-boat is listing to the starboard side. The seabed is of stone, covered in fine mud and the underwater visibility on site can be very poor. Nevertheless, the conditions were good enough on both visits to the site to record its key features, which are described below:

**Name:** U480 **Posn:** 50 22.139N;001 44.243W **Depth:** 60m  
**Date of Loss:** February 1945 **How Sunk:** Mined  
**Date of Survey:** June 1998



Wreck leans 50° to starboard



40m

Figure 1.86. Diagram depicting the wreck of U480 and its key features as listed below (Innes McCartney, except images B, C, G and H Mallinson Sadler Productions and line diagram adapted by the author from Köhl & Niestlé, 1994, 59).

- Image A shows *U480's* snorkel head. It is of an earlier ball-float design which does not seem to be anti-radar coated. The remains of the circular dipole radar warning aerial can be seen on the top. The snorkel is in its retracted position on the port side of the foredeck. The join to the engine trunk is of the very late-war heel connector design (see Figures 1.88 and 1.91);
- Image B depicts the sky observation periscope with its glass lens shattered, revealing the internal mechanism. The shattered lens can be interpreted as being the result of shock from an underwater explosion;
- Image C shows the rubber Alberich coating which was the major clue to identifying this wreck. The outer surfaces of the entire submarine are coated in it. This photo shows part of an entire panel still glued in position on the port side ballast tank;
- Image D depicts the radio loop situated in the conning tower bridge. Interestingly for a U-boat operating in 1945, one may expect to see rod antenna fitting which was situated within the middle of the loop, but it is absent in this case;
- Image E shows the stern end of the pressure hull showing the circular hole through the stern torpedo tube would usually be mounted. Its absence is clearly due to this part of the wreck being heavily damaged;
- Image F depicts the mounting for the 37mm flak gun which now lies on the seabed in the usual position within the debris pile of material that falls off these wrecks to the side on which they are leaning. Interestingly, the entire horseshoe-shaped shroud of the tower lies in one piece on the seabed forward of this gun mount;
- Image G shows the port side propeller which has been bent upwards and away from the source of the explosion which sunk the submarine;
- Image H shows the author examining the blast hole in the starboard side of the pressure hull at its sternmost point. The thick steel of the pressure hull has burst inwards, tearing open a hole around 30cm wide. There is little other obvious battle damage on the wreck. A hole this size would quickly overwhelm a submerged U-boat.

In 2008, during the making of a television documentary, the site was surveyed using high resolution digital side scan sonar and the results are depicted in Figure 1.87 below. The side scan image reveals the entire submarine at the attitude seen by diving and shows some of its key features quite clearly.

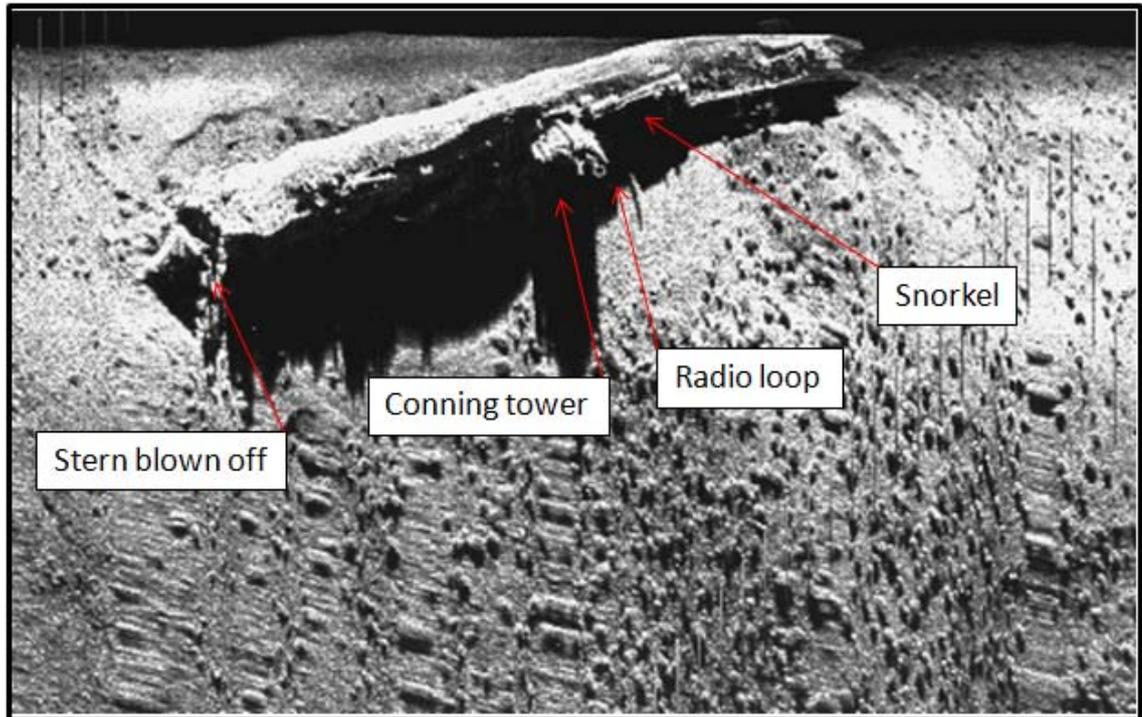


Figure 1.87. Side scan trace of U480 taken in summer 2008. The submarine can be seen leaning over on its starboard side. On this pass the side scan fish was at just the right altitude to capture some of the finer features around the conning tower (Innes McCartney/Mallinson Sadler Productions).

### **Alberich identifies U480**

The design similarities between the U-boats which fought the Inshore Campaign make it a challenge to tell one from another, especially in the absence of any relevant historical text. Although there are means of doing so (for example see *U1191* in Chapter Nine), it is rare to be able to pin down with absolute certainty the specific identity of a mystery WW2-era U-boat from this very late-war period.

In this case, however, the task was a simple one because of the Alberich coating. Alberich was, in Wagnerian legend, a dwarf with a helm of invisibility. The Alberich system was designed as a defence against sonar. It was made up of two 2mm plies of black rubber, with the inner ply being punched with holes in a predetermined pattern dependent on the thickness of steel to which it was bonded. The system served to absorb sound pulses from the same range of frequencies as sonar and it was known to be up to 100% effective in its protection. However, its application came at the very end of the war and only seven operational type VIIC U-boats ever received its benefits. They were: *U470*, *U480*, *U485*, *U486*, *U1105*, *U1106* and *U1107* (Niestlé 1994, 448).

Five of these U-boats were recorded as being sunk in action but only *U480* was ordered to operate in the English Channel (NA HW18/368) in the area where it was identified and did not

return, so the wreck had to be *U480*, regardless of the fact it was officially recorded as being sunk elsewhere.



*Figure 1.88. U480 returning to Norway after its second patrol. Note that all the steel surfaces of the submarine are coated in black Alberich rubber, hence the leaping black panther emblem on the conning tower. There is no flange arrangement for the snorkel on the port side of the conning tower, indicating a later heel connector, as corroborated by the archaeology on the wreck site (see also Figure 1.88) (Mallinson Sadler Productions).*

From an archaeological perspective the Alberich coating may help to explain why some of the features on the wreck seem to be somewhat out of date for a 1945 loss. For example, the absence of the bow life raft containers (see *U1208*) below), rod antenna and anti-radar coating on the snorkel head (see Figure 1.86), which are all upgrades one may look for on such a late-war loss. It is not clear, because the German records are incomplete, whether the upgrades simply were not made due to logistical factors, or because of the problems of bonding Alberich to the surfaces of some of such items. For instance, it is known from the monthly Anti-U-boat reports from 1945 (Anti-U-boat Division 1945c, 25) that Alberich was not bonded to hatch covers, presumably because it was difficult to bond the rubber sheets to a dome-shaped surface.

A simple archaeological test of the efficiency of Alberich can be seen when trying to locate this wreck today. Whereas the side scan's high frequency can pick out the details of the wreck very clearly (see Figure 1.87), this is not the case with the traditional fish-finder type bottom sounder featured on most dive boats, which has a lower frequency closer to that of WW2-era sonar. In this instance the wreck can only be seen as a high point in the seabed and does not give any of the high colour readings associated with metal wrecks, nor the double line effect often seen on

submarine wrecks as the sound bounces off the inner and outer portions of the pressure hull. The Alberich coating is nearly as efficient today as when first applied.

### **11.3: The Sinking of *U480* and its Historical Context**

*U480* was listed as a “B” Probably Sunk in the post war loss register. To better understand why this happened it is necessary to firstly, explain what really occurred when the U-boat was sunk then secondly, look at what was thought to have happened at the time. Finally this leads to an examination of the wreck site of (*U1208*).

#### **The destruction of *U480***

A 1998 search through the published lists of U-boat losses and the Proceedings of the Anti U-boat Assessment Committee (NA, ADM 199/1786) yielded no information as to why *U480* was where it was. The loss of *U480* could not be explained as an accidental loss, nor diving accident because it had clearly suffered explosive damage inflicted on it from an external source (see Figure 1.86 Image H), yet no obvious explanation for this could be found. So the author visited the Naval Historical Branch of the Ministry of Defence, which was at the time based in London and reported the find.

Some months later the Branch released a report reassessing the loss of *U480* (NHB, FDSN1/98), stating that it had been sunk in the *Brazier* D2 minefield around 24<sup>th</sup> February 1945. The source of information relating to minefields was the Naval Staff History of British Mining Operations 1939-45 (BR 1736 (56) (1) and (2)), which was still then not open to the public. It was not made available to the author until 2005. Its importance in this case (and in that of the North Cornwall U-boats (Chapter 12) and *U275*, see Chapter Eight) is crucial in understanding the intelligence background to the loss of *U480* and is explained in detail below.

*U480* was on its third operational patrol when it was destroyed. Its first patrol had been a transit to Brest from Arendal, during which it had shot down an Allied aircraft. Its second patrol, which began on 3 August 1944 from Brest and ended on 4 October 1944 in Norway was focused on the central English Channel (Wynn 1998a, 316). This patrol turned out to be one of the most successful of the entire Inshore Campaign, earning the commander the Knight’s Cross. Between 21<sup>st</sup> and 25<sup>th</sup> August *U480* sank four ships, the corvette HMCS *Alberni*, the minesweeper HMS *Loyalty*, the SS *Orminster* and SS *Fort Yale* (Rohwer 1999, 184).

The losses were in all the Spout area with *U480* attacking targets of opportunity as they passed by and returning to the seabed, manoeuvring using the tide and snorkelling only when safe to do so, but remaining in proximity of the marker buoys which delineated the Spout channel. In the

estimation of the commander, Olzs. Hans-Joachim Förster, the Alberich coating successfully protected the U-boat from the seven hour counter-attack which developed after sinking the *Orminster* (Ministry of Defence (Navy) 1992, 78).

*U480*'s final patrol began when it left Trondheim on 6 January 1945. As per operating procedure at this time, *U480* seems to have made for a holding area to the west of Ireland while waiting for instructions to enter the Channel (Ministry of Defence (Navy) 1992, 89). The order to do so was transmitted on 19<sup>th</sup> January. Decrypted by Bletchley Park it states that Förster was to "go to your old operational area. Reckon here with about three other boats" (NA HW18/368). This broadly coincides with the position given for *U480* in the last surviving pages of the BdU KTB. On 15<sup>th</sup> January the BdU KTB shows *U480* was estimated to be in Grid Square AM33, northwest of Scotland, on its way to the holding area (NARA Microfilmed Records Roll No. 4066. PG30362). Therefore it can be concluded that *U480* received the 19<sup>th</sup> January order to return to the Spout and began to travel to that area. However, unknown to BdU the situation in the Spout had changed considerably since *U480* was last there.

Even before *U480* had set out on its successful second patrol, plans were afoot between the AUD and the Operations Division (Mines) to deploy deep minefields in the Spout area. This was developed as a direct countermeasure to the tactics used by the U-boats of remaining bottomed when not targeting shipping. (NA ADM 1/16500). The first of these minefields, Operation *Pasture*, was laid in the last two weeks of August 1944, at the same time as *U480* was sinking ships in the same area (Ministry of Defence BR1736(56)(1), 240-4).

U-boat operations continued in the Channel in the following months. In December another Alberich-equipped U-boat, *U486* carried out a noticeably destructive patrol off Cherbourg which accounted for two frigates, a transport and the troopship SS *Leopoldville*, which sank with heavy loss of life. As a result of this, at a meeting held in the Admiralty on 29<sup>th</sup> December, Operation *Brazier* was launched. While the marker buoys for the Spout channel were to be left in place, shipping was to be rerouted when necessary, away from any U-boat activity. The buoys would act as focal points, but would be surrounded by deep trap minefields (Ministry of Defence BR1736(56)(1), 244-248). The *Brazier* minefields were laid from 6 January to 3 February 1945, with D2 being completed on 27<sup>th</sup> January, just as *U480* was entering the area.

Figure 1.89 shows the location of the H2 buoy, which was the focal point for shipping coming up the Spout from Cherbourg and all shipping entering and leaving the western mouth of the Solent. The *Brazier* minefield D was laid around this buoy. Clearly *U480* was destroyed in this minefield as its position coincides exactly with the D2 field. It had returned to its old operational area, as ordered and probably planned to remain bottomed around the H2 buoy only to be sunk probably as soon as it arrived, around the first week of February 1945.

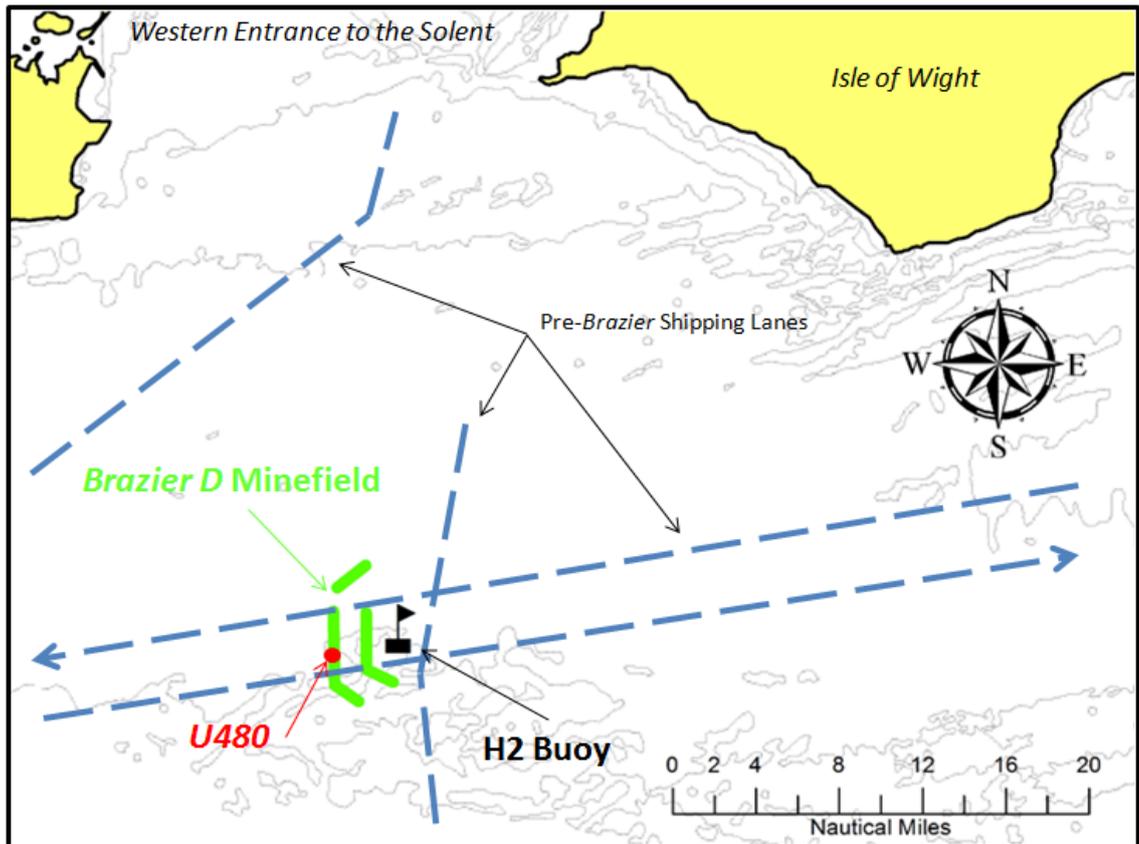


Figure 1.89. The Brazier D minefield, H2 buoy and the wreck of U480 in the second portion (or D2) field. This figure also shows the shipping lanes around which the H2 buoy was a focal point (Innes McCartney).

The *Brazier* mines were laid to rise 30 feet from the seabed and were fitted with a hydrostatic switch which made them inert if they floated to the surface. In this way it was safe for shipping to pass over the fields. The Mark XVII mine used in the *Brazier* fields is similar to the type used in the North Cornwall Minefield (see Chapter 12, Figure 1.95). It was designed as an anti-shipping mine and its devastating potential against submarines can be clearly seen on the North Cornwall U-boat wrecks (see Chapter 12, Figures 1.94, 1.95, 1.96 and 1.98), so it is surprising and as yet unexplained, why *U480* suffered comparatively little damage. Currently, a partial detonation of a mine seems the most plausible explanation.

So *U480* met its end in a minefield, unnoticed by witnesses. As a lost U-boat, its destruction was found an alternative, but initially plausible explanation in the Allied list of losses compiled at the end of the war. The irony is that on the scantest of evidence the Tracking Room had accurately tracked *U480* to the area where it was actually destroyed, see below.

### **The Allied estimation of the destruction of *U480***

Analysing the flow of U-boats to and from British coastal waters during the latter phase of the Inshore Campaign was increasingly difficult for the Tracking Room. Radio transmissions from U-boats, which were so useful for their DF value, let alone the information they contained if

decrypted, had virtually stopped. Sightings of U-boats had become much rarer because the snorkel meant the boats could operate permanently submerged. In some cases the only useful tracking data to emerge was when a U-boat attacked shipping or was stumbled upon by an ASW element by accident.

Just how difficult the job of tracking the enemy had become can be shown by the example of, signal No. 281552N of the OIC "H" Series sent on 28<sup>th</sup> April 1945 (NA, ADM223/309) which states:

"From Admiralty.

On 26<sup>th</sup> April "Channel U/Boats" were warned not to interfere with Spanish ship TORMES on passage to Rouen.

COMMENT: Confirms that Germans expect some U/Boats to be in the English Channel."

The comment clearly demonstrates that this brief operational transmission is being used as the basis of evidence to support the view that U-boats might be in the Channel. In fact the detailed "Channel U-boat Estimate" and the broader "U-boat Serial" of daily U-boat positions was not promulgated via the "H" Series after September 1944. Although we can now never know for certain why OIC stopped providing U-boat positions lists through the "H" Series at that time, it is the estimation of the author that they probably no longer trusted their overall accuracy enough to routinely send the entire positional series to operational units. Instead they focused on specific verifiable pieces of evidence from DF and Special Intelligence.

Nevertheless by using dead reckoning in the absence of any other evidence (Syrett 2002, 18, 316), the Tracking Room maintained a record of anticipated U-boat positions. It was this record to which the AUD referred when routinely carrying out assessments of attacks on U-boats. One such assessment (NA ADM199/1786 AUD 437/45) ultimately became associated with the destruction of *U480* and it is important to see how this came about. Aside from the aforementioned assessment, a narrative of the sinking of a U-boat at this instance is also included in the Monthly Antisubmarine Report for March (Anti-U-Boat Division 1945b, 10).

On 22<sup>nd</sup> February, two ships were torpedoed off Falmouth, including the corvette HMCS *Trentonian*, which later sunk. An ASW operation was mounted in the aftermath of this attack which centred primarily on four of the ships of the 3<sup>rd</sup> Escort Group, HMSs *Duckworth*, *Rowley*, *Cooke* and *Dommett*. Although a target was located and attacked by *Rowley* and *Dommett* later that day it was thought at the time and later assessed as escaping with probably slight damage. Nevertheless oil, a loaf of bread and interestingly rubber sheeting "in its raw state" (NA

ADM199/1786 AUD 437/45) were recovered from the sea. The culprit was actually *U1004* which survived its patrol, radioing details of its attacks whilst returning home on 9 March (NA ADM223/306 101639A).

Of course this was unknown to the 3<sup>rd</sup> Escort Group which maintained the search for the errant U-boat. At dawn on 24<sup>th</sup> the SS *Oriskany* was sunk in convoy off Land's End and the 3<sup>rd</sup> Escort Group was vectored into the area to locate the U-boat which was thought to be the same one attacked two days earlier. Contact was made by sonar at 10:30 and the U-boat was pursued until 12:55 when a final lethal depth-charge attack by HMS *Duckworth* destroyed the target.

“Tin Opening”, (which was the process by which bottomed U-boats were blasted open in the hope of releasing material which would float to the surface) continued until dusk and items recovered from the sea included German food tins, a Kriegsmarine forage cap, loaves of brown bread and “some mysterious fragments of a plastic substance”. The assessment made was a “B” Probably Sunk, based on HMS *Duckworth's* attack which had initially bottomed the target (NA ADM199/1786 AUD 437/45). The “B” letter grade is insightful, because the evidence recovered from the surface could have been ejected from the U-boat as a ruse. For an “A” grade sinking, survivors or human remains were the ideal evidence and were not present in this instance.

The problem for the Assessment Committee was not the attribution of a sinking but trying to find out the identity of the U-boat that was destroyed. The radio transmission sent to *U480* on 19<sup>th</sup> January (mentioned above) ordering it to steer to its old operational area was decrypted with no delay by Bletchley Park and promulgated by the OIC (under the bigram code “RJ”) through the “H” Series the following day (NA ADM 223/303 201933A). The Tracking Room then plotted the course of *U480* by dead reckoning into the central Channel area. On 8 February in “H” Series signal No. 081242A (NA ADM 223/304) recorded that *U480* was operating in the Channel.

With no evidence to mark its now known destruction in the *Brazier D* minefield, the Tracking Room had by 23<sup>rd</sup> February assumed *U480* was retiring and had plotted it as being 30 miles south west of the Scilly Isles (NA ADM223/305 231720A) and then must have plotted its course back to Norway. Quite how *U480* was finally attributed to the successful attack mentioned above is not clear, but the evidence shows that this did not occur until a raft of reassessments were carried out by the Admiralty straight after the war. So in the list of reassessments of November 1945 (NA ADM199/1786, Index pg 13), for the first time *U480* has been attributed to HMS *Duckworth's* attack, as a “B” sinking and remained as such when the first finalised list of U-boat losses was circulated in the Admiralty in 1946 (NA ADM199/1789).

Interestingly, the U-boat Situation report of week ending 26 February mentions the two pieces of rubber recovered during the ASW hunt after the loss of HMCS *Trentonian* and comments that “it is an interesting fact that the only U-boat known to be rubber covered was very probably in the area at the time” (Syrett 1998, 549). This statement is illuminating because it illustrates one of the limitations of Special Intelligence. While OIC knew about Alberich, they had no idea what it looked like. This is borne out by the report circulated in the Admiralty in 1944 (NA ADM1/16169) which shows an understandable lack of appreciation as to the real affects of Alberich on an operational U-boat.

The U-boat Situation report mentioned above shows that a connection had been made between *U480* and HMS *Duckworth*'s successful attack of the 24<sup>th</sup> although the rubber association was clearly flawed. At first sight it is difficult to see why this was not made official until nearly nine months later. However, as Niestlé (1998, 2) has pointed out, there was a rapid run-down of staff in the Admiralty, including the entire Assessment Committee as soon as the war ended. Even the Director of the AUD, Cmdr. Clarence Howard-Johnston was not permitted to continue post-war research after VJ day (Churchill Archives Centre *GBR/0014/HWJN*).

#### **11.4: The Wreck of (*U1208*)**

*Hydrographic Record No. 21809*      *Position: 49 51.820N;006 06.806W*      *Depth 81m*

The fact that a U-boat wreck existed at HMS *Duckworth*'s attack position was never really in doubt, having been confirmed as early as 1945 and having been occasionally surveyed right up until 1988 when HMS *Fox* reported that the wreck was definitely that of a submarine (Hydrographic Record No. 28109). After the identification of *U480* in 1998, the question arose as to which U-boat was actually sunk there. On 11 August 2004 the site was dived and recorded on video by the author and the findings are reported below.

Figure 1.90 depicts the key features of the wreck of (*U1208*) as it is today. In contrast to the wreck of *U480* this one leans to the port side. It has actually broken into two distinct halves forward of the conning tower. The forward portion of the wreck has rolled over until it is nearly completely on its side. The after section maintains a more normal lean of around 50 degrees. The site lies in a very tidal area and the seabed is consequently quite clean, again in contrast to the site of *U480*.

**Name:** (U1208) **Posn:** 49 51.820N;006 06.806W **Depth:** 81m  
**Date of Loss:** 24 February 1945 **How Sunk:** Escort Group  
**Date of Survey:** 11 August 2004

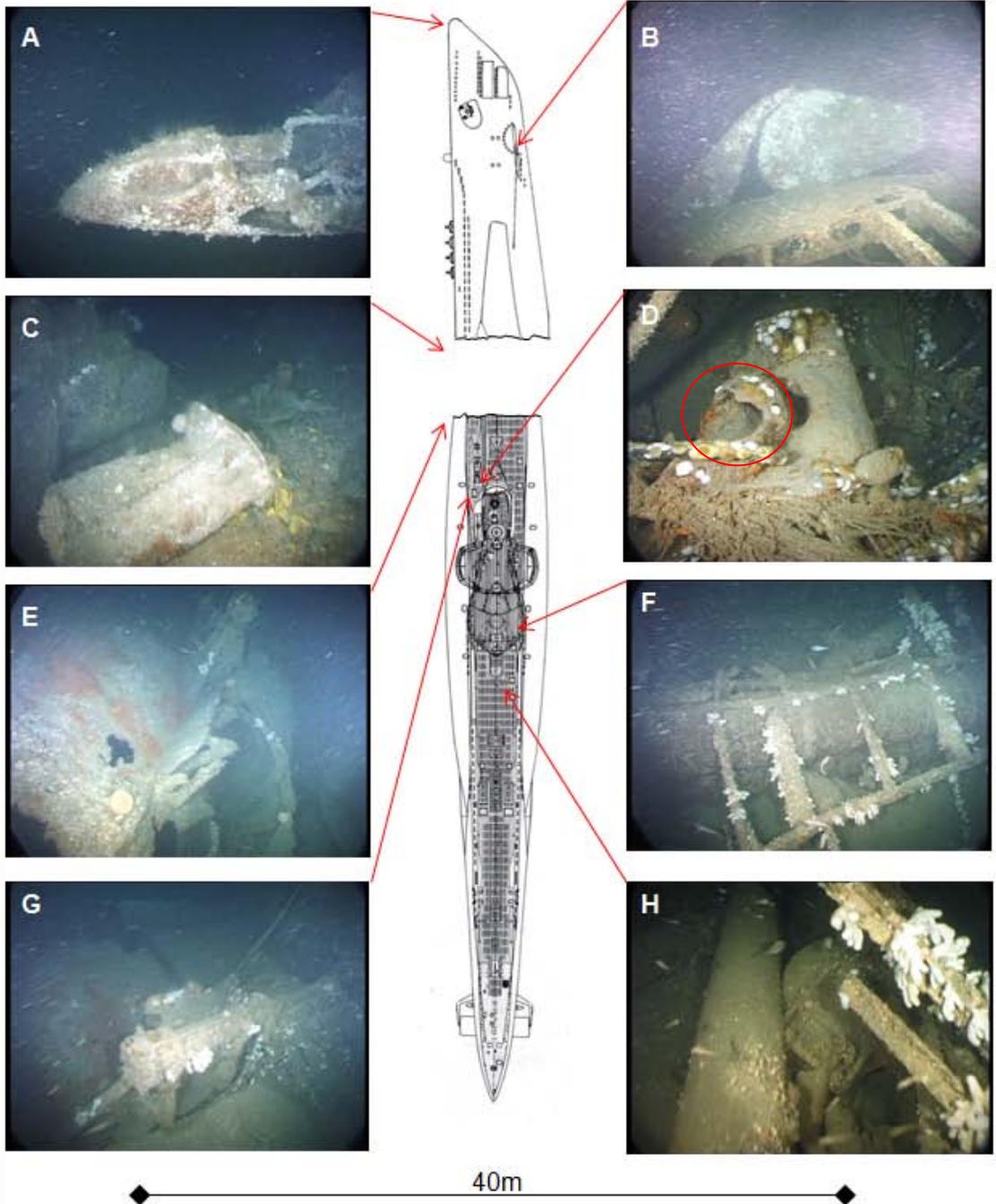
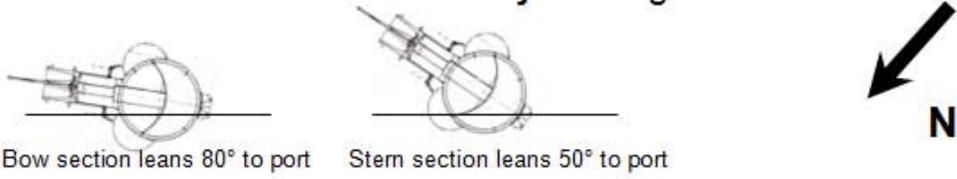


Figure 1.90. Diagram depicting the wreck of (U1208) and its key features as described in the text below (All images Innes McCartney except line diagram, adapted from Köhl & Niestlé, 1994, 59 and Westwood 1983, 33).

Visibility on the dive was in excess of 10 metres and the wreck was largely devoid of any net or fishing line. This is in contrast to the Atlas Survey of the site in 2008 which reported that the middle section was heavily netted (Niestlé 2011, 343). The key features recorded in 2004 are described below.

- Image A shows the bows of the wreck leaning on the port side. The bow is of the “Atlantic” type and is fitted with the late-war underwater refuelling slot and towing eye;
- Image B shows the port side forward hydroplane which is in neutral position, indicating possibly that, as the attackers anticipated the U-boat was drifting with the tide at the time it was destroyed (NA ADM199/1786 AUD 437/45);
- Image C shows a heavily distorted bow life raft container which now lies on the seabed. Only very late-war boats were equipped with these. The damage it has sustained is consistent with depth charging, possibly associated with the “tin opening” the wreck sustained after being sunk;
- Image D shows the heel connector for the snorkel mast. This is housed just inboard and underneath the piston shown in Image G. The damaged remains of the base of the snorkel mast (circled) can be seen still attached to the connector;
- Image E was taken at the point of the break in the hull. The view is facing aft and shows how the pressure hull and saddle tank have been cut right through. The forward end of the snorkel piston can be seen in the distance;
- Image F shows the main diesel air inlet pipe under the deck frames just aft of the conning tower. This pipe attached to both the snorkel and surface running air intake valves. The after part of the wreck that was filmed was seen to be in much better condition than the heavily damaged forward section;
- Image G shows the hydraulic elevator piston for the snorkel on the port side just forward of the conning tower, where it is located on all Type VIIC U-boats;
- Image H shows the galley hatch aft of the conning tower has been opened. This was probably caused by the constant detonations of depth-charges as the wreck was opened up and does not signify that an attempt to escape from the boat was made.

There is no doubt that the wreck is in two halves because of the “tin opening” which took place after it was sunk. In the estimation of the author, at some point the weight of the bows tore it free and unsupported by the main section of the wreck it rolled onto its side. This is, along with the wreck of *U678* (see Chapter Seven) the most extreme example of this practice in the Study Area.

All of the features which can be seen on the wreck are consistent with a very late-war, Norway or Germany based U-boat. Of particular note are the life raft containers and the later Type Two

snorkel mast. Figure 1.91 shows surrendered U-boats in 1945. The two most prominent are *U1058* (centre) and *U1109* (right), both of which display features associated with this period. Of particular note are the life raft containers on the port side bow area of both U-boats, which are the same as those on the wreck of (*U1208*). These were only fitted to U-boats in the second phase of the Inshore Campaign and therefore are not associated with U-boats lost in the Channel which had sailed from France immediately after D-Day. However, there are some subtle differences between each U-boat.

Although both have piston driven snorkel masts, *U1058* has the earlier flange join for the snorkel which can be seen mounted on the port side of the conning tower. *U1109* has the later heel joint which can only be distinguished in this photo because the deck has been cut differently to accommodate it. This is the arrangement present on both *U480* and (*U1208*). Another important difference is that in place of the long removed deck gun, *U1058* has been fitted with a Marcks life raft container. While *U1109* has had the space blanked with a grate. *U480* is similarly fitted and (*U1208*) is too damaged in that area to see which fitting it has.

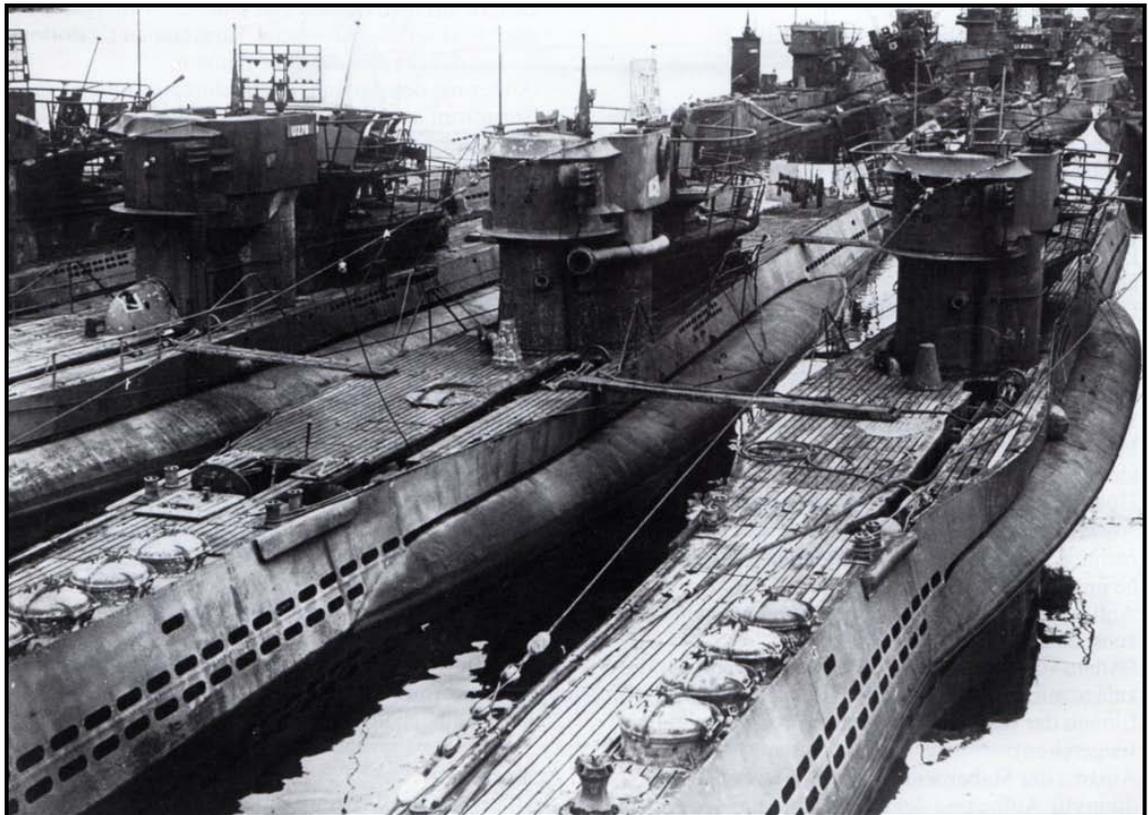


Figure 1.91. Photo showing the surrendered U-boats *U1058* (centre) and *U1109* (right) showing similar and differing late-war modifications (Köhl & Niestlé 1994, 34).

### **The identification of (*U1208*)**

Prior to surveying the site in 2004, the author in conjunction with Axel Niestlé had suggested that the wreck might be *U1208* (McCartney 2002, 21). The survey of the site carried out in 2004

revealed no features that were then known to be in any way contradictory to this theory. Niestlé (2011, 345) reached the same conclusion and was certain without doubt that this wreck is *U1208*. Nevertheless, without hard physical evidence there are very good reasons to be cautious about attributing a definite identity to this wreck. In order to understand why, it is necessary to look at the last patrol of *U1208* in the light of the very vague historical evidence. Moreover at least two other explanations have been given to its loss in the past.

*U1208* set sail from Kristiansand on 14<sup>th</sup> January and after reporting it had reached its holding area on the 31<sup>st</sup>, it was ordered to patrol the western exit of the Channel (Niestlé 2011, 343-5). The only specific positional data relating to *U1208* (bigram code “TU”), as promulgated by the OIC through the “H” Series, came five days later and stated that it was in the vague location of 51 00N;12 00W (NA ADM223/304, 041314A). From this point onward, all estimations as to the location of *U1208* are only speculation.

“H” Series signal No 09033A (NA ADM223/304) of 9 February recorded that BdU had given all U-boats in the area, freedom of operation in the shipping lane between Land’s End and Brighton, if they could not find targets in their allotted billet. It is only assumption that *U1208* picked up this signal and closed to the Land’s End area, but if it did then it would explain why it is found here and not further west, where it had originally been ordered to patrol.

Nevertheless, the first full list of losses circulated in 1946 attributed the destruction of *U1208* to a hedgehog attack by HMS *Amethyst* in a counterattack subsequent to the torpedoing of HMS *Vervain* south of Ireland on 20 February. From the items plucked from the sea, the evidence of the destruction of a U-boat was unequivocal and the attack was assessed as “A” Known Sunk (NA ADM199/1786, AUD 480/45) at the time; with the association made with *U1208* after the war. It seems this association was made purely because from the scant available evidence it was estimated to be the nearest known U-boat to the attack.

As a post-war association, we should not be surprised to discover that this came under suspicion later. In fact in 1986, following an investigation by Lieut. Cmdr. Harries RN (retd.), a jacket recovered from the sea was identified as coming from a crewmember of *U1276* which had also gone missing at that time. Its sinking attribution to an air attack had long been considered suspicions by the Air Historical Branch (NHB, FDS 349/86).

This left *U1208* without an explanation for its loss. However in 1991 Niestlé reviewed the loss of *U327* (see Chapter 13) on 27 February to an attack by the 2<sup>nd</sup> Escort Group at 49 46N; 05 47W and concluded that *U327* could not have been present as it was ordered into the Irish Sea. This attack was then credited to *U1208* (Niestlé 1994, 235 and Naval Historical Branch, FDS 476/97). The attack in question was assessed at the time as “B” Probably Sunk only, although

the evidence recovered from the sea seems to suggest a kill was likely (NA ADM199/1786, AUD 627/45).

However, a search of the Hydrographic Office database by the author in 2000, 2011 and again in 2012 showed no known submarine wreck at the position given. Because of this, the author concluded in 2000 that *U1208* may be at the ex-*U480* position. As mentioned above, both the author and Niestlé have concluded that there is nothing present on the wreck to contradict this theory. It later transpired that in 2009 Odyssey Marine Exploration had located a U-boat where *U327* was listed as destroyed. The identity of the wreck is now thought to be (*U1279*) (see Chapter 13).

However as the examples above have shown, the fates of several U-boats listed as lost in this period should be treated with suspicion and there still is no loss explanation at all for *U927*. So unless *bona fide* evidence from this site emerges in the future the author can only record it as (*U1208*). Moreover, despite the best efforts of several researchers and historians, the exact details of how each U-boat was fitted out on its last patrol cannot be known with the exactitude required for absolute certainty.

## **11.5: Summary and Conclusions – What this Case Study Reveals**

By looking at two U-boats lost in the second phase of the Inshore Campaign, this Case Study has highlighted several features relating to the wrecks of this period and the historical context in which they are set. These concepts and findings are introduced below and are similar to many other of the sites of the Inshore Campaign in this thesis. They are:

### **The archaeology of the U-boat wrecks:**

1. Both of the U-boat wrecks examined in this Case Study were in good enough condition to yield vital clues which placed them in the latter stages of the Inshore Campaign. It shows clearly that where netting does not obscure, or has not removed key identifying features, then can clearly be seen on the wrecks;
2. Both examples show how important it is to establish in as much detail as possible what the types of late-war equipment both boats carried;
3. *U480* was simple to identify because of Alberich. Only this level of physical proof will permit a site to be without brackets in the nomenclature of this thesis. In the context of the period, this should be considered as a rare example of a totally correct identification of a mystery U-boat;
4. (*U1208*) is a more common example of the problems which exist when assessing the actual identifications of U-boats from this period. It looks much like many others. The

problem of making an accurate identification was made worse by the damage on the site and because the items plucked from the sea when the U-boat was destroyed could not be attributed to a specific U-boat ;

5. (*U1208*) could be satisfactorily associated with an attack report because of the accuracy of QH and modern GPS. This gives us a date to the attack which broadly matches the key features of the wreck;
6. The evidence of damage on (*U1208*) corroborates the report of “tin opening” taking place. Along with accurate positional data, due to QH being operative at the time, gives us the time and date and details of when it was destroyed. It was this evidence which makes *U1208* the most likely candidate, but this is little more than a best estimate;
7. The damage on *U480* is not synonymous with contact with a mine and remains unexplained. However the intersection of the wreck with the *Brazier* D2 Minefield means that the overwhelming evidence was that it was mined, with a partial detonation or acoustic trigger on the mine being the most likely explanation.

**The historical context:**

1. The evidence clearly shows that the archival record for this period is very unreliable, both on the Allied and German side. The BdU KTB does not survive for this period, and for reasons explained above and in the introduction to Part Three, the intelligence reliably gathered is very sparse. This is evidenced by the reluctance of OIC to release positional data regarding U-boat tracking through the “H” Series during this period;
2. Due to the rapid wind-down in personnel in the AUD and Tracking Room from the day the war ended means that any assessments into losses carried out after June 1945 up to the time of the release of the first official list in 1946 were not subject to the same rigour as was the case during the war and must be treated as suspicious;
3. This Case Study introduces in detail the deep trap minefields laid during the Inshore Campaign. We now know they claimed at least six U-boats in the Study Area, where the 1946 loss register showed only one loss. In this instance we have seen how *U480* found its way into the loss register due to the rubber association. The next Case Study will examine this in more detail by looking at three more mine victims;
4. The association of “rubber” with Alberich made by Special Intelligence shows the limitations of interpreting what physical properties actually accrue an object known about only from radio decrypts. It explains how the loss *U480* was appended to the site of (*U1208*) in the absence of any better evidence and is a good example of 2 above;
5. The assessments of the loss of both boats made in 1945 were incorrect. They have been reassessed as the result of the location and correct identification of *U480*. In this instance the historical record has been improved by the archaeology. However it should

- be noted that (*U1208*) is now at its second post-war reassessed position, showing if anything that correcting the erroneous losses in the historical text is an iterative process;
6. The reassessments carried out after 1946 up to the time both of these wrecks were surveyed added nothing to what could have been known of them. Although the reassessment of the loss of *U1276*, based squarely on new empirical evidence was a noteworthy breakthrough. It also highlights the lack of rigour mentioned in 2 above;

Finally it should be noted that it is the archaeological evidence gleaned by surveying both wrecks which has improved the historical record beyond what could be expected of it in the absence of the physical evidence that only the wrecks themselves can yield.

In answering the overarching question this thesis sets out to test, the answer in this case is yes, the archaeology can improve the historical text and be more than merely corroborative. The major caveat though, is to be extremely cautious in reattribution losses without absolute verification. *U480* was a safe case, (*U1208*) is not.

## Chapter Twelve: Mystery U-Boat Case Study: (U1021), (U400) and (U683)

### 12.1: Introduction

This specific Case Study examines the three mystery U-boats which were found in recent years off the north coast of Cornwall. Since no U-boats were listed in 1946 as being lost in this area (NA ADM 199/1789) it was something of a surprise for three to appear so close together in that region. While the circumstances which led them to be destroyed have been satisfactorily explained, their identities remain a matter of conjecture, despite much research primarily by the Naval Historical Branch, Axel Niestlé and the author. This Case Study will firstly examine how the U-boats were destroyed and then secondly, will describe how their current identities have been derived through the latest research. Figure 1.92 shows the location of all three wrecks within the Study Area.

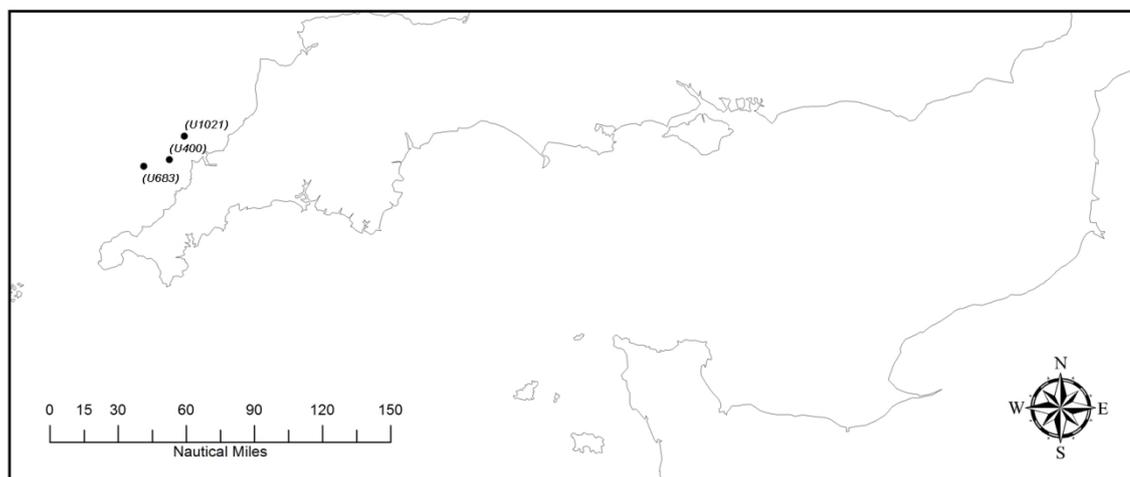


Figure 1.92. Map showing the locations of the wrecks of (U1021), (U400) and (U683) (Innes McCartney).

### 12.2: Details of Destruction

The wreck of (U683) (Hydrographic Record No. 16678) is first reported being located as a wreck in 1945 and first being visited by divers in 1986. After a new survey of the area was conducted on behalf of the Hydrographic Office in 2001, the other two sites were discovered. Both (U1021) (Hydrographic Record No. 60228) and (U400) (Hydrographic Office Record No. 16715) are reported as first being visited by divers in 2002; however Naval Historical Branch records challenge this (see below). The author surveyed all three sites by video camera in 2003 and began the process of attempting to find out how they were lost and which U-boats they actually were.

Of all the sites surveyed by the author and presented in this thesis, these three were unique. This was because of the type of damage they had sustained. All three had been sunk by what looked like a single large explosion. There is no evidence of surface attacks on the two most northerly sites but evidence for this on (*U683*) (see below). The wreck of (*U1021*) (see Figure 1.94) had a nine metre wide hole blasted in its side, which in the author's experience was too big to be caused by a depth-charge. Both (*U683*) (see Figure 1.98) and (*U400*) (see Figure 1.97) had their bows completely blown off. The inescapable conclusion was that they had been mined. However, as described in Chapter 11 the Naval Staff History of British Mining Operations 1939-1945 (BR 1736 (56) (1) and (2)) was not available until 2005, so apart from some vague descriptions and maps in other official publications (such as Roskill 1961, 287) this remained conjecture.

However, when the author visited the Naval Historical Branch in 2005 and was granted access to BR1736 (56) (1) and (2), the picture of what happened to the U-boats became clear. Using the Navmaster navigational software, the lines of mines laid off North Cornwall were accurately mapped against the positions of the three U-boats. Figure 1.93 shows the results of this process and clearly demonstrates that each of the three U-boats was, in fact, mined.

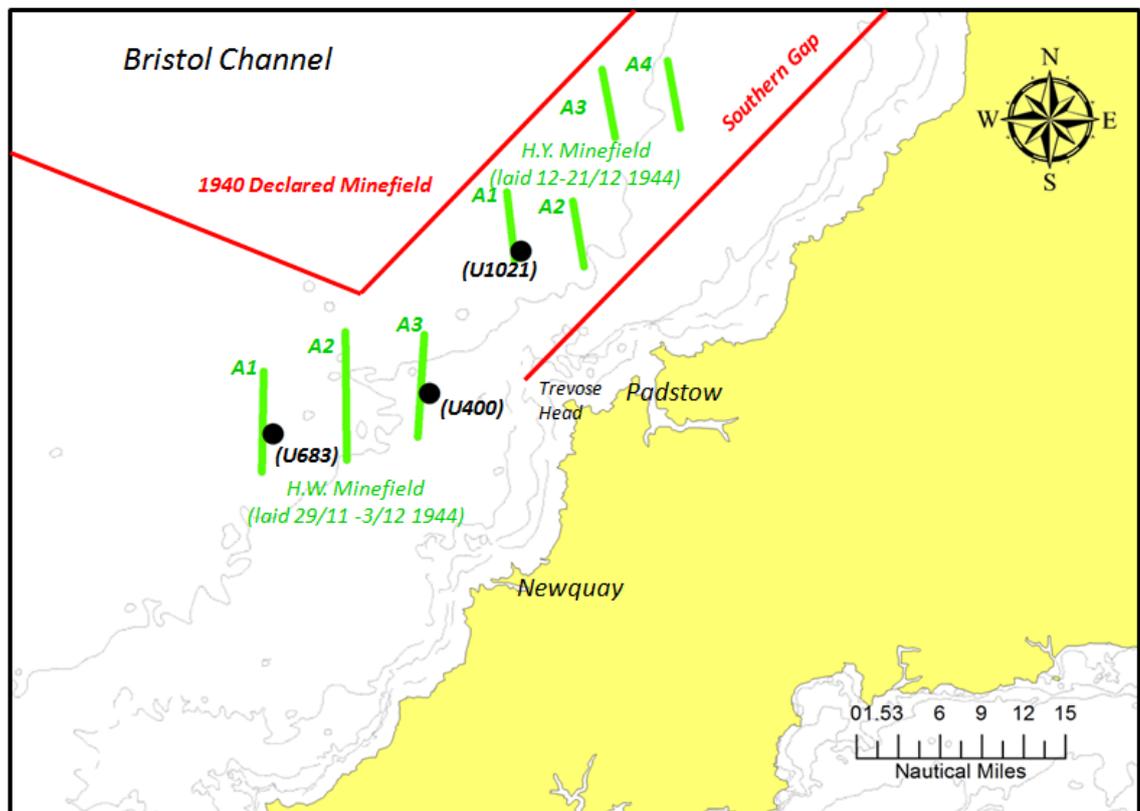


Figure 1.93. Map showing the locations of the wrecks of (*U1021*), (*U400*) and (*U683*) intersected against the minefields which accounted for their destruction (Innes McCartney).

Figure 1.93 shows the anti-invasion minefield which was openly declared in 1940 in red. The so called “Southern Gap” ran along the north coast of Cornwall. The minefields *HY* and *HW* were part of a series laid in the Western Approaches from October 1944. They were laid in a direct response to the shift of U-boats from the French bases to Norway. With the U-boats no longer operating from France, the convoy routes which ran south of Ireland were reopened to allow for a more direct route for Atlantic convoys into the south western ports than the previously used route around the north of Ireland.

The Admiralty recognised that the Irish Sea and Bristol Channel would become attractive to the U-boats and devised the deep-trap minefields specifically to destroy and deter U-boats entering this area (BR1736 (1), 194). As with the *Brazier* minefield in Chapter 11, the mines laid in the *HW* and *HY* fields were the Mark XVII anti-shipping mine (see Figure 1.95), which was laid at a depth of 70 feet, allowing ships to pass safely over it. Unlike the case of *U480*, in each instance where these mines detonated the result was as one would expect from a mine designed to sink a large ship; the U-boat suffered catastrophic damage.

The deployment date of the minefields clearly denotes the earliest date any of the U-boats could have been destroyed. It remains one of the few reliable clues as to the identity of the wrecks. The strategy outlined by the Admiralty for the laying of these fields, alongside the date of the lays determines that the U-boats were lost during the second phase of the Inshore Campaign. This is clearly reflected in the archaeology present on each of the wreck sites (see below) and confirms for certain that all three of the wrecks are from this period.

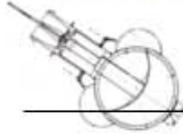
The difficulty however, is to work out which ones they may actually be. With no certain witnesses to the explosions which sunk the U-boats, it is not surprising that there is nothing to go on in the 1946 List of losses (NA ADM 199/1789). The challenge is for the archaeology of the sites to be able to fill in the gap in the historical record. Conversely, the challenge for the historical record is to situate any U-boats actually off the north Cornish coast. The next part of this Case Study will examine each wreck in detail and describe how the current identities have been derived.

### **12.3: The Wreck of (*U1021*)**

*Hydrographic Record No. 60228      Position: 50 39.798N;005 05.068W      Depth: 55m*

As mentioned above the Hydrographic record for this site suggests it was first examined by divers in 2002, subsequent to being found during a survey commissioned by the Hydrographic Office in 2001. However, it is not unknown for local divers to have visited wrecks of which the Hydrographic Office has no knowledge.

**Name:** (U1021) **Posn:** 50 39.798N 005 05.068W **Depth:** 55m  
**Date of Loss:** Around March 1945 **How Sunk:** Mined  
**Date of Survey:** 23 August 2003



Stem section leans 50° to port

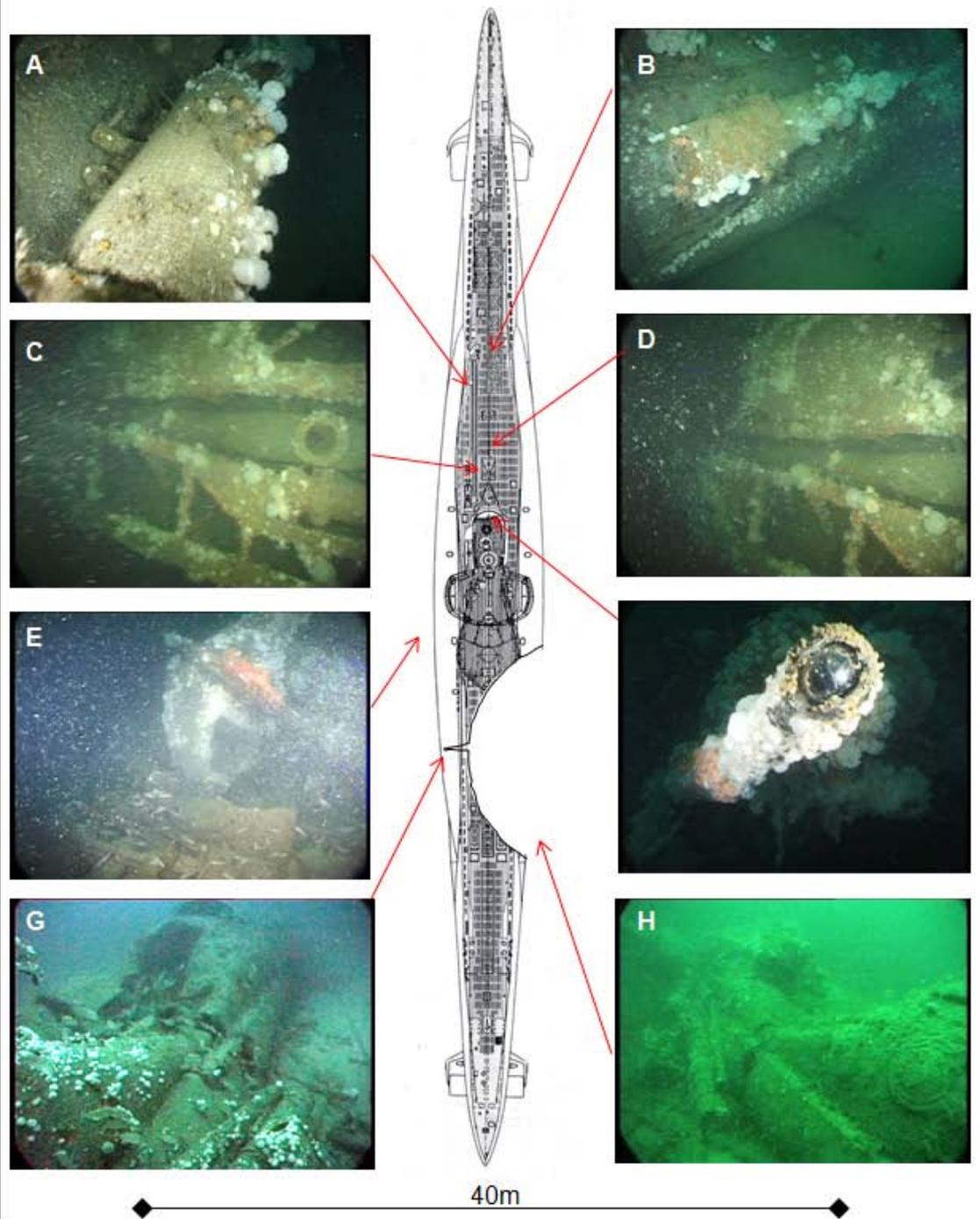


Figure 1.94 Diagram depicting the wreck of (U1021) and its key features as described in the text below. (All images Innes McCartney except the line diagram adapted from Köhl & Niestlé, 1994, 59).

In this instance this seems to be the case. This is because, a search of the Foreign Documents Section records at the Naval Historical Branch shows that it was first asked to assist with the identification of a U-boat at this position as early as 1990 (D/NHB/9/2/17S). The description given by the diver who had visited the site, Mr L. F. Ward, matches what was seen when the author surveyed the site by video on 23 August 2003. Figure 1.94 shows the wreck of (*U1021*) and depicts its key features. The wreck is characterised by the very obvious nine metre wide hole in the starboard side of the wreck (also see Figure 1.95). The key features used in attempting to identify this wreck are described below:

- Image A shows the stem of the snorkel mast, just below the float head. The chequered covering is the “Wesch” radar absorbing covering (see Figure 1.96);
- Image B shows the snorkel head to be of the very late-war “ring-float” design. This example is uncommon because it is not coated with the “Jaumann” type radar absorber usually associated with this snorkel arrangement. One possible interpretation is that the coating was not in supply when the boat was built (see Figure 1.96);
- Images C and D show the snorkel mast in its recess on the port side of the foredeck. The circular hole for connection to the Type One flange system can be seen. Above the mast the circular grate is also clearly visible. This grate probably blanked off a hole left by the removal of the Marcks container. But is it also possible a Marcks container was never actually fitted;
- Image E depicts the M43 model of the mount for the 37mm anti-aircraft gun. In this instance it is upside down, but its shape is unmistakable compared to the earlier M42 type (see Figure 1.96);
- Image F shows the undamaged lens of the sky observation periscope. The evidence from the sites studied in this thesis suggests that they shatter when subjected to depth-charge attack;
- Images G and H show the semi-circular depression shown from both sides. It was made in the starboard side of the wreck, aft of the conning tower. The width of the blast hole was measured by tape by the author at nine metres in 2005. The mine blast has actually caused the U-boat to snap in half, with the crack in the hull visible in both images (also see Figure 1.95);

### **The identification of (*U1021*)**

As with all of the unidentified U-boat wrecks from the Inshore Campaign, the identification of these sites in the absence of unassailable archaeological evidence (such as the Alberich coating on *U480* in Case Study Two) comes down to the combination of subtle differences in design. If these are detectable in the archaeology of the wreck site, then it may be possible to find

similarities in the anecdotal, historical and photographic evidence that survives for each specific U-boat.

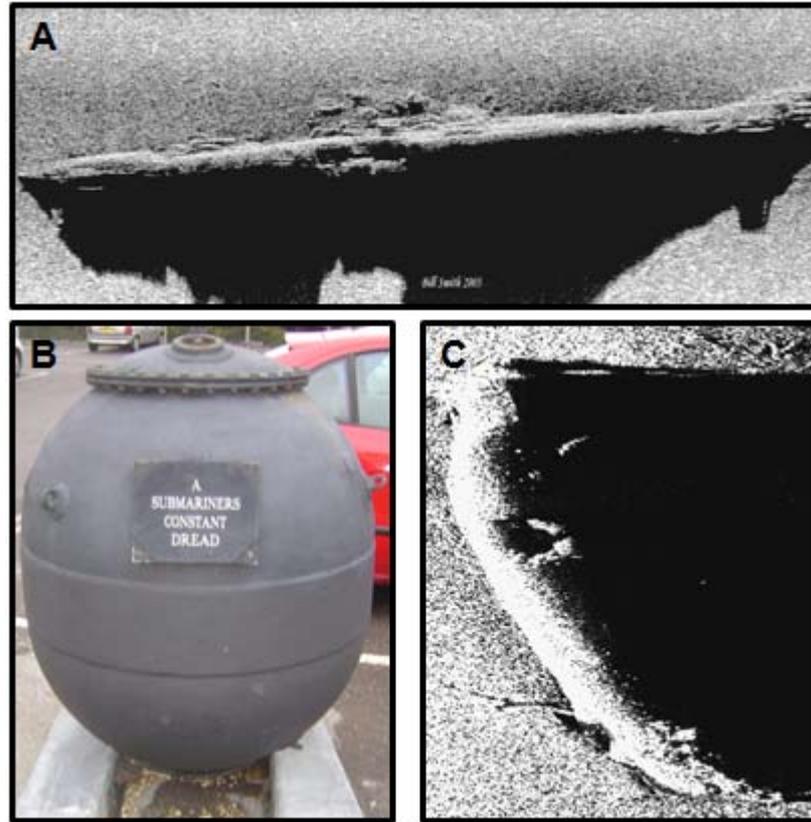


Figure 1.95. The mine damage to (U1021) can clearly be seen in these two side scan images (A&C) of the wreck. The mine used in the deep trap fields of the Inshore Campaign was the Mark XVII anti-shipping mine, as seen in Image B at the Royal Navy Submarine Museum. This mine packed a charge of 500lb, enough to sink a large ship (Images A&C Bill Smith Image B Innes McCartney).

However, using this process in the light of no other data from the historical text would be nearly impossible, because the records of U-boat losses from this period are not reliable, unless considered “A” grade by the Anti-U-boat Division during the war and given a specific identity from items or survivors recovered from the sea. Any other grade than “A”, attributed to a known U-boat wreck must fall under suspicion. Moreover, it is quite possible for any number of U-boats to have exactly the same equipment fit-outs when they sailed on their last patrols. In the absence of any other evidence this makes it impossible to tell them apart.

However the case of (U1021) offers some encouragement, primarily because there is good historical evidence that this U-boat was ordered to the north Cornish coast and the archaeology on site can now be traced to photos of this specific boat.

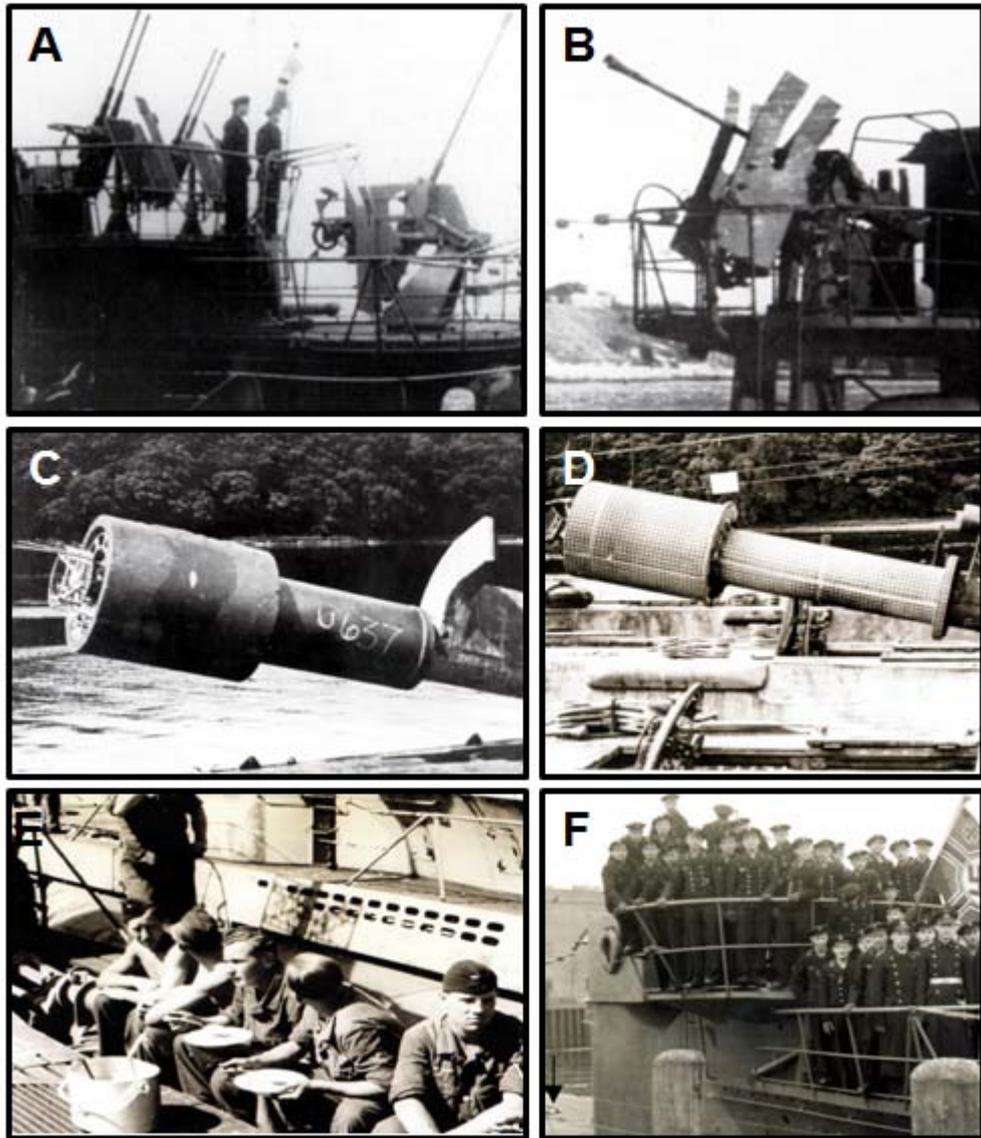


Figure 1.96. Diagram depicting the various archaeological features associated with the North Cornwall U-boats. Image A shows the M43 design of the 37mm gun mount and shield, while Image B shows the M42 style. Images C (Jaumann) and D (Wesch) show the differing designs of anti radar coating associated with the ring-float snorkel head. Image E is actually of U1021 and shows the grate on the foredeck with the soup can on it. Image F is a commissioning photo of U400 and just shows the Marcks container on the foredeck, under the arrow. (Images A-C from Köhl & Niestlé 1994 pgs 27, 28, and 36 respectively Images D and F from Niestlé 2011, pgs 348 and 351 respectively, Image E from Gaby Holpert).

On its first and only operational patrol, *U1021* under the command of Olzs. W. Holpert left Bergen on 20<sup>th</sup> February 1945. There is no data in the “H” Series for this period to give any indication how the Tracking Room traced the movements of this U-boat after it left port. Moreover the reconstruction of the BdU KTB (NHB 1957) lists it as operating off the Minch (northwest Scotland) until its destruction on 30<sup>th</sup> March. However the 1946 attribution to the loss of *U1021* to an attack by HMSs *Rupert* and *Conn* at 58 19N; 005 31W (NA ADM 199/1786, No. 682) has long been known to be another error in this loss register, primarily

caused because the assessors crucially failed to identify the transmission sent to *U1021* on 8 March ordering it to operate off North Cornwall (NHB D/NHB/9/2/17S).

It was finally established in 1991 from items listed in the attack report, including the name of a crew member, that the 30<sup>th</sup> March attack sunk *U965* (Niestlé 2004b, 3), although this was suspected as early as 1990 (NHB D/NHB/9/2/17S). This meant that *U1021* instantly became the candidate for the U-boat wreck reported to NHB in 1990 at the position of (*U1021*). The problem was that two other U-boat wrecks were also discovered in the same area and one other, *U400* was also known to have been ordered to operate off North Cornwall. Therefore it became necessary to examine each site in detail to try to ensure that the right identity could be ascribed to each. Unsurprisingly, due to the vagaries of identifying mystery U-boats from this period, the process has been ongoing and has only recently reached a relatively satisfactory conclusion in this instance.

Archaeologically, the types of late-war technology present on this wreck are commensurate with it being lost in the second phase of the Inshore Campaign. These include the ring-float snorkel (see Figure 1.94 Images A&B and Figure 1.96 Image D) and the type 43 37mm gun mount (see Figure 1.94 Image E and Figure 1.96 Image A). Interestingly though, this wreck was not fitted with bow life raft containers, usually associated with this period. So the technologies present match the dates when the minefields were laid which both coincide with the possible loss of *U1021* in the region of the north Cornish coast.

Although all of the major archaeological features on this site were known from the time of the author's survey in 2003, the major problem was to find enough detailed anecdotal or photographic evidence to specifically tie this wreck to the best candidate from the historical record. During the filming of a documentary in 2005 which charted the author's attempts to identify this wreck, Gaby Holpert, the niece of *U1021*'s commander was located and interviewed in Germany.

Oblzs. Holpert had been a keen photographer and had left an album of photographs of *U1021*. Within it was one specific photo which went unnoticed at the time (see Figure 1.96 Image E). It shows the crew eating on the foredeck and under their soup tin is the circular grate fitted to some U-boats in the previous location of the deck gun (see Figure 1.91 in Chapter 11). From the archaeology present on all three (see Figures 1.94, 1.97 and 1.98) sites we know this wreck was the only of the three fitted with this grate (see Figure 1.94 Image D). This small, yet crucial detail was noticed by Niestlé (2011, 350) and became the clinching piece of evidence to suggest the wreck was *U1021*. Prior to this important piece of evidence being identified it had been postulated that the wreck might be (*U325*) (Niestlé 2004b) or (*U400*) (Niestlé 2007). Upon such small items of detail can more accurate U-boat identifications rely.

Although by simply matching one photograph to the archaeology present on the seabed and then matching this evidence to the historical record does not guarantee the identification can be correct for certain, it makes for a compelling case. It is now possible to piece together the last movements of *U1021*. At sea, on 8 March it was ordered to patrol in an area focused on Pendeen Head, North Cornwall, which is in fact 39 miles south west from the wreck site (NHB D/NHB/9/2/17S) and would have arrived there around 10<sup>th</sup> March.

The AUD's incident records record the sighting of a periscope (NA ADM 199/2056, No.10522) by the minesweepers HMSs *Concertator* and *Lorraine* off Trevoze Head (see Figure 1.99) on 10 March. Equally of note is the witnessing of an underwater explosion by the northward bound straggler of a convoy, SS *Rolfsburg*, which was off Trevoze Head on 14<sup>th</sup> March and witnessed oil in the water (Niestlé 2004b) (see Figure 1.99). While neither of these incidents can be directly linked to the destruction of *U1021*, they do tentatively suggest that its possible *U1021* was destroyed on the 14<sup>th</sup>. From the best evidence currently available this seems to be the most likely scenario.

#### **12.4: The Wreck of (*U400*)**

*Hydrographic Record No. 16715*      *Position: 50 33.272;N 005 11.635W*      *Depth: 48m*

The Hydrographic record for this site shows that it was located by survey in 2001 and first inspected by divers in 2002 (Hydrographic Office Record No. 16715). No other documentation relating to this wreck is known to the author, who surveyed the site by video 26 April 2003. The main features of this wreck are depicted in Figure 1.97 below:

This wreck site is characterised by the major damage to the bow section which has been caused by an explosion which has detonated in the region of the forward torpedo room and has removed the bows including the forward torpedo tube assembly from the wreck. Some of the major archaeological items seen on the site are detailed below:

- Image A shows one of the forward life raft containers lying on the port side of the break between the two sections of the wreck;
- Image B shows the mooring bollards from the bow section of the wreck which, in conjunction with the much degraded condition of this part of the wreck have now fallen onto the seabed;
- Image C shows the area of the break at the forward end of the aft section. One can see from this image that the explosion is likely to have come from underneath the U-boat;

**Name:** (U400) **Posn:** 50 33.272N 005 11.635W **Depth:** 48m  
**Date of Loss:** Around December 1944 **How Sunk:** Mined  
**Date of Survey:** 26 April 2003

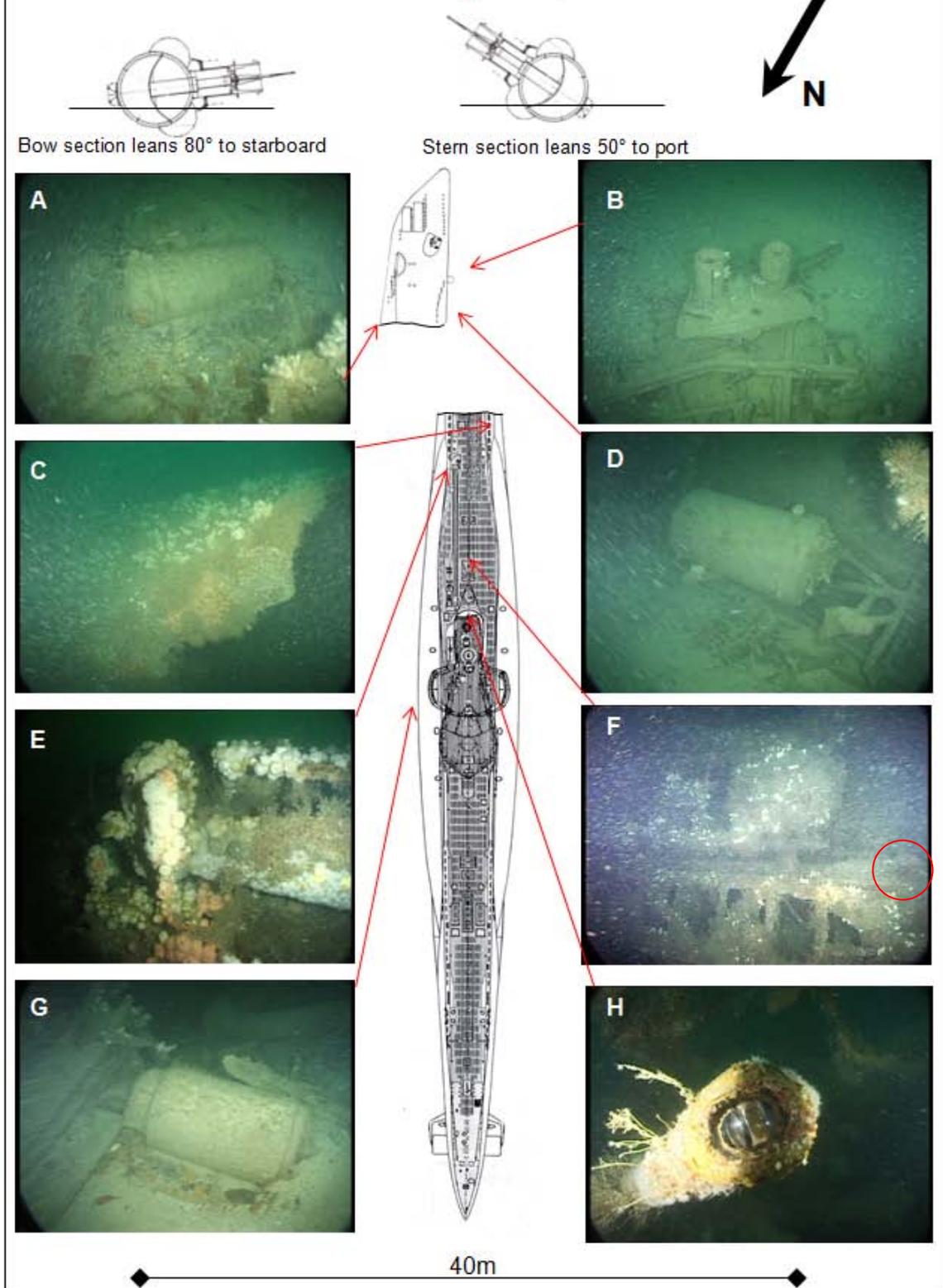


Figure 1.97. Diagram depicting the wreck of (U400) and its key features as described in the text. (All images Innes McCartney except the line diagram adapted from Köhl & Niestlé 1994, 57 and Westwood 1984, 33).

- Image D shows another of the forward life raft containers, this time on the starboard side of the wreck. The scattered pattern of these containers points to the break in the U-boat actually being on the hull at the point where these containers were fitted;
- Image E shows the “ball-float” snorkel head lying in its recess on the port side of the foredeck;
- Image F shows the snorkel mast to be of the Type One design, with the circular fitting circled in red. Above the mast the Marcks life raft container can be seen as the large circular feature (for more details, see Chapter 11, Figure 1.91);
- Image G shows one of the ready-use ammunition containers for the 37mm anti-aircraft gun. These features can be confused for the bow-fitted life raft containers, but in this shot it can be seen to be a subtly different shape, without the distinctive narrowing at the bottom end seen on the life raft containers (see Figure 1.102 in Chapter 13);
- Image H shows sky observation periscope, which like that on (*U1021*) has escaped damage, despite the violence of the destruction of the U-boat.

#### **The identification of (*U400*)**

The process of identification of this site has much in common with that of (*U1021*). While the combination of archaeological features is not unique, there is both historical and photographic evidence which points to the wreck possibly being (*U400*).

On its first and only operational patrol, *U400* sailed from Kristiansand on 18<sup>th</sup> November 1944. According to the 1946 loss register, its destruction occurred on 17<sup>th</sup> December, south of Ireland after being located and attacked by convoy escort HMS *Nyasaland* (NA ADM 199/1789). While protecting the liner SS *Rimutaka*, which was carrying the Duke and Duchess of Gloucester to Australia on official duties, *Nyasaland* located a strong contact and attacked with depth-charges and hedgehog, which exploded after nine seconds. The attack was graded “B” and the identity of *U400* was attributed after the war. However, as Niestlé has shown, the BdU daily plot of movements shows that *U400* was expected to have passed the sinking position a week before on its way to its patrol billet and therefore was extremely unlikely to be in the area (Niestlé 2004b).

During its outward passage *U400* was sent two radio messages. The first, sent on 28<sup>th</sup> November gave it a steering position to the west of Ireland. The second order sent on 4 December was a detailed set of instructions ordering *U400* to operate off the north Cornish coast, specifically in the convoy lanes. (NA HW18/394). Of particular note is the need to report on any suspicion of the presence of minefields in or outside of the declared area (see Figure 1.93). Crucially, it was pointed out by BdU that the last U-boat to operate in this area (for which it had details, see below) was unsuccessful because it did not operate in the convoy lanes, but further westward.

So from the historical record it is possible to place *U400* in the North Cornwall minefields from its estimated arrival time of mid December 1944, actually while the minefields were being laid!

From an intelligence perspective the question must be asked as to whether this is actually a coincidence, or whether the guiding hand of OIC can be detected at work here? This is of notable historical importance, because historians have recognised (notably Syrett 2002, 20-22) it is virtually impossible, due to the utmost secrecy with which the details were handled, to directly trace Allied decryption of enemy codes to operational activity on the tactical level. Operational decisions involving Special Intelligence were most often made and promulgated verbally and have left virtually no archival trace.

However, the four coordinates given for *U400*'s patrol area off North Cornwall were recorded by the OIC in the "H" Series and match almost identically with the shape and location of the "Southern Gap" (see Figure 1.93) from Hartland Point in the north to Trevoze Head in the south (NA ADM 223/300 051320A). But importantly, *U400* was not the first U-boat to be ordered to operate in this area. Within the "H" Series is the 24 November note, marked "Important", that *U680* (Bigram code "PK") had been ordered to operate in this patrol box on 22 November 1944 (ADM 223/208 240032A). The Admiralty orders sent to the minelayer HMS *Apollo* to lay the *HW* minefield, which destroyed (*U400*) were sent only a day later on 25 November (BR1736 (1), 210). While *U680* was redirected elsewhere just as the field was being laid and returned to base, (*U400*) was not so fortunate. Whether this was simply a coincidence in dates or not will be examined in the light of other such instances in Chapter 15.

The damage to the wreck of (*U400*) is all focused at the bows. Nevertheless the forward area aft of the break contains several important identification features (see Figure 1.97). But as with the case of (*U1021*), the crucial element is to trace these back into the historical record. One of the key differences between the wreck of (*U1021*) and those of (*U400*) and (*U683*) is the presence on the latter two of the Marcks life raft container in place of the deck gun mount or circular grate (as on (*U1021*)). In the absence of any certain evidence, this has turned out to be the most important distinguishing feature.

The photographs of *U400* made available to the author during the documentary filming by Ubbo Willms, the nephew of one of *U400*'s crew did not show any distinguishing features which could be specifically matched to the wrecks. However Niestlé (2011, 351) has been able to locate a commissioning photo of *U400* which clearly shows that it was, in fact, fitted with a Marcks container on the foredeck at the location (where the gun mount was once fitted) during construction (see Figure 1.96 Image F). Since there are no features on the wreck site which

contradict the view that this could be the wreck of (*U400*) this would seem to be the best fit at this time, but it must remain, at best, tentative.

However it should be noted that the wreck of (*U683*) also has a Marcks container (see below). Moreover, other U-boats with still uncertain loss explanations which could have been in the area at the same time include *U322* and *U772* (see Chapter 10) which on 4 December 1944 were ordered into the English Channel, or alternatively “if the boats or crews state made that impossible”, to operate in the same patrol area as *U400* (NA ADM 223/301 051621A).

## 12.5: The Wreck of (*U683*)

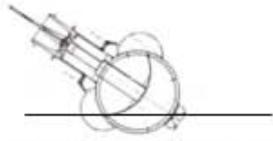
*Hydrographic Record No. 16678*      *Position: 50 31.401N; 005 22.861W*      *Depth: 56m*

The Hydrographic record for this wreck site contains some useful information relating to its initial discovery and its subsequent investigation (Hydrographic Office Record No 16678). A wreck at this site was first located by the 9<sup>th</sup> Escort Group on or before 25 March 1945. This information is cited as having come from the “Plymouth List”. This list was collated by the AUD and seems to have been a list of all wrecks located by surface ships during WW2. While a copy once resided at the Hydrographic Office, it cannot now be located, despite several searches by the Wrecks Officer and the author. Among the records which no longer exist, the Plymouth List is a loss to be much regretted for the purposes of this study and much more besides.

The site is first recorded as being visited by divers in 1986 and several times thereafter subsequent to being surveyed by the author, using video in April 2003. Figure 1.98 shows the disposition of the wreck today and its key surviving features which are described below:

- Image A shows the break where the blows were blown off. The detonation occurred underneath the U-boat, pushing some of the pressure hull upwards and into the void of the forward torpedo room. Unlike the case of (*U1021*), the explosion happened further forward and the bow section is only represented by broken pieces on the seabed;
- Image B depicts a hole in the starboard side outer tank. At first sight it resembles the type of hole which could be made by a hedgehog projectile. However on closer inspection it is not certain that this is the case. Nevertheless whatever struck the wreck at that point did penetrate the hull as the plating is pushed inwards around the hole;

**Name:** (U683) **Posn:** 50 31.401N; 005 22.861W **Depth:** 56m  
**Date of Loss:** around February 1945 **How Sunk:** Mined  
**Date of Survey:** April 2003



Wreck leans 50° to port

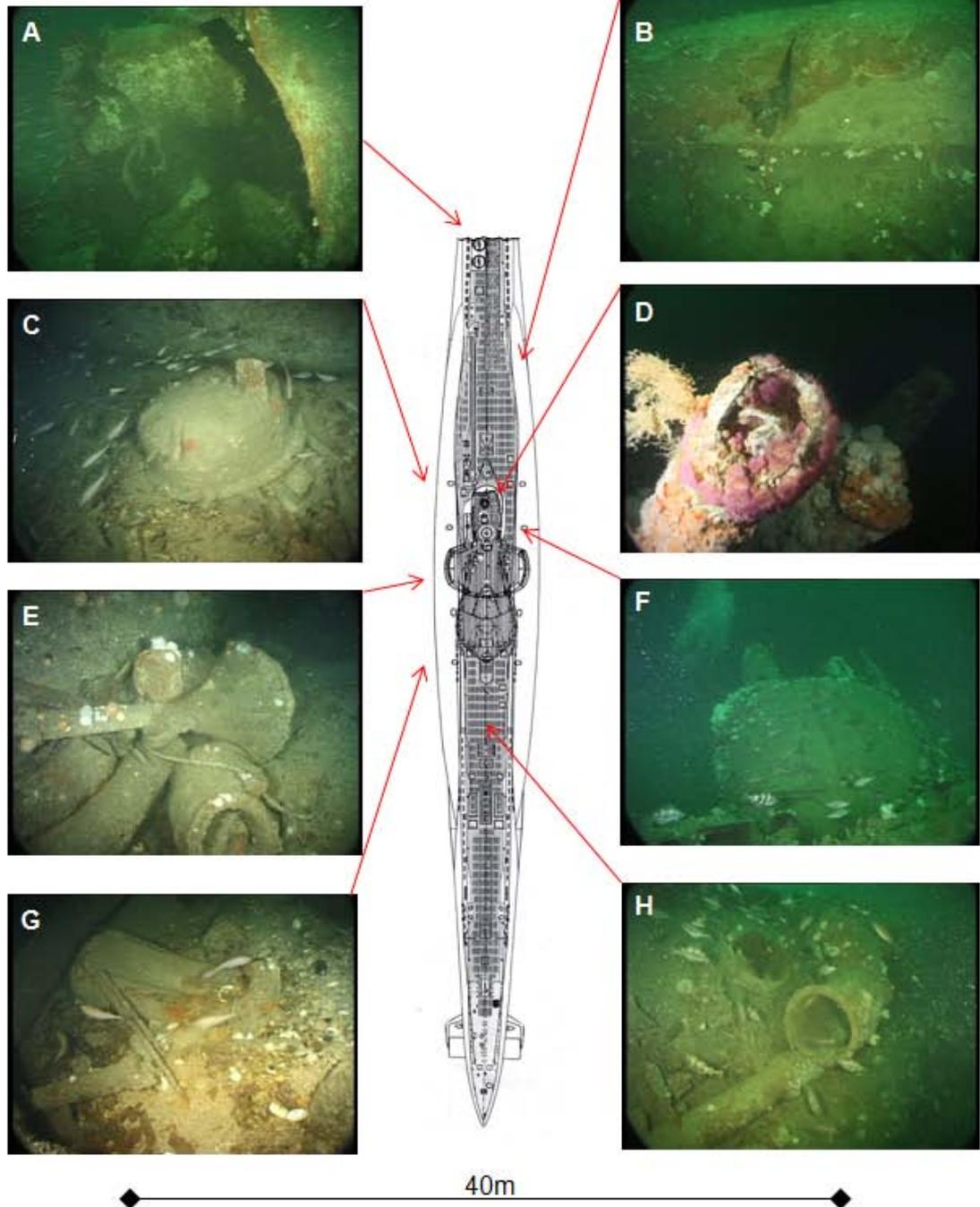


Figure 1.98. Diagram depicting the wreck of (U683) and its key features as described in the text. (All images Innes McCartney except the line diagram adapted from Köhl & Niestlé, 1994, 59).

- Image C shows the Marcks life raft container upside down on the seabed, at the position one would expect to find it if it had slipped off the wreck due to corrosion or other damage;
- Image D shows the sky observation periscope. In contrast to those of (*U400*) and (*U1021*), this one has been damaged and its lens smashed. Comparisons of images of this feature recorded during this project suggest that it was likely to have been caused by an underwater explosion in proximity to where it is situated;
- Image E shows one of the mounts for the 20mm anti aircraft guns lying in the debris which accumulates under the conning tower region on these wrecks as they begin to break up. There was no evidence seen of the location of the larger 37mm gun;
- Image F shows the conning tower as seen from the starboard (upper) side. As with all examples of this type of U-boat wreck, all that is left is the pressure hull, with much of the outer cladding and other features long since collapsed onto the seabed. In this case, even the radio loop has gone;
- Image G shows the completely crushed remains of what appears to be one of the bow life raft containers. Crush damage of this type is usually associated with wrecks which have been depth-charged (see Chapter 11, (*U1208*) Figure 1.90 Image C) and is therefore unusual in this context;
- Image H shows the aft galley hatch with cover missing and engine room piping broken away. The entire upper works of this wreck, above the pressure hull have largely disappeared. This includes any evidence of the snorkel or its elevator.

### **The identification of (*U683*)**

The cases of the two previous U-boats relied in part for their identifications upon the historical text which offered plausible cases for both U-boats to have specifically been ordered to operate in the area of the north Cornish minefields. As far as the author has been able to ascertain, of the U-boats which were destroyed during the war they were the only two known to have been explicitly ordered to operate in that area. The question then comes down to how this third site should be approached from an identification perspective?

Because of the inaccurate nature of the 1946 List of losses and the unreliability of the non-“A” grade sinking event, the theoretical number of U-boats this site could be is large. As a bare minimum this list would include *U1055*, *U772*, *U322*, *U683*, *U1169*, *U650* and *U927*. But assuming that some of these have been correctly identified elsewhere in this thesis, the list is reduced to *U1055*, *U927* and *U683*. Moreover, due to the much degraded nature of the archaeology on the wreck site, a list of specific technologies present on the wreck does not

amount to much more than the bow and Marcks life raft containers. This certainly is not enough to present anything more than a list of possible candidates.

However, the wreck yields one big clue which the other sites do not have. It seems that this site has been attacked by surface vessels. There is no doubt that the U-boat was destroyed by being mined, as the primary damage clearly attests to this. Nevertheless that is not to say that the wreck may not have been attacked as a presumed bottomed U-boat at some point after it was destroyed.

As Figure 1.98 shows, the crushed nature of at least one of the life raft containers, the smashed sky periscope, the possible hedgehog hole and the much degraded overall nature of the wreck all point to this. So if a date for an attack on this site could be established the earliest date (when the minefield was laid) and the latest possible date (when the wreck was attacked) for the sinking would be known. This approach would narrow the potential list of candidates. Such a methodology, which would normally be used to examine a loss to surface vessels can be just as useful with a mining loss, so long as there are recorded incidents to match to the wreck site.

In Chapter Six, Figure 1.58, the GIS database shows there are incidents and assessments recorded by AUD all around the location of this wreck, in contrast to the other two sites. These were used as the starting point to examine the historical record for more detail as to what actually occurred in the location of the wreck and indeed when it occurred. The findings are laid out in Figure 1.99 as detailed below.

Figure 1.99 is based on Admiralty chart No 1178, Approaches to the Bristol Channel. This chart shows the location of the known wrecks off Trevoze Head and the three U-boat wrecks are clearly marked in black. The two incidents marked in dark red relate to (*U1021*) (see above) and play no further part in the analysis which follows.

The first thing to note is the cluster of ASW incidents around the wreck of (*U683*), which is in clear contrast to the other two U-boat sites. These attacks fall into three distinct phases which are shown in red, green and blue. However, they all took place within a period of four days, from 2 to 6 March 1945. The location of each shipwreck within a three mile radius of (*U683*) and the year of its discovery are also shown (Hydrographic Office Record Nos. 16712, 16689, 16672, 16654, 60042 and the bows of the wreck of HMS *Warwick*, No. 16622).



The attacks in red were carried on 2 March out by the escort to coastal convoy WKS 85, HMS *Celandine*. This series of attacks was first recorded in the AUD Incident Reports (NA ADM 199/2056 Record No. 10,400) and is stated to have happened at the northerly of the two positions shown. This attack was considered to be worthy of a full assessment (despite being called into question by the sighting of a periscope by *Celandine's* crew, quickly dismissed by her commanding officer) which was published by AUD on 23 April 1945 (NA ADM 199/1786 AUD 468/45). By this time the position was given as the southerly of the two shown. It will be noted that the two positions, when joined by the dotted line pass directly over the wreck of (*U683*).

HMS *Celandine* actually carried out two attacks; the first by depth-charge and the second by hedgehog. The second attack was considered to have produced an oil slick, but no samples were taken for analysis. The Assessors decided that in the absence of any other evidence the target attacked was not a submarine; Grade "I". There is no mention of whether *Celandine* was fitted with QH, so the accuracy of either position given cannot be guaranteed to be accurate.

The attacks of 5 to 6 March 1945 are shown in green. They are first mentioned in the AUD Incident Reports of 6 March (NA ADM 199/2056 Record No. 10,424) and much more detail is given in the Plymouth Command Diary for 5 and 6 March (NA ADM 199/1442 112-113). They came about after a Warwick aircraft sighted a patch of oil at the position shown. The aircraft initially stayed on station and guided HMS *Dornoch* and other ships of the 16<sup>th</sup> Minesweeper flotilla to the right area. The initial attacks by depth-charge produced oil, and then the contact was lost. The following day attacks on what was presumed to be the same target were carried at the positions shown to the west. More oil was seen and the target considered smashed.

Of the attacks shown in blue, those by HMS *Jonquiere* (NA ADM 199/2056 Record No. 10,433 and ADM 199/1442 113) produced oil and debris which was not from a submarine. The other attack by USS *Brister* does not appear in either the AUD Incident Reports, nor in the Plymouth Diary. However a record of this attack is found in the annex at the end of the assessed AUD attacks (NA ADM 199/1786 Section 4, 137) in a list of attacks which "due to pressure of work" were not fully assessed. However there is a note under this attack which says "Other escorts took over this contact and by accurate fixes confirmed it as "non-sub" contact Ply.No.59, a wreck".

As the wrecks on Figure 1.99 show, the forward section of HMS *Warwick* had been known since 1944. The attacks by USS *Brister* and by HMS *Dornoch* on 6 March would seem to have almost certainly been aimed at this target. However the attack by HMS *Celandine* on 2 March most likely caused the oil slick which was detected by air on the 5<sup>th</sup>. It seems likely that this attack was directed against the wreck of (*U683*) and that the initial attacks by HMS *Dornoch*

may also have been on this target. It is safe to assume that without the *Celandine* attack producing oil, the other later attacks may not have happened.

This approach to locating a date before which (*U683*) may have been lost cannot be considered totally reliable, but in the absence of any other data it is the only approach which can be adopted. Certainly there is an encouraging level of supportive archaeology on site to suggest the wreck was attacked and the historical text yields the data as to what may have happened. Although it can never be proved for certain, it seems that (*U683*) was probably destroyed before 2 March 1945.

The destruction of *U683* was listed in the 1946 register as being destroyed off Land's End by depth-charge and squid on 12<sup>th</sup> March 1945 (NA ADM 199/1786, AUD627/45). However it was established in 1997 by the NHB from items recovered during this attack that it had been directed against the wreck of *U247*. Since this obvious error in the list of losses was established, the loss of *U683* has remained unexplained.

*U683* under the command of Klt. G. Keller left Kristiansand on its first and last patrol on 6 February 1945. The timing of its patrol coincides with that of *U480* from Case Study Two and the intelligence background as described there is the same in this case and does not need to be explained again, suffice to say there is very little historical text to work with. What is known is that *U683* was sent two radio orders. The first was sent on 17<sup>th</sup> February and ordered *U683* to steer for south west of Ireland (NA ADM 223/305 191319A). This was met with a passage report from the U-boat stating its position to the north (NA ADM 223/305 191651A) and is the last transmission the boat sent. The second order sent to *U683* was transmitted on 22<sup>nd</sup> February. It was ordered to operate in the English Channel off Cherbourg. It was to approach the area by moving along the English coast. In the event the patrol area wasn't favourable *U683* was ordered to operate off the English coast.

The reconstruction of the BdU KTB (NHB 1957) estimated that *U683* reached the area around Land's End at the end of February. This predates the early March attacks on the wreck of (*U683*) and clearly post dates the laying of the HW minefield. The explanation for why *U683* may have been off North Cornwall lies in its orders to hug the English coast. It is possible that it crossed the Irish Sea and began its coastal passage down the coast of North Cornwall with fatal consequences.

In terms of identification, the archaeology on the wreck site of (*U683*) is poor, as previously shown. However *U683* was constructed by the same company (Howaldtswerke) as *U400*, although *U683* was built in its Hamburg yard, while *U400* was built at Kiel. As Niestlé (2011, 352) has shown, boats from the Kiel yard were definitely fitted with the Marcks container, not a

deck gun mount, nor the circular grate. The presence of a Marcks container on the wreck site is at least encouraging in that the circumstantial evidence from historical research into the possible identity of this site coalesces with the archaeology at this point.

This is conjecture only, but most of the other likely candidates have now at least some explanation for how they were lost. If the dating methodology described above is correct then *U683* is the most likely candidate, although we will probably never know for certain.

## **12.6: Summary and Conclusions – What this Case Study Reveals**

This Case Study specifically looked at three mystery U-boat wreck sites from the second phase of the Inshore Campaign and has illustrated the processes which have been used in attempts to date and potentially identify them. It shows that even if the site does not have a specific attack linked to it, there will always be some element of the historical text which can be used as a starting point for further research. Conversely, the wreck sites themselves if carefully surveyed and recorded can yield specific details which can be used in the identification process. The main findings and concepts investigated are detailed below:

### **The archaeology of the U-boat wrecks:**

1. All three sites were able to yield vital clues which have, to varying degrees, helped to derive identities for each site. Moreover the outfits of each site clearly denote that they were lost in the second phase of the Inshore Campaign;
2. All three cases also demonstrate the importance of recording in as much detail as possible all of the technologies which can be used to identify the sites. Even in the case of (*U683*) where the wreck is extremely degraded, the presence of a Marcks container on the seabed is potentially a crucial clue as to the site's identity;
3. None of the sites can be identified for certain, but good working theories for each have been derived in no small part due to the study of the archaeology on each wreck. The process of identifying these sites simply from the historical record would not generate the degree of accuracy which we now have;
4. Although no site was destroyed by surface ships, meaning that no attack reports could be evaluated for attribution to the sinking of the U-boats, the details of the destruction of each site was determined by the archaeology to be due to mining. This was confirmed by the historical text, when it was placed in the public domain;
5. Two of the sites have both an historical precedence for being at the locations where they were destroyed and can also be matched from photographs of the suspected U-boats.

This is about as close as an evaluation of their identities as one can get in the absence of an attack report;

6. In the case of (*U683*) the surrounding ASW Incidents and Assessments were used to attempt to find a date before which the U-boat must have been mined. This process narrowed down the time period to a four month window. Within this period, one particular U-boat loss stood out as being the most likely. So by using the methodology usually deployed to examine losses to attacks, some important dating evidence was derived.

**The historical text:**

- 1 As is the case with all of the U-boat losses during the second phase of the Inshore Campaign, the historical material available is very sparse, with no tracking data available through the “H” Series. Nevertheless, clues as to the possible identities of all three wrecks could be found;
- 2 Decrypted radio traffic to each U-boat yielded vital clues as to where they were ordered to operate. In each case this actually came down to one transmission sent to the boat after its anticipated arrival at its transit point;
- 3 The 1946 loss register is seen to have been incorrect in all three of the cases studied. In two of these, another U-boat seems to have been present. In the case of *U683*, the wreck attacked was actually *U247*, sunk many months before;
- 4 The BdU diary reconstructed by AHB/NHB in 1957 has proven its unreliability in the case of *U1021*, which it states patrolled off the Minch, not off North Cornwall;
- 5 The reassessment of the loss of *U1021*, based on the name of a crewmember of *U965* found amongst the flotsam of the attack is worthy of note. This reassessment based on good physical evidence, similar to the case of *U1276* in the previous Case Study shows what could have been achieved in 1946 if a willingness to address the inaccuracies in the loss register had existed;
- 6 There is a strong possibility that minefield *HW* was laid in direct response to the order sent to *U680* to operate in the shipping lane off North Cornwall. This is an interesting case which seemingly is a very rare example of Special Intelligence actually being used at the tactical level. While it is likely that the planning of the deep trap fields in this area predated the order to lay the mines, it seems probable that the field lay was expedited in the light of intelligence about the movement of *U680*;

This Case Study does show that the archaeology of each site has contributed greatly to evaluating the possible identities of each wreck. Moreover their obvious destruction by mines was known to the author before the historical text was available to members of the public. In this instance, three U-boats, all of which were effectively lost to history, have been (with

varying degrees of certitude) placed back on the list of losses. So in answering the overarching question this thesis has set out to test, the answer is clearly that the archaeology can improve the historical text beyond simply being corroborative. But as with many a mystery U-boat from this period, the caveat must be stated that identities cannot be considered absolute and would not have been assessed as “A” grade by AUD during WW2.

## Chapter Thirteen: Mystery U-Boat Case Study: (*U1279*), (*U325*) and (*U650*)

### 13.1: Introduction

This Case Study examines three mystery cases in the area of the Land's End to Lizard peninsulas (see Figure 1.100). They are thought to have been sunk during the second phase of the Inshore Campaign. Therefore the intelligence background behind these cases is limited in terms of what is known of their last movements.



Figure 1.100. Map showing the locations of (*U1279*) (*U325*) and (*U650*). (Innes McCartney).

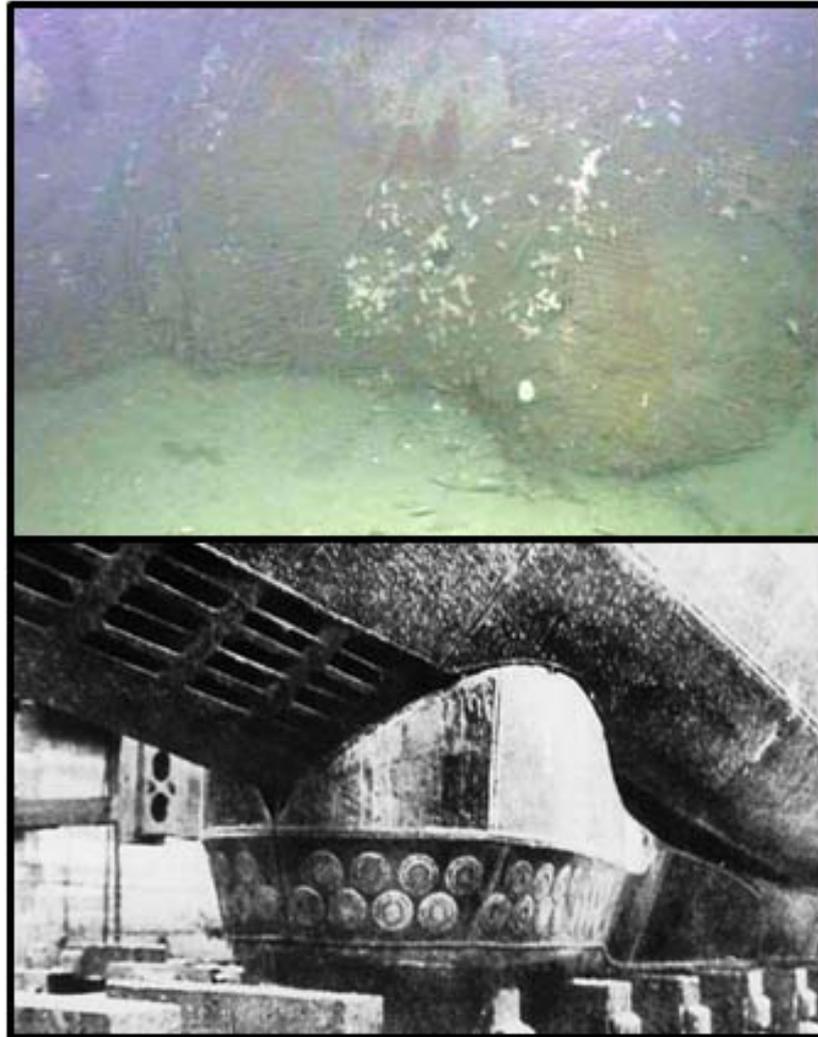
The case of (*U1279*) can be dated with accuracy because there is an AUD assessed attack at its location. The case of (*U325*) can be dated with some accuracy due to the presence of the wreck in a minefield and the evidence is stronger in support of the identity of this wreck than of (*U650*). However, the case of (*U325*) is illustrative of the problems encountered when reassessing mystery cases. The case represented in this thesis, for this site being the wreck of (*U325*) represents the fifth time the case of *U325* has been reassessed since WW2. Why this has happened is examined in this study. The cause of the loss of (*U650*) remains uncertain, with no obvious recorded attack being directed at the wreck from Allied records. Its identity should be considered tenuous until further evidence emerges.

### 13:2: The Wreck of (*U1279*)

Hydrographic Record No. 22326      Position: 49 49.920N;005 45.274W      Depth: 82m

According to the Hydrographic Office wrecks database as of October 2012, there is a wreck at the position shown above which was listed as being the steamship *A.A. Raven*, sunk by the U-

boat *UB55* in 1918. The survey details of the wreck from 1988 show that its dimensions in fact match those of a U-boat. The location of this wreck is nearly identical to the position given in the 1946 List of U-boat losses as the resting place of *U327* (NA ADM199/1789 No.659). The attack which took place at that location (NA ADM199/1786 AUD 627/45) was a good one, although it was graded as “B” Probably Sunk. However there is now no doubt that a U-boat exists at this location, because it was surveyed by ROV by Odyssey Marine Exploration in 2009 and the video tape was sent to the historian Axel Niestlé for analysis.



*Figure 1.101. The GHG balcony on the underside of the wreck of (U1279) and as fitted to U1105. (Odyssey Marine Exploration in Niestlé 2009, 4 (top), Kohl and Niestlé 1994, 16 (bottom)).*

Niestlé (2009) describes the wreck as lying on its starboard side and being extensively damaged. He reports that the key identifying features are as follows:

- Absence of a Marcks life raft container or gun mount, or other feature at the position forward of the conning tower;

- The type 2 (heel connector) snorkel mast with ring-float snorkel head with “Jaumann” anti-radar coating (see *U325* below);
- The rare feature of the GHG balcony array on the underside of the forward part of the hull (see Figure 1.101);
- The bows are heavily damaged, corroborating the description of the sinking of the U-boat and explain why a life raft container broke away and floated to the surface (see below).

It is tempting to assume in cases such as this, that the presence of a U-boat wreck at the position given in 1946 means that that wreck must be as listed; in this instance, *U327*. However, as we have seen in the case of (*U441*) and (*U988*) when looking at “B” graded losses in particular, the evidence gathered at the time of the sinking cannot guarantee that the identity was in fact correctly known. This is the case in this instance and it is due to the vague intelligence background at the time, coupled with a lack of surface evidence to identify the wreck.

#### **The identification of (*U1279*)**

The attack which we now think actually sunk (*U1279*) was carried out by HMS *Lauban* on 27 February 1945. It had been vectored to the area by the sighting of an oil slick and periscope by RAF Liberator H/112. On approach a number of contacts were detected and the most promising was attacked by hedgehog and depth-charge. In the resultant explosions, material rose to the surface which included grey painted wood, paperwork in German, a dinghy and an entire life raft container, which we would now immediately recognise to be of the type fitted to Inshore Campaign-era U-boats (see Figure 1.102). The surface evidence led the AUD assessors to grade the attack “B” Probably Sunk (NA ADM199/1786 AUD627/45).

Both *U1279* and *U327* left Norway on 30 January 1945. The complete absence of radio transmissions from either boat after they left port, despite being ordered to radio their positions to BdU left OIC initially virtually blind as to where these U-boats were or were headed. In fact initially there is only one brief reference to *U1279* on 4 February in the “H” Series (NA ADM223/304 041314A).

The identity of the sunken U-boat of 27 February 1945 was unknown until after the war. The proceedings of the AUD (NA ADM199/1786) state that the identification of the U-boat was made from German records in June 1945, when it was identified as being *U327*. However, Niestlé (1998, 235) showed that *U327* could have been destroyed north of Scotland on 3 February while making its passage southward in an attack which was initially thought to have claimed *U1279*.

*U327* sent no radio messages after it left port to confirm what it was doing but Niestlé (2009) has established that it was ordered into the Irish Sea from the Bristol Channel entrance, so it is unlikely to have ever been at the location of the attack, assuming it was not destroyed on 3 February. However, *U1279* had been ordered to operate off Gibraltar, or if not possible then in the English or Bristol Channels (Niestlé 2009) which means that it could have been in the area at the time of the 27<sup>th</sup> February attack.



Figure 1.102. The life raft container with its dinghy recovered from the wreckage of (*U1279*) at the time of its sinking. (Imperial War Museum).

The other U-boats which went missing in this area at the same time and had not been satisfactorily accounted for were *U683* (see the previous chapter) and *U927* (see Appendix 1.1). With (*U683*) now identified by the author as lost off North Cornwall, this wreck had to be either *U1279* or *U927*. Crucially Niestlé (2009) has identified that only *U1279* would not have had a Marcks container and that *U927* would not have had a GHG balcony, which strongly suggests the wreck must, in fact be (*U1279*). The author can find no reason not to accept this conclusion, based on the evidence available.

### **13:3: The Wreck of (*U325*)**

Hydrographic Record No. 22287

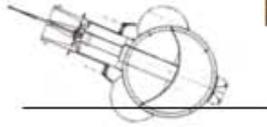
Position: 49 48.321N;005 12.444W

Depth: 88m

According to the Hydrographic Office wrecks database (No. 22287), the wreck at the position of (*U325*) was first located by survey in 1989. The site was reported by divers as being a WW2 submarine in 2006 and was surveyed by the author in September 2007. At a depth of 88 metres it was one of the deepest wrecks dived during the research for this thesis. Bottom time was limited to a survey of the foredeck and conning tower area, where most of the key identifying features of the Type VIIC U-boat can be seen. Figure 1.103 shows the key features recorded during the survey by the author and also a later ROV survey by Odyssey International carried out in 2008 in conjunction with Axel Niestlé (2011).

- Image A shows one upturned bow life raft container on the seabed next to the wreck. It is still being held around its top in the frame which would have been on the upper deck. It can be seen that the frame has two other circular holes and that therefore this U-boat originally had at least three bow containers;
- Image B shows the ring-float snorkel type in the foredeck recess. The black rubber-looking covering is the “Jaumann” anti radar coating (See Chapter 12, Figure 1.96 Image C). Its presence on this wreck signifies that this is a late-war casualty. The snorkel mast has no flange and therefore is of the Type Two “heel connector” design (see the case of (*U1208*) in Chapter 11);
- Images C & D show the foredeck area seen from both sides of the wreck. A square plate with four circular holes can be seen in both images. This is situated in the location where a number of differing features are commonly seen. Other wrecks examined in this thesis have had a variety features in this location including a circular grate, gun mount and a Marcks life raft container. From the sites analysed in the thesis the feature seen here is unique. It will be noted in Image D that there is no other feature on the pressure hull itself under this square plate. Its significance will be discussed below. The area, now free of other features has allowed the fitting of an extra high pressure air cylinder on the starboard side;
- Image E shows the area of the flak gun platforms aft of the conning tower, seen from above. The outer shape of the platform is clearly seen. The cylinders still mounted on the hull are for the “Aphrodite” radar decoy set. The large circular hole held the mounting for the 37mm AA gun. The exact same feature, under construction on a late-war U-boat can be seen in Figure 1.105, Image A, in the circled feature No. 2;
- Image F shows the radio loop in the conning tower area. Interestingly the vertical feature running through it is rope, which it has snagged at some point. Because of the snorkel type denoting a very late war boat, it might have been expected that this radio loop would have incorporated a rod antenna as well;

Name: (U325) Posn: 49 48.321N 005 12.444W Depth: 88m  
Date of Loss: Apr/May 1945 How Sunk: Mined  
Date of Surveys: 2007 & 2008



Wreck leans 60° to port

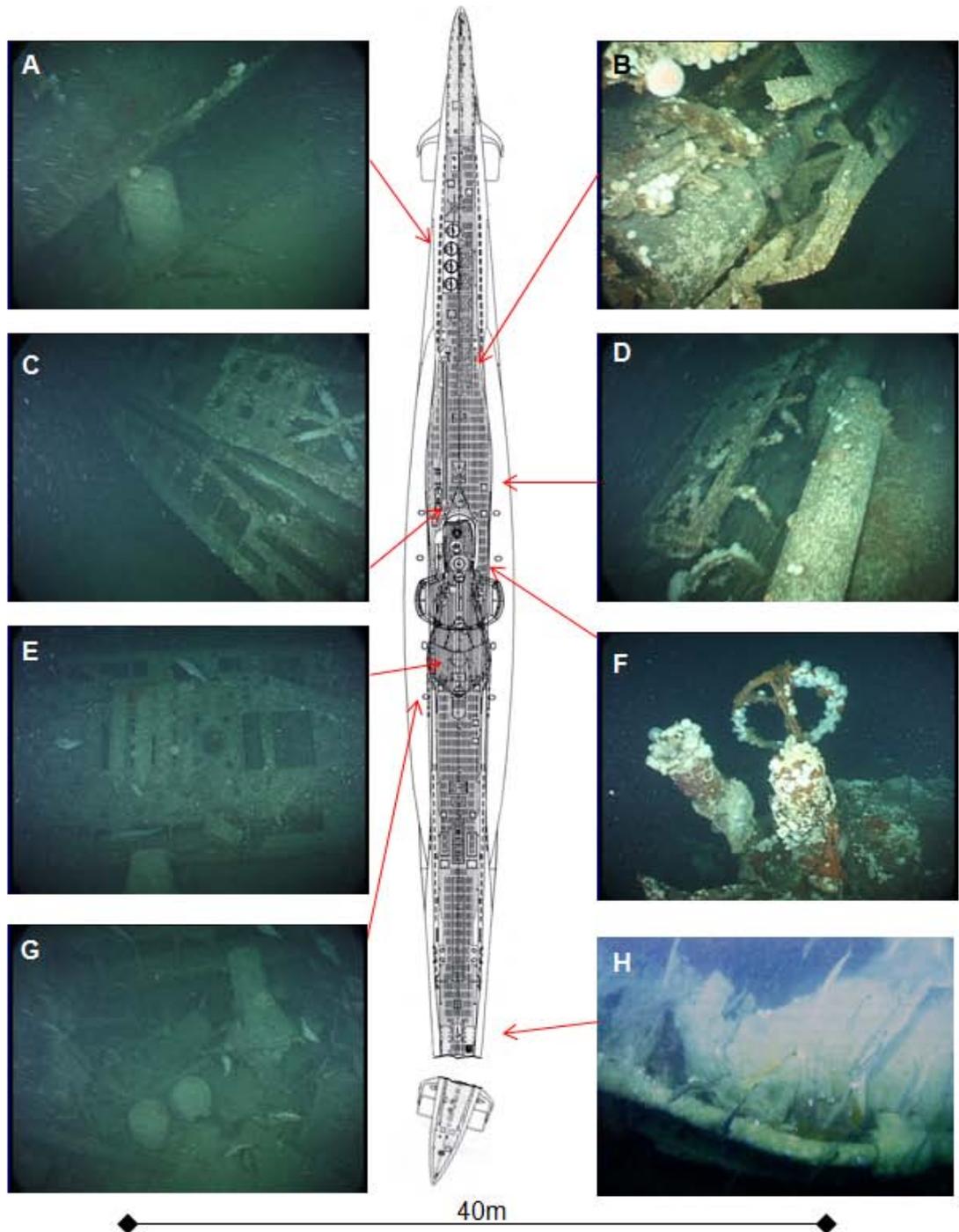


Figure 1.103. Diagram of the wreck of (U325) and its key features as surveyed and described in the text. (All images Innes McCartney except H, Niestlé 2011 and line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image G shows the seabed under the flak gun platform seen in Image E. Pressure-proof ammunition containers can be seen on the seabed, along with the stand for the 37mm AA gun;
- Image H comes from the 2008 ROV survey and shows the large blast hole at the top of the picture. The report (Niestlé 2011, 335-339) describes that the stern, aft of this point has been blown off the wreck. This is indicative of damage caused by a heavy explosion;

Overall the wreck is in very good condition and allows for comparisons to be made with the photographic record of U-boats under construction. In particular, the frames which surround the pressure hull and support the upper deck are intact and this helps when examining wartime photographs.

### **The history of reassessments of the loss of (*U325*)**

The case of the loss of *U325* has been of the most debated instances of a mystery U-boat from WW2. Since 1945, its fate has been reassessed no less than five times and it is interesting to examine how this has happened. Figure 1.104 depicts a map showing the locations where *U325* has been assessed to have been sunk, as promulgated by AUD (NA ADM 199/1789), The Air Historical Branch (AHB) (NHB FDS110), NHB (FDS Revisions to Axis Submarine Losses, 1997) and Axel Niestlé (2007 and 2011) from 1945 to 2011.

On its last patrol, *U325* left Trondheim on 20 March 1945. The radio transmissions between BdU and *U325* (NA HW18/400) show that it made for the west of Ireland and reported its arrival there on 7 April (“A” in Figure 1.104). On the 10<sup>th</sup> it was ordered to operate in the English Channel between Land’s End and Plymouth, with an anticipated arrival date of 19 April (“B” in Figure 1.104) (NHB FDS 110).

Correspondence between NHB and AHB in 1956 shows that the original AUD Assessment of the loss of *U325* was incorrect because AUD had in 1945, overlooked a radio transmission sent to *U325* on the 10<sup>th</sup> (NHB FDS110). In actual fact, the transmission was sent by special cipher and probably was not deciphered when AUD compiled its original list of losses at the end of the war. AUD tallied the loss of *U325* to a plausible attack in the Irish Sea (point “1” in Figure 1.104), not knowing where it had been ordered to patrol. In 1956 when this was realised, AHB assessed *U325* as being lost in the Channel to unknown cause (point “2”).

The discovery of at least one mystery U-boat off North Cornwall (see the previous chapter for a full analysis of the North Cornwall U-boats) led NHB to speculate that it must be *U325* when it released a revised list of losses in 1997 (NHB FDS Revisions to Axis Submarine Losses, 1997). Not persuaded by this and with a lack of any other evidence, Niestlé (1998, 102) considered that

*U325* could have been lost anywhere after its last radio transmission to its patrol area to an unknown cause (point “4”). After inspections of the North Cornwall sites by the Author, the most northerly of them initially seemed to be a good fit for *U325* (point “5”) (Niestlé, 2007). However this has been overturned by better evidence and *U325* is now considered to be at point “6” (for a full explanation, see Chapter 11).

What this shows is that in the presence of new evidence, it has been tempting to look at cases such as *U325* and reassess what may have happened to the U-boat. But the question must be asked if reassessments based on purely historic data make much empirical difference to the accuracy of the loss register? In this instance the answer is clearly that they do not. Conversely, can we trust the archaeological interpretations of mystery sites based on the analyses of each site promulgated in this thesis? The answer seems to be that changes should only be attempted in the light of new hard evidence, but with the recognition that they may not be right. This was one of the reasons why the placing of brackets around uncertain U-boat identities is used in this thesis.

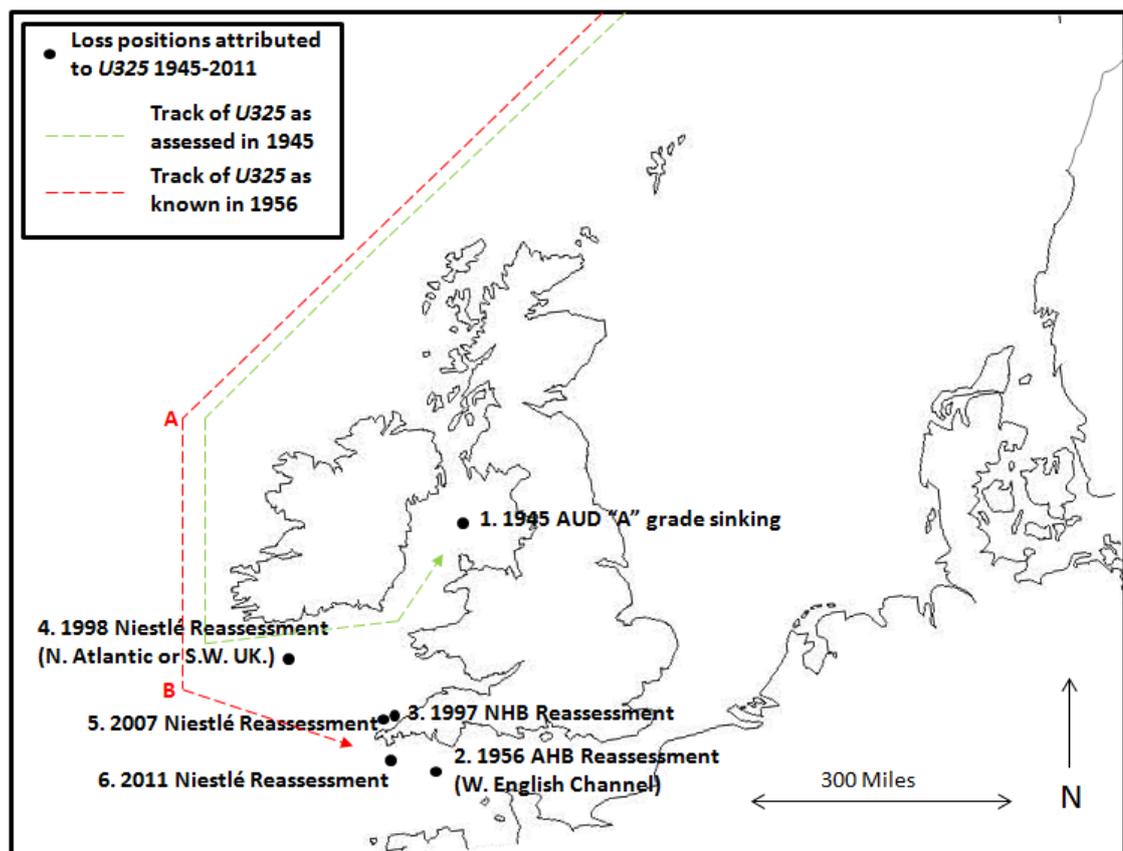


Figure 1.104. The post-war meanderings of *U325*, based on assessments made on the circumstances of its loss 1945-2011. (Innes McCartney).

The example of (*U325*) would seem to suggest that archaeology-based reassessments too should be treated with caution. One question which needs to be addressed is what weight should the

reassessments of mystery sites, such as this, be given when looking at other cases? Should they actually be seen as reducing the pool of difficult cases? Or should they be seen as simply producing theoretical solutions to them? The case of (*U650*) below serves to illustrate this question.

### **The current identification of (*U325*)**

There is encouraging evidence in the case of the identification of this wreck, not only from the wreck but from the photographic record that this site could be *U325*. The U-boat was actually a late-war variant Type VIIC/41 and was built in the small yard of Flenderwerft, Lübeck and was launched in March 1944 (Wynn 1997a, 219). The Type VIIC/41 featured weight savings in its internal equipment which were made so that the pressure hull could be thickened, giving deeper diving capability. Although this design was approved in 1941, long lead times for hull plates meant that none were laid down until 1943 (Stern 1991, 19). Visually these U-boats are virtually indiscernible from the Type VIIC, but the late date of builds means that they were constructed without deck guns, because all were ordered removed from the U-boats in November 1942 (Stern 1991, 100).

Archaeologically, what this means is that on this remarkably intact wreck it may be possible to identify the type of feature built into new U-boat construction late in the war which effectively replaced earlier gun mounts, grates or Marcks containers. This is almost certainly the feature seen in Images C and D of Figure 1.103 and in Image A of Figure 1.105 circled 1. In this instance a square plate has been built in as original equipment. When the U-boat was completed, this plate lay under the wood deck (as seen in Figure 1.105, Image C). Both the author and Axel Niestlé currently consider that the circular grate and/or Marcks container seen on Inshore Campaign wrecks at this location was a standalone feature and not a replacement for the gun mount and it was superseded by the square plate seen on the wreck of (*U325*). There is more evidence to support this view.

Figure 1.105 also reveals another surprising archaeological feature of the wreck of (*U325*). The Image A (top left of circled 1) shows a circular feature on the port side of the foredeck during construction. This is the standard location for the forward Marcks container, (with another originally situated aft of the conning tower) on boats built to carry a deck gun and without the extended flak platform.

However, when the conning tower was extended aft to accommodate more flak armament (the weight saving needed to do this was made by the deck gun being removed), the aft Marcks container had to be scrapped, leaving the boat with one life raft only, in the forward Marcks container.

The problem then arose that when the snorkel was later fitted (always on the port side, forward of the conning tower on Type VII U-boats) the forward Marcks container had to be discarded, because it interfered with the snorkel installation. This can clearly be seen in Figure 1.105, Image B, where the circular recess has been cut through to accommodate the snorkel mast.

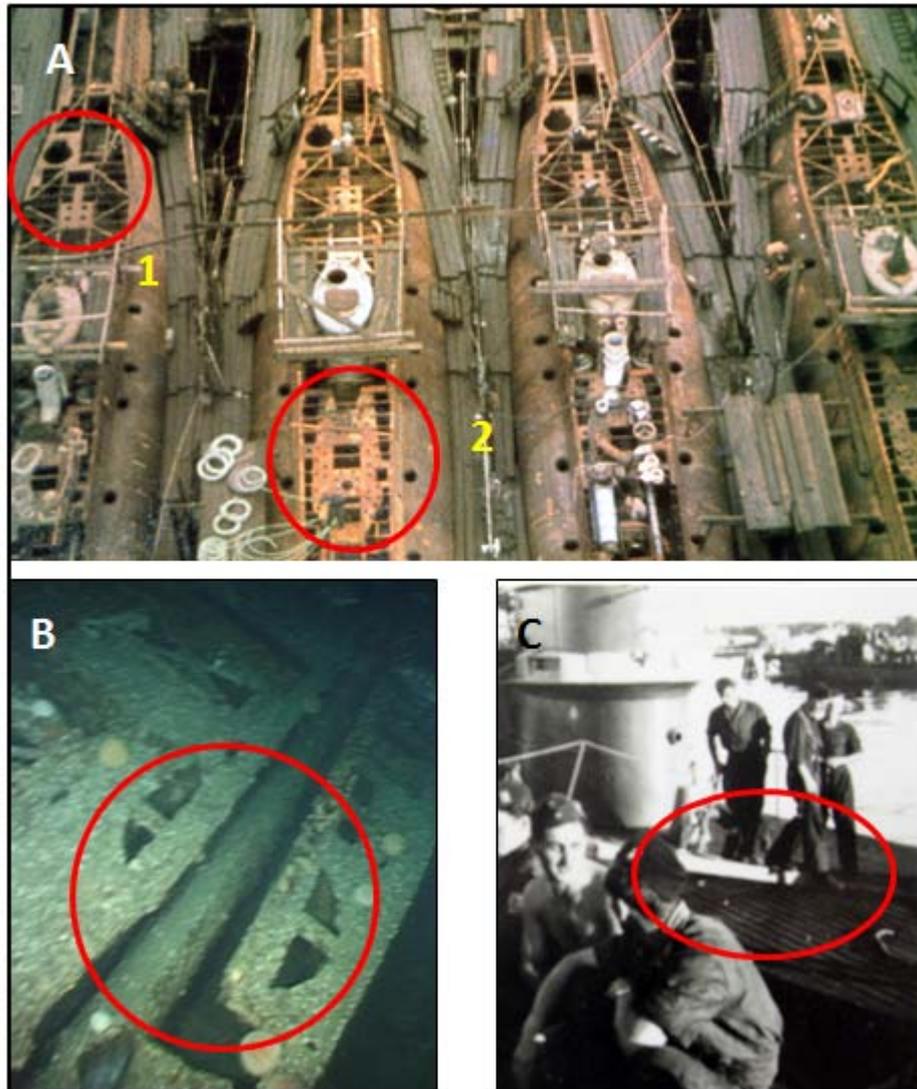


Figure 1.105. Late-war U-boat construction features as seen in the Blohm & Voss shipyard in February 1944 and on (U325) (Image A Wetzel 1996, 15, Image B Innes McCartney, Image C Uboot Archiv).

Most interestingly in the case of this wreck, the Marcks container was not moved to where the square plate is. The reason why is probably because at the time the snorkel was fitted, the boat was also fitted with the bow life raft containers, mitigating the need for the Marcks system entirely. The circular hole for the forward Marcks container was a legacy of the original build and was simply cut through to accommodate the snorkel installation.

Archaeologically, this helps with the identification of the wreck as (U325) because it means that this wreck is a late-war post deck-gun mounting build, with the snorkel added as a retrofit, or at least, while the boat was in the late phases of construction or working up, requiring a

modification to the foredeck. However, it should be stated here, that comparisons between this wreck and the wreck of (*U322*), launched three months previously in the same shipyard raise some interesting questions as to why they have several differing features (see Chapter 14)

A final important clinching piece of evidence pointing to the identity of this boat is the ring-float snorkel head with “Jaumann” coating (seen in Figure 1.103 Image B). From decrypted radio traffic between Flotilla Headquarters and BdU, a radio message on 5 April 1945 states clearly that *U325* had been fitted with this late-war technology (NA HW18/400). The ring-float snorkel head was known to have been less efficient in use, but had the advantage of the “Jaumann” radar absorber which was simple to make and fit. Its confirmed presence on *U325* from a radio decrypt is important in establishing it as this wreck.

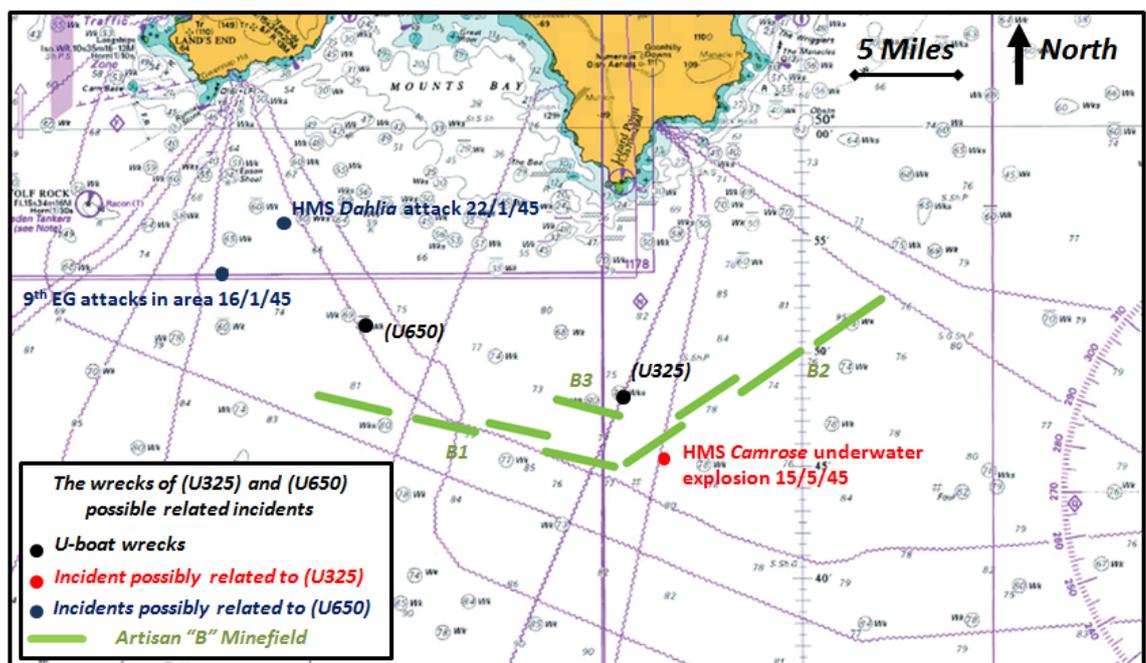


Figure 1.106. Location of the wreck of (*U325*) and (*U650*) and the possible circumstances of their destruction (Innes McCartney based on Chart No.2655).

The damage on the wreck of (*U325*) is similar to that seen on the wreck of (*U480*) (see Chapter 11) in that in both cases a detonation has occurred at the stern, blowing it off. In fact both U-boats were mined. Due to depth and time restrictions on a deep dive the author not did see or record the damage on this wreck (because it was in an area which is usually of little archaeological value), but suspected, due to its location (see Figure 1.106) that it had been mined. This was confirmed for certain with the publication of the Odyssey International survey (Niestlé, 2011, 336) which clearly shows the damage.

The location of the Artisan “B” minefield (see Figure 1.106) which was laid where the wreck of (*U325*) lies has been publically known since the release of Naval Staff History of British

Mining Operations 1939-45 (BR 1736 (56) (1) and (2)) in 2005. The 1,400 mines of this field were laid south of the Lizard peninsula from 3 to 30 April 1945, using QH for navigation. As had become the standard for deep trap fields, the mines were of the Mark XVII type laid at a depth of 60 feet (BR 1736 (56) (1), 258-263).

The wreck of (*U325*) is very close to the B3 field, which was laid on the 30 April. Assuming that according to NHB (FDS 110) *U325* arrived in its patrol area between Land's End and Bull Point (Plymouth) on the 19<sup>th</sup>, and would have been expected to have remained in this area until around 9 May (Niestlé 2011, 339) there can be little doubt that the U-boat met its fate in a minefield which was laid whilst it was in the area. The AUD Incident record No 10,999 (NA ADM 199/2056) reports an underwater explosion at the position shown in Figure 1.106. This may relate to (*U325*), but the date is very late and post-dates the BdU order for U-boats to surrender which was broadcast on 8 May.

The proximity of the dates of the U-boat's arrival in this area and the laying of the fields raises the possibility that the minefield was actually laid specifically on the basis of intelligence that *U325* was coming to this area. As with the case of (*U400*), (see Case Study No. 3) the guiding hand of OIC can be suspected in this instance, but it cannot be proved from the archival evidence which survives. However, it is known that the plans for several deep trap fields in the Channel were forwarded from the Plymouth Command to the Admiralty in February 1945. It may simply be a matter of coincidence that the Artisan field was laid while a U-boat was known to be in the area.

### **13.4: The Wreck of (*U650*)**

*Hydrographic Record No. 22406      Position: 49 51.061N; 005 29.971W      Depth: 87m*

The wreck at the location of (*U650*) is one of only two mystery sites in the Study Area which the author was unable to survey prior to writing this thesis. However a survey of the site was carried out by Odyssey International in 2008 and has been published (Niestlé 2011, 339-342). From this paper, the following features which could help with the identification of this site can be gleaned:

- Type one "flange" snorkel mast with ball-float snorkel head;
- M42 type 37mm gun mounting;
- Four bow mounted life-raft containers;
- Atlantic bow, without the refuelling slot modification to the towing eye (see (*U322*) in Case Study No. Five);

- 88mm gun mount present up to deck level;
- A hedgehog-made hole over the forward torpedo room;
- The wreck lies on its port side.

The presence of life-raft containers in the bow area shows that this boat is definitely from the second phase of the Inshore Campaign. However in the author's estimation, no other features are really of much use in making an attribution as to the wreck's specific identity, unless used in combination with each other and with other factors, especially wartime photographs of this boat; none of which the author has been able to locate.

### **The loss of (*U650*)**

From an intelligence perspective the last movements of *U650* are little understood. This is primarily due to a very limited number of decrypted radio transmissions referring to this U-boat. From the BdU KTB (NARA Microfilmed Records Roll No. 3981 PG30360) it is known that *U650* left Bergen on 9 December 1944. It was plotted daily on a path to the west of Ireland.

The U-boat maintained complete radio silence but three radio transmissions to or referring to *U650* were deciphered. The U-boat was ordered to the south Western Approaches on 20 December and on the following day was warned that its snorkel float valve was likely to be defective. Only on the 30 December when BdU broadcast a signal to "Channel U-boats" did OIC learn that *U650* was to arrive there on the 31<sup>st</sup> (NA HW198/417). Under the Bigram code of "PV" this was promulgated through the "H" Series on 2 January 1945 (NA ADM223/303 021546A). The "H" Series reveals that on 9 January all the Channel U-boats were ordered to attack shipping off Cherbourg, or if that was too strong to attack the shipping lanes along the English coast to the west (NA ADM223/303).

No other clues as to what actually happened to this U-boat have ever emerged. With such scant evidence relating to it, and no plausible claims being made for its destruction, it was listed in 1946 by the AUD as lost to an unknown cause, possibly a mine in January 1945 (NA ADM199/1789 No. 638). In an unreferenced memo by the Naval Historical Branch in the FDS files, in 1997 this was still considered to be case, with the English Channel being added as the most likely location (NHB FDS Box 100).

With a wreck of an Inshore Campaign U-boat now known to exist at 49 51.061N; 005 29.971W (Hydrographic Office wrecks database No. 22406) it is possible to consult the Admiralty Diary and the AUD Incident Records and the Plymouth Command Diary to try and find an attack to match to the wreck. In all cases it has not been possible to find any ASW activity, anywhere near the wreck site. Bearing in mind that the wreck carries evidence of being attacked by hedgehog (Niestlé 2011, 339-342), it is clear an attack took place but was not reported.

Interestingly however, the closest attacks which were not immediately discounted as being on wreckage both took place in January 1945 (see Figure 1.106). The attack on the 22 January by HMS *Dahlia* features in the AUD Incident Record (NA ADM 199/2051 No. 10187) as an attack on a contact, with no other information given. The proximity of the wreck of the SS *Vivona*, sunk in WW1 (Hydrographic Office wrecks database No. 22536) makes it unlikely that this could be related to (*U650*). The attack is also 6 miles from the wreck of the U-boat. The second incident shown on Figure 1.105 is more promising. This features in the Admiralty Daily Diary of 16 January 1945 (NA ADM 199/2310) as a single incident, but is related to the operations in the area by the 9<sup>th</sup> Escort Group (9EG), which in fact attacked several targets in the area at this time which were classified as non-submarine (Niestlé 2011, 342). More details of the attacks can be found in the published diaries of the commander of HMCS *Saint John* (Whitby 2005, 267-271) of the 9EG. They show attacks in the area over an eight day period, but with no positional data given it is impossible to assess whether any were directed at a contact in the vicinity of (*U650*).

In the absence of any certain attack on this wreck it is impossible to date when it was lost. Therefore the potential starting point to try to identify this wreck must be a list of every U-boat which was ordered to the Channel after October 1944 and was not graded as an “A” sinking event in 1945.

### **The identification of (*U650*)**

As shown, there is no hard evidence to point to an identity for this wreck. The presence of a gun mount only means that the boat could have been launched up to around the end of 1943. Just by looking at Inshore Campaign losses which remain unattributed in any sense, this means that it could also be *U1169*. In fact the range of possibilities must also include all non “A” grade losses during this period, which cannot be satisfactorily eliminated by hard evidence.

However in support of this view is what is known of *U650*'s operational career before it was lost. *U650* was based in France on D-day and at that time was not equipped with a snorkel (Wynn 1997b, 106-108). In August 1944 it made the transit to Norway and was snorkel-equipped at Bergen between 22 September and 26 November 1944 (Neitzel 1991, 220). It seems likely that this was also the occasion the life raft containers were added.

Niestlé concludes that “without doubt” (2011, 340) this must be wreck of (*U650*). In support of this view he states that crucially the combination of gun mount and bow life raft containers is unique among U-boats presumed lost in the Channel. Without further evidence to support his contention, and in the light of challenges faced in garnering exact identities to mystery U-boats of this period, as evidenced in this thesis, the author is cautious in being so certain. Matching

these features to a wartime photograph of this boat would go a long way to hardening the evidence in favour of its current identification.

Moreover the radio transmission, located by the author in 2012, to the U-boat warning it that its snorkel installation was faulty (see above) raises the possibility of mechanical failure as being responsible for its loss on transit. Nevertheless for the purposes of giving the wreck site an identity and within the stated policy of placing a bracket around sites which cannot yet be categorised as “A” grade sinkings, this wreck can be given the working identity of (*U650*).

### **13.5: Conclusions**

As this Case Study shows, the little intelligence available on each U-boat during the war, coupled with an absence of viable attacks to match their losses in two of the cases, meant that even before the wrecks were located, the cases of the losses of these boats were likely to need revision if more evidence could be found. In fact as seen above, *U325*'s fate had already been revised in 1956. Due to a richer combination of clues in the case of *U325*, its identification seems a stronger case than that of *U650*. The case of (*U1279*) was a little easier to unravel due to accurate dating of the fatal attack and the therefore limited number of likely candidates.

It should also be noted that the Allies listed *U927* as being sunk in this area in 1945 (NA ADM199/1789 No.656) (see Appendix 2.1). Its absence as a wreck is notable. Laid down in December 1942 and launched in May 1944 (Wynn 1997b 186), it is at least theoretically possible that it could be found in the future and require a reassessment of the identities of (*U650*) or (*U325*). Niestlé (2009) has eliminated the possibility of it being the wreck of (*U1279*).

In terms of a date of loss (*U1279*) seems to be a very good fit. As a “B” sinking, there is some good evidence to tie to the archaeology of the wreck, giving us a good chance of accurately identifying it. But the question remains then; if another U-boat wreck was to be found in this area in the future, could the wrecks of (*U650*) and (*U325*) be ruled out as possible candidates? The answer is a self-evident no. If anything, this proves that when mystery sites are located, they offer the opportunity to hopefully improve the records, but they hardly ever yield definitive truths. As Chapter 12 shows, *U325* was thought to be the wreck now considered to be (*U1021*). Undoubtedly its current attribution is a better fit, but it cannot be said with certitude that it is definitive.

The main findings and concepts investigated in this Case Study are detailed as follows:

### **The Archaeology of the U-boat Wrecks**

1. The archaeology on the sites revealed a good range and combination of features. Especially of note was the GHG balcony on (*U1279*) and ring-float snorkel on (*U325*) and (*U1279*). In the case of (*U325*) this could be matched to an Allied radio decryption of the U-boat being fitted with this variant of snorkel head, coated with “Jaumann”. The absence of the Marcks container on (*U1279*) is also of note in the fact that the absence of certain features can be as useful in identifying a wreck as is their presence;
2. In common with the other Case Studies, detailed recording of often minor features is crucial to dating and understanding the final outfit of the U-boat;
3. The cases for these wrecks being attributed as (*U325*) and (*U650*) are supported by the archaeology. But the weak historical evidence holds back both cases from being anything more than current best supposition. The case of (*U1279*) is stronger because of accurate dating and good historical text covering its sinking;
4. Photographic evidence from *U325* shows that it did not have a gun plate or grate in the gun position. No photographs of *U650* have so far been identified.
5. Comparisons between the wrecks of (*U322*) and (*U325*) (see Chapter 14) raise some interesting questions as to why some of their features are different. It serves to illustrate that the absence of the flotilla records of this time increases, because none are known to exist, the difficulties in making identifications of these mystery U-boats.

### **The Historical text**

1. As shown in the Case Study, the historical text reveals only minor details as to where these three U-boats were when at sea. In the case of *U650*, it is known from one BdU transmission that *U650* was thought by BdU to be in the Channel, but its exact patrol area is not known. By contrast the wreck of (*U325*) is where one might expect it to be found, in its allotted patrol area. The historical text has revealed that (*U1279*) could have been in the entrance of the English Channel at the time of its presumed sinking;
2. The official loss attribution to *U325* was known to have been wrong in 1956. The loss of *U650* has never been officially explained. The official loss of *U1279* could equally have accounted for *U327* as both U-boats are thought to have been in the area at that time;
3. All previous reassessments of *U325*'s loss have subsequently been discredited. This attribution represents the best case so far discovered.

## Chapter Fourteen: Mystery U-Boat Case Study: (U322) and (U772)

### 14.1: Introduction

This Case Study examines the sinking of two of the earliest losses to occur in the Study Area during the second phase of the Inshore Campaign. According to the 1946 official list of U-boat losses (NA ADM199/1786 Nos. 612 & 628) *U772* was sunk near to where this Case Study suggests it actually lies. However *U322* was considered to have been sunk north of Scotland. Figure 1.107 shows where the wrecks lie within the Study Area.



Figure 1.107. Map showing the locations of the wrecks of (U322) and (U772) (Innes McCartney).

As is the case with the other mystery U-boats from this period of the Inshore Campaign, the intelligence background to their actual movements is as vague today as it was to the AUD in 1945. However, the presence of the wrecks gives archaeological clues not available then and clearly points to genuine fates of the two U-boats. This case represents an attempt to redress the historical record, based on the best archival and archaeological data currently available.

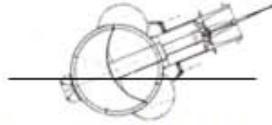
### 14.2: The Wreck of (U322)

Hydrographic Record No. 18541      Position: 50 24.876N; 002 26.209W      Depth: 50m

The Hydrographic Office wrecks database (No. 18541) lists the wreck of a U-boat being first identified in 1987 on a site which had been originally detected by survey in 1952. The author has visited this site on several occasions. In 1997 he identified the site as an Inshore Campaign loss and conducted a video survey of the wreck in 1998 and on two separate occasions in 1999. On one occasion the underwater visibility was an exceptional 20 metres or more, allowing for the rare experience of being able to view from above almost the entire U-boat. The main features of this site are detailed in Figure 1.108 below:

- Images A & D show the four life raft containers on the port side of the bow, with a diver giving a good scale indicator for the size of these features. Image D shows them seen from the side and it can be noted that they are in fact of differing lengths, presumably shaped in this way so that they can remain flush to the deck as the spacing between the pressure hull and deck gets narrower towards the bow;
- Image B shows a good top-down view of the bow, showing the underwater refuelling slot, as fitted to some U-boats from 1943. Circled is the mounting point for the forward jumping wire (see also Figure 1.109) which had to be moved from its traditional position on the bow to accommodate this feature;
- Image C shows the large blast hole in the port side of the wreck, just forward of the control room, abaft the captain's cabin. This represents a substantial hole in the wreck, which in the author's estimation could only have been caused by a depth-charge exploding in very close proximity to the hull;
- Image E shows several important features. Firstly, the hydraulic piston for the snorkel can be seen, along with the remains of the base of the snorkel mast. The rest has been blasted off by the explosion next to it. Nevertheless, there is enough present to determine that the mast was in the lowered position when U-boat was sunk. The hinge is not clear on the video tapes, but appears not to have a heel connector, meaning that this is probably a Type One snorkel mast with flange fitting. Secondly, the circled feature in the top left of the image resembles a Marcks container seen from underneath, which has flipped onto its side and fallen down the starboard side of the wreck. This would probably have been caused by the explosion. This would also explain the seemingly indented nature of the container;
- Image F shows the conning tower seen from the starboard side of the wreck, which shows the extreme angle at which the U-boat is lying. Of importance in this image is the extended periscope which, up until the writing of this thesis (and the access given by Odyssey International to ROV tapes of *(U441)*) remained the only example of a fully extended periscope seen anywhere across the U-boat wrecks of two World Wars in the Study Area, making a rare and noteworthy feature. When seen in conjunction with an elevated snorkel mast, it is evidence that the U-boat was sunk while snorkelling, but when seen alone, as in this instance the interpretation must be that the U-boat was probably attempting to make or had just made a submerged attack on a target;

**Name: (U322) Posn: 50 24.876N 002 26.209W Depth: 50m**  
**Date of Loss: 29 Dec 1944 How Sunk: Depth Charge**  
**Date of Surveys: 1998 & 1999**



Wreck leans 70° to starboard

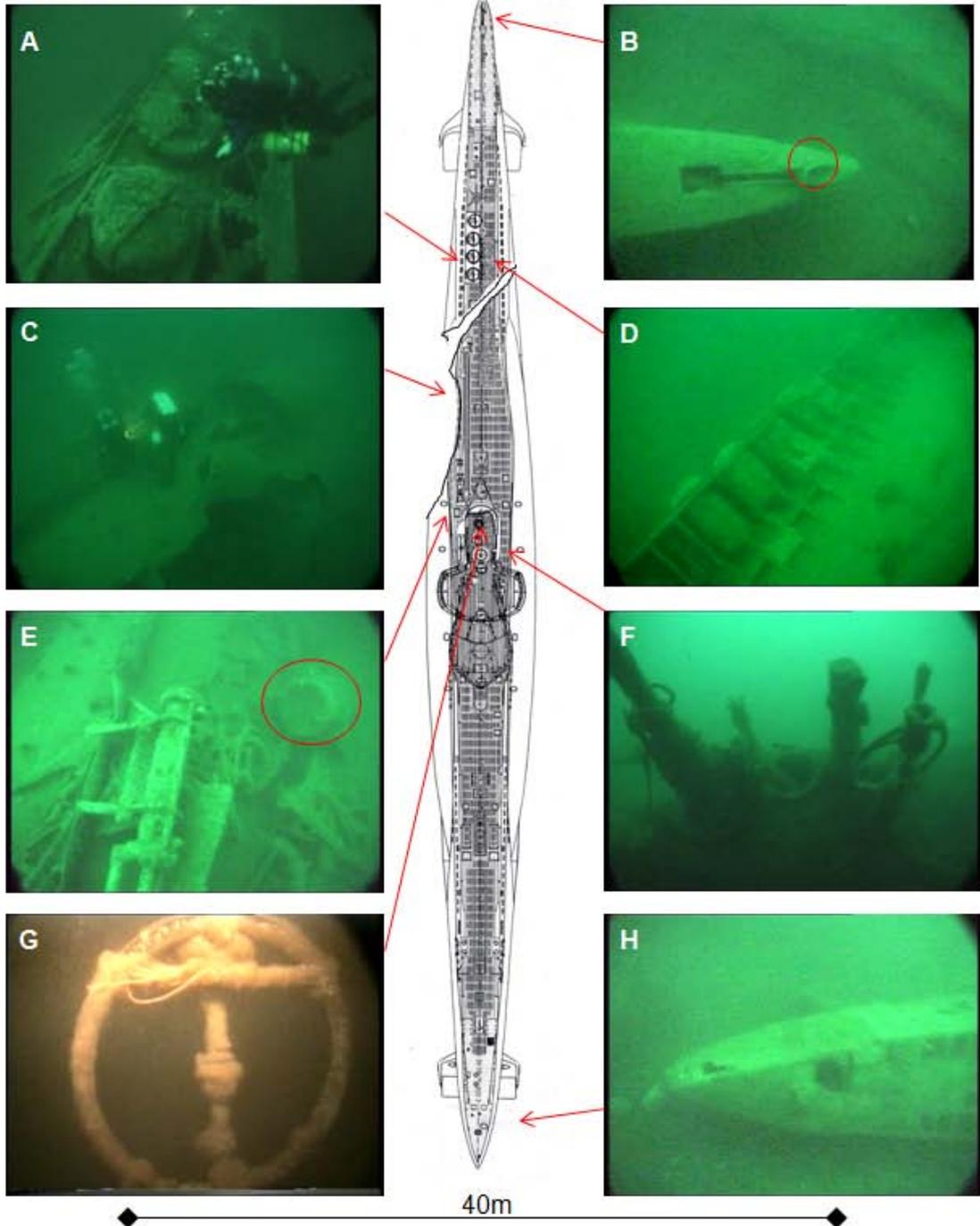


Figure 1.108. Diagram of the wreck of (U322) and its key features as surveyed and described in the text. (All images Innes McCartney except the line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image G shows the rod antenna fitted into the HF loop to allow for submerged radio reception and transmission. This can also be seen in Image F;
- Image H shows the stern of the wreck, lying almost completely over on its side, suggesting that the damage done to the wreck has actually caused it to twist in the time since it was destroyed.

From an archaeological standpoint, this wreck has two particularly interesting features; the bow life raft containers and the underwater refuelling slot. The bow containers point to a wreck from the second phase of the Inshore Campaign. In this instance, they are present alongside the Marcks container. This seems illogical; because why equip a U-boat with both systems? From archival photographs, we know this did occur (see Figure 1.91 in Chapter 11, *U1058* is so equipped). The explanation is that the Marcks container was fitted as part of the original equipment of the boat and that the bow containers were added later. It may have been that with no blanking grate available, the Marcks container was simply left in situ.

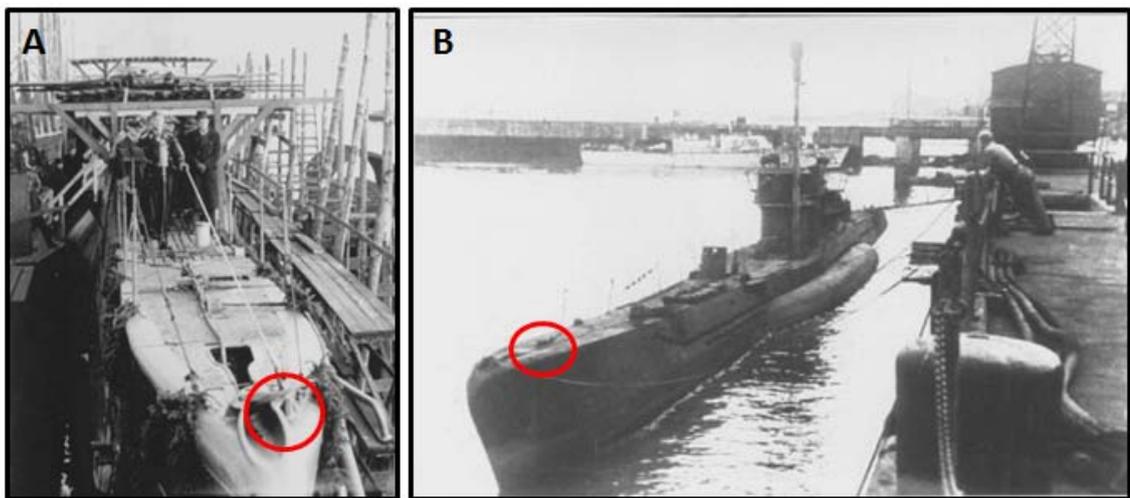


Figure 1.109. The underwater refuelling slot and jumping wire fittings (circled) on the Germaniawerft-built *U1056* (Image A) and the Kriegsmarinewerft Wilhelmshaven-built *U776* (Image B) (Image A Niestlé 2011, 345 and Image B *Uboot Archiv*).

The underwater refuelling slot is present on both wrecks in this Case Study, although in both instances they are slightly different. The mounting point for the forward jumping wire on the wreck of (*U322*) is shown in Image B of Figure 1.108 and on the construction photo of *U1056* in Image A of Figure 1.109. Little is known of this technology, with seemingly only one account of its use (during field testing) surviving (Schaeffer 1953, 105-109). This account is almost exclusively used in Rössler's (1989, 162) technical history of U-boats. What is seemingly unknown is when it was introduced into production and if it was ever (although unlikely) a dockyard retrofit. Testing is known to have ended in October 1943 and the last U-boat tanker (for which the technology was designed to work in conjunction with) was sunk by

the Allies in June 1944 (Rössler 1989, 162). So it is logical to presume that it was fitted to U-boats from mid 1943 to mid 1944. Morris (2012, 9) has shown that the earliest boat known to have been fitted with this technology is *U481*, which was launched in September 1943.

Archaeologically then, this U-boat seems to have been built after deck guns were fitted as standard and during the time they were built with the underwater refuelling slot. This means it would have been launched no earlier than mid 1943, to have the refuelling system and no later than early 1944, when deck gun mounts are clearly no longer fitted (*U322* was launched in December 1943). It was later modified to accommodate a snorkel, and to accept the bow life raft containers.

### **The destruction of the Portland U-boat**

The process which has led to the current attribution of this wreck site as (*U322*) has been a lengthy one and has involved it being previously identified by the author (McCartney 2002, 72-73) and NHB (FDSN48/99) as (*U772*). This has been amended for two reasons. Firstly, a ripple was caused in the records by the identification of (*U400*) off the North Cornish coast (see Case Study No. Three). This led to a reassessment of the losses of *U400*, *U322* and *U772* by Niestlé (2004a), which opened the possibility that this could be the wreck of (*U322*). Secondly, from what is now known of the archaeology on site, the wreck is unlikely to be (*U772*), as described below.

Before the attribution of (*U322*) was made to this site, the correct attack from the Allied records had to be identified. The official list of U-boat losses published by AUD in 1946 (NA ADM199/1789) lists no U-boat within 20 miles of the location of the wreck of (*U322*). The nearest recorded loss in the list is the destruction by Wellington “L” of 407 Squadron of a snorkelling U-boat at a position 20 miles south of the wreck (No. 628) on 30 December 1944. This incident was assessed as a “B” sinking during the war was not altered afterwards (NA ADM199/1786, AUD 55/45). It was however, listed as the event which sunk *U772*.

In 1997, due to the fact that *U772* had not been located elsewhere and was considered lost in the central English Channel it was presumed by the author that this wreck must be (*U772*). However the attribution of its destruction to the air attack listed above was problematic because of the distance of the attack from the wreck (even allowing for a margin of error for aerial navigation at night) and because archaeologically, the lowered snorkel mast indicated the boat was not snorkelling when lost. So, in 1998 the author presented the archaeological details of this site to the Naval Historical Branch for review and possible reassessment. This was subsequent to the successful identification of *U480* by the author and the Branch earlier in the year (see Chapter 11).

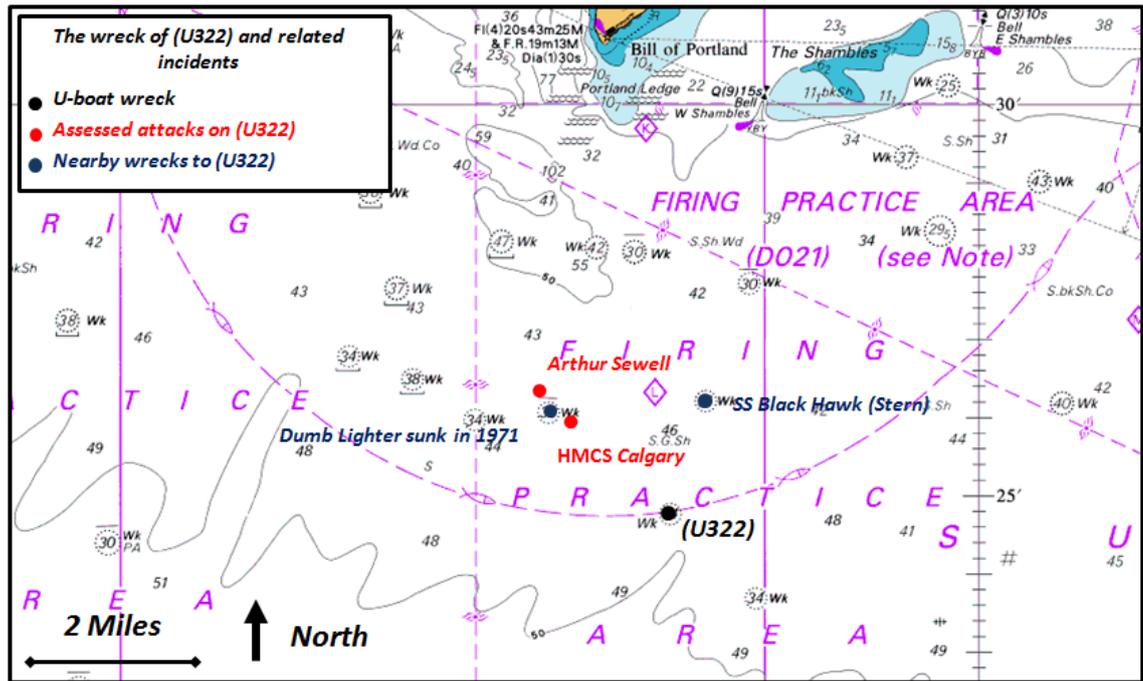


Figure 1.110. Map showing the wreck of (U322) and associated wrecks and incidents (Innes McCartney based on Chart No. 2454).

The report by the Naval Historical Branch, when completed in 1999 (NHB FDSN48/99) was important because by re-examining the AUD's assessed attacks in the area, it correctly identified that the U-boat had actually been destroyed by the convoy escort corvette HMCS *Calgary* on 29 December 1944. This attack was in response to the torpedoing of two ships in the convoy TBC21, the SS *Arthur Sewall* and SS *Black Hawk*, which broke in half and sunk. The original assessment of this attack (NA ADM199/1786, AUD50/45) had been graded "F Insufficient evidence of damage". This was in part because the wreck was not located at the time, even though an oil slick was seen.

However the assessment describes how when making a second approach to the contact, HMCS *Calgary* evaded a torpedo heard on hydrophone approaching it. The torpedo was then clearly heard passing down the side of the ship. It is now considered by the Branch and the author that *Calgary's* next attack with a 10-pattern of depth-charges caught the U-boat at or near periscope depth and sunk it. Archaeologically this is represented on site by the extended periscope and the large depth-charge hole.

Figure 1.110 shows the location of the wreck of (U322), 6 miles south of Portland Bill. The wreck near the position of HMCS *Calgary's* attack was sunk in 1971 and can be discounted as a wartime contact. Bearing in mind the nature of the engagement and the fact that the wreck was not relocated, the position of this attack is close enough to effectively be considered as the one which sunk the U-boat. The stern of (U322)'s last victim, SS *Black Hawk* is shown and from the

distances involved (*U322*) could clearly have been its attacker. From the wreck diagram (see Figure 1.108) it can be seen that Hydrographic Office survey details show the U-boat pointing south. This could mean that the U-boat was affecting an escape to the south and fired a stern shot at HMCS *Calgary* as a last measure to evade detection.

A final note to this incident was uncovered in 2012 when the author located in the post-war annexes to the AUD Assessments (NA ADM199/1786, Section 4, 135) that the SS *Arthur Sewall* actually opened fire on a periscope after it was hit, which was considered to have guided the escorts to the U-boat's position. The Assessment Committee credited the ship with its role in the action. The position given in the Assessment is shown on Figure 1.110 and is consistent with the scenario described above.

### **The identification of the Portland U-boat as (*U322*)**

So while the reason for the destruction of this U-boat was established and dated in 1998; it will be noted that up to that point the wreck was considered to be (*U772*). However, Niestlé (2004b) promulgated the possibility that this was actually (*U322*). Originally thought lost to a combined air and sea attack whilst on transit to the English Channel (ADM199/1789, No.612), Niestlé suggested that this attack had claimed *U482* instead, because the Portland U-boat was actually (*U322*). *U322* could have arrived in the central Channel in time to have been sunk by HMCS *Calgary* in the attack discussed above and was a better fit archaeologically.

From an archaeological standpoint, Niestlé (2004b) suggested that *U772*, (being based in remote Trondheim) was unlikely to have been retrofitted with bow life raft containers before its last patrol. Moreover, because of the identification of (*U400*) among the North Cornwall minefield victims in 2003 (see Case Study No. Three), he suggested that the attack by HMS *Nyasaland* of 17 December, south of Ireland which was officially listed as claiming *U400* (NA ADM199/1789 No.622) actually sunk *U772* while it was on transit to the English Channel. While this analysis was largely a matter of conjecture, the archaeological issues relating to the bow life raft containers was worthy of note.

Convincingly reinforcing the view that this cannot be the wreck of (*U772*), in a meeting on 30 March 2012 between the author and Niestlé, the fitting point of the forward jumping wire was discussed. Niestlé had identified that U-boats built in the Kriegsmarinewerft Wilhelmshaven yard such as *U772*, had been fitted with a jumping wire fixing in a seemingly unique position, aft of the refuelling bow (this can clearly be seen on Image B of Figure 1.109 in the case of *U776*). Since the fixing on this wreck was not of this type, it cannot be (*U772*).

However, because the wreck is probably not (*U772*) it does mean that the only other possibility is actually (*U322*), because from the U-boats known lost during this period, only *U322* and

*U772* were possibly in the English Channel at the time. The next U-boat thought to have possibly entered the Channel and not returned was *U650*, but it could not have arrived before 31 December (see Case Study No. Four).

Because of accurate dating of the loss of (*U322*), we know the only alternative is (*U772*), but that archaeologically, this is not such a good fit. While (*U325*) is the best current fit for the wreck off the Lizard (see Chapter 13), questions remain unanswered in all these cases which make their currently attributed identities far from certain.

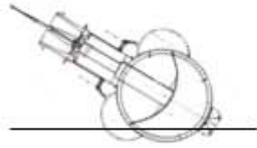
### **14.3: The Wreck of (*U772*)**

*Hydrographic Record No. 18451*      *Position: 50 02.742N; 002 01.383W*      *Depth: 60m*

The wreck listed in the Hydrographic Office wrecks database as No. 18451 was added to charts in 1992 when it was reported to be the wreck of the ship, *Uffe*. On 1 June 1999 the site was dived and recorded by the author on video. At this time the Hydrographic record was amended to show that this is the wreck of a Type VII U-boat. The key features of the wreck are outlined in Figure 1.111 below:

- Image A shows that the bows have been fitted with the towing eye and refuelling slot. No fixing point in the location as the one on (*U322*) can be seen;
- Image B shows that the bow section on the starboard side forward of the conning tower has had an extra high pressure air cylinder added as a retrofit. This probably occurred at the time of the fitting of the snorkel. Similar can be seen on the wreck of (*U325*) in Chapter 13;
- Image C shows the snorkel head to be of the ball-float type. This one has had the round dipole radar warning device fitted to it;
- Image D was taken from inside the large blast hole in the starboard side of the wreck forward of the conning tower. The picture depicts the round doorway in the forward bulkhead of the control room;

**Name:** (U772) **Posn:** 50 02 742;002 01.383W **Depth:** 60m  
**Date of Loss:** 1944 **How Sunk:** Depth Charge?  
**Date of Survey:** 1 June 1999



Wreck leans 50° to port

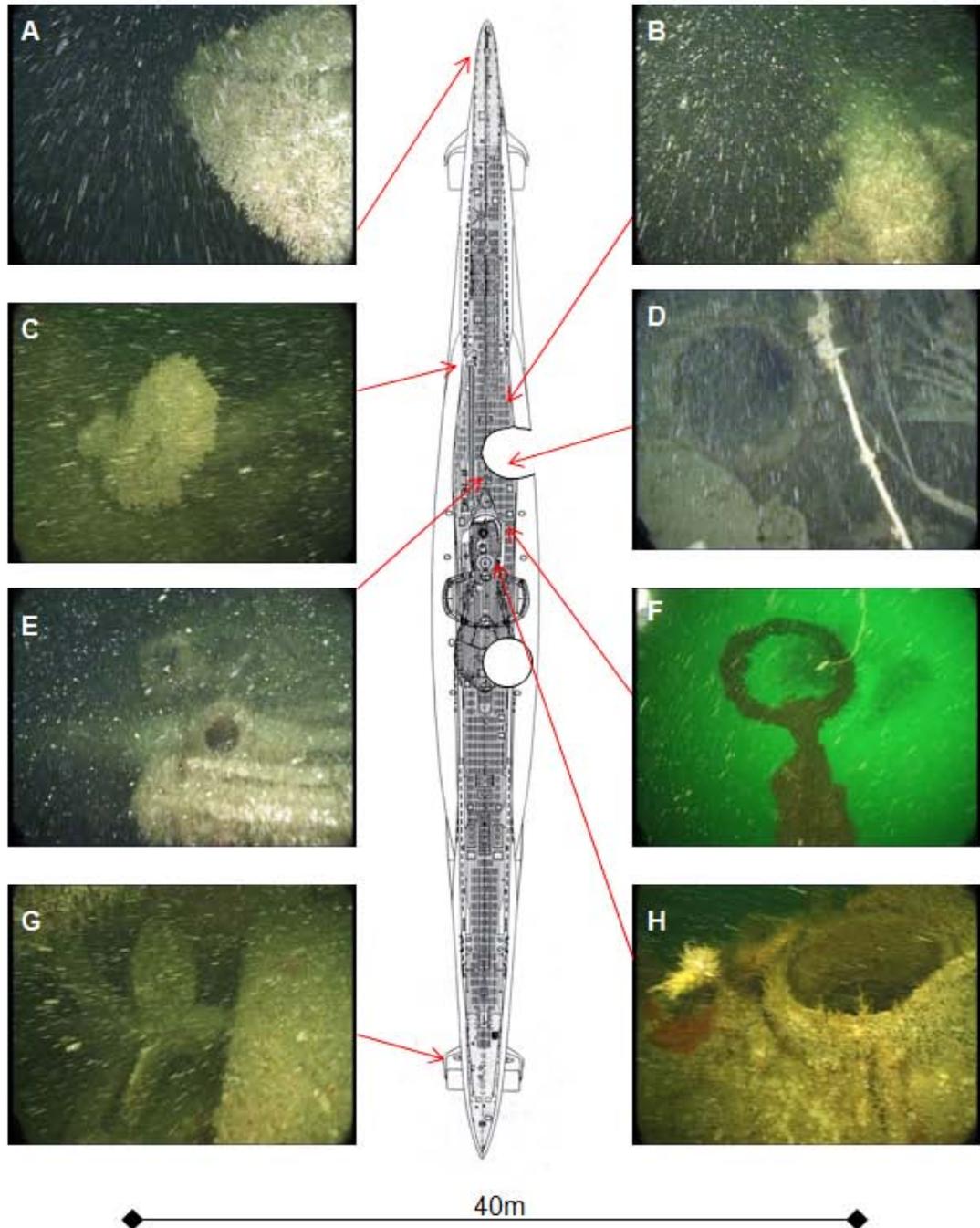


Figure 1.111. Diagram of the wreck of (U772) and its key features as surveyed and described in the text. (All images Innes McCartney except the line diagram, adapted from Köhl & Niestlé, 1994, 59).

- Image E shows the hydraulic snorkel piston and above it is the snorkel mast which shows the circular union denoting it as a Type One arrangement. Above it is a square feature which is where one would expect to see a gun mount or any of the commonly seen modifications. This square feature is challenging to interpret from the tape of the survey. However several viewings of the footage lead to the conclusion that this is possibly the cradle upon which a Marcks container was seated. The Marcks container was not seen on the survey, but due to the proximity of a large depth-charge hole this is not surprising;
- Image F shows the HF loop without rod antenna fitting;
- Image G shows the steel propellers consistent with a wartime constructed German submarine of WW2;
- Image H shows the conning tower hatch to be open. This may well have been a reaction to the explosions which caused the areas of damage seen on the wreck, which due to the poor visibility were not able to be discerned entirely.

The extra air cylinder seen in Image B points to this being a U-boat of the second phase of the Inshore Campaign (I am grateful to Axel Niestlé for pointing this out during our meeting of 30 March 2012); as these were a modification made after the French bases were abandoned. The possible presence of a Marcks container forward of the conning tower means that it was either placed there when the U-boat was retrofitted with a snorkel or was built in as original equipment. From a dating perspective this may rule it out from being a very late-build boat, because it would more likely have been directly fitted with bow life raft containers and the snorkel (as is the case with the wreck of *(U325)*, see Case Study No. Four), dispensing with the need for the Marcks system.

#### **The identification of *(U772)***

Initially, through a process of elimination of sites, (and with the wreck now considered to be *(U322)* being considered as *(U772)*) this wreck was considered to possibly be *(U441)* (McCartney 2002, 73). However this has now been discounted because the boat has almost certainly been positively identified elsewhere (see Chapter 10) and archaeologically it does not fit the features on this site, because *U441* was most likely fitted with a pulley type snorkel elevator.

The only “A” grade sinking of a U-boat wreck in the central English Channel which has not so far been found is *U672*, but it is considered to be too far away, with the attack taking place off Start Point. Moreover the extra air cylinder on this wreck seems to preclude *U672* from being a candidate. Therefore this site is considered to be a mystery case.

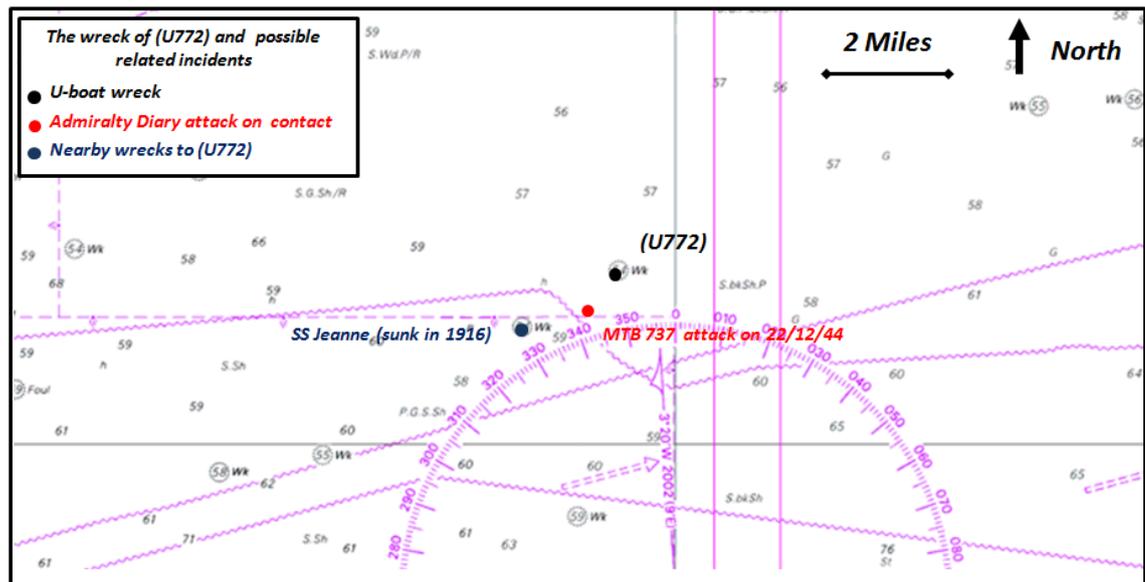


Figure 1.112. Map showing the wreck of (U772) and associated wrecks and incidents (Innes McCartney based on Chart No. 2454).

*U772* is listed in the official register of U-boat losses as being sunk by Wellington “L” of 407 RCAF Squadron on 30 December 1944 at a position 30 miles to the west of where the wreck lies (NA ADM199/1789 No. 628). The AUD Assessment of this attack (NA ADM199/1786, AUD 55/45) was originally graded “F – Insufficient evidence of damage”. However it was upgraded to “B” Probably Sunk and attributed to *U772* in February 1945 when the amended assessment states that due to tracking information a U-boat was known to have gone missing at the time. Simply then, this attack must have been the most plausible AUD had at the time and it was matched to the loss of *U772*. However, as Niestlé (2004b) has shown, this attack was probably directed against *U486* which was not damaged. The first instance in this Case Study where a “B” grade attack can be discounted as being directed against a U-boat. The second instance of a “B” grade attack (that of HMS *Nyasaland* on 17 December 1944) not being directed against a U-boat is discussed below.

In the light of the official attack being discounted and attempting to date the loss of the U-boat by finding a plausible ASW incident from the AUD Incident List and Admiralty War Diary the GIS database found that the area around this wreck is devoid of contacts, except for the one shown in Figure 1.112. In this incident MTB 737, of the 66<sup>th</sup> MTB Minesweeping Flotilla, carried out a depth-charge attack at the position shown. A wider search with the rest of the Flotilla’s MTBs, 760 and 752 failed to relocate the target; as did HMS *Loch Shin* when it joined the hunt. This led to the contact being classified as doubtful (NA ADM199/2308). The Portland War Diary (the Command where the 66<sup>th</sup> MTB Flotilla was based at the time) offers no further

information, other to confirm the position and the launch of depth-charges (NA ADM199/1935). This attack does not appear in the AUD incident list and may have been overlooked by it when trying in February 1945 to establish what happened to *U772*, leading it to opt for attack by Wellington “L” instead.

While it looks likely that the wreck of (*U772*) had been depth-charged, there are reasons to be cautious with attributing this attack to the wreck. Primarily this is because of the proximity of the WW1 wreck SS *Jeanne* (Hydrographic Office wrecks database No. 18444) which is as near the attack position as the wreck of (*U772*). If the contact had been relocated and fixed using QH, then it would be certain that this attack sunk the U-boat, but this is not the case.

According to the BdU KTB (NARA Microfilmed Records Roll No. 4066, PG30361) there were three U-boats operating in this area at the time, including *U680* (which survived and began its return passage at this time (Niestlé, 2004b)), *U772* and *U322* (see above). The attack shown on Figure 1.112 is all the evidence we currently have regarding the loss of this U-boat. If this attack did sink it at this time then (*U772*) and (*U322*) are the only candidates; and as (*U322*) is considered to have been sunk off Portland (see above) then this wreck could only be (*U772*). Although tenuous, this is the best current attribution which can be made.

Archaeologically there is evidence on the wreck to support the view that this is (*U772*). Firstly, as suggested by Niestlé (2004b), *U772* was unlikely to have been fitted with bow life raft containers and the wreck does not have any. Secondly, the wreck does not have the fixing point for the jumping wire in the standard position, seen in most instances in the photographic record. Instead despite marine growth and poor visibility, several viewings of the underwater video footage of the wreck show that the fixing seems to be aft of the refuelling slot, in a position much closer to where it can be seen on the photo of *U776* in Image B of Figure 1.109. *U776* was launched five months after *U772* in the same shipyard, Kriegsmarinewerft Wilhelmshaven (Sharpe 1998, 144-145) and therefore logically can be expected to have the same fixing. If this is the case, then it would prove that the wreck is almost certainly *U772*, but this should be considered only a possibility.

If the wreck is not (*U772*), it is most likely that it will not now be known for certain from which ship and what date the depth-charges which sunk this U-boat were launched. Although it is disappointing that no other records of an attack at this position have been found at the NHB or National Archives, this is not a unique case. The wreck of (*U650*) (see Chapter 13) also suffers from having no directly attributable attack to account for its destruction.

One possibility is that it was an attack recorded in records which do not exist in the United Kingdom. If the attack was carried out by an American escort of an American-commanded

transatlantic convoy, (presumably heading into Cherbourg) then it may not have been passed to the British, because, as stated in the AUD Monthly Antisubmarine Report for February 1945, COMINCH reserved the right to assess any ASW attacks which took place when under direct American control, wherever they took place (Anti U-boat Division 1945a).

An alternative identity for this wreck was identified in a meeting between the author and Axel Niestlé on 30 March 2012, when this site was discussed in detail and all of the evidence was thoroughly reviewed. The outcome was to look at the last few U-boats which are thought to have operated in the central Channel but still cannot be satisfactorily accounted for. There were two prime candidates, *U1169* and *U1055*. Following a search through the photographic archive held at the Uboot Archiv, Cuxhaven, Germany the author established that *U1169* was fitted with a rod antenna. Since one was not fitted to the wreck and no evidence can be found that (*U1055*) was so equipped it is proposed that this wreck could alternatively possibly be (*U1055*).

### **The HMS *Nyasaland* incident re-examined**

As Niestlé (2004a) has shown, the reattribution of (*U400*) to North Cornwall leaves a potentially viable “B” grade attack south of Ireland, (where it was originally thought (*U400*) was destroyed) without a target. The attack by HMS *Nyasaland* on 17 December seems promising, with hedgehog detonations occurring after only nine seconds (See Case Study No. Three). With (*U400*) now considered mined off Cornwall, Niestlé’s assertion is that the U-boat destroyed there was probably *U772*.

The daily plot of U-boat positions in the BdU KTB for this period plots *U772* nowhere near the HMS *Nyasaland* attack position and actually off Cherbourg at the time (NARA Microfilmed Records Roll No. 4066, PG30361). In fact, according to the BdU KTB the nearest *U772* ever got to the *Nyasaland* position was when *U772* passed 100 miles to south of it five days before on 12 December 1944 (see Figure 1.113).

In order to place *U772* at the HMS *Nyasaland* attack location on the right date, Niestlé states that two things must have happened. Firstly, it may have taken the slower route through the Iceland-Faroe gap from Trondheim to the Western Approaches and secondly, it chose to operate in a secondary optional area off Milford Haven, when its primary objective was the Channel (see Figure 1.114), although this is conjecture.

In fact the possible error in the records may not lie with the track of *U772*, but with the HMS *Nyasaland* attack itself. The AUD Assessment reads very plausibly and the commander certainly thought a U-boat was destroyed (NA ADM199/1786, AUD 2048/44). There is also a more detailed record of this attack within the proceedings of the 18<sup>th</sup> Escort Group, in which it states that HMS *Nyasaland* was a newly-commissioned ship (NA ADM199/503). The attack

consisted of two phases, first a 10 pattern depth-charge attack and then one hedgehog attack, in which at least seven explosions were heard when the projectiles were at 200 feet depth (8 seconds after hitting the water). This was followed by a violent explosion which actually damaged HMS *Nyasaland*. The report states that *Nyasaland* quickly left the scene to rejoin the convoy. It isn't known whether QH was in use or whether the position was fixed. The margin of error experienced by dead reckoning navigation could have placed it within the confines of the nearby deep trap minefield.

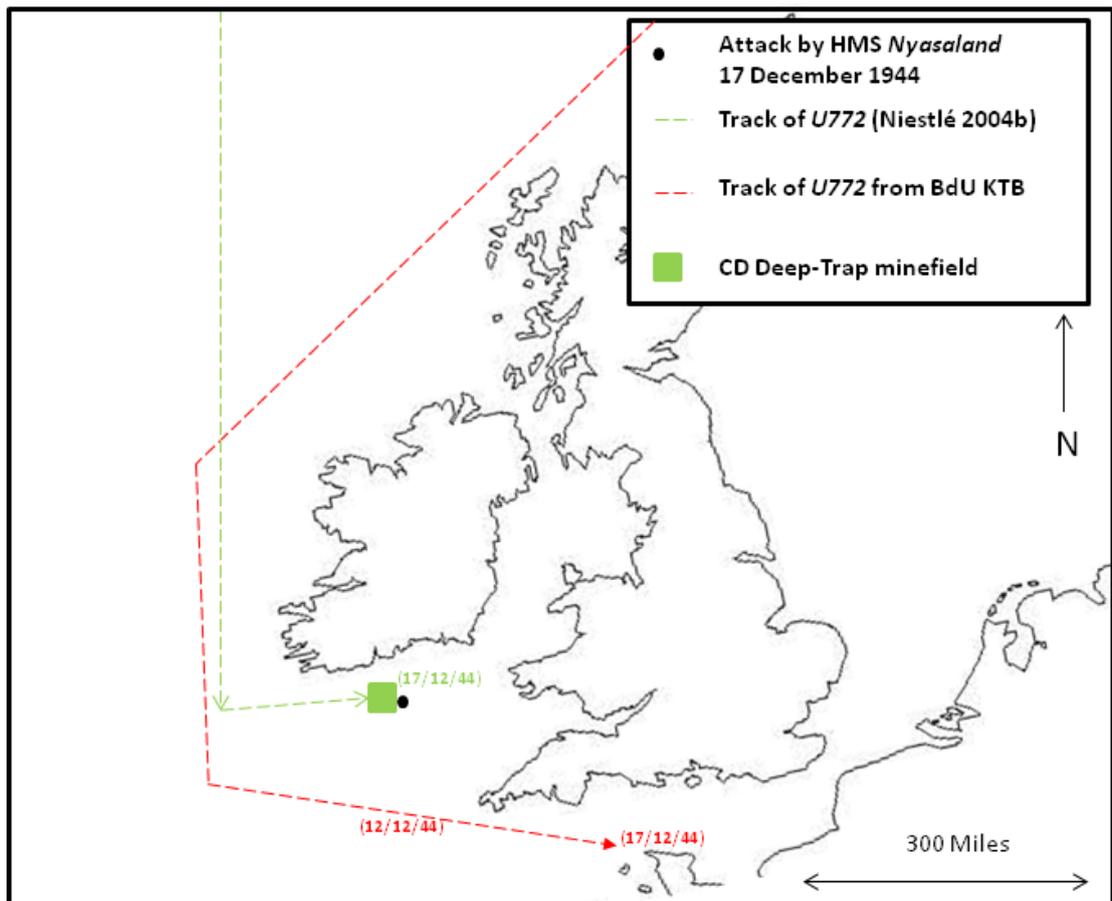


Figure 1.113. Map showing the possible tracks of U772 into the Western Approaches, the HMS *Nyasaland* attack of 17 December 1944 and the location of the CD Minefield (Innes McCartney).

The position given for the attack 51 16N; 08 05W, plots to within four nautical miles of the easterly edge of the CD deep-trap minefield, laid in October and November 1944 (BR 1736 (56) (1), 202-208) and therefore having been in place for not less than two months when HMS *Nyasaland*'s attack took place. The mines were laid at depths between 218 and 233 feet, the same depth as HMS *Nyasaland*'s contact. As the SS *Rolfsburg* incident (see Chapter 12) and the HMS *Camrose* incident (see Chapter 13) show that unexplained underwater explosions near the deep trap minefields did occur. It is possible therefore that HMS *Nyasaland*'s attacks activated a mine or a line of mines. The violent underwater explosion which followed the hedgehog detonations and damaged the attacking ship could have been the result.

It should also be noted that HMS *Nyasaland* claimed to have attacked a “confirmed” submarine three days later on 20 December, only to have had a certain kill thwarted by equipment failure (NA ADM199/503). Since all the evidence points to no U-boat being in the area, this claim can be discounted as well. As a novice ship, such claims could be expected, where perhaps more seasoned hands would have been more sanguine.

In the light of the presence of the CD minefield, the probable optimistic view taken by a new ship, and the seeming absence of any U-boats in the area, the author considers that it is probable that the HMS *Nyasaland* attack of 17 December was not been on a U-boat, but on a non-sub target which led to the probable detonation of a mine in the CD field. With this being the case, then as the Allies stated in 1945, *U772* was in the central Channel at the time of MTB 737’s attack, although whether the wreck nearby is actually (*U772*) must remain the best current estimate only.

#### **14.4: Conclusions**

As Chapters 11-14 show, the intelligence picture available to OIC and subsequent historians is vague, during the Second Phase of the Inshore Campaign, especially in relation to tracking and positional data. But interestingly, the Case Study reveals that sometimes viable attacks, such as that by HMCS *Calgary* on (*U322*) which definitely sunk U-boats, were not accredited because not enough evidence was collected at the time. This is one of the reasons why every known recorded contact with a submarine in the Study Area has been compiled into a GIS database; to ensure all known contacts are evaluated in the light of the presence of the known wrecks. It is this process which has matched a plausible attack with the destruction of (*U772*).

This final Case Study on the mystery sites of WW2 brings the number of cases evaluated to 12. In only one instance (the case of *U480* in Case Study No. Two) has it been possible to be certain to the exacting standards of an AUD “A” grade sinking that the identity of the wreck is correct. Despite the best efforts of the author and other historians, the gap between the archaeology and the often deficient historical text is too wide to close.

The main findings and concepts investigated in this Case Study are detailed as follows:

##### **The Archaeology of the U-boat Wrecks**

1. The archaeology of both sites revealed a good combination of features from two reasonably intact wrecks. The wreck of (*U322*) could be dated with a high degree of certainty to the second phase of the Inshore Campaign by the bow life raft containers. The date of its sinking confirms this to be correct.

2. Similarly (*U772*), can be dated to the second phase of the Inshore Campaign by the additional high pressure cylinders fitted forward of the conning tower.
3. Archival photographs of *U776* seem to point to (*U772*) being a good identity because of the forward jumping wire fixing. Although the wreck video footage is not 100% reliable due to marine growth and poor visibility during the survey.

### **The Historical text**

1. The Historical text is vague when providing details of the last actual operations of these U-boats. Both BdU and the Allies only postulated that both U-boats were in the Channel and their presence in the area was only possibly confirmed when the wrecks were found.
2. The official loss attribution of *U322* north of Scotland appears to have been incorrect because of the archaeological features on (*U322*), but this needs to be proved beyond doubt.
3. The historical text placed *U772* in the Channel, but the attack which is listed as sinking it has been disproven. This opens up the possibility that MTB 737 actually sunk (*U772*).
4. The HMS *Nyasaland* attack of 17 December, which was originally matched to the loss of *U400*, then to *U772* may probably have been directed against a non-sub target, which detonated a mine, causing the belief that a U-boat had been sunk.

## **Chapter Fifteen: Conclusions: Bringing the Inshore Campaign U-Boat Losses into Focus**

### **15.1: Introduction**

With each known U-boat wreck now surveyed or evaluated it is possible to draw up an accurate list of wrecks known as of 2012 and make insightful comparisons to what was known of the U-boat losses when the official list of U-boat losses (NA ADM199/1789) was published just after the war. As described in the introduction to this part of the thesis, there is a raft of questions that it was anticipated this exercise could answer. It will be addressed in this chapter as we attempt to draw a more accurate picture of the U-boats destroyed during the Inshore Campaign and how they met their fates.

### **15.2: The Archaeology Compared to the Historical text**

When comparing the results of the research into the wrecks and the fieldwork carried out on 23 of the wreck sites to the historical text, a complex picture emerges, which is shown in tabular form in Appendix 2.1. In order to simplify what the overall results mean, they have been broken down into seven distinct datasets which are represented as a series of maps as below. They are presented in a way in which they can be systematically combined to derive a map which depicts all of the key data in one final overall picture of the research.

#### **Where archaeology and historical text converge – The wrecks correctly listed in 1946**

The first four of the seven distinct datasets mentioned above are depicted in Figure 1.114. The results of Chapters Seven and Eight show that where the AUD graded a U-boat loss as “A” Known Sunk, none have been challenged by the archaeology. Such was the demanding criteria to reach this grade this is not surprising. In Chapters Seven and Nine the fieldwork from the surveys of seven “A” sinkings (*U767*, *U269*, *U1195*, *U741*, *U678*, *U413* and *U671*) was presented and in each case they were found to be archaeologically consistent with the historical text and are represented in black on Figure 1.114.

Because of this, there was little need to devote any more diving time to an examination of the other seven known wrecks which were also denoted as “A” Known Sunk in 1946 (*U247*, *U1199*, *U1063*, *U399*, *U1018*, *U275* and *U40*). They were described in Chapter Eight and depicted in dark grey in Figure 1.114.

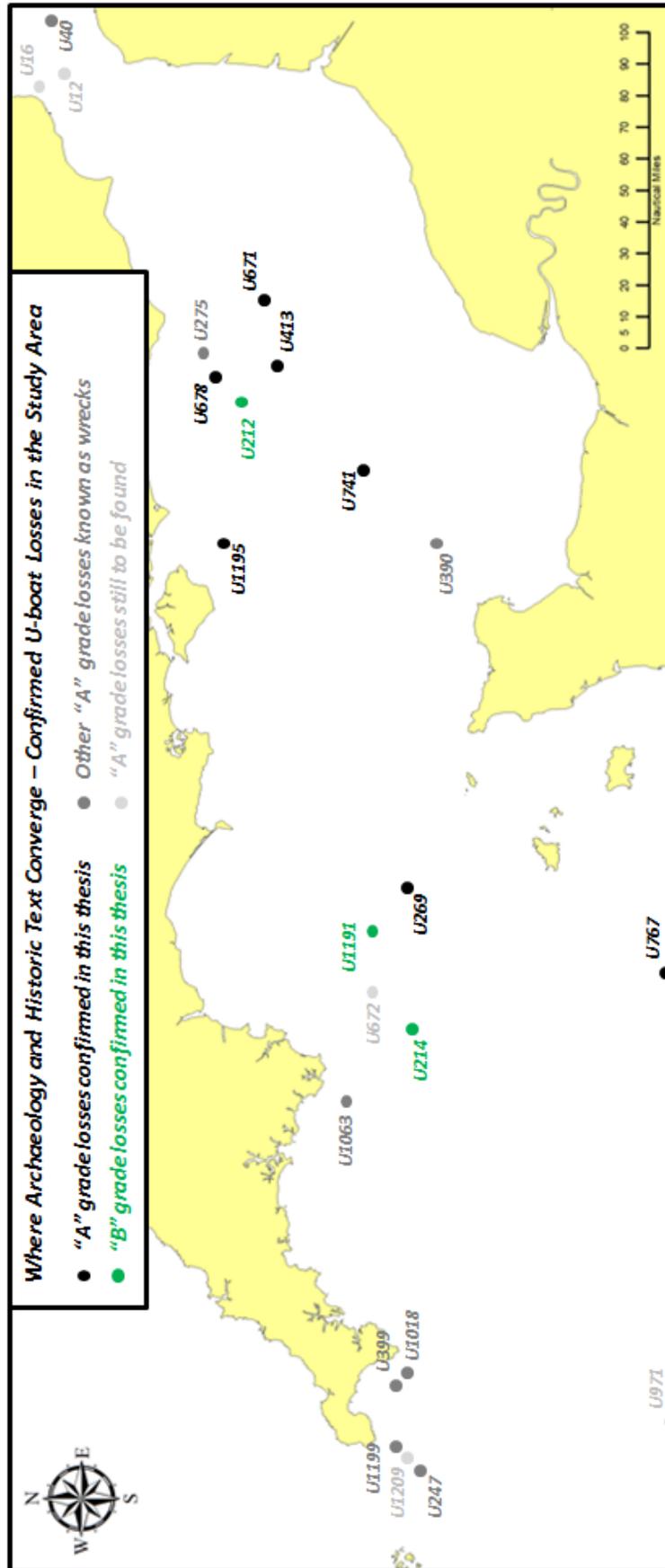


Figure 1.114. U-boat losses listed in 1946 which are now confirmed or considered to be correct (Innes McCartney).

Chapter Eight also addressed the issue of the five U-boat wrecks in the Study Area which were graded “A” Known Sunk but have not been found as shipwrecks. Two were sunk in the Dover Straits (*U12* and *U16*) with evidence of their certain destruction. Two more (*U971* and *U672*) were lost in actions where the survival of the crews confirms they were definitely sunk. Because *U1209* effectively sunk itself by colliding with a rock, it was not graded by AUD. But for the purposes of this thesis it can be afforded “A” status because the fact it sunk was confirmed by the survivors being found in the sea. These five losses although not located as wrecks can be considered lost in the Study Area awaiting future discovery and are depicted in Figure 1.114 in light grey.

A further intriguing element of the fieldwork was the examination of the sites which were graded “B” Probably Sunk in the Study Area. In total the 1946 List states 11 U-boats lost as “B” sinkings in the Study Area (see Appendix 2.2). In three of these cases (*U214*, *U212* and *U1191*) the losses have been confirmed to have been completely correct by surveying the wrecks (see Chapters Seven and Nine). The correct “B” losses are depicted in Figure 1.114 in green.

Figure 1.114 therefore represents an initial measure of the degree of accuracy of the historical text. All of the losses which are confirmed by archaeology or cannot realistically be anywhere else are shown. They show that in 23 instances, the Allies were completely correct in their analysis of U-boats sunk compared to their list, showing 31 losses. So, against its own list, a complete accuracy rate of 74% was achieved. The other eight cases are addressed next.

#### **Where archaeology and historical text conflict – The wrecks incorrectly listed in 1946**

Figure 1.115 looks at the eight cases where the archaeology (or absence of it) conflicts with the historical text. These eight cases when added to the 23 shown in Figure 1.114 make up all of the U-boat losses listed by the Allies in the Study Area in 1946.

Firstly it is instructive to look at the three cases where wrecks are actually present, but had been incorrectly identified. The wrecks have been surveyed and identified in the case studies as, (*U1208*) in Chapter 11, (*U1279*) in Chapter 13 and (*U441*) in Chapter 10. The wrecks were actually listed in 1946 as *U480*, *U327* and *U988* respectively.

Interestingly, these three wrecks represent three more of the 11 “B” graded losses in addition to three mentioned above in the Study Area (also see Appendix 2.2). They are represented in Figure 1.115 in blue. What this means is that only six of the 11 cases (55%) where a U-boat loss was graded “B” Probably Sunk within the Study Area, was a U-boat in actual fact, destroyed.

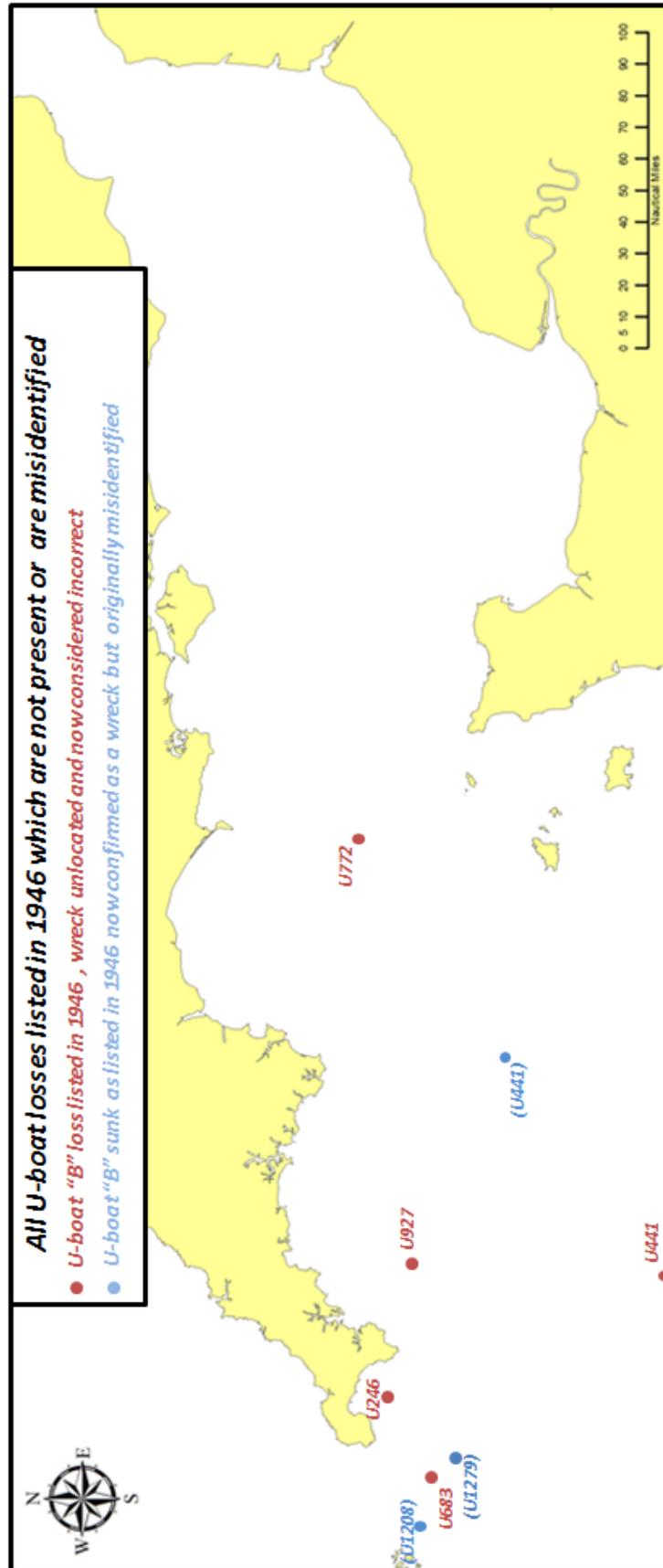


Figure 1.115. U-boat losses listed in 1946 which were either misidentified (blue) or completely erroneous (red) (Innes McCartney).

The balance of the last five “B” Probably Sunk losses is represented in red in Figure 1.115. In this instance, it is now almost certain that in each case the Allies attributed the wrong attack to the loss of the U-boat. These erroneous losses listed in 1946 are shown in Figure 1.115 in red.

Interestingly it will be noted that in three of these cases (*U683* in Chapter 12, *U772* in Chapter 14 and *U441* in Chapter 10), research for this thesis has revealed that they were sunk at another location within the Study Area. Therefore the net loss of potential sites in the Study Area is only a maximum of two; *U246* (Irish Sea) and *U927* (unknown). See Appendix 2.1 for more details on these two cases.

Ultimately then Figures 1.114 and 1.115 represent what is now known of every loss as listed in 1946. All of the losses were either graded “A” or “B”. All the 20 “A”s are considered to be correct. Six of “B”s did account for the loss of a U-boat (which was correctly identified in only half of the cases). Five “B” grade losses appear now to have been erroneous.

It should be noted at this point that to a large extent the actual identity of the sunken U-boat was of secondary importance to AUD. It was more important to know that a U-boat had actually been destroyed. So it is perhaps uncharitable not to measure these as a portion of the cases when AUD was right. If added to the 23 correct losses seen on Figure 1.114, then the degree of accuracy of AUD when assessing where U-boat were destroyed rises from 74% (or 23 of 31) to a remarkably good 84% (or 26 of 31). But of course, this is not the full story, because in the years since 1946 10 mystery U-boats have been discovered, changing the picture considerably.

### **Where archaeology and historical text diverge– the 10 mystery U-boat wrecks unknown in 1946**

Undoubtedly the most remarkable element of the archaeology of U-boat wrecks within the Study Area is the presence of so many mystery sites from both world wars. To date, 10 U-boats from the Inshore Campaign have been found in the Study Area which bear no resemblance to the 1946 List. Clearly their destruction went either unnoticed or was misinterpreted at the time. This large number of mystery U-boat wrecks located within a combat (as opposed to transit) zone actually only represents a net gain for the Study Area of five sites (36 wrecks as opposed to 31 records in 1946). However, such a gain is very likely not to be repeated elsewhere, simply because U-boat wrecks are not an infinite resource. Some further analysis of where these U-boats were actually listed as sunk will follow later in this chapter.

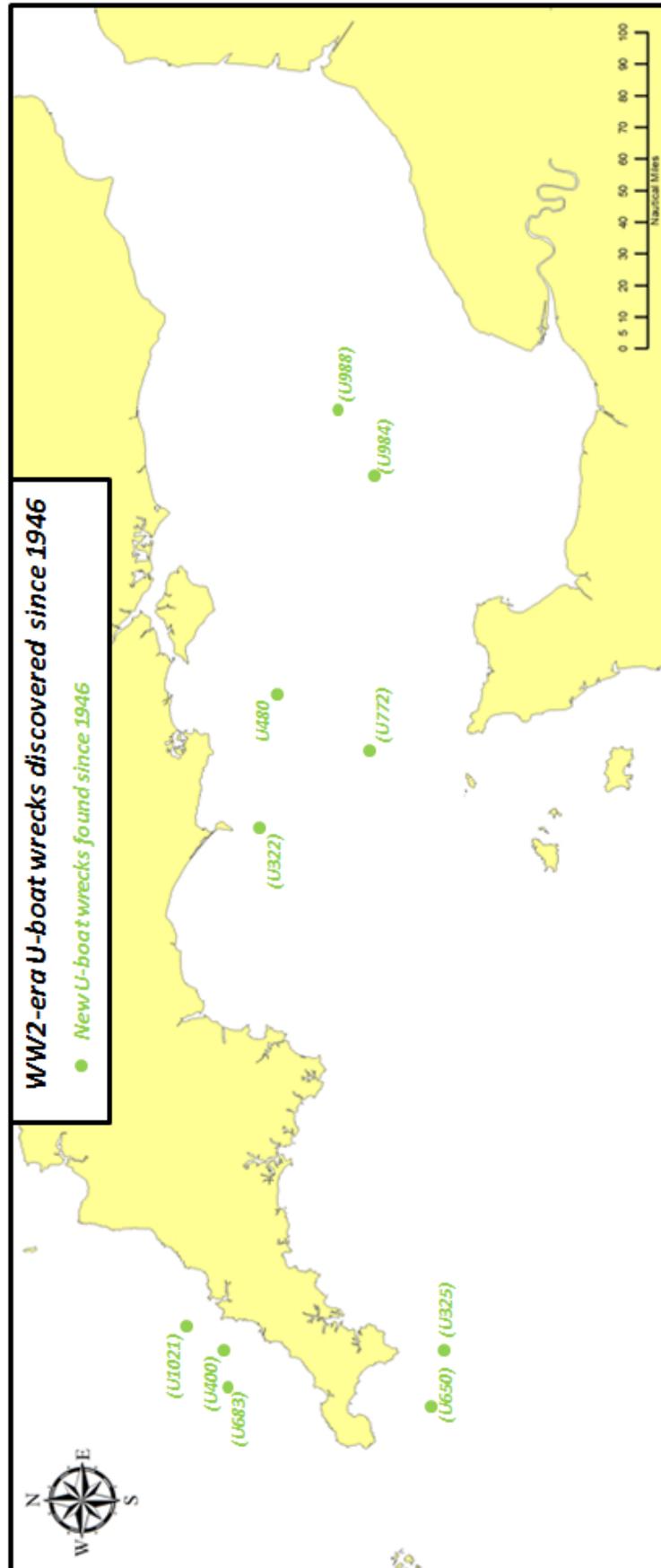


Figure 1.116. The 10 U-boat wrecks found in the Study Area since 1946. They are the mystery sites documented in the case studies in this thesis (Innes McCartney).

Figure 1.116 shows the distribution of these wrecks in the Study Area. In each case they have been subjected to the highest scrutiny of any of the wrecks examined in this thesis. The case studies in Chapters 10 to 14 have examined each case and each wreck has been subjected to survey either by the author or by Axel Niestlé with Odyssey Marine Exploration, or both. It has been a key objective of this study to attempt to identify each one by using both archaeology and the historical text and in each case an identity for the wreck has emerged. But of equal interest is how such a number could have been missed during the war.

Five of the mystery sites have been sunk in minefields specifically laid to sink U-boats. Destroyed in an event which went unnoticed, these U-boats were erroneously listed in 1946 as being sunk by a reported attack on a U-boat. As described in the case studies, this process went on in the months following the war as AUD reconciled the German record of U-boat losses with its own incident record. This was done in an attempt to explain how each U-boat was lost. With the benefit of hindsight, it is somewhat surprising that the minefields were not given a higher consideration when determining what happened to these boats. This is discussed later in this chapter and in Chapter 16.

With the benefit of knowing where the wrecks are, the same incident record coupled with archaeological survey has yielded clues as to what happened to the remaining five mystery sites. They were sunk by surface craft in combat. In each instance the results of the attacks which actually sunk the U-boat were considered inconclusive, most likely by the attackers in the cases of (*U650*), see Chapter 13, (*U984*), see Chapter 10 and (*U772*), see Chapter 14. The Assessment Committee of AUD considered the attacks which sunk (*U988*), see Chapter 10 and (*U322*), see Chapter 14 to have been unsuccessful.

### **The final overall picture of U-boats lost in the Study Area in World War Two**

Drawing all of the seven datasets shown in Figures 1.114 to 1.116 into one map, Figure 1.117 represents an overall summary of what has been achieved during the course of this part of the thesis. For ease of use, all of the correct losses from 1946 either corroborated by the archaeology or which are unassailably correct as represented in Figure 1.114 are shown together in black. The other colours from Figures 1.115 and 1.116 remain the same.

The final outcome to be addressed in this section is to assess what degree of accuracy can actually be placed on the 1946 List. With all of the data now represented in Figure 1.117 and in Appendix 2.4, the question to answer is how much did the Allies actually get right? And conversely how much did the Allies get wrong? In other words, to what extent can the official list of losses in the Study Area be trusted?



As mentioned above in 23 instances (out of the 31 listed in 1946) the Allies correctly recognised a U-boat was destroyed and correctly identified the loss (74%). The question is then, how many times did they get it wrong? To answer this it is important not to double count fates, nor to bring in losses related to the ones in the Study Area, but not represented on the map. Once a U-boat fate has been incorrectly assessed it should not be counted again when its correct fate has been ascertained by the author's research. The answer to this, by simple arithmetic is the thirteen U-boats examined in the case studies, plus the two wrecks which remain unlocated most probably because they are not present at all. The final count is shown in the Table 1.4 below.

	All of World War Two			Inshore Campaign Only		
	Accurate U-boat losses	Inaccurate U-boat losses	Total	Accurate U-boat losses	Inaccurate U-boat losses	Total
	U12	(U441)		U767	(U441)	
	U40	(U988)		U971	(U988)	
	U16	(U984)		U269	(U984)	
	U767	(U772)		U1191	(U772)	
	U971	(U322)		U390	(U322)	
	U269	(U400)		U678	(U400)	
	U1191	(U650)		U672	(U650)	
	U390	(U1208)		U212	(U1208)	
	U678	U480		U214	U480	
	U672	(U683)		U671	(U683)	
	U212	(U1021)		U741	(U1021)	
	U214	(U325)		U413	(U325)	
	U671	(U1279)		U247	(U1279)	
	U741	U246		U1209	U246	
	U413	U927		U1018	U927	
	U247			U275		
	U1209			U399		
	U1018			U1195		
	U275			U1063		
	U399			U1199		
	U1195					
	U1063					
	U1199					
<b>Totals</b>	<b>23</b>	<b>15</b>	<b>38</b>	<b>20</b>	<b>15</b>	<b>35</b>

Table 1.4. The overall assessment of accurate and inaccurate U-boat loss assessments of 1946 when compared to the results of the research in this thesis. The colours match those used in Figures 1.115-1.117. The red lines divide the two phases of the Inshore Campaign (Innes McCartney).

The overall conclusion therefore is that in 23 of 38 instances in the Study Area the Allies correctly attributed the identity of a U-boat to its correct sinking event. This represents an

accuracy of 60% in the Study Area. When looking specifically at the Inshore Campaign, the figures change slightly because *U12*, *U16* and *U40* are removed from the list (as shown in the right hand columns). In this instance, the degree of accuracy is 20 out of 35 or 57%. It seems that during the Inshore Campaign overall U-boat losses as understood in 1946 were wrong in nearly 45% of cases. Clearly then, the study of the official lists of U-boat losses in isolation will not yield anything close to the true picture of events.

Segmenting the right hand columns in Table 1.4 into the two phases of the Inshore Campaign (along the red lines); it becomes apparent that the accuracy in the first phase is 81% (or 13 of 16 losses). In the second phase the accuracy slumps drastically to only 36% (or 7 out of 19). This very clearly represents the effect of the widespread loss of Special Intelligence in the second phase. The prevalence of eight of the 10 mystery U-boats being from this phase, clearly shows that the official records for this period in particular should be treated with the utmost caution. These data is represented in two pie charts in Figure 1.119 below.

Finally, by comparing Figure 1.117 with Figure 1.57 in Chapter Six, or conversely Appendix 2.3 with Appendix 2.4, it is possible to see just how far the research for this thesis progressed from the initial starting point of what was known of each site when investigations into them began. In each instance, the wrecks have been identified and a much sharper overall picture of events has emerged. This allows for some comparisons to be made with the historical text and some questions to be asked later in this chapter.

### **15.3: The 31 U-Boat Wrecks Viewed Collectively**

Of the 31 known wrecks, 23 have been surveyed in detail as part of this thesis. Nineteen of them have been dived and recorded on video tape by the author. One was recorded by amateur divers and three by Odyssey Marine Exploration (in two of these cases Axel Niestlé has reviewed the data and one has been reviewed by the author). In total the surveyed sites represent 74% of the known wrecks, representing a viable portion of the archaeology available.

From the outset of the fieldwork it became apparent that the wrecks themselves were able to yield vital archaeological data. This was primarily due to the nature of their construction. The pressure hulls of the wrecks have withstood the effects of time extremely well and have the strength to retain within their structures many of the key features (listed in the introduction to this part of the thesis) which needed to be recorded to identify the sites. In fact, key identifying features were present on all sites, except *U1195* which has been damaged by salvage attempts on it. This was a positive outcome early on, without which it would have been difficult to proceed with this thesis.

One very positive element of this study has been that the thirteen wrecks addressed in the case studies and the two wrecks examined in Chapter Nine have all been identified in a way in which the archaeology present on the wrecks has played its part. Without the key features still being visible on the wrecks, this too would not have been possible.

### **Similarities between the wrecks**

Collectively the wrecks are remarkably similar to look at. This is not simply because they are of the same class of U-boat, but because they have nearly all degraded over time in a common manner, barring differences caused by battle damage and collision with commercial fishing equipment. The way in which the wrecks have degraded on the seabed can be described as commonly having three main features:

- 1) The armoured shroud which formed the shell of the bridge falls away to the side to which the wreck leans. It takes with it anything fitted to the shroud. What is left behind is the top of the pressure hull, which formed the floor of the bridge, the H/F loop and the periscope housings. In some cases the main control pillar remains in place, but it is more common for it to fall off onto the seabed alongside the shroud;
- 2) The “wintergarden” which contains the 20mm and 37mm AA guns also slips off in time and falls into a pile on the side to which the wreck leans. Curiously it is rare to actually see the guns themselves. It seems the 37mm breech buries in the seabed and the smaller guns either corrode or become buried too. The ready-use ammunition containers remain intact and can be found around the guns. The wreck of *U1191* is the exception which proves the rule by having its wintergarden intact, although the guns have fallen away;
- 3) The upper superstructure which houses the deck does eventually break down, as does the outer streamlining skin of the submarine. Made of thinner steel than the pressure hull it would be natural for this to happen. However this process varies significantly from wreck to wreck probably due to differing environmental conditions on each site.

One interesting element of all of the wrecks is the fact that they lean over to port or starboard and do not naturally sit level on the seabed. This is due to their construction having a deep “V” hull form and it is interesting to note that of the 23 surveyed wrecks, 13 lean to port and 10 to starboard. It would seem therefore that the direction of lean is determined randomly.

## **15.4: The Results of the GIS Database Approach to Matching the Historical text to Extant Archaeology**

One of the key methodologies for tying the historical text to the wreck sites was the development of a GIS spatial database of ASW attacks, as described in Chapter Six, and

depicted in Figure 1.58 and in tabular form in Appendix 2.5. Clearly in the cases of the “A” Known Sunk and the “B” Probably Sunk events there was text available to match to the wrecks. The real question was to what extent did this approach bring an historical context to the mystery sites? Because these wrecks were outside of the official list of U-boat losses, was it possible to detect attacks which could be directly attributable to the wrecks?

The results are shown in Table 1.5 and they are somewhat mixed. It will be recalled that five of the 10 mystery sites were mined. In those cases the circumstances of destruction were detected archaeologically and surface attack could be ruled out as a cause of the loss. Nevertheless, in the case of (*U683*) (see Chapter 12) it will be recalled that an entire cluster of attacks which took place on the dead U-boat were used to date the time period in which the U-boat was sunk, strengthening the case for the identity of the wreck.

<b>U-boat</b>	<b>Database match?</b>
<b>(U988)</b>	AUD Assessment "I"
<b>(U984)</b>	attacked as an already dead target
<b>(U772)</b>	Possible AUD Incident Record
<b>(U322)</b>	AUD Assessment "F"
<b>(U650)</b>	no accurate match
<b>U480</b>	Mined - no match
<b>(U1021)</b>	Mined - no match
<b>(U325)</b>	Mined - no match
<b>(U400)</b>	Mined - no match
<b>(U683)</b>	Mined - attacked as an already dead target

*Table 1.5. The mystery U-boat wreck sites and matches to their locations found within the ASW GIS database developed for this thesis (Innes McCartney).*

In the five cases where the U-boats were lost to surface attack, two attacks were actually found to be listed in the AUD Assessments. They had been fully examined by AUD and discounted. In the case of (*U988*), in Chapter 10, the assessors graded the attack as “I” target attacked not a submarine. In the case of (*U322*) in Chapter 14 the assessors graded the attack “F” insufficient evidence of damage.

The other three cases were less certain. The attack on (*U772*) (see Chapter 14) was used as evidence for its destruction, although it is not 100% certain that this is the case. The attack right on top of (*U984*) (see Chapter 10) was definitely carried out long after the U-boat was destroyed. The actual attack which sunk the U-boat could not be established. Similarly in the case of (*U650*) no attack could be found near the wreck, even though it had clearly been hit by hedgehog.

So overall, in only four of the cases did matches to this database contribute qualitatively to determining the identity of the wrecks. It was a time consuming process to build the database but it is difficult to see how these four cases could have been better served without it and it is therefore considered to have been a worthwhile process.

### 15.5: The Impact of the Research on History

This section will look at those questions posed at the end of the introduction Chapter Six which directly relate to the understanding of the history of the Inshore Campaign and how the results of the research and the fieldwork in this thesis have impacted upon it. These questions relate to three specific areas; tracking and intelligence, detection and killing weapons.

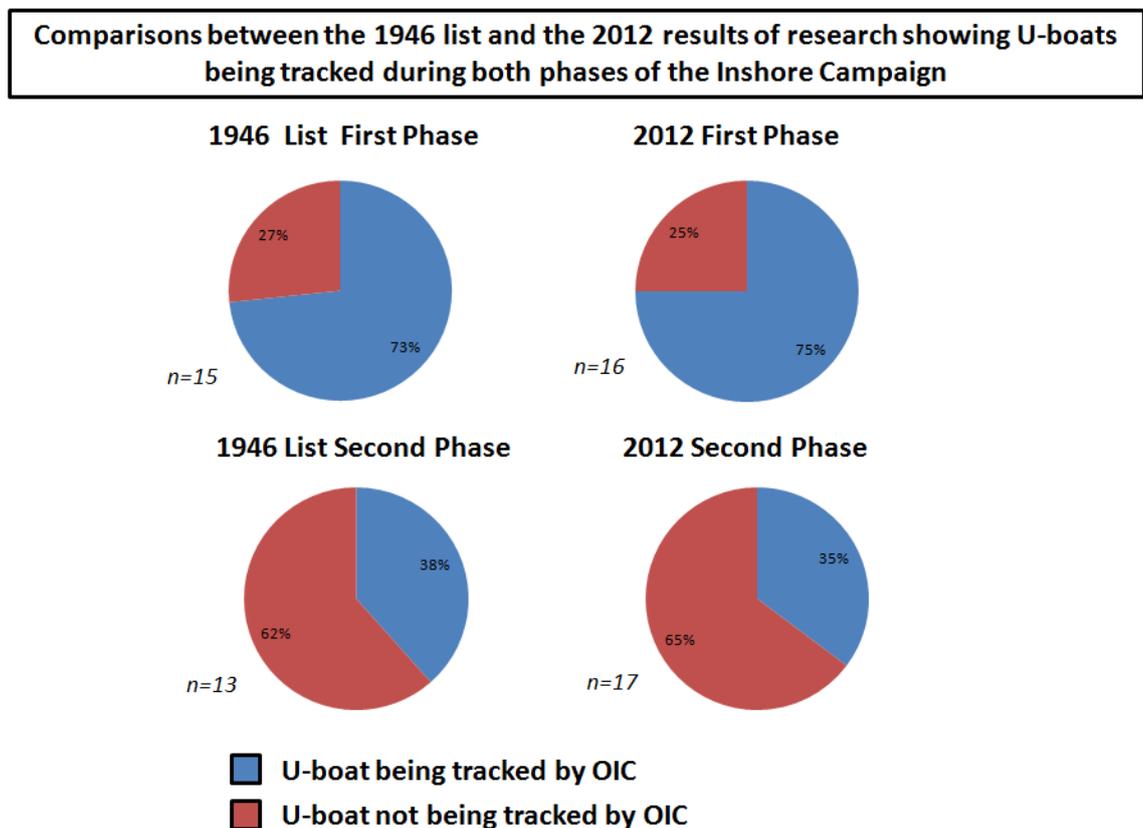


Figure 1.118. U-boats being tracked by OIC during both phases of the Inshore Campaign – A comparison between the 1946 list and the results of the thesis research (Innes McCartney).

#### Tracking and intelligence

The question posed in the introduction was, to what extent were the U-boats which were sunk in the Study Area actually being accurately tracked by OIC? The important point here is to define what is meant by “accurately tracked”. Because the Tracking Room daily plot and daily diary no

longer exist, it is impossible to say with certainty what is known of the detailed daily positions plotted against each U-boat.

However there is enough data in the “H” Series to know when OIC was aware of a U-boat being on patrol and whether it knew where the U-boat was bound. If OIC knew both of these pieces of information, then for the purposes of this study, it is concluded the U-boat could be tracked with some degree of accuracy using dead reckoning, and this is the definition used in Appendix 2.6 to assess whether each U-boat was being tracked. The results are also displayed in more detail in a series of pie charts in Figure 1.118 above.

The data from 1946 and from the new 2012 List of U-boat losses has been segmented into the first and second phases of the Inshore Campaign. Doing so reveals clearly the difference in the amount of viable tracking data OIC was receiving in each phase. The much higher degree of radio intelligence and hence higher knowledge of U-boat operations during the first phase is clearly shown by the fact that around three quarters of the U-boats destroyed during this phase were being tracked. Conversely, during the second phase this figure halves and now only around 35% of U-boats at sea could be tracked. Unsurprisingly, there is little variance in the percentages between the 1946 List and the list of known U-boat wreck compiled for this thesis. This is because although some of the identities of the U-boats themselves have changed, the background intelligence picture remains the same.

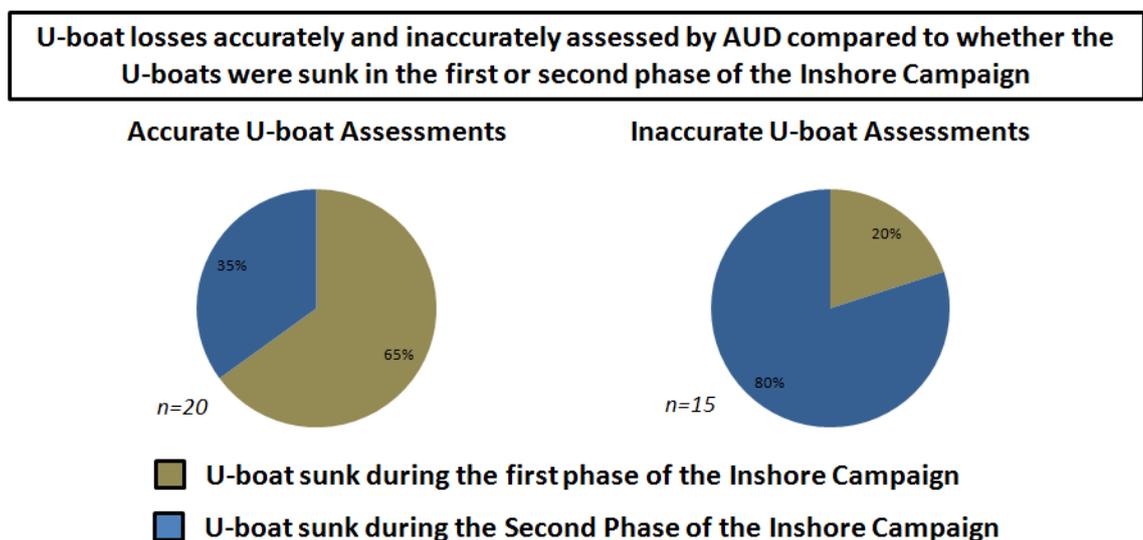


Figure 1.119. U-boats accurately and inaccurately assessed by AUD compared against their being sunk in the two phases of the Inshore Campaign (Innes McCartney).

However, the degree to which accurate tracking led to accurate assessments of U-boat losses can be seen in Figure 1.119. This diagram takes the data in the right hand columns of Table 1.4,

and looks at how it relates to the two phases of the Inshore Campaign. It shows that 65% of the accurate assessment of losses occurred during the first phase of the Inshore Campaign, when we know from Figure 1.118 that 75% of the U-boats lost were being tracked accurately.

Conversely 80% of the inaccurate U-boat assessments occurred during the second phase of the Inshore Campaign when accurate tracking of U-boats had halved to only 35%. There is little doubt that there is a direct correlation between these two datasets. Knowing where a U-boat was or where it was heading, offered the opportunity to identify a U-boat which was reported sunk. An example of this in practice is the case of *U212*, which although only graded as a “B” sinking, was correctly identified when added to the 1946 List, because its progress into its operational area had been accurately tracked (see Chapter Seven).

One further element related to the volume of tracking data available is the ability to target U-boats whilst they are in transit or snorkelling, by vectoring ASW units to where they are known to be. As has been described in the case studies (for example in the case of (*U400*) in Chapter 12) it is now very difficult to directly ascribe the arrival of Special Intelligence into OIC with subsequent direct action which led to the sinking of a U-boat, because orders of that type were invariably passed by telephone and not recorded.

Nevertheless, it is possible to look at the circumstances in which U-boats were destroyed by ASW forces in both phases of the Inshore Campaign. These circumstances of destruction can be divided into occasions where the U-boat was attacked while acting passively and the occasions where the U-boat revealed its presence by attacking a convoy and was peremptorily sunk. Using data derived from the 2012 columns in Appendix 2.7 and removing the cases of U-boats which were mined (*U480*, (*U1021*), (*U683*), (*U400*), *U275* and (*U325*)), which sunk in collision (*U1209*) and were lost to unknown action ((*U984*) and (*U650*)), a list of those purely sunk in ASW actions is derived. The results of segmenting these data into the two phases of the Inshore Campaign are shown in Figure 1.120 below.

In surprisingly stark terms what Figure 1.120 shows is that when tracking accuracy was running at higher levels in the first phase of the Inshore Campaign, a huge 80% of U-boats sunk were in transit or otherwise passively engaged; submerged and wishing to remain undetected. In equally stark terms, when tracking is not running at high levels, nearly 67% of the U-boats which were destroyed, actually revealed their presence by attacking a convoy and were sunk as a result. Only 33% were sunk while in passive mode. While there were certainly other factors at play here, including the numbers of ASW vessels available, it is still remarkable that the data clearly reveals a relationship between the availability of tracking and the numbers of U-boats killed in transit. Because of the lack of historical text in this regard as described above, this approach

seems to reveal the presence of the strategy aimed at sinking U-boats based directly on knowing where they are likely to be.

**Percentages of U-boats destroyed after revealing themselves by attacking convoys.  
The data is segmented into the two phases of the Inshore Campaign**

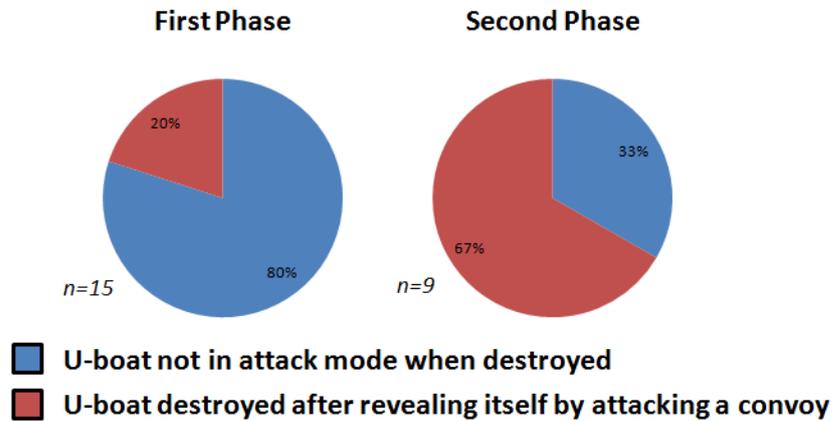


Figure 1.120. The circumstances in which U-boats were destroyed by ASW forces in either phase of the Inshore Campaign (Innes McCartney).

During the research into each U-boat loss, a conscious effort was made to try to find direct links between OIC’s knowledge of U-boat movements and plans and direct action which led to their destruction. Only one new example was found. In the case of *U767* (see Chapter Seven) the use of radio direction finding to vector ASW forces to the location of the U-boat is mentioned in the AUD Assessment of the sinking. However, direction finding per se was not Special Intelligence. So although in this instance an example of direct intelligence killing has been identified, it did not come from radio decryption.

Aside from Llewellyn-Jones’ analysis (detailed in Chapter Seven) of the destruction of *U247*, in which it seems Special Intelligence was certainly used, other evidence is circumstantial only. Of particular note are the cases of the minefields being laid at the time both U-boats were suspected to be operating in the areas where the fields were laid (see Chapters 12 for (*U400*) and 13 for (*U325*)). The case for (*U400*) looks particularly compelling, but it should be remembered that the laying of the minefields had been planned in advance and it is equally possible the minelayers were working to a predetermined schedule. Perhaps the most compelling circumstantial evidence lies in the relationship between the amount of accurate tracking intelligence available and the numbers of U-boats sunk while in transit, as discussed above.

### Detection Technology and Killing Weapons

It is now also possible to compare what was known in 1946 to what is known now about the efficiency of both U-boat detection methods and means of destruction. The types of technology used to detect and destroy each U-boat as known in 1946 and as known now are shown in

tabular form in Appendix 2.8. They are shown diagrammatically in Figures 1.121 and 1.122 below, with the 1939 losses removed, to reflect data from the Inshore Campaign only.

Figure 1.121 shows what was known about the means by which the destroyed U-boats in the Study Area during the Inshore Campaign were detected, compared to what is known as a result of the research for this thesis. The first thing to notice is that Asdic is the predominant detection technology. This is as would be expected in the inshore campaign, because the U-boats were submerged at all times. However, the way in which the other means of detection have changed is revealing.

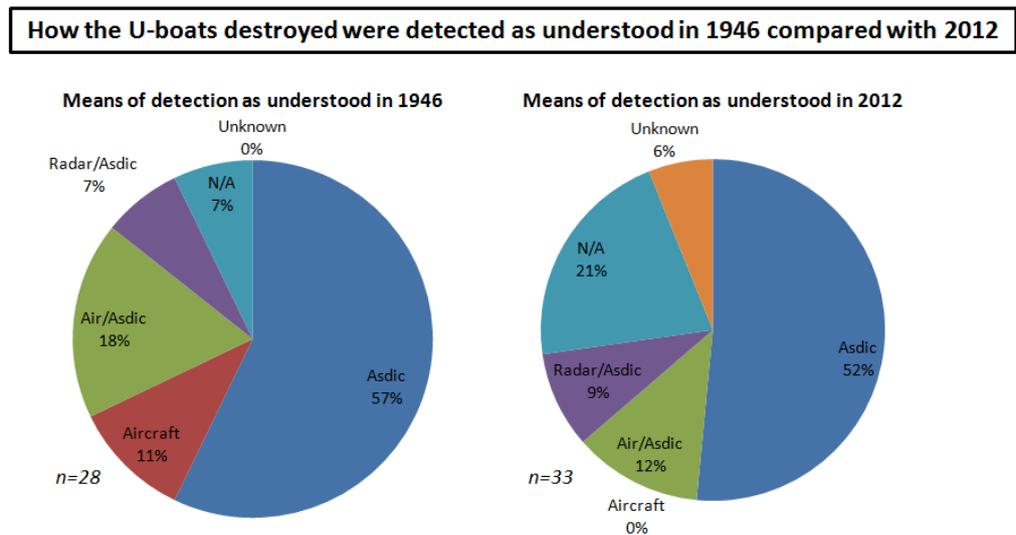


Figure 1.121. The means by which destroyed U-boats were known to have been detected as understood in 1946 compared with 2012 (Innes McCartney).

The N/As represent the cases where the destroyed U-boats were not detected at all. This increased incidence as seen in 2012 is due wholly to mining and clearly shows the devastating nature of the minefields as understood now and clearly missed in 1946. This phenomenon is also clearly represented in Figure 1.122.

More surprising, but of equal interest is the concurrent reduction in the role of aircraft in detecting U-boats in the Study Area. Detection purely by aircraft disappears completely in 2012 and combined cases are reduced significantly. This is because the research into each U-boat loss has shown that the 1946 attributions of U-boat losses specifically to aircraft attack have not been verified by the archaeology. The cases are complete absence of *U927* (see Appendix 2.1) as a wreck, the reattribution of (*U772*) (see Chapter 14) to a surface attack and the reattribution of (*U441*) (see Chapter 10) to a combined air and surface attack.

Figure 1.122 shows how the understanding of the combination of differing ASW weapons which destroyed the U-boats has changed between 1946 and 2012. It is not surprising that

hedgehog and depth-charge would be represented as the most commonly used weapons, again, because the U-boats are submerged at all times during the Inshore Campaign.

But what is surprising is the reduction of hedgehog kills in 2012, which is matched by a similar increase in depth-charge kills. This has been caused in part by three of the mystery sites, (*U988*), (*U772*) and (*U322*) having been destroyed in this way, while *U246*, listed in 1946 as destroyed by hedgehog is now not considered to have been sunk in the Study Area. It is possible that AUD and flotilla commanders regarded the hedgehog as a more reliable weapon and therefore considered its use to represent a better chance of killing a target, although this is speculation. In this regard it is interesting to note that the attacks which sunk both (*U322*) (see Chapter 14) and (*U988*) (see Chapter 10) were fully assessed by AUD and turned down. While the reasons given do not mention depth-charge use as the reason why the attacks were turned down, the suspicion must remain.

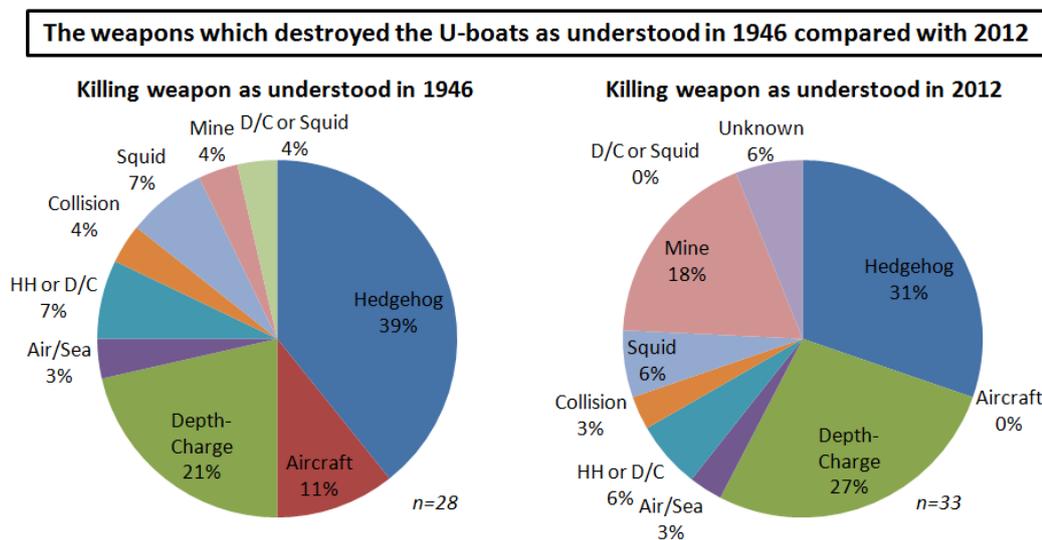


Figure 1.122. The weapons which destroyed U-boats as understood in 1946 compared with 2012 (Innes McCartney).

As was noted in Figure 1.121 the most important revelations seen in Figure 1.122 relate to the increase in the success of mining and the decrease in the success of aircraft as killing weapons. The number of mining casualties increases from one to six between the two lists and now represents 18% of all the U-boats destroyed. It is difficult to understand how this devastating weapon, to which a significant degree of resources had been devoted during the Inshore Campaign, could have been so ignored as means of killing U-boats by AUD when collating the 1946 List in the months after the end of the war.

In this regard, it is particularly interesting to note that it was known that in WW1, in the North Western European theatre, the mine was the singularly most successful antisubmarine weapon

of the war, having accounted for fully 25% of the U-boats destroyed (BR1736 (56) (1), 30). The figure of 18% seen in the Study Area during the Inshore Campaign is remarkably similar.

The Inshore Campaign itself, fought around the UK coastline was fought largely over the same ground as WW1. With the knowledge of the efficiency of mines in that conflict (which led to the laying of the Dover Barrage in 1939), the Admiralty again brought the use of minefields into play in 1944. So why the minefields were largely ignored when drawing up the 1946 List is difficult to understand. Aside from the natural desire to produce an accurate work, not littered with comments such as “mined somewhere”, the only obvious explanation is that it is known that the final tallying-up of U-boat losses took place during the rapid run down of personnel in AUD.

This is manifested in several ways in the historical text, not least in the last tranche of AUD Assessments which were never written up (see Chapter 12 and Appendix 2.5) and in the basic typographic errors present in the 1946 List as mentioned above and discussed in Appendix 2.2. As mentioned in Chapter 11, even the Director of the AUD, Cmdr. Clarence Howard-Johnston was not permitted to continue post-war research into the U-boat losses after VJ day. Herein probably lies the reason why the deadly minefields in the Channel and North Cornwall went unnoticed in 1946.

The removal of aircraft as killing weapons in the Study Area in the Inshore Campaign relates to the three specific air attacks mentioned in relation to Figure 1.121. Without wishing to double count, it should also be noted that in the case of (*U441*), (see Chapter 10) other air attacks have been discounted as well.

With only three instances to refer to, it is difficult to assess what the implications of this outcome are in a broader context. A wider study looking at all of the air attacks against U-boats during the Inshore Campaign clearly lies outside the scope of this study. However it would not be surprising to find that air attacks against U-boats in other geographic areas of the Inshore Campaign fall under suspicion as more wrecks are located and investigated. This is primarily due to the nature of air attacks; with the difficulty of detecting a snorkelling U-boat, correctly identifying the target, accurately hitting it, being unable to detect it as a wreck, nor give an accurate position of the location.

## **15.6: The Impact of the Thesis Outside of the Study Area**

Figure 1.116 revealed that 10 new U-boat wrecks have been found which do not match the 1946 List. Clearly this reduces the number of U-boat wrecks which can be found elsewhere in the

Inshore Campaign theatre. This section will examine the net gains and losses of sites between the overall theatre and the Study Area and what implications this has for the overall list of losses.

Table 1.6 below illustrates what the net effect for the number of U-boat wrecks within and outside of the Study Area actually amounts to. It should be remembered that of the 10 new wreck sites, four were actually listed as sunk somewhere else within the Study Area, reducing the increased number of sites to six. To that number must be added (U1279) and (U1208) because they represent the real identities of two of the misidentified “B” sinkings shown on Figure 1.115 which were listed in 1946 as sunk outside the Study Area. So the increased number of losses is actually eight.

Against this, three U-boat wrecks are now considered to be not present in the Study Area. They represent the two sinking events on the 1946 List for which no wrecks can be located (as described in Appendix 2.1), namely U246 and U927; to which U327 is added because it was listed at the site where (U1279) has been identified (see Chapter 13). Overall then, this represents a net gain of five sites in the Study Area which cannot now be found elsewhere.

<b>IN</b>	<b>1946 Fate</b>	<b>1946 Grade</b>	<b>Wreck present at 1946 location in 2012?</b>
(U984)	Surface attack off Brest	B	no wreck
(U322)	Combined Air/Sea attack off Scotland	B	U482
(U400)	Surface attack south of Ireland	B	no wreck
(U650)	Unknown cause	no grade	no wreck
(U1208)	Surface attack south of Ireland	A	U1276
(U1279)	Surface attack off Scotland	B	U327
(U1021)	Surface attack off Scotland	B	U965
(U325)	Surface attack in the Irish Sea	A	U242
<b>OUT</b>	<b>Wreck now thought present at 2012?</b>	<b>1946 Grade at 2012 location?</b>	<b>Wreck thought present at position in 1946?</b>
U327	Surface attack off Scotland	B	old U1279 position
U246	Irish Sea	A	old U242 position
U927	Unknown	no grade	no wreck

Table 1.6. The net increase in the number of U-boat wreck sites in the Study Area as of 2012 and its implications for the distribution of U-boat wrecks elsewhere, derived from analysis carried out in Chapters 10 to 14 and Appendix 2.4 (Innes McCartney).

However as Table 1.6 shows the actual direct implications of this cannot currently be seen clearly, because some of the attacks directed against U-boats now thought lost in the Study Area have been substituted by other losses, primarily by the work of Axel Niestlé (1998, 2004a,

2009). A further detailed study of the type carried out in this thesis, looking at both the archaeology of the sites and historical text would be needed to derive a more definitive picture.

### **15.7: In Summary**

The results of the conclusions drawn in this chapter are extensive. The key findings can be summarised as:

- 1) Compared against its own list, across the entire war, AUD was 84% successful in correctly identifying the correct location of a destroyed U-boat and 74% correct in establishing the U-boat's identity;
- 2) The 10 new U-boat wreck sites found since 1945 change the overall picture of U-boat losses in the Study Area considerably. Compared against this new 2012 List, for the Inshore Campaign, AUD was only 57% successful in correctly identifying the location of a destroyed U-boat. A success rate of 81% is recorded in the first phase of the Inshore Campaign and only 36% in the second;
- 3) A much higher proportion of misidentification of U-boat losses by AUD was seen in the second phase of the Inshore Campaign, due to the concurrent drop-out of Special Intelligence derived tracking data;
- 4) A strong direct link between the degree of accurate tracking data available to OIC and the numbers of U-boats destroyed in transit has been established. It seems to point at the use of Special Intelligence to directly target U-boats;
- 5) The minefields in the Study Area actually accounted for the destruction of 18% of the U-boats. The AUD appreciation of this in 1946 was 4%;
- 6) It is now established that no U-boats were destroyed by aircraft in the Study Area. In 1946 aircraft are listed as accounting for 11% of the losses;
- 7) The U-boat wrecks in the Study Area are now known to degrade in similar ways, with the ways in which the conning tower, wintergarden and upper structures break down now well understood. In most instances the degradation present could be easily distinguished from the battle damage;
- 8) The database approach to matching ASW incidents to mystery wrecks was successful in only four instances. This may seem a low return but it was absolutely necessary because in no other way could positional matches from the historic record be guaranteed to be found.

**Part Four: Overall Conclusions and Comparisons of the Results from  
both World Wars**

## **Chapter Sixteen: Overall Results, Comparisons between the Two World Wars and Concluding Remarks**

### **16.1: Introduction**

The purpose of this short chapter is to take a reflective view of the results of the research when the two conflicts are seen as a whole. In other words, what has the research achieved and indeed how comfortably do the results sit alongside contemporary views of both U-boat wars?

#### **An overall measure of the success of the research**

The overarching objective of this thesis; to compare the U-boat wrecks in the Study Area to the official lists of the U-boat losses has now been successfully met. The key methodology needed to meet this objective was to develop a reliable and accurate dataset of the wrecks present in the Study Area. This meant that each U-boat wreck site which did not, or potentially did not match the 1919 and 1946 Lists had to be dived recorded and identified.

This was time consuming, taking 14 years to achieve, but there was no other means of developing an accurate dataset of the actual verified identities of the wrecks. No desktop study could have differentiated the wrecks of two world wars from each other, nor which ones were known losses or mystery sites with any accuracy. In cases such as this there is no substitute for actual fieldwork. By the end of the research an accurate picture of the wrecks had been developed and its relationship to the 1919 and 1946 Lists could then be tested and assessed.

The primary limiting factor for studies of this type is the accuracy of the data relating to the wrecks. The primary reason why no other similar studies have yet emerged relates to the cost and time-consuming nature of the fieldwork. Nevertheless opportunities to compare the extant remains of varying types vessels with the historic record exist; not least an extension of the research in this thesis into other geographic areas.

#### **An overall view of the results**

The total number of known U-boat wrecks in the Study Area is 63 (32 from WW1 and 31 from WW2), of which 37 (59%) have been surveyed and recorded by the author (18 from WW1 and 19 from WW2) and a further nine by others. Therefore the total of 46 surveyed wrecks represents 73% of the total number of wrecks. Of the 63 wrecks, 26 (13 from WW1 and 13 from WW2) or 41% have been found to be either mystery sites or wartime misidentifications when measured against the 1919 and 1946 Lists. There is no reason to presume this proportion will be any different in any other region of British waters. The longer term prognosis, primarily due to

the number of WW1 U-boats still unaccounted for, is for the percentage of mystery sites to increase in the future.

The total number of historically correct incidents (wrecks and other certain kills either salvaged or unlocated) in the 2012 (WW2) and 2013 (WW1) lists compiled for this thesis is 72. Compared to the 68 incidents cited in the 1919 and 1946 Lists, this represents a net gain of only four sites (+5 for WW2 and -1 for WW1) and therefore does not significantly affect the numbers of wrecks to be accounted for elsewhere around the British Isles.

## **16.2: Studying the Archaeology of the U-Boat Wrecks**

Beginning this study in 1997 was timely, because it coincided with a number of other developments and circumstances which made it possible. These were mainly, but not limited to:

- The Admiralty Hydrographic surveys of the Study Area had in the 1990s began to use digital sonar imaging and GPS when carrying out surveys. This combination of technologies identified the locations of actual submarine wrecks;
- The first digital video camera and housing of a size and depth rating to be useful for recording the wrecks went on sale in 1998. It is the one still being used by myself today;
- Oxygen (Nitrox) and Helium (Trimix) enriched gasses which allowed for safer exploration of sites beyond 40m depth began to become available to recreational divers only in the late 1990s;
- The general economy, price of marine diesel, and price of helium meant that the cost of diving these wrecks was significantly lower than it is today. Much deeper pockets would be needed now to repeat such an exercise.

To a great extent it was the U-boat wrecks themselves which made this study possible to achieve through diving. The unique nature of submarine wrecks lies in the fact that they were designed and built to withstand being submerged in the marine environment and consequently even when heavily damaged they then survive well as wrecks, as the 46 surveys described in this thesis show. It is the useful feature of submarine wrecks that so many identifying features can be recorded on a dive that made survey by diving feasible as a method for recording the wrecks.

The generally small size of the wrecks means that key features, even the exceptionally deep ones can be recorded on tape in the short time allowed at depth. Whereas, to have attempted a thesis of a similar type, by looking at steamships for example, would have been too challenging, due to their much more degraded state, fewer identifying features visible, their much larger size

and the vastly increased number of examples as wrecks. To examine a large dataset of larger shipwrecks could be done but would require a survey ship with its high attendant running costs and therefore could not be carried out by a self-funded individual, as this study could be.

The 46 survey results show that in every case (except *U1195*, where the wreck is too degraded) the archaeology of each site can contribute significantly and sometimes entirely (in the case of WW1 U-boats such as *UB65* and cases such as *U480*) to deriving an identity for the wreck. But in most instances a combination of archaeology and historical texts are required to unlock the identity of sites when surveyed for the first time. Nevertheless, the prevalence of U-boats in this thesis whose names retain brackets shows that this is not always a straightforward process.

Herein lies the paradox between the study of U-boat wrecks in both World Wars. WW1 U-boats (such as *UB65*) can be specifically identified by their propellor markings while the supporting historical texts appear to be less reliable and need to be treated even more judiciously than would usually be the case when inspecting primary source documents. Conversely, WW2 U-boats are extremely difficult to specifically identify but the supporting historical texts where relevant, are generally much more dependable, especially the output from OIC, even in the difficult second phase of the Inshore Campaign. The reasons why the WW2 texts are more reliable will be discussed later in the chapter.

Importantly, where access to the propellers of WW1 mystery sites is impossible (in this thesis due to extreme depth, remote location and the French diving ban) the chance of deriving an accurate identity for a wreck is very limited. Four mystery sites from WW1 cannot currently be identified for these reasons.

Overall however, the extant archaeological remains of the U-boats of both World Wars have survived robustly enough to significantly contribute to showing that the official lists of losses cannot be solely relied on to provide anything close to a true understanding of U-boat losses in the Study Area. They have proven to be a durable and reliable benchmark upon which to assess the accuracy of one element of the historical texts of the wars against the U-boat; the 1919 and 1946 Lists of losses.

### **16.3: The Means of Destruction in both World Wars**

The results of the research brought forth two new and more accurate lists of U-boat losses in the Study Area in both World Wars (the 2012 and 2013 Lists) which have enabled the means of destruction to be re-examined. When the 1919 List was compared to the 2013 List, the means by which the U-boats were destroyed were seen to be broadly comparable. Importantly, the

percentage lost due to mines remained fixed at around 40%. But also of note was overconfidence in the effect of depth-charges dropped in the vicinity of a U-boat which had already submerged. These attacks were not as effective as ASD imagined.

However most startlingly, the results for the Inshore Campaign as a whole showed a considerable contrast between the 1946 List and the 2012 List. The research showed that mines had actually accounted for 18% of U-boat losses during the Inshore Campaign, whereas the 1946 List cited just 4%. This was the most surprising revelation to come out of the research when looking specifically at the means of destruction. Alongside the increase in the proportion of U-boats destroyed by mines was a fall to 0% (from 11%) in U-boats sunk by aircraft.

It is the WW2 U-boat wrecks found in minefields which account for the most important change in our understanding of how U-boats in the Study Area were destroyed. The figure of 18% across the entire Inshore Campaign obscures the fact that all of the losses occurred in the second phase. While this figure is broadly comparable to a figure of 25% lost to mines across the whole of WW1, it is educative to look at the proportions of U-boats destroyed in the second phase of the Inshore Campaign in isolation.

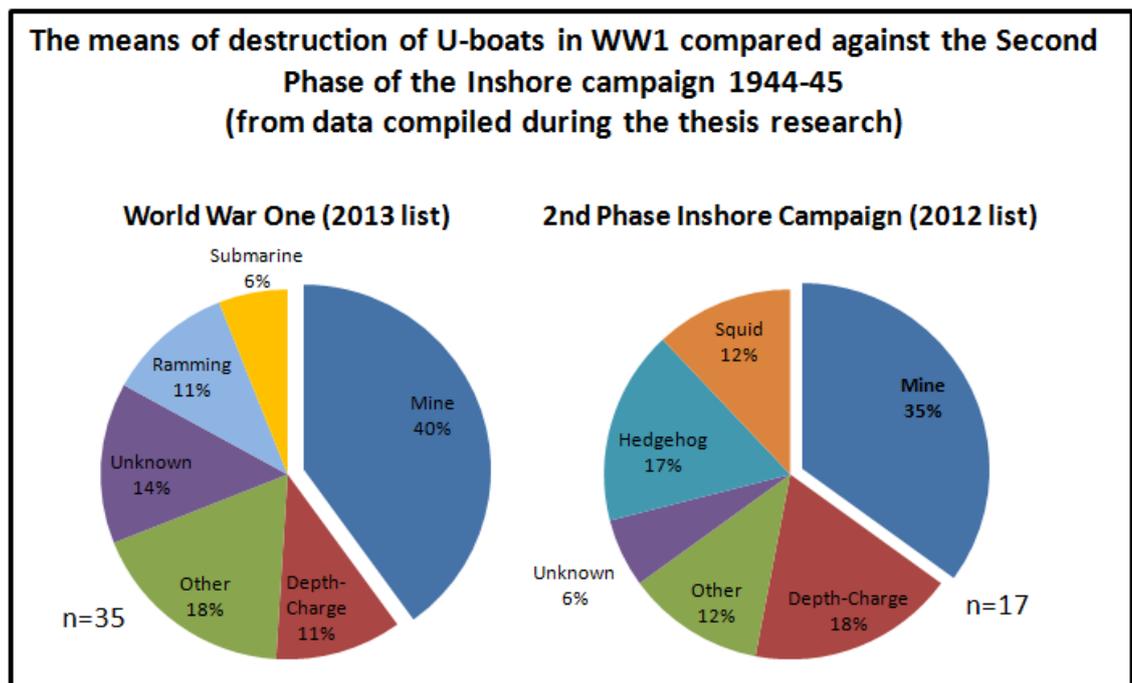


Figure 1.123. Map showing similar percentages of U-boats lost to mines in WW1 and the second phase of the Inshore Campaign (Innes McCartney).

When we do this, the proportion lost to mines rises sharply to 35% of the total. Figure 1.123 shows the proportions of losses in WW1 compared to the second phase of the Inshore Campaign. The similarity in the percentages lost to mines is obvious. One should be a little cautious with these results because the sample pools are small. While the operational differences

between WW1 and the Inshore Campaign are myriad (e.g. the snorkel, ASDIC, QH and radar), there was a common challenge which did not exist in the first phase of the Inshore Campaign.

The task of defeating the U-boat in WW1 and in the second phase of the Inshore Campaign in the Study Area shared the common problem of a reduced level of signals intelligence. As the thesis has shown, the movements of the 35 U-boats lost in WW1 were in all but five cases (86%) completely unknown to Room 40. During the second phase of the Inshore Campaign the movements of 11 of the 17 (65%) U-boats destroyed were unknown to OIC. Again, one should be a little cautious with these results because the sample pools are small (see Figure 1.123).

Clearly, such an obscured view of the enemy's movements makes offensive measures in terms of hunting flotillas and air patrols inefficient because they cannot be placed in the path of the oncoming enemy, because his whereabouts are unknown. But defensive postures, such as selectively mining one's own national waters and adopting the convoy system prove to be the more successful measures to adopt. Let the enemy come to you. It is no surprise therefore that antisubmarine minefields were not a feature of the first phase of the Inshore Campaign until it neared the end. They were not needed until the intelligence picture began to fade.

The paradox is that whereas in WW1 the successful results of killing U-boats with mines in the Study Area was generally known to ASD (in no small part due to intelligence gathered by Salvage Section divers); in the Inshore Campaign the mining losses generally passed unseen. This situation remained until the author began to dive and identify the wrecks in 1997. By the time this thesis was being prepared, the picture that emerged was much clearer.

In 1973 the Naval Staff History of British Mining Operations (BR 1736 (56) (1)) was first published. Its assessments of the efficacy of minelaying during the Inshore Campaign were of course based on the 1946 List. So the question should be asked; would the results of the research in this thesis have appreciably changed its assertions?

For example, when assessing the efficacy of the deep-trap mines in the Channel, the Staff History (BR 1736 (56) (1), 759) states that only one U-boat was destroyed east of St Alban's Head (Poole) in 1945, but that since only three U-boats operated there, the fact that the one lost was mined was "quite significant". If they had known that in fact two of the three U-boats had been mined in Operation *Brazier* (AUD knew about *U275* but did not know about *U480*) would this have been considered even more significant? If so, how much more?

Moreover, AUD knew nothing of the losses in the HW field off North Cornwall which claimed three U-boats (*U1021*, *U400* and *U683*). Nor did they know of the loss of (*U325*) in the *Artisan* field south of the Lizard. Nevertheless the Staff History ((BR 1736 (56) (1), 759-760)

considered it “significant” that two U-boats were sunk (*U260* and *U242*, which AUD misidentified as *U1169* (see Niestlé 1998, 109)) by mines in the Western Approaches (albeit outside of the Study Area). To what extent would a trebling of that number to six have affected this judgement?

In relation to the deep-trap minefield, the Staff History (BR 1736 (56) (1), 765) ends by stating that it “appears as a useful adjunct in inshore antisubmarine warfare”. Would a near trebling in cases to eight from the three it knew about have caused a shift in emphasis here? The answer partially lies in the fact that by the latest reckoning (Paterson 2008, 190-193), 51 U-boats were lost in British and Irish waters from December 1944 to the end of WW2 (the second phase of the Inshore Campaign). A change in the circumstances of the loss of five U-boats represents a 10% change overall and therefore would almost certainly have been seen as significant. However, the fact that the deep-trap minefield would have turned out to have been perceived as more than just “a useful adjunct” is no longer of any great strategic importance (as it may have been in Cold War 1973) and it is really now up to naval historians to debate this point, which brings us conveniently to the next section.

#### **16.4: Comparing the Relative Performances of ASD and AUD in the Light of the Research**

The research has shown that in the Study Area ASD was able to only correctly assess the loss of U-boats in WW1 48% of the time. The 1919 List is then revealed as a document in which 52% of its assertions (based on the sample pool in the Study Area) are wrong. Viewed this way, it resembles the feet of clay upon which both official and unofficial histories of U-boat losses in WW1 were originally constructed. Spindler’s last two volumes (1941 and 1965) especially, corrected many of the more obvious mistakes. But it was not until the wrecks began to be found that the opportunity arose for an independent audit of the true value of the 1919 (and 1946) Lists could be undertaken, based on physical evidence. This was the primary objective of this thesis.

The research has also shown that AUD was able to correctly assess the losses of U-boats across the entire Inshore Campaign 57% of the time; a 9% improvement over their forebears in WW1. However, this figure obscures the fact that they were 81% correct until the French U-boat bases were evacuated and the second phase of the Inshore Campaign began. During this latter phase covering the last six months of the war, AUD was only able to correctly assess a meagre 36% of the losses; thus the record for this period is 64% wrong. A better understanding of what these results really show can be gleaned by viewing them in the light of their relevant historical contexts.

### **ASD, Room 40 and WW1 U-boat Loss Assessments**

The performance of the Navy Staff of WW1 has until recently been uniformly maligned by historians. In particular, Arthur Marder was probably the most critical. The lack of a Naval Staff College produced “merely a nondescript collection of officers... as ignorant of the principles of staff work as they were of strategy and operations.” (Marder 1970, 315). Marder’s sources appear to have been eyewitnesses to many instances of breathtaking incompetence, reinforcing the view that the Naval Staff was not fit for purpose. At the time of the introduction of the railway executive, Sir Eric Geddes, as Controller and then First Lord, Grieves (1989, 43-54) shows that there was continual resistance to reform. It will also be recalled from Chapter Two that The Naval Staff Monograph of the history of the Naval Staff (NA ADM 234/434) is also critical of its performance during WW1.

Nevertheless as part of a general trend towards revising the reputations of maligned individuals and institutions of WW1, e.g. General Haig (Sheffield 2011), pre-war naval planning (Lambert 2012), Black (2009) has shown that the Marder view of the Naval Staff may have been unduly critical. The results of this research, although they really only concern ASD and Room 40, offer some fuel to this debate.

Aside from the cases where the survivors were plucked from the sea, ASD’s performance in correctly assessing where the U-boats were sunk is very poor. Particularly damning are the “A” Known Sunk cases which are clearly wrong, because it has been shown (see Chapter Five) that by ASD’s own definitions these attributions were specious in 1919 and should never have been made.

Furthermore, the case of the wreck of (*UC79*) (found by Damant’s divers and identified as a minelayer sunk in 1918, see Chapter Three) and then completely omitted from the 1919 List is impossible to explain in any other terms than a grossly incompetent oversight. A reader of this thesis will have come across many other examples which do not need repeating here.

The point to be made is that ASD’s tendency to conveniently ignore intelligence data when it did not suit their version of events was known at the time. W. F. Clarke (Room 40 Intelligence Officer and latterly Deputy Head of the Naval Section at Bletchley Park) wrote in his memoirs that: “The Anti Submarine Division...had frequently to boost their own efforts, insisted on the success of many attacks that we in Room 40 knew to have been abortive” (Clarke 1988, 56). This is most probably the explanation for how such obviously inaccurate attributions of U-boat losses passed into the 1919 List and thence into official history.

A last criticism of ASD is the final tallying up of U-boat losses which took place in 1919. Explicitly stated in the prefatory note to the final edition of the Submarine Losses Return (NA

ADM137/26) is the following: “Information received from Official German Sources concerning the loss of German submarines enables a few submarines to be allotted to attacks which have previously been classified as “B” (Probably Sunk)”.

The problem with this approach (which arose again in 1946) is that it presumes that ASD was in possession of all possible ASW incidents by which U-boats were destroyed, from which it could select the best cases and close the book on how the U-boats were destroyed. Tellingly though, the research in this thesis has revealed that the mystery sites have no resemblance to the ASD record of incidents and that it in no way possessed a comprehensive list of these events. Better to have simply listed more cases as “unknown” but that requires the benefit of hindsight. Notably, the AUD in 1946 was also tempted into making the same mistake.

Overall, when looking at ASD’s assessments of how the enemy was destroyed it is difficult not to have a degree of sympathy with Arthur Marder. Evidence from the research shows a less than 50% ability to correctly establish where the U-boats were destroyed and an equal ability to assert truths (“A” Known Sunk) based limited and sometimes erroneous evidence. Moreover the evidence seems to show not only clumsy oversights and an inability to work to its own guidelines, but also perhaps (as Clarke (1988, 56) stated) a tacit meddling with the facts.

In relation to the operational use of intelligence, a common criticism has been that its secrecy was guarded far too strongly (e.g. Beesly 1982, 310), inhibiting its potential utilisation in action. In fact the research shows only two instances where it can be proved that data from Room 40 led to British submarines being vectored to successfully destroy *UC65* and *UB72*. The author has suggested that as being part of the professional navy, the discretion of the commanding officers could naturally be relied upon not divulge anything they may know about the source of the intelligence behind the orders to intercept the U-boats.

Finally, it would be wrong to presume that intelligence on the movements of U-boats was commonly available; it was not. As the research has shown, in the Study Area at least, in 30 out of 35 U-boat losses, Room 40 knew nothing of the movements of the U-boats involved. The very fact that the Flanders Flotilla did not routinely use the radio and that its movements represented a black hole in Room 40’s appreciation of the movements of the German Navy is mentioned only briefly in the unpublished Room 40 history of the German Navy in WW1 (Birch & Clarke 1922a, 316-317) and seems to have been overlooked by most historians. This is despite the fact that Room 40 knew that an average of 21 ships per month were being sunk by the Flanders Flotilla in the Channel, and at its peak of 37 ships sunk in December 1917. This black hole was at least partly responsible for a third of Allied shipping sunk “in all areas” (Birch & Clarke 1922a, 323-324).

### **AUD, OIC and WW2 U-boat Loss Assessments**

By comparison to ASD it is difficult to be too critical of AUD, nor of OIC. Of course this thesis is only looking at the war from D-day onwards, by which time the processes and growing pains of both departments were squarely behind them. By the end of 1943 OIC's staffing numbers had reached their optimum level of 117 and no more could be accommodated within the confines of its rooms in the "citadel". It may have been strained by the workload, but it succeeded throughout Operation *Overlord* and beyond producing its various intelligence summaries alongside other duties (Hamilton 2000, 317-323). The "H" Series bears testament to this view.

By June 1944 (when the Inshore Campaign began), the record time for an Engima transmission through interception, decryption and translation to appearing on an OIC teleprinter was 19 minutes; the average was 30 minutes (NA ADM223/285). Such rapid and complete knowledge of the enemy's signals (and hence his intentions) during this, the first phase of the Inshore Campaign, is manifested in the "Overlord Serial" within the "H" Series and it clearly shows a largely accurate knowledge of U-boat movements. This view is supported by the research, which clearly shows that AUD was 81% correct in its assessments during this period.

Such knowledge of the enemy's movements during the first phase, coupled with a superior numerical advantage effectively represented complete command of the battlefield. The destruction of U-boats which followed was in no small part due to the credibility which OIC had built up in the preceding years. This level of credibility was something Room 40 never achieved in WW1 (Beesly 1982, 172-173). Swift, accurate intelligence leads to accurate U-boat loss assessments.

From this standpoint, there is evidence to show that the AUD Assessment process had by then evolved into a consistent and generally routine exercise carried out in batches. The Assessment Committee worked from reports sent into them where possible in a consistent way and produced its assessment reports on a standardised form, which was clearly benchmarked against its own definitions. There is also evidence to show the geographic delineation of responsibilities between the Allies as to which nation conducted U-boat assessments in the Operation *Overlord* area had been planned in advance and was to be solely the responsibility of AUD in the Study Area except where ships were under independent US control (Anti-U-Boat Division 1945a, 24).

Unlike ASD, "A" Known Sunk meant exactly that. The research has shown that there are no cases in the Study Area throughout the Inshore Campaign where this attribution has proved false. Even during the difficult second phase of the Inshore Campaign this holds true. The five incorrect and three misidentified losses were all "B" Probably Sunk which is consistent with AUD's proscribed assessment process. Of course, AUD benefited greatly in the quality of the data it had when making assessments, which was far in advance of the previous war. ASDIC in

particular could guarantee that a target existed on the seabed, although in the case of (*U988*) (see Chapter 10) this turned out to be a mixed blessing.

The only lingering criticism of AUD is the post-war tallying of lost U-boats to “B” Probably Sunk incidents recorded by AUD. As the director of AUD, Clarence Howard-Johnston recalled in 1980, the immediate post-war rundown in personnel precluded research into U-boat losses and lessons which could have been learned from research were lost (Churchill Archives Centre *GBR/0014/HWJN*). This regrettably compromised the reliability of the 1946 List (Niestlé 1998, 2) and was effectively a repeat of the mistake made by ASD in 1919. Not unsurprisingly, the research has shown that 12 of the 15 errors in the 1946 List in the Study Area come from the second phase of the Inshore Campaign when the U-boats became increasingly difficult to track. In particular, matching the five U-boats, which the research has shown were mined, to other “B” incidents effectively obscured their true fates.

### **16.5: Concluding Remarks**

The objective of the research was to assess how the extant remains of U-boat wrecks can contribute to a better understanding of the U-boat wars. It has shown that the loss registers, which are important sources of much of the published literature, are not consistently reliable documents. The results of the research show that by combining archaeological survey with the historic record, a sharper picture of events emerges.

To the author’s knowledge this is the first such study to look at modern naval losses on a battlefield scale by studying the archaeology of the wrecks. The English Channel Study Area contained a workable number of wrecks which were sunk in defined theatres of operation in both world wars and offered the opportunity to examine their losses collectively and measure them against the historical texts of the time.

In both the specific cases of each ASW action and in the broader battlefield contexts of WW1 and WW2 the results have been surprising. For instance, when viewed collectively on the battlefield level, the minefield is revealed to be more effective than was presumed during WW2. But perhaps more importantly is how the strengths and weaknesses of U-boat intelligence are revealed by, in particular, the mystery U-boat wrecks when all the cases are viewed together. In this sense, one impact of the research has been to show that the battlefield-wide approach to nautical archaeology, where relevant, offers the potential to reveal new meanings not seen by studying wrecks in isolation.

The author is prompted to recall recently seeing a naval atlas of WW2 for sale in the National Archives bookshop. Within its pages was a map of the U-boats sunk during the Inshore Campaign (Faulkner 2012, 249) which was confidently based on the 1946 List with all its

attendant errors. This thesis at least ensures that the data relating to the accuracy of the historical texts of U-boat losses, benchmarked against extant archaeology, is now available to historians and other academics. It is hoped that the thesis makes the case for the archaeology of ships lost in conflict where relevant, to proportionally contribute to the history of naval conflict. It shows that the result of 14 years of fieldwork has led to an accurate dataset of the wrecks in the Study Area, which when compared to official history leads to the emergence of far more accurate picture of the two U-boat wars in the English Channel in the 20<sup>th</sup> Century.