IMPLEMENTING THE BAREG U-552 CAMPAIGN PLAN
Summary

Strategic goals of the U-552 Campaign Plan call for improvements in training for our members, a thematically-linked series of archaeological surveys off the North Carolina Outer Banks, and improved outreach and engagement with counterpart organizations and the general public. An unstated but implied goal of the overall strategy is increased professionalization in the Group’s activities.

The centerpiece of the U-552 Campaign Plan is an ambitious, multi-year effort to conduct a thematically-linked series of archaeological surveys backed by solid historical research. Goal #2 of the U-552 Campaign Plan calls for the Group to conduct a comprehensive historical and archaeological research project of the history of the German submarine U-552, focusing on its eighth wartime patrol. The magnitude of this undertaking is the ultimate motivating factor for all other Goals and Objectives of the U-552 Campaign Plan.

The termination of the Group’s relationship with Coral Edge Adventures, which provided liability coverage for BAREG historical expeditions (“fun trips”), provided the Board with the impetus for addressing its risk management strategy for the future. Because BAREG is incorporated under North Carolina state law --- and is not just a dive club --- the Group is eligible to acquire corporate liability insurance only available to members of the dive industry. Such insurance protects the organization, the Board, and its members during training, historical expeditions, and archaeological surveys. To that end, the Group now had liability insurance coverage from Divers Alert Network for the Group and all its affiliated dive leaders.

With the acquisition of a Group liability insurance policy, the potential to conduct formal scuba training and certification came within reach. On August 31, 2017 SDI|TDI|ERDI approved BAREG’s application and granted the Group status as SDI-TDI Training Facility 1004534. Beginning in 2018, BAREG will begin offering SDI-TDI scuba courses that focus on a range of more advanced SDI recreational specialties that are applicable to maritime archaeology as well as TDI technical training.

While BAREG’s support to NOAA’s Monitor National Marine Sanctuary’s Battle of the Atlantic project is a critically important contribution to the public’s understanding of the World War I and II Atlantic campaigns, that outlet should by no means be our only venue for outreach and engagement. The BAREG website, www.bareg.org, must be the Group’s delivery vehicle not only for current news and information about us, but serve as a repository for historical data on the Battle of the Atlantic shipwrecks off the North Carolina coast, as well as provide a catalogue of training opportunities for our members.
With the acquisition of SDI-TDI Training Facility status and corporate liability insurance coverage, BAREG also acquired new financial obligations. While not completely insignificant, these obligations will almost certainly be met through fees collected for scuba training courses.
The Battle of the Atlantic Research and Expedition Group was formed in the Fall of 2012 with very limited goals, objectives, and expectations, with the initial vision of the infant organization being more of “a bunch of divers sitting around a table talking about wrecks” than the officially-recognized 501(c)3 educational non-profit corporation it has become. From the time of its inception, however, the Group has embraced an ambitious mission statement that would ultimately lead to formal incorporation as an IRS-recognized non-profit:

The purpose of the Group shall be to promote the increase and diffusion of knowledge of the Battles of the Atlantic, including their significance in the two World Wars of the Twentieth Century, and to contribute to the preservation of this important maritime heritage by:

a. conducting historical research on topics related to the maritime campaigns waged between the Allies and Axis/Central Powers during 1914-18 and 1939-45;

b. conducting scuba dives on wrecks associated with these campaigns and documenting their current and changing conditions via
photography, videography, and/or traditional archaeological recording techniques;

c. presenting and publishing the results of both historical research and field work conducted by the group.

Analysis of this mission statement reveals that in order to carry it out, the Group must be proficient at repeatedly performing the following Mission Essential Tasks:

- Conduct General Membership Meetings and Symposia;
- Conduct Board meetings;
- Conduct Entry-Level Archaeology Training;
- Conduct "Advanced" Archaeology Training;
- Conduct maritime archaeological surveys;
- Conduct historical expeditions ("fun" trips);
- Communicate with the General Public.

In 2017, the BAREG Board unveiled the Groups’ U-552 Campaign Plan, a multi-year effort, the centerpiece of which is a comprehensive historical and archaeological research project on the German submarine U-552 and its eighth war patrol. While the Campaign Plan lays out a blueprint for historical research and archaeological efforts for the next several years, it also includes important provisions for bolstering the organization’s capabilities as an avocational maritime archaeology group.
The U-552 Campaign Plan as adopted by the BAREG Board includes three Strategic Goals that generally fall into the following categories: training; historical research and archaeological fieldwork; and outreach and engagement. Those goals, specifically, are:

- Goal #1 – Further develop the expertise of the BAREG membership in maritime history, archaeology, and scuba diving;

- Goal #2 – Conduct a comprehensive historical and archaeological research project on the history of the German submarine U-552, focusing on its eighth wartime patrol;

- Goal #3 – Develop means for sharing the results of research projects, archaeological surveys, and historical expeditions with counterpart organizations and the public at large.
Each of the three Strategic Goals of the U-552 Campaign Plan has a number of Strategic Objectives, fulfillment of which will support the Groups’ ability to accomplish that overall Goal. Goal #1, focused on training, has three supporting Strategic Objectives.

**Goal #1** - Further develop the expertise of the BAREG membership in maritime history, archaeology, and scuba diving.

- Objective #1 – Establish an entry-level training program in Battle of the Atlantic history and maritime archaeology for new members;

- Objective #2 – On an annual basis, offer training on at least one advanced archaeology topic to our members;

- Objective #3 – Through training and recruitment, increase the proportion of members certified at the entry-level trimix level or higher.
GOAL #1: IMPROVING THE PROFICIENCY OF BAREG DIVERS

Protecting the Group, Its Board, and Members

Heretofore, BAREG relied upon its relationship with Coral Edge Adventures for liability coverage during historical expeditions (“fun trips”) conducted by the Group. The arrangement, essentially, consisted of those Group dive leaders (Instructors and Divemasters) who led these expeditions being affiliated with CEA as SDI-TDI dive leaders and therefore included on the CEA group liability policy. BAREG voluntarily adding a 5% surcharge on all trips to cover administrative costs and the portion of the CEA liability policy for these dive leaders, but the relationship was ultimately unsatisfactory and BAREG terminated the association in July 2017. All scuba training conducted by members of the Group was conducted exclusively under CEA auspices, thus providing BAREG liability protection as there was no formal tie between the Group and the training being conducted. As to archaeological training and expeditions, the Group has heretofore conducted these operations with no liability protection whatsoever.

The termination of the relationship with CEA provided BAREG with the impetus for addressing its risk management strategy for the future. Because BAREG is incorporated under North Carolina state law --- and is not just a dive club --- the Group is eligible to acquire corporate liability insurance only available to members of the dive industry. Such insurance protects the organization, the Board, and its members during training, historical expeditions, and archaeological surveys and thus supports both Goals #1 and #2 of the U-552 Campaign Plan. To that end, the Group has purchased a liability insurance policy from Divers Alert Network which covers the Group and all its affiliated dive leaders.

Producing Accomplished Avocational Maritime Archaeologists

The highly aggressive Objectives of Goal #21 of the U-552 Campaign Plan, which calls for the Group to conduct archaeological surveys on five wrecks over roughly the next five years, dictate that BAREG have a sizeable cadre of competent avocational archaeologists. To that end, Objectives #1 and #2 of Goal #1 speak directly to the Group’s ambitions for conducting basic and advanced archaeological training.

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1“Conduct a comprehensive historical and archaeological research project on the history of the German submarine U-552, focusing on its eighth wartime patrol.”
GOAL #1: IMPROVING THE PROFICIENCY OF BAREG DIVERS

For those members new to the Group, BAREG has reached an agreement with NOAA’s Monitor National Marine Sanctuary to present an entry-level training program that will consist of:

- One day of classroom training on the history of the Battle of the Atlantic;
- One day of classroom training comprising an Introduction to Maritime Archaeology;
- Two days of in-water training on basic archaeological survey and mapping techniques (Objective #1, Goal #1).

The first iteration of the BAREG entry-level training course is tentatively scheduled to take place at Monitor National Marine Sanctuary in Newport News, VA and at Lake Phoenix in Rawlings, VA in Spring, 2018. Details will be announced in conjunction with release of the BAREG 2018 activities plan.

Also in support of the Group’s emphasis on archaeological training for our members, BAREG will partner with other avocational maritime archaeology groups such as the Maritime Archaeological and Historical Society (MAHS) and encourage our members to take advantage of training offered by these partner organizations.

Additionally, the Group will conduct or sponsor training in more advanced archaeological techniques or supporting capabilities on at least an annual basis. The first of these will be held in early 2018 and will consist of classes in Archival Research and Video Editing for Maritime Archaeology. The subjects of future classes will be based on the recommendation of BAREG members and our supporting professional archaeologists, but potential topics could include Photogrammetry and 3D Modeling; Search and Recovery; and/or Remote Sensing Techniques and Equipment (Objective #2, Goal #1).

One crucial theme that the Group must instill in both its newest as well as its most experienced members is proper archaeological ethics. To that end, the BAREG Board, in collaboration with our supporting professional archaeologists, will develop an Ethics Standard Operating Procedure (SOP) and fully communicate the provisions of that SOP to the membership.

Producing More Capable Scuba Divers

Goal #1 of the U-552 Campaign Plan is focused on developing the abilities of BAREG’s members, with Objectives #1 and #2 devoted to increasing the level of our members’ expertise as avocational maritime archaeologists. Objective #3, however, is focused on increasing the capabilities of our members as scuba
GOAL #1: IMPROVING THE PROFICIENCY OF BAREG DIVERS

divers and, frankly, adding to the number of technical divers in our ranks. As written, Objective #3 was indifferent as to the certification agency and/or dive shop granting the technical certification, so long as the Group has sufficient divers certified to conduct staged decompression dives below 150 fsw to support the archaeological surveys on the SS *Tamaulipas* (155 fsw) and the *Lancing* (160 fsw).

With the acquisition of a Group liability insurance policy, however, the potential to conduct formal scuba training and certification came within reach. Inquiries with SDI|TDI|ERDI revealed that they do not require an organization to be a “brick and mortar” dive shop in order to be affiliated as a facility and grant SDI, TDI or ERDI certifications. Indeed, SDI|TDI|ERDI has a category of affiliate specifically designed for schools and universities; state, local and Federal government organizations; and non-profit corporations. This category is known as a Training Facility. On August 31, 2017 SDI|TDI|ERDI approved BAREG’s application and granted the Group status as SDI-TDI Training Facility 1004534.

As of this writing, several internal issues remain to be resolved. Our goal is to resolve these issues prior to the end of calendar year 2017:

- Determine the initial composition of the BAREG training staff (those Instructors and Divemasters who will officially be affiliated with BAREG and conduct or assist with SDI-TDI courses under BAREG auspices);
- Determine the initial curriculum of SDI-TDI courses BAREG will offer its members;
- Determine where BAREG will conduct classroom, pool, and open-water training as part of our SDI-TDI or archaeological courses;
- Determine where BAREG Instructors will conduct certification dives for our SDI-TDI courses;
- Review and revise, as necessary, the BAREG Dive SOP;
- Prepare and issue a new BAREG Training SOP.

There is no intention at present for BAREG to offer the Open Water Scuba Diver course, instead focusing on a range of more advanced SDI recreational
GOAL #1: IMPROVING THE PROFICIENCY OF BAREG DIVERS

specialties that are applicable to maritime archaeology as well as TDI technical training. These would include but are not necessarily limited to:

- SDI Research Diver (granted in conjunction with the BAREG entry-level course on maritime archaeology and Battle of the Atlantic history)
- SDI Deep Diver
- SDI Wreck Diver
- SDI Drysuit
- SDI Search and Recovery
- TDI Basic Nitrox
- TDI Intro to Tech
- TDI Advanced Nitrox
- TDI Helitrox
- TDI Normoxic Trimix.

Implicit within Goal #1 of the strategy will be an effort aimed specifically at the recruitment of both new and more experienced recreational divers. The aim of this effort will be to accept recreational divers into our ranks at their current level of certification; train them in basic and advanced maritime archaeological techniques and pertinent recreational scuba specialties; and ultimately advance them into the realm of technical diving.
GOAL #2: IN THE WAKE OF THE RED DEVIL

The centerpiece of the U-552 Campaign Plan is an ambitious, multi-year effort to conduct a thematically-linked series of archaeological surveys backed by solid historical research. Heretofore, the subjects of BAREG’s archaeological surveys were linked only through the fact that all were sunk off the North Carolina coast in the context of the wider campaign known as the Battle of the Atlantic. In all cases, these wrecks were selected due to their location in waters within recreational diving limits. To an extent, therefore, BAREG’s capabilities were a limiting factor in the selection of archaeological projects. While this remains true today, the U-552 Campaign Plan seeks to expand the breadth of BAREG archaeological projects through a series of individual surveys linked by a common historical background at water depths at which the Group has yet to perform archaeological tasks.

Goal #2 - Conduct a comprehensive historical and archaeological research project of the history of the German submarine U-552, focusing on its eighth wartime patrol.

- Objective #1 – British Splendour – 100 fsw;
- Objective #2 – SS Byron D. Benson – 105 fsw;
- Objective #3 – SS Atlas – 120 fsw;
- Objective #4 – SS Tamaulipas – 155 fsw;
- Objective #5 – Lancing – 160 fsw.

In support of this Goal, as well as in support of BAREG-led trips to historically-significant wrecks (“historical expeditions”), the Group will draft, coordinate, and publish an SOP on the processes and procedures for leading and participating in trips before the beginning of the 2018 dive season. Complete details of Goal #2 may be found in Appendix 1, Research Design for the U-552 Campaign.
GOAL #3: COMMUNICATING OUR SUCCESSES

While BAREG’s support to NOAA’s Monitor National Marine Sanctuary’s Battle of the Atlantic project is a critically important contribution to the public’s understanding of the World War I and II Atlantic campaigns, that outlet should by no means be our only venue for outreach and engagement. Goal #2, therefore, seeks to raise the profile of the Group’s work among peer entities, pertinent Government organizations, and the general public.

Goal #3 - Develop means for sharing the results of research projects, archaeological surveys, and historical expeditions with counterpart organizations and the public at large.

- Objective #1 – Develop www.bareg.org into a respected, useful repository of information on the Battle of the Atlantic off the NC Outer Banks.

- Objective #2 – Establish a partnership with a museum.

- Objective #3 – Continue the annual Battle of the Atlantic symposium, improve the quality of its speakers, and bolster the number of attendees.

In the second decade of the 21st Century, a virtual presence on the internet is essential. The Group’s Facebook page is a viable means of communicating with members and the virtual diving, history, and archaeological communities, with over 800 followers as of September 2017. Several current members joined the Group as a result of our exposure on Facebook. The Facebook structure, however, makes it unsuitable for many of our needs.

The BAREG website, www.bareg.org, must be the Group’s delivery vehicle not only for current news and information about us, but serve as a repository for
GOAL #3: COMMUNICATING OUR SUCCESSES

historical data on the Battle of the Atlantic shipwrecks off the North Carolina coast, as well as provide a catalogue of training opportunities for our members.

While we must develop a better presence in the cyber environment, we must also become more visible in the physical world. An ideal means for this would be through a partnership with one or more museums focused on subjects related to the Battle of the Atlantic.

For the past four years, the Group’s Battle of the Atlantic Symposium has been BAREG’s showcase for presentation of the results of significant Group accomplishments, enlightening historical research, and esteemed guest speakers. The Group’s separation from CEA will result in two short-term impacts to the Battle of the Atlantic Symposium:

- It will be in a different venue. The BAREG leadership is currently awaiting confirmation of the availability of an alternate meeting location, which will be announced shortly.

- For 2018, it will again be combined with the General Membership meeting. We anticipate a full return to a full-day Symposium beginning in 2019.
FUNDING AND SUSTAINING THE EFFORT

Financial obligations incurred by acquisition of SDI-TDI Training Facility status and a corporate liability insurance policy amount to an annual obligation of $2,631.00 ($2,451.00 for insurance and $180.00 for SDI-TDI Facility Fee). Individual dive leaders affiliated with BAREG will be responsible for covering their membership renewal fee, while BAREG will provide their liability insurance at no charge to the individual dive leaders.  

The Group’s annual financial obligations for insurance and Training Facility renewal will almost certainly be met through fees collected for scuba training courses. The Group will incur some start-up costs for each course to be run in the form of classroom rental, pool rental, training materials, and certification card processing fees. However, provided that our scuba courses are priced correctly --- while remaining extremely competitive ---- we estimate that the profit from a single TDI Advanced Nitrox/Helitrox course of four students by itself will nearly cover our annual financial obligations for liability insurance and SDI-TDI facility membership. Should BAREG experience a high demand for training throughout the year, it is not inconceivable that the Group will not only be able to meet these annual financial obligations, but have sufficient funds for other purposes, either in the way of new equipment or an ability to offset some of the costs to individual members of participating in annual survey projects.

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1 Valid only when conducted sanctioned BAREG activities.
INTRODUCTION

The Battle of the Atlantic, the longest and one of the most pivotal naval campaigns of World War II, was fought largely between the German submarine force, headed by Grossadmiral Karl Dönitz; the combined US, British, and Canadian navies; and the commercial shipping fleets of a wide variety of Allied nations. One of the major theaters of operation during the Battle of the Atlantic was the US East Coast, and ground zero on the US East Coast was the North Carolina Outer Banks. Within a week of Germany’s declaration of war on the United States on December 11, 1942, the first U-boat, U-125, departed France for a US East Coast patrol. U-125 was one of five long-range, Type IX U-boats dispatched by Dönitz as part of “Operation Drumbeat,” the opening move in an attempt to inflict a devastating blow to Allied shipping before the US Navy could mount an effective defense. Operation Drumbeat succeeded far beyond Dönitz’s best estimate, with the five Drumbeat submarines sinking 23 Allied ships for over 151,500 grt. Following up on the success of Operation Drumbeat, Dönitz launched wave after wave of U-boats against the US East Coast in early 1942. In what came to be known as the Second Happy Time, the U-boats rampaged along the eastern seaboard of the United States, conducting some 184 patrols and sinking some 609 ships for over 3,100,000 tons. Much of this action occurred off the North Carolina Outer Banks, the final resting place of the five vessels of that are the subjects of the U-552 Campaign.

HISTORICAL BACKGROUND

U-552

The U-552 was launched from the Blohm & Voss yard in Hamburg on September 14, 1940. Commissioned under Korvettenkäptan Erich Topp on December 4, 1940, the boat went on to participate in 15 wartime patrols, sinking a total of 30 ships for 163,756 gross registered tonnage of shipping. For the majority of her career, U-552 was assigned to the 7th U-boat Flotilla and was based out of St. Nazaire on the Atlantic Coast of France. U-552 essentially survived World War II, being scuttled in Wilhelmshaven by the German Navy on May 2, 1945.

A Type VIIC German submarine, U-552 was approximately 220 feet in length and had a surfaced displacement of roughly 770 tons. Powered by two supercharged 6-cylinder diesel engines for surface propulsion and two electric motors for propulsion while submerged, the Type VIIC had a top speed of nearly 18 knots on the surface and approximately 7.5 knots submerged. Its main armament consisted of five 53cm torpedo tubes (four forward tubes plus
Type VIIIC U-boat

one stern tube), with a normal wartime load-out of 14 torpedoes. Additionally, as an early-production Type VIIIC, _U-552_ had a secondary armament of a single 88mm deck gun for surface engagements and a 20mm anti-aircraft gun mounted abaft the bridge. With an unrefueled range of 8,500 nautical miles, the Type VIIIC was not designed for trans-Atlantic crossings or operations off the US East Coast, although the Battle of the Atlantic frequently saw the employment of these submarines in this manner as well as deep into the Caribbean. On at least six occasions in 1942 and 1943 _U-552_ was able to make use of Type XIV replenishment submarines (“milk cows”) to extend its time-on-station during a wartime patrol.³

Over the course of her career, _U-552_ was commanded by three officers: (4 December 1940 – 8 September 1942), _Kapitänleutnant_ Klaus Popp (8 September 1942 – 10 July 1944), and _Oberleutnant zur See_ Günther Lube (11 July 1944 – 2 May 1945). Of these, Topp was by far the most successful. As the third most successful German U-Boat commander in World War II, Topp was credited with sinking 35 ships for a total of 197,460 gross register tons (GRT).⁵

Born in Hannover on July 2, 1914, Topp joined the _Reichsmarine_ in 1934, serving on the light cruiser _Karlsruhe_ before transferring to submarines in October 1937. His first command was that of the Type IIC _U-57_, which he led on three war patrols,⁴ and during which he sank 7 ships for a total of over 40,000 GRT.⁶ _U-57_ sank after being rammed by the Norwegian vessel SS _Rona_ on September 3, 1940.

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³ July 11-20, 1940; July 22 - August 4, 1940; August 8 - September 1, 1940.

⁴ Over the course of her career, _U-552_ was commanded by three officers: (4 December 1940 – 8 September 1942), _Kapitänleutnant_ Klaus Popp (8 September 1942 – 10 July 1944), and _Oberleutnant zur See_ Günther Lube (11 July 1944 – 2 May 1945). Of these, Topp was by far the most successful. As the third most successful German U-Boat commander in World War II, Topp was credited with sinking 35 ships for a total of 197,460 gross register tons (GRT).⁵

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Surviving the sinking of the *U-57*, Topp assumed command of *U-552* upon its commissioning and led the boat through 10 wartime patrols, during which he was credited with sinking a total of 33 ships for nearly 190,000 GRT. Notable among these was the *USS Reuben James*, which was sunk on October 31, 1941 while escorting convoy HX-156 in the North Atlantic west of Ireland. The *USS Reuben James* was the first US warship lost in World War II.

**U-552’s Eighth War Patrol**

*U-552* departed St. Nazaire on its eighth war patrol on March 7, 1942 and, after a transit of some 11 days, entered North American waters some 180 NM southeast of Newfoundland by late on March 18\(^{th}\). The vessel continued its patrol unabated until the early morning hours of March 25\(^{th}\), when *U-552* torpedoed and sank the 6,256-ton, Dutch-flagged tanker *Ocana* some 70 NM southeast of Nova Scotia. Following this initial success, *U-552* continued in a southwesterly direction, approaching as close as 8 NM to the coast of Cape Code, Massachusetts, where Topp patrolled for two days (March 27-28) seeking targets. Finding none, he then set a course for the Delmarva peninsula. Arriving off the Virginia Eastern Shore on March 31\(^{st}\), Topp engaged two steamers with torpedoes to no success. *U-552* patrolled off the Eastern Shore of Virginia and Maryland for several days, during which Topp sank the 2,438-ton coastal steamer *David H. Atwater* with surface gunfire roughly 11 NM off the coast. Because at least one of the *Atwater*’s lifeboats was recovered riddled with bullet holes, this attack led to the widespread belief within the United States that U-boat crews were machine-gunning survivors in the water, with one observer claiming,

“\text{If I recall correctly, it was the freighter *David H. Atwater* that was torpedoed by the notorious U-boat 552 about ten miles off the coast. The survivors of the *Atwater* were machine-gunned to death in their life rafts by the Germans. The life rafts were picked up by a U.S. Coast Guard patrol and brought into Ocean City where their bodies were laid out on the Coast Guard dock at South Division Street and the bay.}’’
Following the attack on the *Atwater*, Topp took *U-552* south to the North Carolina Outer Banks. By 0001 hours† on April 4th, the vessel was located some 23 NM east-southeast of the Oregon Inlet. During the course of the day, some 16 vessels were sighted or heard, all of which were too far away to engage. At 2350 hours on April 4th, *U-552* was at periscope depth when two tankers were heard close by. Between 2350 hours on April 4th and 0447 hours on April 5th, *U-552* tracked the two tankers and their escort, alternating between running at maximum speed on the surface and submerging to listen via the boat’s hydrophones (passive sonar). By 0447 hours, *U-552* had closed within range of one of the tankers and fired a single torpedo from Tube III:

Hit aft 40-50 meters.

After one minute 0.8 seconds. Powerful detonation. Fire column one hundred meters high, and the tanker is engulfed in flames. It was a large

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† All times are based on those recorded in *U-552’s* eighth war patrol *Kriegstagebuch* (KTB), which were recorded in Berlin time (EST +6).
tanker of about 10000 GRT.

Short time later we are fired upon with star shells by the real escort who is still positioned further ahead probably with the other tanker.

The wind is positioned favorable and drives the smoke between us and the fire. Tanker lists heavily. The sky is obscured. Nothing is seen of the patrol vessel that we overtook.

Turn off at high speed to about 90°, to get to deeper water. Tanker is torpedoed in about 15-20 meters. The burning oil occupies a sector of about 40°. After about 2 hours the fire disappears, oil on the water continues to burn. The tanker is sunk. Patrol vessel shoots star shells for about 1 hour, however ineffectively.  

The victim was the **SS Byron D. Benson**, an 8,000-ton tanker owned by the Tidewater Associated Oil Company of New York that had been en route from Port Arthur, Texas to Bayonne, NJ with a cargo of 91,500 barrels of crude oil. Built at the Oscar Daniels Shipbuilding yards in Tampa, Florida in 1922, 27 of the 37 crewmen aboard survived the sinking. The vessel drifted and burned for three days before finally sinking and is now located approximately 26 NM northeast of the Oregon Inlet at a maximum depth of approximately 105 feet of seawater (fsw).

For two days following the torpedoing of the *Benson, U-552* patrolled the area south of Cape Hatteras. At 2337 hours on April 6th, Topp noted “At periscope depth. Propeller sounds, tanker with escort vessel coming from the south. Go on parallel course and hold contact submerged.”  

For the next nearly four and a half hours, Topp stalked the tanker, again alternating between running on the surface at full speed and diving to periscope depth to listen on the hydrophones. Finally, at 0357
hours on April 7th, Topp fired a single torpedo from Tube III, a miss. Roughly 20 minutes later, it was followed by a subsequent torpedo from Tube I. After a runtime of 1 minute, 54 seconds, the second torpedo finds its mark.\textsuperscript{11}

Hit astern before the smoke stack. Heavy blowing off steam and heavy diesel odor. Torpedo hit at the forward edge of the engine room and the after-bunker leaks. Settles deeper astern. Transmits his name "BRITISH SPLENDOR" (7138 GRT) torpedoed. Searching for submarine. Escort shoots star shells and throws depth charges. Remain in the vicinity, as the fate of the tanker remains to be seen, if necessary to still give him a finishing shot. Am forced back several times.

Must run off at high speed, was probably heard. Escort shoots aggressively.

With a new attempt to approach it is determined that the tanker lies with the engine part under water. The bridge can still be seen, and the forecastle is still out.

That's enough for me, ran off initially to the east then to the south.\textsuperscript{12}

Topp’s fourth victim of this patrol was the 7,000-ton tanker \textbf{SS British Splendour}, which had been en route from Galveston, Texas to the British Isles with a cargo of some 10,000 barrels of gasoline. Twelve of the crew of 53 were killed in the attack. The wreck of the SS \textit{British Splendour} now lies in approximately 100 fsw some 16 NM south-southwest of the Ocracoke Inlet.\textsuperscript{13}

Following the sinking of the \textit{British Splendor}, Topp departed the area first to the east, then turned south. Roughly three-and-a-half hours later, he decided to take refuge in Raleigh Bay (the area offshore the Outer Banks between Cape Hatteras to the north and Cape Lookout to the south) and transfer the torpedoes stored outside the pressure hull into the submarine. Preparations for the transfer were interrupted by surface traffic in the area. At 1008 hours, Topp sighted “a gigantic freighter” and closed for an attack, which he
launched roughly 45 minutes later.

Tube II and IV fire. Double shot.

Shooting data:

Target speed estimated 10 knots,

Target angle " 80°,

Range " 2000,

Depth " 4 meters.

Aim point forward 60, aft 50 meters, tube IV was a tube runner.

After 2 minutes 06 seconds a tremendous detonation, Water vapor and smoke cloud several hundred meters high.

Hit about forward 30 meters. Engine room is hit. After about 3-4 minutes internal explosion on the steamer.¹⁴

Topp’s second victim on April 7th was the 7,866-ton Norwegian tanker SS Lancing. Lancing was constructed in 1897 as the SS Knight Errant by British shipbuilders Charles Connell and Company, probably at the Connell yards on the River Clyde in Glasgow. After numerous changes of ownership and name, Lancing was converted in 1925 to become a whale oil tanker/factory ship under Norwegian ownership. The vessel was en route from Curaçao to New York with 50 crewmembers and a cargo of 8,900 tons of fuel oil at the time of its encounter with the U-552. A single crewman was lost in the attack. Today the wreck of the SS Lancing is located 12 NM south-southeast of Cape Hatteras and 28.5 NM east-southeast of Ocracoke Inlet at a depth of roughly 160 fsw.¹⁵

Shortly after sinking the Lancing, Topp put U-552 on the bottom for the next 14 hours. Surfacing at approximately 0200 hours on April 8th, the boat’s crew completed the interrupted torpedo transfer operation. U-552 then returned to the bottom.
At roughly 0740 hours on April 9th, U-552 detected propeller noises approaching from the south. Some 40 minutes later, a large, fully-loaded tanker estimated at 8,000 GRT was spotted, and Topp attacked “with the rising moon.” At 0938 hours, Topp fired a single torpedo at the target.

Shot from tube V.

Shooting data:

Target speed estimated = 10.5 knots
Target angle " = 80°
Range " = 2000 meters
Depth 4.5 meters

After 2 minutes 2 seconds hit at the forward edge of the bridge. High smoke and water column. Tanker does not burn. Radio Message apparently failed, attempt by searchlight to communicate with land.
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

Run for a coup de grâce.\textsuperscript{17}

Although damaged, the tanker did not sink and attempted to escape for roughly another 20 minutes. At 1000 hours, \textit{U-552} launched a second torpedo.

Tanker has stopped.

Shot from tube I.

Shooting angle 0°, depth 5 meters, Ato, torpedo speed = 40 knots. After 38 seconds hit amidships. Gigantic fire column. Tanker burns. Ran off before the quickly reaching fire. Lifeboats were caught in the fire.\textsuperscript{18}

Topp’s latest victim was the 7,137-ton tanker \textbf{SS Atlas}. Constructed in Philadelphia in 1916 by the William Cramp and Sons Ship and Engine Building Company, \textit{Atlas} was en route from Houston, TX to Seawarren, NJ with over 84,000 barrels of gasoline when sunk. Two crewmen out her complement of 34 were killed in the attack. The SS \textit{Atlas} today rests in roughly 120 fsw some 15 NM southeast of Cape Lookout, 27 NM southeast of Beaufort Inlet, and 34 NM south-southwest of Ocracoke Inlet.\textsuperscript{19}

\begin{figure}
\centering
\includegraphics[width=0.7\textwidth]{SS_Atlas.jpg}
\caption{SS \textit{Atlas}}
\end{figure}

At 1200 hours on April 9\textsuperscript{th}, Topp again put \textit{U-552} on the bottom “in the breaking dawn,” noting in the KTB that the SS \textit{Atlas} “continues to burn.”\textsuperscript{20} Through the remainder of April 9\textsuperscript{th} and into the early hours of April 10\textsuperscript{th}, \textit{U-552}
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

remained in the Raleigh Bay area seeking additional victims. At 0440 hours on April 10th, propeller sounds were detected approaching from the south. At 0517, Topp surfaced the U-552 and approximately 25 minutes later spots “Large tanker, about 10,000 GRT.” At 0627, Topp attacks.

Shot from tube V. Shooting data: Target speed estimates = 10.5 knots, target angle estimated 80°, range estimated 1000 meters, depth 4.5 meters, Ato, speed 40 knots.

After 49 seconds gigantic detonation. Tanker breaks in the center at the same moment. Keel broken. Bridge goes with the stern part. Begins to burn. Ran off.

Quick in succession blazing burst of flames on the tanker can still be seen, as if gas tanks flew in the air. After the second blazing burst of flame it suddenly disappeared. Believe that the tanker sunk.

The final victim of U-552’s eighth war patrol was the SS Tamaulipas, a 7,000-ton tanker built in 1919 and owned by the Mexican Trading and Shipping Company of New York. En route from Tampico, Mexico to New York with a cargo of 70,000 barrels of furnace oil when struck, Tamaulipas lost two of its crew of 37 in the attack. As noted by Topp in the U-552’s KTB, the vessel did in fact break in two as the result of the torpedo detonation, with the bow and stern sections of the vessel now located some 0.5 NM apart in roughly 155 fsw. The wreck sites are located some 36 NM southeast of Beaufort Inlet and 31 NM south of Ocracoke Inlet.

At 0140 hours on April 11th, Topp signaled his intention to terminate the patrol to German U-boat Headquarters. In return communications, Topp was notified that he had been awarded “as 87th of soldier of the German Armed Forces the Oak Leaves to the Knight’s Cross of the Iron Cross” for U-552’s successes during its eighth war patrol. After a trans-Atlantic crossing of some 16 days, U-552 returned safely to St. Nazaire.

Multibeam of the stern of the SS Tamaulipas

22
Archaeological Objectives

The objective of the *U-552* Campaign is to conduct a complete historical and archaeological survey of the five commercial vessels sunk off the North Carolina Outer Banks by *U-552* during its eighth war patrol. The historical inquiries will consist of archival research into the *U-552*, the five commercial vessels sunk off the North Carolina Outer Banks during the patrol, as well as the circumstances of the shipwreck events.

In addition to archival research, remote sensing surveys were acquired through the broader NOAA Battle of the Atlantic Project. High-resolution side scan sonar and multibeam imagery were gathered during the 2011 Battle of the Atlantic Expedition. Upon the compilation and processing of the data, the images were acquired for the development of this BAREG collaboration. This data, provides a baseline understanding of the condition of the shipwreck sites.

The goal for the archaeological survey is to perform underwater recording techniques that will capture an overall site plan of the shipwrecks, based on established, non-invasive archaeological field measuring, videography, and photography, to include photogrammetry and 3D modeling. The resultant site plans will be published and distributed to the general public.

**Research questions** to be answered in this project include:

1. What was the operational history of each vessel from the time of its construction until its loss?

2. Does the archaeological record corroborate the primary source material (*U-552 KTB*) regarding the sinkings?

3. Did the circumstances of the loss of these vessels have any broader historical implications? For example, did the *U-552*’s eighth war patrol have any impact on US Navy antisubmarine operations or policies relative to the operation of commercial vessels along the US East Coast?

4. What is the current state of the wreck sites of the five vessels? Does the state of preservation on the sites correlate to the natural variables such as water depth, location, and topographical features?

5. What are the precise measurements, configuration, and features of the shipwreck sites?
6. What types of environmental site formation processes and cultural impacts are affecting the shipwreck sites?

7. What actions might be taken to protect and preserve the sites while allowing continued access by the recreational diving community over the course of the next two decades?

8. Do the sites warrant further investigation?

Together, the five shipwrecks of the project span nearly the entire length of the North Carolina Outer Banks from north of the Oregon Inlet to Cape Lookout in the south. Four of the shipwreck sites are located between Cape Hatteras and Cape Lookout, as much as 25 NM off the Outer Banks shoreline (see Figure 7). High and variable currents may be present, and visibility may range from zero to more than 80 feet. These factors produce differing degrees of in-water efficiency from day-to-day. Furthermore, the depth of the sites, ranging from 100-160 fsw, will limit the amount of time that can be spent on site each day.

Locations of the Subjects of the U-552 Campaign (Source: Google Maps).

Because of the challenge the depths of the wreck sites will present during the project, BAREG will stage the project in order of most shallow to deepest.
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

<table>
<thead>
<tr>
<th>Wreck Site</th>
<th>Depth</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS British Splendour</td>
<td>100 fsw</td>
<td>Summer 2018</td>
</tr>
<tr>
<td>SS Byron D Benson</td>
<td>105 fsw</td>
<td>Summer 2019</td>
</tr>
<tr>
<td>SS Atlas</td>
<td>120 fsw</td>
<td>Summer 2020</td>
</tr>
<tr>
<td>SS Tamaulipas</td>
<td>155 fsw</td>
<td>Summer 2021</td>
</tr>
<tr>
<td>SS Lancing</td>
<td>160 fsw</td>
<td>Summer 2022</td>
</tr>
</tbody>
</table>

Schedule for Conduct of the Component Surveys of the U-552 Campaign.

Given this overall framework, the overall project timeline will begin in January 2018 and extend through 2023:

- Archival and historical research, *U-552*: 01 January 2018 to 01 January 2023 (continuous throughout entire project).

- Archival and historical research, SS *British Splendour*: 01 January 2018 to Summer 2018.


- Post processing of SS *British Splendour* data: Summer 2018 to 01 January 2019.

- Archival and historical research, SS *Byron D. Benson*: Fall 2018 to Summer 2019.


- Post processing of SS *Byron D. Benson* data: Summer 2019 to 01 January 2020.


- Post processing of SS *Atlas* data: Summer 2020 to 01 January 2021.

- Archival and historical research, SS *Tamaulipas*: Fall 2020 to Summer 2021.

APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

- Post processing of SS Tamaulipas data: Summer 2021 to 01 January 2022.
- Archival and historical research, SS Lanc-ing: Fall 2021 to Summer 2022.
- SS Lanc-ing Survey: Summer 2022.
- Post processing of SS Lanc-ing data: Summer 2022 to 01 January 2023.
- Final project report: 01 January 2024.

Archaeological Methodology

The archaeological methodology will consist of documenting the site by generating site plans, recording diagnostic hull features, intensive video and photo documentation, documentation of artifacts in situ, and the generation of 3D models.

Site Plans. The primary objective of each of the five surveys will be the production of scale site plans of each of the wreck sites. Due to the sites’ dynamic environments and the nature of this non-invasive survey, permanent baselines will not be established, although temporary tapes will be carefully installed through non-invasive means. Diver teams will be assigned specific areas to map, which will then be compiled to create an overall record of the site. Given constraints of bottom time at depth and the duration of the project, a hybridization of methods will be used to generate the site plans. A combination of video, scaled drawings, and scale photographs will be combined with acoustic data to generate an exterior survey of each wreck site.

Video and Photo Documentation. A photographic/video survey will be conducted to document artifacts, ordnance, and diagnostic features of the site. The photographic/video documentation will include the outer hull structure, diagnostic structural features, any damage or degradation to the hull structure, as well as artifacts in situ. At no point during the survey will the hull structure or any feature of the wreck sites be altered.

Diagnostic Features. Documentation of the sites will include identifying and recording diagnostic features, including diagnostic structural features such as deck machinery, hatches, etc.; hull damage due to the sinking event; hull damage that occurred post-sinking due to natural and/or man-made causes; and all exposed artifacts within the sites immediate vicinity. Additionally, the
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

team will determine the extent of hazardous material remaining on the site while maintaining all safety protocols.

Documentation of artifacts. Diagnostic artifacts will be photographed and/or captured on video from all angles with scaling device. Artifacts and any hazardous material will be documented *in situ*, by capturing on video, measuring and recording exposed artifacts and hazardous material and their relation to the rest of the site *in situ* and identifying artifacts with diagnostic features and makers’ marks.

Generation of 3D Models. Photogrammetry and 3D modeling will be phased into the project so that by the time of the surveys of the SS *Tamaulipas* in 2021 and of the SS *Lancing* in 2022, the Group will rely on this means exclusively for production of a scale site map.

**Post-Survey Assessment**

Post-survey assessment of the wreck sites will compare the historical accounts of their sinking with archaeological interpretations, assess whether additional archaeological fieldwork is called for, and make suggestions for public interpretation and recommendations for future site management.

A determination will be made if remaining artifacts are threatened and/or have historical significance or are of a unique type. An evaluation of the danger to artifacts if left undisturbed will also be conducted.

Environmental hazards and unexploded ordnance will be identified and recommendations for their possible removal or neutralization will be made. Environmental hazards will be reported to the U.S. Coast Guard, while the U.S. Navy and NOAA General Consul will be notified of any unexploded ordnance on-site. A recommendation for the possible removal or neutralization of environmental hazards that balances public safety with preserving the historical significance and integrity of the site will be made.

Recommendations for the long-term preservation of the sites will also be made, based on each site’s stability and integrity. Existing damage to the sites will be evaluated to assess whether it was caused by the sinking event or post-sinking. Post-sinking hull damage/alterations and their causes will be assessed based on environmental and cultural considerations. Long-term hull integrity will be evaluated and recommendations for site preservation will be made.
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

Logistics

As with prior joint surveys between the Battle of the Atlantic Research and Expedition Group (BAREG) and NOAA’s Monitor National Marine Sanctuary (MNMS), BAREG will assume responsibility for providing volunteer divers and acquiring lodging, the research vessel, and breathing gas supplies. The BAREG Board will appoint an overall project lead for each individual component survey of this Campaign, who will be responsible for acquiring or coordinating the acquisition of the necessary logistic support. MNMS will provide overall technical expertise and guidance during the conduct of the surveys, as well as post-survey processing and assessment.

For each component survey, BAREG will establish a forward logistics base, at which lodging, research vessel berthing, and breathing-gas resupply will take place. Based on the location of the individual wreck-sites, the forward logistics base will be located as follows:

<table>
<thead>
<tr>
<th>Wreck Site</th>
<th>Forward Logistics Base</th>
<th>Distance to Wreck Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS British Splendour</td>
<td>Ocracoke Island</td>
<td>16 NM (Ocracoke Inlet)</td>
</tr>
<tr>
<td>SS Byron D Benson</td>
<td>Roanoke Island/Manteo</td>
<td>26 NM (Oregon Inlet)</td>
</tr>
<tr>
<td>SS Atlas</td>
<td>Beaufort/Ocracoke Island (TBD)</td>
<td>27 NM (Beaufort Inlet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>34 NM (Ocracoke Inlet)</td>
</tr>
<tr>
<td>SS Tamaulipas</td>
<td>Beaufort/Ocracoke Island (TBD)</td>
<td>36 NM (Beaufort Inlet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31NM (Ocracoke Inlet)</td>
</tr>
<tr>
<td>SS Lancing</td>
<td>Ocracoke Island/Hatteras (TBD)</td>
<td>18 NM (Hatteras Inlet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28.5 NM (Ocracoke Inlet)</td>
</tr>
</tbody>
</table>

Locations for the Forward Logistics Bases for the U-552 Campain Plan Surveys.
APPENDIX 1: RESEARCH DESIGN FOR THE U-552 CAMPAIGN

END NOTES

11 ibid.
12 ibid.
17 ibid.
18 ibid.
21 ibid.
22 ibid.