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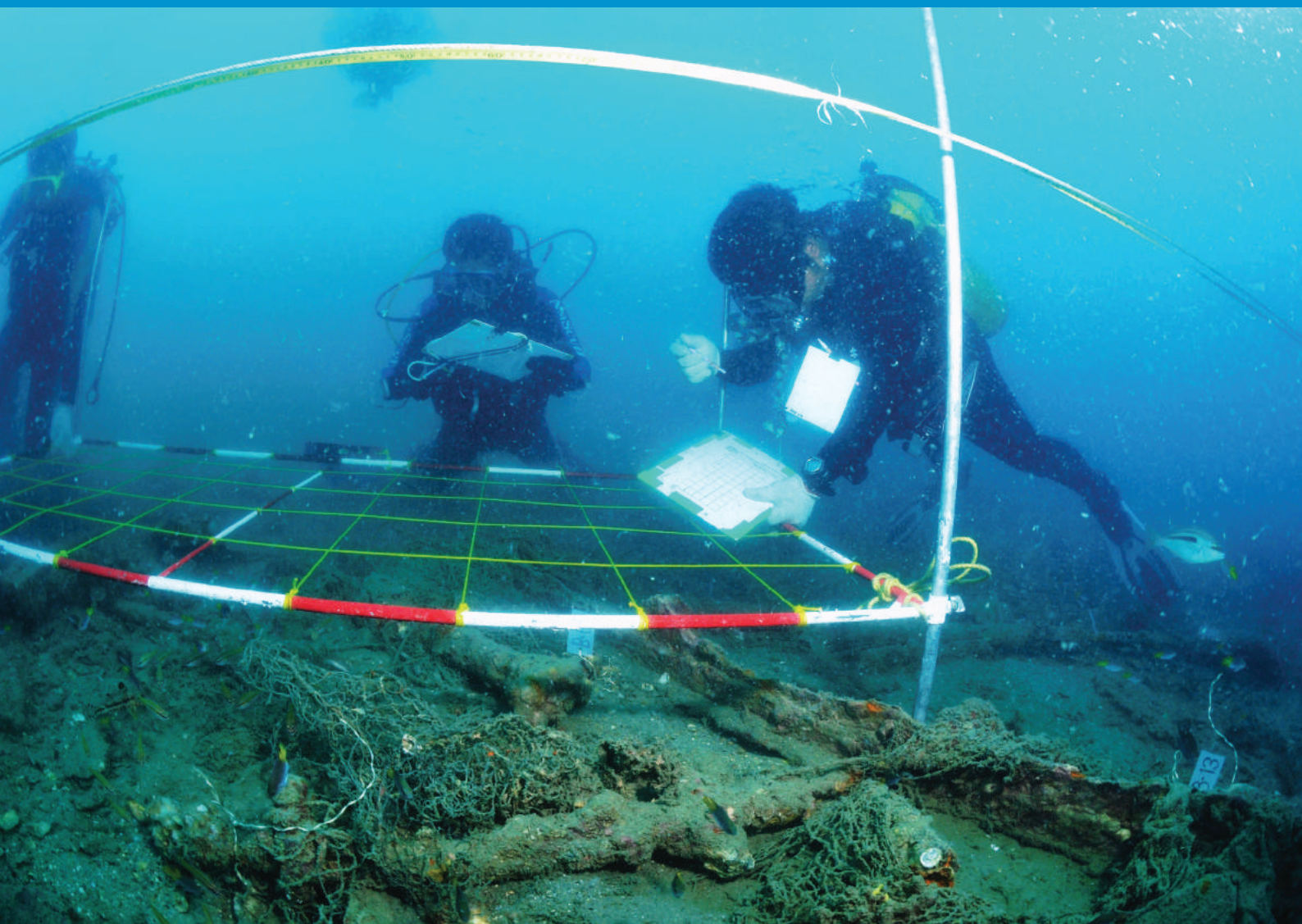
UNIT 12

Author Christopher J. Underwood

Practical Dive Session of the Foundation Course

The Mannok Shipwreck Site, Gulf of Thailand



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Core Knowledge of the Unit

This unit provides students with the opportunity to use the knowledge they have gained during the Foundation Course and participate in a practical diving project on the Mannok Island shipwreck.

Working as a team, students will have to:

- *Undertake an assessment of the wreck site*
- *Create a site plan and site archive*
- *Develop a management plan*
- *Collect information for the story boards*

On each day of the diving project students can expect to:

- *Receive a daily pre-diving safety briefing*
- *Receive a daily pre-diving task briefing*
- *Receive a daily post-diving project update*
- *Review any diving safety or medical issues*
- *Process data and planning for next dives*

Introduction to the Unit

Similar to most types of fieldwork, the two weeks of diving are more complicated to organize than the units that precede or follow it. There are a number of variables such as the weather and underwater visibility over which the trainers have no control, but nonetheless must be taken into account when planning the day to day tasks. The unpredictable nature of this type of fieldwork means that for trainers, flexibility is the key to achieving their goals.

For some students, taking part in a diving project might be a new experience. Most will be looking forward to the challenges, but some may well be anxious about the diving and how they will perform in front of their peers. For others, the two weeks will be a test of their physical limits.

With this in mind, at no point must any of the students be encouraged or persuaded to do something that is beyond their level of experience or fitness. Those responsible for the diving must be aware of the student's physical well-being and where necessary, be ready to take appropriate action such as suggesting additional breaks between dives. The project has scheduled rest days to provide time to catch up with administrative tasks and provide recuperation. Both trainers and students should feel fit and sharp right up until the last day of diving. Tiredness can lead to a lack of concentration and mistakes, which could easily result in a diving accident with potentially serious consequences.

The organization of the project is a team effort between the trainers who advise and assist the students in achieving the project objectives, and those who provide the essential logistical and safety support. The overall success of the field project depends on the combined cooperation of everyone.

1 Mannok Shipwreck

The wreck site selected for the diving project is the Mannok shipwreck, which is situated in the Rayong Province of Thailand. Discovered in 1992 by Mr Vichien Singhatothong of *Toy Tours* (a local dive operator), the wreck was once a steamship that operated between various ports along the coast of the Gulf of Thailand. Artefacts recovered from the site during the Underwater Archaeology Division's (UAD) original survey suggest that the vessel sank after 1917, although the precise details of the sinking are not known.

As well as the characteristics of the wreck site, the prevailing environmental conditions are an important consideration in the choice of the site. However, the details of the discovery and description of the wreck site itself (other than what is necessary for dive safety) are not provided to the students prior to the project. It is expected that students will assess the condition of the site based on their own observations, as well as learning about the discovery and likely origin of the wreck from local sources. Students should use Appendix E: *Management Plan for the Mannok Wreck Site* as a guide to the information required.

2 Environmental Conditions and Site Description

The wreck lies in 20 metres of water, several miles off the coast of Mannok Island in the Gulf of Thailand. As the site is located in unsheltered waters it is subject to sea swells and although the underwater currents are not strong, some students have commented that they experienced difficulty staying in position over the drawing grids (planning frames). Visibility is usually between 5 and 10 metres, although this has been reduced on a few occasions.

The Mannok shipwreck (sometimes also called *Ruea Mail*, which means 'Mail Boat') is approximately 41 metres long, 6.5 metres wide and is relatively two dimensional, rising from the sea bed at a height of no more than 1.5 metres.

The bow section of the vessel is clearly visible and forms a 'triangle' of integral structure from the stem to a bulkhead running across the vessel and is largely covered with fishing nets. There are frames running down both the port and starboard side and side plating is also visible, particularly on the starboard side.

Between the bow and the middle section of the site, there are substantial breaks in the side outline of the vessel on both port and starboard sides up until approaching midship, at which point the framing and side plating resumes.

Although the main structural features are metal, in the flat section of the wreck, between the bow and the boiler, there are parts of what is likely to be the original wooden deck, as well as evidence of possible cargo and the ship's fixtures and fittings.

At the approximate centre of the Mannok shipwreck there is the remains of a single steam boiler, the top of which has been badly damaged, revealing what is left of the steam pipes and stays. Although the circumferences of the boiler ends are incomplete, it is still easy to identify them when approaching from bow or stern, but not so easy when directly overhead.

To the stern and sides of the boiler there are scattered parts of the engine, as well as other parts of the vessel and cultural objects. Behind the boiler on the starboard side, there is evidence of a lower metal deck or engine room walkway.

The vessel's stern frame and arch above the propeller are visible, as is the top few centimetres of the rudder, the back edge of which faces forward on the port side. The propeller is not visible, so its presence cannot be confirmed without some excavation.

Throughout the shipwreck there is evidence of damage caused by salvage and fishing activity. There are numerous clusters of rocks netted or tied together, acting as net weights or as simple anchors. Large fish traps have also been found. The site is also a popular recreational dive site, but the direct impact of this activity is difficult to quantify.

The partly two and partly three dimensional nature of the wreck site, recognizable structural components, ship's fixtures, cultural material and the impact of the activities noted above, all combine to provide a realistic challenge for students.

3 Project Organisation: Selecting Teams

On previous courses it was convenient to divide the students into three teams, with each of the teams being given the task of assessing, either the bow, middle or stern sections of the wreck. However, this decision is dependent on the number of diving students and their level of diving experience and, therefore, shouldn't be assumed to be the only option.

As well as the student's diverse professional backgrounds, their diving experience is also varied. Typically the courses have included those who have only recently completed their diving training, scuba diving instructors, ex-military divers, experienced underwater archaeologists and archaeological technicians.

Prior to the diving project, the only opportunity to assess individual diving abilities (apart from what is recorded in their resumes) is during the practical session held in Unit 2: *Back to Basics*. Therefore trainers and technicians need to be observant and to make a provisional assessment during this exercise. During the previous Foundation Courses in Thailand the Underwater Archaeological Division (UAD) of the Fine Arts Department was responsible for the logistics of and safety during the diving.

The aim of the team selection is to achieve a balance of diving and professional skills within each team, while also taking into account the possibility of language issues, bearing in mind that the level of proficiency in English is also variable. It has been necessary to keep nationals together to enable better team communication, but selecting teams by nationality is not a priority criteria.

During the initial two diving days of the project, students are given the opportunity to familiarize themselves with their diving equipment and the wreck site. Students are encouraged to make initial observations or sketches of parts of the wreck site, (dependent on their level of diving skill and confidence), but the task loading is kept deliberately low. During the previous courses, each student buddy pair has been accompanied by a UAD dive technician, providing safety backup.

It is recommended that the team selection is made definitive after the first two days of the project when there has been an opportunity to see everyone in action.

If the option to divide the wreck site into sections is adopted, it is important to remind the teams that they need to coordinate their tasks with each other, to ensure that the surveys can be joined together to form a single site plan.

3.1 Non-Divers

It is expected that there will be at least one non-diving course student. Non-divers can be given several tasks, nominally under the title of 'Data Manager'. The main and most important task is to ensure that each day the archaeological logs are completed, collated and added to the site archive. The logs can either be completed on the diving vessel or in the evening, but must be completed the same day.

Other tasks assigned to non-divers include:

- *Be the liaison between the teams and the support team*
- *Helping colleagues prepare for diving and the underwater tasks*
- *Learning about scuba diving*
- *Log keeping*

4 First Day Project Briefing

Each day (usually before leaving the quayside) there is a safety and project briefing. It is essential that all those associated with the project are present, including students, trainers and those responsible for the diving.

The briefing on the first day includes a few additional points and is, therefore, likely to be longer than normal. The briefing enables all relevant topics to be explained in detail and gives everyone the opportunity to ask for clarification of any point that is not fully understood.

The following points are specific to the first day briefing:

- *Introductions to the diving support vessel's crew*
- *Responsibilities and roles of students, trainers and those responsible for the diving*
- *Introduction to the on-board medic*
- *On-board routines, e.g. safety equipment and the use of water for showers*
- *Meal arrangements*

Safe diving practices (reminders are also given during the daily briefings):

- *Kitting up*
- *Buddy checks*
- *Signals*
- *In water safety routines, such as what to do if separated from a buddy or in the event of equipment failure*

4.1 Daily Briefing

Ideally, a white board is used to display the expected surface conditions and dive parameters that are updated daily by the dive supervisor. A sketch of the site on the white board is used to illustrate the main features of the wreck site to help orientation.

The daily briefing includes:

4.1.1 Environmental Conditions

- *Wind speed*
- *Sea state*
- *Underwater current*
- *Dangerous marine animals*
  - *Spiny sea urchins*
  - *Moray eels*
  - *Jelly fish*
  - *Stone fish*

4.1.2 The Diving Routine

- *Maximum bottom time*
- *No stop time*
- *Safety stop*
- *Buddy dive teams (students, trainers and safety teams)*
- *Minimum surface interval time*
- *Position of ascent and descent lines*

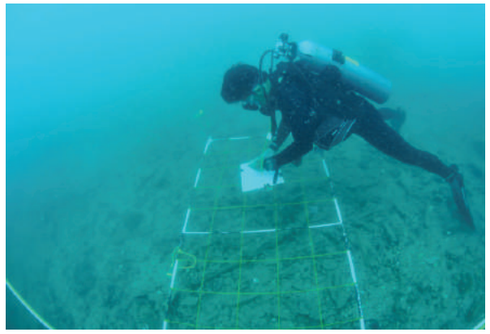
4.1.3 Project Briefing

The trainers are responsible for providing students with both a general update for the benefit of the entire team and any additional advice to the teams that may be required. They must also ensure that individual team surveys are coordinated, so that they can be merged into one overall site plan.

LEFT: Project briefing. © Martijn R. Manders

ABOVE: Diver informing the dive supervisor and log keeper before diving. © Christopher J. Underwood

BELOW: Dive log keeping; an important task for the non-divers. © Christopher J. Underwood



TOP LEFT: Diver using a drawing grid to record the site source. © UAD/A.Kiewmas

TOP RIGHT: Divers fixing the baseline for the survey of the Mannok Island wreck. © UAD/A.Kiewmas

ABOVE: Divers recording structure of the Mannok Island wreck. © UAD/A.Kiewmas

Other daily reminders and considerations:

- *Daily medical issues and checks*
- *Do not dive if feeling unwell, anxious or for any other reason*
- *Notifying the dive supervisor and log keeper before diving and on returning to the dive boat after the dive*
- *Dive times and dive tank contents (bars) are recorded*

Depending on the day to day requirements of the team, it may be necessary to mention additional factors, such as the use of a small boat that is sometimes required.

Each team should provide:

- *A daily update on the progress of each team*

4.1.4 After Diving

Once the daily dives are complete it is essential that each of the students do the following:

- *Disassemble the dive equipment*
- *Wash dive equipment in the freshwater tubs*
- *Store the dive equipment in the changing area on the rear deck*
- *Complete the daily project dive log*
- *Relax*

4.2 End of Day Debrief

At the end of each day spent diving, it is important that the trainers debrief the students. This usually takes place at the quayside before leaving the boat.

4.2.1 Summary of the Project Progress

The debrief should summarize the progress made on the project and remind students about the daily tasks that include:

- *Complete project logs (personal dive logs and description of tasks done)*
- *Develop the management plan*
- *Plan the next day's tasks*
- *Organize buddy teams*
- *Practice using equipment, such as the survey software (Site Recorder)*
- *Country presentations (a short presentation about the cultural heritage of each country represented on the course)*

4.2.2 Planning the Following Day's Dive Tasks

Once debriefed, the dive tasks for the following day should be planned. Decisions must be made regarding:

- *What tasks need to be done*
- *How many divers are required for each task*
- *Role of each diver*
- *If anybody is needed to help with the task*
- *What equipment is required*
  - *Measuring tapes*
  - *Drawing boards, pencil (dive slates)*
  - *Drawing grids (planning frames)*
  - *Profile bars*
  - *Who is going to carry the equipment*

5 Setting up the Site

Although other options are possible, in previous Foundation Courses a baseline has been laid from the stern frame to the stem to facilitate the survey. The baseline also provides a convenient method of orientation around the site. Usually the dive technicians are responsible for laying the baseline and where necessary, placing and recovering other equipment on the site.

6 Project Task and Skill Development

Students are provided with an opportunity to continue to develop their professional skills and to gain valuable diving experience on a wreck site, under the guidance of the trainers and dive technicians.

During the project students will practice:

- *Freehand drawing*
- *Offset survey*
- *Ties and trilateration survey*
- *Direct Survey Method (DSM)*
- *Vertical profiles*
- *Drawing grid (planning frame)*
- *Wreck site assessment*
- *Interpretation of structural components of a metal shipwreck*
- *Use of Site Recorder*

7 Project Archive

Each diver is expected to complete an archaeological log, recording the objectives and results of the dive. This log creates a project archive for each section of the site, which will be merged together at the end of the project.

8 Introduction to the Storyboards

One objective of the diving project is to create storyboards that can be used for display purposes. By creating storyboards, students make the transition from using data and information gathered by them for scientific use, to bringing the story of the site to life for the wider public. From the information gathered during the diving project, the group has to prepare a series of storyboards and final presentations about the wreck site they have been working on.

Unit Summary

The diving project is a major component of the Foundation Course and objectives, such as the development of the management plan and museum storyboards, are dependent on its success.

Trainers need to help students remain focused on these goals, particularly as the daily diving routine is tiring. Despite the rest days, some students will struggle to dive every day and complete all of the associated non-diving tasks. The project follows the trajectory of a normal archaeological project, with the daily changes to environmental conditions on the wreck site contributing to the ebb and flow of the project's progress. Occasionally days are lost through bad weather or when the underwater visibility becomes poor, which inevitably has an impact on the work schedule.

The project is also important in continuing the development of teamwork, which is such an important aspect of fieldwork. During previous courses students have generally excelled in this area, but nonetheless trainers need to be vigilant and ready to intervene if team relationships show signs of strain.

Students tend to enjoy this part of the Foundation Course, as its realistic challenges and experiences give them a tremendous base on which to build when they return to their respective countries.

Suggested Timetable

Time as arranged	Meet on the project vessel
30 mins	Briefings *- Safety briefing* *- Medical issues* *- Task briefing* *- Other as required*
	Leave for the dive site *- Breakfast* *- Teams prepare their dive equipment and review their dive plans.*
	Arrive on site *- Ascent/descent lines are attached to the wreck by the supporting team*
120 mins	First dive by each of the student teams
90 mins	Surface interval *- Lunch*
120 mins	Second dive by each of the student teams
	Leave the site and arrive at the harbour
30 mins	De-brief *- Student teams give updates of their day's progress* *- Trainers give a review of the day's activities* *- Review of medical issues* *- Reminder about the evening tasks* • *Complete project logs* • *Develop management plan* • *Plan the next day's tasks* • *Organise buddy teams* • *Practice using Site Recorder* • *Country presentations*

Teaching Suggestions

Prior to beginning of the practical diving, trainers must provide students with a one hour introductory lecture. The lecture must cover the following broad topics:

Objectives of the fieldwork

- *Practice site assessment and survey techniques*
- *Development of a management plan for the Mannok wreck site*
- *Collect information and images for storyboards*

Introduction to the wreck site

- *General site characteristics, such as environment (depth, normal range of visibility, dive times, etc.)*

Daily routines

- *Dive equipment*
- *Briefing, dive planning, etc.*
- *Safety considerations*

Suggested Reading: Full List

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United States Naval Sea Command. 2008. *United States Navy Diving Manual, Revision 6,* 5 Volumes.

Useful Websites

- *Divers Alert Network (DAN):* ***www.alertdiver.com***
- *Scientific Diving Supervisory Committee:* ***www.uk-sdsc.com***