DARK WATER · TEACHER PACK

Episode 3

Two Islands

Half Moon Reef, June 1727. The Zeewijk is wrecked in the southern Abrolhos and the survivors build a boat from the wreck. Two men are marooned before they leave. The science is why no navigator in 1727 could fix longitude.

FOR
Marine and Maritime Studies ATAR Years 11 and 12

RUNNING TIME
14 min 30 sec

INSIDE
Teacher notes, listening guide, a longitude and dead reckoning task, archive images, sources, answers

A PODCAST FROM scitech

Made for listeners 16 and over.

About this episode

On 9 June 1727 the Zeewijk ran onto Half Moon Reef in the southern Abrolhos with 137 people aboard. She had left the Netherlands with 208. A longboat sent for help was never seen again. The survivors built their own boat, the Sloepie, from the wreck and mangrove timber, and 82 men reached Batavia in April 1728.

Before they left, Adriaan Spoor and Pieter Engels (the episode says it as "Engelse") were found guilty of sodomy under VOC law and put on separate islands. The episode sticks to what the records say about them. Its science is navigation: why dead reckoning made the Abrolhos so hard to avoid, and why the skipper's decision to turn towards the coast against orders put the Zeewijk on the reef.

BEFORE YOU PLAY IT

The episode includes a death sentence for sodomy under eighteenth-century Dutch law and two men left on islands to die. It is brief and not graphic. Some students may want to talk about how the law treated these men and some may find it personal, so have a support contact ready. Please preview it before class. Near the end it gives Lifeline's number, 13 11 14.

WHERE IT FITS

COURSE AND UNIT	SYLLABUS CONTENT	IN THE EPISODE
MMS ATAR Year 11, Unit 1	Historic sea routes, including the Brouwer Route	7:08 to 8:06
MMS ATAR Year 11, Unit 1	Science as a Human Endeavour. Impact of technological advances on navigation	8:06 to 9:57, why longitude needed a clock that didn't exist yet
MMS ATAR Year 11, Unit 2	Charting skills. Latitude and longitude	8:06, and the task on page 5
MMS ATAR Year 11, Unit 2	Historical information found within a shipwreck	12:19, the 1840 mix-up over where the Batavia was lost
MMS ATAR Year 12, Unit 3	Methods of locating shipwrecks. Historical records	12:19, the long search and the 1968 discovery

References are to the SCSA Marine and Maritime Studies ATAR syllabuses for teaching from 2026 (Year 11) and 2027 (Year 12). Check against the version your school is using.

Episode map

Times are from the start of the file. The show sting runs for the first ten seconds.

TIME	SECTION	WHAT HAPPENS
0:10	The wreck	The Zeewijk hits Half Moon Reef at about half past seven in the evening on 9 June 1727.
1:29	The Abrolhos and the VOC	Low coral islands and the survivors' camp opposite the wreck.
3:21	The longboat	Twelve men row north for Batavia in July and are never heard from again. Work starts on the Sloepie in November.
4:50	Spoor and Engels	The trial on 2 December 1727 and the marooning, told only as far as the record goes.
6:21	Batavia and the route	The Sloepie reaches Batavia with 82 men, and the sums from the skipper's crew list. Why the Brouwer Route was fast and where it ended.
8:06	Longitude	Latitude from the sun, longitude as a problem of time and how dead reckoning errors build up.
9:57	The wall	Why the Abrolhos are where ships turning north too late end up.
10:18	Steyns's orders	The skipper breaks the VOC's sailing orders and turns towards the coast. His trial in Batavia.
10:55	The boat	Building a ship from a wreck and crooked mangrove.
11:55	Food and finding the wreck	Seabirds and seals, the 1840 mix-up with the Batavia, and the main site found in March 1968.

START HERE

Give students a map with no grid and ask them to describe where Geraldton is without using place names. Then ask how they would find their own position on a ship with no land in sight, and wait for someone to say they'd need a clock.

TAKE IT FURTHER

Students research John Harrison's marine chronometer. When did a clock that kept time at sea become practical? Would one have saved the Zeewijk, given what Steyns decided?

Listening guide

The time next to each question tells you roughly where to find it.

1 0:10 How many men were on the Zeewijk when she hit the reef, and how many reached Batavia?

2 1:29 Where did the survivors camp, and why there?

3 3:21 The longboat failed. Why was sending it still a reasonable decision?

4 6:41 The skipper's crew list says 137 people were aboard when the Zeewijk struck. Take away the 12 in the longboat, the two marooned men and the 88 who sailed on the Sloepie. How many died at the wreck or on the islands? Why would starting from 208 give the wrong answer?

5 7:08 What was the Brouwer Route, and why was it faster than the older way to Java?

6 8:06 Why was latitude easy to work out in 1727 when longitude was not?

7 8:06 What is dead reckoning? List the measurements a navigator needed for it.

8 8:06 Why do dead reckoning errors build up over time instead of cancelling out?

9 10:18 What did the skipper do that the company had ordered skippers not to do, and what happened to him in Batavia?

10 10:55 Why was mangrove useful for the frames of the Sloepie?

11 12:19 Why did people look for the Batavia in the wrong islands for more than a century?

Where are we?

Longitude is a question of time. The Earth turns 15 degrees an hour, so if you know the time at home when it is noon where you are, you can work out how far east you have come.

PART A. A CLOCK THAT RUNS WRONG

15°
Earth's turn per hour

4 min
per degree of longitude

97.8 km
one degree of longitude at 28.5° S, the latitude of the Abrolhos

1 A navigator's clock has drifted 20 minutes slow over the voyage. How many degrees of longitude is that error?

2 How many kilometres east or west is that at the latitude of the Abrolhos? Show your working.

3 Why is a degree of longitude shorter at 28.5° S than it is at the equator?

PART B. DEAD RECKONING

A ship's log for five days running east along 35° S, before the turn north. Speeds are in knots, which are nautical miles per hour. **This log is made up for the exercise.**

DAY	HEADING	AVERAGE SPEED (KNOTS)
1	090°	7
2	090°	7
3	090°	6
4	090°	8
5	090°	7

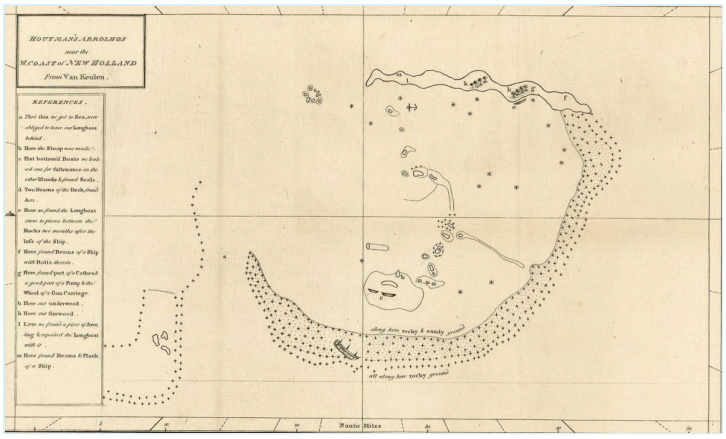
1 How far does the navigator think the ship has travelled in the five days, in nautical miles?

2 An unseen current has been carrying the ship east at 0.5 knots the whole time. How much further east is she than the log says, in nautical miles and in kilometres? (1 nautical mile = 1.852 km)

3 The navigator plans to turn north with 60 nautical miles of sea room to spare, by the log. What happens? Explain using your answers.

From the archive

These are records from the time or close to it. Each was made by someone with their own reasons, so treat them as sources.



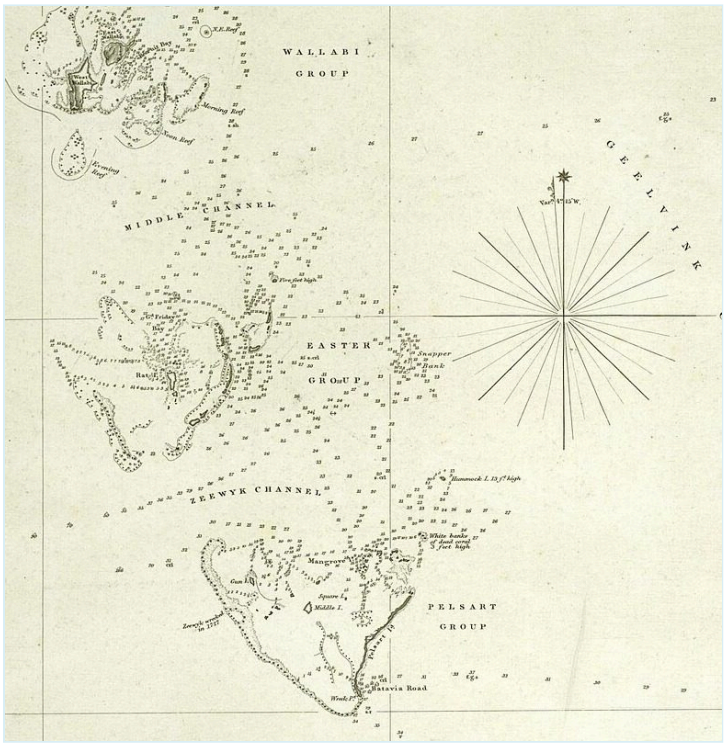
Houtman's Abrolhos, from Van Keulen

ENGLISH EDITION, LATE 1700S

Copied from a Dutch chart that the WA Museum says most closely resembles a sketch map by the Zeewijk's skipper, Jan Steyns. The ship is drawn on Half Moon Reef, and the key marks where the Sloepie was built ("Here the Sloop was made").

Detail. Houtman's Abrolhos near the W. Coast of New Holland, from Van Keulen, published by A. Dalrymple. Source gallica.bnf.fr / BnF. Public domain (BnF).

The key says a longboat was found broken on the rocks two months after the wreck. The episode says the longboat sent for help was never heard from. How could both be true, and what would you need to check?



Admiralty chart of the Houtman Rocks

PUBLISHED 1845, FROM THE BEAGLE'S 1840 SURVEY

It marks the Zeewijk on Half Moon Reef. It also names Batavia Road and Pelsart Island in the southern group, where the Beagle's officers wrongly thought the Batavia had been lost. The Batavia is on Morning Reef in the Wallabi Group, at the top.

Detail. Admiralty Chart 1723, The Houtman Rocks, 1845. National Library of Australia, nla.map-t33. Public domain.

Find Batavia Road. How does this chart show the mistake the episode describes?

Sources

The WA Museum pages are the main sources for this episode.

WA Museum. Roaring 40s, Zeewijk
web.archive.org/web/2026/museum.wa.gov.au/maritime-archaeology-db/roaring-40s/zeewijk
The core timeline from departure to the 1968 discovery. It has a typo, 30 April 1778, which students may spot. Archived copy, because the museum's old address no longer loads (checked 3 November 2026).

WA Museum. Zeewijk 1727
visit.museum.wa.gov.au/zeewijk-1727
The survivors' camp, the two men marooned north of Gun Island and the building of the Sloepie.

WA Museum shipwreck database. Zeewijk
web.archive.org/web/2026/museum.wa.gov.au/maritime-archaeology-db/wrecks/id-806
The database record, with a recorded death toll to compare with the episode's arithmetic. Archived copy, because the museum's old address no longer loads (checked 3 November 2026).

WA Museum Maritime Journals. Jan Steyns's journal, Zeewijk
journals.museum.wa.gov.au/app/journals/2/pages/100
The skipper's journal in English translation. Page 100 is the crew list, certified in Batavia in 1729, that the episode's sums come from.

WA Museum. The problem of longitude in relation to the discovery of Australia
visit.museum.wa.gov.au/learn/news-stories/problem-longitude-relation-discovery-australia
How the Brouwer Route cut the voyage to Java from nearly a year to about six months, and why it led to wrecks.

Royal Museums Greenwich. What is longitude?
rmg.co.uk/stories/time/what-longitude
A clear explanation of longitude as time, with the 15 degrees per hour used in the task.

Westerly (2020). A sorrowful act
westerlymag.com.au/a-sorrowful-act
On Drew Pettifer's exhibition about the two marooned men. Useful for comparing art with the record.

WHERE THE SOURCES DISAGREE

They make a good exercise in reading sources.

- The skipper's crew list gives 137 aboard at the wreck and 35 dead or missing at the wreck and on the islands. The WA Museum database gives 72 deaths with no breakdown. Which would you trust, and why?
- The WA Museum's Zeewijk page says the survivors were ferried to the island 16 days after the wreck. Steyns's journal has the boat reaching the island on 17 June, eight days after the wreck on 9 June.
- Sources disagree by a day or two on when the Sloepie sailed and when she reached Batavia.

Answers

Suggested answers. Accept anything that shows the same understanding.

LISTENING GUIDE

1. 137 were aboard when she hit the reef and 82 reached Batavia.
2. On Gun Island, opposite the wreck. The first men ashore found fresh water there, and the wreck was their only source of timber and supplies.
3. The longboat was the fastest thing they had, the Batavia's commander had made the same trip in 1629 and come back with a ship and they sent their strongest men while they could still row.
4. 137 minus 12, minus 2, minus 88 is 35, which matches the list's own count: 14 drowned or missing and 21 who died on the wreck or the island. Starting from 208 is wrong because the numbers changed on the way: some stayed at the Cape and 22 joined there, 153 sailed from the Cape, and 16 more died before the wreck.
5. Ships dropped south from the Cape of Good Hope to between about 35 and 40 degrees south, turned east and rode the strong steady westerlies across the Indian Ocean before turning north for Java.
6. Latitude came from measuring the height of the sun at noon and using a table. Longitude needed a clock that kept home time for months at sea, and a pendulum clock doesn't work on a rolling ship.
7. Working out position from heading, speed and time. Heading from the compass, speed from a knotted log line and a sand glass and distance from speed multiplied by time, added up every watch.
8. Every measurement is a little off, and unseen currents move the ship as well. The errors add up and nothing on deck shows them.
9. Steyns, an inexperienced replacement skipper, and his council turned east-north-east towards the coast, against the VOC's sailing orders and over his steersman's protests. In Batavia he was found guilty of losing the ship and falsifying his journals, and lost his job, pay and property.
10. Mangrove grows crooked, so the grain follows the curve a frame needs. A curve cut from a straight plank snaps.
11. In 1840 the Beagle's crew found the beams of a large ship in the southern group and decided it was the Batavia, so the group was named after Pelsaert. Searchers looked there for more than a century, but the Batavia was in the Wallabi Group. The Dutch relics on Gun Island were put down to the Zeewijk, correctly.

TASK

PART A

1. 20 minutes divided by 4 minutes per degree is 5 degrees.
2. 5 × 97.8 km = about 489 km.
3. Lines of longitude meet at the poles, so they get closer together away from the equator. A degree of longitude is about 111.3 km at the equator multiplied by the cosine of the latitude.

PART B

1. (7 + 7 + 6 + 8 + 7) × 24 = 840 nautical miles, an average of 7 knots.
2. 0.5 knots × 120 hours = 60 nautical miles, which is about 111 km.
3. The ship is already 60 nautical miles further east than the log says, so the sea room the navigator is counting on isn't there. A ship that turns at the last moment by the log meets the coast before she turns, or, after turning, runs north onto the coast or the Abrolhos sooner than expected.