



ZCZC PB57

GALEWARNING NR57 172358UTC APR

FORTIES VIKING

> CAPSIZE AND
SURVIVAL >>>

Report on
lifeboat Anna Margaretha's capsizes
November 1st 2006

Preface



The crew of the Ameland lifeboat (left to right): Paul Veenstra, Pieter Mosterman, Jan Hoekstra and Kees de Boer (coxswain).

This assessment of the incident in which the 62ft (18,8m) RIB lifeboat Anna Margaretha of the Ameland lifeboat station capsized several times is intended to enable all those involved with our work to learn from its conclusions. Fortunately the incident did not result in loss of life. While the Ameland lifeboat was being thrown about by freakish waves, the crew couldn't help thinking of the German lifeboat 'Alfried Krupp' of Borkum, which capsized on January 1st 1995, drowning coxswain and mechanic.

The crew has received much praise for the way in which they, when no other assistance was available, have left nothing untried to help the crew of the freighter 'Cementina' to get out of trouble, even while their own position was becoming precarious. After the knock downs they managed to limp home with a damaged lifeboat. Their courage and perseverance were in the best traditions of the lifeboat institution.

The open way in which the crew agreed to share their experiences and uncertainties with the inquiring committee was much admired. Their frank self-criticism may one day help others to prevent similar -and probably fatal-accidents.

We thank the following individuals and institutions for their cooperation:

Coxswain and crew of lifeboat 'Anna Margaretha'
Voluntary coxswains and crew of lifeboat stations Lauwersoog, Schiermonnikoog, Eemshaven, Borkum and Norderney (both DGzRS),
The KNRM full time coxswains, MRCC Den Helder (Netherlands Coast Guard)
Deutsche Gesellschaft zur Rettung Schiffbrüchiger, Bremen
MRCC, Bremen
Captain and crew of Cementina
Skipper and crew of Maggie M.
Rijkswaterstaat (Dutch department of Public Works)
KNMI (Royal Netherlands Meteorological Institute)
Maritime Research Institute of the Netherlands (MARIN)
Shipping company Torbulk Ltd
KNRM operational service
KNRM technical service

Compilation:

Interviews and supplements: Germ Martini
- KNRM operational inspector
Text: Kees Brinkman -
KNRM public relations
Translation: Hans Vandersmissen - maritime journalist (De Walrus Maritime Texts)

Photos by:

Flying Focus: 4b, 4c, 11, 20, 22, 30
Arie van Dijk: 4d, 8, 16d, 23
Peter van der Laan: 16b, 16c, 16f
Wessel Agterhof: 9b, 16a, 17a, 17b, 18, 19
Kees Brinkman: 2, 6
Willem Roos: 5, 7
Rob Buist: 3b
Pim Korver: 16e
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Royal Netherlands Sea Rescue Institution
(Koninklijke Nederlandse Redding Maatschappij)
PO-Box 434, 1970 AK IJmuiden
Tel. +31(0)255-548454
www.knrm.nl
info@knrm.nl

The narrative

The full story of a most exciting day, November 1st 2006

All times in local winter time (EET=GMT+2)

Ships in peril

In the night from October 31st to November 1st, gales over the Wadden islands rapidly increased to hurricane force winds. The isles of Ameland and Borkum, and the ports of Eemshaven and Delfzijl, reported stormforce 10 gusting hurricane force 12 Beaufort. On October 30th the centre of the deep Low (980Mb), developing to become hurricane 'Britta', lay between Iceland and Scotland, and was moving from the North of Scotland to the South of Norway. This pushed the isobars over the length of the northern North Sea closer together, a sure signal for winds to increase to storm force, with on November 1st extremely high waves off the Wadden islands' coast. Presumably another very active centre developed within the fierce depression, which resulted in wind speeds of 70 knots, reported near the islands of Ameland and Borkum. On the Waddenzee a number of sailing barges, racing in the 'Slag in de Rondte' regatta for traditional craft between the ports of Harlingen and Eemshaven, were trying to find shelter, but all weather shores seemed to have vanished, while the barges' ground tackle could not cope with such ferocious conditions.



Cementina



The Eemshaven lifeboat with barge Najade.

At 01.00 EET lifeboat station Schiermonnikoog raised the alarm and 62ft (18,8m) Arie Visser-class RIB lifeboat 'Koning Willem I' was launched. Soon the Lauwersoog 35ft (10,6m) Valentijn-class RIB lifeboat 'Annie Jacoba Visser' left port. Both lifeboats barely managed to attend all the craft in trouble and tow the heavy barges, with unhelpful windage from their traditional rigs, to safety. There were not many safe places left in the first place, with Schiermonnikoog marina virtually vanished, the moles awash, while many yachts and the harbour master's office were adrift, being blown towards the Groningen coast. At 03.25 EET the 47ft (15m) Johannes Frederik class RIB lifeboat 'Jan en Titia Visser' launched from its Eemshaven station as well, to beef up 'Annie Jacoba Visser's' horsepowers. The water level was so high that shoals were the least of problems in this otherwise rather amphibious kind of seascape. The tiny port of Noorderpolderzijk, otherwise the muddiest place in the vicinity, gave no shelter whatsoever. The port of Delfzijl reported a tidal height of NAP+4.83m, the highest water level since 1825, when the water rose to NAP+4.60m. If these weather conditions would have coincided with Springs, the tide could have risen some 0.35m higher.

One of the vessels in the North Sea at the time was cement bulker m.v. 'Cementina', which regularly brings cement from the German port of Bremen to the river Humber. 'Cementina' was steaming in the ET shipping lane, lightly ballasted bound for Bremen with seven crew. The forecast for German Bight of NW10 did not alarm the captain, who during his 1800 to 2400hrs watch was very confident about his ship's seakindliness.

By 0245 EET on November 1st 2006, however, 'Cementina' was knocked down by presumably an exceptionally large breaking wave on the port side, which threw the captain out of his bunk, bruising his shoulder. The toplights had hit the water. On the bridge the captain found a terrible mess, with one window blown in, so that all Admiralty charts were soaked and all electronic instruments on the blink. Only the VHF worked more or less, while the AIS signal was still being transmitted. It ultimately turned out that the damage to the wheelhouse had made navigation utterly impossible. The wave's impact had knocked the steering machine out of order.



The course of hurricane Britta.



Baltic Skipper



Republica Argentina



Oceanic

The captain informed the MRCC Den Helder that the vessel was Not Under Command (NUC) but refrained from sending a distress call (mayday). After approximately an hour the ship was drifting out of the shipping lane. The rudder's hydraulic system had packed up and could not be repaired by the crew. This ruled out the option of finding shelter in any port while anchoring would be impossible in these seas. The captain tried to make the most of the still operational propulsion system for keeping the ship's head to sea, which initially seemed promising. 'Cementina's position was then near the TE 11 buoy, in the TSS north of the Westgat channel off the isle of Schiermonnikoog.

The seagoing Bugsier tug 'Oceanic' gave an ETA of 0900 hrs from its position North of the German Wadden islands. Also the freighter 'Baltic Skipper', the tanker 'Lima Chemist' and the guard vessel MFV 'Maggie M' offered help. 'Maggie M', deployed in a pipe laying operation in the vicinity, signalled at 0307 hrs it could reach the casualty within two hours and might be able to act as tug until 'Oceanic' would arrive.

By 0403 hrs 'Cementina' reported that anchoring was impossible because the anchor winch did not work. Conditions worsened while the ship drifted closer to the shore. By 0414 hrs 'Cementina' signalled to need a tug instantly and requested a lifeboat on standby.

Raising the lifeboat alarm

Because all lifeboats in the area were very busy towing the before mentioned racing barges to safety, the 18,8m class Ameland lifeboat 'Anna Margaretha' had to be alarmed. The night before, the crew had talked through arrangements needed because the coxswain Theo Nobel had on November



1st temporarily left the island for family affairs. Second coxswain Kees de Boer took over command and for this service was to be accompanied by the mechanic, three deckhands and the third coxswain.

On arrival at the Ballumerbocht, where the lifeboat is moored to a pontoon, in a gullet along a salting, the crew found the dam, leading towards the lifeboat station's terp, under knee deep water. An appr. 10m craft had gone adrift and lay bumping against the lifeboat and its pontoon. One crew member offered to get that boat out of the way while the others would get on with lifesaving, but the coxswain insisted that two should clear this secondary salvage job. The lifeboat consequently set out to sea with four men: Kees de Boer, Jan Hoekstra, Pieter Mosterman and Paul Veenstra. In the wheelhouse all loose items were stowed in the settee chests and everything else lashed down. VHF conversations between the other lifeboat crews –among whom Kees de Boer's brother Bert, who commands the Lauversoog lifeboat- were overheard and left only one conclusion: it was hell out there.

With so much water in the Waddenzee, the lifeboat could proceed in the relative shelter of the Waddenzee, south of the island across shallows, on an easterly course towards the Westgat channel off Schiermonnikoog. 'Anna Margaretha' took the large waves in the Westgat rather smoothly and from there steered NNE. The lifeboat passed the bulky auto carrier 'Republica Argentina' which was riding out the terrible tempest at anchor, before steering more easterly to meet 'Cementina'.

Last minute salvage

Guard ship 'Maggie M' reached at 0430hrs the casualty, which still had no steerage. 'Maggie's' captain Bon Mainprize offered to tow 'Cementina' out of trouble but the crippled vessel's captain declined such offers repeatedly. The freighter 'Baltic Skipper', which had remained on stand-by until 'Maggie-M' had arrived, was thanked for its attention and continued its course.

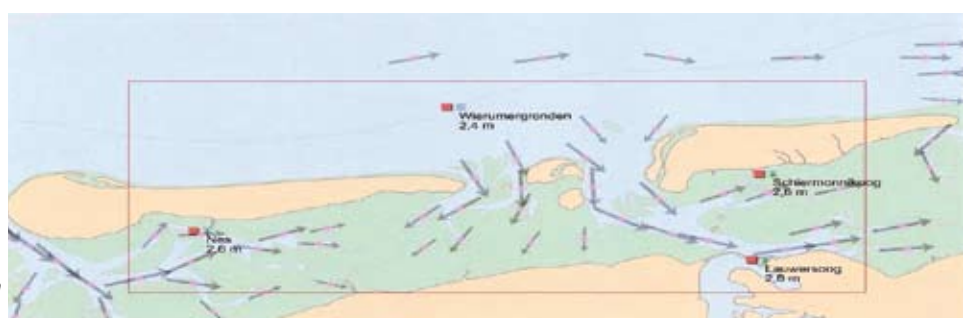
The lifeboat arrived on scene by 0707 hrs, whereupon captain Mainprize offered for the last time to tow 'Cementina' to

seaward, while he pointed out that time was running out rapidly, with the offshore banks less than 2½ nM off. 'Cementina's' captain graciously accepted this time, but since he had neither hawser nor operational anchor winch at his disposal, it was decided that the lifeboat would try to get a rope across from tug to casualty. 'Maggie M' had a 36mm wire hawser with nylon forerunner, total length 75m (41 fathom) and weighing 3 tons.

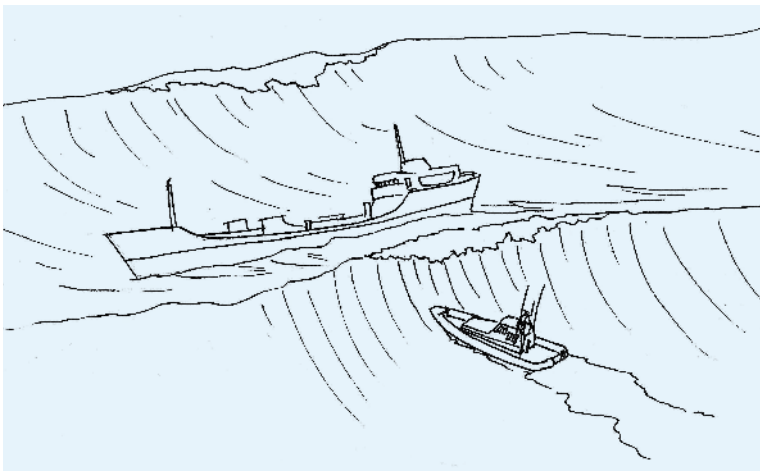
Carefully manoeuvring 'Anna Margaretha' alongside, the lifeboatmen got a heaving line aboard 'Maggie M', where it was hitched to the forerunner, which was subsequently hauled aboard the lifeboat and its eye put over the fore bollard. The coxswain gently let the lifeboat run with the sea, stern first, towards 'Cementina', where crew stood ready on its port side to take the heaving line. While he manoeuvred his starboard bow cautiously in the casualty's lee, De Boer realised that coming alongside in 10 to 12m waves, with 'Cementina's' hull on occasions coming out of the water for half its length, would be extremely hazardous.

When a useful position was reached, the small lifeboat crew was unable to lift the forerunner's eye from the bollard. Only after the coxswain had steamed a bit forward to ease the strain, could the forerunner's eye be lifted and hung on one of the bollard's side hooks. When the lifeboat was in position again, the heaving line was successfully thrown aboard the casualty and the forerunner could be lifted free of the bollard. The very heavy hawser soon proved too much for the heaving line, however and by 0800hrs it broke. With the offshore banks too close for comfort, 'Maggie M's' captain did not wish to put his crew at risk and declined a second try. Time would definitely have run out before the overboard hanging hawser would have been recovered, and he was left with no option but to steam slowly into the sea and get it aboard.

The coxswain overheard the VHF-conversation of 'Cementina' with 'Maggie M' and with the tug 'Oceanic's' captain, who expected to reach the scene by half an hour. This ocean going tug is much bigger and stronger than 'Maggie M', but its draught is significantly bigger as well, while its afterdeck is



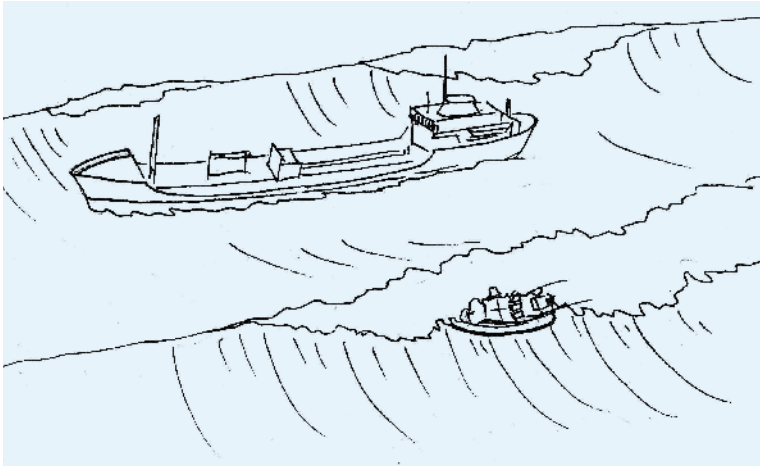
Tidal currents at 04.16hrs, when Ameland lifeboat was launched.



much lower. De Boer calculated that 'Oceanic' would have great difficulties manoeuvring so close inshore and keep his crew on the afterdeck, so he decided to have one other try: tow 'Cementina' with the lifeboat's own propulsion head to wind, while the casualty would under her own power steam into the seas and away from the leeshore.

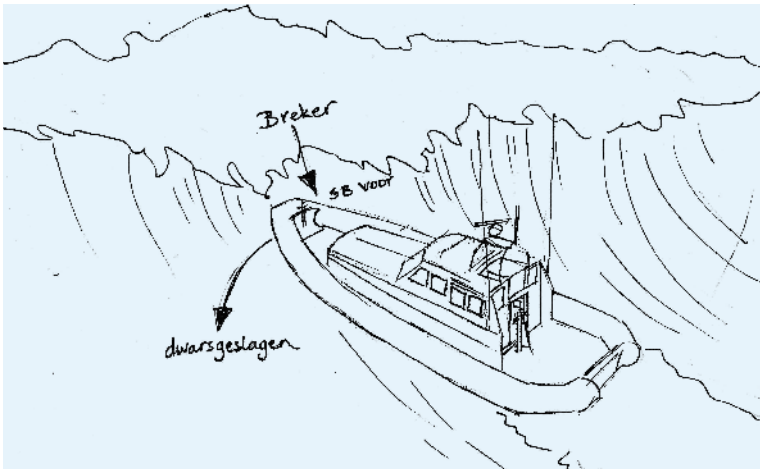
The capsize

Then 'Maggie M', a couple of cables away from 'Cementina', is hit by three particularly steep breakers of a staggering estimated 15m height. The lifeboat is at that moment some 40 yards to the lee of 'Cementina', while the deckhands are preparing the hawser to be passed to the casualty. Then they see 'Cementina's crew leaving their stations on deck and disappear in the wheelhouse: are they giving up or sheltering for 'big un'? The coxswain calls his men into the wheelhouse for consultation by a blast on the horn. Intending to go on deck as soon as possible again, they leave the door open, while one of the deckhands opens a bench to take the spare heaveleine out.

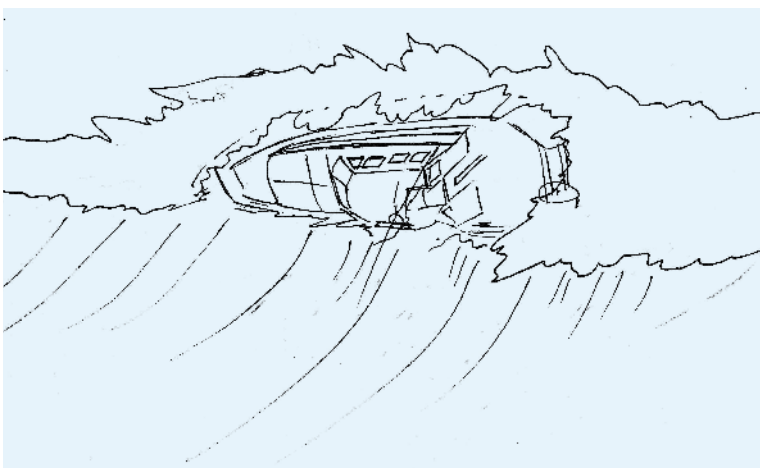


On that moment the answer why 'Cementina's crew fled into the wheelhouse roars from under the casualty: a monstrous ground sea and, with capsize apparently inevitable, De Boer has barely time to shout a warning to his crew to hold on. Virtually head to sea, the lifeboat is making no headway. The breaker hits on the starboard bow, throws the lifeboat beam to sea, and rolls her over to port completely.

The coxswain remains neatly strapped to his seat during the entire roll over, Jan Hoekstra is not strapped but manages to hold on in his seat. Pieter Mosterman and Paul Veenstra are standing free, however, and fly all over the place, when after a slight hesitation the lifeboat rights herself. The engines have switched off automatically beyond 90° list, but silence there is not. Some two feet water slosh around the wheelhouse, after having inundated the dashboard, soaking the instruments, which have consequently packed off while alarms fill the wheelhouse with a demoniacal noise: low fuel alarm, oil pressure alarm, bilge alarm.



De Boer quickly checks whether everyone is still on board and restarts the engines. Short circuits in the alarm panel prevent resetting of the alarms, so that the pandemonium persists. Just before the gears function again, a second ground sea hits the lifeboat, leaving De Boer only time to shout another warning and Mosterman to close the door just before 'Anna Margaretha' is knocked down for a second time. The lifeboat is carried away by the breaker on her port side before she rolls over completely. The crew dangerously fly around a second time, together with all the water that is still there.



Artists impression of the first capsize.

Once upright again conditions seem to have calmed down a bit. The door is opened to get rid of the water and the coxswain undoes his belt to reach for the dead instruments. He tries to start the engines again but only the starboard engine splutters back to life. Too late and with too little power to react properly to the third breaker, which snatches the starboard bow with tremendous power and throws the lifeboat over to port. Pieter Mosterman, still trying to close the door is thrown out, but Paul Veenstra who stands aft to port, just manages to pull him back. Pieter holds on to the door, but Paul is subsequently thrown through the wheelhouse and ends up on the dashboard and on Kees de Boer. Jan Hoekstra lands on the port bench.

For the third time Kees de Boer restarts the engines, again only the starboard one works and at last they manage to head into the seas and weather the breakers.

Confusion

The entire crew of 'Cementina' had mustered in the wheelhouse where chaos reigned. A mixture of water and oil sloshed around and had made windows barely transparent. The cook had nevertheless seen 'Anna Margaretha's first two capsize, but had lost sight of her then. **On board 'Maggie M' the lifeboat's ordeal had not been noticed; in the enormous seas they had lost sight of her altogether.**

Meanwhile, in the MRCC Den Helder apprehension mounted when news about the lifeboat's attempts to pull 'Cementina' free failed to come through. At 0847hrs 'Anna Margaretha's AIS position suddenly vanished from the screens, while she failed to answer any call. The Maritime Rescue and Coordination Centre Bremen was contacted immediately in order to get helicopter assistance and alarm the Borkum lifeboat 'Alfried Krupp'. The KNRM's watchman was informed and the rescue helicopter J-SAR of naval airfield De Kooy was put on alert. Soon the Norderney lifeboat 'Bernard Gruben' and rescue cruiser 'Hermann Marwede', positioned off Helgoland were alerted as well.

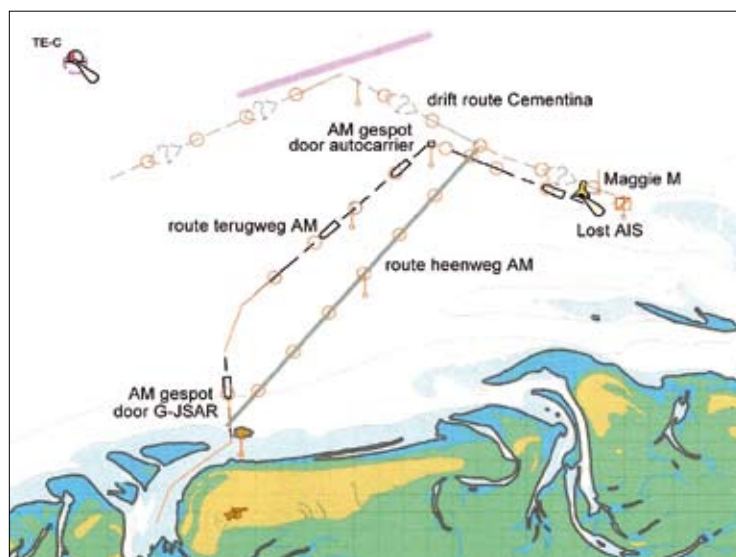
By 0853hrs 'Cementina' was called up and only then did they confirm that the lifeboat had capsized and had presumably lost power. **The cement carrier was by that time in the Riffgat near the Geldsackplate, drifting towards the Westerems, to where the 'Maggie M' was heading as well, to seek shelter for getting the hawser back on board before returning to sea to search for the lifeboat. The lifeboats 'Alfried Krupp', 'Bernard Gruben' and 'Koning Willem I' (Schiernmonnikoog) were being directed towards the scene as well.**

Dead reckoning

On board 'Anna Margaretha' life gradually resumed a sense of normality. The alarms could only be silenced by cutting the wires to the speakers. The hawser, which had been lying on deck, had wound itself in weird bights around the wheelhouse, the aerial of VHF, SSB and AIS had been damaged and were useless, as were the search lights, windscreen wipers and radar scanners; only the directional aerial at the masthead were undamaged. On the aft deck the sad remains of the main search light were found; the drogue had disappeared from its holder. The overhead lining in the wheelhouse had big holes in it, where the tool chest had shot through when it was launched from inside the settee chest –which had been opened to recover the heaving line. A very fortunate wonder indeed that no one had been hit by it.

'Anna Margaretha' headed towards the open sea, steering between 'Cementina' and the tug 'Oceanic', which by then had arrived, but was noticed by none of the crews, so that the lifeboat's whereabouts remained unknown to the outside world. The lifeboat's handheld VHF had disappeared in the confusion but was later found under a pile of rope, paper, cotton waste etc., in a corner of the wheelhouse.

Once out of the surf and ground seas the coxswain had to navigate by sun and wind direction, since the electronic compass had packed up with all the other electronic devices. It was 0830 hrs by then and no one knew about the lifeboat's ordeal. The sea on the port bow gave an unpleasant motion and the lack of windscreen wipers severely reduced the coxswain's sight; the crew had to point out breakers. They manoeuvred carefully to spare the last remaining engine.



First impression of the route of the lifeboat.



The Anna Margaretha returns in Lauwersoog.



Brothers Kees and Bert de Boer. Intense relief.

The crew noticed a low flying aircraft, which, however, did not seem to be looking for the lifeboat and made no mention of it in communication with others.

After an hour the lifeboat sighted the big auto carrier again, which was still riding out the storm anchor, and changed course to a more westerly and from the auto carrier a SW-erly heading. Shortly after this encounter a couple of wreckage buoys were identified as the Kalo buoys, which helped shape a course for the isle of Schiermonnikoog. Closer inshore the breaking seas grew heavier again and the lifeboat was knocked

down several times, though fortunately not beyond 90°, so that the engine kept humming.

Located, at last

Meanwhile, anxiety ashore was mushrooming. The news of the capsizing had spread like wildfire and by 0900 hrs it was on the radio news. Making sense of information was hampered severely by constantly surfacing new rumours. At KNRM headquarters in IJmuiden a crisis team was formed and operational and technical staff were despatched to Lauwersoog lifeboat station and MRCC Den Helder. The KNRM PR-depart-



Rescue helicopter J-SAR.



Stories and emotions shared in the crewroom of Lauwersoog.



ment coordinated press contacts and delivered press releases in consultation with the Coast Guard Centre.

At 1019 hrs Brandaris lighthouse received a telephone call from Pieter Mosterman, whose mobile phone had survived the pandemonium in his inside pocket. At last he could release the message that they had all survived and were entering the Westgat off Schiermonnikoog. By that time the J-SAR-helicopter was overhead the lifeboat and after consultation with the coxswain, Paul Veenstra was winched off. He had in the last capsizing suffered a deep cut in his chin and was brought to Ameland airfield, where a doctor treated his wound.

The three remaining crew proceeded through Westgat and Lauwers, to arrive at Lauwersoog at 11.40hrs to an emotional welcome and dry, warm clothes. After a traditional Dutch meal of coffee, soup and bread, the men were despatched by ferry to their native Ameland.

Tying in the ends

With the lifeboat crew safely ashore, it had to be left to others to solve the problems from which its predicament had originated in the first place.

'Cementina' had not yet reached safety, although a number of vessels were on standby. The tug 'Oceanic' did not manage to get a line across, with heavy breakers roaring over its afterdeck. Coast Guard Centre Den Helder had at 1010 hrs handed over the rescue coordination to MRCC Bremen, since the action had moved to their area. Lifeboat 'Alfried Krupp' had been made 'on scene coordinator' (OSC). 'Cementina' had been blown across the banks and had been able to anchor in the Lauwers, a blind channel between the island of Schiermonnikoog and the islet of Rottumeroog. The crew was evacuated by German helicopter. After the gales had blown out the vessel was towed to the port of Harlingen, for repair of steering machine and wheelhouse.

The KNRM's technical inspector thoroughly surveyed lifeboat Anna Margaretha in Lauwersoog before she was transported for repair to the builder, shipyard Aluboot of Hindeloopen. Already on the evening of November 1st the crew met to discuss their first impressions of the day's events. Details have been put together later.

The operational inspector compiled a detailed report, for which he interviewed all involved.

Conclusion

In general, the dramatic events confirm what the crew already had concluded while they were limping back to Lauwersoog: 'this boat has saved our lives.'

This class of lifeboat has been designed, built and tested to carry out rescue operations even in the worst conditions. Self-righting tests, however, are always carried out in a harbour basin and strictly under control. That genuine capsize can be survived had only been proven once by a similar, though smaller, RIB-lifeboat. On that occasion the wheelhouse's door had been closed and damage was limited to a broken directional aerial. 'Anna Margaretha's ordeal was quite a bit more complicated and its lessons will, hopefully, reverberate for a long time among the lifeboat service's technicians and crews. They will certainly inspire crucial improvements in existing and future boats.

Also from an operational point of view, 'Anna Margaretha's travails were of more than passing interest and many aspects will be discussed at length and in detail with the other coxswains in charge of the same type of craft. One aspect seems to be that the men tend to trust these boats too much, at the expense of a sound sense of risk. As any boat, these modern craft do have their limitations, though, and, in the wake of 'Anna Margaretha's near disaster, they deserve detailed attention as well.

Timetable

(in local winter time: EET=GMT+2)

October 31st 2006

21.00 first report of difficulties by Cementina.

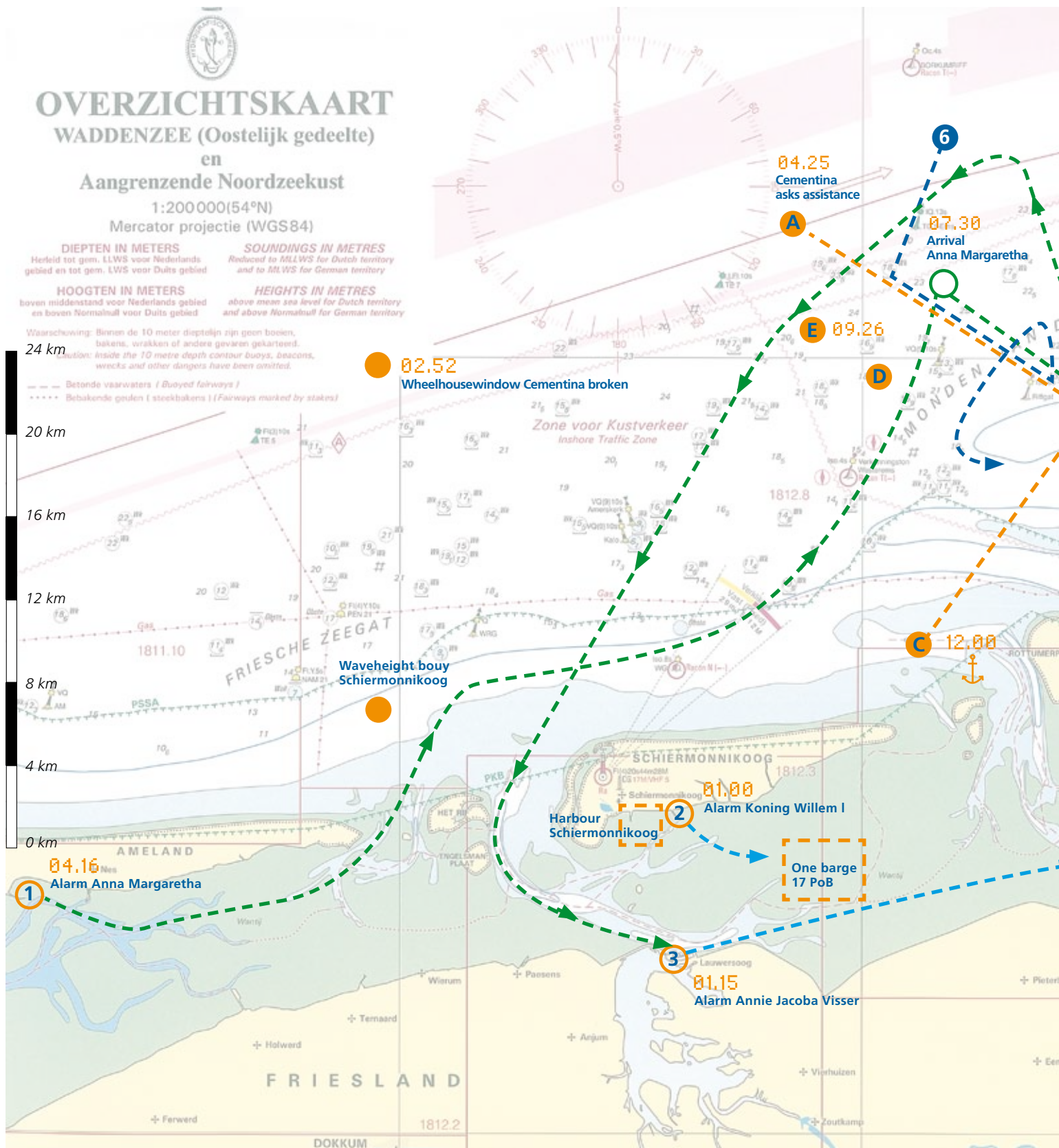
November 1st 2006

- 01.00 Schiermonnikoog lifeboat Koning Willem I (KW1) launches to the help of a sailing barge at Noordpolderzijl.
- 01.15 launch Lauwersoog lifeboat 'Annie Jacoba Visser', also for barge at Noordpolderzijl.
- 02.52 Cementina NUC/drifting (some 16 Nm from position of the lifeboat's capsize). Coast Guard tug 'Waker' alerted.
- 02.56 KW1 at work on Waddenzee and hence not available for North Sea, coastguard Schiermonnikoog informed.
- 02.57 'Waker' 75 Nm –or 7 hours steaming- away and not available, while searching for barge 'Zeelandia', washed from the decks of a freighter and now floating around.
- 02.58 coastguard informs Noordgat salvage company of Terschelling.
- 03.03 'Cementina' not perceived in danger, does want a tug but has not been in contact with shipowner yet.
- 03.07 **ETA Guard ship 'Maggie M' –an 88ft MFV- at 'Cementina' in two hours.**
- 03.10 Eemshaven lifeboat 'Jan en Titia Visser' called out for barge in peril at Noordpolderzijl.
- 03.10 **'Maggie M' announces she can give a tow.**
- 03.11 freighter 'Baltic Skipper' is approaching, now 1.5nM near 'Cementina', reports NW9.
- 03.33 **Maggie M', with 8.5nM to go, offers help.** Svitser Wijsmuller consider despatching Noordgat with their tug.
- 03.41 freighter 'Lima Chemist' offers help, which is declined by Coastguard, since two vessels are on scene already.
- 03.47 MRCC Bremen joins the 'Cementina' operation, gets info from MRCC Den Helder Rescue
- 03.49 coastguard cannot communicate with 'Cementina', which seems still to have propulsion. 'Baltic Skipper' asked to send situation report of casualty.
- 03.55 **MRCC Bremen: 'Maggie M' is underway and can tow 'Cementina'.**
- 03.59 'Baltic Skipper' reports that 'Cementina's VHF is problematic, its steering machine out of order, but electricity running again.
- 04.00 wind speed measured 70 knots at Ameland, Eemshaven and Delfzijl, full hurricane now.
- 04.03 'Baltic Skipper' reports that 'Cementina' cannot deploy ground tackle.
- 04.14 'Cementina' requests help instantly and a lifeboat and a tug.
- 04.16 Launch (prio 2) lifeboat Anna Margaretha. Baltic Skipper offers assistance to Cementina.
- 04.21 Cementina requests tug. Svitser Wijsmuller reply, Noordgat can not go.
- 04.30 Cementina rolling heavily. Now NW 9 -10 Bft.
- 04.32 Borkum lifeboat Alfried Krupp registers 12 Beaufort.
- 04.35 Position tug Oceanic: 54 N en 07-25 O.
- 05.04 Contact with Torbulk Ltd of the Cementina. Coast Guard advises tug assistance.
- 05.33 **Maggie M on scene.**
- 06.03 Contact between MRCC and Torbulk Ltd.
- 06.08 High tide at Borkum.
- 06.15 MRCC Bremen: Cementina drifting 4 - 5 knots, grounding within 1,5 hour.
- 06.44 MRCC Bremen: Alfried Krupp unable to assist in this area under these circumstances.
- 06.52 Heli from Heligoland 40-50 minutes notice.
- 06.53 Oceanic ETA 08.30 hrs.
- 06.54 Cementina 2,5 mile off the Geldsackplate.
- 07.00 High tide Delfzijl. Highest level +4,83 meter (at 06.40 hrs) above NAP. Record since 1825 when NAP +4,60 meter was registered.
- 07.06 German heli Glücksburg ready for take off.
- 07.07 Lifeboat Anna Margaretha arrives at Cementina.
- 07.08 **Contact between MRCC Den Helder, Maggie M and Anna Margaretha about towing the Cementina.**
- 07.11 German heli stays at Helgoland.
- 07.23 Cementina cannot manoeuvre off the Geldsackplatte.
- 07.35 Cementina slowly into deep water.
- 07.47 **Maggie M reports 400 – 500 meter before grounding. Last offer to tow.**
- 07.51 Cementina accepts offer.
- 07.58 **Connection between Maggie M and Cementina**
- 08.00 Oceanic at 5 mile distance.
- 08.12 **Too dangerous for Maggie M. Three waves up to 15 meter.**
- 08.13 MRCC Bremen: Dutch lifeboat Anna Margaretha tries to tow Cementina.
- 08.17 Triple capsize of lifeboat Anna Margaretha.
- 08.23 Oceanic nearby: 53-39-57 N en 006-29-08 O.
- 08.27 Launch of Borkum lifeboat Alfried Krupp, to replace the stand by of Anna Margaretha.
- 08.38 MRCC Bremen acknowledge no contact with Anna Margaretha.
- 08.44 No contact possible with Anna Margaretha.
- 08.45 KNRM informed by MRCC about non-communication with Anna Margaretha.
- 08.47 AIS icon of Anna Margaretha disappears.
- 08.47 Glücksburg heli airborne.
- 08.49 Norderney lifeboat Bernard Gruben launches.
- 08.50 Glücksburg heli ETA 09.25 uur.
- 08.53 Cementina acknowledge capsize and selfrighting of the Anna Margaretha.
- 08.57 J-SAR heli from Den Helder alerted.
- 09.00 Reddingboot Bernard Gruben vertrekt van Norderney.
- 09.00 Breaking radionews in The Netherlands about missing Ameland lifeboat.

- 09.01 Heli Glücksburg airborne.
- 09.08 Oceanic unable to assist, due to high seas.
- 09.11 J-SAR airborne, ETA 09.45 uur.
- 09.12 Schiermonnikoog lifeboat Koning Willem I available.
- 09.23 Autocarrier Republica Argentina reports running lifeboat 0,5 mile ahead. Observed name KNRM course West 5 mile off Borkum.
- 09.25 J-SAR ETA 09.45 hrs.
- 09.27 Helgoland lifeboat Hermann Marwede ETA 13.00 uur.
- 09.31 Glücksburg heli on scene searching.
- 09.45 J-SAR on scene searching expanding square.
- 09.56 Cementina asks permission to anchor.
- 09.59 Lifeboat Alfried Krupp is OSC.
- 10.19 Crewmember Pieter Mosterman of the Anna Margaretha calls Terschelling lighthouse Brandaris.
- 10.20 Cementina anchored in positie 53-34,5 N and 006-20,7 O.
- 10.24 Alfried Krupp meldt on scene.
- 10.28 J-SAR on scene at Anna Margaretha in positie 53-31 N and 006-09,25 O.
- 10.37 Anna Margaretha alters course to Lauwersoog. J-SAR stand by.
- 10.45 Cementina captain wants 4 crew to be evacuated.
- 11.09 One crewmember of Anna Margaretha airlifted by J-SAR and transported to Ameland.
- 11.40 Anna Margaretha arrives in Lauwersoog.
- 12.42 Cementina completely evacuated by helicopter.
- 13.30 Anna Margaretha crew homeward bound by ferry.
- 20.00 First evaluation with Anna Margaretha crew.



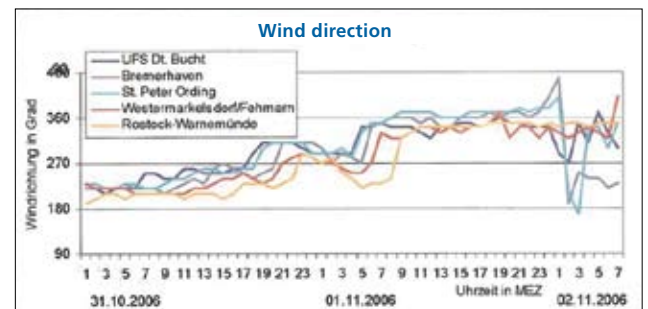
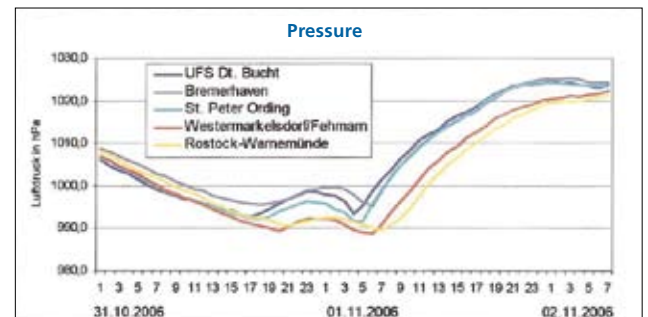
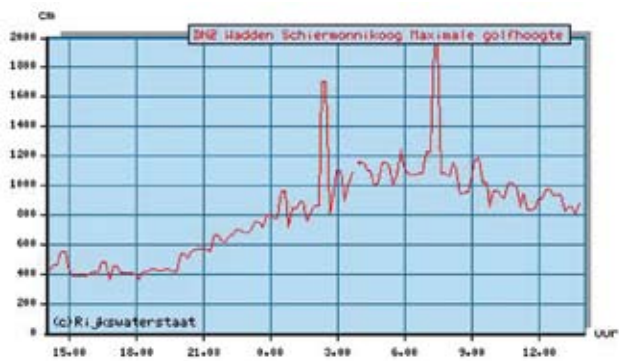
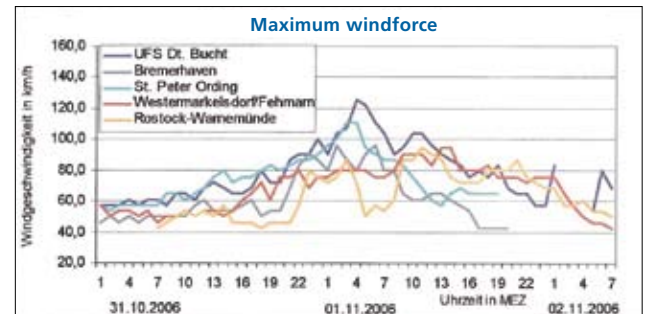
Cementina



An instructive review

In the wake of the training course at the Maritime Rescue Institute in Stonehaven, which all RIB-crews have to pass, the KNRM's instruction and training system is determined by the factors environment, tools and skills. These three have also been chosen as the basis for this review.

Actions must be considered against the background of the KNRM's adage lifeboatmen never turn back. Heroic though it may sound, it is also only partly true: our crews are not trained to put themselves in peril. If they would be very busy just surviving out there, there is no point in trying to rescue others.



The environment

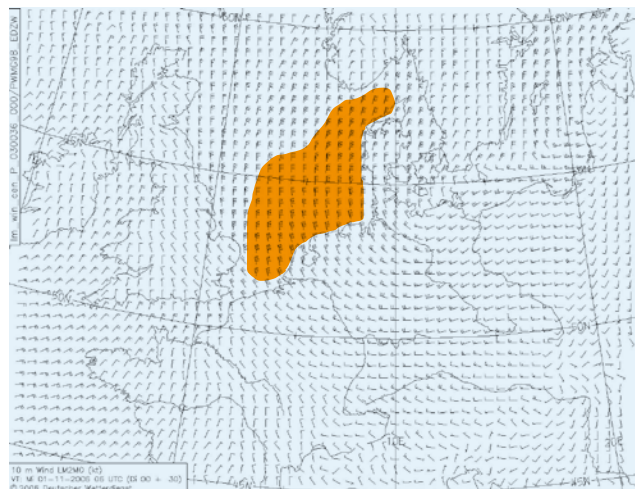
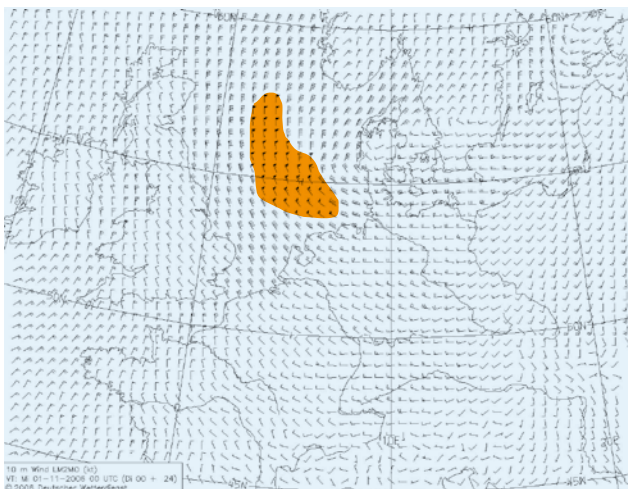
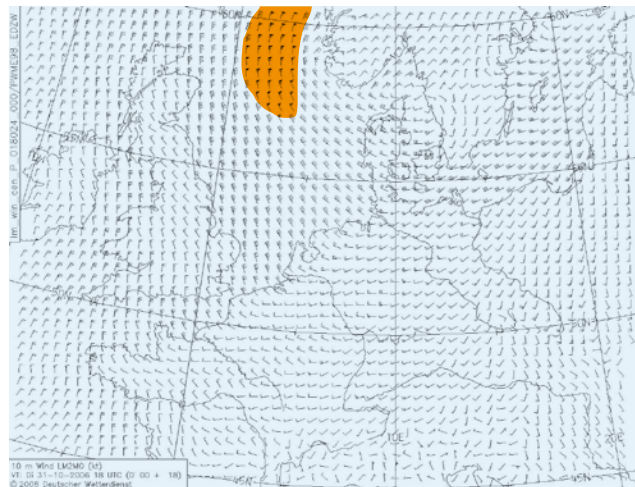
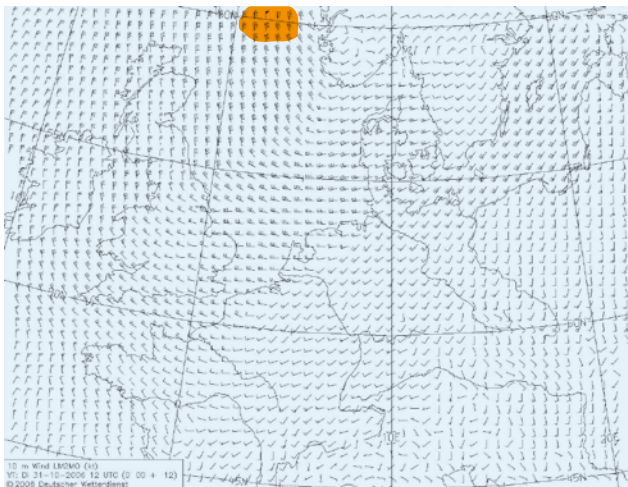
The area of operation was north of the isle of Schiermonnikoog and the entrance to the river Ems, where the Ameland lifeboat's crew has no local knowledge. Normally the lifeboats of Schiermonnikoog or Borkum will do the lifesaving there.

Weather conditions were extreme, with hurricane force winds (12 Beaufort), caused by a deep Low (980Mb), developing to become hurricane 'Britta'. The centre between Iceland and Scotland moved to the South of Norway, while within this fierce depression probably another very active centre developed, which resulted in wind speeds of 70 knots, reported near the islands of Ameland and Borkum.

On the morning of November 1st flood and tempest drove water levels at Delfzijl and in de Dollard bay to record height. High Water Borkum was at 0608hrs, Delfzijl 0700hrs,

whereupon the ebb ran faster than normally, creating even steeper waves than usual, with waves a third higher due to wind against tide conditions. Local lifeboat coxswains confirm this effect, so that at 36ft significant wave height, 50ft waves could be expected over the ebb.

In the atrocious conditions of November 1st, they were even worse than that. with considerably higher extremes: 62ft was registered by the wave height measuring buoy, which the Public Works department (Rijkswaterstaat) later blamed on faulty reading. Offshore platforms to the west and the north registered similar peaks, however, and some suffered wave damage at 55ft above sea level. The complicated Low, the funnel like coastline and fierce tides combined to make this the Dutch equivalent of a 'perfect storm'.



The course of the hurricane windfield

The crew's morale

The crew undoubtedly realised they were in heavy weather. Although conditions were rather extreme in the dark in the Westgat, they were generally not too bad. Once free of the inshore shoals, a sound turn of speed could be achieved. When daylight dawned, things looked even better and for a long time the crew

could work on deck without sustaining breakers on board. Waves were high but long, which could not be said of the first ground seas, however: these were the highest and steepest, and struck completely unexpected –as is the nasty habit of ground seas. Despite everything, the crew felt safe on board the lifeboat under the command of their thoroughly experienced coxswain.



Anna Margaretha - Ameland



Koning Willem I - Schiermonnikoog



Jan & Titia Visser - Eemshaven



Annie Jacoba Visser - Lauwersoog



Edzard Jacob - Schiermonnikoog



Alfried Krupp - Borkum

The tools

'Anna Margaretha'

The 62ft 'Arie Visser'-class RIB lifeboat 'Anna Margaretha' entered service in 2005 on Ameland's Ballumerbocht lifeboat station. The 28 tonnes displacement aluminium alloy craft is powered by two 1,000 hp engines, driving waterjets, which combine manoeuvrability with the capacity to safely negotiate shoals. A bunker capacity of 1,342 gallons in four tanks gives 16 hours endurance at the top speed of 35 knots. Apart from the standard crew of six, she can take 120 survivors on board. Hull and superstructure have been left unpainted. The inflatable tube around the hull adds floating capacity and stability, acts as fender and may absorb wave energy. The lifeboat's 20ft beam, tubes and low centre of gravity give a high initial stability, which is augmented by placing engines, tanks and other systems as low in the hull as possible. The lifeboat's self-righting properties thanks to the air trapped in the superstructure when the boat is in inverted position, require the engines to be cut by mercury switch beyond an inclination of 90°, to avoid the engines burning the remaining oxygen and drawing vacuum in the accommodation. At the same time the engine room's air intakes will be shut hydraulically to avoid flooding of the engine compartment. The engines can only be restarted some 5 to 10 seconds after switching off, to make sure that the engine is not turning out any more and thus avoid damage to the starting-motor.

Omnipotent lifeboat?

All 'Arie Visser'-class coxswains agree that the craft feel as if they can cope with anything sea and weather may throw at them. The down side is that, although she is reasonably forgiving, the boat does not warn when she is being driven too hard: the accelerations felt by the crew may not be the lesser for it, and injuries are very likely when heavy weather is encountered by an inexperienced helmsman.

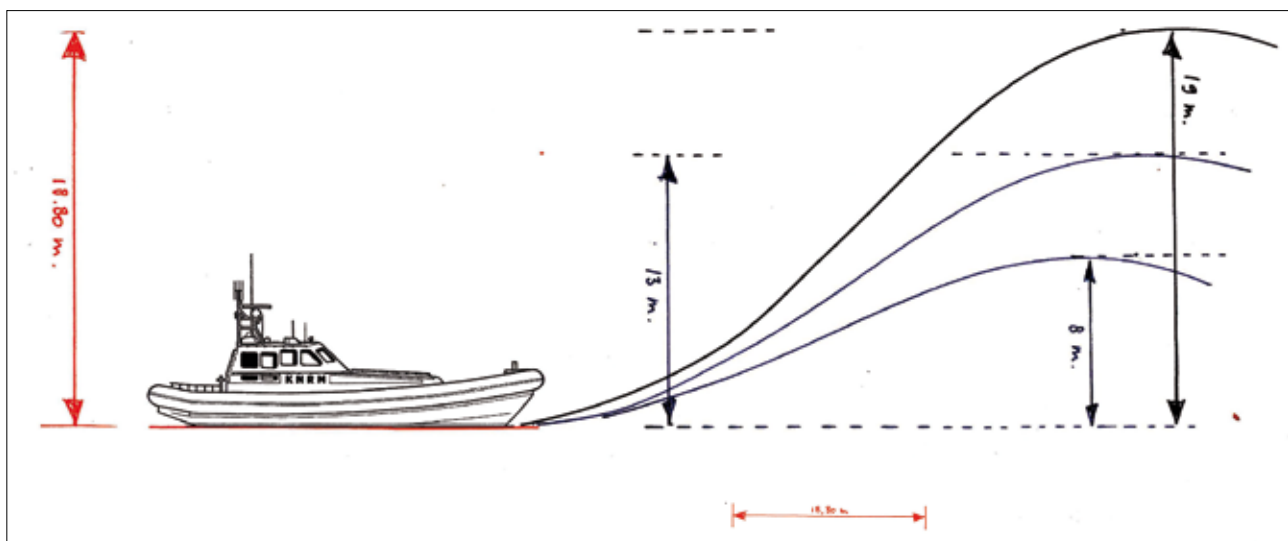


Capsize trials in the Hindeloopen harbour 2005.

The lifeboat's impressive seaworthiness, stability and relatively dry deck in heavy seas, as well as the protective feeling induced by the high tube, add to a perception of safety and a tendency to underestimate the actual circumstances.

Loose inventory

All items on board a lifeboat have their place, which is necessary to find them instinctively in darkness and in extreme situations, such as after a capsize. Most items are lashed down sufficiently but after AM's capsize quite a few had been flying around, especially those from the opened settee chest. Securing all bits and pieces, also those inside the chests, deserves henceforth more attention.



Waveheights related to the lifeboat.

Keep the door closed at sea

The Arie Visser and Johannes Frederik class RIBs owe their self-righting capabilities in large part to the air-pocket of their enclosed wheelhouses. Water sloshing around in the wheelhouse impairs this effect. The wheelhouse's door must therefore always be kept closed at sea, so that at all times one crewmember must be assigned with the task to guard the door and close it as soon as anyone has gone on deck or come into the wheelhouse. This requires sufficient crew, which, in the case of 'Anna Margaretha', was not on board. In order to be able to close the door instantly, it should never be kept open on the hook.

The 'Arie Visser'-class RIBs have substantial door sills to keep the water out in running seas. The disadvantage is that once the water is in, it cannot go out. One-way scuppers in the sills might be helpful.

Personal life-saving equipment

Life-jackets and lifelines are hanging on board the Anna Margaretha ready to be put on as soon as the men go out on deck. Yet, despite the atrocious weather, none of the crew ever contemplated putting a life-jacket over their survival suit. Which robbed them of extra floatation, a flashing light and, even more important, a lifeline to avoid leaving the ship involuntarily in the first place.

Use of communications and navigation equipment

'Anna Margaretha's crew communicated with the Coastguard Coordination centre, other shipping and maritime traffic control station Schiermonnikoog by VHF Channel 16. The latter had no formal role in the operation. Navigation was by compass, GPS-plotter, radar and AIS. The lifeboat's AIS signal failed to come through to Coastguard stations and ships on scene for a time, when 'Anna Margaretha' was to the east of Ameland. After the capsizing the signal was no longer transmitted, but the last position appeared on the plotter for 30 minutes and vanished only then. From then on the coast guard's operators tried to contact the lifeboat, of which 'Anna Margaretha's crew was unaware, since all their equipment had packed up. When the coastguard activated the 'missing contact' procedure, those ashore feared the worse.

After the capsizing all electrical equipment was put out of action by some three tonnes of water sloshing around in the wheelhouse and consequent short circuits in the dashboard. Sand from the ground sea was even in the settee benches. The portable emergency VHF had gone adrift and could not be found among the litter, while the position was beyond GSM mobiles' range. Because the crew did not feel they were really in distress and did not want to trigger a lifesaving operation while they were unable to communicate, they did not activate EPIRB and START.





1. Broken aerials, missing searchlight
2. Broken overhead lining in wheelhouse
3. & 4. Debris in the wheelhouse
5. Broken aerials and radar scanners
6. Broken radar screen
7. Inspector W. Roos registers the damage
8. Cut away speakers (alarm sounders)
9. Rooftop searchlight retrieved on aft deck
10. Broken bucket handle
11. Ambulance equipment broken or bended.

Skills

Number of crew

'Anna Margaretha' has six safe crew seats, with further room for extra crew on the settee chests aft, which, however, is in bad weather not a comfortable position. KNRM propagates for all lifeboats the Bridge Resource Management (BRM) principle, in which the coxswain mainly keeps his hands free to oversee the situation, coordinate actions and intervene where necessary. Preferably he leaves steering and keeping an eye on the sea to the mate, while other crewmembers are dedicated to navigation and communication respectively, which leaves two crew for general duties. As soon as deck work is involved, at least two men, coxswain and mate, must stay in the wheelhouse, one takes station in the wheelhouse at the door, which leaves three hands free for deck work.

Lifeboats of the 'Johannes Frederik'-class are in fact undercrewed, with only four safe seats in the wheelhouse, which is why the 'Arie Visser'-class got six. Coxswains of JF-class lifeboats may therefore be advised to take extra crew on board on the settee chests aft, although this may be less comfortable.

Too few crew at launch: reasons and considerations

'Anna Margaretha' left port on November 1st with a crew of only four, two less than agreed previously. The coxswain had decided to do so in order not to lose time salvaging the drifting motor vessel at the lifeboat's pontoon, and after consultation with the Coastguard Coordination centre, which had classed 'Cementina's fate as a 'Prio 2' (second priority) alarm. In retrospect it must be concluded that in such circumstances 'Arie Visser'-class lifeboats should always have a crew of not less than six. Furthermore, a vessel adrift with no steerage left, in a storm force 10 should always get a Prio 1 alarm. From discussions with other coxswains it became clear that the availability of deckhands who are genuinely up to the worst of conditions may not always be counted on. Coxswains know who of their crews are virtually free of seasickness and those who prefer to avoid confrontation with their susceptibility to the condition. It obviously pays to select a seaworthy 'hard core crew', who will have the necessary reserve stamina for demanding missions in heavy weather.



Cementina drifting in the Westereems around 09.05 hrs.

Consequences of undermanning

Although conditions near the shoals were utterly extreme, 'Anna Margaretha's capsizes might have been avoided if sufficient crew had been available to con the boat and keep an eye on the sea. With the coxswain himself on the helm, deliberating with the crew about what to do and no one actually left looking at the waves, the breakers came as complete surprises. Since these RIBs are excellent seaboats but require an active approach, one dedicated helmsman assisted by a dedicated look out, ought to have sharply reduced the risk of surprise.

The wisdom of towage

The coxswain's consideration, that the lightly ballasted 'Cementina' under her own steam could be coaxed into a desired direction, head to sea and away from the shoals by a tow from the lifeboat, was understandable, but in the given circumstances considered by peer review not a very good idea.

In favour of it were the fact that 'Maggie M' refrained from further salvage attempts, upon which the coastguard had declared the situation as 'it's all yours' to the lifeboat.

'Cementina's captain and crew had not yet communicated any willingness to leave the ship, while it would also have been too dangerous to try to get them off; it seemed safer to rescue the entire ship.

Arguments against the action surfaced in the coxswains' meeting afterwards. One of the skippers, overhearing the Ameland coxswain's deliberations over the VHF, had considered calling him to try to discourage his towage plans. In retrospect it might have been better if he had indeed shared his doubts with his colleague. Such peer advice may at least inspire some extra caution.

Towing a 2,000 tons vessel with a 27 tons lifeboat in a storm 10 and over 33ft waves is definitely not recommended. A lifeboat's primary task is to save life from shipwreck, not to act as last resort when other attempts at salvage have failed. This perception has been elaborated on with the Coastguard.

Handling of the hawser

After a request from 'Maggie M.' and the Coastguard, 'Anna Margaretha' helped to transfer a forerunner with wire cable to 'Cementina'. This hawser was too heavy to handle for the crews of 'Anna Margaretha' en 'Cementina'. A manoeuvre like this, without deploying on the lifeboat a stopper on the hawser, is extremely hazardous. Handling such heavy cable wires requires skill and a lot of salvage experience. Fortunately 'Anna Margaretha' did not sustain any damage through her travails.

After passing the hawser from 'Maggie M' had gone awry, coxswain and crew decided to have another go at towage,



but with the lifeboat's own hawser. In preparation the cable had been taken from its drum, in a number of bights to the foredeck. After capsizing the cable had wound itself three times round the wheelhouse and had presumably caused the damage to antennae, search light and radar. If the cable would have been washed off the lifeboat it could easily have wound up in the jet, which the coxswain was actually afraid of.

Assessment of the situation

The lifeboat's crew was barely aware of their precarious position and neither were they or the 'Cementina's captain informed by the Coastguard about the proximity of the shoals. Until the ground seas struck, all attention had been concentrated on towing 'Cementina's head right into the sea and thus saving

ship and crew from the leeshore.

Although conditions were worsening, the lifeboat had not yet sustained genuine breakers and no warnings were received indicating the danger of being actually on the Borkumriff shoals, near the 10m isobath, which is, with 10 to 15m waves, a sure breeding ground of ground seas. Actively sharing information by a regular exchange of situation reports between lifeboat and Coastguard should help avoiding such misadventures.

The capsizes

All crewmembers felt thoroughly stirred, though vaguely familiar with the capsizing, after experiencing the righting trials at delivery of the lifeboat in Hindeloopen, and from the Helicopter Underwater Escape Trainings (HUET) in Stonehaven and Den Helder. The first capsize took place so swift, while the breaker was recognised instantly as an overturner, that the crew could just be warned, but had only time to hang on for life. Subsequent events came in such rapid succession that the free standing crewmembers had no time –or attention- to strap themselves in on a seat before the boat keeled-over again; they focussed on getting rid of the water in the wheelhouse and on reanimating the lifeboat's systems.

Restarting the engines

Beyond an inclination of 90°, a mercury switch ensures that the engines will be turned off automatically. The air intakes are closed, while hydraulic pressure build-up subsequently stops. It will inevitably take some time before engines running at, say, 2,000 revs, have completely stopped. Therefore a safety break of 5 to 10 seconds is programmed before the engines can be restarted. After restarting, hydraulic pressure must be restored first before the switch between engine and waterjet can be activated and all this took just too much time for the coxswain to avoid turning turtle for the second time.

The port engine failed to start after the second capsize because cooling-water had run back from the exhaust to the engine, which bypasses the engine's one-way valve against incoming water. It is consequently always possible in such cases that cooling-water enters the engine.

After turning over and righting again a number of alarms kept ringing in the wake of short circuits in the dashboard. They could only be silenced by cutting the speakers' wires in the fuse box, accepting the risk that still functioning wires might be cut as well.

Every crewmember should have basic knowledge of the mechanical cycle of the propulsion system, in order to realise why delays in the restarting procedure are unavoidable.

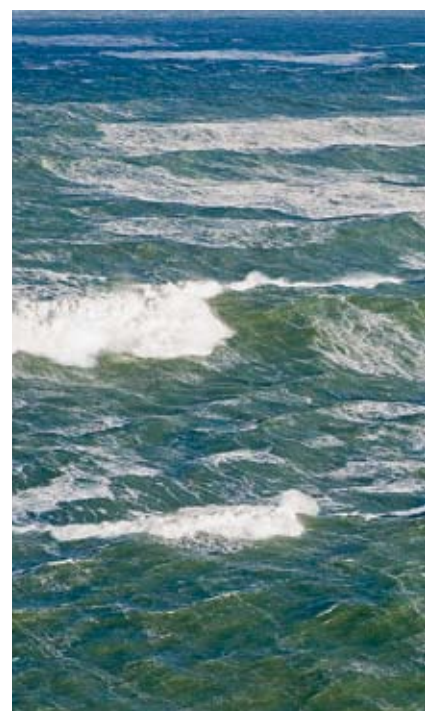
Navigation by dead-reckoning

After serial capsizing, the lifeboat steered clear of the breakers, hauling into the NW-erly storm for a time, to silence the alarms, recuperate the crew and orientate on the position. Unwittingly they ended up further north than they initially realised. Sighting again the auto carrier 'Repubblica Argentina', which they had passed that morning coming from the Westgat, seemed to confirm that their dead reckoning was accurate, although the crew did not realise at the time that the vessel was now hauling against the tempest, further to the NW than where they had sighted it early that morning, when it had been dragging its anchors. From an estimated position they laid a course to the Westgat off Schiermonnikoog, steering by sun and waves. Sighting of the Kalo buoys gave them a reliable fix from where they could steer straight to the Westgat.

Communication failure

After the capsizes it soon dawned upon the crew that communication with the outside world had become impossible. The portable waterproof VHF, especially provided as last resort for exactly this kind of situations, was untraceable. It had apparently been catapulted out of its holder and was later found under a pile of rubbish in a corner of the wheelhouse. Assuming that nearby shipping would have noticed the lifeboat's travails and communicated this to the Coastguard, the crew had intently refrained from activating Epirb and Start. They have –unjustly- never felt forlorn on the fierce, lonely sea.

Offshore supply vessel Troms Fjord riding out the storm north of the Westereems around 09.10hrs.



Crisis management

Reporting the incident

The Coastguard centre reported the apparent loss of 'Anna Margaretha' first to the KNRM's officer of duty, who immediately alerted the director. Operational and technical inspectors and publicity watch were subsequently informed. A small crisis management team of director, duty officer and publicity watch was set up in IJmuiden, the operational and technical inspectors as well as a publicity assistant hurried to Lauwersoog, while a second technical inspector and an operational assistant were despatched to the MRCC Den Helder to act as liaison between KNRM and Coastguard. The director kept the Ameland KNRM-local committee abreast of information, who notified interested parties on their island. There is no standard procedure for informing families and crews in such cases.

Allocation of KNRM staff

'Anna Margaretha' happened to suffer her ordeal on a convenient date, for many of the KNRM's staff were already in the north of the country, nearer to Lauwersoog and the MRCC Den Helder than to IJmuiden, planning to attend in Hindeloopen (province of Friesland) the –ultimately postponed– righting trials of the newly delivered Den Helder lifeboat 'Joke Dijkstra'. The capsizing incident happened at the beginning of a workday, so that everyone was easily contacted and directed to his or her destination for the day.

Crisis team

A crisis team must be in the centre of communications to effectively gather information and document results. For the KNRM the logical nerve centre is its headquarters in IJmuiden, where communication lines and knowledgeable staff are concentrated.



MRCC Den Helder

The period of uncertainty was abound with rumours. In circumstances like these, one should always count with information from third sources that may be hard to confirm. The crisis team was, for instance, not aware that the 0900 hrs radio news bulletin had broadcasted 'Anna Margaretha's disappearance. The crisis team could perhaps make better use of secretariat and reception desk to keep a proper log.

Local personnel

Normally in such emergencies, staff from IJmuiden may not be so readily available. Lifeboat stations can in fact not do without a properly organised local telephone ring to keep family and friends abreast of the latest information before they hear wild stories from the media. The organisation of such an essential facility is a local committee task.

The media

News of the presumed missing of the lifeboat got out remarkably fast, while plainly false news circulated about the crew's fate. The source of this misinformation is still unclear, but in such cases one should always bear in mind that journalists tend to be more interested in scoops for their radio or tv station than in the actual facts. With the same speed as false news emerged, the media's interest subsided again, when other dramatic effects of the hurricane, the unusually high water and a large herd of horses in peril as a result of it, caught the public's attention. This short attention span further hampers communication of the true state of events.

Saving information

It is important to ensure that within 24 hours after any major incident, radio traffic, AIS and plotter tracks are saved as well as other facts gathered, in order to avoid customary deleting of information after 24 hours.

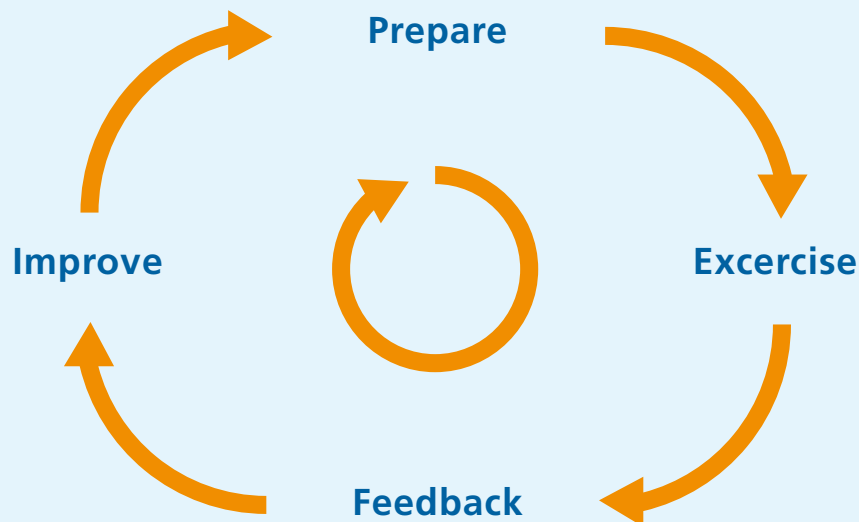


Training and exercise

From good enough to even better!

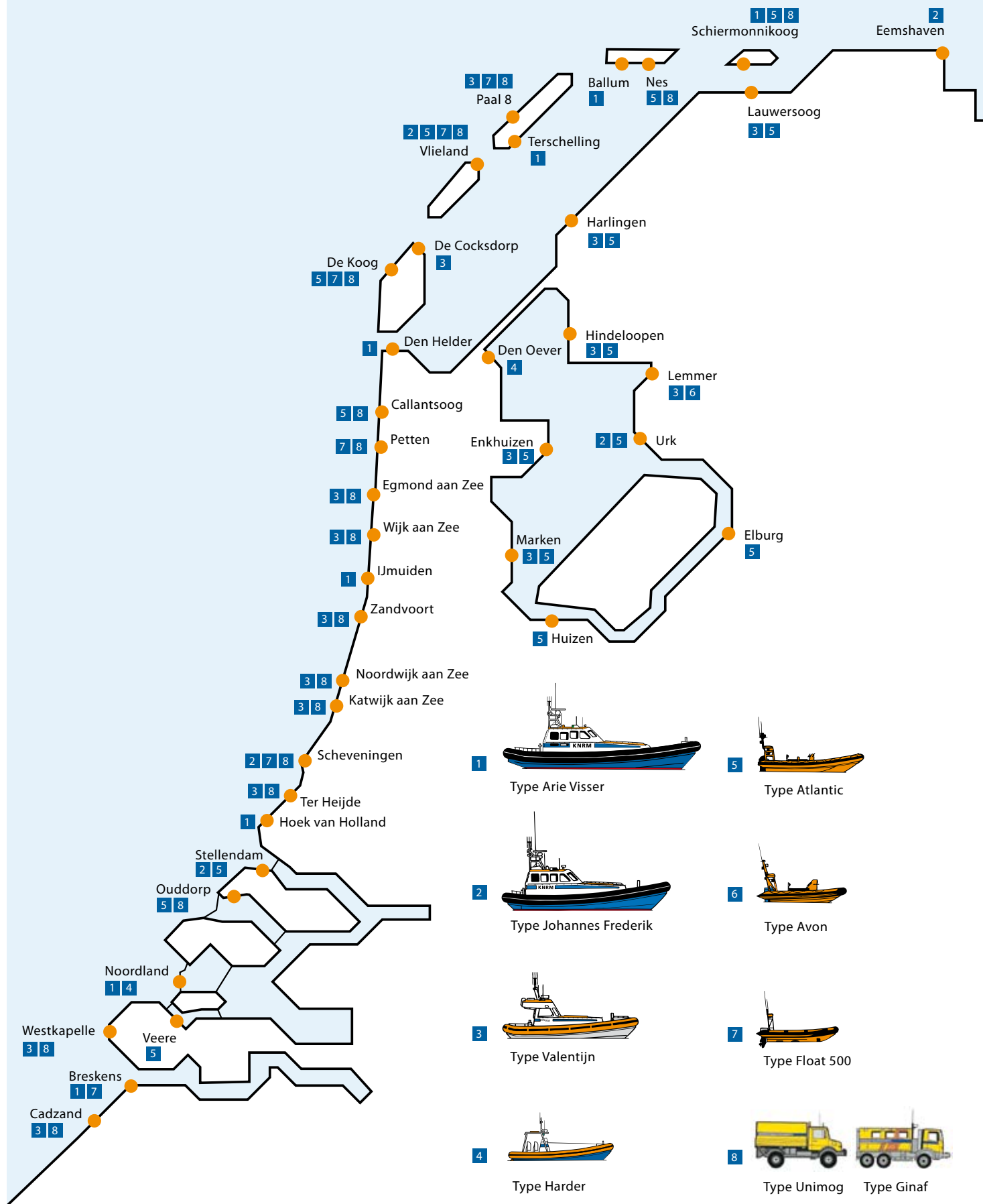


KNRM exercise cycle



Attention!





Conclusions and recommendations KNRM

'Anna Margaretha's ordeal provides valuable lessons; the recommendations derived from these should be considered as a stimulus for continuously improving seamanship rather than as a set of iron rules. Seamanship requires an open mind, not one stuffed with rules and regulations.

Safety

Preparation

Coastguard alerts in winds stronger than fresh breeze 5 should always be priority 1.

Door closed, everything secured

At sea the wheelhouse's door must always be closed. Loose inventory, such as mats, ropes, clothing, etc., can get into the door opening and thwart rapid closure. Loose items must therefore always be lashed down or put in a securely enclosed place, and the same applies to equipment brought on board by the crew themselves. Adaptations shall only be permanently fitted after consultation with the technical inspector. Every item thus fitted will for each lifeboat and truck be included in the inventory list; all additions shall be vetted by the technical inspector.

Minimum crew

Never leave port without the full complement, which for the Arie Visser and Johannes Frederick class is six. Always stick to Bridge Resource Management (BRM), especially under extreme conditions and in complicated operations. Coxswain always inside the wheelhouse with preferably two, but at least one, other crewmember. This implicates that, with a maximum of four on deck, some tasks may simply be impossible to perform. Underway at high speed problems will rarely occur because there will always be at least three crew on the bridge.

Safety equipment

Life jackets and harnesses are essential; their use subjected to the coxswain's judgement, but they must be incorporated in exercises, also in a flat calm. When crews get used to such items they will more readily accept them as a fact of lifeboat life. The desirability of wearing safety helmets in the bigger boats will be studied.

Lifeboat conspicuousness

In extremely heavy weather, when a 'smoking' sea impairs visibility, any small boat will be barely distinguishable, especially in poor (day)light, very high breaking waves and flying spray.

Lifeboats are advised to use their flashing light during operations. The desirability of painting lifeboats even brighter and using lights more elaborately must be researched. Perceptibility of AIS and radar signals depends on the seastate in relation to the lifeboat's low profile, but before 'Anna Margaretha' keeled-over, the Coastguard continuously received the lifeboat's AIS.

Accepting limitations

Lifeboat stations and coxswains need to have a clear view of their crew's seaworthiness in the face of heavy weather. Especially in howling gales the crew's stamina is crucial for the lifeboat's operational effectiveness. If there seems to be a shortage of genuine seadogs, coxswain and local committee should make extending the crew's list with heavy weather types a first priority.

Navigation

Charting ground seas

It is necessary to pass on valuable knowledge to a younger generation, by documenting and charting when (wind strength, direction and previous duration, tidal range, springs or neaps) and where (depth, contour of isobaths, occurrence of tidal races, etc.) ground seas may be expected.

Assessment of the surroundings

The coxswain of a fast, agile lifeboat in heavy weather must constantly be aware of his environment and take the right decisions in a split second, while his senses are continuously saturated by impressions, only a few of which will be relevant. In extreme conditions electronics for navigation may pack up; old fashioned eyes, human brains and intimate knowledge of the sea must take over then. It is of utmost importance to always keep a weather eye open for apparently insignificant phenomena and especially to fathom the behaviour of fellow mariners, for instance 'Maggie M's captain, who thought the situation too dangerous for further attempts at towage. Be aware that, if breaking seas and the consequent risk of capsize are unavoidable, everything that can come loose will, that flying objects tend to inflict damage (for instance to human heads) proportional to their weight and that people not properly lashed to their chairs may end up dead or severely disabled for life. What counts inside certainly counts outside: all loose items on deck will vanish or inflict damage to craft and vulnerable protrusions, such as antennae. Especially ropes may turn into unpredictable hazards, flying anchors may destroy windows and once windows are destroyed a lifeboat's wheelhouse stops being its main self-righting asset.

Instinctive navigation

GPS, plotters, radars and echosounders are fine instruments but they may pack up at the most inconvenient moment. Accurate navigation by more primitive means, such as compass, eyesight, watching the waves and, more generally, developing a second nature for dead reckoning, requires experience. In other words: crews need training in navigation without the accoutrements of modern marine life, such as radar and plotter. Especially the BRM-team must learn to work together and practice position plotting even when there are no instruments to tell them where they are other than an old fashioned magnetic compass.

Evaluation and information

Permanent registering cameras may be helpful for evaluating boat handling and performance in rescue operations, and improve proficiency.

The Coastguard deletes AIS images after four weeks unless requested otherwise. MARIN preserves such information since 2006. Traffic Centre Hook of Holland saves tapes after incidents.

Technical retrospection

Loose inventory and protrusions

More attention should be paid to avoiding protrusions in the wheelhouse.

Settee chests need self-locking fasteners. Modification of standard lay out is needed.

Inventory dreamed up by the crew, such as coat hooks, ash trays, mug holders, tool kits and battery chargers must likewise be considered potential dangers. All that protrudes or can fly around must be avoided.

Portable emergency VHF

Must be locked up in its holder. Modification needed.

Engine starters

Keys will be removed and replaced by rotating switches; the clutches will be operated by push button. Each engine room will have its own set of switches, so that the engines can be started from there if the dashboard fails. Each engine room already has a working switch, to block the engine during servicing. Modification needed.

Water in engine rooms

A very limited and otherwise harmless amount of water has entered an engine room through a not quite watertight hatch when the lifeboat capsized. The water did not reach the

air-filter. The entire capsize and self-righting system has worked properly. Videotapes of sister ship 'Joke Dijkstra's righting trials show that the air intakes remain dry for a long time and are closed when they touch the water.

The hydraulic system has a designed supply sufficient for closing and opening the air intakes three times. After the engines had stopped 'Anna Margaretha' went another two times round. This was the first time in 20 years that the safety margin has been fully utilised and proved very useful indeed.

Location and construction of air intakes are restricted by size and function. Crossing air intakes or moving these to the wheelhouse's aft wall requires comprehensive redesigning for which events provided not sufficient reason.

Swamped switchboard

The damage and general mayhem in the wheelhouse was mainly caused by water entering the evidently non-watertight dashboards through three voids below the dashboard. All cable lead-throughs below the dashboard and from it along the window frames to above need to be made watertight, which clearly will not make the dashboard watertight but at least resistant to ingress of green water. More drastic modifications seem not necessary: the main switch boards as well as the switch boxes have got wet but continued to work properly, although the push buttons to port clearly showed ingress of water. Switch boxes in a closed wheelhouse are not supposed to be watertight. Despite the soaked switch boxes, no fuses blew, although the crew switched several off because they smelt short circuits.

In future cables must be better protected against water, which can simply be done with a spray. Since the lifeboat's self-righting properties depend on the closed wheelhouse, watertight electric main boxes would be a waste of money now. This may change if in the distant future the self-righting properties may be sought in other features. Whatever solutions may be hatched, the intrinsic hostility of electronics and salt water will never be completely solved. In lifeboats, which may have to negotiate more than their fair share of seawater, non-electronic redundancy in essential systems may therefore save lives. Fitting of a directly readable magnetic compass is advisable. Modifications are necessary.

Draining the wheelhouse

The aft deck regularly takes water. Initially a washboard in the door had been made removable, but since it is always kept in place it is fitted permanently in the latest two vessels of the class. But water that has managed to come in must be let out, the facilities for which are –as 'Anna Margaretha's plight proved– not exaggerated: it is drained on the bilge via the rim of the hatch in the wheelhouse floor and through the air vent (1.5"). To facilitate discharging of large quantities of water in

the wheelhouse, a manually removable Henderson hatch will be fitted in the washboard or alongside the door. The cable hatch may have to be offered. New lifeboats will get a permanent washboard in the door.

Modifications needed.

Mast construction

The mast will part from its ground plates when it hits the bottom in a capsized. The welds on which it is supposed to break are intentionally weaker than the bolts with which the ground plates are fitted to the wheelhouse. To further prevent structural damage, the wheelhouse roof will get an extra frame underneath the mast's plates.

The bitts' brawn

For each lifeboat a table is provided stating what the maximum towage conditions are, allowing for seastate (wind and tide), with leeroom for the coxswain to decide. 'Bollard pull' states what weight the boat can tow, but especially under survival conditions, accelerations are far more important, and certainly in breaking water, when keeping slack out of the hawser is generally beyond the coxswain's reach.

Instruction needed.

Exhaust system

The engines' exhausts are led through the stern and closed with a rubber flap that is pushed open by exhaust pressure. The exhausts are injected with cooling water shortly after an upward swing in the exhaust pipe, to prevent injected water running back into the engines when the boat is pitching heavily. After the second capsize the port engine refused to splutter back to life because cooling water had run back and damaged it. This cannot be avoided by reshaping the exhaust.

A dry exhaust system averts such damage and is therefore desirable. Research will concentrate on finding a cost effective solution that still guarantees a sound heat reduction and safety in the jet compartment. Further difficulties are the one-way valve in the stern and noise reduction. If a viable solution that survives rigorous test is possible, this modification will be made to all lifeboats.

Rolling over with engines running

The possibility of letting the engines run while the boat turns turtle, thus keeping the exhaust's pressure on and prevent cooling water from running back, has extensively been studied. Our British and Swedish sister institutions RNLI and SSRS forwarded valuable practical information on the subject. Given today's engines and the Arie Visser class' construction, the disadvantages of engines that keep running while the boat capsizes dwarf the advantages. A dry exhaust seems to be more promising and requires less drastic technology.

Modifications

All announced modifications to the 'Arie Visser'-class lifeboats will be carried out in 2007, except the more extensive one to the exhaust system, which, however, will be designed, fitted and tested in a lifeboat as soon as possible, probably in 2007. The availability of a test boat is a crucial factor, since for 2007 no major overhaul is envisaged of an 'Arie Visser'-class RIB.

Communication

Alarm priorities and lifeboat coverage

In anything over force 5 Beaufort, all alarms for emergencies in the North Sea must be given prio 1. The KNRM requests the Coastguard to always alarm two lifeboat stations in case of extreme weather conditions, for which a protocol is forthcoming. Consultation between coxswain, MRCC Den Helder and KNRM officer of duty should avoid misunderstandings.

Boarder straddling SAR

The operation 'Cementina' moved from the Dutch coast to German waters, which brought MRCC Bremen in the action. Borkum lifeboat initially indicated that, given the extreme conditions and shallow water, they would not be able to do anything useful, but MRCC Bremen has directed German lifeboats towards 'Anna Margaretha' when contact with her had been lost. Communications between MRCC Den Helder and neighbouring MRCCs must be improved.

SITREP at regular intervals

It is of utmost importance that MRCCs and all craft involved in search and rescue operations are aware of each other's situation: position related to casualty, remaining capabilities, envisaged actions, etc., while it is the MRCC's task to constantly survey the entire operation, deploy craft so as to optimise all participants' potentials and to keep all platforms abreast of the latest information concerning meteo, seastate and tides, and warn for navigational dangers lurking under or on the sea, even if these dangers, such as shoals, have been lurking there for a long time. Whereas SITREPs between MRCC and OCC should be exchanged at regular intervals (at least once every 15 minutes), all participating craft must be instructed to send SITREPs as soon as relevant changes –the character of which are described in a protocol- occur.

Acting on asking

Coastguards or any authority may ask the lifeboat to perform acts of bravery in the face of overpowering elements, but it is

only the coxswain who decides what his craft and crew can manage. He is in charge, he must have his hands free to be in charge –which makes a full complement and BRM essential- and he must constantly be aware that in the circumstances on his location he knows best, while his first priority must be the safety of his crew.

Crisis communication

Procedures for crisis communication need overhauling. Main points in the wake of 'Anna Margaretha's ordeal':
Setting up a crisis staff as soon as emergencies loom, to avoid rumours creating their own virtual truth and only increasing confusion;
Structured crisis consultation after a conference call by telephone, in order to keep everyone abreast of the latest information simultaneously;
The crisis staff must disperse SITREPs for all staff members;
A media log must be kept, also to enable the PR-coordinator to timely act on local information.

Recommendations for third parties

Coastguard will arrange with the Dutch Royal Meteorological Institute (KNMI) to obtain and broadcast regional maritime weather alarms;

Coastguard will in extreme weather conditions do all it can to avoid that crewed vessels adrift will reach the danger zone within the three miles off the 10m Isobath, where salvage and rescue operations will be too hazardous. Masters of ships in peril must be convinced of the need to avoid squandering leeroom, and act either by their own means –for instance by anchoring or creative use of remaining power and steerage- or by accepting towage or by evacuating the crew before his vessel strays into the danger zone, where he cannot expect help.

Considering the 'Cementina'/'Anna Margaretha' experience, coordination of operations by MRCCs within boarder straddling SAR areas is open for improvement.

MRCC Den Helder will in heavy weather in the North Sea always call out two lifeboats. These will inform the Coastguard about the names of the crew.

With operations in heavy weather, MRCC will keep participants abreast of information, especially concerning weather, seastate, tide, position of casualties etc. by SITREPs, which will be transmitted at least every 15 minutes.

In high profile SAR-actions, all press briefings will be centrally arranged by the Coastguard, with exclusion of maritime traffic posts and other authorities.

Summary

The Ameland lifeboat launched undermanned because a low priority was assigned to a freighter not under command in the TE-route in a storm 10 increasing 11, while a barge was found adrift at the lifeboat's Ballumerbocht mooring, which needed attention of two crew.

Since all the KNRM's lifeboats stationed in the eastern Waddenzee area had launched to assist sailing barges adrift on the Waddenzee, while the DGZRS-lifeboat of Borkum announced that it was unable to operate in these conditions off the North Sea's leeshore, no second lifeboat was available to stand by the Ameland lifeboat.

The dedicated crew of 'Anna Margaretha' was entirely focussed on saving freighter 'Cementina' and her complement, with no sensory attention left for their surroundings. As a consequence they were unaware of the danger their craft was straying into. The first ground sea hit them by surprise.

Estimated height of the ground seas was 15m, which was not confirmed by official measurements but derived from observations, measurements of average wave heights elsewhere on the North Sea and from local knowledge regarding the effect of a strong ebb against a NW-erly storm.

MV Iselmar lost a liferaft at 10.07 hrs, due to extreme breaking wave, 8 miles north of Terschelling.

Because the lifeboat's crew was moving in and out of the wheelhouse, its door was open, so that the wheelhouse was swamped in the first capsize, soaking instruments and the electrical system and putting all communication and navigation instruments out of action. Since also all aerials had been finished off while the portable VHF had been buried in one of the wheelhouse's corners under a pile of debris, which had been propelled out of an open settee chest, communication with neither ships nor shore was possible. Not before the lifeboat had sailed within range of the solitary mobile phone that had escaped the water, could anyone be informed about the lifeboat's plight.

The heavy weather, poor communication between ships and shore, total lack of communication with the lifeboat and its apparent invisibility -it had vanished from the AIS plot and was not sighted by any of the ships involved- conspired to increase apprehension about the lifeboat's whereabouts, which was made worse by rumours generated by misinformed media and persons.

The lifeboat's self righting capability as well as the remnants of its propulsion power left the crew enough fizz to brave the breakers on their homerun and reach port under their own steam.

Carefully evaluating with all involved what exactly has happened and why, the rapid saving of all relevant information, and collectively formulating recommendations, is expected to further improve the safety-conscious disposition of the KNRM's lifeboat crews.



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NAVIGATIONAL WARNING NR22 160730UTC JAN

SEISMIC SURVEY IN PROGRESS BY GEO PACIFIC/LAMAR

IN AN AREA SW OF TSS OFF TEXEL

A. 52-57.5N 003-52.5E B. 52-44.0N 004-14.5E

C. 52-35.5N 003-56.0E D. 52-38.0N 003-52.5E

