

### 3.1 Freak wave episodes

Many books about the oceans tell about giant waves which endanger even the largest vessels - and which have caused numerous marine disasters. For example Bascom (1980) tells about ships being lost and of survivors describing the cause as a huge solitary wave. He also recounts that both the liners Queen Mary and Queen Elizabeth were fortunate to survive dramatic freak wave encounters in the North Atlantic (causing the former to roll to within two degrees of its point of no-return while carrying 15,000 US troops to the UK in World War II).

Although freak waves can arise in all oceans, one particular stretch of one major shipping route is particularly prone to these. This is within the Agulhas Current off the SE coast of South Africa, approximately between Durnford Point (shortly north of Durban) and Port Elizabeth - see Figure 1. Table 1 lists some large ships which have been severely damaged by freak waves within this area during the 11 years 1981-1991 (not including minor ships such as fishing vessels etc.). Incidents in the Agulhas Current before this time period include

- Passenger liner Waratah, lost in 1909 without any trace ever being recovered (while carrying 211 crew and passengers on its second-ever journey). The fact that many other ships (including sailing ships) had been in the area at the same time without experiencing any difficulties point towards a spatially highly localized phenomenon.
- Supertanker World Glory, sunk in 1968 after being broken in two by a single freak wave,
- Supertanker Neptune Sapphire, survived in 1973 losing its front 60 m bow section.

Figure 2 shows how the front quarter of the cargo liner Bencruchan got bent down after a freak wave incident off the SA coast (also in 1973). Figure 3 shows a giant wave breaking over the front deck of the super-tanker Esso Nederland (in 1978 - with no damage suffered to the vessel). The following Figures 4 a-c. show the damages suffered by the first and the last ships that were listed in Table 1. A freak wave (invariably moving against the direction of the current) is often preceded by a sloping trough, in which the ship accelerates downward before being hit by the wave. The typical frontal damage can arise either when the bow gets buried into the freak wave, or when the high pressure is suddenly released as the ship emerges out of it.

DATE	VESSEL	TYPE	DWT	DATE	VESSEL	TYPE	DWT		
81	4	Energy Endurance	T	205,807	87	7	Goldstar	OBO	145,057
	8	Schelderin	T	230,679	10		Bocita	B	140,000
	8	Rimula	OBO	227,412	88	11	Atlantic Emperor	T	292,641
82	4	Alva Sea	OBO	225,010	89	7	Arabian Sea	T	315,695
	7	Marofa	T	135,000	11		Paaficos	T	268,467
	7	Antonios	T	290,558	90	1	Rokko San	OBO	200,000
	7	Theodora	B	137,519	9		Dorado Star	T	304,707
	7	Victoria	T	236,810	11		Samjohn Captain	B	65,051
	9	Torvanger	CH-T	17,057	91	4	Vasso	B	51,181
84	7	Merity	CH-T	24,083	5		Alborz	T	230,673
	11	Alva Sea	OBO	225,010	8		World Renown	T	262,267
85	2	Musashi	B	62,649	8		Mimosa	T	357,647
86	6	World Scholar	T	268,000	8		Novelty	T	233,399
	8	Formosa Fortune	OBO	162,973	8		Settebello	T	317,354
					9		Atlas Pride	T	248,602

**SHIP TYPES:** T TANKER, OBO OIL / BULK ORE, B BULK, CH-T CHEMICAL TANKER .  
Source: Pentow Marine Salvaging Co., SA.

Table 1. Major ships severely damaged in the Agulhas Current 1981-1991.

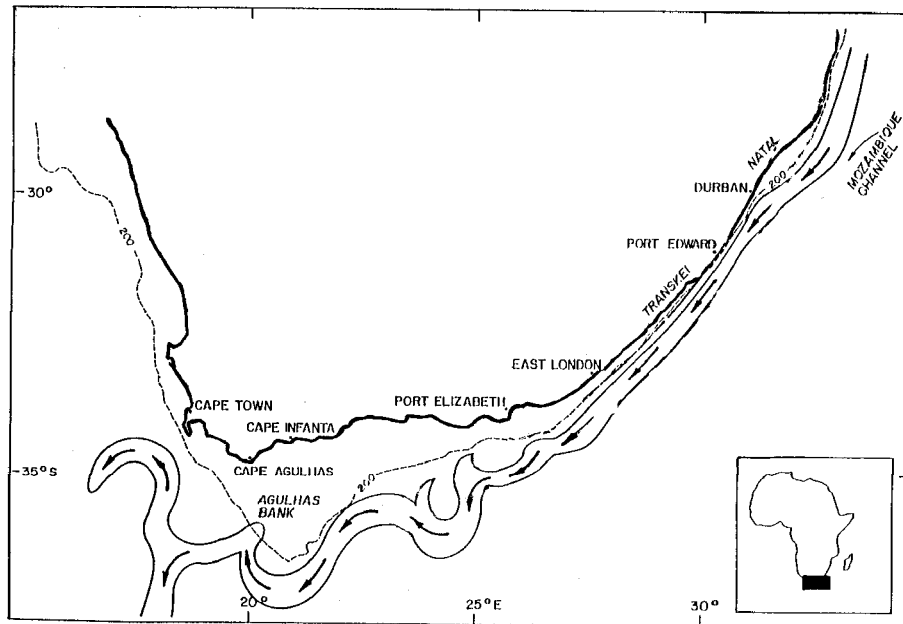


Figure 1. Schematic view of the Agulhas Current.

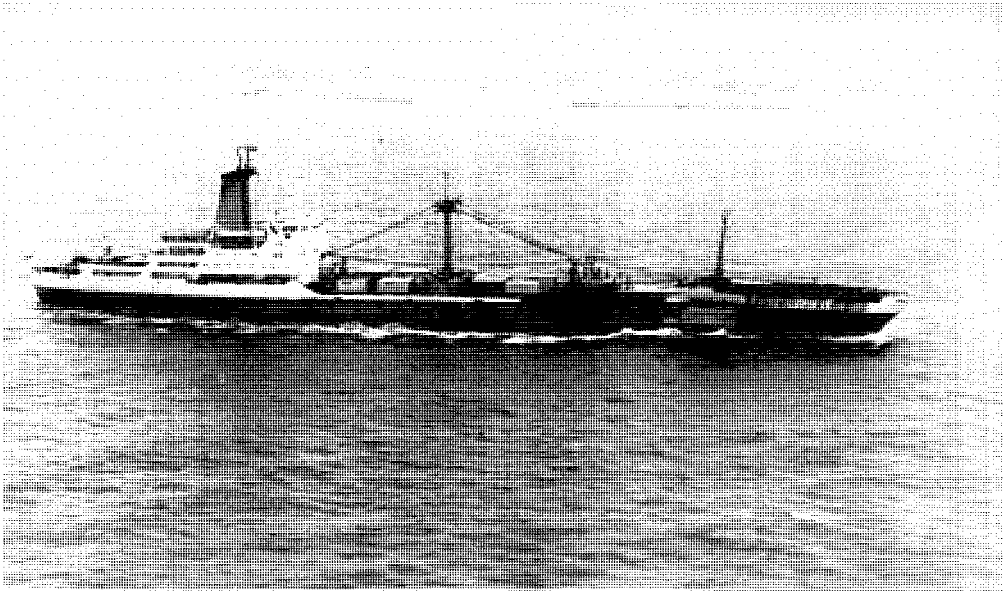


Figure 2. Cargo liner Benchruchan - with front quarter of the ship bent down after a freak wave incident.

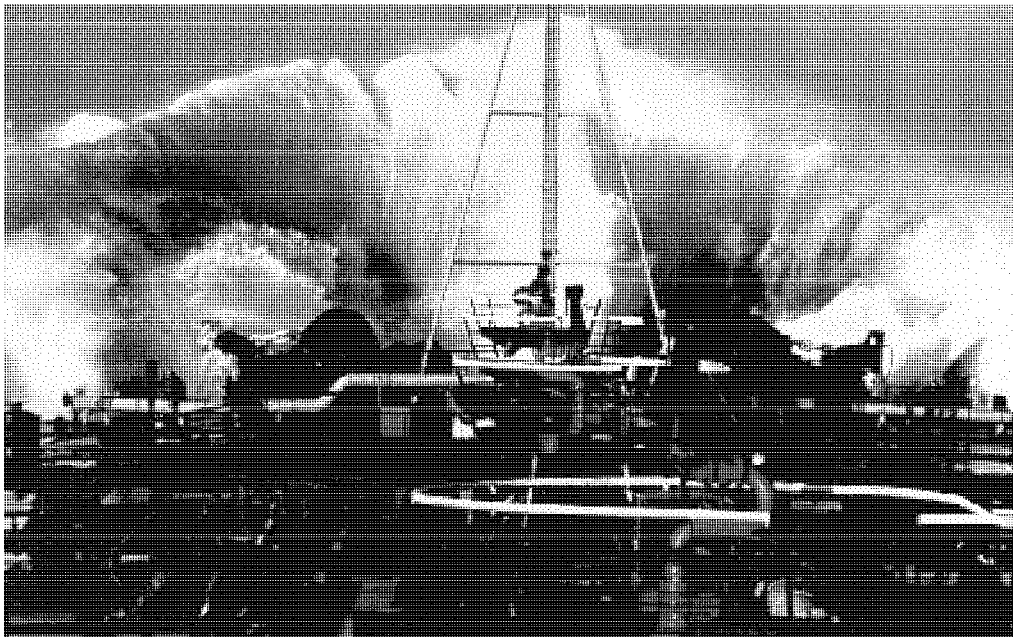
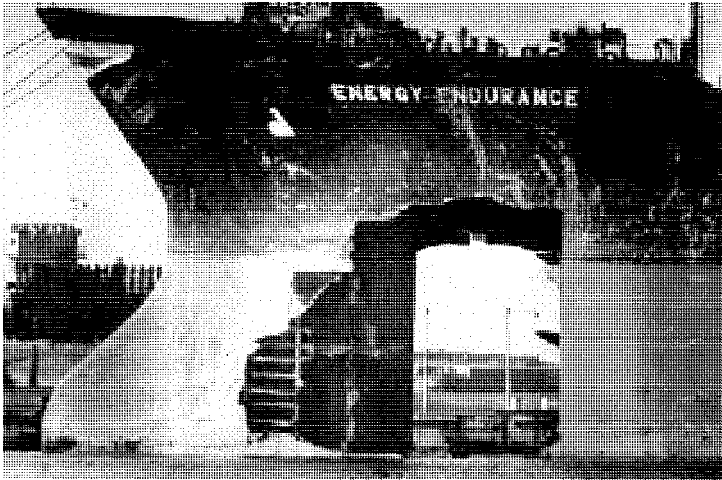
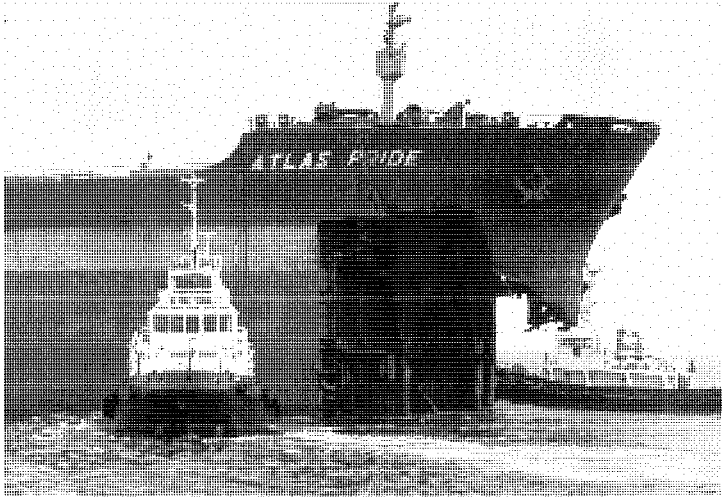


Figure 3. Large wave in the Agulhas current breaking over the front deck of the supertanker Esso Nederland.



Energy Endurance



Atlas Pride

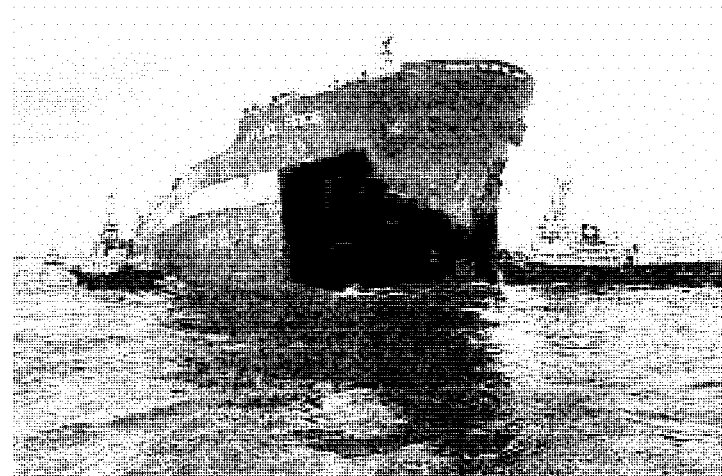


Figure 4 a-c. Bow damage on the supertankers Energy Endurance and Atlas Pride.