

MVI

17 September, 1951

(ARIZONA SWORD -
BERWINDVALE - C-1 Bd)

From: Chief, Merchant Vessel Inspection Division
To: Commandant

Subj: Marine Board of Investigation; Collision involving MV ARIZONA SWORD
and SS BERWINDVALE, Cape Cod Canal, 5 May, 1951

1. Pursuant to the provisions of Title 46 C.F.R., Part 136, the record of the Marine Board convened to investigate subject casualty, together with its Findings of Fact, Conclusions and Recommendations, has been reviewed and is forwarded herewith.

2. The ARIZONA SWORD, a twin-screw motor vessel of 3,133 g.t., with a cargo of bulk sulphur on board, was eastbound and the steam collier BERWINDVALE of 6,643 g.t., without cargo, was westbound in the Cape Cod Canal on 5 May, 1951. The ARIZONA SWORD, shortly after passing under Sigamore Bridge, took a violent sheer to port. Despite collision-avoiding action taken by both vessels, the sheer of the ARIZONA SWORD could not be controlled and it continued until she was broadside to the channel and was swept by the current onto the stem of the BERWINDVALE, which impact occurred at 0614. Subsequent to the collision the ARIZONA SWORD was abandoned and settled to the bottom. No major damage was sustained by the BERWINDVALE. The weather conditions at the time of this collision were good.

3. The Board made the following Findings of Fact:

"1. That the coastal freighter ARIZONA SWORD, official number 249516, was a steel hulled twin screw motor vessel of 3,133 gross tons, owned and operated by the Sword Line, Incorporated, of 52 Wall Street, New York 5, New York.

"2. That the coastal collier BERWINDVALE, official number 247645, was a steel hulled, single screw steamer of 6,643 gross tons, owned and operated by the Staples Coal Company of 80 Federal Street, Boston, Massachusetts.

"3. That the ARIZONA SWORD sailed from Port Sulphur, Louisiana, on 28 April, 1951, with a cargo of 4,800 long tons of bulk sulphur, for Portland, Maine.

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"4. That the HERWINDVALE sailed from Bath, Maine, on 4 May, 1951, in ballast, for Newport News, Virginia.

"5. That the ARIZONA SWORD, with the master, [REDACTED], on the bridge and conning the vessel, entered the western end of the Cape Cod Canal on the early morning of 5 May, 1951, in clear and mild weather and with a green light showing on the canal traffic signal.

"6. That the ARIZONA SWORD decreased to slow speed (100 RPM; about 4 to 4.5 knots through the water) at 0540 E.S.T., passed the U. S. Engineer Sub-Office near the western end of the canal at 0545, and continued on at slow speed until 0552, at which time speed was increased to half speed (175 RPM; about 7 or 8 knots through the water).

"7. That as the ARIZONA SWORD passed under Sagamore Bridge the HERWINDVALE was sighted, approaching from the eastward and a little less than two miles away, and the quartermaster of the ARIZONA SWORD was given a point to head for calculated to keep the vessel on the starboard side of the channel, well clear of the HERWINDVALE.

"8. That the current in the canal was setting to the eastward at approximately three and a half knots, giving the ARIZONA SWORD a speed over the ground of approximately eleven knots and the HERWINDVALE a speed over the ground of approximately five to five and a half knots as the two vessels approached each other.

"9. That when the ARIZONA SWORD had reached a point about 1200 yards east of the Sagamore Bridge the vessel sheared to port and continued to sheer despite a full right rudder.

"10. That the ARIZONA SWORD then, at 0611, backed full on both engines, with rudder remaining at full right and blew three blasts on the whistle, following this up with the danger signal, repeated several times.

"11. That the ARIZONA SWORD continued to sheer to port until it was broadside to the channel and was swept by the current onto the stem of the HERWINDVALE, with which it collided at 0614.

"12. That at the instant of collision the headway of the ARIZONA SWORD had stopped and the vessel was just beginning to move astern under the action of its engines.

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"13. That the HERNIMVALE, which was proceeding normally on its own side of the channel, stopped its engine at 0618 upon hearing the danger signal from the ARIZONA SWORD and backed full and let go its port anchor at 0618.

"14. That the stem of the HERNIMVALE penetrated the ARIZONA SWORD to a depth of about seven feet opposite the latter's No. 1 hatch.

"15. That following the collision, the ARIZONA SWORD bounced clear and although the engines were reversed, her sternway carried her across the channel and her starboard xrow struck the south bank, following which the current carried her to the eastward until she was brought to anchor against the north bank of the east jetty.

"16. That at 1800 the ARIZONA SWORD began listing to port and at 1700 the vessel, having taken a heavy list and taken on a lot of water, was abandoned by its master.

"17. That the HERNIMVALE remained at anchor, close to the north bank of the canal, after the collision until 0644 at which time the anchor was hauled up and the vessel completed its transit of the canal.

"18. That no lives were lost, or persons injured, as a result of the casualty.

"19. That the ARIZONA SWORD sustained a V-shaped cut in her starboard side, at right angles to the fore-and-aft line, penetrating the hull for a distance of approximately seven feet and approximately five feet wide at the widest point as a result of which she subsequently was abandoned in such condition and location that her salvage would be difficult if not economically impracticable.

"20. That the HERNIMVALE sustained a vertical tear in her port bow about five feet high and located just above the waterline and some dishing in of plating and frames on her starboard bow.

"21. That both vessels were manned in accordance with the requirements of their respective certificates of inspection.

"22. That the ARIZONA SWORD had on several previous occasions taken sheers to port while transiting the Houston Ship Channel, but the master had been able to break the sheers without difficulty.

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"23. That the steering engine and rudder of the ARIZONA SWORD could not be examined for possible failure as the vessel was flooded.

"24. That the steering gear was last tested prior to sailing from Fort Sulphur on April 28, 1951, at which time it tested satisfactorily and that no trouble had been experienced with it during Captain Becker's assignment to the vessel.

"25. That, with the possible exception of the steering gear of the ARIZONA SWORD, there was no evidence that material failure on either vessel contributed to the accident.

"26. That the master of the ARIZONA SWORD had had considerable experience in piloting vessels through the Cape Cod Canal, extending over a period of about sixteen years and including a long period with the Eastern Steamship Lines during which he transited the canal every night, and had not previously experienced any difficulties there."

4. The Board made the following Conclusions:

"1. That the violent sheer to port taken by the ARIZONA SWORD was the direct cause of the collision.

"2. That this sheer was probably due to the cushioning effect of the south bank of the canal, that is, with the bow of a vessel relatively close to one bank of a straight, narrow channel of relatively shallow depth, the wedge of water between the bow and the nearer bank builds up higher than on the other side and the bow is forced out sharply while simultaneously the suction of the screws lowers the water between the quarter and the near bank thus drawing the stern towards the bank. This effect, which is most marked with twin screw vessels, may readily cause a vessel to take a sudden and decided wheel toward the opposite bank.

"3. That the HERMINOVAIE was piloted in a prudent manner and her master took proper steps to try to avoid the collision as soon as the ARIZONA SWORD's plight became apparent but that under the existing conditions no action which he could safely have taken would have averted the collision.

"4. That there would have been less likelihood of a sheer occurring and a greater probability of controlling it after it commenced had the ARIZONA SWORD proceeded at slow speed rather than half speed as she approached the HERMINOVAIE.

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"5. That after the sheer occurred, the ARIZONA SWORD would have had a better chance of controlling it had she backed only on the starboard screw and continued to go ahead on the port screw. However, this, too, might have been disastrous had the vessel failed to respond in time. The master of the ARIZONA SWORD was confronted with a difficult situation requiring immediate action and the action he took is not considered unreasonable.

"6. That no act of misconduct, incompetence, inattention to duty, negligence or wilful violation of any law or regulation contributed to the casualty."

5. The Board made the following Recommendations:

"1. That recommendation be made to the Corps of Engineers that instructions and regulations covering navigation of the Cape Cod Canal contain a warning to mariners as to the danger of "bank cushion" and "bank suction" effects in the canal, together with a brief discussion of their nature, such as may be found in Chapter XII of Knight's Seamanship under the heading of "Navigating in Narrow Channels".

"2. That recommendation be made to the Hydrographic Office that a similar warning and discussion be inserted in the Atlantic Coast Pilot under the section covering the Cape Cod Canal.

no "3. That after the accomplishment of the two foregoing recommendations, no further action be taken and the file be closed.

REMARKS

6. Recommendations 1 and 2 of the Board suggest that recommendations be made to the Corps of Engineers and the Hydrographic Office that they incorporate in their instructions, regulations and charts covering the Cape Cod Canal discussion of the phenomena with respect to sheering of vessels. The master of the ARIZONA SWORD was an experienced master and familiar with

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the handling of vessels in narrow channels and it is doubtful such incorporation would have been helpful in preventing the subject casualty. The record of the subject casualty, upon approval, will be forwarded to the Corps of Engineers, Department of the Army and the Hydrographic Office, Department of the Navy for information and such consideration as may be deemed appropriate.

7. Subject to the foregoing remarks it is recommended that the Findings of Fact, Conclusions and Recommendations of the Marine Board of Investigation be approved.

/s/ P. A. OVENDEN
P. A. OVENDEN
Acting

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M
10 January, 1952

From: Chief, Office of Merchant Marine Safety
To: Commandant

Forwarded, recommending approval.

/s/ H. C. SHEPHEARD
H. C. SHEPHEARD

APPROVED:

JAN 15, 1952

/s/ Merlin O'Neill

MERLIN O'NEILL
Vice Adm., U.S. Coast Guard
Commandant