

# An analysis of the M/Vs Anita and Norse Variant distresses, in the Bermuda's triangle

RADU HANZU PAZARA, CIOARA PETRICA IONEL, EUGEN BARSAN

Department: Navigation  
Constanta Maritime University  
Mircea cel Batrin street 104, Constantza  
ROMANIA

hanzu@imc.ro, cioarapetricaionel@gmail.com, <http://www.cmu-edu.eu>

**Abstract:** - It is well known that organizational culture onboard created along the maritime history a lot of legends. One of them is the Bermuda's triangle Legend. Many vessels sunk in this area, and because of the lack of informations about the distresses, the physical phenomenon became mysticity. This paperwork will try to epistemologically demonstrate than the principal cause of the M/V Anita and Norse Variant distresses was the human's factor error.

**Key-Words:** - Bermuda's triangle, distress, legends, freak waves, organizational culture, synchronism.

## 1 Introduction

Areas in the world often purported to posses unusual characteristics are: the :Devil's Sea near Japan, the Marysburgh Vortex (or Great Lakes Triangle) located in Eastern Lake Ontario and the Bermuda Triangle; the notorious legendary place, also known as the Devil's Triangle, is a region in the western part of the North Atlantic Ocean, where a number of vessels disappeared mysteriously. The triangular boundary has its points somewhere on the Atlantic coast of U.S.A.-Miami, San Juan, Puerto Rico, and the island Bermuda. ( Fig.1)

Dozen of theories have been offered to explain the so-called mysterious disappearances, some pure science fiction, others more scientific, and some focused on human error and bad luck.[1]



Fig. 1

On the other hand, the progressive higher level of preparadness of the crew, has also reversed a greater capacity to adapt to new techniques and systems. Yet the facts remains that in vessels grown traditions, the customs and rituals, in an incredible way to man of the earth. We know the experience of the young officer who arrives on the vessel with a series of modern, technical knowledge, which is before the captain and major, that strives to show you what he has studied is worth almost nothing and what counts is what always been done.[2]

If the entry level officer will unfortunately refuse the knowledge, and will adapt and build new deformed abilities based in the experience, finally as Captain is possible to be the subject of the humans errors.

The lack of knowledge will be explained with mystical legends, the logic will be replaced by rethoric, and science by misticities. An example is Columbus who mention sightings of strange-looking animals, and his crew who observed : strange dancing lights on the horizon. Nowadays, the marine insurer Lloyd's of London has determined the triangle to be no more dangerous than any other area of the ocean.

More than 170 ships and planes, have gone missing without a trace in that area of the Atlantic Ocean. Two of them, the Norwegian sister bulk carriers: Anita (Fig 2) and Norse Veritas (Fig 3) lost in 1973 at same time, carring coal to Europe will be analysed in this study.

## 2 Problem Formulation

Loss of a large Norwegian ship with the entire crew in the middle of the North Atlantic is not a common event. However at a special occasion two large Norwegian bulk ships M/S “ANITA” and M/S “NORSE VARIANT” disappeared at the same time at the same location.[3]

### 2.1 Weather

Both ships passed Cape Henry only one hour interval in time on voyages from U.S.A. to Europe. Both ships came right into the center of a very extreme weather event with a strong low pressure giving 15 m significant wave heights and mean wave period close to 10 seconds and strong northerly winds with wind velocities near 60 knots.[3]

### 2.2 M/S “Anita” distress

“ANITA” disappeared completely at sea with the whole crew and no emergency call was ever given. The Court of Inquiry then concluded that the loss can be explained by an event in which a very large wave broke several hatch covers on deck, and the ship was filled with water and sank before any emergency call was given.[3]

### 2.3 M/S “Norse Variant” distress

It was built for the carriage of approx. 1500 cars and belonged to the owner Odd Godager & Co. The ship was built as Uddevallavarvet.

Loaded with coal enroute from Newport News, Virginia to Hamburg in Germany wrecked ship on the 22 March 1973, at 14h off the coast of New Jersey due to strong sea. Emergency was issued, and the last contact with the ship was at: 13h 49min. Only one man, Stein Gabrielsen [( January 14, 1950,died October 19,2009)(born 1923)] from Oslo, by a crew of 30 seamans, survived the accident. He was discovered in 25 March at 06h 06min. GAbrielsen had stayed for a total of two life rafts in the course of three days in heavy seas, snow flurries and winds to hurricane strength. At 11h 50min., he was picked up by : M/T “MOBILE LUBE”.

”Norse Variant” had deck cargo that was damaged

and moved by water on deck with the result that a hatch cover was broken and left open. The ship took in large amounts of water and sank before an organized evacuation was finished. Only one member of the crew was rescued on a liferaft.[3]



Fig. 2



Fig. 3

### 2.4 Norse Variant ship’s particulars (Fig. 3)

CALL SIGN:	LNFC,
Nationality:	Norwegian,
Shipowner:	Odd Godager & Co.,
Home port:	Oslo,
Class:	DNV 1A1 HC ICE-C,
Length:	541.5’=165.00m,
Beam :	70.2’ = 21.39m,
Draft:	40.9’ ,= 12.46m,
Gross tonnage:	13.194 mts,
Netto tonnage	7.190 mts,
Year of built:	1965, Sweden,
Motor type:	B & W, 2 SC SA –
cylinder,diam:	6 / 740 X 1600
Licence:	B & W L / Uddevallavarvet,
BHP:	9000/115 rpm,

### 2.5 Mr. Soren Peter Kjeldsen conclusions

Distress of the M/S Anita and M/S Norse Veritas was caused by the forces of the extreme freak waves, breaking on the superstructure of the ships ;dynamic pressures from large amounts of water on deck should be considered.Hatch covers on bulk ships are weak point and should have the same strength as the ship hull.[3]

### 3 Problem Solution

The energy transmitted to the vessel shall be calculated from the expression (1):

$$E = 1/8 \cdot \rho \cdot g \cdot Hs^2 \quad (1)$$

E - energy,

$\rho$  - density of the sea water,

g - 9.81 m/s<sup>2</sup>,

Hs - height of the wave.

If the ship's draft is n meters and the beam of n meters, deduct the area of the bow by calculating (2):

$$S_{LOA} = B \cdot T \quad (2)$$

$S_{LOA}$  - Surface of the bow,

B - Beam,

T - Draft.

So, that the energy in the exposed area, assume n Joules , which would be interesting to obtain data from the station planning of defeats that could compare with a given limited operation to avoid damaging the structure of the ship and cargo. [4]

Another value to consider, drawing on information received on board, is the effect of the rolling on the ship's structure.Assuming a period of n seconds, we deduce that:

$$L = 1.56 \cdot T^2 \quad (3)$$

L - length of the vessel

T - period of the wave

If the figure is not multiple of n meters, the value of the length of the ship, and it is hoped not that the ship to sync.If the figure does not given the length of the hull, the ship is pitching in resonance as a result of that wave length.If the figure is not an exact multiple of n meters, the value of the breadth of the vessel and is not expected to enter in transverse sync, although it is advisable that the sea affects differents angles to reduce the balance. [4]

### 3.1. The M/S Anita and M/S Norse Veritas calculations

The energy transmitted to the vessel shall be:

$$E = 1/8 \cdot 1019 \text{ g/dm}^3 \cdot 9.8 \text{ m/s}^2 \cdot (15\text{m})^2,$$

$$E = 0.125 \cdot 1019 \text{ g/dm}^3 \cdot 9.8 \text{ m/s}^2 \cdot 225$$

$$E = 26454.375 \text{ J/m}^2$$

The surface of the bow is:

$$S_{LOA} = 21.39\text{m} \cdot 12.46 \text{ m}$$

$$S_{LOA} = 266.51 \text{ m}^2$$

The energy in the exposed area shall be:

$$E_{\text{exp.area}} = 7050355.48 \text{ J}$$

This is an enormous value, but always the naval architects calculate a safety coefficient for 2.5X of the limit values.

Calculating the dangerous period of the wave, for the transverse sync with the expression (4):

$$T = \sqrt{\frac{L}{1.56}} \quad (4)$$

$$B \cdot 7 = 149.8 \text{ m},$$

$$T = \sqrt{\frac{149.8\text{m}}{1.56}} = 9.79 \text{ s}$$

The dangerous period for the transverse sync is 9.79 s.

Calculating the dangerous period of the wave, for the longitudinal sync with the expression (4):

$$T = \sqrt{\frac{L}{1.56}} \quad (4)$$

$$T = \sqrt{\frac{165m}{1.56}} = 10.28 \text{ s}$$

The dangerous period for the longitudinal sync is 10.28 s.

#### 4 Conclusion

The Legends of the Bermuda Triangle is a manufactured mystery...perpetuated by writers who either purposely or unknowingly made use of misconceptions,faulty reasoning,and sensationalism. The age of the vessel, the 8<sup>th</sup> old years influenced not the distress, but the period of the waves of 10 seconds probably should be between : **9.79** s and **10.28** s, periods very purported to produce the most dangerous phenomenon of the ship's manoeuvring-the synchronism.The simultaneous occurrence of two or more wave periods at the same instant ,in the same coordinated time scale.

The M/S Anita synchronized in the transverse axis and capsized, and M/S Norse Veritas synchronized in the longitudinal axis and broked in two parts.

Many ship officers claim real difficult situations at sea, rarely tested in the laboratory experiments, crossing sometimes the seas with the same of the waves and the rolling or pitching periods.Good seakeeping has been a forgotten factor in many cases. For the further education of the ship officers is a need in the following items:

- 1.How to avoid the synchronism in the sea when waves with the same period is expected to occur,**
- 2.How to handle a damaged ship in severe synchronized waves,**
- 3.What is the right time to evacuate a damaged ship by the synchronism.**

I found the answer at the first question in the Master's Deboveanu – SHIPS MANOEUVRING book, using the expression (5) and (6):

$$\cos \alpha = \frac{C}{V} \left( 1 \pm \frac{t}{T} \right), \quad (5)$$

cos α – incident course in waves  
C = speed of the wave( m/sec);

$$C = \sqrt{\frac{g}{2\pi}} \lambda \quad (6)$$

V = speed of the vessel (m/sec);

t = period of the wave seconds;

T = rolling or pitching period of the vessel, seconds;

+ for the bow waves;

- for the stern waves.[5]

And related with the second and third question, the same Master recommend to experiment the manoeuvring in manned reduced scale models.

Phylosophically speaking, it is consensual the maritime investigations truth?No, always depend on the interests of the shipowners,insurances companies and even the seamens or investigators,etc.

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