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The Federal Bureau of Maritime Casualty Investigation (BSU) published the investigation report No. 198/15 on 13 September 2018. The report deals with a chemical reaction in a fertilizer cargo on board the PURPLE BEACH. Upon request the report will be forwarded. Alternatively, this report is available on <https://www.bsu-bund.de/EN/News> for download.

Abstract

Chemical reaction in the fertilizer cargo on board the PURPLE BEACH

In the afternoon of 25 May 2015, a development of smoke out of cargo 3 was visually detected on board the PURPLE BEACH, flying the flag of the Republic of the Marshall Islands. At this time, the ship was on the deep water anchorage in the German Bight. An ammonium nitrate based fertilizer was loaded into the lower hold of cargo hold 3 in Antwerp. The tween deck was partly loaded with general cargo. In order to halt

the development of smoke, CO₂ was discharged by the crew. In the course of the evening, the German authorities were notified of the incident, and at 0259 on 26 May 2015, the Central Command of Maritime Emergencies assumed overall command. The first team of the firefighting service reached the ship at about 0500. In the further course, the exothermal self-sustaining decomposition in the fertilizer cargo was halted

by means of high personnel- and material expenditure. For his purpose, the cargo hold was flooded. Subsequently, the ship was towed to Wilhelmshaven. There the PURPLE BEACH was unloaded. Later on the ship was scrapped.

All investigation reports, safety recommendations and other information published by the BSU are available on <https://www.bsu-bund.de/EN/Publications>.

Summary

Chemical reaction in the fertilizer cargo on board the PURPLE BEACH

In the afternoon of 25 May 2015, a development of smoke out of cargo hold 3 was visually detected on board the PURPLE BEACH, flying the flag of the Republic of the Marshall Islands. At this time, the ship anchored on the deep water anchorage in the German Bight. Brake was the next port of destination. Prior to this, a ammonium nitrate based fertilizer (not dangerous) was loaded into the lower hold of cargo hold 3 in Antwerp. The tween deck was partly loaded with general cargo. In order to halt the development of smoke, CO₂ was discharged by the crew. In the course of the evening, the German authorities were notified of the incident, and at 0259 on 26 May 2015, the Central Command of Maritime Emergencies assumed overall command. The first team of the firefighting service reached the ship at about 0500. The measurements carried out by the firefighters, indicated a decomposition process within the fertilizer cargo. Since the danger of an explosion could not be ruled out and a massive smoke emission out of the closed cargo hold pointed to an exacerbated situation, the ship was evacuated. In the further course, the exothermal self-sustaining decomposition in the fertilizer cargo which had already started was halted by the deployment of the federal multi-purpose ships NEUWERK and MELLUM, the emergency tug NORDIC and the fire fighters operating on board. For this purpose, the cargo hold was flooded. Subsequently, the ship was towed to Wilhelmshaven. There, the PURPLE BEACH was unloaded. Later, the ship was scrapped.

The report deals with the events unfolding on board during the loading of the cargo holds 2 – 5 with fertilizers and the transport, the activities of the crew after having noticed the development of smoke as well as the actions of the Central Command of Maritime Emergencies for halting the chemical reaction in the fertilizer cargo. Moreover, the fact is discussed, that the fertilizer in cargo hold 3 was declared as not dangerous by the manufacturer and therefore allegedly incapable of a self-sustaining decomposition. As a matter of fact, such a reaction was observed on board the ship. Additionally, possible causes for the start of the exothermal self-sustaining decomposition are discussed. However, a precise trigger for the decomposition could not be identified within the scope of the BSU investigation.

The report comprises safety recommendations addressing the Federal Ministry of Transport and Digital Infrastructure and aiming at adapting the transport regulations for ammonium nitrate based fertilizers (not dangerous). Further safety recommendations are addressing the ships management and the manufacturer of the fertilizer.

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Director