Log M-413E SR

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 6, 1998

In reply refer to: M-98-16 through -18

Clearsky Shipping Company
c/o COSCO H.K. Shipping Company Ltd.
Attn: Mr. F. Y. Khong
167 Connaught Road West
Hong Kong

Shortly after 1400 on December 14, 1996, the fully loaded Liberian bulk carrier *Bright Field* temporarily lost propulsion power as the vessel was navigating outbound in the Lower Mississippi River at New Orleans, Louisiana. The vessel struck a wharf adjacent to a populated commercial area that included a shopping mall, a condominium parking garage, and a hotel. No fatalities resulted from the accident, and no one aboard the *Bright Field* was injured; however, 4 serious injuries and 58 minor injuries were sustained during evacuations of shore facilities, a gaming vessel, and an excursion vessel located near the impact area. Total property damages to the *Bright Field* and to shoreside facilities were estimated at about $20 million.[1]

The National Transportation Safety Board determined that the probable cause of this accident was the failure of Clearsky Shipping Company to adequately manage and oversee the maintenance of the engineering plant aboard the *Bright Field*, with the result that the vessel temporarily lost power while navigating a high-risk area of the Mississippi River. Contributing to the amount of property damage and the number and types of injuries sustained during the accident was the failure of the U.S. Coast Guard, the Board of Commissioners of the Port of New Orleans, and International RiverCenter, Inc., to adequately assess, manage, or mitigate the risks associated with locating unprotected commercial enterprises in areas vulnerable to vessel strikes.

Safety Board investigators' examination of the engineering plant and maintenance records for the *Bright Field* revealed engine lubricating oil that was not within the allowable specifications of the oil supplier or engine designer, excessive differential pressure across the second oil filter, and uncorrected vibration and noise from both main engine lubricating oil pumps. Among other deficiencies identified were marginal lubricating oil sump level, incorrectly calibrated sensing devices, reuse of worn parts, and numerous other problems associated with the

[1] For more detailed information, read Marine Accident Report—*Allision of the Liberian Freighter* Bright Field *with the Poydras Street Wharf, Riverwalk Marketplace, and New Orleans Hilton Hotel in New Orleans, Louisiana, December 14, 1996* (NTSB/MAR-98/01).

main engine and various auxiliary systems/machinery. While many deficiencies were corrected before the December 14 voyage, the vessel sailed with several significant engineering problems uncorrected.

A review of the vessel's records dating back to January 1996 revealed that the engineering crew responded to recurring engineering failures with repairs that were sufficient to keep the vessel operating most of the time. However, the crew apparently was not able to make permanent repairs to the vessel's main engine and associated engineering systems; as a result, these problems became a continuing source of voyage disruptions. In the 3 months prior to the accident, the *Bright Field* added about 1 month to its schedule due to delays attributed to engineering problems.

The crew was not required to use the automated propulsion control test procedures that were delivered with the vessel in 1988 or to periodically test the functional operability of the automated propulsion control system. The engineering plant on the *Bright Field* was equipped with a number of safety devices, and the chief electrician submitted a report concerning the status of these devices to the vessel's owners quarterly. But the report was based only on a survey of alarms and sensors. No one regularly performed operational testing and maintenance of safety control devices such as the oil pressure switch that was supposed to start the standby oil pump in case of a drop in main engine lubricating oil pressure.

While the *Bright Field*'s owners provided each vessel in their fleet with general requirements for periodic testing and maintenance of the main engine, including regular analysis of the main engine lubricating oil, Safety Board investigators determined that critical main engine components were run until failure occurred and that periodic preventive maintenance was not routinely accomplished.

The Safety Board concluded that the *Bright Field* showed evidence of recurring engineering problems that affected vessel main engine reliability, and had all engineering systems been kept in good repair and regularly tested, the vessel may not have unexpectedly lost power during its voyage down the Mississippi River.

Clearsky Shipping Company received regular engineering and maintenance reports on the *Bright Field* and thus had knowledge of the vessel's engineering problems. Serious engineering problems were reported to Clearsky as early as January 1996. In addition to reports from the engineering crew, the owners had received periodic telexes from the master documenting the severity of engineering problems, delays in scheduling resulting from the engineering problems, and the inability of the engineering crew to make permanent repairs. On at least one occasion in 1996, the *Bright Field's* owners' representatives visited the vessel because of concerns about the operation of the engineering plant. The Safety Board acknowledges that the owners did replace the *Bright Field*'s chief engineer when the vessel arrived in New Orleans on November 21 because, they said, the engineer had been unresponsive to the owners' orders. The documented problems with the *Bright Field*'s engineering plant, however, existed at least as early as 1995, which predated the arrival on board of the previous chief engineer. These engineering deficiencies are indicative of long-term, recurring problems that cannot be tied to the competence or job performance of a single individual.

The Safety Board concluded that the *Bright Field* owners' oversight of testing and maintenance of the vessel's engineering systems was inadequate and led to unreliable performance of the engineering plant and contributed to the shutdown of the main propulsion engine on the day of the accident.

Quite by chance, the *Bright Field* came to rest between two docked ships in a spot not significantly larger than the ship itself. While the actions of the pilot and crew during the emergency may have been reasonable, their actions were not well-coordinated. Because a computer simulation of the accident scenario was inconclusive, the Safety Board could not determine how changes in the nature or timing of the crew's actions may have affected the outcome. The Safety Board concluded, however, that at several points prior to and during the *Bright Field* emergency, the pilot, master, and crew of the vessel did not exchange information that under other circumstances could have prevented or at least mitigated the effects of the accident.

In the view of the Safety Board, the performance of the *Bright Field* pilot and crew could have benefited from effective application of the principles of bridge resource management (BRM), which entails effective use of all available resources to achieve safe operations. Underlying effective BRM is an understanding that every officer, crewmember, and pilot on board a vessel is responsible for acting and for using resources in close coordination with others on the watch. The master, pilot, and conning officer use leadership skills and command authority to integrate the resources for any given passage or watch. At the same time, they must convey their receptivity to operating information that originates with subordinates. The role of those on the watch is to perform their assigned tasks responsibly, to know about or participate in determining the plans for navigation of the vessel, to be alert to departures from plans or from the expected performance of others, and to make those discrepancies known in time to avert an operational error.

The pilot of the *Bright Field* did not advise the master of his plans for making the river transit, including the fact that he intended to operate the ship at sea speed. Had the pilot offered, or had the master requested, information on the transit plans, not only would both men, as well as the bridge crew, have known when and where to expect various actions, but the flow of information could have enhanced coordination and confidence between the pilot, master, and crew. If, for example, the master had asked, or the pilot had offered, information on the pilot's intended transit speed, that issue could have been discussed, and together they could have evaluated the operational consequences of proceeding at sea speed. Navigational situations can develop at any time for which an increase in speed (to improve rudder control or avoid collision) is a viable option, but, when a ship is already operating at top speed, that option is no longer available. If the pilot and master had discussed the intended speed, they could have reached a consensus on the best way to operate.

A transit plan should include intended speeds, areas of high risk due to traffic concentration, shoreside structures, or river flow characteristics, and actions to be taken in the event of various ship power or control difficulties. According to their statements, each man felt confident of his own abilities and assumed that the other was qualified to perform any duties that

might be required. The lack of discussions between the master and pilot regarding emergency maneuvering procedures did not cause this accident. Still, if the actions to be taken in an emergency had been established, cooperation and coordination in the emergency that developed would probably have been enhanced, tasks could have been clearly delineated, and orders (such as the order to drop anchor) could perhaps have been given and complied with more quickly.

While the pilot was not forthcoming with information about his transit plans, the master did not tell the pilot of the inability to start the main engine from the bridge either at 1055 or when the same difficulty was encountered at 1110. In each case, engine control had to be transferred to the engine control room and back, but this information was not made known to the pilot. Had the pilot been made aware of the situation, he and the master could have discussed options, including the location of engine control (control room or wheelhouse) or use of tug escorts. If the pilot and master could not agree, the pilot could have refused to get underway from the anchorage.

If more information had been exchanged during the 3 minutes after power reduction and before the allision, the actions of the pilot and crew could have been better coordinated and perhaps more timely. Even though the eventual outcome would probably have been the same in this case, in different circumstances, more effective communication could have helped avoid or mitigate an accident.

A limited information exchange took place among the master, second mate, and chief engineer. The master instructed the second mate to call the engine control room and demand an immediate increase in speed. The second mate complied. In response, the chief engineer said he understood what had happened (a sudden drop in the pressure of the lubricating oil pump), but not why it happened, and told the second mate so. He also told the second mate the pressurization problem had already been solved by the No. 2 pump coming on line. He then asked if the second mate wanted to switch engine control from the bridge to the engine control room. The second mate said yes, and the transfer of control began.

In this case, since the pressurization problem had already been corrected, the rpm could have been restored from the bridge as quickly as from the engineroom. If that had been done, the transfer time could have been saved. However, the second mate apparently did not recognize the implication of the chief engineer's comment, which was that the second engineer could increase rpm himself. So when the chief engineer asked for engine control to be transferred, the second mate agreed. The second mate was quite likely simply following the master's order to have "them" (the chief engineer and his staff) increase speed. If the chief engineer had supplied information to the bridge about the time necessary for him to assume control and restore engine rpm, this information may have altered the nature and timing of the master's and pilot's orders.

The second mate also did not immediately pass on the information about the lubricating oil repressurization to the master. If he had, the master may have recognized his option to increase rpm from the bridge and may not have followed the normal practice of sending engine-related problems to the engine control room, thereby saving the control transfer time. Likewise, if the second mate had given the chief engineer additional information about the direction in which the ship was headed, the chief engineer could have made a more informed decision

concerning the options for increasing rpm, such as activating the crash maneuvering feature or perhaps not transferring engine control to the engine control room. After the accident, the master testified that the engineering crew was not made aware of the emergency situation until the allision was unavoidable.

Had the above additional information been supplied during these exchanges, it may not have altered the outcome. Nevertheless, additional information should have been exchanged to facilitate decisions.

As a result of its investigation of the *Bright Field* accident, the National Transportation Safety Board makes the following safety recommendations to Clearsky Shipping Company:

> Perform a baseline engineering assessment of the *Bright Field*'s engineering plant and correct all conditions not in conformance with manufacturer's specifications. (M-98-16)
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> Institute an engineering testing, maintenance, repair, and company oversight program for the *Bright Field* that will ensure safe and reliable operation of the vessel's engineering plant. (M-98-17)
>
> Provide your bridge and engineroom watchstanding officers and crewmembers with initial and recurrent bridge resource management training that includes communication and coordination between pilots and members of the bridge and engineroom watches and that addresses their use of bridge and engineroom systems. (M-98-18)

Also, the Safety Board issued Safety Recommendations M-98-1 through -4 to the U.S. Coast Guard; M-98-5 and -6 to the U.S. Army Corps of Engineers; M-98-7 and -8 to the State of Louisiana; M-98-9 through -12 to the Board of Commissioners of the Port of New Orleans; M-13 through -15 to International RiverCenter; M-98-19 through -23 to New Orleans Paddlewheels, Inc.; M-98-24 through -26 to the New Orleans Baton Rouge Steamship Pilots Association; M-98-27 and -28 to the Crescent River Port Pilots Association; and M-98-29 and -30 to the Associated Federal Pilots and Docking Masters of Louisiana, Inc.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations M-98-16 through -18 in your reply. If you need additional information, you may call (202) 314-6450.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: Jim Hall
Chairman