

**NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorders Division
Washington, D.C. 20594**



Special Study

DCA05MM008

by

Joseph A. Gregor

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May 23, 2005

Digital Camera

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A. ACCIDENT

Location: Dutch Harbor, AK
Date: December 18, 2004
Time: 19:24 Atlantic Standard Time (AST)
Vehicle: M/V Selendang Ayu
NTSB Number: DCA05MM008

B. GROUP - No Group

C. SUMMARY

The 738-ft long, Malaysian bulk/freighter SELENDANG AYU experienced a propulsion failure sometime on Monday, December 6, 2004. The vessel, which was en route from Seattle to Japan with a load of soybeans, was proceeding through the Bering Sea northwest of Dutch Harbor, Unalaska Island, Alaska at the time. The vessel proceeded to drift and resisted all effort to secure her motion. The master requested the Coast Guard to evacuate the 26-man crew, which the Coast Guard accomplished in 3 stages. During the evacuation on Wednesday, December 8, 2004, a Coast Guard helicopter, with 3 Coast Guard and 7 crewmembers, crashed into the sea. Another Coast Guard helicopter rescued the 3 Coast Guard personnel and one crewmember, leaving a total of six crewmembers unaccounted for. A Coast Guard helicopter later removed the master and a Coast Guard swimmer, who had remained on board the doomed vessel. At 1924 AST, the SELENDANG AYU ran aground on Unalaska Island and broke in two parts. The vessel was carrying some 10,000 barrels of bunker fuel.

Two digital cameras were recovered from the vessel and sent to the NTSB Vehicle Recorder Laboratory for evaluation. Image data relevant to the accident was downloaded from two cameras that were recovered from the stricken vessel.

D. DETAILS OF INVESTIGATION

Two consumer-level digital cameras arrived at the NTSB Data Recovery Laboratory on January 19, 2005. Identifying information for these cameras is outlined in table 1.

Camera #	Make	Model	Condition	S/N
1	O'Rite	VC-2200	Undamaged	ORC220030400277
2	Olympus	D-520	Undamaged	108114453

Table 1. Make, model, overt condition, and serial number for cameras recovered from the M/V Selendang Ayu.

The Olympus D-520 is a 2.0 Megapixel digital camera with 3x optical zoom that uses a SmartMedia¹ removable memory card for image storage. The O'Rite VC-2200 is a 2.0 Megapixel digital camera employing 16MB of internal memory along with external SD² card support. Both cameras support USB for downloading image data to a desktop PC.³

Seven JPEG⁴ image files were downloaded from Camera #1 via USB. All seven images appeared to be relevant to the accident. Nine JPEG image files were recovered from Camera #2 by direct reading of the removable SmartMedia card. Eight of these images appeared to be relevant to the accident. A detailed listing of the recovered files

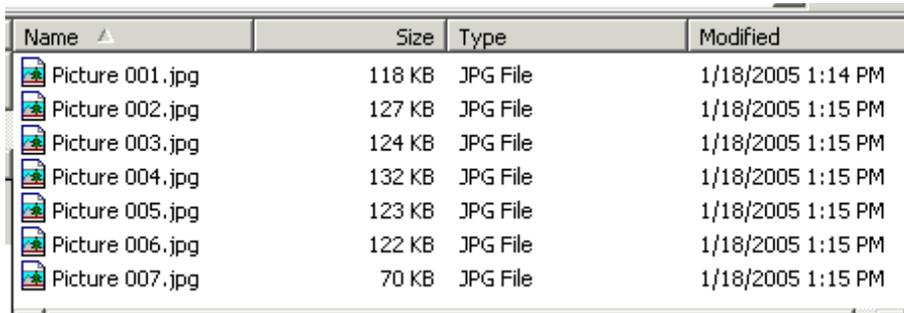
¹ A non-volatile solid-state removable memory standard and device introduced by Toshiba in 1996. SmartMedia cards are the thinnest form factor available flash storage devices, usually incorporating a single flash chip with no internal controller.

² Secure Digital Card; a highly secure stamp-sized non-volatile solid state flash memory card jointly developed by Matsushita Electronic, SanDisk and Toshiba.

³ Universal Serial bus; a plug-and-play Bi-directional serial interface bus standard used for data transfer between a computer and external peripheral devices. The original USB standard supports data transfer at a maximum speed of 12 megabits per second.

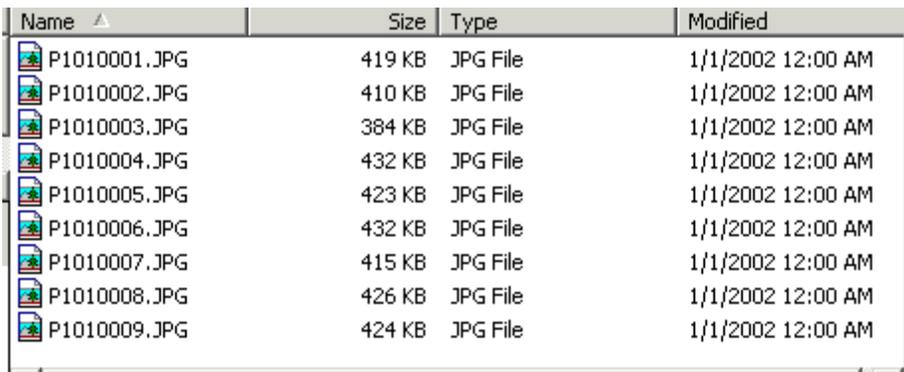
⁴ A standard compressed image file format employing defined by the Joint Photographer's Expert's Group.

is given in figures 1 and 2. The recovered images themselves are illustrated in figures 3 through 17.



Name ▲	Size	Type	Modified
 Picture 001.jpg	118 KB	JPG File	1/18/2005 1:14 PM
 Picture 002.jpg	127 KB	JPG File	1/18/2005 1:15 PM
 Picture 003.jpg	124 KB	JPG File	1/18/2005 1:15 PM
 Picture 004.jpg	132 KB	JPG File	1/18/2005 1:15 PM
 Picture 005.jpg	123 KB	JPG File	1/18/2005 1:15 PM
 Picture 006.jpg	122 KB	JPG File	1/18/2005 1:15 PM
 Picture 007.jpg	70 KB	JPG File	1/18/2005 1:15 PM

Figure 1. Listing of Image files recovered from Camera #1 (O-Rite VC-2200).



Name ▲	Size	Type	Modified
 P1010001.JPG	419 KB	JPG File	1/1/2002 12:00 AM
 P1010002.JPG	410 KB	JPG File	1/1/2002 12:00 AM
 P1010003.JPG	384 KB	JPG File	1/1/2002 12:00 AM
 P1010004.JPG	432 KB	JPG File	1/1/2002 12:00 AM
 P1010005.JPG	423 KB	JPG File	1/1/2002 12:00 AM
 P1010006.JPG	432 KB	JPG File	1/1/2002 12:00 AM
 P1010007.JPG	415 KB	JPG File	1/1/2002 12:00 AM
 P1010008.JPG	426 KB	JPG File	1/1/2002 12:00 AM
 P1010009.JPG	424 KB	JPG File	1/1/2002 12:00 AM

Figure 2. Listing of Image files recovered from Camera #2 (Olympus D-520).

Both cameras were downloaded in the presence of agents from the Federal Bureau of Investigation, and were transferred to the custody of the FBI on January 18, 2005.

Joseph A. Gregor
Data Recover Specialist



Figure 3. Picture 001.jpg recovered from Camera #1 (O'Rite VC-2200).

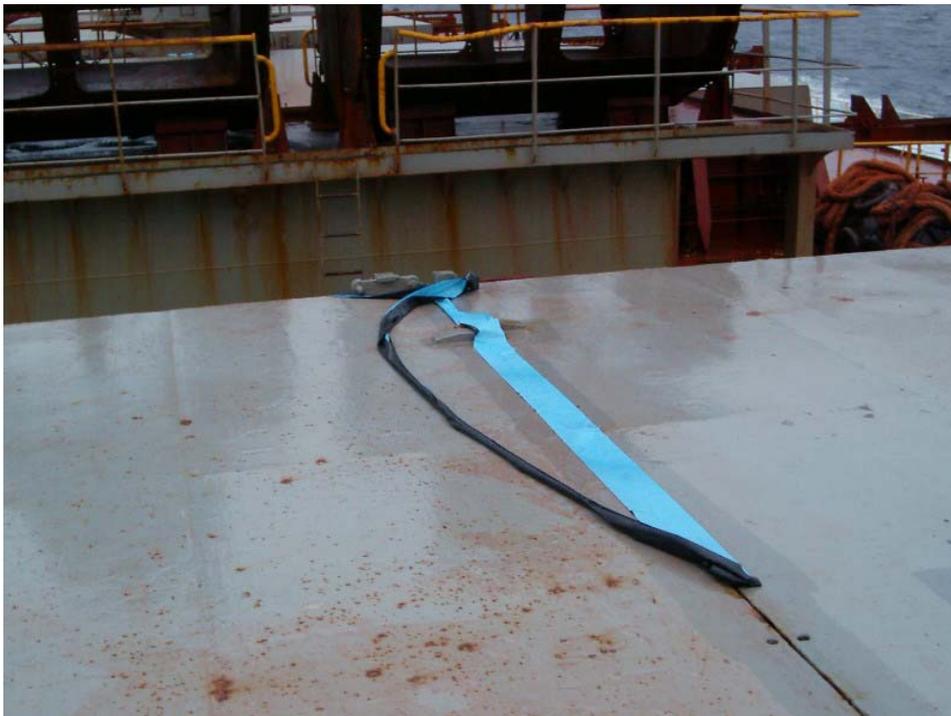


Figure 4. Picture 002.jpg recovered from Camera #1 (O'Rite VC-2200).



Figure 5. Picture 003.jpg recovered from Camera #1 (O'Rite VC-2200).



Figure 6. Picture 004.jpg recovered from Camera #1 (O'Rite VC-2200).



Figure 7. Picture 005.jpg recovered from Camera #1 (O'Rite VC-2200).



Figure 8. Picture 006.jpg recovered from Camera #1 (O'Rite VC-2200).

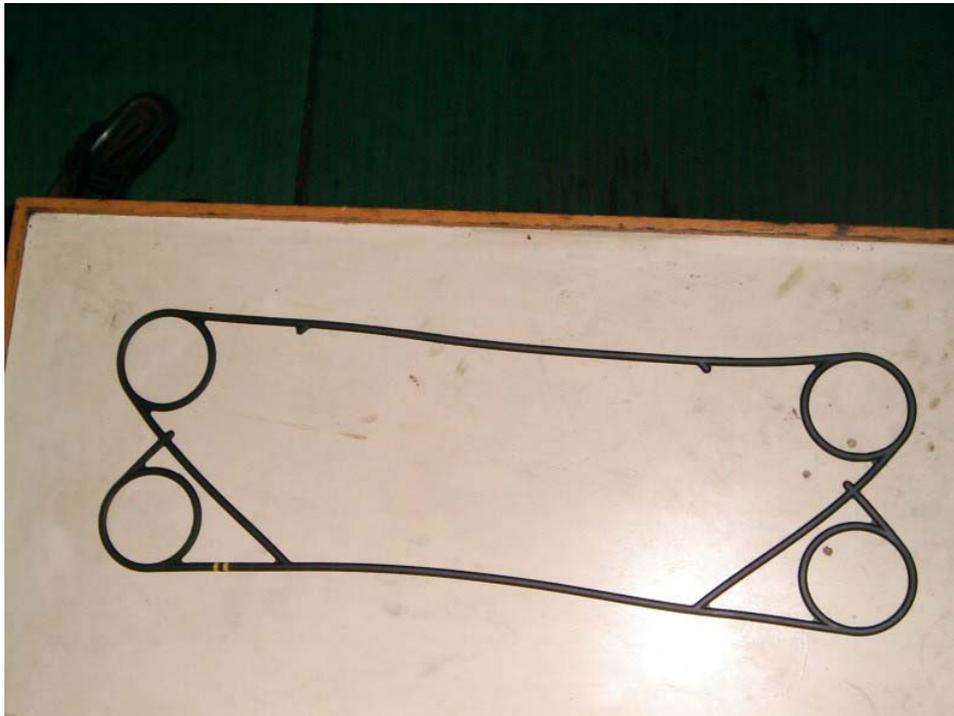


Figure 9. Picture 007.jpg recovered from Camera #1 (O'Rite VC-2200).



Figure 10. P1010002.jpg recovered from Camera #2 (Olympus D-520).



Figure 11. P1010003.jpg recovered from Camera #2 (Olympus D-520).



Figure 12. P1010004.jpg recovered from Camera #2 (Olympus D-520).



Figure 13. P1010005.jpg recovered from Camera #2 (Olympus D-520).



Figure 14. P1010006.jpg recovered from Camera #2 (Olympus D-520).



Figure 15. P1010007.jpg recovered from Camera #2 (Olympus D-520).



Figure 16. P1010008.jpg recovered from Camera #2 (Olympus D-520).



Figure 17. P1010009.jpg recovered from Camera #2 (Olympus D-520).