



KÖZLEKEDÉSBIZTONSÁGI
SZERVEZET

TRANSPORTATION SAFETY
BUREAU

FINAL REPORT

**2006-041-6
MARINE INCIDENT**

**Budapest, River Danube, at 1560.6 river kilometre
6 November 2006**

**towboat
ANR-641**

The sole objective of the technical investigation is to reveal the causes and circumstances of marine casualties, serious and very serious casualties as well as marine incidents, and to initiate the necessary technical measures and make recommendations in order to prevent similar cases in the future. It is not the purpose of this activity to apportion blame or liability.

This present investigation was conducted on the basis of

- Act XLII of 1995 on marine transport,
 - SOLAS 1974/1978 and Act XI of 2001 on its proclamation,
 - Act CLXXXIV of 2005 on the technical investigation of aviation, rail and marine accidents and incidents (hereinafter referred to as Kbv.),
 - Decree 9/2006 (II.27.) of Minister of Economy and Transport (MET) on the detailed rules regarding technical investigation of serious marine casualties and incidents.
 - In absence of other related regulation of the Kbv., the Transportation Safety Bureau of Hungary conducted the investigation in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service,
- The competence of the Transportation Safety Bureau of Hungary is based on the Kbv. until 31st December 2006 and on Government Decree 278/2006 (XII. 23.) from 1st January 2007 respectively.

Under the aforementioned regulations

- The Transportation Safety Bureau of Hungary shall investigate serious marine casualties.
- The Transportation Safety Bureau of Hungary at its own discretion may investigate marine incidents which - in its judgement - would have resulted in casualties in other circumstances.
- The technical investigation is independent of any administrative, infringement or criminal procedures.
- In addition to the aforementioned laws, the A.849 IMO Code (Code for the Investigation of Marine Casualties and Incidents) is applicable.
- This present Final Report shall not be binding, nor shall an appeal be lodged against it.

Incompatibility did not stand against the members of the IC. Persons participating in the technical investigation did not act as experts in other procedures concerning the same case and shall not do so in the future.

The IC shall safe keep the data having come to their knowledge in the course of the technical investigation. Furthermore, the IC shall not be obliged to make the data – regarding which the owner of the data could have refused the disclosure of the data pursuant to the relevant act – available to other authorities.

This present final report

was based on the Draft Report prepared by the IC and accepted by the Director-General of TSB. The Draft Report was sent to the relevant parties - defined by law - for reflections. At the same time, the relevant parties and organisations were also informed and invited to the closing discussion of the Draft Report.

The following organisations were represented at the closing discussion held on 9th December 2008:

- National Transport Authority
- Central Directorate for Environmental Protection and Water

ABBREVIATIONS

MET (GKM)	Ministry of Economy and Transport (Gazdasági és Közlekedési Minisztérium)
IMO	International Maritime Organization
TSB	Transportation Safety Bureau
Kbvt.	Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents
ms.	motor ship
NAVINFO	Marine Emergency Assistance and Information System
NTA	National Transport Authority
RSOE	National Association of Radio Distress-signalling and Infocommunications
SOLAS	Safety of Life at Sea
IC	Investigating Committee
VDR	Voyage Data Recorder (Hajózási Adatrögzítő Rendszer)
CDEPV (VKKI)	Central Directorate for Environmental Protection and Water (Vízügyi és Környezetvédelmi Központi Igazgatóság)

SUMMARY

Occurrence category		marine incident
Vessel	manufacturer	Oltenita Shipyard
	type	Regel ms. towboat
	flag	Romania
	registration	ANR-641
	serial number	n. a.
	owner	S.C. TOUAX ROM S.A. Constanta
	operator	S.C. TOUAX ROM S.A. Constanta
	charterer	n. a.
Occurrence	date and time	6 November 2006, approximately 13 hours 40 minutes
	location	Dunaföldvár
	fatalities	none
	number of seriously injured	none
Extent of damage to the vessel		Breakage of rudder blade and deformation of rudder blade connecting rod
Country of registry		Romania
Registration authority		Autoritatea Navala Romania Capitania Portului Drobeta Turnu Severin
Authority supervising manufacturing		Autoritatea Navala Romania Capitania Portului Drobeta Turnu Severin
Competent investigating body (according to the location of the occurrence)		TSB

Reports and notifications

The incident was reported to the duty services personnel of TSB by the officer on duty of the competent police at 13 hours 45 minutes on 6th November 2006.

The on duty personnel of TSB reported the occurrence to TSB's head of department on duty at 13 hours 50 minutes on 6th November 2006.

Investigating Committee

The Director-General of TSB assigned the following Investigating Committee (hereinafter referred to as IC) on 6th November 2006 to investigate the marine incident:

Investigator-in-Charge	Gábor Wimmer	accident investigator
Member of IC	István Barnácz	accident investigator
Member of IC	Ferenc Pataki	field investigator technician

Synopsis of the investigation

The IC conducted a site survey on 6th November 2006, during which it:

- Interviewed the members of the crew,
- Made copies of the documents of the boat,
- Received the official notes made by the Water Police at the site.

Synopsis of the occurrence

Towboat Regel ms. with a caravan of 6 barges sailed downstream on 3rd November 2006. The first row of barges were anchored before Dunaföldvár Bridge at 1562 river km, then 3 other barges in the second row were anchored at 1562.5 river km. Subsequently, the crew of the towboat noticed that the anchors of the former 3 barges had loosened and the barges drifted approximately 800 metres downstream. The towboat went back for the loosened barges in order to anchor them again. In the course of the re-anchoring manoeuvre, the third right side barge (no. NR 624-es) grounded outside the waterway. Furthermore, the boat itself grounded in the course of refloating manoeuvres and its rudder system became unserviceable. The crew examined the boat as well as the grounded barge and did not find foundering, flooding or any other damage.

The IC issued safety recommendations in relation to the occurrence.

1 FACTUAL INFORMATION

1.1. The course of the occurrence

Having departed from Dunaújváros, towboat Regel ms. with a caravan of 6 barges sailed downstream on 3rd November 2006. The 'numbers' of the pushed units were as follows: NR 455; NR 537; NR 623; NR 624; NR 765; NR 1436. The first row of barges were anchored before Dunaföldvár Bridge at 1562 river km, then 3 other barges in the second row were anchored at 1562.5 river km. Subsequently, the crew of the towboat noticed that the anchors of the former 3 barges had loosened and the barges drifted approximately 800 metres downstream. The towboat went back for the loosened barges in order to anchor them again. The two inner barges on the left side - NR 623 and NR 537 - were successfully taken away and re-anchored at 1562.5 river km. However, the third right side barge (no. NR 624-es) grounded outside the waterway. The exact time of the grounding is unknown as the occurrence was reported to the Water Police only on 6th November 2006 when the boat itself grounded in the course of refloating manoeuvres and became unserviceable. The hydraulic pipe system of the boat became inoperable. The crew examined the boat as well as the grounded barge and did not find foundering, flooding or any other damage.

The NTA ordered the waterway to be closed from 13 hours on 6th November 2006 which was partially opened at 15 hours on 7th November 2006. Subsequently, water traffic - both directions - was going through the upstream span with boats forwarding only one barge at a time.

1.2. Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	0	0	0
Serious	0	0	0
Minor	0	0	0
None	6	0	0

1.3. Damage to ships

In the course of the site survey, no damage was visible above the waterline of the barges and of the boat. There was neither foundering nor flooding. The hydraulic pipe system of the boat sustained damage. The rudder blade connecting rod broke, some flexible hydraulic pipes burst and got torn, therefore the rudder became inoperable. The hydraulic oil was trickling in the steering engine compartment but it did not cause damage to the environment.

1.4. Other damage

The IC did not receive any information about other damages by the completion of the investigation.

1.5. Personnel information

1.5.1 The captain of the boat

Age, gender, nationality		44-year-old Romanian man
Qualifications	Certificate(s) valid	Danube between 0 and 2379 river kms

	Medical certificate valid	9 September 2012.
	Other certificate(s)	„A” category captain, Radio operator certificate, Radar operator certificate
Date of embarkation	Period of time in service on the given boat	Continuous, when the boat is in service
	in the last 12 months	Occasionally, on contractual basis
	in the last 30 days	Continuous

1.5.2 Chief engineer

N. a.

1.5.3 Other personnel

N. a.

1.6 Vessel information

Place of manufacturing	Oltenita
Year of manufacturing	1996
Place and date of last inspection	unknown
Serviceability certificate valid	15 January 2007

1.6.1 Hull information

Last underwater inspection of the hull of the boat	unknown
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1.6.2 Main engine information

Year of manufacturing	unknown	
Manufacturer	Deutz	
Type	2 x 6 LDSR J (K)	
Operation time	unknown	
Operation time	Since last overhaul	unknown
	Since last maintenance	unknown

1.6.3 Data of the faulty device

N. a.

1.6.4 Load information (Regel ms.)

Net weight	409 530 kg
Weight of fuel	unknown
Weight of cargo	840 kg/m ³
In total	unknown
Displacement tonnage	unknown
Permitted maximum draught	1,69 m
Draught at the time of the occurrence	1,69 m

1.7. Meteorological information

Water level: 92 cm at Dunaföldvár

Ford depth: 190-220 cm

Wind: light

Temperature: 10 °C

The weather conditions did not have an effect on the occurrence, therefore their detailed description is not required.

1.8. Aids to navigation

The radar and navigation equipment of the boat operated normally. They had no effect on the occurrence, therefore their detailed description is not required.

1.9. Communications

Communications equipment had no effect on the occurrence, therefore their detailed description is not required.

1.10 Port information

N. a.

1.11 Data recorders

The boat did not have a data recorder on board.

1.12 Information on the damaged boat

It is likely that the damage to the hydraulic pipe system is due to the grounding of the boat. Supposedly, one of the shafts of the rudder blade bent, as a result of which the rudder blades - moved by hydraulic cylinders - jammed. This is when the rudder blade connecting rod broke and the flexible hydraulic pipes got damaged. The towboat required prompt repair.

1.13 Medical and pathological information

Medical and pathological examination was not necessary.

1.14 Fire

There was no fire.

1.15 Survival aspects, the process of the rescue

The occurrence was not life-threatening, therefore the survival aspects were not analysed.

1.16 Test and research

The IC did not conduct and test or research.

1.17 Organisational and management information

The good perception of the situation and the action of the crew played an important role in the alleviation and aversion of the damages.

1.18 Additional information

The IC did not receive any additional information and does not wish to disclose any additional information.

1.19 Useful or effective investigation techniques

The investigation did not require the application of new techniques.

2. ANALYSIS

Based on the available data, on the findings of the investigation and on the report of the captain, the following can be established: the fact that the crew performed the anchoring manoeuvre of the barges at the Dunaföldvár Bridge hastily and that they did not make sure that the barges were securely anchored played a significant part in the occurrence of the incident.

According to the crew, when the towboat went back for the loosened barges - NR 537, NR 623 and NR 624 – they had already floated outside of the waterway. Presumably, this is why the furthest barge (NR 624) - which had the biggest draught - grounded. In the course of the refloating manoeuvres, the towboat itself grounded and sustained damage. The Sacele ms. rescue tugboat arrived at the site and attempted to help in the refloating manoeuvres, but as it also grounded, they stopped the manoeuvres due to the dangerous nature of the situation. Although the crew did not infringe the rules regarding the ford depth, the space between barge NR 624 and the riverbed was not enough to avoid grounding. The draught of barge NR 624 was 210 cm, while the permitted ford depth between 1560 and 1561 river km was 220 cm at the day/time of the occurrence.

3 CONCLUSIONS

The negligence of the crew as well as the questionable accuracy of the given ford depth played a significant role in the occurrence of the incident. Practically, the permitted minimum distance (space) was between the bottom of the barge and the riverbed. The boats presumably drifted beyond the waterway; therefore the grounding was likely to happen.

The incident would have been avoidable if the crew of the towboat had performed the anchoring manoeuvre with more care, patience and precision.

4. SAFETY RECOMMENDATIONS

BA 2006-041-6_1. Based on the experiences of the occurrence and on the findings of the technical investigation, the IC recommends the CDEPW to initiate that the navigation map of the Danube River - in the reaches in the territory of Hungary - be available.

BA 2006-041-6_2. Based on the findings of the technical investigation, the marine incident could have been avoidable if the crew of the towboat had performed the anchoring manoeuvre with more care, however, the IC recommends the CDEPW that navigation maps should contain data on the current water and ford depths as well as data on the waterway (where it narrows significantly). The maps should also be updated regularly. Furthermore, the CDEPW should initiate (or name) an organisation responsible for publishing and updating such maps.

BA 2006-041-6_3. In order to prevent similar cases, the IC recommends the NTA to issue regulations on refloating manoeuvres (methods and techniques) according to the characteristics of the given reach of the river. The IC also suggests that the refloating manoeuvres after a certain time period - defined by the NTA - should be performed subject to the permission of the NTA.

BA 2006-041-6_4 As similar incidents occur rather frequently when water levels are low, the IC recommends the NTA and the CDEPW to harmonise their work with regards to groundings so that the entire or partial compensation for caused damages to the waterway after the occurrence be regulated. Furthermore, the IC recommends that the regulations should include the procedures to be followed after groundings.

5. APPENDICES

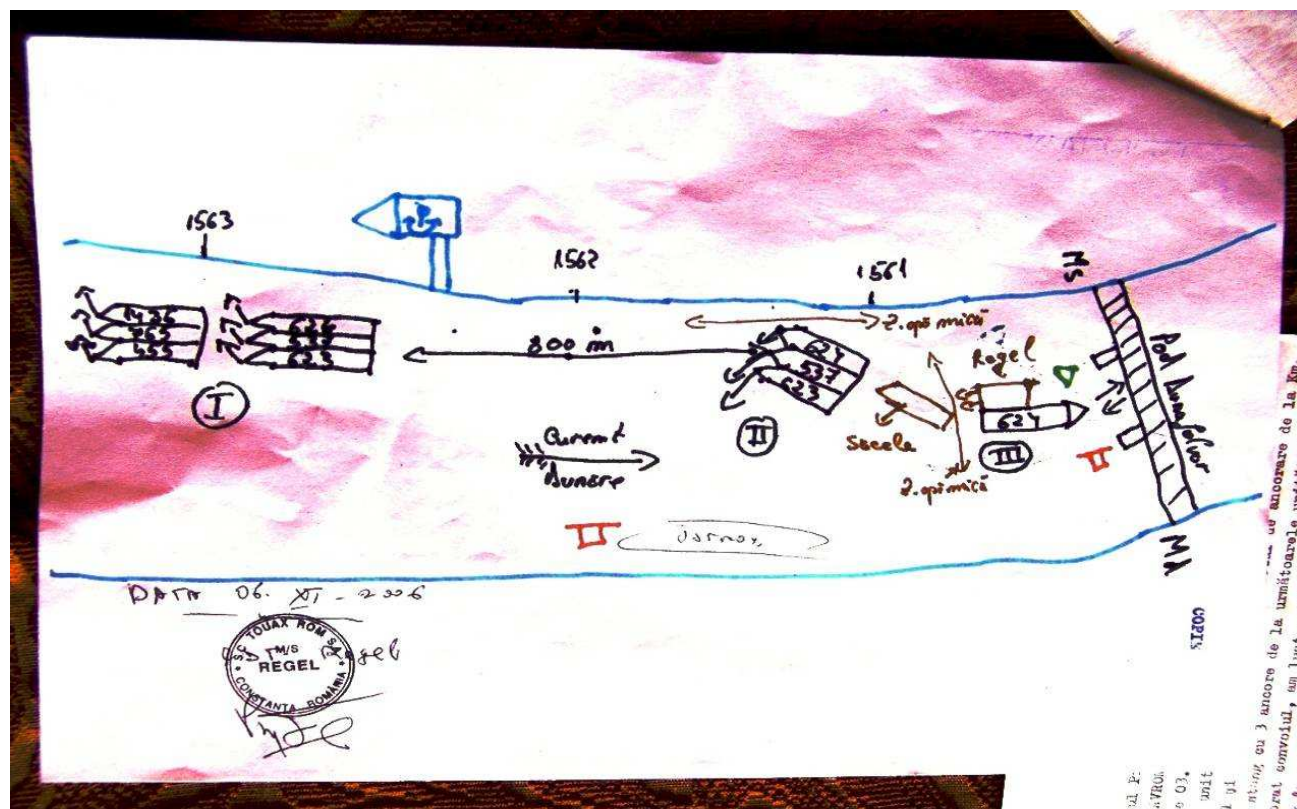
1. Site plan
2. Water level tables
3. Photographs

Budapest, 15th April 2009.

Gábor Wimmer
Investigator-in-Charge

István Barnácz
Member of IC

Ferenc Pataki
field investigator
technician



Ford conditions on the River Danube at Dunaföldvár

No.	Beginning river km	End Rkm	Depth cm	Width m	Length m	Location kód	Depth dm	Width m	Length m	Other code
1	1808.0	1807.5	HU	100	500	-				
2	1800.4	1800.1	HU	100	300	-				
3	1796.5	1794.8	180	110	1700	PU	23	50	1700	
4	1792.1	1791.8	250	120	300	-				
5	1791.1	1790.8	270	120	300	-				
6	1764.3	1764.0	260	150	300	-				
7	1757.1	1756.7	260	150	400	-				
8	1740.2	1739.8	260	150	400	-				
9	1735.5	1733.7	190	100	1800	PU	21	60	1800	
10	1732.4	1731.9	260	150	500	-				
11	1726.0	1724.7	230	130	1300	-				
12	1722.3	1721.8	220	100	500	KO	24	50	500	
13	1714.2	1713.9	220	100	300	-				
14	1711.3	1710.7	210	80	600	-				
15	1701.0	1700.0	240	100	1000	-	-	-	-	
16	1698.9	1697.8	220	100	1100	-	-	-	-	
17	1694.2	1693.8	HU	120	400	-	-	-	-	

18	1684.4	1684.2	HU	90	200	-	-	-	-	
19	1680.4	1679.8	HU	80	600	-	-	-	-	
20	1675.5	1675.3	HU	90	200	-	-	-	-	
21	1667.5	1666.8	240	100	700	-	-	-	-	
22	1653.0	1651.8	250	100	1200	-	-	-	-	
23	1638.4	1637.4	250	90	1000	-	-	-	-	
24	1623.6	1622.6	HU	90	1000	-	-	-	-	
25	1615.9	1615.1	250	100	800	-	-	-	-	
26	1590.7	1590.1	250	80	600	-	-	-	-	
27	1581.5	1580.5	250	110	1000	-	-	-	-	
28	1561.0	1560.0	220	60	1000	-	-	-	-	
29	1559.8	1559.7	190	140	100	BP	22	40	100	
30	1558.5	1557.5	210	100	1000	ZU	22	60	1000	
31	1555.8	1554.8	220	80	1000	-				
32	1551.5	1551.4	HU	130	100	-				
33	1530.5	1529.5	HU	150	1000	-				
34	1522.0	1521.5	230	140	500	PU	25	100	500	
35	1512.5	1511.8	260	160	700	-				
36	1483.5	1482.5	HU	150	1000	-				
37	1469.0	1468.0	HU	130	1000	-				

Code meanings:**HU** – restricted waterway **HV** – meeting of caravans is prohibited**ET** – night sailing is prohibited **PU** – beside red buoy**ZU** – beside green buoy **KO** – in the middle**BP** – beside portside **JP** – beside starboard side

Állomás kód: 442029

Water level 06 GMT

15.

oldal

Állomás név: **DUNAFOLDVAR**

[cm]

m é r t

Folyó név: **DUNA**

Listázás: 2006-Dec-31 10:44:29

év: **2006.**

NAP	JAN	FEB	MÁR	ÁPR	MÁJ	JÚN	JÚL	AUG	SZE	OKT	NOV	DEC
1	-64	-108	3	540	366	351	167	-54	20	-71	-125	-87
2	-68	-114	-13	596	401	372	209	-33	74	-73	-100	-90
3	-77	-118	-29	634	416	393	242	-35	131	-81	-86	-86
4	-70	-114	-42	663	405	400	215	-34	138	-91	-86	-87
5	-27	-111	-45	684	387	414	181	-30	104	-91	-95	-95
6	12	-109	-47	690	369	450	149	1	71	-94	-92	-100
7	10	-112	-51	684	344	476	118	70	42	-84	-95	-106
8	8	-114	-47	665	323	472	97	108	19	-50	-95	-105
9	6	-121	-38	637	302	430	84	175	11	-19	-64	-96
10	-9	-118	-42	598	277	376	86	304	0	-30	-37	-89
11	-23	-101	-45	543	252	327	96	387	8	-60	-32	-86
12	-51	-91	12	476	235	278	88	418	9	-75	-44	-88
13	-66	-91	136	438	218	235	87	370	-14	-79	-33	-84

14	-67	-99	198	421	196	211	72	288	-30	-81	-29	-76
15	-66	-106	218	399	175	187	62	224	-42	-85	-6	-72
16	-72	-114	192	383	153	172	63	182	-52	-95	41	-76
17	-76	-121	138	362	149	178	39	153	-52	-106	74	-84
18	-78	-112	86	361	163	176	12	127	-55	-109	101	-93
19	-92	-100	53	363	169	168	-7	100	-61	-110	70	-100
20	-96	-9	32	374	192	165	-16	65	-69	-118	33	-99
21	-87	46	24	376	228	164	-22	42	-72	-120	7	-103
22	-86	65	10	367	273	167	-27	30	-7	-107	-17	-102
23	-78	75	6	345	293	178	-32	13	45	-110	-36	-99
24	-74	100	52	326	288	186	-37	7	32	-114	-50	-100
25	-90	113	108	309	265	191	-40	-1	6	-117	-43	-106
26	-102	99	146	304	239	213	-48	5	-26	-124	-27	-116
27	-114	65	155	293	209	194	-55	10	-48	-133	-29	-127
28	-110	25	201	294	179	166	-54	32	-64	-131	-44	-130
29	-109		320	308	173	148	-51	30	-74	-120	-56	-134
30	-103		411	330	243	147	-51	10	-75	-119	-73	-136
31	-102		478		310		-56	-1		-127		-136
Átlag:	-65	-53	83	458	264	266	50	95	-1	-94	-35	-99
Min.:	-114	-121	-51	293	149	147	-56	-54	-75	-133	-125	-136
Max.:	12	113	478	690	416	476	242	418	138	-19	101	-72

Annual average: 72 cm
minimum : -136 cm
maximum : 690 cm





