Maritime Transport and Possible Accidents in the Adriatic Sea

Damir Zec, Ph.D
Lovro Maglić, B.Sc
Marija Šimić Hlača, B.Sc

Faculty of Maritime Studies
University of Rijeka, Croatia

Dubrovnik, 22.10.2009.
Maritime traffic in Adriatic

- Ships:
  - Merchant ships
    - international trade,
    - in national trade,
  - Yachts, fishing vessels, war ships and other non-merchant ships.

- Traffic routes:
  - Main longitudinal route,
  - East longitudinal route (along the Croatian islands),
  - West Adriatic longitudinal route (along Italian coast),
  - transversal routes.
Traffic Routes and Separation Schemes
Traffic Load (September 2008)

- Ships monitored: 1,426
- Average number of ships in navigation: 73.5
- Maximum number of ships underway: 159
- Average ship’s speed: 12.2 knots
  - 8% of all ships sail at speed over 20 knots
- Tankers (oil, chemical, gas): 20%

![Number of ships and Sailing speed distribution graphs]
Traffic load – East coast

- Regular lines
  - 42 line routes, up to 1,000 sailings every day

- Cruisers
  - 300-600 sailings per day

- Smaller merchant ships:
  - up to 30 sailings daily

- Yachts & boats
  - 100,000+
Maritime accidents

- Fire/explosion
- Collision
- Hull cracks
- Grounding
- Cargo shift
- Bad weather
Marine accidents

- Consequences:
  - loss of lives,
  - loss of property,
  - salvage costs,
  - pollution damages,
  - pollution clean-up costs & lost profit.
Areas of increased risks

Sinking

Grounding
Areas of increased risks

Collisions

Groundings
Nightmares

- Passenger ships, coastal ferries, cruisers

- Tankers
  - VLCCs sailing to Trieste or Rijeka, grounding, collision in Palagruža area, Kvarner or Bay of Rijeka, Bay of Trieste
  - Fire / explosion
  - Collision or grounding in internal waters

- Cargo ships with dangerous cargoes onboard
  - Sinking
Collision near entrance to Kvarner

- **Spill size:**
  - 6,000 tons of oil in 16 hours,

- **Current:**
  - NNE, 0.3 kns

- **Wind:**
  - SW 15 m/s.
Collision in Kvarner

After 6 hours
Collision in Kvarner

After 30 hours
Collision in Kvarner

After 60 hours
Collision in Kvarner

After 120 hours
Explosion and fire - Urinj

- Spill size - 40,000 tons in 24 hours;

- Current
  - circumferential, counter clockwise, 0.5 knots;

- Wind
  - NNE wind, 8 m/s
Explosion and fire - Urinj

After 6 hours
Explosion and fire - Urinj

After 18 hours
Explosion and fire - Urinj

After 30 hours
Explosion and fire - Urinj

After 42 hours
Explosion and fire - Urinj

After 54 hours
Explosion and fire - Urinj

After 66 hours
Grounding – Central Adriatic

- Spill size - 6,000 tons in 4 hours;
- Current
  - NW, 0.3 knots;
- Wind
  - NNE wind, 3 m/s
Grounding – Central Adriatic

6 Hours
Grounding – Central Adriatic

12 Hours
Grounding – Central Adriatic

24 Hours
Grounding – Central Adriatic
Grounding – Central Adriatic

72 Hours
Grounding – Central Adriatic

96 Hours
Grounding – Central Adriatic

120 Hours
Grounding – Central Adriatic

144 Hours
Grounding – Central Adriatic

168 Hours
Reality
Reality
Reality
Reality
Reality
Reality
Reality
Reality
Conclusions

- Marine accidents are rare but highly disastrous accidents.
- The nature of marine accidents changed significantly; impact range of marine accidents is larger today than ever before.
- No single Adriatic country can tackle the major accident.
- The constant monitoring of the area is required.
Thank you!