**Appendix A:** **Supplementary data**

**Table A** Features with descriptives.

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Feature | Value/definition | Corresponding values |
| Accident | Accident type | collision, stranding/grounding, fire/explosion, contact, capsize/sinking, hull/machinery damage, other | 1,2,3,4,5,6,7 |
| Month | January, February, March, April, May, June, July, August, September, October, November, December | 1,2,3,4,5,6,7,8,9,10,11,12 |
| Time | 0000-0400, 0400–0800, 0800–1200, 1200–1600, 1600–2000, 2000-2400 | 1,2,3,4,5,6 |
| Human | Physical & Psychological state | poor, good | 1,2 |
| Education background | poor, good | 1,2 |
| Time at sea | *<*5 years, 5≤ time *<*10 years, ≥ 10 years | 1,2,3 |
| Time in present rank | *<*1 year, 1 ≤ time *<*5 years, ≥ 5 years | 1,2,3 |
| Communication problem | yes, no | 1,2 |
| Operational error | yes, no, unknown | 1,2,3 |
| Violation operation | yes, no, unknown | 1,2,3 |
| Ship | Age | 0–10 years, 10–20 years, 20–30 years, ≥ 30 years | 1,2,3,4 |
| Ship type | Bulk carrier, Container ship, Oil tanker, Passenger ship (including cruise and ro-ro passenger ship) , Chemical tanker, General cargo ship, Fishing vessel, Yacht and sailing vessel, Tug and port traffic boat, Others | 1,2,3,4,5,6,7,8,9,10 |
| Gross tonnage | *<*500 t, 500–3000 t, ≥ 3000t | 1,2,3 |
| Engine power | *<*750 KW, 750–3000 KW, ≥ 3000 KW | 1,2,3 |
| Flag state | Flag of convenience, Not flag of convenience | 1,2 |
| Ship’s certificates | complete and valid, incomplete or invalid | 1,2 |
| Ship manning | adequate, inadequate | 1,2 |
| Seafarers’ certificates | complete and valid, incomplete or invalid | 1,2 |
| Seaworthiness | yes, no | 1,2 |
| PSC/FSC inspection | unsure, sure | 1,2 |
| Environment | Location | Inland waters, Port, Coastal waters, Open Sea | 1,2,3,4 |
| Visibility | very poor - Vis *<*0.5 nm, Poor - 0.5 ≤ Vis *<*2 nm, Moderate - 2 ≤Vis *<*5 nm, Good and very good - Vis ≥ 5 nm | 1,2,3,4 |
| Wind force | 0-5, 6–7, 8–9, 10-12 | 1,2,3,4 |
| Sea state | 0-3, 4–5, 6–7, 8-9 | 1,2,3,4 |
| Current speed | *<*2kn, 2-4kn, ≥4kn | 1,2,3 |
| Traffic density | low, high | 1,2 |
| Fairway width/ship length | w/l *<* 1, 1 ≤ w/l *<* 2, w/l ≥2 | 1,2,3 |
|  | Depth-draft ratio (h/ d) | h/d *<* 1.2, 1.2 ≤ h/d *<* 1.5, 1.5 ≤ h/d *<* 3, h/d ≥ 3 | 1,2,3,4 |
| Management | Regulation | inadequate, adequate | 1,2 |
| Supervision | inadequate, adequate | 1,2 |
| Violation in supervision | yes, no | 1,2 |
| Safety management system | defective, non-defective | 1,2 |
| Safety management | inadequate, adequate | 1,2 |
| Rectification of problems | unresponsive, responsive | 1,2 |
| Company safety culture | poor, good | 1,2 |
| Training | inadequate, adequate | 1,2 |
| Drill | off schedule, stick to the schedule | 1,2 |

Note: The unit of wind rating is "Beaufort scale".