# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO.6 cycle | | | | |
| Test date | 2012-6-21 | | | | |
| Operation mode | Ballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 10:40 | | Ready time | 10:40 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 10:45 | | Operation end time | 11:35 | |
| Sampling NO.1 time | 10:50 | Sampling NO.2 time | 11:05 | Sampling NO.3 time | 11:20 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 10:50 | 11:00 | 11:10 | 11:20 | 11:30 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 313.7 | 318.6 | 301.3 | 306.7 | 308.2 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 630 | 620 | 620 | 620 | 620 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| The filter differential pressure (bar) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| UV lamp temperature (℃) | 23.5 | 23.6 | 23.7 | 23.7 | 23.7 |

No: 21

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO.6 cycle | | | | |
| Test date | 2012-6-21 | | | | |
| Operation mode | Ballasting Operation (Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 11:50 | | Ready time | 11:50 | |
| System power consumption | ✓ | | UV lamp power | ✓ | |
| Standby status error | ✓ | | Malfunction | ✓ | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 11:55 | | Operation end time | 12:45 | |
| Sampling NO.1 time | 12:00 | Sampling NO.2 time | 12:15 | Sampling NO.3 time | 12:30 |
| Operation status error | ✓ | Fault handling situation | ✓ | Any influence on result? | ✓ |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 12:00 | 12:10 | 12:20 | 12:30 | 12:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 307.1 | 308.7 | 302.4 | 306.6 | 308.2 |
| System power consumption (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp power (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV intensity ($mw/cm^2$) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| The filter differential pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp temperature (℃) | ✓ | ✓ | ✓ | ✓ | ✓ |

No: 22

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 6 cycle | | | | |
| Test date | 2012-6-26 | | | | |
| Operation mode | Deballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 13:00 | | Ready time | 13:00 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 13:00 | | Operation end time | 13:50 | |
| Sampling NO.1 time | 13:05 | Sampling NO.2 time | 13:20 | Sampling NO.3 time | 13:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 13:10 | 13:20 | 13:30 | 13:40 | 13:50 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 324.0 | 321.7 | 312.8 | 310.5 | 316.2 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 620 | 620 | 610 | 620 | 620 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 2.9 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | 24.2 | 24.3 | 24.2 | 23.8 | 24.1 |

No: 23

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.6 cycle | | | | |
| Test date | 2012-6-26 | | | | |
| Operation mode | Deballasting operation ( Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 14:00 | | Ready time | 14:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 14:00 | | Operation end time | 14:50 | |
| Sampling NO.1 time | 14:05 | Sampling NO.2 time | 14:20 | Sampling NO.3 time | 14:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 14:10 | 14:20 | 14:30 | 14:40 | 14:50 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 308.2 | 310.3 | 308.8 | 306.8 | 308.7 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 24

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO.7 Cycle | | | | |
| Test date | 2012-6-28 | | | | |
| Operation mode | Ballasting Operation | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 11:00 | | Ready time | 11:00 | |
| System power consumption | 44kW | | UV lamp power | 40kW | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 11:00 | | Operation end time | 11:50 | |
| Sampling NO.1 time | 11:05 | Sampling NO.2 time | 11:20 | Sampling NO.3 time | 11:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 11:10 | 11:20 | 11:30 | 11:40 | 11:50 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 308.2 | 308.3 | 306.5 | 306.6 | 302.3 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 630 | 630 | 630 | 630 | 620 |
| Pump outlet pressure (bar) | 2.9 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | 2.9 | 3.0 | 3.1 | 3.1 | 3.0 |
| The filter differential pressure (bar) | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 |
| UV lamp temperature (℃) | 24.7 | 24.7 | 24.8 | 24.8 | 24.8 |

No: 25

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO.7 cycle | | | | |
| Test date | 2012-6-28 | | | | |
| Operation mode | Ballasting operation (Comparison Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 12:00 | | Ready time | 12:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 12:00 | | Operation end time | 12:50 | |
| Sampling NO.1 time | 12:05 | Sampling NO.2 time | 12:20 | Sampling NO.3 time | 12:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 12:10 | 12:20 | 12:30 | 12:40 | 12:50 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 308.2 | 310.5 | 310.2 | 309.7 | 308.5 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 2.9 | 2.9 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 26

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.7 Cycle | | | | |
| Test date | 2012-7-3 | | | | |
| Operation mode | Deballasting operation ( Treatment Tank ) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 13:30 | | Ready time | 13:30 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 13:30 | | Operation end time | 14:20 | |
| Sampling NO.1 time | 13:35 | Sampling NO.2 time | 13:50 | Sampling NO.3 time | 14:05 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 13:40 | 13:50 | 14:00 | 14:10 | 14:20 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 306.5 | 312.7 | 310.5 | 315.8 | 309.8 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 580 | 580 | 580 | 580 | 580 |
| Pump outlet pressure (bar) | 2.9 | 2.9 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | 24.8 | 24.9 | 24.9 | 25.0 | 25.0 |

No: 27

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.7 cycle | | | | |
| Test date | 2012-7-3 | | | | |
| Operation mode | Deballasting operation C Comparison Tank | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 14:30 | | Ready time | 14:30 | |
| System power consumption | ✓ | | UV lamp power | ✓ | |
| Standby status error | ✓ | | Malfunction | ✓ | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 14:30 | | Operation end time | 15:20 | |
| Sampling NO.1 time | 14:35 | Sampling NO.2 time | 14:50 | Sampling NO.3 time | 15:05 |
| Operation status error | ✓ | Fault handling situation | ✓ | Any influence on result? | ✓ |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 14:40 | 14:50 | 15:00 | 15:10 | 15:20 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 307.8 | 308.2 | 308.2 | 309.7 | 306.5 |
| System power consumption (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp power (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV intensity ($mw/cm^2$) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| The filter differential pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp temperature (℃) | ✓ | ✓ | ✓ | ✓ | ✓ |

No: 28

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.8 cycle | | | | |
| Test date | 2012-7-5 | | | | |
| Operation mode | Ballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 11:00 | | Ready time | 11:00 | |
| System power consumption | 44kW | | UV lamp power | 40kW | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 11:00 | | Operation end time | 11:50 | |
| Sampling NO.1 time | 11:05 | Sampling NO.2 time | 11:20 | Sampling NO.3 time | 11:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 11:00 | 11:10 | 11:20 | 11:30 | 11:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 308 | 308 | 312 | 310 | 311 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 570 | 570 | 570 | 570 | 570 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 2.9 | 3.0 |
| Filtrate pressure (bar) | 3.0 | 3.0 | 3.1 | 3.1 | 3.0 |
| The filter differential pressure (bar) | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 |
| UV lamp temperature (℃) | 25.8 | 25.8 | 25.8 | 25.8 | 25.8 |

No: 29

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.8 cycle | | | | |
| Test date | 2012-7-5 | | | | |
| Operation mode | Ballasting operation (comparison Tank). | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 12:00 | | Ready time | 12:00 | |
| System power consumption | ✓ | | UV lamp power | ✓ | |
| Standby status error | ✓ | | Malfunction | ✓ | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 12:00 | | Operation end time | 12:50 | |
| Sampling NO.1 time | 12:10 | Sampling NO.2 time | 12:25 | Sampling NO.3 time | 12:40 |
| Operation status error | ✓ | Fault handling situation | ✓ | Any influence on result? | ✓ |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 12:00 | 12:10 | 12:20 | 12:30 | 12:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 308 | 310 | 311 | 309 | 308 |
| System power consumption (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp power (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV intensity ($mw/cm^2$) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| The filter differential pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp temperature (℃) | ✓ | ✓ | ✓ | ✓ | ✓ |

No: 30

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.8 cycle | | | | |
| Test date | 2012-7-10 | | | | |
| Operation mode | Deballasting operation (Treatment Tank). | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 13:00 | | Ready time | 13:00 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 13:00 | | Operation end time | 13:50 | |
| Sampling NO.1 time | 13:05 | Sampling NO.2 time | 13:20 | Sampling NO.3 time | 13:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 13:10 | 13:20 | 13:30 | 13:40 | 13:50 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 307 | 308 | 307 | 307 | 308 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 530 | 530 | 520 | 520 | 520 |
| Pump outlet pressure (bar) | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | 26.6 | 26.6 | 26.6 | 26.7 | 26.7 |

No: 31

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.8 cycle | | | | |
| Test date | 2012-7-10 | | | | |
| Operation mode | Deballasting Operation (Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 14:00 | | Ready time | 14:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 14:00 | | Operation end time | 14:50 | |
| Sampling NO.1 time | 14:05 | Sampling NO.2 time | 14:20 | Sampling NO.3 time | 14:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 14:00 | 14:10 | 14:20 | 14:30 | 14:40 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 300 | 302 | 301 | 298 | 306 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 3.0 | 2.9 | 2.9 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 32

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 9 Cycle | | | | |
| Test date | 2012-7-12 | | | | |
| Operation mode | Ballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 11:00 | | Ready time | 11:00 | |
| System power consumption | 44kW | | UV lamp power | 40kW | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 11:00 | | Operation end time | 11:50 | |
| Sampling NO.1 time | 11:05 | Sampling NO.2 time | 11:20 | Sampling NO.3 time | 11:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 11:00 | 11:10 | 11:20 | 11:30 | 11:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 310 | 312 | 308 | 315 | 310 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 560 | 570 | 560 | 550 | 570 |
| Pump outlet pressure (bar) | 2.9 | 2.9 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | 2.9 | 3.0 | 3.1 | 3.0 | 3.0 |
| The filter differential pressure (bar) | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 |
| UV lamp temperature (℃) | 25.9 | 26.1 | 26.1 | 26.1 | 26.1 |

No: 33

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 9 cycle | | | | |
| Test date | 2012-7-12 | | | | |
| Operation mode | Ballasting Operation (comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 12:00 | | Ready time | 12:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 12:00 | | Operation end time | 12:50 | |
| Sampling NO.1 time | 12:10 | Sampling NO.2 time | 12:25 | Sampling NO.3 time | 12:40 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 12:00 | 12:10 | 12:20 | 12:30 | 12:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 306 | 312 | 310 | 316 | 312 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 2.9 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 34

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 9 cycle | | | | |
| Test date | 2012-7-17 | | | | |
| Operation mode | Deballasting operation (Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 14:30 | | Ready time | 14:30 | |
| System power consumption | ✓ | | UV lamp power | ✓ | |
| Standby status error | ✓ | | Malfunction | ✓ | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 14:30 | | Operation end time | 15:20 | |
| Sampling NO.1 time | 14:35 | Sampling NO.2 time | 14:50 | Sampling NO.3 time | 15:05 |
| Operation status error | ✓ | Fault handling situation | ✓ | Any influence on result? | ✓ |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 14:40 | 14:50 | 15:00 | 15:10 | 15:20 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 307 | 302 | 308 | 310 | 298 |
| System power consumption (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp power (KW) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV intensity ($mw/cm^2$) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| The filter differential pressure (bar) | ✓ | ✓ | ✓ | ✓ | ✓ |
| UV lamp temperature (℃) | ✓ | ✓ | ✓ | ✓ | ✓ |

No: 35

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No.9 cycle | | | | |
| Test date | 2012-7-17 | | | | |
| Operation mode | Deballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 13:30 | | Ready time | 13:30 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 13:30 | | Operation end time | 14:20 | |
| Sampling NO.1 time | 13:35 | Sampling NO.2 time | 13:50 | Sampling NO.3 time | 14:05 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 13:40 | 13:50 | 14:00 | 14:10 | 14:20 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 307 | 308 | 308 | 311 | 317 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 570 | 570 | 570 | 570 | 570 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 |

No: 36

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 10 Cycle | | | | |
| Test date | 2012-7-19 | | | | |
| Operation mode | Ballasting Operation C Treatment Tank D | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 11:00 | | Ready time | 11:00 | |
| System power consumption | 44kW | | UV lamp power | 40kW | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 11:00 | | Operation end time | 11:50 | |
| Sampling NO.1 time | 11:05 | Sampling NO.2 time | 11:20 | Sampling NO.3 time | 11:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 11:00 | 11:10 | 11:20 | 11:30 | 11:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 309 | 310 | 308 | 311 | 315 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 550 | 560 | 550 | 550 | 550 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | 3.0 | 3.1 | 3.0 | 3.0 | 3.0 |
| The filter differential pressure (bar) | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| UV lamp temperature (℃) | 26.2 | 26.1 | 26.2 | 26.2 | 26.2 |

No: 37

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO-10 Cycle | | | | |
| Test date | 2012-7-19 | | | | |
| Operation mode | Ballasting operation (Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 12:00 | | Ready time | 12:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 12:00 | | Operation end time | 12:50 | |
| Sampling NO.1 time | 12:10 | Sampling NO.2 time | 12:25 | Sampling NO.3 time | 12:40 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 12:00 | 12:10 | 12:20 | 12:30 | 12:40 |
| Operation mode | Ballasting | | | | |
| Flow rate ($m^3/h$) | 312 | 310 | 310 | 309 | 316 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 38

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | NO.10 cycle | | | | |
| Test date | 2012-7-24 | | | | |
| Operation mode | Deballasting operation (Treatment Tank) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 13:00 | | Ready time | 13:00 | |
| System power consumption | 44 | | UV lamp power | 40 | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 13:00 | | Operation end time | 13:50 | |
| Sampling NO.1 time | 13:05 | Sampling NO.2 time | 13:20 | Sampling NO.3 time | 13:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 13:10 | 13:20 | 13:30 | 13:40 | 13:50 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 307 | 307 | 308 | 308 | 311 |
| System power consumption (KW) | 44 | 44 | 44 | 44 | 44 |
| UV lamp power (KW) | 40 | 40 | 40 | 40 | 40 |
| UV intensity ($mw/cm^2$) | 530 | 530 | 530 | 530 | 530 |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | 27.9 | 27.9 | 27.9 | 28.1 | 28.1 |

No: 39

Recorder: Supervisor: CCS Site Witness:

# Ballast Water Management System Operation Record

| | | | | | |
|---|---|---|---|---|---|
| Cycle number | No. 10 cycle | | | | |
| Test date | 2012-7-24 | | | | |
| Operation mode | Deballasting Operation (Comparison Treatment) | | | | |
| The record of preparation status for Ballast Water Management System | | | | | |
| Start-up time | 14:00 | | Ready time | 14:00 | |
| System power consumption | / | | UV lamp power | / | |
| Standby status error | / | | Malfunction | / | |
| The record of operation status for Ballast Water Management system | | | | | |
| Operation start time | 14:00 | | Operation end time | 14:50 | |
| Sampling NO.1 time | 14:05 | Sampling NO.2 time | 14:20 | Sampling NO.3 time | 14:35 |
| Operation status error | / | Fault handling situation | / | Any influence on result? | / |

| The record of operational data for Ballast Water Management system | | | | | |
|---|---|---|---|---|---|
| Record time | 14:00 | 14:10 | 14:20 | 14:30 | 14:40 |
| Operation mode | Deballasting | | | | |
| Flow rate ($m^3/h$) | 296 | 302 | 299 | 301 | 301 |
| System power consumption (KW) | / | / | / | / | / |
| UV lamp power (KW) | / | / | / | / | / |
| UV intensity ($mw/cm^2$) | / | / | / | / | / |
| Pump outlet pressure (bar) | 3.0 | 3.0 | 2.9 | 3.0 | 3.0 |
| Filtrate pressure (bar) | / | / | / | / | / |
| The filter differential pressure (bar) | / | / | / | / | / |
| UV lamp temperature (℃) | / | / | / | / | / |

No: 40

Recorder: Supervisor: CCS Site Witness: