Flow-Through Ballast Water Exchange

(Total volumetric Quantity and Pumping Time)

Tank Description	Tank Capacity	Tank Volume x 3 (m^3)	Pump Capacity (m^3 / Hr)	Total Pumping Time (Hrs-Min)
Fore Peak Tank (Center)	4,071.50	Empty-Refill method	1 x 3,000	2 hrs 43 min
Tank No. 1 - P	8,575.60	25,726.80	2 x 3000	4 hrs 17 min
Tank No. 1 - S	8,575.60	25,726.80	2 x 3000	4 hrs 17 min
Tank No. 2 - P	9,879.40	29,638.20	2 x 3000	4 hrs 56 min
Tank No. 2 - S	9,879.40	29,638.20	2 x 3000	4 hrs 56 min
Tank No. 3 - P	9,969.00	29,907.00	2 x 3000	5 hrs 00 min
Tank No. 3 - S	9,969.00	29,907.00	2 x 3000	5 hrs 00 min
Tank No. 4 - P	9,729.80	29,189.40	2 x 3000	4 hrs 52 min
Tank No. 4 - S	9,729.80	29,189.40	2 x 3000	4 hrs 52 min
Tank No. 5 - P	8,913.90	26,741.70	2 x 3000	4 hrs 28 min
Tank No. 5 - S	8,952.70	26,858.10	2 x 3000	4 hrs 29 min
After Peak Tank (Center)	2,220.00	Empty-Refill method	GSPump 400/600m^3/hr X 110/45MTH	3 hrs 42 min (600 m^3)
TOTAL	100,465.70	288,697.10		53 hrs 54 min

METHODS OF BALLAST WATER EXCHANGE AT SEA
1 **Sequential Method, a** process by which a ballast tank intended for the carriage of ballast water is first emptied and then refilled with replacement ocean water to achieve at least 95 per cent volumetric exchange..
2 **Flow-Through Method,** a process by which replacement ocean ballast water is pumped into the ballast tank intended for carriage of ballast waster, allowing water to flow through overflow or other arrangement, until the quantity of water pump-in is equal or more than 3 times the volumetric capacity of the tank.
3 **Dilution method,** a process by which replacement ocean ballast water is filled through the top of the ballast tank intended for the carrieage of ballast water with simultanious discharge from the bottom at the same flow rate and maintaining a constant level in the tank through out the ballast exchange operation. The total quantity of replacement ballast water is equal or over 3 times the volumetric capacity of the tank.
Emergency Ballast Condition = Ballast water exchange is not applicable to Emegency Ballast Condition