



| REFERENCE DRAWINGS | | |
|--------------------|--|-----------------|
| NO. | DRAWING TITLE | DRAWING NUMBER |
| 1 | GENERAL ARRANGEMENT PLAN | AF6097-89940-01 |
| 2 | TANK ARRANGEMENT AND CAPACITY PLAN | AF6097-89940-02 |
| 3 | COOLING WATER SYSTEM | AF6097-25600-01 |
| 4 | AIR PIPES AND SOUNDING DIAGRAM | AF6097-50000-02 |
| 5 | SANITARY FRESH WATER SYSTEM | AF6097-53000-02 |
| 6 | COMPRESSED AIR SYSTEM | AF6097-55100-01 |
| 7 | FIRE WATER EXTINGUISHING SYSTEM | AF6097-55500-03 |
| 8 | ONLY WASTE SYSTEM | 6094-59300-04 |
| 9 | SCUPPER AND DRAINS SYSTEM | AF6097-52600-01 |
| 10 | BLACK, GREY WATER AND SANITARY FLUSHING SYSTEM | AF6097-59300-02 |
| 11 | LEVEL ALARM DIAGRAM | 6094-43700-01 |

| PIPE DIMENSIONS | | | | | |
|-----------------|----------------|----------|--------------|------------------------|----------------------------|
| PIPE CODE | PIPE SIZE | STANDARD | MATERIAL | REMARKS | JOINTS |
| 15 | 25.4 x 6.3 | DIN2448 | CARBON STEEL | GALVANIZED CLASS II LR | FLANGED / SCREWED FITTINGS |
| 20SS | 26.67 x 2.108 | ASME B36 | SAI 316L | NPS 3/4", SCH.10 | |
| 40SS | 48.26 x 2.769 | ASME B36 | SAI 316L | NPS 1 1/2", SCH.10 | |
| 50SS | 60.325 x 2.769 | ASME B36 | SAI 316L | NPS 2", SCH.10 | |
| 50 | 60.3 x 6.3 | DIN2448 | CARBON STEEL | GALVANIZED | FLANGED |
| 65SS | 73.025 x 3.048 | ASME B36 | SAI 316L | NPS 2 1/2", SCH.10 | |
| 65 | 76.1 x 6.3 | DIN2448 | CARBON STEEL | GALVANIZED CLASS II LR | |
| 80SS | 88.9 x 3.048 | ASME B36 | SAI 316L | NPS 3", SCH.10 | |
| 80 | 88.9 x 6.3 | DIN2448 | CARBON STEEL | GALVANIZED CLASS II LR | |

| VALVE MATERIALS | | | | | | |
|-----------------|----|------|-----------------------------------|-------------------|---|------------|
| ND | NP | TEMP | VALVE TYPE | MATERIAL | | L.R. CERT. |
| | | | | BODY | TRIM | |
| 8 | 10 | 40 | PRESSURE GAUGE COCK | BRASS | BRASS | NO |
| 20 | 10 | 40 | GLOBE VALVE | CAST IRON | BRONZE DISC AND SEAT, BRASS STEM | NO |
| 20 | 10 | 40 | SDNR GLOBE VALVE | CAST IRON | BRONZE DISC AND SEAT, BRASS STEM | NO |
| 20 | 10 | 40 | SELF-CLOSING VALVE | CAST IRON | BRONZE | NO |
| 40 | 10 | 40 | ELECTRICAL REMOTE BUTTERFLY VALVE | DUCTILE IRON | ST. STEEL STEM, AL-BZ DISC, NBR SEAT | NO |
| 40 | 10 | 40 | SWING CHECK VALVE | CAST IRON | BRONZE DISC AND SEAT | NO |
| 40 | 10 | 40 | SWING CHECK VALVE | BRONZE | AL-BZ DISC | NO |
| 50 | 10 | 40 | ELECTRICAL REMOTE BUTTERFLY VALVE | CAST IRON | ST. STEEL STEM, AL-BZ DISC | NO |
| 50 | 10 | 40 | SDNR GLOBE VALVE-ANGLED | DUCTILE IRON | BRONZE DISC AND SEAT, BRASS STEM | YES |
| 50 | 10 | 40 | SWING CHECK VALVE | CAST IRON | BRONZE DISC AND SEAT | NO |
| 65 | 10 | 40 | SWING CHECK VALVE | CAST IRON | BRONZE DISC AND SEAT | NO |
| 65 | 10 | 40 | SDNR GLOBE VALVE-ANGLED | DUCTILE IRON | BRONZE DISC AND SEAT | YES |
| 65 | 10 | 40 | SDNR GLOBE VALVE-ANGLED | BRONZE | BRONZE DISC, BRASS STEM | YES |
| 65 | 10 | 40 | GLOBE VALVE | CAST IRON | BRONZE DISC AND SEAT | NO |
| 65 | 10 | 40 | SDNR GLOBE VALVE | CAST IRON | BRONZE DISC AND SEAT | NO |
| 65 | 10 | 40 | SDNR GLOBE VALVE | BRONZE | BRONZE DISC AND SEAT, BRASS STEM | NO |
| 65 | 10 | 40 | BUTTERFLY VALVE | DUCTILE CAST IRON | ST. STEEL DISC AND STEM | NO |
| 65 | 10 | 40 | BUTTERFLY VALVE | CAST STEEL | ST. STEEL DISC AND STEM, FIRE SAFE SEAT | YES |
| 80 | 10 | 40 | ELECTRICAL REMOTE BUTTERFLY VALVE | DUCTILE IRON | ST. STEEL STEM, AL-BZ DISC | NO |
| 80 | 10 | 40 | SDNR GLOBE VALVE-ANGLED | DUCTILE CAST IRON | BRONZE DISC AND SEAT, BRASS STEM | YES |

| EQUIPMENT TABLE | | | | |
|-----------------|--|----------------------------------|----------|--|
| ITEM | DESCRIPTION | CHARACTERISTICS | REMARKS | |
| E520001 | FIRE/BILGE/GEN SERVICE SELF PRIMING PUMP | Q=25m³/h; H=27m; P=6.4Kw | | |
| E520002 | BILGE/FIRE SELF PRIMING PUMP | Q=25m³/h; H=27m; P=6.4Kw | | |
| E520003 | BILGE EJECTOR | Q=25m³/h; H=3.5mWC; H=4.8 mWC | | |
| E520006 | DIAPHRAGM HAND PUMP | Q= abt. 1 m³/h; H=2 bar | | |
| E520007 | SELF PRIMING HAND PUMP WITH HOSE | | PORTABLE | |
| E520008 | HOSE | One quick release coupling; L=8m | | |

| TESTS TABLE | | | |
|--|-----------------------|-------------------|--|
| ITEM | DESIGN PRESSURE (bar) | IN WORKSHOP (bar) | ON BOARD (bar) |
| PIPES | 2.8 | - | TIGHTNESS TEST FOR LEAKAGE UNDER OPERATIONAL CONDITIONS TO BE CONDUCTED IN THE PRESENCE OF L.R. SURVEYOR |
| VALVES ⁽¹⁾ | x ⁽²⁾ | - | |
| 1) = TEST MADE BY THE VALVE SUPPLIER 2) = TO BE TESTED BY HYDRAULIC PRESSURE TO 1.5 TIMES THE NOMINAL PRESSURE RATING OF THE VALVE AT AMBIENT TEMPERATURE | | | |

CALCULATION REPORT

DIAMETER OF MAIN BILGE LINE (7.1.1, PART 15, CH.2 OF THE L.R. RULES AND REGULATIONS FOR THE CLASSIFICATION OF SPECIAL SERVICE CRAFT):

$$d = 1.68 \times \sqrt{L \times (B+D)} = 1.68 \times \sqrt{42.956 \times (7.31+3.77)} = 25.61 \text{ m} \Rightarrow d = DN65$$

DIAMETER OF BRANCH BILGE LINE (7.2.1, PART 15, CH.2 OF THE L.R. RULES AND REGULATIONS FOR THE CLASSIFICATION OF SPECIAL SERVICE CRAFT):

$$d = 2.15 \times \sqrt{L \times (B+D)} = 2.15 \times \sqrt{9 \times (7.31+3.77)} = 33.97 \text{ m} \Rightarrow d = DN65$$

PUMP CAPACITY (8.3.2, PART 15, CH.2 OF THE L.R. RULES AND REGULATIONS FOR THE CLASSIFICATION OF SPECIAL SERVICE CRAFT):

$$Q = \frac{5.75}{10^3} \times \frac{d^5}{d_0^5} = \frac{5.75}{10^3} \times \frac{61.65^5}{21.85^5} = 23.85 \text{ m}^3/\text{h} \Rightarrow Q = 25 \text{ m}^3/\text{h}$$

| CCGS CONSTABLE CARRIÈRE | | | | |
|---|----------|--------------------------------------|-----------------------|-----------------------|
| AF | 07.12.12 | AS FITTED | DB | FP |
| Rev | Date | Description | Perform | Check |
| Client: | Title: | | | |
| CANADIAN COAST GUARD | | BILGE DRAINAGE AND DEWATERING SYSTEM | | |
| international contract engineering | | MID-SHORE PATROL VESSEL | | |
| IRVING SHIPBUILDING INC. | | Scale: NTS | Size: AO | Project No: 6097 |
| P.O. Box 9110, 3099 Barrington Street, Halifax NS, Canada B3K 5M7, Tel: 902 423 9271, Fax: 902 429 4510 | | Drawn by: M Samola | Checked by: S Hanganu | Dwg. date: 18/05/2011 |
| Contract No: F7045-05001/002/NQ | | AF6097-52000-01 | | Rev: AF |
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