**Data Item Description**

**Level 0 Design Guidance Data**

**DID E001**

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# Purpose

Level 0 Design Guidance Data is required by the Purchaser to enable the initial design of the Ship to proceed.

# References

This DID must be read in conjunction with Part 3 (Engineering) of Schedule D1 (SOW).

# Preparation Instructions

The supplier shall provide a DID Compliance Matrix indicating which submission files contain the items listed in this DID.

For written style documents (eg. manuals, performance specification documents, etc) larger than 10 pages the document shall include a Table of Contents that contains links to the various section headers within the document.

## Content and structure

**All physical parameters quoted at this stage are to be within five per cent (5%) of final design figures.**

The following Technical Information shall be provided:

1. General description of the Equipment (along with the normal and emergency operating modes, controls, and any other relevant functionality);
2. General arrangement drawings of the Equipment, including indications of access and maintenance spaces;
3. Piping and instrumentation diagram (P&ID) of the Equipment including:
4. Stream names, flow rates, flow directions, pressure, temperatures
5. Equipment descriptions: make, type, size, capacity
6. Line sizes, piping connections
7. Piping specifications
8. Instruments and controls with ranges and set points
9. Heat tracing requirements
10. Insulation type and thickness
11. Symbols legend
12. Identifiers which relate items in the P&ID to Bills of Materials
13. Overall and other leading dimensions of the Equipment;
14. Dry weights of the Equipment;
15. Wet weights of the Equipment;
16. Performance details listed in the Supplier’s Specifications supported by type test results if available;
17. The time required for the Equipment to reach full output;
18. Guaranteed maximum requirements for cooling water, compressed air, etc…
19. Heat dissipation of the Equipment in to the space;
20. Pump information:
21. Pump shaft bearing life in hours of continuous running;
22. Pump shaft seal life in hours of continuous running;
23. Pump Minimum Efficiency Index (MEI) rating for pumps larger than 1 hp.
24. Electrical demands and specifications (voltages, frequencies, phase, etc…) including full load currents, maximum continuous load, average power, duty cycle, full load power factors, starting/in-rush currents, quality of electric power supply, starting current duration, starting power factors and any harmonic distortion effects produced by the load;
25. Motor starter details
26. Operating temperatures
27. The engineering standards applicable;
28. Airborne noise measurements and vibration measurements;
29. A clear statement or drawing detailing the scope of supply, drawing attention to associated items that will have to be procured by the Purchaser (if any);
30. Information on oils and greases as required below:
31. Oils (see Schedule B3 (General Technical Requirements, VCRI and Compliance Matrix); and
32. Greases (see Schedule B3 (General Technical Requirements, VCRI and Compliance Matrix);
33. An electrical interconnectivity diagram in the format of the example shown in Attachment A, including labels with electrical details for all interconnections.
34. Wiring Diagrams
35. Cable Lists
36. Drawings showing the size and location with dimensional tolerances of the Equipment’s piping connections to external interfaces
37. Drawings showing the size and location with dimensional tolerances of Equipment’s cable entry, connector type, terminations, wiring details, and connectors to external interfaces; including gland size if appropriate and power supply cable route(s) within the Equipment Unit;
38. EMI/EMC (electromagnetic interference and compatibility) information
39. Regulatory Body Certifications
40. Certified Performance Test Curves
41. For engines also provide as a minimum:
42. Engine torque versus speed and fuel rack positioning
43. Exhaust gas temperature versus fuel rack positioning
44. Intake and exhaust configuration diagram and operating characteristics
45. Lubrication oil diagram and operating characteristics
46. Fresh water cooling diagram and operating characteristics
47. Seawater cooling diagram and operating characteristics
48. Engine speed controller functional description
49. Local control panel logic (if fitted).
50. For propulsion motors also provide as a minimum:
51. Controller functional description
52. For gearboxes also provide as a minimum:
53. Gearbox general arrangement
54. Gear ratios
55. Bearing arrangement and types
56. Gearbox efficiency over the full operating range
57. Gearbox moment of inertia with respect to output shaft.
58. Lubrication Oil Pressure in the gearbox
59. For clutches also provide as a minimum:
60. Limiting parameters (maximum torque, etc.).
61. For propeller shafts also provide as a minimum:
62. Moment of inertia
63. Bearing arrangement and types
64. For propellers also provide as a minimum:
65. Torque and thrust maps as a function of ship and shaft speed
66. Diameter
67. Moment of inertia.
68. For hydraulic systems also provide as a minimum:
69. Heat exchanger data such as a rated heat transfer rate at given hot and cold side inlet temperatures and flows
70. Equipment and valve local control logic, where applicable
71. The Equipment Specifications Table shall be populated with the following information for each piece of Equipment:
72. ID Number (provided by Purchaser)
73. Equipment Name
74. Original Equipment Manufacturer
75. OEM Model Number
76. Quantity
77. Name Plate Description
78. Dry Weight (kg)
79. Wet Weight (kg)
80. Width (mm)
81. Depth (mm)
82. Height (mm)
83. C of G Width (mm)
84. C of G Depth (mm)
85. C of G Height (mm)
86. Maintenance Space Required? (y/n)
87. Acoustic Noise Level (dBA)
88. Heat Dissipation (kW)
89. Pertinent Equipment Ratings (eg Crane Rating)
90. Electric Power Voltage (V)/Frequency (Hz)/Phase
91. Power Required (kW)
92. Protection Class (IP Rating)
93. Construction Materials
94. Design Standards Used
95. Motor Starter Type
96. Temperature Rating
97. Chilled Water Flow (m^3/hr)
98. Chilled Water Pressure (bar)
99. Chilled Water Press. Drop (bar)
100. Chilled Water Load/Duty (kW)
101. Chilled Water Design Temp. Differential ('C)
102. Air Pressure Min /Max (bar)
103. Air Quantity (Std. m^3/min)
104. Air Dryness Dewpoint ('C)
105. Air Purity (Micron)
106. Air Oil Content (ppm)

## Structure

* I.a.w Attachment A: Interconnectivity Diagram Example
* I.a.w Attachment B: Equipment Specifications Table in Excel format
* Separate file submission where appropriate (eg. Where the information requested does not reside as part of an interconnectivity diagram or the Equipment Specifications Table)

# Special Instructions

Information that pertains to Equipment physical dimensions and arrangements shall be provided in AutoCAD format (.dwg) to facilitate the development of ship arrangement drawings.

All fields in Attachment A shall be completed, if a piece of information is not applicable “NA” shall be entered.

**Attachment A**

**Interconnectivity Diagram**

EQUIPMENT: [\* insert description of the Equipment]

ALL CABLES TO AND FROM EQUIPMENT WITHIN A SYSTEM SHOULD BE IDENTIFIED ON THIS DIAGRAM



**Attachment B**

**Equipment Specifications Table**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Equipment Specifications Table | | | | | | | | | | | | | | | | |
| ID Number | Equipment Name | Original Equipment Manufacturer | OEM Model Number | Quantity | Name Plate Description | Dry  Weight  (kg) | Wet Weight  (kg) | Width (mm) | Depth (mm) | Height (mm) | C of G Width (mm) | C of G Depth (mm) | C of G Height (mm) | Maintenance Space Required? (y/n) | Acoustic Noise Level (dBA) | Heat Dissipation (kW) |
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| Equipment Specifications Table (continued) | | | | | | | | |
| ID Number | Pertinent Equipment Ratings  (eg Crane Rating) | Electric Power Voltage (V)/Frequency (Hz)/Phase | Power Required (kW) | Protection Class  (IP Rating) | Construction Materials | Design Standards Used | Motor Starter Type | Temperature Rating |
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| Equipment Specifications Table (continued) | | | | | | | | | | |
| ID Number | Chilled Water Flow (m^3/hr) | Chilled Water Pressure (bar) | Chilled Water Press. Drop (bar) | Chilled Water Load/Duty (kW) | Chilled Water Design Temp. Differential ('C) | Air Pressure  Min /Max (bar) | Air Quantity (Std. m^3/min) | Air Dryness Dewpoint ('C) | Air Purity (Micron) | Air Oil Content (ppm) |
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