**Data Item Description**

**Level 1 Design Guidance Data**

**DID E002**

Prepared by: Vancouver Shipyards Co. Ltd.

2 Pemberton Ave.

North Vancouver, BC, Canada, V7P 2R2

Tel: (604) 988-3111

Fax: (604) 984-1636

© Vancouver Shipyards Co. Ltd. 2016

# Purpose

Level 1 Design Guidance Data is required to enable the detailed design of the Ship to proceed.

# Scope

Information as required below and Attachment A. The “Compartment No.” column in the tables at Attachment A are for the Purchaser’s use only.

# 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 Format

**All physical parameters quoted at this stage are to be within one per cent (1%) of final design figures**.

Level 1 Design Guidance data includes, where applicable:

1. Update to all information and Equipment Specification Table entries provided in SDRL E001 and DID E001. Note, if a piece of information is not updated in this submittal it is by default implied to be “within one per cent (1%) of final design figures” per the statement above.
2. Where a Supplier is providing cables that run between equipment cable supporting data as follows shall be provided:
3. Cable and connector / terminal data with pattern numbers / OEM part numbers
4. Number of cores and cross section.
5. Outside diameter.
6. Screening details.
7. LFH/Non LFH

(Note: If non LFH, reasons are to be given.)

1. Cable length constraints.
2. Cable separation criteria.
3. Minimum bending radius.
4. Waveguide requirements and Specifications.
5. Details of seating, foundations, mounting and securing points together with hole sizes, securing bolt specifications and related dimensional tolerances.
6. Positions of lifting eyes where appropriate.
7. Detail of shock and vibration mounts where applicable.
8. Maintenance envelopes, access and withdrawal spaces for all Equipment nits including isometric views and all primary views.
9. Electrical power:
10. Longest supply interruption that can be tolerated without need for re-start, and/or details of battery back up / Uninterruptable Power Supply Equipment (UPSE).
11. Time to become operational after interruption exceeding that in (vi) above.
12. The efficiency of any safety devices fitted, both from personnel and ship safety aspects, and the general electrical safety of the equipment.
13. Whether or not the equipment presents an unbalanced load, and the actual loads presented.
14. Whether or not the equipment draws a pulsed current and if so, its characteristics.
15. Whether or not the equipment causes waveform distortion on the supply lines and if so, the magnitude and phase angle of each harmonic (voltage and current).
16. If 3 phase motors have an Active Front End (AFE) drive, then harmonics analysis must be provided up to the 100th current harmonic.
17. Whether or not the equipment is a source of radio interference, either mains borne or radiated, and to what degree.
18. Liquid Cooling
19. Chilled water flow rates, pressures, temperature rise and heat quantity in kilowatts to be removed by chilled water supply.
20. How coolant failure is sensed and if override exists where applicable.
21. Time from loss of water flow for a critical component or components to reach:
22. Their maximum operating temperature.
23. Failure temperature.
24. Chilled water temperature above which a critical component will exceed its maximum operating temperature.
25. If fitted with a temperature sensor/trip, time from loss of coolant before warning or trip occurs where applicable.
26. Air cooling
27. For equipment that relies on compartment air cooling, the ambient temperature at which critical components will reach maximum operating temperature.
28. If fitted with a temperature sensor/trip, and whether fitted with an override.
29. Other Services:
30. Dry air, hydraulic power, HP air etc. Quantity, quality and dependencies are to be stated.
31. A signal interface diagram identifying all equipment signal interfaces for remote control and surveillance of the equipment. The diagram shall include as a minimum:
32. Remote control switched inputs (e.g. Start/Stop, Valve Actuation, etc.).
33. Remote switched outputs (e.g. plant status indication, etc.).
34. Alarm and warning indicators (3 wire volt free contacts).
35. Analogue surveillance signals (4 - 20 mA).
36. Temperature sensors (PRTs, Cr/Al thermocouples etc.).
37. Vibration, speed, flow signals.
38. Although not common, in the event that the ship’s IPMS will have sequenced automation control over the Equipment (Purchaser will advise if this is the case) then the Supplier shall provide control logic sequences for the Equipment;
39. Weights of each interchangeable assembly/sub-assembly in excess of 70kg.
40. Antenna Clear Arcs and Seating Details, (flatness/level/ thickness etc.)
41. Stiffness of mounting structures.
42. Recoil Forces from Weapons
43. Efflux envelopes and Blast Curves for Weapons, including any special protection for Efflux, or debris management.
44. Weapon Alignment Requirements, including the requirement for any special alignment facilities on board or ashore.
45. Antenna Power Contours, RADHAZ criteria and parameters, including any RADHAZ precautions to be observed.
46. Details of Safe to Rotate/Safe to Transmit Precautions fitted to Equipment.
47. The Supplier must provide 3D Computer Aided Drafting (CAD) files for all provided equipment:
48. File format must be AutoCAD 3D, or other file type compatible with ShipConstructor;
49. 3D model must be simplified and not include unnecessary details for computer performance reasons; and
50. 3D model should include connection locations, connection types, and item weights.

## Structure

I.a.w. Attachment A: Equipment Specification Table in Excel format

Separate file submission where appropriate (eg. 3D model, information not listed in Attachment A)

# Special Instructions

#### Supplier must provide an update to information provided with SDRL E001 and DID E001 where applicable. Changes to the information provided must be clearly identified.

Information that pertains to physical dimensions and arrangements shall be provided in AutoCAD format (.dwg).

**Attachment A to DIDE002**

**Equipment Specifications Table**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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) | Maint. Space Required? (y/n) | Acoustic Noise Level (dBA) | Heat Dissipation (kW) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Level 0 Guidance Data is within 5% of actual final design figures**

**Level 1 Guidance Data is within 1% of actual final design figures**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment Specifications Table (continued) | | | | | | | | |
| ID Number | Pertinent Equipment Ratings | Electric Power Voltage (V)/Frequency (Hz)/Phase | Power Required (kW) | Protection Class (IP Rating) | Construction Materials | Design Standards Used | Motor Starter Type | Temperature Rating |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**Level 0 Data is within 5% of actual final design figures**

**Level 1 Data is within 1% of actual final design figures**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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) |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |

**Level 0 Data is within 5% of actual final design figures**

**Level 1 Data is within 1% of actual final design figures**