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DOCUMENTATION STYLE GUIDE SUBSEA CONTROLS ENGINEERING GLOBAL CODE OF PRACTICE

10000576798-PDC-000

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1. PURPOSE AND SCOPE

1.1. Purpose

This Aker Solutions Controls Engineering Documentation Style Guide is a mandatory Code of Practice (COP) to assist personnel in formatting operation and maintenance manuals. Manuals containing deviations from the styles mentioned in this guide will be rejected by the checker and/or approver.

1.2. Scope

The documentation style guide is applicable to all US Subsea Controls Engineering personnel.

2. RESPONSIBILITIES

The **Technical Manager, Product Engineering, Controls** will be responsible for ensuring that all documentation, as detailed within this style guide, are carried out consistently and adhere to Aker Solutions global quality standards.

The **Technical Writer, Product Engineering, Controls** will be responsible for ensuring that all documentation, including operation and maintenance manuals, are designed and formatted according to this style guide and SAP requirements.

3. REFERENCES

Aker Solutions Standard Abbreviations (1000008969)
Aker Solutions SAP Naming Convention (1000008968)
ISO Standard Acronyms (ISO 13628-1, -5, -6, -8, -9)

4. OWNERSHIP

The ownership of this style guide and responsibility of its contents, rest with the Technical Manager, Product Engineering, Controls. Any proposed deviation from it or revision to its content must be authorized by the above.

5. AKER SOLUTIONS CONTROLS ENGINEERING DOCUMENTATION STYLE GUIDE

5.1. Abbreviations

Abbreviations should follow conventional norms, and if applicable, they should be capitalized. See the Aker Solutions standard abbreviations document 1000008969.

Example:

DWG = Drawing

5.2. Acronyms

On first reference, acronyms should be capitalized and spelled out, immediately followed by the acronym in parentheses. Subsequent uses of the acronym are then used without the parentheses. See the Aker Solutions standard abbreviations document 1000008969.

Example:

The Subsea Control Module (SCM) assembly drawing....The SCM is...

5.3. Addendum

When using an addendum in your document, refer to the Aker Solutions template located in SAP. The template is styled with heading levels 10, 11 and 12 for addendum section headings. Similar to heading levels 1, 2 and 3 for document sections.

Example:

APPENDIX A	HEADING 10
A1	Heading 11
A.1.1	Heading 12

5.4. Bills of Materials (BOM)

The BOM item numbers and associated drawing are often times referenced throughout the manual and listed in the Documentation section of the manual. For hardcopy manuals, BOMs appear immediately after the drawing following the Documentation section. See Portable Document Format (PDF) section 5.18 for placement of BOMs in PDF.

5.5. Captions

Captions are used in figures and tables so that they are identifiable and follow a consistent format for uniformity. Figure captions should appear below the figure or image and table captions should appear above. Tables and figures are numbered according to the heading level (1, 2, 3 or 4) and separated by a hyphen.

See figure and table examples 5.5.1-1 and 5.5.2-1.

5.5.1. Figure Caption

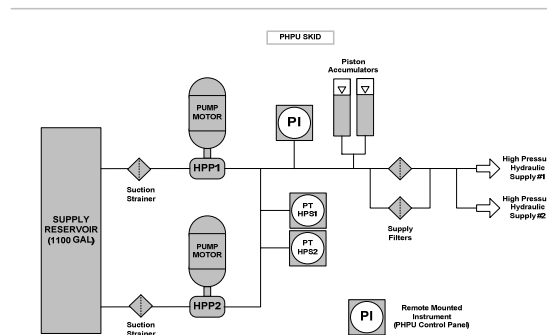


Figure 5.5.1-1 PHPU HP Supply Circuit

5.5.2. Table Caption

Table 5.5.2-1 Pump & Sensor Correlation

Pump	Sensors
HPP1 (PBE-5010)	HPS1 (PT-5002)
HPP2 (PBE-5020)	HPS2 (PT-5003)
LPP1 (PBE-5030)	LPS1 (PT-5004)
LPP2 (PBE-5040)	LPS2 (PT-5005)
Circulation (PBE-5050)	N/A

5.6. Changes Since Last Revision

Changes since last revision is used in all documents, including operation and maintenance manuals to indicate changes that have been incorporated since the last revision in or out of SAP. Changes are shaded and sometimes Italicized within the section(s) where the changes occurred. The revised information is then detailed in the changes since last revision section. This section should be placed after the Introduction, Purpose or Overview sections, which are often heading level 1.

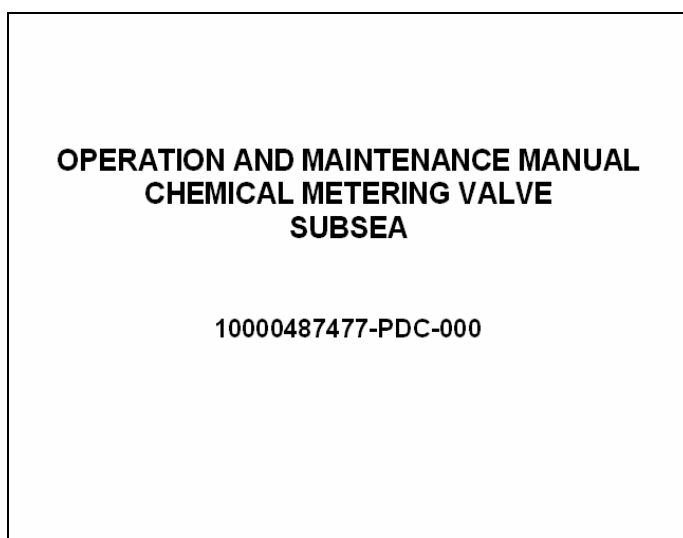
Example:

00 – Client Review
01 – Issued for Construction
01 – Updated Section 3 Installation

5.7. Cover Page

A cover page is used on all documents, including operation and maintenance manuals. The style is based on the template format in SAP. The manual title should be capitalized, bold and size 20 arial font. The title of the manual should be on the second line and the first line should read operation and maintenance manual. The third line can be used as additional space for the document title or used to identify a project name. The document number is provided by SAP approximately 5 spaces below.

Example:



5.8. Document Revisions

Follow the global document management procedure in SAP to issue a revised document after it has been released from document control. The revised document should include a new version number, status and issue date.

Documents that have been revised with redline markups; including operation and maintenance manuals, should be scanned and archived in SAP as an attachment to the DIR.

5.9. Documentation Page

The documentation page is usually the last section in the operation and maintenance manual. This page includes a table of engineering drawings and Aker Solutions documents. The drawings and documents should be listed according to how they are mentioned in the manual. The drawing or document description section in the table should mirror the title on the drawing or document. Make certain to include the appropriate drawing or document number and material number, if applicable.

Example:

Table 5.9-1
Bills of Materials and Engineering Drawings

Material	Drawing	Description
BB10-000267-01	10000120837 (10-000267-01)	Top Assembly, BHP Billiton Shenzi
Material	Document	Description
N/A	10000139766	Procedure, Shipping
N/A	10000392084	Acronyms and Abbreviations, Aker Solutions

5.10. Drawings

Drawings referenced in the manual are listed in and follow the manual's Documentation section. See Portable Document Format section 5.20 for drawing placement in PDF.

5.11. Font Size

The font size for operation and maintenance manuals is normally size 10 based on the template in SAP, but can be changed to font size 11 according to individual requirements and document formatting.

5.12. Font Type

The font type for operation and maintenance manuals is arial. This includes all text in tables.

5.13. Footer

The operation and maintenance manual footers follow the format provided by Aker Solutions and is based on the latest template in SAP. .

Example of Cover Page Footer:

This document contains Aker Subsea legal entity proprietary and confidential information that is legally privileged and is intended only for the person or entity to which it is addressed and any unauthorised use is strictly prohibited. It is provided for limited purpose and shall not be reproduced, stored electronically, transferred to other documents, disseminated or disclosed to any third parties without the prior written consent of the relevant Aker Subsea legal entity. Any attachments are subject to the specific restrictions and confidentiality regulations stated therein and shall be treated accordingly. The document is to be returned upon request and in all events upon completion of use for which it was provided.

Example of Subsequent Footer Pages:

DOCUMENTATION STYLE GUIDE	Document:	10000576798-PDC-000
SUBSEA CONTROLS ENGINEERING	Version:	00 - In Work
GLOBAL CODE OF PRACTICE	Issue date:	10/02/2008
	Page:	10 of 17

5.14. Header

The headers in the operation and maintenance manuals follow the template style in SAP.

Example of Cover Page Header:

Subsea

Ver.	Status	Issue date	Made by	Checked by	Approved by
00	In Work	10/02/2008	SULLIVAN, EMMANUEL		
Originator:		SULLIVAN, EMMANUEL			

Example of Subsequent Header Pages:

DOCUMENTATION STYLE GUIDE	Document:	10000576798-PDC-000
SUBSEA CONTROLS ENGINEERING	Version:	00 - In Work
GLOBAL CODE OF PRACTICE	Issue date:	10/02/2008
	Page:	10 of 17

5.15. Heading Level

The operation and maintenance manual heading levels are set in the template provided in SAP. Follow the heading levels indicated to ensure consistent flow and uniformity within the manual and continuity in document presentation.

5.15.1. Heading Level 1

Level 1 headings follow the format style in the latest template in SAP. Heading level 1 style settings are as follows:

Heading 1 : Normal + Font: 16 pt, Bold, All caps,
 Kern at 16 pt, Indent: Hanging: 49.6 pt, Space
 Before: 8 pt, After: 8 pt, Keep with next, Level 1,
 Tabs: 49.6 pt, List tab, Outline numbered + Level: 1 +
 Numbering Style: 1, 2, 3, ... + Start at: 1 +
 Alignment: Left + Aligned at: 0 pt + Tab after: 49.6 pt +
 Indent at: 49.6 pt

5.15.2. Heading Level 2

Level 2 headings follow the format style in the latest template in SAP. Heading level 2 style settings are as follows:

Heading 2 : Normal + Font: 16 pt, Bold, Indent: Hanging: 49.6 pt, Space Before: 8 pt, After: 8 pt, Keep with next, Level 2, Tabs: 49.6 pt, List tab, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0 pt + Tab after: 49.6 pt + Indent at: 49.6 pt

5.15.3. Heading Level 3

Level 3 headings follow the format style in the latest template in SAP. Heading level 3 style settings are as follows:

Heading 3 : Normal + Font: 14 pt, Indent: Hanging: 49.6 pt, Space Before: 8 pt, After: 8 pt, Keep with next, Level 3, Tabs: 49.6 pt, List tab, Outline numbered + Level: 3 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0 pt + Tab after: 49.6 pt + Indent at: 49.6 pt

5.15.4. Heading Level 4

Level 4 headings follow the format style in the latest template in SAP. Heading level 4 style settings are as follows:

Heading 4 : Normal + Font: Bold, Indent: Hanging: 0.69", Space Before: 8 pt, After: 8 pt, Keep with next, Level 4, Tabs: 0.69", List tab, Outline numbered + Level: 4 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0" + Tab after: 0.69" + Indent at: 0.69"

5.16. Lists

The operation and maintenance manual includes numerous bulleted and numbered lists. Follow the guidelines established in the SAP template to set up bulleted and numbered lists.

5.16.1. Bulleted Lists

The closed or solid circle bullet should be used throughout the operation and maintenance manual to define an unordered list. If there are subsequent bulleted lists under the primary list (Closed Circle Bullet), use the open circle bullet. Capitalize each bullet entry.

Example:

- Closed bulleted list = Style List Bullet
- Closed bulleted list = Style List Bullet
- Closed bulleted list = Style List Bullet
 - Open bulleted list = Style List Bullet
 - Open bulleted list = Style List Bullet
 - Open bulleted list = Style List Bullet

5.16.2. Numbered Lists

Similar to the bulleted list, the numbered lists follow the microsoft word convention and guidelines established in the SAP template.

Example:

- 1) Numbered list = Style Numbered
- 2) Numbered list = Style Numbered
- 3) Numbered list = Style Numbered
 - a) Style Bulleted
 - b) Style Bulleted
 - c) Style Bulleted

5.17. List of Figures

The lists of figures is built according to the caption style used for naming figures in the document. To update the lists of figures, click within the table, then right-click and select update field. The list of figures title is capitalized as **LIST OF FIGURES**.

Example:

LIST OF FIGURES	
Figure 3.2.2-1 Simplified PHPU HP Supply Circuit.....	14
Figure 3.2.3-1 Simplified PHPU HP Umbilical Supply Circuit.....	18
Figure 3.2.4-1 Simplified PHPU LP Supply Circuit.....	20
Figure 3.2.5-1 Simplified LP Umbilical Supply Circuit.....	23
Figure 3.2.6-1 Simplified PHPU LP Topsides Supply Circuit.....	25
Figure 3.2.9-1 Simplified PHPU Control & Communications Schematic.....	28

5.18. List of Tables

The lists of tables is built according to the caption style used for tables in the document. See captions section 5.5. To update the list of tables, click within the table, then right-click and select update field. The list of tables title is capitalized as **LIST OF TABLES**.

Example:

LIST OF TABLES	
Table 3.2.1-1 Pump and Sensor Correlation.....	13
Table 3.2.1-2 PSV Set Point (psi).....	13
Table 3.2.7-1 Circulation and Reservoir Operation.....	26
Table 3.3.1-1 Pump Motor Data.....	30
Table 3.3.3-1 24VDC Power Distribution.....	33
Table 3.3.4-1 Discrete Input (DI) Map.....	34
Table 3.3.4-2 Discrete Output (DO) Map.....	35
Table 3.3.4-3 Analog Input (AI) Map.....	36
Table 4.1-1 PHPU Preventive Maintenance.....	39
Table 5-1 PHPU Troubleshooting.....	60
Table 6-1 PHPU Engineering Drawings.....	63

5.19. Paragraphs

Operation and maintenance manual paragraphs follow the template style in SAP. The paragraph style is set to follow heading levels 1 through 4 and 10 through 12. Follow the font size and type as indicated in sections 5.11 and 5.12.

Example:

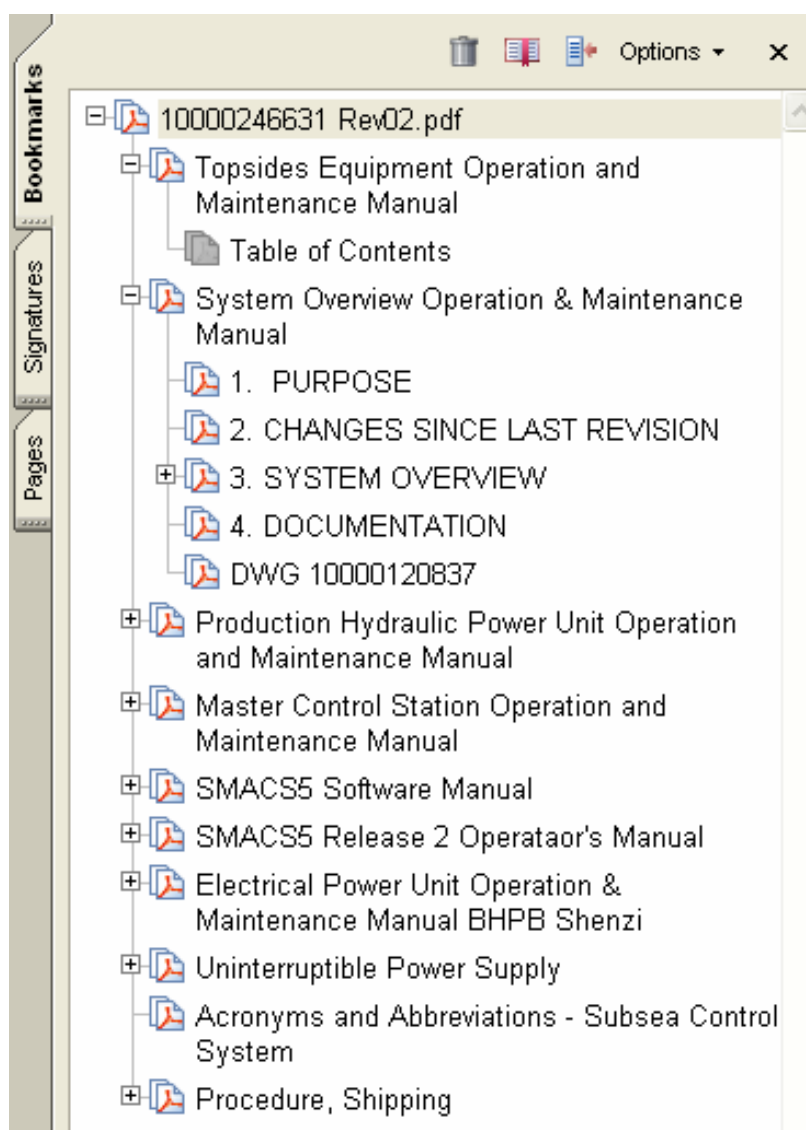
Body text = Style **Normal**

Indented body text = Style **Normal Indent**

5.20. Portable Document Format (PDF)

PDFs are also referred to as electronic manuals. They mirror the hardcopy version in content and format. Drawings and BOMs are listed numerically in the sections that they are mentioned. The BOM, if applicable, follow the applicable drawing(s). Supplemental documents, such as, addendums, procedures, specifications, shipping procedures, acronyms and abbreviations follow the drawings & BOMs. For manuals that mention procedure and specification documents in several sections, like the Shipping Procedure, a separate section should be created.

Example:



5.21. Tables

The operation and maintenance manual tables are based on the SAP template style guidelines. The leading row is shaded gray-10% and the column text is centered, bold and title case. The body column text is left aligned and the font style is title case, except numerical sequences, which are centered. Use the table caption guidelines in section 5.5.

Example:

Table 5.21-1 Example

Material	Drawing	Description
10019317	10000209137	Assembly, PHPU, BHP Billiton Shenzi

5.22. Table of Contents

The table of contents (TOC) is built according to the heading style used in the document. To update the TOC, click within the TOC, then right-click and select update field. The TOC title is capitalized as **TABLE OF CONTENTS** and the spacing is determined by the amount of style headings within the body of the document.

Example:

TABLE OF CONTENTS		
1.	OVERVIEW	5
2.	INSTALLATION	5
3.	OPERATION	9
3.1.	PHPU Control Panel.....	10
3.1.1.	Local Control & Monitoring	10
3.1.2.	Remote Control & Monitoring	11
3.1.3.	Bulkhead Connections.....	11
3.1.4.	Fill Panel	12

5.23. Template

SAP template style number 22 is used for all operation and maintenance manuals. This template is generated when a Document Information Record (DIR) is created in SAP.

5.24. Safety Labels

The safety labels used in the the operation and maintenance manuals are Note, Caution and Warning. The safety labels should follow a consistent style as to allow for uniformity throughout Aker Solutions manuals. The safety labels size should be 3 1/2" wide and the length can be determined according to individual requirements.

5.24.1. Note Label

The 'note' safety label should be formatted with **NOTE** bold, capitalized and centered. The body text should be sentence case. The note and body text should be enclosed in a single line.

Example:

<p style="text-align: center;">NOTE</p> <p>The circulation/fill pump (PBE-5050) is rated at 5 gpm at 100 psi. It takes approximately eleven minutes to empty a 55-gallon drum of control fluid.</p>
--

5.24.2. Caution Label

The 'caution' safety label should be formatted with **CAUTION** bold, capitalized and centered. The body text should be sentence case. The caution and body text should be enclosed in a double line.

Example:

<p style="text-align: center;">CAUTION</p> <p>Do not use sea water since it will corrode the reservoir and contaminate the control fluid. Using sea water will corrode components in the control system and lead to component failures.</p>
--

5.24.3. Warning Label

The 'warning' safety label should be formatted with **WARNING** bold, capitalized and centered. The body text should be bold and uppercase case. The warning and body text should be enclosed in a solid line with 3pt style weight.

Example:

