

OFFSHORE ENGINEERING STANDARDS

OFFSHORE PIPING MATERIALS SPECIFICATION

Doc No: W9000MX001 PART 1 OF 3

AUGUST 2006

SPECIFICATION



**Woodside Energy Ltd.
ABN 63 005 482 986**

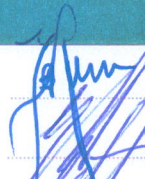
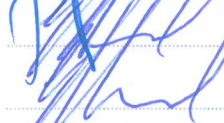
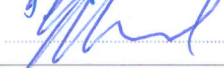
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APPROVALS

Status	Position Indicator	Name	Signature	Date
Prepared By:	OZE4-03	G RALLS		30/8/06
Supervised By:	OZE4	G HOWARD		30/8/06
Approved By:	OZE4	G HOWARD		30/08/06



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REVISION HISTORY

Rev	Description	Prepared By	Approved By	Date
11	Minor omission corrected	G Ralls	G Howard	August 2006
10	General revision and expansion for future projects. Incorporated majority of Cossack Pioneer Piping Material Specification. Also refer introduction 1.1.3	G Ralls	G Howard	July 2006
9	Separate revision history and distribution for Volumes 1 and 2 to allow for individual revisions Preface removed and content incorporated in Section 1.1.1. Section 1.1.2 added New piping classes: W9000MX041 Class 151428 W9000MX042 Class 253467	G Ralls	G Howard	Jan 2004
8	General Revision (refer to Preface for details)	G Ralls	G Howard	May 2003
7	General Revision	G A Lock	D Dragojevic	21/12/99
6	Revised Bolt Length Tables	J Van de Velde		26/5/98
5	General Revision	J Van de Velde / G V Nathan		08/04/98
4	General Revision	G Ralls		01/06/97
3	General Revision	D Clayton		01/12/95
2	General Revision	D Clayton		23/02/95
1	Partial Revision	D Dragojevic		
0	Final Collation	D Dragojevic		28/02/94

DOCUMENT REVIEW AND UPDATE

The Principal Mechanical Engineer, Supply Operations, is the custodian of this document.



The Principal Mechanical Engineer is responsible for ensuring the maintenance and upgrade of the document. When using this document if any errors are encountered or if the user has any other comments on the contents, it is imperative that the user forwards them to the Principal Mechanical Engineer. The Principal Mechanical Engineer will respond/clarify and if necessary revise the relevant sections.

The "Revision Request Form" included with this document shall be used for any proposed changes to this document. The Principal Mechanical Engineer shall approve all changes to this document. Piping Classes may be individually and independently revised and issued.



REVISION REQUEST FORM

Name _____ Phone Number _____

Date _____ Position Indicator _____

REVISION REQUEST:

JUSTIFICATION:

COMPLETED FORM TO BE RETURNED TO PRINCIPAL MECHANICAL ENGINEER, SUPPLY OPERATIONS DIVISION

DATE RECEIVED: _____

ACTION REQUIRED:

APPROVED

CUSTODIAN:

NOT APPROVED



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04	Activity Co-ordinator Offshore Gas (NRA)	OGN1A6
05	Lead Piping Engineer – CAJV	L7 251 St Georges Tce
06	Maintenance Team Leader – Cossack Pioneer	OICE2

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1. INTRODUCTION

1.1 PURPOSE

This issue of the Offshore Piping Material Specification remains a rationalisation of the GWA, NRA and (part) Cossack Pioneer assets.

This specification is not a material selection document. Selection of materials should be undertaken in consultation with the Materials group (OETQ).

Greenfield projects should review this document to determine whether it meets specific needs. Subject to this review, it may be necessary to add special project requirements as an addendum or this specification could be revised.

1.1.1 Revision 8

Revision 8 has now enabled the individual components of this document to be revised and issued without the need to re-issue the Offshore Piping Material Specification in its entirety.

Revision 8 of Volumes 1 and 2 incorporates the following changes:

1. Revisions to and addition of some material numbers in the Piping Classes
2. Revision of the temperature range of valves in LTCS and SS classes to limit the minimum temperature to -30°C in order to remove the requirement for extended bonnets and low temperature body leak testing. No valves included in Volume 2 require cryogenic testing but valves with a specified minimum lower temperature may require a low temperature body leak test.
3. Gearboxes added to some Class 900, 1500 and 2500 ball valves to make the top works consistent with existing GWA valves.

Specifically:

VOLUME 1 REVISION 8

Controlled Document Catalogue (CDC) links to all Piping Class Excel spreadsheets added

Woodside Energy Limited ABN added to Piping Classes

Material Number revisions and additions to Piping Classes

Revision of Temperature Range for Valves (most occurrences of -46°C changed to -30°C)

UNS S32760 (Zeron 100) removed from Piping Class 13466

Other minor revisions and additions to Piping Classes

NOTE: Only significant changes to Piping Classes are highlighted with a revision triangle.

VOLUME 2 REVISION 8

Indices of Corporate Value Identification Numbers (CVIN) have been simplified

Revisions to datasheets as marked (Revisions 3 and 4)

Gearboxes added to some valve datasheets



VOLUME 3 REVISION 2

Volume 3 remains unchanged.

1.1.2 Revision 9

In previous revisions, Volume 1 held revision history, document distribution and concurrence signatories for Volumes 1 and 2 of this document. A revision history and document distribution list have been included in Volume 2 to allow for individual revisions of Volumes 1 and 2. Volume 3 already includes its own revision history and a document distribution list can be added if and when a revision is required.

Refer to the Revision History for other changes in Revision 9.

Piping Classes 151428 and 253467 have been added for Otway and future Greenfield project use.

1.1.3 Revision 10

This revision of Volume 1 (now Part 1) has been raised primarily to incorporate the Cossack Pioneer Piping Material Specification into this document where similar piping classes exist, and create new piping classes where necessary. These new piping classes 33465, 33467, 61428, 61478, 63465 and 63467 may also be required for future projects.

Volume 2 (now Part 2) has been revised to incorporate 142 new valve data sheet references to accommodate the new piping classes introduced into Part 1 and the maximum and minimum temperatures specified in the Cossack Pioneer line designation list. Part 2 also contains some new data sheet references to satisfy Angel Project requirements.

All hard copies of data sheets have been removed from Part 2. The electronic links will be retained.

Part 3 will be revised to include those new piping class calculations.

1.2 SCOPE

This document covers the technical specification for piping classes and shall be used as a common piping specification for all piping services on North Rankin "A" and Goodwyn "A" topside facilities. The specification now includes materials pertaining to Cossack Pioneer. Whilst this document covers the above 3 offshore assets it can also be employed for Greenfield Projects if specific needs are met.

Any deviations from this specification shall be managed using the procedure as outlined in A3000AG137181, Supply Operations (Offshore) Technical Change System.

This specification supersedes the following Offshore Piping Specifications:

NRA	A1150SX001	REV 11
GWA	A1840SX500	REV 4
COS	E5040EX131	REV 0 (partial only. Refer Rev 1 for remainder)

This specification will come into effect from the date of issue, and any use of superseded specifications beyond this date will be deemed as a deviation from this specification.

For modifications to Drilling and Wellheads/Christmas Trees, see Offshore specifications as listed below:

A3000SD003	Specification for Drilling Facilities Piping Material
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A6000SD064 Technical Specification and Quality Requirements Wellheads, Christmas Trees, Gate Valves, Actuators, Running and Testing Tools and Associated Accessories: Goodwyn "A" And North Rankin "A" Platforms

1.3 REGULATORY CONSIDERATIONS (Not applicable this revision)

1.4 DEFINITIONS

1.4.1 GENERAL DEFINITIONS

The **definitions** below shall be included if the words defined are used in the Specification.

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project, or operation or maintenance of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The words **shall/must/will** indicate a mandatory requirement.

The word **should** indicates a recommended course of action.

The words **may/can** indicate one acceptable course of action.

WEL Technical Integrity Custodian (TIC) in this document refers to the Supply Operations Technical Support & Governance Manager. Authority to deviate from the standards is delegated to the custodian(s) indicated on the document details page of this document.

1.4.2 SPECIFIC DEFINITIONS (Not applicable this revision)

1.5 ABBREVIATIONS

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineering
ASTM	American Society for Testing and Materials
CVIN	Corporate Valve Identification Number
DEP	Design and Engineering Practices (Shell)
GWA	Goodwyn "A"
MESC	Material and Equipment Standards and Codes
NRA	North Rankin "A"
OPMS	Offshore Piping Materials Specification (this document)
SBF	Small Bore Fittings

1.6 ACTION ITEMS (Not applicable this revision)



1.7 CROSS REFERENCES (Not applicable this revision)

1.8 CORPORATE VALVE IDENTIFICATION NUMBER (CVIN)

The valve identifier is alphanumeric and consists of the following:

FIRST CHARACTER	This identifies the valve base material and is designated by a letter.
SECOND CHARACTER	This identifies the ASME/API pressure rating and is designated by a number(s).
THIRD CHARACTER	This identifies the valve type and is designated by a letter.
FOURTH CHARACTER	This identifies the valve end connection and is designated by a number.
LAST ALPHA CHARACTERS	These identify special requirement.

The following tables detail the available data for each of the characters identified above.

1. Base Material Letter

LETTER	MATERIAL
A	Nickel Aluminium Bronze
C	Carbon Steel
D	Duplex Stainless Steel
H	Nickel Alloy
K	Monel
L	Low Temperature Carbon Steel
M	Super Austenitic Stainless Steel
N	31/2% Nickel
S	Stainless Steel
X	Super Duplex Stainless Steel

2. ASME Pressure Rating

NUMBER	ASME CLASS
1	ASME 150
3	ASME 300
6	ASME 600
9	ASME 900
15	ASME 1500
25	ASME 2500



3. Valve Type

LETTER	VALVE TYPE
B	Ball Valve
C	Check Valve
D	Diaphragm Valve
F	Butterfly Valve
G	Gate Valve
K	Bleed Valve (Monoflange – Welded)
M	Monoflange Valve
Q	Monoflange (Pressure Equalising)
T	Globe Valve
X	Mono – Block Valve

4. End Connection

NUMBER	END CONNECTION
1	Flanged – non RTJ
3	Flanged / Threaded
4	Wafer (fully lugged) – applicable for butterfly valves
5	Wafer (fully lugged) – applicable for check valves
6	Clamp type ends
7	Butt weld ends
8	Flanged – RTJ

5. Special Requirement (may have 2 letters)

LETTER	SPECIAL REQUIREMENT
A	Soft Seated – Butterfly, Check, Gate, and Globe Valves
B	Blowdown Service – Soft Seated Valves only
C	LTCS Lower Design Temperature Between -20°C and -47°C
D	Dirty Service (applicable to Mono-Block valves only)
F	Full Port
G	Applicable for Galvanised Carbon Steel Service
H	High Temperature up to 320°C
K	Internal Lining
L	Temperature below -50°C
M	Metal Seated – Ball and Butterfly Valves
R	Rubber Lined
T	Impact Tested Duplex Stainless Steel
W	Design Temperature up to 200°C

A typical CVIN would be “C9B1FB”. This indicates that the valve is carbon steel, ASME class 900, ball valve, raised face, full bore and also suitable for blowdown service.



1.9 PIPING CLASS NUMBERING SYSTEM BREAKDOWN STRUCTURE

The number identifies the following:

Specification No: 1****

The first digit(s) relate to the FLANGE RATING as per ASME B16.5 (except as noted on individual pipe classes).

1	Class 150
3	Class 300
6	Class 600
9	Class 900
15	Class 1500
25	Class 2500

Specification No: *1***

The next digit relates to MATERIALS OF CONSTRUCTION:

1	Carbon Steel
2	Low and Intermediate Alloy Steels
3	Stainless Steels, including Duplex and Zeron
4	Aluminium and Al. Brass Alloys
5	Copper and Copper Alloys
6	Nickel and Nickel Alloys
7	Non Metallic Materials
8	Carbon Steel – Galvanised

Specification No: **111

The next three digits are non-specific numbers

1.10 TECHNICAL NOTES

1.10.1 BRANCH CONNECTIONS

The names “Weldolet” and “Latrolet” are registered trade names of Bonney Forge. “Nipoflange” is the registered trade name of Promat Engineering Services. The names are used for clarity of description in this document.

1.10.2 GASKETS AND PACKING

On no account is asbestos to be used in the manufacture of gaskets or packing materials.

Alternative gaskets such as “Pikotek” may be used on a case-by-case basis to replace RTJ gaskets, or for upgrading the pressure rating of a bolted flanged joint, with approval from the Integrity Custodian. They will be classified as Special Piping Items.

1.10.3 SMALL BORE FITTING (SBF)

Small Bore Fittings (SBF) may be subject to fatigue failure as discussed in W9000MX768, Small Bore Fitting (SBF) Vibration Fatigue Assessment. The OPMS has been developed to specifically address these issues. Special note needs to be taken of drawing [W1000DX003.14](#), Branch Support Details for Thin Wall Pipe. This drawing is included in the standard drawings within this specification.



Piping design needs to take specific note of the SBF piping design guides within W9000MX768.

1.10.4 MISCELLANEOUS

Materials not listed in piping class sheets shall be treated as “Specials” and require design approval from the Integrity Custodian.

1.10.5 PIPE CONNECTORS

1.10.5.1 Pyplok Pipe Connecting System

The Pyplok DP40 pipe connection system utilises a portable, hand-held installation tool to compress a fitting onto the external diameter of a pipe to form a permanent, fire safe connection.

The Pyplok pipe connection system is approved for the following materials in non-critical hydrocarbon services and associated utilities:

- Carbon Steel, Stainless Steel, Copper Nickel Pipes
- Maximum Rating Class 150
- Maximum Pipe Diameter DN 50
- Maximum Pipe Wall Thickness Sch 160
- LP Flare Header
- Drain Lines
- Utility Lines
- Vents (e.g. Hot oil tank vents)

Material for the Pyplok connections shall be identical to the pipe segments being joined. Following installation, all carbon steel Pyploks and exposed piping adjacent to the connection shall be painted in accordance with W9000SM001, Protective Coating Specification. Pyplok joint configuration has crevices between the pipe and the connection, with potential for corrosion. Hence, particular attention must be given to protecting these areas (prime before assembly and painting after assembly).

Only Pyplok manufactured equipment and fittings shall be used. Only personnel who have attended the Pyplok training course and have been issued with a certificate of proficiency for the operation of the Pyplok pipe connection system are permitted to use the equipment and to make pipe connections.

1.10.5.2 Deutschlok Pipe Connecting System

Currently approved as per Pipelok.

1.10.6 GS-HYDRO – PIPING WITHOUT WELDING

GS-Hydro – Piping Without Welding using GS Retain Ring Flanges, GS37° Flare Flanges, GS90° Flare Flanges will be considered on a case-by-case basis with approval from the Integrity Custodian.

Presently, GS90° Flare Flanges are only approved for low-pressure (Class 150) applications in non-vibrating, non-hydrocarbon service.



1.10.7 HYDRATIGHT – MORGRIPS

Piping without welding Morgrip fittings will be considered on a case-by-case basis with approval from the Integrity Custodian.

1.10.8 BOLTS

The bolting material required for piping specification breaks shall follow the more noble piping class.



2. CROSS REFERENCE FOR REPLACED OFFSHORE PIPING CLASSES

(For Cossack Pioneer cross reference please refer [E5040EX.001](#))

CLASS	MATERIAL	NOTES	C.A. (mm)	TEMP RANGE	GWA	NRA
11428	CS	0°C MIN	1.5	0 / 350°C	1C1	1A
11478	Low Temp CS		1.5	-46 / 200°C	1L1, 1C3	1A
12181	3.5% Ni STEEL		1.5	-101 / 200°C	1N1	
12182	3.5% Ni STEEL	MIN. WT 13.49 MM	1.5	-101 / 200°C	1N2	
13459	SS 316L	60°C MAX	0	-85 / 60°C	1S1	1ST, 1STA, 1L
13459	SS 316L		1.5	-80 / 50°C		1LHP
13465	DSS (UNS S31803)	-20°C MIN	0	-20 / 120°C	1S1, 1D3	1ST, 1STA, 1L, 1D
13466	SDSS (UNS S32750)		0	-10 / 60°C	1X1	
13467	DSS (UNS S31803)	-50°C MIN	0	-50 / 120°C	1S1, 1D3	1ST, 1STA, 1L
15014	90/10 Cu/Ni		0	0 / 65°C		1CN, 1CNA
17057	GRE 7000M		0	0 / 93°C	1P1, 1P2, 1K1	1CN, CU1, PP1, PP2,
17068	GRE – PSX		0	-10 / 93°C		
17079	GRE 5000 Conductive		0	0 / 93	1P2	1SL
18083	CS (GALVANISED)		1	0 / 60°C		1G,
31428	CS	0°C MIN	1.5	0 / 320°C	3C1	3A
31478	Low Temp CS		1.5	-46 / 200°C	3L1, 3C3	3A
32181	3.5% Ni STEEL		1.5	-101 / 150°C	3N1	
32182	3.5% Ni STEEL	MIN. WT 14 MM	1.5	-101 / 200°C	3N2	
33459	SS 316L	60°C MAX	0	-85 / 60°C	3S1	3H, 3ST
63459	SS 316L	60°C MAX	0	-85 / 60°C	6S1	6ST
91428	CS	0°C MIN	1.5	0 / 250°C	9C1	9A



CLASS	MATERIAL	NOTES	C.A. (mm)	TEMP RANGE	GWA	NRA
91478	Low Temp CS		1.5	-46 / 200°C	9L1, 9C3	9A
92181	3.5% Ni STEEL		1.5	-101 / 200°C	9N1	
92182	3.5% Ni STEEL	MIN.WT13.49 MM	1.5	-101 / 200°C	9N2	
93459	SS 316L	60°C MAX	0	-85 / 60°C	9S1	9L
93459	SS 316L		1.5	-70 / 40°C		9LHP
93465	DSS (UNS S31803)	-20°C MIN	0	-20 / 120°C	9D1	9S1, 9S3
93467	DSS (UNS S31803) (IT)	-50°C MIN	0	-50 / 120°C	9D1	9S1, 9S3
-	Refer A1150S001					9S2
93468	SASS (UNS S31254)		0	-75 / 200°C	9M1	
-	REFER A1392SX506					9Z1
151478	Low Temp CS		1.5	-46 / 200°C	15C1, 15C3	15A
152181	3.5% Ni STEEL		1	-101 / 150°C	15N1	
152182	3.5% Ni STEEL	MIN.WT13.3 MM	1	-101 / 150°C	15N2	
153459	SS 316L	60°C MAX	0	-85 / 60°C	15S1, 15S2	15ST
153465	DSS (UNS S31803)	-20°C MIN	0	-20 / 120°C	15D1, 15S1	15S1
153467	DSS (UNS S31803)	-50°C MIN	0	-50 / 120°C	15D1	15S1
153468	SASS (UNS S31254)		0	-85 / 200°C	15M1	
251478	Low Temp CS		1.5	-46 / 120°C	25C3	25A, 25A1
252181	3.5% Ni STEEL		1.5	-101 / 200°C	25N1	25L
253459	SS 316L	60°C MAX	0	-75 / 60°C	25S1, 25S2	
253465	DSS (UNS S31803)	-20°C MIN	0	-20 / 120°C	25D1	25S1



3. PIPING CLASSES

The hyperlinks provided below are directly linked to the equivalent document stored in the DRIMS. If the links in this document are not being used to access the Piping Classes, users should always refer to the DRIMS for the latest revision of these documents.

SPECIFICATION	CLASS
W9000MX003	11428
W9000MX004	11478
W9000MX005	12181
W9000MX006	12182
W9000MX007	13459
W9000MX008	13465
W9000MX009	13466
W9000MX010	13467
W9000MX011	15014
W9000MX012	17057
W9000MX013	17068
W9000MX040	17079
W9000MX014	18083
W9000MX015	31428
W9000MX016	31478
W9000MX017	32181
W9000MX018	32182
W9000MX019	33459
W9000MX2049151	33465
W9000MX2055786	33467
W9000MX2048048	61428
W9000MX2047967	61478
W9000MX020	63459
W9000MX2047821	63465
W9000MX021	91428
W9000MX022	91478
W9000MX023	92181
W9000MX024	92182
W9000MX025	93459
W9000MX026	93465
W9000MX027	93467
W9000MX028	93468
W9000MX041	151428
W9000MX029	151478
W9000MX030	152181
W9000MX031	152182



W9000MX032	153459
W9000MX033	153465
W9000MX034	153467
W9000MX035	153468
W9000MX036	251478
W9000MX037	252181
W9000MX038	253459
W9000MX039	253465
W9000MX042	253467

4. THIS SECTION NOT IN USE



5. REFERENCES

REFERENCE 1: RELEVANT MESC SPECIFICATIONS/INFORMATION ETC.

GROUP 74 - PIPES

INT 74	INTRODUCTION TO MESC GROUP 74
SPE 74/001	PIPE, CARBON STEEL, API 5L GR B, ASTM A53 GALVANISED
SPE 74/002	PIPE, CARBON STEEL, ASTM A106 GR B
SPE 74/004	PIPE, CARBON AND ALLOY STEEL, ASTM A333
SPE 74/005	PIPE, CARBON STEEL, ASTM A671
SPE 74/008	PIPE, STAINLESS STEEL, ASTM 312
SPE 74/009	PIPE, STAINLESS STEEL, ASTM 358
SPE 74/014	MESC SPEC 74/050

GROUP 76 - FLANGES/FITTINGS

INT 76	INTRODUCTION TO MESC GROUP 76
SPE 76/001	SURFACE FINISH OF FLANGES
SPE 76/002	FLANGES
SPE 76/003	FITTINGS, CARBON & ALLOY STEEL, ASTM A234
SPE 76/004	FITTINGS, CARBON & ALLOY STEEL, ASTM A420
SPE 76/005	FITTINGS, SS BUTT WELD, ASTM A403
SPE 76/006	FITTINGS, DUPLEX BUTT WELD, ASTM A815M
MESC SPEC 76/012	SPECTACLE BLINDS, SPADE BLINDS AND SPACERS
MESC SPEC 76/025	ORIFICE FLANGE SETS, ASME/ANSI B16.36
MESC SPEC 76/026	ORIFICE METER RUNS WITH FLANGED ENDS
MESC SPEC 76/030	BRANCH OUTLETS TO MSS SP-97
MESC SPEC 76/031	BRANCH FITTING, PLAN, BW, THD OR FLG
MESC SPEC 76/051	FLANGES, BRONZE, ANSI B16.24
MESC SPEC 76/056	FITTINGS, BUTT-WELD, ASTM B366

GROUP 81 - FASTENERS

INT 81	INTRODUCTION MESC GROUP 81
MESC SPEC 81/001	STUDBOLTS ASTM A193
MESC SPEC 81/002	NUTS FOR BOLTS ASTM A194
MESC SPEC 81/003	STUDBOLTS ASTM A320
MESC SPEC 81/004	STUDBOLTS AND NUTS ASTM A453 ADD DUPLEX & SDSS BLACK BOLTS

GROUP 85 – GASKETS

INT 85	INTRODUCTION TO MESC GROUP 85
MESC SPEC 85/101	GASKETS, FLAT RING, GRAPH – W/INSERTS
MESC SPEC 85/103	GASKETS, SPIRAL WOUND
MESC SPEC 85/106	GASKETS, FIBRE, NITRILE RUBBER BONDED
MESC SPEC 85/107	JOINTING (GASKETS) AND PACKING MATERIALS
MESC SPEC 85/108	GASKETS, ELASTOMERS NBR BONDED

**REFERENCE 2: RELEVANT DEPs**

DEP 00.00.05.05-GEN	INDEX TO DEP PUBLICATIONS & STANDARD SPECIFICATIONS
DEP 01.00.01.30-GEN	DEFINITION AND DETERMINATION OF TEMPERATURE & PRESSURE LEVELS
DEP 30.10.02.11-GEN	METALLIC MATERIALS - SELECTED STANDARD
DEP 30.10.02.13-GEN	NON METALLIC MATERIALS – SELECTION & APPLICATION
DEP 30.10.02.31-GEN	METALLIC MATERIALS – PREVENTION OF BRITTLE FRACTURE
DEP 30.10.60.18-GEN	WELDING OF METALS
DEP 30.46.00.31-GEN	THERMAL INSULATION FOR HOT SERVICES
DEP 30.48.41.31-GEN	ELECTROLESS NICKEL PLATING
DEP 31.10.03.10-GEN	SYMBOLS & IDENTIFICATION SYSTEM - MECHANICAL
DEP 31.38.01.10-GEN	PIPING CLASSES - BASIS OF DESIGN
DEP 31.38.01.11-GEN	PIPING-GENERAL REQUIREMENTS
DEP 31.38.01.12-GEN	SIOP PIPING CLASSES
DEP 31.38.01.13-GEN	COMPILATION OF BOM FOR PIPING ISOMETRICS
DEP 31.38.01.15-GEN	SIEP PIPING CLASSES
DEP 31.38.01.21-GEN	SPECIFICATIONS FOR PIPING SYSTEMS
DEP 31.38.01.29-GEN	PIPE SUPPORTS
DEP 31.38.01.31-GEN	SHOP AND FIELD FABRICATION OF PIPING
DEP 31.38.30.11-GEN	PROTECTIVE STEAM HEATING OF PIPING SYSTEMS
DEP 31.38.60.10-GEN	HOT-TAPPING ON PIPELINES, PIPING AND EQUIPMENT
DEP 31.40.20.30-GEN	LINE PIPE FOR USE IN OIL & GAS - NON SOUR
DEP 31.46.00.31-GEN	ACOUSTIC INSULATION FOR PIPES, VALVES AND FITTINGS
DEP 32.37.10.11-GEN	INSTRUMENT IMPULSE LINES
DEP 32.37.51.11-GEN	INSTRUMENT AIR LINES
DEP 39.40.20.30-GEN	HIGH PRESSURE METAL/POLYMER FLEXIBLE PIPE FOR USE IN OIL & GAS OPERATIONS AS FLOWLINES AND RISERS
DEP 61.38.10.10-GEN	SHOP & SITE FABRICATION OF ORIFICE METER RUMS
DEP 70.08.10.11-GEN	EQUIPMENT/TOOLS FOR MAINTENANCE & INSPECT. PART 2
DEP 80.45.10.10-GEN	PRESSURE RELIEF EMERGENCY DEPRESSURISING FLARE & VENT SYSTEMS
DEP 80.46.30.11-GEN	INTERLOCKING SYSTEMS FOR SAFETY/RELIEF VALVES

**REFERENCE 3: NATIONAL AND INTERNATIONAL STANDARDS****AUSTRALIAN STANDARDS**

AS1074	STEEL TUBES AND TUBULARS FOR ORDINARY SERVICE
AS 1170.2	SAA LOADING CODE (WIND)
AS 1200	SAA BOILER CODE
AS 1210	SAA UNFIRED PRESSURE VESSELS CODE
AS 1252	HIGH STRENGTH STEEL BOLTS WITH ASSOCIATED NUTS & WASHERS FOR STRUCTURAL ENGINEERING
AS 1271	SAFETY VALVES, OTHER VALVES, LIQUID LEVEL GAUGES & OTHER FITTINGS FOR BOILERS & PRESSURE VESSELS
AS 1650	HOT DIPPED GALVANISED COATING ON FERROUS ARTICLES
AS 1697	SAA GAS PIPELINE CODE
AS 1958	SAA SUBMARINE PIPELINE CODE
AS 2018	SAA LIQUID PETROLEUM PIPELINE CODE
AS 2118	SAA CODE FOR AUTO FIRE SPRINKLERS
AS 2121	SAA EARTHQUAKE CODE
AS 2129	FLANGES FOR PIPES, VALVES AND FITTINGS
AS 2885	SAA PIPELINE CODE
AS 3900	ISO 9000 SERIES FOR QUALITY MANAGEMENT
AS 4041	PRESSURE PIPING

ASME AND/OR ANSI

B 1.1	UNIFIED INCH SCREW THREADS
B 1.20.1	PIPE THREADS
B 16.5	PIPE FLANGES AND FLANGED FITTINGS
B 16.9	FACTORY-MADE WROUGHT STEEL BUTT WELDING FITTINGS
B 16.11	FORGED FITTINGS, SOCKET WELDING AND THREADED
B 16.15	CAST BRONZE THREADED FITTINGS
B 16.20	METALLIC GASKETS FOR PIPE FLANGES
B 16.21	NON METALLIC FLAT GASKETS FOR PIPE FLANGES
B 16.24	BRONZE PIPE FLANGES AND FLANGED FITTINGS
B 16.25	BUTT WELDING ENDS
B 16.36	STEEL ORIFICE FLANGES
B16.47	LARGE DIAMETER STEEL FLANGES NPS26 THROUGH NPS60
B 31.3	PROCESS PIPING
B 36.10M	WELDED AND SEAMLESS WROUGHT STEEL PIPE
B 36.19M	STAINLESS STEEL PIPE
B 46.1	SURFACE TEXTURE
SEC VIII DIV 1	UNFIRED PRESSURE VESSELS



3. OTHER AMERICAN STANDARDS

MSS SP-44	STEEL PIPE LINE FLANGES (REPLACED BY ASME B16.47)
MSS SP-97	FORGED CARBON STEEL - BRANCH O/LET FITTING
API 5L	LINE PIPE
API 6A	WELLHEAD EQUIPMENT
API 601	METAL GASKETS FOR RAISED FACE PIPE FLANGES

4. OTHER INTERNATIONAL STANDARDS

EEMUA 144 – 1987	THE ENGINEERING EQUIPMENT AND MATERIALS USERS ASSOCIATION
UKOOA	UNITED KINGDOM OFFSHORE OPERATORS ASSOCIATION

REFERENCE 4: WOODSIDE ENERGY LIMITED

W9000SX001	RATIONALISED CONSTRUCTION SPECIFICATION FOR PIPING FABRICATION AND INSTALLATION OFFSHORE
W9000SM001	PROTECTIVE COATING STANDARD
W9000MX768	SMALL BORE FITTINGS (SBF) VIBRATION FATIGUE ASSESSMENT
A3000SM015	VALVE SUPPLY SPECIFICATION

5.1 STANDARD DRAWINGS

Click on the required drawing number to go to a copy of that drawing. The drawings appended to this document have been extracted directly from CDI (Corporate Document Index) and are the latest approved revision at the time this document was issued.

Drawing Number	Document Title
W1000DX003.01	PROCESS VENTS AND DRAINS
W1000DX003.02	PROCESS VENTS AND DRAINS
W1000DX003.03	HYDROSTATIC TEST VENTS AND DRAINS
W1000DX003.04	HYDROSTATIC TEST VENTS AND DRAINS
W1000DX003.05	PRESSURE CONNECTIONS
W1000DX003.06	PRESSURE CONNECTIONS
W1000DX003.07	TEMPERATURE CONNECTIONS
W1000DX003.08	TEMPERATURE CONNECTIONS
W1000DX003.09	ORIFICE FLANGE DETAIL
W1000DX003.10	BRANCH FITTING – NIPOFLANGE
W1000DX003.11	BRANCH OUTLET – WELDOLET
W1000DX003.12	BLEED /TEST RING
W1000DX003.13	SPADE BLINDS / SPACER RINGS AND SPECTACLE BLINDS
W1000DX003.14	BRANCH SUPPORT DETAIL FOR THIN WALL PIPE

Also refer to:

PART 2 **Valve Datasheets**

PART 3 **Reference Calculations ([W9000CX001](#))**