Planning, Designing, and Constructing Fixed Offshore Platforms—Working Stress Design

API RECOMMENDED PRACTICE 2A-WSD
TWENTY-SECOND EDITION, NOVEMBER 2014

REAFFIRMED, JUNE 2025



Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

All rights reserved. No part of this work may be reproduced, translated, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001.

Copyright © 2014 American Petroleum Institute

Foreword

This document contains engineering design principles and good practices that have evolved during the development of offshore oil resources. Good practice is based on good engineering; therefore, this recommended practice consists essentially of good engineering recommendations. In no case is any specific recommendation included that could not be accomplished by presently available techniques and equipment. Consideration is given in all cases to the safety of personnel, compliance with existing regulations, and antipollution of water bodies. U.S. customary (USC) conversions of primary metric (SI) units are provided throughout the text of this publication in parentheses, for example, 150 mm (6 in.). Most of the converted values have been rounded for most practical usefulness; however, precise conversions have been used where safety and technical considerations dictate. In case of dispute, the SI units should govern.

Offshore technology continues to evolve. In those areas where the committee felt that adequate data were available, specific and detailed recommendations are given. In other areas, general statements are used to indicate that consideration should be given to those particular points. Designers are encouraged to utilize all research advances available to them. As offshore knowledge continues to grow, this recommended practice will be revised. It is hoped that the general statements contained herein will gradually be replaced by detailed recommendations.

Reference in this document is made to the 1989 edition of the AISC *Specification for Structural Steel Buildings—Allowable Stress Design and Plastic Design*. The use of later editions of AISC specifications is specifically not recommended for design of offshore platforms. The load and resistance factors in these specifications are based on calibration with building design practices and may not be applicable to offshore platforms. Research work is now in progress to incorporate the strength provisions of the new AISC code into offshore design practices.

In this document, reference is made to AWS D1.1/D1.1M:2010, *Structural Welding Code—Steel*. While use of this edition is endorsed, the primary intent is that the AWS code be followed for the welding and fabrication of fixed offshore platforms. However, where specific guidance is given in this API document, this guidance should take precedence.

This edition supersedes the 21st Edition dated December 2000, as well as Errata and Supplement 1 dated December 2002, Errata and Supplement 2 dated September 2005, and Errata and Supplement 3 dated October 2007. Revision bars are not used for this edition for clarity because of the extensive document reorganization outlined in the Introduction.

The verbal forms used to express the provisions in this recommended practice are as follows:

— the term “shall” denotes a minimum requirement in order to conform to the recommended practice,

— the term “should” denotes a recommendation or that which is advised but not required in order to conform to the recommended practice,

— the term “may” is used to express permission or a provision that is optional,

— the term “can” is used to express possibility or capability.

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually by API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001.

Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001, standards@api.org.

Contents

Page

1 Scope . . . 1

2 Normative References . . . 1

3 Terms, Definitions, Acronyms, and Abbreviations . . . 2
3.1 Terms and Definitions . . . 2
3.2 Acronyms and Abbreviations . . . 4

4 Planning . . . 5
4.1 General . . . 5
4.2 Operational Considerations . . . 5
4.3 Environmental Considerations . . . 7
4.4 Site Investigation-Foundations . . . 13
4.5 Selecting the Design Environmental Conditions . . . 14
4.6 Platform Types . . . 16
4.7 Exposure Categories . . . 18
4.8 Platform Reuse . . . 20
4.9 Platform Assessment . . . 20
4.10 Safety Considerations . . . 20
4.11 Regulations . . . 21

5 Design Criteria and Procedures . . . 22
5.1 General . . . 22
5.2 Loading Conditions . . . 23
5.3 Design Loads . . . 24
5.4 Fabrication and Installation Forces . . . 51

6 Structural Steel Design . . . 56
6.1 General . . . 56
6.2 Allowable Stresses for Cylindrical Members . . . 57
6.3 Combined Stresses for Cylindrical Members . . . 63
6.4 Conical Transitions . . . 68

7 Strength of Tubular Joints . . . 73
7.1 Application . . . 73
7.2 Design Considerations . . . 73
7.3 Simple Joints . . . 79
7.4 Overlapping Joints . . . 83
7.5 Grouted Joints . . . 84
7.6 Internally Ring-stiffened Joints . . . 85
7.7 Cast Joints . . . 85
7.8 Other Circular Joint Types . . . 85
7.9 Damaged Joints . . . 86
7.10 Noncircular Joints . . . 86

8 Fatigue . . . 86
8.1 Fatigue Design . . . 86
8.2 Fatigue Analysis . . . 86
8.3 Stress Concentration Factors (SCFs) . . . 88
8.4 S-N Curves for All Members and Connections, Except Tubular Connections . . . 89
8.5 S-N Curves for Tubular Connections . . . 90
8.6 Fracture Mechanics . . . 93

Contents

Page

9 Foundation Design . . . 93
9.1 General . . . 93
9.2 Pile Foundations . . . 93
9.3 Pile Design . . . 95
9.4 Pile Capacity for Axial Compression Loads . . . 96
9.5 Pile Capacity for Axial Pullout Loads . . . 97
9.6 Axial Pile Performance . . . 97
9.7 Soil Reaction for Axially Loaded Piles . . . 98
9.8 Soil Reaction for Laterally Loaded Piles . . . 98
9.9 Pile Group Action . . . 99
9.10 Pile Wall Thickness . . . 100
9.11 Length of Pile Sections . . . 103
9.12 Shallow Foundations . . . 103

10 Other Structural Components and Systems . . . 104
10.1 Superstructure Design . . . 104
10.2 Plate Girder Design . . . 105
10.3 Crane Supporting Structure . . . 105
10.4 Grouted Pile-to-structure Connections . . . 106
10.5 Guyline System Design . . . 110

11 Material . . . 112
11.1 Structural Steel . . . 112
11.2 Structural Steel Pipe . . . 113
11.3 Steel for Tubular Joints . . . 114
11.4 Cement Grout and Concrete . . . 118
11.5 Corrosion Protection . . . 118

12 Drawings and Specifications . . . 118
12.1 General . . . 118
12.2 Conceptual Drawings . . . 119
12.3 Bid Drawings and Specifications . . . 119
12.4 Design Drawings and Specifications . . . 119
12.5 Fabrication Drawings and Specifications . . . 120
12.6 Shop Drawings . . . 121
12.7 Installation Drawings and Specifications . . . 121
12.8 As-built Drawings and Specifications . . . 121

13 Welding . . . 122
13.1 General . . . 122
13.2 Qualification . . . 123
13.3 Welding Details . . . 124
13.4 Records and Documentation . . . 125

14 Fabrication . . . 125
14.1 Assembly . . . 125
14.2 Corrosion Protection . . . 131
14.3 Structural Material . . . 131
14.4 Loadout . . . 131
14.5 Records and Documentation . . . 132

Contents

Page

15 Installation . . . 132
15.1 General . . . 132
15.2 Transportation . . . 133
15.3 Removal of Jacket from Transport Barge . . . 135
15.4 Erection . . . 136
15.5 Pile Installation . . . 139
15.6 Superstructure Installation . . . 145
15.7 Grounding of Installation Welding Equipment . . . 145

16 Inspection . . . 146
16.1 General . . . 146
16.2 Scope . . . 147
16.3 Inspection Personnel . . . 147
16.4 Fabrication Inspection . . . 147
16.5 Loadout, Seafastening, and Transportation Inspection . . . 152
16.6 Installation Inspection . . . 153
16.7 Inspection Documentation . . . 154

17 Accidental Loading . . . 155
17.1 General . . . 155
17.2 Assessment Process . . . 156
17.3 Platform Exposure Category . . . 158
17.4 Probability of Occurrence . . . 158
17.5 Risk Assessment . . . 159
17.6 Fire . . . 160
17.7 Blast . . . 160
17.8 Fire and Blast Interaction . . . 160
17.9 Accidental Loading . . . 160

18 Reuse . . . 161
18.1 General . . . 161
18.2 Reuse Considerations . . . 161

19 Minimum and Special Structures . . . 166
19.1 General . . . 166
19.2 Design Loads and Analysis . . . 167
19.3 Connections . . . 168
19.4 Material and Welding . . . 169

Annex A (informative) API 2A-WSD, 21st Edition vs 22nd Edition Cross-reference . . . 170

Annex B (informative) Commentary . . . 184

Bibliography . . . 292

Figures
5.1 Procedure for Calculation of Wave Plus Current Forces for Static Analysis . . . 25
5.2 Doppler Shift Due to Steady Current . . . 26
5.3 Regions of Applicability of Stream Function, Stokes V, and Linear Wave Theory (from Atkins, 1990; Modified by API Task Group on Wave Force Commentary) 28
5.4 Shielding Factor for Wave Loads on Conductor Arrays as a Function of Conductor Spacing . . . 30
6.1 Example Conical Transition . . . 69

Contents

Page

7.2 In-plane Joint Detailing . . . 77
7.3 Out-of-plane Joint Detailing . . . 78
7.4 Terminology and Geometric Parameters, Simple Tubular Joints . . . 79
7.5 Examples of Chord Length, L_c . . . 83
8.1 Example Tubular Joint S-N Curve for T = 16 mm ($^5/_8$ in.) . . . 91
10.1 Grouted Pile-to-structure Connection with Shear Keys . . . 108
10.2 Recommended Shear Key Details . . . 109
10.1 Connection Design Limitations . . . 109
14.1 Welded Tubular Connections—Shielded Metal Arc Welding . . . 127
17.1 Assessment Process . . . 157
B.5.1 Measured Current Field at 60 ft Depth Around and Through the Bullwinkle Platform in a Loop Current Event in 1991 . . . 189
B.5.2 Comparison of Linear and Nonlinear Stretching of Current Profiles . . . 190
B.5.3 Definition of Surface Roughness Height and Thickness . . . 191
B.5.4 Dependence of Steady Flow Drag Coefficient on Relative Surface Roughness . . . 193
B.5.5 Wake Amplification Factor for Drag Coefficient as a Function of K/C_{ds} . . . 195
B.5.6 Wake Amplification Factor for Drag Coefficient as a Function of K . . . 195
B.5.7 Inertia Coefficient as a Function of K . . . 196
B.5.8 Inertia Coefficient as a Function of K/C_{ds} . . . 196
B.5.9 Shielding Factor for Wave Loads on Conductor Arrays as a Function of Conductor Spacing . . . 198
B.5.10 Example Structure . . . 207
B.5.11 Seismic Load Deformation Curve . . . 209
B.6.1 Elastic Coefficients for Local Buckling of Steel Cylinders Under Axial Compression . . . 213
B.6.2 Comparison of Test Data with Design Equation for Fabricated Steel Cylinders Under Axial Compression . . . 213
B.6.3 Design Equation for Fabricated Steel Cylinders Under Bending . . . 215
B.6.4 Comparison of Test Data with Elastic Design Equations for Local Buckling of Cylinders Under Hydrostatic Pressure ($M > 0.825D/t$) . . . 217
B.6.5 Comparison of Test Data with Elastic Design Equations for Local Buckling of Cylinders Under Hydrostatic Pressure ($M < 0.825D/t$) . . . 217
B.6.6 Comparison of Test Data with Design Equations for Ring Buckling and Inelastic Local Buckling of Cylinders Under Hydrostatic Pressure . . . 218
B.6.7 Comparison of Test Data with Interaction Equation for Cylinders Under Combined Axial Tension and Hydrostatic Pressure (F_{hc} Determined from Tests) . . . 219
B.6.8 Comparison of Interaction Equations for Various Stress Conditions for Cylinders Under Combined Axial Compressive Load and Hydrostatic Pressure . . . 220
B.6.9 Comparison of Test Data with Elastic Interaction Curve for Cylinders Under Combined Axial Compressive Load and Hydrostatic Pressure . . . 221
B.6.10 Comparison of Test Data on Fabricated Cylinders with Elastic Interaction Curve for Cylinders Under Combined Axial Load and Hydrostatic Pressure . . . 221
B.6.11 Comparison of Test Data with Interaction Equations for Cylinders Under Combined Axial Compressive Load and Hydrostatic Pressure (Combination Elastic and Yield-type Failures) . . . 222
B.7.1 Adverse Load Patterns with α up to 3.8 . . . 226
B.7.2 Computed α . . . 226
B.7.3 Safety Index Betas, API 2A-WSD, 21st Edition, Supplement 1 . . . 231
B.7.4 Safety Index Betas, API 2A-WSD, 21st Edition, Supplement 2 . . . 231
B.7.5 Comparison of Strength Factors Q_u for Axial Loading . . . 234
B.7.6 Comparison of Strength Factors Q_u for IPB and OPB . . . 235
B.7.7 Comparison of Chord Load Factors Q_f . . . 237

Contents

Page

B.7.8 Effect of Chord Axial Load on DT Brace Compression Capacity Comparison of University of Texas Test Data with Chord Load Factor . . . 238
B.7.9 K-joints Under Balanced Axial Loading—Test and FE vs New and Old API . . . 241
B.7.10 T-joints Under Axial Loading—Test and FE vs New and Old API . . . 242
B.7.11 DT-joints Under Axial Compression—Test and FE vs New and Old API . . . 242
B.7.12 All Joints Under BIPB—Test and FE vs New and Old API . . . 243
B.7.13 All Joints Under BOPB—Test and FE vs New and Old API . . . 243
B.8.1 Selection of Frequencies for Detailed Analyses . . . 251
B.8.2 Geometry Definitions for Efthymiou SCFs . . . 257
B.8.3 Basic Air S-N Curve as Applicable to Profiled Welds, Including Size and Toe Correction to the Data . . . 273
B.8.4 S-N Curve and Data for Seawater with CP . . . 273
B.10.1 Measured Bond Strength vs Cube Compressive Strength . . . 279
B.10.2 Histogram of the Safety Factors—Tests with and Without Shear Key Connections . . . 279
B.10.3 Cumulative Histogram of the Safety Factors—Tests with and Without Shear Key Connections . . . 280
B.10.4 Measured Bond Strength vs. Cube Compressive Strength Multiplied by the Height-to-spacing Ratio . . . 280
B.17.1 D/T Ratio vs Reduction in Ultimate Capacity, 1220 mm, 1370 mm, and 1525 mm (48 in., 54 in., and 60 in.) Legs—Straight with L = 18.3 m (60 ft), K = 1.0, and F_y = 240 MPa (35 ksi) . . . 288
B.17.2 D/T Ratio vs Reduction in Ultimate Capacity, 1220 mm, 1370 mm, and 1525 mm (48 in., 54 in., and 60 in.) Legs—Straight with L = 18.3 m (60 ft), K = 1.0, and F_y = 345 MPa (50 ksi) . . . 288
B.17.3 D/T Ratio vs Reduction in Ultimate Capacity, 1220 mm, 1370 mm, and 1525 mm (48 in., 54 in., and 60 in.) Legs—Bent with L = 18.3 m (60 ft), K = 1.0, and F_y = 240 MPa (35 ksi) . . . 289
B.17.4 D/T Ratio vs Reduction in Ultimate Capacity, 1220 mm, 1370 mm, and 1525 mm (48 in., 54 in., and 60 in.) Legs—Bent with L = 18.3 m (60 ft), K = 1.0, and F_y = 345 MPa (50 ksi) . . . 289

Tables

4.1 Exposure Category Matrix . . . 18
5.1 Design Loading Conditions . . . 23
5.2 Approximate Current Blockage Factors for Typical Gulf of Mexico Jacket-type Structures . . . 27
5.3 Values Coherence Spectrum Coefficients α, p, q, r, and Δ . . . 38
5.4 Wind Shape Coefficients . . . 39
5.5 Design Level Criteria and Robustness Analysis . . . 41
5.6 C_r Factors for Steel Jacket of Fixed Offshore Platforms . . . 47
5.7 Offshore Design Reference Wind Speed for Drilling Structures . . . 49
5.8 Design Wind Speeds used for Existing Drilling . . . 50
5.9 Deck Acceleration During Design Hurricanes . . . 50
6.1 Values of K and C_m for Various Member Situations . . . 66
6.2 Safety Factors . . . 68
6.3 Limiting Angle α for Conical Transitions . . . 69
7.1 Examples of Joint Classification . . . 76
7.1 Geometric Parameter Validity Range . . . 79
7.2 Values for Q_u . . . 81
7.3 Values for C_1, C_2, C_3 . . . 82
7.4 Q_u for Grouted Joints . . . 84
8.1 Fatigue Life Safety Factors . . . 88
8.2 Basic Design S-N Curves . . . 90
8.3 Factors on Fatigue Life for Weld Improvement Techniques . . . 92
9.1 Pile Factors of Safety for Different Loading Conditions . . . 96

Contents

Page

9.2 Minimum Pile Wall Thickness . . . 102
9.3 Shallow Foundation Safety Factors Against Failure . . . 104
10.2 Guyline Factors of Safety . . . 111
11.1 Structural Steel Plates . . . 114
11.1 Structural Steel Plates (Continued) . . . 115
11.2 Structural Steel Shapes . . . 116
11.3 Structural Steel Pipe . . . 117
11.4 Input Testing Conditions . . . 117
13.1 Impact Testing . . . 123
15.1 Guideline Wall Thickness (in SI Units) . . . 142
15.2 Guideline Wall Thickness (in USC Units) . . . 143
16.1 Recommended Minimum Extent of NDE Inspection . . . 150
17.1 Platform Risk Matrix . . . 158
18.1 Recommended Extent of NDE Inspection-Reused Structure . . . 164
A.1 API 2A-WSD, 21st Edition vs 22nd Edition Cross-reference of Figures . . . 170
A.2 API 2A-WSD, 21st Edition vs 22nd Edition Cross-reference of Tables . . . 175
A.3 API 2A-WSD, 21st Edition vs 22nd Edition Cross-reference of Equations . . . 178
B.7.1 Mean Bias Factors and Coefficients of Variation for K-joints . . . 240
B.7.2 Mean Bias Factors and Coefficients of Variation for Y-joints . . . 240
B.7.3 Mean Bias Factors and Coefficients of Variation for X-joints . . . 241
B.8.1 Equations for SCFs in T/Y-joints . . . 260
B.8.2 Equations for SCFs in X-joints . . . 261
B.8.3 Equations for SCFs in Gap/Overlap K-joints . . . 262
B.8.4 Equations for SCFs in KT-joints . . . 263
B.8.5 Expressions for L_{mp} . . . 265
B.13.1 Average Heat Affected Zone (HAZ) Values . . . 283
B.17.1 Required Tubular Thickness to Locally Absorb Vessel Impact . . . 287

Introduction

This publication serves as a guide for those who are concerned with the design and construction of new fixed offshore platforms and for the relocation of existing platforms used for the drilling, development, production, and storage of hydrocarbons in offshore areas.

In addition, these guidelines are used in conjunction with API 2SIM for the assessment of existing platforms in the event that it becomes necessary to make a determination of the “fitness for purpose” of the structure.

This recommended practice is organized around the framework of the API 2A-WSD, 21st Edition, with the following sections:

— Section 1: Scope;

— Section 2: Normative References;

— Section 3: Terms, Definitions, Acronyms, and Abbreviations;

— Section 4: Planning (API 2A-WSD, 21st Edition, Section 1);

— Section 5: Design Criteria and Procedures (API 2A-WSD, 21st Edition, Section 2);

— Section 6: Structural Steel Design (API 2A-WSD, 21st Edition, Section 3);

— Section 7: Strength of Tubular Joints (API 2A-WSD, 21st Edition, Section 4);

— Section 8: Fatigue (API 2A-WSD, 21st Edition, Section 5);

— Section 9: Foundation Design (API 2A-WSD, 21st Edition, Section 6);

— Section 10: Other Structural Components and Systems (API 2A-WSD, 21st Edition, Section 7);

— Section 11: Material (API 2A-WSD, 21st Edition, Section 8);

— Section 12: Drawings and Specifications (API 2A-WSD, 21st Edition, Section 9);

— Section 13: Welding (API 2A-WSD, 21st Edition, Section 10);

— Section 14: Fabrication (API 2A-WSD, 21st Edition, Section 11);

— Section 15: Installation (API 2A-WSD, 21st Edition, Section 12);

— Section 16: Inspection (API 2A-WSD, 21st Edition, Section 13);

— Section 17: Accidental Loading (API 2A-WSD, 21st Edition, Section 18);

— Section 18: Reuse (API 2A-WSD, 21st Edition, Section 15);

— Section 19: Minimum and Special Structures (API 2A-WSD, 21st Edition, Section 16);

— Annex A: Listing of figures, tables, and equations;

— Annex B: Commentary;

— Bibliography.

The following additional changes to the content of API 2A-WSD not previously noted above have been made:

— API 2A-WSD, 21st Edition, Section 14 (Surveys) and Section 17 (Assessment of Existing Platforms) have been removed in their entirety and now reside in API 2SIM;

— with the publication of API 2FB, the new Section 17 contains only the accidental loading portion of API 2A-WSD, 21st Edition, Section 18;

— Annex A provides a listing of API 2A-WSD, 21st Edition tables, figures, and equations with corresponding 22nd Edition numbers;

— Annex B contains any commentary for the sections;

— Bibliography contains references for all sections.

Planning, Designing, and Constructing Fixed Offshore Platforms—Working Stress Design

1 Scope

This recommended practice is based on global industry best practices and serves as a guide for those who are concerned with the design and construction of new fixed offshore platforms and for the relocation of existing platforms used for the drilling, development, production, and storage of hydrocarbons in offshore areas.

NOTE 1 Specific guidance for hurricane conditions in the Gulf of Mexico and other U.S. offshore areas, previously provided in API 2A-WSD, 21st Edition, Section 2, is now provided in API 2MET.

NOTE 2 Specific guidance for earthquake loading in U.S. offshore areas, previously provided in the API 2A-WSD, 21st Edition, Section 2, is now provided in API 2EQ.

NOTE 3 Specific guidance for soil and foundation considerations in offshore areas, previously provided in API 2A-WSD, 21st Edition, Section 6, is now provided in API 2GEO.

NOTE 4 Specific guidance for the evaluation of structural damage, above and below water structural inspection, fitness-for-purpose assessment, risk reduction and mitigation planning, plus the process of decommissioning has been removed and is now provided in API 2SIM.

NOTE 5 Specific guidance for fire and blast loading, previously provided in the 2A-WSD, 21st Edition, Section 18, is now provided in API 2FB [3].

NOTE 6 Specific guidance for marine operations, supplementing the guidance provided in this document, is now provided in API 2MOP [6]. The provisions in API 2A-WSD shall govern if there are any conflicts.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies (including any addenda/errata).

API Specification 2B, *Fabrication of Structural Steel Pipe*

API Specification 2C, *Specification for Offshore Pedestal-mounted Cranes*

API Recommended Practice 2EQ, *Seismic Design Procedures and Criteria for Offshore Structures*

API Recommended Practice 2GEO, *Geotechnical and Foundation Design Considerations*

API Recommended Practice 2MET, *Derivation of Metocean Design and Operation Conditions*

API Recommended Practice 2N, *Planning, Designing, and Constructing Structures and Pipelines for Arctic Conditions*

API Recommended Practice 2SIM, *Structural Integrity Management of Fixed Offshore Structures*

API Bulletin 2TD, *Guidelines for Tie-downs on Offshore Production Facilities for Hurricane Season*