

ASME NOG-1–2015
(Revision of ASME NOG-1–2010)

Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)

AN AMERICAN NATIONAL STANDARD



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Date of Issuance: February 20, 2015

The next edition of this Standard is scheduled for publication in 2020.

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CONTENTS

Foreword	vi
Committee Roster	vii
Preparation of Technical Inquiries to the Committee on Cranes for Nuclear Facilities	viii
Summary of Changes	ix
Section 1000 Introduction	1
1100 General	1
Section 2000 Quality Assurance	11
2100 Requirements	11
Section 3000 Coatings and Finishes	12
3100 Coating Service Levels	12
3200 Specific Requirements for Coating Service Levels	12
Section 4000 Requirements for Structural Components	14
4100 General	14
4200 Materials and Connections	24
4300 Design Criteria	30
4400 Component Design	35
Section 5000 Mechanical	39
5100 General	39
5200 Materials	42
5300 Design and Performance Criteria	42
5400 Component Design	44
5500 Miscellaneous	81
Section 6000 Electrical Components	83
6100 General	83
6200 Wiring Materials and Methods (Types I, II, and III Cranes)	84
6300 Performance Specifications (Types I, II, and III Cranes)	85
6400 Component Selection (Types I, II, and III Cranes)	86
6500 Electrical Equipment Testing Requirements (Types I, II, and III Cranes)	100
Section 7000 Inspection and Testing	101
7100 Tests and Acceptance Criteria	101
7200 Manufacturing	102
7300 Receipt and Storage Requirements for Storage Facility and/or Site	107
7400 Site	108
7500 Qualification for Permanent Plant Service	111
7600 Documentation	113
Section 8000 Packaging, Shipping, Receiving, Storage, and Handling	114
8100 General	114
Section 9000 Planned Engineered Lifts	115
9100 General	115
9200 Capacity Limitations	115
9300 Lift Frequency Limitations	115
9400 Inspection Frequency	115
9500 Planned Engineered Lifts for Bridge or Gantry Only	115
9600 Planned Engineered Lifts for Hoist and Trolley Only	116



9700	Required Interlocks or Stops	116
9800	Load Testing Requirements	116
9900	Crane Wheel Loads	116

Figures

4153.3-1	Typical Four-Wheel Trolley Model for Seismic Analysis	18
4153.3-2	Typical Four-Wheel Overhead Crane Model for Seismic Analysis	18
4153.3-3	Typical Four-Wheel Gantry Crane Model for Seismic Analysis	19
4153.3-4	Typical Four-Wheel Semi-Gantry Crane Model for Seismic Analysis	19
4160-1	Runway Rail Alignment Tolerance	25
5411.5-1	Drum Shell Design	46
5413.1-1	Allowable Yield Stress, s_{ay}	48
5416.1-1	Typical Hoist Machinery Arrangement With Emergency Brake	52
5416.1-2	Typical Hoist Machinery Arrangement With Redundant Gear Reducers and Brakes	53
5416.1-3	Typical Redundant-Hoist Machinery Arrangement	54
5420-1	Single-Failure-Proof Reeving Example	55
5420-2	Single and Double Reeving	56
5426.1-1	Drum Fleet Angle	57
5426.1-2	Sheave Fleet Angle	58
5427.1-1	Proportions for 24:1 Sheave-to-Rope Ratio	59
5427.1-2	Proportions for 30:1 Sheave-to-Rope Ratio	60
5430-1	Arrangement of Crane Trolley Drives	61
5440-1	Arrangement of Crane Bridge Drives	63
5440-2	Arrangement of Polar Cranes	64
5452.4-1	Minimum Flange Widths and Heights	68
5459.3-1	Power or Control Circuit Limit Switch With Geared Upper Limit Switch	73
5459.3-2	Power or Control Circuit Limit Switch	73
5474-1	Allowable Bending Stress	75
5474-2	Allowable Tension or Compression Stress	76
5474-3	Allowable Shear Stress	77
5477-1	Typical Hook Cross-Section	78
5477-2	Fish Hook Configuration	78
5477-3	Equivalent Section	79
5477-4	Sister Hook Without a Pinhole	80
5477-5	Sister Hook With a Pinhole	80
6472.2-1	K_a Factors for AC and Adjustable Voltage DC Motors (Without Field Weakening)	95
6472.2-2	Typical Polar Crane	96
6473-1	Typical Characteristic Curves for AC Wound Rotor Motors (Examples for 0.75 per Unit Horsepower and 20% Total Resistance)	99
7521.2-1	Inspection for Wheel Wear	112

Tables

4153.6-1	Boundary Conditions: Trolley Wheels to Trolley Rails	21
4153.6-2	Boundary Conditions: Bridge Wheels to Crane Runway Rails	21
4211-1	Acceptable Materials and Reference Properties for Structural Components	26
4212-1	Required C_v Energy Values for Structural Materials (Except Bolting)	27
4221-1	Acceptable Fastener Materials for Structural Connections for Types I and II Cranes	27
4221-2	Fastener Materials That May Be Galvanized	28
4222-1	C_v Energy Values for Fastener Materials	28
4232-1	Test Temperature for Filler Metal — Charpy V-Notch Impact Tests With 20 ft-lb Average Energy	28
4251.5-1	Exemptions to Mandatory Postweld Heat Treatment	29
4311-1	Maximum Allowable Stresses in Structural Steel Members	31



4315-1	Allowable Stresses for Bolts Other Than ASTM A325 or ASTM A490	31
4332.1-1	Value of the Buckling Coefficients, K_{σ} and K_{τ} , for Plates Supported at Their Four Edges	34
5331.1-1	Rated Load Recommended Hoist Speeds	43
5332.1-1	Rated Load Recommended Trolley Speeds	44
5333.1-1	Rated Load Recommended Bridge Speeds	44
5413.1-1	Gearing Allowable Stresses	49
5413.1-2	Load Distribution R Factors	49
5415.1-1	Load Combinations — Hoist Drive Shafting	51
5452.3-1	Allowable Wheel Loads for Rim-Toughened Crane Wheels, P , lb, for Speed Factor = 1	67
5452.3-2	Speed Factor for Determining Allowable Maximum Wheel Load	67
5452.4-1	Guide for Wheel Flange Width and Height	69
5453.1-1	Load Combinations — Bridge and Trolley Axles	69
5454.1-1	Deflections	69
6472.2-1	Overall Friction Factors (Antifriction Bearings)	93
6472.2-2	Suggested Acceleration Rates for AC or AV Travel Drives	94
6472.2-3	Suggested Maximum Acceleration Rates	94
6472.3-1	Duty Classes	97
7210-1	Required Inspections or Tests — Type I	103
7210-2	Required Inspections or Tests — Type II	106
8100-1	Applicable Requirements of ASME NQA-1, Part II, Subpart 2.2, With Modifications of 8000	114
Mandatory Appendices		
I	Additional Requirements	117
II	Criteria Required for Structural Qualification of an Existing Crane Bridge for Use With an ASME NOG-1 Type I Hoist and Trolley	120
Nonmandatory Appendices		
A	Recommended Practices	125
B	Commentary	130
C	NUREG-0554/ASME NOG-1 Conformance Matrix	136



FOREWORD

The Committee on Cranes for Nuclear Power Plants was first established in 1976. In 1980, the name and scope of the Committee were revised from the Committee on Cranes for Nuclear Power Plants to the Committee on Cranes for Nuclear Facilities. This Standard was developed under procedures accredited as meeting the criteria for American National Standards. The Standards committee that approved the Standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate.

This Standard or portions thereof can be applied to cranes at facilities other than nuclear, where enhanced crane safety may be required, and can be provided by means of either single-failure-proof features or a seismic design.

Suggestions for improvement as gained in the use of this Standard are welcome. They should be sent to the Secretary, ASME Committee on Cranes for Nuclear Facilities, The American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

The first edition of NOG-1 was approved in 1983, the second in 1989, the third in 1995, the fourth in 1998, the fifth in 2002, and the sixth in 2004. This 2014 edition contains the revisions made since the 2010 edition; most significant of these is the addition of Mandatory Appendix II on criteria required for structural qualification of an existing crane bridge for use with an ASME NOG-1 Type I hoist and trolley. Mandatory Appendix II parallels the U.S. Nuclear Regulatory Commission's guidance for modification of existing cranes for compliance with NUREG-0554, as presented in NUREG-0612 Nonmandatory Appendix C. ASME NOG-1-2015 received ANSI approval on January 8, 2015.



ASME COMMITTEE ON CRANES FOR NUCLEAR FACILITIES

(The following is the roster of the Committee at the time of approval of this Standard.)

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G. M. Ray, *Vice Chair*
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PREPARATION OF TECHNICAL INQUIRIES TO THE COMMITTEE ON CRANES FOR NUCLEAR FACILITIES

INTRODUCTION

The ASME Committee on Cranes for Nuclear Facilities (CNF) will consider written requests for interpretations and revisions to CNF Standards and develop new requirements if dictated by technological development. The Committee's activities in this regard are limited strictly to interpretations of the requirements or to the consideration of revisions to the present Standard on the basis of new data or technology. As a matter of published policy, ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity and, accordingly, inquiries requiring such consideration will be returned. Moreover, ASME does not act as a consultant on specific engineering problems or on the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

All inquiries that do not provide the information needed for the Committee's full understanding will be returned.

INQUIRY FORMAT

Inquiries shall be limited strictly to interpretations of the requirements or to the consideration of revisions to the present Standard on the basis of new data or technology.

Inquiries shall be submitted in the following format:

(a) *Scope.* The inquiry shall involve a single requirement or closely related requirements. An inquiry letter concerning unrelated subjects will be returned.

(b) *Background.* State the purpose of the inquiry, which would be either to obtain an interpretation of the Standard or to propose consideration of a revision to the present Standard. Provide concisely the information needed for the Committee's understanding of the inquiry, being sure to include reference to the applicable Standard, Edition, Requirements, Parts, Subparts, Appendices, paragraphs, figures, and tables. If sketches are provided, they shall be limited to the scope of the inquiry.

(c) *Inquiry Structure*

(1) *Proposed Question(s).* The inquiry shall be stated in a condensed and precise question format, omitting superfluous background information and, where appropriate, composed in such a way that "yes" or "no" (perhaps with provisos) would be an acceptable reply. The inquiry statement should be technically and editorially correct.

(2) *Proposed Reply(ies).* State what it is believed that the Standard requires. If, in the inquirer's opinion, a revision to the Standard is needed, recommended wording shall be provided.

(d) *Submittal.* The inquiry shall be submitted in typewritten form; however, legible, handwritten inquiries will be considered. It shall include the name, mailing address, and telephone number of the inquirer and be mailed to the following address:

Secretary
ASME Committee on Cranes for Nuclear
Facilities
Nuclear Department
Two Park Avenue
New York, NY 10016



ASME NOG-1–2015

SUMMARY OF CHANGES

Following approval by the ASME Committee on Cranes for Nuclear Facilities and ASME, and after public review, ASME NOG-1–2015 was approved by the American National Standards Institute on January 8, 2015.

ASME NOG-1–2015 includes the following changes identified by a margin note, **(15)**.

<i>Page</i>	<i>Location</i>	<i>Change</i>
8, 9	1160	Updated
14	4110	Revised
	4120	Nomenclature of P_{vi} revised
33	4332.1	Equations under “Design Factor DFB ” revised
34, 35	4341	(1) First paragraph revised (2) Original second paragraph deleted
	4342	Revised
	4345	First paragraph and subpara. (a) revised
39	5100	Paragraph added
40	5161	Nomenclature revised in its entirety
42	5210	Revised in its entirety
43	Table 5331.1-1	First column head revised
44–46	Table 5332.1-1	First column head revised
	Table 5333.1-1	First column head revised
	5411.3	Revised in its entirety
	5411.5	Revised in its entirety
	Fig. 5411.5-1	Revised in its entirety
	5411.7	(1) Subparagraph (b) revised (2) Subparagraph (c) deleted
51	Table 5415.1-1	(1) Penultimate column and Note (2) revised (2) Note (4) added
55, 57, 58, 60, 62	5423.1	Subparagraph (c)(9) added
	5427.1	First paragraph revised
	5430	Subparagraph (a)(6) revised
59	Fig. 5427.1-1	(1) Revised (2) General Notes added
60	Fig. 5427.1-2	(1) Revised (2) General Notes added
61	Fig. 5430-1	A-4 Drive illustration revised



<i>Page</i>	<i>Location</i>	<i>Change</i>
62, 65	5440	Subparagraph (a)(4) revised
63	Fig. 5440-1	A-4 Drive illustration revised
65	5451.1	(1) Subparagraph (a) revised (2) Last sentence in subpara. (b) deleted
87	6415.1	Subparagraph (c) added
89, 90	6422.1	Subparagraph (e) added
	6422.2	Last paragraph added
91	6441	(1) Revised in its entirety (2) Paragraph 6441.1 added
92	6444	Revised in its entirety
93, 94	6472.2	Last sentence added to definition of K_d nomenclature in subpara. (c)
98	6473	First sentence, eq. (12), and definition of D revised
102	7240	Subparagraph (l) revised
104	Table 7210-1	Third entry in first column revised
111	7423	Subparagraph (b)(3) revised
112, 113	7521.3	Subparagraph (b)(12) added
118	I-5111	Added
120–124	Mandatory Appendix II	Added
142	NUREG-0554/ASME NOG-1 Conformance Matrix	(1) Last entry in fourth column revised (2) Last entry in last column deleted



RULES FOR CONSTRUCTION OF OVERHEAD AND GANTRY CRANES (TOP RUNNING BRIDGE, MULTIPLE GIRDER)

Section 1000 Introduction

1100 GENERAL

Cranes covered under this Standard shall be designed in accordance with the Standard's requirements, but not necessarily with its recommendations. The word *shall* is used to denote a requirement, the word *should* is used to denote a recommendation, and the word *may* is used to denote permission, which is neither a requirement nor a recommendation.

1110 Scope

This Standard covers electric overhead and gantry multiple girder cranes with top running bridge and trolley used at nuclear facilities and components of cranes at nuclear facilities.

1120 Applications

This Standard applies to the design, manufacture, testing, inspection, shipment, storage, and erection of the cranes covered by this Standard.

1130 Responsibility

The cranes covered by this Standard are classified into three types (see para. 1150, Definitions, *crane, Type*), depending upon crane location and usage of the crane at a nuclear facility.

The owner shall be responsible for determining and specifying the crane type. The owner shall also be responsible for determining and specifying the environmental conditions of service, performance requirements, type and service level of coatings and finishes, and degree of quality assurance.

Determining the extent to which this Standard can be used, either in part or in its entirety, at other than nuclear facilities, shall be the responsibility of those referencing the use of this Standard.

1140 Environmental Conditions (Types I, II, and III Cranes)

1141 Radiation

(a) The purchase specification shall specify the accumulated radiation dosage expected to be seen by the crane in the life of the nuclear facility.

(b) Components whose normal life could be reduced by the effects of the specified radiation shall be tabulated and submitted to the crane purchaser.

(c) Components whose failure, due to radiation, could result in loss of one of the single-failure-proof features that hold the load either shall be designed to withstand the specified radiation or shall have a specific replacement period. Where state-of-the-art is such that sufficient data are not available, periodic inspections shall be made by the purchaser to determine when replacement should be made.

1142 Temperature

(a) The purchase specification shall specify the following temperature requirements in the area where the crane operates:

- (1) maximum operating temperature
- (2) minimum operating temperature
- (3) ambient temperature for motors
- (4) maximum construction temperature
- (5) minimum construction temperature

(b) The crane shall be designed to withstand the effects of the specified temperatures, or the limitations of the crane's design concerning these temperature conditions shall be specified by the crane designer.

1143 Pressure

(a) The purchase specification shall specify the following pressure requirements in the area where the crane operates:

- (1) normal operating pressure
- (2) any test or abnormal event of these pressures including the rate of change

