Foreword

This publication was sponsored by ASTM Committee D33 on Protective Coating and Lining Work for Power Generation Facilities. Its creation and maintenance is the responsibility of Subcommittee D33.10 on Protective Coatings Maintenance Work for Power Generation Facilities. This subcommittee is composed of representatives from various organizations involved with manufacturing, specifying, applying, and using protective coatings to control corrosion and erosion issues in nuclear power facilities. Subcommittee members include individuals from utilities, architects/engineers/constructors, coating inspection service providers, and other interested parties. The first edition was originally published in December 1990.

In the 1990s and early 2000s, numerous changes evolved with regard to nuclear power coatings. Operating experience, lessons learned, and regulatory changes have resulted in many changes to the way nuclear power plant coatings are selected, evaluated, applied, monitored, and repaired. Due to the magnitude of these changes, Subcommittee D33.10 felt it was prudent to revise this publication to reflect those changes. The information presented herein reflects a consensus of the subcommittee members of D33.10 as of 22 May 2015.

This manual was prepared to address a need perceived by ASTM Committee D33 for guidance in selecting and applying maintenance coatings in nuclear plants but is not to be considered a standard. In addition to serving as that source of guidance, this document has the equally necessary role of acting as a focal point for a rapidly changing technology. While Subcommittee D33.10 considers the information contained in this manual to be state of the art, the book offers limited historical data upon which to establish detailed requirements or methodologies. Accordingly, the user will find this edition rather general. The details of these practices are found in the various cited standards and standard guides referenced throughout and listed in the appendix. ASTM Standard D4538, “Standard Terminology Relating to Protective Coating and Lining Work for Power Generation Facilities,” contains the definitions of the terms used in this publication.

This manual does not purport to address all the safety concerns, if any, associated with the use of the referenced standards. It is the responsibility of the user of this manual to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

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Acronyms

3M          Minnesota Mining and Manufacturing
ABWR        Advanced boiling water reactor
ALARA       As low as reasonably achievable
ANSI        American National Standards Institute
ASTM        ASTM International (formerly American Society for Testing and Materials)
BWR         Boiling water reactor
CFR         Code of Federal Regulations
CSL I       Coatings Service Level I
CSL II      Coatings Service Level II
CSL III     Coatings Service Level III
DBA         Design basis accident
DSC         Digital still camera
ECCS        Emergency core cooling system
EPA         Environmental Protection Agency
EPRI        Electric Power Research Institute
ESS         Engineered safety system
FME         Foreign material exclusion
FSAR        Final safety analysis report
GC          Gas chromatograph
HEPA        High efficiency particulate air
HP          Health physics
HPWC        High pressure water cleaning
HVAC        Heating, ventilation, and air conditioning
LOCA        Loss of coolant accident
LOTO        Lockout/tagout
LPWC        Low pressure water cleaning
MOS         Maximum operating speed
MP          Magnetic particle testing
NACE        NACE International (formerly National Association of Corrosion Engineers)
NFPA        National Fire Protection Association
NIOSH       National Institute of Occupational Safety and Health
NIST        National Institute of Standards and Technology
NPP         Nuclear power plant
NRC         Nuclear Regulatory Commission
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
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<tr>
<td>PA</td>
<td>Protected area</td>
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<tr>
<td>PC</td>
<td>Protective clothing</td>
</tr>
<tr>
<td>PT</td>
<td>Penetrant (dye) testing</td>
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<tr>
<td>PWR</td>
<td>Pressurized water reactor</td>
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<td>QA</td>
<td>Quality assurance</td>
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<tr>
<td>QC</td>
<td>Quality control</td>
</tr>
<tr>
<td>RCA</td>
<td>Radiological controlled area</td>
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<tr>
<td>Reg. Guide</td>
<td>Regulatory guide</td>
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<tr>
<td>RHR</td>
<td>Residual heat removal</td>
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<tr>
<td>ROS</td>
<td>Recommended operating speed</td>
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<tr>
<td>RT</td>
<td>Radiographic testing</td>
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<tr>
<td>SAR</td>
<td>Safety analysis report</td>
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<tr>
<td>SSC</td>
<td>System, structure, or component</td>
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<tr>
<td>SSPC</td>
<td>The Society for Protective Coatings (formerly Steel Structures Painting Council)</td>
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<tr>
<td>TTP</td>
<td>Time temperature pressure</td>
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<tr>
<td>UHPWC</td>
<td>Ultra-high pressure water cleaning</td>
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<td>UT</td>
<td>Ultrasonic test</td>
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<tr>
<td>VOC</td>
<td>Volatile organic compound</td>
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<tr>
<td>WJ</td>
<td>Water jetting</td>
</tr>
</tbody>
</table>
Contents

Foreword iii
Contributors v
Acronyms vii

1 Protecting Surfaces in a Nuclear Plant
   Andy Baer and Bruce Dullum 1

2 Significance of Maintenance Coating
   Richard L. Martin and Daniel L. Cox 5

3 In-Service Condition Monitoring and Assessment
   Timothy Shugart and Daniel L. Cox 7

4 Preparing for Maintenance Coating
   Timothy Shugart, Timothy B. Ridlon, and Peter Blattner 11

5 Planning and Scheduling Maintenance Coating Work
   Daniel L. Cox 17

6 Qualification of Nuclear-Grade Maintenance Coatings
   John O. Kloepper and Steve L. Liebhart 19

7 Coating Materials
   John F. De Barba and Christopher Palen 23

8 Practical Methods of Surface Preparation for Maintenance Painting
   Jon R. Cavallo 29

9 Practical Methods of Coating Application
   Bryan M. Monteon 33

10 Inspection
   Keith A. Miller and Judy Cheng 35

11 Safety
   Daniel L. Cox 39

12 Personnel Training and Qualification
   Daniel L. Cox 43

13 Underwater Maintenance of Nuclear-Safety-Related Immersion Service Coatings
   Charles Vallance 45

Appendix 51