

DCD Tier 2 Chapter 3 Revision 3 to Revision 4 Change List
(Sections 3.9 to 3.11)

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1.	Acronym List	Updated to list only the acronyms used in Sections 3.9 thru 3.11.
2.	Generic	Spelled out acronyms where appropriate.
3.	Generic	Changed GE to GEH where appropriate.

Tier 2 Chapter 3.9 Revision 3 to Revision 4 Change List

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1.	S3.9, General	Spelled out acronyms the first time used in this section.
2.	S3.9.1, 1 st para., 1 st sent.	Deleted “Draft R3” and additional editorial change.
3.	S3.9.1, 2 nd para., Item (1)	Replaced “is related” with “relates” and “safety” with “safety-related”.
4.	S3.9.1, 2 nd para., Item (2)	Replaced “safety” with “safety-related”.
5.	S3.9.1.4, 1 st para., 1 st sent.	Editorial changes.
6.	S3.9.1.4, 4 th para., 2 nd sent.	Added clarification that dynamic testing is part of seismic and dynamic qualification program.
7.	S3.9.1.4, 8 th para.	Revised entire paragraph in response to RAI 3.8-27 S04.
8.	S3.9.1.4, 15 th para., 4 th sent.	Replaced “essential” with “safety-related”.
9.	S3.9.2, 1 st para., last sent.	Deleted “draft R3”.
10.	S3.9.2, 1 st para., last sent.	Editorial change.
11.	S3.9.2, 2 nd para, Item (1)	Replaced “safety” with “safety-related”.
12.	S3.9.2.1.1, 1 st para., 4 th sent.	Editorial change.
13.	S3.9.2.1.1, 3 rd para., 1 st sent	Change “all safety-related piping systems shall be” to “safety-related system critical components and piping runs are”.
14.	S3.9.2.1.1, 3 rd para., 2 nd sent.	Editorial change.
15.	S3.9.2.1.1, 5 th para., 1 st sent.	Replaced “test safety” with “testing personnel protection”.
16.	S3.9.2.1.1, 6 th para, 4 th and 5 th sent.	Editorial changes including reversing order of SI and English units and replacing “criteria” with “criterion”.
17.	S3.9.2.1.2, 3 rd para., 1 st & 2 nd sent.	Editorial changes.

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
18.	S3.9.2.1.2, 6 th para., 1 st sent.	Deleted “all” to be consistent with chapter 14 descriptions.
19.	S3.9.2.1.2, 6 th para., 5 th sent.	Replaced “shall have passed” with “passes”.
20.	S3.9.2.1.2, 8 th para., 5 th sent	Editorial changes.
21.	S3.9.2.2.1, 1 st para., 1 st sent.	Replaced “safety” with “safety-related”.
22.	S3.9.2.2.1, last para., 2 nd sent.	Editorial change.
23.	S3.9.2.2.2, 21 st para., 1 st sent.	Replaced “safety” with “safety-related”.
24.	S3.9.2.2.2, 23 rd para., 3 rd sent.	Editorial change.
25.	S3.9.2.3, 2 nd para.	Added the following sentences after the 1 st sent: “The vibration forcing functions for operational flow transients and steady state conditions are determined by first postulating the source of the forcing function, such as forces due to flow turbulence, symmetric and asymmetric vortex shedding, pressure waves from steady state and transient operations. Based on these postulates, prior startup and other test data from similar or identical components are examined for the evidence of the existence of such forcing functions.” This is in response to RAI 3.9-47S01.
26.	S3.9.2.3, 2 nd para.	Added the following sentences after the 2 nd sentence: “Based on these examinations, the magnitudes of the forcing functions and/or response amplitudes are derived. These magnitudes are then used to calculate the expected ESBWR responses for each component of interest during steady state and transient conditions.” This is in response to RAI 3.9-47S01.
27.	S3.9.2.3, new para.	Added new paragraphs after the 3 rd paragraph, describing details of the special signal analyses of the vibration sensors. This is in response to RAI 3.9-48S01.
28.	S3.9.2.3, 5 th para., 1 st sent.	Editorial change.

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29.	S3.9.2.3, 6 th para., 3 rd sent.	Editorial change.
30.	S3.9.2.3, 6 th para., last sent.	Replaced “no safety” with “nonsafety-related”.
31.	S3.9.2.3, last para., 3 rd sent.	Replaced “99,800 kg/hr (220,000 lbm/hr)” with “100,700 kg/hr (222,000 lbm/hr) at rated power” in response to RAI 3.9-56.
32.	S3.9.2.4, 1 st para., 1 st sent.	Editorial change.
33.	S3.9.2.4, 2 nd para.	Added new 4 th & 5 th sentences to provide references to Subsection 3L in response to RAI 3.9-151S01.
34.	S3.9.2.4, 9 th para., 6 th sent.	Editorial change.
35.	S3.9.2.4, 9 th para.	Added new last sentence to identify Reference 3.9-6.
36.	S3.9.2.4, last para.	Replaced last paragraph w/ new two paragraphs related to COL items that were moved from Subsection 3.9.9.1.
37.	S3.9.2.5, 1 st para., Items (1)	Editorial changes.
38.	S3.9.3, 1 st para.	Deleted “draft R2”.
39.	S3.9.3, 2 nd para., Item (1)	Replaced “safety” with “safety-related”.
40.	S3.9.3.1, 2 nd para., last sent.	Removed reference to 3.9.9.4 for COL info.
41.	S3.9.3.1, 3 rd para.	Editorial change.
42.	S3.9.3.1, last para.	Added new last sentence to identify piping that require Class 1 analysis.
43.	S3.9.3.1.1, 3 rd para., 2 nd sent.	Inserted “i.e., Anticipated Operational Occurrences, as defined in 10 CFR 50, Appendix A” after “transients (SOT)” per RAI 15.0-17 S01.
44.	S3.9.3.1.1, 4 th para., 3 rd sent.	Inserted “e.g., infrequent events, as defined in Subsection 15.0.1.2” after “transients (IOT)” per RAI 15.0-17 S01.
45.	S3.9.3.1.1, 4 th para., 3 rd sent.	Replaced “safety” with “safety-related”.

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46.	S3.9.3.1.1, 4 th para., last sent.	Replaced “an IOT” with “a special event, as defined in Subsection 15.0.1.2, that is” per RAI 15.0-17 S01.
47.	S3.9.3.1.1, 5 th para., last sent.	Deleted “(a) a control rod drop accident” per RAI 15.0-17 S01 and additional editorial changes.
48.	S3.9.3.1.1, 8 th para.	Replaced “safety” with “safety-related” and additional editorial changes.
49.	S3.9.3.1.1, last para.	Replaced “safety” with “safety-related” and additional editorial change.
50.	S3.9.3.2, 2 nd para., last sent.	Revised last sentence and added new sentence to add information related to standards compliance and details of the feedwater nozzle and sparger design.
51.	S3.9.3.4, 3 rd para.	Editorial change.
52.	S3.9.3.4, 6 th para.	Deleted entire paragraph including paragraph title. In response to RAI 6.2-102 S01.
53.	S3.9.3.4, 12 th para., 2 nd sent.	Added “and fatigue usage is in accordance with RG 1.207 and NUREG/CR-6909” in response to RAI 3.9-13 S01.
54.	S3.9.3.4, 12 th para., 4 th & last sent.	Editorial changes.
55.	S3.9.3.4, last para.	Editorial change.
56.	S3.9.3.5.2, 2 nd para., last sent.	Editorial change.
57.	S3.9.3.5.2, 4 th para., 2 nd sent.	Editorial change.
58.	S3.9.3.5.2, 7 th para., 2 nd sent.	Editorial change.
59.	S3.9.3.5.2, 10 th para., last sent.	Editorial change.
60.	S3.9.3.6, 4 th para., 2 nd sent.	Deleted “, that will be prepared by GE,”.
61.	S3.9.3.6, 8 th para., 1 st sent.	Editorial change.
62.	S3.9.3.6, 9 th para., 1 st sent.	Editorial change.
63.	S3.9.3.7, 1 st para., 1 st ,	Editorial change.

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	4 th & last sent.	
64.	S3.9.3.7, 5 th para., 1 st sent.	Changed tense from future to present.
65.	S3.9.3.7.1, 1 st para., 1 st sent.	Replaced “essential” with “safety-related”.
66.	S3.9.3.7.1, 1 st para., 2 nd sent.	Deleted “(1994 edition)” and editorial change.
67.	S3.9.3.7.1, 3 rd para., 1 st sent.	Replaced “IIA” with “II” and additional editorial change.
68.	S3.9.3.7.1, 3 rd para., 2 nd & last sent.	Editorial change.
69.	S3.9.3.7.1, 4 th para.	Deleted “/ANSI”.
70.	S3.9.3.7.1, 8 th para, 3 rd & last sent.	Editorial changes to change tense from future to present and change “bending’ to “binding”.
71.	S3.9.3.7.1, 10 th para., Item (3)b, 1 st para., last sent.	Replaced “the responsibility of the COL holder referencing the ESBWR design” with “addressed in Subsection 3.9.9”.
72.	S3.9.3.7.1, 10 th para., Item (3)c(i)	Editorial changes.
73.	S3.9.3.7.1, 10 th para., Item (3)c(ii)	Editorial changes.
74.	S3.9.3.7.1, 10 th para., Item 3e, 1 st para., 1 st sent.	Removed “covered by plant specific Technical Specifications”.
75.	S3.9.3.7.1, 10 th para., Item 3e, 3 rd para., last sent.	Replaced “shall” with “will” and replaced “...holder referencing the ESBWR design” with “...applicant. See Subsection 3.9.9”.
76.	S3.9.3.7.1, 10 th para., Item 3f, 1st para.	Changed title to “Snubber support data”, deleting “audit”. Changed from: “To ensure that the plant-specific snubber programs will be readily available for a site audit, the plant-specific design specification provided by the COL holder will include the following specific snubber information” to “The COL holder will prepare a plant-specific table to be included as part of the inspection and test program for snubbers (see Subsection 3.9.9) that will include the following information”.

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77.	S3.9.3.7.1, 10 th para., Item 3f, item (i)	Added: “(i.e. shock, vibration, dual purpose) for each ,system and component using snubbers including the number and location of each snubber. If either dual-purpose or arrestor type indicate whether the snubber or component was evaluated for fatigue strength”.
78.	S3.9.3.7.1, 10 th para., Item 3f, item (iv)	Change “materials of construction, and standards for hydraulic fluids and lubricants” to “list type of snubber (i.e. hydraulic, mechanical), materials of construction, standards for hydraulic fluids and lubricants, and the corresponding supplier”.
79.	S3.9.3.7.1, 10 th para., Item (5), 4 th para., 2 nd sent.	Changed tense from future to present.
80.	S3.9.3.7.1, 10 th para., Item (6)	Revised sentence to read “Special engineered pipe supports are not used.”
81.	S3.9.3.7.2, 1 st & 2 nd sent.	Editorial change.
82.	S3.9.3.7.4, 2 nd para., 1 st sent.	Replaced “PCC and IC” with “Isolation Condenser (IC)” in response to RAI 6.2-102 S01.
83.	S3.9.3.9, new	Added new Subsections to provide information on threaded fasteners – ASME Code Class 1, 2 and 3 material selection, special material fabrication processes and special controls and pre-service and in-service inspection requirements. Response for RAI 3.0-1.
84.	S3.9.4, 1 st para., 6 th & 7 th sent.	Replaced “safety” with “safety-related”.
85.	S3.9.4, 2 nd para., Item (1)	Replaced “it related” with “they relate” Replaced “safety” with “safety-related”.
86.	S3.9.4, 2 nd para., Items 2 & 6	Replaced “safety” with “safety-related”.
87.	S3.9.5, 1 st para., 1 st sent.	Deleted “draft R3”.
88.	S3.9.5, 1 st para., 3 rd sent.	Replaced “safety” with “safety-related”.
89.	S3.9.5, 2 nd para., Items 1 & 2	Replaced “safety” with “safety-related”.

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90.	S3.9.5, 5 th para., 1 st sent.	Replaced “Figure 5.3-3” with “Figure 3.9-7”.
91.	S3.9.5.1, 1 st para, 1 st sent.	Editorial change.
92.	S3.9.5.1, 2 nd para.	Added new last sentence to provide reference to Figure 3.9-8 in response to RAI 4.5-2.
93.	S3.9.5.1, 4 th para.	Added new last sentence to provide reference to Figure 3.9-9 in response to RAI 4.5-2.
94.	S3.9.5.2, 9 th para., 2 nd sent.	Replaced “not a safety-related” with “a nonsafety-related”.
95.	S3.9.5.2, 11 th para., 2 nd sent.	Editorial change.
96.	S3.9.5.2, 11 th para.	Added new last sentence to provide reference to Figure 3.9-12 in response to RAI 4.5-20.
97.	S3.9.5.2, 12 th para.	Added new last sentence to provide reference to Figures 3.9-10 and 3.9-11 in response to RAI 4.5-20.
98.	S3.9.5.3, 1 st para.	Replaced “safety” with “safety-related”.
99.	S3.9.5.4, 1 st para., Title	Replaced “Safety” with “Safety-Related”.
100.	S3.9.5.4, 1 st para., 1 st sent.	Deleted “shall” and replaced “safety” with “safety-related”.
101.	S3.9.5.4, 1 st para., 1 st & 2 nd bullets	Editorial changes.
102.	S3.9.5.4, 1 st para., 3 rd bullet	Replaced “shall assure” with “assures” and “safety” with “safety-related”.
103.	S3.9.5.4, 2 nd para, 1 st sent. and 2 nd & 3 rd bullet	Replaced “shall be” with “are”.
104.	S3.9.5.4, 2 nd para., 1 st bullet	Deleted “shall”.
105.	S3.9.5.4, 6 th para., 2 nd sent.	Editorial change.
106.	S3.9.5.4, last para., 1 st sent.	Replaced “non-safety” with “nonsafety-related”.
107.	S3.9.6, new 1 st para.	Inserted new 1 st paragraph.

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
108.	S3.9.6, 2 nd para., old 1 st para.	Deleted 1 st and 2 nd sent. and made editorial change to 3 rd sent.
109.	S3.9.6, 2 nd para., old 1 st para.	For previous 1 st para, item (1) changed “safety” to “safety-related”, item (7) changed “safety” to “safe operation”.
110.	S3.9.6, new 3 rd , 4 th and 5 th para.	Inserted new paragraphs.
111.	S3.9.6, old 2 nd paragraph	Deleted
112.	S3.9.6, old 3 rd para.	Deleted
113.	S3.9.6, old 4 th para.	Deleted, except last sentence. Added new last sentence. Changed subsection from 3.9.9.3 to 3.9.9 for COL info.
114.	S3.9.6.1 Title	Removed “of Safety-Related” from title.
115.	S3.9.6.1, old 1 st para.	Deleted Check Valves paragraphs.
116.	S3.9.6.1, old 2 nd , 3 rd , 4 th , 5 th , 6 th para.	Deleted Power Operated Valve paragraphs.
117.	S3.9.6.1, old 7 th and 8 th para	Deleted Isolation Valve Leak Tests paragraphs.
118.	S3.9.6.1, new 1 st , 2 nd , 3 rd , and 4 th para	Added 4 new paragraphs.
119.	S3.9.6.1, new subsections	Added new subsections 3.9.6.1.1 through 3.9.6.1.5.
120.	S3.9.6.2, thru S3.9.6.8	Added new subsections 3.9.6.2 through 3.9.6.8.
121.	S3.9.7	Replaced content with a statement regarding risk-informed in-service testing.
122.	S3.9.8	Replaced content with a statement regarding risk-informed in-service inspection of piping.
123.	S3.9.9.1	Rewritten in response to RAI 3.9-151S01 and changed subsection number to “3.9.9-1-H”.
124.	S3.9.9.2	Rewritten to identify only location of COL holder item and changed subsection number to 3.9.9-2-H.
125.	S3.9.9.3	Rewritten to identify what COL applicant should provide, and changed subsection number to 3.9.9-3-A.

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126.	S3.9.9.4	Deleted and replaced by 3.9.9-4-A”. Added Subber inspection and test program.
127.	S3.9.10	Added new Reference 3.9-6.
128.	T3.9-1 note 4 and T3.9-2 note (12)	Changed to present tense.
129.	Load Definition Legend for Table 3.9-2	Replaced “essential” with “safety-related” and additional editorial changes.
130.	T3.9-5, LE description	Changed to present tense.
131.	T3.9-6, SL &SET description	Changed to present tense.
132.	T3.9-8	Revised entire table due to IST changes.
133.	T3.9-9	Fatigue limit changed from “0.10” to “0.40” and added note 4 in response to RAI 3.9-13 S01.
134.	F3.9-6, New	Added new Figure 3.9-6, “Flow Chart for Determining Test Data Frequency and Amplitude” in response to RI 3.9-48S01.
135.	F3.9-7 thru F3.9-9	Added new figures in response to RAI 4.5-2.
136.	F3.9-10 thru F3.9-12	Added new figures in response to RAI 4.5-20.

Tier 2 Chapter 3.10 Revision 3 to Revision 4 Change List

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1.	S3.10, 1 st para., 4 th sent.	Replaced “safety” with “safety-related”, for clarity.
2.	S3.10, 2 nd para.	Inserted “industry codes and standards, and Regulatory Guides” after “...following regulations”, for clarity.
3.	S3.10, 2 nd para., Item (4)d	Replaced “rev. 2” with “2006”. Correction of revision for consistency with other references in this section.
4.	S3.10.1.1, 1 st para.	Inserted “mechanical and” after “...Seismic Category I”; replaced “a combination” with “or a combination of”; deleted “or by experience data”; and added, “Qualification by actual seismic experience is not utilized.” at the end of paragraph in response to RAI 3.10-2 S02.
5.	S3.10.1.1, 2 nd para., 1 st sent.	Replaced “lead” with “lend”. Editorial change.
6.	S3.10.1.1, last para.	Deleted entire paragraph in response to RAI 3.10-2 S02
7.	S3.10.1.4, new	Added new Subsection 3.10.1.4, “Dynamic Qualification Report” in response to RAI 3.10-5 S02.
8.	S3.10.2, 2 nd sent.	Inserted “or” after “...by testing, analysis”; deleted “or experience data” in response to RAI 3.10-2 S02; and inserted “mechanical and” after “...Seismic Category I”, for clarity.
9.	S3.10.2.1, 16 th para., 2 nd sent.	Inserted “mechanical and” after “...Seismic Category I”, for clarity.
10.	S3.10.2.1, 19 th para., Title	Replaced “Final Test Report” with “Documentation of Testing”, for clarity.
11.	S3.10.2.1, 19 th para., 1 st & 2 nd sent.	Replaced sentences with “Qualification results are documented and include, but are not necessarily limited to the following:”, for clarity.
12.	S3.10.2.1, 19 th para., 2 nd bullet	Editorial changes.
13.	S3.10.2.1, 19 th para., 3 rd bullet	Deleted “Calculation of” and additional editorial changes.
14.	S3.10.2.1, 19 th para., 8 th bullet	Replaced with “Equipment seismic qualification conclusions (including RBV dynamic loads); and”, for

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
		clarity.
15.	S3.10.2.1	Added following sentence at the end of the subsection: “See Subsection 3.1.1.4 for additional information on the documentation of test results”, for clarity.
16.	S3.10.2.2, 6 th para., Title	Replaced “Analyses for seismic and RBV Dynamic Loads” with “Acceptance Criteria for Qualification by Analysis”, for clarity.
17.	S3.10.2.2, last para.	Revised to read “Qualification results are documented and include, but are not necessarily limited to equipment specification requirements, a summary of qualification results, and justification that the methods used demonstrate that the equipment does not malfunction. See Subsection 3.10.1.4 for additional information on the documentation of qualification results.”, for clarity.
18.	S3.10.2.3, 2 nd para., 2 nd sent.	Replaced “mode” with “modes”. Editorial change.
19.	S3.10.2.3, 5 th para., 3 rd sent.	Replaced “shall be” with “is”. Editorial change.
20.	S3.10.2.3	Added the “Documentation of Combined Testing and Analysis” detail at the end of the section in response to RAI 3.10-2 S02.
21.	S3.10.3.1, 6 th para., 2 nd sent.	Replaced “These” with “There”. Editorial change.
22.	S3.10.3.2, 1 st para., 2 nd sent.	Deleted “operating experience” for consistency with change item 4.
23.	S3.10.3.2, 4 th para., 2 nd bullet	Editorial change.
24.	S3.10.3.3, new	Added Subsection 3.10.3.3, “Documentation of Testing or Analysis of Electrical Supports”, for clarity.
25.	S3.10.4	Replaced entire subsection with: “3.10.4-1-A Dynamic Qualification Report The COL applicant will provide a milestone for completing the Dynamic Qualification Report (DQR) per Subsection 3.10.1.4.”

Tier 2 Chapter 3.11 Revision 3 to Revision 4 Change List

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1.	S3.11, 1 st para., 2 nd & 3 rd sent.	Changed tense from future to present.
2.	S3.11, 2 nd para, Item 4	Added new item g in response to RAI 3.11-13.
3.	S3.11, 3 rd para., Item 1	Replaced “safety” with “safety-related”.
4.	S3.11, 4 th para., 1 st sent.	Inserted “and mechanical” after “The electrical” for clarification.
5.	S3.11, Post-Accident Conditions	Replaced “the equipment...” with “after an accident condition that equipment...”
6.	S3.11.1, 1 st para.	Added “Specific equipment to be included in the equipment qualification program is identified in Table 3.11-1.” to reference Table 3.11-1.
7.	S3.11.1, 2 nd para., 1 st sent.	Replaced “safety” with “safety-related” and deleted “design basis”.
8.	S3.11.1, 2 nd par., 2 nd sent.	Change tense from future to present and replaced “Subsection 3.11.5” with “Subsection 3.11.2.2”.
9.	S3.11.2.1, 4 th para., 2 nd sent.	Change tense from future to present.
10.	S3.11.2.1, 5 th para., 1 st sent.	Changed “between minutes of the occurrence of the event but less than” to “from within minutes of the occurrence of an event up to”.
11.	S3.11.2.1, 5 th para., 2 nd & last sent.	Change tense from future to present and additional editorial change.
12.	S3.11.2.1, 5 th para., Item 3	Replaced “safety” with “safety-related”.
13.	S3.11.2.1, 6 th para.	Change tense from future to present and inserted “and post-accident conditions” after “during accident.
14.	S3.11.2.1, last para.	Change tense from future to present.
15.	S3.11.2.2, 3 rd para.	Change tense from future to present and replaced “The mechanical” with “Qualified mechanical”.
16.	S3.11.2.2, 5 th para.	Revised entire paragraph in response to RAI 3.11-9.
17.	S3.11.2.2, 6 th & 7 th para.	Deleted entire paragraphs in response to RAI 3.11-9.

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
18.	S3.11.2.2, last para.	Revised to include text from Subsection 3.11.5.
19.	S3.11.3	Added “6.4 and” in the 2 nd sentence and replaced “safety” with “safety-related” in the last sentence.
20.	S3.11.4, 1 st para., last sent.	Changed “operation and design basis accident” with “operating and accident”.
21.	S3.11.4, 5 th para., 2 nd sent.	Deleted “neutron, gamma and beta”.
22.	S3.11.4, last para.	Deleted the entire paragraph.
23.	S3.11.5, 1 st para.	Revised for clarity and per RAI 3.11-7.
24.	S3.11.5, Environmental Qualification Records	Deleted entire paragraph.
25.	T3.11-1, new	Added new Table 3.11-1, “Electrical and Mechanical Equipment for Environmental Qualification”.