Issued 7/02/2018

Code Case OMN-15, Revision 3
Performance-Based Requirements for Extending the Snubber Operational Readiness Testing Interval at LWR Power Plants

Inquiry: What alternative rules may be used in place of those specified in paras. ISTD-5200 and ISTD-5240 of the 1998 through 2009 edition of the ASME OM Code that require operational readiness testing during each fuel cycle using test plans described in paras. ISTD-5260, ISTD-5300, and ISTD-5400?

Reply: It is the opinion of the Committee that the test requirement of every fuel cycle, specified in paras. ISTD-5200 and ISTD-5240 of the 1998 through 2009 edition of the ASME OM Code, may be extended to two or more fuel cycles based on the satisfactory results of previous interval tests, provided that the following requirements are met.

1 APPLICABILITY

See Applicability Index.

2 SUPPLEMENTAL DEFINITIONS

extended test interval: interval greater than one fuel cycle.

failure rate: the number of unacceptable required operational readiness tests as a percentage of the total number of required tests performed within a defined test plan group (DTPG) for a completed test campaign.

fuel cycle: time period beginning with the start of the reactor until the completion of the next refuel outage and subsequent restart.

successful test campaign: campaign completed without having to test the entire defined test plan group (DTPG) population.

test campaign: the series of actions required to complete the test plan requirements defined in para. ISTD-5200 during each fuel cycle, or the extended test interval per this Code Case, as applicable.

test interval: the interval between test campaigns.

3 LIMITATIONS

3.1 Implementation of ISTD Requirements

ASME OM Code, Subsection ISTD shall be implemented prior to the use of this Code Case.

3.2 Defined Test Plan Groups (DTPGs)

This Code Case may be used for one or more DTPGs during a given test campaign. When combining DTPGs, the shorter test interval shall be applicable.

3.3 DTPGs Defined in ISTD-5253

This Code Case may not be used for DTPGs defined in para. ISTD-5253.

3.4 Code Case OMN-13

This Code Case shall not be used in conjunction with Code Case OMN-13.

3.5 Extension of Test Interval

The test interval may be extended by only one fuel cycle at a time.

3.6 Maximum Allowable Test Interval

The maximum allowable test interval shall be three fuel cycles plus the Code-allowed 92 days prior to the start of the scheduled refueling outage specified in para. ISTD-5240.

3.7 Snubber Failure Mode Groups (FMGs)

Snubber failure mode group (FMG) categories as defined in Subsection ISTD shall not be used to group snubber failures for DTPGs using this Code Case.

4 GENERAL REQUIREMENTS

4.1 Sample Size and Composition

For the test campaign immediately preceding an extended test interval and during the extended test interval, the initial sample size shall be as indicated in Table 1, Column A and selected randomly from the DTPG. When additional samples are required to satisfy the mathematical expression of Table 1, they shall be selected randomly from the remaining population of the DTPG.

4.2 Test Plans

Test plans listed in Table 1 are in lieu of test plans addressed in paras. ISTD-5260, ISTD-5300, and ISTD-5400.

4.3 Use of FMGs

Use of FMGs as described in paras. ISTD-5263 and ISTD-5270 is not applicable to this Code Case. All testing

Table 1 Test Plan Required for Test Campaign Immediately Preceding and During the Extended Interval

Test Plan [Note (1)]	DTPG Size, n	Column A Initial Sample Size [Note (2)]	Column B Mathematical Expression to Be Satisfied [Notes (2), (3)]
1	$n \geq 370$	52	$N \geq 51.60 + 21.03C$
2	$369 \geq n \geq 300$	$0.13n$	$N \geq 0.13n + C(0.1n)$
3	$299 \geq n \geq 250$	$0.14n$	$N \geq 0.14n + C(0.1n)$
4	$249 \geq n \geq 200$	$0.15n$	$N \geq 0.15n + C(0.1n)$
5	$199 \geq n \geq 150$	$0.18n$	$N \geq 0.18n + C(0.1n)$
6	$149 \geq n \geq 100$	$0.125n$	$N \geq 0.125n + C(0.125n)$
7	$n < 100$	13 [Note (4)]	$N \geq 12.5 + 12.5C$

GENERAL NOTES:

(a) Definitions of terms:
C = total number of unacceptable snubbers found in the DTPG
N = total number of snubbers tested that were selected from the DTPG
n = number of snubbers in the DTPG

(b) The requirements specified in Table 1 apply to the test campaign immediately preceding and during any extended test interval.

(c) The four preceding campaigns, required by para. 5.2, shall meet or exceed the requirements of Table 1 or of para. ISTD-5331 or ISTD-5431.

NOTES:

(1) Alternatively, Test Plan 1 may be used for DTPG sizes less than 370 snubbers.
(2) Fractional sample values shall be rounded up to the next integer.
(3) Additional testing may be required to satisfy the provisions of para. 5.1.
(4) For a DTPG smaller than 13, all snubbers in the DTPG must be successfully tested.

shall be in the respective DTPG until the mathematical expression of Table 1 is satisfied.

4.4 Action on Unacceptable Snubbers

Unacceptable snubbers shall be evaluated and adjusted, repaired, modified, or replaced. The provisions of paras. ISTD-1600 and ISTD-1700 also apply.

4.5 Retesting of Failed Snubbers

Snubbers placed in the same location as snubbers that failed the previous inservice operational readiness test shall be retested at the next refueling outage unless the cause of the failure is clearly established and that cause is corrected to preclude reoccurrences. Any retest or failures found by these retests do not require additional testing in accordance with this Code Case, but shall be evaluated for appropriate corrective action.

4.6 Service-Life Monitoring (SLM)

If testing is conducted specifically for service-life monitoring (SLM) purposes, the results of such testing does not require additional testing in accordance with this Code Case, but shall be evaluated for appropriate corrective action.

4.7 Snubbers Selected for SLM

Any snubbers selected for SLM or seal replacement during an applicable test campaign of this Code Case shall remain eligible for selection and testing under the test campaign.

4.8 Test Campaign Failure Rate

The test interval shall revert back to that specified in para. ISTD-5240 if the failure rate for the completed test campaign exceeds 2.5%.

4.9 Discontinuing Use of This Code Case

During any test campaign using this Code Case, if the entire DTPG population requires testing, usage of this Code Case shall be discontinued. The testing requirements of Subsection ISTD shall apply for that DTPG.

4.10 Functional Test Failures

All functional test failures identified during maintenance, SLM, transient dynamic events (para. ISTD-1750), and visual examination activities (para. ISTD-4230) conducted during the extended test interval shall be evaluated in accordance with paras. ISTD-1800 and ISTD-5270. If any condition indicates the snubber population level of operational readiness has degraded, corrective action shall be implemented as required by paras. ISTD-4270, ISTD-4280, ISTD-5271, and ISTD-5280.

5 SPECIFIC REQUIREMENTS

For the test campaign immediately preceding an extended test interval, the initial sample size shall be as indicated in Table 1, Column A (rounded up to the next integer) in lieu of the initial sample size listed in

para. ISTD-5311 or ISTD-5411, as applicable. Testing shall satisfy the applicable mathematical expression listed in Table 1, Column B in lieu of equations listed in para. ISTD-5331 or ISTD-5431, as applicable.

5.1 Additional Specific Requirements for Implementing a Two Fuel Cycle Test Interval

Prior to implementing a two fuel cycle test interval, three successive single fuel cycle test campaigns shall be successfully completed for the applicable DTPG, with each test campaign failure rate not exceeding 2.5%. These test campaigns shall include the campaign conducted at the end of the fuel cycle immediately preceding the two cycle test interval.

5.2 Additional Specific Requirements for Implementing a Three Fuel Cycle Test Interval

Prior to implementing a three fuel cycle test interval, the following requirements shall be met:

(a) The test interval immediately preceding the three fuel cycle test interval shall be a two fuel cycle test interval.

(b) The four test campaigns immediately preceding the three fuel cycle test interval shall have been completed successfully.

Code Case OMN-15, Revision 3
Nonmandatory Appendix A
Example Scenarios

This Appendix provides examples of various scenarios where the snubber inservice test (IST) interval specified in the ASME OM Code may or may not be extended.

NOTE: Test plan numbers referred to in this Appendix are defined in Table 1 of OMN-15.

A-1 SCENARIO 1

DTPG 3 at Plant X has a total of 298 snubbers. A successful test campaign was completed during RFO 5 using the 10% Plan. A successful test campaign was completed during RFO 6 using the 37 Snubber Plan. What is required in order to bypass a test campaign at RFO 8?

Response: Completion of a successful test campaign at RFO 7 using either Test Plan 1 or Test Plan 3.

A-2 SCENARIO 2

Following Scenario 1 for DTPG 3 at Plant X, a test campaign was bypassed at RFO 8. What is required in order to bypass a test campaign at RFO 10 and RFO 11?

Response: Completion of a successful test campaign at RFO 9 using either Test Plan 1 or Test Plan 3.

A-3 SCENARIO 3

DTPG 3 at Plant X has a total of 298 snubbers. Successful test campaigns were completed during RFO 5 through 8. A successful test campaign was completed during RFO 9 using Test Plan 1. Is a test campaign required at RFO 10?

Response: No.

Is a test campaign required at RFO 11?

Response: Yes. The test interval may be extended by a maximum of one fuel cycle beyond the previous interval.