

ENCLOSURE 8

WCAP-17712 Addendum 2, Revision 0, "Westinghouse SMR Test Plan – ARL Test Specification"
(Non-Proprietary)

Westinghouse SMR Test Plan – Applied Research Laboratory (ARL) Test Specification

WCAP-17712-NP, Addendum 2
Revision 0

**Westinghouse SMR Test Plan – Applied Research
Laboratory (ARL) Test Specification**

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1 SEPARATE EFFECTS TEST

1.1 TEST PURPOSE

[

] a,b,c

Table 1-1 High Phase Ranking and Low State of Knowledge Phenomena

a,b,c

a,b,c

1.2 TEST FACILITY ARRANGEMENT/CONFIGURATION

[

] a,b,c

[

] ^{a,b,c}

[

] ^{a,b,c}

a,b,c,



Figure 1-1 Illustration of [] ^{a,b,c} for Westinghouse SMR Upper Plenum Test

a,b,c

Figure 1-2 SMR Reactor Vessel and Steam Generator

a,b,c

Figure 1-3 SMR Upper Internals

a,b,c

Figure 1-4 ADS-2/Upper Plenum Test Facility Diagram

a,b,c

Figure 1-5 SMR ADS-2 and CMT Line Elevations



Figure 1-6 SMR ADS-2 and CMT Line Penetrations

1.3 TEST FACILITY GEOMETRIC SCALE

[

] ^{a,b,c}

1.4 TEST FACILITY MATERIALS

[

] ^{a,b,c}

1.5 TEST FACILITY SPECIAL CONSIDERATIONS

[

] ^{a,b,c}

Table 1-2 ADS-2 [^{a,b,c} Locations

^{a,b,c}

[

] ^{a,b,c}

1.6 TEST WORKING FLUIDS

[

] ^{a,b,c}**1.7 TEST PRESSURE**

[

] ^{a,b,c}**1.8 TEST TEMPERATURE**

[

] ^{a,b,c}**1.9 KEY TEST MEASUREMENTS**

[

] ^{a,b,c}

[

] ^{a,b,c}

1.10 ADS-2 LIQUID ENTRAINMENT/CARRYOVER AND DE-ENTRAINMENT PHENOMENA

[

] ^{a,b,c}

[

] ^{a,b,c}

1.10.1 Liquid De-Entrainment/Phase Separation in Upper Plenum Internals and at Upper Plenum/ADS Connection

[

] ^{a,b,c}

1.11 ADS-2 TWO-PHASE PRESSURE DROP

[

] ^{a,b,c}

[]^{a,b,c}

1.12 TWO-PHASE FLOW REGIME MAPPING AND TEST MATRIX

[

] ^{a,b,c}

[

] ^{a,b,c}

1.12.1 SMR Plant ADS-2 Conditions

[

] ^{a,b,c}



Figure 1-7 Volumetric Flow of Steam Through ADS-2



Figure 1-8 Superficial Velocity of Steam Through ADS-2



Figure 1-9 Volumetric Flow Rate of Liquid Through ADS-2

a,b,c

Figure 1-10 ADS-2 (RCS-Containment) Pressure Difference

1.12.2 SMR Plant CMT Balance Line Conditions

[

]a,b,c



Figure 1-11 CMT Balance Line Volumetric Flow Rate of Liquid



Figure 1-12 CMT Balance Line Volumetric Flow Rate of Steam



Figure 1-13 CMT Balance Line Superficial Liquid Velocity

a,b,c

Figure 1-14 CMT Balance Line Superficial Steam Velocity

1.13 TEST PROCEDURE

[

] a,b,c

1.14 UNCERTAINTY ANALYSIS

[

] ^{a,b,c}

1.15 TEST REPORT OUTPUT

[

] ^{a,b,c}

1.16 INSTRUMENTATION AND CONTROL REQUIREMENTS

1.16.1 Types of Instrumentation

[

] ^{a,b,c}

1.16.2 Types of Controls

[

] ^{a,b,c}

1.17 DATA ACQUISITION SYSTEM

[

] ^{a,b,c}

1.17.1 DAS Components

[

] ^{a,b,c}

1.17.2 Input Channels

[

] ^{a,b,c}

1.17.3 Sampling Rates

[

] ^{a,b,c}

1.17.4 Camera Frame Rates, Interrogation Spot Resolution and Interrogation Spot Size

[

] ^{a,b,c}

1.17.5 System Accuracy

[

] ^{a,b,c}

1.17.6 DAS Software Verification

[

] ^{a,b,c}

1.17.7 Online Data Storage

[

] ^{a,b,c}

[

] ^{a,b,c}

1.17.8 Online Display

[

] ^{a,b,c}

1.17.9 Test Validation

[

] ^{a,b,c}

1.17.9.1 Data Transmittal

[

] ^{a,b,c}

[

] ^{a,b,c}

1.18 TEST OPERATIONS

1.18.1 Procedures and Documentation

[

] ^{a,b,c}

[

] ^{a,b,c}

1.19 TEST REPORTS AND DATA REQUIREMENTS

[

] ^{a,b,c}

1.19.1 Day-of-Test Report

[

] ^{a,b,c}

1.19.2 Final Test Report

[

] ^{a,b,c}

1.20 QUALITY ASSURANCE

[

] ^{a,b,c}

[

] ^{a,b,c}**Table 1-3 ADS-2/Upper Plenum Test Documents**^{a,b,c}

a,b,c

Figure 1-15 Westinghouse SMR Upper Internals Drawing (1 of 3)

a,b,c

Figure 1-16 Westinghouse SMR Upper Internals Drawing (2 of 3)

a,b,c

Figure 1-17 Westinghouse SMR Upper Internals Drawing (3 of 3)

2 [

] ^{a,b,c}

[

] ^{a,b,c}

[

] ^{a,b,c}

APPENDIX A PROPOSED TEST MATRIX AND PHENOMENA SCALING CONSIDERATIONS

A.1 TEST MATRIX DEVELOPMENT AND PHENOMENA SCALING DISCUSSION

[

] ^{a,b,c}^{a,b,c}]

a,b,c

a,b,c

a,b,c

a,b,c

[

] a,b,c

a,b,c

[

] a,b,c

[

] ^{a,b,c}^{a,b,c}]

a,b,c

$$\mathcal{J}^{a,b,c}$$

a,b,c

[illegible]

a,b,c

[illegible]
$$\mathcal{I}^{a,b,c}$$

[

] ^{a,b,c}

a,b,c

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

a,b,c

[illegible]

a,b,c

$\mathcal{I}^{a,b,c}$

a,b,c

[illegible] $\mathbb{J}^{a,b,c}$

a,b,c
